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

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

AMENDMENT

AC BidCo LLC ("AC BidCo") hereby amends its pending modification application[1] regarding its blanket license to operate Ku-band transmit/receive earth stations aboard aircraft ("ESAAs") on domestic and international flights.[2] In addition to the changes addressed in the Modification Application, AC BidCo asks that its license be updated to conform to recently effective Commission rule changes and seeks to add the following satellites as authorized points of communication for ESAA operations:

(1) the U.S.-licensed Intelsat 39 satellite;
(2) the U.S.-licensed Galaxy 11 satellite;
(3) the U.S.-licensed Intelsat 902 satellite;
(4) the U.S.-licensed SES-11 satellite;
(5) the French-licensed EUTELSAT 133WA satellite;
(6) the Spanish-licensed HISPASAT 143W-1 satellite; and
(7) the Japan-licensed JCSAT-18 satellite.

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[1] Call Sign E120106, File No. SES-MFS-20191112-01456 (the "Modification Application").

[2] Call Sign E120106, File No. SES-MFS-20190304-00227, granted July 22, 2019 (the "AC BidCo License").

AC BidCo certifies that apart from the above, the information provided in the Modification Application has not changed.

A narrative description of the relevant changes is provided here, and AC BidCo is attaching an FCC Form 312 with the updated information. A revised version of Annex 2 to the Modification Application with updated tables listing the satellites to be used and the associated ground stations is also attached, along with copies of relevant coordination letters and supplemental technical information. As discussed herein, grant of the Modification Application as amended is consistent with Commission requirements and will serve the public interest.

I. SATELLITES USED BY THE AC BIDCO ESAA NETWORK

AC BidCo requests addition of the satellites described below as points of communication for the AC BidCo ESAA network pursuant to the provisions of Section 25.228. Each of the requested satellites is eligible for authority for use with the AC BidCo ESAA network. AC BidCo seeks authority for all the requested additional satellites to communicate with both the AeroSat antennas designated as AES1 on the AC BidCo License and the ThinKom model 2Ku antennas designated as AES2 on the license.

Intelsat 39: Intelsat 39 is a U.S.-licensed satellite operating at the nominal 62° E.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 39 capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 10.7-11.7 GHz and 12.25-12.75 GHz downlink spectrum, consistent with the Intelsat 39 License and as permitted under the

[3] *Intelsat License LLC*, Call Sign S3023, File No. SAT-LOA-20171205-00164, granted June 26, 2018 ("Intelsat 39 License"). The orbital location specified in the Intelsat 39 License is 62.0° E.L. However, Intelsat has a pending request to permanently assign the satellite to 61.95° E.L., File No. SAT-MOD-20191024-00119, and has been granted special temporary authority to operate at that location, File No. SAT-STA-20191212-00146, granted Dec. 19, 2019.

Commission's decision regarding earth stations in motion.[4] Intelsat 39 will provide coverage of Asia, Europe, Africa, and 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 Intelsat 39 is included in Annex 3.

Galaxy 11: Galaxy 11 is a U.S.-licensed satellite operating at 93.1° W.L.,[5] and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use Galaxy 11 capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 10.95-11.2 GHz and 11.7-12.2 GHz downlink spectrum, consistent with the Galaxy 11 License and as permitted under the ESIMs Order. Galaxy 11 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 Galaxy 11 is included in Annex 3.

Intelsat 902: Intelsat 902 is a U.S.-licensed satellite operating at the nominal 50° W.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 Intelsat 902 capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 10.95-11.2 GHz and 11.45-11.7 GHz downlink spectrum, consistent with the Intelsat 902 Authorizations and as permitted under the

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4 *Amendment of Parts 2 and 25 of the Commission's Rules to Facilitate the Use of Earth Stations in Motion Communicating with Geostationary Orbit Space Stations in Frequency Bands Allocated to the Fixed-Satellite Service*, Report and Order and Further Notice of Proposed Rulemaking, 33 FCC Rcd 9327 (2018) ("ESIMs Order").

5 *Intelsat License LLC*, Call Sign S2253, File No. SAT-MOD-20181231-00095, granted Apr. 16, 2019 ("Galaxy 11 License").

6 *Intelsat License LLC*, Call Sign S2406, File No. SAT-MOD-20160816-00084, granted Nov. 3, 2016 (authorizing continued operations at 62° E.L.); File No. SAT-STA-20191104-00125, granted Nov. 14, 2019 (authorizing relocation of the satellite to 50.1° W.L.) (together, the "Intelsat 902 Authorizations").

