EXHIBIT A

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

INTELSAT NORTH AMERICA LLC
RASCom-1 LEOP STA REQUEST
EARTH STATION E000296

EXHIBIT A

FREQUENCY COORDINATION AND INTERFERENCE ANALYSIS REPORT

Prepared for
Intelsat North America LLC
Clarksburg, MD
Rascom 1 LEOP
Satellite Earth Station

Prepared By:
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147
November 16, 2007

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1. CONCLUSIONS

An interference study considering all existing, proposed and prior coordinated microwave facilities within the coordination contours of the proposed earth station demonstrates that this site will operate satisfactorily with the common carrier microwave environment. Further, there will be no restrictions of its operation due to interference considerations.

2. SUMMARY OF RESULTS

A number of great circle interference cases were identified during the interference study of the proposed earth station. Each of the cases, which exceeded the interference objective on a line-of-sight basis, was profiled and the propagation losses estimated using NBS TN101 (Revised) techniques. The losses were found to be sufficient to reduce the signal levels to acceptable magnitudes in every case.

There are no unresolved interference cases involving this earth station.

3. SUPPLEMENTAL SHOWING

Pursuant to Part 25.203(c) of the FCC Rules and Regulations, the satellite earth station proposed in this application was coordinated by Comsearch using computer techniques and in accordance with Part 25 of the FCC Rules and Regulations.

Verbal and written coordination was conducted with the below listed carriers.

Company
ALLTEL Communications of VA No. 1, Inc.
ALLTEL Communications of Virginia, Inc.
AT&T COMMUNICATIONS OF MARYLAND INC
AT&T COMMUNICATIONS OF VIRGINIA INC
AT&T CORP
Allegheny Power Service Corporation
Atlantic Broadband (Delmar), LLC
Atlantic Broadband (Penn), LLC
Atlantic City Electric Company
BAY BROADBAND COMMUNICATIONS LLC
BAYCOMM INC
BEDFORD COUNTY
Baltimore Gas and Electric Company
CHESTER, COUNTY OF
COLLEGE OF SOUTHERN MARYLAND
COLUMBIA COUNTY
Cambria, County of
Cellco Partnership - Bridgeville, PA
Cellco Partnership - VA, MD, WV, DC
Cellco Partnership- PA Region
Cellco Partnership-Newark-Dallas Verizon
Cellco Prtnrshp - Phil. Tri-State Rgn
Charles, County of
Charlottesville Cellular Partnership
Cingular Pennsylvania, LLC
Conterra Ultra Broadband, LLC
County of Frederick
County of York
DAUPHIN COUNTY EMERGENCY MANAGEMENT
DELAWARE STATE - DTI
Delmarva Power & Light Company
Dobson Cellular Systems, Inc.
Enoch Pratt Free Library
Exelon Generation Company, L.L.C
FIRST TELEVISION CORP.(MID-ATLANTIC)
Federal Communications Commission
Frederick County
Gloucester County
HANOVER COUNTY
HUNTINGDON COUNTY, PA

Hampton Roads Planning District Commissi
Hardy Cellular Telephone Company
Harrisonburg-Rockingham ECC
International Communications Group, Inc.
LB Tower Company LLC
Last Mile Inc.
Local Communications Network, Inc.
Loudoun County, Virginia
MARYLAND PUBLIC BROADCASTING COMMISSION
MCI Communication Services, Inc.
METROPOLITAN AREA NETWORKS, INC.
Maryland State Highway Administration
Maryland, State of - Budget & Management
NTELOS Telephone, Inc.
New Cingular Wireless PCS - VA, MD, DC
New Cingular Wireless PCS LLC - DC
New Cingular Wireless PCS, LLC - PA
New Jersey, State of -NJ Tramsit
Northern Virginia Electric Cooperative
PENNSYLVANIA TURNPIKE COMMISSION
PRINCE WILLIAM COUNTY
PSEG Services Corporation
Peco Energy Company
Penn Service Microwave Co., Inc.
Petersburg Cellular Partnership
Prince George's County
RAPPAHANNOCK ELECTRIC COOPERATIVE
RCTC Wholesale Corporation
STAFFORD COUNTY SHERIFFS DEPT
Southern & Central Wireless, LLC
Southern Maryland Electric Cooperative
State of Maryland, MIEMSS
State of WV DHHR/BPH State Trauma
Susquehanna Electric Company
Time Warner Cable LLC
Trinity Broadcasting Network Inc
USCOC of Cumberland, Inc.
USCOC of Virginia RSA #2, Inc.
VIRGINIA COMMONWEALTH STATE POLICE
Verizon Maryland, Inc.
Verizon Virginia, Inc.
Virginia Cellular Inc.
Virginia Commonwealth
Virginia Electric & Power Company
Virginia PCS Alliance, L.C.
Virginia RSA #7, Inc.
WITF Inc.
Washington D.C. SMSA L.P.
Wireless Strategies, Inc.
YORK COUNTY VIRGINIA

