**EASTERN CARIBBEAN TELECOMMUNICATIONS AUTHORITY**

**Recommendation of the Eastern Caribbean Telecommunications Authority (ECTEL)**

**To the National Telecommunications Regulatory Commission to consult on a Proposal to Review the ECTEL Regional Radio Spectrum Plan**

**CONSULTATION DOCUMENT**

1. The National Telecommunications Regulatory Commission is in receipt of a submission from ECTEL containing ECTEL's Consultative Document for a proposed review of the ECTEL Regional Radio Spectrum Plan.

2. The Consultative Document is attached.

3. The initial comments period will run from the **17th August to the 10th September 2010.**

4. The comment on comments period will run from the **14th September to the 28th September 2010.**

5. Following the comment on comments period, ECTEL will finalize and submit a draft review of the Regional Radio Spectrum Plan to the ECTEL Council of Ministers for adoption.

6. All responses to this Consultative Document should be written and sent by post, fax or email to:-

**The Managing Director**
**ECTEL**
**P.O. Box 1886**
**Vide Boutielle**
**Castries**
**St. Lucia**
**Facsimile: 1 758 458 1698**
**E-mail:** consultation@ectel.int

All comments should be clearly marked "Comments on Proposal to Review the ECTEL Regional Radio Spectrum Plan."

**Disclaimer**

*This consultative document does not constitute legal, commercial or technical advice. The consultation is without prejudice to the legal position of ECTEL's duties to provide advice and recommendations to the Ministers with responsibility for telecommunications and the National Telecommunications Regulatory Commissions.*

## RATIONALE

ECTEL is conducting a Public Consultation on a proposed review of the ECTEL Regional Radio Spectrum Plan. The Consultation document provides the necessary background and context for the consultation and advances proposals / discussion for the review of the existing 2005 ECTEL Regional Radio Spectrum Plan based on considerations that include the following:-

- the treatment of WiMax;
- use of the 700 MHz Band;
- nationwide spectrum allocations for emergency and State institutions
- ending requirement for frequency authorizations for low powered devices;

In preparation for reviewing the Plan, an audit was conducted by ECTEL on spectrum use in the ECTEL Member States, and it had focused primarily on the following four bands:

1. the land mobile bands;
2. the FM and TV broadcast band;
3. the band allocated for WiMax (Worldwide Interoperability for Microwave Access) service; and
4. The 700 MHz Band

The audit considered global trends and standards for Wireless Broadband Access (WBA), with the aim of facilitating broadband access, growth of services like WiMax, reuse of presently allocated spectrum in a more efficient manner, and ensuring that spectrum is available for the last mile connectivity with access for all.

The review of the Plan seeks to address:

(i) updating the Spectrum Plan to include new footnotes that are relevant to the inclusion of additional band plans for those services most utilized in the ECTEL Member States;
(ii) providing spectrum allocations for broadband services;
(iii) creating a Plan that is technology neutral; and
(iv) compliance with the new allocation from The ITU;

A separate public consultation was held on the establishment of a policy and band plan for the 700 MHz band. The resulting policy and band plan developed was approved by ECTEL's 47th Board meeting held on 23rd April 2009 in Dominica. The 700MHz plan is therefore not intended for consultation in this document although it is included for completeness. The approved 700 MHz plan will be incorporated in the final review of the Spectrum Plan.

The Consultative document presents a combination of definite proposals and discussion on areas of possible review of the Spectrum Plan. Respondents are invited to submit their comments thereon.

**Consultation Procedure and Timetable**

This ECTEL submission includes a request to the Commission to conduct a national consultation in [Member State] on the proposed review of the ECTEL Regional Radio Spectrum Plan in accordance with the timetable outlined on the cover page.

**Council of Minister's Approval**

It is the intention of ECTEL to finalize a review of the Spectrum Plan after taking into account all comments received in this consultation process. The Plan will then be presented to the Council of Ministers for adoption.


# Eastern Caribbean
# Telecommunications Authority (ECTEL)

# Proposal to Review the ECTEL Regional Radio Spectrum Plan

**August 2010**

## 1.0 Introduction

The basis for this proposed review of the 2005 ECTEL Regional Radio Spectrum Plan includes the following considerations:

- the treatment of WiMax;
- use of the 700 MHz Band;
- nationwide spectrum allocations for emergency and State institutions
- ending requirement for frequency authorizations for low powered devices;

The Plan's review, subject to public consultation, will be to better align it with the international best practices for spectrum management and frequency allocation.

## 2.0 Review of the ECTEL Regional Spectrum Plan (2005)

In preparation for the Plan's review an audit of spectrum use in the ECTEL Member States was conducted by ECTEL. The audit focused primarily on the following four bands:

1. the land mobile bands;
2. the FM and TV broadcast band;
3. the band allocated for WiMax (Worldwide Interoperability for Microwave Access) service
4. The 700 MHz Band

The global trends and standards for Wireless Broadband Access (WBA) were considered while conducting the audit. ECTEL is also concerned about facilitating broadband access, growth of services like WiMax, reuse of presently allocated spectrum in a more efficient manner and ensuring that spectrum is available for last mile connectivity with access for all.