ESIMs Order. Intelsat 902 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 Intelsat 902 is included in Annex 3.

SES-11: SES-11 is a U.S.-licensed satellite operating at 104.95° W.L.,[7] and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use SES-11 capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 11.7-12.2 GHz downlink spectrum, consistent with the SES-11 License and as permitted under the ESIMs Order. SES-11 will provide coverage of North America. AC BidCo's operations with SES-11 will comply with the relevant off-axis EIRP density limits in Section 25.218, and accordingly no coordination letter for SES-11 is included with this amendment.

EUTELSAT 133WA: EUTELSAT 133WA is a French-licensed satellite that has been authorized to serve the U.S. at 132.85° W.L.,[8] and complete technical information regarding the satellite is therefore already on file with the Commission. AC BidCo seeks authority to use EUTELSAT 133WA capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 10.95-11.7 GHz and 12.5-12.75 GHz downlink spectrum, consistent with the EUTELSAT 133WA Authorization and as permitted under the ESIMs Order. EUTELSAT 133WA 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 EUTELSAT 133WA is included in Annex 3.

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7 *SES Americom, Inc.*, Call Sign S2964, File No. SAT-LOA-20160512-00047, granted Dec. 7, 2016 ("SES-11 License").

8 *Eutelsat S.A.*, Call Sign S3031, File No. SAT-MPL-20180908-00068, granted Feb. 14, 2019 ("EUTELSAT 133WA Authorization").

HISPASAT 143W-1: HISPASAT 143W-1 is a Spanish-licensed satellite, and Intelsat has filed a U.S. market access request for operations of the satellite at 143° W.L. that includes complete technical information regarding the satellite.[9] AC BidCo seeks authority to use HISPASAT 143W-1 capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 11.45-12.75 GHz downlink spectrum, consistent with the HISPASAT 143W-1 Petition and as permitted under the ESIMs Order. HISPASAT 143W-1 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 HISPASAT 143W-1 is included in Annex 3.

JCSAT-18: JCSAT-18 is licensed by Japan and will be positioned at 150° E.L. JCSAT-18 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.[10]

AC BidCo seeks authority to use JCSAT-18 capacity for ESAA operations in the 14-14.5 GHz uplink spectrum and the 11.2-12.75 GHz downlink spectrum. JCSAT-18 will provide coverage of Asia and the Pacific Ocean. A letter confirming that operation of the AC BidCo ESAA terminals is consistent with coordination agreements with satellites operated within six degrees of JCSAT-18 is included in Annex 3. In addition, Annex 4 contains technical materials

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[9] *Intelsat License LLC,* Call Sign S2476, File No. SAT-PPL-20191205-00143 ("HISPASAT 143W-1 Petition").

[10] *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*").

regarding the proposed AC BidCo operations with JCSAT-18, including coverage maps, link budgets, and an orbital debris mitigation statement.[11]

II. WAIVER REQUESTS

AC BidCo requests limited waivers of the Commission's rules in connection with this amendment. Specifically, AC BidCo seeks any necessary waivers of the U.S. Table of Allocations in Section 2.106 and footnote NG52 to permit ESAA operations in the 10.7-10.95 GHz, 11.2-11.45 GHz and 12.2-12.75 GHz spectrum. Grant of these waivers 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.[12]

AC BidCo requests any necessary 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-

[11] JCSAT-18 is built on the Boeing BSS702MP bus, and the Commission has previously licensed or granted U.S. market access to several other satellites using this bus, including Intelsat 33e, Call Sign S2939, and Intelsat 37e, Call Sign S2972.

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

band in certain circumstances."[13] 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.[14]

The same rationale supports grant of any necessary waiver to permit AC BidCo to receive transmissions from the Intelsat 39, EUTELSAT 133WA, HISPASAT 143W-1, and JCSAT-18 satellites in the 12.2-12.75 GHz range. The Commission has granted a Section 2.106 waiver to allow EUTELSAT 133WA to serve the United States in the 12.5-12.7 GHz band on an unprotected, non-interference basis.[15] The HISPASAT 143W-1 Petition seeks authority for use of the 12.2-12.7 GHz and 12.7-12.75 GHz frequencies to serve the United States and demonstrates that such use would not cause harmful interference to authorized users of this spectrum.[16] AC BidCo does not propose to use the Intelsat 39 or JCSAT-18 satellites in U.S. airspace.

