

TELECOMMUNICATIONS REGULATORY
COMMISSION
VIRGIN ISLANDS

**SPECTRUM AWARD 2015 -
CONSULTATION DOCUMENT**

30 June 2015

Reference Number: C/6/2015

This address for responses to this document or enquiries regarding this document is:
Consultation on the Spectrum Award 2015
Telecommunications Regulatory Commission
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for responses is 12 August 2015.



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Instructions for submitting a response

The Telecommunications Regulatory Commission of the Virgin Islands (the “Commission”) invites responses on this consultation document from all interested parties. Responses should be submitted by **28 July 2015**.

Preferably responses to this document should be sent by email to consultations@trc.vg (indicating the subject: “Consultation on the Spectrum Award 2015”). Alternatively, the responses may be sent to the address (or the number) below:

Consultation on the Spectrum Award 2015 –Telecommunications Regulatory Commission P.O. Box 4401 or 27 Fish Lock Road, 3rd Floor Road Town, Tortola, British Virgin Islands VG 1110 Fax: (284) 494 6786

Responses from corporate bodies (legal persons) should include:

- the name of the company/institution/association/other organisation;
- the name of a principal contact person; and
- full contact details (physical address, postal address, telephone number, fax number and email address).

Responses from individual (natural) persons, should include name and contact details (including email).

In the interest of transparency, the Commission will normally make all submissions received available to the public, subject to the confidentiality of the information received. The Commission will evaluate requests for confidentiality according to relevant legal principles.

Respondents are required to clearly mark any information included in their submission which they consider to be confidential, and provide reasons why that information should be treated as such. Where information claimed to be confidential is included in a submission, respondents are required to provide both a confidential and a non-confidential version of their submission. The Commission will determine whether information claimed to be confidential is to be treated as such and, if so, will not publish that information. In respect of information that is determined to be non-confidential, the Commission may publish or refrain from publishing such information at its sole discretion.

Once the Commission has received and considered responses to this consultation document, it will issue a final Invitation to Apply (ITA) and a draft frequency authorisation which will be published on the Commission’s website.

1. Introduction¹

1.1. Mobile phone and broadband penetration in the Virgin Islands (VI) are high at over 180% and 25% per head of population respectively, while the telecoms sector accounts for around 6% of GDP². Although the Virgin Islands has a relatively small population of about 28,000 inhabitants³, its communications needs are significant. Around 60% of the population are expatriates who come to the islands for work, while in 2014 it was estimated there were around 400,000 international tourist arrivals to the VI, mainly from the U.S. and Europe⁴. The finance and tourism industries are the mainstays of the economy. The health and growth of these sectors depends on access to globally competitive, reliable, high-quality, low-cost communications services. It is particularly important that wireless devices (such as mobile phones and tablets) work seamlessly when people visit the VI. This means that wireless communications technologies deployed in the VI must keep abreast of and be as compatible as possible with those deployed elsewhere in the world.

1.2. Spectrum is a key input to meeting rapid demand for mobile data and voice services and supporting the provision of efficient, resilient and widely available communications infrastructure in the VI. Such infrastructure is essential for economic growth and much social activity in a modern service-based economy such as the VI. The purpose of this document is to set out and consult on the Commission's proposals for the Spectrum Award 2015 in the VI. The frequencies the Commission proposes to award may be used by operators to deliver high speed mobile broadband services to VI citizens, consumers and enterprises, as well as visitors to the VI

1.3. The legal framework for spectrum policy and management is given in the Telecommunications Act (2006) – the "Act". In accordance with Part II, section 6 (e) and (f), the Commission is responsible for determining applications for licences and frequency authorisations and for managing the spectrum in the VI. Accordingly, in 2011 the Commission published a Spectrum Management Framework ("SMF")⁵. The Commission's plans and this consultation process form part of its activities to implement the SMF..

1.4. The Act specifies a number of objectives that are relevant to the assignment of spectrum, namely:

- To implement and enforce the provisions of the Act, the Regulations, the Telecommunications Code and to issue instructions (section 6 (c))
- To promote the economic, orderly and efficient utilisation of frequencies (section 34 (1), 36(c))

¹ Disclaimer: All references to frequency assignments, allocations or similar terms in this document should not be interpreted as granting and confirming any legal right of access to the frequencies mentioned (and in most cases should be considered as simple references to the actual declared usage of spectrum), except where such a right is given in a frequency authorisation issued by the Commission. This document does not constitute legal, technical or commercial advice; the Commission is not bound by this document and may amend it from time to time. This document is without prejudice to the legal position or the rights and duties of the Commission to regulate the market generally.

² http://www.trc.vg/attachments/020_020_Stats_062010_updated.pdf

³ An estimate of 27,800 is given at <http://www.bvi.gov.vg/content/about-territory>; A slightly higher estimate of 28,882 is given at <http://www.bvitourism.co.uk/bvi-facts>

⁴ <http://www.wttc.org/>

/media/files/reports/economic%20impact%20research/country%20reports/british_virgin_islands2014.pdf

⁵ <http://www.trc.vg/index.php/consultations/archived-consultations>

- To ensure fair competition among licensees (section 6 (d))
 - The public interest (sections 21 (c), 23 (d))
 - Taking account of relevant regional and international agreements and standards, including ITU Treaties (section 36 (d-f)).
- 1.5. These objectives have guided the Commission's decision to award spectrum and the choice of the award process in accordance with Part VII, section 34 (b) of the Act. Specifically, the aim of this award is to provide the three mobile operators with frequencies they can use to deliver high speed mobile broadband services using LTE technology. The implementation of this technology in the VI will provide enterprises, consumers and citizens with better quality broadband services and is in line with developments that have already occurred in North America and Europe and being implemented elsewhere across the Caribbean.
 - 1.6. The SMF proposed a number of actions to release spectrum subject to demand from stakeholders, including assignment of 450 MHz, 700 MHz and 2500 MHz bands and assignment of vacant frequencies at 1800 MHz, 1900 MHz and 2100 MHz.
 - 1.7. The SMF proposed a flexible assignment policy that allows the Commission to determine the method of assignment on a case by case basis, taking account of demand for licences, overall public policy objectives and any costs of disruption to existing licensees or impacts on final consumers. Where there is competition between applicants for a specific block of spectrum then a competitive process may be adopted. The SMF stated that in cases where demand does not exceed supply then the Commission is likely to assign licences on a first come first served or direct award basis.
 - 1.8. In all cases frequency authorisations are to be granted according to the procedure defined in the Telecommunications Code (Part 5) (Granting Frequency Authorisations (Interim Procedure)) Requirements, 2011.
 - 1.9. This document is structured as follows. Section 2 contains an assessment of the need for additional spectrum. Section 3 gives an overview of the award process. Section 4 discusses the Commission's proposals for the spectrum bands and packages to be offered. Section 5 discusses options for the award process and makes a specific proposal. Section 6 gives the Commission's proposals for conditions of frequency authorisations to be assigned, including spectrum fees. The draft ITA and the draft frequency authorisation are also being issued with this Consultation Document.
 - 1.10. The Commission welcomes stakeholders' views regarding the release of spectrum in multiple frequency bands and specifically their answers to the questions given throughout the text and listed together in Section 7 of this consultation document.
 - 1.11. In the course of preparing this document the Commission and its consultants held meetings with the mobile service providers in the VI in respect of their interest in different frequency bands and packaging requirements. These views have informed our conclusions on the frequency bands to be offered for assignment and are reported in general terms in this document.

