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BY HAND DELIVERY

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
Office of the Secretary
445 12th Street, S.W.
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Federal Communications Commission
Office of Secretary

Re: **Response to Written Ex Parte Presentation of The Boeing Company;
ARINC Incorporated, SKYLinkSM Application, File Nos. SES-LIC-
20030910-01261 & SES-AMD-20031223-01860**

NOV 02 2004

Dear Ms. Dortch:

ARINC Incorporated ("ARINC") hereby responds to The Boeing Company's ("Boeing") ex parte presentation filed with the Federal Communications Commission ("Commission" or "FCC") on September 30, 2004.¹ In this letter, ARINC -- once again -- demonstrates that its SKYLinkSM system satisfies all applicable legal and technical requirements and provides more than adequate protection to co-frequency networks and users in the 14.0-14.5 GHz band.

I. ARINC's License Application Is Complete, and Boeing's Most Recent Ex Parte Is An Untimely Attempt to Delay This Proceedings.

At the outset, ARINC notes that its SKYLinkSM license application, pending for over thirteen months, is now complete. Most recently, on September 30, 2004, ARINC filed copies of (1) the signed coordination agreement between the National Aeronautics and Space Administration ("NASA") and ARINC, and (2) the signed coordination agreement between the National Science Foundation ("NSF") and ARINC.² Having executed coordination agreements with nearby fixed-satellite licensees, plus NASA and NSF, ARINC's application is ripe for approval.

¹ Letter from Philip L. Malet, Steptoe & Johnson LLP, to Marlene H. Dortch, FCC, File Nos. SES-AMD-20031223-01860 & SES-LIC-20030910-0126 (filed September 30, 2004) ("*Boeing Sept. 30 Ex Parte*").

² See Letter from Carl R. Frank, Wiley Rein & Fielding LLP, to Marlene H. Dortch, FCC, File No. SES-LIC-20030910-01261 (filed Sept. 30, 2004) ("*ARINC Sept. 30 Ex Parte*") (attaching NASA and NSF coordination agreements).

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This explains Boeing's most recent filing, the latest in a series of repetitive and specious tomes. Boeing has strong incentives to block, stall and delay SKYLinkSM, because it currently is the *only* provider of broadband Internet service to aircraft in the United States. Once the Commission grants the SKYLinkSM license, the aviation broadband Internet market will become competitive -- something Boeing apparently hopes to forestall indefinitely by papering the agency with tendentious and misleading objections. Simply put, Boeing is attempting to use the regulatory licensing process as a tool to maintain its monopoly position -- to the ultimate detriment of consumers.

The time has come to call a halt to these captious challenges. ARINC filed its SKYLinkSM license application in September 2003, giving Boeing more than ample time and opportunity to air its supposed concerns. Prior to its latest filing, Boeing had submitted *four* repetitious efforts.³ And ARINC had answered each of Boeing's efforts -- the final answer being ARINC's ex parte of June 3, 2004.⁴ After that, Boeing's apparent strategy was to lay low for four months. Then, upon the filing of the NASA and NSF coordination agreements,⁵ Boeing proffered an "evaluation" of ARINC's June 3 ex parte -- which ARINC had filed *four months* earlier. Boeing's submission is therefore untimely, especially because it merely repackages arguments from earlier filings.

³ See Comments of The Boeing Company, File No. SES-LIC-20030910-01261 (filed Nov. 14, 2003) ("*Boeing Comments*"); Further Comments of The Boeing Company, File No. SES-LIC-20030910-01261 (filed Dec. 18, 2003) ("*Boeing Further Comments*"); Letter from Carlos M. Nalda, Steptoe & Johnson LLP, to Marlene H. Dortch, File No. FCC, SES-LIC-20030910-01261 (filed on March 18, 2004) ("*Boeing March 18 Ex Parte*"); Supplemental Comments of The Boeing Company, File Nos. SES-AMD-20031223-01860 & SES-LIC-20030910-01261 (filed May 21, 2004) ("*Boeing Supplemental Comments*").

⁴ The *Boeing Comments* were answered with ARINC's response on November 28, 2003. See Response of ARINC Incorporated, File No. SES-LIC-20030910-01261 (filed Nov. 28, 2003) ("*ARINC Response*"). The *Boeing Further Comments*, the *Boeing March 18 Ex Parte*, and the *Boeing Supplemental Comments* were answered by ARINC's two ex parte letters of March 11, 2004 and June 3, 2004. See Letter from Carl R. Frank, Wiley Rein & Fielding LLP, to Marlene H. Dortch, FCC, File No. SES-LIC-20030910-01261 (filed March 11, 2004) (attaching paper authored by Don Jansky of Jansky Barmat Telecomm entitled "Assessment of Comments on the ARINC Proposed Aeronautical Mobile Satellite Service (AMSS) In The 14.0-14.5 GHz Band (SKYLINK)" ("*Jansky White Paper*")) ("*ARINC March 11 Ex Parte*"); Letter from Carl R. Frank, Wiley Rein & Fielding LLP, to Marlene H. Dortch, FCC, File Nos. SES-LIC-20030910-01261 & SES-AMD-20031223-01860 (filed June 3, 2004) ("*ARINC June 3 Ex Parte*").

