QUESTIONNAIRE ON SPECTRUM REQUIREMENTS FOR THE FUTURE OF SOUND AND TELEVISION BROADCASTING

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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:**

All analogue TV-transmitters have been switched off.

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:**

See 1).

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:**

1. About 47% of viewers receive terrestrial TV with their primary sets.
2. Indoor antenna connected to primary set in 3.6% of all DTTV households.

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:**

1. In VHF 7 MHz OFDM and in UHF 8 MHz OFDM.
2. First public digital television transmissions started 27th of August, 2001 (3 multiplexes).
3. 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:**

1. Currently used 174-230 MHz and 470-790 MHz, from 2017 the bands will be 174-230 MHz and 470-694 MHz
2. and c) see Annex 1.

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:**

No other primary services.

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. 174-230 MHz and 470-789 MHz mobile / radio microphones, 470-790 MHz mobile / cognitive radio networks; in TV channels 21 and 23 also mobile sound transmission links are allowed (in 474.750, 476.500 and 477.250 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?

 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:**

No need for new frequencies foreseen on the DTT platform.

In the long term, it is expected that the demand of DTT capacity will decrease due to the increasing shift of AV media services to fixed and wireless broadband networks.

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:**

Not considered under current license period

Next network license period begins on the 1st January 2017. In the UHF band 470-694 MHz licenses for 4 nationwide and 2 partly nationwide multiplexes by both DVB-T and -T2 will be granted and in the VHF band 174-230 MHz there'll be two nationwide and one partly nationwide multiplex by DVB-T2.

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. From 2017 174-230 MHz DVB-T2, 478-694 MHz 2 MUX DVB-T, 5 MUX DVB-T2; only DVB-T2 in 2026 at the latest.

**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:**

See Annex 1.

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:**

The band 87.5-108 MHz is in full use and there is no room for growth. Additional spectrum needs have not been considered.

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 is not under consideration in the VHF Bands II and III. Digital radio broadcasting via LTE platform or 5G is considered as a possible option for broadcasting in the future.

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.

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:**

No secondary services (license-free very low power FM-transmitters ERP max 50 nW are allowed).

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:**

The present 20.5 MHz will be required also in future.

**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:**

Multimedia broadcasting is not under consideration.

ANNEX 1

|  |  |  |
| --- | --- | --- |
| **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)** | VHF II 300 kHz |  |  | VHF 7 MHzUHF 8 MHz |
| **FIN** | **VHF II** | 87.5-108 MHz | 776 |  |  |  |
| **VHF III** | 174-230 MHz |  |  |  | 34 |
| **UHF IV+V** | 470-790 MHz |  |  |  | 36 TX stations having high-power transmitters and broadcasting at least 2 MUX; total 193 transmitters / MUX |
| **UHF V** | 694-790 MHz | No TV transmitters after 2016. |
| **UHF V** | 790-890 MHz |  |  |  | - |
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**ANNEX 2**

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Country** | **No of multi-plexes** | **System & modulation** | **FEC** | **GI** | **Reception mode[[1]](#footnote-1)** | **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)** |
| FIN | *1* | *DVB-T* | *2/3* | *1/8* | *Fixed* | *22,12* | *99.9* |  | *9 SD MPEG2* | *22,12* |  | *License valid tl 31.12.2016* |
| *1* | *DVB-T* | *2/3* | *1/8* | *Fixed* | *22,12* | *99.9* |  | *8 SD MPEG2* | *22,12* |  |
| *1* | *DVB-T* | *2/3* | *1/8* | *Fixed* | *22,12* | *90.4* |  | *10 SD MPEG2* | *22,12* |  |
| *1* | *DVB-T* | *2/3* | *1/8* | *Fixed* | *22,12* | *95* |  | *10 SD MPEG2* | *22,12* |  | *License valid till 13.06.2026* |
| *1* | *DVB-T2* | *4/5* | *1/32* | *Fixed* | *45,6* | *80* |  | *3 HD 1 SD MPEG4* | *45,6* |  | *License valid till 31.12.2016* |
| *1* | *DVB-T2* | *4/5* | *1/32* | *Fixed* | *45,6* | *60* |  | *3 HD 1 SD MPEG4* | *45,6* |  |
| *1* | *DVB-T2, 256-QAM2* | *5/6* | *1/4* | *Fixed* | *37.5* | *85* |  | *3 HD, 3 SD MPEG4* | *37.5* |  |
| *1* | *DVB-T2, 256-QAM* | *5/6* | *1/4* | *Fixed* | *37.5* | *85* |  | *2 HD, 7 SD MPEG4* | *37.5* |  |
| *1* | *DVB-T2, 256-QAM* | *5/6* | *1/4* | *Fixed* | *37.5* | *85* |  |  *1 HD, 5 SD MPEG4* | *37.5* |  |

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1. E.g. fixed, portable outdoor/mobile, portable indoor. [↑](#footnote-ref-1)