Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Eutelsat S.A.	)	
	)	
Petition for Declaratory Ruling for	)	File No.:
EUTELSAT 133WA To Access the	)	Call Sign:
U.S. Market and To Be Added to the	)	
Permitted Space Station List at the	)	
Nominal 133°W.L Orbital Location	)	

Expedited Processing Requested
Permit-but-Disclose Status Requested

PETITON FOR DECLARATORY RULING

Eutelsat S.A. ("Eutelsat") respectfully files this Petition for Declaratory Ruling ("Petition") pursuant to Section 25.137(a) of the Commission's rules, 47 C.F.R § 25.137(a), to access the U.S. market using the French-licensed EUTELSAT 133WA satellite (currently known as EUTELSAT 33C), and to add the satellite to the Permitted Space Station List ("Permitted List") in relevant Ku-band frequencies, at the nominal 133°W.L. orbital location.[1] In this Petition,[2] Eutelsat demonstrates that it is legally, technically, and otherwise qualified to hold the requested authority; that the proposed facilities and operations are compliant with applicable

[1] Given the existence of a U.S.-licensed satellite at 133°W.L., Eutelsat will operate the EUTELSAT 133WA satellite at 132.85° W.L. orbital location to avoid potential overlap of the satellites' station-keeping boxes.

[2] To efficiently address certain updates to a prior petition for declaratory ruling for the EUTELSAT 133WA satellite (including the satellite launch date, TT&C frequencies listed in Schedule S, and information regarding residual helium and an associated waiver request), this Petition replaces in its entirety the one filed in File No. SAT-PPL-20180122-00008, Call Sign S3026, which Eutelsat will separately request be dismissed.

Commission rules, regulations, and policies; and that grant of the Petition would serve the public interest, convenience, and necessity. Eutelsat also demonstrates that expedited consideration of the Petition and waiver of certain satellite application processing rules and policies (to the extent necessary to permit substantive consideration and ultimate grant of the Petition) would strongly serve the public interest.

I. INTRODUCTION AND BACKGROUND

EUTELSAT 133WA, a French-licensed satellite currently in orbit at 33˚E.L., operates in Ku-band frequencies at 10.95-11.2 GHz, 11.2-11.45 GHz, 11.45-11.7 GHz, and 12.5-12.75 GHz (space-to-Earth) and 13.0-13.25 GHz, 13.75-14.0 GHz, and 14.0-14.5 GHz (Earth-to-space) to provide fixed-satellite service ("FSS") connectivity to a range of users. The EUTELSAT 133WA satellite was launched on 8 March 2001 and the end of its operational life is not expected before October 2022. Therefore, the satellite is an excellent candidate to provide near-term service from the 133°W.L. orbital location, where the French Administration has ITU date priority in Ku-band and Ka-band frequencies, in advance of the deployment of another purpose-built satellite at that location.[3]

Eutelsat seeks to add the EUTELSAT 133WA satellite to the Permitted List for the 10.95-11.2 GHz, 11.45-11.7 GHz and 13.75-14.0 GHz bands (the "extended Ku-band"), as well as the 14.0-14.5 GHz band (the uplink portion of the "conventional Ku-band"). Eutelsat includes information in this Petition regarding the 11.2-11.45 GHz and 13.0-13.25 GHz bands in the event that future earth station applicants seek to operate with EUTELSAT 133WA in these bands, subject to compliance with applicable Commission rules and policies. Although the EUTELSAT

[3] Eutelsat has filed a petition to provide longer-term service to the U.S. market from 133°W.L. using the EUTELSAT 133WB satellite that will operate across available Ku-band and Ka-band frequencies. *See* File No. SAT-PPL-20180129-00012, Call Sign S3029.

133WA satellite is also capable of supporting downlink operations in the 12.5-12.75 GHz band, Eutelsat does not currently plan to operate in this band in the United States or with U.S.-licensed earth stations.[4]

EUTELSAT 133WA will soon commence relocation to 133˚ W.L. and will begin operating from that location in mid-2018. Operation of the EUTELSAT 133WA satellite at 133˚ W.L. is Eutelsat's first step in fully commercializing this important orbital location. Specifically, Eutelsat seeks to provide near-term service using this in-orbit Ku-band satellite to meet the immediate needs of the U.S. and other markets. In addition, Eutelsat will deploy a purpose-built Ku/Ka-band satellite at the 133˚ W.L. orbital location by 2021 that will operate across all available spectrum bands to provide advanced FSS services and other applications.

EUTELSAT 133WA will operate at the nominal 133°W.L. orbital location in certain frequency bands that have also been requested for use by Intelsat License LLC ("Intelsat") commencing sometime in 2022.[5] For the reasons discussed herein, including the near-term nature of Eutelsat's planned operations, expedited processing and grant of the requested authority in due course will serve the public interest by allowing Eutelsat to meet current U.S. market demand for satellite services from 133°W.L. during a period in which this important spectrum and orbital resource would otherwise lay fallow.

[4] In the event that an earth station applicant seeks to operate with the EUTELSAT 133WA satellite in this band in the future, Eutelsat will provide all technical information necessary to support such a request.

[5] *See* Application for Authority to Launch and Operate Galaxy 15R, a Replacement Satellite with New Frequencies, at 133.0º W.L. (227.0º E.L.), File Nos. SAT-LOA-20170524-00078 and SAT-AMD-20170613-00086 (Call Sign S3015) ("Intelsat Application").

II. DISCUSSION

A. EUTELSAT 133WA Petition for Declaratory Ruling

The Commission will allow non-U.S. licensed satellites to access the U.S. market and will include them on the Permitted List upon their indicating compliance with Sections 25.114 and 25.137 of the Commission's Rules, 47 C.F.R. §§ 25.114 & 25.137, and demonstrating that the public interest would be served by such inclusion. This Petition and accompanying information, including the waivers requested herein, establish that adding the EUTELSAT 133WA satellite to the Permitted List would be consistent with the Commission's rules and policies.

1. Legal Qualifications

The legal qualifications of Eutelsat are a matter of record before the Commission. Eutelsat and its affiliates, including Satelites Mexicanos S.A. de C.V. (d/b/a Eutelsat Americas), operate many satellites that have been approved by the Commission for inclusion on the Permitted Space Station List or as authorized points of communication for U.S. earth station licensees;[6] and ES 172 LLC, a Eutelsat subsidiary, holds two Commission satellite licenses.[7] Eutelsat provides additional information regarding its legal qualifications in FCC Form 312 and relevant attachments to this Petition.

EUTELSAT 133WA is a French-licensed satellite and France is a member country of the World Trade Organization ("WTO"). Where, as here, a non-U.S. satellite licensed by a WTO-member country seeks authority to provide satellite service covered by the WTO Basic

[6] *See, e.g.*, Permitted Space Station List (available at https://www.fcc.gov/permitted-space-station-list).

[7] *See* ES 172 LLC, Call Signs 2610 and 3021 (various file numbers).

Telecommunications Agreement, the Commission presumes that foreign country participation will promote competition in the United States.[8] Accordingly, Eutelsat need not make the effective competitive opportunities showing set out in Section 25.137 of the Commission's rules.

2. Technical Qualifications

Pursuant to Section 25.137(d) of the Commission's rules, 47 C.F.R. § 25.137(d), Eutelsat demonstrates in this Petition that the proposed operations of the EUTELSAT 133WA satellite comply with all applicable Commission requirements for non-U.S. licensed satellites to operate in the United States. Eutelsat provides the attached Engineering Statement, Schedule S and associated materials containing information relating to the technical and operational characteristics of the EUTELSAT 133WA satellite.

a. Spectrum Availability

The EUTELSAT 133WA satellite, which was originally built to operate in ITU Region 1, is capable of operating in the following Ku-band frequencies: 10.95-11.2 GHz, 11.2-11.45 GHz, 11.45-11.7 GHz and 12.5-12.75 GHz (space-to-Earth); and 13.0-13.25 GHz, 13.75-14.0 GHz and 14.0-14.5 GHz (Earth-to-space). Eutelsat seeks to add the EUTELSAT 133WA satellite to the Permitted List, which includes use of the 10.95-11.2 GHz, 11.45-11.7 GHz and 13.75-14.0 GHz bands (the "extended Ku-band"), as well as the 14.0-14.5 GHz band (the uplink portion of the

[8] *See* 47 C.F.R. § 25.137(a)(2); *see also Amendment of the Commission's Regulatory Policies to Allow Non-U.S. Licensed satellites Providing Domestic and International Service in the United States,* Report and Order, IB Docket No. 96-111, 12 FCC Rcd 24094, ¶ 39 (1997) ("We adopt our proposal to apply a presumption in favor of entry in considering applications to access non-U.S. satellites licensed by WTO members to provide services covered by the U.S. commitments under the WTO Basic Telecom Agreement."); *Id.*, ¶ 64 ("[W]e will not evaluate the effective competitive opportunities in the route market for non-U.S. satellites licensed by a WTO Member providing WTO covered services. Thus, we will not perform an ECO-Sat test on any route, whether a WTO route market or a non-WTO route market.").

"conventional Ku-band"). Eutelsat includes information in this Petition regarding the 11.2-11.45 GHz and 13.0-13.25 GHz bands should future earth station applicants seek to operate with EUTELSAT 133WA in these bands, subject to compliance with applicable Commission rules and policies. Eutelsat does not seek to operate in the 12.5-12.75 GHz band in the United States.

i. Permitted List Bands

The United States Table of Frequency Allocations ("Table of Allocations"), Section 2.106 of the Commission's Rules, 47 C.F.R. § 2.106, identifies conditions for spectrum use by FSS networks in the 10.95-11.2 GHz, 11.45-11.7 GHz, and 13.75-14.0 GHz bands. Specifically, in the 10.95-11.2 GHz and 11.45-11.7 GHz bands, FSS operations are co-primary with terrestrial fixed service ("FS") and access to the band has been permitted for a range of earth station receive operations subject, in part, to not claiming protection from FS operations.[9] The addition of extended Ku-Band downlink frequencies for communications with satellites on the Permitted List is consistent with this policy.[10]

In the 13.75-14.0 GHz band FSS, operations are considered co-primary with U.S. government shipboard radar radiolocation and National Aeronautics and Space Administration ("NASA") Tracking and Data Relay Satellite Systems ("TDRSS") operations. Eutelsat will operate the EUTELSAT 133WA satellite consistent with the Table of Allocations and the Commission's policies governing use of the 13.75-14.0 GHz band. In particular, Eutelsat acknowledges that applicants proposing uplink earth station operations with EUTELSAT 133WA would be required to comply with FCC Report and Order 96-377[11] to protect U.S.

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[9] *See* 47 C.F.R. § 2.106 at footnote US52.

