

# Harmonisation of the digital dividend in the European Union and its impact on national DTT planning in the United Kingdom and Spain

**CRISTINA CULLELL**

*Assistant lecturer in the Faculty of Human and Social Sciences at the Universitat Jaume I (UJI)*

cullell@uji.es

*Article received on 21/01/11 and accepted on 13/04/11*

## Abstract

*Decision 2010/267/EU creates a unique digital dividend in the European Union in the 800 MHz frequency band. European harmonisation of this band will have a different impact on the structure and national planning of DTT in European countries. Specifically, this paper analyses the consequences of digital dividend harmonisation in the United Kingdom and Spain. Although both countries have some dependence on the broadcasting network, their television structure and, above all, their strategies and objectives for the implementation of DTT at a national level have given rise to different effects on the legal systems of both countries.*

## Key words

*DTT, harmonisation, digital dividend, United Kingdom, Spain.*

## Resum

*Amb la publicació de la Decisió 2010/267/UE es crea un dividend digital a la Unió Europea, situat a la banda 800 MHz. L'harmonització europea d'aquesta banda de freqüències impactarà de diferent manera sobre l'estructura i la planificació nacional de la TDT als països europeus. En concret, aquest treball analitzarà les conseqüències de l'harmonització del dividend digital al Regne Unit i a Espanya. Malgrat que tots dos països tenen una lleugera dependència de la xarxa de radiodifusió, la seva estructura televisiva i, sobretot, les estratègies i els objectius de la implantació de la TDT a escala nacional han donat lloc a diferents efectes sobre els ordenaments jurídics de tots dos països.*

## Paraules clau

*TDT, harmonització, dividend digital, Regne Unit, Espanya.*

## 1. Introduction

Decision 2010/267/EU establishes the 800 MHz frequency band as a digital dividend in the European Union so that member states will have to allocate this band (which ranges from 790 to 862 MHz) for other services than broadcasting by 2012. This Decision will have significant consequences for the national planning of European countries as many of them will have to reallocate their DTT services to lower frequencies.

Always on the basis of the existence of a high level of national autonomy in defining DTT policies, this article will focus on the impact on the legislation of the United Kingdom and Spain supposed by the European harmonisation of the digital dividend. Various factors have led to this choice. Firstly, both countries constitute, together with Germany, France and Italy, the five large audiovisual markets in Europe and leaders, with Sweden, in the introduction of DTT in Europe. On the other hand, the markets of the United Kingdom and Spain have a structural dependence in terms of the broadcasting network - the terrestrial broadcasting platform is the most extensive among the population - and therefore, in both cases, the digital switchover is a complex and costly process that gives rise to the emergence of the digital dividend.

The purpose of this article is to verify the impact on the national DTT structures of the United Kingdom and Spain of

the European harmonisation of the digital dividend on the 800 MHz frequency band. It should be noted that any reference to the digital dividend necessarily involves digital terrestrial television policies, which condition and often determine the existence of this space. That's why reference will be made to the national digitalisation policies. We are particularly interested in the objectives established, such as the freeing up of spectrum that occurs once the switchover is complete. Although both experiences were based on a prior subscriber model and its subsequent failure led them to encourage open transmissions, the United Kingdom and Spain are based on opposing structures; the former, centralised and the latter, decentralised.<sup>1</sup> Finally, having determined the national strategies to apply this television technology, we will look at the consequences, in the terrain of national regulation, involved in releasing the 800 MHz frequency band and allocating it to services other than broadcasting. It's important to note that we do not propose to compare public policies for the digital switchover but are interested in the impact of the European harmonisation of the digital dividend on the planning and development of DTT in these countries.

## 2. DTT planning and the digital dividend in the United Kingdom

The United Kingdom was one of the first countries in the EU

to introduce digital television in 1998. Applied from an economic and industrial perspective, British DTT policies have been characterised by their level of coordination and planning<sup>2</sup> and also by adopting an equally coordinated and planned position of freeing up the system<sup>3</sup> (García Leiva 2008). From the start, the United Kingdom has seen the release of the spectrum as one of the main political objectives of the national switchover to digital television, as well as the British regulatory authorities being pioneers in Europe and perhaps the first to introduce new ways of managing the spectrum.

## 2.1 Centralised model oriented towards freeing up the spectrum

Digital television was introduced in the United Kingdom in mid-1995 with the publication of the white paper *Digital Terrestrial Broadcasting: The Government's Proposals*.<sup>4</sup> The publication of this document affected the development of digital television in the United Kingdom in two aspects; on the one hand, highlighting the lines of action of the regulatory framework which would form the basis for launching DTT; and, on the other, setting the political objectives that had to be achieved by implementing this technology. The United Kingdom's model of DTT is characterised by its desire to release the spectrum and its centralised structure has made it easier to do so, also facilitating the emergence of the digital dividend.

