

Approved by OMB
3060-0678

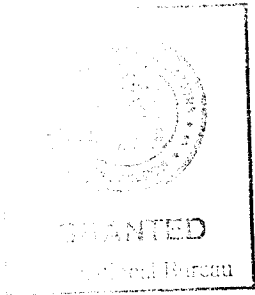
Date & Time Filed: Oct 6 2006 1:56:36:443PM
File Number: SAT-PPL-20061006-00118
Callsign/Satellite ID: S2713

APPLICATION FOR SATELLITE SPACE STATION AUTHORIZATIONS FCC 312 MAIN FORM FOR OFFICIAL USE ONLY	FCC Use Only
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APPLICANT INFORMATION

Enter a description of this application to identify it on the main menu:
SES Gibraltar Permitted List Filing for AMC-18

1-8. Legal Name of Applicant			
Name:	SES Satellites (Gibraltar) Limited	Phone Number:	6099874000
DBA Name:		Fax Number:	
Street:	Suite 9A Leanse Place	E-Mail:	Nancy.Eskenazi@ses-americom.com
	50 Town Range		
City:		State:	
Country:	Gibraltar	Zipcode:	-
Attention:	Nancy J. Eskenazi		

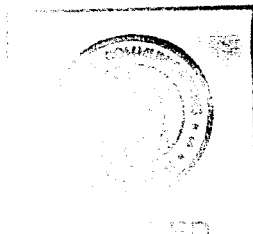


File # SAT-PPL-20061006-00118
with attached conditions
Call Sign S2713 Grant Date 12/7/2006
(or other identifier)
From see conditions see conditions
Approved: [Signature] Chief
Robert G. Nelson Satellite
Division

ATTACHMENT
Conditions of Authorization
IBFS File No. SAT-PPL-20061006-00118; Call Sign S2713
December 7, 2006

Pursuant to Sections 303(r), 308, 309, and 310 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 303(r), 308, 309, and 310, and Sections 0.261 and 25.137(c) of the Commission's rules, 47 C.F.R. §§ 0.261, and 25.137(c), the petition for declaratory ruling filed by SES Satellites (Gibraltar) Ltd., SAT-PPL-20061006-00118, to add the AMC-18 satellite, which is licensed by Gibraltar, to the Commission's Permitted Space Station List IS GRANTED. Accordingly, each earth station with "ALSAT" designated as a point of communication IS GRANTED authority to provide Fixed Satellite Services to, from, or within the United States, by accessing the AMC-18 satellite at the 104.95° W.L. orbital location in the 5925-6425 MHz (Earth-to-space) and 3700-4200 (space-to-Earth) MHz frequency bands, in accordance with the technical specifications set forth in the petition for declaratory ruling, this Attachment, the Commission's Rules, and the following conditions:

1. This action is effective upon the date that the AMC-18 satellite reaches the 104.95° W.L. orbital location. SES Satellites (Gibraltar) Ltd. shall inform the Commission, through a letter to the Chief, Satellite Division, FCC, within five business days following the date on which the AMC-18 satellite arrives at the 104.95° W.L. orbital location. At that time, the Satcom C-4 satellite, which AMC-18 is replacing, will be removed from the Permitted Space Station List.
2. AMC-18 is not authorized to provide any Direct-to-Home Service, Direct Broadcast Service, or Digital Audio Radio Service to, from, or within the United States.
3. Communications between ALSAT-designated routine earth stations and the AMC-18 satellite shall be in compliance with coordination agreements reached between Gibraltar and the United Kingdom and other administrations.



File # SAT-PPL-20061006-00118
with attached conditions
Call Sign S2713 Grant Date 12/7/2006
(or other identifier)
Term Dates
From See conditions To See conditions
Approved: RL
Robert G. McGowan Chief
Satellite
Division

9-16. Name of Contact Representative			
Name:	Karis A. Hastings, Esq.	Phone Number:	202-637-5767
Company:	Hogan & Hartson L.L.P.	Fax Number:	202-637-5910
Street:	555 Thirteenth Street, NW	E-Mail:	KAHastings@HHLaw.com
City:	Washington	State:	DC
Country:	USA	Zipcode:	20004 -1109
Attention:		Relationship:	Legal Counsel

CLASSIFICATION OF FILING

<p>17. Choose the button next to the classification that applies to this filing for both questions a. and b. Choose only one for 17a and only one for 17b.</p> <p>a.</p> <p>(N/A) a1. Earth Station</p> <p><input checked="" type="radio"/> a2. Space Station</p>	<p>b.</p> <p><input checked="" type="radio"/> b1. Application for License of New Station</p> <p>(N/A) b2. Application for Registration of New Domestic Receive-Only Station</p> <p>(N/A) b3. Amendment to a Pending Application</p> <p>(N/A) b4. Modification of License or Registration</p> <p>(N/A) b5. Assignment of License or Registration</p> <p>(N/A) b6. Transfer of Control of License or Registration</p> <p>(N/A) b7. Notification of Minor Modification</p> <p>(N/A) b8. Application for License of New Receive-Only Station Using Non-U.S. Licensed Satellite</p> <p><input type="radio"/> b9. Letter of Intent to Use Non-U.S. Licensed Satellite to Provide Service in the United States</p> <p><input type="radio"/> b10. Replacement Satellite Application – no new frequency bands</p> <p><input type="radio"/> b11. Replacement Satellite Application – new frequency bands (Not eligible for streamlined processing)</p> <p><input checked="" type="radio"/> b12. Petition for Declaratory Ruling to be Added to the Permitted List</p> <p>(N/A) b13. Other (Please specify)</p>
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TYPE OF SERVICE

<p>20. NATURE OF SERVICE: This filing is for an authorization to provide or use the following type(s) of service(s): Select all that apply:</p> <p><input checked="" type="checkbox"/> a. Fixed Satellite <input type="checkbox"/> b. Mobile Satellite <input type="checkbox"/> c. Radiodetermination Satellite <input type="checkbox"/> d. Earth Exploration Satellite <input type="checkbox"/> e. Direct to Home Fixed Satellite <input type="checkbox"/> f. Digital Audio Radio Service <input type="checkbox"/> g. Other (please specify)</p>	
<p>21. STATUS: Choose the button next to the applicable status. Choose only one.</p> <p><input type="radio"/> Common Carrier <input checked="" type="radio"/> Non-Common Carrier</p>	<p>22. If earth station applicant, check all that apply. Not Applicable</p>
<p>23. If applicant is providing INTERNATIONAL COMMON CARRIER service, see instructions regarding Sec. 214 filings. Choose one. Are these facilities:</p> <p><input type="radio"/> Connected to a Public Switched Network <input type="radio"/> Not connected to a Public Switched Network <input checked="" type="radio"/> N/A</p>	
<p>24. FREQUENCY BAND(S): Place an "X" in the box(es) next to all applicable frequency band(s).</p> <p><input checked="" type="checkbox"/> a. C-Band (4/6 GHz) <input type="checkbox"/> b. Ku-Band (12/14 GHz) <input type="checkbox"/> c. Other (Please specify upper and lower frequencies in MHz.) Frequency Lower: Frequency Upper: (Please specify additional frequencies in an attachment)</p>	

TYPE OF STATION

25. CLASS OF STATION: Choose the button next to the class of station that applies. Choose only one.

- (N/A) a. Fixed Earth Station
- (N/A) b. Temporary-Fixed Earth Station
- (N/A) c. 12/14 GHz VSAT Network
- (N/A) d. Mobile Earth Station
- e. Geostationary Space Station.
- f. Non-Geostationary Space Station
- g. Other (please specify)

26. TYPE OF EARTH STATION FACILITY: Not Applicable

PURPOSE OF MODIFICATION

27. The purpose of this proposed modification is to: (Place an "X" in the box(es) next to all that apply.) Not Applicable

ENVIRONMENTAL POLICY

28. Would a Commission grant of any proposal in this application or amendment have a significant environmental impact as defined by 47 CFR 1.1307? If YES, submit the statement as required by Sections 1.1308 and 1.1311 of the Commission's rules, 47 C.F.R. §§ 1.1308 and 1.1311, as an exhibit to this application. A Radiation Hazard Study must accompany all applications for new transmitting facilities, major modifications, or major amendments. Yes No

ALIEN OWNERSHIP

Earth station applicants not proposing to provide broadcast, common carrier, aeronautical en route or aeronautical fixed radio station services are not required to respond to Items 30-34.

29. Is the applicant a foreign government or the representative of any foreign government?	<input type="radio"/> Yes <input checked="" type="radio"/> No
30. Is the applicant an alien or the representative of an alien?	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A
31. Is the applicant a corporation organized under the laws of any foreign government?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
32. Is the applicant a corporation of which more than one-fifth of the capital stock is owned of record or voted by aliens or their representatives or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	<input type="radio"/> Yes <input checked="" type="radio"/> No <input type="radio"/> N/A
33. Is the applicant a corporation directly or indirectly controlled by any other corporation of which more than one-fourth of the capital stock is owned of record or voted by aliens, their representatives, or by a foreign government or representative thereof or by any corporation organized under the laws of a foreign country?	<input checked="" type="radio"/> Yes <input type="radio"/> No <input type="radio"/> N/A
34. If any answer to questions 29, 30, 31, 32 and/or 33 is Yes, attach as an exhibit an identification of the aliens or foreign entities, their nationality, their relationship to the applicant, and the percentage of stock they own or vote. Exhibit A	

BASIC QUALIFICATIONS

35. Does the Applicant request any waivers or exemptions from any of the Commission's Rules?
If Yes, attach as an exhibit, copies of the requests for waivers or exceptions with supporting documents.

Yes No

36. Has the applicant or any party to this application or amendment had any FCC station authorization or license revoked or had any application for an initial, modification or renewal of FCC station authorization, license, or construction permit denied by the Commission? If Yes, attach as an exhibit, an explanation of circumstances.

Yes No

37. Has the applicant, or any party to this application or amendment, or any party directly or indirectly controlling the applicant ever been convicted of a felony by any state or federal court? If Yes, attach as an exhibit, an explanation of circumstances.

Yes No

38. Has any court finally adjudged the applicant, or any person directly or indirectly controlling the applicant, guilty of unlawfully monopolizing or attempting unlawfully to monopolize radio communication, directly or indirectly, through control of manufacture or sale of radio apparatus, exclusive traffic arrangement or any other means or unfair methods of competition? If Yes, attach as an exhibit, an explanation of circumstances

Yes No

39. Is the applicant, or any person directly or indirectly controlling the applicant, currently a party in any pending matter referred to in the preceding two items? If yes, attach as an exhibit, an explanation of the circumstances.

Yes No

40. If the applicant is a corporation and is applying for a space station license, attach as an exhibit the names, address, and citizenship of those stockholders owning a record and/or voting 10 percent or more of the Filer's voting stock and the percentages so held. In the case of fiduciary control, indicate the beneficiary(ies) or class of beneficiaries. Also list the names and addresses of the officers and directors of the Filer.

41. By checking Yes, the undersigned certifies, that neither applicant nor any other party to the application is subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Act of 1988, 21 U.S.C. Section 862, because of a conviction for possession or distribution of a controlled substance. See 47 CFR 1.2002(b) for the meaning of "party to the application" for these purposes. Yes No

42a. Does the applicant intend to use a non-U.S. licensed satellite to provide service in the United States? If Yes, answer 42b and attach an exhibit providing the information specified in 47 C.F.R. 25.137, as appropriate. If No, proceed to question 43. Yes No

42b. What administration has licensed or is in the process of licensing the space station? If no license will be issued, what administration has coordinated or is in the process of coordinating the space station? Gibraltar

43. Description. (Summarize the nature of the application and the services to be provided). (If the complete description does not appear in this box, please go to the end of the form to view it in its entirety.)

SES Satellites (Gibraltar) Limited petitions the FCC for a declaratory ruling adding AMC-18 at 104.95 degrees W.L. to the Permitted List to replace Satcom C-4.

Attachment A

CERTIFICATION

The Applicant 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, and requests an authorization in accordance with this application. The applicant certifies that grant of this application would not cause the applicant to be in violation of the spectrum aggregation limit in 47 CFR Part 20. All statements made in exhibits are a material part hereof and are incorporated herein as if set out in full in this application. The undersigned, individually and for the applicant, hereby certifies that all statements made in this application and in all attached exhibits are true, complete and correct to the best of his or her knowledge and belief, and are made in good faith.

44. Applicant is a (an): (Choose the button next to applicable response.)

- Individual
- Unincorporated Association
- Partnership
- Corporation
- Governmental Entity
- Other (please specify) Foreign Entity

45. Name of Person Signing
John Nelsen

46. Title of Person Signing
Vice President, Business Operations

47. Please supply any need attachments.

1:

2:

3:

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND / OR IMPRISONMENT
(U.S. Code, Title 18, Section 1001), AND/OR REVOCATION OF ANY STATION AUTHORIZATION
(U.S. Code, Title 47, Section 312(a)(1)), AND/OR FORFEITURE (U.S. Code, Title 47, Section 503).

Completed Schedule S

FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT

The public reporting for this collection of information is estimated to average 2 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to jboley@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

Remember – You are not required to respond to a collection of information sponsored by the Federal government, and the government may not conduct or sponsor this collection, unless it displays a currently valid OMB control number or if we fail to provide you with this notice. This collection has been assigned an OMB control number of 3060-0678.

THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.

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

In the Matter of)
)
SES SATELLITES (GIBRALTAR) LTD.) File No. SAT-PPL- _____
)
Petition For Declaratory Ruling Adding)
Replacement Satellite AMC-18 to the Permitted)
Space Station List for Operations from 104.95° W.L.)

PETITION FOR DECLARATORY RULING

SES Satellites (Gibraltar) Ltd. (“SES Gibraltar”), by its attorneys and pursuant to Sections 25.114 and 25.137 of the Commission’s Rules, 47 C.F.R. §§ 25.114 & 25.137, hereby petitions the Commission for a declaratory ruling in connection with its proposed launch and operation of AMC-18 to replace the Satcom C-4 spacecraft at 104.95° W.L. The Gibraltar Regulatory Authority (the “GRA”) has authorized SES Gibraltar to operate AMC-18. At 104.95° W.L., AMC-18 will replace Satcom C-4, which was added to the Commission’s Permitted Space Station List (the “Permitted List”) earlier this year.¹ Grant of the instant petition will permit AMC-18 to provide continuity of C-band services to the U.S. from this orbital location.

I. BACKGROUND

SES Gibraltar is a company formed under the laws of Gibraltar and a wholly-owned, indirect subsidiary of SES Americom, Inc. (“SES Americom”). SES Americom holds

¹ See File No. SAT-PPL-20060330-00035, granted June 21, 2006.
SES Gibraltar plans to move Satcom C-4 to 104.5° W.L. once it has been replaced by AMC-18 so that it would be available if needed as an in-orbit spare pending its retirement in 2007. SES Gibraltar will separately seek appropriate earth station authority relating to the planned relocation of Satcom C-4.

Commission licenses for a fleet of spacecraft operating in the C-, Ku- and Ka-bands. Satcom C-4, which was previously licensed to SES Americom, currently operates at 104.95° W.L. pursuant to a license to SES Gibraltar from the GRA. As noted above, the Commission has placed Satcom C-4 on the Permitted List, authorizing U.S.-licensed earth stations to communicate with the satellite.

