MALTA COMMUNICATIONS AUTHORITY

The assignment process for the 1.5GHz band (1452 – 1492 MHz band) for the use in wireless broadband electronic communication services in Malta

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Consultation Document

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1. Introduction

The Malta Communications Authority (MCA) is preparing to make available for assignment, the Maltese spectrum in the frequency range 1452 – 1492 MHz. Whilst the frequency band 1452 – 1492 MHz across Europe is variously called the 1.4 GHz, 1.5 GHz or even the L band, such a band will be referred to as the `1.5 GHz band` in the consultation document. The right of use for the 1.5 GHz band is on a non-exclusive basis following the adoption of the COMMISSION IMPLEMENTING DECISION (EU) 2015/750 by the European Commission.

The assignment of the 1.5 GHz band for wireless broadband supplemental downlink (WBB SDL) use allows the enhancement of downlink capability for mobile broadband systems and could be a strategic tool to tackle the growing mobile data traffic asymmetry driven by increased multimedia usage. The WBB SDL technology allows the bonding of the usual downlink with a *supplemental* downlink channel(s), in a different band, into a single wider downlink channel. This provides an efficient way of using spectrum by the asymmetric consumption of rich content and other data heavy applications.

The 1.5 GHz band is within the operational range of the current cellular spectrum used by mobile broadband systems and its implementation is expected to have a marginal impact on the design and cost of the network and customer equipment alike[1]. In addition, the 1.5 GHz band offers favourable propagation properties for coverage allowing consumers in different environments the possibility to access enhanced mobile services in a cost efficient way.

[1] ECC Report 188, CEPT Report 54

2. Background

The International Telecommunication Union's (ITU) Radio Regulations allocate the 1.5 GHz frequency band in region 1 (Europe, Africa, Russia and the Middle East) to the fixed, mobile (except aeronautical mobile), broadcasting and broadcasting satellite services on a co-primary basis. In addition, sub bands within the said band were harmonised amongst the Member States to introduce additional flexibility in order to allow the deployment of terrestrial mobile multimedia systems on a national basis (T-DAB) as well as for satellite digital audio broadcasting (S-DAB). Despite such harmonisation measures, the use of the said 1.5 GHz band in Europe has been quite limited.

The under utilisation of the 1.5 GHz band was highlighted in the Commission's report on the Radio Spectrum Policy Programme (RSPP)[2] spectrum inventory. The Radio Spectrum Policy Group (RSPG), in line with the RSPP spectrum target, recommended to the Commission to consider adopting complementary measures to promote further the use of the 1.5 GHz band for supplemental downlink, while still allowing Member States to use part of this band for other uses, such as broadcasting.

In order for Europe to meet the strategic challenges in addressing the growing spectrum demand for wireless broadband, the Commission gave the European Conference of Postal and Telecommunications Administrations (CEPT) a mandate to develop harmonised technical conditions in the 1.5 GHz band for wireless broadband electronic communication services in the Union. In response, CEPT Report 54 proposed harmonisation of the said band for WBB SDL use, while allowing member states to adapt to national circumstances in parts of the band (such as 1452 – 1479.5 MHz) for terrestrial broadcasting. In May 2015, the European Commission adopted the COMMISSION IMPLEMENTING DECISION (EU) 2015/750[3] with the aim at harmonising the conditions for the availability and efficient use of the 1.5 GHz frequency band for terrestrial systems capable of providing electronic communication services in the Union. In parallel to the harmonisation discussions taking place at the European Commission, 3GPP had also commenced studies on the 1.5 GHz band standardisation through work item 3GPP TR 37.814 with the aim to specify band numbering, RF characteristics as well as user equipment requirements. The 3GPP published these requirements for use of 1.5 GHz spectrum in June 2014.

As per the National Frequency Plan, the 1.5 GHz band is currently allocated to mobile and terrestrial broadcasting services in line with the ITU Radio Regulations. In the past, the band was licensed for the provision of digital audio broadcasting services. Due to the limited development and deployment of such technology, the DAB service was not made available in Malta. Following this sequence of events, and after taking into consideration the future use of such a band across the region including the CEPT

[2] Decision No 243/2012/EU of the European Parliament and of the Council of 14 March 2012 establishing a multiannual radio spectrum policy programme (OJ L 81, 21.3.2012, p.7).

