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Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.

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II

(Non-legislative acts)

DECISIONS

COMMISSION DECISION

of 17 July 2013

on the aid scheme SA.21233 C/11 (ex NN/11, ex CP 137/06) implemented by Spain Tax scheme applicable to certain finance lease agreements also known as the Spanish Tax Lease System*(notified under document C(2013) 4426)***(Only the Spanish text is authentic)****(Text with EEA relevance)**

(2014/200/EU)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular the first subparagraph of Article 108(2) thereof,

Having regard to the Agreement on the European Economic Area, and in particular Article 62(1)(a) thereof,

Having called on interested parties to submit their comments pursuant to the provisions cited above ⁽¹⁾ and having regard to their comments,

Whereas:

1. PROCEDURE

- (1) According to several complaints registered with the Commission since May 2006, the Spanish scheme applicable to shipping companies since 2002 (Spanish Tax Lease System) allowed maritime transport companies to buy ships in Spain at a 20-30 % rebate. In particular, two national federations of shipyards and one individual shipyard complained that this scheme resulted in the loss of shipbuilding contracts from their members to Spanish shipyards. On 13 July 2010, shipbuilding associations of seven European countries together signed a petition against the so-called Spanish Tax Lease system (hereinafter 'STL'). At least one shipping company supported these complaints. In August 2010, a Member of the European Parliament asked a question on the same topic ⁽²⁾.
- (2) By letters of 15 September 2006, 30 January 2007, 6 November 2007 and 3 March 2008, the Commission sent Spain requests for information. Spain answered by letters of 16 October 2006, 23 and 27 February 2007, and 11 January and 27 March 2008. At a meeting held on 29 April 2008, the Commission requested additional information which Spain provided by letter of 17 June 2008. The Commission requested further additional information by letter of 23 September 2008, which Spain provided by letter of 24 October 2008.
- (3) Following new information from complainants, the Commission requested further additional information by letters of 11 January and 25 May 2010. Spain answered by letters of 10 March and 26 July 2010. A meeting with the Spanish authorities took place on 24 January 2011.

⁽¹⁾ OJ C 276, 21.9.2011, p. 5.

⁽²⁾ See Parliamentary Question E-5819/2010, answered on 31.8.2010.

- (4) By letter dated 29 June 2011, the Commission informed Spain that it had decided to initiate the procedure laid down in Article 108(2) of the Treaty on the Functioning of the European Union in respect of the aid.
- (5) By letter dated 2 August 2011, Spain commented on the decision to open formal proceedings.
- (6) The Commission decision to initiate the formal investigation procedure (hereinafter 'Decision C(2011) 4494 final') was published in the *Official Journal of the European Union* ⁽³⁾. The Commission invited interested parties to submit their comments on the measures.
- (7) The Commission received comments from several interested parties. By letters of 23 February, 7 March, 11 July and 29 October 2012, and 12 and 25 February and 22 April 2013, it forwarded them to Spain, which was given the opportunity to react. Its comments were received by letters dated 30 April, 24 May, 9 and 23 July and 14 November 2012, and 25 February, 12 March and 21 May 2013. Spain also submitted additional observations by letters of 3 and 9 October 2012. At their request, the Commission had meetings with Pequeños y Medianos Astilleros en Reconversión (PYMAR) ⁽⁴⁾ on 13 November 2012 and 4 February 2013, and with the Spanish authorities on 6 March 2013.

2. DESCRIPTION OF THE SPANISH TAX LEASE SYSTEM

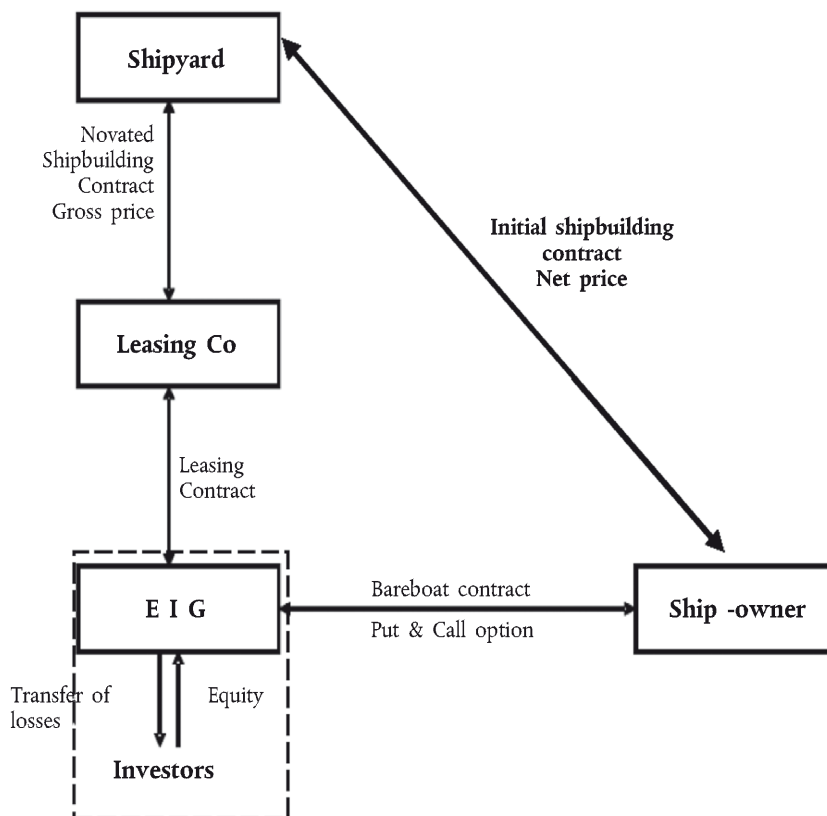
- (8) The Spanish Tax Lease system is used in transactions involving the building by shipyards (sellers) and the acquisition by maritime shipping companies (buyers) of sea-going vessels and the financing of these transactions by means of an ad hoc legal and financial structure.
- (9) The STL system is based on:
 - an ad hoc legal and financial structure organised by a bank and interposed between the shipping company and the shipyard, respectively the buyer and the seller of a vessel,
 - a complex network of contracts between the different parties,
 - the application of several Spanish tax measures.
- (10) At the Commission's request, the Spanish authorities have confirmed that the STL was used in 273 shipbuilding and acquisition transactions between 1 January 2002 and 30 June 2010, for a total value of EUR 8 727 997 332. The scheme continued to apply until 29 June 2011, when the formal investigation procedure was initiated. Buyers are shipping companies from all over Europe and beyond. All but one of the transactions (a contract for EUR 6 148 969) involved Spanish shipyards.

2.1. THE STL — LEGAL AND FINANCIAL STRUCTURE

- (11) As stated, an STL operation allows a shipowner to have a new vessel built with a 20-30 % rebate on the price charged by the shipyard. In order to obtain the discounted price (after deducting the rebate), a shipping company must agree not to buy the vessel directly from the shipyard but from an economic interest grouping (EIG) incorporated under Spanish law and set up by a bank.
- (12) The STL structure is a tax planning scheme generally organised by a bank in order to generate tax benefits for investors in a tax transparent EIG and transfer part of these tax benefits to the shipping company in the form of a rebate on the price of the vessel. The rest of the benefits are kept by the investors in the EIG as remuneration for their investment. In addition to the EIG, an STL operation also involves other intermediaries, such as a bank and a leasing company (see chart below).

⁽³⁾ See footnote 1.

⁽⁴⁾ Spanish association of small and medium-sized shipyards.



- (13) In practice, the EIG leases the vessel from a leasing company from the date that it starts to be built. Once it has been built, the EIG charts out the vessel to the shipping company, on a bareboat basis, and the shipping company starts operating the vessel. In any case, the EIG undertakes to buy the vessel at the end of the leasing contract and the shipping company undertakes to buy the vessel at the end of the bareboat charter contract, by means of reciprocal buy and sell option contracts ⁽⁵⁾. The date of exercising the options established by the leasing contract is set a few weeks before the exercise date of the option set by the bareboat charter. Both options are exercised once the EIG comes under the tonnage tax system (for a more detailed description, see Section 2.2.4 Measure 4: Tonnage tax). A framework agreement is signed by the parties involved to make sure that they all agree on the organisation and functioning of the STL structure.
- (14) The transactions that take place between the different participants in the STL operation have been described in more detail in Decision C(2011) 4494 final (Section 2.2) ⁽⁶⁾ on the basis of the examples provided by Spain ⁽⁷⁾.

2.2. THE STL — TAX ASPECTS

- (15) The purpose of the STL scheme described in Section 2.1 above is first to generate the benefits of certain tax measures in favour of the EIG and the investors participating in it, which will then pass on part of those benefits to the shipping company that acquires a new vessel.
- (16) The EIG collects the tax benefits in two stages under two different sets of tax rules. In the first stage, early and accelerated depreciation of the leased vessel is applied within the 'normal' corporate income tax system. This generates heavy tax losses for the EIG. Because of the EIG's tax transparency, these tax losses are deductible from the investors' own revenues pro rata to their shares in the EIG.

⁽⁵⁾ The leasing company and the shipping company also sign buy (or call) and sell (or put) options contracts.

⁽⁶⁾ See footnote 3.

⁽⁷⁾ By letter of 26 July 2010.

- (17) In normal circumstances, the tax savings made by this early and accelerated depreciation of the cost of the vessel should be offset later on by increased tax payments either when the vessel is completely depreciated and no more depreciation costs can be deducted or when the vessel is sold and a capital gain results from the sale ⁽⁸⁾. Because of the EIG's tax transparency, its increased profits in later years would normally be added to the investors' own revenues and would be liable to tax.
- (18) However, in an STL operation, the EIGs do not keep the vessels after full depreciation is achieved. In the second stage, the tax savings resulting from the initial losses transferred to the investors are then safeguarded as a result of the EIG's switchover to the tonnage tax (TT) system of income taxation and the full exemption of the capital gains resulting from the sale of the vessel — shortly after switching to the new system — to the shipping company ⁽⁹⁾. For further details about these two stages, see Decision C(2011) 4494 final (Section 2.3.1).
- (19) According to information available to the Commission ⁽¹⁰⁾, the combined effect of the tax measures used in the STL enables the EIG and its investors to achieve a tax gain of approximately 30 % of the initial gross price of the vessel. Part of this tax gain — initially collected by the EIG/its investors — is kept by the investors (10-15 %) and part of it is passed on to the shipping company (85-90 %), which in the end becomes the owner of the vessel, with a 20 % to 30 % reduction in the initial gross price of the vessel.
- (20) As already stated, STL operations combine different individual — yet interrelated — tax measures in order to generate a tax benefit. The section below briefly describes these measures. For a more detailed description, see Decision C(2011) 4494 final (Section 2.4).

2.2.1. Measure 1 — Accelerated depreciation ⁽¹¹⁾ of leased assets

(Article 115(6) TRLIS)

- (21) In Spain, the tax treatment of a leasing transaction is different from its accounting treatment. Chapter XIII of Royal Legislative Decree 4/2004 of 5 March 2004 approving the consolidated version of the Law on Corporate Tax (TRLIS) ⁽¹²⁾ and Article 49 of Royal Decree 1777/2004 of 30 July 2004 approving the Regulation on Corporate Tax (RIS) ⁽¹³⁾, apply to finance leasing contracts with a minimum duration of two years if they relate to movable property and 10 years if they relate to immovable property or industrial establishments.

⁽⁸⁾ A capital gain would normally result from the sale of an asset which has been over-depreciated due to early and accelerated depreciation because the residual tax value of the asset is likely to be substantially lower than its sale price.

⁽⁹⁾ The difference between the sale price and the tax value of the ship. The tax value of the ship is the initial price paid less the amounts deducted (expenses) to take account of its depreciation. In the case at hand, the ship would be completely — or almost completely — depreciated before the EIG switches to the TT, i.e. its accounting value would be zero or close to zero.

⁽¹⁰⁾ This includes information provided by Spain: three actual examples of requests filed by EIGs with the tax administration pursuant to Article 115(11) of the consolidated version of the Law on Corporate Tax (*Texto Refundido de la Ley del Impuesto sobre Sociedades* — TRLIS), and the contracts and other annexes attached to those requests.

⁽¹¹⁾ In this Decision, 'depreciation' refers without distinction to the deduction of the depreciation cost by the owner of an asset and to the deduction by the lessee of payments made in respect of the recovery by the lessor of the cost of the asset. Accordingly, accelerated depreciation of leased assets refers to the possibility for lessees to deduct these payments within the limits of twice or three times the straight-line depreciation rate.

⁽¹²⁾ Royal Legislative Decree 4/2004 of 5 March 2004 approving the consolidated version of the Law on Corporate Tax published in the Spanish Official Gazette (BOE) of 11 March 2004.

⁽¹³⁾ Royal Decree 1777/2004 of 30 July 2004 approving the Regulation on Corporate Tax, published in the Spanish Official Gazette (BOE) of 6 August 2004.

- (22) For tax purposes only, the portion of the payments that allows the lessor to recover the cost of the asset ⁽¹⁴⁾ is considered tax-deductible expenditure within certain limits, namely: the amount deducted may not exceed the amount obtained by multiplying the cost of the asset by twice or three times the official coefficient of maximum straight-line depreciation for the type of asset.
- (23) In the case of vessels, the normal straight-line depreciation is spread — for tax purposes — over 10 years (10 % per year). The maximum accelerated depreciation rate for leased assets ranges between 20 % and 30 % per year (from 40 to 60 months). Under Spanish law, owners of vessels can also depreciate according to the declining balance method ⁽¹⁵⁾ or the sum-of-the-years-digit method (SYD) ⁽¹⁶⁾.

2.2.2. Measure 2: Discretionary application of early depreciation of leased assets (Articles 115(11) and 48(4) TRLIS and Article 49 RIS)

- (24) Under Article 115(6) TRLIS, the accelerated depreciation of the leased asset starts on the date on which the asset becomes operational, i.e. not before the asset is delivered to and starts being used by the lessee. However, pursuant to Article 115(11) TRLIS ⁽¹⁷⁾, the Ministry of Economic Affairs and Finance may, upon formal request by the lessee, determine an earlier starting date for depreciation. In principle, this provision applies, under certain conditions, to all leased assets covered by a leasing contract and eligible for accelerated depreciation.
- (25) In fact, Article 115(11) TRLIS imposes two general conditions. First, the new starting date should be determined taking account of 'the specific characteristics of the contracting or construction period for the asset and the specific nature of its economic use'. Pursuant to Article 49 RIS, the tax authorities only authorise early depreciation from the beginning of the construction period when this construction period is over 12 months, and the leasing contract provides for anticipated lease payments. Second, 'determining this date (should) not affect the calculation of the taxable amount arising from the actual use of the asset or the payments resulting from the transfer of ownership, which must be determined in accordance with either the general tax regime or the special regime provided for in Chapter VIII of Title VII TRLIS'.
- (26) According to Article 48(4) TRLIS ⁽¹⁸⁾, the assets covered by the early depreciation scheme described in Article 115(1) TRLIS will be leased to EIGs registered in Spain, which, in turn, will sublease them to third parties. Furthermore, Article 49 RIS establishes the procedure to be followed when filing an application for the early depreciation of leased assets.

2.2.3. Measure 3: Economic interest groupings (EIGs)

- (27) As already stated, Spanish EIGs have a separate legal personality from that of their members. As a result, EIGs can file an application both for the early depreciation measure and for the alternative tonnage taxation scheme provided for by Articles 124-128 TRLIS (see Section 2.2.4.) if they meet the eligibility requirements under Spanish law, even if none of their members is a shipping company.
- (28) However, from a tax perspective, EIGs are transparent with respect to their Spanish resident shareholders. In other words, for tax purposes, profits (or losses) made by EIGs are directly attributed to their Spanish resident members

⁽¹⁴⁾ Excluding the value of the purchase option.

⁽¹⁵⁾ Each year, a constant percentage is applied to the residual value of the asset as at the end of the previous tax exercise (residual value = acquisition value less depreciation booked in the past). Instead of spreading the cost of the asset evenly over a certain period, this system results in declining depreciation charges in each successive period.

⁽¹⁶⁾ If an asset is to be depreciated over five years, the SYD is 15 (=1+2+3+4+5) and the depreciation cost is 5/15 of the acquisition value in year 1, 4/15 in year 2, and so on until 1/15 in year 5.

⁽¹⁷⁾ Copied from the earlier Article 128(11) of Law 43/1995 as introduced by Law 24/2001 and applicable from 2002. 'Early depreciation' means bringing forward the date when depreciation can start. In the case at hand, provided they receive the necessary tax authorisation, taxpayers can start accelerated depreciation during the building of the ship, i.e. before the ship is delivered to the taxable person or before it starts being used by the taxable person.

⁽¹⁸⁾ Article 48 TRLIS governs the special tax arrangements applicable to economic interest groupings. See Section 2.2.3 Measure 3: Economic interest groupings (EIGs)

on a pro rata basis. Since the EIGs involved in STL operations are regarded as an investment vehicle by their members — rather than as a way of carrying out an activity jointly — this Decision refers to them as investors.

- (29) EIGs' tax transparency means that the substantial losses incurred by the EIG through early and accelerated depreciation can be passed on directly to the investors, who can offset these losses against profits of their own and reduce the tax due.

2.2.4. Measure 4: Tonnage tax system (Articles 124 to 128 TRLIS)

- (30) The Spanish TT legislation has applied since 2002. It provides for an alternative calculation of the taxable profits of shipping companies in respect of their eligible transport activities, based on tonnage operated rather than the difference between revenue and expenditure.
- (31) The Commission authorised ⁽¹⁹⁾ the Spanish TT scheme as compatible State aid on the basis of the Community Guidelines on State aid to maritime transport ⁽²⁰⁾ (hereinafter 'the Maritime Guidelines'). The provisions governing the TT scheme are contained in Chapter XVII, Articles 124 to 128 TRLIS.
- (32) Spain also adopted implementing measures contained in Title VI, Articles 50 to 52 of the RIS. The Commission notes that, contrary to the rules set out in Articles 124-128 TRLIS, which were notified to and approved by the Commission, these implementing measures — and in particular the exception contained in Article 50(3) RIS (see Section 2.2.5) — were not notified to or authorised by the Commission.
- (33) As in other Member States, joining the Spanish TT scheme is optional and requires prior authorisation from the tax authorities, valid for 10 years. Revenues from non-shipping — or non-eligible — activities are subject to normal income tax rules.
- (34) Under Spanish law, EIGs involved in the STL can be entered in one of the registers of shipping companies ⁽²¹⁾ because, according to the Spanish authorities, their activities include the operation of their own and chartered vessels. The concept of operating a vessel would therefore include making a vessel available to a third party under a bareboat charter.
- (35) The tax base for eligible shipping activities is calculated according to gross tonnage:

Net registered tonnage	Daily amount per 100 tonnes (EUR)
From 0 to 1 000	0,90
From 1 001 to 10 000	0,70
From 10 001 to 25 000	0,40
Over 25 001	0,20

- (36) Once the alternative tax base is calculated according to the gross tonnage operated by the shipping company, the normal corporate tax rate is applied to this base.
- (37) Pursuant to the first indent of Article 125(2) TRLIS, the TT taxable base is deemed to include all revenues from (eligible) shipping activities on the high seas including, in particular, the capital gains realised when vessels — acquired new by an undertaking benefiting from the TT system — are subsequently sold while the undertaking

⁽¹⁹⁾ Commission Decision C(2002) 582 final of 27.2.2002 in Case N 736/2001, as amended by Decision N 528/2003.

⁽²⁰⁾ OJ C 13, 17.1.2004, p. 3.

⁽²¹⁾ Referred to in Law No 27/1992 of 24.11.1992 on National Ports and the Merchant Navy.

remains under the TT system. Conversely, under normal corporate income tax rules, since the tax base is determined as the difference between revenue and expenditure, when vessels are acquired by an undertaking and subsequently sold with a capital gain, these exceptional capital gains constitute taxable revenue and will thus increase the taxable base on which corporate tax will be levied.

Tax treatment of exceptional capital gains in the context of the transfer of vessels to the TT system

- (38) Special rules apply where a vessel — which is no longer new — and the taxation of its revenue are transferred from the normal corporate tax system to the TT system. In the case of vessels already owned by an undertaking when it joins the TT system, or of second-hand vessels (hereinafter ‘used’ vessels) purchased when an undertaking already benefits from the TT system, a special procedure provided for in Article 125(2) TRLIS ⁽²²⁾ applies. Under this procedure, the taxation of certain amounts takes place under normal corporate tax arrangements only when the vessel is subsequently sold:

— In the first financial year in which the TT system is applied, or in which the used vessels have been acquired, non-distributable reserves equal to the difference between the normal market value and the net accounting value of each of the ships concerned by this rule must be set aside, or this difference must be stated separately in the annual report for each vessel, for each financial year in which ownership of them is retained.

— The amount of the said positive reserve together with the positive difference, at the date of transfer of ownership, between the tax depreciation and the accounting depreciation for the vessel sold will be added to the TT taxable base referred to in Article 125(1) TRLIS once the sale of the vessel is completed.

- (39) Thus, under normal application of the Spanish TT system, as approved by the Commission, potential capital gains are taxed on entry into the TT system and it is assumed that the taxation of capital gains, even though it is delayed, takes place later on when the vessel is sold or dismantled. As explained in Section 2.2.5, under the STL system, this taxation is not deferred but completely avoided because the vessels concerned are deemed to be new, not used. Hence, the special procedure does not apply.

2.2.5. Measure 5: Article 50(3) RIS

- (40) In the case of the authorised STL transactions, the Commission observes that the EIGs can leave the normal corporate income taxation system to join the TT system without settling the hidden tax liability resulting from the early and accelerated depreciation either upon entry into the TT system or subsequently when the vessel is sold or dismantled.

- (41) Indeed, by way of exception from the rule set out in Article 125(2) TRLIS, Article 50(3) RIS ⁽²³⁾ states that when vessels are acquired through a call option as part of a leasing contract previously approved by the tax authorities, those vessels are deemed to be new ⁽²⁴⁾ — not used — without taking into consideration whether they have already been operated or depreciated — as of the date the leasing option is exercised, i.e. after the EIG’s switch to the TT system. According to the information available to the Commission, this exception was only applied to specific leasing contracts approved by the tax authorities in the context of applications for early depreciation pursuant to Article 115(11) TRLIS (see Section 2.2.2 above, Measure 2: Discretionary application of early depreciation of leased assets) i.e. in relation to leased newly built sea-going vessels acquired through STL operations, and — with one exception — from Spanish shipyards.

- (42) In such cases, the vessel is deemed to have been acquired new by the EIG on the date the leasing option was exercised, i.e. after the EIG’s entry into the TT system. The first consequence of the exception provided for in Article 50(3) RIS is that the application of the rules set out in Article 125(2) TRLIS is avoided. The EIG does not need to establish a non-distributable reserve and neither the positive difference between the price paid by the

⁽²²⁾ See Article 125(2) TRLIS.

⁽²³⁾ Introduced by Royal Decree 252/2003 of 28.2.2003, Spanish Official Gazette (BOE) No 62, 13.3.2003.

⁽²⁴⁾ Article 50(3) RIS. It should be noted that this exemption is granted only to EIGs that have already been granted authorisation for early depreciation by the tax authorities.

shipping company and the accounting value of the vessel in the EIG's books⁽²⁵⁾, nor the positive difference between the accounting value and the tax value of the vessel⁽²⁶⁾ is taxed. The second consequence is that the revenue from the sale to the shipping company (the substantial bareboat charter option exercise price) is deemed to originate from a vessel bought and sold by an undertaking benefiting from the TT system and will be included in the TT taxable base pursuant to the first indent of Article 125(2) TRLIS.

3. REASONS FOR INITIATING THE FORMAL INVESTIGATION PROCEDURE

- (43) As a first step, the Commission took the view that the Spanish Tax Lease system, in spite of the application of different tax measures, should be analysed as one single system (global approach) because the different measures could only be used jointly — *de jure* or *de facto* — and concluded that it constituted State aid.
- (44) As a second step, the individual measures were assessed separately (individual approach) and the Commission concluded at that stage as follows:
- The accelerated depreciation of leased assets (measure No 1) could constitute State aid, but would constitute existing aid in any case because it was implemented before accession. Consequently, the formal investigation procedure was not opened in respect of this measure.
 - The early depreciation of leased assets (measure No 2) could constitute State aid as it provides a selective advantage in view of the vague conditions established by the Spanish legislation and the discretionary powers exercised by the Spanish tax administration in interpreting these conditions. This measure, which came into force in 2002⁽²⁷⁾, was regarded as unlawful and possibly incompatible State aid.
 - The EIG status (measure No 3) was not identified as potential State aid. The formal investigation procedure was not opened in respect of this measure.
 - The TT system (measure No 4) was authorised by the Commission as compatible State aid in 2002. The compatibility of the TT system as approved was not questioned in Decision C(2011) 4494 final. By virtue of the authorisation granted by the Commission, this measure should in any case be regarded as existing aid.

However, the Commission questioned two aspects related to the TT system:

- The Commission questioned the possibility given to certain undertakings, such as the EIGs involved in STL operations, of benefiting from the TT system where their activities are limited to renting or leasing out vessels on a bareboat basis. The Commission considered that these undertakings were not active in the sector of maritime transport of goods or passengers as defined in Council Regulation (EEC) No 4055/86⁽²⁸⁾ and in Council Regulation (EEC) No 3577/92⁽²⁹⁾, but rather in the sector of financial investment and the renting or leasing of goods. The Commission noted that their eligibility for the Spanish TT system was never notified to or authorised by the Commission.
- The tax exemption for capital gains (measure No 5) resulting from the implementing measures of the TT system (Article 50(3) RIS) and presented by the Spanish authorities as part of the authorised TT system was regarded as an additional measure falling outside the scope of the authorisation granted by the Commission in 2002. This measure was also regarded as unlawful and possibly incompatible aid.

⁽²⁵⁾ On the date of transfer to TT.

⁽²⁶⁾ On the date the ownership of the vessel is transferred to the shipping company.

⁽²⁷⁾ See footnote 17.

⁽²⁸⁾ Council Regulation (EEC) No 4055/86 of 22 December 1986 applying the principle of freedom to provide services to maritime transport between Member States and between Member States and third countries (OJ L 378, 31.12.1986, p. 1).

⁽²⁹⁾ Council Regulation (EEC) No 3577/92 of 7 December 1992 applying the principle of freedom to provide services to maritime transport within Member States (maritime cabotage) (OJ L 364, 12.12.1992, p. 7).

- (45) The potential recipients of the aid were identified as:
- the EIGs as the primary recipients of the tax advantages,
 - the members/investors in the EIGs which benefit from the tax advantages based on the EIGs' transparency,
 - the shipping companies which receive part of the tax advantages in the form of a rebate on the price of the ship,
 - possibly the shipyards, the banks involved, the leasing companies and other intermediaries.
- (46) The Commission considered that the aid did not appear to be compatible with the internal market.

4. COMMENTS FROM SPAIN AND FROM INTERESTED PARTIES

- (47) Comments were received from the Spanish authorities and from 41 third parties including public authorities, sectoral associations and individual undertakings either involved in STL operations or competitors of those involved, such as foreign shipyards or shipbuilding associations.
- (48) The observations address the following aspects of the Commission's assessment made in Decision C(2011) 4494 final:
- procedural aspects,
 - the general approach: assessment of the STL as a scheme as against assessment of the individual measures forming part of the STL,
 - whether the individual measures amount to State aid (presence of an advantage, state resources, imputability to the State, effect on competition and trade) and whether some of them constitute existing aid,
 - identification of the aid recipients,
 - compatibility of possible State aid,
 - obstacles to recovery of the aid (equal treatment, legitimate expectations, legal certainty).

4.1. PROCEDURE

- (49) Spain considers that the Commission initiated the formal investigation procedure without duly checking its main conclusions with the Spanish authorities. As a consequence, the Spanish State's right of defence and the adversarial principle essential to any administrative procedure has been infringed.
- (50) According to a number of third parties, the Commission should have used the existing aid procedure, because if they constitute aid, the two tax measures involved (depreciation rules for leased assets and the TT system) would be existing aid.

4.2. ASSESSMENT OF THE STL AS A SCHEME/ASSESSMENT OF INDIVIDUAL MEASURES

4.2.1. Complainants

- (51) Holland Shipbuilding considers that the STL should be viewed as a single system because it is an organised system which deliberately exploits different tax measures to produce an economic advantage which is far greater than the total advantage that could be gained from applying the different measures separately and because the measures are interdependent. The use of the TT system allows EIGs to make the temporary tax advantage generated by early and accelerated depreciation permanent. The vague conditions imposed on the application of early depreciation and their interpretation by the Spanish authorities confer discretionary powers on the tax administration. This is borne out by the fact that, in practice, the authorisation is only granted if the switch is made from the normal corporate taxation system to the TT system.

- (52) Danish Maritime and [...] (*)⁽³⁰⁾ also regard the STL as a whole as a State aid scheme that — regardless of who the recipients are — clearly gives an economic advantage to certain undertakings.

4.2.2. Spain and the participants in tax lease transactions

- (53) However, Spain and the undertakings identified by the Commission as potential recipients of aid (shipping companies, banks, investors in EIGs, shipyards involved in STL operations) challenge this global approach.
- (54) They consider that the STL is not enshrined as such in the Spanish tax legislation, that STL operations are private agreements (leasing, bareboat charter, EIG) concluded by private parties that are free to choose the cheapest way to finance an asset and use the contractual and tax arrangements available to them. They also maintain that Spain should not be held responsible for advantages acquired by taxpayers in a move to reduce their tax burden. Moreover, the tax legislation does not require the use of all the measures mentioned by the Commission in Decision C(2011) 4494 final.
- (55) The Asociación Española de Banca (the Spanish Banking Association — AEB) considers that it is the first time that the Commission has identified State aid in a combination of legal transactions between private entities rather than in a legal provision.
- (56) Rather than a system, the AEB considers that there are two different schemes (the depreciation scheme and the TT) which can clearly be split and treated separately, regardless of whether they are used separately or jointly.
- (57) In addition, the AEB considers that the Commission failed to identify a general system of reference before identifying a selective advantage. According to the AEB, there are very many ways of financing the acquisition of an asset using different combinations of legal instruments and tax measures and the Commission should compare all these alternative situations. Concluding that the STL confers a selective advantage on certain companies would therefore be artificial, especially if the Commission uses as a reference the most costly way — from a tax point of view — to finance an investment thereby ignoring all the incentive measures available to investors.
- (58) Consequently, the STL does not confer a selective advantage. This is borne out in particular by the fact that the Commission identifies several potential recipients which do not correspond to economic sectors. Referring to the Commission Notice on the application of the State aid rules to measures relating to direct business taxation⁽³¹⁾ (hereinafter ‘the Commission Notice on business taxation’) and to the Commission Decision concerning the Dutch *Groepsrentebox*⁽³²⁾, the AEB considers that it cannot be concluded that the measure is selective because it is of more benefit to members of EIGs investing in sea-going vessels rather than in other assets.
- (59) As the STL consists solely of private parties using general tax measures in the context of private agreements, there are no state resources involved.
- (60) According to the AEB, there is no effect on competition and trade between Member States because the main recipients identified by the Commission are shipping companies and the measure is available to all shipping companies from Europe and elsewhere in the world.
- (61) In their comments, these third parties describe the STL as a series of unrelated measures (individual approach) and make no further comments about the STL as a whole.

(*) Business secret/confidential information

⁽³⁰⁾ [...]

⁽³¹⁾ OJ C 384, 10.12.1998, p. 3. See paragraph 14.

⁽³²⁾ See Commission Decision 2009/809/EC of 8 July 2009 in Case C 4/07, the Netherlands, *Groepsrentebox*.

4.3. OBSERVATIONS RELATED TO THE ASSESSMENT OF THE INDIVIDUAL MEASURES

4.3.1. Accelerated depreciation (Article 115(6) TRLIS ⁽³³⁾) — Measure 1

- (62) According to Spain and certain third parties, this measure is generally applicable to all types of assets and all sectors. The different tax and accounting treatment of leasing fees does not entail any de facto selectivity, which is borne out by the diversity of the sectors applying this measure. In addition, the Spanish corporate tax system allows alternative arrangements for accelerated depreciation. The AEB states that straight-line depreciation cannot be regarded as the (sole) reference for establishing the existence of an advantage because other methods of depreciation are generally allowed. Article 11 TRLIS and Articles 1-5 RIS provide for the possibility of applying degressive methods such as the declining balance ⁽³⁴⁾ or the sum-of-the-year-digit (SYD) methods ⁽³⁵⁾ as well as the possibility of depreciating an asset according to a specific plan agreed with the tax administration ⁽³⁶⁾. The AEB cites as an example that the declining balance method would be applicable at a rate 2,5 times higher than the applicable straight-line depreciation rate, i.e. 25 %.

4.3.2. Discretionary application of early depreciation (Article 115(11) TRLIS, Article 48(4) TRLIS and Article 49 RIS) — Measure 2

- (63) It is argued that early depreciation is just a method of accelerated depreciation which establishes that accelerated depreciation can start, under certain conditions, before the date when the asset is delivered to and operated by the final user. If it were not possible to deduct the amounts paid during the construction of the asset, this would in fact imply an anticipation of taxation. Early depreciation only restores neutrality and the correspondence between the financial flow and the tax treatment.
- (64) The AEB insists that the possibility of anticipating the start of the depreciation period is a general measure that is also provided for in Article 11(1)(d) TRLIS and in Article 5 RIS, which define the general rules applicable to depreciation. These provisions allow the tax administration to approve a specific depreciation plan presented and justified by the taxable person, including for assets under construction.
- (65) The sole aim of prior authorisation of early depreciation and the procedure followed by the tax administration is to check that the operation is real and that the objective criteria laid down in the legislation are met. In particular, it must be ensured in advance that: there is a lease agreement whose start date is prior to the commissioning or delivery of the asset; when the request is made it is indicated that payments for the recovery of the cost of the asset are deductible; the contract is for the acquisition of an asset requiring a long contractual/construction period in line with the operating conditions of the asset; the asset construction contract is signed, and that an indication is given of the specific contractual conditions governing use of the asset.
- (66) Besides the general conditions set out in Article 49 RIS, an additional condition is imposed by Article 48(4) TRLIS when the applicant is an EIG. The authorisation does not depend on the application of other measures or the submission of additional documents. Finally, the absence of any discretion in the procedure is illustrated by the fact that no application filed with the tax administration has ever been rejected. In that respect, the AEB considers that the Commission should investigate more closely the reasons why financing operations are not carried out. If, as maintained by the Commission on the basis of informal information, some shipping companies were unable to find a bank to organise the operation, this has more to do with the fact that the parties could not agree on certain elements of the operations, such as the price. The AEB formally denies that any of its members participated in any meeting or informal contact with the Spanish authorities. In fact, the situation is not the same as that described in the Commission Decision on the French *GIE fiscaux* ⁽³⁷⁾, where the condition that the operation should represent a

⁽³³⁾ TRLIS: consolidated version of the Law on Corporate Tax.

⁽³⁴⁾ See footnote 15.

⁽³⁵⁾ See footnote 16.

⁽³⁶⁾ See Article 11(1)(d) TRLIS and Article 5 RIS.

⁽³⁷⁾ State aid C 46/2004, Commission decision of 20 December 2006 on the aid scheme implemented by France under Article 39 CA of the General Tax Code (OJ L 112, 30.4.2007, p. 43).

significant economic and social interest was found to be imprecise and left to the discretion of the tax authorities. On the contrary, the AEB denies that any of the conditions specified by Article 49 RIS is imprecise and open to interpretation

- (67) As a consequence, early depreciation — in the same way as accelerated depreciation — is generally applicable to all types of assets and all sectors. It is a general measure.
- (68) As it is a method of applying accelerated depreciation, if it considered to be aid, it should be regarded as existing aid.

4.3.3. The tax transparency of economic interest groupings (Article 48 TRLIS) — Measure 3

- (69) According to the AEB, the transparency of EIGs is consistent with the logic of the Spanish tax system. This transparency allows several investors to make a joint investment which none of them would undertake on its own and yet to apply — because of this transparency and in respect of their share in the investment — the tax treatment that would have applied had they invested on their own. Hence there is no advantage linked to the application of EIG status. Moreover, this status does not entail any sectoral limitations. Any Spanish taxpayer can be a member of an EIG. It is therefore not selective.

4.3.4. The TT system (Articles 124 to 128 TRLIS) — Measure 4

- (70) As the Commission stated in Decision C(2011) 4494 final that it had authorised the Spanish TT system in 2002 as aid compatible with the Maritime Guidelines⁽³⁸⁾, the Spanish authorities and the third parties focus their comments on the scope of the 2002 approval and on the specific issues of whether financial EIGs⁽³⁹⁾ involved in STL operations should benefit from the TT scheme.
- (71) As to the question whether financial EIGs⁽³⁹⁾ involved in STL operations — which do not operate vessels but invest in them and charter them out as part of financial investments — should benefit from the TT system, Spain maintains that the companies operate vessels by chartering them out and have therefore been listed in Spanish shipping registers (as shipping companies) since the entry into force of Article 1 of Royal Decree 1027/1989⁽⁴⁰⁾ of 28 July 1989, repeated in Article 9 of Law 27/1992 of 24 November 1992. As the Commission has authorised the application of the TT system to all companies listed in the Spanish shipping registers⁽⁴¹⁾, this authorisation includes companies that own vessels and rent or lease them out to third parties. If that measure is regarded as State aid, it should therefore be considered existing aid.

4.3.5. Article 50(3) RIS — Measure 5

- (72) Spain, PYMAR and some banks argue that Article 50(3) RIS only contains implementing measures intended to provide legal certainty. They maintain that, in accordance with the principles of the Spanish legal system, substantive elements of a tax measure must always be governed by law and that this provision — which is contained in a Royal Decree — does not introduce anything new but only clarifies the scope of Article 125(2) TRLIS. It does not depart from the law or create additional benefits. The non-taxation of capital gains already formed part of the scheme authorised by the Commission and therefore, if it constitutes aid, it should be regarded as existing aid.

⁽³⁸⁾ See footnote 20.

⁽³⁹⁾ The Commission does not consider the application of the tonnage tax to EIGs to be a problem in so far as they actually operate vessels to provide maritime transport services and meet the conditions laid down in the Maritime Guidelines.

⁽⁴⁰⁾ This provision applies to all ships, boats and naval structures whatever their origin, tonnage or purpose. It also applies to all the maritime companies that operate ships ... whether they are owners thereof or operate them under a leasing agreement, chartering agreement or any other formula allowed by law.

⁽⁴¹⁾ See Commission Decision C(2002)582 final of 27 February 2002, Section 2.4. Recipients: Recipients of the Tonnage Tax scheme can be maritime companies registered under Spanish law, whose activity includes the operation of owned and chartered ships.

- (73) Furthermore, Spain and the alleged recipients maintain that it is logical to consider the vessel to be 'new' since no one used it before the leaseholder, and the exercise of the option is agreed when the leasing contract is signed ⁽⁴²⁾. The AEB states that normally an asset is considered to be new when it is acquired via the option of a leasing contract.

4.4. OBSERVATIONS RELATED TO THE TRANSFER OF STATE RESOURCES AND THE IMPUTABILITY OF THE MEASURES TO THE STATE

- (74) According to the complainants, a tax deduction implies a transfer of state resources in the form of a loss of tax revenue. The STL/tax measures are imputable to the State because all the measures are contained in Spanish law. Moreover, the STL relies on an authorisation that is granted by the tax authorities. Even if these authorisations relate to individual measures, it is clear that, in practice, the authorisations are granted to the overall STL transactions. This is borne out by the fact that the request for early depreciation filed with the tax administration describes in detail the construction and the distribution of the tax advantage between EIG or the investors and the shipping company as well as a notice from the shipyard setting out the expected social and economic benefits from the arrangement. There is no reason why these documents would systematically be provided if they were not in fact a precondition for approval.
- (75) The shipping companies, on the other hand, argue that the discount given by the shipyard or the EIG on the initial price is not imputable to the State because it results from private contractual relationships between the EIG and the shipping company involved in the operation.

4.5. OBSERVATIONS RELATED TO THE DISTORTION OF COMPETITION AND THE EFFECTS ON TRADE

- (76) [...] considers that the size of the advantages concerned (EUR 14 million in the example given in Decision C(2011) 4494 final) undoubtedly affects the recipients' market position and therefore creates substantial distortions in markets characterised by a high level of competition. The scheme provides a great advantage to Spanish shipyards which can promote their ships at a price — lower than that of other European shipyards — which includes the benefits under the STL. [...] refers to statistics from the Spanish Ministry for Industry showing that over time the Spanish shipyards have served more and more shipowners from abroad.
- (77) As for the shipping companies, [...] considers that buying ships from Spanish shipyards at a much lower price enables them to save millions of euros on a substantial part of their fixed costs. As it is spread over the duration of the recovery of the cost of the ships, this advantage gives them a competitive edge over other shipping operators and therefore distorts competition for many years.
- (78) As already stated, shipowners argue that all shipping companies have access to the conditions offered by Spanish shipyards and can therefore benefit from any price rebates that Spanish shipyards might offer. They also argue that they have paid a fair market price and have not benefited from any economic advantage. Consequently, the acquisition of vessels from Spanish shipyards is unlikely to reduce their operating costs significantly or to strengthen their position in a durable manner, as stated by the Commission in Decision C(2011) 4494 final.

4.6. OBSERVATIONS RELATED TO THE IDENTIFICATION OF THE RECIPIENTS OF AID

- (79) According to the AEB, EIGs cannot be recipients of aid. Because of their tax transparency, it is the investors who have to pay the tax resulting from the EIGs' commercial activity. Hence EIGs cannot enjoy any economic advantage resulting from a tax reduction. In addition, any Spanish taxpayer can be an investor — a member — of an EIG.

⁽⁴²⁾ See, in particular, the letter dated 2 August 2011 from the Spanish authorities in response to Commission Decision C(2011) 4494 final, section 3.2.3.2. Alleged new State aid: paragraph 9 of Article 50(3) RIS, '... the concept of "used" in the scope of Corporate Tax applies to those elements that have been used by a third party other than the taxable person himself who seeks the application of a specific provision.'

- (80) On the other hand, a number of shipping companies consider that the EIGs are the only possible recipients of aid. Shipowners cannot be recipients of aid because they are not Spanish taxpayers. Moreover, they argue that the Commission wrongly assumed — without giving any explanation — that the tax benefits would be transferred from the EIG to the shipping company through a price rebate. In fact, the price is fixed as a result of a commercial decision taken by the private owner of an asset.
- (81) Shipowners argue that shipping companies from all over the world generally acquire vessels from shipyards from different countries, including, if they so wish, Spanish shipyards. All shipping companies can therefore benefit from any price rebates that Spanish shipyards are able to offer.
- (82) Several shipowners argue that if the STL constitutes State aid, they are not the recipients of this aid. Two reasons are given: first, the way the STL structure functions shows that there is coordination between the EIG and the shipyard, which constitutes a single centre of interest and fixes the sales price; second, companies operating tugboats and salvage vessels give examples of offers received from shipyards outside Spain to build similar tugs. Those offers are in the same price range or even cheaper than those of the Spanish shipyards eventually selected. They argue that consequently they have paid a fair market price and have not benefited from any economic advantage within the meaning of Article 107(1) TFEU. If the STL were to offer an economic advantage, the recipients would be the shipyards involved in STL operations and not the shipping companies.
- (83) Holland Shipbuilding considers that the recipients of aid are the EIGs and their investors, as well as the shipping companies, but also the Spanish shipyards because there is a substantial difference between the price paid by the shipowner and the price received by the shipyard, which is above the market price. According to a national shipbuilding association, the scheme was designed to benefit the shipyards. It would be incorrect to conclude that STL is of benefit to the shipping companies. The reduction in the building price does not necessarily imply an advantage for the purchaser of the ship. Moreover, Spanish shipyards can only offer this advantage to buyers that use the STL. The STL constitutes unlawful aid to shipbuilding that is damaging to national shipbuilders that are in direct competition with Spanish ones.
- (84) PYMAR considers that the Commission did not give sufficient grounds in Decision C(2011) 4494 final as to why it identifies shipyards as potential recipients of State aid. It also points out that in the decisions in the *GIE Fiscaux*, *Brittany Ferries*, *Air Caraïbes* or *Le Levant* ⁽⁴³⁾ cases concerning similar tax schemes, the Commission did not identify the producer of the asset as a recipient of State aid.

4.7. OBSERVATIONS RELATED TO THE CLASSIFICATION AS EXISTING OR UNLAWFUL AID

- (85) As mentioned in Section 4.3 above, Spain and certain third parties consider that there are only two measures involved: first, the provisions of Article 115 TRLIS concerning the deduction of the cost of an asset acquired via a financial leasing contract. Spain adopted these provisions before it joined the EU. Therefore, if this measure constitutes aid, it is existing aid as stated by the Commission in Decision C(2011) 4494 final, and Article 115(11) TRLIS, which allows the administration to set the starting point for the deduction, is only a means of implementing Article 115. Second, the TT system enshrined in Articles 124 to 128 TRLIS was approved by the Commission in 2002 and is therefore also existing aid. The implementing provisions — in particular Article 50(3) RIS — do not alter the rules enshrined in the law and are therefore covered by the Commission authorisation.

4.8. OBSERVATIONS RELATED TO THE COMPATIBILITY OF AID

- (86) The Spanish authorities and the alleged recipients argue that the aid is compatible on the basis of the TT system approved in 2002 because it covers 'maritime companies registered under Spanish law' ⁽⁴⁴⁾, whose activity includes the operation of owned and chartered ships'. As Article 50(3) RIS only implements the TT system, it is also covered by the 2002 Decision.

⁽⁴³⁾ Commission Decisions of 20.12.2006 in Case C 46/04 *GIE Fiscaux*; 8.5.2001 in Case C 31/98 *Brittany Ferries*; 16.12.2003 in Case N 474/03 *Air Caraïbes* and 20.5.2008 in Case C 74/99 *Le Levant*.

⁽⁴⁴⁾ Reference is made to Spanish Law 27/92. Recipients can thus be companies which have their head office in Spain or companies established in the EU with secondary establishments in Spain.

- (87) The third parties also argue that any aid would be compatible with the Maritime Guidelines, which also *include the operation of owned and chartered ships* and this aid would remain within the aid ceiling imposed by these Guidelines.
- (88) The Asociación de Ingenieros Navales y Oceánicos de España (Spanish Association of Naval Architects and Marine Engineers) considers that the compatibility of any aid should be analysed in the global competitive context rather than focus on the internal market since shipyards in non-EU countries receive support that is not subject to competition rules, as is the case in the EU.
- (89) By contrast, [...] considers that the scheme cannot be regarded as compatible aid at all, not even — as stated in Decision C(2011) 4494 final — under the Maritime Guidelines. Indeed, it considers, first, that Spain will not be able to prove that all ships built were eligible to benefit from these Guidelines and, second, that the aid can only reduce to zero the amount of tax due by the beneficiary in the country that adopts the scheme. Therefore, non-Spanish shipowners would not benefit from the scheme and the tax paid by Spanish shipowners is likely to be limited since they benefit from the TT system and a reduction in social charges.

4.9. OBSERVATIONS RELATED TO RECOVERY

- (90) Both the Spanish authorities and the potential recipients maintain that recovery should be ruled out because that would breach fundamental principles of EU law ⁽⁴⁵⁾ such as equal treatment, the protection of legitimate expectations or legal certainty.

4.9.1. Equal treatment

- (91) PYMAR argues that similar fiscal measures were investigated in two other cases (*Brittany Ferries* ⁽⁴⁶⁾), and *GIE Fiscaux*) where no recovery was ordered. If the Commission concluded that aid existed, this aid should be deemed compatible up to the limit set in Chapter 11 of the Maritime Guidelines and, for the amount in excess of that limit, the protection of legal certainty should, as in the French case, prevent the Commission from requiring the recovery. [...] argues that because no aid was recovered from the French operators, recovering aid from Spanish operators in a very similar case would put the latter at a competitive disadvantage and breach the principle of equal treatment.
- (92) Spain and PYMAR invoke a number of decisions where the Commission has already decided to refrain from recovery because of public statements by the Commission or one of its members. Reference is made to the decisions on Belgian coordination centres, Luxembourg 1929 holding companies and other coordination centres and intragroup activities of multinational companies ⁽⁴⁷⁾, Spanish Goodwill ⁽⁴⁸⁾, an Italian case of aid to large firms in difficulty ⁽⁴⁹⁾ and two fisheries cases ⁽⁵⁰⁾ (Shetland and Orkney Islands).

⁽⁴⁵⁾ See Article 14(1) of Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty.

⁽⁴⁶⁾ Commission Decision of 8.5.2001 in Case C 31/98 (OJ L 12, 15.1.2002, p. 33).

⁽⁴⁷⁾ Coordination Centres (DE), Coordination Centres and Finance Companies (LU), Vizcaya Coordination Centres (ES), Headquarters and International Treasury Pools (FR), Foreign Income (IE), International Financing Activities (NL).

⁽⁴⁸⁾ Commission Decision of 12 January 2011 in the case concerning tax amortization of financial goodwill for foreign shareholding acquisitions (C 45/07, OJ L 135, 21.5.2011, p. 1).

⁽⁴⁹⁾ Commission Decision of 16 May 2000 on the aid scheme implemented by Italy to assist large firms in difficulty (OJ L 79, 17.3.2001, p. 29).

⁽⁵⁰⁾ Commission Decision of 3 June 2003, C87/2001 Orkney Islands Council track-record scheme (OJ L 211, 21.8.2003, p. 49) and Commission Decision of 3 June 2003 on loans for the purchase of fishing quotas in the Shetland Islands (OJ L 211, 21.8.2003, p. 63).

4.9.2. Legitimate expectations/legal certainty

(93) According to Spain ⁽⁵¹⁾ and certain third parties involved in STL operations, the following elements led the parties to these operations to believe that the tax measures used in them did not constitute State aid:

(1) the statement by the Commission in the 2001 *Brittany Ferries* decision ⁽⁵²⁾ to the effect that a similar scheme to the STL — the French *GIE Fiscaux* — was a general measure;

(2) the publication of the draft measures (early depreciation and TT system) in the Official Gazette of the Spanish Parliament on 10 October 2001 ⁽⁵³⁾;

(3) a 2001 Commission letter requesting information from Spain in the context of an investigation about several alleged aid measures, including a tax leasing system, in favour of shipbuilding;

(4) a 2004 Commission Decision ⁽⁵⁴⁾ rejecting the award of aid to Dutch shipyards to compensate for aid allegedly offered to Spanish shipyards competing for the same shipbuilding contracts;

(5) the 2006 Decision in the French *GIE Fiscaux* ⁽⁵⁵⁾ case;

(6) a 2009 letter from Commissioner Kroes ⁽⁵⁶⁾ — at the time in charge of competition — to the Norwegian Minister for Trade and Industry in response to a complaint that the Spanish tax lease scheme would favour Spanish shipyards;

(7) the time that elapsed between the publication of the draft measures in 2001, the start of the scheme in 2002 or the first complaints received by the Commission in 2006 and the opening of the proceedings in June 2011. Such a long time period allegedly corroborated the belief that there were not enough elements to proceed;

(8) a diligent economic operator could not have foreseen the possible existence of State aid in the combination of different schemes that were either a long-established feature of national taxation (accelerated depreciation of leased assets, EIG status) or had been previously approved by the Commission (TT system);

(9) the statements concerning the absence of aid in measures concerning depreciation methods in the Commission notice on business taxation ⁽⁵⁷⁾.

