

**RADIO SPECTRUM POLICY GROUP  
OPINION ON**

**The Introduction of Multimedia Services in particular in the frequency bands  
allocated to the broadcasting services**

**DRAFT – MAY 11, 2006**

Note: please note that, unless specifically stated, information included in the annexes to this Opinion provide supporting material and is therefore not integral part of the body of the Opinion.

## 1. Introduction

This paper represents the Radio Spectrum Policy Group's (RSPG) response to the Request for an Opinion on the introduction of multimedia services in particular in the frequency bands allocated to the broadcasting services (e.g. mobile TV). As the digital dividend could be used for the introduction of such services, this opinion should be seen as complementary to the work undertaken in the development of an RSPG Opinion on spectrum implications of switchover to digital broadcasting as published on 19 November 2004 (Document RSPG04-55 Rev final).

The RSPG Opinion on spectrum implications of switchover to digital broadcasting pointed out the important potential of the "spectrum dividend". The main conclusions of the RSPG Opinion on the spectrum dividend are:

- Member States should, given the diversity in needs and objectives, be able to allocate any dividend to such services that best serve their demands.
- Potential new services include a number of alternatives such as:
  - Increase the number of programme services and/or enhance the TV experience (e.g. multi-camera angles for sports, individual news streams and other quasi-interactive options that are accessed using the remote control)
  - Deliver services with higher technical quality (notably HDTV) or to portable and mobile receivers
  - Enable electronic communication services other than broadcasting.

Therefore, the RSPG proposed further European activities for determination of the spectrum dividend and the description of foreseen national uses of the spectrum dividend.

Furthermore the RSPG recommended that these national responses should be evaluated at the policy, technical and spectrum management levels in order to identify the potential for, and benefits of harmonisation.

This outcome of the RSPG Opinion on spectrum implications of switchover to digital broadcasting formed the basis for the work of the RSPG Working Group for the introduction of Multimedia Services.

Since the adoption of the Opinion on Digital Switchover the Commission has taken the issue forward through the publication of several documents (i.e. Communications from the Commission (COM(2005)204 and 461)). Furthermore the RSPG has adopted an Opinion on Wireless Access Policy for Electronic Communications Services – WAPECS (RSPG05-102), which advocates a more flexible approach to spectrum management in which a range of electronic communications networks and electronic communications services may be offered on a technology and service neutral basis, provided that certain technical requirements to avoid

interference are met, to ensure the effective and efficient use of the spectrum, and the authorisation conditions do not distort competition<sup>1</sup>.

In the area of multimedia services many field trials of mobile TV technology have already been conducted. Commercial services have already been introduced in Korea and are planned in the United States, Finland and other countries. In Germany there are plans to assign frequencies to deliver services to customers during the FIFA World Cup. Furthermore multimedia type services are already available as an integral part of mobile service offerings (i.e. IMT-2000). There is high interest in introducing multimedia services in the traditional broadcasting sector as well as in the value chain of other electronic communications services such as mobile services (i.e. equipment manufacturers, operators and content providers). A number of operators have conducted field trials, and have generally reported positive results, showing that consumers may value these types of services. Furthermore broadcasting services, representing an integral part of multimedia services, are converging with mobile services. Future hybrid network configurations containing both services will therefore need to be taken into account.

In this Opinion, “multimedia services” is seen as the coming together of the traditional broadcasting (point-to-area-coverage) and communication services (one-to-one) in a mobile environment. One of the key questions as outlined in the above mentioned documents is the use of the digital dividend for applications of multimedia services as a direct consequence of switchover to digital broadcasting. The availability and supply of high quality multimedia services with attractive new features could bring significant benefits to consumers on a pan-European basis.

The use of spectrum for broadcasting is typically subject to complementary legislation, i.e. electronic communications legislation and content legislation. The borderline between these different types of legislations is becoming increasingly complex on account of the convergence in electronic communications where any service can be delivered over any network, one example being IPTV. Furthermore, the review of the television without frontiers directive currently being undertaken is expected to cover all the audiovisual media services.