Moreover, AC BidCo's proposed operations in this spectrum 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 any required waiver of

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13 *Service Rules and Procedures to Govern the Use of Aeronautical Mobile Satellite Service Earth Stations in Frequency Bands Allocated to the Fixed Satellite Service*, Notice of Proposed Rulemaking, 20 FCC Rcd 2906 (2005) at ¶ 18 (footnote omitted).

14 *See, e.g.*, AC BidCo License, Section B and condition 900387 (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.

15 *See* EUTELSAT 133WA Authorization, Attachment to Grant at 4, ¶ 19.

16 HISPASAT 143W-1 Petition, Legal Narrative at 8-11.

Section 2.106 is justified to permit use of frequencies in the 12.2-12.75 GHz band for downlinks from Intelsat 39, EUTELSAT 133WA, HISPASAT 143W-1, and JCSAT-18 as part of the AC BidCo ESAA network.

AC BidCo also seeks any necessary waiver of footnote NG52 to Section 2.106 to permit ESAA operations in the 10.7-10.95 GHz and 11.2-11.45 GHz spectrum on an unprotected, non-interference basis, including for terminals in U.S. airspace. Grant of this waiver is consistent with Commission precedent.

Footnote NG52 specifies that except as provided in footnote NG527A, use of the 10.7-11.7 GHz band by the fixed-satellite service is limited to international operations. Footnote NG527A states that ESIMs operations in the 10.95-11.2 GHz and 11.45-11.7 GHz bands are permitted on an unprotected basis with respect to fixed service operations, but that express carve-out does not extend to the 10.7-10.95 GHz or 11.2-11.45 GHz band segments. The Commission has, however, authorized AC BidCo and others to provide ESAA operations in these portions of the extended Ku-band.[17]

Consistent with these past rulings, AC BidCo requests any necessary waiver of the Table of Allocations and footnote NG52 to permit its terminals to receive transmissions from Intelsat 39 in the 10.7-10.95 GHz band segment and from Intelsat 39, EUTELSAT 133WA, and JCSAT-18 in the 11.2-11.45 GHz band segment. Of these satellites, EUTELSAT 133WA is the only spacecraft that AC BidCo plans to use in U.S. airspace. As noted above, AC BidCo is attaching letters confirming that operations of its ESAA terminals are consistent with coordination agreements with satellites operated within six degrees of these spacecraft.

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[17] *See, e.g.,* AC BidCo License, Section B (authorizing use of the 10.7-12.75 GHz band).

Authorizing AC BidCo to receive signals from these satellites in the 10.7-10.95 GHz and 11.2-11.45 GHz frequencies will not alter the technical characteristics of the satellites' 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, waiving footnote NG52 is justified to permit AC BidCo's proposed use of the 10.7-10.95 GHz and 11.2-11.45 GHz spectrum for ESAA operations, including the use of EUTELSAT 133WA in U.S. airspace.

III. UPDATED LICENSE CONDITIONS

Finally, AC BidCo requests that the Commission remove condition 90310 pertaining to data logging from its license. The ESIMs Order determined that mandating data logging was not necessary and deleted this requirement from the rules.[18]

[18] *See ESIMs Order* at ¶ 24 (deleting requirements to log and maintain data regarding the specifics of ESIM terminal operations).

IV. CONCLUSION

AC BidCo amends the Modification Application to make the changes described herein and respectfully requests that the Commission expeditiously process the application as amended.

Respectfully submitted,

AC BIDCO LLC

By: */s/ Marguerite Elias*

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Dated: January 2, 2020

ANNEX 2:
Updated Spacecraft and Teleport Tables

Satellite	Location	Beam Coverage Area	Tx (GHz)	Rx (GHz)	Use in US airspace?	Satellite Operator
AMC-1[1]	130.9W	North America, Pacific Ocean	14-14.5	11.7-12.2	Yes	SES
AMC-4[2]	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-11	104.95W	North America	14-14.5	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 11	93.1W	North America	14-14.5	10.95-11.2; 11.7-12.2	Yes	Intelsat
Galaxy 17	91W	North America	14-14.5	11.7-12.2	Yes	
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			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-39	62E	Asia, Europe, Africa, Indian Ocean Region	14-14.5	10.7-11.7; 12.25-12.75	No	
IS-902	50.1W	North America	14-14.5	10.95-11.2; 11.45-11.7	Yes	
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	
HISPASAT 143W-1	143W	North America	14-14.5	11.45-12.75	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	
Eutelsat 133WA	132.85W	North America	14-14.5	10.95-11.7 12.5-12.75	Yes	
E172B[1]	172E	North Pacific and Northeastern Russia	14-14.5	10.95-11.2; 11.45-11.7; 12.2-12.75	No	
Anik F1R	107.3W	North America	14-14.5	11.7-12.2	Yes	Telesat
T-11N	37.5W	Africa	14-14.5	10.95-11.2; 11.45-11.7; 12.5-12.75	No	
		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	
Telstar 18V	138E	Australia, New Zealand, Indonesia, and Malaysia	14-14.5	11.45-11.7	No	
JCSAT-2B	154E	South Pacific	14-14.5	11.45-11.7; 12.25-12.75	Yes	JSAT
JCSAT-3A	128E	Japan	14-14.5	12.2-12.75	No	
JCSAT-5A[1]	132E	Japan	14-14.5	12.25-12.75	No	
JCSAT-18	150E	Asia and Pacific Ocean	14-14.5	11.2-12.75	No	
JCSAT-110A[2]	110E	Indian Ocean	14-14.5	12.2-12.75	No	

