

**S1. GENERAL INFORMATION** Complete for all satellite applications.

a. Space Station or Satellite Network Name: SPACEWAY 4		e. Estimated Date of Placement into Service:		i. Will the space station(s) operate on a Common Carrier Basis: N	
b. Construction Commencement Date:		f. Estimated Lifetime of Satellite(s): 15 Years		j. Number of transponders offered on a common carrier basis: 0	
c. Construction Completion Date:		g. Total Number of Transponders: 335		k. Total Common Carrier Transponder Bandwidth: 0 MHz	
d1. Est Launch Date Begin:	d2. Est Launch Date End:	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 63125 MHz		i. Orbit Type: Mark all boxes that apply: <input checked="" type="checkbox"/> GSO <input type="checkbox"/> 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)		
29.25	G	30	G	R	Fixed Satellite Service
28.35	G	29.1	G	R	Fixed Satellite Service
19.7	G	20.2	G	T	Fixed Satellite Service
18.3	G	19.3	G	T	Fixed Satellite Service

**S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:**

a. Nominal Orbital Longitude (Degrees E/W): 107.1 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:  The Ka-band at the nominal 107W.L. location is unassigned. The 107.1W.L. location has been selected in order to avoid physical collision with a planned satellite at the 107W.L. orbital location.
Longitudinal Tolerance or E/W Station-Keeping:		f. Inclination Excursion or N/S Station-Keeping Tolerance:		
d. Toward West: 0.05 Degrees	e. Toward East: 0.05 Degrees	Range of orbital are in which adequate service can be provided (Optional): g. Westernmost: _____ Degrees _____ E/W _____ h. Easternmost: _____		
i. Reason for service are selection (Optional):				

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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.
SA1	S		CONUS and parts of Canada
SA2	S		Global

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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 Isolation (dB)	(h) Polar- ization Switch- able? (Y/N)	(i) Polarization Alignment Rel. Equatorial Plane (Degrees)	(j) Service Area ID	Transmit			Receive			Input Attenuator (dB)	
										(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.	(r) Step
		Value	Size														
G1U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G1UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G2U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G2UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G3U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G3UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G4U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G4UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G5U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G5UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G6U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G6UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G7U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G7UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G8U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G8UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G9U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G9UL	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G10U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G10U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G11U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G11U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G12U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G12U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G13U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G13U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G14U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G14U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1
G15U	R	53	51	0.05	0.05	30	N		SA1				1259	22	-100	20	1

G15U	R	53	51	0.05	0.05	30	N						1259	22	-100	20	1
G16U	R	53	51	0.05	0.05	30	N						1259	22	-100	20	1
G16U	R	53	51	0.05	0.05	30	N						1259	22	-100	20	1
G17U	R	53	51	0.05	0.05	30	N						1259	22	-100	20	1
G17U	R	53	51	0.05	0.05	30	N						1259	22	-100	20	1
G1D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G1DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G2D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G2DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G3D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G3DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G4D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G4DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G5D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G5DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G6D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G6DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G7D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G7DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G8D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G8DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G9D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G9DL	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G10D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G10D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G11D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G11D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G12D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G12D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G13D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G13D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G14D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G14D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G15D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G15D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G16D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G16D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G17D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					
G17D	T	53	51	0.05	0.05	30	N			4.5	15.9	65					





U53U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U53U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U54U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U54U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U55U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U55U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U56U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U56U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U57U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U57U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U58U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U58U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U59U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U59U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U60U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U60U	R	53	49	0.05	0.05	30	N			SA1				1259	22	-100	20	1
U1D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U1DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U2D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U2DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U3D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U3DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U4D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U4DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U5D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U5DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U6D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U6DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U7D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U7DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U8D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U8DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U9D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U9DL	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U10D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U10D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U11D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U11D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					
U12D	T	53	49	0.05	0.05	30	N			SA1	4.5	25.1	67					







U51D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U52D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U52D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U53D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U53D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U54D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U54D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U55D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U55D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U56D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U56D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U57D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U57D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U58D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U58D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U59D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U59D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U60D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
U60D	T	53	49	0.05	0.05	30	N		SA1	4.5	25.1	67					
TCL	R	53	51	0.05	0.05	30	N		SA1				5642	15.5			
TMR	T	53	51	0.05	0.05	30	N		SA1	7	0.001	24					
BCN	T	26.9	23.9	0.05	0.05	30	N		SA1	2.4	2	30					
OMN	R	4	0	0.05	0.05	30	N		SA2				8354	-35.2			
OMN	T	4	0	0.05	0.05	30	N		SA2	3	39.8	20					
RFT1	R	53	51	0.05	0.05	30	N		SA1				7893	14			
RFT2	R	53	51	0.05	0.05	30	N		SA1				7893	14			
U32U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U32U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U33U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U33U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U34U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U34U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U35U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U35U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U36U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U36U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U37U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U37U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U38U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1

U38U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U39U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U39U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U40U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U40U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U41U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U41U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U42U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U42U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U43U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U43U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U44U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	1
U44U	R	53	49	0.05	0.05	30	N		SA1				1259	22	-100	20	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
G17U	R	C	-107.1							
G17U	R	C	-107.1							
G1D	T	C	-107.1			-122	-122	-122	-122	-122
G1DL	T	C	-107.1			-122	-122	-122	-122	-122
G2D	T	C	-107.1			-122	-122	-122	-122	-122
G2DL	T	C	-107.1			-122	-122	-122	-122	-122
G3D	T	C	-107.1			-122	-122	-122	-122	-122
G3DL	T	C	-107.1			-122	-122	-122	-122	-122
G4D	T	C	-107.1			-122	-122	-122	-122	-122
G4DL	T	C	-107.1			-122	-122	-122	-122	-122
G5D	T	C	-107.1			-122	-122	-122	-122	-122
G5DL	T	C	-107.1			-122	-122	-122	-122	-122
G6D	T	C	-107.1			-122	-122	-122	-122	-122
G6DL	T	C	-107.1			-122	-122	-122	-122	-122
G7D	T	C	-107.1			-122	-122	-122	-122	-122
G7DL	T	C	-107.1			-122	-122	-122	-122	-122
G8D	T	C	-107.1			-122	-122	-122	-122	-122
G8DL	T	C	-107.1			-122	-122	-122	-122	-122
G9D	T	C	-107.1			-122	-122	-122	-122	-122
G9DL	T	C	-107.1			-122	-122	-122	-122	-122
G10D	T	C	-107.1			-122	-122	-122	-122	-122
G10D	T	C	-107.1			-122	-122	-122	-122	-122
G11D	T	C	-107.1			-122	-122	-122	-122	-122
G11D	T	C	-107.1			-122	-122	-122	-122	-122
G12D	T	C	-107.1			-122	-122	-122	-122	-122
G12D	T	C	-107.1			-122	-122	-122	-122	-122
G13D	T	C	-107.1			-122	-122	-122	-122	-122
G13D	T	C	-107.1			-122	-122	-122	-122	-122

