

Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of

Intelsat License LLC

Petition for Declaratory Ruling to Add
HISPASAT 143W-1 to the Permitted
Space Station List for Ku- and S-band
Operations at 143° W.L.

File No. SAT-PPL- _____

PETITION FOR DECLARATORY RULING

Intelsat License LLC (“Intelsat”), pursuant to Section 25.137 of the rules of the Federal Communications Commission (“Commission” or “FCC”),¹ hereby seeks authorization for the Spanish-licensed HISPASAT 143W-1² spacecraft (Call Sign S2476) to serve the United States from the 143° W.L. orbital location (the “Petition”). Specifically, this Petition requests that the Commission add HISPASAT 143W-1, at the 143° W.L. orbital location, to the Commission’s Approved Space Station List (“Permitted List”) for fixed satellite services (“FSS”) in the extended and conventional Ku-bands and broadcast-satellite service (“BSS”) feeder link bands; and for S- and Ku-band telemetry, tracking, and control (“TT&C”) operations. Grant of this Petition will enable Intelsat to partially replace mobility services previously provided by Intelsat 29e (Call Sign S2913).³

¹ 47 C.F.R. § 25.137.

² HISPASAT 143W-1 was previously known as HISPASAT 30W-4 and HISPASAT-1D.

³ See Letter from Susan H. Crandall, Associate General Counsel, Intelsat US LLC, to Ms. Marlene H. Dortch, Secretary, Federal Communications Commission, File No. SAT-

In accordance with the Commission's rules, this application has been filed electronically as an attachment to FCC Form 312.⁴ Technical information supporting a market access grant for the HISPASAT 143W-1 satellite was included in a previous Petition for Declaratory Ruling for HISPASAT 143W-1 and is hereby incorporated by reference.⁵ That technical information is further supplemented herein by the attached Engineering Statement.

I. BACKGROUND

In 2002, Hispasat S.A. ("Hispasat") launched HISPASAT 143W-1, a Spanish-licensed, Ku-band satellite providing European and North American coverage from the 30° W.L. orbital location. In 2003, the Commission granted market access for one of the satellite's Ku-beams and added the spacecraft to the Permitted List for U.S. operations at 30° W.L.⁶

Pursuant to an agreement with Intelsat, Hispasat will relocate HISPASAT 143W-1 to, and operate the satellite at, the 143° W.L. orbital location. The drift to 143° W.L. is expected to commence in early December 2019 and take approximately eight weeks.

MOD-20160916-00091 (Jun. 28, 2019) (notifying the FCC of the complete loss of Intelsat 29e).

⁴ 47 C.F.R. § 25.137(a).

⁵ *Petition for Declaratory Ruling to Add HISPASAT-1D Satellite at 30° W.L to the Permitted Space Station List*, File No. SAT-PDR-20030430-00090 (Apr. 30, 2003). *See supra* n. 2

⁶ *Petition for Declaratory Ruling to Add HISPASAT-1D Satellite at 30° W.L to the Permitted Space Station List*, Order, File No. SAT-PDR-20030430-00090 (2003) ("*HISPASAT-1D Order*").

Once on-station at 143° W.L., Intelsat will utilize HISPASAT 143W-1, in inclined orbit, to partially restore capacity lost following the in-orbit failure and the full cessation of operations of Intelsat 29e.⁷

II. INTELSAT IS QUALIFIED TO HOLD THE MARKET ACCESS AUTHORIZATION REQUESTED HERIN

A. Legal Qualification

Intelsat is legally qualified to hold the market access authorization requested in this Petition. The information provided in the attached Form 312 demonstrates Intelsat's compliance with the Commission's basic legal qualifications. In addition, Intelsat already holds multiple Commission satellite licenses, and its legal qualifications are a matter of record before the Commission.⁸

B. Technical Qualifications

In the attached Form 312, Schedule S, and Engineering Statement, Intelsat demonstrates that it is technically qualified to hold the authorization requested herein. Specifically, Intelsat provides the information currently required by Section 25.137(b) of the Commission's rules.⁹

⁷ *See supra* n. 3.

