

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
(Technical and Operational Description)

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: AMC-9	e. Estimated Date of Placement into Service: 6/30/2003	i. Will the space station(s) operate on a Common Carrier Basis: N
b. Construction Commencement Date:	f. Estimated Lifetime of Satellite(s): 20 Years	j. Number of transponders offered on a common carrier basis: 0
c. Construction Completion Date:	g. Total Number of Transponders: 48	k. Total Common Carrier Transponder Bandwidth: 0 MHz
d. Estimated Launch Date: 6/7/2003	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 1728 MHz	i. 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 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)		
11700	M	12200	M	T	Direct to Home in the Fixed Fixed Satellite Service
11700	M	12200	M	T	Fixed Satellite Service
14000	M	14500	M	R	Direct to Home in the Fixed Fixed Satellite Service
14000	M	14500	M	R	Fixed Satellite Service
3700	M	4200	M	T	Direct to Home in the Fixed Fixed Satellite Service
3700	M	4200	M	T	Fixed Satellite Service
5925	M	6425	M	R	Direct to Home in the Fixed Fixed Satellite Service
5925	M	6425	M	R	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 83 W	b. Alternate Orbital Longitude (Degrees E/W):	c. Reason for orbital location selection: The geostationary arc, for providing domestic service in the C and Ku frequency bands, is heavily used. Most orbit locations are already occupied or licensed by the FCC. 83°W.L. was selected because it recently became available for re-assignment, and adequate coverage (e.g., minimum elevation angle) of the desired service areas is possible from this 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: W h. Easternmost: W
i. Reason for service are selection (Optional):		

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

Page 2: NGSO Orbits

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 initial 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)**

Page 3: Service Areas

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.
CNA	E		-15 dB gain contour of beams CUH and CUV for the uplink; -10 dB gain contour of beams CDH and CDV for the

Page 4: Antenna Beams

S7. SPACE STATION ANTENNA BEAM CHARACTERISTICS For each antenna beam provide:

[illegible]

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

Page 5: Beam Diagrams

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
CDH	T	C	-83		W H 12C EIRP 41_4	-152	-151	-151	-150	-150
CDV	T	C	-83		W V 13C EIRP 41_4	-152	-151	-151	-150	-150
CUH	R	C	-83		9 83W H 13C G_T 5					
CUV	R	C	-83		9 83W V 12C G_T 5					
KUH	R	C	-83		9 83W H 13K G_T 4					
KUV	R	C	-83		9 83W V 12K G_T 4					
KDH	T	C	-83		W H 12K EIRP 53_3					
KDV	T	C	-83		W V 13K EIRP 53_3					

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

Page 6: Channels and Transponders

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)
CD007	36000	T	3840	H	C
CD009	36000	T	3880	H	C
CD011	36000	T	3920	H	C
CD013	36000	T	3960	H	C
CD015	36000	T	4000	H	C
CD017	36000	T	4040	H	C
CD019	36000	T	4080	H	C
CD021	36000	T	4120	H	C
CD023	36000	T	4160	H	C
CD002	36000	T	3740	V	C
CD004	36000	T	3780	V	C
CD006	36000	T	3820	V	C
CD008	36000	T	3860	V	C
CD010	36000	T	3900	V	C
CD012	36000	T	3940	V	C
CD014	36000	T	3980	V	C
CD016	36000	T	4020	V	C
CD018	36000	T	4060	V	C
CD020	36000	T	4100	V	C
CD022	36000	T	4140	V	C
CD024	36000	T	4180	V	C
CU001	36000	R	5945	V	C
CU003	36000	R	5985	V	C
CU005	36000	R	6025	V	C
CU007	36000	R	6065	V	C
CU009	36000	R	6105	V	C
CU011	36000	R	6145	V	C
CU013	36000	R	6185	V	C
CU015	36000	R	6225	V	C
CU017	36000	R	6265	V	C

