

**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: HORIZONS 3E		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: 36		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) 2424 MHz		l. 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)		
5925	M	6425	M	R	Fixed Satellite Service
3700	M	4200	M	T	Fixed Satellite Service
12.920	G	13.250	G	R	Fixed Satellite Service
13.750	G	14.000	G	R	Fixed Satellite Service
10.850	G	11.700	G	T	Fixed Satellite Service
12.200	G	12.700	G	T	Fixed Satellite Service
14.000	G	14.500	G	R	Fixed Satellite Service
12.700	G	12.750	G	T	Fixed Satellite Service

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

a. Nominal Orbital Longitude (Degrees E/W): 169 E		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:
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		g. Westernmost: 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 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.
GLB	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 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														
CGV	R	20.8	16.8	0.1	0.4	22	N	90	GLB							1	1
CPLU	R	1.2	1.2	0.1	0.4	22	N		GLB							1	1
CHLU	R	4.8	4.8	0.1	0.4	22	N		GLB							1	1
TGH	T	20.1	16.1	0.1	0.4	22	N	0	GLB		13.7						
TPLD	T	7.6	7.6	0.1	0.4	22	N		GLB		15.4						
THLD	T	3.3	3.3	0.1	0.4	22	N		GLB		11.9						
CLHD	T	11.5	11.5	0.1	0.4	22	N		GLB		9.4						
KLRD	T	18.1	18.1	0.1	0.4	22	N		GLB		16						
KLLD	T	19.4	19.4	0.1	0.4	22	N		GLB		16.8						
PVR	R	29.6	25.6	0.1	0.4	22	N	90	GLB				4	-106		1	1
PHR	R	29.6	25.6	0.1	0.4	22	N	0	GLB				4	-106		1	1
PHT	T	27.8	23.8	0.1	0.4	22	N	0	GLB		49.5						
PVT	T	27.8	23.8	0.1	0.4	22	N	90	GLB		49.5						
GLR	R	21.1	18.6	0.1	0.4	30	N		GLB				-6	-102		1	1
GRR	R	21.1	18.6	0.1	0.4	30	N		GLB				-6	-102		1	1
GRT	T	21	18.5	0.1	0.4	30	N		GLB		36						
GLT	T	21	18.5	0.1	0.4	30	N		GLB		36						

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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
CGV	R	C	169							
CPLU	R	C	169							
CHLU	R	C	169							
TGH	T	C	169			-168.4	-168.3	-168.1	-168	-167.9
TPLD	T	C	169			-166.7	-166.6	-166.4	-166.3	-166.2
THLD	T	C	169			-170.2	-170.1	-169.9	-169.8	-169.7
CLHD	T	C	169			-154.3	-153.2	-152.1	-150.9	-150.8
KLRD	T	C	169			-155.3	-155.2	-155.1	-154.9	-154.8
KLLD	T	C	169			-154.5	-154.4	-154.3	-154.1	-154
PVR	R	C	169		PVR.gxt					
PHR	R	C	169		PHR.gxt					
PHT	T	C	169		PHT.gxt	-148.2	-148.1	-148	-147.9	-147.8
PVT	T	C	169		PVT.gxt	-148.2	-148.1	-148	-147.9	-147.8
GLR	R	C	169							
GRR	R	C	169							
GRT	T	C	169			-159.3	-159.2	-159.1	-159	-158.9
GLT	T	C	169			-159.3	-159.2	-159.1	-159	-158.9

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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)
CU001	36000	R	5945	L	C
CU003	36000	R	5985	L	C
CU005	36000	R	6025	L	C
CU007	36000	R	6065	L	C
CU009	108000	R	6145	L	C
CU011	108000	R	6265	L	C
CU013	36000	R	6345	L	C
CU015	36000	R	6385	L	C
CU002	36000	R	5945	R	C
CU004	36000	R	5985	R	C
CU006	36000	R	6025	R	C
CU008	36000	R	6065	R	C
CU010	108000	R	6145	R	C
CU012	108000	R	6265	R	C
CU014	36000	R	6345	R	C
CU016	36000	R	6385	R	C
CD001	36000	T	3720	R	C
CD003	36000	T	3760	R	C
CD005	36000	T	3800	R	C
CD007	36000	T	3840	R	C
CD009	108000	T	3920	R	C
CD011	108000	T	4040	R	C
CD013	36000	T	4120	R	C
CD015	36000	T	4160	R	C
CD002	36000	T	3720	L	C
CD004	36000	T	3760	L	C
CD006	36000	T	3800	L	C
CD008	36000	T	3840	L	C
CD010	108000	T	3920	L	C
CD012	108000	T	4040	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
TC001		CU001	GLR		
TC002		CU003	GLR		
TC003		CU005	GLR		
TC004		CU007	GLR		
TC005		CU009	GLR		
TC006		CU011	GLR		
TC007		CU013	GLR		
TC008		CU015	GLR		
TC009		CU002	GRR		
TC010		CU004	GRR		
TC011		CU006	GRR		
TC012		CU008	GRR		
TC013		CU010	GRR		
TC014		CU012	GRR		
TC015		CU014	GRR		
TC016		CU016	GRR		
TC017				CD001	GRT
TC018				CD003	GRT
TC019				CD005	GRT
TC020				CD007	GRT
TC021				CD009	GRT
TC022				CD011	GRT
TC023				CD013	GRT
TC024				CD015	GRT
TC025				CD002	GLT
TC026				CD004	GLT
TC027				CD006	GLT
TC028				CD008	GLT
TC029				CD010	GLT
TC030				CD012	GLT

