

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: a) DVB-T2

b) Yes, DVB-T, 16QAM, 2/3, GI= 1/4

c) 1 Mux with 4 programmes of total 16 Mb/s

- 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: a) Yes.

b) December 2013

- 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: a) approximately ?? %

b) most of the people in the country prefer the satellite receptions and the Terrestrial

- 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: a) Bahrain (CH 53, CH55, CH57) , MBC (CH 48, CH 50)

b) Bahrain (CH 25, CH 30, CH 38, CH 44) , MBC (CH 46)

- 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: a) in use (CH 44), planed (CH 25, CH 30, CH 38, CH 53, CH55, CH57).

c) None

d) CH 44 is already digital.

- 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: a) NO,

- 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: a) No,

- 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: a) Yes,

b) early 2014

- 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: a) Yes,

b) TV programmes, early 2014.

- 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: a) Yes,

b) 6 more. End of 2013 or early 2014

- 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: a) 48 MHz , before Dec. 2013. (DVB-T2, MPEG 4).

ANNEX I

Suggested form of presentation of reply to Question 1: *What standards have you adopted for digital terrestrial television broadcasting? Have you started introduction of digital terrestrial television services? If yes, 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.*

A sample response is shown for guidance only.

| Country | No of multiplexes | System & modulation | FEC | GI | Reception mode 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) ² | Any additional comments (e.g. duration of licences) |
|---------|-------------------|---------------------|-------|-------|-----------------------------|-------------------------------|--|---|-----------------------|--------------------------------|---|---|
| XX | 2 | DVB-T, 64-QAM | 2/3 | 1/32 | Fixed | 24.10 | 98.0% | 99.2% | 9 SD MPEG2 | | | Public service multiplexes licensed until 2022 |
| | 1 | DVB-T2, 256-QAM | 2/3 | 1/128 | Fixed | 40.20 | 98.0% | 99.2% | 5 HD MPEG4 | 169.7 plus two new muxes (tbc) | 256 | Public service multiplex licensed until 2022 |
| | 3 | DVB-T, 64-QAM | 3/4 | 1/32 | Fixed | 27.10 | 89.0% | 92.0% | 11 SD MPEG2 | | | Licensed until 2024 |
| | 1 | [DVB-T, tbc] | [tbc] | [tbc] | Fixed | [tbc] | [tbc] | | [tbc] | | | Expected local multiplex |
| | 1 | [DVB-T2, tbc] | [tbc] | [tbc] | Fixed | [tbc] | [tbc] | | [tbc] | | | Expected local multiplex |
| YY | 1 | DVB-T2, 64-QAM | 2/3 | 1/4 | Portable indoor | 22.6 | - | 60% | 3 HD MPEG4 | 22.6 | | From 2013 |

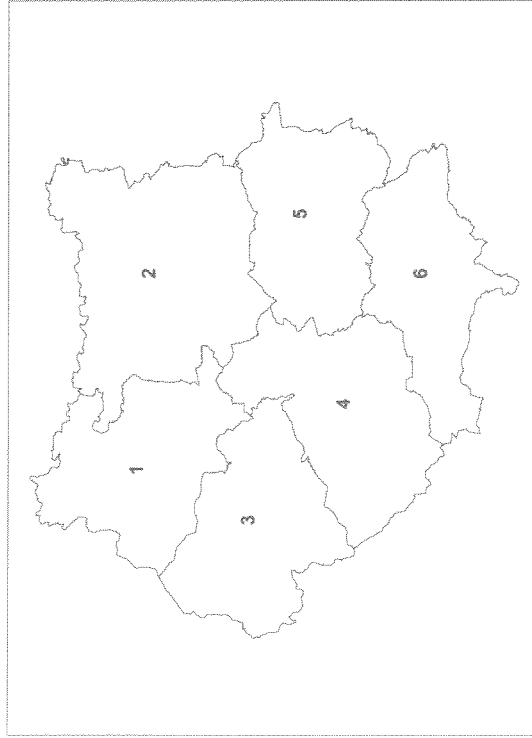
¹ E.g. fixed, portable outdoor/mobile, portable indoor.

² Refer Sections 2 and 3 on page 1 of this circular.

ANNEX 2

Suggested presentation of reply to Question 5: *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.*
 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.
 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 how many are in the remaining part of the UHF band.



| Area | Layer 1 | Layer 2 | Layer 3 | Layer 4 | Layer 5 | Layer 6 | Layer 7 |
|------|---------|---------|---------|---------|---------|---------|---------|
| 1 | 27 | 37 | 39 | 44 | 54 | 56 | 66 |
| 2 | 23 | 69 | 38 | - | 57 | 56 | - |
| 3 | 23 | 69 | 43 | - | 57 | 52 | - |
| 4 | 30 | 32 | 39 | 61 | 35 | 52 | 68 |
| 5 | 21 | 28 | 31 | 45 | 48 | 50 | - |
| 6 | 60 | - | 33 | 32 | 49 | 67 | 65 |

ANNEX 3

Suggested form of presentation of reply to Question 11: *What is the minimum amount of spectrum you foresee that will be required for digital terrestrial television broadcasting in Bands IV & V, 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.*

One example methodology showing how spectrum requirements can be calculated from the different parameters using a set of assumptions can be found in Doc. [6A/59](#) submitted to WP 6A and which is currently under debate in this Working Party.

A sample response is shown for guidance only.

| Country | No of multi-plexes | System & modulation | FEC | GI | Reception mode ³ | Capacity per multiplex (Mb/s) | Intended percentage population coverage | Content per multiplex | Total capacity (Mb/s) | Total spectrum bandwidth needed (MHz) ⁴ | Any additional comments including time frames |
|---------|--------------------|---------------------|-----|-------|-----------------------------|-------------------------------|---|-----------------------|-----------------------|--|--|
| XX | 6 | DVB-T2, 256-QAM | 2/3 | 1/128 | Fixed | 40.20 | 99.2% | 7 HD MPEG4 | 187.0 | | 1 now, 5 more from 2020 |
| | 2 | DVB-T2, 16-QAM | 1/2 | 1/8 | Fixed | 13.1 | 90% | 2 HD MPEG4 | | | 1 in 2013, 1 more from 2020 |
| YY | 4 | DVB-T2, 64-QAM | 2/3 | 1/4 | Portable indoor | 22.6 | 60% | 15 SD MPEG4 | 90.4 | | 1 from 2013 2 more from 2015, 1 more from 2020 |
| ZZ | 4 | DVB-T2, 256-QAM | 2/3 | 1/128 | Fixed | 40.20 | 99.2% | 7 HD MPEG4 | 160.8 | | 1 from 2013 2 more from 2015, 1 more from 2020 |

³ E.g. fixed, portable outdoor/mobile, portable indoor.

⁴ Refer Sections 2 and 3 on page 1 of this circular.