

**DRAFT DECISION
ON THE
DESIGNATION OF THE 700 MHz BAND FOR TERRESTRIAL ELECTRONIC
COMMUNICATIONS SERVICES**

**LIMITATION OF THE NUMBER OF FREQUENCY USAGE RIGHTS TO BE
ALLOCATED IN THE 700 MHz, 900 MHz, 1800 MHz, 2.1 GHz, 2.6 GHz and
3.6 GHz BANDS AND**

DEFINITION OF THE RESPECTIVE ALLOCATION PROCEDURE

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1. Framework

1.1. Spectrum planning and management for 5G

As part of the European Union (EU) strategy for the Digital Single Market¹, the European Commission (EC) adopted Implementing Decision (EU) 2016/687², of 28 April (Decision 2016/687/EU), through which the technical conditions for the availability and efficient use of the 694-790 MHz (700 MHz band) frequency band for terrestrial systems capable of providing wireless broadband electronic communications (TECS) services were harmonised.

As a result of this decision, the 700 MHz band was therefore considered particularly appropriate to ensure the provision of broadband services in rural areas, underlining the need for coordinated introduction at EU level to foster investment in high-speed broadband networks and facilitate the proliferation of advanced digital services.

Subsequently, in November 2016, the EU Radio Spectrum Policy Group (RSPG) published its first “*Opinion on spectrum related aspects for next-generation wireless systems (5G)*”³, under which the elements considered strategic for the rapid launch of services supported on 5G systems are highlighted.

This thus represents the first indication of what are considered the pioneering bands for 5G: the 700 MHz band, suitable for ensuring the transition to the next generation of networks and coverage in different areas, the 3.6 GHz band (3 4-3.8 GHz), capable of providing the necessary capacity for services based on the 5G systems, and the 26 GHz (24.25-27.5 GHz) band, which allows ultra-fast capacity to be made available.

It is within this framework that on 17 May 2017 Decision (EU) 2017/899 of the European Parliament and of the Council on the use of the 470-790 MHz frequency band in the EU

¹ Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1447773803386&uri=CELEX%3A52015DC0192>.

² Adopted under Decision 676/2002/EC of the European Parliament and of the Council, of 7 March 2002, on a regulatory framework for radio spectrum policy in the European Community (Radio Spectrum Decision). Available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2016.118.01.0004.01.ENG&toc=OJ:L:2016:118:TOC.

³ English version available at http://rspg-spectrum.eu/wp-content/uploads/2013/05/RPSG16-032-Opinion_5G.pdf.

was adopted⁴ ⁵, which determined that “*Until 30 June 2020, Member States shall allow the use of the 694-790 MHz (“700 MHz”) frequency band by terrestrial systems capable of providing broadband wireless electronic communications services only in accordance with the harmonised technical conditions established by the Commission pursuant to Article 4 of Decision 676/2002/EC.*”, and, on 4 December 2017, the EU Telecommunications Ministers signed a declaration containing the roadmap for the introduction of 5G in Europe⁶, which reiterates that allocation of the 700 MHz band should take place in most Member States (MS) by 2020 and calls on the EC to take the necessary measures to establish, in 2019 and based on the conclusions of the RSPG work, the technical harmonisation of the 3.6 GHz and 24.25-27.5 GHz bands.

In detail and relevant to the achievement of the 5G objectives, the Ministers committed themselves to this roadmap and urged the EC to take the necessary steps to support the following goals:

- 2020: allocation of the 700 MHz in most MS;
- 2020: availability of 5G in at least one city in each MS;
- 2022: 700 MHz band available in all MS;
- 2018-2025: implementation of 5G networks/infrastructure;
- 2025: “Gigabit Society” (5G available in major cities and along major transportation routes).

In this context, the European Electronic Communications Code (EECC), of 11 December, adopted by the European Parliament and the Council⁷, provided in Article 54 for a coordinated timetable of allocations for specific 5G frequency bands, establishing that, by 31 December 2020, the MS shall take, if appropriate for facilitating the deployment of 5G, take the necessary measures to:

- a) Reorganise and allow the use of sufficiently broad blocks of the 3.4-3.8 GHz band;*
- b) Allow at least 1 GHz of the 24.25-27.5 GHz band to be used, provided that there*

⁴ Available at http://eur-lex.europa.eu/legal-content/PT/TXT/?uri=uriserv:OJ.L_.2017.138.01.0131.01.POR&toc=OJ:L:2017:138:TOC.

⁵ Corrigendum of the text of the Decision: https://eur-lex.europa.eu/legal-content/PT/TXT/?uri=uriserv:OJ.L_.2018.184.01.0012.01.POR&toc=OJ:L:2018:184:TOC.

⁶ Available at https://www.mkm.ee/sites/default/files/8.a_b_aob_5g_roadmap_final.pdf.

⁷ The European Electronic Communications Code is available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2018.321.01.0036.01.ENG&toc=OJ:L:2018:321:TOC.

is clear market demand and no significant restrictions on migrating existing users or releasing the band.

At national level, the Digital Agenda for Portugal⁸, approved in 2012 and updated in 2015, integrates a set of objectives, namely involving the promotion of digital inclusion and the reinforcement of broadband coverage and access, among others, the goals of which are broadly aligned with those set out in the roadmap for the introduction of 5G in Europe.

More recently, the National Programme for Spatial Planning Policy (NPSP), updated by Law 99/2019, of 5 September⁹, incorporates measures designed to strengthen broadband services at national level, especially in rural areas, and the development of support networks for wireless broadband electronic communications services, with a view to the implementation of 5G.

1.2. Public consultation with the national market

Bearing in mind the above context, in March 2018, the Autoridade Nacional de Comunicações (ANACOM) launched a public consultation on the provision of the 700 MHz frequency band and other bands that could be of interest for simultaneous availability, namely: 450 MHz, 900 MHz, 1500 MHz, 1800 MHz, 2.1 GHz (TDD¹⁰), 2.6 GHz, 3.6 GHz and 26 GHz¹¹.

As described in greater detail the respective report¹², this consultation reflected special and more pressing market interest in the 3.6 GHz band, widespread interest in the allocation of the 700 MHz band, with doubts being raised regarding the date of migration of Digital Terrestrial Television (DTT) and the timely availability of equipment and/or implementation of a sufficiently stable 5G ecosystem, which led a number of entities to advocate that its allocation should only occur in 2020 or later, and substantial, albeit cautious, interest in the 26 GHz band, given the uncertainties concerning the arrangements for its allocation.

⁸ Available at <http://www.portugaldigital.pt/index/>.

⁹ Available at <https://dre.pt/web/guest/home/-/dre/124457181/details/maximized>.

¹⁰ TDD – “Time Division Duplex”. Time-division multiplexing.

¹¹ Available at <https://www.anacom.pt/render.jsp?contentId=1431843>.

¹² Available at <https://www.anacom.pt/render.jsp?contentId=1431846>.

In terms of the 900 MHz, 1800 MHz, and 2.6 GHz bands, these generated widespread market interest, as they fall under the EC framework for provision of terrestrial electronic communications services.

1.3. Developments after market consultation

Subsequent to the launch of the public consultation referred to in the preceding paragraph, although still prior to the publication of the respective report, ANACOM approved the national roadmap for the 700 MHz band¹³, which was met with the agreement of the then Secretary of State for Infrastructure.

This roadmap foresees the release of the 700 MHz frequency band, implying the migration of digital terrestrial television (DTT), which has been operating in the band concerned, to a new frequency band. According to the roadmap, the release of the band should start in the last quarter of 2019, which will allow the allocation of the 700 MHz band for electronic communications services by 30 June 2020.

More recently, ANACOM approved the decision, of 4 October 2019, concerning changes to the DTT (MUX A) network in the context of the release of the 700 MHz band, which includes the development plan and respective timetable¹⁴. With respect to the timetable, the migration process should begin between the third week of January 2020 and the first week of February, and end on 30 June of that year.

1.4. Bands to be made available to the market

Bearing in mind that described and pondering the positions expressed in the above consultation, ANACOM considers it appropriate and proportionate to make available, for applications in the context of publicly available terrestrial electronic communications networks and services, in accordance with the principles of technological neutrality, the frequency bands indicated in **Table 1**:

Table 1. Frequency bands to be provided

| Bands | Quantity of Spectrum |
|---------|---------------------------------|
| 700 MHz | 2 x 30 MHz (FDD ¹⁵) |

¹³ Available at <https://www.anacom.pt/render.jsp?contentId=1456507>.

¹⁴ Available at <https://www.anacom.pt/render.jsp?contentId=1493731>.

¹⁵ FDD – “Frequency Division Duplex”. Frequency division multiplexing.

| | |
|-----------------|---|
| 900 MHz | 2 x 5 MHz (FDD) + 2 x 3 MHz (FDD) + 2 x 1 MHz (FDD) |
| 1800 MHz | 2 x 15 MHz (FDD) |
| 2.1 GHz | 2 x 5 MHz (FDD) |
| 2.6 GHz | 2 x 10 MHz (FDD) + 25 MHz (TDD) |
| 3.6 GHz | 20 x 20 MHz (TDD) |

1.5. State of play of the bands to be made available to the market

1.5.1. 700 MHz core band (703-733 MHz and 758-788 MHz)

As mentioned above, the 700 MHz core band is covered by Decision 2016/687/EU regarding the harmonisation of the 694-790 MHz frequency band for terrestrial systems capable of providing wireless broadband electronic communications services and for flexible national use within the EU.

