



INTERNATIONAL TELECOMMUNICATION UNION

Malawi (MWI)

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Date: 20 May 2013

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

References: Administrative Circular CA/201

Introduction and Background

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 Members States and Sector Members of current and future spectrum requirements for terrestrial television broadcasting in Region 1 and Iran.

2 One particular question that is to 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 realized that 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 was sent to all Administrations and Sector Members in Region 1 and Iran, was designed to gather information on spectrum use in the band 694-790 MHz for television broadcasting.

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

6. To date a total of 45 responses were received. Of these; 30 from CEPT administrations, 3 from ASMG, 1 AUT administration, 1 from Iran and 10 from Sector Members, all from Europe. Two Sector Members that responded, EBU and BNE, are associations representing most of the European broadcasters and network operators.

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7. Indications are that some Member States did not have sufficient time to respond to the Questionnaire.

Malawi (MWI) response to Circular letter 6/LCCE/78

Question 1

a) What standards have you adopted for digital terrestrial television broadcasting?	<i>DVB - T2</i>
b) Have you started introduction of digital terrestrial television services?	<i>Yet to start DTT service roll-out.</i>
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.	<i>Only one National Multiplex has been planned from the start looking at the size of the broadcasting industry in Malawi.</i> <i>The proposal within the first phase is to cover about 70% of the population.</i>
(d) the total spectrum use to inform WP 6A	<i>The first multiplex within layer one of the frequencies is expected to utilise the intended coverage from initial 7 sites utilising MFN configuration rising to up to 24 sites to achieve 100% coverage.</i>

Question 2

a) Have you commenced analogue television switch-off?	<i>Not yet commenced but is expected to commence within December, 2013.</i>
b) If you have any such plans, when do you expect to have completed the analogue switch-off process?	<i>17 June 2015.</i>

Question 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	<i>Currently DTT is yet to be rolled out but the analogue viewership for terrestrial services is estimated at 48%.</i>
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cable networks)?	
b) If possible, please also provide details of the number or proportion of users who receive television primarily by terrestrial means.	<i>Current analogue statistics stand estimated at 48% with the rest of the coverage being provided by Satellite feed.</i>

Question 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)).	<i>Zero (0) in the sub-band 694 - 790 MHz.</i>
b) How many are in the remaining part of the UHF band.	<p><i>Zero (0) in the sub-band 790 - 862 MHz</i></p> <p><i>Two (2) in the sub-band 470 - 694 MHz</i></p> <p><i>NOTE: It should be noted that most of the analogue television transmitters operate in the VHF band (174 - 238 MHz)</i></p>

Question 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.	<p><i>In line with the identified Digital Dividend (DD 1), the channels in use currently span between 470 - 790 MHz.</i></p> <p><i>In line with DD2, it is planned that after the WRC-15, only the band 470 - 694 MHz will remain in use for digital broadcasting services.</i></p>
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.	<p><i>Allotments / SFN were only planned for T-DAB (audio) services and all DVB-T assignments were based on the MFN plan.</i></p> <p><i>All identified Digital Requirements were coordinated with the three neighbouring countries i.e. Zambia, Tanzania and</i></p>

	<i>Mozambique with only the exception of the band 694 - 790 MHz which is being re-coordinated after its identification as DD2.</i>
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)).	<i>Twenty Seven (27) in sub-band 694 - 790 MHz.</i>
d) How many are in the remaining part of the UHF band.	<i>Sixty Six (66) in the sub-band 470 - 694 MHz</i> <i>Nine (9) in the sub-band 790 to 862 MHz</i>

Question 6

a) Are those frequency bands also shared with other primary services?	<i>Within the band 470 - 790 MHz, there is the allocation 606 - 614 MHz for Radio Astronomy.</i> <i>Within the band 790 - 862 MHz, there is sharing on a primary basis with Fixed and Mobile except Aeronautical Mobile.</i> <i>Identification has been made for IMT as per the Mobile primary allocation.</i>
b) If yes, please give details of those systems and their spectrum use.	<i>Currently there is no deployment of any Radio Astronomy systems.</i> <i>A number of Fixed Links which were still remaining within the band 790 - 862 MHz are being migrated to free up the sub-band.</i>

Question 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?	<i>There is no sharing with any secondary services apart from the Primary services i.e. Radio Astronomy and Fixed links as highlighted already.</i>
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b) If yes, please give details of those systems and their spectrum use.	<i>Remaining links are being migrated at present.</i>

Question 8

a) Do you foresee the adoption or expansion of television services broadcast using second-generation systems such as DVB-T2?	<i>Yes, the DTT roll-out in the country is already premised on the DVB-T2 technology.</i>
b) If yes, please give indicative details of the planned transition, including any simulcast period.	<i>The DTT roll-out will from the onset be based on DVB-T2 technology.</i>

Question 9

a) Do you foresee a requirement for new and enhanced services, including HD and 3D television, on the terrestrial television platform?	<i>Yes, the need is foreseen but will not be a key requirement at the onset.</i>
b) If yes, please give indicative details of the number and nature of services planned, and if known, the expected timeframe for their introduction.	<i>The issue is yet to be discussed and finalised as it does not form part of the initial key activities for the DTT roll-out.</i>

Question 10

a) Are there plans in your country to launch more multiplexes in the future?	<i>Yes, a private Mux on top of the Public Mux.</i>
b) If yes, how many more and when? Please also indicate the expected timeframe for their introduction.	<i>The second Mux is expected to be launched in 2015.</i>

Question 11

<p>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.</p> <p>If appropriate, a suggested form to express these requirements is shown in Annex 3.</p>	<p><i>Two muxes are planned within the band 470 - 694 MHz with a further three Muxes (1 Mobile and 2 Fixed) that can still be accommodated when necessary depending on the growing needs of the industry.</i></p>
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ANNEXURE 1

Presentation of response 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.*

Country	No of Muxes	System & modulation	FEC	GI	Reception mode	Capacity per multiple x (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)
MWI	2	DVB-T2, 256-QAM	3/5	1/8	Fixed	24.10	48.0%	70%	20 SD MPEG4	± 200 Mb/s	224	
	1	DVB-H, QPSK	1/2	1/4	Mobile	40.20	0.0%	50%	±20 Mobile CH			
	2	DVB-T2, 256-QAM	3/5	1/8	Fixed	27.10	0.0%	30%	12 SD MPEG4 + 2 HD MPEG4			

ANNEXURE 2

Presentation of response to Question 5:

Table 1

	Group 1	Group 2	Group 3	Group 4
1	CH 21	CH 22	CH 23	CH 24
2	CH 26	CH 27	CH 28	CH 29
3	CH 31	CH 32	CH 33	CH 34
4	CH 36	CH 37	CH 38	CH 39
5	CH 41	CH 42	CH 43	CH 44

Channels divided in groups of 4 to deliver the expected Five (5) Muxes.

ANNEXURE 3

Suggested form of presentation of response 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.*

Country	No of Muxes	System modulation &	FEC	GI	Reception mode	Capacity per multiplex (Mb/s)	Intended percentage population coverage	Content per multiplex	Total capacity (Mb/s)	Total spectrum bandwidth needed (MHz)	Any additional comments including time frames
MWI	4	DVB-T2, 256-QAM	3/5	1/8	Fixed	30	100%	2 HD + 64 SD MPEG-4	200.0	224	
	1	DVB-H, QPSK	1/2	1/4	Fixed	20	50%	2 HD MPEG-4			