



GRA

GIBRALTAR REGULATORY
AUTHORITY

Licensing of Mobile/Fixed Communications Networks in Gibraltar, including 5G Mobile Communications Services

Public Consultation

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FOREWORD

The Gibraltar Regulatory Authority (the "GRA") has issued this consultation with a view to building upon the current framework for the licensing of GSM services and its harmonisation towards a technology neutral platform, in accordance with its Decision 02/14.

Specifically, this consultation is concerned with the GRA's proposals to license the provision of Mobile/Fixed Communications Networks ("MFCN") in Gibraltar, including 5G mobile communications services and beyond, the identification of additional spectrum, and the reallocation of available spectrum in the currently allocated bands for mobile services.

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1. EXECUTIVE SUMMARY

The Gibraltar Regulatory Authority (the "GRA") has issued this consultation with a view to building upon the current framework for the licensing of GSM services and its harmonisation towards a technology neutral platform, in accordance with its Decision 02/14¹. Specifically, this consultation is concerned with the GRA's proposals to license the provision of Mobile/Fixed Communications Networks ("MFCN") in Gibraltar, including 5G mobile communications services and beyond, the identification of additional spectrum, and the reallocation of available spectrum in the currently allocated bands for mobile services.

The introduction of 5G technology is particularly suited to the provision of exceptionally faster mobile data services and improved quality of service, meaning that broadband delivered over a MFCN could be equally as fast as that delivered over a fixed network. The prospect of these technologies also offers new innovative services including the Internet of Things ("IoT")² and machine-to-machine communications ("M2M"), which will provide operators the platforms to offer services in a more economic manner, as well as the opportunity to offer more bespoke solutions.

The focus of this consultation is the process for licensing future MFCN services in Gibraltar and, in this context, to set out the GRA's plans for the spectrum bands which should be allocated for the development of these services, including 5G. In this regard, the GRA has considered current spectrum assignments and considered how available spectrum can be offered effectively to existing and new operators, taking into account factors influencing potential occupancy across the bands.

As explained below, the GRA proposes to split the spectrum for MFCN's into three general categories, namely:

- Frequencies below 1 GHz
- Frequencies between 1 GHz and 6 GHz
- Frequencies above 6 GHz

Furthermore, this consultation aims to set up a mechanism to allocate available and future bands efficiently with a view to allowing for faster allocation of spectrum. This will allow the market to determine what technology to deploy, within a more dynamic and forward-looking fee structure.

In order to provide mobile services in Gibraltar, an operator is required to hold a General Authorisation and respective licences ("Part VI Licence"), for use of the electromagnetic spectrum, in accordance with the provisions of the Communications Act 2006 (the "Act"), and the Communications (Authorisation and Licensing) Regulations 2006 (the "Authorisation Regulations").

¹ "Consultation on the Licensing of 4G Mobile Services & Liberalisation of Mobile Bands in Gibraltar, Response to Consultation and Decision Document No. 02/14 and Response to Public Consultation 03/13", Gibraltar Regulatory Authority, 21st March 2014 < https://www.gra.gi/download/759/rpc_02_14.pdf > (accessed 27th August 2019)

² As defined by the International Telecommunication Union. See "Overview of the Internet of Things", Recommendation ITU-T Y.2060, ITU, July 2012 at Page 1 < <http://handle.itu.int/11.1002/1000/11559-en?locatt=format:pdf&auth> > (accessed 27th August 2019)

In respect of spectrum fees, the GRA collects licence fees on behalf of Her Majesty's Government of Gibraltar ("HMGoG") and the Minister responsible for Communications sets the relevant licence fees in consultation with the GRA.

The current fee structure for mobile spectrum is technology specific, which, in light of the push for a technology neutral spectrum, will be revisited. Consequently, spectrum fees will be examined and the current fees for 2G, 3G and 4G may require re-evaluating to be brought in line with technology neutral principles and the band classifications above. Each frequency band has its own physical properties that allow for greater propagation, penetration or capacity. Therefore, spectrum will be valued taking into due consideration:

- Demand for spectrum;
- Availability of the required bands; and
- Interoperability of technology allowed in the band due to sharing constraints or international sharing agreements.

