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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

|  |  |
| --- | --- |
| **Name of the Administration:** | **Federal Network Agency, Germany** |
| **Contact person:** | **Helmut Wolf** |
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| Telephone number: | **+49 6131 18 3447** |

|  |  |
| --- | --- |
| **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*

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

*n.a.*

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

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

*n.a.*

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

*n.a.*

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

*no analogue TV, see Annex 1*

b) What channel bandwidths are used for analogue television?

*no analogue TV, see Annex 1*

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

*none, no analogue TV*

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

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

*10%*Source: Digitisation Report, published by die medienanstalten – ALM GbR   
(http://www.die-medienanstalten.de/service/publikationen/digitalisierungsbericht.html)

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.

*~~*

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)?

*see Annex 2*

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

*The switch-over to digital television has been completed in 2012*

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.

*see Annex 2*

A proposed format for detailed responses is provided in 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?

*see Annex 1****Note:*** *It is envisaged, that after switch over to DVB-T2, 694-790 will not be used for DTT*

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

*see Annex 1*

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

*see Annex 1*

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

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

*no, in the spectrum currently used for DTT (470-790 MHz)*

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

*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.

*Related to spectrum currently used for DTT (470-790 MHz):*

*SAB/SAP: 470-790 MHz*

*Wind Profiler Radars: 470 - 494 Mhz*

*Radio Astronomy: 608 – 614 MHz*

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.

*HDTV (based on DVB-T2, HEVC), expected to start in 2016*

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

*no*

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

*n.a.*

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.

*Today, the spectrum from 470–790 MHz is used for DVB-T. However, it is planned to switch-over to DVB-T2 (HEVC) using the range of 470–694 MHz.*

**SECTION TWO – Sound broadcasting**

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

*see Annex 1*

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

*see Annex 1,*

***Note:*** *In the HF band, about 530 frequencies are used in timely staggered operation, about max.25 of them are active at the same time.*

c) What channel bandwidths do they use?

*see Annex 1*

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

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

*no plans to use additional spectrum*

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

*n.a.*

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

*yes*

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 A)*

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

*2011*

*(first DAB, not DAB+, emissions started in 1999)*

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

*see Annex 1*

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.

*see Annex 1*

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?

*VHF III is used for digital sound broadcasting since switch-off of analogue television in this band.*

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

*see Annex 1*

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

*see Annex 1*

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

*No decision on a possible switch off of analogue is taken.*

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

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

*no*

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

*n.a.*

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.

*SAB/SAP: 174-230 MHz*

*hearing aid devices*

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.

*actually VHF II and VHF III is used for sound broadcasting, changes are not envisaged for the foreseeable future*

**SECTION THREE –Multimedia broadcasting**

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

*no*

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

*n.a.*

c) In which Bands?

*n.a.*

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

*n.a.*

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

*n.a.*

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

*n.a.*

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.

*n.a.*

ANNEX 1

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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)** | |  |  |  |  |
| **XX** | **LF** | 148.5-283.5 kHz | 5 (9 kHz) |  |  |  |
| **MF** | 525-526.5 kHz |  |  |  |  |
| **MF** | 526.5-1606.5 kHz | 45 (9 kHz) |  |  |  |
| **MF** | 1606.5-1705 kHz |  |  |  |  |
| **HF** | 2.3-26.1 MHz\*\* | ca. 530,( **see Note to Q 11b)** (9 kHz) |  |  |  |
| **VHF I** | 47-50 MHz |  |  |  |  |
|  | 50-54 MHz |  |  |  |  |
|  | 54-68 MHz |  |  |  |  |
|  | 68-72 MHz |  |  |  |  |
|  | 76-87.5 MHz |  |  |  |  |
| **VHF II** | 87.5-108 MHz | ca. 2800  (300 kHz) |  |  |  |
| **VHF III** | 174-216 MHz |  | ca. 115 (1,75 MHz) |  |  |
| **VHF III** | 216-230 MHz |  | ca. 240  (1,75 MHz) |  |  |
| **UHF IV** | 470-694 MHz |  |  |  | ca. 460 (8 MHz) |
| **UHF V** | 694-790 MHz |  |  |  | ca 150 ( **see Note to Q 5a)**  (8 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**

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.*

**Note: The table reflects the answer given by the German broadcasters to the questionnaire in 2012. However, a switch-over to DVB-T2 and HEVC is envisaged starting from 2016, which will change the situation significantly.**

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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)** |
| **D** | 3 (Layer 1-3) | DVB-T, 16-QAM | 2/3 | 1/4 | fixed, portable | 13,3 | 90% -100% | 95% - 100%% | 4 SD | 39,9 | 320 | Public service multiplexes |
| 3 (Layer 4-6) | DVB-T, 16-QAM | 2/3 | 1/4 | fixed, portable | 13,3 | 55% - 66% | 75% - 80% | 4 SD | 39,9 | Commercial multiplexes |
| 2 (Layer 7+8) | DVB-T, 16-QAM | 2/3 | 1/4 | fixed, portable | 13,3 | 14% | 15% - 20% | 4 SD | 26,6 | Commercial multiplexes |
| 1 (Layer 9) | DVB-T, 64-QAM | 2/3 | 1/4 | fixed, portable | 13,3 | 6% | 10% - 15% | 4 SD | 13,3 | Commercial multiplex |

*\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*

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)