4. EARTH STATION COORDINATION DATA

This section presents the data pertinent to frequency coordination of the proposed earth station that was circulated to all carriers within its coordination contours.

Earth Station Data Sheet

19700 Janelia Farm Boulevard, Ashburn, VA 20147
(703)726-5500 http://www.comsearch.com

Date: 11/16/2007

Administrative Information

Status	TEMPORARY (Operation from 12/18/2007 to 06/18/2008)
Licensee Name	Intelsat North America LLC

Site Information — CLARKSBURG, MD

Latitude (NAD 83)	39° 13' 2.9" N
Longitude (NAD 83)	77° 16' 15.0" W
Climate Zone	A
Rain Zone	2
Ground Elevation (AMSL)	118.15 m / 387.6 ft

Link Information

Satellite Type	Low Earth Orbit
Mode	TO - Transmit-Only
Modulation	FM Digital
Minimum Elevation Angle	5.0°
Azimuth Range	0.0° to 360°
Antenna Centerline (AGL)	5.49 m / 18.0 ft

Antenna Information — Transmit

Manufacturer		VERTEX RSI
Gain / Diameter		53.6 dBi / 9.0 m
3-dB / 15-dB Beamwidth		0.20° / 0.40°
Max Available RF Power	(dBW/4 kHz)	10.2
	(dBW/MHz)	34.2
Maximum EIRP	(dBW/4 kHz)	63.8
	(dBW/MHz)	87.8
	(dBW)	87.1
Interference Objectives:	Long Term	-151.0 dBW/4 kHz 20%
	Short Term	-128.0 dBW/4 kHz 0.0025%

Frequency Information — Transmit 6.1 GHz

Emission / Frequency Range (MHz)	850KN0N / 6182.0
	850KN0N / 6183.5
Max Great Circle Coordination Distance	214.8 km / 133.5 mi
Precipitation Scatter Contour Radius	351.6 km / 218.4 mi

Coordination Values	**CLARKSBURG, MD**
Licensee Name	Intelsat North America LLC
Latitude (NAD 83)	39° 13' 2.9" N
Longitude (NAD 83)	77° 16' 15.0" W
Ground Elevation (AMSL)	118.15 m / 387.6 ft
Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Mode	Transmit 6.1 GHz
Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	10.2 (dBW/4 kHz)

Transmit 6.1 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
0	1.16	98.13	4.50	214.80
5	1.12	93.13	4.50	214.80
10	1.02	88.13	4.50	214.80
15	0.87	83.13	4.50	214.80
20	0.96	78.13	4.50	214.80
25	1.11	73.13	4.50	214.80
30	1.29	68.13	4.50	214.80
35	1.02	63.13	4.50	214.80
40	0.93	58.13	4.50	214.80
45	1.08	53.13	4.50	214.80
50	1.20	48.13	4.50	214.80
55	0.87	43.13	4.50	214.80
60	0.70	38.13	4.50	214.80
65	0.73	33.13	4.50	214.80
70	0.93	28.13	4.50	214.80
75	0.76	23.13	4.50	214.80
80	0.76	18.13	4.50	214.80
85	0.76	13.14	4.50	214.80
90	0.69	8.14	4.50	214.80
95	0.61	3.17	4.50	214.80
100	0.71	1.92	4.50	214.80
105	0.76	6.88	4.50	214.80
110	0.71	11.88	4.50	214.80
115	0.67	16.88	4.50	214.80
120	0.73	21.87	4.50	214.80
125	0.70	26.87	4.50	214.80
130	0.60	31.87	4.50	214.80
135	0.48	36.87	4.50	214.80
140	0.48	41.87	4.50	214.80
145	0.29	46.88	4.50	214.80
150	0.28	51.87	4.50	214.80
155	0.23	56.87	4.50	214.80
160	0.29	61.87	4.50	214.80
165	0.26	66.87	4.50	214.80
170	0.00	71.87	4.50	214.80
175	0.00	76.87	4.50	214.80
180	0.00	81.87	4.50	214.80
185	0.00	86.87	4.50	214.80