The GRA has authorized SES Gibraltar to deploy AMC-18, a new C-band only spacecraft that is under construction and scheduled for launch in the fourth quarter of 2006, to 104.95° W.L. to replace Satcom C-4. A redacted copy of the GRA License for AMC-18 is attached hereto as Exhibit 1.

AMC-18 will be collocated at the nominal 105° W.L. location with SES Americom's AMC-15 Ku/Ka-band hybrid spacecraft. In order to facilitate stationkeeping of the two spacecraft, SES Gibraltar and SES Americom will operate at slight offsets. Specifically, SES Gibraltar will operate AMC-18 centered at 104.95° W.L. with an East-West stationkeeping tolerance of +/- 0.05 degrees, and SES Americom will operate AMC-15 centered at 105.05° W.L., also with an East-West stationkeeping tolerance of +/- 0.05 degrees.² This will permit operation of the two satellites without any overlap of the respective stationkeeping boxes.

SES Gibraltar respectfully requests that the Commission add AMC-18 to the Permitted List for communication with U.S.-licensed earth stations as a replacement for Satcom C-4. Granting Permitted List status to AMC-18 will serve the public interest by permitting the continuation of C-band services from 105° W.L. SES Gibraltar demonstrates below that it satisfies all requirements for inclusion of AMC-18 on the Permitted List.

² The Commission has authorized AMC-15 to operate at the 105.05° W.L. position. See File No. SAT-MOD-20060410-00041, granted June 8, 2006.

II. SES GIBRALTAR'S REQUEST COMPLIES WITH SECTION 25.137

The Commission adopted in the *DISCO II* proceeding³ policies for determining whether to permit foreign-licensed satellites to serve the U.S. market, and these standards are codified in Section 25.137 of the Commission's Rules, 47 C.F.R. § 25.137. The petition of SES Gibraltar fully complies with the Commission's market access requirements.

As discussed above, SES Gibraltar has received authorization to operate AMC-18 from the Gibraltar Regulatory Authority. Gibraltar is a British Overseas Territory. The United Kingdom is responsible for the external relations of its territories, while each territory is responsible for its domestic law.⁴ Through the United Kingdom, Gibraltar is a WTO-member country. In *DISCO II*, the Commission adopted a presumption that with respect to services covered by the WTO agreement, entry into the U.S. market by entities licensed by WTO-member countries will promote competition in the U.S. market.⁵ Fixed Satellite Service ("FSS") operations except for direct-to-home ("DTH") are covered by the WTO agreement.⁶

SES Gibraltar seeks authority to provide non-DTH FSS services in the standard C-band to U.S. users. Because SES Gibraltar is licensed by a WTO-member country and seeks to provide only WTO-covered services, SES Gibraltar is not required to make the effective competitive opportunities showing described in Section 25.137(a).

³ See *Amendment of the Commission's Policies to Allow Non-U.S. Licensed Space Stations providing Domestic and International Service in the United State*, 12 FCC Rcd 24094 (1997) ("*DISCO II*").

⁴ Under the Colonial Laws Validity Act 1865 of the United Kingdom, the local legislative body of a British Overseas Territory is empowered to make laws for the "peace, order and good government" for that territory only, subject to a presumption that such laws cannot have extra-territorial effect.

⁵ *DISCO II*, 12 FCC Rcd at 24112.

⁶ *Id.* at 24097-98.

The Commission should consider this request for market access for AMC-18 under the procedures the Commission has implemented for replacement satellites. In its *Space Station Licensing Reform* proceeding, the Commission determined that it would:

afford non-U.S.-licensed satellites the same replacement expectancy as we do U.S.-licensed satellites. That is, we will permit the proposed replacement satellite to access the U.S. market provided that the location remains available to a satellite authorized by the Administration that authorized the existing satellite, and the technical characteristics of the proposed replacement allow it to be assigned to the location.⁷

As discussed above, AMC-18 has been authorized by the GRA for operation at the same location and in the same frequencies as the spacecraft it is replacing. Accordingly, this application is eligible for streamlined processing.

III. SES GIBRALTAR'S REQUEST COMPLIES WITH SECTION 25.114 OF THE COMMISSION'S RULES

SES Gibraltar is also legally and technically qualified to provide services to the United States. As noted above, SES Gibraltar's parent, SES Americom, is a long-standing Commission licensee that operates a fleet of spacecraft serving U.S. customers. SES Gibraltar currently operates AAP-1, a Gibraltar-licensed Ku-band spacecraft at the 108.2° E.L. orbital location, and Satcom C-4, a Gibraltar-licensed C-band spacecraft at the 104.95° W.L. orbital location.

SES Gibraltar is submitting with this petition a Schedule S and a narrative technical appendix and interference analysis concerning the proposed operation of AMC-18 at the 104.95° W.L. orbital location. These materials demonstrate that AMC-18 complies fully

⁷ *Amendment of the Commission's Space Station Licensing Rules and Policies*, First Report and Order, 18 FCC Rcd 10760, 10879 (2003).

with the Commission's technical rules, including the requirement for operations in a two-degree spacing environment.

**IV. GRANT OF SES GIBRALTAR'S REQUEST
WILL SERVE THE PUBLIC INTEREST**

Finally, inclusion of AMC-18 at 104.95° W.L. on the Commission's Permitted List will serve the public interest. It will permit efficient use of spectrum and orbital resources and allow the continuation of C-band services to U.S. customers from this orbital location. The Commission adopted policies that promote market entry by WTO-member-licensed entities in the expectation that such entry:

should stimulate competition in the U.S. Fixed-Satellite Services ("FSS") market, providing consumers more alternatives in choosing communications providers and services. Increased competition may also lead to reduced prices for those services and further technological innovation.⁸

Grant of Permitted List status to AMC-18 is consistent with these objectives.

⁸ *New Skies Networks, Inc.*, Order, 18 FCC Rcd 896, 896 (Sat. Div. rel. Jan. 29, 2003).

V. CONCLUSION

For the foregoing reasons, SES Gibraltar respectfully requests that the Commission issue a declaratory ruling adding the AMC-18 satellite at 104.95° W.L. to the Commission's Permitted Space Station List.

Respectfully submitted,

SES Satellites (Gibraltar) Ltd.

By: /s/ John Nelsen

John Nelsen
Vice President, Business Operations
SES Satellites (Gibraltar) Ltd.
Suite 9A Leanse Place
50 Town Range
Gibraltar

Of Counsel

Peter A. Rohrbach
Karis A. Hastings
Hogan & Hartson L.L.P.
Washington, D.C. 20004-1109
Tel: (202) 637-5600

Dated: October 5, 2006



**LICENCE GRANTED TO SES SATELLITES (GIBRALTAR) LIMITED
UNDER SECTION 4 OF THE OUTER SPACE ACT 1986
AS EXTENDED TO GIBRALTAR BY THE
OUTER SPACE ACT 1986 (GIBRALTAR) ORDER 1996**

THE LICENCE

- 1 The Governor, in exercise of the powers conferred on him by section 4 of the Outer Space Act 1986 ("the Act") as extended to Gibraltar by the Outer Space Act 1986 (Gibraltar) Order 1996 (S.I. 1996/No.1916) ("the Order") subject to the exceptions and modifications specified in the Schedule to that Order, hereby grants to SES Satellites (Gibraltar) Limited, a company incorporated in Gibraltar under No. 57393 whose registered office is situate at 28 Irish Town, Gibraltar ("the Licensee") a licence, for the period specified in paragraph 2, subject to the Conditions set out in the Schedule and to revocation as set out in paragraph 2, to carry out those activities specified in paragraph 4, in relation to the satellite known as SES-AMC18 ("the Satellite").
- 2 Subject to compliance with the Conditions Precedent set out in paragraph 3, this Licence shall enter into force with the commencement of operation of the Satellite until revocation by the Governor under the Act as extended to Gibraltar by the Order or until termination by the Licensee by not less than six months notice in writing subject to the provisions of Condition 2. In the event that operation of the Satellite has not taken place before 31st March 2007 this Licence shall not enter into force and the Licensee shall return it to the Governor.
- 3 This Licence shall not enter into force unless the following conditions ("the Conditions Precedent") have been complied with:
 - (1) Unless otherwise approved by the Governor, the Licensee will take all steps in its power to ensure that the positioning of the Satellite conforms with the information provided.
 - (2) Immediately before the launch of the Satellite the insurance policies identified in Condition 4.2 of the Schedule to this Licence remain valid and enforceable and that any amendments made to those policies have been made insofar as they relate to the Satellite with the prior written consent of the Governor and that the insurers are not entitled to repudiate or disclaim liability, or withhold cover, under these policies.

4 The following activities are authorised by this Licence (“the Licensed Activities”)

(1) Operation of the Satellite

5 In this Licence —

(a) “Condition” means a condition set out in the Schedule to this Licence;

(b) “Governor” means the Governor and Commander-in-Chief of Gibraltar and includes any person or agency to whom he may have delegated such functions, duties, responsibilities and powers conferred on him by the Act as extended to Gibraltar by the Order as are relevant for the purpose of this Licence;

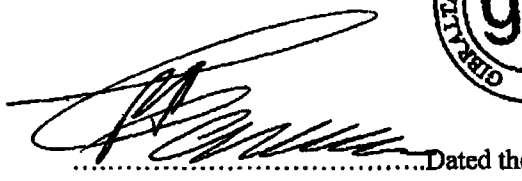
(c) except where the context otherwise requires, words and expressions have the same meaning as they have in the Act as extended to Gibraltar by the Order;

(d) the headings are inserted for convenience only and shall not affect its interpretation or construction;

(e) the Schedule forms an integral part of this Licence.

Chief Executive
Gibraltar Regulatory Authority




.....Dated the 27th day of September 2006

Governor may reasonably require to enable the Governor to determine whether or not the proposed transferee will require a licence under the Act as extended to Gibraltar by the Order.

- 3.12 The Licensee shall notify the Governor within seven working days in respect of any transfer, mortgage, charge or other disposal of all or part of the legal or beneficial ownership of the Satellite.
- 3.13 The Licensee shall pay to the Government of Gibraltar a licence fee of £1,000 per annum.

4 Insurance

- 4.1 The Licensee shall insure and continue to insure itself against all liabilities that may arise in respect of damage or loss suffered by third parties, in Gibraltar, the United Kingdom or elsewhere, as a result of the Licensed Activities.
- 4.2 Subject to Condition 4.3, Condition 4.1 shall be satisfied by the policy of insurance issued by
REDACTED
under which SES Global S.A., SES Astra S.A., and SES Americom Inc is the Policyholder and Her Majesty's Government of the United Kingdom and the Government of Gibraltar are Insured Parties (as evidenced by the signed copy of the original Insurance Contract the Licensee supplied to the Governor).
- 4.3 In the event that the Satellite does not reach its planned orbit as notified to the Governor in accordance with paragraph 3(b) of this Licence, or in the event that Final Acceptance of the Satellite does not take place in accordance with the Contract, the Governor may require the Licensee to make additional insurance arrangements to comply with Condition 4.1 above.
- 4.4 The Licensee shall provide evidence of the policies of insurance entered into to comply with its obligations under the terms of this Licence to the Governor upon demand together with evidence of payment of the premiums in respect of such policy or policies. Without prejudice to the generality of Condition 4.7, the Licensee shall not vary terms relating to the Licensed Activities of, nor add any additional named insureds as relates to the Satellite to, the insurance effected to comply with its obligations under this Licence without the prior written consent of the Governor.
- 4.5 The Licensee shall ensure that the Crown in right of its Government in Gibraltar and the Crown in right of its Government in the United Kingdom are a named insured in any such policy of insurance or its interest is secure in a manner satisfactory to the Governor.

- 4.6 The Licensee shall immediately notify the Governor of any event or other occurrence which is likely to give rise to a claim under any of the policies of insurance effected by the Licensee pursuant to the terms of this Licence.
- 4.7 The Licensee shall ensure that the policies of insurance effected by the Licensee pursuant to the terms of this Licence remain valid and enforceable and that any amendments made to those policies have been made with the prior written consent of the Governor and that the insurer is not entitled to repudiate or disclaim liability or withhold cover under those policies.

5 Indemnity

The Licensee shall indemnify the Crown in right of its Government in Gibraltar against any claims brought against the Crown in such right in respect of damage or loss arising out of activities carried on by the Licensee to which the Act as extended to Gibraltar by the Order applies.

6 Additional Condition

It shall also be a condition of this Licence that:

- 6.1 the Licensee has full corporate power and has taken all necessary corporate action to enable it to perform its obligations under this Licence,
- 6.2 the Licensee's application for a licence, its carrying on the Licensed Activities and performance of its obligations under this Licence and the Act as extended to Gibraltar by the Order will not to the best of its knowledge, information and belief constitute any breach or default under or in respect of any contractual, governmental or public obligation binding upon it at the date of this Licence,
- 6.3 the Licensee is not engaged in any litigation or arbitration proceedings which might have a materially adverse effect upon its capacity or ability to perform its obligations under this Licence and to the best of its knowledge, information and belief it does not have cause to consider that any such legal or arbitration proceedings are about to commence.

Provided always that the granting of this Licence shall in no way be construed as a waiver by the Governor of any failure on the part of the Licensee to comply with any condition hereunder prior to the date of grant.

ATTACHMENT A

TECHNICAL APPENDIX

IN SUPPORT OF AMC-18 AT 104.95° W.L.

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TECHNICAL APPENDIX

1.0 Overall Description

This application requests that the AMC-18 replacement satellite be placed on the Commission's Permitted Space Station List ("Permitted List") to permit U.S.-licensed earth stations to communicate with it at the 104.95° W.L. orbital location. At 104.95° W.L., AMC-18 will be operated under a license issued to SES Satellites (Gibraltar) Ltd. ("SES Gibraltar") by the Gibraltar Regulatory Authority. The spacecraft coverage areas will include the Contiguous United States ("CONUS"), the Caribbean, Mexico and portions of Alaska. AMC-18 will operate in the C-band, using uplink frequencies from 5.925-6.425 GHz and downlink frequencies from 3.700-4.200 GHz, replacing Satcom C-4, which SES Gibraltar currently operates at 104.95° W.L. The spacecraft has 24 C-band transponders and was built by Lockheed Martin using its Series 3000 design.

This appendix provides technical information regarding the proposed operation of AMC-18 at the 104.95° W.L. orbital position. In addition to this narrative Technical Appendix, the associated Schedule S database is included, pursuant to Section 25.114(c).¹

2.0 Orbit Location Selection

SES Gibraltar requests that AMC-18 be authorized to operate at the 104.95° W.L. orbital location to replace Satcom C-4, which is currently providing C-band capacity at that location.

¹ Attachment 1 provides a hard copy version of the Schedule S database.

3.0 Communications Payload

3.1 Transponder Characteristics

AMC-18 is equipped with twenty-four 36 MHz C-band transponders. Polarization sense for the transponders is capable of being switched by ground command. The C-band polarization plan for AMC-18 at 104.95° W.L. is provided in Table 1. The frequency response and total group delay, specified over the transponder bandwidth, are provided in Tables 2 and 3 below.

TABLE 1
C-BAND FREQUENCY PLAN
AMC-18 (104.95° W.L.)

Frequencies are nominal center frequencies in Megahertz, bandwidth 36 MHz.

Vertical polarization is E-field parallel to the pitch axis.