⁵ See *ARINC Sept. 30 Ex Parte*.

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The Commission should not countenance further Boeing sandbagging. Section 1.52 of the Rules flatly prohibits pleadings that are “interposed for delay.”⁶ Eight years ago, the FCC affirmed that its “rules prohibit the filing of frivolous pleadings or pleadings filed for the purpose of delay” and cautioned that “[t]he Commission intends to fully utilize its authority to discourage and deter the filing of such pleadings and to impose appropriate sanctions where such pleadings are filed.”⁷ Indeed, “the Commission need [not] allow the administrative processes to be obstructed or overwhelmed by captious or purely obstructive protests.”⁸ Boeing’s latest non-effort surely qualifies, and the Commission should dismiss it for that reason alone.

This is especially true because Boeing’s fears are fanciful and attenuated. Boeing’s claim to potential injury depends on a Rube Goldberg two-step where hypothetical and unproven interference to adjacent satellites might, at some time in the future, prompt “an affected FSS satellite operator [to] look to all AMSS systems to alter their operations in the event of a harmful interference event.”⁹ It is difficult to conceive of a more speculative argument. Moreover, Boeing stands alone in imagining SKYLinkSM might interfere -- *no* FSS operator shares Boeing’s concerns. In fact, ARINC has fully coordinated with all adjacent FSS operators within four degrees of its operations at AMC-1 at 103°.¹⁰ This alone speaks volumes about Boeing’s claims and, just as importantly, Boeing’s motives in this proceeding.

⁶ 47 C.F.R. § 1.52.

⁷ See *Commission Taking Tough Measures Against Frivolous Pleadings*, Public Notice, 11 FCC Rcd 3030 (1996).

⁸ *Office of Communication of United Church of Christ v. FCC*, 359 F.2d 994, 1005 (D.C. Cir. 1996).

⁹ *Boeing Comments* at 5.

¹⁰ Specifically, ARINC entered into a coordination agreement with SES Americom, which operates AMC-4 at 101° W.L. and AMC-2 at 105° W.L., and PanAmSat, which operates the Galaxy-4R satellite at 99° W.L. See Letter Coordination Agreement by and among SES Americom, PanAmSat, and ARINC (dated April 6, 2004) (attached as Exhibit 2 to *ARINC June 3 Ex Parte*).

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II. ARINC's SKYLinkSM System Fully Conforms to FCC Rules and ITU Recommendations.

Both the ITU and the FCC have allocated the 14.0-14.5 GHz band for AMSS (Earth-to-Space) on a secondary basis.¹¹ No one disputes that AMSS operations are "technically feasible"¹² -- indeed, Boeing's own AMSS system is operating today. Boeing's AMSS license required it to avoid interfering with adjacent FSS operators by operating below the mask for routinely authorized VSAT earth stations.¹³ ARINC's SKYLinkSM application seeks the same authority. Indeed, Boeing proposed AMSS rules that presume "routine licensing" "so long as the applicant can demonstrate . . . that it can satisfy the aggregate e.i.r.p. density levels for routinely processed VSAT terminals."¹⁴ Though these rules have not yet been adopted, ARINC supports Boeing's approach.¹⁵

ARINC has fully demonstrated that its SKYLinkSM system manages AMSS traffic so that the aggregate off-axis e.i.r.p. meets the VSAT mask at least 99.999

¹¹ See *Amendment of Parts 2, 25, and 87 of the Commission's Rules to Implement Decisions from World Radiocommunication Conferences Concerning Frequency Bands Between 28 MHz and 36 GHz and to Otherwise Update the Rules in this Frequency Range*, Report and Order, 18 FCC Rcd 23426, 23454-55, ¶ 76 (2003) ("Allocation Report and Order").

¹² *Id.*

¹³ See 47 C.F.R. § 25.134(a) & 25.209(a)(1).

¹⁴ Letter from Carlos M. Nalda, Steptoe & Johnson LLC, to Marlene H. Dortch, FCC, IB Docket Nos. 00-248 & 02-10, at 4 (filed April 19, 2004) ("*Boeing April 19 Ex Parte*") (asserting that AMSS systems should be subject to "Routine licensing pursuant to a separate AMSS rule based on compliance with an off-axis e.i.r.p. mask"); *In the Matter of Amendment to Parts 2 and 25 of the Commission's Rules to Allocate Spectrum in the 14-14.5 GHz Band to the Aeronautical Mobile-Satellite Service ("AMSS") and To Adopt Licensing and Service Rules for AMSS Operations in the Ku-Band*, Boeing Petition for Rulemaking, RM No. 10800, at 14-15 (filed July 21, 2003) ("*Boeing Petition for Rulemaking*"). See also *id.* at 15 ("[R]ather than imposing separate antenna performance requirements and input power levels, AMSS licensing rules need only ensure that the aggregate e.i.r.p. spectral density of all co-frequency AES transmissions will not exceed the levels generated by a routinely authorized VSAT under Section 25.134(a)(1) of the Rules (i.e., a maximum input power density of -14 dBW/4 KHz into an antenna with sidelobes specified in Section 25.209(a)(1))."); Boeing Proposed Rule 25.216 (attached as Attachment 2 to *Boeing Petition for Rulemaking*) (proposing that AMSS license applicants "demonstrate that its AES transmissions will not cause unacceptable interference to authorized FSS networks operating in the 14.0-14.5 GHz band (Earth-to-space).").

