



DECISION 01 OF 2014

The Telecommunications and Radiocommunications Regulator's Decision on Planning for the 700MHz Band in Vanuatu

Background

The office of the Telecommunications and Radiocommunications Regulator released a Public Consultation document on 30th April 2014 inviting public comment and input on the planning of the 700MHz Band in Vanuatu. During the consultation period, TRR received comments and feedback from service providers and interested persons, which has assisted the Regulator in the making of this decision.

Decisions:

After assessing all the comments and feedback received from the service providers and interested persons, and in the exercise of its powers and duties under the Telecommunications and Radiocommunications Regulation Act 2009 ("the Act") I, the Telecommunications and Radiocommunications Regulator ("the Regulator") hereby make the following decisions.

1. The Regulator shall allocate the 700 MHz band (698-806 MHz) for use by Licensees or service providers or potential service providers to provide mobile broadband services using 4th Generation Long Term Evolution (LTE) technologies, or technologies that will be compatible with LTE services under the technical parameters and conditions as outlined in the Schedule hereto attached to this decision.
2. The Regulator may assign the 700 MHz spectrum band to licensees, or service providers by means of a spectrum auction.
3. In order to assess the level of demand for spectrum in the 700 MHz band in advance of the auction, the Regulator will call for Expressions of Interest in acquiring spectrum in the band. Potential service providers will be asked to nominate how much spectrum they would be

seeking to acquire and to indicate their preference, if any, for particular parts of the band. In particular:

- a. All Expressions of Interest shall be treated as confidential (Commercial in Confidence) and will not be made public unless permitted by the Act.
 - b. After receiving Expressions of Interest, the Regulator may decide not to proceed to an auction of 700 MHz band spectrum if it decides that the level of demand for spectrum can be satisfied without a competitive process.
4. The Regulator may set aside 2 x 15 MHz spectrum in the 700 MHz band for a new carrier (other than the current mobile service providers, namely Telecom Vanuatu Limited and Digicel (Vanuatu) Limited).
 5. The Regulator may decide not to proceed in accordance with paragraph 4 above if, following receipt of Expressions of Interest, it considers that there is sufficient spectrum in the band to provide for new entrant(s).
 6. In the event where the Regulator decides to assign spectrum in the 700 MHz band without an auction, the licensees, service providers or potential service providers will be subject to Radio Spectrum Fees as prescribed by the Regulator.
 7. The Regulator may make spectrum available for a Public Protection and Disaster Relief broadband network. A decision on whether this spectrum would be made available in the 700 MHz band or another suitable band (e.g. 800 MHz band), will be made after receipt of Expressions of Interest.

Made this 14th day of August 2014



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SUMMARY OF REASONS RELATING TO THE DECISIONS ON PLANNING FOR THE 700MHz BAND IN VANUATU

1. Having considered the views of responders to its public consultation on Planning for the 700 MHz Band in Vanuatu, the Regulator has concluded that it is in the public interest to proceed to allocate the 700 MHz band for mobile broadband services. It has also decided that the 700 MHz band should be made available for services using 4th Generation Long Term Evolution (LTE) technologies, or technologies that will be compatible with LTE services under the technical parameters and conditions as set out in the Decision.

In reaching this decision, the Regulator has taken into account:

- a. The significant benefits that mobile broadband can bring to Vanuatu in terms of increased access to broadband services, greater productivity in the economy and better international roaming opportunities both for visitors to Vanuatu and for Vanuatu residents travelling to other countries;
 - b. The general level of support amongst respondents for the allocation of the 700 MHz band;
 - c. The benefits for international roaming if Vanuatu adopts the same or similar technologies adopted in other countries in the region and elsewhere;
 - d. The widespread adoption of LTE technologies internationally;
 - e. The support amongst most responders for the technical conditions proposed in the Consultation Paper; and
 - f. The need to ensure that interference to, from and between services using the band is manageable.
2. The Regulator has concluded that the best way of assigning this spectrum is by means of a spectrum auction. In reaching this decision, the Regulator has taken into account:
 - a. The requirement under the Radio Apparatus Licence and Spectrum Licence (Fees) Regulation (Order No 153 of 2012) that the Regulator is to “charge the assignment of spectrum using the administrative incentive pricing or spectrum auctions whichever is appropriate under the circumstance”;
 - b. The greater fairness and transparency of a spectrum auction compared to other assignment methods;