[3] COMMISSION IMPLEMENTING DECISION (EU) 2015/750 on the harmonisation of the 1452 – 1492 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Union

Decision ECC/DEC/(13) 03[4], which harmonised the band 1452 -1492 MHz for SDL, the MCA has decided that no future assignments for broadcasting services will be considered in the 1.5 GHz band[5].

In addition, following WRC-15, the ITU has allocated additional spectrum bands (1427 – 1452 MHz & 1492 – 1518 MHz) adjacent to the 1.5 GHz band to be used for IMT services. Such additional allocation may prompt the European Commission to seek harmonisation of the additional spectrum for wireless broadband use.

[4] ECC Decision ECC/DEC/(13) 03 -The harmonised use of the frequency band 1452-1492 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)

[5]The decision is reflected in the National Frequency Plan

3. The Consultation Process

Following the adoption of the Commission Implementing Decision (EU) 2015/750 by the European Commission, as per Regulation 75 of the Electronic Communications Networks and Services (General) Regulations[6] (hereinafter 'the ECNSR'), the MCA shall, by updating the National Frequency Plan, designate the 1.5 GHz frequency band to be used by terrestrial systems capable of providing electronic communication services in compliance with the technical parameters set out in the Commission Implementing Decision. In addition, following the publication of the decision on the assignment process for the 1.5 GHz band, the MCA, depending on the market demand shall assign the right of use for the said spectrum on a non-exclusive basis. In view of the 1.5 GHz band harmonisation measures, the MCA is issuing a public consultation on the assignment and management approach to be adopted for this band. The consultation, by proposing to allocate the 1.5 GHz band completely for WBB SDL, is expanding further the Authority's earlier decision on future assignment considerations for terrestrial digital broadcasting networks services. In addition, the MCA is consulting on behalf of Government on the proposed spectrum pricing for the band in question.

The MCA is putting forward for consultation the following key issues with regard to the assignment and governance conditions for the 1.5 GHz band.

3.1 Spectrum Requirements

3.1.1 Channelling Plan and Lot Configuration

In today`s world, the mobile operators are deploying next generation networks supporting larger bandwidth and better user experience in order to cope with the ever increasing user's demands and additional network capacity. In this context, in order for the mobile operators to be able to support the significant increase of mobile users as well as their requirements, access to additional bandwidth in the 1.5 GHz band will contribute to appropriately supplement related deployments in other mobile bands from several mobile operators.

The success of a frequency band arrangement depends on the emergence of an ecosystem with high equipment market penetration in the related frequency band. This requires that the band is large enough in order to accommodate multiple operators, which would through competition trigger growing demands. Failing to harmonise the 1.5 GHz band in its entirety (less than 40 MHz), would eventually result in not exploiting the full potential of such a band by the equipment manufacturers as well as by the operators. Harmonising the full 40 MHz bandwidth in the 1.5 GHz band will allow the possibility to accommodate multiple operators and therefore drive economies of scale to the benefits of consumers.

[6] Subsidiary Legislation 399.28 of the Laws of Malta

The channelling arrangement for the full 40 MHz bandwidth in the 1.5 GHz band, as established in the Commission Implementing Decision (EU) 2015/750, is designed to accommodate eight frequency blocks of 5 MHz each for mobile bands. Such a channel arrangement allows mobile operators implementing SDL technology the opportunity of having access to a frequency block of 5 MHz or more in order to make network investments justifiable. New advanced services (such as higher definition video based multimedia content) supported by the latest technology releases and user devices would impose stringent data speeds that will require additional bandwidth in access of 5 MHz.

Taking into account the need for additional spectrum capacity in a competitive and bandwidth hungry application environment whilst allowing the possibility for several operators to access the 1.5 GHz band, the MCA reiterates its opinion that a harmonised channelling arrangement for Mobile SDL across the whole 1.5 GHz band is essential.

The MCA, in view of the above as well as the Government's earlier decision (reflected in the National Frequency Plan) that no future assignments for broadcasting services will be considered in the 1.5 GHz band, is proposing to make available for assignment a total of 8 lots across the whole 1.5 GHz band; where a single lot consists of an individual (1) slot of 5 MHz bandwidth within the 1.5 GHz band.

