

# Attachment B - Engineering Statement

## 1. Scope

This Attachment contains additional information regarding the Eutelsat S.A. (“Eutelsat”) Petition for Declaratory Ruling to modify the U.S. Market Access Grant for EUTELSAT 12 West B (the “Petition”), as required by Section 25.114 and other sections of the Part 25 rules. This Attachment contains information that cannot be entered into the Schedule S online submission system relating to the 11.2-11.45 GHz band, which is the subject of the Petition.

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

The EUTELSAT 12 West B satellite is currently operating at the 12.5° W.L. orbital location. It was launched on September 20, 2001. The EUTELSAT 12 West B satellite was moved to its current location and renamed EUTELSAT 12 West B in October 2015.<sup>1</sup> The satellite’s current U.S. market access authority allows it to provide Ku-band mobility and other FSS services over parts of the Americas in the 10.95-11.2 GHz, 11.45-11.7 GHz, and 12.5-12.75 GHz bands (space-to-Earth) and the 13.75- 14.5 GHz band (Earth-to-space). Eutelsat seeks authority to operate in the 11.2-11.45 GHz band as well.

## 3. Spacecraft Overview

EUTELSAT 12 West B was manufactured and supplied by Alcatel Space and is based on the Spacebus 3000-B2 bus platform. The satellite is 3-axis stabilized and uses both electric propulsion (Xenon propellant) and bi-propellant propulsion (hydrazine propellant) systems for spacecraft orientation and for correction of the spacecraft orbit.

The EUTELSAT 12 West B satellite employs 35 Ku-band transponders using both linear polarizations thereby providing dual-frequency reuse. The satellite employs two (2) fixed Ku-band beams and one (1) steerable Ku-band beam for each of the uplink and downlink bands, including an Americas beam with the 11.2-11.45 GHz band (an illustration of the beam coverage area is provided in Exhibit 1).

The EUTELSAT 12 West B satellite is currently operating with a 0.9° inclination angle, the satellite’s inclination is increasing at a rate of 0.9° per year and the anticipated end of life of the satellite is 31 July 2022.

## 4. Frequency Plan

The following table lists the channels of the EUTELSAT 12 West B satellite in the 11.2-11.45 GHz band. This information is also provided in the accompanying Schedule S but is included here for completeness.

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<sup>1</sup> Eutelsat’s modification petition to reflect new frequencies and planned services for U.S. market access from the satellite’s current orbital location. See Petition for Declaratory Ruling to Modify the U.S. Market Access Grant for EUTELSAT 12 West B, File No. SAT-MPL-20191017-00117, Call Sign S2596 (grant stamp, April. 8, 2020) (the “Modification”).

Table 1 Ku-Band Downlink Frequency Plan

Channel ID	Bandwidth (kHz)	Center Frequency (MHz)	Polarization
C1	72000	11241.67	H
C2	72000	11241.67	V
C3	72000	11325	H
C4	72000	11325	V
C5	72000	11408.33	H
C6	72000	11408.33	V

## 5. Frequency Tolerance

EUTELSAT 12 West B will meet the frequency tolerance requirements of Section 25.202(e), which specifies that the carrier frequency of each space station transmitter be maintained within 0.002% of the reference frequency.

## 6. Out of Band Emissions

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

## 7. Frequency Reuse

EUTELSAT 12 West B employs full frequency reuse on the Ku-band uplink and downlink by employing dual orthogonal linear polarization and frequency reuse across its multiple regional beams.

## 8. Cessation of Emissions

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

## 9. ITU Filings

The EUTELSAT 12 West B satellite is operating in the 11.2-11.45 GHz Ku-band based on the EUTELSAT EXB-12.5W and F-SAT-30B-12.5W ITU filings.

## 10. PFD Analysis

The power flux density (“PFD”) limits for space stations operating in the 11200-11450 MHz band are not specified in Section 25.208 of the Commission’s rules but are specified in rule No. 21.16 of the International Telecommunication Union (“ITU”) Radio Regulations at the same level as the bands 10950-11200 MHz and 11450-11700 MHz.

