

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

In the Matter of

ECHOSTAR SATELLITE OPERATING
CORPORATION

File Nos.

SAT-STA-20130510-00067,
SAT-STA-20130716-00093,
SAT-STA-20130912-00115,
SAT-STA-20131113-00131,
SAT-STA-20140113-00004,
SAT-STA-20140314-00031,
SAT-STA-20140513-00050,
SAT-MOD-20130227-00026,
SAT-MOD-20140623-00074,
SAT-AMD-20130429-00063,
SAT-AMD-20130613-00083

Call Sign S2232

To: Chief, International Bureau

SUPPLEMENTAL OPPOSITION OF SPECTRUM FIVE LLC

Recent monitoring of EchoStar 6 shows that its downlink beam is operating at a power level far in excess of — and, therefore, in violation of — the terms of the Special Temporary Authorization (“STA”) that allowed EchoStar to relocate EchoStar 6 to 96.2° W.L. EchoStar’s clear and continuous violation of a key condition on which the Commission granted that STA provides an additional reason to deny EchoStar’s pending requests for permanent authority to operate EchoStar 6 at 96.2° W.L. and for a renewal of the STA. Spectrum Five is also providing this information to the Enforcement Bureau.

I. EchoStar 6 Is Operating Unlawfully

On February 20, 2013, EchoStar applied for an STA to operate EchoStar 6 at 96.2° W.L. In its application, EchoStar represented that it would point EchoStar 6’s downlink beam into the Atlantic Ocean, that the beam’s power would fall off by 4 to 6 dB in the portions of the United States that the beam still covered, and — importantly — that “the downlink transmissions of the

ECHOSTAR-6 satellite will be controlled *so as to not exceed a peak downlink EIRP of 49.8 dBW* in order not to exceed a 0.25 dB change in the overall equivalent protection margin ('OEPM') with respect to any authorized operational adjacent BSS network"¹ Based on these representations, the Bureau found that "no operating satellite will experience harmful interference from EchoStar 6's proposed operations."² The Bureau granted the STA on the condition that EchoStar 6's operations "must be in accordance with the technical specifications set forth in EchoStar's application" — including that EchoStar 6 would be operated at a peak downlink EIRP of 49.8 dBW.³

Recent measurements taken by SAT Corporation on July 7, 2014 and July 8, 2014 at Woodbine, MD, show that EchoStar 6 is operating in violation of this condition. According to those measurements, the EIRP at Woodbine, MD ranged from 49.02 dBW to 50.74 dBW.⁴ As

¹ Application Narrative, Exhibit 2 at 1-2, Application for Special Temporary Authority, *EchoStar Satellite Operating Corporation; Request for Special Temporary Authority to Move EchoStar 6 to, and Operate It at, 96.2° W.L.*, IBFS File No. SAT-STA-20130220-00023 (Feb. 20, 2013) (emphasis added) ("Initial STA Application"); *see also id.* at 4-5 (repeating statements that EchoStar 6 would operate with "a peak downlink EIRP of 49.8 dBW")

