# Consultation on the assignment process of radio spectrum in the VHF band for Terrestrial Digital Audio Broadcasting (T-DAB) Services in Malta

Consultation

MCA/C/21-4261

Publication Date

26 August 2021

www.mca.org.mt

(+356) 2133 6840
info@mca.org.mt

Valletta Waterfront, Pinto Wharf,
Floriana FRN1913, Malta

MALTA COMMUNICATIONS AUTHORITY

# Contents

# 1. Introduction

Terrestrial Digital Audio Broadcasting (T-DAB) is a wireless terrestrial service that enables broadcasting audio content in digital format. The strong points of a T-DAB network are:

-i- its ability to maximise its reach to geographic areas compared to wired transmissions;

-ii- the digitisation of the signal which helps to achieve better spectral efficiencies than the analogue counterpart; and

-iii- better network deployment.

T-DAB networks support Single Frequency Networks ('SFN') where multiple transmitters are synchronised, thus virtually behaving as a single unit. The possibility of an SFN network allows for the deployment of multiple transmitters, allowing transmitters to run at lower powers, potentially limiting interference beyond the area of interest while maximising the network footprint.

## Background on the Local T-DAB Dimension

In 2005, the Malta Communications Authority ('MCA') and the then Ministry for Competitiveness and Communications on behalf of the Government, had jointly published two papers that shaped the policy concerning digital radio transmission. The first paper, "Policy and Implementation Strategy re: Digital Terrestrial Television (DTTV), Third Generation Mobile Telephony (3G) and Broadband Wireless Access (BWA)[1]", touches upon the primary policy issues related to digital radio, while the second paper, "Policy and Implementation Strategy – Terrestrial Digital Audio Broadcasting" addresses other key issues. These papers will be discussed jointly and treated as a single policy. This policy paper was published in a scenario where radio audio transmissions were exclusively made in analogue.

[1] https://www.mca.org.mt/sites/default/files/reports/strategy-doc.pdf

At that time, digital terrestrial television was already offered on a commercial basis and, discussions were progressing in the direction of switching off the analogue TV altogether; this had also spurred some thoughts on whether the switch-off of analogue radio should be on the cards as well.

The established key policies for the use of spectrum for digital audio broadcasting are listed below:

1. Coverage targets were to be reached within 18 months from the availability of the spectrum;
2. Network coverage targets were established at 95% of locations covering the whole of the Maltese islands;
3. No analogue radio turn-off date was established;
4. Transmissions were to be carried out in DAB;
5. An auction process was established as the means to award spectrum should demand exceed supply;
6. Duration of the rights of use of spectrum was established as an initial period of eight (8) years, which could be renewed for a further eight (8) years, provided that a review would be carried out two years before the expiry of the first term; and
7. Successful applicants were expected to abide by the conditions of the spectrum licence.

To date, the aforementioned key policies for the use of spectrum for digital audio broadcasting established in the 2005 policy papers are still in place.

In 2006, Digi B Network Ltd was awarded a spectrum licence granting it the rights of use for four spectrum channels[2] in both the VHF and the L-Band, both, suitable for setting up a T-DAB network with nationwide coverage. The spectrum was awarded for an initial period of eight years, and following a review, the licence was renewed for a period of eight (8) years, where the term of the licence will expire in 2022.

[2] T-DAB in the L-Band did not really pick up and the assigned channels for T-DAB were reduced to three. The L-Band was eventually repurposed for other services..

In the same year, a regional radiocommunication conference (RRC-06) was held under the International Telecommunication Union (ITU) framework to develop a regional frequency plan for digital terrestrial broadcasting services in the 174-230 MHz and 470-862 MHz band. T-DAB was designated for use in the 174-230 MHz band along with DTTV.

Malta's national frequency plan reflects the use of terrestrial broadcasting applications in the 174-230 MHz band, where broadcasting is the primary service and land mobile services operate on a secondary basis.

Furthermore, in 2018, the European Electronic Communications Code[3] ('EECC') introduced provisions towards interoperability of car radio devices, intending to encourage more widespread use of digital radio services across Europe.[4] The MCA consulted on a proposed amendment to the Electronic Communications Networks and Services (General) Regulations, SL 399.28 ('the Regulations'), to implement the provisions. The proposed amendment to the Regulations was intended to provide legal clarity to the effect that, as from 21st December 2020, any car radio receiver integrated into new cars made available for sale or rent in Malta must be equipped, as a minimum, with a DAB+ radio device. The applicable amendments to the Regulations were published on the 21st April 2020 as per Legal Notice 151 of 2020.

[3] Directive (EU) 2018/1972 of the European Parliament and of the Council of 11 December 2018 establishing the European Electronic communications Code.

[4] See EECC, Article 113 and Annex XI paragraph 3 thereof.

## The future for the Local T-DAB Dimension

Whether in analogue or digital transmission formats, radio is an important medium through which citizens access a diverse range of information, news, and entertainment services. The audience assessment report for March 2020[5] published by the Broadcasting Authority provides an analysis of the number of radio listeners over the years. The assessment shows that over the years between 2017 and 2019, the number of listeners hovered in the region of 50% of the population; the latest figure published in Jan 2021[6] stands at around 63%. The proliferation of digital radio receivers on the local market stands in the region of 12%.

Whilst the applicable Policy on T-DAB published by Government in 2005 still addresses the needs for the local digital radio, the reality and conditions of the market following sixteen years of development need to be evaluated and applied within the current context. Therefore, the MCA, in continuation with the implementation of policy objectives, is of the opinion that two main areas merit further discussion, being (a) the use of auction as the spectrum assignment mechanism in case of demand exceeding supply, and (b) the choice of DAB standard as the transmission technology.

Throughout this document, the MCA will be presenting and consulting upon a number of proposals that will shape the spectrum assignment and management process governing the respective T-DAB radio spectrum for 2022 and beyond.

[5] Audience Assessment report March 2020 - https://www.dropbox.com/sh/9oxo9v3ohs3tov0/AABHZP3let-J2UhI16pkPlPa/B.A.%20Audiences/Audience%20Assessments/2020a-March?dl=0&preview=Audience+Assessment_Mar2020.docx&subfolder_nav_tracking=1

[6] Audience Assessment Report December 2020 - https://www.dropbox.com/sh/9oxo9v3ohs3tov0/AADr4ycCZHpZ3QKivuSOTKlVa/B.A.%20Audiences/Audience%20Assessments/2020c-Dec?dl=0&preview=BA+-+Audience+Survey+December+2020.pdf&subfolder_nav_tracking=1

# 2. T-DAB Networks and the Broadcast Radio Spectrum

## Available T-DAB Radio spectrum for 2022 and beyond.

T-DAB spectrum available in Malta may be split into two groups. The first group consists of spectrum channels allocated to Malta as a result of the outcome of the RRC-06 conference coordinated by the ITU. The use of this spectrum is subject to rules for the sharing of spectrum resources among neighbouring countries.

Table 1 below shows the list of GE06 spectrum channels allocated for use in Malta in the VHF Band III.

| Frequency Blocks | Spectrum Range (MHz) |
|---|---|
| **5A – 5D**[7] | 174.160 – 180.832 |
| **12A** | 223.168 – 224.704 |

*Table 1 Spectrum Available for use in Malta as agreed during the RRC-06ce.*

Channels 5A to 5D may be configured as a single channel of 7MHz suitable for DTT transmissions. Government policy[8] established that VHF Channel 5 would be used for the transmission of DTT in HD. Throughout this Consultation, any reference to channels 5A to 5D in relation to T-DAB will be inferring to the technical potential use of these channels for T-DAB transmission. However this may only be possible in case the aforementioned Government policy is updated to allow such use. At this stage, the supply of spectrum is

[7] Channels 5A to 5D may be configured as a single channel of 7MHz suitable for DTTV transmissions.

