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| **Radiocommunication Study Groups** |  |
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| To Administrations of Member States of the ITU, Radiocommunication  Sector Members, ITU-R Associates participating in the work of  Radiocommunication Study Group 6 and ITU-R Academia | |

**Subject**: Questionnaire on spectrum requirements for the future of sound and television broadcasting

**References**: Documents [6/ 93](http://www.itu.int/md/R12-SG06-C-0093/en) and [6/249](http://www.itu.int/md/R12-SG06-C-0249/en)

1 Study Group 6 (SG 6) is the ITU-R Study Group assigned to the Broadcasting service. Its scope covers radiocommunication broadcasting, including vision, sound, multimedia and data services principally intended for delivery to the general public.

2 SG 6 created a Rapporteur Group to look at the future spectrum requirements for the Broadcasting service in light of technical developments, decisions taken by WRC-03 and WRC-07 on the use of digital modulation in the HF Bands, and the changes to frequency allocations at WRC-97, WRC-07 and WRC-12, as part of the work in maintaining its catalogue of Reports and Recommendations.

3 One of the questions that needs to be addressed by SG 6 include how broadcast requirements are changing with the move to digital broadcast systems, and the introduction of new and enhanced broadcast services.

4 The following questionnaire, which is being sent to all Administrations and Sector Members, is designed to gather information on spectrum use by sound and television broadcasting in the bands allocated on a Regional[[1]](#footnote-1) or global basis to terrestrial broadcasting (see Annex 1).

5 Administrations and Sector Members are also invited to make more detailed inputs addressing the matter of current and future spectrum requirements for radio and television broadcasting to the next meeting of WP 6A and SG 6.

6 Administrations and Sector Members are requested to submit responses to [brsgd@itu.int](mailto:brsgd@itu.int) by 17 October 2014.

David Barrett

Chairman SG6 Rapporteur Group on spectrum requirements   
for the future of the broadcasting Service

QUESTIONNAIRE ON SPECTRUM REQUIREMENTS FOR THE FUTURE OF SOUND AND TELEVISION BROADCASTING

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| **Name of the Administration:** |  |
| **Contact person:** |  |
| E-mail address: |  |
| Telephone number: |  |

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| **Name of the Sector Member:** | abertis telecom |
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| Telephone number: | +349356789100 |
| **What best describes your organisation?**  Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe) | Network operator |
| **The geographical area over which you operate:** | Spain |

**SECTION ONE – Television broadcasting**

1) a) Is your country still using analogue television?

b) If yes, has analogue television switch-off commenced?

c) If your country has any plans to switch-off analogue television:

i) When is the analogue switch-off process expected to be completed?

ii) How much extra spectrum will be required during the transition phase to digital terrestrial television broadcasting?

**Reply:**

1) a) No, since 2010 analogue television is switched off.

2) a) Please indicate how many analogue television transmitters are in operation in your country and in which bands.

b) What channel bandwidths are used for analogue television?

c) What is the spectrum requirement for analogue television in your country?

A proposed format for responses to question 2a) and 2b) is provided in Annex 1

**Reply:**

2) N/A.

3) a) What is the percentage of viewer uptake of terrestrial television in your country?

b) If possible, please also provide details of the number or proportion of users who receive television primarily by terrestrial means by:

i) Fixed roof top antenna, or  
ii) Portable indoor antenna.

**Reply:**

3) a) Viewer uptake of terrestrial television in Spain is more than 98.5%.

b) In Spain, by law, the collective fixed roof top antenna is mandatory for the buildings with more than 3 households (where lives the big majority of the population) and for the case of the building with less than 3 households, it is estimated that the 95% have rooftop antenna. Furthermore, the coverage of DTT multiplexes is designed to provide fixed outdoor service.

Then, it is reasonable to assume that nearly all citizens receive television by fixed roof top antennas.