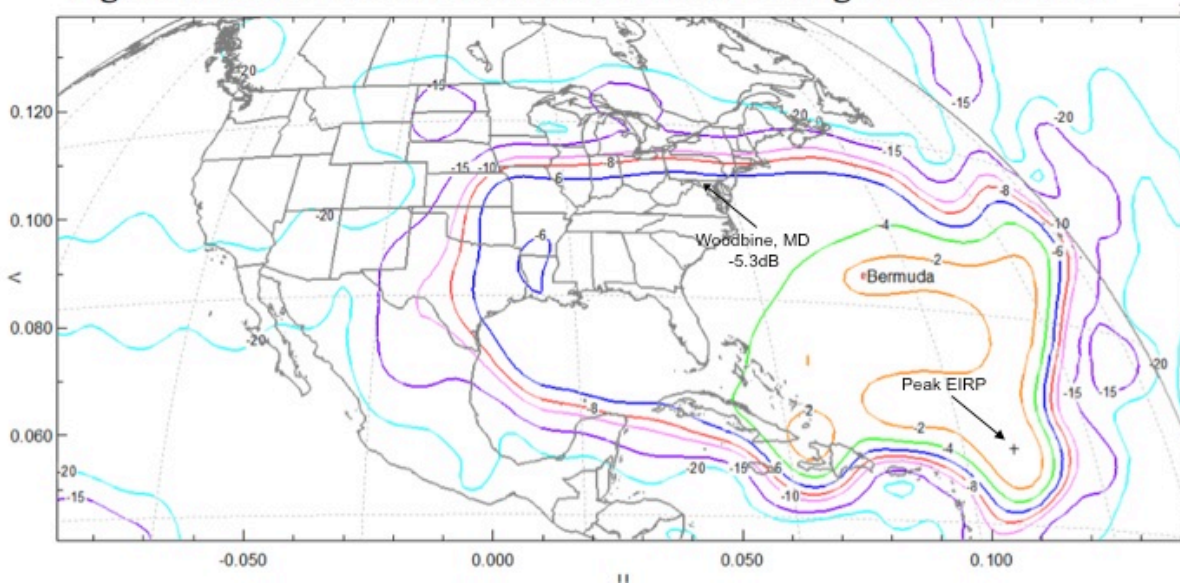
² Order and Authorization, *EchoStar Satellite Operating Company; Application for Special Temporary Authority Related to Moving the EchoStar 6 Satellite from 77° W.L. Orbital Location to the 96.2° W.L. Orbital Location, and to Operate at the 96.2° W.L. Orbital Location*, 28 FCC Rcd 4229, ¶ 10 (Int'l Bur. 2013) ("Bureau Order").

³ *Id.* ¶ 20.

⁴ *See* Summary of Findings, attached to Sharon Declaration (Ex. A hereto). Because the antenna used for the measurements had a linear polarization, the Measured EIRP accounted for only half of the total power emitted by the EchoStar 6's circularly polarized downlink beam. *See id.*; Gerald F. Dionne, et al, *Circular Polarization and Nonreciprocal Propagation in Magnetic Media*, 15 Lincoln Lab. J. 323, 326 (2005) (explaining that a circularly polarized beam is comprised of two linearly polarized beams of equal magnitude). Thus, the Corrected EIRP represents the total power emitted by EchoStar 6 after applying a +3 dB correction factor, as a +3 dB correction factor represents a doubling in power.

shown below in Figure 2-1 from EchoStar’s own STA application, the EIRP at Woodbine, MD is approximately 5.35 dB lower than the peak downlink EIRP.⁵

Figure 2-1: ECHOSTAR-6 Downlink Beam Coverage from 96.2°W.L.



SAT Corporation’s measurements thus establish EchoStar 6’s peak downlink EIRP at the boresight ranged from approximately 54.37 dBW to 56.09 dBW. In other words, rather than operating EchoStar 6 at significantly reduced power levels,⁶ as EchoStar promised in its STA application — and as the Bureau required as a condition of granting the STA — EchoStar is operating EchoStar 6 at *full* power. By operating EchoStar 6 at full power, EchoStar is not only violating a clear and key condition of the STA grant and may also be violating the terms of its coordination agreement with DIRECTV, but also the heightened power level invalidates EchoStar’s claim — and the Commission’s finding — that EchoStar 6 would not affect other

⁵ See Summary of Findings, attached to Sharon Declaration (explaining that Woodbine, MD “fall[s] approximately halfway between EIRP contours [for EchoStar 6] reported at 49.1dBW and 49.6dBW”). The graph was taken from EchoStar’s Initial STA Application, Exhibit 2, and edited to show the location of Woodbine, MD and of the Peak EIRP of the EchoStar 6 downlink beam.

⁶ Because EIRP is reported on a logarithmic scale, EchoStar’s commitment to reduce the power of EchoStar 6 from 54.7 dBW to 49.8 dBW was a commitment to cut the power of the satellite by more than 300 percent.

satellite networks.⁷ Indeed, EchoStar 6's sole transponder in operation appears to be operating on the same frequencies as those used by DIRECTV's satellites at 101° W.L. to carry the MLB Network and Univision channels.⁸ Those channels may be suffering signal degradation as a result of EchoStar 6's unlawful operations.

