DEVELOPMENT
OF
MOBILE SPECTRUM SCREEN

THE SMA'S RESPONSES TO STAKEHOLDERS' COMMENTS ON THE PROPOSED SPECTRUM SCREEN

AUGUST 13, 2021

SPECTRUM MANAGEMENT AUTHORITY
KINGSTON, JAMAICA

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A. Introduction

1. The Responses to Stakeholders' Comments on the "Position Paper on the Development of Mobile Spectrum Screen has been prepared by the Spectrum Management Authority ("the SMA" or "the Authority"), the regulatory body with responsibility for the management of the radio frequency spectrum in Jamaica and an agency under the Ministry of Science, Energy and Technology (MSET).

2. The document was prepared by the SMA, in collaboration with the Fair Trading Commission (FTC), the administrative body responsible for implementing the Fair Competition Act (FCA) and the Office of Utilities Regulation (OUR), which was established by an Act of Parliament in 1995 to regulate the operations of utility companies.

3. The information provided herein are primarily for those parties currently providing or are considering providing mobile services to the public in Jamaica. This document set out the SMA responses to the concerns and questions raised by the submissions received from Digicel and FLOW.

4. **Comments and or recommendations are being solicited with rationale for your position, on**:

- The SMA's Responses to Stakeholders' Comments on the "Position Paper on the Development of Mobile Spectrum Screen, and
- General guidelines and rules in relation to the mobile spectrum screen.

5. All related comments must be addressed **in writing to**:

The Managing Director
Spectrum Management Authority
13-19 Harbour Street,
Kingston
consultation@sma.gov.jm

6. **The revised deadline for submission of comments on the SMA's responses is 2021 August 30.**

7. **Publication of Submission**

The SMA will publish in whole or in part, all comments received in relation to this phase (Comments to the SMA's Responses) of the Mobile Spectrum Screen Consultation Position Paper. The identity of those making the comments will be published and requests for confidentiality of subject material will be considered in accordance with the need for transparency, or as authorized by law. In an effort to provide The recently revised timeline for the consultation is summarized in the Table below.

Events	Revised Deadline Dates
Posting of Position Paper - **SMA**	2021 July 9
Submission of comments on Position Paper - **Industry**	2021 August 4
Posting of responses to comments received - **SMA**	2021 August 13
Submission of comments on SMA's responses - **Industry**	2021 August 30
Posting of Notice of Recommendation - **SMA**	2021 September 7

B. Background

8. The NOTICE OF DECISION TO EXTEND THE AGGREGATE SPECTRUM CAP POLICY[1], of 2017 March 24 (hereinafter "the 2017 Decision"), made provision for its review within six (6) months of the conclusion of the World Radiocommunication Conference in 2019 (WRC-19).

9. However, based on the assessment of the World Health Organization (WHO) that the Coronavirus (COVID-19) was a pandemic and the Prime Minister's declaration that the whole Jamaica was a disaster area, the SMA recommended a delay in the review of the Policy.

10. Subsequently, the Minister, acting on the recommendation of the SMA, extended the period of review for the 2017 Decision for a further period of nine (9) months commencing 2020 May. The SMA has since sought a further extension.

11. On 2020 November 16, the SMA issued a Position Paper, PROPOSED SPECTRUM HOLDINGS POLICY[2], which proposed the following spectrum holding policy:

- Removing the spectrum cap and utilizing a spectrum screen for assignments above 120 MHz of spectrum in the listed frequency bands: 700MHz, 850MHz, 900MHz, 1800MHz, 1900MHz, and 1700/2100 MHz (AWS Band); and
- A 30% in-band Screen on all other suitable and available bands allocated for mobile services, (1500 MHz, 25 GHz, 37 GHz, 43 GHz, and 66 GHz, …etc.)

12. Based on initial queries/comments received, a second round of consultations was initiated on July 9, 2021, with the issuance of this Position Paper on the Development of a Mobile Spectrum Screen. The Position Paper sought to set out the general guidelines and rules in relation to the mobile spectrum screen; and describe the evaluation process, criteria, and related rubric.

13. At the end of the extended deadline of August 4, 2021, the SMA received two stakeholder responses to the Position Paper from namely: Digicel and FLOW.

