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:		e. Estimated Date of Placement into Service:	i Will the space station(s) operate on a Common Carrier Basis:
AMC-4		12/22/1999	N
b. Construction Commencement Date:		f. Estimated Lifetime of Satellite(s):	j. Number of transponders offered on a common carrier basis:
		15 Years	0
c. Construction Completion Date:		g. Total Number of Transponders:	k. Total Common Carrier Transponder Bandwidth:
		52	0 MHz
d1. Est Launch Date Begin:	d2. Est Launch Date End:	h. Total Transponder Bandwidth (no. transponders x Bandwidth)	l. Orbit Type: Mark all boxes that apply:
11/13/1999	11/13/1999	2016 MHz	[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)		
14.0	G	14.5	G	R	Fixed Satellite Service
14.0	G	14.5	G	R	Direct to Home in the Fixed Fixed Satellite Service
11.7	G	12.2	G	T	Fixed Satellite Service
11.7	G	12.2	G	T	Direct to Home in the Fixed Fixed Satellite Service
5925	M	6425	M	R	Fixed Satellite Service
3700	M	4200	M	T	Fixed Satellite Service
13.75	G	14.0	G	R	Fixed Satellite Service
11.45	G	11.7	G	T	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W):	b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:
67 W			Availability of the orbital location with good elevation angles for South and North American coverage
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
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.
KNUL	S		North America and the Caribbean, -6 dB contour
KNDL	S		North America and the Caribbean, -6 dB contour
KSUL	S		South America and parts of the Caribbean, -6 dB contour
KSDL	S		South America and parts of the Caribbean, -6 dB contour
CUL	S		C-band payload off (If on, coverage would be North America), -6 dB contour
CDL	S		C-band payload off (if on, coveage would be North America), -6 dB contour
GBL	S		Hemispherical coverage

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 Iso-lation (dB)	(h) Polar-ization Switch-able? (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
KNR	R	33.6	27.6	0.15	0	30	Y	90	KNUL				632	5.59	-98.6	18	1
KNR	R	33.87	27.87	0.15	0	30	Y	0	KNUL				624	5.92	-98.9	18	1
KNT	T	33.47	27.47	0.15	0	30	Y	90	KNDL	1.48	78	52.39					
KNT	T	33.6	27.6	0.15	0	30	Y	0	KNDL	1.53	77.1	52.47					
KSR	R	33.8	27.8	0.15	0	30	Y	90	KSUL				731	5.16	-98.2	18	1
KSR	R	33.51	27.51	0.15	0	30	Y	0	KSUL				734	4.85	-97.8	18	1
KSTV	T	32.43	26.43	0.15	0	30	Y	90	KSDL	1.62	75.5	51.21					
KST	T	32.35	26.35	0.15	0	30	Y	0	KSDL	1.84	71.8	50.91					
CRV	R	33	27	0.15	0	30	Y	90	CUL				567	5.46	-101.2	18	1
CRH	R	32.66	26.66	0.15	0	30	Y	0	CUL				479	5.86	-101.6	18	1
CTV	T	29.83	23.83	0.15	0	30	Y	90	CDL	1.11	15.5	41.72					
CTH	T	29.87	23.87	0.15	0	30	Y	0	CDL	1.35	14.6	41.52					
GBL	R	10	6.5	0.15	0	30	Y	90	GBL				600	-17			
GBL	R	10	6.5	0.15	0	30	Y	0	GBL				600	-17			

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
KNR	R	C	-67		KNRV.gxt					
KNR	R	C	-67		KNRH.gxt					
KNT	T	C	-67		KNTV.gxt	-154.2	-153.7	-153.1	-152.5	-151.8
KNT	T	C	-67		KNTH.gxt	-154.9	-154.3	-153.6	-152.2	-150.9
KSR	R	C	-67		KSRV.gxt					
KSR	R	C	-67		KSRH.gxt					
KSTV	T	C	-67		KSTV.gxt	-173.6	-173	-171.1	-170.3	-169.6
KST	T	C	-67		KSTH.gxt	-172.2	-173.1	-171.3	-170.6	-169
CRV	R	C	-67		CRV.gxt					
CRH	R	C	-67		CRH.gxt					
CTV	T	C	-67		CTV.gxt	-163.2	-162.9	-162.5	-161.9	-161.5
CTH	T	C	-67		CTH.gxt	-163.8	-163.4	-163	-162.4	-161.8
GBL	R	C	-67							
GBL	R	C	-67							