Notably, in its pending applications to modify its license for EchoStar 6 and to renew its STA to operate EchoStar 6 at 96.2° W.L., EchoStar has repeated its claim that EchoStar 6 will operate at a reduced peak downlink EIRP of 49.8 dBW and thus will not affect other satellite networks.⁹ Because EchoStar has been either unwilling or unable to abide by this condition of its STA and its own prior and repeated representations to the Commission about EchoStar 6's peak downlink EIRP, the Commission should reject EchoStar's current representation that

⁷ Initial STA Application at 5 (“EchoStar will operate the satellite with reduced downlink EIRP so as not to ‘affect’ . . . other BSS satellite networks.”); *Bureau Order* ¶ 10 (“[W]e find, based on information provided by [EchoStar], that no operating satellite will experience harmful interference from EchoStar 6's proposed operations as a result of this STA grant.”) (citing Initial STA Application, Exhibit 2; footnote omitted).

⁸ See Summary of Findings, attached to Sharon Declaration (explaining that only a single transponder (number 17) with center frequency 12457.28 MHz is in operation); DBSTalk, Transponder Maps (July 12, 2014) (transponder 17 for DIRECTV8 at 101° W.L. carries MLB Network and Univision, among other channels), *available at* <http://www.dbstalk.com/topic/200951-transponder-maps-domestic-latinam-data-refresh-7122014/>.

⁹ See IBFS File No. SAT-MOD-20130227-00026 (Feb. 27, 2013) (“[T]he downlink transmissions of the ECHOSTAR-6 satellite will be controlled so as to not exceed a peak downlink EIRP of 49.8 dBW in order not to exceed a 0.25 dB change in the overall equivalent protection margin (‘OEPM’) with respect to any authorized operational adjacent BSS network.”); Application, Exhibit 1 at 1, SAT-STA-20140513-00050 (May 13, 2014) (requesting renewal of the initial STA); Application, Exhibit 1 at 1, IBFS File No. SAT-STA-20140314-00031 (Mar. 14, 2014) (same); Application, Exhibit 1 at 1, IBFS File No. SAT-STA-20140113-00004 (Jan. 13, 2014) (same); Application, Exhibit 1 at 1, IBFS File No. SAT-STA-20131113-00131 (Nov. 13, 2013) (same); Application at 1, IBFS File No. SAT-STA-20130912-00115 (Sept. 12, 2013) (same); Application at 1, IBFS File No. SAT-STA-20130716-00093 (July 16, 2013) (same); Application at 1, IBFS File No. SAT-STA-20130510-00067 (May 10, 2013) (same).

EchoStar 6 will not affect other satellite networks, and it should deny all of the pending applications.¹⁰

II. EchoStar 6 Is Still Not Providing Useful Service

As Spectrum Five has explained, EchoStar 6 has *never* provided service to a single customer despite purportedly operating at 96.2° W.L. since sometime in April 2013.¹¹ In fact, EchoStar has admitted that it did not even “activate[]” EchoStar 6’s communications payload for *testing* until November 2013 — approximately eight months after the Bureau granted its STA application and approximately six months after the STA expired.¹² Furthermore, although EchoStar claims that EchoStar 6’s “communications payload was activated” in November 2013, and commenced “uninterrupted” operations on December 3, 2013,¹³ SAT Corporation’s July 7 and July 8 measurements again confirm that only 1 of the 32 transponders on EchoStar 6 is actually turned on today.¹⁴ EchoStar has never contested Spectrum Five’s claim that EchoStar still has no imminent plans to provide service using EchoStar 6 some 15 months after EchoStar 6 purportedly arrived at 96.2° W.L.

¹⁰ See 47 C.F.R. § 25.156(a) (requiring that an applicant be “legally, technically, and otherwise qualified”); see also *id.* § 25.160 (providing for revocation of licenses for repeated and willful violations of Commission rules).

¹¹ See, e.g., Opposition at 4-7, *EchoStar STA Renewal*, IBFS File No. SAT-STA-20140513-00050 (June 9, 2014) (“Spectrum Five 6/9/14 Opp’n”).

¹² Letter from Jennifer A. Manner, EchoStar, to Marlene H. Dortch, Secretary, FCC, at Decl. ¶ 3, IBFS File Nos. SAT-STA-20140113-00004 *et al.* (Mar. 31, 2014) (“EchoStar 3/31/14 Letter”) (confirming that EchoStar 6 has never provided service from 96.2° W.L., and that there are no concrete plans for it to do so).