14. At this juncture, the SMA now provides its responses to the comments received.

[1] Link for SMA's website, Cap Decision.
[2] Link for SMA's website, Spectrum Holding Policy.

C. RESPONSES TO DIGICEL'S COMMENTS ON THE POSITION PAPER

The SMA reviewed and considered the comments of the mobile providers on August 9, 2021 and the following responses were encapsulated:

DIGICEL'S COMMENTS

1. General Comments

Paragraph 2 & 3:
"Further the previous Consultations carried out by the Authority clearly anticipate that there will be no more than three mobile networks in Jamaica for the foreseeable future. Digicel believes that given the market size three operators with similar market share would each struggle to achieve minimum economic scale and that on this basis concurs with the view that there will be no more than three operators for the foreseeable future.

Therefore, the formulas used in the screen should recognise this market reality and be constructed to reflect a three (3) player market."

SMA's Response to Paragraphs 2 and 3 combined:
*The SMA notes the above comments, but however refutes the assertion that "the Authority clearly anticipate that there will be no more than three mobile networks in Jamaica", since it is not the practice or policy of the SMA to predict future events particularly in relation to market activities which are of a s dynamic nature. In alignment with this, and the fact that the market structure can change the SMA in recognition of these facts chooses to use **'n'** in the formula, denoting the number of operators in the market, at any given time which is more than appropriate in the circumstances.*

Paragraph 4:
"While we note the proposed cut-off for recommending the award of spectrum and the various proposed thresholds and for apportionment of evaluation points at the levels of the points proposed to be awarded, the Authority has not set out any rationale or reason why it has chosen any of these. For example, why is the threshold for allocation 70 and not 65 or on what basis did the Authority decide that if less than 5% of consumers ported in the previous 6 months then no points would be awarded?

The failure to properly set out its reasoning means that the Authority has denied respondents the opportunity to engage meaningfully with the detail of the proposed methodology. This is exacerbated by the short timeframe which was given for response. Digicel reserves its rights in respect of this."

SMA's Response to Paragraph 4 & 5:
In recognition of the above comment, the SMA wishes to advise that in proposing "the cut-off for recommending the award of spectrum...at the levels of points proposed to be awarded," the SMA was guided primarily by the following:

- *The Government of Jamaica's (GoJ's) policy considerations, (included in the document), which the SMA has to balance in managing the spectrum.*
- *The SMA also considered the **nature of the transaction**, in that, the SMA believes that assigning spectrum above the trigger point can certainly enhance an operator's competitiveness, (which was the reason for the cap), and as such the operator's application must be very convincing for the SMA to recommend to the Minister, the award of the additional spectrum. As such, the criteria incorporated were established to ensure that – the spectrum is needed, it will be utilized efficiently and that the market remains competitive. Notwithstanding, if these are not maximized there should be significant public interest benefits to be derived, to compensate.*
- *Considerations were also given to the levels the SMA deemed to be acceptable if the objectives are to be met under the circumstances outlined above. Particularly as it relates to the 70% and not 65%, the SMA with the abovementioned considerations in mind, reviewed each category and determined that 70% is the acceptable level for award. Considerations were given to minimum levels of acceptance particularly with regards to competitive analysis and efficient use of the spectrum categories in determining the pass score of 70%, which we hold as reasonable under the circumstances.*
- *Further, as you may be able to appreciate, the approach to the scoring, is not an exact science and is based on the SMA's best judgement, at this time, under the current circumstances. As such the entire process is subject to review as the instrument is used going forward and the necessary adjustments will be made as the circumstances warrant.*
- ***Please see detailed comments on porting, under Section 3 (Competition Analysis**).*

2. Technical Information

Paragraph 1:
"The use of the phrases "The intended geographic coverage of the network" in Section 30. "Improved download rate (Mbps) coverage quality, under peak traffic conditions at the deployment areas specified by the Applicant. [emphasis added]" at Section 35 and "Based on the area identified by the applicant, that is, the area under consideration for increase capacity, the SMA would seek to determine the prevailing and the proposed levels of spectral efficiency in that area." [emphasis added] at Section 47 of the document, all indicate that applications can be made for sub-national geographic allocations.

