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EUROPEAN COMMISSION

Brussels,  
C(2010)

Draft

**COMMISSION IMPLEMENTING DECISION**

of [...]

**on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community**

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## COMMISSION IMPLEMENTING DECISION

of [...]

**on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community**

(Text with EEA relevance)

THE EUROPEAN COMMISSION,

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

Having regard to Decision No 676/2002/EC of the European Parliament and of the Council of 7 March 2002 on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision)<sup>1</sup>, and in particular Article 4(3) thereof,

Whereas:

- (1) The Commission Communication "Transforming the digital dividend into social benefits and economic growth"<sup>2</sup> stressed the importance of a coherent opening of the 790-862 MHz band (the '800 MHz band') for electronic communications services by adopting technical conditions of use. The 800 MHz band is part of the digital dividend, i.e. radio frequencies that are freed up as a result of more efficient spectrum use through the switchover from analogue to digital terrestrial TV.
- (2) The Commission has supported a more flexible use of spectrum in its Communication on "Rapid access to spectrum for wireless electronic communications services through more flexibility"<sup>3</sup>, which *inter alia* addresses the 800 MHz band, currently allocated in most Member States for high power broadcasting networks. Technological neutrality and service neutrality have been underlined by Member States in the Radio Spectrum Policy Group (RSPG) opinion on Wireless Access Policy for Electronic Communications Services (WAPECS) of 23 November 2005 as important policy goals to achieve a more flexible use of spectrum and have been confirmed by the Better Regulation Directive n°[ ] of [ ] November 2009 amending the Framework Directive 2002/21/EC. Moreover, the RSPG opinion of 18 September 2009 on the digital dividend encourages the application of the WAPECS principles and recommends that the Commission acts on the recommendations contained therein as soon as possible in

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<sup>1</sup> OJ L 108, 24.4.2002, p. 1.

<sup>2</sup> COM(2009)586.

<sup>3</sup> COM(2007)50.

order to minimise EU level uncertainty in the ability of Member States to make available the 800 MHz band.

- (3) The European Parliament in its resolution<sup>4</sup> on the digital dividend urges Member States to release their digital dividends as quickly as possible and emphasises that the immediacy of switchover in some Member States and the differences in national switchover plans require a response at Community level that cannot await the entry into force of the amending directives of the electronic communications regulatory framework. The Council in its conclusions<sup>5</sup> on the digital dividend invited the Commission to support and assist the Member States in the process of achieving close cooperation between Member States in coordinating spectrum usage and of reaping the full benefits of the digital dividend<sup>6</sup>].
- (4) A study undertaken on behalf of the Commission<sup>7</sup> found that appropriate European coordination would increase the potential economic impact of the digital dividend substantially as compared to individual national plans with an overall positive social impact. The results in terms of socio-economic benefits are based on the assumption of a Community approach that releases the 800 MHz band by 2015 and imposes technical conditions preventing high power cross-border interference.
- (5) Noting the strong impact of broadband communications on growth, the Economic Recovery Plan<sup>8</sup> has set a target of 100% broadband coverage by between 2010 and 2013<sup>9</sup>. This cannot be achieved without a significant role being played by wireless infrastructures, including in the provision of broadband to rural areas, part of which can be done by giving early access to the digital dividend.
- (6) The designation of the 800 MHz band for terrestrial systems capable of providing electronic communications services would be an important element addressing the convergence of the mobile, fixed and broadcasting sectors and reflecting technical innovation. The services provided in this frequency band should mainly target end-user access to broadband communications, including broadcasting content.
- (7) Pursuant to Article 4(2) of Decision 676/2002/EC, on 3 April 2008 the Commission gave a mandate to the European Conference of Postal and Telecommunications Administrations (hereinafter the “CEPT”) to define the technical conditions to be applied to the 800 MHz band optimised for, but not limited to, fixed and/or mobile communications networks with a particular focus on common and minimal (least restrictive) technical conditions, the most appropriate frequency arrangement and a recommendation on how to handle Programme Making and Special Events (PMSE) services.

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<sup>4</sup> Resolution on reaping the full benefits of the digital dividend in Europe: a common approach to the use of the spectrum released by the digital switchover (2008/2099(INI)), 24 September 2008.