[10] *See Part 25 Second Report & Order* at ¶249.

[11] *See Amendment of Parts 2, 25 and 90 of the Commission's Rules to Allocate 13.75-14.0 GHz Band to the Fixed-Satellite Service,* Report and Order, FCC 96-377 (rel. September 26, 1996).

government operations from harmful interference. In addition, Eutelsat will coordinate operation of the EUTELSAT 133WA satellite with NASA TDRSS operations.

In the 14.0-14.5 GHz band FSS operations are considered primary and the Commission routinely grants authority for satellite operations in this band.[12] Eutelsat affirms that operations of the EUTELSAT 133WA satellite will conform with the Commission's rules, including footnotes 5.149 and US342 to the Table of Allocations, by taking all practicable steps to protect the radio astronomy service from harmful interference.

The Commission has previously granted authority for operations in the 10.95-11.2 GHz, 11.45-11.7 GHz, and 13.75-14.0 GHz bands,[13] and Eutelsat affirms that earth station operations with EUTELSAT 133WA will be consistent with similarly approved operations.[14] For example, downlink operations in the 11.45-11.7 GHz will be consistent with various Commission rules permitting access to this band for a range of earth station applications, including earth stations onboard vessels ("ESVs"), earth stations aboard aircraft ("ESAAs"), vehicle-mounted earth stations ("VMESs") and routinely licensed FSS earth stations. In addition, the particulars of uplink earth station operations will be examined by the Commission in appropriate earth station applications seeking to operate in that band.

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[12] *See, e.g.*, New Skies B.V., SAT-MPL-20170108-00002 (SES-10).

[13] *See, e.g.*, Telesat International Ltd., SAT-PPL-20160225-00020 (Telstar 19V).

[14] *See, e.g,* Intelsat License LLC, File No. SES-LIC-20090529-00665 (Call Sign E090093) (authorizing a gateway earth station to communicate with the PAS-1R satellite in the 13.75-14.0 GHz and 11.45-12.2 GHz bands); SES Americom Inc., File No. SES-LIC-20130116-00054 (Call Sign E130012) (authorizing a gateway earth station to operate with certain U.S. and non-U.S. licensed satellite in the 13.75-14.0 GHz and 11.45-11.7 GHz bands).

ii. Additional Ku-band Frequencies

EUTELSAT 133WA's planned operations in the 11.2-11.45 GHz and 13.0-13.25 GHz bands will be in accordance with Footnote NG52 to the Table of Allocations.[15] To the extent not waived by the Commission (which may be possible in the context of future earth station applications to communicate with EUTELSAT 133WA), this footnote requires that the use of bands 10.7-11.8 GHz (space-to-Earth) and 12.75-13.25 GHz (Earth-to-space) by geostationary satellites in the FSS shall be limited to international systems, i.e., other than domestic systems. Pursuant to Footnote 5.441 these operations shall also be in accordance with the provisions of Appendix 30B.[16] In the 11.2-11.45 GHz band Eutelsat commits to compliance with Footnote US211 and will take all practicable steps to protect radio astronomy observations in the adjacent bands from harmful interference.[17]

b. Other Issues

The EUTELSAT 133WA satellite will operate in a slightly inclined orbit at the nominal 133°W.L. orbital location. It will arrive on-station with an inclination of 0.4°, which is expected to increase at a rate of 0.87° per year. Eutelsat anticipates the satellite's end-of-life to be no earlier than October 2022, even considering the impact of inclined orbit operations.

Pursuant to Section 25.280(b), 47 C.F.R. § 25.280(b), Eutelsat will:

> (1) Periodically correct the satellite attitude to achieve a stationary spacecraft antenna pattern on the surface of the Earth and centered on the satellite's designated service area;

[15] *See* 47 C.F.R. § 2.106 at footnote NG52.

[16] *See* 47 C.F.R. § 2.106 at footnote 5.441.

[17] *See* 47 C.F.R. § 2.106 at footnote US211.

(2) Control all electrical interference to adjacent satellites, as a result of operating in an inclined orbit, to levels not to exceed that which would be caused by the satellite operating without an inclined orbit;

(3) Not claim protection in excess of the protection that would be received by the satellite network operating without an inclined orbit; and

(4) Continue to maintain the space station at the authorized longitude orbital location in the geostationary satellite arc with the appropriate east-west station-keeping tolerance.

Eutelsat also has provided a EUTELSAT 133WA Space Debris Mitigation Plan as part of this Petition in order to demonstrate compliance with the Commission's orbital debris mitigation and satellite end-of-life requirements.[18]

B. Public Interest Considerations

This Petition provides a unique opportunity to enable satellite service to U.S. consumers using spectrum and orbital resources that would otherwise remain fallow. Specifically, granting EUTELSAT 133WA authority to access the U.S. market will enable near-term commercial operations at the 133°W.L. orbital location. Introduction of new satellite services will address current U.S. demand and also will lay the foundation for longer-term competitive services at this location, thereby strongly serving the public interest.

EUTELSAT 133WA is an in-orbit satellite asset currently operated by Eutelsat at 33°E.L. Eutelsat plans to commence relocation of the satellite in March 2018 and arrive at 133°W.L. by mid-2018. In order to commence operations and bring the benefits of new satellite services to the U.S. market at the earliest practicable time, Eutelsat requests expedited processing of this Petition. It also requests a waiver of the Commission's application processing rules to facilitate such expedited processing in the unique circumstances presented here.

[18] Eutelsat seeks a limited waiver of certain venting requirements embodied in Section 25.283(c) of the Commission's rules, 47 C.F.R. § 25.283(c), to the extent necessary to grant this petition.

C. Waiver Requests

Eutelsat requests waivers of certain Commission rules in the context of this Petition. The Commission has authority to grant waivers of its rules for "good cause shown."[19] In general, good cause exists if grant of a waiver would not undermine the purposes of the rule and would otherwise serve the public interest.[20] As discussed below, compelling reasons exist to grant the requested waivers in connection with Eutelsat's Petition to access the U.S. market and add EUTELSAT 133WA to the Permitted List.

1. Queue Procedure and Application Processing Policies

Pursuant to Section 25.137(c), 47 C.F.R. § 25.137(c), an in-orbit, non-U.S. licensed GSO-like satellite seeking to serve the United States can have its request placed in a queue and considered before later-filed applications of other U.S. satellite system operators. Eutelsat notes that the Intelsat Application at 133°W.L. includes some of the bands that will be used by EUTELSAT 133WA, and that Section 25.158 of the rules, 47 C.F.R. § 25.158, and associated Commission policies generally would result in deferral of the Petition during the pendency of the Intelsat Application. Eutelsat requests a waiver of these rules and policies to the extent necessary to process and grant the Petition in a time frame that would support the introduction of service from EUTELSAT 133WA by mid-2018.

The EUTELSAT 133WA satellite will be ready to commence operations by mid-year, and it has an end-of-life time frame consistent with the deployment time frame of Intelsat's proposed satellite at 133°W.L. EUTELSAT 133WA would therefore be decommissioned at

[19] *See* 47 C.F.R. § 1.3; *WAIT Radio v. FCC*, 418 F.2d 1153 (D.C. Cir. 1969).

[20] *WAIT Radio*, 418 F.2d at 1157; *Intelsat North America LLC*, 22 FCC Rcd. 11989 ¶6 (2007).

approximately the same time Intelsat's proposed satellite would be launched. As a result, the Commission can process and grant this Petition without prejudice to the ultimate outcome of the Intelsat Application.[21]

Further, because the Intelsat Application raises complex procedural and substantive issues, Commission consideration of those issues can be expected to take considerable time. Deferring consideration of this Petition during the pendency of the Intelsat Application would leave valuable spectrum and orbital resources lying fallow and deprive U.S. consumers of competitive satellite services that will be available in the coming months from the 133°W.L. orbit location. Thus, a waiver would serve the public interest by permitting the introduction of new satellite services in the U.S. market.

In sum, granting a waiver to permit substantive consideration of this Petition would not undermine the underlying purposes of the Commission's application processing rules and policies in the unique circumstances presented here. The interim nature of EUTELSAT 133WA operations will enable consideration and potential grant of this Petition without prejudice to the outcome of the Intelsat Application or other Commission action relating to 133°W.L. In addition, grant of the requested waiver would otherwise serve the public interest by facilitating the near-term introduction of additional satellite services in the U.S. market.

2. Request for Waiver of 47 C.F.R. §§ 25.137(d)(4) & 25.165

Eutelsat submits that it should not be required to post a bond in connection with its request to serve the U.S. market using the EUTELSAT 133WA satellite. Section 25.137(d)(4) of the

[21] Eutelsat would accept an affirmative condition that requires decommissioning prior to start of service of any co-frequency, co-coverage and co-located Intelsat satellite, should one be authorized in connection with the current application.

Commission's rules requires a bond to be posted where a non-U.S. licensed satellite operator files a petition for declaratory ruling to access the U.S. market for non-U.S.-licensed space stations that are not in orbit and operating.

Although EUTELSAT 133WA is currently in-orbit, it is not in orbit and operating at the 133° W.L. orbital location from which it proposes to provide service. As noted herein, Eutelsat plans to relocate the satellite and commence operations by mid-2018. To the extent the Commission grants this petition prior to EUTELSAT 133WA's arrival at 133° W.L., Eutelsat requests waiver or other confirmation that no bond requirement will be imposed. If the Commission determines that the bond requirement applies and a waiver is not warranted, however, Eutelsat will provide necessary information and post any bond required in connection with grant of this Petition.

3. EUTELSAT 133WA Station-keeping Tolerance

Section 25.210(j) of the Commission's rules, 47 C.F.R. § 25.210(j), requires satellite operators to maintain station-keeping within ± 0.05° of their assigned orbital longitude in the east/west direction, unless specifically authorized by the Commission to operate with a different longitudinal tolerance. The Commission has previously allowed an increased station-keeping tolerance based on a finding that doing so would not adversely affect the operations of other spacecraft and would have benefits such as conserving fuel for future operations.[22]

Eutelsat seeks to operate EUTELSAT 133WA with an increased station-keeping volume of ± 0.10°. Operating with this station-keeping tolerance will have no adverse impact on other

[22] *See, e.g.*, SES Americom, Inc. Application for Modification of Satcom SN-4 Fixed Satellite Space Station License, 20 FCC Rcd 11542, 11545 (Sat. Div. 2005).

operators because the volume will not overlap with that of any other satellites.[23] Furthermore, a station-keeping tolerance of ± .10° will afford Eutelsat additional operational flexibility and conserve fuel to extend the on-orbit lifetime of this valuable satellite asset. Thus, permitting a larger station-keeping tolerance under Section 25.210(j) will serve the public interest.

