

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

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| _____ |) | |
| <i>Application of</i> |) | |
| |) | |
| DIRECTV ENTERPRISES, LLC |) | File Nos. SAT-A/O-20120817-00137 |
| |) | SAT-AMD-20120824-00142 |
| For Authorization to Operate |) | SAT-AMD-20120913-00148 |
| DIRECTV 1R, a Direct Broadcast |) | |
| Satellite, at 55.8° E.L. |) | |
| _____ |) | |

RESPONSE OF DIRECTV ENTERPRISES, LLC

In this proceeding, DIRECTV Enterprises, LLC (“DIRECTV”) seeks authority to operate the DIRECTV 1R satellite at the 55.8° E.L. orbital location, where it will be used for less than a year to ensure continuity of service to Broadcasting Satellite Service (“BSS”) subscribers in Russia currently served by the Bonum 1 satellite while the Russian Satellite Communications Company (“RSCC”) completes construction of a delayed replacement satellite. In response to DIRECTV’s application, New Skies Satellites B.V. (doing business as “SES”) filed comments asking that the Commission determine whether these proposed operations are compatible with those of the NSS-12 satellite operating at 57° E.L., and proposing that various conditions be imposed on any grant.¹

DIRECTV does not object to the proposed condition requiring that DIRECTV 1R be operated on an unprotected and non-harmful interference basis – consistent with past Commission practice. DIRECTV understands that the satellite will operate with very nearly the

¹ See Comments of New Skies Satellites B.V., IBFS File Nos. SAT-A/O-20120817-00137, SAT-AMD-20120824-00142, and SAT-AMD-20120913-00148 (filed Oct. 31, 2012) (“SES Comments”).

same characteristics as the Bonum 1 satellite it is replacing, and thus there is no reason to anticipate any material effect on other satellite operators. However, DIRECTV does not believe that the proposed condition requiring operations below the power flux density (“PFD”) coordination trigger levels in Annex 1 of Appendix 30 of the ITU Radio Regulations (“Annex 1”) is justified or necessary to ensure protection of NSS-12 given the requirement for non-harmful interference operations. The PFD levels set forth in Annex 1 are used to determine satellite networks that might be “affected,” in an ITU sense, by a new BSS system. They are not hard limits, and the ITU rules explicitly allow BSS systems that exceed those triggers to operate on a provisional basis even in the absence of agreement from other affected systems.

Although SES cites to a single satellite upon which the Commission imposed an Annex 1- related condition, that condition was not requested by the affected party or explained by the Commission, and remains anomalous. The Commission should not propagate that improvidently imposed condition any further. Doing so in this case would likely preclude the use of DIRECTV 1R at 55.8° E.L., resulting in significant disruption of video service to subscribers throughout Russia during most of 2013. Given the demonstrable lack of impact on NSS-12, such an outcome clearly would not serve the public interest.

BACKGROUND

DIRECTV proposes to operate DIRECTV 1R in a portion of the band designated for BSS operations in ITU Region 1, namely 12.2-12.5 GHz (downlink). NSS-12 provides Fixed-Satellite Service (“FSS”) in ITU Region 3 using a portion of this same band, namely 12.25-12.75 GHz (downlink). More specifically, the overlapping frequencies are used by the NSS-12 South Asia beam which operates in this frequency range using vertical polarization, providing FSS

service to India. As can be seen from Figure 1 below, all of India is within the 51 dBW downlink EIRP contour of the NSS-12 South Asia beam.

