

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)	
)	
Expanding Flexible Use of the 3.7 to 4.2 GHz Band)	GN Docket No. 18-122
)	
Expanding Flexible Use in Mid-Band Spectrum)	GN Docket No. 17-183
Between 3.7 and 24 GHz)	(Inquiry Terminated as to 3.7-4.2 GHz)
)	
Petition for Rulemaking to Amend and Modernize)	RM-11791
Parts 25 and 101 of the Commission's Rules to)	
Authorize and Facilitate the Deployment of)	
Licensed Point-to-Multipoint Fixed Wireless)	
Broadband Service in the 3.7-4.2 GHz Band)	
)	
Fixed Wireless Communications Coalition, Inc.,)	RM-11778
Request for Modified Coordination Procedures in)	
Band Shared Between the Fixed Service and the)	
Fixed Satellite Service)	

COMMENTS OF EXTREME REACH, INC.

Extreme Reach, Inc. ("Extreme Reach") submits these comments in response to the above-captioned Notice of Proposed Rulemaking ("NPRM") in which the Federal Communications Commission solicits feedback on proposals to permit terrestrial mobile use of the 3700-4200 MHz band (the "C-band").¹ We have three primary goals in submitting these comments: (1) make perfectly clear that the C-band content distribution services provided by satellite operators are essential to our business; (2) support the market-based approach of Intelsat License LLC, SES Americom, Inc., and Intel Corporation proposed in the NPRM to allow terrestrial mobile use of the C-band;² and (3) oppose new fixed point-to-multipoint ("P2MP")

¹ *Expanding Flexible Use of the 3.7-4.2 GHz Band*, Order and Notice of Proposed Rulemaking, GN Docket No. 18-122, FCC 18-91 (rel. July 13, 2018).

² See NPRM ¶¶ 66-97.

services in the C-band and associated proposed limits on full-band, full-arc protection for satellite earth stations.

Extreme Reach utilizes C-Band satellite capacity for distribution of syndicated television programs to approximately 590 television stations nationwide. In aggregate, this typically represents 340 hours of television programming per week. A number of these shows are produced very close to their air date/time and the ability to deliver them to stations in a timely and error free manner is critical.

The actual method of distribution Extreme Reach employs is file-based, not real-time linear video. Show segments are encoded as files and then spliced together with barter advertisements. The resulting integrated show is distributed as single file using Internet Protocol (“IP”) multicast distribution via C-band satellite to servers deployed at each station. A proprietary protocol is utilized for the actual delivery, IP data is encapsulated and uplinked as a 74Mbps DVB-S2 8PSK full transponder carrier. At all the locations we distribute to in this manner, there is downlink antenna which belongs to the station and a DVB-S2 receiver provided by Extreme Reach connected to a server we also provide. The same receive antenna/LNB/IFL is typically being used by the station to receive programming and services from other providers. Programs which are distributed 'land' on our server and are then transferred as files into the stations environment.

As indicated above, C-band satellite capacity forms the backbone of the infrastructure that content companies such as Extreme Reach use to supply consumers across the country with premium video programming. Any change in the current C-band operating environment could negatively affect our business³ and the American consumers we serve. Loss of C-band satellite

³ Indeed, our industry has made substantial investments in C-band facilities to expand and update our distribution networks to ensure that all Americans have access to high quality content.

capacity for point to multipoint delivery would adversely affect the speed, reliability and efficiency with which Extreme Reach would be able to deliver syndicated programming to end users.

C-band offers reliability, quality, and cost efficiency that cannot be matched by other technologies or in other satellite spectrum. Satellite delivery ensures us a guaranteed multicast 'pipe' of 74Mbps which is exclusively utilized for file-based delivery of programming, so that every television station receives the file at the same time. Use of the Internet as a delivery mechanism cannot guarantee this, as file deliveries would contend with other Internet traffic. Accordingly, the same ubiquitous download speeds cannot be realized with Internet delivery and native multicast is not possible.

We have previously operated both C-band and Ku-band distribution paths but found the Ku-band path was significantly less reliable due to attenuation from rain fade. This resulted in a lower aggregate throughput due to the number of retransmissions required to ensure that all files were delivered in their entirety and error free. All our distribution is now consolidated using C-band capacity on the Galaxy-19 satellite and our network is now highly reliable with very low error rates. Switching away from C-band satellites would also strand the investment Extreme Reach has made in the ground stations used for content distribution.

Moreover, the record suggests that co-frequency sharing between terrestrial mobile services and satellite operations is not feasible. As the NPRM recognizes, because signals from satellites are very weak when they reach the ground, terrestrial mobile operations could cause harmful interference to earth stations over large distances.⁴ Any risk of interference to the C-band satellite services on which Extreme Reach relies is unacceptable, not only from a business

⁴ See NPRM ¶ 50.

revenue perspective, but because it jeopardizes the ability of American consumers to receive the programming content they want and upon which they rely. A sudden problem with television reception due to government action would almost certainly result in public outrage.

Since we deliver programming using a file-based method and non-real time there is no observable impairment due to interference as there would be with a traditional real time Integrated Receiver Decoder (“IRD”) based distribution platform (i.e., you can't see it on a television monitor as the show is being received). Instead, what happens is that our protocol sees a larger than normal number of missed packets which require repair and it will attempt to resend them. Now, if this is happening at a small number of sites and the packet loss is minimal, then this is a manageable situation and exactly how our network operates today. However, if we were to encounter the scenario where multiple receive locations were to be impacted by interference causing packet loss then the amount of repair data which would have to be sent would increase dramatically and the throughput and effective capacity of the network would be reduced. For a network such as ours to operate correctly an interference free environment is critical.

In our experience, there has been a transition in the last decade from 'Craft' to 'IT' in the core operations of television stations. As a consequence, the number of engineering staff who have the knowledge and skillset to identify and resolve any RF issues - particularly interference - has dramatically been reduced. We do not feel that any arrangement which operates on the basis of co-frequency sharing with mobile operations and/or dynamic interference resolution is operationally viable.

The proper management of the future of the C-band is critical to the continued vitality of our business. Thus, we believe that a market-based approach, led by satellite operators, is the only practical solution for introducing terrestrial mobile operations in the C-band. Cable,

systems, broadcasters and content delivery companies have been working with satellite operators for decades. We are their customers, and they understand our needs and have direct knowledge of our operations. Consequently, satellite operators are best positioned to protect our company and other incumbent users while also undertaking the arduous and costly task of clearing spectrum for terrestrial mobile use. We urge the Commission to move forward with the market-based solution discussed in the NPRM.⁵

Finally, the Commission should not allow new P2MP services in the C-band or restrict the protection of C-band earth stations across the full spectrum band and the visible satellite arc.⁶ The flexibility to change frequencies and receive antenna orientations is essential to the value of the C-band satellite capacity on which Extreme Reach and others rely. This flexibility allows restoration of service if an outage affects our primary space segment and facilitates the resolution of interference issues, as well as enabling us to take advantage of competition among satellite operators. The requirement to work around new P2MP facilities would undermine the nationwide reach of C-band service, and the requirement to modify earth station licenses for any change in operating parameters would impose significant and unjustified regulatory burdens.

⁵ See NPRM ¶¶ 66-97.

⁶ See NPRM ¶¶ 37-40 & 116-132.

Extreme Reach urges the Commission to focus on other spectrum that is not as intensely used as the C-band to meet any requirements for additional frequencies suitable for P2MP operations.

Respectfully submitted,

Extreme Reach, Inc.

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