According to Article 3 (1) of Decision 2016/687/EU, MS should “*Designate and make available the 703-733 MHz and 758-788 MHz frequency bands on a non-exclusive basis, for terrestrial systems capable of providing wireless broadband electronic communications services, in accordance with the parameters (...)*” as identified in the Annex to the Decision.

At national level, the 694-790 MHz frequency band is allocated under the NTFA for the broadcasting service and is currently used for DTT, radio broadcasting aids and microphone transmitters exempt from licensing¹⁶.

In order to make the 700 MHz core band available for terrestrial electronic communications services (TECS), it is necessary to change its designation in the NTFA, its use being subject to the allocation of right of use of frequencies (RUF), as in the other bands designated for these services.

In this context, it is essential to proceed with the release the usages of the DTT network (which are positioned adjacent to the first 5 MHz block of the 758-788 MHz spectrum band) and the usages of radio broadcasting aids, which are the subject of autonomous decisions.

¹⁶ As indicated in the table with information regarding applications exempt from a station licence, available at https://www.anacom.pt/streaming/lisencaoLicencaEstacao.pdf?contentId=1188499&field=ATTACHED_FILE.

Regarding microphone transmitters and taking into account the findings of the CEPT 53¹⁷ and 60¹⁸ reports, the availability of the 700 MHz core band for TECS appears to render unfeasible the continuation of the operation of these items of equipment/applications in this core band.

Until a decision¹⁹ is taken regarding the designation of the 694-703 MHz and 733-758 MHz frequency bands, as provided for in Decision 2016/687/EU, these items of equipment/applications may continue to operate under current conditions. However, with effect from 30.06.2020, the use of such bands by microphone transmitters shall be subject to the technical conditions laid down in Decision 2016/687/EU.

However, it should be noted that microphone transmitters may continue to operate between 470 MHz and 694 MHz, under the same technical conditions as currently applicable.

In view of that presented, the NTFAs should be amended as follows:

- a) in the Table of Allocations (corresponding to the “Radiocommunications and applications” section), designate the 703-733 MHz / 758-788 MHz band for TECS;
- b) in the Reservations, provide for the provision of the 703-733 MHz / 758-788 MHz band, indicating the quantity of spectrum, the geographical validity and the allocation procedure (see section 3.1 below), while maintaining the requirement to allocate RUF;
- c) under Station Exemptions²⁰, amend the table containing information on applications exempt from station licences to exclude the 703-733 MHz / 758-788 MHz band from usage by transmitting microphones with effect from 30 June 2020; indicating that, without prejudice to the decision on the designation of these bands, future usage of the 694-703 MHz and 733-758 MHz bands will be subject to the technical conditions set out in Decision 2016/687/EU, with effect from the same date.

¹⁷ Available at <http://www.erodocdb.dk/Docs/doc98/official/pdf/CEPTREP053.PDF>.

¹⁸ Available at <http://www.erodocdb.dk/Docs/doc98/official/pdf/CEPTREP060.PDF>.

¹⁹ The national choice referred to in the said Decision shall be dealt with under an independent procedure.

²⁰ Available at <https://www.anacom.pt/render.jsp?categoryId=343582>.

1.5.2. 900 MHz (880-915 MHz / 925-960 MHz) Band

This band (as well as the 1800 MHz band) is currently harmonised in accordance with Decision 2009/766/EC, of 20 October 2009, as amended by Commission Implementing Decision 2011/251²¹ (Decision 2011/251/EU), of 18 April, and as such, designated in the NTFA Allocation Table for systems capable of providing TECS.

Thus, the current situation of the 900 MHz band is as follows, as described in **Table 2**:

Table 2. Current situation of the 900 MHz band

| | 100 kHz | | | | | | 100 kHz | | | | | | |
|-----------------|---------|-------|------------------------|-------|----------|-------|---------|-------------------|-------|-------------------|-------|---|-------|
| UpLink | 880.0 | 885.0 | 885.0 | 890.0 | 890.1 | 895.1 | | 898.1 | 905.9 | 905.9 | 913.9 | | 915.0 |
| LB [MHz] | 5 | | 5 | | 5 | | 3 | 7.8 | | 8 | | 1 | |
| Operator | Free | | VODAFONE ²² | | VODAFONE | | L | NOS ²³ | | MEO ²⁴ | | L | |
| DownLink | 925.0 | 930.0 | 930.0 | 935.0 | 935.1 | 940.1 | | 943.1 | 950.9 | 950.9 | 958.9 | | 960.0 |
| LB [MHz] | 5 | | 5 | | 5 | | 3 | 7.8 | | 8 | | 1 | |
| Operator | Free | | VODAFONE | | VODAFONE | | L | NOS | | MEO | | L | |

Following the public consultation referred to in chapter 1.2, ANACOM has considered the possibility of making additional spectrum available in this band, in particular that previously used by 1st generation cordless phones (CT1) – 914-915 MHz / 959-960 MHz.

In fact, following the CEPT Decision ECC/DEC/(01)01²⁵, of 15 November 2001, aimed at “reducing not only the use of CT applications to the minimum possible before the end of 2008, but also safeguarding the interests of users and the transparency of procedures with the industry and retailers”, ANACOM amended the NFAP²⁶, in 2008, this band ceasing to be identified for this type of equipment.

Inquiries having been made to verify the possible provision of CT1 equipment in the market, it was concluded that such equipment is not being marketed, as a result of which ANACOM believes that the 914-915 MHz / 959-960 MHz band (where there are 2x1 MHz

²¹ Available at https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2011.106.01.0009.01.ENG&toc=OJ:L:2011:106:TOC.

²² Vodafone Portugal – Comunicações Pessoais, SA (VODAFONE).

²³ NOS Comunicações, SA (NOS).

²⁴ MEO – Serviços de Comunicações e Multimédia, SA (MEO).

²⁵ Available at <https://www.ecodocdb.dk/download/bac824b1-8c23/ECCDEC0101.DOC>.

²⁶ Available at <https://www.anacom.pt/render.jsp?categoryId=343582>.

unused) may be made available in conjunction with the spectrum currently available in the 900 MHz band.

As a result, the following spectrum is free:

- 2x5 MHz: 880-885 MHz / 925-930 MHz, which is identified in the NTFA reservation section for allocation to TECS, subject to national RUF allocation. However, the associated allocation procedure has not yet been defined;
- 2x3 MHz: 895.1-898.1 MHz / 940.1-943.1 MHz, which is not identified in the reservations section of the NTFA;
- 2x1 MHz: 914-915 MHz / 959-960 MHz, which is not identified in the reservations section of the NTFA.

In view of the above, it is necessary to amend the Reservations section of the NTFA to provide for the availability of the 895.1-898.1 MHz / 940.1-943.1 MHz and 914-915 MHz / 959-960 MHz frequency bands, indicating the quantity of spectrum, the geographical validity and the allocation procedure (see section 3.1 below), the designation for TECS and the requirement for allocation of RUF being maintained.

Given the existence of various sub-bands, and depending on the results of the associated allocation procedure, there are operations, specifically those of new entrants, which may be dependent on spectrum contiguity, and in order to maximise the value of that spectrum, a rearrangement of the 900 MHz band may be required. Notwithstanding, this rearrangement may also be promoted by current RUF holders in order to maximise the contiguity of the spectrum allocated.

1.5.3. 1800 MHz band (1710-1785 MHz / 1805-1880 MHz)

This band (as well as the 900 MHz band) is currently harmonised in accordance with Decision 2009/766/EC, of 20 October 2009, as amended by Commission Implementing Decision 2011/251 (Decision 2011/251/EU), of 18 April, and as such designated in the NTFA Allocation Table for systems capable of providing TECS.

The current situation of the 1800 MHz band is as follows, as described in **Table 3**:

Table 3. Current situation of the 1800 MHz band

| | | | | | | | | |
|------------------|----------|------|------|------|------|------|------|------|
| Up Link | 1710 | 1730 | 1730 | 1750 | 1750 | 1770 | 1770 | 1785 |
| LB [MHz] | 20 | | 20 | | 20 | | 15 | |
| Operator | VODAFONE | | NOS | | MEO | | Free | |
| Down Link | 1805 | 1825 | 1825 | 1845 | 1845 | 1865 | 1865 | 1880 |
| LB [MHz] | 20 | | 20 | | 20 | | 15 | |
| Operator | VODAFONE | | NOS | | MEO | | Free | |

There is thus 2x15 MHz of free spectrum (1770-1785 MHz / 1865-1880 MHz), which is identified in the reservations section of the NTFA for allocation to TECS, subject to national RUF allocation. However, the associated allocation procedure has not yet been defined.

In view of the above, it is necessary to amend the Reservations Section of the NTFA to include the allocation procedure (see section 3.1 below) of this spectrum.

1.5.4. 2.1 GHz band (FDD) (1920-1980 MHz / 2110-2170 MHz)

This band is currently harmonised in accordance with Implementing Decision 2012/688/EU, of 5 November 2012²⁷, and as such designated in the NTFA Allocation Table for systems capable of providing TECS.

