



Draft Policy for New Spectrum Bands – 700 MHz, 11 GHz, 12 GHz and 42 GHz

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1. Introduction

This document contains URCA's proposals for the opening of the 700 MHz, 11 GHz, 12 GHz and 42 GHz spectrum bands, and details of the process taken by URCA in arriving at these proposals.

1.1 URCA's Consultation Document on Opening of New Spectrum Bands

The Utilities Regulation and Competition Authority (URCA) commenced public consultation on the "Opening of New Spectrum Bands – URCA's Consultation Document ECS 23/2010" (the "Consultation Document") on 1 October 2010.

The Consultation Document contained the following:

1. Regulatory measures that URCA proposed to implement in respect of spectrum bands that have no existing frequency assignment, which were the subject of consultation questions 1 through 6.
2. Specific proposals for the technical treatment of the 700 MHz band, which were the subject of consultation questions 7 through 10.
3. A request for Expressions of Interest in the following spectrum bands:
 - a. 700 MHz;
 - b. 11 GHz;
 - c. 12 GHz; and,
 - d. 40 GHz.

Questions 1 through 6 of the Consultation Document have been addressed in URCA's Statement of Results – ECS 10/2011 and the regulatory measures issued in URCA's Guidelines on the Opening of New Radio Spectrum Bands – ECS 11/2011 (the "Guidelines"), both published on 27 May 2011. This current document contains URCA's responses to the comments received on the opening of the 700 MHz band (questions 7 through 10 of the Consultation Document, ECS 23/2010), URCA's assessment of the Expressions of Interest received in relation to the specific bands addressed in the Consultation Document, and Draft Policies in respect of the bands that URCA proposes to open, based on the responses received.

URCA thanks all respondents for their participation in this public consultation process. Six (6) companies, which are listed below, responded to the Consultation Document:

- ❖ The Bahamas Telecommunications Company Ltd. (BTC);
- ❖ Peace Holdings Co. Ltd. (Peace Holdings);
- ❖ Hi-Technology Communications (Hi-Tech);
- ❖ Cable Bahamas Ltd. and Caribbean Crossing Ltd. (CBL, Jointly);
- ❖ AMP'd Wireless Ltd., and
- ❖ Systems Resource Group Limited (SRG). It should be noted that SRG has since (May 2011) been acquired by CBL.

The full text of each response can be found at www.urbahamas.bs in the Publications section.

1.2 Process for Opening New Spectrum Bands

The Guidelines (ECS 11/2011) describe the procedures URCA will follow to allocate standard spectrum. Interested persons will note that the Guidelines envisage that URCA will follow a seven (7) step process for opening new spectrum bands.

Step 1: Submission of Expressions of Interest

Step 2: Assessment of Expressions of Interest

Step 3: URCA to prepare draft policy for that band

Step 4: Consultation on the draft policy

Step 5: Finalising the policy

Step 6: Implementation of the policy

Step 7: Licence award

An Invitation for Expressions of Interest in specific spectrum bands having been issued in document ECS 23/2010 (Step 1), Section 3 of this document summarises URCA's assessment of the Expressions of Interest received (Step 2), and Section 4 contains URCA's Draft Policy for each band in cases where URCA considers that there is justification for its opening of that band (Step 3).

URCA is now inviting public comment on the Draft Policies for each band contained in Section 3, as envisaged by Step 4 of the process outlined in the Guidelines.

1.3 How to Respond

URCA hereby invites and welcomes comments and submissions from members of the public, licensees and other interested parties on the matters contained in Section 3 of this Consultation document.

Persons may deliver their written submissions or comments on this Consultation Document to the Director of Policy and Regulation of URCA either:

- by hand, to URCA's office at UBS Annex Building, East Bay Street, Nassau, Bahamas;
- by mail to P.O. Box N-4860, Nassau, Bahamas; or
- by fax, to 242 393 0237; or
- by email, to **info@urcabahamas.bs**

All submissions to this consultation should be submitted by 5pm on 20 February 2012.

After the consultation closes, all responses will be published online on the URCA website, with the exception of any responses that are clearly marked (in full or part) as being private and confidential. Explanations should be provided to justify any information that is submitted on a confidential basis, but URCA shall have the sole discretion to determine whether to publish any contribution. URCA will carefully consider all submissions received, and publish its Final Policy for each of the relevant bands as envisaged by Step 5 of the process set out in the Guidelines.

2. Responses to Consultation Document

2.1 Consultation on the 700 MHz Band

In this section, URCA provides its results on consultation questions 7 through 10 of the Consultation Document ECS 23/2010, which related to URCA's proposals for the opening of the 700 MHz band.

2.1.1 Background to the 700 MHz Band.

Internationally, the 700 MHz band comprises the frequencies in the range 698 MHz to 806 MHz. The Bahamas National Spectrum Plan currently allocates this band to Broadcasting.

Renewed popularity in licensing of the 700 MHz spectrum band arises out of the reallocation, in Region 2, of Ultra High Frequency (UHF) television channels 52 – 69, i.e., 698MHz to 806 MHz to Fixed and Mobile services in addition to the existing allocation to Broadcasting Services. This occurred in line with the introduction of Digital Television Broadcasting Services which enabled television broadcasting to be accomplished with a far lower quantum of spectrum than previously required, making significant spectrum, with propagation and power characteristics conducive to serving customers over a large area, available for assignment to fixed and mobile services.

Television broadcasting in The Bahamas has not seen the development of a significant free-to-air market and today there exists only a single free-to-air channel broadcast by the Broadcasting Corporation of The Bahamas (ZNS), which is delivered using a Very High Frequency (VHF) television channel (Channel 13). The 700 MHz band in The Bahamas is therefore entirely unused and available for licensing by URCA for fixed and mobile systems.

2.1.2 Responses to Consultation Questions on the 700 MHz Band

In the Consultation Document, URCA asked the following questions in relation to the opening of the 700 MHz band, and received the responses set out below:

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 suggestions to structure the spectrum band.

BTC

BTC agreed that the 700 MHz band is suitable for many commercial applications and the band has been made available to operators in the USA and that making the 700 MHz band available will provide operators greater certainty in planning services using this band. However, it disagreed with the band plan proposed by URCA.

BTC noted that URCA cites the USA example, and the actions by the Federal Communications Commission (FCC) for guidance on its procedure, including configuration of the 700 MHz band, but felt that URCA had ignored 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, and BTC felt that URCA was "misreading" what URCA considered to be a "good practice".

BTC drew reference to the USA's separate re-farming, configuration and award processes for the "upper" versus the "lower" 700 MHz band, which had both USA statutory and practical (density and occupancy by broadcasters) reasons that are not applicable to The Bahamas. BTC argued that there is nothing in the USA precedent that dictates a split of this band in The Bahamas.

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

CBL

CBL felt that URCA's proposal was reasonable and that alignment with the North American markets should ensure the availability of equipment.

Hi-Tech

Hi-Tech agreed with URCA to split the 700 MHz band into lower and upper bands as proposed.

SRG

SRG consolidated its answers to questions 7 and 8 with its answer to question 9.

In summary, SRG disagreed with URCA's proposal to follow the USA band plan. SRG noted that when making available the 700 MHz spectrum in the United States, the FCC was constrained by the historical use of the band and the analogue TV 6 MHz channels that became available. SRG

noted that URCA has no such constraint in making 700 MHz available in The Bahamas. SRG argued that the groundswell of LTE (Long Term Evolution technology) adoption suggests that much would be gained by The Bahamas allocating the spectrum in a way that optimises adoption of technology that is designed to meet today's demand for mobile broadband access.

Peace Holdings

Peace Holding did not agree with the splitting up of the 700 MHz band as indicated by URCA in its document and argued that URCA should consider opening up the whole band for reasons such as: increasing the number of operators; making it possible to provide services that might be developed in future for the whole of the band; and to provide increased flexibility.

URCA's Comments and Proposed Way Forward

URCA notes the concerns expressed regarding its adoption of the FCC approach in its entirety, to the planning of the 700 MHz band.

