

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

In the Matter of)	
)	
AC BidCo LLC)	File No. SES-MOD-_____
)	Call Sign E120106
Modification to Blanket License for)	
Operation of Ku-Band Transmit/Receive)	
Earth Stations Aboard Aircraft)	

MODIFICATION

AC BidCo LLC (“AC BidCo”) hereby requests a modification of its blanket license to operate Ku-band transmit/receive earth stations aboard aircraft (“ESAAs”) on domestic and international flights.¹ AC BidCo requests that the Commission modify the AC BidCo ESAA License to include additional spacecraft as authorized points of communication. Specifically, AC BidCo requests that the Commission permit ESAA operations with:

- (1) the U.S.-licensed Intelsat 37e satellite at 18° W.L.;
- (2) the U.S.-licensed Horizons 3e satellite at 169° E.L.
- (3) the Brazilian-licensed SES-14 satellite at 47.5° W.L.;
- (4) the Russian-licensed ABS-3A satellite at 3° W.L.; and
- (5) the Japan-licensed JCSAT-110A satellite at 110° E.L.

A narrative description of the relevant changes is provided here, and AC BidCo is attaching an FCC Form 312 that identifies the revised points of communication. Supplemental technical information and copies of relevant coordination letters are attached as well. Pursuant to Section 25.117(c) of the Commission’s rules, AC BidCo is providing herein information that

¹ See Call Sign E120106, File No. SES-MFS-20171220-01351, granted Mar. 9, 2018 (the “AC BidCo ESAA License”).

is changing as a result of the modification. AC BidCo certifies that the remaining information provided in support of the AC BidCo ESAA License has not changed.²

I. SATELLITES USED BY THE AC BIDCO ESAA NETWORK

AC BidCo requests modification of its license to specify the satellites described below as points of communication for the AC BidCo ESAA network pursuant to the provisions of Section 25.227(a)(2) and (b)(2). Each of the requested satellites is eligible for authority for use with the AC BidCo ESAA network. Updated tables listing the satellites to be used and the associated ground stations are provided in Annex 2 hereto. AC BidCo seeks authority for all the requested additional satellites except JCSAT-110A to communicate with both the AeroSat antennas designated as AES1 on the AC BidCo ESAA License and the ThinKom model 2Ku antennas designated as AES2 on the license. For JCSAT-110A, AC BidCo is only seeking authority for the ThinKom model AES2 terminals.

Intelsat 37e: Intelsat 37e is a U.S.-licensed satellite positioned at the 18° W.L. orbital location,³ and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use Intelsat 37e capacity for ESAA operations on a primary basis in the 14-14.5 GHz uplink spectrum and on an unprotected basis in the 10.95-11.7 GHz downlink spectrum, consistent with the Intelsat 37e License and with the Commission's orders in the ESAA proceeding.⁴ AC BidCo also seeks authority to use

² For the Commission's convenience, AC BidCo has attached as Annex 1 hereto a table listing the information required pursuant to Section 25.227 of the Commission's rules and providing a cross-reference to the necessary information.

³ *Intelsat License LLC*, Call Sign S2972, File No. SAT-LOA-20160915-00089, granted June 8, 2017, corrected June 13, 2017 ("Intelsat 37e License").

⁴ *Revisions to Parts 2 and 25 of the Commission's Rules to Govern the Use of Earth Stations Aboard Aircraft Communicating with Fixed-Satellite Service Geostationary-Orbit Space Stations Operating in the 10.95-11.2 GHz, 11.45-11.7 GHz, 11.7-12.2 GHz and 14-14.5 GHz Frequency*

Intelsat 37e capacity for ESAA operations on a nonconforming basis in the 12.5-12.75 GHz downlink spectrum.

AC BidCo has received Special Temporary Authority (“STA”) permitting a limited number of ESAA terminals to communicate with Intelsat 37e, and service has commenced using the satellite pursuant to that STA.⁵ Intelsat 37e will continue to provide coverage of Europe. A letter confirming that operation of the AC BidCo ESAA terminals is consistent with coordination agreements with satellites operated within six degrees of Intelsat 37e at 18° W.L. was submitted with the AC BidCo STA request for Intelsat 37e and is included in Annex 3 for the Commission’s convenience.

Horizons 3e: Horizons 3e is a U.S.-licensed satellite positioned at the 169° E.L. orbital location,⁶ and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use Horizons 3e capacity for ESAA operations on a primary basis in the 14-14.5 GHz uplink spectrum and on an unprotected basis in the 10.95-11.7 GHz downlink spectrum, consistent with the Horizons 3e License and with the ESAA Decisions. AC BidCo also seeks authority to use Horizons 3e capacity for ESAA operations on a nonconforming basis in the 12.2-12.75 GHz downlink spectrum.

Bands, Notice of Proposed Rulemaking and Report and Order, IB Docket Nos. 12-376 & 05-20, 27 FCC Rcd 16510 (2012) (“ESAA Order”); Second Report and Order and Order on Reconsideration, IB Docket No. 12-376, 29 FCC Rcd 4226 (2014) (“ESAA Second Order,” and with the ESAA Order, the “ESAA Decisions”).

⁵ *AC BidCo LLC*, File No. SES-STA-20180525-00823, granted June 11, 2018.

⁶ *Horizons-3 License LLC*, Call Sign S2947, File No. SAT-MOD-20170622-00093, granted Apr. 25, 2018, (“Horizons 3e License”).

Horizons 3e will provide coverage of the Asia Pacific region. A letter confirming that operation of the AC BidCo ESAA terminals is consistent with coordination agreements with satellites operated within six degrees of Horizons 3e at 169° E.L. is included in Annex 3.

SES-14: SES-14 is a Brazilian-licensed satellite positioned at the 47.5° W.L. orbital location that has been approved for U.S. market access,⁷ and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use SES-14 capacity for ESAA operations on a primary basis in the 14-14.5 GHz uplink spectrum and in the 11.7-12.2 GHz downlink spectrum and on an unprotected basis in the 10.95-11.2 GHz and 11.45-11.7 GHz downlink spectrum, consistent with the SES-14 Authorization and the ESAA Decisions.