[8] A Policy and Strategy for Digital Broadcasting that meets General Interest Objectives (February 2009) https://www.mca.org.mt/consultations-decisions/policy-and-strategy-digital-broadcasting-meets-general-interest-objectives

expected to exceed demand for spectrum for T-DAB. Therefore, such designation should not limit the deployment of T-DAB.

Malta has also concluded a negotiation process with its neighbouring countries to agree on the use of additional channels for commercial T-DAB broadcasting. As a result of this agreement, Malta will be able to make use of an additional ten channels in the VHF III band. These channels are subject to strict conditions to ensure that no interference is caused beyond the coordination zone of this agreement. The coordination zone listed in Annex 4 consists of the territory of Malta and the island of Sicily except for the regions of Palermo and Messina.

Under this agreement, some channels are designated for the exclusive use of Malta, while others are shared with specific regions in Sicily. While the worst-case scenario is based on the design recommendations set out in ITU-R BS.1660-8, the MCA notes that upon considering the physical distance between the areas where the use of frequencies will be shared and given further geographic topographies that would influence signal propagation, there is an optimistic possibility for the planning conditions to be relaxed. The process for determining alternative 'relaxed' technical conditions is still underway.

*Table 2 List of all the Channels available for the use of Malta*

| Frequency Block Number | Frequency | Shared with or Exclusive use |
|---|---|---|
| **5A** | 174.160 – 175.696 | **Exclusive Use** |
| **5B** | 175.872 – 177.408 | **Exclusive Use** |
| **5C** | 177.584 – 179.120 | **Exclusive Use** |
| **5D** | 179.296 – 180.832 | **Exclusive Use** |
| **6A** | 181.168 – 182.704 | Trapani |
| **6C** | 184.592 – 186.128 | Trapani |

| | | |
|---|---|---|
| **9A** | 202.160 - 203.696 | **Exclusive Use** |
| **9C** | 205.584 – 228.128 | Enna and Catania |
| **11A** | 216.160 – 217.696 | **Exclusive Use** |
| **11B** | 217.872 – 219.408 | **Exclusive Use** |
| **11C** | 219.587 – 221.120 | **Exclusive Use** |
| **11D** | 221.296 – 222.832 | **Exclusive Use** |
| **12A** | 181.168 – 182.704 | Trapani |
| **12C** | 226.592 – 228.128 | Trapani |
| **12D** | 228.304 -229.840 | **Exclusive Use** |

***As per Table 2, Malta will therefore have a total of 15 channels in the VHF band III, which, solely from a technical standpoint, could be used for the transmission of T-DAB radio. Due to the contiguous nature of the spectrum channels, eight of the above-indicated channels could also be used for the transmission of DTT.***

# 3. Establishing the radio spectrum bandwidth for the deployment of future T-DAB networks

## Addressing the needs of the current Audio Broadcasting Market in Malta

An assessment of the current scenario of audio broadcasting in Malta is necessary to understand the scale of the demand for digital audio broadcasting radio frequencies. In Malta, audio broadcasting is carried out in either analogue or digital transmissions. For the past years, the total number of analogue transmissions with a permanent licence stood fixed at thirteen stations. In its 2019 annual report[9], the Broadcasting Authority stated that twenty-one community radios had a permanent licence. At the same time, sixteen were awarded[10] a temporary licence suitable to transmit for a limited period. When considering the cumulative time requested for transmission by all the temporary community radios, the total air-time is equivalent to that of a single radio station operating throughout the year. Strictly from a frequency spectrum perspective, the main difference between the spectrum allocated for national radio stations and that used for community radio stations is that the national radio stations use spectrum channels protected from interference. In contrast, community radios operate a spectrum licence that offers no protection against incoming interference, while they cannot cause interference to others. Furthermore, the latter is restricted to transmissions in a specific geographical area. There are other licensing conditions that are not tied to the use of spectrum, which are applicable and which may offer differentiation between the two radio types. These however are not the subject of this Consultation.

The Digital Audio Broadcasting network set up currently consists of a single network operator who is assigned with the right of use for three (3) radio spectrum channels. Each radio spectrum channel forms a multiplex capable of carrying multiple audio broadcasting stations. While all the radio stations would then share the same network and its coverage footprint,

[9] Broadcasting Authority – Annual Report 2019 - https://www.dropbox.com/sh/9oxo9v3ohs3tov0/AACqV-kjxpYchJ5BI9UVDD0Ja/B.A.%20Annual%20Reports/58-2019.pdf?dl=0

[10] Broadcasting licences are awarded by the Broadcasting Authority.

each station can enjoy a different amount of resources on the network, generally translating in different sound quality. In fact, various radio channels are transmitted using higher bit-rates, thus resulting in superior audio quality. The existing T-DAB network hosts a total of 53 radio channels[11], of which forty-six are transmitted at standard audio quality, while another seven are transmitted at higher bit-rates and hence better audio quality. Of all the radio stations, twelve are simulcasted over their respective analogue radio channel.

In estimating the demand for the digital audio broadcasting network, the following elements are taken into account

a) **Future analogue switch-off**: Various European countries are contemplating the future of analogue FM radio and, in some cases, have set a sunset date for FM transmissions. Drivers towards FM switch-off are typically motivated by the strength of network efficiencies that digital networks bring about. The MCA notes that should Malta contemplate a transition away from analogue radio in the future, such transition may drive demand for digital transmissions. Noting such a scenario, and given that all the national analogue stations, except for one, are already transmitted on the digital network, the pressure on resources, in this case, is not expected to be significant. However, It should be noted that a T-DAB network might not be efficient to service community radios. This inefficiency arises both from a spectrum efficiency point of view, where a spectrum channel capably of carrying a significant number of stations is used for just radio channel, as well as from a financial perspective where capital investment suitable for multiple radio stations is used for just one channel. However, for the sole purpose of estimating resource demand, in a worst-case scenario, all radio community channels can be accommodated in a single DAB+ multiplex.
b) **Additional broadcasting content**: The spectrum efficiencies of the digital platform allow for the same frequency channel to be shared with multiple broadcasters. While spectrum resources are always finite, in the case of T-DAB, the supply of the spectrum still exceeds the estimated demand. Therefore, given the availability of spectrum resources, more content can eventually be transmitted on the T-DAB network. While

[11] As applicable at the date of publication.

it is difficult to estimate the increase in demand for new and additional transmissions, the experience over the past years of operation of the commercial digital radio network indicates that the increase in new channels spawning from existing radio channels was limited.

c) **Improvement in audio quality:** A key advantage of T-DAB is the ability to tailor spectrum resources for each broadcasting channel. The higher the audio quality of a channel is, the more spectrum resources are necessary. Therefore, for the same number of channels transmitted today, more spectrum requirements would be needed with higher audio quality. The MCA believes that while the market should be allowed to establish the desired audio quality, and hence network operators shall organise their offerings to the best needs of the market, the audio quality of a digital broadcasting platform should at least be at par with the audio quality achieved on the analogue platform. However, in the interest of spectrum efficiency and consumer interests, the MCA reserves the right to establish minimum audio quality performance parameters should market developments lead to such needs.

d) **Data Services**: Unlike analogue radio transmissions, T-DAB is also capable of delivering data services. Typical use of such services includes channel information service, electronic programming guides, digital multimedia and vehicle traffic information services.

***Based on the facts and consideration noted above, the MCA observes that the current demand for radio broadcasting resources can be accommodated using up to three frequency channels allocated for T-DAB. However, the MCA considers that it is also reasonable to assume that as the demand for ancillary services, additional radio stations coupled with the improvement in the transmitted audio quality, an increase in spectrum resources available for the transmission of DAB networks would be deemed appropriate.***

## Future development of Digital Radio in Malta

Another further possible development, as is the case for digital television, is for Government to introduce a future policy identifying the need for digital radio broadcasting that meets the

general interest. While the discussion of such a policy is beyond the scope of this Consultation, implementation of the policy objectives will only be possible if enough spectrum resources are made available for such a model to be successful.

