

## **Decision**

### **On the authorization regime governing mobile satellite service (MSS) systems in the 2 GHz band**

#### **1. BACKGROUND**

By determination of 5 May 2011, the Management Board of ICP-ANACOM has approved the draft decision on the authorization regime governing mobile satellite service (MSS) systems in the 2GHz band.

It was likewise determined that the draft decision be made subject to the general consultation procedure, for a period of 20 working days, pursuant to article 8 of Law no. 5/2004 of 10 February (LCE - Lei das Comunicações Electrónicas (Electronic Communications Law)), which period, by determination of the Management Board of ICP-ANACOM of 2 June 2011, was extended for an additional 5 working days.

Under this procedure, timely responses were received from the following undertakings:

- Inmarsat Ventures Limited (**Inmarsat**);
- Solaris Mobile, Lda (**SML**);
- Vodafone Portugal, Comunicações Pessoais, S.A. (**Vodafone**).

The respective report prepared with basis in this consultation process comprises an integral part of the present decision and includes a summary of the positions stated and of the positions taken by ICP-ANACOM thereon.

## II. ASSESSMENT

### 1. Community Framework

In 1997, the CEPT<sup>1</sup> adopted a Decision (ERC/DEC/(97)03)<sup>2</sup> on the Harmonised Use of Spectrum for Satellite Personal Communication Services (S-PCS) operating within the bands 1610-1626.5 MHz, 2483.5-2500 MHz, 1980-2010 MHz and 2170-2200 MHz<sup>3</sup>. This Decision is based on the segmentation of various frequency bands among the different access technologies.

Based on this decision, most European governments, including the Portuguese Government, gave authorisation to the operation of two MSS systems (Iridium and Globalstar) in the 1610-1626.5 MHz and 2483.5-2500 MHz bands. For the 1980-2010 MHz and 2170-2200 MHz bands, no system was implemented for the provision of MSS. This spectrum is also identified at ITU (International Telecommunication Union) level in the context of IMT (International Mobile Telecommunications) provision, particularly with respect to the IMT's satellite component.

However, with a view to the delivery of new MSS applications, ERC/DEC/(97)03 required updating. One consequence of this initiative was the formulation of a new Decision applying only to the band commonly known as the 2 GHz band, which in 2006 led to the adoption of Decision ECC/DEC/(06)09<sup>4</sup> and later to the

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<sup>1</sup> European Conference of Postal and Telecommunications Administrations

<sup>2</sup> Available at:

[http://194.182.137.50/search?q=ERC%2FDEC%2897%2903&filter=0&proxystylesheet=default\\_frontend&site=default\\_collection&client=default\\_frontend&output=xml\\_no\\_dtd](http://194.182.137.50/search?q=ERC%2FDEC%2897%2903&filter=0&proxystylesheet=default_frontend&site=default_collection&client=default_frontend&output=xml_no_dtd)

<sup>3</sup>

<sup>4</sup> Available at:

[http://194.182.137.50/search?q=ECC%2FDEC%2806%2909&filter=0&proxystylesheet=default\\_frontend&site=default\\_collection&client=default\\_frontend&output=xml\\_no\\_dtd](http://194.182.137.50/search?q=ECC%2FDEC%2806%2909&filter=0&proxystylesheet=default_frontend&site=default_collection&client=default_frontend&output=xml_no_dtd)

revision of ERC/DEC/(97)03 with regard to the remaining bands, leading to the adoption of Decision ECC/DEC/(09)02 (June 2009)<sup>5</sup>.

Decision ECC/DEC/(06)09, along with ECC REPORT 013, served as the basis for approval by the European Commission (EC) of **Decision 2007/98/EC**<sup>6</sup> of 14 February 2007, providing also for the harmonised use of radio spectrum in the 2 GHz frequency bands for the implementation of systems providing mobile satellite services.

