



The Bahamas Telecommunications Company  
Limited

Response To

**Opening New Spectrum Bands**  
URCA Consultation Document ECS 23/2010

Legal, Regulatory and  
Interconnection Division  
**November 16, 2010**

# **BTC Response to Opening New Spectrum Bands URCA Consultation Document ECS 23/2010**

Issue Date – 1 October 2010

Response Date – 16 November 2010

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## **1 Introduction**

BTC's response is organised according to the URCA Consultation Document, responding to the ten questions posed by URCA. Where BTC's response does not align directly with the questions, reference is made to the relevant paragraph numbers in the URCA consultation document. Additional points which do not align directly with the URCA questions are made with reference only to the paragraph numbers in the consultation document.

## 2 BTC Responses to URCA Questions

### 2.1 URCA Question #1

Do you agree with URCA's proposal of factors to consider when it initiates the process to open new spectrum bands upon its own volition? If not, please provide additional or other factors that should be considered.

#### **BTC Answer to URCA Question #1:**

BTC respectfully suggests that while it is appropriate for URCA to act in a forward-looking manner to ensure the availability of spectrum for services desired by the people of The Bahamas, the factors as given do not address the elements that should be considered, are not practicable and should therefore be further revised. URCA's proposed factors and the process these reflect have not been thought through. This is particularly true since the potential benefits which a spectrum release should bring to the Bahamas are not properly considered in URCA's present proposal.

BTC believes that the four factors presented are not sufficiently developed to provide a clear and unambiguous basis for action by URCA. The least problematic is factor (iv) -- observation of technology/industry trends -- while the three local market factors require substantial further specification, e.g. factors (i) and (ii) might not be distinguishable in practice and should be merged into one. Also, the proper analysis to be undertaken by URCA is whether enough suitable spectrum-by-competing-service-type is available (overall and by competitor). Also, URCA should, in advance of any such proceeding specify appropriate indicators of competition and spectrum constraint. Factor (iii) likewise should be further developed, with URCA specifying how it proposes to receive "overwhelming interest from the public." Does URCA intend to hold periodic public hearings, roundtables or similar events, will it invite specific oral or written submissions as separate from industry submissions?. How will URCA document that "overwhelming interest" has been shown?

As an alternative, BTC recommends that URCA consider the following in determining whether to open new spectrum bands:

- URCA should adopt service and technology neutrality in its allocation/assignment of spectrum. URCA notes (in ¶ 2.2 of the Consultation Document) that it has not to date opened new spectrum under the present legal/regulatory regime; moreover, URCA states that while (also at ¶ 2.2) formerly there existed a service-specific regime, the Communications Act of 2009 (hereafter "Act") indeed envisions full liberalization, including technology neutrality (at ¶ 1.2) and at least encourages service neutrality insofar as it is a means of achieving economically efficient spectrum use taking into account the evolution of new technologies and services (at ¶ 2.1, referring to Art. 32 of the Act). BTC notes that URCA is not constrained by the Act in adopting such policy of technology and service neutrality, and that practical and tested means exist of avoiding potential interference issues, particularly through the use of a 'spectrum mask' approach.
- URCA should release bands based on industry demand and on expected benefits to The Bahamas. BTC notes in this context that the Act (in Art. 34(2) thereof) specifically mandates URCA to consult service providers and network operators (e.g. current industry participants) on issues concerning management and use of spectrum. While the Act does not preclude URCA from consulting other stakeholders or acting sua sponte (including on behalf of other stakeholders), the provisions of Act read together require (procedurally that present industry operators

be consulted, while substantively (as noted in ¶ 2.1 and in conformity with the Act's economic efficiency mandate of Art 32(1)(b)) ensuring that such releases of spectrum result in or maintain sustainable competition for services demanded in and by the Bahamian market. Where URCA fails to ensure that industry demand sufficient to be economically efficient and likely to result in sustainable, competitive provision of services, the opening of unused bands may create an over-supply unless URCA's study of demand clearly indicates or dictates otherwise. BTC believes that where a band is to be opened that could support commercial services, it should be allocated in such a way as to allow sustainable facilities-based competition. Allocation of spectrum to too many players may lead to high consumer service prices because of too low economies of scale.

BTC notes that, as URCA has in the present proceeding already opened a proceeding likely to open new spectrum prior to finalizing salient reasons and procedures for so doing, it should consider truncating this process at the Expression of Interest stage now at issue, fully account for the input it receives in terms of this and other questions and institute a fully separate process to configure and assign spectrum in the bands under consideration after appropriately identifying rationales, criteria and processes.

## 2.2 URCA Question #2

Do you agree that URCA should also consider specific demands from the industry? If not, please indicate what should stimulate URCA to consider initiating the process to open new spectrum bands.

### **BTC Answer to URCA Question #2:**

Yes, BTC considers that demands from the industry are very important.

With a relatively small population of 353,000, The Bahamas has to be an 'intelligent technology follower to industry leaders'. That means that technology deployments need to match a big market such as North America, Europe or Asia. BTC sees itself as a leader in the region with respect to applying appropriate technologies in The Bahamas.

Thus BTC supports the strategy that technology deployed should where possible conform to recognised open standards. BTC also notes that the relatively low population density and the general geographical structure of the Bahamas favours the lower bands over the upper bands for access networks. Bands above 1GHz will be mainly used for micro-cells in the towns. It is important that this is recognised by URCA in its plans for lower bands allocated where propagation conditions favour a given service, network topology and technology.

BTC welcomes the fact that URCA espouses technology neutrality in para 1.2.