URCA agrees that many of the considerations which informed the FCC band plan are not applicable to The Bahamas, however URCA believes that there are cogent reasons for adopting a plan that is compatible with the USA. In particular, URCA notes the following:

- The Bahamas' close proximity to the USA makes it relatively easy for operators and persons based in The Bahamas to purchase equipment designed for the USA market. Compatibility of spectrum assignments helps ensure that this is possible.
- The Bahamas accommodates several million tourists each year, of which a high proportion is from the USA. The benefit of compatibility between USA and Bahamian mobile networks (particularly in relation to roaming) argues in favour of synchronisation, at least in relation to mobile services provided in the 700 MHz band.
- Notwithstanding comments to the contrary made by respondents to the consultation document (and partially as a result of the time elapsed since those responses were submitted), to date the USA has the most commercially successful implementations of LTE technology in mobile networks and the majority of LTE subscribers in the world. Thus it is likely that the purchase of equipment manufactured for the USA market would provide valuable savings for Bahamian licensees and customers.

URCA therefore feels that it should, insofar as possible, seek to maintain a high level of compatibility with the FCC band plan to enable operators and customers to take advantage of the benefits of compatibility. URCA appreciates, however, that the FCC band plan contains a number of inefficiencies which are a result of specific characteristics of the USA market.

URCA has therefore considered alternative band plans for the 700 MHz spectrum including ones proposed for Europe, Central and South America, Asia Pacific and Japan, and other regional countries. URCA has also reviewed discussion documents issued by industry bodies (such as the 3rd Generation Partnership Project (3GPP) and 4G Americas) regarding the preferred spectrum blocks for the various technologies operating in the band.

In this regard, URCA has been most encouraged by plans put forward regionally (such as by the Eastern Caribbean Telecommunications Authority (ECTEL)¹ and the Telecommunications Authority of Trinidad and Tobago (TATT)²) which are characterised by simplicity, efficiency as well as a high level of compatibility with the North American plans.

Having taken cognisance of the consultation responses and considered the alternative band plans employed in various jurisdictions, URCA's preferred way forward is to split the entire 700 MHz band into 18 channels of 6MHz each, further grouped into blocks of either 6 MHz (unpaired) or 12 MHz (paired), similar to the approach proposed by ECTEL. This enables URCA to closely align the lower part of the 700 MHz band with the FCC band plan, while maximising the amount of the band that can be utilised. URCA will no longer pursue the split Upper/Lower band configuration.

URCA has also sought, consistent with comments received, to maximise pairing of spectrum for Frequency Division Duplex (FDD) systems, although URCA has not sought to eliminate the option for operators to obtain unpaired spectrum which may be used for Time Division Duplex (TDD) systems. It should be noted that URCA will not prohibit operators from applying for multiple unpaired bands and, if successful, using them in a paired configuration.

URCA's research has highlighted the desirability of making possible spectrum allocations of up to 20 MHz to ensure that operators have adequate spectrum to allow for higher speeds and network usage. However, URCA notes the relatively small population of The Bahamas, and the likelihood that certain operators may wish to obtain smaller allocations. URCA therefore proposes to allow operators to obtain up to a total of two (2) blocks of spectrum thereby allowing for allocations of 6 MHz, 12 MHz or 24 MHz. URCA notes that these allocations would allow for appropriate guard bands to be established by operators within their assignments.

URCA proposes, save for a few reservations discussed later in this document, to open the entire 700 MHz band for licensing as soon as possible. URCA's detailed proposals for the band are set out in Section 4.3 below.

¹ See <http://www.ectel.int/>.

² See www.tatt.org.tt

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

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

CBL

CBL argued that there is no reason to reserve the Upper band for future use. CBL believed that the Upper Band should be subject to the process of opening new spectrum bands and subject to the Expression of Interest contained in this Consultation. CBL can only see the utility of reserving the Upper Band if URCA believes there is some national interest factor (e.g., public safety) that may warrant an allocation in the Upper Band. If this is the case, CBL proposes that URCA should reserve the Upper Band for a stipulated period, after which, if it is not used, then it would be open for allocation to operators.

Hi-Tech

Hi-Tech did not agree with URCA's proposal that the 700 MHz Upper Band be reserved for future use. Hi-Tech argued that various services could be provided using this band.

SRG

SRG consolidated its answers to question 7 and 8 with its answer to question 9. SRG does not agree with the proposed reservation and suggests 716-728 MHz and 768-777 MHz as reserved spectrum in its preferred band plan.

Peace Holdings

Peace Holding did not agree for the reasons expressed in answer to Question #7 above. Peace Holdings argued that the whole band should be opened and only those portions of the band required for special services such as police, and government services should be reserved.

URCA's Comments and Proposed Way Forward

URCA notes the concerns expressed by respondents and feels that it may be appropriate to make most of the band available for commercial use, save for two reservations.

URCA proposes to make appropriate reservations for Public Health and Safety within the band, consistent with the USA and Canadian band plans.

URCA is also mindful of the development of LTE as the predominant 4th Generation mobile technology and notes BTC's indications that it would be seeking an allocation of 700 MHz spectrum which it will use to implement an LTE network. URCA is conscious that BTC enjoys a monopoly in the provision of mobile services and will continue to do so until, at the earliest, 2014; however, URCA is minded to ensure that any new entrant, should it wish to do so, would be able to employ LTE technology in the 700 MHz band on an equivalent basis to any grant that is made to BTC. URCA therefore also proposes to earmark a portion of the 700 MHz band for licensing to operators authorised to provide mobile services. Section 114 of the Comms Act (as amended by the Communications Amendment Act 2011) expressly discusses the possibility of two new mobile operators in addition to BTC, and based on experience in other regional jurisdictions and international jurisdictions of similar size, URCA considers that a total of three mobile operators is a reasonable planning assumption for the purposes of this band. URCA therefore proposes to earmark a total of 72 MHz for mobile use, allowing a maximum of 24 MHz for each licensed operator. It should be noted that the provision of mobile services will be prohibited in licences granted for spectrum outside the earmarked blocks. Thus, while an operator authorised to provide mobile services would be free to seek spectrum outside the mobile blocks, such spectrum cannot be used for mobile services.

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 offer licences with smaller bandwidths? If not, please propose another structure for consideration.

BTC

BTC disagreed with the proposal arguing that it represents an inefficient and out dated band architecture. BTC recommended 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 disagreed with the proposed split into smaller sub-blocks.

CBL

CBL considers that the proposal is reasonable.

Hi-Tech

Hi-Tech agreed with the proposal to maintain a 6 MHz RF channel structure in the 700 MHz spectrum band.

Peace Holdings

Peace Holdings expressed no disagreement with URCA maintaining a 6 MHz channel structure and dividing a portion thereof.

SRG

SRG disagreed with the 6 MHz band plan since this doesn't match with today's technologies. SRG proposes the following band plan:

e-UTRA Operating Band	Uplink Operating Band BS Receive UE Transmit	Downlink Operating Band BS Transmit UE Receive	Pairing	Channel Bandwidth (MHz)
12	698 MHz to 716 MHz	728 MHz to 746 MHz	2 x 18 MHz	1.4, 3, 5, 10
13	777 MHz to 787 MHz	746 MHz to 756 MHz	2 x 10 MHz	5, 10
14	788 MHz to 798 MHz	758 MHz to 768 MHz	2 x 10 MHz	5, 10

Also SRG was of the opinion that a minimum spectrum allocation for LTE would be 5 MHz, smaller allocations are not helpful but if URCA requires this for other services then the range 798-806 MHz could be utilised for that purpose.

SRG argued that rather than replicate the historical model of the United States, there is an opportunity for The Bahamas to design a 700 MHz band plan and channel structure that is optimised for future ultra-fast mobile broadband services in The Bahamas.

URCA's Comments and Proposed Way Forward

URCA notes the concerns and comments expressed.

URCA's decision on this Question is included in its decision on Question #7 above. There were no expressions of interest from respondents seeking a block size of less than 5 MHz. Since the 5 MHz block size would complicate URCA's goal of maximising compatibility with the North American plans, URCA has decided upon 6MHz as the smallest block size.

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

BTC objected to having to comment at this stage on the URCA interim pricing proposal because the proposals are as yet undefined. BTC felt that it was 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 does not encourage economic efficiency.