The current situation of the 2.1 GHz band is as follows, as described in **Table 4**:

Table 4. Current situation of the 2.1 GHz (FDD) band

| | | | | | | | |
|------------------------|----------|------|------|------|------|------|------|
| Up Link [MHz] | 1920 | 1940 | 1940 | 1955 | | 1960 | 1980 |
| LB [MHz] | 20 | | 15 | | 5 | 20 | |
| Operator | VODAFONE | | NOS | | Free | MEO | |
| Down Link [MHz] | 2110 | 2130 | 2130 | 2145 | | 2150 | 2170 |
| LB [MHz] | 20 | | 15 | | 5 | 20 | |
| Operator | VODAFONE | | NOS | | Free | MEO | |

Following the public consultation referred to in chapter 1.2, NOS submitted to ANACOM a request for the allocation of 2x5 MHz FDD (1955-1960/2145-2150 MHz), which were not the subject of that consultation, as a result of which, the real interest of the other operators or any other entities in this (single) available FDD carrier not being known,

²⁷ Available at <https://eur-lex.europa.eu/legal-content/en/TXT/HTML/?uri=CELEX:32012D0688&qid=1570798827337&from=EN>.

ANACOM considered it appropriate, under the terms of the corresponding draft decision, likewise adopted on the same date²⁸, to include these 2x5 MHz available in this band (1955-1960/2145- 2150 MHz) in the spectrum allocation procedure subject of this project, allowing NOS, or other interested parties, to acquire this spectrum in a transparent and non-discriminatory manner.

There is thus 2x5 MHz free spectrum (1995-1960 MHz / 2145-2150 MHz), which is identified in the reservations section of the NTFA for allocation to TECS, subject to national RUF allocation. However, the associated allocation procedure has not yet been defined.

In view of the above, it is necessary to amend the Reservations Section of the NTFA to include the allocation procedure (see section 3.1 below) of this spectrum.

1.5.5. 2.6 GHz band (2500-2690 MHz)

This band is currently harmonised in accordance with Commission Decision 2008/477/EC²⁹, of 13 June 2008, (Decision 2008/477/EC), and as such designated in the NTFA Allocation Table, for systems capable of providing TECS.

The following table presents the current situation of the occupation of this frequency band.

Table 5. Current situation of the 2.6 GHz band

| | | | | |
|----------------------|---------------|-----------------|---------------|---------------|
| Up Link [MHz] | 2500-2510 MHz | 2510-2530 MHz | 2530-2550 MHz | 2550-2570 MHz |
| LB [MHz] | 10 | 20 | 20 | 20 |
| Operator | Free | VODAFONE | NOS | MEO |

| | | | | |
|------------------------|---------------|-----------------|---------------|---------------|
| Down Link [MHz] | 2620-2630 MHz | 2630-2650 MHz | 2650-2670 MHz | 2670-2690 MHz |
| LB [MHz] | 10 | 20 | 20 | 20 |
| Operator | Free | VODAFONE | NOS | MEO |

TDD

| | | | | |
|--------------------------|-----------------|------|-------------|------|
| Banda Frecuencias | 2570 | 2595 | 2595 | 2620 |
| LB [MHz] | 25 | | 25 | |
| Operator | VODAFONE | | Free | |

²⁸ Available at www.anacom.pt.

²⁹ Available at

There is thus the following free spectrum (which is identified in the reservations section of the NTFA for allocation to TECS, subject to national RUF allocation. However, the associated allocation procedure has not yet been defined):

- 2x10 MHz (FDD): 2500-2510 MHz / 2620-2630 MHz;
- 25 MHz (TDD): 2595-2620 MHz.

In view of the above, it is necessary to amend the Reservations section of the NTFA to include the allocation procedure (see section 3.1 below) for this spectrum.

1.5.6. 3.6 GHz band (3.4-3.8 GHz)

Uses in the 3.6 GHz (3.4-3.8 GHz) frequency band were harmonised at CEPT level for FWA³⁰, in 2006, through ECC/REC/(04)05³¹ “*Guidelines for accommodation and assignment of multipoint fixed wireless systems in frequency bands 3.4-3.6 GHz and 3.6-3.8 GHz*”.

Subsequently, the EC adopted Decision 2008/411/EC, of 21 May, concerning the harmonisation of this same frequency band for terrestrial systems capable of providing electronic communications services³², introducing BWA³³ applications under this context. This decision was first amended by Implementing Decision 2014/276/EU³⁴, of 2 May (Decision 2014/276/EU), which modified the technical conditions (FDD vs TDD mode, 5 MHz channelling and other block edge masks) and extended the use of this frequency band to dense high-speed wireless broadband networks.

Secondly, it was amended by Implementing Decision (EU) 2019/235³⁵, of 24 January 2019 (Decision 2019/235/EU), which updated certain technical conditions applicable to the 3.6 GHz frequency band.

This band is designated in the NTFA Allocation Table for systems capable of providing BWA and for TECS, in accordance with Decision 2008/411/EC as amended by Decision 2014/276/EU, as well as for fixed service by satellite (space-to-Earth). There is a licensed

³⁰ FWA: “*Fixed Wireless Access*”.

³¹ Available at <https://www.ecodocdb.dk/download/732d965f-241c/REC0405.PDF>.

³² Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L:2008:144:TOC>.

³³ Note that “BWA” was considered, under Regulation 427/2009, of 29 October (BWA Auction Regulation), as a descriptive term for new broadband wireless technologies, encompassing fixed, nomadic and mobile applications.

³⁴ Available at <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A32014D0276>.

³⁵ Available at <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32019D0235>.

station, at Almargem do Bispo, which operates at the frequency of 3760 MHz (+/- 1 MHz), whose validity period ends on 1 January 2023.

In the reservations section of the NTFA, the 3.4-3.8 GHz band is available on a non-exclusive basis - as part of the 2015 implementation of Decision 2014/276/EU - for:

- BWA³⁶, subject to the allocation of RUF, with geographical delimitation, but whose allocation procedure has not been defined:
 - 1 block 2x28 MHz = 56 MHz, in Zone 2;
 - 2 blocks of 2x28 MHz = 112 MHz, in Zones 3 to 7;
 - 3 blocks of 2x28 MHz = 168 MHz, in Zone 8;
 - 4 blocks of 2x28 MHz = 224 MHz, in Zone 9.
- TECS, also subject to the allocation of RUF, but whose geographical validity and allocation procedure have not been defined.

However, on 26 June 2019, MEO requested the cancellation of its RUF with effect from 30 June 2019, a request that was the subject of a favourable decision by ANACOM, adopted on the same date³⁷, as a result of which that spectrum is currently free, and may be made available to the market.

Additionally, ANACOM also adopted, on this date³⁸, a draft decision to change the frequency usage rights granted to Dense Air, which now only uses the following quantity of spectrum:

- 100 MHz (3.4-3.5 GHz) in zones 1 and 2;
- 55 MHz (3,400-3,455 GHz) in zones 3 to 8.

In accordance with the aforementioned decision, it was further decided to make available to the market the full spectrum of the 3.4-3.8 GHz (400 MHz) band, although the use of part of it would be conditional, until August 2025, on the scope of the RUF held by Dense Air.

³⁶ In accordance with Administrative Rule no. 1062/2004, of 25 August (available at <https://www.anacom.pt/render.jsp?contentId=975973>), Zone 2 corresponds to the districts of Braga, Porto and Viana do Castelo; Zone 3 corresponds to the districts of Aveiro and Coimbra; Zone 4 corresponds to the districts of Bragança, Guarda, Vila Real and Viseu; Zone 5 corresponds to the districts of Castelo Branco and Portalegre; Zone 6 corresponds to the districts of Beja, Évora and Setúbal (only part of the municipalities, the rest being in Zone 1); Zone 7 corresponds to the district of Faro; Zone 8 corresponds to the Autonomous Region of the Azores; and Zone 9 corresponds to the Autonomous Region of Madeira.

³⁷ Available at www.anacom.pt.

³⁸ Available at www.anacom.pt.

Table 6. Situation of the 3.6 GHz band

| Frequency Range (GHz) | Allocation |
|-----------------------|--------------------------------------|
| 3.4 - 3.5 | Dense Air (100 MHz) in zones 1 and 2 |
| 3.5 - 3.55 | Dense Air (55 MHz) in zones 3 to 8 |
| 3.55 - 3.6 | 45 MHz in zones 3 to 8 |
| 3.6 - 3.65 | 55 MHz in zone 9 |

Therefore, it is important to amend the NTFA as follows:

- in the Allocation Table, submit this frequency band to the conditions of Decision 2008/411/EC, as amended by Decision 2019/235/EU (thus appearing as a supporting document in the NTFA);
- in the Reservations section, indicate the geographical validity and allocation procedure (see section 3.1 below), keeping the designation for TECS and the requirement to allocate RUF;
- in Reservations, remove the indication of spectrum available for BWA applications.

2. ANACOM’s duties and competences

The ANACOM Charter, as approved by Decree-Law no. 39/2015, of 16 March³⁹, assigns to this entity, as regulatory authority, the carrying out of various duties, among which stand out, in accordance with applicable law, the duties of ensuring “*the guarantee of freedom to offer networks and the provision of services*” as well as “*the efficient management of the radio spectrum, involving the planning, allocation of spectrum resources, their supervision and coordination between civil, military and paramilitary radiocommunications*” (Article 8 (1) (c) and (e)).

In order to carry out its duties, ANACOM has regulatory, monitoring, supervisory and sanctioning powers, and is responsible for, in terms of the matters at hand, “*assigning, amending and revoking frequency usage rights*” (Article 9 (1) (b)).