Channel Number	Receive		Transmit	
	Freq.	Polar.	Freq.	Polar.
1	5945	H	3720	V
2	5965	V	3740	H
3	5985	H	3760	V
4	6005	V	3780	H
5	6025	H	3800	V
6	6045	V	3820	H
7	6065	H	3840	V
8	6085	V	3860	H
9	6105	H	3880	V
10	6125	V	3900	H
11	6145	H	3920	V
12	6165	V	3940	H
13	6185	H	3960	V
14	6205	V	3980	H
15	6225	H	4000	V
16	6245	V	4020	H
17	6265	H	4040	V
18	6285	V	4060	H
19	6305	H	4080	V
20	6325	V	4100	H
21	6345	H	4120	V
22	6365	V	4140	H
23	6385	H	4160	V
24	6405	V	4180	H

Table 2 Transponder Frequency Response

	Frequency Offset (MHz)	dB p-p
36 MHz channel	±14	1.0
	±16	1.7
	±18	6.7

Table 3 Total Transponder Group Delay

	Frequency Offset (MHz)	Relative Group Delay (ns p-p)
36 MHz channel	0	4.0
	±8	8.5
	±12	14.5
	±16	39.5
	±18	109.5

3.2 Emission designators

The emission designators of typical communications carriers to be used on AMC-18 are shown in Table 4.

TABLE 4

EMISSION DESIGNATORS

Signal	Emission Designator
Digital Compressed Television	36M0G7W
Single Channel Digital Television	6M95G1D
High Speed Digital Data (60 MBps) QPSK Modulated	36M0G1W
Digital SCPC – FDMA 56 kBps, QPSK Modulated	100KG1D
T1 (1.544 MBps), QPSK Modulated	1M40G1D
TV/FM	36M0F3F
Telecommand	800KF9D
Telemetry 1 and Telemetry 2	300KF9D

3.3 Communications Coverage

The receive and transmit antenna beams of AMC-18 at the proposed nominal orbital location of 104.95° W.L. will provide coverage of CONUS, the Caribbean, Mexico and portions of Alaska. Attached hereto as Annex 2 are coverage maps showing antenna gain contours of the C-band transponders operating at the 104.95°W.L. orbital position.

For the contours shown in Annex 2, the maximum Effective Isotropic Radiated Power (EIRP) from each C-band antenna beam will be 41.5 dBW.

The transponders will be operated to meet the requirements of Section 25.208, as shown in Table 5, even if transponder characteristics vary by +/-0.5 dB for different transponders.

The Saturating Flux Density (SFD) values in the uplinks can be computed from the formula

$$\text{SFD} = -92 - (G/T) + \text{FCA} \text{ dBW/m}^2$$

where G/T represents the satellite receiver Gain-to-System temperature ration, and FCA represents the flux-control attenuator setting.

Table 5
Downlink Power Flux Density

Type of carrier:	Digital					TV-FM/analog				
Elevation angle, degrees	5.0	10.0	15.0	20.0	25.0	5.0	10.0	15.0	20.0	25.0
SSPA Power, Watts	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0	13.0
Maximum Carrier Downlink EIRP, dBW	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2	41.2
Carrier Downlink EIRP at Elevation angle, dBW	38.5	38.8	39.1	39.5	41.2	38.5	38.8	39.1	39.5	41.2
Carrier IF Bandwidth/Energy dispersal BW, dBHz	74.6	74.6	74.6	74.6	74.6	64.5	63.0	63.0	63.0	63.0
4 kHz, dBHz	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0	36.0
Minimum Spreading Loss, dBW/m2	-162.3	-162.3	-162.3	-162.3	-162.3	-162.3	-162.3	-162.3	-162.3	-162.3
Power Flux Density, dBW/m2/4kHz	-164.4	-163.4	-162.9	-161.4	-161.9	-154.3	-151.8	-151.3	-149.8	-150.3
25.208 requirement, dBW/m2/4kHz	-152.0	-149.5	-147.0	-144.5	-142.0	-152.0	-149.5	-147.0	-144.5	-142.0
Margin	12.4	13.9	15.9	16.9	19.9	2.3	2.3	4.3	5.3	8.3

3.4 Interference Analysis

A 2° spacing interference analysis is provided in Attachment B.

AMC-18 is being coordinated with the US-licensed satellites within the orbit 99° W.L. to 111°

W.L. Coordination with Canadian-licensed operational satellites in the same orbital arc has been completed, and coordination with other non-U.S.-licensed satellites is in progress.

3.5 Link Budgets

Table 4 above shows the emission designators of the carriers used in different services. Table 6 below provides the earth station characteristics of the digital services. Tables 7 through 15 contain the detailed link budget information for the earth station characteristics in Table 6.

Table 6

C-Band Earth Station Sizes Used in Link Budget Analysis

Carrier Type	Earth Station Diameter Uplink (meters)	Earth Station Diameter Downlink (meters)
Digital TV 40 MBPS QPSK	9.0	3.8
Digital TV 8 MBPS QPSK	9.0	4.5
8-PSK 60 MBPS Data	9.0	9.0
QPSK 56 KBPS Data	4.5	3.8
QPSK T1 Data	4.5	3.8
TV/FM	9.0	4.5
Telecommand	10.0	
Telemetry 1 and Telemetry 2		10.0

Table 7

Typical Uplink Link Budget Calculations Digital Television

Parameter	Digital TV MCPC 40 MBPS QPSK ¾ RS	Digital TV SCPC QPSK ¾ RS
Transmit Power(dBW)	25.10	9.60
Transmit Loss (dB)	-0.50	-0.50
Antenna Gain (dBi)	53.20	53.20
Ground Station EIRP (dBW)	77.80	62.30
Uplink Rain Loss (dB)	-1.00	-1.00
Free Space Loss (dB)	-200.10	-200.10
Satellite G/T (dB/K)	-3.10	-3.10
Data Rate (dB-Hz)	76.02	69.03
Boltzmann's Constant (dBW/K-Hz)	-228.60	-228.60
E_b/N_o (dB)	26.18	17.67
E_b/I_o (Db)	18.12	18.12
Up $E_b/(N_o + I_o)$ (dB) For 10^{-7}	17.49	14.88

Table 8

Typical Downlink Link Budget and Overall Calculation Digital Television

Parameter	Digital TV MCPC 40 MBPS QPSK ¾ RS	Digital TV SCPC QPSK ¾ RS
Satellite Carrier EIRP (dBW)	37.00	25.80
Downlink Rain Loss (dB)	-0.50	-0.50
Free Space Loss (dB)	-196.30	-196.30
Ground Station G/T (dB/K)	22.30	23.70
Bit Rate (dB-Hz)	76.02	69.03
Boltzmann's Constant (dBW/K-Hz)	-228.60	-228.60
E_b/N_o (dB)	15.08	12.27
E_b/I_o (dB)	18.12	18.12
$E_b/(N_o + I_o)$ (dB)	13.33	11.26
Total UP/DOWN $E_b/(N_o+I_o)$ (dB)	11.92	9.69
Required	5.50	5.50
Margin	6.42	4.19

Table 9

Typical Uplink Link Budget Calculations Wide Band Digital

Parameter	60 MBPS 8PSK 2/3 RS
Transmit Power(dBW)	25.10
Transmit Loss (dB)	-0.50
Antenna Gain (dBi)	53.20
Ground Station EIRP (dBW)	77.80
Uplink Rain Loss (dB)	-1.00
Free Space Loss (dB)	-200.10
Satellite G/T (dB/K)	-3.10
Data Rate (dB-Hz)	77.78
Boltzmann's Constant (dBW/K-Hz)	-228.60
E_b/N_o (dB)	24.42
E_b/I_o (dB)	16.35
Total $E_b/(N_o + I_o)$ (dB) For 10^{-7}	15.72

Table 10

Typical Downlink Link Budget and Overall Calculation Wide Band Digital

Parameter	60 MBPS 8PSK 2/3 RS
Satellite Carrier EIRP (dBW)	37.00
Downlink Rain Loss (dB)	-0.50
Free Space Loss (dB)	-196.30
Ground Station G/T (dB/K)	29.80
Bit Rate (dB-Hz)	77.78
Boltzmann's Constant (dBW/K-Hz)	-228.60
E_b/N_o (dB)	20.82
E_b/I_o (dB)	16.35
$E_b/(N_o + I_o)$ (dB)	15.03
Total UP/DOWN $E_b/(N_o+I_o)$ (dB)	12.35
Required	7.20
Margin	5.15

Table 11

Typical Uplink Link Budget Calculations Narrow Band Digital

Parameter	56Kbps QPSK 3/4 RS	1.544 MBPS QPSK 3/4
Transmit Power(dBW)	-3.40	11.80
Transmit Loss (dB)	-0.50	-0.50
Antenna Gain (dBi)	47.20	47.20
Ground Station EIRP (dBW)	43.30	58.50
Uplink Rain Loss (dB)	-1.00	-1.00
Free Space Loss (dB)	-200.10	-200.10
Satellite G/T (dB/K)	-3.10	-3.10
Data Rate (dB-Hz)	47.48	61.89
Boltzmann's Constant (dBW/K-Hz)	-228.60	-228.60
E_b/N_o (dB)	20.22	21.01
E_b/I_o (dB)	16.12	18.12
Total $E_b/(N_o + I_o)$ (dB) For 10^{-7}	14.69	16.32

Table 12

Typical Downlink Link Budget and Overall Calculation Narrow Band Digital

Parameter	56Kbps QPSK 3/4 RS	1.544 MBPS QPSK 3/4
Satellite Carrier EIRP (dBW)	6.80	22.00
Downlink Rain Loss (dB)	-0.50	-0.50
Free Space Loss (dB)	-196.30	-196.30
Ground Station G/T (dB/K)	22.30	22.30
Bit Rate (dB-Hz)	47.48	61.89
Boltzmann's Constant (dBW/K-Hz)	-228.60	-228.60
E_b/N_o (dB)	13.42	14.21
E_b/I_o (dB)	16.12	18.12
$E_b/(N_o + I_o)$ (dB)	11.55	12.73
Total UP/DOWN $E_b/(N_o+I_o)$ (dB)	9.83	11.15
Required	6.30	6.30
Margin	3.53	4.85

Table 13

Typical Uplink Link Budget Calculations TV/FM

Parameter	TV/FM
Transmit Power(dBW)	25.10
Transmit Loss (dB)	-0.50
Antenna Gain (dBi)	53.20
Ground Station EIRP (dBW)	77.80
Uplink Rain Loss (dB)	0.00
Free Space Loss (dB)	-200.10
Satellite G/T (dB/K)	-3.10
Bandwidth (dB-Hz)	75.56
Boltzmann's Constant (dBW/K-Hz)	-228.60
C/N (dB)	27.64
C/I (dB)	25.00
Total C/(N + I) (dB)	23.11

Table 14

Typical Downlink Link Budget and Overall Calculation TV/FM

Parameter	TV/FM
Satellite Carrier EIRP (dBW)	37.00
Downlink Rain Loss (dB)	-0.50
Free Space Loss (dB)	-196.30
Ground Station G/T (dB/K)	23.70
Bandwidth (dB-Hz)	75.56
Boltzmann's Constant (dBW/K-Hz)	-228.60
C/N (dB)	16.94
C/I (dB)	19.00
C/(N + I) (dB)	14.84
Total UP/DOWN C/(N+I)(dB)	14.24
Required	12.00
Margin	2.24

Table 15
TT&C Link Budgets

Command carrier link budget	Unit	Value
UL Antenna flange power, min	dBW	10.0
TxES antenna gain	dB	56
UL EIRP	dBW	66
Satellite G/T	dB/K	-17
Carrier BW	KHz	800.0
Rain fade margin	dB	1.0
CNR	dB	17.9
CNR(required)	dB	10.0
Margin	dB	7.9
Telemetry carrier link budget		
EIRP	dBW	14.0
RxES antenna diameter	m	10.0
RxES G/T	dB/K	33.2
Rain fade	dB	0.5
CNR	dB	15.5
CNR(required)	dB	9.0
Margin	dB	6.5
PFD	dBW/ m ² /4KHz	-167.3

4.0 Orbital Arc Considerations

This spacecraft is proposed to be located at 104.95°W. The east-west and north-south stationkeeping tolerance will be maintained within +/- 0.05 degrees.

5.0 Schedule S Notes

The following items supplement the information provided in Schedule S.

With respect to items S13.8 (Noise budget reference), for Emissions A through F, the numbers provided indicate the Table number of the link budgets in this Technical Appendix. The center frequencies and polarizations of the Telecommand and Telemetry carriers are given below, along with the antennas used for normal operation:

Command	6423.5 MHz	Hpol	Horn antenna
Telemetry 1	3700.5 MHz	Hpol	Communications antenna
Telemetry 2	4199.5 MHz	Vpol	Communications antenna

6.0 Cessation of Emissions

Each TWTA is commandable to apply or remove RF drive of the associated amplifier as required under § 25.207. Each TWTA can also be commanded on and off, although they are normally powered for the entire mission, after the satellite arrives on station.

7.0 Mitigation of Orbital Debris

This section provides the information required under Section 25.114(d)(14) of the Commission's Rules.

§ 25.114(d)(14)(i): SES Gibraltar has assessed and limited the amount of debris released in a planned manner during normal operations of AMC-18. No debris is generated during normal on-station operations, and the spacecraft will be in a stable configuration. On-station operations require station keeping within the +/- 0.05 degree E-W and N-S control box, thereby ensuring adequate collision avoidance distance from other satellites in geosynchronous orbit.

In the event that co-location within the same stationkeeping volume of this and another satellite is required, use of the proven Inclination-Eccentricity (I-E) separation method can be employed.

This strategy is presently in use by SES ASTRA to ensure proper operation and safety of multiple satellites within one orbital box.

SES Gibraltar has also assessed and limited the probability of the space station becoming a source of orbital debris by collisions with small debris or meteoroids that could cause loss of control and prevent post-mission disposal. The probability of micrometeorite damage that can cause any loss of functionality is factored into the ultimate spacecraft probability of success. Any significant probability of damage would need to be mitigated in order for the spacecraft design to meet the required probability of success of the mission. The design of the spacecraft locates all sources of stored energy within the body of the structure, which provides protection from small orbital debris. Steps have been taken to limit the effects of any collisions through shielding, the placement of components, and the use of redundant systems.

§ 25.114(d)(14)(ii): SES Gibraltar has assessed and limited the probability of accidental explosions during and after completion of mission operations. As part of the Safety Data Package, an extensive analysis is completed by the spacecraft manufacturer, reviewing each potential hazard relating to accidental explosions. A matrix is generated indicating the worst-case effect, the hazard cause, and the hazard controls available to minimize the severity and the probability of occurrence. Each subsystem is analyzed for potential hazards, and the Safety Design Package is provided for each phase of the program running from design phase, qualification, manufacturing and operational phase of the spacecraft. Also, the spacecraft manufacturer generates a Failure Mode Effects and Criticality Analysis for the spacecraft to identify all potential mission failures. The risk of accidental explosion is included as part of this analysis. This analysis indicates failure modes, possible causes, methods of detection, and compensating features of the spacecraft design.

The design of the spacecraft is such that during all normal operations, risk of explosion is minimized. All propulsion subsystem pressure vessels, which have high margins of safety at launch, have even higher margins in orbit, since use of propellants and pressurants during launch decreases the propulsion system pressure. Burst tests are performed on all pressure vessels during qualification testing to demonstrate a margin of safety against burst. Bipropellant mixing is prevented by the use of valves that prevent backwards flow in propellant and pressurization lines. All pressures, including those of the batteries, are monitored by telemetry.