<sup>5</sup> Conclusions on reaping the full benefits of the digital dividend in Europe: a common approach to the use of the spectrum released by the digital switchover, 12 June 2008.

<sup>6</sup> [N.B.: This sentence may be replaced in light of the outcome of the Council Meeting of 18 December 2009]

<sup>7</sup> Study on exploiting the Digital Dividend – a European approach, Analysys Mason, 14 August 2009.

<sup>8</sup> *Presidency Conclusions*, Council of the European Union, Brussels, 12 December 2008 17271/08.

<sup>9</sup> Endorsed by the Council: Competitiveness Council *Key Issues Paper*, March 2009.

- (8) In response to that mandate, the CEPT has adopted four reports (CEPT Reports 29, 30, 31 and 32). These reports contain technical conditions for base stations and terminal stations operating in the 800 MHz band. Such harmonised technical conditions will facilitate economies of scale without requiring that any type of particular technology is used, based on optimised parameters for the most likely use of the band.
- (9) CEPT Report 29 gives guidance on cross-border coordination issues which are of particular relevance during the coexistence phase, i.e. when some Member States may have implemented the technical conditions optimised for fixed and/or mobile communications networks, while other Member States still have high power broadcasting transmitters in operation in the 800 MHz band. CEPT considers that the GE06 Agreement<sup>10</sup> provides the necessary regulatory procedures for cross-border coordination.
- (10) CEPT Report 30 identifies least restrictive technical conditions through the concept of Block Edge Masks (BEM), which are regulatory requirements aimed at managing the risk of harmful interference between neighbouring networks and are without prejudice to limits set in equipment standards under Directive 1999/5/EC of the European Parliament and of the Council of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity (*the R&TTE Directive*)<sup>11</sup>. Based on this CEPT Report the BEMs are optimised for, but are not limited to, fixed and/or mobile communications networks using Frequency-Division Duplexing (FDD) and/or Time-Division Duplexing (TDD).
- (11) In cases where harmful interference has been caused or where it is reasonably considered could be caused the measures identified in CEPT Report 30 could also be complemented by proportionate national measures that could be imposed.
- (12) The avoidance of harmful interference and disturbance into television receiver equipment, including cable TV equipment, may depend on a more effective interference rejection in such equipment. Conditions related to television receiver equipment should be addressed as a matter of urgency within the framework of the Directive for electromagnetic compatibility (EMC Directive<sup>12</sup>).
- (13) The avoidance of harmful interference into television receiver equipment may also depend on in-block and out-of-band emission limits for terminal stations. Conditions related to terminal stations should be addressed as a matter of urgency within the framework of the R&TTE directive in line with the elements developed in CEPT Report 30.
- (14) CEPT Report 31 concludes that the preferred frequency arrangement for the 800 MHz band should be based on FDD mode in order to facilitate cross-border coordination with broadcasting services, noting that such an arrangement would not discriminate in

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<sup>10</sup> Final Acts of the International Telecommunication Union Regional Radiocommunication Conference for planning of the digital terrestrial broadcasting service in parts of Regions 1 and 3, in the frequency bands 174-230 MHz and 470-862 MHz (RRC-06).

<sup>11</sup> OJ L 91, 7.4.1999, p. 10. Directive as amended by Regulation (EC) No 1882/2003 of the European Parliament and of the Council (OJ L 284, 31.10.2003, p. 1).

<sup>12</sup> OJEU L 390, 21.12.2004, p. 24. Directive 2004/108/EC of the European Parliament and the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC.

favour of or against any currently envisaged technology. This does not exclude the possibility for Member States to use other frequency arrangements with the aim of a) achieving general interest objectives; b) ensuring greater efficiency through market-based spectrum management; c) ensuring greater efficiency when sharing with existing rights of use during a coexistence period, or d) avoiding harmful interference, e.g. in coordination with third countries. When designating or making available the 800 MHz band for terrestrial systems capable of providing electronic communications services, Member States should therefore use the preferred frequency arrangement or alternative arrangements described in CEPT Report 31.

