



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

S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

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

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

S4d. Orbit Epoch Date:

For each Orbital Plane Provide:

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

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

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

**NO NGSO DATA FILED**

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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.
CONUS1	S		CONUS+Alaska+Hawaii
LACR1	S		Los Angeles, CA+Castle Rock, CO

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

(a) Beam ID	(b) T/R Mode	Isotropic Antenna Gain		(e) Pointing Error (Degrees)	(f) Rotational Error (Degrees)	(g) Min. Cross- Polar Iso- lation (dB)	(h) Polar- ization Switch- able? (Y/N)	(i) Polarization Alignment Rel. Equatorial Plane (Degrees)	(j) Service Area ID	Transmit			Receive			Input Attenuator (dB)	
		(c) Peak (dBi)	(d) Edge (dBi)							(k) Input Losses (dB)	(l) Effective Output Power (W)	(m) Max. EIRP (dBW)	(n) System Noise Temp (k)	(o) G/T Max. Gain Pt. (db/K)	(p) Min. Saturation Flux Density (dBW/m2)	(q) Max. Value	(r) Step Size
UL1	R	32.3	29.3	0.14	30	Y		LACR1				1023	2.2	-93.5	31	1	

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

(a) Beam ID	(b) T/R Mode	(c) Co-or Cross Polar 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
DL_1	T	C	-101		D8TX_CO.gxt					
DL_1	T	X	-101		D8TX_X.gxt					
UL1	R	C	-101		D8RX_CO.gxt					
UL1	R	X	-101		D8RX_X.gxt					

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

(a) Channel No.	(B) Assigned Bandwidth (kHz)	(c) T/R Mode	(d) Center Frequency (MHz)	(e) Polarization (H, V, L, R)	(f) TTC or Comm Channel (T or C)
A0001	24000	R	17324	R	C
A0003	24000	R	17353.16	R	C
A0005	24000	R	17382.32	R	C
A0007	24000	R	17411.48	R	C
A0009	24000	R	17440.64	R	C
A0011	24000	R	17469.8	R	C
A0013	24000	R	17498.96	R	C
A0015	24000	R	17528.12	R	C
A0017	24000	R	17557.28	R	C
A0019	24000	R	17586.44	R	C
A0021	24000	R	17615.6	R	C
A0023	24000	R	17644.76	R	C
A0025	24000	R	17673.92	R	C
A0027	24000	R	17703.08	R	C
A0029	24000	R	17732.24	R	C
A0031	24000	R	17761.4	R	C
C0001	24000	T	12224	R	C
C0003	24000	T	12253.16	R	C
C0005	24000	T	12282.32	R	C
C0007	24000	T	12311.48	R	C
C0009	24000	T	12340.64	R	C
C0011	24000	T	12369.8	R	C
C0013	24000	T	12398.96	R	C
C0015	24000	T	12428.12	R	C
C0017	24000	T	12457.28	R	C
C0019	24000	T	12486.44	R	C
C0021	24000	T	12515.6	R	C
C0023	24000	T	12544.76	R	C
C0025	24000	T	12573.92	R	C
C0027	24000	T	12603.08	R	C

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
T0001	134.7	A0001	UL1	C0001	DL_1
T0002	134.7	A0003	UL1	C0003	DL_1
T0003	134.7	A0005	UL1	C0005	DL_1
T0004	134.7	A0007	UL1	C0007	DL_1
T0005	134.7	A0009	UL1	C0009	DL_1
T0006	134.7	A0011	UL1	C0011	DL_1
T0007	134.7	A0013	UL1	C0013	DL_1
T0008	134.7	A0015	UL1	C0015	DL_1
T0009	134.7	A0017	UL1	C0017	DL_1
T0010	134.7	A0019	UL1	C0019	DL_1
T0011	134.7	A0021	UL1	C0021	DL_1
T0012	134.7	A0023	UL1	C0023	DL_1
T0013	134.7	A0025	UL1	C0025	DL_1
T0014	134.7	A0027	UL1	C0027	DL_1
T0015	134.7	A0029	UL1	C0029	DL_1
T0016	134.7	A0031	UL1	C0031	DL_1
C1		CMD	UL1		
T1				TLM1	DL_1
T2				TLM1	DL_1

C0029	24000	T	12632.24	R	C
C0031	24000	T	12661.4	R	C
CMD	2000	R	17307	L	T
TLM1	2000	T	12203.25	L	T
TLM2	2000	T	12203.75	L	T

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S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

(a) Digital Mod. ID	(b) Emission Designator	(c) Assigned Bandwidth (kHz)	(d) No. of Phases	(e) Uncoded Data Rate (kbps)	(f) FEC Error Correction Coding Rate	(g) CDMA Processing Gain (dB)	(h) Total C/N Performance Objective (dB)	(i) Single Entry C/I Objective (dB)
DTH	24M0G7W	24000	4	40000	0.857		7.6	28



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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						
TLM	2M00G9D	2000		1									7.6	28
CMD	2M00F9D	2000		1									7.6	28

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

Associated Transponder ID Range (a) Start    (b) End		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) (j) Min.    (k) Max.		EIRP (dBW) (l) Min.    (m) Max.		(n) Max. Power Flux Density (dBW/m <sup>2</sup> /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
T0001	T0016	DTH		1				65.3	14.7	19.7	51.3	57.3		13
C1			CMD	1				65.3	-4.9	47.1				
T1	T2		TLM	1							12	18.3		40

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

**Remote Control (TT C) Location(s):**

S14a: Street Address: 5130 Robert J. Mathews Pkwy			
S14b. City: El Dorado Hills	S14c. County: Sacramento	S14d. State/Country CA	S14e. Zip Code: 95762
S14f. Telephone Number: 916 605 5401		S14g. Call Sign of Control Station (if appropriate): E030105	

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 1487.9	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2220		
S15c. Mass of spacecraft and fuel at launch (kg): 3707.9	S15f. Length (m): 31.3	S15i. Payload: 0.8845
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1468	S15g. Width (m): 8.7	S15j. Bus: 0.9115
S15e. Deployed Area of Solar Array (square meters): 60.6	S15h. Height (m): 6.2	S15k. Total: 0.8062

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): 5958	(f): 5958	(k): 5763	(p): 5763
Bus (Watts):	(b): 1864	(g): 955	(l): 1874	(q): 594
Total (Watts):	(c): 7833	(h): 6913	(m): 7637	(r): 6717
Solar Array (Watts):	(d): 9340	(i): 8379	(n): 8399	(s): 7659
Depth of Battery Discharge (%):	(e) 74 %	(j) 0 %	(o) 72 %	(t) 0 %

S17. CERTIFICATIONS:

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

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