

**EXHIBIT A**

**ENGINEERING STATEMENT**

The engineering data contained herein have been prepared on behalf of CORRIDOR TELEVISION, L.L.P., licensee of full-power digital television station KCWX-DT, Channel 5 in Fredericksburg, Texas, in support of this Application for Construction Permit for the Channel 8 Distributed Transmission System (DTS) facility granted by the FCC in the KCWX-DT Petition for Rulemaking (LMS-0000139110). It is proposed to utilize a DTS system comprised of six single frequency network (SFN) nodes in the following locations: Fredericksburg, Texas; Austin, Texas; San Antonio, Texas; D'Hanis, Texas; Mountain Home, Texas; and, San Saba, Texas. The combination of these facilities will cover the vast majority of the KCWX-DT Channel 5 repack allotment service contour, and minimize "loss" area, especially "underserved" loss area due to the channel change. This proposal will also meet the requirements of the new DTS Rules recently adopted by the Commission. We will describe each SFN node separately and then treat the entire DTS facility as a whole.

**FREDERICKSBURG NODE (Reference Facility)**

It is proposed to mount a Dielectric directional THB-TH-4/8-1 panel antenna at the 336-meter level of the existing 350-meter KCWX-DT tower. The proposed effective radiated power for the facility is 17.0 kW in the horizontal plane. It is important to note that this proposed facility meets the Commission's maximum DTV power and height requirements in Section 73.622(f)(7) for high-band VHF stations operating in Zone 2, such as KCWX-DT. Below are operating parameters for the Fredericksburg node operation on Channel 8:

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Site coordinates: 30-08-13.7 N, 98-36-36.1 W (NAD83)

Site elevation: 579.0 meters AMSL

Overall tower height: 350.0 meters AMSL

FCC Antenna Structure Registration Number: 1209887

Antenna height above ground: 336 meters

Antenna height above mean sea level: 915 meters

Antenna height above average terrain: 412 meters

Antenna make/model: Dielectric THB-TH-4/8-1

FCC Antenna ID Number : 1007959

Antenna orientation: 0 degrees true

Line of Symmetry : 80 degrees true

Electrical beam tilt: 0 degrees

Effective radiated power: 17.0 kW

Exhibit B is a map upon which the predicted service contours are plotted. As shown, the community of Fredericksburg, Texas, is completely encompassed by the proposed 43 dBu city-grade service contour. Azimuth and elevation pattern data for the proposed antenna is provided in Exhibit C. A power density calculation appears as Exhibit D.

Since no change in the overall height or location of the KCWX-DT tower is proposed herein, the Federal Aviation Administration has not been notified of this application. The FCC issued Antenna Structure Registration Number 1209887 to this tower.

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**AUSTIN NODE**

This facility will be nearly identical to the Austin Channel 8 digital replacement translator that is currently licensed to KCWX-DT under LMS- 0000114392. It is proposed to utilize the existing Scala/Kathrein directional antenna, which is mounted at the 152-meter level of an existing 284.4-meter communications/broadcast tower. The proposed effective radiated power for the facility is 3.0 kW in the horizontal plane. Below are operating parameters for the Austin DTS node operation on Channel 8:

Site coordinates: 30-19-21.0 N, 97-48-04.0 W (NAD83)

Site elevation: 237.8 meters AMSL

Overall tower height: 284.4 meters AMSL

FCC Antenna Structure Registration Number: 1063584

Antenna height above ground: 152.0 meters

Antenna height above mean sea level: 389.8 meters

Antenna height above average terrain: 166.2 meters

Antenna make/model: Kathrein 2X2-K5234517

FCC Antenna ID Number: 1006840

Antenna orientation: 5 degrees

Line of symmetry: 235 degrees true

Electrical beam tilt: 0 degrees

Effective radiated power: 3.0 kW

Exhibit E is a map upon which we have plotted the predicted service contours of the Austin DTS node. Elevation and azimuth pattern data for the licensed Scala/Kathrein antenna appear in Exhibit F. The only change from the licensed DRT facility will be an additional rotation

**EXHIBIT A**

of the antenna's azimuth pattern 5 degrees clockwise. A detailed power density calculation is provided in Exhibit G.

Since no change in the overall height or location of the existing communications tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1063584 to this tower.

**SAN ANTONIO NODE**

This facility will be similar to the San Antonio Channel 8 digital replacement translator that is currently licensed to KCWX-DT under LMS-0000144677. It is proposed to install a new Scala/Kathrein directional antenna at the 108-meter level of an existing 152.4-meter communications/broadcast tower. The proposed effective radiated power for the facility will continue to be 3.0 kW in the horizontal plane. Below are operating parameters for the San Antonio DTS node operation on Channel 8:

Site coordinates: 29-14-40.0 N, 98-44-28.0 W (NAD83)

Site elevation: 216.7 meters AMSL

Overall tower height: 152.4 meters AMSL

FCC Antenna Structure Registration Number: 1041476

Antenna height above ground: 108.0 meters

Antenna height above mean sea level: 324.7 meters

Antenna height above average terrain: 117.1 meters

Antenna make/model: Kathrein 2X2-K5234517

FCC Antenna ID Number: 1006840

**EXHIBIT A**

*(San Antonio Node Specifications, Continued)*

Antenna orientation: 145 degrees

Line of symmetry: 15 degrees true

Electrical beam tilt: 0 degrees

Effective radiated power: 3.0 kW

Exhibit H is a map upon which we have plotted the predicted service contours of the San Antonio DTS node. Elevation and azimuth pattern data for the proposed Scala/Kathrein antenna appear in Exhibit I. A detailed power density calculation is provided in Exhibit J.

Since no change in the overall height or location of the existing communications tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1041476 to this tower.

**D'HANIS NODE**

It is proposed to install a Scala/Kathrein directional antenna at the 93-meter level of an existing 112.8-meter communications/broadcast tower. The proposed effective radiated power for the facility is 1.0 kW in the horizontal plane. Below are operating parameters for the D'Hanis DTS node operation on Channel 8:

Site coordinates: 29-18-46.1 N, 99-21-37.4 W (NAD83)

Site elevation: 306.9 meters AMSL

Overall tower height: 112.8 meters AMSL

FCC Antenna Structure Registration Number: 1233244

Antenna height above ground: 93.0 meters

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*(D'Hanis Node Specifications, Continued)*

Antenna height above mean sea level: 400.0 meters

Antenna height above average terrain: 111.8 meters

Antenna make/model: Scala/Kathrein CL-713

FCC Antenna ID Number: 20786

Antenna orientation: 340 degrees true

Electrical beam tilt: 0 degrees

Effective radiated power: 1.0 kW

Exhibit K is a map upon which we have plotted the predicted service contours of the D'Hanis DTS node. Elevation and azimuth pattern data for the proposed Scala/Kathrein antenna appear in Exhibit L. A detailed power density calculation is provided in Exhibit M.

Since no change in the overall height or location of the existing communications tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1233244 to this tower.

**MOUNTAIN HOME NODE**

It is proposed to install a Scala/Kathrein directional antenna at the 136-meter level of an existing 150.3-meter communications/broadcast tower. The proposed effective radiated power for the facility is 7.0 kW in the horizontal plane. Below are operating parameters for the Mountain Home DTS node operation on Channel 8:

Site coordinates: 30-15-12.6 N, 99-28-01.3 W (NAD83)

Site elevation: 684.6 meters AMSL

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*(Mountain Home Node Specifications, Continued)*

Overall tower height: 150.3 meters AMSL

FCC Antenna Structure Registration Number: 1239380

Antenna height above ground: 136.0 meters

Antenna height above mean sea level: 820.0 meters

Antenna height above average terrain: 165.0 meters

Antenna make/model: Kathrein 2X2-K5234517

FCC Antenna ID Number: 1006840

Antenna orientation: 225 degrees

Line of symmetry: 95 degrees true

Electrical beam tilt: 0 degrees

Effective radiated power: 7.0 kW

Exhibit N is a map upon which we have plotted the predicted service contours of the Mountain Home DTS node. Elevation and azimuth pattern data for the proposed Scala/Kathrein antenna appear in Exhibit O. A detailed power density calculation is provided in Exhibit P.

Since no change in the overall height or location of the existing communications tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1239380 to this tower.

**SAN SABA NODE**

It is proposed to install a Scala/Kathrein directional antenna at the 100-meter level of an existing 141.1-meter communications/broadcast tower. The proposed effective radiated

EXHIBIT A

power for the facility is 3.0 kW in the horizontal plane. Below are operating parameters for the San Saba DTS node operation on Channel 8:

Site coordinates: 30-57-56.1 N, 98-56-57.3 W (NAD83)

Site elevation: 574.5 meters AMSL

Overall tower height: 141.1 meters AMSL

FCC Antenna Structure Registration Number: 1217044

Antenna height above ground: 100.0 meters

Antenna height above mean sea level: 674.5 meters

Antenna height above average terrain: 177.9 meters

Antenna make/model: Kathrein 2X2-K5234517

FCC Antenna ID Number: 1006840

Antenna orientation: 290 degrees

Line of symmetry: 160 degrees true

Electrical beam tilt: 0 degrees

Effective radiated power: 3.0 kW

Exhibit Q is a map upon which we have plotted the predicted service contours of the San Saba DTS node. Elevation and azimuth pattern data for the proposed Scala/Kathrein antenna appear in Exhibit R. A detailed power density calculation is provided in Exhibit S.

Since no change in the overall height or location of the existing communications tower is proposed herein, the Federal Aviation Administration has not been notified of this application. In addition, the Federal Communications Commission issued Antenna Structure Registration Number 1217044 to this tower.

**PROPOSAL MEETS THE REQUIREMENTS OF THE FCC'S DTS RULES**

It is believed that the newly proposed KCWX-DT Channel 8 facility meets all of the requirements of Section 73.626(f) of the Commission's DTS Rules based on the following analysis.