At the end of operational life, after the satellite has reached its final disposal orbit, all on-board sources of stored energy will be depleted or secured, and the batteries will be discharged.

§ 25.114(d)(14)(iii): SES Gibraltar has assessed and limited the probability of the space station becoming a source of debris by collisions with large debris or other operational space stations. Specifically, SES Gibraltar has assessed the possibility of collision with satellites located at, or reasonably expected to be located at, the requested orbital location or assigned in the vicinity of that location.

Regarding avoidance of collisions with controlled objects, in general, if a geosynchronous satellite is controlled within its specified longitude and latitude stationkeeping limits, collision with another controlled object (excluding where the satellite is collocated with another object) is the direct result of that object entering the allocated space.

The instant application seeks authority for operation of AMC-18 at the 104.95° W.L. orbital location, where the spacecraft would operate in the C-band pursuant to a license from the Gibraltar Regulatory Authority. At 104.95° W.L., AMC-18 will be operated at an offset from SES Americom's AMC-15 spacecraft, which is assigned to 105.05° W.L.. During regular operation there are no other satellites assigned to or reasonably expected to be located at

104.95° W.L. or to nearby orbital locations such that there would be an overlap with the stationkeeping volume of AMC-18 at 104.95° W.L.

SES Americom, which will be assisting with the TT&C of the spacecraft, has a contract with an external laboratory that is monitoring encounters between satellites under SES Americom's control and some 500 active and inactive drifting objects. Any close encounters (separation of less than 5 km.) are flagged and investigated in more detail. If required, avoidance maneuvers are performed to eliminate the possibility of collisions.

If relocation of a spacecraft is required, as a minimum, the moving spacecraft is maneuvered such that it is at least 30 km away from the synchronous radius at all times. In most cases, much larger deviation from the synchronous radius is used. In addition, the external laboratory's assistance is used to ensure no close encounter occurs during the move.

When de-orbit of a spacecraft is required, the initial phase is treated as a satellite move, and the same precautions are used to ensure collision avoidance.

§ 25.114(d)(14)(iv): Post-mission disposal of the satellite from operational orbit will be accomplished by carrying out maneuvers to a higher orbit. The upper stage engine remains part of the satellite, and there is no re-entry phase for either component.

Post-mission disposal of the satellite from operational orbit will be accomplished by carrying out maneuvers to a higher orbit. The fuel budget for this operation is included in the satellite design. SES Gibraltar plans to maneuver AMC-18 to a disposal orbit with a minimum perigee of 268 km above the normal operational altitude. This proposed disposal orbit altitude is based on the following calculation pursuant to § 25.283 of the Commission's Rules.

Area of the satellite (average aspect area): 21.83 m²
Mass of the spacecraft: 952.83 kg
CR (solar radiation pressure coefficient): 1.45

Therefore the Minimum Disposal Orbit Perigee Altitude, as calculated under the IADC formula is:
 $36,021 \text{ km} + (1000 \times \text{CR} \times \text{A/m}) = 36,054 \text{ km}$, or 268 km above the GSO arc (35,786 km)

SES Gibraltar intends to reserve 12.6 kg of fuel in order to account for post-mission disposal of AMC-18. SES Gibraltar has assessed fuel gauging uncertainty and has provided an adequate margin of fuel reserve to address the assessed uncertainty.

ANNEX 1

PRINT VERSION OF SCHEDULE S

Schedule_S - [Schedule S]

File Edit View Window Help

Applicant | Satellite | Op. Band | GSD Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | Transponder | Modulation | Emission | Other

Applicant Information:

Add Save Delete

Name: Phone Number:
 Street: Fax Number:
 Street: E-mail:
 City: State: Zipcode: Attention:
 Country:

Note: Begin new data entry by first clicking "Add" button. Click "Save" button when finished.
 Revise existing data by editing any data field. Click "Save" button when finished.

GENERAL NOTE: Several tables (Applicant, FCC Only, Satellite, GSD, NGSO Header, Electrical, and Physical) only allow one (1) data row each. All of these tables have "Add/Save/Delete" buttons that must be used to control data entry and storage. All other "Grid" tables allow multiple rows of data, each of which is "Saved" by moving the cursor into a different data row.

FCC Only:

Add Save Delete

Call Sign:
 File Number (without dashes): Complete this information only if requested by FCC Staff with respect to a previously filed application.
 Date Filed:
 Satellite Alias Name:
 ITU Network Name:

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Schedule_S - [Schedule S]

File Edit View Window Help

Applicant **Satellite** | Op. Band | GSD Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | Transponder | Modulation | Emission | Other

S1. General Information: Complete for all satellite applications.

Add Save Delete

a. Space Station or Satellite Network Name: AMC-18

b. Construction Commencement Date: 8/1/2001 or _____

c. Construction Completion Date: 11/1/2006 or _____

d1. Estimated Launch Date (Begin): 11/1/2006 or _____

d2. Estimated Launch Date (End): 11/30/2006 or _____

e. Estimated Date of Placement into Service: 1/1/2007 or _____

f. Estimated Lifetime of Satellite(s): 21.5 Years

g. Total No. of Transponders: 24

h. Total Transponder Bandwidth (No. Transponders x Bandwidth): 864 MHz

i. Will the space station(s) operate on a Common Carrier Basis? (Yes/No): N

j. Number of transponders offered on a Common Carrier basis: 0

k. Total Common Carrier Transponder Bandwidth: 0 MHz

l. Orbit Type: Check all boxes that apply. GSD NGSO

NOTE: All dates should be given in whatever format is set for "Short Date" in your "Control Panel" under "Regional & Language Options" or "Regional Settings". This is "MM/DD/YYYY" for "English (United States)" setting.

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Schedule_S - [Schedule S]

File Edit View Window Help

Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | Transponder | Modulation | Emission | Other

S2. OPERATING FREQUENCY BANDS
 For each frequency band in which the satellite will operate, provide:

	a. Lower Frequency Limit (numeric)	b. Unit (Hz)	c. Upper Frequency Limit (numeric)	d. Unit (Hz)	e. T/R Mode	f. Nature of Service		Lower Frequency Limit (MHz)	Upper Frequency Limit (MHz)	T/R Mode	f. Nature of Service	Description
▶	3700	M	4200	M	T		▶	3700	4200	T	FSS	Fixed Satellite Service
	5925	M	6425	M	R			3700	4200	T		
*								5925	6425	R	FSS	Fixed Satellite Service
								5925	6425	R		

S2f. Nature of Service(s): To edit, click button in column "f" of table S2

NOTES: * Use "K", "M", or "G" to denote "kHz", "MHz", or "GHz".
 ** Use "T" for "Transmit" and "R" for "Receive".

To delete an Operating Band: (1) click in any column in the row of table S2, (2) then click at the left sidebar of row to be deleted. This highlights the entire row.
 (3) Finally press "Delete" key on keyboard. GENERAL NOTE: This general process also applies to deleting rows in any of the GRID tables on the other tabs.

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Schedule_S - [Schedule S]

File Edit View Window Help

Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | Transponder | Modulation | Emission | Other

S3. Orbital Information for Geostationary Satellites

Add Save Delete

a. Nominal Orbital Longitude: 104.95 Degrees E/W W

Longitudinal Tolerance or E/W Station-Keeping:

c. Toward West: 0.05 Degrees

d. Toward East: 0.05 Degrees

e. Inclination Excursion or N/S Station-Keeping Tolerance: 0.05 Degrees

Range of orbital arc in which adequate service can be provided (Optional):

f. Westernmost: Degrees E/W W

g. Easternmost: Degrees E/W W

b. Reason for orbital location selection:
Availability of C-band spectrum at 105W (nominal).

h. Reason for service arc selection (Optional):

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Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | **Service Area** | Antenna Beam | Beam Diagram | Transponder | Modulation | Emission | Other

S6. Service Area Characteristics For each Service Area provide: S3. Orbital Information for GSO Satellites

	a. Service Area ID	b. Type of Assoc. Station (E'arth or S'pace)	c. Service Area Diagram File Name (GXT File)	d. Service Area Description, State Codes, ITU Codes, or Figure No.	Service Area Diagram File Name (Pdf File)
▶	CNA	E		-7 dB gain contour of beams CUH and CUV for the uplink; -8 dB gain	
*					

NOTE: Double-Click anywhere on the service area row to view the service area GXT file. Double-Click in PDF column to view the PDF file for the service area row.

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Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | **Antenna Beam** | Beam Diagram | Transponder | Modulation | Emission | Other

S7. Space Station Antenna Beam Characteristics
For each Antenna Beam provide:

	a. Beam ID	b. T/R Mode	c. Peak Gain (dB)	d. Edge Gain (dB)	e. Pointing Error (Deg)	f. Rotational Error (Deg)	g. Min Cross-Polar Isolation (dB)	h. Polarization Switchable? (Y/N)	i. Polarization Alignment Rel. Equatorial Plane (Deg)	j. Service Area ID	k. Xmt Input Losses (dB)	l. Xmt Effective Output Power (W)	m. Xmt Max EIRP (dBW)	n. Rec System Noise Temp (K)	o. G/T at Max Gain Pt. (dB/K)	p. Min Saturation Flux Density (dBW/m2)	q. Attenuator Max Value (dB)	r. Attenuator Step Size (dB)
▶	CDH	T	30.24	22.24	0.15	0	31.3	Y	0	CNA	1.65	12.56	41.23					
	CDV	T	30.51	22.51	0.15	0	30.6	Y	90	CNA	1.68	12.56	41.5					
	CUH	R	31.74	23.74	0.15	0	33.8	Y	0	CNA				583	4.01	-96.01	18	1
	CUV	R	31.61	23.61	0.15	0	32.6	Y	90	CNA				593	3.96	-95.96	18	1
	TCV	R	10	8	0.15	0				CNA				585	-17			
*																		

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Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | Antenna Beam | **Beam Diagram** | Transponder | Modulation | Emission | Other

58. ANTENNA BEAM DIAGRAMS
 For each beam pattern provide the reference to the graphic image and numerical data:
 Also provide the power flux density levels in each beam that result from the emission with the highest power flux density.

	a. Beam ID	b. T/R Mode	c. Co- or Cross-Polar Mode (C or X)	d. GSO Ref. Orbital Longitude (deg E)	e. NGSO Antenna Gain Contour Description (Figure/Table/Exhibit)	f. GSO Antenna Gain Contour Data (GXT format)	g. Max PFD @ 5 deg* (dBW/m2 per ref. Bandwidth)	h. Max PFD @ 10 deg* (dBW/m2 per ref. Bandwidth)	i. Max PFD @ 15 deg* (dBW/m2 per ref. Bandwidth)	j. Max PFD @ 20 deg* (dBW/m2 per ref. Bandwidth)	k. Max PFD @ 25 deg* (dBW/m2 per ref. Bandwidth)	l. PFD Ref. Bandwidth (4kHz or 1MHz)
	CDH	T	C	-104.95		ch12_CDH.gxl	-153	-152	-151	-150	-149	4kHz
	CDV	T	C	-104.95		ch13_CDV.gxl	-153	-152	-151	-150	-149	4kHz
	CUH	R	C	-104.95		ch13_CUH.gxl						
	CUV	R	C	-104.95		ch12_CUV.gxl						
	CDH	T	X	-104.95		ch12_CDH_X.g						
	CDV	T	X	-104.95		ch13_CDV_X.g						
	CUH	R	X	-104.95		ch13_CUH_X.g						
	CUV	R	X	-104.95		ch12_CUV_X.g						
/	TC	R	C	-104.95		command_rx_ar						
*												

NOTE: Double-Click anywhere on the diagram row to view the diagram PDF.
 Double-Click in GXT column to view the GXT file for the row.

*@ X deg., where X is the Angle of Arrival above horizontal

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S9. Space Station Channels							S10. Space Station Transponders					
a. Channel ID	b. Assigned Bandwidth (kHz)	c. T/R Mode	d. Center Frequency (MHz)	e. Polarization	f. TT&C or Comm		a. Transponder ID	b. Transponder Gain (dB)	c. Receive Channel ID	d. Receive Beam ID	e. Transmit Channel ID	f. Transmit Beam ID
CD001	36000	T	3720	V	C		C0001	112	CU001	CUH	CD001	CDV
CD003	36000	T	3760	V	C		C0003	112	CU003	CUH	CD003	CDV
CD005	36000	T	3800	V	C		C0005	112	CU005	CUH	CD005	CDV
CD007	36000	T	3840	V	C		C0007	112	CU007	CUH	CD007	CDV
CD009	36000	T	3880	V	C		C0009	112	CU009	CUH	CD009	CDV
CD011	36000	T	3920	V	C		C0011	112	CU011	CUH	CD011	CDV
CD013	36000	T	3960	V	C		C0013	112	CU013	CUH	CD013	CDV
CD015	36000	T	4000	V	C		C0015	112	CU015	CUH	CD015	CDV
CD017	36000	T	4040	V	C		C0017	112	CU017	CUH	CD017	CDV
CD019	36000	T	4080	V	C		C0019	112	CU019	CUH	CD019	CDV
CD021	36000	T	4120	V	C		C0021	112	CU021	CUH	CD021	CDV
CD023	36000	T	4160	V	C		C0023	112	CU023	CUH	CD023	CDV
CD002	36000	T	3740	H	C		C0002	112	CU002	CUV	CD002	CDH
CD004	36000	T	3780	H	C		C0004	112	CU004	CUV	CD004	CDH
CD006	36000	T	3820	H	C		C0006	112	CU006	CUV	CD006	CDH
CD008	36000	T	3860	H	C		C0008	112	CU008	CUV	CD008	CDH
CD010	36000	T	3900	H	C		C0010	112	CU010	CUV	CD010	CDH
CD012	36000	T	3940	H	C		C0012	112	CU012	CUV	CD012	CDH
CD014	36000	T	3980	H	C		C0014	112	CU014	CUV	CD014	CDH
CD016	36000	T	4020	H	C		C0016	112	CU016	CUV	CD016	CDH
CD018	36000	T	4060	H	C		C0018	112	CU018	CUV	CD018	CDH
CD020	36000	T	4100	H	C		C0020	112	CU020	CUV	CD020	CDH
CD022	36000	T	4140	H	C		C0022	112	CU022	CUV	CD022	CDH
CD024	36000	T	4180	H	C		C0024	112	CU024	CUV	CD024	CDH
CU001	36000	R	5945	H	C		TC001		TC	TC		
CU003	36000	R	5985	H	C		TM001				TM1	CDH
CU005	36000	R	6025	H	C		TM002				TM2	CDV
CU007	36000	R	6065	H	C		*					
CU009	36000	R	6105	H	C							
CU011	36000	R	6145	H	C							
CU013	36000	R	6185	H	C							
CU015	36000	R	6225	H	C							
CU017	36000	R	6265	H	C							
CU019	36000	R	6305	H	C							

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Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | **Transponder** | Modulation | Emission | Other

