



# **Technical Standards Framework for FM Radio Broadcasting in The Bahamas**

**Statement of Results and Final Decision**

**ECS 03/2019**

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## TABLE OF CONTENTS

1. Introduction .....	3
2. Purpose of this Statement of Results and Final Decision.....	4
3. Overview of Consultation Process .....	4
4. URCA’s Decisions and Reasons for Decisions .....	6
5. Next Steps .....	19
6. URCA’s Final Decision .....	20

## 1. Introduction

The Utilities Regulation and Competition Authority (URCA) now issues this Statement of Results and Final Determination in relation to its “Second Consultation on *Technical Standards Framework for FM Radio Broadcasting in The Bahamas – ECS 08/2018*” (“the Second Consultation”). URCA also publishes its Technical Standards for FM Radio Broadcasting in The Bahamas (the Technical Standards) document – ECS 04/2019 concurrently with the publication of this Statement of Results and Final Decision. URCA’s decisions reflected herein have also considered matters discussed and responses received in relation to URCA’s consultation on “*Technical Standards Framework for FM Radio Broadcasting in The Bahamas – ECS 07/2015*”<sup>1</sup> (the First Consultation).

URCA is required to give due consideration to all comments prior to introducing a regulatory measure or making a final decision<sup>2</sup>. The technical nature and scope of the written comments by the respondents to the First Consultation required URCA to conduct an extensive review of its proposed technical standards. URCA particularly recognized the potential impact of the proposed technical standards on the FM broadcast industry in The Bahamas and the wider Bahamian public. In response, URCA considered it important to engage expert technical consultants who undertook further technical work to address the substantive technical concerns raised by the respondents to the First Consultation and to ensure that the technical standards are best suited for implementation in The Bahamas, as well as comply with international best practice.

Consequential to the further work that was conducted by the technical consultants, on 13 July 2018 URCA published the Second Consultation that also advanced technical work conducted by URCA. The Second Consultation provided members of the public, licensees and interested parties further opportunity to comment on the proposed Technical Standards and related matters, prior to implementation. The Second Consultation closed on 13 August 2018 and URCA did not receive any responses to the consultation document. The Response Date to the Second consultation was extended to 28 August 2018 and despite the extension, URCA still did not receive any written responses to the Second Consultation document.

The cumulative effect of URCA conducting an extensive review of its proposed Technical Standards in response to key stakeholder concerns and extending the dates for response to afford members of the public, licensees and interested parties every opportunity to submit

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<sup>1</sup><https://www.urcabahamas.bs/consultations/technical-standards-framework-fm-broadcasting-bahamas/>

<sup>2</sup> Pursuant to section 11(1)(c) of the Comms Act.

written comments on the issues under consultation, inevitably resulted in the unforeseen delay of the overall completion of the consultation process.

This Statement of Results and Final Decision now sets out URCA's reasons and reasoning for its decisions on the issues and questions under the Second Consultation. The Statement of Results and Final Decision also forms the basis for the implementation of the Technical Standards, as a regulatory measure issued by URCA in accordance with the Communications Act, 2009.

## **2. Purpose of this Statement of Results and Final Decision**

- (i) To set out URCA's reasons and reasoning for its decisions to the issues and questions under the Second Consultation; and
- (ii) To set out the basis for URCA's regulatory measures for the implementation of the Technical Standards.

## **3. Overview of Consultation Process**

URCA is disappointed with the lack of written responses to its Second Consultation despite URCA's best efforts to explain the importance of receiving such responses prior to implementing the Technical Standards. URCA considers it important to set out in detail its efforts to effectively engage with the public, and interested parties, particularly affected licensees, throughout this consultation process prior to issuing this Statement of Results and Final Decision.

### Pre-consultation process

URCA's pre-consultation process, to the end of developing and implementing the Technical Standards, was initiated by URCA with an open invitation to FM radio broadcasters throughout The Bahamas and the launch of an industry meeting held on 6 July 2015 between the FM radio broadcasters and URCA. Best efforts were particularly made by URCA to accommodate the business operations and travel arrangements of the FM radio broadcasters operating in the Family Islands to attend the stakeholder meeting.

The meeting was also the initial forum through which URCA engaged with the FM radio broadcasters to canvass their preliminary views prior to developing the First Consultation Document. URCA considered that the input from the FM radio broadcasters as key stakeholders,

at that stage of the process, was integral and invaluable to jointly identifying the core issues for consideration under consultation.

### The First Consultation Document

The preliminary views and core issues identified by the FM radio broadcasters and URCA during the stakeholder meeting culminated in the development and publication of the First Consultation Document on 22 December 2015 on the URCA website<sup>3</sup>. URCA also issued an email to each FM radio broadcast station to notify of the publication of the consultation document and where the document could be found and downloaded from the URCA website. The First Consultation provided members of the public, licensees and interested parties with the opportunity to submit written comments to URCA on the proposed Technical Standards, and related matters, prior to implementation.