Coordination Values	**CLARKSBURG, MD**
Licensee Name	Intelsat North America LLC
Latitude (NAD 83)	39° 13' 2.9" N
Longitude (NAD 83)	77° 16' 15.0" W
Ground Elevation (AMSL)	118.15 m / 387.6 ft
Antenna Centerline (AGL)	5.49 m / 18.0 ft
Antenna Mode	Transmit 6.1 GHz
Interference Objectives: Long Term	-151.0 dBW/4 kHz 20%
Short Term	-128.0 dBW/4 kHz 0.0025%
Max Available RF Power	10.2 (dBW/4 kHz)

Transmit 6.1 GHz

Azimuth (°)	Horizon Elevation (°)	Antenna Discrimination (°)	Horizon Gain (dBi)	Coordination Distance (km)
190	0.00	91.87	4.50	214.80
195	0.00	96.87	4.50	214.80
200	0.42	101.87	4.50	214.80
205	0.92	106.87	4.50	214.80
210	1.05	111.87	4.50	214.80
215	0.75	116.87	4.50	214.80
220	0.92	121.87	4.50	214.80
225	1.05	126.87	4.50	214.80
230	0.90	131.87	4.50	214.80
235	1.11	136.87	4.50	214.80
240	1.48	141.87	4.50	214.80
245	1.48	146.87	4.50	214.80
250	1.76	151.86	4.50	214.80
255	1.76	156.86	4.50	214.80
260	1.97	161.85	4.50	214.80
265	1.98	166.84	4.50	214.80
270	2.29	171.79	4.50	214.80
275	2.78	176.46	4.50	214.80
280	2.68	177.57	4.50	214.80
285	2.68	172.96	4.50	214.80
290	3.05	167.98	4.50	214.80
295	3.13	163.02	4.50	214.80
300	3.49	158.01	4.50	214.80
305	3.19	153.06	4.50	214.80
310	3.64	148.04	4.50	214.80
315	3.56	143.06	4.50	214.80
320	3.19	138.09	4.50	214.80
325	3.05	133.10	4.50	214.80
330	2.65	128.11	4.50	214.80
335	2.18	123.12	4.50	214.80
340	1.94	118.13	4.50	214.80
345	1.45	113.13	4.50	214.80
350	1.45	108.13	4.50	214.80
355	1.13	103.13	4.50	214.80

5. CERTIFICATION

I HEREBY CERTIFY THAT I AM THE TECHNICALLY QUALIFIED PERSON RESPONSIBLE FOR THE PREPARATION OF THE FREQUENCY COORDINATION DATA CONTAINED IN THIS APPLICATION, THAT I AM FAMILIAR WITH PARTS 101 AND 25 OF THE FCC RULES AND REGULATIONS, THAT I HAVE EITHER PREPARED OR REVIEWED THE FREQUENCY COORDINATION DATA SUBMITTED WITH THIS APPLICATION, AND THAT IT IS COMPLETE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF.