S9. Space Station Channels						S10. Space Station Transponders					
a. Channel ID	b. Assigned Bandwidth (kHz)	c. T/R Mode	d. Center Frequency (MHz)	e. Polarization	f. TT&C or Comm	a. Transponder ID	b. Transponder Gain (dB)	c. Receive Channel ID	d. Receive Beam ID	e. Transmit Channel ID	f. Transmit Beam ID
CD014	36000	T	3980	H	C	C0001	112	CU001	CUH	CD001	CDV
CD016	36000	T	4020	H	C	C0003	112	CU003	CUH	CD003	CDV
CD018	36000	T	4060	H	C	C0005	112	CU005	CUH	CD005	CDV
CD020	36000	T	4100	H	C	C0007	112	CU007	CUH	CD007	CDV
CD022	36000	T	4140	H	C	C0009	112	CU009	CUH	CD009	CDV
CD024	36000	T	4180	H	C	C0011	112	CU011	CUH	CD011	CDV
CU001	36000	R	5945	H	C	C0013	112	CU013	CUH	CD013	CDV
CU003	36000	R	5985	H	C	C0015	112	CU015	CUH	CD015	CDV
CU005	36000	R	6025	H	C	C0017	112	CU017	CUH	CD017	CDV
CU007	36000	R	6065	H	C	C0019	112	CU019	CUH	CD019	CDV
CU009	36000	R	6105	H	C	C0021	112	CU021	CUH	CD021	CDV
CU011	36000	R	6145	H	C	C0023	112	CU023	CUH	CD023	CDV
CU013	36000	R	6185	H	C	C0002	112	CU002	CUV	CD002	CDH
CU015	36000	R	6225	H	C	C0004	112	CU004	CUV	CD004	CDH
CU017	36000	R	6265	H	C	C0006	112	CU006	CUV	CD006	CDH
CU019	36000	R	6305	H	C	C0008	112	CU008	CUV	CD008	CDH
CU021	36000	R	6345	H	C	C0010	112	CU010	CUV	CD010	CDH
CU023	36000	R	6385	H	C	C0012	112	CU012	CUV	CD012	CDH
CU002	36000	R	5965	V	C	C0014	112	CU014	CUV	CD014	CDH
CU004	36000	R	6005	V	C	C0016	112	CU016	CUV	CD016	CDH
CU006	36000	R	6045	V	C	C0018	112	CU018	CUV	CD018	CDH
CU008	36000	R	6085	V	C	C0020	112	CU020	CUV	CD020	CDH
CU010	36000	R	6125	V	C	C0022	112	CU022	CUV	CD022	CDH
CU012	36000	R	6165	V	C	C0024	112	CU024	CUV	CD024	CDH
CU014	36000	R	6205	V	C	TC001		TC	TC		
CU016	36000	R	6245	V	C	TM001				TM1	CDH
CU018	36000	R	6285	V	C	▶ TM002				TM2	CDV
CU020	36000	R	6325	V	C	*					
CU022	36000	R	6365	V	C						
CU024	36000	R	6405	V	C						
TC	800	R	6423.5	H	T						
TM1	300	T	3700.5	H	T						
TM2	300	T	4199.5	V	T						
*											

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Applicant Satellite Op. Band GSO Orbit NGSO Orbit Service Area Antenna Beam Beam Diagram Transponder Modulation Emission Other														
S11. Digital Modulation Parameters														
a. Digital Mod. ID	b. Emission Designator	c. Assigned Bandwidth (kHz)	d. No. of Phases	e. Uncoded Data Rate (kbps)	f. FEC Error Correction Coding Rate	g. CDMA Processing Gain (dB)	h. Total C/N Performance Objective (dB)	i. Single Entry C/I Objective (dB)						
▶ A	36M0G7W	36000	4	40000	0.691		6.8	19						
B	6M95G1W	6950	4	8000	0.691		6.8	19						
C	36M0G7W	36000	8	60000	0.614		9.9	22.1						
D	100KG1W	100	4	56	0.691		6.8	19						
E	1M35G7W	1350	4	1544	0.691		6.8	19						
*														
S12. Analog Modulation Parameters														
a. Analog Mod. ID	b. Emission Designator	c. Assigned Bandwidth (kHz)	d. Signal Type	e. Channels per Carrier	f. Ave. Companded Talker Level (dBm0)	g. Telephony Bottom Baseband Freq (MHz)	h. Telephony & SCPC/FM Top Baseband Freq (MHz)	i. Telephony RMS Modulation Index	j. Video Standard (NTSC, PAL, etc.)	k. Video Noise Weighting (dB)	l. Video & SCPC/FM Modulation Index	m. SCPC/FM Compander, Pre-emphasis, & Noise Weighting (dB)	n. Total C/N Performance Objective (dB)	o. Single Entry C/I Objective (dB)
▶ F	36M0F3F	36000	TV/FM	1					NTSC	12.8	1.29		12	26
G	800KF9D	800		1									10	21
H	300KF9D	300		1									9	21
*														
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Schedule S - [Schedule S]

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Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | Transponder | Modulation | **Emission** | Other

S13. TYPICAL EMISSIONS
For each planned type of emission provide:

a. Assoc. Transponder ID (Start)	b. Assoc. Transponder ID (End)	c. Digital Mod. ID	d. Analog Mod. ID	e. Carriers per Transponder	f. Carrier Spacing (kHz)	g. Noise Budget Reference	h. Dispersal Bandwidth (kHz)	i. Assoc. XMT Stn Max Antenna Gain (dBi)	j. Assoc. Stn Min. XMT Power (dBW)	k. Assoc. Stn Max. XMT Power (dBW)	l. Min. EIRP (dBW)	m. Max. EIRP (dBW)	n. Max. PFD (dBW/m ²)	o. PFD Ref. BndWdth (4kHz or 1MHz)	p. Assoc. Stn Rec. G/T (dB/K)
C0001	C0024	A		1		7.8		53.8	14	32	31.1	41.2	-159.7	4kHz	22.3
C0001	C0024	B		5	6950	7.8		53.8	-1.5	16.5	22.1	34.1	-159.9	4kHz	23.7
C0001	C0024	C		1		9.10		53.8	14	32	32.3	41.2	-160.2	4kHz	29.8
C0001	C0024	D		360	100	11.12		47.8	-14.5	3.5	3.8	15.6	-156.7	4kHz	22.3
C0001	C0024	E		26	1350	11.12		47.8	0.7	18.7	17.6	26.9	-159.8	4kHz	22.3
C0001	C0024		F	1		13.14	2800	53.2	14.6	32.6	35.3	41.2	-149.6	4kHz	23.7
TC001	TC001		G	1		15		54.4	10	15					
TM001	TM002		H	1		15					10	14	-167.3	4kHz	33.2
*															

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Applicant | Satellite | Op. Band | GSO Orbit | NGSO Orbit | Service Area | Antenna Beam | Beam Diagram | Transponder | Modulation | Emission | Other

S14. TT&C Station Locations

Is the space station(s) controlled and monitored remotely? Complete Satellite Tab before responding to Yes/No Question S14.

	a1. Street1 Address	a2. Street2 Address	b. City	c. County	d1. State	d2. Country	e. Zip Code	f. Telephone No.	g. Call Sign of Control Station
▶	Woodbine TT&C	2323 Grimville Rd	Mt. Airy		MD	USA	21771	410-549-4300	E7169
	Vernon Valley Spacecra	11 Edsall Drive	Sussex		NJ	USA	07461	973-823-6000	WB81
	Suite 9A, Leanse Place	50 Town Range	Gibraltar	Gibraltar		GIB		011-350-77025	
*									

S15. SPACECRAFT PHYSICAL CHARACTERISTICS

a. Mass of spacecraft w/o fuel:	918 kg	e. Deployed area of Solar Array:	23.99 sq. meters	f. Length:	14.65 m	i. Payload:	0.92
b. Mass of fuel & disposables at launch:	1163 kg			g. Width:	1.82 m	j. Bus:	0.86
c. Mass of spacecraft & fuel at launch:	2081 kg			h. Height:	3.79 m	k. Total:	0.79
d. Mass of fuel, in orbit, at BOL:	360.41 kg						

Spacecraft Dimensions - Deployed on-orbit (meters)

Probability of Survival to End of Life (0-1)

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS

Spacecraft Subsystem	Electrical Power (Watts) @ BOL @ Equinox	Electrical Power (Watts) @ EOL @ Solstice	Electrical Power (Watts) @ BOL @ Equinox	Electrical Power (Watts) @ EOL @ Solstice
Payload (Watts): a.	1516	f. 1516	k. 1516	p. 1516
Bus (Watts): b.	924	g. 574	l. 924	q. 574
Total (Watts): c.	2440	h. 2090	m. 2440	r. 2090
Solar Array (Watts): d.	3592	i. 3044	n. 2797	s. 2483
Depth of Battery Discharge (%): e.	58	j.	o. 58	t.

S17. CERTIFICATIONS

Complete Satellite Tab before responding to S17 Certifications.

a. Are the power flux density limits of § 25.208 met?

b. Are the appropriate service area coverage requirements of § 25.143(b)(i) and (iii), or § 25.145(c)(1) and (2) met?

c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2), and (3) met?

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ANNEX 2
COVERAGE MAPS FOR C-BAND CONTOURS

Fig 1. EIRP C-Band Transmit Antenna Gain Contours

Transponder 12 (H-Pol Downlink)

Peak EIRP = 41.5 dBW

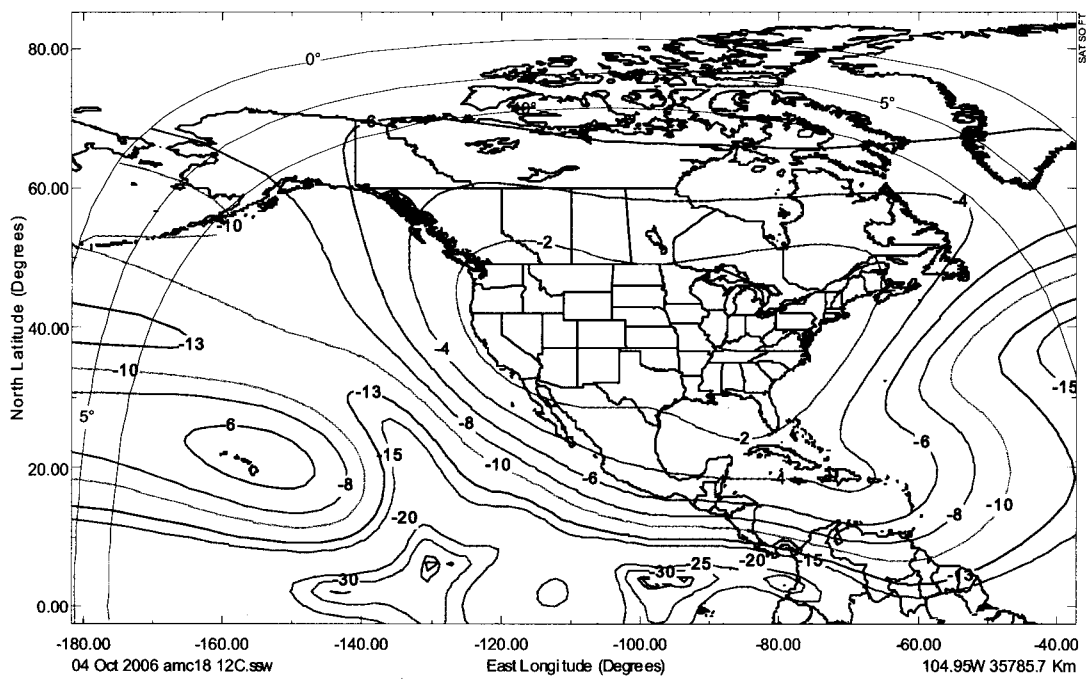


Fig. 2 C-Band Receive Antenna Gain Contours

Transponder 12 (V-Pol Uplink)

Peak G/T =4.5 dB/K

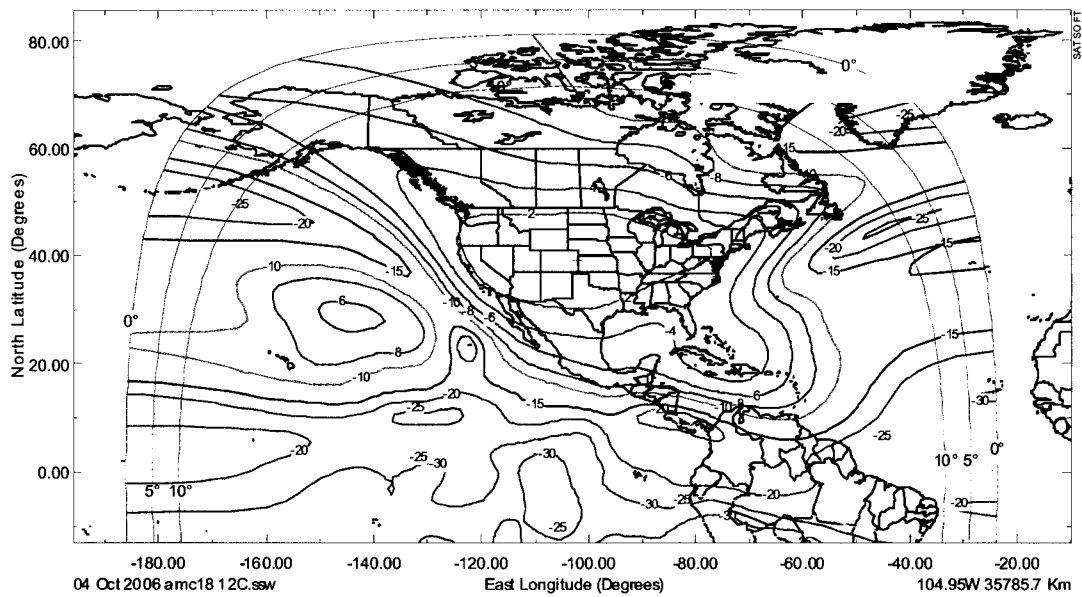


Fig 3. C-Band Transmit Antenna Gain Contours

Transponder 13 (V-Pol Downlink)

Peak EIRP = 41.1 dBW

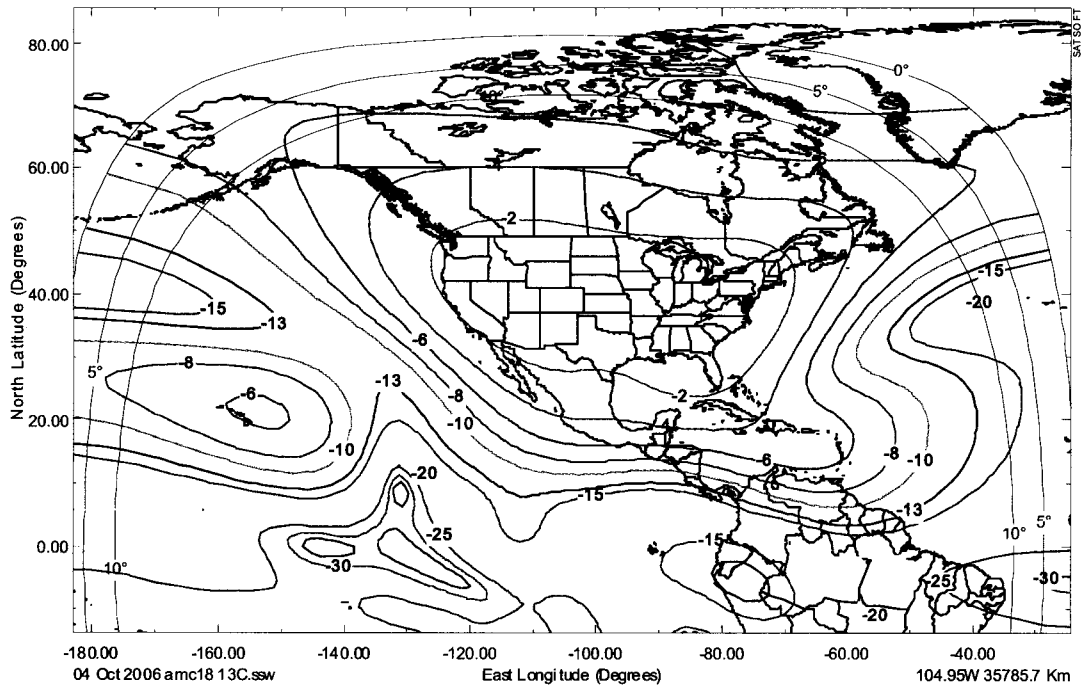


Fig 4. C-Band Receive Antenna Gain Contours

Transponder 13 (H-Pol Uplink)