- c. The prospect that there may be more demand for this spectrum than can be met by the available supply, based on requests to the Regulator for access to this spectrum;
 - d. The lack of information currently available to the Regulator to enable the setting of an administrative incentive price for this spectrum.
3. The Regulator has decided that in preparation for an auction of the 700 MHz band, it will call for Expressions of Interest in acquiring spectrum in the band. Potential licensees will be asked to nominate how much spectrum they would be seeking to acquire and to indicate their preference, if any, for particular parts of the band. In reaching this decision The Regulator has taken into account:
 - a. The need to test the level of demand for spectrum in the band;
 - b. The possibility that requests for access to the band can be met without an auction if projected demand fails to materialise.
4. The Regulator's decision to set aside 2 x 15 MHz spectrum for a new mobile operator is based on the advantages that would arise to consumers from an increase in competition in the Vanuatu markets for mobile and broadband services.
5. The Regulator has decided that if it proceeds to assign spectrum in the 700 MHz band without an auction, the licences will be subject to Radio Spectrum Fees to be determined by the Regulator. This is consistent with the requirements of the Radio Apparatus Licence and Spectrum Licence (Fees) Regulation (Order No 153 of 2012) that the Regulator is to "charge the assignment of spectrum using the administrative incentive pricing or spectrum auctions whichever is appropriate under the circumstance". The administrative incentive price would be the Radio Spectrum Fee.
6. The Regulator's decision to make available spectrum for a Public Protection and Disaster Relief broadband network, either in the 700 MHz band or another suitable band is based on:
 - a. The advantages that access to broadband services would bring for emergency services and defence agencies in the event of natural disasters and other emergencies; and
 - b. The uncertainty as to whether there will be sufficient spectrum in the 700 MHz band for both this purpose and for commercial users. In the event that sufficient spectrum is not available for both, the Regulator will make an allocation in another suitable band (e.g. the 800 MHz band).

SCHEDULE:

TECHNICAL PARAMETERS AND CONDITIONS

1.1 BASIS OF PARAMETERS

The limits for the technical framework for the terminal stations are based on 3GPP values for a 5 MHz E-UTRA (LTE) channel.

The limits for base stations are based on a combination of the European values and the values currently being used in the 800 MHz band in Australia. In order to help preserve options for future planning of the frequencies above 803 MHz, an additional requirement is for out-of-band emissions above 806 MHz. Since there is not yet any decision on what will eventually occupy this spectrum, these values have been determined based on both the values given in 3GPP TS36.104 v10.3.0 and the European values, with an additional 10-15dB of filtering. It is also in line with the out-of-band values currently for the 890 MHz boundary in the 800 MHz band.

Any system which meets the 3GPP standards for Band 28 will be able to operate in Vanuatu.

The powers are expressed as radiated powers, these are the powers transmitted from the antenna of the system.

1.2 OUT OF BAND LIMITS

The out of band and out of licence limits are shown in Table 1 below.

These limits are expressed in terms of EIRP and the onus is on the operator to ensure the combination of transmitter powers, feeder loss and antenna gain results in an emission within these limits.

Non-spurious out-of-band emission limits

For transmitters operating in the lower band (703-748 MHz) emissions falling:

- (a) above 694 MHz, at frequencies offset from the upper and lower limits of the licence:
 - (i) between 0 MHz and 1 MHz – a radiated maximum true mean power of -15dBm/30kHz;
 - (ii) between 1 MHz and 5 MHz – a radiated maximum true mean power of -10dBm/MHz;
 - (iii) between 5 MHz and 10 MHz – a radiated maximum true mean power of -13dBm/MHz;
 - (iv) greater than 10 MHz – a radiated maximum true mean power -25dBm/MHz;
- (b) between 673-694 MHz:
 - a radiated maximum true mean power of -34dBm/MHz (averaged over a 7 MHz bandwidth)
- (c) below 673 MHz
 - a radiated maximum true mean power of -34dBm/MHz (averaged over a 7 MHz bandwidth).

