



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

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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

In the Matter of )  
)  
SWE-DISH Satellite )  
Communications, Inc. )  
)  
Application for Earth Station Authority )  
In the Fixed-Satellite Service )  
)

File No. SES-LIC-20030910-01236

**Int'l Bureau**

OCT 27 2003

**Front Office**

COMMENTS

Pursuant to Section 25.154 of the Commission's Rules, 47 C.F.R. 25.154 § (2002), AvL Technologies ("AvL"), by its undersigned counsel, hereby files comments regarding the above-referenced earth station application of SWE-DISH Satellite Communications, Inc. ("SWE-DISH" or "Applicant"), filed on September 10, 2003 in FCC File no. SES-LIC-20030910-01236 ("Application").<sup>1</sup> As more fully discussed below, AvL believes the Application does not adequately demonstrate compliance with the Federal Communications Commission's ("Commission's" or "FCC's") two-degree spacing requirement under Section 25.209 of the Commission's Rules, 47 C.F.R. § 25.209. As such, SWE-DISH should be required to supplement its Application with specific technical information demonstrating compliance with the Commission's two degree spacing requirement (and the absence of interference at two degrees).

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<sup>1</sup> The FCC issued a Public Notice accepting this Application for filing on September 24, 2003. See *In Re* Satellite Radio Applications Accepted for Filing, *Public Notice*, Report No. SES-00535 (Sept. 24, 2003).

## I. INTRODUCTION

According to Section 25.209(f) of the Commission's Rules, 47 C.F.R. § 25.209(f), earth stations which do not conform with the performance standards set forth in 47 C.F.R. § 25.209(a)-(b) of the Commission's Rules must follow special procedures for licensing. The SWE-DISH antenna does not conform with Section 25.209(a) or (b) of the Commission's Rules. The Commission does not routinely grant authorizations for non-conforming stations under Section 25.209(f) of the Commission's Rules absent a finding that unacceptable levels of interference will not be caused under conditions of uniform 2 degree orbital spacings. *Id.* The FCC has proposed to streamline noncompliant antennas in its *Notice of Proposed Rulemaking*<sup>2</sup> and *Further Notice of Proposed Rulemaking*<sup>3</sup> in IB Docket No. 00-248. (To date, the Commission has not yet acted on either the NPRM or FNPRM.) In this proceeding, the FCC "propose[d] requiring applicants to either (1) reduce their power levels to those that would be produced if the maximum allowable power level were transmitted by an antenna that complies with the 2 degree spacing standards of the Commission's rules, or (2) obtain affidavits from satellite operators demonstrating that the satellite operators are aware of the proposed non-routine earth station operations and have reflected those non-routine operations in agreements with other satellite operators."<sup>4</sup> Further, "[e]arth station applicants would be required to reduce their power levels if

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<sup>2</sup> *In Re 2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations, Notice of Proposed Rulemaking*, IB Dkt. No. 00-248, FCC 00-435 (Dec. 14, 2000)("NPRM").

<sup>3</sup> *In Re 2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations, Further Notice of Proposed Rulemaking*, IB Dkt. No. 00-248, FCC 02-257 (Sept. 26, 2002)("FNPRM").

they sought an ALSAT earth station license.”<sup>5</sup> This is the process that is now being followed by the FCC on a case-by-case basis for all applicants seeking authority to use antennas smaller than 1.2 meters in the Ku-band.<sup>6</sup>

In its Application, SWE-DISH seeks authority to operate a non-circular earth station antenna of less than 1.2 meters in diameter (0.77m) (“IPT” or “IPT Terminal Suitcase”) without properly addressing any of the issues to ensure an acceptable interference environment for adjacent satellite operators spaced at 2 degrees. The SWE-DISH antenna will emit more power off-axis than an antenna conforming to Section 25.209(a) of the Commission’s Rules. Thus, this antenna may cause potential harmful interference to adjacent satellites in violation of 47 C.F.R. § 25.209. For this reason, and as further discussed below, SWE-DISH should be required to supplement its Application to address this concern.

## II. DISCUSSION

The Applicant should demonstrate compliance with Section 25.209 of the Commission’s Rules. The SWE-DISH IPT can be operated without the major axis of the 0.90 x 0.66 meter elliptical reflector aligned with the orbital plane. It has a stated Polarization Range of 150° (-30° to +120°). This is the range of their motorized feed adjustment and can be achieved without rotating the reflector to keep its major axis aligned with the orbital plane. Therefore, at the input power level proposed of – 16dBW/4kHz, off-axis emission will exceed the 15-25 log  $\theta$  allowed by the FCC in the orbital arch when the satellite longitude is not close to the longitude of the

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<sup>4</sup> NPRM at ¶ 8.

<sup>5</sup> *Id.* See also *In Re Routine Licensing of Large Networks of Small Antenna Earth Stations Operating in the 12/14 GHz Frequency, Declaratory Order*, FCC No. 3588 (April 9, 1986).

<sup>6</sup> It is AvL’s understanding that affidavits are not required where off-axis emissions are equal to that of a compliant antenna.

antenna. With the SWE-DISH IPT, this is only possible by continually and methodically tilting the entire terminal. There is no means of assuring that this can be done, particularly with any accuracy or reliability. This means that the 0.66 meter minor axis with its mainlobe beamwidth that extends beyond 2 degrees and non-compliant ( $32-25 \log \theta$ ) sidelobe patterns will come into play. Therefore, satellites spaced at two degrees from the satellite of use will experience emission levels higher than those of a compliant antenna.

