

**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: DIRECTV 9S		e. Estimated Date of Placement into Service: 7/15/2006		i. Will the space station(s) operate on a Common Carrier Basis: N	
b. Construction Commencement Date: 11/1/2003		f. Estimated Lifetime of Satellite(s): 15 Years		j. Number of transponders offered on a common carrier basis: 0	
c. Construction Completion Date: 11/30/2005		g. Total Number of Transponders: 22		k. Total Common Carrier Transponder Bandwidth: 0 MHz	
d1. Est Launch Date Begin: 1/1/2006	d2. Est Launch Date End: 6/30/2006	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 528 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)		
17.3	G	17.8	G	R	Feeder Link for Broadcasting Satellite Service in FSS
12.2	G	12.7	G	T	Broadcasting Satellite Service - Video

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 101.125 W		b. Alternate Orbital Longitude (Degrees E/W):		c. Reason for orbital location selection:			
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: 0.05 Degrees		g. Westernmost: h. Easternmost:				
i. Reason for service are selection (Optional):							

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

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

**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

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.
LABC	S		Area around Los Angeles, CA
CRBC	S		Area around Castle Rock, CO
USA	S		CONUS+Alaska+Hawaii
SA1	S		See GXT file associated with corresponding beam
SA2	S		See GXT file associated with corresponding beam
SA3	S		See GXT file associated with corresponding beam
SA4	S		See GXT file associated with corresponding beam
SA5	S		See GXT file associated with corresponding beam
SA6	S		See GXT file associated with corresponding beam
SA7	S		See GXT file associated with corresponding beam
SA8	S		See GXT file associated with corresponding beam
SA9	S		See GXT file associated with corresponding beam
SA10	S		See GXT file associated with corresponding beam
SA11	S		See GXT file associated with corresponding beam
SA12	S		See GXT file associated with corresponding beam
SA13	S		See GXT file associated with corresponding beam
SA14	S		See GXT file associated with corresponding beam
SA15	S		See GXT file associated with corresponding beam
SA16	S		See GXT file associated with corresponding beam
SA17	S		See GXT file associated with corresponding beam
SA18	S		See GXT file associated with corresponding beam
SA19	S		See GXT file associated with corresponding beam
SA20	S		See GXT file associated with corresponding beam
SA21	S		See GXT file associated with corresponding beam
SA22	S		See GXT file associated with corresponding beam
SA23	S		See GXT file associated with corresponding beam
SA24	S		See GXT file associated with corresponding beam
SA25	S		See GXT file associated with corresponding beam
SA26	S		See GXT file associated with corresponding beam

FEDERAL COMMUNICATIONS COMMISSION
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	(c) 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 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
UL1	R	46	45	0.14		27	Y		LABC				9332	6.3	-100	31	1
UL2	R	50.4	49.4	0.14		27	Y		CRBC				12589	9.4	-100	31	1
N101	T	38.3	30.3	0.14		27	N		USA	2.4	302	60.1					
RB01	T	49.9	45.9	0.05		27	N		SA1	1.5	15.8	60.4					
RB02	T	50.5	46.5	0.05		27	N		SA2	1.4	14.1	60.6					
BB03	T	48.5	44.5	0.05		27	N		SA3	2.4	28.8	60.7					
RB04	T	50.7	46.7	0.05		27	N		SA4	2.8	12.6	58.9					
RB05	T	50.7	46.7	0.05		27	N		SA5	2.1	5.8	56.2					
RB06	T	50.5	46.5	0.05		27	N		SA6	2.6	23.4	61.6					
BB07	T	48.1	44.1	0.05		27	N		SA7	1.8	4	52.3					
BB08	T	48.3	44.3	0.05		27	N		SA8	2.3	19.1	58.8					
BB09	T	44.7	40.7	0.05		27	N		SA9	2.3	10.7	52.7					
BB10	T	47.6	43.6	0.05		27	N		SA10	2.8	12.6	55.8					
BB11	T	47.3	43.3	0.05		27	N		SA11	2.7	12.6	55.6					
CB12	T	49.9	45.9	0.05		27	N		SA12	2.2	42.7	64					
CB13	T	50.2	46.2	0.05		27	N		SA13	2.6	19.1	60.4					
CB14	T	49.8	45.8	0.05		27	N		SA14	2.5	34.7	62.7					
CB15	T	50.5	46.5	0.05		27	N		SA15	2.8	17.8	60.2					
CB16	T	49	45	0.05		27	N		SA16	2.6	7.1	54.9					
CB17	T	48.1	44.1	0.05		27	N		SA17	2.7	3.6	51					
CB18	T	50.2	46.2	0.05		27	N		SA18	2.7	22.4	61					
CB19	T	47.6	43.6	0.05		27	N		SA19	1.5	5.6	53.6					
CB20	T	48.9	44.9	0.05		27	N		SA20	2.3	5.8	54.2					
BB21	T	48.2	44.2	0.05		27	N		SA21	2.5	11	56.1					
BB22	T	47.5	43.7	0.05		27	N		SA22	2.6	18.6	57.6					
BB23	T	47.7	43.7	0.05		27	N		SA23	1.7	11.2	56.5					
BB24	T	47.7	43.7	0.05		27	N		SA24	1.8	7.2	54.5					
RB25	T	48.2	44.2	0.05		27	N		SA25	1.6	5.4	53.9					
RB26	T	45.2	41.2	0.05		27	N		SA26	1.6	11	54					