Some of the political objectives contained in the white paper were to extend viewers' choice, to benefit domestic electronic equipment manufacturers, spread interactive services, increase competition between multichannel TV platforms and improve the efficiency of the spectrum via analogue switch-off (Goodwin 2005). Precisely, this last objective related to the spectrum makes Britain a particular case in terms of spectrum strategy as releasing part of the radio spectrum has formed part of the political agenda for DTT in the United Kingdom since the middle of the 1990s. In this way, and ignoring the social, technological and democratic arguments regarding the DTT roll-out in the United Kingdom, the economic justification for this technological change was related to the value of the spectrum that would be freed up after the digital switchover. To some extent, we could claim that the United Kingdom's interest in this question was influenced by the policies implemented in the United

States aimed at promoting auctions to allocate spectrum licences (Levy 1999:108).<sup>5</sup>

From a British point of view, the introduction of DTT was seen as a dual opportunity: to release the radio spectrum and change how such a strategic resource was managed. Meeting spectrum demands was one of the priorities of the British authorities and, in 2003, the plans for the digital TV switchover included the freeing up of 112 MHz, a total of 14 channels distributed on two other bands than the spectrum (see table 2.1). According to the plan, the United Kingdom's digital dividend was made up of 48 MHz located at the top end of UHF, between the frequencies of 806 and 854 MHz (channels 63-68), and another, larger one, 64 MHz, at the lower end of UHF, comprising the frequencies 550-630 MHz (channels 31-35, 37 and 39-40) (Ofcom 2007, 2009).

The emergence of the digital dividend is also seen as an opportunity to introduce changes in how the broadcasting network is managed. In recent years, the regulatory authorities for this network have been reviewing the traditional management mechanisms (based on a command and control model) to implement more dynamic and flexible mechanisms that meet the needs of a sector immersed in change and in constant technological innovation, within a context where spectrum demand is growing quickly and unpredictably. In fact, one of the problems of the traditional command and control model, characterised by a high degree of centralisation and tough administrative control, is related to the fact that spectrum policy might be subordinated to the interests of broadcasting and, according to this model's proposals, broadcasting needs might be met without taking into account the specific availability of this valuable resource (Cave 2006:116).

An example of this tendency can be found in the United Kingdom in 2002 with the "Radio Spectrum Management Review", which opened the door to reforms being introduced in its radio spectrum regulation.<sup>6</sup> The creation of Ofcom in 2003 was also a regulatory response by the British authorities to technological convergence, as it was becoming increasingly difficult to sustain regulatory regimes based on the application of different rules or procedures for different forms of communication (Smith 2006). As stated by the regulation to set up Ofcom, one of the main political objectives of the new organisation was

**Table 2.1. List of channels that make up the United Kingdom's digital dividend**

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69

Channels released

Source: Authors, based on Ofcom, 2007.

to ensure the optimum and efficient use of the radio spectrum in Britain. In this way, what had been announced since the mid-1990s became a reality, adopting specific measures to make the use of the radio spectrum more flexible and enable it to be sold off. The introduction of DTT in the United Kingdom has been marked by greater pressure on the uses of the radio spectrum, helping a more flexible and open regulatory framework to be introduced.

Another characteristic of the digital TV model in the United Kingdom is related to its centrality. Regarding this, we must refer to the enactment of the 1996 Broadcasting Act, a direct consequence of the publication of the 1995 white paper, which established 6 national multiplexes, 3 of which were allocated to the ONdigital subscriber channel.<sup>7</sup> At the beginning, as happened in Spain, the British government relied on private business to promote the new TV technology but, given the failure of this model, it had to rectify the situation, being forced to introduce an open model and allocating the multiplexes previously given to ONdigital to the Freeview<sup>8</sup> platform. Nevertheless, what we should note here is not the failure of the subscriber model but the number of multiplexes authorised. Although the British authorities favoured a structured dominated by the expansion of digital channels generating more supply (rather than higher quality in terms of image and sound, such as high definition television or innovation, by encouraging the introduction of interactive services), DTT planning in the United Kingdom has 6 multiplexes, all with national coverage. The lack of regional or local channels is a consequence of the centralist structure that characterises this country's broadcasting networks and gives rise to a much lower occupation of the spectrum. A larger digital dividend is therefore more likely to result.

