

BEFORE THE
Federal Communications Commission
WASHINGTON, DC 20554

In the Matter of	)	
Panasonic Avionics Corporation	)	File No.: SES-STA-20110104-00005
	)	
Request for Special Temporary Authority to	)	Call Sign: E100089
Operate Up to 10 Technically Identical	)	
Aeronautical Mobile-Satellite Service ("AMSS")	)	
Earth Stations ("AESs") in the 14.0-14.4 GHz and	)	
11.7-12.2 GHz Frequency Bands	)	

To: Chief, International Bureau

PETITION OF ROW 44, INC.

Row 44, Inc. ("Row 44"), by its attorneys and pursuant to Section 25.154 of the Commission's Rules, hereby petitions the International Bureau (the "Bureau") to take no action on the above-captioned application for special temporary authority ("STA") until the applicant, Panasonic Avionics Corporation ("PAC" or "Applicant"), provides complete information concerning its proposed Ku-band aeronautical mobile-satellite service ("AMSS") Earth station network. The submission of a separate STA request seeking essentially the same authority requested in its underlying application for permanent authority (SES-LIC-20100805-00992, as amended by SES-AMD-20100914-01163 and SES-AMD-20101115-01432) does not relieve PAC from the requirement that it demonstrate full compliance with Section 25.220 of the FCC's Rules, including complete details of the characteristics of its AMSS system that underpin PAC's assurances that it can operate without causing harmful interference to other Ku-band FSS users. Row 44 does not oppose grant of an appropriately conditioned STA

provided that PAC submits the information currently omitted from its underlying application (and therefore from the newly-filed STA request).

Discussion

Row 44 has filed a Petition in the underlying application proceeding in which it has pointed out a number of deficiencies or omissions in PAC's showing. *See Attached Pleadings: Petition of Row 44, Inc., filed October 15, 2010 (Attachment 1) and Consolidated Reply of Row 44, Inc. to Panasonic Avionics' Response and Panasonic Avionics' November 15 Amendment, filed December 1, 2010 (Attachment 2).* Row 44 respectfully requests that both of these documents be incorporated herein by reference, and considered in connection with the instant STA request.

In response to Row 44's filings, PAC has provided information that augments or clarifies some aspects of its proposed AMSS operations. *See November 15 Amendment, SES-AMD-20101115-01432; Response to Petition of Row 44, Inc., filed November 15, 2010; and Reply to Consolidated Reply of Row 44, Inc., filed December 13, 2010.* Nonetheless, there remain several areas in which the application remains incomplete, or insufficiently clear in its details, including the provision of: (1) complete off-axis EIRP spectral density plots along the GSO arc (*see Consolidated Reply of Row 44 at 7-9*), (2) antenna gain data with respect to maximum antenna skew conditions (*id.* at 10-11), (3) details concerning how the PAC system can achieve adequate antenna pointing accuracy, as is required for all MSS Earth stations operating in the Ku-band Fixed-Satellite Service spectrum (*id.* at 11-15), (4) explanation of the distinct operation of the iDirect modem with the MELCO antenna and its interaction to determine when transmitter muting must occur (*id.* at 15), and (5) a plot of the carrier waveform (*id.* at 16).

Row 44 notes that PAC has requested that STA be granted as of February 1, 2011, just a few weeks from now. But it appears that *commercial operations have already been initiated by the company* and its partners for service to U.S. destinations. See Attachment 3, Press Releases of PAC and Lufthansa, issued November 30, 2010 (referencing U.S. flights serving cities including New York, Detroit and Atlanta). It seems presumptuous for the Applicant to have made and executed such plans in the absence of FCC action on its application, at least if it believes that an AMSS Earth station license is necessary for it to operate domestically. On the other hand, if as PAC suggests in its STA Request, its separate experimental STA is sufficient to permit its current activities, then there would appear to be no need or basis for the STA in the first instance. See STA Request at 1 & 4.¹

In any case, the FCC's rules affirmatively preclude taking private commercial factors into consideration in processing STA requests. See 47 C.F.R. § 25.120(b)(1) ("The Commission may grant a temporary authorization only upon a finding that there are extraordinary circumstances requiring temporary operations in the public interest and that delay in the institution of these temporary operations would seriously prejudice the public interest. Convenience to the applicant, such as marketing considerations or meeting scheduled customer in-service dates, will not be deemed sufficient for this purpose.")² PAC, in fact, has

¹ Row 44 notes that PAC's experimental STA actually expired on July 7, 2010 (OET File No. 0339-EX-ST-2009), but remains in effect during the pendency of its application for a two-year experimental license (OET File No. 0281-EX-PL-2010) pursuant to the terms of Section 5.61(b) of the FCC's Rules. See 47 C.F.R. § 5.61(b).

² While the FCC often grants STAs to allow service to begin in advance of a pending application's formal grant, it typically does so only when the underlying application is a routine matter involving spectrum use and equipment that conforms to established FCC rules, and does not involve waiver requests or other special considerations. This is not such a circumstance.

made no public interest showing at all in its STA Request, let alone a demonstration that any delay in commencement of operations “would seriously prejudice the public interest.”³

Despite these infirmities, and assuming that PAC provides the additional information required with respect to the underlying application, Row 44 has no objection to grant of an appropriately conditioned STA for purposes of conducting additional flight testing of the PAC system. As PAC itself points out in its STA Request (STA Request at 3 & n.8), Row 44 itself was granted similar authority in early 2009, which allowed it not only to offer proof of concept marketing trials for prospective customers, but also to gather useful technical data regarding the in-flight operation of its antennas, which was then submitted to the International Bureau in connection with the processing of its application for permanent authority. *See Row 44, Inc.*, 24 FCC Rcd 3042 (IB/OET 2009).⁴ Accordingly, Row 44 respectfully requests that any STA that may ultimately be granted to PAC in this proceeding be subject to the conditions set forth on the following page:

³ PAC’s only mention of the public interest in the STA Request is a conclusory assertion at the very end of the request that grant would “serve the public interest by facilitating the initial implementation of [PAC’s] cost-effective, broadband AMSS service.” STA Request at 12. No substantive discussion is offered to support this conclusion.

⁴ The particular basis for the Row 44 STA was “facilitating assessment and resolution of concerns regarding interference that might result from full-scale operation as proposed in Row 44’s underlying license application.” *Row 44, Inc.*, 24 FCC Rcd at 3044 (¶ 6). An STA on this same basis could be appropriate in this instance as well.

Proposed STA Conditions

(1) Aircraft earth stations shall not be operated while an aircraft is on the ground or within 20 meters of the ground unless appropriate safety protocols are in place to ensure that persons having access to areas within 20 meters of the antenna are not exposed to radiofrequency energy in excess of the maximum permissible limits specified in 47 C.F.R. § 1.1310. The exterior surface of each antenna shall be prominently marked with a sign warning of the potential for exposure to high levels of radiofrequency energy.

(2) Panasonic Avionics shall not cause harmful interference to, and shall not claim protection from, any other lawfully operating station. In the event harmful interference results from operation pursuant to this authorization, Panasonic Avionics shall cease operation immediately upon notification of such interference, and shall immediately inform the Federal Communications Commission, in writing, of the incident.

(3) Operation pursuant to this authorization shall be in compliance with the terms of Panasonic Avionics' coordination agreement with the National Science Foundation pertaining to operation of aircraft earth stations in the Ku-Band.

(4) In the absence of a coordination agreement with the National Aeronautics and Space Administration ("NASA") pertaining to operation of aircraft earth stations in the Ku-Band, Panasonic Avionics may not operate within the 14.0-14.2 GHz band within line of sight of any NASA TDRSS facility.

(5) Panasonic Avionics shall submit to the Commission a detailed written report on the operation of the antennas deployed pursuant to this authorization no later than 90 days after the release of this order.

(6) The authorization shall not be considered one relating to an "activity of a continuing nature" for purposes of 47 C.F.R. § 1.62 and 5 U.S.C. § 558(c), but may be extended for an additional sixty (60) days following submission of the report required under paragraph 5 above.

Conclusion

For the reasons set forth herein, Row 44 urges the FCC to require that PAC provide the additional data noted herein that is currently missing from its pending AMSS network application. Action on the STA request should be deferred until this additional information is provided and the underlying application is complete. Row 44 has no objection to grant of the

requested STA once such information is provided, along with such other information the FCC may deem appropriate to request, so long as PAC is subject to the same conditions and requirements, set forth above, that were included in the grant of similar authority to Row 44 in connection with the processing of its own AES application in 2009.

Respectfully submitted,

ROW 44, INC.

By: _____



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January 13, 2011

Its Attorney

ATTACHMENT 1

Petition of Row 44, Inc., filed October 15, 2010

BEFORE THE
Federal Communications Commission
WASHINGTON, DC 20554

In re: Application of	)	
Panasonic Avionics Corporation	)	File Nos. SES-LIC-20100805-00992
	)	SES-AMD-20100914-01163
For Authority to Construct and Operate an	)	
Aeronautical-Mobile Satellite Service Earth	)	Call Sign E100089
Station Network Operating in the Ku-Band	)	

To: Chief, International Bureau

PETITION OF ROW 44, INC.

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Row 44, Inc. (“Row 44”), by its attorneys and pursuant to Section 25.154 of the Commission’s Rules, hereby petitions the International Bureau (the “Bureau”) to take no action on the above-captioned application until the applicant, Panasonic Avionics Corporation (“Panasonic Avionics” or “Applicant”), amends the application to come into compliance with the FCC’s Rules and provide information critical to the Bureau’s evaluation of its proposal. As filed, and as further supplemented on September 14, 2010,¹ Panasonic Avionics’ application (the “Application”) fails to provide the full complement of information required for the Bureau to determine whether its proposal to operate a Ku-band aeronautical mobile-satellite service (“AMSS”) Earth station network is compliant with the requirements of either Section 25.218 or Section 25.220 of the FCC’s Rules and can operate without causing harmful interference to other Ku-band FSS users. Absent the submission of additional clarifying information to

¹ See Amendment to Application, FCC File No. SES-AMD- 20100914-01163, filed September 14, 2010.

provide the required showing, the Application should be dismissed as defective, or simply denied.

I. Introduction, Summary and Statement of Interest.

Row 44 is a licensed AMSS network operator with a strong and continuing interest in the integrity of Ku-band operating environment. Row 44 was granted a system license on August 5, 2009² after deploying a limited number of AMSS Earth stations pursuant to Special Temporary Authority for a period of almost six months during 2009.³ Row 44 has subsequently modified its license to add an additional antenna,⁴ and has begun the general roll-out of its system on commercial airliners operated by Southwest Airlines.⁵ For these reasons, Row 44 has both significant expertise dealing with the technical issues related to successful non-interfering operation of a Ku-band AMSS system and a strong interest in ensuring that the current spectrum use conditions that have facilitated development of beneficial Ku-band MSS services, including Row 44's, are maintained without disruption.