1452 – 1457 Ch1	1457-1462 Ch2	1462 – 1467 Ch3	1467 – 1472 Ch4	1472 – 1477 Ch5	1477 – 1482 Ch6	1482 – 1487 Ch7	1487 - 1492 Ch8
Downlink (base station transmit)							
40 MHz (8 blocks of 5 MHz)							

Figure 1: channel arrangement in the 1.5 GHz band as established in (EU) 2015/750

3.1.2 Spectrum Caps

Since spectrum is a finite and scarce resource, a balance has to be achieved 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 effectively deploy reliable services. In this context, the Authority is proposing to introduce a cap of four (4) 5 MHz channels during the assignment process. Such a cap will put the 1.5 GHz spectrum in line with the future needs as already defined in the work item by 3GPP on the technical specifications for the use of the 1.5 GHz band for Supplemental Downlink in UTRA and E-UTRA networks (Release 12)[7].

[7] http://www.3gpp.org/DynaReport/37814.htm

The MCA is cognisant of the fact that such a cap may not provide sufficient capacity[8] for all the Mobile Network Operators (MNOs) in Malta when considering the 40 MHz bandwidth of the harmonised spectrum. Despite of such a fact, the MCA is also aware that the current technology employed by some network operators may support single band or dual band aggregate carriers. In addition, the Authority notes that whilst further spectrum in the 3.4 GHz is currently being made available for mobile use, following WRC-15, the ITU has allocated additional adjacent spectrum bands to the 1.5 GHz band (1427 - 1452 MHz and 1492 - 1518 MHz) to be used for IMT services. Such additional allocation may prompt the European Commission to seek harmonisation of the additional spectrum for Wireless Broadband use.

In addition, the Authority proposes to establish an overall spectrum cap of 250 MHz. This overall cap will be calculated over the 800 MHz, 900 MHz, 1.5 GHz, 1.8 GHz, 2.1 GHz and 2.5 GHz bands, including any unpaired spectrum, and will take account of the applicant's spectrum holdings at the time of the call of applications.

3.2 Methods of assignment and applicable criteria

There are a number of different regulatory requirements that needs to be addressed with respect to the assignment of such a scarce resource. The MCA, after taking into consideration earlier assignment processes for spectrum, is proposing to adopt a process that aims to strike a balance between making the necessary evaluations to ensure the ability of the applicant to utilise the spectrum effectively, whilst still awarding the spectrum on the basis of an auction in the event that demand exceeds supply.

The Authority intends to initiate the assignment process in case of market demand. The assignment process will be split into two main stages namely the *Assignment Stage* and the *Grant Stage.*

3.2.1 Market Demand

The Authority shall initiate the assignment process if it receives a formal request for spectrum[9]. At this point the Authority will publish a notice announcing the receipt of this request and will request any other interested parties to come forward within a given timeframe. If on the expiry of this timeframe it results that there is excess demand for the available lots, the Authority will then issue a formal Call for Applications (hereinafter 'Call'). This will put on offer the entire 40 MHz spectrum. Otherwise the Authority, following the qualification of the applicants, will proceed to a direct assignment.

[8] Such a scenario will be present in the case were all MNOs will implement Release 12 for their network architecture

[9] http://www.mca.org.mt/sites/default/files/pageattachments/Formal%20Request%20for%20Spectrum.pdf

3.2.2 Assignment Stage

Call for Applications

The assignment stage shall commence with the launch for a Call for Applications. The call for applications will include:

- A non-refundable application fee;
- An appropriate bid bond/performance guarantee to ensure the applicant's commitment to the assignment process;
- An appropriate deposit, which will be reflective of the first year spectrum fees and the applicant's spectrum requirements.

The applicants shall not apply for specific frequencies but for a number of lots in the available frequency spectrum. The applicants shall specify the maximum number of lots that they may eventually apply for throughout the course of the process ('Maximum Interest') together with alternative options that would suit their needs in the case that demand for spectrum exceeds supply ('Alternative Options'). This information would be used in confidence by the Authority in the event that brokered meetings need to be held.

Qualification Phase

The Authority shall carry out a qualification process to assess whether applicants have the necessary standings to fulfil the license obligations should they be successful in acquiring the spectrum rights. This process will not rank applicants. The outcome of this phase will be a pass or fail result based on a set of criteria including but not limited to:

- The applicant's credentials;
- The applicant's experience in the establishment, operation and commercialisation of similar electronic communications networks;
- The applicant's business plan;
- Access to adequate financing for the venture; and
- Complementary uplink spectrum.