⁸ *See Constellation, LLC, Carlyle PanAmSat I, LLC, Carlyle PanAmSat II, LLC, PEP PAS, LLC, and PEOP PAS, LLC, Transferors and Intelsat Holdings, Ltd., Transferee, Consolidated Application for Authority to Transfer Control of PanAmSat Licensee Corp. and PanAmSat H-2 Licensee Corp.*, Memorandum Opinion and Order, 21 FCC Rcd 7368, 7381, ¶ 23 (2006) ("The Commission previously has determined that PanAmSat and Intelsat are qualified to hold licenses.").

⁹ 47 C.F.R. § 25.137(b).

III. REQUEST TO ADD HISPASAT 143W-1 TO THE PERMITTED LIST

Intelsat respectfully requests authority to utilize the HISPASAT 143W-1 satellite at 143° W.L. to serve the U.S. market. HISPASAT 143W-1 is currently operating at 30° W.L. and will drift to, and operate at, its new orbital location pursuant to Spanish authorization.

Roughly two weeks into the drift—approximately mid-December 2019—TT&C operations for HISPASAT 143W-1 will be transitioned from European earth stations to South American and U.S. earth stations.¹⁰ Once on-station at 143° W.L., the satellite will utilize Intelsat and third-party earth stations for TT&C. HISPASAT 143W-1’s specific TT&C frequencies are as follows: 11700 MHz, 12749.75 MHz, and 2251 MHz in the downlink; and 14498.7 MHz and 2072.7958 MHz in the uplink.

Once located at 143° W.L., HISPASAT 143W-1 will also operate on the frequencies identified below.

	HISPASAT 30W-4¹¹ at 30° W.L.	HISPASAT 143W-1 at 143° W.L.
11.45-11.7 GHz		✓
11.7-11.95 GHz	✓	✓
11.95-12.2 GHz	✓	✓
12.2-12.5 GHz		✓
12.5-12.7 GHz		✓
12.7-12.75 GHz		✓
13.75-14.0 GHz		✓
14.0-14.25 GHz	✓	✓
14.25-14.5 GHz		✓
17.3-17.55 GHz		✓
17.55-17.8 GHz		✓

¹⁰ Intelsat will be seeking Special Temporary Authority to support the drift using Intelsat earth stations.

¹¹ *See supra* n. 2.

IV. GRANT OF THE PETITION IS CONSISTENT WITH FCC POLICY AND IN THE PUBLIC INTEREST

The Commission has established a rebuttable presumption that granting market access to non-U.S. satellites licensed by World Trade Organization Members that provide services covered by U.S. commitments under the Basic Telecom Agreement furthers competition in the United States.¹² In conducting a *DISCO II* analysis, the Commission examines whether permitting access to the foreign-licensed satellite will distort competition in the United States or create issues relating to spectrum availability, national security, law enforcement, foreign policy, or trade.¹³

Grant of Intelsat's Petition to add HISPASAT 143W-1 to the Permitted List for operations in the Ku- and S-bands at 143° W.L. fully complies with the Commission's *DISCO II* framework. HISPASAT 143W-1 is a Spanish-licensed satellite, providing covered FSS operations.¹⁴ Accordingly, the Petition is subject to the presumption in favor of market access.

Moreover, the Commission previously determined under the *DISCO II* framework that the HISPASAT 143W-1 satellite offers services in furtherance of competition in the United States.¹⁵ This favorable assessment should be extended to Intelsat's current Petition to add the HISPASAT 143W-1 satellite to the Permitted List at 143° W.L., as grant will permit Intelsat to

¹² *Amendment of the Commission's Regulatory Policies to Allow Non-U.S.-Licensed Space Stations to Provide Domestic and International Satellite Service in the United States*, Report and Order, 12 FCC Rcd 24094, ¶ 39 (1997) ("*DISCO I*").

