

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
(Technical and Operational Description)

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: INTELSAT 21		e. Estimated Date of Placement into Service: 10/19/2012		i. Will the space station(s) operate on a Common Carrier Basis: N	
b. Construction Commencement Date: 8/1/2009		f. Estimated Lifetime of Satellite(s): 15 Years		j. Number of transponders offered on a common carrier basis:	
c. Construction Completion Date: 3/22/2012		g. Total Number of Transponders: 60		k. Total Common Carrier Transponder Bandwidth: MHz	
d1. Est Launch Date Begin: 7/20/2012	d2. Est Launch Date End: 8/19/2012	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 2160 MHz		l. Orbit Type: Mark all boxes that apply: ☒ GSO ☐ NGSO	

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

Frequency Band Limits				e. T/R Mode	f. Nature of Service(s): List all that apply to this band
Lower Frequency (. Hz)		Upper Frequency (. Hz)			
a. Numeric	b. Unit (K/M/G)	c. Numeric	d. Unit (K/M/G)		
5925	M	6425	M	R	Fixed Satellite Service
14000	M	14500	M	R	Fixed Satellite Service
3700	M	4200	M	T	Fixed Satellite Service
11450	M	11700	M	T	Fixed Satellite Service
11700	M	12200	M	T	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 58 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: REPLACE INTELSAT 9
Longitudinal Tolerance or E/W Station-Keeping:		f. Inclination Excursion or N/S Station-Keeping Tolerance: 0.05 Degrees	Range of orbital are in which adequate service can be provided (Optional): Degrees E/W g. Westernmost: h. Easternmost:	
d. Toward West: 0.05 Degrees				
e. Toward East: 0.05 Degrees				
i. Reason for service are selection (Optional):				

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

Page 2: NGSO Orbits

S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

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

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

S4d. Orbit Epoch Date:

For each Orbital Plane Provide:

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

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

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

NO NGSO DATA FILED

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

Page 3: Service Areas

S6. SERVICE AREA CHARACTERISTICS for each service area provide:

(a) Service Area ID	(b) Type of Associated Station (Earth or Space)	(c) Service Area Diagram File Name (GXT File)	(d) Service Area Description. Provide list of geographic areas (state postal codes or ITU 3-ltr codes), satellites or Figure No. of Service Area Diagram.
1	S		NORTH AND SOUTH AMERICA
2	S		MEXICO, THE CARIBBEAN, AND CENTRAL AMERICA
3	S		BRAZIL AND URGUAY
4	S		NORTHEAST UNITED STATES, EASTERN SOUTH AMERICA, EUROPE, WESTERN AFRICA
5	S		GLOBAL