The review of the Plan seeks to address:

(i) updating the Spectrum Plan to include new footnotes that are relevant to the inclusion of additional band plans for those services most utilized in the ECTEL Member States;

(ii) ensuring that the Frequency Allocation Table (FAT) becomes technology neutral;

(iii) providing spectrum allocations for broadband services;

(iv) creating a Plan that is technology neutral; and

(v) compliance with the new allocation from The ITU;

The items under Section 3.0 of this Consultative document are primarily intended to be incorporated as footnotes in the reviewed Spectrum Plan. Section 3.0 presents a combination of footnotes that already exist in the current plan, definite proposals for new footnotes, and discussion on areas for possible new footnotes. Section 3 is therefore intended to be the basis for defining a new set of footnotes (for the revised Plan) that will replace the complete set of footnotes that are applicable to ECTEL Member States in the current Plan. A copy of the current 2005 ECTEL Regional Radio Spectrum Plan is available on ECTEL's website at http://www.ectel.int/spectrummanagement.htm

A separate public consultation was held on the establishment of a policy and band plan for the 700 MHz band. The resulting policy and band plan developed was approved by ECTEL's 47th Board meeting held on 23rd April 2009 in Dominica. The 700MHz plan is therefore not intended for consultation in this document although it is included for completeness. The approved 700 MHz plan will be incorporated in the final review of the Spectrum Plan.

Respondents are invited to submit comment on any matter (entered, proposed or discussed) in section 3.

Following consultation, final review positions will be determined and incorporated as corresponding footnotes in the review of the Regional Radio Spectrum Plan.

## 3.0 Footnotes applicable to ECTEL Member States

**E.1**

The range 1605-1705 kHz is allocated to Broadcasting on an exclusive basis. Assignments require ITU coordination.

**E.2 Health and Safety**

The following frequencies are allocated for the provision of Health and Safety Services

| | |
|---|---|
| 21 74.5 kHz | for Search and Rescue (SAR) |
| 2 182 kHz | for GMDSS |
| 21 87.5 kHz | for Distress and Safety Radio Communication Services using DSC |

**E.3 Community Radio Services**

The band 88.1-88.9 is allocated to Community Radio Service. The power limit for the use of this band is 25 W.

The existing Spectrum Plan has the range 88.1-89.5 for Community Radio Service. This is an error because a range of only 10MHz (88.1-88.9) was intended.

To minimize the need across member states for relocating existing national broadcasters who currently operate within the 88.1-88.9 range, the allocation of different 10MHz ranges in different member states is now being considered. Respondents may therefore wish to comment on this new approach being considered and to suggest/justify which 10Mhz ranges would be best allocated in the different member states.

The occupied Bandwidth for FM broadcast stations is limited to 150 kHz unless otherwise authorized by the NTRC.

**E.4**

The band **235-267 MHz**. is allocated to Digital Audio Broadcast services.

**E.5 Studio to Transmitter**

The band 335 MHz - 399 MHz is allocated to Audio Broadcasting services for Studio to Transmitter Links, STL

**E.6**

454.975 MHz to 462.5625 MHz is allocated for outside broadcast television and radio

**E.7 Outside broadcast Frequencies**

The band 467.7125 - 470 MHz is allocated to Broadcasting for Radio and Television outside Broadcast operation.

**E.7A**

The band 462.5625-467.7125 is allocated to Family Radio Services on a secondary basis

**E.8 GSM Band Commonwealth of Dominica**

In the Commonwealth of Dominica the band 912-915 is allocated to GSM Services

**E.9**

The band 1710-1990 is allocated for GSM services

**E.10**

The band 1990-2025 MHz is allocated for future Mobile Services; eg 3G mobile services.

**E.11 Broadband Services**

The following Bands are allocated for the provision of Broadband services on a Primary basis:

| | | |
|---|---|---|
| 2520 | -2655 | MHz, |
| 2655 | -2670 | MHz, |
| 2670 | -2690 | MHz |
| 3 400 | -3500 | MHz |
| 3 500 | -3700 | MHz |

**E.11A Band Allocation for Broadband Services**

The bands allocated for provision of International Mobile Telecommunications (IMT ) services on a global basis are the following: 2.3 GHz, 2.5 GHz, 3.3 GHz, 3.5 GHz, 3.6 GHz, and 5.8 GHz. The Regional FAT complies with this trend. So far, frequencies have already been assigned in the 2.3 GHz band for the operation of IMT networks. There are also a number of applications presently being processed by ECTEL for IMT use

***Fixed Broadband Services***

Fixed IMT (IEEE 802.16-2004, OFDM) is primarily used for fixed applications. The spectrum bands proposed for fixed IMT WiMAX services in the ECTEL member states are the following:

| Spectrum | Duplexing | Channel Bandwidth |
|---|---|---|
| 3.5 GHz | TDD | 3.5 MHz |
| 3.5 GHz | TDD | 7 MHz |
| 3.5 GHz | FDD | 3.5 MHz |
| 3.5 GHz | FDD | 7 MHz |
| 5.8 GHz | TDD | 10 MHz |

***Mobile Broadband Services***

Mobile WiMAX (IEEE 802.16-2005, OFDMA), has recently been identified by the ITU standards as an IMT service. This technology is versatile in scope and can be used as Fixed, Nomadic, Portable, Limited and Fully Mobile Operation. The frequency bands proposed for Mobile WiMAX in the ECTEL Member States are the following:

| Spectrum | Duplexing | Channel Width |
|---|---|---|
| 2.3-2.4 GHz | TDD | 8.75, 5, 10 MHz |
| 3.4-3.8 GHz | TDD | 5, 7, 10 MHz |
| 2.469-2.69 GHz | TDD | 5, 10 MHz |
| 3.3-3.4 GHz | TDD | 5, 7 MHz |
| 2.305-2.320, 2.345-2.360 GHz | TDD | 3.5, 5, 10 MHz |

For Mobile IMT, FDD profiles, other frequency bands and channel bandwidth are to be considered based on market opportunity and regulatory requirements.