For its part, the Electronic Communications Law (*Lei das Comunicações Eletrónicas - LCE*)⁴⁰, as the applicable substantive regime, commits ANACOM to pursuing various objectives for the regulation of electronic communications, namely, “*promoting*

³⁹ Available at <https://www.anacom.pt/render.jsp?contentId=1351851>.

⁴⁰ Law no. 5/2004, of 10 February, in its current wording. Available at <https://www.anacom.pt/render.jsp?contentId=975162>.

competition in the provision of electronic communications networks and services, and related resources and services”, for the purposes of which the Authority shall, inter alia, “encourage effective use and ensure efficient management of frequencies” (Article 5 (1) (a) and (2) (d) of the LCE).

In this context, it is incumbent upon ANACOM to *“ensure efficient management of the spectrum, (...) taking into account the important social, cultural and economic value”* of the frequencies, as well as *“carry out spectrum allocation and frequency allocation”* and *“frequency planning”*, in accordance with the criteria of *“a) radio spectrum availability; b) guaranteeing conditions of effective competition in the relevant markets; c) effective and efficient use of frequencies; d) weighing up the interests of spectrum users”* and *“allocating spectrum and assigning frequencies”* in accordance with *“objective, transparent, non-discriminatory and proportionate criteria”* (Article 15 (1), (2) and (5) of the LCE).

An essential instrument and framework for the exercise of these powers is, therefore, the publication by ANACOM of the NTFA, which, in accordance with the provisions of Article 16 of the LCE, should contain: the frequency allocation table; the frequency bands and spectrum allocated to companies offering publicly available public communications networks or electronic communications services, including the date of review of the allocation; the dedicated frequency bands to be made available, specifying when usage rights are required, as well as the respective allocation process; and the unsusceptible transmission and lease RUF, as well as the bands for which transmission and lease are not permitted.

The usage of frequencies is subject to the general authorisation regime and depends additionally and exceptionally on the granting by ANACOM of frequency usage rights (Article 19 (3) of the LCE).

However, according to Article 30 (1) of the LCE, the use of frequencies is dependent on the granting of right of use of frequencies (RUF) only when necessary to *“a) avoid harmful interference; b) ensure the technical quality of the service; c) safeguard the efficient use of the spectrum; d) accomplish other objectives of general interest as defined by law”*.

The LCE further establishes that the allocation of RUF must be carried out by means of open, objective, transparent, proportionate and non-discriminatory procedures (Article

30 (3) and (5)), which may be under the full accessibility regime or be subject to competitive or comparative selection procedures, such as auctions or tenders.

In this context, it is incumbent upon ANACOM to approve RUF allocation regulations, except in the case of frequencies accessible for the first time in the context of electronic communications or, if not, which are intended to be used for new services, in which case competence to approve the regulations, where they involve competitive or comparative selection procedures, shall rest with the member of the Government in charge of the communications sector (Article 30 (7) and (8) of the LCE).

Moreover, ANACOM may limit the number of RUF to be allocated where necessary to ensure the efficient use of frequencies (Article 31 of the LCE). In this case, ANACOM shall consider, *inter alia*, the need to maximise benefits for users and facilitate the development of competition, for this purpose, and without prejudice to other measures it deems appropriate:

1. promoting the general consultation procedure provided for in Article 8 of the LCE;
2. publishing the duly substantiated decision to limit the number of usage rights to be allocated, under which it defines the allocation procedure (full accessibility or selection by competition or comparison, namely auctions or tenders); and
3. initiating the procedure for the submission of applications for usage rights, as defined.

Finally, it should be underlined that Article 35 of the LCE gives ANACOM the power to ensure that flexibility in the use of frequencies and the accumulation of RUF does not lead to distortions of competition, and may, for the purpose, adopt appropriate, non-discriminatory and transparent measures, in particular:

1. Imposing conditions associated with the RUF, pursuant to Article 32 of the same law, including setting deadlines for the effective exploitation of the usage rights by the respective holder.
2. Determining to the respective holder, and in a specific case, the transfer or lease of RUF, or
3. Limiting the quantity of spectrum to be allocated to the same holder in RUF allocation procedures.

3. Allocation procedure and technical conditions of usage of available frequencies

3.1. Allocation procedure

Bearing in mind the need to ensure the efficient use of frequencies, in view of their scarcity, reflected in a level of demand expected to exceed the number of rights to be allocated, as evidenced by the responses received under the public consultation referred to in section 1.2, as well as the need to simultaneously ensure the maximisation of the benefits to users and to promote the development of competition, ANACOM believes that it should limit the number of rights to be granted for the usage of these frequencies concerned.

As the LCE defines that the spectrum allocation procedure may be carried out in full accessibility or involve a selection process by competition or comparison, ANACOM considers that, in the light of the findings of the aforementioned public consultation, the allocation through a selection process appears to be the most appropriate for choosing the entities to which the corresponding RUF may be allocated.

Given the flexibility of implementation that is intended to be provided – inter alia, through the possibility of a) making economic operations of different types available (taking into account the principle of service neutrality), b) using different technologies (taking into account the principle of technological neutrality), and c) flexible spectrum allocation taking into account the needs of each entity – as well as the need to approximate the value of the spectrum concerned to that of the situation in the market, it is understood that the selection procedure that best suits the domestic market is that of selection by competition, usually called auctioning.

In this case, the option of auctioning is the potentially more transparent and objective spectrum allocation procedure for all interested parties, which least interferes with the business plans of those entities, allowing each entity, which has its own needs in terms of spectrum, to acquire RUF on the quantity of spectrum that it actually needs and values, enabling the emergence of operations with different dimensions, stimulating the efficient use of the spectrum and reducing the motivation for unsystematic assignments of this resource.

In this context, it is important to emphasise that one of the objectives of this selection process is to allow, flexibly, the obtainment of RUF in various frequency bands (among those that will be made available), and in varying spectrum quantities, according to and in line with the business objectives of the interested parties, an objective that would be difficult to achieve through a comparison procedure (commonly called a tender).

It should be noted that most European countries have implemented, or are about to implement, auctioning as a selection mechanism for the frequency bands concerned. It should also be noted that most of the entities that contributed to the public consultation on the availability of the 700 MHz band (and other relevant bands) favoured a competitive allocation procedure, by means of an auction.

Considering the allocation of the RUF by auction, it should be noted that current law (namely Article 105 of the LCE and Article 19 of Decree-Law 151-A/2000, of 20 July⁴¹) establishes that the granting of RUF and the use of the spectrum set aside for companies are subject to the payment of fees, the amounts of which are fixed by Government Administrative Rule.

With regard to the RUF allocation fee per auction, this is an administrative fee, the amount of which must be fixed prior to the respective allocation procedure, as provided in the table of paragraph 2 of Annex I to Administrative Rule no. 1473-B/2008, of 17 December, in its current wording.

Regarding spectrum usage fees, taking into account the comments made under the public consultation referred to in chapter 1.2, with a view to their reduction and the maintenance of the amounts during the term of the RUF, ANACOM will analyse the matter under its own radio spectrum management remit and, under its duties to assist the Government, will present a proposal to amend Administrative Rule no. 1473-B/2008, of 17 December, in its current wording.

Additionally, the aforementioned Decree-Law 151-A/2000 states that, if the RUF are granted by means of an auction, the respective regulation may establish “*a minimum bid value [base price], as well as the minimum allowable value of the intervals between bids, where applicable, and shall take into account the regulatory objectives*” set in the LCE.

⁴¹ Decree Law 151-A/2000, of 20 July, as amended by Decree Law 264/2009, of 28 September, Law 20/2012, of 14 May, and Law 82-B/2014, of 31 December.
Available at <https://www.anacom.pt/render.jsp?categoryId=333299&languageId=1&tab=>.

3.2. Size of lots to be made available

ANACOM considers it appropriate to make available to the market, for the provision of publicly available terrestrial electronic communications networks and services, free spectrum in the following frequency bands: 700 MHz, 900 MHz, 1800 MHz, 2.1 GHz (FDD), 2.6 GHz (FDD and TDD) and 3.6 GHz.

The limitation of RUF involves setting the size of each lot that will be made available in the allocation procedure. For this, it is necessary to take into account the need for the spectrum concerned to enable a viable operation, which may involve different dimensions, at a national or more regional level, and depends upon the business model that each entity intends to develop, which, for example, may be exclusively wholesale or an integrated operation.

Thus, the sizing of the lots in each frequency band aims to provide a balance between the minimum viability of a commercial operation and the need for flexibility in choosing the quantity of spectrum that each entity would be interested in obtaining.

The effective and efficient use of the spectrum being an overarching concern, it is also intended to create conditions to enable different entities to commercially exploit these frequency bands, as a result of which each lot should not be smaller than the minimum quantity of spectrum required for a particular operation. Moreover, the size of each lot cannot be so large as to require the acquisition of more spectrum than necessary and render various operations unfeasible. It is intended that this size should promote a competitive and competitive procedure.

Taking into account the spectrum allocation procedures that have taken place in various European countries, it can be seen that, in the 700 MHz, 900 MHz and 1800 MHz frequency bands, there is major convergence in the definition of 2x5 MHz lots. Indeed, also in Portugal, in the previous procedure for allocating the 900 MHz and 1800 MHz bands, the size of the lots was 2x5 MHz.