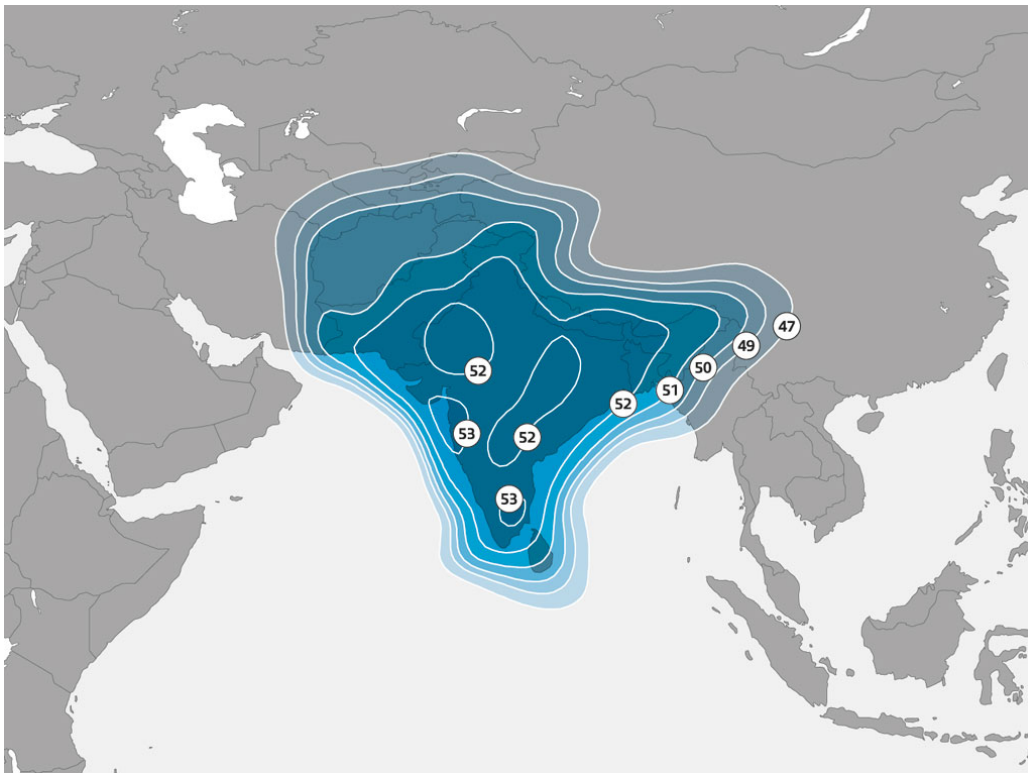


Figure 1. NSS-12 South Asia Beam²

Figure A3 of the SES Comments shows the DIRECTV 1R downlink pattern, but does not indicate the relative power levels corresponding to the various contour lines. Figure 2 below reproduces that contour map, with the addition of relative gain labels. As can be seen, virtually all of India, and virtually all of Region 3 for that matter, falls outside of the -20 dB contour for DIRECTV 1R. Moreover, as shown in the comments recently submitted by RSCC, the downlink EIRP of the DIRECTV 1R signal over the relevant area is very similar to that of the existing

² This beam pattern can be found at the SES website. See NSS-12 Footprints (available at <http://www.ses.com/4629013/nss-12>). The figures on the contours reflect downlink EIRP of the satellite. Other information relevant to NSS-12 is drawn from LyngSat (available at <http://www.lyngsat.com/NSS-12.html>).

Bonum 1 satellite that has operated for years without complaint from SES with respect to NSS-12's operations.³

