

# THE ASSIGNMENT PROCESS OF RADIO SPECTRUM IN VHF BAND FOR TERRESTRIAL DIGITAL AUDIO BROADCASTING (T-DAB) SERVICES IN MALTA

DECISION PAPER

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## List of Abbreviations

DAB	Digital Audio Broadcasting
T-DAB	Terrestrial Digital Audio Broadcasting
DMB	Digital Multimedia Broadcasting
DTT	Digital Terrestrial
ECNSR	Electronic Communications Networks and Services (General) Regulations
ECRA	Electronic Communications (Regulations) Act
GE06	Geneva 2006 Agreement ( <a href="http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/4.129.43.en.100.pdf">http://search.itu.int/history/HistoryDigitalCollectionDocLibrary/4.129.43.en.100.pdf</a> )
HD	High Definition
ICNIRP	International Commission on Non-Ionising Radiation Protection
ITU	International Telecommunications Union
MCA	Malta Communications Authority
SFN	Single Frequency Network
SL	Subsidiary Legislation

## 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.

The Malta Communications Authority (hereunder referred to as "the MCA" or "the Authority") is hereby publishing its final Decision detailing the assignment process and the relevant licence conditions concerning spectrum channels in the VHF band that shall be made available for 2022 and beyond.

The total spectrum that may be utilised to set up a T-DAB network in Malta consists of a total of fifteen channels, of which six shall be made available with the publication of this Decision paper, while the remaining nine channels will be kept in reserve for future use following further market assessments.

Of the six (6) spectrum channels made immediately available, one (1) spectrum channel forms part of the spectrum channels registered for use by Malta under the Geneva 2006 Agreement (GE 06), while the other five (5) spectrum channels are the result of the negotiation process between Malta and its neighbouring countries concerning the use of additional VHF channels for commercial T-DAB broadcasting.

Between 26<sup>th</sup> August and 6<sup>th</sup> October 2021, the Authority has conducted a public consultation on the proposed assignment process and the relevant licence conditions for this respective spectrum band. DigiB Network, LIFT Broadcasting Limited, Pure Radio, and All Rock Radio Malta provided their feedback in response to this Consultation. This feedback is discussed further in Annex 1 of this Decision.

The publication of this Decision paper concludes the consultation process.

### **The principles underpinning spectrum management:**

The assignment of the spectrum is based on a set of fundamental principles, namely:

- a) Spectrum is a finite resource and must be used effectively and efficiently.
- b) Operators have time-bound rights of use of spectrum without enjoying ownership rights.
- c) A fair, transparent and non-discriminatory competitive assignment process is applied to determine who is entitled to hold the rights of use of spectrum in the eventuality that the demand for spectrum exceeds supply.
- d) A competitive selection process for the award of radio spectrum can be based on either qualitative metrics (commonly known as beauty contest) or quantitative metrics (such as an auction), or a mix of both. The choice of the selection process depends primarily on the spectrum and market conditions.

The above principles underpin the assignment methodology and the licence conditions that are being put forward in this Decision.

# 1. Spectrum Characteristics

## Available Spectrum

There is a total of fifteen channels that are available in Malta that have the technical potential to be used to set up T-DAB networks. Of these, eight channels also have the technical potential to set up two digital terrestrial television (DTT) multiplexes. Government policy<sup>1</sup>, as published in 2009, establishes that VHF Channel 5<sup>2</sup> would be used for the transmission of DTT in high definition (HD) that meets the general interest.

The fifteen channels shall be used as follows

- a) Six (6) channels shall be made immediately available to set up T-DAB networks.
- b) Four (4) channels shall remain available for HD DTT in line with Government policy.
- c) Four (4) channels that could be used for either DTT or T-DAB shall be kept in reserve, pending further analysis of the future of the DTT and T-DAB markets.
- d) One (1) channel is reserved to allow for flexibility in policy options related to digital radio that meets the general interest.

Through this Decision, the MCA is making available on the market a total of six (6) VHF broadcasting channels as listed in Table 1 below.

A review of the policy concerning the reservation of spectrum shall be carried out periodically at least every three (3) years, or earlier as may be required due to developments in the T-DAB or in the DTT markets.

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<sup>1</sup>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-generalinterest-objectives>

<sup>2</sup> VHF Channel 5 is equivalent to channels 5a – 5D as suitable for T-DAB

## Spectrum Lots

The term 'Spectrum Lot' refers to how the available spectrum is grouped into indivisible units. Spectrum considered in this Decision paper is organised in six lots, where each lot consists of a single channel. The minimum number of lots to be assigned is one (1).

