

**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: AFRISTAR-2	e. Estimated Date of Placement into Service: 11/1/2006	i. Will the space station(s) operate on a Common Carrier Basis: N
b. Construction Commencement Date: 1/10/2005	f. Estimated Lifetime of Satellite(s): 15 Years	j. Number of transponders offered on a common carrier basis: 0
c. Construction Completion Date: 6/1/2006	g. Total Number of Transponders: 2	k. Total Common Carrier Transponder Bandwidth: 0 MHz
d. Estimated Launch Date: 8/1/2006	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 5.2 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)		
1452	M	1492	M	T	Broadcasting Satellite Service - Sound
7025	M	7075	M	R	Feeder Link for Broadcasting Satellite Service in FSS

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 21 E	b. Alternate Orbital Longitude (Degrees E/W):	c. Reason for orbital location selection: Co-Location with AfriStar-1 satellite launched in October 1998	
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): g. Westernmost: <u> </u> <u> </u> h. Easternmost: <u> </u> <u> </u>	
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.
1	E		Figure 1: Uplink Service Area
2	S		Figure 2: Downlink Service Area
3	S		Figure 3: Downlink Telemetry Service Area

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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)	
		(c) Peak (dBi)	(d) Edge (dBi)							(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
SD1	T	30	22	0.15	23	Y		2	1	950	59.8						
DD2	T	12	9	0.15	23	Y		3	1	25	-2						

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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
AU2	R	C	21		AU2.gxt					
SD1	T	C	21		SD1R.gxt	-133	-132	-132	-131	-131
DD2	T	C	21		DD2.gxt	-158		-157		-156

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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)
TDM1	2600	T	1479.5	L	C
TDM2	2600	T	1479.5	R	C
TM	500	T	1491.7	R	T
TC1	1000	R	7073	L	T
TC2	1000	R	7074	L	T

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
TR1	145	0001	AU2	TDM1	SD1R
TR2	145	0002	AU2	TDM2	SD1R
TM				TM	DD2

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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)
1	2M60G7E	2600	4	1536	0.42		4.4	16.6
2	500KG7D	500	4				-8	13

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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 ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
TR1	TR1	1		1		AfriStar-2 Refer		30	17.1	29.8	47.1	59.8	-130	-22.5
TR2	TR2	1		1		AfriStar-2 Refer		30	17.1	29.8	47.1	59.8	-130	-22.5
TM	TM	2		1				12	-12	-2	0	10	-154	
TC1	TC1		1	1				51.5	26	19.4	70.9	77.5	-86	-8.3
TC2	TC2		1	1				51.5	26	19.4	70.9	77.5	-86	-8.3

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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: Cassis Earth Station			
S14b. City: Cassis	S14c. County: Mauritius	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number: +230 211 8026		S14g. Call Sign of Control Station (if appropriate):	

Remote Control (TT C) Location(s):

S14a: Street Address: A1-6, Peenya Industrial Estate			
S14b. City: Bangalore	S14c. County: India	S14d. State/Country	S14e. Zip Code:
S14f. Telephone Number: +91 802 809 4125		S14g. Call Sign of Control Station (if appropriate):	

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 1237	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 1496		
S15c. Mass of spacecraft and fuel at launch (kg): 2715	S15f. Length (m): 28	S15i. Payload: 0.9999
S15d. Mass of fuel, in orbit, at beginning of life (kg): 475	S15g. Width (m): 8.32	S15j. Bus: 0.9999
S15e. Deployed Area of Solar Array (square meters): 49.25	S15h. Height (m): 4.26	S15k. Total: 0.9998

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): 3792	(f): 3792	(k): 3792	(p): 3792
Bus (Watts):	(b): 566	(g): 544	(l): 566	(q): 544
Total (Watts):	(c): 4358	(h): 4336	(m) 4358	(r): 4336
Solar Array (Watts):	(d): 5706	(i): 5784	(n): 5160	(s): 5230
Depth of Battery Discharge (%):	(e) 60.75 %	(j) 60.75 %	(o) 60.75 %	(t) 60.75 %

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.