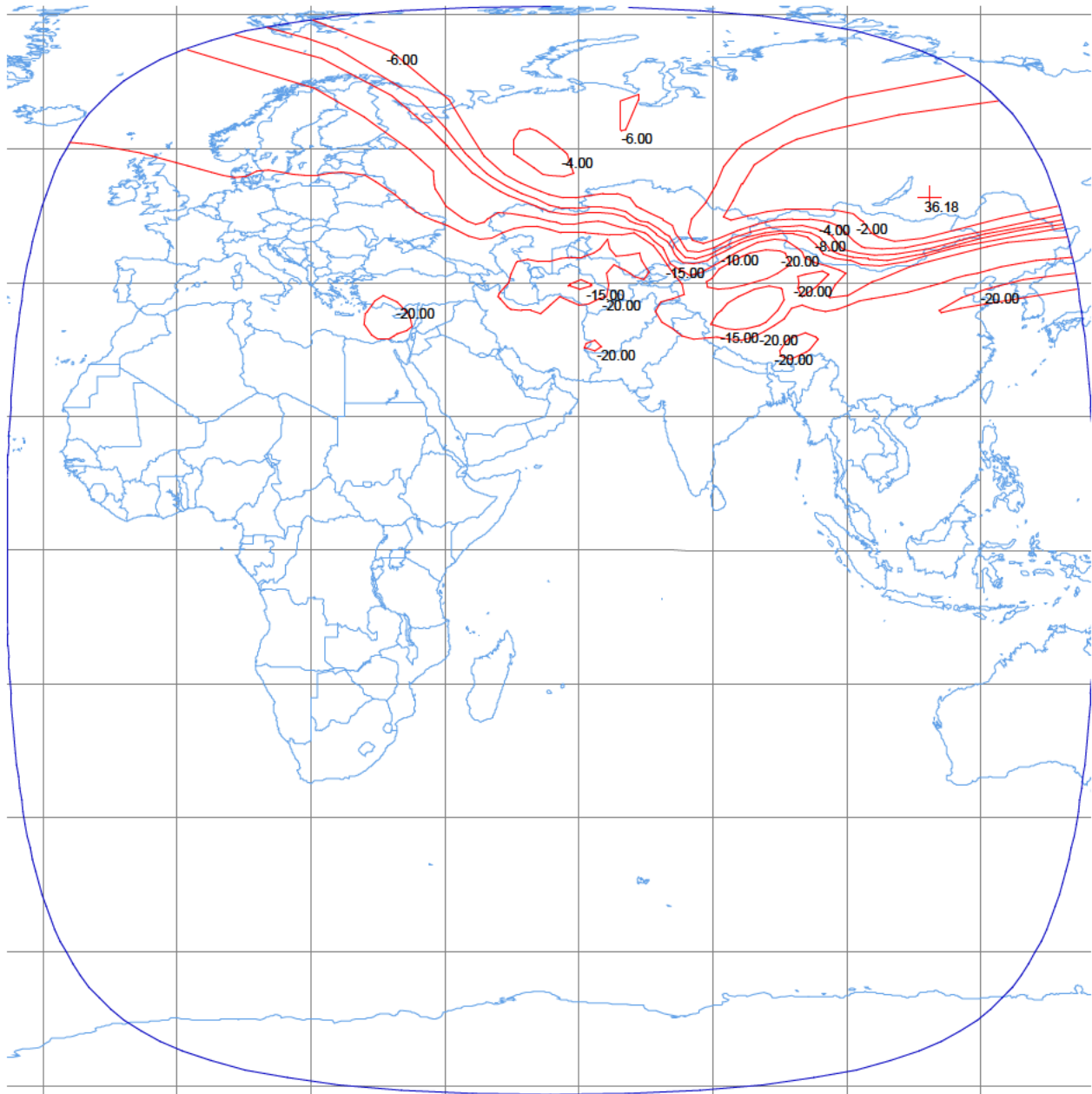


Figure 2. DIRECTV 1R Relative Gain Downlink Contours

³ See Comments of Russian Satellite Communications Company, IBFS File Nos. SAT-A/O-20120817-00137, SAT-AMD-20120824-00142, and SAT-AMD-20120913-00148, at 2 and Figure 2 (filed Nov. 13, 2012).

DISCUSSION

A. DIRECTV Does Not Object to a Condition Requiring Operations on a Non-Harmful Interference Basis

DIRECTV proposes to operate temporarily under the ITU network filings of another administration. It recognizes (as SES points out⁴) that in such circumstances, the Commission typically imposes a condition requiring that such operations be conducted on an unprotected and non-harmful interference basis. DIRECTV is fully prepared to accept such a condition. As shown by the RSCC filing, DIRECTV 1R's footprint is practically indistinguishable from that of Bonum 1, which has elicited no interference complaints to date. DIRECTV anticipates no difficulty in operating without causing harmful interference to any other network, including NSS-12.

B. Imposing a Condition Limiting DIRECTV 1R to the PFD Coordination Triggers in Annex 1 is Both Unnecessary and Inconsistent with ITU Rules

1. A Coordination Trigger Does Not Impose a Hard Limit on Satellite PFD

In its comments, SES claims to have performed its own calculation of the DIRECTV 1R PFD levels in Region 3 and concluded that they would exceed the Annex 1 levels established as a trigger for coordination of Region 1 BSS networks with affected Region 3 FSS networks throughout the spacecraft's limited Region 3 coverage area.⁵ It summarizes those results in a figure that shows areas where SES calculates that DIRECTV 1R would exceed a PFD of -163.27 dBW/m²/40 kHz, though here again the figure does not reflect the degree to which that level would be exceeded.⁶

⁴ SES Comments at 7 n.25.

⁵ *Id.* at 6.

⁶ *Id.*, Figure A3.

