

**ECTEL
CONSULTATION DOCUMENT**

**Recommendation of the Eastern Caribbean Telecommunications Authority
(ECTEL)
To the National Telecommunications Regulatory Commission to consult on
a Draft Policy for the allocation and assignment of frequencies in the 700 MHz band
and related matters**

Consultation Document

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2008

1. The National Telecommunications Regulatory Commission is in receipt of a submission from ECTEL containing ECTEL's Consultative Document for a Policy on allocation and assignment of frequencies in the 700 MHz band and related matters in [Member State].
2. The Consultative Document is herein attached.
3. The initial comments period will run from December 22nd 2008 to January 20th 2009.
4. Reply comments from January 23rd 2009 to February 6th 2009.
5. Following the Reply Comments period, ECTEL will finalize and submit the draft Policy to the ECTEL Council of Ministers for its recommendation for adoption in the ECTEL Member States.
6. All responses to this Consultative Document should be written and sent by post, fax or email to: -

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All comments should be clearly marked "Comments on Policy for the Allocation and Assignment of frequencies in the 700 MHz band Consultation Document"

Disclaimer

This consultative document does not constitute legal, commercial or technical advice. The consultation is without prejudice to the legal position of ECTEL 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 the allocation and assignment of frequencies in the 700 MHz Band. This consultation is being conducted to examine the allocation and frequency assignment in the band. The related matters to be noted include the level of fees to be charged and the trends in the market that could affect regulation of the Band.

The Consultation on the 700 MHz band recognizes the need to review the pricing of spectrum, including 700 MHz band, but the outcome of this review should not significantly reduce any competitive advantage of the ECTEL Member States for investment in telecommunications.

The consultative process **on a Policy for the allocation and award of frequencies in the 700 MHz band** is being conducted during the period December 22nd 2008 to February 6th 2009. Based on the results of this consultative process, a draft Policy will be developed and adopted.

The Consultation document provides the necessary background and context for policy development.

KEY ISSUES

The key questions for consideration in this consultation are:

1. How will the frequencies in the 700 MHz Band be allocated?
2. How much spectrum will be assigned to each provider?
3. How many providers can be accommodated in the band?
4. Which method should be used for award of Frequency Authorizations?
5. What changes will be required in the ECTEL regulatory framework to accommodate the policies adopted for the 700 MHz band

Other key issues include ensuring that the principle of technology neutrality in spectrum management is maintained for the 700 MHz Band, and that Licensing and Spectrum fees reflect the outcome of consultation.

CONSULTATION PROCEDURE

In order to carry out this consultation, ECTEL hereby requests the Commission to conduct a national consultation **on a Policy for the allocation and assignment of frequencies in the 700 MHz band** in accordance with the 'Consultation Procedure and Timetable' outlined in the cover page.

D R A F T

POLICY ON THE ALLOCATION AND ASSIGNMENT OF FREQUENCIES IN THE 700 MHZ BAND

1.0 INTRODUCTION

1.1 BACKGROUND

Internationally, the 700 MHz spectrum band which was previously used for analog television broadcasting is now being allocated for new broadband wireless applications. This transition is one of the last major evolutions in Television Broadcasting in North America. In the ECTEL Regional Spectrum Management Plan, this Band, Ultra High Frequency (UHF) television broadcasting channel 52 (698 MHz) to channel 69 (806) MHz, is allocated for Broadcasting. Presently there are no frequencies assigned in this band to any operator in the ECTEL Member States.

With the digitization of the UHF TV channels, this band is now available to be used to offer broadband services such as the WiMAX technology services. The ECTEL Member States have already received several applications for the use of this band and must now therefore consider a new band plan to facilitate the provision of new services and applications in the 700 MHz band. In developing the band plan, ECTEL has decided to consult with interested parties on the development of policy to guide the process.

ECTEL seeks to establish the process for awarding spectrum to providers, determine how best the band can be divided and establish the number of providers to be accommodated in the band. This consultation is consistent with established regulatory practice.