In summary, the releasing of the spectrum or, in other words, the emergence of the digital dividend has been, from the start, one of the key points in the national development of DTT (García Leiva 2009). That's why the United Kingdom's digitalisation policies have been implemented while taking this objective into serious consideration, aimed at freeing up the spectrum. As we will see, harmonising the 800 MHz frequency band does not suppose further planning problems for this country.<sup>9</sup>

## 2.2 The impact of harmonising the 800 MHz frequency band on the United Kingdom

Decision 2010/267/EU on the harmonisation and releasing of the 800 MHz frequency band in the EU has been received in the United Kingdom with the firm defence of its national interests, even more so if we take into account the fact that, internally, this country had already incorporated measures such as those provided for in this European regulation.<sup>10</sup> In this respect, we should mention that, during the World Radio-communication Conference in 2007 (WRC-07), the British government undertook to release the same frequency band for communication services other than television. We will now look at

the impact of European harmonisation of the 800 MHz frequency band on the national planning of DTT in the UK.

Firstly, we must point out that this country has been a pioneer in Europe in adopting new ways of managing the radio spectrum, as can be seen in the publication of the 2006 Wireless Telegraphy Act which introduces a more flexible and market-oriented approach to the British structuring of spectrum regulation. Ofcom took a similar stance, defending a market-oriented approach for the digital dividend that ensures users have enough flexibility to decide how to use it (Ofcom 2007).

The digital dividend planned in the United Kingdom comprises the 600 MHz frequency band, between 550 and 606 MHz (channels 31-37), and the 800 MHz frequency band, between 790 and 862 MHz (channels 61 and 62), harmonised by the EU. In accordance with this, European harmonisation of the digital dividend will mean that two digital multiplexes allocated to providing DTT services will have to be reallocated (channels 61 and 62). After a consultation stage held in 2009, Ofcom decided to transfer the digital multiplexes of channels 61 and 62 to channels 39 and 40, belonging to the digital dividend located at the lower end of UHF. Channel 38 will be allocated to PMSE services,<sup>11</sup> as had been planned (Ofcom 2009).

The appearance of the digital dividend in the United Kingdom is the result of the coordinated, strategic planning of public digital TV policies. In this way, future European harmonisation of the 800 MHz sub-frequency band will not cause too many problems for the British authorities and the reticence they have shown towards Decision 2010/267/EU to guide European countries to free up the 800 MHz frequency band for services other than broadcasting by 2012 is basically in defence of their national interests.

## 3. DTT planning and the digital dividend in Spain

One of the characteristics of the DTT switchover in Spain is the lack of in-depth public debate on this issue, as demonstrated by the large number of rules the Spanish authorities have pub-

**Table 2.2. List of EU harmonised frequencies and current United Kingdom occupation**

Channel	Frequencies	National plan
61	790-798 MHz	DTT Multiplex
62	798-806 MHz	DTT Multiplex
63	806-814 MHz	Digital dividend of the upper section of UHF planned by Ofcom
64	814-822 MHz	
65	822-830 MHz	
66	830-838 MHz	
67	838-846 MHz	
68	846-854 MHz	
69	854-862 MHz	PMSE Programme Making and Special Events

Source: Author, based on Ofcom, 2009.

lished to tackle the development of this TV technology.<sup>12</sup> Another of the particularities of the DTT model in Spain is related to its dimension at a state, autonomous community and local level. This strongly decentralised structure meant that the authorities had to prioritise the number of channels above their quality and innovation.<sup>13</sup> The decentralisation of the Spanish broadcasting network has meant that room has had to be made on the radio spectrum for operators from different territories to the extent that, in Spain, the digital dividend was not expected to come about until mid-2009.

### 3.1 Decentralised model aimed at providing broadcasting services

Spain's DTT policy has been characterised by little planning and great legislative fragmentation, making the process somewhat uncertain. Two aspects have dominated DTT policy in this country right from the start: on the one hand, the decentralisation of the broadcasting network and the lack of a plan to release a part of the spectrum once the switchover is complete; and on the other hand, the almost total occupation of the UHF band for broadcasting services, which has been the dominant tone in Spain. Its authorities have not considered the possibility of freeing up of the spectrum nor the consequent opening up to communications services other than broadcasting. The EU will have to act as a guide for the Spanish authorities in this direction.

