Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Use of Spectrum Bands Above 24 GHz For Mobile Radio Services	)	GN Docket No. 14-177
	)	
Establishing a More Flexible Framework to Facilitate Satellite Operations in the 27.5-28.35 GHz and 37.5-40 GHz Bands	)	IB Docket No. 15-256
	)	
Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band	)	RM-11664
	)	
Amendment of Parts 1, 22, 24, 27, 74, 80, 90, 95, and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services	)	WT Docket No. 10-112

To: The Commission

COMMENTS OF
THE GLOBAL VSAT FORUM

The Global VSAT Forum ("GVF") [1] provides these comments in response to the Commission's Notice of Proposed Rulemaking ("NPRM") examining the use of higher

[1] With over 250 members, GVF brings together organizations engaged in the delivery and use of advanced broadband and narrowband satellite services to consumers, and commercial and government enterprises worldwide.

frequency bands for mobile services and establishing a more flexible framework to facilitate satellite operations.[2]

With the outcome of the World Radiocommunication Conference ("WRC-15") behind us, the International Telecommunication Union ("ITU") concluded that studies on frequency-related matters for International Mobile Telecommunications ("IMT") identification, including possible additional allocations to the mobile services on a primary basis will be considered as part of the WRC-19 activity. A key outcome of Resolution 238 was the exclusion of the Ka-band Fixed Satellite Service ("FSS") 27.5 – 30.0 GHz from the scope of this Resolution. Another key outcome of the WRC-15 was adoption of WRC-19 agenda item 1.5 to consider use of the 27.5-29.5 GHz band by earth station in motion in the fixed-satellite service. In particular, the exclusion of any part of the range 27.5 – 30.0 GHz from the scope of Resolution 238 was argued at WRC-15 and the conclusion was that IMT in the 28 GHz band is incompatible with existing FSS operations worldwide.[3]

However we note that the NPRM has proposed to authorize mobile operations in the 27.5-28.35 GHz Ka-band (the "28 GHz band").[4] Given the aforementioned, the GVF recommends that the FCC reconsider its position in light of the decision of the WRC with regard to the 28 GHz band and consider alternative bands for IMT in the United States.

---

[2] *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Notice of Proposed Rulemaking, FCC 15-138, 30 FCC Rcd 11878 (2015) ("*NPRM*").

[3] *Id*. at ¶ 28.

[4] *Id*. at ¶ 30.

I. INTRODUCTION

Today, the U.S. satellite industry is in the forefront of the Ka-band initiative, and the United States is recognized globally as a leader in the manufacture of Ka-band satellites. The satellite industry is a significant economic driver in the U.S. and employs hundreds of thousands of Americans - more than 225,000 in the third quarter of 2013.

As the C and Ku-band are becoming more congested, most new broadband and telecommunication satellite operators will deploy Ka-band technology in the coming years which is why a sustainable future growth in Ka-band needs to be protected. Ka-band investment in spacecraft, ground infrastructure and customer equipment will radically increase in the coming few years.

One important step to protecting future growth of Ka-band satellite service in the United States is to elevate individually licensed FSS earth stations to co-primary status in the 28 GHz band. Such an approach will ensure satellite operators will continue to invest and expand the broadband service Americans have come to rely on.

II. ALTERNATIVE BANDS FOR MMW CONSIDERATION

The GVF recognizes the need to develop new spectrum for 5G operations, but encourages the Commission to consider alternative bands for mmW mobile use in light of the WRC-15 decision to exclude the 28 GHz band from further mmW study, and to work with relevant stakeholders to examine the suitability of those alternative bands for mobile and other uses.[5]

[5] *NPRM* at ¶ 14.

In considering suitable bands for mmW mobile services, the Commission identified four criteria for evaluating potential candidate bands.[6]

1. Bands with at least 500 megahertz of contiguous spectrum;
2. Bands that are being considered internationally for mmW mobile service. (Included in this are bands that have existing mobile allocations.);
3. Mobile use in mmW bands should be compatible with existing incumbent license assignments and uses; and
4. The importance of establishing a flexible regulatory framework that accommodates as wide a variety of services as possible;

With these factors in mind, GVF recommends consideration of the following alternative bands for mobile mmW services:

24.25-27.5 GHz – This is similar to one allocation the NPRM has already recommended, at 24.25-24.45 GHz and 25.05-25.25 GHz.[7] The band satisfies each of the FCC's five criteria. The FCC should expand its consideration to the entire band identified at the WRC-15, or at least those portions of the band raised in the NPRM. Operations in this band may be more suitable for sharing with IMT, however any introduction of IMT should include a plan to protect existing BSS and FSS feeder links and allow for their continued development.