***Guard Band Requirements for Broadband Services***

Guard bands are required in channel plans to avoid harmful interference between assignments to different providers using the channels in an allocated band. The global standards for IMT WiMAX guard band are the following:

(i) A 300 kHz guard band (FCC mask) or 500kHz guard band (ETSI mask) would potentially enable Mobile Station (MS) to Base Station (BS) and BS to MS

coexistence for 2 FDD systems or 2 synchronized TDD systems assuming an average throughput loss of 5 % is acceptable.

(ii) Each operator will need to synchronize its TDD base stations to avoid mobile station to mobile station (MS-MS) and base station to base station (BS-BS) interference within its own network.

(iii) If operators in adjacent bands also deploy mobile WiMAX TDD, then it is strongly recommended that all the operators synchronize their systems to avoid mobile station to mobile station (MS-MS) and base station to base station (BS-BS) interference, thereby drastically reducing the additional filtering and guard bands requirements.

**(iv)** If operators in adjacent bands have FDD systems, then the mobile station to mobile station interference when in close proximity of each other will need to be studied carefully and will possibly need higher guard bands.

***Band Plans for Broadband Services***

**3.5 GHz band**

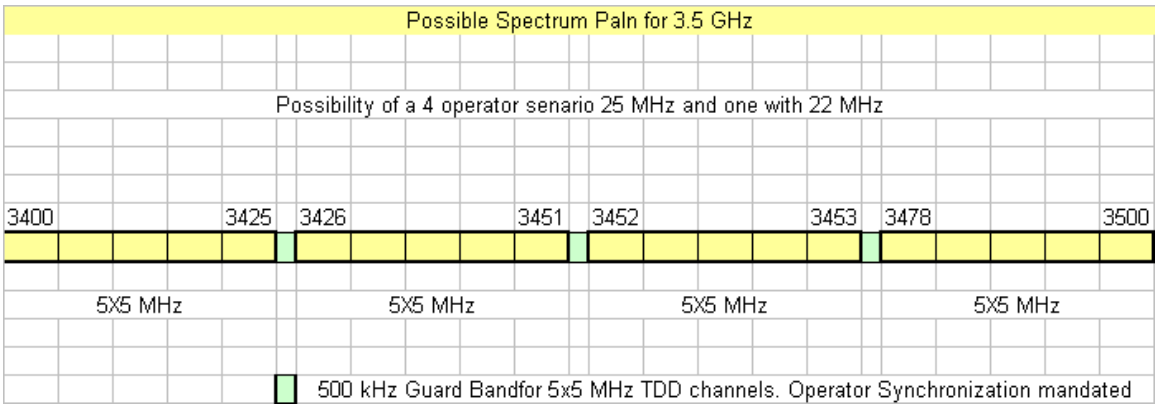
(i) The 3.4 to 3.6 GHz band, which is globally harmonized for IMT WiMAX and would be a suitable band for BWA in the ECTEL Member States.

(ii) 3.4-3.6 GHz IMT WiMAX equipment would be cheaper because of economies of scale as it is globally adopted and all vendors manufacture equipment in this band.

(iii) ECTEL can comply with the global trends in this band because this band is presently clear of any spectrum use in the Member States and could be used for licensed IMT WiMAX operators.

(iv) The proposed spectrum plan for the ECTEL Member States is outlined in the table below. There would be provision for licence to be awarded to four providers with 25 MHz each (5 blocks of 5 MHz each)

**TABLE 1**




**2.5 GHz band**

- This is the most important globally harmonized band for mobile IMT (802.16e). Mobile equipment is already present in the global market.

- The global trend for the band 2535 -2655 MHz is that it is being used for radio networking, cyclone warning dissemination system, meteorological data dissemination, satellite time and frequency dissemination applications using INSAT system. About 40 MHz has been assigned in this band for BWA applications. Assignments of frequencies have already been made to various ISP service providers in many cities using 5MHz Channels.

- 120 MHz of spectrum should be made available in this band, to be assigned for mobile operators with technology neutral approach since this band can be used both for WiMAX and IMT 2000. It would be best to assign 30 MHz (15+15) per operator with 5/10 MHz channels with both TDD and FDD options.

- ITU-R WRC-07 reviewed the use of the band 2 500-2 690 MHz by space services in order to facilitate sharing with current and future terrestrial services. This agenda item at the WRC-07 was No. 1.9.

**2.3 GHz band**

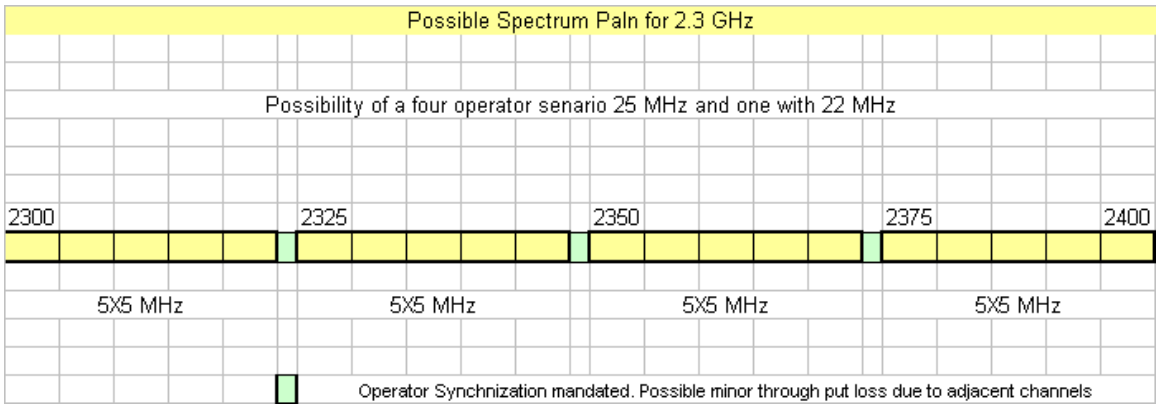
- This band is the key globally harmonized band for mobile IMT (802.16e) and is the band most applicants are seeking in the ECTEL Member States. Part of this band is already assigned in one Member State and other Member States have already received applications for this band.