At the end of the 1990s, with the approval of Royal Decree 2169/1998, the National Technical Plan for Digital Terrestrial Television (PTNTDT) was published and Spain headed the list of European countries in the development and implementation of digital terrestrial television. As stated in the PTNTDT, the digital terrestrial television service would be operated in Spain on the frequency bands between 470 and 862 MHz and would be developed between spectrum channels 21 to 56 without there being any planned release of any channel. The whole radio spectrum in Spain was therefore occupied by channels with state, regional or local coverage to the extent that there was no room for services other than broadcasting. In fact, we should note that the PTNTDT not only did not include the releasing of frequencies for other uses but actually widened the availability of the spectrum for broadcasting services.

The PTNTDT subdivided the operation of frequency bands into three different bands aimed at broadcasting services of a different level. In this respect we need to distinguish between two kinds of network: Single Frequency Networks (SFN), which allow a zone of a territory to be covered (a service zone) by using the same frequency or spectrum channel on all stations without the possibility of locally different content. Another type of network is the Multifrequency Network (MFN), through which a service zone is covered using a different frequency or spectrum channel for each station. On this kind of network, locally different content can be produced and the decentralised structure of Spain's TV system meant that this kind of network was the most suitable to promote pluralism.<sup>14</sup>

The first band is between 470 and 758 MHz and supplies spectrum channels 21 to 56. These networks would be dedicated to establishing multifrequency and single frequency networks for local coverage. The second frequency band would range from 758 to 830 MHz, made up of channels 57 to 65, used mainly for single frequency networks covering autonomous communities, provinces and local services. Finally, the last band into which the spectrum is divided would range from 830 to 862 MHz, whose channels were 66 to 69, planned for establishing single frequency networks at a state level.

At first, the subscriber model dominated DTT in Spain and, consequently, at the beginning of 1999 a tender was held for licences to use national SFN multiplexes from channel 66 to 69 as subscriber television. Quiero TV won the tender. As happened in the United Kingdom, the subscriber model did not work for terrestrial TV and, in 2002, after the failure of Quiero TV, the Spanish authorities reassigned the channels occupied by this subscriber platform. With the change in government, Royal Decree 944/2005 was published, approving a new National Technical Plan for DTT that left the spectrum planning of 1998 intact, without considering other uses than broadcasting and without reference to the possible releasing of space on the radio spectrum.<sup>15</sup>

Apart from the little or non-existent presence of the digital dividend on the Spanish DTT agenda, decentralisation was another dominant characteristic in the process as, right from the start, the plan was for the digital terrestrial television platform to be operated at a state, regional and local level.<sup>16</sup> This three-dimensional focus of DTT meant that, to a certain extent, this country's authorities ignored the possibility of freeing up space on the radio spectrum and the demands for spectrum space from autonomous communities and local corporations had to be met, due to the network's decentralisation. The tradition of local and regional television in Spain meant that DTT development took into account these areas of broadcasting. Nonetheless, although the 1998 PTNTDT planned digital television at a local, regional and state level, it did so with little precision when defining the implementation in these areas and was not enough to develop regional and local digital broadcasting.<sup>17</sup>

**Taula 3.1. Distribució de freqüències de TDT segons el Pla nacional de TDT de 1998**

Band	Frequencies	Channels	Use
I	470-758 MHz	21-56	Local MFN and SFN
II	758-839 MHz	57-65	Regional, provincial and local SFN
III	830-862 MHz	66-69	State SFN

Font: Elaboració pròpia a partir del Reial decret 2169/1998.

The existence of a complex DTT map in Spain, hugely decentralised and with various administrations involved in carrying out the process, has made it difficult to release the spectrum. Once the many different demands on the broadcasting network had been met, made by various actors (local, regional, public, private, etc.) to provide broadcasting services, the Spanish government found it difficult to free up part of this resource for other wireless electronic communications services.

### 3.2 The impact of harmonising the 800 MHz frequency band on Spain

DTT planning in Spain – the 1998 and 2008 PTNTDT – has been characterised by the total planning of frequencies between 470 and 862 MHz for providing broadcasting services and has given rise to almost total occupation of the spectrum without it being possible to release any portion. In principle, this situation means that there is almost no possibility for the emergence of the digital dividend to improve the coverage, capacity and speed of mobile broadband networks. This situation led the Spanish government to acknowledge that it was unlikely to comply with the European trend of opening up the digital dividend to electronic communication services.

Nevertheless, the European trend towards releasing the 800 MHz frequency band for all kinds of services and the report by the Telecommunications Market Commission (CMT)<sup>18</sup> led to a commitment by the Spanish government to release the 800 MHz frequency band for all kinds of communications by 2015. Specifically, the recently approved State Act 2/2011, on the sustainable economy states that “the 790-862 MHz frequency band is principally aimed at providing advanced electronic communications services in line with the harmonised uses agreed by the European Union. This band must remain available to be assigned to its new uses by 1 January 2015” (article 51).

