

Consultation Paper:

Assignment of Spectrum in the 3400 – 3800 MHz Band

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Foreword

In 2005, the MCA had undertaken an assignment process whereby three rights of use of spectrum in the 3400 – 3600 MHz band were granted. During the last quarter of 2008, one of the licensees informed the Authority that it was rescinding its right of use. As a result the Authority is in the process of making the rescinded spectrum available on the market.

The Authority considers it opportune to precede any placing on the market of the rescinded spectrum by a review of the current policy and established assignment methodology such that market and technological developments that have taken place in the last four years can be appropriately factored in.

This consultation paper captures the proposed policy direction and assignment methodology including licence conditions applicable to the available spectrum and elicits feedback from interested parties that should serve as valuable input to the drafting of a final position.

1 Background

In July 2004, Government had issued a consultation document proposing the assignment of spectrum in the 3400 – 3600 MHz band. Following the responses received a final policy was published in February 2005 (The 2005 Policy)¹. This policy outlined Government's high-level direction concerning the eventual assignment of spectrum in this band.

In October 2005², the MCA awarded the rights of use for spectrum in the 3.5GHz band to three operators namely:

- Cellcom Ltd³
- MobIsle Ltd⁴
- Vodafone Malta Ltd⁵

During the last quarter of 2008, Cellcom Ltd informed the Authority that it was rescinding its right of use of spectrum. As a result, 24.5 MHz of spectrum in the 3.5GHz band can be made available on the market.

The Authority considers it opportune to precede any placing on the market of the spectrum by a review of the current policy and established assignment methodology such that market and technological developments that have taken place in the last four years can be appropriately factored in. In particular the Authority is mindful of the adoption in 2008 of the Commission Decision 2008/411/EC which deals specifically with the harmonisation of the 3400 - 3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community. To this effect, a specific section in this document deals with the future of the 3600 – 3800 MHz band.

The MCA is therefore putting forward for consultation its proposals for the re-assignment of this spectrum. The responses received will serve as a valuable input in the definition of the final policy on the subject.

¹ <http://www.mca.org.mt/infocentre/openarticle.asp?id=565&pref=2>

² <http://www.mca.org.mt/infocentre/openarticle.asp?id=699&pref=6>

³ <http://www.mca.org.mt/infocentre/openarticle.asp?id=779&pref=6>

⁴ <http://www.mca.org.mt/infocentre/openarticle.asp?id=777&pref=6>

⁵ <http://www.mca.org.mt/infocentre/openarticle.asp?id=778&pref=6>

2 Current Situation

2.1 Key elements of 2005 Policy

The following is the policy direction established in 2005 for the 3.4 – 3.6 GHz spectrum.

- Spectrum assigned in 3 lots of 24.5MHz (paired) each;
- 3 blocks with guard bands
- Demand assessment via call for applications;
- Comparative selection process in the case demand exceeded supply;
- Price € 46,587.50 (Lm 20,000) per 24.5MHz (paired) per annum; and
- Rollout and coverage obligations;
 - Launch within 1st year
 - Rollout completion within 4 years
- Licence duration 15 years.

2.2 Current Assignments

3400 - 3600 MHz Band

The band in question is sub-divided as follows:

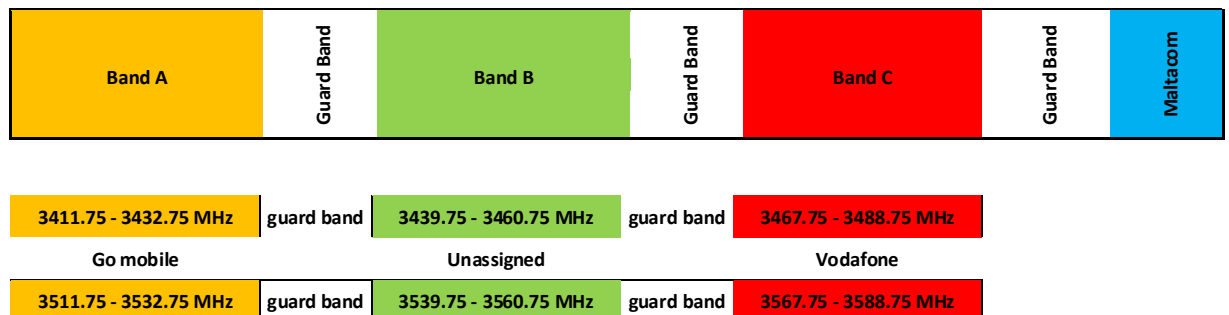


Figure 1: Current Spectrum Usage on the Maltese Islands

Other Relevant Bands

Current policy direction and assignments in other relevant bands are provided in Annex C.

2.3 Legal Background

2.3.1 *European Regulatory Framework*

The European regulatory framework for electronic communications⁶ sets out harmonised parameters including timeframes for the assignment of spectrum across the European Union with the main principles being: Objectivity, Transparency, Proportionality and Non-Discrimination.

2.3.2 *Relevant Spectrum Directives and Decisions*

In addition to the regulatory framework a number of Directives and Decisions have been issued since the publishing of the 2005 policy with respect to these specific frequency bands.

These directives and decisions have the objective of ensuring a harmonised use of the spectrum in question and form an integral part of the WAPECS process initiated by the European Commission. In particular, the Commission Decision 2008/411/EC deals specifically with the harmonisation of the 3400 - 3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community.

This Commission decision stipulates that the band in question should be made available on a non-exclusive basis to fixed, nomadic and mobile electronic communication services. The networks offering these services should operate in line with the technical parameters stipulated in the said decision and which are reproduced in Annex B for ease of reference.

However the 3400 – 3800 MHz band presents differences in its current use between the lower and upper parts of the band. As a result, the deadline for implementation of this decision for the lower part of the band (3400 – 3600 MHz) was set to December 2008, while the deadline for the implementation in the upper part (3600 – 3800 MHz) is the 1st January 2012.

⁶ Framework Directive: http://eur-lex.europa.eu/pri/en/oj/dat/2002/l_108/l_10820020424en00330050.pdf; Authorisation Directive: http://eur-lex.europa.eu/pri/en/oj/dat/2002/l_108/l_10820020424en00210032.pdf

The current assignments which are in the 3400 – 3600 MHz band are already aligned to the decision in that they were assigned on a technology and service neutral approach.

At the time of award of the spectrum licences in 2005, the 3600 – 3800 MHz part of the band was not considered for assignment primarily because there was yet no formal EU decision on the band and a number of other assignments were already present on these frequencies. Given that there now is a Decision with an implementation date by January 2012 this document also presents the proposed policy and assignment for this spectrum.

3 Proposed Assignment Process

The main objective of the proposed licensing regime is the maximisation of overall economic and consumer benefit, through a more comprehensive approach that stimulates effective and efficient use of spectrum.

The proposed implementation aims to build upon the strengths identified in the 2005 Policy whilst seeking to address any shortcomings without distorting the market.

3.1 Spectrum Assignment Block

3.1.1 Channelling Plan

The channel bandwidth and a paired/unpaired allocation could affect the technology adopted and therefore the services offered by the successful applicants. Therefore in establishing the preferred channel bandwidths or the number of frequency blocks consideration is given to the services being implemented as well as the capabilities of the equipment available now and foreseen for the future.

In establishing an appropriate channelling plan for the 2005 Policy, the ERC Recommendation 14-03 was adopted. This recommendation was re-confirmed in the studies recently carried out by CEPT. Moreover since then a number of network deployments were carried out on the basis of similar channelling plans.

In view of this, and in view of the current assignments in the band, MCA is of the opinion that a paired allocation with 3.5MHz channel bandwidth and 100MHz channel spacing, as established in the 2005 policy, continues to be the most appropriate approach.