***The MCA is proposing to reserve at least one radio channel to afford flexibility in policy options.***

## Alternative uses for radio spectrum in the VHF band

The spectrum identified for digital audio broadcasting lies in the VHF band, which is also available for digital terrestrial television. A block of four consecutive T-DAB channels may be grouped into a single 7MHz channel suitable for DTTV transmissions. T-DAB and DTTV transmission using the same frequency channels cannot co-exist in the same area. Of the available spectrum, channels 5A to 5D and channels 11A to 11D can be grouped as two DTTV channels 5 and 11, respectively. At present, Channel 5 is earmarked for HD TV in line with the aforementioned Government policy concerning digital broadcasting that meets the general interest objectives[12].

Considering that there is sufficient spectrum to meet the current and near-future demands for digital radio transmissions, and given further that channels 5A to 5D are already reserved for DTT, the MCA proposes that channels 11A to 11D are kept in reserve and not allocated for digital radio services, at least until such time where the future demand for DTT and T-DAB are clearly indicated. This allows for future regulatory decisions to assign the spectrum for either DTTV and/or T-DAB should the demand for further spectrum for these services arise.

## Radio spectrum bandwidth for the deployment of future T-DAB networks

On taking into account all of the considerations discussed in previous sections, the MCA is proposing that of the eleven channels that are currently available for T-DAB, ***the MCA shall***

[12] A Policy and Strategy for Digital Broadcasting that meets General Interest Objectives (February 2009) https://www.mca.org.mt/consultations-decisions/policy-and-strategy-digital-broadcasting-meets-general-interest-objectives

***therefore place on the market the rights of use for a total of six (6) T-DAB radio channels***[13]. Should the development of a T-DAB network, or the digital audio broadcasting market in general, be constrained by the availability of spectrum, the MCA will consult again on the utilisation of the reserved frequencies.

The DAB radio channels available in this assignment process are listed in the table below.

*Table 3 List of Channels included in this process*

| Channel Number | Frequency |
|---|---|
| **6A** | 181.168 – 186.128 |
| **6C** | 184.592 – 186.128 |
| **9C** | 202.160 – 203.696 |
| **12A** | 181.168 – 182.704 |
| **12C** | 226.592 – 228.128 |
| **12D** | 228.304 – 229.840 |

## Market Considerations

Both analogue and digital radio networks are free to air transmissions where no subscription is required to access the radio stations offered.

[13] In order to honour the coordination agreement set up with the neighbouring countries, the rights of use for the respective radio spectrum shall commence as from 1st July 2022.

The key players of the radio broadcasting market are:

(a) the radio broadcasters which are primarily content providers, and given the nature of the analogue radio offer, they are also network operators;
(b) the listeners who are interested in receiving the content of their choice using devices of their choice; and
(c) the digital radio network provider who is interested in providing access to the broadest range of broadcasting channels as services over its network such that listeners would naturally tune into the network as the only source of radio content.

    This may incentivise broadcasters to pay to have their content transmitted over the digital network and allowing the radio network provider to generate revenue.

Statistical data published by the Broadcasting Authority in July 2020[14] shows that the ownership of digital radio network equipment stands at just over 12% of the listeners, which is a relatively low penetration rate, especially upon considering that the digital radio network has been operating for over fifteen years. The MCA believes that this could be due to the alignment of multiple factors such as:

a) the widespread availability of the analogue network;
b) the overall preference of listeners to the content offered by the local broadcasters, which content is simultaneously available on both networks;
c) the price point of the analogue receiver, which is generally cheaper when compared with the digital counterpart; and
d) the widespread availability of the analogue radio receiver as a secondary function to the primary scope of the appliance, e.g. a car, alarm clock and others.

Given these considerations, the MCA considers that while the present situation represents steady yet relatively slow progress towards the digitisation of audio broadcasting, there is still ample room for growth both in terms of the number of listeners who depend on a digital

[14] Television and Radio Audience Assessment – July 2020 – Broadcasting Authority https://www.dropbox.com/sh/9oxo9v3ohs3tov0/AACRIWJYf1IJLbYviWsWI0QNa/B.A.%20Audiences/Audience%20Assessments/2020b-July?dl=0&preview=Audiencesuch+Assessment_July2020.pdf&subfolder_nav_tracking=1

platform to receive their radio content and transmission, and in terms of transmitted audio quality. The recent requirement to equip new cars on the market with a DAB capable radio receiver is expected to improve T-DAB uptake. In addition, ensuring that an improvement in both the network and audio quality such that the T-DAB network is able to match and supersede the quality offered by the analogue service will help in engaging the listener to the network.

***Therefore, the MCA proposes that spectrum arrangements proposed in this Consultation should be designed in such a way in order to encourage the technical development of the network, which facilitates high-quality T-DAB networks transmissions and improved audio quality.***

## Spectrum Lots and Spectrum Caps

The terms 'Spectrum Lot' and 'Spectrum Caps' are two parameters that organise the spectrum for which the rights of use will be assigned. These parameters represent the minimum and maximum spectrum rights operators can be licensed for. This arrangement will eventually have a significant role in determining the maximum number of operators possible in the respective T-DAB market. In addition, the size of the spectrum lots and applicable caps have a direct influence on both the efficient use of spectrum and the ability of network operators to scale up their operation to improve content and quality. The MCA has established the respective parameters on the basis of the need to:

(i) *ensure the efficient and effective use of spectrum;*
(ii) *promote a competitive approach;*
(iii) *promote further investment and innovation; and*
(iv) *safeguard the public interest.*

The term 'Spectrum Lot' refers to how the available spectrum is grouped into different units consisting of spectrum enjoying similar properties. In this case, the MCA proposes that there should be six lots of one channel each.

The term 'Spectrum Cap' refers to the maximum number of spectrum channels that a network operator may be assigned with the rights of use. In this case, the MCA proposes that no spectrum caps shall be set, meaning that any potential network provider can acquire as much spectrum as necessary to meet the requirements of its network, provided that efficient use of spectrum is assured.

The MCA is of the opinion that the proposed spectrum lot and cap structure shall allow for the development of T-DAB networks that can reach high-quality DAB services while at the same time being sustainable in the long term. The proposed spectrum configuration shall provide DAB network operators with the total flexibility to make use of the right amount of spectrum that fulfils the current spectrum resource demands, which may eventually vary according to the DAB services offered as time progresses.

Table 4 below denotes the spectrum channels being made available on the market together with their respective lot structure. The last column indicates any restrictions that may be applicable for each lot.

*Table 4 Spectrum channels grouped by lots*

| Lot | Channel | Frequency | Additional Notes |
|---|---|---|---|
| **Lot 1** | 6A | 181.168 – 186.128 | Shared with Trapani<br>Coordinated with Italy |
| **Lot 2** | 6C | 184.592 – 186.128 | Shared with Trapani<br>Coordinated with Italy |
| **Lot 3** | 9C | 202.160 – 203.696 | Shared with Enna and Catania<br>Coordinated with Italy |
| **Lot 4** | 12A | 181.168 – 182.704 | Shared with Trapani<br>Coordinated under the GE06 |
| **Lot 5** | 12C | 226.592 – 228.128 | Shared with Trapani<br>Coordinated with Italy |
| **Lot 6** | 12D | 228.304 – 229.840 | Exclusive use<br>Coordinated with Italy |

## Consultation questions

1. **How do you envisage the progress on the DAB market uptake and listenership during the next ten years?**