¹³ *Id.*

¹⁴ Summary of Findings, attached to Sharon Declaration; see also Spectrum Five 6/9/14 Opp’n, Sharon Decl. ¶ 4 & Exh. C (showing only one transponder was activated on April 9, 2014).

It is thus apparent that EchoStar's goal in seeking authority to operate EchoStar 6 at 96.2° W.L. was to warehouse valuable spectrum rather than to provide useful service to the public. This is contrary to the Commission's anti-warehousing policy,¹⁵ and provides ample reason to deny EchoStar's pending applications, especially in light of EchoStar 6's unlawful operations and EchoStar's repeated misstatements and misleading omissions to the Commission on numerous topics.¹⁶

III. The D.C. Circuit's Recent Decision Has No Bearing on EchoStar's Pending Applications

On July 14, 2014, EchoStar informed the Commission that the D.C. Circuit had dismissed for lack of standing EchoStar's petition for review of the April 1, 2013 grant of the STA to EchoStar.¹⁷ Because the D.C. Circuit dismissed Spectrum Five's petition for lack of standing — on the ground that it was insufficiently clear that a decision in Spectrum Five's favor would cause the International Telecommunications Union to undo the harm to Spectrum Five that resulted from the Commission's grant of the STA — it did not reach the merits of the lawfulness of the grant of the STA.¹⁸ That decision therefore provides no basis for rejecting any of the numerous grounds Spectrum Five has provided for denying EchoStar's pending applications for permanent and renewed temporary authority to operate EchoStar 6 at 96.2° W.L. The Commission should act on those pending applications, but it should deny them for the

¹⁵ First Order on Reconsideration and Fifth Report and Order, *Amendment of the Commission's Space Station Licensing Rules and Policies*, 19 FCC Rcd 12637, ¶ 25 (2004) (noting the "real costs associated with warehousing and speculation in orbit and spectrum resources, in that it precludes another party willing and able to construct a satellite from doing so").

¹⁶ Spectrum Five 6/9/14 Opp'n at 7-15 (recounting select misstatements).

¹⁷ Letter from Jennifer A. Manner, EchoStar, to Marlene H. Dortch, Secretary, FCC, IBFS File Nos. SAT-STA-20130220-0002 *et al.* (July 14, 2014).

¹⁸ See *Spectrum Five LLC v. FCC*, – F.3d –, 2014 WL 3398590 (D.C. Cir. July 11, 2014).

reasons Spectrum Five has provided.

CONCLUSION

The Commission should deny EchoStar's pending applications for temporary and permanent authority to operate EchoStar 6 at 96.2° W.L.

July 15, 2014

Respectfully submitted,

SPECTRUM FIVE LLC

/s/ David Wilson

David Wilson
Chief Executive Officer

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CERTIFICATE OF SERVICE

I, Daniel Dorris, hereby certify that a true and correct copy of the foregoing Opposition of Spectrum Five LLC was served on the following by First-Class U.S. Mail, postage prepaid, on July 15, 2014.

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Washington, D.C. 20037
Counsel for EchoStar Satellite Operating Corporation

/s/ Daniel Dorris
Daniel Dorris

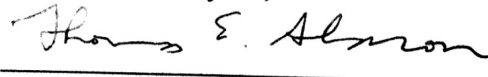
EXHIBIT A

DECLARATION

I, Thomas E. Sharon, declare under penalty of perjury that the following facts are true and accurate to the best of my knowledge, information, and belief:

1. I am the Chief Operating Officer of Spectrum Five LLC.
2. I have over 30 years experience in the operation of space satellites.
3. I requested that SAT Corporation, pursuant to its contract with Spectrum Five, provide me with measurements of EchoStar 6's downlink beam as received from a monitoring station in Woodbine, MD.
4. SAT Corporation provided me with the attached report titled "Summary of Findings" dated July 9, 2014. The report summarizes SAT Corporation's measurements.

Executed on July 15, 2014:



Thomas E. Sharon, PhD
Chief Operating Officer
Spectrum Five, LLC

SUMMARY OF FINDINGS

To: Tom Sharon
Spectrum Five

From: Mike Felix
NOC Supervisor
SAT Services NOC

Date: July 9th, 2014

Between July 7th and July 8th 2014, SAT Services provided spectrum measurements of the Echostar 6 satellite. These measurements were taken with a 7.3 meter antenna from Woodbine, MD. The following measurements were observed.