Considering the factors above, and after having reviewed all views from interested parties on this consultative document, spectrum fees will be proposed to HMGoG by the GRA with the aim of harmonising such fees for mobile services in keeping with a technology neutral approach.

In awarding spectrum, the GRA will be applying a methodology that takes into account the interest from new operators as well as existing operators. This opens up an opportunity for new operators to offer services in under-utilised bands and at the same time, allows for the removal of the requirement for operators to establish multi-band networks.

With this in mind, the GRA proposes to define different sets of criteria based on approved business plans. As such, the most suitable way to bring forward MFCN licensing in Gibraltar, including 5G services, is by inserting conditions covering a set of minimum service criteria in the Part VI Licences issued by the GRA. This will allow operators to operate under a consistent set of licence conditions relevant to the service being offered.

2. INTRODUCTION

2.1. CONSULTATION PROCEDURE AND TIMETABLE

The GRA invites views from interested parties on this consultative document. Comments should be submitted in writing before 5pm on 27th September 2019 to: -

consultation@gra.gi

All comments are welcome, but it would make the task of analysing responses easier if comments are referenced to the relevant question numbers. Unless marked confidential, the GRA will make copies of the comments available online.

The GRA will analyse all comments and take them into consideration before issuing any decisions as a result of this consultation.

This consultative document is not a legal document and does not constitute legal, commercial or technical advice. The GRA is not bound by it. The consultation is without prejudice to the legal position of the GRA or its rights and duties under the relevant legislation.

2.2. PRIVACY

Any and all personal data collected during the course of this public consultation will be managed in accordance with our privacy policy which can be found online at <https://www.gra.gi/home/privacy-statement>.

3. REGULATORY FRAMEWORK

3.1. BACKGROUND TO 5G

This consultation addresses proposals for the licensing of current and future mobile services in Gibraltar, and the spectrum bands that should be made available for existing and future MFCN's. The GRA's objectives are to maximize the efficient use of the electromagnetic spectrum in Gibraltar, and to establish adequate conditions whereby operators are encouraged to roll out next generation networks ("NGN") and services.

There has been a rapid and continued growth in demand for mobile data over the last few years. This has been primarily driven by the use of data services on mobile devices. 5G will support significantly faster mobile broadband speeds and heavier data usage than 4G, while also enabling the full development of the IoT's potential. From smart cities to autonomous cars and fibre-over-the-air, 5G will be at the heart of the future of communications.

Newer technologies utilise a range of frequencies to deliver services and combine different frequency bands to provide higher data throughput. Each sub-band is particularly suited for certain services, as these act differently with respect to propagation, penetration and bandwidth availability. Future MFCN's will likely require spectrum within 3 key frequency ranges in order to deliver widespread coverage and support all-use cases³. The 3 ranges are 0-1 GHz, 1-6 GHz and 6 GHz and above.

The table below summarises the specific properties of each band⁴:

³ "5G Spectrum GSMA Public Policy Position", GSMA, July 2019

< <https://www.gsma.com/spectrum/wp-content/uploads/2019/07/5G-Spectrum-Positions.pdf> > (accessed 27th August 2019)

⁴ *Ibid*

0-1 GHz	<ul style="list-style-type: none"> • Extended coverage and use in buildings • Ultra-reliable communications • eMBB⁵ • Mass M2M • Supports IoT services
1-6 GHz	<ul style="list-style-type: none"> • Good mix of coverage and capacity • Ultra-reliable communications • eMBB • M2M (less coverage)
6 GHz and above	<ul style="list-style-type: none"> • High data transmission capacity for specific cases • Ultra-reliable communications • eMBB

Much work continues to be done at International Telecommunication Union (“ITU”) and EU level to identify harmonised bands within each of the categories above. Each key frequency range is examined in more detail below.

3.2. LICENSING OF MOBILE SERVICES

In order to provide mobile services in Gibraltar, an operator is required to hold a General Authorisation and the respective Part VI Licences for use of the electromagnetic spectrum. The same will apply with newer mobile technologies. Please refer to our website for details about this.