URCA's National Radio Spectrum Plan published in March 2010 calls for the optimal use of radio spectrum. URCA did consult on this. BTC is moderately pleased with the result.

BTC considers that it is unlikely, in the near future, that there will ever be widespread spectrum congestion in the Bahamas. Nonetheless there need to be spectrum efficiency measures so that URCA can understand if there is real congestion developing in specific bands and plan accordingly. Measurement of congestion should be based on measurement of actual occupancy. The National Radio Spectrum Plan has something to say on this. Does URCA aim to claw back and re-release spectrum that is under-utilised?

BTC recommends that URCA should make projections of future spectrum demand generally in order to estimate the real spectrum demand picture so as to ensure that all needs are met. Market studies by URCA are required so that URCA knows beforehand if demand is likely to exceed supply. Then URCA can initiate the appropriate process:

- if supply is greater than demand, make direct awards to interested parties.
- If demand is greater than supply, use auctions or Administrative Incentive Pricing to make economically efficient allocations.

BTC recommends that URCA develops the spectrum strategic plan further based on market studies and assessments. The strategic plan should be regularly reviewed and published to provide the industry with greater transparency and certainty on the likely spectrum to be released and re-farmed in the future.

URCA should consider spectrum bands that are suitable for commercial services (including premium bands and the 2.5GHz and 3.5GHz bands) and indicate the amount of spectrum assigned or available or likely to be available in the future. Most mobile operators globally are operating multi-band systems and they need to plan ahead and to obtain necessary spectrum resources to grow their networks and services. We urge URCA to harmonise its spectrum allocations (whilst embracing liberalisation) so that the Bahamas can benefit from economies of scale for commercial services.

How would consumer demand be assessed? BTC would point out that demand is traditionally difficult to estimate beyond the benefits offered by the current state of art.

BTC notes that that in many parts of the consultation document, URCA seems to be saying that it will decide the services and technologies for which a band can be used. This form of allocation is referred to in spectrum management circles as 'command and control'. This form of spectrum management is not popular since it requires that URCA will be 'all knowing' and perfectly predict the future. As the regulatory body governing the communication sector in the Bahamas, specific demands are required when administering such a vital resource, however the demands should be reasonable and practicable to adhering to. Most regulators are liberalising and are asking that the markets decide the future through market economics. URCA needs to be clear about what type of spectrum market it intends.

BTC notes URCA's intention to consult the markets through a consultation process. The timescales suggested are very short. BTC would point out that the time period from initial band identification to release through a suitable award mechanism is typically three years in other countries. BTC urges URCA to re-consider its processes and to define the process completely along with target stages and times.

BTC is of the view that spectrum for paging services should be minimised. Preferably paging licensees should be free to offer other services (following the principles of technology and service neutrality).

BTC expects that demand for broadband wireless access services (both from fixed and mobile terminals) will grow substantially. In practice it is likely that mobile networks will prove most attractive for The Bahamian market, for reasons including market characteristics (residents and tourists are mobile), and practicality (it is a lot easier and more flexible for customers to connect to a mobile network than a fixed network). Broadband wireless access services are an increasingly important use of radio spectrum as shown in the comparative table below. In many countries though not yet in The Bahamas, the number of customers accessing broadband through mobile services now exceeds that through fixed services by a considerable margin.



**Table: Fixed and Mobile Access to Broadband Services**

Country	Fixed broadband subscriptions per 100 inhabitants			Mobile cellular subscriptions with access to data communication at broadband speed per 100 inhabitants		
	2007	2008	2009	2007	2008	2009
Antigua and Barbuda	8.1	14.5	17.0	-	-	-
Australia	23.2	25.1	25.4	32.7	53.7	65.1
Austria	19.5	20.7	22.5	29.7	42.7	54.6
<b>Bahamas</b>	<b>3.9</b>	<b>10.1</b>	<b>9.2</b>	<b>1.8</b>	<b>7.9</b>	<b>8.0</b>
Bahrain	9.7	14.2	20.8	10.1	25.2	62.3
Bermuda	44.6	52.5	61.7	..	7.2	10.8
Canada	27.5	29.6	29.7	1.5	4.6	7.5
Czech Republic	14.6	17.1	19.5	6.5	13.1	8.9
Denmark	35.9	36.8	37.9	12.2	22.5	36.2
Estonia	20.7	23.7	25.3	3.3	14.9	18.7
Faroe Islands	26.9	30.0	34.1	26.8	30.0	31.8
Finland	30.6	30.5	29.4	15.3	24.3	39.8
France	25.2	28.5	31.1	13.8	23.6	40.6
Germany	23.8	27.5	30.4	15.1	21.8	31.6
Greece	9.2	13.5	17.2	12.3	16.3	22.5
Hong Kong, China	27.3	28.1	29.3	31.6	42.8	54.4
Hungary	13.8	16.8	18.8	1.9	3.6	6.1
Iceland	31.8	32.9	33.2	-	2.7	6.2
Ireland	17.4	20.1	21.6	2.9	7.0	10.3
Italy	17.1	18.9	19.7	41.4	48.8	53.6
Japan	22.2	23.7	24.9	65.4	75.5	84.2
Korea (Rep. of)	30.7	32.1	33.8	49.2	71.6	83.6
Liechtenstein	39.6	55.0	75.2	15.0	24.9	55.7
Macao, China	21.5	23.1	23.4	6.0	21.5	45.8
Malta	20.2	23.5	24.4	6.9	11.2	19.2
Netherlands	33.5	35.1	35.7	12.6	25.0	39.6
New Zealand	20.3	21.6	23.0	27.9	45.2	61.2
Norway	30.4	33.3	37.3	13.3	20.9	29.7
Oman	0.7	1.1	1.4	1.9	5.3	61.2
Portugal	14.2	15.3	17.4	24.5	40.5	42.7
Singapore	20.0	21.7	23.7	42.8	65.3	88.3
Slovak Republic	8.8	11.2	14.4	3.6	10.5	23.8
Slovenia	17.1	21.2	23.1	11.6	26.3	28.6
Spain	18.3	20.5	21.5	22.8	38.9	52.2
Sweden	30.4	41.2	41.1	24.7	35.5	50.3
Switzerland	31.5	33.9	34.6	19.3	28.3	37.0
Trinidad and Tobago	2.7	6.4	7.8	8.0	13.8	13.8
United Kingdom	25.6	28.2	29.8	20.5	33.9	38.0