The term 'Spectrum Cap' refers to the maximum number of spectrum channels for which the rights of use could be assigned. There are no Spectrum Caps associated with this spectrum. Therefore, there is no limit to the amount of spectrum that can be licensed to a single licensee, provided that the licensee can demonstrate the need for spectrum and its ability to maximise its utilisation and hence ensure the efficient use of spectrum,

Table 1 *Spectrum channels grouped by lots* below denotes the spectrum channels being made available on the market together with their respective lot structure. The information listed in the last column indicates any planning restrictions arising from coordination agreements specific to a particular channel and any other region in Sicily where the specific channel is shared. This information is helpful during the planning stages of the T-DAB network to ensure the avoidance of harmful interference.

*Table 1 Spectrum channels grouped by lots*

Lot	Channel	Frequency	Additional Notes
Lot 1	6A	181.168 – 182.704	Shared with Trapani Coordinated with Italy
Lot 2	6C	184.592 – 186.128	Shared with Trapani Coordinated with Italy
Lot 3	9C	205.584 – 207.120	Shared with Enna and Catania Coordinated with Italy
Lot 4	12A	223.168 – 224.704	Shared with Trapani

			Coordinated under the GE06
<b>Lot 5</b>	12C	226.592 – 228.128	Shared with Trapani Coordinated with Italy
<b>Lot 6</b>	12D	228.304 – 229.840	Exclusive use Coordinated with Italy

## 2. Assignment Process and applicable criteria

The assignment process for the aforementioned spectrum lots is depicted in Figure 1 below.

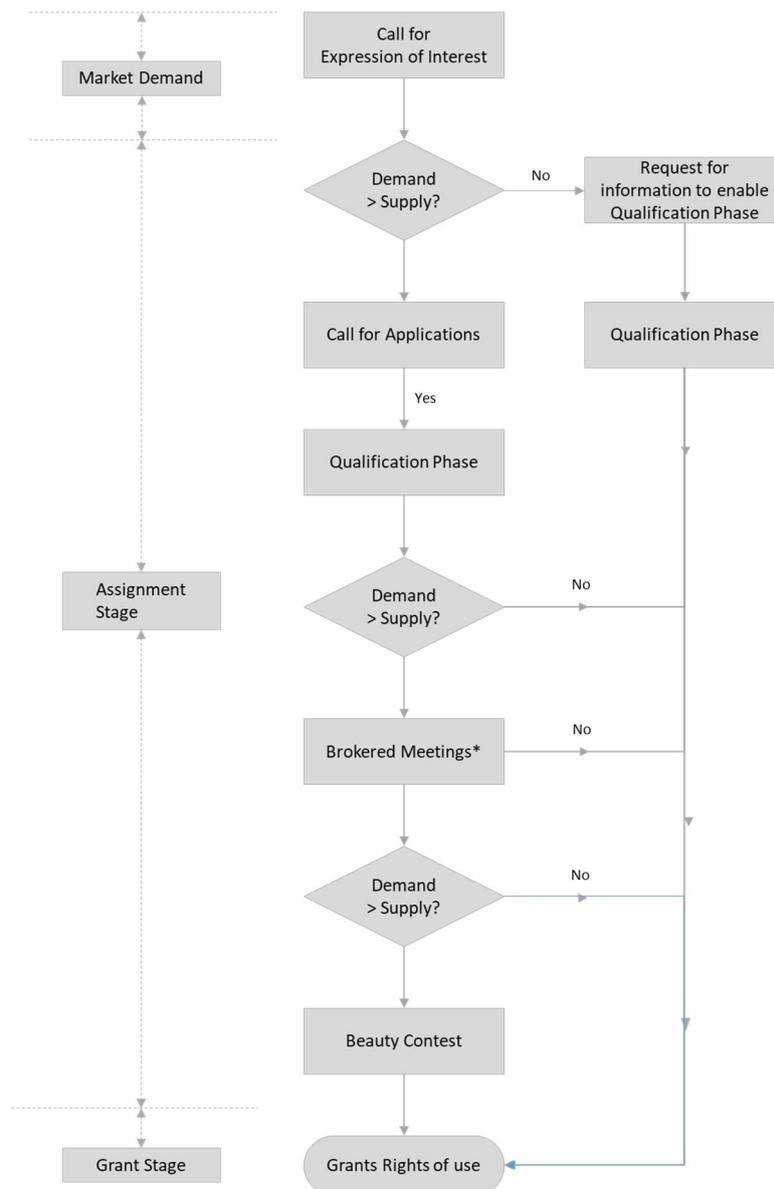


Figure 1 Overview of the spectrum assignment process

## **Stage 1 – Market Demand**

The market demand stage commences immediately upon publication of this Decision (MCA/D/21 - 4460) establishing the framework for the assignment of the rights of use of spectrum suitable for T-DAB. The MCA shall 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 of the T-DAB network, 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.