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
C0001	117.4	CU001	CUH	CD001	CDV
C0003	117.4	CU003	CUH	CD003	CDV
C0005	117.4	CU005	CUH	CD005	CDV
C0007	117.4	CU007	CUH	CD007	CDV
C0009	117.4	CU009	CUH	CD009	CDV
C0011	117.4	CU011	CUH	CD011	CDV
C0013	117.4	CU013	CUH	CD013	CDV
C0015	117.4	CU015	CUH	CD015	CDV
C0017	117.4	CU017	CUH	CD017	CDV
C0019	117.4	CU019	CUH	CD019	CDV
C0021	117.4	CU021	CUH	CD021	CDV
C0023	117.4	CU023	CUH	CD023	CDV
C0002	117.4	CU002	CUV	CD002	CDH
C0004	117.4	CU004	CUV	CD004	CDH
C0006	117.4	CU006	CUV	CD006	CDH
C0008	117.4	CU008	CUV	CD008	CDH
C0010	117.4	CU010	CUV	CD010	CDH
C0012	117.4	CU012	CUV	CD012	CDH
C0014	117.4	CU014	CUV	CD014	CDH
C0016	117.4	CU016	CUV	CD016	CDH
C0018	117.4	CU018	CUV	CD018	CDH
C0020	117.4	CU020	CUV	CD020	CDH
C0022	117.4	CU022	CUV	CD022	CDH
C0024	117.4	CU024	CUV	CD024	CDH
K0001	128.5	KU001	KUH	KD001	KDV
K0003	128.5	KU003	KUH	KD003	KDV
K0005	128.5	KU005	KUH	KD005	KDV
K0007	128.5	KU007	KUH	KD007	KDV
K0009	128.5	KU009	KUH	KD009	KDV
K0011	128.5	KU011	KUH	KD011	KDV

CU019	36000	R	6305	V	C
CU021	36000	R	6345	V	C
CU023	36000	R	6385	V	C
CU002	36000	R	5965	H	C
CU004	36000	R	6005	H	C
CU006	36000	R	6045	H	C
CU008	36000	R	6085	H	C
CU010	36000	R	6125	H	C
CU012	36000	R	6165	H	C
CU014	36000	R	6205	H	C
CU016	36000	R	6245	H	C
CU018	36000	R	6285	H	C
CU020	36000	R	6325	H	C
CU022	36000	R	6365	H	C
CU024	36000	R	6405	H	C
KD001	36000	T	11720	V	C
KD003	36000	T	11760	V	C
KD005	36000	T	11800	V	C
KD007	36000	T	11840	V	C
KD009	36000	T	11880	V	C
KD011	36000	T	11920	V	C
KD013	36000	T	11960	V	C
KD015	36000	T	12000	V	C
KD017	36000	T	12040	V	C
KD019	36000	T	12080	V	C
KD021	36000	T	12120	V	C
KD023	36000	T	12160	V	C
KD002	36000	T	11740	H	C
KD004	36000	T	11780	H	C
KD006	36000	T	11820	H	C
KD008	36000	T	11860	H	C
KD010	36000	T	11900	H	C
KD012	36000	T	11940	H	C
KD014	36000	T	11980	H	C
KD016	36000	T	12020	H	C
KD018	36000	T	12060	H	C
KD020	36000	T	12100	H	C
KD022	36000	T	12140	H	C
KD024	36000	T	12180	H	C

K0013	128.5	KU013	KUH	KD013	KDV
K0015	128.5	KU015	KUH	KD015	KDV
K0017	128.5	KU017	KUH	KD017	KDV
K0019	128.5	KU019	KUH	KD019	KDV
K0021	128.5	KU021	KUH	KD021	KDV
K0023	128.5	KU023	KUH	KD023	KDV
K0002	128.5	KU002	KUV	KD002	KDH
K0004	128.5	KU004	KUV	KD004	KDH
K0006	128.5	KU006	KUV	KD006	KDH
K0008	128.5	KU008	KUV	KD008	KDH
K0010	128.5	KU010	KUV	KD010	KDH
K0012	128.5	KU012	KUV	KD012	KDH
K0014	128.5	KU014	KUV	KD014	KDH
K0016	128.5	KU016	KUV	KD016	KDH
K0018	128.5	KU018	KUV	KD018	KDH
K0020	128.5	KU020	KUV	KD020	KDH
K0022	128.5	KU022	KUV	KD022	KDH
K0024	128.5	KU024	KUV	KD024	KDH

