

S1. GENERAL INFORMATION Complete for all satellite applications.

a. Space Station or Satellite Network Name: DIRECTV 97W		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: 48		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) 1920 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)		
18.3	G	18.8	G	T	Direct to Home in the Fixed Fixed Satellite Service
28.35	G	28.6	G	R	Fixed Satellite Service
29.25	G	29.5	G	R	Fixed Satellite Service
18.3	G	18.8	G	T	Fixed Satellite Service
19.7	G	20.2	G	T	Fixed Satellite Service
19.7	G	20.2	G	T	Direct to Home in the Fixed Fixed Satellite Service
29.5	G	30.0	G	R	Fixed Satellite Service

S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:

a. Nominal Orbital Longitude (Degrees E/W): 97.1 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> Degrees </u> <u> E/W </u> g. Westernmost: h. Easternmost:	
d. Toward West:	0.05 Degrees	e. Toward East:	0.05 Degrees				
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.
CONUS+	S		CONUS + Alaska + Hawaii
LABC	S		Uplink beam centered on Los Angeles, CA
CRBC	S		Uplink beam centered on Castle Rock, CO

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	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														
UL1	R	50.7	49.7	0.1		30	Y		LABC				1862	18	-105	20	1
UL2	R	51.2	50.2	0.1		30	Y		CRBC				1862	18.5	-105	20	1
DL1	T	37.3	29.3	0.1		30	Y		CONUS+	2.4	148	59					

**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
UL1	R	C	-97.1		LA_RX_CO.gxt					
UL2	R	C	-97.1		CRK_RX_CO.gxt					
DL1	T	C	-97.1		TX_CO.gxt	-124	-124	-124	-124	-124

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	36000	R	28375	R	C
R0002	36000	R	28375	L	C
R0003	36000	R	28415	R	C
R0004	36000	R	28415	L	C
R0005	36000	R	28455	R	C
R0006	36000	R	28455	L	C
R0007	36000	R	28495	R	C
R0008	36000	R	28495	L	C
R0009	36000	R	28535	R	C
R0010	36000	R	28535	L	C
R0011	36000	R	28575	R	C
R0012	36000	R	28575	L	C
R0013	36000	R	29275	R	C
R0014	36000	R	29275	L	C
R0015	36000	R	29315	R	C
R0016	36000	R	29315	L	C
R0017	36000	R	29355	R	C
R0018	36000	R	29355	L	C
R0019	36000	R	29395	R	C
R0020	36000	R	29395	L	C
R0021	36000	R	29435	R	C
R0022	36000	R	29435	L	C
R0023	36000	R	29475	R	C
R0024	36000	R	29475	L	C
R0025	36000	R	29530	R	C
R0026	36000	R	29530	L	C
R0027	36000	R	29570	R	C
R0028	36000	R	29570	L	C
R0029	36000	R	29610	R	C
R0030	36000	R	29610	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
N42	121	R0042	UL2	T0042	DL1
N43	121	R0043	UL2	T0043	DL1
N44	121	R0044	UL2	T0044	DL1
N45	121	R0045	UL2	T0045	DL1
N46	121	R0046	UL2	T0046	DL1
N47	121	R0047	UL2	T0047	DL1
N48	121	R0048	UL2	T0048	DL1
CMD1		CMD1	UL2		
CMD2		CMD2	UL2		
TLM1				TLM1	DL1
TLM2				TLM2	DL1
N1	121	R0001	UL1	T0001	DL1
N2	121	R0002	UL1	T0002	DL1
N3	121	R0003	UL1	T0003	DL1
N4	121	R0004	UL1	T0004	DL1
N5	121	R0005	UL1	T0005	DL1
N6	121	R0006	UL1	T0006	DL1
N7	121	R0007	UL1	T0007	DL1
N8	121	R0008	UL1	T0008	DL1
N9	121	R0009	UL1	T0009	DL1
N10	121	R0010	UL1	T0010	DL1
N11	121	R0011	UL1	T0011	DL1
N12	121	R0012	UL1	T0012	DL1
N13	121	R0013	UL1	T0013	DL1
N14	121	R0014	UL1	T0014	DL1
N15	121	R0015	UL1	T0015	DL1
N16	121	R0016	UL1	T0016	DL1
N17	121	R0017	UL1	T0017	DL1
N18	121	R0018	UL1	T0018	DL1
N19	121	R0019	UL1	T0019	DL1

