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: AMAZONAS-2		e. Estimated Date of Placement into Service:	i Will the space station(s) operate on a Common Carrier Basis: N
b. Construction Commencement Date: 2/16/2007		f. Estimated Lifetime of Satellite(s): 15 Years	j. Number of transponders offered on a common carrier basis:
c. Construction Completion Date:		g. Total Number of Transponders: 36	k. Total Common Carrier Transponder Bandwidth: MHz
d1. Est Launch Date Begin: 6/1/2009	d2. Est Launch Date End: 11/30/2009	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 1500 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)		
14	G	14.5	G	R	Fixed Satellite Service
11.7	G	12.2	G	T	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 61 W	b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection: This position was granted by Brasilian administration. Under this application, we are only seeking authority to provide service to the U.S. territories in the standard Ku band (14-14.5 GHz and 11.7-12.2 GHz).
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: 0.07 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):			

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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	AMA2_NA_SA.gxt	01

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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 Isolation (dB)	(h) Polarization Switchable? (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
KUR	R	33	25	0.05	0.05	30	N	0	1				427	6.7	-98.7	18	1
KUR	R	33	25	0.05	0.05	30	N	90	1				427	6.7	-98.7	18	1
KUT	T	34.3	26.3	0.05	0.05	30	N	0	1	2.4	17.7	52					
KUT	T	34.3	26.3	0.05	0.05	30	N	90	1	2.4	17.7	52					

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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
KUR	R	C	-61		MA2_NA_RX_H_C.gx					
KUR	R	X	-61		MA2_NA_RX_H_X.gx					
KUT	T	C	-61		MA2_NA_TX_H_C.gx	-132	-132	-132	-132	-132
KUT	T	X	-61		MA2_NA_TX_H_X.gx					
KUR	R	C	-61		MA2_NA_RX_V_C.gx					
KUR	R	X	-61		MA2_NA_RX_V_X.gx					
KUT	T	C	-61		MA2_NA_TX_V_C.gx	-132	-132	-132	-132	-132
KUT	T	X	-61		MA2_NA_TX_V_X.gx					

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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)
KT1	36000	T	11972	V	C
KT2	36000	T	12012	V	C
KT3	36000	T	12052	V	C
KT4	36000	T	12092	V	C
KT5	36000	T	12132	V	C
KT6	36000	T	12172	V	C
KT7	36000	T	11972	H	C
KT8	36000	T	12012	H	C
KT9	36000	T	12052	H	C
KT10	36000	T	12092	H	C
KT11	36000	T	12132	H	C
KT12	36000	T	12172	H	C
KT13	36000	T	11730	V	C
KT14	36000	T	11770	V	C
KT15	36000	T	11810	V	C
KT16	36000	T	11850	V	C
KT17	36000	T	11890	V	C
KT18	36000	T	11930	V	C
KT19	36000	T	11730	H	C
KT20	36000	T	11770	H	C
KT21	36000	T	11810	H	C
KT22	36000	T	11850	H	C
KT23	36000	T	11890	H	C
KT24	36000	T	11930	H	C
KR13	36000	R	14030	H	C
KR14	36000	R	14070	H	C
KR15	36000	R	14110	H	C
KR16	36000	R	14150	H	C
KR17	36000	R	14190	H	C
KR18	36000	R	14230	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
1	130	KR1	KURH	KT1	KUTV
2	130	KR2	KURH	KT2	KUTV
3	130	KR3	KURH	KT3	KUTV
4	130	KR4	KURH	KT4	KUTV
5	130	KR5	KURH	KT5	KUTV
6	130	KR6	KURH	KT6	KUTV
7	130	KR7	KURV	KT7	KUTH
8	130	KR8	KURV	KT8	KUTH
9	130	KR9	KURV	KT9	KUTH
10	130	KR10	KURV	KT10	KUTH
11	130	KR11	KURV	KT11	KUTH
12	130	KR12	KURV	KT12	KUTH
13	130	KR13	KURH	KT13	KUTV
14	130	KR14	KURH	KT14	KUTV
15	130	KR15	KURH	KT15	KUTV
16	130	KR16	KURH	KT16	KUTV
17	130	KR17	KURH	KT17	KUTV
18	130	KR18	KURH	KT18	KUTV
19	130	KR19	KURV	KT19	KUTH
20	130	KR20	KURV	KT20	KUTH
21	130	KR21	KURV	KT21	KUTH
22	130	KR22	KURV	KT22	KUTH
23	130	KR23	KURV	KT23	KUTH
24	130	KR24	KURV	KT24	KUTH
25	130	KR25	KURH	KT25	KUTV
26	130	KR26	KURH	KT26	KUTV
27	130	KR27	KURH	KT27	KUTV
28	130	KR28	KURH	KT28	KUTV
29	130	KR29	KURH	KT29	KUTV
30	130	KR30	KURH	KT30	KUTV