4.9.2.1. The 2001 Commission Decision in the *Brittany Ferries* case (BAI)

(94) In recital 193 of that Decision, the Commission stated that: '... with regard to economic interest groupings and the tax advantages they may confer, the Commission considers that they constitute a general measure, given that they are common in France, can be set up in all sectors of economic activity and come under common law.'

⁽⁵¹⁾ In particular, the letter of 2 August 2011.

⁽⁵²⁾ Commission Decision of 8 May 2001 concerning State aid implemented by France in favour of the Bretagne Angleterre Irlande company ('BAI' or 'Brittany Ferries') (OJ L 12, 15.1.2002, p. 33).

⁽⁵³⁾ See Official Gazette of the Spanish Parliament, Congress of Deputies, VII Legislature, Series A: Draft laws, No 50-1, 10 October 2001, pp 22-25 (<http://www.congreso.es>).

⁽⁵⁴⁾ State aid Case C 66/2003, Commission Decision of 30 June 2004 on the State aid which the Netherlands is planning to implement in favour of four shipyards to support six shipbuilding contracts (OJ L 39, 11.2.2005, p. 48).

⁽⁵⁵⁾ State aid C 46/2004, Commission Decision of 20 December 2006 on the aid scheme implemented by France under Article 39 CA of the General Tax Code (OJ L 112, 30.4.2007, p. 43).

⁽⁵⁶⁾ Letter dated 9.3.2009.

⁽⁵⁷⁾ See, in particular, paragraph 13.

- (95) The Decision was published in the Official Journal on 15 January 2002. In the 2006 Decision on the French *GIE Fiscaux*, the Commission considered that: 'While it is true that the scheme at issue in that case was that in force before 1998, it must nevertheless be observed that that fact was not made clear in the grounds for the Decision and that that circumstance may have helped to mislead recipients under the scheme here at issue.'
- (96) Spain ⁽⁵⁸⁾ and some third parties argued that this statement had either created a situation of legal uncertainty as to the lawfulness of the STL — which is very similar in its construction and effects — or had given rise to legitimate expectations that the STL did not constitute State aid.

4.9.2.2. *The publication of the draft measures in the Official Gazette of the Spanish Parliament*

- (97) According to PYMAR, the Commission became aware of the existence of the STL system when its constituent measures (discretionary application of early depreciation of leased assets and the TT system) were published as part of the same draft law in the Official Gazette of the Spanish Parliament on 10 October 2001. Following this, shipyards started to include the benefits of these measures in their bids for new shipbuilding projects, without awaiting the entry into force of the measures, in order to move forward in the negotiation and implementation of the first STL structures.

4.9.2.3. *The 2001 request for information about the Spanish tax leasing scheme*

- (98) PYMAR refers to a letter sent by the Commission on 21 December 2001 following a complaint about several state measures that allegedly reduced the cost of ships bought from Spanish shipyards. In that letter, the Commission notably requested information about a tax leasing system:

'It has come to the attention of the Commission that a number of measures seem to exist that reduce the cost of buying ships from Spanish shipyards. In particular the Commission has been provided information that the following measures are available:

...

3. A tax-leasing system, whereby ships built in Spain can be used to reduce taxes through the use of SPVs (special purpose vehicles). The gain from this combination appears to be transferred to the shipowner through a lower price or through reduced leasing costs. Could Spain please provide all relevant information that allows it to evaluate this issue'.

- (99) According to PYMAR, this letter indicates that the Commission had information and was aware of the existence of the tax lease system and that it has investigated the matter in 2001 already without taking any action, which created the legitimate expectation that the Spanish measure did not constitute aid.

4.9.2.4. *The 2004 Decision concerning the Dutch notification*

- (100) On 9 September 2002, the Dutch authorities notified a 'matching aid' that they intended to award Dutch shipyards with a view to matching aid allegedly offered by Spain ⁽⁵⁹⁾. At the end of a formal investigation ⁽⁶⁰⁾, the Commission concluded in its final Decision ⁽⁶¹⁾ that 'the Spanish authorities hav[ing] clearly denied that the aid would ever be available' it did not have 'sufficient proof of the alleged Spanish aid' ⁽⁶²⁾ and declared the notified aid incompatible with the internal market.
- (101) According to PYMAR, because the STL was in force in 2002, before the Netherlands notified the aid, the 2004 Commission decision would have created the legitimate expectation that the STL system did not constitute aid.

⁽⁵⁸⁾ See the letter of 2.8.2011.

⁽⁵⁹⁾ Notifications registered under Case Nos N 601 to N 606/2002.

⁽⁶⁰⁾ See letter dated 11 November 2003, OJ C 11, 15.1.2004, p. 5.

⁽⁶¹⁾ See Decision C(2004) 2213, OJ L 39, 11.2.2005, p. 48.

⁽⁶²⁾ See recital 24 of Decision C(2004) 2213.

4.9.2.5. *The 2006 Decision in the French GIE Fiscaux case*

- (102) According to PYMAR, the French scheme *GIE Fiscaux* is very similar to the STL system. As a result, the 2006 Decision in the French case gave rise to legitimate expectations on the part of operators that: (1) the STL system would be considered compatible with the internal market within the limits of Chapter 11 of the Maritime Guidelines and (2) the recovery of the State aid exceeding the ceilings of Chapter 11 of the Guidelines would not be required, given the procedural similarities of both cases.
- (103) In addition, PYMAR invokes a number of Commission decisions where the similarity of a measure with a measure previously approved by the Commission was a factor that justified the legitimate expectations of operators. In particular, PYMAR recalls that no recovery was ordered in cases ⁽⁶³⁾ such as Foreign Income (Ireland), International Financing Activities (the Netherlands), Coordination Centres and Finance Companies (Luxembourg), Coordination Centres in Vizcaya (Spain), Control and Coordination Centres (Germany), Central Corporate Treasuries and Headquarters and Logistics Centres (France), Tax Ruling for US Foreign Sales Corporations (Belgium) and Gibraltar Qualifying Companies (UK), because those schemes were very similar to the Belgian Coordination Centres schemes which had been previously approved by the Commission.

4.9.2.6. *The 2009 letter sent by Commissioner Kroes*

- (104) In response to a letter from the Norwegian authorities complaining about alleged discrimination against Norwegian shipyards in connection with the Spanish tax lease system, Commissioner Kroes replied that DG Competition: '[had] already investigated the matter' and that at its request, Spain had issued a public statement in the form of an answer of the tax administration to a question from a taxpayer ⁽⁶⁴⁾ — a tax ruling — confirming that the measure was not restricted to Spanish shipyards and could also be used for the acquisition of ships produced in other Member States. The letter concluded that, in view of that clarification, no further action was considered necessary.
- (105) According to PYMAR, on 2 April 2009 a Norwegian shipowner shared the content of Commissioner Kroes's letter with a Spanish shipyard with which it was involved in STL operations. PYMAR also submitted a letter of 13 September 2012 from Gerencia del Sector de la Construcción Naval ⁽⁶⁵⁾ (GSN) testifying that, back in 2009, it knew about the content of Commissioner Kroes's letter and had shared it with entities participating in STL operations and with PYMAR in the course of their regular meetings.

4.9.2.7. *Time elapsed between the complaint and the opening of the procedure*

- (106) According to PYMAR, nine years elapsed between the time the Commission became aware of the scheme in December 2001/the start of the scheme in 2002 (five years from the first complaints received by the Commission in 2006) and the opening of the proceedings in June 2011. The time elapsed without action from the Commission corroborated the belief that there were not enough elements to proceed.

4.9.2.8. *A diligent economic operator could not have foreseen the possible existence of State aid in the combination of several measures*

- (107) According to PYMAR and other third parties, this is the first time that the Commission has considered that the joint application of several measures constitutes State aid — something which normally prudent operators could not have foreseen.

⁽⁶³⁾ See Decision of 17.2.2003, OJ L 204, 13.8.2003, p. 51 (IE); Decision of 17.2.2003, OJ L 180, 18.7.2003, p. 52 (NL); two Decisions of 16.10.2002, OJ L 153, 20.6.2003, p. 40 and OJ L 170, 9.7.2003, p. 20 (LU); Decision of 22.8.2002, OJ L 31, 6.2.2003, p. 26 (ES); Decision of 5.9.2002, OJ L 177, 16.7.2003, p. 17 (DE); Decision of 11.12.2002, OJ L 330, 18.12.2003, p. 23 and Decision of 13.5.2003, OJ L 23, 28.1.2004, p. 1 (FR); Decision of 24.6.2003, OJ L 23, 28.1.2004, p. 14 (BE); and Decision of 30.3.2004, OJ L 29, 2.2.2005, p. 24 (UK).

⁽⁶⁴⁾ Spain published the tax ruling on 1 December 2008: <http://petete.meh.es/Scripts/know3.exe/tributos/CONSUVIN/texto.htm?Consulta=CONSULTA&Pos=7262> (last consulted on 19.6.2013).

⁽⁶⁵⁾ *La Gerencia Naval* (<http://www.gernaval.org/>) a public enterprise, according to its statute, approved by Royal Decree 3451/2000 of 22 December 2000 (BOE, 11.1.2001).

4.9.2.9. *The statements on depreciation methods in the Commission Notice on business taxation*

- (108) PYMAR argues that according to Article 13 of the Commission Notice on business taxation, measures of a purely technical nature such as depreciation rules do not constitute State aid. On that basis, operators had legitimately considered that the early depreciation measure did not constitute State aid.

4.9.3. **Considerations relevant for State aid recovery**

- (109) From the moment the Commission became aware of the existence of the STL, its actions and also the time elapsed have created legitimate expectations that there was no aid and consequently that the aid granted for operations carried out previously would not be recovered. Hence the Commission should refrain from ordering recovery of the aid for all the operations.
- (110) Similarly, the letter from Commissioner Kroes in 2009 confirms that the scheme had been analysed by the Commission. All parties involved in tax lease operations (shipping companies, EIGs, banks and intermediaries, etc.) could have legitimate expectations that the Commission would have discovered any aid in the system and that, because no further investigations were planned, no aid was involved.
- (111) PYMAR also refers to decisions in which the Commission acknowledged that actions by EU institutions (Court of Justice, Commission, etc.) could generate legitimate expectations that aid awarded in the past would not be recovered, which would prevent the Commission from ordering recovery including when the aid was granted prior to the action that gave rise to legitimate expectations. They refer to decisions in the Spanish goodwill case, the Belgian coordination centres case, an Austrian energy tax rebate case and an Italian case of aid to large firms in difficulty ⁽⁶⁶⁾.

4.9.4. **Contractual clauses**

- (112) The Spanish authorities and PYMAR state that any aid identified by the Commission in favour of shipping companies or EIGs and investors would in any case affect the shipyards, which would receive claims to reimburse the EIGs or their investors or investing companies by virtue of the contractual relationships between the different participants in the STL operations. Indeed, according to PYMAR, some clauses in the contracts require the shipyards to compensate the investors and shipping companies, in particular, in the event of a change to the legislation — including tax legislation — affecting the operation.

5. ASSESSMENT

5.1. PROCEDURE

- (113) The Commission considers that the procedure followed has neither breached Spain's rights of defence nor any third party's right to be heard. On the contrary, the decision to open formal proceedings is the initial formal step that the Commission must take pursuant to Council Regulation (EC) No 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 93 of the EC Treaty ⁽⁶⁷⁾ (hereinafter 'Regulation (EC) No 659/1999') if, after a preliminary investigation, it has doubts about the compatibility of a State aid measure with the internal market (Articles 13 and Article 4(4) of Regulation (EC) No 659/1999). The purpose of the decision to open proceedings is precisely to summarise the relevant issues of fact and law, make a preliminary assessment as to the aid character of the measure, set out the doubts as to its compatibility with the internal market and call upon the Member State concerned and other interested parties to submit comments (Article 6 of Regulation (EC) No 659/1999).
- (114) Moreover, the Commission did not open the formal investigation procedure in respect of the accelerated depreciation of leased assets (Article 115(6) TRLIS) since it has indicated that if the measure constituted State aid, it could in any event be regarded as existing aid. It did not raise doubts about the TT system, at least to the

⁽⁶⁶⁾ Commission Decision of 12.1.2011 in Case C-45/2007, recital 192 (OJ L 135, 21.5.2011, p. 1); Commission Decision of 13.11.2007 in Case C-15/2002, recital 85 (OJ L 90, 2.4.2008, p. 7); Commission Decision of 9.3.2004 in Case C-33/2003, recitals 47, 48 and 66 (OJ L 190, 22.7.2005, p. 13); and Commission Decision of 16.5.2000 in Case C-68/1999, recital 73 (OJ L 79, 17.3.2001, p. 29).

⁽⁶⁷⁾ OJ L 83, 27.3.1999, p. 1.

extent that it had been notified and authorised by the Commission (Articles 124 to 128 TRLIS) because this measure was also regarded as existing aid. These two measures are only mentioned and described in Decision C(2011) 4494 final because they are important elements of the STL and are linked to the measures subject to the formal investigation (Articles 115(11) and 48(4) TRLIS and Article 49 RIS, as well as Article 50(3) RIS and the application of the TT system to non-transport activities).

- (115) The Commission considers that Articles 115(11) and 48(4) TRLIS and Article 49 RIS, as well as Article 50(3) RIS and the application of the TT system to non-transport activities can be separated from the other measures mentioned in the previous recital (i.e. Article 115(6) TRLIS and Articles 124 to 128 TRLIS) and do not constitute existing aid pursuant to Article 1(b) of Regulation (EC) No 659/1999, since those measures were introduced in 2002 and 2003, after Spain's accession to the EU, and put into effect without prior authorisation by the Commission. Therefore, in respect of those measures, the Commission has rightly followed the procedure applicable to unlawful aid (Articles 1(f), 13 and 4(4) of Regulation (EC) No 659/1999).

5.2. ASSESSMENT OF THE STL AS A SYSTEM/ASSESSMENT OF INDIVIDUAL MEASURES

- (116) The fact that the STL system is composed of various measures that are not all enshrined in the Spanish tax legislation is not sufficient to prevent the Commission from describing and assessing it as a system. Indeed, as explained in Decision C(2011) 4494 final, the Commission considers that the different tax measures used in the STL operations were linked together *de jure* or *de facto*. *De jure*, the discretionary application of early depreciation of leased assets (Article 115(11) TRLIS) corresponds to an early application of the accelerated depreciation of leased assets (Article 115(6) TRLIS). Similarly, Article 50(3) RIS establishes an exception to a special procedure applicable in the context of the TT system. *De jure*, Article 50(3) RIS only concerns vessels eligible for the TT system and leasing contracts authorised by the tax administration. *De facto*, leasing contracts were only regarded as authorised by the tax administration in the context of authorisations granted for early depreciation of leased assets. *De jure*, early depreciation can be envisaged for a wide range of assets possibly acquired via a leasing contract. However, the conditions for early depreciation are subject to interpretation and were *de facto* only considered to be met — and authorisations were only delivered — with respect to vessels eligible for the TT system.
- (117) In addition, the Commission notes that two of the three main measures involved in the STL (discretionary application of early depreciation and rules on eligibility for the TT system) entered into force on the same date (1 January 2002) under the same law.
- (118) The Commission also notes that, when arguing about legitimate expectations and equal treatment, the same third parties that challenge the Commission's global approach present the STL system as being very similar to the French *GIE Fiscaux* scheme. The fact that all the features of the French measure were included in one legal provision necessarily implied a global assessment. In that respect, the fact that the different elements of the STL are spread among different legal provisions that are *de facto* linked together would not — as such — warrant a different approach.
- (119) For those reasons, the Commission considers that it is necessary to describe the Spanish Tax Lease as a system of connected tax measures and to assess their effects in their reciprocal context, taking into account, in particular, the *de facto* relationships introduced — or approved — by the State.
- (120) In any case, the Commission does not rely exclusively on a global approach. In parallel to a global approach, the Commission also analysed the individual measures that make up the STL. The Commission considers that the two approaches are complementary and lead to consistent conclusions. Individual assessment is necessary to determine which part of the economic advantages generated by the STL system results from general measures and which from selective measures. Individual assessment also allows the Commission to determine, where necessary, which part of the aid is compatible with the internal market and which part should be recovered.

- (121) This dual approach, which was already followed in Decision C(2011) 4494 final, enables the Commission to define a reference system for each of the individual measures and for the STL system as a whole, in order to identify selective advantages that constitute State aid. For every STL operation, the counterfactual situation against which the presence of aid will be assessed is the operation itself, with the same contractual provisions but carried out without the measures identified as State aid. In this respect, an alternative operation with actual different arrangements — contractual and financial — would not constitute a proper counterfactual situation.
- (122) Economic operators are free to structure their asset financing operations as they wish and use for that purpose the general tax measures which they consider the most suitable. However, inasmuch as these operations entail the application of selective tax measures, which are subject to State aid control, the undertakings involved in these transactions are potential recipients of State aid. On the one hand, the fact that several sectors or categories of undertakings are identified as potential recipients is not an indication that the STL system is a general measure ⁽⁶⁸⁾. On the other hand, the fact that the system is used to finance the acquisition, bareboat chartering and resale of sea-going vessels can be seen as a clear indication that the measure is selective from a sectoral point of view.

5.3. EXISTENCE OF AID WITHIN THE MEANING OF ARTICLE 107(1) TFEU

- (123) According to Article 107(1) TFEU, 'any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market'.
- (124) State aid rules apply only to aid granted to undertakings involved in economic activities. Furthermore, the criteria laid down in Article 107(1) TFEU are cumulative. Therefore, the measures under assessment constitute State aid within the meaning of the Treaty if all the above-mentioned conditions are fulfilled. Basically, the financial support should:
- be granted by the State and through state resources,
 - favour certain undertakings or the production of certain goods,
 - distort or threaten to distort competition, and
 - affect trade between Member States.
- (125) The Commission has carried out its assessment at two different levels:
- At the level of the individual measures involved, where the Commission considers whether each measure constitutes State aid irrespective of its use in the STL.
 - At the level of the STL system as a whole: as already stated, the STL relies on a combination of these measures which are *de jure* or *de facto* connected to one other.

5.3.1. Undertakings within the meaning of Article 107 TFEU

- (126) The Commission considers that all parties involved in STL operations are undertakings within the meaning of Article 107(1) TFEU — and this is not contested by Spain ⁽⁶⁹⁾ or any third-party — since their activities consist in

⁽⁶⁸⁾ See Case C-75/97 *Belgium v Commission* (Maribel bis/ter) [1999] ECR I-3671, paragraph 32.

⁽⁶⁹⁾ See, in particular, the letter dated 2 August 2011 from the Spanish authorities in response to Commission Decision C(2011) 4494 final, Section 3.2.2. Transparency arrangements applicable to EIG, first paragraph: 'In accordance with Article 1 of Law 12/1991 of 29 April 1991 on Economic Interest Groupings ... these entities have legal personality, are of a commercial nature and have the capacity to engage in economic activities.'

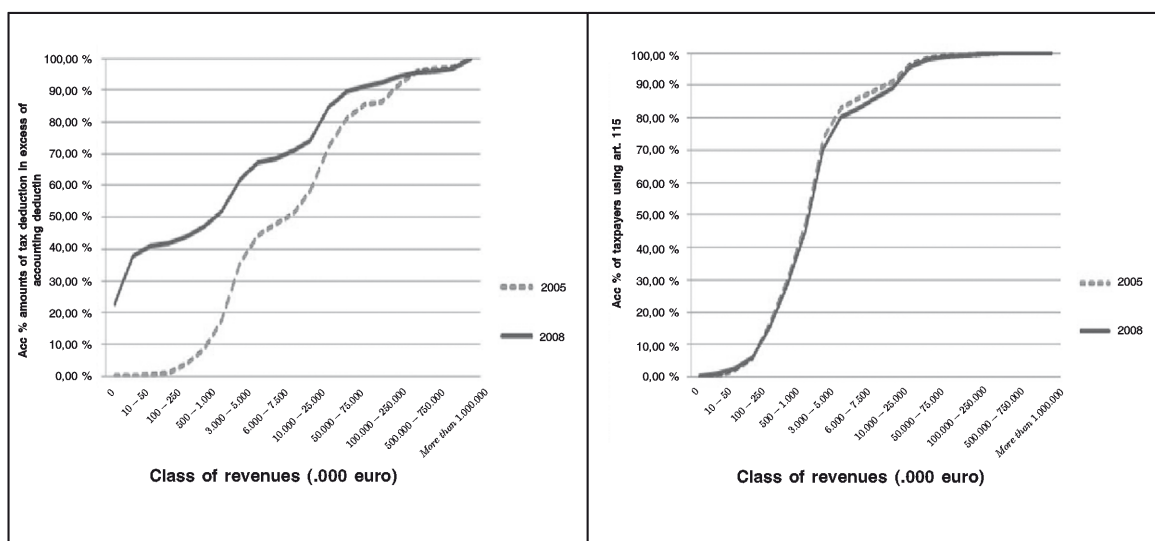
offering goods and services in a market ⁽⁷⁰⁾. More precisely, shipyards offer newly built vessels or construction, repair and renovation services; leasing companies offer financing facilities; EIGs charter out and sell vessels; investors offer goods and services on a wide range of markets, except if they are individuals not exercising any economic activity, in which case they are not covered by this Decision; shipping companies offer maritime transport services; organising banks offer intermediation and financing services and other intermediaries provide intermediation or consulting services.

5.3.2. Existence of a selective advantage

- (127) According to settled case-law: 'Article 107(1) of the Treaty requires it to be determined whether, under a particular statutory scheme, a State measure is such as to favour 'certain undertakings or the production of certain goods' in comparison with others which, in the light of the objective pursued by the scheme in question, are in a comparable legal and factual situation. If it is, the measure concerned fulfils the condition of selectivity.' ⁽⁷¹⁾

5.3.2.1. Accelerated depreciation (Article 115(6) TRLIS) — Measure 1

- (128) In Decision C(2011) 4494 final, the Commission said that, if the measure constituted aid, it would be existing aid and it did not conduct an assessment. As a result of the formal investigation, the Commission has now come to the conclusion that this measure, taken in isolation, does not constitute State aid because it does not favour certain undertakings or the production of certain goods. The Commission notes that the measure is applicable to all companies which are subject to income tax in Spain without any limitation as to their sector of activity, place of establishment, size, legal status or location of the assets. It also applies without exception to all goods that are subject to depreciation.
- (129) Moreover, the limitation to leased assets does not constitute an element of selectivity as the acquisition of any assets can be financed through financial leasing contracts which are generally accessible to companies of all sectors and sizes. There is no indication that the recipients of the measure are *de facto* concentrated in certain sectors or types of production. The statistics provided by Spain concerning the use of Article 115 TRLIS by Spanish taxpayers (see graphs below) confirm that financial leasing is used by companies exhibiting a wide range of taxable revenues (45 % of the declared users of Article 115 earn less than EUR 1 million and 70 % less than EUR 3 million) (see left-hand chart). The absolute amount of the tax advantage that can result from the deduction of an extra expense ⁽⁷²⁾ pursuant to Article 115 TRLIS also varies according to the taxpayer's revenue (see right-hand chart).



Source: Ministry for Economic Affairs and Finance

⁽⁷⁰⁾ See Case 118/85 *Commission v Italy* [1987] ECR 2599, paragraph 7; Case C-35/96 *Commission v Italy* [1998] ECR I-3851, paragraph 36; Joined Cases C-180/98 to C-184/98 *Pavlov and Others* [2000] ECR I-6451, paragraph 75.

⁽⁷¹⁾ See Case C-172/03 *Heiser* [2005] ECR I-1627, paragraph 40.

⁽⁷²⁾ This extra expense corresponding to the positive difference between the expense deducted for tax purposes pursuant to Article 115 and the expense registered in the accounting must be identified in the beneficiary's tax return.

(130) The Spanish authorities have also confirmed that leasing contracts and Article 115 TRLIS can be used with respect to assets built (or originating) in other Member States. Finally, the Commission notes that the conditions of application of Article 115(6) TRLIS are clear, objective and neutral and that no prior authorisation is necessary for it to apply. As a consequence, the tax administration does not have the power to authorise or reject at its own discretion the application of that measure ⁽⁷³⁾.

(131) The Commission therefore concludes that the accelerated depreciation of leased assets (Article 115(6) TRLIS) as such does not confer a selective advantage on the EIGs in STL operations.

5.3.2.2. *Discretionary application of early depreciation (Article 115(11) Article 48(4)TRLIS and Article 49 RIS) — Measure 2*

(132) The rules on depreciation in Spanish tax legislation (Article 11 TRLIS) generally provide that the cost of an asset should be spread over its economic life — hence from the moment it is used for an economic activity. According to Article 115(6) TRLIS, accelerated depreciation of leased assets should take account of the date on which the asset became operational. Since it allows accelerated depreciation to begin before the asset starts being used, Article 115(11) TRLIS confers an economic advantage.

(133) This possibility is an exception to the general rule set out in Article 115(6) and is subject to discretionary authorisation by the Spanish authorities; this measure is therefore at first sight selective. Contrary to what Spain and some third parties allege, the criteria for granting the authorisation are not clear and objective, and even if they were clear and objective this would not be sufficient to rule out their selective nature ⁽⁷⁴⁾. The Commission notes that the criteria set out in Article 115(11) TRLIS are vague and require interpretation from the tax administration which has not published any administrative rules or explanations in this respect. The discretionary application of early depreciation on the basis of vague criteria introduces selectivity into the STL system, even if the discretionary powers are not exercised in an arbitrary manner ⁽⁷⁵⁾. In addition, the Commission notes that Spain did not convincingly explain why all the conditions imposed by Article 48(4) TRLIS and Article 49 RIS are necessary to avoid abuses. For example, the specific characteristics of the economic use of the asset ⁽⁷⁶⁾ must be demonstrated, as well as the absence of effect on the taxable amount arising from the use of the asset or transfer of ownership ⁽⁷⁷⁾. No justification was presented for these limitations, which introduce further elements of selectivity. Nor did Spain demonstrate why a prior authorisation is necessary. Ensuring the reality of a leasing operation, for instance, appears as important for allowing the normal deduction of the leasing/depreciation costs of an asset or for applying accelerated depreciation as it is for the early application of this depreciation. However, the first measures are not subject to prior authorisation and, as is the case for those measures, an *ex-post* verification of the clear and objective criteria applicable to the early depreciation of leased assets would appear to suffice.

(134) In Decision C(2011) 4494 final, according to the Commission the Spanish authorities had confirmed at a meeting that, based on the authorisations issued, the conditions of Article 115(11) TRLIS were only deemed to be met in the case of acquisitions of vessels that had switched from the normal corporate taxation regime to the TT system ⁽⁷⁸⁾ and the subsequent transfer of ownership of the vessel to the shipping company through the

⁽⁷³⁾ See Case C-295/97 *Piaggio* [1999] ECR I-3735, paragraph 39, and the case-law cited.

⁽⁷⁴⁾ See Joined Cases T-92/00 and T-103/00 *Diputación Foral de Álava v Commission* [2002] ECR II-1385, paragraph 58.

⁽⁷⁵⁾ *Ibid.*, paragraph 35.

⁽⁷⁶⁾ Article 115(11) TRLIS: 'The Ministry ... may determine the date referred to in paragraph 6 ... taking into account the specific characteristics of the contracting or construction period for the asset and the specific nature of its economic use, provided that determining this date does not affect the calculation of the taxable amount arising from the actual use of the asset or the payments resulting from the transfer of ownership, which must be determined in accordance with either the general tax regime or the special regime ...' (our underlining).

⁽⁷⁷⁾ Article 49(3)(c) RIS: 'The application shall at least contain the following information: c) Proof of the specific characteristics of the asset's use. The legal and financial reports on the intended use of the asset purchased through a financial lease agreement shall be provided, indicating the specific contractual formulas that will be used and the positive and negative financial flows that will occur.'

⁽⁷⁸⁾ Letters from the Spanish authorities of 27 March 2008, 10 March 2010 and 27 July 2010 in which the authorisations issued until the end of June 2010 were summarised.

exercise of an option in the context of a bareboat charter. Spain has denied ⁽⁷⁹⁾ having made such a statement but acknowledged that there were difficulties of interpretation ⁽⁸⁰⁾. The Commission notes that no evidence was provided establishing that authorisations for applying early depreciation have been granted in other circumstances ⁽⁸¹⁾.

- (135) On the basis of the examples provided by the Spanish authorities, it appears that the requests for early depreciation filed by EIGs with the tax administration describe in detail the whole STL organisation and provide all the relevant contracts (in particular, shipbuilding contract, leasing contract, bareboat charter, option contracts, debt assumption and release agreement). According to Spain, these elements are necessary to check compliance with the conditions imposed by Articles 115(11) and Article 48(4) TRLIS and Article 49 RIS.
- (136) However, the Commission notes that the procedure set out in the implementing regulations ⁽⁸²⁾ confers important discretionary powers on the tax administration to interpret the legal requirements and possibly impose additional conditions. In particular, the administration is allowed to require any additional information they may deem relevant for the assessment ⁽⁸³⁾. In this respect, the Commission also notes that in some of the examples provided, the requests filed by the applicants also featured additional annexes which are not necessary to demonstrate compliance with the conditions imposed by Articles 115(11) and 48(4) TRLIS and Article 49 RIS: (1) a detailed calculation of the overall tax advantages and how they will be shared between the shipping company, on the one hand, and the EIG or its investors on the other hand, and (2) a statement by the shipyard, detailing the economic and social benefits expected from the shipbuilding contract. According to some complainants, these documents are required by the tax administration in the context of the authorisation process. According to Spain, these elements were provided by the applicants (EIGs) on their own initiative. These documents indicate, in particular, that the importance of a shipbuilding contract for the Spanish economy is taken into account, as well as the overall tax advantage generated by the STL operation.
- (137) The Commission concludes that the compulsory prior authorisation procedure, the necessary interpretation of the vague conditions of Articles 115(11) and 48(4) TRLIS and Article 49 RIS, and the possibility for the tax administration to request any additional document or information are clear evidence that the tax administration enjoys wide discretionary powers in the exercise of its task of authorising STL operations.
- (138) As mentioned in the Commission Notice on the application of the State aid rules to measures relating to direct business taxation (hereinafter 'the Notice on fiscal aid') ⁽⁸⁴⁾, the Court of Justice acknowledges that treating economic agents on a discretionary basis may mean that the individual application of a general measure takes on the features of a selective measure, in particular where exercise of the discretionary power goes beyond the simple management of tax revenue by reference to objective criteria ⁽⁸⁵⁾ ⁽⁸⁶⁾.
- (139) The Commission therefore considers that the discretionary application of early depreciation of leased assets by application of Articles 115(11) and Article 48(4) TRLIS and Article 49 RIS confers a selective advantage on the EIGs involved in STL operations and on their investors.

⁽⁷⁹⁾ The Spanish authorities deny having confirmed "in practice", as stated in paragraph 34 of the Commission Decision, that only assets that subsequently came under the tonnage scheme could come under the provisions of Article 115(11) TRLIS.'

⁽⁸⁰⁾ The Spanish authorities simply pointed to the difficulty of interpretation introduced by the requirement, laid down by the legislator, of making the application of early depreciation subject to the absence of effects on the calculation of the tax base derived from the effective use of the asset and on the revenue derived from its transfer.

⁽⁸¹⁾ The bareboat charter contract between the EIG and the shipping company would seem to result from the interpretation of one of the conditions imposed by Article 48 TRLIS and to be subject to the review and authorisation of the tax administration.

⁽⁸²⁾ In particular Article 49 RIS.

⁽⁸³⁾ Article 49(4) RIS: 'The Directorate-General for Taxation may request from the taxable person any data, reports, records and proof considered necessary.'

⁽⁸⁴⁾ OJ C 384, 10.12.1998.

⁽⁸⁵⁾ See Notice on fiscal aid, section on discretionary administrative practices, points 21 and 22.

⁽⁸⁶⁾ Case C-241/94 *France v Commission* (Kimberly Clark Sopalin) [1996] ECR I-4551.

5.3.2.3. *The tax transparency of economic interest groupings (Article 48 TRLIS) — Measure 3*

- (140) The Commission considers that the tax transparent status of EIGs enshrined in Articles 48 and 49 TRLIS merely enables different operators to join and finance any investment or carry out any economic activity. As a consequence, that measure does not confer any selective advantage on the EIGs or their members.

5.3.2.4. *The tonnage tax system (Articles 124 to 128 TRLIS) — Measure 4*

- (141) As explained in Section 2.2.4 above, the TT system constitutes an existing State aid scheme, approved by Commission Decision C(2002)582 final of 27 February 2002. It includes the rules under Article 125(2) TRLIS concerning the treatment of hidden tax liabilities and capital gains in the context of a transfer to the TT system of used or second-hand assets previously subject to the general tax system.
- (142) Indeed, as explained in recital 17 above, under normal circumstances — i.e. when a company stays within the general corporate tax system rather than switching to the TT system — the tax advantage resulting from early or accelerated depreciation of assets in the first years (increasing hidden tax liabilities) is offset to a large extent in the subsequent years (decreasing hidden tax liabilities) or upon sale or dismantling of the asset (taxation of capital gain). Over the whole period, this process results in the deferral of the payment of certain amounts of tax. Because the tax paid under the TT system does not depend on the difference between revenue and expenditure, a switch to the TT system in the middle of the period implies that hidden tax liabilities are not settled.
- (143) Compared with what would happen in the context of the general tax system, the deferral under the TT system of the settlement of hidden tax liabilities as permitted by Article 125(2) TRLIS confers an additional selective economic advantage on the companies that switch to the TT system, as against those that stay within the general tax system.
- (144) As explained below, in Section 5.4., the TT system as approved by the Commission does not extend to the tax treatment of revenues obtained from bareboat chartering, which therefore constitutes not existing, but new aid.

5.3.2.5. *Article 50(3) RIS — Measure 5*

- (145) Compared with what was authorised as part of the notified TT scheme, Article 50(3) RIS provides a further advantage: by establishing an exception to the normal application of Article 125(2) TRLIS, certain sea-going vessels that would normally be regarded as used or second-hand are deemed to be new on transfer to the TT system. Consequently, the settlement of hidden tax liabilities — normally deferred until sale or dismantling of the asset pursuant to Article 125(2) TRLIS — is definitely cancelled. This cancellation constitutes an economic advantage.
- (146) The economic advantage conferred by Article 50(3) RIS is selective because it is not available to all assets. It is not even available to all vessels subject to the TT scheme and to Article 125(2) TRLIS. In fact, this advantage is only available on condition that the vessel is acquired through a financial leasing contract previously authorised by the tax administration. As already mentioned, the Spanish authorities have confirmed that the tax administration only considered this condition actually to be fulfilled if a financial leasing contract had been authorised in the context of an application for early depreciation pursuant to Article 115(11) TRLIS. Neither Spain nor any third party has referred to other circumstances that would allow a leasing contract to be previously authorised by the tax administration. As mentioned in Section 5.3.2.2 above, these authorisations were granted in the context of substantial discretionary powers exercised by the tax administration and in practice only in relation to newly built sea-going vessels.
- (147) Contrary to the argument put forward by Spain and certain third parties, Article 50(3) RIS does not merely provide a clarification to the special procedure notified, or to the concept of 'used vessel'. By considering that a leased vessel is still new on the date that the call option is exercised by the lessee, provided that the leasing

contract was previously approved by the tax administration, it departs from the special procedure ⁽⁸⁷⁾ enshrined in Article 125(2) TRLIS. This selectively introduces an additional advantage by preventing the taxation of the subsequent capital gain.

- (148) The Commission considers that the award of this additional selective advantage — be it by reference to the general tax scheme or even by reference to the normal application of the alternative TT system and Article 125(2) TRLIS as authorised by the Commission — cannot be justified by the nature and general scheme of the Spanish tax system.
- (149) Indeed, the Commission has authorised Article 125(2) TRLIS as a special procedure that was supposed to prevent abuse of Article 125(1), i.e. to prevent operators from transferring used and over-depreciated vessels to the TT system for the sole purpose of selling them with a substantial capital gain that would be exempted under the TT scheme. The Commission notes in that respect that the STL operations feature EIGs which lease — then briefly own — one single vessel which they do not operate themselves and switch to the TT scheme for the very limited period of time necessary to exercise the option of the leasing contract and transfer the ownership of their only vessel to the shipping company. These operations do not appear to be in line with the objectives of the TT system as envisaged in the Maritime Guidelines.
- (150) As a consequence, the Commission does not agree that it is logical to consider a vessel to be ‘new’ on the date on which the option is exercised because no one has used it before the leaseholder, or because the exercise of the option had already been agreed when the leasing contract was signed.
- (151) As for the first part of this argument, the Commission notes that the special procedure also applies to vessels transferred by one operator from the normal tax system to the TT system, i.e. without any change in ownership and without any third party using it.
- (152) As for the second part, the fact that the option is already agreed has nothing to do with determining whether the vessel is new. The Commission did not receive any explanation as to why such a vessel should be regarded as new — irrespective of who is the owner — on the day the option is exercised. Nor did it receive any convincing explanation as to why this hypothesis would only be reasonable if the leasing contract was previously approved by the tax administration.
- (153) In that respect, the Commission notes that the capital gain would not be tax exempt if Article 50(3) RIS only clarified that leased vessels are considered to be new on the day the leasing contract is signed, without taking into consideration the date on which the option is exercised. In that case, the EIG should be regarded as the owner of the vessel prior to its transfer to the TT system, the vessel would be regarded as used or second-hand on entry to the TT system and Article 125(2) TRLIS would apply, leading to the deferred settlement of the hidden tax liabilities or the taxation of the capital gain when the vessel is sold or dismantled.
- (154) The Commission therefore considers that Article 50(3) RIS confers a selective advantage on undertakings that acquire vessels through financial leasing contracts previously authorised by the tax administration and, in particular, on the EIGs or their investors involved in STL operations.

⁽⁸⁷⁾ See Commission Decision C(2002) 582 final of 27 February 2002, Section 2.12.1 Capital allowances: ‘Capital gains accrued before the entry into the Tonnage Tax scheme are subject to full taxation under the normal rules for the corporation tax when the ship is sold. In order to ensure this provision, the beneficiary has to set a reserve equal to the difference between the normal market value and the net accounting value of each of the ships, thus reflecting the capital gains of the ship entering this scheme. This reserve is subject to full taxation in case of transfer of ownership. Furthermore, in order to prevent fiscal circumvention when switching to the new scheme, the eventual positive difference between the fiscal depreciation and the accounting one is also fully taxed at normal rates when the ship is sold, so to avoid that lower than fiscal accounting depreciation transforms itself in a lower nominal capital gain, thus partly eluding full tax payment for capital gains.’ (our underlining)

5.3.2.6. *Selective advantage resulting from the STL as a whole. Recipients of the advantage*

- (155) The amount of the economic advantage resulting from the STL as a whole corresponds to the advantage that the EIG would not have achieved in the same financing operation by the sole application of general measures. In practice, this advantage corresponds to the sum of the advantages reaped by the EIG by applying the above-mentioned selective measures, namely:
- the interest saved on the amounts of tax payment deferred by virtue of early depreciation (Articles 115(11) and 48(4) TRLIS and Article 49 RIS),
 - the amount of tax avoided or interest saved on tax deferred by virtue of the TT scheme (Article 128 TRLIS), given that the EIG was not eligible for the TT scheme,
 - the amount of tax avoided on the capital gain made on the sale of the vessel by virtue of Article 50(3) RIS.
- (156) Looking at the STL as a whole, the advantage is selective because it was subject to the discretionary powers conferred on the tax administration by the compulsory prior authorisation procedure and by the imprecise wording of the conditions applicable to early depreciation. Since other measures applicable only to maritime transport activities eligible under the Maritime Guidelines — in particular Article 50(3) TRLIS — are dependent on that prior authorisation, the whole STL system is selective. As a result, the tax administration would only authorise STL operations to finance sea-going vessels (sectoral selectivity). As confirmed by the statistics provided by Spain, all the 273 STL operations organised until June 2010 concern sea-going vessels.
- (157) In that respect, the fact that all shipping companies, including companies established in other Member States, potentially have access to STL financing operations does not alter the conclusion that the scheme favours certain activities, namely the acquisition of sea-going vessels through leasing contracts, in particular with a view to their bareboat chartering and subsequent resale.
- (158) European shipyards complained on several occasions that they did not have access to Spanish banks' financing for STL.
- (159) In its Decision to open the formal investigation procedure the Commission observed that all but one of the vessels admitted to STL were built in Spanish shipyards. The Commission expressed doubts⁽⁸⁸⁾ that such an outcome could reasonably be explained in the context of operations resulting only from the free choice of economic operators in a free and competitive market.
- (160) However, in the absence of any evidence that applications related to the acquisition of non-Spanish vessels were rejected, the Commission cannot establish that STL was *de facto* limited to the acquisition of Spanish vessels. In addition, the Commission notes that by a binding notice in response to a question by a prospective investor, dated 1 December 2008, the Spanish tax administration expressly confirmed that STL applies to ships built in other Member States of the EU⁽⁸⁹⁾. Under these circumstances, the Commission concludes that the STL entails no further element of selectivity to the benefit of Spanish shipyards and no discrimination based on the place of establishment of the shipyard.
- (161) The Commission considers that the advantage accrues to the EIG and, by transparency, to its investors. Indeed, the EIG is the legal entity that applies all the tax measures and, where applicable, files requests for authorisations with the tax administration. For instance, it is not disputed that requests for the application of early depreciation or TT were filed on behalf of the EIG. From a tax perspective, the EIG is a tax-transparent entity and its taxable revenues or deductible expenses are automatically transferred to the investors.

⁽⁸⁸⁾ See recital 73 of Commission Decision C(2011) 4494 final.

⁽⁸⁹⁾ See <http://petete.meh.es/scripts/know3.exe/tributos/CONSUVIN/texto.htm?NDoc=12728&Consulta=buques&Pos=230>

- (162) In an STL operation, in economic terms, a substantial part of the tax advantage collected by the EIG is transferred to the shipping company through a price rebate. The annexes attached to certain files when EIGs request prior authorisation for early depreciation (see recital 168 below) confirm that the operators involved in STL operations consider that the tax benefits resulting from the operation are shared between EIGs or their investors and the shipping companies. However, the question of the imputability to the State of this advantage will be discussed in the next section.
- (163) Whereas other participants in STL transactions such as shipyards, leasing companies and other intermediaries benefit from an indirect effect of that advantage, the Commission considers that the advantage initially collected by the EIG and its investors is not transferred to them.

5.3.3. Transfer of state resources and imputability to the State

State resources

- (164) The selective advantages for the EIGs and their members identified in measures 2, 4 and 5 above (see Sections 5.3.2.2, 5.3.2.4 and 5.3.2.5) result from the application of tax law provisions.
- (165) For each of the STL transactions, the use of state resources results in interest foregone on the tax deferral resulting from the early depreciation of leased assets, tax foregone in the absence of settlement of the hidden tax liabilities when the EIG switches from the normal corporate tax system to the TT schemes, and tax foregone in the absence of taxation of the capital gain made when the ownership of the vessel is transferred to the shipping company. The STL system as a whole involves the definitive loss of tax revenue equivalent to the consumption of state resources in the form of fiscal expenditures and interest foregone.
- (166) In the context of STL operations, the State initially transfers its resources to the EIG by financing the selective advantages. By way of tax transparency, the EIG then transfers the state resources to its investors.

Imputability

- (167) The measures at issue derive from the application of Spanish tax law and from tax authorisations granted by the Spanish tax administration for the application of both the early depreciation and the TT scheme. These authorisations were granted for the application of individual measures such as the early (accelerated) depreciation of the vessel leased by each EIG or the switch of the EIG to the TT. Moreover, based on the examples provided by the Spanish authorities, the authorisation process was indispensable for the financing operation to go through.
- (168) According to the complainants, the tax administration would review and intervene in the share-out of the tax gain between the shipping company, on the one hand, and the EIG and its investors, on the other. Based on the examples provided by the Spanish authorities, it appears that, indeed, requests submitted to the tax administration for the authorisation of early depreciation generally include a calculation of the overall tax advantage generated by the STL structure and how this tax advantage is shared between the shipping company and the investors in the EIG, or, in any event, contain the necessary elements for doing this calculation.
- (169) However, all the economic consequences of granting the tax advantage to the EIGs result from a combination of legal transactions between private entities. The applicable rules do not oblige the EIGs to transfer part of the tax advantage to the shipping companies and, even less so, to the shipyards or to the intermediaries. It is true that the tax administration enjoys wide discretion and, in that context, it assesses the economic impact of the overall transaction, but this is not enough to establish that it is the Spanish authorities that decide on the transfer of part of the advantage to the shipping companies or the amount of this transfer. This situation is different from that

examined in the *Air Caraïbes* or in the French *GIE Fiscaux* decisions, where there was a legal obligation for the investors to transfer at least 60 % or two thirds of the advantage to the users and the French authorities verified that each transaction complied with that requirement.

- (170) Hence the selective advantages were granted through state resources. They are clearly imputable to the Spanish State since they are of benefit to the EIGs and their investors. However, this is not the case with the advantages enjoyed by the shipping companies and *a fortiori* the indirect advantages flowing to the shipyards and the intermediaries.

5.3.4. Distortion of competition and effect on trade

- (171) Finally, this advantage threatens to distort competition and to affect trade between Member States. When aid granted by a Member State strengthens the position of an undertaking compared with other undertakings competing in intra-EU trade, the latter must be regarded as affected by that aid ⁽⁹⁰⁾. It is sufficient that the recipient of the aid competes with other undertakings on markets open to competition ⁽⁹¹⁾ and to trade between Member States.
- (172) In the case at hand, the investors, i.e. the members of the EIGs, are active in different sectors of the economy, in particular in sectors open to intra-EU trade. In addition, via the operations benefiting from STL they are active through the EIGs in the markets for bareboat chartering and the acquisition and sale of sea-going-vessels, which are open to intra-EU trade. The advantages flowing from the STL strengthen their position in their respective markets, thereby distorting or threatening to distort competition.
- (173) The economic advantage received by the EIGs and their investors benefiting from the measures under scrutiny is therefore liable to affect trade between the Member States and distort competition in the internal market.

5.4. EXISTING OR UNLAWFUL AID

- (174) Article 1(b) of Regulation (EC) No 659/1999 ⁽⁹²⁾ sets out different situations where aid is regarded as existing aid. According to submissions received in the case at issue, existing aid would be (i) aid which existed prior to the entry into force of the Treaty in Spain or (ii) aid previously approved by the Commission.

The tonnage tax constitutes existing aid, but its application to revenues obtained from bareboat chartering constitutes new aid

- (175) Among the measures qualifying as State aid ⁽⁹³⁾, the Commission considers that only the legal provisions of the TT system (Articles 124 to 128 TRLIS, Measure 4) constitute an existing State aid scheme because it was approved by the Commission in 2002.
- (176) However, the Commission considers that the EIGs involved in tax lease operations do not meet all the conditions to be eligible for the Spanish TT.
- (177) The Commission authorised the Spanish TT as compatible aid on the basis of the Maritime Guidelines, which apply only to undertakings carrying on genuine maritime transport activities ⁽⁹⁴⁾ either with their own vessels or with chartered vessels. By way of exception, the TT can apply to activities that the Guidelines regard as ancillary or assimilated to maritime transport. For instance, under certain conditions, ship management, dredging or towing

⁽⁹⁰⁾ See, in particular, Case 730/79 *Philip Morris v Commission* [1980] ECR 2671, paragraph 11; Case C-53/00 *Ferring* [2001] ECR I-9067, paragraph 21; Case C-372/97 *Italy v Commission* [2004] ECR I-3679, paragraph 44.

⁽⁹¹⁾ Case T-214/95 *Het Vlaamse Gewest v Commission* [1998] ECR II-717.

⁽⁹²⁾ OJ L 83, 27.3.1999, p. 1.

⁽⁹³⁾ As explained in Sections 5.3.2.1 and 5.3.2.3, the Commission does not regard the provisions of Articles 115(6) (Accelerated depreciation) and 48 TRLIS (EIG legal status) as State aid.

⁽⁹⁴⁾ See Maritime Guidelines, Section 3.1 Fiscal Treatment of shipowning companies, paragraph 12: 'These guidelines apply only to maritime transport.'

activities may qualify for aid ⁽⁹⁵⁾. By contrast, the mere ownership of a vessel, its acquisition through financial leasing or its renting or chartering out to third parties, without assuming full responsibility for the vessel's operation, cannot be regarded as a qualifying activity. Obviously, the beneficiary of the TT system should be the one carrying on the qualifying transport activity with the qualifying vessel.

- (178) It is true that, by way of exception, bareboat chartering activities have previously been allowed by the Commission as part of certain notified TT schemes, but only on a temporary basis and under specific circumstances related to overcapacity ⁽⁹⁶⁾. Under those conditions, the core activity of the concerned undertakings remains maritime transport and the revenues from bareboat chartering-out activities can be regarded as ancillary to that core activity. This tolerance is fully in line with objectives of the Maritime Guidelines: 'maintaining and improving maritime know-how and protecting and promoting employment for European seafarers' and 'contributing to the consolidation of the maritime cluster established in the Member States while maintaining an overall competitive fleet on world markets' ⁽⁹⁷⁾.
- (179) In line with the Maritime Guidelines, Commission Decision C(2002) 582 final of 27 February 2002 authorising the Spanish TT system explicitly mentions that only maritime transport activities qualify for the TT ⁽⁹⁸⁾. Indeed, Section 2.4. 'Recipients' provides that: 'Recipients of the Tonnage Tax scheme can be maritime companies registered under Spanish law, whose activity includes the operation of owned and chartered ships' (our underlining) and its Section 2.5. 'Qualifying activities/ships' provides that: 'The Tonnage Tax scheme only covers income from seagoing ships operated in maritime transport activities. Qualifying activities are targeted to include only maritime transport' (our underlining).
- (180) From the wording of the 2002 Commission Decision, adopted on the basis of the Maritime Guidelines, it follows that undertakings identified as shipowners under Spanish law may benefit from the TT system provided that they carry on their qualifying maritime transport activities — and within the limits of these.
- (181) The Commission considers that the activity carried on by the EIGs involved in STL operations cannot be regarded as a transport activity. When it switches to the TT system the EIG leases in a single vessel from a leasing company and charters it out to a third-party shipowner on a bareboat basis. If the third-party shipowner operates the vessel to provide maritime transport services, it can be eligible for the TT. However, the EIG only puts a vessel at the disposal of a third-party shipping company that operates it. The EIG is therefore an intermediary providing rental or leasing services, not transport services.
- (182) The EIGs involved in STL operations usually charter out the only vessel that they own or lease in, which therefore represents the whole of their fleet. In such circumstances, the EIG does not bear any risk or responsibility in terms of technical, crew or even commercial management of the vessel. It is a pure intermediary and the revenues from bareboat chartering out cannot be regarded as ancillary to a maritime transport activity.