To this end, in mid-2010 Royal Decree 365/2010 was published, governing the assignment of DTT multiples after analogue terrestrial TV broadcasting ends.<sup>19</sup> Always based on the legal framework established by the DTT National Technical Plan, approved by Royal Decree 944/2005, this legislation aims to regulate the assignment of DTT multiples once analogue terrestrial TV broadcasting ends, without having to assign additional capacity in providing DTT services or granting new digital channels or multiples. With the aim of the 790 to 862 MHz frequency sub-band being released by 1 January 2015, Royal Decree 365/2010 plans two phases of action.

The first phase allows DTT services to be operated on all frequency bands, even on those between 790 and 862 MHz. In turn, this first phase has two stages: in the first, DTT services can be operated on channels 66 to 69 (both inclusive) at the same time as including the planning of 3 more multiples based on analogue channels operated by the private companies Antena 3 Televisión, Gestevisión Telecinco and Sogecable. In this first stage, private operators and the Corporación RTVE must achieve 90% coverage of the population with the new

multiples planned. At the beginning of March 2011, the second stage of the first phase started, during which channel 66 is gradually left free and the number of operators is extended to the rest of the channels (67, 68 and 69), so that operational capacity is shared between those with DTT service licences (see table 3.2). During this stage private operators and Corporación RTVE must achieve 96% coverage with the planned multiples.




After three months the second phase starts, during which three new digital multiples are planned with state coverage to replace radio spectrum channels 67, 68 and 69; these new multiples will constitute single frequency networks (SFN) and the frequencies between 790 and 862 MHz will not be included in any case. Within nine months of the assignment of the new channels in the frequency range of 470 to 790 MHz (radio spectrum channels 21 to 60), operators have to achieve at least 96% coverage of the area planned. It's important to note that Decree 365/2010 provides for a period of simultaneous broadcasting until the degree of aerial conversion for the new digital multiples planned in phase two is similar to those planned in phase one (article 4.3). At that point, the companies authorised to provide DTT services will stop broadcasting on and sharing channels 67, 68 and 69 and will only broadcast on a newly planned digital multiplex, assigned to each of these companies.

Regarding the costs resulting from the new broadcasting network planning, the second paragraph of article 51 of State Act 2/2011, on the sustainable economy, states that “the costs resulting from the reorganisation of the radio spectrum that is necessary to carry out to free up the frequency band of 790 to 862MHz must be met by the Administration with the revenue obtained from the public tenders held to assign the radio spectrum”. The introduction *in extremis* –once the transition period has ended– of the digital dividend in Spain will have significant consequences entailing the reorganisation of the UHF band, as the frequencies affected by European harmonisation, namely 790-862 MHz (channels 61 to 69) were assigned to broadcasters with state and regional coverage, both public and private.

## 4. Conclusions

European harmonisation of the digital dividend on the 800 MHz frequency band will have differing effects on the internal legislation of the United Kingdom and Spain. On the one hand, in Britain, harmonisation of the 800 MHz frequency band will entail minimal cost because the British authorities had already planned to release a greater amount of the radio spectrum than the amount harmonised via Decision 2010/267/EU. The establishment of the European digital dividend on the 800 MHz frequency band will force the British authorities to extend it to the high part of UHF, initially planned on 48 MHz, and the two multiplex channels planned for channels 61 and 62 will have to be moved to the low digital dividend band, specifically channels 39 and 40 (Ofcom 2009).<sup>21</sup> In spite of the small adjust-

**Table 3.2. List of frequencies harmonised by Decision 2010/267/EU and occupation in Spain according to Royal Decree 365/2010**

Channel	Frequencies	Occupation
61	790-798 MHz	Autonomous community multiplex
62	798-806 MHz	Autonomous community multiplex
63	806-814 MHz	Autonomous community multiplex
64	814-822 MHz	Autonomous community multiplex
65	822-830 MHz	Autonomous community multiplex
66	830-838 MHz	Channel released as from March 2011 <sup>1</sup>
67	838-846 MHz	
68	846-854 MHz	
69	854-862 MHz	

Source: Author, based on Royal Decree 363/2010 and data from SETSI.

ments to the planning of the digital dividend in the United Kingdom, the reservations expressed by the British authorities regarding this issue are related to questions of national sovereignty rather than technical or programming difficulties.