CBL

CBL noted that in the National Radio Spectrum Plan (ECS 06/2010) URCA indicated that it was conducting a comprehensive benchmarking exercise of Standard Spectrum Fees and a new spectrum fee schedule would be published by 30 June, 2010 to become effective 1 January, 2011. CBL noted that it appears that benchmarking is a foregone conclusion. CBL's main concern was that the spectrum fees are reasonable and appropriate for this market.

Hi-Tech

Hi-Tech agreed with URCA's proposal for interim pricing for the 700 MHz band.

SRG

SRG expressed concerns with URCA's approach with respect to interim pricing. SRG indicated the view that in opening new spectrum, it should be a requirement that all interested parties have a clear idea of the following:

- Spectrum cost;
- Territories that are accommodated; and
- Restrictions that will be placed on the licence. In particular the BTC mobile speech monopoly is an issue to be addressed.

In the absence of the above, SRG argued that it would be difficult for any party to make an informed decision with respect to their interest in the spectrum, or whether a sound business case exists for developing a network and introducing services.

In Section 1.5 of the Consultation, URCA stated that it will be undertaking a “forthcoming review of the existing spectrum fee table ... to address any anomalies in pricing across bands as well as address national, territorial and local use of spectrum and the fees associated with such uses”. SRG respectfully questions the timing of URCA’s proposal to open the 700 MHz band prior to the above review, and believed that a strong argument exists for introducing a delay in the opening of the spectrum:

- LTE technology is still in its infancy, and is yet to even be commercially introduced in the United States.
- LTE is mobile technology, and yet BTC has a mobile monopoly that does not yet have a finite end date.
- Operators will be loath to commit to investment in the absence of clear direction surrounding BTC’s mobile speech monopoly and the services to be permitted under the available licences.
- Interest in the spectrum, and therefore fees to be collected by the Treasury, will be much higher once the technology is fully established, fees are accurately known, and permitted services are properly understood.

SRG suggested that the sector may be better served by delaying the opening of the 700 MHz spectrum until such time as URCA’s review of spectrum fees has been concluded, there is a known end date for BTC’s mobile speech monopoly, and a decision has been made with respect to the position regarding mobile speech in 700 MHz (and other spectrum bands) following the end of the monopoly period.

URCA’s Comments and Proposed Way Forward

URCA has reviewed the comments from respondents, noting that the recurring theme is the need for certainty and predictability in relation to spectrum fees. URCA reiterates its intention to conduct a comprehensive review of spectrum fees charged in The Bahamas in order to ensure that the fees charged are appropriate having regard to the need for the Government to recover the economic value of spectrum, and for the fees to serve as an incentive to efficient usage of the spectrum. That said, URCA has not yet conducted its review though it expects to commence the review in 2012³. URCA, noting comments from industry, does not wish to delay the availability of 700 MHz spectrum until it completes its review and therefore proposes to

³ See URCA’s Draft Three Year Strategy and Annual Plan 2012 at www.urcabahamas.bs.

establish interim fees for 700 MHz spectrum based on the fees currently charged for equivalent spectrum (having regard to the usage rights included). A detailed discussion of the interim pricing proposed by URCA is contained in section 4.2.1.

URCA is conscious that internationally the prevalent commercial use for 700 MHz spectrum is for wireless broadband services, which can be provided on a fixed, nomadic⁴ or mobile basis, and which may include voice, data and video applications. URCA notes that the provision of mobile services is the prime use economically, with the largest most successful implementations being for mobile networks (such as the LTE implementations in North America). URCA recognises that in The Bahamas, the provision of mobile services is currently limited by law to BTC, and therefore the licence granted to other persons must restrict the use of the spectrum to the provision of fixed or nomadic services. URCA considers that the restriction on mobile services represents a reduction in the value of the spectrum to those licensees which should be reflected in the price paid for the spectrum. URCA therefore proposes to set a higher fee for the spectrum which is earmarked for and permits mobile services (see Question 8 above) than the spectrum within which mobile services will be prohibited.

URCA's proposal is to price the 700 MHz spectrum blocks in which mobile services are permitted, at a per MHz rate equivalent to the proposed interim spectrum fee payable for spectrum in similar standard spectrum bands (see section 4.2.1). URCA proposes to price the remaining blocks, which restrict mobile services at 75% of that price, to account for the reduced earning potential of those blocks.

It should be noted that this rate may be adjusted once URCA has completed its comprehensive spectrum price review; however, such adjustment would be consistent with changes in the rates for spectrum across the entire Radiofrequency Spectrum range administered by URCA.

⁴ Nomadic services refer to services which are characterized by limited ability of the customer to move around while receiving service but without the ability of mobile networks to receive uninterrupted services while moving across the entire service area.

3. Assessment of Expressions of Interest

In this section of the document, URCA reviews and assesses the Expressions of Interest received in the bands included in the Consultation Document and outlines its intention in respect of each band, based on the level of interest received, availability of spectrum, and the overall policy objectives.

3.1 The 700 MHz Band

3.1.1 Assessment of Expressions of Interest

BTC

BTC expressed interest in obtaining frequencies in the 700 MHz band for the deployment of next generation wireless services, noting that the evolution of its network into 4G/LTE would provide consumers faster speeds to support a wider range of multimedia services, particularly web browsing and video applications.

BTC indicated its preference for specific paired frequency assignments in the band.

CBL

CBL expressed an interest in the 700 MHz band for wireless data, voice and video. CBL indicated its preference for specific paired frequency assignments in the band.

Hi-Tech

Hi-Technology expressed an interest for the use of the 700 MHz band and suggested that it be used for both Wireless Digital TV and Broadband services. No specific preferred assignments were given.

SRG

SRG indicated that it did not file a request for the 700 MHz on the basis that it would be restricted from using that spectrum to offer mobile speech services, and indicating that it would be interested in the band in the event that mobile speech services were permitted.

SRG reserved the right to submit an expression of interest for the 700 MHz spectrum band in the event that mobile speech services were to be permitted.

Last Mile

Last Mile did not respond to the Consultation Document, however, it submitted a completed application for 700 MHz spectrum within the timeframe that the document was out for consultation. URCA notes that the band is currently closed, and therefore the application was not accepted. URCA reminds parties that licence applications can only be accepted for bands which have already been opened by URCA. URCA's request was for expressions of interest only, without any commitment to open any particular band.

3.1.2 URCA's Comments and Proposed Way Forward

URCA notes that the level of immediate interest and the desirability of spectrum in this band and the concern that there may be more demand than available spectrum in the Lower 700 MHz band. This might mean that interested parties may not be able to obtain spectrum in the 700 MHz band immediately, and URCA notes comments suggesting that URCA should open the entire 700 MHz band immediately in order to address this concern.

URCA accepts this concern and has proposed a band plan which divides the entire 700 MHz band into 18 channels of 6 MHz each. The channels are combined into blocks of 6MHz (unpaired) or paired blocks of 12 MHz each, with reservations for Public Health and Safety (one 12 MHz paired block), and future mobile use (4 blocks of 12 MHz each). The band plan also contains restriction on the use of certain blocks to fixed (or nomadic) use only. The use of the band will be defined as terrestrial broadband wireless access (BWA). A maximum of two (2) blocks per applicant will be allowed by URCA, therefore allowing for a total of 6 commercial operators in the band (including the blocks reserved for future mobile use).

URCA is mindful that there remains a significant amount of other spectrum suitable for broadband wireless access, or public mobile networks, which is currently licensed (in many cases to parties that have expressed interest in the 700 MHz band) but which URCA believes may remain underutilised. URCA is concerned at the level of spectrum (particularly in valuable access bands) currently assigned to parties which appears to be underutilised and URCA intends to adopt an approach to licensing the 700 MHz band which will encourage efficiency in spectrum usage by licensees.

URCA's approach will use a combination of the following methods to encourage efficiency:

- Timing the opening of valuable spectrum bands to allow for the build out of new networks and technologies to occur in an orderly manner.

