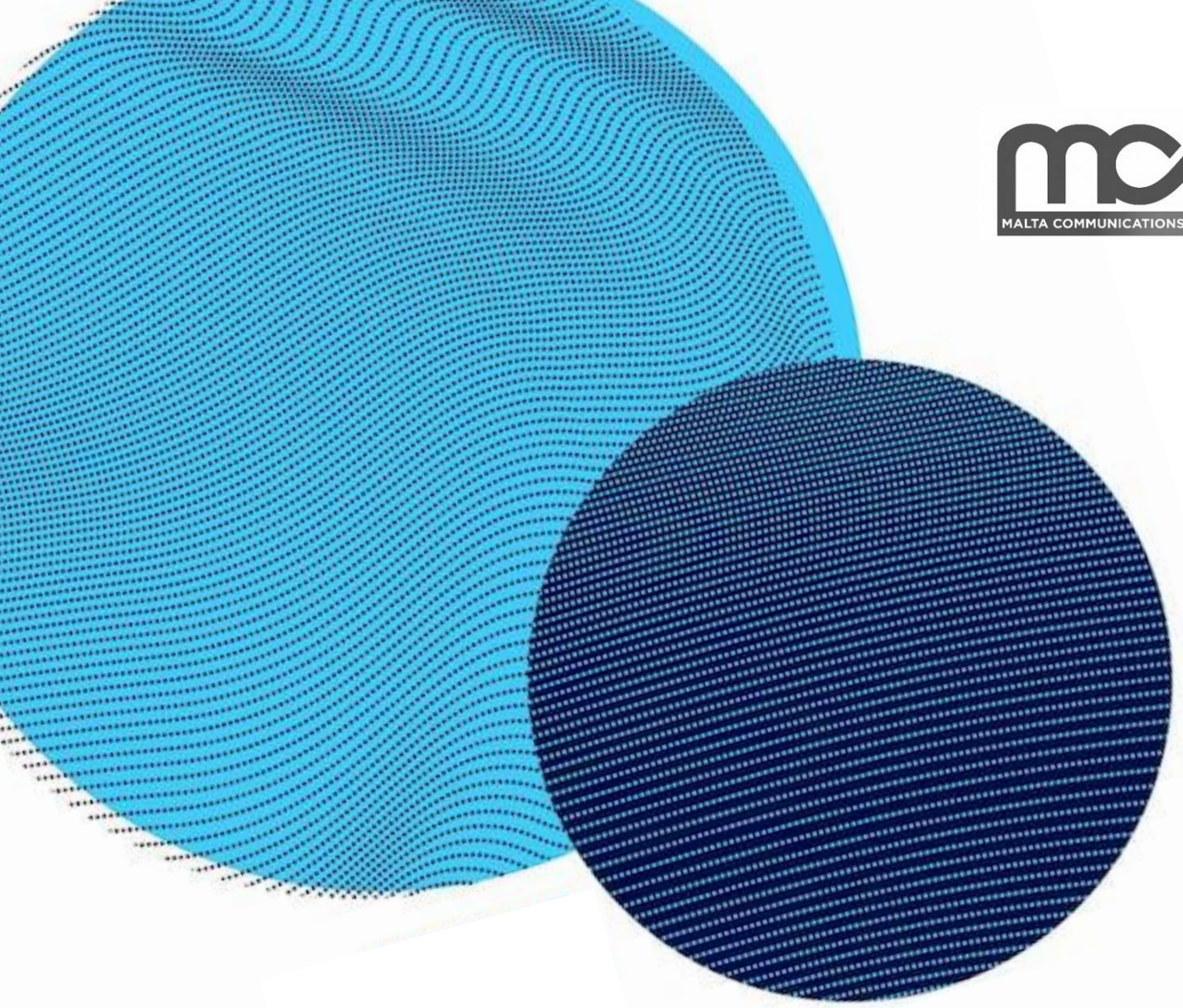

Extension of terrestrial 2 GHz spectrum rights of use and complementary work programme

Consultation Document

MCA/C/22-4646

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Glossary

Term	Description
2G	Second generation mobile/wireless communications systems (GSM)
3G	Third generation mobile/wireless communications systems (UMTS)
4G	Fourth generation mobile/wireless communications systems
5G	Fifth generation mobile/wireless communications systems
6G	Sixth generation mobile/wireless communications systems
3GPP	3rd Generation Partnership Project
5G NSA	Non-Stand Alone 5G
5G SA	Stand Alone 5G
AAS	Active antenna system
Android OS	Android Operating System
BEMs	Block-edge masks
CEPT	European Conference of Postal and Telecommunications Administrations
CS	Circuit Switched
CSFB	Circuit Switched FallBack
DECT	Digital European cordless telecommunications
DL	Downlink operation
DSS	Dynamic Spectrum Sharing
e.i.r.p	Equivalent isotropically radiated power
eCall	Emergency call
ECC	Electronic Communications Committee
EECC	European Electronic Communications Code
ETSI	European Telecommunications Standards Institute
EU	European Union
GAMBoD	GSA Analyser for mobile broadband databases
GHG	Greenhouse gas emissions
GSA	Global mobile Suppliers Association
GSMA	GSM Association
IMS	(Internet Protocol) Multimedia Subsystem
IoS	iPhone Operating System
IoT	Internet of Things
IP	Internet Protocol
LTE	Long-Term Evolution, commonly marketed as 4G LTE

Term	Description
LTE-eMTC	LTE evolved Machine Type Communication
LTE-M	Long Term Evolution for Machines
LTE-MTC	LTE Machine Type Communication
M2M	Machine-to-machine communications
MCA	Malta Communications Authority
MIoT	Includes LTE-M and NB-IOT
MNOs	Mobile Network Operators
NB-IoT	Narrowband Internet of Things
NR	New Radio (5G)
QoS	Quality of service
RSPG	Radio Spectrum Policy Group
SDL	Supplementary downlink operation
SIM	Subscriber Identity Module
SRVCC	Single Radio Voice Call Continuity
SUL	Supplementary uplink operation
TRP	Total radiated power
UL	Uplink operation
VoLTE	Voice over LTE
VoNR	Voice over NR
WAS	Wholesale Agreements and Solutions Group
WRC-23	World Radiocommunication Conferences in 2023
WRC-27	World Radiocommunication Conferences in 2027

1. Rationale

In the late 1990s, 155 MHz within the 2 GHz band were identified as the core bands for the introduction of third generation mobile and wireless communications systems (3G) in Europe. Globally, numerous 3G systems were rationalised and replaced by more cost-efficient wireless systems. In Malta, radio spectrum within the 2 GHz band is still being used by 3G systems along with 4G systems. Recent regulatory developments and technology advancements have allowed for the mixed operation of 4G and 5G within the same spectrum band in a dynamic fashion.