[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	Location	Beam Coverage Area	Tx (GHz)	Rx (GHz)	Use in US airspace?	Satellite Operator
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
AsiaSat 9	122E	China	14-14.5	10.95-12.75	No	
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
APSTAR-6C	134E	Asia	14-14.5	12.25-12.75	No	APT Mobile Satcom Limited
Amazonas-2	61W	North America	14-14.5	10.95-11.2 11.7-12.2	Yes	Hispamar Satellite S.A.

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-11	Vernon Valley, NJ	TBD: new antenna
SES-14	Woodbine, MD Port St. Lucie, FL	E170197 E170198
SES-15	Woodbine, MD South Mountain, CA	E170138 E170139
Galaxy 11	Atlanta, GA	E940532
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-39	Fuchsstadt, Germany	N/A
IS-902	Hagerstown, MD	TBD
IS-904	Moscow, Russia	N/A
IS-907	Hagerstown, MD	E030103
Horizons 3e	Napa teleport NAP-C21	E950307
HISPASAT 143W-1	Brewster, WA	TBD: new antenna

Satellite	Teleport Location	FCC Call Sign
Eutelsat 115WB	Brewster, WA	E120043
Eutelsat 117WA	Brewster, WA	E060416
Eutelsat 133WA	Brewster, WA	TBD: new antenna
E172B	Khabarovsk, Russia	N/A
Anik F1R	Brewster, WA	E960222
T-11N	Aflenz, Austria	N/A
Telstar 12V	Rio de Janeiro, Brazil	N/A
Telstar 18/Apstar 5	China	N/A
Telstar 18V	Sydney, Australia	N/A
JCSAT-2B	Kapolei, HI	E010236
JCSAT-3A	Yokohama, Japan	N/A
JCSAT-5A	Yokohama, Japan	N/A
JCSAT-18	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
AsiaSat-9	Beijing, China	N/A
ARSAT-2	Brewster, WA	E120043
Optus D2	Belrose, Australia	N/A
ABS-3A	Macae, Brazil	N/A
APSTAR 6C	Beijing, China	N/A
Amazonas-2	Brewster, WA	E891020

ANNEX 3: Satellite Company Letters

INTELSAT
Envision. Connect. Transform.

December 10th, 2019

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

Re: Engineering Certification of Intelsat Corporation

To whom it may concern,

This letter certifies that Intelsat Corporation is aware that AC BidCo LLC ("AC BidCo") is planning to seek modification of its authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive Earth Stations Aboard Aircraft ("ESAA") terminals AES1 and AES2 (Call Sign E120106). The AC BidCo application will seek authority for these ESAA terminals to communicate with IS-39 at 62° E.L. under the current ESAA rules, including Section 25.228.

Intelsat Corporation certifies that AC BidCo's use of the ESAA transmit/receive terminals AES1 and AES2, 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 IS-39 and will be operated in conformance with existing coordination agreements with other satellite systems.

If the FCC authorizes the operations proposed by AC BidCo in its application, Intelsat Corporation will include the power density levels used by AC BidCo in all future satellite network coordination agreements with other adjacent satellite operators.

Sincerely,

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INTELSAT
Envision. Connect. Transform.

December 18th, 2019

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

Re: Coordination Certificate for AC BidCo LLC Earth Stations Aboard Aircraft Application

To whom it may concern

This letter certifies that Intelsat Corporation is aware that AC BidCo LLC ("AC BidCo") is planning to seek modification of its authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive Earth Stations Aboard Aircraft ("ESAA") terminals AES1 and AES2 (Call Sign E120106). The AC BidCo application will seek authority for these ESAA terminals to communicate with G-11 at 93.1W under the current ESAA rules, including Section 25.228.