¹³ *Id.* at ¶¶ 4 & 178; 47 C.F.R. § 25.143(a).

¹⁴ *DISCO II* at ¶¶ 25 & 30.

¹⁵ HISPASAT-1D Order at ¶ 7.

utilize the satellite's full Ku-band transponder capacity to serve the United States.¹⁶

Additionally, grant of this Petition is in the public interest because it will allow Intelsat to restore service to customers who were affected by the loss of the Intelsat 29e satellite.

Grant of this Petition will not result in an increased risk of harmful interference. Intelsat will utilize HISPASAT 143W-1's communications payload and TT&C frequencies at 143° W.L. in conformance with existing coordination agreements and the FCC's rules governing operations vis-à-vis adjacent locations.

V. WAIVER REQUESTS

Under Section 1.3 of the Commission's rules, the Commission has authority to waive its rules "for good cause shown."¹⁷ Good cause exists if "special circumstances warrant a deviation from the general rule and such deviation will serve the public interest" better than adherence to the general rule.¹⁸ In determining whether waiver is appropriate, the Commission should "take into account considerations of hardship, equity, or more effective implementation of overall policy."¹⁹ Additionally, a waiver of the Table of Allocations is generally granted "when there is little potential interference into any service authorized under the Table of Frequency allocations and when the nonconforming operator accepts any interference from authorized services."²⁰

¹⁶ *Id.* at ¶ 13.

¹⁷ 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969).

¹⁸ *Northeast Cellular Telephone Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990).

¹⁹ *WAIT Radio*, 418 F.2d at 1159.

²⁰ *See The Boeing Company Application for Blanket Authority to Operate Up to Eight Hundred Technically-Identical Transmit and Receive Mobile Earth Stations Aboard Aircraft in the 14.0-14.5 GHz and 11.7-12.2 GHz Frequency Bands, Order and Authorization*, Order and Authorization, 16 FCC Rcd 22645, 22651 (2001); *Application of Fugro-Chance, Inc. for Blanket Authority to Construct and Operate a Private Network*

While HISPASAT 143W-1 largely complies with Commission rules, certain waivers are required as a result of the frequencies and technical characteristics of the spacecraft.

A. U.S. Table of Frequency Allocations, Footnote NG52

Good cause exists to waive the international-only requirements for the 11.45-11.7 GHz frequency band on HISPASAT 143W-1. The purpose of NG52 is to limit the number of FSS earth stations with which the co-primary Fixed Service (“FS”) stations would need to coordinate.²¹ The Commission has found that waiving NG52 would not undermine the purpose of the rules if the party seeking waiver: (1) will be utilizing earth stations that are receive-only in these bands and thus “not capable of causing interference into FS stations” operating in the bands; and (2) agrees to “accept any level of interference from FS stations” in these bands.²²

With respect to the 11.45-11.7 GHz frequency band, grant of the requested waiver satisfies these criteria and would be consistent with precedent, including prior waiver of NG52 for Intelsat 29e at 50° W.L.²³ Intelsat agrees to accept any level of interference into those earth

of Receive-Only Mobile Earth Stations, Order and Authorization, 10 FCC Rcd 2860, 2860 (1995) (authorizing Mobile Satellite Service in the C-band). See also Application of Motorola Satellite Communications, Inc. for Modification of License, Order and Authorization, 11 FCC Rcd 13952, 13952-13956 (1996) (authorizing service to fixed terminals in bands allocated for mobile satellite service).

²¹ *See Amendment of Part 2 of The Commission’s Rules to Conform, to the Extent Practicable, with the Geneva Radio Regulations, as Revised by the Space WARC, Geneva, Report and Order, 26 RR 2d 1257, ¶¶ 35-38 (1973). See also EchoStar KuX Corporation Application for Authority to Construct, Launch and Operate a Geostationary Satellite Using the Extended Ku-band Frequencies in the Fixed-Satellite Service at the 83° W.L. Orbital Location, Order and Authorization, 20 FCC Rcd 919, ¶ 9 (2004) (“EchoStar 83° Waiver”).*

²² *Id.* at ¶ 13 (waiving the international-only restriction for passive, receive-only earth station operations in the 11.45-11.7 GHz band).

