

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: ECHOSTAR-15		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:	
c. Construction Completion Date:		g. Total Number of Transponders: 32		k. Total Common Carrier Transponder Bandwidth: MHz	
d1. Est Launch Date Begin:	d2. Est Launch Date End:	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)		
17300	M	17800	M	R	Feeder Link for Broadcasting Satellite Service in FSS
12200	M	12700	M	T	Broadcasting Satellite Service - Video

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 45.1 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: The satellite will operate under the authority of the Administration of Brazil. The 45.1 W.L. location is consistent with the Brazilian cluster of the ITU Region 2 BSS Plan.	
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): <u>Degrees</u> <u>E/W</u>	
d. Toward West:	0.05 Degrees	e. Toward East:		g. Westernmost: h. Easternmost:	
		0.05 Degrees			
i. Reason for service are selection (Optional):					

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 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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 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.
SA1	S		-3 dB contour of the uplink beams
SA2	S		Brazil
SA3	S		Visible Earth

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				
										(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														
RX1R	R	44.9	41.9	0.12		30	N		SA1				1905	12.1	-100.4	21	1
RX1L	R	44.9	41.9	0.12		30	N		SA1				1905	12.1	-100.4	21	1
RX2R	R	44.7	41.7	0.12		30	N		SA1				1919	11.9	-99.5	21	1
RX2L	R	44.7	41.7	0.12		30	N		SA1				1919	11.9	-99.5	21	1
BED	T	34.3	26.3	0.12		30	N		SA2	2.8	236	58.1					
BEDL	T	34.3	26.3	0.12		30	N		SA2	2.8	236	58.1					
BWD	T	34.3	26.3	0.12		30	N		SA2	2.8	236	58.1					
BWD	T	34.3	26.3	0.12		30	N		SA2	2.8	236	58.1					
TCO	R	44.9	40.9	0.12		30	N		SA1				32000	-3.1	-93		
TCO	R	44.7	40.7	0.12		30	N		SA1				32000	-3.3	-93		
TMO	T	34.3	30.3	0.12		30	N		SA2	4.9	0.024	18					
TMO	T	34.3	30.3	0.12		30	N		SA2	4.9	0.024	18					
OMN	R	9	-4	0		30	N		SA3				5000	-28	-83		
OMN	T	9	-4	0		30	N		SA3	9.3	4.1	15.2					

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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
RX1R	R	C	-45.1		RX1R.gxt					
RX1L	R	C	-45.1		RX1L.gxt					
RX2R	R	C	-45.1		RX2R.gxt					
RX2L	R	C	-45.1		RX2L.gxt					
BED	T	C	-45.1		BEDR.gxt					
BEDL	T	C	-45.1		BEDL.gxt					
BWD	T	C	-45.1		BWDR.gxt					
BWDL	T	C	-45.1		BWDL.gxt					
TCO	R	C	-45.1		TCOS1.gxt					
TCO	R	C	-45.1		TCOS2.gxt					
TMO	T	C	-45.1		TMOS1.gxt					
TMO	T	C	-45.1		TMOS2.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
U0002	24000	R	17353.16	R	C
U0003	24000	R	17382.32	R	C
U0004	24000	R	17411.48	R	C
U0005	24000	R	17440.64	R	C
U0006	24000	R	17469.8	R	C
U0007	24000	R	17498.96	R	C
U0008	24000	R	17528.12	R	C
U0009	24000	R	17557.28	R	C
U0010	24000	R	17586.44	R	C
U0011	24000	R	17615.6	R	C
U0012	24000	R	17644.76	R	C
U0013	24000	R	17673.92	R	C
U0014	24000	R	17703.08	R	C
U0015	24000	R	17732.24	R	C
U0016	24000	R	17761.4	R	C
U0017	24000	R	17338.58	L	C
U0018	24000	R	17367.74	L	C
U0019	24000	R	17396.9	L	C
U0020	24000	R	17426.06	L	C
U0021	24000	R	17455.22	L	C
U0022	24000	R	17484.38	L	C
U0023	24000	R	17513.54	L	C
U0024	24000	R	17542.7	L	C
U0025	24000	R	17571.86	L	C
U0026	24000	R	17601.02	L	C
U0027	24000	R	17630.18	L	C
U0028	24000	R	17659.34	L	C
U0029	24000	R	17688.5	L	C
U0030	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	126	U0001	RX1R	D0001	BEDR
T0002	126	U0003	RX1R	D0003	BEDR
T0003	126	U0005	RX1R	D0005	BEDR
T0004	126	U0007	RX1R	D0007	BEDR
T0005	126	U0009	RX1R	D0009	BEDR
T0006	126	U0011	RX1R	D0011	BEDR
T0007	126	U0013	RX1R	D0013	BEDR
T0008	126	U0015	RX1R	D0015	BEDR
T0009	126	U0002	RX1R	D0002	BWDR
T0010	126	U0004	RX1R	D0004	BWDR
T0011	126	U0006	RX1R	D0006	BWDR
T0012	126	U0008	RX1R	D0008	BWDR
T0013	126	U0010	RX1R	D0010	BWDR
T0014	126	U0012	RX1R	D0012	BWDR
T0015	126	U0014	RX1R	D0014	BWDR
T0016	126	U0016	RX1R	D0016	BWDR
T0017	126	U0017	RX1L	D0017	BWDL
T0018	126	U0019	RX1L	D0019	BWDL
T0019	126	U0021	RX1L	D0021	BWDL
T0020	126	U0023	RX1L	D0023	BWDL
T0021	126	U0025	RX1L	D0025	BWDL
T0022	126	U0027	RX1L	D0027	BWDL
T0023	126	U0029	RX1L	D0029	BWDL
T0024	126	U0031	RX1L	D0031	BWDL
T0025	126	U0018	RX1L	D0018	BEDL
T0026	126	U0020	RX1L	D0020	BEDL
T0027	126	U0022	RX1L	D0022	BEDL
T0028	126	U0024	RX1L	D0024	BEDL
T0029	126	U0026	RX1L	D0026	BEDL
T0030	126	U0028	RX1L	D0028	BEDL