URCA received comments from key industry stakeholders requesting that additional time to formulate responses to the issues and questions under the First Consultation. URCA acceded to this request and extended the deadline for that consultation to March 4, 2016 to ensure that its consultation process was as comprehensive and inclusive as possible. At the close of the First Consultation, URCA received three (3) responses to that consultation document. The FM radio broadcasters who provided written responses to the First Consultation Document are listed below:

- (i) Associated Media Group Ltd. (AMGL);
- (ii) Guardian Radio and Pure Gold Investments Ltd. (jointly); and
- (iii) Tribune Radio Limited (on behalf of itself and other licensees within the Tribune Media Group Companies) – (collectively referred to herein as TRL).

The respondents broadly expressed general support for the implementation of FM radio broadcast technical standards by URCA. URCA's high level overview of the submissions by the respondents to the First Consultation is that they were generally constructive, insightful and useful. More importantly and as previously stated, the comments by the respondents (particularly from TRL), raised substantive technical issues that required URCA to conduct an extensive review of its proposed technical standards. For example, TRL disagreed with URCA's proposed standard channel spacing of 600 KHz for FM radio in The Bahamas and considered that URCA, having granted an excessive number of licences, was attempting to "fill every slot" and force changes that damage legacy operators. TRL commented that interference would increase

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<sup>3</sup> Pursuant to section 12(1)(a) of the Comms Act.

and safety of Bahamians will be compromised, both by proximity to non-ionizing RF radiation and the weakening of communications systems and signals necessary for good communication (particularly in time of emergency). TRL stated that standardizing future channel spacing may make sense; however, a retroactive reshuffling of stations to accommodate retroactive channel spacing does not as it fails to recognize a broadcaster's real property right in relation to its frequency. TRL noted that listeners "know where to go" for music, news, severe weather reports and emergency communications and that moving existing legacy stations could cost lives in an emergency. TRL considered certain aspects of the proposed technical standards to be "incongruous, incompatible and non-compliant with URCA principles and policies, as prescribed in Section 4 of the Comms Act regarding the Electronic Communications Sector". URCA gave due consideration to these concerns and has addressed them more substantively under section 4 of this Statement of Results and Final Decision.

#### The Second Consultation Document

On 13 July 2018 URCA published the Second Consultation document which provided a further formal means through which members of the public, licensees and interested parties were able to make written submissions to URCA on the subject matter contained therein. URCA notified each FM radio broadcast station by email regarding the publication of the Second Consultation and provided the hyperlink to the same. The Second Consultation closed on 13 August 2018 and, as stated above, URCA did not receive any written responses to the Second Consultation document.

Recognizing the potential impact of the proposed technical standards on the FM broadcast industry and the wider Bahamian public and that the matters under consultation received substantial media coverage and public commentary, URCA extended the Response Date to the Second Consultation to 28 August 2018 to provide a further opportunity for interested persons to submit written responses. URCA particularly sought to solicit comments from FM radio broadcasters who would be the interested parties directly impacted by the proposed FM technical standards. URCA also published a Public Notice of the extension on its website and notified each FM radio broadcast station by email and letter regarding the extension to the Response Date.

URCA understands the importance of an open and transparent consultation process and is therefore satisfied that it has complied with its statutory duty under the Communications Act, 2009 (Comms Act) by affording all persons having interest in the subject matter of the Consultation Documents a reasonable opportunity to make submissions.

#### **4. URCA's Decisions and Reasons for Decisions**

The Second Consultation document set out a series of proposals and questions aimed at obtaining the views of members of the public, licensees and interested persons on the issues raised therein. URCA largely repeated the proposals and questions that were set out in the First Consultation for the benefit of first-time respondents to the Second Consultation document. URCA also reviewed and amended some of the proposals and questions under the First Consultation consequential to the technical work conducted by the technical consultants regarding those technical issues that were raised by respondents to the First Consultations and the technical advice that was provided in relation thereto.

Below, URCA lists each question that was posed under the Second Consultation document and provides its analysis and reasons for its Decision in relation to each:

**Question 1: Do you agree with the core objectives of this consultation?**

URCA also notes that while no comments were received in relation to the Second Consultation, respondents to the First Consultation were generally in agreement with the overall objectives of the proposed standards. The core objectives under the Second Consultation were to:

- (i) further the interest of consumers by promoting the optimal use of the radio spectrum as a state asset;
- (ii) improve the quality of FM Broadcasting in The Bahamas;
- (iii) provide a framework for low power (community) FM radio broadcasting; and
- (iv) maximise the number of assignments in each geographical area.

The technical standards are aimed at significantly reducing the occurrence of harmful interference in FM radio broadcasting band and improving the spectral efficiency and fidelity of FM radio.

URCA considers that these core objectives are consistent with the electronic communications policy objectives of the Comms Act and URCA’s statutory functions for the development of the electronic communications sector in The Bahamas.

**Question 2 (a): Do you agree with URCA’s proposed standard channel spacing of 600 KHz for islands in The Bahamas greater than 19 miles long and minimum 800 kHz in cases where the islands in The Bahamas are less than 19 miles long?**

The 600 kHz frequency spacing has been mainly adopted in countries such as Canada and the US with land mass more expansive than that in The Bahamas. URCA’s research suggested that 600

kHz frequency spacing might be appropriate for the islands of The Bahamas, provided that the maximum effective radiated power of any of the stations under consideration did not exceed 10 kW.

