

**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 KU-79W		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:	
c. Construction Completion Date:		g. Total Number of Transponders: 24		k. Total Common Carrier Transponder Bandwidth: MHz	
d1. Est Launch Date Begin:	d2. Est Launch Date End:	h. Total Transponder Bandwidth (no. transponders x Bandwidth) 864 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)		
11700	M	12200	M	T	Direct to Home in the Fixed Fixed Satellite Service
11700	M	12200	M	T	Fixed Satellite Service
14000	M	14500	M	R	Fixed Satellite Service

**S3. ORBITAL INFORMATION FOR GEOSTATIONARY SATELLITES ONLY:**

a. Nominal Orbital Longitude (Degrees E/W): 79 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): Degrees      E/W	
d. Toward West:	0.05 Degrees	e. Toward East:		g. Westernmost: h. Easternmost:	
		0.05 Degrees			
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.
USA	S		CONUS and Puerto Rico
MEX	S		Mexico
USMEX	S		Southern US and Mexico



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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
UST	T	C	-79		US+PR_TX_H.gxt					
USTV	T	C	-79		US+PR_TX_V.gxt					
MTH	T	C	-79		Mexico TX_H.gxt					
MTV	T	C	-79		Mexico TX_V.gxt					
RXH	R	C	-79		JS+Mexico_RX_H.gxt					
RXV	R	C	-79		JS+Mexico_RX_V.gxt					

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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)
RX001	36000	R	14020	H	C
RX003	36000	R	14060	H	C
RX005	36000	R	14100	H	C
RX007	36000	R	14140	H	C
RX009	36000	R	14180	H	C
RX011	36000	R	14220	H	C
RX013	36000	R	14260	H	C
RX015	36000	R	14300	H	C
RX017	36000	R	14340	H	C
RX019	36000	R	14380	H	C
RX021	36000	R	14420	H	C
RX023	36000	R	14460	H	C
RX002	36000	R	14040	V	C
RX004	36000	R	14080	V	C
RX006	36000	R	14120	V	C
RX008	36000	R	14160	V	C
RX010	36000	R	14200	V	C
RX012	36000	R	14240	V	C
RX014	36000	R	14280	V	C
RX016	36000	R	14320	V	C
RX018	36000	R	14360	V	C
RX020	36000	R	14400	V	C
RX022	36000	R	14440	V	C
RX024	36000	R	14480	V	C
TX001	36000	T	11720	V	C
TX003	36000	T	11760	V	C
TX005	36000	T	11800	V	C
TX007	36000	T	11840	V	C
TX009	36000	T	11880	V	C
TX011	36000	T	11920	V	C

(a) Transponder ID	(b) Transponder Gain (dB)	Receive Band		Transmit Band	
		(c) Channel No.	(d) Beam ID	(e) Channel No.	(f) Beam ID
U0001	120	RX001	RXH	TX001	USTV
U0003	120	RX003	RXH	TX003	USTV
U0005	120	RX005	RXH	TX005	USTV
U0007	120	RX007	RXH	TX007	USTV
U0009	120	RX009	RXH	TX009	USTV
U0011	120	RX011	RXH	TX011	USTV
U0013	120	RX013	RXH	TX013	USTV
U0015	120	RX015	RXH	TX015	USTV
U0017	120	RX017	RXH	TX017	USTV
U0019	120	RX019	RXH	TX019	USTV
U0021	120	RX021	RXH	TX021	USTV
U0023	120	RX023	RXH	TX023	USTV
U0002	120	RX002	RXV	TX002	USTH
U0004	120	RX004	RXV	TX004	USTH
U0006	120	RX006	RXV	TX006	USTH
U0008	120	RX008	RXV	TX008	USTH
U0010	120	RX010	RXV	TX010	USTH
U0012	120	RX012	RXV	TX012	USTH
U0014	120	RX014	RXV	TX014	USTH
U0016	120	RX016	RXV	TX016	USTH
U0018	120	RX018	RXV	TX018	USTH
U0020	120	RX020	RXV	TX020	USTH
U0022	120	RX022	RXV	TX022	USTH
U0024	120	RX024	RXV	TX024	USTH
M0001	120	RX001	RXH	TX001	MTV
M0003	120	RX003	RXH	TX003	MTV
M0005	120	RX005	RXH	TX005	MTV
M0007	120	RX007	RXH	TX007	MTV
M0009	120	RX009	RXH	TX009	MTV
M0011	120	RX011	RXH	TX011	MTV