U0031	24000	R	17746.82	L	C
U0032	24000	R	17775.98	L	C
D0001	24000	T	12224	R	C
D0002	24000	T	12253.16	R	C
D0003	24000	T	12282.32	R	C
D0004	24000	T	12311.48	R	C
D0005	24000	T	12340.64	R	C
D0006	24000	T	12369.8	R	C
D0007	24000	T	12398.96	R	C
D0008	24000	T	12428.12	R	C
D0009	24000	T	12457.28	R	C
D0010	24000	T	12486.44	R	C
D0011	24000	T	12515.6	R	C
D0012	24000	T	12544.76	R	C
D0013	24000	T	12573.92	R	C
D0014	24000	T	12603.08	R	C
D0015	24000	T	12632.24	R	C
D0016	24000	T	12661.4	R	C
D0017	24000	T	12238.58	L	C
D0018	24000	T	12267.74	L	C
D0019	24000	T	12296.9	L	C
D0020	24000	T	12326.06	L	C
D0021	24000	T	12355.22	L	C
D0022	24000	T	12384.38	L	C
D0023	24000	T	12413.54	L	C
D0024	24000	T	12442.7	L	C
D0025	24000	T	12471.86	L	C
D0026	24000	T	12501.02	L	C
D0027	24000	T	12530.18	L	C
D0028	24000	T	12559.34	L	C
D0029	24000	T	12588.5	L	C
D0030	24000	T	12617.66	L	C
D0031	24000	T	12646.82	L	C
D0032	24000	T	12675.98	L	C
CMD1	1000	R	17791.5	R	T
CMD2	1000	R	17793.5	R	T
TLM1	1000	T	12692	R	T
TLM2	1000	T	12693	R	T
TLM3	1000	T	12694.5	R	T

