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January 18, 2011

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VIA IBFS

Robert G. Nelson
Chief, Satellite Division
International Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Intelsat License LLC (f/k/a Intelsat North America LLC) Application to Modify Authorization for Intelsat 709, IBFS File No. SAT-MOD-20091106-00117 (Call Sign S2396)

Dear Mr. Nelson:

Intelsat License LLC (“Intelsat”) (f/k/a Intelsat North America LLC), by counsel, herein responds to the International Bureau’s (“Bureau”) December 17, 2010 request for additional information relating to Intelsat’s above-referenced application for authority to modify the authorization for the Intelsat 709 satellite.

In the attached Engineering Statement, Intelsat provides an interference analysis of the effect of Intelsat 709 (call sign S2396) transmissions from the 54.85° E.L. orbital location on adjacent satellites. As set forth in Sections 25.114(d)(7) and 25.140(b)(2) of the Commission’s rules, this analysis demonstrates the compatibility of Intelsat 709 two degrees from any authorized space station.¹

¹ 47 C.F.R. §§ 25.114(d)(7) and 25.140(b)(2). See also *International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis*, Report No. SPB-195, DA 03-3863 (Dec. 3, 2003) (Public Notice); *International Bureau Satellite Division Information: Clarification of 47 C.F.R. § 25.140(b)(2), Space Station Application Interference Analysis*, Report No. SPB-207, DA 04-1708 (June 16, 2004) (Public Notice).



Marlene H. Dortch
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Please contact Susan Crandall of Intelsat at (202) 944-7848 or me with any questions.

Respectfully Submitted,

/s/ Jennifer D. Hindin

Jennifer D. Hindin
Counsel for Intelsat License LLC

Engineering Statement

Intelsat License LLC (“Intelsat”) (f/k/a Intelsat North America LLC) hereby supplements its pending application SAT-MOD-20091106-00117 pertaining to the proposed operation of Intelsat 709 from 54.85° E.L. Specifically, Intelsat proposes to replace the section titled “Adjacent Satellite Link Analysis” of the Engineering Statement contained in its pending application with that provided herein and to include two new exhibits, 6 and 7. The inclusion of this information was requested by the Commission in a letter to Intelsat dated December 17, 2010.

The new text for the section “Adjacent Satellite Link Analysis” and Exhibits 6 and 7 are provided below:

Adjacent Satellite Link Analysis

The impact of the proposed Intelsat 709 emissions on the transmissions of a hypothetical adjacent satellite located at 52.85° E.L and 56.85° E.L was analyzed. It was assumed that each of these satellites had the same operating characteristics as the proposed Intelsat 709 spacecraft. In order to minimize the number of calculations to be performed, the following combined beam peak performance characteristics were assumed for the satellites at 52.85° E.L and 56.85° E.L:

Beam Name	Beam Polarization	Beam Peak G/T (dB/K)	Beam Peak SFD Range (dBW/m²)	Beam Peak EIRP (dBW)
Global	Circular	-7.0	-91.3 to -77.3	30.5
Hemi	Circular	-3.0	-92.1 to -78.1	38.3
Zone	Circular	-3.5	-90.8 to -76.8	38.5
C-Spot	Circular	3.0	-93.9 to -79.9	36.8
Ku-Spot	Linear	5.0	-91.8 to -77.8	50.5

For the satellite located at 52.85° E.L, it was assumed that the adjacent satellites were Intelsat 709, located at 54.85° E.L, and a hypothetical satellite having the same operating characteristics as Intelsat 709 located at 50.85° E.L. For the satellite located at 56.85° E.L, it was assumed that the adjacent satellites were Intelsat 709, located at 54.85° E.L, and a hypothetical satellite having the same operating characteristics as Intelsat 709 located at 58.85° E.L.

For the C-band analysis, it was assumed that Intelsat 709 and the hypothetical satellites located at 50.85° E.L and 58.85° L.L operated with a maximum uplink power density of -38.7 dBW/Hz, a maximum downlink beam peak EIRP density of -36.0 dBW/Hz.