In addition to the immediate and continued use of this band, one must look ahead to assess and decide the best course of action with regards to both timing of the assignment as well as the surrounding conditions and, or challenges. The facets to be considered can be grouped into two main categories, namely:

a) Market and Industry Developments; and
b) Regulatory Aspects

Market and Industry Developments include amongst others: Industry Player consolidation strategies to 5G and away from legacy technologies, considerations on impact in relation to 2G/3G technology switch off (sunsetting), VoLTE / VoNR strategies, future roaming agreements, user terminal developments and Internet of Things ('IoT') strategies.

Regulatory Aspects include amongst others: Europe's Digital Decade and the respective Digital Connectivity Targets, Green Digital, Europe's Green Deal, the Malta Communications Authority ('Authority' or 'MCA') earmarked sustainability initiatives, European and national spectrum management frameworks, including grants of rights of use for the 2 GHz band as well as for other bands designated for the provision of terrestrial mobile electronic communications systems.

One important and immediate aspect from a regulatory perspective concerns the grants of rights of use of radio spectrum in the 1920-1980 MHz and 2110-2170 MHz frequency bands ('paired 2 GHz band') for the provision of terrestrial systems capable of providing electronic communications services which will expire on the 16th August 2022. The same grants also authorise the use of unpaired radio spectrum in the 1900-1920 MHz band ('unpaired 2 GHz band') for the provision of the same type of services.

In accordance with its work programme for 2022, the MCA shall be formulating the framework for the reassignment of radio spectrum in the paired 2 GHz band. From a radio spectrum point of view, this process will serve to implement the latest amendments to the European Union framework for the harmonisation of the paired 2 GHz band, pursuant to Commission Implementing Decision 2012/688/EU. Specifically, these latest amendments are established in Commission Implementing Decision (EU) 2020/667 and aim to facilitate the introduction of next-generation (5G) terrestrial wireless systems, including systems employing an active antenna system ('AAS'). The MCA is required to adopt the new national framework for the paired 2 GHz band by 1st January 2026, at the latest.

In view of the upcoming expiry of the rights of use enjoyed by holders of radio spectrum in the paired and unpaired 2 GHz bands, the MCA is consulting on the adoption of interim measures of radio spectrum concerning the paired and unpaired 2 GHz bands. This process is a priority for the MCA and it is desirable, in the immediate term, to give regulatory certainty to the respective right holders on the continued availability of these bands for terrestrial systems capable of providing electronic communications services in Malta.

Additionally, the MCA would like to set the scene for the work programme of the next 3 years, and in doing so it aims to foster the ongoing upgrade by providers of electronic communications of their networks to the latest most efficient technology, in order to create their own spectrum dividends in line with the principles of service and technology neutrality.[1] Through this consultation, the MCA would like to understand and anticipate what future consultations on the subject matter could include for setting the work programme, agenda or in other words charting out a clear spectrum and technology related roadmaps. Apart from consulting on the matters at hand, the extension of the licences and framework revisions, this consultation also seeks to provide the basis for a 'launch pad' to this 3-year work-plan.

[1] This objective is pursuant to Article 6(3) of Decision No. 243/2012/EU of the European Parliament and of the Council of 14 March 2012 establishing a multiannual radio spectrum policy programme.

Hence, the wider scope of this Consultation document is two-fold:

A. ***In view of both the evolving Market & Industry Developments as well as in consideration of the Regulatory Aspects, MCA is consulting upon the granting of extensions to existing grants of rights of use of radio spectrum in the paired 2 GHz band and unpaired 2 GHz band as a measure to provide regulatory certainty and to safeguard the continued provision of terrestrial systems capable of providing electronic communications services in these bands.***

B. ***To chart the way for further consultations, including on the work programme for the MCA that would lead to a clear spectrum and technology roadmap for the next 3 years.***

MCA invites all interested parties to submit their views on the proposals and observations made. The respondents are being invited to substantiate their submissions with the appropriate relevant data supporting the opinions put forward.

2. Terrestrial 2 GHz Spectrum Band

Current Industry and Regulatory Environment

All authorised mobile network operators in Malta currently enjoy the rights of use of radio spectrum in the 2 GHz spectrum band, which rights reflect the technical conditions established in Commission Implementing Decision 2012/688/EU. Annex 1 provides information on the radio spectrum assignments in the paired and unpaired 2 GHz bands.

On 23 December 2019, the MCA published a Report on Consultation and Decision (MCA/D/19-3733)[2]. The term of the current 2 GHz band licences, following the adoption of MCA Decision (MCA/D/19-3733) has been aligned to expire on the 16th August 2022. Currently, in view of the principle of technology neutrality as reflected in the respective licences, the 2 GHz band is being used by mobile networks operators for the provision of 3G, 4G as well as Dynamic Spectrum Shared Non-Stand Alone 5G services (since 5G SA is not yet permitted under the current framework) across the Maltese Islands.

In May 2020, the European Commission published Commission Implementing Decision (EU) 2020/667, amending the Commission Implementing Decision 2012/688/EU on the harmonisation of the paired 2 GHz band for terrestrial systems capable of providing electronic communications services in the Union.

The amended EU decision continued to respect the principle of technology neutrality but introduced certain new elements in support of more efficient spectrum use and to support the upgrading of wireless networks to the latest and most efficient technology. The decision, besides reviewing the EU harmonised framework to make the paired 2 GHz band also suitable for next-generation (5G) terrestrial wireless systems, provides the opportunity to remove the 300 kHz guard band at the lower and upper frequency boundaries of the band thereby increasing the usable size of the channel blocks from 4.8 MHz to 5 MHz. Hence, the EU decision establishes a harmonised channel arrangement for the band based on 4.8-5 MHz channel blocks and includes the conditions necessary in support of mobile base stations employing AAS.

[2] https://www.mca.org.mt/sites/default/files/Consultation%20document_MCA-C-19-3660.pdf.

Member States are required to apply the general technical parameters laid down in the amended Commission Implementing Decision by 1st January 2026. The implementation process of this Decision into the underlying national frameworks requires a comprehensive review of the licensing regime for the paired 2 GHz band, which the MCA intends to undertake prior to the deadline set therein.

The use of the 2 GHz band is also technologically correlated with other currently assigned wireless broadband radio spectrum bands. Authorised mobile network operators in Malta also benefit from the rights of use of radio spectrum in the 900 MHz and 1800 MHz bands. The respective license holders use the 900 MHz and 1800 MHz bands for the provision of 2G and 3G electronic communications legacy networks, as well as by 4G and 5G networks. These rights of use will also start expiring in the near future, (i.e. as from August 2026). In view of the correlation of use between the 2 GHz band and the 900 / 1800 MHz bands, the MCA considers as beneficial for industry, in case where the respective spectrum bands reassignment process is combined.