SES-14 will provide coverage of North America. A letter confirming that operation of the AC BidCo ESAA terminals is consistent with coordination agreements with satellites operated within six degrees of SES-14 at 47.5° W.L. is included in Annex 3.

ABS-3A: ABS-3A is a Russian-licensed satellite positioned at the 3° W.L. orbital location that has been approved for U.S. market access,⁸ and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use ABS-3A capacity for ESAA operations on a primary basis in the 14-14.25 GHz uplink spectrum and on an unprotected basis in the 10.95-11.2 GHz downlink spectrum, consistent with the ABS-3A Authorization and the ESAA Decisions.

⁷ *SES DTH do Brasil Ltda*, Call Sign S2974, File No. SAT-MPL-20170606-00083, granted Sept. 7, 2017 (“SES-14 Authorization”).

⁸ *ABS Global Ltd.*, Call Sign S2987, File No. SAT-PDR-20161130-00124, granted Apr. 25, 2017 (“ABS-3A Authorization”).

ABS-3A will provide coverage of North and South America. A letter confirming that operation of the AC BidCo ESAA terminals is consistent with coordination agreements with satellites operated within six degrees of ABS-3A at 3° W.L. is included in Annex 3.

JCSAT-110A: JCSAT-110A (also known as JCSAT-15) is licensed by Japan and is positioned at 110° E.L. JCSAT-110A is not on the Permitted Space Station List, but its licensing administration, Japan, is a member of the World Trade Organization (“WTO”). Accordingly, under the Commission’s *DISCO II* market access framework, there is a presumption that allowing the satellite to communicate with U.S.-licensed earth stations for services covered by the WTO Basic Telecommunications Agreement will serve the public interest.⁹

AC BidCo seeks authority to use JCSAT-110A capacity for ESAA operations on a primary basis in the 14-14.5 GHz uplink spectrum, consistent with the Commission’s ESAA Decisions. AC BidCo seeks authority to use JCSAT-110A capacity for ESAA operations on a nonconforming basis in the 12.2-12.75 GHz downlink spectrum.

JCSAT-110A will provide coverage of the Indian Ocean region. A letter confirming that operation of the AC BidCo ESAA terminals is consistent with coordination agreements with satellites operated within six degrees of JCSAT-110A is included in Annex 3. In addition, Annex 4 contains technical materials regarding the proposed AC BidCo operations with JCSAT-110A, including a coverage map, a link budget, and an orbital debris mitigation statement.

II. COORDINATION AND SPECTRUM SHARING MATTERS

Attached as Annex 3 pursuant to Section 25.227(b)(2) of the Commission’s rules are copies of letters confirming that AC BidCo’s proposed ESAA operations are consistent with the

⁹ See *Amendment of the Commission’s Policies to Allow Non-U.S. Licensed Space Stations providing Domestic and International Service in the United States*, Report & Order, 12 FCC Rcd 24094, 24112, ¶ 39 (1997) (“*DISCO II*”).

coordination agreements between operators of the satellites discussed above and operators of adjacent spacecraft. Furthermore, AC BidCo's operations with the additional satellites will conform to the terms of the agreements between AC BidCo and the National Aeronautics and Space Administration and the National Science Foundation.

III. WAIVER REQUEST

AC BidCo seeks a limited waiver of the Commission's rules in connection with its request to update the satellites authorized as points of communication for the AC BidCo ESAA network. Specifically, AC BidCo requests a waiver of the U.S. Table of Allocations in Section 2.106 to permit ESAA operations in the 12.2-12.75 GHz spectrum.

Grant of this waiver is consistent with Commission policy:

The Commission may waive a rule for good cause shown. Waiver is appropriate if special circumstances warrant a deviation from the general rule and such deviation would better serve the public interest than would strict adherence to the general rule. Generally, the Commission may grant a waiver of its rules in a particular case if the relief requested would not undermine the policy objective of the rule in question and would otherwise serve the public interest.¹⁰

AC BidCo requests waiver of the Table of Allocations in Section 2.106 of the Commission's rules to permit use of downlink spectrum in the 12.2-12.75 GHz band range for ESAA operations. The Commission has expressly recognized that "terminals on U.S.-registered aircraft may need to access foreign satellites while traveling outside of the United States (*e.g.*, over international waters), and therefore may need to downlink in the extended Ku-band in

¹⁰ *PanAmSat Licensee Corp.*, 17 FCC Rcd 10483, 10492 (Sat. Div. 2002) (footnotes omitted).

certain circumstances.”¹¹ To meet this need, AC BidCo and other ESAA providers have requested and received Commission authority to receive signals in the 12.2-12.75 GHz band.¹²

The same rationale supports grant of a waiver to permit AC BidCo to receive transmissions from the Intelsat 37e, Horizons 3e, and JCSAT-110A satellites using spectrum in the 12.2-12.75 GHz range. In each case the proposed operations are consistent with coordination agreements with operators of adjacent satellites within six degrees. Authorizing AC BidCo to receive signals from these satellites will not alter the technical characteristics of the satellite’s operations in any way, and therefore will not create harmful interference to other authorized users of the spectrum. Furthermore, AC BidCo will not claim interference protection from such authorized users. Under these circumstances, grant of a Section 2.106 waiver is justified to permit use of frequencies in the 12.2-12.75 GHz band for downlinks from Intelsat 37e, Horizons 3e, and JCSAT-110A as part of the AC BidCo ESAA network.

¹¹ *Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service*, IB Docket No. 05-20, Notice of Proposed Rulemaking, 20 FCC Rcd 2906 (2005) at ¶ 18 (footnote omitted).

¹² *See, e.g.*, AC BidCo ESAA License, Section B and conditions 900387 and 900389 (authorizing reception of transmissions in the 12.2-12.75 GHz band on a non-interference, non-protected basis); *Panasonic Avionics Corporation*, File No. SES-MFS-20180122-00052, Call Sign E100089, granted Aug. 1, 2018, Section B.

IV. CONCLUSION

AC BidCo respectfully requests that the Commission modify the AC BidCo ESAA License to reflect the changes described herein.