Moreover, Panasonic Avionics specifically references Row 44's 2008 AMSS license application in its own system description, insisting that it is providing a technical demonstration "similar" to that upon which the 2009 grant of Row 44's license was based. Application at 4. Row 44 believes, however, that the Application falls short of providing the depth and breadth of required technical information that was included in Row 44's 2008 application. As it currently stands, the Application, as amended, does not include a complete

² See *Row 44, Inc.*, 24 FCC Rcd 10223 (IB/OET 2009).

³ See FCC File Nos. SES-STA 20080711-00928 (granted 3/13/2009), SES-STA-20090417-00507 (granted 5/15/2009), SES-STA-20090709-00854 (granted 7/14/2009).

⁴ See FCC File No. SES-MOD-20091021-01342 (granted 1/20/2010).

⁵ See, e.g., "WiFi Here and Now," Southwest Airlines Blog, posted September 8, 2010, available at <http://www.blogsouthwest.com/blog/wifi-here-and-now>.

technical showing equivalent to that submitted by Row 44 and other AMSS licensees, and is internally inconsistent or lacking adequate detail in several key respects.

First, Panasonic Avionics' Application is not clear on which of two pathways to licensure it is seeking to follow – EIRP spectral density compliance under Section 25.218 of the FCC's Rules, or demonstration of no harmful interference through coordination under Section 25.220 of the Rules. *See* 47 C.F.R. §§ 25.218 & 25.220. As a whole, the Application does not present a complete showing under either approach, providing only some of the information that is required under each of the relevant rules. Moreover, the Application itself makes plain that it does not comply with Section 25.218.

Second, the link budget and other supporting documentation provided in the Application are internally inconsistent with the actual operating parameters for which it requests licensing in Form 312. Its link budget exhibit also fails to include a coverage map, rendering it defective for purposes of demonstrating the ability of the proposed network to operate successfully at the proposed input power and EIRP levels.

Third, Panasonic Avionics' general reliance on the prior FCC approval of Boeing's 2003 application to employ the same Mitsubishi Electronics Corporation antenna ("MELCO Antenna") is misplaced. In view of the significantly different hardware, wave forms, access protocol and other differing technical parameters that are now being proposed for this antenna, its prior approval seven years ago for use by a different applicant using a different modem, modulation and access protocol is of little relevance. In fact, the only common element between the Panasonic Avionics proposal and Boeing's 2003 system is the MELCO Antenna hardware itself.

Finally, the Application specifically relies upon Panasonic Avionics' assertion that the MELCO Antenna has "recently operated without interference during flight trials pursuant to FCC experimental authority." Application at 3-4. It suggests that this testing is probative of its capability to avoid harmful interference to other spectrum users, yet does not provide any of the data that may have been gathered during these operations to support this conclusory statement. This stands in contrast to other applicants that have provided such real world data in connection with their own applications.⁶

The Bureau should require Panasonic Avionics to correct these deficiencies before it proceeds with further processing of the Application. In the event that it fails to correct these omissions, the Application should be dismissed or denied.

II. Panasonic Avionics Has Failed to Provide a Complete Showing With Respect to its EIRP Spectral Density and Antenna Gain Performance.

From the outset, Panasonic Avionics' Application presents a confusing and inconsistent picture with respect to compliance with the Commission's current Part 25 Rules. The FCC's Rules provide that "an antenna not conforming to the standards of paragraphs (a) and (b) of" Section 25.209, which establishes antenna performance standards, "will be authorized only if the applicant meets its burden of demonstrating that its antenna will not cause unacceptable interference." 47 C.F.R. § 25.209(f). In turn, the rule further provides that applicants seeking approval for mobile Ku-band FSS Earth stations not covered by the Earth Stations on Vessels ("ESV") or Vehicle-Mounted Earth Stations ("VMES") rules "must comply with the procedures set forth in §§ 25.218 or 25.220." including the antenna pattern requirements of

⁶ See, e.g., Row 44, Inc., "Satellite Interference Test Plan and Report, Row 44 Satellite Broadband System," FCC File Nos. SES-LIC-20080508-00570, as amended, and SES-STA-20080711-00928 (filed May 11, 2009).

Section 25.132(b). *Id.* (emphasis added). The Applicant does not make plain at any point which of these two pathways to licensure it is seeking to follow, nor does it present a complete showing under either of these alternative approaches.

In its original narrative and associated Technical Appendix, Panasonic Avionics included a Regulatory Compliance Index (“Index”) listing the FCC Rules purportedly referenced in the Application along with the pages of both the narrative and the Technical Appendix that address alleged satisfaction of each rule requirement. As detailed herein, however, the Index ultimately proves to be more confusing than helpful.⁷ There is no reference at all in the Index to Section 25.218 of the Rules, which became effective in March of 2009, yet within the Application itself, Panasonic Avionics appears to place significant reliance on Section 25.218(f) to demonstrate its capability to operate in the conventional Ku-band on a non-interference basis. *See* Application at 14-16; Technical Appendix at 10-12.

A. Insufficient Data Has Been Submitted to Demonstrate Compliance with the Off-Axis EIRP Limits Under Section 25.218(f) of the FCC’s Rules.

The technical standards set forth in Section 25.218 of the FCC’s Rules are further illuminated by the specific application requirements contained in Section 25.115(h). There, the Rules make plain that any applicant seeking to demonstrate compliance with the new off-axis EIRP spectral density limits must provide “three tables showing the off-axis EIRP level of the proposed Earth station antenna of the plane of the geostationary orbit, the elevation plane, and towards the horizon.” 47 C.F.R. § 25.115(h). Further, in each table, “the EIRP level must be

⁷ The Index is very similar to the index bearing the same title contained in Row 44’s 2008 application, but lacks necessary updates to account for rule changes that have occurred since that time, other than the addition of a superfluous reference to Section 25.226, which deals only with VMES applications. *Compare* Application, Regulatory Compliance Index and Row 44 Application, FCC File No. SES-LIC-20080508-00570, at iii (Regulatory Compliance Index).

provided at increments of 0.1° for angles between 0° and 10° off-axis, and at increments of 5° for angles between 10° and 180° off-axis.” *Id.* In its initial Application, Panasonic Avionics provided only a single EIRP spectral density plot, which it described as representing “worst-case power (edge of coverage), worst-case skew, etc.,” and no accompanying tables for any of the required planes. This very limited and ambiguous showing is not sufficient to comply with the detailed requirements of the Rules. Moreover, even with respect to its “worst case” demonstration, the Applicant did not explain the full range of variables that were considered to define this “worst case” scenario, and whether it includes worst case pointing error consistent with the general FCC requirement to maintain pointing accuracy to within 0.2 degrees and the pointing accuracy requirements of ITU-R Recommendation M.1643. *See* 47 C.F.R.

§§ 25.222(a)(1)(ii) & (iii) & (b)(1)(iii) and 25.226(a)(1)(ii) & (iii) & (b)(1)(iii); ITU-R Rec. M.1643, Part A.

In its subsequent supplemental filing, Panasonic Avionics filed additional tables that appeared to constitute a partial showing under Section 25.115(h) and 25.218(f), although the amendment itself nowhere references Section 25.218. Even these additional tables, however, fall short of providing the complete data set requested under the rules, failing both to include information regarding off-axis EIRP for angles between 90° and 180° and to provide any data at all for the horizontal plane.⁸

The fact that the Application’s demonstration under Section 25.218(f) remains incomplete is ultimately immaterial, however, as it appears that even submission of the complete data required under Sections 25.218(f) and 25.215(h) could not show the required

⁸ Section 25.115(h) is not explicit in requiring negative azimuth data, but given the asymmetry of the Applicant’s antenna pattern, as well as the absence of compliance with Section 25.209 in any plane, this data seems especially necessary.

compliance with 25.218(f)(2) for off-axis EIRP spectral density “in all other directions.” In its initial filing, Panasonic Avionics actually stated unequivocally that “The MELCO AES antenna exceeds the off-axis EIRP spectral density values set forth in the Commission’s rules in directions away from the geostationary arc.” Application at 16 (Section VI.B.). That being the case, it is plain that the antenna does not meet the standards set out in Section 25.218(f).

B. Panasonic Avionics Has Failed to Provide the Information Required to Satisfy Section 25.220 of the FCC’s Rules.

As Panasonic Avionics admittedly does not comply with the requirements of Section 25.218, it is essential that it make a full showing under Section 25.220. In contrast to its omission of references to Sections 25.215(h) and 25.218(f), the Index to the Application does make reference to both Sections 25.220(c) and (e), although these references are outdated, referring to subsections that were eliminated last year and effectively replaced by revised subsection (d). Section 25.220(d) now details the specific requirements to coordinate the use of a non-conforming antenna. More importantly, an applicant that has not made the EIRP spectral density showing under Section 25.218 must satisfy all of the requirements contained in Section 25.220. *See* 47 C.F.R. § 25.220(a)(1) (Section 25.220 applies to applications “other than ESV, VMES and ... feeder link applications in which the proposed earth station operations do not fall within the applicable off-axis EIRP envelope specified in § 25.218”). In the pages referenced by the Index as relating to Section 25.220, however, Panasonic Avionics simply states that it has entered into coordination letters with the space segment providers at the two orbital locations it seeks to use without supplying the required technical information that should have provided the technical underpinning for these coordination letters.⁹

⁹ Row 44 also notes that, while the coordination letter submitted with respect to proposed use of Intelsat’s Galaxy 17 at 91° W.L. is countersigned by SES Americom, as is customary for these agreements, the letter submitted with respect to Telesat’s Telstar 14 at 63° W.L. is not

Specifically, Section 25.220 requires that applicants not fully compliant with Sections 25.209 or 25.218 must submit the complete antenna gain data set forth in Section 25.132(b) of the FCC's Rules. *See* 47 C.F.R. § 25.132(b). Data of the same nature required to demonstrate compliance with Section 25.209 is sought for frequencies at the top, middle and bottom of each allocated frequency band, showing two orthogonal cuts, vertical and horizontal, both co-polarized in the azimuth plane (both +/- 7 degrees and +/- 180 degrees) and the elevation plane (0 to 45 degrees), and cross-polarized in the E- and H-planes (+/- 9 degrees). *Id.* Panasonic Avionics' Application provides only a single set of plots for azimuth and elevation without identifying which of the multiple data sets requested under the rules these plots are intended to represent. *See* Application, Technical Appendix at 16-17 (Section B). Although the patterns are unlabeled as to the polarization sense shown or the portion of the frequency band that is represented, it appears that the figures show antenna gain at 14 GHz with vertical polarization.