¹⁵ See Comments of Aeronautical Radio Inc. in Support of Boeing's Petition for Rulemaking, RM No. 10800 (filed Nov. 3, 2003) (supporting Boeing's proposed AMSS licensing rules).

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percent of the time.¹⁶ ARINC therefore satisfies the rule for routinely processed VSAT terminals. It should thus be routinely processed and awarded an AMSS license.

Boeing's September 30 *ex parte* continues its campaign to obstruct and delay. The letter merely parrots old suspicions -- in a scattershot fashion -- that ARINC already has answered. Boeing's critique centers on the weary supposition that Ku-band AMSS systems must employ "positive control." This is nonsense. ARINC already has demonstrated that neither the Communications Act, the Rules, nor any ITU-Radio Regulation mandate Boeing's ill-defined "positive control," and that such a concept is absent from Recommendation ITU-R M.1643.¹⁷ And until its recent blizzard of dilatory filings, Boeing itself agreed: The AMSS rules Boeing drafted do *not* mandate "positive control."¹⁸ Boeing's newfound embrace of something it calls "positive control" is therefore merely an anti-competitive attempt to force AMSS market entrants to adopt Boeing's technology.

Because "positive control" is not required, most of Boeing's repetitious claims are irrelevant. For example, Boeing attacks ARINC's Monte Carlo methodology because it allegedly is "devoted to describing the assumed user traffic" for ARINC's SKYLinkSM system, and doesn't describe any "monitoring or control mechanism."¹⁹ But Boeing ignores SKYLinkSM's monitoring and control features, which ARINC has explained several times.²⁰ SKYLinkSM system traffic

¹⁶ *ARINC June 3 Ex Parte* at 3-6. The mask is defined by the input power density specified in Section 25.134(a) of the Commission's Rules (*i.e.*, -14 dBW/4 kHz) into an antenna with the sidelobe levels specified in Section 25.209(a)(1).

¹⁷ Part A of Recommendation ITU-R M.1643 -- which is not binding -- merely "states that monitoring and control should be done by an NCMC or equivalent facility." *ARINC March 11 Ex Parte*, Jansky White Paper at 9; *see also ARINC Response* at 3-8. ARINC's SKYLinkSM system, as ARINC has already explained, plainly meets this guideline as well as the other relevant parts of Recommendation ITU-R M.1643. *See, e.g., ARINC Response* at 3-8; *id.*, SKYLink Technical Exhibit at 1; *id.*, SKYLink Technical Exhibit, Attachment 1 (comparing ITU-R Recommendation M-1643 with ARINC SKYLinkSM Application); *ARINC March 11 Ex Parte*, Jansky White Paper at 5 & 8-9; *ARINC June 3 Ex Parte* at 6-8; *id.*, Engineering Response at 11-12.

¹⁸ *See generally* Boeing Proposed Rule 25.216 (attached as Attachment 2 to *Boeing Petition for Rulemaking*).

¹⁹ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 4. According to Boeing, "the SKYLink system will spend an indeterminate amount of time in the congestion control regime." *Id.*, Technical Analysis at 3.

²⁰ *See, e.g., ARINC June 3 Ex Parte* at 1-2, 4, 6-8; *id.*, Engineering Response 1-12; *ARINC March 11 Ex Parte*, Jansky Paper at 8; *ARINC Response* at 3-8; *id.*, SKYLink Technical Exhibit at 1-4; *id.*, SKYLink Technical Exhibit, Attachment 1; SKYLinkSM Application, File Nos. SES-LIC-20030910-

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will be monitored and controlled continuously and *in real-time* at ARINC's Network Operations Center ("NOC").²¹ Indeed, ARINC's Monte Carlo simulation demonstrates that harmful interference from SKYLinkSM is extraordinarily unlikely: ARINC's calculations -- which Boeing has not rebutted -- have demonstrated that, when 100 AESs are logged-in to the SKYLinkSM system, it "will remain below the FCC emission mask fully 99.99985 percent of the time in periods of high demand."²²

Moreover, it is decidedly in ARINC's commercial best interest to manage the traffic to prevent interference. Should ARINC allow demand on its system to grow to the levels that Boeing predicts, SKYLinkSM would suffer self-interference -- *i.e.*, SKYLinkSM users' data rates would drop and service quality could suffer dramatically. ARINC has no incentive to allow this to happen; indeed, if ARINC does not manage traffic effectively, it will lose customers and do harm to its own business. ARINC's incentives are thus entirely in accord with the interests of adjacent FSS operators -- namely, to manage traffic to prevent interference, both to itself and to adjacent operators.