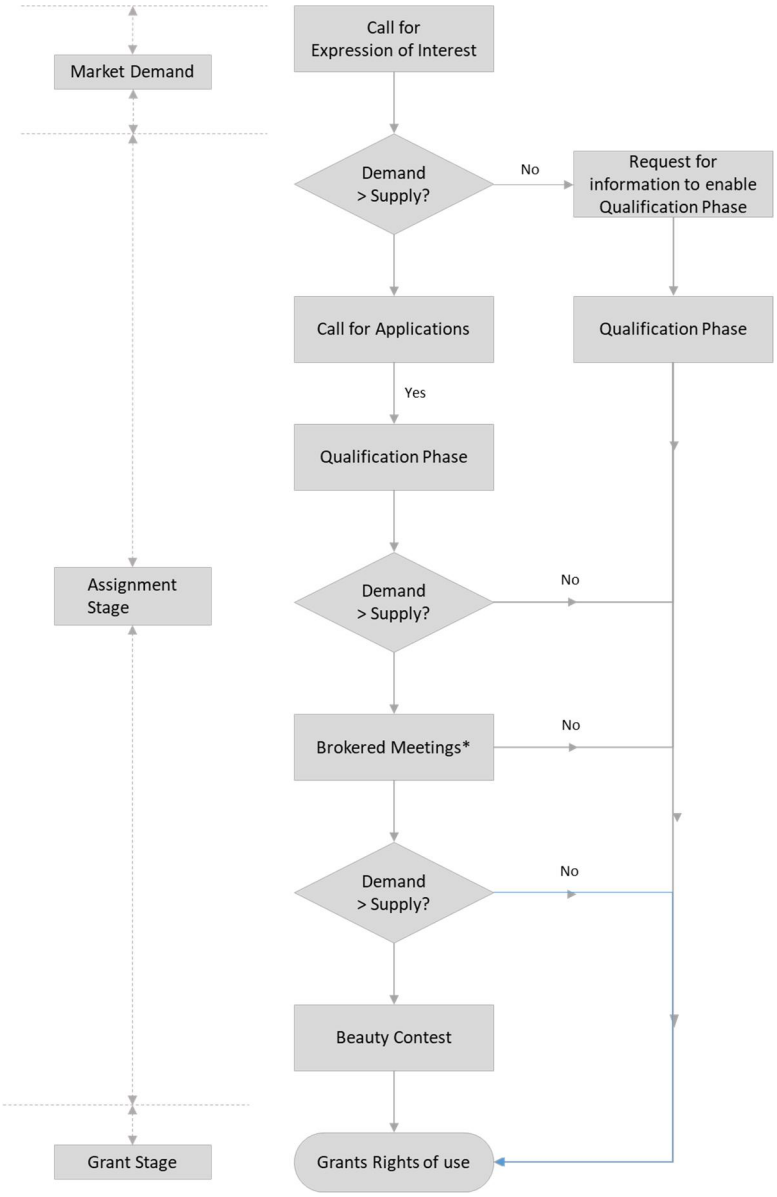
2. **In view of the envisaged DAB market developments as earmarked in your reply to question 1 above, do you consider the proposed spectrum lots and applicable caps adequate for the deployment of a commercial DAB network?**

3. **In view of the existing initiatives aimed to promote the use of DAB technology, such as the mandate of DAB receivers in the car, do you consider any other initiatives that may support the further development of digital radio?**

# 4. Assignment Process and Applicable Criteria

The MCA proposes to adopt the assignment process highlighted in Figure 1 below.

*Figure 1 Overview of the spectrum assignment process*



## Stage 1 – Market Demand

Upon publication of its final Decision that establishes the framework for spectrum assignment, the MCA will wait for a formal expression of interest in writing to acquire the rights of use of spectrum for any amount of spectrum lots available in this process before initiating the assignment process.

The MCA shall, in the absence of an expressed market demand and in order to protect the interests of listeners, reserve the right to issue an invitation for the expression of interest of the assignment of the rights of use of spectrum for the purposes of setting up a DAB network.

The MCA shall publish a notice announcing the receipt of such request together with an Expression of Interest inviting interested parties to express their interest in acquiring spectrum suitable for setting up a T-DAB network as listed in this Consultation. This process will run for a period of at least two (2) weeks.

## Stage 2 – Formal submission to acquire the rights of use of spectrum

The process will launch a formal Call for Applications ('Call'). Interested stakeholders will be required to submit the following:

a) a non-refundable application fee;
b) an appropriate bid bond/performance guarantee. The bid bond is intended to ensure an applicant's commitment to the assignment process, lasting up to the award of a grant of rights of use. In the case of unsuccessful applicants, the bid bond will be released at the end of the assignment process once the successful applicant or applicants have been announced. In the case of successful applicants, the bid bond will be maintained as a performance guarantee. The performance guarantee will serve as evidence of good faith to guarantee that the licensee will honour the winning bids and will abide by the licence conditions;
c) an appropriate deposit which will be reflective of the first-year spectrum fees due and the applicant's spectrum requirements; and
d) Other necessary documentation that is relevant for the assessment criteria as established by the MCA.

During this stage, applicants will be requested to express their preferences towards specific lots and the respective frequency channels as identified in table 4 above. The Call shall establish the documentation that would need to be submitted by the applicant.

## Stage 3 - Qualification Phase

The assignment process aims to identify the applicant who is best positioned to maximise the use of the spectrum by building infrastructure available nationwide and strengthening competition in the electronic communication sector or, more specifically, in the digital audio broadcasting networks and services. This qualification phase will not rank any of the applicants, but will instead consist of a pass or fail result based on a set of criteria that are intended to ensure that an applicant has the technical and financial capabilities to meet the minimum requirements associated with the rights of use of spectrum. While the final list of documentation that will be necessary to support the phase will be published in the call for application, this Consultation will focus on the main elements that make up the qualification phase.

Applicants for the spectrum licence will be required to successfully pass and demonstrate to the satisfaction of the MCA, the following:

a) **A due diligence** process carried out in which the credentials of the applicants for spectrum are established and verified;
b) A **technical assessment** of the proposal during which the MCA will validate the proposal against the technical requirements listed in Section 5 of this Consultation. This process will also attest to the technical competence of the applicants;
c) A **commercial assessment** of the long-term business plan that will enable the execution of the technical solution presented in b) above while ensuring healthy returns for the applicant throughout the whole operating period of the spectrum licence;
d) **The capacity to access finance** that is necessary to execute the business plan to completion; and

e) **The capacity of the applicant to factor adequately consumer interests and protection in order** to minimise disruption to existing T-DAB listeners.

Following the qualification phase, the MCA will reassess the demand for spectrum, and the process will proceed as follows:

a) Should there be no single applicant that passes the qualification stage, then the process is suspended for a period of one (1) month, thus allowing the applicants to revise their application. Following this period, and after any necessary reassessments as the MCA may consider necessary, should the process conclude with no valid applicants, the process will be closed off and will only be reinitiated **when new demand from the spectrum is received;**
b) Should the demand be less than or equal to the supply, then the MCA will proceed with a direct assignment; and
c) Should the demand exceed supply, the MCA will proceed to a competitive assignment process.

## Stage 4 - Brokered Meetings

In the eventuality that demand for spectrum exceeds supply, the MCA reserves the right to hold brokered meetings with those applicants holding a valid application. During the brokered meetings, the MCA would seek to establish a single agreement that could satisfy the needs and expectations of all applicants. In conducting the brokered meetings, the MCA will consider the actual spectrum requests, the technology, and the service planned to be delivered. To facilitate the negotiations and to protect the commercial interests of the parties involved, all brokered meetings shall be held privately.

If a proposal is accepted by all the parties, then the MCA would grant the rights of use of spectrum according to the agreement reached. All agreements reached during the brokered meetings shall be binding and shall form part of the licence conditions.

In the eventuality that either no agreement is reached between the qualified applicants and the MCA, or the MCA decides not to hold brokered meetings, a competitive selection process

shall be necessary. The MCA proposes that this process shall take the form of a beauty contest.

## Stage 5 – Competitive Process - Beauty Contest

The MCA proposes that if the demand for spectrum exceeds supply, a beauty contest is held out amongst applicants to establish those applicants that can provide the best technical, social and economic value for the rights of use of spectrum. While the validation process would focus on the ability of the applicants to meet the minimum criteria for the rights of use of spectrum, as will be established in the final Decision of the MCA subsequent to the conclusion of this Consultation ('MCA Decision'), at the Beauty Contest stage, applicants are expected to pledge on improving on the minimum level of service and prove their technical and financial ability to fulfil their pledges.