Respectfully submitted,

AC BIDCO LLC

By: /s/ Marguerite Elias

Of Counsel

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Dated: August 13, 2018

ANNEX 1: Table of Information Required by Section 25.227

Section 25.227 Requirement	Citation to Information Provided
25.227(a)(4) & 25.227(b)(5)	N/A: no use of a contention protocol is proposed.
25.227(a)(5) & 25.227(b)(6)	The 24/7 point of contact information remains the same. The phone number is +1 866-943-4662 and the e-mail address is noc@gogoair.com . The street address is: AC BidCo Network Operations Center, 111 North Canal Street, Chicago, IL, 60606, as specified in Form 312 Schedule B, Items E2-E9.
25.227(a)(15)	AC BidCo certifications are in Annex 5 attached.
25.227(b)(2)(i)	Off-axis EIRP density information regarding the AeroSat and ThinKom terminals licensed for use by AC BidCo was previously provided to the Commission. Operations with the additional satellites included in this application will not involve any increase in the maximum off-axis EIRP density levels previously described to the Commission for the AeroSat and ThinKom terminals and authorized in the AC BidCo ESAA license.
25.227(b)(2)(ii)	Target satellite operator certifications are in Annex 3 attached.
25.227(b)(2)(iii) & (iv)	AC BidCo has previously demonstrated that its system will comply with coordination agreements and requirements to cease emissions.
25.227(b)(4)	The ESAA network will operate in U.S. airspace, foreign airspace, and in the airspace over international waters. Coverage areas for the specific satellites to be used in the ESAA network are described in the table found in Annex 2 attached. Coverage information for the Intelsat 37e, Horizons 3e, SES-14, and ABS-3A satellites are already on file with the Commission. Coverage maps for the JCSAT-110A satellite are in Annex 4 attached.
25.227(b)(7)	AC BidCo certifications are in Annex 5 attached.
25.227(b)(8)	No change to previously filed Radiation Hazard analyses.
25.227(c)	AC BidCo's coordination agreement with NASA was filed February 1, 2013 in File Nos. SES-LIC-20120619-00574 <i>et al.</i>
25.227(d)	AC BidCo's coordination agreement with NSF was included as Amendment Exhibit B in File No. SES-AMD-20120731-00709.

ANNEX 2:

Updated Spacecraft and Teleport Tables

Satellite	Location	Beam Coverage Area	Tx (GHz)	Rx (GHz)	Use in US airspace?	Satellite Operator
AMC-1¹	130.9W	North America, Pacific Ocean	14-14.5	11.7-12.2	Yes	SES
AMC-4²	134.9W	North America, Pacific Ocean	14-14.5	11.45-11.7; 11.7-12.2	Yes	
AMC-6	83W	North America	14-14.5	11.45-11.7; 11.7-12.2	Yes	
AMC-21	124.9W	United States	14-14.5	11.7-12.2	Yes	
ASTRA 4A	4.8E	Europe	14-14.25	11.7-12.2; 12.2-12.75	No	
SES-1	101W	North America	14-14.5	11.7-12.2	Yes	
SES-3	103W	North America	14-14.5	11.7-12.2	Yes	
SES-4	22W	Europe	14-14.5	12.5-12.75	No	
SES-6	40.5W	East Atlantic Ocean	14-14.5	10.95-11.2; 11.45-11.7	No	
		West Atlantic Ocean	14-14.5	10.95-11.2; 11.45-11.7	Yes	
SES-10	67W	North and Central America, the Gulf of Mexico, and the Caribbean	14-14.5	10.95-11.2; 11.45-11.7; 11.7-12.2	Yes	
SES-14	47.5W	North America	14-14.5	10.95-11.2; 11.45-11.7; 11.7-12.2	Yes	
SES-15	129.15W	North America, Pacific Ocean	14-14.5	10.7-11.7 11.7-12.2	Yes	

¹ This satellite is only used for communications with the Aerosat antenna system, designated AES1.

² This satellite is only used for communications with the ThinKom 2Ku antenna system, designated AES2.

Satellite	Location	Beam Coverage Area	Tx (GHz)	Rx (GHz)	Use in US airspace?	Satellite Operator
Galaxy 17	91W	North America	14-14.5	11.7-12.2	Yes	Intelsat
Galaxy 28	89W	Brazil	14-14.5	11.7-12.2	No	
IS-14	45W	North and South America excludes Brazil	14-14.5	11.7-12.2	Yes	
IS-18	180E	South Pacific	14-14.5	12.25-12.75	No	
IS-19	166E	Northeast Pacific	14-14.5	12.25-12.75	Yes	
		Northwest Pacific	14-14.5	12.25-12.75	No	
		Australia				
		Southwest Pacific				
IS-20	68.5E	Middle East	14-14.5	10.95-11.2; 11.45-11.7; 12.5-12.75	No	
IS-21	58W	Brazil	14-14.5	11.7-12.2	No	
		South Atlantic Ocean	14-14.5	11.45-11.7	No	
IS-22	72.1E	Mobility from Mideast to Japan and to Australia	14-14.5	12.25-12.5	No	
IS-29e	50W	United States	14-14.5	10.95-11.7; 11.7-12.2	Yes	
IS-33e	60E	Africa, Asia, and Europe	14-14.5	10.95-11.2; 11.45-11.7; 11.7-12.2; 12.5-12.6	No	
IS-37e	18W	Europe	14-14.5	10.95-11.7; 12.5-12.75	No	
IS-904	60E	Spot 1 - Western Russia	14-14.5	10.95-11.2; 11.45-11.7	No	
IS-907	27.5W	East Pacific	14-14.5	10.95-11.2; 11.45-11.7	Yes	
Horizons 3e	169E	Asia Pacific	14-14.5	10.95-11.7 12.2-12.75	Yes	

