In the Matter of) 

Use of Spectrum Bands Above 24 GHz) GN Docket No. 14-177
For Mobile Radio Services) )
Amendment of the Commission’s Rules) ET Docket No. 95-183
Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands) (Terminated)
Implementation of Section 309(j) of the) PP Docket No. 93-253
Communications Act – Competitive) (Terminated)
Bidding, 37.0-38.6 GHz and 38.6-40.0) )
GHz Bands) )
Petition for Rulemaking of the Fixed) RM-11664
Wireless Communications Coalition to) )
Create Service Rules for the 42-43.5 GHz) )
Band) )

To: The Commission

COMMENTS OF INMARSAT

Inmarsat hereby submits comments in response to the Commission’s Notice of Inquiry (“NOI”) in the above-referenced proceeding.

I. BACKGROUND

Inmarsat began as an intergovernmental organization created by the International Maritime Organization to establish a satellite communications network for the maritime community. Originally created to oversee public satellite safety and security communications, Inmarsat was privatized in 1999 and since its successful privatization, Inmarsat has continued to invest in new technologies for mobile satellite service customers.\(^1\) As an example of this investment, Inmarsat has invested over $1.5 billion in its current fourth-generation I-4 satellite network, including its Broadband Global Access Network

(BGAN) service, which is currently providing mobile broadband service both to the United States and globally.\(^2\)

In addition to the I-4 satellite constellation, Inmarsat continues to lead the industry in innovation and is introducing its next-generation Global Xpress service.\(^3\) Inmarsat’s $1.6 plus billion investment in three Inmarsat-5 Ka-band satellites is already providing cutting edge services to users in the Indian Ocean region that will be extended across the globe with the upcoming launch of the F2 and F3 satellites, marking the first time a commercial satellite operator has utilized Ka-band radio frequencies to deliver a global satellite service.\(^4\) Inmarsat has also ordered a fourth Global Xpress Ka-band satellite from Boeing for delivery and launch in the 2016 timeframe.

Inmarsat’s customers for existing L-band and Ka-band services include both the public and private sectors and both public safety and emergency response applications, including for response to natural disasters,\(^5\) supporting both governmental and non-governmental organizations.\(^6\) Further public applications include military telecommunications and public scientific research. Private enterprise customers such as the oil and gas, shipping, construction, and mining industries depend on Inmarsat technology to

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\(^4\) The first satellite, Inmarsat-5 F1 entered commercial service on July 1, 2014 and provides Global Xpress services in Europe, the Middle East, Africa, and Asia. The second and third I-5 satellites are expected to launch early in 2015, with global coverage expected to be achieved in the second half of 2015.

\(^5\) For example, Inmarsat BGAN technology played a critical role in supporting government and non-government agencies such as Télécoms Sans Frontières and the American Red Cross, as well as international news organizations in response to global disasters including the 2013 Philippines typhoon. Inmarsat Comments, supra note 1 at 3.

\(^6\) Id. at 3
communicate with and monitor isolated places such as oil platforms and remote work sites that have no existing terrestrial telecommunications infrastructure.

Inmarsat provides a range of capabilities including tracking of ships, land vehicles, and aircraft, voice and fax, and high-speed broadband data and video streaming. GlobalXpress service capabilities include super high-speed broadband to ships at sea as well as aircraft in flight, allowing passengers access to broadband connectivity. These new broadband services complement existing Inmarsat services, while maintaining Inmarsat’s commitment to providing highly reliable safety of life services in the challenging maritime and aviation environments.

II. DISCUSSION

As the Commission states, this is an initial inquiry into the suitability of specific bands above 24 GHz for terrestrial mobile services. Inmarsat welcomes the Commission’s efforts to seek comment on the bands identified in the NOI. As it has in other bands, Inmarsat supports the need for reasoned examination of the costs and benefits associated with all existing and potential uses of limited spectrum resources. The discussion of new services requires thoughtful review of concrete technical information and thorough business plans to ensure that the significant amount of time and resources necessary to evaluate potential new spectrum uses is done in an efficient manner for all parties without creating unnecessary regulatory risk for existing users. Inmarsat is hopeful that the questions posed in the NOI will produce the kind of information that is necessary for meaningful discussions based on tangible systems rather than vague potential offerings.

Inmarsat has worked with other satellite and non-satellite operators over the years to seek intensive and flexible use of spectrum using both shared and non-shared models. These efforts have allowed concrete systems to deploy in order to meet the constantly growing demands for all services, particularly mobile, both satellite and terrestrial. However,
Inmarsat has encountered situations where sharing is not feasible. Terrestrial mobile systems are usually deployed ubiquitously, so geographic separation with respect to other systems is generally not practical. When satellite earth stations are mobile or deployed ubiquitously, sharing is also generally not feasible. As a consequence, it may make more sense to look at finding other bands for new terrestrial mobile services.

