

**Technical Exhibit FCC Form 349  
Gary L. Moss  
Minor Modification K283CD  
Facility ID# 156271  
.25 kW Horizontal and Vertical  
Waco, TX**

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**Technical Exhibit FCC Form 349**  
**Gary L. Moss**  
**Minor Modification K283CD**  
**Facility ID# 156271**  
**.25 kW Horizontal and Vertical**  
**Waco, TX**

**Purpose Of Application**

Gary L. Moss, ("Moss") the proposed assignee of K283CD, proposes through this instant application to modify and relocate K283CD. The proposed site utilizes an existing tower at N31°32'15" W97°05'32" (NAD27) at .25 kW horizontal and vertical at a height above average terrain of 87.3 m. The HAAT was calculated using the Computer program V-Soft Probe 4 using 12 radials in compliance with the methodology of 47CFR 73.313. NED 03 second terrain data was used for all contour calculations. The antenna used for the instant proposed facility is a 3 bay, double vee EPA type 2 half wave antenna, mounted 110 meters above ground level. The proposed facility has over 50% 60 dBu 50-50 contour overlap with the construction permit facility 60 dBu 50-50, which allows Moss to file this as a minor change. Moss proposes to use this translator with KRMX, Marlin, TX FID 35581. See the following pages for a demonstration with the proposed facility 60 dBu contour does not exceed the 60 dBu contour of KRMX.

**Interference To Other Facilities**

This proposed facility complies with 47CFR 74.1204 of the Commission's rules for interference to other facilities. There is no overlap of the proposed facility's interfering contours with the protected contours of any other application or facility, with the exception of second adjacent Class C2 KWOW, Clifton, TX FID 6559. In this case it can be demonstrated that no actual interference will occur, as no population is covered by the area where the proposed translator has an interfering signal 40 dB more than that of the contour of KWOW. KWOW has a calculated contour of 68 dBu 50-50 at the proposed translator location. The interference contour of the proposed facility, 108 dBu 50-10, is calculated by free space method to extend less than 442 meters from the translator antenna support structure. As shown in the following exhibit, this contour does not reach ground level when the vertical radiation pattern of the SWR FMEC 3HW antenna is taken into consideration. No actual interference will occur anywhere at ground level, as this interference contour does not reach the ground at any point. The nearest point to ground level is at 270.11 meters from the support structure. At this point the interfering contour is 16.99 meters above ground level. The existing tower is located in a rural area. There are no structures within 300 meters of the proposed facility that are more than a single story or that are more than 7 meters tall. Moss acknowledges that operation of this facility will cease if there are any complaints of interference. See the following pages for demonstration of no interference and compliance with 74.1204 d.

**Environmental**

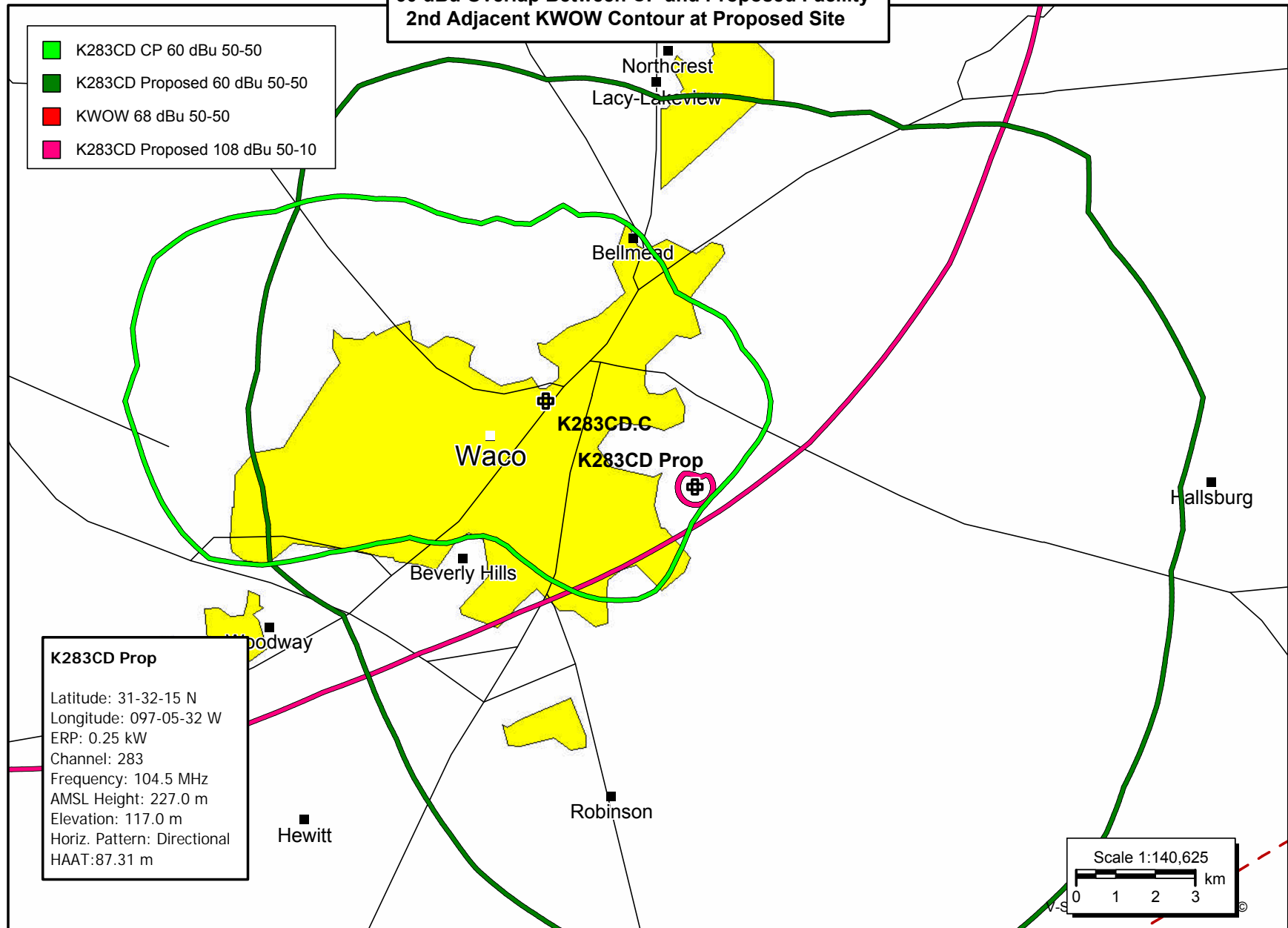
The proposed location is an existing 124 m tower. No alterations of any sort with the exception of adding the proposed antenna and transmission line will be made. The antenna proposed above was studied using the OET FM model program. Using this program, with the antenna mounted at 110 meters above ground level, the worst case power density at 2 meters above ground level was found to be .00002621 microwatts/cm<sup>2</sup>, which occurs 50.8 meters from the base of the support structure. This is .000013% of the maximum level for the general population, uncontrolled exposure level, and exempts the facility from further study, as it is an insignificant contributor.