3.3. MADE-TO-MEASURE CONDITIONS

The GRA proposes to insert made-to-measure conditions into Part VI Licences to ensure consistency between operators, regulatory control and speedy delivery of NGN’s, whilst ensuring that each proposal for spectrum usage is considered on its merits, and future development if any. The GRA wants to ensure that 5G services are launched at the earliest date possible in a way which is most effective, and which will offer optimum services for customers. For example, the GRA will consider requests for large allocations of spectrum for the provision of mobile telephony services to Gibraltar far more significant, than a large allocation of spectrum designed only to benefit a small cross-section of the community. Therefore, requests for large allocations envisaged for the provision of a robust and effective mobile telephony network will be considered only on the basis that specific and realistic targets are accepted, and more importantly, met by the requesting operator.

Operators should note that under the Schedule to Notice 07/2006 Concerning the General Criteria for The Grant of Licences Limited in Number⁶, section 3 lists the requirements that must be met for the grant of a Part VI Licence. Particularly, paragraph 3(e) provides that “*the*

⁵ Enhanced Mobile Broadband

⁶ “Notice 7/2006 Concerning the General Criteria for The Grant of Licences Limited in Number”, Gibraltar Regulatory Authority, 19th October 2006
< <https://www.gra.gi/communications/notice-concerning-the-general-criteria-for-the-grant-of-licences-07/2006> >, (accessed 27th August 2019)

reliability of the licence is sufficient to provide a robust network". On this note, Single Frequency Networks ("SFN"), will be deemed robust networks by the GRA.

3.4. AVAILABLE BANDS FOR THE INTRODUCTION OF NGN SERVICES

All Part VI Licences currently issued for operators are technology neutral. This allows operators to decide which technology best suits their needs. As a consequence, the GRA proposes to include the term 5G, LTE Evolution in all Part VI Licences, with a view to incorporate technologies and standards as they are developed.

In order to avoid uncertainty and make more efficient use of the spectrum, the Part VI Licence will be amended to include the paired frequencies, if applicable, and the type of duplexing used, namely Frequency Division Duplexing ("FDD") or Time Division Duplexing ("TDD"). Furthermore, a reference will be added to bind the use of the specified bands in the Licence to the permitted use, as defined in the Gibraltar Frequency Allocation Table ("GFAT")⁷. This will provide the mechanism to make spectrum available quicker, and the invitation for future interest simpler.

Question 1: Do you agree with, or have any comments on the GRA's proposed amendments in respect of the 3 spectrum ranges?

Question 2: Do you agree with, or have any comments on the proposed introduction of made-to-measure licence conditions?

4. MOBILE SPECTRUM

4.1. AVAILABLE MOBILE SPECTRUM

In this section, the GRA examines the spectrum bands that may be made available for use by MFCN's for future mobile services, including 5G, bearing in mind that current Part VI Licences are already technology neutral. This analysis covers the bands that are currently in use for mobile services namely 2G, 3G and 4G, as well as other bands where spectrum may also be made available for 5G usage.

4.2. CURRENT 2G, 3G, 4G SPECTRUM ASSIGNMENTS IN USE

Currently, Gibtelecom Limited and Eazi Telecom Limited hold Part VI Licences to provide mobile services in Gibraltar, and both operators run 2G, 3G and 4G networks. Additionally, both operators make use of spectrum in the 1800 MHz band to support the provision of 2G mobile services, are licensed to use 2100 MHz spectrum for the provision of 3G services, and are also licensed to use the 800 MHz band for 4G services. Only Gibtelecom Limited has an

⁷ The Gibraltar Frequency Allocation Table can be found on the Gibraltar Regulatory Authority's website at < <https://www.gra.gi/communications/gfat> > (accessed 27th August 2019)

allocation in the 900 MHz band and makes use of part of its 1800 MHz allocation to provide 4G services complementing its allocation in the 2600 MHz band for 4G services.

4.3. BELOW 1 GHZ BAND

It is understood that spectrum below 1 GHz may be required to extend high speed 5G mobile broadband coverage across dense urban areas such as Gibraltar, and to support IoT services. Without an allocation in this band, 5G services may struggle to perform adequately⁸.