TX013	36000	T	11960	V	C
TX015	36000	T	12000	V	C
TX017	36000	T	12040	V	C
TX019	36000	T	12080	V	C
TX021	36000	T	12120	V	C
TX023	36000	T	12160	V	C
TX002	36000	T	11740	H	C
TX004	36000	T	11780	H	C
TX006	36000	T	11820	H	C
TX008	36000	T	11860	H	C
TX010	36000	T	11900	H	C
TX012	36000	T	11940	H	C
TX014	36000	T	11980	H	C
TX016	36000	T	12020	H	C
TX018	36000	T	12060	H	C
TX020	36000	T	12100	H	C
TX022	36000	T	12140	H	C
TX024	36000	T	12180	H	C
CMD1	1300	R	14005	V	T
CMD2	1300	R	14495	H	T
TLM1	106	T	11724	H	T
TLM2	106	T	11725	H	T

M0013	120	RX013	RXH	TX013	MTV
M0015	120	RX015	RXH	TX015	MTV
M0017	120	RX017	RXH	TX017	MTV
M0019	120	RX019	RXH	TX019	MTV
M0021	120	RX021	RXH	TX021	MTV
M0023	120	RX023	RXH	TX023	MTV
M0002	120	RX002	RXV	TX002	MTH
M0004	120	RX004	RXV	TX004	MTH
M0006	120	RX006	RXV	TX006	MTH
M0008	120	RX008	RXV	TX008	MTH
M0010	120	RX010	RXV	TX010	MTH
M0012	120	RX012	RXV	TX012	MTH
M0014	120	RX014	RXV	TX014	MTH
M0016	120	RX016	RXV	TX016	MTH
M0018	120	RX018	RXV	TX018	MTH
M0020	120	RX020	RXV	TX020	MTH
M0022	120	RX022	RXV	TX022	MTH
M0024	120	RX024	RXV	TX024	MTH
CMD1		CMD1	RXV		
CMD2		CMD2	RXH		
TLM1				TLM1	USTH
TLM2				TLM2	USTH

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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)
M01	36M0G7W	36000	4	60000	0.58		3.8	16



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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						
CMD	1M30F9D	1300		1									15	27.2
TLM	106KG9D	106		1									14	26.2

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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)		EIRP (dBW)		(n) Max. Power Flux Density (dBW/m <sup>2</sup> /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
						(j) Min.	(k) Max.		(l) Min.	(m) Max.				
M0001	M0024	M01		1				59.8	15	17	48	54	-124	14
U0001	U0024	M01		1				59.8	15	17	46	54	-124	14
CMD1	CMD2		CMD	1				59.8	12.2	12.2				
TLM1	TLM2		TLM	1							15.3	15.3		35.9

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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

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S15. SPACECRAFT PHYSICAL CHARACTERISTICS:

S15a. Mass of spacecraft without fuel (kg): 1225	Spacecraft Dimensions (meters)	Probability of Survival to End of Life (0.0 - 1.0)
S15b. Mass of fuel and disposables at launch (kg): 1250		
S15c. Mass of spacecraft and fuel at launch (kg): 2475	S15f. Length (m): 22.4	S15i. Payload: 0.95
S15d. Mass of fuel, in orbit, at beginning of life (kg): 500	S15g. Width (m): 5.1	S15j. Bus: 0.85
S15e. Deployed Area of Solar Array (square meters): 13	S15h. Height (m): 7.4	S15k. Total: 0.808

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): 4650	(f): 4650	(k): 4650	(p): 4650
Bus (Watts):	(b): 1375	(g): 940	(l): 1375	(q): 940
Total (Watts):	(c): 6025	(h): 5590	(m): 6025	(r): 5590
Solar Array (Watts):	(d): 6935	(i): 6220	(n): 6725	(s): 6005
Depth of Battery Discharge (%):	(e) 70 %	(j) 0 %	(o) 70 %	(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.**