Brokered Meetings

In the event that demand exceeds the availability of spectrum in any of the lot categories, the Authority proposes to reserve the right, at its own discretion and without binding itself to do so, to carry out a set of brokered meetings with the qualifying applicants. The objective of these meetings would be to reach an agreement on an assignment plan that addresses the requirements of all the qualifying applicants. In order to protect commercial interests, the meetings would be held separately with each qualifying applicant.

In developing the proposals cognisance would be taken of the spectrum requests put forward by the applicants, their business and technical plans and the outcome of the discussions during the meetings.

If the proposal so developed is accepted by all the parties then the Authority would proceed with the granting of rights of use in accordance with the agreement reached.

In the absence of a full agreement being reached at the end of the brokered meetings, the Authority proposes to reserve the right to attempt to reach an agreement to assign parts of the spectrum, whereby only the remaining lots would be auctioned.

Any proposed solution reached between the Authority and each of the qualifying applicants would be binding on the individual applicants but not on the Authority in view of the fact that the Authority would first have to ensure that the proposed solution reached fits within an overall solution acceptable to all the qualifying applicants.

In the event that no agreement (whether full or partial) is reached between the qualified applicants and the Authority, or should the Authority decide not to hold brokered meetings, then the Authority proposes that all the spectrum in the bands under consideration in the Call would be auctioned.

Auction

The Authority proposes that the applicants would be required to simultaneously bid for the lots in question. All bids submitted by each applicant at any stage of the auction would need to be in line with its expressed "Maximum Interest", the spectrum caps mentioned above and any other criteria that would be established in the auction rules. The Authority will retain the option to publish the auction rules only if, following the qualification phase, demand still exceeds supply. In this case the Authority will publish the said rules prior to the brokered meetings and the applicants will be given the opportunity to withdraw their applications at that stage. The Authority proposes that qualifying applicants would be obliged to take part in at least the first round of the auction stage. Failure to do so would result in a forfeit of the bank guarantee.

3.2.3 Grant Stage

The Authority proposes that it would have the sole and unlimited discretion to award the particular channels in the way it deems best in the interest of spectrum efficiency.

This notwithstanding, as part of their submissions to the Call, interested parties would be invited to indicate their ranked preferences for particular frequency channels and provide a justification for such preference. However, this in no way would tie down the Authority to assign the frequencies in accordance with the expressed preferences of applicants.

Once the outcome of the assignment stage is known, the Authority would proceed to the award of the specific contiguous blocks of spectrum to each successful applicant. Should there be no way to easily reconcile the applicants' preferences, then the Authority proposes that a lottery would be used to determine the band assignments.