- The demands for this band is because it has better propagation characteristics than the higher bands.

- Presently only 40 MHz is available in the 2.5 to 2.696 GHz band, which is not adequate considering the large number of operators as well as likely deployment of IMT 2000 (International Mobile Telephony 2002) developed by the ITU-D in this band. Allocating additional spectrum from the 2.3 to 2.4 GHz would ensure appropriate spectrum availability for mobile IMT.

- The proposed spectrum plan for the ECTEL Member States is outlined in the table below. There would be provision for licence to be awarded to four providers with 25 MHz each (5 blocks of 5 MHz each). This band would also be used for fixed IMT. The present mobile operators in the ECTEL Member States could also use this band for microwave links to provide WBA to areas that do not have service such as rural areas.

**TABLE 2**




***Allocation Summary***

- Global trends show that the bands 3.5 (3.4-3.6 GHz), 2.5 (2.495-2.690 GHz) and 2.3 (2.300-2.4000 GHz) are the bands most preferred by operators to provide WiMAX service. The request for these bands is presently being experienced at ECTEL based on the Frequency Authorization applications being reviewed for WiMAX service.
  - In India and most countries, while large allocations with block sizes of at least 28 MHz in 3.5 GHz & 40 MHz in 2.5/2.3 GHz are preferred with the potential of a large number of operators, allocations with block sizes of at least 21 MHz will facilitate fuller competition. This will also facilitate the deployment of multiple sector systems with wider channel sizes. Depending on the number of operators entering the ECTEL market this can be adopted.

  - The global trend is to have flexible channel band width. If channel band width must be defined, then 5MHz and 7 MHz for the 3.5 GHz band, or 5 and 10 MHz for the 2.5/2.3 GHz band are suggested. It is recommended that ECTEL use bandwidth of 5 MHz.

- TDD operation should be allowed even if spectrum is “paired”.

- As per ITU regulations (ETSI EN 302 326-2), no in-band mask requirements should be permitted by operators, only out-of-band mask.

- It is recommended that no restriction should be placed on mobility or mobile services and no restriction should be placed on voice vs. data services.

## E.12 Spread Spectrum and MMDS

The following bands are proposed for Spread Spectrum in the ECTEL Member States and do not require a licence for low powered equipment being used for non commercial purpose:

Use of low power equipment in the frequency band 2.4–2.4835 GHz with specified technical parameters.

Indoor use of low power wireless equipment in the frequency bands 5.150-5.350 GHz and 5.725-5.875 GHz with specified technical parameters

The following bands are proposed for LMDS/ MMDS (including broadband wireless) applications:

2.5 GHz (2535 - 2655 MHz )
2.7-2.9 GHz
3.3-3.4 GHz
5.0 GHz (5725 - 5825 MHz)
10.7 – 11.7 GHz

## E.13 Land mobile service spectrum plan

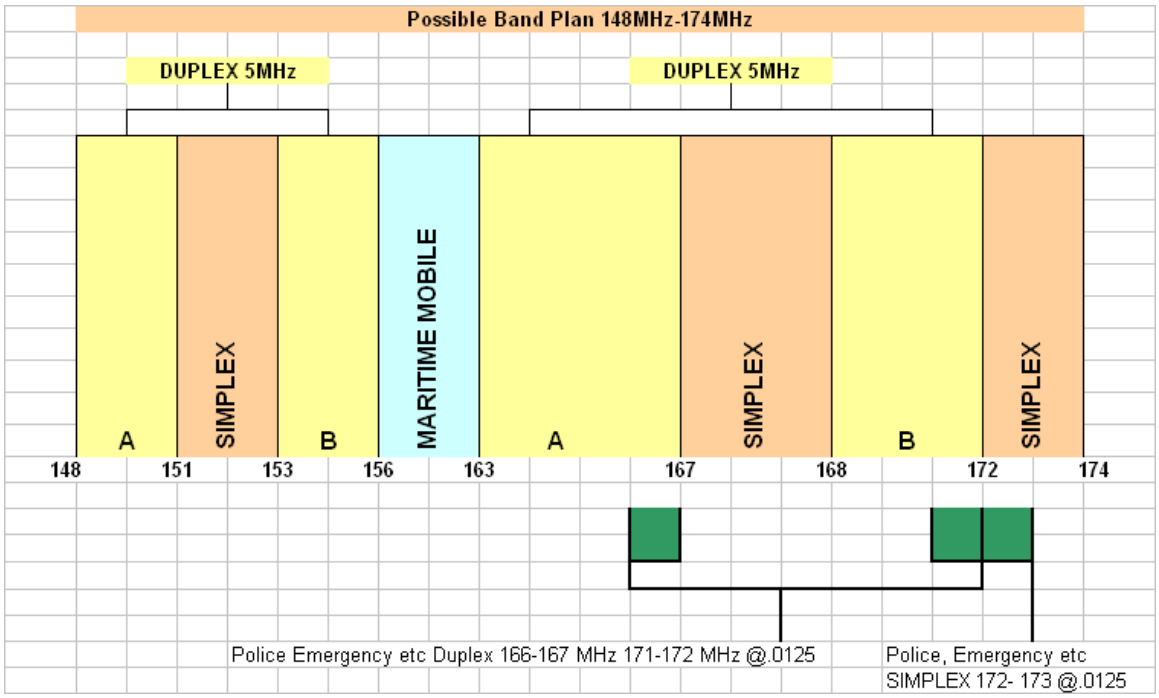
A spectrum audit of the land mobile band in ECTEL states shows little congestion. One observation in the land mobile band in some countries is that there are frequencies in the database issued to operators before the introduction of the new telecommunications act. Some of these operators have stopped using the frequencies but others continue to use the frequencies and should apply for a land mobile licence.