Eutelsat notes that the Commission has repeatedly granted authority to operate with a ± .10° station-keeping tolerance, subject to the condition that authority to operate with the larger tolerance shall terminate in the event that another satellite is launched into a location such that its station-keeping volume would overlap the satellite's ± 0.10 degree station-keeping volume, but would not overlap a ± 0.05° degree station-keeping volume, unless the satellite operator has successfully coordinated its physical operations with those of the other spacecraft.[24] Eutelsat acknowledges and accepts this condition on EUTELSAT 133WA operations.

4. EUTELSAT 133WA End-of-Life Venting

Section 25.283(c) requires that after the completion of a satellite mission "all stored energy sources on board the satellite are discharged, by venting excess propellant, discharging batteries, relieving pressure vessels, and other appropriate measures." Eutelsat hereby requests waiver of Section 25.283(c), 47 C.F.R. § 25.283(c), of the Commission's rules to the extent necessary to grant this petition.

The EUTELSAT 133WA satellite uses a Thales Alenia Space Spacebus 3000, a widely used spacecraft bus.[25] This spacecraft bus propulsion system design, like many others, dictates

[23] The satellite will operate at 132.85° W.L. to avoid overlap of its station-keeping box with that of the Galaxy 15 satellite located at 133.0° W.L.

[24] *See, e.g.,* FCC ISAT List, available at https://www.fcc.gov/isat-list (noting multiple waivers for Inmarsat 3F and 4F satellites).

[25] *See* Thales Alenia Space: Spacebus-3000/4000 B-Class (available at http://space.skyrocket.de/doc_sat/aeosp_spacebus-b-class.htm).

that the propellant and pressurant tanks be isolated from each other during the orbit-raising process. Once the propellant and pressurant tanks have been isolated from each other, the remaining helium in the pressurant tank cannot be vented because the exit from the tank is closed by the action of firing a pyro-valve and this operation cannot be reversed. Therefore, as a result of the design of the spacecraft bus, Eutelsat cannot vent all remaining pressurant from EUTELSAT 133WA at end-of-life.

Multiple factors, however, ensure that EUTELSAT 133WA's design is consistent with a safe flight profile and will not pose a risk of creating orbital debris. As explained in the EUTELSAT 133WA Space Debris Mitigation Plan, the remaining helium in the two pressurant tanks will be *de minimis*, containing 0.5 kg of helium in each 51.7 liter tank. The pressurant tanks have been designed, manufactured, and validated according to MIL-STD-1522 and they are "leak before burst" designed. Therefore, the risk of break-up is negligible.[26] Accordingly, the need for safety has been appropriately addressed.

Eutelsat notes that the Commission has granted a waiver in analogous circumstances, such as for Anik F3, AMAZONAS-3, and Eutelsat 36B.[27] Eutelsat respectfully submits that a similar waiver is justified in this circumstance, especially considering that the Eutelsat 36B and EUTELSAT 133WA belong to the same family of Spacebus designs and their propellant and

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[26] *Eutelsat 133WA Space Debris Mitigation Plan* at 6.

[27] *See, e.g.,* Telesat Canada Petition for Partial Waiver of Section 25.283(c), File No. SAT-APL-20111117-00222, Call Sign S2703 (granted April 11, 2012); Hispamar Satélites, S.A. Petition for Declaratory Ruling to Add Amazonas-3 Satellite to the Permitted Space Station List, File No. SAT-PPL-20121018-00183, Call Sign S2886 (Granted March 14, 2013) (granting Permitted List status to Amazonas-3, which will retain a de minimis quantity of helium pressurant at end of life); Boeing Application Supplement and Request for Waiver, File No. SES-LIC-20140922-00748, Call Sign E140097 (granted March 13, 2015).

pressurant tanks operate in a similar manner.[28] Based on the above, a grant of this waiver would be consistent with past Commission waivers in similar circumstances.

Grant of this waiver request along with the underlying application will serve the public interest by allowing EUTELSAT 133WA authority to access the U.S. market which will enable near-term commercial operations at the 133°W.L. orbital location. Introduction of new satellite services will address current U.S. demand and also will lay the foundation for longer-term competitive services at this location, thereby strongly serving the public interest.

D. Other Issues

1. Waiver Required by 47 U.S.C. § 304

As required by Section 304 of the Communications Act of 1934, as amended, 47 U.S.C. § 304, although included in Form 312, Eutelsat hereby separately waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise.

2. Permit-but-Disclose Status

Eutelsat respectfully requests that the Commission designate this proceeding as "permit-but-disclose" for purposes of its *ex parte* rules. The Commission has discretion to modify the application of its *ex parte* rules in any proceeding where the public interest warrants doing so.[29]

[28] *See* Boeing Application Supplement and Request for Waiver, Eutelsat 36B Space Debris Mitigation Plan at 6, File No. SES-LIC-20140922-00748, Call Sign E140097 (granted March 13, 2015); *See also* Eutelsat 133WA Space Debris Mitigation Plan at 6.

[29] *See* 47 C.F.R. § 1.1200(a).

Designating this application proceeding as "permit-but-disclose" under Section 1.1206 of the Commission's rules, rather than "restricted" under Section 1.1208 of the rules,[30] would facilitate more thorough consideration of the unique procedural and substantive public interest issues presented here and would ensure a more complete record for the Commission to take appropriate action on the Petition.

III. CONCLUSION

Eutelsat seeks to access the U.S. market and add the in-orbit EUTELSAT 133WA satellite to the Permitted List at the 133°W.L. orbital location. EUTELSAT 133WA will commence operations at 133°W.L. by mid-2018 using Ku-band frequencies for which France holds ITU date priority. Eutelsat requests expedited processing of this Petition and such waivers of the Commission's satellite application processing rules necessary to permit the introduction of service consistent with the satellite's arrival at the 133°W.L. orbital location.

Authorizing EUTELSAT 133WA to provide service to U.S. customers will serve the public interest by enhancing competition in the United States, making efficient use of in-orbit satellite assets and preventing available spectrum and orbital resources from laying fallow. For these and other reasons set forth herein, Eutelsat respectfully requests that the EUTELSAT 133WA satellite be permitted to access the U.S. market and be added to the Permitted List in relevant Ku-band frequencies at the 133°W.L. orbital location.

[30] *See* 47 C.F.R. §§ 1.1206, 1.1208.

Attachment A

FCC Form 312, Response to Questions 34 and 40: Foreign Ownership, Officers, Directors, and Ten Percent or Greater Shareholders of Eutelsat S.A.

Eutelsat S.A. is a *société anonyme* organized under the laws of France. The address of Eutelsat S.A. is 70 rue Balard, 75015 Paris, France. An organizational chart showing the ownership of Eutelsat S.A. is attached.

96.37% of Eutelsat S.A.'s share capital is held by Eutelsat Communications S.A., the publicly traded parent of Eutelsat S.A. In addition, the Russian Satellite Communications Company ("RSCC") holds 3.38% of the shares issued by Eutelsat S.A. and 0.31% of the shares of Eutelsat S.A. are held by other non-Eutelsat entities as set out on the ownership chart attached hereto. RSCC and these other entities have no control over Eutelsat S.A. All shareholdings of Eutelsat S.A. (other than the 0.11% of such shares held by Eutelsat S.A.'s employees and executives) are a result of the privatization of Eutelsat S.A., formerly an intergovernmental organization.

26.45% of the share capital of Eutelsat Communications S.A. is held by Bpifrance Participations (formerly named Fonds Stratégique d'Investissement ("FSI")), a *société anonyme* formed in 2008 to enhance equity in France and help stabilize French companies during the economic crisis. Approximately 51% of the FSI's share capital is held by the Caisse des Dépôts et Consignations (the "CDC") and approximately 49% of its share capital is held directly by the French State. Bpifrance Participations must present its strategic plans and annual report to the supervisory commission of the CDC. The Bpifrance Participations' board of directors has ten members. Three of the directors are representatives of the CDC, three of the directors are representatives of the French State and three of the directors are qualified personalities. The chief executive officer of Bpifrance Participations is appointed by its board of directors. The address of Bpifrance Participations is 27-31, avenue du Général Leclerc, 94710 Maisons-Alfort, Cedex, France.

The CDC is a financial institution wholly owned by the French State that serves the general interest and the economic development of France. Approximately 50% of the CDC's recurring and non-recurring net profit is paid to the French State. The CDC is managed by a chief executive officer, who is appointed by the President of the French State. The CDC is supervised by a supervisory commission of 13 members, all of which are appointed by various sectors of the French government.

7.50% of the share capital of Eutelsat Communications is held by Fonds Stratégique de Participation (FSP). Backed by six major French insurance companies (BNP PARIBAS CARDIF, CNP ASSURANCES, CREDIT AGRICOLE ASSURANCES, SOGECAP (SOCIETE

GENERALE group), GROUPAMA and NATIXIS ASSURANCES), the FSP is a long-term equity investor in French companies. Through FSP, insurance companies and key institutional investors with long-term liabilities channel some of France's long-term savings into equity investments.

6.60% of the share capital of Eutelsat Communications S.A. is held by Land Breeze s.a.r.1. Land Breeze s.a.r.l. is organized under the laws of Luxembourg and is a wholly owned subsidiary of China Investment Corp. ("CIC"). Two other subsidiaries of CIC organized under the laws of the People's Republic of China, Flourish Investment Corporation and Best Investment Corporation (together with Land Breeze s.a.r.l., the "CIC Entities"), own 0.06% and 0.01% of the shares of Eutelsat Communications, S.A., respectively. Information about CIC can be found on its website: http://www.chinainv.cn/cicen/.