For the Ku-band analysis, it was assumed that Intelsat 709 and the hypothetical satellites located at 50.85° E.L and 58.85° L.L operated with a maximum uplink power density of -45 dBW/Hz, and with a maximum downlink beam peak EIRP density of -24.0 dBW/Hz.

For both C-band and Ku-band, downlink EIRP densities were computed by dividing the peak EIRP by the minimum occupied bandwidth for full transponder utilization.

The analysis considered the impact of Intelsat 709's digital carriers on a wide band digital carrier of the adjacent satellites located at 52.85° E.L and 56.85° E.L. Wide band carriers typically determine the minimum receiving earth station size and lead to the highest downlink EIRP density for a spacecraft. The impact of Intelsat 709 TV/FM carriers on the transmission of the adjacent satellites at 52.85° E.L and 56.85° E.L was not considered for the reasons articulated in the section above (titled "Link Budgets and Interference Analysis"). The assumptions made in the above section pertaining to Earth station off-axis gain performance, Earth station cross-polarization performance and rain attenuation were also applied in the analysis.

The results of the analysis are listed in Exhibits 6 and 7 and show that the proposed operation of Intelsat 709 would not have a significant impact on the operation of a satellite located at either 52.85° E.L and 56.85° W.L. Accordingly, Intelsat 709 transmissions will be limited to those levels contained in Sections 25.212(c) and (d) of the Rules, as applicable, unless higher levels are coordinated with affected adjacent satellite operators. In any case, pursuant to the results in Exhibits 6 and 7, at C-band, the uplink power density level of Intelsat 709's digital carriers will not exceed -38.7 dBW/Hz and the downlink EIRP density of such carriers will not exceed -36.0 dBW/Hz. Similarly, at Ku-band, the uplink power density level of Intelsat 709's digital carriers will not exceed -45 dBW/Hz and the downlink EIRP density of such carriers will not exceed -24.0 dBW/Hz.

Notwithstanding the above showing, Intelsat agrees to operate Intelsat 709 under the conditions currently included in its Special Temporary Authority.¹

¹ SAT-STA-20100111-0006 (see conditions 15 and 16 of FCC grant on February 12, 2010).

Exhibit 14: Link Budget For Adjacent Satellite Located At 52.85° E.L.