⁽⁹⁵⁾ See Maritime Guidelines, Section 3.1 Fiscal Treatment of shipowning companies, 11th, 12th and 16th paragraphs: 'Ship management companies may qualify for aid only in respect of vessels for which they have been assigned the entire crew and technical management. ... to be eligible, ship managers have to assume from the owner the full responsibility for the vessel's operation as well as take over from the owner all the duties and responsibilities imposed by the ISM code'; 'The Commission can accept that the towing at sea of other vessels, oil platforms, etc. falls under that definition.' and '“Dredging” activities are in principle not eligible for aid to maritime transport. However, fiscal arrangements for companies (such as tonnage tax) may be applied to those dredgers whose activities consist in “maritime transport” ...'

⁽⁹⁶⁾ See Commission Decision of 11 December 2002 in Case N 504/02, Ireland, Introduction of a tonnage tax, recital 28; Commission Decision of 20.12.2011 in SA.30515, Finland, Amendments to the tonnage taxation aid scheme, recital 10.

⁽⁹⁷⁾ See Maritime Guidelines, point 2.2 General objectives of revised State aid guidelines.

⁽⁹⁸⁾ See Section 2.4 Recipients: 'Recipients of the Tonnage Tax scheme can be maritime companies registered under Spanish law whose activity includes the operation of owned and chartered ships' and Section 2.5 Qualifying activities/ships: 'The Tonnage Tax scheme only covers income from seagoing ships operated in maritime transport activities. Qualifying activities are targeted to include only maritime transport'.

- (183) In addition, EIGs stay within the TT system for a short period of time, i.e. the two weeks needed to exercise the option of the leasing contract and for the shipowner to exercise the option associated with the charter contract. Allowing this type of activities under the TT system does not appear to increase in any lasting way the tonnage under the flag of — or controlled by — EEA countries. For the same reasons, the EIGs involved in STL operations do not appear to contribute to the objective of ‘maintaining ... maritime know-how and protecting ... employment for European seafarers’ or to the ‘consolidation of the maritime cluster’.
- (184) In conclusion, the approval that follows from the 2002 Decision does not imply that the activity of undertakings such as the EIGs involved in STL can be considered a maritime transport activity.
- (185) Therefore, the Commission considers that including undertakings such as the EIGs involved in STL ⁽⁹⁹⁾ operations under the TT scheme leads to the award of new aid, either through the calculation of the taxable revenue as a function of the tonnage operated or the possibility of postponing the settlement of hidden tax liabilities until the vessel is either sold or dismantled, pursuant to Article 125(2) TRLIS.

The other measures constitute new aid

- (186) Early depreciation of leased assets (Articles 115(11) and 48(4) TRLIS and Article 49 RIS, Measure 2) is not existing aid because it was introduced in 2002, i.e. after Spain joined the EU in 1986 and was never notified to the Commission or approved by it. Furthermore, the effect of this measure can be clearly separated from the effect of accelerated depreciation. This measure constitutes unlawful aid.
- (187) Similarly, Article 50(3) RIS, which allowed the exemption of capital gains on vessels acquired in the context of previously authorised leasing contracts (Measure 5) entered into force in 2002 without prior notification or approval by the Commission.
- (188) The Commission considers that the approval granted in 2002 does not cover the implementing measures and, in particular, Article 50(3) RIS because it introduces an exception to the special procedure applicable to used vessels pursuant to Article 125(2) TRLIS, which means an additional advantage. This exception should have been notified together with the legal provisions approved by the Commission, but it was not.
- (189) The application of Article 125(2) TRLIS does not appear to require any further definition or clarification. It would normally trigger the taxation of the capital gain made by a lessor on the transfer of a vessel to the lessee (shipping company). If Spain considered that a clarification was necessary, this should have been done upon notification.
- (190) Consequently, the implementing measures and, in particular, Article 50(3) RIS also constitute unlawful aid.

5.5. COMPATIBILITY WITH THE INTERNAL MARKET

- (191) The Commission concludes that the following measures constitute State aid, on an individual basis and in the context of the STL:
- Early depreciation of assets acquired through a financial leasing contract (Articles 115(11) and 48(4) TRLIS and Article 49 RIS),
 - TT scheme as regards the eligibility of bareboat chartering activities,
 - Article 50(3) RIS.

⁽⁹⁹⁾ It should be noted that EIGs, like other forms of undertakings, can in principle enter the TT scheme if they carry on eligible activities.

- (192) In principle, State aid as defined by Article 107(1) TFEU is prohibited. However, Article 107(2) provides that certain types of aid are compatible and Article 107(3) that certain types of aid or aid to certain recipients can be declared compatible by the Commission. Depending on the category of recipients, specific rules such as the Maritime Guidelines⁽¹⁰⁰⁾ or the Shipbuilding Framework⁽¹⁰¹⁾ could apply.
- (193) Neither the Spanish authorities nor the third parties identified as recipients in this decision have invoked the application of any other provision of Article 107(2) and (3) TFEU or the application of any other State aid framework adopted on the basis of Article 107(3)(c) TFEU.

5.5.1. Application of the Maritime Guidelines

Eligibility of revenues of bareboat chartering out to the TT

- (194) As stated in recital 71 above, the Spanish authorities and certain third parties consider that chartering out is covered by the 2002 Decision authorising the Spanish TT scheme because it refers to the operation of owned and chartered ships.
- (195) The Commission does not agree with this interpretation of the 2002 Decision. Both the Maritime Guidelines and the 2002 Decision make it clear that the TT should apply only to maritime transport activities⁽¹⁰²⁾. As a rule, revenues from other activities outside transport — even when carried out by a maritime transport company — cannot be taxed according to the TT system⁽¹⁰³⁾ unless by explicit exception and under certain conditions (ancillary activities, dredging, towage).
- (196) In this context, ‘the operation of owned and chartered ships’ mentioned as an eligible activity in the 2002 Decision only covers the ‘operation’ of vessels that are either owned or chartered on a bareboat basis and operated — in the case of both owned and chartered ships — by a maritime transport company.
- (197) As already mentioned in Section 5.3.2.4, the financial EIGs involved in STL financing operations do not operate vessels themselves and do not provide any maritime transport service. They are financial intermediaries involved in the collective financing of an asset. They do not intervene in the strategic, technical, crew or even commercial management of the vessel they charter out and they do not bear any risk or responsibility for the provision of maritime transport services.
- (198) In addition, the Commission notes that the EIGs involved in STL operations charter out their sole vessel with both a buy (or ‘call’) option which, from the outset, the shipping company undertakes to exercise and a sell (or ‘put’) option which the EIG can exercise. This is equivalent to a delayed — yet definitive — transfer of ownership of the whole of the EIG’s fleet. Consequently, the EIG is not in the same situation as shipowners that are suffering from temporary overcapacity and, in search of some flexibility, charter out part of their fleet to third-party operators for a limited period of time (see recital 178 above).
- (199) For all these reasons, the Commission considers that the EIGs involved in STL operations are neither eligible for the Spanish Tonnage Tax system as authorised by the Commission nor covered by the provisions of the Maritime Guidelines.

⁽¹⁰⁰⁾ Community guidelines on State aid to maritime transport, OJ C 205, 5.7.1997, p. 5 (applicable until 16.1.2004), OJ C 13, 17.1.2004, p. 3 (applicable from 17.1.2004).

⁽¹⁰¹⁾ Framework on State aid to shipbuilding, OJ C 317, 30.12.2003, p. 11. However, given that the shipyards are not recipients or the aid and it is impossible to quantify an economic flow to their benefit, it is not necessary to assess the aid under this Framework.

⁽¹⁰²⁾ See Maritime Guidelines, Section 2.1 Scope of revised State aid Guidelines, first paragraph: ‘These guidelines cover any aid granted by Member States or through State resources in favour of maritime transport’ and Section 3.1 Fiscal Treatment of shipowning companies, 12th paragraph: ‘These guidelines apply only to maritime transport.’

⁽¹⁰³⁾ See Maritime Guidelines, Section 3.1 Fiscal treatment of shipowning companies, last paragraph: ‘the fiscal advantages mentioned above must be restricted to shipping activities; hence, in cases where a shipowning company is also engaged in other commercial activities, transparent accounting will be required in order to prevent ‘spill-over’ into non-shipping activities.’

- (200) However, the Commission considers that, in view of the general character of leasing operations, the EIGs involved in STL operations and their investors act as intermediaries which channel to other recipients (shipping companies) an advantage that pursues an objective of common interest.

Eligibility of EIGs and/or their investors as intermediaries

- (201) In line with the approach adopted in the Decision of 20 December 2006 concerning the French *GIE fiscaux* ⁽¹⁰⁴⁾, the Commission takes the view that, when it represents a fair remuneration for their intermediation in the transfer to the shipping companies of an advantage that pursues an objective of common interest, the aid retained by the EIG or its investors would be found compatible in the same proportion. It is true that, in this case, there is no legal obligation for the EIGs to transfer part of the aid received to the shipping companies. However, in the exercise of its discretion when assessing the compatibility of the measure under Article 107(3)(c) TFEU, the Commission considers it appropriate to take into account the favourable effects of the measure for the maritime sector and to apply *mutatis mutandis* the provisions of the Maritime Guidelines — normally applicable to aid measures — to the advantage transferred to the shipping company. Therefore, if the application of the Maritime Guidelines to a shipping company involved in a specific STL operation results in a ratio of compatible advantage over a total advantage of x%, the same percentage of the aid retained by the EIG or its investors is compatible.

Advantage for the end-user shipping companies

- (202) Since the advantage is of benefit to the shipping companies, Article 107(3)(c) TFEU together with the Maritime Guidelines ⁽¹⁰⁵⁾ is the only relevant framework to assess its compatibility.
- (203) The Commission considers that the shipping companies do not benefit from State aid within the meaning of Article 107(1) TFEU. Nevertheless, in order to identify the amount of compatible aid at the level of EIGs — as intermediaries channelling to shipping companies an advantage that pursues an objective of common interest — the Commission considers that the Maritime Guidelines should be applied *mutatis mutandis* to the advantage transferred by the EIG to the shipping company in order to determine: (1) the amount of the aid initially received by the EIG and transferred to the shipping company that would have been compatible if the amount transferred constituted State aid to the shipping company; (2) the proportion of that compatible advantage in the total advantage transferred to the shipping company; and (3) the amount of aid that should be deemed compatible as remuneration of the EIGs for their intermediation.
- (204) The Maritime Guidelines describe different categories of State aid and the conditions under which aid can be authorised by the Commission. In particular, the Guidelines make it clear that they apply only to maritime transport activities and a limited number of ancillary or assimilated activities.
- (205) When an end-user shipping company provides maritime transport services (or assimilated activities) and meets all the conditions of the Guidelines, an advantage received by this company and which constitutes aid would be compatible with the internal market.
- (206) Pursuant to the Maritime Guidelines, aid can be granted through different categories of measures. One of the main conditions imposed by Article 10 of the 1997 Guidelines and Article 11 of the 2004 Maritime Guidelines is an overall aid ceiling, i.e. a maximum amount of State aid that an undertaking can be granted which can be deemed compatible with the internal market ⁽¹⁰⁶⁾.

⁽¹⁰⁴⁾ State aid C 46/2004, Commission Decision of 20.12.2006 on the aid scheme implemented by France under Article 39 CA of the General Tax Code (OJ L 112, 30.4.2007, p. 43).

⁽¹⁰⁵⁾ As indicated above, Spain invoked the 2002 Commission Decision authorising the Spanish Tonnage Tax as a basis for compatibility. In fact, the conclusion that the TT is compatible with the internal market is based on the Maritimes Guidelines.

⁽¹⁰⁶⁾ This ceiling applies only to certain categories of aid identified by the Guidelines: fiscal and social measures to improve competitiveness, crew relief, investment aid and regional aid.

- (207) Under the 1997 Guidelines, the aid ceiling corresponds to 'a reduction to zero of taxation and social charges of seafarers and of corporate taxation of shipping activities'. Under the 2004 Guidelines, the ceiling corresponds to a reduction to zero of taxation and social charges of seafarers and a tax reduction by application of a TT scheme. However, the 2004 Guidelines also state that 'the total amount of aid granted ... should not exceed the total amount of taxes and social contributions collected from shipping activities and seafarers.'
- (208) Regarding the application of the aid ceiling to specific beneficiary shipowners, the Commission considers that it should be envisaged at EEA level. This means that the ceiling should take due account of the corporate tax and the social charges paid by the recipients in other EEA Member States. This approach is consistent with the *FagorBrandt* case-law⁽¹⁰⁷⁾ which confirmed that the assessment of a State aid measure should take due account of the cumulative effect of possible aid awarded in different Member States.
- (209) As the case at hand concerns aid awarded to the EIGs in respect of the acquisition — by a shipowner — of a long-term asset, the Commission agrees with the Spanish authorities that the advantage received by the shipping company should be spread over the asset's normal depreciation period (10 years from a tax point of view) and compared to the total amount of taxes and social charges paid over the same period.
- (210) In accordance with the ceiling, all advantages granted in excess of the total amount of income tax and social charges of seafarers and corporate taxation of shipping activities must be regarded as incompatible with the Treaty.

5.6. RECOVERY

- (211) Article 14 of Regulation (EC) No 659/1999 provides that, where negative decisions are taken in cases of unlawful aid, the Commission shall decide that the Member State concerned shall take all necessary measures to recover the aid from the beneficiary. Through recovery of the aid, the competitive position that existed before it was granted is restored as far as is possible.
- (212) However, Article 14 of the Regulation also provides that the Commission shall not require recovery of the aid if this would be contrary to a general principle of Community law. This section examines whether the general principles of equal treatment, protection of legitimate expectations or legal certainty prevent the Commission from ordering the recovery of all or part of the aid granted in the past.

5.6.1. Equal treatment

- (213) The principle of equal treatment and non-discrimination requires that comparable situations are not treated differently and that different situations are not treated equally unless such treatment is objectively justified⁽¹⁰⁸⁾.
- (214) The French *GIE Fiscaux* scheme is indeed comparable to the STL in a number of respects. It requires the intermediation of a tax transparent EIG or investors between the builder of a long-term asset and the buyer to which the EIG leases or charters the asset. The EIG applies accelerated and early depreciation to the asset and the capital gain resulting from the sale of the asset is exempted from corporate tax. The EIG or its investors return a substantial part of the benefits resulting from the tax measures to the buyer of the asset (for instance, a shipping company) through a reduction of the rent or the buy option price. However, the French scheme featured an explicit exemption of capital gains whereas, in the STL, this exemption results from the joint application of the TT system and Article 50(3) RIS to the EIG.

⁽¹⁰⁷⁾ See Joined Cases T-115/09 and T-116/09 *Electrolux AB and Whirlpool Europe BV v Commission*.

⁽¹⁰⁸⁾ See Case C-110/03 *Belgium v Commission*, paragraph 71 and the case-law cited.

- (215) The Commission also notes that the legal context and procedural history of the French and Spanish cases are different and that the Commission refrained from ordering the recovery for part of the period under assessment in its 2006 final decision on the *GIE Fiscaux* for reasons related to the specific procedural history of that case. In particular, France had not formally notified the scheme to the Commission but had informed it before implementing the scheme. The Commission also observes that, when it initiated the formal investigation procedure with respect to the *GIE Fiscaux*, it had never before ruled on a similar case. On the contrary, when it initiated the formal investigation with respect to the STL, the Commission had already ruled that a similar scheme — precisely the French *GIE Fiscaux* — was a State aid scheme. Since the legal and factual context of the *GIE Fiscaux* differs from that of the STL, the Commission considers that different treatment could be justified. However, as the Commission will explain in Section 5.6.3 below, reasons relating to the principle of legal certainty led the Commission to refrain from ordering recovery in this case until the date of publication of the Decision concerning the French *GIE Fiscaux*.
- (216) The Commission further considers that, in the cases mentioned in recital 92 above, the application of the principle of legitimate expectations to similar measures was justified in respect of circumstances specific to each case. For the Spanish Goodwill case, a reply to an MEP had clearly qualified the scheme as a general measure. For the coordination centres and intragroup activities of multinational companies⁽¹⁰⁹⁾, the Commission found that legitimate expectations existed on the basis not only of the prior authorisation of the Belgian Coordination Centres as a general measure in 1984 and 1987 but also of the answer given by the Commission to a Parliamentary Question⁽¹¹⁰⁾. This stated that a broad range of tax measures — ‘rules governing taxation of the European headquarters of multinational groups, designed to avoid double taxation’ — ‘fell outside the scope of the State aid rules’. Moreover, all those schemes had been implemented after the reply to the Parliamentary Question was given. In the Gibraltar Qualifying Companies case, the existence of legitimate expectations relied on the fact that the measure was modelled on another measure in the same Member State — the Exempt Companies scheme — which constituted existing aid. Similarly, the Orkney and Shetland measures were modelled on each other.
- (217) With regard to the STL, the Commission therefore considers that the general principle of equal treatment is met if, taking into account the specific circumstances of the scheme, the principles of protection of legitimate expectations and legal certainty (see sections 5.6.2 and 5.6.3 below) are respected.

5.6.2. Legitimate expectations

- (218) Legitimate expectations would result from an action by the Commission that provided precise, unconditional and consistent assurances⁽¹¹¹⁾ of such a nature as to give rise to hopes — that are justified⁽¹¹²⁾ — on the part of the authorities or beneficiaries under a scheme that it was lawful⁽¹¹³⁾. According to the case-law, no legitimate expectations can in principle be recognised in the absence of a proper notification⁽¹¹⁴⁾,⁽¹¹⁵⁾, unless exceptional circumstances are identified⁽¹¹⁶⁾.

⁽¹⁰⁹⁾ Coordination Centres (DE); Coordination Centres and Finance Companies (LU); Vizcaya Coordination Centres (ES); Headquarters and International Treasury Pools (FR); Foreign Income (IE); International Financing Activities (NL).

⁽¹¹⁰⁾ Answer given on 12 July 1990 to Written Question No 1735/90 from Mr G. de Vries to the Commission (OJ C 63, 11.3.1991, p. 37).

⁽¹¹¹⁾ Case C 167/06 P *Komninou and others v Commission*, paragraph 63, and Case C-537/08 P *Kahla Thüringen Porzellan v Commission* [2010] ECR I-12917, paragraph 63.

⁽¹¹²⁾ Joined Cases C-182/03 and C-217/03 *Belgium and Forum 187 v Commission* [2006] ECR I 5479, paragraph 147; Case C-167/06 P *Komninou and Others v Commission* [2007] ECR I-141, paragraph 63; Case T-107/02 *GE Betz v OHIM — Atofina Chemicals (BIOMATE)*, [2004] ECR II-1845, paragraph 80, and the case-law cited.

⁽¹¹³⁾ Case C-289/81, *Mavridis v Parliament* [1983] ECR 1731; Case T-290/97, *Mehibas Dordtselaan BV v Commission* [2000] ECR II-15, paragraph 59. See also Case 265/85 [1987] ECR 1155, paragraph 44 and Case C-152/88 *Sofrimport v Commission* [1990] ECR I-153, paragraph 26.

⁽¹¹⁴⁾ Under Article 108(3) TFEU, Member States have an obligation to notify new aid measures to the Commission and to seek its approval before implementing the measure. Chapter II of the Procedural Regulation (OJ L 83, 27.3.1999) lays down detailed rules for the application of Article 107 to notified aid.

⁽¹¹⁵⁾ See Joined Cases C-183/02 P and C-187/02 P *Demesa and Territorio Histórico de Álava v Commission*, [2004] ECR I-10609, paragraphs 44-45 and 52.

⁽¹¹⁶⁾ See Joined Cases T-427/04 and T-17/05 *France v Commission* (France Télécom) [2009] ECR II-4315, paragraph 263.

5.6.2.1. *The 2001 Commission Decision in Brittany Ferries (BAI)*

- (219) The Commission observes that Spain failed to notify the STL to the Commission and that the statement made in its 2001 Decision concerned a different scheme — the predecessor scheme of the one assessed in the *GIE Fiscaux* Decision — and made an explicit reference to the legal system of another Member State. As a consequence, the Commission considers that this statement does not constitute exceptional circumstances and is not sufficient to justify the acknowledgement of legitimate expectations in favour of Spain and third-party operators involved in STL operations. This conclusion is consistent with the approach adopted in the 2006 Commission Decision concerning the *GIE Fiscaux* where the Commission did not identify any element demonstrating the existence of legitimate expectations ⁽¹¹⁷⁾.

5.6.2.2. *The publication of the draft measures in the Official Gazette of the Spanish Parliament*

- (220) The publication of draft measures in the Official Gazette of a Member State's Parliament does not meet the requirement of formal notification and stand-still imposed by this provision of the Treaty. The Commission notes that the early depreciation measure was implemented 21 months after the publication of Regulation (EC) No 659/1999 without prior notification and at the same time as the TT scheme, which was properly notified to — and authorised by — the Commission in accordance with the provisions of the Treaty and the abovementioned Regulation.

5.6.2.3. *The 2001 request for information about a tax leasing scheme*

- (221) The Commission considers that this letter is not liable to have created any justified hopes concerning the STL or the individual measures involved in STL operations.
- (222) In accordance with Article 10(1) and (2) of Regulation (EC) No 659/1999, the Commission analysed the information it had in its possession regarding alleged unlawful aid and, on 21 December 2001, requested information from the Member State. In the first place, the Commission notes that a request for information is not a public document. Second, contrary to what PYMAR claims, this request shows that the Commission did not have the necessary information to identify and assess the alleged unlawful aid. As such, even if it had been made public, it could not have created any legitimate expectation that the scheme did not constitute aid. Third, and most importantly, by letters of 28 January 2002 and 28 May 2002 the Spanish authorities categorically denied that any tax measure was available in support of the acquisition of ships for contracts signed after 31 December 2000.

5.6.2.4. *The 2004 Decision concerning the Dutch notification* ⁽¹¹⁸⁾

- (223) The Commission considers that the 2004 Decision could not have created justified hopes in respect of the STL or the individual measures involved in STL operations for the following reasons:
- (224) First, the subject of the Commission investigation in this case was not a Spanish measure but a scheme notified by the Dutch Government intended to compensate Dutch shipyards or allow them to match offers made in 2000 ⁽¹¹⁹⁾ by Spanish shipyards which allegedly benefited from State aid granted by Spain with respect to six specific shipbuilding contracts. Consequently, the purpose of the 2004 Commission Decision was to provide an assessment of the aid notified by the Netherlands and not of any aid allegedly awarded by Spain.
- (225) Second, the Spanish measure that the Netherlands intended to match was neither the STL nor any of its components. As mentioned in the 2003 Decision to open the formal proceedings in that case, the Dutch authorities clearly invoked aid in the form of interest subsidies on credits allegedly awarded to shipowners under Spanish Royal Decree 442/94 ⁽¹²⁰⁾. Moreover, the Commission notes that both the early depreciation of leased

⁽¹¹⁷⁾ See recital 187 of that Decision.

⁽¹¹⁸⁾ Commission Decision of 30 June 2004 on the State aid which the Netherlands is planning to implement in favour of four shipyards to support six shipbuilding contracts.

⁽¹¹⁹⁾ See Table 2 in recital 9 of Commission Decision of 11 November 2003, OJ C 11, 15.1.2004, p. 7.

⁽¹²⁰⁾ See recital 8 of the abovementioned Commission Decision of 11 November 2003: 'The purpose of the notified aid is to match the interest subsidies allegedly offered by Spain. The Netherlands allege that ... prices quoted by the Spanish yards included interest subsidies for export financing supported by the Spanish authorities, on the basis of the Spanish Royal Decree (RD) 442/94'.

assets and the Spanish TT scheme only entered into force on 1 January 2002. A draft of those measures was only published in the Official Gazette of the Spanish Parliament on 10 October 2001. Therefore, they could not have been used to finance shipbuilding contracts in 2000.

- (226) Third, even if the operators had imagined that the Spanish measure that was intended to be matched was the STL — which is not the case — the statements made in the 2004 Decision could not create any legitimate expectations. Indeed, the Commission stated that it did not have ‘sufficient proof of the alleged Spanish aid’ because Spain had indicated that the aid under Royal Decree 442/94 would no longer be available after 31 December 2000. After that date, the aid would no longer be authorised under the Shipbuilding Regulation ⁽¹²¹⁾. However, the subject of the Commission investigation was the Dutch matching aid, not the alleged Spanish aid and the main doubt raised by the Commission in the decision to open proceedings concerned the possibility under the Framework on State aid to shipbuilding ⁽¹²²⁾ of matching aid — once it had been proven — awarded by another Member State, and not by a non-EU State.
- (227) The absence of proof of the alleged aid came as a secondary argument in the doubts expressed by the Commission. After asking Spain for clarifications based on the information provided by the Netherlands, the Commission could only record the Spanish denial that aid was granted ⁽¹²³⁾ (pursuant to Spanish Royal Decree 442/94) and conclude that the Netherlands had failed to provide sufficient proof of the Spanish aid to be matched. The lack of proof of State aid does not amount to proof of the non-existence of State aid in (any) Spanish measure. On the contrary, the Commission had already clarified in the decision to open proceedings that it had ‘not been able to establish that Spain had illegally granted the alleged aid, but the Commission continues to keep the EU shipbuilding market, and potential State aid violations, under review ⁽¹²⁴⁾.’ Had they considered in good faith that the Spanish aid that the Netherlands intended to match was the STL, the actual or potential recipients of the STL should have been alerted by the fact that Spain had denied its existence rather than pleaded its compatibility.

5.6.2.5. *The 2006 Decision in the French GIE Fiscaux case*

- (228) The Commission considers that neither its decision to open the formal proceedings in the French *GIE Fiscaux* in 2004 nor its 2006 final decision concluding that the scheme was partly incompatible aid can possibly have created any legitimate expectations, as argued by PYMAR.
- (229) Indeed, aid measures must be notified to the Commission. In the absence of a notification, only exceptional circumstances can lead the Member State and operators legitimately to expect that a measure does not constitute aid. However, if the notification and approval procedure was not respected, it cannot legitimately be expected that a measure which amounts to State aid is compatible with the internal market.
- (230) On the contrary, in the French *GIE Fiscaux* Decision of 20 December 2006, the Commission clearly expressed its position that the French tax lease scheme conferred State aid. The fact that the STL was a tax lease scheme similar to the French scheme should have alerted Spain and the recipients to the likelihood that the STL could constitute State aid. Therefore, any legitimate expectations that existed before publication in the *Official Journal of the European Union* on 30 April 2007 of the Decision concerning the French scheme would have ceased being legitimate from that date.
- (231) Similarly, the mere fact that the incompatible aid was not recovered in the French case is insufficient to create legitimate expectations that incompatible aid possibly identified in the Spanish case would not be recovered. Indeed, if there were any reasons to prevent the Commission from requesting the Member State to recover the aid, these would have to be found in the specific circumstances of the case.

⁽¹²¹⁾ OJ L 202, 18.7.1998, p. 1.

⁽¹²²⁾ OJ C 317, 30.12.2003, p. 11.

⁽¹²³⁾ See recital 24 of the abovementioned final Decision of 30 June 2004: ‘In State aid proceedings the Commission has to, in the last analysis, rely on the statements of the Member State supposed to (have) grant(ed) the aid.’

⁽¹²⁴⁾ See recital 14 of the abovementioned Commission Decision of 11 November 2003.

5.6.2.6. *The 2009 letter sent by Commissioner Kroes*

- (232) The Commission considers that the letter sent by Commissioner Kroes could not have created any justified hopes concerning the STL or the individual measures involved in STL operations for the following reasons:
- (233) First of all, this letter is not a formal act representing the position of the Commission — i.e. the College of Commissioners — as would be a formal Commission Decision or the answer to a Parliamentary Question. In her one-page letter, Commissioner Kroes replied, in the context of a bilateral exchange, to a one-page letter sent by Ms Brustad, Norwegian Minister for Trade and Industry. The content of this letter was not made public by the Commission.
- (234) The Commission notes that the letter from the Norwegian shipowner — mentioned in recital 105 above — is addressed to a single Spanish shipyard with which the shipowner is doing business and that the testimony, dated 2012, comes from Gerencia del Sector Naval, a government body. The Commission also notes that neither the Spanish authorities — who knew that the investigation was ongoing — nor the operators considering STL operations asked the Commission to clarify the position expressed in Commissioner Kroes's letter.
- (235) Second, and more importantly, even if that letter was made public in 2009, it did not provide specific, unconditional and concordant assurances that the STL was lawful. Indeed, the answer given by Commissioner Kroes focuses on alleged discriminations between shipyards established in different EEA countries. The conclusion of the letter that no further action was envisaged 'at that stage' was clearly linked to the recent publication of a statement clarifying that the STL could be used for the acquisition of ships produced in other European countries, which directly addressed the concerns expressed by Ms Brustad. In any event, the letter did not even mention, and even less took any position regarding, the presence of State aid at the level of the EIG or its investors. As regards shipping companies, shipyards and intermediaries, the Commission considers that they are not recipients of the aid, so that the issue of legitimate expectations does not arise.
- (236) The Commission therefore considers that the letter did not in any case provide precise, unconditional and consistent assurances liable to create legitimate expectations that the scheme did not contain State aid to the benefit of the EIG or its investors.
- (237) As the Commission did not identify the existence of legitimate expectations on the basis of the letter, the question whether such legitimate expectations would cover the period before the letter is of no relevance whatsoever.

5.6.2.7. *A diligent economic operator could not have foreseen the possible existence of State aid in the joint application of several measures*

- (238) As the individual measures constitute State aid (except for the accelerated depreciation of leased assets), the fact that economic operators could not foresee that their combination could also be regarded as State aid is irrelevant and does not justify the existence of legitimate expectations or the breach of any other fundamental principle of EU law.
- (239) On the contrary, several third parties among the operators involved in STL operations have argued that the 2006 Decision in the French *GIE Fiscaux* case had given them legitimate expectations because the measure was very similar to the STL. The fact that all the features of the French measure were included in one legal provision necessarily implies a global assessment. In that respect, the fact that the different elements of the STL were included in different measures — *de facto* linked and used together — to produce similar effects should not guarantee a different approach and does not rule out a global assessment.

- (240) In any case, the Commission considers that both the early depreciation of leased assets and the tax exemption — pursuant to Article 50(3) RIS — of the capital gains realised under the TT constitute State aid in each case. In the absence of any notification of these provisions, operators could only have legitimate expectations that they were lawful in exceptional circumstances that have not been demonstrated.

5.6.2.8. *The statements concerning depreciation methods in the Commission Notice on direct business taxation* ⁽¹²⁵⁾

- (241) The Commission notes that the wording of the Notice did not provide any grounds for operators to harbour legitimate expectations that the STL was lawful. First, the provisions invoked refer only to depreciation methods so that legitimate expectations, if any, could only cover the early depreciation of leased assets.
- (242) Second, the Notice cannot be interpreted in such a way that any measure related to depreciation falls outside the scope of State aid rules. Indeed, recital 13 of the Notice states that depreciation rules and rules on loss carry-overs do not constitute aid provided that they apply without distinction to all firms and to the production of all goods. The STL is not applicable to all firms or to the production of all goods.
- (243) Moreover, recital 22 of the same Notice clarifies that the level of discretion enjoyed by the tax administration and the room for manoeuvre which it enjoys support the presumption that there is State aid involved. As explained in Section 2.2.2 above, the application of early depreciation is subject to conditions — the wording of which requires interpretation — and prior authorisation by the tax administration. Before granting the authorisation the administration can request additional documents from the applicant or information from other administrations. The fact that additional documents were present in all the application files available to the Commission suggests that they were — explicitly or implicitly — requested by the administration or that the applicants knew that they were necessary to obtain the authorisation. As a consequence, the administration enjoyed wide discretionary powers in the application of this measure.
- (244) Consequently, in view of the characteristics of the scheme, the wording of the Notice could not give rise to uncertainty, even less to legitimate expectations as far as the aid character of the early depreciation is concerned.

5.6.2.9. *Eligibility of the revenues from bareboat chartering for the tonnage tax scheme*

- (245) The authorisation granted by Commission Decision C(2002) 582 final of 27 February 2002 refers to ‘companies registered under Spanish law, whose activity includes the operation of owned and chartered ships’. However, the Commission considers that this sentence cannot create any legitimate expectations that entities whose activities exclusively consist of chartering out one vessel on a bareboat basis would be eligible for the TT scheme. Indeed, as explained in recitals 179 and 180 above, the 2002 Decision is clear that the TT scheme should apply exclusively with respect to qualifying vessels and qualifying maritime transport activities.

5.6.3. **Legal certainty**

- (246) Legal certainty is a fundamental requirement of European law designed to ensure the foreseeability of legal situations and relationships governed by it. According to the case-law, the requirement of legal certainty prevents the Commission from indefinitely delaying the exercise of its powers and it does not imply action by the institution concerned ⁽¹²⁶⁾. However, until now two cumulative elements have been required for that principle to be breached:

— the existence of a body of elements creating a situation of uncertainty concerning the regularity of the measure,

— a prolonged lack of action on the part of the Commission, in spite of its awareness of the aid.

⁽¹²⁵⁾ See Commission Notice on the application of State aid rules to measures related to direct business taxation, OJ C 384, 10.12.1998, p. 3.

⁽¹²⁶⁾ See Joined Cases C-74/00 P and C-75/00 P *Falck and Acciaierie di Bolzano v Commission* [2002] ECR I-7869, paragraph 140.

- (247) The French *GIE Fiscaux* Decision and the *Salzgitter* judgment⁽¹²⁷⁾ are the only two occasions where the Commission and the Court of First Instance, respectively, considered that violation of the principle of legal certainty can prevent recovery even if there are no legitimate expectations. However, the judgment in *Salzgitter* was set aside by the Court of Justice precisely regarding the application of the principle of legal certainty to the case⁽¹²⁸⁾.

5.6.3.1. *Elements that have created a situation of uncertainty concerning the regularity of the measure*

- (248) The STL and the French *GIE Fiscaux* share a number of key characteristics and have very similar effects (see Section 5.6.1 Equal treatment). Both are used in the financing of long-term investment assets. They feature tax-transparent EIGs that depreciate the assets and transfer their ownership to their final user through some type of leasing contract. In both cases, the depreciation is early or accelerated and the capital gains by the EIG are tax exempted. In both cases, the economic advantage resulting from the early or accelerated depreciation and from the exemption of capital gains is shared between the investors in the EIGs and the final user of the asset (through a price rebate), although there are major differences as regards the state intervention in this respect.
- (249) The key measures that form part of the STL system were implemented between 2002⁽¹²⁹⁾ and 2003, i.e. before the Commission decided that the French system constituted State aid.
- (250) In view of the similarity of the STL and the *GIE Fiscaux*, it is therefore possible — as argued by the Spanish authorities and certain third parties — that events invoked in favour of the protection of legal certainty for the French system have also created a situation of uncertainty concerning the regularity of the STL.
- (251) On this point, the Commission concludes that this situation of uncertainty could indeed have been created by the Commission's statement in its 2001 *Brittany Ferries* Decision⁽¹³⁰⁾, to the effect that certain tax advantages were a general measure. As explained in recital 192 of the *GIE Fiscaux* Decision, this statement did not specify that it referred to the predecessor scheme of *GIE Fiscaux*, which may have misled the recipients of that scheme and of a similar scheme, such as STL.
- (252) As for the other elements invoked by Spain and third parties, the Commission has analysed whether the elements invoked to support the existence of legitimate expectations (see Section 5.6.1) could have created a situation of uncertainty.
- (253) First, Member States have an obligation under the Treaty to notify the Commission of their plans to grant new aid. The publication of the draft measures in the Official Gazette of the Spanish Parliament cannot be regarded as a notification to the Commission and the absence of reaction by the Commission cannot have contributed to creating a situation of uncertainty.
- (254) Second, the 2001 request for information concerning a tax leasing measure shows that the Commission reacted to allegations of aid made by a complainant. This request was addressed to Spain and in its replies Spain strongly denied the existence of such measures. The request was not made public by the Commission but if, for any reason, future recipients of the STL happened to find out about this request for information at the time they intended to participate in the scheme, it should have alerted them to the fact that a complaint had been filed with the Commission, which considered that the measures of this scheme could constitute State aid. A request for information would also indicate that the Commission did not have sufficient knowledge of the measure to assess it and would not lead to the conclusion that the Commission approved the measure. Moreover, as this request was sent before the entry into force of the measures making up the STL, Spain could have notified all the elements of the scheme in order to obtaining legal certainty. Alternatively, recipients should have asked Spain — or the Commission — about the notification of the scheme by Spain or its approval by the Commission.

⁽¹²⁷⁾ See Case T-308/00 *Salzgitter v Commission* [2004] ECR II-1933.

⁽¹²⁸⁾ Case C-408/04P *Commission v Salzgitter* [2008] ECR I-2767.

⁽¹²⁹⁾ In practice, the first STL operations appear to have been arranged as of July 2002.

⁽¹³⁰⁾ OJ L 12, 15.1.2002, p. 33.

Consequently, neither Spain nor the operators could argue that this request or — in view of the answer given — the absence of follow-up action from the Commission has contributed to creating a situation of uncertainty.

- (255) Third, as to the 2004 Decision concerning the Dutch compensation measure, the Commission points out that compensation for a different measure from the STL cannot have created a situation of uncertainty with respect to the STL. The fact that a precise description of the alleged Spanish aid in public documents was only provided in the Dutch version of the decision to open the formal investigation procedure is not sufficient to conclude that readers could assume that it concerned the STL. Indeed, a translation of the Dutch decision or an inquiry to the Commission could easily have clarified that the alleged Spanish aid involved interest-rate subsidies on the basis of Royal Decree 442/1994. In addition, the Commission merely mentioned the fact that Spain had denied the existence of the alleged Spanish aid and that the Netherlands had failed to bring sufficient proof. As mentioned in that Decision, the Commission can only trust the Member State and cannot be held responsible for the uncertainty, if any, that the absence of follow-up action on its part could have caused. The Commission therefore finds that the 2004 Decision could not have contributed to a situation of uncertainty regarding the lawfulness of the STL.
- (256) Fourth, the Commission considers that the situation of uncertainty created with respect to the lawfulness of the STL as a result of the statement made in the 2001 Commission Decision concerning Brittany Ferries stopped on the date of publication of the Commission Decision on the French *GIE Fiscaux*. That Decision made it clear that the Commission regarded the French tax lease scheme as State aid and should have alerted Spain and the beneficiaries of the STL to the fact that the scheme could constitute State aid. As a result, it cannot possibly have created — or contributed to — a situation of uncertainty in that respect.
- (257) Fifth, for the reasons set out in Section 5.6.2.6 above, the Commission considers that the letter sent by Commissioner Kroes in 2009 did not create or contribute to creating a situation of uncertainty.

5.6.3.2. Time elapsed between the complaint and the opening of the procedure

- (258) The Commission considers that the time elapsed in the investigation of the STL before initiating the formal investigation procedure should be calculated from 2006 when the Commission received the complaints from European shipyards. Indeed, for the reasons set out above, neither the publication of the draft measures in the Spanish Official Gazette, nor the allegations received by the Commission in 2001 and explicitly denied by Spain in 2002 support the view that the Commission has unduly delayed the exercise of its investigative powers. Nor does the 2004 final Decision in Case C-66/2003, which concerned the matching of a different alleged State aid measure, support this opinion.
- (259) The time that elapsed between the first complaint in 2006 and the opening of the formal procedure in 2011 does not appear excessive given the number of tax measures involved, the complexity of tax lease operations and the lack of transparency concerning these lease operations. In addition, the Commission sent eight formal requests for information between September 2006 and May 2010 ⁽¹³¹⁾ and was regularly in contact with the Spanish authorities.
- (260) Furthermore, it was only in October 2010 that the Commission received a new complaint containing a key element for the assessment of the scheme, namely a comprehensive study by tax experts, describing the functioning of the scheme and its effects. Consequently, the time elapsed in the investigation of the STL does not appear sufficient to invoke legal certainty.
- (261) In view of the complexity of the measures at hand, the Commission cannot rule out that legal uncertainty may have been created by the 2001 Decision on Brittany Ferries, as alleged by Spain and the recipients, regarding the

⁽¹³¹⁾ Eight requests for information were sent to Spain on the following dates: 15.9.2006, 30.1.2007, 6.11.2007, 5.2.2008, 3.3.2008, 23.9.2008, 11.1.2010, 12.5.2010.

classification of the STL as aid. But this can only have been the case until the publication in the Official Journal on 30 April 2007 of the Commission Decision on the French *GIE Fiscaux*, where the Commission established that that scheme constituted State aid.

- (262) As a consequence, the Commission concludes that it should not order the recovery of aid resulting from STL operations in respect of which the aid was granted between the entry into force of the STL in 2002 and 30 April 2007.

5.6.4. Determining the amounts to be recovered

- (263) The Commission has assessed different tax measures which constitute State aid schemes. It is not the purpose of this Decision to establish the precise amounts of aid received by each beneficiary in each of the STL operations. However, the Commission considers that the following methodology should be followed by the Member State in order to determine, on a case-by-case basis, the recipients of aid and the amount of incompatible aid to be recovered from them. This methodology can be further refined in cooperation with the Spanish authorities, in particular in order to establish the actual amount of the tax advantage enjoyed by the investors, in the light of their individual tax situation.
- (264) Step 1: Calculation of the total tax advantage generated by the operation: This is the net present value (NPV) of the tax advantages actually obtained by the EIG or its investors (i.e. before the deduction of the part of those advantages transferred to the shipping company through a price rebate). The NPV should be calculated on the starting date of depreciation — early depreciation as authorised by the tax authorities — and the discount rates used for the purpose of that calculation should be based on market realities. The Commission suggests that, by default, Spain can use calculations provided by EIGs to the tax administration when applying for the early depreciation (see recital 168 above). In principle, the tax advantage is considered granted on the date when the taxes are due by the EIG or its investors.
- (265) Step 2: Calculation of the tax advantage generated by the general tax measures applied to the operation: This is the NPV — calculated in the same way as for step 1 — of the amount of the tax advantages that the EIG or its investors would have obtained in a reference situation in which only the accelerated depreciation measure would have been used from the moment the vessel started to be operated and the operation taxed according to normal corporate tax rules. In this scenario, the capital gain on the sale of the vessel to the shipping company would have been subject, on the date the option is exercised by the shipping company, to the corporate tax generally applicable to corporate profits. In principle, the tax advantage is considered to be obtained on the date when the taxes are due by the EIG or its investors.
- (266) Step 3: Calculation of the tax advantage equivalent to State aid: as the Commission considers accelerated depreciation to be a general measure, the amount of the advantage corresponding to that measure (i.e. the deferred payment of certain amounts of tax) does not constitute State aid. The difference between the amounts obtained in Step 1 and Step 2 should correspond to the aid that the EIG and its investors have received as recipients of the tax measures in question, i.e. the NPV of the total advantage derived from the use of early depreciation, the TT scheme (for which EIGs were not eligible) and the tax exemption of the capital gains achieved through Article 50(3) RIS. In principle, the tax advantage is deemed to be obtained on the date when the taxes are due by the EIG or its investors.
- (267) Step 4: Calculation of the amount of compatible aid: first, the aid received by the EIG or its investors as calculated in step 3 is compatible inasmuch as it corresponds to the advantage transferred to the shipping company which would have been compatible if it had been considered State aid to the shipping company. The percentage of the aid transferred to the shipping company must be determined on the basis of a calculation similar to those submitted by the EIGs in their application to the tax administration (see recital 136 above), and allowing a remuneration in conformity with the market for the intermediation. As explained in recitals 202 to 210 above, part of the advantage transferred to the shipping company can be regarded as compatible if the shipping company, the vessel concerned and its transport activities are eligible under the Maritime Guidelines. The amount compatible should be determined in compliance with Chapter 11 of the Guidelines and taking due account of all aid already granted to that shipping company in the EEA. In particular, the amounts of aid granted in Spain must be added to

those granted in the company's country of establishment (if it is an EEA member). The amount of aid exceeding the ceiling, or not proven to be compatible under Chapter 11 of the Maritime Guidelines, is to be regarded as incompatible.

- (268) As the ceiling in Chapter 11 of the Maritime Guidelines is calculated on an annual basis and the advantage received by the shipping company relates to a long-term asset, the Commission agrees that, for the application of that ceiling, the advantage resulting for the shipping company from the STL operation can be spread over the normal depreciation period (10 years) of the vessel concerned.
- (269) Second, inasmuch as it corresponds to a remuneration in conformity with the market for the intermediation of financial investors in the transfer of a compatible advantage to the shipping companies, this remuneration will also be regarded as compatible or incompatible aid in the same proportion as the advantage channelled to the shipping company (see recital 201 above).

5.6.5. Contractual clauses

- (270) As mentioned above, PYMAR has informed the Commission about certain clauses contained in certain contracts between the investors, the shipping companies and the shipyards. Under such clauses, the shipyards would be required to compensate the other parties if the expected tax advantages cannot be obtained.
- (271) In its final negative decision with partial recovery concerning the French *GIE fiscaux* case⁽¹³²⁾, which bears considerable similarities with the case at hand, the Commission noted that: 'the fact that the legal and tax-related risks incurred by the members of EIGs may, in some cases, have been contractually passed on to the users of the assets cannot negate the principle that the Commission's purpose in demanding, where appropriate, the recovery of unlawful aid is to deprive the various recipients of the advantage they have enjoyed in their respective markets compared with their competitors and to restore the status quo that existed before the aid was granted'. The Commission concluded that: 'the achievement of that purpose cannot depend ... on contractual stipulations agreed upon by the aid recipients'.
- (272) According to well-established case-law, the obligation on a State to abolish aid regarded by the Commission as being incompatible with the internal market has as its purpose to re-establish the previously existing situation⁽¹³³⁾. According to another formula, the main objective pursued in recovering unlawfully paid State aid is to eliminate the distortion of competition caused by the competitive advantage which such aid affords⁽¹³⁴⁾. By repaying the aid, the beneficiary forfeits the advantage which it had over its competitors in the market, and the situation prior to payment of the aid is restored⁽¹³⁵⁾.
- (273) In order to achieve that result, the Commission must have the power to order that recovery takes place from the actual recipients, so that it can fulfil the function of re-establishing the competitive situation in the market(s) where the distortion has occurred. To that effect, the Commission must be able to identify clearly the undertakings that are obliged to repay the unlawful aid that it declares incompatible. This objective would, however, be permanently frustrated if private parties were able, by contractual stipulations, to alter the effects of recovery decisions adopted by the Commission. That possibility, if available, could be used by economic operators enjoying substantial bargaining power to protect themselves from recovery decisions, thereby depriving State aid control of its practical consequences.
- (274) By way of comparison, in its recent *Residex* judgment⁽¹³⁶⁾, the Court of Justice declared that it is for the national court, taking account of all the particular features of the case, to identify the beneficiary or, as the case may be, the recipients of a guarantee constituting State aid and to effect recovery of the total amount of the aid in question. In addition, irrespective of who the beneficiary of the aid may be, and given that the objective of the measures that the national courts are bound to take in the event of infringement of Article 108(3) TFEU is, essentially, to restore the competitive situation existing prior to the payment of the aid in question, those courts must ensure that the

⁽¹³²⁾ See recital 196 of the Decision.

⁽¹³³⁾ See, in particular, Case C-348/93 *Commission v Italy* [1995] ECR I-673, paragraph 26.

⁽¹³⁴⁾ Case C-277/00 *Germany v Commission* [2004] ECR I-3925, paragraph 76.

⁽¹³⁵⁾ Case C-350/93 *Commission v Italy* [1995] ECR I-699, paragraph 22.

⁽¹³⁶⁾ Judgment of 8 December 2011 in Case C-275/10, *Residex Capital IV*, not yet published, paragraphs 43-45.

measures which they take with regard to the validity of the above-mentioned acts make it possible for such an objective to be achieved. This shows that, when it is necessary to remedy the distortion caused by the aid, national courts may intervene and declare that contracts are invalid, even to the detriment of parties that are not recipients of the aid — in this case the lenders whose claims were assisted by the state guarantee. The same reasoning applies *a fortiori* to the Commission when it orders that the aid be effectively recovered from the recipients. In this respect, it should be stressed that the Commission is called upon to take a final decision on the aid measure, rather than ensuring, as national courts must do, that the rights of individuals are safeguarded where the obligation to give prior notification of State aid to the Commission pursuant to Article 108(3) TFEU has been infringed.

- (275) It follows that contractual clauses sheltering the recipients of the aid from recovery of illegal and incompatible aid, by transferring the legal and economic risks of such recovery to other persons, are contrary to the very essence of the system of State aid control established by the Treaty. Such a system is essential for accomplishing the tasks entrusted to the Community and, in particular, for the functioning of the internal market and therefore constitutes a set of rules of public policy ⁽¹³⁷⁾. Therefore, private parties cannot depart from it by contractual stipulations.
- (276) This is all the more true in the situation under scrutiny in the STL system, where some of the shipyards are controlled by the State. To the extent that public shipyards have stipulated the contractual clauses sheltering the recipients from the recovery of aid, their behaviour would prevent the recovery of unlawful and incompatible State aid from fulfilling its function. In addition, the behaviour of state-controlled operators trying to shelter their contractual counterparts from recovery may put considerable pressure on their private competitors who may be induced to accept similar clauses in their contracts, thereby leading to a generalised protection of recipients from recovery.

6. CONCLUSION

The Commission concludes that:

- Pursuant to the Maritime Guidelines and the Decision of 27 February 2002 authorising the Spanish TT system, activities which exclusively consist of leasing, chartering or renting out vessels do not constitute transport services. Consequently, those activities are in principle not eligible for the Spanish TT scheme as authorised by the Commission.
- Articles 115(11) and 48(4) TRLIS and Article 49 RIS (early depreciation of leased assets), the application of the TT system to non-eligible EIGs as well as Article 50(3) RIS constitute State aid within the meaning of Article 107(1) TFEU.
- Those measures are not existing aid within the meaning of Article 1(b) of Regulation (EC) No 659/1999 as they were neither notified nor otherwise authorised by the Commission.
- Spain has unlawfully implemented the aid in question in breach of Article 108(3) of the Treaty on the Functioning of the European Union.
- It follows that the so-called Spanish Tax Lease system, involving the joint use of Articles 115(11) and 48(4) TRLIS and Article 49 RIS (early depreciation of leased assets), the application of the TT system to non-eligible EIGs as well as the use of Article 50(3) RIS, is unlawful.
- Aid to the EIG or its investors can be regarded as compatible with the internal market inasmuch as it corresponds to a remuneration in conformity with the market for the intermediation of financial investors and it is channelled to maritime transport companies that are eligible under the Maritime Guidelines in compliance with the conditions laid down in those Guidelines. This implies, in particular, that the total amount transferred to the shipping companies does not exceed the ceiling imposed by Chapter 11 of the Guidelines.