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 4: Antenna Beams

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

(a) Beam ID	(b) T/R Mode	Isotropic Antenna Gain		(e) Pointing Error (Degrees)	(f) Rotational Error (Degrees)	(g) Min. Cross- Polar Iso- lation (dB)	(h) Polar- ization Switch- able? (Y/N)	(i) Polarization Alignment Rel. Equatorial Plane (Degrees)	(j) Service Area ID	Transmit			Receive				
		(c) Peak (dBi)	(d) Edge (dBi)							(k) Input Losses (dB)	(l) Effective Output Power (W)	(m) Max. EIRP (dBW)	(n) System Noise Temp (k)	(o) G/T Max. Gain Pt. (db/K)	(p) Min. Saturation Flux Density (dBW/m2)	Input Attenuator (dB)	
																(q) Max. Value	(r) Step Size
WHH	R	28.2	20.2	0.07	0.2	30	N	0	1				375	2.5	-108.5	28	1
WHV	R	28.2	20.2	0.07	0.2	27	N	90	1				375	2.5	-108.5	28	1
MXH	R	36.9	30.9	0.07	0.2	30	N	0	2				441	10.5	-108.5	28	1
MXV	R	36.4	30.4	0.07	0.2	30	N	90	2				391	10.5	-108.5	28	1
BZH	R	31.7	27.7	0.07	0.2	30	N	0	3				417	5.5	-107.5	28	1
MOV	R	27.8	21.8	0.07	0.2	30	N	90	4				318	2.8	-102.8	28	1
WHH	T	26.3	18.3	0.07	0.2	30	N	0	1	1.4	53.5	43.6					
WHV	T	26.3	18.3	0.07	0.2	30	N	90	1	1.4	54.2	43.6					
MXH	T	34.9	28.9	0.07	0.2	30	N	0	2	1	125.3	55.9					
MXV	T	35.3	29.3	0.07	0.2	30	N	90	2	1.2	115.9	55.9					
BZVD	T	30.7	26.7	0.07	0.2	30	N	90	3	1	119.7	51.5					
MOH	T	26.7	20.7	0.07	0.2	30	N	0	4	1	119.7	47.5					
CMD	R	19.1	16.8	0.07	0.2		N	0	5				1616	-13	-105.8		
CMD	R	11.3	10.8	0.07	0.2		N	0	5				1631	-20.8	-97.6		
CMD	R	9.1	8.6	0.07	0.2		N		5				1817	-23.5	-95.1		
TLM	T	19.3	17	0.07	0.2		N	90	5	3.8	0.3	13.5					
TLMB	T	9.6	9.1	0.07	0.2		N	90	5	1	3.4	14.9					
TLMP	T	9.6	9.1	0.07	0.2		N		5	4.1	1.6	11.5					
UPC	T	14.4	13.9	0.07	0.2		N		5	1	0.7	12.6					
UPK	T	19.3	18.8	0.07	0.2		N	0	5	1	0.7	17.5					
UPK	T	19.3	18.8	0.07	0.2		N	90	5	1	0.7	17.5					

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 5: Beam Diagrams

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

(a) Beam ID	(b) T/R Mode	(c) Co-or Cross Polar Mode ("C" or" X")	(d) GSO Ref. Orbital Longitude (Deg. E/W)	(e) NGSO Antenna Gain Contour Description (Figure/Table/ Exhibit)	(f) GSO Antenna Gain Contour Data (GXT File)	Max. Power Flux Density (dBW/M2/Hz)				
						At Angle of Arrival above horizontal (for emission with highest PFD)				
						(g) 5 Deg	(h) 10 Deg	(i) 15 Deg	(j) 20 Deg	(k) 25 Deg
WHH	R	C	-58		WHHU.gxt					
WHV	R	C	-58		WHVU.gxt					
MXH	R	C	-58		MXHU.gxt					
MXV	R	C	-58		MXVU.gxt					
BZH	R	C	-58		BZHU.gxt					
MOV	R	C	-58		MOVU.gxt					
WHH	T	C	-58		WHHD.gxt	-152	-149.6	-149.4	-149.3	-149.2
WHV	T	C	-58		WHVD.gxt	-152	-149.6	-149.4	-149.3	-149.2
MXH	T	C	-58		MXHD.gxt					
MXV	T	C	-58		MXVD.gxt					
BZVD	T	C	-58		BZVD.gxt	-150	-147.5	-145	-142.5	-141.3
MOH	T	C	-58		MOHD.gxt	-150	-147.5	-145.5	-145.4	-145.3
CMD	R	C	-58		CMDG.gxt					
CMD	R	C	-58		CMDB.gxt					
CMD	R	C	-58		CMDP.gxt					
TLM	T	C	-58		TLMG.gxt	-168.5	-168.4	-168.3	-168.2	-168.1
TLMB	T	C	-58		TLMB.gxt	-167.1	-167	-166.9	-166.8	-166.7
TLMP	T	C	-58		TLMP.gxt	-170.5	-170.4	-170.3	-170.2	-170.1
UPC	T	C	-58		UPCR.gxt	-158.6	-158.5	-158.4	-158.3	-158.2
UPK	T	C	-58		UPKH.gxt	-153.7	-153.6	-153.5	-153.4	-153.3
UPK	T	C	-58		UPKV.gxt	-153.7	-153.6	-153.5	-153.4	-153.3
WHV	R	X	-58		WHVU_XP.gxt					

