

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

In the Matter of:	)	
	)	
	)	
SES ASTRA S.A.	)	File No. SAT-PPL-
	)	
Petition for Declaratory Ruling	)	
To Add SES-1 at 101.0° W.L. to the	)	
Permitted Space Station List	)	
	)	

PETITION FOR DECLARATORY RULING

SES ASTRA S.A. (“SES ASTRA”), pursuant to Sections 1.2 and 25.137 of the Commission’s Rules, hereby requests a declaratory ruling to add the SES-1 satellite at 101.0° W.L. to the Commission’s Permitted Space Station List for service to the U.S. in the conventional C- and Ku-bands.¹ SES ASTRA also respectfully requests authority to provide direct-to-home (“DTH”) services using the SES-1 satellite in the United States and between the United States and certain foreign jurisdictions.

The SES-1 satellite will replace AMC-2, which is currently authorized to operate at the nominal 101° W.L. orbital location under a Commission license issued to SES ASTRA’s affiliate, SES Americom, Inc. (“SES Americom”).² In place of AMC-2, the SES-1 satellite will provide interim supplemental capacity for the ailing AMC-4 satellite at 101° W.L.³ Grant of the

¹ The “conventional C-band” refers to the 3700-4200 MHz and 5925-6425 MHz frequencies. The “conventional Ku-band” refers to the 11.7-12.2 GHz and 14.0-14.5 GHz frequencies.

² *SES Americom, Inc.*, Stamp Grant, File Nos. SAT-MOD-20080124-00030; SAT-AMD-20080311-00070 (granted May 19, 2008) (“*AMC-2 Grant*”).

³ SES Americom holds a Commission license to operate AMC-4 at 101.0° W.L. *See SES Americom, Inc.*, Stamp Grant, File No. SAT-MOD-20080314-00072 (granted May 19, 2008) (“*AMC-4 Grant*”).

instant petition is consistent with the Commission’s prior decision to authorize AMC-2 to play this role, and will permit use of SES-1 to ensure continuity of C- and Ku-band services to the U.S. from this orbital location.

I. BACKGROUND

SES ASTRA, a company formed under the laws of Luxembourg, is a leading provider of satellite services in Europe that specializes in the provision of DTH platform services. SES ASTRA’s affiliate SES Americom is a leading provider of satellite services in the United States and a Commission licensee. SES Americom holds Commission licenses for a fleet of spacecraft operating in the C-, Ku- and Ka-bands, and for earth station facilities located in various parts of the United States.

SES ASTRA has been authorized by the Luxembourg Ministry of State, Office of Media and Communications (“Ministry of Communications”)⁴ to operate a C- and Ku-band spacecraft at 101.0° W.L. to support the operations of its affiliate, SES Americom. SES ASTRA has agreed to deploy the SES-1 satellite to that location to replace the AMC-2 satellite.⁵ The

⁴ Ministère d’État, Service des Médias et des Communications of the Grand Duchy of Luxembourg.

⁵ Because SES-1 will be serving as a replacement satellite under Section 25.165 of the Commission’s rules, SES ASTRA assumes that no performance bond will be required to be posted when the Commission acts on the instant petition. *See* 47 C.F.R. § 25.165(a) (replacement satellites are exempt from the requirement to post a performance bond); 47 C.F.R. § 25.165(e) (defining a replacement satellite as one that will operate “at the same orbit location, in the same frequency bands, and with the same coverage area as one of the licensee’s existing satellites” and will be brought into use before the existing satellite is retired from service).

In the event that the Commission does not agree that SES-1 is a replacement satellite for purposes of Section 25.165, SES ASTRA requests that the Commission waive the performance bond requirement for SES-1. A waiver under the unique circumstances here would not undermine the purposes for which the bond rule was adopted. As discussed herein, SES Americom’s Commission-licensed AMC-4 spacecraft will remain in service at 101° W.L. during the period when SES ASTRA plans to position SES-1 at that location. As a result, no operator unaffiliated with SES Americom could be licensed by the Commission to operate in the C- and Ku-band at 101° W.L. during that period. Thus, imposition of a bond is not necessary to achieve

SES-1 satellite (formerly known as AMC-24) is presently under construction and scheduled for launch in March-April of 2010. Documentation from the Ministry of Communications confirming that SES ASTRA has been authorized to operate the satellite at 101.0° W.L. is attached hereto as Exhibit 1.

As discussed above, SES Americom is already authorized to operate two spacecraft in the C- and Ku-bands at the nominal 101° W.L. orbital location. SES Americom has operated AMC-4 at 101° W.L. since late 1999. In 2008, following solar array problems with AMC-4 that decreased its operational capacity, SES Americom sought and was granted authority to relocate AMC-2 to the nominal 101° W.L. orbital location in order to supplement AMC-4's capacity.⁶ AMC-2 was assigned to 100.95° W.L. SES Americom was authorized to operate both AMC-2 and AMC-4 in the combined stationkeeping volume bounded by 100.90° W.L. and 101.05° W.L.,⁷ but is operating both spacecraft in formation at 101.0° W.L. +/- 0.05 degrees.

SES Americom currently intends to replace the ailing AMC-4 satellite with a spacecraft tentatively named SES-3, which is scheduled to be launched in the in the period December 2010-May 2011. Pending launch and operation of the long-term replacement satellite

the purposes of the bond rule, "ensuring the licensee's financial ability to establish the licensed service, ensuring its good faith intent to provide the service, and discouraging the warehousing or speculative pursuit of scarce spectrum." *Rainbow DBS Company LLC*, Memorandum Opinion and Order, 22 FCC Rcd 4272, 4274 (2007). SES ASTRA would not be seeking Commission authority to use SES-1 at 101° W.L. to serve the U.S. if it did not have a good faith intent, and the financial ability, to place the satellite in operation there. Furthermore, SES ASTRA cannot warehouse the spectrum to be used by SES-1 given the concurrent operations of AMC-4 in the same frequencies at the same location. In any event, the Commission has not required the posting of a bond when a satellite is launched prior to the date the bond would be due, which is likely to be the case here under the current launch schedule for SES-1. *See, e.g., DIRECTV Enterprises, LLC*, Order and Authorization, 21 FCC Rcd 8028, 8032 (Sat. Div. 2006) (no bond is required if satellite is successfully launched within 30 days of authorization).

⁶ *See AMC-2 Grant*.

⁷ *See id.* at ¶ 1; *see also AMC-4 Grant* at ¶ 1 (authorizing AMC-4 to operate in an expanded station-keeping volume).

for AMC-4, SES Americom has arranged with SES ASTRA to deploy SES-1 temporarily to the nominal 101° W.L. orbital location to take the place of AMC-2.⁸ SES Americom intends to maintain AMC-4 at its current position as well until its replacement satellite is launched. In order to facilitate continued joint stationkeeping at the nominal 101° W.L. orbital location, SES ASTRA requests assignment of SES-1 to the 101.0° W.L. location where it will be flown in formation with AMC-4. To be clear, SES ASTRA will arrange with SES Americom to fly both SES-1 and AMC-4 within a +/- 0.05 degree box centered on 101.0° W.L.

SES ASTRA respectfully requests that the Commission add SES-1 to the Permitted List for communication with U.S.-licensed earth stations. Granting Permitted List status to SES-1 will serve the public interest by ensuring the continuation of C- and Ku-band services from 101° W.L. SES ASTRA demonstrates below that it satisfies the requirements for inclusion of SES-1 on the Permitted List.

II. SES ASTRA'S REQUEST COMPLIES WITH SECTION 25.137

In the *DISCO II* proceeding,⁹ the Commission adopted 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. SES ASTRA's petition fully complies with the Commission's market access requirements. Grant of market access for SES-1 will allow use of the spacecraft to ensure service continuity for customers currently using AMC-2 for Fixed Satellite Service ("FSS") and DTH services.

⁸ SES Americom expects to seek authority to relocate AMC-2 to another orbital location once SES-1 is in place at 101.0° W.L.

⁹ 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*").

A. FSS Operations

In *DISCO II*, the Commission adopted a presumption that with respect to satellite services covered by the WTO agreement on basic telecommunications, entry into the U.S. market by satellites licensed by WTO-member countries will promote competition in the U.S. market.¹⁰ In this case, the C- and Ku-band FSS (other than DTH services) that SES ASTRA is seeking to provide in the United States are covered by the WTO agreement.¹¹ In addition, SES ASTRA has been authorized by Luxembourg to operate SES-1 at 101.0° W.L., and Luxembourg is a member of the WTO. As a result, the presumption in favor of entry clearly applies to SES ASTRA's proposed non-DTH FSS operations.

B. DTH Operations

SES ASTRA is also requesting authority to provide DTH services, which are not covered by the WTO agreement. For such non-covered services, the Commission applies the “ECO-Sat” test, which requires a determination of whether U.S.-licensed satellites have “effective competitive opportunities” in the relevant foreign markets to provide analogous services.¹² Under the Commission's rules, the relevant foreign markets for this test are (i) the country in which the non-U.S.-licensed satellite is licensed; and (ii) the countries in which communications with U.S. earth stations will originate or terminate.¹³ To assess compliance with the ECO-Sat test the Commission looks at whether there are *de jure* or *de facto* barriers to entry for U.S. satellite operators.¹⁴

¹⁰ *DISCO II*, 12 FCC Rcd at 24112.

¹¹ *Id.* at 24097-98.

¹² *DISCO II*, 12 FCC Rcd at 24134.

¹³ See 47 C.F.R. § 25.137(a).

¹⁴ *DISCO II*, 12 FCC Rcd at 24128.

In this instance, SES ASTRA is seeking authority to use capacity on SES-1 to continue providing DTH services within the U.S. and between the U.S. and certain other markets. Grant of DTH authority for SES-1 is in the public interest as it would ensure continuity of service to existing DTH customers on AMC-2. Specifically, SES ASTRA requests that the Commission authorize the provision of DTH capacity using SES-1: (1) within the U.S., (2) between the U.S. and Mexico, (3) between the U.S. and the Netherlands Antilles, and (4) between the U.S. and the overseas territories of the United Kingdom located in the Caribbean (Bermuda, the British Virgin Islands (“BVI”), and the Cayman Islands). As demonstrated below, all of these countries satisfy the ECO-Sat test.

Luxembourg. Luxembourg passes the ECO-Sat test.¹⁵ There are no *de jure* or *de facto* barriers in Luxembourg to U.S. satellite operators wishing to provide capacity for DTH service. The Luxembourg policy conforms to the European Union directive specifying that “Member States shall ensure that any regulatory prohibition or restriction on the offer of space segment capacity to any authorised satellite earth station network operator are abolished”¹⁶

Mexico. Mexico passes the ECO-Sat test. The U.S. and Mexico have entered into a bilateral agreement pursuant to which Mexico has agreed to permit U.S.-licensed satellites to provide FSS including DTH service to, from, and within Mexico provided that licensing and

¹⁵ Luxembourg has previously passed an ECO-Sat-like analysis in connection with SES Americom’s provision of DTH service using its U.S.-licensed satellites. *See SES Americom, Inc.*, 18 FCC Rcd 16589 at ¶¶ 16-17 (IB 2003). In that context, the Commission considered whether Luxembourg’s indirect ownership of SES Americom raised competitive concerns, including whether “a foreign operator could provide services in the United States that a U.S.-owned operator could not provide because it could not obtain authorization to operate in the home market of the foreign operator.” *Id.* at ¶ 16. The Commission concluded that “such concerns . . . have not been presented in this case,” and that “no competitive concerns [were] presented by SES Global’s indirect ownership in the Applicants as providers of DTH service in the United States.” *Id.* at ¶ 17.

¹⁶ Commission Directive 2002/77/EC, 16 September 2002 on competition in the markets for electronic communications networks and services, OJ L249, Article 7(1), page 21.

coordination conditions are met.¹⁷ Accordingly, allowing SES-1 to provide DTH capacity in Mexico is consistent with *DISCO II*.¹⁸

Netherlands Antilles and U.K. Territories in the Caribbean. The Satellite Division has previously found that the ECO-Sat test is satisfied with respect to the provision of DTH services for the Netherlands Antilles, Bermuda, BVI, and Cayman Islands route markets.¹⁹

In sum, U.S.-licensed operators have effective competitive opportunities to provide DTH transmission capacity in Luxembourg, Mexico, the relevant Caribbean islands, and the Netherlands Antilles. Thus, the ECO-Sat test is satisfied for both the home and route markets for DTH service to, from, and within the U.S.

III. SES ASTRA’S REQUEST COMPLIES WITH SECTION 25.114 OF THE COMMISSION’S RULES

SES ASTRA is legally and technically qualified to provide FSS services in the United States. SES ASTRA has successfully operated a fleet of geostationary satellites in the FSS and Broadcasting-Satellite Service for more than two decades. As noted above, SES ASTRA’s affiliate, SES Americom, is a long-standing Commission licensee that operates a fleet of spacecraft serving U.S. customers. In addition, two other SES ASTRA affiliates – New Skies

¹⁷ See Protocol Concerning the Transmission and Reception of Signals from Satellites for the Provision of Direct-to-Home Satellite Television Services in the United States of America and the United Mexican States, November 8, 1996.

¹⁸ See *DISCO II*, 12 FCC Rcd at 24157 (there is no need for an inquiry into effective competitive opportunities where a bilateral agreement is in place with respect to the relevant service). See also *EchoStar Satellite LLC*, 21 FCC Rcd 4077, 4080 (Sat. Div. 2006) at ¶ 8 & n.20 (in light of U.S.-Mexico bilateral agreement, “no further market access analysis is required” under *DISCO II* in order to authorize U.S.-licensed earth stations to communicate with satellite operating under Mexican authority for DTH services).

¹⁹ See *SES Americom, Inc.*, Consent to Assignment, File No. SAT-ASG-20080609-00120 (granted Aug. 6, 2008) (“*AMC-21 Grant*”) at 3.

Satellites B.V. and SES Satellites (Gibraltar) Limited – operate a number of foreign-licensed satellites that have been granted U.S. market access.²⁰

SES ASTRA is submitting with this petition a Schedule S and a narrative technical appendix and interference analysis concerning the proposed operation of SES-1 at 101.0° W.L. These materials demonstrate that SES-1 complies fully with the Commission’s technical rules, including the requirement for operations in a two-degree spacing environment. Operations of SES-1 at the nominal 101° W.L. orbital location will conform to the existing coordination arrangements SES Americom has with adjacent satellite networks at that location.

IV. GRANT OF SES ASTRA’S REQUEST WILL SERVE THE PUBLIC INTEREST

Adding SES-1 at 101.0° W.L. to the Commission’s Permitted List will serve the public interest. In 1997, the Commission adopted policies that promote market access by WTO-member-licensed entities in the expectation that its policies would “advance entry of new competitors and services into the U.S. satellite services market” and “provide U.S. consumers with additional choices among providers, reduce prices, and increase the quality and variety of services.”²¹ Grant of Permitted List status to SES-1 would be consistent with these objectives.