URCA has paid particular attention to the approach taken by the Federal Communications Commission (FCC) in the United States, in relation to “Grandfathered short-spaced stations” as set out under Part 73.213 of the FCC’s Code of Federal Regulations<sup>4</sup> (CFR) which prescribes the minimum geographical distance separation required to achieve the appropriate spectrum mask, while taking into account the effective radiated power (ERP) proposed for FM radio broadcasting stations in the US. The CFR established that for US broadcast stations with transmission power of less than 6 kilowatts (kW), the minimum physical separation required between FM radio stations with frequency spacing of 600 kHz, is 19 miles. URCA is cognisant that geographical spacing of 19 miles for radio transmitters in many of the smaller islands of The Bahamas may be unachievable, and therefore, URCA considered that channel spacing of 800 KHz may be most appropriate for the topography of the smaller islands of The Bahamas. URCA was particularly concerned that the suggested 19 mile geographical separation distance would not be practical on smaller islands such as New Providence, which is only 21 miles long and 7 miles wide. From a purely technical standpoint, URCA therefore considered frequency spacing of 800 kHz would have been ideal to ensure optimal use of radio spectrum.

On the basis of these considerations, URCA’s preliminary position as set out in the Second Consultation Document, proposed standardized channel spacing of 600 KHz for islands in The Bahamas that are greater than 19 miles long (taking the longest straight line measurement possible on the island), and channel spacing of 800 KHz for islands in The Bahamas that are less than 19 miles long. Following publication of that document, URCA further analysed the different standard frequency spacing possibilities, considered submissions made in response to the First Consultation Document (none were received for the Second Consultation Document), and has arrived at the following findings:

- 400 kHz spacing would grant the most efficient usage of the spectrum in terms of the number of broadcast stations that can be accommodated (potentially up to 50), however it would require significant and potentially costly efforts in spectrum engineering and management on the part of the licensee and the regulator, and increases the likelihood of low quality reception at the edge of the coverage area due to necessarily lower radiated power and increased use of filters and other technical equipment to avoid adjacent channel interference. With 400 kHz spacing, sustained spectrum monitoring effort would be necessary by the regulator at additional expense to the sector;

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<sup>4</sup> Revised as of October 1, 2006



- 800 kHz spacing would result in a significantly decreased effort in spectrum engineering and management, and would practically eliminate any adjacent channel interference risk. With 800 kHz spacing, optimal distances between transmitters using adjacent frequency assignments can be as low as 19 miles, and up to 25 FM transmitters could be accommodated on a single island. However, this spacing would not be consistent with the existing frequency allocations in New Providence, as there are a total of 26 currently assigned frequencies in existence; and
- The adoption of a 600 kHz spacing approach, also the most commonly adopted standard in ITU Region 2, would represent a balanced option between the alternatives provided above. It should be sufficiently robust to avoid adjacent channelling interference in most instances, while assuring the availability of FM radio spectrum resources to accommodate all existing broadcasters (up to 32).

In light of the foregoing, URCA considers that it should adopt channel spacing for FM broadcast stations of a minimum of 600 kHz for islands in The Bahamas greater than 19 miles long. In cases of islands in The Bahamas less than 19 miles long, URCA's frequency assignments for FM radio stations should be a minimum of 800 kHz<sup>5</sup>.

URCA considers that its adoption of the aforementioned 600 kHz and 800 kHz channel spacing guidelines should facilitate the optimal co-existence amongst licensees operating in the RF environment. Assignments with such spacing are also likely to reduce the technical complexity of filtering co-sited stations, allowing for the possibility of increased multiplexing of stations on the same antenna, with attendant reduced costs and proliferation of broadcasting antennae. The mitigation of potential interference will also be made easier and less costly. URCA further considers that another advantage of establishing as 800 kHz spacing for Full Service (power/coverage) FM broadcast stations is that it will allow for greater flexibility for URCA to make provision for un-protected 400 kHz spacing assignments for LPFM operations in smaller markets for special programming or for temporary special events.

It should be noted that the assignment of frequencies is an URCA responsibility, and therefore URCA's decision on optimal spacing shall take effect as an internal policy, which will guide URCA's deliberations on licensing or frequency assignment matters moving forward. No Technical Standard will be established pertaining to this issue.

**Question 2(b): What are your views regarding URCA's proposed approach to standardizing the channel spacing for FM radio broadcasting in The Bahamas and the requirement to migrate?**

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<sup>5</sup> The proposed channel spacing will apply to new applications and would be based on non-interference conditions to existing broadcasters.

As noted previously, the proposed spacing of 600 kHz and 800 kHz is not consistent with the current assignments of FM radio frequencies, particularly on the island of New Providence. Legacy decisions made by URCA and its predecessor the Public Utilities Commission (PUC) (particularly during the transition period to the new regulatory regime between 2009 and 2011) have resulted in uneven spacing of FM radio stations in New Providence across the FM band.