Similarly, Boeing again contends²³ that ARINC's "congestion controller will only attempt to limit AES transmissions when the systems compliance level drops to 99%," and therefore the SKYLinkSM system will exceed the VSAT mask 1 percent of the time.²⁴ ARINC repeatedly has explained that its congestion controller is not the sole limitation on the probability of exceeding the off-axis

(Continued . . .)

01261 & SES-AMD-20031223-01860, Technical Description (filed Sept. 2, 2003) ("*SKYLinkSM Application*"). See also Letter from Heather O. Dixon, Wiley Rein & Fielding LLP, to Marlene H. Dortch, FCC, File Nos. SES-LIC-20030910-01261 & SES-AMD-20031223-01860, at 8 & 14-15 (filed June 10, 2004).

²¹ The SKYLinkSM NOC uses "sophisticated traffic algorithms to continuously monitor and control AES traffic in real-time[,], thereby permitting SKYLinkSM to 'manage AMSS traffic to ensure that the aggregate e.i.r.p. does not exceed the mask set forth in Part 25 more than 0.001 percent of the time'" *ARINC June 3 Ex Parte* at 4 (quoting *ARINC June 3 Ex Parte*, Engineering Response at 1). See also *id.*, Engineering Response at 10 ("[T]he SKYLinkSM system monitors and controls interference levels directly, dynamically and proactively in real-time to ensure an extraordinarily low potential for what is essentially undetectable co-frequency interference.").

²² *Id.*, Engineering Response at 8.

²³ Boeing has been making this claim -- in one form or another -- since December 2003. See, e.g., *Boeing Further Comments* at 5.

²⁴ *Boeing Sept. 30 Ex Parte* at 1; see also *id.*, Technical Analysis at 1-4.

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e.i.r.p. mask.²⁵ Boeing's focus on the 99% figure intentionally "confuses the SKYLinkSM congestion control software's initial proposed level -- which is set to reduce data throughput under peak demand conditions -- with the total probability of exceeding the mask for any reason."²⁶

Boeing also avers that ARINC's Monte Carlo simulation is flawed because it "assumes random traffic patterns, rather than real world traffic patterns that are non-random and also not predictable."²⁷ Boeing points to "[r]eal world events such as a weather emergency, a stock market plunge or an election" that would "prompt individuals to seek information or exchange information at the same time."²⁸ This too is wrong. While demand might spike in any small area, the SKYLinkSM beam covers all of CONUS:

ARINC's use of broad-beam Ku-band capacity ensures that weather and/or emergency air traffic anomalies -- which might be regional, but almost never "continental" -- remain statistically independent for any given universe of AES.²⁹

Thus, over any given transponder, SKYLinkSM traffic will be essentially random and thus is properly appraised via Monte Carlo simulations.

Finally, Boeing insists ARINC's license be conditioned on "verification of all SKYLinkSM system operational and control parameters prior to commencement of commercial operations," because that "was required of Boeing in the context of licensing the Connexion by BoeingSM system's transmit-receive operations."³⁰ But that was then; this is now. When Boeing was licensed, "the U.S. Table [of Frequency Allocations did] not include an allocation for AMSS downlinks in the 12 GHz band" or "an allocation for AMSS uplinks in the 14 GHz band."³¹ Boeing

²⁵ See, e.g., *ARINC June 3 Ex Parte* at 4 & 6-8; *id.*, Engineering Response at 1-2, 8, 9, 10. See also *supra* note 21.

²⁶ *ARINC June 3 Ex Parte* at 4 (footnote omitted).

²⁷ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 4.

²⁸ *Id.*, Technical Analysis at 5.

²⁹ *ARINC June 3 Ex Parte*, Engineering Response at 4 n.5; see also *ARINC June 3 Ex Parte* at 5 n.16.

³⁰ *Boeing Sept. 30 Ex Parte* at 2 (citing *The Boeing Company Application for Blanket Authority to Operate Up to Eight Hundred Technically Identical Transmit and Receive Mobile Earth Stations Aboard Aircraft in the 14.0-14.5 GHz and 11.7-12.2 GHz Frequency Bands*, Order and Authorization, 16 FCC Rcd 22645 (2001) ("*Boeing Transmit-Receive Order*").

³¹ *Boeing Transmit-Receive Order*, 16 FCC Rcd at 22646, ¶ 4.