Exhibit T is a map on which we have plotted the combined 36 dBu coverage contours of all nodes in the DTS facility. As shown, each node's contour overlaps the contour of another facility in the system. In addition, on this map, we have plotted the 43 dBu city-grade coverage contour resulting from the Fredericksburg (reference facility) DTS node. Clearly, the community of Fredericksburg lies within this contour. [It is also important to note that the Mountain Home node also places a 43 dBu contour over Fredericksburg. See Exhibit N.]

Exhibit U is the same map, but we have added the 28 dBu repack allotment contour of KCWX-DT on Channel 5. From this map one can see that the majority of the Channel 5 contour is covered by the Channel 8 DTS facility. The area of the Channel 5 contour not served by the Channel 8 DTS facility is discussed in the appendix.

In Exhibit V, we have plotted the transmitter sites of all six DTS nodes in relation to an arc originating from the reference facility's transmitter site and defined by either the FCC's Table of distances or the coverage area of the largest station in the San Antonio Designated Market Area (DMA), of which KCWX-DT is a part. This station happens to have the largest coverage area in the DMA, and the resultant arc has a radius of 123 kilometers. As shown, all of the DTS nodes have transmitter sites located within the Largest Station in the Market arc.

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The new DTS Rules recently adopted by the Commission state that the 36 dBu F(50,50) contour of a high-band VHF SFN node must be located within a 149-kilometer arc originating from the DTS reference site. We provide a map in Exhibit W that shows this to be the case for all of the proposed Channel 8 KCWX-DT DTS nodes.

The newly adopted Rules also require that the 23.8 dBu F(50,10) contours of the DTS nodes be located within a 208-kilometer arc originating from the reference facility's transmitter site or the interference F(50,10) contour of the reference facility. In this case it is the 28 dBu F(50,10) contour of the KCWX-DT repack allotment contour on Channel 5. As shown in Exhibit X, all of the DTS 23.8 dBu F(50,10) contours are located within one or both of the required limits.

Finally, in Exhibit Y, we provide the summary results from a TVStudy interference study, which was conducted using a cell size of 2.0 kilometers and increment spacing of 1.0 kilometer. It concludes that the proposed KCWX-DT DTS facility on Channel 8 meets the Commission's de minimis interference criteria to all co-channel and adjacent-channel full-power and Class A facilities.

I declare under penalty of perjury that the foregoing statements and the attached exhibits are true and correct to the best of my knowledge and belief.

A handwritten signature in blue ink, appearing to read "K. T. Fisher", is written over a horizontal line.

September 7, 2021

KEVIN T. FISHER

**CONTOUR POPULATION**

**2018 U.S. CENSUS ESTIMATE**

**CITY-GRADE (43 DBU) : 3,371,782 (1,299,783 HH)**

**NOISE-LIMITED (36 DBU) : 4,206,676 (1,609,769 HH)**

**Smith and Fisher, LLC**

**NOISE-LIMITED  
FCC CONTOUR**

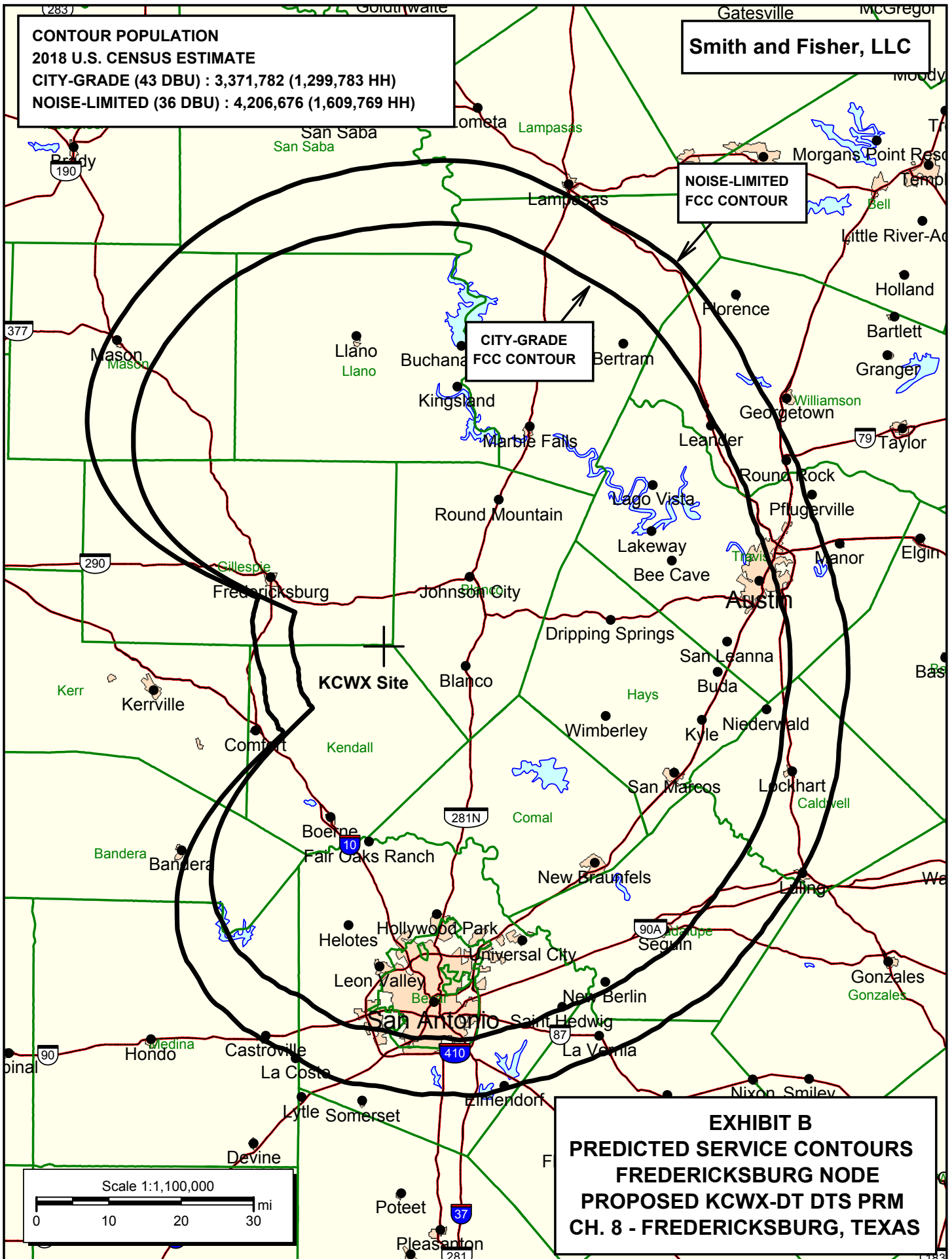
**CITY-GRADE  
FCC CONTOUR**

**KCWX Site**

**EXHIBIT B**  
**PREDICTED SERVICE CONTOURS**  
**FREDERICKSBURG NODE**  
**PROPOSED KCWX-DT DTS PRM**  
**CH. 8 - FREDERICKSBURG, TEXAS**

Scale 1:1,100,000

0 10 20 30 mi



## Horizontal Polarization AZIMUTH PATTERN

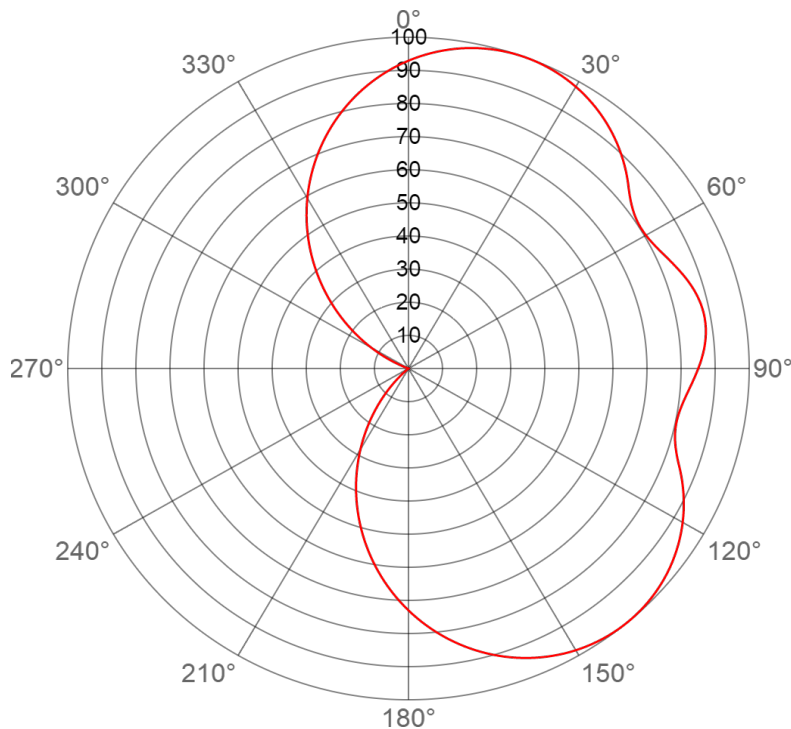


Exhibit No. **C**  
Date **19 Mar 2019**  
Call Letters **KCWX-DT**  
Channel **8**  
Antenna Type **THB-TH-4/8-1**  
Location **FREDERICKSBURG, TX**  
Customer