As part of this consultation URCA sought the views of interested parties on possible methods for migration of radio stations including the possibility of using URCA's powers under the Comms Act. It is noted that no responses were received whether from existing broadcasters/licensees or the public on this issue in response to the Second Consultation Document. URCA has therefore been forced to reach its decision based on comments submitted in response to the First Consultation Document, and URCA's own further research.

URCA has considered the likely impact on radio broadcast stations in New Providence and the public that would result from any regulator-imposed requirement to migrate frequencies to conform to the ideal spacing configuration, and notes the following important considerations:

- URCA is cognizant that radio stations have expended significant resources on product branding, "good will" and the general recognition by the public of the radio station.
- Licensees operating radio stations on existing frequency assignments affected by a requirement to migrate would be forced to incur costs to change trademarks, stationery, logos, business paraphernalia and other related material and to engage in widespread advertising to familiarise the public with the new frequency.
- The migration would necessarily impact several radio stations which would, taken as a whole, be disruptive and have a negative impact upon the listening public during the migration period, possibly resulting in significant harm.
- While the re-spacing may be an ideal approach, adequate reduction of potential harmful interference between existing FM radio stations in New Providence can be achieved through compliance by radio broadcast stations to the FM radio technical standards proposed by URCA arising out of this consultation.
- URCA does not consider the current irregular spacing to be the fault of the existing licensees and a disproportionate part of the burden of any migration would fall upon those licensees. As such, URCA does not consider it inappropriate to carry out an exercise now which would disproportionately impact and expose the existing licensees to costs and expenses resulting from decision made through no fault of their own.

Based on the foregoing, URCA has balanced its objective of achieving spectrum efficiency in New Providence through establishment of appropriate frameworks, with the possibility of harm to

existing radio broadcast stations and the public. URCA has therefore determined that it will not require the migration of any existing FM radio broadcast stations to comply with the optimal spacing determined above.

URCA has in its contemplation that natural migration of radio stations will occur over time by URCA being alerted to changes in the broadcasting environment which occur from time to time in the ordinary course of the market's development. URCA considers this to be an adequate response to the need for realignment of the band. To that end, URCA will therefore:

- Ensure that future assignments, if any, are made consistent with the proposed optimal spacing. This may mean delaying the re-licensing of any frequencies that may be vacated due to surrender or termination of licences until a suitable frequency (consistent with the spacing policy determined) is available for assignment, and necessarily means that URCA's moratorium on the issuance of new FM Radio licences in New Providence, established on 27 March 2014 will remain in effect for the foreseeable future;
- Opportunities for changes that occur in the ordinary course of operations (such as in connection with business-driven station rebranding exercises, changes of ownership, and termination or surrender of licences) shall be used where possible to realign the broadcasting market toward the determined ideal configuration;
- Any station that wishes to voluntarily change its frequency assignment to one consistent with the determined optimal spacing will be allowed to do so, provided that the relevant frequency is available within the constraints identified herein;
- URCA recognises that the value of goodwill and branding for each radio station may vary so that different stations may have vastly different positions regarding change of frequency assignment. URCA may have in its power the ability to offer incentives which may result in some stations voluntarily moving to optimal frequency assignments. In this vein, URCA may in the future consider voluntary schemes to incentivise existing broadcasters to migrate voluntarily.

URCA will in due course publish the proposed revised configuration for each island in The Bahamas. Existing licensees who are desirous of making changes in their station frequency assignment for any reason are invited to approach URCA which will consider reassignment, if possible, within the existing frequency availability constraints.

It is worth repeating here that the assignment of frequencies is an URCA responsibility, and therefore URCA's decision on methods for achieving the optimal spacing between FM radio stations shall take effect as an internal policy, which will guide URCA's deliberations on licensing or frequency assignment matters moving forward. No Technical Standard will be established pertaining to this issue.

**Question 3: What are your general views regarding the licensing of Low Power FM broadcasting in The Bahamas?**

URCA has seen a significant decrease in interest for this type of radio broadcast service but has determined that it remains appropriate to proactively establish technical standards which will govern Low Power or Community broadcasting, for the overall effective regulation of the FM radio broadcast industry.

**Question 4: Do you agree with URCA's proposal that the coverage area for Low Power FM broadcasting stations in the smaller Family Islands should not exceed a one (1) mile radius from the station? What are your views regarding the maximum ERP limit and authorization for those stations that are licensed on 'no interference and no protection' basis?**

URCA has determined that the coverage area of Low Power FM (LPFM) broadcasting stations should not exceed a one (1) mile radius from the station<sup>6</sup>, particularly for the smaller Islands<sup>7</sup> of The Bahamas to allow for effective radio transmissions to the listening community without causing harmful interference to other high-power FM broadcasters that are operating in close proximity.

