

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

In the Matter of	)	
	)	
SES AMERICOM, INC.	)	File No. SAT-MOD-_____
	)	Call Sign S2181
Application for Modification of AMC-16	)	
Fixed-Satellite Space Station License	)	

**APPLICATION OF SES AMERICOM, INC.**

SES Americom, Inc. (“SES”) respectfully requests a modification of its license for the AMC-16 fixed-satellite space station to reorient the satellite’s Ka-band beams to provide coverage of the 50 states, Canada and parts of the Caribbean. Grant of the requested modification will serve the public interest by allowing SES to meet customer demand for Ka-band capacity at the 85° W.L. orbital location.

A completed FCC Form 312 is attached, and SES incorporates by reference the technical information previously provided in support of AMC-16.<sup>1</sup> In addition, SES is providing here technical information relating to the proposed modification on Schedule S and in narrative form pursuant to Section 25.114 of the Commission’s Rules.

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<sup>1</sup> The most recent technical information regarding AMC-16 is found in File No. SAT-MOD-20121224-00221. *See also* File Nos. SAT-MOD-20060929-00113; SAT-MOD-20050621-00132; SAT-AMD-20051115-00218; SAT-RPL-20040227-00024; SAT-MOD-20040227-00022 & SAT-LOA-19950929-00133.

## MODIFICATION

AMC-16 is a hybrid Ku/Ka-band satellite that is licensed by the Commission to operate at 85° W.L.<sup>2</sup> In response to customer demand, SES proposes to reorient the AMC-16 Ka-band beams so that they can provide coverage of the 50 states, Canada and parts of the Caribbean. No change in the Ku-band operations of AMC-16 is proposed. SES proposes to accomplish the desired effect by reorienting AMC-16 to obtain the desired Ka-band coverage and using the gimbal on the Ku-band antenna to maintain the current Ku-band coverage pattern. No existing AMC-16 Ka-band customers will be affected by the reorientation.

Reorientation of AMC-16 as proposed will not adversely affect any other operators. The technical appendix demonstrates that the Ka-band payload of AMC-16 conforms to Commission requirements for operations at two-degree spacing. AMC-16 will also be operated consistent with applicable existing and future coordination agreements.<sup>3</sup>

The Commission has generally permitted satellite operators the flexibility to design and modify their networks in response to customer requirements, absent compelling countervailing public interest considerations.<sup>4</sup> Here, grant of the requested modification will permit SES to make efficient use of AMC-16 in response to customer requirements.

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<sup>2</sup> See File No. SAT-MOD-20121224-00221, granted March 22, 2013. The Ku-band portion of the license was assigned to EchoStar Satellite Operating Corporation in 2015. See File No. SAT-ASG-20141020-00111, granted March 24, 2015.

<sup>3</sup> SES has previously coordinated the Ka-band operations of AMC-16 with U.S. Federal systems, as required by footnote US 334 to the table of frequency allocations, 47 C.F.R. § 2.106. SES will advise the appropriate U.S. government representative regarding the proposed change in coverage of the AMC-16 Ka-band payload.

<sup>4</sup> See, e.g. *AMSC Subsidiary Corporation*, 13 FCC Rcd 12316 at ¶ 8 (IB 1998) (the Commission generally leaves space station design decisions to the licensee “because the licensee is in a better position to determine how to tailor its system to meet the particular needs of its customers”) (footnote omitted).

**CONCLUSION**

For the foregoing reasons, SES seeks a modification of the AMC-16 license to permit reorientation of the satellite's Ka-band beams, as described in the attached materials.

Respectfully submitted,

SES AMERICOM, INC.

By: /s/ Petra A. Vorwig

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Dated: March 1, 2017

## **TECHNICAL APPENDIX**

### **REPOINTING THE KA-BAND BEAMS OF AMC-16 AT 85° W.L.**

## **1.0 Overall Description (§25.114(d)(1))**

This technical appendix is submitted in support of the modification application of SES Americom, Inc. (“SES”) seeking authority to re-orient the Ka-band beams on AMC-16 at 85° W.L. SES incorporates by reference the technical information it has already provided with respect to AMC-16<sup>1</sup> and provides here technical information relating to the proposed modification. No change is proposed in the spacecraft’s Ku-band operations. In the Ka-band frequencies (downlink frequencies from 18.58-18.8 GHz and 19.7-20.2 GHz and uplink frequencies from 28.4-28.6 GHz and 29.5-30 GHz), the satellite will operate using 12 spot beams providing coverage of the 50 states, Canada and parts of the Caribbean.