G14D	T	C	-107.1			-122	-122	-122	-122	-122
G14D	T	C	-107.1			-122	-122	-122	-122	-122
G15D	T	C	-107.1			-122	-122	-122	-122	-122
G15D	T	C	-107.1			-122	-122	-122	-122	-122
G16D	T	C	-107.1			-122	-122	-122	-122	-122
G16D	T	C	-107.1			-122	-122	-122	-122	-122
G17D	T	C	-107.1			-122	-122	-122	-122	-122
G17D	T	C	-107.1			-122	-122	-122	-122	-122
U1U	R	C	-107.1							
U1UL	R	C	-107.1							
U2U	R	C	-107.1							
U2UL	R	C	-107.1							
U3U	R	C	-107.1							
U3UL	R	C	-107.1							
U4U	R	C	-107.1							
U4UL	R	C	-107.1							
U5U	R	C	-107.1							
U5UL	R	C	-107.1							
U6U	R	C	-107.1							
U6UL	R	C	-107.1							
U7U	R	C	-107.1							
U7UL	R	C	-107.1							
U8U	R	C	-107.1							
U8UL	R	C	-107.1							
U9U	R	C	-107.1							
U9UL	R	C	-107.1							
U10U	R	C	-107.1							
U10U	R	C	-107.1							
U11U	R	C	-107.1							
U11U	R	C	-107.1							
U12U	R	C	-107.1							
U12U	R	C	-107.1							
U13U	R	C	-107.1							
U13U	R	C	-107.1							
U14U	R	C	-107.1							
G1U	R	C	-107.1							
G1UL	R	C	-107.1							
G2U	R	C	-107.1							
G2UL	R	C	-107.1							

G3U	R	C	-107.1							
G3UL	R	C	-107.1							
G4U	R	C	-107.1							
G4UL	R	C	-107.1							
G5U	R	C	-107.1							
G5UL	R	C	-107.1							
G6U	R	C	-107.1							
G6UL	R	C	-107.1							
G7U	R	C	-107.1							
G7UL	R	C	-107.1							
G8U	R	C	-107.1							
G8UL	R	C	-107.1							
G9U	R	C	-107.1							
G9UL	R	C	-107.1							
G10U	R	C	-107.1							
G10U	R	C	-107.1							
G11U	R	C	-107.1							
G11U	R	C	-107.1							
G12U	R	C	-107.1							
G12U	R	C	-107.1							
G13U	R	C	-107.1							
G13U	R	C	-107.1							
G14U	R	C	-107.1							
G14U	R	C	-107.1							
G15U	R	C	-107.1							
G15U	R	C	-107.1							
G16U	R	C	-107.1							
G16U	R		-107.1							
U14U	R	C	-107.1							
U15U	R	C	-107.1							
U15U	R	C	-107.1							
U16U	R	C	-107.1							
U16U	R	C	-107.1							
U17U	R	C	-107.1							
U17U	R	C	-107.1							
U18U	R	C	-107.1							
U18U	R	C	-107.1							
U19U	R	C	-107.1							
U19U	R	C	-107.1							

U20U	R	C	-107.1							
U20U	R	C	-107.1							
U21U	R	C	-107.1							
U21U	R	C	-107.1							
U22U	R	C	-107.1							
U22U	R	C	-107.1							
U23U	R	C	-107.1							
U23U	R	C	-107.1							
U24U	R	C	-107.1							
U24U	R	C	-107.1							
U25U	R	C	-107.1							
U25U	R	C	-107.1							
U26U	R	C	-107.1							
U26U	R	C	-107.1							
U27U	R	C	-107.1							
U27U	R	C	-107.1							
U28U	R	C	-107.1							
U28U	R	C	-107.1							
U29U	R	C	-107.1							
U29U	R	C	-107.1							
U30U	R	C	-107.1							
U30U	R	C	-107.1							
U31U	R	C	-107.1							
U31U	R	C	-107.1							
U32U	R	C	-107.1							
U32U	R	C	-107.1							
U33U	R	C	-107.1							
U33U	R	C	-107.1							
U34U	R	C	-107.1							
U34U	R	C	-107.1							
U35U	R	C	-107.1							
U35U	R	C	-107.1							
U36U	R	C	-107.1							
U36U	R	C	-107.1							
U37U	R	C	-107.1							
U37U	R	C	-107.1							
U38U	R	C	-107.1							
U38U	R	C	-107.1							
U39U	R	C	-107.1							



U39U	R	C	-107.1							
U40U	R	C	-107.1							
U40U	R	C	-107.1							
U41U	R	C	-107.1							
U41U	R	C	-107.1							
U42U	R	C	-107.1							
U42U	R	C	-107.1							
U43U	R	C	-107.1							
U43U	R	C	-107.1							
U44U	R	C	-107.1							
U44U	R	C	-107.1							
U45U	R	C	-107.1							
U45U	R	C	-107.1							
U46U	R	C	-107.1							
U46U	R	C	-107.1							
U47U	R	C	-107.1							
U47U	R	C	-107.1							
U48U	R	C	-107.1							
U48U	R	C	-107.1							
U49U	R	C	-107.1							
U49U	R	C	-107.1							
U50U	R	C	-107.1							
U50U	R	C	-107.1							
U51U	R	C	-107.1							
U51U	R	C	-107.1							
U52U	R	C	-107.1							
U52U	R	C	-107.1							
U53U	R	C	-107.1							
U53U	R	C	-107.1							
U54U	R	C	-107.1							
U54U	R	C	-107.1							
U55U	R	C	-107.1							
U55U	R	C	-107.1							
U56U	R	C	-107.1							
U56U	R	C	-107.1							
U57U	R	C	-107.1							
U57U	R	C	-107.1							
U58U	R	C	-107.1							
U58U	R	C	-107.1							