Timothy O. Crutcher
Frequency Planner
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

DATED: November 16, 2007

EXHIBIT B

SCHEDULE B – TECHNICAL INFORMATION

INTELSAT NORTH AMERICA LLC
RASCom-1 LEOP STA REQUEST
EARTH STATION E000296

FCC 312
Schedule B

FEDERAL COMMUNICATIONS COMMISSION
APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
Technical and Operational Description)
(Place an "X" in one of the blocks below)

☒ STA REQUEST ☐ Registration of new Domestic Receive-Only Station ☐ Amendment to a Pending Application ☐ Modification of License/Registration ☐ Notification of Minor Modification

B1. Location of Earth Station Site. If temporary-fixed, mobile, or VSAT remote facility, specify area of operation and point of contact. If VSAT hub station, give its location For VSAT networks attach individual Schedule B, Page 1 sheets for each hub station and each remote station. Individually provide the Location, Points of Communications, and Destination Points for each hub and remote station.

B1a. Station Call Sign	B1b. Site identifier (HUB, REMOTE1, etc.)	B1c. Telephone Number	B1j. Geographic Coordinates N/S, Deg. - Min. - Sec. - E/W	B1k. Lat./Lon. Coordinates are:
		(202)-944-7538	Lat. 39° - 13' - 02.9" N Lon. 77° - 16' - 15.0" W	☐ NAD-27 ☒ NAD-83

B1d. Mailing Street Address of Station or Area of Operation	B1e. Name of Contact Person
22021 COMSAT Drive	Angela Maimo

B1f. City	B1g. County	B1h. State	B1i. Zip Code	B1l. Site Elevation (AMSL)
Clarksburg	Montgomery	Md	20871	118.15

B2. Points of Communications: List the names and orbit locations of all satellites with which this earth station will communicate. The entry "ALSAT" is sufficient to identify the names and locations of all satellite facilities licensed by the U.S. All non-U.S. licensed satellites must be listed individually.

Satellite Name and Orbit Location	Satellite Name and Orbit Location	Satellite Name and Orbit Location
Rascom 1 LEOP Operations		

B3. Destination points for communications using non-U.S. licensed satellites. For each non-U.S. licensed satellite facility identified in section B2 above, specify the destination point(s) (countries) where the services will be provided by this earth station via each non-U.S. license satellite system. Use additional sheets as needed.

Satellite Name	List of Destination Points

FEDERAL COMMUNICATIONS COMMISSION
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FCC Form 312 - Schedule B: (Technical and Operational Description)

B4. Earth Station Antenna Facilities: Use additional pages as needed.

(a) Site ID*	(b) Antenna ID**	(c) Quantity	(d) Manufacturer	(e) Model	(f) Antenna Size (meters)	(g) Antenna Gain Transmit and/or Receive (____dBi at____GHz)
	9.0	1	Vertex/RSI	KPC	9	53.6 dBi @ 6 GHz

B5. Antenna Heights and Maximum Power Limits: (The corresponding Antenna ID in tables B4 and B5 applies to the same antenna)

(a) Antenna ID**	(b) Antenna Structure Registration No.	Maximum Antenna Height (c) Above Ground Level (meters)	Maximum Antenna Height (d) Above Mean Sea Level (meters)	(e) Building Height Above Ground Level (meters)***	(f) Maximum Antenna Height Above Rooftop (meters)***	(g) Total Input Power at antenna flange (Watts)	(h) Total EIRP for all carriers (dBW)
9.0M		10.0	128.15			2250	87.1

Notes: * If this is an application for a VSAT network, identify the site (Item B1b, Schedule B, Page 1) where each antenna is located. Also include this Site-ID on Schedule B, Page 5.
** Identify each antenna in VSAT network or multi-antenna station with a unique identifier, such as HUB, REMOTE1, A1, A2, 10M, 12M, 7M, etc. Use this same antenna ID throughout tables B4, B5, B6, and B7 when referring to the same antenna.
*** Attach sketch of site or exemption, See 47 CFR Part 17.

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FCC Form 312 - Schedule B: (Technical and Operational Description)

B6. Frequency Coordination Limits: Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) Range of Satellite Arc Eastern Limit**	(d) Range of Satellite Arc Western Limit**	(e) Antenna Elevation Angle Eastern Limit	(f) Antenna Elevation Angle Western Limit	(g) Earth Station Azimuth Angle Eastern Limit	(h) Earth Station Azimuth Angle Western Limit	(i) Maximum EIRP Density toward the Horizon (dBW/4kHz)
9.0M	6182.0	LEOP	LEOP	5°	5°	LEOP	LEOP	14.7
9.0M	6183.5	LEOP	LEOP	5°	5°	LEOP	LEOP	14.7

Notes: * Provide the ANTENNA-ID from table B4 to identify the antenna to which each frequency band and orbital arc range is associated.