The effective radiated power (ERP) and transmission antenna height and antenna pattern will be determined by URCA on a "per station" basis to permit high quality broadcasting in the specific coverage area while limiting the risk of interference, but URCA has determined a maximum ERP limit of 100 Watts for LPFM stations in The Bahamas. LPFM stations are required to firstly obtain a licence under the Comms Act from URCA to operate and use spectrum for LPFM broadcasting. Spectrum licences issued to LPFM stations will be granted on the basis that the stations shall not cause harmful interference to commercial FM broadcasting stations and are not entitled to claim protection from interference caused by commercial FM broadcasting stations.

The Technical Standards as published by URCA will apply to Low Power FM broadcasting in The Bahamas.

**Question 5(a): Do you believe that the technical standards proposed by URCA for FM radio broadcasting in The Bahamas are appropriate?**

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<sup>6</sup> The geography (i.e. land mass) of each Island must be considered when establishing the broadcasting parameters for Low Power FM broadcasting stations. For example, Rum Cay has land mass of 30 square miles while Abaco has land mass of 775.7 square miles. As such, URCA may consider extending the coverage area for Low Power FM broadcasting on the larger islands.

<sup>7</sup> Islands with land mass of 80 square miles or less.

URCA has determined that the Technical Standards will be informed and guided by the technical standards published by the ITU for Region 2. URCA has considered the technical standards for FM broadcast as published by other countries in ITU Region 2 such as Canada, US and within the region<sup>8</sup>. URCA has used detailed parameters as well as an internationally-recognized propagation model (Langley–Rice Model) and software developed by the Canadian Communications Research Centre (CRC) in the process of developing the technical standards. URCA is therefore satisfied that the Technical Standards are appropriate and compatible with ITU Region 2 standards. The Technical Standards are the minimum requirements for the design and operation of FM radio broadcasting networks.

URCA has established effective radiated power (ERP) or power levels in the Technical Standards which it considers are appropriate for FM broadcast stations in The Bahamas. URCA conducted further technical investigations and analyses in this regard and has determined that the ERPs would minimize harmful interference between radio stations while simultaneously permitting high quality ubiquitous coverage by such stations, including in-building penetration.

URCA sets out below its approach to determining the proposed ERP/power levels. A maximum value for Height Above Average Terrain (HAAT) of 100 meters was considered and the following revised factors<sup>9</sup> were also considered when calculating coverage for radio frequency propagation:

- (i) terrain (natural features of the land);
- (ii) antenna and tower heights above the average terrain (HAAT);
- (iii) radio frequency (RF) energy generated directly from the transmitter output port of the transmitter;
- (iv) location of the transmitter;
- (v) antenna gain;
- (vi) the ERP and the receive signal levels at the fringes for an acceptable quality of service to the customer;
- (vii) signal radiation patterns;
- (viii) the climate zone (Tropical - in the case of The Bahamas); and
- (ix) recommended receiving antenna height (30ft above ground).

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<sup>8</sup> Particularly Barbados, Jamaica, Trinidad and Tobago and the Organisation of Eastern Caribbean States (OECS)

<sup>9</sup> These factors are based on landmass and the physical layout of the land.

All calculations were done using coverage prediction RF planning software namely: the Longley-Rice<sup>10</sup> propagation model 20 MHz to 40 GHz, which encompasses the band spread for FM radio broadcast frequencies (88 MHz – 108 MHz).

During the propagation modelling and calculation exercise, the frequency 108 MHz was used for all locations. This was done to give greater assurance that the signal levels being recommended for the service area(s) to be covered are strong enough for listeners to receive a good quality signal, since the higher frequencies in the band provide a shorter range and the coverage area is lessened. As a result, operators operating below 108 MHz should experience signals beyond the average coverage area achieved through URCA's modelling exercise. URCA has concluded that along with proper channel spacing and engineering layout, the power levels will assist with minimizing the effect of harmful interference that numerous stations, particularly in New Providence, are currently experiencing. URCA also concludes that the established power levels will mitigate hazardous radiation to the general public from the extremely high radiating signals being emanated from relatively low installed antennas and tower heights (especially those located in densely populated communities of New Providence).

URCA notes that under the First Consultation the power levels of the transmitter were determined on the basis that the ERP power and antenna height above average terrain (HAAT) employed, provided a minimum signal level of 70 dB above 1 uV/m over the coverage area. URCA clarified under the Second Consultation that this is at 9.1 meters (30ft above ground)<sup>11</sup>. This ensured that the 1mV/m contour encompasses the population centre that is being served. The level of coverage considering a field strength of 70 dBuV/m evaluated outdoor at 30 feet (9.1 meters) above the ground (measured with a real outdoor antenna or evaluated using dedicated spectrum engineering tools) is internationally accepted to ensure satisfactory service quality inclusive of indoor/in-building penetration, in the presence of interference from industrial and domestic equipment in normal reception conditions. The minimum usable field strength at a point, in the absence of interferences from industrial and domestic equipment, measured at 10 m above the ground using an outdoor antenna is 48 dBuV/m. No "indoor" or "interferences from industrial and domestic equipment" corrections are to be applied to the 70 dBuV/m field strength value (evaluated at 30 feet or 9.1 meters).