Assuming an elevation angle towards DIRECTV 1R of 54° (*i.e.*, the approximate elevation angle for an earth station located in Northern India), the spreading loss is about -162.3 dBW/m². Assuming SES's calculations are correct, this means that in order not to trigger coordination under Annex 1, the downlink EIRP density of DIRECTV 1R should not exceed:

$$-163.27 + 162.3 = -0.97 \text{ dBW/40 kHz} = -47 \text{ dBW/Hz.}$$

DIRECTV agrees that DIRECTV 1R would exceed this PFD trigger. However, exceeding a coordination trigger does not mean that two systems are incompatible; it just implies the need for coordination. In other words, it is an invitation to begin a conversation, not the end of one. Indeed, the ITU Radio Regulations make this abundantly clear in Article 4 of Appendix 30, entitled "Procedures for modifications to the Region 2 Plan or for additional uses in Regions 1 and 3." Specifically, even when, through the application of Annex 1, a Region 1 BSS operator is obligated to seek agreement of a Region 3 FSS operator deemed "affected" by the proposed BSS operations, the BSS operator may provisionally begin operations even in the absence of such agreement.⁷ Moreover, if such operations do not elicit a complaint of harmful interference within the first four months, such use of the frequencies is no longer provisional.⁸

Clearly, there is a significant difference between a coordination trigger and a hard limit. The Commission should not allow SES to prevent compatible operations of another satellite by transforming an ITU rule into something it was never intended to be.

⁷ See ITU Radio Regulations, Appendix 30, Article 4, Section 4.1.18.

⁸ *Id.* Accordingly, it is not accurate to characterize these triggers (as SES does) as hard "PFD limits," or to claim that DIRECTV had an obligation to demonstrate that its proposed operations would conform to those PFD levels. See SES Comments at 5.

2. DIRECTV 1R's Limited Operations in Region 3 Would Have Very Little Impact on NSS-12

One way to assess the potential impact of DIRECTV 1R on NSS-12 is to examine the expected carrier-to-interference (“C/I”) levels that could be produced. As stated above, all of India falls within the 51 dBW downlink EIRP contour of NSS-12. The peak downlink EIRP in the DIRECTV 1R application is 57.8 dBW and, also as stated above, virtually all of India falls outside the -20 dB contour of DIRECTV 1R. Table 1 below illustrates the expected worst case C/I in northern India (*i.e.*, the area where DIRECTV 1R can be expected to have the greatest effect and the specific area of focus in the SES comments) from DIRECTV 1R into receive antennas communicating with NSS-12 for different receive antenna sizes. The typical size of a VSAT antenna falls in the range of 1.2 meters, but results have been included for receive antennas as small as 0.76 meters for illustrative purposes.

As shown in Table 1, NSS-12 enjoys high levels of C/I no matter what antenna size is assumed. This is a result of the combination of the roll-off of the DIRECTV 1R downlink beam into India and the discrimination of NSS-12 receive antennas in the direction of DIRECTV 1R.

| | | | |
|--------------------------------------|-------|-------|-------|
| VSAT size (m) | 1.2 | 0.9 | 0.76 |
| Effic (%) | 65 | 65 | 65 |
| VSAT pk gain (dB) | 41.91 | 39.41 | 37.94 |
| VSAT gain at 1.2° geocentric offset* | 31.2 | 33.4 | 33.72 |
| D1R Pk EIRP (dBW) | 57.8 | 57.8 | 57.8 |
| D1R contour for India (dB) | -20 | -20 | -20 |
| NSS-12 EIRP (dBW) | 51 | 51 | 51 |
| C/I (dB) | 23.91 | 19.21 | 17.42 |

*Note that this gain value was derived using Recommendation ITU-R BO.1213

Table 1. NSS-12 Worst Case C/I from DIRECTV 1R for Varying Receive Earth Station Sizes

The C/I results for the rest of India would be even greater as the DIRECTV 1R beam would continue to roll off and the NSS-12 EIRP would increase.⁹

A second way to gauge the potential impact of DIRECTV 1R on NSS-12 is to compare the potential interference for this case to the results that would be obtained if these networks were subject to the Commission’s two-degree spacing policy. Although the Commission’s two-degree spacing rules are not applicable to the current situation, it is worth noting the Commission’s conclusion that Ku-band FSS satellites can be presumed to coexist in a two-degree co-frequency/co-coverage environment so long as their respective downlink EIRP densities do not exceed -26 dBW/Hz.¹⁰ For this case, Table 2 sets forth an analysis similar to that performed for Table 1 for two generic Ku-band FSS networks with 2° geocentric spacing. In order to be conservative, the analysis includes no discrimination between the networks as it was assumed that they are co-coverage and have equal EIRP density.