As for the 3.6 GHz band, it can be seen that, in the allocation procedures of various European countries, the size of the lots has varied greatly. As regards the respective geographical scope, it appears that, in some cases, lots have been made available at regional level. Since there may also be demand for spectrum in Portugal for usage restricted to specific geographical areas, ANACOM is willing to consider such interest,

as a result of which 20 MHz lots of regional scope⁴² will be made available, and a possible aggregation of regions may be considered, namely between coastal and inland regions.

In view of the above, the spectrum identified above shall be made available in lots of the following sizes, as identified in **Table 7**:

Table 7. Bands and quantity of spectrum available for allocation

| Band Name | Band | Quantity of spectrum | Lot size |
|---------------|------------------------------------|----------------------|-----------------|
| 700 MHz | 703-733 MHz 758-788 MHz | 2 x 30 MHz | 2 x 5 MHz |
| 900 MHz | 880-885 MHz 925-930 MHz | 2 x 5 MHz | 2 x 5 MHz |
| | 895.1-898.1 MHz 940.1-943.1 MHz | 2 x 3 MHz | 2 x 1 MHz |
| | 914-915 MHz 959-960 MHz | 2 x 1 MHz | 2 x 1 MHz |
| 1800 MHz | 1770-1785 MHz 1865-1880 MHz | 2 x 15 MHz | 2 x 5 MHz |
| 2.1 GHz (FDD) | 1995 1960 MHz 2145-2150 MHz | 2 x 5 MHz | 2 x 5 MHz |
| 2.6 GHz (FDD) | 2500-2510 MHz 2620-2630 MHz | 2 x 10 MHz | 2 x 5 MHz |
| 2.6 GHz (TDD) | 2595-2620 MHz | 25 MHz | 25 MHz |
| 3.6 GHz | 3.400-3.760 GHz | 360 MHz | 20 MHz national |
| | 3.760-3.800 GHz | 40 MHz | 20 MHz regional |

3.3. Technical conditions associated with the use of the frequencies

The RUF allocated will have associated a set of technical conditions and/or restrictions.

Notwithstanding the details by band contained in the following section, one of the technical conditions to be observed is the Block Edge Mask (BEM), understood as an emission mask defined according to the frequency of a “block edge”, the latter being the edge of the frequencies of a spectrum block for which an operator has been allocated RUF.

Another transversal condition is that holders of RUF must fulfil their obligations under cross-border coordination agreements concluded with Spain.

⁴² The regions concerned are those defined in Administrative Rule no. 1062/2004, of 25 August, available at <https://dre.pt/web/guest/pesquisa/-/search/625179/details/maximized?dreId=121868>.

3.3.1. 700 MHz core band conditions (703-733 MHz / 758-788 MHz)

RUF that may be allocated in this band are subject to the following technical conditions of use, which are defined in the Annex to Decision 2016/687/EU, which is supported by CEPT reports 53 and 60:

- Paired mode 2x5 MHz channelling with 55 MHz duplex spacing.
- Application of the BEM limits of Tables 1, 3, 4, 5 and 8 of the Annex to Decision 2016/687/EU.
- With reference to Table 2 of the Annex to Decision 2016/687/EU, ANACOM imposes a maximum limit for intrablock power of 64 dBm/5 MHz per antenna.
- Application of the limits of Tables 6 and 7 of the Annex to Decision 2016/687/EU, if the frequencies between 733 MHz and 758 MHz are allocated.

Additionally, since the possibility of interference between the operation of systems in adjacent bands is not, by its nature, to be discounted, any interference that remains in the reception of DTT should be resolved on a case-by-case basis by holders of RUF in the 700 MHz band, in accordance with Article 21 (1) (b) of Decree-Law 151-A/2000.

The main channel of the 700 MHz core band consists of 2x30 MHz, which must be assigned in multiples of 5 MHz, as shown in the following table.

Table 8. 700 MHz core band channelling

| | | | | | |
|---------------------------|---------|---------|---------|---------|---------|
| 703-708 | 708-713 | 713-718 | 718-723 | 723-728 | 728-733 |
| 30 MHz (6 lotes de 5 MHz) | | | | | |
| 758-763 | 763-768 | 768-773 | 773-778 | 778-783 | 783-788 |

3.3.2. Conditions for the 900 MHz and 1800 MHz frequency bands

RUF to be allocated in these bands are subject to the conditions of Decision 2009/766/EC, as amended by Decision 2011/251/EU⁴³, for the implementation of other terrestrial systems capable of providing electronic communications services and which may co-exist with GSM systems, in particular those identified in the respective annex⁴⁴.

⁴³ Available at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32011D0251>.

⁴⁴ For further information, see the studies prepared by the CEPT as transcribed in ECC Reports 82, 96 and 162, as well as CEPT Reports 40, 41 and 42.

3.3.3. Conditions for the 2.1 GHz frequency band

The RUF to be allocated in this band are subject to the technical conditions set out in the Annex to Decision 2012/688/EU.

3.3.4. Conditions for the 2.6 GHz frequency band

RUF that may be allocated in this band are subject to the conditions identified in Decision 2008/477/EC, in particular the following:

- The first 5 MHz block of the 25 MHz lot is considered a restricted block, and operation with this block is subject to a maximum radiated power (EIRP) of +25dBm/5 MHz.
- The EIRP power limits of the TDD and FDD base stations will be limited to +61dBm/5 MHz.

3.3.5. Conditions for the 3.6 GHz frequency band

RUF that may be allocated in this band are subject to the conditions of Decision 2008/411/EC, as amended by Decision 2014/276/EU and by Decision 2019/235/EU.

The technical conditions concerned shall include, in particular:

- Harmonised BEM for non-active (non-AAS) systems and active antenna (AAS) systems, in synchronised, semi-synchronised and non-synchronised operation⁴⁵.

Regarding the synchronism between the networks of the various operators that hold RUF in this band after the allocation procedure, ANACOM considers that this is a matter to be coordinated by the operators, taking into account the specificities of the technologies and the implementation of their networks. However, it should be noted that, in accordance with the Annex to Decision 2019/235/EU, non-synchronised operation will require the implementation of more restrictive emission limits.

⁴⁵ In ECC Report 296 (available at <https://www.ecodocdb.dk/download/19d5a467-c234/ECC%20Report%20296.pdf>) a set of interference mitigation techniques are analysed for the implementation of MFCN in the different modes of operation, as well as the operation of 4G and 5G networks in co-channel or adjacent channel, with a view to network synchronism.

- Application of the conditions of Recommendation ECC/REC/(15)01⁴⁶, if regional RUF are allocated, with a view to coordinating the networks implemented under those RUF.
- Use of the 3.6 GHz frequency band shall ensure the protection of stations operating under the space-to-Earth fixed satellite service (SFS) by appropriate coordination by broadband wireless networks.

ECC Report 254⁴⁷ “Operational guidelines for spectrum sharing to support the implementation of the current ECC framework in the 3600-3800 MHz range” identifies a range of measures seeking the protection of the SFS.

From the analysis of this report and taking into account the characteristics of the SFS station operating in the 3.7-3.8 GHz sub-band – namely 3760 MHz (+/- 1 MHz), it was concluded that operators allocated spectrum in the 3.6 GHz band must meet the following conditions:

- a. To protect the SFS station operating in the 3759.5-3760.5 MHz band:
 - the power received from the SFS receiver antenna shall be limited to -188 dBm/560 kHz;
 - the implementation of TECS stations at a minimum distance of 5 km from the SFS station should be coordinated with the earth station operator⁴⁸.
 - b. In the 3.4-3.7595 GHz and 3.7605-3.8 GHz bands, BEM emissions should be limited to the levels presented in Table 7 of the Technical Annex to Decision 2019/235/EU, with appropriate adjustments with respect to existing guard bands (difference between the edges of carriers of TECS and SFS operator stations) to protect the SFS stations operating in the 3.7-3.8 GHz sub-band or 3.8-4.2 GHz sub-band.
- Implement mitigation techniques in accordance with the annex to Decision 2019/235/EU to ensure the protection of radiolocation systems operating in the 3.1-3.4 GHz frequency band.

⁴⁶ Available at https://www.ecodocdb.dk/document/category/ECC_Recommendations?status=ACTIVE.

⁴⁷ Available at <https://www.ecodocdb.dk/download/0202d6d9-23b1/ECCRep254.pdf>.

⁴⁸ The operators may need to implement additional techniques to mitigate potential interference at the SFS station, such as: limiting effective station heights to 210 m, using site engineering techniques or taking advantage of natural obstacles (terrain, buildings).

4. Conditions associated with the use and allocation of RUF

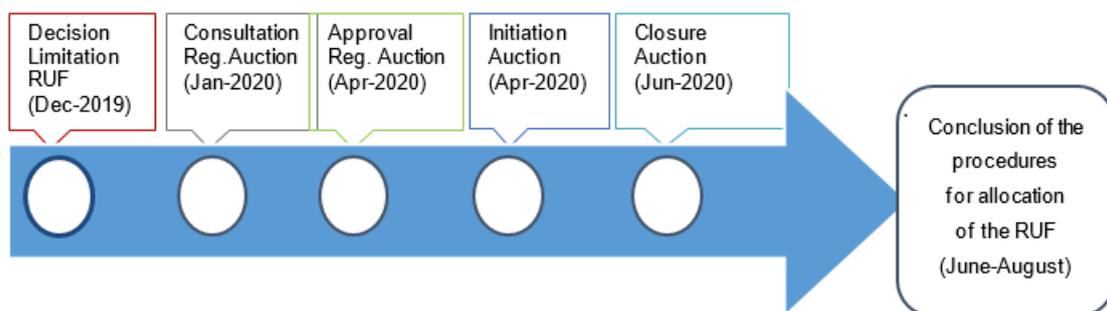
Bearing in mind the frequency bands that will be made available under the RUF allocation procedure and anticipating their significance, namely, among others, for the development of applications and services within a 5G context, ANACOM believes that conditions should be promoted for greater contestability of the mobile market and, at the same time, efforts should be made to improve the living conditions of the wider population and the economic fabric of the country, making digital access more accessible and immediate, with expected benefits for cohesion in economic and social terms, and of the territory.