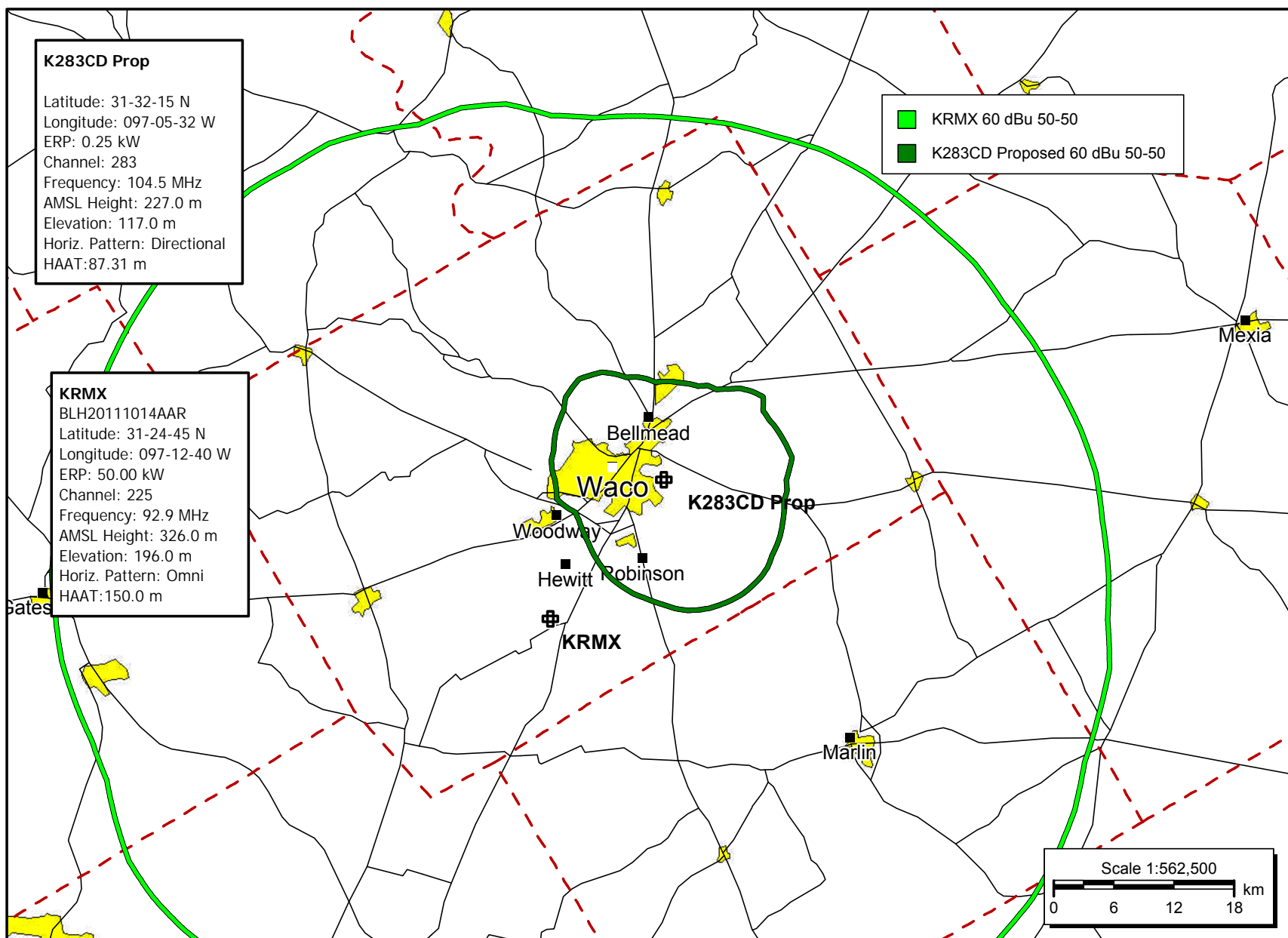
**60 dBu Overlap Between CP and Proposed Facility  
2nd Adjacent KWOW Contour at Proposed Site**

- K283CD CP 60 dBu 50-50
- K283CD Proposed 60 dBu 50-50
- KWOW 68 dBu 50-50
- K283CD Proposed 108 dBu 50-10

**K283CD Prop**

Latitude: 31-32-15 N  
Longitude: 097-05-32 W  
ERP: 0.25 kW  
Channel: 283  
Frequency: 104.5 MHz  
AMSL Height: 227.0 m  
Elevation: 117.0 m  
Horiz. Pattern: Directional  
HAAT: 87.31 m





K283CD Waco, TX  
 74.1204(d) Showing  
 Translator or LPFM Maximum Licensed ERP = 0.25  
 Translator or LPFM Antenna Height AG = 110 Meters  
 K283CD Antenna Model = SWRFMEC\_3\_HW\_98\_MHZ\_MIDBAND

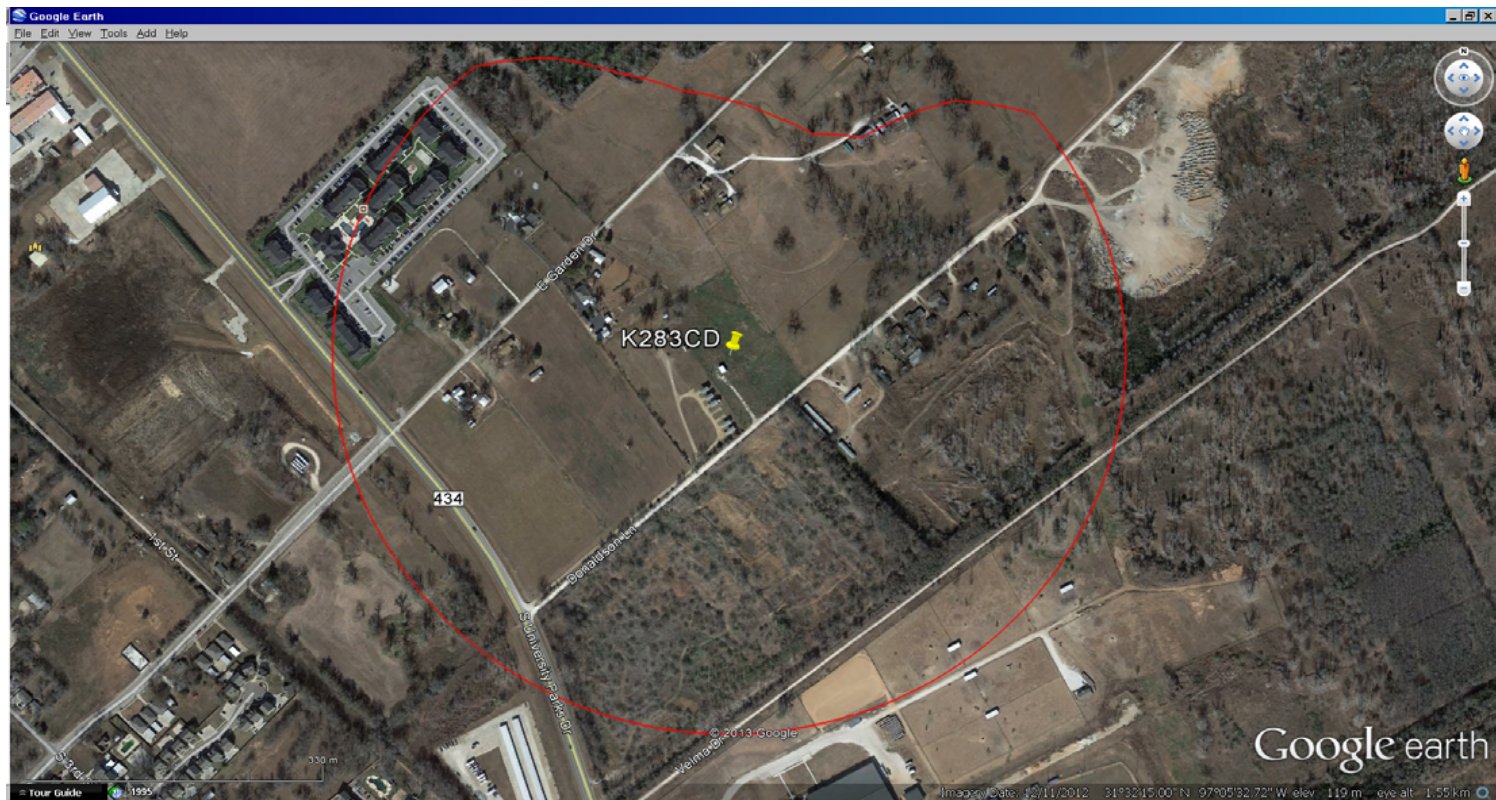
Protected Station's Contour = 68 dBu  
 Translator's or LPFM's full Interference contour 108

