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: AMC-20		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: 32	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) 768 MHz	l. Orbit Type: Mark all boxes that apply: [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): 105.5 W	b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: Petition for a Declaratory Ruling allowing BSS services from 105.5W was filed.
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: h. Easternmost:	
i. Reason for service are selection (Optional):			

FEDERAL COMMUNICATIONS COMMISSION **Page 2: NGSO Orbits**
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:

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

FEDERAL COMMUNICATIONS COMMISSION
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.
US_PLUS	E		CONUS, AK, HI, Puerto Rico, and parts of Caribbean, Fig 1, Annex 2

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 Isolation (dB)	(h) Polarization Switchable? (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
NG1	T	36.3	21.3	0.13	0	30	N	45	US_PLUS	1	126	57.3					
NG1	T	36.3	21.3	0.13	0	30	N	45	US_PLUS	1	126	57.3					
NG1	R	32.8	17.8		0	30	N	45	US_PLUS				750	4	-97	20	1
NG1	R	32.8	17.8		0	30	N	45	US_PLUS				750	4	-97	20	1
GBL	T	4.3	3.3	0.13	0	30	N	45	US_PLUS	1.5	117.5	25					
GBL	R	4.3	3.3		0	30	N	45	US_PLUS				790	-24.7	-73.8		

FEDERAL COMMUNICATIONS COMMISSION
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
NG1	T	C	-105.5		NG1TL_COPOL.gxt	-153.8	-153.8	-153.8	-151.8	-148.8
NG1	T	X	-105.5		NG1TL_XPOL.gxt					
NG1	T	C	-105.5		NG1TR_COPOL.gxt	-153.8	-153.8	-153.8	-151.8	-148.8
NG1	T	X	-105.5		NG1TR_XPOL.gxt					
NG1	R	C	-105.5		NG1RL_COPOL.gxt					
NG1	R	X	-105.5		NG1RL_XPOL.gxt					
NG1	R	C	-105.5		NG1RR_COPOL.gxt					
NG1	R	X	-105.5		NG1RR_XPOL.gxt					
GBL	T	C	-105.5		GBLRT_COPOL.gxt	-165.8	-164.8	-164.8	-164.8	-164.8
GBL	R	C	-105.5		GBLRR_COPOL.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:

(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)
T001	24000	T	12217.0	L	C
T002	24000	T	12231.58	R	C
T003	24000	T	12246.16	L	C
T004	24000	T	12260.74	R	C
T005	24000	T	12275.32	L	C
T006	24000	T	12289.9	R	C
T007	24000	T	12304.48	L	C
T008	24000	T	12319.06	R	C
T009	24000	T	12333.64	L	C
T010	24000	T	12348.22	R	C
T011	24000	T	12362.8	L	C
T012	24000	T	12377.38	R	C
T013	24000	T	12391.96	L	C
T014	24000	T	12406.54	R	C
T015	24000	T	12421.12	L	C
T016	24000	T	12435.7	R	C
T017	24000	T	12450.28	L	C
T018	24000	T	12464.86	R	C
T019	24000	T	12479.44	L	C
T020	24000	T	12494.02	R	C
T021	24000	T	12508.6	L	C
T022	24000	T	12523.18	R	C
T023	24000	T	12537.76	L	C
T024	24000	T	12552.34	R	C
T025	24000	T	12566.92	L	C
T026	24000	T	12581.5	R	C
T027	24000	T	12596.08	L	C
T028	24000	T	12610.66	R	C
T029	24000	T	12625.24	L	C
T030	24000	T	12639.82	R	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
TID01	125	R001	NG1RL	T001	NG1TL
TID02	125	R002	NG1RR	T002	NG1TR
TID03	125	R003	NG1RL	T003	NG1TL
TID04	125	R004	NG1RR	T004	NG1TR
TID05	125	R005	NG1RL	T005	NG1TL
TID06	125	R006	NG1RR	T006	NG1TR
TID07	125	R007	NG1RL	T007	NG1TL
TID08	125	R008	NG1RR	T008	NG1TR
TID09	125	R009	NG1RL	T009	NG1TL
TID10	125	R010	NG1RR	T010	NG1TR
TID11	125	R011	NG1RL	T011	NG1TL
TID12	125	R012	NG1RR	T012	NG1TR
TID13	125	R013	NG1RL	T013	NG1TL
TID14	125	R014	NG1RR	T014	NG1TR
TID15	125	R015	NG1RL	T015	NG1TL
TID16	125	R016	NG1RR	T016	NG1TR
TID17	125	R017	NG1RL	T017	NG1TL
TID18	125	R018	NG1RR	T018	NG1TR
TID19	125	R019	NG1RL	T019	NG1TL
TID20	125	R020	NG1RR	T020	NG1TR
TID21	125	R021	NG1RL	T021	NG1TL
TID22	125	R022	NG1RR	T022	NG1TR
TID23	125	R023	NG1RL	T023	NG1TL
TID24	125	R024	NG1RR	T024	NG1TR
TID25	125	R025	NG1RL	T025	NG1TL
TID26	125	R026	NG1RR	T026	NG1TR
TID27	125	R027	NG1RL	T027	NG1TL
TID28	125	R028	NG1RR	T028	NG1TR
TID29	125	R029	NG1RL	T029	NG1TL
TID30	125	R030	NG1RR	T030	NG1TR