The rules establishing the procedure of the Beauty Contest, including the weighting and grading of the different measures, will be published at a later stage if necessary.

Following the publication of the said rules, the MCA will allow sufficient time before the actual beauty contest starts, during which applicants are entitled to withdraw their application without losing their bank guarantee. Beyond this stage, once applicants have been invited to submit their documentation to participate in the Beauty Contest, applicants may not withdraw the process without being forfeited the bank guarantee.

## Stage 6 – Grant Stage

At this stage, the applicants reaching the grant stage would be assigned the rights of use for the lots and respective frequency channels as indicated in their formal submission.

## Future of unassigned spectrum

In the eventuality that spectrum lots remain unassigned, the MCA proposes that the unassigned spectrum will remain available to any interested party subject to the same conditions as listed in the MCA Decision establishing the assignment spectrum conditions.

Should future interest be expressed for the  Lots in question, the process outlined above will be initiated.

## Consultation Questions

4. ***What are your views on the proposed competitive assignment mechanism (beauty contest) as adopted in the underlying spectrum assignment framework?***

# 5. Conditions for the Rights of Use of Radio Spectrum

In this section, the MCA proposes the technical and operating conditions that will eventually be attached to the spectrum licence. The conditions of the rights of use of radio spectrum are additional to any other obligations applicable to all authorised undertakings, including but not limited to the provision of access and interconnection (including infrastructure sharing) and 'must carry' obligations in line with applicable policies and procedures the MCA may establish.

In proposing the following conditions, the MCA seeks to strike a balance between the inherent need to ensure the efficient use of spectrum while minimising the deployment costs against the need to deliver a high-quality product and service to the end-user.

The design of a broadcasting network for digital audio services is typically characterised by the technology used for the radio frequency network setup and the technology that encodes the data carried by the RF network. The RF broadcast transmission network technology primarily determines the maximum possible bit-rate per unit of spectrum in balance with the level of service resilience against possible interference. The information encoding technology determines the amount of bit-rate necessary to encode the audio at a given level of audio quality. These factors correlate with the number of transmitting stations that can be carried on a single multiplex.

The technical conditions which will be associated with the spectrum are more relevant to the RF broadcast transmission network technology. The planning objectives of the RF network may be summarised by the following:

1. Obligation to reach coverage targets set out in the licence conditions;
2. Obligation not to cause interference to other countries;
3. EMF Obligations;
4. Desire to protect the network from any incoming interference; and
5. Overall network costs.

The solutions that address the objectives highlighted above may somewhat conflict with each other. For instance, the drive to reach coverage obligations may direct the network designer to increase the transmission power, hence increasing the signal reach. However, the increase in power is typically limited by the obligation not to cause interference to third countries and not to cause harmful EMF emissions. The limitation on transmitting power may eventually result in an increase in the number of signal transmitters to reach adequate signal coverage, thus increasing network costs. Therefore, a delicate balance between the target objectives is an inherent requirement to achieve a functional and financially feasible network design.

As part of the qualification stage of the assignment process, the MCA will test the ability of the potential network operators in achieving these objectives. Given that at this stage, there will be no active networks[15] that could be physically measured, the MCA will request the applicants to provide details of network plans as part of the call for applications for spectrum. The MCA will then assess these network plans using network coverage simulation tools. Proposals that do not meet the license requirements outlined below will be rejected.

The obligations to be attached with the license of this spectrum shall only deal with the first three objectives in the list above.

## Use of Radio Frequency

Digital Audio Broadcasting ('DAB') is a digital radio standard for broadcasting digital audio radio services developed by the WorldDAB consortium and published by ETSI as EN 300 401. The standard is built around a core that defines the coding, modulation and transmission system parameters and offers both streaming and packet services to deliver content. Typically, the streaming service is suitable for audio broadcasting, while packet transmission is suitable for data services such as the EPG, station information, traffic services and others.

There are two audio encoding methods available for DAB. The DAB Audio and DAB+. DAB Audio, which utilises MPEG Audio Layer II encoding, has been widely superseded with HE-

[15] In the eventality that a proposed network is set up and active, the MCA reserves the right to consider the performance of the network as part of its assessment.

AACv2 audio encoding system (as used in DAB+), given the better encoding efficiencies gained. Therefore, all things being equal, a DAB+ audio encoding can carry more radio broadcasting stations than DAB Audio audio encoding for the same level of audio quality. A DAB network can transmit both types of audio encoding streams, even simultaneously; however, in such a case of simultaneous DAB audio encoding technology transmission, a DAB+ receiver would still be necessary since a DAB Audio receiver is not capable of decoding a DAB+ audio stream.

As for T-DAB deployments, DAB is the standard of choice across most European countries, where there is a clear shift towards the use of DAB+ audio encoding, mainly for efficiency reasons. This is witnessed by the deployment of new DAB+ multiplexes and upgrades to existing DAB Audio multiplexes over the past years.

In Malta, the current digital radio network has been deployed using DAB+ technology, and hence Malta has been enjoying higher efficiencies from the inception of such a service. In view of the advantages offered by DAB+ technology, the MCA does not foresee any value in deploying a digital radio network using DAB technology. Any DAB Audio deployment will eventually be both a technological regression and will also result in spectrum inefficiencies. Therefore, the MCA proposes that the allowed encoding of audio over the digital audio broadcasting network shall only be HE-AACv2 (DAB+).

DAB technology is also capable of carrying digital multimedia broadcasting (DMB). DMB allows the transmission of video services and also offers two profiles. Both profiles make use of the same video encoding tool, H.264, which is also a high-efficiency encoder. The use of the T-DAB network to deliver DMB is also permissible.

This proposal also reflects the efforts required from car manufacturers and importers who, through a recent amendment to the law are required to use DAB+ receivers for all cars placed on the market for sale or for rent in Malta.[16]

[16] See LN 151 of 2020.

The licensee shall use radio frequency spectrum only to establish and operate a terrestrial network using a Single Frequency Network[17] configuration capable of providing electronic communication services suitable for digital terrestrial sound broadcasting services and other ancillary services which are supported under the DAB standard.

In carrying broadcasting content from their respective providers, the network operator should not refuse the broadcast of any such complimentary services together with further services related to the broadcasting of sound signals when these are made available.

In addition, given the obligations imposed by the European Commission concerning the equivalence of access to electronic communications services by disabled end-users[18], the broadcasted signal shall be capable of delivering its audio and data streams, where applicable, concurrently without any significant degradation on the quality of the broadcasted stream. Such technical conditions shall allow the broadcasting of information that will facilitate the experience of disabled end-users.

## Coverage Obligations

The planning of broadcasting networks is generally based on the premise that receiving antennas are fixed and are installed at a height of 10m above ground level. However, the typical T-DAB receivers are either portable receivers or are installed in cars. In either case, the planning conditions of fixed antennas placed at 10m above ground level are not applicable.

The GE06 agreement provides two sets of planning configurations RPC-4 for the mobile reception case and RPC-5 for the portable indoor reception case. Table 5 below presents the key planning parameters associated with both RPCs. These planning parameters shall be considered as the reference guidelines since adjustment might be necessary to cater for the local environment that has an impact on signal propagation.

[17] Single-Frequency Network (SFN) as per Recommendation ITU-R-BT.1306 - A single-frequency network is a broadcast network where several transmitters simultaneously send the same signal over the same frequency channel.