Peak G/T = 4.5 dB/K

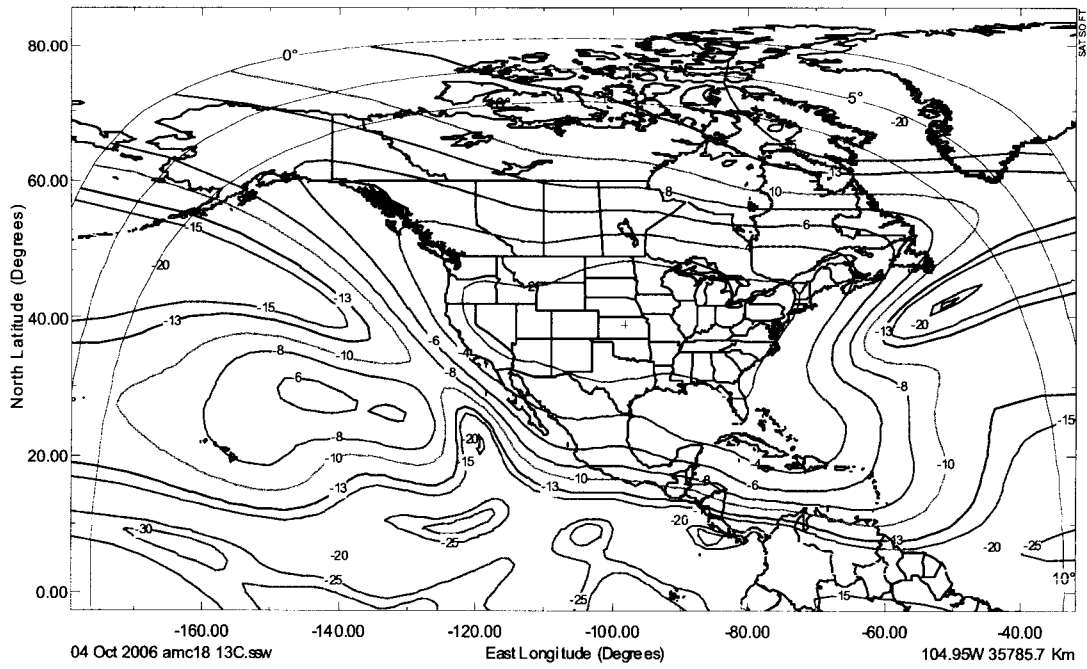


Fig 5. C-Band Transmit (Downlink) Cross-pol Discrimination Contours

Transponder 12 (H-Pol Downlink)

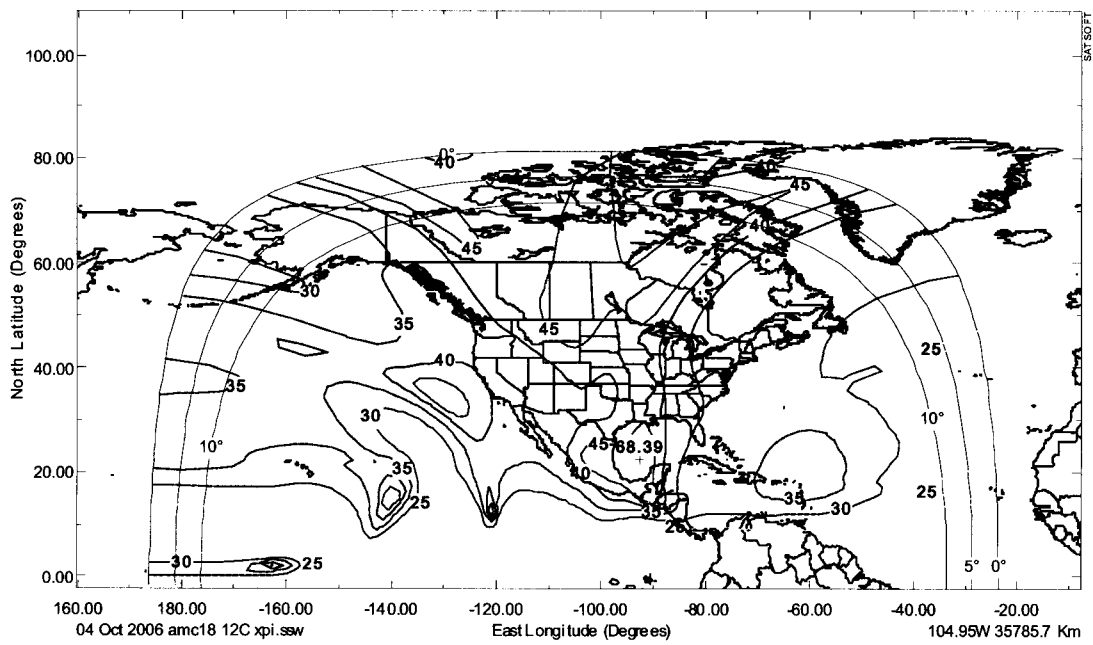


Fig 6. C-Band Receive (Uplink) Cross-pol Discrimination Contours
Transponder 12 (V-Pol Uplink)

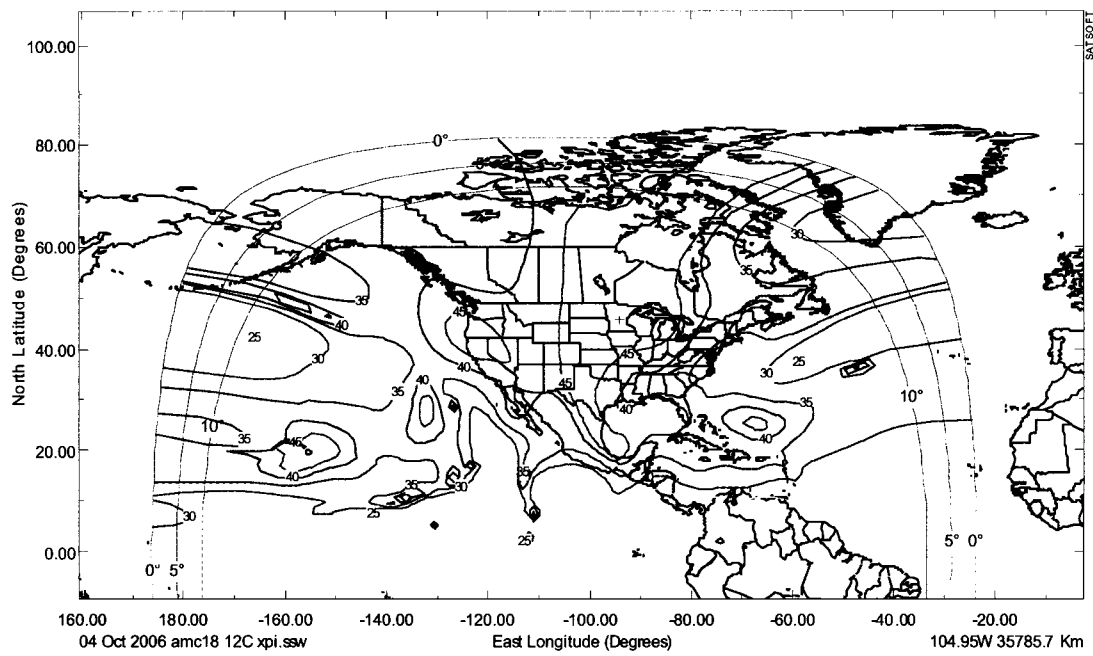


Fig 7. C-Band Transmit (Downlink) Cross-pol Discrimination Contours

Transponder 13 (V-Pol Downlink)

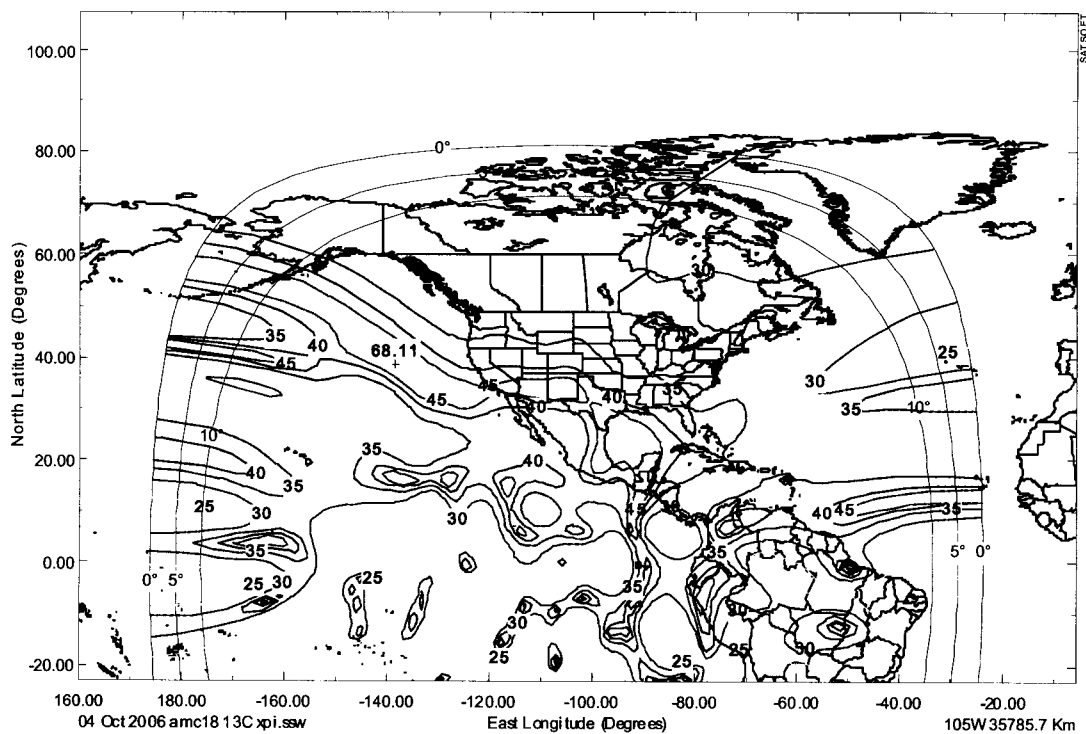


Fig 8. C-Band Receive (Uplink) Cross-pol Discrimination Contours

Transponder 13 (H-Pol Uplink)

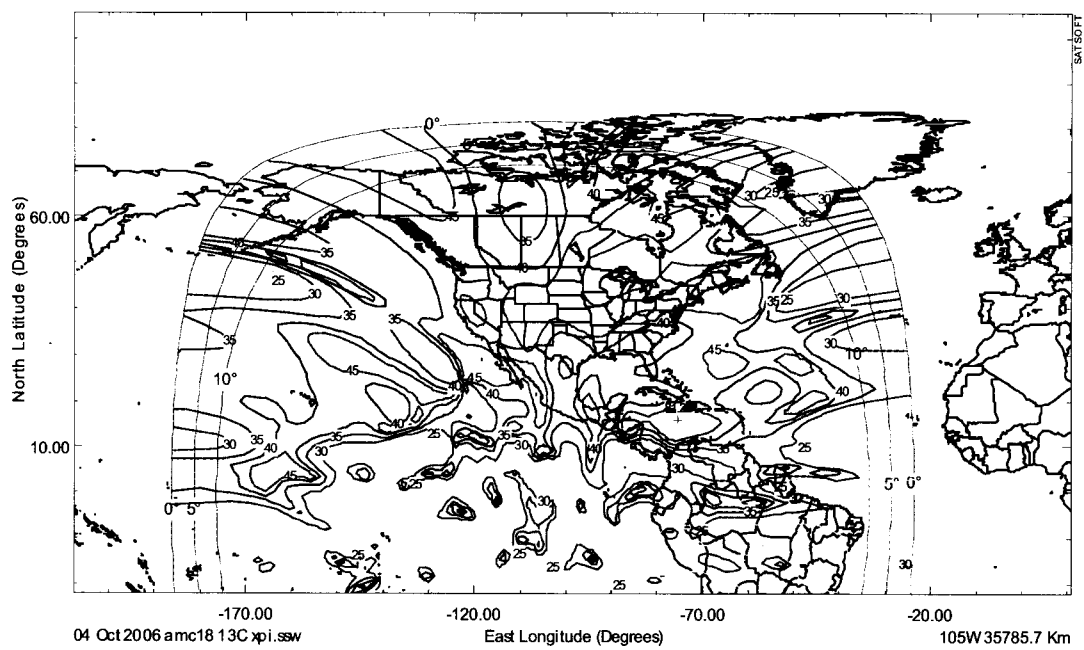
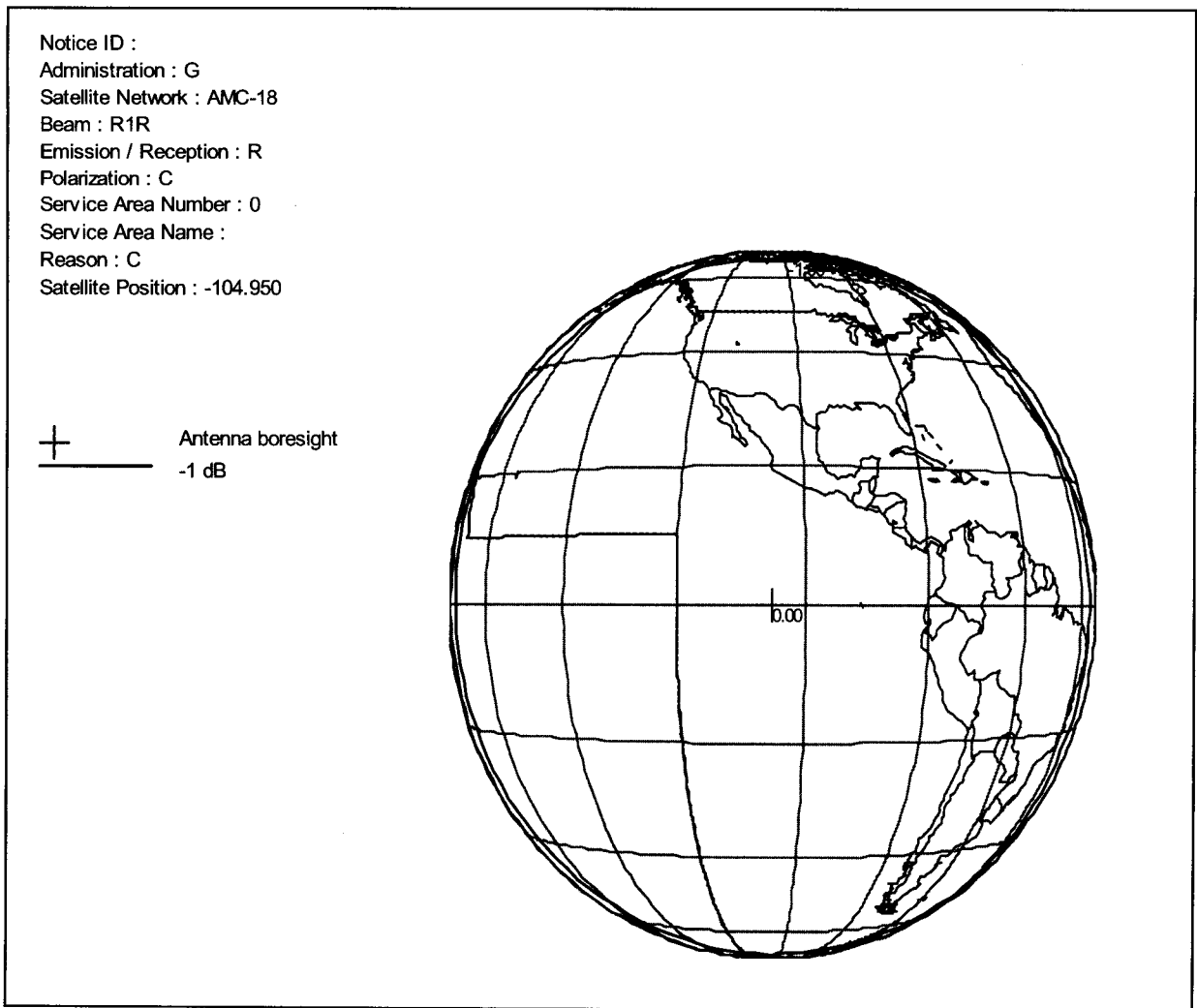


Fig 9. Command Carrier Receive Horn Antenna Gain Contours



ATTACHMENT B

TWO DEGREE SPACING ANALYSIS

IN SUPPORT OF AMC-18 AT 104.95° W.L.