⁽¹³⁷⁾ See, by analogy, Case C-126/97 *Eco Swiss China Time* [1999] ECR I-3055, paragraphs 36-41.

- The part of the aid which exceeds the amount of compatible aid should be recovered from the recipients, i.e. EIGs and their investors without the possibility for such recipients to transfer the burden of recovery to other persons.
- The Commission should not order the recovery of aid resulting from STL operations in respect of which the aid was granted between the entry into force of the STL in 2002 and 30 April 2007, the date of publication of the Decision concerning Case C-46/2004 *France GIE Fiscaux* (see recital 261 above).
- Beyond that date, ordering the recovery would not breach the general principles of protection of legitimate expectations and legal certainty enshrined in European Union law,

HAS ADOPTED THIS DECISION:

Article 1

The measures resulting from Article 115(11) TRLIS (early depreciation of leased assets), from the application of the tonnage tax scheme to non-eligible undertakings, vessels or activities and from Article 50(3) RIS constitute State aid to the EIGs and their investors, unlawfully put into effect by Spain since 1 January 2002 in breach of Article 108(3) of the Treaty on the Functioning of the European Union.

Article 2

The State aid measures referred to in Article 1 are incompatible with the internal market, except to the extent that the aid corresponds to a remuneration in conformity with the market for the intermediation of financial investors and that it is channelled to maritime transport companies eligible under the Maritime Guidelines in compliance with the conditions imposed in those Guidelines.

Article 3

Spain shall put an end to the aid scheme referred to in Article 1 to the extent that it is incompatible with the common market.

Article 4

1. Spain shall recover the incompatible aid granted under the scheme referred to in Article 1 from the EIG investors that have benefited from it, without the possibility for such recipients to transfer the burden of recovery to other persons. However, no recovery shall take place in respect of aid granted as part of financing operations in respect of which the competent national authorities have undertaken to grant the benefit of the measures by a legally binding act adopted before 30 April 2007.

2. The sums to be recovered shall bear interest from the date on which they were made available to the recipients until their actual recovery.

3. The interest shall be calculated on a compound basis in accordance with Chapter V of Commission Regulation (EC) No 794/2004⁽¹³⁸⁾ and Commission Regulation (EC) No 271/2008⁽¹³⁹⁾ amending Regulation (EC) No 794/2004.

4. Spain shall cancel all outstanding payments of aid under the scheme referred to in Article 1 with effect from the date of adoption of this Decision.

Article 5

1. Recovery of the aid granted under the scheme referred to in Article 1 shall be immediate and effective.

2. Spain shall ensure that this Decision is implemented within four months of the date of notification of this Decision.

⁽¹³⁸⁾ OJ L 140, 30.4.2004, p. 1.

⁽¹³⁹⁾ OJ L 82, 25.3.2008, p. 1.

Article 6

1. Within two months of notification of this Decision, Spain shall submit the following information:
 - (a) the list of recipients that have received aid under the scheme referred to in Article 1 and the total amount of aid received by each of them under the scheme;
 - (b) the total amount (principal and recovery interest) to be recovered from each beneficiary;
 - (c) a detailed description of the measures already taken and planned to comply with this Decision;
 - (d) documents demonstrating that the recipients have been ordered to repay the aid.
2. Spain shall keep the Commission informed of the progress of the national measures taken to implement this Decision until recovery of the aid granted under the scheme referred to in Article 1 has been completed. It shall immediately submit, on simple request by the Commission, information on the measures already taken and planned to comply with this Decision. It shall also provide detailed information concerning the amounts of aid and recovery interest already recovered from the recipients.

Article 7

This Decision is addressed to the Kingdom of Spain.

Done at Brussels, 17 July 2013.

For the Commission
Joaquín ALMUNIA
Vice-President

ANNEX

Information about the amounts of aid received, to be recovered and already recovered

Identity of the beneficiary	Total amount of aid received under the scheme (*)	Total amount of aid to be recovered (*) (Principal)	Total amount already reimbursed (*)	
			Principal	Recovery interest

(*) Million of national currency.

COMMISSION DECISION**of 2 October 2013****on compensation to be paid to Simet SpA for public transport services provided between 1987 and 2003 (state aid measure SA.33037 (2012/C) – Italy)***(notified under document C(2013) 6251)***(Only the Italian text is authentic)****(Text with EEA relevance)**

(2014/201/EU)

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union, and in particular the first subparagraph of Article 108(2) thereof,

Having regard to the Agreement on the European Economic Area, and in particular Article 62(1)(a) thereof,

Having called on interested parties to submit their comments pursuant to the provisions cited above ⁽¹⁾, and having regard to their comments,

Whereas:

1. PROCEDURE

- (1) By electronic notification of 18 May 2011, the Italian authorities notified, in accordance with Article 108(3) of the Treaty, compensation given to Simet SpA ('Simet') for the provision of inter-regional bus transport services under a public service obligation carried out during the period 1987–2003, as ordered by the Council of State (*Consiglio di Stato*), Italy's Supreme Administrative Court ('the notified measure'). This notification was registered under case number SA.33037.
- (2) Further information on the notified measure was provided by the Italian authorities by submissions of 12 July 2011, 5 October 2011, 20 February 2012, 2 and 28 March 2012, and 17 April 2012.
- (3) By letter dated 31 May 2012, the Commission informed Italy that it had decided to initiate the procedure laid down in Article 108(2) of the Treaty ('the opening decision').

The following submissions were received within the accepted deadlines:

- The Italian authorities submitted their observations on the opening decision by letters of 1 June 2012, 24 September 2012 and 11 October 2012.
- The only third party to submit observations in reply to the opening decision was Simet, the potential beneficiary of the notified measure. Its submissions were received on 4 August 2012, 31 October 2012 and 13 December 2012.
- The Italian authorities provided comments on third party submissions by letters of 28 November 2012, 4 December 2012, 19 December 2012 and 10 January 2013.

2. DESCRIPTION OF THE MEASURE**2.1. THE COMPANY AND THE SERVICES PROVIDED**

- (4) Simet is a private company providing scheduled passenger transport services by bus based on concessions granted by the Italian State under Law 1822/39 ⁽²⁾. More specifically, Simet operates a network of inter-regional scheduled bus connections between the Calabria Region and other Italian regions. In addition to these services, which account for approximately two thirds of its revenue, Simet also provides other services, including international travel services, tourism services and bus hire with driver ⁽³⁾, which account for the remaining third of its revenue.

⁽¹⁾ OJ C 216, 21.7.2012, p. 45.

⁽²⁾ Law of 28 September 1939 — Rules governing bus services for passengers, baggage and agricultural packages on the basis of a concession awarded to private industry (rules subsequently replaced by Legislative Decree 285/2005).

⁽³⁾ See <http://ngs.Simetspa.it/portale/azienda/>

- (5) In October 1999 Simet for the first time asked the Ministry for Infrastructure and Transport ('the Ministry') for compensation for its inter-regional bus service with respect to the years starting from 1987 ⁽⁴⁾. The Ministry denied this and subsequent requests, as it considered that it had not entrusted Simet with public service obligations.
- (6) According to the Italian authorities, Simet, like other providers of inter-regional scheduled bus transport services, operated on the basis of provisional licences (concessions) renewed annually at the request of the company. Those concessions gave the company the exclusive right to provide the relevant services. The annual concession specifications stated that delivering the service did not give the company the right to any subsidy or compensation of any kind and that the service was operated entirely at the company's own risk. The fares proposed by the company itself were also reflected in the annual concession specifications accepted by the Ministry.
- (7) Over time, the company submitted a number of requests to change the arrangements for delivery of the services provided, which were usually approved in accordance with the procedure laid down in Presidential Decree 369/94 ⁽⁵⁾. Articles 4 and 5 of Presidential Decree 369/1994 provided for a detailed procedure for the assessment and comparative analysis of applications related to the introduction of any new service on the basis of a concession.

2.2. THE JUDGMENTS OF THE COUNCIL OF STATE PRIOR TO THE OPENING DECISION

- (8) In response to the Ministry's refusal to grant public service compensation for the period starting from 1987, Simet brought a legal action before the Italian administrative courts requesting compensation for the discharge of public service obligations.
- (9) On appeal, in judgment 1405/2010 of 9 March 2010 ('judgment 1405/2010'), the Council of State recognised Simet's right to receive compensation for its scheduled (predominantly inter-regional) bus services, provided under the concessions granted by the Italian State. The precise amount of the compensation was to be determined on the basis of reliable data from the company's accounts.
- (10) As explained in more detail in the opening decision, judgment 1405/2010 does not precisely identify by which legal act the public service obligation was imposed, or in what form. Order 2072 of the Council of State issued on 18 January 2011, following the failure of the administration to comply with judgment 1405/2010, is more explicit in this respect, stating that *'the Ministry has repeatedly denied the company the opportunity to change routes, times and stops and ordered it to keep fares at or below those charged by Ferrovie dello Stato (Italian State Railways) – these are elements that the company believes are indicative of carrying out a public service.'*
- (11) While judgment 1405/2010 does mention the new Regulation (EC) No 1370/2007 of the European Parliament and of the Council ⁽⁶⁾, which governs public service compensation, insofar as it *'lays down compensation criteria which are not dissimilar to those laid down in previous Community regulations'*, the Council of State ordered the responsible authorities to pay compensation to Simet on the basis of Articles 6, 10 and 11 of Council Regulation (EEC) No 1191/69 ⁽⁷⁾.
- (12) The Italian authorities have decided to await the assessment of the notified measure by the Commission before executing the rulings of the Council of State (judgment 1405/2010 and order 2072/2010) and paying Simet the compensation.

⁽⁴⁾ Simet's letter of 22 October 1999, reference 175/99.

⁽⁵⁾ Presidential Decree of 22 April 1994 – Regulations on simplifying the concession procedure for ordinary bus lines under state responsibility.

⁽⁶⁾ Regulation (EC) No 1370/2007 of the European Parliament and of the Council of 23 October 2007 on public passenger transport services by rail and by road and repealing Council Regulations (EEC) Nos 1191/69 and 1107/70 (OJ L 315, 3.12.2007, p. 1).

⁽⁷⁾ Council Regulation (EEC) No 1191/69 of 26 June 1969 on action by Member States concerning the obligations inherent in the concept of a public service in transport by rail, road and inland waterway (OJ L 156, 28.6.1969, p. 1).

2.3. INITIALLY NOTIFIED SUM OF POSSIBLE PUBLIC SERVICE COMPENSATION

- (13) As regards the amount of compensation to be paid to Simet for the services rendered, the Italian authorities submitted a report to the Commission, commissioned by Simet and prepared by an outside consultant ('the initial report'), without endorsing the estimates it contained. The initial report estimated the compensation due at approximately EUR 59,4 million ⁽⁸⁾.
- (14) Subsequently, however, the claims for compensation were reassessed as, following the opening decision, the Council of State asked for an independent evaluation of the appropriate level of compensation. The outcome of that evaluation is discussed in sections 2.6 and 2.7.

2.4. DURATION

- (15) Although SIMET claims compensation for services provided until the end of 2013 ⁽⁹⁾, the Italian authorities consider that the relevant period for the purposes of this notification covers only 1987 to 2003, as judgment 1405/2010 relates only to the appeal covering that period. In particular, point 3.1 of judgment 1405/2010 clearly refers to compensation for the years 1987 to 2003.

2.5. DEVELOPMENTS IN THE NATIONAL COURT PROCEEDINGS FOLLOWING THE OPENING DECISION

- (16) Following the Italian authorities' refusal to execute judgment 1405/2010 and order 2072/2011, the Council of State made a new order, No 270/2012, appointing a panel of independent experts to decide how to enforce judgment 1405/2010.
- (17) The panel, comprising a chairman and two members, was tasked with calculating the amount of compensation payable to Simet under judgment 1405/2010. At the same time the parties to the dispute appointed their own experts, who commented on the preliminary findings of the panel of experts. This led to the exchange of a number of reports and replies over the ensuing months.
- (18) The panel of experts completed its work in August 2012. The panel did not reach a unanimous conclusion. Instead, two separate reports were submitted to the Council of State:
- On 29 August 2012, a minority report signed by the chairman of the panel appointed by the Council of State was submitted, which concluded that there was not enough data available to determine the compensation to be paid to Simet and therefore that no compensation could be awarded.
 - On 20 August 2012, a majority report signed by two of the three experts appointed by the Council of State was submitted, concluding that the compensation payable to Simet amounted to EUR 22 049 796.
- (19) As the state aid procedure is still ongoing before the Commission, the Council of State has not yet adopted a final decision on the amount of compensation payable to Simet.

2.6. THE MINORITY REPORT

- (20) The minority report stresses the following points in particular:
- the lack of reliable data for calculating compensation (required by order 2072/2011 and judgment 1405/2010);
 - the lack of separate accounting required by Regulation (EEC) No 1191/69 as a necessary condition for awarding compensation (in order to prevent overcompensation);

⁽⁸⁾ For each year under review, the annual compensation was the sum of the deficit resulting from operating losses, financial charges and return on equity. The calculation was based on a number of theoretical assumptions, including assumptions on the operating costs related to the inter-regional scheduled bus services in years prior to 2000, as no account separation existed for that period. The required return on equity invested in scheduled bus services was estimated at between 20 % and 36 % for the period 1987 to 2003. As the annual compensation was not paid in the years for which it was calculated, the consultant calculated its net present value (NPV). More details on the methodology used in this initial calculation are available in the opening decision.

⁽⁹⁾ Under Article 9 of Legislative Decree 285/2005, which repealed Law 1822/39, the concessions for scheduled services under Law 1822/1939 can be prolonged until the end of 2013.

- the impossibility of replacing the separate accounting system with other accounting systems, which have not yet been shown to allow accurate identification of all elements of cost and revenue;
- as to the years for which analytical accounting data are available (only two, 2002 and 2003): the documents enclosed with the financial statements (notes to the financial statements and report on operations) make no reference to such data. This would seem to indicate that the analytical accounts were not used by the corporate governance bodies to monitor the company's operations;
- the lack of predetermined parameters for calculating compensation;
- the company's failure to identify precise, specific and unequivocal public service obligations (with reference to the types identified in Union legislation) for individual routes;
- the failure to identify precisely the 'economic disadvantage' arising from such obligations;
- the lack of evidence of the damage incurred by Simet, which had the burden of providing such evidence in the proceedings that led to judgment 1405/10.

- (21) In light of these deficiencies, the minority report concludes that there are no reliable data for calculating the compensation ordered by judgment 1405/2010 and thus that no amount of compensation can be determined.

2.7. THE MAJORITY REPORT

- (22) The majority report uses the following methodology to calculate the compensation due to Simet:

2.7.1. Compensation element based on the difference between operating costs and revenue

2.7.1.1. Method for estimating revenue

- (23) For the years 1987 to 1992 and 2002 to 2003, the experts extrapolated revenue derived from scheduled bus services directly from the financial account statements. For the period 1993-2001 the experts used Simet's documentation on revenue, since the financial account statements for that period do not detail revenue derived from those services ⁽¹⁰⁾. On the basis of these calculations, the total revenue for the period 1987-2003 was found to be EUR 57 213 440.

2.7.1.2. Method for estimating bus service costs

- (24) Since no analytical accounts were available for the period 1987 to 1992, the experts allocated costs to inter-regional scheduled bus services on the basis of the percentage of revenue generated by those same services during that period. The experts took the total amount of costs from each of the annual financial statements. Then, to reconstruct the operating costs, the experts deducted from total costs all the following non-operating costs: interest payable, financial charges, losses on disposal of assets, miscellaneous losses and costs, direct taxes and final inventories. Finally, the operating costs attributable to inter-regional scheduled bus services were determined on the basis of the percentage of revenue generated by the same scheduled bus services.
- (25) For the period 1993 to 2001, Simet changed the presentation of data in its annual financial statements ⁽¹¹⁾. Consequently, for those years the experts deducted from the company's annual financial statements the value of total operating costs, being the algebraic sum of the following production cost items: ancillary and consumable materials, outside services, use of property not owned, personnel costs, amortisation and depreciation, variation in stocks of raw, ancillary and consumable materials, and miscellaneous operating expenses. The operating costs attributable to scheduled bus services were then determined on the basis of the percentage of revenue generated by those same scheduled bus services (as was done for the period 1987-1992). For the years 2000 and 2001, even if some cost accounting was applied, the relevant documents were not exhaustive, which was why it was decided to use the same method for the identification of costs stemming from the scheduled bus service as for the previous years.

⁽¹⁰⁾ Apparently in the light of the amendments to the Fourth Council Directive 78/660/EEC of 25 July 1978 based on Article 54(3)(g) of the Treaty on the annual accounts of certain types of companies (OJ L 222, 14.8.1978, p. 11).

⁽¹¹⁾ See previous footnote.

- (26) For the years 2002 and 2003, cost accounting data were available. The experts therefore divided costs into the following categories: (i) costs related to mileage; (ii) costs directly allocable to scheduled bus services; and (iii) allocable costs based on turnover.

— The first category of costs includes costs related to fuel, engine oil, tyres, spare parts, outside work, vehicle wash, motorway tolls, compulsory vehicle servicing, leasing and depreciation of assets. Each of these cost items was divided by the total number of kilometres travelled and the cost per kilometre was then multiplied by the number of kilometres travelled by scheduled bus services only.

— The second category of costs includes those cost items which, on the basis of the analytical accounts, are directly attributable to inter-regional scheduled bus services. These include: direct employment, waste disposal, commissions payable, miscellaneous charges, parking fees, rental of third-party vehicles for scheduled bus services, purchases for on-board services, and reimbursement of travelling personnel's expenses.

— The third category of costs includes 'indirect costs' and comprises indirect labour costs, overheads, bus insurance, vehicle ownership tax and rent for premises. Those costs were allocated on the basis of the percentage of revenue generated by the same scheduled bus services.

- (27) After adding up the figures thus calculated for each of the above periods, the total costs related to the scheduled bus services for the period 1987-2003 were found to amount to EUR 59 510 413.

- (28) Consequently, after subtracting these costs from the revenues derived from scheduled bus services, the majority report arrives at an operating loss of EUR 2 296 973 for the period 1987-2003.

2.7.2. Compensation element related to the need to ensure remuneration of the capital employed

- (29) For each year under review, the experts determined the capital employed, being the sum of:

— equity (E), whose value was taken from the annual financial statements, considering the shareholder's equity and

— loan capital (D). The experts counted as loan capital only financial debt, i.e. payables to banks and to other lenders.

- (30) The 'Weighted Average Cost of Capital' (WACC) formula is taken as a basis for determining the remuneration rate of the capital employed.

$$WACC = \frac{E}{V} * Re + \frac{D}{V} * Rd * (1 - T_c)$$

Where:

Re = required rate of return on equity;

Rd = cost of debt; E = firm's equity;

D = firm's debt; V = E + D;

E/V = percentage of financing that is equity;

D/V = percentage of financing that is debt;

Tc = corporate tax rate

- (31) The required return on equity was calculated using the 'Capital Asset Pricing Model'. This model describes the relationship between risk and expected return:

$$\bar{r}_a = r_f + \beta_a (\bar{r}_m - r_f)$$

Where:

r_f = Risk free rate

β_a = Beta of the security

$\bar{r}_m$ = Expected market return

- (32) The interest rate for ten-year government bonds, taken from national statistics, was used as a proxy for a risk-free rate (r_f).
- (33) For the years for which compensation was to be assessed, the experts concluded that a 5,8 % risk premium ($r_m - r_f$) was on average asked by investors investing in stocks rather than in risk-free securities on the Italian market ⁽¹²⁾.
- (34) The beta ⁽¹³⁾ of the shares in Simet's capital was calculated by taking an unlevered beta ⁽¹⁴⁾ value of 0,39 for the bus service and transport sector ⁽¹⁵⁾. That beta value was subsequently adjusted relative to the financial structure reported by the company for each year:

$$\text{Levered beta} = \text{Unlevered beta} \times \{1 + [(1 - \text{Tax Rate}) \times (\text{Debt/Equity})]\}$$

- (35) From 1987 to 1994 the Italian corporate tax rate was 36 %, from 1995 to 2000 it was 37 %, and from 2001 to 2002 it was 36 %.
- (36) According to the experts, the remuneration of capital employed provides the compensation that Simet should receive after tax. As the compensation will be taxable, it has to be adjusted as follows:

$$\text{Remuneration before tax} = \text{Remuneration after tax} \div (1 - \text{corporate tax rate})$$

- (37) On the basis of these formulae, the experts calculate that the remuneration due on the capital employed by Simet is EUR 5 948 150.
- (38) Thus, the total amount of compensation calculated by the experts before the application of late payment interest is EUR 8 245 124 (compensation related to the operating loss and remuneration of the capital employed).

2.7.3. Calculation of interest for late payment

- (39) Given that the compensation sums calculated above were not paid in the years for which they were due, the experts revised those sums upwards as follows:
- the sums initially calculated were re-valued based on ISTAT consumer price inflation indices up to July 2012;
 - then statutory interest was applied to the amounts so obtained.
- (40) Thus, the expert panel arrived at a total compensation of EUR 22 049 796.

2.7.4. Other observations included in the majority report

- (41) The majority report takes the view that the compensation awarded by the Council of State does not concern a direct application of Regulation (EEC) No 1191/69, that is a direct award – albeit retroactively – of compensation under that Regulation. Instead, it considers that the Council of State proposed the application of the criteria laid down in that Regulation on the common methods of compensation to ascertain the damage incurred by Simet as a result of the unlawful extension of its public service obligations over time.
- (42) The majority report further notes that in cases where the Commission considered that Regulation (EEC) No 1191/69 did not apply for the purpose of assessing public service compensation, it often approved such compensation by applying by analogy the Community framework for state aid in the form of public service obligations. The main criterion for the Commission was that the amount of compensation did not exceed what was necessary to cover the costs incurred in discharging those obligations. As regards the risk of over-compensation in the present case, the majority report takes the view that since the exercise performed relates to the *ex post* calculation of the costs actually incurred in the past by the company to provide the required scheduled bus services, its calculations are free from the uncertainty inherent in any prognostic assessment when compensation is determined *ex ante*. Consequently, there is no issue of over-compensation.

⁽¹²⁾ This figure was taken from a database compiled by Professor A. Damodaran. See www.damodaran.com

⁽¹³⁾ A measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole.

⁽¹⁴⁾ *Unlevered beta* = beta of the company without any debt.

⁽¹⁵⁾ This figure was taken from a database compiled by Professor A. Damodaran. See www.damodaran.com, 'auto and trucks'.

- (43) The majority report touches upon the issue of the absence of account separation. It takes the view that separate accounting is applied to those undertakings receiving compensation for the provision of a public service in order to prevent the misuse of such funds for the company's other activities. However, since in the case at hand no public resources have thus far been transferred to Simet as compensation for the provision of a public service, the requirement of account separation should not be considered a reason for refusing payment of the compensation awarded by the Council of State.
- (44) The majority report also notes that for the years 2002 and 2003, when analytical accounting was available, the actual operating loss was largely the same as the losses arrived at on the basis of the methodology used for previous years according to which costs were allocated to inter-regional scheduled bus services on the basis of the percentage of revenue generated by those same services (the figures differed by just 2,6 %). Therefore, the experts take the view that the unavailability of analytical accounts for the preceding period should not have any practical significance for awarding compensation.

3. GROUNDS FOR INITIATING THE PROCEDURE

- (45) As explained in the opening decision, the Commission had several doubts regarding the compatibility of the notified measure with the internal market.
- (46) First, the Commission had doubts regarding the classification of the notified measure as a non-aid measure. In particular, the Commission questioned whether the four conditions laid down by the European Court of Justice in its *Altmark* judgment⁽¹⁶⁾ had been fulfilled.
- (47) Second, the Commission raised the question as to the applicable legal framework. As the compensation ordered by the Council of State related to public service obligations allegedly imposed on Simet for the years 1987 to 2003, but not yet paid, the question arose whether Regulation (EEC) No 1191/69 or Regulation (EC) No 1370/2007 was applicable in the present case.
- (48) The Commission considered that Regulation (EEC) No 1191/69 would be applicable in the present case if it could be shown that a public service obligation had in fact been unilaterally imposed on Simet by the Italian authorities and that the compensation proposed complied with all the requirements of that Regulation. That is because, under Article 17(2) of Regulation (EEC) No 1191/69, compensation for public service obligations imposed unilaterally on an undertaking which is paid pursuant to the rules of that Regulation is dispensed from prior notification to the Commission. If, however, neither of these two conditions was shown to have been satisfied, the compatibility of the notified measure would need to be assessed under Regulation (EC) No 1370/2007.
- (49) Third, assuming that the compensation ordered by the Council of State had in fact resulted from the unilateral imposition of public service obligations, the Commission nevertheless had doubts, based on the information available to it, that the compensation complied with the requirements of Regulation (EEC) No 1191/69. The Commission also doubted the appropriateness of applying the common compensation procedure laid down in Regulation (EEC) No 1191/69, applicable to unilaterally imposed public service obligations, for the years after 1992, since, as of July 1992, inter-regional bus services could not have been subject to unilaterally imposed public service obligations⁽¹⁷⁾.
- (50) Fourth, if further investigation confirmed that at least one of the conditions for exemption from notification pursuant to Regulation (EEC) No 1191/69 was not met and an assessment under Regulation (EC) No 1370/2007 had to be conducted, the Commission had doubts whether the conditions of that Regulation were complied with in the present case.
- (51) In any event, regardless of the legal basis applied, the Commission had doubts whether the compensation ordered by the Council of State excluded the possibility of overcompensation. The Commission noted the absence of a proper account separation by Simet until at least 2000⁽¹⁸⁾, and questioned the possibility of precisely establishing *ex post* the costs related to scheduled bus services. It also questioned the appropriateness of the required return on equity used in the calculations for the compensation.

⁽¹⁶⁾ Case C-280/00 *Altmark Trans and Regierungspräsidium Magdeburg* [2003] ECR I-7747.

⁽¹⁷⁾ See Article 1(5) of Regulation (EEC) No 1191/69, as amended by Council Regulation (EEC) No 1893/91 of 20 June 1991 amending Regulation (EEC) No 1191/69 on action by Member States concerning the obligations inherent in the concept of a public service in transport by rail, road and inland waterway (OJ L 169, 29.6.1991, p. 1).

⁽¹⁸⁾ Until 2000, no account separation was implemented at all.

4. COMMENTS FROM ITALY

- (52) In their submissions, the Italian authorities considered that the notified measure constituted state aid within the meaning of Article 107(1) of the Treaty, specifically because it did not satisfy all the conditions laid down by the European Court of Justice in its *Altmark* judgment. The Italian authorities also considered that the compensation awarded by the Council of State neither complied with Regulation (EEC) No 1191/69 nor with Regulation (EC) No 1370/2007.
- (53) The Italian authorities stressed that neither a unilateral nor a contractual imposition of public service obligations existed for inter-regional bus services during the period under review. The legal instruments governing the relationship between the public authority and private companies operating passenger transport services were unilateral concessions on the basis of which the public authority transferred to a private body its own legal right to carry out transport services for undifferentiated customers, originally assigned to the State under Law 1822/39.
- (54) The Italian authorities further recalled that the concession specifications issued by the Ministry at the request of the company clearly stated that the service was operated entirely at the operating company's own risk, except for the guarantee of exclusive rights which existed during the period under review. Operating the service gave rise to no right to receive any kind of subsidy or compensation. Such concessions were of a temporary nature and renewed each year at the company's request. The licences were subject to various changes from one year to the next with regard to routes, stopping points, numbers of departures, etc., in light of specific requests made by the companies.
- (55) Regarding the cap on fares described in the opening decision and existing until 2001, the Italian authorities noted that this cap applied throughout Italy and not just in one specific geographical location. They also noted that, according to Article 2(5) of Regulation (EEC) No 1191/69, this was a measure of price policy, but did not constitute a tariff obligation subject to mandatory compensation within the meaning of that Regulation.
- (56) Furthermore, according to the Italian authorities, as of July 1992 ⁽¹⁹⁾, unilateral public service impositions for inter-regional bus services were not even allowed under Regulation (EEC) No 1191/69. Article 1(5) of that Regulation allows unilateral impositions only for urban, suburban and regional services.
- (57) In any event, the Italian authorities noted that Simet never applied for the termination of public service obligations as required by Article 4 of Regulation (EEC) No 1191/69, which it considers a prerequisite for maintaining that the obligations in question existed. Simet's 1999 request addressed to the Ministry ⁽²⁰⁾ was a generic request for compensation for public service obligations allegedly imposed by the concessions issued from 1987 onwards. The Italian authorities pointed out that that request did not indicate which public service obligations were to be terminated to ensure appropriate profitability of the inter-regional scheduled bus services.
- (58) Consequently, the Italian authorities concluded that Simet had not shown that it took responsibility for public service obligations (as defined in Article 2(2) of Regulation (EEC) No 1191/69) and had, in particular, not shown to which specific and precise obligations to operate or to carry, and to which fare obligations, it had been subject. According to Italy, Simet had demonstrated only that it carried out various universal transport services on the basis of state concessions granted by the responsible authorities, issued at the company's request. The entrusting of universal transport services to Simet did not in itself show that Simet took on any public service obligation within the meaning of Regulation (EEC) No 1191/69.
- (59) The Italian authorities further noted that, for the largest part of the period under review (1987-2001), Simet did not implement proper accounting separation as required by Article 1(5) of Regulation (EEC) No 1191/69 ⁽²¹⁾. It was therefore not possible to calculate the additional net costs resulting from the fulfilment of the public service obligations, which meant that the conditions as laid down in Article 10 of Regulation (EEC) No 1191/69 were not met.
- (60) Finally, the Italian authorities pointed out that the Ministry did not establish any compensation amounts in advance, as required by Article 13 of Regulation (EEC) No 1191/69, since it did not impose any public service obligations on Simet. In the present case, the compensation owed to Simet had been exclusively calculated on the basis of an *ex post* assessment.

⁽¹⁹⁾ Date of entry into force of Regulation (EEC) No 1893/91.

⁽²⁰⁾ Simet's letter of 22 October 1999, reference 175/99.

⁽²¹⁾ There was no account separation at all until 2000.

- (61) The Italian authorities considered that an assessment under Regulation (EC) No 1370/2007 raised largely the same issues as an assessment under Regulation (EEC) No 1191/69 (including absence of a clearly defined public service obligations, absence of the objective compensation parameters decided in advance, absence of account separation, etc.) With regard to the concept of 'reasonable profit', as set out in the Annex to Regulation (EC) No 1370/2007, the Italian authorities considered the rate of return proposed by Simet in the initial report to be inflated for a situation where compensation was determined *ex post* and eliminated the risk of unforeseen costs/losses.
- (62) The Italian authorities fully endorsed the findings of the minority report, which concluded that the amount of the compensation could not be calculated. At the same time, they considered that the majority report contained certain material and methodological errors. For example, the Italian authorities doubted the appropriateness of the assumption-based method used in that report for estimating the net operating costs of the alleged public service obligations. They also contested the fact that that report:
- does not limit the sum of capital employed to the capital attributable to the public service obligations, but takes the entire capital employed for the purposes of calculating the compensation; that is, the capital used for other business activities of the company, such as travel agencies, international services, bus hire with driver, is not excluded from those calculations;
 - includes a risk premium going beyond 100 basis points when determining the required return on capital; this does not appear appropriate for a compensation calculated *ex post*; and
 - does not properly calculate the interest related to the fact that compensation amounts were not paid in the years for which they were determined. The experts appointed by the Council of State applied legal interest on amounts totally re-valued in 2012 and not on the original amounts, as would have been appropriate.

5. COMMENTS FROM THIRD PARTIES

- (63) The only third party to submit observations in response to the opening decision was Simet, the potential beneficiary of the notified measure. In its submissions, Simet disagreed with the preliminary positions taken by the Commission in the opening decision.
- (64) To substantiate its claim that obligations were imposed on it, Simet submitted the concessions awarded to it for the routes covered by the court proceedings. According to Simet, the requirements stipulated in those concessions included, *inter alia*, the fares, stability of the itinerary, stops, frequency and timing of the service. They also included the conditions regulating the transportation of passengers' luggage, and the free carriage of ordinary letters for the postal service and of other mail against payment of the fee laid down by the provisions governing such carriage. Those concessions also required the company to report all interruptions, accidents and changes to the service and contained obligations to issue tickets for the transportation of passengers, luggage and agricultural packages and to keep the relevant records for five years. Also, Simet had to obtain prior authorisation from the Ministry's Provincial Motor Vehicle Offices concerning the type and characteristics of buses to be used for services covered by concessions as well as for providing other services.
- (65) Simet also submitted what it claimed were full or partial refusals of the Ministry to grant changes to the details of the services provided by it. For the period under review, Simet submitted (partial) refusals with respect to ⁽²²⁾:
- applications to operate new stops in addition to those of its existing scheduled services on the Rossano-Naples link (1992), on the Cariatì-Milan link (1995), on the Cosenza-Florence link (1999), on the Cosenza-Florence and Cosenza-Pisa link (2000), and on the San Giovanni-Milan link (2003);
 - an application for authorisation to operate new scheduled services on the Cosenza-Naples link (2000).

⁽²²⁾ The Commission did not analyse other submissions as they do not concern the period covered by the Council of State's decisions.

- (66) Simet considers that these refusals demonstrate the unilateral nature of the imposition of public service obligations by the Italian authorities. Simet further claims that the authorities did not allow for the 'optimisation' of transport links through expansion and diversification of supply. Transport links have in fact been 'frozen' and, therefore, remained tied to ministerial decisions, although formally classified as 'business activity'.
- (67) Simet disagrees with the claim in recital 16 of the opening decision that the fares proposed by the company were reflected in the annual concession specifications. Initially, the fares for long-distance routes had to be similar to those for second-class rail travel. This is supported by the ministerial memo of 19 December 1988 (D.C. III Div 32 No 3846), which states *'whereas many companies with concessions for public bus services have petitioned for fare increases; whereas no general directives on fares have been issued recently; pending new directives [...] [regional offices] may directly authorise concession holders to implement for the services they operate an increase in the fares to align them on the level of prices of the State railway company, Ferrovie dello Stato (FS), for second-class rail travel, plus the 'express' supplement if the services use the motorways [as in the case in question]; ... obviously there should not be any fare increase in cases where the fare level referred to above is already applied.'* According to Simet, these steps demonstrate that it was not allowed to set fares that were higher than the fare for second-class rail travel (i.e. the lowest fare charged by Ferrovie dello Stato). As a result, the company was prevented from obtaining more revenue from its operations due to the State's interest in satisfying essentially public needs and purposes.
- (68) The Ministry's circular No A/7302 of 3 July 1992 stipulated that for that year the fare should be increased by 6,1 % for bus lines under state responsibility. According to Simet, this circular, by which the Ministry authorised fare increases merely to align them with ISTAT figures, confirms that it was impossible for the company to charge the fares it thought appropriate on its own initiative. Simet further notes that the Ministry's circular No 3/02 of 5 April 2002, which lays down how the fares should be converted from lire to euros, states (in point (2) that the fares in question are 'regulated fares and prices'.
- (69) Finally, the concessions issued by the Ministry state that the fare is 'laid down' (*stabilita*), i.e. decisively fixed by the administration. Not being a simple 'authorisation' but a 'concession', the corresponding specifications expressly state that the provision of services is *'governed by the clauses laid down, and those which may be subsequently laid down'* and that *'the administration may withdraw the concession at any time and the operator may make no claim of any kind'*. Point 6 of each of the concession specifications states clearly that the timetables and the fares are to be those approved by the Provincial Motor Vehicle Office of the Ministry. Simet argues that since fixed fares preclude any flexibility in the services that can be offered to users, it was not allowed to react to the demands of the market or its own needs as it saw fit.
- (70) By being obliged to charge the fares imposed upon it, Simet claims it was prevented from implementing pricing policies that would usually be practised by an undertaking in a modern, free and competitive market. On the one hand, Simet stresses that the level of the fares imposed by the Ministry (equivalence to the second-class rail fares charged by Ferrovie dello Stato) were so low that the company was unable to cover the costs of operating the bus services. On the other hand, these measures have enabled the state to provide unjustified support to its rail company, Ferrovie dello Stato, since concession holders of inter-regional bus service such as Simet were prevented from applying fares lower than the fares charged by that company for a second-class ticket with express train supplement. Ferrovie dello Stato was further favoured by the fact that subsidies were refused to Simet and other companies providing similar services.
- (71) In light of the above, Simet considers that the concessions issued by the Ministry and subsequent decisions rejecting the requests for changes to the routes show that those concessions fulfil the criteria of a service contract within the meaning of Article 14 of Regulation (EEC) No 1191/69 in providing for obligations with respect to routes, stops, fares, free carriage of ordinary letters for the postal services and of other mail against payment of the fee laid down by the provisions governing such carriage.

- (72) Even assuming Regulation (EEC) No 1191/69 did not provide for any right to compensation for holders of inter-regional concessions, as argued by the Ministry, Simet contends that this would mean that the service had been liberalised and, as such, the administration could not impose any obligations, in particular those concerning fares, on the undertaking. Simet therefore considers that the Ministry acted in breach of the law and that under national law (i.e. Article 35 of Legislative Decree No 80/1998 applied by the Council of State) compensation for damages is due.
- (73) For Simet, what is at stake is not a case of the type governed by Regulation (EEC) No 1191/69, but a dispute over damages. Simet notes that judgment 1405/2010 recognised Simet's entitlement to damages under Article 35 of Legislative Decree No 80/1998 to compensate for the harm caused by the Ministry's unlawful decisions refusing to abolish the public service obligations imposed on Simet. Those decisions, which breached the right to freedom of enterprise anchored in Article 41 of the Italian Constitution, since they caused material loss to the company in the running of its business activity, therefore had to be deemed unlawful and, as such, entitled the company to repayment of the losses suffered. The Council of State recognised that the Ministry had caused unjustified injury to Simet by obliging it to perform public service obligations in breach of its right to provide a transport service freely and independently.
- (74) If, however, it is assumed that Regulation (EEC) No 1191/69, as amended, allowed the administration to impose public service obligations to meet the needs of the region, Simet considers that the Ministry was obliged to provide for payment to compensate such obligations. According to Simet, Regulation (EEC) No 1191/69 allows service obligations to be imposed to 'meet the transport needs of a region' and not 'in a region' (Article 1(2)).

6. COMMENTS FROM ITALY ON THIRD PARTY COMMENTS

- (75) In their comments on the third party comments, the Italian authorities reiterated their position that no public service obligations within the meaning of Regulation (EEC) No 1191/69 or Regulation (EC) No 1370/2007 existed and that no compensation was due.
- (76) To substantiate their position, the Italian authorities further explained the system which governed the operation of scheduled passenger transport services by bus under Law No 1822/39 ⁽²³⁾ (law applicable during the period under consideration). According to this law, the regulatory framework for scheduled services under state responsibility (also known as 'ordinary scheduled bus services') was as follows:
- i) The service was operated under a system of concessions.
 - ii) Concessions were awarded upon application by the undertakings.
 - iii) No selection procedures for the award of concessions were provided for or carried out.
 - iv) Under the Law, concessions could be temporary or permanent, at the sole discretion of the Ministry, which invariably chose to grant temporary concessions to all undertakings. Consequently, concessions lasted one year and the undertakings (including Simet) applied for renewal of the concession each year.
 - v) The concessions gave operators the exclusive right to operate the service on the route identified in the concession specification.
 - vi) Concession holders were awarded preferential consideration based on the catchment areas served, defined on the basis of the '*finitimità*' criterion, that is, of bus route proximity and economic and functional interconnection (Articles 5 and 6 of Law No 1822/39).
 - vii) Priority was also awarded to existing services. In other words, for reasons of cost-effectiveness, it was considered preferable to adapt existing services rather than set up new services.

⁽²³⁾ Since repealed and replaced by Legislative Decree No 285/2005.

- viii) Furthermore, whenever a concession for new services needed to be issued, the criterion of population size in the catchment area was applied, relative to the total length of the new bus routes. A population size of at least 300 000 residents was considered necessary for services with a total length of up to 500 km. For longer bus routes, a proportional criterion was applied ⁽²⁴⁾.
- (77) Consequently, whenever undertakings lodged applications for a change to an existing service or for an award of a concession for new services, the Ministry had to base its decision on that legal framework.
- (78) Concerning full or partial refusals by the Ministry to grant the changes requested by Simet with respect to the services provided, the Italian authorities noted that these were solely related to the system as governed by Law 1822/39. The Ministry could not agree to grant new concessions to provide new services or to extend the scope of existing concessions (by accepting new stops) in cases where this would have impinged on the rights of other scheduled service operators, as defined in that Law. At the same time, the Ministry accepted the changes which did not contradict the principles laid down in Law 1822/39 ⁽²⁵⁾.
- (79) While acknowledging that Simet was refused authorisation to provide new services or to add additional stops to the existing services on a number of occasions, the Italian authorities contend that Simet's submissions and annexed documents fail to provide evidence of formal requests to change the details of the services provided as laid down in existing concession specifications, followed by refusals. In any event, the Ministry never rejected Simet's requests for the removal of stops in sparsely populated areas or for changes to the timetables.
- (80) Concerning the clauses of the concession specifications on the transportation of postal items, the Italian authorities claim that Simet did not furnish any evidence documenting the services actually provided and the net cost involved. The Italian authorities further noted that Simet produced no documentary evidence that the Ministry rejected its applications for fare changes. Furthermore, Simet never asked for authorisation to reduce fares.
- (81) As regards the memo of the Ministry of Transport of 19 December 1988 (D.C. III Div 32 No 3846) and the subsequent ministerial circular No A/66 of 10 January 1989 (issued by the Ministry's Provincial Motor Vehicle Office of Catanzaro), according to the Italian authorities these documents allowed scheduled service providers to align their fares with the fares of Ferrovie dello Stato and had to be viewed as part of a wider national transport policy and a wider pricing policy. The same should be said of the letter from the Provincial Office of Catanzaro No 7302 of 3 July 1992 (also referred to by Simet) aimed at enabling scheduled bus service operators to raise fares by up to 6,1 % in line with inflation, implementing circular No 801/92 ⁽²⁶⁾. That letter also points out that undertakings could operate under a different fare scheme, provided they submitted a specific application. The Italian authorities note that no such application was ever submitted by Simet. In any event, neither the ministerial memo of 1988 nor the Ministry's 1992 letter constituted a rejection of any application from Simet for termination of a public service obligation relating to fares.
- (82) The Italian authorities also disagree with Simet's contention that point 2 of circular No 3/02 of 5 April 2002 proves that the fares for the scheduled service were set by the Ministry. That circular merely provided instructions for converting fares in lire to euros. The fact that long-distance scheduled transport fares were referred to as being 'regulated' fares does not mean that they were not set by the operators. Rather, this meant that those were fares which were set in advance in the interests of transparency and publicity for passengers and subsequently authorised by the competent ministerial services. Since the service is a scheduled universal service, the details of the services provided, such as routes, bus stops, timetables and fares, must be known in advance, in contrast to occasional services. According to the Italian authorities, the same principle exists at Union level for regular services, which are governed by Regulation (EC) No 1073/2009 of the European Parliament and of the Council ⁽²⁷⁾, according to

⁽²⁴⁾ Article (2)(2)(e) of Presidential Decree No 369 of 22 April 1994.

⁽²⁵⁾ For instance, in 1992 the Ministry accepted that bus stops should be moved for safety reasons on the Rossano-Naples link; and in 2000 the Ministry accepted additional bus stops and route changes to serve new locations on grounds of cost-effectiveness on the Cosenza-Florence and the Cosenza-Pisa link. In addition, the Italian authorities noted that the documentation submitted by Simet showed that in 1992 the Ministry accepted the fare increase it had requested on the Rossano-Naples link.

⁽²⁶⁾ Which set a ceiling on fare increases for ordinary scheduled bus services corresponding to the rate of inflation.

⁽²⁷⁾ Regulation (EC) No 1073/2009 of the European Parliament and of the Council of 21 October 2009 on common rules for access to the international market for coach and bus services, and amending Regulation (EC) No 561/2006 (OJ L 300, 14.11.2009, p. 88).

which fares are an integral part of the authorisations for regular services (Article 6(2) of that Regulation). In light of these advance scheduling requirements, the Italian authorities also contest Simet's interpretation of point No 6 of the concession specifications⁽²⁸⁾, as both Simet's application and the Ministry's concession specification referred to pre-set timetables and fares for the scheduled services.

- (83) As regards the amount of compensation demanded, Simet claimed only '*compensation ... within the limits of the amounts proven to be due*'. According to the Italian authorities, the cost calculations produced over time by Simet are generic, as they cover its entire business activity, and also objectively incorrect and not based on reliable data, given the absence of account separation for the majority of the period under review.
- (84) The Italian authorities consider it entirely irrelevant whether the case in question concerns the award of public service compensation (hence, the direct application of Regulation (EEC) No 1191/69) or the award of damages. Even supposing that the Council of State meant to recognise Simet's entitlement to damages, which according to the Italian authorities is neither a foregone nor an obvious conclusion based on a reading of judgment 1405/2010⁽²⁹⁾, any damage incurred could only arise from the operation of public service obligations. The Italian authorities insist that no such obligations have ever been imposed on Simet.
- (85) Finally, the Italian authorities disagree that compensatory damages are required by Article 41 of the Italian Constitution. The transport of passengers by means of scheduled inter-regional services cannot be considered to have been completely liberalised by a simple and direct application of Article 41 of the Italian Constitution, being first subject to a concession system (regulated by Law No 1822/39 and Presidential Decree 369/94) and subsequently to an authorisation system (regulated by Legislative Decree 285/05).

7. ASSESSMENT OF THE AID

7.1. EXISTENCE OF AID

- (86) Under Article 107(1) of the Treaty, '*any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the provision of certain goods shall, in so far as it affects trade between Member States, be incompatible with the internal market*'.
- (87) For a support measure to be considered state aid within the meaning of Article 107(1), it must fulfil all of the following conditions:
- it must be granted by the state or through state resources,
 - it must confer a selective advantage by favouring certain undertakings or the production of certain goods,
 - it must distort or threaten to distort competition,
 - it must affect trade between Member States.
- (88) The Commission will examine whether each of these conditions has been fulfilled in the present case.

7.1.1. State resources and imputability

- (89) The Commission observes that the judgments of the Council of State require the Ministry to pay compensation to Simet for the provision of inter-regional bus transport services from 1987 to 2003 on routes under state responsibility. The resources from which this compensation would be paid are those available to the Ministry and thus constitute state resources. The decision to pay that compensation, which has been taken by the court, is imputable to the state.

7.1.2. Selective economic advantage

- (90) The Commission notes first and foremost that Simet is engaged in an economic activity, namely passenger transportation against remuneration. Therefore, Simet should be considered an 'undertaking' within the meaning of Article 107(1) of the Treaty.
- (91) The granting of the measure should also be considered selective, since it benefits only Simet.

⁽²⁸⁾ Point 6 of each of the concession specifications states clearly that the timetables and the fares shall be those approved by the Provincial Motor Vehicle Office of the Ministry.

⁽²⁹⁾ Judgment 1405/2010 refers to the right to receive amounts by way of compensation pursuant to Articles 6, 10 and 11 of Regulation (EEC) No 1191/69, which must be determined by the administration on the basis of reliable data (page 21, point 3.3 of the judgment). Furthermore, in point 3.3 the Council of State affirms that it has not assessed damages because: '*No claims for damages put forward by the appellant can be accepted at present, because only when the administration has determined the amount referred to above will it be known whether there is residual damage not covered by the amount assessed, which must be calculated and demonstrated by the company concerned.*'

- (92) As regards the granting of an economic advantage, it follows from the *Altmark* judgment that compensation granted by the state or through state resources to undertakings in consideration for public service obligations imposed on them does not confer such an advantage on the undertakings concerned, and hence does not constitute aid within the meaning of Article 107(1), provided the following four conditions are met ⁽³⁰⁾:
- first, the recipient undertaking must actually be required to discharge public service obligations and those obligations have to be clearly defined;
 - second, the parameters on the basis of which the compensation is calculated must be established beforehand in an objective and transparent manner;
 - third, the compensation must not exceed what is necessary to cover all or part of the costs incurred in discharging the public service obligations, taking into account the relevant receipts and a reasonable profit for discharging those obligations; and
 - fourth, where the undertaking which is to discharge public service obligations is not chosen in a public procurement procedure, the level of compensation needed must have been determined on the basis of an analysis of the costs which a typical undertaking, well run and adequately provided with means of transport so as to be able to meet the necessary public service requirements, would have incurred in discharging those obligations, taking into account the relevant receipts and a reasonable profit for discharging the obligations.
- (93) As regards the second condition, the parameters that serve as the basis for calculating compensation must be established in advance in an objective and transparent manner in order to ensure that they do not confer an economic advantage that could favour the recipient undertaking over competing undertakings. However, the need to establish the compensation parameters in advance does not mean that the compensation has to be calculated on the basis of a specific formula. Rather, what matters is that it is clear from the outset how the compensation is to be determined.
- (94) In the present case, Simet has not provided any evidence to show that the compensation parameters for the provision of the services in question over the period under consideration were ever established in advance in an objective and transparent manner. Rather, the concessions specifications upon which Simet relies to demonstrate that a public service obligation was imposed upon it state that the operation of the services does not give the company any right to a subsidy or compensation of any kind and that the service is operated entirely at the company's own risk. It is for this reason that judgment 1405/2010 of the Council of State ordered that that compensation be calculated on the basis of reliable data from the company's accounts. Any such calculations, in the absence of compensation parameters established in advance, are necessarily based solely on *ex post* estimates of the net costs involved in the provision of the inter-regional scheduled bus services in question, such as the calculations contained in the initial report and the majority report. The second *Altmark* condition has therefore not been met in the present case.
- (95) In order to exclude the presence of an economic advantage where compensation is granted to undertakings in consideration for public service obligations imposed on them, the *Altmark* judgment requires that all four conditions be satisfied, and there is consequently no reason for the Commission to examine whether the other three conditions have been met in the present case. Accordingly, the payment of compensation to Simet for the provision of inter-regional bus transport services for the period 1987-2003 does confer on that undertaking a selective economic advantage.

