

**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: EHOSTAR-157W	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): 12 Years	j. Number of transponders offered on a common carrier basis: 0
c. Construction Completion Date:	g. Total Number of Transponders: 32	k. Total Common Carrier Transponder Bandwidth: 0 MHz
d. Estimated Launch Date:	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 768 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)		
17.3	G	17.8	G	R	Feeder Link for Broadcasting Satellite Service in FSS
12.2	G	12.7	G	T	Broadcasting Satellite Service - Video

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 157 W	b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: Winning bidder for 157W orbital location in DBS Auction No. 52.
Longitudinal Tolerance or E/W Station-Keeping:	f. Inclination Excursion or N/S Station-Keeping Tolerance:	Range of orbital are in which adequate service can be provided (Optional): Degrees E/W	
d. Toward West: 0.05 Degrees	e. Toward East: 0.05 Degrees	g. Westernmost: h. Easternmost:	
i. Reason for service are selection (Optional):			

**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

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

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.
SARX	S		Defined by the -3 dB contour. CONUS.
SATX	S		Defined by the -4 dB contour. CONUS, Alaska, Hawaii, Mexico.

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

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)	
										(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
		(c) Peak (dBi)	(d) Edge (dBi)														
RXLC	R	37.6	34.6	0.12		30	N		SARX				915	8	-95	1	20
RXR	R	37.6	34.6	0.12		30	N		SARX				915	8	-95	1	20
TXLC	T	34.6	30.6	0.12		30	N		SATX	1.8	198.2	57.4					
TXR	T	34.6	30.6	0.12		30	N		SATX	1.8	198.2	57.4					

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

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
RXLC	R	C	-157		RXLC.gxt					
TXLC	T	C	-157		TXLC.gxt					
TXR	T	C	-157		TXRC.gxt					
RXR	R	C	-157		RXRC.gxt					

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)
U0001	24000	R	17324	R	C
U0003	24000	R	17353.16	R	C
U0005	24000	R	17382.32	R	C
U0007	24000	R	17411.48	R	C
U0009	24000	R	17440.64	R	C
U0011	24000	R	17469.8	R	C
U0013	24000	R	17498.96	R	C
U0015	24000	R	17528.12	R	C
U0017	24000	R	17557.28	R	C
U0019	24000	R	17586.44	R	C
U0021	24000	R	17615.6	R	C
U0023	24000	R	17644.76	R	C
U0025	24000	R	17673.92	R	C
U0027	24000	R	17703.08	R	C
U0029	24000	R	17732.24	R	C
U0031	24000	R	17761.4	R	C
U0002	24000	R	17338.58	L	C
U0004	24000	R	17367.74	L	C
U0006	24000	R	17396.9	L	C
U0008	24000	R	17426.06	L	C
U0010	24000	R	17455.22	L	C
U0012	24000	R	17484.38	L	C
U0014	24000	R	17513.54	L	C
U0016	24000	R	17542.7	L	C
U0018	24000	R	17571.86	L	C
U0020	24000	R	17601.02	L	C
U0022	24000	R	17630.18	L	C
U0024	24000	R	17659.34	L	C
U0026	24000	R	17688.5	L	C
U0028	24000	R	17717.66	L	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	123.7	U0001	RXRC	D0001	TXLC
T0003	123.7	U0003	RXRC	D0003	TXLC
T0005	123.7	U0005	RXRC	D0005	TXLC
T0007	123.7	U0007	RXRC	D0007	TXLC
T0009	123.7	U0009	RXRC	D0009	TXLC
T0011	123.7	U0011	RXRC	D0011	TXLC
T0013	123.7	U0013	RXRC	D0013	TXLC
T0015	123.7	U0015	RXRC	D0015	TXLC
T0017	123.7	U0017	RXRC	D0017	TXLC
T0019	123.7	U0019	RXRC	D0019	TXLC
T0021	123.7	U0021	RXRC	D0021	TXLC
T0023	123.7	U0023	RXRC	D0023	TXLC
T0025	123.7	U0025	RXRC	D0025	TXLC
T0027	123.7	U0027	RXRC	D0027	TXLC
T0029	123.7	U0029	RXRC	D0029	TXLC
T0031	123.7	U0031	RXRC	D0031	TXLC
T0002	123.7	U0002	RXLC	D0002	TXRC
T0004	123.7	U0004	RXLC	D0004	TXRC
T0006	123.7	U0006	RXLC	D0006	TXRC
T0008	123.7	U0008	RXLC	D0008	TXRC
T0010	123.7	U0010	RXLC	D0010	TXRC
T0012	123.7	U0012	RXLC	D0012	TXRC
T0014	123.7	U0014	RXLC	D0014	TXRC
T0016	123.7	U0016	RXLC	D0016	TXRC
T0018	123.7	U0018	RXLC	D0018	TXRC
T0020	123.7	U0020	RXLC	D0020	TXRC
T0022	123.7	U0022	RXLC	D0022	TXRC
T0024	123.7	U0024	RXLC	D0024	TXRC
T0026	123.7	U0026	RXLC	D0026	TXRC
T0028	123.7	U0028	RXLC	D0028	TXRC