The introduction of multimedia services is an issue that is currently high on the agenda for many parties. Complementary to the development of a strategy regarding the digital dividend, and the consideration of WAPECS, the RSPG has identified and addressed various ways in which the introduction of multimedia services could be facilitated, in particular in the frequency bands allocated to the broadcasting services. The RSPG has also identified various constraints applying to those bands and possible means of alleviating them.

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<sup>1</sup> This is without prejudice to the services pursuing identified general interest objectives. See for example recital 6 of the Framework Directive.

## **2. The Public Consultation (*to be completed at a later stage*)**

Acknowledging the importance of radio spectrum for significant industrial and economic activities and as part of the process of preparing the Opinion, the RSPG undertook a public consultation, in parallel with the ongoing discussion in the RSPG, to seek the views from all interested parties on how to facilitate the introduction of multimedia services, particularly in the frequency bands allocated to the broadcasting services. The consultation was conducted according to Article 5 of the Radio Spectrum Policy Group Decision<sup>2</sup>, via the RSPG website, on 15 May 2006, with a closing date for comments of 14 July 2006.

## **3. International regulatory context<sup>3</sup>**

This Section reviews some of the frequency bands that may be used for the provision of multimedia services, in particular the frequency bands allocated to the broadcasting services, and considers the associated constraints and limitations to the development of these services, and the scope for alleviating some of these constraints and limitations.

### **3.1 174 – 230 MHz (VHF band III)**

This band is subject to the Stockholm 1961 Agreement (ST-61) for the provision of analogue TV, to the Chester 1997 Agreement for digital television broadcasting and to the Wiesbaden 1995/Maastricht 2002 Special Arrangements for digital sound broadcasting. As a consequence of the new Agreement to be established by RRC-06 (GE-06), all these Agreements/Arrangements will be superseded from June 2006 in respect of the band 174 – 230 MHz.

After analogue switchover, the use of the band will be based on a fixed channel arrangement of 7 MHz bandwidth for digital television and 1.75 MHz for digital sound broadcasting. The GE-06 Plan will provide each country with a similar amount of spectrum on the basis of allotments and/or assignments, serving different geographical areas, and which may be combined to provide layers of national coverage. The typical share of each country is expected to be 1 national digital TV layer (7 MHz) and three national digital sound layers (1.75 MHz).

In order to keep the flexibility of responding to market requirements for TV or sound broadcasting, most European countries have planned portable indoor reception for both TV and sound. It will thus be possible to replace the national digital TV layer of 7 MHz by 4 national digital sound layers without any change in the interference pattern thus without any need for coordination.

Also, the GE-06 Agreement is expected to leave significant flexibility in implementing the plan:

- the concept of allotment planning should provide a high degree of flexibility regarding the location of broadcasting transmitters within the corresponding service area and interference envelope.

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<sup>2</sup> 2002/622/EC

<sup>3</sup> This Section will be updated after RRC-06

- The concept of spectrum mask offers flexibility for implementing broadcasting services with different characteristics or other applications, provided the interference and the protection requirement are kept within the envelope used for generating the plan. If the proposed use exceeds the mask, it requires prior agreement from affected administrations.

Overall, the international regulatory framework which will result from the GE-06 Agreement is expected to provide administrations with the freedom to implement multimedia services in the band using various technologies, such as DVB-H in 7 MHz channels, or T-DMB in 1.75 MHz channels, with minimum constraints. The main limitations are:

- This will be fully available only once protection of analogue transmissions has ceased, which is generally expected in 2012.
- Mobile uplink transmissions in this band could not be notified to ITU using the spectrum mask concept proposed by Europe to the RRC and would require guardbands with television or sound broadcasting, hence make their coexistence and coordination difficult.

### **3.2 470 – 862 MHz (UHF bands IV and V)**

This band is subject to the Stockholm 1961 Agreement (ST-61) for the provision of analogue TV and to the Chester 1997 Agreement for digital television broadcasting. As a consequence of the new Agreement to be established by RRC-06 (GE-06), these Agreements will be superseded from June 2006 in respect of the band 470 – 862 MHz.