²³ *See Intelsat License LLC Application to Modify Authorization for Intelsat 29e, Stamp Grant, File No. SAT-MOD-20160916-00091, Condition 20 (granted Jan. 26, 2017). See*

stations from FS stations in the band. Intelsat will provide services in the 11.45-11.7 GHz frequency band in the United States and its territories only on a non-interference/non-protected basis. Accordingly, the earth stations operating in these bands pose no interference concerns with respect to co-frequency FS stations and therefore will not need to be coordinated with FS stations located within the United States and its territories.

Intelsat also agrees to abide by customer notification requirements that the FCC has previously imposed when granting waivers of NG52.²⁴ Intelsat will inform its customers in writing, including any customers receiving end-user services from resellers accessing capacity on HISPASAT 143W-1, of the potential for interference from FS operations in the 11.45-11.7 GHz frequency band.

B. U.S. Table of Frequency Allocations, BSS Frequencies

Good cause exists to grant a waiver of the International Telecommunication Union (“ITU”) Region 2 BSS Plan and the U.S. Table of Frequency Allocations to permit HISPASAT 143W-1 to utilize the 12.2-12.7 GHz downlink and 17.3-17.8 GHz feeder link bands for FSS on a non-interference/non-protected basis in ITU Region 2, including the United States. A waiver of Section 2.106 to permit HISPASAT 143W-1 to operate in these frequency bands is in the public interest because it will facilitate efficient use of these bands without causing harmful interference to terrestrial FS stations or BSS operations.

accord DIRECTV Enterprises, LLC, Fleet Management Notice for SKY-B1 Satellite, Stamp Grant, File No. SAT-MOD-20170221-00019, Condition 10 (granted May 11, 2017).

²⁴ See, e.g., *id.*; *Intelsat North America Request for Waiver*, Stamp Grant, File No. SAT-MOD-20050610-00122, Condition 3 (granted Sept. 30, 2005); *EchoStar 83° Waiver*, ¶ 13.

There is no potential for harmful interference from HISPASAT 143W-1 into U.S. BSS networks. HISPASAT 143W-1 is 14° from the nearest operational BSS satellite with access to the U.S. market that is operating in the 12.2-12.7 GHz and 17.3-17.8 GHz bands. At this orbital separation, there is no risk of harmful interference from HISPASAT 143W-1 to BSS networks in these bands.²⁵ Additionally, HISPASAT 143W-1 operations will be compatible with any future non-geostationary orbit FSS operations in the 12.2-12.7 GHz frequency band in ITU Region 2 and that receive a “favourable” or “qualified favourable” finding in accordance with Recommendation 85 (WRC-03), certifying its compliance with applicable equivalent PFD limits in Article 22 of the ITU Radio Regulations.²⁶

As these frequencies will be used with relatively large gateway earth stations with low downlink Equivalent Isotropically Radiated Power (“EIRP”) densities and low power densities at the earth station input, coordination is expected to be triggered with a very limited number of assignments or proposed modifications. Intelsat will endeavor to complete all required coordination agreements. In case any of these coordination agreements are not completed, the corresponding operation of HISPASAT 143W-1 in the Region 2 BSS Plan frequencies will be conducted on a non-interference/non-protected basis.

²⁵ See *Application for Authority to Operate Replacement Payloads of the EUTELSAT 172B Satellite in the 3700-4200 MHz, 5925-6425 MHz, 10.95-11.20 GHz, 11.45-11.7 GHz, 12.2-12.75 GHz and 14.0-14.5 GHz bands at 172.0° E.L.*, Stamp Grant, File No. SAT-RPL-20170927-00136 (granted Apr. 25, 2018) (finding that waiver was “justified because FSS operations in these bands are consistent with No. 5.492 of the ITU Radio Regulations and there are no U.S. BSS satellites transmitting from orbital locations within 50° of the 172° E.L. orbital location.”).

