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:
NIMIQ 5		11/26/2009	N
b. Construction Commencement Date:		f. Estimated Lifetime of Satellite(s):	j. Number of transponders offered on a common carrier basis:
5/4/2007		15 Years	0
c. Construction Completion Date:		g. Total Number of Transponders:	k. Total Common Carrier Transponder Bandwidth:
6/30/2009		32	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:
8/1/2009	9/30/2009	768 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)		
12.2	G	12.7	G	T	Broadcasting Satellite Service - Video
12.2	G	12.7	G	T	Broadcasting Satellite Service - Sound
12.2	G	12.7	G	T	Broadcasting Satellite Service - Data

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:
72.7 W			This orbital location is registered at the ITU by the Canadian administration.
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):			

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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.
SARX	S		Cheyenne, WY and Gilbert, AZ uplink sites
SATX	S		CONUS

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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				
		(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
RXL	R	36.4	28.4	0.15	0.2	30	N		SARX				690	8	-105	20	1
RXR	R	36.4	28.4	0.15	0.2	30	N		SARX				690	8	-105	20	1
TXL	T	35.5	29.5	0.15	0.2	30	N		SATX	1.8	99.1	55.5					
TXR	T	35.5	29.5	0.15	0.2	30	N		SATX	1.8	99.1	55.5					

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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
RXL	R	C	-72.7		RXL.gxt					
RXR	R	C	-72.7		RXR.gxt					
TXL	T	C	-72.7		TXL.gxt					
TXR	T	C	-72.7		TXR.gxt					

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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)
U01	24000	R	17324	R	C
U03	24000	R	17353.16	R	C
U05	24000	R	17382.32	R	C
U07	24000	R	17411.48	R	C
U09	24000	R	17440.64	R	C
U11	24000	R	17469.8	R	C
U13	24000	R	17498.96	R	C
U15	24000	R	17528.12	R	C
U17	24000	R	17557.28	R	C
U19	24000	R	17586.44	R	C
U21	24000	R	17615.6	R	C
U23	24000	R	17644.76	R	C
U25	24000	R	17673.92	R	C
U27	24000	R	17703.08	R	C
U29	24000	R	17732.24	R	C
U31	24000	R	17761.4	R	C
U02	24000	R	17338.58	L	C
U04	24000	R	17367.74	L	C
U06	24000	R	17396.9	L	C
U08	24000	R	17426.06	L	C
U10	24000	R	17455.22	L	C
U12	24000	R	17484.38	L	C
U14	24000	R	17513.54	L	C
U16	24000	R	17542.7	L	C
U18	24000	R	17571.86	L	C
U20	24000	R	17601.02	L	C
U22	24000	R	17630.18	L	C
U24	24000	R	17659.34	L	C
U26	24000	R	17688.5	L	C
U28	24000	R	17717.66	L	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
T001	134.5	U01	RXR	D01	TXR
T003	134.5	U03	RXR	D03	TXR
T005	134.5	U05	RXR	D05	TXR
T007	134.5	U07	RXR	D07	TXR
T009	134.5	U09	RXR	D09	TXR
T011	134.5	U11	RXR	D11	TXR
T013	134.5	U13	RXR	D13	TXR
T015	134.5	U15	RXR	D15	TXR
T017	134.5	U17	RXR	D17	TXR
T019	134.5	U19	RXR	D19	TXR
T021	134.5	U21	RXR	D21	TXR
T023	134.5	U23	RXR	D23	TXR
T025	134.5	U25	RXR	D25	TXR
T027	134.5	U27	RXR	D27	TXR
T029	134.5	U29	RXR	D29	TXR
T031	134.5	U31	RXR	D31	TXR
T002	134.5	U02	RXL	D02	TXL
T004	134.5	U04	RXL	D04	TXL
T006	134.5	U06	RXL	D06	TXL
T008	134.5	U08	RXL	D08	TXL
T010	134.5	U10	RXL	D10	TXL
T012	134.5	U12	RXL	D12	TXL
T014	134.5	U14	RXL	D14	TXL
T016	134.5	U16	RXL	D16	TXL
T018	134.5	U18	RXL	D18	TXL
T020	134.5	U20	RXL	D20	TXL
T022	134.5	U22	RXL	D22	TXL
T024	134.5	U24	RXL	D24	TXL
T026	134.5	U26	RXL	D26	TXL
T028	134.5	U28	RXL	D28	TXL