The missing data is of particular importance as it is essential for Panasonic Avionics and the neighboring satellite operators with which its operations must be coordinated to understand fully the performance of its antenna at all off-axis angles in all types of situations. Notably, the Application reveals that the MELCO Antenna does not comply with Section 25.209 of the FCC's Rules even in the azimuth plane with vertical polarization. For example, Figure B.1 in Appendix B to the Technical Appendix shows that the Section 25.209 antenna gain mask is exceeded by approximately 8 dB in the vicinity of +/- 3° azimuth. Yet when Boeing sought approval of the MELCO Antenna, the side lobe level in azimuth for horizontal

countersigned by any of the operators within six degrees of that satellite. *See* Application, Attachment B.

polarization was at least 1 dB higher than for vertical polarization¹⁰, suggesting that submission of additional patterns by the Applicant could show even worse performance (the horizontal pol side lobes are also much more asymmetric). In addition, with an elliptical Cassegrain reflector, there will be significant variation in the antenna patterns at different frequencies, and the Applicant has provided plots at only one frequency, which is not clearly identified. In the absence of full data, Panasonic Avionics cannot reasonably claim to have sufficient knowledge of the operating characteristics of its antenna to maintain compliance with the FCC mask or to otherwise avoid harmful interference.

Moreover, insufficient antenna pattern data has been provided to ensure that the MELCO Antenna will be able to comply with the antenna pointing requirements of ITU-R Rec. M.1643. In the Technical Appendix, Panasonic Avionics claims that the pointing error is less than 0.25° , which is inconsistent with the statement in each of the coordination letters that pointing accuracy is maintained to 0.25° 1-sigma. If the overall pointing error is 0.25° 1-sigma, then the number of cases in which the actual pointing error exceeds 0.25° will still be greater than fifteen percent. Accordingly, in neither case can it be determined with sufficient accuracy whether the pointing error is less than 0.2° or greater than 0.5° as is required for mobile antennas operating in the Ku-band.

In sum, under the FCC's Rules, where a proposed antenna is not compliant with the requirements of Section 25.209, a full set of antenna patterns is required in order to obtain

¹⁰ See Application of The Boeing Company, SES-MOD-20030512-00639, Technical Appendix at 9.

consideration under the coordination provisions of Section 25.220.¹¹ Panasonic Avionics has not yet met that threshold.

III. Technical Documents Submitted by Panasonic Avionics in Support of its Proposal Are Inconsistent with the Operating Parameters Requested in the Application Itself.

In addition to the issues identified above, there are multiple contradictions in the supporting materials for the Application with respect to the values of critical operating parameters, particularly EIRP and EIRP spectral density. For example, the link budget provided with the Application as Appendix A is invalid for the parameters actually requested in Form 312. The link budget is premised on a maximum EIRP per carrier of 47.2 dBW, more than 5 dBW higher than the value of 42.1 dBW given for this parameter in the Application itself.¹² The higher value appears to identify the maximum potential EIRP for the MELCO Antenna, rather than the actual operating authority being sought. Because the AMSS Earth Station is not proposed to operate at this high power, the Appendix A link budget carries no weight in evaluating the Application. The ability to close the link to the requested satellite at the higher value has no bearing on the Applicant's ability to close the link under the operational characteristics actually specified in the Application. Accordingly, Panasonic Avionics needs to submit a corrected link budget.

¹¹ Panasonic also has yet to enter into a coordination agreement with NASA, which it recognizes as a prerequisite for operations at the lower conventional Ku-band transmit frequencies in certain geographic areas. See Application at 18 (absent a coordination agreement with NASA, "Panasonic agrees not to operate MELCO AES antennas within the 14.0-14.2 GHz band within line of site of NASA TDRSS facilities").

¹² This same discrepancy infects the radiation hazard analysis provided for the antenna (Technical Appendix, Attachment A), and both of the coordination letters signed by Intelsat and Telesat (Technical Appendix, Attachment B).

In addition, to establish the expected coverage capability of its network with the operating parameters requested, a coverage map is required to illustrate the scope of operation predicted using the correct operating parameters. Accordingly, when it submits its corrected link budget, Panasonic Avionics should also include a hemispheric coverage map detailing the expected coverage at its proposed operating power and maximum EIRP of 42.1 dBW.

The discrepancies between the Form 312 and the link budget are compounded by different values for the same parameters in other Applicant submissions. For example, in the September 14, 2010 Application Amendment, a distinct and inconsistent maximum EIRP value of 41.3 dBW is provided in new Appendix D.¹³ These discrepancies, in turn, raise questions regarding the correct values for other critical operating parameters, such as EIRP spectral density and signal bandwidth. These are the types of internal inconsistencies that generally warrant dismissal of the application as defective under Section 25.112(a)(1) of the FCC's Rules. *See* 47 C.F.R. § 25.112(a)(1).¹⁴

¹³ Overall, there are at least four different figures given for Maximum EIRP in different parts of the materials provided with the Panasonic Avionics Application – 42.1 dBW (Form 312, Schedule B at Line E40), 46.7 dBW (Application Attachment A, Radiation Hazard Analysis at 3), 47.2 dBW (Technical Appendix at 4 (Table 1) and Appendix A (Link Budget) and in both coordination letters (Attachment B); and 41.3 dBW (September 14 Application Amendment, Appendix D).

¹⁴ The rule provides: “An application will be unacceptable for filing and will be returned to the applicant with a brief statement identifying the omissions or discrepancies if ... the application is defective with respect to completeness of answers to questions, informational showings, internal inconsistencies, execution, or other matters of a formal character.” *See also, e.g.*, Letter from Kathryn Medley, Chief, Satellite Engineering Branch, to Raul Magallanes, Counsel to Data Technology Solutions, FCC File No. SES-LIC-20090807-00971, at 1 (dated September 15, 2010) (application dismissed as defective because “[w]e cannot determine the proposed emission power ... due to inconsistencies among the proposed maximum EIRP density per carrier listed in the Schedule B of the application and the average EIRP density calculated from other parameters”).

IV. Panasonic Avionics' Reliance on Prior Approval of the MELCO Antenna in 2003 is Misplaced Given the Different Operating System and Technical Parameters for Its Proposal.

The Applicant also places significant reliance on the claim that the MELCO Antenna which it seeks to operate was previously approved for use by Boeing. *See* Application at 3 & footnotes 5 & 6. In asserting that this fact is relevant to processing its own Application, however, Panasonic ignores the substantial differences in the operating parameters approved for the Boeing network in comparison to those included in its Application. Most significantly, Panasonic Avionics is proposing to operate using Time Division Multiple Access ("TDMA") rather than the Code Division Multiple Access ("CDMA") protocol that Boeing employed. Considering the impact of high-speed motion on signal timing and the lower spreading factor to be used in Panasonic Avionics' TDMA proposal as compared to Boeing's previously-authorized CDMA system, the Application presents a much different set of interference considerations than the previously approved CDMA operation employing the MELCO Antenna. For example, Boeing's Connexion system spread its 1024 kbps signal over 32.4 MHz (a spreading factor of 31) with an EIRP of 44.6 dBW, yielding an EIRP spectral density of ~5.6 dBW/4 kHz, which is well within FCC requirements.¹⁵ The Applicant, however, appears to use a spreading factor that is closer to 16, which for the same data rate and bandwidth would be about 3 dB poorer than Boeing's, *i.e.*, the 8.6 dBW/4kHz spectral density indicated by the Application is 3 dB higher than Boeing's. In short, to really understand Panasonic Avionics' design, the Bureau would need to know the maximum data rate, the spreading factor used and the actual signal bandwidth. For these reasons, the Applicant's reference to the prior licensing of the MELCO antenna under Boeing's proposal is meaningless, as the Bureau should

¹⁵ *See* FCC File No. SES-MOD-20030512-00639.

independently evaluate the operating proposal contained in the current Application rather than relying in any way on past grant of a distinct system proposal involving operation of the MELCO Antenna under very different circumstances.

V. Panasonic Avionics Should Provide the FCC with Data from Its Experimental Testing Demonstrating Interference-Free Operation of Its AMSS Earth Stations.

At several points in the Application, Panasonic Avionics alleges that an additional fact supporting approval of its proposal is its recent operation of the MELCO Antenna pursuant to FCC experimental authority.¹⁶ For example, it states near the beginning of the Application narrative that the antenna has “previously operated without interference on a commercial basis, and has more recently operated without interference during flight trials pursuant to FCC experimental authority.” Application at 3-4. If, as the Applicant contends, the operational results observed during its experimental testing are relevant to the Bureau’s consideration of its Application, then it should submit for the record the data on tracking and pointing performance that it has derived from this testing. Indeed, Row 44 provided such data in connection with its own AMSS license application, upon which Panasonic Avionics now specifically relies as precedent.¹⁷

Row 44 notes that the FCC’s Rules nowhere require flight testing prior either to the filing of an FCC Earth Station application or to FCC action on such an application, but where an applicant has placed significant reliance on claims of successful non-interference operation during flight testing, it is appropriate for it to submit such data as it may have derived from such testing to demonstrate the accuracy of these claims. The data provided should show that

¹⁶ See OET ELS File No. 0339-EX-ST-2009 (Call Sign WD9XQT).

¹⁷ See page 2 and 3-4 & n.6, *supra*.

both tracking rate and tracking acceleration are sufficiently accurate and responsive to changing flight dynamics to ensure cessation of transmissions within 100 milliseconds in the event that pointing error would otherwise exceed 0.5°. *See, e.g.*, 47 C.F.R. § 25.115(h)(4) & § 25.226(b)(1)(iii).

VI. Conclusion

For all of the foregoing reasons, Row 44 petitions the Commission to require that Panasonic Avionics provide the additional data noted herein that is currently missing from the Application. Action on the Application should be deferred until this additional information is provided. Alternatively, the Application should be dismissed or denied in the event that the Applicant does not timely submit the additional information necessary to complete its required showing of compliance with the FCC's Rules.

Respectfully submitted,

ROW 44, INC.

By: 
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October 15, 2010

Its Attorney

TECHNICAL CERTIFICATE

I, James B. Costello, hereby certify that I am the technically qualified person responsible for the preparation of the technical discussion contained in the foregoing "Petition," that I am familiar with Part 25 of the Commission's Rules (47 C.F.R., Part 25), and that I have either prepared or reviewed the technical information and supporting facts contained herein and found them to be complete and accurate to the best of my knowledge and belief.