The reassignment process provides the opportunity to foster a dialogue with industry on the sunsetting of any of the legacy technologies, the introduction of new services such as Voice over LTE (VoLTE) and Voice over New Radio (VoNR) and any associated benefits to sustain better the environment in line with the European Green Deal.[3] Technology neutrality is a fundamental principle stemming from European and national law and this principle will continue to be respected by the MCA. Hence, MCA's role in this regard will remain to foster a dialogue between the market players, and consequently these players would need to determine which of these wireless technologies to deploy or to decommission within the Maltese islands.

The forthcoming expiry of the 2 GHz grants of rights of use provides the MCA with the opportunity to stimulate a discussion on the review and development of a spectrum and technology roadmap which is adequate for the decades to come; an opportunity to foster a dialogue with industry on amongst others the sunsetting of the legacy technologies and the introduction of new services such as Internet Protocol Voice in view of facilitating further the environmental goals as set in the European Green Deal.

[3] https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

3. 2 GHz Band Technical Conditions

European Spectrum Management Frameworks

3.1 EUROPEAN UNION

In 2012, the European Commission adopted Commission Implementing Decision 2012/688/EU on the harmonisation of the frequency bands 1920-1980 MHz and 2110-2170 MHz for terrestrial systems capable of providing electronic communications services in the Union. This Decision has introduced the set of technical conditions based on a set of block-edge masks ('BEMs') to ensure coexistence between services at a national level.

On the basis of the European 5G Action Plan[4] and Opinions of the Radio Spectrum Policy Group[5], on 12th July 2018 the European Commission granted a mandate to CEPT[6] to develop harmonised least restrictive technical conditions for a number of frequency bands, including the paired 2 GHz band, in line with the principles of technology and service neutrality, suitable for next generation (5G) terrestrial wireless systems. The CEPT was tasked to carry out the review of the EU harmonised technical conditions for this frequency band as set out in Commission Implementing Decision 2012/688/EU with a view to make such conditions suitable for 5G.

In response to this mandate the CEPT developed CEPT Report 72 which proposes changes to the harmonised framework set out in Commission Implementing Decision 2012/688/EU in force at that time. The key conclusions of this report are listed below:

a) The FDD band plan for the band as per Commission Implementing Decision 2012/688/EU remains valid.
b) The 300 kHz guard band at the lower and upper frequency boundaries of the band plan can be removed.

[4] https://digital-strategy.ec.europa.eu/en/policies/5g-action-plan.
[5] Documents RSPG16-032 (9 November 2016) and RSPG18-005 (30 January 2018).
[6] European Conference of Postal and Telecommunications Administrations (CEPT).

c) The bands 1920-1980 MHz and 2110-2170 MHz are divided into twelve paired blocks and the minimum block size should be in the range 4.8 MHz to 5.0 MHz.
d) Supplementary uplink ('SUL') and supplementary downlink ('SDL') operation is permitted.
e) For SUL, the frequency band 1920-1980 MHz may be used for NR uplink operation without a paired downlink NR channel in the frequency band 2110-2170 MHz.
f) For SDL operation, the frequency band 2110-2170 MHz may be used for NR downlink operation without a paired uplink NR channel in the frequency band 1920-1980 MHz.
g) The current BEM remains applicable for non-AAS mobile electronic communications networks and is based on equivalent isotropically radiated power ('e.i.r.p').
h) A new BEM is introduced for AAS mobile electronic communications networks based on total radiated power '(TRP').

On the basis of CEPT Report 72, in May 2020, Commission Implementing Decision 2020/667/EU was adopted which amended Decision 2012/688/EU to update the technical conditions applicable to the paired 2 GHz band. This decision needs to be implemented nationally by the 1st January 2026.

It should be noted that the unpaired 2 GHz band between 1900 and 1920 MHz is currently not subject to any EU radio spectrum harmonisation measures.

3.2 CEPT

CEPT adopts decisions aimed at harmonising the use of radio spectrum for various wireless systems. For the paired 2 GHz band, this is established in ECC Decision (06)01[7].

In accordance with its Roadmap for 5G[8], in March 2019 the Electronic Communications Committee (ECC) of CEPT adopted revisions to this Decision to make it suitable for use by 5G systems. From a technical perspective, the technical conditions of the ECC decision and the EU Decision are aligned.

It should be noted that the ECC is also undertaking studies to assess the feasibility of alternate spectrum solutions for the unpaired 2 GHz band. In this regard a number of candidate applications are being considered for harmonisation. These include Railway Mobile Radio and Unmanned Aircraft Vehicles. In addition, the same band is also supported by the European Telecommunications Standards Institute ('ETSI') in Technical Report no. TR 103 810 for use by the DECT-2020 NR.

[7] https://docdb.cept.org/document/394.
[8] https://cept.org/ecc/topics/spectrum-for-wireless-broadband-5g.

4. Key Considerations

4.1 THE 2 GHz BAND – A BROADER PERSPECTIVE

Recent development and technology advancements have allowed for the mixed operation of 4G and 5G within the same 2 GHz spectrum band (3GPP Band 1) in a dynamic fashion. This has been brought about through the use of Dynamic Spectrum Sharing functionality which allows the seamless use of spectrum within that band for 4G/5G or both at the same time. It should be noted that under the current licences, local operators are already permitted to deploy 5G in the 2 GHz band, however without AAS. Only after that the Commission Implementing Decision 2020/667/EU has been adopted in the national frameworks can then fully fledged 5G (including 5G SA) be permitted to be deployed in the 2 GHz band.

Apart from the short-term use of this band and the service continuity aspect, most importantly the provision of legacy voice services for 4G through Circuit Switched FallBack ('CSFB'), a number of in/directly interrelated facets with the 2 GHz shall also be considered. These can be grouped as follows:

A. Market and Industry Developments

- Industry Player consolidation strategies to 5G and away from legacy technologies
- Technology switch off (sunsetting)
- International and local mobile market scenarios
- GSMA 2G – 3G Sunset Guidelines
- VoLTE / VoNR strategies
- Future Roaming Agreements
- 5G standalone deployments
- User terminals and legacy phone penetrations
- Economics underpinning the replacement / upgrade of IoT devices
- Deployment of Alternative IoT networks

The Market and Industry Development aspects identified above can be classified further into 3 primary categories. Irrespective of their interdependence, the respective categories however shall need to be addressed in their own right.