Moreover, allowing SES-1 to serve the U.S. as requested herein will also permit efficient use of spectrum and orbital resources and allow the continuation of C- and Ku-band services (including DTH services) to U.S. customers from this orbital location. The Commission has consistently recognized that ensuring continuity of service is an important public interest

²⁰ The NSS-7, NSS-806, and NSS-9 satellites operated by New Skies Satellites B.V. are on the Commission’s Permitted Space Station List, as are the AMC-18 and AMC-21 satellites operated by SES Satellites (Gibraltar) Ltd. See Permitted Space Station List, available at <http://www.fcc.gov/ib/sd/se/permitted.html>.

²¹ *DISCO II*, 12 FCC Rcd at 24113.

objective.²² Given the technical problems affecting AMC-4, additional capacity is needed at the nominal 101° W.L. orbital location to decrease the load on that spacecraft. Adding SES-1 to the Permitted List will allow that satellite to replace AMC-2 in this important role.

V. CONCLUSION

For the foregoing reasons, SES ASTRA respectfully requests that the Commission issue a declaratory ruling adding the SES-1 satellite at the 101.0° W.L. orbital location to the Commission's Permitted Space Station List.

Respectfully submitted,

SES ASTRA S.A

By: /s/ Miriam Murphy

Miriam Murphy
Senior Vice President, General Counsel
SES ASTRA S.A
Château de Betzdorf
L-6815 Betzdorf
Luxembourg

Of Counsel

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

Dated: December 22, 2009

²² See, e.g., *DIRECTV Enterprises, LLC, Request for Special Temporary Authority to Conduct Telemetry, Tracking and Control During the Relocation of DIRECTV 1 to the 72.5° W.L. Orbital Location*, Order and Authorization, DA 05-1890 (Sat. Div. rel. July 14, 2005) at ¶ 18 (granting STA to relocate spacecraft to a location where it will replace a satellite with failing solar panels “will enable DIRECTV to maintain continuity of DBS service to its customers”); *DIRECTV Enterprises, LLC, Application for Authorization to Operate DIRECTV 5, a Direct Broadcast Satellite, at the 109.8° W.L. Orbital Location*, Order and Authorization, DA 05-2654 (Sat. Div. rel. Oct. 5, 2005) at ¶ 8 (“DIRECTV’s proposal to provide DBS service from this location will serve the public interest, convenience and necessity in that it will ensure continuity of service to DIRECTV subscribers”).

EXHIBIT 1:
LUXEMBOURG AUTHORIZATION



LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère d'État
Commissaire du Gouvernement
auprès de SES Astra

Robert G. Nelsen
Chief, Satellite Division
International Bureau
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. 20554

Luxembourg, 18 December 2009

Re: SES ASTRA S.A.

Dear Mr. Nelsen:

The Luxembourg Ministry of State, Department for Media and Communications, hereby confirms that SES ASTRA S.A. has been authorized to operate a satellite network, LUX-G7-40B, at the nominal 101° W.L. orbital location, using the C-band (3700-4200 MHz / 5925-6425 MHz) and Ku-band (11700-12200 MHz / 14000-14500 MHz) frequencies.

The effective date of this authorization is 18 December 2009.

A copy of the API filing for the LUX-G7-40B satellite network is attached.

Yours sincerely,

Pierre Goerens
Commissioner of the Government



UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
BUREAU DES RADIOCOMMUNICATIONS

INTERNATIONAL TELECOMMUNICATION UNION
RADIOCOMMUNICATION BUREAU

UNIÓN INTERNACIONAL DE TELECOMUNICACIONES
OFICINA DE RADIOCOMUNICACIONES

© I.T.U.

RÉSEAU À SATELLITE SATELLITE NETWORK RED DE SATÉLITE		LUX-G7-40B		SECTION SPÉCIALE N° SPECIAL SECTION No. SECCIÓN ESPECIAL N.º		API/A/5880					
				BR IFIC / DATE BR IFIC / DATE BR IFIC / FECHA		2657 / 17.11.2009					
ADM. RESPONSABLE RESPONSIBLE ADM. ADM. RESPONSABLE		LUX		LONGITUDE NOMINALE NOMINAL LONGITUDE LONGITUD NOMINAL		101 W		NUMÉRO D'IDENTIFICATION IDENTIFICATION NUMBER NÚMERO DE IDENTIFICACIÓN		109540734	
RENSEIGNEMENTS REÇUS PAR LE BUREAU LE / INFORMATION RECEIVED BY THE BUREAU ON / INFORMACIÓN RECIBIDA POR LA OFICINA EL										10.09.2009	

Ces renseignements sont publiés par le Bureau des radiocommunications en application du No. 9.2B. Ils font l'objet de la (les) procédure(s) suivante(s), indiquée(s) ci-dessous par un X dans la case pertinente.

This information is published by the Radiocommunication Bureau in accordance with No. 9.2B. It is subject to the procedure(s) indicated below by an X in the relevant box.

Esta información se publica por la Oficina de Radiocomunicaciones en virtud del No. 9.2B. Está sujeta al (a los) procedimiento(s) siguiente(s), señalado(s) con una X en la casilla apropiada.

X	Les renseignements ont été reçus conformément à l' Article 9, sous-section IA Toute administration estimant que des brouillages inacceptables peuvent être causés à ses réseaux ou à ses systèmes à satellites existants ou en projet devra communiquer ses commentaires à l'administration qui a demandé la publication, <u>avec copie au Bureau des radiocommunications</u> , dans le délai de <u>quatre</u> mois qui suit la date de la présente publication.	The information has been received pursuant to Article 9, Sub-Section IA Any administration which believes that unacceptable interference may be caused to its existing or planned satellite networks or systems shall communicate its comments to the publishing administration, <u>with a copy to the Radiocommunication Bureau</u> , within <u>four</u> months after the date of this publication.	La información ha sido recibida de conformidad con el artículo 9, sub-sección IA Toda administración que estime que pueden causarse interferencias inaceptables a sus redes o sistemas de satélites existentes o previstos comunicará sus comentarios a la administración que haya publicado la información, <u>con copia a la Oficina de Radiocomunicaciones</u> , en un plazo de <u>cuatro</u> meses contados a partir de la fecha de esta publicación.
	DATE LIMITE POUR LA RÉCEPTION DES COMMENTAIRES EXPIRY DATE FOR THE RECEIPT OF COMMENTS FECHA LÍMITE PARA LA RECEPCIÓN DE LOS COMENTARIOS		
X	Les renseignements ont été reçus conformément à l' Article 9, sous-section IB Toute administration estimant que ses réseaux à satellite, ses systèmes à satellites ou ses stations de terre, selon le cas, existants ou en projet, sont affectés, peut envoyer ses observations à l'administration qui a demandé la publication des renseignements, avec copie au Bureau des radiocommunications.	The information has been received pursuant to Article 9, Sub-Section IB Any administration which considers that its existing or planned satellite systems or networks or terrestrial stations, as appropriate, are affected, may send its comments to the administration which has requested publication of the information, with a copy of such comments to the Radiocommunication Bureau.	La información ha sido recibida de conformidad con el artículo 9, sub-sección IB Cualquier administración que considere que sus sistemas o redes de satélites o estaciones terrenales, según el caso, existentes o planificados se verán afectados, podrá comunicar sus comentarios a la administración que haya solicitado la publicación de la información, enviando una copia de dichos comentarios a la Oficina de Radiocomunicaciones.

Information aussi disponible sur le / Information also available on the / Información también disponible en:

Space Network Systems Online Service : <http://www.itu.int/sns/advpub.html>



国际电信联盟
无线电通信局

МЕЖДУНАРОДНЫЙ СОЮЗ ЭЛЕКТРОСВЯЗИ
БЮРО РАДИОСВЯЗИ

الاتحاد الدولي للاتصالات
مكتب الاتصالات الراديوية

© I.T.U.

卫星网络 СПУТНИКОВАЯ СЕТЬ الشبكة الساتلية	LUX-G7-40B	特节编号 СПЕЦИАЛЬНАЯ СЕКЦИЯ № القسم الخاص رقم	API/A/5880
		无线电通信局国际频率信息通报 / 日期 ИФИК БР / ДАТА النشرة الإعلامية الدولية للترددات / رقمها وتاريخها	2657 / 17.11.2009
负责主管部门 ОТВЕТСТВЕННАЯ АДМ. الإدارة المسؤولة	LUX	标称经度 НОМИНАЛЬНАЯ ДОЛГОТА خط الطول الاسمي	101 W
		识别号 ИДЕНТИФИКАЦИОННЫЙ НОМЕР رقم تعرف الهوية	109540734
通信局收到资料的日期 / ДАТА ПОЛУЧЕНИЯ ИНФОРМАЦИИ БЮРО / معلومات استلمها المكتب في			10.09.2009

无线电通信局根据第9.2B款公布该资料。需经过下面方框内用X表示的程序

Эта информация публикуется Бюро радиосвязи в соответствии с п. 9.2B. К ней применяется(ются) процедура(ы), отмеченная(ые) ниже знаком X в соответствующей графе.

إن مكتب الاتصالات الراديوية ينشر هذه المعلومات تطبيقاً للرقم 9.2B. وهي موضوع الإجراء التالي (أو الإجراءات التالية) المشار إليها فيما يلي بالرمز X في المربع المناسب.

根据第9条IA小节收到该资料	Информация была получена в соответствии со Статьей 9, подраздел IA	استلمت المعلومات وفقاً للمادة 9، القسم الفرعي IA
如果任何主管部门认为对其现有的或规划的卫星网络或系统可能产生无法接受的干扰，请在本通报公布之后的四个月内将其意见寄送负责主管部门，副本抄送无线电通信局。	Любая администрация, которая считает, что ее существующим или запланированным спутниковым сетям или системам могут быть причинены неприемлемые помехи, должна направить свои замечания запросившей публикацию администрации с копией Бюро радиосвязи в течение четырех месяцев после даты настоящей публикации.	كل إدارة ترى أن تداعلات غير مقبولة قد تؤثر في شبكتها أو أنظمتها الساتلية، الموجود منها أو المخطط له، عليها أن ترسل تعليقاتها إلى الإدارة التي طلبت النشر مع نسخة منها إلى مكتب الاتصالات الراديوية في مهلة أربعة أشهر تلي تاريخ هذا النشر.
接收意见的截止日期 ПРЕДЕЛЬНАЯ ДАТА ДЛЯ ПОЛУЧЕНИЯ ЗАМЕЧАНИЙ الموعد النهائي لاستلام التعليقات		
X 根据第9条IB小节收到该资料	Информация была получена в соответствии со Статьей 9, подраздел IB	استلمت المعلومات وفقاً للمادة 9، القسم الفرعي IB
如果任何主管部门认为其现有的或规划的卫星系统或网络或地面台站受到影响，可将其意见寄送要求公布资料的主管部门，副本抄送无线电通信局。	Любая администрация, которая считает, что затронуты ее существующие или запланированные спутниковые системы или сети или наземные станции, в зависимости от случая, может направить свои замечания администрации, которая запросила публикацию информации, с копией Бюро радиосвязи.	كل إدارة ترى أن شبكتها أو أنظمتها الساتلية أو محطاتها للأرض الموجود منها أو المخطط له حسب الحالة، قد تأثرت، يمكنها أن ترسل تعليقاتها إلى الإدارة التي طلبت نشر المعلومات مع نسخة منها إلى مكتب الاتصالات الراديوية.

资料也可以通过因特网获得 / Информация также находится на / معلومات متوفرة أيضاً في :

Space Network Systems Online Service : <http://www.itu.int/sns/advpub.html>

On trouvera la description des éléments de données utilisés dans les publications dans le document: - ItemsDescription_F.pdf - http://www.itu.int/ITU-R/space/brific/legend/	The description of the data items used in the publications can be found in the document: - ItemsDescription_E.pdf - http://www.itu.int/ITU-R/space/brific/legend/	La descripción de los datos empleados en las publicaciones figura en el documento: - ItemsDescription_S.pdf - http://www.itu.int/ITU-R/space/brific/legend/
出版物中使用的数据项说明，见文件: - ItemsDescription_C.pdf - http://www.itu.int/ITU-R/space/brific/legend/	Описание элементов данных, используемых в данной публикации, содержится в документе: - ItemsDescription_R.pdf - http://www.itu.int/ITU-R/space/brific/legend/	يمكن الاطلاع على وصف عناصر المعطيات المستعملة في المنشورات في الوثيقة: ItemsDescription_A.pdf http://www.itu.int/ITU-R/space/brific/legend/

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20/BR21 BR IFIC no./part	2657/
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

Résumé / Summary / Resumen / 綜述 / Резюме / خلاصة

Article 9, sous-section IB / Article 9, sub-section IB / Artículo 9, sub-sección IB
 第9条第1B分节 / Статья 9, подраздел IB / المادة 9، القسم الفرعي IB

BR7a Group id.	BR9 Action code	BR47 Frequency band (MHz)	C4a Class of station
109641881		235 - 322	EI
109641882		335.4 - 399.9	EI
109641883		1452 - 1492	EB
109641884		2500 - 2520	EC, EI
109641885		2520 - 2535	EC, EK, ER, EV
109641886		2535 - 2655	EB, EC, EK, EV
109641887		2655 - 2670	EC, ED, EK, EV
109641888		2670 - 2690	EC, ED, EI, EK
109641889		3400 - 4200	EC, EK, ER
109641890		5725 - 5850	EC, ED, EK
109641891		5850 - 6700	EC, ED, EK
109641892		6700 - 6725	EC, ED, EK, ER
109641893		7025 - 7075	EC, ED, EK, ER
109641894		7250 - 7375	EC, EI, EK, ER
109641895		7375 - 7750	EC, EK, ER
109641896		7900 - 8025	EC, ED, EI, EK
109641897		8025 - 8400	EC, EK, ER
109641898		10950 - 11200	EC, EK, ER
109641899		11450 - 11700	EC, EK, ER
109641900		11700 - 12200	EC, EK, ER
109641901		12200 - 12500	EC, EK, ER
109641902		12500 - 12750	EC, EK, ER, EV
109641903		13750 - 14000	EC, ED, EE, EY
109641904		14000 - 14500	EC, ED, EI, EK
109641905		17300 - 17700	EC, EK, ER, EV
109641906		17800 - 18100	EC, EK, ER
109641907		18100 - 18400	EC, ED, EK, ER
109641908		18400 - 19700	EC, EK, ER
109641909		19700 - 20200	EC, EI, EK, ER
109641910		20200 - 21200	EC, EE, EI, EY
109641911		21400 - 22000	EK, ER, EV
109641912		24750 - 25250	EC, ED, EK
109641913		27000 - 27500	EC, ED, EK
109641914		27500 - 29500	EC, ED, EK
109641915		29500 - 30000	EC, ED, EI, EK
109641916		30000 - 31000	EC, ED, EE, EI
109641917		37500 - 39500	EC, EK, ER
109641918		39500 - 40500	EC, EI, EK, ER

A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.		BR1 Date of receipt	10.09.2009	BR20/BR21 BR IFIC no./part	2657/
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