1.2 CONSULTATION

ECTEL is conducting a Public Consultation on the allocation and assignment of frequencies in the 700 MHz Band. This consultation is being conducted to examine the modalities of allocation and assignment of frequencies in the above mentioned band consistent with internationally accepted approaches for the allocation, use and pricing of scarce natural resources.

The ECTEL regulatory framework is currently funded by Spectrum Fees and it is anticipated that the approach to pricing for the 700 MHz band will inform, and be informed by the review of all other spectrum fees.

The consultative process **on a Policy for the allocation and assignment of frequencies in the 700 MHz band** is being conducted during the period 22nd December 2008 to 6th February 2009. Based on the results of this consultative process a draft Policy for the allocation and assignment of frequencies in the 700 MHz band will be developed and adopted.

2.0 OBJECTIVE OF CONSULTATION

2.1 POLICY OBJECTIVES OF CONSULTATION

The Consultation has as its primary objectives, the introduction of a regulatory framework for new broadband wireless services in the 700 MHz Band. The 700 MHz Band is a band of 108 MHz, between 698 – 806 MHz, which was previously allocated to analog television broadcasting and is now proposed for Broadband Wireless Access (BWA). Presently, in the 700 MHz Band there are no frequencies allocated or assigned to any operators in the ECTEL Member States

The introduction of competition in the band is expected to increase investment in the sector and facilitate the lowering of the cost of telecommunication services. It is however noted that the objective of increasing levels of ICT penetration could only be facilitated by the opening up of the 700 MHz Band. In order to achieve greater levels of penetration of ICTs, the access devices for the internet would also have to be made more affordable.

The need to make broadband more accessible has been among the primary recommendations of studies on universal access which also identify the expansion of broadband as a basis for expanded use of ICT in all aspects of economic activity.

The objectives to be achieved through the Consultation would include:

1. Development of a Policy to govern the allocation and assignment of frequencies in the 700 MHz Band;
2. Provision of a methodology for the determination of the award of frequencies in the 700 MHz Band;
3. Identifying the required changes to the regulatory framework to facilitate the identified processes and procedures for the management of the 700 MHz Band

The procedures for the 700 MHz Band will be consistent with any new approaches for regulation in a converged environment.

2.2 POLICY GOALS

The goals proposed for the use of the 700 MHz Band are:

- Introduction of further competition in the provision of telecommunications services;

- The attainment of universal service in broadband access and internet connectivity.
- Revenue generation to ensure effective regulation of the band;
- Increase in the deployment and investment in new technologies
- Reduction in prices for telecommunications services.
- Conversion of telecommunications services to digital platforms.

The 700 MHz Band provides the opportunity of achieving universal service in broadband access and internet connectivity by designating the band for broadband wireless access thereby facilitating increased levels of Internet penetration. It must be noted though that provision of new broadband services in this band by itself cannot automatically lead to increased levels of penetration given that the absence of affordable access devices was listed as a major deterrent to this increase. The 700 MHz technology provides the opportunity to the provider for a reduction in cost of provision and an increase in the speed of deployment; it is expected that efficiency gains will be passed on to the consumer through a reduction in the price of services.

In the ECTEL Member States the band has never been used and is therefore available for assignment without restriction. A moratorium on the assignment of any frequencies in this band is in effect until the consultation process is completed.

The Regional Spectrum Plan currently designates this spectrum for broadcasting services and this could be modified during the revision of the said Plan. Similarly changes that would be required to the Spectrum Regulations and Spectrum Fees would be incorporated in the ongoing revision of both Regulations.

A policy option under consideration is to reserve one or more of the possible blocks for a new operator in an attempt to increase the level of service competition.

2.3 FUTURE TRENDS

The main stakeholders in the telecommunications industry anticipate that the band that will overtake the current mobile phone service bands. Among other service providers, Google's interest in the band hinges on web migration to wireless due to band's technical ability of easily penetrating walls and carrying over large distances.