[18] See Article 114 of the EECC

*Table 5 Key parameters of RPCs*

| **Reference planning Configuration** | **RPC 4** | **RPC 5** |
|---|---|---|
| Location probability | 99% | 95% |
| Reference C/N (dB) | 15 | 15 |
| Reference $(E_{med})_{ref}(dB(\mu V/m))$ fr = 200MHz<br><br>Antenna height of 10m[19] | 60 dB µV/m | 66 dB µV/m |

The MCA considers that reliable reception conditions will boost confidence in the T-DAB network, thus providing towards the reputation of the service and hence potential growth in terms of listeners. Planning to achieve a good signal reception both outdoors, including mobility, and indoors are equally important. These two planning conditions are reflected in RPC4 and RPC5, respectively. However, the MCA also notes the while it is ideal that networks should aim towards reaching the radio network conditions listed under RPC5, the MCA also acknowledges that there are significant challenges along the way, especially if these are to be achieved in relatively short time frames. Therefore, the MCA proposes that reaching network conditions that match RPC 4 should be an interim milestone.

The MCA proposes that the network provider shall achieve network conditions that meet RPC 4 for 95% of the Maltese island within the first eighteen months following the award of the rights of use of spectrum. The coverage conditions relative to reach the conditions associated with RPC 5 shall be contemplated at the time when the spectrum licence is renewed.

[19]Signals measures at antenna height of 1.5m are expected to be 12dB lower. Figures are quoted at 10m AGL to denote expected signal strength during testing and measurements

In adopting the mobile reception mode for T-DAB, the Reference Planning Configuration (RPC 4) as established in the GE06 Agreement shall be deemed appropriate, where the equivalent median field strength for mobile antenna reception shall be used. The reference value for minimum median field strength indicated for RPC 4 at a frequency of 200MHz (Band III) is quoted as 60 dB μV/m. An area is considered to be covered with a T-DAB signal if the measured signal strength at the height of 10m above ground level reaches or exceeds the quoted signal level.

The assessment of coverage obligations is carried in two stages. The first stage would be carried out as part of the qualification phase of the application process. At this point, the applicant shall provide the MCA with an estimate of the network coverage attainable with the proposed network. Based on the submissions by the applicant and based on prediction models using commercially available tools, the MCA shall assess the coverage claims by the applicant. Any proposal which does not meet the coverage criteria will be eliminated from the process.

A second assessment will be carried out after the licence award as part of the compliance checks of the licence conditions. This assessment will take the form of outdoor signal measurements across Malta and Gozo. Additional assessments may be carried out by the MCA during the lifespan of the network to ensure continuous adherence to the spectrum licence conditions.

## Applicable criteria for the avoidance of harmful cross-border interference

As stated earlier in this Consultation, transmissions of signals for the provision of terrestrial broadcasting services is also subject to regulations adopted within the framework of the ITU to avoid risks of harmful cross-border interference. In this respect, it should also be stated

that under the EECC, Member States are required to use the radio spectrum efficiently and avoid harmful interference. [20]

The MCA proposes that T-DAB networks are assessed to ensure that they will not cause any undue cross-border harmful interference. This assessment will be carried out both during the Assignment process and throughout the duration for the spectrum rights of use.

The MCA's objective in carrying out the qualification phase during the spectrum assignment process is to ensure that the applicants have the necessary abilities to design a T-DAB network that can meet the coverage obligations while avoiding cross-border harmful interference. The MCA, however, recognises that the network deployed may somewhat differ from the initially proposed network for the assessment by the MCA due to a variety of reasons. Moreover, the network may evolve over time or be modified during its lifetime. It is pertinent in this regard to note that licensees are required to keep the MCA abreast with the latest developments of their network. The MCA shall then be in a position to maintain its assessments on the conformance with the established licence criteria.

The MCA reserves the right to disqualify any application received if, on the basis of the aforementioned assessment, it concludes that the proposed network would also cause cross-border harmful interference. Similarly, a licence holder may be held in breach of its spectrum license conditions if the MCA, through its network assessment, determines that the deployed network may be creating cross-border interference.

The MCA proposes a single process for validating the network suitable both during the application stage and during the licence term. During the application stage, it is unrealistic to expect an applicant to roll out a network before being granted a spectrum licence. On the other hand, networks that are rolled out could not be extensively tested for third-country interference since the test area is inherently huge. Therefore, the MCA proposes that the assessment of the network is primarily based on simulation data. If a network is rolled out, the MCA may, at its discretion, refer to data taken from the implemented network to complement simulation data. The MCA shall request all the necessary information from the

[20] See EECC Article 4.

applicant or the spectrum licence holder to run network coverage simulations using commercial simulations tools available on the market and configured to be compliant with the requirements of the GE06 Agreement.

Network coverage simulation tools require as input (a) a network configuration, complete with transmitter location (geographical coordinates and antenna height), transmitting power (ERP), and antenna details and (b) maps of the area to be simulated, including topographical details listing the earth's features including land use. One of the outputs of network simulators is a map of the area of interest showing the signal strength expected to be received from the transmission network.

Recommendation ITU-R *P.1546 – Method for point-to-area predictions for terrestrial services in the frequency range 30MHz to 4000 MHz*[21], describes a method for point-to-area radio propagation for terrestrial services for a range of frequencies, including the VHF band III. This model is suitable to simulate networks that use transmitters that are less than 3000m in height and over long-distance paths not exceeding 1000 km in length stretching over the land, sea and a mix of both. This model is recommended to assess the impact a network has on third countries however is not suitable to determine radio coverage within the country (local coverage). A number of implementations of the ITU model in P.1546 are available on commercial platforms. Simulation tools, including those implementing P.1546, although configured with the same parameters, could provide slightly different results. This could be attributed to a number of factors, such as the cartographic data, especially when assessing signals over mixed paths. In order to minimise any discrepancies in the outcomes arising from the use of different simulation tools, Annex 2 of this Consultation proposes the details on how the propagation model within the simulation tool shall be configured during the network coverage simulation exercise.

For the MCA to be able to carry out the cross-border interference assessments on the respective T-DAB networks, the MCA shall require:-

a) a description of the network in a format as specified in Annex 3,
b) the simulated radio propagation charts covering 1000km from Malta, and

[21] https://www.itu.int/dms_pubrec/itu-r/rec/p/R-REC-P.1546-6-201908-I!!PDF-E.pdf

c) the simulated received field strength level at each of the test points listed in Annex 1.

The MCA shall confirm the submitted results from simulation against the simulation of the proposed network undertaken by the MCA on a commercially available implementation of the ITU P.1546 prediction model, which is suitably configured according to Annex 3. The MCA's final assessment of the technical capabilities of the network being assessed will be guided by the output of such a simulation.

The MCA, as a spectrum administrator, liaises with the ITU in the domain of the international management for the radio frequency spectrum. The ITU provides spectrum administrations with tools that utilise the P.1546 prediction model to determine the coordination zones and calculate the impact on existing networks as registered with the ITU in the relevant plans. The use of these tools is restricted only to national administrations.

Since the ITU prediction tool is not publicly available, the MCA shall separately simulate the networks under assessment using the ITU tools available at the time and provide the simulation results to the applicant or licensee only for reference purposes. As stated earlier, while the MCA will be conducting its assessments using the simulation results produced by a commercially available tool, the MCA may also refer to results obtained through the ITU simulation tools. These tools also indicate any corrective action to be applied to the configuration to avoid interference in a neighbouring country.

In the eventuality that such assessment is carried out as part of the assessment of a hypothetical network setup, then the outcome of the tool refers to actions that should be undertaken when implementing the network after the rights of use are granted. In this case, where the applicant does not consider such requests as fair and reasonable, the applicant may, subject to a valid justification, quit from the assignment process without incurring any penalties.

In the eventuality that such assessment is carried out as part of the assessment of an existing network setup during the lifetime of the network, then the licensee shall be required to abide by any direction given by the MCA for the purposes of meeting Malta's international obligations as regards to the avoidance of harmful interference.

## Non-interference conditions related to Channel 12A

Channel 12A is registered for use in the GE06 Agreement. Annex 1 lists the basis of the existing agreement. This is based on a single 35dBw transmitter having an established antenna radiation pattern and effective antenna height to match the topography of the location of the transmitter and its surroundings. The registered network is a reference network solely intended to express the transmission limitations which needs to be adhered to when transmitting the channel. The reference network does not in any way represent any active T-DAB network in Malta, nor does it denote a requirement to implement such a network.