Upon receipt of an expression of interest in acquiring the rights of use of any of the spectrum lots listed in Table 1 above, the MCA shall publish a notice stating the receipt of an expression of interest, further inviting interested parties to express their interest in acquiring spectrum suitable for setting up a T-DAB network. This process shall 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, the value of which will be published in the Call;
- 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. 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. The value of the bid bond will be published in the Call;

- 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 choosing from any lots listed in Table 1 that would be available during the process. The Call shall detail the list of any documentation that would need to be submitted by the applicant.

### Stage 3 - Qualification Phase

The Authority shall assess all the documentation provided on the basis of a set of objectives listed hereunder. 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. The final list of documentation that will be necessary to support this phase will be published in the Call.

Applicants for the spectrum licence will be required to successfully pass by demonstrating to the satisfaction of the MCA their proficiency in the following areas:

- 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 adequately cater for the protection of consumer interests and rights in order** to minimise disruption to existing T-DAB listeners.

At the end of 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 resubmissions of documentation by the parties, and further assessments by the MCA, should the process still conclude with no valid applicants, the process will be closed off and will only be reinitiated **when new demand for 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. At its discretion, the MCA may hold brokered meetings as indicated in Stage 4

#### **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 in the form of a beauty contest as described in Stage 5 below shall be held.

### **Stage 5 – Competitive Process - Beauty Contest**

If the demand for the rights of use of spectrum for T-DAB is greater than the available spectrum, a beauty contest will be held. During this process, all valid applicants will be invited to submit their pledges on how they intend to improve their offer over and above the minimum level of services established in this Decision. In addition, applicants will also be required to provide the necessary documentation on how they intend to support their pledges, both financially and technically.

The rules establishing the procedure of the Beauty Contest, including the weighting and grading of the different areas of focus, will be published should the need arise. The MCA shall allow applicants to assess these rules for at least five (5) days, during which period applicants may withdraw the process without losing their bank guarantee. Beyond this period, once applicants have been invited to submit their documentation to participate in the Beauty Contest, they may not withdraw the process without forfeiting 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. During this stage, the Authority will take utmost account of the preferences expressed by the applicant during the process.

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

### 3. Conditions of Rights of Use of Radio Spectrum

The technical conditions associated with the rights of use of spectrum are specified in this section which can be summarised as follows:

1. Use of Radio Spectrum.
2. Network Coverage Obligations.
3. Obligation not to cause interference to other countries.
4. EMF Obligations.

These conditions are valid throughout the entire duration of the spectrum licence.

#### Use of Radio Spectrum

The licensee shall use radio frequency spectrum only to establish and operate a terrestrial network using a Single Frequency Network<sup>3</sup> 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 as developed by the World DAB consortium and published by ETSI as EN 300 401.

In order to ensure spectral efficiency, the T-DAB networks in Malta shall be only allowed to make use of HE-AACv2 (DAB+) encoding. Therefore, the use of MPEG-Audio Layer II shall not be allowed.

In transmitting Digital Multimedia Broadcasting (DMB) service, the T-DAB network may adopt any of the two available profiles listed in the standard.

There are no further restrictions on the transmission of other related ancillary and data services that are supported in the DAB standard.

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<sup>3</sup> 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.

In carrying broadcasting content from their respective providers, the licensee should not refuse the carriage of any complimentary services related to the broadcasting of sound signals when they 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<sup>4</sup>, 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

Coverage obligations shall be benchmarked against both the RPC 4 planning and RPC 5<sup>5</sup> planning configurations that are listed in Table 2 below

Table 2 Reference Planning Configuration

Reference Planning Configuration	RPC 4	RPC 5
Location Probability	99%	95%
Reference C/N (dB)	15	15
Reference $a(E_{med})_{ref}(dB(\mu V/m))$ at Antenna height of 10m	60 dB $\mu V/m$	66 dB $\mu V/m$

An area is considered to be covered with a T-DAB signal sufficient to match the requirements of either RPC 4 or RPC5 when the measured signal strength at the height of 10m above ground level reaches or exceeds the relevant levels as quoted in Table 2 above.