Review Azimuth = 180 Degrees True  
 Relative Field on the horizon at Review Azimuth = 1.000  
 Translator/LPFM ERP on the horizon at Review Azimuth = 0.25 kW  
 Distance between stations = 31.2 km  
 Protected Station= KWOW, 21 kW, 316.4 M Meters COR AMSL

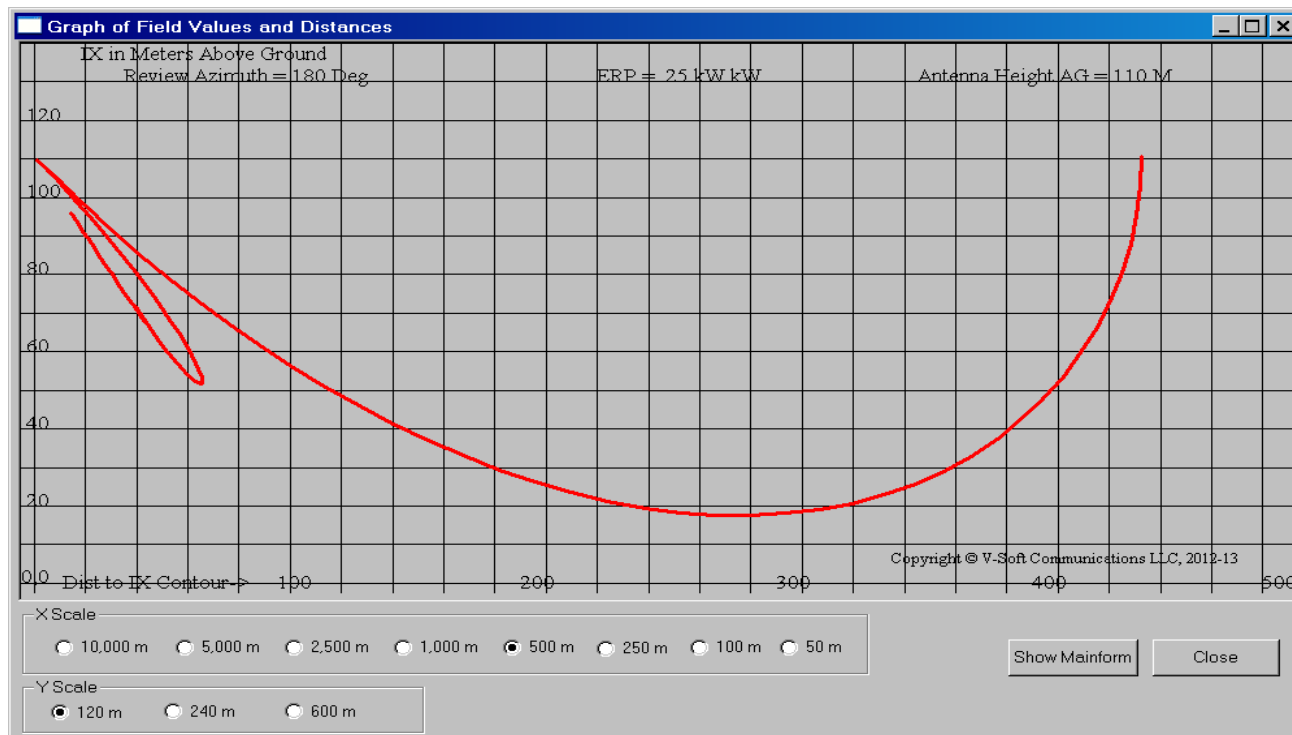
Depression Angle From Horizon(Deg)	Vertical Relative Field	Horizontal Relative Field	ERP (kw)	Dist to IX Contour Along Dep. Angle(m)	Dist to IX Contour From Tower Base(m)	Height IX Above Ground (m)
00.00	1.0	1.0	0.2500	441.5400	441.5400	110.000
01.00	0.999	1.0	0.2495	441.0984	441.0312	102.302
02.00	0.995	1.0	0.2475	439.3323	439.0646	094.668
03.00	0.99	1.0	0.2450	437.1246	436.5255	087.123
04.00	0.982	1.0	0.2411	433.5922	432.5360	079.754
05.00	0.972	1.0	0.2362	429.1768	427.5437	072.595
06.00	0.96	1.0	0.2304	423.8783	421.5563	065.693
07.00	0.945	1.0	0.2233	417.2552	414.1451	059.149
08.00	0.929	1.0	0.2158	410.1906	406.1987	052.912
09.00	0.911	1.0	0.2075	402.2429	397.2906	047.075
10.00	0.891	1.0	0.1985	393.4121	387.4353	041.685
11.00	0.869	1.0	0.1888	383.6982	376.6486	036.787
12.00	0.846	1.0	0.1789	373.5428	365.3800	032.336
13.00	0.821	1.0	0.1685	362.5043	353.2133	028.454
14.00	0.795	1.0	0.1580	351.0243	340.5973	025.080
15.00	0.767	1.0	0.1471	338.6612	327.1216	022.348
16.00	0.739	1.0	0.1365	326.2980	313.6578	020.060
17.00	0.709	1.0	0.1257	313.0518	299.3729	018.473
18.00	0.678	1.0	0.1149	299.3641	284.7122	017.491
19.00	0.647	1.0	0.1047	285.6764	270.1123	016.993
20.00	0.615	1.0	0.0946	271.5471	255.1708	017.125
21.00	0.583	1.0	0.0850	257.4178	240.3202	017.750
22.00	0.551	1.0	0.0759	243.2885	225.5732	018.863

23.00	0.518	1.0	0.0671	228.7177	210.5358	020.633
24.00	0.485	1.0	0.0588	214.1469	195.6329	022.899
25.00	0.452	1.0	0.0511	199.5761	180.8773	025.656
26.00	0.42	1.0	0.0441	185.4468	166.6785	028.705
27.00	0.387	1.0	0.0374	170.8760	152.2516	032.424
28.00	0.355	1.0	0.0315	156.7467	138.3991	036.412
29.00	0.324	1.0	0.0262	143.0589	125.1222	040.644
30.00	0.293	1.0	0.0215	129.3712	112.0388	045.314
31.00	0.263	1.0	0.0173	116.1250	099.5386	050.191
32.00	0.234	1.0	0.0137	103.3203	087.6206	055.249
33.00	0.205	1.0	0.0105	090.5157	075.9128	060.702
34.00	0.178	1.0	0.0079	078.5941	065.1575	066.051
35.00	0.151	1.0	0.0057	066.6725	054.6149	071.758
36.00	0.126	1.0	0.0040	055.6340	045.0089	077.299
37.00	0.101	1.0	0.0026	044.5955	035.6156	083.162
38.00	0.078	1.0	0.0015	034.4401	027.1392	088.797
39.00	0.056	1.0	0.0008	024.7262	019.2159	094.439
40.00	0.035	1.0	0.0003	015.4539	011.8384	100.066
41.00	0.015	1.0	0.0001	006.6231	004.9985	105.655
42.00	0.003	1.0	0.0000	001.3246	000.9844	109.114
43.00	0.021	1.0	0.0001	009.2723	006.7814	103.676
44.00	0.037	1.0	0.0003	016.3370	011.7518	098.651
45.00	0.052	1.0	0.0007	022.9601	016.2352	093.765
46.00	0.066	1.0	0.0011	029.1416	020.2435	089.037
47.00	0.078	1.0	0.0015	034.4401	023.4881	084.812
48.00	0.09	1.0	0.0020	039.7386	026.5903	080.468
49.00	0.1	1.0	0.0025	044.1540	028.9676	076.677
50.00	0.109	1.0	0.0030	048.1279	030.9360	073.132
51.00	0.118	1.0	0.0035	052.1017	032.7887	069.509
52.00	0.125	1.0	0.0039	055.1925	033.9799	066.508
53.00	0.131	1.0	0.0043	057.8417	034.8100	063.806
54.00	0.136	1.0	0.0046	060.0494	035.2962	061.419
55.00	0.141	1.0	0.0050	062.2571	035.7092	059.002
56.00	0.145	1.0	0.0053	064.0233	035.8014	056.922
57.00	0.147	1.0	0.0054	064.9064	035.3505	055.565
58.00	0.149	1.0	0.0056	065.7895	034.8631	054.207
59.00	0.151	1.0	0.0057	066.6725	034.3389	052.850
60.00	0.151	1.0	0.0057	066.6725	033.3363	052.260
61.00	0.151	1.0	0.0057	066.6725	032.3235	051.687
62.00	0.151	1.0	0.0057	066.6725	031.3009	051.132
63.00	0.15	1.0	0.0056	066.2310	030.0682	050.988
64.00	0.148	1.0	0.0055	065.3479	028.6466	051.266
65.00	0.146	1.0	0.0053	064.4648	027.2440	051.575

