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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:** | **ANACOM** |
| **Contact person:** | **Maria Luisa Mendes** |
| E-mail address: | **luisa.mendes@anacom.pt** |
| Telephone number: | **00 351 21 721 2002** |

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| **Name of the Sector Member:** |  |
| **Contact person:** |  |
| E-mail address: |  |
| Telephone number: |  |
| **What best describes your organisation?**  Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe) | **National Regulator Authority.** |
| **The geographical area over which you operate:** | Portugal (mainland, Azores and Madeira). |

**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:**

a) No, since the 26th of April 2012, there is no analogue television in Portugal.

b) and c) not applicable.

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:**

Not applicable.

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)

In Portugal we have Digital Terrestrial Television only. For the Terrestrial broadcast platform, and considering watching television on primary sets (defined as those using the terrestrial platform for TV delivery on their main set), the percentage of viewers is nearly 21.8%.

(Source: TNS, April/May 2013; Figures about primary sets refer to households (in continental territory of Portugal) who rely only on DTT sets for TV reception, without pay-TV)

b) Data not available.

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:**

a) Portugal is using DVB-T (system B according to ITU-R BT. 1306).

b) In Portugal DTT was introduced in the 29th of Aril 2009 and at that time the network consisted of nearly 50 stations. Nowadays the SFN network in Portugal mainland consists of 229 stations, in Azores the network (MFN) consists of 14 stations and in Madeira (SFN) the network consists of 11 stations.

c)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **No of multi-plexes** | **System & modulation** | **FEC** | **GI** | **Reception mode[[2]](#footnote-2)** | **Capacity per multiplex (Mb/s)** | **Current percentage population coverage** | **Intended percentage population coverage** | **Content per multiplex** | **Total spectrum bandwidth used or intended for implementation (MHz)** | **comments** |
| *1* | *DVB-T, 64-QAM* | *2/3* | *1/4* | *Fixed* | *19.91* | *92,5%* | *87.26%* | *5 SD MPEG4* | *56* | *multiplex licensed until 2023* |

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:**

Channels in use:

|  |  |  |  |
| --- | --- | --- | --- |
| Frequency band | Application | Transmitter location information | Short Comments |
| 678 MHz - 686 MHz | DVB-T | Azores islands | MFN - channel 47 |
| 686 MHz - 694 MHz | MFN - channel 48 |
| 694 MHz - 702 MHz | MFN - channel 49 |
| |  |  | | --- | --- | | 742 MHz - 750 MHz |  | | |  |  | | --- | --- | |  | MFN - channel 55 | |
| 750 MHz - 758 MHz | MFN - channel 56 |
| 734 MHz - 742 MHz | Madeira islands | SFN - channel 54 |
| |  |  | | --- | --- | |  | 750 MHz - 758 MHz | | **National Coverage - mainland** | SFN - channel 56 |

We are in a process of migration from the current SFN network in Portugal mainland to a MFN (MFN of SFN’s) and 7 of the 12 main transmitters (Portugal mainland was divided in 12 allotments) are already transmitting the same content that is being broadcasted by the SFN network.

These 7 transmitters are using channel 40, channel 42, channel 45, channel 47, channel 48 and channel 49

There are also 7 more networks planned and included in GE06, and with all these networks the spectrum from 470-790 MHz is intended to be used.

1. Currently 261 digital terrestrial television transmitters are in operation.
2. Currently we intend to use the 470-790 MHz frequency band with a 8 MHz raster..

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) No, they are not.

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:**

1. Yes.
2. The frequency bands are shared with radio microphones and in-ears, under a license exempt regime for P< 50 mW. For further details please consult ERC Recommendation 70-03 available at <http://www.erodocdb.dk/doks/doccategoryECC.aspx?doccatid=2> (including the individual annexes and appendices with the national implementations and restrictions)

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:**

1. Up to now we have received HD requirements only.
2. The issue is under public discussion – no decision on the subject for the moment.

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:**

1. Probably, at least one in the near future. The issue is under public discussion – no decision on the subject for the moment.

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:**

1. Currently 320 MHz, noting however that the second digital dividend (694-790 MHz) is under consideration .

**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:**

a) In the GE75 frequency bands (MW), AM with 9 kHz bandwidth; In the 87,5 – 108,0 MHz band, FM pilot-tone system with + 75 kHz of maximum frequency deviation;

1. In the GE75 frequency bands, there are nearly 50 stations transmitting; In the 87,5 – 108,0 MHz band there are nearly 740 stations
2. In Medium wave 9 kHz, in FM 180 kHz, 256 kHz or 264 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). In certain areas of the country, namely around the cities of Lisbon and Oporto the spectrum in FM is heavily congested.

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:**

Digital sound broadcasting was introduced in Portugal in 1999. It was a T-DAB SFN network in Block 12 B (224,88-226,416 MHz) with 176 kHz bandwidth. However and since the service penetration was very low, (less than 5%), the network was shut-down in May 2011.

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:**

No, they are not.

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:**

The 174-223 MHz frequency band is shared with radio microphones and in-ears under a license exempt regime if P < 50 mW. For further details please consult ERC Recommendation 70-03 available at <http://www.erodocdb.dk/doks/doccategoryECC.aspx?doccatid=2> (including the individual annexes and appendices with the national implementations and restrictions).

The frequency bands for Medium Wave are not shared with any other service.

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:**

This issue is under consideration.

**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:**

This issue is under consideration.

1. Regions 1, 2 or 3 as defined in Nos. **5.3** to **5.9** of the Radio Regulations. [↑](#footnote-ref-1)
2. E.g. fixed, portable outdoor/mobile, portable indoor. [↑](#footnote-ref-2)