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

<b>Name of the Administration:</b>	NICTA
<b>Contact person:</b>	KICA ALUVUCA
<b>E-mail address:</b>	kaluvula@nicta.gov.pg
<b>Telephone number:</b>	+675 3033286

<b>Name of the Sector Member:</b>	NICTA
<b>Contact person:</b>	KICA ALUVUCA
<b>E-mail address:</b>	kaluvula@nicta.gov.pg
<b>Telephone number:</b>	+675 3033286
<b>What best describes your organisation?</b> Commercial broadcaster/Public service broadcaster/ Service provider/ Other (please describe)	ICT Regulator
<b>The geographical area over which you operate:</b>	Papua New Guinea (Pacific)

SECTION ONE – Television broadcasting

- 1) a) Is your country still using analogue television? *Yes*  
 b) If yes, has analogue television switch-off commenced? *No*  
 c) If your country has any plans to switch-off analogue television:  
 i) When is the analogue switch-off process expected to be completed? *2016-2017*  
 ii) How much extra spectrum will be required during the transition phase to digital terrestrial television broadcasting? *—*

Reply: *cii) There is enough spectrum for A2D transition.*

- 2) a) Please indicate how many analogue television transmitters are in operation in your country and in which bands. *3 - VHF Band with a new entrant in 2014*  
 b) What channel bandwidths are used for analogue television? *7 and 8 MHz*  
 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: *There is spectrum in VHF Band III and UHF Bands IV and V some UHF to cater for Digital Dividend.*

- 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 *70%*  
 ii) Portable indoor antenna. *20%*

Reply: *3a) 8.3 receivers per 1000 people.*

- 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)? *DVB-T2*  
 b) When did your country start or when is it proposing to start the introduction of digital terrestrial television services? *Already started with Digital PNA.*  
 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: *Digital PNA, a mobile operator is providing DTT using DVB-T2. They are test on channel 7 of the VHF band providing both ~~BT~~ free-to-view and pay TV. They intend to use a second channel in VHF to provide more channels. They will cover the major towns terrestrially and DTTA for rural areas.*

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- 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? VHF Band III
- b) Please indicate how many digital terrestrial television transmitters are currently used or intended to be used and in which bands. 1 on channel 7
- c) What channel bandwidth is used or intended to be used for digital terrestrial television in your country? 7 MHz

A proposed format for responses to question 5b) and 5c) is provided in Annex 1

Reply: There are 8 channels in VHF Band III.  
Channels 4, 5, 6, 7, 8 will be used for DTT.

- 6) a) Are the terrestrial television frequency 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:

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

Reply:

- 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? Yes
- 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 new entrant into the market, Digicel will provide one HD service.

- 9) a) Are there plans in your country to launch more multiplexes in the future? Maybe
- b) If yes, how many more and when? Please also indicate the expected timeframe for their introduction.

Reply: Digicel PNG will own one multiplex and probably EMTV or NBC could own the other.

- 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: In PNG, there are currently 3 analogue free to air services nationwide, (VHF Band III)  
 They are: ① NBC - public - ch 2  
 ② EMTV - private commercial - ch 4  
 ③ 3ABN - Religious - ch 6

There is now a new entrant, Digicel PNG, a mobile operator. Digicel is providing FTA and Pay TV. We have assigned ch 7, but they also need a second channel. Planning for A2D was based only for the above 3 FTA services, however with the entrance of Digicel, the ~~same~~ scenario has slightly changed as they intend to begin broadcast on the digital platform using DVB-T2. They will launch their network in November 2014.

SECTION TWO – Sound broadcasting

- 11) a) What analogue sound broadcasting standards are used in your country and what bands are they operating in? *Fm and Am*
- b) Please indicate how many analogue radio transmitters are in operation in your country and in which bands. *more than 50*
- c) What channel bandwidths do they use? *200kHz for AM*

A proposed format for responses to question 11b) and 11c) is provided in Annex 1

Reply:

- 12) a) Is additional spectrum required for growth in the analogue sound broadcasting platform in your country? *No*
- b) If yes, how much additional spectrum is required?

Reply:

- 13) a) Is your country considering introducing, or has it already introduced digital sound broadcasting? *No*
- 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? *No plans*
- 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: *No plans yet for digital sound*

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- 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: 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?  
b) If yes, please give details of those systems and their spectrum use.

Reply: 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:

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: no plans yet for multimedia broadcasting.



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)		VHF I 180kHz VHF II 300kHz		7 MHz <del>7 MHz</del>	7MHz <del>7 &amp; 8 MHz</del>	
XX	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**					
	VHF I	47-50 MHz					
		50-54 MHz					
		54-68 MHz	35				
		68-72 MHz					
		76-87.5 MHz					
	VHF II	87.5-108 MHz	<del>750</del> 245				
	VHF III	174-216 MHz			60 <del>250</del>	5 <del>(221)</del>	
	VHF III	216-230 MHz			35	(7)	
	UHF IV	470-694 MHz			5683	137 (4387)	
	UHF V	694-790 MHz			3940	<del>(2768)</del>	
	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						

\* 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 3900-3950<sup>D</sup>, 3950-4000<sup>D</sup> kHz; the bands for tropical broadcasting: 2300-2498, 3200-3400<sup>D</sup>, 4750-4995<sup>D</sup>, 5005-5060<sup>D</sup> kHz and the Article 12 Bands 5 900-5 950<sup>D</sup>, 5 950-6 200, 7 200-7 300, 7 300-7 400<sup>D</sup>, 7 400-7 450, 9 400-9 500<sup>D</sup>, 9 500-9 900, 11 600-11 650<sup>D</sup>, 11 650-12 050, 12 050-12 100<sup>D</sup>, 13 570-13 600<sup>D</sup>, 13 600-13 800, 13 800-13 870<sup>D</sup>, 15 100-15 600, 15 600-15 800<sup>D</sup>, 17 480-17 550<sup>D</sup>, 17 550-17 900, 18 900-19 020<sup>D</sup>, 21 450-21 850, 25 670-26 100.

<sup>D</sup> 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 multiplexes	System & modulation	FEC	GI	Reception mode <sup>2</sup>	Capacity per multiplex (Mbs)	Current percentage population coverage	Intended percentage population coverage	Content per multiplex	Total capacity (Mbs)	Total spectrum bandwidth used or intended for implementation (MHz)	Any additional comments (e.g. duration of licences)
ZZ	3	<i>DVB-T, 64-QAM</i>	<i>2/3</i>	<i>1/32</i>	<i>Fixed</i>	<i>24.10</i>	<i>98.0%</i>	<i>99.2%</i>	<i>9 SD MPEG2</i>	<i>153.6</i>	<i>256</i>	<i>Public service multiplexes licensed until 2025</i>
	3	<i>DVB-T, 64-QAM</i>	<i>3/4</i>	<i>1/32</i>	<i>Fixed</i>	<i>27.10</i>	<i>75.0%</i>	<i>90.0%</i>	<i>11 SD MPEG2</i>			<i>Licensed until 2030</i>
	1	<i>DVB-T, 64-QAM</i>	<i>2/3</i>	<i>1/4</i>	<i>Portable indoor</i>	<i>22.6</i>	-	<i>60%</i>	<i>3 HD MPEG4</i>	<i>22.6</i>	<i>From 2017</i>	

PNLr	2	DVB-T2 64 QAM			Fixed and portable indoor	24	70%	90%	11SD 1HD	153.6	256 MHz	
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<sup>2</sup> E.g. fixed, portable outdoor/mobile, portable indoor.