The 694 MHz – 790 MHz (“700 MHz Band”), currently allocated to DVB-T services has been identified in the EU as a suitable band for wireless broadband electronic communications services⁹, making it an ideal harmonised band for 5G. At present, the frequency 754 MHz (DVB-T Channel 56) is allocated and in use by Gibraltar Freeview Limited. This band should be made available for mobile services in Europe by 30th June 2020¹⁰.

The proposed channel plan implemented in various European countries including the UK and Spain, is shown below:

694 MHz-703 MHz	703 MHz- 708MHz	708 MHz-713 MHz	713 MHz-718 MHz	718 MHz-723 MHz	723 MHz-728 MHz	728 MHz-733 MHz	733 MHz-738 MHz	738 MHz-743 MHz	743 MHz-748 MHz	748 MHz-753 MHz	753 MHz-758 MHz	758 MHz-736 MHz	763 MHz-768 MHz	768 MHz-773 MHz	773 MHz-778 MHz	778 MHz-783 MHz	783 MHz-788 MHz	788 MHz-791 MHz
Guard band	Uplink						Gap	Supplemental Downlink (SDL)				Downlink				Guard band		
9 MHz	30 MHz (6 blocks of 5 MHz)						5MHz	20 MHz (4 blocks of 5 MHz)				30 MHz (6 blocks of 5 MHz)				3 MHz		

The above follows the same layout as the channel plan for the 800 MHz band currently being utilised for 4G services.

The GRA will make available the 700 MHz Band for mobile services as recommended in Decision (EU) 2017/899, together with the above associated channel plan.

4.4. 1 – 6 GHZ BAND

Spectrum in the range 1-6 GHz offers a good mixture of coverage and capacity for MFCN’s. Most 5G tests and network deployments around the world are concentrating on this band,

⁸ See Note 3 *Supra*

⁹ Decision (EU) 2017/899 Decision (EU) 2017/899 of the European Parliament and of the Council of 17 May 2017 on the use of the 470-790 MHz frequency band in the Union

< <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A32017D0899> >, (accessed 27th August 2019)

¹⁰ *Ibid*

with C-Band (3400 MHz – 3800 MHz)¹¹ being the clear favourite in Europe. However, there is also a growing interest in L-Band (1452 MHz -1492 MHz)/Extended L-Band (1427 MHz - 1518 MHz) and 2.3 GHz -2.4 GHz¹².

4.4.1. L-BAND (1452 MHZ – 1492 MHZ)

The 1452 MHz - 1492 MHz band has been harmonised for use of MFCN’s supplemental downlink (“MFCN SDL”) by the European Conference of Postal and Telecommunications Administrations (“CEPT”)¹³. Although Gibraltar is not a member of CEPT, the GRA, as a matter of good practice, considers CEPT decisions and implements those most beneficial to Gibraltar. There are currently no registered users of this band in Gibraltar, therefore, the GRA will make this band available for MFCN’s and will implement CEPT ECC Decision (13)03.

The channel plan for the L-Band is outlined below:

1452 MHz-1457 MHz	1457 MHz-1462 MHz	1462 MHz-1467 MHz	1467 MHz-1472 MHz	1472 MHz-1477 MHz	1477 MHz-1482 MHz	1482 MHz-1487 MHz	1487 MHz-1492 MHz
Downlink (base station transmit)							
40 MHz (8 blocks of 5 MHz)							

The GRA will make available the L-Band for mobile services as recommended in CEPT ECC Decision (13)03, together with the above associated channel plan.

4.4.2. EXTENDED L-BAND (1427 MHZ – 1452 MHZ AND 1492 MHZ - 1518 MHZ)

The 1427 MHz – 1452 MHz and 1492 MHz – 1518 MHz bands have been identified by CEPT for harmonised use for MFCN SDL¹⁴. The GRA intends to implement CEPT ECC Decision (17)06 and make the 1427 MHz -1452 MHz and 1492 MHz - 1518 MHz bands available for MFCN’s in Gibraltar with the following associated channel plans:

¹¹ Commission Decision of 21 May 2008 on the harmonisation of the 3400-3800 MHz frequency band for terrestrial systems capable of providing electronic communications services in the Community (notified under document number C(2008) 1873) < <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32008D0411&from=DA> >, (accessed 27th August 2019)