2. The need for a spectrum award

- 2.1. There are three mobile network operators in the VI, CCT, Digicel and LIME, serving a market of just under 50,000 subscribers and the many international visitors to the VI. The total mobile market in the VI, as measured by the number of subscribers and revenues has not grown in recent years, due to market saturation and fierce price competition between operators. However, as is the case around the world, data traffic on mobile networks has grown rapidly with the advent of 3G technologies and competitive provision of smartphones and tablets. Operators in the VI require additional spectrum to support this growth in data traffic and to provide VI consumers, citizens and enterprises with the latest mobile broadband applications.
- 2.2. At present there is vacant spectrum in the 450 MHz, 700 MHz, 1800 MHz, 1900 MHz, 2100 MHz, and 2500 MHz bands that could in principle be included in the award. Additional spectrum will allow mobile operators to serve the likely future growth in mobile data traffic and to offer consumers faster data rates, improved coverage and capacity to support new applications. Without additional spectrum there is the risk of poor network performance and reduced levels of economic activity.
- 2.3. Of particular importance is the 700 MHz band which is the main band for 4G services based on LTE technology in the United States (and its territories in the Caribbean) and which has now been assigned in a number of Caribbean states e.g. Anguilla, Antigua and Barbuda, Jamaica, Trinidad and Tobago, and Turks and Caicos.
- 2.4. Other higher frequency bands also have a role in providing additional capacity for high speed data services using LTE technology. For example, the 1800 MHz/1900 MHz/AWS bands are now core LTE bands⁵ and operators are deploying LTE technology as demand for second generation voice services declines. The 2500 MHz band is used in some countries for fixed wireless access (as is the 2300 MHz band). However, where these bands are vacant they are being awarded for LTE mobile services. The latest smartphones include these bands.
- 2.5. Internationally the situation in the 450 MHz band is much less clear. Due to limited bandwidth, the lower antenna gain (in devices) and often extensive current use of the band by private mobile radio systems, LTE-450 is possibly more suitable for smart grid and smart metering communications rather than for public mobile broadband services. In December 2014, Finland launched the first commercial LTE 450 MHz network in partnership with Huawei. This service is mainly aimed at enterprise, business to business, governmental sectors and transportation users.
- 2.6. Our initial discussions with the three mobile operators indicate that there is considerable interest in acquiring additional spectrum in all bands except the 450 MHz band and the 1800 MHz and 2100 MHz bands as allocated in ITU Region 1. Interest in the 2.5 GHz band is subject to there being suitable cross border arrangements with the USVI. The strongest interest is in the 700 MHz band and there is also interest in the vacant 1900 MHz spectrum and allocation of 1800 MHz and 2100 MHz band spectrum to align with the US AWS allocation.

⁵ LTE technology is also being introduced in the 2100 MHz band in some countries in Asia.

2.7. A provisional schedule for the award is outlined below:

Stage of the award	Indicative date
This public consultation document published	30 June 2015
Responses to public consultation	28 July 2015
Issue of ITA and draft frequency authorisations	Mid August 2015
Application due date	Mid September 2015
Grant of licences	Mid October 2015

3. Overview of approach to the award

- 3.1. The award may potentially include spectrum in the 450 MHz, 700 MHz, 1800 MHz, 1900 MHz, 2100 MHz and 2500 MHz bands. The Commission plans to conduct a single award process for all of the bands that will be offered for assignment. This is because there is some substitutability between uses of the bands (e.g. the 700 MHz and 1900 MHz/AWS bands can be used for similar services), and all the bands can be used to support provision of mobile data capacity. Making multiple bands available in a common process means that operators can express demand across the available spectrum taking account of the different bands available. It thereby promotes the economic, orderly and efficient utilisation of frequencies. A single multi-band award process is also more efficient in terms of the time taken and administrative costs for all parties.
- 3.2. The Commission anticipates that there will be competition for the spectrum offered and proposes to award spectrum using a competitive process in which applications are ranked by comparative evaluation of non-money bids - this is called a "comparative evaluation". The Commission considers that this approach best meets its objective to promote the public interest by awarding spectrum to those operators that offer the most attractive services for VI citizens, consumers and enterprises. Frequency authorisations will be granted in each band according to information submitted by applicants concerning their plans for use of the offered spectrum and their declared preferences across bands.
- 3.3. The Commission is minded to limit the possible applicants for the Spectrum Award 2015 to the existing licensed mobile network operators in the BVI - CCT, Digicel and LIME – as these operators are best placed to make immediate use of this valuable spectrum. The Commission is obliged to allocate the spectrum to promote its economic and socially efficient use such that the public interest is served and competition between licensees is promoted. Consequently, the Commission has determined that in order to prequalify to apply for the relevant spectrum, each applicant must be in material compliance with its existing Licence for the Operation of a Telecommunications Network providing Telecommunications Services in the BVI.
- 3.4. The Commission will not accept an application or grant a new frequency authorisation to an applicant if that applicant (a) is not operating within the terms of its current licence or frequency authorisation, (b) is not in material compliance with, or is in persistent breach of, any provisions of the Act, the Regulations, the Telecommunications Code or its licence or frequency authorisation(s)

and (c) is not in compliance in material respects with, and is not in persistent breach of, any instructions issued by the Commission. For the avoidance of doubt, material compliance includes timely delivery of all financial and corporate information to the Commission and payment of any and all Royalty fees due to the Commission.

3.5. Annual fees will be payable as a condition of granting the frequency authorisations. The Commission is minded to set annual fees at levels broadly aimed to recover the Commission’s administrative costs of managing the spectrum awarded and not to maximise government revenue. The Commission believes this approach will result in service offerings that best meet the needs VI citizens, consumers and enterprises.

Question 1: Do you agree that only the Unitary Licence Holders that operate mobile networks in the VI should be eligible to take part in the comparative evaluation process?