U0030	24000	R	17746.82	L	C
U0032	24000	R	17775.98	L	C
D0001	24000	T	12224	L	C
D0003	24000	T	12253.16	L	C
D0005	24000	T	12282.32	L	C
D0007	24000	T	12311.48	L	C
D0009	24000	T	12340.64	L	C
D0011	24000	T	12369.8	L	C
D0013	24000	T	12398.96	L	C
D0015	24000	T	12428.12	L	C
D0017	24000	T	12457.28	L	C
D0019	24000	T	12486.44	L	C
D0021	24000	T	12515.6	L	C
D0023	24000	T	12544.76	L	C
D0025	24000	T	12573.92	L	C
D0027	24000	T	12603.08	L	C
D0029	24000	T	12632.24	L	C
D0031	24000	T	12661.4	L	C
D0002	24000	T	12238.58	R	C
D0004	24000	T	12267.74	R	C
D0006	24000	T	12296.9	R	C
D0008	24000	T	12326.06	R	C
D0010	24000	T	12355.22	R	C
D0012	24000	T	12384.38	R	C
D0014	24000	T	12413.54	R	C
D0016	24000	T	12442.7	R	C
D0018	24000	T	12471.86	R	C
D0020	24000	T	12501.02	R	C
D0022	24000	T	12530.18	R	C
D0024	24000	T	12559.34	R	C
D0026	24000	T	12588.5	R	C
D0028	24000	T	12617.66	R	C
D0030	24000	T	12646.82	R	C
D0032	24000	T	12675.98	R	C

T0030	123.7	U0030	RXLC	D0030	TXRC
T0032	123.7	U0032	RXLC	D0032	TXRC

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	24M0G7W	24000	4	27647	0.691		6.1	18.3

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

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 ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
T0001	T0032	D1		1		LB1.doc	0	65	3.2	21.8	50.6	57.4		12.7

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

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: 530 Echostar Drive			
S14b. City: Cheyenne	S14c. County: Laramie	S14d. State/Country WY	S14e. Zip Code: 82007
S14f. Telephone Number: (307) 633-5227		S14g. Call Sign of Control Station (if appropriate): E980005	

Remote Control (TT C) Location(s):

S14a: Street Address: 801 North American Sky Boulevard			
S14b. City: Gilbert	S14c. County: Maricopa	S14d. State/Country AZ	S14e. Zip Code: 85233
S14f. Telephone Number: (307) 633-5227		S14g. Call Sign of Control Station (if appropriate): E020306	

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

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 2000	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2200		
S15c. Mass of spacecraft and fuel at launch (kg): 4200	S15f. Length (m): 47.1	S15i. Payload: 0.87
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1500	S15g. Width (m): 8	S15j. Bus: 0.85
S15e. Deployed Area of Solar Array (square meters): 91.2	S15h. Height (m): 5	S15k. Total: 0.74

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): 10500	(f): 10500	(k): 10500	(p): 10500
Bus (Watts):	(b): 2000	(g): 1111	(l): 2000	(q): 1111
Total (Watts):	(c): 12500	(h): 11611	(m): 12500	(r): 11611
Solar Array (Watts):	(d): 15500	(i): 13439	(n): 13740	(s): 12090
Depth of Battery Discharge (%):	(e) 76 %	(j) %	(o) 76 %	(t) %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" 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.