

**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: BSSNET2A-111W		e. Estimated Date of Placement into Service: 1/1/2021		i. Will the space station(s) operate on a Common Carrier Basis: N	
b. Construction Commencement Date: 3/1/2018		f. Estimated Lifetime of Satellite(s): 15 Years		j. Number of transponders offered on a common carrier basis: 0	
c. Construction Completion Date: 9/1/2020		g. Total Number of Transponders: 26		k. Total Common Carrier Transponder Bandwidth: 0 MHz	
d1. Est Launch Date Begin: 10/1/2020	d2. Est Launch Date End: 12/1/2020	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 758 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)		
17.3	G	17.7	G	T	Broadcasting Satellite Service - Data
17.3	G	17.7	G	T	Broadcasting Satellite Service - Sound
17.3	G	17.7	G	T	Broadcasting Satellite Service - Video
17.3	G	17.7	G	T	TTC
24.75	G	25.25	G	R	Feeder Link for Broadcasting Satellite Service in FSS
24.75	G	25.25	G	R	TTC

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 110.9 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: Available Appendix F orbital location			
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):							

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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.
CONUS+	S		USA, HWA, ALS, PTR
SWU	S	SWRR SA.gxt	SW UPLINK
CRBRSA	S	CRBRSA.gxt	Caribbean CMD
CRBTSA	S	CRBTSA.gxt	Caribbean TLM

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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															
CON	T	37.1	27.1	0.15		30	N		CONUS+	1.7	202	60.2						
SWR	R	47	45	0.15		30	N		SWU				900	17.5	-104	20	1	
CON	T	37.1	27.1	0.15		30	N		CONUS+	1.7	202	60.2						
SWR	R	47	45	0.15		30	N		SWU				900	17.5	-104	20	1	
CRB	R	47	43	0.15		30	N		CRBRSA				1128	16.5	-104	20	1	
CRBT	T	45.5	41.5	0.15		30	N		CRBTSA	2	0.63	43.5						

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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
CON	T	C	-110.9		CONTL.gxt	-117.3	-117.2	-117	-116.9	-116.8
CON	T	C	-110.9		CONTR.gxt	-117.3	-117.2	-117	-116.9	-116.8
SWR	R	C	-110.9		SWRL.gxt					
SWR	R	C	-110.9		SWRR.gxt					
CRB	R	C	-110.9		CRBR.gxt					
CRBT	T	C	-110.9		CRBT.gxt	-120.1	-120.1	-120.1	-120.1	-120.1

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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)
CH001	26000	T	17325	L	C
CH003	26000	T	17354.16	L	C
CH005	26000	T	17383.32	L	C
CH007	26000	T	17412.48	L	C
CH009	26000	T	17441.64	L	C
CH011	26000	T	17470.8	L	C
CH013	26000	T	17499.96	L	C
CH015	26000	T	17529.12	L	C
CH017	26000	T	17558.28	L	C
CH019	26000	T	17587.44	L	C
CH021	26000	T	17616.6	L	C
CH023	26000	T	17645.76	L	C
CH025	26000	T	17674.92	L	C
CH002	26000	T	17325	R	C
CH004	26000	T	17354.16	R	C
CH006	26000	T	17383.32	R	C
CH008	26000	T	17412.48	R	C
CH010	26000	T	17441.64	R	C
CH012	26000	T	17470.8	R	C
CH014	26000	T	17499.96	R	C
CH016	26000	T	17529.12	R	C
CH018	26000	T	17558.28	R	C
CH020	26000	T	17587.44	R	C
CH022	26000	T	17616.6	R	C
CH024	26000	T	17645.76	R	C
CH026	26000	T	17674.92	R	C
CU001	26000	R	24775	R	C
CU003	26000	R	24804.16	R	C
CU005	26000	R	24833.32	R	C
CU007	26000	R	24862.48	R	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	121.3	CU001	SWRR	CH001	CONTL
T0003	121.3	CU003	SWRR	CH003	CONTL
T0005	121.3	CU005	SWRR	CH005	CONTL
T0007	121.3	CU007	SWRR	CH007	CONTL
T0009	121.3	CU009	SWRR	CH009	CONTL
T0011	121.3	CU011	SWRR	CH011	CONTL
T0013	121.3	CU013	SWRR	CH013	CONTL
T0015	121.3	CU015	SWRR	CH015	CONTL
T0017	121.3	CU017	SWRR	CH017	CONTL
T0019	121.3	CU019	SWRR	CH019	CONTL
T0021	121.3	CU021	SWRR	CH021	CONTL
T0023	121.3	CU023	SWRR	CH023	CONTL
T0025	121.3	CU025	SWRR	CH025	CONTL
T0002	121.3	CU002	SWRL	CH002	CONTR
T0004	121.3	CU004	SWRL	CH004	CONTR
T0006	121.3	CU006	SWRL	CH006	CONTR
T0008	121.3	CU008	SWRL	CH008	CONTR
T0010	121.3	CU010	SWRL	CH010	CONTR
T0012	121.3	CU012	SWRL	CH012	CONTR
T0014	121.3	CU014	SWRL	CH014	CONTR
T0016	121.3	CU016	SWRL	CH016	CONTR
T0018	121.3	CU018	SWRL	CH018	CONTR
T0020	121.3	CU020	SWRL	CH020	CONTR
T0022	121.3	CU022	SWRL	CH022	CONTR
T0024	121.3	CU024	SWRL	CH024	CONTR
T0026	121.3	CU026	SWRL	CH026	CONTR
CMDA		CMD1	SWRR		
CMDB		CMD2	SWRR		
TLMA				TEL1	CONTR
TLMB				TEL2	CONTR