Question 2: Do you agree that a comparative evaluation award process is the most appropriate in light of the demand for valuable spectrum?

4. Spectrum to be included in the award

4.1. Based upon our initial discussions with operators there appears to be strong interest in the 700 MHz, band and some interest in the 1900 MHz, AWS-1 and 2500 MHz bands. There is no or little interest in the 450 MHz, the 1800 MHz and the 2100 MHz bands. The reasons for these preferences differ by band.

450 MHz band

4.2. In the case of the 450 MHz band there is current use of the band for private mobile services. There is at most 2x7 MHz of bandwidth available in the band, little deployment elsewhere in the world and as a consequence there are few commercially available devices. There does not appear to be any interest in using the band for public mobile services in the VI. The Commission does not plan to include the 450 MHz band in the current award.

Question 3: Do you agree with the Commission’s proposal not to include the 450 MHz band in the award? If not, please give reasons for your response.

700 MHz band

4.3. The 700 MHz band spectrum being considered for release in the VI comprises upper and lower bands in the range 698 to 757 MHz as shown in the table below. The band is allocated for Mobile and Broadcasting services within ITU Region 2 on a co-primary basis and is currently vacant in the VI.

Band	Block designation	Frequencies
Lower 700 MHz	A	698-704 MHz and 728-734 MHz
	B	704-710 MHz and 734-740 MHz
	C	710-716 MHz and 740-746 MHz
Upper 700 MHz	C1	776-782 MHz and 746-751 MHz
	C2	782-787 MHz and 751-757 MHz

4.4. Initial indications are that each of the three incumbent mobile operators (CCT, Digicel and LIME) is interested in obtaining at least 2x10 MHz spectrum in the band. This means there is excess demand for the spectrum in the band. Given this excess demand it is necessary to consider how many

packages to offer, as there is not sufficient spectrum to offer each operator 2x10 MHz. The packaging in the band depends primarily on

- Whether there are one, two or three applicants for frequencies within the band
- The need to provide high bandwidth services
- The need for multiple operator support for roaming services
- The usefulness of the different packages, including the potential benefits for consumers from regional synergy.

4.5. The Commission is minded to structure the lots in the 700 MHz band such that three packages can be awarded that are valuable for providing coverage for high speed mobile broadband services and able to support competitive service delivery to visitors roaming from North America and other Caribbean nations.

4.6. The three packages are as follows: Package 1 – blocks A & B; Package 2 – block C; Package 3 – blocks C1 & C2. This packaging ensures that there are two blocks having more than 2x10 MHz of spectrum which is important for delivery of high speed broadband services and that there are competing networks capable of delivering this quality of service. The third package would have a reduced quantity of spectrum at 2x6 MHz. This spectrum is valuable for providing coverage for LTE services and is able to provide effective roaming services.

Question 4: Do you agree that the 700 MHz band should be included in this award? If not, please give reasons for your response.

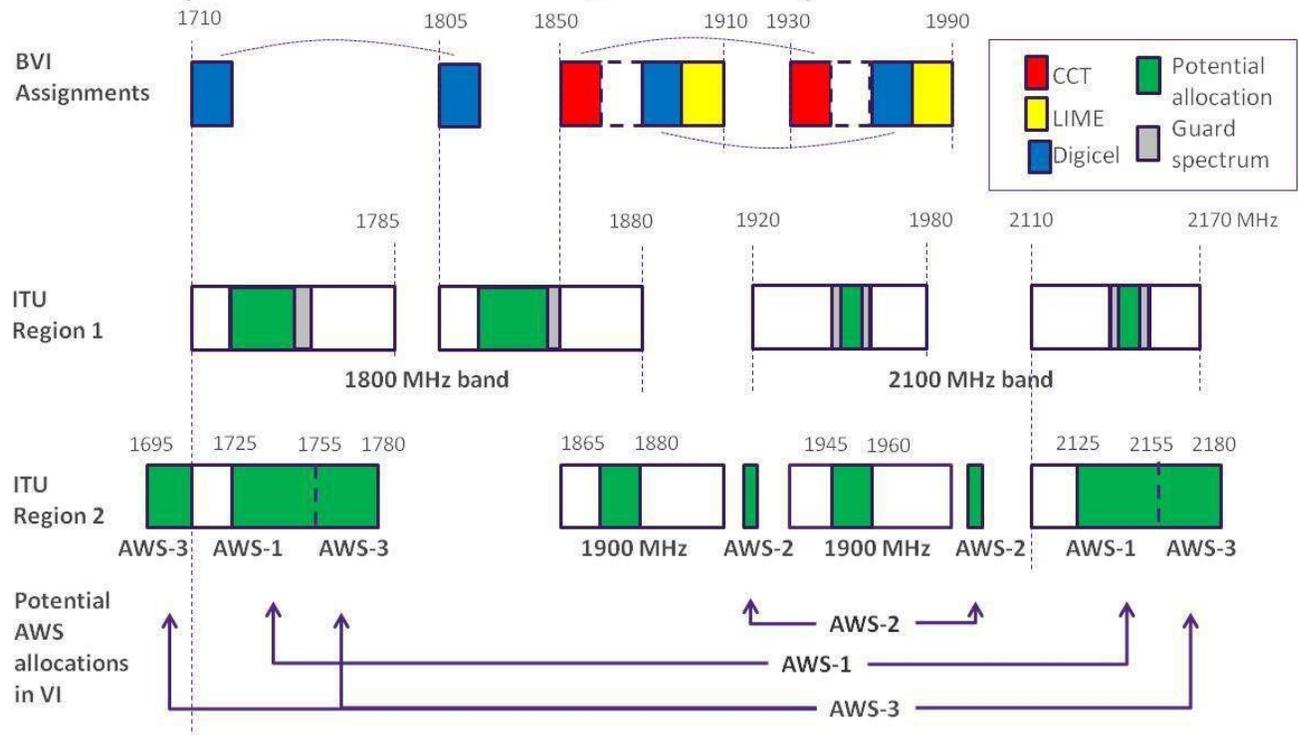
Question 5: Do you agree with the Commission's proposals for the packaging of the 700 MHz band? If not, please give your reasons and propose an alternative approach showing how it best meets the Commission's objectives in respect of competitive provision of high speed mobile services in the VI.

1800 MHz, 2100 MHz, 1900 MHz and AWS bands

4.7. The 1800 MHz and 2100 MHz bands (mainly used in ITU Region 1) overlap with the 1900 MHz and AWS bands (mainly used in ITU Region 2) as shown in the figure below. The possible combinations of spectrum available are as follows:

- Option 1: 2x 25 MHz at 1800 MHz and 2x5 MHz at 2100 MHz or
- Option 2: 2x15 MHz at 1900 MHz and 2x25 MHz at 1800MHz or
- Option 3: 2x15 MHz at 1900 MHz, 2x30 MHz at AWS-1, 2x5 MHz at AWS-2 and 2x25 MHz plus 15 MHz at AWS-3.