** If operating with geostationary satellites, give the orbital arc limits and the associated elevation and azimuth angles. If operating with non-geostationary satellites, give the notation "NON-GEO" for the satellite arc and give the minimum operational elevation angle and the maximum azimuth angle range.

FEDERAL COMMUNICATIONS COMMISSION
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FCC Form 312 - Schedule B: (Technical and Operational Description)

B7. Particulars of Operation (Full particulars are required for each r.f. carrier): Use additional pages as needed.

(a) Antenna ID*	(b) Frequency Limits (MHz)	(c) T/R Mode **	(d) Antenna Polarization (H,V,L,R)	(e) Emission Designator	(f) Maximum EIRP per Carrier (dBW)	(g) Maximum EIRP Density per Carrier (dBW/4kHz)	(h) Description of Modulation and Services
9.0M	6182.0	T	H,V,C	850KN0N	87.1	63.8	FM with BPSK Subcarrier and PCM Data
9.0M	6183.5	T	H,V,C	850KN0N	87.1	63.8	FM with BPSK Subcarrier and PCM Data

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APPLICATION FOR SATELLITE SPACE AND EARTH STATION AUTHORIZATIONS
FCC Form 312 - Schedule B: (Technical and Operational Description)

If VSAT Network, provide the SITE-ID (Item B1b) of the station that B8-B13 are in response to (HUB, REMOTE1, etc.): _____

B8. If the proposed antenna(s) operate in the Fixed Satellite Service (FSS) with **geostationary** satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a) and (b) as demonstrated by the manufacturer's qualification measurements? If NO, provide as an exhibit, a technical analysis showing compliance with two-degree spacing policy.

☒ **YES** ☐ **NO**

B9. If the proposed antenna(s) do not operate in the Fixed Satellite Service (FSS), or if they operate in the Fixed Satellite Service (FSS) with **non-geostationary** satellites, do(es) the proposed antenna(s) comply with the antenna gain patterns specified in Section 25.209(a2) and (b) as demonstrated by the manufacturer's qualification measurement?

☐ **YES** N/A ☐ **NO**

B10. Is the facility operated by remote control? If YES, provide the location and telephone number of the control point.

☐ **YES** ☒ **NO**

Remote Control Point Location:

B10a. Street Address			
B10b. City	B10c. County	B10.d. State/Country	B10e. Zip Code
B10f. Telephone Number	B10g. Call Sign of Control Station (if appropriate)		

B11. Is frequency coordination required? If YES, attach a frequency coordination report as an exhibit.

☒ **YES** ☐ **NO**

B12. Is coordination with another country required? If YES, attach the name of the country(ies) and plot of coordination contours as an exhibit.

☐ **YES** ☒ **NO**

B13. FAA Notification - (See 47 CFT Part 17and 47 CFT Part 25.113(c))
Where FAA notification is required, have you attached a copy of a completed FCC Form 854 and/or the FAA's study regarding the potential hazard of the structure to aviation? EXISTING FACILITY FAILURE TO COMPLY WITH 47 CFT PARTS 17 AND 25 WILL RESULT IN THE RETURN OF THIS APPLICATION

☐ **YES** ☒ **NO**

EXHIBIT C

RADIATION HAZARD REPORT

INTELSAT NORTH AMERICA LLC
RASCom-1 LEOP STA REQUEST
EARTH STATION E000296

Analysis of Non-Ionizing Radiation for a 9.0-Meter Earth Station System

This report analyzes the non-ionizing radiation levels for a 9.0-meter earth station system. The analysis and calculations performed in this report comply with the methods described in the FCC Office of Engineering and Technology Bulletin, No. 65 first published in 1985 and revised in 1997 in Edition 97-01. The radiation safety limits used in the analysis are in conformance with the FCC R&O 96-326. Bulletin No. 65 and the FCC R&O specifies that there are two separate tiers of exposure limits that are dependant on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure. The Maximum Permissible Exposure (MPE) limits for persons in a General Population/Uncontrolled environment are shown in Table 1. The General Population/Uncontrolled MPE is a function of transmit frequency and is for an exposure period of thirty minutes or less. The MPE limits for persons in an Occupational/Controlled environment are shown in Table 2. The Occupational MPE is a function of transmit frequency and is for an exposure period of six minutes or less. The purpose of the analysis described in this report is to determine the power flux density levels of the earth station in the far-field, near-field, transition region, between the subreflector or feed and main reflector surface, at the main reflector surface, and between the antenna edge and the ground and to compare these levels to the specified MPEs.