- The re-valuation of spectrum fees across all bands to better reflect its economic value to encourage licensees to take only the amount of spectrum that they need to provide services, and also to more fairly price spectrum which is used across multiple islands or the entire Bahamas, as compared to spectrum used on a single island.
- Adopting licensing procedures which encourage efficient use by, for example limiting the extent to which excessive allocations of spectrum are licensed; requiring licensees to justify the quantum of spectrum applied for; and requiring roll-out of services to communities within reasonable time periods.
- Revision of licence conditions to ensure that spectrum licences contain conditions which discourage underutilisation, such as “use or lose” clauses, and spectrum auditing.

The Draft Policy for the 700 MHz band, based on the foregoing, is set out in Section 4.3 below.

3.2 The 11 GHz Band

3.2.1 Assessment of Expressions of Interest

SRG and BTC have both expressed interest in the 11GHz band for backhaul purposes.

SRG

SRG has indicated that it sought licences in the 11 GHz band in October 2008. SRG repeated its proposal that the band be opened for the purposes of carrier grade, high capacity backhaul solutions for network operators and service providers, noting the following technical and licensing considerations:

- The 11 GHz spectrum (10.7 GHz – 11.7 GHz) is licensed by the FCC as a high capacity band, with 40 MHz channels allowing data transfer at 3 x DS3⁵ or OC3⁶.

⁵ “Digital Signal 3 refers to a link offering a standard digital transmission rate of 44.736 Mbps.

⁶ Optical Carrier 3 refers to an optical link offering a transmission rate of 155.52 Mbps.

- The 11 GHz spectrum is divided into two groups designated as Bands A and B. Within each band there are 6 channels giving a total of 12, as follows:

Band	ID Number	TxLow (GHz) Centre Frequency	TxHigh (GHz) Centre Frequency
A	1	10.735	11.225
A	2	10.775	11.265
A	3	10.815	11.305
A	4	10.855	11.345
A	5	10.895	11.385
A	6	10.935	11.425
B	7	10.975	11.465
B	8	11.015	11.505
B	9	11.055	11.545
B	10	11.095	11.585
B	11	11.135	11.625
B	12	11.175	11.665

- Adoption of the 11 GHz spectrum will provide major carrier separation by technology and spectrum and allow multiple operators to apply for and utilize separate channels in the 11 GHz band for backhaul.
- The 11 GHz spectrum can support multiple carriers or hundreds of smaller entities with close management and oversight by the regulator on the location, frequency and direction of the individual point to point links.

BTC

BTC indicated minimal interest in the 11 and 12 GHz bands at present, noting that these bands can be used primarily for backhaul links, and suggesting that licensing of these bands should be on a First Come First Served basis. BTC also suggested that URCA should put in place “use or lose” clauses when licensing these bands in order to ensure that URCA could recover licensed spectrum that was not put in use by the licensee.

3.2.2 URCA’s Comments and Proposed Way Forward

URCA notes that there is interest in this band, but the interest is not at a level which would result in scarcity, or which raises significant concerns regarding efficient allocation.

The Region 2 primary allocation for the 11 GHz band is “Fixed, Fixed-Satellite & Mobile except aeronautical mobile”. The National Radio Spectrum Plan for The Bahamas provides that allocations will be made to services on a case by case basis. URCA has decided to open the 11

GHz band for use by operators for fixed, point to point communications systems. The spectrum will be assigned on an exclusive basis by way of Individual Spectrum Licences.

URCA's Draft Policy for the 11 GHz Band is set out in Section 4.4 below.

3.3 The 12 GHz Band

3.3.1 Expressions of Interest in the 12 GHz Band

Of the parties responding to the Request for Expressions of Interest, BTC indicated that it had only a minor interest at present in the 11 GHz and 12 GHz bands for the purpose of establishing backhaul links.

IP Solutions International Ltd. (IPSI)

URCA has also received outside the Consultation Document process an Expression of Interest from IPSI in spectrum in the 11GHz or 12 GHz band. IPSI proposes to use spectrum in the 12 GHz band for a Multimedia Wireless System (MWS), in combination with spectrum in the 40 GHz band (on which see Section 3.4 below).

3.3.2 URCA's Comments and Proposed Way Forward

URCA notes that there is interest in this band, but the interest is not at a level which would result in scarcity, or which raises significant concerns regarding efficient allocation. URCA notes that there is no scarcity of spectrum in the 12 GHz band or any other factor which would lead URCA to withhold a grant of such spectrum to any interested person, and therefore URCA has decided to open the 12 GHz band for fixed, point to multipoint systems. This use will be defined as terrestrial fixed broadband wireless access (FBWA).

URCA notes, however, that the 12 GHz band is currently shared with fixed satellite uses, and is cognisant to ensure that any use by terrestrial FBWA does not cause harmful interference to the existing uses. URCA will ensure that licences for FBWA contain adequate technical restrictions to ensure that there is no harmful interference caused.

The spectrum will be assigned on an exclusive basis by way of Individual Spectrum Licences.

The Draft Policy for the 12 GHz Band is set out in Section 4.5 below.

3.4 The 42 GHz Band

3.4.1 Expressions of Interest in the 40 GHz Band

BTC

The only respondent to the Consultation Document was BTC, which did not express an interest in having this band opened, though BTC noted that the band could be used by broadcasters for short-haul engineering links.

IPSI

URCA had received, prior to the issuance of the Consultation Document, an Expression of Interest from IPSI in spectrum in the 40 GHz band, specifically in the frequency range 40.5 GHz to 43.5 GHz. IPSI proposes to use this spectrum for a Multimedia Wireless System (MWS).

3.4.2 URCA's Comments and Proposed Way Forward

URCA notes that there is interest in this band, but the interest is not at a level which would result in scarcity, or which raises significant concerns regarding efficient allocation. URCA therefore proposes to open the 40 GHz band for use by operators for point to point and point to multipoint communications systems.

URCA proposes that the 40 GHz band is opened with a channelling arrangement as set out in ITU-R F.42 GHz, recommendations. A host of fixed services can be accommodated in the 42 GHz band, as outlined below:

- a. Wireless local loops;
- b. Call termination or origination services to long distance providers
- c. Connection of the customers of a competitive access provider
- d. Connection and interconnection services to private networks;
- e. Internet Access; and
- f. Cable head end applications.

The suggested spectrum was adopted by the European Union in Region 1 in 1999. As of 2008, very few point-to-multipoint (P-MP) systems were actually deployed in the 42 GHz band. Nevertheless, there exists a need for point-to-point links (P-P) for large data capacity, over short hops, e.g., to transport infrastructures needed by multimedia services carried by broadband wireless applications. Historically P-P links have been deployed in the 23 GHz and 38 GHz and lower bands.

URCA has proposed a band plan which will allow fixed, point to point; or point to multipoint services to be accommodated in the 42 GHz band. This use will be defined as terrestrial fixed broadband wireless access (FBWA).

The Draft Policy for the 42 GHz Band is set out in Section 4.6 below.

4. Draft Policy on Opening of New Bands

4.1 Outline of the Process for Opening New Bands

The Guidelines provide at Section 3, the steps to be taken by URCA in opening a new spectrum band.

The seven step process for opening new spectrum bands as specified by URCA is as follows:

- Step 1: Submission of Expressions of Interest
- Step 2: Assessment of Expressions of Interest
- Step 3: URCA to prepare draft policy for that band
- Step 4: Consultation on the draft policy
- Step 5: Finalising the policy
- Step 6: Implementation of the policy
- Step 7: Licence award

URCA, having completed its review of the Expressions of Interest submitted, shall now move on to steps 3 and 4 of the process, the issuance of and consultation on a “Draft Policy” for each band to be opened.

The Guidelines provide that the policy should contain, at a minimum, the following:

- The frequency range for the band;
- the packaging of the band;
- licence terms and conditions;
- the application procedure; and,
- the time schedule and award process.

As URCA has decided to open all of the Bands set out in ECS 11/2011, URCA sets out in the remainder of this Section its Draft Policy for each of those Bands.

Once URCA has received comments on the Draft Policies from interested persons, it will finalize the policy having regard to comments received, and will publish and implement the final policy.

4.2 Spectrum Pricing and Licensing Issues

4.2.1 Interim Pricing of Spectrum

As noted above in answer to Question #10 above, URCA proposes to conduct a comprehensive review of its spectrum fees to be commenced in 2012. URCA also proposes in 2012 to review some of the wider spectrum policy issues that will impact the demand, efficiency of use, and value of spectrum licensed in The Bahamas.