Satellite	Location	Beam Coverage Area	Tx (GHz)	Rx (GHz)	Use in US airspace?	Satellite Operator
Eutelsat 115WB	114.9W	North America	14-14.5	11.7-12.2	Yes	Eutelsat
Eutelsat 117WA	116.8W	Central and South America	14-14.5	11.7-12.2	Yes	
E172B¹	172E	North Pacific and Northeastern Russia	14-14.5	10.95-11.2; 11.45-11.7; 12.2-12.75	No	
T-11N	37.5W	Africa	14-14.5	10.95-11.2; 11.45-11.7; 12.5-12.75	No	Telesat
		Atlantic	14-14.5	11.45-11.7	No	
Telstar 12V	15W	Brazil	14-14.5	11.7-12.2	No	
Telstar 18/ Apstar 5	138E	Asia	14-14.5	12.2-12.75	No	
JCSAT-2B	154E	South Pacific	14-14.5	11.45-11.7; 12.25-12.75	Yes	JSAT
JCSAT-5A¹	132E	Japan	14-14.5	12.25-12.75	No	
JCSAT-110A²	110E	Indian Ocean	14-14.5	12.2-12.75	No	
Yamal 300K	177W	North Pacific Ocean	14-14.5	10.95-11.2; 11.45-11.7; 12.5-12.75	Yes	Gazprom Space Systems
Yamal 401	90E	Russia	14-14.5	10.95-11.2; 11.45-11.7; 12.5-12.75	No	
Asiasat 7	105.5E	China	14-14.5	12.25-12.75	No	AsiaSat
ARSAT-2	81W	North America	14-14.5	11.7-12.2	Yes	Empresa Argentina de Soluciones Satelitales S.A.
Optus D2	152E	Australia	14-14.5	12.25-12.75	No	Optus
ABS-3A	3W	North and South America	14-14.25	10.95-11.2	Yes	ABS Global

¹ These satellites are only used for communications with the Aerosat antenna system, designated AES1.

² This satellite is only used for communications with the ThinKom 2Ku antenna system, designated AES2.

Satellite	Teleport Location	FCC Call Sign
AMC-1	Woodbine, MD	E900448
AMC-4	Brewster, WA	E120043
AMC-6	Perris, CA	E940448
AMC-21	Woodbine, MD	E900448
ASTRA 4A	Betzdorf, Luxembourg	N/A
SES-1	Woodbine, MD	E920698
SES-3	Woodbine, MD	E140059
SES-4	Bristow, VA	E020071
	Bristow, VA	E000696
SES-6	Betzdorf, Luxembourg	N/A
SES-10	Perris, CA	E940448
SES-14	Woodbine, MD	E170197
	Port St. Lucie, FL	E170198
SES-15	Woodbine, MD	E170138
	South Mountain, CA	E170139
Galaxy 17	Atlanta, GA ATL-K26	E990214
Galaxy 28	Rio de Janeiro, Brazil	N/A
IS-14	ATL teleport ATL-C06	E940333
	ATL teleport ATL-K15	E090093
IS-18	Napa teleport NAP-K22	E990224
IS-19	Perth, Australia	N/A
	Napa teleport NAP-K31	E980460
	Napa teleport NAP-C30	E980467
IS-20	Fuchsstadt, Germany	N/A
IS-21	Rio de Janeiro, Brazil	N/A
	Mobility: MTN teleport MTN-K02	E030051
IS-22	Kumsan, Korea	N/A
IS-29e	Hagerstown, MD	E030103
IS-33e	Fuchsstadt, Germany	N/A
	Moscow, Russia	N/A
IS-37e	Hagerstown, MD	E040414
IS-904	Moscow, Russia	N/A
IS-907	Hagerstown, MD	E030103
Horizons 3e	Napa teleport NAP-C21	E950307

Satellite	Teleport Location	FCC Call Sign
Eutelsat 115WB	Brewster, WA	E120043
Eutelsat 117WA	Brewster, WA	E060416
E172B	Khabarovsk, Russia	N/A
T-11N	Aflenz, Austria	N/A
Telstar 12V	Rio de Janeiro, Brazil	N/A
Telstar 18/Apstar 5	China	N/A
JCSAT-2B	Kapolei, HI	E010236
JCSAT-5A	Yokohama, Japan	N/A
JCSAT-110A	Perth, Australia	N/A
Yamal 300K	Brewster, WA BRW-05C	E120043
Yamal 401	Moscow, Russia	N/A
Asiasat 7	Beijing, China	N/A
ARSAT-2	Brewster, WA	E120043
Optus D2	Belrose, Australia	N/A
ABS-3A	Macaé, Brazil	N/A

ANNEX 3:
Satellite Company Letters



May 24, 2018

Federal Communication Commission
International Bureau
445 12th Street SW
Washington, DC 20554

Re: Engineering Certification of Intelsat for Intelsat 37e Satellite

To Whom It May Concern:

This letter certifies that Intelsat is aware that AC BidCo LLC ("AC BidCo") is planning to seek a modification to its blanket authorization, from the Federal Communications Commission ("FCC"), to operate the Ku-band transmit/receive terminals AES1 and AES2 for the provision of Aeronautical Mobile Satellite Service (Call Sign E120106). AC BidCo seeks additional authorization for these aeronautical Ku-band earth stations to also utilize Intelsat 37e at 18W, under the current rules for Earth Stations Aboard Aircraft (ESAA), including Section 25.227.

Intelsat certifies that the use of the ESAA transmit/receive terminals AES1 and AES2 by AC BidCo, installed and operated in accordance with the AC BidCo application and the above conditions, is consistent with existing coordination agreements with all adjacent satellite operators within +/- 6 degrees of orbital separation from Intelsat 37e. Intelsat also acknowledges that the use of the above referenced terminals by AC BidCo has the potential to receive harmful interference from adjacent satellite networks that may be unacceptable.

If the FCC authorizes the operations proposed by AC BidCo in its application, Intelsat will include the power density levels, as described above, in all future satellite network coordinations with other adjacent satellite operators. AC BidCo shall comply with all such coordination agreements reached by the satellite operators.