In practice this is not the case, allocations are made on a national basis. To do otherwise would reduce the overall efficiency of spectrum utilization given the need for co-ordination between different areas and different operators."

SMA's Response to Paragraphs 1 and 2 combined:
The comments are duly noted. The SMA wishes to inform that the mention of "the intended geographic coverage of the network…," etc. is based on the fact that these proposed requests, by operators would only be in circumstances where they are experiencing challenges in providing related services. As such,

these challenges may be island wide or in specific geographic areas. In recognition of this the SMA in doing its assessment would needs to obtain information in relation to the "area or areas under consideration". The licence, however, would still be an island wide licence and all the other requisite information would be required. To be clear, the licence would be island wide, however in submitting the application, the SMA requires specific information pertinent to the area(s) experiencing challenges.

Paragraph 3:

Considering the spectral efficiency only in areas that have been designated by the operator runs the risk of gaming whereby operators only identify and apply for those areas which will maximise the spectral efficiency score.

SMA's Response to Paragraph 3:

The SMA appreciates this comment, and is mindful of such a situation, and in recognition ensured that the process of award itself is sufficiently robust. Additionally, operators do have other categories/criteria that are necessary to be satisfied as well.

Paragraph 4:

A more equitable approach would be to consider the spectral efficiency in a predefined geographical area that equates to a minimum population coverage.

SMA's Response to Paragraph 4:

The SMA appreciates the proposal above, however, at this juncture, the SMA's method of choice is to consider the spectral efficiency of the specific area that the operator indicates is problematic. Utilizing a predefine geographical area, is not without its challenges, particularly where problem/issues go across predefined areas. It should be noted however that the system will be subjected to review, particularly in its early stages to assess and resolve issues that may develop.

Paragraph 5

As market shares vary over time the effect of changes in market shares could be dealt with by issuing shorter duration licenses for spectrum above the trigger point and reapplying the spectrum screen assessment criteria using the updated market shares where an application for renewal is received.

SMA's Response to Paragraph 5:

The proposal by Digicel is acknowledged and the SMA has been deliberating on the tenure of the licence, however, not to deal with the effects of market change. As noted, the award of the licence was not predicated on market share, but on the criteria established. As such reviews and checks will be made to ensure that the operator is fulfilling the terms and conditions of the licence.

3. Competitive Analysis

Digicel believes that the Authority's proposed contestability measure does not adequately reflect the effect of market shares.

For example Digicel has almost twice the customer base of its current competitor but does not have twice the spectrum holding. The proportionate asymmetry in customer base means that for a given spectrum allocation there is far higher scope for Digicel's competitor to expand its base within its existing holding without suffering capacity or other constraints.

Market shares may vary over time through competition but not over the very short term. Because of this a mechanism which took account of the scope for expansion of the customer base of either established competitors or relatively new entrants would be a more equitable approach and ensure that a balance was struck between preserving the competitive dynamic of market entry and /or expansion while at the same time not inhibiting the ability of larger established operators to maintain and increase the quality of service as end-user usage patterns move to higher data volumes.

Digicel believes that the proposal that 5% 6 monthly porting rate becomes the threshold for awarding any points is too high a bar.

The Authority has provided no background data which supports this assessment. Digicel notes that the Fair Trading Commission has already found that the current retail mobile market structure in Jamaica is competitive and therefore any porting activity in excess of current levels should be awarded points.

SMA's Response to Paragraph 1 to 3:

One of the objectives of the spectrum screen is to safeguard competition. The sole purpose of implementing this component (Competitive Analysis) of the screening instrument is to identify markets in which competition is sufficiently robust to overcome the presumed detrimental effects of mobile spectrum assignments beyond the trigger point.

It is not intuitively obvious that making special accommodations for proportionate asymmetries in customer base could advance the objective. Ideally, the implementation of this screen should not entrench or otherwise disturb the pre-existing competitive dynamics at play in the market. Nonetheless, further discussions are welcomed as to how the screening instrument could be improved in this regard.

SMA's Response to Paragraph 4 and 5:

Further the SMA takes on board Digicel's comment with regards to the porting rate and now propose the following:

- If the porting rate is less than 0.391%, then 0 point is assigned;
- If the porting rate is between 0.391% and 3.863%, then 3 points are assigned;
- If the porting rate exceeds 3.863%, then 5 points are assigned.