1800/2100 MHz and 1900 MHz/AWS bands



4.8. Initial indications are that the operators prefer Option 3, excluding the AWS-2 and AWS-3 bands. The latter two bands have only recently been auctioned in the US (since mid-2014) and so there is not a developed ecosystem of devices for these bands. Furthermore the AWS-2 band was not bought by a major US operator. Hence the Commission plans to release 2x15 MHz at 1900 MHz and 2x30 MHz at AWS-1 in the current award and does not plan to release AWS-2 and AWS-3.

4.9. Spectrum in the 1900 MHz and AWS-1 bands are usually configured in 2x5 MHz blocks with multiple contiguous blocks being assigned to individual operators. The Commission proposes to adopt this same approach in the VI.

4.10. The Commission has considered a number of packaging options for the 1900 MHz band:

- Offer three lots of 2x5 MHz
- Offer two lots – one of 2x5 MHz and one of 2x10 MHz
- Offer a single lot of 2x15 MHz.

4.11. The AWS-1 spectrum is being used primarily for LTE rollout in the US and we anticipate similar interest in the VI. The role of the band is likely to be to provide high speed data services in areas of high traffic demand. As such we anticipate that at least 2x10 MHz will be required in any package. Therefore the available 2x30 MHz of spectrum could be packaged as follows:

- 3 lots of 2x10 MHz
- 2 lots of 2x15 MHz
- 2x20 MHz and 2x10 MHz.

4.12. Given the partial substitutability of spectrum between 1900 MHz, AWS-1 and, to a lesser extent, the 700 MHz band, the packaging of the three bands cannot be considered in isolation. In the longer term spectrum in the AWS-1 and 1900 MHz bands will be an important complement to the 700 MHz band in the delivery of LTE capacity.

4.13. Furthermore, the current market share of the operators is not necessarily a good indication of market share in advanced data services. Therefore we consider that to meet the objective of supporting the provision of services by three network operators, packaging of spectrum across the three bands should be as equitable as possible.

4.14. It is difficult to see how a balanced release of spectrum could be achieved by splitting the 1900 MHz spectrum into 2 parts, since a balanced quantity of spectrum would require one operator to obtain 2x5 MHz of AWS-1.

4.15. Therefore the Commission has considered three main packaging options. Two options that aim to balance the usefulness and quantity of the spectrum across the 1900 MHz and AWS-1 bands alone, namely:

Option A: 3 packages comprising

- 2x5 MHz of 1900 MHz and 2x10 MHz of AWS-1;
- 2x5 MHz of 1900 MHz and 2x10 MHz of AWS-1;
- 2x5 MHz of 1900 MHz and 2x10 MHz of AWS-1; Option B: 3 packages comprising
- 2x15 MHz of 1900 MHz;
- 2x15 MHz of AWS-1;
- 2x15 MHz of AWS-1;

and one option that aims to balance the quantity of spectrum across all three bands:

Option C: 3 packages comprising

- 2x12 MHz (700 MHz) + 2x10 MHz (AWS-1)
- 2x11 MHz (700 MHz) + 2x15 MHz (1900 MHz) □ 2x6 MHz (700 MHz) + 2x20 MHz (AWS-1).

4.16. The first of these options (Option A) has nearly identical packages however not all operators have signalled their desire or acceptance of this as a solution for the 1900 MHz band. The second option (Option B) has minor differences in usefulness between the packages at 1900 MHz and AWS-1, but an advantage that these differences may in some way complement spectrum obtained at 700 MHz. This option is also most consistent with the spectrum needs indicated so far by the operators. The third option (Option C) would appear to be most equitable across the bands in terms of total spectrum but risks penalising the applicant that performs best in the comparative evaluation and so is awarded a large block of 700MHz spectrum and fewer AWS-1/1900MHz frequencies.

4.17. The Commission is minded to adopt the second option (Option B) listed above for the 1900 MHz and AWS-1 bands: 1 package comprising 2x15 MHz of 1900 MHz spectrum and 2 packages comprising 2x15 MHz of AWS-1 spectrum.

Question 6: Do you agree that the 1900 MHz and AWS-1 bands should be included in this award? If not, please give reasons for your response.

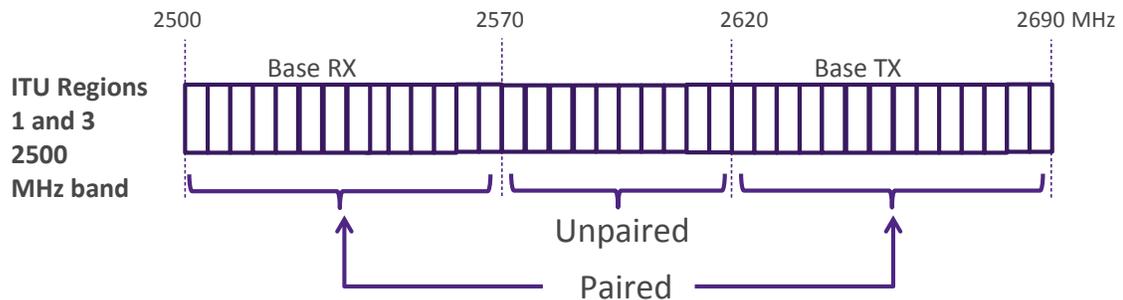
Question 7: Do you agree with the Commission’s proposals for the packaging of the 1900 MHz and AWS-1 bands? If not, please give your reasons and propose an alternative approach showing how it best meets the Commission’s objectives in respect of competitive provision of high speed mobile services in the VI.

4.18. The Commission has also considered what would happen if the 1800 MHz allocation is re-farmed to AWS1 at some stage in the future. At that time, it is possible that the 2x15 MHz would be re-distributed amongst any of the three operators and therefore re-alignment of spectrum holdings may be necessary to ensure contiguous spectrum lots. The Commission has therefore introduced a provision into the draft Frequency Authorisation requiring operators to re-align spectrum holdings should the Commission request that they do so for spectrum management reasons.

Question 8: Do you agree with the Commission’s proposal for a new provision in the draft Frequency Authorisation that requires operators to realign their spectrum holdings should they be requested to do so by the Commission? If not, please give your reasons.

2500 MHz band

4.19. The 2500 MHz band is harmonised for public mobile services within ITU Regions 1 and 3. In the SMF the Commission proposed to adopt the band structure recommended by ITU as shown below.