(i) VoLTE and Sunsetting

The switch-off of legacy technologies, to some extent, is a technology lifecycle episode which is distinguished and endorsed by the global mobile ecosystem organisation, the GSMA. Based on the 2020 WAS report of 2G/3G closure, the GSMA notes that the major milestones for Full Circuit-Switched closure are 2021-2022 starting in North America and Asia, and 2025-2027 starting in Europe[9].

VoLTE/VoNR deployments are seen as a cardinal building block for the market and industry developments to materialize. The retirement of 2G/3G also requires mature alternative technologies to meet the development needs of low and mid-speed IoT applications (10Mbps DL and 5Mbps UL) that account for 90% of the overall cellular IoT connections[10].

Mobile Network operators are investing in VoLTE, enabling a high-definition voice experience for LTE users, with 286 operators identified as investing in VoLTE and 232 launched networks[11]. Furthermore, according to the latest figures published in GAMBoD, GSA has recorded 3,624 VoLTE-capable devices, up from 3,563 in December 2021, including carrier and frequency variants. Of these devices, 2,856 are phones which means 24.7% of LTE phones announced are known to support VoLTE. Nonetheless, the successful deployment of VoLTE remains dependent on the two handset manufacturers that have the largest share in both IoS and Android OS and some markets have reported issues to have a satisfactory rollout of VoLTE in this regard.

For there to be a well-defined migration strategy away from legacy technologies and towards 5G, this has to be accompanied by a clear path for voice migration. VoLTE is seen as a first step paving the way to VoNR. However, for this path to materialise, considerations need to be in place for 5G SA. If that is not the case, 4G and 5G shall remain dependent on CSFB for the voice handling part with the added complication of real-time interworking/handovers (SRVCC) between legacy and next generation (5G) mobile networks.

Nonetheless, the implementation of SRVCC and its different flavours, is seen as an important activity to ensure a seamless transition to VoLTE and VoNR. SRVCC will also help to phase properly the rollout of VoLTE at an appropriate low frequency band so as to minimise the interplay between legacy and all-IP voice. The very existence of SRVCC in this transition is to be seen as an added assurance (safety net) until VoLTE/VoNR coverage matures to the extent of rendering SRVCC redundant.

[9] https://www.gsma.com/newsroom/wp-content/uploads/NG.121-v1.0-2.pdf

[10] https://gsacom.com/paper/2g-3g-shutdowns-a-comprehensive-guide/

[11] GSA LTE Device Ecosystem Status Update May 2022, (https://gsacom.com/download.php?id=11912)

(ii) Roaming

Future roaming agreements are defining as well the longevity of legacy networks. GSMA has already taken steps to chart out guidelines[12] to its members with a view to define a time-plan for sunsetting and its effects on roaming.

GSMA has outlined the major challenges it foresees under 3 main headings, namely regulation, device, and network.

Regulation:	**1. Regulator's permission: get regulators' support to shut down 2/3G** **2. eCall migration toward IMS Voice**
Device:	**1. 4G Entry level phone: promote entry level phone industry** **2. IMS Voice phone: recommend industry to enable IMS Voice by default** **3. Migrate 2/3G M2M to 4G MIoT (LTE-M and NB-IoT) by promoting the migration of legacy 2/3G use case to 4G**
Network:	**1. Develop IMS Voice in the home network, including postpaid and prepaid offers** **2. Promote IMS Voice roaming** **3. SIM replacement to offer 4G SIM card, or promote SIM replacement solution** **4. Define network sunset initiation criteria: how to make 2G or 3G phase out decision based on the situation of 2/3G network, revenue, user, expenditure and 4G network readiness** **5. Migrating 2/3G users to LTE by identifying the user category and develop the migration policy (2G user with no data requirement, 2G user with less data requirement, 2/3G user with 4G phone), offer different promotion** **6. Spectrum refarming (partial or full)**

It is expected that the provision of VoLTE roaming services shall be expected by roaming partners in the coming years and this shall pose additional pressure on MNOs to deploy VoLTE on a national level. The inbound roaming aspect of VoLTE requires deployment at the radio level. Inbound roaming is therefore much more demanding that the outbound roaming scenario where only and IMS Core deployment is involved.

[12] https://www.gsma.com/newsroom/wp-content/uploads/NG.121-v1.0-2.pdf

(iii) End-user Equipment and IoT/M2M

Last but not least, the handset aspect needs to be viewed from a holistic perspective. Legacy phones tend to be cheaper than more advanced ones and are the preferred device for the elderly. The replacement cycle of phones for this category needs to be properly judged and a suitable next generation replacement needs to be identified. Similarly, for IoT and M2M, the migration from cheap 2G modules needs to happen in a timely manner. The merits of a coordinated approach towards legacy network retirement should also be considered within this context, particularly to ensure the continued portability of services.

Whilst noting the above, the ever-increasing drive towards migration for All-IP mobile networks, and the switch off of legacy mobile networks, however, brings a different dimension which undoubtedly needs to be taken into consideration by the industry, namely:

- The strategies adopted by MNO's for the complete switch-offs or sunsetting of the legacy CS networks involves an understanding of risks for both the mobile network operator and consumers, namely:

  (i) customer churn, particularly when operators do not switch off at the same time,
  (ii) cost and complexity of deploying new infrastructure,
  (iii) uncertain demand for new services,
  (iv) the cost of migrating M2M connections,
  (v) possible changes in coverage, particularly if the new technology does not provide the same coverage as the replaced legacy technology, and
  (vi) potential brand damage if some customers are left without coverage or are forced to upgrade handsets / M2M devices.

- The interim availability of a legacy network technology is still at this point in time a necessity. One of the reasons for the continued use of such legacy mobile networks is that they are still used, with 2G and 3G networks[13] in particular being relied upon for many machine-to-machine services such as smart meters and e-call systems.

[13] As an alternative to 2G/3G M2M, 4G offers two data networking technologies, Narrowband Internet of Things (NB-IoT) and LTE Machine Type Communication (LTE-MTC) and LTE evolved Machine Type Communication (LTE-eMTC).

B. Regulatory Aspects

- Europe's Policies for the next decade[14]
- MCA earmarked Sustainability Initiatives
- MCA radio spectrum road map and envisaged radio spectrum management frameworks

The EU policies for the upcoming decade identify the need for a green and digital transformation of Europe. This was further evidenced by the Commission proposals which followed, such as the European Green Deal (and the EU fit for 55' package) together with the 2030 DIGITAL COMPASS; all acting as a blueprint to make the green and digital transformation.

