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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	llite applications	•	
a. Space Station or Satellite Network Name:	e. Estimated Date c	e. Estimated Date of Placement into Service:	i. Will the space station(s) operate on a Common Carrier basis? YES NO
b. Construction Commencement Date:	f. Estimated Lifetime of Satellite(s):	ne of Satellite(s): Years	j. Number of transponders offered on a Common Carrier basis:
c. Construction Completion Date:	g. Total Number of Transponders	Transponders:	k. Total Common Carrier Transponder Bandwidth: MHz
d. Estimated Launch Date;	h. Total Transpond	h. Total Transponder Bandwidth (No. Transponders x Bandwidth): MHz	1. Orbit Type: Mark all boxes that apply. GSO NGSO
S2. OPERATING FREQUENCY BANDS Identify the frequency range and transmit/receive mode for all frequency bands inwhich this station will operate. Also indicate the nature of service(s) for each frequency band.	frequency range the nature of set	Identify the frequency range and transmit/receive mode for all frequent Also indicate the nature of service(s) for each frequency band.	ncy bands inwhich this station will operate.
Frequency Band Limits			
Jnit c. Numeric d. Unit	e. T/R Mode f	f. Nature of Service(s): List all that apply to this band	nd .
S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:	ARY SATELLI	ITES ONLY:	
a. Nominal Orbital Longitude (Degrees E/W):		b. J	Reason for orbital location selection:
Longitudinal Tolerance or E/W Station-Keeping: c. Inclination Excursion or N/S Station-Keeping		Range of orbital arc in which adequate service can be provided (Optional): Degrees E/W	
c. Toward West: Degrees Tolerance:			
d. Toward East: Degrees D	Degrees	g Fasternmost:	

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h. Reason for service arc selection (Optional):

*See FCC Form 312 - Main Form for public burden estimate

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Page 2: NGSO Orbits

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S4. ORBITAL INFORMATION FOR NON-GEOSTATIONARY SATELLITES ONLY

					(a) Orbital Planc No.	S. INITIAL			 	-							(c) Orbital Planc No.	For each Orb	S4b. T	S4a. T
31100000					(b) Satellite Number	SATELLITE											(f) No. of Satel- lites in Plane	For each Orbital Plane Provide:	S4b. Total Number of Orbital Planes in Network or System:	S4a. Total Number of Satellites in Network or System:
					Initial Phase Angle (Degrees)	PHASE AN												de:	f Orbital Plan	Satellites in
					(a) Orbital Planc No	GLE For ea											(g) Inclination Angle (degrees)		es in Netwo	Network or
				Prince of the Pr	(b) Satellite Number	55. INITIAL SATELLITE PHASE ANGLE For each satellite in each orbital plane, provide the initial phase angle				TAXABLE DATE OF THE PARTY OF TH					· Company of the comp		(h) Orbital Period (Seconds)		rk or System:	System:
					(c) Initial Phase Angle (Degrees)	ch orbital plane, j						and the state of t					(i) Apogec (km)			
					(a) Orbital Plane No.	provide the initia										A CONTRACTOR OF THE CONTRACTOR	(j) Perigee (km)	***************************************	S4d. Orbi	S4c. Cele
					(b) Satellite Number	ıl phase angle.										1,000 (206	(k) Right Ascension of the Ascending Node (Dea)			S4c. Celestial Reference l
					(c) Initial Phase Angle (Degrees)		ļ													Body (Earth, Sun, Moon, etc.):
					(a) Orbital Planc No.											(D081003)	(1) Argument of Perigee (Degrees)			ı, Sun, Moo
																019111	Acti		1	n, etc.):
					(b) Satellite Number											\top	Active Service Arc Range (Degrees) gin (n) End (o)			
					(c) Initial Phase Angle (Degrees)											+	rc Range) (o) Other			

Page 3: Service Areas

S6. SERVICE AREA CHARACTERISTICS For each service area provide:

(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.	Service Area Diagram File Name (GXT File)	(b) Type of Associated Station (Earth or Space)	(a) Service Arca ID