In the case of Spain, complying with Decision 2010/267/EU is more complex technically and more expensive. We have shown that the Spanish authorities had not planned to release frequencies after the digital switchover, so that the harmonisation of the 800 MHz frequency band has forced them to modify DTT regulation and planning a few days before analogue broadcasting ended. Specifically, as contained in the Spanish DTT planning before the approval of Royal Decree 365/2010, the harmonised channels 61-69 were occupied by state and regional broadcasters. In this way, complying with European and international obligations, the Spanish authorities will have to carry out a significant reform of the legislation that will include, among other aspects, the modification of the PTNTDT and the relocation of broadcasters operating between the frequencies of 790 and 862 MHz, affected by European harmonisation. The operators in question will have to be reassigned to lower frequencies between 490 and 790 MHz, as established by Royal Decree 365/2010, governing the assignment of digital terrestrial television multiples after analogue terrestrial broadcasts have ended.

In short, harmonisation of the 800 MHz frequency band, establishing the digital dividend in Europe, will mean that the digital switchover in Spain will have a much higher economic and social cost than in the United Kingdom, which had already planned for the emergence of the digital dividend. A space whose 790-862 MHz frequency band was harmonised by the EU in mid-2010 for electronic communications services other than broadcasting, as provided for in Decision 2010/267/EU.

## Notes

- 1 Over time, both models have gone back to including subscriber content on the DTT platform.
- 2 A good example of this is that the 30 December 2012 has always been maintained as the date that analogue TV would be switched off throughout the country, unlike in Spain, which has changed the date of the analogue switch-off on several occasions.
- 3 The experience of the British digital switchover has been extensively studied by Collins (2002); Galperin (2004); Goodwin (2005) and a comparative analysis of the public digital TV policies in the United Kingdom and Spain by García Leiva (2008).
- 4 This white paper led to the publication of the 1996 Broadcasting Act, which establishes 6 national multiplexes, 3 of which were assigned to the subscriber platform ONdigital.
- 5 In 1996, the government published a white paper on the management of the broadcasting spectrum that pre-established certain lines of action to prevent spectrum congestion and guarantee it was used efficiently.
- 6 The report "Radio Spectrum Management Review", by Professor Martin Cave for the Treasury and the Secretary of State for Trade and Industry in the United Kingdom.
- 7 The remaining three open multiplexes were assigned as follows: one to the BBC, another shared between Channel 3 from ITV and Channel 4 and the third also shared between Channel 5 and S4C in Welsh. Each multiplex had 8 MHz.
- 8 Free multichannel platform for digital terrestrial television promoted by the BBC in which BSkyB and Crown and Castle took part. The DTT model in the United Kingdom is currently characterised by offering predominantly free content, led by public and private agents.
- 9 The United Kingdom plans to free up 112 MHz once the switchover is complete. In total, Ofcom calculates that 128 MHz

will be released on UHF, 8 MHz of which will come from suppressing aeronautical radar, 8 MHz more from astronomy and the rest, 112 MHz, from analogue broadcasting.

- 10 It should be noted that the British authorities have been against the EU fixing a deadline for member states opening up the 800 MHz frequency band to other communications.
- 11 Reserving channel 69 for PMSE means using it for wide-reaching TV broadcasts, such as the Olympic Games, world championships, etc.
- 12 Additional provision 44a of State Act 66/1997, of 30 December, on fiscal, administrative and social order measures. It should be noted that DTT was introduced in Spain by an accompanying act without any greater democratic discussion in the parliament (Suárez 2009: 394-395 and García Leiva 2008: 211).
- 13 Nevertheless, the PTNTDT establishes the possibility to develop mobile services and high definition.
- 14 The European Commission wants to promote SFNs rather than MFNs (European Commission, 2009).
- 15 The 2005 PTNTDT advanced the data for 98% digital coverage (public broadcasters) and 95% coverage (private broadcasters) of the population to 3 April 2010.
- 16 According to Royal Decree 2169/1998, of 9 October, approving the National Technical Plan for Digital Terrestrial Television, and Royal Decree 944/2005, of 29 July, approving the National Technical Plan for Digital Terrestrial Television.
- 17 It was not until 2004, six years after the publication of the PTNTDT, that the National Technical Plan for Local Digital Television was approved, which provided more details regarding coverage and the geographical division of digital television, although that same year it was amended with the arrival in power of the Socialist Party, with some geographical scopes changing.
- 18 The CMT's report to the First Vice-President of the government and the Ministry of the Presidency on the Draft Bill on the financing of the Corporación de Radio y Televisión Española (RO 2009/747) states that the assignment of part of the digital dividend to electronic communications services, along the same lines as has occurred in France, Sweden and the United Kingdom and Finland, would benefit citizens as a whole, promoting access to services of the information society and narrowing the digital divide. It would also promote competition, innovation and, in short, economic growth and the wellbeing of society.
- 19 Revised in 2011 by Royal Decree 169/2011, of 11 February, amending Royal Decree 365/2010, of 26 March, governing the assignment of digital terrestrial television multiples after analogue terrestrial television broadcasts have ended, and Royal Decree 691/2010, of 20 May, governing digital terrestrial television in high definition. Royal Decree 365/2010 provides for the temporary use of the digital multiple associated with channel 66 in order to avoid loss of coverage.
- 21 See tables 2.1 and 2.2.

