

**ENGINEERING STATEMENT**

The engineering data contained herein have been prepared on behalf of UNIMAS DALLAS LLC, licensee of full-power digital television station KSTR-DT, Channel 48 in Irving, Texas, in support of its request for Experimental Special Temporary Authority to construct a distributed transmission system (DTS) in the Dallas-Fort Worth market in order to begin implementation of the ATSC-3.0 transmission standard for testing purposes. The purpose of this exhibit is to show that operation of the DTS facility on repack Channel 34 will meet the FCC's interference criteria to all stations, full-power and low-power. No change in any operating parameters (other than operation on Channel 34 rather than Channel 48) is proposed herein.

The DTS facility is comprised of the presently licensed operation of KSTR-DT (BLCDT-20100826AFG) as well as operation with three single frequency network (SFN) nodes at sites located within the KSTR-DT noise-limited service contour. Below are operating parameters for the main and SFN node facilities:

**KSTR-DT MAIN TRANSMITTER SITE (REFERENCE SITE)**

Site Name : Cedar Hill

Site Coordinates (NAD83) : 32-32-36 N, 096-57-33 W

Tower ASRN : 1059733

Ground Elevation : 248.1 meters

Overall Tower Height Above Ground : 498.4 meters

Antenna Radiation Center Above Ground : 490.1 meters

Antenna Radiation Center Above Mean Sea Level : 738.2 meters

Effective Radiated Power : 1000 kW (H-only)

Antenna Make/Model : Dielectric TFU-30GTH-R S200DC

Type : Horizontally Polarized, Directional

Orientation : 0 degrees true

**KSTR-DT SFN-1 TRANSMITTER SITE**

Site Name : Garland  
Site Coordinates (NAD83) : 32-50-36.5 N, 096-33-49.3 W  
Tower ASRN : 1050894  
Ground Elevation : 152.7 meters  
Overall Tower Height Above Ground : 123.1 meters  
Antenna Radiation Center Above Ground : 103 meters  
Antenna Radiation Center Above Mean Sea Level : 255.7 meters  
Effective Radiated Power : 100 kW (H), 8.9 kW (V)  
Antenna Make/Model : Dielectric TFU-24WB  
Type : Elliptically Polarized, Directional (Medium Cardioid Pattern)  
Electrical Beam Tilt : 0.5 degrees  
Orientation : 270 degrees true

**KSTR-DT SFN-2 TRANSMITTER SITE**

Site Name : Fort Worth  
Site Coordinates (NAD83) : 32-45-01.0 N, 097-16-08.0 W  
Tower ASRN : 1053406  
Ground Elevation : 191.1 meters  
Overall Tower Height Above Ground : 340.3 meters  
Antenna Radiation Center Above Ground : 190 meters  
Effective Radiated Power : 100 kW (H), 8.9 kW (V)  
Antenna Make/Model : Dielectric TFU-24WB  
Type : Elliptically Polarized, Directional (Medium Cardioid Pattern)  
Electrical Beam Tilt : 0.5 degrees  
Orientation : 90 degrees true

**KSTR-DT SFN-3 TRANSMITTER SITE**

Site Name : Denton

Site Coordinates (NAD83) : 33-10-01.7 N, 097-06-43.2 W

Tower ASRN : 1048967

Ground Elevation : 201.5 meters

Overall Tower Height Above Ground : 64.6 meters

Antenna Radiation Center Above Ground : 56.8 meters

Effective Radiated Power : 17 kW (H), 1.5 kW (V)

Antenna Make/Model : Dielectric TFU-16WB

Type : Elliptically Polarized, Directional (Medium Cardioid Pattern)

Electrical Beam Tilt : 0.5 degrees

Orientation : 135 degrees true

We conducted a TVStudy interference study for the proposed DTS facility, using a cell size of 1.0 kilometer and increment spacing of 1.0 kilometer. Attached are the summary results of that study. It concludes that the proposed KSTR-DT DTS facility on Channel 34 meets the Commission's *de minimis* interference criteria to all co-channel and adjacent-channel pre-repack full-power and Class A facilities, as well as to all Low Power Television stations, except one. The facility proposed herein causes 10.1% interference to the service population of licensed KJJM-LD, Channel 34 in Dallas, Texas. However, KJJM-LD will be displaced by KSTR-DT when the latter goes on the air in Repack Transition Phase 3 and will be forced to go off the air. It is also important to note that KJJM-LD has been authorized to operate on displacement Channel 12 in Dallas (LMS-0000051677). Upon making the change to operation on Channel 12, the interference described above will be ameliorated, once KSTR-DT begins operation on its repack channel.