Against this background, a reflection on the conditions which could be justified in the future spectrum auction is included in this draft decision.

Contributions received in this regard will be duly considered in forming ANACOM's position concerning this matter.

5. Timetable

The following is an indicative timetable containing a forecast of the chronological development of the main stages of this selection procedure for the allocation of RUF.



6. Subject matter and deadline of consultation

For the foregoing reasons, it being necessary to create conditions for the availability of spectrum for the provision of publicly available terrestrial electronic communications services, ANACOM's decision, pursuant to Article 31 of the LCE, to limit the number of RUF to be allocated for this purpose and to define the respective allocation procedure shall be subject to the general consultation procedure provided for in Article 8 of the same statute, under which the interested parties shall be given the opportunity to make representations within the time frame established for the purpose, which may not be less than 20 working days.

Also bearing in mind that Article 14 of the Television Act⁴⁹ provides that the Regulatory Authority for the Media (RAM) is entitled to be heard in matters involving radio spectrum planning for the exercise of television activity, ANACOM will notify the RAM of this draft decision, so that it may comment on it.

In this context, ANACOM considers it appropriate to set a deadline of 20 working days for interested parties to comment, in writing and in Portuguese, preferably by email.

Subsequently, ANACOM will make available on its website the responses received, safeguarding confidential information, which must be duly justified and indicated by the interested parties and accompanied by a redacted version for the aforementioned purposes of publication.

ANACOM will also make available a final report containing a reference to all announcements and the overall assessment reflecting this Authority's understanding of them.

7. Decision

In view of the above, ANACOM's Management Board, within the scope of the duties provided for in Article 8 (1) (c) and (e) of its Charter, as approved by Decree-Law 39/2015, of 16 March, in pursuit of the regulatory objectives provided for in Article 5 of Law 5/2004, of 10 February, as amended, in particular under paragraph 1 (a) and (d)

⁴⁹ Law 27/2007, of 30 July, in its current working, available at http://www.pgdlisboa.pt/leis/lei_mostra_articulado.php?nid=923&tabela=leis&so_miolo.

paragraph 2, and in the exercise of the powers conferred under Articles 8, 15, 16, 19, 30 and 31 of the same regime, decides as follows:

1. To designate the 703-733 MHz / 758-788 MHz frequency band for terrestrial electronic communications services and identify this spectrum in the reservations section of the NTFA, subjecting their usage, in 2x5 MHz lots, to the allocation of Frequency Usage Rights under national geographic scope.
2. To amend the NTFA table containing information regarding applications exempt from station licensing, excluding the 703-733 MHz / 758-788 MHz band from use by transmitting microphones as of 30 June 2020 and stating that, without prejudice to the decision on the designation of these bands, the future use of 694-703 MHz and 733-758 MHz will be subject to the technical conditions set out in Decision 2016/687/EU, with effect from the same date.
3. To identify the 895.1-898.1 MHz / 940.1-943.1 MHz and 914-915 MHz / 959-960 MHz frequency bands in the reservations section of the NTFA, subjecting their usage, in 2x1 MHz lots, to the allocation of Frequency Usage Rights under national geographic scope.
4. To subject the 3.4-3.8 GHz frequency band to the conditions of Decision 2008/411/EC, as amended by Decision 2019/235/EU, thus acting as a supporting document under the NTFA.
5. To identify the 3.400-3.760 GHz frequency band in the reservations section of the NTFA, subjecting their usage, in 20 MHz lots, to the allocation of Frequency Usage Rights under national geographic scope.
6. To identify the 3.760-3.800 GHz frequency band in the reservations section of the NTFA, subjecting their usage, in 20 MHz lots, to the allocation of Frequency Usage Rights under national geographic scope, taking into account the territorial division by zones as defined in the annex to Administrative Rule no. 1062/2004, of 25 August.
7. To remove from the Reservation section of the NTFA the identification of the 3.4-3.8 GHz frequency band for BWA applications.

8. To limit the number of Frequency Usage Rights to be allocated for the provision of publicly available terrestrial electronic communications services, as follows:
 - a) up to 6 RUF in the 700 MHz band;
 - b) up to 5 RUF in the 900 MHz band;
 - c) up to 3 RUF in the 1800 MHz band;
 - d) up to 1 RUF in the 2.1 GHz band
 - e) up to 3 RUF in the 2.6 GHz band;
 - f) up to 18 regional RUF in the 3.760-3.800 GHz band;
 - g) up to 18 national RUF in the 3,400-3,760 GHz band.
9. To subject the allocation of frequency usage rights referred to in the preceding paragraph to an auction procedure.
10. To amend the existing NFTA in accordance with the decisions contained in the preceding paragraphs.
11. To submit this draft decision to a general consultation procedure, in accordance with the provisions of Article 8 of the LCE, setting a deadline of 20 (twenty) working days for interested parties to comment, in writing in Portuguese.
12. To notify the Regulatory Authority for the Media of this draft decision so that it may express its views in writing within the deadline established in the preceding paragraph.

Lisbon, 22 October 2019.

ANNEX

I. Profile of the domestic market

I.1. Results of the 2014 mobile market assessment

In August 2014, following the auction for the allocation of RUF in the 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2.1 GHz and 2.6 GHz bands⁵⁰, ANACOM conducted an assessment concerning the mobile market⁵¹, given its duties assigned under Article 39 of the Regulation of the aforementioned auction. Specifically, this assessment was conducted under Council Directive 87/372/EEC⁵², of 25 June, as amended by Directive 2009/114/EC⁵³ of the European Parliament and of the Council, of 16 September, and ANACOM's powers in terms of spectrum management and the allocation of RUF, namely Articles 20 and 35 of the LCE.

Within the aforementioned context, any possible distortions of competition that could result from spectrum allocation mechanisms were analysed, specifically any technical advantages that could be associated with each of the frequency bands allocated for the provision of mobile electronic communications services, as well as possible distortions arising from the fact that there could be operators with different frequency combinations and possible distortions affecting entities already operating in the same market, but without RUF allocated.

The conclusions reached with this analysis, which, it should be remembered, was carried out in 2014, at a time when not all the obligations imposed on the operators to which RUF were granted in the context of the aforementioned auction were effective, are reproduced below:

“In light of the foregoing, it is understood that it is undeniable that there are advantages in operating certain frequency bands over others, specifically as some are better suited for coverage solutions and others are particularly suited for capacity solutions. However, as it turned out, the spectrum combinations of mobile network operators, being very similar to each other, do not lead to distortions of competition between those operators.”

⁵⁰ Available at <https://www.anacom.pt/render.jsp?categoryId=340980>.

⁵¹ Available at <https://www.anacom.pt/render.jsp?contentId=1324432>.

⁵² Available at <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A31987L0372>.

⁵³ Available at <https://www.anacom.pt/render.jsp?contentId=986806>.

Similarly, the right granted to mobile network operators to benefit from refarming did not offer any advantages to any of the active mobile network operators, as all had frequency usage rights over equivalent quantities of spectrum in the 900 MHz and 1800 MHz bands. Notwithstanding the fact that Vodafone has some additional spectrum in the 900 MHz and 2.6 GHz band, which, as mentioned above, and given the context associated with it, does not give it a significant advantage over the other operators.

Additionally, the allocation of usage rights under the Multi-Band Auction likewise did not contribute towards creating distortions in relation to operators present in the market without frequency usage rights, and also allowed the establishment of a set of network access obligations, which apply to operators with 800 MHz and 900 MHz frequency usage rights, and which may facilitate the entry of new entities into the market.

Therefore, as there is no need to correct any situations of imbalance arising from spectrum allocation, the ICP-ANACOM considers that no regulatory intervention is warranted at the moment, namely the powers conferred upon it by Articles 20 and 35 of the Electronic Communications Act.

However, ICP-ANACOM understands that, if spectrum is available, there is no reason why the regulator would not consult the market at an appropriate time regarding the availability of that spectrum, this initiative taking into account the spectrum that may be returned by Vodafone, in 2015 (in this respect, it is recalled that the company may transmit it in accordance with the provisions of the Electronic Communications Act, as a result of which it will not necessarily be available for inclusion under a new allocation procedure). Other developments in the meantime will also be considered (e.g. taking into account the results of the forthcoming World Radiocommunication Conference 2015, WRC-15).

In any case, ICP-ANACOM will always have the opportunity, within the framework of the Electronic Communications Act, to assess the efficient usage of spectrum by the mobile operators and the effectiveness of the network access obligations imposed on them (section 10 (d)), and which will only become fully effective with the end of existing restrictions on operation in the 800 MHz band.

Additionally, it should be noted that future Community decisions regarding the spectrum will also affect analyses to be carried out by the regulator.”