For transmitters operating in the upper band (758-803 MHz) emissions falling:

- (a) between 748-806 MHz, at frequencies offset from the upper and lower limits of the licence:
 - (i) between 0 MHz and 5 MHz – a radiated maximum true mean power of +15dBm/MHz;
 - (ii) between 5 MHz and 10 MHz – a radiated maximum true mean power of +11dBm/MHz;
 - (iii) greater than 10 MHz – a radiated maximum true mean power of +9dBm/MHz.
- (b) between 806-813 MHz – a radiated maximum true mean power of -6dBm/MHz
- (c) above 813 MHz and below 748 MHz – a radiated maximum true mean power of -15dBm/MHz.

Table 1 Out of band and out of licence limits.

Figures 1 and 2 illustrate these out-of-band emission limits. In both figures, the blue lines indicate emission limits at the edge of the entire lower band block (703-748 MHz), while the red lines illustrate the limits for a hypothetical licence located somewhere within the band.



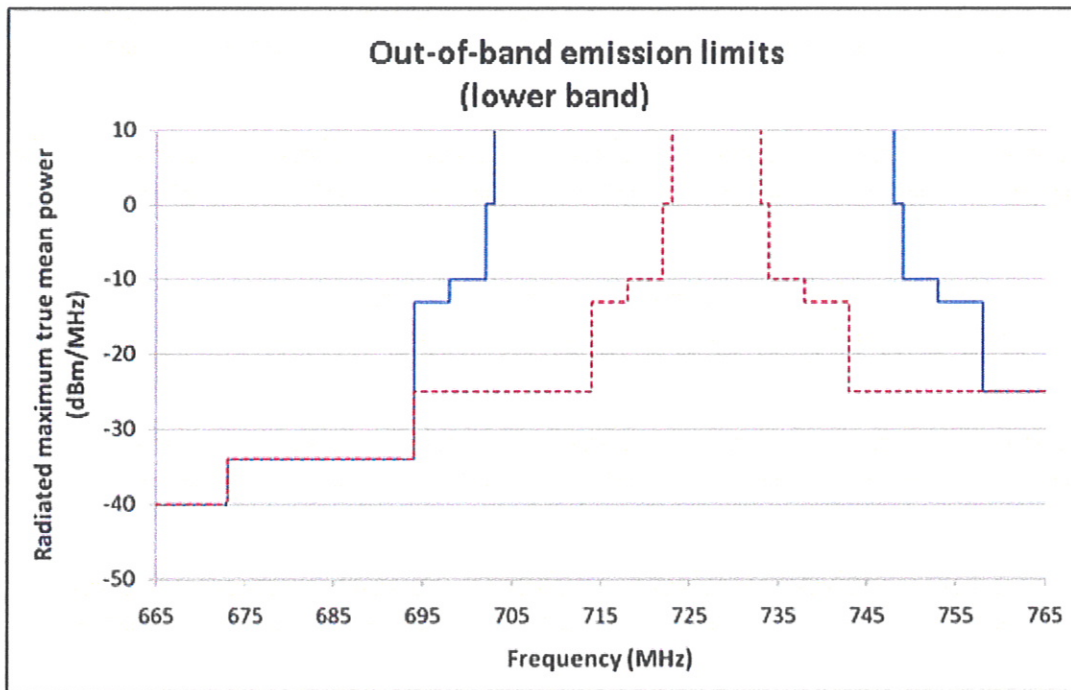


Figure 1 Out of band/licence limits for lower band.