The 700 MHz band users are a potential challenge to cellular providers, because it can also facilitate more personalized and interactive services. New provider would also be able to compete with traditional satellite/television providers, where through the deployment of one 700 MHz tower they are able to serve large geographic areas.

2.4 SPECTRUM FEES

The present fees that would be applicable for operators in this band under the present Spectrum Fee regulations are in the range of \$500 for a 5 MHz block to \$1500 EC for a 15 MHz block of frequencies. These Fees are to be revised with the conduct of Public consultation on the Fee structure.

The fee revision would be done in a holistic manner examining all factors which would affect the regulation of providers who will be operating in the band.

3.0 ALLOCATION OF THE 700 MHZ BAND

3.1 SUBDIVISION OF THE 700 MHZ BAND

The 700 MHz band (698 – 806 MHz) is a band of 108 MHz that is typically divided into eighteen 6 MHz channels. This subdivision was previously designated for analog television broadcasts. The re-designation of the Band for Broadband Wireless Access now require that a determination on the assignment of the 6MHz blocks of frequencies to potential service providers and how many of these blocks are to be assigned to any given provider.

The sub-division is based on the assumption that equipment to be deployed in this band will be designed around the 6MHz channel characteristics. This is not however expected to be a major limitation as the equipment would likely be digital and incorporate Internet protocols that could easily adjust for any variation in bandwidth.

In determining how much spectrum each provider requires to provide quality service in environments like the ECTEL Member States, the practices in other countries were examined.

3.2 USA - THE UNITED STATES FEDERAL COMMUNICATIONS COMMISSION (FCC)

- 3.2.1 The Lower 700 MHz band (698 MHz – 746 MHz) has been allocated by The Federal Communications Commission (FCC), to commercial Fixed and Mobile Services to support the development of new services, such as broadband Internet access and subscription broadcasting services.
- 3.2.2 The Upper 700 MHz band (746 – 806 MHz) has been allocated to public health and safety services, Fixed and Mobile Services.
- 3.2.3 The FCC band plan offers three (3) 6 MHz paired channels and two (2) 6 MHz contiguous and unpaired channels in the Lower 700 MHz band.

3.3 CANADA

- 3.3.1 Canada allocated four 6 MHz channels (channel 63, 64, 68 & 69) to Public Health and safety services.
- 3.3.2 They allocated eight channels (Channels 60-67) to Fixed and Mobile services.
- 3.3.3 Channels 52 – 59 are not presently allocated.

3.4 THE CARIBBEAN

- 3.4.1 **Barbados** has not as yet started consultation on the 700 MHz band but is expected to adopt the FCC proposal for the lower band. Allocations and assignments however do exist in the lower band.
- 3.4.2 **Trinidad and Tobago** completed its public consultation on the Spectrum Plan for the accommodation of Broadband Wireless Access Services in September 2008. The Telecommunications Authority of Trinidad and Tobago (TATT) is at present considering the Lower 700 MHz Band for assignment to new users, and will be adopting the FCC frequency assignment plan for the deployment of broadband wireless access (BWA) radio communications systems. This will include a modification of the FCC Plan to allow flexibility for either Frequency Division Duplex (FDD) or Time Division Duplex (TDD) modes of operation. TATT recommends the use of the lower 700 MHz band for public telecommunication and broadcasting services on a national level. Three blocks of 24 MHz each were auctioned with an expected fee of approximately US \$33,000 for each 24 MHz block.
- 3.4.3 Jamaica intends to hold a public consultation on 700 MHz in the first quarter of 2009. This country is currently inviting interested parties to submit proposals to pre-qualify for participation in an auction of the 2.5 GHz band for the provision of wireless broadband and 3G services in Jamaica. Applications are also being invited for spectrum licences in the 3.5 GHz Band for the provision of wireless broadband services in Jamaica.