Page 4: Antenna Beams

															(a) Beam ID	
															(b) T/R Mode	
															Antenna Gain (c) Peak (d) Edg (dBi) (dBi)	Isotr
															na Gain (d) Edge (dBi)	opic
															ng res	(c)
															Rotational Error (Degrees)	(f)
															Min. Cross- Polar Iso- lation (dB)	(g)
															ization Switch able? (Y/N)	Vh)Polar-
															Polarization Alignment Rel. Equatorial Plane (Degrees)	for each antenna beam provide:
												·			(j) Service Area ID	lenna beam
															(k) Input Losses (dB)	provide:
															(1)Effective Output Power (W)	Transmit
															(m) Max. EIRP (dBW)	
															(n) System Noice Temp- crature (K)	
															(o) G/T at Max.Gain Pt. (dB/K)	
															(dBW/m2) Input Attenus Saturation (q) Max. (dBW/m2)	Danaiya
															Input Atte (q) Max. Value	
															Input Attenuator (dB) (q) Max. (r) Step Value Size	

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Page 5: Beam Diagrams

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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.

				2000	anar hand (8 7	s that apply to the subject freque	*Use a Reference Bandwidth of 4 kHz or 1 MHz as appropriate to the ECC Bules that apply to the	H7 or 1 MH7	ndwidth of 4 l	erence Ba	*Use a Re
			-								
-											
						•					
				-							
						,					
(4KHZ OF IMHZ)	(K) 25 Deg	(J) 20 Deg	(1) L3 Deg	(n) to Deg	Sort c (8)	(GAI FIIC)	(rigare) radie) Eximote)	(DCB. 1) W)	(0 01 %)		
(l) Reference Bandwidth*	ghest PFD)	mission with hig	horizontal (for e	f Arrival above	At Angle o	GSO Antenna Gain Contour Data	NGSO Antenna Gain Contour Description (Figure / Table / Exhibit)	Ref. Orbital Longitude (Deg. F/W)	Polar Mode	T/R Mode	Beam ID
)	ce Bandwidth	Max. Power Flux Density (dBW/m2 per Reference Bandwidth*)	x Density (dBW	Max. Power Flu	7	(f)	(c)	ÖŚĐ (Þ)	(c) Co- or		(a)

SATELLITE SPACE STATION AUTHORIZATIONS FEDERAL COMMUNICATIONS COMMISSION

Page 6: Channels and

Transponders

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S9. SPACE STATION CHANNELS For each frequency channel provide:

(a) Channel No.

-	+-	-	+-	╁	+	┼	┼	+	+	+	├ ─	ـــــ	 ┼	+	-	├ ─	-	-	-	₩-	├	 	<u> </u>		 \vdash			
																											Assigned Bandwidth (kHz)	(b)
																											T/R Mode	(c)
																											Center Frequency (MHz)	(d)
																							•				Polarization (H,V,L,R)	(b) (c) (d) (c) (f)
																										(TT&C or Comm Channel (T or C)	(f)
*																											Transponder ID	(2)
onder o																										_	onder	
hot was a																										(42)	Transponder Gain*	(b)
thut of rocciving a																											(c) Channel No	Receiv
tone and input of																										,	(d) Beam ID	Receive Band
																										110.	(c) Channel	(a) (b) Receive Band Transmit Band
																										5	(f) Beam	Transmit Band

^{*}Transponder gain between output of receiving antenna and input of transmitting antenna.

**Also complete this table for half-links such as TT&C and on-board processing. In such cases, provide the receive or transmit information, as appropriate.

S11. DIGITAL MODULATION PARAMETERS For each digital emission provide:

															(a) Digital Mod. ID I
															(b) Emission Designator
															(b) Assigned Bandwidth Phases (kbps) (c) Assigned Bandwidth Phases (kbps) (d) Uncoded Uncoded Correction Process (kbps) (f) CDM. (g) CDM. COMMERTE COding Rate Gain (d) Correction Process
															(d) No. of Phases
															(c) Uncoded Data Rate (kbps)
															FEC Error Correction Coding Rate
															(g) CDMA Processing Gain (dB)
															Total C/N Performance Objective (dB)
															(i) Single Entry C/I Objective (dB)

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Page 7: Digital Modulation

Page 8: Analog Modulation

S12. ANALOG MODULATION PARAMETERS For each analog emission provide:

_	 	 		 .,		 	 	 	 		 		 		 	
															Analog Mod. ID	(~)
															Emission Designator	: `
															Assigned Bandwidth (kHz)	- 1
															Signal Type* (see below)	(A)
															Channels per Carrier	
															 (f) Avc. Companded Talker Level (dBm0)	{ ₿
															(g) Bottom Bascband Freq. (MHz)	Multi-channe
															(g) (h) Bottom Top Baseband Baseband Freq. (MHz) Freq. (MHz)	Telephony
															RMS Modulation Index	
															Standard NTSC, PAL, etc.	CD VELACO
															 Noise Weight- ing (dB)	
															SCPC/FM Modulation Index	AN VII dan Br
															Compander, Preemphasis, Noise Weight ing (dB)	(m) SCPC/FN
															Total C/N Performance Objective (dB)	(n)
															Single Entry C/I Objective (dB)	(a)