U59U	R	C	-107.1							
U59U	R	C	-107.1							
U60U	R	C	-107.1							
U60U	R	C	-107.1							
U1D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U1DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U2D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U2DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U3D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U3DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U4D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U4DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U5D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U5DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U6D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U6DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U7D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U7DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U8D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U8DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U9D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U9DL	T	C	-107.1		-119	-119	-119	-119	-119	-119
U10D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U10D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U11D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U11D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U12D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U12D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U13D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U13D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U14D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U14D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U15D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U15D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U16D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U16D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U17D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U17D	T	C	-107.1		-119	-119	-119	-119	-119	-119
U18D	T	C	-107.1		-119	-119	-119	-119	-119	-119





U57D	T	C	-107.1			-119	-119	-119	-119	-119
U58D	T	C	-107.1			-119	-119	-119	-119	-119
U58D	T	C	-107.1			-119	-119	-119	-119	-119
U59D	T	C	-107.1			-119	-119	-119	-119	-119
U59D	T	C	-107.1			-119	-119	-119	-119	-119
U60D	T	C	-107.1			-119	-119	-119	-119	-119
U60D	T	C	-107.1			-119	-119	-119	-119	-119
TCL	R	C	-107.1							
TMR	T	C	-107.1			-138.1	-138.1	-138.1	-138.1	-138.1
BCN	T	C	-107.1			-134.4	-134.1	-133.8	-133.5	-133.2
RFT1	R	C	-107.1							
RFT2	R	C	-107.1							
OMN	R	C	-107.1							
OMN	T	C	-107.1			-142	-142	-142	-142	-142

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

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)
UL01	250000	R	29875	R	C
UL02	250000	R	29875	L	C
UL03	250000	R	29625	R	C
UL04	250000	R	29625	L	C
UL05	250000	R	29375	R	C
UL06	250000	R	29375	L	C
UL07	250000	R	28975	R	C
UL08	250000	R	28975	L	C
UL09	250000	R	28725	R	C
UL10	250000	R	28725	L	C
UL11	250000	R	28475	R	C
UL12	250000	R	28475	L	C
UL13	125000	R	29937.5	R	C
UL14	125000	R	29937.5	L	C
UL15	125000	R	29812.5	R	C
UL16	125000	R	29812.5	L	C
UL17	125000	R	29687.5	R	C
UL18	125000	R	29687.5	L	C
UL19	125000	R	29562.5	R	C
UL20	125000	R	29562.5	L	C
UL21	125000	R	29437.5	R	C
UL22	125000	R	29437.5	L	C
UL23	125000	R	29312.5	R	C
UL24	125000	R	29312.5	L	C
DL01	250000	T	20075	L	C
DL02	250000	T	20075	R	C
DL03	250000	T	19825	L	C
DL04	250000	T	19825	R	C
DL05	250000	T	19175	L	C
DL06	250000	T	19175	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
RL39	110	UL17	U26UR	DL29	G2DR
RL40	110	UL17	U26UR	DL30	G2DL
RL41	110	UL13	U26UR	DL25	G2DR
RL42	110	UL13	U26UR	DL26	G2DL
RL43	110	UL23	U33UR	DL19	G2DR
RL44	110	UL23	U33UR	DL20	G2DL
RL45	110	UL21	U33UR	DL17	G2DR
RL46	110	UL21	U33UR	DL18	G2DL
RL47	110	UL15	U33UR	DL23	G2DR
RL48	110	UL15	U33UR	DL24	G2DL
RL49	110	UL23	U19UR	DL19	G3DR
RL50	110	UL23	U19UR	DL20	G3DL
RL51	110	UL21	U19UR	DL17	G3DR
RL52	110	UL21	U19UR	DL18	G3DL
RL53	110	UL15	U19UR	DL23	G3DR
RL54	110	UL15	U19UR	DL24	G3DL
RL55	110	UL19	U22UR	DL31	G3DR
RL56	110	UL19	U22UR	DL32	G3DL
RL57	110	UL17	U22UR	DL29	G3DR
RL58	110	UL17	U22UR	DL30	G3DL
RL59	110	UL13	U22UR	DL25	G3DR
RL60	110	UL13	U22UR	DL26	G3DL
RL61	110	UL20	U25UL	DL15	G3DR
RL62	110	UL20	U25UL	DL16	G3DL
RL63	110	UL18	U25UL	DL13	G3DR
RL64	110	UL18	U25UL	DL14	G3DL
RL65	110	UL14	U25UL	DL21	G3DR
RL66	110	UL14	U25UL	DL22	G3DL
RL67	110	UL24	U32UL	DL35	G3DR
RL68	110	UL24	U32UL	DL36	G3DL

DL07	250000	T	18925	L	C
DL08	250000	T	18925	R	C
DL09	250000	T	18675	L	C
DL10	250000	T	18675	R	C
DL11	250000	T	18425	L	C
DL12	250000	T	18425	R	C
DL13	125000	T	20137.5	R	C
DL14	125000	T	20137.5	L	C
DL15	125000	T	20012.5	R	C
DL16	125000	T	20012.5	L	C
DL17	125000	T	19887.5	R	C
DL18	125000	T	19887.5	L	C
DL19	125000	T	19762.5	R	C
DL20	125000	T	19762.5	L	C
DL21	125000	T	19237.5	R	C
DL22	125000	T	19237.5	L	C
DL23	125000	T	19112.5	R	C
DL24	125000	T	19112.5	L	C
DL25	125000	T	18987.5	R	C
DL26	125000	T	18987.5	L	C
DL27	125000	T	18862.5	R	C
DL28	125000	T	18862.5	L	C
DL29	125000	T	18737.5	R	C
DL30	125000	T	18737.5	L	C
DL31	125000	T	18612.5	R	C
DL32	125000	T	18612.5	L	C
DL33	125000	T	18487.5	R	C
DL34	125000	T	18487.5	L	C
DL35	125000	T	18362.5	R	C
DL36	125000	T	18362.5	L	C
CMD1	1000	R	28351	L	T
CMD2	1000	R	28353	L	T
CMD3	1000	R	28351	L	T
CMD4	1000	R	28353	L	T
TLM1	800	T	19700.5	R	T
TLM2	800	T	19702.5	R	T
TLM3	800	T	19700.5	R	T
TLM4	800	T	19702.5	R	T
RFAT1	25	R	29998	R	T