Sincerely,


Alexander Gerdénitsch
Manager, Spectrum Policy, Americas
Intelsat

5/24/2018
Date



June 12, 2018

Federal Communication Commission
International Bureau
445 12th Street SW
Washington, DC 20554

Re: Engineering Certification of Intelsat for Horizons 3e Satellite

To Whom It May Concern:

This letter certifies that Intelsat is aware that AC BidCo LLC ("AC BidCo") is planning to seek a modification to its blanket authorization, from the Federal Communications Commission ("FCC"), to operate the Ku-band transmit/receive terminals AES1 and AES2 for the provision of Aeronautical Mobile Satellite Service (Call Sign E120106). AC BidCo seeks additional authorization for these aeronautical Ku-band earth stations to also utilize Horizons 3e at 169°E, under the current rules for Earth Stations Aboard Aircraft (ESAA), including Section 25.227.

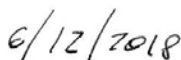
Intelsat certifies that the use of the ESAA transmit/receive terminals AES1 and AES2 by AC BidCo, installed and operated in accordance with the AC BidCo application and the above conditions, is consistent with existing coordination agreements with all adjacent satellite operators within +/- 6 degrees of orbital separation from Horizons 3e. Intelsat also acknowledges that the use of the above referenced terminals by AC BidCo has the potential to receive harmful interference from adjacent satellite networks that may be unacceptable.

If the FCC authorizes the operations proposed by AC BidCo in its application, Intelsat will include the power density levels, as described above, in all future satellite network coordinations with other adjacent satellite operators. AC BidCo shall comply with all such coordination agreements reached by the satellite operators.

Sincerely,



Alexander Gerdienitsch
Manager, Spectrum Policy, Americas
Intelsat



Date



Kimberly M. Baum
Vice President Spectrum Management & Development, Americas

**Federal Communications Commission
International Bureau
445 12th Street, S.W.
Washington, D.C. 20554**

17 July 2018

Subject: Engineering Certification of SES Americom, Inc. for the SES-14 Satellite

To whom it may concern,

This letter confirms that SES is aware that AC BidCo LLC, ("AC BidCo"), licensed by the Federal Communications Commission ("FCC") as AC BidCo LLC, is planning to file an application seeking a modification to its blanket authorization (the "Modification Application") to operate technically identical Ku-band Earth Stations Aboard Aircraft ("ESAA") pursuant to ITU RR 5.504A and Section 25.227 of the Commission's rules (Call Sign E120106). The Modification Application will seek authority for AC BidCo's ESAA terminals to communicate with the SES-14 satellite at 47.5° W.L, under the current ESAA rules, including Section 25.227.

Based upon the representations made to SES by AC BidCo concerning how it will operate on SES-14 according to its letter signed July 16th, 2018:

- SES certifies that it has completed coordination as required under the FCC's rules and that the power density levels specified by AC BidCo are consistent with any existing coordination agreements to which SES is a party with adjacent satellite operators within +/- 6 degrees of orbital separation from SES-14.
- If the FCC authorizes the operations proposed by AC BidCo, SES will include the power density levels specified by AC BidCo in all future satellite network coordination with other operators of satellites adjacent to SES-14.

Yours Sincerely,

Kimberly M. Baum

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9 August 2018

Federal Communications Commission
International Bureau
445 12th Street, SW
Washington, DC 20554
UNITED STATES OF AMERICA

To whom it may concern,

This letter certifies that ABS Global Ltd. is aware that AC BidCo LLC ("AC BidCo") is planning to seek authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive terminals AES1 and AES2 for the provision of Aeronautical Mobile Satellite Service (Call Sign E120106). AC BidCo seeks additional authorization for these aeronautical Ku-band earth stations to also utilize ABS-3A at 3° W.L. under the current rules for Earth Stations Aboard Aircraft (ESAA), including Section 25.227

ABS Global Ltd. clarifies that the use of the ESAA transmit/receive terminals AES1 and AES2 by AC BidCo, installed and operated in accordance with the AC BidCo application and ABS operational conditions, is consistent with existing coordination agreements with all adjacent satellite operators within +/-6 degrees of orbital separation from ABS-3A. ABS Global Ltd. also acknowledges that the use of the above referenced terminals by AC BidCo has the potential to receive harmful interference from adjacent satellite networks that may be unacceptable.

If the FCC authorizes the operations proposed by AC BidCo in its application, ABS Global Ltd. will include the power density levels, as described above, in all future satellite network coordination with the other adjacent satellite operators. AC BidCo shall comply with all such coordination agreements reached by the satellite operators.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Srin Prasadanna', is located below the 'Yours sincerely,' text.

Mr. Srin Prasadanna
Executive Vice President
Regulatory Affairs

ABS

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SKY Perfect JSAT Corporation
AKASAKA INTERCITY AIR
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26th July 2018

Federal Communications Commission
International Bureau
445 12th Street, SW
Washington, DC 20554
UNITED STATES OF AMERICA

To whom it may concern

This letter certifies that JSAT is aware that AC BidCo LLC ("AC BidCo") is planning to seek authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive terminals AES1 and AES2 for the provision of Aeronautical Mobile Satellite Service (Call Sign E120106). AC BidCo seeks additional authorization for these aeronautical Ku-band earth stations to also utilize JCSAT-110A at 110°EL under the current rules for Earth Stations Aboard Aircraft (ESAA), including Section 25.227

JSAT certifies that the use of the ESAA transmit/receive terminals AES1 and AES2 by AC BidCo, installed and operated in accordance with the AC BidCo application and the above conditions, is consistent with existing coordination agreements with all adjacent satellite operators within +/-6 degrees of orbital separation from JCSAT-110A.

If the FCC authorizes the operations proposed by AC BidCo in its application, JSAT will include the power density levels, as described above, in all future satellite network coordination with the other adjacent satellite operators. AC BidCo shall comply with all such coordination agreements reached by the satellite operators.

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Y. Moriai', written over a horizontal line.