²⁶ 47 C.F.R. § 2.106, No. 5.487A. See, e.g., *WorldVu Satellites Limited LLC*, Order and Declaratory Ruling, 32 FCC Rcd 5366, ¶ 24(d) (2017).

C. Table of Frequency Allocations, TT&C Frequencies

Intelsat requests a waiver of Section 2.106 of the Commission's rules to permit HISPASAT 143W-1 to conduct downlink operations in 12.7-12.75 GHz frequency band and backup TT&C at the 2072.2958 MHz (Earth-to-space) and 2251 MHz (space-to-Earth) center frequencies on a non-interference basis.

Good cause exists to grant waiver to allow downlink operations in the 12.7-12.75 GHz frequency band. While this band is allocated for FSS use in the United States, the allocation is for Earth-to-space transmissions. The HISPASAT 143W-1 satellite is designed to downlink in the 12.7-12.75 GHz band—most notably with its telemetry at 12749.75 MHz—as is consistent with the FSS allocation of ITU Region 1, where the satellite currently operates. As the spacecraft is now in orbit, it is not possible to change the telemetry frequency. Further, Intelsat will conduct telemetry operations in the United States and its territories only on a non-interference/non-protected basis.

Good cause also exists to grant waiver to allow backup TT&C in the 2025-2100 MHz and 2200-2290 MHz frequency bands. In the United States, the 2025-2110 MHz band is allocated to the FS and mobile service on a primary basis and the 2200-2290 MHz band remains unallocated in the non-Federal service. The HISPASAT 143W-1 satellite was designed with its contingency TT&C frequencies in S-band, consistent with the allocation of ITU Region 1, where the satellite currently operates. As the spacecraft is now in orbit, it is not possible to change the contingency TT&C frequencies. Use of these frequencies will be infrequent as they will only be used for a portion of the drift to 143° W.L.; bi-annual testing, which will last approximately two hours per test; and TT&C services in the event the satellite's primary Ku-band TT&C frequencies experience an anomaly. Additionally, Intelsat will conduct TT&C operations in the

2072.2958 MHz and 2251 MHz frequencies in the United States and its territories only on a non-interference/non-protected basis.

D. East/West Station-Keeping Tolerance

Intelsat requests a waiver of Section 25.210(j) of the Commission’s rules, which requires satellite operators to maintain station-keeping within $\pm 0.05^\circ$ of their assigned orbital longitude in the east/west direction, unless specifically authorized by the Commission to operate with a different longitudinal tolerance.²⁷ HISPASAT 143W-1 will be operated with an east/west station-keeping tolerance of $\pm 0.1^\circ$.

Good cause exists to grant waiver of Section 25.210(j). Allowing HISPASAT 143W-1 to provide service to the U.S. market with a $\pm 0.1^\circ$ longitudinal tolerance will afford additional operational flexibility and conserve fuel, thus maximizing service to U.S. customers by extending the operational life of the satellite. Grant of the requested waiver would not adversely impact other operators because the east/west station-keeping volume will not overlap with that of any other satellites given that the closest satellite to HISPASAT 143W-1 is 2.3° away. As such, grant would be consistent with FCC precedent in which increased station-keeping volume was permitted based on a finding that doing so would not adversely affect the operations of other spacecraft and would have additional benefits such as conserving fuel for future operations.²⁸

E. Post-Mission Disposal

To the extent necessary and out of an abundance of caution, Intelsat requests a waiver of Section 25.114(d)(14)(ii) and 25.283(c) of the Commission’s rules, which require a “space

²⁷ 47 C.F.R. § 25.210(j).