BR7a Group id.	BR9 Action code	BR47 Frequency band (MHz)		C4a Class of station
109641919		40500	- 42500	EC, EK, ER, EV
109641920		42500	- 43500	EC, ED, EK
109641921		47200	- 50200	EC, ED, EK
109641922		50400	- 51400	EC, ED, EK
109641923		22550	- 23550	ES
109641924		24450	- 24750	ES
109641925		32000	- 33000	ES
109641926		54250	- 58200	ES
109641927		59000	- 64000	ES
109641928		65000	- 71000	ES
109641929		116000	- 126000	ES
109641930		17700	- 17800	EC, EK, ER, EV
109641931		43500	- 45500	EI
109641932		1492	- 1525	EI
109641933		1525	- 1559	EI
109641934		1610	- 1660.5	EI
109641935		1675	- 1700	EI
109641936		2010	- 2025	EI
109641937		2160	- 2170	EI
109641938		2483.5	- 2500	EI
109641939		1980	- 2010	EI
109641940		2170	- 2200	EI
109641941		1668	- 1675	EI
109641942		2310	- 2360	EB
109641943		1559	- 1610	EN
109641944		2025	- 2110	EK
109641945		2200	- 2290	ER

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

A1f2 Submitted on behalf

A4a1 Orbital long. 101 W

BR7a/BR7b Group id. 109641881 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
235	MHz	322	MHz

C4a Class of station EI

C4b Nature of service CP

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name VISIBLE EARTH

BR7a/BR7b Group id. 109641882 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
335.4	MHz	399.9	MHz

C4a Class of station EI

C4b Nature of service CP

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name VISIBLE EARTH

BR7a/BR7b Group id. 109641883 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1452	MHz	1492	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2500	MHz	2520	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2520	MHz	2535	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2535	MHz	2655	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station	EB	EC	EK	EV
C4b Nature of service	CP	CP	OT	CP
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641887	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
2655	MHz	2670	MHz

C4a Class of station	EC	ED	EK	EV
C4b Nature of service	CP	OT	OT	CP
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641888	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
2670	MHz	2690	MHz

C4a Class of station	EC	ED	EI	EK
C4b Nature of service	CP	OT	CP	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641889	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
3400	MHz	4200	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641890 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
5725	MHz	5850	MHz

C4a Class of station

EC	ED	EK
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

REGION 1

BR7a/BR7b Group id. 109641891 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
5850	MHz	6700	MHz

C4a Class of station

EC	ED	EK
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641892 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
6700	MHz	6725	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station	EC	ED	EK	ER
C4b Nature of service	CP	OT	OT	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641893	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit	7025	C1b Upper limit	7075
	MHz		MHz

C4a Class of station	EC	ED	EK	ER
C4b Nature of service	CP	OT	OT	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641894	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit	7250	C1b Upper limit	7375
	MHz		MHz

C4a Class of station	EC	EI	EK	ER
C4b Nature of service	CP	CP	OT	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641895	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit	7375	C1b Upper limit	7750
	MHz		MHz

A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.		BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id.	109641896	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section

API/A/5880

A2a Date of bringing into use

18.08.2016

A2b Period of valid.

50

BR60 Regulatory deadline(s)

11.44/11.44.1	10.09.2016
---------------	------------

9.5D

10.09.2011

C1 Frequency Range

C1a Lower limit	C1b Upper limit
7900	8025
MHz	MHz

C4a Class of station

EC	ED	EI	EK
----	----	----	----

C4b Nature of service

CP	OT	CP	OT
----	----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id.	109641897	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section

API/A/5880

A2a Date of bringing into use

18.08.2016

A2b Period of valid.

50

BR60 Regulatory deadline(s)

11.44/11.44.1	10.09.2016
---------------	------------

9.5D

10.09.2011

C1 Frequency Range

C1a Lower limit	C1b Upper limit
8025	8400
MHz	MHz

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id.	109641898	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section

API/A/5880

A2a Date of bringing into use

18.08.2016

A2b Period of valid.

50

BR60 Regulatory deadline(s)

11.44/11.44.1	10.09.2016
---------------	------------

9.5D

10.09.2011

C1 Frequency Range

C1a Lower limit	C1b Upper limit
10.95	11.2
GHz	GHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641899 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
11.45	GHz	11.7	GHz

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641900 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
11.7	GHz	12.2	GHz

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

REGION 2

BR7a/BR7b Group id. 109641901 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
12.2	GHz	12.5	GHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

EC	EK	ER
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

REGION 3

BR7a/BR7b Group id. 109641902 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
12.5	GHZ	12.75	GHZ

C4a Class of station

EC	EK	ER	EV
----	----	----	----

C4b Nature of service

CP	OT	OT	CP
----	----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

REGIONS 1 & 3

BR7a/BR7b Group id. 109641903 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
13.75	GHZ	14	GHZ

C4a Class of station

EC	ED	EE	EY
----	----	----	----

C4b Nature of service

CP	OT	OT	OT
----	----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641904 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
14	GHZ	14.5	GHZ

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station	EC	ED	EI	EK
C4b Nature of service	CP	OT	CP	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641905	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
BR14 Special Section	API/A/5880				
A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50		
BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011	

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
17.3	GHz	17.7	GHz

C4a Class of station	EC	EK	ER	EV
C4b Nature of service	CP	OT	OT	CP
C11a2 Service area				
C11a4 Service area name	REGIONS 1 & 2			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641906	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
BR14 Special Section	API/A/5880				
A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50		
BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011	

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
17.8	GHz	18.1	GHz

C4a Class of station	EC	EK	ER	
C4b Nature of service	CP	OT	OT	
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641907	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
BR14 Special Section	API/A/5880				
A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50		
BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011	

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
18.1	GHz	18.4	GHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station	EC	ED	EK	ER
C4b Nature of service	CP	OT	OT	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641908	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
BR14 Special Section	API/A/5880				
A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50		
BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011	

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
18.4	GHZ	19.7	GHZ

C4a Class of station	EC	EK	ER
C4b Nature of service	CP	OT	OT
C11a2 Service area			
C11a4 Service area name	VISIBLE EARTH		

C11a3 Service area diagram

BR7a/BR7b Group id.	109641909	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
BR14 Special Section	API/A/5880				
A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50		
BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011	

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
19.7	GHZ	20.2	GHZ

C4a Class of station	EC	EI	EK	ER
C4b Nature of service	CP	CP	OT	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641910	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
BR14 Special Section	API/A/5880				
A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50		
BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011	

C1 Frequency Range			
C1a Lower limit	C1b Upper limit		
20.2	GHZ	21.2	GHZ

A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.		BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station	EC	EE	EI	EY
C4b Nature of service	CP	OT	CP	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641911	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
21.4	GHz	22	GHz

C4a Class of station	EK	ER	EV
C4b Nature of service	OT	OT	CP
C11a2 Service area			
C11a4 Service area name	REGIONS 1 & 3		

C11a3 Service area diagram

BR7a/BR7b Group id.	109641912	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
24.75	GHz	25.25	GHz

C4a Class of station	EC	ED	EK
C4b Nature of service	CP	OT	OT
C11a2 Service area			
C11a4 Service area name	REGIONS 2 & 3		

C11a3 Service area diagram

BR7a/BR7b Group id.	109641913	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
27	GHz	27.5	GHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

EC	ED	EK
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

REGIONS 2 & 3

BR7a/BR7b Group id. 109641914 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
27.5	GHz	29.5	GHz

C4a Class of station

EC	ED	EK
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641915 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
29.5	GHz	30	GHz

C4a Class of station

EC	ED	EI	EK
----	----	----	----

C4b Nature of service

CP	OT	CP	OT
----	----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641916 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
30	GHz	31	GHz

A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.		BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station	EC	ED	EE	EI
C4b Nature of service	CP	OT	OT	CP
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641917	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
37.5	GHz	39.5	GHz

C4a Class of station	EC	EK	ER
C4b Nature of service	CP	OT	OT
C11a2 Service area			
C11a4 Service area name	VISIBLE EARTH		

C11a3 Service area diagram

BR7a/BR7b Group id.	109641918	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
39.5	GHz	40.5	GHz

C4a Class of station	EC	EI	EK	ER
C4b Nature of service	CP	CP	OT	OT
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641919	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section	API/A/5880
----------------------	------------

A2a Date of bringing into use	18.08.2016	A2b Period of valid.	50
-------------------------------	------------	----------------------	----

BR60 Regulatory deadline(s)	11.44/11.44.1	10.09.2016	9.5D	10.09.2011
-----------------------------	---------------	------------	------	------------

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
40.5	GHz	42.5	GHz

A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.		BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station	EC	EK	ER	EV
C4b Nature of service	CP	OT	OT	CP
C11a2 Service area				
C11a4 Service area name	VISIBLE EARTH			

C11a3 Service area diagram

BR7a/BR7b Group id.	109641920	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
42.5	GHz	43.5	GHz

C4a Class of station	EC	ED	EK
C4b Nature of service	CP	OT	OT
C11a2 Service area			
C11a4 Service area name	VISIBLE EARTH		

C11a3 Service area diagram

BR7a/BR7b Group id.	109641921	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
47.2	GHz	50.2	GHz

C4a Class of station	EC	ED	EK
C4b Nature of service	CP	OT	OT
C11a2 Service area			
C11a4 Service area name	VISIBLE EARTH		

C11a3 Service area diagram

BR7a/BR7b Group id.	109641922	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
50.4	GHz	51.4	GHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

EC	ED	EK
----	----	----

C4b Nature of service

CP	OT	OT
----	----	----

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id. 109641923 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
22.55	GHz	23.55	GHz

C4a Class of station

ES

C4b Nature of service

OT

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

--

BR7a/BR7b Group id. 109641924 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
24.45	GHz	24.75	GHz

C4a Class of station

ES

C4b Nature of service

OT

C11a2 Service area

--

C11a3 Service area diagram

--

C11a4 Service area name

--

BR7a/BR7b Group id. 109641925 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
32	GHz	33	GHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
54.25	GHz	58.2	GHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
59	GHz	64	GHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
65	GHz	71	GHz

A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.		BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

ES

C4b Nature of service

OT

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

--

BR7a/BR7b Group id.	109641929	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section

API/A/5880

A2a Date of bringing into use

18.08.2016

A2b Period of valid.

50

BR60 Regulatory deadline(s)

11.44/11.44.1 10.09.2016

9.5D

10.09.2011

C1 Frequency Range

C1a Lower limit	C1b Upper limit
116	126

C4a Class of station

ES

C4b Nature of service

OT

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

--

BR7a/BR7b Group id.	109641930	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section

API/A/5880

A2a Date of bringing into use

18.08.2016

A2b Period of valid.

50

BR60 Regulatory deadline(s)

11.44/11.44.1 10.09.2016

9.5D

10.09.2011

C1 Frequency Range

C1a Lower limit	C1b Upper limit
17.7	17.8

C4a Class of station

EC

EK

ER

EV

C4b Nature of service

CP

OT

OT

OT

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

VISIBLE EARTH

BR7a/BR7b Group id.	109641931	BR1 Date of receipt	10.09.2009	C2c RR No. 4.4	
---------------------	-----------	---------------------	------------	----------------	--

BR14 Special Section

API/A/5880

A2a Date of bringing into use

18.08.2016

A2b Period of valid.

50

BR60 Regulatory deadline(s)

11.44/11.44.1 10.09.2016

9.5D

10.09.2011

C1 Frequency Range

C1a Lower limit	C1b Upper limit
43.5	45.5

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1492	MHz	1525	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1525	MHz	1559	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1610	MHz	1660.5	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1675	MHz	1700	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2010	MHz	2025	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2160	MHz	2170	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص										API/A/5880
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657	
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB					

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2483.5	MHz	2500	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1980	MHz	2010	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2170	MHz	2200	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1668	MHz	1675	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2310	MHz	2360	MHz

C4a Class of station

C4b Nature of service

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name

☐ BR7a/BR7b Group id. BR1 Date of receipt C2c RR No. 4.4

BR14 Special Section

A2a Date of bringing into use A2b Period of valid.

BR60 Regulatory deadline(s) 11.44/11.44.1 9.5D

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
1559	MHz	1610	MHz

SECTION SPECIALE / SPECIAL SECTION / SECCIÓN ESPECIAL / 特节 / СПЕЦИАЛЬНАЯ СЕКЦИЯ / القسم الخاص								API/A/5880	
A	A1a Sat. Network	LUX-G7-40B	A1f1 Notifying adm.	LUX	A1f3 Inter. sat. org.	BR1 Date of receipt	10.09.2009	BR20 BR IFIC no.	2657
BR6a/BR6b Id. no.		109540734	BR3a Provision reference		9.1/IB				

C4a Class of station EN EN

C4b Nature of service CP CO

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name VISIBLE EARTH

 BR7a/BR7b Group id. 109641944 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2025	MHz	2110	MHz

C4a Class of station EK

C4b Nature of service OT

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name VISIBLE EARTH

 BR7a/BR7b Group id. 109641945 BR1 Date of receipt 10.09.2009 C2c RR No. 4.4

BR14 Special Section API/A/5880

A2a Date of bringing into use 18.08.2016 A2b Period of valid. 50

BR60 Regulatory deadline(s) 11.44/11.44.1 10.09.2016 9.5D 10.09.2011

C1 Frequency Range			
C1a Lower limit		C1b Upper limit	
2200	MHz	2290	MHz

C4a Class of station ER

C4b Nature of service OT

C11a2 Service area

C11a3 Service area diagram

C11a4 Service area name VISIBLE EARTH

BR22 Administration remarks

BR23 Radiocommunication Bureau comments

TECHNICAL APPENDIX

IN SUPPORT OF SES-1 (101°W.L.)

TECHNICAL APPENDIX

1.0 Overall Description

SES-1 is a hybrid C and Ku-band communications satellite to be operated at 101° W.L. with coverage of the Continental USA, Alaska, Hawaii, Mexico (C-band only), and parts of the Caribbean.

The spacecraft will operate in the following frequency bands:

- Conventional Ku-band frequencies with downlink frequencies from 11.70 to 12.20 GHz and uplink frequencies from 14.0 to 14.5 GHz
- Conventional C-band frequencies with downlink frequencies from 3.70 to 4.20 GHz and uplink frequencies from 5.925 to 6.425 GHz

Dual linear polarization is used in both the C- and Ku-bands.

Tables 1 and 2 show the frequency plan of the satellite. The frequency bands are divided into 24 C-band transponders of 36 MHz bandwidth each, and 24 Ku-band transponders of 36 MHz bandwidth each. Transponders 14, 16, 18, 20, 22, and 24 can be operated in cross-strap mode.¹

2.0 Schedule S

The Schedule S database is attached as an electronic file. The following items supplement the information provided in Schedule S.

1. Transponder frequency plan.

Sections S9 and S10 of Schedule S show the transponder frequency plans. Beams with IDs KRV, KTV, KRH and KTH provide coverage over CONUS, Alaska, Hawaii, and parts of the Caribbean. Beams with IDs CRV, CTV, CRH and CTH provide coverage of CONUS, Mexico, Alaska, Hawaii, and parts of the Caribbean.