Table 1. Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	0.2
300-1500	Frequency (MHz)*(0.8/1200)
1500-100,000	1.0

Table 2. Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Power Density (mW/cm^2)
30-300	1.0
300-1500	Frequency (MHz)*(4.0/1200)
1500-100,000	5.0

Table 3. Formulas and Parameters Used for Determining Power Flux Densities

Parameter	Symbol	Formula	Value	Units
Antenna Diameter	D	Input	9.0	m
Antenna Surface Area	$A_{surface}$	$\pi D^2 / 4$	63.62	m^2
Subreflector Diameter	D_{sr}	Input	117.0	cm
Area of Subreflector	A_{sr}	$\pi D_{sr}^2/4$	10751.32	cm^2
Frequency	F	Input	6182	MHz
Wavelength	λ	300 / F	0.048528	m
Transmit Power	P	Input	2250.00	W
Antenna Gain (dBi)	G_{es}	Input	53.6	dBi
Antenna Gain (factor)	G	$10^{Ges/10}$	229086.8	n/a
Pi	π	Constant	3.1415927	n/a
Antenna Efficiency	η	$G\lambda^2/(\pi^2D^2)$	0.67	n/a

1. Far Field Distance Calculation

The distance to the beginning of the far field can be determined from the following equation:

Distance to the Far Field Region

$$R_{ff} = 0.60\ D^2 / \lambda \quad (1)$$
$$= 1001.5\ \text{m}$$

The maximum main beam power density in the far field can be determined from the following equation:

On-Axis Power Density in the Far Field

$$S_{ff} = G\ P / (4\ \pi\ R_{ff}^2) \quad (2)$$
$$= 40.896\ \text{W/m}^2$$
$$= 4.090\ \text{mW/cm}^2$$

2. Near Field Calculation

Power flux density is considered to be at a maximum value throughout the entire length of the defined Near Field region. The region is contained within a cylindrical volume having the same diameter as the antenna. Past the boundary of the Near Field region, the power density from the antenna decreases linearly with respect to increasing distance.

The distance to the end of the Near Field can be determined from the following equation:

Extent of the Near Field

$$R_{nf} = D^2 / (4\ \lambda) \quad (3)$$
$$= 417.3\ \text{m}$$

The maximum power density in the Near Field can be determined from the following equation:

Near Field Power Density

$$S_{nf} = 16.0\ \eta\ P / (\pi\ D^2) \quad (4)$$
$$= 95.470\ \text{W/m}^2$$
$$= 9.547\ \text{mW/cm}^2$$

3. Transition Region Calculation

The Transition region is located between the Near and Far Field regions. The power density begins to decrease linearly with increasing distance in the Transition region. While the power density decreases inversely with distance in the Transition region, the power density decreases inversely with the square of the distance in the Far Field region. The maximum power density in the Transition region will not exceed that calculated for the Near Field region. The power density calculated in Section 1 is the highest power density the antenna can produce in any of the regions away from the antenna. The power density at a distance R_t can be determined from the following equation:

Transition Region Power Density

$$S_t = S_{nf}\ R_{nf} / R_t \quad (5)$$
$$= 9.547\ \text{mW/cm}^2$$

4. Region between the Main Reflector and the Subreflector

Transmissions from the feed assembly are directed toward the subreflector surface, and are reflected back toward the main reflector. The most common feed assemblies are waveguide flanges, horns or subreflectors. The energy between the subreflector and the reflector surfaces can be calculated by determining the power density at the subreflector surface. This can be determined from the following equation:

Power Density at the Subreflector

$$S_{sr} = 4000\ P / A_{sr} = 837.107\ mW/cm^2 \quad (6)$$

5. Main Reflector Region

The power density in the main reflector is determined in the same manner as the power density at the subreflector. The area is now the area of the main reflector aperture and can be determined from the following equation:

Power Density at the Main Reflector Surface

$$S_{surface} = 4\ P / A_{surface} = 141.471\ W/m^2 = 14.147\ mW/cm^2 \quad (7)$$

6. Region between the Main Reflector and the Ground

Assuming uniform illumination of the reflector surface, the power density between the antenna and the ground can be determined from the following equation:

Power Density between Reflector and Ground

$$S_g = P / A_{surface} = 35.368\ W/m^2 = 3.537\ mW/cm^2 \quad (8)$$

7. Summary of Calculations

Table 4. Summary of Expected Radiation levels for Uncontrolled Environment

Region		Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Far Field (R_{ff} = 1001.5 m)	S_{ff}	4.090	Potential Hazard
2. Near Field (R_{nf} = 417.3 m)	S_{nf}	9.547	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	9.547	Potential Hazard
4. Between Main Reflector and Subreflector	S_{sr}	837.107	Potential Hazard
5. Main Reflector	$S_{surface}$	14.147	Potential Hazard
6. Between Main Reflector and Ground	S_g	3.537	Potential Hazard

Table 5. Summary of Expected Radiation levels for Controlled Environment

Region		Calculated Maximum Radiation Power Density Level (mW/cm^2)	Hazard Assessment
1. Far Field (R_{ff} = 1001.5 m)	S_{ff}	4.090	Satisfies FCC MPE
2. Near Field (R_{nf} = 417.3 m)	S_{nf}	9.547	Potential Hazard
3. Transition Region ($R_{nf} < R_t < R_{ff}$)	S_t	9.547	Potential Hazard
4. Between Main Reflector and Subreflector	S_{sr}	837.107	Potential Hazard
5. Main Reflector	$S_{surface}$	14.147	Potential Hazard
6. Between Main Reflector and Ground	S_g	3.537	Satisfies FCC MPE

It is the applicant's responsibility to ensure that the public and operational personnel are not exposed to harmful levels of radiation.

8. Conclusions

This antenna will be located in a fenced area. The fenced are will be sufficient to prohibit the general public from having access the areas that exceed the MPE limits

Since one diameter removed from the main beam of the antenna or ½ diameter removed from the edge of the antenna the RF levels are reduced by a factor of 100 or 20 dB. None of the areas exceeding the MPE levels will be accessible by the general public.

Radiation hazard signs will be posted while this earth station is in operation.

The applicant will ensure that no buildings or other obstacles will be in the areas that exceed the MPE levels.

Means of Compliance Controlled Areas

The earth station's operational personnel will not have access to the areas that exceed the MPE levels while the earth station is in operation.

The transmitters will be turned off during antenna maintenance.

EXHIBIT D

WAIVER REQUEST

INTELSAT NORTH AMERICA LLC
RASCom-1 LEOP STA REQUEST
EARTH STATION E000296

Exhibit D

PETITION FOR WAIVER OF SECTIONS 25.137 AND 25.114

Pursuant to Section 25.137 of the Federal Communications Commission's ("Commission" or "FCC") rules, earth station applicants "requesting authority to operate with a non-U.S. licensed space station *to serve the United States*" must demonstrate that effective competitive opportunities exist and must provide the same technical information required by Section 25.114 for U.S.-licensed space stations.[1] Intelsat herein seeks authority to provide launch and early orbit phase ("LEOP") services -- not commercial services -- to the United States, and thus believes that Section 25.137 does not apply.

To the extent the Commission determines, however, that Intelsat's request for authority to provide LEOP services on a special temporary basis is a request to serve the United States with a non U.S.-licensed satellite, Intelsat respectfully requests a waiver of Sections 25.137 and 25.114 of the Commission's rules.[2] The Commission may grant a waiver for good cause shown.[3] The Commission typically grants a waiver where the particular facts make strict compliance inconsistent with the public interest.[4] In granting a waiver, the Commission may take into account considerations of hardship, equity, or more effective implementation of overall policy on an individual basis.[5] Waiver is therefore appropriate if special circumstances warrant a deviation from the general rule, and such a deviation will serve the public interest.