Additionally, please see background data provided for support below:

Background Data

- The thresholds were arrived at by identifying distinct periods of competitive intensity (as determined by the Competitive Index), and calculating the six-month porting rate associated with the periods identified.
- The thresholds are based data covering the period 2016:Q1 through 2020:Q4. Markets are presumed to be competitive in quarters with a Competitive Index in excess of 0.850. The market is presumed to be highly competitive for a Competitive Index beyond 0.950.
- Based on the distribution of share of mobile subscriptions among operators, the six-month porting rate averaged 0.391% during quarters in which the Competitive Index ranged between 0.850 and 0.950. [2016:Q1 to 2019:Q3]
- Similarly, the six-month porting rate averaged 3.863% during the period in which the Competitive Index exceeded 0.950. [2019:Q4 to 2020:Q4]]

4. Public Interest

Digicel notes that including the underserved areas in the calculation for network spectral efficiency will tend to lower the spectral efficiency score as these areas tend to be lower usage. This reinforces the Digicel proposal that spectral efficiency should be calculated on a predefined area which has specified level of population coverage.

SMA's Response:

The SMA takes on board the comments with regards to certain communities in the spectral efficiency calculation and will make allowance for such circumstances, whereby operators may deploy smaller carriers in those areas.

5. Spectral Efficiency Calculations

As pointed out previously Digicel believes that in practice applications for spectrum above the trigger point will be for capacity expansion from live networks. This means that the applicant will have information about current peak network demand, current volumes of base stations and reliable projections on customer and volume growth which necessitate the additional spectrum. Therefore, the calculation could and should be based on peak busy hour demand not some measure derived from weekly throughput. The calculation should also be based on the number of cells in the predefined population coverage area.

SMA's Response:

The "Cell Spectral Efficiency" is a measure of the amount of traffic being carried over a unit of bandwidth per cell (or specified area). The higher the Cell Spectral Efficiency, then the more efficient the frequency band is being utilized.

The spectral efficiency calculation proposed to be adopted has been recommended by the 3rd Generation Partnership Project (3GPP), which unites 7 telecommunications standard development organizations (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC), known as "Organizational Partners" and provides their members with a stable environment to produce the Reports and Specifications that define 3GPP technologies. This particular recommendation has also had the backing of the International Telecommunications Unions (ITU), which **is the United Nations specialized agency for information and communication technologies – ICTs**. *The SMA as a spectrum regulatory body are guided by the standards established by these bodies.*

6. Legacy Technologies and Public Interest

Some account must be taken of the issue of legacy technologies.

Existing allocations support the embedded base of customers using legacy and less spectrally efficient technologies. These are often cheaper in terms of devices and are used by the more economically vulnerable. There is a strong public interest in maintaining these services until organic migration to newer technologies occurs. A spectrum screen which punishes the continued operation of these legacy services does not benefit the citizens of Jamaica in an inclusive manner. Therefore, Digicel suggests that public interest points be awarded where the embedded spectrum allocation below the trigger point is used for the provision of legacy services. This could be on a sliding scale based on the proportion of spectrum so used.

SMA's Response to the above comment:
The SMA notes the comments mentioned above. The SMA wishes to reiterate the policy considerations of this screen, and in particular the SMA's mandate, which is to manage the spectrum efficiently. The SMA also reiterates the fact that the efficient use of the spectrum redounds to the benefit of both the operator and end users. Additionally, achievement of the stated policy objectives/considerations will also facilitate the Government of Jamaica (GoJ) achieving one of its Vision 2030 Plan Outcome, which is to have a technology enabled society. Therefore, the GoJ and by extension the SMA, wishes to have as many if not all citizens included in the technology revolution, leaving no one behind. Hence the need for plans to migrate legacy technologies and their customers to newer technologies.

