

INTERNATIONAL TELECOMMUNICATION UNION



Radiocommunication Bureau

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**Circular letter
6/LCCE/78**

11 May 2012

**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 terrestrial television broadcasting in connection with WRC-15 Agenda item 1.2

References: Administrative Circular CA/201

1 Consistent with the directives set forth by Administrative Circular [CA/201](#) and in accordance with the outcomes of the first session of the Conference Preparatory Meeting 15-1, ITU-R Working Party 6A seeks estimates from Member States and Sector Members of current and future spectrum requirements for terrestrial television broadcasting in Region 1 and Iran.

2 One particular question that will be addressed by the JTG 4-5-6-7 is to confirm the lower edge of the allocation to the mobile service made at WRC-12 from 694-790 MHz. As a result Working Party 6A realizes the JTG 4-5-6-7 needs to be fully informed about the implications to the broadcasting service consequential to that decision.

3 The following questionnaire, which is being sent to all Administrations and Sector Members in Region 1 and Iran, is designed to gather information on spectrum use in the band 694-790 MHz for television broadcasting.

4 Administrations and Sector Members are also invited to make more detailed inputs addressing the matter of current and future spectrum requirements for television broadcasting to the next meeting of WP 6A.

5 Administrations and Sector Members are requested to submit responses to brsgd@itu.int or rsg6@itu.int by 31 July 2012.

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At the request of the Chairman of Study Group 6 the attached questionnaire is published for consideration of the Administrations of Member States, Sector Members and Associates, as appropriate. The Radiocommunication Bureau does not make any engagement nor assume any responsibility with respect to the content of the attachment or any follow-up action as may be required.

Distribution:

- Administrations of Member States of the ITU and Radiocommunication Sector Members participating in the work of Radiocommunication Study Group 6
- ITU-R Associates participating in the work of Radiocommunication Study Group 6
- ITU-R Academia
- Chairman and Vice-Chairmen of Radiocommunication Study Group 6
- Secretary General of the ITU, Director of the Telecommunication Standardization Bureau, Director of the Telecommunication Development Bureau

QUESTIONNAIRE ON SPECTRUM REQUIREMENTS FOR TERRESTRIAL TELEVISION BROADCASTING IN CONNECTION WITH WRC-15 AGENDA ITEM 1.2

This questionnaire can be completed online at the following web page:

<https://extranet.itu.int/rsg-meetings/sg6/wp6a/Lists/DTTB%20Questionnaire/overview.aspx>

Login as: **Username:** (your TIES username)@ties.itu.int

Password: (your TIES password)

NOTE - Electronic versions of Annexes 1, 2 & 2 can be found under QUESTIONNAIRE in the WP 6A Share Folder on the WP 6A Sharepoint site.

Name of the Administration/Sector Member:

For sector members please indicate the geographical area over which you operate:

Contact person:

E-mail address:

Telephone number:

- 1
- a) What standards have you adopted for digital terrestrial television broadcasting?
 - b) Have you started introduction of digital terrestrial television services?
 - c) If yes, please provide further detail on the number of multiplexes in use, their technical specifications, the percentage of geographic area or population they are intended to cover and the total spectrum use to inform WP 6A.

A proposed format for detailed responses is provided in Annex 1.

Reply 1:

- a) DVB-T
 - a. Adopted Standard for the video of SD programs is MPEG-2.
 - b. All the broadcasted HD programs are MPEG-4 (H264-AVC).
- b) Yes.
- c) See Annex 1 below.

- 2
- a) Have you commenced analogue television switch-off?
 - b) If you have any such plans, when do you expect to have completed the analogue switch-off process?

Reply 2:

- a) Analogue switch off completed.
- b) Not applicable.

- 3
- a) What is the percentage of viewer uptake of terrestrial television in your country, including those whose service provider uses terrestrial broadcast re-transmission (e.g. in cable networks)?
 - b) If possible, please also provide details of the number or proportion of users who receive television primarily by terrestrial means.

Reply 3:

- a) The current percentage population reached by digital terrestrial broadcasting signals is ~100%.
 - b) The percentage of users who receive television primarily by terrestrial means is around 99%. The percentage of user who receive television primarily by satellite means is less than 10%. IPTV users are under 0.1% pop.
- 4
- a) Indicate how many analogue television transmitters use channels in the frequency sub-band 694-790 MHz (as indicated in Resolution **232 (WRC-12)**).
 - b) How many are in the remaining part of the UHF band.

Reply 4:

- a) 0, see answer to question 2
 - b) 0, see answer to question 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) If allotments/SFNs are in use, a sketch map of frequency allocations could be included, with an accompanying table of allocations, as shown in Annex 2. Otherwise, it might be possible to show main transmitters and channels, grouped in layers, in a table.
 - c) Please indicate how many digital television assignments/allotments use channels in the frequency sub-band 694-790 MHz (as indicated in Resolution **232 (WRC-12)**), and
 - d) How many are in the remaining part of the UHF band.