Inmarsat looks forward to reviewing the comments filed in this proceeding and evaluating the proposals put forward for use of the bands under consideration and how those technologies can co-exist with existing spectrum users. Inmarsat welcomes a course of action allowing all players to work together to find the best arrangements for deployment and future growth for all services.

A. LMDS BANDS

Inmarsat has operations and licenses pending at the Commission for use of the LMDS band (27.5-28.35 GHz, 29.1-29.25). Inmarsat does not have plans to use the 31-31.5 GHz LMDS bands. Inmarsat does have longer term plans to use the 39 GHz (38.6-40 GHz) bands. Therefore, Inmarsat’s comments are only focused on the portions of the LMDS and 39 GHz bands in which it has an interest.

As the Commission notes in the NOI, there is significant satellite use of the 27.5-28.35 and 29.1-29.25 GHz bands and more can be expected in the years to come. At the moment, much of the satellite deployment is for gateway type earth stations. However, it can be expected that as the demand for Ka-band satellite services continues to grow, these bands will be more extensively used including for user terminal applications through coordination with existing users.

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7 Inmarsat Inc., Application to Operate an FSS Gateway Earth Station Facility in Lino Lakes, Minnesota with the Inmarsat-5 F2 Satellite to be Located at 55° W.L., File Nos. SES-LIC-20120426-00397; SES-AMD-20120823-00781, Call Sign E120072 (Filed 2012).

While some of the plans for potential mobile terrestrial service to be developed for use in these bands appears interesting from a technical standpoint, the commercial viability and operating characteristics of these proposed services appear distant and speculative at this point. Understandably, manufacturers must begin the discussion somewhere, but there also seems to be recognition among the proponents and the Commission that they do not yet have enough information or operator and consumer interest to provide concrete plans for the type of equipment that would be deployed and identification of bands where such operations may be deployed. These facts are also evident from the number and depth of the questions asked by the Commission in the NOI.

As Inmarsat has in the L-, C- and Ka-bands, we remain ready to talk with parties to maximize the use of limited spectrum resources based on concrete proposals. At this point, Inmarsat believes that it is too early to provide comments on the feasibility of mobile terrestrial use in the bands referenced in the NOI, other than to highlight some of the successes and challenges that satellite and terrestrial operators have had in the past. Part of the overall conversation that must take place in deciding the best and most efficient use for spectrum is to examine deployed systems, existing sharing regimes in the Commission’s rules, future growth of existing services and whether it makes more sense for a new service to be introduced into these bands or in other spectrum.

As a general matter, Inmarsat believes that the Commission should also seek information on potentially intensifying the use of the LMDS bands for existing and growing satellite services before or at the same time as considering other uses of the bands. Proponents of broadband terrestrial mobile services typically refer to the need for contiguous spectrum and at these higher frequencies more bandwidth is usually required to achieve the kind of throughput that proponents of such systems suggest.
The LMDS bands that Inmarsat currently uses and seeks to use in the United States are not necessarily sufficient for new terrestrial broadband services. Moreover, the spectrum is already being used by satellite providers whose services are growing and more extensive use of these bands could meet the growth in demand for Ka-band satellite broadband.

In addition, Inmarsat also notes that the U.S. band plan for LMDS has not been replicated in the rest of the world. Therefore, it looks unlikely that international harmonization of those bands for mobile terrestrial service would be possible. In addition, given the rapid deployment of Ka-band FSS systems globally, there are probably better prospects for terrestrial mobile services in other bands under consideration in the NOI, above 31 GHz for example.

B. 39 GHz BANDS

As is the case with terrestrial technologies, it can take many years before equipment becomes available and end users’ demand is sufficient for satellite network infrastructure investments to become cost effective. As the growth of satellite services continues in the Ka-band, the 39 GHz spectrum is becoming increasingly necessary as the next frontier for satellite services. Many operators and manufacturers are starting to plan the construction of satellite networks that will operate in the 39 GHz band, either for gateways or user terminals. Inmarsat is no exception. It is also examining the potential for deploying satellite networks in this band.

Therefore, as the Commission looks at the potential for terrestrial mobile systems in the 39 GHz band, it is important to ensure that opportunities are also available for satellite services, even in bands where deployment has not occurred. Today, satellite services have just as much, if not more, invested in deployment of new services in the 39 GHz as any other services.
III. CONCLUSION

Therefore, Inmarsat urges that any proposals developed in this proceeding for mobile services in the 27.5-28.35 GHz, 29.1-29.25, and 38.6-40 GHz bands account for existing operations and the growing need for spectrum for future satellite networks, particularly in Ka-band.

Inmarsat is doubtful about the feasibility of 5G systems to share with other services, but stands ready to discuss new technologies and sharing mechanisms based on concrete proposals. Inmarsat looks forward to reviewing the comments in this proceeding and providing additional comments, as appropriate.

Respectfully Submitted,

By: /s/____________

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