4.20. The band is able to provide services to visitors roaming from Europe and parts of the Asia Pacific region. Mobile devices are available for LTE technology. Use of the band for LTE has been slow to develop globally. Operators have preferred to use lower frequency bands because of their lower deployment costs and better in-building penetration. However, the band is starting to be used in large cities in locations where there are very high traffic levels.

4.21. A constraint on the use of the band is that assignments have been made in the US Virgin Islands for Broadband Radio Service (BRS) and the Educational Broadcast Service (EBS). There is potential for interference from these services in the VI particularly to the west of the territory. Any use of the band in the VI will either need to be in areas unaffected by such interference or subject to coordination with USVI licensees.

4.22. One operator is interested in obtaining frequencies in the band at present. Other operators may be interested in future, but noted that the interference issues with the US need to be resolved first through formal cross-border frequency co-ordination.

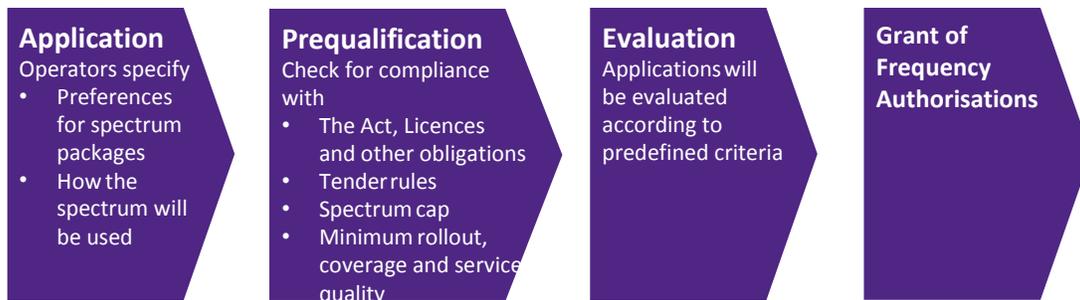
4.23. Given it will take time for formal cross-border frequency co-ordination with the US to be achieved and there is not a pressing need for this spectrum in the VI (especially as the Commission is proposing to release 2x73 MHz of spectrum in other bands) the Commission concludes that the 2500 MHz band should not form part of the current award.

Question 9: Do you agree with the Commission’s proposal not to include the 2500 MHz band in the award? If not, please give reasons for your response and indicate how you think the spectrum should be packaged to address interference with the USVI in line with the objectives and timetable for this Award.

5. Award design

Overview of the award process

- 5.1. Initial indications from the VI mobile operators have shown that there is a great deal of interest in the 700 MHz, 1900 MHz and AWS-1 bands. Given the strong demand, the Commission proposes that each participant in the award can only win at most a single lot from the 700 MHz band and a single lot from the 1900 MHz or AWS-1 bands.
- 5.2. The Commission will publish an Invitation to Apply (ITA) for spectrum lots. This will detail the spectrum lots, application process, pre-qualification requirements, evaluation process and assignment of spectrum. A draft of the ITA is published separately with this Consultation Document.
- 5.3. The Commission proposes to determine the spectrum lots to be assigned by comparative evaluation using the process shown below.



- 5.4. The Commission is keen to ensure that the assigned spectrum is used effectively for the delivery of high speed mobile data services across the VI. Therefore it plans to include minimum performance requirements that must be achieved using any spectrum assigned in this award. Those applying for spectrum in the award will be required to submit deployment plans that demonstrate how they intend to meet the minimum performance requirements using the assigned spectrum in this award.
- 5.5. The comparative evaluation process requires those applying for spectrum to describe their plans for utilisation of the spectrum to be awarded (these are termed “Additional Commitments”) and the benefits that this will bring to residents and enterprises in the VI.
- 5.6. The Commission will assess the submitted Additional Commitments and assign a score for each applicant. On the basis of these scores, the Commission will determine which of the applicants is to be awarded each lot.
- 5.7. The Frequency Authorisations will then be awarded to the successful applicants. Some of the Additional Commitments would become obligations attached to the Frequency Authorisations as described below.

Comparative evaluation process

- 5.8. The Commission considered two ways of undertaking the comparative evaluation:
- Allowing applicants to specify potentially different Additional Commitments in support of each lot of interest. In this approach the successful applicant for each lot would be selected according to the applicants' lot preferences and individual scores for each lot; or
 - Asking applicants to provide a single set of Additional Commitments, the assessment of which would establish a ranking of applicants. Lots would then be assigned in order of ranking according to the applicants' lot preferences.
- 5.9. The Commission is minded to adopt the latter approach because mobile services are usually delivered using a combination of bands. This approach results in a more transparent method of assigning the lots and it requires less bid preparation and evaluation.
- 5.10. The Commission further proposes that a service centric definition of Additional Commitments is adopted whereby the applicant can meet its Additional Commitments using any of its assigned spectrum. Such an approach allows operators to optimise spectrum use across their assigned bands, whilst still achieving the promised service benefits for VI consumers.
- 5.11. The Commission also considered whether the Additional Commitments should apply if an applicant is awarded any of the six lots. The aim of the comparative evaluation is to promote investment and the widespread availability of advanced high speed data services. As such the Commission considers that only the 700 MHz band lots have the ability to achieve broad coverage at comparatively low cost, and that 2x10 MHz is required to achieve the kind of high user data rates the award aims to promote.
- 5.12. Therefore, the Commission is minded to stipulate that only applicants assigned the two larger lots in the 700 MHz band (i.e. package 1 and package 3) should have Additional Commitments included within their Frequency Authorisations⁶. However, all spectrum lots would still be subject to the minimum performance requirements.

Question 10: Do you agree that the proposed comparative evaluation process (described in paras 5.8 - 5.12 above) is most appropriate for assignment of spectrum in the 700 MHz, 1900 MHz and AWS-1 bands?

Question 11: Do you propose an alternative method of assignment? Please justify any such proposal in terms of the most efficient use of spectrum and other Commission objectives and the ease of implementation.

Spectrum caps

- 5.13. The Commission seeks to ensure fair competition among licensees and to this end proposes to apply spectrum caps. The spectrum caps set out in the SMF, namely a spectrum cap of 60 MHz that applies to each licensee's spectrum holdings below 1 GHz and a spectrum cap of 170 MHz that applies to each licensee's spectrum holdings up to and including 2.5 GHz, were derived for a

⁶ The award design also takes account of the potential situation where there are two or more applicants that are not assigned spectrum at 700 MHz. In this situation, the Additional Commitments scores of such applicants will be used to determine the order that they are assigned lots in the 1900 MHz and AWS-1 bands. In this case, some of the Additional Commitments will also become obligations of their Frequency Authorisations.

situation with a total of 140 MHz available below 1 GHz and 550 MHz available at or below 2.5 GHz.

