

**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-76W		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): 76 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:	
	0.05 Degrees	0.05 Degrees		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:

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.
MEX+	S		Mexico, Central America, Part of Caribbean
USMEX	S		Southern CA, Mexico, Central America, Part of Caribbean

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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				
										(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														
TXH	T	34.3	30.3	0.1	0.1	30	N	0	MEX+	2.1	93.3	53					
TXV	T	34.3	30.3	0.1	0.1	30	N	90	MEX+	2.1	93.3	53					
RXH	R	33.8	27.8	0.1	0.1	30	N	0	USMEX				1000	3.8	-100	20	1
RXV	R	33.8	27.8	0.1	0.1	30	N	90	USMEX				1000	3.8	-100	20	1

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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
TXH	T	C	-76		RECTV KU-76W TXH.					
TXV	T	C	-76		RECTV KU-76W TXV.					
RXH	R	C	-76		RECTV KU-76W RXH.					
RXV	R	C	-76		RECTV KU-76W RXV.					

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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
CH001	120	RX001	RXH	TX001	TXH
CH003	120	RX003	RXH	TX003	TXH
CH005	120	RX005	RXH	TX005	TXH
CH007	120	RX007	RXH	TX007	TXH
CH009	120	RX009	RXH	TX009	TXH
CH011	120	RX011	RXH	TX011	TXH
CH013	120	RX013	RXH	TX013	TXH
CH015	120	RX015	RXH	TX015	TXH
CH017	120	RX017	RXH	TX017	TXH
CH019	120	RX019	RXH	TX019	TXH
CH021	120	RX021	RXH	TX021	TXH
CH023	120	RX023	RXH	TX023	TXH
CH002	120	RX002	RXV	TX002	TXV
CH004	120	RX004	RXV	TX004	TXV
CH006	120	RX006	RXV	TX006	TXV
CH008	120	RX008	RXV	TX008	TXV
CH010	120	RX010	RXV	TX010	TXV
CH012	120	RX012	RXV	TX012	TXV
CH014	120	RX014	RXV	TX014	TXV
CH016	120	RX016	RXV	TX016	TXV
CH018	120	RX018	RXV	TX018	TXV
CH020	120	RX020	RXV	TX020	TXV
CH022	120	RX022	RXV	TX022	TXV
CH024	120	RX024	RXV	TX024	TXV
CMD1		CMD1	RXH		
CMD2		CMD2	RXV		
TLM1				TLM1	TXH
TLM2				TLM2	TXH

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	11704	H	T
TLM2	106	T	11705	H	T

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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	34800	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 ² /Hz)	(o) Assoc. Stn Rec. G/T (dB/K)
						(j) Min.	(k) Max.		(l) Min.	(m) Max.				
CH001	CH024	M01		1				59.8	17	19	49	53	-125	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): 26	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.