¹² *Ibid*

¹³“The harmonised use of the frequency band 1452-1492 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)”, ECC Decision (13)03, European Conference of Postal and Telecommunications Administrations, as amended on 2nd March 2018

< <https://www.ecodocdb.dk/download/ccf1bd32-f898/ECCDec1303.pdf> >, (accessed 27th August 2019)

¹⁴“The harmonised use of the frequency bands 1427-1452 MHz and 1492-1518 MHz for Mobile/Fixed Communications Networks Supplemental Downlink (MFCN SDL)”, ECC Decision (17)06, European Conference of Postal and Telecommunications Administrations, as corrected on 2nd March 2018

< <https://www.ecodocdb.dk/download/4f052b0b-2c6c/ECCDEC1706.pdf> >, (accessed 27th August 2019)

1427 MHz-1432 MHz*	1432 MHz-1437 MHz	1437 MHz-1442 MHz	1442 MHz-1447 MHz	1447 MHz-1452 MHz
Downlink (base station transmit)				
25 MHz (5 blocks of 5 MHz)				

* Block conditions apply

1492 MHz-1497 MHz	1497 MHz-1502 MHz	1502 MHz-1507 MHz	1507 MHz-1512 MHz	1512 MHz-1517 MHz*	1517 MHz-1518 MHz
Downlink (base station transmit)					Guard band
25 MHz (5 blocks of 5 MHz)					1 MHz

* Block conditions apply

The GRA will make available the Extended L-Band for mobile services as recommended in CEPT ECC Decision (17)06, together with the above associated channel plans.

Furthermore, due to the availability in the above bands, the GRA has considered and sees the benefit in, amalgamating the above bands and make available a larger contiguous block. This is reflected in the table below, which is deemed to better serve MFCN's:

1427 MHz-1432 MHz*	1432 MHz-1437 MHz	1437 MHz-1442 MHz	1442 MHz-1447 MHz	1447 MHz-1452 MHz	1452 MHz -1457 MHz	1457 MHz-1462 MHz	1462 MHz-1467 MHz	1467 MHz-1472 MHz	1472 MHz-1477 MHz	1477 MHz-1482 MHz	1482 MHz-1487 MHz	1487 MHz-1492 MHz	1492 MHz-1497 MHz	1497 MHz-1502 MHz	1502 MHz-1507 MHz	1507 MHz-1512 MHz	1512 MHz-1517 MHz*	1517 MHz-1518 MHz
Downlink (base station transmit)																		Guard band
90 MHz (18 blocks of 5 MHz)																		1 MHz

* Block conditions apply

The GRA will amalgamate the L-Band and Extended L-Band as per the table above.

4.4.3. 2300 MHz – 2400 MHz

The 2300 MHz – 2400 MHz band has been identified by CEPT for harmonised use for MFCN’s¹⁵. After examining the GFAT and the Gibraltar Frequency Register, the GRA sees the benefit in implementing CEPT ECC Decision (14)02 on the harmonised technical and regulatory conditions for the use of the 2300 MHz - 2400 MHz band and make it available for MFCN’s in Gibraltar with the following associated channel plan:

2300 MHz-2503 MHz	2305 MHz-2310 MHz	2310 MHz-2315 MHz	2315 MHz- 2320 MHz	2320 MHz -2325 MHz	2325 MHz -2330 MHz	2330 MHz-2335 MHz	2335 MHz -2340 MHz	2340 MHz -2345 MHz	2345 MHz -2350 MHz	2350 MHz -2355 MHz	2355 MHz -2360 MHz	2360 MHz -2365 MHz	2365 MHz -2370 MHz	2370 MHz -2375 MHz	2375 MHz -2380 MHz	2380 MHz -2385 MHz	2385 MHz -2390 MHz	2390 MHz -2395 MHz	2395 MHz -2400 MHz
TDD (MHz)																			
100 MHz (20 blocks of 5 MHz)																			

The GRA will make available the 2300 MHz – 2400 MHz Band for mobile services as recommended in CEPT ECC Decision (14)02, together with the above associated channel plan.