Source: ITU Database (a) fixed broadband subscriptions per 100 inhabitants and (b) mobile cellular subscriptions with access to data communication at broadband speed per 100 inhabitants for the ITU's 'high income countries' category (OECD and non-OECD), for the years 2007-2009.

BTC notes typical World governments' targets as anything from 98.5% of population benefiting from at least 2Mb/s by 2012 to Australia's 90% of population benefiting from at least 100Mb/s by 2018.



It would be most useful if URCA and the Minister would advise of targets in The Bahamas. This would set the frame for future spectrum needs.

BTC believes that the following table summarises the main characteristics of alternative approaches to broadband supply:

Technology	Downstream Speed Mb/s	Network Cost per Subscriber	Comment
Copper DSL	0.5-20 <sup>1</sup>	Low thousands of \$	Assumes copper in ground
FTTN	40	High hundreds of \$	Assumes copper in ground
FTTH	100+	Thousands of \$	
HSPA	1+	Hundreds of \$	Needs spectrum
LTE	10+	Hundreds of \$ <sup>2</sup>	Needs spectrum

This table shows the advantages of radio-based broadband provision – adequate speed and cost. The available radio-based speeds are more than adequate for most applications.

Thus in practice BTC expects that the markets for broadband access and cellular mobile services will merge together, and will be an increasingly important use of radio spectrum, in line with ITU forecasts.

The advent of broadband two-way satellite services using cheap two-way terminals for business or home use means that increasing use of satellite services can also be expected, primarily in the K and Ka bands.

URCA should seek to be responsive to demand for new spectrum, and indeed proposes to include a review of industry and consumer demand, this question has already been answered in the affirmative. However, and as suggested above, BTC recommends that URCA should ensure notice and opportunity, including opportunity to oppose demands from single, specific industry actors for particular kinds of spectrum. BTC observes that this form of request constitutes demand as defined by URCA and should be channelled into a public proceeding on the band in question to ensure proper consideration of public interest factors, including proper public resource use, suitability, sustainability etc. (as listed by URCA under additional factors to be considered). Whatever information is finally defined as relevant and appropriate, and therefore required by URCA under *3.2: Information that must be provided and Information that may be provided*, should be sought as proposals from all participants in an open proceeding rather than allowing for sole-operator proposals on how to structure use of a band. BTC notes that the Communications Act provides an open and transparent mandate in this context.

<sup>1</sup> Depends critically on distance from the exchange or backhaul node, and quality of copper plant

<sup>2</sup> The level of network capital expense required for radio access varies greatly with the traffic per subscriber.

### 2.3 URCA Question #3

Do you agree with URCA's proposal that licensees should only be awarded an optimum amount of spectrum licences for services to be provided in a territory? If you disagree, please provide a framework for URCA to consider when determining the optimum amount of spectrum bandwidth to award each potential licensee.

#### **BTC Answer to URCA Question #3:**

With respect to this question, BTC suggests that as posed by URCA, the language used is open to excessive interpretation and lacks sufficient precision to answer in the abstract, requiring instead a case-specific response. As an initial matter, BTC notes that URCA's proposal appears to correspond with the considerations the regulator has laid out in factor (iii) of URCA's proposed test for industry-initiated requests (dealt with in Question #2, above) and should be read in this context.. BTC therefore notes that while, as a general matter, the award of only "an optimum amount of spectrum licences for services to be provided in a territory" is in accordance with the aims of the Communications Act and sector policy in that economic inefficiency with regard to a scarce public resource is to be avoided, a substantial amount of further specification is required to arrive at an appropriate set of spectrum assignments. BTC fully agrees that assignments so excessive as to constitute a waste of resources or impede in-band competition should be avoided, yet submits that basic prudence and foresight also require that URCA avoid creating administrative barriers and limitations in this regard. Of particular concern in this context are the rapid progression of technologies which have tended to require greater bandwidth as faster transmission speeds become required and the converging markets for formerly distinct platforms and services that call for the least-necessary regulatory designation as to the kinds of services to be provided and the manner in which they are provided. See BTC's response to Question 1 in this context. In order to more specifically answer URCA's inquiry, BTC respectfully requests URCA to take account of the information and suggestions below:

- BTC recommends that URCA conduct market studies in order to ascertain the industry demand (reflecting in turn consumer demand) for spectrum in a band to be considered for release, and how many operators can sustainably co-exist in that spectrum. This initial research, combined with a notice and comment industry proceeding should then direct subsequent determinations, including band configurations to be made available.
- BTC further suggests (as also stated in our response to Question #1) that URCA adopt an ex-ante technology and service neutrality policy, allowing industry demand to determine what the most economically efficient use of a band may be (and hence also how assignable blocks are to be structured). URCA's present approach of technology-but-not-service neutrality is liable to lead to administrative misjudgements as to the development of technology and demand for services, create additional burdens on regulator and industry and ultimately be inefficient, including with respect to spectrum use. BTC therefore suggests that in the present context "appropriate" assignable spectrum blocks should be determined with respect to industry demand for the services the public calls for and with an eye to creating and sustaining viable competition.
- BTC notes that URCA's National Spectrum Plan (the "Plan"), having laid out policy objectives which the present question appears to summarize (at Section 2.2 of the Spectrum Plan), has not fully laid out, in the Plan how it intends to assign standard spectrum. While the Plan suggests that standard spectrum can be acquired from the regulator by just making a claim, a method also used in other advanced economies such as Norway, it has not laid out how it intends to proceed where

demand exceeds supply. In the context of the Norwegian example, if the claim is not challenged (that is, there is no competition) then the requestor it is allocated the spectrum, else an auction is held. BTC therefore suggests that URCA establish, as it has for premium spectrum, a procedure to be used in such cases.

- BTC recommends that per-island licensing of bands for commercial use is in general not practical from an economic standpoint. In addition to the resulting diseconomies, it would demand coordination of spectrum allotment and assignment between islands and an additional overhead for URCA for no real benefit. BTC therefore suggests that for commercial use, national assignments or allotments are superior in that they are:
  - More efficient in the use of spectrum
  - co-existence management between islands is avoided
  - the cost-effectiveness of small markets which would result from an island-by-island approach would be poor.

Therefore BTC strongly recommends the use of nation-wide assignments or allotments where the envisaged service is commercial.

- BTC also suggests that URCA, in determining what constitutes an “optimum amount” of spectrum, consider the Universal Service Obligations (USOs) of BTC<sup>3</sup>. Given that BTC’s USOs require BTC to provide service to all requestors in settlements of 10 households or more, BTC must be in a position to ensure it has the resources, including spectrum resources to meet these obligations. BTC directs URCA’s attention to the fact that its USOs include, inter alia, the provision of basic telephony and narrowband internet services. While at present this mandate refers to a “narrowband” service delivered over a fixed infrastructure, the rapid evolution of mobile services and the migration of users onto the mobile network without fixed line connections will require BTC to provide new and faster services using more spectrum-intensive technologies. Hence BTC requires additional planning certainty as to the availability of spectrum for the present and future provision of services that include a USO component.

#### **BTC comments on specific bands:**

BTC’s biggest current spectrum issue with URCA is the en masse assignment of WiMAX frequencies to a competitor, SRG, who have been assigned the bands 2150-2162MHz and 2500-2690MHz. BTC considers that this assignment was anti-competitive and resulted in one operator having far more spectrum suitable for broadband wireless access than they could ever use efficiently. A frequency disaggregation of the said frequency band should be pursued, forthwith, by URCA to allow for other operators within the sector to have this preferred option and propagation advantage within the aforementioned spectrum band.

The 850 MHz band is very versatile, it is good for both area and indoor coverage. However, the 1900 MHz band is not so good for building penetration, and is only really useful if held in parallel with sufficient 850 MHz spectrum. Since The Bahamas is flat with low buildings and since the traffic generated in mobile networks is relatively low, upper bands above 2GHz are significantly less useful in The Bahamas for mobile services than in more dense countries like the UK or US. BTC trusts that URCA will consider such local considerations when designing packages of spectrum to ensure fair competition.

#### **2.4 URCA Question #4**

Do you agree that URCA should not award the entire capacity of a spectrum band to a single operator unless the applicant could prove an exception to best practices? If not,

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<sup>3</sup> See Comm. Act Para 119 (interim determinations).

please provide details to guide URCA in considering the award of an entire band to a single operator to the exclusion of others.

**BTC Answer to URCA Question #4:**

BTC agrees with URCA that there should not be awards of an entire band to a single operator with the limited exception of public safety and national security functions and/ or implications. It should also be noted that allocation of spectrum bands into licence blocks to be awarded should precede consideration of specific applications – hence the URCA scenario should not in practice occur.

BTC does not object to multiple operators per band, in fact BTC supports this so that competition may be established. BTC is concerned that the “first come first served” approach can run counter to URCA’s stated policy of encouraging competition. BTC would want to be convinced band by band of the arguments for premium and standard designations. Such designations automatically determine potential future competition in each band and for each service. As noted above, BTC does support the approach where spectrum is awarded to an applicant without competition unless there is an interest from a second applicant. In this case, if there is such multiple interests there is then a competition. As noted above, it is not clear if this is the regime URCA intends.

**BTC’s biggest current concern is the block allocation of WiMAX spectrum to the competitor SRG (see above). BTC would like to see this decision made by the URCA predecessor reversed. 190 MHz is far too much for one operator. The decision was made when WiMAX was new and evolving.**

URCA needs to develop its approach to suitable competitive structures. URCA should not simply mandate as many operators as possible. URCA needs to consider how many operators provide a good level of competition in each band/spectrum offer. It would in BTC’s view be wise if URCA provided high level leadership on this matter.

BTC prefers block allotments e.g. of fixed link bands. BTC is pleased to self-manage such allotments.

As discussed in BTC’s answer to Question 3, BTC considers that its Universal Service Obligations (USOs) mean BTC should have more spectrum so that the USOs may be efficiently delivered. BTC’s USOs include: provision of service on reasonable request at settlements of ten or more households, geographically averaged prices, pay phones at convenient locations, directories and directory enquiry service, etc.