URCA does not wish to delay licensing of new bands pending those reviews and therefore as an interim measure URCA will adopt a pricing structure for new spectrum bands based on the following general propositions:

- i. Interim prices for new spectrum bands will be set, and will apply until such time as URCA completes its review of prices and amends its fee schedule to reflect the revised prices.
- ii. Interim prices will be based on existing spectrum fees, so far as possible. This means that where a new band is comparable to an existing band in which a spectrum fee already applies, URCA will apply a fee that is reasonably comparable to (though not always the same as) the fee for the already open band.
- iii. Interim prices for new bands which are not comparable to existing licensed bands will be calculated based on a scale which reduces the price of spectrum as the frequency increases, in order to compensate for the changes in characteristics of higher frequency bands and the impact such changes have on their economic value.
- iv. URCA's review will encompass all spectrum, both standard and premium. In respect of premium spectrum, URCA will make recommendations to the Sector Minister for any new pricing of premium spectrum under section 31 of the Comms Act.

Table 1 below sets out the pricing for newly opened bands. It should be noted that the table applies only to Standard Spectrum bands that are not already open, and therefore existing licences, licence for Premium Spectrum, or new licences in already open bands will not be affected by the interim prices, although it is expected that URCA's spectrum fee review will apply to all licensees in all Standard Spectrum bands, and that URCA will make recommendations for new Premium Spectrum fees.

Table 1 – URCA’s Interim Spectrum Fees for Newly Opened Bands

Spectrum Frequency Range	Current Spectrum Fees - Point to Point	Proposed Interim Point to Point Spectrum Fee	Current Spectrum Fees - Point to Multipoint	Proposed Interim Point to Multipoint Spectrum Fee
300 MHz to 500 MHz	N/A	N/A	\$10 per khz (Private Land Base Station)	\$10 per khz (Private Land Base Station) \$16,000 per Mhz (Public Access)
500 MHz to 960 Mhz	N/A	N/A	\$5.2 per KHz (public trunking) \$1.56 per KHz (private trunking)	\$5.2 per KHz (public trunking) \$1.56 per KHz (private trunking) \$8,000 per MHz (Public Access)
960 MHz to 3.4 GHz	Bandwidth up to 50kHz per link - \$450 Bandwidth ≥50kHz but <3.5MHz per link - \$620 Bandwidth ≥3.5 MHz but <30 MHz per link - \$800 ≥30 MHz - \$1,200	Bandwidth up to 50kHz per link - \$450 Bandwidth ≥50kHz but <3.5MHz per link - \$620 Bandwidth ≥3.5 MHz but <30 MHz per link - \$800 ≥30 MHz - \$1,200	Varies from \$133.3 per MHz, to \$5,000 per MHz for premium bands in this range.	\$4,000 per MHz
3.4 GHz to 6.7 GHz	Bandwidth up to 50kHz per link - \$450 Bandwidth ≥50kHz but <3.5MHz per link - \$620 Bandwidth ≥3.5 MHz but <30 MHz per link - \$800 ≥30 MHz - \$1,200	No Change	3.5 GHz band is open, and licensed at fee of \$2000 per MHz for the first MHz pair, \$1,000 each additional MHz	\$2,000 per MHz

Spectrum Frequency Range	Current Spectrum Fees - Point to Point	Proposed Interim Point to Point Spectrum Fee	Current Spectrum Fees - Point to Multipoint	Proposed Interim Point to Multipoint Spectrum Fee
6.7 GHz to 30 GHz	Bandwidth up to 50kHz per link - \$450 Bandwidth ≥50kHz but <3.5MHz per link - \$620 Bandwidth ≥3.5 MHz but <30 MHz per link - \$800 ≥30 MHz - \$1,200	No Change	N/A	\$20 per MHz
30 GHz and above	Up to 50kHz per link - \$450 ≥50kHz but <3.5MHz per link - \$620 ≥3.5 MHz but <30 MHz per link - \$800 Bandwidth ≥30 MHz per link - \$1,200	No Change	N/A	\$10 per MHz

Consultation Question #1:

Do you agree with URCA’s proposals for interim pricing of newly opened standard spectrum bands? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

4.2.2 Geographical Licensing

URCA’s current licensing policies permit an operator to select the parts of The Bahamas which are covered by its spectrum licence, subject only to availability of spectrum. The Bahamas comprises widely separated islands of different sizes and populations. This means that spectrum licences currently vary widely in geographical scope ranging from single island licences, to any multiple of islands, to licences that cover the entire country.

URCA notes that while this approach is convenient for operators who are able to tailor their spectrum licences to their specific requirements, it also presents certain challenges to URCA

from a spectrum management perspective, as well as from a competition context. Some of the challenges identified by URCA are as follows:

- Spectrum pricing across the various islands is uneven as a result of the different populations and sizes involved.
- The availability of valuable spectrum can be compromised when an operator chooses to obtain licences for and use spectrum in a limited part of The Bahamas, excluding other parts of The Bahamas while also preventing other operators from obtaining licences which might deliver services to a greater proportion of The Bahamas.
- The current approach enables “cherry picking” by licensees who obtain spectrum for and provide service only in more densely populated islands therefore gaining a potentially unfair advantage over other operators who are required to cover less profitable parts of The Bahamas. This also has the potential effect of denying service to the less profitable parts of The Bahamas thereby failing to capitalize on one of the most significant benefits of access spectrum, which is its suitability for providing inexpensive coverage to rural and remote areas.

URCA is currently considering a shift in its licensing policies that will address the policy issues presented by the current geographic licensing of spectrum. The full review of the issues and implementation of revised licensing policies will commence in 2012. For the time being, however, in respect of new bands to be opened, URCA intends to limit the geographic options for licensing available to applicants in the following ways:

Licensing of Wireless Access Spectrum in Newly Opened Bands up to 3.4 GHz

URCA notes that their propagation characteristics make bands in this range particularly popular for commercial provision of broadband wireless access over large areas.

URCA, for the reasons stated above does not consider that continuing to licence new spectrum bands in this range for ad hoc groups of Islands in The Bahamas serves to further the Electronic Communications Sector (ECS) Policy objectives and URCA therefore proposes on an interim basis to open new bands within this frequency range for licensing only for a geographic area which will be defined as “*The Bahamas*”. For the purpose of this interim position, URCA will include coverage rights and obligations in an Individual Spectrum Licence (ISL) issued for “*The Bahamas*” consistent with the following:

- An ISL granted for “*The Bahamas*” shall grant the Licensee exclusive use of the licensed frequencies throughout the whole of The Bahamas, including its territorial waters; and,

- An ISL granted for “The Bahamas” shall require the Licensee, within timeframes set out in the Licence, to provide specified coverage levels in, at a minimum, New Providence, Grand Bahama, Abaco, Eleuthera and at least six (6) other populated islands in The Bahamas”.

Licensing of Wireless Access Spectrum in Newly Opened Bands above 3.4 GHz but below 6.7 GHz

Bands above 3.4 GHz are generally less valuable and URCA notes that they are generally in lower demand in The Bahamas. URCA therefore does not consider that these bands present the same level of concern as the lower bands. However, URCA maintains its position that the current *ad hoc* geographic licensing is unsuitable and should not be continued.

URCA will therefore grant ISLs for these bands for either “The Bahamas”, or for use on a “Single Family Island” (which term does not include New Providence or Grand Bahama). Spectrum fees for a “Single Family Island” ISL will be 25% of the spectrum fee for The Bahamas, and will require the licensee to cover a particular percentage of the selected island within a time period specified in the ISL.

Licensing of Wireless Access Spectrum in Newly Opened Bands above 6.7 GHz

URCA will continue to apply the current approach to newly opened bands above 6.7 GHz.

Consultation Question #2:

Do you agree with URCA’s approach to the geographical categories for licensing of newly opened spectrum bands? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

4.3 Draft Policy for the 700 MHz Band

4.3.1 Frequency Range

The frequencies in the range 698 MHz to 806 MHz shall be referred to as the 700 MHz band.