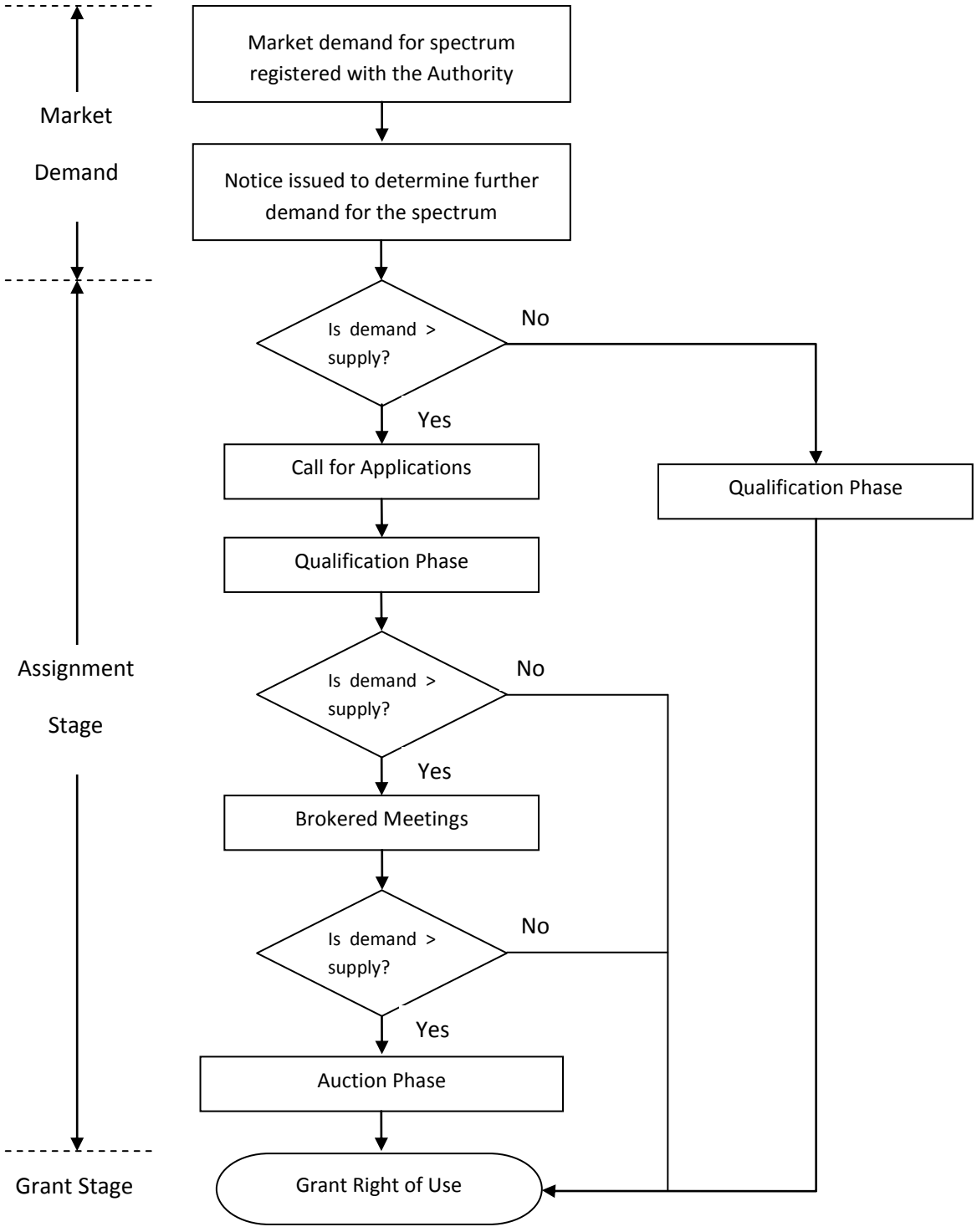

Figure 2: Assignment Methodology

3.3 Conditions of Rights of Use

3.3.1 License commencement and duration

Frequency spectrum is a fundamental building block in establishing the mobile network infrastructure as well as in the provision of mobile services. Given the value of such a resource in the mobile network elements, the license duration for the right of use for frequency spectrum should strike a balance. The license duration should not be too long so as to ensure that national resources are returned to the Government in due time and do not constrain potential developments in the market. On the other hand, the duration must be proportional to the investment made so as to ensure that the licensees have an adequate return on investment.

The Authority is proposing that the 1.5 GHz spectrum shall be assigned with a license term of fifteen (15) years. The time period proposed is in line with the usability timeframe of telecommunication technologies as well as to the terms applied in recent spectrum assignments and European best practice.

In addition, the MCA is proposing that the license period shall commence when the right of use for the frequency lot is assigned to the mobile operator and shall remain in force until the expiry date, unless otherwise lawfully terminated as per the terms and conditions assigned with the right of use.

The licensee can, on providing the MCA with objective reasons, request the hand back of all or part of the spectrum assignment in the 1.5 GHz band. The MCA shall review such requests on a case-by-case basis and has the right to unconditionally reject such requests. In the event that the MCA accepts the hand back request, and where the licensee will not be requested to pay any future spectrum fees, they will not be entitled to a refund of those fees already paid or that were due by them until the date of the hand back. In addition, on the basis of international rationale, the MCA may request the licensees to hand back all or part of the spectrum assignment in the 1.5 GHz band. In the event that the licensees fail to comply, penalties including, but not limited to, a forfeit of the bank guarantee (in the case of a Call for Expressions) will apply.

3.3.2 Technology Neutrality

In line with the principles established in the Framework Directive (2002/21/EC as amended by 2009/140/EC) the Authority proposes that this spectrum is assigned on a technology neutral basis. Therefore licensees will be free to deploy any SDL supporting technologies, being HSPA+ and /or LTE as long as they comply with the EU spectrum harmonisation decision 2015/750/EU.

3.3.3 Service Neutrality

Independently from the technology of choice, it is possible to deploy a number of services. Therefore the Authority, in line with the principles established in the abovementioned Framework Directive, is of

the view that any rights of use for spectrum in the bands under consideration should not include any constraints on the type of services that are offered over the resulting networks.