URCA used omni-directional antennas in each case during the calculations to achieve the desired results for each island. However, radio broadcast stations can maximize the results beyond the proposed power levels, which can also assist in minimizing the effects of harmful interference by proper signal pattern engineering. That is, in instances where omni-directional antennas are

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<sup>10</sup> The software used to produce the results was provided by the Communications Research Centre of Canada (CRC), the Canadian government's primary laboratory for research and development (R&D) in advanced telecommunications.

<sup>11</sup> Reference: BPR-3, Part 3: Application Procedure Rules for FM Broadcasting Undertakings, Chapter 3.9.1 Prediction of Coverage.

used, directional antennas can be utilized in the alternative for more robust results. URCA therefore determines that this should also have the effect of narrowing the radiation pattern beam, achieving greater range and greatly minimizing the effects of harmful interference.

**Question 6: URCA invites comments on any additional suitable approaches to protect NavCom operations.**

URCA has determined that the safeguard against interference to aeronautical radio-navigation and communications (NavCom) services in The Bahamas is necessary. FM broadcasting stations transmit at much higher power than NavCom facilities and therefore it is important to limit spurious signals from FM stations to prevent interference to NavCom reception. All FM stations must suppress spurious emissions in the band 108-137 MHz to -85 dB and external filtering may be employed by the licensee in order to comply.

URCA has further decided that any new application for FM radio broadcasting (commercial or low power) should be subject to an FM/NavCom compatibility analysis and depending on the result of such analysis, the following will take place:

- a) if no interference is predicted, it is presumed that compatibility exists, and the application may be approved (subject to all other relevant factors being appropriate);
- b) if the potential for interference is low, a conditional approval of the licence may be granted subject to:
  - (i) monitoring during on-air testing of the station, or occasionally; and
  - ii) flight tests during on-air testing of a station in complex electromagnetic environments; and
- c) if the potential for interference is high, the application shall not be approved. Compatibility analysis and interpretation of the results will be performed by URCA in consultation with any other relevant regulatory authority and agency.<sup>12</sup>

URCA will conduct its analysis of each new application to provide FM radio broadcast services in The Bahamas in accordance with international practice based, inter alia, on Report ITU-R M.2147 (05/2009) *“Assessment of potential interference between FM broadcasting stations operating in the band around 87-108 MHz and aeronautical VDL Mode 4 systems in the band 112-117.975 MHz operating in the AM(R)S”* and Report ITU M.929-2 (1990) *“Compatibility between the broadcasting service in the band of about 87-108 MHz and the aeronautical services in the band 108-137 MHz”*.

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<sup>12</sup> For example, the Ministry of Transport and Aviation and/or the Civil Aviation Department.

URCA notes that TRL as a Respondent to the First Consultation opined that the issues with NavCom are practically non-existent due to the avionics radios and instruments found in modern planes. TRL argued that the 85 dB specification is meaningless without an applied distance figure (vector) and that airplanes in fact contain basic VHF FM broadcast receive radios as an additional means of navigation and communication. URCA is sympathetic to this view and internationally established protection criteria for NavCom interference prediction models would be used by URCA for assessing FM and aeronautical frequency assignment compatibility. URCA considers that it is possible to establish distance separation criteria between the FM and NavCom stations beyond which compatibility analysis may not be required.

**Question 7: URCA invites comments on the feasibility of sharing existing sites by any new applicants or existing FM broadcast licensees. URCA also invites comments on whether the requirement of sharing existing sites by new applicants or existing FM broadcast licensees should be made mandatory.**

FM radio broadcasters should not erect a new tower or antenna supporting structure unless the broadcaster has received “Certificate of No Objection” from URCA and approval from all relevant Government agencies. URCA requires owners/operators of an FM radio station to firstly apply to URCA prior to the modification of an existing tower or the erection of a new tower or antenna supporting structure for FM radio broadcasting in The Bahamas.

Considering the foregoing, FM radio broadcasters shall comply with the requirements under the Infrastructure Sharing Regulations ECS 04/2015.

**Question 8(a): URCA invites comments regarding: (i) the extent to which existing licensees have historically followed international standards; and (ii) what evidence could be submitted to URCA to demonstrate such compliance?**

**Question 8(b): Any comments regarding the proposed process to verify compliance to the international standards related to RF exposure should be included.**

**Question 8(c): Do you agree with the adoption of a single standard RF Radiation Exposure by FM radio stations namely the International Commission on Non-ionizing Radiation Protection (ICNIRP)?**

URCA considered potential public health and safety implications consequential to RF transmission by radio broadcast stations when developing the technical standards for FM broadcasting in The Bahamas. URCA also recognized that exposure to radio frequency energy may pose significant public health and safety risks. Under the Comms Act, URCA may by determination or regulation establish technical rules and standards in relation to technical equipment to ensure against damage to public health, safety or the environment. Where URCA



does not establish such rules or standards it may recognize and apply technical rules and standards of other countries in this regard<sup>13</sup>.