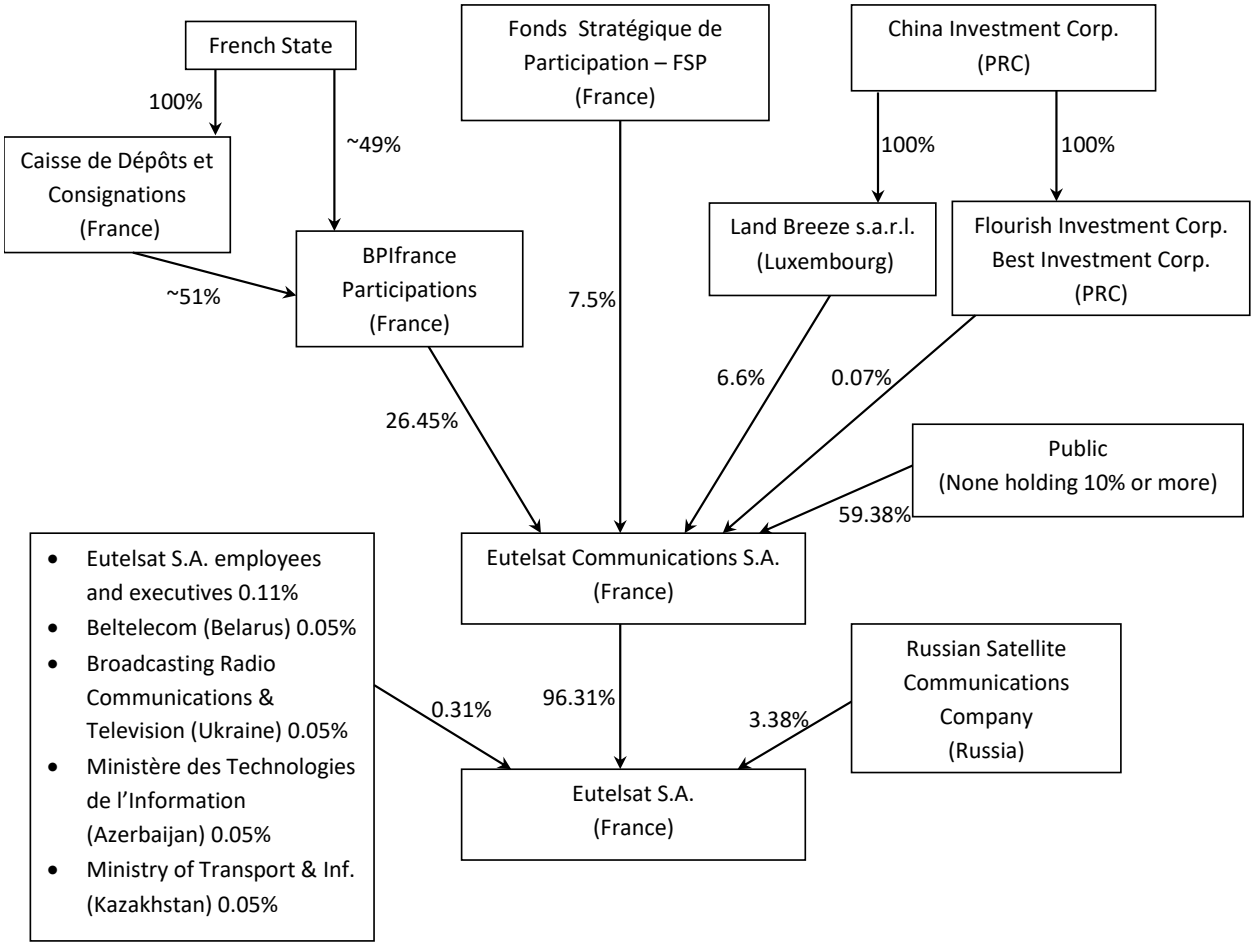
To the best of Eutelsat Communications S.A.'s knowledge, no other shareholders own, directly or indirectly, more than 10% of its share capital or voting rights. Eutelsat Communications S.A. is managed by a board of directors that currently has 12 members, each of whom has a four-year renewable term of office. Currently, eight of the directors are independent, three are affiliated with the Bpifrance Participations. No decisions of the board of directors can be taken or be blocked by three directors. Neither the Bpifrance Participations, nor any of the CIC Entities or FSP, nor any foreign government or person controlled by or acting on behalf of a foreign government has or will have the right or power to appoint any of Eutelsat Communications S.A.'s principal officers. None of the CIC Entities or FSP has the right or power to appoint any of Eutelsat Communications S.A.'s directors.

More information about Eutelsat Communications S.A., its shareholders, and its governance can be found on its website at www.eutelsat.com.

Principal officers of Eutelsat Communications S.A. include:

Rodolphe Belmer, CEO
Michel Azibert, Deputy CEO
Yohann Leroy, Deputy CEO

The individuals listed above can be contacted c/o Eutelsat S.A., 70 rue Balard, 75015 Paris, France. Mr. Belmer, Mr. Azibert and Mr. Leroy are citizens of the Republic of France.


French State
100%
~49%
Caisse de Dépôts et Consignations (France)
~51%
BPIfrance Participations (France)
Fonds Stratégique de Participation – FSP (France)
7.5%
China Investment Corp. (PRC)
100%
100%
Land Breeze s.a.r.l. (Luxembourg)
Flourish Investment Corp. Best Investment Corp. (PRC)
6.6%
0.07%
26.45%
Public (None holding 10% or more)
59.38%
Eutelsat Communications S.A. (France)
• Eutelsat S.A. employees and executives 0.11%
• Beltelecom (Belarus) 0.05%
• Broadcasting Radio Communications & Television (Ukraine) 0.05%
• Ministère des Technologies de l'Information (Azerbaijan) 0.05%
• Ministry of Transport & Inf. (Kazakhstan) 0.05%
0.31%
96.31%
3.38%
Russian Satellite Communications Company (Russia)
Eutelsat S.A. (France)

Attachment B – Regulatory Compliance Matrix

Reference	Reference Location	Topic / Reason for (n/a)
25.114(a)(1)	FCC Form 312, Schedule S, Attachment C	Overall context of filing
25.114(a)(2)	n/a	NGSO constellation
25.114(a)(3)	n/a	Application filed pursuant to two-step procedure
25.114(b)	Form 312	Waiver required by 47 U.S.C 304
25.114(c)(1)	Schedule-S	Applicant info
25.114(c)(2)	Schedule-S	Info for correspondence person
25.114(c)(3)	Schedule-S	Type of authorization
25.114(c)(4)(i)	Schedule-S	Channel frequency, bandwidth and polarization
25.114(c)(4)(ii)	Schedule-S	Maximum EIRP and EIRP density of TX beams
25.114(c)(4)(v)	Schedule-S	RX beam: G/T, SFD
25.114(c)(4)(vi)(A)	Schedule-S	GSO: Antenna Gain Contours
25.114(c)(4)(vi)(B)	n/a	NGSO: Antenna Gain Contours
25.114(c)(4)(vi)(C)	n/a	Shapeable Beams: Antenna Gain Contours
25.114(c)(4)(vi)(D)	n/a	Steerable, non-shapeable beams
25.114(c)(4)(vii)(A-C)	n/a	GSO: Large number of spot beams
25.114(c)(5)(i-v)	Schedule-S	GSO: Orbital parameters
25.114(c)(6)(i-ix)	n/a	NGSO: Orbital parameters
25.114(c)(7)	Schedule-S	Frequency Bands, Types of Service and Coverage Areas
25.114(c)(8)	Schedule-S, See 25.208	TX Beams: PFD
25.114(c)(10)	Schedule-S	Operational Lifetime
25.114(c)(11)	Schedule-S	Common Carrier Status
25.114(c)(13)	n/a	17/24 GHz BSS polarization isolation
25.114(d)(1)	Narrative, Attachment C - Section 2	Overall description
25.114(d)(6)	Narrative	Public Interest
25.114(d)(7)	See 25.140(a)	Interference Analysis
25.114(d)(8)	n/a	L-Band MSS
25.114(d)(9)	n/a	MSS: Multiple Satellites
25.114(d)(10)	n/a	L/S-Band MSS
25.114(d)(11)	n/a	DBS
25.114(d)(12)	n/a	NGSO FSS
25.114(d)(13)(i-ii)	n/a	DBSS
25.114(d)(14)(i-v)	Attachment D - Orbital Debris	Orbital Debris
25.114(d)(15)(i-v)	n/a	17/24 GHZ BSS
25.114(d)(16)	n/a	17/24 GHZ BSS
25.114(d)(17)	n/a	17/24 GHZ BSS
25.114(d)(18)	n/a	17/24 GHZ BSS

Reference	Reference Location	Topic / Reason for (n/a)
25.137(a)	Narrative	Requirements for U.S. market access request
25.137(b)	FCC Form 312, Schedule S, Attachment C, Narrative	Legal and technical information required for U.S. market access
25.137(c)	Narrative – Part II, Section C	Queue placement
25.137(d)	Narrative – Part II, Section A	Non-U.S.-licensed satellite requirements
25.137(e-g)	n/a	Changes/modifications
25.140(a)(3)(i)	n/a	C-band limits
25.140(a)(3)(ii)	Attachment C - Section 14	Ku-band limits
25.140(a)(3)(iii)	n/a	Ka-band limits
25.140(a)(3)(iv)	Attachment C - Section 14	AP30B limits
25.140(a)(3)(v)	n/a	2-degree spacing interference analysis
25.140(d)	n/a	Non-routine transmission levels
25.156(a)	Narrative	Application consideration - general
25.158	Narrative – Part II, Section C	Application consideration - GSO
25.159	n/a	Unbuilt systems
25.172(a)(1-4)	Attachment C – Section 4	TT&C Reporting
25.202(e)	Attachment C - Section 7	Frequency Tolerance
25.202(f)(1-3)	Attachment C - Section 8	Out of band - emissions
25.202(g)	Attachment C – Section 4	TT&C on band edge
25.207	Attachment C - Section 10	Cessation of Emissions
25.208(a-g)	Attachment C - Section 12	PFD Analysis
25.210(f)	Attachment C - Section 9	Full Frequency Reuse
25.210(j)	Narrative	EW Station keeping tolerance
25.283(a-c)	Attachment D - Orbital Debris	End-of-life Disposal
25.207	Attachment C - Section 10	Cessation of Emissions

Attachment C - Engineering Statement

1. Scope

As required by Section 25.114 and other sections of the Part 25 rules, this Attachment contains additional information that cannot be entered into the Schedule S online submission system regarding the proposed relocation and operations of the EUTELSAT 133WA satellite at the nominal 133° W.L. orbital location.

2. General Description (Section 25.114(d)(1))

The EUTELSAT 133WA satellite will provide fixed-satellite service ("FSS") and mobility services in the United States and other markets from the nominal 133° W.L. orbital location. (The satellite will actually operate at 132.85° W.L. to avoid overlap of its station-keeping box with that of the Galaxy 15 satellite located at 133.0° W.L.). It should be noted that the Schedule S rounds the new orbital location to 133 W.L. EUTELSAT 133WA will begin operations at 133° W.L. with an inclination of 0.4° and the inclination will increase by 0.87°/year.

EUTELSAT 133WA employs twenty-four Ku-band primary transponders using both linear polarizations, thereby providing dual-frequency reuse. The satellite also has Ku-band back-up transponders. The satellite has one regional fixed Ku-band beam and two steerable Ku-band beams. The fixed Ku-band beam and one of the steerable Ku-band beams will be configured to cover the Contiguous United States (CONUS) plus the state of Alaska. The other steerable Ku-band beam may be employed outside of the United States; however, it is not the subject of this filing.