Intelsat Corporation certifies that AC BidCo's use of the ESAA transmit/receive terminals AES1 and AES2, 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 G-11 at 93.1W and will be operated in conformance with existing coordination agreements with other satellite systems.

If the FCC authorizes the operations proposed by AC BidCo in its application, Intelsat Corporation will include the power density levels used by AC BidCo in all future satellite network coordinations.

Yours sincerely,

Giselle Creeser

Giselle Creeser
Director, Spectrum Policy & Engineering
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December 18th, 2019

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

Re: Coordination Certificate for AC BidCo LLC Earth Stations Aboard Aircraft Application

To whom it may concern

This letter certifies that Intelsat Corporation is aware that AC BidCo LLC ("AC BidCo") is planning to seek modification of its authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive Earth Stations Aboard Aircraft ("ESAA") terminals AES1 and AES2 (Call Sign E120106). The AC BidCo application will seek authority for these ESAA terminals to communicate with IS-902 at 50W and HISPASAT 143W-1 at 143W under the current ESAA rules, including Section 25.228.

Intelsat Corporation certifies that AC BidCo's use of the ESAA transmit/receive terminals AES1 and AES2, 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 IS-902 and HISPASAT 143W-1 and will be operated in conformance with existing coordination agreements with other satellite systems.

If the FCC authorizes the operations proposed by AC BidCo in its application, Intelsat Corporation will include the power density levels used by AC BidCo in all future satellite network coordinations.

Yours sincerely,

Giselle Creeser
Director, Spectrum Policy & Engineering
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eutelsat
communications via satellite

December 20th, 2019

Federal Communications Commission
International Bureau
445 12th Street, SW
Washington, D.C. 20554

Re: Coordination Certificate for AC BidCo LLC Earth Stations Aboard Aircraft Application

To whom it may concern

This letter certifies that Eutelsat S.A. is aware that AC BidCo LLC ("AC BidCo") is planning to seek modification of its authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive Earth Stations Aboard Aircraft ("ESAA") terminals AES1 and AES2 (Call Sign E120106). The AC BidCo application will seek authority for these ESAA terminals to communicate with Eutelsat 133WA at 132.85°W under the current ESAA rules, including Section 25.228.

Eutelsat S.A. certifies that AC BidCo's use of the ESAA transmit/receive terminals AES1 and AES2 at the power density levels defined between AC BidCo and Eutelsat is consistent with existing coordination agreements with all adjacent satellite operators within +/-6 degrees of orbital separation from Eutelsat 133WA and will be operated in conformance with existing coordination agreements with other satellite systems.

If the FCC authorizes the operations proposed by AC BidCo in its application, Eutelsat S.A. will include the power density levels used by AC BidCo in all future satellite network coordinations.

Sincerely,

For Eutelsat
Filipe De Oliveira
Director of Resources Engineering

20th December 2019

Date

Eutelsat S.A. · société anonyme à Conseil d'Administration au capital de 987 459 990 € · RCS n° 422 551 176 Paris
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MD-A-19-059

SKY Perfect JSAT Corporation
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Tokyo 107-0052, Japan
TEL +81-3-5571-7800

December 23rd, 2019

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

Re: Coordination Certificate for AC BidCo LLC Earth Stations Aboard Aircraft Application

To whom it may concern

This letter certifies that JSAT is aware that AC BidCo LLC ("AC BidCo") is planning to seek modification of its authorization from the Federal Communications Commission ("FCC") to operate Ku band transmit/receive Earth Stations Aboard Aircraft ("ESAA") terminals AES1 and AES2 (Call Sign E120106). The AC BidCo application will seek authority for these ESAA terminals to communicate with JCSAT-18 at 150°EL under the current ESAA rules, including Section 25.228.

JSAT certifies that AC BidCo's use of the ESAA transmit/receive terminals AES1 and AES2, 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-18 and will be operated in conformance with existing coordination agreements with other satellite systems.

If the FCC authorizes the operations proposed by AC BidCo in its application, JSAT will include the power density levels used by AC BidCo in all future satellite network coordinations.