I declare under penalty of perjury that the foregoing statements and the attached exhibit, which was prepared by me or under my immediate supervision, are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read 'K. T. Fisher', with a stylized, elongated final stroke.

KEVIN T. FISHER

April 2, 2019

TVSTUDY INTERFERENCE ANALYSIS RESULTS  
 PROPOSED KSTR-DT DTS FACILITY  
 CHANNEL 34 – DALLAS, TEXAS

Study created: 2019.04.02 15:47:00

Study build station data: LMS TV 2019-04-01

Proposal: KSTR-DT D34 DD EXP IRVING, TX  
 File number: BLANK0000063075  
 Facility ID: 60534  
 Station data: User record  
 Record ID: 532  
 Country: U.S.  
 Zone: II  
 Ref. lat.: 32 32 36.00 N  
 Ref. long.: 96 57 33.00 W  
 # DTS sites: 4

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
No	KVUE	D33	DT	LIC	AUSTIN, TX	BLCDDT20050624AAI	259.6 km
Yes	KUVN-DT	D33	DT	CP	GARLAND, TX	BLANK0000063068	5.2
Yes	KUVN-DT	D33	DT	BL	GARLAND, TX	DTVBL35841	5.2
No	K33LH-D	D33	LD	CP	RANGER, TX	BNPDTL20100304ABA	169.7
No	KPKN-LD	D33	LD	LIC	TYLER, TX	BLANK0000008908	152.6
No	KSJF-CD	D34	DC	LIC	FORT SMITH, AR	BLANK0000064259	408.0
Yes	KMSS-TV	D34	DT	LIC	SHREVEPORT, LA	BLCDDT20050705AAB	283.6
Yes	KCYH-LD	D34	LD	LIC	ARDMORE, OK	BLANK0000068523	184.2
No	K34JK-D	D34	LD	LIC	ELK CITY, OK	BLDTT20100607AAA	378.3
No	K34JJ-D	D34	LD	LIC	HOLLIS, OK	BLDTT20100802AZI	359.5
Yes	K43LK-D	D34	LD	CP	LAWTON, OK	BLANK0000029550	259.7
Yes	K34ML-D	D34	LD	CP	MC ALESTER, OK	BNPDTL20100511ABJ	272.0
No	KMYT-TV	D34	DT	LIC	TULSA, OK	BLANK0000067647	404.6
No	K34LT-D	D34	LD	CP	VIAN, OK	BNPDTL20100504AMA	374.7
Yes	KIDV-LD	D34	LD	LIC	ALBANY, TX	BLDTT20110428AAG	231.3
No	K34FM-D	D34	LD	LIC	AUSTIN, TX	BLANK0000005051	259.4
Yes	KEYE-TV	D34	DT	CP	AUSTIN, TX	BLANK0000034391	259.6
No	K34FM-D	N34-	TX	LIC	AUSTIN, TX	BLTT20061002BGB	259.4
Yes	KEYE-TV	D34	DT	BL	AUSTIN, TX	DTVBL33691	259.6
Yes	KZCZ-LD	D34	LD	LIC	COLLEGE STATION, TX	BLANK0000011233	139.7
Yes	KTWC-LD	D34	LD	LIC	CROCKETT, TX	BLDTL20120628ABT	196.8
Yes	KJJM-LD	D34	LD	LIC	DALLAS & MESQUITE, TX	BLDTL20090319ABX	5.2

Yes	KIAH	D34	DT CP	HOUSTON, TX	BLANK0000035711	358.7
Yes	KIAH	D34	DT BL	HOUSTON, TX	DTVBL23394	358.7
No	KVHP-LD	D34	LD CP	JASPER, TX	BLANK0000054529	330.3
No	NEW	D34	LD APP	JUNCTION, TX	BNPDTL20100406ABR	350.3
No	K34HW	N34-	TX LIC	MASON, TX	BLTTL20070507AEV	296.0
No	K34LQ-D	D34	LD CP	ROSCOE, TX	BNPDTL20100310ACF	345.0
Yes	KDFW	D35	DT LIC	DALLAS, TX	BLCDT20090508AAB	5.0
No	KAXW-LD	D35	LD LIC	MULLIN, TX	BLANK0000068482	139.7
No	KPKN-LD	D35	LD CP	TYLER, TX	BLANK0000062833	152.6
No	NEW	D35	LD APP	TYLER, TX	BNPDTT20091123AIY	156.9