3. Spacecraft Overview

EUTELSAT 133WA was manufactured and supplied by Thales Alenia Space based on the Spacebus 3000B2 bus platform. The satellite is 3-axis stabilized and uses bi-propellant chemical propulsion for attitude, on-station control, repositioning and end-of-life deorbit.

The satellite will operate in Ku-band at the frequencies listed below:

Ku-band Uplink	Ku-band Downlink
13.0 – 13.25 GHz	10.95 – 11.2 GHz
13.75 – 14.0 GHz	11.2 – 11.45 GHz
14.0 – 14.5 GHz	11.45 – 11.7 GHz
	12.5 – 12.75 GHz[1]

EUTELSAT 133WA provides the following coverage (illustrations of the beam coverage areas are provided in Exhibit 3):

Ku-band Uplink	Fixed Beam	Alaska, Western Canada, Western US and North Pacific
	Steerable Beam #1	CONUS
Ku-band Downlink	Fixed Beam	Alaska, Western Canada and North Pacific
	Steerable Beam #1	CONUS

4. Telemetry, Tracking and Control (TT&C)

As required by 25.172(a), this section describes how TT&C operations will be conducted for the satellite. No TT&C sites within the United States will be employed for operation of the satellite.

The TT&C sub-system provides for communications during on-station operations, as well as during spacecraft emergencies. Ku-band telecommand transmissions are normally received and Ku-band telemetry communications are normally transmitted by the spacecraft through a wide-beam antenna. During emergency operations, TT&C communications are transmitted and received through a near omni-directional antenna.

TT&C communication channels have been selected at the edge of the assigned Ku-band in accordance with Section 25.202(g). The satellite utilizes two Ku-band telemetry channels. The Ku-band telemetry channel center frequencies are 11451.091 MHz and 11452.570 MHz with a bandwidth of 300 kHz. The satellite utilizes one Ku-band command channel. The Ku-band command channel center frequency is 13750.6 MHz with a bandwidth of 600 kHz. TT&C operations will be conducted from earth station facilities located in Mexico.

[1] The 12.5 – 12.75 GHz band is included in a steerable beam that Eutelsat does not currently intend for use in the United States or with U.S.-licensed earth stations. In the event that an earth station applicant seeks to operate with the EUTELSAT 133WA satellite in this band in the future, Eutelsat will provide all technical information necessary to support such a request.

The TT&C beams used for orbital maneuvers and on-station emergencies have gain contours that vary by less than 8 dB across the surface of the Earth. Accordingly, the gain at 8 dB below the peak falls beyond the edge of the Earth. Therefore, pursuant to Section 25.114(c)(4)(vi)(A) of the Commission's rules, contours for these beams are not required to be provided and the associated GXT files have not been included in Schedule S.

Contact details for the control stations are provided below:

E133WA TT&C station 1:
Hermosillo
Carretera Bahía Kino, Km. 5.5
Col. El Llano
CP 83210
Hermosillo, Sonora

E133WA TT&C station 2:
Iztapalapa
Av. de las Telecomunicaciones s/n
Col. Leyes de Reforma
CP 09310
Mexico, D.F.

Satellite control center addresses and telephone numbers:

E133WA Control Center
Address: Eutelsat
70 rue Balard
75015 Paris
France

E133WA control responsible person: H. Schulze
Phone: fixed: / mobile: +33 1 5398 3466
24/7 hours number(s): +33 1 5398 3445

E133WA Operations Coordinator: P. Turner
Phone: +33 1 5398 3177

5. Uplink Power Control

EUTELSAT 133WA utilizes three Ku-band ULPC channels in two beacon beams. The Ku-band ULPC channel center frequencies are 11200 MHz in the global beacon beam (BG), and 11451.091 MHz and 11452.570 MHz in the region beacon beam (BR). The Ku-band beacon in the BG beam has a bandwidth of 100 kHz and the Ku-band beacons in the BR beam have a bandwidth of 300 kHz.

The coverage patterns of the global Ku-band ULPC beacon beam has gain contours that vary by less than 8 dB across the surface of the Earth. Accordingly, the gain at 8 dB below the peak falls beyond the edge of the Earth. Therefore, pursuant to Section 25.114(c)(4)(vi)(A) of the Rules, contours for these beams are not required to be provided and the associated GXT files have not been included in Schedule S.

6. Frequency Plan

6.1 Ku-Band

The following tables list the uplink and downlink Ku-band channel plan for EUTELSAT 133WA. This information is also provided in the accompanying Schedule S but is included here for clarity.

Table 1 Ku-Band Downlink Frequency Plan

Channel ID	Bandwidth (kHz)	Center Frequency (MHz)	Polarization
DB1	72000	10991.67	H
DB2	72000	10991.67	V
DB3	72000	11075	H
DB4	72000	11075	V
DB5	72000	11158.33	H
DB6	72000	11158.33	V
DC1	72000	11241.67	H
DC2	72000	11241.67	V
DC3	72000	11325	H
DC4	72000	11325	V
DC5	72000	11408.33	H
DC6	72000	11408.33	V
DD1	72000	11491.67	H
DD2	72000	11491.67	V
DD3	72000	11575	H
DD4	72000	11575	V
DD5	72000	11658.33	H
DD6	72000	11658.33	V
DS1	33000	11469.23	H
DS2	33000	11488.46	V
DS3	33000	11507.69	H
DS4	33000	11526.92	V
DS5	33000	11546.15	H
DS6	33000	11565.38	V
DS7	33000	11584.62	H
DS8	33000	11603.85	V
DS9	33000	11623.08	H
DS10	33000	11642.31	V
DS11	33000	11661.54	H
DS12	33000	11680.77	V
B1	100	11200	V

TM1	300	11451.091	V
TM2	300	11452.570	V

Table 2 Ku-Band Uplink Frequency Plan

Channel ID	Bandwidth (kHz)	Center Frequency (MHz)	Polarization
UB1	72000	13791.67	V
UB2	72000	13791.67	H
UB3	72000	13875	V
UB4	72000	13875	H
UB5	72000	13958.33	V
UB6	72000	13958.33	H
UC1	72000	13041.67	V
UC2	72000	13041.67	H
UC3	72000	13125	V
UC4	72000	13125	H
UC5	72000	13208.33	V
UC6	72000	13208.33	H
UD1	72000	14291.67	V
UD2	72000	14291.67	H
UD3	72000	14375	V
UD4	72000	14375	H
UD5	72000	14458.33	V
UD6	72000	14458.33	H
UF1	72000	14041.67	V
UF2	72000	14041.67	H
UF3	72000	14125	V
UF4	72000	14125	H
UF5	72000	14208.33	V
UF6	72000	14208.33	H
US1	33000	14269.23	V
US2	33000	14288.46	H
US3	33000	14307.69	V
US4	33000	14326.92	H
US5	33000	14346.15	V
US6	33000	14365.38	H
US7	33000	14384.62	V
US8	33000	14403.85	H
US9	33000	14423.08	V

US10	33000	14442.31	H
US11	33000	14461.54	V
US12	33000	14480.77	H
TC1	600	13750.6	H

7. Frequency Tolerance

Section 25.202(e) requires that the carrier frequency of each space station transmitter be maintained within 0.002% of the reference frequency. These frequency tolerance requirements will be met.

8. Out of Band Emissions

The out-of-band emission limits of Section 25.202(f)(1), (2) and (3) will be met.

9. Frequency Reuse

EUTELSAT 133WA employs full frequency reuse on the Ku-band uplink and downlink by employing dual orthogonal linear polarization and frequency reuse across multiple regional and spot beams.

10. Cessation of Emissions

As required by Section 25.207 of the FCC's rules, all downlink transmissions can be turned on and off by ground telecommand, thereby causing cessation of emissions from the satellite.

11. ITU Filings

The satellite will operate in Ku-bands (10.95-11.2, 11.45-11.7 and 13.75-14.5 GHz) at the 133° W.L. orbital location under the F-SAT-N4-133W ITU satellite network filings. The satellite will operate in the AP30B Ku-bands (11.2-11.45 GHz and 13.0-13.25 GHz) at the 133° W.L. orbital location under the F-SAT-E-30B-133W ITU satellite network filing. The operation of the satellite will fall within the envelope of the parameters disclosed in these ITU satellite network filings.

12. PFD Analysis

Section 25.208 of the Commission's rules specifies the power flux density ("PFD") limits for space stations operating in the 10950–11200 MHz and 11450–11700 MHz. The Commission's rules do not specify a PFD limit in the 11200-11450 band; however, there are PFD limits specified in rule No. 21.16 of the International Telecommunication Union ("ITU") Radio Regulations. The maximum PFD levels for EUTELSAT 133WA transmissions were calculated for the bands 10950–11200 MHz, 11200-11450 MHz and 11450–11700 MHz. The results are provided in Schedule S and show that the downlink PFD levels of the EUTELSAT 133WA carriers do not exceed the limits specified in Section 25.208 of the Commission's rules, nor those in No. 21.16 of the ITU Radio Regulations, as applicable.

13. Link Budgets

Link analysis for the satellite was conducted for representative carriers in the Ku-band fixed and steerable beams. For each of these links, it was assumed that the nearest satellites to EUTELSAT 133WA were AMC-1 operating at 130.9° W.L. and AMC-4 operating at 134.9° W.L.

The following assumptions were used in the link budget analysis:

- The link budgets are for clear sky operation.
- The clear sky link margins were chosen to provide sufficient link availability for the service(s).
- All transmitting and receiving earth stations have a cross-polarization isolation value of at least 27 dB within their main beam lobe.

The results of the analysis are shown in Exhibit 1 for the situation in which the AMC-1 and AMC-4 links are operating at the expected power levels. A separate set of data is provided in Exhibit 2 to demonstrate the links if AMC-1 and AMC-4 were operating at the maximum power levels dictated for two-degree spacing as defined in 25.140.

14. Interference Analysis

In this section, the information specified in Section 25.140(a) is presented (as required by Section 25.114(d)(7)).

The downlink EIRP density of EUTELSAT 133WA transmissions in the conventional or extended Ku-bands will not exceed levels provided in Section 25.140(a)(3)(ii). Associated uplink transmissions will not exceed applicable EIRP density envelopes in Sections 25.218, 25.222(a)(1), 25.226(a)(1) or 25.227(a)(1), unless the non-routine uplink and/or downlink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the satellite.

EUTELSAT 133WA will operate 1.95° away from the AMC-1 satellite. These two satellites do not have any spectrum overlap in the Ku-band downlink, but they do both operate in the Ku-band uplink band from 14.0-14.5 GHz. To evaluate the implication of operating at a spacing of slightly less than two degrees, the EIRP density envelopes in Sections 25.218, 25.222(a)(1), 25.226(a)(1) or 25.227(a)(1) were analyzed. In all cases, the critical part of the EIRP density envelope is described by $15 - 25*\log_{10}(\theta)$ dBW/4 kHz for angular separations from 1.7 to 6 degrees off boresight.