Yours sincerely,

Signature

December 23, 2019

Date:

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

ANNEX 4:

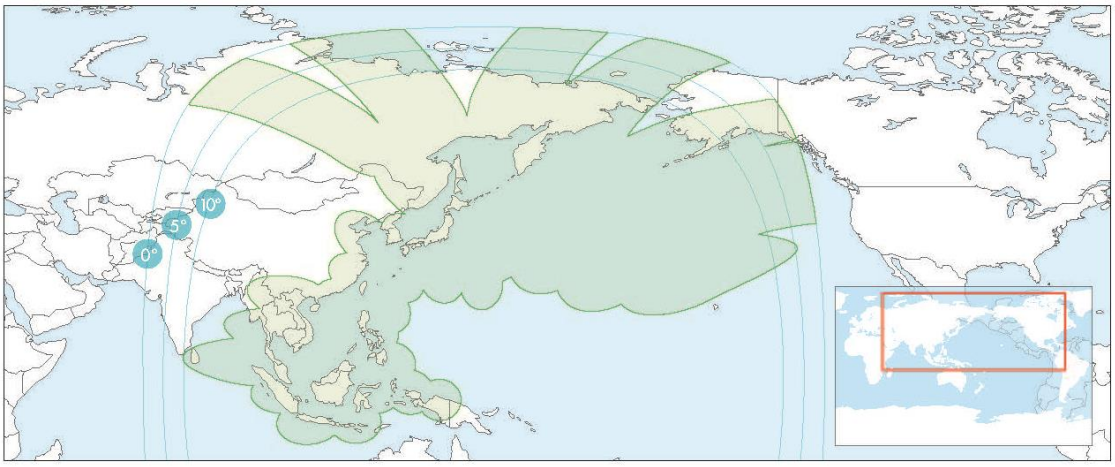
JCSAT-18 Coverage Maps, Link Budgets, and Orbital Debris Mitigation Statement

JCSAT-18 Coverage Maps

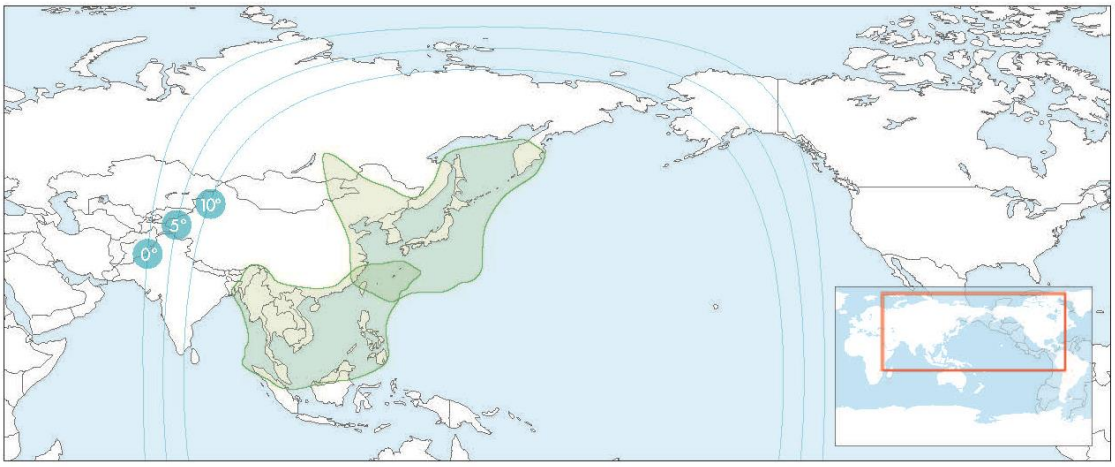
JCSAT-18

Coverage Area

Ku-band spot beam



Ku-band conventional beam



JCSAT-18 Link Budget: AeroSat Antenna (AES1)

Forward Link Budget

Hub	Yokohama	
Required Eb/No	4.2	dB
Modulation	4-PSK	
Info Rate	47,335	Kbps
FEC Rate	0.726	
Carrier Rolloff	1.1	
Satellite SFD @ 2 dB/K	-70.2	dBW/m^2
Transponder Atten	0	dB
Transponder ID		

Hub Transmit

Frequency	27.187	GHz
Satellite G/T	17.8	dB/^{o}K
Antenna Diameter	13	m
Carrier EIRP	64.18	dBW
Ant. Input PFD	-27.24	dBW/4kHz
Path Loss	212.56	dB
Atm/Point/Pol Loss	0.11	dB

Aircraft Receive Terminal

Frequency	12.437	GHz
Satellite EIRP	54.9	dBW
Downlink PFD@ Beam Center	12.22	dBW/4kHz
Receive Gain	68.8	dB
Terminal G/T	11.78	dB/^{o}K
Path Loss	205.66	dB
Other Losses	0.04	dB