1. Two-Degree Spacing Analysis for AMC-18

The positions immediately adjacent to 104.95° W.L. are 103° W.L., which is assigned to SES Gibraltar's parent company SES Americom (operating satellite: AMC-1), and 107.3° W.L., which is occupied by Telesat Canada's satellites ANIK F1R and F2. The following analysis will illustrate that the AMC-18 satellite is compatible with a co-coverage, co-frequency satellite, spaced 2° or more away. At 1.95° spacing the C/I values would decrease by an estimated amount of 0.25 dB, and this difference is small enough to have no material impact on the interference environment.

This analysis is performed for digital signals in both networks, and analog TV/FM signal calculations are provided for information in the Annex to this Attachment. Analog TV/FM signals are coordinated on a case-by-case basis with nearby spacecraft. Further, at C-band, it should be recognized that the FCC has a frequency/polarization plan that ensures that adjacent satellites operate the same channels on opposite polarizations. This channelization plan ensures that the center four MHz of analog transmissions, where most of the power of the analog signal is concentrated, fall within the guardband of transponders on the adjacent satellites with the same polarization. This polarization and channelization advantage was not taken into account in the analysis in the Annex, and as a result, the interference shown in the Annex from the analog emissions is higher than would occur in practice. Digital signals are more robust and operate typically down to much lower C/N ratios than analog signals. They are therefore more tolerant of interference, thereby improving the ability to coordinate at 2° orbital spacing.

1.1 C-band Uplink Analysis

This scenario addresses uplink interference between digital carriers in both the wanted and victim satellite networks. The analysis assumes that the transponder gains can be matched to give similar wanted input signal spectral density levels at the two satellites. The Uplink C/I will be a function of the difference between the gain of the transmitting earth stations at boresight and the gain at the off-axis (topocentric) angle.

The topocentric angle for a geocentric separation of 2° is approximately 2.1°. The gain at 2.1° off boresight for an antenna that meets the 29-25 log(θ) reference pattern is 20.9 dBi. The boresight gain will be a function of the size of the transmitting earth station. The following table lists the boresight gain, the off-axis gain and the corresponding C/I that would result in this interference scenario:

Table B-1.

C-band Uplink C/I for 2 degree geocentric spacing.

Antenna size	On-axis gain	Off-axis gain	C/I
2.40	41.70	20.94	20.75
3.00	43.64	20.94	22.69
4.50	47.16	20.94	26.21
6.10	49.80	20.94	28.85
7.50	51.59	20.94	30.65

Assuming that the minimum (i.e., threshold) C/N for a digital service is 8 dB, the effect of the C/I (20.8 dB) on the 2.4 meter earth station in Table B-1 above would only degrade the C/N by 0.22 dB, equivalent to an increase of 5.3% in the victim system's noise temperature. This is less than the ITU coordination trigger criteria; i.e., internationally, if a 6% increase in noise temperature is not exceeded, then coordination is not needed between the concerned networks.

1.2 C-band Downlink Analysis

This scenario addresses downlink interference between digital carriers in both the wanted and victim satellite networks. The analysis assumes that the EIRPs of the two satellites are similar. Similar to the uplink, the downlink C/I will be a function of the difference between the gain of the receiving earth stations at boresight and the gain at the off-axis angle, as well as any difference in EIRP between the two networks.

The topocentric angle for a geocentric separation of 2° is approximately 2.1°. The gain at 2.1° off boresight for an antenna that meets the 29-25 log(θ) reference pattern is 20.9 dBi. The boresight gain will be a function of the size of the transmitting earth station. The following table lists the boresight gain, the off-axis gain and the corresponding C/I that would result in this interference scenario, where the EIRP of the two networks is similar (Table B-2):

Table B-2.

C-band Downlink C/I for 2 degree geocentric spacing. Similar EIRPs

Antenna size	On-axis gain	Off-axis gain	Off-axis discrimination	C/I
2.40	38.18	20.94	17.23	17.23
3.00	40.11	20.94	19.17	19.17
4.50	43.64	20.94	22.69	22.69
6.10	46.28	20.94	25.33	25.33
7.50	48.07	20.94	27.13	27.13

Again, assuming that the minimum (i.e., threshold) C/N for a digital service is 8 dB, the effect of the C/I (17.23 dB) into the 2.4 meter earth station in Table B-2 above would only degrade the C/N by 0.5 dB, equivalent to an increase of 11.9% in the victim system's noise temperature. Although this does exceed the normal criteria of 6%, it is expected that such a C/I level can be coordinated. In addition, it should be noted that this

analysis does not take into account the FCC's requirement that adjacent satellites operate the same channel on opposite polarizations.

1.3 Additional interference analysis

Additional C-band interference analysis is provided in the Annex to this Attachment, for a variety of carriers. It should be noted that analog carriers are included for information, but that these carriers require coordination on a case-by-case basis.

Annex to Attachment B

Additional interference analysis for C-band

**Downlink C/I analysis
C-band**

Adjacent into SES

Orbital Position : SES Americom **104.95**
 Orbital Position Adjacent Satellite **103.0**
 Geocentric Separation 1.95
 Topocentric Separation 2.05

SES Carriers

	36M0G7W	6M95G1W	1M50G1W	100KG1W	36M0F3F
Emission	32.6	5.8	1.3	0.1	2.0
Bandwidth	3.5	3.5	3.5	3.5	3.5
Receive Earth Station (m)	40.0	40.0	40.0	40.0	40.0
Satellite EIRP	-35.1	-39.6	-39.6	-39.6	-23.0
Downlink EIRP density	41.5	41.5	41.5	41.5	41.5
RX Earth Station Gain	29.0	29.0	29.0	29.0	29.0
Sidelobe Characteristic	21.0	21.0	21.0	21.0	21.0
Off-axis Gain					

Adjacent Satellite Carriers

<u>Emission</u>	<u>Satellite EIRP</u>	<u>Bandw. (MHz)</u>	<u>Downlink EIRP density</u>	<u>Receive Ant. (m)</u>	<u>Earth Station Gain</u>	<u>Sidelobe Charact.</u>	<u>Off-axis Gain</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>
36M0G7W	40	32.6	-35.1	3.8	42.2	29	21.0	20.5	16.0	16.0	16.0	20.5
6M95G1W	40	5.8	-39.6	4.5	43.6	29	21.0	24.9	20.5	20.5	20.5	37.0
1M50G1W	40	1.3	-39.6	3.8	42.2	29	21.0	24.9	20.5	20.5	20.5	37.0
100KG1W	40	0.1	-39.6	3.5	41.5	29	21.0	24.9	20.5	20.5	20.5	37.0
36M0F3F	40	2.0	-23.0	3.8	42.2	29	21.0	20.5	3.9	3.9	3.9	20.5

**Downlink C/I analysis
C-band**

SES Americom into Adjacent

Orbital Position : SES Americom **104.95**
 Orbital Position Adjacent Satellite **103.0**
 Geocentric Separation 1.95
 Topocentric Separation 2.05

SES Carriers

Emission	36M0G7W	6M95G1W	1M50G1W	100KG1W	36M0F3F
Bandwidth	32.6	5.8	1.3	0.1	2.0
Receive Earth Station (m)	3.5	3.5	3.5	3.5	3.5
Satellite EIRP	40.0	40.0	40.0	40.0	40.0
Downlink EIRP density	-35.1	-39.6	-39.6	-39.6	-23.0
RX Earth Station Gain	41.5	41.5	41.5	41.5	41.5
Sidelobe Characteristic	29.0	29.0	29.0	29.0	29.0
Off-axis Gain	21.0	21.0	21.0	21.0	21.0

Adjacent Satellite Carriers

<u>Emission</u>	<u>Satellite EIRP</u>	<u>Bandw. (MHz)</u>	<u>Downlink EIRP density</u>	<u>Receive Ant. (m)</u>	<u>Earth Station Gain</u>	<u>Sidelobe Charact.</u>	<u>Off-axis Gain</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>
36M0G7W	40	32.6	-35.1	3.8	42.2	29	21.0	21.2	25.6	25.6	25.6	21.2
6M95G1W	40	5.8	-39.6	4.5	43.6	29	21.0	18.2	22.6	22.6	22.6	6.1
1M50G1W	40	1.3	-39.6	3.8	42.2	29	21.0	16.7	21.2	21.2	21.2	4.6
100KG1W	40	0.1	-39.6	3.5	41.5	29	21.0	16.0	20.5	20.5	20.5	3.9
36M0F3F	40	2.0	-23.0	3.8	42.2	29	21.0	21.2	37.7	37.7	37.7	21.2

**Uplink C/I analysis
C-band**

SES into Adjacent

Orbital Position : SES Americom 104.95
 Orbital Position Adjacent Satellite **103.**
 Geocentric Separation 1.95
 Topocentric Separation 2.05

SES Carriers

Emission	36M0G7W	6M95G1W	1M50G1W	100KG1W	36M0F3F
Bandwidth (MHz)	32.6	5.8	1.3	0.1	2.0
Satellite FTS	-93.0	-93.0	-93.0	-93.0	-93.0
Uplink EIRP	70.0	62.1	55.6	43.6	70.0
Uplink Power (max) (feed inp.)	20.2	16.6	10.6	-1.3	20.2
Uplink Power density (feed)	-54.9	-55.0	-54.5	-54.5	-42.8
Uplink Earth Station (m)	6.1	3.7	3.5	3.5	6.1
Earth Station Gain	49.8	45.5	45.0	45.0	49.8
Upl. EIRP density	-5.1	-9.6	-9.6	-9.6	7.0
Sidelobe Characteristic	29.0	29.0	29.0	29.0	29.0
Off-axis Eirp density	-33.9	-34.0	-33.5	-33.5	-21.8

Adjacent Satellite Carriers

<u>Emission</u>	<u>Bandw. (MHz)</u>	<u>Satellite ETS</u>	<u>Uplink EIRP</u>	<u>Uplink Eirp density</u>	<u>Transm. Ant. (m)</u>	<u>Earth Station Gain</u>	<u>Sidelobe Charact.</u>	<u>Off-axis Eirp density</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>
36M0G7W	32.6	-94.0	69.0	-6.1	9	53.2	29	-38.3	27.8	27.9	27.4	27.4	27.8
6M95G1W	5.8	-94.0	57.1	-10.6	4.5	47.2	29	-36.7	23.4	23.5	23.0	23.0	11.3
1M50G1W	1.3	-94.0	50.7	-10.6	3.8	45.7	29	-35.3	23.4	23.5	23.0	23.0	11.3
100KG1W	0.1	-94.0	38.6	-10.6	3.5	45.0	29	-34.5	23.4	23.5	23.0	23.0	11.3
36M0F3F	2.0	-94.0	69.0	6.0	7.5	51.6	29	-24.6	27.8	40.0	39.5	39.5	27.8

**Uplink C/I analysis
C-band**

Adjacent into SES

SES Carriers

		<u>36M0G7W</u>	<u>6M95G1W</u>	<u>1M50G1W</u>	<u>100KG1W</u>	<u>36M0F3F</u>
Emission		36M0G7W	6M95G1W	1M50G1W	100KG1W	36M0F3F
Bandwidth (MHz)		32.6	5.8	1.3	0.1	2.0
Satellite FTS		-94.0	-94.0	-94.0	-94.0	-94.0
Uplink EIRP		69.0	57.1	50.6	38.6	69.0
Orbital Position : SES Americom	104.95	19.2	11.6	5.6	-6.3	19.2
Orbital Position Adjacent Satellite	103.0	Uplink Power (max) (feed inp.)	Uplink Power (max) (feed inp.)	Uplink Power (max) (feed inp.)	Uplink Power (max) (feed inp.)	Uplink Power (max) (feed inp.)
Geocentric Separation	1.95	Uplink Power density (feed)	Uplink Power density (feed)	Uplink Power density (feed)	Uplink Power density (feed)	Uplink Power density (feed)
Topocentric Separation	2.05	Uplink Earth Station (m)	Uplink Earth Station (m)	Uplink Earth Station (m)	Uplink Earth Station (m)	Uplink Earth Station (m)
		Earth Station Gain	Earth Station Gain	Earth Station Gain	Earth Station Gain	Earth Station Gain
		Upl. EIRP density	Upl. EIRP density	Upl. EIRP density	Upl. EIRP density	Upl. EIRP density
		Sidelobe Characteristic	Sidelobe Characteristic	Sidelobe Characteristic	Sidelobe Characteristic	Sidelobe Characteristic
		<u>Off-axis Eirp density</u>	<u>Off-axis Eirp density</u>	<u>Off-axis Eirp density</u>	<u>Off-axis Eirp density</u>	<u>Off-axis Eirp density</u>

Adjacent Satellite Carriers

<u>Emission</u>	<u>Bandw. (MHz)</u>	<u>Satellite FTS</u>	<u>Uplink EIRP</u>	<u>Uplink Eirp density</u>	<u>Transm. Ant. (m)</u>	<u>Earth Station Gain</u>	<u>Sidelobe Charact.</u>	<u>Off-axis Eirp density</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>	<u>C/I</u>
36M0G7W	32.6	-93.0	70.0	-5.1	9	53.2	29	-37.3	31.2	26.8	26.8	26.8	31.2
6M95G1W	5.8	-93.0	58.1	-9.6	9	53.2	29	-41.7	35.6	31.2	31.2	31.2	47.7
1M50G1W	1.3	-93.0	51.7	-9.6	3.8	45.7	29	-34.3	28.1	23.7	23.7	23.7	40.2
100KG1W	0.1	-93.0	39.6	-9.6	3.5	45.0	29	-33.5	27.4	23.0	23.0	23.0	39.5
36M0F3F	2.0	-93.0	70.0	7.0	7.5	51.6	29	-23.6	29.6	13.0	13.0	13.0	29.6

**ALIEN OWNERSHIP
(Response to Items 34-40)**

The petitioner, SES Satellites (Gibraltar) Ltd. (“SES Gibraltar”), is a company formed under the laws of Gibraltar and a wholly-owned, indirect subsidiary of SES Americom, Inc. (“SES Americom”). SES Americom is a Commission licensee, and information regarding its ownership and control is on file with the Commission.