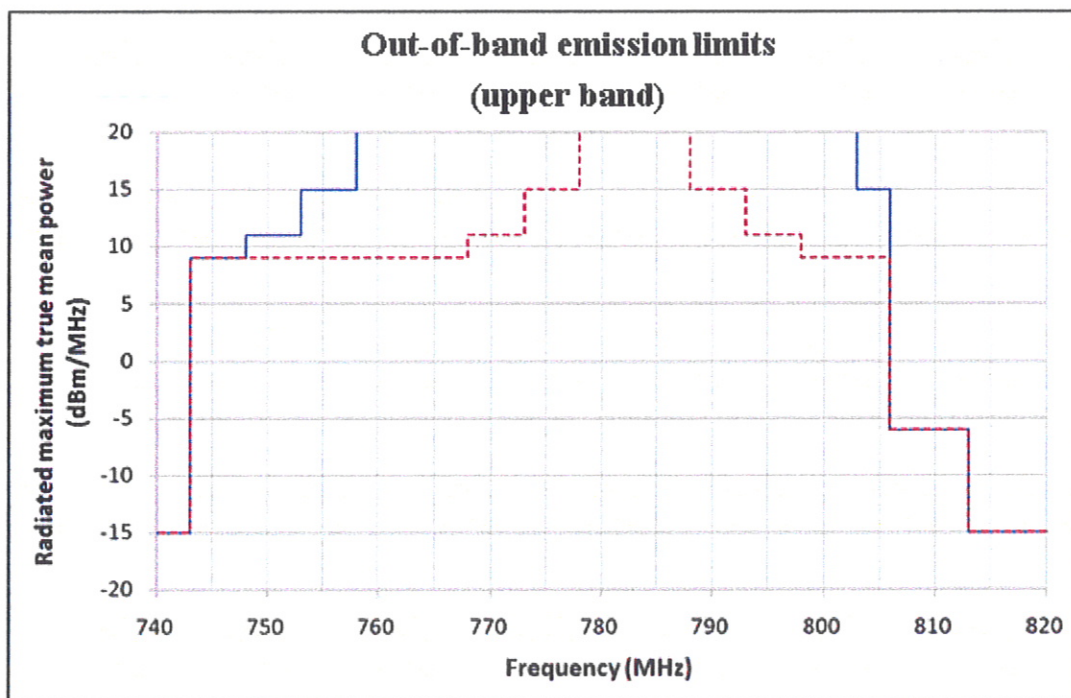


Figure 2 Out of band/licence limits for upper band



1.3 OUT OF BAND SPURIOUS EMISSION LIMITS

Limits on spurious emissions protect other services from aggregate out of band noise caused by communications devices. The spurious limits are common to those accepted by equipment vendors and no additional requirements than those contained in standards are necessary.

The limits for spurious emissions have been based on arrangements and limits found in CEPT/ERC/REC 74-01 and ITU-R Radio Regulations Appendix 3 and ITU-R Recommendation SM 329. These limits are applicable outside of the band 694-803 MHz.

Note that these limits are expressed in terms of EIRP and the onus is on the operator to ensure the combination of transmitter powers, feeder loss and antenna gain results in an emission within these limits.

<p><i>The maximum permissible level of spurious emissions from a transmitter operated under a 700 MHz band spectrum licence is a radiated mean power of:</i></p> <ul style="list-style-type: none"> -36dBm per 1 kHz within the band 9 kHz to 150 kHz; -36dBm per 10 kHz within the band 150 kHz to 30 MHz; -36dBm per 100 kHz within the band 30 MHz to 1 GHz; and -30dBm per 1 MHz within the band 1 GHz to 12.5 GHz.
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Table 2 Transmitter spurious limits

<p><i>The maximum permissible level of spurious emissions from a receiver operated under a 700 MHz spectrum licence is a radiated mean power of:</i></p> <ul style="list-style-type: none"> -57dBm per 100 kHz within the band 30 MHz to 1 GHz; and -47dBm per 1 MHz within the band 1 GHz to 12.5 GHz.
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Table 3 Receiver spurious limits

1.4 REFERENCE STANDARDS

The following references were used to determine the technical parameters described above.

Reference technology	Applicable standards and reports
UMTS (UTRA, WCDMA, HSPA, HSPA+)	ITU-R Report M.2039-2, 3GPP TS 25.101, 3GPP TS 25.104, 3GPP TS 24.942, ECC Report 82, ECC Report 96
LTE (E-UTRA, LTE-Advanced)	ITU-R Report M.2039-2, 3GPP TS 36.101, 3GPP TS 36.104, 3GPP TS 36.942

Table 4 Reference Standards used in the 700 MHz Band Plan

