



To: HELLENIC TELECOMMUNICATIONS & POST COMMISSION (“EETT”)
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Subject: Globalstar’s comments regarding EETT’s Public Consultation on the Amendment of the Radio Spectrum Use Conditions Regulation and the Regulation on the Determination of Spectrum Use Fees and Fees for Radio Frequency Assignment

NON-CONFIDENTIAL VERSION

Dear Sirs,

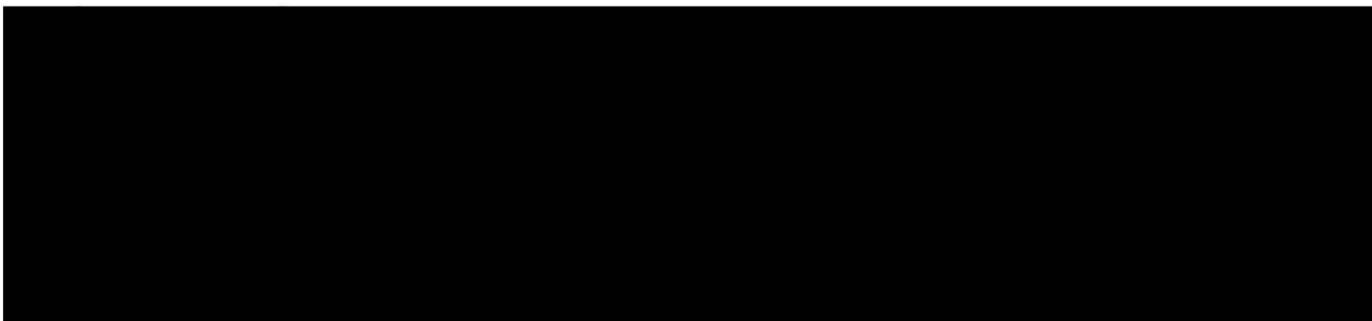
We are pleased to forward you our comments regarding EETT’s aforementioned public consultation.

GLOBALSTAR’s regulatory team remains at your disposal should you need any further clarifications.



Signature

Date 29th January 2024



[REDACTED]

Globalstar's comments regarding EETT's Public Consultation on the Amendment of the Radio Spectrum Use Conditions Regulation and the Regulation on the Determination of Spectrum Use Fees and Fees for Radio Frequency Assignment

Globalstar has reviewed EETT's public consultation and would like to raise the following comments.

Globalstar would like to express its appreciation for the efforts of EETT to update the regulatory framework which would allow deployment of Ancillary Terrestrial Components belonging to a mobile satellite system. Globalstar has been following EETT's previous consultation and its results and conclusions as well as the comprehensive proposal for new regulation on certain frequency bands.

The overall proposal regarding regulation of ATC services of a Mobile Satellite system is well understood and no comments are raised for the majority of conditions established in the public consultation document. There are two specific points of concern to Globalstar (points A and B below) plus a few additional observations (point C et seq. below).

Globalstar's comments mainly address the following points:

- A. Additional Requirement No. 6 (referred to in the newly introduced row regarding the use of the 2483,5-2495 MHz band by ATCs, in Annex A.6), on the requirement of dual mode functionality for the User Terminal connected in an ATC network. The requirement in question reads: *"Each ATC communicates with a mobile satellite terminal and/or a mobile IMT terminal which (terminal devices) will be able to connect to both the satellites and the ATC, i.e. they will have a dual function. The ATCs will not communicate with terminal devices that are not capable of communicating with the network's non-geostationary orbit satellites of the mobile satellite service."* This requirement should be also viewed in conjunction with Additional Requirement No. 18.
- B. The characterization (made in Additional Requirement No. 6 of the newly introduced row regarding the use of the 2483,5-2495 MHz band by ATCs, in Annex A.6) of the mobile satellite service network including a terrestrial (ATC) component as a Hybrid Satellite/Terrestrial System i.e. *"System employing satellite and terrestrial components where the satellite and terrestrial components are interconnected but operate independently of each other. In such systems the satellite and terrestrial components have separate network management systems"*
- C. Applicable ETSI ENs and ECC Decisions.