The MCA simulated the reference network using its propagation tools configured to meet the relevant parameters set out in the GE06, including those related to Recommendation ITU-R P1546. A number of test points were established at the border of third countries, and the simulated received signal level was recorded and is provided as a guideline in Annex 1 of this Consultation. A network will be considered compliant with the GE06 Agreement if the simulated received signal levels do not exceed the values as reflected in the respective test points.

## Non-interference conditions related to the use of remaining channels

While the remaining channels are not registered under the GE06 Agreement, Malta has secured coordination agreements with Italy, allowing for the use of this spectrum from 1st July 2022. This agreement establishes a coordination zone that includes the territory of Malta and Gozo and all the provinces of Sicily, excluding the provinces of Palermo and Messina, as indicated in Annex 4. This agreement provides Malta with the rights to use spectrum subject to the condition that any signal originating from Malta carried over the channels listed under this agreement does not reach any land-based territory beyond the coordination zone with a

field strength greater than the coordination trigger field strength[22] as defined in the GE06 Agreement and established at 12dBμV/m and 17dBμV/m for T-DAB and DTT respectively falling in Band III.

## Harmful Interference and EMF Obligations

All wireless networks operators are legally bound to ensure that their networks do not cause harmful interference to other networks providing similar services or services of other nature provided in the same or adjacent band.

In addition, the T-DAB network operator enjoying the rights of use for such spectrum shall ensure that the cumulative non-ionising radiation emissions from its T-DAB network shall comply with any obligations as specified at law and any Decisions or Directives issued by the MCA or any other national competent authority in relation to electromagnetic radiation. Currently, the standards for non-ionising radiation emissions refer to those standards adopted by the International Commission on Non-Ionising Radiation Protection (ICNIRP).

## Must Carry Obligations

The Electronic Communication Networks and Services Regulations (SL 399.28 of the Laws of Malta) grants the MCA the faculty to impose 'must-carry' obligations on broadcasting networks, including digital radio networks. While there are no such obligations imposed on the current T-DAB network, the MCA reserves the right to impose must-carry obligations should these prove to be required as the market develops.

[22] The coordination trigger field strength is defined as the Field-strength which, when exceeded, determines that coordination is required.

## 6. Transfer of Rights

As identified in the National Frequency Plan[23] currently in force, note MLT 09 identifies that rights of use for the respective spectrum that may be transferred or leased to third parties in accordance with the Electronic Communications (Regulation) Act (Cap 399). The 174-230MHz band is not included in MLT09, and consequently, any rights of use falling within this band cannot be traded, assigned or transferred to third parties.

The MCA shall be notified of any impending repossession of spectrum rights in this band. No repossession of spectrum rights may be concluded without the approval of the MCA.

[23] Refer to note MLT09 in the National Frequency Plan - https://www.mca.org.mt/sites/default/files/NFP_edition%206-1.pdf

# 7. License Duration and Renewal

Under the coordination terms agreed between Italy and Malta, except for channel 12A, all of the other spectrum channels listed in Table 2 above shall be available for use from 1st July 2022. Since Channel 12A forms part of the assigned radio spectrum for Malta under the GE06 agreement, this channel is available for use once the term of the current licence expires.

Such a misalignment in the availability of the respective radio spectrum implies that if the corrective intervention proposed in this section is implemented, radio transmission happening during the interim period between 22nd March and 30th June 2022 using any of the assigned radio spectrum channels (except for Channel 12A) will have to be carried out under a non-interference and non-protection basis. Such conditions will result in inferior transmission parameters to those established under the Italy-Malta Coordination Agreement. Furthermore, such radio transmissions would necessitate additional temporary network planning by the network operator to mitigate any possible significant interference generated towards Italy during such time. The MCA considers such a process as burdensome on the network operator when taking into consideration the short period of time during which these restrictions apply.

On considering that:

(i) the current demand for radio broadcasting is serviced using three frequency channels,

(ii) the current provider for T-DAB is already operating its network under the conditions prevalent between 22nd March and 30th June 2021, and

(iii) a potential future network may be operating using as much as six frequency channels,

the MCA observes that there is a potential risk whereby during the aforementioned interim period the T-DAB service may be offered on only one frequency channel (Channel 12A). Undoubtedly, such an approach may be potentially harmful to the local digital radio service.

This aforementioned risk increases if a new provider is requested to operate a T-DAB network during the interim period.

Upon considering the long-term duration of the rights of use of spectrum, the MCA deems it reasonable to propose to extend the current rights of use until 30th June 2022, under the same conditions of the existing spectrum licence, including the payment of relevant spectrum fees. Such an extension is without prejudice to the current licence holder formally expressing in writing its agreement to the extension of the said licence.

All new licences for the right of use of DAB radio spectrum shall then have a commencement date from 1st July 2022 at the earliest or when the spectrum is made available.

The MCA considers that these proposals strike the right balance, addressing the well-being of the end-users of the T-DAB radio and the need to offer all potential applicants spectrum that is immediately available for the establishment of a T-DAB network without impinging on the useful lifespan of the spectrum.

If the extension of the existing licence is not possible, then the MCA shall issue licenses for the rights of use of the respective spectrum with a commencement date of 22nd March 2022. The licence conditions for the rights of use for such spectrum shall, however, state that the licensees will, except for Channel 12A, apply an appropriate reduction in the transmission power during the interim period 22nd March 2022 and 30th June 2022 to meet the non-interference requirements applicable during this period. Such conditions shall guarantee the avoidance of cross-border interference. Any stakeholder interested in acquiring the rights of use of the spectrum and who is interested in transmitting radio signal before the 1st July 2022 will be required to indicate its intentions in its application providing the MCA with additional details on mitigation measures aimed to avoid cross-border interference during this period, which plans will be duly studied.

The rights of use of spectrum shall be initially assigned for an eight (8) year period.

## Renewal of Spectrum Licence

The holder of the rights of use of spectrum shall have the right of having its spectrum licence renewed on a perpetual basis provided that:

a) The provider is not found in breach of the licence conditions;
b) There is excess spectrum resources either immediately available or kept in reserve such that the MCA may satisfy all those demands for spectrum suitable for T-DAB that are formally raised with the MCA; and
c) The conditions of the renewed spectrum licence shall be reviewed through a public consultation process. This consultation process shall be initiated not later than two years from the end of the term of the spectrum licence. The conditions for renewal shall serve as a minimum to define (i) coverage obligations, (ii) spectrum fees, (iii) the term of the new licence and (iv) the terms for the next renewal, including any applicable timelines for the consultation process suitable to discuss the term of the next renewal.

## Consultation questions

**5. Do you have any reservations on the proposed extension of the current licence term by approximately three months as proposed in the Consultation. If yes, kindly substantiate your feedback with the reasons why in your opinion, the MCA should not adopt such an approach.**

**6. What are your views on the proposed licence renewal process, where subject to a number of conditions, the rights holder of the spectrum will be allowed to renew the licence on a perpetual basis?**

## 8. Spectrum Pricing

On assignment of the spectrum licence, the licensee (s) shall be liable for the full amount of usage fees for all the spectrum channels assigned for the whole term of the licence. The payment of such fees is structured such that these are to be paid on an annual basis at a yearly rate as established in the Eighth Schedule of the Electronic Communications Networks and Services (Regulation) (S.L.399.28), currently set at two thousand, three hundred and twenty-nine Euros and thirty-seven cents (€2,329.37) for each channel of 1.536MHz bandwidth in the 174-230MHz band.

In the eventuality that the Government decides to alter the price of the respective spectrum while the assignment process is still in progress, **but not yet concluded**, prospective bidders or licence holders will have the right to either exit from the spectrum award process without incurring penalties or accept the new price and proceed with the assignment process.