R0031	36000	R	29650	R	C
R0032	36000	R	29650	L	C
T0033	36000	T	19890	R	C
T0034	36000	T	19890	L	C
T0035	36000	T	19930	R	C
T0036	36000	T	19930	L	C
T0037	36000	T	19970	R	C
T0038	36000	T	19970	L	C
T0039	36000	T	20010	R	C
T0040	36000	T	20010	L	C
T0041	36000	T	20050	R	C
T0042	36000	T	20050	L	C
T0043	36000	T	20090	R	C
T0044	36000	T	20090	L	C
T0045	36000	T	20130	R	C
T0046	36000	T	20130	L	C
T0047	36000	T	20170	R	C
T0048	36000	T	20170	L	C
TLM1	106	T	19701	L	T
TLM2	106	T	19702	L	T
R0033	36000	R	29690	R	C
R0034	36000	R	29690	L	C
R0035	36000	R	29730	R	C
R0036	36000	R	29730	L	C
R0037	36000	R	29770	R	C
R0038	36000	R	29770	L	C
R0039	36000	R	29810	R	C
R0040	36000	R	29810	L	C
R0041	36000	R	29850	R	C
R0042	36000	R	29850	L	C
R0043	36000	R	29890	R	C
R0044	36000	R	29890	L	C
R0045	36000	R	29930	R	C
R0046	36000	R	29930	L	C
R0047	36000	R	29970	R	C
R0048	36000	R	29970	L	C
T0001	36000	T	18330	R	C
T0002	36000	T	18330	L	C
T0003	36000	T	18370	R	C

N20	121	R0020	UL1	T0020	DL1
N21	121	R0021	UL1	T0021	DL1
N22	121	R0022	UL1	T0022	DL1
N23	121	R0023	UL1	T0023	DL1
N24	121	R0024	UL1	T0024	DL1
N25	121	R0025	UL2	T0025	DL1
N26	121	R0026	UL2	T0026	DL1
N27	121	R0027	UL2	T0027	DL1
N28	121	R0028	UL2	T0028	DL1
N29	121	R0029	UL2	T0029	DL1
N30	121	R0030	UL2	T0030	DL1
N31	121	R0031	UL2	T0031	DL1
N32	121	R0032	UL2	T0032	DL1
N33	121	R0033	UL2	T0033	DL1
N34	121	R0034	UL2	T0034	DL1
N35	121	R0035	UL2	T0035	DL1
N36	121	R0036	UL2	T0036	DL1
N37	121	R0037	UL2	T0037	DL1
N38	121	R0038	UL2	T0038	DL1
N39	121	R0039	UL2	T0039	DL1
N40	121	R0040	UL2	T0040	DL1
N41	121	R0041	UL2	T0041	DL1

T0004	36000	T	18370	L	C
T0005	36000	T	18410	R	C
T0006	36000	T	18410	L	C
T0007	36000	T	18450	R	C
T0008	36000	T	18450	L	C
T0009	36000	T	18490	R	C
T0010	36000	T	18490	L	C
T0011	36000	T	18530	R	C
T0012	36000	T	18530	L	C
T0013	36000	T	18570	R	C
T0014	36000	T	18570	L	C
T0015	36000	T	18610	R	C
T0016	36000	T	18610	L	C
T0017	36000	T	18650	R	C
T0018	36000	T	18650	L	C
T0019	36000	T	18690	R	C
T0020	36000	T	18690	L	C
T0021	36000	T	18730	R	C
T0022	36000	T	18730	L	C
T0023	36000	T	18770	R	C
T0024	36000	T	18770	L	C
T0025	36000	T	19730	R	C
T0026	36000	T	19730	L	C
T0027	36000	T	19770	R	C
T0028	36000	T	19770	L	C
T0029	36000	T	19810	R	C
T0030	36000	T	19810	L	C
T0031	36000	T	19850	R	C
T0032	36000	T	19850	L	C
CMD1	1300	R	29502	L	T
CMD2	1300	R	29998	L	T

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)
M1	36M0G7W	36000	4	38720	0.645		4.7	16.9

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						
C1	1M30F9D	1300		1									15	27.2
T1	106KG9D	106		1									14	26.2

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) (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)
N1	N48	M1		1				66.9	9.3	14.3	51	59	-118.9	18.5
TLM1	TLM2		T1	1							15.3	15.3	-146.7	41.8
CMD1	CMD2		C1	1				66.9	4.1	20.1				

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

Page 10: TT and C

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

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

Page 11:
Characteristics and
Certifications

S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 3556	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 2440		
S15c. Mass of spacecraft and fuel at launch (kg): 5996	S15f. Length (m): 36	S15i. Payload: 0.6
S15d. Mass of fuel, in orbit, at beginning of life (kg): 266	S15g. Width (m): 16	S15j. Bus: 0.85
S15e. Deployed Area of Solar Array (square meters): 104	S15h. Height (m): 7.3	S15k. Total: 0.51

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): 19200	(f): 19200	(k): 19200	(p): 19200
Bus (Watts):	(b): 1800	(g): 700	(l): 1800	(q): 700
Total (Watts):	(c): 21000	(h): 19900	(m): 21000	(r): 19900
Solar Array (Watts):	(d): 26308	(i): 23486	(n): 22174	(s): 20600
Depth of Battery Discharge (%):	(e) 79.5 %	(j) 0 %	(o) 79.5 %	(t) 0 %

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.