Gain **2.0 (3.01 dB)**  
Calculated  
Drawing # **THB-C2**

Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value	Deg	Value
0	0.929	36	0.954	72	0.861	108	0.827	144	0.997	180	0.730	216	0.187	252	0.000	288	0.000	324	0.504
1	0.936	37	0.949	73	0.866	109	0.835	145	0.996	181	0.717	217	0.172	253	0.000	289	0.000	325	0.519
2	0.943	38	0.943	74	0.870	110	0.844	146	0.994	182	0.705	218	0.157	254	0.000	290	0.000	326	0.534
3	0.949	39	0.936	75	0.874	111	0.854	147	0.991	183	0.691	219	0.142	255	0.000	291	0.008	327	0.549
4	0.954	40	0.929	76	0.877	112	0.863	148	0.989	184	0.678	220	0.127	256	0.000	292	0.019	328	0.564
5	0.960	41	0.922	77	0.879	113	0.873	149	0.986	185	0.664	221	0.112	257	0.000	293	0.031	329	0.579
6	0.965	42	0.915	78	0.881	114	0.882	150	0.982	186	0.651	222	0.098	258	0.000	294	0.043	330	0.594
7	0.970	43	0.907	79	0.882	115	0.890	151	0.978	187	0.637	223	0.083	259	0.000	295	0.056	331	0.608
8	0.974	44	0.899	80	0.883	116	0.899	152	0.974	188	0.622	224	0.070	260	0.000	296	0.070	332	0.622
9	0.978	45	0.890	81	0.882	117	0.907	153	0.970	189	0.608	225	0.056	261	0.000	297	0.083	333	0.637
10	0.982	46	0.882	82	0.881	118	0.915	154	0.965	190	0.594	226	0.043	262	0.000	298	0.098	334	0.651
11	0.986	47	0.873	83	0.879	119	0.922	155	0.960	191	0.579	227	0.031	263	0.000	299	0.112	335	0.664
12	0.989	48	0.863	84	0.877	120	0.929	156	0.954	192	0.564	228	0.019	264	0.000	300	0.127	336	0.678
13	0.991	49	0.854	85	0.874	121	0.936	157	0.949	193	0.549	229	0.008	265	0.000	301	0.142	337	0.691
14	0.994	50	0.844	86	0.870	122	0.943	158	0.943	194	0.534	230	0.000	266	0.000	302	0.157	338	0.705
15	0.996	51	0.835	87	0.866	123	0.949	159	0.936	195	0.519	231	0.000	267	0.000	303	0.172	339	0.717
16	0.997	52	0.827	88	0.861	124	0.954	160	0.929	196	0.504	232	0.000	268	0.000	304	0.187	340	0.730
17	0.998	53	0.820	89	0.856	125	0.960	161	0.922	197	0.488	233	0.000	269	0.000	305	0.203	341	0.743
18	0.999	54	0.814	90	0.850	126	0.965	162	0.915	198	0.473	234	0.000	270	0.000	306	0.219	342	0.755
19	1.000	55	0.810	91	0.845	127	0.970	163	0.907	199	0.457	235	0.000	271	0.000	307	0.234	343	0.767
20	1.000	56	0.806	92	0.839	128	0.974	164	0.899	200	0.441	236	0.000	272	0.000	308	0.250	344	0.779
21	1.000	57	0.804	93	0.834	129	0.978	165	0.890	201	0.426	237	0.000	273	0.000	309	0.266	345	0.790
22	0.999	58	0.803	94	0.828	130	0.982	166	0.882	202	0.410	238	0.000	274	0.000	310	0.282	346	0.802
23	0.998	59	0.803	95	0.823	131	0.986	167	0.873	203	0.394	239	0.000	275	0.000	311	0.298	347	0.813
24	0.997	60	0.804	96	0.818	132	0.989	168	0.863	204	0.378	240	0.000	276	0.000	312	0.314	348	0.823
25	0.996	61	0.807	97	0.813	133	0.991	169	0.854	205	0.362	241	0.000	277	0.000	313	0.330	349	0.834
26	0.994	62	0.810	98	0.810	134	0.994	170	0.844	206	0.346	242	0.000	278	0.000	314	0.346	350	0.844
27	0.991	63	0.813	99	0.807	135	0.996	171	0.834	207	0.330	243	0.000	279	0.000	315	0.362	351	0.854
28	0.989	64	0.818	100	0.804	136	0.997	172	0.823	208	0.314	244	0.000	280	0.000	316	0.378	352	0.863
29	0.986	65	0.823	101	0.803	137	0.998	173	0.813	209	0.298	245	0.000	281	0.000	317	0.394	353	0.873
30	0.982	66	0.828	102	0.803	138	0.999	174	0.802	210	0.282	246	0.000	282	0.000	318	0.410	354	0.882
31	0.978	67	0.834	103	0.804	139	1.000	175	0.790	211	0.266	247	0.000	283	0.000	319	0.426	355	0.890
32	0.974	68	0.839	104	0.806	140	1.000	176	0.779	212	0.250	248	0.000	284	0.000	320	0.441	356	0.899
33	0.970	69	0.845	105	0.810	141	1.000	177	0.767	213	0.234	249	0.000	285	0.000	321	0.457	357	0.907
34	0.965	70	0.850	106	0.814	142	0.999	178	0.755	214	0.219	250	0.000	286	0.000	322	0.473	358	0.915
35	0.960	71	0.856	107	0.820	143	0.998	179	0.743	215	0.203	251	0.000	287	0.000	323	0.488	359	0.922

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## ELEVATION PATTERN

Exhibit No. **C**  
Date **19 Mar 2019**  
Call Letters **KCWX-DT**  
Channel **8**  
Antenna Type **THB-TH-4/8-1**  
Location **FREDERICKSBURG, TX**  
Customer

**Future fill is available!**

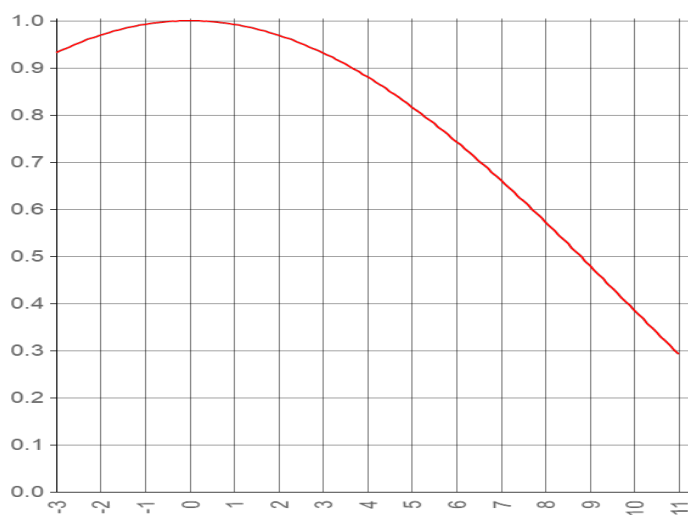
RMS Gain at Main Lobe **4.2 (6.23 dB)**

RMS Gain at Horizontal **4.2 (6.23 dB)**

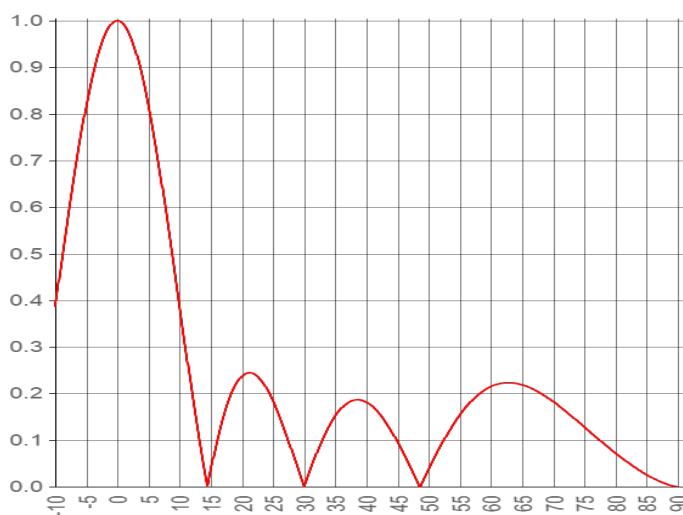
**Calculated**

Beam Tilt **0 Degrees**

Drawing # **04H042000**



Degrees below horizontal



Degrees below horizontal

Angle	Field	Angle	Field	Angle	Field	Angle	Field	Angle	Field
-10	0.386	10	0.386	30	0.000	50	0.038	70	0.183
-9	0.480	11	0.292	31	0.037	51	0.065	71	0.172
-8	0.573	12	0.201	32	0.072	52	0.090	72	0.162
-7	0.661	13	0.115	33	0.103	53	0.113	73	0.151
-6	0.743	14	0.035	34	0.130	54	0.135	74	0.139
-5	0.817	15	0.036	35	0.152	55	0.154	75	0.128
-4	0.881	16	0.098	36	0.169	56	0.171	76	0.116
-3	0.932	17	0.149	37	0.180	57	0.186	77	0.105
-2	0.969	18	0.190	38	0.186	58	0.198	78	0.094
-1	0.992	19	0.219	39	0.186	59	0.208	79	0.083
0	1.000	20	0.237	40	0.181	60	0.215	80	0.072
1	0.992	21	0.244	41	0.172	61	0.220	81	0.062
2	0.969	22	0.242	42	0.158	62	0.223	82	0.052
3	0.932	23	0.230	43	0.140	63	0.223	83	0.042
4	0.881	24	0.210	44	0.119	64	0.222	84	0.034
5	0.817	25	0.184	45	0.096	65	0.219	85	0.026
6	0.743	26	0.152	46	0.070	66	0.214	86	0.018
7	0.661	27	0.116	47	0.044	67	0.208	87	0.012
8	0.573	28	0.078	48	0.016	68	0.200	88	0.007
9	0.480	29	0.039	49	0.011	69	0.192	89	0.002

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POWER DENSITY CALCULATION

FREDERICKSBURG DTS NODE  
PROPOSED KCWX-DT DTS PRM  
CHANNEL 8 – FREDERICKSBURG, TEXAS

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Fredericksburg facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 17.0 kW, an antenna radiation center 336 meters above ground, and the specific elevation pattern of the proposed Dielectric antenna, maximum power density two meters above ground of  $0.00020 \text{ mW/cm}^2$  is calculated to occur 188 meters east of the base of the tower. Since this value is only 0.1 percent of the  $0.20 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with access to the public) surrounding a facility operating on Channel 8 (180-186 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.