7.1.3. Distortion of competition and effect on trade between Member States

- (96) As regards these two criteria, it is necessary to verify whether the notified measure is likely to distort competition to the extent that it affects trade between Member States.
- (97) As reflected in the *Altmark* judgment ⁽³¹⁾, since 1995 several Member States have opened certain transport markets to competition from undertakings established in other Member States, so that a number of undertakings are already offering their urban, suburban or regional transport services in Member States other than their state of origin. This tendency is even more pronounced for inter-regional scheduled transport services such as those provided by Simet. Accordingly, any compensation granted to Simet should be considered liable to distort competition for the provision of inter-regional bus transportation services and liable to affect trade between Member States to the extent that it negatively impacts on the ability of transport undertakings established in other Member States to offer their services in Italy and strengthens the market position of Simet.

⁽³⁰⁾ Case C-280/00 *Altmark Trans and Regierungspräsidium Magdeburg* [2003] ECR I-7747, paragraphs 87 and 88.

⁽³¹⁾ Paragraph 79.

- (98) The Commission also notes that Simet is active in other markets, such as international travel services, tourism services and bus rental services, and thus clearly competes with other companies within the Union in those markets. Any compensation granted to Simet would necessarily also distort competition and affect trade between Member States on those markets as well.
- (99) Accordingly, the Commission takes the view that the notified measure is liable to distort competition and affect trade between Member States.

7.1.4. Conclusion

- (100) In light of the above, the Commission finds that the notified measure constitutes state aid within the meaning of Article 107(1) of the Treaty.

7.2. EXEMPTION FROM THE NOTIFICATION OBLIGATION UNDER REGULATION (EEC) NO 1191/69

- (101) According to the reasoning of the Council of State, Simet acquired the right to obtain compensation for the provision of the transport services in question at the point in time at which it carried out those services. For this reasoning to hold, the compensation payments would have to have been exempted from the compulsory notification procedure pursuant to Article 17(2) of Regulation (EEC) No 1191/69: otherwise failure to notify that compensation would have rendered it illegal, as it would have been contrary to the state aid provisions of the Treaty.
- (102) This is because, under Article 17(2) of that Regulation (EEC) No 1191/69, compensation paid pursuant to the Regulation is exempted from the preliminary information procedure laid down in Article 108(3) of the Treaty and thus from prior notification. It follows from the *Combust* judgment that the concept of 'public service compensation' within the meaning of that provision must be interpreted in a very narrow manner⁽³²⁾. The exemption from notification provided by Article 17(2) covers only compensation for public service obligations imposed unilaterally on an undertaking, pursuant to Article 2 of that Regulation, which are calculated using the method described in Articles 10 to 13 of that Regulation (the common compensation procedure), and not to public service contracts as defined by Article 14. Compensation paid pursuant to a public service contract as defined by Article 14 of Regulation (EEC) No 1191/69 which constitutes state aid must be notified to the Commission before it is put into effect. Failure to do so will result in that compensation being deemed illegally implemented aid.
- (103) The question of whether Article 17(2) indeed dispensed the Italian authorities from prior notification in the present case therefore depends, first, on whether a public service obligation was in fact unilaterally imposed on Simet by the Italian authorities and, second, on whether the compensation paid pursuant to that obligation complies with Regulation (EEC) No 1191/69. The Commission will examine both questions in turn.

7.2.1. Did the Italian authorities unilaterally impose a public service obligation on Simet?

- (104) According to Simet⁽³³⁾, the unilateral imposition of a public service obligation upon it can be inferred from the specifications regarding the details of the services to be provided as laid down in the concession specifications issued for each separate inter-regional scheduled bus route, the imposition of fares by the Ministry and the ministerial refusals to accept changes to existing services or to issue new service concessions.
- (105) However, on the basis of the information it has received, the Commission finds that Simet has not convincingly shown that the Italian authorities unilaterally imposed a public service obligation upon it.
- (106) First, Simet's initiative in requesting the renewal of concession specifications for all sixteen years during the period under review cannot be reconciled with the unilateral imposition of a public service obligation. The purpose of those specifications was to provide Simet with the exclusive right to provide the relevant services for the period under review. Despite the fact that each of those specifications stipulated that the operation of the service was not subject to compensation and that the service was operated entirely at the company's own risk, Simet repeatedly requested the prolongation of those rights.

⁽³²⁾ Case T-157/01 *Danske Busvognmænd* [2004] ECR II-917, paragraphs 77 to 79.

⁽³³⁾ See section 5.

- (107) Second, the fact that these specifications stipulated the fares, the routes and the frequency and timing of the services does not necessarily mean that unilateral public service obligations were imposed on Simet as a result of the concessions. Rather, considering that the services provided were regular scheduled services, it was necessary for the concession specifications, which granted Simet an exclusive right to provide those services, to stipulate in advance the details of the services to be provided. No evidence has been provided of formal requests to change those details followed by refusals by the Ministry. Nor has Simet provided evidence to show that these details were unilaterally imposed by the Italian authorities on Simet, rather than proposed by that operator, in return for the right to provide services on an exclusive basis, and subsequently authorised by the Ministry.
- (108) Third, as regards the alleged obligation to transport postal items, Simet has failed to provide any evidence setting out the services actually provided and the net cost involved. Nor has Simet provided evidence that it ever contested the clauses of the concession specifications concerning the transportation of postal items. This could either mean that the provision of those services did not go against the commercial interests of the company or that it considered the provision of those services as a fair remuneration for the right to operate the inter-regional transport services on an exclusive basis.
- (109) Fourth, as regards the fares that Simet could charge to passengers for the services it provided, while the Italian authorities acknowledge that until 2001 there were indeed national provisions setting broad principles for the pricing of bus transport services pricing as part of a wider national transport policy and a wider pricing policy ⁽³⁴⁾, operators could submit a specific application to apply a different fare. This is clearly explained in the ministerial letter that Simet refers to ⁽³⁵⁾. The Commission notes, however, that Simet has provided no evidence that it ever submitted such an application to the Italian authorities, nor that any applications for fare changes during the period 1987-2003 were ever rejected by the Ministry.
- (110) Contrary to Simet's contention, the fact that long-distance scheduled transport fares were 'approved' by the Provincial Motor Vehicle Office of the Ministry ⁽³⁶⁾ and the reference to 'regulated' fares in circular No 3/02 of 5 April 2002 ⁽³⁷⁾ do not mean that those fares were not initially set by the operators. Rather, the use of these terms only means that the fares were set in advance in the interests of transparency and publicity for passengers and subsequently authorised by the competent ministerial services.
- (111) In any event, such measures do not constitute a 'tariff obligation' within the meaning of Article 2(5) of Regulation (EEC) No 1191/69 which would have been subject to the common compensation procedure. The latter is limited to *'any obligation imposed upon transport undertakings to apply, in particular for certain categories of passenger, for certain categories of goods, or on certain routes, rates fixed or approved by any public authority which are contrary to the commercial interests of the undertaking and which result from the imposition of, or refusal to modify, special tariff provisions'*. The definition of tariff obligations *'shall not apply to obligations arising from general measures of price policy applying to the economy as a whole or to measures taken with respect to transport rates and conditions in general with a view to the organisation of the transport market or of part thereof'*.
- (112) Finally, as regards the ministerial refusals submitted by Simet, the Commission observes that these were requests for expansion and did not concern changes in the manner of provision of existing services. An expansion of services was not always possible, because of the way in which the operation of scheduled passenger transport services is regulated under Law No 1822/39. Concessions to provide new services or to extend the scope of existing services could be granted only to the extent they did not impinge on the rights of other scheduled services operators, so that the refusals to start new services or extend existing services were the result of a balancing of interests of different economic operators, rather than the consequence of imposing public service obligations as alleged by Simet.

⁽³⁴⁾ Until the end of 1991, circular 13/74 of 30 April 1974 provided that, normally, the fares of inter-regional scheduled bus services had to be similar to those of second-class rail transportation. Subsequently, between 1992 and 2000, memorandum No 801 of 17 March 1992 stipulated that, normally, fare increases had to be contained within the rate of inflation, which at the time was indicated by the inter-ministerial pricing committee.

⁽³⁵⁾ Letter from the Provincial Office of Catanzaro No A/7302 of 3 July 1992.

⁽³⁶⁾ Point 6 of the concession specifications.

⁽³⁷⁾ Point 2 of circular No 3/02 of 5 April 2002 which gave instructions for converting fares in lire to euros.

- (113) Consequently, Simet has not shown that the Italian authorities unilaterally imposed a public service obligation upon it.

7.2.2. Does the compensation paid pursuant to that obligation comply with Regulation (EEC) No 1191/69?

- (114) In any event, even if a unilateral imposition of public service obligations were shown to exist in some form, the compensation for those services, in order to be exempted from prior notification under Article 17(2) of that Regulation, would still need to comply with the common compensation procedure (Section IV) of Regulation (EEC) No 1191/69. The Commission does not consider this to be the case.
- (115) First, the Commission notes that Article 10 of Regulation (EEC) No 1191/69 provides, inter alia, that the amount of the compensation must, in the case of an obligation to operate or to carry, be equal to the difference between the reduction in financial burden and the reduction in revenue of the undertaking if the whole or the relevant part of the obligation in question were terminated for the period of time under consideration. The Commission further notes that, according to the Court of Justice in the *Antrop* judgment, the requirement set out in that provision is not fulfilled where *'it is not possible to ascertain on the basis of reliable data [from the company's accounts] the difference between the costs imputable to the parts of [its] activities in the areas covered by the respective concessions and the corresponding income and consequently it is not possible to calculate the additional cost deriving from the performance of public service obligations by [that undertaking]'* ⁽³⁸⁾.
- (116) Moreover, as of 1 July 1992, Regulation (EEC) No 1191/69, by virtue of Article 1(5)(a) thereof, requires transport undertakings which operate not only services subject to public service obligations but also engage in other activities to operate the public services as separate divisions, whereby: (i) the operating accounts corresponding to each of those activities are separate and the proportion of the assets pertaining to each is used in accordance with the accounting rules in force, and (ii) expenditure is balanced by operating revenue and payments from public authorities, without any possibility of transfer from or to another sector of the undertaking's activity.
- (117) In the present case, Simet failed to implement a proper account separation for the different services provided by it until 2002 and the robustness of the cost accounts as regards account separation for the years 2002 and 2003 can be called into question since there is no evidence that those cost accounts were used by the company's governance bodies to exercise control over its operations. Article 10 has therefore not been complied with.
- (118) Second, Simet has not demonstrated that *'economic disadvantages ... were determined taking into account the effects of the obligation on the undertaking's activities as a whole'* (Article 5(1) of Regulation (EEC) No 1191/69), nor was the requirement to fix the amount of compensation in advance (Article 13 of the Regulation) fulfilled, as explained in section 7.1.2.
- (119) Finally, the compensation period of the notified measure covers 1987 to 2003. However, the common compensation procedure applied to inter-regional bus services only until July 1992 and was subsequently restricted to *'urban, suburban, or regional passenger transport services'* by Council Regulation (EEC) No 1893/91 ⁽³⁹⁾. The definition of *'regional services'* provided in Regulation (EEC) No 1191/69 (*'transport services operated to meet the transport needs of a region'*) cannot be extended to cover all transport services serving the needs of the population of a region and therefore also to cover inter-regional routes. This is because such a wide interpretation would have rendered the Regulation largely ineffective, as Member States were in any event allowed to exclude its application to undertakings whose activities were confined exclusively to the *'operation of urban, suburban or regional services'* ⁽⁴⁰⁾.
- (120) The Commission therefore finds that the notified compensation does not comply with the common compensation procedure laid down in Regulation (EEC) No 1191/69.

⁽³⁸⁾ Case C-504/07 [2009] ECR I-3867.

⁽³⁹⁾ OJ L 169, 29.6.1991, p. 1.

⁽⁴⁰⁾ Article 1(2) of Regulation (EEC) No 1191/69.

7.2.3. Conclusion on the exemption from notification

- (121) In light of the above, the Commission concludes that the compensation the Council of State considers due to Simet for the provision of inter-regional bus transport services in the period 1987-2003 was not exempted from compulsory prior notification on the basis of Article 17(2) of Regulation (EEC) No 1191/69.

7.3. COMPATIBILITY OF THE AID

- (122) Since it has not been shown that the compensation payments were exempted from prior notification pursuant to Article 17(2) of Regulation (EEC) No 1191/69, the compatibility of those payments with the internal market will need to be examined, as they constitute state aid within the meaning of Article 107(1) TFEU, as explained in section 7.1 above.
- (123) The Commission considers that the examination of the compatibility of the notified measure should be conducted under Regulation (EC) No 1370/2007, which entered into force on 3 December 2009 and repealed Regulation (EEC) No 1191/69, since that is the legislation in force at the time the present decision is being adopted ⁽⁴¹⁾. It notes in this respect that the compensation awarded to Simet by the Council of State has not yet been paid, so that the date on which the effects of the planned aid would occur is the same as that on which the Commission adopts the decision ruling on the compatibility of the aid with the internal market ⁽⁴²⁾. Moreover, it is questionable that an entitlement to that compensation was irrevocably granted to Simet prior to judgment 1405/2010, delivered by the Council of State on 9 March 2010, which effectively obliges the Italian State to make those payments to that undertaking. As explained in (94) above, the concession specifications upon which Simet relies to demonstrate that a public service obligation was imposed upon it stipulate that the operation of the services does not give the company any right to a subsidy or compensation of any kind and that the provision of those services was operated entirely at the company's own risk. Finally, it should be stressed that the amount of the compensation to be paid to Simet has not yet been decided by the Council of State.
- (124) Regulation (EC) No 1370/2007 governs the award of public service contracts, as defined in Article 2(i) thereof, in the field of public passenger transport by road and by rail. Under to Article 9(1) of that Regulation, *'public service compensation for the operation of public passenger transport services ... paid in accordance with this Regulation shall be compatible with the [internal] market. Such compensation shall be exempt from the prior notification requirement laid down in Article [108(3)] of the Treaty.'*
- (125) For the reasons set out below, the Commission considers that the notified compensation does not comply with the conditions of Regulation (EC) No 1370/2007, and so it cannot be declared compatible with the internal market on the basis of Article 9(1) of that Regulation.
- (126) In particular, the Commission notes that even if the concession specifications met the requirements under Article 2(i) of Regulation (EC) No 1370/07 for the definition of a public service contract, not all the provisions of Article 4 of that Regulation, which establishes the mandatory content of public service contracts and general rules, have been complied with. For instance, Article 4(1)(b) requires that the parameters on the basis of which the compensation is calculated be established in advance in an objective and transparent manner in a way that prevents overcompensation, while Article 4(1)(c) and Article 4(2) lay down the arrangements with regard to the allocation of costs and revenues. As explained in relation to the Commission's examination of the second criterion of the *Altmark* judgment in section 7.1.2, the concession specifications at issue stipulated that the operation of the services does not give Simet any right to a subsidy or compensation of any kind and that the service is operated entirely at the company's own risk. Such an exclusion of compensation necessarily entails that the compensation parameters have not been established in advance, so that Article 4 of the Regulation has not been complied with.
- (127) Furthermore, Article 6(1) provides that in the case of directly awarded public service contracts, compensation must comply with the provisions of Regulation (EC) No 1370/2007 and with the provisions laid down in the Annex to ensure that the compensation does not go beyond what is necessary to carry out the public service obligation. That Annex requires, inter alia, a separation of accounts (point (5) and specifies how the maximum amount of compensation should be determined.

⁽⁴¹⁾ The Commission refers in this respect to the reasoning developed in recitals 307 to 313 of its Decision of 24 February 2010 in Case C 41/08 (ex NN 35/08) concerning public transport service contracts between the Danish Ministry of Transport and Danske Statsbaner (OJ L 7, 11.1.2011, p. 1). This decision was annulled by the General Court in Case T-92/11 *Jørgen Andersen v European Commission* [2013], not yet published – which judgment is currently on appeal before the Court of Justice in Case C 303/13. The outcome of the appeal is not relevant for the outcome of the present case, since the General Court confirmed in the judgment under appeal that with regard to aid which has been notified but not paid, the rules, principles and criteria for assessing the compatibility of state aid which are in force at the date on which the Commission takes its decision should be applied (see paragraph 39 of the judgment).

⁽⁴²⁾ Case C-334/07 P *Commission v Freistaat Sachsen* [2008] ECR I-9465, paragraphs 50 to 53; Case T-3/09 *Italy v Commission* [2011] ECR II-95, paragraph 60.

- (128) As noted in recital 115 above, for most of the notified period (between 1987 and 2001), Simet did not apply a proper account separation, while the robustness of the analytical accounts for 2002 and 2003 can also be questioned. Consequently, it is impossible to demonstrate that whatever compensation is ultimately awarded does not exceed an amount corresponding to the net financial effect equivalent to the total of the effects, positive or negative, of compliance with the public service obligation on the costs and revenue of the public service operator (point 2 of the Annex).
- (129) Moreover, in the absence of compensation parameters laid down in advance, any cost allocation must necessarily be conducted *ex post* on the basis of arbitrary assumptions, as was done in both the initial report and the majority report. The Commission cannot accept, however, the assumptions made in the majority report that each service provided by the company should necessarily represent the same proportion of revenues and costs in a given year. Moreover, since an *ex post* calculation will necessarily result in full compensation of the costs incurred in the provision of the service, the Commission considers that a rate of return on equity exceeding the relevant swap rate plus 100 basis points, as employed in both the initial report and the majority report, would normally not be viewed as a suitable reference for calculating the reasonable profit.
- (130) Accordingly, the Commission considers that the compensation ordered by the *Council of State*, which is not provided for in the concession specifications, would not be paid in accordance with the provisions of Regulation (EC) No 1370/2007, and therefore that the notified measure is incompatible with the internal market.
- (131) Finally, as regards Simet's claim that judgment 1405/2010 of the Council of State does not concern an award of public service compensation based on the applicable Council Regulation, but represents an award of damages related to a breach of Regulation (EEC) No 1191/69 which stems from the alleged illegal unilateral imposition of public service obligations under Articles 1(3) and 1(5) of that Regulation, the Commission notes that while no reference to Regulation (EEC) No 1191/69 appears in the operative part of judgment 1405/2010, that judgment does refer to Simet's right to receive amounts by way of compensation pursuant to Articles 6, 10 and 11 of Regulation (EEC) No 1191/69, which must be determined by the administration on the basis of reliable data ⁽⁴³⁾. Furthermore, in judgment 1405/2010, the Council of State itself dismissed Simet's claim for damages, which it understood to cover the residual losses not covered by the compensation to be awarded, and its claim for unjust enrichment, since the main claim for compensation on the basis of Regulation (EEC) No 1191/69 had been accepted ⁽⁴⁴⁾. Thus, in point 3.3 of the judgment the Council of State states that: *'No claims for damages put forward by the appellant can be accepted at present, because only when the administration has determined the amount referred to above will it be known whether there is residual damage not covered by the amount assessed, which must be calculated and demonstrated by the company concerned.'*
- (132) In any event, the Commission considers that an award of damages in favour of Simet for the alleged illegal unilateral imposition of public service obligations by the Italian authorities, calculated on the basis of the common compensation procedure laid down by Regulation (EEC) No 1191/69, would contravene Articles 107 and 108 of the Treaty. This is because such an award would produce the exact same result for Simet as an award of public service compensation for the period under review, despite the fact that the concession specifications governing the services in question were neither exempt from prior notification nor complied with the substantive requirements of Regulation (EEC) No 1191/69 or Regulation (EC) No 1370/2007, as demonstrated above. The availability of such an award would thus effectively enable the circumvention of the state aid rules and the conditions laid down by the Union legislator under which competent authorities, when imposing or contracting for public service obligations, compensate public service operators for costs incurred in return for the discharge of public service obligations. Finally, as previously stated, the concession specifications under which Simet provided the transport services did not provide for payment of any financial compensation. Simet agreed to run the services under the conditions laid down in those concessions at its own risk.
- (133) Accordingly, the Commission cannot accept Simet's claim that judgment 1405/2010 of the Council of State represents an award of damages related to a breach of Regulation (EEC) No 1191/69 rather than an award of public service compensation.

8. CONCLUSION

- (134) In light of the above, the Commission finds that the notified measure constitutes state aid within the meaning of Article 107(1) of the Treaty which is incompatible with the internal market,

⁽⁴³⁾ Point 3.3 of judgment 1405/2010.

⁽⁴⁴⁾ Point 3.4 of judgment 1405/2010.

HAS ADOPTED THIS DECISION:

Article 1

The compensation payments to Simet notified by the Italian authorities constitute state aid within the meaning of Article 107(1) of the Treaty on the Functioning of the European Union. The aid was not exempt from prior notification on the basis of Article 17(2) of Regulation (EEC) No 1191/69.

The aid is not compatible with the internal market, as the conditions of Regulation (EC) No 1370/2007 have not been met. Consequently, the aid may not be implemented by the Italian authorities.

Article 2

This Decision is addressed to the Italian Republic.

Done at Brussels, 2 October 2013.

For the Commission

Joaquín ALMUNIA

Vice-President

COMMISSION DECISION**of 20 March 2014**

determining the European Union position for a decision of the Management entities under the Agreement between the Government of the United States of America and the European Union on the coordination of energy-efficiency labelling programmes for office equipment on adding specifications for computer servers and uninterruptible power supplies to Annex C to the Agreement and on the revision of specifications for displays and imaging equipment included in Annex C to the Agreement

(Text with EEA relevance)**(2014/202/EU)**

THE EUROPEAN COMMISSION,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to Council Decision 2013/107/EU of 13 November 2012 on the signing and conclusion of the Agreement between the Government of the United States of America and the European Union on the coordination of energy-efficiency labelling programmes for office equipment ⁽¹⁾, and in particular Article 4 thereof,

Whereas:

- (1) The Agreement provides for the European Commission, together with the United States Environmental Protection Agency (EPA), to develop and periodically revise common specifications for office equipment specification, thereby amending Annex C to the Agreement.
- (2) The position of the European Union with regard to amendment of the specifications is to be determined by the Commission.
- (3) The measures provided for in this Decision take account of the opinion given by the European Union Energy Star Board referred to in Article 8 of Regulation (EC) No 106/2008 of the European Parliament and of the Council of 15 January 2008 on a Community energy-efficiency labelling programme for office equipment ⁽²⁾ as amended by Regulation (EU) No 174/2013 ⁽³⁾.
- (4) The display specification in Annex C, Part II, and imaging equipment specification in Annex C, Part III, should be repealed and replaced by the specifications annexed to this Decision,

HAS ADOPTED THIS DECISION:

Sole Article

The position to be adopted by the European Union for a decision by the Management Entities under the Agreement between the Government of the United States of America and the European Union on the coordination of energy-efficiency labelling programmes for office equipment on revising the display and imaging equipment specifications in Annex C, Parts II and III, and adding new specifications for computer servers and uninterruptible power supplies, to the Agreement shall be based on the attached draft decision.

⁽¹⁾ OJ L 63, 6.3.2013, p. 5.

⁽²⁾ OJ L 39, 13.2.2008, p. 1.

⁽³⁾ OJ L 63, 6.3.2013, p. 1.

This Decision shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

Done at Brussels, 20 March 2014.

For the Commission
The President
José Manuel BARROSO

ANNEX I

DRAFT DECISION

of ...

of the Management entities under the Agreement between the Government of the United States of America and the European Union on the coordination of energy-efficiency labelling programmes for office equipment on adding specifications for computer servers and uninterruptible power supplies to Annex C to the Agreement and on the revision of specifications for displays and imaging equipment included in Annex C of the Agreement

THE MANAGEMENT ENTITIES,

Having regard to the Agreement between the Government of the United States and the European Union on the coordination of energy-efficiency labelling programmes for office equipment, and in particular Article XII thereof,

Whereas specifications for new products 'computer servers' and 'uninterruptible power supplies' should be added to the Agreement and existing specifications for product type 'imaging equipment' and 'displays' should be revised,

HAVE DECIDED AS FOLLOWS:

Part I 'Displays', Part II 'Uninterruptible Power Supplies', Part III 'Computer Servers' and Part IV 'Imaging Equipment' shall be added to Annex C of the Agreement between the Government of the United States and the European Union on the coordination of energy-efficiency labelling programmes for office equipment as laid down hereafter.

Part II 'Displays' and Part III 'Imaging Equipment' currently included in Annex C of the Agreement between the Government of the United States and the European Union on the coordination of energy-efficiency labelling programmes for office equipment shall be repealed.

The Decision shall enter into force on the twentieth day following its publication. The Decision, done in duplicate, shall be signed by the Co-chairs.

Signed in Washington DC on the [...]

[...]

*on behalf of the United States Environmental
Protection Agency*

Signed in Brussels on the [...]

[...]

on behalf of the European Union

ANNEX II

ANNEX C

PART II TO THE AGREEMENT

I. DISPLAY SPECIFICATIONS

1. **Definitions**

1.1. Product Types

Electronic Display (Display): A commercially-available product with a display screen and associated electronics, often encased in a single housing, that as its primary function displays visual information from (1) a computer, workstation or server via one or more inputs (e.g., VGA, DVI, HDMI, Display Port, IEEE 1394, USB), (2) external storage (e.g., USB flash drive, memorycard), or (3) a network connection.

- (a) Computer Monitor: An electronic device, typically with a diagonal screen size greater than 12 inches and a pixel density greater than 5 000 pixels per square inch (pixels/in²), that displays a computer's user interface and open programs, allowing the user to interact with the computer, typically using a keyboard and mouse.

Enhanced-Performance Display: A computer monitor that has all of the following features and functionalities:

- (i) A contrast ratio of at least 60:1 measured at a horizontal viewing angle of at least 85°, with or without a screen cover glass;
 - (ii) A native resolution greater than or equal to 2,3 megapixels (MP); and,
 - (iii) A colour gamut size of at least sRGB as defined by IEC 619662-1. Shifts in colour space are allowable as long as 99 % or more of defined sRGB colours are supported.
- (b) Digital Picture Frame: An electronic device, typically with a diagonal screen size less than 12 inches, whose primary function is to display digital images. It may also feature a programmable timer, occupancy sensor, audio, video, or bluetooth or wireless connectivity.
- (c) Signage Display: An electronic device typically with a diagonal screen size greater than 12 inches and a pixel density less than or equal to 5 000 pixels/in². It is typically marketed as commercial signage for use in areas where it is intended to be viewed by multiple people in non-desk based environments, such as retail or department stores, restaurants, museums, hotels, outdoor venues, airports, conference rooms or classrooms.

- 1.2. External Power Supply (EPS): Also referred to as an external power adapter. A component contained in a separate physical enclosure external to a display, designed to convert line voltage ac input from the mains to lesser dc voltage(s) in order to provide power to the display. An EPS connects to the display via a removable or hard-wired male/female electrical connection, cable, cord or other wiring.

1.3. Operational Modes:

- (a) On Mode: The power mode in which the product has been activated, and is providing one or more of its principal functions. The common terms, 'active,' 'in-use,' and 'normal operation' also describe this mode. The power in this mode is typically greater than the power in Sleep Mode and Off Mode.
- (b) Sleep Mode: The power mode the product enters after receiving a signal from a connected device or an internal stimulus. The product may also enter this mode by virtue of a signal produced by user input. The product must wake on receiving a signal from a connected device, a network, a remote control, and/or an internal stimulus. While the product is in this mode, it is not producing a visible picture, with the possible exception of user-oriented or protective functions such as product information or status displays, or sensor-based functions.

Notes: 1. Examples of internal stimuli are a timer or occupancy sensor.

2. A power control is not an example of user input.

(c) Off Mode: The power mode in which the product is connected to a power source, and is not providing any On Mode or Sleep Mode functions. This mode may persist for an indefinite time. The product may only exit this mode by direct user actuation of a power switch or control. Some products may not have this mode.

1.4. Luminance: The photometric measure of the luminous intensity per unit area of light travelling in a given direction, expressed in candelas per square meter (cd/m^2). Luminance refers to the brightness settings of a display.

(a) Maximum Reported Luminance: The maximum luminance the display may attain at an On Mode preset setting, and as specified by the manufacturer, for example, in the user manual.

(b) Maximum Measured Luminance: The maximum luminance the display may attain by manually configuring its controls, such as brightness and contrast.

(c) As-shipped Luminance: The luminance of the display at the factory default preset setting the manufacturer selects for normal home or applicable market use. The As-shipped Luminance of displays with Automatic Brightness Control (ABC) enabled by default may vary based on the Ambient Light Conditions of the location in which the display is installed.

1.5. Screen Area: The viewable screen width multiplied by the viewable screen height, expressed in square inches (in^2).

1.6. Automatic Brightness Control (ABC): The self-acting mechanism that controls the brightness of a display as a function of ambient light.

1.7. Ambient Light Conditions: The combination of light illuminances in the environment surrounding a display, such as a living room or an office.

1.8. Bridge Connection: A physical connection between two hub controllers, typically, but not limited to, USB or FireWire, which allows for expansion of ports typically for the purpose of relocating the ports to a more convenient location or increasing the number of available ports.

1.9. Network capability: An ability to obtain an IP address when connected to a network.

1.10. Occupancy Sensor: A device used to detect human presence in front of or in the area surrounding a display. An occupancy sensor is typically used to switch a display between On Mode and Sleep or Off Mode.

1.11. Product Family: A group of displays, made under the same brand, sharing a screen of the same size and resolution, and encased in a single housing that may contain variations in hardware configurations.

Example: Two computer monitors from the same model line with a diagonal screen size of 21 inches and a resolution of 2,074 megapixels (MP), but with variations in features such as built-in speakers or camera, could be qualified as a product family.

1.12. Representative Model: The product configuration that is tested for ENERGY STAR qualification and is intended to be marketed and labelled as ENERGY STAR.

2. **Scope**

2.1. Included Products

2.1.1. Products that meet the definition of a display as specified herein and are powered directly from ac mains, via an external power supply, or via a data or network connection, are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.2.

2.1.2. Typical products that would be eligible for qualification under this specification include:

(a) Computer Monitors

(b) Digital Picture Frames

(c) Signage Displays, and,

(d) Additional products including monitors with keyboard, video and mouse (KVM) switch functionality, and other industry-specific displays that meet the definitions and qualification criteria in this specification.

2.2. Excluded Products

2.2.1. Products that are covered under other ENERGY STAR product specifications are not eligible for qualification under this specification. The list of specifications currently in effect can be found at www.eu-energystar.org.

2.2.2. The following products are not eligible for qualification under this specification:

(a) Products with a viewable diagonal screen size greater than 61 inches;

(b) Products with an integrated television tuner;

(c) Products that are marketed and sold as televisions, including products with a computer input port (e.g., VGA) that are marketed and sold primarily as televisions;

(d) Products that are component televisions. A component television is a product that is composed of two or more separate components (e.g., display device and tuner) that are marketed and sold as a television under a single model or system designation. A component television may have more than one power cord;

(e) Dual-function televisions/computer monitors that are marketed and sold as such;

(f) Mobile computing and communication devices (e.g., tablet computers, slates, electronic readers, smartphones);

(g) Products that must meet specifications for medical devices that prohibit power management capabilities and/or do not have a power state meeting the definition of Sleep Mode; and,

(h) Thin clients, ultra-thin clients, or zero clients.

3. **Qualification Criteria**

3.1. Significant Digits and Rounding

3.1.1. All calculations shall be carried out with directly measured (unrounded) values.

3.1.2. Unless otherwise specified, compliance with specification requirements shall be evaluated using directly measured or calculated values without any benefit from rounding.

- 3.1.3. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification requirements.

3.2. General Requirements

- 3.2.1. External Power Supply: If the product is shipped with an EPS, the EPS shall meet the level V performance requirements under the International Efficiency Marking Protocol, and include the level V marking. Additional information on the Marking Protocol is available at www.energystar.gov/powersupplies

External Power Supplies shall meet level V requirements when tested using the Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies, Aug. 11, 2004

3.2.2. Power Management:

- (a) Products shall offer at least one power management feature that is enabled by default, and that can be used to automatically transition from On Mode to Sleep Mode either by a connected host device or internally (e.g., support for VESA Display Power Management Signalling (DPMS), enabled by default).
- (b) Products that generate content for display from one or more internal sources shall have a sensor or timer enabled by default to automatically engage Sleep or Off Mode.
- (c) For products that have an internal default delay time after which the product transitions from On Mode to Sleep Mode or Off Mode, the delay time shall be reported.
- (d) Computer monitors shall automatically enter Sleep Mode or Off Mode within 15 minutes of being disconnected from a host computer.

3.3. On Mode Requirements

- 3.3.1. On Mode power (P_{ON}), as measured per the ENERGY STAR test method shall be less than or equal to the Maximum On Mode Power Requirement (P_{ON_MAX}), as calculated and rounded per Table 1, below.

If the product's pixel density (D_p), as calculated per Equation 1, is greater than 20 000 pixels/in², then the screen resolution (r) used to calculate P_{ON_MAX} shall be determined per Equation 2.

Equation 1: Calculation of Pixel Density

$$D_p = \frac{r \times 10^6}{A}$$

Where

- D_p is the pixel density of the product rounded to the nearest integer, in pixels/in²,
- r is the screen resolution, in megapixels, and
- A is the viewable screen area, in in².

Equation 2: Calculation of Resolution if the Product's Pixel Density (D_p) Exceeds 20 000 pixels/in²

$$r_1 = \frac{20,000 \times A}{10^6} \qquad r_2 = \frac{(D_p - 20,000) \times A}{10^6}$$

Where:

- r_1 and r_2 are the screen resolutions, in megapixels, to be used when calculating P_{ON_MAX} .

- D_p is the pixel density of the product rounded to the nearest integer, in pixels/in², and
- A is the viewable screen area, in in².

Table 1

Calculation of Maximum On Mode Power Requirements (P_{ON_MAX})

Product Type and Diagonal Screen Size, d (in inches)	where $D_p \leq 20\,000$ pixels/in ² (in watts)	where $D_p > 20\,000$ pixels/in ² (in watts)
	Where: — r = Screen resolution in megapixels — A = Viewable screen area in in ² — The result shall be rounded to the nearest tenth of a watt	Where: — r = Screen resolution in megapixels — A = Viewable screen area in in ² — The result shall be rounded to the nearest tenth of a watt
$d < 12,0$	$(6,0 \times r) + (0,05 \times A) + 3,0$	$((6,0 \times r_1) + (3,0 \times r_2) + (0,05 \times A) + 3,0)$
$12,0 \leq d < 17,0$	$(6,0 \times r) + (0,01 \times A) + 5,5$	$((6,0 \times r_1) + (3,0 \times r_2) + (0,01 \times A) + 5,5)$
$17,0 \leq d < 23,0$	$(6,0 \times r) + (0,25 \times A) + 3,7$	$((6,0 \times r_1) + (3,0 \times r_2) + (0,025 \times A) + 3,7)$
$23,0 \leq d < 25,0$	$(6,0 \times r) + (0,06 \times A) - 4,0$	$((6,0 \times r_1) + (3,0 \times r_2) + (0,06 \times A) - 4,0)$
$25,0 \leq d \leq 61,0$	$(6,0 \times r) + (0,01 \times A) - 14,5$	$((6,0 \times r_1) + (3,0 \times r_2) + (0,1 \times A) - 14,5)$
$30,0 \leq d \leq 61,0$ (for products meeting the definition of a Signage Display only)	$(0,27 \times A) + 8,0$	$(0,27 \times A) + 8,0$

- 3.3.2. For products meeting the definition of an Enhanced-Performance Display, a power allowance (P_{EP}), as calculated per Equation 3, shall be added to P_{ON_MAX} , as calculated per Table 1. In this case, P_{ON} , as measured per the ENERGY STAR test method shall be less than or equal to the sum of P_{ON_MAX} and P_{EP} .

Equation 3: Calculation of On Mode Power Allowance for Enhanced-Performance Displays

$$P_{EP < 27"} = 0,30 \times P_{ON_MAX}$$

$$P_{EP \geq 27"} = 0,75 \times P_{ON_MAX}$$

Where:

- $P_{EP < 27"}$ is the On Mode power allowance, in watts, for an Enhanced-Performance Display with a diagonal screen size less than 27 inches,
- $P_{EP \geq 27"}$ is the On Mode power allowance, in watts, for an Enhanced-Performance Display with a diagonal screen size greater than or equal to 27 inches, and
- P_{ON_MAX} is the maximum On Mode power requirement, in watts.

- 3.3.3. For products with Automatic Brightness Control (ABC) enabled by default, a power allowance (P_{ABC}), as calculated per Equation 5, shall be added to P_{ON_MAX} , as calculated per Table 1, if the On Mode power reduction (R_{ABC}), as calculated per Equation 4, is greater than or equal to 20 %.

- (a) If R_{ABC} is less than 20 %, P_{ABC} shall not be added to P_{ON_MAX} .
- (b) P_{ON} , as measured with ABC disabled per the ENERGY STAR test method shall be less than or equal to P_{ON_MAX} .

Equation 4: Calculation of On Mode Power Reduction for Products with ABC Enabled by Default

$$R_{ABC} = 100 \times \left(\frac{P_{300} - P_{10}}{P_{300}} \right)$$

Where

- R_{ABC} is the On Mode percent power reduction due to ABC,
- P_{300} is the measured On Mode power, in watts, when tested with an ambient light level of 300 lux, and
- P_{10} is the measured On Mode power, in watts, when tested with an ambient light level of 10 lux.

Equation 5: Calculation of On Mode Power Allowance for Products with ABC Enabled by Default

$$P_{ABC} = 0,10 \times P_{ON_MAX}$$

Where:

- P_{ABC} is the On Mode power allowance, in watts, and
- P_{ON_MAX} is the maximum On Mode power requirement, in watts.

- 3.3.4. For products powered with a low-voltage dc source, P_{ON} , as calculated per Equation 6, shall be less than or equal to P_{ON_MAX} , as calculated per Table 1.

Equation 6: Calculation of On Mode Power for Products Powered by a Low-voltage Dc Source

$$P_{ON} = P_L - P_S$$

Where:

- P_{ON} is the calculated On Mode power, in watts,
- P_L is the ac power consumption, in watts, of the low-voltage dc source with the unit under test (UUT) as the load, and
- P_S is the marginal loss of the ac power supply of the source, in watts.

3.4. Sleep Mode Requirements

- 3.4.1. Measured Sleep Mode power (P_{SLEEP}) for products with none of the data or network capabilities included in Table 3 or 4 shall be less than or equal to the Maximum Sleep Mode Power Requirement (P_{SLEEP_MAX}), as specified in Table 2.

Table 2

Maximum Sleep Mode Power Requirement ($P_{\text{SLEEP_MAX}}$)

$P_{\text{SLEEP_MAX}}$ (watts)

0,5

- 3.4.2. Measured Sleep Mode power (P_{SLEEP}) for products with one or more of the data or network capabilities included in Table 3 or 4 shall be less than or equal to the Maximum Data/Networking Sleep Mode Power Requirement ($P_{\text{SLEEP_AP}}$), as calculated per Equation 7.

Equation 7: Calculation of Maximum Data/Networking Sleep Mode Power requirement

$$P_{\text{SLEEP_AP}} = P_{\text{SLEEP_MAX}} + P_{\text{DN}} + P_{\text{ADD}}$$

Where:

- $P_{\text{SLEEP_AP}}$ is the Maximum Sleep Mode Power Requirement, in watts, for products that were tested with additional power-consuming capabilities,
- $P_{\text{SLEEP_MAX}}$ is the Maximum Sleep Mode Power Requirement, in watts, as specified in Table 2,
- P_{DN} is the power allowance, in watts, as specified in Table 3 for data or networking capability connected during Sleep Mode testing, and
- P_{ADD} is the power allowance, in watts, as specified in Table 4 for additional capabilities enabled by default that are active during Sleep Mode testing.

Table 3

Power Allowances in Sleep Mode for Data or Network Capabilities

Capability	Included Types	P_{DN} (watts)
	USB 1.x	0,1
	USB 2.x	0,5
	USB 3.x, DisplayPort (non-video connection), Thunderbolt	0,7
Network	Fast Ethernet	0,2
	Gigabit Ethernet	1,0
	Wi-Fi	2,0

Table 4

Power Allowances in Sleep Mode for Additional Capabilities

Capability	Included Types	P_{ADD} (watts)
Sensor	Occupancy Sensor	0,5
Memory	Flash memory-card/smart-card readers, camera interfaces, PictBridge	0,2

Example 1: A digital picture frame with only one bridging or network capability connected and enabled during Sleep Mode testing, **Wi-Fi**, and no additional capabilities enabled during Sleep Mode testing, would qualify for the 2,0 W Wi-Fi adder. Recalling that $P_{SLEEP_AP} = P_{SLEEP_MAX} + P_{DN} + P_{ADD}$, $P_{SLEEP_AP} = 0,5\text{ W} + 2,0\text{ W} + 0\text{ W} = \mathbf{2,5\text{ W}}$.

Example 2: A computer monitor with **USB 3.x** and **DisplayPort (non-video connection)** bridging capability shall be tested with only the USB 3.x connected and enabled. Assuming no additional capabilities are enabled during Sleep Mode testing, this display would qualify for the 0,7 W USB 3.x adder. Recalling that $P_{SLEEP_AP} = P_{SLEEP_MAX} + P_{DN} + P_{ADD}$, $P_{SLEEP_AP} = 0,5\text{ W} + 0,7\text{ W} + 0\text{ W} = \mathbf{1,2\text{ W}}$.

Example 3: A computer monitor with one bridging and one network capability, **USB 3.x** and **Wi-Fi**, shall be tested with both capabilities connected and enabled during Sleep Mode testing. Assuming no additional capabilities are enabled during Sleep Mode testing, this display would qualify for the 0,7 W USB 3.x adder and the 2,0 W Wi-Fi adder. Recalling that $P_{SLEEP_AP} = P_{SLEEP_MAX} + P_{DN} + P_{ADD}$, $P_{SLEEP_AP} = 0,5\text{ W} + (0,7\text{ W} + 2,0\text{ W}) + 0\text{ W} = \mathbf{3,2\text{ W}}$.

- 3.4.3. For products that offer more than one Sleep Mode (e.g., 'Sleep' and 'Deep Sleep'), measured Sleep Mode power (P_{SLEEP}) in any Sleep Mode shall not exceed P_{SLEEP_MAX} in the case of products without data or networking connection capabilities, or P_{SLEEP_AP} , in the case of products tested with additional power-consuming capabilities, such as data bridge connections or networking connections. If the product has a variety of Sleep Modes that may be manually selected, or if the product can enter Sleep Mode via different methods (e.g., remote control or putting the host PC to sleep), the measured Sleep Mode power (P_{SLEEP}) of the Sleep Mode with the highest P_{SLEEP} , as measured per Section 6.5 of the Test Method, shall be the P_{SLEEP} reported for qualification. If the product automatically transitions through its various Sleep Modes, the average P_{SLEEP} of all Sleep Modes as measured in Section 6.5 of the Test Method shall be the P_{SLEEP} reported for qualification

3.5. Off Mode Requirements

Measured Off Mode power (P_{OFF}) shall be less than or equal to the Maximum Off Mode Power Requirement (P_{OFF_MAX}) specified in Table 5.

Table 5

Maximum Off Mode Power Requirement (P_{OFF_MAX})

P_{OFF_MAX} (watts)
0,5

- 3.6. Maximum reported and maximum measured luminance shall be reported for all products; as shipped luminance shall be reported for all products except those with ABC enabled by default.

4. Test requirements

4.1. Test Methods

For products placed on the market of the European Union manufacturers are required to perform tests and self-certify those models that meet Energy Star guidelines. Test methods identified below shall be used to determine qualification for ENERGY STAR.

Product Type	Test Method
All Product Types and Screen Sizes	ENERGY STAR Test Method for Determining Displays Energy Use Version 6.0 – Rev. Jan-2013

4.2. Number of Units Required for Testing

- 4.2.1. One unit of a Representative Model, as defined in Section 1, shall be selected for testing.

- 4.2.2. For qualification of a product family, the product configuration that represents the worst-case power consumption for each product category within the family shall be considered the Representative Model.

4.3. International Market Qualification

Products shall be tested for qualification at the relevant input voltage/frequency combination for each market in which they will be sold and promoted as ENERGY STAR.

5. **User Interface**

Manufacturers are encouraged to design products in accordance with the user interface standard, *IEEE P1621: Standard for User Interface Elements in Power Control of Electronic Devices Employed in Office/Consumer Environments*. For details, see <http://eetd.LBL.gov/Controls>. In the event that the manufacturer does not adopt *IEEE P1621*, the manufacturer shall provide EPA or the European Commission, as appropriate with its rationale for not doing so.

6. **Effective date**

- 6.1. The date that manufacturers may begin to qualify products as Energy Star under this Version 6.0, will be defined as the effective date of the Agreement. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the date (e.g., month and year) on which a unit is considered to be completely assembled.

- 6.2. Future Specification Revisions: EPA and the European Commission reserve the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note ENERGY STAR qualification is not automatically granted for the life of a model.

7. **Considerations for future revisions**

7.1. Displays Larger Than 61 in Diagonal Screen Size

It is understood that interactive displays greater than 60" in diagonal screen size are currently available in the market and are namely used for commercial and educational purposes. There is interest in better understanding the power consumption associated with these products when tested according to the Displays Test Method and EPA and the European Commission will work with stakeholders prior to, and during, the next specification revision development process to access the information. EPA and the European Commission are in principle interested in exploring expanding the scope of products to those greater than 61" in diagonal screen size in the next specification revision.

7.2. Touch Screen Functionality

EPA and the European Commission are committed to continuing to develop performance levels for displays that account for new features and functionality, and anticipate that displays with touch screen functionality, which are included in the scope of this specification, will become more prevalent in the market, especially among signage displays. Going forward, EPA, DOE and the European Commission will explore with stakeholders whether touch screen functionality impacts On Mode power consumption to determine to what extent the next specification development process should address touch screen functionality.

II. UNINTERRUPTIBLE POWER SUPPLIES SPECIFICATIONS

1. **Definitions**

Unless otherwise specified, all terms used in this document are consistent with the definitions in the International Electrical Commission (IEC) standard IEC 62040-3 ⁽¹⁾.

⁽¹⁾ International Electrotechnical Commission (IEC). IEC standard 62040-3:2011. 'Uninterruptible power systems (UPS) - Part 3: Method of specifying the performance and test requirements.' Ed. 2.0.

For the purpose of this specification the following definitions apply:

Uninterruptible Power Supply (UPS): Combination of convertors, switches, and energy storage devices (such as batteries) constituting a power system for maintaining continuity of load power in case of input power failure ⁽¹⁾.

1.1. Power conversion mechanism:

(a) Static UPS: UPS where solid-state power electronic components provide the output voltage.

(b) Rotary UPS: UPS where one or more electrical rotating machines provide the output voltage.

(1) Rotary UPS (RUPS) without Diesel: A rotary UPS that does not contain an integral diesel engine to supply power to the load during an input power failure.

(2) Diesel-coupled rotary UPS (DRUPS): A rotary UPS that contains an integral diesel engine that may be used to supply power to the load during an input power failure.

(c) Power Output:

(1) Alternating Current (Ac)-output UPS: UPS that supplies power with a continuous flow of electric charge that periodically reverses direction.

(2) Direct Current (Dc)-output UPS/Rectifier: UPS that supplies power with a continuous flow of electric charge that is unidirectional. Includes both individual rectifier units for dc applications and entire dc-output UPS frames or systems, consisting of rectifier modules, controllers, and any other supporting components.

Note: Dc-output UPSs are also known as rectifiers. For the purposes of this document, the term 'Dc-output UPS/Rectifier' is used because a 'rectifier' may also refer to an Ac-output UPS subsystem.

1.2. Modular UPS: A UPS comprised of two or more single UPS units, sharing one or more common frames and a common energy storage system, whose outputs, in Normal Mode of operation, are connected to a common output bus contained entirely within the frame(s). The total quantity of single UPS units in a modular UPS equals 'n + r' where n is the quantity of single UPS units required to support the load; r is the quantity of redundant UPS units. Modular UPSs may be used to provide redundancy, to scale capacity or both.

1.3. Redundancy: Addition of UPS units in a parallel UPS to enhance the continuity of load power, and classified as follows.

(a) N + 0: UPS that cannot tolerate any failures while maintaining Normal Mode operation. No redundancy.

(b) N + 1: Parallel UPS that can tolerate the failure of one UPS unit or one group of UPS units while maintaining Normal Mode operation.

(c) 2N: Parallel UPS that can tolerate the failure of one half of its UPS units while maintaining Normal Mode operation.

⁽¹⁾ 2 Input power failure occurs when voltage and frequency are outside rated steady-state and transient tolerance bands or when distortion or interruptions are outside the limits specified for the UPS.

1.4. UPS Operational Modes:

(a) Normal Mode: Stable mode of operation that the UPS attains under the following conditions:

- (1) Ac input supply is within required tolerances and supplies the UPS.
- (2) The energy storage system remains charged or is under recharge.
- (3) The load is within the specified rating of the UPS.
- (4) The Bypass is available and within specified tolerances (if applicable).

(b) Stored Energy Mode: Stable mode of operation that the UPS attains under the following conditions:

- (1) Ac input power is disconnected or is out of required tolerance.
- (2) All power is derived from the energy storage system or, in the case of a DRUPS, from the integrated Diesel engine or a combination of both.
- (3) The load is within the specified rating of the UPS.

(c) Bypass Mode: Mode of operation that the UPS attains when operating the load supplied via the Bypass only.

1.5. UPS Input Dependency Characteristics:

(a) Voltage and Frequency Dependent (VFD): Capable of protecting the load from power outage ⁽¹⁾.

(b) Voltage Independent (VI): Capable of protecting the load as required for VFD, above, and in addition from:

- (1) Under-voltage applied continuously to the input
- (2) Over-voltage applied continuously to the input ⁽²⁾

(c) Voltage and Frequency Independent (VFI): Independent of voltage and frequency variations and capable of protecting the load against adverse effects from such variations without depleting the stored energy source.

1.6. Single-normal-mode UPS: A UPS that functions in Normal Mode within the parameters of only one set of input dependency characteristics. For example, a UPS that functions only as VFI.

1.7. Multiple-normal-mode UPS: A UPS that functions in Normal Mode within the parameters of more than one set of input dependency characteristics. For example, a UPS that can function as either VFI or VFD.

1.8. Bypass: Power path alternative to the ac converter.

(a) Maintenance Bypass (path): Alternative power path provided to maintain continuity of load power during maintenance activities.

⁽¹⁾ The output of the VFD UPS is dependent on changes in ac input voltage and frequency and is not intended to provide additional corrective functions, such as those arising from the use of tapped transformers.

⁽²⁾ An output voltage tolerance band narrower than input voltage window shall be defined by the manufacturer. The output of the VI UPS is dependent on ac input frequency and the output voltage shall remain within prescribed voltage limits (provided by additional corrective voltage functions, such as those arising from the use of active and/or passive circuits).