Herebelow, Globalstar provides further information on each of the above points.

Point A. - Additional Requirement No. 6

Globalstar has already raised this point as a critical aspect which will prevent effective deployment of ATC networks. The dual mode requirement for the user terminal connecting to an ATC network is ineffective and impractical to achieve its objectives, as already commented by Globalstar in response to the previous public consultation on MSS.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Further to the previous comments raised by Globalstar in response to the public consultation in September 2023 regarding 'The operation of Ancillary Terrestrial Components of the Mobile Satellite Service in the 2483,5 – 2495 MHz Radio Spectrum Band', here below are further reasons and comments to justify the impracticality of such dual mode functionality to the user terminals to be deployed as part of the ATC network.

a. Limitations due to line-of-sight visibility to the satellite.

One of the scenarios for the need of deploying ATC network is when there is no line of sight and / or visibility from the satellite to the user terminal. This scenario happens usually in indoor areas. For example, in the case of terminals such as mobile terminals, which are used within certain areas, there would not be a need of connectivity with the satellite as the area would not be served by satellite. [REDACTED]

[REDACTED] Similar scenarios happen in outdoor areas when the line-of-sight visibility is not available at certain azimuths due to human constructed or natural terrain obstacles.

Consequently, if one of the reasons for deploying ATC to complement the mobile satellite service is because of the physical impracticality to connect with the satellite, it seems quite difficult to understand that such user terminals should be equipped with a functionality which will not be used. It does not make sense to impose a condition on terminals connecting with the ATC to also be able to communicate with the satellite. It may be a desirable feature towards future deployments or higher flexibility of operation of the ATC user terminals but not a regulatory requirement.

b. Limitations due to limited capacity of the mobile satellite service (the satellite component).

It is understood that EETT considers that another reason justifying the deployment of ATC is because the satellite capacity of a MSS is limited. [REDACTED]

Consequently, if one of the reasons for deploying ATC to complement the mobile satellite service is because a need of increasing the capacity of the mobile satellite system, noting that such increase in capacity cannot be provided via the satellite component of the MSS, it seems quite difficult to understand that such user terminals should be equipped with a functionality which will not be used. It does not make sense to impose a condition on terminals connecting with the ATC to also be able to communicate with the satellite. It may be a desirable feature towards future deployments or higher flexibility of operation of the ATC user terminals but not a regulatory requirement.

c. No availability of ATC user terminals with dual mode functionality.

[REDACTED]

[REDACTED]

However, there is no availability of user terminals connecting to ATC with a dual mode function in the present. The markets where ATC deployment is already authorised have not imposed such functionality and therefore, no equipment is available on the market. Hence, the imposition of such regulatory requirement entails technical impracticality to deploy ATC network.

Consequently, requesting the deployment of user terminals working as part of an ATC network to be equipped with functions which are not available in the market, now or in the shorter-term future, does not make sense and, practically, the requirement would impede effective deployment of ATC networks.

d. The ATC network is a low-power network which will remain ancillary to the mobile satellite service.

The ATC network proposed by Globalstar is a type of low-power network and its deployment does not consist of the same scale as a high-power terrestrial service. As a result, it inherently cannot operate independently as a standalone terrestrial service but is designed to consistently function in an ancillary capacity to the mobile satellite service. Adhering to the requirement that the deployment of terrestrial facilities remains ancillary to satellite operations also ensures that the low-power ATC network proposed by Globalstar maintains its supportive role and does not pose competitive challenges to the mobile service.

e. Potential review of the regulatory framework in the future (Additional Requirement No. 18).