In this band, as in the band 174 – 230 MHz, the GE-06 Plan will provide each country with a similar amount of spectrum on the basis of allotments and/or assignments, serving different geographical areas, and which may be combined to provide layers of national coverage. The typical share of each country is expected to be 7 or 8 national digital TV layers of 8 MHz.

The GE-06 Agreement is expected to leave significant flexibility in using this band, due to the concepts of allotment and spectrum mask.

European countries have selected different planning configurations, which correspond to fixed reception, portable outdoor or indoor reception. The choice between these three configurations was made in 2005 and to a large extent based on the need to preserve the operation of existing terrestrial digital broadcasting networks at the date of analogue switchover, but also on the perceived requirement for new broadcasting services (e.g. more TV programmes, enhance quality or to portable and mobile receivers). This requirement may differ from country to country depending on national strategies, and may be influenced by the penetration rate of cable and satellite services. These have to be taken into account if the appeal of digital television is to enable analogue switchover in a foreseeable future.

Compared with fixed reception, the power level required at reception site is 150 times greater for portable outdoor reception, and 1500 times greater for indoor reception. The choice made by Member States in 2005 will therefore have consequences on the future ability, within the corresponding country, to implement broadcasting services corresponding to a configuration

differing from that selected for the planning. A given choice however, will not rule out moving to another configuration according to market requirements, but it may make it difficult or costly, since it may lead to deploying more transmitting sites, or reducing the number of achievable layers as a result of more difficult coordination.

Overall, the international regulatory framework which will result from the GE-06 Agreement is expected to provide administrations with the flexibility to implement multimedia services in the band 470 – 862 MHz using various technologies, such as T-DMB or DVB-H in 8 MHz channels, with minimum constraints. The main limitations are:

- This will be fully available only once protection of analogue transmissions has ceased, which is generally expected in 2012.
- In many countries, the implementation of mobile multimedia services may require departing from the reference planning configuration adopted before RRC-06, hence entail delays and network costs.
- Mobile uplink transmissions in this band could not be notified to ITU using the spectrum mask concept proposed by Europe to the RRC and would require guard bands with television or sound broadcasting, hence make their coexistence and coordination difficult.
- For reasons related to handset design and cost, a guard band may be needed between the channels used for TV reception (“downlink”) and the frequency used for transmission by the mobile terminal (“uplink”), within the 900 MHz band (if both frequencies are to be used in the same handset). CEPT has drawn administrations attention to this potential constraint.

### **3.3 1452 – 1492 MHz (L-Band)**

The use of the band 1452 – 1479.5 MHz by digital sound broadcasting is subject to the Maastricht 2002 Special Arrangement, which planned that use with a fixed channel arrangement of 1.75 MHz bandwidth, with the specific characteristics of T-DAB, on the basis of allotments. Very few countries have introduced digital sound broadcasting services using T-DAB in this band, and where these services have been introduced, take-up has been limited. The band is potentially available and could be made readily available for multimedia services using T-DAB or other technologies throughout most of Europe.

In relation to the band 1479.5-1492 MHz, ECC/DEC/(03)02 decision designates its use for satellite digital audio broadcasting systems. It has been implemented by 11 EU Member States and another three EU Member States have committed to implement it. Several competing satellite projects are planned to provide multimedia services to portable or handheld terminal in this band. They are expected to use complementary terrestrial components in the same band, to enhance coverage. ITU regulations require administrations to protect the reception of satellite services in other countries, which limits the availability of this band for terrestrial broadcasting services.

The main limitations arising from the international regulatory context in the band 1452 – 1492 MHz are:

- Mobile uplink transmissions in this band require guard bands with sound broadcasting, hence make their coexistence and coordination difficult.
- The Maastricht Special Arrangement was developed on the basis of the T-DAB system. However, this Arrangement now seems unduly restrictive. It may therefore need to be reviewed to ensure that other technologies and services are not unduly precluded from use of the band.
- The requirement on each country to provide protection for the potential reception of satellite broadcasting services in other countries limits the availability of the band 1479.5 – 1492 MHz for terrestrial broadcasting services.