Given the transnational nature of the services in question, the selection of satellite operators, were each Member State to proceed on an individual basis, could lead to divergent solutions (with the possible selection of different MSS system operators in different states). This would offset the advantages provided by pan-European coverage, fragmenting the market and potentially leading to complex situations of harmful interference. As such, it was considered that selection and authorization of operators of 2 GHz MSS systems should be undertaken at Community level.

The legal framework for this process was established in **Decision no. 626/2008/EC**<sup>7</sup> of the Parliament and of the Council on the selection and authorisation of systems providing mobile satellite services (MSS).

In accordance with the provisions of this Decision, a Community procedure was established for the selection of 2GHz MSS operators (comparative selection procedure) and a range of common obligations were defined, with each Member State having responsibility, at national level, for the authorisation of the selected operators.

Accordingly, on 7 August 2008, the European Commission published a “**Call for Applications**” (doc. **2008/C201/EC**).

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<sup>5</sup>Available at: [http://194.182.137.50/search?q=ECC%2FDEC%2809%2902&filter=0&proxystylesheet=default\\_frontend&site=default\\_collection&client=default\\_frontend&output=xml\\_no\\_dtd](http://194.182.137.50/search?q=ECC%2FDEC%2809%2902&filter=0&proxystylesheet=default_frontend&site=default_collection&client=default_frontend&output=xml_no_dtd)

<sup>6</sup> Available at: <http://www.anacom.pt/render.jsp?contentId=987537>

<sup>7</sup> Available at: [http://eur-lex.europa.eu/Result.do?T1=V4&T2=2008&T3=626&RechType=RECH\\_naturel&Submit=Pesquisar](http://eur-lex.europa.eu/Result.do?T1=V4&T2=2008&T3=626&RechType=RECH_naturel&Submit=Pesquisar)

Upon conclusion of the selection procedure, **Decision no. 2009/449/EC**<sup>8</sup> of the European Commission of 13 May 2009 was published, whereby the following systems were selected: **INMARSAT** (given authorisation in each Member State to use the 1980 - 1995 MHz and 2170 - 2185 MHz frequency sub-bands for Earth-space communications and space-Earth communications respectively) and **SOLARIS** (given authorisation in each Member State to use the 1995 - 2010 MHz and 2185 - 2200 MHz frequency sub-bands for Earth-space communications and space-Earth communications respectively).

In light of the provisions of Decision no. 626/2008/EC, as referred to above, it is important at this time to establish the authorization regime applicable to the provision by the selected applicants of 2 GHz MSS systems in the national territory. This is the object of the present draft decision of ICP-ANACOM.

## **2. MSS Network architecture with Complementary Ground Components (CGC)**

In order to characterize the system in the context of this draft decision, it is necessary to consider each of the components (satellite and terrestrial) detailed below, with reference to figure 1<sup>9</sup>, below.

This figure includes a typical connection of a 2G/3G land mobile system (e.g. in the 900/1800 MHz or 2.1 GHz bands) which should be interpreted as representing the possibility that the user terminals are dual and therefore having access to any one of the land mobile or MSS systems including CGCs

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<sup>8</sup> Available at: [http://eur-lex.europa.eu/Result.do?T1=V4&T2=2009&T3=449&RechType=RECH\\_naturel&Submit=Pesquisar](http://eur-lex.europa.eu/Result.do?T1=V4&T2=2009&T3=449&RechType=RECH_naturel&Submit=Pesquisar)

<sup>9</sup> Slide taken from CEPT REPORT 013 containing the architecture of a system called "NEMO"