4.3.2 Packaging of the Band

URCA proposes to divide the entire 700 MHz band into 18 channels of 6 MHz each, which will be allocated as blocks of either 6 MHz (unpaired) or 12 MHz (paired) as shown in Figure 1 and Table 2 below:

Figure 1: 700 MHz Frequency Band Plan

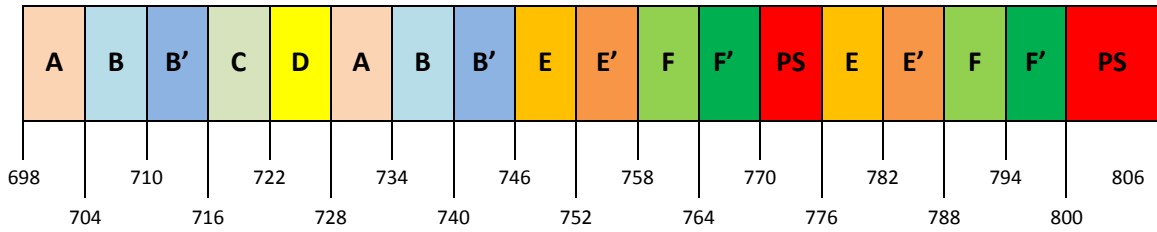


Table 2: 700 MHz Spectrum Blocks

BLOCK	FREQUENCY RANGE	BANDWIDTH	PAIRING	NOTES
A	698-704 MHz and 728-734 MHz	12 MHz	2 x 6 MHz	Mobile services restricted.
B	704 – 710 MHz and 734 – 740 MHz	12 MHz	2 x 6 MHz	Mobile services licensees only.
B'	710 – 716 MHz and 740 – 746 MHz	12 MHz	2 X 6 MHz	Mobile services licensees only.
C	716 – 722 MHz	6 MHz	Unpaired	Mobile services restricted.
D	722 – 728 MHz	6 MHz	Unpaired	Mobile services restricted.
E	746 – 752 MHz and 776 – 782 MHz	12 MHz	2 x 6 MHz	Mobile services licensees only.
E'	752 – 758 MHz and 782 – 788 MHz	12 MHz	2 x 6 MHz	Mobile services licensees only.
F	758 – 764 MHz and 788 – 794 MHz	12 MHz	2 x 6 MHz	Mobile services licensees only.
F'	764 – 770 MHz and 794 – 800 MHz	12 MHz	2 x 6 MHz	Mobile services licensees only.
PS	770 – 776 MHz and 800 to 806 MHz	12 MHz	2 x 6 MHz	Public Health and Safety reserved

- The maximum assignment per operator in the 700 MHz band will be 2 blocks.
- Operators granted the B, E or F block, will be given first preference in obtaining the B', E' and F' respectively. An operator cannot apply for more than one of the B, E and F blocks.
- The PS blocks are reserved for Public Health and Safety use, and will be addressed by URCA in a separate later process.

- As BTC is the only entity currently authorised to offer mobile services, it will be the only eligible applicant for the B, B', E, E', F and F' blocks. BTC will be entitled to apply for up to two of those blocks, and the remaining blocks will be held by URCA in reserve until the expiry of BTC's mobile exclusivity, when they will be offered to any new entrant authorised to provide mobile services.

4.3.3 Licence Terms and Conditions

URCA proposes to grant Individual Spectrum Licences for spectrum in the 700 MHz band in accordance with URCA's Licensing Guidelines in force from time to time, save for additional terms and conditions as set out below:

- The Spectrum shall be licensed on a National basis only. That is, the Licensee will be authorized to use the spectrum in all parts of The Bahamas, and will be required to roll-out its services throughout a majority of The Bahamas as specified below.
- URCA, recognizing the value of the 700 MHz spectrum and its importance to the development of electronic communications services in The Bahamas, shall include the following additional terms and conditions in the Individual Spectrum Licences for this spectrum:
 - The Licensee will be required to put the spectrum into active, commercial use within eighteen (18) months of the date on which the Licence is granted, failing which URCA will commence proceedings to revoke the grant of the Licence.
 - The primary use of the spectrum granted must be to build and maintain a public "access" network; any usage for backhaul must be secondary and incidental only.
 - The spectrum must be used for the provision of electronic communications services available to the general public in all licensed areas in The Bahamas.
 - URCA proposes that the Licensee be required to roll out commercial electronic communications services using the spectrum to communities in The Bahamas in accordance with the following schedule, at a minimum:
 - Year 1 – Spectrum to be put in active service on at least New Providence and Grand Bahama;
 - Year 2 – Roll-out on Abaco and Eleuthera with at least 75% population coverage, achieve 99% population coverage on New Providence and Grand Bahama;

- Year 3 – Roll-out on at least two additional Family Islands with at least 75% population coverage, achieve 99% population coverage on Abaco and Eleuthera;
- Year 4 – Roll-out on at least two additional Family Islands with at least 75% population coverage; and,
- Year 5 – Roll-out on at least two additional Family Islands with at least 75% population coverage.⁷

4.3.4 Application Procedure

Timing of Applications

URCA will issue a Request for Applications (RFA) document, inviting qualified persons to apply for an Individual Spectrum Licence (ISL) for spectrum in the 700 MHz band, on a competitive basis (to the extent that demand exceeds supply).

An Individual Operating Licence (IOL) will also be required for the provision of electronic communications services to the public using the 700 MHz spectrum, and an ISL will not be granted to persons who do not already hold an IOL.

Applicants that are not already holders of an Individual Operating Licence will be required to apply for an IOL concurrently with their application in response to the RFA. Such applications will be considered concurrently with URCA's assessment of the spectrum applications within the RFA process. In the event that an applicant is successful in obtaining an IOL, but is not awarded 700 MHz spectrum, the applicant may apply for other available spectrum, adopt other methods of providing services to the public, or may to withdraw its IOL application.

Applications shall be submitted to URCA fully in accordance with the RFA, by the response deadline.

Information to be Submitted

- Applicants will be required to provide the following information:
 - General Information, including:
 - Corporate nature of the applicant;
 - Contact details;

⁷ URCA would particularly welcome comments from the Industry on the proposed roll-out conditions having regard to market characteristics, geographic factors and other relevant factors.

- Ownership;
- Information about the control and guidance of the applicant; and,
- Auditors and Legal advisors.
- Proof of Financial Stability, including;
 - Financial Statements (if incorporated) or equivalent information regarding assets, net worth and trading history; and,
 - References, including financial references.
- Business Plan, including:
 - Service and Marketing Proposals;
 - Technical Proposal showing network topography and technologies to be used;
 - Income and Expenditure projections for at least three years; and,
 - Personnel plans, showing adequate technical and other expertise.
- Choice of Spectrum Blocks.

Selection Process

In order to be granted spectrum in the 700 MHz band, URCA proposes that applicants be required to achieve a minimum score of 70% overall in URCA's assessment of the information provided in their application based on the relevant selection criteria, and outline of which is provided below.

- The following Selection Criteria are proposed, with the following weighting for each:
 - Presence in The Bahamas – YES/NO – applicants must have a presence in The Bahamas as required by the Communications Act 2009.
 - Fit and Proper person to hold a licence under the Communications Act 2009 – YES/NO – successful applicants must be “Fit and Proper” persons as required by the Communications Act 2009.
 - Financial Strength (30%) – The applicant must demonstrate the necessary financial resources to provide the services outlined, and meet all roll-out and other commitments contained in the Licence. URCA will assess the financial capacity of the applicant based on the information provided in the application.
 - Technical Capability (30%) – The applicant has put forward a sound technical plan for coverage and service provision using the spectrum, and has the technical resources and expertise to implement it. URCA will assess the technical capability of the applicant based on the information provided in the application.
 - Electronic Communications Service Benefits (30%) – The applicant proposes to provide electronic communications services of a quality/coverage and price that would further the achievement of the ECS Policy Objectives. Matters considered

would include (but are not limited to) access to new technologies, enhanced services, reduction in prices, increased competition in markets, particularly those with limited or no current service etc.