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

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
N101	T	C	-101		N101_C.gxt					
RB01	T	C	-101		RB01_C.gxt					
RB02	T	C	-101		RB02_C.gxt					
BB03	T	C	-101		BB03_C.gxt					
RB04	T	C	-101		RB04_C.gxt					
RB05	T	C	-101		RB05_C.gxt					
RB06	T	C	-101		RB06_C.gxt					
BB07	T	C	-101		BB07_C.gxt					
BB08	T	C	-101		BB08_C.gxt					
BB09	T	C	-101		BB09_C.gxt					
BB10	T	C	-101		BB10_C.gxt					
BB11	T	C	-101		BB11_C.gxt					
CB12	T	C	-101		CB12_C.gxt					
CB13	T	C	-101		CB13_C.gxt					
CB14	T	C	-101		CB14_C.gxt					
CB15	T	C	-101		CB15_C.gxt					
CB16	T	C	-101		CB16_C.gxt					
CB17	T	C	-101		CB17_C.gxt					
CB18	T	C	-101		CB18_C.gxt					
CB19	T	C	-101		CB19_C.gxt					
CB20	T	C	-101		CB20_C.gxt					
BB21	T	C	-101		BB21_C.gxt					
BB22	T	C	-101		BB22_C.gxt					
BB23	T	C	-101		BB23_C.gxt					
BB24	T	C	-101		BB24_C.gxt					
RB25	T	C	-101		RB25_C.gxt					
RB26	T	C	-101		RB26_C.GXT					
UL1	R	C	-101		ULLA_C.gxt					

UL2	R	C	-101		ULCR_C.gxt					
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**FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

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)
R0001	24000	R	17324	R	C
R0003	24000	R	17353.16	R	C
R0005	24000	R	17382.32	R	C
R0007	24000	R	17411.48	R	C
R0009	24000	R	17440.64	R	C
R0011	24000	R	17469.8	R	C
R0013	24000	R	17498.96	R	C
R0015	24000	R	17528.12	R	C
R0017	24000	R	17557.28	R	C
R0019	24000	R	17586.44	R	C
R0021	24000	R	17615.6	R	C
R0023	24000	R	17644.76	R	C
R0025	24000	R	17673.92	R	C
R0027	24000	R	17703.08	R	C
R0029	24000	R	17732.24	R	C
R0031	24000	R	17761.4	R	C
R0002	24000	R	17338.58	L	C
R0004	24000	R	17367.74	L	C
R0006	24000	R	17396.9	L	C
R0008	24000	R	17426.06	L	C
R0010	24000	R	17455.22	L	C
R0012	24000	R	17484.38	L	C
R0014	24000	R	17513.54	L	C
R0016	24000	R	17542.7	L	C
R0018	24000	R	17571.86	L	C
R0020	24000	R	17601.02	L	C
R0022	24000	R	17630.18	L	C
R0024	24000	R	17659.34	L	C
R0026	24000	R	17688.5	L	C
R0028	24000	R	17717.66	L	C

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
NAT2	107	R0002	UL1	T0002	DL1
NAT6	107	R0006	UL1	T0006	DL1
NAT8	107	R0008	UL1	T0008	DL1
NAT10	107	R0010	UL1	T0010	DL1
NAT14	107	R0014	UL1	T0014	DL1
NAT16	107	R0016	UL1	T0016	DL1
NAT22	107	R0022	UL1	T0022	DL1
NAT24	107	R0024	UL1	T0024	DL1
NAT30	107	R0030	UL1	T0030	DL1
NAT32	107	R0032	UL1	T0032	DL1
S1	102	R0027	UL2	T0028	RB01
S2	102	R0029	UL2	T0028	RB02
S3	102	R0021	UL1	T0020	BB03
S3A	102	R0029	UL1	T0028	BB03
S4	102	R0031	UL2	T0028	RB04
S5	102	R0018	UL2	T0018	RB05
S5A	102	R0028	UL2	T0028	RB05
S6	102	R0007	UL2	T0018	RB06
S6A	102	R0017	UL2	T0028	RB06
S7	102	R0031	UL1	T0028	BB07
S8	102	R0027	UL1	T0028	BB08
S9	102	R0005	UL2	T0004	BB09
S9A	102	R0013	UL2	T0012	BB09
S10	102	R0007	UL1	T0018	BB10
S10A	102	R0017	UL1	T0028	BB10
S11	102	R0018	UL1	T0018	BB11
S11A	102	R0028	UL1	T0028	BB11
S12	102	R0004	UL2	T0004	CB12
S12A	102	R0012	UL2	T0012	CB12
S12B	102	R0020	UL2	T0020	CB12

