Before the

Federal Communications Commission

Washington D.C 20554

In the Matter of )

)

Report on the Feasibility of Allowing )

Commercial Wireless Services, Licensed ) GN Docket 18-122

or Unlicensed, to Use or Share the Frequencies )

Between 3.7-4.2 GHz )

Comments of Thomas C. Smith

I would like to express my objections to the proposed re-allocation of the 3.7 to 4.2 GHz band from the use of satellite to earth satellite transmission to use for terrestrial use for mobile and fixed 5G broadband services. I firmly believe that these two services are incompatible and would no doubt prevent the spectrum from being used for the delivery of radio and television programming. This band was originally used for intercity telephone long lines service and later satellite downlink transmission. Because both services used fixed facilities, it was possible to coordinate these services in most cases. Despite coordination between the services, there were still some issues where satellite receive stations had to take extra steps to suppress interference. Coordination between fixed transmit and receive stations and consumer mobile services is nearly impossible. Even if the Commission provided for a protected area around a satellite receive station, all it would require just one person with a personal device to enter the area and try to use the device or the device just trying to ping its location to a base station to interfere with the reception of the faint satellite signal by the satellite receive station. Just driving past a satellite receive site with a wireless device could cause sporadic, unpredictable and untraceable interference. Relying on GPS and downloaded software to the devices to geofence a protect area around a satellite receive station is nearly impossible as GPS can be turned off and most devices will not be regularly update by most users. As people move between cities on a regular basis, the devices can be used in too many locations to keep up with the updates. Finally because of the number of receive satellite stations in most metropolitan areas, the number of areas that would need protection would make these 5G broadband devices unusable in many locations.

In order to facilitate coordination between terrestrial microwave stations and satellite earth receive stations, the earth stations were required to be licensed so the FCC had a record to where they were located. After it became apparent that interference was not a major issues and the phone companies started to switch from microwave to fiber optics, the interference issues further decreased. Because of these changes, the FCC no longer required receive satellite stations to be licensed or registered. Thousands of earth stations were installed since that time, leaving the FCC with no count of the number of earth stations that exist. All cable headends, nearly all of the TV stations and the majority of radio station studios have satellite receive stations at their facilities. In the Madison, WI. the metro area where I live, there a at least 20 facilities with satellite receive stations including 6 TV stations plus the state public TV network, 3 LPTV stations, 5 radio studio facilities representing 15 local stations and the state public radio network, a Charter cable headend, a couple of corporate facilities, 3-4 University of Wisconsin locations including the schools of Space Science and Meteorology and a state office building. There may be more, but these are the ones that I know of from my knowledge of the local radio and TV stations, the University and from what I found on Google Earth. Other than the University sites, I believe that most metro areas would be similar with the number depending on the number of TV and radio stations facilities located there. In smaller communities, there would be at least receive earth stations for the local radio stations and the cable headend.

Is there a replacement for using the C-band 3.7-4.2 GHz band for program transmission? I do not believe that there is another service that can replicate the reliability of C-band satellites. The KU and KA satellite bands are subject to fading during both heavy rain and snow storms. Sufficient Fiber Optic lines do not run to all communities and the internet facilities in many areas do not have the capacity or the speed to provide reliable service. This is particularly true in many small rural communities and those in sparsely populated areas.

I provide consulting services to a local TV station which carries a number of digital sub-channels plus take numerous program feeds during the day for the main channel. The station could be taking 10-12 Program services at the same time with six digital sub-channels receiving programming from their networks 24 hours a day via satellite. The station would need very large amounts of guaranteed internet bandwidth which is very expensive ongoing expense. Once satellite receivers and antennas are installed, there is little addition expense as the program supplier pays for the transmission expenses. Also, the internet was designed to send files such as documents, program downloads and pictures. It was not designed for continuous program video and audio streams with the reliability that broadcasters demand. It was designed for files that were in a form that packets of data could be resent if there was a transmission interruption. That is difficult in a continuous video or audio stream and it is amazing that streaming video and audio works as well as it does. But anyone that uses a streaming service has experienced video freezing up while the device one is using is buffering the video data input due to uneven data transmission. This is unacceptable for broadcast. Use of the internet or any other mode of fiber transmission is also subject to lengthy interruptions compared to satellite transmission due to possible damage to the local distribution system. If a pole or poles carrying the cable is taken down by a storm or a accident or a buried cable is accidently cut or dug up, there can be a outage that can last several hours or even days or weeks after a major storm such as hurricane or tornado.

I believe this proposal is based on much misinformation on the use of the 3.7 to 4.2 GHz band for satellite transmission. In Commissioner Michael O-Reilly's blog last August, he stated the C-band satellite was past its prime since people no longer used large dishes in their yards to receive satellite programming and had gone to Dish and DirecTV for their program services with small dishes. C-band programming was not meant for personal use in the home, but for the distribution to cable systems, TV stations and radio stations with some use for video teleconferences in education and industry. Home systems were created by hobbyist to basically steal programming, with the program suppliers eventually scrambling the service and selling descramblers to home viewers. C-band satellite service is an extension of the common carrier service that was supplied by the various telephone companies with the terrestrial microwave system and C-band satellite is still used by those that the service was intended for. One way to see how C-band satellite is used is to go to the website Langsat.com. This site has a list of satellites used by program providers to broadcasters and cable systems and what programming is being transmitted on each of them.

Commissioner O-Reilly also stated that this proposal to use the spectrum would be opening it up for commercial use. In my opinion, when someone spends about three quarters of a billion dollars to build and launch a satellite and charge to transmit programming over the satellite, I would consider that commercial use. His comments seem to me that was he was ill informed on the use of the 3.7 to 4.2 GHz band. In his blog, he did not even acknowledge that existence of commercial satellite use. In his comments after the announcement on the May 1, 2018 notice for comments on this docket still takes this view. This concerns me as can one make a good decision about an action if ones facts are suspect. A decision made when ones facts are in error can be disastrous and costly to all those involved.

On May 23, 2018, Chairman Pai announced in a speech before the Wireless Interstructure Association that the Commission would be taking up an action pertaining to the 3.7 to 4.2 GHz band in July 2018. This seems to be premature considering that registration of C-band satellite receive stations ends on July 18, 2018. When the registration period ends, hopefully the Commission will realize the true extent the C-band satellite system is used.

I have been a TV and radio broadcast technician for nearly 49 years and have dealt with microwave and satellite systems. I have also dealt with interference issues from time to time and know how difficult they can be to detected and correct. Because of this, I am greatly concerned about the ramifications this proposal could cause. Also, I believe that the Commission must support the use of spectrum for existing users as these services are as important as wireless usage. The economy relies on many different participants and technologies and it is not in the public interest nor is it the governments business to favor one business or technology over another. We need a diversity of services and many older technologies are still useful and needed, We cannot just follow the newest shiny technology and be captivated by the latest fad or buzz word in technology without giving consideration for existing technology and the services they provide.

Respectfully Submitted

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