## 2.5 URCA Question #5

Do you agree with URCA's proposal on the information to be provided when requesting a new spectrum band to be opened? If not, please provide amendments or a new proposal for consideration.

### **BTC Answer to URCA Question #5:**

BTC recommends that URCA should first decide what the aim of gathering the data is, then decide to what use the data is to be put, and finally conclude the data needed. There is also an implication that the data provided will be made public through the consultation. BTC recommends that URCA continues to offer full confidentiality of information which providers state is confidential.

### **If URCA is adopting technology and service neutrality then URCA is proposing to collect too much information.**

BTC recommends that URCA should adopt a 2-stage proceeding, the first to determine need/demand, proposed services/configuration into licensable blocks, followed by a separate proceeding to award licences. Please see also BTC's answer to URCA Question #6.

BTC expects URCA to protect BTC's current spectrum allocations and BTC thus expects that URCA will use suitable engineering analysis when releasing and allocating new bands and licences.

### **Technology and Service Neutrality**

BTC hopes that the phrase "envisages full liberalisation of the electronic communications sector" implies that URCA will apply service and technology neutrality in spectrum licensing but that it will not adopt a laissez faire approach. Service and technology neutrality requires conscious thought and due engineering effort in band and block design. It is not laissez faire spectrum management. Neutrality is a controlled state.

BTC urges URCA to consider how technology and service neutrality can best be implemented. BTC is in favour of an approach that makes use of spectrum masks to control out of band and out of block emissions. The URCA consultation document omits the necessary words such as 'using appropriate emission masks or other power flux density constraints that enable neutrality'.

Whilst BTC is concerned about the potential inefficiency of fallow guard bands, it would be happy to manage its own guard bands to fit within a block edge mask band structure and would be happy to coordinate with other operators to ensure efficient spectrum use.

Using such an approach, URCA would have "carrot and stick" The carrot is that responsible spectrum users such as BTC would manage the bands they occupy themselves as responsible spectrum user, so as to remain within the limits of the defined spectrum mask. The stick is that URCA can still close down transmitters which are radiating outside the "spectrum mask".

Thus spectrum licensees should be assumed to be responsible users and allowed to decide which technologies to use and which services to provide, provided they conform to technical limitations on interference to other spectrum users. BTC is aware that technology and service neutrality places significant workload on URCA to engineer suitable band structures. It may be that harmonising with others who have already done the necessary research such as the CEPT may be useful in reducing the neutrality burden.

It is BTC's view that there are significant inconsistencies in the principles of technology and service neutrality in the URCA consultation document. On the one hand URCA espouses technology neutrality in para 1.2. On the other hand this principle does not seem to be reflected in the majority of the remainder of the consultation document. BTC would be happy to discuss these concepts further with URCA.

### **Spectrum Trading**

Spectrum trading is being adopted in many countries. BTC urges URCA to work with the Ministry to accommodating spectrum trading so that spectrum licence holders will be free to transfer their licences to others for a consideration. BTC urges URCA to tackle necessary issues surrounding clarification of property rights to enable trading.

### **URCA Information Requirements**

URCA has promised confidentiality on commercially sensitive matters. BTC is concerned that as a result of the need to disclose such detail on future plans, its secrets may pass to third parties. BTC would emphasise that confidentiality is vital and it would seek URCA's assurances that the procedures in place at URCA are capable of managing commercially sensitive material.

With regard to Section 3.2 "Information that must be provided", BTC would prefer a technology and service neutral approach where possible (or at most a broad statement of service category to maintain consistency with ITU Region 2).

With regard to Section 3.3 "Additional Information that may be provided", BTC is of the view that this indicates that URCA may intend to "micro-manage" spectrum users. BTC queries why the proposed degree of detail would be useful in a decision to open a spectrum band. Surely potential band users need simply show economic or social benefit to The Bahamas and this can be done without setting out the precise network design and station locations.



## 2.6 URCA Question #6

Do you agree with URCA's proposal on guidelines on how to configure and open a new spectrum band and award licences? If not, please provide amendments or a new proposal for consideration.

### **BTC Answer to URCA Question #6:**

BTC respectfully disagrees with a number of specific issues raised by URCA's proposed guidelines including particularly the timelines proposed, the union of configuration and award process as well as a number of related matters touched on in response to earlier questions. BTC restates that it recommends for URCA to:

- Adopt service and technology neutrality. BTC recommends that URCA consider the use of "spectrum masks" as the way to allow technology neutrality whilst at the same time controlling harmful interference between spectrum users.
- Ensure competitive market structures whilst limiting competition to sustainable levels
- Provide for operators to use spectrum in efficient ways (for example but not limited to allowing operators to have sufficient spectrum to offer not only current but also next-generation broadband services).
- Provide for spectrum trading as URCA is authorized to do, so to allow for additional efficiencies and the avoidance of under-utilized spectrum
- Allow enough time for development and implementation of the National Spectrum Plan and consultation on key elements of it.

BTC is pleased to adopt any technology which would be beneficial and economic to deploy in The Bahamas, which normally would be market-ready technologies developed in larger markets first. BTC welcomes the recognition enshrined in the Communications Act that proper account should be taken of the potential impact of new spectrum uses on existing investments. Generally BTC expects that technologies which are best to deploy in The Bahamas will have been developed elsewhere and will be targeted mainly at large markets such as North America, Europe or Asia, where they will achieve economies of scale from which The Bahamas will benefit.