<sup>4</sup> See Article 50 of S.L 399.48 of the Laws of Malta

<sup>5</sup> The GE06 agreement established RPC4 and RPC5 as planning configurations for T-DAB aiming at establishing mobile reception and portable indoor reception respectively.

Territorial coverage requirements for T-DAB is spread over thirty-six months, with an interim milestone assessed after 18 months.

Licensees are required to reach the requirements of RPC 4 over at least 95% of the territorial area of Malta and Gozo within eighteen (18) months from the award of the spectrum licence.

In addition, within thirty-six (36) months from the award of the spectrum licence, the licensee or licensees are required to reach T-DAB coverage levels as specified under RPC-5 for 95% of the islands of Malta and Gozo, excluding all of the unbuilt up areas as indicated in Annex 7

An assessment of the coverage achieved by the spectrum licence holder shall be carried out by the Authority initially after eighteen (18) months after the licence award date as part of the compliance checks of the licence conditions. A separate assessment shall be carried out after thirty-six (36) months from the award of the spectrum licence.

Both assessments will take the form of signal measurements across the islands Malta and Gozo.

The coverage obligations shall apply equally to all spectrum channels.

### **Applicable Criteria for the avoidance of cross-border harmful interference**

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.<sup>6</sup>

The MCA shall assess T-DAB networks to ensure that these will not cause any undue cross-border harmful interference. Separate assessments will be carried out during the Assignment process and throughout the duration of the spectrum Licence.

In carrying out its assessment, the MCA shall adopt the process as listed in Annex 2.

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<sup>6</sup>See also article 31A of Cap. 399 of the Laws of Malta which reflects Article 4 of the EECC.

The objective of the assessment carried out during the qualification phase of 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 harmful cross-border interference.

The objective of the assessment during the tenure of the licence is to ensure that any changes applied to the network do not cause any harmful interference. All licensees are required to keep the MCA abreast with the latest developments of their network.

The MCA reserves the right to disqualify any application received if, based on the aforementioned assessment, it concludes that the proposed network would be causing harmful cross-border interference.

Similarly, the MCA reserves the right to hold a licence holder in breach of its spectrum licence conditions if it is determined that the deployed network, including subsequent modifications applied, would be creating cross-border interference. In addition, the licensee shall also be held in breach of the spectrum licence if actual interference is confirmed through field measurements.

The MCA shall also separately simulate the networks under assessment using the ITU tools available at the time and provide the simulation results to the applicant or licensee for reference purposes only. The outcome of these tools shall represent the potential complaints that could be raised by third countries in view of any network interference they might experience. These tools also indicate those corrective actions that may need to be applied to the T-DAB network in Malta to avoid interference in a neighbouring country.

When 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 should the rights of use of spectrum be awarded. In this case, provided that the spectrum assignment process is not concluded and 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.

If 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 3 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 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 2 of this Decision.

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.

The Authority may, at its discretion, complement the information obtained from simulation by using existing data derived from an existing network, wherever and however such is available.

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

While the remaining channels are not registered under the GE06 Agreement, Malta has secured a coordination agreement with Italy. 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<sup>7</sup> as defined in the GE06 Agreement and established at 12dB $\mu$ V/m for T-DAB falling in Band III.

A network will be considered compliant with the requirements of the coordination agreement between Malta and if the simulated received signal levels do not exceed the established 12dB $\mu$ V/m outside the coordination area.

The Authority may, at its discretion, complement the information obtained from simulation by using data derived from an existing network, wherever and however such is available.

### **EMF Obligations**

All wireless network 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 offered 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 however so described 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).

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<sup>7</sup> The coordination trigger field strength is defined as the Field-strength which, when exceeded, determines that coordination is required.

## 4. Transfer of Rights

As identified in the National Frequency Plan<sup>8</sup> currently in force, note MLT 09 identifies the 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.

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<sup>8</sup> Refer to note MLT09 in the National Frequency Plan - [https://www.mca.org.mt/sites/default/files/NFP\\_edition%20%206-3.pdf#overlay-context=initiatives/spectrum-planning](https://www.mca.org.mt/sites/default/files/NFP_edition%20%206-3.pdf#overlay-context=initiatives/spectrum-planning)

## 5. Extension of Existing Spectrum Licence

The rights of use of spectrum listed under Licence MCA/L/14-1962 shall be extended to Digi B Network Limited until 30th June 2022 under the same conditions, including payment terms.