UPLINK BEAM INFORMATION						
Uplink Beam Name	GLOBAL	HEMI	ZONE	ZONE	CSPOT	KSPOT
Uplink Frequency (GHz)	6.175	6.175	6.175	6.175	6.175	14.250
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	LINEAR
Uplink Relative Contour Level (dB)	-4.0	-6.0	-4.0	-4.0	-4.0	-4.0
Uplink Contour G/T (dB/K)	-11	-9.0	-7.5	-7.5	-1.0	1.0
Uplink SFD (dBW/m2)	-87.3	-86.1	-86.8	-86.8	-89.9	-82.8
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	GLOBAL	HEMI	ZONE	ZONE	CSPOT	KSPOT
Downlink Frequency (GHz)	3.950	3.950	3.950	3.950	3.950	11.950
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	LINEAR
Downlink Relative Contour Level (dB)	-4.0	-6.0	-4.0	-4.0	-4.0	-4.0
Downlink Contour EIRP (dBW)	26.5	32.3	34.5	34.5	32.8	46.5
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
ADJACENT SATELLITE 1						
Satellite 1 Orbital Location	54.85E	54.85E	54.85E	54.85E	54.85E	54.85E
Uplink Power Density (dBW/Hz)	-38.7	-38.7	-38.7	-38.7	-38.7	-45.0
Uplink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
Downlink EIRP Density (dBW/Hz)	-36.3	-38.0	-40.0	-38.0	-36.3	-24.0
Downlink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
ADJACENT SATELLITE 2						
Satellite 1 Orbital Location	50.85E	50.85E	50.85E	50.85E	50.85E	50.85E
Uplink Power Density (dBW/Hz)	-38.7	-38.7	-38.7	-38.7	-38.7	-45.0
Uplink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
Downlink EIRP Density (dBW/Hz)	-36.3	-38.0	-40.0	-38.0	-36.3	-24.0
Downlink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
CARRIER INFORMATION						
Carrier ID	36M0G7W	36M0G7W	34M0G7W	36M0G7W	36M0G7W	34M0G7W
Carrier Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	N/A	N/A	N/A	N/A	N/A	N/A
Information Rate(kbps)	24575	24575	23204	24575	24575	23204
Code Rate	1/2x188/204	1/2x188/204	1/2x188/204	1/2x188/204	1/2x188/204	1/2x188/204
Occupied Bandwidth(kHz)	30133	30133	28452	30133	30133	28452
Allocated Bandwidth(kHz)	36000	36000	34000	36000	36000	34000
Minimum C/N, Clear Sky (dB)	3.36	3.36	3.36	3.36	3.36	3.36
Minimum C/N, Rain (dB)	3.36	3.36	3.36	3.36	3.36	3.36
UPLINK EARTH STATION						
Earth Station Diameter (meters)	7.0	8.1	8.1	8.1	6.1	6.1
Earth Station Gain (dBi)	51.0	52.8	52.8	52.8	49.4	56.9
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK EARTH STATION						
Earth Station Diameter (meters)	6.1	3.5	3.0	3.0	3.5	1.2
Earth Station Gain (dBi)	46.5	41.1	39.7	39.7	41.1	41.3
Earth Station G/T (dB/K)	26.2	21.0	19.2	19.2	21.0	18.8
Earth Station Elevation Angle	20	20	20	20	20	20
LINK FADE TYPE						
	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE						
Uplink Earth Station EIRP (dBW)	75.6	76.8	76.1	76.1	73.0	80.1
Uplink Path Loss, Clear Sky (dB)	-200.2	-200.2	-200.2	-200.2	-200.2	-207.5
Uplink Rain Attenuation	0.0	0.0	0.0	0.0	0.0	0.0
Satellite G/T(dB/K)	-11	-9.0	-7.5	-7.5	-1.0	1.0
Boltzman Constant(dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.8	-74.8	-74.5	-74.8	-74.8	-74.5
Uplink C/N(dB)	18.2	21.4	22.4	22.2	25.6	27.7
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW)	26.5	32.3	34.5	34.5	32.8	46.5
Antenna Pointing Error (dB)	-5	-5	-5	-5	-5	-5
Downlink Path Loss, Clear Sky (dB)	-196.3	-196.3	-196.3	-196.3	-196.3	-205.9
Downlink Rain Attenuation	0.0	0.0	0.0	0.0	0.0	0.0
Earth Station G/T (dB/K)	26.2	21.0	19.2	19.2	21.0	18.8
Boltzman Constant(dBW / K - Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.8	-74.8	-74.5	-74.8	-74.8	-74.5
Downlink C / N(dB)	9.7	10.3	10.9	10.7	10.8	12.9
COMPOSITE LINK PERFORMANCE						
C/N Uplink (dB)	18.2	21.4	22.4	22.2	25.6	27.7
C/N Downlink (dB)	9.7	10.3	10.9	10.7	10.8	12.9
C/I Intermodulation (dB)	N/A	N/A	N/A	N/A	N/A	N/A
C/I Uplink Co-Channel (dB)*	25.0	25.0	25.0	25.0	25.0	25.0
C/I Downlink Co-Channel (dB)*	25.0	25.0	25.0	25.0	25.0	25.0
C/I Uplink Adjacent Satellite 1 (dB)	17.5	16.7	18.3	18.0	14.9	28.6
C/I Downlink Adjacent Satellite 1 (dB)	12.0	11.8	11.1	8.9	10.6	13.8
C/I Uplink Adjacent Satellite 2 (dB)	17.5	16.7	18.3	18.0	14.9	28.6
C/I Downlink Adjacent Satellite 2 (dB)	13.9	16.6	19.9	17.6	15.4	17.2
C/(N+I) Composite (dB)	5.7	6.2	6.8	5.6	5.7	9.1
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	4.7	5.2	5.8	4.6	4.7	8.1
Minimum Required C/N (dB)	-3.4	-3.4	-3.4	-3.4	-3.4	-3.4
Excess Link Margin (dB)	1.4	1.9	2.4	1.2	1.3	4.7
Number of Carriers	1.0	1.0	1.0	1.0	1.0	1.0
CARRIER DENSITY LEVELS						
Uplink Power Density (dBW/Hz)	-50.2	-50.8	-51.2	-51.5	-51.2	-51.3
Downlink EIRP Density At Beam Peak (dBW/Hz)	-44.3	-36.5	-36.0	-36.3	-38.0	-24.0

Exhibit 15: Link Budget For Adjacent Satellite Located At 56.85° E.L.