CD014	36000	T	4120	L	C
CD016	36000	T	4160	L	C
KU001	72000	R	12960	H	C
KU003	72000	R	13040	H	C
KU005	72000	R	13120	H	C
KU007	81000	R	13205	H	C
KU009	224000	R	13868	H	C
KU011	108000	R	14046	H	C
KU013	108000	R	14166	H	C
KU015	81000	R	14271	H	C
KU017	81000	R	14361	H	C
KU019	81000	R	14451	H	C
KU002	72000	R	12960	V	C
KU004	72000	R	13040	V	C
KU006	72000	R	13120	V	C
KU008	81000	R	13205	V	C
KU010	224000	R	13868	V	C
KU012	108000	R	14046	V	C
KU014	108000	R	14166	V	C
KU016	81000	R	14271	V	C
KU018	81000	R	14361	V	C
KU020	81000	R	14451	V	C
KD001	72000	T	12240	V	C
KD003	72000	T	12320	V	C
KD005	72000	T	12400	V	C
KD007	81000	T	12485	V	C
KD009	224000	T	10968	V	C
KD011	108000	T	11146	V	C
KD013	108000	T	11266	V	C
KD015	81000	T	11371	V	C
KD017	81000	T	11461	V	C
KD019	81000	T	11551	V	C
KD002	72000	T	12240	H	C
KD004	72000	T	12320	H	C
KD006	72000	T	12400	H	C
KD008	81000	T	12485	H	C
KD010	224000	T	10968	H	C
KD012	108000	T	11146	H	C
KD014	108000	T	11266	H	C

TC031					CD014	GLT
TC032					CD016	GLT
TK001		KU001	PHR			
TK002		KU003	PHR			
TK003		KU005	PHR			
TK004		KU007	PHR			
TK005		KU009	PHR			
TK006		KU011	PHR			
TK007		KU013	PHR			
TK008		KU015	PHR			
TK009		KU017	PHR			
TK010		KU019	PHR			
TK011		KU002	PVR			
TK012		KU004	PVR			
TK013		KU006	PVR			
TK014		KU008	PVR			
TK015		KU010	PVR			
TK016		KU012	PVR			
TK017		KU014	PVR			
TK018		KU016	PVR			
TK019		KU018	PVR			
TK020		KU020	PVR			
TK021					KD001	PVT
TK022					KD003	PVT
TK023					KD005	PVT
TK024					KD007	PVT
TK025					KD009	PVT
TK026					KD011	PVT
TK027					KD013	PVT
TK028					KD015	PVT
TK029					KD017	PVT
TK030					KD019	PVT
TK031					KD002	PHT
TK032					KD004	PHT
TK033					KD006	PHT
TK034					KD008	PHT
TK035					KD010	PHT
TK036					KD012	PHT
TK037					KD014	PHT



KD016	81000	T	11371	H	C
KD018	81000	T	11461	H	C
KD020	81000	T	11551	H	C
CMD01	1200	R	5925.5	L	T
CMD2A	1200	R	6424.5	V	T
CMD2B	1200	R	6424.5	L	T
TLM1A	300	T	4197.75	H	T
TLM1B	300	T	4197.75	L	T
TLM2A	300	T	4198.25	H	T
TLM2B	300	T	4198.25	L	T
TLM3A	300	T	4198.75	H	T
TLM3B	300	T	4198.75	L	T
TLM4A	300	T	4199.25	H	T
TLM4B	300	T	4199.25	L	T
ULPC1	25	T	4199.75	H	T
ULPC2	25	T	11451	R	T
ULPC3	25	T	12200.25	R	T

TK038				KD016	PHT
TK039				KD018	PHT
TK040				KD020	PHT

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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)
D1	36M0G7W	36000						
D2	8M25G7W	8250						
D3	1M74G7W	1733						
D4	382KG7W	382						





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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: 7900 Tysons One Place			
S14b. City: McLean	S14c. County: Fairfax	S14d. State/Country VA	S14e. Zip Code: 22102
S14f. Telephone Number: 703-559-7701		S14g. Call Sign of Control Station (if appropriate):	

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**Page 11:  
Characteristics and  
Certifications**

**S15. SPACECRAFT PHYSICAL CHARACTERISTICS:**

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

**S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:**

**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.**

**FCC NOTICE REQUIRED BY THE PAPERWORK REDUCTION ACT**

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