## 6. Licence Duration

The rights of use of spectrum for any assigned lot shall have a commencement date not earlier than 1st July 2022. The spectrum shall be made available for a period of eight years.

The holder of the rights of use of spectrum shall have the right to having the spectrum licence renewed on a perpetual basis subject to the following conditions being simultaneously met:

- 1) The licence holder is not found in breach of any of the licence conditions by the renewal date of the spectrum licence.
- 2) There are sufficient spectrum resources that are either immediately available or kept in reserve such that the Authority can satisfy all the demands for spectrum suitable for T-DAB. Such requests should be formally registered with the Authority and should have had their assessment completed in line with the procedure outlined in Section 4 above and are declared as valid applications by the renewal date of the spectrum licence.
- 3) The conditions of the renewed spectrum licence are accepted by the licence holder. By not later than two years from the end of the term of the active spectrum licence, the MCA shall hold a public consultation process in which it proposes the spectrum licence conditions of the renewed spectrum. The discussion shall include as a minimum: (i) coverage obligations, (ii) spectrum fees, (iii) the term of the newly renewed licence, and (iv) the terms of the next renewal, including any applicable timelines for the consultation process suitable to discuss the term of the next renewal.

## 7. Spectrum Pricing

On assignment of the spectrum licence, the Licensee(s) shall be liable for the full amount of the rights of use 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 Part B of the Twelfth Schedule of the Electronic Communications Networks and Services (General) Regulations, as per S. L. 399. 48 of the Laws of Malta. These fees are currently set at two thousand, three hundred and twenty-nine Euro and thirty-seven euro cents (€2,329.37) for each channel of 1.536MHz channel in the 174-230MHz band.

If 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 will have the right to exit from the spectrum award process without incurring penalties. On continuing with the assignment process, the applicants are required to signify in writing their acceptance of the new price.

## 8. Annexes

### Annex 1 – Response to Consultation

The Paper "Consultation on the Assignment Process of Radio Spectrum in the VHF Band for Terrestrial Digital Audio Broadcasting (T-DAB) Services in Malta" was subject to a public consultation period from 26th August 2021 until 6th October 2021. During this period, the MCA received feedback from the following:

- a) DigiB Network
- b) LIFT Broadcasting Limited
- c) Pure Radio
- d) All Rock Radio Malta

The feedback consisted of various observations and remarks that were within the scope of the Consultation, together with additional comments concerning matters beyond the scope of the Consultation or which were intended for other competent authorities in relation to the respective matters of their regulatory functions. In the drafting of the respective Decision and hence its response to the consultation feedback, the MCA will be taking into consideration only those aspects which are deemed to fall with the remit and scope of the Consultation.

The MCA would like to thank all the respondents for the feedback provided.

In this section, the feedback received will be split up into two main parts. First, the submissions concerning the present state of the T-DAB market will be addressed, following which submissions concerning the proposals related to the spectrum assignment process and associated conditions for the right of use will then be addressed.

#### Market of Digital and Analogue Audio Networks

Within the context of the discussion concerning the development of the digital radio network, the respondents noted that the 12% statistical figure for the penetration of digital radio equipment as quoted<sup>9</sup> in the Consultation paper could be underestimated, especially when compared with a similar statistical figure published by the MCA where it is stated that the penetration rate of digital radio equipment stands at 18%. It was further stated that the

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<sup>9</sup>Broadcasting Authority – Annual Report 2019 - <https://www.dropbox.com/sh/9oxo9v3ohs3tov0/AACqVkjxpYchJ5BI9UVDD0Ja/B.A.%20Annual%20Reports/58-2019.pdf?dl=0>

quoted penetration rate of equipment is to be seen in the light that the T-DAB network in Malta is a private initiative that, unlike other networks in Europe, operates without financial support from the Government.

The MCA clarifies that within the context of describing the audio broadcasting landscape by comparing the audience capture of both the analogue and digital broadcasting networks, the choice of a study published by the Broadcasting Authority was preferred over that published by the MCA because the former study captured market information on both technologies using the same methodology and hence minimised statistical inaccuracies inherent when referring to studies using different methodologies. Furthermore, the Authority notes that, in view of the minimal statistical discrepancy between the respective figures, strict references to the statistical figures are considered to be of marginal importance within the context and scale of the market development, also illustrated throughout the consultation paper.