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therefore needed a waiver for a nonconforming use. As a result, the FCC properly subjected Boeing's AMSS to heightened scrutiny, to monitor the "potential for interference into any service authorized under the Table of Frequency Allocations."³² Today, by contrast, the ITU and the Commission each have allocated the 14.0-14.5 GHz band to the AMSS (Earth-to-Space) on a secondary basis. Accordingly, the rationale for the waiver, and for the concomitant reporting requirements, has vanished.

III. Boeing's Technical Complaints Have Been Asked and Answered.

Boeing proffers a litany of technical nit-picks that, it claims, prevent SKYLinkSM from complying with the VSAT mask. Boeing's parade of horrors isn't new, and ARINC already has rebutted the lot.

Boeing's Flawed Monte Carlo Simulation

Boeing erroneously insists ARINC has not accounted for "pointing errors, e.i.r.p. variation, and the forward uplink off-axis e.i.r.p. contribution," and then, relying on that false predicate, re-asserts that "not accounting for these factors will result in an off-axis e.i.r.p. level that exceeds the FCC mask up to 10% of the time, when the ARINC system is in the congestion control regime."³³ But this ground has already been plowed. In its June 3, 2004 ex parte, ARINC fully explained that Boeing's Monte Carlo simulation -- from which Boeing's wild 10% figure is derived -- was based on faulty assumptions and therefore is neither objective nor accurate.³⁴

Pointing Error

Although there is no "mandatory requirement to 'specifically account for pointing error in determining off-axis e.i.r.p.,""³⁵ ARINC nevertheless did.³⁶

³² *Id.* at 22651, ¶ 12 (internal quotations omitted).

³³ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 3.

³⁴ *ARINC June 3 Ex Parte* at 6; *id.*, Engineering Response at 9-10.

³⁵ *ARINC March 11 Ex Parte*, Jansky White Paper at 8-9.

³⁶ *ARINC June 3 Ex Parte*, Engineering Response 2-5, 10-11 (taking account of various pointing error factors affecting e.i.r.p.); *ARINC March 11 Ex Parte* at 8-9; *ARINC Response* at 9; *id.*, SKYLink Technical Exhibit at 4; *id.*, SKYLink Technical Exhibit, Attachment 1 ("The SKYLink system addresses these issues [of mispointing of the AIST antenna] in sections 3.1.2.2 Transmit Patterns, 3.1.3.1 Antenna Installation and Calibration and 3.1.3.2 Operational Antenna Pointing" of the SKYLink license application); *SKYLinkSM Application*, Technical Description, §§ 3.1.2.2, 3.1.3.1 & 3.1.3.2.

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Boeing now contends that the error must be measured “both along and orthogonal to the GSO arc” by using a pointing error of 0.59 degrees in azimuth and 0.38 degrees in elevation (0.71 degrees conical error) in its simulation.³⁷ But azimuth and elevation errors are unrelated to whether the signal is in the GSO arc or orthogonal to the arc, unless the values for position, heading, roll, pitch, and yaw are all given. Thus, Boeing’s facile consideration of only azimuth and elevation tells one nothing useful. By contrast, “ARINC’s more precise simulation considered by the magnitude *and* direction of each pointing error,” and it showed that “SKYLinkSM can carry nearly twice the traffic Boeing estimates without exceeding the aggregate e.i.r.p. limit.”³⁸

Moreover, contrary to Boeing confused claim, ARINC has not “abandoned its previously claimed overall AES pointing error of 0.1 degrees.”³⁹ Because there are various components to pointing error, ARINC’s Monte Carlo simulation assumed an “rms pointing error of 0.1 degree” as one component of pointing error, plus, to demonstrate the SKYLinkSM system’s viability even under very conservative estimates, ARINC’s model used *Boeing’s* “0.71 degree” estimate of “INS ‘conical error’” as a separate component.⁴⁰ ARINC’s model thus handles *both* of those pointing error components -- along with a third component listed in Table 1 of ARINC’s *ex parte*.⁴¹ Nothing was abandoned or overlooked.

E.I.R.P. Variation

ARINC previously demonstrated that Recommendation ITU-R M.1643 does not mandate AMSS systems to account for e.i.r.p. variation in determining off-axis e.i.r.p.⁴² Nonetheless, ARINC fully accounted for e.i.r.p. variations in transponder G/T with an independent, uniform amplitude variation range of +/- 2 dB.⁴³ Boeing incorrectly speculates that “[t]his effectively assumes that all AESs are located within G/T contours that are within 4 dB of the peak G/T value for the transponder.”⁴⁴ In fact, it assumes that all AESs are located within G/T contours

³⁷ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 7-8.

³⁸ *ARINC June 3 Ex Parte*, Engineering Response at 10.

³⁹ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 8.

⁴⁰ *ARINC June 3 Ex Parte*, Engineering Response at 4 (Pointing Errors).

⁴¹ *Id.*

⁴² *ARINC March 11 Ex Parte*, Jansky White Paper at 9 (“The only mandatory parts of Recommendation ITU-R M.1643 are Parts B and C of Annex 1, which have been incorporated by reference into several footnotes to the Radio Regulations in the 14-14.5 GHz band.”).