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)
KNR01	36000	R	14020	H	C
KNR02	36000	R	14040	V	C
KNR03	36000	R	14060	H	C
KNR04	36000	R	14080	V	C
KNR05	36000	R	14100	H	C
KNR06	36000	R	14120	V	C
KNR07	36000	R	14140	H	C
KNR08	36000	R	14160	V	C
KNR09	36000	R	14180	H	C
KNR10	36000	R	14200	V	C
KNR11	36000	R	14220	H	C
KNR12	36000	R	14240	V	C
KNR13	36000	R	14260	H	C
KNR14	36000	R	14280	V	C
KNR15	36000	R	14300	H	C
KNR16	36000	R	14320	V	C
KNR17	36000	R	14340	H	C
KNR18	36000	R	14360	V	C
KNR19	36000	R	14380	H	C
KNR20	36000	R	14400	V	C
KNR21	36000	R	14420	H	C
KNR22	36000	R	14440	V	C
KNR23	36000	R	14460	H	C
KNR24	36000	R	14480	V	C
KNR25	72000	R	13875	H	C
KNR26	72000	R	13875	V	C
KNR27	72000	R	13955	H	C
KNR28	72000	R	13955	V	C
KNT01	36000	T	11720	V	C
KNT02	36000	T	11740	H	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
KNN01	110.4	KNR01	KNRH	KNT01	KNTV
KNN02	110.4	KNR02	KNRV	KNT02	KNTH
KNN03	110.4	KNR03	KNRH	KNT03	KNTV
KNN04	110.4	KNR04	KNRV	KNT04	KNTH
KNN05	110.4	KNR05	KNRH	KNT05	KNTV
KNN06	110.4	KNR06	KNRV	KNT06	KNTH
KNN07	110.4	KNR07	KNRH	KNT07	KNTV
KNN08	110.4	KNR08	KNRV	KNT08	KNTH
KNN09	110.4	KNR09	KNRH	KNT09	KNTV
KNN10	110.4	KNR10	KNRV	KNT10	KNTH
KNN11	110.4	KNR11	KNRH	KNT11	KNTV
KNN12	110.4	KNR12	KNRV	KNT12	KNTH
KNN13	110.4	KNR13	KNRH	KNT13	KNTV
KNN14	110.4	KNR14	KNRV	KNT14	KNTH
KNN15	110.4	KNR15	KNRH	KNT15	KNTV
KNN16	110.4	KNR16	KSRV	KNT16	KNTH
KNN17	110.4	KNR17	KNRH	KNT17	KNTV
KNN18	110.4	KNR18	KNRV	KNT18	KNTH
KNN19	110.4	KNR19	KNRH	KNT19	KNTV
KNN20	110.4	KNR20	KNRV	KNT20	KNTH
KNN21	110.4	KNR21	KNRH	KNT21	KNTV
KNN22	110.4	KNR22	KNRV	KNT22	KNTH
KNN23	110.4	KNR23	KNRH	KNT23	KNTV
KNN24	110.4	KNR24	KNRV	KNT24	KNTH
KNN25	110.4	KNR25	KNRH	KNT25	KNTV
KNN26	110.4	KNR26	KNRV	KNT26	KNTH
KNN27	110.4	KNR27	KNRH	KNT27	KNTV
KNN28	110.4	KNR28	KNRV	KNT28	KNTH
KSS01	109.5	KSR01	KSRH	KST01	KSTV
KSS02	109.5	KSR02	KSRV	KST02	KSTH