I.2. Profile of the current mobile market

Historically, the domestic mobile sector has been essentially characterised by the presence of three providers with their own networks, with the vast majority of mobile

accesses being concentrated on these operators. Although some providers of mobile virtual operations (MVNO⁵⁴) have emerged over recent years, their number has been declining⁵⁵ and their subscriber share remains very low (2.4%), and shows no sign of increasing (+0.1% between the 1st half of 2018 and the 1st half of 2019).

With regard to the existing offers on the market made available by the aforementioned service providers, it has been observed that, in recent years, the focus has been on all-net offers, which accounted for 88% of total mobile offers at the end of 2018, 24% up on 2015. Moreover, the number of mobile Internet access offers increased significantly, reaching 72% of the total in 2018 (up 21% on 2015), as a result of the increasing value being placed on mobile data traffic, which has been increasing at the expense of more traditional voice and SMS services. In fact, according to the Marktest *Telecommunications Barometer* (MTB)⁵⁶, mobile phone Internet service penetration grew 26.4% between the end of 2014 and the end of 2018, while voice service users grew 2.2% over the same period. At the same time, the latest trends in the market are in the direction of growth in bundled offers, which reached a penetration of 94.5 per 100 households, with almost half of these offers incorporating mobile services.

The mobile penetration rate at the end of the first half of 2019, considering mobile accesses with actual usage (excluding M2M⁵⁷), amounted to 119.6 per 100 inhabitants, and according to data from the MTB, at the end of 2018, 96.8% of Portuguese residents were customers of this service. Nevertheless, and despite Portugal occupying 19th place among the 28 EU MS in the European Commission's 2019 *Digital Economy and Society Index* (DESI)⁵⁸, in terms of the mobile broadband penetration indicator that includes this

⁵⁴ *Mobile Virtual Network Operators*.

⁵⁵ As of June 2018, there were five virtual mobile network operators in Portugal. However, during 2018, Vectone Mobile (Portugal) Limited, a service provider supported by the NOS network, ceased operations in Portugal. Moreover, at the beginning of 2019, CTT ceased its activities as a mobile virtual network operator, supported on MEO's network. There are currently three active mobile virtual network operators, Lycamobile Portugal, which has been supported by VODAFONE's mobile network since September 2012, and ONI and NOWO, which have been supported by MEO's network since 2016.

⁵⁶ The *Telecommunications Barometer* (TCB) is a regular Marktest study for the telecommunications sector. The *Telecommunications Barometer - Fixed Network* consists of Portuguese homes. Monthly, a sample proportional to and representative of all such homes is collected (1,150 interviews per month). The *Telecommunications Barometer - Mobile Network* consists of individuals aged 10 and over resident in Portugal, of whom a monthly sample is collected proportional to and representative all such individuals (1,200 interviews per month). Analysis of the data from the TCB is carried out for a quarterly period. November information refers to the quarter consisting of September, October and November. Assuming a simple random sampling, the quarterly household sample guarantees a maximum absolute margin of error of 1.7% (questions asked of all households), and the quarterly sample of individuals aged 10 years and older, a maximum absolute margin of error of 1.6% (questions asked of all individuals).

⁵⁷ Machine to machine access.

⁵⁸ Available at <https://ec.europa.eu/digital-single-market/scoreboard/portugal>.

index, Portugal occupies 27th position, with a penetration of 70 per 100 inhabitants, substantially lower than the European average, which is around 96 per 100 inhabitants.

In any case, the use of mobile broadband services in Portugal continues to grow, which has been associated with the increase in mobile phone Internet access, which increased 64.2% between the end of 2014 and the first half of 2019, the proliferation of mobile applications and the high penetration of smartphones in Portugal, which at the end of 2018, was 79.5%. The trends witnessed have not allow any significant approximation to the European average.

As regards mobile broadband prices, it should be borne in mind that all providers have a multiplicity of tariffs. However, it should be noted that, according to the EC-prepared *Mobile Broadband Prices in Europe 2018*⁵⁹ study, the prices of offers that incorporate mobile voice and mobile internet in Portugal were between 5% and 23% higher than the EU28 average, with Portugal being among the relatively expensive countries.

It follows from the foregoing that, although the domestic market has always been characterised by great retail dynamism, in which the various providers have come up with innovative commercial solutions that have contributed to the development and growth of the electronic communications sector and to maintaining high penetration, mobile broadband penetration remains below the European average.

Regarding competitive dynamics, the fact that the entry of new players into the mobile market is difficult has an impact on the level of contestability of that market. And while network access obligations were imposed under the previous frequency allocation procedure, the impact of those measures on market entry is not obvious. Moreover, it is expected that the spectrum that will now be made available may support a number of significant new operations, in particular within a 5G context, making it more important for different entities to be able to benefit from it.

Competitive dynamics also have a significant impact on the levels of coverage provided by mobile networks. In this respect, it should be noted that active providers have always had coverage obligations associated with RUF, usually by reference to covered areas,

⁵⁹ Available at <https://ec.europa.eu/digital-single-market/en/news/mobile-broadband-prices-went-down-europe-2018>.

Table available in ANACOM publication "Trends in Telecommunications Prices", dated March 2019. Available at <https://www.anacom.pt/render.jsp?categoryId=3476&tab=380049>.

percentage of target population and roads covered, in order to ensure that, as far as possible, the services provided reach the wider population and territory.

In this context, in order to respond to the difficulties experienced, in particular in the most remote areas, and given the existence of various parishes with poor mobile broadband coverage, ANACOM established coverage obligations, both under the Multi-Band Auction regulations⁶⁰ for providers who acquired 800 MHz RUF, and under the renewal of the 2.1 GHz RUF allocated to MEO, NOS and VODAFONE, which cover 1,068 parishes overall (480 parishes were identified in the context of that regulation⁶¹, and 588 parishes were identified under the renewal of the RUF⁶²). Other more general coverage obligations are added to these, which aim essentially to ensure that there are no reductions in the minimum coverage levels observed on the dates of issue and renewal of the RUF.

These obligations have contributed to a continuous bolstering of the coverage provided by mobile networks in Portugal.

Notwithstanding the aforementioned coverage obligations and although providers demonstrate a good level of coverage and network performance throughout the country, the country's technological, social and economic development continues to dictate the need for increased levels of coverage. Indeed, there are still many districts, and even larger areas, at parish and municipal level, that have coverage problems in most of their respective territories or in very significant parts thereof, and which often express their discontent to ANACOM, demanding the rectification of the shortcomings found. It should be added that, often, these shortcomings relate not only to a lack of coverage, but also the provision of capacity at levels below those deemed necessary for the communities and the economic sector to sustain their respective activities and ensure active participation in society.

Additionally, the growing relevance of mobile broadband services has created among companies and various entities, consumers and end users, an expectation regarding the use of these services anywhere within national territory.

⁶⁰ Regulation 560-A/2011, of 19 October (Regulation of the Auction for the Allocation of Frequency Usage Rights in the 450 MHz, 800 MHz, 900 MHz, 1800 MHz, 2.1 GHz and 2.6 GHz Bands).

⁶¹ List of parishes available at <https://www.anacom.pt/render.jsp?contentId=1143329>.

⁶² List of parishes available at <https://www.anacom.pt/render.jsp?contentId=1372752>.

Furthermore, technological, economic and social developments in recent years increasingly dictate that widespread access to mobile services is increasingly an indispensable condition for the development of the Information Society, which underpins the country's economic development and represents a fundamental pillar of economic, social and territorial cohesion.

II. Public consultation with the market

It should be noted that, under the public consultation procedure held in 2018, ANACOM had already signalled that the allocation of spectrum in the 700 MHz band (possibly, simultaneously with other bands), constitutes a provision of means, the use of which allows it to contribute to achieving the public interest objectives, in particular by meeting EU objectives and the legitimate aspirations of communities, the business community and the State itself, boosting the economic and social development of the country.

It was also then indicated that consideration could be given, in particular, to the imposition of obligations (associated with the allocation and/or use of spectrum that may become available) aimed at promoting investment and innovation, as well as broadening and/or improving mobile coverage.

To this end, the market was asked questions on a number of issues, including setting limits on spectrum acquisition, determining incentive measures for new entrants and the imposition of coverage obligations.

Following the comments received, in its public consultation report, ANACOM clarified that, as in previous procedures, in future spectrum allocation procedures it will continue to ensure the necessary balance between companies already operating in the market, which, in principle, should continue to be able to access additional spectrum, but will necessarily be constrained by the type and amount of spectrum and the operations developed, and companies wishing to develop new operations, for which access to spectrum is essential. In this context, it should also be added that, in its actions and as follows from the LCE, it is bound to respect the principles of non-discrimination and the minimisation of the risk of spectrum hoarding, maximise benefits for end-users, and promote the development of competition and the effective and efficient use of the spectrum, principles that will be duly considered in the decision regarding the spectrum availability model to be adopted.

Specifically, regarding the imposition of potential coverage obligations, comments were made to the effect that they should only be imposed where objectively necessary, only apply to bands below 1 GHz, not affect new entrants and only be imposed under RUF renewal procedures.

As for possible incentives for new entrants, some entities consider them essential, others consider them unnecessary and some even claim that they may create market distortions. The comments regarding limits on spectrum acquisition also diverge between those who believe that such limits should not be established and those that admit or consider it necessary to set them.