### **3.4 Other relevant frequency bands not allocated to the broadcasting service**

Frequency bands allocated to services other than broadcasting may also be used to provide multimedia services with technologies other than those considered for the bands allocated to the broadcasting service. These include the following:

- The bands identified for IMT-2000 at 2 GHz and 2.5 GHz are available for that purpose throughout Europe and developments are underway to provide broadcasting services as part of current systems (for example MBMS in UMTS-networks). In particular, the bands identified for IMT-2000 TDD operation at 2 GHz (1900 – 1920 MHz and 2010 – 2025 MHz) are available for such developments and, in many countries, unused across the whole EU. The use of these TDD bands by the technologies considered in the bands allocated to the broadcasting service is under technical and regulatory investigation.
- The bands allocated to the mobile-satellite, mobile and fixed services at 1980-2010 and 2170 - 2200 MHz could be used to provide satellite multimedia services to portable or handheld terminals. Competing satellite projects exist in these bands, which may also use terrestrial complements in the same band for coverage enhancements.

### **3.5 Analysis of options**

Table 1 shows a simplified summary of the principal spectrum options, highlighting the status of the frequency bands and their respective advantages, including likely timescales and limitations, prospect of Europe-wide availability, and identifying possible action to reduce the constraints.

**Table 1 – Spectrum options**

<b>Frequency Band</b>	<b>Advantage</b>	<b>Timing of availability</b>	<b>Rules and constraints</b>	<b>Possibility of Europe-wide availability of common spectrum</b>	<b>Possible action</b>
174-230 MHz (Band III)	Coverage	TV spectrum: Many years in most countries (following DSO)  T-DAB spectrum: early for countries not having introduced T-DAB or for systems operating within T-DAB data capacity	RRC decisions. Existing licence conditions  T-DAB assignments/allotments limit technologies  Existing T-DAB licences in some countries  Existing analogue TV :licences in some countries	Low at least until 2012	National action to make licences more flexible
470-862 MHz (Band IV/V) – upper limit varies in some countries)	Coverage. Potentially significant amount of spectrum	Several years in most countries (following DSO)	RRC decisions Proximity of higher channels to 900 MHz 2G spectrum for dual standard handsets  Exiting analogue and digital licences for TV	Low until 2012	Pursue spectrum mask concept at RRC –National action to make licenses more flexible

1452-1492 MHz (L-Band)	Availability. Significant spectrum amount	Early – unused in most countries	Maastricht Arrangement limits to T-DAB (or systems within that mask).  Some licensed T-DAB use but very limited.  ITU satellite allocation and existing filings in the band 1467-1492 MHz.  CEPT ECC/DEC/(03)02 decision for satellite use in the band 1479.5-1492 MHz	High	Confirm mask approach Review possibility of accommodating wider-band technologies within Maastricht framework or consider more radical review
1800 MHz (1785-1805 or part thereof)	Availability	Early – at least for 1800-1805	Limited amount of spectrum, if constrained to top 5 MHz	High, at least for upper 5MHz	Avoid limitations on use
IMT2000 TDD 2GHz spectrum	Availability	Early	CEPT ECC/DEC/(06)01 decision on UMTS/IMT-2000  Existing UMTS licences	High	Technical and regulatory investigation.
2 GHz MSS	Significant spectrum amount		CEPT ECC/DEC/(97)03 Decision on MSS	High	Retain flexibility in current discussions
2.5 - 2.69 GHz	Availability by 2008 internationally harmonised, large amount	2008, subject to market demand and national licensing schemes	CEPT ECC/DEC/(05)05 on UMTS/IMT-2000 Some countries prefer to constrain to IMT-2000, some other prefer a technology neutral approach Rules regarding in-band cross-border coordination and out-of-band compatibility to be developed	High	

## 4. The Opinion of the RSPG

The purpose of this Opinion is to facilitate the introduction of multimedia services within Europe.