RL69	110	UL22	U32UL	DL33	G3DR
RL70	110	UL22	U32UL	DL34	G3DL
RL71	110	UL16	U32UL	DL27	G3DR
RL72	110	UL16	U32UL	DL28	G3DL
RL73	110	UL19	U24UR	DL31	G4DR
RL74	110	UL19	U24UR	DL32	G4DL
RL75	110	UL17	U24UR	DL29	G4DR
RL76	110	UL17	U24UR	DL30	G4DL
RL77	110	UL13	U24UR	DL25	G4DR
RL78	110	UL13	U24UR	DL26	G4DL
RL79	110	UL24	U28UL	DL35	G4DR
RL80	110	UL24	U28UL	DL36	G4DL
RL81	110	UL22	U28UL	DL33	G4DR
RL82	110	UL22	U28UL	DL34	G4DL
RL83	110	UL16	U28UL	DL27	G4DR
RL84	110	UL16	U28UL	DL28	G4DL
RL85	110	UL23	U31UR	DL19	G4DR
RL86	110	UL23	U31UR	DL20	G4DL
RL87	110	UL21	U31UR	DL17	G4DR
RL88	110	UL21	U31UR	DL18	G4DL
RL89	110	UL15	U31UR	DL23	G4DR
RL90	110	UL15	U31UR	DL24	G4DL
RL91	110	UL20	U38UL	DL15	G4DR
RL92	110	UL20	U38UL	DL16	G4DL
RL93	110	UL18	U38UL	DL13	G4DR
RL94	110	UL18	U38UL	DL14	G4DL
RL95	110	UL14	U38UL	DL21	G4DR
RL96	110	UL14	U38UL	DL22	G4DL
RL97	110	UL20	U27UL	DL15	G5DR
RL98	110	UL20	U27UL	DL16	G5DL
RL99	110	UL18	U27UL	DL13	G5DR
RL100	110	UL18	U27UL	DL14	G5DL
RL101	110	UL14	U27UL	DL21	G5DR
RL102	110	UL14	U27UL	DL22	G5DL
RL103	110	UL20	U30UL	DL15	G5DR
RL104	110	UL20	U30UL	DL16	G5DL
RL105	110	UL18	U30UL	DL13	G5DR
RL106	110	UL18	U30UL	DL14	G5DL
RL107	110	UL14	U30UL	DL21	G5DR

RFAT2	25	R	29998	L	T
BCN	25	T	20199.5	V	T

RL108	110	UL14	U30UL	DL22	G5DL
RL109	110	UL19	U41UR	DL31	G5DR
RL110	110	UL19	U41UR	DL32	G5DL
RL111	110	UL17	U41UR	DL29	G5DR
RL112	110	UL17	U41UR	DL30	G5DL
RL113	110	UL13	U41UR	DL25	G5DR
RL114	110	UL13	U41UR	DL26	G5DL
RL115	110	UL23	U48UR	DL19	G5DR
RL116	110	UL23	U48UR	DL20	G5DL
RL117	110	UL21	U48UR	DL17	G5DR
RL118	110	UL21	U48UR	DL18	G5DL
RL119	110	UL15	U48UR	DL23	G5DR
RL120	110	UL15	U48UR	DL24	G5DL
RL121	110	UL19	U6UR	DL31	G6DR
RL122	110	UL19	U6UR	DL32	G6DL
RL123	110	UL17	U6UR	DL29	G6DR
RL124	110	UL17	U6UR	DL30	G6DL
RL125	110	UL23	U13UR	DL19	G6DR
RL126	110	UL23	U13UR	DL20	G6DL
RL127	110	UL21	U13UR	DL17	G6DR
RL128	110	UL21	U13UR	DL18	G6DL
RL129	110	UL20	U21UR	DL15	G6DR
RL130	110	UL20	U21UR	DL16	G6DL
RL131	110	UL18	U21UR	DL13	G6DR
RL132	110	UL18	U21UR	DL14	G6DL
RL133	110	UL24	U35UL	DL35	G6DR
RL134	110	UL24	U35UL	DL36	G6DL
RL135	110	UL22	U35UL	DL33	G6DR
RL136	110	UL22	U35UL	DL34	G6DL
RL137	110	UL23	U11UR	DL19	G7DR
RL138	110	UL23	U11UR	DL20	G7DL
RL139	110	UL21	U11UR	DL17	G7DR
RL140	110	UL21	U11UR	DL18	G7DL
RL141	110	UL24	U45UL	DL35	G7DR
RL142	110	UL24	U45UL	DL36	G7DL
RL143	110	UL22	U45UL	DL33	G7DR
RL144	110	UL22	U45UL	DL34	G7DL
RL145	110	UL20	U53UL	DL15	G7DR
RL146	110	UL20	U53UL	DL16	G7DL



RL147	110	UL18	U53UL	DL13	G7DR
RL148	110	UL18	U53UL	DL14	G7DL
RL149	110	UL19	U58UR	DL31	G7DR
RL150	110	UL19	U58UR	DL32	G7DL
RL151	110	UL17	U58UR	DL29	G7DR
RL152	110	UL17	U58UR	DL30	G7DL
RL153	110	UL23	U29UR	DL19	G8DR
RL154	110	UL23	U29UR	DL20	G8DL
RL155	110	UL21	U29UR	DL17	G8DR
RL156	110	UL21	U29UR	DL18	G8DL
RL157	110	UL15	U29UR	DL23	G8DR
RL158	110	UL15	U29UR	DL24	G8DL
RL159	110	UL20	U36UL	DL15	G8DR
RL160	110	UL20	U36UL	DL16	G8DL
RL161	110	UL18	U36UL	DL13	G8DR
RL162	110	UL18	U36UL	DL14	G8DL
RL163	110	UL14	U36UL	DL21	G8DR
FL01	112	UL02	G1UL	DL11	U34DR
FL02	112	UL12	G1UL	DL09	U34DR
FL03	112	UL08	G1UL	DL05	U34DR
FL04	112	UL05	G1UR	DL04	U39DL
FL05	112	UL03	G1UR	DL02	U39DL
FL06	112	UL10	G1UL	DL08	U39DL
FL07	112	UL06	G1UL	DL03	U40DR
FL08	112	UL04	G1UL	DL01	U40DR
FL09	112	UL09	G1UR	DL07	U40DR
FL10	112	UL01	G1UR	DL12	U46DL
FL11	112	UL11	G1UR	DL10	U46DL
FL12	112	UL07	G1UR	DL06	U46DL
FL13	112	UL02	G2UL	DL11	U14DR
FL14	112	UL12	G2UL	DL09	U14DR
FL15	112	UL08	G2UL	DL05	U14DR
FL16	112	UL06	G2UL	DL03	U23DR
FL17	112	UL04	G2UL	DL01	U23DR
FL18	112	UL09	G2UR	DL07	U23DR
FL19	112	UL05	G2UR	DL04	U26DL
FL20	112	UL03	G2UR	DL02	U26DL
FL21	112	UL10	G2UL	DL08	U26DL
FL22	112	UL01	G2UR	DL12	U33DL