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 6: Channels and Transponders

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

(a) Channel No.	(B) Assigned Bandwidth (kHz)	(c) T/R Mode	(d) Center Frequency (MHz)	(e) Polarization (H, V, L, R)	(f) TTC or Comm Channel (T or C)
CU001	36000	R	5945	H	C
CU003	36000	R	5985	H	C
CU005	36000	R	6025	H	C
CU007	36000	R	6065	H	C
CU009	36000	R	6105	H	C
CU011	36000	R	6145	H	C
CU013	36000	R	6185	H	C
CU015	36000	R	6225	H	C
CU017	36000	R	6265	H	C
CU019	36000	R	6305	H	C
CU021	36000	R	6345	H	C
CU023	36000	R	6385	H	C
CU002	36000	R	5945	V	C
CU004	36000	R	5985	V	C
CU006	36000	R	6025	V	C
CU008	36000	R	6065	V	C
CU010	36000	R	6105	V	C
CU012	36000	R	6145	V	C
CU014	36000	R	6185	V	C
CU016	36000	R	6225	V	C
CU018	36000	R	6265	V	C
CU020	36000	R	6305	V	C
CU022	36000	R	6345	V	C
CU024	36000	R	6385	V	C
CD001	36000	T	3720	V	C
CD003	36000	T	3760	V	C
CD005	36000	T	3800	V	C
CD007	36000	T	3840	V	C
CD009	36000	T	3880	V	C
CD011	36000	T	3920	V	C

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
C0001	134.9	CU001	WHHU	CD001	WHVD
C0003	134.9	CU003	WHHU	CD003	WHVD
C0005	134.9	CU005	WHHU	CD005	WHVD
C0007	134.9	CU007	WHHU	CD007	WHVD
C0009	134.9	CU009	WHHU	CD009	WHVD
C0011	134.9	CU011	WHHU	CD011	WHVD
C0013	134.9	CU013	WHHU	CD013	WHVD
C0015	134.9	CU015	WHHU	CD015	WHVD
C0017	134.9	CU017	WHHU	CD017	WHVD
C0019	134.9	CU019	WHHU	CD019	WHVD
C0021	134.9	CU021	WHHU	CD021	WHVD
C0023	134.9	CU023	WHHU	CD023	WHVD
C0002	134.9	CU002	WHVU	CD002	WHHD
C0004	134.9	CU004	WHVU	CD004	WHHD
C0006	134.9	CU006	WHVU	CD006	WHHD
C0008	134.9	CU008	WHVU	CD008	WHHD
C0010	134.9	CU010	WHVU	CD010	WHHD
C0012	134.9	CU012	WHVU	CD012	WHHD
C0014	134.9	CU014	WHVU	CD014	WHHD
C0016	134.9	CU016	WHVU	CD016	WHHD
C0018	134.9	CU018	WHVU	CD018	WHHD
C0020	134.9	CU020	WHVU	CD020	WHHD
C0022	134.9	CU022	WHVU	CD022	WHHD
C0024	134.9	CU024	WHVU	CD024	WHHD
K0001	137.6	KU001	MXVU	KD001	MXHD
K0003	137.6	KU003	MXVU	KD003	MXHD
K0005	137.6	KU005	MXVU	KD005	MXHD
K0007	137.6	KU007	MXVU	KD007	MXHD
K0009	137.6	KU009	MXVU	KD009	MXHD
K0011	137.6	KU011	MXVU	KD011	MXHD

