



**Public Consultation on the Establishment of a
Policy for Assignment of Spectrum in the 2.5GHz Band**

(2500MHz - 2690MHz)

Publication 7, MAY 2015

Objective of the Consultation

Following an application received from Andrew's Communications Ltd. (Trading as People's Telecoms Company Ltd) for assignment of spectrum in the 2.5GHz Band, using the Band 41 Plan (**Public Notice 2015-3**¹), the Commission wishes to conduct a public consultation on the allocation of the 2.5GHz Band and the assignment of spectrum in that band.

The consultation examines modalities of allocation and assignment of frequencies in the 2.5GHz Band that are consistent with internationally accepted approaches for such allocation and assignments.

The Commission intends to develop a policy for the allocation and assignment of frequencies in the 2.5GHz Band based on the result of this consultation.

The 2.5GHz Spectrum Band

2.5GHz Band is used to provide access to fixed and mobile wireless broadband services using the International Telecommunication Union ("ITU") recommendations (ITU-R F 1243) for access to wireless services operating in bands 2290 to 2670MHz.

Because of continuing evolutions by commercial operators in the development and deployment of new and innovative wireless technologies to provide higher data rates to consumers, the 2000 World Radio-communication Conference (WRC) allocated the 2.5/2.6GHz bands (2500 to 2690 MHz) on a primary basis in all ITU regions for the implementation of the terrestrial component of International Mobile Telecommunications (IMT).

In 2011, following on the recommendations of the ITU for the allocation of the 2.5 GHz Band for IMT services in Region 2, which includes the TCI, the Commission made provision in the Turks and Caicos Islands Table of Frequency Allocations for the allocation of fixed and mobile wireless broadband services on a primary basis in the 2.5GHz Band.

Channelization of the 2.5GHz Band

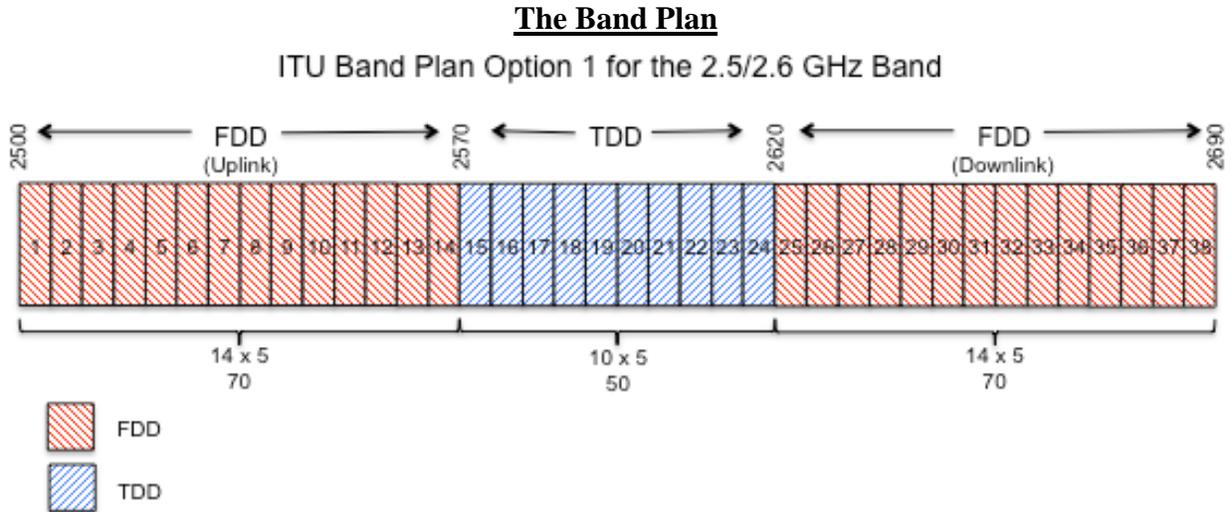
The ITU recommends two options for the arrangement of the 2.5GHz Band for administrations wishing to implement it for IMT. The first option, the Band Plan option, consists of preconfigured allocations of paired and unpaired spectrum most commonly adopted worldwide. A second option is for administrations wishing to use the 2.5GHz Band solely for FDD or TDD. For the deployment of mixed FDD/TDD, however, the first option, the Band Plan option, is recommended².

¹ PN 2015-3 ACL application for spectrum, posted on the TCI Telecommunications Commission website

² ITU-RM.1036-4

The Band Plan Option

The Band Plan consists of 38 five MHz spectrum blocks with a fixed combination of paired and unpaired spectrum. It provides 140MHz of paired spectrum for FDD operations and a 50MHz block of unpaired spectrum for TDD operations in the centre. Block 15, between the TDD block and the FDD uplink channels, is designated as a guard band. The use of 5MHz channel blocks allows combining blocks for channel widths of 5, 10, 15 and 20MHz – in accordance with 3GPP specifications for LTE and other technologies.



