

**S1. GENERAL INFORMATION** Complete for all satellite applications.

a. Space Station or Satellite Network Name: AMC-21		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: 24		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) 960 MHz		i. 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)		
14.00	G	14.50	G	R	Fixed Satellite Service
11.70	G	12.20	G	T	Fixed Satellite Service
14.00	G	14.50	G	R	Direct to Home in the Fixed Fixed Satellite Service
11.70	G	12.20	G	T	Direct to Home in the Fixed Fixed Satellite Service

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

a. Nominal Orbital Longitude (Degrees E/W): 125 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: Orbital location is available for licensing, and is suitable for providing coverage to all the 50 states.	
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): <u>      Degrees      </u> <u>      E/W      </u>	
d. Toward West:	0.05 Degrees	e. Toward East:		g. Westernmost:	
	0.05 Degrees			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 initial 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.
NA-UL	E		North America, G/T contours: -5.5 dB/K contour
NA-DL	E		North America, EIRP contours: 40 dBW contour

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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			Input Attenuator (dB)	
										(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)	(q) Max. Value	(r) Step Size
		(c) Peak (dBi)	(d) Edge (dBi)														
KRV	R	33	23	0.15	0	30	Y	90	NA-UL				708	4.5	-97.5	21	1
KRH	R	33	23	0.15	0	30	Y	0	NA-UL				708	4.5	-97.5	21	1
KTV	T	34	24	0.15	0	30	Y	90	NA-DL	2.5	40	50					
KTH	T	34	24	0.15	0	30	Y	0	NA-DL	2.5	40	50					

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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
KRV	R	C	-125		amc21_gain_UL					
KRH	R	C	-125		amc21_gain_UL					
KTV	T	C	-125		amc21_gain_DL	-153.8	-153.3	-152.3	-151.8	-151.3
KTH	T	C	-125		amc21_gain_DL	-153.8	-153.3	-152.3	-151.8	-151.3

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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)
KR001	36000	R	14020	V	C
KR002	36000	R	14040	H	C
KR003	36000	R	14060	V	C
KR004	36000	R	14080	H	C
KR005	36000	R	14100	V	C
KR006	36000	R	14120	H	C
KR007	36000	R	14140	V	C
KR008	36000	R	14160	H	C
KR009	36000	R	14180	V	C
KR010	36000	R	14200	H	C
KR011	36000	R	14220	V	C
KR012	36000	R	14240	H	C
KR013	36000	R	14260	V	C
KR014	36000	R	14280	H	C
KR015	36000	R	14300	V	C
KR016	36000	R	14320	H	C
KR017	36000	R	14340	V	C
KR018	36000	R	14360	H	C
KR019	36000	R	14380	V	C
KR020	36000	R	14400	H	C
KR021	36000	R	14420	V	C
KR022	36000	R	14440	H	C
KR023	36000	R	14460	V	C
KR024	36000	R	14480	H	C
KT001	36000	T	11720	H	C
KT002	36000	T	11740	V	C
KT003	36000	T	11760	H	C
KT004	36000	T	11780	V	C
KT005	36000	T	11800	H	C
KT006	36000	T	11820	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
K0004	128	KR004	KRH	KT004	KTV
K0006	128	KR006	KRH	KT006	KTV
K0008	128	KR008	KRH	KT008	KTV
K0010	128	KR010	KRH	KT010	KTV
K0012	128	KR012	KRH	KT012	KTV
K0001	128	KR001	KRV	KT001	KTH
K0003	128	KR003	KRV	KT003	KTH
K0005	128	KR005	KRV	KT005	KTH
K0007	128	KR007	KRV	KT007	KTH
K0009	128	KR009	KRV	KT009	KTH
K0011	128	KR011	KRV	KT011	KTH
K0013	128	KR013	KRV	KT013	KTH
K0015	128	KR015	KRV	KT015	KTH
K0017	128	KR017	KRV	KT017	KTH
K0019	128	KR019	KRV	KT019	KTH
K0021	128	KR021	KRV	KT021	KTH
K0002	128	KR002	KRH	KT002	KTV
K0014	128	KR014	KRH	KT014	KTV
K0016	128	KR016	KRH	KT016	KTV
K0018	128	KR018	KRH	KT018	KTV
K0020	128	KR020	KRH	KT020	KTV
K0022	128	KR022	KRH	KT022	KTV
K0024	128	KR024	KRH	KT024	KTV
C1		TC	KRV		
T1				TM1	KTV
T2				TM2	KTH
C2		TCB	KRH		
K0023	128	KR023	KRV	KT023	KTH