CD013	36000	T	3960	V	C
CD015	36000	T	4000	V	C
CD017	36000	T	4040	V	C
CD019	36000	T	4080	V	C
CD021	36000	T	4120	V	C
CD023	36000	T	4160	V	C
CD002	36000	T	3720	H	C
CD004	36000	T	3760	H	C
CD006	36000	T	3800	H	C
CD008	36000	T	3840	H	C
CD010	36000	T	3880	H	C
CD012	36000	T	3920	H	C
CD014	36000	T	3960	H	C
CD016	36000	T	4000	H	C
CD018	36000	T	4040	H	C
CD020	36000	T	4080	H	C
CD022	36000	T	4120	H	C
CD024	36000	T	4160	H	C
KU001	36000	R	14020	V	C
KU003	36000	R	14060	V	C
KU005	36000	R	14100	V	C
KU007	36000	R	14140	V	C
KU009	36000	R	14180	V	C
KU011	36000	R	14220	V	C
KU013	36000	R	14260	V	C
KU015	36000	R	14300	V	C
KU017	36000	R	14340	V	C
KU019	36000	R	14380	V	C
KU021	36000	R	14420	V	C
KU023	36000	R	14460	V	C
KU002	36000	R	14040	H	C
KU004	36000	R	14080	H	C
KU006	36000	R	14120	H	C
KU008	36000	R	14160	H	C
KU010	36000	R	14200	H	C
KU012	36000	R	14240	H	C
KU014	36000	R	14280	H	C
KU016	36000	R	14320	H	C
KU018	36000	R	14360	H	C

K0013	137.6	KU013	MXVU	KD013	MXHD
K0015	137.6	KU015	MXVU	KD015	MXHD
K0017	137.6	KU017	MXVU	KD017	MXHD
K0019	137.6	KU019	MXVU	KD019	MXHD
K0021	137.6	KU021	MXVU	KD021	MXHD
K0023	137.6	KU023	MXVU	KD023	MXHD
K0002	136.7	KU002	MXHU	KD002	MXVD
K0004	136.7	KU004	MXHU	KD004	MXVD
K0006	136.7	KU006	MXHU	KD006	MXVD
K0008	136.7	KU008	MXHU	KD008	MXVD
K0010	136.7	KU010	MXHU	KD010	MXVD
K0012	136.7	KU012	MXHU	KD012	MXVD
K0014	136.7	KU014	MXHU	KD014	MXVD
K0016	136.7	KU016	MXHU	KD016	MXVD
K0018	136.7	KU018	MXHU	KD018	MXVD
K0020	136.7	KU020	MXHU	KD020	MXVD
K0022	136.7	KU022	MXHU	KD022	MXVD
K0024	136.7	KU024	MXHU	KD024	MXVD
K0026	141	KU026	BZHU	KD026	BZVD
K0028	141	KU028	BZHU	KD028	BZVD
K0030	141	KU030	BZHU	KD030	BZVD
K0032	141	KU032	BZHU	KD032	BZVD
K0034	141	KU034	BZHU	KD034	BZVD
K0036	141	KU036	BZHU	KD036	BZVD
K0038	141	KU038	BZHU	KD038	BZVD
K0040	141	KU040	BZHU	KD040	BZVD
K0042	141	KU042	BZHU	KD042	BZVD
K0044	141	KU044	BZHU	KD044	BZVD
K0046	141	KU046	BZHU	KD046	BZVD
K0048	141	KU048	BZHU	KD048	BZVD
K0025	140.2	KU025	MOVU	KD025	MOHD
K0027	140.2	KU027	MOVU	KD027	MOHD
K0029	140.2	KU029	MOVU	KD029	MOHD
K0031	140.2	KU031	MOVU	KD031	MOHD
K0033	140.2	KU033	MOVU	KD033	MOHD
K0035	140.2	KU035	MOVU	KD035	MOHD
K0037	140.2	KU037	MOVU	KD037	MOHD
BM036	141	KU036	BZHU	MM037	MOHD
BM038	141	KU038	BZHU	MM035	MOHD