## References

- CAVE, M. "New spectrum using technologies and the future of spectrum management: a European policy perspective". In: *Communications - The next decade*, November 2006 [online]. London: Ofcom, 2006.  
<<http://stakeholders.ofcom.org.uk/binaries/research/research-publications/section4.pdf>> [consulted: December 2010]
- *Review of Radio Spectrum Management. An independent review for Department of Trade and Industry and HM Treasury*. March 2002 [online]. London: Ofcom, 2002.  
<[http://www.ofcom.org.uk/static/archive/ra/spectrum-review/2002review/1\\_whole\\_job.pdf](http://www.ofcom.org.uk/static/archive/ra/spectrum-review/2002review/1_whole_job.pdf)> [consulted: December 2010]
- CAVE, M; WEBB, W; DOYLE, C. *Essentials of Moderns Spectrum Management*. Cambridge: Cambridge University Press, 2007. ISBN: 9780521876698
- COLLINS, R. "Digital Television in the United Kingdom" In: *Javnost - The Public*. Eslovenia: European Institute for Communication and Culture, 2002, no. 4 vol. 2, p. 5-18. ISSN: 1854-8377
- COUNCIL OF THE EUROPEAN UNION. *Conclusions on "Reaping the full benefits of the digital dividend in Europe: a common approach to using the spectrum released by the digital switchover"*. June 2008 [online]. Luxembourg: EU Transport, Telecommunications and Energy Council, 2008.  
<<http://www.consilium.europa.eu/App/NewsRoom/loadBook.aspx?target=2008&bid=87&lang=ES&id=354>> [consulted: December 2010]
- COUNCIL OF EUROPE. *Declaration of the Committee of Ministers on the allocation and management of the digital dividend and the public interest*. February 2008 [online]. Strasbourg: Council of Europe, 2008.  
<<https://wcd.coe.int/ViewDoc.jsp?Ref=Decl%2820.02.2008%29&Language=lanFrench&Ver=0002&Site=COE&BackColorInternet=9999CC&BackColorIntranet=FFBB55&BackColorLogged=FFAC75>> [consulted: August 2010]
- EUROPEAN COMMISSION. *Transforming the digital dividend into social benefits and economical growth* COM (2009)586final. October 2009 [online]. Brussels: European Commission, 2009.  
<<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0586:FIN:ES:PDF>> [consulted: December 2010]
- *Reaping the full benefits of the digital dividend in Europe: a common approach to using the spectrum released by the digital switchover* COM (2007)700final. November 2007 [online]. Brussels: European Commission, 2007a.  
<<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2007:0700:FIN:es:PDF>> [consulted: December 2010]

-- *Rapid access to spectrum for wireless electronic communications services through more flexibility*. COM (2007)50final. February 2007 [online]. Brussels: European Commission, 2007b.

<[http://eur-lex.europa.eu/LexUriServ/site/es/com/2007/com2007\\_0050es01.pdf](http://eur-lex.europa.eu/LexUriServ/site/es/com/2007/com2007_0050es01.pdf)> [consulted: December 2010]

COMISIÓN DEL MERCADO DE LAS TELECOMUNICACIONES. *Informe Anual 2008* [online]. Barcelona: CMT, 2008.

<[http://www.cmt.es/cmt\\_ptl\\_ext/SelectOption.do?nav=publi\\_anuales&detalles=09002719800868c6&pagina=1](http://www.cmt.es/cmt_ptl_ext/SelectOption.do?nav=publi_anuales&detalles=09002719800868c6&pagina=1)> [consulted: November 2010]

GALPERIN, H. *New Television and Old politics. The transition to Digital TV in the United States and Britain*. Cambridge: Cambridge University Press, 2005. ISBN: 9780521041201

GARCÍA LEIVA, M. T. "El dividendo digital: desafíos, oportunidades y posiciones nacionales" In: *RCLS Revista Latina de Comunicación Social*. La Laguna [Tenerife]: Universidad de La Laguna, April 2009, v. 64, p. 424-436. ISSN: 1138-5820

-- *Políticas públicas y televisión digital: el caso de la TDT en España y en el Reino Unido*. Madrid: Consejo Superior de Investigaciones Científicas, 2008. ISBN: 9788400086527.