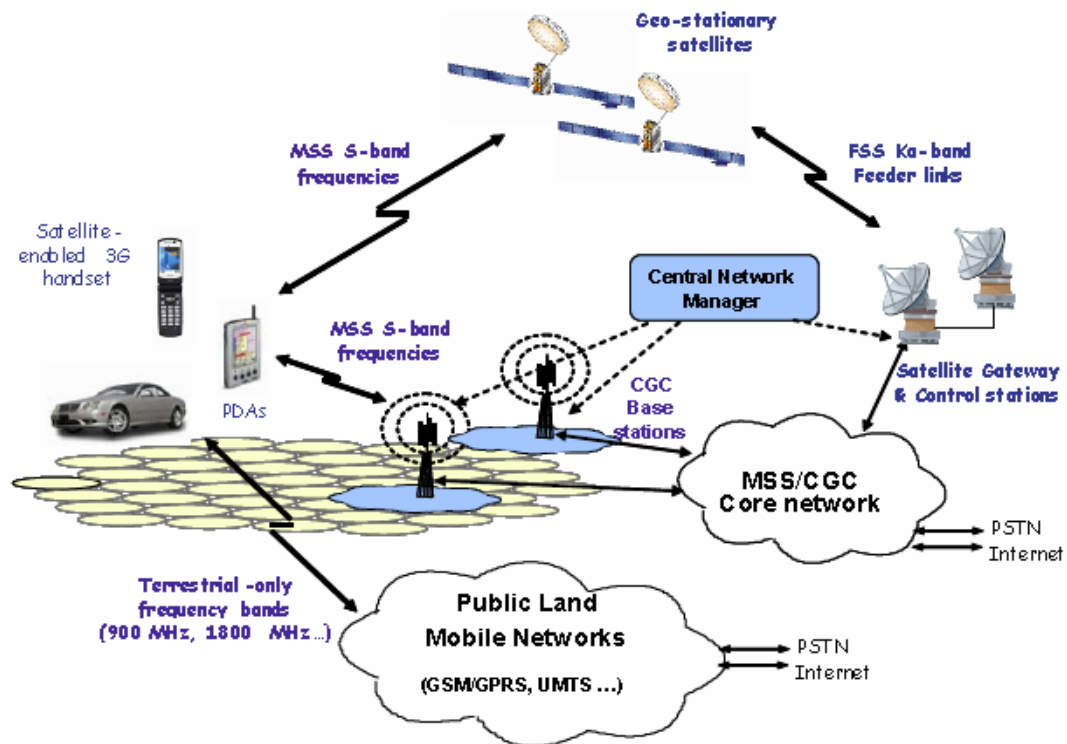


Figure 1 - 2 GHz MSS system that includes CGCs

## 2.1. Satellite component (space station)

In the context of 2GHz MSS, space stations are stations on board satellites positioned in geostationary orbit.

## 2.2. Terrestrial component (CGCs)

The technological innovation of the new MSS systems, especially in terms of the 2 GHz band, has made it possible for the quality of the MSS to be enhanced through the use of complementary ground components (CGC) operating in the MSS band on the links to the mobile terminals and, in certain configurations, in frequency bands known as Ku (14/11, 12 GHz) or Ka (20/18 GHz) when communicating directly with satellites. This has given rise to the name "MSS systems which include CGCs".

As a technological "innovation" in Europe, characterization of this type of station (CGC) has led to intense debate with regard to their features and respective regulatory framework. Indeed, the operation of stations can be limited to being mere repeaters of satellite signals or may expand the provision of applications to end-users, depending on the intentions of the CGC operators, according to their business plans in each EU Member States and, naturally, depending on each authorization scheme.

In this type of configuration, the space station (satellite) is directly linked to the mobile terminals and to the ground control and routing stations (gateways) in the 1980-2010 MHz and 2170-2200 MHz frequency bands for service connections between users. Depending on the systems, there are links, which are not accessible to users, between the earth station and satellite or between the satellite and CGC in the frequency bands known as Ku (14/11, 12 GHz) and Ka (30/20 GHz).

The CGC is directly linked to the users (mobile terminals) in the frequency bands of the mobile satellite service (1980-2010 MHz and 2170-2200 MHz). Connection to other CGCs can be carried out using "gateways" or by connecting to the public switched networks (PSTN). In the first case, other bands may be used, depending on the system's configuration.