KU020	36000	R	14400	H	C
KU022	36000	R	14440	H	C
KU024	36000	R	14480	H	C
KD001	36000	T	11720	H	C
KD003	36000	T	11760	H	C
KD005	36000	T	11800	H	C
KD007	36000	T	11840	H	C
KD009	36000	T	11880	H	C
KD011	36000	T	11920	H	C
KD013	36000	T	11960	H	C
KD015	36000	T	12000	H	C
KD017	36000	T	12040	H	C
KD019	36000	T	12080	H	C
KD021	36000	T	12120	H	C
KD023	36000	T	12160	H	C
KD002	36000	T	11740	V	C
KD004	36000	T	11780	V	C
KD006	36000	T	11820	V	C
KD008	36000	T	11860	V	C
KD010	36000	T	11900	V	C
KD012	36000	T	11940	V	C
KD014	36000	T	11980	V	C
KD016	36000	T	12020	V	C
KD018	36000	T	12060	V	C
KD020	36000	T	12100	V	C
KD022	36000	T	12140	V	C
KD024	36000	T	12180	V	C
KU026	36000	R	14040	H	C
KU028	36000	R	14080	H	C
KU030	36000	R	14120	H	C
KU032	36000	R	14160	H	C
KU034	36000	R	14200	H	C
KU036	36000	R	14240	H	C
KU038	36000	R	14280	H	C
KU040	36000	R	14320	H	C
KU042	36000	R	14360	H	C
KU044	36000	R	14400	H	C
KU046	36000	R	14440	H	C
KU048	36000	R	14480	H	C

BM040	141	KU040	BZHU	MM033	MOHD
BM042	141	KU042	BZHU	MM031	MOHD
BM044	141	KU044	BZHU	MM029	MOHD
BM046	141	KU046	BZHU	MM027	MOHD
BM048	141	KU048	BZHU	MM025	MOHD
MB025	140.2	KU025	MOVU	BB048	BZVD
MB027	140.2	KU027	MOVU	BB046	BZVD
MB029	140.2	KU029	MOVU	BB044	BZVD
MB031	140.2	KU031	MOVU	BB042	BZVD
MB033	140.2	KU033	MOVU	BB040	BZVD
MB035	140.2	KU035	MOVU	BB038	BZVD
MB037	140.2	KU037	MOVU	BB036	BZVD

KD026	36000	T	11740	V	C
KD028	36000	T	11780	V	C
KD030	36000	T	11820	V	C
KD032	36000	T	11860	V	C
KD034	36000	T	11900	V	C
KD036	36000	T	11940	V	C
KD038	36000	T	11980	V	C
KD040	36000	T	12020	V	C
KD042	36000	T	12060	V	C
KD044	36000	T	12100	V	C
KD046	36000	T	12140	V	C
KD048	36000	T	12180	V	C
KU025	54000	R	14030	V	C
KU027	27000	R	14075	V	C
KU029	27000	R	14105	V	C
KU031	27000	R	14135	V	C
KU033	27000	R	14165	V	C
KU035	27000	R	14195	V	C
KU037	27000	R	14225	V	C
KD025	54000	T	11487	H	C
KD027	27000	T	11532	H	C
KD029	27000	T	11562	H	C
KD031	27000	T	11592	H	C
KD033	27000	T	11622	H	C
KD035	27000	T	11652	H	C
KD037	27000	T	11682	H	C
MM037	27000	T	11940	H	C
MM035	27000	T	11980	H	C
MM033	27000	T	12020	H	C
MM031	27000	T	12060	H	C
CMD1	1000	R	13994.5	H	T
CMD2	1000	R	13750.5	L	T
TLM1	500	T	11451.25	V	T
TLM2	500	T	11451.75	V	T
TLM3	500	T	11453.25	V	T
TLM4	500	T	11453.75	V	T
TLM5	500	T	11451.25	L	T
TLM6	500	T	11451.75	L	T
TLM7	500	T	11453.25	L	T