3.5 EUROPE

- 3.5.1 Europe has not yet allocated spectrum in the 700 MHz band. European Operators will possibly have to wait until 2011 before spectrum become available in this band. The frequency band Plan is not yet determined but compared to the US the band is 128 MHz wide.

3.5.2 In The United Kingdom however 128 MHz of cleared UHF Spectrum will be auctioned on a UK wide basis in 2009. Two band plan options are under consideration - one for frequency division duplex (FDD) and another for time division duplex (TDD).

4.0 ECTEL MODEL FOR 700 MHZ

4.1 BAND SUBDIVISION

ECTEL proposes to maintain the division of the 108 MHz band into eighteen channels of 6 MHz each.

The ECTEL proposal is to allocate:

- six providers with 12 MHz each (6 MHz up-link and 6 MHz down-link with guard band included)
- Public and Private Safety Network (emergency, police etc) – 12 MHz
- Reserve 24 MHz for future use

Table1:

| BLOCK | BANDWIDTH | FREQUENCY AND PAIRING | TOTAL BANDWIDTH |
|--------------|------------------|-------------------------------|------------------------|
| A | 12 MHz | (698-704 MHz and 728-734 MHz) | 12 MHz |
| A' | 12 MHz | (704-710 MHz and 734-740 MHz) | 12 MHz |
| *B | 6 MHz | (710-716 MHz) | 6 MHz |
| *B' | 6MHz | (716-722 MHz) | 6 MHz |
| *E | 6MHz | (722-728 MHz) | 6 MHz |
| *E' | 6MHz | (800-806 MHz) | 6 MHz |
| C | 12 MHz | (740-746 MHz and 770-776 MHz) | 12 MHz |
| C' | 12 MHz | (746-752 MHz and 776-782 MHz) | 12 MHz |
| D | 12 MHz | (752-758 MHz and 782-788 MHz) | 12 MHz |
| D' | 12 MHz | (758-764 MHz and 788-794 MHz) | 12 MHz |
| **PS | 6MHz | (764-770 MHz) | 6 MHz |
| **PS' | 6Mhz | (794-800 MHz) | 6 MHz |
| | | | |

* Reserved for future use

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

The proposed Band Plan is shown in Figure 1 below.