- 5.14. The main differences between the situation described in the SMF and this award are that the Commission is not planning to award vacant 2.5 GHz spectrum and the decision to offer AWS-1 and not 1800 MHz and

2100 MHz bands which reduces the total amount of spectrum available by 10 MHz. Whilst this might suggest that a lower total spectrum cap should be adopted, the Commission notes that competition issues are less acute with higher frequencies (because they are relatively plentiful) and regulatory certainty is given by having a cap that is consistent over time. Hence the Commission proposes a 60 MHz cap for spectrum below 1 GHz and an overall cap of 170 MHz are used in this award.

Question 12: Do you agree that the spectrum caps of 60 MHz for an operator's holdings below 1 GHz and 170 MHz for all of an operator's spectrum holdings should be applied in this award? If not, please give your reasons.

Pre-qualification requirements

- 5.15. To pre-qualify for the Award, applicants must be in compliance with the Act, the terms and conditions of their existing operating licence and frequency authorisations and any other request for information. For the avoidance of doubt, this includes payment of any monies due to the Commission.
- 5.16. Applicants will need to be compliant with the ITA rules, have submitted the correctly completed forms and included all the information necessary to support their applications.
- 5.17. Applicants will need to specify all the lots from the 700 MHz band that are of interest in order of preference. Applicants will also need to specify all the lots from the 1900 MHz and AWS-1 bands that are of interest in order of preference alongside each potential outcome regarding the 700 MHz band.⁷ Applicants should note that failure to include all lots in the list of preference could mean not being assigned any spectrum lots.
- 5.18. Applicants must comply with required spectrum caps. Where necessary, applicants will need to identify any spectrum to be released in order to be compliant with the Sub-1 GHz spectrum cap of 60 MHz and/or the overall spectrum cap of 170 MHz. Any spectrum proposed for release must be approved by the Commission.⁸
- 5.19. The minimum service requirements that the Commission proposes to include in the Frequency Authorisations for all lots in the award are summarised below:

⁷ This gives the applicant the opportunity to express any preferences for 1900 MHz and AWS-1 spectrum that are dependent on particular lots won at 700 MHz and also the case where no lots are won at 700 MHz.

⁸ The spectrum released must be consistent with good spectrum management practice (e.g. spectrum should be consistent with paired arrangements in the band, be contiguous as far as possible and from one edge of the operators currently assigned spectrum).

Minimum service requirements be achieved using spectrum assigned in the award

The Authorisation Holder shall provide using the Authorised Spectrum, and thereafter maintain an electronic communications network that is capable of providing to users:

- *within 12 months of the Date of Issue*
- *to at least 95% of the population of each of the islands of Tortola, Anegada, Jost Van Dyke and Virgin Gorda*
- *a mobile telecommunications service with a sustained downlink speed of not less than 2 megabits per second when that network is lightly loaded (by which is meant the common channels only are transmitted at 22% of the maximum cell power)*
- *at 90% of locations within any area of 100m by 100m.*

For the purpose of this Minimum Service Requirement, a network is considered 'lightly loaded' if it has a single user demanding service within the serving cell, and the surrounding cells of the network are loaded to a light level (by which is meant the common channels only are transmitting at 22% of the maximum cell power).

5.20. Applicants will be asked to submit technical plans to show that their intended rollout is capable of meeting the minimum service requirements.

Question 13: Do you agree that minimum service requirements be applied to all spectrum blocks awarded?

Question 14: Do you have any other comments on the minimum service requirements?

Evaluation criteria

5.21. The Commission considered a range of evaluation criteria for the comparative evaluation covering three aspects:

- The network deployment – this includes the rollout, coverage, services offered and the quality of service. These criteria are attributed a substantial proportion of the potential score and they would become obligations under the Frequency Authorisations where appropriate.
- The means by which users are assured good performance – this ensures that the services offered are actually available for the user with good quality of service. These should be measurable according to a reasonable method as proposed by the applicants. These criteria also account for a substantial portion of the potential score and would become obligations under the Frequency Authorisation where appropriate.
- The quality of the submitted plans – the quality of the business plan and competitive service offerings and devices are intended to assess whether the applicant has properly considered the financial implications of their Additional Commitments and has taken an innovative approach to ensuring VI consumers, citizens and enterprises have access to a rich set of services and devices. In allotting scores to these aspects, the Commission took account of the difficulty of enforcing these as commitments. In practice the business plan will have to

take into account the operator’s actual market performance, and the service offering will evolve with technology and the popularity of applications. Accordingly these categories have a lower weighting in the assessment and would not become obligations under the Frequency Authorisations.

5.22. The maximum score for each category of evaluation criteria is summarised below.

Evaluation criteria	Maximum score
Rollout and coverage	25
Quality of service	25
Performance guarantees	20
Quality of business plan	15
Competitive offering and consumer benefit	15
<i>Total</i>	<i>100</i>

5.23. Further guidance on how the Commission intends to assess and determine the score in each category can be found in Appendix A of this document (and is repeated at Appendix C of the draft ITA). Such guidance is not binding.

Question 15: Do you have any comments on the proposed evaluation criteria?

Question 16: Do you propose any changes to the evaluation criteria weightings? Please justify such changes in terms of the Commission’s objectives and the ease of implementation.

Assignment Process

5.24. The Additional Commitments will be evaluated by the Commission according to the evaluation criteria described above to determine a score. The highest score will be ranked first, the second highest score will be ranked second and so on.

5.25. The 700 MHz lots will be assigned to applicants according to their preferences and the ranking of Additional Commitments. The Commission will consider each applicant in turn in order of ranking and assign to that applicant the lot having its highest preference that has not already been assigned to another applicant. Where there are no such lots, the applicant will not be assigned a lot in the 700 MHz band.

5.26. The Commission will then assign the lots in the 1900 MHz and AWS-1 bands. To balance the usefulness of assigned spectrum as far as possible lots will be assigned according to applicants’ preferences in the following sequence:

- Applicants that did not obtain a 700 MHz lot (if any). Where there are two or more such applicants the sequence will be determined from their Additional Commitments scores
- The applicant that has been assigned package P2 from the 700 MHz band (if any)
- The remaining applicants in reverse order of ranking established for the 700 MHz band.

Question 17: Do you have any comments on the Commission's proposals to assign lots in the 1900 MHz and AWS-1 as described in para 5.26?

Grant of Frequency Authorisations

5.27. The Frequency Authorisations will be granted to the successful applicants following the assignment process.

5.28. A draft frequency authorisation is appended to the draft Invitation to Apply (ITA) that is published as a separate document.

Question 18: Do you have any comments on the draft Invitation to Apply (ITA) that is published in a separate document?