UPLINK BEAM INFORMATION						
Uplink Beam Name	GLOBAL	HEMI	ZONE	ZONE	CSPOT	KSPOT
Uplink Frequency (GHz)	6.175	6.175	6.175	6.175	6.175	14.250
Uplink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	LINEAR
Uplink Relative Contour Level (dB)	-4.0	-6.0	-4.0	-4.0	-4.0	-4.0
Uplink Contour G/T (dB/K)	-11	-9.0	-7.5	-7.5	-1.0	1.0
Uplink SFD (dBW/m2)	-87.3	-86.1	-86.8	-86.8	-89.9	-82.8
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
DOWNLINK BEAM INFORMATION						
Downlink Beam Name	GLOBAL	HEMI	ZONE	ZONE	CSPOT	KSPOT
Downlink Frequency (GHz)	3.950	3.950	3.950	3.950	3.950	11.950
Downlink Beam Polarization	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	CIRCULAR	LINEAR
Downlink Relative Contour Level (dB)	-4.0	-6.0	-4.0	-4.0	-4.0	-4.0
Downlink Contour EIRP (dBW)	26.5	32.3	34.5	34.5	32.8	46.5
Rain Rate (mm/hr)	42.0	42.0	42.0	42.0	42.0	42.0
ADJACENT SATELLITE 1						
Satellite 1 Orbital Location	IS709	IS709	IS709	IS709	IS709	IS709
Satellite 1 Orbital Location	54.85E	54.85E	54.85E	54.85E	54.85E	54.85E
Uplink Power Density (dBW/Hz)	-38.7	-38.7	-38.7	-38.7	-38.7	-45.0
Uplink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
Downlink EIRP Density (dBW/Hz)	-36.3	-38.0	-40.0	-38.0	-36.3	-24.0
Downlink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
ADJACENT SATELLITE 2						
Satellite 1 Orbital Location	SAT-2	SAT-2	SAT-2	SAT-2	SAT-2	SAT-2
Satellite 1 Orbital Location	58.85E	58.85E	58.85E	58.85E	58.85E	58.85E
Uplink Power Density (dBW/Hz)	-38.7	-38.7	-38.7	-38.7	-38.7	-45.0
Uplink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
Downlink EIRP Density (dBW/Hz)	-36.3	-38.0	-40.0	-38.0	-36.3	-24.0
Downlink Polarization Advantage (dB)	0.0	0.0	0.0	0.0	0.0	0.0
CARRIER INFORMATION						
Carrier ID	36M0G7W	36M0G7W	34M0G7W	36M0G7W	36M0G7W	34M0G7W
Carrier Modulation	QPSK	QPSK	QPSK	QPSK	QPSK	QPSK
Peak to Peak Bandwidth of EDS (MHz)	N/A	N/A	N/A	N/A	N/A	N/A
Information Rate(kbps)	24575	24575	23204	24575	24575	23204
Code Rate	1/2x188/204	1/2x188/204	1/2x188/204	1/2x188/204	1/2x188/204	1/2x188/204
Occupied Bandwidth(kHz)	30133	30133	28452	30133	30133	28452
Allocated Bandwidth(kHz)	36000	36000	34000	36000	36000	34000
Minimum C/N, Clear Sky (dB)	3.36	3.36	3.36	3.36	3.36	3.36
Minimum C/N, Rain (dB)	3.36	3.36	3.36	3.36	3.36	3.36
UPLINK EARTH STATION						
Earth Station Diameter (meters)	7.0	8.1	8.1	8.1	6.1	6.1
Earth Station Gain (dBi)	51.0	52.8	52.8	52.8	49.4	56.9
Earth Station Elevation Angle	20	20	20	20	20	20
DOWNLINK EARTH STATION						
Earth Station Diameter (meters)	6.1	3.5	3.0	3.0	3.5	1.2
Earth Station Gain (dBi)	46.5	41.1	39.7	39.7	41.1	41.3