Transponders K01 to K24 connect beams KRV and KTH, and KRH and KTV. Transponders C01 to C24 connect beams CRV and CTH, and CRH and CTV. Cross-strapped transponders X01 to X06 connect uplinks KR14, KR16, KR18, KR20, KR22, and KR24, respectively, to downlinks CT14, CT16, CT18, CT20, CT22, and CT24, respectively. Transponders X07 to X12

¹ A cross-strapped transponder has C-band uplink and Ku-band downlink, or Ku-band uplink and C-band downlink.

connect uplinks CR14, CR16, CR18, CR20, CR22, and CR24, respectively, to downlinks KT14, KT16, KT18, KT20, KT22, and KT24, respectively.

Table 1: Ku-band Frequency Plan

Channel	Receive Frequency (MHz)	Polarization	Transmit Frequency (MHz)	Polarization
1	14020	H	11720	V
2	14040	V	11740	H
3	14060	H	11760	V
4	14080	V	11780	H
5	14100	H	11800	V
6	14120	V	11820	H
7	14140	H	11840	V
8	14160	V	11860	H
9	14180	H	11880	V
10	14200	V	11900	H
11	14220	H	11920	V
12	14240	V	11940	H
13	14260	H	11960	V
14	14280	V	11980	H
15	14300	H	12000	V
16	14320	V	12020	H
17	14340	H	12040	V
18	14360	V	12060	H
19	14380	H	12080	V
20	14400	V	12100	H
21	14420	H	12120	V
22	14440	V	12140	H
23	14460	H	12160	V
24	14480	V	12180	H

Table 2: C-band Frequency Plan

Channel	Receive Frequency (MHz)	Polarization	Transmit Frequency (MHz)	Polarization
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

2. TWTA redundancy.

Ku-band

The communications receivers are configured in a 4-for-2 redundancy (as a minimum) with cross-strapping between polarizations and coverage beams such that any two receivers can complete the mission. Twenty-four (24) operational frequencies utilizing 36 MHz bandwidth are provided by thirty-two (32) High Power Amplifiers (HPAs) arranged in two groups of 16-for-12.

C-band

The communications receivers are configured in a 4-for-2 redundancy (as a minimum) with cross-strapping between polarizations and coverage beams such that any two receivers can complete the mission. Twenty-four (24) operational frequencies utilizing 36 MHz bandwidth are provided by thirty-two (32) High Power Amplifiers (HPAs) arranged in two groups of 16-for-12.

3. Saturation Flux Density values.

SFD values can be obtained by using the expression

Ku-band

$$\text{SFD} = -94 - (\text{G/T}) + \text{Transponder Gain Setting, dBW/m}^2$$

C-band

$$\text{SFD} = -96 - (\text{G/T}) + \text{Transponder Gain Setting, dBW/m}^2$$

4. Transponder frequency response.

The frequency response and total group delay, specified over the transponder bandwidth, are provided in Tables 3 to 6 below.

Table 3: Ku-band Transponder Frequency Response

	Frequency Offset (MHz)	dB p-p
36 MHz channel	±14	1.2
	±16	1.5
	±18	3.6

Table 4: C-band Transponder Frequency Response

	Frequency Offset (MHz)	dB p-p
36 MHz channel	±14	1.0
	±16	1.3
	±18	2.4

Table 5: Ku-band Transponder Total Group Delay

	Frequency Offset (MHz)	Relative Group Delay (ns p-p)
36 MHz channel	0	6.0
	±8	9.0
	±12	16.0
	±16	45.0
	±18	85.0

Table 6: C-band Transponder Total Group Delay

	Frequency Offset (MHz)	Relative Group Delay (ns p-p)
36 MHz channel	0	4.0
	±8	8.5
	±12	16.0
	±16	50.0
	±18	84.0

5. Telemetry and Telecommand (TT&C) frequencies and beams.

Table 7 shows the TT&C carrier center frequencies and bandwidths. The TT&C carriers use communication antennas during normal operation.

Table 7: TT&C Carrier Frequencies²

	Frequency, MHz	Nominal polarization
Command carriers (bandwidth: 800 KHz, capture range)		
C-band	6423.5	H
Ku-band	14499.0	V
Beacons/Telemetry (bandwidth: 400 KHz)		
C-band pair	3700.5	H
	4199.5	V
Ku-band pair	11701.0	V
	12199.0	H

5.1 Command carrier characteristics and link budgets

1. Bandwidth (2-sided): 800 KHz

² SES will advise the Commission of any changes to these frequencies after coordination has been completed.

2. Capture range (2-sided): 2.0 MHz
3. Transmit Earth Station sidelobe envelope: $29 - 25 \log \theta$, dB
4. Uplink power flux at the satellite:
 -92 dBW/m^2 to -60 dBW/m^2

Tables 8 and 9 show the command carrier link budgets in the Ku- and C-bands, respectively.

Table 8: Ku-band Command Carrier Link Budget

Tx ES dia (typical), m	8.4
Tx ES gain, dBi	59.5
Tx ES antenna input power, dBW	10
Tx ES EIRP, dBW	69.5
Link loss, dB	207.5
Satellite G/T, dB/K	-7
Command carrier bandwidth, MHz	0.8
Tx ES antenna input power density, dBW/Hz	-49.03
Carrier-to-Noise Ratio, dB	24.57
Required CNR, dB	10
Margin	14.57

Table 9: C-band Command Carrier Link Budget

Tx ES dia (typical), m	13
Tx ES gain, dBi	56
Tx ES antenna input power, dBW	10
Tx ES EIRP, dBW	66
Link loss, dB	200.1
Satellite G/T, dB/K	-5
Command carrier bandwidth, MHz	0.8
Tx ES antenna input power density, dBW/Hz	-49.03
Carrier-to-Noise Ratio, dB	30.47
Required CNR, dB	10
Margin	20.47

5.2 Telemetry/Beacon carrier link budgets

Tables 10 and 11 show telemetry link budgets, with an EIRP minimum of 10 dBW in the coverage area.

Table 10: Ku-band Telemetry Link Budget

EIRP	dBW	17.0
Carrier bandwidth	MHz	0.5
EIRP density	dBW/4KHz	-3.99
Rx ES antenna gain	dB	55.0
Rx ES G/T	dB/K	33.2
Rain fade	dB	8.0
CNR	dB	11.1
CNR (required)	dB	9.0
Margin	dB	2.1

Table 11: C-band Telemetry Link Budget

EIRP	dBW	12.0
Carrier bandwidth	MHz	0.5
EIRP density	dBW/4KHz	-8.99
Rx ES antenna gain	dB	43.0
Rx ES G/T	dB/K	23.0
Rain fade	dB	1.0
CNR	dB	11.5
CNR (required)	dB	9.0
Margin	dB	2.5

3.0 Satellite Antenna Gain Contours

Annex 1 shows the antenna gain contours for 8 different cases: transmit and receive beams, H- and V-polarizations for Ku- and C-bands. Table 12 shows the correspondence between peak gains of the antennas and maximum EIRP or G/T values.

Table 12: Maximum Co-pol Gain, EIRP and G/T Values

		Ku-band		C-band	
		H-pol	V-pol	H-pol	V-pol
Transmit beam	Gain (max.), dBi	35.40	34.40	31.2	31.1
	EIRP (max.), dBW	53.58	52.29	41.68	41.59
Receive beam	Gain (max.), dBi	33.90	33.60	32.20	32.50
	G/T (max), dB/K	7.0	6.8	4.9	4.79

These files with co-pol data are also provided as gxt files in Schedule S:

1. CRV.gxt (V-pol, C-band receive beam)
2. CTV.gxt (V-pol, C-band transmit beam)
3. KRH.gxt (H-pol, Ku-band receive beam)
4. KTH.gxt (H-pol, Ku-band transmit beam)
5. CRH.gxt (H-pol, C-band receive beam)
6. CTH.gxt (H-pol, C-band transmit beam)
7. KRV.gxt (V-pol, Ku-band receive beam)
8. KTV.gxt (V-pol, Ku-band transmit beam)

4.0 Emission Designators and Link Budgets

The services provided by SES-1 will be wide ranging, including digital TV and digital transmission services ranging from 56 KBPS to high-speed. Sample link budgets for these services follow. Table 13 provides the characteristics of the earth stations used for this analysis and estimated link margins for Ku-band carriers. Table 14 shows similar results for C-band carriers.

Tables 15 and 16 show analog TV/FM (emission designator 36M0F3F) link budgets for Ku-band and C-band carriers, respectively.

Table 13: Ku-band Link Budgets for 7 Typical Links

Parameter	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	56Kbps QPSK $\frac{3}{4}$ RS	1.544 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 50 MBPS 8PSK 2/3 RS
Carrier designation	36M0G7W	27M0G7W	6M95G1W	5M00G1W	100KG1W	1M60G1W	36M0G7W
Throughput rate, Mbps	40	32	8	6	0.0562	1.5440	50
Symbol rate, MHz	28.8	22.9	5.7	4.2	0.0407	1.1	27.1
Uplinks:							
Transmit Power (dBW)	20	20	8.9	8.9	-2	8	20
Transmit Loss (dB)	-1	-1	-1	-1	-1	-1	-1
Antenna diameter	6.1	6.1	3.7	3.7	1.8	1.8	6.1
Antenna Gain (dBi)	57.2	57.2	52.9	52.9	46.6	46.6	57.2
Ground Station EIRP (dBW)	76.2	76.2	60.8	60.8	43.6	53.6	76.2
Uplink Rain Loss (dB)	-2	-2	-2	-2	-2	-2	-2
Free Space Loss (dB)	-207.5	-207.5	-207.5	-207.5	-207.5	-207.5	-207.5
Satellite G/T (dB/K)	3	3	3	3	3	3	3
Data Rate (dB-Hz)	76	75	69	67.6	47.5	61.9	76
Boltzmann's Constant (dBW/K-Hz)	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6
Eb/No (dB)	22.3	23.3	13.9	15.3	18.2	13.8	21.3
Eb/Io (dB)	18	18	16	16	16	16	18
Total Eb/(No + Io) (dB) For 10 ⁻⁷	16.6	16.9	11.8	12.6	14.0	11.8	16.3

Table 13 (cont'd): Ku-band Link Budgets for 7 Typical Links

Parameter	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	56Kbps QPSK $\frac{3}{4}$ RS	1.544 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 50 MBPS 8PSK 2/3 RS
Carrier designation	36M0G7W	27M0G7W	6M95G1W	5M00G1W	100KG1W	1M60G1W	36M0G7W
Downlinks:							
Satellite Carrier EIRP (dBW)	49.4	49.4	35.7	34.3	18.5	28.5	49.4
Interference bandwidth (MHz)	36	27	6.95	5	0.1	1.6	36
Satellite EIRP density (dBW/4KHz)	9.84	11.09	3.28	3.31	4.50	2.46	9.84
Downlink Rain Loss (dB)	-3	-3	-3	-3	-3	-3	-3
Free Space Loss (dB)	-206.3	-206.3	-206.3	-206.3	-206.3	-206.3	-206.3
Ground station antenna dia, m	0.9	0.9	2.4	2.4	1.2	2.4	2.4
Ground Station G/T (dB/K)	17.1	17.1	25.6	25.6	19.6	25.6	25.6
Eb/No (dB)	9.8	10.8	11.6	11.6	9.9	11.5	17.3
C/IM			18	18	18	18	
Eb/Imo (dB)			16.6	16.6	16.6	16.6	
C/I	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Eb/Io(ASI)	13.6	13.6	13.6	13.6	13.6	13.6	12.3
Eb/Io (dB)	13.6	13.6	11.8	11.8	11.8	11.8	12.3
Eb/(No + Io) (dB)	8.3	9.0	8.7	8.7	7.7	8.7	11.1
Total Up/Down Eb/(No+Io)(dB)	7.7	8.3	7.0	7.2	6.8	6.9	10.0
Required	5.4	5.4	5.4	5.4	5.4	5.4	7.2
Margin	2.3	2.9	1.6	1.8	1.4	1.5	2.8

Table 14: C-band Link Budgets for 7 Typical Links

Parameter	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	56Kbps QPSK $\frac{3}{4}$ RS	1.544 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 50 MBPS 8PSK 2/3 RS
Carrier designation	36M0G7W	27M0G7W	6M95G1W	5M00G1W	100KG1W	1M60G1W	36M0G7W
Throughput rate, Mbps	40	32	8	8	0.0562	1.5440	50
Symbol rate, MHz	28.8	22.9	5.7	5.7	0.0407	1.1	27.2
Uplinks:							
Transmit Power (dBW)	25.1	20	9.6	12	-3.4	11.8	25.1
Transmit Loss (dB)	-0.5	-0.5	-0.5	-1	-0.5	-0.5	-0.5
Antenna diameter	9	9	9	9	4.5	4.5	9
Antenna Gain (dBi)	53.2	53.2	53.2	53.2	47.2	47.2	53.2
Ground Station EIRP (dBW)	77.8	72.7	62.3	64.2	43.3	58.5	77.8
Uplink Rain Loss (dB)	-1	-1	-1	-1	-1	-1	-1
Free Space Loss (dB)	-200.1	-200.1	-200.1	-200.1	-200.1	-200.1	-200.1
Satellite G/T (dB/K)	-2	-2	-2	-2	-2	-2	-2
Data Rate (dB-Hz)	76	75	69	69	47.5	61.9	77
Boltzmann's Constant (dBW/K-Hz)	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6	-228.6
Eb/No (dB)	27.3	23.2	18.8	20.7	21.3	22.1	26.3
Eb/Io (dB)	18	18	18	16	16	16	16.35
Total Eb/(No + Io) (dB) For 10 ⁻⁷	17.5	16.9	15.4	14.7	14.9	15.0	15.9

Table 14 (cont'd): C-band Link Budgets for 7 Typical Links

Parameter	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 40 MBPS QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	Digital TV SCPC QPSK $\frac{3}{4}$ RS	56Kbps QPSK $\frac{3}{4}$ RS	1.544 MBPS QPSK $\frac{3}{4}$ RS	Digital TV MCPC 50 MBPS 8PSK 2/3 RS
Carrier designation	36M0G7W	27M0G7W	6M95G1W	5M00G1W	100KG1W	1M60G1W	36M0G7W
Downlinks:							
Satellite Carrier EIRP (dBW)	37	37	25.8	25.8	6.8	22	37
Interference bandwidth (MHz)	36	27	6.95	5	0.1	1.6	36
Satellite EIRP density (dBW/4KHz)	-2.56	-1.31	-6.62	-5.19	-7.20	-4.04	-2.56
Downlink Rain Loss (dB)	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5	-0.5
Free Space Loss (dB)	-196.3	-196.3	-196.3	-196.3	-196.3	-196.3	-196.3
Ground station antenna dia, m	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Ground Station G/T (dB/K)	21.8	21.8	21.8	21.8	21.8	21.8	21.8
Eb/No (dB)	14.6	15.6	10.4	10.4	12.9	13.7	13.6
C/IM			18	18	18	18	
Eb/Imo (dB)			16.6	16.6	16.6	16.6	
C/I(ASI)	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Eb/Io(ASI)	14.6	14.6	14.6	14.6	14.6	14.6	13.3
Eb/Io (dB)	14.6	14.6	12.5	12.5	12.5	12.5	13.3
Eb/(No + Io) (dB)	11.6	12.1	8.3	8.3	9.7	10.0	10.5
Total Up/Down Eb/(No+Io)(dB)	10.6	10.8	7.5	7.4	8.5	8.9	9.4
Required	5.4	5.4	5.4	5.4	5.4	5.4	7.2
Margin	5.2	5.4	2.1	2.0	3.1	3.5	2.2