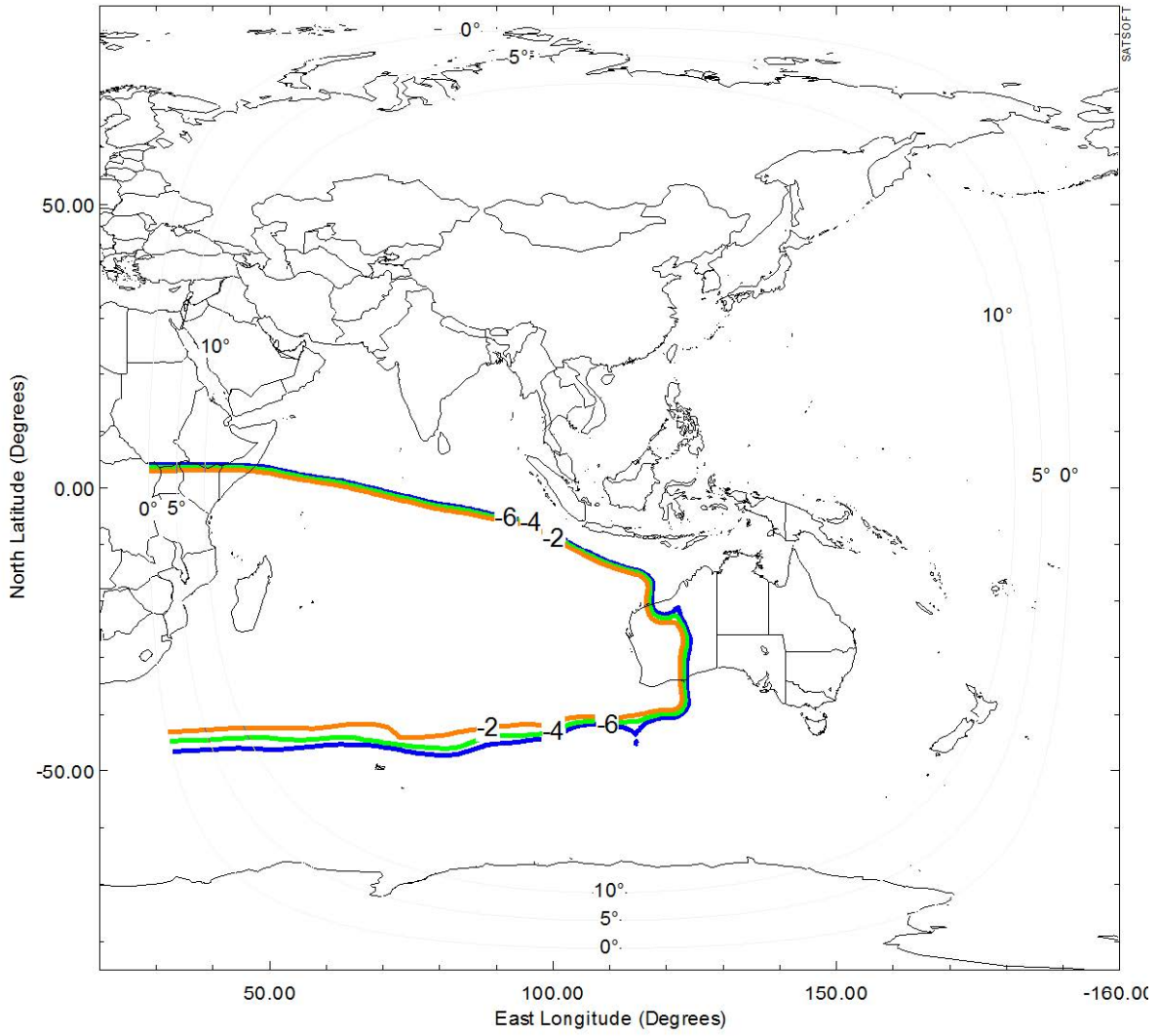
Yutaka Moriai
General Manager, Mobile Business Division
Space & Satellite Business Unit

ANNEX 4:

JCSAT-110A Coverage Maps, Link Budget, and Orbital Debris Mitigation Statement

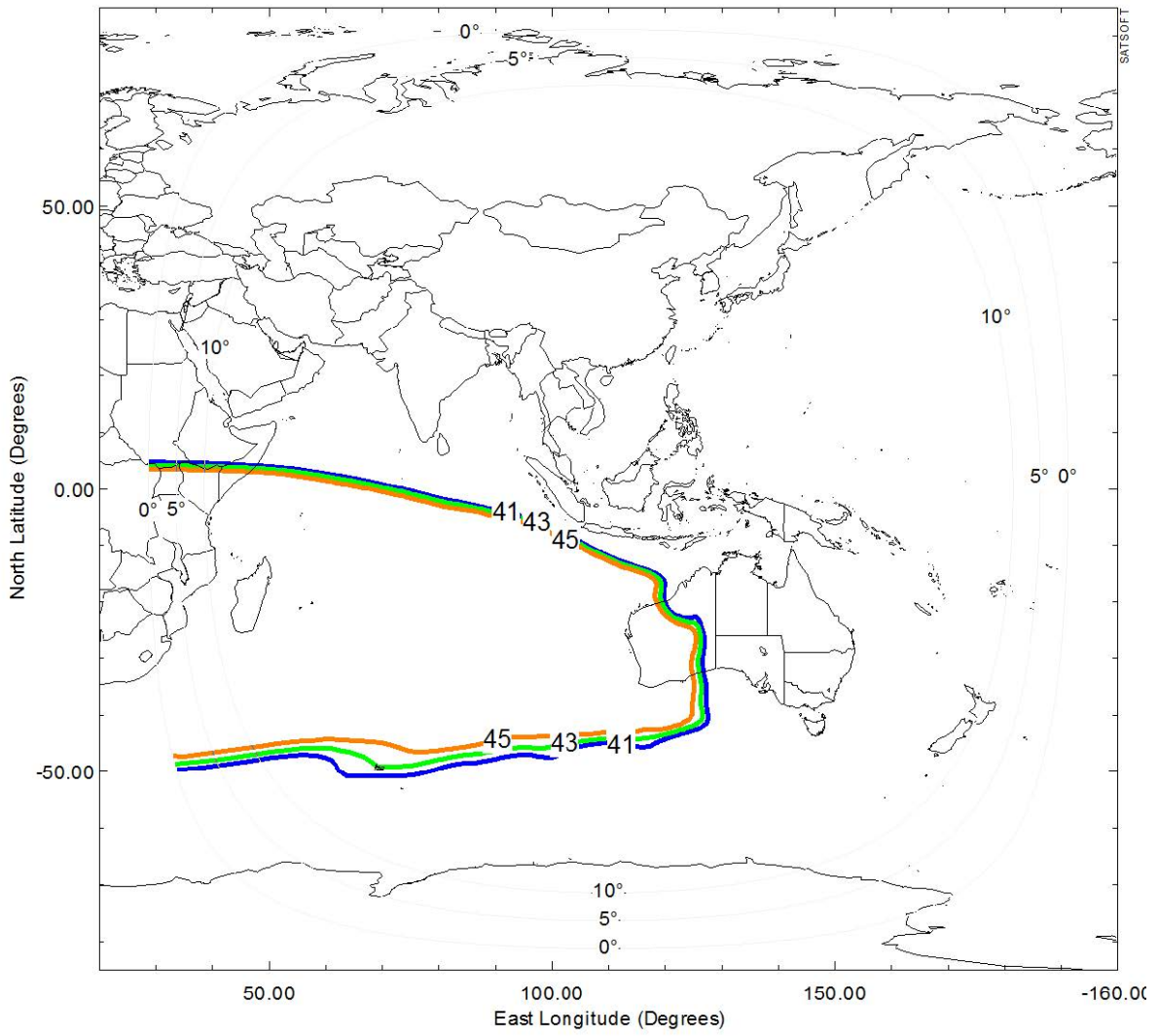
JCSAT-110A Coverage Maps

Ku-Band SIOR Beam Vertical G/T



JCSAT-110A Coverage Maps

Ku-Band SIOR Beam Horizontal G/T



JCSAT-110A Link Budget: ThinKom Antenna (AES2)

Earth Station Information									
Uplink Site		Perth	Perth	Perth	2Ku Gogo	2Ku Gogo	2Ku Gogo	2Ku Gogo	2Ku Gogo
Antenna Diameter	m	7.2	7.2	7.2	0.76	0.76	0.76	0.76	0.76
Downlink Site		2Ku Gogo	2Ku Gogo	2Ku Gogo	Perth	Perth	Perth	Perth	Perth
Antenna Diameter	m	0.76	0.76	0.76	7.2	7.2	7.2	7.2	7.2
Carrier Information		Forward Link			Maintenance	Traffic(A)	Traffic(B)	Traffic (C)	Traffic (D)
Information Rate	Mbps	3.257	3.760	4.359	0.246	0.983	0.943	0.472	0.236
Modulation		QPSK	QPSK	QPSK	BPSK	BPSK	BPSK	BPSK	BPSK
FEC Type		DVB-S2X ACM	DVB-S2X ACM	DVB-S2X ACM	S2X VSATs	S2X VSATs	S2X VSATs	S2X VSATs	S2X VSATs
FEC Rate		1/4	13/45	1/3	1/4	1/4	1/3	1/3	1/3
Symbol Rate	Msp	6.8	6.8	6.8	2.048	8.192	3.072	1.536	0.768
Allocated BW	MHz	8.16	8.16	8.16	2.46	9.84	3.69	1.850	0.930
Power Equivalent BW	MHz	17.5	17.5	17.5	0.1	0.2	0.2	0.1	0.05
Link Budget									
Uplink									
Required EIRP	dBW	65.0	65.0	65.0	43.9	46.4	46.4	43.9	40.9
Transmit power	dBW	7.9	7.9	7.9	12.5	15.0	15.0	12.4	9.4
	W	6.1	6.1	6.1	17.7	31.5	31.5	17.6	8.8
Feeder loss ¹	dB	-1.0	-1.0	-1.0	-0.6	-0.6	-0.6	-0.6	-0.6
Ant. Gain ¹	dB	58.1	58.1	58.1	32.0	32.0	32.0	32.0	32.0
Uplink path loss	dB	-207.0	-207.0	-207.0	-207.9	-207.9	-207.9	-207.9	-207.9
Satellite G/T	dB/K	-0.1	-0.1	-0.1	-0.4	-0.4	-0.4	-0.4	-0.4
Bandwidth	dBHz	-68.3	-68.3	-68.3	-63.1	-69.1	-64.9	(-) 61.9	(-) 58.9
Boltzmann Const.	dBW/Hz-K	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6
C/Nup (thermal)	dB	18.2	18.2	18.2	1.0	-2.5	1.7	2.2	2.2
Downlink									
Satellite EIRP	dBW	46.3	46.3	46.3	48.3	48.3	48.3	48.3	48.3
Output backoff	dB	-8.4	-8.4	-8.4	-30.9	-28.3	-28.3	(-) 30.9	(-) 33.9
Downlink path loss	dB	-206.7	-206.7	-206.7	-205.8	-205.8	-205.8	-205.8	-205.8
Rcv. Ant. G/T ¹	dB/K	8.0	8.0	8.0	34.0	34.0	34.0	34.0	34.0
Bandwidth	dBHz	-68.3	-68.3	-68.3	-63.1	-69.1	-64.9	(-) 61.9	(-) 58.9
Boltzmann Const.	dBW/Hz-K	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6
C/Ndown (thermal)	dB	-0.6	-0.6	-0.6	11.1	7.6	11.8	12.3	12.3
Total									
C/Ntotal (thermal)	dB	-0.7	-0.7	-0.7	0.6	-2.9	1.3	1.8	1.8
C/I	dB	15.7	15.7	15.7	9.4	6.3	10.1	10.5	10.5
Total C/(N+I)	dB	-0.8	-0.8	-0.8	0.0	-3.4	0.8	1.2	1.2
Required C/(N+I) ²	dB	-2.0	-1.6	-1.1	-7.7	-7.7	-2.7	-2.7	-2.7
Total C/(N+I) Margin	dB	1.2	0.8	0.3	7.7	4.3	3.5	3.9	3.9
Link Availability ³	%	-	-	-	99.5	99.2	99.0	99.1	99.1

<NOTE>

: AES site is assumed to locate at 43.3 deg E, 2.5 deg N.

*1 : The above calculation is based on the Earth station specification with your provided parameters.

*2 : These parameters are based on Guaranteed E_g/N₀ of BER 10⁻⁵ of Gilat satellite modem.

*3 : These parameters are based on ITU-R P.618-12 and its related documents.