FL23	112	UL11	G2UR	DL10	U33DL
FL24	112	UL07	G2UR	DL06	U33DL
FL25	112	UL01	G3UR	DL12	U19DL
FL26	112	UL11	G3UR	DL10	U19DL
FL27	112	UL07	G3UR	DL06	U19DL
FL28	112	UL05	G3UR	DL04	U22DL
FL29	112	UL03	G3UR	DL02	U22DL
FL30	112	UL10	G3UL	DL08	U22DL
FL31	112	UL06	G3UL	DL03	U25DR
FL32	112	UL04	G3UL	DL01	U25DR
FL33	112	UL09	G3UR	DL07	U25DR
FL34	112	UL02	G3UL	DL11	U32DR
FL35	112	UL12	G3UL	DL09	U32DR
FL36	112	UL08	G3UL	DL05	U32DR
FL37	112	UL05	G4UR	DL04	U24DL
FL38	112	UL03	G4UR	DL02	U24DL
FL39	112	UL10	G4UL	DL08	U24DL
FL40	112	UL02	G4UL	DL11	U28DR
FL41	112	UL12	G4UL	DL09	U28DR
FL42	112	UL08	G4UL	DL05	U28DR
FL43	112	UL01	G4UR	DL12	U31DL
FL44	112	UL11	G4UR	DL10	U31DL
FL45	112	UL07	G4UR	DL06	U31DL
FL46	112	UL06	G4UL	DL03	U38DR
FL47	112	UL04	G4UL	DL01	U38DR
FL48	112	UL09	G4UR	DL07	U38DR
FL49	112	UL06	G5UL	DL03	U27DR
FL50	112	UL04	G5UL	DL01	U27DR
FL51	112	UL09	G5UR	DL07	U27DR
FL52	112	UL02	G5UL	DL11	U30DR
FL53	112	UL12	G5UL	DL09	U30DR
FL54	112	UL08	G5UL	DL05	U30DR
FL55	112	UL05	G5UR	DL04	U41DL
FL56	112	UL03	G5UR	DL02	U41DL
FL57	112	UL10	G5UL	DL08	U41DL
FL58	112	UL01	G5UR	DL12	U48DL
FL59	112	UL11	G5UR	DL10	U48DL
FL60	112	UL07	G5UR	DL06	U48DL
FL61	112	UL05	G6UR	DL04	U6DL

FL62	112	UL10	G6UL	DL08	U6DL
FL63	112	UL01	G6UR	DL12	U13DL
FL64	112	UL11	G6UR	DL10	U13DL
FL65	112	UL07	G6UR	DL06	U13DL
FL66	112	UL06	G6UL	DL03	U21DR
FL67	112	UL04	G6UL	DL01	U21DR
FL68	112	UL09	G6UR	DL07	U21DR
FL69	112	UL02	G6UL	DL11	U35DR
FL70	112	UL12	G6UL	DL09	U35DR
FL71	112	UL08	G6UL	DL05	U35DR
FL72	112	UL01	G7UR	DL12	U11DL
FL73	112	UL11	G7UR	DL10	U11DL
FL74	112	UL02	G7UL	DL11	U45DR
FL75	112	UL12	G7UL	DL09	U45DR
FL76	112	UL08	G7UL	DL05	U45DR
FL77	112	UL06	G7UL	DL03	U53DR
FL78	112	UL04	G7UL	DL01	U53DR
FL79	112	UL09	G7UR	DL07	U53DR
FL80	112	UL07	G7UR	DL06	U58DL
FL81	112	UL10	G7UL	DL08	U58DL
FL82	112	UL01	G8UR	DL12	U29DL
FL83	112	UL11	G8UR	DL10	U29DL
FL84	112	UL07	G8UR	DL06	U29DL
FL85	112	UL06	G8UL	DL03	U36DR
FL86	112	UL04	G8UL	DL01	U36DR
FL87	112	UL09	G8UR	DL07	U36DR
FL88	112	UL05	G8UR	DL04	U54DL
FL89	112	UL03	G8UR	DL02	U54DL
FL90	112	UL10	G8UL	DL08	U54DL
FL91	112	UL02	G8UL	DL11	U59DR
FL92	112	UL12	G8UL	DL09	U59DR
FL93	112	UL08	G8UL	DL05	U59DR
FL94	112	UL02	G9UL	DL11	U10DR
FL95	112	UL12	G9UL	DL09	U10DR
FL96	112	UL08	G9UL	DL05	U10DR
FL97	112	UL06	G9UL	DL03	U42DR
FL98	112	UL04	G9UL	DL01	U42DR
FL99	112	UL09	G9UR	DL07	U42DR
FL100	112	UL01	G9UR	DL12	U44DL