Table 15: Ku-band Link Budgets for TV/FM

Parameter	Typical TV/FM link
Carrier designation	36M0F3F
Uplinks:	
Transmit Power (dBW)	22
Transmit Loss (dB)	-1
Antenna diameter	6.1
Antenna Gain (dBi)	57.2
Ground Station EIRP (dBW)	78.2
Uplink Rain Loss (dB)	-2
Free Space Loss (dB)	-207.5
Satellite G/T (dB/K)	3
Bandwidth (dB-Hz)	75.6
Boltzmann's Constant (dBW/K-Hz)	-228.6
C/N, uplink (dB)	24.7
Downlinks:	
Satellite Carrier EIRP (dBW)	49.4
Downlink Rain Loss (dB)	-3
Free Space Loss (dB)	-206.3
Ground station antenna dia, m	1.2
Ground Station G/T (dB/K)	19.6
C/N, DL (dB)	12.7
C/I ASI (dB)	18.0
C/Ntot, dB	11.4
Required (dB)	11
Margin (dB)	0.4

Table 16: C-band Link Budgets for TV/FM

Parameter	Typical TV/FM link
Carrier designation	36M0F3F
Uplinks:	
Transmit Power (dBW)	25
Transmit Loss (dB)	-0.5
Antenna diameter	9
Antenna Gain (dBi)	53.2
Ground Station EIRP (dBW)	77.7
Uplink Rain Loss (dB)	-1
Free Space Loss (dB)	-200.1
Satellite G/T (dB/K)	-3
Bandwidth (dB-Hz)	75.6
Boltzmann's Constant (dBW/K-Hz)	-228.6
C/N, uplink (dB)	26.6
Downlinks:	
Satellite Carrier EIRP (dBW)	37
Downlink Rain Loss (dB)	-0.5
Free Space Loss (dB)	-196.3
Ground station antenna dia, m	3.8
Ground Station G/T (dB/K)	21.8
C/N, DL (dB)	15.1
C/I ASI (dB)	16.0
C/Ntot, dB	12.3
Required(dB)	11
Margin(dB)	1.3

5.0 Power Flux Density Limits in C-band

Section 25.208 of the Commission's Rules specifies the maximum allowed PFD in C-band.

Table 17 shows the PFD and margin computations. The margins are all positive.

Table 17: C-band PFD and Margin Values

Elevation angle, deg.	5.00	10.00	15.00	20.00	25.00	Max. EIRP
Max. EIRP*, dBW	41.70	41.70	41.70	41.70	41.70	41.70
EIRP at elevation angle, dBW	34.20	34.60	35.30	36.20	37.40	41.80
Minimum spreading loss, dB/m2	-163.3	-163.1	-163.1	-162.9	-162.8	-162.1
25.208 PFD limit	-152.0	-149.5	-147.0	-144.5	-142.0	-142.00
Digital Carriers						
Carrier bandwidth, MHz	36.00	36.00	36.00	36.00	36.00	36.00
PFD, dBW/m2/4KHz	-168.6	-168.1	-167.3	-166.3	-165.0	-159.9
Margin, dB, relative to 25.208	16.64	18.62	20.32	21.80	23.00	17.86
Analog TV/FM(2 MHz spreading)						
Carrier bandwidth, MHz	2.00	2.00	2.00	2.00	2.00	2.00
PFD, dBW/m2/4KHz	-156.2	-155.6	-154.8	-153.7	-152.5	-147.3
Margin, dB, relative to 25.208	4.08	6.06	7.77	9.25	10.45	5.31

* The maximum EIRP values shown are in H-pol. The maximum EIRP values in V-pol are 0.1 dB lower.

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 Interference Analysis

Annex 2 shows the results of an interference analysis for operations in a 2-degree spacing environment. Using C/I metrics, the analysis shows that the interference can be restricted to no more than 6% of the noise plus interference at threshold.³

8.0 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 has assessed and limited the amount of debris released in a planned manner during normal operations of SES-1. During the satellite ascent, after separation from the launcher, no debris would be generated. As with all recent SES satellite launches, all

³ The interference analysis is done assuming digital wanted and interfering carriers. Analog carriers will be coordinated on a case-by-case basis, and are not addressed here.

deployments would be conducted using pyrotechnic devices designed to retain all physical debris. No debris is generated during normal on-station operations, and the spacecraft will be in a stable configuration. On-station operations require stationkeeping within the +/- 0.05 degree N-S and E-W control box, thereby ensuring adequate collision avoidance distance from other satellites in geosynchronous orbit. This application seeks authority to co-locate SES-1 with AMC-4 using the proven Inclination-Eccentricity (I-E) separation method. This strategy is presently in use by SES to ensure proper operation and safety of multiple satellites within one orbital box.

SES 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 design of SES's recent spacecraft locates all sources of stored energy within the body of the structure, which provides protection from small orbital debris. SES requires that spacecraft manufacturers assess the probability of micrometeorite damage that can cause any loss of functionality. This probability is then 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 SES's required probability of success of the mission. SES has taken steps 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 has assessed and limited the probability of accidental explosions during and after completion of mission operations. As part of the Safety Data Package submission for SES spacecraft, 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 SES-1 spacecraft is such that the risk of explosion is minimized both during and after mission operations. In designing and building the spacecraft, the manufacturer takes steps to ensure that debris generation will not result from the conversion of energy sources on board the satellite into energy that fragments the satellite. 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, will be 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, excess propellant will be vented, pressure vessels will be relieved, and the batteries will be discharged.

§ 25.114(d)(14)(iii): SES 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 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 SES-1 at the 101° W.L. orbital location, where it will replace SES Americom's AMC-2 spacecraft. AMC-2 was relocated to the nominal 101° W.L. orbital location in 2008 in order to supplement the capacity provided by SES Americom's AMC-4 satellite, which has suffered solar array failures. In order to facilitate continued joint stationkeeping at the nominal 101° W.L. orbital location, SES requests assignment of SES-1 to the 101.0° W.L. location that will be vacated by AMC-2. SES seeks authority to operate SES-1 in formation with AMC-4 within a +/- 0.05 degree box centered on 101.0° W.L. SES is not aware of any other FCC- or non-FCC licensed spacecraft that are

operational or planned to be deployed at 101° W.L. or to nearby orbital locations such that there would be an overlap with the requested stationkeeping volume of SES-1.

SES uses the SOCRATES system offered by the Center for Space Standards and Innovation to monitor the risk of close approach of its satellites with other 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.

During any relocation, 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 SOCRATES system 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. The fuel budget for elevating the satellite to a disposal orbit is included in the satellite design. SES plans to maneuver SES-1 to a disposal orbit with a minimum perigee of 259 km above the normal operational altitude. The proposed disposal orbit altitude complies with the altitude resulting from application of the IADC formula based on the following calculation:

Area of the satellite (average aspect area): 25.4 m^2

Mass of the spacecraft: 1362.7 kg

C_R (solar radiation pressure coefficient): 1.3

Therefore the Minimum Disposal Orbit Perigee Altitude, as calculated under the IADC formula is:

$36,021 \text{ km} + (1000 \times C_R \times A/m) = 36045 \text{ km}$, or 259 km above the GSO arc (35,786 km)

SES intends to reserve 29.4 kg of fuel in order to account for post-mission disposal of SES-1.

SES has assessed fuel-gauging uncertainty and has provided an adequate margin of fuel reserve to address the assessed uncertainty.

ANNEX 1

COVERAGE MAPS

Fig 1. C-band, Receive beam, H-pol (CRH)
G/T max. 4.9 dB/K, Antenna gain max. 32.2 dBi

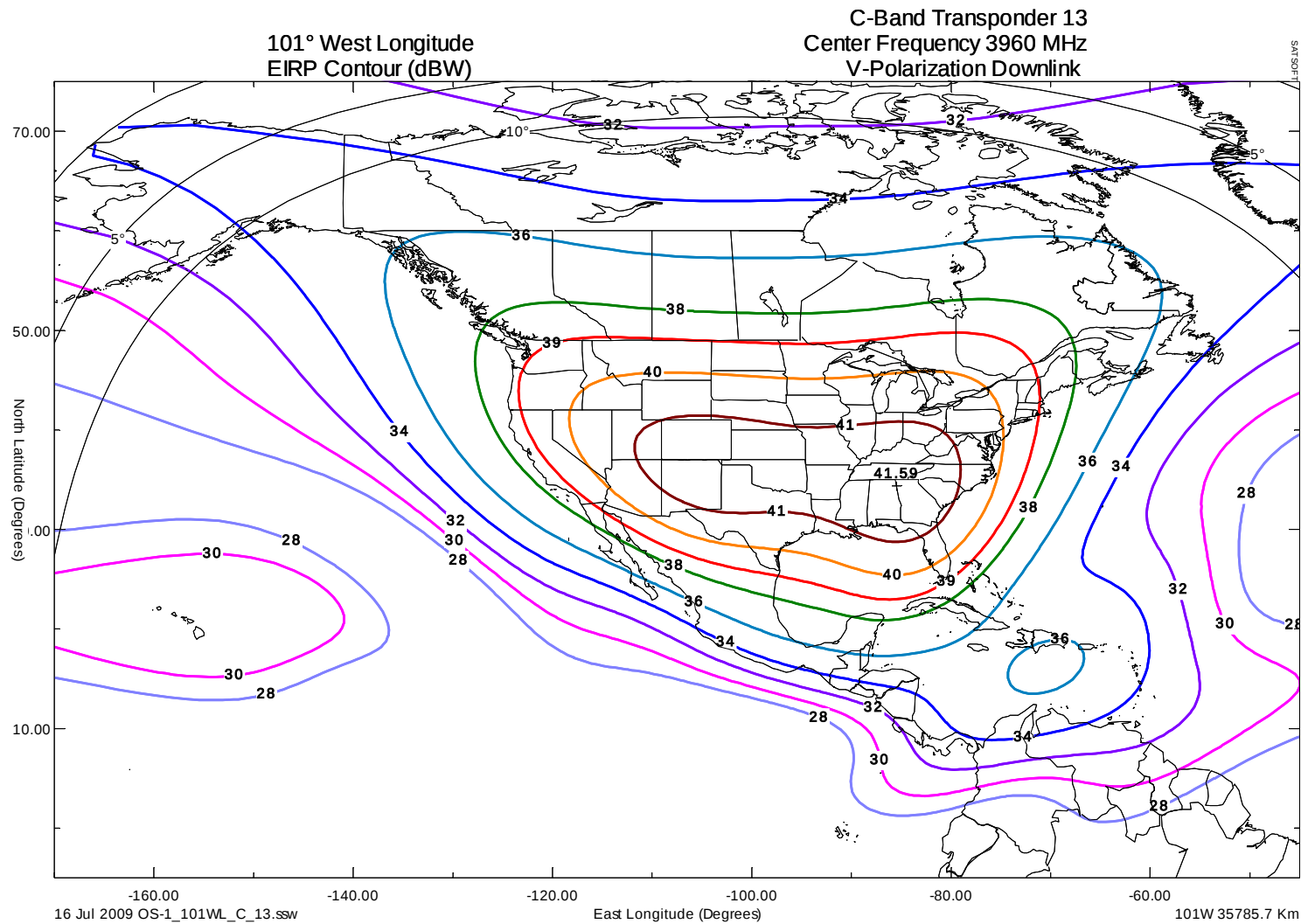


Fig 2. C-band, Receive beam, V-pol (CRV)
G/T max. 4.8 dB/K, Antenna gain max. 32.5 dBi

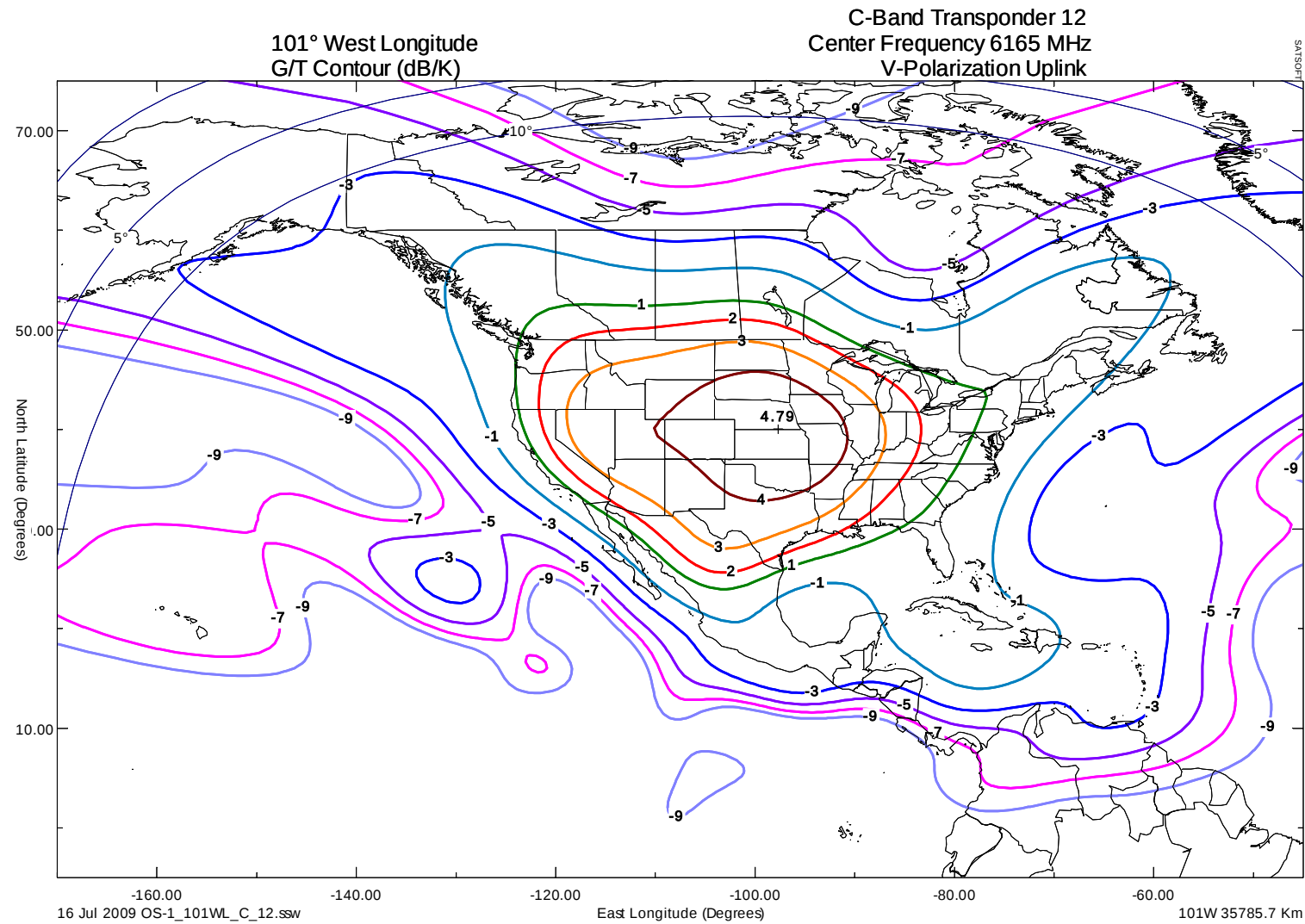


Fig 3. C-band, Transmit beam, H-pol (CTH)
 EIRP max. 41.7 dBW, Antenna gain max. 31.2 dBi

