FCC 312 Schedule S	FEDERAL COMMUNICATIONS COMMISSION SATELLITE SPACE STATION AUTHORIZATIONS (Technical and Operational Description)	Page 1: General, Frequency Bands, and GSO Orbit

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name:		e. Estimated Date of Placement into Service:	i Will the space station(s) operate on a Common Carrier Basis:
ECHOSTAR-15		7/17/2010	N
b. Construction Commencement Date:		f. Estimated Lifetime of Satellite(s):	j. Number of transponders offered on a common carrier basis:
4/14/2008		15 Years	0
c. Construction Completion Date:		g. Total Number of Transponders:	k. Total Common Carrier Transponder Bandwidth:
5/13/2010		32	0 MHz
d1. Est Launch Date Begin:	d2. Est Launch Date End:	h. Total Transponder Bandwidth (no. transponders x Bandwidth)	l. Orbit Type: Mark all boxes that apply:
7/1/2010	10/1/2010	768 MHz	[X] 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)		
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):	b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:
61.55 W			Consistent with Region 2 USA Plan and existing EchoStar license.
Longitudinal Tolerance or E/W Station-Keeping: d. Toward West: 0.05 Degrees e. Toward East: 0.05 Degrees	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: W h. Easternmost: W	
i. Reason for service are selection (Optional): Cluster range of Region 2 BSS Plan for the 61.5W nominal orbital slot is from 61.7W to 61.3W.			

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S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

S4a. Total Number of Satellites in Network or System:

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

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

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 intital 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.
CONUS+	S		CONUS, Puerto Rico
CHEYENNE	S		Area around Cheyenne, WY
GILBERT	S		Area around Gilbert, AZ
GLOBAL	S		Visible Earth

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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				
		(c) Peak (dBi)	(d) Edge (dBi)							(k) Input Losses (dB)	(l) Effective Output Power (W)	(m) Max. EIRP (dBW)	(n) System Noice 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
OMN	R	9	-4	1	1	30	N		GLOBAL				5000	-41	-83		
OMN	T	9	-4	1	1	30	N		GLOBAL	9.3	4.1	15.2					
TCO	R	44.9	41.9	0.12	0.2	30	N		CHEYENN				32000	-10	-93		
NA	T	0	0	0	0	30			CONUS+	1	1	0					
TCO	R	44.7	41.9	0.12	0.2	30	N		GILBERT				32000	-10	-93		
RR1	R	44.9	41.9	0.12	0.2	30	N		CHEYENN				1905	7.6	-100.4	21	1
RL1	R	44.9	41.9	0.12	0.2	30	N		CHEYENN				1905	7.6	-100.4	21	1
RR2	R	44.7	41.7	0.12	0.2	30	N		GILBERT				1919	7.4	-99.5	21	1
TEL	T	34.3	24.3	0.12	0.2	30	N		CONUS+	2.8	236	58.1					
TER	T	34.3	24.3	0.12	0.2	30	N		CONUS+	2.8	236	58.1					
TMO	T	34.3	28.3	0.12	0.2	30	N		CONUS+	4.9	0.13	18					
TMO	T	34.3	28.3	0.12	0.2	30	N		CONUS+	4.9	0.13	18					
RL2	R	44.7	41.7	0.12	0.2	30	N		GILBERT				1919	7.4	-99.5	21	1
TWL	T	34.3	24.3	0.12	0.2	30	N		CONUS+	2.8	236	58.1					
TWR	T	34.3	24.3	0.12	0.2	30	N		CONUS+	2.8	236	58.1					

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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
TCO	R	C	-61.55		TCOS1.gxt					
TCO	R	C	-61.55		TCOS2.gxt					
RL1	R	C	-61.55		RL1.gxt					
RR2	R	C	-61.55		RR2.gxt					
RL2	R	C	-61.55		RL2.gxt					
TEL	T	C	-61.55		TEL.gxt					
TER	T	C	-61.55		TER.gxt					
TWL	T	C	-61.55		TWL.gxt					
TWR	T	C	-61.55		TWR.gxt					
RR1	R	C	-61.55		RR1.gxt					
TMO	T	C	-61.55		TMOS1.gxt					
TMO	T	C	-61.55		TMOS2.gxt					