This is important because some spectrum should be set aside for a nationwide/regional public-private network for emergency, Government, Police etc in the Regional Spectrum plan. This will have to be coordinated with public safety agencies, Red Cross, and Police, etc for the allocation of this band. The duplex band and the simplex band in the figure below will be allocated to these services and will be free.

The allocation for the VHF land mobile band would be 148 MHz to 174 MHz, with 156 MHz to 163 MHz allocated for maritime mobile use (this is a standard channelized band with international standards). The land mobile band would further be divided into 2 duplex band with 5MHz separation between the transmit frequencies and the receive frequencies, and 3 bands allocated for simplex operation. The channel spacing will be 12.5 kHz.

Most of the channels would be allocated for commercial use, and 3 MH (2 MHz for duplex operation and 1 MHz for simplex operation) would be allocated for emergency and NGO use as seen in the table below.

**Land mobile band plan**



It is proposed that the NTRCs could assign the land mobile frequencies in the respective Jurisdiction for power of 25 Watts or less without consultation from ECTEL. The reason is that these would not cause harmful cross border interference and can be easily managed on a national level. The regional land mobile band plan would be used as a guide to facilitate those assignments.

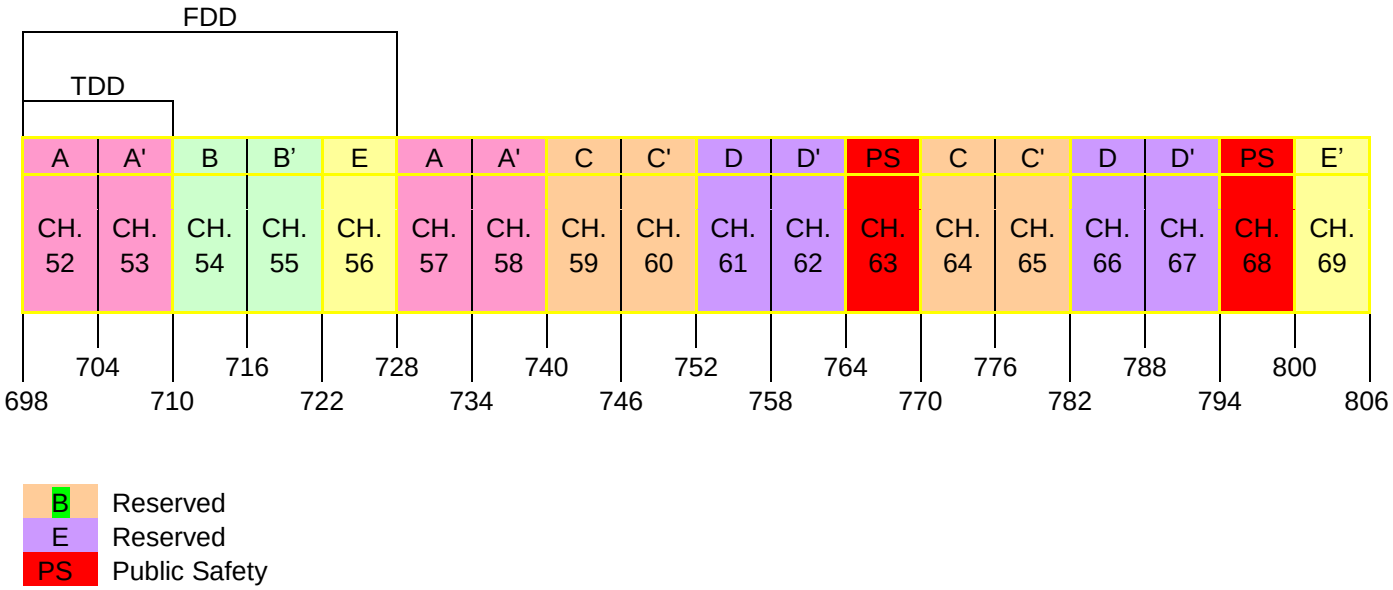
**E.13A**

The band 806MHz to 824.040 MHz is allocated for UHF Land Mobile Service

## E.14 700 MHz band plan

A separate public consultation was held by ECTEL on the establishment of a policy and band plan for the 700 MHz band. The resulting policy and band plan developed was approved by ECTEL's 47th Board meeting held on 23rd April 2009 in Dominica. The 700MHz plan is therefore not intended for consultation in this document but is included here for completeness. The complete band plan and policy for 700 MHz is available on ECTEL's website at www.ectel.int