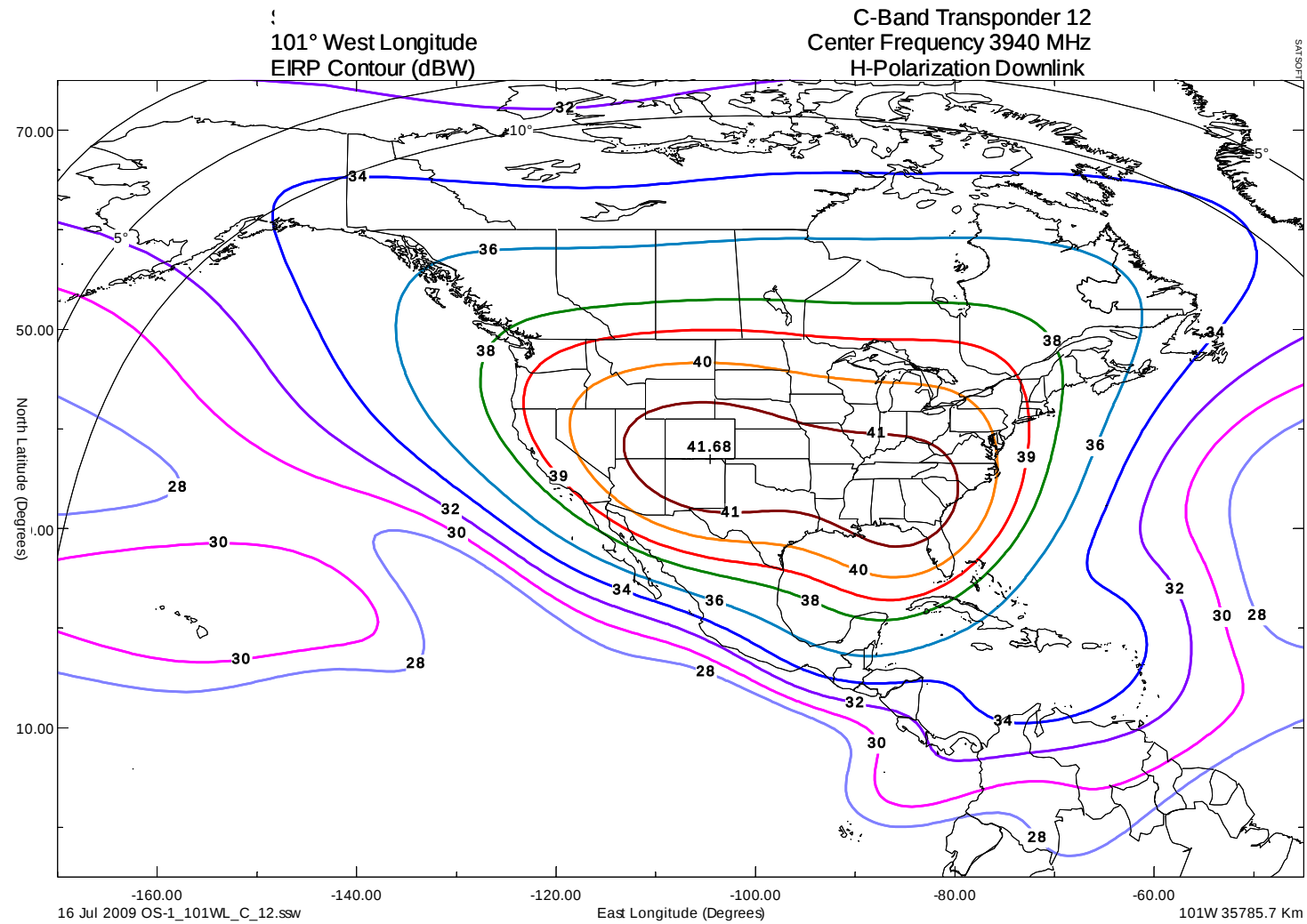


Fig. 4. C-band, Transmit beam, V-pol (CTV)
 EIRP max. 41.6 dBW, Antenna gain max. 31.1 dBi

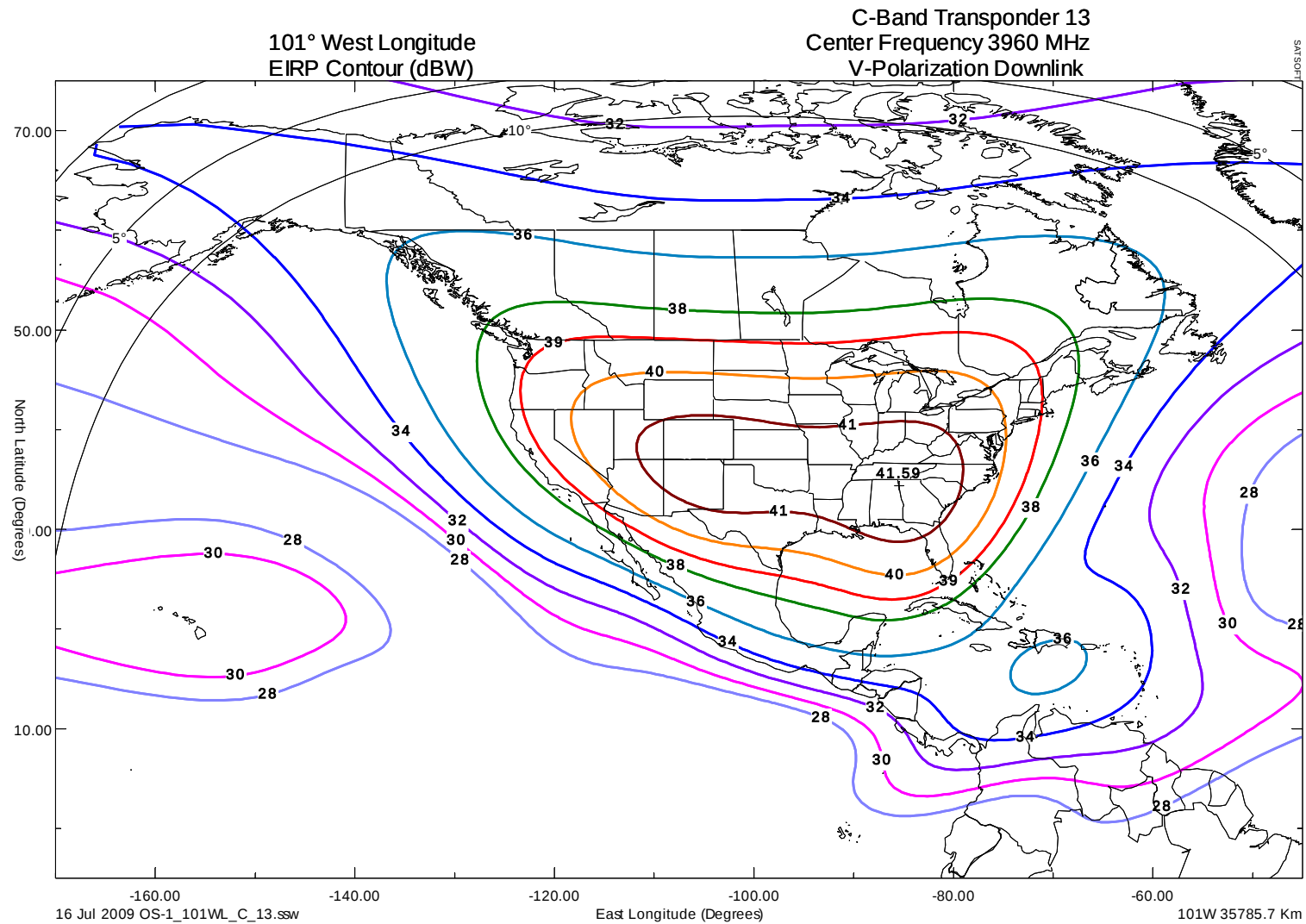


Fig. 5. Ku-band, Receive beam, H-pol (KRH)
 G/T max.7.0 dB/K, Antenna Gain max.33.9 dBi

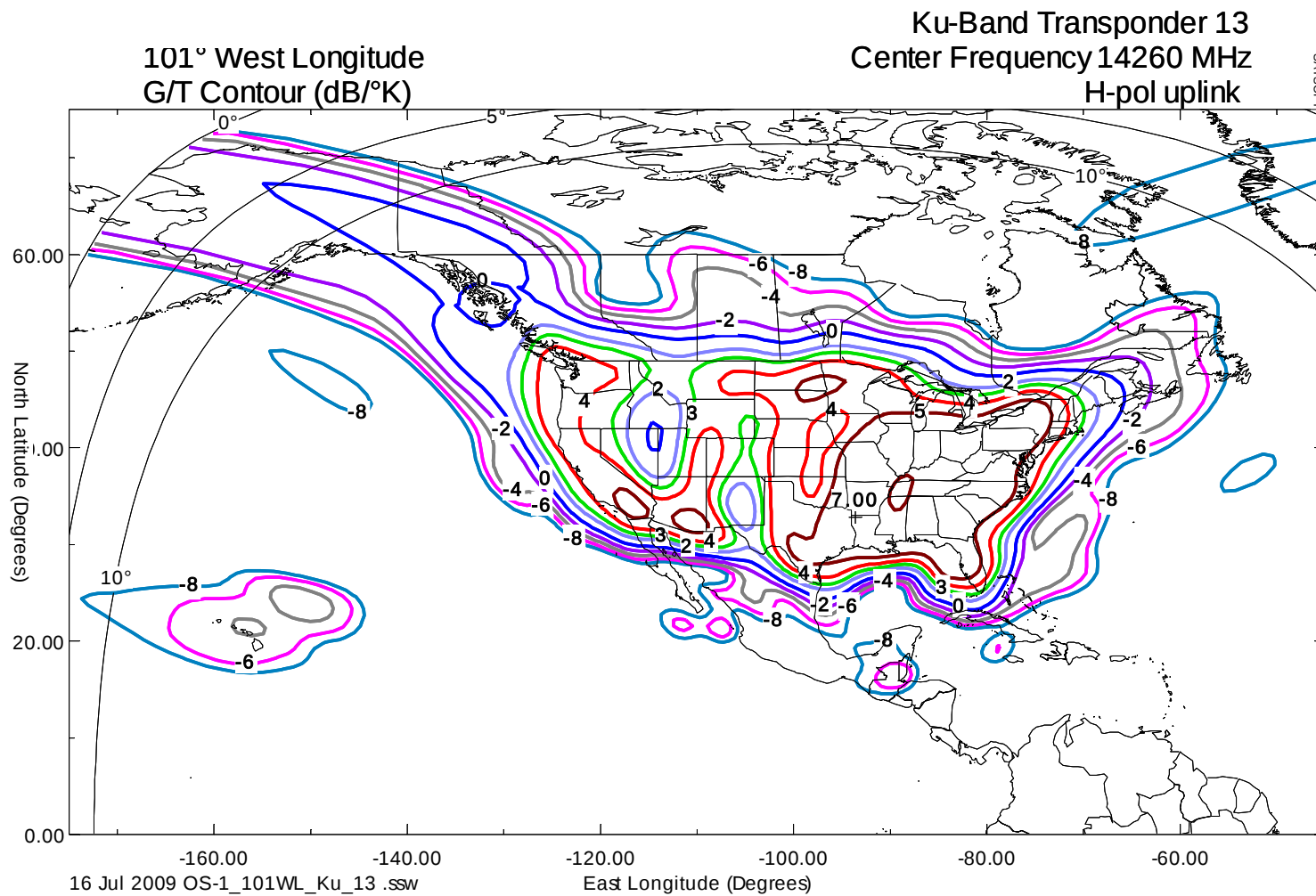


Fig. 6. Ku-band, Receive beam, V-pol (KRV)
G/T max 6.8 dB/K, Antenna Gain max. 33.6 dBi

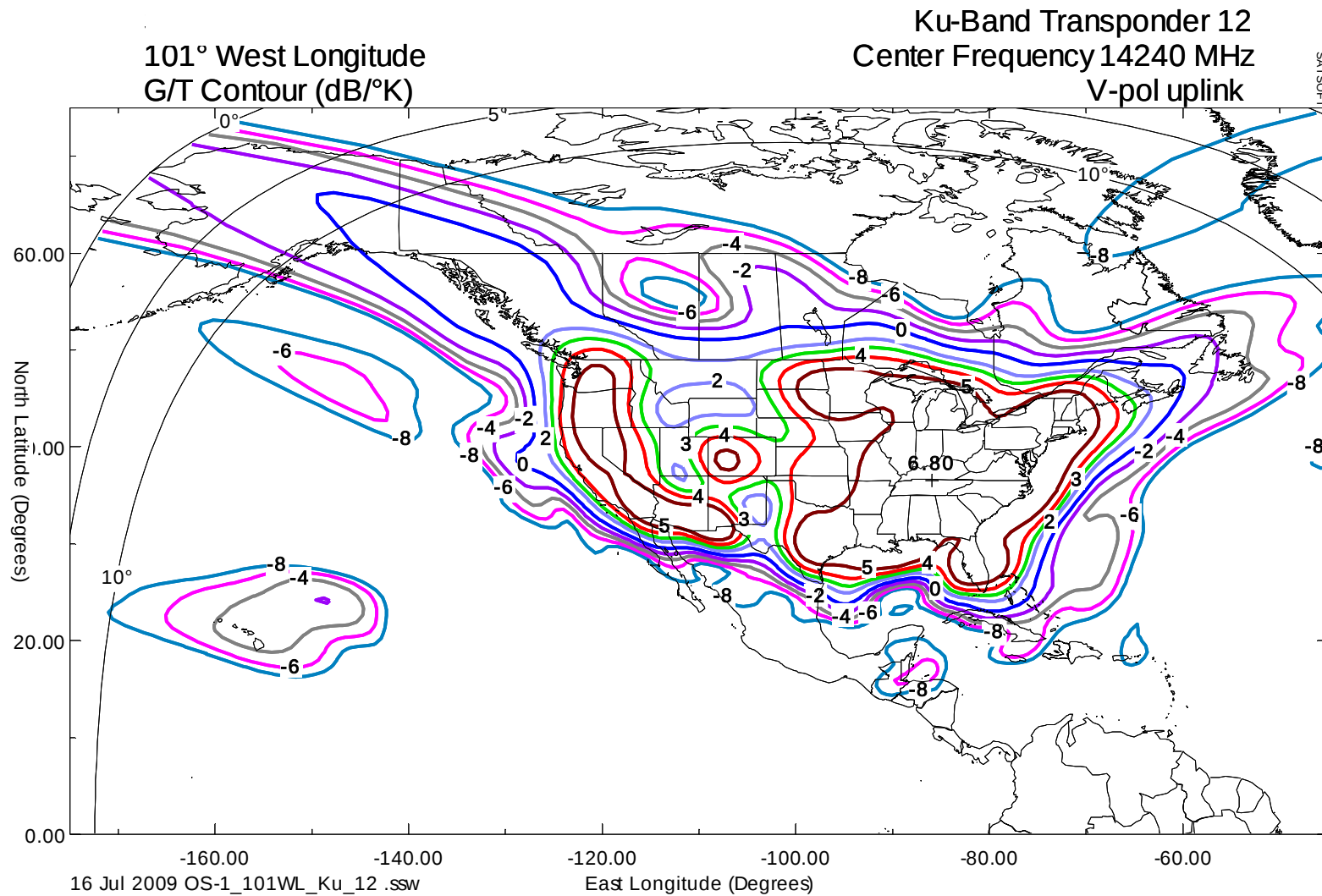


Fig. 7. Ku-band, Transmit beam, H-pol (KTH)
 EIRP max. 53.6 dBW, Antenna Gain max. 35.4 dBi