T031	24000	T	12654.4	L	C
T032	24000	T	12668.98	R	C
R001	24000	R	17317.0	L	C
R002	24000	R	17331.58	R	C
R003	24000	R	17346.16	L	C
R004	24000	R	17360.74	R	C
R005	24000	R	17375.32	L	C
R006	24000	R	17389.9	R	C
R007	24000	R	17404.48	L	C
R008	24000	R	17419.06	R	C
R009	24000	R	17433.64	L	C
R010	24000	R	17448.22	R	C
R011	24000	R	17462.8	L	C
R012	24000	R	17477.38	R	C
R013	24000	R	17491.96	L	C
R014	24000	R	17506.54	R	C
R015	24000	R	17521.12	L	C
R016	24000	R	17535.7	R	C
R017	24000	R	17550.28	L	C
R018	24000	R	17564.86	R	C
R019	24000	R	17579.44	L	C
R020	24000	R	17594.02	R	C
R021	24000	R	17608.6	L	C
R022	24000	R	17623.18	R	C
R023	24000	R	17637.76	L	C
R024	24000	R	17652.34	R	C
R025	24000	R	17666.92	L	C
R026	24000	R	17681.5	R	C
R027	24000	R	17696.08	L	C
R028	24000	R	17710.66	R	C
R029	24000	R	17725.24	L	C
R030	24000	R	17739.82	R	C
R031	24000	R	17754.4	L	C
R032	24000	R	17768.98	R	C
TC	2000	R	17793.5	L	T
TM1	1000	T	12694.5	L	T
TM2	1000	T	12698.5	R	T
TCE	2000	R	17793.5	L	T
TM1E	1000	T	12694.5	L	T

TID31	125	R031	NG1RL	T031	NG1TL
TID32	125	R032	NG1RR	T032	NG1TR
TIDTC		TC	GBLRR		
TTM1				TM1	GBLRT
TTM2				TM2	GBLRT
TIDCE		TCE	NG1RL		
TTM1E				TM1E	NG1TL
TTM2E				TM2E	NG1TR

TM2E	1000	T	12698.5	R	T

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	27640	0.69		7	20
TM	1M00G9D	1000					9	
D2	24M0G7W	24000	4	30000	0.75		5.2	20

FEDERAL COMMUNICATIONS COMMISSION **Page 8: Analog Modulation**
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						
TC	1M50FXW	1500	FDM/FM	1									10	20

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		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.		
TID01	TID32	D1		1		Link Analysis.xl		65	17.3	19	49	57.3	-148.8	13
TIDTC				1		TC_budgets.xls		64.2	25	26				
TTM1	TTM2	TM				TM_budgets.xls					20	25	-162.3	39.5
TIDCE				1		TC_budgets.xls		64.2	10	23				
TTM1E	TTM2E	TM				TM_budgets.xls					20	25	-162.3	39.5
TID01	TID32	D2		1		Link Analysis.xl		65	17.3	19	49	57.3	-148.8	13

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): #Error

Remote Control (TT C) Location(s):

S14a: Street Address: Woodbine TT&C			
S14b. City: Mt. Airy	S14c. County:	S14d. State/Country MD	S14e. Zip Code: 21771
S14f. Telephone Number: 410-549-4300	S14g. Call Sign of Control Station (if appropriate): E7169		

Remote Control (TT C) Location(s):

S14a: Street Address: Vernon Valley Spacecraft Contol			
S14b. City: Sussex	S14c. County:	S14d. State/Country NJ	S14e. Zip Code: 07461
S14f. Telephone Number: 973-823-6000	S14g. Call Sign of Control Station (if appropriate): WB81		

Remote Control (TT C) Location(s):

S14a: Street Address: Suite 9A, Leanse Place			
S14b. City: Gibraltar	S14c. County: Gibraltar	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number: 011-350-77025	S14g. Call Sign of Control Station (if appropriate):		

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

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a: Mass of spacecraft without fuel (kg): 2000	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2400		
S15c. Mass of spacecraft and fuel at launch (kg): 4400	S15f. Length (m): 27	S15i. Payload: 0.8964
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1000	S15g. Width (m): 8.9	S15j. Bus: 0.9065
S15e. Deployed Area of Solar Array (square meters): 71.2	S15h. Height (m): 7.3	S15k. Total: 0.8126

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): 8719	(f): 8719	(k): 8719	(p): 8719
Bus (Watts):	(b): 525	(g): 436	(l): 607	(q): 467
Total (Watts):	(c): 9244	(h): 9155	(m) 9326	(r): 9186
Solar Array (Watts):	(d): 14394	(i): 12956	(n): 12358	(s): 11239
Depth of Battery Discharge (%):	(e) 73.9 %	(j) %	(o) 74.2 %	(t) %

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.