The respondents also remarked that the future of digital audio broadcasting relies on the switch-off of the analogue radio network. Respondents claim that considering the limitations associated with the FM platform arising from limitations in the availability of spectrum and possibly also hardware limitations<sup>10</sup>, the T-DAB network is the only avenue available for new radio broadcasters to reach their audience. Another advantage identified in the feedback is the power efficiencies gained in operating a T-DAB network compared to the FM transmissions, which is highly relevant in the context of the current global climate change discussions. While acknowledging that some initiatives are a step in the right direction, respondents also see there is an urgent need for a plan detailing the actual analogue switch-off.

The MCA notes that aspects concerning the switch-off of analogue FM transmissions fall beyond the remit of the Authority. It is also to be noted that by engaging in coordination for additional spectrum with Malta's neighbouring countries, Malta has maximised the spectrum resources that can be allocated for T-DAB. In addition, reserving one spectrum channel for

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<sup>10</sup> Note: These claims are made by one respondent. The MCA is not in a position to verify the claim

future use safeguards the eventuality for the need of spectrum if and when analogue switch-off is considered.

### **Spectrum Conditions and Spectrum Award Process**

In its Consultation, the MCA stated its proposal concerning the amount of spectrum to be allocated for T-DAB and its organisation in terms of spectrum lots and caps. Of the feedback received, one respondent noted that the projected spectrum configuration for 2022 and beyond is only sufficient for the short term. This respondent noted that while a T-DAB network is more efficient in its use of spectrum, it observed that the current offering of higher definition audio is proving to be popular with radio stations, and hence the demand for spectrum is expected to increase such that the six spectrum channels made available might not be sufficient in the long term.

The MCA notes that whilst acknowledging the observation made, it notes that spectrum suitable for T-DAB networks is, at present, held in reserve for any future alternative potential use. As stated in the Consultation, the Authority shall review the spectrum held in reserve at such time when further spectrum is required to fulfil the requirements of the DAB market.

The MCA also requested feedback on the proposals concerning coverage obligations to be imposed on the T-DAB network operator. The feedback received from Digi B, the current network operator, acknowledges the need to provide robust network coverage to provide a quality service to the T-DAB listeners. This respondent also explained that under specific circumstances, the signal levels proposed under RPC 4 and RPC 5 would not be sufficient and stronger signal levels would be necessary.

On considering the feedback received, the MCA acknowledges the need to require coverage obligations that go beyond the basic requirements of RPC-4 as proposed in its Consultation. In addition, the MCA needs to seek a balance in coverage obligation to ensure that these do not serve as a barrier to entry into the market. Therefore, the Authority notes that the coverage obligations will be set in two stages. A provider is initially required to reach the requirements of RPC4 in 95% of all territories in Malta and Gozo within 18 months. Then, following another eighteen (18) months, the provider is required to achieve RPC5 in 95% of all the territory of Malta and Gozo that is denoted as built-up areas.

The MCA had also requested feedback related to the spectrum assignment process. The feedback received is detailed below.

With regard to the adoption of a beauty contest as the competitive assignment mechanism, the MCA positively notes that no objections to such an approach were registered.

Concerning the short-term extension of the existing spectrum licence to align the dates of the availability of the spectrum, DigiB network expressed its agreement with the proposal. No other feedback or objections on the matter were submitted by any of the respondents. The Authority notes the agreement registered and shall therefore proceed with extending the existing spectrum licence to DigiB Networks until 30<sup>th</sup> June 2022. The new spectrum licences for spectrum shall be made available from 1st July 2022 onwards.

With reference to the proposal concerning the perpetual renewal of the rights of use of spectrum, the respondents expressed their positive outlook since this will provide long-term stability to all stakeholders resulting in additional comfort towards their investments and efforts. In view of the comments received, the Authority shall therefore proceed to adopt the perpetual renewal for the rights of use of spectrum as part of the assignment and management frameworks governing the T-DAB radio spectrum in 2022 and beyond.

## **Annex 2 – Applicable Process for the Network Assessment for the avoidance of cross-border harmful interference**

This Annex lists the process to be adopted by the Authority in carrying out its assessments on new networks or modifications to existing networks. Such assessments will be carried out in order to ensure that the networks under review do not create any cross border harmful interference.

In order for the Authority to be able to carry out the cross border interference assessments on the respective T-DAB networks, the following information shall be required: -

- a) a description of the network in a format as specified in Annex 5;
- b) the simulated radio propagation charts covering 1000km from Malta; and
- c) the simulated received field strength at each of the test points listed in Annex 3.

This information is to be provided to the Authority upon request or whenever a significant change to the network is applied in accordance with regulation 11 of General Authorisations (Radiocommunications Apparatus) Regulations, as per S. L. 399. 40 of the Laws of Malta.