October 15, 2010

By: James B. Costello
James B. Costello
Vice President - Engineering
Row 44, Inc.

CERTIFICATE OF SERVICE

I, Sharon Krantzman, hereby certify that a true and correct copy of Row's 44, Inc.'s foregoing Petition was sent by first-class, postage prepaid mail this 15th day of October, 2010, to the following:

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Anita Kartic
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Sharon Krantzman

ATTACHMENT 2

Consolidated Reply of Row 44, Inc. to Panasonic Avionics'
Response and Panasonic Avionics' November 15 Amendment,
filed December 1, 2010

BEFORE THE
Federal Communications Commission
WASHINGTON, DC 20554

In re: Application of	)	
Panasonic Avionics Corporation	)	File Nos. SES-LIC-20100805-00992
	)	SES-AMD-20100914-01163
For Authority to Construct and Operate an	)	SES-AMD-20101115-01432
Aeronautical-Mobile Satellite Service Earth	)	
Station Network Operating in the Ku-Band	)	Call Sign E100089

To: Chief, International Bureau

**CONSOLIDATED REPLY OF ROW 44, INC. TO PANASONIC AVIONICS' RESPONSE
AND PANASONIC AVIONICS' NOVEMBER 15 AMENDMENT**

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December 1, 2010

Counsel to Row 44, Inc.

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SUMMARY

Panasonic Avionics' November 15th Response, as incorporated into its pending Application by its contemporaneously-filed Amendment, corrects some of the deficiencies in the initial Application. However, there remain significant questions regarding some aspects of the proposal.

It is a fundamental requirement for processing any Earth station application that the Applicant provide a complete record upon which the Bureau can determine whether grant of the application is consistent with the public interest, convenience and necessity. As amended, the Application fails to provide the threshold information required for the Bureau to make this determination. New applicants for AMSS authority can neither be held to a lesser standard than prior applicants for such authority, nor can they be excused from providing basic technical showings that other Ku-band AMSS providers have submitted, and which other MSS providers must file pursuant to the service rules applicable to Earth Stations on Vessels and Vehicle-Mounted Earth Stations.

First, the Applicant's effort to incorporate by reference the entirety of the 2003 Boeing modification application relating to the MELCO antenna is faulty in multiple respects. Panasonic Avionics fails to specify what specific elements of the Boeing application it is incorporating into its Application, leaving it for FCC staff to guess what portions may be relevant. Moreover, Panasonic Avionics fails to acknowledge the significant differences between its own proposal and the 2003 Boeing license with respect to modulation, multiple access scheme, transmitted signal bandwidths, frequency spreading factors, and skew angle range.

Second, Panasonic Avionics' showing with respect to off-axis EIRP spectral density along the geostationary arc also remains incomplete. In the September amendment, where skew

data was provided, the EIRP spectral density patterns submitted for skew angles greater than zero degrees are symmetrical and appear to be calculated rather than measured. Measured EIRP patterns are needed to confirm performance, particularly in view of the ITU requirement to consider the aging of antenna equipment in this connection. The information submitted by Panasonic Avionics also does not take into account the simultaneous effect of both misorientation and antenna mispointing. Absent this data, which has been submitted by prior AMSS applicants, it is not clear how the Applicant can substantiate its claim that it will reduce the EIRP spectral density in order to remain compliant with the FCC mask.

Third, Panasonic Avionics' has not provided antenna gain information relative to maximum geographic skew conditions. The MELCO antenna is a non-circular Cassegrain dish with an aspect ratio of approximately 3:1, such that the antenna pattern varies significantly with varying skew angle. In particular, the main beam and the first side lobes broaden significantly as the skew angle increases. Accordingly, Panasonic Avionics should be asked to provide complete antenna gain patterns for all skew angles up to the maximum 34 degree skew to demonstrate that there are no skew angles for which parasitic sidelobes occur.

Fourth, Panasonic Avionics' application contains insufficient information concerning the manner in which it maintains pointing accuracy to avoid interference to adjacent satellites. While it states that its pointing error exceeds 0.25° for only a small percentage of the time, this characterization is highly misleading. Assuming a normal distribution, a 1-sigma pointing error of 0.25 degrees means that the antenna will be accurately pointed within ± 0.25 degrees only 68% of the time. Because Panasonic therefore will not comply with the 0.2° antenna pointing limit, it must demonstrate that it will not exceed the off-axis EIRP limits when its antenna is maximally

mispointed, or that it otherwise will cease transmissions. The details of the mechanism for such compliance must be explained.

Fifth, it remains unclear precisely what the occupied transmit bandwidth will be for Panasonic Avionics' operating system. There remain inconsistencies between the service parameters specified in its Form 312 and those for which supporting documentation is provided in the associated exhibits, including the link budget.

Sixth, Panasonic Avionics continues to refuse to provide required information concerning geographic coverage of its service as required by the rules for both coordination of non-compliant Earth station antennas and for other MSS services operating in the Ku-band FSS. Panasonic Avionics must provide this information detailing the geographic scope of its service and it must be consistent with its link budget.

Row 44 continues to urge the International Bureau to withhold further action on the Application until the Applicant amends its proposal to come into compliance with the FCC's Rules and precedents concerning non-compliant Ku-band AMSS Earth station network applications. Absent the submission of another round of clarifying information as outlined in Section III of this Reply, the Application should be dismissed as defective.

BEFORE THE
Federal Communications Commission
WASHINGTON, DC 20554

In re: Application of	)	
	)	
Panasonic Avionics Corporation	)	File Nos. SES-LIC-20100805-00992
	)	SES-AMD-20100914-01163
For Authority to Construct and Operate an	)	SES-AMD-20101115-01432
Aeronautical-Mobile Satellite Service Earth	)	
Station Network Operating in the Ku-Band	)	Call Sign E100089

To: Chief, International Bureau

**CONSOLIDATED REPLY OF ROW 44, INC. TO PANASONIC AVIONICS' RESPONSE
AND PANASONIC AVIONICS' NOVEMBER 15 AMENDMENT**

Row 44, Inc. ("Row 44"), by its attorneys and pursuant to Sections 25.154(e) and 1.45 of the Commission's Rules, hereby replies to two November 15, 2010 filings submitted by Panasonic Avionics Corporation ("Panasonic Avionics" or "Applicant"), a "Response to Petition of Row 44, Inc." ("PAC Response") and an Amendment to its pending application ("PAC Amendment"), which contained the same material as the PAC Response plus a revised FCC Form 312. The PAC Response, as incorporated into the Application by the PAC Amendment, corrects some of the deficiencies in Panasonic Avionics' original Application. However, there remain significant questions regarding some aspects of the proposal. Accordingly, Row 44 continues to urge the International Bureau (the "Bureau") to withhold further action on the Application until the Applicant amends its proposal to come into compliance with the FCC's Rules and precedents concerning non-compliant Ku-band aeronautical mobile-satellite service ("AMSS") Earth station network applications. As filed, and

as amended on September 14, 2010 and November 15, 2010, Panasonic Avionics' Application fails to provide all of the threshold information required for the Bureau to determine whether its AMSS Earth station network is compliant with the FCC Rules and policies and can operate without causing harmful interference to other Ku-band Fixed-Satellite Service ("FSS") users consistent with the public interest. Absent the submission of another round of clarifying information to provide the required showing, the Application should be dismissed as defective.

I. Introduction.

It is a fundamental requirement for processing of any Earth station application that the Applicant provide a complete record upon which the Bureau can determine whether grant of the application is consistent with the public interest, convenience and necessity. *See* 47 U.S.C. § 309(d) & (e). This is true regardless of whether those satellite operators asked to give their assent through coordination have signed letters or affidavits with respect to the proposed operations. *See* 47 C.F.R. § 25.220(d). While successful coordination is a significant factor in support of an applicant's proposal, its completion does not excuse the applicant from meeting the threshold regulatory requirements that apply to it. New applicants for AMSS authority can neither be held to a lesser standard than prior applicants for such authority, as governed by FCC precedents, nor can they be excused from providing basic technical showings that other Ku-band MSS providers must submit under the service rules applicable to Earth Stations on Vessels

(“ESV”) and Vehicle-Mounted Earth Stations (“VMES”).¹ In this connection, the grant of prior authority to Boeing for the same antenna, but with different system characteristics, does not relieve Panasonic Avionics of the requirement to provide full details regarding its own system’s particular operation.

To date, Panasonic Avionics seems disinclined to provide these basic showings. Instead of correcting fully the deficiencies in its initial Application brought to the Bureau’s attention in Row 44’s Petition, Panasonic Avionics appears focused in its Response on further obscuring its proposed antenna’s actual performance, dodging the legitimate questions posed, and mischaracterizing elements of the Row 44 Petition in order to create straw men that it can more easily knock down.² The Bureau should discount these efforts and require Panasonic Avionics to meet the standards that apply to MSS applicants proposing operations in the Ku-band FSS spectrum.

¹ In this regard, the Applicant oddly asserts that “Panasonic’s satellite operators have examined significantly greater technical information than required by this rule in the context of coordinating Panasonic’s AMSS operations,” but does not explain why at least the portion of this clearly relevant information that relates to the rules in question should be withheld from the FCC. PAC Response at 22. Panasonic Avionics notes that much of the material is “proprietary” (*id.*), but information reviewed by system operators in connection with prior AMSS coordinations has previously been filed with the FCC pursuant to appropriate requests for confidential treatment. *See, e.g., Row 44, Inc.*, 24 FCC Rcd 10223, 10228-29 (¶ 13) (IB/OET 2009).

² For example, Panasonic Avionics devotes an entire section of the PAC Response, covering a page and a half, to refuting a claim the Row 44 did not make – i.e., it argues that there is no requirement to “provide tracking and pointing performance flight test data.” PAC Response at 17-19. Row 44 made no such claim, but simply observed that the Applicant’s own emphasis on flight test data – i.e., that it confirmed that its system operated consistently “with domestic and international requirements governing Ku-band AMSS operations” through “interference-free flight test operations of the MELCO antenna over the past several months” – merited inclusion of available data from such testing because the Applicant sought to rely upon it. *See* Petition at 13; Application at 11. If Panasonic Avionics does not provide such data, it obviously cannot rely on this “testing” to support approval of its application.

II. Panasonic Avionics Application Remains Incomplete in Several Key Respects.

A. **Panasonic Avionics' Effort to Incorporate by Reference the Prior Boeing Application for the MELCO Antenna is Faulty.**

In its Application, and repeatedly in the PAC Response, Panasonic Avionics maintains that it is incorporating by reference the whole of the prior Boeing application for use of the MELCO antenna. *See* Application at 7; PAC Response at i, 2-3, 5, 8, 18 and 23. As Row 44 noted in its Petition, there are multiple problems with this approach. *See* Petition at 12-13.