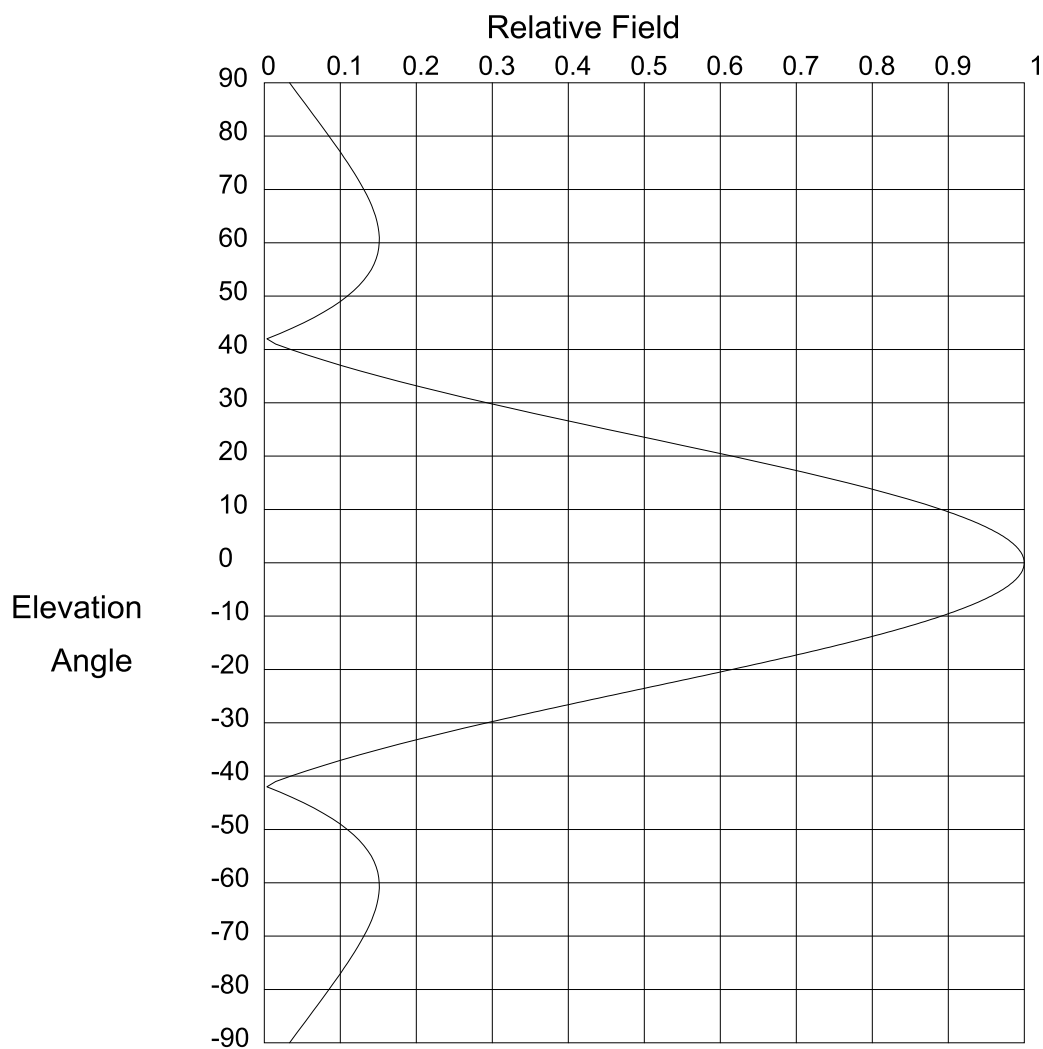
66.00	0.144	1.0	0.0052	063.5818	025.8610	051.915
67.00	0.141	1.0	0.0050	062.2571	024.3258	052.692
68.00	0.138	1.0	0.0048	060.9325	022.8257	053.504
69.00	0.135	1.0	0.0046	059.6079	021.3616	054.351
70.00	0.131	1.0	0.0043	057.8417	019.7830	055.647
71.00	0.127	1.0	0.0040	056.0756	018.2564	056.980
72.00	0.123	1.0	0.0038	054.3094	016.7825	058.349
73.00	0.119	1.0	0.0035	052.5433	015.3622	059.753
74.00	0.114	1.0	0.0032	050.3356	013.8744	061.614
75.00	0.11	1.0	0.0030	048.5694	012.5707	063.086
76.00	0.09	1.0	0.0020	039.7386	009.6136	071.442
77.00	0.1	1.0	0.0025	044.1540	009.9325	066.978
78.00	0.095	1.0	0.0023	041.9463	008.7211	068.970
79.00	0.09	1.0	0.0020	039.7386	007.5825	070.992
80.00	0.085	1.0	0.0018	037.5309	006.5172	073.039
81.00	0.08	1.0	0.0016	035.3232	005.5258	075.112
82.00	0.075	1.0	0.0014	033.1155	004.6088	077.207
83.00	0.07	1.0	0.0012	030.9078	003.7667	079.323
84.00	0.065	1.0	0.0011	028.7001	003.0000	081.457
85.00	0.059	1.0	0.0009	026.0509	002.2705	084.048
86.00	0.054	1.0	0.0007	023.8432	001.6632	086.215
87.00	0.049	1.0	0.0006	021.6355	001.1323	088.394
88.00	0.044	1.0	0.0005	019.4278	000.6780	090.584
89.00	0.039	1.0	0.0004	017.2201	000.3005	092.783
90.00	0.033	1.0	0.0003	014.5708	000.0000	095.429