To comply with the Commission's proposals, a 'twin transition' is needed, where digitalisation and greening go hand in hand. Electronic communication networks play an essential role in the enablement of this twin transition. Digitisation promises to bring major efficiency gains that in turn should translate into significant reductions of greenhouse gas (GHG) emissions.

Environmental considerations as part of the green transition that include sustainability initiatives as well as the necessary enablers for the digital transition (spectrum availability etc.) shall be dovetailed and included in the MCA's work programme for the coming three years and beyond.

In its Strategy Update 2021 – 2023 document[15], the MCA has committed to establish its role and contributions within the sectors it regulates towards making the European Green Deal a success.

4.2 THE 2 GHz BAND - CHALLENGES & OPPORTUNITIES

The latest developments within the mobile telecommunications industry have evolved into an ever-*complex multi-dimensional domain which requires a pertinent and holistic underlying regulatory framework* for the respective markets to flourish. This new multi-dimension domain, however, does not only consist of challenges which needs to be overcome, but also opportunities for the MCA, together with the market players to consider and exploit.

The table below lists the main challenges and opportunities brought forward by this new multi-dimensional domain.

[14] Digital Decade, Digital Connectivity Targets, Green Digital and Europe's Green Deal.

[15] https://www.mca.org.mt/sites/default/files/MCA%20Strategy%20Update%202021%20-%202023.pdf.

Challenges	Opportunities
Scheduling of the Revised 2 GHz Assignment Framework (Consultation and Decision implementing Commission Implementing Decision (EU) 2020/667) and the making available on the market the rights of use for the 2 GHz band at the opportune moment for the mobile telecommunications market.	Despite the regulatory certainty necessary to ensure continuity of services, the European Commission however recognised the need for a implementation time period in accordance with the EECC; a period that allows the Member States to designate and make available the 2 GHz band in accordance with the technical parameters set out in Commission Decision. This timeframe also provides sufficient time to the industry to adopt and implement the respective technical parameters in a timely manner. By revising the underlying framework/s by the date as established by the Commission - 1st Jan 2026 – it shall provide the current regulatory and industry environments the opportunity to develop further over the 3 years to come. In addition, Commission Implementing Decision (EU) 2020/667 enhances spectrum efficiencies and hence provides for the removal of the guard bands. This will allow for the granting of 5 MHz spectrum lots.
Establishing the regulatory conditions for the underlying 2 GHz assignment framework which are appropriate for the next 15 to 20 years.	Considering that the industry is at a technology transitional period with both legacy and new technologies being maintained concurrently, the regulatory conditions *must be* future looking to reflect the respective lifecycles.
VoLTE (4G) and VoNR (5G SA) are still not a mainstream service, but SRVCC is there to help	Whilst benefitting from the advantages brought forward by these technologies, legacy technologies, to the major extent may be then made redundant.
Sunsetting of legacy circuit switched technologies and handset dependencies / Implementing 5G Stand Alone	Sunsetting of legacy technologies (2G/3G) will eventually pave the way for repurposing and better spectrum efficiency as well as for the development for a natural handset replacement cycle. Furthermore, such measures will facilitate further the achievement of the green and sustainability target set by the European Commission.
The rights of use for the 900 MHz and 1800 MHz radio spectrum, which are currently in use to amongst other services, carry legacy voice traffic (and complimentary to the 2 GHz band), shall not start to expire before 2026	A "*timely*" multi-band assignment process consisting of a mix of low and medium spectrum bands will provide the mobile industry an opportunity to carefully assess their spectrum needs and decide accordingly for the radio spectrum bouquet which addresses their service offerings.
A spectrum pricing regime that reflects the relative merits and value of each band	The pricing of radio spectrum needs to reflect a holistic offer across complementary bands, with price relativity reflecting band characteristics.

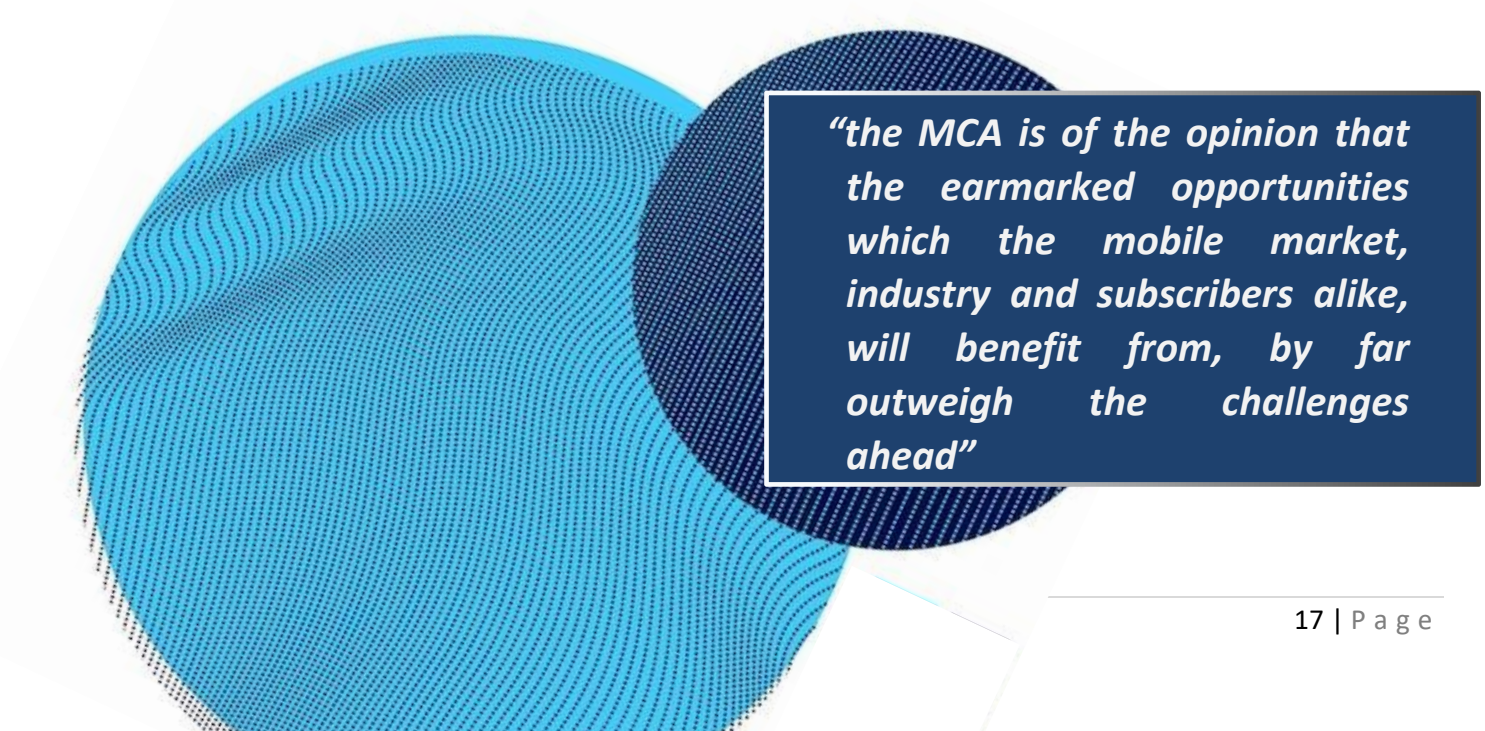
The opportunities highlighted above unequivocally give rise to a possible number of workstreams. Amongst the multitude of workstreams, the following may be of relevance for the MCA, as follows:

- *Stimulate discussions on the sun-setting of legacy technologies and implementation of VoLTE/SRVCC in case the market operators decide to do so;*
- *Facilitate IoT and M2M service management and Education campaign regarding handset type and lifecycle;*
- *Ensure the timely market availability of spectrum in accordance with the relevant spectrum harmonisation related frameworks; and*
- *Align licences' expiry for a common multi-band assignment in the period 2025/2026.*

4.3 NEXT STEPS

Careful consideration of the opportunities and challenges involved, together with the impact and implications which, depending on the regulatory course, the mobile market may undergo through in the very near future, is of utmost importance at this stage. At present, ***the MCA is of the opinion that the earmarked opportunities which the mobile market – industry and subscribers alike – will benefit from, by far outweigh the challenges ahead.***

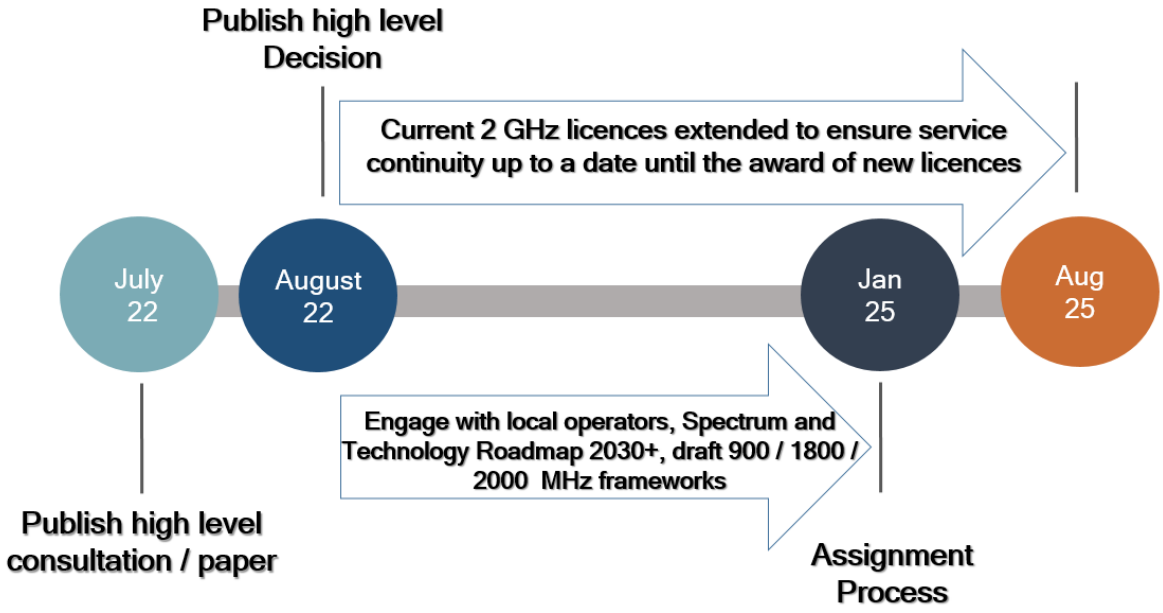
The immediate earmarked challenges consist of ensuring the continuity of 3G services and stimulating discussions on and the potential planning for the relocation of legacy voice services onto 4G/VoLTE along with the technical and operational hurdles brought about with the myriad of opportunities highlighted above.



Cognisant of the circumstances involved, and after careful consideration of the impact and implications of the above, the MCA has arrived at the conclusion that the best and most appropriate course of action for all the stakeholders involved is to have a three-pronged approach:

a. ***Immediate (August 2022)***
b. ***Interim phase (September 2022- end 2025)***
c. ***Long term phase (2026 onwards)***

This approach can be summarized in the timeline below:



5. Proposed Measures

On the basis of what was discussed above, the MCA is consulting on the extension of the term of 2 GHz licenses and the conditions therein.

Finally, the MCA would like to receive feedback from interested stakeholders regarding the HIGH–LEVEL WORK STREAMS as identified in section 4.2 and possible new initiatives that may be required so that a roadmap for the next 3 years can be charted out.

5.1 IMMEDIATE PHASE - LICENCE TERM

For the immediate term, it is a MCA priority to give regulatory certainty to the mobile network operators in relation to the continued use of radio spectrum in the paired and unpaired 2 GHz bands.

As stated in Section 1, the MCA is required to implement the latest amendments to Commission Implementing Decision 2012/688/EU by the 1st January 2026. Furthermore, the expiry dates of the rights of use of radio spectrum that are currently in force will expire on the 16th August 2022.

The MCA would like to take the opportunity of the favourable EU implementation deadline in order to engage in discussions with the relevant stakeholders to address the considerations described under Section 4.

In this regard the MCA is hereby proposing to extend the current grants of rights of use of radio spectrum until the 16th August 2025 as a measure to give regulatory certainty to the respective right holders that electronic communications services may continue to be provided in the band within the entire Maltese territory.

It shall be underlined that this proposal will not jeopardise the right of current holders of rights of use to request the MCA to terminate their grants prior to the expiry date.

Question 1

Do you agree with the proposal to extend the licence term for the current rights of use of radio spectrum in the paired and unpaired 2 GHz frequency bands until the 16th August 2025?

The terms and conditions of the grants of the rights of use in the 2 GHz band are the subject of Question 2.

Please provide justifications in case of disagreement.

5.2 IMMEDIATE PHASE - LICENCE CONDITIONS FOR THE EXTENSION

The MCA considers that the conditions that are attached to the current rights of use of radio spectrum in the 2 GHz band do not constitute any regulatory burden or a significant barrier to the deployment of innovative wireless services in Malta. In this regard the MCA is proposing to retain the same conditions for the extended term of the rights of use including the applicable fees as established in Part B of the Twelfth Schedule of the Electronic Communications Networks and Services (General) Regulations (S.L. 399.48 of the Laws of Malta). [16]

[16] Please refer to Part B, item c(ii).