- (15) CEPT Report 32 recognises the interest in the continued operation of applications for PMSE and identifies a number of potential frequency bands and innovative technical developments as a solution to the current use of the 800 MHz band by these applications. Administrations should continue to study the available options and the efficiency of PMSE systems with the aim of including their findings in the regular reports to the Commission on effective use of spectrum.
- (16) The results of the mandate to the CEPT should be made applicable in the Community and implemented by the Member States from the moment they designate the 800 MHz band for networks other than high-power broadcasting networks given the urgency identified by the European Parliament, the Council and the RSPG as well as the increasing demand identified in studies at European and global levels for terrestrial electronic communications services providing broadband communications.
- (17) While there is an urgent need to have common technical conditions for the efficient use of the 800 MHz band by systems capable of providing electronic communications services, in order to ensure that any action taken in the immediate future by one or more Member States does not diminish the benefit of a harmonised European approach, the timing has direct implications for the organisation of broadcasting services by Member States in their national territories.
- (18) Member States may decide individually whether and at what point in time they designate or make available the 800 MHz band for networks other than high-power broadcasting networks, and this Decision is without prejudice to the use of the 800 MHz band for public order and public security purposes and defence in some Member States.
- (19) It will be a matter for Parliament and Council, upon a proposal from the Commission, to decide on any deadline by which the Member States must allow the use of the 800 MHz band for systems capable of providing electronic communications services.
- (20) The designation and making available of the 800 MHz band on a non-exclusive basis in accordance with the results of the mandate to CEPT recognises the fact that there are other radio applications not covered by this Decision. For other systems and services appropriate sharing criteria for coexistence may be based on national considerations.
- (21) An optimal use of the 800 MHz band in the case where neighbouring Member States or third countries have decided on different uses will require a constructive coordination of cross-border transmissions with the objective of an innovative approach by all parties taking into account the RSPG opinions on Spectrum Issues

concerning Outer EU Borders of 19 June 2008 and on the Digital Dividend of 18 September 2009. Member States should take due account of the need to coordinate with Member States that continue to avail of existing high-power broadcasting rights. They should also facilitate future reorganisation of the 800 MHz band to allow, in the long term, optimum use by low- and medium-power systems capable of providing electronic communications services. In the particular case of coexistence with aeronautical radio navigation systems, which requires technical measures in addition to the BEM, Member States should develop bilateral or multilateral agreements.

- (22) The use of the 800 MHz band by other existing applications in third countries can limit the introduction and use of this band for terrestrial systems capable of providing electronic communications services in several Member States, which will have to be taken into account in any future decision to set a deadline by which the Member States must allow the use of the 800 MHz band for such terrestrial systems. Information on such limitations should be notified to the Commission pursuant to Articles 7 and 6(2) of Decision 676/2002/EC and published in accordance with Article 5 of Decision 676/2002/EC.
- (23) In order to ensure effective use of the 800 MHz band also in the longer term, administrations should continue to study solutions that may increase efficiency and innovative use. Such studies should be taken into account when considering a review of this Decision.
- (24) The measures provided for in this Decision are in accordance with the opinion of the Radio Spectrum Committee.

HAS ADOPTED THIS DECISION:

#### *Article 1*

This implementing Decision aims at harmonising the technical conditions for the availability and efficient use of the 790-862 MHz band (800 MHz band) for terrestrial systems capable of providing electronic communications services in the Community.

#### *Article 2*

- (1) When they designate or make available the 800 MHz band for networks other than high-power broadcasting networks, Member States shall do so, on a non-exclusive basis, for terrestrial systems capable of providing electronic communications services in compliance with the parameters set out in the Annex to this Decision.
- (2) Member States shall ensure that systems referred to in paragraph 1 give appropriate protection to systems in adjacent bands.
- (3) Member States shall facilitate cross-border coordination agreements with the aim of enabling the operation of systems referred to in paragraph 1, taking into account existing regulatory procedures and rights.
- (4) Member States shall not be bound to implement the obligations under this Decision in geographical areas where spectrum coordination with third countries requires a

deviation from the parameters in the Annex to this Decision, provided that they notify the relevant information to the Commission, including the affected geographical areas, and publish it pursuant to Decision 676/2002/EC.

Member States shall make all practicable efforts to resolve such deviations and inform the Commission thereupon.