KT007	36000	T	11840	H	C
KT008	36000	T	11860	V	C
KT009	36000	T	11880	H	C
KT010	36000	T	11900	V	C
KT011	36000	T	11920	H	C
KT012	36000	T	11940	V	C
KT013	36000	T	11960	H	C
KT014	36000	T	11980	V	C
KT015	36000	T	12000	H	C
KT016	36000	T	12020	V	C
KT017	36000	T	12040	H	C
KT018	36000	T	12060	V	C
KT019	36000	T	12080	H	C
KT020	36000	T	12100	V	C
KT021	36000	T	12120	H	C
KT022	36000	T	12140	V	C
KT023	36000	T	12160	H	C
KT024	36000	T	12180	V	C
TC	800	R	14001.0	V	T
TM1	300	T	11700.75	V	T
TM2	300	T	12199.25	H	T
TCB	800	R	14499.0	H	T

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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)
A	36M0G7W	36000	4	40000	0.69		6.8	18
B	27M0G7W	27000	4	32000	0.69		6.8	18
C	6M95G1W	6950	4	8000	0.69		6.8	18
D	5M00G1W	5000	4	6000	0.69		6.8	18
E	100KG1W	100	4	56	0.69		6.8	18
F	1M60G1W	1600	4	1544	0.69		6.8	18
G	33M0G7W	33000	8	50000	0.61		9.9	20





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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 <sup>2</sup> /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
K0001	K0024	A		1		link_budgets.xl		57.2	20	25	46.4	49.4	-152.7	17.1
K0001	K0024	B		1		link_budgets.xl		57.2	20	25	46.4	49.4	-151.4	17.1
K0001	K0024	C		5	6950	link_budgets.xl		52.9	8.9	14	35.7	40.7	-154.2	25.6
K0001	K0024	D		6	5000	link_budgets.xl		52.9	8.9	14	34.3	39.3	-154.2	25.6
K0001	K0024	E		250	100	link_budgets.xl		46.6	-2	3	18.5	23.5	-153	19.6
K0001	K0024	F		20	1544	link_budgets.xl		46.6	8	13	28.5	33.5	-155	25.6
K0001	K0024	G		1		link_budgets.xl		47.2	20	25	46.4	49.4	-152.3	25.6
K0001	K0024		H	1		TVFM_budget.x	6000	57.2	20	26	46.4	49.4	-144.9	19.6
C1	C2		I	1		TTC_budgets.xl		59.8	10	20				
T1	T1		J	1		TTC_budgets.xl					15	20		35
T2	T2		J	1		TTC_budgets.xl					15	20		35

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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: 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 Vally Spacecraft control			
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	

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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: 0.85
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1000	S15g. Width (m): 5.5	S15j. Bus: 0.88
S15e. Deployed Area of Solar Array (square meters): 70	S15h. Height (m): 3.9	S15k. Total: 0.75

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): 6200	(f): 6200	(k): 6200	(p): 6200
Bus (Watts):	(b): 540	(g): 450	(l): 620	(q): 480
Total (Watts):	(c): 6740	(h): 6650	(m): 6820	(r): 6680
Solar Array (Watts):	(d): 10400	(i): 9200	(n): 8900	(s): 7900
Depth of Battery Discharge (%):	(e) 80 %	(j) 80 %	(o) 80 %	(t) 80 %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?	<input type="checkbox"/> YES	<input type="checkbox"/> NO	<input checked="" 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.**