X-Field™ By V-Soft Communications@LLC



## Elevation Pattern

Scale: Linear

Units: Field, Relative

## Systems With Reliability LLC

Date: 1/31/2014

CLIENT: *Charles Staples*

ANTENNA TYPE: FMEC/3-HWS

FREQUENCY: 98.1 MHz

PATTERN POL.: Circular

DIRECTIVITY(Peak): 2.025/3.064 dBd

Beam Tilt (Deg.) : 0

DIRECTIVITY(Horiz): 2.025/3.064 dBd

Null Fill(s)(%) : 0, 0, 0

# Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
90.0	.033 (-29.542)	52.0	.125 (-18.072)	14.0	.795 (-1.996 )
89.0	.039 (-28.275)	51.0	.118 (-18.59)	13.0	.821 (-1.714 )
88.0	.044 (-27.17)	50.0	.109 (-19.22)	12.0	.846 (-1.455 )
87.0	.049 (-26.19)	49.0	.10 (-19.99)	11.0	.869 (-1.218 )
86.0	.054 (-25.311)	48.0	.09 (-20.939)	10.0	.891 (-1.004 )
85.0	.059 (-24.514)	47.0	.078 (-22.127)	9.8	.895 (-0.963 )
84.0	.065 (-23.786)	46.0	.066 (-23.653)	9.6	.899 (-0.924 )
83.0	.07 (-23.116)	45.0	.052 (-25.698)	9.4	.903 (-0.885 )
82.0	.075 (-22.497)	44.0	.037 (-28.651)	9.2	.907 (-0.848 )
81.0	.08 (-21.923)	43.0	.021 (-33.646)	9.0	.911 (-0.811 )
80.0	.085 (-21.388)	42.0	.003 (-49.299)	8.8	.915 (-0.775 )
79.0	.09 (-20.889)	41.0	.015 (-36.401)	8.6	.918 (-0.739 )
78.0	.095 (-20.422)	40.0	.035 (-29.143)	8.4	.922 (-0.705 )
77.0	.10 (-19.986)	39.0	.056 (-25.058)	8.2	.926 (-0.672 )
76.0	.105 (-19.577)	38.0	.078 (-22.158)	8.0	.929 (-0.639 )
75.0	.11 (-19.195)	37.0	.101 (-19.889)	7.8	.932 (-0.607 )
74.0	.114 (-18.838)	36.0	.126 (-18.013)	7.6	.936 (-0.576 )
73.0	.119 (-18.506)	35.0	.151 (-16.409)	7.4	.939 (-0.546 )
72.0	.123 (-18.197)	34.0	.178 (-15.004)	7.2	.942 (-0.517 )
71.0	.127 (-17.912)	33.0	.205 (-13.753)	7.0	.945 (-0.488 )
70.0	.131 (-17.65)	32.0	.234 (-12.626)	6.8	.948 (-0.46 )
69.0	.135 (-17.411)	31.0	.263 (-11.599)	6.6	.951 (-0.434 )
68.0	.138 (-17.195)	30.0	.293 (-10.658)	6.4	.954 (-0.408 )
67.0	.141 (-17.003)	29.0	.324 (-9.791)	6.2	.957 (-0.382 )
66.0	.144 (-16.835)	28.0	.355 (-8.987)	6.0	.96 (-0.358 )
65.0	.146 (-16.692)	27.0	.387 (-8.24)	5.8	.962 (-0.334 )
64.0	.148 (-16.576)	26.0	.42 (-7.544)	5.6	.965 (-0.312 )
63.0	.15 (-16.487)	25.0	.452 (-6.894)	5.4	.967 (-0.29 )
62.0	.151 (-16.427)	24.0	.485 (-6.286)	5.2	.97 (-0.269 )
61.0	.151 (-16.398)	23.0	.518 (-5.717)	5.0	.972 (-0.248 )
60.0	.151 (-16.401)	22.0	.551 (-5.183)	4.8	.974 (-0.229 )
59.0	.151 (-16.441)	21.0	.583 (-4.684)	4.6	.976 (-0.21 )
58.0	.149 (-16.518)	20.0	.615 (-4.216)	4.4	.978 (-0.192 )
57.0	.147 (-16.638)	19.0	.647 (-3.778)	4.2	.98 (-0.175 )
56.0	.144 (-16.805)	18.0	.678 (-3.369)	4.0	.982 (-0.159 )
55.0	.141 (-17.024)	17.0	.709 (-2.987)	3.8	.984 (-0.143 )
54.0	.136 (-17.302)	16.0	.739 (-2.632)	3.6	.985 (-0.128 )
53.0	.131 (-17.648)	15.0	.767 (-2.302)	3.4	.987 (-0.115 )

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CLIENT: *Charles Staples*  
 ANTENNA TYPE: FMEC/3-HWS  
 FREQUENCY: 98.1 MHz  
 PATTERN POL.: Circular  
 DIRECTIVITY(Peak): 2.025/3.064 dBd  
 DIRECTIVITY(Horiz): 2.025/3.064 dBd

Date: 1/31/2014

Beam Tilt (Deg.) : 0  
 Null Fill(s)(%) : 0, 0, 0

# Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
3.2	.988 (-0.101)	-4.4	.978 (-0.192)	-12.0	.846 (-1.455 )
3.0	.99 (-0.089)	-4.6	.976 (-0.21)	-12.2	.841 (-1.505 )
2.8	.991 (-0.078)	-4.8	.974 (-0.229)	-12.4	.836 (-1.555 )
2.6	.992 (-0.067)	-5.0	.972 (-0.248)	-12.6	.831 (-1.607 )
2.4	.993 (-0.057)	-5.2	.97 (-0.269)	-12.8	.826 (-1.66 )
2.2	.994 (-0.048)	-5.4	.967 (-0.29)	-13.0	.821 (-1.714 )
2.0	.995 (-0.04)	-5.6	.965 (-0.312)	-13.2	.816 (-1.768 )
1.8	.996 (-0.032)	-5.8	.962 (-0.334)	-13.4	.811 (-1.824 )
1.6	.997 (-0.025)	-6.0	.96 (-0.358)	-13.6	.805 (-1.88 )
1.4	.998 (-0.019)	-6.2	.957 (-0.382)	-13.8	.80 (-1.937 )
1.2	.998 (-0.014)	-6.4	.954 (-0.408)	-14.0	.795 (-1.996 )
1.0	.999 (-0.01)	-6.6	.951 (-0.434)	-14.2	.789 (-2.055 )
.8	.999 (-0.006)	-6.8	.948 (-0.46)	-14.4	.784 (-2.115 )
.6	1.00 (-0.004)	-7.0	.945 (-0.488)	-14.6	.778 (-2.176 )
.4	1.00 (-0.002)	-7.2	.942 (-0.517)	-14.8	.773 (-2.238 )
.2	1.00 (0)	-7.4	.939 (-0.546)	-15.0	.767 (-2.302 )
.0	1.00 (0)	-7.6	.936 (-0.576)	-15.2	.762 (-2.366 )
-.2	1.00 (0)	-7.8	.932 (-0.607)	-15.4	.756 (-2.431 )
-.4	1.00 (-0.002)	-8.0	.929 (-0.639)	-15.6	.75 (-2.497 )
-.6	1.00 (-0.004)	-8.2	.926 (-0.672)	-15.8	.744 (-2.564 )
-.8	.999 (-0.006)	-8.4	.922 (-0.705)	-16.0	.739 (-2.632 )
-1.0	.999 (-0.01)	-8.6	.918 (-0.739)	-16.2	.733 (-2.701 )
-1.2	.998 (-0.014)	-8.8	.915 (-0.775)	-16.4	.727 (-2.771 )
-1.4	.998 (-0.019)	-9.0	.911 (-0.811)	-16.6	.721 (-2.842 )
-1.6	.997 (-0.025)	-9.2	.907 (-0.848)	-16.8	.715 (-2.914 )
-1.8	.996 (-0.032)	-9.4	.903 (-0.885)	-17.0	.709 (-2.987 )
-2.0	.995 (-0.04)	-9.6	.899 (-0.924)	-17.2	.703 (-3.062 )
-2.2	.994 (-0.048)	-9.8	.895 (-0.963)	-17.4	.697 (-3.137 )
-2.4	.993 (-0.057)	-10.0	.891 (-1.004)	-17.6	.691 (-3.213 )
-2.6	.992 (-0.067)	-10.2	.887 (-1.045)	-17.8	.685 (-3.291 )
-2.8	.991 (-0.078)	-10.4	.882 (-1.087)	-18.0	.678 (-3.369 )
-3.0	.99 (-0.089)	-10.6	.878 (-1.13)	-18.2	.672 (-3.449 )
-3.2	.988 (-0.101)	-10.8	.874 (-1.173)	-18.4	.666 (-3.529 )
-3.4	.987 (-0.115)	-11.0	.869 (-1.218)	-18.6	.66 (-3.611 )
-3.6	.985 (-0.128)	-11.2	.865 (-1.264)	-18.8	.654 (-3.694 )
-3.8	.984 (-0.143)	-11.4	.86 (-1.31)	-19.0	.647 (-3.778 )
-4.0	.982 (-0.159)	-11.6	.855 (-1.357)	-19.2	.641 (-3.863 )
-4.2	.98 (-0.175)	-11.8	.851 (-1.406)	-19.4	.635 (-3.95 )