SES Gibraltar’s petition is not subject to the provisions regarding foreign ownership and control in Section 310(b)(4) of the Communications Act of 1934, as amended. SES Gibraltar is not seeking a Commission license but only authority for U.S.-licensed earth stations to communicate with SES Gibraltar’s space station.

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: AMC-18		e. Estimated Date of Placement into Service: 1/1/2007		i. Will the space station(s) operate on a Common Carrier Basis: N	
b. Construction Commencement Date: 8/1/2001		f. Estimated Lifetime of Satellite(s): 21.5 Years		j. Number of transponders offered on a common carrier basis: 0	
c. Construction Completion Date: 11/1/2006		g. Total Number of Transponders: 24		k. Total Common Carrier Transponder Bandwidth: 0 MHz	
d1. Est Launch Date Begin: 11/1/2006	d2. Est Launch Date End: 11/30/2006	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 864 MHz		i. Orbit Type: Mark all boxes that apply: <input checked="" type="checkbox"/> GSO <input type="checkbox"/> NGSO	

S2. OPERATING FREQUENCY BANDS Identify the frequency range and transmit/receive mode for all frequency bands in which this station will oper
Also indicate the nature of service(s) for each frequency band.

Frequency Band Limits				e. T/R Mode	f. Nature of Service(s): List all that apply to this band
Lower Frequency (Hz)		Upper Frequency (Hz)			
a. Numeric	b. Unit (K/M/G)	c. Numeric	d. Unit (K/M/G)		
3700	M	4200	M	T	Fixed Satellite Service
3700	M	4200	M	T	
5925	M	6425	M	R	Fixed Satellite Service
5925	M	6425	M	R	

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 104.95 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: Availability of C-band spectrum at 105W (nominal).	
Longitudinal Tolerance or E/W Station-Keeping:		f. Inclination Excursion or N/S Station-Keeping Tolerance:		Range of orbital are in which adequate service can be provided (Optional):	
d. Toward West:	0.05 Degrees	0.05 Degrees		Degrees E/W	
e. Toward East:	0.05 Degrees			g. Westernmost: W	
				h. Easternmost: W	
i. Reason for service are selection (Optional):					

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S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

S4c. Celestial Reference Body (Earth, Sun, Moon, etc.):

S4b. Total Number of Orbital Planes in Network or System:

S4d. Orbit Epoch Date:

For each Orbital Plane Provide:

(e) Orbital Plane No.	(f) No. of Satellites in Plane	(g) Inclination Angle (degrees)	(h) Orbital Period (Seconds)	(i) Apogee (km)	(j) Perigee (km)	(k) Right Ascension of the Ascending Node (Deg.)	(l) Argument of Perigee (Degrees)	Active Service Arc Range (Degrees)		
								(m) Begin Angle	(n) End Angle	(o) Other

S5. INITIAL SATELLITE PHASE ANGLE For each satellite in each orbital plane, provide the initial phase angle.

(a) Orbital Plane No.	(b) Satellite Number	(c) Initial Phase Angle (Degrees)

NO NGSO DATA FILED

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Page 3: Service Areas

S6. SERVICE AREA CHARACTERISTICS for each service area provide:

(a) Service Area ID	(b) Type of Associated Station (Earth or Space)	(c) Service Area Diagram File Name (GXT File)	(d) Service Area Description. Provide list of geographic areas (state postal codes or ITU 3-itr codes), satellites or Figure No. of Service Area Diagram.
CNA	E		-7 dB gain contour of beams CUH and CUV for the uplink; -8 dB gain contour of beams CDH and CDV for the do

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S7. SPACE STATION ANTENNA BEAM CHARACTERISTICS For each antenna beam provide:

(a) Beam ID	(b) T/R Mode	Isotropic Antenna Gain		(e) Pointing Error (Degrees)	(f) Rotational Error (Degrees)	(g) Min. Cross- Polar Iso- lation (dB)	(h) Polar- ization Switch- able? (Y/N)	(i) Polarization Alignment Rel. Equatorial Plane (Degrees)	(j) Service Area ID	Transmit			Receive			Input Attenuator (dB)		
		(c) Peak (dBi)	(d) Edge (dBi)							(k) Input Losses (dB)	(l) Effective Output Power (W)	(m) Max. EIRP (dBW)	(n) System Noise Temp (k)	(o) G/T Max. Gain Pt. (db/K)	(p) Min. Saturation Flux Density (dBW/m2)	(q) Max. Value	(r) Step Size	
CDH	T	30.24	22.24	0.15	0	31.3	Y	0	CNA	1.65	12.56	41.23						
CDV	T	30.51	22.51	0.15	0	30.6	Y	90	CNA	1.68	12.56	41.5						
CUH	R	31.74	23.74	0.15	0	33.8	Y	0	CNA				583	4.01	-96.01	18	1	
CUV	R	31.61	23.61	0.15	0	32.6	Y	90	CNA				593	3.96	-95.96	18	1	
TC	R	10	8	0.15	0		Y		CNA				585	-17				

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S8. ANTENNA BEAM DIAGRAMS For each beam pattern provide the reference to the graphic image and numerical data:
Also provide the power flux density levels in each beam that result from the emission with the highest power flux density.

(a) Beam ID	(b) T/R Mode	(c) Co-or Cross Polar ("C" or "X")	(d) GSO Ref. Orbital Longitude (Deg. E/W)	(e) NGSO Antenna Gain Contour Description (Figure/Table/ Exhibit)	(f) GSO Antenna Gain Contour Data (GXT File)	Max. Power Flux Density (dBW/M2/Hz)				
						At Angle of Arrival above horizontal (for emission with highest PFD)				
						(g) 5 Deg	(h) 10 Deg	(i) 15 Deg	(j) 20 Deg	(k) 25 Deg
CDH	T	C	-104.95		ch12_CDH.gxt	-153	-152	-151	-150	-149
CDV	T	C	-104.95		ch13_CDV.gxt	-153	-152	-151	-150	-149
CUH	R	C	-104.95		ch13_CUH.gxt					
CUV	R	C	-104.95		ch12_CUV.gxt					
CDH	T	X	-104.95		ch12_CDH_X.gxt					
CDV	T	X	-104.95		ch13_CDV_X.gxt					
CUH	R	X	-104.95		ch13_CUH_X.gxt					
CUV	R	X	-104.95		ch12_CUV_X.gxt					
TC	R	C	-104.95		_command_rx_anten					

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S9. SPACE STATION CHANNELS For each frequency channel provide: S10. SPACE STATION TRANSPONDERS For each transponder provide:

(a) Channel No.	(B) Assigned Bandwidth (kHz)	(c) T/R Mode	(d) Center Frequency (MHz)	(e) Polarization (H, V, L, R)	(f) TTC or Comm Channel (T or C)
CD001	36000	T	3720	V	C
CD003	36000	T	3760	V	C
CD005	36000	T	3800	V	C
CD007	36000	T	3840	V	C
CD009	36000	T	3880	V	C
CD011	36000	T	3920	V	C
CD013	36000	T	3960	V	C
CD015	36000	T	4000	V	C
CD017	36000	T	4040	V	C
CD019	36000	T	4080	V	C
CD021	36000	T	4120	V	C
CD023	36000	T	4160	V	C
CD002	36000	T	3740	H	C
CD004	36000	T	3780	H	C
CD006	36000	T	3820	H	C
CD008	36000	T	3860	H	C
CD010	36000	T	3900	H	C
CD012	36000	T	3940	H	C
CD014	36000	T	3980	H	C
CD016	36000	T	4020	H	C
CD018	36000	T	4060	H	C
CD020	36000	T	4100	H	C
CD022	36000	T	4140	H	C
CD024	36000	T	4180	H	C
CU001	36000	R	5945	H	C
CU003	36000	R	5985	H	C
CU005	36000	R	6025	H	C
CU007	36000	R	6065	H	C
CU009	36000	R	6105	H	C
CU011	36000	R	6145	H	C

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
C0001	112	CU001	CUH	CD001	CDV
C0003	112	CU003	CUH	CD003	CDV
C0005	112	CU005	CUH	CD005	CDV
C0007	112	CU007	CUH	CD007	CDV
C0009	112	CU009	CUH	CD009	CDV
C0011	112	CU011	CUH	CD011	CDV
C0013	112	CU013	CUH	CD013	CDV
C0015	112	CU015	CUH	CD015	CDV
C0017	112	CU017	CUH	CD017	CDV
C0019	112	CU019	CUH	CD019	CDV
C0021	112	CU021	CUH	CD021	CDV
C0023	112	CU023	CUH	CD023	CDV
C0002	112	CU002	CUV	CD002	CDH
C0004	112	CU004	CUV	CD004	CDH
C0006	112	CU006	CUV	CD006	CDH
C0008	112	CU008	CUV	CD008	CDH
C0010	112	CU010	CUV	CD010	CDH
C0012	112	CU012	CUV	CD012	CDH
C0014	112	CU014	CUV	CD014	CDH
C0016	112	CU016	CUV	CD016	CDH
C0018	112	CU018	CUV	CD018	CDH
C0020	112	CU020	CUV	CD020	CDH
C0022	112	CU022	CUV	CD022	CDH
C0024	112	CU024	CUV	CD024	CDH
TC001		TC	TC		
TM001				TM1	CDH
TM002				TM2	CDV

CU013	36000	R	6185	H	C
CU015	36000	R	6225	H	C
CU017	36000	R	6265	H	C
CU019	36000	R	6305	H	C
CU021	36000	R	6345	H	C
CU023	36000	R	6385	H	C
CU002	36000	R	5965	V	C
CU004	36000	R	6005	V	C
CU006	36000	R	6045	V	C
CU008	36000	R	6085	V	C
CU010	36000	R	6125	V	C
CU012	36000	R	6165	V	C
CU014	36000	R	6205	V	C
CU016	36000	R	6245	V	C
CU018	36000	R	6285	V	C
CU020	36000	R	6325	V	C
CU022	36000	R	6365	V	C
CU024	36000	R	6405	V	C
TC	800	R	6423.5	H	T
TM1	300	T	3700.5	H	T
TM2	300	T	4199.5	V	T

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S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

(a) Digital Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) No. of Phases	(e) Uncoded Data Rate (kbps)	(f) FEC Error Correction Coding Rate	(g) CDMA Processing Gain (dB)	(h) Total C/N Performance Objective (dB)	(i) Single Entry C/I Objective (dB)
A	36M0G7W	36000	4	40000	0.691		6.8	19
B	6M95G1W	6950	4	8000	0.691		6.8	19
C	36M0G7W	36000	8	60000	0.614		9.9	22.1
D	100KG1W	100	4	56	0.691		6.8	19
E	1M35G7W	1350	4	1544	0.691		6.8	19

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S13. TYPICAL EMISSIONS For each planned type of emission provide:

Associated Transponder ID Range		Modulation ID		(e) Carriers per Transponder	(f) Carrier Spacing (kHz)	(g) Noise Budget Reference (Table No.)	(h) Energy Dispersal Bandwidth (kHz)	Receive Band (Assoc. Transmit Stn)			Transmit Band (This Space Station)			
(a) Start	(b) End	(c) Digital (Table S11)	(d) Analog (Table S12)					(i) Assoc. Stn. Max. Antenna Gain (dBi)	Assoc. Station Transmit Power (dBW)		EIRP (dBW)		(n) Max. Power Flux Density (dBW/m ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
				(j) Min. (k) Max.		(l) Min.	(m) Max.							
C0001	C0024	A		1		7, 8		53.8	14	32	31.1	41.2	-159.7	22.3
C0001	C0024	B		5	6950	7, 8		53.8	-1.5	16.5	22.1	34.1	-159.9	23.7
C0001	C0024	C		1		9, 10		53.8	14	32	32.3	41.2	-160.2	29.8
C0001	C0024	D		360	100	11, 12		47.8	-14.5	3.5	3.8	15.6	-156.7	22.3
C0001	C0024	E		26	1350	11, 12		47.8	0.7	18.7	17.6	26.9	-159.8	22.3
C0001	C0024		F	1		13, 14	2800	53.2	14.6	32.6	35.3	41.2	-149.6	23.7
TC001	TC001		G	1		15		54.4	10	15				
TM001	TM002		H	1		15					10	14	-167.3	33.2

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S14. Is the space station(s) controlled and monitored remotely? If Yes, provide the location and telephone number of the TT and C control point(s): Yes

Remote Control (TT C) Location(s):

S14a: Street Address: Woodbine TT&C			
S14b. City: Mt. Airy	S14c. County:	S14d. State/Country MD	S14e. Zip Code: 21771
S14f. Telephone Number: 410-549-4300		S14g. Call Sign of Control Station (if appropriate): E7169	

Remote Control (TT C) Location(s):

S14a: Street Address: Vernon Valley Spacecraft Ops			
S14b. City: Sussex	S14c. County:	S14d. State/Country NJ	S14e. Zip Code: 07461
S14f. Telephone Number: 973-823-6000		S14g. Call Sign of Control Station (if appropriate): WB81	

Remote Control (TT C) Location(s):

S14a: Street Address: Suite 9A, Leanse Place			
S14b. City: Gibraltar	S14c. County: Gibraltar	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number: 011-350-77025		S14g. Call Sign of Control Station (if appropriate):	

Remote Control (TT C) Location(s):

S14a: Street Address:			
S14b. City:	S14c. County:	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number:		S14g. Call Sign of Control Station (if appropriate):	

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 918	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 1163		
S15c. Mass of spacecraft and fuel at launch (kg): 2081	S15f. Length (m): 14.65	S15i. Payload: 0.92
S15d. Mass of fuel, in orbit, at beginning of life (kg): 360.41	S15g. Width (m): 1.82	S15j. Bus: 0.86
S15e. Deployed Area of Solar Array (square meters): 23.99	S15h. Height (m): 3.79	S15k. Total: 0.79

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:

Spacecraft Subsystem	Electrical Power (Watts) At Beginning of Life		Electrical Power (Watts) At End of Life	
	At Equinox	At Solstice	At Equinox	At Solstice
Payload (Watts):	(a): 1516	(f): 1516	(k): 1516	(p): 1516
Bus (Watts):	(b): 924	(g): 574	(l): 924	(q): 574
Total (Watts):	(c): 2440	(h): 2090	(m): 2440	(r): 2090
Solar Array (Watts):	(d): 3592	(i): 3044	(n): 2797	(s): 2483
Depth of Battery Discharge (%):	(e) 58 %	(j) %	(o) 58 %	(t) %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?	<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met?	<input type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input checked="" type="checkbox"/>	N/A
c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2) and (3) met?	<input checked="" type="checkbox"/>	YES	<input type="checkbox"/>	NO	<input type="checkbox"/>	N/A
In addition to the information required in this Form, the space station applicant is required to provide all the information specified in Section 25.114 of the Commission's rules, 47 C.F.R § 25.114.						