In this case, good cause exists for a waiver of both Section 25.137 and Section 25.114. With respect to Section 25.114, Intelsat seeks authority only to provide LEOP services for the RASCom-1 satellite. Intelsat has already provided with its STA request all the technical information relating to the LEOP services that Intelsat will be performing. The information sought by Section 25.114 is not relevant to LEOP services. Moreover, Intelsat does not have – and would not easily be able to obtain -- such information because Intelsat is not the operator of the RASCom-1 satellite, nor is Intelsat in contractual privity with that operator. Rather, Intelsat has a contract with Telespazio, which was hired by Thales, the manufacturer of the RASCom-1 satellite, to conduct LEOP services for the satellite.

The information that Intelsat is not including is not required to determine potential harmful interference. The Schedule S information for this satellite would pertain to the operation of the RASCom-1 satellite at its final orbital location. However, the present application for LEOP services involves communications *prior* to the satellite attaining its final location in the geostationary orbit. In other words, during the LEOP mission, the earth station will not be

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[1] 47 C.F.R. § 25.137 (emphasis added).

[2] 47 C.F.R. §§ 25.137 and 25.114.

[3] 47 C.F.R. § 1.3.

[4] *N.E. Cellular Tel. Co. v. FCC*, 897 F.2d 1164, 1166 (D.C. Cir. 1990) ("*Northeast Cellular*").

[5] *WAIT Radio v. FCC*, 418 F.2d 1153, 1159 (D.C. Cir. 1969); *Northeast Cellular*, 897 F.2d at 1166.

communicating with a satellite located in the geostationary orbit. Rather, it will be transmitting to a satellite traveling on its "transfer orbit" or "LEOP path", which starts immediately following its separation from a launch vehicle, and ends when the satellite reaches its geostationary orbital location. Moreover, as with any STA, Intelsat will perform the LEOP services on a non-interference basis.

Because it is not relevant to the service for which Intelsat seeks authorization, and because obtaining the information would be a hardship, Intelsat seeks a waiver of all the information required by Section 25.114. As noted above, Intelsat has provided the required technical information that is relevant to the LEOP services for which Intelsat seeks authorization.

Good cause also exists to waive Section 25.137. Section 25.137 is designed to ensure that "U.S.-licensed satellite systems have effective competitive opportunities to provide analogous services" in other countries.[6] Here, there is no service being provided by the satellite; it is simply being placed in its orbital location after separating from the launch vehicle. Thus, the purpose of the information required by Section 25.137 is not implicated here. For example, Section 25.137(d) requires earth station applicants requesting authority to operate with a non-U.S.-licensed space station that is not in orbit and operating to post a bond.[7] The underlying purpose in having to post a bond—*i.e.*, to prevent warehousing of orbital locations by operators seeking to serve the United States—would not be served by requiring Intelsat to post a bond in order to provide approximately 10 days of LEOP services to the RASCom-1 satellite.

It is Intelsat's understanding that RASCom-1 will operate against ITU filings held by RASCOM, an intergovernmental organization, and will be operated by RASCOMStar, a Mauritius company.[8] It is also Intelsat's understanding that at 2.85° E.L., RASCom-1 will not serve the United States. Thus, the purposes of Section 25.137—to ensure that U.S. satellite operators enjoy "effective competitive opportunities" to serve foreign markets and to prevent warehousing of orbital locations serving the United States—will not be undermined by grant of this waiver request.

Finally, Intelsat notes that it expects to operate with the RASCom-1 satellite using its U.S. earth station for a period of approximately 10 days. Requiring Intelsat to obtain copious technical and legal information from an unrelated party, where there is no risk of harmful interference and the operations will cease after approximately 10 days, would pose undue hardship without serving underlying policy objectives. Given these particular facts, the waiver sought herein is plainly appropriate.

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[6] 47 C.F.R. § 25.137(a).

[7] *See* 47 C.F.R. § 25.137(d)(4).

[8] Mauritius is a WTO-member country.