3.3.4 Rollout and Coverage Obligations

The Authority considers that, given the 1.5 GHz band is intended as a capacity spectrum, no roll-out obligations in terms of geographical coverage should be imposed on the licensees. The network to support this spectrum maybe rolled out in stages driven by demand for capacity rather than to provide wide area coverage. The licensees shall however commit themselves to put into service the allocated spectrum in selected areas where a minimum of 25% of its active data users may avail themselves of such services within a period of one (1) year from the date when the right of use of the frequency band/s is assigned. The licensee will be in breach of the obligations in case of failing to roll out such spectrum within the stipulated timeframe or providing inadequate or inaccessible services over a time period following the commissioning of such spectrum. The MCA is introducing the "use it or lose it" condition in order to address any specific risks of spectrum right's holders anti-competitiveness as well as speculatively hoarding which will eventually result in otherwise inefficient use of spectrum.

The MCA, provided that the conditions of use for such spectrum remain unchanged, retains its right to change its opinion on the matter in the future.

3.3.5 Interference Mitigation Conditions

All wireless network operators are legally bound to ensure that their networks do not create any undue interference to other networks providing similar services or services of other nature provided in the same or adjacent spectrum bands. The harmonised technical conditions and parameters as identified in the Annex of the European Commission Decision 2015/750/EU for the deployment of electronic communications services in the 1.5 GHz band are to be adopted. Such parameters also ensure the efficient use of spectrum together with matters related to spectrum planning.

For ease of reference, the mentioned technical parameters are annexed in this document.

3.3.6 Sanctions

The Authority notes that in the case of any departure or non-compliance with any condition or obligation as set out in this document or licence, the Authority has the right to take action in accordance with the powers prescribed at law, including those provided in Articles 31 to 33 of the Malta Communications Act[10], which include the imposition of an administrative fine and the revocation or suspension of the licence.

[10] Chapter 418 of the Laws of Malta

3.4 Pricing

The frequency spectrum, being a national resource is owned by the Government of Malta and administered through powers as established at law by the National Regulatory Authority responsible, in this case being the MCA. The Government shall establish the annual spectrum fees for the 1.5 GHz band through an amendment of the Eight Schedule of the ECNSR.

Setting spectrum prices that are reflective of 'market value' poses a challenge. The spectrum prices in a competitive market should strike a balance in order to reach a scenario were demand meets the supply for spectrum. Thus, the price of the spectrum should reflect the monetary value the interested stakeholders are willing to pay. Irrespective of the model adopted in establishing the value for the spectrum, a number of factors need to be taken into consideration when setting the minimum price for the frequency band in question.

The current harmonised spectrum within the EU for the 1.5 GHz band provides a total of 40 MHz of available spectrum [11]. The spectrum band is relatively well developed from a regulatory perspective as well as from a global potential with respect to mobile broadband using SDL. The harmonisation of such a band in Malta should be relatively free of complication, following the earlier decision taken by the MCA to free up the frequencies in this band.

From a technical perspective, the 1.5 GHz band lies somewhere in between the 800/900 MHz and the 2 GHz bands. The propagation characteristics of the 1.5 GHz bands are intermediate between these bands. Although the 1.5 GHz band has similar but not necessarily equivalent properties to sub 1 GHz spectrum, such a 1.5 GHz band offers significant advantages in terms of coverage and in building penetration (being more akin to those at the 800/900 MHz band) as well as having the possibility for deployment using existing infrastructure.

In principle, both the operators as well as the subscriber shall eventually benefit from the harmonisation of the 1.5 GHz band. Harmonisation of the 1.5 GHz band shall avoid costs to operators by using SDL to meet rising demand in subscriber capacity and mobile broadband. At the same time, the consumers will benefit from improved coverage and higher data speeds. Malta shall also benefit from the harmonisation of the 1.5 GHz band as well when considering the innovative potential for new services, increased competition in the mobile markets as well as enhancing further the result achieved with respect to the digital agenda targets.

On the other hand, the fact that the 1.5 GHz band is a nascent band for mobile services needs to be taken into consideration. Such a band currently does not have the same scale of ecosystem as the existing mobile bands and may take some time for the amount of available devices to catch up in the near future. This is further augmented due to the fact that other bands including the 3.4 GHz band may likely become more relevant for mobile access in the future.

[11] At WRC 15, the 1.5 GHz band was expanded further for IMT use worldwide extending the band form 1452 – 1492 MHz to 1427 – 1518 MHz

Moreover, the spectrum in the 1.5 GHz band within Europe is harmonised and released as supplemental downlink only, and therefore it does not offer any uplink possibilities. This makes the potential market for the harmonised 1.5 GHz spectrum most likely to be limited to operators who already have or who are interested to acquire spectrum in other frequency bands with which SDL can be combined. Unlike other spectrum available in other frequency bands, the 1.5 GHz band cannot be used to provide services on a standalone basis.