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S9. SPACE STATION CHANNELS For each frequency channel 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)
R01	24000	R	17324	R	C
R03	24000	R	17353.16	R	C
R05	24000	R	17382.32	R	C
R07	24000	R	17411.48	R	C
R09	24000	R	17440.64	R	C
R11	24000	R	17469.8	R	C
R13	24000	R	17498.96	R	C
R15	24000	R	17528.12	R	C
R17	24000	R	17557.28	R	C
R19	24000	R	17586.44	R	C
R21	24000	R	17615.6	R	C
R23	24000	R	17644.76	R	C
R25	24000	R	17673.92	R	C
R27	24000	R	17703.08	R	C
R29	24000	R	17732.24	R	C
R31	24000	R	17761.4	R	C
R02	24000	R	17338.58	L	C
R04	24000	R	17367.74	L	C
R06	24000	R	17396.9	L	C
R08	24000	R	17426.06	L	C
R10	24000	R	17455.22	L	C
R12	24000	R	17484.38	L	C
R14	24000	R	17513.54	L	C
R16	24000	R	17542.7	L	C
R18	24000	R	17571.86	L	C
R20	24000	R	17601.02	L	C
R22	24000	R	17630.18	L	C
R24	24000	R	17659.34	L	C
R26	24000	R	17688.5	L	C
R28	24000	R	17717.66	L	C

S10. SPACE STATION TRANSPONDERS For each transponder provide:

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
H01	125.6	R01	RR1	T01	TER
H03	125.6	R03	RR1	T03	TWR
H05	125.6	R05	RR1	T05	TER
H07	125.6	R07	RR1	T07	TWR
H09	125.6	R09	RR1	T09	TER
H11	125.6	R11	RR1	T11	TWR
H13	125.6	R13	RR1	T13	TER
H15	125.6	R15	RR1	T15	TWR
H17	125.6	R17	RR1	T17	TER
H19	125.6	R19	RR1	T19	TWR
H21	125.6	R21	RR1	T21	TER
H23	125.6	R23	RR1	T23	TWR
H25	125.6	R25	RR1	T25	TER
H27	125.6	R27	RR1	T27	TWR
H29	125.6	R29	RR1	T29	TER
H31	125.6	R31	RR1	T31	TWR
H02	125.6	R02	RL1	T02	TWL
H04	125.6	R04	RL1	T04	TEL
H06	125.6	R06	RL1	T06	TWL
H08	125.6	R08	RL1	T08	TEL
H10	125.6	R10	RL1	T10	TWL
H12	125.6	R12	RL1	T12	TEL
H14	125.6	R14	RL1	T14	TWL
H16	125.6	R16	RL1	T16	TEL
H18	125.6	R18	RL1	T18	TWL
H20	125.6	R20	RL1	T20	TEL
H22	125.6	R22	RL1	T22	TWL
H24	125.6	R24	RL1	T24	TEL
H26	125.6	R26	RL1	T26	TWL
H28	125.6	R28	RL1	T28	TEL

R30	24000	R	17746.82	L	C
R32	24000	R	17775.98	L	C
T01	24000	T	12224	R	C
T03	24000	T	12253.16	R	C
T05	24000	T	12282.32	R	C
T07	24000	T	12311.48	R	C
T09	24000	T	12340.64	R	C
T11	24000	T	12369.8	R	C
T13	24000	T	12398.96	R	C
T15	24000	T	12428.12	R	C
T17	24000	T	12457.28	R	C
T19	24000	T	12486.44	R	C
T21	24000	T	12515.6	R	C
T23	24000	T	12544.76	R	C
T25	24000	T	12573.92	R	C
T27	24000	T	12603.08	R	C
T29	24000	T	12632.24	R	C
T31	24000	T	12661.4	R	C
T02	24000	T	12238.58	L	C
T04	24000	T	12267.74	L	C
T06	24000	T	12296.90	L	C
T08	24000	T	12326.06	L	C
T10	24000	T	12355.22	L	C
T12	24000	T	12384.38	L	C
T14	24000	T	12413.54	L	C
T16	24000	T	12442.7	L	C
T18	24000	T	12471.86	L	C
T20	24000	T	12501.02	L	C
T22	24000	T	12530.18	L	C
T24	24000	T	12559.34	L	C
T26	24000	T	12588.5	L	C
T28	24000	T	12617.66	L	C
T30	24000	T	12646.82	L	C
T32	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