- 4.1 The RSPG considers that multimedia services are one of the promising new services fostering growth and innovation among the many that are seeking urgent and easy access to spectrum. In this context, European action to enable the development of multimedia services must be taken in a way that does not distort the use of spectrum as a whole, promotes and does not distort competition, encourages innovation, maximises benefits across the European Union, and does not conflict with national and European content legislation aiming at promoting cultural diversity and media pluralism.
- 4.2 The RSPG considers that any approach to facilitate the development of multimedia services should be consistent with the Opinion adopted by the RSPG on WAPECS.
- 4.3 The RSPG considers that any approach taken at European level to facilitate the introduction of multimedia services must take account of the wide variety of different spectrum bands that could be used and the varying degrees of flexibility that exist in these bands both as to timeframe and availability.
- 4.4 The RSPG notes that existing licences to provide analogue and digital broadcasting services along with legal decisions taken at national level concerning the licensing regime in digital terrestrial television or sound broadcasting may affect the ability to find spectrum to deploy new services like HDTV or mobile multimedia. In particular, it may be difficult in many countries to gather substantial and coherent amount of spectrum for mobile multimedia in the band 470 – 862 MHz before 2012. The RSPG notes that even after 2012, it may be difficult to provide a sufficient number of 8 MHz multiplexes on a national basis for such applications, depending on market demand and economic business models associated with the provision of multimedia services.
- 4.5 The RSPG considers that introduction of multimedia services could be facilitated by:
  - issuing new licenses, or reviewing current licences, to allow the use of multimedia services,
  - limiting the constraints and obligations to the minimum required, while taking into account the international coordination, planning and legal framework
- 4.6 The RSPG considers that there are other frequency bands allocated to the broadcasting service which should be investigated with a view to facilitate the deployment of mobile multimedia services in a shorter timeframe (notably 1 452 – 1 492 MHz).

Other bands not allocated to the broadcasting service also offer the opportunity to provide multimedia services, e.g. the bands allocated to the mobile service at 2 GHz and 2.5 GHz (bands designated for IMT-2000 bands), and the bands at 1980-2010 and 2170 - 2200 MHz for satellite services.
- 4.7 The RSPG notes that the development of multimedia services has so far been left to national initiatives, on the basis of national trials and policies where different solutions

and models are tried in parallel in different countries. Since the timescale is different from country to country as well, it is possible to learn from examples and to implement the “best-practice-solution”. This represents the current status and developments in the EU when it comes to the introduction of multimedia services: some Member States are in the process of awarding licences for multimedia services while others have not yet published any such plans. Advantages include the possibility to learn from examples and to implement the “best-practice-solution”. Disadvantages include the fact that this is a long process where the potential benefits of a pan-European solution might take a long time or not be realised at all.

**4.8** The RSPG considers that several actions could be considered at European level in order to facilitate the introduction of multimedia services, in a manner consistent with the objectives identified above and with the principles of the WAPECS Opinion. These actions would enable administrations to issue new licenses in a similar timeframe under a coherent authorisation regime to enable economies of scale, minimizing the applicable constraints, taking into account the expected revised television without frontiers directive.

- In the 1452 – 1479.5 MHz band, the Maastricht Special Arrangement seems unduly restrictive and should therefore be reviewed urgently to ensure that other technologies and services are not unduly precluded from use of the band.
- In bands 174 – 230 MHz and 470 – 862 MHz, a minimum amount of [7-8] MHz should be made available to allow the provision of multimedia services, as requested by market conditions and permitted by analogue switch-off
- In the bands 1479.5 – 1492 MHz, 1980 – 2010 MHz and 2170 – 2200 MHz, the existing international framework and the work achieved or in progress at CEPT and EU level could enable the deployment of pan-European multimedia services. Further work should be done on how to implement a framework allowing the development of both satellite and terrestrial services in a way that is fair to all potential users of the spectrum.

**4.9** The RSPG considers that there may also be a need for action at European level to remove unnecessary constraints in current licences for broadcasting, mobile and fixed services in order to enable the introduction of multimedia services. These obstacles can be found in national allocation provisions, in the licensing regime and its legal conditions and in national legislation (both electronic communications and content regulation). In respect of content regulation, any such actions are being addressed in the on-going discussions concerning the review of the television without frontiers directive. Such actions could lead to more flexibility in the use of the spectrum and potential for the rapid introduction of multimedia services under current licenses. One difficulty however, is that licences differ from country to country thus there can be no one-size-fits-all-approach.