1. Do you agree with the proposed 3.5 MHz paired channel bandwidth? Justify.

3.1.2 *Interference Mitigation Techniques*

All wireless operations are legally bound not to create any undue interference to other networks.

One of the most straightforward methods is the establishment of guard bands. This implies that useful spectrum is left unassigned to act as a buffer between different undertakings operating in the same band. By its very nature this has negative implications in terms of spectrum efficiency.

On the other hand, techniques are available that enable operators to minimise interference through effective and flexible management of their own spectrum assignment.

At the time of drawing up the 2005 policy the adoption of guard bands was considered the most appropriate. Since then, recent CEPT studies, whose results were summarised in CEPT Report 15, have developed technical parameters applicable to deployments in the 3.4-3.8GHz band. These parameters were also adopted by the European Commission in its decision 2008/411/EC and are outlined in Annex B for ease of reference.

In view of this and in order to ensure that spectrum is utilised efficiently, it is being proposed that no guard bands are established between the 3.5MHz blocks, the only exception being the upper guard band (centre frequency: 3492.25 / 3592.25 MHz) to ensure maximum protection to the link deployed in the adjacent channel.

2. Do you agree with the proposed adoption of mitigation techniques instead of guard bands? Justify

3.1.3 *Channelling Arrangement*

The 2005 Policy had stipulated that the 3.4-3.6 GHz band is split in three (3) equal blocks of seven (7) 3.5MHz channels as shown in the figure below:

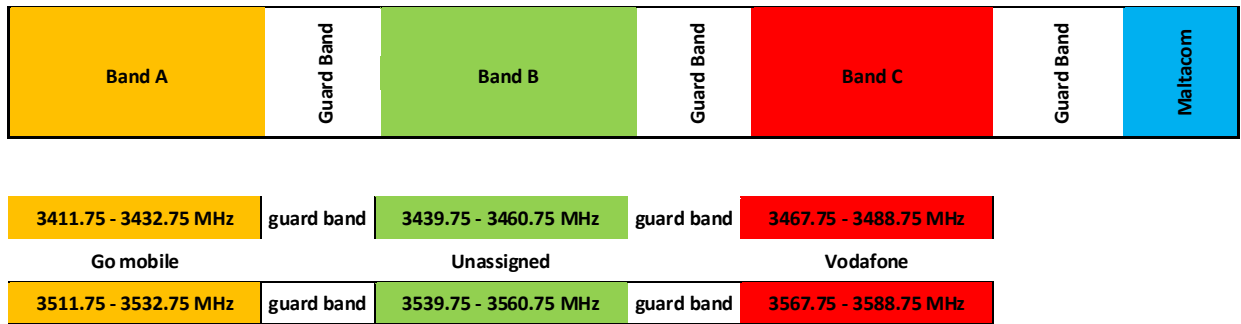


Figure 2: Original Channelling Arrangement

At this point the MCA is proposing two options in terms of the possible channelling arrangements that can be adopted in any upcoming assignment.

Option A: Issue the spectrum as 1 block

The spectrum to be assigned would consist of:

- 1 lot of seven (7) 3.5MHz paired spectrum channels
- 2 lots of 3.5MHz paired spectrum each

Such an approach would provide an opportunity for a third entrant.

It also provides limited additional capacity that can potentially augment existing licence holders' total spectrum, however not all operators would be able to have equal spectrum because one of the guards will need to be retained.

Option B: Issue the spectrum as individual lots

The spectrum to be assigned under this option would consist of:

- Nine (9) individual lots of 3.5MHz paired spectrum each.

Such an approach provides the most flexible assignment approach. It allows current licence holders to acquire more spectrum without at the same time limiting the possibility of new licence holders.

**3. Which option do you prefer in terms of channelling arrangements?
Justify**

3.1.4 Spectrum Caps

In any successful wireless deployment, spectrum is bound to be the most crucial element. On the other hand, spectrum is a scarce resource and needs to be appropriately managed. Therefore the spectrum made available, has to strike the right balance between the need to promote competition by allowing as many operators in the market as may be interested while at the same time providing the industry with adequate resources to foster innovation.