Globalstar understands this additional requirement as an element forcing to keep updated the regulation. It is then understood that the current regulation should be practical at the light of the technology and market status. For the similar reasons as updates of the regulatory framework should be reviewed and updated in the future due to the advent of new technologies, services, equipment, applications, it is also understood that current regulatory framework should be realistic bearing in mind the status of technologies, services, applications, equipment, and not requesting requirements which may or may not be developed by the market.

Additional Requirement No. 18 (referred to in the newly introduced row regarding the use of the 2483,5-2495 MHz band by ATCs, in Annex A.6) is a guarantee for EETT that the requirement of dual mode functionality indicated in Additional Requirement No. 6 could be perfectly incorporated in the future updates or reviews of the current regulatory framework, thus avoiding a regulatory framework which would not be realistic or in accordance with the current and short-term market scenarios.

Instead of requiring impractical conditions, not available as of today market possibilities, EETT could rely on the potential future review of the regulatory framework to incorporate new requirements. This would include among others, the option to require, then, the dual mode functionality for the ATC user terminals, when such technology may become available, taking pro-active action to monitor development of technology, equipment and applications being provided by the modern mobile satellite systems.

f. Possible misinterpretation of the applicability of mobile earth stations concept to the case of MSS ATC.

[REDACTED]

When developing the new regulatory framework, it is perfectly understood that EETT would have taken into account any other precedent situations of mobile satellite systems including satellite and terrestrial components.

[REDACTED]

[REDACTED]

As an additional reference on requirements for networks extending the reach of other networks (concept of ATC), Globalstar brings to the attention of EETT another possible analogy of the concept of the ATC and extension of a telecom network based on the scenario of deploying Terrestrial Television Gap fillers to extend the coverage of the main broadcast network and avoid the problems of lack of line of site visibility (TV receiver towards main broadcast tower). The TV reception station (TV user) is not required to be equipped with two antennas, one pointing towards the Repeater Gap Filler (the ATC base station in our case) and another one pointing towards the main Transmit Broadcast station (the satellite in our case).

g. Regulatory framework in the EU Member States and the need for uniform application.

[REDACTED] Globalstar is a global NGSO MSS network capable of providing services all over the world, including the European market.

[REDACTED]

h. References to IMT Communications should not be restricted to using IMT type terminals.

In the proposed regulatory framework, references are made to the use of frequencies in accordance with the IMT definition. While this is indeed a possibility, note should be taken that the band 2485 – 2495 MHz (which

[REDACTED]

is a part of the 2483,5 – 2500 MHz can be used for IMT and also for any other type of mobile services, being IMT or not.

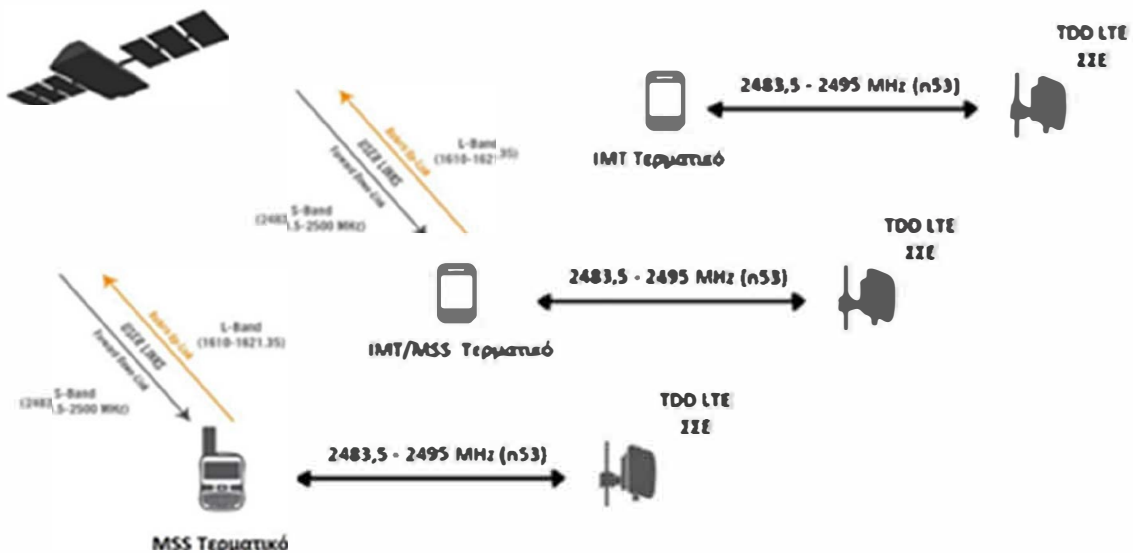
Note should be taken that ITU RR Resolution 225 indicates (*resolves* 1) that this band may be used for implementation of satellite component of IMT subject to the provisions of MSS in this band, therefore the use of IMT is just an option, not a mandatory requirement. Also, the same Resolution, states that the use of the band for IMT does not preclude the use of the band by any applications of the services to which the band is allocated. Consequently, the deployment of ATC may follow IMT characteristics or any other type of applications.