Transponder

Total OPBO	3.50	dB
Carrier OPBO	8.17	dB
C/No Thermal Up	97.59	dB-Hz
C/No Thermal Dn	80.92	dB-Hz
C/Io Total	85.74	dB-Hz
C/No+Io	79.61	dB-Hz
Add'l Link Margin	0.28	dB
% BW per cxr	33.83	%
% Power per cxr	34.15	%
Xpdr BW Alloc	36.19	MHz

Return Link Budget

Terminal	Aerosat Ku Remote	
Required Eb/No	5.5	dB
Modulation	4-PSK	
Info Rate	2,781.2	Kbps
FEC Rate	0.679	
Carrier Spacing	1.2	
Carrier Spreading	1.2	
Satellite SFD @ 2 dB/K	-73.5	dBW/m^2
Transponder Atten	0	dB
Transponder ID		

Aircraft Transmit Terminal

Frequency	14.094	GHz
Satellite G/T	8.5	dB/^{o}K
Antenna Diameter	0.4	m
Carrier EIRP	40.79	dBW
Ant Input PFD	-15.3	dBW/4kHz
Path Loss	206.74	dB
Atm/Point/Pol Loss	0.05	dB

Hub Receive

Frequency	17.794	GHz
Satellite EIRP	62.9	dBW
Downlink PFD@ Beam Center	-1.75	dBW/4kHz
Hub G/T	48.54	dB/^{o}K
Path Loss	208.88	dB
Other Losses	0.22	dB

Transponder

Total OPBO	3.50	dB
Carrier OPBO	37.56	dB
C/No Thermal Up	70.60	dB-Hz
C/No Thermal Dn	92.88	dB-Hz
C/Io Total	73.26	dB-Hz
C/No+Io	68.71	dB-Hz
Add"l Link Margin	0.09	dB
% BW per cxr	4.73	%
% Power per cxr	0..04	%
Xpdr BW Alloc	2.45	MHz

JCSAT-18 Link Budget: ThinKom Antenna (AES2)

Forward Link Budget

Hub	Yokohama	
Required Eb/No	5.2	dB
Modulation	4-PSK	
Info Rate	52,681	Kbps
FEC Rate	0.808	
Carrier Rolloff	1.1	
Satellite SFD @ 2 dB/K	-70.2	dBW/m^2
Transponder Atten	0	dB
Transponder ID		

Hub Transmit

Frequency	27.187	GHz
Satellite G/T	17.8	dB/^{o}K
Antenna Diameter	13	m
Carrier EIRP	64.18	dBW
Ant. Input PFD	-43.73	dBW/4kHz
Path Loss	212.56	dB
Atm/Point/Pol Loss	0.43	dB

Aircraft Receive Terminal

Frequency	12.437	GHz
Satellite EIRP	54.9	dBW
Downlink PFD@ Beam Center	12.22	dBW/4kHz
Receive Gain	68.8	dB
Terminal G/T	13.98	dB/^{o}K
Path Loss	205.66	dB
Other Losses	0.04	dB

Transponder

Total OPBO	3.50	dB
Carrier OPBO	8.17	dB
C/No Thermal Up	97.59	dB-Hz
C/No Thermal Dn	83.12	dB-Hz
C/Io Total	85.74	dB-Hz
C/No+Io	81.13	dB-Hz
Add'l Link Margin	0.79	dB
% BW per cxr	33.83	%
% Power per cxr	34.15	%
Xpdr BW Alloc	36.19	MHz

Return Link Budget

Terminal	Thinkom 2Ku Remote	
Required Eb/No	7.8	dB
Modulation	16-PSK	
Info Rate	3,719.2	Kbps
FEC Rate	0.454	
Carrier Spacing	1.2	
Carrier Spreading	1.2	
Satellite SFD @ 2 dB/K	-73.5	dBW/m^2
Transponder Atten	0	dB
Transponder ID		

Aircraft Transmit Terminal

Frequency	14.094	GHz
Satellite G/T	8.5	dB/^{o}K
Antenna Diameter	0.6	m
Carrier EIRP	45.11	dBW
Ant Input PFD	-18.48	dBW/4kHz
Path Loss	206.74	dB
Atm/Point/Pol Loss	0.05	dB

Hub Receive

Frequency	17.794	GHz
Satellite EIRP	62.9	dBW
Downlink PFD@ Beam Center	-1.75	dBW/4kHz
Hub G/T	47.36	dB/^{o}K
Path Loss	208.88	dB
Other Losses	0.22	dB

Transponder

Total OPBO	3.50	dB
Carrier OPBO	33.24	dB
C/No Thermal Up	74.92	dB-Hz
C/No Thermal Dn	96.02	dB-Hz
C/Io Total	73.26	dB-Hz
C/No+Io	70.99	dB-Hz
Add"l Link Margin	0.08	dB
% BW per cxr	4.73	%
% Power per cxr	0.11	%
Xpdr BW Alloc	2.45	MHz

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MD-A-19-058

JCSAT-18

The JCSAT-18 Spacecraft is a Boeing BSS702MP model satellite that will be positioned at 150° E.L. This statement addresses requirements contained in Section 25.114(d)(14)(i)-(iv) of the Commission's rules.