4) If your country has switched or is considering switching to digital terrestrial television broadcasting

a) What system standard is your country using or considering adopting   
(as specified in Recommendations ITU-R BT.1306 and BT.1877)?

b) When did your country start or when is it proposing to start the introduction of digital terrestrial television services?

c) Please provide further detail on the number of multiplexes in use, their technical specifications, the percentage of geographic area or population they cover or are intended to cover and the total spectrum use.

A proposed format for detailed responses is provided in Annex 2

**Reply:**

4) a) In Spain, the standard adopted for digital terrestrial television broadcasting is DVB-T (ETSI EN 300 744 ). For video services, on SD services MPEG2 is used and on HD services is MPEG4.

Furthermore, HbbTV standard is currently used for interactivity.

b) Since 1.999.

c) See Annex 2.

5) a) What frequencies/channels are currently used or intended to be used by digital terrestrial television broadcasting in your country? Please distinguish between those in use and those intended to be used?

b) Please indicate how many digital terrestrial television transmitters are currently used or intended to be used and in which bands.

c) What channel bandwidth is used or intended to be used for digital terrestrial television in your country?

A proposed format for responses to question 5b) and 5c) is provided in Annex 1

**Reply:**

5) a) From 1st January 2015: 470 – 790 MHz (channels 21-60).

b) See Annex 2.

c) See Annex 2.

6) a) Are the terrestrial television frequency bands also shared with other primary services in your country?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

6) a) 470 – 790 MHz No.

b) N/A.

7) a) Are the terrestrial television frequency bands also shared with secondary services used for the support of broadcasting such as SAB/SAP (services ancillary to broadcasting/production), or other types of services such as radio astronomy or wind-profile radar?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

7) a) Yes.

b) SAB/SAP services ancillary to broadcasting/production, according to ERC 70-03 (CEPT recommendation), relating to the use of Short Range Devices.

8) a) Does your country foresee a requirement for new and enhanced services, including multimedia and data applications, HD, 3D, and UHD television, on the terrestrial television platform?

b) If yes, please give indicative details of the number and nature of services planned, and if known, the expected timeframe for their introduction.

**Reply:**

8) a) In terms of innovation of new services, in Spain:

* HD: there were trials form 2005 on HD and the first HD commercial service in Spain was set up on beginnings of 2007. Currently, all national and most of the regional broadcasters are providing HD services (around the 25% of services are HD). Furthermore, new HD services are expected shortly.
* 3D: during 2010, there were some trial services on 3D but is not foreseen anymore.
* UHD: during the Mobile World Congress 2013 in Barcelona, there was a test of UHD over DTT by using DVB-T2 HEVC standard. New UHD services are expected.

We do foresee requirements and need for new and enhanced services, including multimedia and data applications, HD, 3D, and UHD television, on the terrestrial television platform.

b) See question 4 and annex 2.

9) a) Are there plans in your country to launch more multiplexes in the future?

b) If yes, how many more and when? Please also indicate the expected timeframe for their introduction.

**Reply:**

9) a) There are some proposals to launch one DVB-T2 multiplex.

b) Expected on 2016.

10) a) What is the amount of spectrum your country foresees will be required for terrestrial television broadcasting, taking into consideration the responses to Questions 5, 6, 7, 8, and 9? Please indicate the modes of transmission that will be used, and timeframes.

**Reply:**

10) a) The spectrum that will be used from 1st January 2015: 470 – 790 MHz (channels 21-60).

**SECTION TWO – Sound broadcasting**

11) a) What analogue sound broadcasting standards are used in your country and what bands are they operating in?

b) Please indicate how many analogue radio transmitters are in operation in your country and in which bands.

c) What channel bandwidths do they use?

A proposed format for responses to question 11b) and 11c) is provided in Annex 1

**Reply:**

11) a) MW AM Band: 526,5 - 1606,5 kHz

FM Band: 87,5 – 108 MHz

b) MW AM Band:

National Public: 124

National Licensed: 107

**TOTAL: 231**

FM Band:

National Public: 688

Regional Public: 278

National Licensed: 1.905

Local: 1.222

**TOTAL: 4.093**

c) MW AM Band: 9 KHz

FM Band: 256 KHz

12) a) Is additional spectrum required for growth in the analogue sound broadcasting platform in your country?

b) If yes, how much additional spectrum is required?