In BTC's opinion a single 30 day consulting period is not long enough if new bands and their configuration to be usable to particular standards and services are to be discussed and determined. Normally such decisions proceed in several stages, from assessment of demand, through discussion of alternative bands to a specific proposal to release a particular band along with a configuration of such band into proposed licensable blocks. Determinations on the award of actual licensed blocks are normally handled in a separate, subsequent proceeding. Often some element of re-farming is needed, which of course requires additional time to achieve. In other countries these processes have often required several years to achieve.

The proposal as it now stands implies that URCA would decide one day to have a look at a band, issue a request for interested parties to express interest, wait 30 days, then make a decision under which operators will be making investments of millions of dollars. This proposed timeline is too aggressive for such important decisions. The process must be part of a several year plan with initial announcements, industry consultation, amendments, followed by Expressions of Interest, etc.

BTC also notes that for bands in which international coordination or harmonisation is needed, this process can take five years or more. As now stated, the URCA proposed



procedure presumes that a band that is currently unallocated is not in need of international agreement. This implies a harmonised band like 1800MHz. URCA, however, does not acknowledge such international obligations in the Consultation document. In other words, URCA is not free to act alone and its proposed rules should recognize that. We note in this context that while the Act makes provision for vacating and refarming spectrum, URCA does not appear to consider that its rules would also have to encompass such situations.

BTC also notes that, as has been touched upon previously, URCA needs to build in sufficient time for consultation and consideration of comments received at each step of the way. We note in this context that for example the first FCC proceeding to seek comments and suggest a proposed configuration for part of the 700MHz band took nearly one year, not counting the separate and later licensing processes.

Finally, we note that URCA appears to have pre-judged the matter in regard to the 700 MHz band, having put into operations rules that are merely proposed, yet presenting a fully configured band and placing potentially interested parties into a situation of having to play by excessively restricted, incomplete and hurried rules in order to avoid losing out a chance at obtaining space in this band.

## 2.7 URCA Question #7

Do you agree with URCA's proposal to split the 700 MHz band into a Lower band and an Upper band as discussed? If not, please state reasons why the band should not be divided and offer other suggestions to structure the spectrum band.

### **BTC Answer to URCA Question #7**

BTC agrees that the 700 MHz band is suitable for many commercial applications and the band has been made available to operators in the U.S. and that making the 700 MHz band available will provide operators greater certainty in planning services using this band. However, it disagrees with the band plan as it now stands as, particularly since reasons given by URCA are neither salient nor complete.

URCA cites the United States FCC for guidance on its procedure, including configuration of the 700 MHz band, ignoring a number of factors that were specific to the FCC decisions and the time they were made but which do not apply to the Bahamas, thus misreading what it takes to be a "good practice." While the availability of equipment etc. may argue for conforming Bahamian band uses to those in large neighbouring markets (so long as local demand studies confirm this to be wise), the FCC 700 MHz proceedings are fundamentally distinguishable from the Bahamian situation and approach. As an initial matter, what in the U.S. case was a case of digital dividend re-farming was handled through extended comment, configuration and award processed that ultimately led to competitive, service-and-technology neutral licences in a number of U.S. local markets, with licensees including a whole range of mobile broadband providers, whereas URCA is proposing a more limited and specific use of this band.

Among the mis-readings made by URCA are included for instance, the U.S. distinctions drawn and the separate re-farming, configuration and award processes for the "upper" versus the "lower" 700 MHz band had both U.S. statutory and practical (density of occupancy by broadcaster) reasons that are not applicable to the Bahamas. There is nothing in the U.S. "precedent" that dictates a split of this band. While keeping spectrum in reserve may be good policy insofar as it reflects long-range spectrum planning, is cognizant of demand structures etc., URCA has failed to produce appropriate reasons for replicating this arbitrary distinction. As noted earlier, market research and input from the industry on how much of this band should initially be allocated need to provide an empirical and replicable basis for a determination in this matter.

Furthermore, and with respect to how URCA proposes to divide this band, the regulator does not appear to have followed its own proposed rules and factors, presenting a complete configuration (and hence a maximum number of licences) also without a statement of reasons and presenting what factors it considered other than an outdated FCC proceeding. A review of the FCC decisions, the earlier of which dates back nearly a decade, clearly sets out that the band plan, including unpaired spectrum and paired blocks in the existing 6 MHz size did not even then represent a considered expert judgement but merely reflect the lowest common denominator between industry commenters in that decision. The FCC specifically states that since no commenter specifically requested other than a 6 MHz block unit, it would maintain these – hardly a good basis for URCA to do so ten years later. In terms of the block sizes at stake, that same 2001 Report and Order notes that at the time all commenters stated that the small licensable blocks adopted would be sufficient, including for the then-cutting edge "3G" services. As BTC has repeatedly noted, that is no longer the case and it seems certain the FCC would not, in late 2010 decide on a similar block structure again.

However, the 700 MHz band can be used for various services including fixed, mobile and broadcasting. BTC urges URCA to adopt a technology and service neutral approach in assigning the spectrum.

BTC does not agree with the band plan proposed by URCA (see BTC's Expression of Interest in 700 MHz bands below).

BTC recommends that, since demand for broadband mobile access is growing rapidly, the whole of the 700 MHz bands should be made available by URCA for use in the near future.

## **2.8 URCA Question #8**

Do you agree with URCA's proposal that the 700 MHz Upper Band should be reserved for future use? If not, please give reasons, providing details for the band to be used otherwise at this time.

### **BTC Answer to URCA Question #8**

BTC recommends that, since demand for broadband mobile access is growing rapidly, the whole of the 700 MHz bands should be made available by URCA for use in the near future.

BTC has a strong interest in the 700 MHz band. And BTC believes that URCA should expect that the main use will be for broadband access and mobile services.