CU009	26000	R	24891.64	R	C
CU011	26000	R	24920.8	R	C
CU013	26000	R	24949.96	R	C
CU015	26000	R	24979.12	R	C
CU017	26000	R	25008.28	R	C
CU019	26000	R	25037.44	R	C
CU021	26000	R	25066.6	R	C
CU023	26000	R	25095.76	R	C
CU025	26000	R	25124.92	R	C
CU002	26000	R	24775	L	C
CU004	26000	R	24804.16	L	C
CU006	26000	R	24833.32	L	C
CU008	26000	R	24862.48	L	C
CU010	26000	R	24891.64	L	C
CU012	26000	R	24920.8	L	C
CU014	26000	R	24949.96	L	C
CU016	26000	R	24979.12	L	C
CU018	26000	R	25008.28	L	C
CU020	26000	R	25037.44	L	C
CU022	26000	R	25066.6	L	C
CU024	26000	R	25095.76	L	C
CU026	26000	R	25124.92	L	C
CMD1	1000	R	24753	R	T
CMD2	1000	R	24755	R	T
TEL1	1000	T	17303	R	T
TEL2	1000	T	17306	R	T
CMD3	1000	R	24753	R	T
CMD4	1000	R	24755	R	T
TEL3	1000	T	17303	R	T
TEL4	1000	T	17306	R	T

CMDC		CMD3	CRBR		
CMDD		CMD4	CRBR		
TLMC				TEL3	CRBT
TLMD				TEL4	CRBT

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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	26M0G7W	26000	8	41529	0.6389	0	7.5	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						
TLM	1M00F9D	1000		1									10	25
CMD	1M00F9D	1000		1									13.3	25

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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	T0026	D1		1		Service Link.pdf		65.2	6.2	13	53.4	60.2	-116.3	18
CMDA	CMDB		CMD	1		CMD SWU.pdf		65.2	5.5	21.5				
TLMA	TLMB		TLM	1		TLM SWU.pdf					15.1	25.1	-138.3	41.2
CMDC	CMDD		CMD	1		CMD CRB.pdf		65.2	5.5	21.5				
TLMC	TLMD		TLM	1		TLM CRB.pdf					33.5	43.5	-120.1	41.2

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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: TBD			
S14b. City:	S14c. County:	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number:		S14g. Call Sign of Control Station (if appropriate):	

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Characteristics and
Certifications**

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 3715	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2542		
S15c. Mass of spacecraft and fuel at launch (kg): 6260	S15f. Length (m): 45	S15i. Payload: 0.7
S15d. Mass of fuel, in orbit, at beginning of life (kg): 277	S15g. Width (m): 8.2	S15j. Bus: 0.85
S15e. Deployed Area of Solar Array (square meters): 80	S15h. Height (m): 7.3	S15k. Total: 0.6

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): 14922	(f): 14922	(k): 14922	(p): 14922
Bus (Watts):	(b): 1766	(g): 955	(l): 1766	(q): 955
Total (Watts):	(c): 16688	(h): 15877	(m): 16688	(r): 15877
Solar Array (Watts):	(d): 17944	(i): 19900	(n): 17000	(s): 17500
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?	<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 checked="" type="checkbox"/> YES	<input type="checkbox"/> NO	<input 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.

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