Approved by OMD Control Number 3060-0678
Estimated Burden Hours: 80

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: JCSAT-RA		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:	k. Total Common Carrier Transponder Bandwidth: MHz
d1. Est Launch Date Begin:	d2. Est Launch Date End:	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 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)		
3940	M	4200	M	T	Fixed Satellite Service
12.2	G	12.7	G	T	Fixed Satellite Service
13.8	G	14	G	R	Fixed Satellite Service
14	G	14.2	G	R	Fixed Satellite Service
12.7	G	12.75	G	T	Fixed Satellite Service
6425	M	6485	M	R	Fixed Satellite Service
14.2	G	14.47	G	R	Fixed Satellite Service
14.47	G	14.5	G	R	Fixed Satellite Service
6225	M	6425	M	R	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 169 E	b. Alternate Orbital Longitude (Degrees E/W):	c. Reason for orbital location selection:
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 arc selection (Optional):		

f. 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:

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

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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.
1	S		Japan
2	S		Asia
3	S		Asia and Hawaii
4	S		Global

FEDERAL COMMUNICATIONS COMMISSION **Page 4: Antenna Beams**
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
JRH	R			0.15	0.4	30		0	1					12.9	-100	1	1
JRV	R			0.15	0.4	30		90	1					12.2	-100	1	1
ARH	R			0.15	0.4	30		0	2					3.1	-93	1	1
ARV	R			0.15	0.4	30		90	2					3.2	-93	1	1
CRH	R			0.15	0.4	27	N	22	3					0.9	-97	1	1
CRV	R			0.15	0.4	27	N	-68	3					0.8	-97	1	1
JTV	T			0.15	0.4	30		90	1			58					
JTH	T			0.15	0.4	30		0	1			57.8					
ATV	T			0.15	0.4	30		90	2			49					
ATH	T			0.15	0.4	30		0	2			49					
CTV	T			0.15	0.4	27	N	-68	3			40.9					
CTH	T			0.15	0.4	27	N	22	3			41					
OHR	R			0.15	0.4	18		0	4							1	1
HHR	R			0.15	0.4	30		0	4							1	1
OVT	T			0.15	0.4	18		90	4			3.5					
HHT	T			0.15	0.4	30		0	4			6.9					

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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
JRH	R	C								
JRV	R	C								
ARH	R	C								
ARV	R	C								
CRH	R	C								
CRV	R	C								
JTV	T	C				-153.8	-153.7	-153.6	-153.4	-149.3
JTH	T	C				-153.6	-153.5	-153.4	-153.2	-149.1
ATV	T	C				-152.6	-152.5	-152.4	-152.2	-152.1
ATH	T	C				-152.6	-152.5	-152.4	-152.2	-152.1
CTV	T	C				-161.9	-161.7	-161.6	-161.5	-161.4
CTH	T	C				-161.8	-161.6	-161.5	-161.4	-161.3
OHR	R	C								
HHR	R	C								
OVT	T	C				-167.7	-167.6	-167.5	-167.4	-167.3
HHT	T	C				-164.3	-164.2	-164.1	-164	-163.9