Independently of the option selected (see section 3.1.3), spectrum caps could be considered if demand exceeds supply in order to facilitate access to interested parties.

It is therefore proposed that at the first stage of the call no spectrum caps are defined. However, should demand exceed supply, a spectrum cap will be introduced during the second stage of the assignment process.

In the latter case a spectrum cap of twelve (12) 3.5MHz-channels will be established. The existing BWA assignments in the 3.4-3.6 GHz band prospective applicants might have will be included in this cap.

4. Do you agree that during the call for applications no spectrum caps are established? Justify.

5. Do you agree with the concept of spectrum caps? Justify

6. Do you consider the proposed cap of 42MHz of paired spectrum as adequate? Justify

3.2 Process Overview

In line with the MCA's guiding principles, any course of action undertaken should be open, transparent, proportionate and non-discriminatory. Therefore the Authority proposes that, following the receipt of an expression of interest in the spectrum, the first step should entail an assessment of the market demand for the spectrum in question, through a binding call for applications.

If following the first phase it results that demand for the available spectrum exceeds supply, then a comparative (i.e. beauty contest) or competitive (such as auctions) selection process should be used, in order to determine which entities will be granted spectrum rights of use. Comparative and competitive processes answer different regulatory requirements and are discussed in detail in the 'Strategic Framework for Management of Radio Spectrum 2007-2010' published in 2007.

In 2005, Government had proposed that should demand exceed supply in the 3.4-3.6 GHz band the spectrum was to be assigned via a beauty contest. At the time, the prime motivator underlying the whole process was the need to ensure the provision of multiple broadband networks.

Today, Malta is served by a number of broadband technologies and distinct networks. In the circumstances an auction is considered the most appropriate mechanism, should demand exceed supply.

3.2.1 *Future of Unassigned Spectrum*

In the event that any spectrum remains unassigned, this will become available to any interested parties under the established conditions taking due account, where relevant, of the results of this assignment process. Any request will be published and should further interest be expressed this will trigger the above outlined process.

- 7. Do you agree with the proposed assignment process? Justify**
- 8. Do you agree with MCA's preference for an auction, should demand exceed supply? Justify.**

3.3 Spectrum Pricing

The 2005 Policy had established that the applicable spectrum fee for a block of 24.5MHz of paired spectrum would consist of an annual fee of €46,587.50 (Lm20,000) for the duration of the licence and considering that existing rights' holders currently pay this annum fee, also taking into account that the original spectrum assignment was carried out quite recently, it is proposed that this same spectrum fee will be applied:

- An annual fee of €46,587.50 (Lm 20,000) for the duration of the licence

- In the event of an auction, the bidders will be required to bid up the first year fee where the base price will be set at the annual fee of €46,587.50 (Lm 20,000).

The rights of use will be granted upon an upfront payment of the annual licence fee of €46,587.50 (Lm20,000) or in case of an auction the final winning bid. In subsequent years the annual fee stipulated above would apply and will be due on the anniversary of the grant.

9. Do you consider the proposed fee structure as adequate for the spectrum in question? Justify.

3.4 Conditions of Rights of Use

The MCA is conscious that spectrum is a scarce resource and that it should be used efficiently and effectively for the benefits of the consumers. In order to achieve this goal, the MCA considers it important to set clear requirements for the development of infrastructure and the offer of services.

3.4.1 Licence Obligations

The MCA considers that so as to ensure maximum benefits for all the users, licensed operators should make any service they offer available on a nationwide basis.

In line with previous assignments in this band, the licence obligations will be two-fold:

- Commercial launch of the service must take place within a year of the spectrum grant
- Coverage of national territory should be achieved as follows:

Territory Coverage	Timeframe (from grant)
33%	12 months
100%	24 months

The above timelines represent in fact a slight departure from the 2005 Policy and are a result of the experience gathered in recent years which has shown that 2 years is an adequate timeframe for nationwide deployment.