The MCA however is cognisant of the fact that the recent review of Commission Implementing Decision 2012/688/EU through the introduction of Commission Implementing Decision 2020/667/EU in May 2020 has introduced changes to the EU spectrum management framework for the paired 2 GHz band specifically in relation to the provision of next generation (5G) wireless systems. Until the national spectrum management framework is revised, holders of rights of use of radio spectrum in the paired 2 GHz band will therefore not be permitted to use their spectrum holding for SUL and SDL operation as well as for the deployment of AAS mobile electronic communications networks.

Question 2

Do you agree that the conditions to be attached to the extended grants for the rights of use of the 2 GHz band should not be modified?

Will the restrictions not to use the assigned radio spectrum for SUL / SDL operation and for AAS jeopardise your technology roadmap or other planned developments in your mobile electronic communications network?

Please provide justifications in case of disagreement and include alternative measures for the consideration of the MCA

5.3 INTERIM PHASE - NEXT STEPS

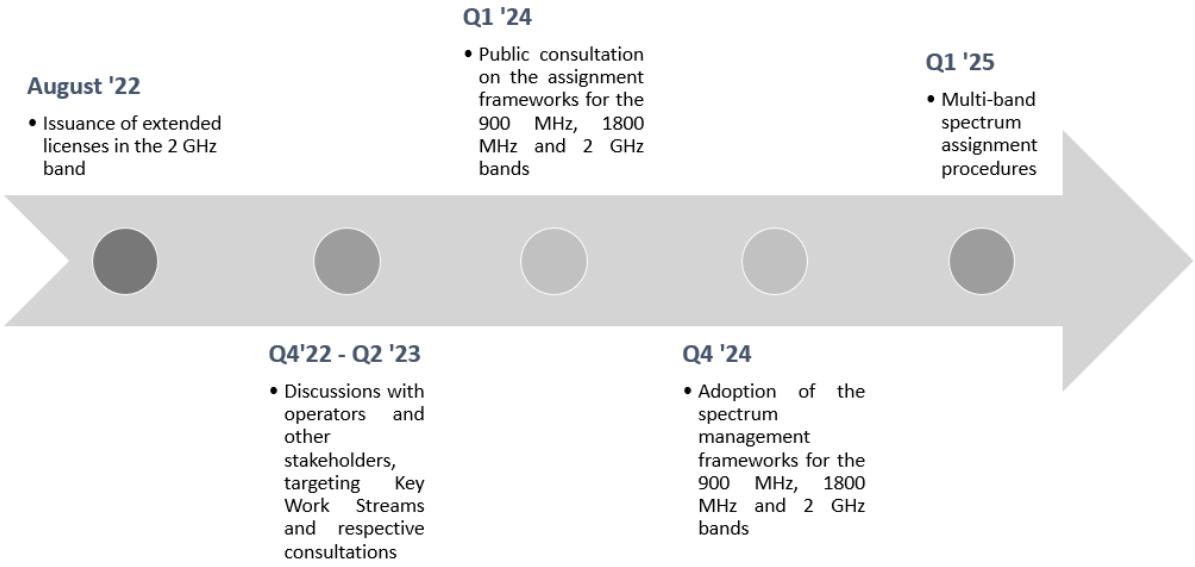
For the period between August 2022 until 2025, the MCA intends to engage in discussions with operators and other impacted stakeholders.

The MCA considers that apart from the extension of the current rights of use, it is deemed imperative to successfully devise frameworks meeting the needs of the local society. In this regard the MCA proposes to *stimulate discussions* with the local industry players and other stakeholders as necessary, with a view to address the challenges and opportunities described in section 4.2, which include the merits of coordinating the sun-setting of legacy technologies, IoT and M2M service management, education campaign regarding handset type and lifecycle, spectrum availability and multi-band assignment, caps and framework revisions as per applicable EC Decisions.

The outcome of such discussions may require the MCA to undertake public consultations on targeted subject matters.

The MCA notes that the aspects highlighted above are intended to set the high-level goals which need to be addressed for the ensuing a correlated work programme. ***The MCA therefore invites all potentially involved parties to share their opinions, comments, and observations with regard to the subject matter and as such parties consider relevant in relation to their respective areas of expertise.***

The outcome of these discussions will assist the MCA to develop the relevant regulatory frameworks and to undertake the spectrum assignment procedures in a timely manner. It will also help the MCA chart the necessary targeted consultation documents, reflecting the high-level salient work streams to be undertaken with a view to produce a 3-year roadmap. The following provides a tentative high-level work plan to address the work that needs to be undertaken.



Question 3

MCA will engage in discussions with all the relevant stakeholders in accordance with the tentative timeframes described above including the identification of key work streams to be consulted upon. MCA invites general comments from interested stakeholders regarding upcoming publications in the form of future consultation documents.

What is your opinion on the highlighted workstreams and the tentative timelines being suggested?

5.4 LONG TERM

Come 2026, following the execution of the work programme envisaged for the Interim Phase (September 2022 - end 2025), the MCA shall be in a position to take a more accurate stock-take of regulatory and technological developments and move along accordingly.

Aspects that may become salient by then, include WRC-23 decisions and visibility of WRC-27 programme, new spectrum that becomes available for 5G/6G, European law, as well as the Quality of Service of VoLTE/VoNR deployments. Other external influences include GSMA, GSA, local market pressures which shall all affect the mobile market ecosystem. The GSMA may adopt a more prescriptive position on the sunsetting of legacy technologies.

6. Consultation Framework

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 stakeholders during the consultation period which shall run from the 7th July 2022 to the 8th August 2022.

For the sake of clarity and ease of understanding, the MCA encourages stakeholders to structure their comments in line with the section and sub-section numbers used throughout this consultation document.

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 why the information should be treated as confidential.

For the sake of transparency, the MCA will publish a list of all respondents to this consultation. The MCA will take the necessary steps to protect the confidentiality of all such material in accordance with the MCA's confidentiality guidelines and procedures. Respondents are however encouraged to avoid confidential markings wherever possible.