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 of JCSAT-18 and has assessed and limited the probability of the spacecraft becoming a source of debris by collisions with small debris or meteoroids. No debris is generated during foreseeable on-station operations.

During the JCSAT-18 Spacecraft design, the possibility of the spacecraft itself becoming a source of debris due to collisions with small debris or meteoroids that could cause loss of control preventing appropriate deorbit or disposal was considered and mitigated with redundant components and minimization of single points of failure. In addition, critical components are located within the structure of the spacecraft and are shielded from external debris. The spacecraft does not use any subsystems for end-of-life disposal that are not used for normal operations.

MINIMIZING RISK OF ACCIDENTAL EXPLOSIONS – 25.114(d)(14)(ii)

JSAT has assessed and limited the probability of accidental explosions during and after completion of mission operations. The JCSAT-18 Spacecraft has been designed to minimize the risk that on-board hazardous materials within the Propulsion Subsystem and the Electrical Power Subsystem (e.g. batteries) will cause an event that has the potential to generate orbital debris. Specifically:

- The Propulsion Subsystem was designed, manufactured, and tested to ensure a very low risk of propellant leakage and a very low risk of undesired mixing of propellant to prevent conditions that could potentially result in the release of orbital debris.
- The Electrical Power Subsystem has multiple on-board safety systems to maintain the on-board batteries within their safe operating range as specified by the manufacturer to mitigate the risk of battery overcharge, undercharge, thermal runaway, or instability that could potentially result in the release of orbital debris, even in the event of an Electrical Power Subsystem component failure.

Throughout the JCSAT-18 mission, critical subsystems such as the Propulsion Subsystem and Electrical Power Subsystem will be monitored to further reduce the already very remote risk of an event that could result in the release of orbital debris. At the end of operational life, after the satellite has reached its final disposal orbit, unless prevented by technical failures beyond its control, JSAT will deplete or secure all on-board sources of stored energy by venting excess propellant, discharging batteries, relieving pressure vessels, and other appropriate measures to minimize any possibility that an explosion will create debris.

SAFE FLIGHT PROFILES AND ORBITAL COORDINATION – 25.114(d)(14)(iii)

JSAT has assessed and limited the probability of the JCSAT-18 Spacecraft becoming a source of debris through collision with large debris or another operating spacecraft. Apart from JCSAT-6, which is planned to be relocated away from 150° E.L. before the arrival of JCSAT-18, JSAT is not aware of any other FCC- or non-FCC licensed spacecraft that are operational or planned to be deployed at 150° E.L. or to nearby orbital locations such that there would be an overlap with the stationkeeping volume of JCSAT-18. In order to monitor nearby objects, JSAT receives conjunction data messages (CDM) from the Combined Space Operations Center (CSpOC) in a timely manner. As a result of CDM evaluation, collision avoidance maneuvers will be implemented if needed.

POST MISSION DISPOSAL – 25.114(d)(14)(iv)

At the end of mission life, the JCSAT-18 Spacecraft will be moved to a disposal orbit approximately 300 km higher than the geostationary orbit altitude, in compliance with:

(a) Recommendation ITU-R S.1003.2 12/2010 environmental protection of the geostationary satellite orbit. S Series Fixed-satellite services. Geneva, 2011;

(b) IADC Space Debris Mitigation Guidelines, IADC-02-01 Rev 1, Action Item number 22.4,9/2007; and

(c) Space systems - disposal of satellites operating at geosynchronous altitude, ISO 26872. Switzerland, 2010.

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

235 km + (1000·CR·A/m) = 276 km

CR = 1.5 JCSAT-18 Solar radiation pressure coefficient

A= 82 m^2 JCSAT-18 Area based on deployed on-station configuration

M= 3006 kg JCSAT-18 dry mass

Planned post-mission disposal altitude: 300 km

Margin to minimum altitude requirement: 24 km

JSAT intends to reserve 5.2 kg of propellant to account for post-mission disposal of JCSAT-18. JSAT has assessed propellant gauging uncertainty and has provided an adequate margin of propellant reserve to address the assessed uncertainty.