## **2.0 Schedule S (§25.114(c))**

The Schedule S database is included with this filing. Considering the large number of spot beams utilized in the Ka-band payload, SES is providing information in the Schedule S for two representative user beam groups for Transmitting Beams and Receiving Beams. Two representative beams are provided because the new Schedule S software will not allow two non-contiguous spectrum segments to be associated with a single beam. The worst case G/T, EIRP, SFD and PFD values are provided. In accordance with Section 25.114(c)(4)(vii), the predicted antenna gain contours of the two representative transmit and receive antenna beams are provided in Schedule S. In accordance with Section 25.114(c)(4)(vii)(B), Table 1 below provides the latitude and longitude of each spot beam’s maximum gain point.

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<sup>1</sup> The most recent technical information regarding AMC-16 is found in File No. SAT-MOD-20121224-00221. *See also* File Nos. SAT-MOD-20060929-00113; SAT-MOD-20050621-00132; SAT-AMD-20051115-00218; SAT-RPL-20040227-00024; SAT-MOD-20040227-00022 & SAT-LOA-19950929-00133.

**Table 1**

<b>Beam</b>	<b>Longitude</b>	<b>Latitude</b>
Ka1 Downlink	-74.3	41.9
Ka1 Uplink	-75.1	41.9
Ka2 Downlink	-96.2	36.1
Ka2 Uplink	-96.2	36.1
Ka3 Downlink	-70.6	29.5
Ka3 Uplink	-71.2	30.2
Ka4 Downlink	-96.8	46.7
Ka4 Uplink	-97.4	45.7
Ka5 Downlink	-144.0	23.5
Ka5 Uplink	-146.8	22.6
Ka6 Downlink	-85.4	44.5
Ka6 Uplink	-85.4	43.6
Ka7 Downlink	-108.0	39.0
Ka7 Uplink	-108.5	38.2
Ka8 Downlink	-64.5	41.4
Ka8 Uplink	-65.4	41.4
Ka9 Downlink	-86.7	32.2
Ka9 Uplink	-86.7	32.2
Ka10 Downlink	-135.8	59.3
Ka10 Uplink	-146.8	60.3
Ka11 Downlink	-77.0	33.7
Ka11 Uplink	-76.3	33.7
Ka12 Downlink	-110.1	47.3
Ka12 Uplink	-110.5	46.4

Pursuant to 25.114(c)(4)(v), the gain-to-temperature ratio at beam peak and saturated flux density are not required for the command beam; however, the new Schedule S requires an entry for this parameter so we submitted dummy values (of 0 and -1). The beam peak flux density at the command threshold is -143.8 dBW/m<sup>2</sup>/1MHz. Pursuant to 25.114(c)(4)(vi)(A), the contour at 8 dB below peak of beams falls entirely beyond visible Earth so GXT files are not provided for TC1, TM1, TM2 and TM3.

### **3.0 Certification with respect to two degree spacing levels (§25.140)**

SES certifies that AMC-16 will not generate a power flux-density at the Earth's surface in excess of  $-118 \text{ dBW/m}^2/\text{MHz}$  and that its associated uplink operations will not exceed applicable EIRP density envelopes in §25.138(a) 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 orbital location and except as provided in §25.140(d).

### **4.0 Maximum Theoretical Operation Levels**

AMC-16 will be operated consistent with coordination agreements with adjacent satellites. In the 18.58-18.8 GHz and 19.7-20.2 GHz bands, the power flux-density at the Earth's surface produced by AMC-16 emissions will not exceed  $-115 \text{ dBW/m}^2/\text{MHz}$ , and in the 28.4-28.6 GHz and 29.5-30 GHz bands, the input power density of the uplink digital carriers of earth stations operating with AMC-16 will not exceed  $-50 \text{ dBW/Hz}$ .

### **5.0 Mitigation of Orbital Debris (§25.114(d)(14))**

The information required under Section 25.114(d)(14) of the Commission's Rules is already on file with the Commission and is incorporated by reference herein.<sup>2</sup>

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<sup>2</sup> See File No. SAT-MOD-20121224-00221, Legal Narrative at 3-4 and Technical Appendix at 15-16.

## DECLARATION

I, Donna Wang, hereby certify under penalty of perjury that I am the technically qualified person responsible for the technical information contained in the foregoing exhibit; that I am familiar with the technical requirements of Part 25; and that I either prepared or reviewed the technical information contained in the exhibit and that it is complete and accurate to the best of my knowledge, information and belief.

/s/ Donna Wang

Donna Wang  
Engineer, Spectrum Management and Development  
Americas  
SES

Dated: March 1, 2017