## Systems With Reliability LLC

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CLIENT: *Charles Staples*  
 ANTENNA TYPE: FMEC/3-HWS  
 FREQUENCY: 98.1 MHz  
 PATTERN POL.: Circular  
 DIRECTIVITY(Peak): 2.025/3.064 dBd  
 DIRECTIVITY(Horiz): 2.025/3.064 dBd

Date: 1/31/2014

Beam Tilt (Deg.) : 0  
 Null Fill(s)(%) : 0, 0, 0

# Relative Field Tabulation

Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)	Elev. Angle	Rel. Fld(dB)
-19.6	.628 (-4.037)	-27.2	.381 (-8.386)	-54.0	.136 (-17.302 )
-19.8	.622 (-4.126)	-27.4	.374 (-8.533)	-55.0	.141 (-17.024 )
-20.0	.615 (-4.216)	-27.6	.368 (-8.682)	-56.0	.144 (-16.805 )
-20.2	.609 (-4.307)	-27.8	.362 (-8.834)	-57.0	.147 (-16.638 )
-20.4	.603 (-4.399)	-28.0	.355 (-8.987)	-58.0	.149 (-16.518 )
-20.6	.596 (-4.493)	-28.2	.349 (-9.143)	-59.0	.151 (-16.441 )
-20.8	.59 (-4.588)	-28.4	.343 (-9.302)	-60.0	.151 (-16.401 )
-21.0	.583 (-4.684)	-28.6	.336 (-9.462)	-61.0	.151 (-16.398 )
-21.2	.577 (-4.781)	-28.8	.33 (-9.625)	-62.0	.151 (-16.427 )
-21.4	.57 (-4.88)	-29.0	.324 (-9.791)	-63.0	.15 (-16.487 )
-21.6	.564 (-4.979)	-29.2	.318 (-9.959)	-64.0	.148 (-16.576 )
-21.8	.557 (-5.081)	-29.4	.312 (-10.13)	-65.0	.146 (-16.692 )
-22.0	.551 (-5.183)	-29.6	.305 (-10.303)	-66.0	.144 (-16.835 )
-22.2	.544 (-5.287)	-29.8	.299 (-10.479)	-67.0	.141 (-17.003 )
-22.4	.538 (-5.392)	-30.0	.293 (-10.658)	-68.0	.138 (-17.195 )
-22.6	.531 (-5.499)	-31.0	.263 (-11.599)	-69.0	.135 (-17.411 )
-22.8	.524 (-5.607)	-32.0	.234 (-12.626)	-70.0	.131 (-17.65 )
-23.0	.518 (-5.717)	-33.0	.205 (-13.753)	-71.0	.127 (-17.912 )
-23.2	.511 (-5.827)	-34.0	.178 (-15.004)	-72.0	.123 (-18.197 )
-23.4	.505 (-5.94)	-35.0	.151 (-16.409)	-73.0	.119 (-18.506 )
-23.6	.498 (-6.054)	-36.0	.126 (-18.013)	-74.0	.114 (-18.838 )
-23.8	.492 (-6.169)	-37.0	.101 (-19.889)	-75.0	.11 (-19.195 )
-24.0	.485 (-6.286)	-38.0	.078 (-22.158)	-76.0	.105 (-19.577 )
-24.2	.478 (-6.404)	-39.0	.056 (-25.058)	-77.0	.10 (-19.986 )
-24.4	.472 (-6.524)	-40.0	.035 (-29.143)	-78.0	.095 (-20.422 )
-24.6	.465 (-6.646)	-41.0	.015 (-36.401)	-79.0	.09 (-20.889 )
-24.8	.459 (-6.769)	-42.0	.003 (-49.299)	-80.0	.085 (-21.388 )
-25.0	.452 (-6.894)	-43.0	.021 (-33.646)	-81.0	.08 (-21.923 )
-25.2	.446 (-7.021)	-44.0	.037 (-28.651)	-82.0	.075 (-22.497 )
-25.4	.439 (-7.149)	-45.0	.052 (-25.698)	-83.0	.07 (-23.116 )
-25.6	.433 (-7.279)	-46.0	.066 (-23.653)	-84.0	.065 (-23.786 )
-25.8	.426 (-7.411)	-47.0	.078 (-22.127)	-85.0	.059 (-24.514 )
-26.0	.42 (-7.544)	-48.0	.09 (-20.939)	-86.0	.054 (-25.311 )
-26.2	.413 (-7.68)	-49.0	.10 (-19.99)	-87.0	.049 (-26.19 )
-26.4	.407 (-7.817)	-50.0	.109 (-19.22)	-88.0	.044 (-27.17 )
-26.6	.40 (-7.956)	-51.0	.118 (-18.59)	-89.0	.039 (-28.275 )
-26.8	.394 (-8.097)	-52.0	.125 (-18.072)	-90.0	.033 (-29.542 )
-27.0	.387 (-8.24)	-53.0	.131 (-17.648)	90.0	.00 (-50 )

## Systems With Reliability LLC

Page 3 of 3

CLIENT: *Charles Staples*  
 ANTENNA TYPE: FMEC/3-HWS  
 FREQUENCY: 98.1 MHz  
 PATTERN POL.: Circular  
 DIRECTIVITY(Peak): 2.025/3.064 dBd  
 DIRECTIVITY(Horiz): 2.025/3.064 dBd

Date: 1/31/2014

Beam Tilt (Deg.) : 0  
 Null Fill(s)(%) : 0, 0, 0

## K283CD Allocation Study

Gary L. Moss

REFERENCE CH# 283D - 104.5 MHz, Pwr= 0.25 kW DA, HAAT= 87.3 M, COR= 227 M DISPLAY DATES  
 31 32 15.0 N. Average Protected F(50-50)= 12.1 km DATA 01-30-14  
 97 05 32.0 W. Composite Directional SEARCH 02-02-14

CH CITY	CALL	TYPE STATE	ANT TX	AZI. <--	DIST FILE #	LAT. LNG.	Pwr (kW) HAAT (M)	INT (km) COR (M)	PRO (km) LICENSEE	*IN* (Overlap in km)	*OUT*
283C Dallas	KKDA-FM	LIC NCY	TX	5.7 185.7	117.44 BLH20020408AAN	32 35 19.0 96 58 05.0	100.000 508	187.9 698	84.3 Service Broadcasting Group	-80.3*	0.1
283D Waco	K283CD	CP DC	TX	300.1 120.0	4.31 BNPFT20130830APA	31 33 25.0 97 07 54.0	0.250 80	15.2 222	4.8 Wildcatter Wireless, Inc.	-22.9*	-41.7*
285A Bellmead	KBHT	LIC ZCX	TX	0.0 0.0	0.00 BLH20130813AAM	31 32 15.0 97 05 32.0	6.000 100	2.7 238	27.7 M&m Broadcasters, Ltd.	-12.5*	-28.4*
281C2 Clifton	KWOW	LIC NCX	TX	315.3 135.1	31.16 BLH20111024AIY	31 44 11.0 97 19 27.0	21.000 143	5.1 316	47.5 Waco Entertainment Group,	12.9	-17.4*
284L1 Temple	KRYH-LP	LIC	TX	208.0 27.9	55.20 BLL20040213ACX	31 05 56.0 97 21 53.0	0.032 52			37.8	34.3
282C2 Taylor	KLQB	LIC NCN	TX	192.0 11.9	125.35 BLH19980616KB	30 26 04.0 97 21 53.0	48.000 150	77.9 308	52.3 Univision Radio License Co	35.2	55.8
284C2 Bryan	KKYS	LIC CN	TX	142.9 323.3	114.14 BLH19891113KC	30 42 59.0 96 22 20.0	50.000 87	64.6 185	40.1 Cc Licenses, Llc	35.8	53.3
286C3 Cameron	KMIL	LIC NCX	TX	175.5 355.5	75.74 BLH20070208AIB	30 51 30.0 97 01 47.0	15.000 100	3.5 213	34.3 Centex Broadcasting, Llc	59.1	39.8
229D Hillsboro	K229CO	CP C	TX	0.9 180.9	51.50 BNPFT20130819AAX	32 00 07.0 97 05 02.0	0.140 101	187.9 300	84.3 Antonio Delgado	10.0R	41.5M
283L1 Killeen	KHSP-LP	LIC	TX	235.3 54.9	81.80 BLL20051025ABO	31 06 59.0 97 47 55.0	0.068 36			50.2	42.8
280C3 Franklin	KJXJ	LIC CX	TX	144.0 324.3	89.50 BLH20090528AJS	30 53 05.0 96 32 29.0	8.700 168	3.8 275	38.5 Brazos Valley Communicatio	71.9	49.8