The release of the Upper Band should be based on demand. BTC understands that a demand analysis has not yet been undertaken by URCA; BTC recommends that such a study should be undertaken now.

If such a study shows that demand exceeds the spectrum available in the Lower Band, then the Upper Band should be made available together with the Lower Band.

## 2.9 URCA Question #9

Do you agree with the proposal to maintain a 6 MHz RF channel structure in the 700 MHz spectrum Band? Do you further agree with the proposal to split one or more of the 6 MHz blocks into smaller sub-blocks to offers licences with smaller bandwidths? If not, please propose another structure for consideration.

### **BTC Answer to URCA Question #9**

BTC observes that URCA has pre-judged both service and technology in suggesting uses for 700MHz. This is not in line with URCA's stated policy of service and technology neutrality. This pre-judgement, suggesting also the number of operators and the application suggests an administrative assignment by URCA on a station-by-station basis or allotment of small blocks. This would not in BTC's view be a valid allocation method for such valuable spectrum.

BTC does not agree with the proposal as it represents an inefficient and outdated band architecture. Further, BTC recommends that all the proposed frequencies should be paired for Frequency Division Duplex (FDD) use, with unpaired spectrum minimized or eliminated from the band plan as it has little or no commercial application. BTC also disagrees with the proposed split into smaller sub-blocks.

As in regard to URCA's split of the 700 MHz band into two parts (Question #7), BTC has noted that URCA has failed to show even a minimally salient rationale for its proposed band architecture.

In the USA the FCC issued 2x6 MHz blocks in 2003. Later (in 2007) the upper 700 MHz auctions also included 2x11MHz and 2x5MHz. BTC believes that URCA may be acting on old information in presenting 6MHz as "standard". FCC's permissible uses in the 700 MHz band are relatively service-neutral and hence block sizes are not fixed.

A 3G W-CDMA channel needs 4.8MHz of channel bandwidth. In 6MHz channels/blocks this would leave significant spectrum wasted.

BTC has concerns that 6MHz block sizes at 700MHz may be both inefficient and out of date with world trends. Typically 5MHz channels are being planned with block sizes for LTE of 20MHz being planned for such that 5MHz channels can be concatenated as technology moves to give higher bit rates.

Having described why the FCC "precedent" is inappropriate, BTC notes that the proposed band architecture is at best inefficient. Further, BTC has noted that it believes URCA should adopt a service and technology-neutral approach and avoid "micro-planning" without (apparently) an empirical basis in market studies and industry demand. Having noted (including in its Expression of Interest) that the proposed licensable blocks are insufficient for current and near-future broadband technologies like LTE, the proposed division into even smaller spectrum blocks likewise cannot be commended. Further, absent a proper market study and a determination as to what number of licenses may lead to or maintain sustainable competition, comments in the abstract may not be helpful. BTC reiterates that the number of licences should be broad enough to allow competition in appropriate markets/sub-markets (in view of existing actors, respective market shares, the overall spectrum allocation situation, etc) and be sized to allow for efficient operation of services demanded by the market. Finally, should URCA be concerned about letting large blocks of the 700 MHz spectrum, BTC suggests that it adopt a policy of allowing spectrum trading, thus making it possible for market-mechanisms to sub-divide spectrum should this become necessary and appropriate. In sum, BTC suggests that URCA re-open this proceeding after

receiving Expressions of Interest and on the basis of this industry consultation consider a better architecture. Kindly see BTC's expression of interest in this band in the following.

BTC suggests that URCA reviews its information and forms a long term plan that accommodates future fixed and mobile technologies (indeed accommodates technology and service neutrality).

BTC recommends that URCA should conduct a proper review and consider the 700MHz band together with other bands that are suitable for commercial services including the premium bands, 2.5GHz and 3.5GHz; and taking into account new players entering the mobile market after 2011.

BTC suggests that further study of the allocation approach is needed for the 700MHz band.

## **2.10 URCA Question #10**

Do you agree with URCA's proposed interim pricing for the 700 MHz band? If not, please state reasons why and offer other suggestions.

### **BTC Answer to URCA Question #10**

BTC objects to the URCA proposed interim pricing because the proposals are as yet undefined. It is unfair to be asked to comment when the interim pricing has not been made known.

BTC recommends that this question should be posed again once URCA's proposed fee schedule has been developed and is ready for public consultation, in order to avoid prejudicing the public interest in the efficient use of spectrum resources. Whatever fee schedule is proposed should encourage economic efficiency; typically a legacy fee schedule for administrative pricing under does not encourage economic efficiency.

Spectrum fee benchmarking is a reasonable approach, but account should be taken of the relatively modest opportunity for operators to recoup investments in a country with a small and widely-distributed population.



### **3 BTC Responses which do not align directly to URCA questions**

#### **Re URCA Para 1.5:**

BTC Response: BTC considers that the current URCA spectrum fee schedule is acceptable.

#### **Re URCA Para 1.6:**

BTC Response: BTC welcomes the opportunity to take part in any consultation on an important matter such as this and is pleased that URCA will consult on all draft regulations.

#### **Re URCA Para 1.10:**

BTC Response: BTC is pleased for its response to this consultation to be published.

## **4 Expressions of Interest for the 700 MHz lower band**

Para. 5.1 URCA specifically invites Expressions of Interest in the 700 MHz Lower Band according to the band plan found in the table below.

