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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:** | **AUSTRIA** |
| **Contact person:** |  |
|  E-mail address: | **josef.hotter@bmvit.gv.at** |
|  Telephone number: | **+43 1 71162 654211** |

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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?

 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) Analogue television is not anymore in operation in Austria**

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) Analogue television is not anymore in operation in Austria**

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 Austria 11% of the population use terrestrial television.**

 **b) 5 % of the population receive television primarily by terrestrial means in Austria.**

 **i) no information available**

 **ii) no information 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) In Austria System B is used** (Appendix 2 to Annex 1, BT.1306);

 **b) Digital terrestrial television started in Austria on 26th October 2006**

 **c) Please 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: a) Current usage and further planning is carried out between channel 21 and channel 60**

 **b) See Annex 1**

 **c) 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) No, there is no other primary service sharing the band with terrestrial television frequency bands, in particular 470 to 790 MHz. Austria, as a member state of the European Union (EU), assigned IMT under the MOBILE Service allocation in the frequency range 790 to 862 MHz, according to harmonisation decisions of EU and CEPT. The Broadcasting service is established below, in the frequency range 470 to 790 MHz.**

 **b) Not applicable.**

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) Yes, in Austria the terrestrial television frequency bands are shared with the Mobile Service, the Radiolocation Service and the Radio Astronomy Service on a secondary basis.**

 **b) SAB/SAP applications use the interleaved spectrum within the whole band of 470 to 790 MHz. Wind profilers are not yet assigned but intend going to use the band 470 – 494 MHz according to RR FN 5.291A.**

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) HD television is already in use; in the future all television services will operate in HD. 3D is no option. UHD is not foreseen before 2019.**

 **b) 9 HD programmes are distributed at the moment. All programmes in HD are currently expected not before 2017.**

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. Quite a lot of multiplexes are in operation at the moment in Austria. More multiplexes would be welcomed, but are nevertheless not possible, due to the lack of available frequencies in GE06 Plan**

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: a) 320 MHz is the amount of spectrum which is required for the use of terrestrial television broadcasting in Austria. Currently there is a mixture of DVB‑T and DVB-T2 services. Up from the year 2018 only DVB-T2 will be used.**

**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) Mainly System 4 and in some cases System 1 is used.**

 **b) See Annex 1**

 **c) In VHF Band II: mainly 300 kHz; in HF range: 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) In Austria the VHF Band II is more or less fully exploited. There is no noteworthy unused spectrum 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: a) Austria considers the introduction of digital sound broadcasting. The legal framework for the introduction is fully developed. Test transmissions for digital sound broadcasting are planned to start in April 2015.**

 **b) Digital System A will be used and perhaps in some cases System G could be an option for local operators according to the strategy in Austria (ITU-R BS.1114).**

 **c) See answer a)**

 **d) See Annex 1**

 **e) See Annex 1**

 **f) At the moment no transmitters are in operation.**

 **g) Not applicable.**

 **h) See Annex 1**

 **i) 174 MHz to 230 MHz**

 **In the far future, Band II could also be used for digital sound broadcasting.**

 **j) Not applicable**

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) 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: a) Yes, the bands are shared on a secondary basis.**

 **b) Short range devices for inductive -, wireless control - and RFID applications, fixed and mobile (except aeronautical mobile) applications (civil and non-civil).**

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) VHF Band II and Band III**

**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) Not used and currently not planned**

ANNEX 1

Form of 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)** | ***300kHz*** | ***1.5 MHz(System A)100 kHz(System G)*** |  | ***8MHz*** |
| **AUT** | **LF** | 148.5-283.5 kHz |  |  |  |  |
| **MF** | 525-526.5 kHz |  |  |  |  |
| **MF** | 526.5-1606.5 kHz |  |  |  |  |
| **MF** | 1606.5-1705 kHz |  |  |  |  |
| **HF** | 2.3-26.1 MHz\*\* | 4 |  |  |  |
| **VHF I** | 47-50 MHz |  |  |  |  |
|  | 50-54 MHz |  |  |  |  |
|  | 54-68 MHz |  |  |  |  |
|  | 68-72 MHz |  |  |  |  |
|  | 76-87.5 MHz |  |  |  |  |
| **VHF II** | 87.5-108 MHz | ***1289*** |  |  |  |
| **VHF III** | 174-216 MHz |  | ***about 300, intended*** |  |  |
| **VHF III** | 216-230 MHz |  | ***about 100, intended*** |  |  |
| **UHF IV/V** | 470-694 MHz |  |  |  | ***481*** |
| **UHF V** | 694-790 MHz |  |  |  | ***73*** |
| **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.*

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| **Country** | **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 capacity(Mb/s)** | **Total spectrum bandwidth used or intended for implementation (MHz)** | **Any additional comments(e.g. duration of licences)** |
| AUT | 7 MUX1 Layer | DVB-T, 16-QAM | 3/4 | 1/4 | Fixed/portable indoor | 14.93 | 96.0% | 96.0% | 3 SD MPEG2 | 38,89-46.45 | *320* | Public and commercial service multiplexlicensed until 2016 |
| 2 MUX1 Layer | DVB-T, 16-QAM | 5/6 | 1/81/4 | Fixed/portable indoor | 16.59 | 88.0% | 88.0% | 4;5 SD MPEG2 | Public and commercial service multiplexlicensed until 2016 |
| 16 MUX1 Layer | DVB-T, QPSK- 16QAM | 2/3; 3/4 | 1/81/4 | Fixed | 7.37-14.94 | 32.0% | 70.0% | 1-4 SD MPEG2 | 38,89-46.45 | *320* | Commercial service multiplex licensed range until 2017 – 2023Some channels from TV white spaces are used see APPENDIX 1 Layer 7 |
| AUT | 3 MUX3 Layer | DVB-T2, 64-QAM | 3/4 | 1/8 | Fixed/portable indoor | 31,19 | 85% | 88.0% | 2-4 HD MPEG44-10 SD MPEG4 | 93,57 | 320 | Operation started in April 2013 |

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)