The requirement for CGC to be an integral part of the MMS system results from CEPT and ITU studies in which it was concluded that sharing between the mobile and mobile-satellite services was not possible in the same geographic area. The only possibility for sharing between the ground component and the MSS is for the CGC to be controlled by the MSS system; in this scenario, the same pattern of frequency reuse is ensured, preventing use of the same frequency by the satellite and CGC while in the same geographic area.

It can be expected that MSS satellites improve spectral efficiency by reusing frequencies and with the use of spatially separated "spot beams". This geographical separation of the beams using the same frequency in a given

location will cause some frequencies to be used by CGCs instead of by satellites.

### **2.3. Mobile terminals**

According to the definition of the mobile satellite service pursuant to this draft decision, mobile terminals enable communication with the satellite, as well as with CGCs.

As such, in operational terms, these terminals operate in "hybrid" mode, i.e. as mobile earth stations connected to the satellite and to CGCs.

### **3. Analysis of the regime governing access to the activity comprising the MSS system and CGCs**

In the context of defining a regime to govern access to the activity comprising the MSS system and complementary ground components (CGCs), the first question to arise is whether the two realities should be integrated under a single general authorization/right of use or, otherwise, should be made subject to separate analysis.

Under the terms of Decision no. 2007/98/EC, MSS systems are systems capable of providing radiocommunications services between one or more mobile earth stations by means of one or more space stations, or between a mobile earth station and one or more complementary ground stations used at fixed locations.

Under the terms of point b) of paragraph 2 of article 2 of Decision no. 626/2008/EC, CGCs refer to *ground-based stations used at fixed locations, in order to improve the availability of MSS in geographical areas within the footprint of the system's satellite(s), where communications with one or more space stations cannot be ensured with the required quality.*

This definition should be taken together with the provisions of paragraph 2 of article 3 of Decision 2007/98/EC, corroborated by point b) of paragraph 3 of article 8 of Decision no. 626/2008/EC: *complementary ground components shall constitute an integral part of the mobile satellite system and shall be controlled by the satellite resource and network management system. These stations shall use the same direction of transmission and the same portions of frequency bands as the associated satellite components and shall not increase the spectrum requirement of its associated mobile satellite system..*

Although CGCs are intended to enhance the provision of such services in areas where it may not be possible to retain a continuous line of sight with the satellite due to obstructions in the skyline caused by buildings and terrain, hypothetically, they could also be configured as a land mobile "network", similar to existing land mobile networks, but using spectrum assigned to the MSS.

In this context, at the national level, it becomes particularly relevant to establish the authorization regime in respect of MSS systems, while taking into account the characterization of the CGCs, as well as the range of services whose provision it is intended to enable to these stations in the context of these systems, i.e. whether they are to be allowed merely as repeater stations of the satellite signal or, otherwise, made subject to no such restriction.

The different Member States have not been uniform in the approaches taken.

While, on the one hand, countries like the United Kingdom have seen fit to authorize operators of MSS system in the satellite component separately from CGC operators, considering them as "land mobile networks" which are complementary to 2 GHz MSS systems and making it clear that they are not required to transmit the same service or applications of the satellite component, there are other countries, such as Germany, which have issued a single right of use covering the satellite component and CGCs in repeater mode.



Meanwhile France, which also opted to allow the operation of CGCs in repeater mode only, decided to grant these stations authorization separately from the MSS.

As a further example, other European countries, although they have not yet issued authorisation, have already set out some options.

One such case is Spain, which intends to issue a single authorisation for the two components and to limit, at least at the outset, the use of CGCs to the functions of repeater stations.

The same is true for Italy, although in this case a single authorisation will be subject precisely to the fact that the CGCs may be considered as mere repeaters.

In Ireland, the MSS system with CGC will be made available under a general authorization, with a right of use of CGC not limiting these stations to a "repeater" function.