**CONTOUR POPULATION**

**2018 U.S. CENSUS ESTIMATE**

**CITY-GRADE (43 DBU) : 1,890,216 (761,275 HH)**

**NOISE-LIMITED (36 DBU) : 2,161,996 (864,753 HH)**

**Smith and Fisher, LLC**

**NOISE-LIMITED  
FCC CONTOUR**

**CITY-GRADE  
FCC CONTOUR**

**Austin SFN**

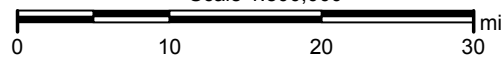
**Austin**

**EXHIBIT E**

**PREDICTED SERVICE CONTOURS  
AUSTIN NODE**

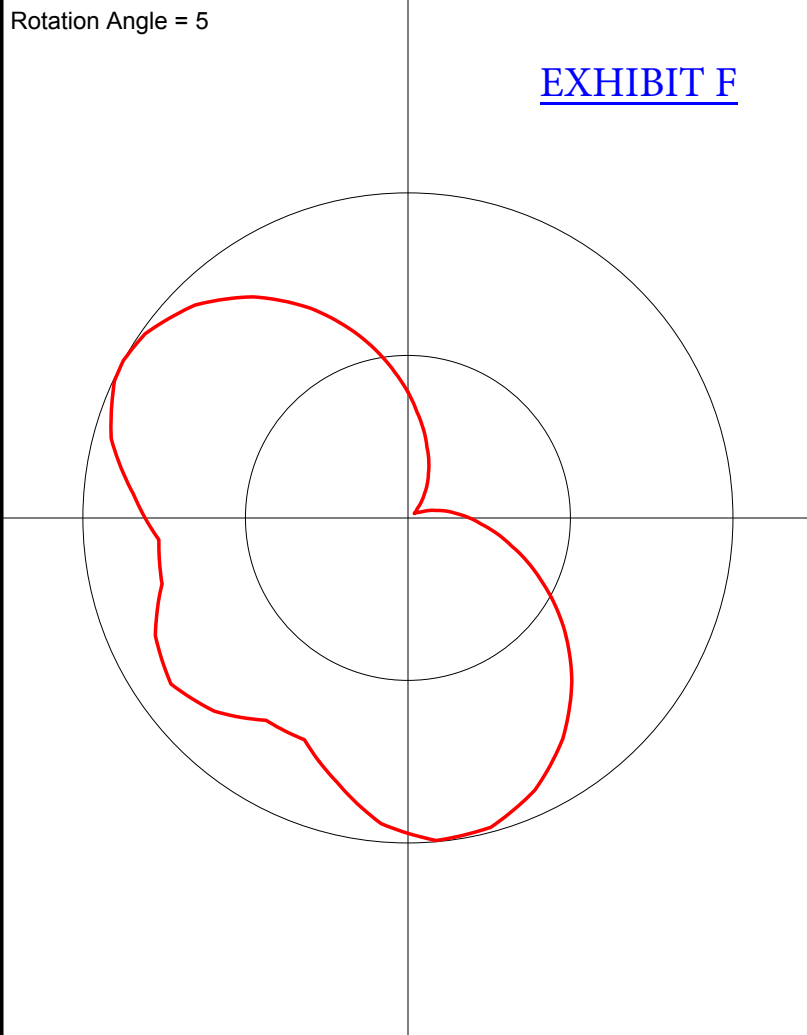
**PROPOSED KCWX-DT DTS PRM  
CH. 8 - FREDERICKSBURG, TEXAS**

Scale 1:800,000



Antenna Pattern

Pre-Rotation Antenna Pattern....



Azimuth (deg)	Relative Field
0.0	0.326
10.0	0.226
20.0	0.149
30.0	0.087
40.0	0.041
50.0	0.024
60.0	0.042
70.0	0.089
80.0	0.151
90.0	0.228
100.0	0.329
110.0	0.451
120.0	0.584
130.0	0.713
140.0	0.83
150.0	0.924
160.0	0.985
170.0	0.996
180.0	0.944
190.0	0.842
200.0	0.753
210.0	0.76
220.0	0.841
230.0	0.89
240.0	0.857
250.0	0.783
260.0	0.769
270.0	0.848
280.0	0.945
290.0	0.996
300.0	0.987
310.0	0.926
320.0	0.83
330.0	0.712
340.0	0.581
350.0	0.448

POWER DENSITY CALCULATION

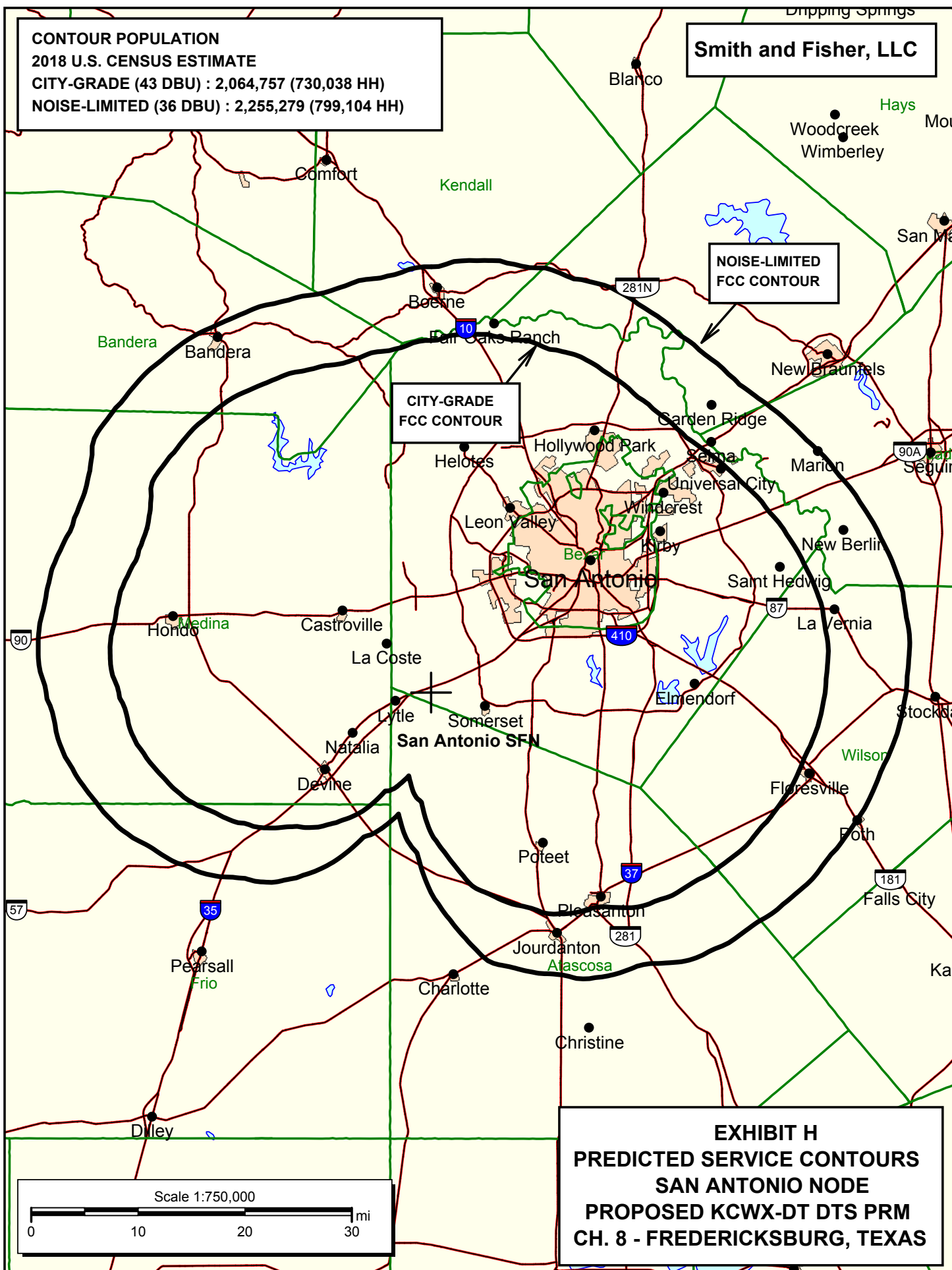
AUSTIN NODE  
PROPOSED KCWX-DT DTS PRM  
CHANNEL 8 – FREDERICKSBURG, TEXAS

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Austin facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 3.0 kW, an antenna radiation center 152 meters above ground, and assuming a vertical relative field value of 20 percent at the steeper elevation angles for the proposed antenna, maximum power density two meters above ground of  $0.00018 \text{ mW/cm}^2$  is calculated to occur near the base of the tower. Since this value is significantly less than 0.1 percent of the  $0.20 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 8 (180-186 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.