1. **Panasonic Avionics' Application Fails to Comply With FCC Requirements.**

First, Panasonic does not comply with the FCC's explicit requirements for incorporation by reference, set forth in the instructions to Form 312. There, the FCC makes plain that applicants seeking to rely on previously submitted materials must identify the relevant information not only by file number and call sign, but also with respect to the particular exhibits and specific page numbers of the prior application that contain relevant data. *See* FCC Form 312, "Instructions for Completion of FCC Form 312 Application for Satellite Space and Earth Station Authorizations" at 2 (Incorporation by Reference).³ This degree of detail is nowhere provided in Panasonic Avionics' many references to the Boeing application, even though such detail is especially necessary in this instance, where the prior filing was submitted by a different company, and more than seven years has passed since the original submission. Instead, Panasonic Avionics simply refers generally to the almost 75-page Boeing modification

³ The pertinent instruction states: "Reference documents, exhibits, or other lengthy showings already on file with the FCC may be referred to in the application without further submission only if: (a) the information is **current and accurate in all significant respects** and (b) the reference **states specifically where the previously filed information can be found** (i.e., station call sign and application file number, title of proceeding, docket number or legal citations), **including exhibit and page references**. If either of these criterion is not met, the reference documents must accompany the application" (***bold/italicized*** emphasis added; underlined emphasis in original).

application as if the entirety of that filing was germane to its own proposal. See Application at 7; PAC Response at i, 2-3, 5, 8, 18 and 23.

Second, the instructions also require that any cross-referenced information must be “current and accurate in all significant respects” (*id.*, see note 1), a standard which it is far from clear the Applicant could meet given the multiple differences in the two proposals. In general, Panasonic Avionics simply fails to acknowledge the importance of the fact that there are critical differences between its own proposal and the facilities covered by the 2003 Boeing license. By not identifying specifically the relevant portions of the earlier application, Panasonic Avionics is, in effect, seeking to impose a significant burden on FCC staff to sift through the 2003 material and identify the portions that are actually important to consider in the pending proceeding, or simply to garner acceptance of the false premise that the pending proposal varies little from Boeing’s.

2. Panasonic Avionics Ignores the Considerable Differences Between Boeing’s Licensed System and Its Own Proposal.

There are indisputably considerable differences between how Panasonic Avionics proposes to operate its Earth station network and how Boeing previously operated using a system incorporating the MELCO antenna. In particular, the current application includes different technical parameters with respect to Modulation (BPSK and QPSK instead of OQPSK); multi-user access scheme (TDMA v. CDMA); signal transmission bandwidth (160 kHz, 2.56 MHz & 9 MHZ instead of 24.3 MHz and 32.4 MHz); frequency spreading factors; and skew angle.

Also of critical significance is the fact that the Panasonic Avionics system will substitute a different modem – the iDirect modem – for the type used previously by Boeing. This change may have a substantial impact on the manner in which the system handles pointing accuracy, but any explanation of this effect is entirely absent from Panasonic Avionics’ operating description.

In particular, Boeing's 2003 modification application provided an explicit explanation of how its system's pointing accuracy would be achieved through use of received-signal strength indicator ("RSSI") modem data, as augmented by additional accuracy improving methods.⁴ Because Panasonic Avionics is using a different modem in its configuration, a complete explanation, and perhaps field testing and data submission, is required to demonstrate that the new modem maintains pointing error to at least the same limits as the Boeing system. As Boeing explained in its application, the modem has a key function for proper pointing of the antenna and for assuring compliance with the rules. Given the complexity of the Boeing antenna pointing technique (*i.e.*, sequential lobing), Panasonic Avionics' statement that antenna pointing control and tracking performance has not been evaluated during its experimental test flights is cause for concern. See PAC Response at 18. Without careful examination, it cannot be concluded that the non-harmful-interference performance of the OQPSK modulated signal in Boeing's CDMA scheme will be repeated in the case of a BPSK or QPSK signal in a D-TDMA scheme.

Moreover, Boeing's Connexion service operated the MELCO antenna within a skew angle range substantially narrower than the range over which Panasonic proposes to operate. With AMC 4 at 101° W.L. and Telstar 6 at 93° W.L. as its sole points of communication, the maximum skew angle for the Boeing service to cover the continental United States was approximately ± 25 degrees. In contrast, the only points of communication for the proposed Panasonic Avionics service are Galaxy 12 at 91° W.L. and Estrela Do Sul at 63° W.L., requiring a maximum skew angle of at least 34 degrees to cover those portions of the United States that

⁴ See FCC File No. SES-LIC-20001204-02300, Technical Annex at 24.

Panasonic Avionics' system would actually be able to serve.⁵ *See also* Section II.F., below.

Given the large difference in the skew angle range between the two systems, the past success of Boeing's operations in avoiding reported harmful interference to other Ku-band FSS users is not probative of whether Panasonic Avionics can achieve similar results, particularly when the related issues of maximum EIRP spectral density compliance and pointing accuracy are also taken into consideration, as they must be.

B. Panasonic Avionics' Showing with Respect to Off-Axis EIRP Spectral Density along the GSO Arc is Incomplete.

As a general rule, Panasonic Avionics seems fundamentally disinclined to provide a complete picture of its operations, relying instead on shortcuts premised not only on the alleged similarity of its proposal to Boeing's, as discussed in the foregoing section, but also on assertions that the antenna "has essentially equivalent performance" in both polarizations and across frequency bands. *See* PAC Response at 13-17. The Applicant, however, neither explains what it means by "essentially equivalent," nor why it would be unduly burdensome to produce, as previous AMSS applicants have, the full quantity of off-axis EIRP spectral density graphs that the existing Ku-band MSS rules for ESVs and VMESs require. *See* 47 C.F.R. §§ 25.222(a)(1) and 25.226(a)(1). In addition, if Panasonic Avionics does not have such data to provide to the FCC, then it seems dubious that it could confidently make the claim that its system has "essentially equivalent performance" across frequencies and polarizations.

1. A Complete Set of Measured EIRP Spectral Density Patterns Is Required.

The Applicant's assertion that "the interference characteristics of the Panasonic eXConnect system will be equal to or better than the previously authorized Connexion by Boeing

⁵ Due to the additive effect of aircraft banking, among other factors involving flight dynamics, it appears that Panasonic Avionics operation with a 34 degree maximum skew may not provide enough margin to provide service to significant parts of the West Coast of the United States.

system" (PAC Response at 9) is not supported by the EIRP pattern exhibits unless the EIRP spectral density skew patterns provided are based on actual measured data.⁶ In the September amendment, where skew data was provided, the EIRP spectral density patterns submitted for skew angles greater than zero degrees are symmetrical and appear to be calculated rather than measured, while the zero degree skew angle plots do show typical asymmetries and significant differences between vertical and horizontal polarizations. *Compare* September 14th Amendment, FCC File No. SES-AMD-20100914-01163, Appendix C at Figs. 1 & 2 and PAC Response at 15-16, Figs. 1 & 2.⁷ It seems evident from the antenna gain patterns attached to the PAC Amendment (and to the PAC Response) that the EIRP spectral density patterns should also differ significantly between horizontal and vertical polarization. If this indicates, as it would appear, that the EIRP patterns do not represent actual measured patterns, then the data provided thus far to demonstrate compliance with the FCC's EIRP spectral density mask is of little relevance to consideration of the Application. Because the MELCO antenna is a Cassegrain reflector, with an aspect ratio of approximately 3:1, the antenna patterns for a defined skew value cannot simply be interpolated from the zero degree skew patterns provided. The Applicant needs to provide the real world data representing actual antenna performance. This measured data must necessarily be obtainable given Panasonic Avionics' experimental operations.

The ultimate question, of course, is whether the MELCO antenna can maintain acceptable EIRP performance at critical angles of less than seven degrees for both polarization senses,

⁶ From an interference standpoint, the entire power density pattern must be considered, not just the maximum input power density from the modem into the antenna. For this reason, Panasonic Avionics' statement focused solely on maximum input power density is misleading. See PAC Response at 9 n.23.

⁷ There are no EIRP spectral density patterns for skew angles greater than zero degrees in the November 15th PAC Amendment or PAC Response.

consistent with the relevant FCC Ku-band masks, not only when the antenna is perfectly aligned but when maximum antenna pointing error is taken into account.⁸ The information submitted by the Applicant, however, does not take into account the effect of both misorientation (skew) and mispointing error, and therefore fails to answer the question whether the mask is exceeded for any skew angle at any frequency within the allocated frequency band when the maximum pointing error is properly considered. The omission of this required data is inconsistent with both the ESV and VMES rules and with the information required from previous AMSS applicants in connection with their applications. *See* 47 C.F.R. § 25.222(a)(1) and § 25.226(a)(1). In particular, Panasonic should be required to provide measured EIRP spectral density patterns for both orthogonal senses of polarization and all skew angles in the angular range -34 degrees to +34 degrees along the tangent to the orbital arc at the position of the target satellite for an angular range along the orbit and at the bottom, middle and top of each allocated frequency band plotted against the FCC mask. In the absence of a full complement of data, it is not clear how Panasonic Avionics can substantiate its claim that it will adjust its EIRP spectral density in order to remain in compliance with the FCC EIRP spectral density mask. *See also* Section II.D.

2. Measured EIRP Spectral Density Patterns Will Properly Take Into Account the Aging of the Antenna Equipment.

International Telecommunication Union (“ITU”) requirements mandate that the aging of antenna equipment be taken into consideration. *See* ITU-R M.1643, Part A, ¶ 2.2. The MELCO

⁸ Panasonic Avionics also attempts to discount any impact from off-axis transmissions between 90 and 180 degrees, in the direction of the aircraft fuselage. *See* PAC Response at 13 n.32. However, if an AMSS antenna transmits significant power in this angular range, the power would be reflected by the metallic surface of the aircraft, and could potentially be emitted in undesired directions within -90 to 90 degree angular range, causing greater potential for interference.

antennas originally mounted on Lufthansa aircraft have been non-operational since the termination of Boeing's Connexion service four years ago, at the end of 2006. It appears that only a small number of these antennas have been reactivated by Panasonic Avionics under its experimental license. Given the passage of time, absent field testing and measurement, it cannot be certain that any of these antennas, and specifically all those being reactivated for use, are still able to operate within their original specifications. Aging and/or corrosion of bearings, gears, aperture, and/or hollow conductors is very likely to occur during a time period of four years for an operating aircraft. If any of these antenna components has changed its properties there is a potential that key characteristics of the antenna systems are affected. Accordingly, even more so than in the case of newly-installed equipment, the current application requires the submission of antenna patterns that demonstrate actual antenna performance.