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Terrain database is NED 03 SEC, R= 73.215 qualifying spacings or FCC minimum spacings in KM, M= Margin in KM  
In & Out distances between contours are shown at closest points. Reference Zone= West Zone, Co to 3rd  
adjacent.  
Ant Column: (D= DA Standard, Z= DA 73.215, N= Not DA 73.215, \_= Omni), Polarization (C,H,V,E), Beamtilt(Y,N,X)  
""affixed to 'IN' or 'OUT' values = site inside protected contour.  
« = Station meets FCC minimum distance spacing for its class.

Facility Studied

Co located with this facility

No actual interference complies with 74.1204 d

02-02-2014      Terrain Data: NED 03 SEC      FM Over Analysis

KKDA-FM    BLH20020408AAN

K283CD

Channel = 283C  
Max ERP = 100 kW  
RCAMSL = 698 M  
N. Lat. 32 35 19.0  
W. Lng. 96 58 05.0  
Protected  
60 dBu

Channel = 283D  
Max ERP = 0.25 kW  
RCAMSL = 227 M  
N. Lat. 31 32 15.0  
W. Lng. 97 05 32.0  
Interfering  
40 dBu

(km)	Azimuth	ERP	HAAT	Dist	Azimuth	ERP	HAAT	Dist	Actual	IX
	(degrees)	(kW)	(m)	(km)	(degrees)	(kW)	(m)	(km)	(dBu)	
----- -----										
-	126.0	100.0000	0493.6	086.3	050.9	000.2500	0097.5	105.0	21.6	
	127.0	100.0000	0492.6	086.3	051.1	000.2500	0096.8	103.6	21.9	
	128.0	100.0000	0491.5	086.2	051.3	000.2500	0096.0	102.1	22.2	
	129.0	100.0000	0492.2	086.2	051.5	000.2500	0095.0	100.6	22.5	
	130.0	100.0000	0493.3	086.3	051.7	000.2500	0094.1	099.2	22.7	
	131.0	100.0000	0493.3	086.3	051.9	000.2500	0093.4	097.7	23.1	
	132.0	100.0000	0493.4	086.3	052.0	000.2500	0092.7	096.2	23.4	
	133.0	100.0000	0493.1	086.3	052.2	000.2500	0092.1	094.7	23.7	
	134.0	100.0000	0492.8	086.3	052.3	000.2500	0091.5	093.2	24.1	
	135.0	100.0000	0492.3	086.3	052.4	000.2500	0091.1	091.7	24.4	
	136.0	100.0000	0490.7	086.2	052.5	000.2500	0091.0	090.2	24.8	
	137.0	100.0000	0490.1	086.1	052.6	000.2500	0090.8	088.7	25.2	
	138.0	100.0000	0489.9	086.1	052.6	000.2500	0090.6	087.2	25.6	
	139.0	100.0000	0489.4	086.1	052.7	000.2500	0090.5	085.7	26.0	
	140.0	100.0000	0488.4	086.0	052.7	000.2500	0090.5	084.2	26.4	
	141.0	100.0000	0486.7	085.9	052.7	000.2500	0090.5	082.7	26.8	
	142.0	100.0000	0484.8	085.8	052.6	000.2500	0090.7	081.2	27.2	
	143.0	100.0000	0483.2	085.7	052.5	000.2500	0090.8	079.7	27.7	
	144.0	100.0000	0482.0	085.6	052.5	000.2500	0091.0	078.2	28.1	
	145.0	100.0000	0481.4	085.6	052.4	000.2500	0091.2	076.7	28.5	
	146.0	100.0000	0480.2	085.5	052.3	000.2500	0091.7	075.3	28.9	
	147.0	100.0000	0478.2	085.4	052.1	000.2500	0092.4	073.8	29.4	
	148.0	100.0000	0475.8	085.2	051.9	000.2500	0093.5	072.3	29.9	
	149.0	100.0000	0473.8	085.1	051.6	000.2500	0094.4	070.8	30.4	
	150.0	100.0000	0472.8	085.0	051.4	000.2500	0095.4	069.4	30.8	
	151.0	100.0000	0472.5	085.0	051.2	000.2500	0096.4	067.9	31.3	
	152.0	100.0000	0472.5	085.0	051.0	000.2500	0097.3	066.5	31.8	
	153.0	100.0000	0472.6	085.0	050.7	000.2500	0098.3	065.0	32.3	
	154.0	100.0000	0471.7	084.9	050.4	000.2500	0099.5	063.6	32.8	
	155.0	100.0000	0471.6	084.9	050.0	000.2500	0100.3	062.1	33.3	
	156.0	100.0000	0471.3	084.9	049.6	000.2479	0101.1	060.7	33.8	
	157.0	100.0000	0470.5	084.9	049.2	000.2452	0102.2	059.3	34.4	
	158.0	100.0000	0469.9	084.8	048.7	000.2424	0103.0	057.9	34.9	
	159.0	100.0000	0470.0	084.8	048.2	000.2395	0103.3	056.5	35.4	
	160.0	100.0000	0471.1	084.9	047.7	000.2367	0103.3	055.1	35.8	
	161.0	100.0000	0472.1	085.0	047.1	000.2337	0103.1	053.7	36.3	