3.4.2 *Technical Conditions*

The MCA proposes to include specific technical conditions aimed at minimising interference in line with the EU decision on the harmonisation of the 3400 – 3800 MHz band. These conditions are also provided in Annex B of this document for ease of reference.

3.4.3 *Technology and Service Neutrality*

In line with the previous spectrum assignment, the new EU decision, as well as the policy direction established in the 'Strategic Framework for the Management of Radio Spectrum 2007-2010', the MCA proposes to make this spectrum available on a technology and service neutral basis.

10. Do you agree with the licence conditions stipulated above? Justify.

3.5 Licence Duration

The 2005 Policy had established that the rights of use should be granted for a period of 15 years. So as to maintain a common termination date the MCA proposes that the rights of use for the spectrum to be assigned will terminate on the 20th October 2020. This would ensure that the relevant spectrum in the band is released all together thereby allowing for a future review of policy and reassignment of the whole band.

If spectrum is assigned within the short term , this would be equivalent to a licence duration of around 11 years which is within the norm of European best practice.

11. Do you agree with the proposed licence termination date of 20th October 2020? Justify.

3.6 3600 – 3800 MHz

As outlined earlier on the Commission Decision 2008/411/EC takes into consideration the 3600 – 3800 MHz band as well, which decision has to be implemented by 1st January 2012. Given the developments, the MCA therefore considers it opportune to develop the policy and assignment methodology also for this band and to make this spectrum available to any interested market players.

Current assignments in the 3600 – 3800 MHz band

Currently this band is partly used by a microwave link between Malta and Sicily that acts as a backup for international connectivity. Given the strategic importance of this link and the considerable additional spectrum that is being made available within the band, it is proposed that the current assignment is retained and adequately protected.

As a result the MCA is proposing to make available on the market the lower part of the 3600 – 3800 MHz band equivalent to 12 paired channels of 3.5MHz each, based on the channelling arrangement defined in ERC Recommendation 12-08:.

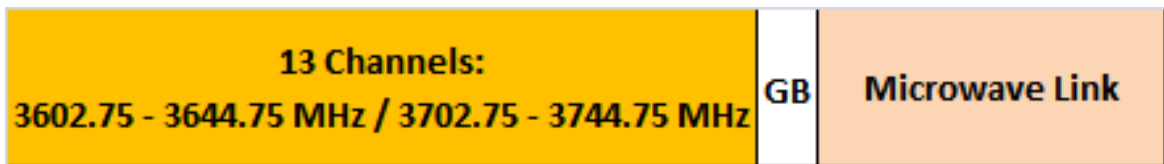


Figure 3: Proposed Channelling Arrangement for 3600 – 3800 MHz

It is also proposed that such spectrum is made available under the same conditions proposed in the earlier sections for the 3400 – 3600 MHz band.

12. Do you agree with the proposed way forward for the 3600 – 3800 MHz band? Justify.

3.7 Other Issues

The MCA would be pleased to receive comments and proposals on any other issues which may be deemed relevant for the purposes of this consultation.

4 Proposed Way Forward

The recent market developments, call for an appropriate regulatory action. However any policy has to reflect local industry's needs so as to bear the desired fruits. Moreover any action taken at national level needs to be in line with any EU position on the subject.

This consultation is being published with a view to assess the local market's view on the subject. Feedback received following this consultation will provide the Authority with the necessary information to enable it to formulate its final position on the subject. The spectrum will then be made available to the market and the assignment process triggered subject to market demand.

5 Consultation Framework

The MCA invites comments from interested parties regarding this Consultation Paper. The consultation period will run until 12:00pm on Monday 18th May 2009. Comments should be sent to:

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Written representations will be made public by the MCA subject to the MCA's Internal Guidelines on Confidentiality published on 16 December 2004.

Philip Micallef

Chairman
7 April 2009

Annex A: The WAPECS Concept and the 3400 - 3800 MHz Band

In line with the European Commission's objectives outlined in the i2010 Strategy, policy development is currently underway to facilitate spectrum access through market mechanisms. A fundamental underlying concept for such a system to be implemented is **Wireless Access Platforms for Electronic Communication Services** (WAPECS).