TLM8	500	T	11453.75	L	T
UPC	25	T	4199.5	R	T
UPK1	25	T	11450.25	H	T
UPK2	25	T	11698.50	V	T
MM029	27000	T	12100	H	C
MM027	27000	T	12140	H	C
MM025	36000	T	12180	H	C
BB048	36000	T	11487	V	C
BB046	27000	T	11532	V	C
BB044	27000	T	11562	V	C
BB042	27000	T	11592	V	C
BB040	27000	T	11622	V	C
BB038	27000	T	11652	V	C
BB036	27000	T	11682	V	C
UPK3	25	T	12199.25	H	T

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 7: Digital Modulation

S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

(a) Digital Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) No. of Phases	(e) Uncoded Data Rate (kbps)	(f) FEC Error Correction Coding Rate	(g) CDMA Processing Gain (dB)	(h) Total C/N Performance Objective (dB)	(i) Single Entry C/I Objective (dB)
D1	54M0G7W	54000	4	36862	0.5		3.4	16.6
D2	36M0G7W	36000	4	24575	0.5		3.4	17.8
D3	27M0G7W	27000	4	18431	0.5		3.4	18
D4	10M3G7W	10300	4	6000	0.5		3.9	17.8
D5	100KG7W	100	4	64	0.5		3	17.4
D6	1M45G7W	1450	2	512	0.5		3.4	17.1
D7	400KG7W	400	2	128	0.5		3.4	17.6

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 8: Analog Modulation

S12. ANALOG MODULATION PARAMETERS For each analog emission provide:

(a) Analog Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) Signal Type	(e) Channels per Carrier	Multi-channel Telephony				(j) Video Standard NTSC, PAL, etc.	(k) Video Noise- Weighting (dB)	(l) Video and SCPC/FM Modulation Index	(m) SCPC/FM Compander, Preemphasis, and Noise Weighting (dB)	(n) Total C/N Performance Objective (dB)	(o) Single Entry C/I Objective (dB)
					(f) Ave. Companded Talker Level (dBm0)	(g) Bottom Baseband Freq. (MHz)	(h) Top Baseband Freq. (MHz)	(i) RMS Modulation Index						
A1	36M0F3F	36000	TV/FM	1					NTSC	12.8	2.6		10	22.8
A2	24M0F3F	24000	TV/FM	1					NTSC	12.8	2.6		10	24.5