URCA determines that it is the responsibility of the operators of FM radio broadcast stations to ensure that all broadcasting installations comply with the internationally accepted radiation limits at all times, including the consideration of combined effects of nearby installations within the local radio environment. Radio station operators shall design and operate their network to meet requirements to ensure the protection of the general public from harmful exposure to RF radiation. URCA will adopt an ex post regulatory approach to compliance and enforcement in this regard.

URCA considers that a multi-agency approach to the development of comprehensive public health and safety standards specific to the electronic communications sector in The Bahamas required<sup>14</sup>. In the interim, however, URCA will recognize and apply technical rules and standards of other countries in this regard. URCA has set out in the Technical Standards consultation document references to international public health and safety standards for RF radiation exposure applicable to the band 88-108 MHz.

Under the First Consultation, URCA proposed to require FM radio broadcasters in The Bahamas take account of these standards in accordance with Section 83 of the Comms Act and Condition 6 of the ISL. Having considered the comments by Respondents under the First Consultation, URCA reviewed its proposal and has determined to adopt the single Standard for RF Radiation Exposure by FM radio stations namely the International Commission on Non-ionizing Radiation Protection (ICNIRP) that is formally recognized as an official collaborating non-governmental organization by the World Health Organization (WHO), the specialized agency of the United Nations that is concerned with international public health. URCA is aware that the ICNIRP limits are also recommended by the ITU through Recommendation ITU-T K.52, "SERIES K: PROTECTION AGAINST INTERFERENCE, Guidance on complying with limits for human exposure of electromagnetic fields".

**Question 9: Do you believe that the introduction of DSB will benefit consumers and stakeholders in the radio broadcast market in The Bahamas?**

**Question 10: Do you agree with URCA's view that a "hybrid" approach to FM radio broadcasting may be a viable option to the implementation of full digital FM broadcasting in the Bahamas?**

In accordance with its mandate under the Comms Act to further the interest of consumers and to ensure that radio spectrum is managed and used in a manner that is economically efficient and facilitates the evolution of new technologies and electronics communications services, URCA

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<sup>13</sup> Section 83 of Comms Act

<sup>14</sup> Particularly with the Ministry of Health

considers that the technological advances of digital technology and the potential impact of such technology on the radio broadcast market in The Bahamas will have, but not be limited to, the following direct benefit consumers and stakeholders in the radio broadcast market in The Bahamas: (i) improved reception; (ii) easier navigation between stations; (iii) reduced radiation exposure; (iv) reduction in power consumption; (v) spectrum efficiency; (vi) reduce harmful interference; (vii) release of spectrum for other services; and (viii) be compatible with international technical standards.

URCA considers that obtaining the views of members of the public, licensees and interested persons regarding this issue is critical on this issue and considers the lack of response to be indicative of a lack of public interest on this issue. In the absence of such views, URCA reserves decision on these matters at this time.

**Question 11: Do you agree with the assessment that it may be premature to focus on digital migration of FM broadcasting in the Bahamas at this stage?**

URCA considers that the switchover from analogue to digital broadcasting can be a complex process with social and economic implications that go beyond the pure technical migration. URCA will also monitor global developments before finally deciding on whether migration to digital technology for FM broadcasting in The Bahamas should be implemented. One of the main challenges with the launch of digital radio broadcasting in The Bahamas is the availability of the equipment. A large investment in suitable equipment may be required by radio broadcasters, and consumers will need digital compliant radios to experience the full benefit of Digital Sound Broadcasting (DSB).

URCA has therefore determined that whether and when digital radio migration will in fact occur in The Bahamas will be market driven and depend heavily on market demand through the development of digital technology globally. Any regulatory changes or migration to DSB will not happen without full public consultation which considers the costs and benefits to consumers and takes into account the needs of all stakeholders relying on FM radio services. URCA will particularly consider the economic efficiency and switching costs for operators and consumers.

**Question 12(a): What are your general views on (future) Digital Sound Broadcasting?**

**Question 12(b): Which technology and devices (e.g. digital handsets) do you (as a broadcaster/consumer etc.) expect to use in the future?**

**Question 13: Are there any other matters URCA should consider as part of its public consultation regarding DSB in The Bahamas?**

URCA considers that obtaining the views of members of the public, licensees and interested persons regarding questions 12(a), 12(b) and 13 above would have been particularly instructive,

and is necessary for URCA to move forward on this issue. In the absence of such views, URCA reserves decision on these matters at this time.

**Question 14: What do you consider is a reasonable time frame within which FM broadcast licensees should be required to be fully compliant with the Technical Standards issued by URCA consequential to this Consultation process? Please give reasons in support of your position.**

URCA proposed in the Second Consultation document that all new FM radio broadcast licensees in The Bahamas would be required to be compliant with the technical standards from the date of publication of the Final Decision. URCA is sympathetic to the views submitted by the Respondents on this issue in response to the First Consultation that a longer period for existing FM radio broadcast licensees to become fully compliant with the technical standards would be fair and appropriate. Respondents had proposed a period of two (2) years, however, URCA considers such timeframe would represent an inordinate delay. URCA's field measurement exercise and further technical analysis indicated that the harmful interference between FM radio broadcasters was mainly consequential to pilot carrier deviation levels which were significantly above or below best practice international standards for FM radio broadcasting. There were frequent instances of over modulation and/or excessive ERP by FM radio broadcast stations. URCA is aware that FM radio broadcast transmitters are manufacture synthesized to allow for some these issues to be effectively remedied, in some instances by simply tune dialling broadcast transmitter equipment to the appropriate technical standards that have been established by URCA under this consultation process.