In respect of the authorization scheme to be established, it is stipulated under paragraph 1 of article 7 and under paragraph 1 of article 8 of Decision no. 626/2008/EC, respectively, that Member States are to grant selected operators of mobile satellite systems:

- The right to use the specific radio frequencies for the MSS systems and the right to operate a mobile satellite system;
- Authorisations necessary for the provision of CGCs of mobile satellite systems on their territories.

Paragraph 3 of article 8 of the Decision no. 626/2008/EC sets out the **common conditions governing national authorisations issued for the operation of CGCs**, whereby:

- a) Operators shall use the assigned radio spectrum for the provision of complementary ground components of mobile satellite systems;

- b) Complementary ground components shall constitute an integral part of a mobile satellite system and shall be controlled by the satellite resource and network management mechanism; they shall use the same direction of transmission and the same portions of frequency bands as the associated satellite components and shall not increase the spectrum requirement of the associated mobile satellite system;
- c) Independent operation of complementary ground components in case of failure of the satellite component of the associated mobile satellite system shall not exceed 18 months;
- d) Rights of use and authorisations shall be granted for a period of time ending no later than the expiry of the authorisation of the associated mobile satellite system.

These conditions, and specifically conditions b) to d), highlight the nature of the link between the satellite and ground component (CGC), as being parts of a single system. For this reason, the definition of conditions never involves only one component.

Although opting for one or two separate authorisations/rights of use for operators of the MSS system in the satellite component and for CGC operators does not prevent these stations from being an integral part of the MSS, ICP-ANACOM takes the view that granting two separate authorizations for exactly the same radio frequencies may lead to problems of compatibility, both from a legal standpoint and from a technical standpoint.

From a legal standpoint, problems may arise, in particular, both in terms of the repercussions which non-compliance with obligations in respect of one component of the system might have on another, and in terms of responsibility for quality of service provision to the end-user.

From a technical standpoint, the existence of a single authorization means that frequencies can be managed in an integrated manner through a single entity

responsible for the entire system, with clear benefits in terms of monitoring and control of the spectrum, particularly in detecting situations of interference.

In the case of pan-European satellite systems, these issues are of particular importance.

In this context, ICP-ANACOM is of the position that **both components of the MSS systems - satellite and CGCs - should be subject to a single authorisation**, in which context CGCs are not to be made subject to any limitation as regards their function as mere repeater stations of the satellite signal, notwithstanding that MSS operators may themselves opt for a more restrictive use of their CGCs.

Indeed, ICP-ANACOM is of the position that this is the option that is most fitting to the neutrality of services which, whenever possible, is to be ensured within the framework of spectrum management.

Furthermore, with a lengthy period of validity, as is the case with the authorization of these systems, in principle, no restrictions should be applied from the outset on the range of services and applications that CGCs can bring to users, whereas in this, as in other uses, the most efficient use should be sought for the spectrum and with the greatest level of derived economic and social benefit.

The installation of the CGCs is a different matter, with nothing preventing a person other than the MSS operator from undertaking their installation.

#### **4. Right of use of frequencies or general authorization only**

In accordance with article 19 of paragraph 3 of Law no. 5/2004 of 10 February, as amended by Law no. 51/2011 of 13 September (LCE - Lei das Comunicações Electrónicas (Electronic Communications Law)), the use of

frequencies may, as an exception, be dependent on the allocation of individual rights of use, if so required by ICP-ANACOM.

Otherwise, the provision of electronic communications networks and services remains subject only to the general authorisation regime, which regime entails compliance with the rules set forth in said Law and in the respective regulations, and shall not be dependent on any prior decision or act of the Regulator (see article 3, point h) and article 19, paragraph 2 of the LCE).