Earth Station G/T (dB/K)	26.2	21.0	19.2	19.2	21.0	18.8
Earth Station Elevation Angle	20	20	20	20	20	20
LINK FADE TYPE	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky	Clear Sky
UPLINK PERFORMANCE						
Uplink Earth Station EIRP (dBW)	75.6	76.8	76.1	76.1	73.0	80.1
Uplink Path Loss, Clear Sky (dB)	-200.2	-200.2	-200.2	-200.2	-200.2	-207.5
Uplink Rain Attenuation	0.0	0.0	0.0	0.0	0.0	0.0
Satellite G/T(dB/K)	-11	-9.0	-7.5	-7.5	-1.0	1.0
Boltzman Constant(dBW/K-Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.8	-74.8	-74.5	-74.8	-74.8	-74.5
Uplink C/N(dB)	18.2	21.4	22.4	22.2	25.6	27.7
DOWNLINK PERFORMANCE						
Downlink EIRP per Carrier (dBW)	26.5	32.3	34.5	34.5	32.8	46.5
Antenna Pointing Error (dB)	-5	-5	-5	-5	-5	-5
Downlink Path Loss, Clear Sky (dB)	-196.3	-196.3	-196.3	-196.3	-196.3	-205.9
Downlink Rain Attenuation	0.0	0.0	0.0	0.0	0.0	0.0
Earth Station G/T (dB/K)	26.2	21.0	19.2	19.2	21.0	18.8
Boltzman Constant(dBW / K - Hz)	228.6	228.6	228.6	228.6	228.6	228.6
Carrier Noise Bandwidth (dB-Hz)	-74.8	-74.8	-74.5	-74.8	-74.8	-74.5
Downlink C / N(dB)	9.7	10.3	10.9	10.7	10.8	12.9
COMPOSITE LINK PERFORMANCE						
C/N Uplink (dB)	18.2	21.4	22.4	22.2	25.6	27.7
C/N Downlink (dB)	9.7	10.3	10.9	10.7	10.8	12.9
C/I Intermodulation (dB)	N/A	N/A	N/A	N/A	N/A	N/A
C/I Uplink Co-Channel (dB)*	25.0	25.0	25.0	25.0	25.0	25.0
C/I Downlink Co-Channel (dB)*	25.0	25.0	25.0	25.0	25.0	25.0
C/I Uplink Adjacent Satellite 1 (dB)	17.5	16.7	18.3	18.0	14.9	28.6
C/I Downlink Adjacent Satellite 1 (dB)	12.0	11.8	11.1	8.9	10.6	13.8
C/I Uplink Adjacent Satellite 2 (dB)	17.5	16.7	18.3	18.0	14.9	28.6
C/I Downlink Adjacent Satellite 2 (dB)	13.9	16.6	19.9	17.6	15.4	17.2
C/(N+I) Composite (dB)	5.7	6.2	6.8	5.6	5.7	9.1
Required System Margin (dB)	-1.0	-1.0	-1.0	-1.0	-1.0	-1.0
Net C/(N+I) Composite (dB)	4.7	5.2	5.8	4.6	4.7	8.1
Minimum Required C/N (dB)	-3.4	-3.4	-3.4	-3.4	-3.4	-3.4
Excess Link Margin (dB)	1.4	1.9	2.4	1.2	1.3	4.7
Number of Carriers	1.0	1.0	1.0	1.0	1.0	1.0
CARRIER DENSITY LEVELS						
Uplink Power Density (dBW/Hz)	-50.2	-50.8	-51.2	-51.5	-51.2	-51.3
Downlink EIRP Density At Beam Peak (dBW/Hz)	-44.3	-36.5	-36.0	-36.3	-38.0	-24.0

Certification Statement

I hereby certify that I am a technically qualified person and am familiar with Part 25 of the Commission's rules and regulations. The contents of this engineering statement were prepared by me or under my direct supervision and to the best of my knowledge are complete and accurate.

 /s/ Jose Albuquerque

Jose Albuquerque
Intelsat
Senior Director, Spectrum
Engineering

 January 18, 2011

Date