ECTEL PROPOSAL FOR THE 700 MHz BAND PLAN

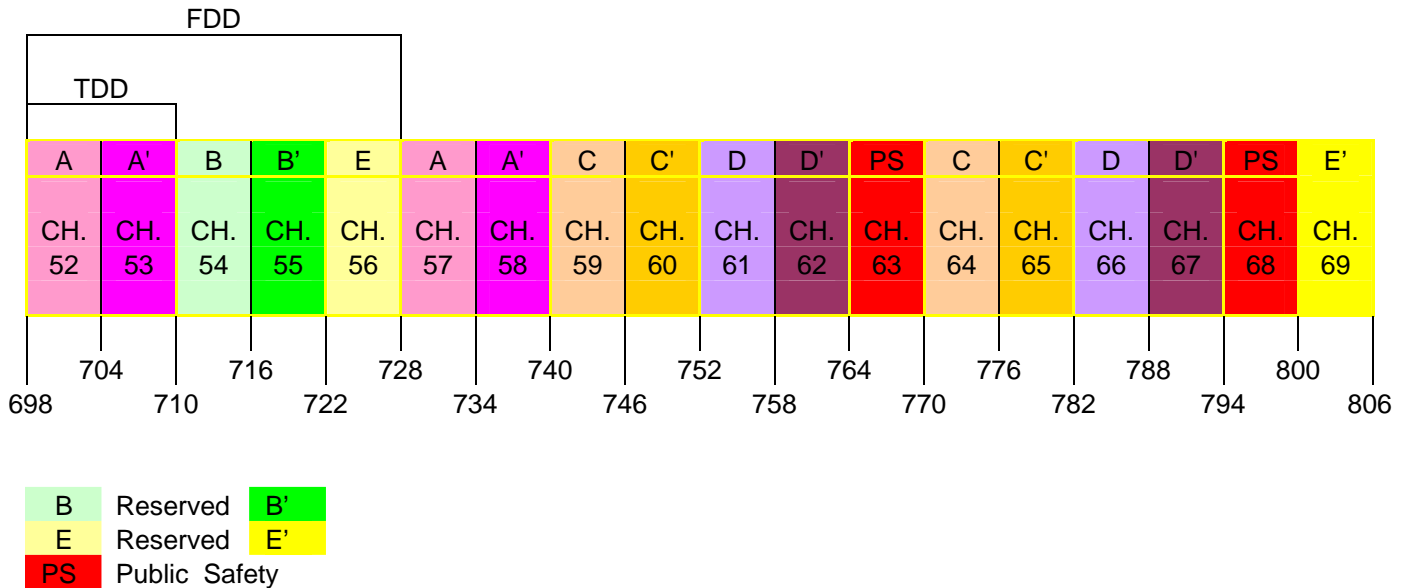


Figure 1 ECTEL 700 MHz BAND PLAN (PROPOSED)

Q4.1 a) Do you agree with ECTEL proposed sub division of the band and the allocation of 12 MHz per operator? If not, why?

4.2 BAND ALLOCATION FOR PUBLIC SAFETY SERVICES

ECTEL propose to allocate 12 MHz of the 700 MHz spectrum for Public Safety services. It is further proposed that this 12 MHz will be assigned to a provider to build a nation wide network that would provide safety services and also commercial services on a limited basis. The commercial services would be on a secondary basis and users of this service could be “bumped off” the system in the event of any occurrence that would require the bandwidth to provide a national health or safety service.

Consideration will be given to the deployment of this system as an OECS-wide network and this would be facilitated by using the same blocks of frequencies in all Member States.

Q4.2 a) Do you agree with the allocation of 12 MHz to a public safety provider? If not, why?

Q4.2 b) Do you consider the allocation for an OECS wide Network to be desirable? If not, why?

4.3 BAND USAGE

ECTEL proposes that the band should be used for broadband wireless service with a portion being designated for Public Health and Safety Services. Applying the principle of technology neutrality providers can deliver any service on the band with any technology of their choosing after they have obtained a licence for the service and obtained requisite frequency authorizations.

The conditions associated with the frequency authorization will include standards designed to deliver reliable high quality service to subscribers and avoidance of harmful interference of other users in the Band.

Q4.3 a) Do you agree with the proposal that the service provider can use any technology of his choosing within the band? If not, why?

5.0 TECHNICAL CONSIDERATIONS

5.1 TECHNICAL CHARACTERISTICS OF THE BAND

The propagation characteristics of the spectrum in this band and the allowable power limits make it conducive to business models that are built on serving consumers over a large area. As such, radio-communication systems operating in this band can achieve similar coverage areas comparable to typical UHF television broadcasters. Due to its broadcast-like features (such as its ability to penetrate walls), this spectrum is best suited for both broadband communications in general and public-safety uses in particular. The characteristics of the band allows for wireless broadband with voice and data being provided over Internet Protocols.

It is estimated that the cost of building networks using 700 MHz is fifty percent less than similar networks using a 1900 MHz PCS platforms targeting similar coverage. The costs are lower in rural areas, due to less interference and wide-open spaces. Each tower broadcasting at 700MHz covers twice as many square miles, in some case up to twenty miles reach.

Table 2: Comparison of features between 700 MHz systems and other frequency Bands

| Network feature | 700 MHz | 1900 MHz | 2400 MHz |
|-------------------------------------|----------------|-----------------|-----------------|
| Total Network costs @US \$150k/cell | \$150,000 | \$600,000 | \$1,500,000 |
| Network Cost per customer | \$180 | \$725 | \$1820 |
| # of Months to Network | 9 months | 36 months | 91 months |

| | | | |
|--|-------------|--------------|------------|
| Cost Break even | | | |
| Cell site coverage per thousand square miles | 1 cell site | 4 cell sites | Approx. 11 |

Verifiable direct cost comparison with 900 MHz is not available for this consultation but it is noted that 700 MHz compared to 900 MHz:

- Travels further with the same power
- penetrates obstacles better
- allows sustainably higher power limits;
- covers 1.5 to 2 times more territory with similar power;
- uses fewer towers with fewer backhaul ;
- requires less base stations; and
- antennae are of lower cost.