Based on these arguments, it is evident that the way in which the 1.5 GHz band is being harmonised has both a positive and negative aspects alike. Whilst the characteristics of the 1.5 GHz band are somewhat reflective to the favoured sub 1 GHz spectrum traits, the other mentioned factors may somewhat restrict the implementation and use of such a band, eventually impinging negatively on the value of the spectrum. The Government, after taking into consideration the aspects towards the physical characteristics of the spectrum, the technological developments within such a band as well as the fees paid for other substitutable bands, is proposing that the annual fee for a 5 MHz channel (one lot) shall be set to a base price of eight thousand Euros (€8000). The proposed annual fee reflects the current market value for such a spectrum.

It should be noted that in the event of an auction, the reserve price shall be the fee for the right of use of such spectrum as establish at law. The successful bidders shall then pay the difference in price between the reserve price and the final bid immediately upon the conclusion of the auction. In addition, the successful bidder will have to pay the applicable annual spectrum fees on a quarterly basis for the entire duration of the license for the rights of use of the spectrum awarded to them.

In the case were the MCA consents the hand back of the allocated spectrum, the licensees will not be required to pay any future spectrum fees related to the channels handed back, but will not be entitled to a refund of those fees already paid or that were due by them until the date of the hand back.

4. Consultation Questions

1. Do you have any reservation about the fact that the entire 40 MHz bandwidth in the said 1.5 GHz band will be issued for assignment in order to be utilized primarily for Supplementary Downlinks?
2. Do you agree with the concept of spectrum caps as identified in the consultation document? Please provide your views on the proposed spectrum caps.
3. Do you agree with the assignment process proposed?
4. Do you agree with the license period as being proposed by the Authority? Justify in case of a negative position.
5. Do you agree with the conditions assigned with the right of use for the spectrum in question?
6. What are your views on the spectrum fees being proposed by Government?

The Authority would be pleased to receive comments and proposals on any other aspects that may be deemed relevant for the purposes of this consultation.

For the sake of clarity and ease of understanding, the Authority encourages stakeholders to structure their comments in the same order as adopted throughout this document.

5. Invitation to Comments

In accordance with its obligations under Article 4A of the Malta Communications Authority Act [Cap. 418 of the Laws of Malta], the Authority welcomes written comments and representations from interested parties and stakeholders during the consultation period, which shall run from the 08/07/2016 to the 02/09/2016.

The Authority appreciates that respondents may provide confidential information in their feedback to this consultation document. This information is to be included in a separate annex and should be clearly marked as confidential. Respondents are also requested to state the reasons why the information should be treated as confidential.

For the sake of openness and transparency, the Authority will publish a list of all respondents to this consultation on its website, within three days following the deadline for responses. The Authority will take the necessary steps to protect the confidentiality of all such material in accordance with the Authority's confidentiality guidelines and procedures. Respondents are however encouraged to avoid confidential markings wherever possible.

All responses should be submitted to the Authority, in writing by no later than 12:00 hrs on 02/09/2016 and addressed to:

Ing. Antoine Sciberras
Acting Chief of Spectrum Management and Technology

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Extensions to the consultation deadline will only be permitted in exceptional circumstances and where the Authority deems fit. The Authority reserves the right to grant or refuse any such request at its discretion. Requests for extensions are to be made in writing within the first ten (10) working days of the consultation period.

Annex 1 - General Technical Operating Parameters within the 1.5 GHz Band

The information contained in this Annex is for information purposes only. The parameters as specified in the EU decision prevail.

A. GENERAL PARAMETERS

1. The mode of operation within the 1452-1492 MHz frequency band shall be limited to base station ('downlink-only') transmission.

2. Block sizes within the 1452-1492 MHz frequency band shall be assigned in multiples of 5 MHz. The lower frequency limit of an assigned block shall be aligned with or spaced at multiples of 5 MHz from the lower band edge of 1452 MHz.