Reply 5:

- a) CVA uses UHF band for DTT and VHF band for DTT except channels 7, 11, 12.
- b) Tree assignments in UHF band.
- c) One.
- d) Two.

- 6
- a) Are those frequency bands also shared with other primary services?
 - b) If yes, please give details of those systems and their spectrum use.

Reply 6:

- a) No.
- b) Not applicable.

- 7
- a) Are those frequency bands also shared with secondary services such as PMSE (Programme Making and Special Events), radio astronomy or wind-profile radar?
 - b) If yes, please give details of those systems and their spectrum use.

Reply 7:

174-223 MHz : SRD (professional radio microphones, temporary audio wideband links)

470-790 MHz : SRD (professional radio microphones, temporary audio wideband links)

- 8
- a) Do you foresee the adoption or expansion of television services broadcast using second-generation systems such as DVB-T2?
 - b) If yes, please give indicative details of the planned transition, including any simulcast period.

Reply 8:

- a) At the moment there is no plan for the transition from DVB-T standard towards the DVB-T2 standard.
- b) Not applicable

- 9
- a) Do you foresee a requirement for new and enhanced services, including HD and 3D 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 9:

- a) Yes
- b) A number of HD services are already available on DTT platform. It is foreseen that the number of enhanced program (especially HD) will increase as soon; in the final scheme all programs will be at least in HD with some further programs in 3D format (no simulcast HD/3D).

The following table gives details of the number and nature of predictable services.

	SERVICES/ CONTENTS	DESCRIPTION	Capacity (Mb/s)
1	AUDIO	5+1 and greater audio coding to be adopted with the incoming HD, 3D and UHDTV standards	1,5 Mbit/s for each multiplex
2	SERVICES FOR SECONDARY SCREENS	Usage of multiple PLP (Physical Layer Pipe) to carry IP information associated to television programs to be linked by tablets, smart phones and portable devices through wi-fi or blue-tooth	5 Mbit/s for each multiplex
3	INTERACTIVITY	Evolution of MHP (1.13 and subsequent) will need more spectrum then now	at least 5 Mbit/s for each multiplex
4	H/IBB	Development of H/IBB (Hybrid/Integrated Broadband and Broadcasting applications);	5 Mbit/sec for each multiplex
5	HD	The usage of wider screen, flat instead of CRT (from 21"-24" to 42"-50") requires HD transmission with double capacity than SD in order to keep the same quantization noise	an increase of 10 Mbit/s for each multiplex
6	3D	3D content	increase of 50% of capacity compared to HD program

- 10** 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 10:

- a) no, all the capacity is already used
b) not applicable
- 11** a) What is the amount of spectrum you foresee that will be required for terrestrial television broadcasting, if plans in Questions 8, 9 and 10 are to be supported, and services identified in Questions 6 and 7 are to be taken into account? Please indicate the modes of transmission that will be used, and timeframes.
If appropriate, a suggested form to express these requirements is shown in Annex 3.

Reply 11:

The Vatican Administration foresees for the future the use of more amount of spectrum than today even taking into account the efficiency provided by new techniques (DVB-T2, encoding, etc.).

Taking into account:

- the present use of spectrum
- new developments as explained answering question 9,
- that during a transitional period (at least 5 years) is needed:
 - Simulcast between DVB-T and DVB-T2
- that in the final scheme all programs will be at least in HD with some further programs in 3D format (no simulcast HD/3D)

the total amount of needed capacity for terrestrial broadcasting is estimated in the table below:

	Capacity used/needed [Mbit/s]		
	Present [Annex 1]	Transitional period [simulcasts T/T2] without considering new services	Final scheme T2 considering new services as in Table 2
CVA	~110	~200	~ 180 (*)

(*) Taking into account the possible improvement of the new coding system (e.g. H265)

ANNEX 1

Country	No of multiplexes	System & modulation	FEC	GI	Reception mode ⁷	Capacity per multiplex (Mb/s)	Current percentage population coverage	Intended percentage population coverage	Content per multiplex	Total capacity (Mbit/s)	Total spectrum bandwidth used or intended for implementation MHz ⁸	Any additional comments (e.g. duration of licenses) (**)
CVA	3	DVB-T, 64-QAM SFN in UHF	3/4 or 2/3	1/4 or 1/32	Fixed	22.4 Typical	99%	>95%	16SD MPEG2 + 2HD + 4 Radio	~60	3x7MHz	Free to Air
CVA	2	DVB-T, 64-QAM SFN in UHF Band	3/4 or 5/6	1/4	Fixed	22.4 – 23.7	>99.0%	>99.0%	4 SD MPEG 2 programs + 3 radio programs	~50	(2x7 MHz channels)	Free to Air