162.0	100.0000	0472.6	085.0		046.5	000.2301	0102.3	052.4	36.7
163.0	100.0000	0474.6	085.1		045.9	000.2268	0101.2	051.0	37.1
164.0	100.0000	0478.4	085.4		045.4	000.2238	0100.1	049.6	37.5
165.0	100.0000	0479.0	085.4		044.5	000.2194	0098.9	048.2	37.8
166.0	100.0000	0475.6	085.2		043.4	000.2131	0097.5	047.1	38.0
167.0	100.0000	0473.8	085.1		042.2	000.2071	0096.5	045.9	38.2
168.0	100.0000	0472.8	085.0		041.1	000.2010	0096.3	044.7	38.5
169.0	100.0000	0471.7	084.9		039.8	000.1937	0096.1	043.6	38.8
170.0	100.0000	0471.1	084.9		038.5	000.1815	0096.0	042.5	39.0
171.0	100.0000	0470.5	084.9		037.1	000.1688	0095.5	041.4	39.0
172.0	100.0000	0470.1	084.8		035.6	000.1559	0094.5	040.4	39.0
173.0	100.0000	0470.6	084.9		034.1	000.1431	0094.0	039.4	39.0
174.0	100.0000	0470.9	084.9		032.4	000.1299	0095.3	038.4	39.2
175.0	100.0000	0471.3	084.9		030.7	000.1167	0096.3	037.5	39.2
176.0	100.0000	0470.8	084.9		028.7	000.1100	0095.8	036.7	39.2
177.0	100.0000	0469.5	084.8		026.7	000.1070	0098.5	036.0	39.7
178.0	100.0000	0468.6	084.7		024.5	000.1040	0098.8	035.4	39.9
179.0	100.0000	0468.1	084.7		022.3	000.1009	0096.8	034.8	39.8
180.0	100.0000	0467.6	084.7		020.0	000.0977	0093.9	034.3	39.6
181.0	100.0000	0466.2	084.6		017.6	000.0992	0091.7	033.9	39.7
182.0	100.0000	0463.7	084.4		015.1	000.1009	0091.7	033.7	39.8
183.0	100.0000	0463.2	084.4		012.6	000.1025	0090.0	033.4	39.9
184.0	100.0000	0462.8	084.3		010.1	000.1042	0088.5	033.2	39.9
185.0	100.0000	0462.1	084.3		007.6	000.1068	0088.0	033.2	39.9
186.0	100.0000	0462.1	084.3		005.0	000.1095	0086.7	033.2	39.9
187.0	100.0000	0461.2	084.2		002.5	000.1122	0084.7	033.3	39.8
188.0	100.0000	0460.1	084.2		000.0	000.1149	0084.3	033.5	39.7
189.0	100.0000	0458.5	084.0		357.6	000.1180	0082.1	033.9	39.4
190.0	100.0000	0457.1	083.9		355.2	000.1210	0081.2	034.3	39.3
191.0	100.0000	0456.8	083.9		352.9	000.1240	0083.2	034.7	39.4
192.0	100.0000	0456.2	083.9		350.7	000.1269	0086.5	035.3	39.6
193.0	100.0000	0456.2	083.9		348.5	000.1322	0088.0	035.8	39.7
194.0	100.0000	0458.1	084.0		346.3	000.1387	0088.2	036.4	39.7
195.0	100.0000	0461.6	084.3		344.1	000.1454	0089.8	036.9	39.8
196.0	100.0000	0464.2	084.4		342.1	000.1518	0089.2	037.5	39.7
197.0	100.0000	0467.1	084.6		340.1	000.1582	0088.6	038.2	39.5
198.0	100.0000	0470.1	084.8		338.2	000.1671	0089.2	038.9	39.5
199.0	100.0000	0474.0	085.1		336.3	000.1760	0092.9	039.7	39.7
200.0	100.0000	0478.3	085.4		334.5	000.1849	0096.9	040.6	39.9
201.0	100.0000	0480.4	085.5		332.9	000.1928	0099.9	041.6	39.9
202.0	100.0000	0483.0	085.7		331.4	000.2005	0101.4	042.6	39.8
203.0	100.0000	0485.1	085.8		330.0	000.2077	0101.6	043.7	39.5
204.0	100.0000	0486.4	085.9		328.8	000.2127	0101.9	044.8	39.2
205.0	100.0000	0487.8	086.0		327.7	000.2173	0102.3	046.0	38.9
206.0	100.0000	0489.5	086.1		326.6	000.2218	0102.5	047.3	38.5
207.0	100.0000	0490.1	086.1		325.7	000.2257	0102.6	048.5	38.1
208.0	100.0000	0491.2	086.2		324.8	000.2294	0102.7	049.8	37.7
209.0	100.0000	0492.3	086.3		324.0	000.2328	0102.9	051.2	37.3
210.0	100.0000	0494.5	086.4		323.2	000.2363	0103.0	052.5	36.8
211.0	100.0000	0495.3	086.4		322.5	000.2392	0103.2	053.9	36.4
212.0	100.0000	0496.5	086.5		321.9	000.2419	0103.4	055.2	35.9
213.0	100.0000	0498.1	086.6		321.3	000.2445	0103.8	056.6	35.4
214.0	100.0000	0498.8	086.6		320.8	000.2467	0104.1	058.1	35.0
215.0	100.0000	0499.6	086.7		320.3	000.2487	0104.4	059.5	34.5
216.0	100.0000	0500.8	086.8		319.9	000.2500	0104.5	061.0	34.0
217.0	100.0000	0501.6	086.8		319.5	000.2500	0104.5	062.4	33.5
218.0	100.0000	0503.5	086.9		319.1	000.2500	0104.6	063.9	33.0

219.0	100.0000	0504.3	087.0		318.8	000.2500	0104.6	065.4	32.6
220.0	100.0000	0505.4	087.0		318.6	000.2500	0104.6	066.9	32.1
221.0	100.0000	0506.1	087.1		318.3	000.2500	0104.5	068.4	31.7
222.0	100.0000	0508.1	087.2		318.1	000.2500	0104.5	069.8	31.2
223.0	100.0000	0509.7	087.3		317.9	000.2500	0104.5	071.4	30.8
224.0	100.0000	0511.2	087.4		317.7	000.2500	0104.5	072.9	30.3
225.0	100.0000	0513.1	087.5		317.6	000.2500	0104.5	074.4	29.9
226.0	100.0000	0513.1	087.5		317.5	000.2500	0104.5	075.9	29.4
227.0	100.0000	0513.2	087.5		317.5	000.2500	0104.5	077.4	29.0
228.0	100.0000	0514.8	087.6		317.4	000.2500	0104.4	079.0	28.6
229.0	100.0000	0516.4	087.7		317.4	000.2500	0104.3	080.5	28.1
230.0	100.0000	0518.0	087.8		317.4	000.2500	0104.3	082.0	27.7
231.0	100.0000	0519.2	087.9		317.4	000.2500	0104.3	083.6	27.3
232.0	100.0000	0519.2	087.9		317.4	000.2500	0104.4	085.1	26.8
233.0	100.0000	0519.3	087.9		317.5	000.2500	0104.5	086.6	26.4
234.0	100.0000	0519.2	087.9		317.6	000.2500	0104.5	088.2	26.0
235.0	100.0000	0519.3	087.9		317.8	000.2500	0104.5	089.7	25.6
236.0	100.0000	0519.6	087.9		317.9	000.2500	0104.5	091.2	25.2
237.0	100.0000	0519.6	087.9		318.0	000.2500	0104.5	092.7	24.8
238.0	100.0000	0520.0	087.9		318.1	000.2500	0104.5	094.2	24.4
239.0	100.0000	0520.3	087.9		318.3	000.2500	0104.5	095.7	24.0
240.0	100.0000	0520.4	087.9		318.5	000.2500	0104.6	097.3	23.6
241.0	100.0000	0520.0	087.9		318.7	000.2500	0104.6	098.7	23.2
242.0	100.0000	0519.5	087.9		318.9	000.2500	0104.6	100.2	22.9
243.0	100.0000	0519.2	087.9		319.1	000.2500	0104.6	101.7	22.6
244.0	100.0000	0519.2	087.9		319.3	000.2500	0104.6	103.2	22.2
245.0	100.0000	0519.7	087.9		319.5	000.2500	0104.5	104.7	21.9

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K283CD Allocation Study  
Gary L. Moss

FMCommander Single Allocation Study - 02-04-2014 - NED 03 SEC  
K283CD's Overlaps (In= -80.32 km, Out= 0.11 km)

K283CD CH 283 D DA  
Lat= 31 32 15.0, Lng= 97 05 32.0  
0.25 kW 87.3 M HAAT, 227 M COR  
Prot.= 60 dBu, Intef.= 40 dBu

KKDA-FM CH 283 C 73.215 N BLH20020408AAN  
Lat= 32 35 19.0, Lng= 96 58 05.0  
100.0 kW 508 M HAAT, 698 M COR  
Prot.= 60 dBu, Intef.= 40 dBu