# 9. Submission of Responses

In accordance with its obligations under Article 4A of the Malta Communications Authority Act, Cap. 418 of the Laws of Malta, the MCA welcomes written comments and representations from interested parties and stakeholders during the national consultation period, which shall run from 26th August 2021 till 6th October 2021.

The MCA 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 MCA may publish a list of all respondents to this Consultation on its website within three working days following the deadline for responses. The MCA will take the necessary steps to protect the confidentiality of all such material as soon as it is received, in accordance with the MCA's confidentiality guidelines and procedures[24]. Respondents are, however, encouraged to avoid confidential markings wherever possible.

All responses should be submitted electronically to the MCA, in writing and addressed to:

Chief, Spectrum Management and Technology

Malta Communications Authority

Valletta Waterfront, Pinto Wharf,

Floriana, FRN1913 Malta.

Email: spectrum.mca@mca.org.mt

[24] http://www.mca.org.mt/sites/default/files/articles/confidentialityguidelinesFINAL_0.pdf

Extensions to the consultation deadline will only be permitted in exceptional circumstances and where the MCA deems fit. The MCA 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 – T-DAB stations registered for Malta under the GE06

This Annex provides all the necessary information relating to the reference network for T-DAB stations registered for Malta in the GE06 Agreement.

In addition, this Annex refers to the following accompanying documents:

a) Accompanying Document 1 – Presents the details of the transmitting stations, which are listed in the GE06 Agreement. The reference network referred to in Section 5 is composed of all transmitters operating simultaneously as an SFN network.
b) Accompanying Document 2 – Presents a simulation of the reference network with the transmitting powers set at the registered power (35 dBW). This is accompanied by a total of 360 test points, each set at one-degree intervals representing the border where the trigger field strength is reached. In order to assist the applicant in fine-tuning their network, the MCA proposes to publish two more simulations of the same reference network using transmission power set at +3dB and -3dB during the assignment stage.

Table 6 below lists the details of the transmitting station and its location as registered in the GE06. The complete set of details is provided in Accompanying Document 1.

| **Transmitter Name** | **Latitude**<br><br>**DDMMSS** | **Longitude**<br><br>**DDMMSS** | **Transmitting Channels** |
|---|---|---|---|
| Gharghur | 355459 | 142659 | 12A |

*. Table 6 List of Transmitters, location and transmitting frequency*

Table 7 below provides the list of fields and their description relevant to the data included in Accompanying Document 1.

| No | Data item |
|---|---|
| 1 | Plan entry code (1 – Assignment, 2 – SFN, 3 – Allotment, 4 – Allotment with linked assignment(s)) and SFN_id, |
| 2 | Name of the location of the transmitting station |
| 3 | Latitude (±DDMMSS) |
| 4 | Longitude (±DDDMMSS) |
| 5 | Altitude of site above sea level (m) |
| 6 | Reference Planning Configuration |
| 7 | Centre Frequency |
| 8 | Polarisation (H – Horizontal, V – Vertical, M – Mixed, U – Unspecified) |
| 9 | Maximum effective radiated power of the vertically polarised component in the horizontal plane (dBW) |
| 10 | Antenna directivity (D – Directional, ND – Non-directional) |
| 11 | Height of transmitting antenna above ground level (m) |
| 12 | Maximum effective antenna height (m) |
| 13 | Effective antenna height (m), at 36 different azimuths in 10° intervals, measured in the horizontal plane from True North in a clockwise direction |
| 14 | Antenna attenuation (dB) – vertical: the value of attenuation of the vertically polarised component, normalised to 0 dB, at 36 different azimuths in 10° intervals, measured in the horizontal plane from True North in a clockwise direction |

*Table 7 Description of fields of information as applicable to Accompanying Document 1*

## Configuration for the network coverage software simulation tool

The following are the key points in ensuring proper configuration of tools and correct estimate of the transmission limits to prevent harmful cross border interference.

1. The propagation model is configured into the network simulation tool using the configuration setting in accordance with the GE06 requirements, which are also listed in Annex 2 of this consultation document.
2. The reference network model detailed in Accompanying Document 3 is to be loaded in the simulator and simulated using the power setting of 35dBW per transmitter having all transmitting stations transmitting simultaneously.
3. Using a simulations radius of at least 1000km, the contour plot is established as that region where the trigger field strength is not exceeded. This plot establishes the geographical boundary where the field strength cannot be exceeded.

# Annex 2 – Propagation Model parameters

As discussed earlier, different propagation tools may present a slightly different outcome even when using the same propagation model. The list of parameters necessary to be applied to the propagation model is listed in Table 8 of this Annex.

Any simulations which are carried out using parameters different to those listed in this Annex are automatically invalid.

| **Parameter** | **Setting** | **Remarks/Reference** |
|---|---|---|
| Receiving/mobile antenna height | Enabled | Recommendation P.1546-6, Annex 1, paragraph 10 |
| Time variability | 1% | Recommendation P.1546-6, Annex 1, paragraph 8 |
| Location variability | 50% | Recommendation P.1546-6, Annex 1, paragraph 13 |
| A correction based on tropospheric scattering | Enabled | Recommendation P.1546-6, Annex 1, paragraph 14 |
| Path | Sea, warm | - |
| Transmitting antenna height | Effective antenna height | Recommendation P.1546-6, Annex 1, paragraph 6 |

*Table 8 List of Settings applicable to the P.1546-6 model*

# Annex 3 – File formatting details for communication of network proposals

As indicated in Section 5 of this Consultation, an applicant is required to submit the details of its proposed network to the MCA for its assessment. The MCA shall make use of its network coverage simulation tools to verify the submissions received. As part of the submission, the applicant is to provide details of the proposed network in the format shown in Accompanying Document 3.

Accompanying Document 3 is a sample file that describes the reference model denoted in Annex 1 above.

The details of each field as listed in Accompanying Document 3 can be found in Section 1 of Chapter III of the Preface to the BR International Frequency Information Circular (Terrestrial Services) as published by the ITU[25]

[25] https://www.itu.int/en/ITU-R/terrestrial/brific/Pages/default.aspx

# Annex 4 – Coordination zone between Malta and Italy


*Figure 2 Coordination zone between Malta and Italy*

The figure above depicts the zone which concerns the coordination agreement reached between the Maltese and Italian authorities. This figure applies to all the spectrum channels except for channel 12A. The coordination zone includes the territory of Malta and Gozo and all the provinces of Sicily, excluding the provinces of Palermo and Messina.

## Annex 5 - List of Consultation Questions

1. **How do you envisage the progress on the DAB market uptake and listenership during the next ten years?**

2. **In view of the envisaged DAB market developments as earmarked in your reply to question 1 above, do you consider the proposed spectrum lots and applicable caps adequate for the deployment of a commercial DAB network?**

3. **In view of the existing initiatives aimed to promote the use of DAB technology, such as the mandate of DAB receivers in the car, do you consider any other initiatives that may support the further development of digital radio?**

4. ***What are your views on the proposed competitive assignment mechanism (beauty contest) as adopted in the underlying spectrum assignment framework?***

5. **Do you have any reservations on the proposed extension of the current licence term by approximately three months as proposed in the Consultation? If yes, kindly substantiate your feedback with the reasons why in your opinion, the MCA should not adopt such an approach.**

6. **What are your views on the proposed licence renewal process, where subject to a number of conditions, the rights holder of the spectrum will be allowed to renew the licence on a perpetual basis?**

**Respondents are encouraged to provide additional feedback on any aspect of the Consultation.**

# Annex 6 - Glossary

ECNS – Electronic Communications Networks and Services

ECS – Electronic Communications Services

EECC - Directive (EU) 2018/1972 of the European Parliament and of the Council of 11th December 2018 establishing the European Electronic Communications Code

DAB – Digital Audio Broadcasting

DMB – Digital Multimedia Broadcasting

DTTV – Digital Terrestrial Television

GE06 – Geneva Agreement 2006 (ITU)

(http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/4.129.43.en.100.pdf

ITU – International Telecommunication Union

MCA – Malta Communications Authority