**CONTOUR POPULATION**  
**2018 U.S. CENSUS ESTIMATE**  
**CITY-GRADE (43 DBU) : 2,064,757 (730,038 HH)**  
**NOISE-LIMITED (36 DBU) : 2,255,279 (799,104 HH)**

**Smith and Fisher, LLC**



**NOISE-LIMITED  
FCC CONTOUR**

**CITY-GRADE  
FCC CONTOUR**

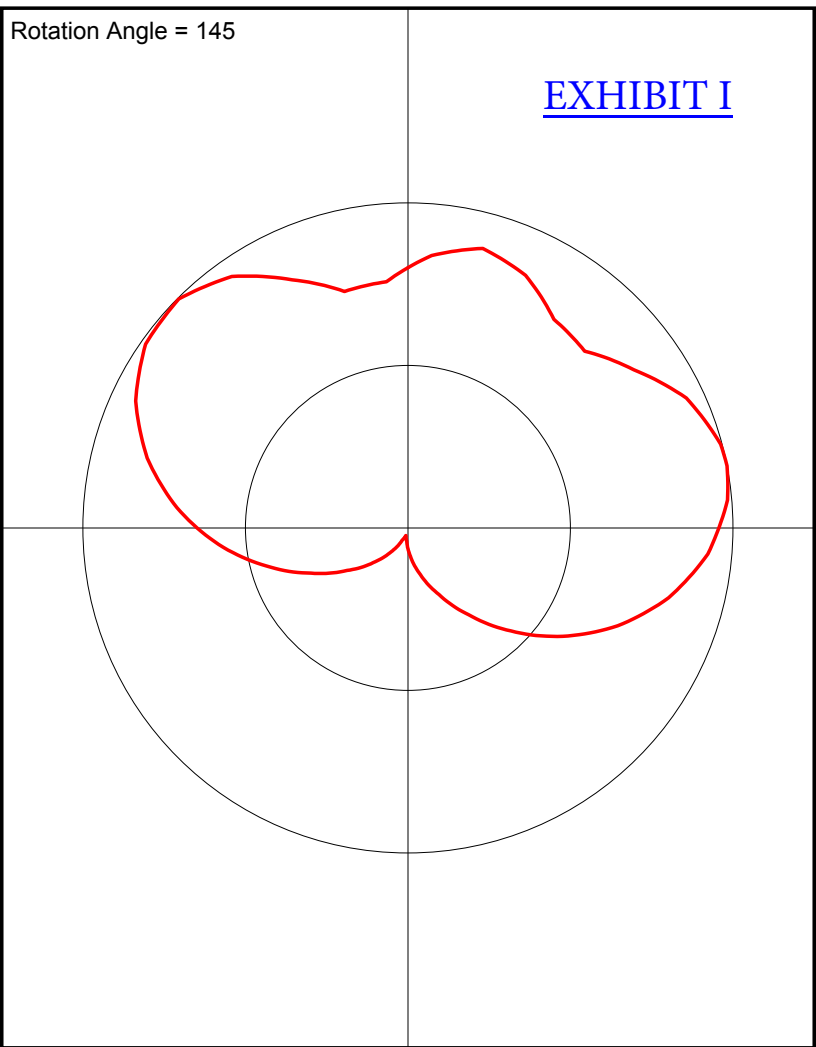
**EXHIBIT H**  
**PREDICTED SERVICE CONTOURS**  
**SAN ANTONIO NODE**  
**PROPOSED KCWX-DT DTS PRM**  
**CH. 8 - FREDERICKSBURG, TEXAS**

Antenna Pattern  
Pre-Rotation Antenna Pattern....

Rotation Angle = 145

EXHIBIT I

Azimuth (deg)	Relative Field
0.0	0.326
10.0	0.226
20.0	0.149
30.0	0.087
40.0	0.041
50.0	0.024
60.0	0.042
70.0	0.089
80.0	0.151
90.0	0.228
100.0	0.329
110.0	0.451
120.0	0.584
130.0	0.713
140.0	0.83
150.0	0.924
160.0	0.985
170.0	0.996
180.0	0.944
190.0	0.842
200.0	0.753
210.0	0.76
220.0	0.841
230.0	0.89
240.0	0.857
250.0	0.783
260.0	0.769
270.0	0.848
280.0	0.945
290.0	0.996
300.0	0.987
310.0	0.926
320.0	0.83
330.0	0.712
340.0	0.581
350.0	0.448



POWER DENSITY CALCULATION

SAN ANTONIO NODE  
PROPOSED KCWX-DT DTS PRM  
CHANNEL 8 – FREDERICKSBURG, TEXAS

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this San Antonio facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 3.0 kW, an antenna radiation center 108 meters above ground, and assuming a vertical relative field value of 20 percent at the steeper elevation angles for the proposed antenna, maximum power density two meters above ground of  $0.00036 \text{ mW/cm}^2$  is calculated to occur near the base of the tower. Since this is but 0.2 percent of the  $0.20 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 8 (180-186 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.

**CONTOUR POPULATION**  
**2018 U.S. CENSUS ESTIMATE**  
**CITY-GRADE (43 DBU) : 1,547 (1,085 HH)**  
**NOISE-LIMITED (36 DBU) : 3,554 (2,316 HH)**

**Smith and Fisher, LLC**

Real

Leakey

**NOISE-LIMITED  
FCC CONTOUR**

Bandera

Band

**CITY-GRADE  
FCC CONTOUR**

Uvalde

Sabinal

90

**D'Hanis SFN**

Hondo

Medina

Uvalde

Scale 1:400,000

0 3 6 9 mi

**EXHIBIT K**  
**PREDICTED SERVICE CONTOURS**  
**D'HANIS NODE**  
**PROPOSED KCWX-DT DTS PRM**  
**CH. 8 - FREDERICKSBURG, TEXAS**

### Pre-Rotation Antenna Pattern....

Azimuth (deg)	Relative Field
0.0	1.0
10.0	0.945
20.0	0.81
30.0	0.59
40.0	0.325
50.0	0.01
60.0	0.01
70.0	0.01
80.0	0.01
90.0	0.01
100.0	0.01
110.0	0.01
120.0	0.01
130.0	0.01
140.0	0.03
150.0	0.03
160.0	0.03
170.0	0.03
180.0	0.03
190.0	0.03
200.0	0.03
210.0	0.02
220.0	0.01
230.0	0.01
240.0	0.01
250.0	0.01
260.0	0.01
270.0	0.01
280.0	0.01
290.0	0.01
300.0	0.01
310.0	0.05
320.0	0.38
330.0	0.606
340.0	0.8
350.0	0.945