To be consistent with the ITU recommendations for Region 2 and the assignment of spectrum in the 2.5GHz Band by neighbouring states, the Commission is inclined to use the Band Plan option. [Although Cable and Wireless/LIME are presently licensed to provide legacy fixed point-to-point or fixed point-to-multipoint services using paired channels in the 2.5GHz band (2511.500MHz and 2630.500MHz), using 7MHz channel blocks, those frequencies are not in use, and the Commission is willing to compensate LIME with alternative frequencies.]

Band Plan Models

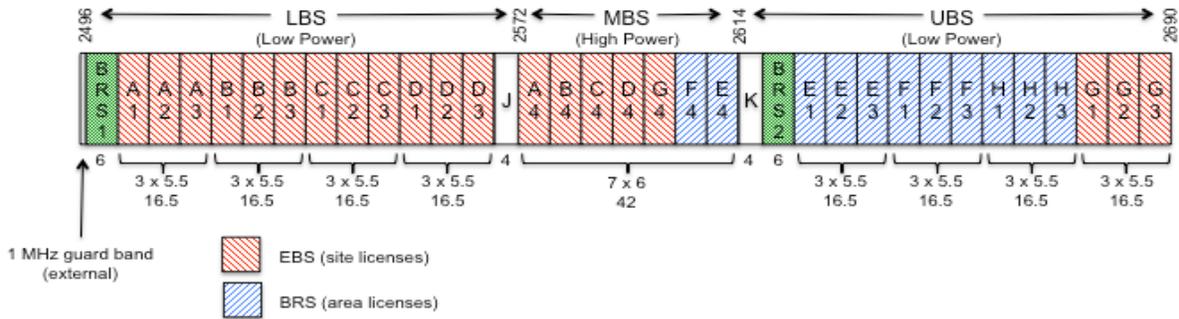
The Commission is considering two Band Plan models for the assignment of spectrum to service providers wishing to deploy advanced LTE services in the TCI.

Band Plan Model 1:

This model follows the format used for the FCC 2.5GHz Band in the US. It divides the band into 33 channels – 20 EBS and 13 BRS – comprised of 186MHz of spectrum divided into three sub-bands, separated by two 4 MHz guard bands (J and K blocks) comprising the remainder of the allocation. The upper band segment (UBS) and lower band segment (LBS) are set aside for low-power cellular transmissions. The mid-band segment (MBS) is set aside for legacy fixed point-to-point or fixed point-to-multipoint services. [This would enable LIME to maintain their fixed point-to-point or fixed point-to-multipoint services within the 2.5GHz band.]

Band Plan Model 1

Band Plan for the 2.5 GHz spectrum in the US



Band Plan Model 2

This plan divides the 2.5GHz Band into 38 channels bandwidths of 5MHz that allow combining blocks for channel widths of 5,10,15 and 20MHz using FDD or TDD technology.

Band Plan Model 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
A1	A2	B1	B2	C1	C2	D1	D2	E1	E2	F1	F2	G1	G2	H1	H2	I1	I2	J1	J2	K1	K2	L1	L2	M1	M2	N1	N2	O1	O2	P1	P2	Q1	Q2	R1	R2	S1	S2	
20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		20 MHz		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S																				
2500	2510	2520	2530	2540	2550	2560	2570	2580	2590	2600	2610	2620	2630	2640	2650	2660	2670	2680	2690																			

Pricing of 2.5GHz Spectrum Band

The 2.5GHz Band is considered valuable because of propagation characteristics that enable radio-communication systems operating in this band to cover wide geographical areas and achieve high levels of indoor penetration with relatively few base stations. These characteristics are particularly desirable in broadband communications. Also, the cost of building a network using 2.5GHz is substantially less than the cost of building a similar network using higher frequencies.

In 2012 the Commission established a policy for pricing 700MHz spectrum for LTE deployment where the cost was based on prime and non-prime usage (\$/MHz-pop)³. See Table 1:

Spectrum Band	Annual Fee *	Annual Fee/MHz/pop **
700 MHz Prime	\$30,000 / 12MHz	6.9¢
700 MHz Non-Prime	\$20,000 /12Mhz	4.3¢
850 MHz	\$30,000 / 10MHz	3.9¢
900 MHz	\$30,000 / 10MHz	3.9¢
1800 MHz	\$40,000 / 10MHz	5.2¢
1900 MHz	\$78,000 / 5MHz	20.3¢
Average		8.3¢

* Note that the fees are currently applied on a paired spectrum basis.

** The estimated 2010 population of TCI is 38,400. Source: World Bank

Because lower frequency bands provide better penetration and coverage than higher frequency bands the Commission proposes that the price for LTE Advance spectrum in the 2.5GHz Band should be similar to the cost of non-prime spectrum in the 700 MHz Band (4.3¢ MHz/pop). See Table 2:

Spectrum Band	Annual Fee	Annual Fee MHz/pop
2.5GHz (A1-S2)	\$8000 / 5 MHz	4.3¢
2.5GHz (A1-S2)	\$16000 / 10MHz	4.3¢
2.5GHz (A1-R2)	\$24000 /15MHz	4.3¢
2.5GHz (A-R)	\$32000 / 20MHz	4.3¢

Pro and Cons

Most regions have yet to implement the ITU recommendations for deployment of LTE/IMT services in the 2.5GHz Band and retain the traditional channelization used for legacy systems (ITU-R F1243). China, Japan and the USA, have recently rearranged the 2.5GHz Band in their jurisdictions using the Band Plan (Band 41) for LTE Advance broadband services. This deployment has the potential of making equipment more affordable and furthering the proliferation of broadband mobile devices, such as smartphones and tablets, that operate in the 2.5GHz Band.

