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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 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:** | **SPAIN (E)** |
| **Contact person:** |  |
|  E-mail address: | Antonio Fernández-Paniagua |
|  Telephone number: | +34 91 346 15 07 |

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| **Name of the Sector Member:** | **Corporación Radio Televisión Española - RTVE** |
| **Contact person:** | Javier Sánchez Pérez |
|  E-mail address: | javier.sanchez.perez@rtve.es |
|  Telephone number: | +34 91 346 70 94 |
| **What best describes your organisation?**Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe) | PSB |
| **The geographical area over which you operate:** |  |

**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:** Switch-off completed on 3rd April, 2010

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?

Further details in Annex 1

**Reply:** No analogue television anymore.

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:** a) 98%

 b) 89 %

 i) 99%

 ii) 1%

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.

**Reply:** a) ETSI EN 300744

 UIT-T H.264 (HDTV)

 b)Start: 1999. Royal Decree 2169/1998 first DTT plan, 9th October 1998

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| **Country** | **No of multi-plexes** | **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)** | **Network** |
| E | 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 99% | 98% | 4 SD MPEG2 | 183.41 | 320 (470-790 MHz) | Public service multiplexuntil 2025 | RGE1 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 96% | 96% | 3 HD MPEG4 | Public service multiplexuntil 2025 | RGE2 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 98% | 98% (public) | 4 SD MPEG2 | Public / Private service multiplexuntil 2025 | MAUT |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 96% | 96% | 1 HD MPEG4 +4 SD MPEG2 | Private service multiplexlicensed until 2025 | MPE1 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 96% | 96% | 1 HD MPEG4 +4 SD MPEG2 | Private service multiplexlicensed until 2025 | MPE2 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 96% | 96% | 1 HD MPEG4 +4 SD MPEG2 | Private service multiplexlicensed until 2025 | MPE3 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | 96% | 96% | 4 SD MPEG2 | Private service multiplexlicensed until 2025 | MPE4 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/4 | Fixed | 19.91 | - | TBD | 3 HD MPEG4 | Later tender procedure | MPE5 |
| 1 | DVB-T, 64-QAM | 2/3 | 1/32 | Fixed | 24.13 | 50% | 80% | 4 SD MPEG2 | Local multiplex licensed until 2020 | LOC |

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?

Further details in Annex 1

**Reply:** a) Used : 470 – 862 MHz (channels 21-69)

 Intended: 470 – 790 MHz (channels 21-60) (from 1st January 2015)

 b) Band 470 – 694 MHz (channels 21-48): 7274 assignments

 Band 694 – 790 MHz (channels 49-60): 4730 assignments

 Band 790 – 860 MHz (channels 61-69): 10722 assignments

 c) Channel bandwith : 8 MHz

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:** a) 470 – 790 MHz No

 790 – 830 MHz Mobile Service (excluding aeronautical mobile). Allocated according to RR 5.316A, 5.316B, 5.317A but not in use.

 830 – 862 MHz Mobile Service (excluding aeronautical mobile) Allocated according to RR 5.316, 5.316A, 5.316B, 5.317A but not in use.

 Fixed Service. Allocated but not in use.

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:** a) 470 – 790 MHz Land Mobile Service, intended for applications ancillary to broadcasting; PMSE (no protection/no interference basis)

 790 – 862 MHz GPR/WPR Radar systems

 823 – 832 MHz PMSE (collective use; e.i.r.p ≤ 20mW)

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:** a) Yes. Royal Decree 691/2010, 20th May, HD DTT regulation.

 b) Royal Decree 805/2014, 19th September, DTT plan.

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:** a) No.

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:** Under Study.

**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?

Further details in Annex 1

**Reply:** a) FM: 19 kHz pilot tone + 75 kHz maximum deviation

 VHF II (87.5 – 108 MHz)

 3835 assignments

 Channel bandwith : 256 kHz

 AM 4 kHz baseband with 9 kHz channel spacing.

 MF (526.5 – 1606.5 kHz)

 231 assignments

 Channel bandwith : 9 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:** a) No.

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?

Further details in Annex 1

**Reply:** a) Yes.

 b) DAB: ETS EN 300 401 (Digital System A; Eureka 147).

 c) 1st January, 2000 (DAB).

 d) 1536 kHz.

 e) DAB:

 Used: 195 – 223 MHz

 Intended: 1452 – 1492 MHz.

 f) 20%.

 g) No additional spectrum required.

 h) 976 asignments.

 i) 195 – 223 MHz

 1452 – 1492 MHz.

 j) No plan yet.

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:** a) 195 – 223 MHz Land Mobile Service.

 Allocated according to RR 5.235

 1452 – 1492 MHz Satellite Broadcasting Service.

 Allocated according to RR 5.345

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:** 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:** a) Under study.

**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:** a) Under study.

ANNEX 1

Presentation of reply to Questions 2, 5, 11, and 13:

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| **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)** | *MF 9 kHz**VHF II 256 kHz* | *1536 kHz* | *-* | *8 MHz* |
| **E** | **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 | *3835* |  |  |  |
| **VHF III** | 174-216 MHz |  | *641* |  |  |
| **VHF III** | 216-230 MHz |  | *335* |  |  |
| **UHF IV** | 470-694 MHz |  |  |  | *7274* |
| **UHF V** | 694-790 MHz |  |  |  | *4730* |
| **UHF V** | 790-890 MHz |  |  |  | *10722* |
| **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. |

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