⁴³ *ARINC June 3 Ex Parte*, Engineering Response 4 (Power).

⁴⁴ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 8.

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within 4 dB *above* the G/T value that defines the boundary of coverage, not measured at peak G/T “hotspots.”

Boeing also insists that this “does not give any consideration to AESs that may be outside this G/T contour, perhaps because they are entering or exiting the footprint.”⁴⁵ That much is true. But AESs outside the contour are correctly excluded from consideration. As ARINC has previously explained, a SKYLinkSM AES cannot attempt to log-on until it receives a complete bulletin board message.⁴⁶ AESs outside the SKYLinkSM transmit beam thus will not attempt log-on, and will resume only when in view of the spacecraft’s transmit beam. Typically, a spacecraft e.i.r.p. transmit footprint is effectively identical to its G/T receive footprint (with nearly co-extensive contours at edge of coverage). Thus, the confluence of events that would place an AES within the forward link footprint but outside the return link footprint is statistically rare. Therefore, contrary to Boeing’s assertion, there *is* a “mechanism within the ARINC system that . . . limits the AES operation to the assumed area.”⁴⁷

1 dB Margin

Boeing also frets about ARINC’s ability to provide 1 dB additional “cushion” below the VSAT mask.⁴⁸ ARINC’s ex parte of June 3, 2004 addressed Boeing’s concerns about the SKYLinkSM system’s probability of exceeding the VSAT mask. It therefore did not explicitly address the 1 dB margin. At the outset of SKYLink’s commercial operations, ARINC will maintain a 1 dB margin with respect to the mask, and ARINC’s SKYLinkSM system will be managed and operated so that it exceeds the mask minus 1 dB less than 0.001% of the time. Thus, Boeing’s point actually reinforces the *improbability* of harmful interference from SKYLink.

Forward Uplink Off-Axis E.I.R.P.

Though Boeing “strongly disagrees,”⁴⁹ ARINC plainly accounted for the negligible contribution of the forward uplink to off-axis e.i.r.p. As ARINC explained in its ex parte of June 3, 2004, “[t]he contribution of the fixed Ground

⁴⁵ *Id.*

⁴⁶ *See ARINC June 3 Ex Parte*, Engineering Response 11-12.

⁴⁷ *Boeing Sept. 30 Ex Parte*, Technical Analysis at 8.

⁴⁸ *Id.*, Technical Analysis at 9.

⁴⁹ *Id.*

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Earth Station [("GES")] to off-axis e.i.r.p. is small in comparison to a *single* AES and does not change over time.”⁵⁰ This negligible impact reflects not only the number of transmitters but the reduced sidelobe emissions from the fixed GES earth station. The SKYLinkSM GES antenna has been “professionally pointed to center of box and is not tracking, so any pointing error will be both static and small in comparison to the off-axis limiting contribution of simultaneous transmitting AES.”⁵¹ Figure 1 below demonstrates that a single fixed GES generates emissions in the shape of a narrow spike. The emissions of a single transmitting AES, by contrast, form the shape of a broad main lobe.