GOODWIN, P. "United Kingdom: Never Mind the Policy, Feel the Growth". In: BROWN, A.; PICARD, R. *Digital Terrestrial Television in Europe*. London: Lawrence Erlbaum Associates, 2005. ISBN: 0805853871

LEVY, D. *Europe's digital revolution. Broadcasting regulation, the EU and the nation state*. London: Routledge, 1999. ISBN: 0415171962

OFCOM. *Digital Dividend: clearing the 800 MHz band*. London: Ofcom, 2009.

<<http://www.ofcom.org.uk/consult/condocs/800mhz/state ment/clearing.pdf>> [consulted: December 2010]

-- *Digital Dividend Review: a statement on our approach to awarding the digital dividend*. London: Ofcom, 2007.

<<http://www.ofcom.org.uk/consult/condocs/ddr/statement/statement.pdf>> [consulted: December 2010]

SMITH, P. "The politics of UK television policy: the making of the Ofcom" In: *Media Culture and Society*. London: SAGE, 2006, no. 28, v. 6, p. 933-940. ISSN: 0163-4437

SUAREZ, R. *Las políticas públicas de la Televisión Digital Terrestre en la Unión Europea. Estudio comparado de Suecia y España*. Doctoral thesis. Barcelona: Universitat Pompeu Fabra, 2009.

## Legislation

Commission Recommendation 2009/848/EC of 28 October 2009 facilitating the release of the digital dividend in the European Union. OJEU L 308 (24/11/2009). [Notified with number C(2009) 8287 final]

Commission Decision 2010/267/EU of 6 May 2010 on harmonised technical conditions of use in the 790-862 MHz frequency band for terrestrial systems capable of providing electronic communications services in the European Union. OJEU L 117 (11/5/2010). [Notified with number C(2010) 2923]

Ley de Estado 2/2011, de 4 de marzo, de Economía Sostenible. BOE no. 55 (05/03/2011).

Resolución de 29 de noviembre de 2005, de la Secretaría de Estado de Telecomunicaciones y para la Sociedad de la Información, por la que se dispone la publicación del Acuerdo de Consejo de Ministros, de 25 de noviembre de 2005, por el que se amplía con canales digitales adicionales el contenido de las concesiones de las sociedades que gestionan el servicio público de televisión terrestre de ámbito estatal. BOE no. 290 (5/12/2005).

Real Decreto 2169/1998, de 9 de octubre, por el que se aprueba el Plan Técnico Nacional de la Televisión Digital Terrenal. BOE núm. 248 (16/10/1998).

Real Decreto 439/2004, de 12 de marzo, por el que se aprueba el Plan Técnico Nacional de la Televisión Digital Local. BOE núm. 85 (8/4/2004).

Real Decreto 2268/2004, de 3 de diciembre, por el que se modifica el Real Decreto 439/2004, de 12 de marzo, por el que se aprueba el Plan Técnico Nacional de la Televisión Digital Local. BOE núm. 292 (4/12/2004).

Real Decreto 944/2005, de 3 de diciembre, por el que se aprueba el Plan Técnico Nacional de la Televisión Digital Terrestre. BOE núm. 181 (30/7/2005).

Real Decreto 863/2008, de 23 de mayo, por el que se aprueba el Reglamento de desarrollo de Ley 32/2003, de 3 de noviembre, General de Telecomunicaciones, en lo relativo al uso del dominio público radioeléctrico. BOE núm. 138 (7/6/2008).

Real Decreto 365/2010, de 26 de marzo, por el que se regula la asignación de los múltiples de la Televisión Digital Terrestre tras el cese de las emisiones de televisión terrestre con tecnología analógica. BOE núm. 81 (3/4/2010).



Real Decreto 169/2011, de 11 de febrero, por el que se modifican el Real Decreto 365/2010, de 26 de marzo, por el que se regula la asignación de los múltiples de la Televisión Digital Terrestre tras el cese de las emisiones de televisión terrestre con tecnología analógica y el Real Decreto 691/2010, de 20 de mayo, por el que se regula la Televisión Digital Terrestre en alta definición. *BOE* núm. 37 (12/2/2011).

Broadcasting Act. 24 July 1996. Chapter 55.

Communication Act. 17 July 2003. Chapter 21.

Wireless Telegraphy Act. 8 November 2006. Chapter 36.