An analysis of the sidelobe isolation at 2° vs. 1.95° demonstrates that the difference is only 0.32 dB. Therefore, Eutelsat plans to only operate with earth stations that can meet a more stringent EIRP density envelope as defined by: $15 - 0.32 - 25*\log_{10}(\theta)$ dBW/4 kHz, unless the uplink operation is coordinated with operators of authorized co-frequency space stations at assigned locations within six degrees of the satellite as defined by Section 25.140(a)(3)(ii) above.

Per Section 25.140 (a)(3)(iv), operations in the 13000 – 13250 MHz and 11200 – 11450 MHz bands will take into account the applicable requirements of Appendix 30B of the ITU's Radio Regulations. There are no United States Appendix 30B ITU filings within 6 degrees of 133 W.L.; therefore, there are no compatibility issues with EUTELSAT E133WA operations under Appendix 30B with respect to United States ITU Appendix 30B filings.

CERTIFICATION OF PERSON RESPONSIBLE FOR PREPARING ENGINEERING INFORMATION

I hereby certify that I am the technically qualified person responsible for preparation of the engineering information contained in this application, that I am familiar with Part 25 of the Commission's rules, that I have either prepared or reviewed the engineering information submitted in this application, and that it is complete and accurate to the best of my knowledge and belief.

/s/

_____

David C Morse, Ph.D.
Avaliant, LLC
Bellevue, WA USA
(425) 246-3080

EXHIBIT 1: SATELLITE LINK BUDGETS – Nominal Interference Conditions

eutelsat

	Link 1 - Forward Maritime	*Link 2 - Forward Aero*	*Link 3 - Return Aero*	*Link 4 - Return Maritime*
SPACE SEGMENT				
Satellite	E133WA	E133WA	E133WA	E133WA
Orbital Position	-133	-132.85	-132.85	-132.85
Transponder	D01S	C1	D1	D01S
Bandwidth (MHz)	33	72	72	33
Uplink frequency (MHz)	14269.23	13041.67	14291.67	14269.23
Downlink frequency (MHz)	11469.23	11241.67	11491.67	11469.23
Uplink Coverage	Steerable 1 Receive	Fixed 1 Receive	Fixed 1 Receive	Steerable 1 Receive
Downlink Coverage	Steerable 1 Transmit	Fixed 1 Transmit	Fixed 1 Transmit	Steerable 1 Transmit
IPFD setting (dBW/m²)	-82	-86	-86	-86
IBO Multicarrier (dB)	9.5	8.4	8.4	9.5
OBO Multicarrier (dB)	4.3	3.7	3.7	4.3
CARRIER PARAMETERS				
Service category	DATA	DATA	DATA	DATA
Modulation	8 PSK	4 PSK	4 PSK	4 PSK
FEC	5/6	1/2	1/2	3/4
Spreading Factor	1	1	1	1
Roll Off (%)	20	20	20	20
Spectral efficiency (bps)	2.42	0.97	1	1.5
Reed Solomon (n/k)	1	1	1	1
Symbol rate (Mbaud)	27.5	45	3.333	4.167
Usefull Bit rate (Mbps)	66.613	43.44	3.333	6.25
Overall Bit rate (Mbps)	66.613	43.44	3.333	6.25
E_b/N_0 (dB)	6.3	1.7	2.5	4.7
E_s/N_0 (dB)	10.14	1.55	2.5	6.46
CARRIER RESOURCES				
Transponder mode	ALC Single carrier	ALC Single carrier	Linear	Linear
IBO with rain (dB)	0	0	26.	19.5
OBO with rain (dB)	0	0	21.3	14.3
Bandwidth consumption (MHz)	33.	54	5	5
Power consumption (MHz)	33.	72.	1.25	3.3
IPFD carrier (dBW/m²)	-86	-90	-115.	-111.5
GROUND SEGMENT - UPLINK				
Earth Station Code	Other	Other	Other	Other
Country	United States of America - US	United States of America - US	United States of America - US	United States of America - US
Location	Miami Beach	Anchorage	N/A	N/A
Longitude (°)	-80.13	-149.88	-149.88	-80.13
Latitude (°)	25.78	61.22	53	25.78
Distance (km)	39051.47	39627.5	38846.61	39051.47
satellite G/T towards transmit station (dB/K)	4	4	3	6
Elevation angle (°)	25.19	19.2	27.41	25.19
Azimuth angle (°)	251.68	160.73	159.01	251.68
Antenna size (m)	9	9	0.45	1.2
Atmospheric losses (dB)	0.2	0.2	0.2	0.2
Uplink EIRP (dBW)	77.02	73.15	47.97	51.52
Post PA losses (dB)	4	4	1.5	1.5
Operating HPA Power (clear sky) (W)	53.98	26.49	26.79	8.56
HPA Rating (W)	340.59	83.77	30.06	9.6
GROUND SEGMENT - DOWNLINK				
Earth Station	Other	Other	Other	Other
Country	United States of America - US	United States of America - US	United States of America - US	United States of America - US
Location	N/A	N/A	Anchorage	Miami Beach
Longitude (°)	-80.13	-149.88	-149.88	-80.13
Latitude (°)	25.78	53	61.22	25.78
Distance (km)	39051.47	38846.61	39627.5	39051.47
Antenna G/T towards satellite (dB/K)	20.16	11.93	36.65	36.63
Elevation angle (°)	25.19	27.41	19.2	25.19
Azimuth angle (°)	251.68	159.01	160.73	251.68
Antenna size (m)	1.2	0.45	9	9
Atmospheric Losses (dB)	0.3	0.3	0.3	0.3
Satellite EIRP towards receive station (dBW)	50	50	50	50
System temperature (K)	130	117	165	165
RESULTS				
Uplink Path Length (km)	39051.47	39627.5	38846.61	39051.47
Thermal Uplink C/N (dB)	27.67	22.31	6.82	12.36
Aggregated C/I Uplink (dB)	22.27	19.84	8.39	12.05
Uplink Propagation Losses (dB)	207.36	206.71	207.33	207.36
Downlink Path Length (km)	39051.47	38846.61	39627.5	39051.47
Thermal Downlink C/N (dB)	18.61	8.45	22.8	28.97
Aggregated C/I Downlink (dB)	19.32	4.67	11.7	16.62
Downlink Propagation Losses (dB)	205.47	205.25	205.61	205.47
C/N+I Overall (dB)	14.8	3.01	3.71	8.43
E_b/N_0 Overall (dB)	10.96	3.16	3.71	6.67
Clear Sky Link Margin (dB)	4.66	1.46	1.21	1.97
SUMMARY				
Bandwidth (MHz)	33.	54	4	5
Power Equivalent Bandwidth (MHz)	33.	72.	1.25	3.3

EXHIBIT 2: SATELLITE LINK BUDGETS – Worst Case Interference Conditions

eutelsat

	Link 1FWM	*Link 2FWA*	*Link 3RTA*	*Link 4RTM*
SPACE SEGMENT				
Satellite	E133WA	E133WA	E133WA	E133WA
Orbital Position	-132.85	-132.85	-132.85	-132.85
Transponder	D01S	C1	D1	D01S
Bandwidth (MHz)	33	72	72	33
Uplink frequency (MHz)	14269.23	13041.67	14291.67	14269.23
Downlink frequency (MHz)	11469.23	11241.67	11491.67	11469.23
Uplink Coverage	Steerable 1 Receive	Fixed 1 Receive	Fixed 1 Receive	Steerable 1 Receive
Downlink Coverage	Steerable 1 Transmit	Fixed 1 Transmit	Fixed 1 Transmit	Steerable 1 Transmit
IPFD setting (dBW/m²)	-82	-86	-86	-86
IBO Multicarrier (dB)	9.5	8.4	8.4	9.5
OBO Multicarrier (dB)	4.3	3.7	3.7	4.3
CARRIER PARAMETERS				
Modulation	8 PSK	2 PSK	4 PSK	4 PSK
FEC	5/6	1/3	1/3	3/4
Spreading Factor	1	1	1	1
Roll Off (%)	20	20	20	20
Spectral efficiency (bps)	2.42	0.33	0.64	1.5
Reed Solomon (n/k)	1	1	1	1
Symbol rate (Mbaud)	27.5	45	3.333	4.167
Usefull Bit rate (Mbps)	66.613	15	2.136	6.25
Overall Bit rate (Mbps)	66.613	15	2.136	6.25
E_b/N_0 (dB)	6.3	1	0.8	4.7
E_s/N_0 (dB)	10.14	-3.77	-1.13	6.46
CARRIER RESOURCES				
Transponder mode	ALC Single carrier	ALC Single carrier	Linear	Linear
IBO with rain (dB)	0	0	26.	19.5
OBO with rain (dB)	0	0	21.3	14.3
Bandwidth consumption (MHz)	33.	54	4	5
Power consumption (MHz)	33.	72.	1.25	3.3
IPFD carrier (dBW/m²)	-86	-90	-119.	-111.5
GROUND SEGMENT - UPLINK				
Earth Station Code	Other	Other	Other	Other
Country	United States of America - US	United States of America - US	United States of America - US	United States of America - US
Location	Miami Beach	Anchorage	Anchorage	N/A
Longitude (°)	-80.13	-149.88	-149.88	-80.13
Latitude (°)	25.78	61.22	61.22	25.78
Distance (km)	39051.47	39627.5	39627.83	39051.47
satellite G/T towards transmit station (dB/K)	4	4	3	6
Elevation angle (°)	25.19	19.2	19.2	25.19
Azimuth angle (°)	251.68	160.73	160.73	251.68
Antenna size (m)	9	9	0.45	1.2
Atmospheric losses (dB)	0.2	0.2	0.2	0.2
Uplink EIRP (dBW)	77.02	73.15	43.97	51.52
Post PA losses (dB)	4	4	1.5	1.5
Operating HPA Power (clear sky) (W)	53.98	26.49	10.66	8.56
HPA Rating (W)	340.59	83.77	11.97	9.6
GROUND SEGMENT - DOWNLINK				
Earth Station	Other	Other	Other	Other
Country	United States of America - US	United States of America - US	United States of America - US	United States of America - US
Location	N/A	Anchorage	Anchorage	Miami Beach
Longitude (°)	-80.13	-149.88	-149.88	-80.13
Latitude (°)	25.78	61.22	61.22	25.78
Distance (km)	39051.47	39627.83	39627.5	39051.47
Antenna G/T towards satellite (dB/K)	20.16	11.93	36.65	36.63
Elevation angle (°)	25.19	19.2	19.2	25.19
Azimuth angle (°)	251.68	160.73	160.73	251.68
Antenna size (m)	1.2	0.45	9	9
Atmospheric Losses (dB)	0.3	0.3	0.3	0.3
Satellite EIRP towards receive station (dBW)	50	50	50	50
System temperature (K)	130	117	165	165
RESULTS				
Uplink Path Length (km)	39051.47	39627.83	39627.83	39051.47
Thermal Uplink C/N (dB)	27.67	22.31	2.64	12.36
Aggregated C/I Uplink (dB)	22.97	20.32	4.62	10.86
Uplink Propagation Losses (dB)	207.36	206.71	207.5	207.36
Downlink Path Length (km)	39051.47	39627.83	39627.5	39051.47
Thermal Downlink C/N (dB)	18.61	8.28	22.8	28.97
Aggregated C/I Downlink (dB)	14.17	-1.52	14.34	16.2
Downlink Propagation Losses (dB)	205.47	205.42	205.61	205.47
C/N+I Overall (dB)	12.31	-1.99	0.31	7.82
E_b/N_0 Overall (dB)	8.46	2.78	2.24	6.06
Clear Sky Link Margin (dB)	2.16	1.78	1.44	1.36
SUMMARY				
Bandwidth (MHz)	33.	54	4	5
Power Equivalent Bandwidth (MHz)	33.	72.	1.25	3.3

Exhibit 3: Service Areas

This document illustrates the service areas for the uplink and downlink beams in the accompanying Schedule S.