JCSAT-110A Orbital Debris Mitigation Statement



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JCSAT-110A Orbital Debris Mitigation Plan

This section addresses requirements contained in Section 25.114(d)(14)(i)-(iv) of the Commission's rules.

- a. Debris Release Assessment-25.114(d)(14)(i). JSAT has assessed and limited the amount of debris released in a planned manner during normal operations and has assessed and limited the probability of the spacecraft becoming a source of debris by collisions with small debris or meteoroids.

The only phase of the mission in which portions of the spacecraft separated from the main spacecraft body was during deployment. During deployment, however, all separation and deployment mechanisms were designed to contain all debris generated when activated so as to ensure that no debris left the spacecraft. The assessment found no other sources for debris throughout the mission.

In the event of collisions with small debris or meteoroids, the spacecraft hardware has been designed with redundant units such that individual faults will not cause the loss of the entire spacecraft. All critical components (e.g., computers and control devices) are built within the structure and shielded from external influences. Items that could not be built within the spacecraft nor shielded (e.g., antennas) are able to withstand impact.

The spacecraft can be controlled through both the normal payload antenna and wide angle antennas. The likelihood of both being damaged during a small body collision is minimal.

- b. Accidental Explosion Assessment-25.114(d)(14)(ii). JSAT has assessed and limited the probability of accidental explosions during and after completion of mission operations. The spacecraft employs the SSL 1300 satellite bus. This type of spacecraft has a history of successful on-orbit operations without fragmentation of the satellite into pieces of debris. All batteries and propellant tanks are monitored for pressure or temperature variations. Alarms in the Satellite Control Center inform controllers of any variations. Additionally, long-term trending analysis is performed to monitor for any unexpected trends.

The batteries are operated utilizing the manufacturer's automatic recharging scheme. Doing so ensures that charging terminates normally without building

JCSAT-110A Orbital Debris Mitigation Statement

up additional heat and pressure. As this process occurs wholly within the spacecraft, it also affords protection from command link failures (on the ground). In order to ensure that the spacecraft has no explosive risk after it has been successfully de-orbited, all stored energy sources onboard the spacecraft will be removed by venting excess propellant (Hydrazine, Oxidizer), and all propulsion lines and latch valves will be vented. All battery chargers will be turned off, and batteries will be left in a permanent discharge state. These steps will ensure that no buildup of energy can occur resulting in an explosion in the years after the spacecraft is de-orbited.

- c. Assessment Regarding Collision with Large Debris and Other Space Stations-25.114(d)(14)(iii). JSAT has also assessed and limited the probability of the spacecraft becoming the source of debris by collisions with large debris or other operational space stations. In addition to JCSAT-110A, two other known spacecraft operate within +/- 0.1 degrees of 110° E.L. N-SAT110 is operated by JSAT, and JSAT closely manages the collocation of JCSAT-110A and N-SAT110 at this location. BSat3c is controlled by a 3rd-party satellite operator, and JSAT has an agreement with that operator regarding safe positioning of the satellites to mitigate the collision risk. In order to monitor nearby objects JSAT receives CDM (Conjunction Data Messages) from JSpOC in a timely manner. As a result of CDM evaluation, collision avoidance operation will be implemented if needed.
- d. Post-Mission Disposal Plans-25.114(d)(14)(iv). Post-mission disposal of the satellite from operational orbit will be accomplished by maneuvering it to a disposal orbit 300 km above the geostationary arc. The propellant budget for orbit raising is included in the satellite design, and all propellants will be vented when accomplished.

See Appendix-A for details.

JCSAT-110A Orbital Debris Mitigation Statement

Appendix-A Analysis for Post-Mission Disposal Plan

1) Post-mission disposal altitude

The minimum post-mission disposal altitude above the geostationary orbit is calculated as follows (using the IADC formula):

$$235 \text{ km} + (1000 \cdot CR \cdot A/m) = 278.8 \text{ km}$$

CR = 1.15 JCSAT-110A Solar radiation pressure coefficient

A = 62 m² JCSAT-110A Area based on deployed on-station configuration

M = 1629 kg JCSAT-110A dry mass

Planned post-mission disposal altitude: 300 km

Margin to minimum altitude requirement: 21.2 km

2) Propellant budget for post-mission disposal

The amount of propellant reserved for the post-mission orbital raising is shown in the table below.

Disposal altitude	GEO + 300 km
Required Delta V	10.9m/s
Effective Isp	280 sec
Spacecraft Mass after orbital raising	1636.4 kg
Required propellant (reserved)	7.6 kg

The propellant budget is based on -3 sigma worst case analysis incorporating on-orbit performance deviations for the propulsion and attitude control subsystem.

In order to ensure the reserved propellant at the time of disposal, three propellant gauging methods are employed during on-orbit operations: Book-keeping, Pressure-Volume-Temperature (PVT) and Propellant Tank Thermal Capacity Gauging. Typical uncertainties of three gauging methods are shown in the table below. All three methods can be used and compared to track the remaining propellant in conservative approach throughout the mission life.

JCSAT-110A Orbital Debris Mitigation Statement

Combination of Book-keeping and PVT method	+/- 10 kg
Propellant Tank Thermal Capacity Gauging	+/- 2.5 kg at \leq 60 kg bipropellant remaining

SKY Perfect JSAT Corporation



Hiroaki Nagai
General Manager
Satellite Operation Division
3rd August, 2018

ANNEX 5:

AC BidCo Certifications

AC BidCo LLC (“AC BidCo”), in support of the foregoing application to modify the AC BidCo ESAA License, hereby certifies as follows:

1. AC BidCo’s target space station operators have confirmed that AC BidCo’s proposed ESAA operations over international waters are within coordinated parameters for adjacent satellites up to 6 degrees away on the geostationary arc.
2. AC BidCo will comply with the requirements contained in paragraphs (a)(6), (a)(9), (a)(10), and (a)(11) of Section 25.227 of the Commission’s rules, 47 C.F.R. § 25.227.

By: /s/ Timothy Joyce
Timothy Joyce
VP of RF Engineering, Gogo LLC
for AC BidCo LLC

August 13, 2018