The Authority shall configure its simulation tool to simulate the network under test using propagation models established in ITU-R P. 1546 and configured in line with Annex 4.

The Authority, as a spectrum administrator, is at law required to respect the relevant international agreements, including the ITU Radio Regulations and other agreements applicable to radio spectrum. The principles adopted by the GE-06 Agreement for the planning of digital broadcasting services is based on Recommendation ITU-R.1546. This tool establishes a field-strength prediction method used primarily for cross-border coordination activities, including the determination of coordination zones and investigations of cross-border harmful interference. Software tools developed by the ITU in relation to frequency planning and coordination are limited for use by national spectrum administrators.

In view of the restrictions on the use of the aforementioned ITU tool, the Authority shall simulate the DTT networks under assessment on behalf of the interested stakeholders/existing network operators. The outputs obtained through the ITU tool simulations will be passed on to the interested stakeholders or existing network operators for

their reference since these include valuable information that could be useful to modify the network designs.

### Annex 3 – 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 station as listed in the GE06 Agreement.
- b) Accompanying Document 2 – Presents a simulation of the reference network using transmitting power set at the registered power. For each simulation, the border where the trigger field strength is reached is presented. This data is intended to assist the applicant to understand the variations that exist between the simulator tools provided by the ITU and the simulator tool used by the applicant.

Table 3 below lists the transmitting station and its location as registered in the GE06. The complete set of details for the transmitter is provided in Accompanying Document 1.

<b>Transmitter Name</b>	<b>Latitude DDMMSS</b>	<b>Longitude DDMMSS</b>	<b>Transmitting Channels</b>
Gharghur	355459	142659	12A

Table 3 Details of Transmitters, location and transmitting frequency

Table 4 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 ( $\pm$ DDMMSS)
4	Longitude ( $\pm$ 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 $10^\circ$ 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 $10^\circ$ intervals, measured in the horizontal plane from True North in a clockwise direction

Table 4 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 Annex4 of this Decision.
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.
3. Using a simulation 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 4 – 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 5 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
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 5 List of Settings applicable to the P. 1546-6 model

## **Annex 5 – File formatting details for communication of network proposals**

As indicated in Section 4 of this Decision, an applicant is required to submit the details of its proposed network to the Authority for its assessment. The Authority 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 3 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<sup>11</sup>.

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<sup>11</sup><https://www.itu.int/en/ITU-R/terrestrial/brific/Pages/default.aspx>

## Annex 6 – Coordination zone between Malta and Italy

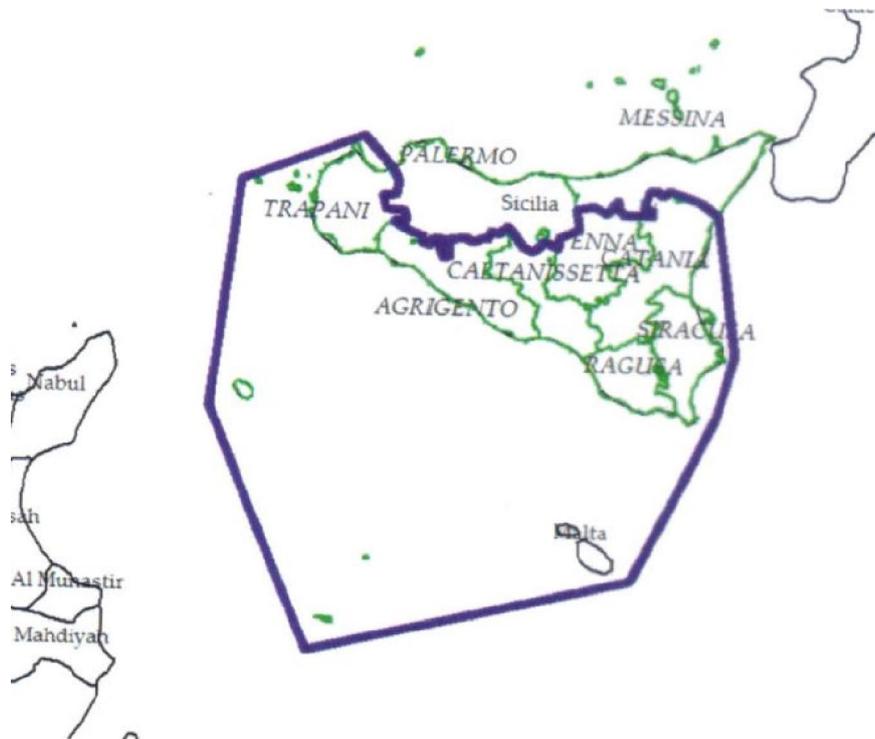


Figure 2 Coordination zone between Malta and Italy

The figure above depicts the zone which concerns the coordination agreement reached between the Maltese and Italian authorities. This figure applies all the listed spectrum except for channel 12A.