D. RESPONSES TO FLOW'S COMMENTS ON THE POSITION PAPER

The SMA reviewed and considered the comments of the mobile providers on August 9, 2021 and the following responses were encapsulated:

FLOW'S COMMENTS

1. Frequency Bands Listed Under the Cap

In its 2020 November Position Paper, the SMA proposed removing the spectrum cap and utilizing a spectrum screen for assignments above 120 MHz of spectrum in the listed frequency bands: 700MHz, 850MHz, 900MHz, 1800MHz, 1900MHz, and 1700/2100 MHz (AWS Band). Flow considered this reasonable. We note with concern that the current proposal removes the 1800 MHz frequency band from the list of frequency bands under the 120 MHz trigger point. Flow asks that the SMA provides an explanation and justification for this proposal. Absent better information, such a policy proposal appears to materially favour one mobile service provider at the expense on others. Flow does not support this proposal.

SMA's Response:

The SMA notes FLOW's concern regarding the removal of the 1800 MHz spectrum from the Spectrum Cap. Firstly, there is no attempt on the part of the SMA to act in the interest of any particular mobile operator. The proposal to remove the 1800 MHz spectrum was primarily due to the overlap of the uplink of the AWS (1700/2100 MHz) band and the uplink of the 1800 MHz band. Based on the demand for the AWS band it rendered the 1800 MHz uplink unusable. The proposal to remove the 1800 MHz from the spectrum Cap and Screen, whichever is in place, is to encourage the use of its downlink.

2. Regulatory Certainty Matters

Flow accepts that there is the need to revisit various regulatory policies from time to time. However, such changes should be justified and subject to an open consultation process. This approach is needed for regulatory certainty. It does not seem appropriate for spectrum bands to be added or subtracted to the screening process merely as deemed necessary by the SMA. A transparent process is best practice.

SMA's Response:

The SMA acknowledges FLOW's point and hence the mention of the 1800 MHz in this consultation for discussion. The SMA has therefore provided its reasoning for the proposal for further deliberations.

3. Efficient use of the spectrum (40 points)

It is not clear in the document if the speeds and coverages are only to be considered for the specific range of spectrum requested or for the whole service from the mobile provider. Flow asks the SMA to clarify.

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SMA's Response to Paragraph above:
The SMA clarifies that the speed and coverage are in relation to the specified problem area(s) that the applicant indicates is the primary reason for the additional spectrum.

I. The use of peak traffic conditions and population coverage favours low band spectrum; any nationwide high band spectrum will have problems reaching the total scoring of 100 due to coverage of the bands. As such, the SMA should confirm that this approach will not be used to evaluate high band spectrum assignments in the future.

SMA's Response:
The SMA confirms that the approach will be used to assess spectrum efficiency in area(s) under consideration. Therefore, if the applicant indicates a need for additional spectrum to address an issue in a particular area, the approach will only consider the area indicated in the application.

II. Is this number considering only the spectrum requested, considering all the spectrum in the band or considering all service (e.g. if 10 MHz would be requested to expand current carrier, it would not be a service by itself, but improvement of the current service)

SMA's Response:
The number is considering the area under scrutiny and the bands serving the area.

III. There is no mention on how it is supposed to be measured, as average speeds, border cell speeds, one measurement, over several months, etc.

SMA's Response:
The average speed will be used for the data rate of 5 Mbps.

IV. There is no mention of any enforcement of these numbers after the award of the spectrum

SMA's Response:
The SMA, as regulator, will conduct enforcement measures in keeping with the Telecommunications Act, 2000. The award of the spectrum will be granted by a licence that is specific to the conditions stipulated therein.

V. In case of low bands with a small carrier (e.g. 5 MHz carrier) the deployments are usually geared towards reaching broad technology coverage instead of speed, these cases are not being rewarded either by this scoring.

SMA's Response:
Generally, the spectrum screen is focused on enhancing network capacity and as such, there is no reward for applying for additional spectrum in pursuit of reaching additional customers

(coverage). Consequently, points will not be awarded for coverage. If coverage is being provided for the underserved / unserved, it is a plus for the operator.

4. Cell Spectral Efficiency (CSE)

As a general comment there is lack of information on the scoring about how to aggregate the different spectral efficiencies that can be found in the network, only one number is presented as score, maximum 2 Bps/Hz/Cell, when they mention the 3GPP table continuously.