In the case of MSS systems, in addition to the above conditions as applicable to the CGCs, under article 7 of Decision No 626/2008/EC, provision is also made for the following **conditions with regard to the satellite component**:

- a) Operators shall use the assigned radio spectrum for the provision of MSS;
- b) Operators shall meet milestones six to nine set out in the Annex to Decision 626/2008/EC within 24 months of the adoption of the selection decision;
- c) Operators shall honour any commitments they give in their applications or during the comparative selection procedure;
- d) Operators shall provide to the competent authorities of all Member States an annual report detailing the status of development of their proposed mobile satellite system;
- e) Rights of use and authorisations shall be granted for a duration of eighteen years from the date of the adopted selection decision.

The imposition of such conditions and the level of obligations associated therewith do not appear compatible with the general authorization regime, and therefore the most fitting option for the provision of MSS entails the **allocation of a right of use of frequencies to the respective operator** with the imposition, *inter alia*, of the following conditions:

- a) Conditions as result from the Community selection procedure;
- b) Common conditions as set out in paragraph 2 of article 7 of Decision no. 626/2008/EC regarding the MSS, as identified above;
- c) Common conditions as set out in paragraph 3 of article 8 of Decision no. 626/2008/EC regarding CGCs, as identified above in point 3;
- d) Conditions as result from paragraph 1 of article 27 of the LCE, which by their nature, are applicable to this service;
- e) Conditions as result from paragraph 1 of article 32 of the LCE, among which the following are identified:
  - Right of use of radio spectrum assigned to the provision of MSS;
  - Effective and efficient use of frequencies;
  - Compliance with the specific conditions governing use of radio frequencies as included in the radio licenses issued pursuant to Decree-Law no. 151-A/2000 of 20 July;
  - Compliance with the technical and operational conditions necessary for the non-production of harmful interference and for the limitation of public exposure to electromagnetic fields in accordance with Decree-Law no. 11/2003 of 18 January and with Decree-Law no. 1421/2004 of 23 November and with the regulations of ICP-ANACOM as are published in the implementation thereof;
  - Maximum duration in accordance with article 33 of the LCE;
  - Payment to ICP-ANACOM of such fees as are due under article 105 of the LCE;
  - Compliance with the obligations arising from international agreements applying to use of frequencies.

With a view to the deployment of MSS systems and considering the above, the National Table of Frequency Allocations (NTFA) is to be amended in accordance with this decision, in particular setting out that:

- Rights of use of frequencies are required for this type of system;
- The respective allocation process is subject to the allocation of spectrum effected pursuant to Decision 2009/449/EC to Inmarsat Ventures Limited and Solaris Mobile Limited

Details are given below of some of the conditions stemming from paragraph 1 of article 32 of the LCE.

## **5. Duration of validity of the right of use of frequencies**

Under the terms of paragraph 1 of article 33 of the LCE, the rights of use of frequencies are allocated for a period of 15 years, whereas in duly reasoned situations, according to the service in question and taking into account the intended purpose, as well as the need to provide an appropriate period to allow for amortization of the investment, ICP-ANACOM may provide allocation for a different period, having a minimum of 10 years and a maximum of 20 years.

In the case of the MSS, Decision no. 626/2008/EC requires that rights of use and authorisations are granted for a period of 18 years from the date of approval of the selection decision (thereby bringing the validity durations in force in different Member States into line), taking into account the lengthiness and the complexity of the phases of technical development required in order to launch mobile satellite services which, in turn, are reflected in the evolution of the technical and commercial development of services.

Additionally, pursuant to point d) of paragraph 3 of article 8 of said Decision no. 626/2008/EC, rights of use and authorisations shall be granted for a period of time ending no later than the expiry of the authorisation of the associated mobile satellite system.

As such and with this reasoning, the rights of use (which cover both components - satellite and ground) are to be allocated by ICP-ANACOM with a duration of validity extending until 14 May 2027, i.e. 18 years from Decision no. 2009/449/EC of the European Commission of 13 May 2009.

## **6. Radio Licensing**

Under the terms of paragraph 1 of article 7 of Decree-Law no. 151-A-2000 of 20 July, as amended by Decree-Law no. 264/2009 of 28 September, a radio licence shall be required for the use of radiocommunications networks, except in cases as provided for in article 9, paragraph 1, point a), which provides for exemptions from this type of licensing.