KNT03	36000	T	11760	V	C
KNT04	36000	T	11780	H	C
KNT05	36000	T	11800	V	C
KNT06	36000	T	11820	H	C
KNT07	36000	T	11840	V	C
KNT08	36000	T	11860	H	C
KNT09	36000	T	11880	V	C
KNT10	36000	T	11900	H	C
KNT11	36000	T	11920	V	C
KNT12	36000	T	11940	H	C
KNT13	36000	T	11960	V	C
KNT14	36000	T	11980	H	C
KNT15	36000	T	12000	V	C
KNT16	36000	T	12020	H	C
KNT17	36000	T	12040	V	C
KNT18	36000	T	12060	H	C
KNT19	36000	T	12080	V	C
KNT20	36000	T	12100	H	C
KNT21	36000	T	12120	V	C
KNT22	36000	T	12140	H	C
KNT23	36000	T	12160	V	C
KNT24	72000	T	12180	H	C
KNT25	72000	T	11575	V	C
KNT26	72000	T	11575	H	C
KNT27	72000	T	11655	V	C
KNT28	72000	T	11655	H	C
KSR01	36000	R	14020	H	C
KSR02	36000	R	14040	V	C
KSR03	36000	R	14060	H	C
KSR04	36000	R	14080	V	C
KSR05	36000	R	14100	H	C
KSR06	36000	R	14120	V	C
KSR07	36000	R	14140	H	C
KSR08	36000	R	14160	V	C
KSR09	36000	R	14180	H	C
KSR10	36000	R	14200	V	C
KSR11	36000	R	14220	H	C
KSR12	36000	R	14240	V	C
KSR13	36000	R	14260	H	C

KSS03	109.5	KSR03	KSRH	KST03	KSTV
KSS04	109.5	KSR04	KSRV	KST04	KSTH
KSS05	109.5	KSR05	KSRH	KST05	KSTV
KSS06	109.5	KSR06	KSRV	KST06	KSTH
KSS07	109.5	KSR07	KSRH	KST07	KSTV
KSS08	109.5	KSR08	KSRV	KST08	KSTH
KSS09	109.5	KSR09	KSRH	KST09	KSTV
KSS10	109.5	KSR10	KSRV	KST10	KSTH
KSS11	109.5	KSR11	KSRH	KST11	KSTV
KSS12	109.5	KSR12	KSRV	KST12	KSTH
KSS13	109.5	KSR13	KSRH	KST13	KSTV
KSS14	109.5	KSR14	KSRV	KST14	KSTH
KSS15	109.5	KSR15	KSRH	KST15	KSTV
KSS16	109.5	KSR16	KSRV	KST16	KSTH
KSS17	109.5	KSR17	KSRH	KST17	KSTV
KSS18	109.5	KSR18	KSRV	KST18	KSTH
KSS19	109.5	KSR19	KSRH	KST19	KSTV
KSS20	109.5	KSR20	KSRV	KST20	KSTH
KSS21	109.5	KSR21	KSRH	KST21	KSTV
KSS22	109.5	KSR22	KSRV	KST22	KSTH
KSS23	109.5	KSR23	KSRH	KST23	KSTV
KSS24	109.5	KSR24	KSRV	KST24	KSTH
KSS25	109.5	KSR25	KSRH	KST25	KSTV
KSS26	109.5	KSR26	KSRV	KST26	KSTH
KSS27	109.5	KSR27	KSRH	KST27	KSTV
KSS28	109.5	KSR28	KSRV	KST28	KSTH
KNS01	110.2	KNR01	KNRH	KST01	KSTV
KNS02	110.2	KNR02	KNRV	KST02	KSTH
KNS03	110.2	KNR03	KNRH	KST03	KSTV
KNS22	110.2	KNR22	KNRV	KST22	KSTH
KNS23	110.2	KNR23	KNRH	KST23	KSTV
KNS24	110.2	KNR24	KNRV	KST24	KSTH
KNS25	110.2	KNR25	KNRH	KST25	KSTV
KNS26	110.2	KNR26	KNRV	KST26	KSTH
KNS27	110.2	KNR27	KNRH	KST27	KSTV
KNS28	110.2	KNR28	KNRV	KST28	KSTH
KSN01	109.7	KSR01	KSRH	KNT01	KNTV
KSN02	109.7	KSR02	KSRV	KNT02	KNTH
KSN03	109.7	KSR03	KSRH	KNT03	KNTV