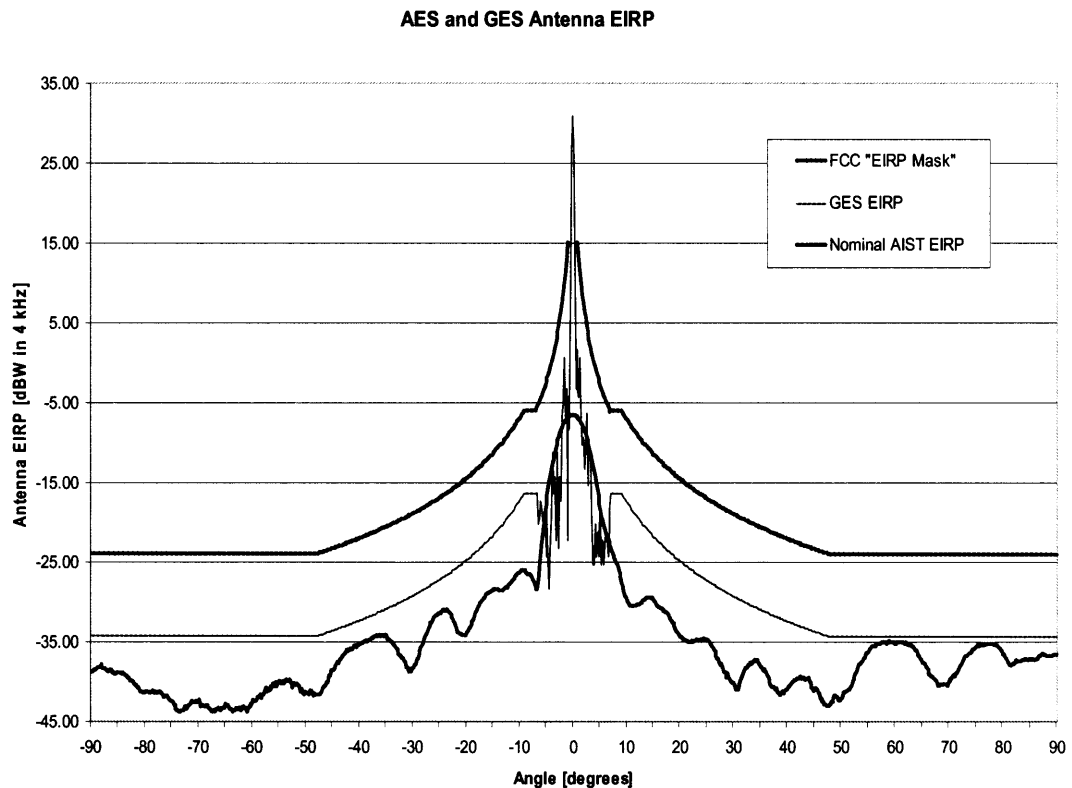


Figure 1. Forward Uplink GES Off-Axis E.I.R.P. versus Nominal AES Off-Axis E.I.R.P.

⁵⁰ ARINC June 3 Ex Parte, Engineering Response at 4 (Power) (emphasis added).

⁵¹ *Id.*, Engineering Response at 15.

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When the GES is aggregated with multiple AESs with various pointing errors, SKYLinkSM's aggregate off-axis e.i.r.p. emissions will first approach the VSAT limit at the *sides* of the mask, approximately 4 degrees from boresight. Thus, the maximum allowable SKYLink signal density will be limited by the edges of the broad main AES emission lobes; the narrow emission spike of the fixed GES antenna is not implicated. This is demonstrated below in Figure 2.

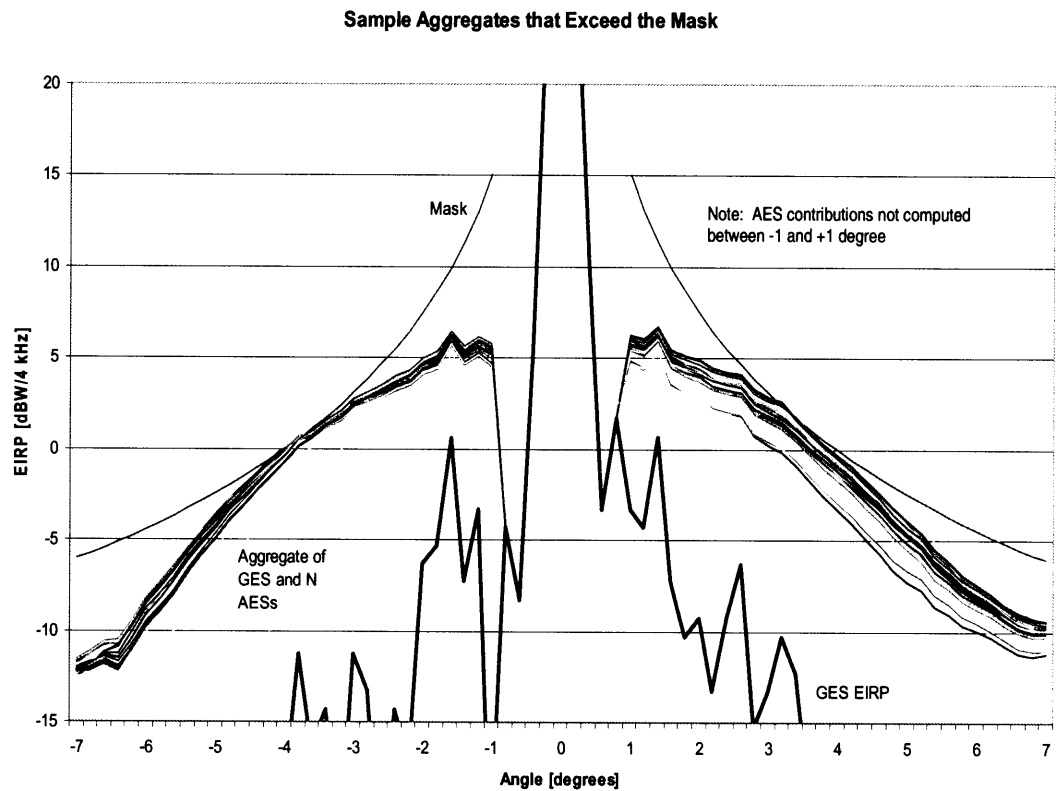


Figure 2. Forward Uplink GES Off-Axis E.I.R.P. and Aggregate AES Off-Axis E.I.R.P.