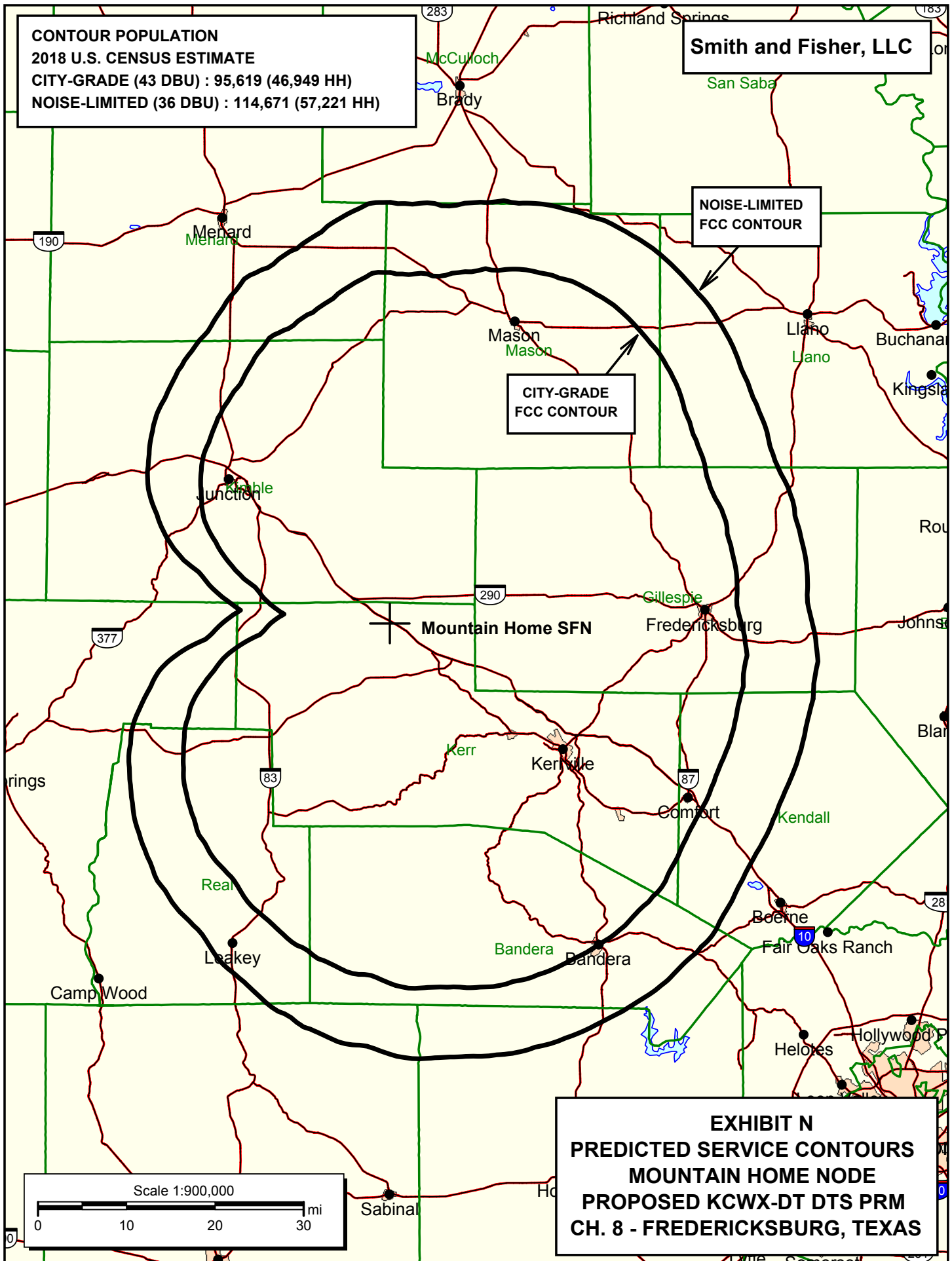
EXHIBIT L

POWER DENSITY CALCULATION

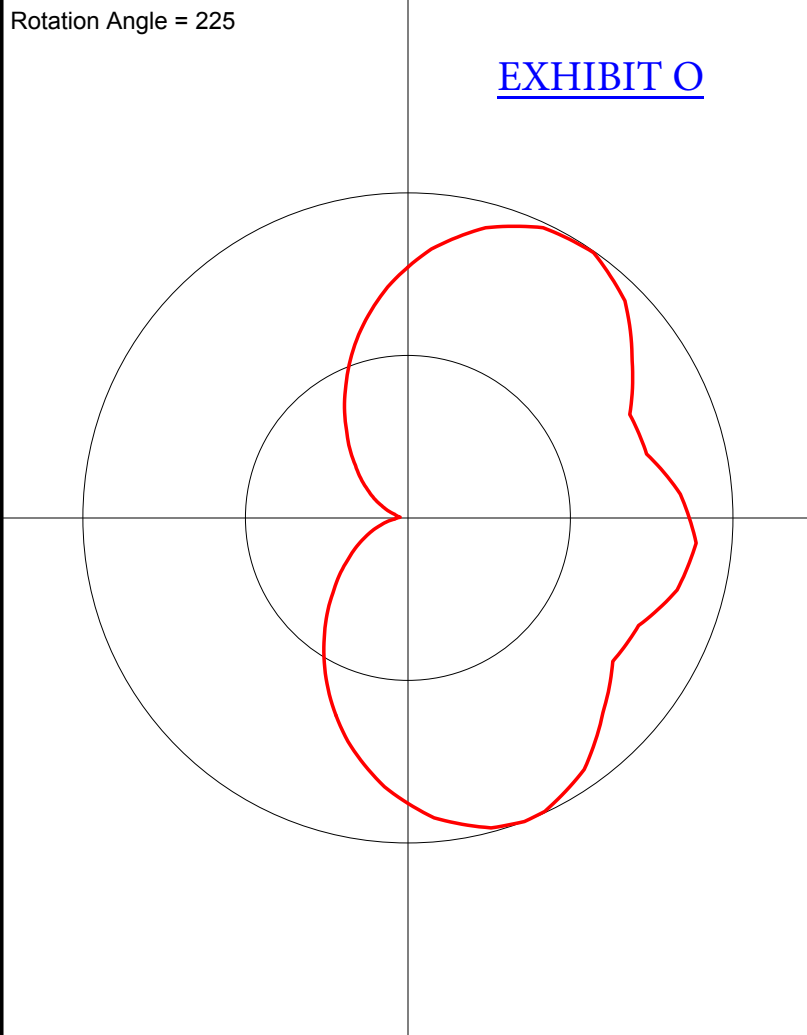
D'HANIS NODE  
PROPOSED KCWX-DT DTS PRM  
CHANNEL 8 – FREDERICKSBURG, TEXAS

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this D'Hanis facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 1.0 kW, an antenna radiation center 93 meters above ground, and assuming a vertical relative field value of 20 percent at the steeper elevation angles for the proposed antenna, maximum power density two meters above ground of  $0.00016 \text{ mW/cm}^2$  is calculated to occur near the base of the tower. Since this is less than 0.1 percent of the  $0.20 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 8 (180-186 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.



Antenna Pattern  
Pre-Rotation Antenna Pattern....



POWER DENSITY CALCULATION

MOUNTAIN HOME NODE  
PROPOSED KCWX-DT DTS PRM  
CHANNEL 8 – FREDERICKSBURG, TEXAS

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this Mountain Home facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 7.0 kW, an antenna radiation center 136 meters above ground, and assuming a vertical relative field value of 20 percent at the steeper elevation angles for the proposed antenna, maximum power density two meters above ground of  $0.00052 \text{ mW/cm}^2$  is calculated to occur near the base of the tower. Since this is but 0.3 percent of the  $0.20 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 8 (180-186 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.

**CONTOUR POPULATION**  
**2018 U.S. CENSUS ESTIMATE**  
**CITY-GRADE (43 DBU) : 33,455 (19,842 HH)**  
**NOISE-LIMITED (36 DBU) : 66,659 (39,382 HH)**

**Smith and Fisher, LLC**

**NOISE-LIMITED  
FCC CONTOUR**

**CITY-GRADE  
FCC CONTOUR**

**San Saba SFN**

**EXHIBIT Q**  
**PREDICTED SERVICE CONTOURS**  
**SAN SABA NODE**  
**PROPOSED KCWX-DT DTS PRM**  
**CH. 8 - FREDERICKSBURG, TEXAS**

Scale 1:800,000

0 10 20 30 mi

# Antenna Pattern

Pre-Rotation Antenna Pattern....

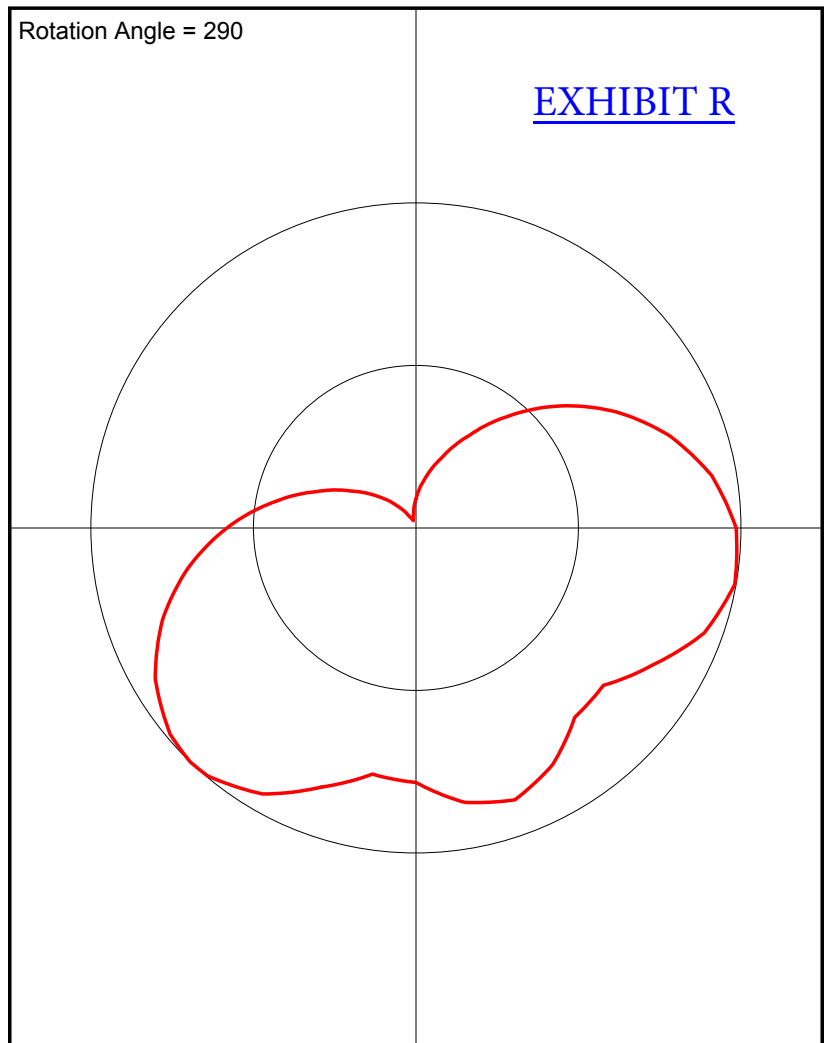
Azimuth (deg)

Relative Field

0.0	0.326
10.0	0.226
20.0	0.149
30.0	0.087
40.0	0.041
50.0	0.024
60.0	0.042
70.0	0.089
80.0	0.151
90.0	0.228
100.0	0.329
110.0	0.451
120.0	0.584
130.0	0.713
140.0	0.83
150.0	0.924
160.0	0.985
170.0	0.996
180.0	0.944
190.0	0.842
200.0	0.753
210.0	0.76
220.0	0.841
230.0	0.89
240.0	0.857
250.0	0.783
260.0	0.769
270.0	0.848
280.0	0.945
290.0	0.996
300.0	0.987
310.0	0.926
320.0	0.83
330.0	0.712
340.0	0.581
350.0	0.448