²⁸ *See, e.g.*, Application of ES 172 LLC, File No. SAT-MOD-20171122-00159, Condition # 4 (granted Feb. 14, 2018); SES Americom, Inc. Application for Modification of Satcom SN-4 Fixed Satellite Space Station License, 20 FCC Rcd 11542, 11545 (2005).

station licensee” to demonstrate that stored energy will be discharged at the spacecraft’s end of life. In 2015, the Commission revised Section 25.283(c) to “permit a satellite to maintain de minimis propellant or pressurant upon disposal.” Post de-orbit, HISPASAT 143W-1 will retain a residual amount of helium.

Grant of this waiver is supported on hardship grounds. HISPASAT 143W-1 is an Alcatel Space (now Thales Alenia) SPACEBUS-3000B platform, which is not capable of venting fuel at end-of-life. The helium tanks for this model of satellite bus were sealed by firing a pyrotechnic valve following transfer orbit, therefore barring the venting of any remaining helium reserves at end-of-life. HISPASAT 143W-1 is currently in orbit and a design change cannot be accomplished at this time. Waiver in these circumstances is further supported by the fact that HISPASAT 143W-1 was launched prior to adoption of the rule requiring discharge of remaining fuel at end of life.²⁹

Although HISPASAT 143W-1 is a foreign-licensed space station and subject to the effective oversight of the Spanish government, out of an abundance of caution, Intelsat requests that the Commission waive Sections 25.114(d)(14)(ii) and 25.283(c).

VI. OPERATIONS IN THE 11.45-11.7 AND 13.75-14.0 GHZ FREQUENCY BANDS

Intelsat understands that HISPASAT 143W-1’s operations in the 11.45-11.70 GHz and 13.75-14.0 GHz frequency bands are subject to certain limitations and obligations, that Intelsat accepts and will fulfill. Specifically, for operations in the 11.45-11.70 GHz band, Intelsat accepts the following conditions:

²⁹ HISPASAT 143W-1 was launched in 2002—two years prior to the Commission’s adoption of the orbital debris mitigation rule requiring discharge of all propellant, Section 25.283(c), which was adopted and became effective in 2004. *Mitigation of Orbital Debris*, Second Report and Order, 19 FCC Rcd 11567 (2004); *Mitigation of Orbital Debris*, 69 Fed. Reg. 54581-54589 (Sept. 9, 2004).

- Intelsat’s use of the 11.45-11.70 GHz band (space-to-Earth) is subject to footnote US211 to the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, US211, which urges applicants for airborne or space station assignments to take all practicable steps to protect radio astronomy observations in the adjacent bands from harmful interference, consistent with footnote US74.

For operations in the 13.75-14.0 GHz frequency band, Intelsat accepts the following conditions:

- In the 13.75-14.0 GHz band (Earth-to-space), receiving space stations in the FSS shall not claim protection from radiolocation transmitting stations operating in accordance with the U.S. Table of Frequency Allocations.
- Pursuant to footnote US337 of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, any earth station in the United States and its possessions communicating with the HISPASAT 143W-1 space station in the 13.75-13.8 GHz band (Earth-to-space) is required to coordinate through the National Telecommunications and Information Administration’s (“NTIA”) Interdepartment Radio Advisory Committee’s (“IRAC”) Frequency Assignment Subcommittee (“FAS”) to minimize interference to the National Aeronautics and Space Administration (“NASA”) Tracking and Data Relay Satellite System, including manned space flight.
- Operations of any earth station in the United States and its possessions communicating with the HISPASAT 143W-1 space station in the 13.75-14.0 GHz band (Earth-to-space) shall comply with footnote US356 of the U.S. Table of Frequency Allocations, 47 C.F.R. § 2.106, US356, which specifies a mandatory minimum antenna diameter of 4.5 meters and a non-mandatory minimum and maximum EIRP. Operations of any earth station located outside the United States and its possessions communicating with the HISPASAT 143W-1 space station in the 13.75-14.0 GHz band (Earth-to-space) shall be consistent with footnote 5.502 to the ITU Radio Regulations, which allows a minimum antenna diameter of 1.2 meters for earth stations of a geostationary satellite orbit network and specifies mandatory power limits.
- Operators of earth stations accessing the HISPASAT 143W-1 space station in the 13.75-14.0 GHz band are encouraged to cooperate voluntarily with NASA in order to facilitate continued operation of NASA’s Tropical Rainfall Measuring Mission satellite.