4.4.4. C – BAND (3400 MHz – 3800 MHz)

CEPT ECC Decision (11)06¹⁶ harmonises the 3400 MHz - 3800 MHz band to facilitate high data rate MFCN’s including International Mobile Telecommunications (“IMT”) services. This band commonly referred to as C-Band is in use in Gibraltar and many other countries in Europe and throughout the world for the Fixed-Satellite (space-to-earth) services. Due to the current use of this band throughout the world, a sharing and co-location criteria has been developed by CEPT. Each of the sub-bands are considered below.

4.4.5. LOWER C-BAND (3400 MHz – 3600 MHz)

Fixed Wireless Access (“FWA”), operating in the 3400 MHz – 3600 MHz band was first used in Gibraltar in 2006. FWA was allowed use as a secondary service to the fixed-satellite space-to-

¹⁵ “Harmonised technical and regulatory conditions for the use of the band 2300-2400 MHz for Mobile/Fixed Communications Networks (MFCN)”, ECC Decision (14)02, European Conference of Postal and Telecommunications Administrations, as amended on 27th June 2014

< <https://www.ecodocdb.dk/download/b02d6dab-2b58/ECCDEC1402.PDF> >, (accessed 27th August 2019)

¹⁶ “Harmonised frequency arrangements and least restrictive technical conditions (LRTC) for mobile/fixed communications networks (MFCN) operating in the band 3400-3800 MHz”, ECC Decision (11)06, European Conference of Postal and Telecommunications Administrations, as amended on 26th October 2018

< <https://www.ecodocdb.dk/download/34f57e2a-1c04/ECCDEC1106.PDF> >, (accessed 27th August 2019)

earth services ("FSS"), which means that FWA services cannot interfere nor claim protection from these. In order to achieve this, geographical restrictions were implemented around the Windmill Hill area, due to the location of the earth station operated by SES Satellites (Gibraltar) Ltd ("SES"). The technology commonly available at the time, WiMax, never delivered to its full potential and the two WiMax projects in Gibraltar were terminated after little success. SES however, currently operate in this band for the purposes of space-to-earth communications.

Geographical restriction is an effective means to ensure co-existence of systems, namely the FSS and mobile service, but given the high density of buildings in Gibraltar and the nomadic nature of mobile services, geographical restriction could inhibit the rollout of any meaningful network in the band in the South District. The GRA therefore proposes to make part of this sub-band available for mobile services and remove current geographical restrictions, whilst at the same time, introducing a substantial guard band to protect SES's operations. Therefore, the GRA proposes to make the band available for MFCN's on a technology neutral basis as follows:

3400 MHz-3410 MHz	3410 MHz-3420 MHz	3420 MHz-3430 MHz	3430 MHz - 3440 MHz	3440 MHz -3450 MHz	3450 MHz -3460 MHz	3460 MHz -3470 MHz	3470 MHz -3480 MHz	3480 MHz -3490 MHz	3490 MHz -3500 MHz	3500 MHz -3510 MHz	3510 MHz -3520 MHz	3520 MHz -3530 MHz	3530 MHz -3540 MHz	3540 MHz -3550 MHz	3550 MHz -3560 MHz	3560 MHz -3570 MHz	3570 MHz -3580 MHz	3580 MHz -3590 MHz	3590 MHz -3600 MHz
TDD (MHz)																	Guard Band		
180 MHz (18 blocks of 10 MHz)																	20MHz		

The table above illustrates the proposed channel plan for this band. The 3580 MHz – 3600 MHz band will be initially reserved as a guard band and any mobile base station, pico or nano cell, in the area close to the above-mentioned earth station will also have to provide evidence of non-harmful interference before being allowed to provide a public service. In effect, the mobile service would be classified as a secondary service and must not interfere with the operations of the earth station.

Question 3: Do you agree with, or have any comments on the GRA's proposed channel plan for the sub-band 3400-3600 MHz and conditions of use?

4.4.6. UPPER C-BAND (3600 MHz – 3800 MHz)

This portion of the band is currently in use by SES for its space-to-earth functions. Due to the spread of frequencies in use, it would not be practical to design a suitable channel plan with enough guard bands and the required physical separation from a mobile transmitter to the SES earth station to be of any significant benefit for MFCN's. Furthermore, any imposed restriction on new space-to-earth use could hinder further development for SES. With this in mind, and taking into consideration the amount of spectrum identified in the 1 – 6 GHz band for mobile services, the GRA proposes not to make the 3600 MHz – 3800 MHz band available for mobile services at this time.