**ECTEL PROPOSAL FOR THE 700 MHz BAND PLAN**







| BLOCK | Bandwidth | Frequency and Pairing | |
|---|---|---|---|
| A: | 12 MHz | (698-704 MHz and 728-734 MHz) | 2x6 MHz |
| A': | 12 MHz | (704-710 MHz and 734-740 MHz) | 2x6 MHz |
| *B: | 6 MHz | (710-716 MHz) | 6 MHz |
| *B': | 6 MHz | (716-722 MHz) | 6 MHz |
| *E: | 6 MHz | (722-728 MHz) | 6 MHz |
| *E': | 6 MHz | (800-806 MHz) | 6 MHz |
| C: | 12 MHz | (740-746 MHz and 770-776 MHz) | 2x6 MHz |
| C': | 12 MHz | (746-752 MHz and 776-782 MHz) | 2x6 MHz |
| D: | 12 MHz | (752-758 MHz and 782-788 MHz) | 2x6 MHz |
| D': | 12 MHz | (758-764 MHz and 788-794 MHz) | 2x6 MHz |

| | | | |
|---|---|---|---|
| **PS: | 6 MHz | (764-770 MHz) | 6 MHz |
| **PS': | 6 MHz | (794-800 MHz) | 6 MHz |

* Reserved for future use

** Public and Private Safety Network (emergency, police etc)

**Technical Specifications**

In order to operate BWA equipment to offer service in the 700 MHz band all operators using the radio spectrum must adhere to and shall not exceed the maximum technical specifications identified below. These standards are adopted from the FCC, industry Canada and ESTI standardization for BWA service in the 700 MHz band.

- **Maximum Effective Radiated Power (E.R.P.)**[1]

Base Station – 30dBW

Fixed and Mobile Station – 14.8 dBW

Portable (handheld) Station – 4.8 dBW

- **Modulation scheme**

Digital (BPSK, QPSK etc)

## E.15 Amateur Radio

There are three classes of Amateur operators Novice, General and Advance

**NOVICE**

CONDITIONS

[1] Notwithstanding these parameters identified, amended or additional technical operating conditions may be instituted and identified in the respective schedule of the licence document for the specific radiocommunications system deployed.

The novice may operate in 80 meter, 40 meter, 10 meter and 2 meter bands as bands as recommended by The International Amateur Radio (IARU) in the modes indicated in Annex D.

The novice may operate with the following power levels:

5. In the 80 meter and 40 meter – 100 watts;
6. In the 10 meter and 2 meter - 50 watts.

The novice is liable for any violation caused by failing to meet technical safety standards.

## PROHIBITIONS

The novice shall not modify the equipment of artisanal or industrial production which is part of his station so that it performs outside of these licence conditions.

The novice shall not allow the use of his station by any unlicensed operator without his supervision and shall be liable for any breach of this licence committed by the unlicensed operator.

The novice shall not forge any of the features or indications recorded on it.

This novice is non-transferable.

The novice is forbidden from:

a) Using the amateur stations for illicit ends;
b) Transmitting false call signs or identity signals;
c) Intentionally interfering in the communications of other amateur stations, or any other radio communications services;
d) Transmitting false alarm signals;
e) Transmitting words or expressions grossly offensive to good morals or good manners;

If the novice fails to comply with any term or condition of this Licence, the Licensee shall be in breach of this Licence.

**GENERAL**

CONDITIONS

The general may operate in all the bands and in the modes recommended by the International Amateur Radio Union (IARU) for Region 2 as shown in Annex D.

The general may also operate in the 60 Meter Band in USB only at the power levels stated in section 4.3 below.

The general may operate with power levels not exceeding 1,500 watts always ensuring that the operation does not cause harmful interference. This would be except for the following bands:

- 80 meters at 500 watts;
- 60 meters at 50 watts;
- 40 meters at 500 watts;
- 30 meters at 200 watts (pep);

The general is liable for any violation caused by failing to meet technical safety standards.

The general shall comply with the technical requirements established by this licence.

The general may apply to the Commission for a short form off the licence upon paying an administrative fee to cover the cost of issuing the licence in the short form.

## PROHIBITIONS

The general shall not modify the equipment of artisanal or industrial production which is part of his station so that it performs outside of these licence conditions.

The general shall not allow the use of his station by any unlicensed operator without his supervision and shall be liable for any breach of this licence committed by the unlicensed operator.

The general shall not forge any of the features or indications recorded on it.

This general is nontransferable.

The Licensee is forbidden from:

a) Using the amateur stations for illicit ends;
b) Transmitting false call signs or identity signals;
c) Intentionally interfering in the communications of other amateur stations, or any other radio communications services;
d) Transmitting false alarm signals;
e) Transmitting words or expressions grossly offensive to good morals or good manners;

If the general fails to comply with any term or condition of this Licence, the Licensee shall be in breach of this Licence.

## ADVANCED

CONDITIONS

The advance may operate in all the bands and in the modes recommended by the International Amateur Radio Union (IARU) for Region 2 as shown in Annex D.
The advance may also operate in the following bands and modes:

1) 60 meter in USB only;
2) 6 meters in phone, image and RTTY;

3) 2 meters in phone, image and RTTY;

4) 1.25 meters in phone, image and RTTY

5) 70 centimeters in phone, image and RTTY;

6) 23 cm in phone, image and RTTY

The advance may operate with power levels not exceeding 1,500 watts always ensuring that the operation does not cause harmful interference. This would be except for the following bands:

1.0 60 meters at 50 watts;

2.0 30 meters at 200 watts (pep);

3.0 70 cm and 23 cm at 100 watts

The advance is liable for any violation caused by failing to meet technical safety standards.

