

August 10, 2015

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Re: *Ex Parte* Filing; Application of Space Exploration Technologies Corp. for Experimental License for the MicroSat-1a/b Test and Demonstration Mission, File No. 0356-EX-PL-2015

Dear Ms. Dortch:

Intelsat herein responds to Space Exploration Technologies Corporation's ("SpaceX") July 31, 2015 *ex parte* filing in the above referenced proceeding. SpaceX filed an application for an experimental satellite system in late May.¹ The company sought confidentiality on almost every exhibit of the application, save for a two-page, high-level summary of the purpose of the experiment. Only when the Federal Communications Commission ("FCC") demanded an orbital debris assessment and Intelsat filed both an Informal Objection and Request for Information and a Freedom of Information Act Request, did actual technical data arrive in the docket.

Intelsat's filing was not frivolous—it sought to ensure that there would not be harmful interference² to co-frequency geostationary ("GSO") networks such as Intelsat's, and that proper provisions were in place to avoid collisions with other satellites.³ Of course, as an experimental licensee, SpaceX's operations would be secondary. Yet, Intelsat is concerned about interference whose source could not be identified (or not in a sufficiently timely fashion) — in which case, "secondary" operational status hardly matters. Intelsat also expressed concern about SpaceX's conclusory statement regarding collision avoidance and its lack of coordination efforts.⁴ SpaceX's recent *ex parte* fails adequately to address these concerns.

¹ *SpaceX Application for Experimental License*, File No. 0356-EX-PL-2015 (filed May 29, 2015).

² *See* 47 U.S.C. § 301 (2012).

³ *Intelsat Informal Objection and Request for Information to SpaceX Application for Experimental License*, File No. 0356-EX-PL-2015 (filed July 9, 2015).

⁴ *Id.* at 4.

SPACE X FAILS TO MEET ITS BURDEN OF NON-INTERFERENCE

Section I of the SpaceX *ex parte* addresses radio-frequency (“RF”) interference. According to SpaceX, “[t]he information that already has been made publically available in Exhibit 2, Exhibit 7, and Form 442 satisfies the Commission’s requirements and resolves the issues Intelsat raised.” This is not true, for at least two reasons.

First, Intelsat’s Reply to SpaceX’s Opposition observed that SpaceX has failed to show compliance with the equivalent power-flux density (“EPFD”) limits in 47 C.F.R. 25.208(g) and (h).⁵ These subsections, which mirror Tables and footnotes in Article 22 of the International Telecommunication Union (“ITU”) Radio Regulations, include limits for various different percentages of time, as shown in the following extract from Table 1G of Section 25.208(g) of the FCC’s Rules⁶:

Frequency band (GHz) for International Allocations	Single-entry EPFD _{down} dB (W/m ²)	Percentage of time during which EPFD _{down} level may not be exceeded	Reference bandwidth (kHz)	Reference antenna diameter and reference radiation pattern ³
10.7-11.7 in all Regions; 11.7-12.2 in Region 2; 12.2-12.5 in Region 3; and 12.5-12.75 in Regions 1 and 3	-175.4	0	40	60 cm, Recommendation ITU-R S.1428.
	-174	90		
	-170.8	99		
	-165.3	99.73		
	-160.4	99.991		
	-160	99.997		
	-160	100		

In Section 5.1 of its analysis in Revision 2 of Exhibit 2, however, SpaceX only demonstrates compliance with the relatively high EPFD level of -160 dB(W/m²) corresponding to 100% of the time.⁷ SpaceX completely ignored the requirement to comply with the more restrictive EPFD levels (such as -174 dB(W/m²) for 90% of the time) that apply to different percentages of time from 0% to 100%. This is a glaring omission on the part of SpaceX. The company’s continued reluctance to demonstrate compliance with all relevant FCC requirements makes it impossible for co-frequency systems, such as Intelsat, to assess interference potential.

Second, SpaceX glibly asserts, when referring to its 14 GHz transmit earth stations, that “the sidelobes of the antenna patterns are at least 30dB down from the main lobe.”⁸ However, it provided no

⁵ *Intelsat’s Reply to SpaceX’s Opposition to Informal Objection* at 1-2, File No. 0356-EX-PL-2015 (filed July 24, 2015)(hereinafter *Intelsat Reply*).

⁶ 47 C.F.R. § 208(g-h) (2013).

⁷ SpaceX Exhibit 2, *Information Regarding Power Flux Density, Revision 2*, at page 5, File No. 0356-EX-PL-2015 (filed July 20, 2015).

⁸ *Id.*

corroboration for this claim. Intelsat properly sought the data necessary to support the 30dB figure for 12° off-axis angles.⁹

SpaceX continues to assert that the technical information that Intelsat is seeking is confidential.¹⁰ Yet, Intelsat understands that, in certain circumstances, the United States will make ITU filings for experimental satellites.¹¹ As such, SpaceX's antenna gain masks and probabilistic EPFD levels eventually could be available to Intelsat via the ITU coordination process. This undercuts SpaceX's claims that these data are "competitively sensitive."

SPACE X FAILS TO MEET ITS BURDEN OF COLLISION AVOIDANCE

SpaceX continues to fail to satisfy its burden of ensuring collision avoidance. The rules demand applicants for experimental satellites provide a statement describing:

what steps have been taken to contact, and ascertain the likelihood of successful coordination of physical operations with, the other system.¹²

Intelsat provides the telemetry, tracking, and command ("TT&C") during Launch and Early Orbit Phase ("LEOP") for its own and third-party satellites. Given the electric propulsion systems increasingly favored, satellites headed to geostationary orbit spend more time in lower orbits. This increases the risk of collision with low Earth orbit satellites ("LEOs"), further augmenting the need for coordination. Yet, so far as we have been able to ascertain, no one from SpaceX has communicated with Intelsat's technical or launch team to designate a SpaceX point of contact. That, *per force*, does not satisfy obligations under the rule. (Such a point of contact also would be useful for interference coordination, as discussed above.)

Very truly yours,

/s/ Susan H. Crandall

Susan H. Crandall
Associate General Counsel
Intelsat Corporation

⁹ *Intelsat Reply* at 2.

¹⁰ *See SpaceX Response to Freedom of Information Act Request*, FOIA Control No. 2015-000611, at 4-5 (filed July 31, 2015).

¹¹ *Public Notice* DA 13-445 at 4 (Mar. 15, 2013).

¹² 47 C.F.R. § 5.64(b)(3).

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