KSR14	36000	R	14280	V	C
KSR15	36000	R	14300	H	C
KSR16	36000	R	14320	V	C
KSR17	36000	R	14340	H	C
KSR18	36000	R	14360	V	C
KSR19	36000	R	14380	H	C
KSR20	36000	R	14400	V	C
KSR21	36000	R	14420	H	C
KSR22	36000	R	14440	V	C
KSR23	36000	R	14460	H	C
KSR24	36000	R	14480	V	C
KSR25	72000	R	13875	H	C
KSR26	72000	R	13875	V	C
KSR27	72000	R	13955	H	C
KSR28	72000	R	13955	V	C
KST01	36000	T	11720	V	C
KST02	36000	T	11740	H	C
KST03	36000	T	11760	V	C
KST04	36000	T	11780	H	C
KST05	36000	T	11800	V	C
KST06	36000	T	11820	H	C
KST07	36000	T	11840	V	C
KST08	36000	T	11860	H	C
KST09	36000	T	11880	V	C
KST10	36000	T	11900	H	C
KST11	36000	T	11920	V	C
KST12	36000	T	11940	H	C
KST13	36000	T	11960	V	C
KST14	36000	T	11980	H	C
KST15	36000	T	12000	V	C
KST16	36000	T	12020	H	C
KST17	36000	T	12040	V	C
KST18	36000	T	12060	H	C
KST19	36000	T	12080	V	C
KST20	36000	T	12100	H	C
KST21	36000	T	12120	V	C
KST22	36000	T	12140	H	C
KST23	36000	T	12160	V	C
KST24	36000	T	12180	H	C

KSN04	109.7	KSR04	KSRV	KNT04	KNTH
KSN05	109.7	KSR05	KSRH	KNT05	KNTV
KSN06	109.7	KSR06	KSRV	KNT06	KNTH
KSN07	109.7	KSR07	KSRH	KNT07	KNTV
KSN08	109.7	KSR08	KSRV	KNT08	KNTH
KSN09	109.7	KSR09	KSRH	KNT09	KNTV
KSN10	109.7	KSR10	KSRV	KNT10	KNTH
KSN11	109.7	KSR11	KSRH	KNT11	KNTV
KSN12	109.7	KSR12	KSRV	KNT12	KNTH
KSN13	109.7	KSR13	KSRH	KNT13	KNTV
KNS04	110.2	KNR04	KNRV	KST04	KSTH
KNS05	110.2	KNR05	KNRH	KST05	KSTV
KNS06	110.2	KNR06	KNRV	KST06	KSTH
KNS07	110.2	KNR07	KNRH	KST07	KSTV
KNS08	110.2	KNR08	KNRV	KST08	KSTH
KNS09	110.2	KNR09	KNRH	KST09	KSTV
KNS10	110.2	KNR10	KNRV	KST10	KSTH
KNS11	110.2	KNR11	KNRH	KST11	KSTV
KNS12	110.2	KNR12	KNRV	KST12	KSTH
KNS13	110.2	KNR13	KNRH	KST13	KSTV
KNS14	110.2	KNR14	KNRV	KST14	KSTH
KNS15	110.2	KNR15	KNRH	KST15	KSTV
KNS16	110.2	KNR16	KNRV	KST16	KSTH
KNS17	110.2	KNR17	KNRH	KST17	KSTV
KNS18	110.2	KNR18	KNRH	KST18	KSTH
KNS19	110.2	KNR19	KNRH	KST19	KSTV
KNS20	110.2	KNR20	KNRV	KST20	KSTH
KNS21	110.2	KNR21	KNRH	KST21	KSTV
KSN14	109.7	KSR14	KSRV	KNT14	KNTH
KSN15	109.7	KSR15	KSRH	KNT15	KNTV
KSN16	109.7	KSR16	KSRV	KNT16	KNTH
KSN17	109.7	KSR17	KSRH	KNT17	KNTV
KSN18	109.7	KSR18	KSRV	KNT18	KNTH
KSN19	109.7	KSR19	KSRH	KNT19	KNTV
KSN20	109.7	KSR20	KSRV	KNT20	KNTH
KSN21	109.7	KSR21	KSRH	KNT21	KNTV
KSN22	109.7	KSR22	KSRV	KNT22	KNTH
KSN23	109.7	KSR23	KSRH	KNT23	KNTV
KSN24	109.7	KSR24	KSRV	KNT24	KNTH