The maximum PFD levels for the EUTELSAT 12 West B transmissions were calculated for the 11200-11450 MHz band. The results, provided in Schedule S, show that the downlink PFD levels of EUTELSAT 12 West B’s carriers do not exceed the limits specified in either Section 25.208 of the Commission’s rules (for the 10950-11200 MHz and 11450-11700 MHz bands) or in the ITU Radio Regulations.

Should the Americas beams of EUTELSAT 12 West B be reoriented, the orientation of the beams and/or the downlink power density will be adjusted such that the PFD limits will still be ensured.

## 11. Interference Analysis

The interference analysis required by Section 25.140(a), as specified in Section 25.114(d)(7) when applying for authorizations for space stations in the FSS, was presented in the *Modification* application. The addition of the downlink frequencies requested in the instant Petition will not change the previous analysis.

Per Section 25.140 (a)(3)(v), EUTELSAT 12 West B operations in the 11200-11450 MHz band will take into account the applicable requirements of Appendix 30B of the ITU’s Radio Regulations. There are no U.S. Appendix 30B ITU filings within 6 degrees of 12.5 W.L. having precedence against the AP30B ITU filings supporting the EUTELSAT 12West B satellite, and therefore there are no compatibility issues with EUTELSAT 12 West B operations under Appendix 30B with respect to U.S. Appendix 30B ITU filings.

## 12. Schedule S

While this filing is intended to only cover the addition of the 11200-11450 MHz band, the Schedule S system insists on the inclusion of an uplink band. Therefore, the uplink band 14250-14500 MHz was included, along with Receiving Beam F1H2 and its accompanying received channels D01-D12. This information has already been provided and is only duplicated to satisfy the expectations of the Schedule S online application system.

# 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/

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## Exhibit 1: Service Area

This exhibit illustrates the current service area for the downlink beam in the accompanying Schedule S. The Americas beam service area includes the eastern third of North America, most of South America, the Bahamas, and the Caribbean and is illustrated in **Error! Reference source not found.**, below.

It reflects the service area for operations in the 11.2-11.45 GHz band:

Downlink beams: F1H7, F1V7

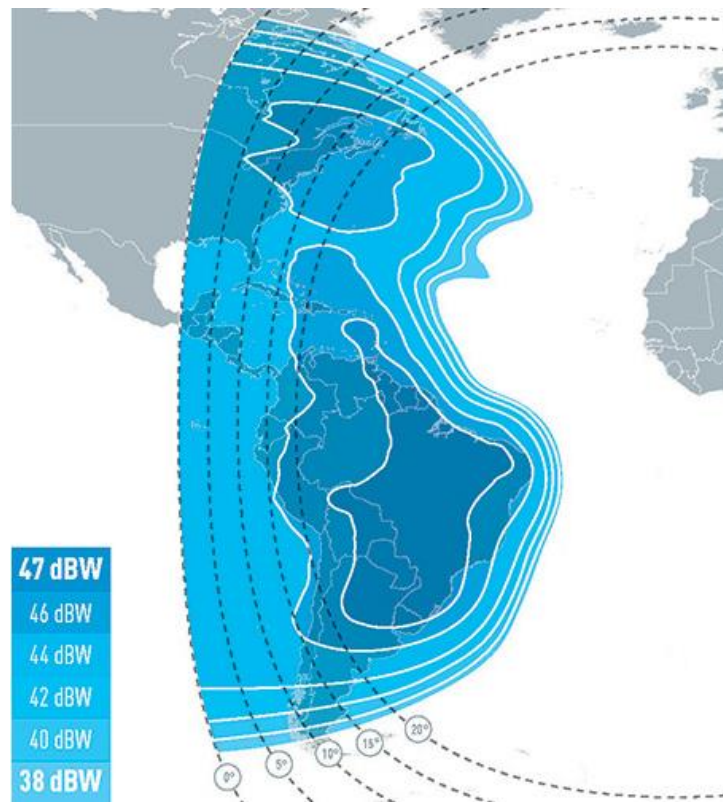


Figure 1 American Downlink Service Area - EUTELSAT 12 West B