VII. CONCLUSION

For the reasons set forth above, Intelsat respectfully requests that the Commission grant this Petition.

Respectfully submitted,

Intelsat License LLC

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Exhibit A
FCC Form 312, Response to Question 34: Foreign Ownership

The Commission previously approved Intelsat’s ownership structure, including foreign ownership.¹ There have been no material changes to Intelsat’s ownership since the *2018 Pro Forma*.

¹ See *Intelsat Holdings, Ltd. and Serafina Holdings Limited, Consolidated Application for Consent to Transfer of Control of Holders of Title II and Title III Authorizations*, Memorandum Opinion and Order, 22 FCC Rcd 22151 (2007) (“*Intelsat-Serafina Order*”); *Intelsat Application for Pro Forma Transfer of Control*, File Nos. SAT-T/C-20180627-00048, SAT-T/C-20180627-00049, SES-T/C-20180627-01430, SES-T/C-20180627-01436, SES-T/C-20180627-01433 (granted June 29, 2018), 0008216564 (granted June 28, 2018) and 0037-EX-TU-2018 (granted June 29, 2018) (“*2018 Pro Forma*”).

Exhibit B

FCC Form 312, Response to Question 40: Officers, Directors, and Ten Percent or Greater Shareholders

The officers and directors/managers of Intelsat License LLC are as follows:

Officers:

David Tolley, Chairman
José Toscano, Deputy Chairman
Michelle Bryan, Secretary
Mirjana Hervy, Director, Finance

Board of Managers:

David Tolley
José Toscano
Michelle Bryan

The business address of all Intelsat License LLC officers and members of the Board of Managers is: 4 rue Albert Borschette L-1246 Luxembourg.

Intelsat License LLC is a Delaware limited liability company that is indirectly wholly owned by Intelsat S.A. Specifically, Intelsat License LLC is wholly owned by Intelsat License Holdings LLC, also a Delaware limited liability company. Intelsat License Holdings LLC is wholly owned by Intelsat Ventures S.à r.l., a Luxembourg company, which is in turn wholly owned by Intelsat Alliance LP, a Delaware limited partnership. Intelsat Alliance LP is indirectly wholly owned by Intelsat Jackson Holdings S.A., a Luxembourg company. Intelsat Jackson Holdings S.A. is wholly owned by Intelsat Connect Finance S.A., a Luxembourg company, which in turn is wholly owned by Intelsat Envision Holdings LLC, a Delaware limited liability company. Intelsat Envision Holdings LLC is wholly owned by Intelsat (Luxembourg) S.A., a Luxembourg company. Intelsat (Luxembourg) S.A. is wholly owned by Intelsat Investments S.A., a Luxembourg company, which in turn is wholly owned by Intelsat Holdings S.A., a Luxembourg company. Intelsat Holdings S.A. is wholly owned by Investment Holdings S.à r.l., a Luxembourg company. Intelsat Investment Holdings S.à r.l. is wholly owned by Intelsat S.A., a Luxembourg company. Each of these entities may be contacted at the following address: 4 rue Albert Borschette, L-1246 Luxembourg.

Intelsat S.A. is a publicly traded company. To the best of Intelsat's knowledge, and with the exception of BC Partners Holdings Limited ("BCP"), described below, no person or entity holds a ten percent or greater ownership interest in Intelsat S.A. as of October 16, 2019.

Name:	BCP
Address:	Heritage Hall, Le Marchant Street, St Peter Port, Guernsey, Channel Islands
Citizenship:	Guernsey
Indirect Interest:	Approximately 39-40% ¹

¹ The exact indirect interest held by BCP is subject to fluctuation as Intelsat S.A.'s stock is publicly traded.