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Tuesday, 11 May 2021

Mr. Kenva Williams
Director General (Acting)
Turks and Caicos Islands Telecommunications Commission (“Commission”)
Business Solutions Complex
Leeward Highway
Providenciales

Dear Mr. Williams,

Re: Consultation on National Table of Frequency Allocations

We refer to the Public Notice 2021-7 (Extension) dated May, 4 2021, entitled *National Table of Frequency Allocations* (NTFA), and welcome the opportunity to provide Digicel’s comments to the accompanying document entitled *National Table of Frequency Allocations Consultation Document* (Consultation Document) dated April 20, 2021.

Digicel’s response, **attached** to this letter, follows the same numbering construct as set out under paragraph 1.7 entitled *Consultation questions* in the Consultation Document.

We look forward to the Commission’s response to these comments, and engaging further in the consultation process.

Yours sincerely,

A handwritten signature in black ink, appearing to be 'A. Stoddard', written over a dotted line.

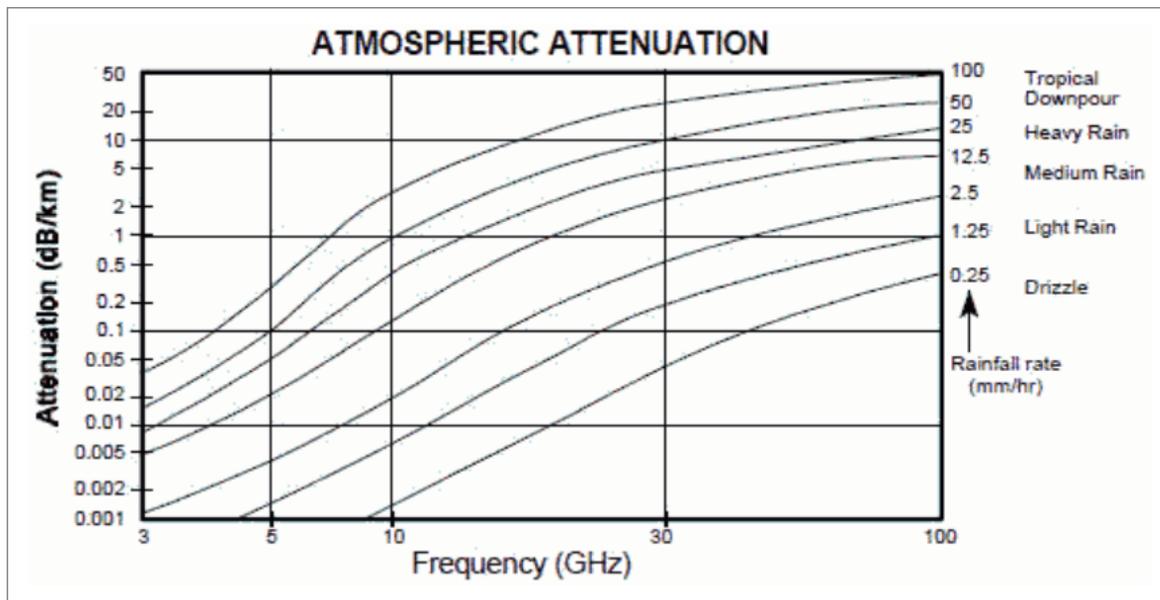
Mr. Addison Stoddard
Chief Executive Officer
Digicel (Turks and Caicos) Limited

(ATTACHMENT)

1. Please comment on the Turks and Caicos Islands NFTA, including the ITU Footnotes identified as applicable to the Turks and Caicos Islands.

5.338A: Digicel is of the respectful view that the Commission should avoid introducing 5G on spectrum within the ranges 20-80GHz. This is because, these frequency ranges are better suited for small cell deployments, with a typical cell radius of less than 1km. These high frequency ranges are therefore extremely susceptible to attenuation from rain and other environmental elements, and as such are not suited for the TCI climate.

Further, these high frequency based radios are typically installed in metropolitan areas, with high population density, where small cell technology can be exploited. The graph below illustrates how the intensity of rainfall can affect and impact the atmospheric attenuation*:



*Source: <https://www.everythingrf.com/community/what-is-the-impact-of-rain-on-rf-signal-propagation>

Mobile networks, classified as essential services, require a high level of availability. Therefore frequencies that are less susceptible to atmospheric attenuation are always preferred. The graph above also illustrates how frequencies below 5GHz are more robust in relation to atmospheric attenuation.

Further, it is Digicel's respectful view that, rather than considering the adoption of microwave (up to 30GHz) or millimetre (mm) wave (30-300GHz) frequencies for 5G, the Commission ought to consider mid-band frequencies (below 5GHz) for 5G, such as n40, n41 and n78, which offers much better propagation, particularly where a cell radius can vary between 2-4 km. A network grid built on mid-band frequencies, with a larger cell radius, will offer licensed telecommunications operators a more cost effective build out requiring half the sites in comparison to a network grid based on microwave or mm wave frequencies. Having fewer sites also allows the operators to have reduced carbon footprint, resulting in fewer emissions. The latter is noteworthy given the current global move and scrutiny relating to higher, unnecessary, and avoidable emissions.