T0031	126	U0030	RX1L	D0030	BEDL
T0032	126	U0032	RX1L	D0032	BEDL
T0033	125	U0001	RX2R	D0001	BEDR
T0034	125	U0003	RX2R	D0003	BEDR
T0035	125	U0005	RX2R	D0005	BEDR
T0036	125	U0007	RX2R	D0007	BEDR
T0037	125	U0009	RX2R	D0009	BEDR
T0038	125	U0011	RX2R	D0011	BEDR
T0039	125	U0013	RX2R	D0013	BEDR
T0040	125	U0015	RX2R	D0015	BEDR
T0041	125	U0002	RX2R	D0002	BWDR
T0042	125	U0004	RX2R	D0004	BWDR
T0043	125	U0006	RX2R	D0006	BWDR
T0044	125	U0008	RX2R	D0008	BWDR
T0045	125	U0010	RX2R	D0010	BWDR
T0046	125	U0012	RX2R	D0012	BWDR
T0047	125	U0014	RX2R	D0014	BWDR
T0048	125	U0016	RX2R	D0016	BWDR
T0049	125	U0017	RX2L	D0017	BWDL
T0050	125	U0019	RX2L	D0019	BWDL
T0051	125	U0021	RX2L	D0021	BWDL
T0052	125	U0023	RX2L	D0023	BWDL
T0053	125	U0025	RX2L	D0025	BWDL
T0054	125	U0027	RX2L	D0027	BWDL
T0055	125	U0029	RX2L	D0029	BWDL
T0056	125	U0031	RX2L	D0031	BWDL
T0057	125	U0018	RX2L	D0018	BEDL
T0058	125	U0020	RX2L	D0020	BEDL
T0059	125	U0022	RX2L	D0022	BEDL
T0060	125	U0024	RX2L	D0024	BEDL
T0061	125	U0026	RX2L	D0026	BEDL
T0062	125	U0028	RX2L	D0028	BEDL
T0063	125	U0030	RX2L	D0030	BEDL
T0064	125	U0032	RX2L	D0032	BEDL
CMD1		CMD1	RX1R		
CMD2		CMD2	RX1R		
CMD3		CMD1	RX2R		
CMD4		CMD2	RX2R		
CMD5		CMD1	OMNUR		

TLM4	1000	T	12698.5	R	T
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CMD6		CMD2	OMNUR		
TLM1				TLM1	BEDR
TLM2				TLM2	BEDR
TLM3				TLM3	BEDR
TLM4				TLM4	BEDR
TLM5				TLM1	BWDR
TLM6				TLM2	BWDR
TLM7				TLM3	BWDR
TLM8				TLM4	BWDR
TLM9				TLM1	OMNDR
TLM10				TLM2	OMNDR
TLM11				TLM3	OMNDR
TLM12				TLM4	OMNDR

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	31698	0.7925		5.8	23
D2	25M8G7W	25800	8	41209	0.6389		7.5	23

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

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	1M00F2D	1000		1									10	22.2
A2	1M00G2D	1000		1									9	21.2

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	T0064	D1		1		LB1.doc		65.8	11.2	21.2	50.1	58.1		15.7
T0001	T0064	D2		1		LB2.doc		65.8	11.2	21.2	50.1	58.1		15.7
CMD1	CMD4		A1	1		TC1.docx		63.9	-13.8	6.2				
CMD5	CMD6		A1	1		TC2.docx		63.9	3.7	16.7				
TLM1	TLM8		A2	1		TM1.docx					15	18		42.9
TLM9	TLM12		A2	1		TM2.docx					2.2	15.2		42.9

**FEDERAL COMMUNICATIONS COMMISSION
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: 801 North Dish Drive			
S14b. City: Gilbert	S14c. County: Maricopa	S14d. State/Country AZ	S14e. Zip Code: 85233
S14f. Telephone Number: 480-558-2778		S14g. Call Sign of Control Station (if appropriate):	

Remote Control (TT C) Location(s):

S14a: Street Address:			
S14b. City:	S14c. County:	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number:		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): 2479	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 3146		
S15c. Mass of spacecraft and fuel at launch (kg): 5619	S15f. Length (m): 6.9	S15i. Payload: 0.8377
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1030	S15g. Width (m): 8	S15j. Bus: 0.8635
S15e. Deployed Area of Solar Array (square meters): 92	S15h. Height (m): 32.5	S15k. Total: 0.7234

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): 14102	(f): 14102	(k): 14102	(p): 14102
Bus (Watts):	(b): 3461	(g): 1705	(l): 3461	(q): 1705
Total (Watts):	(c): 17563	(h): 15807	(m): 17563	(r): 15807
Solar Array (Watts):	(d): 19493	(i): 17522	(n): 18478	(s): 16610
Depth of Battery Discharge (%):	(e) 76.5 %	(j) %	(o) 76.5 %	(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.