- (b) Automatic Bypass: Power path (primary or stand-by) alternative to the indirect ac converter.
 - (1) Mechanical Bypass: control is via a switch with mechanically separable contacts
 - (2) Static Bypass (electronic bypass): control is via an electronic power switch, for example transistors, thyristors, triacs or other semiconductor device or devices.
 - (3) Hybrid Bypass: control is via switch with mechanically separable contacts in combination with at least one controlled electronic valve device.
- 1.9. Reference Test Load: Load or condition in which the output of the UPS delivers the active power (W) for which the UPS is rated ⁽¹⁾.
- 1.10. Unit Under Test (UUT): The UPS undergoing the test, configured as though for shipment to the customer, and including any accessories (e.g., filters or transformers) necessary to meet the test setup as specified in Section 3 of the ENERGY STAR Test Method.
- 1.11. Power Factor: Ratio of the absolute value of active power P to the apparent power S.
- 1.12. Product Family: A group of product models that are (1) made by the same manufacturer, (2) subject to the same ENERGY STAR qualification criteria, and (3) of a common basic design. For UPSs, acceptable variations within a product family include:
 - (a) Number of installed modules;
 - (b) Redundancy;
 - (c) Type and quantity of input and output filters;
 - (d) Number of rectifier pulses ⁽²⁾; and
 - (e) Energy storage system capacity.
- 1.13. Abbreviations:
 - (a) A: Ampere
 - (b) ac: Alternating Current
 - (c) dc: Direct Current
 - (d) DRUPS: Diesel coupled rotary UPS
 - (e) RUPS: Rotary UPS
 - (f) THD: Total Harmonic Distortion
 - (g) UPS: Uninterruptible Power Supply

⁽¹⁾ This definition permits the UPS output greater than 100 000 W to be backfed into the input ac supply when in test-mode and subject to local regulations.

⁽²⁾ Pulses are the waveform peaks produced by a rectifier per cycle and depend on its design and the number of input phases.

- (h) UUT: Unit Under Test
- (i) V: Volt
- (j) VFD: Voltage and Frequency Dependent
- (k) VFI: Voltage and Frequency Independent
- (l) VI: Voltage Independent
- (m) W: Watt
- (n) Wh: Watt-hour

2. Scope

2.1. Products that meet the definition of an Uninterruptible Power Supply (UPS) as specified herein including Static and Rotary UPSs and Ac-output UPSs and Dc-output UPSs/Rectifiers are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.3.

2.2. Products eligible for qualification under this specification include:

- (a) Consumer UPSs intended to protect desktop computers and related peripherals, and/or home entertainment devices such as TVs, set top boxes, DVRs, Blu-ray and DVD players;
- (b) Commercial UPSs intended to protect small business and branch office information and communication technology equipment such as servers, network switches and routers, and small storage arrays;
- (c) Data Center UPSs intended to protect large installations of information and communication technology equipment such as enterprise servers, networking equipment, and large storage arrays; and,
- (d) Telecommunications Dc-output UPSs/Rectifiers intended to protect telecommunication network systems located within a central office or at a remote wireless/cellular site.

2.3. Excluded Products

2.3.1. Products that are covered under other ENERGY STAR product specifications are not eligible for qualification under this specification. The list of specifications currently in effect can be found at www.eu-energystar.org.

2.3.2. The following products are not eligible for qualification under this specification:

- (a) Products that are internal to a computer or another end-use load (e.g., battery supplemented internal power supplies or battery backup for modems, security systems, etc.);
- (b) Industrial UPSs specifically designed to protect critical control, manufacturing, or production processes or operations;
- (c) Utility UPSs designed for use as part of electrical transmission and distribution systems (e.g. electrical substation or neighbourhood-level UPSs);
- (d) Cable TV (CATV) UPSs designed to power the cable signal distribution system outside plant equipment and connected directly or indirectly to the cable itself. The 'cable' may be coaxial cable (metallic wire), fibre-optic, or wireless (e.g., 'Wi-Fi');

- (e) UPSs designed to comply with specific UL safety standards for safety-related applications, such as emergency lighting, operations or egress, or medical diagnostic equipment; and,
- (f) UPSs designed for mobile, shipboard, marine or airborne applications.

3. Qualification Criteria

3.1. Significant Digits and Rounding

- 3.1.1. All calculations shall be carried out with directly measured (unrounded) values.
- 3.1.2. Unless otherwise specified, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.
- 3.1.3. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.
- 3.2. Energy Efficiency Requirements for Ac output UPSs
- 3.2.1. Single-normal-mode UPSs: Average loading-adjusted efficiency (Eff_{AVG}), as calculated per Equation 1, shall be greater than or equal to the Minimum Average Efficiency Requirement (Eff_{AVG_MIN}), as determined per Table 2, for the specified rated output power and input dependency characteristic, except as specified below.

For products with rated output power greater than 10 000 W and communication and measurement capability, as specified in Section 3.6, average loading-adjusted efficiency (Eff_{AVG}), as calculated per Equation 1, shall be greater than or equal to the Minimum Average Efficiency Requirement (Eff_{AVG_MIN}), as determined per Table 3, for the specified input dependency characteristic.

Equation 1: Calculation of Average Efficiency for Ac-output UPSs

$$Eff_{AVG} = t_{25\%} \times Eff|_{25\%} + t_{50\%} \times Eff|_{50\%} + t_{75\%} \times Eff|_{75\%} + t_{100\%} \times Eff|_{100\%}$$

Where:

- Eff_{AVG} is the average loading-adjusted efficiency,
- $t_n\%$ is the proportion of time spent at the particular $n\%$ of the Reference Test Load, as specified in the loading assumptions in Table 1, and
- $Eff|_n\%$ is the efficiency at the particular $n\%$ of the Reference Test Load, as measured according to the ENERGY STAR Test Method.

Table 1

Ac-output UPS Loading Assumptions for Calculating Average Efficiency

Rated Output Power, P, in watts (W)	Input Dependency Characteristic	Proportion of Time Spent at Specified Proportion of Reference Test Load, $t_n\%$			
		25 %	50 %	75 %	100 %
$P \leq 1\,500\text{ W}$	VFD	0,2	0,2	0,3	0,3
	VFD	0	0,3	0,4	0,3
$1\,500\text{ W} < P \leq 10\,000\text{ W}$	VFD, VI, or VFI	0	0,3	0,4	0,3
$P > 10\,000\text{ W}$	VFD, VI, or VFI	0,25	0,5	0,25	0

Table 2

Ac-output UPS Minimum Average Efficiency Requirement

Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), where:

- P is the Rated Output Power in watts (W), and
- ln is the natural logarithm.

Rated Output Power	Input Dependency Characteristic		
	VFD	VI	VFI
$P \leq 1\,500\text{ W}$	0,967		$0,0099 \times \ln(P) + 0,815$
$1\,500\text{ W} < P \leq 10\,000\text{ W}$	0,970	0,967	
$P > 10\,000\text{ W}$	0,970	0,950	$0,0099 \times \ln(P) + 0,805$

Table 3

Ac-output UPS Minimum Average Efficiency Requirement for Products with Metering and Communications Capability

Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), where:

- P is the Rated Output Power in watts (W), and
- ln is the natural logarithm.

Rated Output Power	Input Dependency Characteristic		
	VFD	VI	VFI
$P > 10\,000\text{ W}$	0,960	0,940	$0,0099 \times \ln(P) + 0,795$

3.2.2. Multiple-normal-mode UPSs that Do Not Ship with the Highest Input Dependency Mode Enabled by Default: If the Multiple-normal-mode UPS does not ship with its highest input dependency mode enabled by default, its average loading-adjusted efficiency (Eff_{AVG}), as calculated per Equation 1, shall be greater than or equal to:

(a) The Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), as determined per Table 2, for the rated output power and lowest input dependency mode provided by the UPS, for models with output power less than or equal to 10 000 W or no communication and measurement capability as specified in Section 3.6; or

(b) The Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), as determined per Table 3, for the rated output power and lowest input dependency mode provided by the UPS, for models with output power greater than 10 000 W and communication and measurement capability as specified in Section 3.6.

3.2.3. Multiple-normal-mode UPSs that Ship with the Highest Input Dependency Mode Enabled by Default: If the Multiple-normal-mode UPS does ship with its highest input dependency mode enabled by default, its average loading-adjusted efficiency (Eff_{AVG}), as calculated per Equation 2, shall be greater than or equal to:

(a) The Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), as determined per Table 2, for the rated output power and lowest input dependency mode provided by the UPS, for models with output power less than or equal to 10 000 W or no communication and measurement capability as specified in Section 3.6; or

- (b) The Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), as determined per Table 3, for the rated output power and lowest input dependency mode provided by the UPS, for models with output power greater than 10 000 W and communication and measurement capability as specified in Section 3.6.

Equation 2: Calculation of Average Efficiency for Multiple-normal-mode Ac-output UPSs

$$\text{Eff}_{\text{AVG}} = 0,75 \times \text{Eff}_1 + 0,25 \times \text{Eff}_2$$

Where:

- Eff_{AVG} is the average loading adjusted efficiency,
- Eff_1 is the average loading adjusted efficiency in the lowest input dependency mode (i.e., VFI or VI), as calculated per Equation 1, and
- Eff_2 is the average loading adjusted efficiency in the highest input dependency mode (i.e., VFD), as calculated per Equation 1.

3.3. Energy Efficiency Requirements for Dc-output UPSs/Rectifiers

Average loading-adjusted efficiency (Eff_{AVG}), as calculated per Equation 3, shall be greater than or equal to the Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), as determined per Table 4. This requirement shall apply to complete systems and/or individual modules. Manufacturers can qualify either, subject to the following requirements:

- (a) Complete systems that are also modular shall be qualified as Modular UPS Product Families with a particular model of module installed,
- (b) Qualification of individual modules will have no bearing on the qualification of modular systems unless the entire systems are also qualified as specified above.
- (c) For products with rated output power greater than 10 000 W and communication and measurement capability, as specified in Section 3.6, average loading-adjusted efficiency (Eff_{AVG}), as calculated per Equation 3, shall be greater than or equal to the Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$), as determined per Table 5.

Equation 3: Calculation of Average Efficiency for All Dc-output UPSs

$$\text{Eff}_{\text{AVG}} = \frac{\text{Eff}|30\% + \text{Eff}|40\% + \text{Eff}|50\% + \text{Eff}|60\% + \text{Eff}|70\% + \text{Eff}|80\%}{6}$$

Table 4

Dc-output UPS/Rectifier Minimum Average Efficiency Requirement

Minimum Average Efficiency
Requirement ($\text{Eff}_{\text{AVG_MIN}}$)
0,955

Table 5

Dc-output UPS/Rectifier Minimum Average Efficiency Requirement for Products with Metering and Communications Capability

Rated Output Power	Minimum Average Efficiency Requirement ($\text{Eff}_{\text{AVG_MIN}}$)
$P > 10\,000\text{ W}$	0,945

3.4. Power Factor Requirements

The measured input power factor of all Ac-output UPSs at 100 percent of the Reference Test Load shall be greater than or equal to the Minimum Power Factor Requirement specified in Table 6 for all VFI and VI Normal Modes required for qualification.

Table 6

UPS Minimum Input Power Factor Requirement for Ac-output UPSs

Minimum Power Factor Requirement
0,90

3.5. Standard Information Reporting Requirements

3.5.1. Data for a standardized Power and Performance Data Sheet (PPDS) shall be submitted to EPA and/or the European Commission for each model or Product Family.

3.5.2. Further details on the PPDS can be found on the ENERGY STAR web page for UPS at www.energystar.gov/products.

The PPDS contains the following information:

- (a) General characteristics (manufacturer, model name and number);
- (b) Electrical characteristics (power conversion mechanism, topology, input and output voltage and frequency);
- (c) Average efficiency used for qualification;
- (d) Efficiency at each loading point and power factor test results, in each applicable Normal Mode, and for both the tested maximum and minimum configurations for Modular UPS Product Families;
- (e) Metering and communications ability (data displayed on the meter, data provided via the network, and available protocols);
- (f) Web link to an available public document containing model specific test procedure guidelines, if applicable;
- (g) Battery/stored energy device characteristics;
- (h) Physical dimensions

3.5.3. EPA and the European Commission may periodically revise this PPDS, as necessary, and will notify Partners of the revision process.

3.6. Communication and Measurement Requirements

3.6.1. Ac-output UPSs and Dc-output UPSs/Rectifiers with rated output power greater than 10 000 W may qualify for a 1 percentage point efficiency incentive, as reflected in Tables 3 and 5, if sold with an energy meter possessing the following characteristics:

- (a) The meter is either shipped as an independent, external component bundled with the UPS at the point of sale or is integral to the UPS.
- (b) The meter measures UPS output energy in kWh in each Normal Mode.
- (c) The meter can communicate the measurement results over a network using one of the following protocols: Modbus RTU, Modbus TCP, or SNMP (v1, 2, or 3)
- (d) If the meter is external to the UPS, it meets the requirements in Section 3.6.2.
- (e) If the meter is integral to the UPS, it meets the requirements in Section 3.6.3.

3.6.2. Requirements for External Meters: External meters bundled with the UPS shall meet one of the following requirements for the UPS to obtain the metering efficiency incentive:

- (a) Meet Accuracy Class 2 or better (i.e., Class 1, Class 0,5 S, or Class 0,2 S), as specified in IEC 62053-21 ⁽¹⁾, IEC 62053-22 ⁽²⁾, or ANSI C12.2 ⁽³⁾;
- (b) Exhibit a relative error in energy measurement less than or equal to 2 percent compared to a standard under the conditions specified in Section 3.6.4, with the exception of current, which shall be tested at 25 percent and 100 percent of the meter's maximum current; or
- (c) Exhibit a relative error in energy measurement less than or equal to 5 percent compared to a standard when part of a complete measurement system (including current transformers that could be integrated with the meter and UPS) under the conditions specified in Section 3.6.4.

3.6.3. Requirements for Integral Meters: Integral meters shall meet the following requirements under the conditions specified in Section 3.6.4 for the UPS to obtain the metering efficiency incentive:

Exhibit a relative error in energy measurement less than or equal to 5 percent compared to a standard when part of a complete measurement system (including current transformers integrated with the meter and UPS).

3.6.4. Environmental and Electrical Conditions for Meter Accuracy: The meter shall meet the requirements specified in Section 3.6.2 or 3.6.3 under the following conditions:

- (a) Environmental conditions: Consistent with the ENERGY STAR Test Method and the standards referenced therein; and
- (b) Electrical conditions: Consistent with each of the loading points in the ENERGY STAR Test Method and the standards referenced therein.

⁽¹⁾ International Electrotechnical Commission (IEC). IEC standard 62053-21. 'Electricity metering equipment (a.c.) - Particular requirements — Part 21: Static meters for active energy (classes 1 and 2).' Ed. 1.0.

⁽²⁾ International Electrotechnical Commission (IEC). IEC standard 62053-22. 'Electricity metering equipment (a.c.) - Particular requirements — Part 22: Static meters for active energy (classes 0,2 S and 0,5 S).' Ed. 1.0.

⁽³⁾ American National Standards Institute. ANSI standard C12.1. 'American National Standard for Electric Meters: Code for Electricity Metering.' 2008.

4. Testing

4.1. Test Methods

For products placed on the market of the European Union manufacturers are required to perform tests and self-certify those models that meet Energy Star guidelines. When testing UPSs, the test methods identified in Table 7 shall be used to determine ENERGY STAR qualification.

Table 7

Test Methods for ENERGY STAR Qualification

Product Type	Test Method
All UPSs	ENERGY STAR Test Method for Uninterruptible Power Supplies, Rev. May-2012

4.2. Number of Units Required for Testing

4.2.1. Representative Models shall be selected for testing per the following requirements:

- (a) For qualification of an individual product model, a product configuration equivalent to that which is intended to be marketed and labelled as ENERGY STAR is considered the Representative Model;
- (b) For qualification of a Modular UPS Product Family where models vary by number of installed modules, the manufacturer shall select the maximum and minimum configurations to serve as Representative Models—i.e., a modular system shall meet the eligibility criteria in both its maximum and minimum non-redundant configurations. If the maximum and minimum configuration Representative Models meet the ENERGY STAR qualification criteria at their respective output power levels, all intermediate configuration models within a Modular UPS Product Family may be qualified for ENERGY STAR.
- (c) For qualification of a UPS Product Family where the models are related by a characteristic other than the number of installed modules, the highest energy using configuration within the Product Family shall be considered the Representative Model with the exception of energy storage system variations—the manufacturer may select any energy storage system for the test, within the requirements of the ENERGY STAR Test Method. Other products within a Product Family do not have to be tested for qualification, but they are expected to meet relevant ENERGY STAR qualification criteria and may be subject to verification testing sometime after initial qualification.

4.2.2. A single unit of each Representative Model shall be selected for testing.

4.2.3. All tested units shall meet ENERGY STAR qualification criteria.

5. Effective Date

5.1. The date that manufacturers may begin to qualify products as Energy Star under this Version 1.0, will be defined as the effective date of the Agreement. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.

5.2. Future Specification Revisions: EPA and the European Commission reserve the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model.

III. COMPUTER SERVERS SPECIFICATION (VERSION 2.0)

1. **Definitions**

1.1. Product Types

1.1.1. Computer Server: A computer that provides services and manages networked resources for client devices (e.g., desktop computers, notebook computers, thin clients, wireless devices, PDAs, IP telephones, other computer servers, or other network devices). A computer server is sold through enterprise channels for use in data centres and office/corporate environments. A computer server is primarily accessed via network connections, versus directly-connected user input devices such as a keyboard or mouse. For purposes of this specification, a computer server must meet all of the following criteria:

- (a) is marketed and sold as a Computer Server;
- (b) is designed for and listed as supporting one or more computer server operating systems (OS) and/or hypervisors;
- (c) is targeted to run user-installed applications typically, but not exclusively, enterprise in nature;
- (d) provides support for error-correcting code (ECC) and/or buffered memory (including both buffered dual in-line memory modules (DIMMs) and buffered on board (BOB) configurations).
- (e) is packaged and sold with one or more ac-dc or dc-dc power supplies; and
- (f) is designed such that all processors have access to shared system memory and are visible to a single OS or hypervisor.

1.1.2. Managed Server: A computer server that is designed for a high level of availability in a highly managed environment. For purposes of this specification, a managed server must meet all of the following criteria:

- (a) is designed to be configured with redundant power supplies; and
- (b) contains an installed dedicated management controller (e.g., service processor).

1.1.3. Blade System: A system comprised of a blade chassis and one or more removable blade servers and/or other units (e.g., blade storage, blade network equipment). Blade systems provide a scalable means for combining multiple blade server or storage units in a single enclosure, and are designed to allow service technicians to easily add or replace (hot-swap) blades in the field.

(a) Blade Server: A computer server that is designed for use in a blade chassis. A blade server is a high-density device that functions as an independent computer server and includes at least one processor and system memory, but is dependent upon shared blade chassis resources (e.g., power supplies, cooling) for operation. A processor or memory module that is intended to scale up a standalone server is not considered a Blade Server.

(1) *Multi-bay Blade Server*: A blade server requiring more than one bay for installation in a blade chassis.

(2) *Single-wide Blade Server*: A blade server requiring the width of a standard blade server bay.

(3) *Double-wide Blade Server*: A blade server requiring twice the width of a standard blade server bay.

(4) *Half-height Blade Server*: A blade server requiring one half the height of a standard blade server bay.

- (5) *Quarter-height Blade Server*: A blade server requiring one quarter the height of a standard server bay.
- (6) *Multi-Node Blade Server*: A blade server which has multiple nodes. The blade server itself is hot swappable, but the individual nodes are not.
- (b) *Blade Chassis*: An enclosure that contains shared resources for the operation of blade servers, blade storage, and other blade form-factor devices. Shared resources provided by a chassis may include power supplies, data storage, and hardware for dc power distribution, thermal management, system management, and network services.
- (c) *Blade Storage*: A storage device that is designed for use in a blade chassis. A blade storage device is dependent upon shared blade chassis resources (e.g., power supplies, cooling) for operation.
- 1.1.4. *Fully Fault Tolerant Server*: A computer server that is designed with complete hardware redundancy, in which every computing component is replicated between two nodes running identical and concurrent workloads (i.e., if one node fails or needs repair, the second node can run the workload alone to avoid downtime). A fully fault tolerant server uses two systems to simultaneously and repetitively run a single workload for continuous availability in a mission critical application.
- 1.1.5. *Resilient Server*: A computer server designed with extensive Reliability, Availability, Serviceability (RAS) and scalability features integrated in the micro architecture of the system, CPU and chipset. For purposes of ENERGY STAR qualification under this specification, a Resilient Server shall have the characteristics as described in Appendix B of this specification.
- 1.1.6. *Multi-node Server*: A computer server that is designed with two or more independent server nodes that share a single enclosure and one or more power supplies. In a multi-node server, power is distributed to all nodes through shared power supplies. Server nodes in a multi-node server are not designed to be hot-swappable.
- Dual-node Server*: A common multi-node server configuration consisting of two server nodes.
- 1.1.7. *Server Appliance*: A computer server that is bundled with a pre-installed OS and application software that is used to perform a dedicated function or set of tightly coupled functions. Server appliances deliver services through one or more networks (e.g., IP or SAN), and are typically managed through a web or command line interface. Server appliance hardware and software configurations are customized by the vendor to perform a specific task (e.g., name services, firewall services, authentication services, encryption services, and voice-over-IP (VoIP) services), and are not intended to execute user-supplied software.
- 1.1.8. *High Performance Computing (HPC) System*: A computing system which is designed and optimized to execute highly parallel applications. HPC systems feature a large number of clustered homogeneous nodes often featuring high speed inter-processing interconnects as well as large memory capability and bandwidth. HPC systems may be purposely built, or assembled from more commonly available computer servers. HPC systems must meet ALL the following criteria:
- (a) Marketed and sold as a Computer Server optimized for higher performance computing applications;
- (b) Designed (or assembled) and optimized to execute highly parallel applications;
- (c) Consist of a number of typically homogeneous computing nodes, clustered primarily to increase computational capability;
- (d) Includes high speed inter-processing interconnections between nodes.
- 1.1.9. *Direct Current (dc) Server*: A computer server that is designed solely to operate on a dc power source.

- 1.1.10. Large Server: A resilient/scalable server which ships as a pre-integrated/pre-tested system housed in one or more full frames or racks and that includes a high connectivity I/O subsystem with a minimum of 32 dedicated I/O slots.

1.2. Product Category

A second-order classification or sub-type within a product type that is based on product features and installed components. Product categories are used in this specification to determine qualification and test requirements.

1.3. Computer Server Form Factors

- 1.3.1. Rack-mounted Server: A computer server that is designed for deployment in a standard 19-inch data centre rack as defined by EIA-310, IEC 60297, or DIN 41494. For the purposes of this specification, a blade server is considered under a separate category and excluded from the rack-mounted category.

- 1.3.2. Pedestal Server: A self-contained computer server that is designed with PSUs, cooling, I/O devices, and other resources necessary for stand-alone operation. The frame of a pedestal server is similar to that of a tower client computer.

1.4. Computer Server Components

- 1.4.1. Power Supply Unit (PSU): A device that converts ac or dc input power to one or more dc power outputs for the purpose of powering a computer server. A computer server PSU must be self-contained and physically separable from the motherboard and must connect to the system via a removable or hard-wired electrical connection.

- (a) Ac-Dc Power Supply: A PSU that converts line-voltage ac input power into one or more dc power outputs for the purpose of powering a computer server.

- (b) Dc-Dc Power Supply: A PSU that converts line-voltage dc input power to one or more dc outputs for the purpose of powering a computer server. For purposes of this specification, a dc-dc converter (also known as a voltage regulator) that is internal to a computer server and is used to convert a low voltage dc (e.g., 12 V dc) into other dc power outputs for use by computer server components is not considered a dc-dc power supply.

- (c) Single-output Power Supply: A PSU that is designed to deliver the majority of its rated output power to one primary dc output for the purpose of powering a computer server. Single-output PSUs may offer one or more standby outputs that remain active whenever connected to an input power source. For purposes of this specification, the total rated power output from any additional PSU outputs that are not primary and standby outputs shall be no greater than 20 watts. PSUs that offer multiple outputs at the same voltage as the primary output are considered single-output PSUs unless those outputs (1) are generated from separate converters or have separate output rectification stages, or (2) have independent current limits.

- (d) Multi-output Power Supply: A PSU that is designed to deliver the majority of its rated output power to more than one primary dc output for the purpose of powering a computer server. Multi-output PSUs may offer one or more standby outputs that remain active whenever connected to an input power source. For purposes of this specification, the total rated power output from any additional PSU outputs that are not primary and standby outputs is greater than or equal to 20 watts.

- 1.4.2. I/O Device: A device which provides data input and output capability between a computer server and other devices. An I/O device may be integral to the computer server motherboard or may be connected to the motherboard via expansion slots (e.g., PCI, PCIe). Examples of I/O devices include discrete Ethernet devices, InfiniBand devices, RAID/SAS controllers, and Fibre Channel devices.

I/O Port: Physical circuitry within an I/O device where an independent I/O session can be established. A port is not the same as a connector receptacle; it is possible that a single connector receptacle can service multiple ports of the same interface.

- 1.4.3. Motherboard: The main circuit board of the server. For purposes of this specification, the motherboard includes connectors for attaching additional boards and typically includes the following components: processor, memory, BIOS, and expansion slots.
- 1.4.4. Processor: The logic circuitry that responds to and processes the basic instructions that drive a server. For purposes of this specification, the processor is the central processing unit (CPU) of the computer server. A typical CPU is a physical package to be installed on the server motherboard via a socket or direct solder attachment. The CPU package may include one or more processor cores.
- 1.4.5. Memory: For purposes of this specification, memory is a part of a server external to the processor in which information is stored for immediate use by the processor.
- 1.4.6. Hard Drive (HDD): The primary computer storage device which reads and writes to one or more rotating magnetic disk platters.
- 1.4.7. Solid State Drive (SSD): A storage device that uses memory chips instead of rotating magnetic platters for data storage.
- 1.5. Other Datacenter Equipment:
 - 1.5.1. Network Equipment: A device whose primary function is to pass data among various network interfaces, providing data connectivity among connected devices (e.g., routers and switches). Data connectivity is achieved via the routing of data packets encapsulated according to internet Protocol, Fibre Channel, InfiniBand or similar protocol.
 - 1.5.2. Storage Product: A fully-functional storage system that supplies data storage services to clients and devices attached directly or through a network. Components and subsystems that are an integral part of the storage product architecture (e.g., to provide internal communications between controllers and disks) are considered to be part of the storage product. In contrast, components that are normally associated with a storage environment at the data centre level (e.g., devices required for operation of an external SAN) are not considered to be part of the storage product. A storage product may be composed of integrated storage controllers, storage devices, embedded network elements, software, and other devices. While storage products may contain one or more embedded processors, these processors do not execute user-supplied software applications but may execute data-specific applications (e.g., data replication, backup utilities, data compression, install agents).
 - 1.5.3. Uninterruptible Power Supply (UPS): Combination of convertors, switches, and energy storage devices (such as batteries) constituting a power system for maintaining continuity of load power in case of input power failure.
- 1.6. Operational Modes and Power States
 - 1.6.1. Idle State: The operational state in which the OS and other software have completed loading, the computer server is capable of completing workload transactions, but no active workload transactions are requested or pending by the system (i.e., the computer server is operational, but not performing any useful work). For systems where ACPI standards are applicable, Idle State correlates only to ACPI System Level S0.
 - 1.6.2. Active State: The operational state in which the computer server is carrying out work in response to prior or concurrent external requests (e.g., instruction over the network). Active state includes both (1) active processing and (2) data seeking/retrieval from memory, cache, or internal/external storage while awaiting further input over the network.
- 1.7. Other Key Terms
 - 1.7.1. Controller System: A computer or computer server that manages a benchmark evaluation process. The controller system performs the following functions:
 - (a) start and stop each segment (phase) of the performance benchmark;

- (b) control the workload demands of the performance benchmark;
 - (c) start and stop data collection from the power analyser so that power and performance data from each phase can be correlated;
 - (d) store log files containing benchmark power and performance information;
 - (e) convert raw data into a suitable format for benchmark reporting, submission and validation; and
 - (f) collect and store environmental data, if automated for the benchmark.
- 1.7.2. Network Client (Testing): A computer or computer server that generates workload traffic for transmission to a unit under test (UUT) connected via a network switch.
- 1.7.3. RAS Features: An acronym for reliability, availability, and serviceability features. RAS is sometimes expanded to RASM, which adds 'Manageability' criteria. The three primary components of RAS as related to a computer server are defined as follows:
- (a) Reliability Features: Features that support a server's ability to perform its intended function without interruption due to component failures (e.g., component selection, temperature and/or voltage de-rating, error detection and correction).
 - (b) Availability Features: Features that support a server's ability to maximize operation at normal capacity for a given duration of downtime (e.g., redundancy [both at micro- and macro-level]).
 - (c) Serviceability Features: Features that support a server's ability to be serviced without interrupting operation of the server (e.g., hot plugging).
- 1.7.4. Server Processor Utilization: The ratio of processor computing activity to full-load processor computing activity at a specified voltage and frequency, measured instantaneously or with a short term average of use over a set of active and/or idle cycles.
- 1.7.5. Hypervisor: A type of hardware virtualization technique that enables multiple guest operating systems to run on a single host system at the same time.
- 1.7.6. Auxiliary Processing Accelerators (APAs): Computing expansion add-in cards installed in general-purpose add-in expansion slots (e.g., GPGPUs installed in a PCI slot).
- 1.7.7. Buffered DDR Channel: Channel or Memory Port connecting a Memory Controller to a defined number of memory devices (e.g. DIMMs) in a computer server. A typical computer server may contain multiple Memory Controllers, which may in turn support one or more Buffered DDR Channels. As such, each Buffered DDR Channel serves only a fraction of the total addressable memory space in a computer server.
- 1.8. Product Family
- A high-level description referring to a group of computers sharing one chassis/motherboard combination that often contains hundreds of possible hardware and software configurations.
- 1.8.1. Common Product Family Attributes: A set of features common to all models/configurations within a product family that constitute a common basic design. All models/configurations within a product family must share the following:
- (a) Be from the same model line or machine type;

- (b) Either share the same form factor (i.e., rack-mounted, blade, pedestal) or share the same mechanical and electrical designs with only superficial mechanical differences to enable a design to support multiple form factors;
- (c) Either share processors from a single defined processor series or share processors that plug into a common socket type.
- (d) Share PSUs that perform with efficiencies greater than or equal to the efficiencies at all required load points specified in Section 3.2 (i.e., 10 %, 20 %, 50 %, and 100 % of maximum rated load for single-output; 20 %, 50 %, and 100 % of maximum rated load for multi-output).

1.8.2. Product Family Tested Product Configurations

(a) Purchase Consideration Variations:

- (1) Low-end Performance Configuration: The combination of Processor Socket Power, PSUs, Memory, Storage (HDD/SDD), and I/O devices that represents the lower-price or lower-performance computing platform within the Product Family.
- (2) High-end Performance Configuration: The combination of Processor Socket Power, PSUs, Memory, Storage (HDD/SDD), and I/O devices that represents either the higher-price or higher-performance computing platform within the Product Family.

(b) Typical Configuration:

Typical Configuration: A product configuration that lies between the Minimum and Maximum Power configurations and is representative of a deployed product with high volume sales.

(c) Power Utilization Variations:

- (1) Minimum Power Configuration: The minimum configuration that is able to boot and execute supported OSs. The Minimum Configuration contains the lowest Processor Socket Power, least number of installed PSUs, Memory, Storage (HDD/SDD), and I/O devices, that is both offered for sale and capable of meeting ENERGY STAR requirements.
- (2) Maximum Power Configuration: The vendor-selected combination of components that maximize power usage within the Product Family once assembled and operated. The Maximum Configuration contains the highest Processor Socket Power, greatest number of installed PSUs, Memory, Storage (HDD/SDD), and I/O devices that is both offered for sale and capable of meeting ENERGY STAR requirements.

2. Scope

2.1. Included Products

A product must meet the definition of a Computer Server provided in Section 1 of this document to be eligible for ENERGY STAR qualification under this specification. Eligibility under Version 2.0 is limited to Blade-, Multi-node, Rack-mounted, or Pedestal form factor computer servers with no more than four processor sockets in the computer server (or per blade or node in the case of blade or multi-node servers) Products explicitly excluded from Version 2.0 are identified in Section 2.2.

2.2. Excluded Products

2.2.1. Products that are covered under other ENERGY STAR product specifications are not eligible for qualification under this specification. The list of specifications currently in effect can be found at www.eu-energystar.org/.

2.2.2. The following products are not eligible for qualification under this specification:

- (a) Fully Fault Tolerant Servers;

- (b) Server Appliances;
- (c) High Performance Computing Systems;
- (d) Large Servers;
- (e) Storage Products including Blade Storage; and
- (f) Network Equipment.

3. Qualification Criteria

3.1. Significant Digits and Rounding

- 3.1.1. All calculations shall be carried out with directly measured (unrounded) values.
- 3.1.2. Unless otherwise specified, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.
- 3.1.3. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

3.2. Power Supply Requirements

- 3.2.1. Power supply test data and test reports from testing entities recognized by EPA to perform power supply testing shall be accepted for the purpose of qualifying the ENERGY STAR product.
- 3.2.2. Power Supply Efficiency Criteria: Power Supplies used in products eligible under this specification must meet the following requirements when tested using the Generalized Internal Power Supply Efficiency Test Protocol, Rev. 6.6 (available at www.efficientpowersupplies.org). Power Supply data generated using Rev. 6.4.2 (as required in Version 1.1), 6.4.3, or 6.5 are acceptable provided the test was conducted prior to the effective date of Version 2.0 of this specification.
 - (a) Pedestal and Rack-mounted Servers: To qualify for ENERGY STAR, a pedestal or rack-mounted computer server must be configured with only PSUs that meet or exceed the applicable efficiency requirements specified in Table 1 prior to shipment.
 - (b) Blade and Multi-node Servers: To qualify for ENERGY STAR, a Blade or Multi-node computer server shipped with a chassis must be configured such that all PSUs supplying power to the chassis meet or exceed the applicable efficiency requirements specified in Table 1 prior to shipment.

Table 1

Efficiency Requirements for PSUs

Power Supply Type	Rated Output Power	10 % Load	20 % Load	50 % Load	100 % Load
Multi-output (Ac-Dc)	All Output Levels	N/A	85 %	88 %	85 %
Single-output (Ac-Dc)	All Output Levels	80 %	88 %	92 %	88 %

- 3.2.3. Power Supply Power Factor Criteria: Power Supplies used in Computers eligible under this specification must meet the following requirements when tested using the Generalized Internal Power Supply Efficiency Test Protocol, Rev. 6.6 (available at www.efficientpowersupplies.org). Power Supply data generated using Rev. 6.4.2 (as required in Version 1.1), 6.4.3, or 6.5 are acceptable provided the test was conducted prior to the effective date of Version 2.0.

- (a) Pedestal and Rack-mounted Servers: To qualify for ENERGY STAR, a pedestal or rack-mounted computer server must be configured with only PSUs that meet or exceed the applicable power factor requirements specified in Table 2 prior to shipment, under all loading conditions for which output power is greater than or equal to 75 watts. Partners are required to measure and report PSU power factor under loading conditions of less than 75 watts, though no minimum power factor requirements apply.
- (b) Blade or Multi-node Servers: To qualify for ENERGY STAR, a Blade or Multi-node computer server shipped with a chassis must be configured such that all PSUs supplying power to the chassis meet or exceed the applicable power factor requirements specified in Table 2 prior to shipment, under all loading conditions for which output power is greater than or equal to 75 watts. Partners are required to measure and report PSU power factor under loading conditions of less than 75 watts, though no minimum power factor requirements apply.

Table 2

Power Factor Requirements for PSUs

Power Supply Type	Rated Output Power	10 % Load	20 % Load	50 % Load	100 % Load
Ac-Dc Multi-output	All Output Ratings	N/A	0,80	0,90	0,95
Ac-Dc Single-output	Output Rating ≤ 500 W	N/A	0,80	0,90	0,95
	Output Rating > 500 W and Output Rating ≤ 1 000 W	0,65	0,80	0,90	0,95
	Output Rating > 1 000 watts	0,80	0,90	0,90	0,95

3.3. Power Management Requirements

- 3.3.1. Server Processor Power Management: To qualify for ENERGY STAR, a Computer Server must offer processor power management that is enabled by default in the BIOS and/or through a management controller, service processor, and/or the operating system shipped with the computer server. All processors must be able to reduce power consumption in times of low utilization by:

(a) reducing voltage and/or frequency through Dynamic Voltage and Frequency Scaling (DVFS), or

(b) enabling processor or core reduced power states when a core or socket is not in use.

- 3.3.2. Supervisor Power Management: To qualify for ENERGY STAR, a product which offers a pre-installed supervisor system (e.g., operating system, hypervisor) must offer supervisor system power management that is enabled by default.

- 3.3.3. Power Management Reporting: To qualify for ENERGY STAR, all power management techniques that are enabled by default must be itemized on the Power and Performance Data Sheet. This requirement applies to power management features in the BIOS, operating system, or any other origin that can be configured by the end-user.

3.4. Blade and Multi-Node System Criteria

- 3.4.1. Blade and Multi-Node Thermal Management and Monitoring: To qualify for ENERGY STAR, a blade or multi-node server must provide real-time chassis or blade/node inlet temperature monitoring and fan speed management capability that is enabled by default.

3.4.2. Blade and Multi-Node Server Shipping Documentation: To qualify for ENERGY STAR, a blade or multi-node server that is shipped to a customer independent of the chassis must be accompanied with documentation to inform the customer that the blade or multi-node server is ENERGY STAR qualified only if it is installed in a chassis meeting requirements in Section 3.4.1 of this document. A list of qualifying chassis and ordering information must also be provided as part of product collateral provided with the blade or multi-node server. These requirements may be met via either printed materials, electronic documentation provided with the blade or multi-node server, or information publically available on the Partner's website where information about the blade or multi-node server is found.

3.5. Active State Efficiency Criteria

3.5.1. Active State Efficiency Reporting: To qualify for ENERGY STAR, a Computer Server or Computer Server Product Family must be submitted for qualification with the following information disclosed in full and in the context of the complete Active State efficiency rating test report:

- (a) Final SERT rating tool results, which include the results files (both html and text format) and all results-chart png files; and
- (b) Intermediate SERT rating tool results over the entire test run, which include the results-details files (both html and text format) and all results-details-chart png files.

Data reporting and formatting requirements are discussed in Section 4.1 of this specification.

3.5.2. Incomplete Reporting: Partners shall not selectively report individual workload module results, or otherwise present efficiency rating tool results in any form other than a complete test report, in customer documentation or marketing materials.

3.6. Idle State Efficiency Criteria – One-Socket (1S) and Two-Socket (2S) Servers (neither Blade nor Multi-Node)

3.6.1. Idle State Data Reporting: Maximum Idle State power (P_{IDLE_MAX}) shall be measured and reported, both in qualification materials and as required in Section 4.

3.6.2. Idle State Efficiency: Measured Idle State power (P_{IDLE}) shall be less than or equal to the Maximum Idle State Power Requirement (P_{IDLE_MAX}), as calculated per Equation 1.

Equation 1: Calculation of Maximum Idle State Power

$$P_{IDLE_MAX} = P_{BASE} + \sum_{i=1}^n P_{ADDL_i}$$

Where:

- P_{IDLE_MAX} is the Maximum Idle State Power Requirement,
- P_{BASE} is the base idle power allowance, as determined per Table 3,
- P_{ADDL_i} is the Idle State power allowance for additional components, as determined per Table 4.

- (a) These Idle power limits are applicable to one and two socket systems only.
- (b) Use Section 6.1 of the ENERGY STAR Computer Servers Test Method to determine the Idle State power for qualification.
- (c) The Resilient category in Table 3 applies only to two socket systems that meet the definition of Resilient Server as set forth in Appendix B.

- (d) All quantities (with the exception of installed processors) in Tables 3 and 4 refer to the number of components installed in the system, not the maximum number of components the system can support (e.g., installed memory, not supported memory; etc.)
- (e) The Additional Power Supply allowance may be applied for each redundant power supply used in the configuration.
- (f) For the purposes of determining Idle power allowances, all memory capacities shall be rounded to the nearest GB ⁽¹⁾.
- (g) The Additional I/O Device allowance may be applied for all I/O Devices over the Base Configuration (i.e., Ethernet devices additional to two ports greater than or equal to 1 Gigabit per second (Gbit/s), onboard Ethernet, plus any non-Ethernet I/O devices), including on-board I/O devices and add-in I/O devices installed through expansion slots. This allowance may be applied for each of the following types of I/O functionality: Ethernet, SAS, SATA, Fibre Channel and Infiniband.
- (h) The Additional I/O Device allowance shall be calculated based upon the rated link speed of a single connection, rounded to the nearest Gbit. I/O devices with less than 1 Gbit speed do not qualify for the Additional I/O Device allowance.
- (i) The Additional I/O Device allowance shall only be applied for I/O devices that are active/enabled upon shipment, and are capable of functioning when connected to an active switch.

Table 3

Base Idle State Power Allowances for 1S and 2S Servers

Category	Maximum Possible Number of Installed Processors (# P)	Managed Server	Base Idle State Power Allowance, P _{BASE} (watts)
A	1	No	47,0
B	1	Yes	57,0
C	2	No	92,0
D	2	Yes	142,0
Resilient	2	Yes	205,0

Table 4

Additional Idle Power Allowances for Extra Components

System Characteristic	Applies To:	Additional Idle Power Allowance
Additional Power Supplies	Power supplies installed explicitly for power redundancy	20 watts per Power Supply
Hard Drives (including solid state drives)	Per installed hard drive	8,0 watts per Hard Drive
Additional Memory	Installed memory greater than 4 GB	0,75 watts per GB

⁽¹⁾ GB defined as 1 024³ or 2³⁰ bytes.

System Characteristic	Applies To:	Additional Idle Power Allowance
Additional Buffered DDR Channel	Installed buffered DDR Channels greater than 8 channels (Resilient Servers only)	4,0 watts per Buffered DDR Channel
Additional I/O Devices	Installed Devices greater than two ports of ≥ 1 Gbit, onboard Ethernet	< 1 Gbit: No Allowance $= 1$ Gbit: 2,0 watts/Active Port > 1 Gbit and < 10 Gbit: 4,0 watts/Active Port ≥ 10 Gbit: 8,0 watts/Active Port

3.7. Idle State Efficiency Criteria – Three-Socket (3S) and Four-Socket (4S) Servers (neither Blade nor Multi-Node)
Idle State Data Reporting: Idle State power (P_{IDLE}) shall be measured and reported, both in qualification materials and as required in Section 4.

3.8. Idle State Efficiency Criteria – Blade Servers

3.8.1. Idle State Data Reporting: Idle State power ($P_{TOT_BLADE_SYS}$) and (P_{BLADE}) shall be measured and reported, both in qualification materials and as required in Section 4.

3.8.2. The testing of Blade Servers for compliance with Section 3.8.1 shall be carried out under all of the following conditions:

(a) Power values shall be measured and reported using a half-populated Blade Chassis. Blade Servers with multiple power domains, choose the number of power domains that is closest to filling half of the Blade Chassis. In a case where there are two choices that are equally close to half, test with the domain or combination of domains which utilize a higher number of Blade Servers. The number of blades tested during the half-populated Blade Chassis test shall be reported.

(b) Power for a fully-populated blade chassis may be optionally measured and reported, provided that half-populated chassis data is also provided.

(c) All Blade Servers installed in the Blade Chassis shall share the same configuration (homogeneous).

(d) Per-blade power values shall be calculated using Equation 2.

Equation 2: Calculation of Single Blade Power

$$P_{BLADE} = \frac{P_{TOT_BLADE_SYS}}{N_{INST_BLADE_SRV}}$$

Where:

— P_{BLADE} is the per-Blade Server Power

— $P_{TOT_BLADE_SYS}$ is total measured power of the Blade System,

— $N_{INST_BLADE_SRV}$ is the number of installed Blade Servers in the tested Blade Chassis.

3.9. Idle State Efficiency Criteria – Multi-Node Servers

3.9.1. Idle State Data Reporting: Idle State power ($P_{TOT_NODE_SYS}$) and (P_{NODE}) shall be measured and reported, both in qualification materials and as required in Section 4, below.

3.9.2. The testing of Multi-Node Servers for compliance with Section 3.9.1 shall be carried out under all of the following conditions:

- (a) Power values shall be measured and reported using a fully-populated Multi-Node Chassis.
- (b) All Multi-Node Servers in the Multi-Node Chassis shall share the same configuration (homogeneous).
- (c) Per-node power values shall be calculated using Equation 3.

Equation 3: Calculation of Single Node Power

$$P_{\text{NODE}} = \frac{P_{\text{TOT_NODE_SYS}}}{N_{\text{INST_NODE_SRV}}}$$

Where:

- P_{NODE} is the per Node Server Power
- $P_{\text{TOT_NODE_SYS}}$ is total measured power of the Multi Node Server,
- $N_{\text{INST_NODE_SRV}}$ is the number of installed Multi Node Servers in the tested Multi-Node Chassis.

3.10. Other Testing Criteria

APA Requirements: For all computer servers sold with APAs, the following criteria and provisions apply:

- (a) For single configurations: All Idle State testing shall be conducted both with and without the APAs installed. Idle Power measurements taken both with the APAs installed and removed shall be submitted to EPA or the European Commission, as appropriate as part of ENERGY STAR qualification materials.
- (b) For Product Families: Idle State testing shall be conducted both with and without the APAs installed in the Maximum Power/High-end Performance Configuration found in 1.8.2. Testing with and without the APAs installed may optionally be conducted and disclosed at the other test points.
- (c) Idle State power measurements taken both with the APAs installed and removed shall be submitted to EPA or the European Commission, as appropriate as part of ENERGY STAR qualification materials. These measurements shall be submitted for each individual APA product that is intended for sale with the qualified configuration.
- (d) Measurements of P_{IDLE} in Sections 3.6 and 3.7, P_{BLADE} in Section 3.8 and P_{NODE} in Section 3.9 shall be performed with APAs removed, even if they are installed as-shipped. These measurements shall then be repeated with each APA installed, one at a time, to evaluate Idle State power consumption of each installed APA.
- (e) The Idle State power consumption of each installed APA in qualified configurations shall not exceed 46 watts.
- (f) The Idle State power consumption of each individual APA product sold with a qualified configuration shall be reported.

4. **Standard Information Reporting Requirements**

Data Reporting Requirements

- 4.1. All required data fields in the ENERGY STAR Version 2.0 Computer Servers Qualified Product Exchange form shall be submitted to the European Commission for each ENERGY STAR qualified Computer Server or Computer Server Product Family.
- (a) Partners are encouraged to provide one set of data for each ENERGY STAR qualified product configuration, though the European Commission will also accept a data set for each qualified product family.
 - (b) A product family qualification must include data for all defined test points in 1.8.2, as applicable.
 - (c) Whenever possible, Partners must also provide a hyperlink to a detailed power calculator on their Web site that purchasers can use to understand power and performance data for specific configurations within the product family.
- 4.2. The following data will be displayed on the EU ENERGY STAR Web site through the product finder tool:
- (a) model name and number, identifying SKU and/or configuration ID;
 - (b) system characteristics (form factor, available sockets/slots, power specifications, etc.);
 - (c) system type (unmanaged, managed, scalable, etc.);
 - (d) system configuration(s) (including Low-end Performance Configuration, High-end Performance Configuration, Minimum Power Configuration, Maximum Power Configuration, and Typical Configuration for Product Family qualification);
 - (e) power consumption and performance data from required Active and Idle State Efficiency Criteria testing including results.xml, results.html, results.txt, all results-chart png files, results-details.html, results-details.txt, all results-details-chart png files;
 - (f) available and enabled power saving features (e.g., power management);
 - (g) a list of selected data from the ASHRAE Thermal Report;
 - (h) inlet air temperature measurements made prior to the start of testing, at the conclusion of Idle State testing, and at the conclusion of Active State testing;
 - (i) for product family qualifications, a list of qualified configurations with qualified SKUs or configuration IDs; and
 - (j) for a blade server, a list of compatible blade chassis that meet ENERGY STAR qualification criteria.
- 4.3. EPA and the European Commission may periodically revise this list, as necessary, and will notify and invite stakeholder engagement in such a revision process.

5. Standard Performance Data Measurement and Output Requirements

5.1. Measurement and Output

5.1.1. A computer server must provide data on input power consumption (W), inlet air temperature (°C), and average utilization of all logical CPUs. Data must be made available in a published or user-accessible format that is readable by third-party, non-proprietary management software over a standard network. For blade and multi-node servers and systems, data may be aggregated at the chassis level.

5.1.2. Computer servers classified as Class B equipment as set out in EN 55022:2006 are exempt from the requirements to provide data on input power consumption and inlet air temperature in 5.1.1. Class B refers to household and home office equipment (intended for use in the domestic environment). All computer servers in the program must meet the requirement and conditions to report utilization of all logical CPUs.

5.2. Reporting Implementation

5.2.1. Products may use either embedded components or add-in devices that are packaged with the computer server to make data available to end users (e.g., a service processor, embedded power or thermal meter (or other out-of-band technology), or pre-installed OS);

5.2.2. Products that include a pre-installed OS must include all necessary drivers and software for end users to access standardized data as specified in this document. Products that do not include a pre-installed OS must be packaged with printed documentation of how to access registers that contain relevant sensor information. This requirement may be met via either printed materials, electronic documentation provided with the computer server, or information publicly available on the Partner's website where information about the computer server is found.

5.2.3. When an open and universally available data collection and reporting standard becomes available, manufacturers should incorporate the universal standard into their systems;

5.2.4. Evaluation of the accuracy (5.3) and sampling (5.4) requirements shall be completed through review of data from component product datasheets. If this data is absent, Partner declaration shall be used to evaluate accuracy and sampling.

5.3. Measurement Accuracy

5.3.1. Input power: Measurements must be reported with accuracy of at least $\pm 5\%$ of the actual value, with a maximum level of accuracy of $\pm 10\text{ W}$ for each installed PSU (i.e., power reporting accuracy for each power supply is never required to be better than $\pm 10\text{ watts}$) through the operating range from Idle to full power;

5.3.2. Processor utilization: Average utilization must be estimated for each logical CPU that is visible to the OS and must be reported to the operator or user of the computer server through the operating environment (OS or hypervisor);

5.3.3. Inlet air temperature: Measurements must be reported with an accuracy of at least $\pm 2^\circ\text{C}$.

5.4. Sampling Requirements

5.4.1. Input power and processor utilization: Input power and processor utilization measurements must be sampled internally to the computer server at a rate of greater than or equal to measurement per contiguous 10 second period. A rolling average, encompassing a period of no more than 30 seconds, must be sampled internally to the computer server at a frequency of greater than or equal to once per ten seconds.