FL101	112	UL11	G9UR	DL10	U44DL
FL102	112	UL07	G9UR	DL06	U44DL
FL103	112	UL05	G9UR	DL04	U52DL
FL104	112	UL03	G9UR	DL02	U52DL
FL105	112	UL10	G9UL	DL08	U52DL
FL106	112	UL02	G10UL	DL11	U47DR
FL107	112	UL12	G10UL	DL09	U47DR
FL108	112	UL08	G10UL	DL05	U47DR
FL109	112	UL03	G10UR	DL02	U56DL
FL110	112	UL06	G10UL	DL03	U57DR
FL111	112	UL04	G10UL	DL01	U57DR
FL112	112	UL09	G10UR	DL07	U57DR
FL113	112	UL07	G10UR	DL06	U60DL
FL114	112	UL10	G10UL	DL08	U60DL
FL115	112	UL06	G11UL	DL03	U3DR
FL116	112	UL04	G11UL	DL01	U3DR
FL117	112	UL09	G11UR	DL07	U3DR
FL118	112	UL05	G11UR	DL04	U37DL
FL119	112	UL03	G11UR	DL02	U37DL
FL120	112	UL10	G11UL	DL08	U37DL
FL121	112	UL02	G11UL	DL11	U49DR
FL122	112	UL12	G11UL	DL09	U49DR
FL123	112	UL08	G11UL	DL05	U49DR
FL124	112	UL01	G11UR	DL12	U51DL
FL125	112	UL11	G11UR	DL10	U51DL
FL126	112	UL07	G11UR	DL06	U51DL
FL127	112	UL05	G12UR	DL04	U4DL
FL128	112	UL10	G12UL	DL08	U4DL
FL129	112	UL06	G12UL	DL03	U5DR
FL130	112	UL04	G12UL	DL01	U5DR
FL131	112	UL09	G12UR	DL07	U5DR
FL132	112	UL02	G12UL	DL11	U12DR
FL133	112	UL12	G12UL	DL09	U12DR
FL134	112	UL08	G12UL	DL05	U12DR
FL135	112	UL01	G12UR	DL12	U17DL
FL136	112	UL11	G12UR	DL10	U17DL
FL137	112	UL07	G12UR	DL06	U17DL
FL138	112	UL05	G13UR	DL04	U20DL
FL139	112	UL03	G13UR	DL02	U20DL

FL140	112	UL10	G13UL	DL08	U20DL
FL141	112	UL08	G13UL	DL05	U43DR
FL142	112	UL09	G13UR	DL07	U43DR
FL143	112	UL01	G13UR	DL12	U50DL
FL144	112	UL11	G13UR	DL10	U50DL
FL145	112	UL07	G13UR	DL06	U50DL
FL146	112	UL06	G13UL	DL03	U55DR
FL147	112	UL04	G13UL	DL01	U55DR
FL148	112	UL01	G14UR	DL12	U1DL
FL149	112	UL11	G14UR	DL10	U1DL
FL150	112	UL07	G14UR	DL06	U1DL
FL151	112	UL05	G14UR	DL04	U2DL
FL152	112	UL03	G14UR	DL02	U2DL
FL153	112	UL10	G14UL	DL08	U2DL
FL154	112	UL06	G14UL	DL03	U7DR
FL155	112	UL04	G14UL	DL01	U7DR
FL156	112	UL02	G14UL	DL11	U16DR
FL157	112	UL12	G14UL	DL09	U16DR
FL158	112	UL08	G14UL	DL05	U16DR
FL159	112	UL05	G15UR	DL04	U8DL
FL160	112	UL03	G15UR	DL02	U8DL
FL161	112	UL10	G15UL	DL08	U8DL
FL162	112	UL06	G15UL	DL03	U9DR
FL163	112	UL04	G15UL	DL01	U9DR
FL164	112	UL09	G15UR	DL07	U9DR
FL165	112	UL01	G15UR	DL12	U15DL
FL166	112	UL11	G15UR	DL10	U15DL
FL167	112	UL07	G15UR	DL06	U15DL
FL168	112	UL02	G15UL	DL11	U18DR
FL169	112	UL12	G15UL	DL09	U18DR
FL170	112	UL08	G15UL	DL05	U18DR
RL01	110	UL24	U34UL	DL35	G1DR
RL02	110	UL24	U34UL	DL36	G1DL
RL03	110	UL22	U34UL	DL33	G1DR
RL04	110	UL22	U34UL	DL34	G1DL
RL05	110	UL16	U34UL	DL27	G1DR
RL06	110	UL16	U34UL	DL28	G1DL
RL07	110	UL19	U39UR	DL31	G1DR
RL08	110	UL19	U39UR	DL32	G1DL

RL09	110	UL17	U39UR	DL29	G1DR
RL10	110	UL17	U39UR	DL30	G1DL
RL11	110	UL13	U39UR	DL25	G1DR
RL12	110	UL13	U39UR	DL26	G1DL
RL13	110	UL20	U40UL	DL15	G1DR
RL14	110	UL20	U40UL	DL16	G1DL
RL15	110	UL18	U40UL	DL13	G1DR
RL16	110	UL18	U40UL	DL14	G1DL
RL17	110	UL14	U40UL	DL21	G1DR
RL18	110	UL14	U40UL	DL22	G1DL
RL19	110	UL23	U46UR	DL19	G1DR
RL20	110	UL23	U46UR	DL20	G1DL
RL21	110	UL21	U46UR	DL17	G1DR
RL22	110	UL21	U46UR	DL18	G1DL
RL23	110	UL15	U46UR	DL23	G1DR
RL24	110	UL15	U46UR	DL24	G1DL
RL25	110	UL24	U14UL	DL35	G2DR
RL26	110	UL24	U14UL	DL36	G2DL
RL27	110	UL22	U14UL	DL33	G2DR
RL28	110	UL22	U14UL	DL34	G2DL
RL29	110	UL16	U14UL	DL27	G2DR
RL30	110	UL16	U14UL	DL28	G2DL
RL31	110	UL20	U23UL	DL15	G2DR
RL32	110	UL20	U23UL	DL16	G2DL
RL33	110	UL18	U23UL	DL13	G2DR
RL34	110	UL18	U23UL	DL14	G2DL
RL35	110	UL14	U23UL	DL21	G2DR
RL36	110	UL14	U23UL	DL22	G2DL
RL37	110	UL19	U26UR	DL31	G2DR
RL38	110	UL19	U26UR	DL32	G2DL
RL164	110	UL14	U36UL	DL22	G8DL
RL165	110	UL19	U54UR	DL31	G8DR
RL166	110	UL19	U54UR	DL32	G8DL
RL167	110	UL17	U54UR	DL29	G8DR
RL168	110	UL17	U54UR	DL30	G8DL
RL169	110	UL13	U54UR	DL25	G8DR
RL170	110	UL13	U54UR	DL26	G8DL
RL171	110	UL24	U59UL	DL35	G8DR
RL172	110	UL24	U59UL	DL36	G8DL