- Other Benefits (10%) – The applicant will generally enhance Bahamian society consistent with ECS Policy Objectives (e.g., jobs, activity in underserved communities, community development and betterment).
- Once the applications are assessed by URCA, the successful applicants will be invited to choose their spectrum blocks from those blocks for which they are eligible. Applicants will choose in order of their scores in the assessment with highest scores first. Ties will be resolved either by negotiation or random selection.
- Full details of the selection criteria and the marking scheme will be set out in the RFA.

4.3.5 Licence Fees

URCA proposes that the Licences granted be subject, on an interim basis, to the following annual spectrum fees:

- \$8,000 per MHz for the B, B', E, E', F and F' blocks;
- \$6,000 per MHz per year for all other blocks;
- Pricing for the PS block will be determined by URCA in conjunction with licensing of that block.

The above licence fees shall be payable until URCA's Fee Schedule is amended to reflect a revised fee for spectrum assignments in the 700 MHz band.

4.3.6 Time Schedule for Application and Licensing

URCA proposes to issue an RFA for 700 MHz spectrum concurrently with its Final Policy on the 700 MHz band. Applications may only be submitted in response to and in accordance with the RFA process. Applications will not be accepted outside such process.

Consultation Question #3:

Do you agree with URCA's proposals for licensing the 700 MHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

4.4 Draft Policy for the 11 GHz Band

4.4.1 Frequency Range

The frequencies in the range 10,700 MHz to 11,700 MHz shall be referred to as the 11 GHz band.

4.4.2 Packaging of the Band

URCA proposes that the 11 GHz band is opened for fixed, point to point services, with a channelling arrangement the same as ITU-R F.387-10, recommendation 1.2. URCA notes that this plan is also adopted by the Federal Communication Commission (FCC), as outlined in their Code of Federal Regulation 47, for *Fixed Services*.

As an example, the channelling arrangement for 40 MHz bandwidth frequency channels for Fixed Service in the 11 GHz band would result in a channelling arrangement as set out in Figure 2 and the accompanying table below.

Figure 2: 11 GHz Band, 40 MHz Packaging

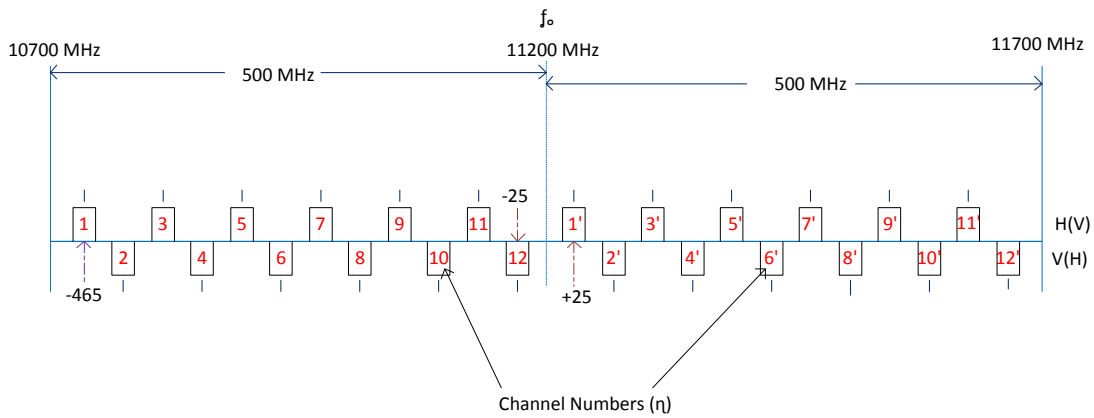
Lower half of the band	$f_n = f_o - 505 + 40 n$	$n = 1, 2, 3, \dots, 12$
Upper half of the band	$f_{n'} = f_o + 15 + 40 n$	$f_o = 11200 \text{ MHz}$

Where:

f_o is the frequency at the centre of the range comprised in the band (11,200 MHz); and,

f_n is the centre frequency of channel n in the lower half of the band; and,

$f_{n'}$ is the centre frequency of channel n' in the upper half of the band.



RF channel arrangement in the 11 GHz band according to ITU-R F.387-11 recommendation 1.2

n	f_n	$f_{n'}$
1	10735	11225
2	10775	11265
3	10815	11305
4	10855	11345
5	10895	11385
6	10935	11425
7	10975	11465
8	11015	11505
9	11055	11545
10	11095	11585
11	11135	11625
12	11175	11665

URCA proposes to permit any feasible channel size up to a maximum of 40 MHz on a case by case basis, subject to the same formulae.

Technical parameters established for the Band will include performance requirements, transmit power and emissions that meet FCC CFRs 47 Part 101.

4.4.3 Licence Terms and Conditions

The Licences to be granted shall be Individual Spectrum Licences granted in accordance with URCA's Licensing Guidelines in force from time to time.

4.4.4 Application Procedure

Applicants shall submit applications to URCA in accordance with URCA's Licensing Guidelines in force at the time of submission of the application. Applications will be considered by URCA and spectrum granted on a "first come first served" basis.

4.4.5 Licence Fees

The Licences granted shall be subject to Licence Fees calculated in accordance with URCA's Fee Schedule.

4.4.6 Time Schedule for Application and Licensing

Applications may be submitted at any time following the Implementation of the Policy for the 11 GHz band, and shall be considered by URCA in accordance with the timeframes set out in URCA's Licensing Guidelines.

Consultation Question #4:

Do you agree with URCA's proposals for packaging, pricing and licensing the 11 GHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

4.5 Draft Policy for the 12 GHz Band

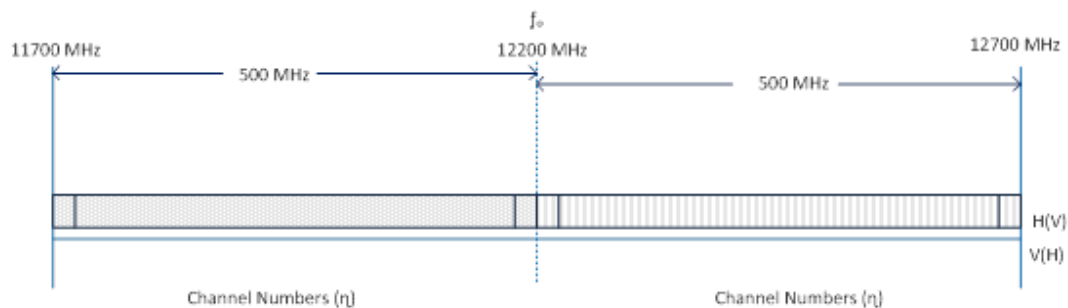
4.5.1 Frequency Range

The 12 GHz band shall comprise those frequencies in the range 11,700 MHz to 12,700 MHz.

4.5.2 Packaging of the Band

URCA proposes that the 12 GHz band be opened for point to multipoint systems with a channelling arrangement consistent with the Federal Communication Commission (FCC) outline set out in the Code of Federal Regulations 47, Part 101.1405.

Figure 3: 12 GHz Packaging



Licences shall be granted on an exclusive basis, within any of the following Geographic categories:

1. “The Bahamas” – Includes the whole of the Commonwealth of The Bahamas;
2. “Single Family Island” – Any one Island, excluding New Providence or Grand Bahama.

Licences may be granted for any feasible block size within the above plan, subject to URCA’s planning to ensure maximum usage of the band.

The technical rules established for the operation shall be technologically neutral and will not specify a particular equipment configuration or methodology.

In reaching its decision, URCA has noted the MITRE Report⁸ whose conclusion supports the sharing of the 12 GHz band between terrestrial point to multipoint and satellite services, which is also supported by the FCC⁹.

URCA will provide protection to the existing Direct Broadcast Satellite (DBS) and non-geostationary satellite orbit fixed-satellite services (NGSOFSS) by limiting the interference potential to a level that does not give rise to harmful interference as defined by s.33 of the Comms Act.

