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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:** | **National Media and Infocommunications Authority** |
| **Contact person:** | **Mária Kissné-Akli PhD** |
|  E-mail address: | **kissne@nmhh.hu** |
|  Telephone number: | **+36 1 468 0676** |

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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) |  |
| **The geographical area over which you operate:** |  |

**SECTION ONE – Television broadcasting**

1) a) Is your country still using analogue television? **No. The ASO was completed on 31th October 2013 in Hungary.**

 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:**

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:**

3) a) What is the percentage of viewer uptake of terrestrial television in your country? **22 % of the population**

 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.

 **The proportion of users who receive television primarily by terrestrial means is 19%. No data is available regarding the proportion of the different reception modes.**

**Reply:**

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)? **DVB-T**

 b) When did your country start or when is it proposing to start the introduction of digital terrestrial television services? **2008**

 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. **Data are provided in Annex 2**

A proposed format for detailed responses is provided in Annex 2

**Reply:**

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?

**470-790 band is used and 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. **Data are provided in Annex 1**

 c) What channel bandwidth is used or intended to be used for digital terrestrial television in your country? **Data are provided in Annex 1**

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

**Reply:**

6) a) Are the terrestrial television frequency bands also shared with other primary services in your country? **No, it is not.**

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

**Reply:**

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? **Yes, it is.**

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

 **Radio astronomy: 608-614 MHz**

 **SAB/SAP: 470-790 MHz**

**Reply:**

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? **Yes**

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

**Currently** **three HD programmes are available. The Hungarian network operator has already started the HbbTV service. The future demands are not known for UHD, 3D and multimedia services.**

**Reply:**

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

**Hungary has no plan to launch more multiplexes.**

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

**Reply:**

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.

**320 MHz is the amount of spectrum Hungary foresees will be required for terrestrial television broadcasting in Hungary.**

**The transmission mode is DVB-T. There is no decision about DVB-T2 yet.**

 **The Hungarian network operator has licence for five multiplexes until 2020.**

**Reply:**

**SECTION TWO – Sound broadcasting**

11) a) What analogue sound broadcasting standards are used in your country and what bands are they operating in? **MF-AM system is in the 526.5-1606.5 kHz band, VHF-FM system is in the 87.5-108 MHz band.**

 b) Please indicate how many analogue radio transmitters are in operation in your country and in which bands. **The data are in the Annex 1.**

 c) What channel bandwidths do they use? **The data are in the Annex 1**

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

**Reply:**

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

**Reply: No, it is not.**

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

13) a) Is your country considering introducing, or has it already introduced digital sound broadcasting? **Yes, Hungary 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)? **DAB+ system (Digital System A)**

 c) When did your country start or when does it propose to start digital sound broadcasting? **Hungary introduced it in 2009 for trial operation.**

 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. **222.064 MHz is currently used by DAB+ in Hungary. Hungary plans the 216-230 MHz band to be used by DAB+ in the future.**

 f) What is the percentage of the population that is covered by digital sound broadcasting by direct reception in your country? **Approximately 30% of the population is covered by digital sound broadcasting.**

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

**Additional spectrum was not required and is not considered to be required for the transition to digital sound broadcasting yet.**

 h) Please indicate how many digital radio transmitters are currently used or intended to be used and in which bands. **The data are in the Annex 1.**

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

 **21 MHz is the spectrum requirement for digital sound broadcasting in Hungary.**

 j) If your country has introduced digital sound broadcasting, how long will it continue to use analogue sound broadcasting? **It is not considered yet.**

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

**Reply:**

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

**Reply: No, they are not.**

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

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? **Yes**

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

**Reply: Radio navigation service for NDB: in MF band**

 **Terrestrial mobile service for PMSE usage: in VHF II band**

 **Fix and mobile services for point-point, point-multipoint systems in 223-230 MHz band**

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: 42.6 MHz is the amount of spectrum Hungary foresees will be required for terrestrial sound broadcasting including analogue and digital as well.**

**System D is used by MF-AM system.**

**System 4 is used by VHF-FM system.**

**Mode of transmission I is used by DAB+ system.**

**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: Hungary introduced the DVB-H in 2008 but the operation was finished in 2011.**

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.

|  |  |  |
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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 300 kHz** | **VHF III 1.5 MHz** |  | **8 MHz** |
| **XX** | **LF** | 148.5-283.5 kHz |  |  |  |  |
| **MF** | 525-526.5 kHz |  |  |  |  |
| **MF** | 526.5-1606.5 kHz | **10** |  |  |  |
| **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 | **340** |  |  |  |
| **VHF III** | 174-216 MHz |  |  |  |  |
| **VHF III** | 216-230 MHz |  | **3 (in use)****47 (intended to be used)** |  |  |
| **UHF IV** | 470-694 MHz |  |  |  | **304 (in use)****335 (intended to be used)** |
| **UHF V** | 694-790 MHz |  |  |  | **129(in use)****152 (intended to be used)** |
| **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**

Suggested form of presentation of reply to Question 4: *If your country has switched or is considering switching to digital terrestrial television broadcasting, what system standards is it using or considering adopting? When did your country start, or when is it proposed to start the introduction of digital terrestrial television services? 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 sample response is shown in *italics* for guidance only.

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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** | **Total Spectrum Bandwidth Used or intended for implementaion** | **Any additional comments** |
| **(Mb/s)** | **(MHz)** | **(eg duration of licences)** |
| Hungary | 1 | DVB-T, 64-QAM | 3/4 | 1/4 | fix | 22.39 | 96 | 96% | 3HD, 1 SD MPEG4, 4 digital radio  | 22.39 | 320 MHz | Public service multiplexes licensed until 2020 |
| Hungary | 1 | DVB-T, 64-QAM | 3/4 | 1/4 | fix | 22.39 | 96 | 96% | 14 SD MPEG4,  | 22.39 |  licensed until 2020 |
| Hungary | 1 | DVB-T, 64-QAM | 3/4 | 1/4 | fix | 22.39 | 96 | 96% | 15 SD MPEG4 | 22.39 |  licensed until 2020 |
| Hungary | 1 | DVB-T, 64-QAM | 3/4 | 1/4 | fix | 22.39 | 96 | 96% | 13 SD MPEG4 | 22.39 |  from 2014licensed until 2020 |
| Hungary | 1 | DVB-T, 64-QAM | 3/4 | 1/4 | fix | 22.39 | 70 | 96% | 11 SD MPEG4 | 22.39 |  from 2014licensed until 2020 |

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