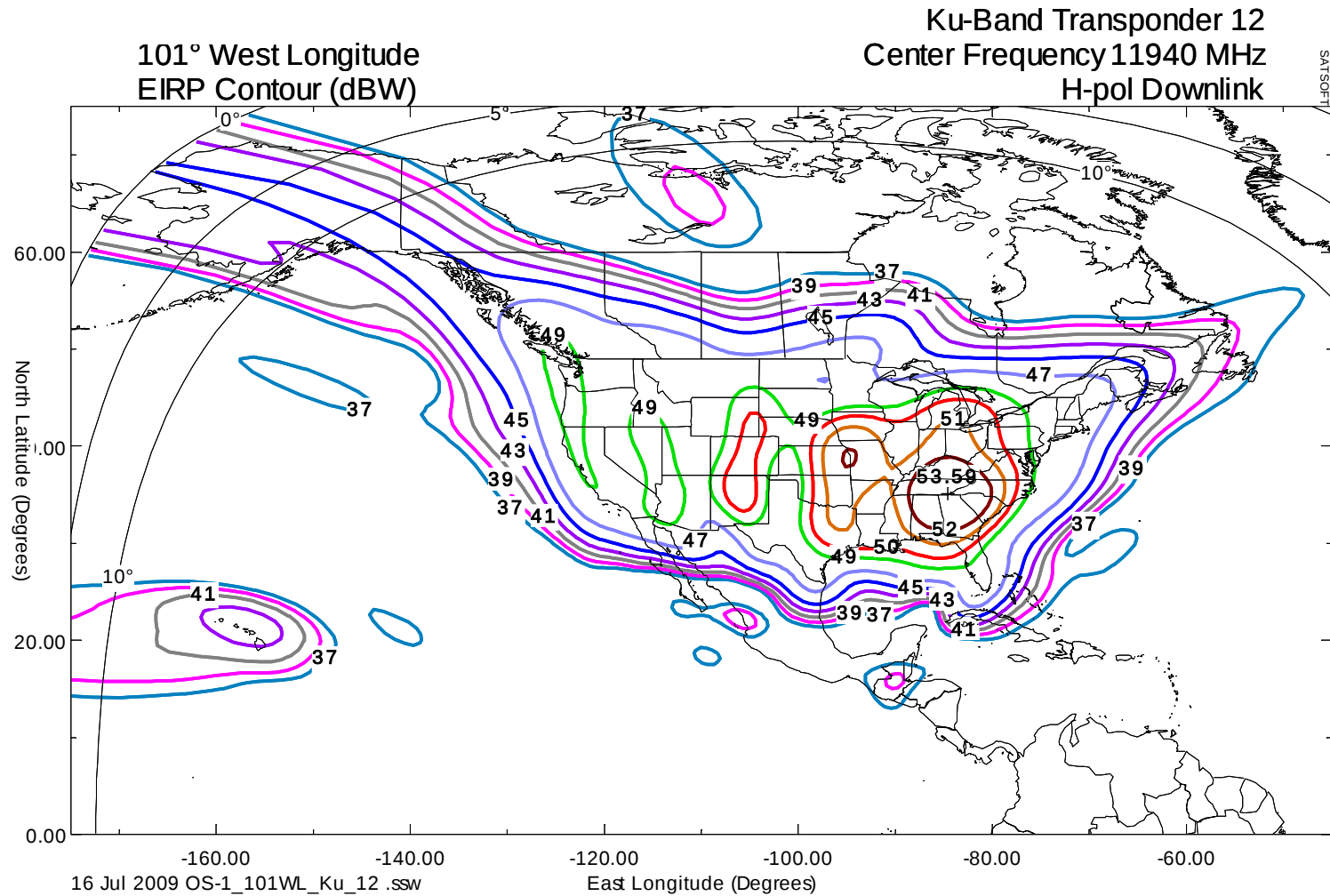
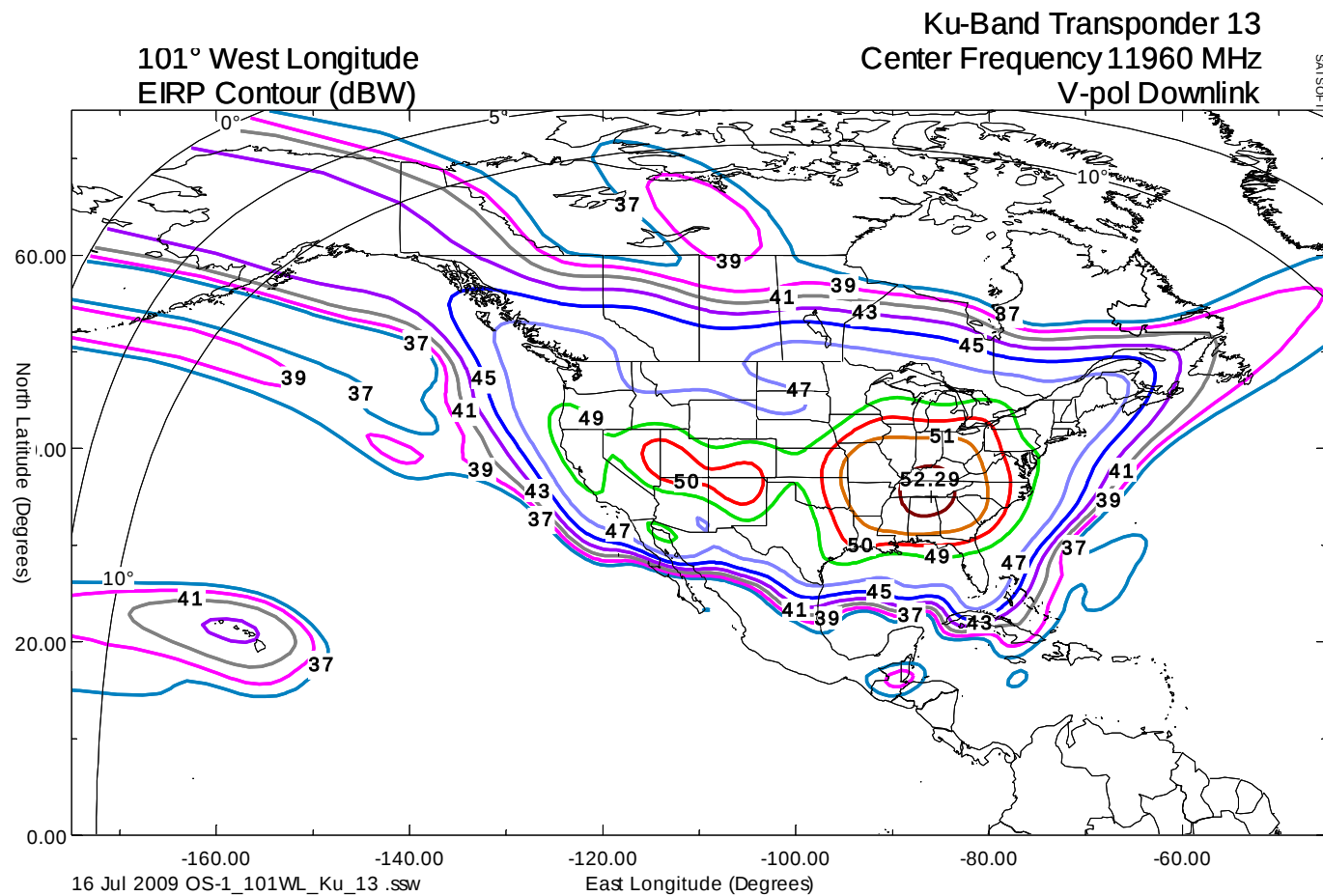


Fig. 8. Ku-band, Transmit beam, V-pol (KTV)
 EIRP max. 52.3 dBW, Antenna Gain max. 34.4 dBi



ANNEX 2

INTERFERENCE ANALYSIS

IN SUPPORT OF SES-1

Two-degree Spacing Analysis

The operational Ku-band satellites adjacent to the 101° W.L. position are Intelsat's Galaxy 16 at 99° W.L. and SES Americom's AMC-1 at 103° W.L. SES-1 will take the place of SES Americom's AMC-2 spacecraft, which is currently operating at the nominal 101° W.L. position and being flown in formation with SES Americom's AMC-4 spacecraft. Operations of SES-1 at this location will conform to the existing coordination arrangements SES Americom has with adjacent satellite networks. SES will advise Intelsat of its intention to deploy SES-1 to take the place of AMC-2 and will exchange technical data with Intelsat. SES Americom has successfully coordinated AMC-2 and AMC-4 at 101° W.L. with Intelsat's adjacent satellite. It is therefore expected that any necessary additional coordination with Intelsat will be concluded without major problems.

Satellite transponders of SES-1 will be operated at power no higher than that allowed by the FCC, or generally coordinated with adjacent satellite operators.

The following analysis will demonstrate that the SES-1 network is compatible with a co-coverage, co-frequency satellite, spaced two degrees away. This analysis has been performed for digital signals in both networks. Analog TV/FM signals are coordinated on a case-by-case basis with nearby spacecraft, and are therefore not addressed in this analysis. 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° orbit spacing.

1 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.

1.1 Ku-band uplink C/I estimates

The topocentric angle for a geocentric separation of 2° is approximately 2.2° . The sidelobe envelope at 2.2° 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 1 lists the boresight gain, the off-axis gain and the corresponding C/I that would result in this interference scenario:

Table 1: Ku-band uplink C/I for 2-degree geocentric spacing

Antenna size (m)	On-axis gain (dBi)	Off-axis gain	C/I (dB)
1.2	43.04	20.94	22.09
1.8	46.56	20.94	25.61
2.4	49.06	20.94	28.11
4.5	54.52	20.94	33.57
6.0	57.02	20.94	36.07

Assuming that the minimum (i.e., threshold) C/N for a digital service is 8 dB, the effect of the C/I (22.09 dB) from the 1.2 meter earth station in Table 1 above would only degrade the C/N by 0.17 dB, equivalent to an increase of 3.7% 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 uplink C/I estimates

The topocentric angle for a geocentric separation of 2° is approximately 2.2°. The sidelobe envelope at 2.2° 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 2 lists the boresight gain, the off-axis gain and the corresponding C/I that would result in this interference scenario:

Table 2: C-band uplink C/I for 2-degree geocentric spacing

Antenna size (m)	On-axis gain (dBi)	Off-axis gain	C/I (dB)
3.8	46.04	20.94	25.10
4.5	47.51	20.94	26.57
6.0	50.01	20.94	29.07
7.5	51.95	20.94	31.01
9.0	53.53	20.94	32.59

Assuming that the minimum (i.e., threshold) C/N for a digital service is 8 dB, the effect of the C/I (25.10 dB) from the 3.8 meter earth station in Table 2 above would only degrade the C/N by 0.1 dB,

equivalent to an increase of 1.9% 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.

2 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 either similar, or the wanted network has an EIRP of 2 dB lower than SES-1. 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 2.2°. The gain at 2.2° 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 receiving earth station.

2.1 Ku-band

The following Tables list 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 3) and where the EIRP of the two networks is different by 2 dB (Table 4):

***Table 3: Ku-band downlink C/I for 2-degree geocentric spacing
EIRP of the wanted and interfering satellites is the same***

Antenna size (m)	On-axis gain (dBi)	Off-axis gain	Off-axis discrimination (dB)	C/I (dB)
1.2	41.70	20.94	20.75	20.75
1.8	45.22	20.94	24.27	24.27
2.4	47.72	20.94	26.77	26.77
4.5	53.18	20.94	32.23	32.23
6.0	55.68	20.94	34.73	34.73

**Table 4: Ku-band downlink C/I for 2-degree geocentric spacing
EIRP of the wanted satellite is 2 dB lower than that of the interfering satellite**

Antenna size (m)	On-axis gain (dBi)	Off-axis gain	Off-axis discrimination (dB)	C/I (dB)
1.2	41.70	20.94	20.75	18.75
1.8	45.22	20.94	24.27	22.27
2.4	47.72	20.94	26.77	24.77
4.5	53.18	20.94	32.23	30.23
6.0	55.68	20.94	34.73	32.73

Again, assuming that the minimum (i.e., threshold) C/N for a digital service is 8 dB, the effect of the C/I (18.75 dB) into the 1.2 meter earth station in Table 4 above would only degrade the C/N by 0.35 dB, equivalent to an increase of 7.8% in the victim system's noise temperature. Although this does exceed the normal criteria of 6% by a small amount, the victim system's link degradation is still less than 0.5 dB, which is significantly less than the likely link margin.

2.2 C-band

The following Tables list 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 5) and where the EIRP of the two networks is different by 2 dB (Table 6):

**Table 5: C-band downlink C/I for 2-degree geocentric spacing
EIRP of the wanted and interfering satellites is the same**

Antenna size (m)	On-axis gain (dBi)	Off-axis gain	Off-axis discrimination (dB)	C/I (dB)
3.8	42.16	20.94	21.22	21.22
4.5	43.64	20.94	22.69	22.69
6.1	46.28	20.94	25.33	25.33
7.5	48.07	20.94	27.13	27.13

**Table 6: C-band downlink C/I for 2-degree geocentric spacing
EIRP of the wanted satellite is 2 dB lower than that of the interfering satellite**

Antenna size (m)	On-axis gain (dBi)	Off-axis gain	Off-axis discrimination (dB)	C/I (dB)
3.8	42.16	20.94	21.22	19.22
4.5	43.64	20.94	22.69	20.69
6.1	46.28	20.94	25.33	23.33
7.5	48.07	20.94	27.13	25.13

Again, assuming that the minimum (i.e., threshold) C/N for a digital service is 8 dB, the effect of the C/I (19.22 dB) into the 3.8 meter earth station in Table 6 above would only degrade the C/N by 0.32 dB, equivalent to an increase of 7% in the victim system's noise temperature. Although this does exceed the normal criteria of 6% by a small amount, the victim system's link degradation is still less than 0.5 dB, which is significantly less than the likely link margin.