H30	125.6	R30	RL1	T30	TWL
H32	125.6	R32	RL1	T32	TEL
TLMF				TLM4	TMOS1
TLMG				TLM1	TMOS2
TLMH				TLM2	TMOS2
CMDA		CMD1	OMNR		
CMDB		CMD2	OMNR		
CMDC		CMD1	TCOS1		
CMDD		CMD1	TCOS2		
CMDE		CMD2	TCOS1		
CMDF		CMD2	TCOS2		
TLMA				TLM1	OMNT
TLMB				TLM2	OMNT
TLMC				TLM3	OMNT
TLMD				TLM4	OMNT
TLME				TLM3	TMOS1
H33	124.9	R01	RR2	T01	TER
H35	124.9	R03	RR2	T03	TWR
H37	124.9	R05	RR2	T05	TER
H39	124.9	R07	RR2	T07	TWR
H41	124.9	R09	RR2	T09	TER
H43	124.9	R11	RR2	T11	TWR
H45	124.9	R13	RR2	T13	TER
H47	124.9	R15	RR2	T15	TWR
H49	124.9	R17	RR2	T17	TER
H51	124.9	R19	RR2	T19	TWR
H53	124.9	R21	RR2	T21	TER
H55	124.9	R23	RR2	T23	TWR
H57	124.9	R25	RR2	T25	TER
H59	124.9	R27	RR2	T27	TWR
H61	124.9	R29	RR2	T29	TER
H63	124.9	R31	RR2	T31	TWR
H34	124.9	R02	RL2	T02	TWL
H36	124.9	R04	RL2	T04	TEL
H38	124.9	R06	RL2	T06	TWL
H40	124.9	R08	RL2	T08	TEL
H42	124.9	R10	RL2	T10	TWL
H44	124.9	R12	RL2	T12	TEL
H46	124.9	R14	RL2	T14	TWL

TLM4	1000	T	12698.5	R	T

H48	124.9	R16	RL2	T16	TEL
H50	124.9	R18	RL2	T18	TWL
H52	124.9	R20	RL2	T20	TEL
H54	124.9	R22	RL2	T22	TWL
H56	124.9	R24	RL2	T24	TEL
H58	124.9	R26	RL2	T26	TWL
H60	124.9	R28	RL2	T28	TEL
H62	124.9	R30	RL2	T30	TWL
H64	124.9	R32	RL2	T32	TEL

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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)
QPSK1	24M0G7W	24000	4	27647	0.6912	0	5.7	28
QPSK2	24M0G7W	24000	4	32255	0.8064	0	7.5	28
8PSK1	25M8G7W	25800	8	41209	0.6406	0	7.5	28
8PSK2	25M8G7W	25800	8	46360	0.7207	0	8.3	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						
CMD	1M00F2D	1000		1									10	22.2
TLM	1M00G2D	1000		1									9	21.2

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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)			
(a) Start	(b) End	(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/m2/Hz)	(o)Assoc. Stn Rec. G/T (dB/K)
									(j) Min.	(k) Max.	(l) Min.	(m) Max.		
H01	H64	QPSK1		1		E15_LB_QPSK		65.7	4.1	16.1	46	58.1		13.2
H01	H64	QPSK2		1		E15_LB_QPSK		65.7	4.1	16.1	46	58.1		13.2
H01	H64	8PSK1		1		E15_LB_8PSK		65.7	4.1	16.1	46	58.1		13.2
CMDA	CMDB		CMD	1		E15_TCTO.xls		63.9	16.4	36.4				-41
CMDC	CMDF		CMD	1		E15_TCOS.xls		63.9	2.9	8.9				-10
TLMA	TLMD		TLM	1		E15_TMTO.xls					4.6	15.2		48
TLME	TLMH		TLM	1		E15_TMOS.xls					14	18		48
H01	H64	8PSK2		1		E15_LB_8PSK		65.7	4.1	16.1	46	58.1		13.2

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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: 530 Echostar Drive			
S14b. City: Cheyenne	S14c. County: Laramie	S14d. State/Country WY	S14e. Zip Code: 82007
S14f. Telephone Number: 307-633-5460	S14g. Call Sign of Control Station (if appropriate):		

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):		

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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) 76.5 %	(o) 76.5 %	(t) 76.5 %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?:		**YES**		**NO**	X	**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**	X	**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?	X	**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.