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Obvious cases of uses other than IMT are those associated to emergency communications or IoT communications (main business applications of Globalstar) which do not follow the IMT-type characteristics.

i. The topology of scenarios for ATC communications.

The example of structure of the Mobile satellite system network, as indicated in Additional Requirement No. 6, should be expanded with the scenario of possible direct communication between the user terminal and the ATC Base station, as follows:



Note should be taken that the frequencies proposed for operation of the Globalstar ATC are 2485 – 2495 MHz, thus coinciding with the same frequencies being used for the satellite component of the Globalstar MSS, although the Globalstar MSS includes additional frequencies, not planned for use by the ATC. There will not be any frequency to be operated by the ATC which will not be operated by the satellite component.

j. Regulatory alternative: Potential requirement of dual mode functionality to the ATC base station.

If the intention of the requirement of dual mode is to ensure some sort of connectivity of the Mobile Satellite Service interconnection with the ATC, a requirement for the ATC Base station to provide connectivity with its user terminals and with the satellite might be understandable. If the ATC may be seen as a sort of Mobile Earth Stations capable of communicating with the satellite and also with the user terminals, then, it would be possible to request such dual mode connectivity for the ATC Base station.

This requirement of dual mode for the ATC Base station would make sense as compared with other typical satellite connectivity scenarios; for example where a user terminal has certain required functions (e.g., a VSAT terminal), nothing prevents that such terminal acts as a repeater and connects with WiFi or other sub-connecting elements. In this case of requiring the ATC Base station to constitute a specific mobile earth station, indeed, it could be requested to incorporate dual functionality of satellite and terrestrial links for the ATC Base station.

As a summary, in light of the abovementioned grounds which demonstrate the impracticality of a requirement of dual mode functionality to the user terminal of the ATC, Globalstar requests EETT to omit such requirement and remove the corresponding condition in 'Additional Requirement No. 6' in the final regulatory framework.

Point B. – Additional Requirement No 6. Definition of the hybrid or integrated mobile satellite system

In the definitions section provided in the newly introduced row regarding the use of the 2483,5-2495 MHz band by ATCs in Annex A.6., definition No. 5 defines the concept of Hybrid Satellite/Ground System: as a “*System employing satellite and terrestrial components where the satellite and terrestrial components are interconnected but operate independently of each other. In such systems the satellite and terrestrial components have separate network management systems and do not necessarily operate in the same frequency band*”, in consistence with the respective ITU definition.