C. Panasonic Avionics' Has Not Provided Antenna Gain Information Relative to Maximum Geographic Skew Conditions.

In response to Row 44's Petition, Panasonic Avionics has submitted additional antenna gain patterns pursuant to Section 25.220(b) of the FCC's Rules. *See* 47 C.F.R. § 25.220(b); PAC Response/PAC Amendment at Attachment A. While these patterns provide additional important data, the PAC Amendment is still not complete.

As noted above, the MELCO antenna is a non-circular Cassegrain dish with an aspect ratio of approximately 3:1, such that the antenna pattern varies significantly with the skew angle of the antenna. In particular, the main beam and the first side lobes broaden significantly as the skew angle increases. For finite skew angles, such equipment configurations pose a special problem in that the secondary Cassegrain reflector has its own mechanical holders. There are certain skew angles at which portions of the transmitted signal are reflected by these holders, in turn affecting the overall antenna pattern.

Because the patterns for horizontal and vertical polarization for zero degrees skew differ significantly, as shown in Attachment A to the PAC Response, there is a potential for parasitic sidelobes to occur, especially considering the different antenna gains of the two polarizations. Further, because the antenna is non-circular, the two dimensional antenna pattern does also not possess a rotational symmetry. Therefore the antenna pattern for a defined skew angle along the tangent to the orbital arc at the position of the target satellite might look very different from the patterns for zero degree skew. Accordingly, Panasonic Avionics should be asked to provide complete antenna gain patterns for all skew angles up to the maximum 34 degree skew in order to demonstrate that there are no skew angles for which parasitic sidelobes occur in the angular range of approximately seven degrees to 85 degrees azimuth.⁹

D. Panasonic Avionics' Application Contains Insufficient Information Concerning the Manner in Which It Maintains Pointing Accuracy to Avoid Interference to Adjacent Satellites.

1. Because Panasonic Avionics States That It Will Not Comply with the 0.2° Antenna Pointing Accuracy Requirement, It Must Demonstrate That It Will Not Exceed the Applicable Off-Axis EIRP Limits.

As noted above, although there are no rules specifically applicable to AMSS applicants, prior blanket license applicants have been required to provide the information and certifications that are equivalent to those provided by previous applicants for MMSS (ESV) and LMSS (VMES) Earth station networks. Panasonic Avionics itself has at least provided lip service to meeting these requirements in its initial Application and in the PAC Response. See Application

⁹ Because parasitic sidelobes can have significant power, Panasonic Avionics may need to consider the potential impact of such potentially interfering patterns on adjacent satellite operators outside the $\pm 6^\circ$ coordination zone specified under § 25.220.

at Regulatory Compliance Index and p. 14.¹⁰ Nonetheless, the proffered showings fall well short of satisfying the requirements.

Sections 25.222 and 25.226 both include a requirement that applicants, in addition to providing the EIRP spectral density compliance showing discussed under Section II.B., above, shall identify the “maximum antenna pointing error” for the subject antenna and “demonstrate that the maximum antenna pointing error can be achieved without exceeding the off-axis EIRP spectral-density limits” when the applicant is unable to maintain pointing accuracy to within 0.2°. 47 C.F.R. §§ 25.222(b)(1)(iv)(A) and 25.226(b)(1)(iv)(A). With respect to this requirement, Panasonic Avionics asserts that it “identifies the pointing accuracy of the MELCO antenna as 0.25° 1-sigma.” PAC Response at 19. But as the Applicant’s subsequent explanation implies, albeit in less than accurate fashion, 0.25° 1-sigma does not identify a maximum antenna pointing error, but is instead a statistical measure of confidence that the actual value will not deviate from the mean by more than the stated value (i.e., one standard deviation from the

¹⁰ Although the Applicant cited both Sections 25.222 and 25.226, which govern ESV and VMES applicants, it principally referred to essentially the same EIRP spectral density provisions that appear in 25.218 of the FCC’s Rules. See Application at 15-16. Nonetheless, in its October 18, 2010 Letter, the Applicant disclaimed reliance on any of these rules, but asserted that it cited these regulations “in the context of providing additional technical information not required by Section 25.220 to further demonstrate that Panasonic’s proposed AMSS operations are compliant with the Commission’s two-degree spacing policies and will not cause harmful interference ...” See Letter from Carlos M. Nalda and Joshua T. Guyan, Counsel to Panasonic Avionics, to Marlene H. Dortch, Secretary, FCC, at 2 (dated October 18, 2010). It would appear that the Applicant is under the mistaken impression that it can cite to these provisions if they are believed to be somehow helpful to its cause, but otherwise to ignore them as irrelevant. Because it would make no sense as a matter of both policy and procedure to hold AMSS applicants to a lesser standard than ESV and VMES applicants, which have almost identical rules, these regulations must be considered relevant to Panasonic Avionics’ Application.

mean).¹¹ Specifically, Panasonic Avionics states that “pointing error exceeds 0.25° for a small percentage of the time based on statistical characterization of the error.” PAC Response at 19. This characterization that pointing error will only exceed 0.25° “a small percentage of the time” is highly misleading.

Assuming a normal distribution, a 1-sigma pointing error of 0.25 degrees is a statement that the antenna will be accurately pointed within ± 0.25 degrees approximately 68% of the time.¹² This indicates that almost one-third of the time, the pointing error will be greater than 0.25 degrees. This is not a “small percentage of the time” by any reasonable definition of that term. Moreover, one can predict based on the information the Applicant provides that approximately five percent of the time (1 in 20 pointing actions), the pointing error will be greater than 0.5 degrees, the point at which automatic shutdown would be required under one provision of the ESV/VMES Rules. Based on standard statistical distributions, a 1-sigma error of 0.25 degrees indicates that the actual maximum antenna pointing error would be

¹¹ At any rate, since the stated mispoint of 0.25° exceeds the 0.2° pointing accuracy standard, Panasonic makes plain that it cannot satisfy the standards of Sections 25.222(a)(1)(ii)(A) or 25.226(a)(1)(ii)(A) of the Commission’s Rules. See 47 C.F.R. §§ 25.222(a)(1)(ii)(A) and 25.226(a)(1)(ii)(A). Thus, Panasonic is required to identify its maximum antenna pointing error and demonstrate how it will maintain EIRP spectral density within the stated limits when this maximum pointing error occurs. See 47 C.F.R. §§ 25.222(a)(1)(ii)(B) and 25.226(a)(1)(ii)(B).

¹² In order to have a 99.7% confidence level of events being within the stated value, the value must be 3-sigma.

approximately 0.75 degrees. Panasonic Avionics has not provided data regarding off-axis EIRP levels with this maximal degree of mispoint, as is required.¹³

2. The Applicant Must Describe How It Will Control Off-Axis EIRP To Prevent Harmful Interference When Antenna Mispoint Exceeds 0.2° Or When Harmful Interference Would Otherwise Be Caused.

The applicable rules also require that the Applicant demonstrate that the transmitter “can detect if the transmitter exceeds the declared maximum antenna pointing error and can cease transmission within 100 milliseconds” if the maximum error at which the system can maintain compliance is exceeded, and further demonstrate that transmissions will remain inhibited until the mispointing condition is rectified and pointing accuracy is restored to a value “less than or equal to the declared maximum antenna pointing error.” 47 C.F.R. §§ 25.222(b)(1)(iv)(B) and 25.226(b)(1)(iv)(B). Panasonic Avionics does not even acknowledge this requirement, let alone provide an explanation of how it can be met.

Indeed, the Applicant is not entirely consistent in identifying which compliance approach its system will employ, stating in its initial application that “[p]ointing error will be monitored and emissions will be inhibited if the pointing error ever exceeds 0.5 deg” (Application at 4), but stating in the PAC Response that “[w]hen operating in horizontal polarization,” it would “reduce its maximum EIRP spectral density when necessary to remain compliant with the mask.” PAC Response at 14. If Panasonic claims that it will be able to reduce its maximum EIRP spectral density when necessary to remain compliant with the mask, instead of simply ceasing

¹³ See, e.g., Letter from Scott A. Kotler, Chief, Systems Analysis Branch, FCC, to David S. Keir, Counsel to Row 44, Inc., FCC File No. SES-LIC-20080508-00570, at 2 (dated August 7, 2008)(requiring submission of EIRP spectral density graphs depicting “when the antenna is maximally misoriented in azimuth, elevation, and polarization ... under two potential situations (1) the antenna has zero mispointing with the target satellite and (2) the antenna is maximally mispointed from the target satellite before the antenna receives a cessation of emission command”).

transmission, then it must demonstrate definitively how it will determine when the mask is exceeded, and how it will ensure that the EIRP spectral density is reduced in these instances. Alternatively, it must show that it can cease transmission within 100 milliseconds, as required when the EIRP spectral density limits would be exceeded due to mispointing.¹⁴ Given the significant role of the Boeing modem in achieving compliance with these requirements¹⁵, Panasonic Avionics should explain whether and how its iDirect modem is used to achieve compliance and whether its performance in this regard differs from the modem used by Boeing.

E. It Remains Unclear Precisely What the Occupied Transmit Bandwidth Will Be for Panasonic Avionics' Operating System.

Despite Panasonic Avionics' submission of a corrected link budget, there remain inconsistencies between the service parameters specified in its Form 312 and those for which supporting documentation is provided in the associated exhibits, including the link budget. For example, the revised link budget continues to specify a "Noise bandwidth" of 1.67 MHz for the return link. See PAC Response at Attachment C. However, the Form 312 does not include an emission designator for this bandwidth, instead specifying 160 kHz, 2.56 MHz and 9 MHz. See Application, Form 312, Schedule B at Line E47. The Application does not even include the transmit emission designator 1M67G7D, which would appear to be the value equivalent to the bandwidth specified in both the original and the revised link budgets. Accordingly, it is not clear whether the "Noise bandwidth" set forth in the link budget is the occupied bandwidth, the

¹⁴ From the receive patterns Panasonic Avionics has now submitted, it can be inferred that a pointing error of 0.5 degrees would reduce the received signal strength by a very small amount of about 0.1 dB. Taking into account the typical signal fluctuation from the satellite, the atmosphere, and aircraft vibrations of about 0.5 dB, a reduction in the received signal strength of this magnitude attributable to mispointing would not be significant enough to permit detection of the level of mispointing that would ordinarily require cessation of emissions.