#### *Article 3*

Member States shall keep the use of the 800 MHz band under scrutiny and report their findings to the Commission upon request, to allow regular and timely review of this Decision.

#### *Article 4*

This implementing Decision is addressed to the Member States.

Done at Brussels, [...]

*For the Commission*

*Member of the Commission*



## ANNEX

### Parameters referred to in Articles

The technical conditions presented in this annex are in the form of frequency arrangements and block-edge masks (BEMs). A BEM is an emission mask that is defined, as a function of frequency, relative to the edge of a block of spectrum for which rights of use are granted to an operator. It consists of in-block and out-of-block components which specify the permitted emission levels over frequencies inside and outside the licensed block of spectrum, respectively.

The BEM levels are built up by combining the values listed in the tables below in such a way that the limit at any frequency is given by the highest (least stringent) value of a) the baseline requirements, b) the transition requirements, and c) the in-block requirements (where appropriate). The BEMs are presented as upper limits on the mean equivalent isotropically radiated power (EIRP) or total radiated power (TRP)<sup>13</sup> over an averaging time interval, and over a measurement frequency bandwidth. In the time domain, the EIRP or TRP is averaged over the active portions of signal bursts and corresponds to a single power control setting. In the frequency domain, the EIRP or TRP is determined over the measurement bandwidth specified in the following tables<sup>14</sup>. In general, and unless stated otherwise, the BEM levels correspond to the power radiated by the relevant device irrespective of the number of transmit antennas, except in the case of transition requirements for base stations which are specified per antenna.

BEMs shall be applied as an essential component of the technical conditions necessary to ensure coexistence between services at a national level. However, it should be understood that the derived BEMs do not always provide the required level of protection of victim services and additional mitigation techniques would need to be applied in a proportionate manner at national level in order to resolve any remaining cases of interference.

Member States shall also ensure that operators of terrestrial systems capable of providing electronic communications services in the 800 MHz band can use less stringent technical parameters than those set out below provided that the use of these parameters is agreed among all affected parties and that these operators continue to comply with the technical conditions applicable for the protection of other services, applications or networks and with obligations resulting from cross-border coordination.

Member States shall also ensure that equipment operating in this band can use power limits other than those set out below provided that appropriate mitigation techniques are applied which comply with Directive 1999/5/EC and which offer at least an equivalent level of protection to that provided by these technical parameters.

The term block edge refers to the frequency boundary of an authorised right of use. The term band edge refers to the boundary of a range of frequencies designated for a certain use.

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<sup>13</sup> TRP is a measure of how much power the antenna actually radiates. The TRP is defined as the integral of the power transmitted in different directions over the entire radiation sphere.

<sup>14</sup> The actual measurement bandwidth of the measurement equipment used for purposes of compliance testing may be smaller than the measurement bandwidth provided in the tables.

## A) General parameters:

- (1) Within the band 790-862 MHz the frequency arrangement shall be as follows:
  - (a) The assigned block sizes shall be in multiples of 5 MHz.
  - (b) The duplex mode of operation shall be FDD with the following arrangements. The duplex spacing shall be 41 MHz with base station transmission (down link) located in the lower part of the band starting at 791 MHz and finishing at 821 MHz and terminal station transmission (up link) located in the upper part of the band starting at 832 MHz and finishing at 862 MHz.
- (2) Notwithstanding A(1), but provided the technical conditions of Part B and Part C of this annex are applied, Member States may implement alternative frequency arrangements with the aim of a) achieving general interest objectives; b) ensuring greater efficiency through market-based spectrum management; c) ensuring greater efficiency when sharing with existing rights of use during a coexistence period, or d) avoiding interference.

## B) Technical conditions for FDD or TDD base stations (BS)

- (1) In-block limits:

An in-block EIRP limit for base stations is not obligatory. However, Member States may set limits and, unless otherwise justified, such limits would normally lie within the range 56 dBm/5MHz to 64 dBm/5MHz.