Question 19: Do you have any comments on the draft frequency authorisation appended to the draft ITA?

6. Licence conditions and spectrum fees

6.1. **Licence duration.** The Commission proposes that each frequency authorisation assigned will have a term of 15 years, subject to the holder of the authorisation also holding a Unitary Licence. If an operator's Unitary Licence terminates, then the frequency authorisations held by the operator will also terminate at the same time. The Commission notes that it is common international practice for frequency or spectrum licences to have durations of between 10 and 20 years⁹. The Commission considers that a 15 year duration for frequency authorisations gives sufficient time for licensees to plan efficiently and to recoup their investments in the infrastructure and services that will use the frequencies.

6.2. **Use it or lose it.** The primary goal of the proposed spectrum releases is to ensure that the spectrum assigned will be exploited in a timely and efficient way by operators who acquire it to deliver new and improved services for the benefit of consumers and enterprises in the VI. The Commission has proposed minimum rollout requirements to ensure the spectrum is used in a timely way to deliver high speed mobile broadband services. This together with the fact that consumer devices support frequency bands from ITU Regions 1 and 2 thereby allowing operators to provide roaming using only Region 2 frequency bands means there is potentially no benefit from a use it or lose it condition. Furthermore the proposed performance guarantees mitigate the risk of non-use and use it or lose it conditions are difficult to implement practically which has led other regulators to reject their use (e.g. Ofcom in the UK). Therefore the Commission does not propose to include a use it or lose it condition in the frequency authorisations issued in this award.

6.3. **Construction of sites.** The SMF (para 15.7) stated that the Commission proposed to introduce a licence condition in frequency authorisations that requires sharing of infrastructure under reasonable, nondiscriminatory conditions to minimize environmental impact and the costs of network deployments for all operators. The draft frequency authorisation appended to the draft ITA contains such a condition. The Commission regards such a condition as consistent with promoting the public interest through efficient use of infrastructure in the VI and minimising the visual intrusion from transmitter sites.

⁹ <http://www.gsma.com/spectrum/wp-content/uploads/2014/02/GSMA-Report.-Licence-Renewal-in-Latin-America.-2014.pdf>

6.4. **Technical information and compliance with international radio regulations.** The Commission proposes to include licence conditions that oblige licensees to keep accurate technical records, supply information as reasonably requested by the Commission and to comply with international radio regulations. The draft frequency authorisation appended to the draft ITA contains such conditions.

6.5. **Coverage and service commitments.** The Commission proposes to include conditions reflecting winning applicants' coverage and service commitments as Schedules to frequency authorisations. These schedules will also contain reference to any associated performance bonds. Minimum coverage and service commitments are discussed more fully in Section 5.

6.6. **Spectrum fees.** Annual fees will be payable as a condition of the frequency authorisations. The Commission is minded to set annual fees at levels aimed broadly to recover the Commission's administrative costs of releasing and managing the spectrum awarded. To determine the level of fees payable, the Commission has also reviewed benchmarks for annual fees from elsewhere in the Caribbean. The Commission proposes the same annual frequency fee per MHz for each frequency band assigned. The fee will be \$1,400/MHz. Hence if an operator is awarded 2x5 MHz of spectrum the annual fees payable will be \$14,000.

Question 20: Do you agree that licences should have a 15 year duration? If not, please propose an alternative with reasons.

Question 21: Do you agree that the Commission should not include a use it or lose it condition in licences?

Question 22: Do you have any comments on the level of spectrum fees proposed by the Commission?

7. Summary list of questions

7.1. The Commission is interested in respondents' views on the award process and has asked the questions given below. When formulating answers please provide any reasoning, analysis or references that support your views.

No.	Question
1	Do you agree that only the Unitary Licence Holders that operate mobile networks in the VI should be eligible to take part in the comparative evaluation process?
2	Do you agree that a comparative evaluation award process is the most appropriate in light of the demand for valuable spectrum?
3	Do you agree with the Commission's proposal not to include the 450 MHz band in the award? If not, please give reasons for your response.
4	Do you agree that the 700 MHz band should be included in this award? If not, please give reasons for your response.
5	Do you agree with the Commission's proposals for the packaging of the 700 MHz band? If not, please give your reasons and propose an alternative approach showing how it best meets the Commission's objectives in respect of competitive provision of high speed mobile services in the VI.
6	Do you agree that the 1900 MHz and AWS-1 bands should be included in this award? If not, please give reasons for your response.
7	Do you agree with the Commission's proposals for the packaging of the 1900 MHz and AWS-1 bands? If not, please give your reasons and propose an alternative approach showing how it best meets the Commission's objectives in respect of competitive provision of high speed mobile services in the VI.
8	Do you agree with the Commission's proposal for a new provision in the draft Frequency Authorisation that requires operators to realign their spectrum holdings should they be requested to do so by the Commission? If not, please give your reasons.
9	Do you agree with the Commission's proposal not to include the 2500 MHz band in the award? If not, please give reasons for your response and indicate how you think the spectrum should be packaged to address interference with the US VI in line with the objectives and timetable for this Award.
10	Do you agree that the proposed comparative evaluation process (described in paras 5.8 5.12 above) is most appropriate for assignment of spectrum in the 700 MHz, 1900 MHz and AWS-1 bands?

11	Do you propose an alternative method of assignment? Please justify such proposal in terms of the most efficient use of spectrum and other Commission objectives and the ease of implementation.
12	Do you agree that the spectrum caps of 60 MHz for an operator's holdings below 1 GHz and 170 MHz for all of an operator's spectrum holdings should be applied in this award? If not, please give your reasons.
13	Do you agree that minimum service requirements be applied to all spectrum blocks awarded?

No.	Question
14	Do you have any other comments on the minimum service requirements?
15	Do you have any comments on the evaluation criteria?
16	Do you propose any changes to the evaluation criteria weightings? Please justify such changes in terms of the Commission's objectives and the ease of implementation.
17	Do you have any comments on the Commission's proposals to assign lots in the 1900 MHz and AWS-1 as described in para 5.26?
18	Do you have any comments on the draft Invitation to Apply (ITA) that is published in a separate document?
19	Do you have any comments on the draft frequency authorisation that is appended to the draft ITA?
20	Do you agree that licences should have a 15 year duration? If not, please propose an alternative with reasons.
21	Do you agree that the Commission should not include a use it or lose it condition in licences?
22	Do you have any comments on the level of spectrum fees proposed by the Commission?