III. Conditions associated with spectrum allocation and usage

In the context of the foregoing, it is understood that one of the public interest objectives to be pursued under the next RUF allocation procedure is to create the conditions for the emergence of new entities to further stimulate market development, enabling the launching of new, competitively priced offers that have a positive impact on competition and end-users.

Another purpose of this allocation procedure is to create conditions that allow the mitigation or even the elimination of shortcomings identified in the coverage and capacities available on mobile networks, given their importance to the general population and to the domestic economic sector.

Finally, it should be noted that it is understood that the measures to be taken in this procedure will be decisive in ensuring the economic and social cohesion of the country by ensuring that the new technological, network and system developments within a 5G environment, as well as offers based on technologies/services of a more traditional nature, do not create or accentuate the digital divide; on the contrary, they should be used to boost the digital inclusion of the population and the growth and competitiveness of the country and all its regions.

Of course, it is also ANACOM's objective to ensure the management and efficient use of the spectrum.

Therefore, considering the various objectives, which in ANACOM's view should be pursued under the next allocation procedure together with the imposition of measures

aimed at promoting greater competitive dynamics, specifically involving the imposition of network access and infrastructure sharing obligations, it is also considered prudent to consider the imposition of coverage obligations.

In this regard, it is also important to ensure the objectives set for mobile broadband under the Digital Agenda for Portugal and the National Programme for Spatial Planning Policy (NPSPP), which aim to reinforce broadband services at national level, especially in rural areas. It should be noted that there are also highly demanding objectives defined at European level for the development of a “Gigabit Society”⁶³ in 2025, with particular emphasis on the goal of all households having access to 100 Mbps at that date.

The existence of spectrum subject to restrictions of use is an aspect that should be properly taken into account when considering any conditions or obligations that may be set, as well as the prices associated with each lot, bearing in mind the objectives that should be pursued. This matter will also be considered in the proposal that ANACOM, within the scope of its own radio spectrum management powers and its duty to provide support to the Government, consider appropriate to present in relation to the amendment to Administrative Rule no. 1473-B/2008, of 17 December, in its current wording.

Finally, Commission Recommendation (EU) 2019/534, of 26 March, on the cybersecurity of 5G networks, in particular as regards national risk assessment, necessary security measures, European Union-based risk assessments based on national assessments and the identification of a possible set of common measures to mitigate risks related to the infrastructure underlying the digital ecosystem, in particular 5G networks, as well as the recent publication of the report *EU Coordinated Risk Assessment of the Cybersecurity of 5G Networks* by the Network Information Security Cooperation Group⁶⁴, which warns that, in December 2019, security measures applicable to 5G networks should be adopted at European level.

III.1. Spectrum Caps

In the context of the foregoing, it should be noted that the imposition of spectrum caps is one of the measures that can be used to fulfil the objectives of public interest that are pursued with the allocation procedure under preparation. In particular, this measure could be adopted to safeguard competition in the market, while allowing conditions to be

⁶³ Available at <https://ec.europa.eu/digital-single-market/en/broadband-europe>.

⁶⁴ NIS Cooperation Group), available at https://ec.europa.eu/newsroom/dae/document.cfm?doc_id=62132.

created for various operations in the market, possibly including new entrants, and preventing spectrum hoarding, in particular in view of the counterproductive effect this may have on foreclosure of the market. It is noted that, generally, spectrum allocation limits have been used by MS in 5G auctions (see table 1, attached).

In setting the limits, it is important to establish a value that allows the prevention of spectrum hoarding, but which is also high enough to allow the development of viable operations in each frequency band or group of bands.

As part of the allocation procedure under preparation, ANACOM believes that consideration should be given to the imposition of limits, which may be applied in isolation, affecting one frequency band, and/or applied simultaneously to several frequency bands. For this purpose, the possible substitutability of the bands with other bands and their value should be considered, both for the entities that already hold RUF and for any new entrants.

Likewise, consideration should be given to the eventual setting of different limits for entities that are in different situations (for example, between new entrants and entities already having RUF). In this context, taking into account the RUF already held by some companies and bearing in mind that the allocation procedure includes two types of bands: a) those which will be better suited for coverage (frequency bands below 1 GHz) and b) bands more geared towards capacity solutions (bands above 1 GHz), the imposition of limits that include spectrum already assigned may also be considered.

In this sense, similarly to what has already been observed in other MS, ANACOM deems it appropriate to consider the creation of a spectrum package which, in a first phase, may be made available exclusively to new entrants. In the absence of market interest, such spectrum would be made available under the same allocation procedure to all interested parties on an equal footing.

In view of the foregoing, ANACOM understands that it may be justified to impose a set of limits on the allocation of spectrum in certain frequency bands to ensure compliance with objectives associated in particular with the promotion of competition.

Any interested parties may also comment under the consultation procedure to which the draft auction regulation will be subject.

III.2. Obligations associated with usage

Given that spectrum is a scarce resource, and given that this case concerns the issue of RUF under an auction procedure, such allocation must be accompanied by the setting of obligations aimed at meeting the public interest objectives ANACOM is mandated to pursue, in accordance with that mentioned under section III.

It should be noted that, in many countries in recent years, obligations have been imposed under allocation procedures implemented in the same bands as will be made available in Portugal, and there are various types of obligations (see table 1, attached).

The imposition of obligations has to be assessed in the context of the pursuit of the public interest objectives listed by ANACOM, taking into account the interests of the market in general and the benefits for economic, social and territorial cohesion, as well as for end-users, taking into account the bands to be allocated and the associated charges.

In light of the foregoing, ANACOM believes that the allocation procedure under preparation should include the imposition of obligations on bidders acquiring spectrum, namely in the 700 MHz and 3.6 GHz bands. In this context, the imposition of different obligations should be considered in view of the amount of spectrum already held.

Specifically, consideration could be given to imposing network access obligations. These obligations aim, inter alia, to promote the market entry of new entities, in particular benefiting those who have no spectrum, who choose not to acquire spectrum or who have not managed to obtain the spectrum necessary for a viable operation.

In this context, they may result in network access obligations for MVNO and may be imposed on entities that obtain significant amounts of spectrum or that accumulate frequencies across several bands, or that accumulate these new acquisitions with previously obtained RUF.

But they may also be reflected by infrastructure sharing obligations, which may take the form of national roaming, facilitating the implementation of networks not only of new players, but also already established entities. In a context of 5G network and application development, the savings that will be gained by sharing will add value to the market and necessarily to end users, who will be able to benefit more quickly from the networks and services offered using the frequency bands to be made available.

In particular, ANACOM considers that the imposition of national roaming obligations should be considered, in particular in sparsely populated areas, considering that this is relevant to the fulfilment of social and economic inclusion objectives, the economy of means allowing services to arrive in areas that would otherwise not be covered by multiple operators.

At the same time, in view of the public interest objectives to be pursued, ANACOM considers it essential that consideration should be given to setting coverage obligations to promote the expansion of the mobile networks, enhancing competition and ensuring the diversity of supply, essential for creating benefits for end users. In this regard, it is important to recall the gaps that still exist in the coverage of mobile networks, not only in terms of broadband services, but also voice services, which are the subject of frequent complaints by members of the public, and also by local officials.

Weighing up the coverage obligations to be imposed involves several challenges:

- a) Identifying areas/communities to which the obligations apply;
- b) Defining the obligation specifically, which should consider the existence of very diverse services, with very different demands in terms of speed and latency;
- c) Defining the timetables for the performance of these obligations;
- d) Defining methodologies for monitoring and verifying compliance with spectrum use obligations.

Naturally, in considering these obligations, ANACOM believes that it will also be important to take into account the objectives of the Digital Agenda, in that all citizens will have access to speeds of 30 Mbps by 2020, and half of households will have access to 100 Mbps, as well as the European 5G roadmap, which refers to the goal of a 5G city in 2020 and the EC goals for the “Gigabit Society by 2025”⁶⁵, namely that all dwellings should have access to 100 Mbps by 2025.

In this context, this Authority deems it appropriate to consider the possibility of establishing RUF obligations in the 700 MHz band involving voice coverage obligations

⁶⁵ Available at <https://ec.europa.eu/digital-single-market/en/broadband-europe>.

across all national territory and broadband data coverage obligations in certain geographical areas and along the main roadways.

Regarding the 3.6 GHz band, ANACOM also considers it appropriate to consider the imposition of obligations to install base stations, particularly at locations with potential for economic development, which may vary depending on the amount of spectrum acquired.

Any interested parties may also comment under the consultation procedure to which the draft auction regulation will be subject.

III.3. Reservation prices

ANACOM is assessing which amounts are appropriate to be set as reservation prices for each of the lots that will be made available in the auction. In this consideration, the objectives underlying the implementation of this procedure will be taken into account. In particular, consideration shall be given to the need for the value not to constitute an obstacle or disincentive for new entities to enter the market and for the development of operations of various types. Specific measures may be chosen that tackle the particular situations, specifically with a view to creating conditions that facilitate such entry.

In weighing up the values to be established, account shall also be taken of the obligations that will be imposed under this RUF allocation procedure, any constraints on spectrum use, including those resulting from the use of part of the spectrum in the 3.6 GHz band being dependent on the existence of RUF that will remain in force until 2025, and of course, the duration of the rights.

The values that have been set in other countries in allocation procedures involving the same frequency bands, as well as the values previously set by ANACOM for some of the bands that will now also be made available, shall be an important point of reference in this setting of values.