Rotation Angle = 290

EXHIBIT R

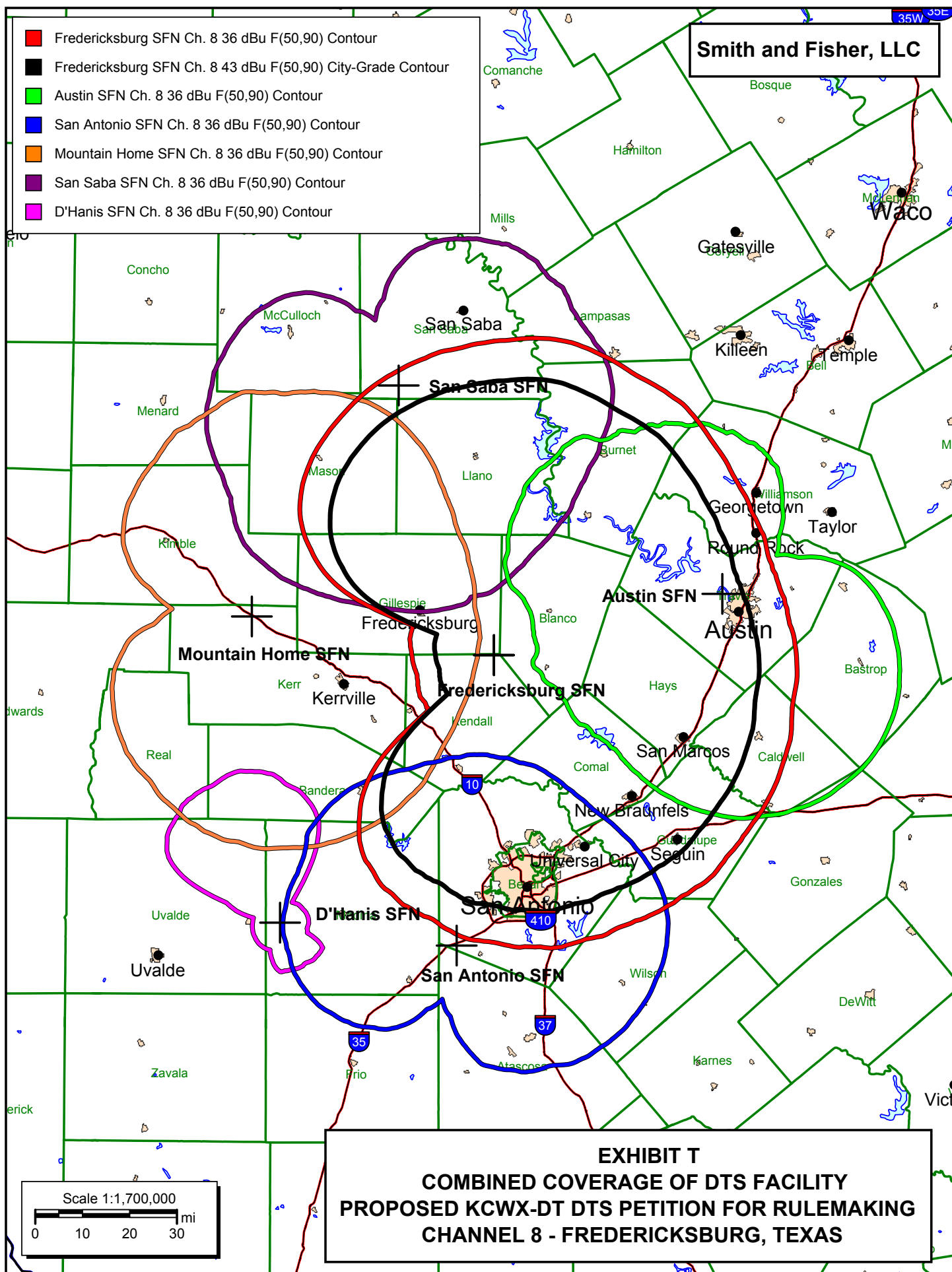


POWER DENSITY CALCULATION

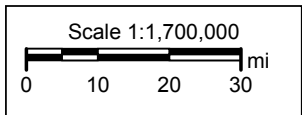
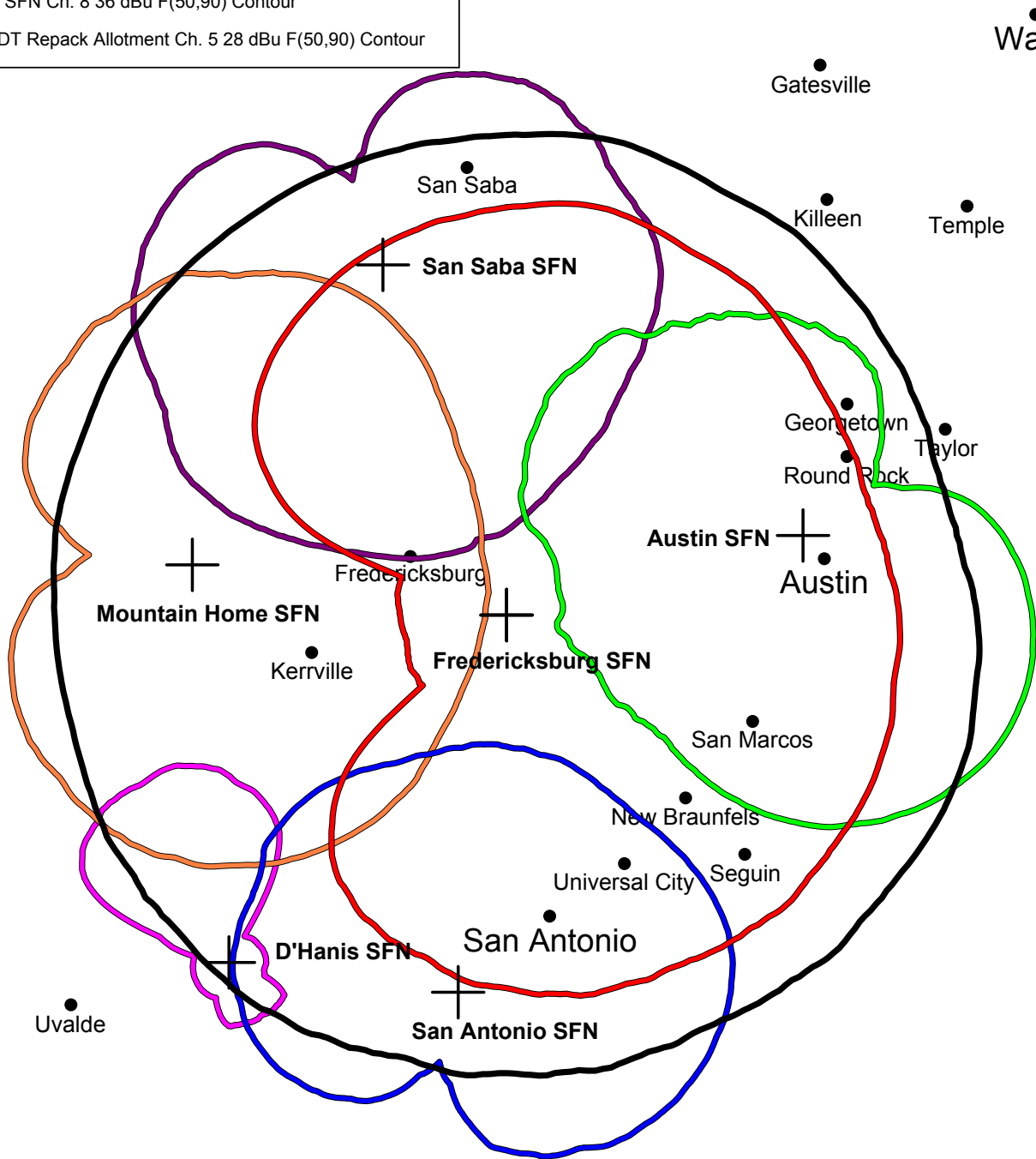
SAN SABA NODE  
PROPOSED KCWX-DT DTS PRM  
CHANNEL 8 – FREDERICKSBURG, TEXAS

Since the FCC considers the possible biological effects of RF transmissions in its environmental determinations, we have studied the matter with respect to this San Saba facility. Employing the methods set forth in *OET Bulletin No. 65* and considering a main-lobe effective radiated power of 3.0 kW, an antenna radiation center 100 meters above ground, and assuming a vertical relative field value of 20 percent at the steeper elevation angles for the proposed antenna, maximum power density two meters above ground of  $0.00042 \text{ mW/cm}^2$  is calculated to occur near the base of the tower. Since this is but 0.2 percent of the  $0.20 \text{ mW/cm}^2$  reference for uncontrolled environments (areas with public access) surrounding a facility operating on Channel 8 (180-186 MHz), a grant of this proposal may be considered a minor environmental action with respect to public exposure to non-ionizing electromagnetic radiation.

Further, the station owner will take whatever precautionary steps are necessary, such as reducing power or leaving the air temporarily, to ensure that workers operating in the vicinity of the antenna are not exposed to excessive non-ionizing radiation.



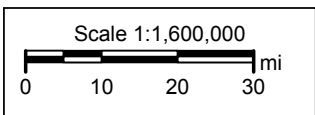
- Fredericksburg SFN Ch. 8 36 dBu F(50,90) Contour
- Austin SFN Ch. 8 36 dBu F(50,90) Contour
- San Antonio SFN Ch. 8 36 dBu F(50,90) Contour
- Mountain Home SFN Ch. 8 36 dBu F(50,90) Contour
- San Saba SFN Ch. 8 36 dBu F(50,90) Contour
- D'Hanis SFN Ch. 8 36 dBu F(50,90) Contour
- KCWX-DT Repack Allotment Ch. 5 28 dBu F(50,90) Contour



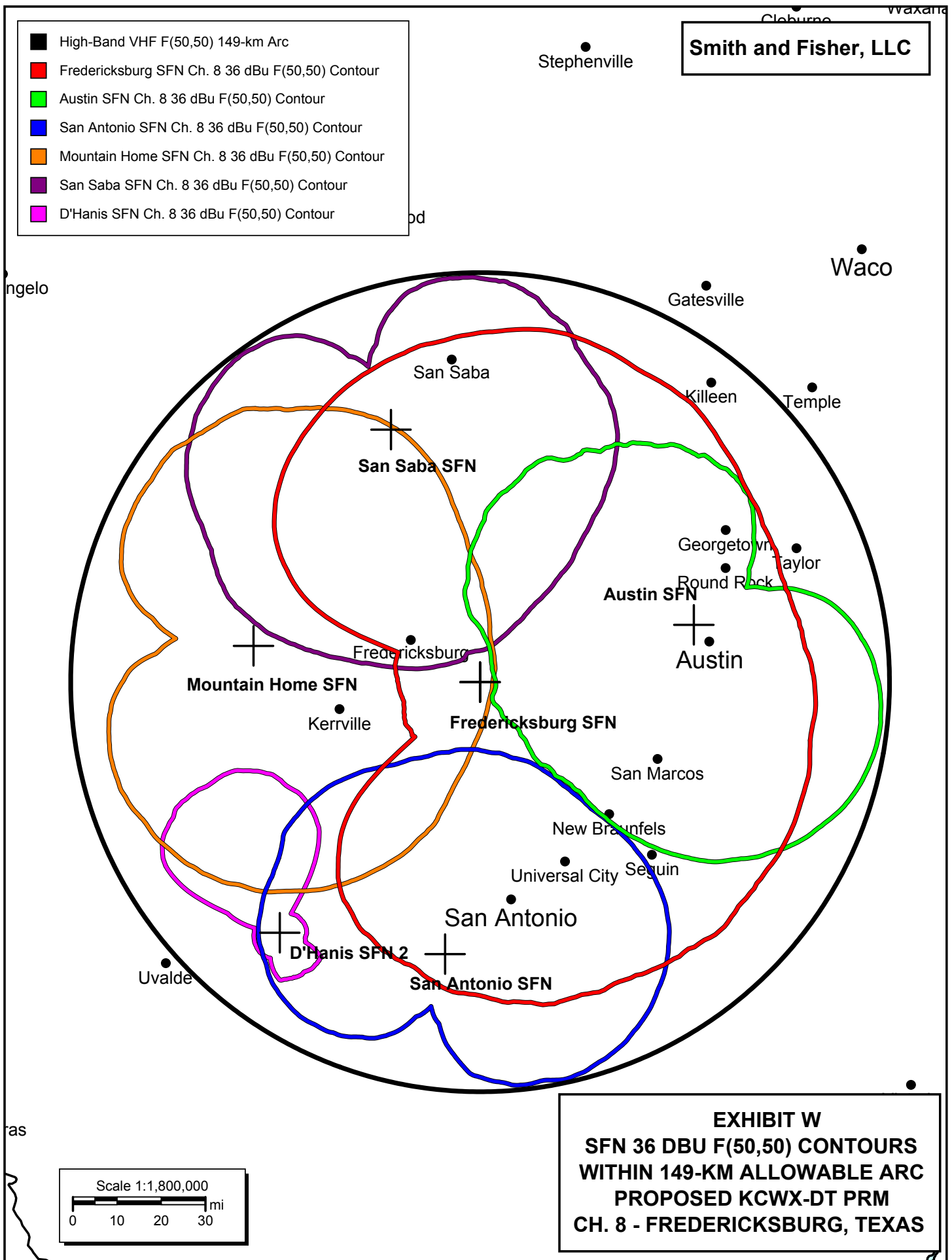
**EXHIBIT U**  
**COMBINED 36 DBU CONTOUR COVERAGE OF DTS FACILITY**  
**IN COMPARISON TO KCWX-DT CH. 5 REPACK COVERAGE**  
**PROPOSED KCWX-DT DTS PETITION FOR RULEMAKING**  
**CHANNEL 8 - FREDERICKSBURG, TEXAS**