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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)
TVJ1	270	T	12748.35	V	T
TVJ2	270	T	12749.75	V	T
C-001	36000	T	3960	V	C
C-003	36000	T	4000	V	C
C-005	36000	T	4040	V	C
C-007	36000	T	4080	V	C
C-009	36000	T	4120	V	C
C-011	36000	T	4160	V	C
C-002	36000	T	3980	H	C
C-004	36000	T	4020	H	C
C-006	36000	T	4060	H	C
C-008	36000	T	4100	H	C
C-010	36000	T	4140	H	C
C-012	36000	T	4180	H	C
C0001	36000	R	6245	H	C
C0003	36000	R	6285	H	C
C0005	36000	R	6325	H	C
C0007	36000	R	6365	H	C
C0009	36000	R	6405	H	C
C0011	36000	R	6445	H	C
C0002	36000	R	6265	V	C
C0004	36000	R	6305	V	C
C0006	36000	R	6345	V	C
C0008	36000	R	6385	V	C
C0010	36000	R	6425	V	C
C0012	36000	R	6465	V	C
K-001	36000	T	12268	V	C
K-003	36000	T	12308	V	C
K-005	36000	T	12348	V	C
K-007	36000	T	12388	V	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
C0001	1	C0001	CRH	C-001	CTV
C0003	1	C0003	CRH	C-003	CTV
C0005	1	C0005	CRH	C-005	CTV
C0007	1	C0007	CRH	C-007	CTV
C0009	1	C0009	CRH	C-009	CTV
C0011	1	C0011	CRH	C-011	CTV
C0002	1	C0002	CRV	C-002	CTH
C0004	1	C0004	CRV	C-004	CTH
C0006	1	C0006	CRV	C-006	CTH
C0008	1	C0008	CRV	C-008	CTH
C0010	1	C0010	CRV	C-010	CTH
C0012	1	C0012	CRV	C-012	CTH
KJ001	1	K0001	JRH	K-001	JTV
KJ003	1	K0003	JRH	K-003	JTV
KJ005	1	K0005	JRH	K-005	JTV
KJ007	1	K0007	JRH	K-007	JTV
KJ009	1	K0009	JRH	K-009	JTV
KJ011	1	K0011	JRH	K-011	JTV
KJ013	1	K0013	JRH	K-013	JTV
KJ015	1	K0015	JRH	K-015	JTV
KJ017	1	K0017	JRH	K-017	JTV
KJ019	1	K0019	JRH	K-019	JTV
KJ021	1	K0021	JRH	K-021	JTV
KJ023	1	K0023	JRH	K-023	JTV
KJ025	1	K0025	JRH	K-025	JTV
KJ027	1	K0027	JRH	K-027	JTV
KJ029	1	K0029	JRH	K-029	JTV
KJ002	1	K0002	JRV	K-002	JTH
KJ004	1	K0004	JRV	K-004	JTH
KJ006	1	K0006	JRV	K-006	JTH

K-009	36000	T	12428	V	C
K-011	36000	T	12468	V	C
K-002	36000	T	12288	H	C
K-004	36000	T	12328	H	C
K-006	36000	T	12368	H	C
K-008	36000	T	12408	H	C
K-010	36000	T	12448	H	C
K-012	36000	T	12488	H	C
K-013	27000	T	12508	V	C
K-015	27000	T	12538	V	C
K-017	27000	T	12568	V	C
K-019	27000	T	12598	V	C
K-021	27000	T	12628	V	C
K-023	27000	T	12658	V	C
K-025	27000	T	12688	V	C
K-027	27000	T	12718	V	C
K-014	27000	T	12523	H	C
K-016	27000	T	12553	H	C
K-018	27000	T	12583	H	C
K-020	27000	T	12613	H	C
K-022	27000	T	12643	H	C
K-024	27000	T	12673	H	C
K-026	27000	T	12703	H	C
K-028	27000	T	12733	H	C
K-029	27000	T	12215	V	C
K-030	27000	T	12215	H	C
K0001	36000	R	14016	H	C
K0003	36000	R	14056	H	C
K0005	36000	R	14096	H	C
K0007	36000	R	14136	H	C
K0009	36000	R	14176	H	C
K0011	36000	R	14216	H	C
K0002	36000	R	14036	V	C
K0004	36000	R	14076	V	C
K0006	36000	R	14116	V	C
K0008	36000	R	14156	V	C
K0010	36000	R	14196	V	C
K0012	36000	R	14236	V	C
K0013	27000	R	14256	H	C

KJ008	1	K0008	JRV	K-008	JTH
KJ010	1	K0010	JRV	K-010	JTH
KJ012	1	K0012	JRV	K-012	JTH
KJ014	1	K0014	JRV	K-014	JTH
KJ016	1	K0016	JRV	K-016	JTH
KJ018	1	K0018	JRV	K-018	JTH
KJ020	1	K0020	JRV	K-020	JTH
KJ022	1	K0022	JRV	K-022	JTH
KJ024	1	K0024	JRV	K-024	JTH
KJ026	1	K0026	JRV	K-026	JTH
KJ028	1	K0028	JRV	K-028	JTH
KJ030	1	K0030	JRV	K-030	JTH
KA002	1	K0002	ARV	K-002	ATH
KA003	1	K0003	ARH	K-003	ATV
KA004	1	K0004	ARV	K-004	ATH
KA007	1	K0007	ARH	K-007	ATV
KA029	1	K0029	ARH	K-029	ATV
KA030	1	K0030	ARV	K-030	ATH
EJ007	1	E0007	JRH	C-007	CTV
EJ009	1	E0009	JRH	C-009	CTV
EJ011	1	E0011	JRH	C-011	CTV
EA007	1	E0007	ARH	C-007	CTV
EA009	1	E0009	ARH	C-009	CTV
EA011	1	E0011	ARH	C-011	CTV
EJ008	1	E0008	JRV	C-008	CTH
EJ010	1	E0010	JRV	C-010	CTH
EJ012	1	E0012	JRV	C-012	CTH
EA008	1	E0008	ARV	C-008	CTH
EA010	1	E0010	ARV	C-010	CTH
EA012	1	E0012	ARV	C-012	CTH