Having regard to the foregoing, URCA considers that requiring FM radio broadcasters to become fully compliant with the technical standards established consequential to this consultation process by no later than eighteen (18) months from the publication of the FM technical standards by URCA would be fair and appropriate. URCA intends to work closely with FM radio broadcast licensees as necessary to ensure a seamless implementation of and compliance with the technical standards established by URCA.

For licensees establishing new FM radio broadcast stations, URCA's considerations are different. The establishment of a new station presents an optimal opportunity to set up in full compliance with all applicable standards. Further, the potential for disruption by new broadcasters of existing broadcast signals (particularly in a mature, active broadcasting market) is significant, and new broadcasters must mitigate against this by following best practices from "day one". URCA has therefore decided that any newly licensed FM radio broadcaster must be compliant with the FM Technical Standards from the date of the grant of the relevant Individual Spectrum Licence.

## **5. Next Steps**

URCA will publish the Technical Standards for FM Radio Broadcasting in The Bahamas on its website as a standalone document. URCA will revise the Technical Standards from time to time consequential to industry experiences, developing law and best practice, and any changes to URCA's powers and responsibilities.

URCA will engage closely with all FM radio broadcast licensees to ensure a seamless implementation of and compliance with the Technical Standards.

## 6. URCA's Final Decision

**WHEREAS** the Utilities Regulation and Competition Authority (URCA), on 6 July 2015 conducted a pre-consultation meeting, the attendance of which was open to all FM radio broadcast stations in The Bahamas, to the end of developing and implementing technical standards for FM radio broadcasting in The Bahamas;

**WHEREAS** URCA, on 22 December 2015, published on its website its the “*Technical Standards Framework for FM Radio Broadcasting in The Bahamas – ECS 07/2015*” (the First Consultation) and notified each FM radio broadcast station of the publication of the consultation document and where the document could be found and downloaded from the URCA website;

**WHEREAS** URCA, having received comments from key industry stakeholders requesting that additional time to formulate responses to the issues and questions under the First Consultation was required, acceded to such request and extended the deadline for that consultation to March 4, 2016 to ensure that its consultation process was as comprehensive and inclusive as possible;

**WHEREAS** URCA gave due consideration to all comments received to First Consultation and considered the technical nature and scope of such comments by the respondents, conducted an extensive review of its proposed technical standards and having recognized the potential impact of the proposed technical standards on the FM broadcast industry in The Bahamas and the wider Bahamian public, engaged expert technical consultants to conduct further technical work to address the substantive technical concerns raised by the respondent to the First Consultation and to ensure that the technical standards are best suited for implementation in The Bahamas, as well as comply with international best practice;

**WHEREAS** URCA, consequential to the further work that was conducted by the technical consultants, on 13 July 2018 published on its website its “*Second Consultation on Technical Standards Framework for FM Radio Broadcasting in The Bahamas – ECS 08/2018*” (“the Second Consultation”) document that provided members of the public, licensees and interested parties with further opportunity to comment on the proposed technical standards for FM radio broadcasting in The Bahamas and related matters, prior to implementation.

**WHEREAS** on 13 August 2018 the Second Consultation closed and URCA did not receive any written responses to the Second Consultation document, by Public Notice published on the URCA website extended the Response Date to the Second consultation to 28 August 2018. Despite the extension, URCA did not receive any written responses to the Second Consultation document.

**WHEREAS** in the absence of responses to the Second Consultation document, URCA again conducted further due diligence on its proposals, conducted a further review of the responses from the First Consultation document in the context of the proposals made in the Second

Consultation document, and sought to ensure that all views within URCA's knowledge were fully considered before making its final decision.

**AND WHEREAS** URCA, having duly considered all the responses to the First Consultation, hereby issues the following Final Decision in accordance with its powers under section 99 of the Comms Act:

1. URCA shall publish Technical Standards for FM Radio Broadcasting in The Bahamas – ECS 04/2019 document in the form annexed to this decision (the “FM Radio Technical Standards”) which shall, subject to the following provisions apply with immediate effect to all licensees operating FM Radio Broadcast Stations in The Bahamas.
2. All existing licensees providing FM radio broadcast services in The Bahamas shall be in compliance with the FM Radio Technical Standards within eighteen (18) months from the date of this decision.
3. All persons granted a licence to provide FM radio broadcast services in The Bahamas after the date of this decision shall comply with the FM Radio Technical Standards from the date of the grant of their licence.
4. Contravention of the FM Radio Technical Standards may be subject to enforcement action pursuant to Part XVII of the Comms Act.
5. URCA may revise the FM Radio Technical Standards from time to time as it considers necessary or appropriate to reflect industry experiences, developing law and best practices, or any changes in the applicable regulatory environment.