Glossary

Acronym	Meaning
AWS	Advanced Wireless Services
BRS	Broadcast Radio Service
EBS	Educational Broadcast Service
FA	Frequency Authorisation
GDP	Gross Domestic Product
ITA	Invitation to Apply
ITU	International Telecommunications Union
LTE	Long Term Evolution
SMF	Spectrum Management Framework
TRC	Telecommunications Regulatory Commission
US	United States
VI	British Virgin Islands

Appendix A: Guidelines on Interpretation of the Evaluation Criteria

The following guidelines for submission are provided to assist Applicants submit information relevant to each of the Evaluation Criteria.

Rollout and coverage

Rollout commitments should be made for specific dates at 6 months, 12 months and 24 months after the date of Frequency Authorisation. The score will be attributed based on the coverage promised for those specific dates and maintained thereafter and no additional score will be attributed for achieving the coverage earlier than that date (i.e. earlier than the first date or between the dates specified).

- 30% of the score will be attributed to commitments at 6 months
- 40% of the score will be attributed to commitments at 12 months
- 30% of the score will be attributed to commitments at 24 months

At each rollout date, Scoring will be based on coverage of following areas using the weightings given.

Area covered	Measure			Weighting
	6 months	12 months	24 months	
<i>Tortola</i>	<i>Outdoor coverage*</i>	<i>Indoor coverage*</i>	<i>Indoor coverage*</i>	50%
<i>Virgin Gorda</i>	<i>Outdoor coverage*</i>	<i>Indoor coverage**</i>	<i>Indoor coverage**</i>	10%
<i>Anegada</i>	<i>Outdoor coverage*</i>	<i>Indoor coverage**</i>	<i>Indoor coverage**</i>	6%
<i>Jost Van Dyke</i>	<i>Outdoor coverage*</i>	<i>Indoor coverage**</i>	<i>Indoor coverage**</i>	6%
<i>Guana</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	5%
<i>Great Camanoe</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	5%
<i>Scrub</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	4%
<i>Beef</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	3%
<i>Peter</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	3%
<i>Norman</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	3%
<i>Cooper</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	3%
<i>Ginger</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	1%

<i>Salt</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>Deployed at least 1 base station</i>	<i>1%</i>
<i>Total</i>				<i>100%</i>
<p><i>* For assessment of outdoor coverage at 6 months the Additional Commitments will be compared with the Minimum Service Requirements defined in the Frequency Authorisation.</i></p> <p><i>** For the purposes of defining Additional Commitments, indoor coverage is defined as the areas within buildings having in-building propagation losses ≤ 12dB. To obtain the score associated with indoor coverage the Applicant must specify how its Network Deployment Plan will vary to accommodate the additional inbuilding propagation loss.</i></p>				

Services offered and quality of service

Quality of Service will be assessed using a mix of quantitative and qualitative measures. The quantitative measures focus directly on the provision of data services and are intended to ensure that a high quality platform of delivery is maintained. For the Qualitative measures the Applicant is invited to describe the breadth and quality of services offered including product packaging, specific applications and interaction with particular end user devices. The Applicant should describe the introduction of these within a 12 month timeframe.

Type of measure	Timeframe	Metric	Weighting
<i>Quantitative</i>	<i>6 months</i>	<i>Average user data rate that can be expected across the network within the defined coverage area under loaded network conditions</i>	<i>14.7%</i>
		<i>Peak user data rate that will be offered based on the technology to be deployed</i>	<i>6.3%</i>
	<i>12 months</i>	<i>Average user data rate that can be expected across the network within the defined coverage area under loaded network conditions</i>	<i>19.6%</i>
		<i>Peak user data rate that will be offered based on the technology to be deployed</i>	<i>8.4%</i>
	<i>24 months</i>	<i>Average user data rate that can be expected across the network within the defined coverage area under loaded network conditions</i>	<i>14.7%</i>
		<i>Peak user data rate that will be offered based on the technology to be deployed</i>	<i>6.3%</i>
<i>Qualitative</i>	<i>12 months</i>	<i>Description of innovative data services and applications</i>	<i>30%</i>
<i>Totals</i>			<i>100%</i>

Performance guarantees

The purpose of performance guarantees is to give Applicants the opportunity to reinforce their Additional Commitments by providing the Commission with the means to assess and enforce compliance. Applicants will score highest in this regard where they:

- Offer verification methods that are simple and unambiguous to implement; and
- Include performance bonds that can be drawn upon in the event of non-compliance.

The scoring associated with performance guarantees will be split between those associated with rollout and coverage, and the services offered and quality of service. The score will be attributed to the methods of verification and performance bonds as shown in the following table.

<i>Criteria</i>	<i>Aspect</i>	<i>Weighting</i>
<i>Rollout and coverage</i>	<i>Methods of verification</i>	<i>15%</i>
	<i>Performance bond</i>	<i>35%</i>
<i>Services offered and quality of service</i>	<i>Methods of verification</i>	<i>15%</i>
	<i>Performance bond</i>	<i>35%</i>
<i>Total</i>		<i>100%</i>

The performance bond may take the form of a money payment or irrevocable bank guarantee to TRC prior to the grant of the Frequency Authorisation.

Quality of the business plan

A credible and well reasoned business plan is important to demonstrate that the operator has thought through the provision of advanced data services and understands the financial implications of submitting the Additional Commitments. Assessment of the business plan will look for a professional approach to business planning and consistency across all assumptions made.

It is for the Applicants to decide whether they submit a business plan for services using the newly awarded spectrum alone or the entire mobile business. Applicants may prefer to present a plan covering the entire mobile business where revenues are difficult to attribute by technology. However, Applicants should separate revenues and costs associated with the spectrum to be awarded where possible.

The business plan should include discounted cash flow analysis showing the impact of introducing advanced high speed data services using the spectrum that is the subject of this award and for which the applicant is applying. The analysis should be for a 10 year period from the grant of the licence and should include as a minimum:

- Projected market size in VI in terms of revenues and subscribers
- Projected market share of revenues and subscribers
- Capital expenditure
- Operational expenditure
- Financial strength of applicant, covering the timing of fund raising, sources of funds and nature of commitment by providers of capital

The assumed cost of capital should also be stated with justification.

A business plan which that does not cover its cost of capital or relies on overly optimistic or invalid assumptions will be awarded a low score. Applicants that include valid supporting evidence for their assumptions such as benchmarks from Caribbean and other international markets will be awarded a higher score.

Competitiveness and consumer benefit

Applicants should describe the range of services and the user devices they would offer using the spectrum to be awarded. The score attributed using this criterion would have the following weighting:

- 30% based on the flexibility of the product offerings (ability to cater for a range of low and high usage segments)
- 30% based on a wide variety of user terminals including both budget and advanced devices
- 40% based on innovative service offerings.

It is important that Applicants are able to describe their service plans and the types of terminal they would offer to the market and show relevant linkages to their business plans and any service or other agreements they have with third party suppliers.