5.4.2. Inlet air temperature: Inlet air temperature measurements must be sampled internally to the computer server at a rate of greater than or equal to 1 measurement every 10 seconds.

5.4.3. Time stamping: Systems that implement time stamping of environmental data shall sample internally to the computer server data at a rate of greater than or equal to 1 measurement every 30 seconds.

5.4.4. Management Software: All sampled measurements shall be made available to external management software either via an on-demand pull method, or via a coordinated push method. In either case the system's management software is responsible for establishing the data delivery time scale while the computer server is responsible to assuring data delivered meets the above sampling and accuracy requirements.

6. Testing

6.1. Test Methods

6.1.1. When testing Computer Server products, the test methods identified in Table 5 shall be used to determine ENERGY STAR qualification.

Table 5

Test Methods for ENERGY STAR Qualification

Product Type or Component	Test Method
All	ENERGY STAR Test Method for Computer Servers (Rev. March-2013)
All	Standard Performance Evaluation Corporation (SPEC) Server Efficiency Rating Tool (SERT), Version 1.0.0, Rev. Feb 26, 2013

6.1.2. When testing Computer Server products, UUTs must have all Processor Sockets populated during testing.

If a Computer Server cannot support populating all Processor Sockets during testing, then the system must be populated to its maximum functionality. These systems will be subject to the base idle state power allowance based on the number of sockets in the system.

6.2. Number of Units Required for Testing

Representative Models shall be selected for testing per the following requirements:

- (a) For qualification of an individual product configuration, the unique configuration that is intended to be marketed and labelled as ENERGY STAR is considered the Representative Model.
- (b) For qualification of a product family of all product types, one product configuration for each of the five points identified in definitions 1.8.2 within the family are considered Representative Models. All such representative models shall have the same Common Product Family Attributes as defined in 1.8.1.

6.3. Qualifying Families of Products

6.3.1. Partners are encouraged to test and submit data on individual product configurations for qualification to ENERGY STAR. However, a Partner may qualify multiple product configurations under one Product Family designation if each configuration within the family meets one of the following requirements:

- (a) Individual products are built on the same platform, are eligible under and meet the same specific requirements in this specification, and are identical in every respect to the tested, representative product configuration except for housing and colour; or

- (b) Individual products meet the requirements of a product family, as defined in Section 1.8, above. In this case, partners must test and submit data as required in Section (b).

- 6.3.2. Partners are required to submit a Power and Performance Data Sheet for each product family that is submitted for qualification.
- 6.3.3. All product configurations within a product family that is submitted for qualification must meet ENERGY STAR requirements, including products for which data was not reported.

7. **Effective Date**

- 7.1. The effective date of this Version 2.0 ENERGY STAR Computer Servers specification will be defined as the effective date of the Agreement. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.
- 7.2. Future Specification Revisions: EPA and the European Commission reserve the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model.

8. **Considerations for Future Revisions**

- 8.1. Active State Efficiency Criteria: EPA and the European Commission intend to set active state efficiency criteria in Version 3.0 for all computer server categories in which it has enough SERT data to adequately differentiate products.
- 8.2. Right Sizing of Power Supplies: EPA and the European Commission will investigate opportunities for encouraging right-sizing of power supplies in Version 3.0.
- 8.3. Inclusion of Dc-Dc Computer Servers: EPA and the European Commission encourage manufacturers to work with SPEC to develop support for dc servers in the SERT, so that dc computer servers may be considered for qualification in Version 3.0.
- 8.4. Inclusion of Additional System Architectures: EPA and the European Commission encourage manufacturers to work with SPEC to develop support for architectures that are not currently supported by the SERT, but which represent a sizeable portion of the Computer Servers market. EPA and the European Commission will consider any architecture that is supported by the SERT prior to the development of Version 3.0.
- 8.5. Removal of Adder for Additional Redundant Power Supplies: EPA and the European Commission are aware of technology that allows redundant power supplies to be kept in standby mode and only activated when needed. EPA and the European Commission encourage the adoption of this technology in computer servers, and will investigate whether the current adder for additional redundant power supplies is still necessary in Version 3.0.
- 8.6. Auxiliary Processing Accelerator (APA) Requirements: EPA and the European Commission intends to revisit and potentially expand APA requirements in Version 3.0, based on APA data collected from Version 2.0 as well as the potential incorporation of APA evaluation in the SERT.
- 8.7. Thermal Reporting and Testing Requirements: EPA and the European Commission plans to re-evaluate current temperature reporting and testing requirements to maximize the value of the data collected for manufacturers as well as data centre operators.

Appendix A

Sample Calculations

1. Idle State Power Requirements

To determine the Maximum Idle State Power Requirement for ENERGY STAR qualification, determine the base idle state level from Table 3, and then add power allowances from Table 4 (provided in Section 3.6 of this Eligibility Criteria). An example is provided below:

Example: A standard single processor Computer Server with 8 GB of memory, two hard drives, and two I/O devices (the first with two 1 Gbit ports and the second with six 1 Gbit ports).

1.1. Base allowance:

(a) Determine base idle allowance from Table 3, provided for reference below.

(b) The example server is evaluated under Category A and could consume no more than 47,0 watts in Idle to qualify for ENERGY STAR.

Category	Number of Installed Processors (# P)	Managed Server	Base Idle Power Allowance (W)
A	1	No	47,0
B	1	Yes	57,0
C	2	No	92,0
D	2	Yes	142,0
Resilient	2	Yes	205,0

1.2. Additional Idle Power Allowances: Calculate additional idle allowances for extra components from Table 4, provided for reference below.

System Characteristic	Applies To	Additional Idle Power Allowance
Additional Power Supplies	Power supplies installed explicitly for power redundancy	20,0 watts per Power Supply
Hard Drives (including solid state drives)	All installed hard drives	8,0 watts per Hard Drive
Additional Memory	Installed memory greater than 4 GB	0,75 watts per GB
Additional Buffered DDR Channel	Installed buffered DDR Channels greater than 8 channels (Resilient Servers only)	4,0 watts per Buffered DDR Channel
Additional I/O Devices (single connection speed rounded to nearest Gbit)	Installed Devices greater than two ports of 1 Gbit, onboard Ethernet	< 1 Gbit: No Allowance = 1 Gbit: 2,0 watts/Active Port > 1 Gbit and < 10 Gbit: 4,0 watts/Active Port ≥ 10 Gbit: 8,0 watts/Active Port

- (a) The example server has two hard drives. It therefore is provided with an additional 16,0 watt allowance for each hard drive ($2 \text{ HDD} \times 8,0 \text{ watts}$).
 - (b) The example server has 4 GB in excess of the base configuration. It therefore is provided with an additional 3,0 watt allowance for memory ($4 \text{ extra GB} \times 0,75 \text{ watts/GB}$).
 - (c) The example server has one I/O card that does not qualify for an adder: the first device has only two Ethernet ports and does not exceed the two-port threshold. Its second device does qualify for an adder: the server is provided with an additional 12,0 watt allowance for the device ($\text{six } 1\text{Gbit ports} \times 2,0 \text{ watts/active port}$).
- 1.3. Calculate the final idle allowance by adding the base allowance with the additional power allowances. The example system would be expected to consume no more than 78,0 watts at Idle to qualify ($47,0 \text{ W} + 16,0 \text{ W} + 3,0 \text{ W} + 12,0 \text{ W}$).

2. Additional Idle Allowance — Power Supplies

The following examples illustrate the idle power allowances for additional power supplies:

- 2.1. If a Computer Server requires two power supplies to operate, and the configuration includes three installed power supplies, the server would receive an additional 20,0 watt idle power allowance.
- 2.2. If the same server were instead shipped with four installed power supplies, it would receive an additional idle power allowance of 40,0 watts.

3. Additional Idle Allowance — Additional Buffered DDR Channel

The following examples illustrate the idle power allowances for additional buffered DDR channels:

- 3.1. If a resilient Computer Server is shipped with six installed buffered DDR channels, the server would not receive an additional idle power allowance.
- 3.2. If the same resilient server were instead shipped with 16 installed buffered DDR channels, it would receive an additional idle power allowance of 32,0 watts ($\text{first } 8 \text{ channels} = \text{no additional allowance}$, $\text{second } 8 \text{ channels} = 4,0 \text{ watts} \times 8 \text{ buffered DDR channels}$).

Appendix B

Identifying resilient server class

- 1. **Processor RAS and Scalability** — All of the following shall be supported:
 - 1.1. Processor RAS: The processor must have capabilities to detect, correct, and contain data errors, as described by all of the following:
 - (a) Error detection on L1 caches, directories and address translation buffers using parity protection;
 - (b) Single bit error correction (or better) using ECC on caches that can contain modified data. Corrected data is delivered to the recipient (i.e., error correction is not used just for background scrubbing);
 - (c) Error recovery and containment by means of (1) processor checkpoint retry and recovery, (2) data poison indication (tagging) and propagation, or (3) both. The mechanisms notify the OS or hypervisor to contain the error within a process or partition, thereby reducing the need for system reboots; and
 - (d) (1) Capable of autonomous error mitigation actions within processor hardware, such as disabling of the failing portions of a cache, (2) support for predictive failure analysis by notifying the OS, hypervisor, or service processor of the location and/or root cause of errors, or (3) both.

- 1.2. The processor technology used in resilient and scalable servers is designed to provide additional capability and functionality without additional chipsets, enabling them to be designed into systems with 4 or more processor sockets. The processors have additional infrastructure to support extra, built-in processor busses to support the demand of larger systems.
- 1.3. The server provides high bandwidth I/O interfaces for connecting to external I/O expansion devices or remote I/O without reducing the number of processor sockets that can be connected together. These may be proprietary interfaces or standard interfaces such as PCIe. The high performance I/O controller to support these slots may be embedded within the main processor socket or on the system board.
2. **Memory RAS and Scalability** — All of the following capabilities and characteristics shall be present:
 - (a) Provides memory fault detection and recovery through Extended ECC;
 - (b) In x4 DIMMs, recovery from failure of two adjacent chips in the same rank;
 - (c) Memory migration: Failing memory can be proactively de-allocated and data migrated to available memory. This can be implemented at the granularity of DIMMs or logical memory blocks. Alternatively, memory can also be mirrored;
 - (d) Uses memory buffers for connection of higher speed processor -memory links to DIMMs attached to lower speed DDR channels. Memory buffer can be a separate, standalone buffer chip which is integrated on the system board, or integrated on custom-built memory cards. The use of the buffer chip is required for extended DIMM support; they allow larger memory capacity due to support for larger capacity DIMMs, more DIMM slots per memory channel, and higher memory bandwidth per memory channel than direct-attached DIMMs. The memory modules may also be custom-built, with the memory buffers and DRAM chips integrated on the same card;
 - (e) Uses resilient links between processors and memory buffers with mechanisms to recover from transient errors on the link; and
 - (f) Lane sparing in the processor-memory links. One or more spare lanes are available for lane failover in the event of permanent error.
3. **Power Supply RAS:** All PSUs installed or shipped with the server shall be redundant and concurrently maintainable. The redundant and repairable components may also be housed within a single physical power supply, but must be repairable without requiring the system to be powered down. Support must be present to operate the system in degraded mode when power delivery capability is degraded due to failures in the power supplies or input power loss.
4. **Thermal and Cooling RAS:** All active cooling components, such as fans or water-based cooling, shall be redundant and concurrently maintainable. The processor complex must have mechanisms to allow it to be throttled under thermal emergencies. Support must be present to operate the system in degraded mode when thermal emergencies are detected in system components.
5. **System Resiliency** — no fewer than six of the following characteristics shall be present in the server:
 - (a) Support of redundant storage controllers or redundant path to external storage;
 - (b) Redundant service processors;

- (c) Redundant dc-dc regulator stages after the power supply outputs;
- (d) The server hardware supports runtime processor de-allocation;
- (e) I/O adapters or hard drives are hot-swappable;
- (f) Provides end to end bus error retry on processor to memory or processor to processor interconnects;
- (g) Supports on-line expansion/retraction of hardware resources without the need for operating system reboot ('on-demand' features);
- (h) Processor Socket migration: With hypervisor and/or OS assistance, tasks executing on a processor socket can be migrated to another processor socket without the need for the system to be restarted;
- (i) Memory patrol or background scrubbing is enabled for proactive detection and correction of errors to reduce the likelihood of uncorrectable errors; and
- (j) Internal storage resiliency: Resilient systems have some form of RAID hardware in the base configuration, either through support on the system board or a dedicated slot for a RAID controller card for support of the server's internal drives.

6. **System Scalability** — All of the following shall be present in the server:

- (a) Higher memory capacity: ≥ 8 DDR3 or DDR4 DIMM Ports per socket, with resilient links between the processor socket and memory buffers; and
- (b) Greater I/O expandability: Larger base I/O infrastructure and support a higher number of I/O slots. Provide at least 32 dedicated PCIe Gen 2 lanes or equivalent I/O bandwidth, with at least one x16 slot or other dedicated interface to support external PCIe, proprietary I/O interface or other industry standard I/O interface.

Appendix C

Test Method

1. **Overview**

The following test method shall be used for determining compliance with requirements in the ENERGY STAR Product Specification for Computer Servers and when acquiring test data for reporting of Idle State power and Active State power on the ENERGY STAR Power and Performance Data Sheet.

2. **Applicability**

The following test method is applicable to all products eligible for qualification under the ENERGY STAR Product Specification for Computer Servers.

3. **Definitions**

Unless otherwise specified, all terms used in this document are consistent with the definitions contained in the ENERGY STAR Product Specification for Computer Servers.

4. **Test setup**

- 4.1. Input Power: Input power shall be as specified in Tables 6 and 7. The frequency for input power shall be as specified in Table 8.

Table 6

Input Power Requirements for Products with Nameplate Rated Power Less Than or Equal to 1 500 watts (W)

Product Type	Supply Voltage	Voltage Tolerance	Maximum Total Harmonic Distortion
Servers with alternating current (ac)-direct current (dc) Single-Output Power Supply Units (PSUs)	230 volts (V) ac or 115 V ac (*)	+/- 1,0 %	2,0 %
Servers with ac-dc Multi-Output PSUs	230 V ac or 115 V ac (*)		
Optional Testing Conditions For ac-dc (Japanese Market)	100 V ac		
Three-phase Servers (North American Market)	208 V ac		
Three-phase Servers (Europe Market)	400 V ac		

Table 7

Input Power Requirements for Products with Nameplate Rated Power Greater Than 1 500 W

Product Type	Supply Voltage	Voltage Tolerance	Maximum Total Harmonic Distortion
Servers with ac-dc Single-Output PSUs	230 V ac or 115 V ac (*)	+/- 4,0 %	5,0 %
Servers with ac-dc Multi-Output PSUs	230 V ac or 115 V ac (*)		
Optional Testing Conditions For ac-dc (Japanese Market)	100 V ac		
Three-phase Servers (North American Market)	208 V ac		
Three-phase Servers (Europe Market)	400 V ac		

(*) Note: 230 V ac refers to the European market and 115 V ac refers to the North American market.

Table 8

Input Frequency Requirements for All Products

Supply Voltage	Frequency	Frequency Tolerance
100 V ac	50 hertz (Hz) or 60 Hz	± 1,0 %
115 V ac	60 Hz	
230 V ac	50 Hz or 60 Hz	
Three-phase (North American Market)	60 Hz	
Three-phase (Europe Market)	50 Hz	

- 4.2. Ambient Temperature: Ambient temperature shall be within 25 ± 5 °C.
- 4.3. Relative Humidity: Relative humidity shall be within 15 % and 80 %.
- 4.4. Power Analyser: The power analyser shall report true Root Mean Square (RMS) power and at least two of the following measurement units: voltage, current, and power factor. Power analysers shall possess the following attributes:
- (a) Compliance: The power analyser shall be chosen from the list of power measuring devices specified in the Server Efficiency Rating Tool (SERT)TM (1) Design Document 1.0.0 (2).
 - (b) Calibration: The analyser shall have been calibrated within a year of the test date, by a standard traceable to the National Institute of Science and Technology (USA) or a counterpart national metrology institute in other countries.
 - (c) Crest Factor: An available current crest factor of 3 or more at its rated range value. For analysers that do not specify the current crest factor, the analyser must be capable of measuring an amperage spike of at least 3 times the maximum amperage measured during any 1 second sample.
 - (d) Minimum Frequency Response: 3,0 kHz.
 - (e) Minimum Resolution:
 - (1) 0,01 W for measurement values less than 10 W;
 - (2) 0,1 W for measurement values from 10 W to 100 W; and
 - (3) 1,0 W for measurement values greater than 100 W.
 - (f) Logging: The reading rate supported by the analyser shall be at least 1 set of measurements per second, where set is defined as a power measurement, in watts. The data averaging interval of the analyser shall equal the reading interval. Data averaging interval is defined as the time period over which all samples captured by the high-speed sampling electronics of the analyser are averaged to provide the measurement set.
 - (g) Measurement Accuracy: Power measurements shall be reported by the analyser with an overall accuracy of 1 % or better for all measured power values.
- 4.5. Temperature Sensor: The temperature sensor shall possess the following attributes:
- (a) Compliance: The temperature sensor shall be chosen from the list of temperature measuring devices specified in the SERT Design Document 1.0.0.
 - (b) Logging: The sensor shall have a minimum reading rate of 4 samples per minute.
 - (c) Measurement Accuracy: Temperature must be measured no more than 50 mm in front of (upwind of) the main airflow inlet of the Unit Under Test (UUT) and reported by the sensor with an overall accuracy of $\pm 0,5$ °C or better.

(1) <http://www.spec.org/sert/>

(2) http://www.spec.org/sert/docs/SERT-Design_Document.pdf

- 4.6. Active State Test Tool: SERT 1.0.0, provided by Standard Performance Evaluation Corporation (SPEC) ⁽¹⁾.
- 4.7. Controller System: The Controller System may be a Server, a desktop computer, or a laptop and shall be used to record power and temperature data.
- (a) The power analyser and the temperature sensor shall be connected to the Controller System.
- (b) The Controller System and the UUT shall be connected to each other via an Ethernet network switch.
- 4.8. General SERT Requirements: Any additional requirements specified in any SPEC or SERT 1.0.0 supporting documents shall be followed, unless otherwise specified in this test method. Supporting documents from SPEC include:
- (a) SPEC Power and Performance Methodology
- (b) SPEC Power Measurement Setup Guide
- (c) SPEC PTDaemon Design Document
- (d) SERT Design Document
- (e) SERT Run and Reporting Rules
- (f) SERT User Guide
- (g) SERT JVM Options
- (h) SERT Result File Fields
5. **Test conduct**
- 5.1. Test Configuration
- Power and efficiency shall be tested and reported for the Computer Servers being tested. Testing shall be conducted as follows:
- 5.1.1. As-shipped Condition: Products shall be tested in their 'as-shipped' configuration, which includes both hardware configuration and system settings, unless otherwise specified in this test method. Where relevant, all software options shall be set to their default condition.
- 5.1.2. Measurement Location: All power measurements shall be taken at a point between the ac power source and the UUT. No Uninterruptible Power Supply (UPS) units may be connected between the power meter and the UUT. The power meter shall remain in place until all Idle and Active State power data are fully recorded. When testing a Blade System, power shall be measured at the input of the Blade Chassis (i.e., at the power supplies that convert data centre distribution power to Chassis distribution power).
- 5.1.3. Air Flow: Purposefully directing air in the vicinity of the measured equipment in a way that would be inconsistent with normal data centre practices is prohibited.

⁽¹⁾ <http://www.spec.org/>

5.1.4. Power Supplies: All PSUs shall be connected and operational.

UUTs with Multiple PSUs: All power supplies shall be connected to the ac power source and operational during the test. If necessary, a Power Distribution Unit (PDU) may be used to connect multiple power supplies to a single source. If a PDU is used, any overhead electrical use from the PDU shall be included in the power measurement of the UUT. When testing Blade Servers with half-populated Chassis configurations, the power supplies for the unpopulated power domains can be disconnected (see section 5.2.4(b) for more information).

5.1.5. Power Management and Operating System: The as-shipped operating system or a representative operating system shall be installed. Products that are shipped without operating systems shall be tested with any compatible operating system installed. For all tests, the power management techniques and/or power saving features shall be left as-shipped. Any power management features which require the presence of an operating system (i.e. those that are not explicitly controlled by the Basic Input Output System (BIOS) or management controller) shall be tested using only those power management features enabled by the operating system by default.

5.1.6. Storage: Products shall be tested for qualification with at least one Hard Disk Drive (HDD) or one Solid State Drive (SSD) installed. Products that do not include pre-installed hard drives (HDD or SSD) shall be tested using a storage configuration used in an identical model for sale that does include pre-installed hard drives. Products that do not support installation of hard drives (HDD or SSD) and, instead, rely exclusively on external storage solutions (e.g. storage area network) shall be tested using external storage solutions.

5.1.7. Blade System and Dual/Multi-Node Servers: A Blade System or Dual/Multi-Node Server shall have identical configurations for each node or Blade Server including all hardware components and software/power management settings. These systems shall also be measured in a way that ensures all power from all tested nodes/Blade Servers is captured by the power meter during the entire test.

5.1.8. Blade Chassis: The Blade Chassis, at a minimum, shall have power, cooling, and networking capabilities for all the Blade Servers. The Chassis shall be populated as specified in section 5.2.4. All power measurements for Blade Systems shall be made at the input of the Chassis.

5.1.9. BIOS and UUT System Settings: All BIOS settings shall remain as-shipped unless otherwise specified in the test method.

5.1.10. Input/Output (I/O) and Network Connection: The UUT shall have at least one port connected to an Ethernet network switch. The switch shall be capable of supporting the UUT's highest and lowest rated network speeds. The network connection shall be live during all tests, and, although the link shall be ready and able to transmit packets, no specific traffic is required over the connection during testing. For the purpose of testing ensure the UUT offers at least one Ethernet port (using a single add-in card only if no onboard Ethernet support is offered).

5.1.11. Ethernet Connections: Products shipped with support for Energy Efficient Ethernet (compliant with IEEE 802.3az) shall be connected only to Energy Efficient Ethernet compliant network equipment during testing. Appropriate measures shall be taken to enable EEE features on both ends of the network link during all tests.

5.2. UUT Preparation

5.2.1. The UUT shall be tested with the processor sockets populated as specified in Section 6.1.2 of ENERGY STAR Eligibility Criteria Version 2.0.

5.2.2. Install the UUT in a test rack or location. The UUT shall not be physically moved until testing is complete.

5.2.3. If the UUT is a Multi-node system, the UUT shall be tested for per node power consumption in the fully-populated Chassis configuration. All Multi-node Servers installed in the Chassis shall be identical, sharing the same configuration.

- 5.2.4. If the UUT is a Blade System, the UUT shall be tested for Blade Server power consumption in the half-populated Chassis configuration with an additional option of testing the UUT in the fully-populated Chassis configuration. For Blade Systems, populate the Chassis as follows:

(a) Individual Blade Server Configuration

All Blade Servers installed in the Chassis shall be identical, sharing the same configuration (homogeneous).

(b) Half Chassis Population (Required)

- (1) Calculate the number of Blade Servers required to populate half the number of Single-wide Blade Server slots available in the Blade Chassis.
- (2) For Blade Chassis having multiple power domains, choose the number of power domains that is closest to filling half of the Chassis. In a case where there are two choices that are equally close to filling half of the Chassis, test with the domain or combination of domains which utilize a higher number of Blade Servers.

Example 1: A certain Blade Chassis supports up to 7 Single-wide Blade Servers on two power domains. One power domain supports 3 Blade Servers and the other supports 4 Blade Servers. In this example, the power domain which supports 4 Blade Servers would be fully populated during testing, while the other power domain would remain unpopulated.

Example 2: A certain Blade Chassis supports up to 16 Single-wide Blade Servers on four power domains. Each of the four power domains supports 4 Blade Servers. In this example, two of the power domains would be fully populated during testing, while the other two power domains would remain unpopulated.

- (3) Follow all user manual or manufacturer recommendations for partially populating the Chassis, which may include disconnecting some of the power supplies and cooling fans for the unpopulated power domains.
- (4) If user manual recommendations are not available or are incomplete, then use the following guidance:
 - (i) Completely populate the power domains.
 - (ii) If possible, disconnect the power supplies and cooling fans for unpopulated power domains.
 - (iii) Fill all empty bays with blanking panels or an equivalent airflow restriction for the duration of testing.

(c) Full Chassis Population (Optional)

Populate all available Chassis bays. All power supplies and cooling fans shall be connected. Proceed with all required tests in the test procedure as specified in Section 6.

- 5.2.5. Connect the UUT to a live Ethernet (IEEE 802.3) network switch. The live connection shall be maintained for the duration of testing, except for brief lapses necessary for transitioning between link speeds.
- 5.2.6. The Controller System required to provide SERT workload harness control, data acquisition, or other UUT testing support shall be connected to the same network switch as the UUT and satisfy all other UUT network requirements. Both the UUT and Controller System shall be configured to communicate via the network.

- 5.2.7. Connect the power meter to an ac voltage source set to the appropriate voltage and frequency for the test, as specified in Section 4.
- 5.2.8. Plug the UUT into the measurement power outlet on the power meter following the guidelines in 5.1.2.
- 5.2.9. Connect the data output interface of the power meter and the temperature sensor to the appropriate input of the Controller System.
- 5.2.10. Verify that the UUT is configured in its as-shipped configuration.
- 5.2.11. Verify that the Controller System and UUT are connected on the same internal network via an Ethernet network switch.
- 5.2.12. Use a normal ping command to verify that the Controller System and UUT can communicate with each other.
- 5.2.13. Install SERT 1.0.0 on the UUT and the Controller System as specified in the SERT User Guide 1.0.0 ⁽¹⁾.

6. Test procedures for all products

6.1. Idle State Testing

- 6.1.1. Power on the UUT, either by switching it on or connecting it to mains power.
- 6.1.2. Power on the Controller System.
- 6.1.3. Begin recording elapsed time.
- 6.1.4. Between 5 and 15 minutes after the completion of initial boot or log in, set the power meter to begin accumulating idle power values at an interval of greater than or equal to 1 reading per second.
- 6.1.5. Accumulate idle power values for 30 minutes. The UUT shall maintain in Idle State throughout this period and shall not enter lower power states with limited functionality (e.g., sleep or hibernate).
- 6.1.6. Record the average idle power (arithmetic mean) during the 30 minute test period.
- 6.1.7. When testing a Multi-node or Blade System, proceed as follows to derive single node or single Blade Server power:
 - (a) Divide the measured total idle power in Section 6.1.6 by the number of nodes/Blade Servers installed for the test;
 - (b) Record the measured total and per-node/per-Blade Server power values as calculated in 6.1.7(a) for each measurement.

6.2. Active State Testing Using SERT

- 6.2.1. Reboot the UUT.
- 6.2.2. Between 5 and 15 minutes after the completion of initial boot or log in, follow the SERT User Guide 1.0.0 to engage SERT.

⁽¹⁾ http://www.spec.org/sert/docs/SERT-User_Guide.pdf

- 6.2.3. Follow all steps outlined in the SERT User Guide 1.0.0 to successfully run SERT.
- 6.2.4. Manual intervention or optimization to the Controller System, UUT, or its internal and external environment is prohibited during the execution of SERT.
- 6.2.5. Once SERT is completed, include the following output files with all testing results:
- (a) Results.xml
 - (b) Results.html
 - (c) Results.txt
 - (d) All results-chart.png files (e.g. results-chart0.png, results-chart1.png, etc.)
 - (e) Results-details.html
 - (f) Results-details.txt
 - (g) All results-details-chart png files (e.g. results-details-chart0.png, results-details-chart1.png, etc.)

IV. IMAGING EQUIPMENT SPECIFICATION (VERSION 2.0)

1. **Definitions**

1.1. Product Types:

- 1.1.1. **Printer:** A product whose primary function is to generate paper output from electronic input. A printer is capable of receiving information from single-user or networked computers, or other input devices (e.g., digital cameras). This definition is intended to cover products that are marketed as printers, and printers that can be field-upgraded to meet the definition of an MFD.
- 1.1.2. **Scanner:** A product whose primary function is to convert paper originals into electronic images that can be stored, edited, converted, or transmitted, primarily in a personal computing environment. This definition is intended to cover products that are marketed as scanners.
- 1.1.3. **Copier:** A product whose sole function is to produce paper duplicates from paper originals. This definition is intended to cover products that are marketed as copiers, and upgradeable digital copiers (UDCs).
- 1.1.4. **Facsimile (Fax) Machine:** A product whose primary functions are (1) to scan paper originals for electronic transmission to remote units, and (2) to receive electronic transmissions for conversion to paper output. A fax machine may also be capable of producing paper duplicates. Electronic transmission is primarily over a public telephone system, but may also be via a computer network or the internet. This definition is intended to cover products that are marketed as fax machines.
- 1.1.5. **Multifunction Device (MFD):** A product that performs two or more of the core functions of a Printer, Scanner, Copier, or Fax Machine. An MFD may have a physically integrated form factor, or it may consist of a combination of functionally integrated components. MFD copy functionality is considered to be distinct from single-sheet convenience copying functionality sometimes offered by fax machines. This definition includes products marketed as MFDs, and 'multi-function products' (MFPs).
- 1.1.6. **Digital Duplicator:** A product sold as a fully-automated duplicator system through the method of stencil duplicating with digital reproduction functionality. This definition is intended to cover products that are marketed as digital duplicators.

- 1.1.7. Mailing Machine: A product whose primary function is to print postage onto mail pieces. This definition is intended to cover products that are marketed as mailing machines.
- 1.2. Marking Technologies:
- 1.2.1. Direct Thermal (DT): A marking technology characterized by the burning of dots onto coated print media that is passed over a heated print head. DT products do not use ribbons.
- 1.2.2. Dye Sublimation (DS): A marking technology characterized by the deposition (sublimation) of dye onto print media as energy is supplied to heating elements.
- 1.2.3. Electro-photographic (EP): A marking technology characterized by the illumination of a photoconductor in a pattern representing the desired output image via a light source, development of the image with particles of toner using the latent image on the photoconductor to define the presence or absence of toner at a given location, transfer of the toner to the final print media, and fusing to cause the output to become durable. For purposes of this specification, Colour EP products simultaneously offer three or more unique toner colours, while Monochrome EP products simultaneously offer one or two unique toner colours. This definition includes Laser, Light Emitting Diode (LED), and Liquid Crystal Display (LCD) illumination technologies.
- 1.2.4. Impact: A marking technology characterized by the formation of the desired output image by transferring colorant from a 'ribbon' to the print media via an impact process. This definition includes Dot Formed Impact and Fully Formed Impact.
- 1.2.5. Ink Jet (IJ): A marking technology characterized by the deposition of colorant in small drops directly to the print media in a matrix manner. For purposes of this specification, Color IJ products offer two or more unique colorants at one time, while Monochrome IJ products offer one colorant at a time. This definition includes Piezo-electric (PE) IJ, IJ Sublimation, and Thermal IJ. This definition does not include High Performance IJ.
- 1.2.6. High Performance IJ: An IJ marking technology that includes nozzle arrays that span the width of a page and/or the ability to dry ink on the print media via supplemental media heating mechanisms. High-performance IJ products are used in business applications usually served by electro-photographic marking products.
- 1.2.7. Solid Ink (SI): A marking technology characterized by ink that is solid at room temperature and liquid when heated to the jetting temperature. This definition includes both direct transfer and offset transfer via an intermediate drum or belt.
- 1.2.8. Stencil: A marking technology characterized by the transfer of images onto print media from a stencil that is fitted around an inked drum.
- 1.2.9. Thermal Transfer (TT): A marking technology characterized by the deposition of small drops of solid colorant (usually coloured waxes) in a melted/fluid state directly to print media in a matrix manner. TT is distinguished from IJ in that the ink is solid at room temperature and is made fluid by heat.
- 1.3. Operational Modes:
- 1.3.1. On Mode:
- (a) Active State: The power state in which a product is connected to a power source and is actively producing output, as well as performing any of its other primary functions

- (b) Ready State: The power state in which a product is not producing output, has reached operating conditions, has not yet entered into any lower-power modes, and can enter Active State with minimal delay. All product features can be enabled in this state, and the product is able to return to Active State by responding to any potential inputs, including external electrical stimulus (e.g., network stimulus, fax call, or remote control) and direct physical intervention (e.g., activating a physical switch or button).
- 1.3.2. Off Mode: The power state that the product enters when it has been manually or automatically switched off but is still plugged in and connected to the mains. This mode is exited when stimulated by an input, such as a manual power switch or clock timer to bring the unit into Ready State. When this state is resultant from a manual intervention by a user, it is often referred to as Manual Off, and when it is resultant from an automatic or predetermined stimuli (e.g., a delay time or clock), it is often referred to as Auto-off ⁽¹⁾.
- 1.3.3. Sleep Mode: A reduced power state that a product enters either automatically after a period of inactivity (i.e., Default Delay Time), in response to user manual action (e.g., at a user-set time of day, in response to a user activation of a physical switch or button), or in response to external electrical stimulus (e.g., network stimulus, fax call, remote control). For products evaluated under the TEC test method, Sleep Mode permits operation of all product features (including maintenance of network connectivity), albeit with a possible delay to transition into Active State. For products evaluated under the OM test method, Sleep Mode permits operation of a single active network interface, as well as a fax connection if applicable, albeit with a possible delay to transition into Active State.
- 1.3.4. Standby: The lowest power consumption state which cannot be switched off (influenced) by the user and that may persist for an indefinite time when the product is connected to the main electricity supply and used in accordance with the manufacturer's instructions ⁽²⁾. Standby is the product's minimum power state. For Imaging Equipment products addressed by this specification, the 'Standby' Mode usually corresponds to Off Mode, but may correspond to Ready State or Sleep Mode. A product cannot exit Standby and reach a lower power state unless it is physically disconnected from the main electricity supply as a result of manual manipulation.
- 1.4. Media Format:
- 1.4.1. Large Format: Products designed for A2 media and larger, including those designed to accommodate continuous-form media greater than or equal to 406 mm wide. Large-format products may also be capable of printing on standard-size or small-format media.
- 1.4.2. Standard Format: Products designed for standard-sized media (e.g., Letter, Legal, Ledger, A3, A4, B4), including those designed to accommodate continuous-form media between 210 mm and 406 mm wide. Standard-size products may also be capable of printing on small-format media.
- A3-capable: Standard Format products with a paper path width equal to or greater than 275 mm.
- 1.4.3. Small Format: Products designed for media sizes smaller than those defined as Standard (e.g., A6, 4" × 6", microfilm), including those designed to accommodate continuous-form media less than 210 mm wide.
- 1.4.4. Continuous Form: Products that do not use a cut-sheet media format and that are designed for applications such as printing of bar codes, labels, receipts, banners, and engineering drawings. Continuous Form products can be Small, Standard, or Large Format.
- 1.5. Additional Terms:
- 1.5.1. Automatic Duplexing: The capability of a copier, fax machine, MFD, or printer to produce images on both sides of an output sheet, without manual manipulation of output as an intermediate step. A product is considered to have automatic duplexing capability only if all accessories needed to produce duplex output are included with the product upon shipment.

⁽¹⁾ For the purposes of this specification 'mains' or the 'main electricity supply' refers to the input power source, including a dc power supply for products that operate solely off dc power.

⁽²⁾ IEC 62301 Ed. 1.0 – Household electrical appliances – Measurement of standby power.

- 1.5.2. Data Connection: A connection that permits the exchange of information between the Imaging Equipment and one external powered device or storage medium.
- 1.5.3. Default Delay Time: The time set by the manufacturer prior to shipping that determines when the product will enter a lower-power mode (e.g., Sleep, Auto-off) following completion of its primary function.
- 1.5.4. Digital Front-end (DFE): A functionally-integrated server that hosts other computers and applications and acts as an interface to Imaging Equipment. A DFE provides greater functionality to the Imaging Equipment.
- (a) A DFE offers three or more of the following advanced features:
- (1) Network connectivity in various environments;
 - (2) Mailbox functionality;
 - (3) Job queue management;
 - (4) Machine management (e.g., waking the Imaging Equipment from a reduced power state);
 - (5) Advanced graphic user-interface (UI);
 - (6) Ability to initiate communication with other host servers and client computers (e.g., scanning to e-mail, polling remote mailboxes for jobs); or
 - (7) Ability to post-process pages (e.g., reformatting pages prior to printing).
- (b) Type 1 DFE: A DFE that draws its dc power from its own ac power supply (internal or external), which is separate from the power supply that powers the Imaging Equipment. This DFE may draw its ac power directly from a wall outlet, or it may draw it from the ac power associated with the Imaging Equipment's internal power supply. A Type 1 DFE may be sold standard with the Imaging Equipment product or as an accessory.
- (c) Type 2 DFE: A DFE that draws its dc power from the same power supply as the Imaging Equipment with which it operates. Type 2 DFEs must have a board or assembly with a separate processing unit that is capable of initiating activity over the network and can be physically removed, isolated, or disabled using common engineering practices to allow power measurements to be made.
- (d) Auxiliary Processing Accelerator (APA): A computing expansion add-in card installed in a general-purpose add-in expansion slot of the DFE (e.g., GPGPU installed in a PCI slot).
- 1.5.5. Network Connection: A connection that permits the exchange of information between the Imaging Equipment and one or more external powered devices.
- 1.5.6. Functional Adder: A data or network interface or other component that adds functionality to the marking engine of an Imaging Equipment product and provides a power allowance when qualifying products according to the OM method.
- 1.5.7. Operational Mode (OM): For the purposes of this specification, a method of comparing product energy performance via an evaluation of power (measured in watts) in various operating states, as specified in Section 9 of the ENERGY STAR Imaging Equipment Test Method.

- 1.5.8. Typical Electricity Consumption (TEC): For the purposes of this specification, a method of comparing product energy performance via an evaluation of typical electricity consumption (measured in kilowatt-hours) during normal operation over a specified period of time, as specified in Section 8 of the ENERGY STAR Imaging Equipment Test Method.
- 1.5.9. Marking Engine: The fundamental engine of an Imaging Equipment product that drives image production. A marking engine relies upon functional adders for communication ability and image processing. Without functional adders and other components, a marking engine cannot acquire image data for processing and is non-functional.
- 1.5.10. Base Product: The most fundamental configuration of a particular Product Model, which possesses the minimum number of functional adders available. Optional components and accessories are not considered part of a base product.
- 1.5.11. Accessory: A piece of peripheral equipment that is not necessary for the operation of the Base Product, but that may be added before or after shipment in order to add functionality. An accessory may be sold separately under its own model number, or sold with a base product as part of a package or configuration.
- 1.5.12. Product Model: An Imaging Equipment product that is sold or marketed under a unique model number or marketing name. A product model may be comprised of a base product or a base product plus accessories.
- 1.5.13. Product Family: A group of product models that are (1) made by the same manufacturer, (2) subject to the same ENERGY STAR qualification criteria, and (3) of a common basic design. Product models within a family differ from each other according to one or more characteristics or features that either (1) have no impact on product performance with regard to ENERGY STAR qualification criteria, or (2) are specified herein as acceptable variations within a product family. For Imaging Equipment, acceptable variations within a product family include:
- (a) Colour,
 - (b) Housing,
 - (c) Input or output paper-handling accessories,
 - (d) Electronic components not associated with the marking engine of the Imaging Equipment product, including Type 1 and Type 2 DFEs.

2. Scope

2.1. Included Products

- 2.1.1. Commercially-available products that meet one of the Imaging Equipment definitions in Section 1.1 and are capable of being powered from (1) a wall outlet, (2) a data or network connection, or (3) both a wall outlet and a data or network connection, are eligible for ENERGY STAR qualification, with the exception of products listed in Section 2.2.
- 2.1.2. An Imaging Equipment product must further be classified as either 'TEC' or 'OM' in Table 1, below, depending on the method of ENERGY STAR evaluation.

Table 1

Evaluation Methods for Imaging Equipment

Equipment Type	Media Format	Marking Technology	ENERGY STAR Evaluation Method
Copier	Standard	DT, DS, EP, SI, TT	TEC
	Large	DT, DS, EP, SI, TT	OM

Equipment Type	Media Format	Marking Technology	ENERGY STAR Evaluation Method
Digital Duplicator	Standard	Stencil	TEC
Fax Machine	Standard	DT, DS, EP, SI, TT	TEC
		IJ	OM
Mailing Machine	All	DT, EP, IJ, TT	OM
Multifunction Device (MFD)	Standard	High Performance IJ, DT, DS, EP, SI, TT	TEC
		IJ, Impact	OM
	Large	DT, DS, EP, IJ, SI, TT	OM
Printer	Standard	High Performance IJ, DT, DS, EP, SI, TT	TEC
		IJ, Impact	OM
	Large or Small	DT, DS, EP, Impact, IJ, SI, TT	OM
	Small	High Performance IJ	TEC
Scanner	All	N/A	OM

2.2. Excluded Products

2.2.1. Products that are covered under other ENERGY STAR product specifications are not eligible for qualification under this specification. The list of specifications currently in effect can be found at www.eu-energystar.org.

2.2.2. Products that satisfy one or more of the following conditions are not eligible for ENERGY STAR qualification under this specification:

Products that are designed to operate directly on three-phase power.

3. Qualification Criteria

3.1. Significant Digits and Rounding

3.1.1. All calculations shall be carried out with directly measured (unrounded) values.

3.1.2. Unless otherwise specified, compliance with specification limits shall be evaluated using directly measured or calculated values without any benefit from rounding.

3.1.3. Directly measured or calculated values that are submitted for reporting on the ENERGY STAR website shall be rounded to the nearest significant digit as expressed in the corresponding specification limit.

3.2. General Requirements

3.2.1. External Power Supply (EPS):

If the product is shipped with a single-voltage EPS, the EPS shall meet the level V performance requirements under the International Efficiency Marking Protocol and include the level V marking. Additional information on the Marking Protocol is available at www.energystar.gov/powersupplies.

- Single-output EPS shall meet level V requirements when tested using the Test Method for Calculating the Energy Efficiency of Single-Voltage External Ac-Dc and Ac-Ac Power Supplies, Aug. 11, 2004.
 - Multi-output EPS shall meet the level V requirements when tested using the EPRI 306 Generalized Internal Power Supply Efficiency Test Protocol, Rev. 6.6. Power Supply data generated using Rev. 6.4.2 (as required in Version 1.2) is acceptable provided the test was conducted prior to the effective date of Version 2.0.
- 3.2.2. Additional Cordless Handset: Fax machines and MFDs with fax capability that are sold with additional cordless handsets shall use an ENERGY STAR qualified handset, or one that meets the ENERGY STAR Telephony specification when tested to the ENERGY STAR test method on the date the Imaging Equipment product is qualified as ENERGY STAR. The ENERGY STAR specification and test method for telephony products may be found at www.energystar.gov/products.
- 3.2.3. Functionally Integrated MFD: If an MFD consists of a set of functionally integrated components (i.e., the MFD is not a single physical device), the sum of the measured energy or power consumption for all components shall be less than the relevant MFD energy or power consumption requirements for ENERGY STAR qualification.
- 3.2.4. DFE Requirements: The Typical Electricity Consumption (TEC_{DFE}) of a Type 1 or Type 2 DFE sold with an Imaging Equipment product at the time of sale shall be calculated using Equation 1 for a DFE without Sleep Mode or Equation 2 for a DFE with Sleep Mode. The resulting TEC_{DFE} value shall be less than or equal to the maximum TEC_{DFE} requirement specified in Table 2 for the given DFE type.
- (a) The TEC value or Ready State power of a DFE that meets the maximum TEC_{DFE} requirements should be excluded or subtracted from the TEC energy and OM power measurements of the Imaging Equipment product as appropriate.
 - (b) Section 3.3.2 provides further detail on subtracting TEC_{DFE} values from TEC products;
 - (c) Section 3.4.2 provides further detail for excluding DFEs from OM Sleep and Standby levels.

Equation 1: TEC_{DFE} Calculation for Digital Front Ends without Sleep Mode

$$TEC_{DFE} = \frac{168 \times P_{DFE_READY}}{1\,000}$$

Where:

- TEC_{DFE} is the typical weekly energy consumption for DFEs, expressed in kilowatt-hours (kWh) and rounded to the nearest 0,1 kWh;
- P_{DFE_READY} is Ready State power measured in the test procedure in watts.

Equation 2: TEC_{DFE} Calculation for Digital Front Ends with Sleep Mode

$$TEC_{DFE} = \frac{(45 \times P_{DFE_READY}) + (123 \times P_{DFE_SLEEP})}{1\,000}$$

Where:

- TEC_{DFE} is the typical weekly energy consumption for DFEs, expressed in kilowatt-hours (kWh) and rounded to the nearest 0,1 kWh;

— $P_{\text{DFE_READY}}$ is the DFE Ready State power measured in the test procedure in watts.

— $P_{\text{DFE_SLEEP}}$ is the DFE Sleep Mode power measured in the test procedure in watts.

Table 2

Maximum TEC_{DFE} Requirements for Type 1 and Type 2 DFEs

DFE Category	Category Description	Maximum TEC_{DFE} (kWh/week, rounded to the nearest 0,1 kWh/week for reporting)	
		Type 1 DFE	Type 2 DFE
A	All DFEs that do not meet the definition of Category B will be considered under Category A for ENERGY STAR qualification.	10,9	8,7
B	To qualify under Category B DFEs must have: 2 or more physical CPUs or 1 CPU and ≥ 1 discrete Auxiliary Processing Accelerators (APAs)	22,7	18,2

3.3. Requirements for Typical Electricity Consumption (TEC) Products

3.3.1. Automatic Duplexing Capability:

- (a) For all copiers, MFDs, and printers subject to the TEC test method, automatic duplexing capability shall be present at the time of purchase as specified in Tables 3 and 4. Printers whose intended function is to print on special single-sided media for the purpose of single sided printing (e.g., release coated paper for labels, direct thermal media, etc.) are exempt from this requirement.

Table 3

Automatic Duplexing Requirements for all Color TEC Copiers, MFDs, and Printers

Monochrome Product Speed, s , as Calculated in the Test Method (ipm)	Automatic Duplexing Requirement
$s \leq 19$	None
$19 < s < 35$	Integral to the base product or optional accessory
$s \geq 35$	Integral to the base product

Table 4

Automatic Duplexing Requirements for all Monochrome TEC Copiers, MFDs, and Printers

Monochrome Product Speed, s , as Calculated in the Test Method (ipm)	Automatic Duplexing Requirement
$s \leq 24$	None
$24 < s < 37$	Integral to the base product or optional accessory
$s \geq 37$	Integral to the base product

- (b) If a product is not certain to be bundled with an automatic duplex tray, the partner must make clear in their product literature, on their Web site, and in institutional sales literature that although the product meets the ENERGY STAR energy efficiency requirements, the product only fully qualifies for ENERGY STAR when bundled with or used with a duplex tray. EPA and the European Commission ask that partners use the following language to convey this message to customers: 'Achieves ENERGY STAR energy savings; product fully qualifies when packaged with (or used with) a duplex tray.'

3.3.2. Typical Electricity Consumption: Calculated Typical Energy Consumption (TEC) per Equation 3 or Equation 4 shall be less than or equal to the Maximum TEC Requirement (TEC_{MAX}) specified in Equation 6.

- (a) For Imaging Equipment with a Type 2 DFE that meet the Type 2 DFE maximum TEC_{DFE} requirement in Table 2, the measured energy consumption of the DFE shall be divided by 0,80 to account for internal power supply losses and then excluded when comparing the product's measured TEC value to TEC_{MAX} . The DFE shall not interfere with the ability of the Imaging Equipment to enter or exit its lower-power modes. The energy use of a DFE can only be excluded if it meets the DFE definition in Section 1 and is a separate processing unit that is capable of initiating activity over the network.

Example: A printer's total TEC result is 24,50 kWh/wk and its Type 2 TEC_{DFE} value calculated in Section 3.2.4 is 9,0 kWh/wk. The TEC_{DFE} value is then divided by 0,80 to account for internal power supply losses with the Imaging Equipment in Ready State, resulting in 11,25 kWh/wk. The power supply adjusted value is subtracted from the tested TEC value: 24,50 kWh/wk – 11,25 kWh/wk = 13,25 kWh/wk. This 13,25 kWh/wk result is then compared to the relevant TEC_{MAX} to determine qualification.

- (b) For printers, fax machines, digital duplicators with print capability, and MFDs with print capability, TEC shall be calculated per Equation 3.

Equation 3: TEC Calculation for Printers, Fax Machines, Digital Duplicators with Print Capability, and MFDs with Print Capability

$$TEC = 5 \times \left[E_{JOB_DAILY} + (2 \times E_{FINAL}) + \left[24 - (N_{JOBS} \times 0.25) - (2 \times t_{FINAL}) \right] \times \frac{E_{SLEEP}}{t_{SLEEP}} \right] + 48 \times \frac{E_{SLEEP}}{t_{SLEEP}},$$

Where:

- TEC is the typical weekly energy consumption for printers, fax machines, digital duplicators with print capability, and MFDs with print capability, expressed in kilowatt-hours (kWh) and rounded to the nearest 0,1 kWh;
- E_{JOB_DAILY} is the daily job energy, as calculated per Equation 5, in kWh;
- E_{FINAL} is the final energy, as measured in the test procedure, converted to kWh;
- N_{JOBS} is the number of jobs per day, as calculated in the test procedure,
- t_{FINAL} is the final time to Sleep, as measured in the test procedure, converted to hours;
- E_{SLEEP} is the Sleep energy, as measured in the test procedure, converted to kWh; and
- t_{SLEEP} is the Sleep time, as measured in the test procedure, converted to hours.

- (c) For copiers, digital duplicators without print capability, and MFDs without print capability, TEC shall be calculated per Equation 4.

Equation 4: TEC Calculation for Copiers, Digital Duplicators without Print Capability, and MFDs without Print Capability

$$TEC = 5 \times \left[E_{JOB_DAILY} + (2 \times E_{FINAL}) + \left[24 - (N_{JOBS} \times 0.25) - (2 \times t_{FINAL}) \right] \times \frac{E_{AUTO}}{t_{AUTO}} \right] + 48 \times \frac{E_{AUTO}}{t_{AUTO}},$$

Where:

- TEC is the typical weekly energy consumption for copiers, digital duplicators without print capability, and MFDs without print capability, expressed in kilowatt-hours (kWh) and rounded to the nearest 0,1 kWh;
- E_{JOB_DAILY} is the daily job energy, as calculated per Equation 5, in kWh;
- E_{FINAL} is the final energy, as measured in the test procedure, converted to kWh;
- N_{JOBS} is the number of jobs per day, as calculated in the test procedure;
- t_{FINAL} is the final time to Sleep, as measured in the test procedure, converted to hours;
- E_{AUTO} is the Auto-off energy, as measured in the test procedure, converted to kWh; and
- t_{AUTO} is the Auto-off time, as measured in the test procedure, converted to hours.