In the RSPG Opinion⁷ published in November 2005, WAPECS is defined as:

'A framework for the provision of electronic communications services within a set of frequency bands to be identified and agreed between European Union Member States in which a range of electronic communications networks and electronic communications services may be offered on a technology and service neutral basis, provided that certain technical requirements to avoid interference are met, to ensure the effective and efficient use of the spectrum, and the authorisation conditions do not distort competition⁸'.

Considerable work was carried out in a number of European committees to develop this concept, particularly the Radio Spectrum Policy Group (RSPG), the Radio Spectrum Committee (RSC) and the Communications Committee (COCOM). In July 2006 the European Commission issued a mandate⁹ to CEPT to investigate the possibility of implementing WAPECS in a number of bands including the 3400-3800 MHz band. The final report addressing technology neutrality in these bands was tabled to the European Commission in December 2007.

As a result of the outcomes of this study a new commission decision was drafted with a view to harmonise the conditions in the 3400-3800 MHz band thereby enabling technology neutrality. This decision was approved by the RSC in March 2008 and was officially adopted on 21 May 2008 as 2008/411/EC.

⁷ http://rspg.groups.eu.int/doc/documents/meeting/rspg8/rspg_05_102.pdf

⁸ This is without prejudice to the services pursuing identified general interest objectives. See for example recital 6 of the Framework Directive.

⁹

http://europa.eu.int/information_society/policy/radio_spectrum/docs/current/mandates/ec_to_cept_wapecs_06_06.pdf#search=%22EC%20Mandate%20WAPECS%22

Annex B: Technical Parameters for the 3400-3800MHz band

As part of the Commission's Mandate on WAPECS, CEPT has conducted a number of studies to identify the applicable technical parameters to allow technology neutrality in the 3400-3800 MHz band. The results of these studies form the basis for the Commission Decision 2008/411/EC.

The relevant technical parameters are listed in the Annex of this decision and are being reproduced here for ease of reference.

Excerpt of Annex to Commission Decision 2008/411/EC:

The following technical parameters called block edge mask (BEM) are an essential component of conditions necessary to ensure coexistence in the absence of bilateral or multilateral agreements between neighbouring networks. Less stringent technical parameters, if agreed among the operators of such networks, can also be used. Equipment operating in this band may also make use of e.i.r.p.¹⁰ limits other than those set out below provided that appropriate mitigation techniques are applied which comply with Directive 1999/5/EC and which offer at least an equivalent level of protection to that provided by these technical parameters¹¹.

¹⁰ Equivalent isotropically radiated power.

¹¹ The generic technical conditions applicable to fixed and nomadic networks are described in Harmonised Standards EN 302 326-2 and EN 302 326-3, which also include definitions for a central station and a terminal station. The term central station may be considered equivalent to the term base station in the context of mobile cellular networks.

A) Limits for in-block emissions:

Station type	Maximum e.i.r.p. spectral density (dBm/MHz) (including tolerances and Automatic Transmitter Power Control (ATPC) range)
Central Station (and Repeater Station down-links)	+ 53 Note 1
Terminal Station outdoor (and Repeater Station up-links)	+ 50
Terminal Station (indoor)	+ 42
Note 1: The Central Station e.i.r.p. spectral density value given in the table is considered suitable for conventional 90 degrees sectorial antennas.	

Table 1: E.i.r.p. spectral density limits for fixed and nomadic deployments between 3400 and 3800 MHz

Station type	Maximum e.i.r.p. spectral density (dBm/MHz) (Minimum ATPC range: 15 dB)
Central Station	+ 53 Note 1
Terminal Station	+ 25
Note 1: The Central Station e.i.r.p. spectral density value given in the table is considered suitable for conventional 90 degrees sectorial antennas.	