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 9: Typical Emissions

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

Associated Transponder ID Range		Modulation ID		(e) Carriers per Transponder	(f) Carrier Spacing (kHz)	(g) Noise Budget Reference (Table No.)	(h) Energy Dispersal Bandwidth (kHz)	Receive Band (Assoc. Transmit Stn)			Transmit Band (This Space Station)			
		(c) Digital (Table S11)	(d) Analog (Table S12)					(i) Assoc. Stn. Max. Antenna Gain (dBi)	Assoc. Station Transmit Power (dBW)		EIRP (dBW)		(n) Max. Power Flux Density (dBW/m ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
(a) Start	(b) End								(j) Min.	(k) Max.	(l) Min.	(m) Max.		
C0001	MB037		A1	1	36000	IS21 SCHEDUL	4000	56.4	15	23	35.6	43.6	-148.5	26.2
C0001	MB037	D2		1	36000	NOTE.txt		49.4	15	23	35.6	43.6	-157.3	19.2
C0001	MB037	D4		2	10300	NOTE.txt		49.4	10.2	18.2	28.5	36.5	-157.9	19.2
C0001	MB037	D5		254	100	NOTE.txt		49.4	-10.3	-2.3	8	16	-158.9	19.2
C0001	MB037		A1	1	36000	NOTE.txt	4000	56.9	13.5	19.5	49.9	55.9	-136.2	25
C0001	MB037	D2		1	36000	NOTE.txt		56.9	12.5	18.5	42.8	48.8	-152.1	25
C0001	MB037	D4		3	10300	NOTE.txt		56.9	4.2	10.2	36.3	42.3	-152.1	26.7
C0001	MB037	D5		360	100	NOTE.txt		56.9	-15.3	-9.3	16.8	22.8	-152.1	25
C0001	MB037	D6		24	1450	NOTE.txt		56.9	-3.3	2.7	28.8	34.8	-152.2	25
C0001	MB037	D7		90	400	NOTE.txt		49	-3.5	2.5	20.6	26.6	-154.4	33.1
C0001	MB037		A1	1	36000	NOTE.txt	4000	56.9	19.5	23.5	47.5	51.5	-140.6	25
C0001	MB037	D2		1	36000	NOTE.txt		56.9	18.1	22.1	44.8	48.8	-152.1	22.3
C0001	MB037	D4		3	10300	NOTE.txt		56.9	6.6	10.6	38.2	42.2	-152.2	22.3
C0001	MB037	D5		360	100	NOTE.txt		56.9	-13.5	-9.5	18.2	22.2	-152.7	22.3
C0001	MB037	D6		24	1450	NOTE.txt		56.9	-1.5	2.5	30.2	34.2	-152.8	22.3
C0001	MB037	D7		90	400	NOTE.txt		46.4	-1.6	2.4	19.6	23.6	-157.4	33.1
C0001	MB037		A2	1	24000	NOTE.txt	4000	60.1	17	23	41.5	47.5	-144.6	30.7
C0001	MB037	D3		1	27000	NOTE.txt		56.8	16.3	22.3	41.5	47.5	-152.1	22
C0001	MB037	D4		2	10300	NOTE.txt		56.8	5	11	34.9	40.9	-153.5	24.7
C0001	MB037	D5		197	100	NOTE.txt		56.8	-14.9	-8.9	15	21	-153.9	24.7
C0001	MB037	D6		12	1450	NOTE.txt		56.8	-2.9	3.1	27	33	-154	24.7
C0001	MB037	D7		67	400	NOTE.txt		48.9	-4.5	1.5	17.5	23.5	-157.5	32.8
C0001	MB037		A2	2	24000	NOTE.txt	4000	56.8	18.1	24.1	35.3	41.3	-150.8	36.3
C0001	MB037	D1		1	54000	NOTE.txt		56.8	17.3	23.3	41.5	47.5	-155.2	24.7
C0001	MB037	D4		3	10300	NOTE.txt		56.8	8.7	14.7	32.5	38.5	-155.9	26.4
C0001	MB037	D5		353	100	NOTE.txt		56.8	-11.4	-5.4	12.5	18.5	-156.4	26.4
C0001	MB037	D6		31	1450	NOTE.txt		56.8	-0.9	5.1	23	29	-158	28.3
C0001	MB037	D7		135	400	NOTE.txt		52.6	-5	1	14.7	20.7	-160.3	32.8
C0001	MB037		A2	1	24000	NOTE.txt	4000	57	19.4	23.4	41.5	47.5	-144.6	28.7