R0030	24000	R	17746.82	L	C
R0032	24000	R	17775.98	L	C
T0002	24000	T	12238.58	L	C
T0004	24000	T	12267.74	L	C
T0006	24000	T	12296.9	L	C
T0008	24000	T	12326.06	L	C
T0010	24000	T	12355.22	L	C
T0012	24000	T	12384.38	L	C
T0014	24000	T	12413.54	L	C
T0016	24000	T	12442.7	L	C
T0018	24000	T	12471.86	L	C
T0020	24000	T	12501.02	L	C
T0022	24000	T	12530.18	L	C
T0024	24000	T	12559.34	L	C
T0026	24000	T	12588.5	L	C
T0028	24000	T	12617.66	L	C
T0030	24000	T	12646.82	L	C
T0032	24000	T	12675.98	L	C
CMD1	1000	R	17795	R	T
TLM1	1000	T	12695.5	R	T
TLM2	1000	T	12696.5	R	T

S13	102	R0003	UL2	T0004	CB13
S13A	102	R0011	UL2	T0012	CB13
S13B	102	R0019	UL2	T0020	CB13
S14	102	R0003	UL1	T0004	CB14
S14A	102	R0011	UL1	T0012	CB14
S14B	102	R0019	UL1	T0020	CB14
S15	102	R0013	UL1	T0012	CB15
S15A	102	R0015	UL1	T0026	CB15
S16	102	R0001	UL2	T0012	CB16
S16A	102	R0009	UL2	T0020	CB16
S17	102	R0023	UL2	T0020	CB17
S18	102	R0001	UL1	T0012	CB18
S18A	102	R0009	UL1	T0020	CB18
S19	102	R0023	UL1	T0020	CB19
S20	102	R0004	UL1	T0004	CB20
S20A	102	R0012	UL1	T0012	CB20
S20B	102	R0020	UL1	T0020	CB20
S21	102	R0021	UL2	T0018	BB21
S21A	102	R0015	UL2	T0026	BB21
S22	102	R0025	UL2	T0026	BB22
S23	102	R0026	UL2	T0026	BB23
S24	102	R0005	UL1	T0004	BB24
S25	102	R0026	UL1	T0026	RB25
S26	102	R0025	UL1	T0026	RB26
T1				TLM1	N101
T2				TLM2	N101

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

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)
BSS1	24M0G7W	24000	8	43550	0.7258		8.2	28
BSS2	24M0G7W	24000	4	30320	0.758		6.8	28

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

Page 8: Analog Modulation

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						
CMD	1M00F9D	1000		1									7.6	28
TLM	1M00F9D	1000		1									7.6	28

FEDERAL COMMUNICATIONS COMMISSION
SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)

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 ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
						(j) Min.	(k) Max.		(l) Min.	(m) Max.				
NAT2	NAT32	BSS1		1				63	9.7	14.7	60.1	60.1		13
NAT2	NAT32	BSS2		1				63	9.7	14.7	60.1	60.1		13
S1	S26	BSS1		1				63	9.7	14.7	52.3	61.6		13
S1	S26	BSS2		1				63	9.7	14.7	52.3	61.6		13
T1	T2		TLM	1							19.2	19.2		29.3

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SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

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: 1600 Forbes Way			
S14b. City: Long Beach	S14c. County: Los Angeles	S14d. State/Country CA	S14e. Zip Code: 90810
S14f. Telephone Number: 310-525-5590		S14g. Call Sign of Control Station (if appropriate):	

Remote Control (TT C) Location(s):

S14a: Street Address: 33E Telegraph Rd.			
S14b. City: Fillmore	S14c. County: Ventura	S14d. State/Country CA	S14e. Zip Code: 93015
S14f. Telephone Number: 805-524-4444		S14g. Call Sign of Control Station (if appropriate):	

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SATELLITE SPACE STATION AUTHORIZATIONS
FCC Form 312 - Schedule S: (Technical and Operational Description)**

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 2364	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 3140		
S15c. Mass of spacecraft and fuel at launch (kg): 5685	S15f. Length (m): 31.3	S15i. Payload: 0.85
S15d. Mass of fuel, in orbit, at beginning of life (kg): 984	S15g. Width (m): 12.1	S15j. Bus: 0.84
S15e. Deployed Area of Solar Array (square meters): 59.6	S15h. Height (m): 7.5	S15k. Total: 0.73

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): 7581	(f): 7581	(k): 7581	(p): 7581
Bus (Watts):	(b): 2845	(g): 1788	(l): 2845	(q): 1788
Total (Watts):	(c): 10696	(h): 9639	(m): 10696	(r): 9639
Solar Array (Watts):	(d): 12710	(i): 11442	(n): 11820	(s): 10641
Depth of Battery Discharge (%):	(e) 80 %	(j) 0 %	(o) 80 %	(t) 0 %

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.