The advance shall comply with the technical requirements established by this licence.

## PROHIBITIONS

The advance shall not modify the equipment of artisanal or industrial production which is part of his station so that it performs outside of these licence conditions.

The advance shall not allow the use of his station by any unlicensed operator without his supervision and shall be liable for any breach of this licence committed by the unlicensed operator.

The advance shall not forge any of the features or indications recorded on it.

This advance is non-transferable.

The advance is forbidden from:

a) Using the amateur stations for illicit ends;
b) Transmitting false call signs or identity signals;
c) Intentionally interfering in the communications of other amateur stations, or any other radio communications services;
d) Transmitting false alarm signals;
e) Transmitting words or expressions grossly offensive to good morals or good manners;

If the advance fails to comply with any term or condition of this Licence, the Licensee shall be in breach of this Licence.

**IARU REGION 2 MF/HF BAND PLAN**
**Effective January 1st 2008**

The IARU Region 2 has established this band plan as the way to better organize the use of our bands efficiently. To the extent possible, this band plan is harmonized this with those of the other regions. It is suggested that Member Societies, in coordination with the authorities, incorporate it in their regulations and promote it widely with their radio amateur communities.

| FREQUENCY (kHz) | MAX BANDWIDTH (Hz) | PREFERRED MODE |
|---|---|---|
| **160 m Band** | | |
| 1800 – 1810 | 500 | Digimodes |
| 1810 – 1830 | 200 | CW<br>CW QRP Centre of activity 1812 kHz |
| 1830 – 1840 | 200 | CW Priority for intercontinental operation (DX window) |
| 1840 – 1850 | 2700 | SSB Priority for intercontinental operation (DX window) |
| 1850 – 1999 | 2700 | All modes<br>SSB QRP Centre of activity 1910 |
| 1999 – 2000 | 200 | Beacons |

**80 m Band**

| | | |
|---|---|---|
| 3500 – 3510 | 200 | CW Priority for intercontinental operation (DX window) |
| 3510 – 3560 | 200 | CW<br>CW Contest preferred<br>CW QRS Centre of activity 3555 kHz |
| 3560 – 3580 | 200 | CW<br>CW QRP Centre of activity 3560 kHz |
| 3580 – 3590 | 500 | All narrow band modes, digimodes |
| 3590 – 3600 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |
| 3600 – 3625 | 2700* | All modes, digimodes, automatically controlled data stations (unattended) |
| 3600 – 3650 | 2700 | All modes<br>SSB Contest preferred<br>Digital voice (DV) Centre of activity 3630 kHz |
| 3650 – 3700 | 2700 | All modes<br>SSB QRP Centre of activity 3690 kHz |
| 3700 – 3775 | 2700 | All modes<br>SSB Contest preferred<br>Image Centre of activity 3735 kHz<br>Emergency Centre of activity 3750 kHz |
| 3775 – 3800 | 2700 | All modes<br>SSB Priority for intercontinental operation (DX window) |
| 3800 – 3875 | 2700 | All modes |
| 3875 – 3900 | 2700* | All modes<br>Image Centre of activity 3845 kHz<br>Emergency Centre of activity 3985 kHz |
| 3900 – 4000 | 2700 | All modes |

**40 m Band**

| | | |
|---|---|---|
| 7000 – 7025 | 200 | CW Priority for intercontinental operation (DX window) |
| 7025 – 7035 | 200 | CW<br>CW QRP Centre of activity 7030 kHz |
| 7035 – 7038 | 500 | All narrow band modes, digimodes |
| 7038 – 7040 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |

| | | |
|---|---|---|
| 7040 – 7043 | 2700 | All modes, digimodes, automatically controlled data stations (unattended) |
| 7043 – 7100 | 2700 | All modes<br>Image Centre of activity 1: 7043 kHz<br>Region 2 Emergency Centre of activity 1: 7060 kHz<br>Digital voice (DV) Centre of activity 7070 kHz<br>SSB QRP Centre of activity 1: 7090 kHz. |
| 7100 – 7300 | 2700* | All modes<br>Region 2 Emergency Centre of activity 2: 7240 kHz<br>SSB QRP Centre of activity 2: 7285 kHz<br>Image Centre of activity 2: 7165 kHz<br>AM Calling frequency 7275 kHz<br>Region 2 Emergency Centre of activity 3: 7290 kHz |

**30 m Band**

| | | |
|---|---|---|
| 10100 – 10130 | 200 | CW<br>CW QRP Centre of activity 10116 kHz |
| 10130 – 10140 | 500 | All narrow band digimodes |
| 10140 – 10150 | 2700 | All modes digimodes, no phone (SSB, AM or DV) |

**20 m Band**

| | | |
|---|---|---|
| 14000 – 14025 | 200 | CW Priority for intercontinental operation (DX window) |
| 14025 – 14060 | 200 | CW<br>CW Contest preferred<br>CW QRS Centre of activity 14055 kHz |
| 14060 – 14070 | 200 | CW<br>CW QRP Centre of activity 14060 kHz |
| 14070 – 14089 | 500 | All narrow band modes, digimodes |
| 14089 – 14099 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |
| 14099 – 14101 | 200 | IBP, Exclusively for beacons |
| 14101 – 14112 | 2700 | All modes, digimodes, automatically controlled data stations (unattended) |
| 14112 – 14285 | 2700 | All modes<br>SSB contest preferred |

| | | |
|---|---|---|
| | | Digital voice (DV) Centre of activity 14130 kHz<br>Image Centre of activity 14230 kHz<br>SSB Priority for intercontinental operation (DX window) 14190 – 14200 kHz<br>SSB QRP Centre of activity 14285 kHz |
| 14285 - 14300 | 2700* | All modes<br>AM Calling frequency 14286 kHz |
| 14300 – 14350 | 2700 | All modes, Global emergency centre of activity 14300 kHz. |