4.5.3 Licence Terms and Conditions

The Licences to be granted shall be Individual Spectrum Licences granted in accordance with URCA's Licensing Guidelines in force from time to time. The Licensee will also be required to observe the following technical restrictions¹⁰:

- Maximum power limit of 14 dBm per 24 megahertz Effective Isotropic Radiated Power (EIRP);
- Equivalent power flux density (EPFD) limit of -168.4 dBW/m²/4kHz
- URCA will adopt a prescribed methodology and predictive model to calculate EPFD values¹¹ that would limit increased in Basic Service Set (BSS) unavailability due to the Licensee's systems to a negligible level over a baseline level of BSS unavailability. The unavailability allowance ascribed to the licensee's system will be in addition to the unavailability allowance ascribed to NGSOFSS operations in the 12 GHz band.
- The Licensee must site and design its transmitting antennas to avoid causing harmful interference to existing DBS customers.
- URCA will permit fixed one-way operations, but exclude mobile and aeronautical operations by the Licensee. Permissible operations include the flexibility for two-way services whereby the 12 GHz band could be used for the downstream¹² path,

⁸ MTR 01W0000024: MITRE Technical Report; Analysis of Potential Interference to DBS in the 12.2-12.7 GHz Band. April 2001.

⁹ FCC 02-116; Memorandum Opinion and Order and Second Report and Order. May 23, 2002.

¹⁰ Based on FCC 47 CFR Ch.1, Part 101

¹¹ FCC 47 CFR Ch. 1: 101.105 Interference Protection Criteria

¹² In satellite telecommunications terminology, uplink means the signal sent from Earth to the satellite and downlink means the signal from the satellite to earth.

and any upstream (or return) path could be located in other spectrum or over a wireline.

- The Licensee's signals shall not exceed a power flux density (PFD) of – 135dBW/m²/4kHz measured and/or calculated at the surface of the earth at distances greater than 3 km (1.86m) from the transmitting site.

4.5.4 Application Procedure

Applicants may submit applications to URCA in accordance with URCA's Licensing Guidelines in force at the time of submission of the application. Applications will be considered by URCA and spectrum granted on a "first come first served" basis.

4.5.5 Licence Fees

The Licences granted shall be subject, on an interim basis, to the following fees:

- The Bahamas - \$20 per MHz per annum;
- Single Family Island - \$5 per MHz per annum.

The above fees shall be the applicable licence fee until URCA's Fee Schedule is amended to reflect a fee for spectrum in the 12 GHz band.

4.5.6 Time Schedule for Application and Licensing

Applications may be submitted at any time following the Implementation of the Final Policy for the 12 GHz band, and shall be considered by URCA in accordance with the timeframes set out in URCA's Licensing Guidelines.

Consultation Question #5:

Do you agree with URCA's proposals for packaging, pricing and licensing the 12 GHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

4.6 Draft Policy for the 42 GHz Band

4.6.1 Frequency Range

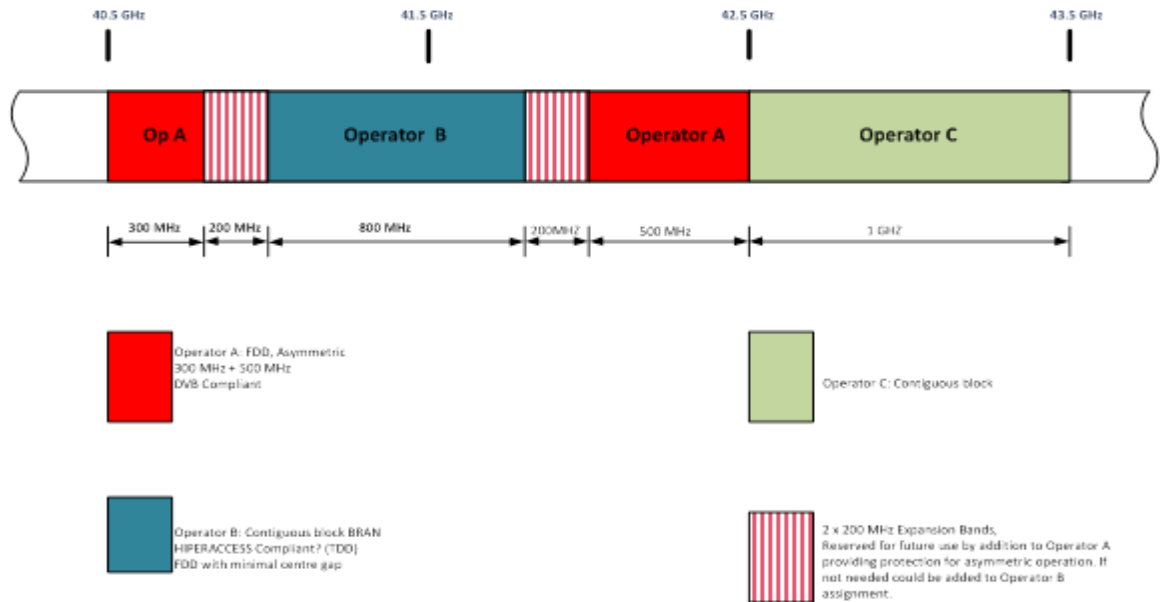
This policy proposes the licensing of the 40,500 MHz to 43,500 MHz frequency range for fixed, point-to-point microwave systems, and terrestrial broadband fixed wireless access systems.

4.6.2 Packaging of the Band

The proposed Band arrangement in the 42 GHz band will permit up to a 1 GHz contiguous block. The Band Plan proposal is as follows:

- i. The block designations are Operator A, Operator B and Operator C;
- ii. Operator A can be paired to facilitate frequency division duplex (FDD) system;
- iii. Operator B can represent a contiguous block, FDD with minimal centre gap;
- iv. Time division duplex (TDD) system is represented by Operator B as well;
- v. Operators may be Asymmetric by 300 MHz + 500 MHz;
- vi. Expansion blocks 2 x 200 MHz larger frequency blocks can be made available through the aggregation for 50 MHz paired blocks.

Figure 4: 42 GHz Packaging



URCA will include appropriate technical parameters based on the technical specifications set out in the licence application.

Licences shall be granted on an exclusive basis, within any of the following Geographic categories:

1. “The Bahamas” – Includes the whole of the Commonwealth of The Bahamas;
2. “Single Family Island” – Any one Island, excluding New Providence or Grand Bahama.

A maximum of one block will be granted to a single operator.

4.6.3 Licence Terms and Conditions

The Licences to be granted shall be Individual Spectrum Licences granted in accordance with URCA’s Licensing Guidelines in force from time to time.

4.6.4 Application Procedure

Applicants shall submit applications to URCA in accordance with URCA’s Licensing Guidelines in force at the time of submission of the application. Applications will be considered by URCA and spectrum granted on a “first come first served” basis.

4.6.5 Licence Fees

The Licences granted shall be subject, on an interim basis, to the following fees:

- The Bahamas - \$10 per MHz per annum;
- Single Family Island - \$2.50 per MHz per annum.

The above fees shall be the applicable licence fee until URCA's Fee Schedule is amended to reflect a fee for spectrum in the 12 GHz band.

4.6.6 Time Schedule for Application and Licensing

Applications may be submitted at any time following the Implementation of the Policy for the 42 GHz band, and shall be considered by URCA in accordance with the timeframes set out in URCA's Licensing Guidelines.

Consultation Question #6:

Do you agree with URCA's proposals for packaging, pricing and licensing the 42 GHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

5. Summary of Consultation Questions

In this section URCA recaps the questions on which comment from stakeholders is sought in this Consultation Document. Stakeholders are reminded that only Section 4 of this document is consultative. The remainder of the document provides URCA's response to a previous consultation document (ECS 23/2010).

Consultation Question #1:

Do you agree with URCA's proposals for interim pricing of newly opened standard spectrum bands? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

Consultation Question #2:

Do you agree with URCA's approach to the geographical categories for licensing of newly opened spectrum bands? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

Consultation Question #3:

Do you agree with URCA's proposals for licensing the 700 MHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

Consultation Question #4:

Do you agree with URCA's proposals for packaging, pricing and licensing the 11 GHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

Consultation Question #5:

Do you agree with URCA's proposals for packaging, pricing and licensing the 12 GHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.

Consultation Question #6:

Do you agree with URCA's proposals for packaging, pricing and licensing the 42 GHz band? Please provide detailed reasons for your response, including if appropriate, alternative proposals.