The coordination zone includes the territory of Malta and Gozo, and all the administrative borders of the provinces of Sicily, excluding the Provinces of Palermo and Messina.

## Annex 7 – Geographic map of Malta and Gozo indicating coverage obligations

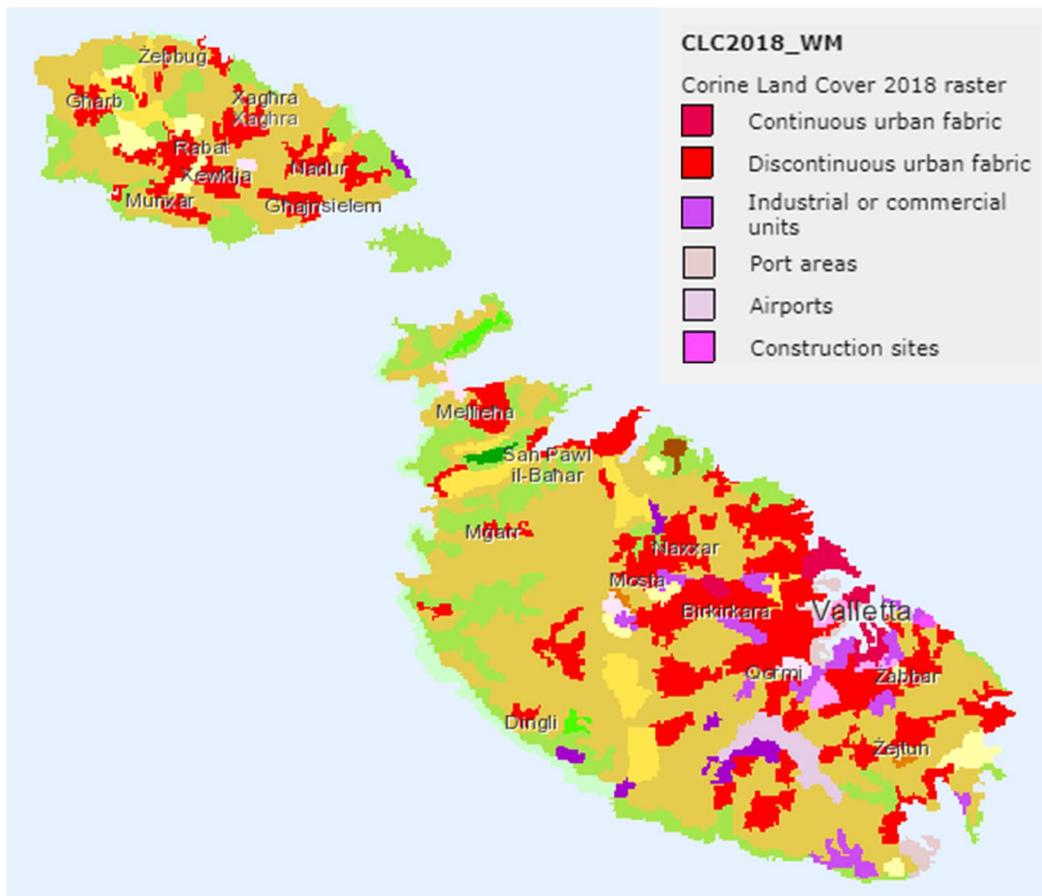


Figure 3 Land use map of Malta and Gozo

Figure 3 below is a graphical representation of the land use in Malta. The legend includes the landmass areas over which the coverage obligation shall be due in line with Section 4.

Both the map and the legend are produced and published by Copernicus – Land Monitoring Service<sup>12</sup>. In addition, the map server provided by the Planning Authority allows the same map to be overlaid with more comprehensive map layers.

The coverage of the T-DAB network across the built-up areas of Malta and Gozo are denoted by the map areas indicated as follows:

<sup>12</sup><https://land.copernicus.eu/pan-european/corine-land-cover/clc2018>

- a) Continuous urban fabric
- b) Discontinuous urban fabric
- c) Industrial and commercial units
- d) Port areas
- e) Airports
- f) Construction sites