Question 4: Do you agree with, or have any comments on the GRA’s proposed plan for the sub-band 3600-3800 MHz?

4.5. ABOVE 6 GHZ

Spectrum above 6 GHz may be required for 5G services to deliver ultra-high-speed mobile broadband. Work at UK, European and international level in preparation for the World Radiocommunication Conference 2019 (“WRC 2019”) is ongoing. It is envisaged that WRC 2019 will see a discussion on the identification of frequency bands for the future development of IMT, including possible additional allocations to the mobile service in the frequency range between 24.25 GHz and 86 GHz, in accordance with Resolution 238 [COM6/20]¹⁷.

Although preferred bands have been identified by the EU and other regions, until the final acts of the WRC 2019 conference are published, there is no certainty as to what bands, if any, will ultimately be made available and protected for these services.

Whilst the GRA will not delay the allocation of current available spectrum for mobile services, spectrum in the bands above 6 GHz will become available only once WRC 2019 has concluded and relevant documents on the subject are published.

Question 5: Do you agree with, or have any comments on the GRA’s proposal to consider making spectrum available for MFCN’s in the bands above 6 GHz only after WRC 2019 has concluded and relevant documents are published?

5. INVITATION FOR INTEREST AND ALLOCATION PROCESS

Taking into consideration the amount of potential spectrum available and the proliferation of smart phones and other devices with multi-band capabilities, it is unlikely that an operator would require spectrum allocations in all bands. Furthermore, the spectrum trading mechanisms in the Act allow licensed operators to trade spectrum allocations between themselves to suit their needs, thus allowing the market to decide how best to utilise spectrum and what services to offer¹⁸.

The table below shows an approximate percentage utilisation of the respective bands under consideration. Although there can be no equalisation of spectrum on all bands for new or current operators, the GRA envisages being able to make available, sufficient capacity within all the bands.

¹⁷ Resolution 238 (WRC-15) Studies on frequency-related matters for International Mobile Telecommunications identification including possible additional allocations to the mobile services on a primary basis in portion(s) of the frequency range between 24.25 and 86 GHz for the future development of International Mobile Telecommunications for 2020 and beyond < https://www.itu.int/dms_pub/itu-r/oth/0c/0a/ROCOA00000C0014PDFE.pdf > (accessed 27th August 2019)

¹⁸ Section 59B Communications Act 2006

The table below shows the total usable spectrum available in MHz per band, and states the current percentage utilisation for existing and future MFCN bands identified by the GRA.

Band	Frequency Range (MHz)	Total Usable Spectrum (MHz)*	Current Spectrum Allocation**
700 Band	694 – 790	30 MHz FDD 20 MHz TDD	63 %***
800 Band	791 - 821	30 MHz FDD	66 %
900 Band	925 - 960	35 MHz FDD	19.5 %
Extended L-Band	1427 - 1518	90 MHz (Duplexing model TBA)	0%
1800 Band	1805 -1880	75 MHz FDD	19.5 %
UMTS 2100	2110 - 2170	60 MHz FDD	33 %
2400 Band	2300 - 2400	100 MHz TDD	0%
LTE 2600	2620 - 2690	70 MHz FDD 50 MHz TDD	33 %
Lower C-Band	3400 – 3600	180 MHz TDD	0%

*Excludes guard bands and spectrum occupied by neighbouring countries

**Includes both allocation and reservations

***Please refer to Section 4.3 above for more details

5.1. AWARD PROCESS

The GRA has focused this consultation on preparing the framework to allow a fast rollout of 5G and future technologies. Therefore, the GRA proposes to make current and future MFCN spectrum available on a technology neutral basis, which will be reflected in the award process.

5.2. DETAILS OF PROPOSED MOBILE LICENCE AWARD PROCESS

The GRA’s proposed award process is as follows:

- **Application Stage:** The GRA will issue a public call for expressions of interest to persons interested in MFCN spectrum bands. As referred to above, an operator will be required to hold a General Authorisation and the respective Part VI Licences for use of the electromagnetic spectrum.
- **Qualification Stage:** The GRA will evaluate the applications received in response to its call for expressions of interest in order to determine the number of valid applications received. Each applicant may subsequently be required to submit additional

information to assist the GRA in evaluating its business plan, and intended usage of the required spectrum.