**Reply:**

12) a) The current spectrum is fully used by the national / regional radio stations.

For the case of FM, the licence assignments managed by the government always receive more requests than the spectrum can allocate at least on most of the geographical areas.

b) No enough data are available.

13) a) Is your country considering introducing, or has it already introduced digital sound broadcasting?

b) If yes, which system standards are used or are being considered for adoption (as specified in Recommendations ITU-R BS.1114, BS.1514, BS.1615)?

c) When did your country start or when does it propose to start digital sound broadcasting?

d) What channel bandwidths is your country using or considering using?

e) What frequencies are currently used or intended to be used by digital sound broadcasting in your country? Please distinguish between those in use and those intended to be used.

f) What is the percentage of the population that is covered by digital sound broadcasting by direct reception in your country?

g) What additional spectrum was required or is considered to be required for the transition to digital sound broadcasting?

h) Please indicate how many digital radio transmitters are currently used or intended to be used and in which bands.

i) What is the spectrum requirement for digital sound broadcasting in your country?

j) If your country has introduced digital sound broadcasting, how long will it continue to use analogue sound broadcasting?

A proposed format for responses to question 13d) and 13h) is provided in Annex 1

**Reply:**

13) a) Introduced since 1.999 but without success.

b) DAB, EN 300 401.

c) DAB is introduced in Spain since 1999.

d) Channel bandwidth: Mode I, 1.536 MHz.

e) Used Band: 195-223 MHz (Band III).

Additional Planned Band intended to use: 1.452 – 1.479,5 MHz

f) Currently around 20%.

g) No.

h) Currently, 6 transmitters on Band III.

i) There is not demand.

j) There is not a deadline to switch off the analogue sound broadcasting.

14) a) Are the terrestrial sound broadcasting bands also shared with other primary services in your country?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

14) a) No.

15) a) Are the terrestrial sound broadcasting bands also shared with secondary services e.g., used for the support of broadcasting such as SAB/SAP (services ancillary to broadcasting/production), or other types of services such as radio astronomy or wind-profile radar?

b) If yes, please give details of those systems and their spectrum use.

**Reply:**

15) a) No

16) a) What is the amount of spectrum your country foresees will be required for terrestrial sound broadcasting, taking into consideration the responses to the previous questions? Please indicate the modes of transmission that will be used, and timeframes.

**Reply:**

16) a) The current spectrum

**SECTION THREE –Multimedia broadcasting**

17) a) Is your country considering introducing or has already introduced multimedia broadcasting?

b) If yes which system standards is your country using or considering using (as specified in Recommendations ITU-R BT.1833 and BT.2016)?

c) In which Bands?

d) When did your country start or when does it propose to start digital multimedia broadcasting?

e) What are the current and proposed population coverages for digital multimedia broadcasting in your country?

f) What is the spectrum requirement for multimedia broadcasting in your country?

g) If your country has introduced digital multimedia broadcasting, please provide further information to describe the system, its implementation and any limitations on its operation.

**Reply:**

No plans for introducing DMB in Spain.

ANNEX 1

Suggested form of presentation of reply to Questions 2, 5, 11, and 13:

A sample response is shown in *Italics* for guidance only.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Country** | **Band** | | **Number of Transmitting Stations\*** | | | |
| **Analogue Radio**)(Q11b & Q11c) | **Digital Radio** (Q13d & Q13h) | **Analogue TV** (Q2a & Q2)b | **Digital TV** (Q5b & Q5c) |
| **Channel bandwidth (MHz)** | | *VHF I 180kHz*  *VHF II 300kHz* |  |  | *8MHz* |
| **XX** | **LF** | 148.5-283.5 kHz |  |  |  |  |
| **MF** | 525-526.5 kHz |  |  |  |  |
| **MF** | 526.5-1606.5 kHz | 231 |  |  |  |
| **MF** | 1606.5-1705 kHz |  |  |  |  |
| **HF** | 2.3-26.1 MHz\*\* |  |  |  |  |
| **VHF I** | 47-50 MHz |  |  |  |  |
|  | 50-54 MHz |  |  |  |  |
|  | 54-68 MHz |  |  |  |  |
|  | 68-72 MHz |  |  |  |  |
|  | 76-87.5 MHz |  |  |  |  |
| **VHF II** | 87.5-108 MHz | *4093* |  |  |  |
| **VHF III** | 174-216 MHz |  | *6* |  |  |
| **VHF III** | 216-230 MHz |  |  |  |  |
| **UHF IV** | 470-694 MHz |  |  |  | *~40.000* |
| **UHF V** | 694-790 MHz |  |  |  |
| **UHF V** | 790-890 MHz |  |  |  |  |
| **UHF V** | 890-960 MHz |  |  |  |  |
|  | 1452-1492 MHz |  |  |  |  |
|  | 11.7-12.5 GHz |  |  |  |  |
|  | 12.5-12.7 GHz |  |  |  |  |
|  | 40.5-42.5 GHz |  |  |  |  |
|  | 74-76 GHz |  |  |  |  |
| \* Transmitting stations please include “main stations” and “relay stations.” Please use parenthesis to indicate stations that have still to be brought into use  \*\* The bands 3900-3950D, 3950-4000D kHz; the bands for tropical broadcasting: 2300-2498, 3200-3400D, 4750-4995 D, 5005-5060D kHz and the Article 12 Bands 5 900-5 950D, 5 950-6 200, 7 200-7 300, 7 300-7 400D, 7 400-7 450, 9 400-9 500D, 9 500-9 900, 11 600-11 650D, 11 650-12 050, 12 050-12 100D, 13 570-13 600D, 13 600-13 800, 13 800-13 870D, 15 100-15 600, 15 600-15 800D, 17 480-17 550D, 17 550-17 900, 18 900-19 020D, 21 450-21 850, 25 670-26 100.  D Resolution 517 (Rev.WRC-07) applies. In the HF bands subject to Article 12 see also No. 5.134. | | | | | | |

**ANNEX 2**

Detail on the number of multiplexes in use, their technical specifications, the percentage of geographic area or population they cover or are intended to cover and the total spectrum use in Spain.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **System & modulation** | **FEC** | **GI** | **Reception mode** | **Capacity per multiplex (Mb/s)** | **Current percentage population coverage** | **Intended percentage population coverage** | **Content per multiplex** | **Total capacity (Mb/s)** | **Total spectrum bandwidth used or intended for implementation (MHz)** | **Any additional comments (e.g. duration of licences)** |
|
| **E** | *1* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *98.80%* | *98.80%* | *4SD MPEG2* | *From 140Mb/s (7 national content) up to 220Mb/s (depending on regional/local multiplexes)* | *Number of channels: 40 TV channels from channel number 21 to 60.  Spectrum bandwidth and boundaries: 40 x 8 = 320 MHz, from 470 to 790 MHz.* | *Public National Broadcaster* |
| *1* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *98.50%* | *98.50%* | *3HD MPEG4* |
| *4* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *98.50%* | *98.50%* | *4SD MPEG2* | *Commercial broadcasters. Licensed until 2025* |
| *1* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *98.50%* | *98.50%* | *3 HD MPEG4* |
| *1-2 (for 17 regions)* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *98.50%* | *98.50%* | *SD MPEG2 /* | *Regional MUX* |
| *3 SD MPEG2 + 1 HD MPEG42 +* |
| *1-2 (256 local regions)* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *98.50%* | *98.50%* | *4SD MPEG2* | *Local MUX* |

1. Regions 1, 2 or 3 as defined in Nos. **5.3** to **5.9** of the Radio Regulations. [↑](#footnote-ref-1)