

**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: STAR ONE C2		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: 4		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) 216 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)		
14000	M	14500	M	R	Fixed Satellite Service
11700	M	12200	M	T	Fixed Satellite Service

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

a. Nominal Orbital Longitude (Degrees E/W): 70 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:  The Brazilian telecommunications authority has authorized Star One to operate the STAR ONE C2 satellite at 70°W.L.	
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>      </u> Degrees <u>      </u> E/W	
d. Toward West:	0.05 Degrees	e. Toward East:		g. Westernmost:	h. Easternmost:
	0.05 Degrees	0.1 Degrees			
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.
SA1	S		Parts of southern CONUS to -8 dB rel. gain contour (see GXT file)
SA2	S		B (Brazil)
SA3	S		RG2

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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				
										(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)	Input Attenuator (dB)	
		(q) Max. Value	(r) Step Size														
MKR	R	33.8	25	0.15	1	27	N	0	SA1				590	6.1	-99	18	1
MKR	R	33.8	25	0.15	1	27	N	90	SA1				590	6.1	-99	18	1
MKT	T	32.6	24.7	0.15	1	27	N	0	SA1	1.9	18.8	51.4					
MKT	T	32.6	24.7	0.15	1	27	N	90	SA1	1.9	18.8	51.4					
BRR	R	33.8	25.4	0.15	1	27	N	0	SA2				620	5.9	-99	18	1
BRR	R	33.8	25.4	0.15	1	27	N	90	SA2				620	5.9	-99	18	1
BRT	T	32.5	24.7	0.15	1	27	N	0	SA2	1.9	18.8	51.3					
BRT	T	32.5	24.7	0.15	1	27	N	90	SA2	1.9	18.8	51.3					
GBL	T	19.6	16.6	0.15	1	30	N	0	SA3	4	0.088	9					
GBL	T	19.6	16.6	0.15	1	30	N	90	SA3	4	0.088	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
MKR	R	C	-70		MMKRH.GXT					
MKR	R	C	-70		MMKRV.GXT					
MKT	T	C	-70		MMKTH.GXT	-157.9	-156.8	-155.6	-154.5	-153.4
MKT	T	C	-70		MMKTV.GXT	-157.9	-156.8	-155.6	-154.5	-153.4
BRR	R	C	-70							
BRR	R	C	-70							
BRT	T	C	-70			-159.9	-159.8	-159.6	-159.5	-159.4
BRT	T	C	-70			-159.9	-159.8	-159.6	-159.5	-159.4
GBL	T	C	-70		GBLH.gxt	-153	-153	-153	-153	-153
GBL	T	C	-70		GBLV.gxt	-153	-153	-153	-153	-153

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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)
KU001	36000	R	14040	V	C
KU002	72000	R	14180	V	C
KU003	72000	R	14320	H	C
KU004	36000	R	14460	H	C
KD001	36000	T	11740	H	C
KD002	72000	T	11880	H	C
KD003	72000	T	12020	V	C
KD004	36000	T	12160	V	C
BN01	25	T	11700.5	H	T
BN02	25	T	12199.3	V	T

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
TK001	128.6	KU001	MKRV	KD001	BRTH
TK002	128.6	KU001	BRRV	KD001	MKTH
TK003	128.6	KU002	MKRV	KD002	BRTH
TK004	128.6	KU002	BRRV	KD002	MKTH
TK005	128.6	KU003	MKRH	KD003	BRTV
TK006	128.6	KU003	BRRH	KD003	MKTV
TK007	128.6	KU004	MKRH	KD004	BRTV
TK008	128.6	KU004	BRRH	KD004	MKTV
BN01				BN01	GBLH
BN02				BN02	GBLV

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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)
D01	36M0G7W	36000	4	48400	0.806		7.8	20
D02	17M9G7W	17900	8	34368	0.768		12.4	24.6
D03	5M50G7W	5500	8	8448	0.614		9.4	21.6
D04	1M64G7W	1640	4	2048	0.75		8.5	20.7
D05	614KG7W	614	4	512	0.5		5.7	17.9





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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)		EIRP (dBW)		(n) Max. Power Flux Density (dBW/m <sup>2</sup> /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
						(j) Min.	(k) Max.		(l) Min.	(m) Max.				
TK001	TK008	D05		96	750	K3 LB.doc		46.6	7.4	15.4	19.5	26.5	-157	30.9
TK001	TK008	D05		55	750	K4 LB.doc		54.5	3	11	24	30	-153	22.9
TK001	TK008	D04		30	1975	K5 LB.doc		49.1	10.9	18.9	26.5	32.5	-155	33.4
TK001	TK008	D04		18	1975	K6 LB.doc		57	6	13	30	35	-153	25.4
TK001	TK008	D03		10	6875	K7 LB.doc		57	9	15	31	37	-156	33.4
TK001	TK008	D02		4	18000	K8 LB.doc		59	10.5	17.5	37	41	-157	35.3
TK001	TK008	D01		1		K9 LB.doc		59	16	24	42	50	-151	22.9
BN01	BN02		A01	1		BCN LB.doc					6	9	-153	29.4

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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): #Error

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**S15. SPACECRAFT PHYSICAL CHARACTERISTICS:**

S15a. Mass of spacecraft without fuel (kg): 1812	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2286		
S15c. Mass of spacecraft and fuel at launch (kg): 4098	S15f. Length (m): 37	S15i. Payload: 0.72
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1200	S15g. Width (m): 7.5	S15j. Bus: 0.83
S15e. Deployed Area of Solar Array (square meters): 65	S15h. Height (m): 6.1	S15k. Total: 0.6

**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): 6488	(f): 6488	(k): 6488	(p): 6488
Bus (Watts):	(b): 1962	(g): 1550	(l): 1962	(q): 1550
Total (Watts):	(c): 8450	(h): 8038	(m): 8450	(r): 8038
Solar Array (Watts):	(d): 9707	(i): 9020	(n): 8825	(s): 8200
Depth of Battery Discharge (%):	(e) 75 %	(j) 75 %	(o) 75 %	(t) 75 %

**S17. CERTIFICATIONS:**

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