The Ku-band fixed uplink service area #1 includes Alaska, western Canada, portions of the north Pacific Ocean and the western United States and is illustrated in Figure 1. Figure 1 reflects the service area for uplink beams F1H1, F1H2, F1H3, F1V1, F1V2 and F1V3V.

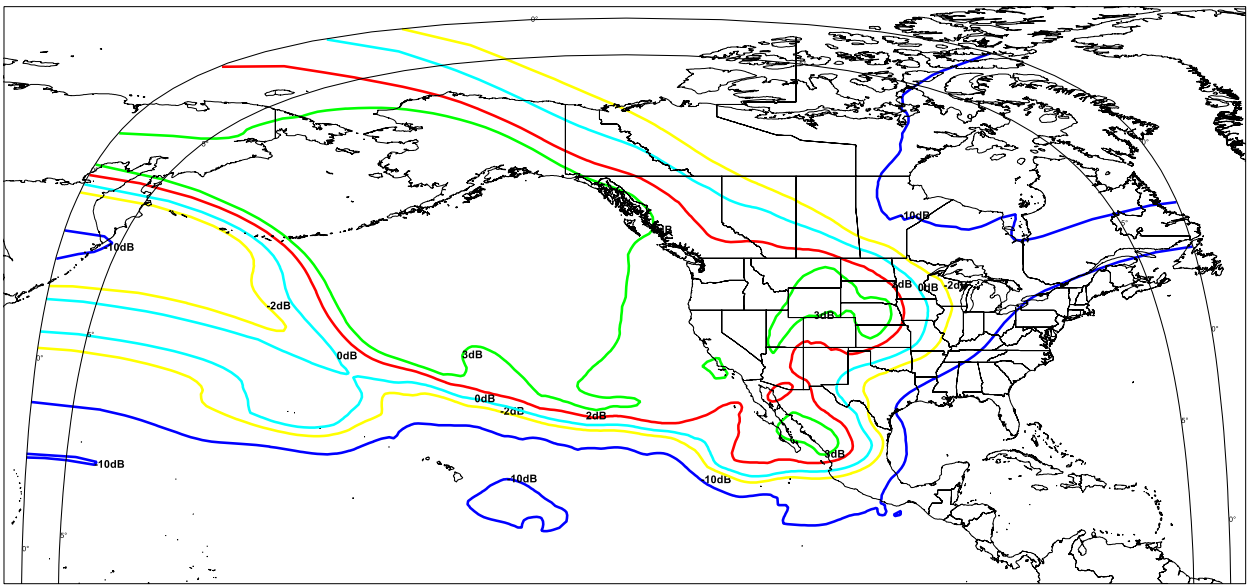


Figure 1 Ku-band Fixed Uplink Service Area #1 from 132.85°W.L.

The Ku-band fixed downlink service area #1 includes Alaska, western Canada, portions of the north Pacific Ocean and portions of the western United States and is illustrated in Figure 2. Figure 2 reflects the service area for uplink beams F1H5, F1H6, F1H7, F1V5, F1V6 and F1V37.

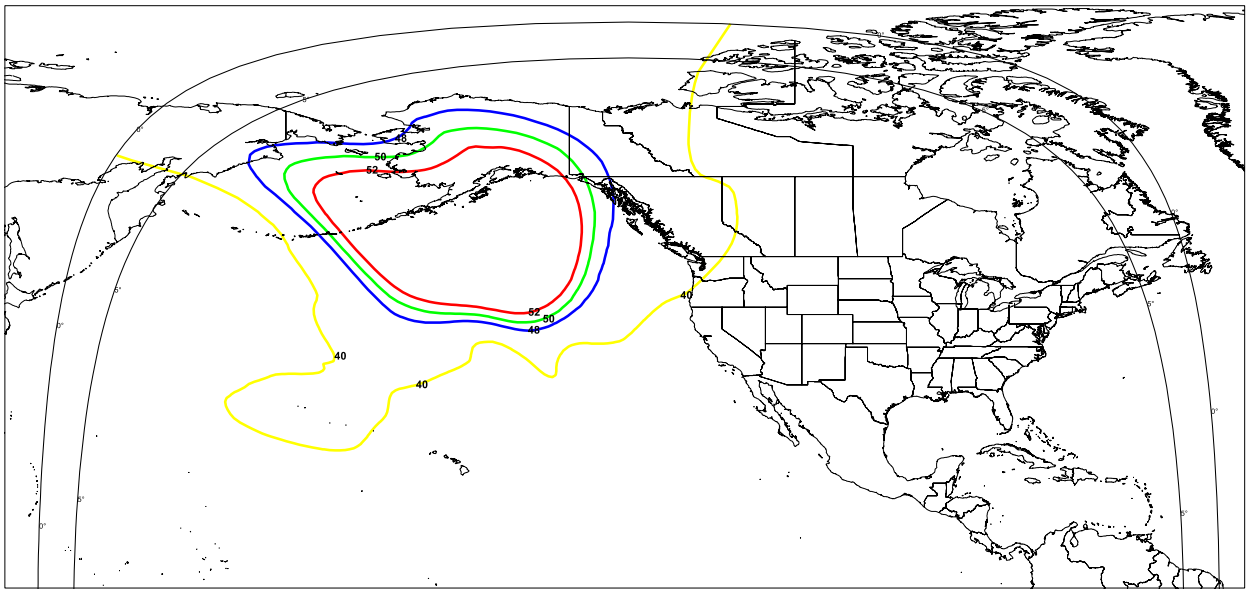


Figure 2 Ku-band Fixed Downlink Service Area #1 from 132.85°W.L.

The Ku-band steerable uplink service area #1 includes the majority of the contiguous United States (CONUS) and is illustrated in Figure 3. Figure 3 reflects the service area for uplink beams S1H3 and S1V3.

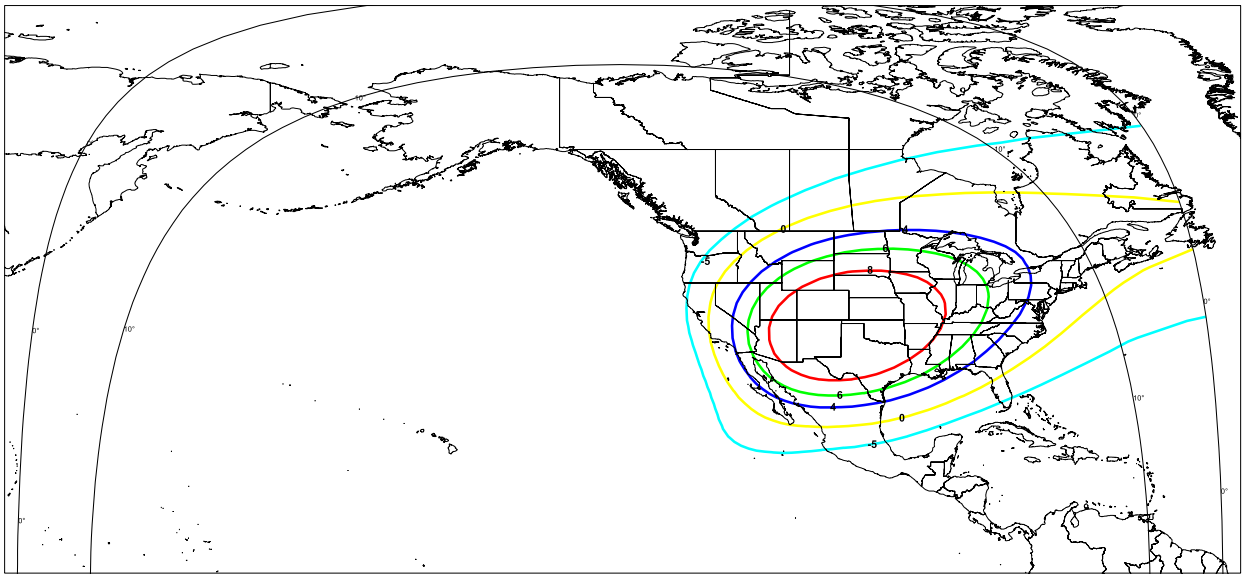


Figure 3 Ku-band Steerable Uplink Service Area #1 from 132.85°W.L.

The Ku-band steerable downlink service area #1 includes eastern Canada and the contiguous United States (CONUS) and is illustrated in Figure 4. Figure 4 reflects the service area for uplink beams S1H7 and S1V7.

