

April 26, 2016

VIA ECFS

Ms. Marlene Dortch
Secretary
Federal Communications Commission
445 12th Street, SW
Washington, D.C. 20554

Re: Written *Ex Parte* Presentation – Use of Spectrum Bands above 24 GHz for Mobile Radio Services, *et al*; GN Docket No. 14-177

Dear Ms. Dortch:

SES Americom, Inc. (“SES”) and Inmarsat Mobile Networks, Inc. (“Inmarsat,” collectively “the 28GHz Operators”) are writing to express their support in principle for the initial framework EchoStar Satellite Operating Corporation (“EchoStar”) and AT&T outlined to the Commission on April 5, 2016, which would allow individually licensed Fixed Satellite Service (“FSS”) earth stations to share spectrum with terrestrial 5G operations in the 27.5-28.35 GHz (“28 GHz”) band (“Echo/AT&T Proposal” or “Proposal”).¹ The 28 GHz Operators’ support is contingent on the final approach and associated rules ensuring that: (1) individually licensed earth stations have genuine access to the bands, through a fair coordination process and through a safe harbor approach which will allow for deployment of additional FSS earth stations on a co-primary basis; and (2) FSS satellites receiving in the 28 GHz band are protected from the interference generated by all types of 5G transmitters located inside the uplink satellite beams.

Under the Echo/AT&T Proposal, any FSS earth station that is licensed or has an application pending with the Commission at the time terrestrial rights are auctioned would be granted co-primary status regardless of its location and will need to be taken into account by the 5G deployment in that area. The parties have also proposed parameters defining 50 “urban core” areas. Within an urban core area, terrestrial licensees would be primary and FSS earth stations requesting operating authority after

¹ Notice of *Ex Parte* filed by AT&T and EchoStar Satellite Operating Corporation, Hughes Network Systems, LLC, and Alta Wireless, Inc., GN Docket 14-177 (filed April 6, 2016) (“Echo/AT&T Ex Parte”). The 28 GHz Operators are continuing to evaluate the elements of the proposal that address sharing in the 37-40 GHz band.

an auction would be secondary. Outside the urban core areas in the 28 GHz band, terrestrial and FSS operations would be co-primary.

Satellite networks will be a critical part of the 5G solution, and the 28 GHz Operators anticipate that satellite and terrestrial operators can find a solution that will allow both technologies to use the 28 GHz band in the short term and to support additional future growth.² Depending on the final implementation, the basic concept offered in the Echo/AT&T Proposal could represent a reasonable balance between satellite and terrestrial operations. On the one hand, Upper Microwave Flexible Use (“UMFU”) band licensees will have primary access to the spectrum within the most densely populated urban areas, allowing them to develop their services in areas attractive for mobile deployments in these frequency bands without concern of receiving interference from future 28 GHz band earth stations. Individually licensed earth stations, on the other hand, will obtain certainty in their ability to access the 28 GHz band on a co-primary basis in geographic areas outside the most densely populated urban areas, which will greatly enhance satellite operators’ ability to plan for future satellite deployments.

As a threshold matter, the 28 GHz Operators strongly support granting co-primary status to any earth station that is licensed or has a pending application at the time of an initial UMFU auction (“existing FSS earth stations”). While the framework for post-auction licensing set forth in the Proposal is a promising start, there are several elements that are either unclear or absent that must be addressed in final rules to ensure both terrestrial and satellite operators are able to leverage the full benefits of the Proposal. The most important items that must be addressed are outlined below, but additional concerns may arise as the specific operating rules are developed.

Guaranteed Access for Individually-Licensed Earth Stations

The 28 GHz Operators believe that a framework defining (i) areas where UMFU licensees can deploy their networks with no restriction other than the need to protect satellite receivers and taking into account any existing FSS earth stations, (ii) an intermediate area where access to spectrum for both UMFU licensees and earth station operators is based on coordination, and (iii) safe harbor areas where satellite operators

² See “SES Strongly Advocates and Supports Future 5G Deployment in Europe”, available at <http://www.ses.com/4233325/news/2016/22011760> (“In order to cope with the tremendous growth of data demand, including 5G requirements, a combination of terrestrial and satellite wireless technologies is needed. Satellites play a key role in allowing the seamless extension of 5G services, by providing connectivity on the sea, in the air and to remote land areas.”).

can freely deploy earth stations will provide the necessary balance to ensure an optimum use of spectrum by the different services.