Thus, in the area of the FCC mask where aggregate AES e.i.r.p. would hypothetically first encounter the mask, the SKYLinkSM Forward Link does not

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contribute to, and has essentially no effect on, off-axis e.i.r.p. measured at adjacent satellites.⁵²

IV. Conclusion.

As demonstrated above and in its previous filings, ARINC's SKYLinkSM system complies with the Commission's Rules, Recommendation ITU-R M.1643, and even Boeing's proposed rules. It does so in a different way than Boeing's Connexion system, but that is not germane: The Commission has never mandated any particular AMSS technology.

ARINC has recognized, rebutted, and rubbished each of Boeing's claims. However, ARINC wholeheartedly endorses one Boeing argument:

In this dawning age of "Internet time" the Commission should refuse to allow outmoded tactics of regulatory and procedural posturing to forestall the development of new and worthwhile communications services to the public. The Commission should address only those technical concerns that are legitimately at issue in this proceeding and should authorize [the applicant]'s innovative service as soon as the those [sic] concerns are resolved to the Commission's satisfaction. Any regulatory delay . . . will only harm consumers by depriving them and the aviation industry from the tremendous benefits of broadband Internet access and up-to-date information services.⁵³

This eloquent plea was a reaction to delays in licensing Boeing's AMSS, which eventually was granted. It's good advice -- and eerily applicable to the instant application.

The FCC should reject Boeing's "outmoded tactics of regulatory and procedural posturing." Rather, the agency should "address only those technical concerns that are legitimately at issue in this proceeding." ARINC repeatedly has shown that the aggregate off-axis e.i.r.p. of the SKYLinkSM system meets the VSAT mask at least 99.999 percent of the time.⁵⁴ ARINC has completed coordination with adjacent satellite operators and Federal government users. Nothing more is

⁵² ARINC June 3 Ex Parte, Engineering Response at 15; see also *id.*, Engineering Response at 4 & 14-15; ARINC Response at 8; SKYLinkSM Application, Technical Description at 3.

⁵³ Boeing's Response to Comments, File No. SES-LIC-20001204-02300, Callsign E000723, at 5-6 (filed April 5, 2001).

⁵⁴ See, e.g., ARINC June 3 Ex Parte at 3-6.

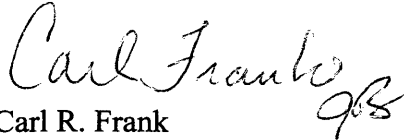
October 28, 2004

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required. Given its meritless filings and anti-competitive motives, nothing further from Boeing should be accepted.

For the reasons set forth above and in ARINC's previous filings, the Commission should expeditiously grant ARINC's license for its SKYLinkSM system.

Sincerely,

A handwritten signature in cursive script that reads "Carl R. Frank". The signature is written in black ink and includes a stylized flourish at the end.

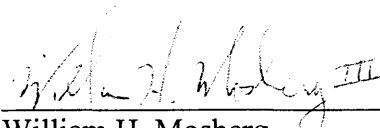
Carl R. Frank
Counsel for ARINC Incorporated

cc: Thomas Tycz
Fern Jarmulnek
Robert Nelson
Andrea Kelly
Steven Spaeth
Shabnam Javid
Arthur Lechtman
Ed Davison, NTIA

**CERTIFICATION OF PERSON RESPONSIBLE
FOR TECHNICAL INFORMATION**

I am a Technical Consultant for the SKYLinkSM program at ARINC Incorporated. I certify that I am qualified to review the technical information contained in this Response to Written Ex Parte of The Boeing Company, that I am familiar with Part 25 of the Commission's Rules and International Telecommunication Union Recommendation ITU-R M.1643, that I have reviewed the technical information submitted in this document, and that it is complete and accurate to the best of my knowledge and belief.

My technical qualifications include over 32 years of experience in communications and systems engineering. I hold an A.B. - Sc.B. in Latin - Electrical Engineering from Brown University and an M.S. in Computer Science from Northeastern University.

By: 
William H. Mosberg
Technical Consultant, SKYLink Program
ARINC Incorporated

Dated: October 27, 2004

Sworn and subscribed to before me this 27th day of October 2004.


Notary Public

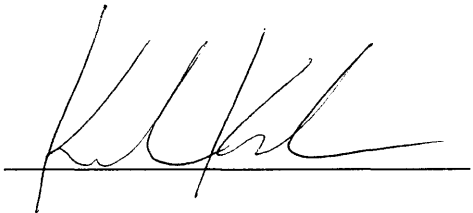
My Commission Expires: September 1, 2005

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Response to Written Ex Parte Presentation of The Boeing Company was served via first-class mail, postage prepaid, this 28th day of October 2004, upon the following:

Joseph A. Godles
Goldberg, Godles, Wiener & Wright
1229 Nineteenth Street, N.W.
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Counsel for PanAmSat

Philip L. Malet
Carlos M. Nalda
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Counsel for The Boeing Company

A handwritten signature in black ink, appearing to read 'K. Kasler', is written over a horizontal line.

Kelion N. Kasler
Wiley Rein & Fielding LLP
1776 K Street, NW
Washington, DC 20006