Reponses to Questions 1 and 2 should be submitted to the MCA in writing by no later than **12.00hrs CET** on the **8th August 2022.**

Responses to the invitation for opinions to the interested stakeholders as per Question 3 should be submitted to the MCA in writing by no later than **12.00hrs CET** on the **15th September 2022.**

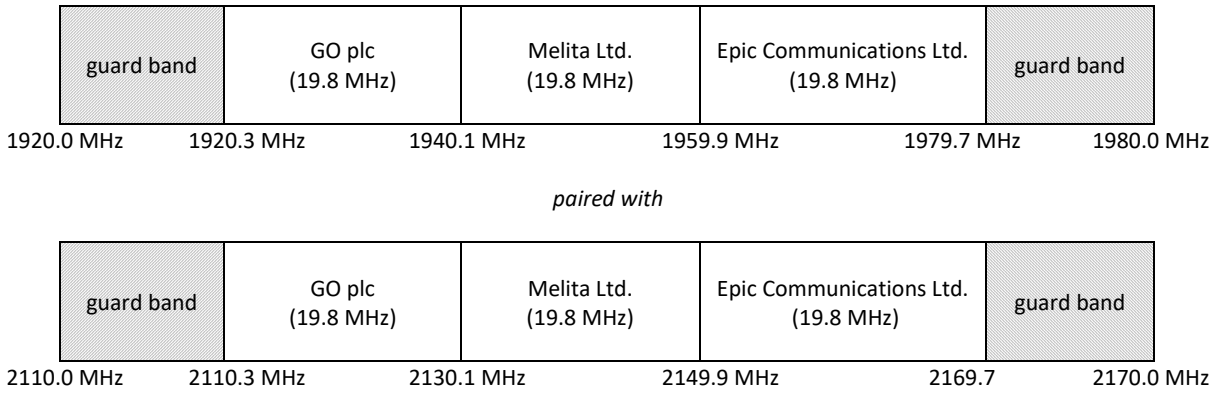
All responses should be submitted electronically to the Authority on consultations@mca.org.mt, and addressed to the Chief Executive Officer.

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 requests at its discretion. Requests for extensions are to be made in writing within the first ten (10) working days of the consultation period.

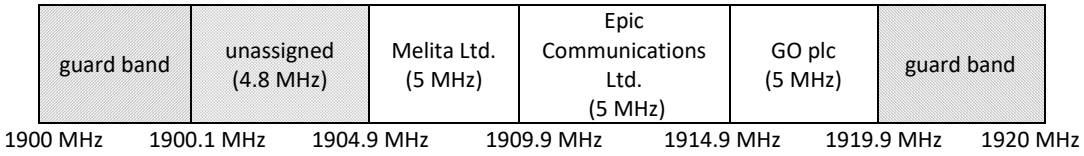
7. Annex 1 - Radio Spectrum Assignments in the 2 GHz Band

TERRESTRIAL 2GHz Band ASSIGNMENT PLAN

Frequency Division Duplex (FDD) (Paired)[17]:

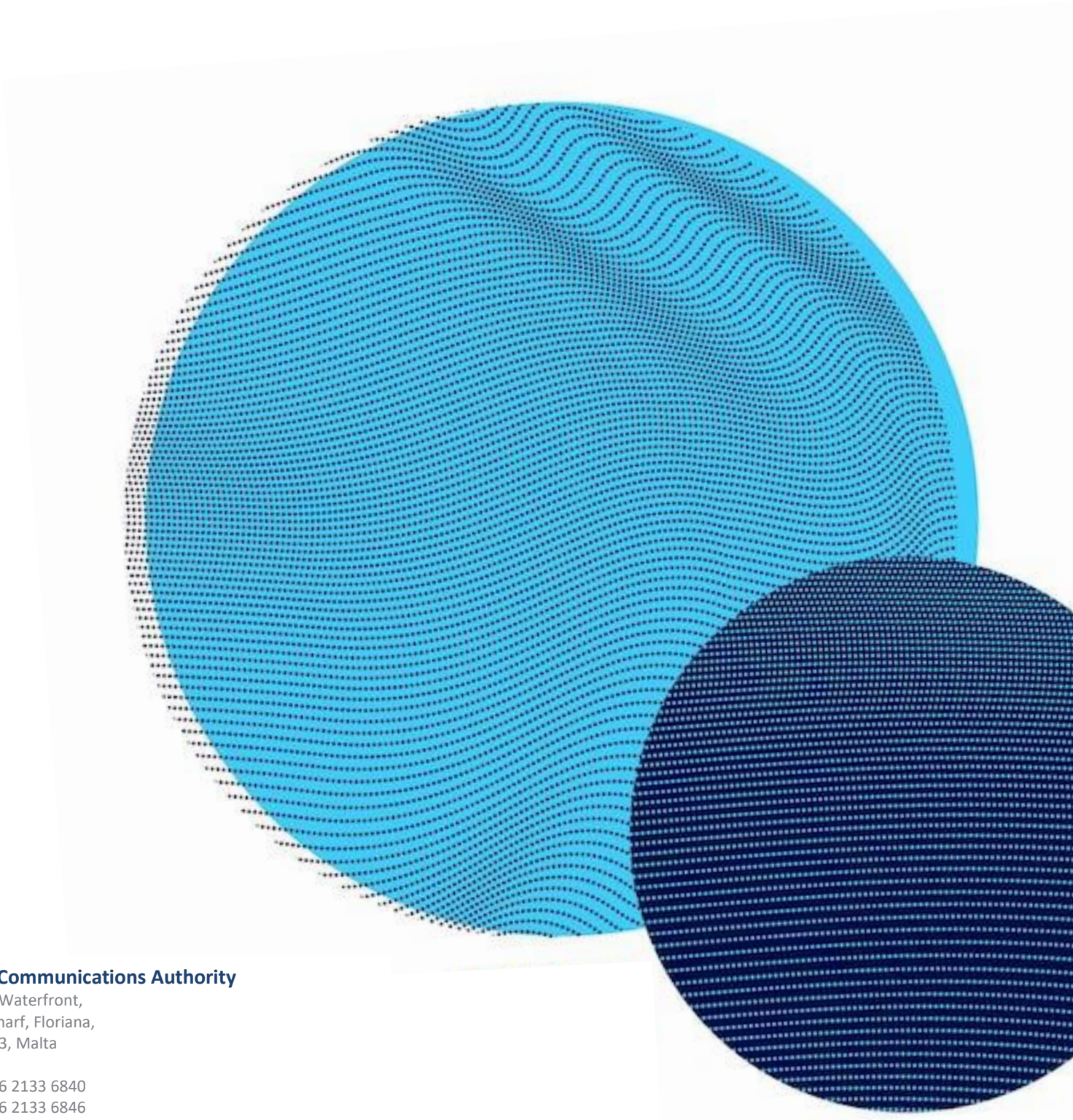


Time Division Duplex (TDD) (Unpaired)[18]:



[17] The band 1920-1980 MHz is paired with 2110-2170 MHz for FDD operation.

[18] The bands 1900-1920 MHz and 2010-2025 MHz are unpaired bands for TDD operation. However, the band 2010-2020 MHz is identified for self-provided applications operating in self coordinated mode.



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