**Smith and Fisher, LLC**

- Largest Station in Market Coverage Arc (123 km)
- Fredericksburg SFN Ch. 8 36 dBu F(50,90) Contour
- Austin SFN Ch. 8 36 dBu F(50,90) Contour
- San Antonio SFN Ch. 8 36 dBu F(50,90) Contour
- Mountain Home SFN Ch. 8 36 dBu F(50,90) Contour
- San Saba SFN Ch. 8 36 dBu F(50,90) Contour
- D'Hanis SFN Ch. 8 36 dBu F(50,90) Contour



**EXHIBIT V**  
**LOCATION OF SFN TRANSMITTER SITES**  
**WITHIN 123-KM ALLOWABLE ARC**  
**PROPOSED KCWX-DT PRM**  
**CHANNEL 8 - FREDERICKSBURG, TEXAS**





TVSTUDY INTERFERENCE ANALYSIS RESULTS  
PROPOSED KCWX-DT DTS PETITION FOR RULEMAKING  
CHANNEL 8 – FREDERICKSBURG, TEXAS  
[AMENDMENT TO LMS-0000139110]

Study created: 2021.05.21 15:55:23

Study build station data: LMS TV 2021-05-07  
Proposal: KCWX D8 DD APP FREDERICKSBURG, TX  
File number: BLANK0000139110  
Facility ID: 24316  
Station data: User record  
Record ID: 1032  
Country: U.S.  
Zone: II  
Ref. lat.: 30 08 13.70 N  
Ref. long.: 98 36 36.10 W  
# DTS sites: 6

Stations potentially affected by proposal:

IX	Call	Chan	Svc	Status	City, State	File Number	Distance
Yes	KTBC	D7	DT	APP	AUSTIN, TX	BLANK0000035707	80.8 km
Yes	KTBC	D7	DT	LIC	AUSTIN, TX	BLANK0000123466	80.8
Yes	KIII	D8	DT	LIC	CORPUS CHRISTI, TX	BLCDT20060710ACO	292.4
Yes	WFAA	D8	DT	LIC	DALLAS, TX	BLANK0000116834	313.1
Yes	KUHT	D8	DT	LIC	HOUSTON, TX	BLANK0000129908	305.3
Yes	KGNS-TV	D8	DT	LIC	LAREDO, TX	BLCDT20090617ADS	292.5
Yes	KLRN	D9	DT	LIC	SAN ANTONIO, TX	BLEDT20120516AAX	93.3
Yes	KCEN-TV	D9	DT	LIC	TEMPLE, TX	BLCDT20021010AAB	183.3

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: D8  
Latitude: 30 57 56.10 N (NAD83)  
Longitude: 98 56 57.30 W

Height AMSL: 674.5 m

HAAT: 0.0 m

Peak ERP: 3.00 kW

Antenna: San Saba Pattern 0.0 deg

Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.024 kW	184.7 m	40.5 km
45.0	0.805	149.5	62.4
90.0	2.91	152.6	72.9
135.0	1.71	196.9	72.7
180.0	1.84	243.7	76.5
225.0	2.99	170.3	75.1
270.0	1.01	146.3	63.7
315.0	0.042	182.8	44.6

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m    Computed HAAT: 178 m

Record parameters as studied, DTS site # 2:

Channel: D8

Latitude: 29 14 40.00 N (NAD83)

Longitude: 98 44 28.00 W

Height AMSL: 324.7 m

HAAT: 0.0 m

Peak ERP: 3.00 kW

Antenna: San Antonio Pattern 0.0 deg

Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	1.92 kW	116.1 m	64.1 km
45.0	1.77	130.9	65.6
90.0	2.74	146.6	71.5
135.0	0.602	118.8	56.4
180.0	0.012	125.5	30.2
225.0	0.068	104.6	39.5
270.0	1.26	96.4	58.0
315.0	2.98	98.1	64.2

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m    Computed HAAT: 117 m

Record parameters as studied, DTS site # 3:

Channel: D8

Latitude: 30 15 12.60 N (NAD83)

Longitude: 99 28 1.20 W

Height AMSL: 820.0 m

HAAT: 0.0 m

Peak ERP: 7.00 kW

Antenna: Mountain Home Pattern 0.0 deg

Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	4.17 kW	158.9 m	76.6 km
45.0	6.24	184.0	81.8
90.0	5.25	146.5	76.9
135.0	5.03	202.9	81.7
180.0	5.40	156.1	78.3
225.0	0.744	146.6	61.5
270.0	0.007	166.4	30.4
315.0	0.364	158.3	57.9

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m    Computed HAAT: 165 m

Record parameters as studied, DTS site # 4:

Channel: D8

Latitude: 30 19 21.00 N (NAD83)

Longitude: 97 48 4.00 W

Height AMSL: 389.8 m

HAAT: 0.0 m

Peak ERP: 3.00 kW

Antenna: Austin Pattern (Licensed) (ID 1006840) 5.0 deg

Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.449 kW	129.4 m	55.7 km
45.0	0.005	157.8	27.6
90.0	0.108	198.6	52.3
135.0	1.53	236.6	74.6

180.0	2.82	183.9	75.7
225.0	2.12	114.2	64.5
270.0	1.96	146.5	68.7
315.0	2.57	162.7	73.1

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m Computed HAAT: 166 m

Record parameters as studied, DTS site # 5:

Channel: D8

Latitude: 30 8 13.70 N (NAD83)

Longitude: 98 36 36.10 W

Height AMSL: 915.0 m

HAAT: 412.0 m

Peak ERP: 28.5 kW

Antenna: Dielectric-THB-TH-4/8-1 (ID 1007959) 0.0 deg

Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	24.6 kW	454.3 m	111.8 km
45.0	22.4	432.0	109.0
90.0	20.6	425.2	107.7
135.0	28.0	426.0	110.6
180.0	15.2	385.5	102.0
225.0	0.130	381.0	64.8
270.0	0.002	360.2	31.3
315.0	3.72	429.2	93.6

Record parameters as studied, DTS site # 6:

Channel: D8

Latitude: 29 18 46.10 N (NAD83)

Longitude: 99 21 37.40 W

Height AMSL: 400.0 m

HAAT: 0.0 m

Peak ERP: 1.00 kW

Antenna: D'Hanis Pattern 0.0 deg

Elev Pattn: Generic

36.0 dBu contour:

Azimuth	ERP	HAAT	Distance
0.0 deg	0.656 kW	72.2 m	48.8 km

45.0	0.000	101.9	8.8
90.0	0.000	125.4	9.8
135.0	0.000	130.5	17.0
180.0	0.000	126.1	16.7
225.0	0.000	136.2	10.1
270.0	0.000	112.9	9.3
315.0	0.494	89.1	50.3

Database HAAT does not agree with computed HAAT

Database HAAT: 0 m    Computed HAAT: 112 m

\*\*DTS proposal has coverage outside reference facility and distance limit

Distance to Canadian border: 1837.8 km

\*\*Proposal is within coordination distance of Mexican border

Distance to Mexican border: 127.3 km

Conditions at FCC monitoring station: Kingsville TX

DTS site # 1    Bearing: 165.0 degrees    Distance: 405.1 km

DTS site # 2    Bearing: 157.1 degrees    Distance: 217.2 km

DTS site # 3    Bearing: 153.4 degrees    Distance: 348.5 km

DTS site # 4    Bearing: 181.5 degrees    Distance: 320.3 km

DTS site # 5    Bearing: 166.5 degrees    Distance: 307.8 km

DTS site # 6    Bearing: 144.9 degrees    Distance: 253.2 km

Proposal is not within the West Virginia quiet zone area

Conditions at Table Mountain receiving zone:

DTS site # 1    Bearing: 332.6 degrees    Distance: 1164.1 km

DTS site # 2    Bearing: 335.7 degrees    Distance: 1345.1 km

DTS site # 3    Bearing: 336.1 degrees    Distance: 1214.1 km

DTS site # 4    Bearing: 330.3 degrees    Distance: 1279.4 km

DTS site # 5    Bearing: 333.4 degrees    Distance: 1260.9 km

DTS site # 6    Bearing: 337.6 degrees    Distance: 1314.3 km

Study cell size: 2.00 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%

No IX check failures found.