The options recommended by the ITU for arrangement in the 2.5GHz Band have advantages and disadvantages. Because of the recent arrangement of 2.5GHz spectrum in the United States, it is possible, perhaps likely, that over the coming years, telecommunications providers within our region will develop and deploy new equipment designed to operate within the 2.5GHz for IMT

³ DN 2012-7, Spectrum Policy Decision for 700MHz, posted on the TCI Telecommunications Commission website

services set by ITU. On the other hand, the traditional channelization of the 2.5GHz Band for legacy point to multipoint is long dated in the telecommunications industry and therefore the equipment designed to operate in this spectrum is likely to be usable within the parameters of the traditional channelization.

Consultation

The Commission invites comments generally on the application of Andrew's Communications Ltd. (Trading as People's Telecoms Company Ltd) for assignment of spectrum in the 2.5GHz Band, using the Band 41 Plan (**Public Notice 2015-3**), but would also appreciate comments regarding the following specific issues:

1. The Commission prefers the use of TDD technology that uses a single, wider channel over the two narrower channels used in FDD technology. TDD appears to provide operators with flexibility for more efficient and intensive use of the 2.5GHz Band. The Commission therefore proposes to allocate the 2.5GHz Band based on TDD technology, dividing the band into 38 channels of 5MHz bandwidths, which allows combining blocks for channel widths of 5,10,15 and 20MHz.

Question 1:

Do you agree that the 2.5GHz spectrum should be channelized based on TDD/IMT technology with channels of 5,10,15 and 20MHz bandwidth each?

2. In keeping with technology neutrality, the Commission proposes that the majority of the band be designated for assignment to providers who could use any technology of their choosing to deliver the broadband wireless services.

Question 2:

Do you agree with the proposal that service providers may use technology of their choice in delivering broadband wireless services within the band?

3. The Commission is seeking specific spectrum usage information from current commercial mobile licensees and other entities interested in acquiring commercial mobile spectrum:

Question 3:

- (1) ***What is your need for additional spectrum for commercial mobile services applications and how much spectrum do you require?***
- (2) ***What deployment timelines are being considered?***

- (3) What types of applications/uses are envisaged?*
- (4) How much of your anticipated spectrum needs be addressed by having access to the 2.5GHz Band?*

- 4. In the future the Commission proposes to award an optimum amount of spectrum for delivery of allocated services in the TCI.

Question 4:

Do you agree with the Commission's proposal that providers be awarded an optimum amount of spectrum for provision of services in the TCI? If you disagree, please provide a framework for the Commission to determine the amount of spectrum bandwidth to award to potential licensees

- 5. The Commission proposes that a portion of the 2.5GHz Band be designated for Public Health and Safety Services and seeks the views of all stake holders, including public safety agencies on this proposal

Question 5:

- (1) Do public safety agencies need spectrum for broadband applications?*
- (2) How much and for what type of applications?*
- (3) What are the anticipated deployment plans and possible constraints in implementing these applications?*
- (4) Is there suitable spectrum other than 2.5GHz spectrum to meet these broadband requirements?*

- 6. Spectrum in the TCI has traditionally been assigned on a first come first-served basis. An alternative method of assignment would be a comparative selection method.

Question 6:

In the case of the 2.5GHz spectrum do you think that the traditional first-come, first-served method of assigning spectrum is appropriate, or would it be preferable to use a comparative selection method?

- 7. The Commission proposes that the price of the 2.5GHz Band be set at the cost of the non-prime spectrum of the 700 MHz Band (4.3¢ MHz/pop).

Question 7:

Do you agree that the 2.5GHz price be set at the price of the non-prime spectrum of the 700 MHz Band (4.3¢ Mhz/ pop)? If not, what pricing do you propose?

8. The Commission proposes to reserve some spectrum in the 2.5GHz Band for future technological development.

Question 8:

Do you consider that it is appropriate to reserve any channels of the 2.5 GHz Band for future use?

Responses to Consultation

Comments should be submitted to the Commission within 3 weeks of the publication of this document, at their office at Business Solutions Building, Leeward Highway, Providenciales, Turks and Caicos Islands, or by mail to P.O. Box 203, Providenciales, Turks and Caicos Islands, or electronically via email at consultations@tcitelecommission.tc. Submissions should be filed electronically as well as in paper form. The submission deadline is May 29, 2015.

Any person may submit comments in reply to any matters contained in submissions filed with the Commission by the stipulated deadline of May 29, 2015. Such reply comments must be filed with the Commission in the manner described above by 3:30 PM, Friday, June 5, 2015.