- (2) Out-of-block limits:

**Table 1: Baseline requirements – BS BEM out-of-block EIRP limits**

Frequency range of out-of-block emissions	Maximum mean out-of-block EIRP	Measurement bandwidth
Frequencies used for FDD uplink	-49.5 dBm	5 MHz
Frequencies used for TDD	-49.5 dBm	5 MHz

**Table 2: Transition requirements – BS BEM out-of-block EIRP limits per antenna<sup>15</sup> over frequencies of FDD downlink and TDD**

Frequency range of out-of-block emissions	Maximum mean out-of-block EIRP	Measurement bandwidth
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<sup>15</sup> For one to four antennas.

-10 to -5 MHz from lower block edge	18 dBm	5 MHz
-5 to 0 MHz from lower block edge	22 dBm	5 MHz
0 to +5 MHz from upper block edge	22 dBm	5 MHz
+5 to +10 MHz from upper block edge	18 dBm	5 MHz
Remaining FDD downlink frequencies	11 dBm	1 MHz

**Table 3: Transition requirements – BS BEM out-of-block EIRP limits per antenna<sup>16</sup> over frequencies used as guard band**

Frequency range of out-of-block emissions	Maximum mean out-of-block EIRP	Measurement Bandwidth
Guard band between broadcasting band edge at 790 MHz and FDD downlink band edge <sup>17</sup>	17.4 dBm	1 MHz
Guard band between broadcasting band edge at 790 MHz and TDD band edge	15 dBm	1 MHz
Guard band between FDD downlink band edge and FDD uplink band edge (duplex gap) <sup>18</sup>	15 dBm	1 MHz
Guard band between FDD downlink band edge and TDD band edge	15 dBm	1 MHz
Guard band between FDD uplink band edge and TDD band edge	15 dBm	1 MHz

**Table 4: Baseline requirements – BS BEM out-of-block EIRP limits over frequencies below 790 MHz**

Case	Condition on base station in-block EIRP, P dBm/10 MHz	Maximum mean out-of-block EIRP	Measurement bandwidth	
A	For TV Channels where broadcasting is protected	$P \geq 59$	0 dBm	8 MHz
		$36 \leq P < 59$	(P-59) dBm	8 MHz

<sup>16</sup> For one to four antennas.

<sup>17</sup> 790 MHz to 791 MHz for the frequency arrangement described in Part A(1).

<sup>18</sup> 821 MHz to 832 MHz for the frequency arrangement described in Part A(1).

		$P < 36$	-23 dBm	8 MHz
B	For TV Channels where broadcasting is subject to an intermediate level of protection	$P \geq 59$	10 dBm	8 MHz
		$36 \leq P < 59$	(P-49) dBm	8 MHz
		$P < 36$	-13 dBm	8 MHz
C	For TV Channels where broadcasting is not protected	No conditions	22 dBm	8 MHz

Cases A, B, and C listed in Table 4 can be applied per broadcasting channel and/or per region so that the same broadcasting channel may have different levels of protection in different geographic areas and different broadcasting channels may have different levels of protection in the same geographic area. Member States shall apply the baseline requirement in case A in circumstances where digital terrestrial broadcasting channels are in use at the time of deployment of terrestrial systems capable of providing electronic communications services. Member States may apply the baseline requirements in cases A, B or C in circumstances where the relevant broadcasting channels are not in use at the time of deployment of terrestrial systems capable of providing electronic communications services. They shall take into account that case A and B reserve the option of bringing relevant broadcasting channels into use for digital terrestrial broadcasting at a future date, while case C is appropriate where there are no plans to bring the relevant broadcasting channels into use.

### C) Technical conditions for FDD or TDD terminal stations (TS)

**Table 5: In-block requirements – TS BEM in-block emission limit over frequencies of FDD uplink and TDD**

<b>Maximum mean in-block power</b>	23 dBm <sup>19</sup>
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Member States may relax the limit in Table 5 for specific deployments, e.g. fixed terminal stations in rural areas, providing that protection of other services, networks and applications is not compromised and cross-border obligations are fulfilled.

<sup>19</sup> This power limit is specified as EIRP for terminal stations designed to be fixed or installed and as TRP for terminal stations designed to be mobile or nomadic. EIRP and TRP are equivalent for isotropic antennas. It is recognised that this value is subject to a tolerance of up to +2 dB, to take account of operation under extreme environmental conditions and production spread.