### **4.1 BTC's Expression of Interest in 700 MHz bands**

BTC has moderate interest to obtain frequencies in the 700 MHz band (698 – 806 MHz) for the deployment of next generation wireless services. As the provider of mobile services in The Bahamas, the evolution of our network into 4G/LTE is necessary to provide consumers faster speeds to support a wider range of multimedia services, particularly web browsing and video applications. BTC believes the use of 700 MHz should not be limited to fixed broadband services and URCA should adopt technology and service neutrality.

Based on technical trials conducted overseas as well as industry consensus, contiguous spectrum in blocks of 2 x 20 MHz are needed to support download speeds of 30 Mb/s or more. Recently in May 2010, the auction of 4G spectrum (in the 2.5 GHz band) in Denmark resulted in mobile operators such as TDC, Telenor and Telia obtaining 2 x 20 MHz paired spectrum. In the U.S., Verizon was reportedly unable to achieve higher download speeds due to the lack of a larger block of contiguous spectrum.

BTC would require, in all probability, paired frequencies to deploy an FDD mobile system covering the entire nation. To achieve the maximum potential of the 4G technologies, BTC requires at least 2 x 20 MHz spectrum block. While it is technically possible to deploy LTE with 2 x 12 MHz, as in the case of operators in the U.S., that would restrict our ability to offer the full benefits of 4G. BTC is of the view that equipment vendors should be consulted on the feasibility to adopt a different band plan from FCC's current band plan. To achieve higher spectral efficiency, BTC is of the view that block sizes in multiple of 5 MHz should be adopted in line with international norms for broadband systems such as 3G, HSPA, WiMAX and 4G/LTE. In addition, the split of the band into Lower and Upper portions should be removed to allow for operators to acquire contiguous blocks.

However, based on URCA's currently proposed 6 MHz band plan, BTC's preferred spectrum blocks are:

- 746 – 770 MHz paired with 776 – 800 MHz in the Upper Band
- If only the Lower Band is available, BTC would require three 6MHz paired blocks: 698 – 716 MHz paired with 728 – 746 MHz.

BTC's service deployment depends on the availability of equipment which is linked to the progress of other operators internationally. Verizon in the U.S. and NTT in Japan have indicated that their LTE services would be available by end of 2010, and further operators have indicated their plans to launch commercial LTE services in 2011. Forecasts are now pointing to mass adoption of LTE by 2015 (e.g., Portio Research forecasts worldwide LTE subscriber base to pass the 200 million mark by end-2015). BTC believes such a forecast could well prove conservative.

BTC is assured that the probability of trials could be pursued shortly after the spectrum has been awarded and it will provide coverage in New Providence and the other highly populated areas before expanding the coverage to rural areas. LTE services should be commercially available much earlier than 2015 to ensure that The Bahamas is in step with other countries in offering high-speed mobile services, and can support roamers in the tourism and finance sectors as soon as they start arriving in any numbers.

## **5 Proposal to open the 11, 12 & 40 GHz bands**

BTC has minimal interest at present in the 11 and 12 GHz bands, however these bands can be used primarily for backhaul links. While BTC has extensive fibre networks, it still needs microwave links for middle-mile backhaul from base stations. With increasing use of mobile and wireless broadband services, greater backhaul capacity will be needed.

The 11 GHz, 12 GHz and 40 GHz bands can be used for point-to-point or point-to-multipoint services including base station backhaul purposes. However, these services will not require nationwide coverage and frequencies can be re-used by another operator in a different location. BTC is therefore of the view that these three bands should be made available on a "first come, first served" basis. For a block assignment on a nationwide basis, there should be a "use it or lose it" clause.

The Region 2 primary allocation for the 11 and 12 GHz bands is FIXED, FIXED-SATELLITE, MOBILE except aeronautical mobile. Therefore use for backhaul services is consistent with ITU. BTC observes that 11.7 to 12.7 GHz are used for Ku-band downlinks in Region 2, so URCA will have international obligations and there will be a need for co-ordination.

BTC has little interest in the 40 GHz band. Whilst BTC understands it is of considerable interest to broadcasters for short-haul ENG links, BTC itself does not anticipate requiring much use of this band. In any case, short ranges and directionality mean the band could be re-used extensively. Market conditions are very different in the SHF bands. There is a lot of spectrum – far more than the Bahamas could ever need. So the first come first served route (with some sort of contribution to economic and social welfare) is ideal.

## 6 Summary of Invitation for Proposals to Open New Bands & Expressions of Interest

URCA Paragraph	BTC Response to Consultation Document
<b>Expression of Interest #1</b> URCA invites Expressions of Interest from the industry on the use of the 700 MHz spectrum band for broadband fixed services.	See section 4.1 above.
<b>Proposals to open new spectrum bands</b>	
URCA invites the industry and the sector to offer proposals to open the 11 GHz spectrum band for back haul services.	BTC is interested to open this band
URCA invites the industry and the sector to offer proposals to open the 12 GHz spectrum band for various services in accordance with the National Spectrum Plan.	BTC is interested to open this band
URCA invites the industry and the sector to offer proposals to open the 40 GHz spectrum band for various services in accordance with the National Spectrum Plan.	BTC is not interested to open this band
URCA invites the industry and the sector to offer proposals to open any other new spectrum band for services in accordance with the National Spectrum Plan.	BTC is not interested in opening any other bands at this time

## 7 Reservation of Rights

BTC has addressed the issues but reserves the right to comment at any time on all issues and states categorically that the decision not to respond to any issue raised in this Consultation in whole or in part does not necessarily represent agreement in whole or in part with URCA's position, nor does any position taken by BTC in this consultation mean a waiver of any of BTC's rights in any way. BTC expressly reserves all its rights.