This UHF band is best suited to sparse and distributed demand sets or broadcast type applications and is attractive for several reasons for provision of broadcast services and public safety services.

5.2 EQUIPMENT SPECIFICATIONS

One of ECTEL's main considerations in planning the spectrum is to ensure that harmful interference between providers is avoided. In addition to the spectrum planning procedures proposed above, ECTEL herein proposes a basic set of specifications for equipment operating in the band. ECTEL proposes that all BWA equipment operating in the 700 MHz band must adhere to or surpass the minimum technical standards.

The minimum technical standards to operate in this band will be as follows:

1. Maximum Effective Radiated Power (e.r.p)
 - a) Base Station -30 dBW
 - b) Fixed and Mobile - 14.8 dBW
 - c) Portable (Handheld) Station -4.8 dBW
2. Modulation Scheme - Digital
3. Accepted Standards FCC, Industry Canada, ETSI

ECTEL however will provide amended or additional technical operating conditions as required for any specific Radiocommunications system that may be deployed.

6.0 METHODOLOGY FOR AWARD OF FREQUENCIES

6.1 DEMAND FOR BAND

The estimated demand for this band, based on applications received and expressions of interest, exceeds the amount of available spectrum especially when one considers reserving for future expansion while catering for Public Health and Safety Services. It is further expected that with the propagation characteristics of, future demand for the band will continue to increase.

Q6.1 a) Do you consider 12MHz of spectrum per operator to be excessive considering the ECTEL conditions of bandwidth requirements and customer base? If so what bandwidth would you recommend?

6.2 METHODS FOR AWARD OF FREQUENCY AUTHORIZATIONS

ECTEL recommends the consideration of two allocation methodologies; auctions or administrative pricing.

6.2.1 Auctions

Auction is a process of buying offering spectrum for sale and assigning to the winning bid. Auctions come in many forms and it is considered that they are best applied to determining the true market value of the resource. Auctions would require technical expertise to set pre-qualifying prices and manage the bidding and schedule of payments.

There are four primary types of auction: (1) the English auction or open ascending price auction, (2) The Dutch Auction or open descending price auction, (3) The sealed first-price auction, and (4) the Vickrey auction.

Q6.2.1 Would you consider the auction as an appropriate method for awarding Licences/frequencies in the 700 MHz Band? What type of auction would you consider best if auctions were to be used?

6.2.2 Administrative Pricing

Administrative pricing seeks to recover the cost of regulation from the regulated enterprises/companies. In applying administrative pricing for the 700 MHz band ECTEL would need to revise the 700 MHz fees as part of the revision of all Spectrum fees.

Q6.2.2. Would you consider administrative pricing as an appropriate method for awarding Licences/frequencies in the 700 MHz Band? What costs would you include for consideration in determining the regulatory costs?

7.0 RECOMMENDATIONS FOR 700 MHZ BAND

Based on a review of the new management and regulation of 700 MHz in other jurisdictions ECTEL Directorate recommends the following for Public consultation:

- The 700 MHz Band is sub-divided as per the allocations in table xx above.
- Six providers will each be assigned 12 MHz of frequency to provide broadband wireless access service
- One national provider will be awarded 12 MHz for Public Health and Safety Services; and
- New spectrum fees for the 700 MHz will be established;

Q7 a) Do you consider these recommendations appropriate for developing policies and licensing guidelines for the 700 MHz band?

Q7 b) What other recommendations should be included for consideration as part of the Policy?

**MANAGING DIRECTOR
ECTEL**