C0001	MB037	D3		1	27000	NOTE.txt		57	19.4	23.4	41.5	47.5	-152.1	22.4
C0001	MB037	D4		2	10300	NOTE.txt		57	5	9	34.8	40.8	-153.6	25.1
C0001	MB037	D5		200	100	NOTE.txt		57	-14.8	-10.8	15	21	-153.9	25.1
C0001	MB037	D6		12	1450	NOTE.txt		57	-2.9	1.1	26.9	32.9	-154.1	25.1
C0001	MB037	D7		67	400	NOTE.txt		49.1	-4.9	-0.9	17	23	-158	33.2
C0001	MB037		A1	1	36000	NOTE.txt	4000	57	19.4	23.4	41.5	47.5	-144.6	31.1
C0001	MB037	D2		1	36000	NOTE.txt		57	19.4	23.4	41.5	47.5	-153.4	22.4
C0001	MB037	D4		2	10300	NOTE.txt		57	9.4	13.4	34.2	40.2	-154.2	25.1
C0001	MB037	D5		235	100	NOTE.txt		57	-10.5	-6.5	14.3	20.3	-154.6	25.1
C0001	MB037	D6		20	1450	NOTE.txt		57	0.1	4.1	24.8	30.8	-156.2	26.8
C0001	MB037	D7		90	400	NOTE.txt		49.8	-2.6	1.4	14.9	20.9	-160.1	33.2
C0001	MB037		A2	1	24000	NOTE.txt	4000	61.6	17.5	23.5	47.5	51.5	-140.6	22
C0001	MB037	D3		1	27000	NOTE.txt		56.8	17.5	23.5	43.6	47.6	-152	22
C0001	MB037	D4		2	10300	NOTE.txt		56.8	8.4	14.4	38.3	42.3	-152.1	22
C0001	MB037	D5		270	100	NOTE.txt		56.8	-11.6	-5.6	18.3	22.3	-152.6	22
C0001	MB037	D6		18	1450	NOTE.txt		56.8	-1.4	4.6	28.5	32.5	-154.5	24.7
C0001	MB037	D7		67	400	NOTE.txt		48.9	-2	4	20	24	-157	32.8
C0001	MB037		A1	1	36000	NOTE.txt	4000	58	18.1	24.1	47.5	51.5	-140.6	24.7
C0001	MB037	D2		1	36000	NOTE.txt		56.8	17.8	23.8	44.7	48.7	-152.2	22
C0001	MB037	D4		3	10300	NOTE.txt		56.8	7.3	13.3	38.2	42.2	-152.2	22
C0001	MB037	D5		360	100	NOTE.txt		56.8	-12.7	-6.7	18.2	22.2	-152.7	22
C0001	MB037	D6		24	1450	NOTE.txt		56.8	-0.7	5.3	30.1	34.1	-152.9	22
C0001	MB037	D7		90	400	NOTE.txt		46.3	-1.1	4.9	19.3	23.3	-157.7	32.8

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

Page 10: TT and C

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

Remote Control (TT C) Location(s):

S14a. Street Address: 3400 INTERNATIONAL DRIVE, NW			
S14b. City: WASHINGTON DC	S14c. County: DC	S14d. State/Country	S14e. Zip Code: 20008
S14f. Telephone Number: 202-941-7701		S14g. Call Sign of Control Station (if appropriate):	

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

**Page 11:
Characteristics and
Certifications**

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 2477	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 3507		
S15c. Mass of spacecraft and fuel at launch (kg): 5984	S15f. Length (m): 43.7	S15i. Payload: 0.941
S15d. Mass of fuel, in orbit, at beginning of life (kg): 735	S15g. Width (m): 9.2	S15j. Bus: 0.876
S15e. Deployed Area of Solar Array (square meters): 70.3	S15h. Height (m): 6.7	S15k. Total: 0.823

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:

Spacecraft Subsystem	Electrical Power (Watts) At Beginning of Life		Electrical Power (Watts) At End of Life	
	At Equinox	At Solstice	At Equinox	At Solstice
Payload (Watts):	(a): 11260	(f): 11260	(k): 11260	(p): 11260
Bus (Watts):	(b): 2203	(g): 1198	(l): 2139	(q): 963
Total (Watts):	(c): 13463	(h): 12458	(m): 13399	(r): 12223
Solar Array (Watts):	(d): 14007	(i): 13071	(n): 13942	(s): 12872
Depth of Battery Discharge (%):	(e) 67.5 %	(j) %	(o) 74.8 %	(t) %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?:	☒ YES	☐ NO	☐ N/A
b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met?	☐ YES	☐ NO	☒ N/A
c. Are the frequency tolerances of § 25.202(e) and the out-of-band emission limits of § 25.202(f)(1), (2) and (3) met?	☒ YES	☐ NO	☐ N/A

In addition to the information required in this Form, the space station applicant is required to provide all the information specified in Section 25.114 of the Commission's rules, 47 C.F.R. § 25.114.