¹⁵ See page 6 & footnote 4, above.

necessary bandwidth, or the effective signal bandwidth. Based on the link budget calculation, however, it appears to state the necessary bandwidth. *See also* Application, Technical Appendix at 11 (“... the terminal is operating with a 1.66 MHz carrier bandwidth”).¹⁶

The Commission’s Rules provide that the emission designator defines the "necessary bandwidth" for the identified transmission. *See* 47 C.F.R. 2.201(a). Using the bandwidth value and the maximum EIRP spectral density from the necessary bandwidth, the maximum total EIRP per carrier can be calculated. If the maximum EIRP per carrier is reduced, as Panasonic Avionics has done in its Amendment, and the emission designator remains the same, the EIRP spectral density is reduced by the same amount that the total EIRP is reduced. Thus the 8.6 dBW/4kHz, the 41.3 dBW EIRP, and the 9 MHz emission designator provided in Form 312 are inconsistent both with each other and with the parameters in the link budget. In particular, the 0.8 dB reduction in EIRP from 42.1dB to 41.3 dB that is shown in Form 312, Schedule B is not reflected in the link budget and would actually reduce the 8.6 dBW/4kHz EIRP spectral density originally implied, and still specified in Form, 312.¹⁷

If the emission designator cannot be calculated according to Sections 2.202(c)(1), (2), or (3), then § 2.202(c)(4) applies. *See* 47 C.F.R. 2.202(c). That is, if "the transmit power is not uniform across the emission designator bandwidth, but rolls off at the edges of the bandwidth" (see PAC Response at 10), Panasonic must then provide actual measurements to verify the transmit signal bandwidth. *See* 47 C.F.R. § 2.202(c)(4). From these measurements the effective signal bandwidth can be determined by taking into account the provisions of Section 25.202(f)(1)

¹⁶ The PAC Response indicates that the effective signal bandwidth is 0.8 dB smaller than the necessary bandwidth, which would appear to reduce its link margin from 1 dB to 0.2 dB.

¹⁷ In addition, the 0.8 dB reduction in EIRP should change the value for Maximum EIRP density toward the horizon reflected at Line E60 of Form 312, Schedule B.

of the Rules. *See* 47 C.F.R. 2.202(f)(1). Together with the maximum EIRP spectral density, the maximum EIRP per carrier can then be calculated. This is the type of information that the Commission has previously requested from applicants in order to clarify the nature of proposed operations.¹⁸

F. Panasonic Avionics Continues to Refuse to Provide Required Information Concerning Geographic Coverage of its Service.

In its Petition, Row 44 noted that Panasonic Avionics had failed to provide a complete description of its geographic coverage area (*e.g.*, a service area coverage map) illustrating the expected extent of its network's coverage capability. *See* Petition at 11. In response, Panasonic Avionics simply asserted that Row 44's observation was "erroneous" and "without foundation." PAC Response at 11. This response, however, ignores two separate sections of the FCC's Rules that squarely contradict this contention. Generally, Section 25.220 of the Commission's Rules, upon which Panasonic Avionics explicitly relies, provides that all Earth station applicants must include a "[d]etailed description of the service to be provided." 47 C.F.R. § 25.220(g)(1). More specifically, both the ESV and VMES rules require Ku-band MSS applicants to include a specific exhibit "describing the geographic area(s) in which the [service] will operate." 47 C.F.R. § 25.222(b)(3) and 47 C.F.R. § 25.226(b)(4). Panasonic Avionics must provide this information detailing the geographic scope of its service.

III. In Light of the Omissions Outlined Above, The Commission Should Request Additional Information from Panasonic Avionics.

To summarize the more detailed points made in the foregoing section, Row 44 provides a list below of the discrete questions that remain unanswered in or key items of information that

¹⁸ *See, e.g.*, Letter from Scott A. Kotler, Chief, Systems Analysis Branch, FCC, to David S. Keir, Counsel to Row 44, Inc., FCC File No. SES-LIC-20080508-00570, at 3 (dated August 25, 2008) (requesting a spectrum analyzer plot of a typical transmitted signal).

remain missing from Panasonic Avionics' amended Application, and which should be answered or provided, as applicable, prior to further processing of the Application.

A. Cross-References to Boeing Application

1. What specific elements of the 2003 Boeing application does PA seek to incorporate by reference, cited by Exhibit and/or page number, as applicable, as required by FCC Rules?

B. Off-Axis EIRP Spectral Density

1. Do the Off-Axis EIRP Spectral Density Patterns reflect actual measured values?
2. What impact does inclusion of misorientation and mispointing data have on compliance with the FCC EIRP spectral density mask?
3. What are the measured EIRP spectral density patterns for both vertical and horizontal polarization and for all skew angles from minimum to maximum along the orbital arc at the bottom, middle and top of the transmit frequency band as compared to the EIRP spectral density mask?
4. How will PA know when it must reduce EIRP spectral density in order to remain in compliance with the FCC mask?
5. Alternatively, what means will the Applicant employ to ensure that transmissions are ceased in the event that the EIRP spectral density mask would be exceeded?

C. Skew Angle

1. Provide antenna gain patterns showing the degree to which 25.209 mask is exceeded at the maximum skew angle.
2. Are there skew angles for which parasitic sidelobes occur and exceed the FCC mask in the angular range of approximately 7° to 85° azimuth?

D. Pointing Accuracy

1. What is the maximum antenna pointing error for the MELCO antenna, as employed in Panasonic Avionics' proposed operating system?
2. How does the iDirect modem help maintain pointing accuracy and/or monitor EIRP spectral density compliance?
3. Does the pointing accuracy performance of the iDirect modem differ from the performance of the Boeing modem?

E. Occupied Transmit Bandwidth

1. What portion of the bandwidth is actually occupied by the system transmit signal?
2. What are the spectral characteristics of the Applicant's transmitted waveform?

F. Geographic Coverage

1. Provide an exhibit describing the geographic areas in which the service will operate.
2. Provide a correct link budget that matches the corrected data in Form 312, Schedule B.

IV. Panasonic Avionics Procedural Arguments Are Misplaced and Fundamentally Inaccurate.

Following the filing of the PAC Response and the PAC Amendment on November 15, 2010, Row 44 filed a letter noting the different reply/comment deadlines applicable to these filings under the FCC's Rules, and stating that it planned to file a consolidated reply today, December 1, 2010, which it calculated as the later of the two applicable deadlines.¹⁹ In response to the November 19th Letter, Panasonic Avionics filed responsive correspondence arguing, (1) that it was questionable whether Row 44 had a right to respond to either filing, and (2) that if such rights applied in the case of both the PAC Response and the PAC Amendment, the response deadline would be the same in each case – November 26, 2010, the day after Thanksgiving.²⁰ The first contention is frivolous, and the second is inaccurate.

Panasonic cannot legitimately contend that Row 44 is not a party to this application proceeding. Row 44 established such status on October 15, 2010, when it filed its Petition. *See* 47 C.F.R. §1.1202(d)(1). Under separate provisions of the FCC's Rules, Row 44 has a right to respond when Panasonic Avionics initiates a filing with the Commission, or a right of reply when Panasonic Avionics files any opposition or response to a Row 44 filing. *See* 47 C.F.R. §

¹⁹ *See* Letter from David S. Keir, Counsel to Row 44, to Marlene H. Dortch, Secretary, FCC, (dated November 19, 2010) ("November 19th Letter").

²⁰ *See* Letter from Carlos M. Nalda, Counsel to Panasonic Avionics, to Marlene H. Dortch, Secretary, FCC (dated November 22, 2010) ("November 22nd Letter").

1.45(b) & (c).²¹ The issue addressed in Row 44's November 19th Letter was that because Panasonic Avionics filed both a response to Row 44's Petition and submitted a new amendment to the original application, there were different deadlines applicable to two almost identical filings.

While Row 44 and Panasonic Avionic agree on the reply deadline with respect to the PAC Response (November 26, 2010), notwithstanding the dispute over whether such filing is permitted, they disagree on the deadline for responding to the PAC Amendment.²² Panasonic Avionics erroneously maintains that it was not required to serve this filing on Row 44, and that therefore, the filing deadline would have been ten days from the November 15th filing date – defaulting to November 26th due to the Thanksgiving holiday. See November 22nd Letter at 2. This is not correct. As outlined above, Row 44 is a party to the Application, and therefore any communication regarding the application, which necessarily includes an amendment, should have been served on Row 44 under the Commission's Rules. See 47 C.F.R. § 1.1202(b)(1) and 1.1208.²³ The Applicant states quite plainly in its November 22nd Letter that it failed to comply

²¹ See also 47 C.F.R. § 1.115(a)(4) (“Applications for earth station authorizations must be filed in accordance with the pleading limitations, periods and other applicable provisions of §§1.41 through 1.52 of this chapter”).

²² While Panasonic Avionics asserts that Row 44 offered no “rationale or any public interest basis whatsoever” for its alternative request for a brief extension of time, if required, it goes without saying that a filing due on the day after Thanksgiving would impose on the filer a hardship unmatched by virtually any other date. Filings of a technical nature involving complex Earth station networks require coordination with multiple parties, including counsel, engineering and business personnel, consultants and others. To require such coordination among all these individuals in the midst of the busiest travel day of the year (Wed.), a secular day of family gathering celebrated by all Americans regardless of faith (Thurs.), and the ensuing holiday weekend would be too much even for the most churlish misanthrope to ask.

²³ The application is a restricted proceeding to which Row 44 has become a party. Any communication from the applicant to the FCC that is not served upon Row 44 is therefore a prohibited *ex parte* presentation under Section 1.1202(b)(1). Accordingly, service is required to avoid violation of the FCC's Rules.

with this requirement. *See* November 22nd Letter at 2 (“Panasonic did not serve the application upon Row 44 or any other party”). Technically, service upon Row still has not been properly effected, and thus this response is not yet due, even today.²⁴ Nonetheless, Row 44 was aware of the PAC Amendment at the time it filed its November 19th Letter, and it committed therein to filing its consolidated response today, December 1st.

²⁴ Row 44’s counsel received a copy of the PAC Amendment by email on November 17, 2010. However, the FCC’s Rules provide that “Documents that are required to be served must be served in paper form, even if documents are filed in electronic form with the Commission....” 47 C.F.R. § 1.47(d). Even if email delivery constituted proper service, the application of the ten-day response period plus the three-day addition for mail service would yield a filing deadline of today, December 1, 2010. *See* 47 C.F.R. § 1.45(b) and 1.4(h).