K0015	27000	R	14286	H	C
K0017	27000	R	14316	H	C
K0019	27000	R	14346	H	C
K0021	27000	R	14376	H	C
K0023	27000	R	14406	H	C
K0025	27000	R	14436	H	C
K0027	27000	R	14466	H	C
K0014	27000	R	14271	V	C
K0016	27000	R	14301	V	C
K0018	27000	R	14331	V	C
K0020	27000	R	14361	V	C
K0022	27000	R	14391	V	C
K0024	27000	R	14421	V	C
K0026	27000	R	14451	V	C
K0028	27000	R	14481	V	C
K0029	27000	R	13963	H	C
K0030	27000	R	13963	V	C
E0007	36000	R	13827	H	C
E0009	36000	R	13867	H	C
E0011	36000	R	13907	H	C
E0008	36000	R	13847	V	C
E0010	36000	R	13887	V	C
E0012	36000	R	13927	V	C
TVO1	270	T	12748.35	V	T
THH1	270	T	12748.35	H	T
TVO2	270	T	12749.75	V	T
THH2	270	T	12749.75	H	T
OSCVJ	960	R	13993.5	V	T
EMCHO	960	R	14496	H	T
EMCHH	960	R	14496	H	T
BCNC	25	T	4199.55	V	T
BCNK1	25	T	12248.5	H	T
BCNK2	25	T	12747.2	V	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)
D1	36M0G7W	36000						
D2	27M0G7W	27000						
D3	8M25G7W	8250						
D4	1M74G7W	1733						
D5	861KG7W	861						
D6	350KG2D	270						

FEDERAL COMMUNICATIONS COMMISSION **Page 8: Analog Modulation**

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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						

FEDERAL COMMUNICATIONS COMMISSION **Page 9: Typical Emissions**
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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)			
								(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)
(a) Start	(b) End	(c) Digital (Table S11)	(d) Analog (Table S12)						(j) Min.	(k) Max.	(l) Min.	(m) Max.		
C0001	C0012	D1										41		
C0001	C0012	D3										41		
C0001	C0012	D4										38		
C0001	C0012	D5										35		
EJ007	EJ012	D1										41		
EJ007	EJ012	D3										41		
EJ007	EJ012	D4										38		
EJ007	EJ012	D5										35		
EA007	EA012	D1										41		
EA007	EA012	D3										41		
EA007	EA012	D4										38		
EA007	EA012	D5										35		
KJ001	KJ012	D1										58		
KJ001	KJ012	D3										51.6		
KJ001	KJ012	D4										44.8		
KJ001	KJ012	D5										41.8		
KJ013	KJ030	D2										58		
KJ013	KJ030	D3										52.9		
KJ013	KJ030	D4										46.1		
KJ013	KJ030	D5										43		
KA002	KA004	D1										49		
KA002	KA004	D3										42.6		
KA002	KA004	D4										35.8		
KA002	KA004	D5										32.8		
KA007	KA007	D1										49		
KA007	KA007	D3										42.6		
KA007	KA007	D4										35.8		
KA007	KA007	D5										32.8		
KA029	KA030	D2										49		

KA029	KA030	D3										43.9		
KA029	KA030	D4										37.1		
KA029	KA030	D5										34		

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

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S16. SPACECRAFT ELECTRICAL CHARACTERISTICS:

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.

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The public reporting estimate for this collection of information includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the required data, and completing and reviewing the collection of information. If you have any comments on this burden estimate, or how we can improve the collection and reduce the burden it causes you, please write to the Federal Communications Commission, AMD-PERM, Paperwork Reduction Project (3060-0678), Washington, DC 20554. We will also accept your comments regarding the Paperwork Reduction Act aspects of this collection via the Internet if you send them to PERM@fcc.gov. PLEASE DO NOT SEND COMPLETED FORMS TO THIS ADDRESS.

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THE FOREGOING NOTICE IS REQUIRED BY THE PAPERWORK REDUCTION ACT OF 1995, PUBLIC LAW 104-13, OCTOBER 1, 1995, 44 U.S.C. SECTION 3507.