SMA's Response to Paragraph 1 above:
The "Cell Spectral Efficiency" is concerned with how the operator is using the frequency band(s) over a given geographic area. It is a measure of the amount of traffic being carried over a unit of bandwidth per cell (or specified area). The higher the Cell Spectral Efficiency, then the more efficient the frequency band is being utilized. Therefore, the spectral efficiency will be calculated at the band level and for the area under consideration, and not at the cell level. So, for instance, in a mobile network, several frequency bands (700MHz, 1900MHz, 2100MHz, etc.) may be utilized to deliver services. There is a spectral efficiency measure attached to each frequency band based on the bandwidth and the traffic that is carried on each frequency band.

There needs to be a better explanation about the 3GPP average number for spectrum efficiency per cell. It seems that the 3GPP is considering a fully loaded cell for this number, which is not comparable for when we consider a full functional network; due to the nature of the way customers are distributed is normal to have cells with little traffic, even within one congested site, this besides all the rural and road located cells. If we do the average of the network efficiency per cell then we will add plenty of cells that cannot have more traffic, not because of bad design by the operator, but because that's how live networks behave. We believe this number should be reconsidered only for loaded cells or to obtain a full network comparison.

SMA's Response to Paragraph 2:
The SMA takes on board the comments with regards to certain communities in the spectral efficiency calculation and will make allowance for such circumstances, whereby operators may deploy smaller carriers in those areas.

I. It is not clear that the number to be compared is coming from the 3GPP table or is coming from the scoring table, the 3GPP table has 10 different average scenarios, but the scoring table only has 2 as maximum number

SMA's Response to Item I:
The SMA notes the comment and wishes to clarify that the value for the ITU Urban Macro deployment scenario (which is specific to a cell size and coverage area), will form the basis for comparing and determining the scores to be awarded based on actual spectral efficiency.

II. it is not clear if we should add uplink and downlink efficiency numbers into one number or test them separately

SMA's Response to Item II:
The focus will be on the downlink average spectral efficiency objective.

III. There are several scenarios where the spectrum efficiency would vary, from indoor to rural, should all be compared to the scoring or should each scenario be compared vs the 3GPP averages.

SMA's Response to Item III:
Same as item I.

IV. Should we just use the current spectrum efficiency of the same band we are requesting or the full network, what if only same band is required and the operator is requesting a new band, should the current CSE be zero and then having reduced scoring?

SMA's Response to Item IV:
The spectral efficiency considered in the assessment will be for the frequency band(s) serving the area(s) under consideration being requested by the operator.

V. We are not sure if the requested spectrum efficiency has to consider only loaded cells or all cells that use such spectrum, using all cells result in a very reduced spectrum efficiency due to the network normally has part of the site that is underutilized because of the way people move.

SMA's Response to V:
The SMA hereby indicates that operators should apply for additional spectrum in instances that it is required for use in areas that they are having capacity crunch.

5. Consideration of Alternatives

We request the revision of the scoring, the total individual score adds up to 125, not 100. In general, these questions aren't clear about the feasibility of each action, they request if certain activities were made to make the network more efficient, but most of them can't be fully executed without incurring in large capex investment; it is not clear the extent of each alternative should be pursued before getting a positive score

SMA's Response to Regarding the Points:
The SMA is giving options for the operator to use as alternative rather than to limit the options available. However only up to 100 points may be used, with each option contributing 25 points at maximum.

SMA's Response to Regarding the Network Efficiency:

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The SMA notes FLOW's concern, but notes that to increase efficiency of a network it does not always require additional spectrum. Bearing in mind the limited nature of the frequencies under consideration, as such, the SMA is emphasizing on the operators, the importance of conducting the necessary due diligence first, and provide same to the SMA, and in the event that it points to additional spectrum as the resolution, then the SMA is more incline to support same.