KST25	72000	T	11575	V	C
KST26	72000	T	11575	H	C
KST27	72000	T	11655	V	C
KST28	72000	T	11655	H	C
CR01	36000	R	5945	H	C
CR02	36000	R	5965	V	C
CR03	36000	R	5985	H	C
CR04	36000	R	6005	V	C
CR05	36000	R	6025	H	C
CR06	36000	R	6045	V	C
CR07	36000	R	6065	H	C
CR08	36000	R	6085	V	C
CR09	36000	R	6105	H	C
CR10	36000	R	6125	V	C
CR11	36000	R	6145	H	C
CR12	36000	R	6165	V	C
CR13	36000	R	6185	H	C
CR14	36000	R	6205	V	C
CR15	36000	R	6225	H	C
CR16	36000	R	6245	V	C
CR17	36000	R	6265	H	C
CR18	36000	R	6285	V	C
CR19	36000	R	6305	H	C
CR20	36000	R	6325	V	C
CR21	36000	R	6345	H	C
CR22	36000	R	6365	V	C
CR23	36000	R	6385	H	C
CR24	36000	R	6405	V	C
CT01	36000	T	3720	V	C
CT02	36000	T	3740	H	C
CT03	36000	T	3760	V	C
CT04	36000	T	3780	H	C
CT05	36000	T	3800	V	C
CT06	36000	T	3820	H	C
CT07	36000	T	3840	V	C
CT08	36000	T	3860	H	C
CT09	36000	T	3880	V	C
CT10	36000	T	3900	H	C
CT11	36000	T	3920	V	C

KSN25	109.7	KSR25	KSRH	KNT25	KNTV
KSN26	109.7	KSR26	KSRV	KNT26	KNTH
KSN27	109.7	KSR27	KSRH	KNT27	KNTV
KSN28	109.7	KSR28	KSRV	KNT28	KNTH
C01	107.3	CR01	CRH	CT01	CTV
C02	106.3	CR02	CRV	CT02	CTH
C03	107.3	CR03	CRH	CT03	CTV
C04	106.3	CR04	CRV	CT04	CTH
C05	107.3	CR05	CRH	CT05	CTV
C06	106.3	CR06	CRV	CT06	CTH
C07	107.3	CR07	CRH	CT07	CTV
C08	106.3	CR08	CRV	CT08	CTH
C09	107.3	CR09	CRH	CT09	CTV
C10	106.3	CR10	CRV	CT10	CTH
C11	107.3	CR11	CRH	CT11	CTV
C12	106.3	CR12	CRV	CT12	CTH
C13	107.3	CR13	CRH	CT13	CTV
C14	106.3	CR14	CRV	CT14	CTH
C15	107.3	CR15	CRH	CT15	CTV
C16	106.3	CR16	CRV	CT16	CTH
C17	107.3	CR17	CRH	CT17	CTV
C18	106.3	CR18	CRV	CT18	CTH
C19	107.3	CR19	CRH	CT19	CTV
C20	106.3	CR20	CRV	CT20	CTH
C21	107.3	CR21	CRH	CT21	CTV
C22	106.3	CR22	CRV	CT22	CTH
C23	107.3	CR23	CRH	CT23	CTV
C24	106.3	CR24	CRV	CT24	CTH
C1		TC	GBLRH		
T1				TM1	CTH
T2				TM2	CTV
T3				TM3	KNTH
T4				TM4	KNTv