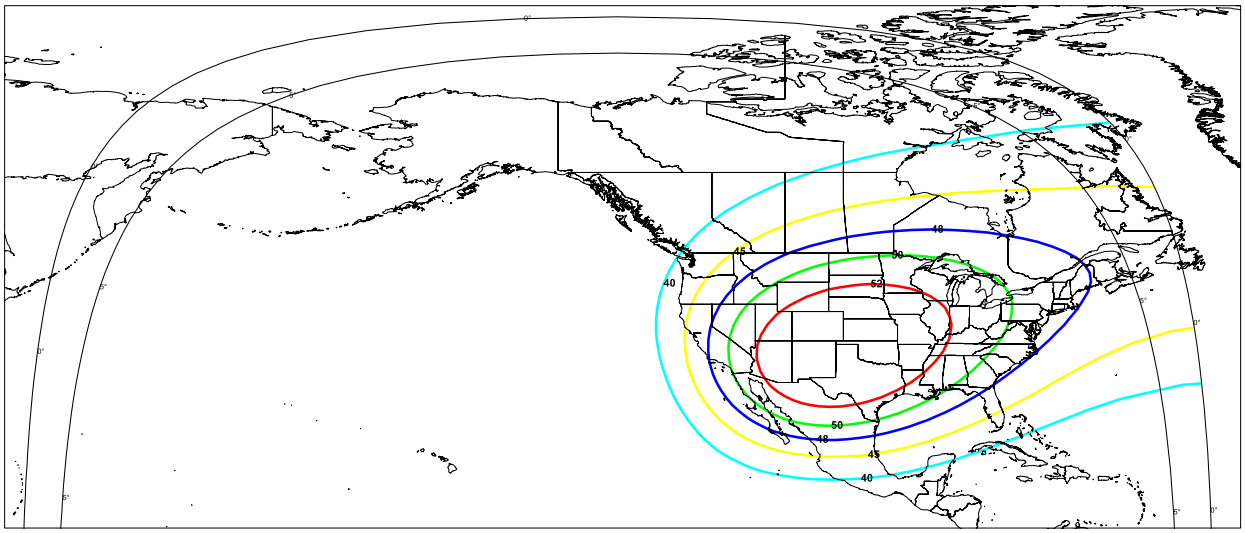


Figure 4 Ku-band Steerable Downlink Service Area #1 from 132.85°W.L.

The Ku-band regional beacon service area includes North America and the North Pacific and is illustrated in Figure 5. Figure 5 reflects the service area for downlink beam BR.

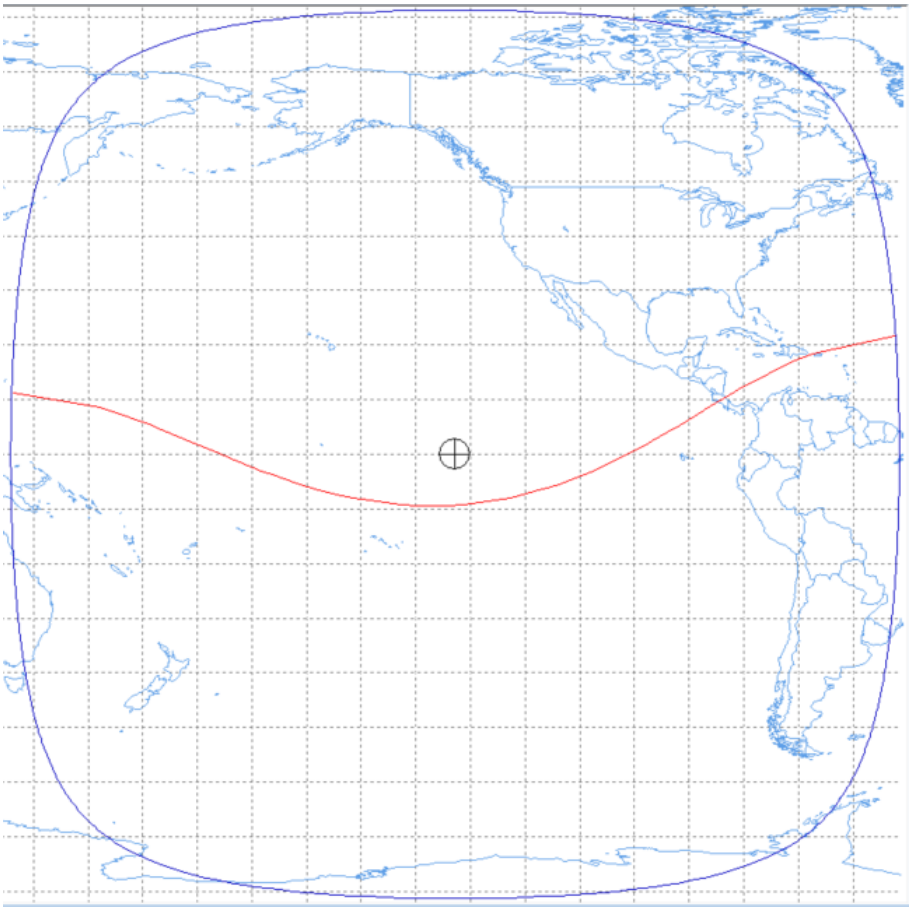


Figure 5 Ku-band Regional Service Area from 132.85°W.L.

EUTELSAT 133WA Space Debris Mitigation Plan
(prepared for the Federal Communications Commission)

ISSUE/REVISION: Issue 1, Rev. 1

ISSUE DATE: 23 February 2018

Prepared by:	*Position*	*Signature*	*Date*
D. Zamora	Head of Flight Dynamics		23/02/2018

Approved by:	*Position*	*Signature*	*Date*
L.R. Pattinson	Director of Satellite Operations		27/2/18.

CHANGE RECORD

Date	*Issue/rev*	*Pages affected*	*Description*
19/01/2018	1/0	All	First issue.
23/02/2018	1/1	All 4 6	Replace EOL by "end of life" Correct typo on launch date. Add information regarding residuals in the He tanks.

TABLE OF CONTENTS

1. Introduction

This document describes the space debris mitigation plan that Eutelsat Communications S.A ("Eutelsat") shall apply to the EUTELSAT 133WA satellite at the 132.85° West Longitude (W.L.) orbital location.

Eutelsat 133WA is based on the Thales Alenia Space Spacebus 3000 bus and it was manufactured according to European standards and specifications. The satellite is 3-axis stabilised and uses bi-propellant chemical propulsion for attitude and on-station control.

Eutelsat 133WA was launched on the 8th of March 2001 and the end of its operational life is not expected to be before October-2022.

2. Related documents

2.1. Applicable Documents

1. EUTELSAT Space Debris Mitigation Plan. Issue 2.0. EUT_CTL_SAT_QMS_PLN_00021, 25 April 2017.
2. FCC. Orbital Debris Mitigation Standard Practices. FCC 04-130. June 21, 2004

2.2. Reference Documents

1. European Code of Conduct for Space Debris Mitigation. Issue 1.0. 28 June 2004.
2. IADC Space Debris Mitigation Guidelines. IADC-02-01. Revision 1. September 2007.
3. Space Product Assurance. Safety. ECSS-Q-40A. 19 April 1996.
4. Orbital Debris Mitigation Standard Practices. FCC 04-130. 21 June 2004.
5. NASA Safety Standard. Guidelines and Assessment Procedures for limiting Orbital Debris. NSS 1740.14. Aug 1995.
6. ITU Environment Protection of the Geostationary Orbit. S.1003. 1993.
7. UNCOPUOS. Technical Report on Space Debris. 1999.

3. EUTELSAT 133WA Operations

Eutelsat operates the satellite to control and limit the amount of debris released in a planned manner during normal operations, and assesses and limits the probability of the space station becoming a source of debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal.

Eutelsat has assessed the amount of debris released in a planned manner and no intentional debris will be released during normal operations of the EUTELSAT 133WA spacecraft. A safe operational configuration of the satellite system is ensured thanks to the hardware design and operational procedures

Eutelsat minimizes the probability of the satellite becoming a source of debris by collisions with large debris or other operational satellites. Eutelsat assessed and determined that there are no other satellites located at or sufficiently near EUTELSAT

133WA's planned orbital location that might result in overlap of satellite orbit control windows[1].

EUTELSAT 133WA will be controlled within its orbit control window (132.85° W.L. +/- 0.1°) by standard routine periodic orbit correction manoeuvres. In case of anticipated violation of the window, correction manoeuvres would be implemented to avoid such violation.

Eutelsat has assessed the probability of accidental explosions during and after completion of mission operations. Thanks to design safety margins, the probability of occurrence of accidental explosion of the EUTELSAT 133WA satellite is negligible.

Satellite design is such that high levels of thruster activity and orbit perturbation do not result when foreseeable on-board events occur

4. EUTELSAT 133WA End of life disposal

The post-mission disposal activities have been planned as follows:

1. The orbit of the satellite will be raised by 300 km in order to ensure that the spacecraft will not re-enter into the GEO protected region (GEO height +/- 200 km) in the long term. A mass of 6.5 kg of propellant have been allocated and reserved with a confidence level of 99% to carry out the post-mission disposal manoeuvres. The FCC will be informed of any significant change to the above quantity of propellant.

   The minimum perigee height to avoid re-entering into the GEO protected region can be computed using the IADC formula applied to this satellite:

   $$\Delta H \text{ (km)} = 235 + 1000 \cdot (A/m) \cdot \text{eff} = 269 \text{ km}$$

   where the final term is the effective area/mass ratio of the satellite. Therefore, the planned 300 km above GEO height is sufficient to satisfy the 269 km requirement.

   Eutelsat will monitor the remaining propellant to ensure that sufficient fuel remains in the tanks to reach the 300 km minimum perigee.

2. The satellite tracking, telemetry and control operations are planned to avoid interference and coordinated with potentially affected satellite networks.

3. As part of the end of life activities, EUTELSAT 133WA energy sources will be rendered inactive such that debris generation will not result from the conversion or dissipation of energy sources on-board the satellite. For EUTELSAT 133WA, this involves the following:

[1] Galaxy 15(SCC# 28884) is being controlled at 133°W +/-0.05°, so the E133WA orbit control window will not overlap.

- Discharge the batteries during end of life operations and isolate them from the solar arrays to prevent further electrical energy storage.

- Switch off the momentum wheels.

- Deplete and eventually vent the propellant tanks, which allows depressurizing during passivation operations and results in only negligible residuals remaining in the helium tanks that cannot be vented[2]. In addition, the tanks have been designed, manufactured, and validated according to the MIL-STD-1522 standard and they are "leak before burst" designed. Therefore, the risk of break-up is negligible.

- All pyrotechnic systems are fired at initial stage of satellite operations. Those systems do not generate any debris.

5. Notifications

Eutelsat undertakes to provide the relevant bodies as required (UNCOPUOS, FCC, ITU, French ANFR, etc.) with all appropriate notifications as required by law or regulations for Eutelsat satellites including but not limited to those concerning initial entry of service, location, relocations, inclined orbit operations and de-orbiting operations.

[2] The helium tanks are isolated just after the completion of Launch and Early Operations Phase (LEOP) operations and therefore cannot be fully vented as part of the end of life (EOL) operations. The following table summarises information regarding the residual helium in the tanks:

Tank	Volume [L]	Pressure [bar]	Temp. [°C]	He Mass [kg]
He1	51.5	60.2	14.7	0.5
He2	51.7	60.2	14.7	0.5