Based on Additional Requirement No. 6 (of the newly introduced row regarding the use of the 2483,5-2495 MHz band by ATCs, in Annex A.6.) which characterizes the structure of the mobile satellite system service network including a terrestrial component (ATC) as a Hybrid Satellite/Terrestrial System, it seems that EETT assumes that Globalstar’s control center would include a center for the satellite and another one for the terrestrial component. This is not fully correct, and it is a crucial concept of operation. Globalstar reminds that the use of spectrum for ATC will be the same spectrum used for the satellite component, although the satellite component enlarges its spectrum. In addition, there will not be use of ATC in frequencies which are not operated by the satellite component of the Globalstar mobile satellite system. Globalstar has explained the concept of operation in the technical document¹ submitted to EETT regarding the operation of the overall mobile satellite system, which includes the Network Operations Control System linking the capacities of controlling both the satellite and the terrestrial networks.


In light of the architecture of the Globalstar mobile satellite system, Globalstar considers that its system is indeed an Integrated Mobile Satellite System controlling both networks under a unified overall management center.

Point C. - Applicable ETSI ENs and ECC Decisions.

In the references to equipment and standards made under the row regarding the use of the 2483,5-2495 MHz band by Mobile Satellite Terminals in Annex A.6., reference is made to:

- ETSI EN 301 441 standard
- ETSI EN 301 473 standard

¹ See chapter 6.2 of the and figure 13 describing the Network Operations System

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- ECC/DEC/(09)02
 - ECC/DEC (12)01

Globalstar would like to make the following observations on the above references.

- EN 301 441. *'Satellite Earth Stations and Systems (SES); Harmonised Standard for Mobile Earth Stations (MES), including handheld earth stations, for Satellite Personal Communications Networks (S-PCN) operating in the 1,6 GHz/2,4 GHz frequency band under the Mobile Satellite Service (MSS) covering the essential requirements of article 3.2 of the Directive 2014/53/EU'*. Globalstar understands this standard has been developed bearing in mind the characteristics of MSS systems and not addressing specifically requirements for the user terminal of the ATC.
- EN 301 473. *'Satellite Earth Stations and Systems (SES); Harmonised Standard for Aircraft Earth Stations (AES) providing Aeronautical Mobile Satellite Service (AMSS)/ Mobile Satellite Service (MSS) and/or the Aeronautical Mobile Satellite on Route Service (AMS(R)S)/ Mobile Satellite Service (MSS), operating in the frequency band below 3 GHz covering the essential requirements of article 3.2 of the Directive 2014/53/EU'*. It does not cover the band 2483,5-2495 MHz and it addresses aircraft stations. It is not clear why it should be applicable to Globalstar ATC.
- ECC/DEC/(09)02 of 26 June 2009 on the harmonisation of the bands 1610-1626.5 MHz and 2483,5-2500 MHz for use by systems in the Mobile-Satellite Service amended on 2 November 2012. It covers Globalstar ATC band. This decision is just indicating that the band is to be used for MSS. Further conditions are set for L band but not for S band. It applies to the MSS but there is no reference at all regarding ATC. In the CEPT data base, it appears that Greece is studying the adoption of this Decision and the purpose of referring it now may be just to update the Greek regulatory framework. This reference is indeed relevant to endorse the deployment of MSS services although not specific for ATC.
- ECC DEC (12)01. Exemption from individual licensing and free circulation and use of mobile satellite terminals operating under the control of networks in the range 1 to 3 GHz. The decision reads: *"that administrations, with the exception of satellite terminals installed permanently on maritime vessels or aircraft, shall exempt from individual licensing and allow the free circulation and use of the satellite mobile terminals operating under the control of satellite networks, capable of providing electronic communications services in the frequency band, or parts of the frequency band, listed in Annex 1"*. Similar comment as for ECC (09)02. It affects MSS user terminals and does not raise much relevance for ATC as deployment of user terminals belonging to an ATC network would not be designed to move across different countries. It is nevertheless a relevant Decision applicable to the user terminals of the satellite component.

On the duration of the rights

Globalstar respectfully requests a duration of the license of ten (10) years, renewable as per the applicable legal provisions, in order for Globalstar to obtain sufficient upfront regulatory certainty in Greece, which is necessary to safeguard Globalstar's intended investment and ensure seamless provision of the said important services.

