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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:** | **RWANDA** |
| **Contact person:** | **Francis NGABO** |
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| **Name of the Sector Member:** | **RWANDA UTILITIES REGULATORY AUTHORITY(RURA)** |
| **Contact person:** | **Maj. Patrick NYIRISHEMA** |
| E-mail address: | [**patrick.nyirishema@rura.rw**](mailto:patrick.nyirishema@rura.rw) |
| Telephone number: | **+250788305154** |
| **What best describes your organisation?**  Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe) | **Regulator** |
| **The geographical area over which you operate:** | Rwanda |

**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. a) **Rwanda is no longer using Analogue television, the switch-off ended on 31/07/2014**

**b) Analogue television switch-off already completed**

**c) switch-off completed**

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:**

1. There are no analogue transmitters in operation in Rwanda.
2. Not applicable since switch-over is completed.
3. No spectrum requirements for analogue television in Rwanda.

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. The percentage of viewer uptake of terrestrial television in the country is 75%
2. Details of the number or proportion of users who receive television primarily by terrestrial means by fixed roof top or portable indoor antenna are 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:**

1. **Currently Rwanda is using DVB-T but considers upgrading to DVB-T2.**
2. **Introduction of digital terrestrial television services started in 2008.**
3. **The number of multiplexes is 7 and the percentage of geographical coverage of the whole country is 75% and the total spectrum in use is 224 MHz**

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. **Frequencies/channels for terrestrial television.**

|  |  |  |
| --- | --- | --- |
| **SITES** | **CHANNELS IN USE** | **INTENDED CHANNELS TO BE USED** |
| JARI AND REBERO | 22, 23, 27, 28 and 29 | 22, 23, 26, 27, 28,29, 43 and 47 |
| BYUMBA | 60 | 25, 33, 36 and 44 |
| GIHUNDWE | 21, 25, 41 and 60 | 25, 26, 30 and 41 |
| GITWE | 30 | 30 and 36 |
| HUYE | 21,31, 38 and 50 | 21, 38, 40 and 48 |
| KARISIMBI | 62 | 24 and 45 |
| KARONGI | 34 | 31, 34, 36 and 37 |
| KINANIRA | 24 | 21, 24, 35 and 47 |
| MUGOGO | 38, 41 and 61 | 32, 39, 41 and 46 |
| NYABITIMBO | 43 | 40, 43 and 46 |
| NYARUPFUBIRE | 56 | 31 and 41 |
| RUBONA | 25, 27, 28 and 29 | 22, 25, 27, 28, 29, 30,41 and 43 |
| RUSHAKI | 54 | 39, 42, 44 and 48 |

1. Digital terrestrial television transmitters in use are 28 and the ones intended for use is 53.
2. The channel bandwidth planned for Rwanda is 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:**

1. Terrestrial television frequency bands in Rwanda are not shared with any other service
2. 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:**

1. No any secondary services in Rwanda share frequency bands with terrestrial television band.
2. Not applicable

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. Yes our country foresees requirements for new and enhanced services including but not limited to multimedia, data applications, HD, 3D and UHD television.
2. The nature of services planned are;

* Video on Demand services.
* IP TV.
* Texts.
* Graphics
* Data
* Voice

There is no planned timeframe for their introduction but as technology evolves then these services will be integrated into terrestrial platform.

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. **No plan to launch multiplexes in the near future.**
2. **Not applicable**

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. The spectrum needed for the future terrestrial television broadcasting is 400 MHz and modes of transmission will be DVB-T2. The existing DVB-T will be changed to DVB-T2 in the future though there is no specific timeframe for migration to DVB-T2.

**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:**

1. Analogue sound broadcasting standards in use are AM and FM standards.
2. There are 56 FM transmitters and 1 AM (shortwave) transmitter.
3. The channel, bandwidth in use is 300 KHz for FM radios.

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:**

1. For FM sound broadcasting, additional frequency spectrum is required as we have shortage of FM frequencies.
2. Spectrum requirement is 15 MHz

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:**

1. **Rwanda has not yet introduced sound digital broadcasting; but considers to introduce it in the future.**
2. **Not Applicable**
3. **No plan for digital sound broadcasting channel bandwidths.**
4. **Not yet decided**
5. **We have reserved frequency from 170-230 MHz for digital sound broadcasting.**
6. **Not applicable**
7. **Not yet decided**
8. **Not applicable**
9. **The spectrum requirements for digital sound broadcasting will be about 60 MHz.**
10. **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:**

1. No other services share spectrum with terrestrial sound broadcasting.
2. Not applicable

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:**

1. No SAB/SAP services share spectrum with terrestrial sound broadcasting
2. Not applicable

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:**

1. The amount of spectrum requirements will be 60 MHz, the modes of transmission is not yet decided and no time frames planned to shift from FM to Digital sound broadcasting.

**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:**

1. The multimedia broadcasting has not yet been introduced in Rwanda but we are considering introducing it in the future.
2. Rwanda has not decided yet on the system standard to use
3. Not yet decided
4. No specific time frame to start Multimedia broadcasting
5. Proposed coverage is 90% of the country population
6. Not yet decided
7. Not applicable

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.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **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)** | | *FM radios channel bandwidth is 300 KHz* |  | Was 8 MHz but now switched-off | **8 MHz** |
| **RWANDA** | **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\*\* | 1 AM radio Transmitter at 6 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 | 56 FM Radio Transmitters |  |  |  |
| **VHF III** | 174-216 MHz |  |  | *No* | *No* |
| **VHF III** | 216-230 MHz |  |  | *No* | *No* |
| **UHF IV** | 470-694 MHz |  |  | *No* | - In Use: 21 transmitters.  - Intended for use: 53 transmitters. |
| **UHF V** | * 1. MHz |  |  | *No* | -In use: 7 transmitters.  - Intended for use: 0 |
| **UHF V** | 790-890 MHz |  |  | *No* | -In use: 0 transmitters.  - Intended for use: 0 |
| **UHF V** | 890-960 MHz |  |  |  | - In use: 0 transmitters.  - Intended for use: 0 |
|  | 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.

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **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)** |
| **Rwanda** | 2 | DVB-T, 64-QAM | 3/4 | 1/16 | Fixed and Portable Indoor | 24 | 75% | 90% | 5 SD MPEG-4 | 17 | 256 | Rwanda Broadcasting Agency as Public service multiplexes licensed until 2029 |
| 1 | DVB-T, 64-QAM | 3/4 | 1/64 | Fixed | 512 | 37.0% | 40.0% | MPEG4 | 2560 | 144 | STARTIMES as Private service multiplexes licensed until 2029 |
|  | 4 | DVB-T2, 64-QAM | 3/4 | 1/64 | Fixed | 512 | 35.0% | 60.0% | MPEG4 |

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)