CT12	36000	T	3940	H	C
CT13	36000	T	3960	V	C
CT14	36000	T	3980	H	C
CT15	36000	T	4000	V	C
CT16	36000	T	4020	H	C
CT17	36000	T	4040	V	C
CT18	36000	T	4060	H	C
CT19	36000	T	4080	V	C
CT20	36000	T	4100	H	C
CT21	36000	T	4120	V	C
CT22	36000	T	4140	H	C
CT23	36000	T	4160	V	C
CT24	36000	T	4180	H	C
TC	800	R	6423.5	H	T
TM1	300	T	3700.5	H	T
TM2	300	T	4199.5	V	T
TM3	300	T	11702	H	T
TM4	300	T	12198	V	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)
A_KU	36M0G7W	36000	4	40000	0.69		6.4	18
B_KU	27M0G7W	27000	4	32000	0.69		6.4	18
C_KU	6M95G1W	6950	4	8000	0.69		6.4	18
D_KU	5M00G1W	5000	4	6000	0.69		6.4	18
E_KU	100KG1W	100	4	56	0.69		6.4	18
F_KU	1M60G1W	1600	4	1544	0.69		6.4	18
G_KU	36M7W	36000	8	50000	0.61		9.9	20
H_C	36M0G7W	36000	4	40000	0.69		6.8	18
I_C	6M95G1W	6950	4	8000	0.69		6.8	18
J_C	36M0G7W	36000	8	60000	0.61		9.9	22
K_C	36M7W	36000	16	110000	0.81		16.6	24
L_C	100KG1D	100	4	56	0.75		7.2	18
M_C	1M60G1D	1600	4	1544	0.75		7.2	18

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						
Q_C	800KF9D	800		1									10	21
R_C	300KF9D	300		1									9	21
S_KU	300KF9D	300		1									9	21
													0	

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.		
KNN01	KSN28	A_KU		1		Dig_Ku_budget		57.2	20	23	43.68	49.68	-151.9	17.1
KNN01	KSN28	B_KU		1		Dig_Ku_budget		57.2	20	23	43.68	49.68	-150.6	17.1
KNN01	KSN28	C_KU		5	6950	Dig_Ku_budget		52.9	8.9	12	30.68	36.68	-157.7	25.6
KNN01	KSN28	D_KU		6	5000	Dig_Ku_budget		52.9	8.9	12	29.68	35.68	-157.3	25.6
KNN01	KSN28	E_KU		250	100	Dig_Ku_budget		46.6	-5	-3	13.48	19.48	-156.5	19.6
KNN01	KSN28	F_KU		20	1544	Dig_Ku_budget		46.6	8	11	23.48	29.48	-158.6	25.6
KNN01	KSN28	G_KU		1		Dig_Ku_budget		57.2	20	23	43.68	49.68	-151.9	25.6
C01	C24	H_C		1		Dig_C_budgets		54.4	17.1	20.1	35.72	41.72	-159.4	21.8
C01	C24	I_C		5		Dig_C_budgets		54.4	9.6	15	25.98	31.98	-162.4	25.2
C01	C24	J_C		1		Dig_C_budgets		54.4	22	25	35.72	41.72	-159.4	33.2
C01	C24	K_C		1		Dig_C_budgets		54.4	22	25	35.72	41.72	-159.4	33.2
C01	C24	L_C		250	15	Dig_C_budgets		47.4	-3.4	2	5.98	11.98	-164	23
C01	C24	M_C		20	1544	Dig_C_budgets		47.4	11	16	23.2	29.2	-158.8	23
C1	C1		Q_C	1		TTC_budgets.xl		54.4	13	16				
T1	T2		R_C	1		TTC_budgets.xl					14.3	18.3	-164.9	31
T3	T4		S_KU	1		TTC_budgets.xl					12.4	16.4	-164.7	38.3

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: 410-548-4300	S14g. Call Sign of Control Station (if appropriate): E7169		

Remote Control (TT C) Location(s):

S14a: Street Address: Vernon Valley Spacecrafts 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		

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): 1764.6	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2144.3		
S15c. Mass of spacecraft and fuel at launch (kg): 3908.9	S15f. Length (m): 20.8	S15i. Payload: 0.744
S15d. Mass of fuel, in orbit, at beginning of life (kg): 640.6	S15g. Width (m): 7.6	S15j. Bus: 0.86
S15e. Deployed Area of Solar Array (square meters): 69.2	S15h. Height (m): 5.4	S15k. Total: 0.64

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): 7061	(f): 7061	(k): 2116	(p): 2304
Bus (Watts):	(b): 1397	(g): 771	(l): 2381	(q): 1641
Total (Watts):	(c): 8458	(h): 7832	(m) 4497	(r): 3945
Solar Array (Watts):	(d): 19775	(i): 11660	(n): 4518	(s): 4047
Depth of Battery Discharge (%):	(e) 73.1 %	(j) 7.1 %	(o) 73.1 %	(t) 73.1 %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?:	X	**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**	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.