Further, the SWE-DISH Application does not address the issue of possible pointing errors discussed in the FNPRM. In Exhibit C, SWE-DISH states that with a mainlobe beamwidth of  $\pm 1.7$  degrees there cannot be any adjacent satellite interference because “[t]he closest adjacent satellites are at 2 degrees spacing.”<sup>7</sup> This only applies for satellites at the same longitude of the antenna and is not practical for fixed temporary antennas used in the United States.

In addition, this application lists only one emission designator of 2M04G7W yet indicates “various FEC,” and “various data rates.”<sup>8</sup> Even with 2 Mbps modulation the specified EIRP of 51.7 dBW @ P-1 dB appears to exceed the listed Total EIRP for all carriers (E40) by more than 2 dB. At the lower data rates, this high EIRP capability appears to present even more danger of harmful adjacent satellite interference.

There also appears to be a disparity between some of the specifications for the IPT Terminal Suitcase available on the Applicant’s website at [www.SWE-DISH.com](http://www.SWE-DISH.com). For instance, the Tx Gain at midband is listed as 39.7 dBi on their website but only 38.4 dBi at 14.25 in the

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<sup>7</sup> Application at Exhibit C, p. 1.

<sup>8</sup> *Id.* at FCC Form 312, Schedule B, E47 and E50.

Application.<sup>9</sup> This raises the concern that link budgets have and may continue to incorporate the 1.3 dB higher gain and thus require 1.3 dB additional power to operate to achieve certain performance. The off-axis energy issue is further exacerbated by the higher input power levels required by these small antennas in order to achieve the same transmitted EIRPs. This is especially true where small antennas are used to transmit higher data rates.

In Exhibit C, under the page titled “Examples of Existing Licenses Granted for Similar Antennas,” SWE-DISH attempts to draw similarity between the IPT and other antennas licensed by the Commission.<sup>10</sup> Of the five examples listed, only two are elliptical antennas. Of those two, unlike the SWE-DISH antennas, the elliptical reflectors are rotated with the major axis aligned with the orbital plane, and have considerably lower EIRP capability (38.5 vs. 51.7 dBW). The other three antennas are larger, .95 to 1.0 meter, with correspondingly narrower main lobe beamwidths. Further, the two letters included in Exhibit C also cannot be considered as verifications or affidavits demonstrating coordination because no approval for operation is granted by such letters.<sup>11</sup> Moreover, the attached letter from Intelsat in Exhibit C should not be accepted as an affidavit or verification without further disclosures. AvL is aware that Intelsat has accepted the SWE-DISH IPT as a Standard G earth station which for antennas with a  $D/\lambda < 50$  allows  $G = 32 - 25 \log \theta$  dBi. This is specified in Intelsat Earth Station Standards Document IEES-601 (Rev. 11), paragraph 3.1.1(c). However, Intelsat’s requirement is not compliant with 47 C.F.R. § 25.209, and as such is irrelevant to the instant issue. It should also be noted that some international satellites are spaced at 3 degrees and the ITU generally allows for higher off-

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<sup>9</sup> *Id.* at E41/42.

<sup>10</sup> *Id.* at Exhibit C, p. 2.

<sup>11</sup> *Id.* at Exhibit C, pp. 23-4, and 25.

axis emissions than that allowed by the FCC's rules. Intelsat also requires approval of a submitted Transmission Plan on all antennas before allowing operation on its satellites. This approval is not indicated in the attached letter. Finally, AvL understands that any approval by PanAmSat for operation of the SWE-DISH IPT may require substantial power restrictions due to the issues that have been stated above. Thus, none of these assertions by SWE-DISH actually provide actual evidence on non-interference.

Accordingly, AvL believes that the FCC should carefully review the Application for the SWE-DISH IPT Suitcase Terminal to ensure compliance with Part 25, and with the requirement that each applicant demonstrate that its use will not cause interference to adjacent ALSATs. Further, AvL believes that in allowing incorrect non-conforming uses, the FCC will ultimately act to decrease the opportunity for non-interfering applicants using non-conforming antennas and for new technologies that can reduce the cost and increase the availability of new small terminals. It is important for the antenna industry, as well as for adjacent satellites, to have a standard that ensures non-interference to potential purchasers.

### III. CONCLUSION

For the foregoing reasons, the Commission should review SWE-DISH's Application, as indicated herein, and confirm that SWE-DISH's antenna complies with the Commission's two-degree orbital spacing requirements prior to granting the Application.

Respectfully submitted,

AvL TECHNOLOGIES

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Its Attorney

October 24, 2003



**AFFIDAVIT**


James L. Oliver, Affiant, being duly sworn/affirmed according to law, deposes and says that:

He is the President of AvL Technologies;

That AvL Technologies is a party of interest as an industry member;

That he is authorized to and does make this affidavit for said Petitioner;

That the facts above set forth are true and correct to the best of his knowledge, information, and belief and that he expects said Petitioner to be able to prove the same at any hearing hereof.

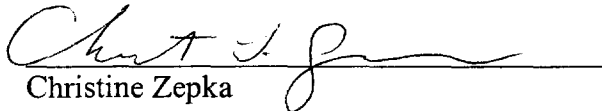
  
James L. Oliver, President  
AvL Technologies

Dated: 10/23/03

## CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing was sent by first-class mail, postage prepaid, to this 24th of October, 2003, to the following:

SWE-DISH Satellite Communications, Inc.  
1634 Eye Street, NW  
Suite 605  
Washington, DC 20006  
Attn: Mr. Pal Ekberg

  
Christine Zepka