



October 18, 2013

National Telecommunications and Information Administration
U.S. Department of Commerce
Office of Spectrum Management
1401 Constitution Avenue, N.W.
Washington, DC 20230
Attention: Ed Drocella
measurementNOI@ntia.doc.gov

Re: Spectrum Monitoring Pilot Program
Docket No. 130809703-01

Dear Mr. Drocella:

EchoStar Satellite Operating Company (EchoStar), DISH Network Corporation (DISH), and Hughes Network Systems, LLC (Hughes), (collectively, the Companies), submit these comments in response to the National Telecommunications and Information Administration's (NTIA's) Notice of Inquiry (NOI) on its proposed spectrum monitoring pilot program. As discussed herein, the Companies urge NTIA to design its test to examine frequencies that are best suited for terrestrial use, as well as in a way that accurately monitors directional services or services that may be intermittent or passive.

EchoStar is a diverse, dynamic US company. Founded by Charlie Ergen in 1980, EchoStar is a home-grown US satellite operator, services provider, and technology company. Today EchoStar owns, leases, or operates a fleet of 22 satellites in the Broadcasting-Satellite Service (BSS), the Mobile-Satellite Service (MSS), and the FSS bands, which provide innovative, multichannel video programming distribution through DISH Network Corporation (DISH), and state-of-the-art fixed and mobile broadband services, among other services. EchoStar is also a leading satellite technology and services company and employs more than 2,000 engineers focused on creating hardware and service solutions for cable, telecommunications, IPTV, and satellite companies worldwide.

Hughes Network Systems, LLC (Hughes) is the global leader in providing broadband satellite networks and services for enterprises, governments, small businesses, and consumers. Having pioneered the Very Small Aperture Terminal (VSAT), Hughes remains the world's leading provider of enterprise VSAT services and has built on this expertise to bring high-speed satellite broadband service to consumers and small businesses across the United States. This broadband business is expanding with the recently launched EchoStar® XVII satellite, a next-generation, Ka band, high-throughput satellite that delivers high-speed Internet access. This high-speed broadband service is especially important to EchoStar's US consumer and small business customers living or working in rural communities or in markets with limited terrestrial broadband build-out. Further, these services are invaluable during emergencies when the terrestrial infrastructure is unavailable.

DISH is the nation's third largest pay-TV provider with more than 14 million subscribers and over 25,000 employees across the country. Considered an industry leader in technology, DISH's award-winning innovations include the Hopper Whole-Home HD DVR and TV Everywhere devices and functionality that consumers can use to watch their TV on smartphones, tablets, and computers. Additionally, the dishNET satellite broadband service, which can be bundled with DISH's satellite TV

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service, offers affordable high-speed broadband Internet access. DISH is also preparing to enter the wireless market; DISH has acquired spectrum assets – including in the AWS-4 band and Lower 700 MHz E Block – and is planning for future network deployment.

NTIA's NOI proposes to run a 2-year project program to determine spectrum sharing or relocation opportunities of communications services using the radiocommunications spectrum resource. Since the main purpose of this testing is to identify frequency bands for terrestrial wireless broadband usage, the Companies first urge NTIA to consider limiting the frequencies in which monitoring is performed to a reasonable frequency range where such services could be offered. However, no matter what frequencies NTIA chooses to examine, it needs to be aware that not all radiocommunications services can be measured the same way. Accordingly, it may be appropriate to exclude certain bands, for instance where satellite or passive services operate or to utilize different testing methodologies that measure spectrum efficiency in a different manner.

With regard to satellite spectrum, satellite earth stations use highly directional antennas to transmit energy toward the sky, so there is little likelihood of assessing the presence of an earth station unless the monitoring station is in its immediate vicinity. For signals emanating from satellites, the signal is very weak by the time it reaches Earth. To capture the signal requires the installation of a large, highly directional antenna capable of receiving the signal. While NTIA could install such facilities, the measurements from these stations would be limited to the signal radiated by the satellite toward that location on Earth. Given that satellites tend to use shaped beams or spot beams that can be very narrow, it is entirely possible that a monitoring center could completely fail to see activity from an operational satellite because no energy is being transmitted toward its specific location.

Further, for satellite communications, in the case of spot beams for one-way video delivery and high-throughput satellite broadband, the frequencies are “reused” many times over the geographic territory of the United States for very specific geographic regions that may or may not coincide with NTIA-intended testing areas. These satellite reuse schemes may give the impression that the frequencies are not efficiently used. However, that is not the case. Such a result is simply a matter of geospatial frequency reuse to limit the amount of self-interference generated into a given satellite system. An example of this may be seen for a certain frequency range within a given satellite band being allocated for the geographic region of Cleveland, OH, and then again in Minneapolis, MN. For the area of Chicago, IL, between these two locations, this same frequency range is not used due to a self-impaired area that is essentially a location where interference exists and cannot be made available for use to the Chicago region. This result is more efficient since that the given frequency range within a band was used twice for two distinct regions, instead of only once as would happen with traditional national satellite coverage. For example, the Chicago region would use a different frequency range within the specified satellite band, so they would not be prevented from receiving any services on other frequencies using a similar reuse plan. To an NTIA monitoring site in the Chicago region, the portions of the band not covering that area may seem underutilized, when in fact the total satellite band overall has been utilized in a much more efficient way in order to serve many more customers as opposed to using the satellite frequencies as a national coverage.

Similarly, while certain services, such as broadcast over satellite, may be continuous in nature in terms of transmissions, other satellite services, such as providing satellite newsgathering or services provided to the public safety community, may be intermittent at best. Accordingly, the spectrum resource may lie fallow for periods of time. Such is the case in certain spectrum. For instance, since the

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is still being developed, such as AWS-4, this does not mean that the spectrum is being used in a manner that warrants increased sharing or reallocation. In fact, the spectrum, when the network is built, will be used efficiently.

The Companies urge NTIA to make clear which services it intends to cover in its monitoring program to ensure that the funds made available are efficiently focused on its intended survey population. If NTIA does intend to monitor satellite activity under this program, it would be to the advantage of NTIA and representatives of the satellite industry to hold additional dialogue as how to best implement a monitoring capability that meets NTIA's objectives and budget. Similarly, the NTIA program must also take into account the status of network builds in determining what spectrum is available for reallocation or spectrum sharing.

We appreciate the opportunity to comment on this important project.

Respectfully submitted,

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