- **Award Stage:** This stage involves the GRA awarding MFCN spectrum to successful applicants. On award, successful applicants will be required to submit a non-refundable fee based on a percentage of the licence fee, which will be deducted from the total licence fee payable at launch.

5.3. MINIMUM SERVICE LEVELS

As outlined above, the GRA plans to specify within Part VI Licences, the minimum service criteria conditions that will apply, in respect of the usage of the allocated spectrum. In particular, the GRA will be considering applications with a view to how these will ultimately benefit the consumer. In the case of mobile telephony networks therefore, and with the consumers' best interests at the forefront of the process, the GRA would expect operators planning to roll out NGN including 5G mobile telephone networks to adhere to a minimum set of obligations. These will be set with a view that the consumer is able to benefit from first class facilities and services. Note in particular, that due to the scarcity of spectrum, the GRA must act guardedly when allocating spectrum, thus ensuring that any allocations required for mobile telephone networks are seen to fruition by the operators. In the absence of this, i.e. the GRA finding that operators with significant allocations are not utilising the spectrum efficiently nor be seen to be rolling-out a network in accordance with the criteria below, the GRA will have little recourse but to withdraw allocations, and make that spectrum available. This will be particularly so, should the demand for spectrum, as a whole or in any particular band, exceed supply.

The GRA proposes to include the following obligations within Part VI Licences, in the instances where NGN mobile telephony networks aimed at the general public are to be rolled-out.

For New Operators:

- **Launch Date:** Operators will be obliged to launch commercial services within 12 months of licence award;
- **Coverage at Launch:** Operators will be obliged to provide at least 50% population coverage at launch;
- **Population Coverage to be Achieved:** Operators will be obliged to provide at least 70% population coverage within two years of service launch.

For Established Operators:

- **Launch Date:** Operators will be obliged to launch commercial services within 9 months of licence award;
- **Coverage at Launch:** Operators will be obliged to provide at least 70% population coverage at launch;
- **Population Coverage to be Achieved:** Operators will be obliged to provide at least 95% population coverage within two years of service launch.

The GRA proposes to include the following obligations within Part VI Licences, in the instances where services are not aimed at the general public, but rather aimed at specific markets or services:

- **Launch date:** Operators will be obliged to launch services as per the approved business plan timescales;
- **Coverage at launch:** Operators will be obliged to provide at least 70% of the approved business coverage at launch or as directed in the licence conditions;
- **Population coverage to be achieved:** Operators will be obliged to provide at least 95% of the approved coverage within two years of service launch or as directed by licence conditions.

Question 6: Do you agree with, or have any comments on the GRA's proposal to include minimum service levels subject to the proposed usage of the spectrum?

6. SUMMARY OF QUESTIONS

Having published this consultation, the GRA welcomes any comments related to this but especially, on the 6 specific questions posed above. For ease of reference these are:

Question 1: Do you agree with, or have any comments on the GRA's proposed amendments in respect of the 3 spectrum ranges?

Question 2: Do you agree with, or have any comments on the proposed introduction of made-to-measure licence conditions?

Question 3: Do you agree with, or have any comments on the GRA's proposed channel plan for the sub-band 3400-3600 MHz and conditions of use?

Question 4: Do you agree with, or have any comments on the GRA's proposed plan for the sub-band 3600-3800 MHz?

Question 5: Do you agree with, or have any comments on the GRA's proposal to consider making spectrum available for MFCN's in the bands above 6 GHz only after WRC 2019 has concluded and relevant documents are published?

Question 6: Do you agree with, or have any comments on the GRA's proposal to include minimum service levels subject to the proposed usage of the spectrum?

The GRA however, notes that members of the public and operators alike, may wish to comment on other aspects of the proposed changes to the spectrum and allocation process. The GRA would therefore welcome any comments on the merits of this consultation, issues arising out of it, or any other general comments which a respondent may wish to make.

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