3. Base station transmission must comply with the block edge mask in this annex.

B. TECHNICAL CONDITIONS FOR BASE STATIONS — BLOCK EDGE MASK

The following technical parameters for base stations called 'block edge mask' (BEM) shall be used in order to ensure coexistence between neighbouring networks in the absence of bilateral or multilateral agreements between operators of such neighbouring networks. Less stringent technical parameters, if agreed among the operators or administrations concerned, may also be used provided that these parameters comply with the technical conditions applicable for the protection of other services or applications, including in adjacent bands or subject to cross-border obligations.

The BEM is an emission mask that is defined as a function of frequency in relation to the edge of a block of spectrum for which rights of use are granted to an operator. It consists of in-block and out-of-block power limits. The in-block power limit is applied to a block owned by an operator. Optional in-block requirements are set out below. The out-of-block power limits are applied to spectrum within the 1452-1492 MHz frequency band which is outside a block granted to an operator. They are set out in Table 1.

Furthermore, coexistence power limits are defined for wireless broadband electronic communications services within the 1452-1492 MHz band in order to ensure compatibility between these services and other radio services or applications either within the 1452-1492 MHz frequency band or in the adjacent 1427-1452 MHz or 1492-1518 MHz frequency bands. The co-existence power limits with regard to

services or applications in the adjacent bands are set out in Table 2. Additional technical or procedural measures [1] or both may be applied at national level to ensure coexistence with services and applications in the adjacent bands. The coexistence limits for T-DAB services in the 1452-1492 MHz band are set out in Table 3.

In-block requirements

An in-block equivalent isotropically radiated power (EIRP) [2] limit for base stations is not obligatory. Member States may set an EIRP limit not exceeding 68 dBm/5 MHz which can be increased for specific deployments, for example for the aggregated use of spectrum within the 1452-1492 MHz band and spectrum in lower frequency bands.

Out-of-block requirements

Table 1

Base station BEM out-of-block EIRP limits within the 1452-1492 MHz frequency band per antenna

Frequency range of out-of-block emissions	Maximum mean out-of-block EIRP	Measurement bandwidth
– 10 to – 5 MHz from lower block edge	11 dBm	5 MHz
– 5 to 0 MHz from lower block edge	16.3 dBm	5 MHz
0 to + 5 MHz from upper block edge	16.3 dBm	5 MHz
+ 5 to + 10 MHz from upper block edge	11 dBm	5 MHz
Frequencies within the 1452-1492 MHz band spaced more than 10 MHz from the lower or upper block edge	9 dBm	5 MHz

[1] For instance, one or more of the following: frequency planning coordination, site coordination, more stringent in-band power limits for base stations, more stringent out-of-band equivalent isotropically radiated power limits for base stations than stipulated in Table 2.

[2] In-block EIRP is the total power radiated in any direction at a single location, independent of any base station configuration.

Coexistence requirements for adjacent bands

Table 2

Base station out-of-band EIRP limits for adjacent bands

Frequency range of out-of-band emissions	Maximum mean out-of-band EIRP	Measurement bandwidth
Below 1449 MHz	–20 dBm	1 MHz
1449-1452 MHz	14 dBm	3 MHz
1492-1495 MHz	14 dBm	3 MHz
Above 1495 MHz	–20 dBm	1 MHz

Explanatory note to Table 2: these requirements are intended to ensure compatibility with coordinated fixed links, mobile services and aeronautical telemetry services limited to ground stations, deployed in adjacent frequency bands below 1452 MHz or above 1492 MHz.

Coexistence requirements within the 1452-1492 MHz frequency band

Table 3

Base-station out-of-block EIRP limits for adjacent channel coexistence with T-DAB within the 1452-1492 MHz frequency band

Frequency range of out-of-block emissions	Maximum mean out-of-block EIRP	Measurement bandwidth
0 to 1.3 MHz from block edge	9.3 dBm	1 MHz
1.3 to 1.5 MHz from block edge	2.8 dBm	1 MHz
1.5 to 1.8 MHz from block edge	–6.7 dBm	1 MHz
1.8 to 2 MHz from block edge	–12.4 dBm	1 MHz
2 to 2.3 MHz from block edge	–13.7 dBm	1 MHz
2.3 to 5 MHz from block edge	–14.9 dBm	1 MHz
Remaining frequencies used for T-DAB	–14.9 dBm	1 MHz

Explanatory note to Table 3: these requirements apply only if T-DAB is in operation at national level. They are intended to ensure compatibility with T-DAB services in adjacent channels within the 1452-1492 MHz frequency band and assume a guard band of at least 1.5 MHz between wireless broadband electronic communications services and T-DAB services.