U30	24000	R	17746.82	L	C
U32	24000	R	17775.98	L	C
D01	24000	T	12224	R	C
D03	24000	T	12253.16	R	C
D05	24000	T	12282.32	R	C
D07	24000	T	12311.48	R	C
D09	24000	T	12340.64	R	C
D11	24000	T	12369.8	R	C
D13	24000	T	12398.96	R	C
D15	24000	T	12428.12	R	C
D17	24000	T	12457.28	R	C
D19	24000	T	12486.44	R	C
D21	24000	T	12515.6	R	C
D23	24000	T	12544.76	R	C
D25	24000	T	12573.92	R	C
D27	24000	T	12603.08	R	C
D29	24000	T	12632.24	R	C
D31	24000	T	12661.4	R	C
D02	24000	T	12238.58	L	C
D04	24000	T	12267.74	L	C
D06	24000	T	12296.9	L	C
D08	24000	T	12326.06	L	C
D10	24000	T	12355.22	L	C
D12	24000	T	12384.38	L	C
D14	24000	T	12413.54	L	C
D16	24000	T	12442.7	L	C
D18	24000	T	12471.86	L	C
D20	24000	T	12501.02	L	C
D22	24000	T	12530.18	L	C
D24	24000	T	12559.34	L	C
D26	24000	T	12588.5	L	C
D28	24000	T	12617.66	L	C
D30	24000	T	12646.82	L	C
D32	24000	T	12675.98	L	C
TC1	1000	R	17790	R	T
TC2	1000	R	17790	L	T
TM1	1000	T	12695	R	T
TM2	1000	T	12695	L	T

T030	134.5	U30	RXL	D30	TXL
T032	134.5	U32	RXL	D32	TXL
CMD1		TC1	RXR		
CMD2		TC2	RXL		
TLM1				TM1	TXR
TLM2				TM2	TXL

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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	24M0G7W	24000	4	27647	0.691		5.7	28
D2	24M0G7W	24000	4	30719	0.768		6.6	28
D3	25M8G7W	25800	8	41200	0.639		7.5	28

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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)			
(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.		
T001	T032	D1		1		DBS_QPSK1.d		65.7	11.6	19.5	47.5	55.5		13.2
T001	T032	D2		1		DBS_QPSK2.d		65.7	11.6	19.5	47.5	55.5		13.2
T001	T032	D3		1		DBS_8PSK.doc		65.7	11.6	19.5	49.5	55.5		13.2

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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: 133438 Allan Park Road			
S14b. City: Allan Park	S14c. County:	S14d. State/Country ON	S14e. Zip Code: N4N 3B8
S14f. Telephone Number: 519-371-7490	S14g. Call Sign of Control Station (if appropriate):		

Remote Control (TT C) Location(s):

S14a: Street Address: 5311 Allard Way			
S14b. City: Edmonton	S14c. County:	S14d. State/Country AB	S14e. Zip Code: T6H 5X8
S14f. Telephone Number: 780-437-6167	S14g. Call Sign of Control Station (if appropriate):		

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a: Mass of spacecraft without fuel (kg): 1969	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2925		
S15c. Mass of spacecraft and fuel at launch (kg): 4794	S15f. Length (m): 26.1	S15i. Payload: 0.9546
S15d. Mass of fuel, in orbit, at beginning of life (kg): 1389	S15g. Width (m): 8.8	S15j. Bus: 0.8854
S15e. Deployed Area of Solar Array (square meters): 73.5	S15h. Height (m): 6.8	S15k. Total: 0.8452

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): 7720	(f): 7720	(k): 7720	(p): 7720
Bus (Watts):	(b): 1596	(g): 1010	(l): 1582	(q): 958
Total (Watts):	(c): 9316	(h): 8730	(m) 9302	(r): 8678
Solar Array (Watts):	(d): 12429	(i): 11234	(n): 10570	(s): 9927
Depth of Battery Discharge (%):	(e) 71.5 %	(j) 71.5 %	(o) 71.5 %	(t) 71.5 %

S17. CERTIFICATIONS:

a. Are the power flux density limits of § 25.208 met?:		**YES**		**NO**	X	**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.