Table 2: E.i.r.p. spectral density limits for mobile deployments between 3400 and 3800 MHz)

B) Limits for out-of-block emissions (Block Edge Mask for Central Stations):

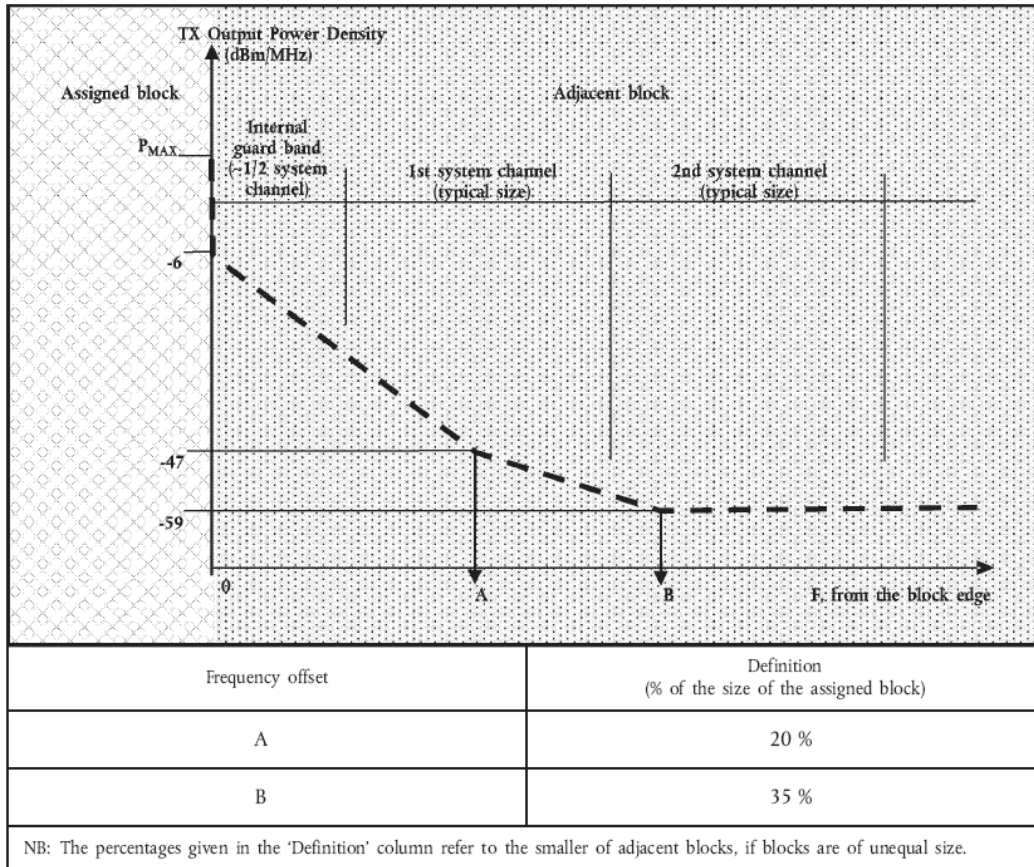


Figure 1: Central Station out-of-block emissions

Frequency offset	Central Station Transmitter Output Power Density Limits (dBm/MHz)
In-band (within assigned block)	See Tables 1 and 2
$\Delta F=0$	-6
$0 < \Delta F < A$	$-6 - 41 \cdot (\Delta F/A)$
A	-47
$A < \Delta F < B$	$-47 - 12 \cdot ((\Delta F - A)/(B - A))$
$\Delta F \geq B$	-59

Table 3: Tabular description of Central Station Block Edge Mask

Annex C: Current Policy Position in other Relevant Bands

900 MHz and 1800 MHz band: Policy under consultation –

<http://www.mca.org.mt/newsroom/openarticle.asp?id=695>

2100 MHz Band: Assigned in 2005

2500 MHz Band: Response to consultation and Preliminary position published in November 2008 –

<http://www.mca.org.mt/infocentre/openarticle.asp?id=1249&pref=24>