The results set forth in Table 2 show that the C/I values for the case of 1.2 meter and 0.90 meter receive antennas are lower (*i.e.*, worse) than those in Table 1, and the results for the 0.76 meter case are basically the same in the two tables.

| | | | |
|-----------------------------------|-------|-------|-------|
| VSAT size (m) | 1.2 | 0.9 | 0.76 |
| Effic (%) | 65 | 65 | 65 |
| VSAT pk gain (dB) | 41.91 | 39.41 | 37.94 |
| VSAT gain at 2° geocentric offset | 20.4 | 20.4 | 20.4 |
| Ntwk A Pk EIRP density (dBW/Hz) | -26 | -26 | -26 |
| Ntwk B Pk EIRP density (dBW/Hz) | -26 | -26 | -26 |
| C/I (dB) | 21.47 | 18.97 | 17.50 |

Table 2. C/I from Compatible FSS Networks Serving the U.S.

⁹ The results in this table are for a DIRECTV 1R communications carrier with a bandwidth of 24 MHz and a peak EIRP of 57.8 dBW (*i.e.*, EIRP density of -16 dBW/Hz). The impact of the DIRECTV 1R telemetry carrier would be significantly less as the peak EIRP for this 800 kHz carrier is 16 dBW (*i.e.*, EIRP density of -43 dBW/Hz).

¹⁰ See 47 C.F.R. § 25.212(c).

In other words, two Ku-band FSS satellites operating consistent with parameters the Commission has found compatible for adjacent operations would enjoy less protection than NSS-12 would receive from DIRECTV 1R over India. These C/I results further support the compatibility between DIRECTV 1R and NSS-12.¹¹

3. The Commission Should Not Extend an Anomalous Precedent

SES has cited a single case in which the Commission imposed a condition requiring compliance with the PFD trigger in Annex 1 absent completion of coordination for operations at a higher level.¹² That proceeding involved Galaxy 26, a hybrid C-/Ku-band satellite seeking authority to operate at 50.75° E.L., and two SES network filings at the ITU with higher date priority, one of which included the Region 1/3 BSS downlink band (11.7-12.2 GHz) at the 51° E.L. location.¹³ Because SES did not have satellites operating under either of those ITU filings, it requested that the Commission condition the grant of operating authority consistent with past precedent, such that Galaxy 26 would be required to comply with any existing or future coordination agreement and, in the absence of such agreement, either cease operations or be subject to further conditions upon launch of a satellite with higher ITU priority.¹⁴

Intelsat did not object to the proposed conditions, as they reflected Commission precedent.¹⁵ Yet the authorization actually issued to Intelsat included an additional, unrequested

¹¹ This analysis likely understates the C/I in many cases. DIRECTV 1R utilizes circularly polarized emissions, while NSS-12 uses a single linear polarization for its operation in the 12.25-12.50 GHz band. As a result, whenever DIRECTV 1R uses a single polarization, it achieves an additional 3 dB of discrimination against NSS-12.

¹² See SES Comments at 8 n.26.

¹³ See IBFS File No. SAT-MOD-20090309-00034.

¹⁴ See Comments of New Skies Satellites B.V., IBFS File No. SAT-MOD-20090309-00034, at 4 (filed Apr. 27, 2009).

¹⁵ See Intelsat North America LLC Response to Comments, IBFS File No. SAT-MOD-20090309-00034 (filed May 6, 2009).

condition requiring Intelsat to operate the satellite in accordance with the BSS PFD trigger specified in Annex 1.¹⁶ The Commission did not explain its rationale for imposing this condition. As discussed above, the PFD trigger does not function as a hard limit under the ITU rules in the same way it does as imposed on Galaxy 26. SES would have the Commission reflexively extend this anomalous precedent to DIRECTV 1R as well. The Commission should reject that approach in recognition of the appropriate and limited function of the PFD triggers in Annex 1. Doing otherwise in this case will likely preclude the use of DIRECTV 1R for continuity of service provided by RSCC, resulting in disruption of direct-to-home video service throughout Russia during 2013. Such a result both is unnecessary and inconsistent with the public interest.

Respectfully submitted,

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November 13, 2012

¹⁶ See Stamp Grant, IBFS File No. SAT-MOD-20090309-00034, Condition 3b (June 17, 2009).

ENGINEERING CERTIFICATION

The undersigned hereby certifies to the Federal Communications Commission as follows:

- (i) I am the technically qualified person responsible for the engineering information contained in the foregoing Response,
- (ii) I am familiar with Part 25 of the Commission's Rules, and
- (iii) I have either prepared or reviewed the engineering information contained in the foregoing Response, and it is complete and accurate to the best of my knowledge and belief.

Signed:

/s/

Jack Wengryniuk

November 13, 2012

Date

CERTIFICATE OF SERVICE

I hereby certify that, on this 13th day of November, 2012, a copy of the foregoing
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