RL173	110	UL22	U59UL	DL33	G8DR
RL174	110	UL22	U59UL	DL34	G8DL
RL175	110	UL16	U59UL	DL27	G8DR
RL176	110	UL16	U59UL	DL28	G8DL
RL177	110	UL24	U10UL	DL35	G9DR
RL178	110	UL24	U10UL	DL36	G9DL
RL179	110	UL22	U10UL	DL33	G9DR
RL180	110	UL22	U10UL	DL34	G9DL
RL181	110	UL16	U10UL	DL27	G9DR
RL182	110	UL16	U10UL	DL28	G9DL
RL183	110	UL20	U42UL	DL15	G9DR
RL184	110	UL20	U42UL	DL16	G9DL
RL185	110	UL18	U42UL	DL13	G9DR
RL186	110	UL18	U42UL	DL14	G9DL
RL187	110	UL14	U42UL	DL21	G9DR
RL188	110	UL14	U42UL	DL22	G9DL
RL189	110	UL23	U44UR	DL19	G9DR
RL190	110	UL23	U44UR	DL20	G9DL
RL191	110	UL21	U44UR	DL17	G9DR
RL192	110	UL21	U44UR	DL18	G9DL
RL193	110	UL15	U44UR	DL23	G9DR
RL194	110	UL15	U44UR	DL24	G9DL
RL195	110	UL19	U52UR	DL31	G9DR
RL196	110	UL19	U52UR	DL32	G9DL
RL197	110	UL17	U52UR	DL29	G9DR
RL198	110	UL17	U52UR	DL30	G9DL
RL199	110	UL13	U52UR	DL25	G9DR
RL200	110	UL13	U52UR	DL26	G9DL
RL201	110	UL24	U47UL	DL35	G10DR
RL202	110	UL24	U47UL	DL36	G10DL
RL203	110	UL22	U47UL	DL33	G10DR
RL204	110	UL22	U47UL	DL34	G10DL
RL205	110	UL19	U56UR	DL31	G10DR
RL206	110	UL19	U56UR	DL32	G10DL
RL207	110	UL17	U56UR	DL29	G10DR
RL208	110	UL17	U56UR	DL30	G10DL
RL209	110	UL20	U57UL	DL15	G10DR
RL210	110	UL20	U57UL	DL16	G10DL
RL211	110	UL18	U57UL	DL13	G10DR

RL212	110	UL18	U57UL	DL14	G10DL
RL213	110	UL23	U60UR	DL19	G10DR
RL214	110	UL23	U60UR	DL20	G10DL
RL215	110	UL21	U60UR	DL17	G10DR
RL216	110	UL21	U60UR	DL18	G10DL
RL217	110	UL20	U3UL	DL15	G11DR
RL218	110	UL20	U3UL	DL16	G11DL
RL219	110	UL18	U3UL	DL13	G11DR
RL220	110	UL18	U3UL	DL14	G11DL
RL221	110	UL14	U3UL	DL21	G11DR
RL222	110	UL14	U3UL	DL22	G11DL
RL223	110	UL19	U37UR	DL31	G11DR
RL224	110	UL19	U37UR	DL32	G11DL
RL225	110	UL17	U37UR	DL29	G11DR
RL226	110	UL17	U37UR	DL30	G11DL
RL227	110	UL13	U37UR	DL25	G11DR
RL228	110	UL13	U37UR	DL26	G11DL
RL229	110	UL24	U49UL	DL35	G11DR
RL230	110	UL24	U49UL	DL36	G11DL
RL231	110	UL22	U49UL	DL33	G11DR
RL232	110	UL22	U49UL	DL34	G11DL
RL233	110	UL16	U49UL	DL27	G11DR
RL234	110	UL16	U49UL	DL28	G11DL
RL235	110	UL23	U51UR	DL19	G11DR
RL236	110	UL23	U51UR	DL20	G11DL
RL237	110	UL21	U51UR	DL17	G11DR
RL238	110	UL21	U51UR	DL18	G11DL
RL239	110	UL15	U51UR	DL23	G11DR
RL240	110	UL15	U51UR	DL24	G11DL
RL241	110	UL19	U4UR	DL31	G12DR
RL242	110	UL19	U4UR	DL32	G12DL
RL243	110	UL17	U4UR	DL29	G12DR
RL244	110	UL17	U4UR	DL30	G12DL
RL245	110	UL13	U4UR	DL25	G12DR
RL246	110	UL13	U4UR	DL26	G12DL
RL247	110	UL20	U5UL	DL15	G12DR
RL248	110	UL20	U5UL	DL16	G12DL
RL249	110	UL18	U5UL	DL13	G12DR
RL250	110	UL18	U5UL	DL14	G12DL



RL251	110	UL14	U5UL	DL21	G12DR
RL252	110	UL14	U5UL	DL22	G12DL
RL253	110	UL24	U12UL	DL35	G12DR
RL254	110	UL24	U12UL	DL36	G12DL
RL255	110	UL22	U12UL	DL33	G12DR
RL256	110	UL22	U12UL	DL34	G12DL
RL257	110	UL16	U12UL	DL27	G12DR
RL258	110	UL16	U12UL	DL28	G12DL
RL259	110	UL23	U17UR	DL19	G12DR
RL260	110	UL23	U17UR	DL20	G12DL
RL261	110	UL21	U17UR	DL17	G12DR
RL262	110	UL21	U17UR	DL18	G12DL
RL263	110	UL15	U17UR	DL23	G12DR
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RL266	110	UL19	U20UR	DL32	G13DL
RL267	110	UL17	U20UR	DL29	G13DR
RL268	110	UL17	U20UR	DL30	G13DL
RL269	110	UL13	U20UR	DL25	G13DR
RL270	110	UL13	U20UR	DL26	G13DL
RL271	110	UL16	U43UL	DL27	G13DR
RL272	110	UL16	U43UL	DL28	G13DL
RL273	110	UL14	U43UL	DL21	G13DR
RL274	110	UL14	U43UL	DL22	G13DL
RL275	110	UL23	U50UR	DL19	G13DR
RL276	110	UL23	U50UR	DL20	G13DL
RL277	110	UL21	U50UR	DL17	G13DR
RL278	110	UL21	U50UR	DL18	G13DL
RL279	110	UL15	U50UR	DL23	G13DR
RL280	110	UL15	U50UR	DL24	G13DL
RL281	110	UL20	U55UL	DL15	G13DR
RL282	110	UL20	U55UL	DL16	G13DL
RL283	110	UL18	U55UL	DL13	G13DR
RL284	110	UL18	U55UL	DL14	G13DL
RL285	110	UL23	U1UR	DL19	G14DR
RL286	110	UL23	U1UR	DL20	G14DL
RL287	110	UL21	U1UR	DL17	G14DR
RL288	110	UL21	U1UR	DL18	G14DL
RL289	110	UL15	U1UR	DL23	G14DR