3. Additional examples of C/I estimates

Attached tables 7 to 14 show some examples of single-entry C/I analysis for typical carriers on the satellite networks. The adjacent satellite is assumed to be at 99° W.L., but the same results apply to the 103° W.L neighbor also. The uplink sites of SES-1 can be in the 50-state or the Caribbean regions.

3.1 Ku-band

Table 7 shows the key uplink parameters of SES-1 and adjacent satellite carriers. Table 8 shows C/I estimates in SES-1 and adjacent satellite carrier uplinks. The C/I values in the adjacent carriers are at least 20.0 dB.

Table 9 shows the key downlink parameters of SES-1 and adjacent satellite carriers. Table 10 shows C/I estimates in SES-1 and adjacent satellite carrier uplinks. The C/I values in the adjacent carriers are minimally about 20.0 dB.

**Table 7: SES and adjacent satellite uplink carrier characteristics – Ku-band
(SES-1 at 101 °W.L., Adjacent satellite at 99 °W.L.,
Topocentric separation at the receiver location 2.2°, antenna pointing error 0.4°)**

SES carriers								
		36M0G7W	27M0G7W	6M95G1W	5M00G1W	1M60G1W	100KG1W	
Bandwidth	MHz	36.0	27.0	6.0	5.0	1.6	0.1	
UL EIRP	dBW	78	76.8	70.2	69.4	58	42	
UL flange power	dBW	20.7	19.5	17.2	16.4	11.4	-0.8	
UL flange power dens.	dBW/Hz	-54.9	-54.8	-50.6	-50.6	-50.6	-50.8	
UL ant. Dia	m	6.1	6.1	3.7	3.7	1.8	1.2	
UL ant. Gain	dBi	57.3	57.3	53	53	46.6	42.8	
UL EIRP density	dBW/Hz	2.4	2.5	2.4	2.4	-4.0	-8.0	
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6	22.6	22.6	
Off-ax. EIRP dens	dBW/Hz	-32.2	-32.2	-28.0	-28.0	-28.0	-28.2	
G/T	dB/K	2.0	2.0	2.0	2.0	2.0	2.0	
C/N (thermal)	dB	25.5	25.6	25.5	25.5	19.1	15.1	
Adj. Satellite carriers								
		25M0G7W	17M5G7W	Dig. TV(20.0)	Dig. TV(3.95)	TDMA	64Kbps	9.6Kbps
Bandwidth	MHz	25.0	17.5	14.9	3.4	36.0	0.1	0.0235
UL EIRP	dBW	75	67.9	75	60	75	42	36
UL flange power	dBW	15.6	8.5	15.6	13.4	21.2	-0.8	-6.8
UL flange power dens.	dBW/Hz	-58.4	-63.9	-56.1	-51.9	-54.4	-50.8	-50.5
UL ant. Dia	m	7.5	7.5	7.5	1.8	4.5	1.2	1.2
UL ant. Gain	dBi	59.4	59.4	59.4	46.6	53.8	42.8	42.8
UL EIRP density	dBW/Hz	1.0	-4.5	3.3	-5.3	-0.6	-8.0	-7.7
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6	22.6	22.6	22.6
Off-ax. EIRP dens	dBW/Hz	-35.8	-41.3	-33.5	-29.3	-31.7	-28.2	-27.9
G/T	dB/K	0.5	0.5	0.5	0.5	0.5	0.5	0.5
C/N (thermal)	dB	22.6	17.1	24.9	16.3	21.0	13.6	13.9

Table 8: Ku-band uplink C/I estimates in carriers shown in Table 7

Uplink C/I in SES carriers due to interference from adj. satellite							
	SES carriers						
Adj. Sat carriers		36M0G7W	27M0G7W	6M95G1W	5M00G1W	1M60G1W	100KG1W
36M0G7W		38.2	38.2	38.2	38.2	31.7	27.8
27M0G7W		43.7	43.8	43.7	43.7	37.3	33.3
Dig. TV (20.0)		36.0	36.0	35.9	35.9	29.5	25.5
Dig. TV (3.95)		31.7	31.8	31.7	31.7	25.3	21.3
TDMA		34.2	34.2	34.2	34.2	27.7	23.7
64Kbps		30.6	30.7	30.6	30.6	24.1	20.2
9.6Kbps		30.3	30.4	30.3	30.3	23.9	19.9
Uplink C/I in adj. sat carriers due to interference from SES carriers							
	SES carriers						
Adj. Sat carriers		36M0G7W	27M0G7W	6M95G1W	5M00G1W	1M60G1W	100KG1W
36M0G7W		33.3	33.2	29.0	29.0	29.0	29.2
27M0G7W		27.7	27.7	23.4	23.4	23.5	23.7
Dig. TV (20.0)		35.5	35.5	31.2	31.2	31.3	31.4
Dig. TV (3.95)		26.9	26.9	22.6	22.7	22.7	22.9
TDMA		31.7	31.6	27.4	27.4	27.5	27.6
64Kbps		24.2	24.2	20.0	20.0	20.0	20.2
9.6Kbps		24.5	24.5	20.3	20.3	20.3	20.5

**Table 9: SES and adjacent satellite downlink carrier characteristics – Ku-band
(SES-1 at 101 °W.L., Adjacent satellite at 99 °W.L.,
Topocentric separation at the receiver location 2.2 °, antenna pointing error 0.4 °)**

SES Carriers		36M0G7W	36M0G7W	6M95G1W	5M00G1W	1M60G1W	100KG1W
Bandwidth(occupied)	MHz	36.0	36.0	6.0	5.0	1.6	0.1
Satellite EIRP max	dBW	52.8	52.8	52.8	52.8	52.8	52.8
Carrier EIRP	dBW	50.0	50.0	40.7	39.2	36.0	24.0
Carrier EIRP dens	dBW/Hz	-25.6	-25.6	-27.1	-27.8	-26.0	-26.0
Rx ES ant. Dia	m	1.2	1.2	1.8	1.8	1.2	1.2
Rx ES ant. Gain	dBi	41.2	41.2	44.7	44.7	41.2	41.2
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6	22.6	22.6
C/N (thermal)	dB	16.2	16.2	18.1	17.5	15.7	15.7
Adj. Satellite carriers		36M0G7W	36M0G7W	27M0G7W	Dig. TV(20.0)	Dig. TV(3.95)	TDMA
Bandwidth (occupied)	MHz	36.0	36.0	27.0	14.9	3.4	36.0
Satellite EIRP max	dBW	51.0	51.0	51.0	51.0	51.0	51.0
Carrier EIRP	dBW	48.0	48.0	48.0	44.2	36.8	47.0
Carrier EIRP dens	dBW/Hz	-27.6	-27.6	-26.3	-27.6	-28.6	-28.6
Rx ES ant. Dia	m	1.8	2.4	1.2	1.8	1.8	4.5
Rx ES ant. Gain	dBi	44.72	47.22	41.20	44.72	44.72	52.68
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6	22.6	22.6
C/N (thermal)	dB	17.7	20.2	15.4	17.7	16.7	24.7

Table 10: Ku-band downlink C/I estimates in carriers shown in Table 9

Downlink C/I in SES carriers due to interference from adj. satellite						
	SES carriers					
Adj. Sat carriers	36M0G7W	36M0G7W	6M95G1W	5M00G1W	1M60G1W	100KG1W
36M0G7W(1)	20.6	20.6	22.5	21.9	20.1	20.1
36M0G7W(2)	20.6	20.6	22.5	21.9	20.1	20.1
27M0G7W	19.3	19.3	21.3	20.7	18.9	18.9
Dig. TV (20.0)	20.6	20.6	22.5	21.9	20.1	20.1
Dig. TV (3.95)	21.6	21.6	23.5	22.9	21.1	21.1
TDMA	21.6	21.6	23.5	22.9	21.1	21.1
64Kbps	21.0	21.0	23.0	22.3	20.5	17.6
9.6Kbps	20.7	20.7	22.7	22.1	20.3	20.3
Downlink C/I in adj. sat carriers due to interference from SES carriers						
	SES carriers					
Adj. Sat carriers	36M0G7W	36M0G7W	6M95G1W	5M00G1W	1M60G1W	100KG1W
36M0G7W(1)	20.1	20.1	21.7	22.3	20.6	20.5
36M0G7W(2)	22.6	22.6	24.2	24.8	23.1	23.0
27M0G7W	17.8	17.8	19.4	20.0	18.3	18.3
Dig. TV (20.0)**	20.1	20.1	21.7	22.3	20.6	20.5
Dig. TV (3.95)**	19.1	19.1	20.7	21.3	19.6	19.5
TDMA	27.1	27.1	28.6	29.3	27.5	27.5
64Kbps	19.1	19.1	20.7	21.3	19.6	19.6
9.6Kbps	19.4	19.4	21.0	21.6	19.9	19.9

3.2 C-band

Table 11 shows the key uplink parameters of SES-1 and adjacent satellite carriers. Table 12 shows C/I estimates in SES-1 and adjacent satellite carrier uplinks. The C/I values in the adjacent carriers are at least 23 dB.

Table 13 shows the key downlink parameters of SES-1 and adjacent satellite carriers. Table 14 shows C/I estimates in SES-1 and adjacent satellite carrier uplinks. The C/I values in the adjacent carriers are minimally about 19.0 dB.

**Table 11: SES and adjacent satellite uplink carrier characteristics –C-band
(SES-1 at 101 °W.L., Adjacent satellite at 99 °W.L.,
Topocentric separation at the receiver location 2.2 °, antenna pointing error 0.4 °)**

SES Carriers		36M0G7W	6M95G1W	1M60G1W	100KG1W
Bandwidth	MHz	36.0	6.0	1.6	0.1
UL EIRP	dBW	69	57.1	50.6	38.6
UL flange power	dBW	19.2	11.6	5.6	-6.3
UL flange power dens.	dBW/Hz	-56.4	-56.2	-56.4	-56.3
UL ant. Dia	m	6.1	3.7	3.4	3.4
UL ant. Gain	dBi	49.8	45.46	44.72	44.72
UL EIRP density	dBW/Hz	-6.6	-10.7	-11.4	-11.4
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6
Off-ax. EIRP dens	dBW/Hz	-33.7	-33.6	-33.8	-33.7
G/T	dB/K	2.0	2.0	2.0	2.0
C/N (thermal)	dB	16.5	12.4	11.7	11.7
Adj. Satellite carriers		36M0G7W	6M5G1W	1M50G1W	100K50G1W
Bandwidth	MHz	32.6	5.8	1.3	0.1
UL EIRP	dBW	70	58.1	51.7	39.6
UL flange power	dBW	13.42	1.52	2.61	-8.77
UL flange power dens.	dBW/Hz	-61.71	-66.11	-58.53	-58.77
UL ant. Dia	m	9.00	9.00	3.80	3.50
UL ant. Gain	dBi	56.58	56.58	49.09	48.37
UL EIRP density	dBW/Hz	-5.1	-9.5	-9.4	-10.4
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6
Off-ax. EIRP dens	dBW/Hz	-39.1	-43.5	-35.9	-36.2
G/T	dB/K	0.5	0.5	0.5	0.5
C/N (thermal)	dB	16.5	12.1	12.2	11.2

Table 12: C-band uplink C/I estimates in carriers shown in Table 11

Uplink C/I in SES carriers due to interference from adj. satellite				
	SES carriers			
Adj. Sat carriers	36M0G7W	6M5G1W	1M50G1W	100KG1W
36M0G7W	32.5	28.4	27.7	27.7
6M5G1W	36.9	32.8	32.1	32.1
1M50G1W	29.3	25.2	24.5	24.5
100K50G1W	29.6	25.5	24.7	24.8
Uplink C/I in adj. sat carriers due to interference from SES carriers				
	SES carriers			
Adj. Sat carriers	36M0G7W	6M5G1W	1M50G1W	100KG1W
36M0G7W	28.6	28.4	28.7	28.5
6M5G1W	24.2	24.0	24.3	24.1
1M50G1W	24.3	24.1	24.4	24.2
100K50G1W	23.3	23.2	23.4	23.3

**Table 13: SES and adjacent satellite downlink carrier characteristics – C-band
(SES-1 at 101 °W.L., Adjacent satellite at 99 °W.L.,
Topocentric separation at the receiver location 2.2 °, antenna pointing error 0.4 °)**

SES Carriers		36M0G7W	6M95G1W	1M60G1W	100KG1W
Bandwidth (occupied)	MHz	32.6	5.8	1.3	0.1
Satellite EIRP max	dBW	41.5	41.5	41.5	41.5
Carrier EIRP	dBW	40.0	30.5	25.7	12.7
Carrier EIRP dens	dBW/Hz	-35.1	-37.1	-35.4	-37.3
Rx ES ant. Dia	m	6.1	7	5.4	4.5
Rx ES ant. Gain	dBi	46.28	47.48	45.22	43.64
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6
C/N (thermal)	dB	21.7	20.9	20.4	16.9
Adj. Satellite carriers		36M0G7W	6M95G1W	1M60G1W	100KG1W
Bandwidth (occupied)	MHz	32.6	5.8	1.3	0.1
Satellite EIRP max	dBW	41.5	41.5	41.5	41.5
Carrier EIRP	dBW	40.0	30.5	25.7	12.7
Carrier EIRP dens	dBW/Hz	-35.1	-37.1	-35.4	-37.3
Rx ES ant. Dia	m	6.1	7	5.4	4.5
Rx ES ant. Gain	dBi	46.28	47.48	45.22	43.64
Sidelobe gain (at 1.8 deg)	dBi	22.6	22.6	22.6	22.6
C/N (thermal)	dB	21.7	20.9	20.4	16.9

Table 14: C-band downlink C/I estimates in carriers shown in Table 13

Downlink C/I in SES carriers due to interference from adj. satellite				
	SES carriers			
Adj. Sat carriers	36M0G7W	6M95G1W	1M60G1W	100KG1W
36M0G7W	23.7	22.9	22.3	18.9
6M95G1W	25.7	24.9	24.3	20.9
1M60G1W	23.9	23.1	22.6	19.2
100KG1W	25.8	25.0	24.5	21.0
Downlink C/I in adj. sat carriers due to interference from SES carriers				
	SES carriers			
Adj. Sat carriers	36M0G7W	6M95G1W	1M60G1W	100KG1W
36M0G7W	23.7	25.7	23.9	25.8
6M95G1W	22.9	24.9	23.1	25.0
1M60G1W	22.3	24.3	22.6	24.5
100KG1W	18.9	20.9	19.2	21.0

Engineering Declaration

DECLARATION OF Krish Jonnalagadda

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

/s/ Krish Jonnalagadda

Manager, Satellite Market Development
SES Americom, Inc.

Dated: December 22, 2009