I) To utilize other / new spectrum not under the screen for which the spectrum under consideration is to be assessed Not clear if it considers the feasibility of spectrum, some bands could be not appropriate for the level of service required or not having fully handset compatibility

II) The deployment of more spectrally-efficient wireless technologies and the migration of customers to these technologies Not clear what's the level of investments in new technology should be to this be considered done, e.g. a network could migrate fully to 5G, including handsets in order to be more efficient, but the investment is prohibitive

III) Increased reuse of available radio frequencies enabled both by cell site splitting (considering Open RAN, which helps to reduce cost) and LTE-A support for enhanced small cell and Wi-Fi integration This point requires technical revision, Cell splitting is not beneficial all the time for extra capacity, in cases like ours where they are required on low bands it can cause interference and reduced service. Open Ran is an initiative focused to reduce cost, not to increase spectrum efficiency, our experience has shown that there is no cost reduction in the Jamaica environment, we would suggest removing them from the options This point requires clarification regarding the feasibility of using Wi-Fi making economic sense, since the network could also be covered with Wi-Fi spots, but that is not feasible from a service or investment point most of the time

IV) Tighter packing of offered data into available transmission capacity, etc. Not clear if this suggest the change of commercial structures, but Jamaican mobile market is very competitive and constraining the offering is not feasible without negative reactions of the customers

V) The deployment of more stations / Network upgrade - hardware upgrade to network. Does this question have any financial or practical consideration? All networks could duplicate or triplicate the number of sites present in the market to solve all capacity issues, but deploying a new site has high capex and logistic concerns. How many new sites are required to obtain this score? Flow looks forward to the SMA's clarification of the issues raised. This will facilitate our better understanding and additional comments.

SMA's Response to Items I, II, III, IV and VI (en bloc):

The SMA notes FLOW's concern. As mentioned before, the SMA encourages operators to conduct the necessary due diligence and provide the results to the SMA prior to requesting additional spectrum. The idea here is that the operator should confirm that none of the listed options could not be feasibly deployed to remedy the situation they are confronting. Should the results support the required resolution, then the SMA is inclined to view the situation favourably.

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6. Contestability Index

I. What is the definition of free usable spectrum, does it consider spectrum that's colliding with other bands, guard bands, or spectrum in the band range, but not standardized like 700 MHz Will a table of used and unused spectrum will be provided for this point?

SMA's Response to Item I above:
The SMA defines 'free usable spectrum" as "spectrum assignable for IMT purposes". Further, the SMA normally posts on its website, frequencies that are available that are updated as required.

II. What if more than one company is requesting new spectrum, is this score done once each per each provider or all at the same time

SMA's Response to Item II:
The applications are evaluated independently on a first come first served basis.

Flow looks forward to the SMA's clarification of the issues raised. This will facilitate our better understanding and additional comments.

7. Consumer Behaviour

I. It is required to clarify if the "number of subscriptions" is referred to total market subscriptions or only the carrier subscriptions applying for the spectrum
II. It is required to clarify if they are only referring to postpaid subscriptions

Flow looks forward to the SMA's clarification of the issues raised. This will facilitate our better understanding and additional comments.

SMA's Response to Consumer Behaviour:
The term *"number of subscriptions*" is taken to mean the total number of mobile subscriptions. In this context the reference includes both postpaid and prepaid subscriptions.

The SMA will await additional comments from the FTC.

8. Public Interest

Expansion of coverage in unserved and/or underserved areas (100/200)

I. Coverage areas are not defined, cities and towns are not a good indicator of the limits to cover. Polygons should be included within the request

SMA's Response to Item I:
The SMA acknowledges and notes FLOW's comment, the proposed polygons can be provided prior to submission of an application.

II. This number is highly dependent of the band and the amount requested, lower bands reach better coverage and bigger amounts give better capacity, it should consider that penalizes requests for high spectrum and future mm wave spectrum

SMA's Response to Item II:
Please note that mm wave spectrum is not at the point whereby the screen would come into play since they are guided by a different trigger. Further the SMA reiterates that the screen is more about capacity and not coverage.

Improved coverage quality (100/200)

I. It is not clear if this rate should consider all spectrum bands, just the spectrum band in which the request is being done or just the spectrum range being requested

SMA's Response to Item I:
The coverage quality is not specific to any band, but more so in relation to the area as specified by the operator.

II. It is not clear if this rate is the increased throughput after adding spectrum to the service or the target throughput of the service

SMA's Response to Item II:
The rate is for the target throughput of the service

III. IF it is only about the band, this rate should be normalized by spectrum quantity, since for LTE / 5G technologies bigger spectrum blocks allows bigger peak rates. In this form it is penalizing smaller spectrum requests

SMA's Response to Item III:
It is not only about the band and its efficient use, but it is about all the criteria outlined in the document to include the competition analysis and public interest.