V. Conclusion.

For all of the foregoing reasons, Row 44 continues to urge the Commission to require that Panasonic Avionics provide the remaining data, as identified herein, that is needed to complete the showing that is required of a Ku-band AMSS applicant. Action on the Application should continue to be deferred until this additional information is provided. In the event that the Applicant does not timely submit the additional information necessary to complete its required showing of compliance with the FCC's Rules, the Application would be subject to dismissal without prejudice.

Respectfully submitted,

ROW 44, INC.

By: _____

David S. Keir

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December 1, 2010

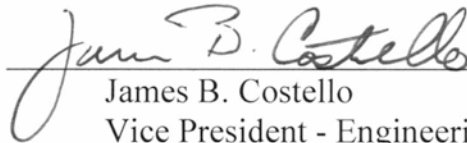
Its Attorney

TECHNICAL CERTIFICATE

I, James B. Costello, hereby certify that I am the technically qualified person responsible for the preparation of the technical discussion contained in the foregoing "Consolidated Reply of Row 44, Inc. to Panasonic Avionics' Response and Panasonic Avionics' November 15 Amendment," that I am familiar with Part 25 of the Commission's Rules (47 C.F.R., Part 25), and that I have either prepared or reviewed the technical information and supporting facts contained herein and found them to be complete and accurate to the best of my knowledge and belief.

December 1, 2010

By:

A handwritten signature in cursive script, reading "James B. Costello", written over a horizontal line.

James B. Costello
Vice President - Engineering
Row 44, Inc.

CERTIFICATE OF SERVICE

I, David S. Keir, hereby certify that a true and correct copy of Row's 44, Inc.'s foregoing "Consolidated Reply of Row 44, Inc. to Panasonic Avionics' Response and Panasonic Avionics' November 15 Amendment" was sent by first-class, postage prepaid mail this 1st day of December, 2010, to the following:

Carlos M. Nalda, Esquire
Joshua T. Guyan, Esquire
Squire Sanders & Dempsey
1201 Pennsylvania Avenue, NW
Washington, DC 20044



David S. Keir

ATTACHMENT 3

Press Releases of Panasonic Avionics Corp. and Lufthansa,
issued November 30, 2010

Panasonic Avionics' Global Communications Suite Provides Broadband Connectivity on Lufthansa Trans-Atlantic Flights

Lake Forest, CA

LAKE FOREST, Calif. – 30 Nov. 2010 – Panasonic Avionics Corporation (Panasonic), the world leader in state-of-the-art in-flight entertainment and communication (IFEC) systems, today announced that its Global Communications Suite enables Lufthansa's newly re-launched FlyNet broadband internet service. Using the Global Communications Suite's eXConnect system, FlyNet will provide passengers with in-flight broadband connectivity on Lufthansa's commercial intercontinental flights, beginning December 1st on North-Atlantic routes. The service was demonstrated earlier today on an international flight traveling from Frankfurt, Germany to New York, U.S.A.

"We are very excited to announce that our Global Communications Suite is operational, initially on transatlantic flights offered by Lufthansa, our launch customer," said Paul Margis, Chief Executive Officer for Panasonic Avionics Corporation. "We are honored to be part of Lufthansa's FlyNet re-launch, and we believe that our Global Communications Suite will play a key role in helping them deliver their industry-leading in-flight broadband internet service."

"Broadband Internet on board our long-haul flights is an innovation in the interests of our customers," said Thierry Antinori, a member of the Lufthansa German Airlines Board. "With Panasonic as our technology partner, we can now again offer passengers a fast, state-of-the-art, broadband service, just like they would expect in a hotel or in a public hotspot – but at 30,000 feet."

Panasonic's Global Communications Suite is comprised of three main product offerings – eXConnect, eXPhone, and eXTV. eXConnect provides two-way broadband connectivity to an aircraft. It supports a wide range of passenger and crew applications, including Internet access offered in cooperation with Deutsche Telekom, voice, data, and the ability to monitor and transmit airline operational data in real time. The company's eXPhone product, offered in collaboration with AeroMobile's GSM mobile phone service, allows passengers to use their mobile phones, smart phones and BlackBerry® devices onboard to make voice calls if selected by the airline, send SMS text messages or use GPRS services such as email and Internet access. Panasonic's eXTV television network delivers high-quality, live television to passengers during their flight. It provides live, uninterrupted programming to aircraft flying all over the world, even over oceans. The service offers several core channels as well as regional channels.

With eXConnect, FlyNet lets passengers use their own electronic and communication devices, such as laptops, smart phones and PDAs, to wirelessly connect to the internet. Passengers will be able to browse the internet; access social media sites; explore the free Lufthansa FlyNet portal for the latest news on politics, economics, sports and entertainment; connect to VPNs to send/receive emails and attachments; and instantly share their location via Facebook and Twitter.

Download Press Release



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About Panasonic Avionics Corporation

Panasonic Avionics Corporation is the world's leading supplier of in-flight entertainment and communication systems. The company's best-in-class solutions, supported by professional maintenance services, fully integrate with the cabin enabling airlines to deliver the ultimate travel experiences with a rich variety of entertainment choices, resulting in improved quality communication systems and solutions, reduced time-to-market and lower overall costs.

Established in 1979, Panasonic Avionics Corporation, a U.S. corporation, is a subsidiary of Panasonic Corporation of North America, the principal North American subsidiary of Panasonic Corporation (NYSE: PC). Headquartered in Lake Forest, California with over 3,100 employees and operations in 80 locations worldwide, it serves over 200 customers worldwide and provides IFEC systems on over 3,700 aircraft. For additional information, please visit www.panasonic.aero.

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Lufthansa relaunches FlyNet Internet onboard service

– New York (JFK), Detroit and Atlanta are launch markets

– Free access through January 2011

East Meadow, NY, November 30, 2010 – Lufthansa announced today that **effective December 1, 2010**, passengers onboard select intercontinental flights can once again enjoy the convenience of Internet access with the relaunch of [FlyNet](#). Working with its long-standing partners **Panasonic Avionics Corporation** and Deutsche Telekom, Lufthansa remains the only airline offering broadband Internet access on overseas routes. **The service will initially be available on specific flights from Frankfurt to New York (JFK), Detroit and Atlanta;** by the end of 2011 FlyNet will be available on virtually all of Lufthansa's intercontinental aircraft.

"Inflight Internet onboard our long-haul flights is an innovation in the interests of our customers," says Thierry Antinori, a member of the Lufthansa German Airlines Board. "FlyNet complements the consistent communications service offering for Lufthansa customers at all points of the travel chain. It provides them with completely new and unique opportunities to spend their time onboard or while waiting for connecting flights."

FlyNet's high-speed, high-performance capabilities can be accessed throughout the aircraft by passengers with a WLAN-enabled device, such as a laptop, smartphone, tablet PC or mp3 player. Business travelers can access their company's Virtual Private Network (VPN) and the broad bandwidth ensures that emails – including those with large file attachments – can be sent and received in real time. In 2011, inflight data communication should also be possible using the mobile phone standards GSM and GPRS. With that, in addition to the wireless Internet (WLAN) service, Lufthansa customers will be able to use their mobile phones to send and receive SMS text messages and transfer data with PDAs and smart phone devices such as the iPhone, PDAs and BlackBerry.

FlyNet is incredibly easy to use. Upon launching an Internet browser, passengers can automatically access the exclusive, free Lufthansa FlyNet portal, where they will find constantly updated news about economics, politics, sports and entertainment – or they can access the paid Internet service provided by Deutsche Telekom. Service provider information detailing the various billing options is available, including payment via credit card, via integrated roaming partners or by redeeming Miles & More award miles. The

price for one hour of online access is 10.95 euros or 3,500 miles, while the 24-hour flat rate is 19.95 euros, or 7,000 miles. Under the flat rate agreement, passengers can access the Internet on all Lufthansa connecting flights equipped with a hotspot during the period of validity, as well as after the flight in Lufthansa lounges.

As a result of the introductory FlyNet offer, inflight Internet access will be available for free on FlyNet-equipped aircraft until January 31, 2011.

Lufthansa operated the world's first scheduled commercial flight offering broadband Internet access with FlyNet's original introduction on January 15, 2003. From May 2004 until the end of 2006, when Lufthansa's then partner Connexion by Boeing discontinued the service, FlyNet enjoyed increasing popularity, with about 30,000 users per month. With 69 of its long-range aircraft equipped with FlyNet, Lufthansa had the largest Internet-enabled long-haul fleet in the world.

About Lufthansa

One of the world's largest and most prestigious airlines, Lufthansa currently flies to 197 destinations in 85 countries, with hubs in Frankfurt, Munich, and with its recent acquisition of Austrian Airlines and SWISS – Vienna and Zurich. From its 22 North American gateways, Lufthansa serves over 400 destinations in more than 100 countries. An industry innovator, the airline has long been committed to environmental care and sustainability, operating the most technically-advanced and fuel-efficient fleet in the world. Its long-haul fleet to and from North America includes the Boeing 747-400, as well as the Airbus A340-600, A340-300 and A330-300. Currently, Lufthansa has 146 aircraft worth about \$19 billion on order. It will be the largest European operator of the A380 and is also the launch customer for the new Boeing 747-8, the industries' two most fuel-efficient passenger aircraft. Known for its premium services, Lufthansa is currently investing \$190 million in building new or upgraded lounge facilities across its worldwide network. In January 2009, it opened a three-story, U.S. flagship lounge at JFK Airport. In fall 2010, Lufthansa re-launched its broadband wireless Internet service onboard— FlyNet. For more information or reservations, visit www.lufthansa.com.

Photographic images of Lufthansa FlyNet can be downloaded from [the Lufthansa Mediabase](http://mediabase.lufthansa.com/mediabase/Access.do?lnk=1&cid=7036&chk=54417cfb96fcc6b3182b14c19ac5aa85).
(<http://mediabase.lufthansa.com/mediabase/Access.do?lnk=1&cid=7036&chk=54417cfb96fcc6b3182b14c19ac5aa85>)

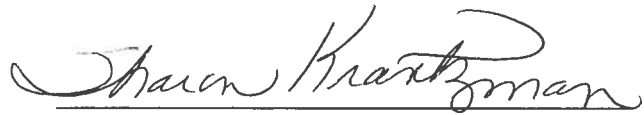
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CERTIFICATE OF SERVICE

I, Sharon Krantzman, hereby certify that a true and correct copy of the foregoing "Petition of Row 44, Inc." was sent by first-class mail, postage prepaid this 13th day of January, 2011, to the following:

Carlos M. Nalda, Esquire
Joshua T. Guyan, Esquire
Squire Sanders & Dempsey
1201 Pennsylvania Avenue, NW
Washington, DC 20044


Sharon Krantzman