It is therefore Digicel's recommendation that the Commission should avoid the introduction of 5G on the frequencies highlighted paragraph 1.2.1, and instead replace those frequencies with the mid-band frequencies of n40, n41 and n78 as below:

- a. n40: 2300 – 2400 MHz.
- b. n41: 2496 – 2690 MHz.
- c. n78: 3300 – 3800 MHz.

2. Please comment on the separate Footnotes specific to the Turks and Caicos Islands.

T5: Digicel assumes that it is the intention of the Commission to introduce the 3GPP Band 1 (B1) into the NFTA. If this is not the case, we welcome the Commission's response clarifying this matter with urgency, and certainly ahead of the consultation progressing to the next step.

That being said, if Digicel's assumption is correct, it is Digicel's view that such introduction of B1 into the NFTA must be avoided at all costs as B1's downlink (DL) overlaps with Band 4 (B4), which already exists and in use within the market, as follows:

- a. B1 DL = 2110 – 2170 MHz; and
- b. B4 DL = 2110 – 2155 MHz.

T13: The Commission appears to be in favour of 3GPP Band 7 (B7). B7 is a European band, defined as part of IMT, which can be used for 4G LTE services. However, Digicel is of the view and recommends that the Commission should consider adopting band 41 instead (Band 41 is defined from 2496 – 2690MHz (194MHz) based on TDD), for the following reasons:

- a. B41 offers more spectrum, which can be shared amongst licensed telecommunications operators, that is, 194 MHz (TDD) vs 2x70MHz (FDD);
- b. B41 is an American aligned band plan, which better suits TCI due to its proximity to North America;
- c. B41 devices are more popular in TCI compared to B7, and currently outnumbers them by a ratio of 3:1; and
- d. The evolutionary path of B41 to 5G n41 will offer a much richer experience on 5G than that of B7's evolution to n7, because the 5G band n41 will support the maximum channel sizes of 100MHz vs 50MHz for n7. As a result, the best 5G experience would be realized on n41 due to the larger channel sizes.

3. Please indicate any additional frequency bands that could be identified in a Footnote for future public telecommunications services.

5.384A: The Commission should consider 2300 – 2400MHz (Band 40) and 2500 – 2690MHz (B41) (specifically 2496 – 2690MHz) for the following reasons:

- a. B40 is a TDD band that can be used to deliver 4G LTE services and has an evolutionary path for 5G in the form of n40; and
- b. B41 is a TDD band that can be used to deliver 4G LTE services and has an evolutionary path for 5G in the form of n41.

5.430A: The Commission should consider 3400 – 3600MHz (Band 42) as it is a TDD band that can be used to deliver 4G LTE services and has an evolutionary path for 5G in the form of n78.

4. Please indicate any additional frequency bands that could be identified in a Footnote for licence exempt use.

No comments.

5. Please indicate any specific frequency bands that could be identified for other uses.

No comments.

6. Please identify any additional frequency bands for which a band plan could be required.

In addition to the existing frequency bands, Digicel respectfully recommends the following bands for future use:

a. 5G NR, specifically:

- i. n40: 2300 – 2400 MHz.
- ii. n41: 2496 – 2690 MHz.
- iii. n78: 3300 – 3800 MHz.

b. 4G band reclassification in order to allow more spectrum availability, specifically:

- i. B5 > B26 - UL: 814-849 DL: 859-894.
- ii. B4 > B66 - UL: 1710-1780 DL: 2110-2200.
- iii. B2 > B25 - UL: 1850-1915 DL: 1930-1995.

Digicel's Additional Comments

The following are Digicel's further comments, specifically relating to the existing TCI Band Plans (par. 5):

- a. 5.1 – The Commission should consider reclassifying 700MHz Band 17 to Band 12 as Band 17 is already known to be a subset of Band 12. Reclassifying the allocation, therefore, would offer 2x5MHz of additional spectrum for public telecommunications services. The table below is provided for illustration purposes:

Band	Frequency (MHz)	Uplink (MHz)	Downlink (MHz)
12	700	699-716	729-746
17	700	704-716	734-746

Further, spectrum 699-704MHz/729-734MHz can also be utilised successfully to deliver LTE services.

- b. 5.2 – Noted, no further comments.
- c. 5.3 – Noted, no further comments.
- d. 5.4 - Introduction of 3GPP 1800MHz Band 3 (B3) **should be avoided at all costs**, for the following reasons:
- i. B3's UL clashes directly with UL of B4 (AWS) which exists in and is being utilised in the market;
 - ii. B3's DL clashes directly with UL of B2, which exists in market;

- iii. Introduction will force operators to deploy filters (1800MHz B3 – Downlink, 1900MHz B2 – Uplink), which comes at significant costs, which can be used for more important network and infrastructure upgrades.
- e. 5.5 – Displays assignment for Flow + Digicel only. Is the Commission’s intention to limit the band to this range? We welcome your response.
- f. 5.6 – There appears to be incorrectly described current assignment, which is actually a subset of 3GPP Band 4 (AWS); Downlink: 2110-2155MHz, Uplink: 1710-1755MHz. Is the Commission’s intention to limit the band to this range? We welcome your response.

END OF DOCUMENT