31.8-33.4 GHz – This was a key band identified during the WRC-15 by many administrations and participants, including mobile vendors heavily involved in the development of 5G technology, as appropriate for study for IMT. While the band is not globally harmonized

[6] *Id*. at ¶¶ 16-23.

[7] *Id*. at ¶ 61.

as a mobile band,[8] the decision of the WRC-15 to support this band indicates that global harmonization is possible. GVF recognizes that a portion of the proposed band is used by the U.S. government (*i.e.*, 33.0 – 33.4 GHz). Nevertheless, the remaining portions of the band (31.8 – 33.0 GHz = 1.2 GHz total bandwidth) should be appropriate for mobile mmW and offers sufficient spectrum to provide at least 500 MHz.

Taking into account the state of the art technology, a bandwidth of around 3-4% of the center frequency could be supported by one RF component with reasonable complexity. For instance, 1.2 GHz of bandwidth could be covered by one RF component when the center frequency is 32.4 GHz. It is expected that such a frequency range could be implemented by one single device to facilitate global roaming in around the year 2020.

45.5-47.2 GHz – This is another band that was identified during the WRC-15 as appropriate for study for IMT. In the same manner as above, spectrum in the 45.5 GHz band and around the 47 GHz band respectively could also be grouped into broader frequency blocks. Technical advancement will not only provide the economies of scale for low cost device, but also increase the flexibility of spectrum management. Although the NPRM did not include a detailed discussion regarding this band, the Commission acknowledged that "the fact that a particular band or bands are not considered in this NPRM does not foreclose future Commission action on the band or bands."[9] Therefore, the FCC should consider this band, perhaps through the immediate release of a further public notice.

[8] *Id.* at ¶¶ 17-21.

[9] *Id.* at ¶ 20.

Q/V-band – Given the significant opportunities presented by the spectrum bands identified above, the Commission should postpone further consideration of the Q/V bands pending determination of whether the other three bands above are sufficient for the near-term foreseeable needs of mmW mobile services. As the NPRM acknowledges, portions of these bands are used for other services and are projected to be used in the future for additional services such as FSS.[10] Rather than prejudging such determinations now, further consideration of these bands should be postponed until the consideration of the above-bands is more mature.

III. ELEVATE FSS SERVICES IN THE 28 GHZ BAND

The Commission at a minimum should elevate individually licensed FSS earth stations in the 28 GHz band to co-primary status. The demand for satellite broadband services requires the deployment of multiple earth stations which perform aggregation and interconnection of customer terminals to the Internet. Such earth stations communicate with satellites and provide Internet or backhaul connectivity to customers. It is thus critical that FSS operators be allowed to continue deploying FSS earth stations in the band and have certainty that they will be able to access the 28 GHz spectrum on a secure basis in the future, so that they can provide broadband services with data rates comparable with terrestrial deployments.

IV. CONCLUSION

As the record demonstrates, 5G technologies are still in the conceptual phase and, accordingly, many years away from potential deployment – despite limited early testing by few

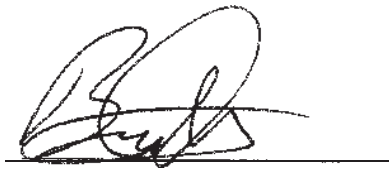
[10] *Id*. at ¶ 19 and ¶125 n.264 (acknowledging the soft-segmentation plan favoring FSS in the 40-42.5 GHz band).

manufacturers. We urge the Commission to ensure continued access to spectrum for satellite broadband operations in mmW spectrum.

As the Commission contemplates the possibility of opening the 28 GHz band for 5G mobile services, GVF urges it to recognize the important benefits of the satellite services being provided today in spectrum above 24 GHz and to reexamine the premises underlying the current service designations in the above band in light of technology and marketplace developments over the past twenty years.

Respectfully submitted,

THE GLOBAL VSAT FORUM

By: 

David Hartshorn
Secretary General
Global VSAT Forum
Fountain Court
2 Victoria Sq, Victoria St
St Albans, Hertfordshire
United Kingdom, AL1 3TF
202-390-1885

Bruce A. Olcott
Preston N. Thomas
Jones Day
51 Louisiana Ave. NW
Washington, D.C. 20001
(202) 879-3630

Its Attorneys

January 28, 2016