KU001	36000	R	14020	H	C
KU003	36000	R	14060	H	C
KU005	36000	R	14100	H	C
KU007	36000	R	14140	H	C
KU009	36000	R	14180	H	C
KU011	36000	R	14220	H	C
KU013	36000	R	14260	H	C
KU015	36000	R	14300	H	C
KU017	36000	R	14340	H	C
KU019	36000	R	14380	H	C
KU021	36000	R	14420	H	C
KU023	36000	R	14460	H	C
KU002	36000	R	14040	V	C
KU004	36000	R	14080	V	C
KU006	36000	R	14120	V	C
KU008	36000	R	14160	V	C
KU010	36000	R	14200	V	C
KU012	36000	R	14240	V	C
KU014	36000	R	14280	V	C
KU016	36000	R	14320	V	C
KU018	36000	R	14360	V	C
KU020	36000	R	14400	V	C
KU022	36000	R	14440	V	C
KU024	36000	R	14480	V	C
CD001	36000	T	3720	H	C
CD003	36000	T	3760	H	C
CD005	36000	T	3800	H	C

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

Page 7: Digital Modulation

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)
A	36M0G7W	36000	4	40000	0.691		6.8	19
B	6M95G1W	6950	4	8000	0.691		6.8	19
C	36M0G7W	36000	8	60000	0.614		9.9	22.1
D	36M0G7W	36000	16	110000	0.806		16.6	28.8
E	100KG1W	100	4	56	0.691		6.8	19
F	1M35G7W	1350	4	1544	0.691		6.8	19

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

Page 8: Analog Modulation

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						
G	36M0F3F	36000	TV/FM	1					NTSC	12.8	1.29		12	26

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

Page 9: Typical Emissions

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)			
		(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/m ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
(a) Start	(b) End								(j) Min.	(k) Max.	(l) Min.	(m) Max.		
C0001	C0024	A		1		17		53.8	7.7	26.7	31.6	41.4	-159.5	22.3
C0001	C0024	B		5	6950	17		53.8	-7.8	11.2	22.7	34.9	-159.7	23.7
C0001	C0024	C		1		19		53.8	7.7	26.7	31.1	41.4	-160	29.8
C0001	C0024	D		1		19		53.8	7.7	26.7	36.3	41.4	-160.2	29.8
C0001	C0024	E		360	100	21		47.8	-20	-1.8	3	15.8	-156.5	22.3
C0001	C0024	F		26	1350	21		47.8	-5.6	13.4	17.8	27.7	-159.6	22.3
K0001	K0024	A		1		24		57.3	7.2	26	47.7	53.3	-147.6	17.1
K0001	K0024	B		5	6950	24		53	-3.9	14.9	34.9	46.8	-147.2	25.6
K0001	K0024	C		1		26		57.3	7.2	26	45.7	53.3	-148.1	25.6
K0001	K0024	D		1		26		60.7	3.8	22.6	48.6	53.3	-148.3	33.6
K0001	K0024	E		360	100	28		46.7	-14.8	4	17.5	27.7	-144.6	19.6
K0001	K0024	F		26	1350	28		46.7	-4.8	14	27.8	39.6	-147.1	25.6
C0001	C0024	G		1		21bis	5500	53.2	8.3	27.3	35.3	41.4	-152.3	23.7
K0001	K0024	G		1		28bis	2000	57.2	7.3	26.1	46.1	53.3	-136	29.4

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

Page 10: TT and C

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: 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 Ops			
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: Grand Junction			
S14b. City: Grand Junction	S14c. County:	S14d. State/Country CO	S14e. Zip Code: 81505
S14f. Telephone Number: 970-241-8300		S14g. Call Sign of Control Station (if appropriate): E890537	

Remote Control (TT C) Location(s):

S14a: Street Address: SES Americom			
S14b. City: Somis	S14c. County:	S14d. State/Country CA	S14e. Zip Code: 93066
S14f. Telephone Number: 805-386-4195		S14g. Call Sign of Control Station (if appropriate): E940156	

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

**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): 6.9	S15i. Payload:
S15d. Mass of fuel, in orbit, at beginning of life (kg):	S15g. Width (m): 1.8	S15j. Bus:
S15e. Deployed Area of Solar Array (square meters): 64.9	S15h. Height (m): 3.7	S15k. Total:

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): 6125	(f): 6125	(k):	(p):
Bus (Watts):	(b): 2046	(g): 1143	(l):	(q):
Total (Watts):	(c): 8171	(h): 7267	(m):	(r):
Solar Array (Watts):	(d): 10744	(i): 9608	(n):	(s):
Depth of Battery Discharge (%):	(e) %	(j) %	(o) %	(t) %

S17. CERTIFICATIONS:

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