RL290	110	UL15	U1UR	DL24	G14DL
RL291	110	UL19	U2UR	DL31	G14DR
RL292	110	UL19	U2UR	DL32	G14DL
RL293	110	UL17	U2UR	DL29	G14DR
RL294	110	UL17	U2UR	DL30	G14DL
RL295	110	UL13	U2UR	DL25	G14DR
RL296	110	UL13	U2UR	DL26	G14DL
RL297	110	UL20	U7UL	DL15	G14DR
RL298	110	UL20	U7UL	DL16	G14DL
RL299	110	UL18	U7UL	DL13	G14DR
RL300	110	UL18	U7UL	DL14	G14DL
RL301	110	UL24	U16UL	DL35	G14DR
RL302	110	UL24	U16UL	DL36	G14DL
RL303	110	UL22	U16UL	DL33	G14DR
RL304	110	UL22	U16UL	DL34	G14DL
RL305	110	UL16	U16UL	DL27	G14DR
RL306	110	UL16	U16UL	DL28	G14DL
RL307	110	UL19	U8UR	DL31	G15DR
RL308	110	UL19	U8UR	DL32	G15DL
RL309	110	UL17	U8UR	DL29	G15DR
RL310	110	UL17	U8UR	DL30	G15DL
RL311	110	UL13	U8UR	DL25	G15DR
RL312	110	UL13	U8UR	DL26	G15DL
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RL314	110	UL20	U9UL	DL16	G15DL
RL315	110	UL18	U9UL	DL13	G15DR
RL316	110	UL18	U9UL	DL14	G15DL
RL317	110	UL14	U9UL	DL21	G15DR
RL318	110	UL14	U9UL	DL22	G15DL
RL319	110	UL23	U15UR	DL19	G15DR
RL320	110	UL23	U15UR	DL20	G15DL
RL321	110	UL21	U15UR	DL17	G15DR
RL322	110	UL21	U15UR	DL18	G15DL
RL323	110	UL15	U15UR	DL23	G15DR
RL324	110	UL15	U15UR	DL24	G15DL
RL325	110	UL24	U18UL	DL35	G15DR
RL326	110	UL24	U18UL	DL36	G15DL
RL327	110	UL22	U18UL	DL33	G15DR
RL328	110	UL22	U18UL	DL34	G15DL

RL329	110	UL16	U18UL	DL27	G15DR
RL330	110	UL16	U18UL	DL28	G15DL
TC1		CMD1	TCL		
TC2		CMD2	TCL		
TC3		CMD3	OMNUL		
TC4		CMD4	OMNUL		
TM1				TLM1	TMR
TM2				TLM2	TMR
TM3				TLM3	OMNDR
TM4				TLM4	OMNDR
RFT1		RFAT1	RFT1		
RFT2		RFAT2	RFT2		
BCN				BCN	BCNV

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

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	250MG7W	250000	16	533000	0.6642		9.3	21.5
D2	250MG7W	250000	8	450000	0.747		8.2	20.4
D3	250MG7W	250000	4	358000	0.895		6.6	18.8
D4	3M67G7W	3672	8	6666	0.747		8.2	20.4
D5	1M22G7W	1224	8	1950	0.6642		7.1	19.3
D6	612KG7W	612	4	868	0.8869		6.5	18.7
D7	612KG7W	612	2	243	0.5		-1.2	11



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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/m2/Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
FL01	FL170	D1		1		LB1.doc		58.9	11.1	27.1	63	67	-119	18.6
FL01	FL170	D2		1		LB2.doc		58.9	11.1	27.1	63	67	-119	18.6
FL01	FL170	D3		1		LB3.doc		58.9	11.1	27.1	63	67	-119	18.6
RL01	RL330	D4		34		LB4.doc		45.6	-3	3	63	65	-122	38
RL01	RL330	D5		102		LB5.doc		45.6	-3	3	63	65	-122	38
RL01	RL330	D6		204		LB6.doc		45.6	-3	0	63	65	-122	38
RL01	RL330	D7		204		LB7.doc		45.6	-3	0	63	65	-122	38
TC1	TC2		A1	1		CMD1 LB.doc		64.5	-18.2	-1.2				
TC3	TC4		A1	1		CMD2 LB.doc		69.9	9.4	13.4				
TM1	TM2		A2	1		TLM1 LB.doc					22	24	-131.8	
TM3	TM4		A2	1		TLM2 LB.doc					16	20	-142	
RFT1	RFT2		A3	1		RFAT LB.doc		65	-15	-13				
BCN	BCN		A4			BCN LB.doc					27	30	-132.5	

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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: 5281 East Garton			
S14b. City: Castle Rock	S14c. County: Douglas	S14d. State/Country CO	S14e. Zip Code: 80104
S14f. Telephone Number: 303-660-7200		S14g. Call Sign of Control Station (if appropriate):	

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

S14a: Street Address: 33 East Telegraph Road			
S14b. City: Fillmore	S14c. County: Ventura	S14d. State/Country CA	S14e. Zip Code: 93015
S14f. Telephone Number: 805-524-4444		S14g. Call Sign of Control Station (if appropriate):	

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 3497	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 3140		
S15c. Mass of spacecraft and fuel at launch (kg): 6637	S15f. Length (m): 26	S15i. Payload: 0.8764
S15d. Mass of fuel, in orbit, at beginning of life (kg): 400	S15g. Width (m): 9.4	S15j. Bus: 0.7769
S15e. Deployed Area of Solar Array (square meters): 75	S15h. Height (m): 8.4	S15k. Total: 0.6809

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): 11449	(f): 11449	(k): 11449	(p): 11449
Bus (Watts):	(b): 2840	(g): 1596	(l): 2840	(q): 1596
Total (Watts):	(c): 14289	(h): 13045	(m): 14289	(r): 13045
Solar Array (Watts):	(d): 16122	(i): 14532	(n): 15693	(s): 14067
Depth of Battery Discharge (%):	(e) 73.1 %	(j) %	(o) 73.1 %	(t) %

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.**