**17 m Band**

| | | |
|---|---|---|
| 18068 – 18095 | 200 | CW<br>CW QRP Centre of activity 18086 kHz |
| 18095 – 18105 | 500 | All narrow band modes, digimodes |
| 18105 – 18109 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |
| 18109 – 18111 | 200 | IBP, Exclusively for beacons |
| 18111 – 18120 | 2700 | All modes, digimodes, automatically controlled data stations (unattended) |
| 18120 – 18168 | 2700 | All modes<br>SSB QRP Centre of activity 18130 kHz<br>Global Emergency Centre of activity 18160 kHz |

**15 m Band**

| | | |
|---|---|---|
| 21000 – 21070 | 200 | CW<br>CW QRS Centre of activity 21055 kHz<br>CW QRP Centre of activity 21060 kHz |
| 21070 – 21090 | 500 | All narrow band modes, digimodes |
| 21090 – 21110 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |
| 21110 – 21120 | 2700 | All modes (excluding SSB), digimodes, automatically controlled data stations (unattended) |
| 21120 – 21149 | 500 | All narrow band modes |
| 21149 – 21151 | 200 | IBP, Exclusively for beacons |
| 21151 – 21450 | 2700 | All modes<br>Digital voice (DV) Centre of activity 21180 kHz<br>SSB QRP Centre of activity 21285 kHz<br>Image Centre of activity 21340 kHz<br>Global Emergency Centre of activity 21360 kHz |

**12 m Band**

| | | |
|---|---|---|
| 24890 – 24915 | 200 | CW |
| | | CW QRP Centre of activity 24906 kHz |
| 24915 – 24925 | 500 | All narrow band modes, digimodes |
| 24925 – 24929 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |
| 24929 – 24931 | 200 | IBP, Exclusively for beacons |
| 24931 – 24940 | 2700 | All modes, digimodes, automatically controlled data stations (unattended) |
| 24940 – 24990 | 2700 | All modes |
| | | QRP SSB Centre of activity 24950 kHz |

**10 m Band**

| | | |
|---|---|---|
| 28000 – 28070 | 200 | CW |
| | | CW QRS Centre of activity 28055 kHz |
| | | CW QRP Centre of activity 28060 kHz |
| 28070 – 28120 | 500 | All narrow band modes, digimodes |
| 28120 – 28150 | 500 | All narrow band modes, digimodes, automatically controlled data stations (unattended) |
| 28150 – 28190 | 500 | All narrow band modes |
| 28190 – 28199 | 200 | Regional time shared beacons |
| 28199 – 28201 | 200 | IBP, Exclusively beacons |
| 28201 – 28225 | 200 | Continuous duty beacons |
| 28225 – 28300 | 2700 | All modes, beacons |
| 28300 – 28320 | 2700 | All modes, digimodes, automatically controlled data stations (unattended) |
| 28320 – 29000 | 2700 | All modes |
| | | Digital voice (DV) Centre of activity 28330 kHz |
| | | SSB QRP Centre of activity 28360 kHz |
| | | Image Centre of activity 28680 kHz |
| 29000 – 29200 | 6000 | All modes |
| | | AM Preferred |
| 29200 – 29300 | 6000 | All modes including FM simplex, digimodes, automatically controlled data stations (unattended) |
| 29300 – 29510 | 6000 | Satellite downlink |
| 29510 – 29520 | | Guard band, no transmission allowed |
| 29520 – 29700 | 6000 | FM – 10 kHz channels |
| | | FM Repeater input only. 10 kHz channels 29520 – 29590 kHz |

FM Calling frequency 29600 kHz

FM Repeater outputs only. 10 kHz channels 29620 – 29690 kHz

********** END OF DOCUMENT **********

*) DSB AM phone allowed in this segment with a maximum bandwidth of 6 kHz.

**Explanations**

Bandwidths - The number in the bandwidth column always refers to the maximum allowed.

Preferred Modes

| | |
|---|---|
| *All modes* | Do not exceed the specified bandwidth. |
| *Image* | The Image modes include FAX and SSTV. |
| *Narrow band modes* | All modes up to 500 Hz bandwidth including CW, RTTY, PSK and others. |
| *Digimodes* | Includes, but not limited to PSK31, PSK63, RTTY, MT63 and others within bandwidth limits. |
| *Sideband usage* | Below 10 MHz use Lower Side Band (LSB)<br>Above 10 MHz use Upper Side Band (USB). |

**Notes**

1. CW QSOs are accepted across all bands, except within beacon segments.
2. Contest activity shall not take place on the 10, 18 and 24 MHz bands.
3. The term *"automatically controlled data stations"* includes Store and Forward stations.
4. Transmitting frequencies:

The announced frequencies in the bandplan are understood as *"transmitted frequencies"*, and not those of the suppressed carrier!

5. Unattended transmitting stations:

IARU member societies are requested to limit this activity on the HF bands. It is recommended that any unattended transmitting stations on HF shall be activated only under operator control, except for beacons agreed with the IARU beacon coordinator, or specially licensed experimental stations.