The urban core areas defined in the Echo/AT&T Proposal represent one acceptable approach to defining areas where UMFU operations can be deployed without fear of satellite earth station interference. For the safe harbor areas, the 28 GHz Operators propose that any new earth station in an area where the population density does not exceed a specified threshold should be granted a primary license without coordinating with the terrestrial licensee, subject to meeting a pfd limit in adjacent areas with a higher population density. This safe harbor approach would have the advantage of avoiding triggering a coordination process in areas of limited interest to UMFU licensees and would incentivize satellite earth station operators to select sites outside of areas of high desirability for mobile deployments and to minimize the emissions radiated towards UMFU networks.

With respect to the intermediate areas, where some mobile deployments may occur and coordination would be required to avoid harmful interference, the 28 GHz Operators propose additional mechanisms to ensure that the satellite and terrestrial operators engage in good faith coordination. Such good faith coordination must be based on a clear statement of what qualifies as unacceptable interference, and this standard should be based on realistic and equitable considerations. Without such a standard, the coordination process could devolve into a disagreement over whether the second-in-time services would actually create unacceptable interference, ultimately resulting in gridlock.

The ultimate rules must also define what stage of development a terrestrial system must have achieved to be considered in the coordination process. Currently, the Echo/AT&T Proposal indicates that the terrestrial licensee's planned deployments must be taken into account,³ but such an approach is too open ended and leaves ample opportunity for abuse. The 28 GHz Operators believe that only terrestrial operations existing at the start of the coordination process should be considered when evaluating the potential interference environment. Alternatively, if planned terrestrial operations are to be considered in the coordination process, the terrestrial operator must prove that the deployment is imminent by providing building permits, rights-of-way approvals, equipment purchase orders, and other documentation demonstrating that construction is scheduled to occur within weeks of initiating coordination discussions.

³ *Echo/AT&T Ex Parte* at 4.

On a related note, neither operator should be allowed to extract any financial payments beyond reimbursement for reasonable expenses incurred to alter existing operations as noted in the Echo/AT&T Proposal. To concede such status and allow for broader financial compensation would create opportunities for the terrestrial operator to extract monopoly rents or otherwise stymie the coordination process.

Finally, if coordination cannot be achieved in an intermediate area, despite good faith efforts on behalf of the satellite operator, a means should be provided for satellite operators to move forward with deployment as long as their individually-licensed earth station does not cause unacceptable interference to existing terrestrial stations. In this case, the earth station application could be granted if the satellite operator makes a showing that a) it meets a defined pfd limit at the edge of nearby urban core areas, and b) the pfd produced around the earth station does not exceed that defined pfd limit at the site of existing terrestrial stations.

Satellites Receiving in the 28 GHz Band Must be Protected

Numerous parties have already identified the risk that FSS satellites receiving in the 28 GHz band may experience unacceptable interference from the aggregate transmissions of numerous UMFU stations in the satellite's uplink beam.⁴ The rules must ensure that in all scenarios aggregate emissions from UMFU operations do not interfere with FSS satellites. This may require limits on UMFU deployment and methods for UMFU licensees to coordinate operations among themselves to keep aggregate emissions below the necessary thresholds. To be truly effective, the rules should provide a mechanism that allows the interference generated towards satellites to be monitored and measures to be taken to ensure the aggregate interference never exceeds the limit. This issue is particularly important because such interference will dramatically increase as UMFU base stations and terminals are deployed, while a satellite cannot be modified once it is in orbit.

The 28 GHz Operators respectfully request that the Commission consider adopting an approach along the lines proposed by EchoStar and AT&T, but ensure that the concerns outlined above are addressed to allow terrestrial and satellite operators full use of the spectrum to continue and expand services to US consumers.

⁴ See Notice of Ex Parte filed by O3b Limited, GN Docket 14-177 (filed April 12, 2016); see also Comments of Viasat, Inc., GN Docket 14-177, at 22-25, Exhibit 1 (Feb. 26, 2016); Notice of Ex Parte filed by ViaSat, Inc., GN Docket 14-177, at 2-3 (filed April 21, 2016).

Inmarsat Mobile Networks, Inc.

By: /s/ Donna Bethea-Murphy

Donna Bethea-Murphy
Senior Vice President
Inmarsat Mobile Networks, Inc.
1101 Connecticut Avenue, NW
Washington, DC 20036

Respectfully submitted,

SES Americom, Inc.

By: /s/ Petra A. Vorwig

Petra A. Vorwig
Senior Legal & Regulatory Counsel
1129 20th Street, NW
Suite 1000
Washington, D.C. 20036
(202) 478-7143