KR19	36000	R	14030	V	C
KR20	36000	R	14070	V	C
KR21	36000	R	14110	V	C
KR22	36000	R	14150	V	C
KR23	36000	R	14190	V	C
KR24	36000	R	14230	V	C
KT25	36000	T	10975	V	C
KT26	36000	T	11015	V	C
KT27	36000	T	11055	V	C
KT28	36000	T	11095	V	C
KT29	36000	T	11135	V	C
KT30	36000	T	11175	V	C
KT31	36000	T	10975	H	C
KT32	36000	T	11015	H	C
KT33	36000	T	11055	H	C
KT34	36000	T	11095	H	C
KT35	36000	T	11135	H	C
KT36	36000	T	11175	H	C
KR25	36000	R	14271	H	C
KR26	36000	R	14311	H	C
KR27	36000	R	14351	H	C
KR28	36000	R	14391	H	C
KR29	36000	R	14431	H	C
KR1	36000	R	13772	H	C
KR2	36000	R	13812	H	C
KR3	36000	R	13852	H	C
KR4	36000	R	13892	H	C
KR5	36000	R	13932	H	C
KR6	36000	R	13972	H	C
KR7	36000	R	13772	V	C
KR8	36000	R	13812	V	C
KR9	36000	R	13852	V	C
KR10	36000	R	13892	V	C
KR11	36000	R	13932	V	C
KR12	36000	R	13972	V	C
KR30	36000	R	14471	H	C
KR31	36000	R	14271	V	C
KR32	36000	R	14311	V	C
KR33	36000	R	14351	V	C

31	130	KR31	KURV	KT31	KUTH
32	130	KR32	KURV	KT32	KUTH
33	130	KR33	KURV	KT33	KUTH
34	130	KR34	KURV	KT34	KUTH
35	130	KR35	KURV	KT35	KUTH
36	130	KR36	KURV	KT36	KUTH

KR34	36000	R	14391	V	C
KR35	36000	R	14431	V	C
KR36	36000	R	14471	V	C

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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	1M80G7W	1800	4	2048	0.75		9	17.7
2	33M0G7W	33000	4	38010	0.75		6.1	18.3
3	7M89G7W	9000	8	11300	0.67		8	20.2
4	14K0G7W	14	4	11	0.5		6.8	19

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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						

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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.		
1	36	1		18		LINK_BUDGET		53.2	1.2	9.2	30	32	-132.5	30
1	36	2		1		LINK_BUDGET		53.2	11.8	19.8	41.7	43.7	-133.5	26
1	36	3		4		LINK_BUDGET		49.4	8.1	16.1	36.6	38.6	-132.4	26.5
1	36	4		2337		LINK_BUDGET		43.4	-17.9	-9.9	3.15	5.15	-138.3	33

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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: PRAIA DO FLAMENGO 200			
S14b. City: RIO DE JANEIRO	S14c. County: BRAZIL	S14d. State/Country	S14e. Zip Code: 22210-030
S14f. Telephone Number: +552198582255	S14g. Call Sign of Control Station (if appropriate):		

Remote Control (TT C) Location(s):

S14a: Street Address: CARRETERA M 220, KM 1,800			
S14b. City: ARGANDA DEL REY	S14c. County: SPAIN	S14d. State/Country	S14e. Zip Code: 28500
S14f. Telephone Number: +34918700160	S14g. Call Sign of Control Station (if appropriate):		

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a: Mass of spacecraft without fuel (kg): 2505	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2931		
S15c. Mass of spacecraft and fuel at launch (kg): 5436	S15f. Length (m): 28	S15i. Payload: 0.91
S15d. Mass of fuel, in orbit, at beginning of life (kg): 861	S15g. Width (m): 8.6	S15j. Bus: 0.86
S15e. Deployed Area of Solar Array (square meters): 71.41	S15h. Height (m): 6.7	S15k. Total: 0.78

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): 12020	(f): 12020	(k): 12020	(p): 12020
Bus (Watts):	(b): 2408	(g): 1016	(l): 2386	(q): 1011
Total (Watts):	(c): 14428	(h): 13036	(m) 14406	(r): 13031
Solar Array (Watts):	(d): 16006	(i): 14348	(n): 15380	(s): 13966
Depth of Battery Discharge (%):	(e) 65 %	(j) %	(o) 69 %	(t) %

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?	X	**YES**		**NO**		**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.