No non-directional AM stations found within 0.8 km

No directional AM stations found within 3.2 km

Record parameters as studied, DTS site # 1:

Channel: D34  
Latitude: 32 32 36.00 N (NAD83)  
Longitude: 96 57 33.00 W  
Height AMSL: 720.2 m  
HAAT: 0.0 m  
Peak ERP: 1000 kW  
Antenna: 0.0 deg  
Elev Pattn: Generic

40.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1000 kW	506.1 m	115.6 km
45.0	971	510.9	115.7
90.0	554	519.8	111.0
135.0	157	505.3	98.2
180.0	120	496.8	95.2
225.0	158	520.3	99.5
270.0	554	536.4	112.1
315.0	971	539.5	117.5

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 517 m

ERP exceeds maximum

ERP: 1000 kW ERP maximum: 468 kW

Record parameters as studied, DTS site # 2:

Channel: D34

Latitude: 32 50 36.60 N (NAD83)  
Longitude: 96 33 49.30 W  
Height AMSL: 255.7 m  
HAAT: 0.0 m  
Peak ERP: 100 kW  
Antenna: 0.0 deg  
Elev Pattn: Generic

40.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	70.9 kW	105.0 m	61.6 km
45.0	21.2	113.9	57.0
90.0	41.0	106.6	59.3
135.0	21.1	125.0	57.9
180.0	70.6	119.1	62.9
225.0	98.6	100.7	62.6
270.0	94.3	98.4	62.1
315.0	98.6	89.3	61.1

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 107 m

Record parameters as studied, DTS site # 3:

Channel: D34  
Latitude: 32 45 1.00 N (NAD83)  
Longitude: 97 16 8.00 W  
Height AMSL: 381.1 m  
HAAT: 0.0 m  
Peak ERP: 100 kW  
Antenna: 0.0 deg  
Elev Pattn: Generic

40.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	70.6 kW	200.9 m	69.3 km
45.0	98.6	217.4	72.2
90.0	94.3	205.5	71.1
135.0	98.6	197.5	70.7
180.0	70.9	184.0	68.1
225.0	21.2	164.5	60.8
270.0	41.0	200.3	66.5
315.0	21.1	182.2	62.0

Database HAAT does not agree with computed HAAT  
Database HAAT: 0 m Computed HAAT: 194 m

Record parameters as studied, DTS site # 4:

Channel: D34  
Latitude: 33 10 1.70 N (NAD83)  
Longitude: 97 6 43.20 W  
Height AMSL: 258.3 m  
HAAT: 0.0 m  
Peak ERP: 17.0 kW  
Antenna: 0.0 deg  
Elev Pattn: Generic

40.7 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	3.58 kW	69.7 m	43.1 km
45.0	12.0	83.8	51.0
90.0	16.8	90.1	53.4
135.0	16.0	90.8	53.3
180.0	16.8	71.1	50.6
225.0	12.1	53.2	45.7
270.0	3.60	54.7	40.4
315.0	6.96	49.8	42.2

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 70 m

DTS proposal coverage is within reference facility and distance limit

Distance to Canadian border: 1554.4 km

Distance to Mexican border: 513.5 km

Conditions at FCC monitoring station: Kingsville TX

DTS site # 1 Bearing: 189.2 degrees Distance: 574.0 km

DTS site # 2 Bearing: 192.3 degrees Distance: 613.6 km

DTS site # 3 Bearing: 185.9 degrees Distance: 593.0 km

DTS site # 4 Bearing: 186.8 degrees Distance: 640.7 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

DTS site # 1 Bearing: 321.1 degrees Distance: 1119.9 km

DTS site # 2 Bearing: 318.8 degrees Distance: 1118.2 km

DTS site # 3 Bearing: 321.3 degrees Distance: 1083.9 km

DTS site # 4 Bearing: 319.2 degrees Distance: 1057.6 km



Study cell size: 1.00 km

Profile point spacing: 1.00 km

Maximum new IX to full-service and Class A: 0.50%

Maximum new IX to LPTV: 2.00%

\*\*IX check failure to BLDTL20090319ABX LIC scenario 1, 10.11% interference caused.