- (d) Daily Job Energy shall be calculated per Equation 5.

Equation 5: Daily Job Energy Calculation for TEC Products

$$E_{JOB_DAILY} = (2 \times E_{JOB1}) + \left((N_{JOBS} - 2) \times \frac{E_{JOB2} + E_{JOB3} + E_{JOB4}}{3} \right),$$

Where:

- E_{JOB_DAILY} is the daily job energy, expressed in kilowatt-hours (kWh);
- E_{JOBi} is the energy of the i th job, as measured in the test procedure, converted to kWh; and
- N_{JOBS} is the number of jobs per day, as calculated in the test procedure.

Equation 6: Maximum TEC Requirement Calculation

$$TEC_{MAX} = TEC_{REQ} + Adder_{A3},$$

Where:

- TEC_{MAX} is the maximum TEC requirement in kilowatt-hours per week (kWh/wk), rounded to the nearest 0,1 kWh/wk for reporting;

— TEC_{REQ} is the TEC requirement specified in Table 5, in kWh; and

— $Adder_{A3}$ is a 0,3 kWh/wk allowance provided for A3-capable products.

Table 5

TEC Requirement Before A3 Allowance (If Applicable)

Color Capability	Monochrome Product Speed, s , as Calculated in the Test Method (ipm)	TEC_{REQ} (kWh/week, to the nearest 0,1 kWh/week for reporting)
Monochrome Non-MFD	$s \leq 5$	0,3
	$5 < s \leq 20$	$(s \times 0,04) + 0,1$
	$20 < s \leq 30$	$(s \times 0,06) - 0,3$
	$30 < s \leq 40$	$(s \times 0,11) - 1,8$
	$40 < s \leq 65$	$(s \times 0,16) - 3,8$
	$65 < s \leq 90$	$(s \times 0,2) - 6,4$
	$s > 90$	$(s \times 0,55) - 37,9$
Monochrome MFD	$s \leq 5$	0,4
	$5 < s \leq 30$	$(s \times 0,07) + 0,05$
	$30 < s \leq 50$	$(s \times 0,11) - 1,15$
	$50 < s \leq 80$	$(s \times 0,25) - 8,15$
	$s > 80$	$(s \times 0,6) - 36,15$
Color Non-MFD	$s \leq 10$	1,3
	$10 < s \leq 15$	$(s \times 0,06) + 0,7$
	$15 < s \leq 30$	$(s \times 0,15) - 0,65$
	$30 < s \leq 75$	$(s \times 0,2) - 2,15$
	$s > 75$	$(s \times 0,7) - 39,65$
Color MFD	$s \leq 10$	1,5
	$10 < s \leq 15$	$(s \times 0,1) + 0,5$
	$15 < s \leq 30$	$(s \times 0,13) - 0,05$
	$30 < s \leq 70$	$(s \times 0,2) - 2,05$
	$70 < s \leq 80$	$(s \times 0,7) - 37,05$
	$s > 80$	$(s \times 0,75) - 41,05$

3.3.3. Additional Test Results Reporting Requirements:

- (a) Recovery times from various modes (Active 0, Active 1, Active 2 times) and Default Delay Time shall be reported for all products tested using the TEC test method.

- (b) DFE model name/number, Ready State power, Sleep Mode power, and TEC_{DFE} shall be reported for any Type 1 DFE sold with an Imaging Equipment product, including those not tested with the Imaging Equipment product as part of the highest energy using configuration per Section 4.2.1(c).

3.4. Requirements for Operational Mode (OM) Products

- 3.4.1. Multiple Sleep Modes: If a product is capable of automatically entering multiple successive Sleep Modes, the same Sleep Mode shall be used to determine qualification under the Default Delay Time to Sleep requirements specified in Section 3.4.3 and the Sleep Mode power consumption requirements specified in Section 3.4.4.

- 3.4.2. DFE Requirements: For Imaging Equipment with a functionally-integrated DFE that relies on the Imaging Equipment for its power, and that meets the appropriate maximum TEC_{DFE} requirement found in Table 2, the DFE power shall be excluded subject to the following conditions:

- (a) Ready State power of the DFE, as measured in the test method, shall be divided by 0,60 to account for internal power supply losses.

- (1) Sleep Mode Requirements: If the resultant power in Paragraph (a), above, is less than or equal to the Ready State or Sleep Mode power of the Imaging Equipment, then the power shall be excluded from the Imaging Equipment's measured Ready State or Sleep Mode power when comparing to the Sleep Mode requirements in Section 3.4.4, below. Otherwise, the Sleep Mode power of the DFE, as measured in the test method, shall be divided by 0,60 and excluded from the Ready or Sleep Mode power of the Imaging Equipment for comparing to the requirements.

- (2) Standby Requirements: If the resultant power in Paragraph (a), above, is less than or equal to the Ready State, Sleep Mode, or Off Mode power of the Imaging Equipment, then the power shall be excluded from the Imaging Equipment's Ready State, Sleep Mode, or Off Mode power when comparing to the Standby requirements in Section 3.4.5, below. Otherwise, the Sleep Mode power of the DFE, as measured in the test method, shall be divided by 0,60 and excluded from the Ready State, Sleep Mode, or Off Mode power of the Imaging Equipment for comparing to the requirements.

- (b) The DFE must not interfere with the ability of the Imaging Equipment to enter or exit its lower-power modes.

- (c) In order to take advantage of this exclusion, the DFE must meet the definition in Section 1 and be a separate processing unit that is capable of initiating activity over the network.

Examples: Product 1 is an Imaging Equipment product whose Type 2 DFE has no distinct sleep mode. The Type 2 DFE has measured Ready State and Sleep Mode power both equal to 30 watts. The measured Sleep Mode power of the product is 53 watts. When subtracting 50 watts ($30 \text{ watts}/0,60$) from the measured Sleep Mode power of the product, 53 watts, the resulting 3 watts is the Sleep Mode power of the product for use in the criteria limits below.

Product 2 is an Imaging Equipment product whose Type 2 DFE goes to sleep when the Imaging Equipment goes to sleep during testing. The Type 2 DFE has measured DFE Ready State and Sleep Mode power equal to 30 watts and 5 watts, respectively. The measured Sleep Mode power of the product is 12 watts. When subtracting 50 watts ($30 \text{ watts}/0,60$) from the measured Sleep Mode power of the product, 12 watts, the result is -38 watts. In this case, instead subtract 8,33 watts ($5 \text{ watts}/0,60$) from the measured Sleep Mode power of the product, 12 watts, resulting in 3,67 watts which is used in the criteria limits below.

- 3.4.3. Default Delay Time: Measured Default Delay Time to Sleep (t_{SLEEP}) shall be less than or equal to the Required Default Delay Time to Sleep (t_{SLEEP_REQ}) requirement specified in Table 6, subject to the following conditions:

- (a) The Default Delay Time to Sleep may not be adjusted by the user to be greater than the Maximum Machine Delay Time. This Maximum Machine Delay Time shall be set by the manufacturer at less than or equal to 4 hours.

(b) When reporting data and qualifying products that can enter Sleep Mode in multiple ways, partners should reference a Sleep level that can be reached automatically. If the product is capable of automatically entering multiple, successive Sleep levels, it is at the manufacturer's discretion which of these levels is used for qualification purposes; however, the default-delay time provided must correspond with whichever level is used.

(c) Default Delay Time does not apply to OM products that can meet Sleep Mode requirements in Ready State.

Table 6

Required Default Delay Time to Sleep for OM Products

Product Type	Media Format	Monochrome Product Speed, s , as Calculated in the Test Method (ipm or mppm)	Required Default Delay Time to Sleep, t_{SLEEP_REQ} (minutes)
Copier	Large	$s \leq 30$	30
		$s > 30$	60
Fax Machine	Small or Standard	All	5
MFD	Small or Standard	$s \leq 10$	15
		$10 < s \leq 20$	30
		$s > 20$	60
	Large	$s \leq 30$	30
		$s > 30$	60
Printer	Small or Standard	$s \leq 10$	5
		$10 < s \leq 20$	15
		$20 < s \leq 30$	30
		$s > 30$	60
	Large	$s \leq 30$	30
		$s > 30$	60
Scanner	All	All	15
Mailing Machine	All	$s \leq 50$	20
		$50 < s \leq 100$	30
		$100 < s \leq 150$	40
		$s > 150$	60

3.4.4. Sleep Mode Power Consumption: Measured Sleep Mode power consumption (P_{SLEEP}) shall be less than or equal to the maximum Sleep Mode power consumption requirement (P_{SLEEP_MAX}) determined per Equation 7, subject to the following conditions:

(a) Only those interfaces that are present and used during the test, including any fax interface, may be considered functional adders.

(b) Product functionality offered through a DFE shall not be considered a functional adder.

- (c) A single interface that performs multiple functions may be counted only once.
- (d) Any interface that meets more than one interface type definition shall be classified according to the functionality used during the test.
- (e) For products that meet the Sleep Mode power requirement in Ready State, no further automatic power reductions are required to meet Sleep Mode requirements.

Equation 7: Calculation of Maximum Sleep Mode Power Consumption Requirement for OM products

$$P_{\text{SLEEP_MAX}} = P_{\text{MAX_BASE}} + \sum_1^n \text{Adder}_{\text{INTERFACE}} + \sum_1^m \text{Adder}_{\text{OTHER}}$$

Where:

- $P_{\text{SLEEP_MAX}}$ is the maximum Sleep Mode power consumption requirement, expressed in watts (W), and rounded to the nearest 0,1 watt;
- $P_{\text{MAX_BASE}}$ is the maximum Sleep Mode power allowance for the base marking engine, as determined per Table 7, in watts;
- $\text{Adder}_{\text{INTERFACE}}$ is the power allowance for the interface functional adders used during the test, including any fax capability, and as selected by the manufacturer from Table 8, in watts;
- n is the number of allowances claimed for interface functional adders used during the test, including any fax capability, and is less than or equal to 2;
- $\text{Adder}_{\text{OTHER}}$ is the power allowance for any non-interface functional adders in use during the test, as selected by the manufacturer from Table 8, in watts; and
- m is the number of allowances claimed for any non-interface functional adders in use during the test, and is unlimited.

Table 7

Sleep Mode Power Allowance for Base Marking Engine

Product Type	Media Format	Marking Technology				$P_{\text{MAX_BASE}}$ (watts)
		Impact	Ink Jet	All Other	Not Applicable	
Copier	Large			x		8,2
Fax Machine	Standard		x			0,6
Mailing Machine	N/A		x	x		5,0
MFD	Standard	x	x			0,6
	Large		x			4,9
				x		8,2

Product Type	Media Format	Marking Technology				P _{MAX_BASE} (watts)
		Impact	Ink Jet	All Other	Not Applicable	
Printer	Small	x	x	x		4,0
	Standard	x	x			0,6
	Large	x		x		2,5
			x			4,9
Scanner	Any				x	2,5

Table 8

Sleep Mode Power Allowances for Functional Adders

Adder Type	Connection Type	Max. Data Rate, <i>r</i> (Mbit/second)	Details	Functional Adder Allowance (watts)
Interface	Wired	$r < 20$	Includes: USB 1.x, IEEE 488, IEEE 1284/Parallel/Centronics, RS232	0,2
		$20 \leq r < 500$	Includes: USB 2.x, IEEE 1394/FireWire/i.LINK, 100 Mb Ethernet	0,4
		$r \geq 500$	Includes: USB 3.x, 1 G Ethernet	0,5
		Any	Includes: Flash memory-card/smart-card readers, camera interfaces, PictBridge	0,2
	Fax Modem	Any	Applies to Fax Machines and MFDs only.	0,2
	Wireless, Radio-frequency (RF)	Any	Includes: Bluetooth, 802.11	2,0
	Wireless, Infrared (IR)	Any	Includes: IrDA.	0,1
Cordless Handset	N/A	N/A	Capability of the Imaging Equipment to communicate with a cordless handset. Applied only once, regardless of the number of cordless handsets the product is designed to handle. Does not address the power requirements of the cordless handset itself.	0,8
Memory	N/A	N/A	Applies to the internal capacity available in the Imaging Equipment for storing data. Applies to all volumes of internal memory and should be scaled accordingly for RAM. This adder does not apply to hard disk or flash memory.	0,5/GB

Adder Type	Connection Type	Max. Data Rate, r (Mbit/second)	Details	Functional Adder Allowance (watts)
Scanner	N/A	N/A	Applies to MFDs and Copiers only. Includes: Cold Cathode Fluorescent Lamp (CCFL) or a technology other than CCFL, such as Light-Emitting Diode (LED), Halogen, Hot-Cathode Fluorescent Tube (HCFT), Xenon, or Tubular Fluorescent (TL) technologies. (Applied only once, regardless of the lamp size or the number of lamps/bulbs employed.)	0,5
Power Supply	N/A	N/A	Applies to both internal and external power supplies of Mailing Machines and Standard Format products using Inkjet and Impact marking technologies with nameplate output power (POUT) greater than 10 watts.	0,02 x (POUT – 10,0)
Touch Panel Display	N/A	N/A	Applies to both monochrome and colour touch panel displays.	0,2
Internal Disk Drives	N/A	N/A	Includes any high-capacity storage product, including hard-disk and solid-state drives. Does not cover interfaces to external drives.	0,15

- 3.4.5. Standby Power Consumption: Standby Mode power, which is the lesser of the Ready State Power, Sleep Mode Power, and Off Mode Power, as measured in the test procedure, shall be less than or equal to the Maximum Standby Power specified in Table 9, subject to the following condition.

The Imaging Equipment shall meet the Standby Power requirement independent of the state of any other devices (e.g., a host PC) connected to it.

Table 9

Maximum Standby Power Requirement

Product Type	Maximum Standby Power (watts)
All OM Products	0,5

4. Testing

4.1. Test Methods

When testing Imaging Equipment products, the test methods identified in Table 10 shall be used to determine qualification for ENERGY STAR.

Table 10

Test Methods for ENERGY STAR Qualification

Product Type	Test Method
All Products	ENERGY STAR Imaging Equipment Test Method, Rev. May-2012

4.2. Number of Units Required for Testing

4.2.1. Representative Models shall be selected for testing per the following requirements:

- (a) For qualification of an individual product model, a product configuration equivalent to that which is intended to be marketed and labelled as ENERGY STAR is considered the Representative Model;
- (b) For qualification of a product family that does not include a Type 1 DFE, the highest energy using configuration within the family shall be considered the Representative Model. Any subsequent testing failures (e.g., as part of verification testing) of any model in the family will have implications for all models in the family.
- (c) For qualification of a product family that includes Type 1 DFE, the highest energy using configuration of the Imaging Equipment and highest energy using DFE within the family shall be tested for qualification purposes. Any subsequent testing failures (e.g., as part of verification testing) of any model in the family and all Type 1 DFEs sold with the Imaging Equipment, including those not tested with the Imaging Equipment product, will have implications for all models in the family. Imaging Equipment products that do not incorporate a Type 1 DFE may not be added to this product family for qualification and must be qualified as a separate family without a Type 1 DFE.

4.2.2. A single unit of each Representative Model shall be selected for testing.

4.3. International Market Qualification

Products shall be tested for qualification at the relevant input voltage/frequency combination for each market in which they will be sold and promoted as ENERGY STAR.

5. User Interface

Manufacturers are encouraged to design products in accordance with the user interface standard IEEE 1621: Standard for User Interface Elements in Power Control of Electronic Devices Employed in Office/Consumer Environments. For details, see <http://eetd.LBL.gov/Controls>.

6. Effective Date

Effective Date: The Version 2.0 ENERGY STAR Imaging Equipment specification shall take effect on January 1, 2014. To qualify for ENERGY STAR, a product model shall meet the ENERGY STAR specification in effect on its date of manufacture. The date of manufacture is specific to each unit and is the date on which a unit is considered to be completely assembled.

6.1. Future Specification Revisions: EPA and the European Commission reserve the right to change this specification should technological and/or market changes affect its usefulness to consumers, industry, or the environment. In keeping with current policy, revisions to the specification are arrived at through stakeholder discussions. In the event of a specification revision, please note that the ENERGY STAR qualification is not automatically granted for the life of a product model.

6.2. Items for Consideration in a Future Revision:

- (a) Test Method Changes: EPA, DOE and the European Commission will continue to monitor the implementation of proxying capability in Imaging Equipment hardware and consider the development of a test method to determine the presence of a network proxy (e.g., one compliant with ECMA-393 ProxZzy for Sleeping Hosts). EPA, DOE and the European Commission will also evaluate the possibility of measuring and reporting as-shipped product speed, recovery time from Sleep or Off Modes for OM products, and wakeup from Sleep Mode caused by common network events.

- (b) **TEC Requirements in Kilowatt-hours per Year:** EPA and the European Commission have added columns to the TEC Tables expressing the requirements in kilowatt-hours per year in addition to the currently-used kilowatt-hours per week. Although this is purely informative, EPA and the European Commission will consider making this unit the only way to express TEC in a future specification revision as a way to address issues with reporting accuracy and comparisons between other ENERGY STAR products (which typically report in kilowatt-hours/year).
- (c) **Equipment for Printing and Scanning Media Other than Paper:** EPA and the European Commission often receive questions about qualifying products that print or scan media other than paper (e.g., cloth, microfilm, etc.) and welcomes data on their energy consumption. Such data would support development of requirements for these products in a future version of the specification.
- (d) **Professional Products (High-speed TEC Products for Printing on Heavier, Larger Paper):** EPA and the European Commission have learned that some high-speed TEC products have additional requirements for handling larger and heavier paper. EPA and the European Commission will consider separating these into a separate category in a future version of the specification.
- (e) **Decoupled Requirements for TEC Categories:** In Version 1 and 2 Imaging Equipment specifications, EPA and the European Commission assumed that colour products would have higher TEC than monochrome products due to their additional complexity, and multi-function would have higher TEC than single-function. The TEC requirements were structured to reflect this relationship. However, EPA and the European Commission have recently learned that colour MFDs—a premium product—can incorporate energy saving features that decrease their energy consumption below that for monochrome non-MFDs. EPA and the European commission will therefore consider decoupling the TEC requirements in the future to recognize the highest performers among all TEC categories.
- (f) **Scope Re-evaluation:** EPA and the European Commission may re-assess the current market for Imaging Equipment to determine whether the current scope of included products is still relevant and whether ENERGY STAR label continues to provide a market differentiation for all product classes included in scope.
- (g) **Expanding Duplexing Requirements:** EPA and the European Commission may re-assess the requirements for the presence of duplexing as integral to the base product and consider how the optional requirements could be made more stringent. Changing the requirements to result in greater coverage of products with duplexing integral to the base marking engine could reduce paper usage.

Appendix D

Test Method for Determining Imaging Equipment Energy Use

1. Overview

The following test method shall be used for determining product compliance with requirements in the ENERGY STAR Eligibility Criteria for Imaging Equipment.

2. Applicability

ENERGY STAR test requirements are dependent upon the feature set of the products under evaluation. Table 11 shall be used to determine the applicability of each section of this document.

Table 11

Test Procedure Applicability

Product Type	Media Format	Marking Technology	ENERGY STAR Evaluation Method
Copier	Standard	Direct Thermal (DT), Dye Sublimation (DS), Electro-photographic (EP), Solid Ink (SI), Thermal Transfer (TT)	Typical Energy Consumption (TEC)
	Large	DT, DS, EP, SI, TT	Operational Mode (OM)

Product Type	Media Format	Marking Technology	ENERGY STAR Evaluation Method
Digital Duplicator	Standard	Stencil	TEC
Fax Machine	Standard	DT, DS, EP, SI, TT	TEC
		Ink Jet (IJ)	OM
Mailing Machine	All	DT, EP, IJ, TT	OM
Multifunction Device (MFD)	Standard	High Performance IJ, DT, DS, EP, SI, TT	TEC
		IJ, Impact	OM
	Large	DT, DS, EP, IJ, SI, TT	OM
Printer	Standard	High Performance IJ, DT, DS, EP, SI, TT	TEC
		IJ, Impact	OM
	Large or Small	DT, DS, EP, Impact, IJ, SI, TT	OM
	Small	High Performance IJ	TEC
Scanner	All	N/A	OM

3. Definitions

Unless otherwise specified, all terms used in this document are consistent with the definitions in the ENERGY STAR Eligibility Criteria for Imaging Equipment.

4. Test Setup

General Test Setup

- 4.1. Test Setup and Instrumentation: Test setup and instrumentation for all portions of this procedure shall be in accordance with the requirements of International Electrotechnical Commission (IEC) Standard 62301, Ed. 2.0, 'Measurement of Household Appliance Standby Power', Section 4, 'General Conditions for Measurements.' In the event of conflicting requirements, the ENERGY STAR test method shall take precedence.
- 4.2. Ac Input Power: Products intended to be powered from an ac mains power source shall be connected to a voltage source appropriate for the intended market, as specified in Table 12 or 13.
 - (a) Products shipped with external power supplies (EPSs) shall first be connected to the EPS and then to the voltage source specified in Table 12 or 13.
 - (b) If a product is rated to operate at a voltage/frequency combination in a specific market that is different from the voltage/frequency combination for that market (e.g., 230 volts (V), 60 hertz (Hz) in North America), the unit shall be tested at the manufacturer rated voltage/frequency combination for that unit. The voltage/frequency used shall be reported.

Table 12

Input Power Requirements for Products with Nameplate Rated Power Less Than or Equal to 1 500 W

Market	Voltage	Voltage Tolerance	Maximum Total Harmonic Distortion	Frequency	Frequency Tolerance
North America, Taiwan	115 V ac	+/- 1,0 %	2,0 %	60 Hz	+/- 1,0 %
Europe, Australia, New Zealand	230 V ac	+/- 1,0 %	2,0 %	50 Hz	+/- 1,0 %
Japan	100 V ac	+/- 1,0 %	2,0 %	50 Hz/60 Hz	+/- 1,0 %

Table 13

Input Power Requirements for Products with Nameplate Rated Power Greater than 1 500 W

Market	Voltage	Voltage Tolerance	Maximum Total Harmonic Distortion	Frequency	Frequency Tolerance
North America, Taiwan	115 V ac	+/- 4,0 %	5,0 %	60 Hz	+/- 1,0 %
Europe, Australia, New Zealand	230 V ac	+/- 4,0 %	5,0 %	50 Hz	+/- 1,0 %
Japan	100 V ac	+/- 4,0 %	5,0 %	50 Hz/60 Hz	+/- 1,0 %

4.3. Low-voltage Dc Input Power:

- (a) Products may be powered with a low-voltage dc source (e.g., via network or data connection) only if the dc source is the only acceptable source of power for the product (i.e., no ac plug or EPS is available).
- (b) Products powered by low-voltage dc shall be configured with an ac source of the dc power for testing (e.g., an ac-powered universal serial bus (USB) hub).

The ac source of the dc power used for testing shall be recorded and reported for all tests.

- (c) Power for the unit under test (UUT) shall include the following, as measured per Section 5 of this method:

- (1) Ac power consumption of the low-voltage dc source with the UUT as the load (P_L); and
- (2) Ac power consumption of the low-voltage dc source with no load (P_S).

4.4. Ambient Temperature: Ambient temperature shall be $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

4.5. Relative Humidity: Relative humidity shall be between 10 % and 80 %.

4.6. Power Meter: Power meters shall possess the following attributes:

- (a) Minimum Frequency Response: 3,0 kHz
- (b) Minimum Resolution:
 - (1) 0,01 W for measurement values less than 10 W;
 - (2) 0,1 W for measurement values from 10 W to 100 W;
 - (3) 1 W for measurement values from 100 W to 1,5 kW; and
 - (4) 10 W for measurement values greater than 1,5 kW.
- (5) Measurements of accumulated energy should have resolutions which are generally consistent with these values when converted to average power. For accumulated energy measurements, the figure of merit for determining required accuracy is the maximum power value during the measurement period, not the average, since it is the maximum that determines the metering equipment and setup.

4.7. Measurement Uncertainty ⁽¹⁾:

- (a) Measurements of greater than or equal to 0,5 W shall have an uncertainty of 2 % or better at the 95 % confidence level.
- (b) Measurements of less than 0,5 W shall have an uncertainty of 0,02 W or better at the 95 % confidence level.

4.8. Time Measurement: Time measurements may be performed with a standard stopwatch or other time keeping device with a resolution of at least 1 second.

4.9. Paper Specifications:

- (a) Standard Format Products shall be tested in accordance with Table 14.
- (b) Large, Small, and Continuous Format products shall be tested using any compatible paper size.

Table 14

Paper Size and Weight Requirements

Market	Paper Size	Basis Weight (g/m ²)
North America/Taiwan	8,5" × 11"	75
Europe/Australia/New Zealand	A4	80
Japan	A4	64

5. **Low-voltage dc source measurement for all products**

- 5.1. Connect the dc source to the power meter and relevant ac supply as specified in Table 12.
- 5.2. Verify that the dc source is unloaded.
- 5.3. Allow the dc source to stabilize for a minimum of 30 minutes.
- 5.4. Measure and record the unloaded dc source power (PS) according to IEC 62301 Ed. 1.0.

6. **Pre-Test UUT Configuration for all products**

6.1. General Configuration

- 6.1.1. Product Speed for Calculations and Reporting: The product speed for all calculations and reporting shall be the highest speed as claimed by the manufacturer per the following criteria, expressed in images per minute (ipm) and rounded to the nearest integer:

- (a) In general, for Standard-size products, a single A4 or 8,5" × 11" sheet printed/copied/scanned on one side in one minute is equal to 1 (ipm).

When operating in duplex mode a single A4 or 8,5" × 11" sheet printed/copied/scanned on both sides in one minute is equal to 2 (ipm).

- (b) For all products, the product speed shall be based on:

- (1) The manufacturer-claimed print speed, unless the product cannot print, in which case,

⁽¹⁾ Measurement uncertainty calculations should be performed according IEC 62301 Ed. 2.0 Appendix D. Only the uncertainty due to the measurement instrument shall be calculated.

- (2) The manufacturer-claimed copy speed, unless the product cannot print or copy, in which case,
- (3) The manufacturer-claimed scan speed.
- (4) When a manufacturer intends to qualify a product in a certain market by making use of test results that qualified the product in another market using other sizes of paper (e.g., A4 versus 8,5" × 11"), and if its maximum claimed speeds, as determined per Table 15, differ when producing images on different sizes of paper, the highest speed shall be used.

Table 15

Calculation of Product Speed for Standard, Small, and Large Format Products with the Exception of Mailing Machines

Media Format	Media Size	Product Speed, s (ipm) Where: — s_p is the maximum claimed monochrome speed in images per minute when processing the given media, — w is the width of the media, in meters (m), — ℓ is the length of the media, in meters (m).
Standard	8,5" × 11"	s_p
	A4	s_p
Small	4" × 6"	$0,25 \times s_p$
	A6	$0,25 \times s_p$
	Smaller than A6 or 4" × 6"	$16 \times w \times \ell \times s_p$
Large	A2	$4 \times s_p$
	A0	$16 \times s_p$

- (c) For Continuous Form products, product speed shall be calculated per Equation 8

Equation 8: Calculation of Product Speed

$$s = 16 \times w \times s_L$$

Where:

- s is the product speed, in ipm,
- w is the width of the media, in meters (m),
- s_L is the maximum claimed monochrome speed, in meters per minute.

- (d) For Mailing Machines, product speed shall be reported in units of mail pieces per minute (mppm).

- (e) The product speed used for all calculations and qualification, as calculated above, may not be the same as the product speed used for testing.

6.1.2. Color: Color-capable products shall be tested making monochrome (black) images.

- (a) For those products without black ink, a composite black shall be used.

Network Connections: Products that are capable of being network-connected as-shipped shall be connected to a network.

- (b) Products shall be connected to only one network or data connection for the duration of the test.

Only one computer may be connected to the UUT, either directly or via a network.

- (c) The type of network connection depends on the characteristics of the UUT and shall be the topmost connection listed in Table 16 available on the unit as-shipped.

Table 16

Network or Data Connections for Use in Test

Order of Preference for Use in Test (if Provided by UUT)	Connections for all Products
1	Ethernet – 1 Gb/s
2	Ethernet – 100/10 Mb/s
3	USB 3.x
4	USB 2.x
5	USB 1.x
6	RS232
7	IEEE 1284 ⁽¹⁾
8	Wi-Fi
9	Other Wired – in order of preference from highest to lowest speed
10	Other Wireless – in order of preference from highest to lowest speed
11	If none of the above, test with whatever connection is provided by the device (or none)

⁽¹⁾ Also referred to as a Parallel or Centronics interface.

- (d) Products connected to Ethernet, per paragraph 6.1.2(c) above, and capable of supporting Energy Efficient Ethernet (IEEE Standard 802.3az) ⁽¹⁾, shall be connected to a network switch or router that also supports Energy Efficient Ethernet for the duration of the test.

- (e) In all cases the type of connection used during the test shall be reported.

Service/Maintenance Modes: UUTs shall never be in service/maintenance modes, including colour calibration, during testing.

- (f) Service/Maintenance modes shall be disabled prior to testing.

⁽¹⁾ Institute of Electrical and Electronics Engineers (IEEE) Standard 802.3az-2010. 'IEEE Standard for Information Technology—Telecommunications and Information Exchange Between Systems—Local and Metropolitan Area Networks—Specific Requirements—Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications.' 2010.

- (g) Manufacturers shall provide instructions detailing how to disable service/maintenance modes if this information is not included in the product documentation packaged with the UUT or is not readily available online.
- (h) If service/maintenance modes cannot be disabled and a service/maintenance mode occurs during a job other than the first job, the results from the job with the service/maintenance mode may be replaced with results from a substitute job. In this case, the substitute job shall be inserted into the test procedure immediately following Job 4, and the inclusion of the substitute job shall be reported. Each job period shall be 15 minutes.

6.2. Configuration for Fax Machines

All fax machines and MFDs with fax capability that connect to a telephone line shall be connected to a telephone line during the test, in addition to the network connection specified by Table 16 if the UUT is network capable.

- (a) In the case that a working phone line is not available, a line simulator may be used as a replacement.
- (b) Only fax machines shall be tested using the fax capability.

Fax machines shall be tested with one image per job.

6.3. Configuration for Digital Duplicators

Except as noted below, digital duplicators shall be configured and tested as printers, copiers, or MFDs, depending on their capabilities as-shipped.

- (a) Digital duplicators shall be tested at maximum claimed speed, which is also the speed that should be used to determine the job size for performing the test, not at the default as-shipped speed, if different.
- (b) For digital duplicators, there shall be only one original image.

7. **Pre-test UUT Initialization for all products**

General Initialization

Prior to the start of testing, the UUT shall be initialized as follows:

- (a) Set up the UUT per the instructions in the Manufacturer's Instructions or documentation.
 - (1) Accessories, such as paper source, that are shipped with the base product and are intended to be installed or attached by the end-user shall be installed as intended for the product model. Paper shall be placed in all paper sources designated to hold the paper specified for testing, and the UUT shall pull from the default paper source, using the as-shipped paper source settings.
 - (2) If the product is connected to a computer, either directly or via a network, during the test, the computer shall be running the newest version of the manufacturer's default driver available at the time of testing using settings corresponding to the default settings upon shipment, unless otherwise specified in this test method. The print driver version used for testing shall be recorded.
 - (i) In the event that a setting does not have a default and is not defined in this test method, the setting shall be set according to the tester's discretion and shall be recorded.
 - (ii) When connecting via a network and multiple computers are connected to the network, print driver settings apply only to the computer sending the print jobs to the UUT.

(3) For products designed to operate on battery power when not connected to the mains power source, the battery shall be removed for all tests. For UUTs where operation without a battery pack is not a supported configuration, the test shall be performed with fully charged battery pack(s) installed, making sure to report this configuration in the test results. To ensure the battery is fully charged, perform the following steps:

(i) For UUTs that have an indicator to show that the battery is fully charged, continue charging for an additional 5 hours after the indication is present.

(ii) If there is no charge indicator, but the manufacturer's instructions provide a time estimate for when charging this battery or this capacity of battery should be complete, continue charging for an additional 5 hours after the manufacturer's indication.

(iii) If there is no indicator and no time estimate in the instructions, the duration shall be 24 hours.

(b) Connect the UUT to its power source.

(c) Power on the UUT and perform initial system configuration, as applicable. Verify that default delay times are configured according to product specifications and/or manufacturer recommendations.

(1) Product Speed for Testing: The product shall be tested with speed settings in their default as-shipped configuration.

(2) Auto-off for TEC Products: If a printer, digital duplicator, fax machine, or MFD with print-capability has Auto-off capability and it is enabled as-shipped, it shall be disabled prior to testing.

(3) Auto-off for OM Products: If a product has an Auto-off Mode enabled as-shipped, it shall remain enabled for the duration of testing.

(d) User-controllable anti-humidity features shall be turned off or disabled for the duration of testing.

(e) Pre-conditioning: Place the UUT in Off Mode, then let the UUT sit idle for 15 minutes.

(1) For EP-TEC products, let the UUT sit in Off Mode for an additional 105 minutes, for a total of at least 120 minutes (2 hours).

(2) Pre-conditioning is only required prior to beginning the first test on each UUT.

8. Typical Energy Consumption (TEC) Test Procedure

8.1. Job Structure

8.1.1. Jobs per Day: The number of jobs per day (N_{JOBS}) is specified in Table 17.

Table 17

Number of Jobs per Day (N_{JOBS})

Monochrome Product Speed, s (ipm)	Jobs per Day (N_{JOBS})
$s \leq 8$	8
$8 < s < 32$	s
$s \geq 32$	32

- 8.1.2. Images per Job: Except for fax machines, the number of images shall be computed according to Equation 9, below. For convenience, Table 21 at the end of this document provides the resultant images per job computation for each integer product speed up through 100 ipm.

Equation 9: Calculation of Number of Images per Job

$$N_{IMAGES} = \begin{cases} 1 & s < 4 \\ \text{int} \left[\frac{(0,5 \times s^2)}{N_{JOBS}} \right] & s \geq 4 \end{cases}$$

Where:

- N_{IMAGES} is the number of images per job, rounded down (truncated) to the nearest integer,
- s is the (monochrome) maximum reported speed in images per minute (ipm), calculated in section 6.1.1, of this test procedure, and
- N_{JOBS} is the number of jobs per day, as calculated per Table 17.

Test Image: Test Pattern A from International Organization for Standardization (ISO)/IEC Standard 10561:1999 shall be used as the original image for all testing.

- (a) Test images shall be rendered in 10 point size in a fixed-width Courier font (or nearest equivalent).
- (b) German-specific characters need not be reproduced if the product is incapable of German character reproduction.

Print Jobs: Print jobs for the test shall be sent over the network connection designated in Table 16 immediately before printing each job.

- (c) Each image in a print job shall be sent separately, (i.e., all images may be part of the same document), but shall not be specified in the document as multiple copies of a single original image (unless the product is a digital duplicator).
- (d) For printers and MFDs that can interpret a page description language (PDL) (e.g., Printer Command Language PCL, Postscript), images shall be sent to the product in a PDL.

Copy Jobs:

- (e) For copiers with speed less than or equal to 20 ipm, there shall be one original per required image.
- (f) For copiers with speed greater than 20 ipm, it may not be possible to match the number of required original images (i.e., due to limits on document feeder capacity). In this case, it is permissible to make multiple copies of each original, and the number of originals shall be greater than or equal to ten.

Example: For a 50 ipm unit that requires 39 images per job, the test may be performed with four copies of 10 originals or three copies of 13 originals.

- (g) Originals may be placed in the document feeder before the test begins.

Products without a document feeder may make all images from a single original placed on the platen.

Fax Jobs: Fax jobs shall be sent via the connected phone line or line simulator immediately before performing each job.

8.2. Measurement Procedures

Measurement of TEC shall be conducted according to Table 18 for printers, fax machines, digital duplicators with print capability, and MFDs with print capability, and Table 19 for copiers, digital duplicators without print capability, and MFDs without print capability, subject to the following provisions:

- (a) Paper: There shall be sufficient paper in the UUT to perform the specified print or copy jobs.
- (b) Duplexing: Products shall be tested in simplex mode, unless the speed of duplex mode output is greater than the speed of simplex mode output, in which case they will be tested in duplex mode. In all cases, the mode in which the unit was tested and the print speed used must be documented. Originals for copying shall be simplex images.
- (c) Energy Measurement Method: All measurements shall be recorded as accumulated energy over time, in Wh; all time shall be recorded in minutes.

'Zero meter' references may be accomplished by recording the accumulated energy consumption at that time rather than physically zeroing the meter.

Table 18

TEC Test Procedure for Printers, Fax Machines, Digital Duplicators with Print Capability, and MFDs with Print Capability

Step	Initial State	Action	Record (at end of step)	Unit of Measure	Possible States Measured
1	Off	Connect the UUT to the meter. Ensure the unit is powered and in Off Mode. Zero the meter; measure energy over 5 minutes or more. Record both energy and time.	Off energy	Watt-hours (Wh)	Off
			Testing Interval time	Minutes (min)	
2	Off	Turn on unit. Wait until unit indicates it is in Ready Mode.	—	—	—
3	Ready	Print a job of at least one output image but no more than a single job per Table 21. Measure and record time to first sheet exiting unit.	Active0 time	Minutes (min)	—
4	Ready (or other)	Wait until the meter shows that the unit has entered its final Sleep Mode or the time specified by the manufacturer.	—	—	—
5	Sleep	Zero meter; measure energy and time over 1 hour. Record the energy and time.	Sleep energy, E_{SLEEP}	Watt-hours (Wh)	Sleep
			Sleep time, t_{SLEEP} (≤ 1 hour)	Minutes (min)	

Step	Initial State	Action	Record (at end of step)	Unit of Measure	Possible States Measured
6	Sleep	Zero meter and timer. Print one job (calculated above). Measure energy and time. Record time to first sheet exiting unit. Measure energy over 15 minutes from job initiation. The job must finish within the 15 minutes.	Job1 energy, E_{JOB1}	Watt-hours (Wh)	Recovery, Active, Ready, Sleep
			Active1 time	Minutes (min)	
7	Ready (or other)	Repeat Step 6.	Job2 energy, E_{JOB2}	Watt-hours (Wh)	Same as above
			Active2 time	Minutes (min)	
8	Ready (or other)	Repeat Step 6 (without Active time measurement).	Job3 energy, E_{JOB3}	Watt-hours (Wh)	Same as above
9	Ready (or other)	Repeat Step 6 (without Active time measurement).	Job4 energy, E_{JOB4}	Watt-hours (Wh)	Same as above
10	Ready (or other)	Zero meter and timer. Measure energy and time until meter and/or unit shows that unit has entered Sleep Mode or the final Sleep Mode for units with multiple Sleep modes, or the time specified by the manufacturer, if provided. Record energy and time.	Final energy, E_{FINAL}	Watt-hours (Wh)	Ready, Sleep
			Final time, t_{FINAL}	Minutes (min)	

Notes: Steps 4 and 10: For those units that do not indicate when they have entered the Final Sleep Mode, manufacturers shall specify the time to Final Sleep Mode for testing purposes.

Table 19

TEC Test Procedure for Copiers, Digital Duplicators without Print Capability, and MFDs without Print Capability

Step	Initial State	Action	Record	Unit of Measure	Possible States Measured
1	Off	Connect the UUT to the meter. Ensure the unit is powered and in Off Mode. Zero the meter; measure energy over 5 minutes or more. Record both energy and time.	Off energy	Watt-hours (Wh)	Off
			Testing Interval time	Minutes (min)	
2	Off	Turn on unit. Wait until unit has entered Ready Mode.	—	—	—
3	Ready	Copy a job of at least one image but no more than a single job per Job Table. Measure and record time to first sheet exiting unit	Active0 time	Minutes (min)	—

Step	Initial State	Action	Record	Unit of Measure	Possible States Measured
4	Ready (or other)	Wait until the meter shows that the unit has entered its final Sleep Mode or the time specified by the manufacturer.	—	—	—
5	Sleep	Zero meter; measure energy and time over 1 hour or until unit enters Auto-off Mode. Record the energy and time.	Sleep energy	Watt-hours (Wh)	Sleep
			Sleep time (≤ 1 hour)	Minutes (min)	
6	Sleep	Zero meter and timer. Copy one job (calculated above). Measure and record energy and time to first sheet exiting unit. Measure energy over 15 minutes from job initiation. The job must finish within the 15 minutes.	Job1 energy, E_{JOB1}	Watt-hours (Wh)	Recovery, Active, Ready, Sleep, Auto-off
			Active1 time	Minutes (min)	
7	Ready (or other)	Repeat Step 6.	Job2 energy, E_{JOB2}	Watt-hours (Wh)	Same as above
			Active2 time	Minutes (min)	
8	Ready (or other)	Repeat Step 6 (without Active time measurement).	Job3 energy, E_{JOB3}	Watt-hours (Wh)	Same as above
9	Ready (or other)	Repeat Step 6 (without Active time measurement).	Job4 energy, E_{JOB4}	Watt-hours (Wh)	Same as above
10	Ready (or other)	Zero meter and timer. Measure energy and time until meter and/or unit shows that unit has entered its Auto-off Mode or the time specified by the manufacturer. Record energy and time; if unit began this step while in Auto-off Mode, report both energy and time values as zero.	Final energy, E_{FINAL}	Watt-hours (Wh)	Ready, Sleep
			Final time, t_{FINAL}	Minutes (min)	
11	Auto-off	Zero the meter; measure energy and time over 5 minutes or more. Record both energy and time.	Auto-off energy, E_{AUTO}	Watt-hours (Wh)	Sleep, Auto-off
			Auto-off time, t_{AUTO}	Minutes (min)	

Notes: Steps 4 and 10: For those units that do not indicate when they have entered the Final Sleep Mode, manufacturers shall specify the time to Final Sleep Mode for testing purposes.

9. Operational Mode (OM) Test Procedure

Measurement Procedures

Measurement of OM power and delay times shall be conducted according to Table 20, subject to the following provisions:

Power Measurements: All power measurements shall be made using either the average power or accumulated energy approaches as described below:

- (1) Average Power Method: The true average power shall be measured over the course of a user selected period, which shall be no less than 5 minutes.

For those modes that do not last 5 minutes, the true average power shall be measured over the mode's entire duration.

- (2) Accumulated Energy Approach: If the test instrument is incapable of measuring the true average power, the accumulated energy consumption over the course of a user selected period shall be measured. The test period shall be no less than 5 minutes. The average power shall be determined by dividing the accumulated energy consumption by the time of the test period.
- (3) If the power consumption of the tested mode is periodic, then the test duration shall contain one or more complete periods.

Table 20

Operational Mode (OM) Test Procedure

Step	Initial State	Action(s)	Record	Unit of Measure
1	Off	Plug the UUT into meter. Turn on unit. Wait until unit indicates it is in Ready Mode.	—	
2	Ready	Print, copy, or scan a single image.	—	
3	Ready	Measure Ready power.	Ready power, P_{READY}	Watts (W)
4	Ready	Wait and measure default delay-time to Sleep.	Sleep default- delay time, t_{SLEEP}	Minutes (min)
5	Sleep	Measure Sleep power.	Sleep power, P_{SLEEP}	Watts (W)
6	Sleep	Wait and measure default delay time to Auto-off. (Disregard if no Auto-off Mode).	Auto-off default- delay time	Minutes (min)
7	Auto-off	Measure Auto-off power. (Disregard if no Auto-off Mode).	Auto-off power $P_{\text{AUTO-OFF}}$	Watts (W)
8	Auto-off	Manually turn device off and wait until unit is off. (If no manual on-off switch, note and wait for lowest-power Sleep state).	—	—
9	Off	Measure Off power. (If no manual on-off switch, note and measure Sleep Mode power).	Off power P_{OFF}	Watts (W)

Notes:

- Step 1 – If the unit has no Ready indicator, use the time at which the power consumption level stabilizes to the Ready level, and note this detail when reporting the product test data.
- Step 4 – The Default Delay Time shall be measured starting from the completion of the job until the unit enters Sleep Mode.
- Steps 4 and 5 – For products with more than one Sleep level, repeat these steps as many times as necessary to capture all successive Sleep levels and report these data. Two Sleep levels are typically used in large-format copiers and MFDs that use high-heat marking technologies. For products lacking this Mode, disregard Steps 4 and 5.
- Steps 4 and 5 – For products without a Sleep Mode, perform and record measurements from Ready Mode.
- Steps 4 and 6 – Default-delay time measurements are to be measured in parallel fashion, cumulative from the start of Step 4. For example, a product set to enter a Sleep level in 15 minutes and enter a second Sleep level 30 minutes after entering the first Sleep level will have a 15-minute default-delay time to the first level and a 45 minute default-delay time to the second level.

10. Test Procedures for Products with a Digital Front End (DFE)

This step applies only to products that have a DFE as defined in Section 1 of the ENERGY STAR Program Requirements for Imaging Equipment.

10.1. Ready Mode DFE Test

10.1.1. Products that are network-capable as-shipped shall be connected during testing. The network connection used shall be determined using Table 16.

10.1.2. If the DFE has a separate main power cord, regardless of whether the cord and controller are internal or external to the imaging product, a 10 minute power measurement of the DFE alone shall be made, and the average power recorded while the main product is in Ready Mode.

10.1.3. If the DFE does not have a separate main power cord, the tester shall measure the dc power required for the DFE when the unit as a whole is in Ready Mode. A 10 minute power measurement of the dc input to the DFE shall be made, and the average power recorded while the main product is in Ready Mode. This will most commonly be accomplished by taking an instantaneous power measurement of the dc input to the DFE.

10.2. Sleep Mode DFE Test

This testing shall be performed to obtain the Sleep Mode power of a DFE device over a 1 hour period. The resulting value will be used to qualify Imaging Equipment products that incorporate DFEs with network-capable Sleep Modes.

10.2.1. Products that are network-capable as-shipped shall be connected during testing. The network connection used shall be determined using Table 16.

10.2.2. If the DFE has a separate main power cord, regardless of whether the cord and controller are internal or external to the imaging product, a 1 hour power measurement of the DFE alone shall be made, and the average power recorded while the main product is in Sleep Mode. At the end of the 1 hour power measurement, a print job shall be sent to the main product to ensure the DFE is responsive.

10.2.3. If the DFE does not have a separate main power cord, the tester shall measure the dc power required for the DFE when the unit as a whole is in Sleep Mode. A 1 hour power measurement of the dc input to the DFE shall be made, and the average power recorded while the main product is in Sleep Mode. At the end of the 1 hour power measurement, a print job shall be sent to the main product to ensure the DFE is responsive.

10.2.4. In cases 10.2.2 and 10.2.3, the following requirements apply:

(a) Manufacturers shall provide information on:

(1) Whether DFE Sleep Mode is enabled as-shipped; and

(2) The expected time to sleep of the DFE.

(b) If the DFE does not respond to the print request at the end of 1 hour, the Ready Mode power level measured in the test method shall be reported as the Sleep Mode power.

Note: All information specified or provided by manufacturers for product testing shall be publicly available.

11. References

11.1. ISO/IEC 10561:1999. Information technology — Office equipment — Printing devices — Method for measuring throughput — Class 1 and Class 2 printers.

11.2. IEC 62301:2011. Household Electrical Appliances – Measurement of Standby Power. Ed. 2.0.

Table 21

Number of Images per Day Calculated for Product Speeds from 1 to 100 ipm

Speed (ipm)	Jobs/Day	Unrounded Images/Job	Images/Job	Images/Day	Speed (ipm)	Jobs/Day	Unrounded Images/Job	Images/Job	Images/Day
1	8	0,06	1	8	36	32	20,25	20	640
2	8	0,25	1	8	37	32	21,39	21	672
3	8	0,56	1	8	38	32	22,56	22	704
4	8	1,00	1	8	39	32	23,77	23	736
5	8	1,56	1	8	40	32	25,00	25	800
6	8	2,25	2	16	41	32	26,27	26	832
7	8	3,06	3	24	42	32	27,56	27	864
8	8	4,00	4	32	43	32	28,89	28	896
9	9	4,50	4	36	44	32	30,25	30	960
10	10	5,00	5	50	45	32	31,64	31	992
11	11	5,50	5	55	46	32	33,06	33	1 056
12	12	6,00	6	72	47	32	34,52	34	1 088
13	13	6,50	6	78	48	32	36,00	36	1 152
14	14	7,00	7	98	49	32	37,52	37	1 184
15	15	7,50	7	105	50	32	39,06	39	1 248
16	16	8,00	8	128	51	32	40,64	40	1 280
17	17	8,50	8	136	52	32	42,25	42	1 344
18	18	9,00	9	162	53	32	43,89	43	1 376
19	19	9,50	9	171	54	32	45,56	45	1 440
20	20	10,00	10	200	55	32	47,27	47	1 504
21	21	10,50	10	210	56	32	49,00	49	1 568
22	22	11,00	11	242	57	32	50,77	50	1 600
23	23	11,50	11	253	58	32	52,56	52	1 664
24	24	12,00	12	288	59	32	54,39	54	1 728
25	25	12,50	12	300	60	32	56,25	56	1 792
26	26	13,00	13	338	61	32	58,14	58	1 856
27	27	13,50	13	351	62	32	60,06	60	1 920
28	28	14,00	14	392	63	32	62,02	62	1 984
29	29	14,50	14	406	64	32	64,00	64	2 048
30	30	15,00	15	450	65	32	66,02	66	2 112
31	31	15,50	15	465	66	32	68,06	68	2 176
32	32	16,00	16	512	67	32	70,14	70	2 240
33	32	17,02	17	544	68	32	72,25	72	2 304
34	32	18,06	18	576	69	32	74,39	74	2 368
35	32	19,14	19	608	70	32	76,56	76	2 432

Speed (ipm)	Jobs/Day	Unrounded Images/Job	Images/Job	Images/Day	Speed (ipm)	Jobs/Day	Unrounded Images/Job	Images/Job	Images/Day
71	32	78,77	78	2 496	86	32	115,56	115	3 680
72	32	81,00	81	2 592	87	32	118,27	118	3 776
73	32	83,27	83	2 656	88	32	121,00	121	3 872
74	32	85,56	85	2 720	89	32	123,77	123	3 936
75	32	87,89	87	2 784	90	32	126,56	126	4 032
76	32	90,25	90	2 880	91	32	129,39	129	4 128
77	32	92,64	92	2 944	92	32	132,25	132	4 224
78	32	95,06	95	3 040	93	32	135,14	135	4 320
79	32	97,52	97	3 104	94	32	138,06	138	4 416
80	32	100,00	100	3 200	95	32	141,02	141	4 512
81	32	102,52	102	3 264	96	32	144,00	144	4 608
82	32	105,06	105	3 360	97	32	147,02	147	4 704
83	32	107,64	107	3 424	98	32	150,06	150	4 800
84	32	110,25	110	3 520	99	32	153,14	153	4 896
85	32	112,89	112	3 584	100	32	156,25	156	4 992'

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