Also in accordance with paragraph 1 of article 8 of the same law, the use of stations which comprise a licensed radiocommunications network, shall not require a licence.

Therefore, taking into account:

- CGC MSS network architecture as detailed above, as well as the definition of "MSS systems" pursuant to Decision 2007/98/EC;
- the use of frequencies of this MSS network, under the present draft decision, including satellite stations, CGCs and mobile terminals;

the MSS network will be subject to radio licensing in the form of a network license whereas stations which comprise the network will not be subject to licensing, pursuant to paragraph 1 of article 7 and to paragraph 1 of article 8 of Decree-Law no. 151-A/2000.

## **7. Applicable Fees**

In accordance with article 105 of the LCE, holders of such rights of use of frequencies are required to make payment of the following fees:

1. Fees due in respect of the exercise of the activity of electronic communications networks and services provider, under the terms of article 105 , paragraph 1, point b) of the LCE;
2. Fees due in respect of the assignment of rights of use of frequencies, under the terms of article 105, paragraph 1, point c) of the LCE;
3. Fees due in respect of the use of frequencies, under the terms of article 105, paragraph 1, point f) of the LCE and of article 19 of Decree-Law no. 151-A/2000 of 20 July, as amended by Decree-Law no. 264/2009 of 28 September.

## **III. Decision**

In light of what has been set out, the Management Board of ICP-ANACOM, pursuant to the powers conferred under points c), f) and m) of article 6 of its Statutes, as in annex to Decree-Law no. 309/2001 of 7 December, in pursuit of the regulatory objectives set out in article 5 of Law no. 5/2004 of 10 February, as amended by Law no. 51/2011 of 13 September (LCE), and pursuant to articles 15, 16 and 32 of the same Law, determines:

1. To make provision in the national territory of MSS systems in the 1980-2010 MHz and 2170-2200 MHz frequency bands by applicants which are selected under the terms of Decision no. 2009/449/CE subject to the allocation by ICP-ANACOM of a right of use, which right is to be applicable to the satellite component and also to the ground component (CGC);



2. To make the rights of use which are so allocated subject to the following conditions:
- a) Conditions as result from the Community selection procedure;
  - b) Common conditions as laid down in paragraph 2 of article 7 of Decision no. 626/2008/EC regarding the MSS;
  - c) Common conditions as defined in paragraph 3 of article 8 of Decision no. 626/2008/EC regarding the CGC;
  - d) Conditions as result from paragraph 1 of article 27 of the LCE, which are applicable by their nature;
  - e) Conditions as result from paragraph 1 of article 32 of the LCE, among which the following are identified:
    - i) Right of use of radio spectrum assigned to the provision of MSS;
    - ii) Effective and efficient use of frequencies;
    - iii) Compliance with the specific conditions governing use of radio frequencies as included in the radio licenses issued pursuant to Decree-Law no. 151-A/2000 of 20 July;
    - iv) Compliance with the technical and operational conditions necessary for the non-production of harmful interference and for the limitation of public exposure to electromagnetic fields in accordance with Decree-Law no. 11/2003 of 18 January and with Decree-Law no. 1421/2004 of 23 November and with the regulations of ICP-ANACOM as are published in the implementation thereof;
    - v) That the right of use be valid until 14 May 2027;
    - vi) Payment to ICP-ANACOM of the fees due under the terms of article 105 of the LCE and under the terms of article 19 of Decree-Law no. 151-A/2000 of 20 July, as amended by Decree-Law no. 264/2009 of 28 September;

vii) Compliance with the obligations arising from international agreements applying to use of frequencies.

3. To make the MSS network subject to radio licensing in the form of network licensing, pursuant to paragraph 1 of article 7 and to paragraph 1 of article 8 of Decree-Law no. 151-A/2000 of 20 July .
4. To amend the National Table of Frequency Allocations in accordance with the present decision.