Day	Time (UTC)	Measured EIRP	Corrected EIRP	Theoretical EIRP	Nominal EIRP	Predicted Longitude (W)	Predicted Latitude (N)
7-Jul	1640	47.65	50.65	49.6	49.35	96.22	0.27
7-Jul	1759	46.85	49.85	49.6	49.35	96.23	0.94
7-Jul	2106	46.16	49.16	49.1	49.35	96.2	2.02
7-Jul	2303	46.35	49.35	49.1	49.35	96.17	1.87
8-Jul	0003	46.73	49.73	49.1	49.35	96.17	1.85
8-Jul	0100	46.02	49.02	49.6	49.35	96.17	1.56
8-Jul	0200	47.1	50.1	49.6	49.35	96.18	1.07
8-Jul	0302	47.47	50.47	49.6	49.35	96.19	0.61
8-Jul	0405	46.87	49.87	49.1	49.35	96.21	0.03
8-Jul	0520	46.68	49.68	48.7	49.35	96.23	-0.76
8-Jul	0631	47.45	50.45	46.7	49.35	96.24	-1.24
8-Jul	0731	46.4	49.4	46.7	49.35	96.25	-1.63
8-Jul	0817	47.1	50.1	46.7	49.35	96.25	-1.86
8-Jul	0906	47	50	46.7	49.35	96.25	-2.03
8-Jul	1002	46.5	49.5	46.7	49.35	96.24	-2.1
8-Jul	1102	47	50	46.7	49.35	96.23	-2.05
8-Jul	1200	47.1	50.1	46.7	49.35	96.23	-1.86
8-Jul	1259	47.1	50.1	46.7	49.35	96.22	-1.33
8-Jul	1408	47.74	50.74	46.7	49.35	96.22	-1.05
8-Jul	1542	47.33	50.33	48.7	49.35	96.22	-0.16

DEFENITION OF MEASUREMENTS

Measured EIRP – This is the Effective Isotropic Radiated Power (or EIRP) reported by the measurement system. An earth station gain calibration kit is installed on the antenna used for these measurements to rule out cable and other system losses. The antenna used for measurement was manually peaked on the Echostar-6 satellite before measurements were taken.

Corrected EIRP – A +3dB correction factor is applied to all Measured EIRP values. This is due to the Echostar 6 satellite having a circular Ku downlink polarity while the antenna used for measurement has only a linear Ku polarization option.

Theoretical EIRP – This value estimates the effect of satellite inclination on the Woodbine, MD site’s theoretical EIRP levels due to reported inclination effects if no attitude correction actions were being performed by the Echostar 6 satellite.

Nominal EIRP – If the Echostar 6 satellite was flown in such a manner as to introduce no inclination effects, the estimated nominal EIRP for the site would be approximately 49.35dB at all times. This assumption is made based on the Woodbine, MD site falling approximately halfway between EIRP contours reported at 49.1dBW and 49.6dBW.

Predicted Longitude and Latitude – These values were derived from the published NORAD TLE model at the time measurements were taken.

ASSUMPTIONS AND OBSERVATIONS

As limited data was available directly from Echostar regarding the configuration or flight operations of the Echostar-6 satellite, the following data sources were used:

EIRP contours and downlink beam coverage: <http://www.satbeams.com/footprints?beam=7757>

Ephemeris and satellite position: <http://www.n2yo.com/?s=26402>

Only a single transponder (Ku-17, center frequency 12457.28MHz) was active on the Echostar-6 satellite during the above measurement windows. A single carrier occupying all non-guard band bandwidth was observed operating in the transponder during all measurement windows. It is assumed the transponder is being operated at or near saturation.

Based on EIRP trending, observed EIRP levels at the Woodbine site should have dropped between the 0631 and 1408 UTC measurement windows. No such drop was observed. One of two conditions would have caused this observation. The most likely scenario is that the Echostar-6 payload is being reoriented throughout the day to maintain nominal earth pointing. The other possibility is that the available contour data does not match the actual satellite configuration.

Overall, corrected measured EIRP levels tracked near expected nominal levels throughout the measurement period.