
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](#) and [6/249](#)

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 Regional¹ 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

¹ Regions 1, 2 or 3 as defined in Nos. 5.3 to 5.9 of the Radio Regulations.

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

Name of the Administration:	Agence Nationale des Fréquences (ANF)
Contact person:	Mr. ARROUDJ Samir
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Name of the Sector Member:	Algerian Broadcasting (Télédiffusion d'Algérie)
Contact person:	Mr. Chawki SAHNINE
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What best describes your organisation? Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe)	Public service broadcaster
The geographical area over which you operate:	Algeria

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) **Yes**
 - b) **In JUNE 2015 for UHF band**
 - c) i) **JUNE 2020 for VHF band, probably before the deadline.**
 - ii) **NA**
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- 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) a) **14 stations Bands UHF IV&V**
527 stations Bands VHF III
- b) **7 MHz**
- c) **NA**

See annex 1 for more details.

- 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:

- 3) a) **The population coverage is 95% for analogue television and 80% for Digital television (first multiplex). Nevertheless, we don't have information regarding viewer uptake.**

b) **The network have been deployed for fixed roof top antenna, we don't have details of the number or proportion of users who receive with 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)?
- 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:

- 4) a) **DVB-T/MPEG-2 MFN SDTV for the first multiplex under deployment
DVB-T2/MPEG-4 SFN SD and HDTV for the next three multiplex**
- b) **The DTT platform was switched-on in 2010**
- c) **Coverage of 80% of the population for the first mux, 95% will be covered before the end of 2016.**

See annex 2 for more details.

- 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:

- 5) a) **The frequency band 470-790 MHz is currently used for DTT which corresponds to 40 channels (channel 21 to channel 60).**
- b) **At the end of the deployment, more than 600 transmitters (low, high and medium power) will be on air by multiplex**
- c) **8 MHz**

See annex 1 for more details.

- 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:

- 6) a) **Bands used by terrestrial television are not shared with another primary service**

- 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:

- 7) a) **No**

- 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:

- 8) a) **Yes, HD**
b) **Probably for the second multiplex within the next two years.**

- 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:

- 9) a) **Yes, 5 others multiplexes.**
b) **3 multiplex within 2017/2018**
2 multiplex within 2020.

- 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:

- 10) a) **8 MHz x 40 channels = 320 MHz**

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:

- 11) a) **Frequency Modulation (FM) broadcasting for VHF II band and Amplitude Modulation (AM) broadcasting for LF and MF (Long, Medium and short wave)**
- b) **500 FM radio transmitters (VHF-II) for the moment**
03 long wave transmitters
23 medium wave transmitters
- c) **200 KHz for FM and 9 KHz for AM radio**

See annex 1 for more details.

- 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:

- 12) a) **Yes, there is still a high demand for FM spectrum.**
- b) **Up to 4 FM frequencies by site (2 assignments)**

- 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:

- 13)
 - a) **Yes it is on the roadmap.**
 - b) **DRM for AM (< 30 MHz) and DAB+ for VHF-III.**
 - c) **03 AM transmitters (2 MW and 1 LW) are DRM ready, but still broadcast in analog since there are no receiver on the market.**
DAB tests will be done within next 12 months. Full deployment will be done after the ASO.
 - d) **DAB : 1,5 MHz**
DRM: 9 KHz
 - e) **DAB : VHF band III and probably L-band**
DRM: LW, MW and SW (under 30 MHz)
 - f) **75% of the population is covered by 3 transmitters (2 MW and 1 LW) DRM ready. But as it was mentioned, for the moment, it still broadcast in analog because of unavailability of DRM receiver.**
 - g) **Unknown**
 - h) **See f)**
 - i) **Under study**
 - j) **NA**

- 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.

Reply:

- 14)
 - 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?
- No
- b) If yes, please give details of those systems and their spectrum use.

.Reply:

- 15) a) **No**

- 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:

- 16) a) **Under study**

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:

- 17) a) **Under study**
- b) **Under study**
- c) **Under study**
- d) **Under study**
- e) **NA**
- f) **Under study**
- g) **NA**

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)	DigitalRadio (Q13d& Q13h)	Analogue TV (Q2a & Q2)b	DigitalTV (Q5b & Q5c)
	Channel bandwidth (MHz)	< 30 MHz : 9 kHz VHF II : 200kHz		<i>7 MHz</i>	<i>8MHz</i>	
XX	LF	148.5-283.5 kHz	3			
	MF	525-526.5 kHz	Today: 23 2017: 29 2020 : 40			
	MF	526.5-1606.5 kHz				
	MF	1606.5-1705 kHz				
	HF	2.3-26.1 MHz**	2 transmitter within 2 years			
	VHF I	47-50 MHz				
		50-54 MHz				
		54-68 MHz				
		68-72 MHz				
		76-87.5 MHz				
	VHF II	87.5-108 MHz	Today: 500 2017: 2400			
	VHF III	174-216 MHz			<i>527</i>	
	VHF III	216-230 MHz				
	UHF IV	470-694 MHz			<i>14</i>	Today: 130 2017: > 600?
	UHF V	694-790 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				
<p>* Transmitting stations please include “main stations” and “relay stations.” Please use parenthesis to indicate stations that have still to be brought into use</p> <p>** The bands 3900-3950^D, 3950-4000^D kHz; the bands for tropical broadcasting: 2300-2498, 3200-3400^D, 4750-4995^D, 5005-5060^D kHz and the Article 12 Bands 5 900-5 950^D, 5 950-6 200, 7 200-7 300, 7 300-7 400^D, 7 400-7 450, 9 400-9 500^D, 9 500-9 900, 11 600-11 650^D, 11 650-12 050, 12 050-12 100^D, 13 570-13 600^D, 13 600-13 800, 13 800-13 870^D, 15 100-15 600, 15 600-15 800^D, 17 480-17 550^D, 17 550-17 900, 18 900-19 020^D, 21 450-21 850, 25 670-26 100.</p> <p>^D Resolution 517 (Rev.WRC-07) applies. In the HF bands subject to Article 12 see also No. 5.134.</p>						

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.*

Country	No of multiplexes	System & modulation	FEC	GI	Reception mode	Capacity per multiplex (Mb/s)	Current percentage population coverage	Intended percentage population coverage	Content per multiplex	Total capacity (Mb/s)	Total spectrum bandwidth used (MHz)
Algeria	1 (R1)	DVB-T, 64-QAM	2/3	1/8	Fixed	22	80%	95%	6 SD MPEG 2	133 Mbps for the 4 first mux	320 MHz
	1 (R2)	DVB-T2, 256-QAM	2/3	1/16	Fixed	37	-	95%	13 SD MPEG-4 (if HD is introduced, the number of channels will be less)		
	1 (R3)	DVB-T2, 256-QAM	2/3	1/16	Fixed	37	-	95%	13 SD MPEG-4 (if HD is introduced, the number of channels will be less)		
	1 (R4)	DVB-T2, 256-QAM	2/3	1/16	Fixed	37	-	95%	13 SD MPEG-4 (if HD is introduced, the number of channels will be less)		
	1 (R5)	DVB-T2, Modulation under study	under study	under study	under study	under study	-	95%	under study		
	1 (R6)	DVB-T2, Modulation under study	under study	under study	under study	under study	-	95%	under study		