^{*}Indicate whether signal is (a) FDM/FM, (b) CSSB/AM, (c) SCPC/FM, or (d) TV/FM. Rev 4d, June 19, 2003, 5:45 pm

Page 9: Typical Emissions

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

$_{\scriptscriptstyle L}$ Γ		T	Τ	Τ	T	T	Τ	T	Τ	Γ	Τ	Π	Т	Т	Т	T	T	П	T	Т	Г	T	T	П	Т	П	Т	
* 1																										(a) Start	* consolorum.	Associated Transponder ID Range
																										(b) End	r 12 venige	r ID Range
									2																	(Table S11)	(c) Digital	Modul
																										(Table S12)		Modulation ID
																										Transponder	Carriers	(c)
																										Spacing (kHz)	Carrier	∋
																										(Table No.)	Budget	(g) Noise
																										Bandwidth* (kHz)		
																										Max.Antenna Gain (dBi)	(i)Assoc.Stn	Receive Bar
																										(j) Min. (k) Max.	Assoc. S	Receive Band (Assoc.Transmit Stn)
																										(k) Max.	tation	mit Stn)
																										(I) Min.	EIRP (dBW)	
																	,									(m) Max.	dRW)	Transmit E
																										(n)dBW/m2	Max. Power	Transmit Band (This Space Station)
-																										<u> </u>		
																			,					/		Rec. G/T	A sear Stn	

^{*} For those emissions using energy dispersal, provide the bandwidth of the energy dispersal. Otherwise, leave blank.
**Use a Reference Bandwidth of 4 kHz or 1 MHz as appropriate to the FCC Rules that apply to the subject frequency band (§ 25.208).

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

Page 10: TT&C

S14a. Street Address				
S14b. City	S14c. County		S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	on (if appropriate)	
S14a. Street Address				
S14b. City	S14c. County		S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	on (if appropriate)	
S14a. Street Address				
S14b. City	S14c. County		S14d. State / Country	S14c. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	on (if appropriate)	
S14a. Street Address				
S14b. City	S14c. County		S14d. State / Country	S14c. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	on (if appropriate)	
S14a. Street Address			The state of the s	
S14b. City	S14c. County		S14d. State / Country	S14e. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	on (if appropriate)	
S14a. Street Address				
S14b. City	S14c. County		S14d. State / Country	S14c. Zip Code
S14f. Telephone Number		S14g. Call Sign of Control Station (if appropriate)	on (if appropriate)	

Page 11: Characteristics & Certifications

S15. SPACECRAFT PHYSICAL CHARACTERISTICS

S15k. Total	S15h. Height (m)	S15e. Deployed Area of Solar Array (square meters)
S15j. Bus	S15g. Width (m)	S15d. Mass of fuel, in orbit, at beginning of life (kg)
S15i. Payload	S15f. Length (m)	S15c. Mass of spacecraft and fuel at launch (kg)
to End of Life (0.0 - 1.0)	(meters)	S15b. Mass of fucl & disposables at launch (kg)
Probability of Survival	Spacecraft Dimensions	S15a. Mass of spacecraft without fuel (kg)

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS

(i) %	(0) %	%	% %	Discharge (%)
				(Watts)
(s)	(n)	(i)	(d)	Solar Array
(r)	(m)	(h)	(c)	Total (Watts)
(b)	(1)	(g)	(b)	Bus (Watts)
(p)	(k)	(f)	(a)	Payload (Watts)
At Solstice	At Equinox	At Solstice	At Equinox	babayacın
of Life	Electrical Power (Watts) At End of Life	ower (Watts) ing of Life	Electrical Power (Watts At Beginning of Life	Spacecraft

S17. CERTIFICATIONS

	formation	de all the int	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.
□ N/A	YES NO NA	☐ YES	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?
□ N/A	YES NO N/A	☐ YES	b. Are the appropriate service area coverage requirements of § 25.143(b)(ii) and (iii), or § 25.145(c)(1) and (2) met?
□ N/A	YES NO N/A	YES	a. Are the power flux density limits of § 25.208 met?