

Technical Report K256DK Minor Modification

This technical report is submitted for a minor modification to the K256DK at Phoenix, AZ, FCC facility I.D. 155722. Changes in tower site and antenna are submitted. The translator will continue to operate as a fill-in facility for KIKO(AM) 1340 kHz at Apache Junction, AZ, FCC facility I.D. 72477.

K256DK Modification Analysis:

An overlap study (exhibit E-1) shows the K256DK modification is within the KMVP-FM 254C second-adjacent protected contour. A tabulation of the 125.37 +40 dBu F(50-10) contour (exhibit E-2) using the vertical elevation pattern of the Nicom BKG77-1 antenna (exhibit E-3) shows the interfering contour lowest point is 28.4 meters above the site elevation, which will not reach any population, roads or buildings (exhibit E-4). Based on this showing, a waiver of Section 74.1204 is requested, in accordance with *Living Way Ministries, Inc.* (FCC 08-242). The 60 dBu contour is contained within the primary KIKO(AM) 2.0 mV/m daytime contour and overlaps the current K256DK licensed 60 dBu contour (exhibit E-5). The modification remains within 250 miles of the original K246CH licensed facility (exhibit E-6), in accordance with MB Docket No. 13-249, and the modified 60 F(50-50) dBu contour is 179.5 kilometers from the Mexican border, following CFR 74.1235(d)(2) (exhibit E-7).

Antenna System:

The K256DK modification will be located on the existing tower, ASR 1210712, at coordinates:

33 16 19.2N 111 44 24.5W NAD 83.

A Nicom BKG77 single bay, non-directional antenna will be mounted at a COR AGL of 54.9 meters, 450.5 meters AMSL, 46 meter HAAT (exhibit E-8) and operate at 0.250 kW ERP.

RF Exposure Calculation:

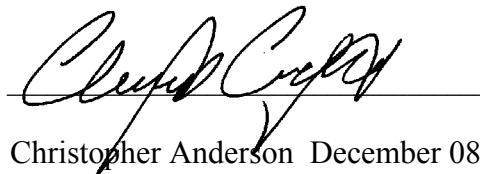
The RF contribution was calculated using the formula from the OET Bulletin 65:

$$S \text{ (RF in microwatts/cm}^2\text{)} = \frac{33.4 \times F^2 \times (H \text{ ERP} + V \text{ ERP in watts})}{R^2 \text{ (height of radiation center in meters -2m)}}$$

Using a worst case vertical (F) factor of 1.0, the RF is calculated to be 5.97 $\mu\text{W/cm}^2$ to the ground, which is below 5% of the 200 $\mu\text{W/cm}^2$ maximum permissible for general public exposure allowing exclusion from consideration.

Conclusion:

It is concluded that the K256DK modification complies with all Commission rules and policies.



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E-1 K256DK Mod. Overlap Study

REFERENCE 33 16 19.20 N. 111 44 24.50 W.		CH# 256D - 99.1 MHz, Pwr= 0.25 kW, HAAT= 46.0 M, COR= 450.5 M Average Protected F(50-50)= 8.84 km Omni-directional							DISPLAY DATES DATA 12-08-20 SEARCH 12-08-20		
CH CITY	CALL	TYPE ANT STATE	AZI <--	DI ST FILE #	LAT LNG	PWR(kW) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT* (in km)	
254C Phoenix	KMVP-FM	LIC _CN AZ	282.8 102.6	30.84 BMLH20040707ABN	33 19 58.20 112 03 50.50	100.000 545	12.8 911	88.0 Bonneville International C	6.8	-58.2*(1)	
256D Phoenix	K256DK	LIC DHN AZ	20.6 200.7	26.16 0000125313	33 29 33.50 111 38 26.10	0.250	772	---Reference--- Rocket Radio Corporation			
256D Phoenix	K256DK	APP DHN AZ	20.7 200.7	26.16 BMPFT20180706ABB	33 29 33.10 111 38 25.40	0.250	771	---Reference--- Rocket Radio Corporation			
257C2 Payson	KEMP	CP ZCN AZ	20.0 200.2	108.03 BPH20180731ABO	34 11 04.10 111 20 18.40	50.000 140	105.5 1468	71.9 Kemp Communications, Inc.	-6.2	23.8	
257D Phoenix	K257CD	LIC DCN AZ	318.2 138.0	48.20 BLFT20180213AAA	33 35 40.10 112 05 14.50	0.250	33.1 671	21.5 LPFM Broadcasting, LLC	4.4	10.2	
257L1 Gold Canyon	KRWV-LP	LIC _CN AZ	74.6 254.8	29.54 BMLL20180706ABC	33 20 31.10 111 26 00.30	0.100 -52	573	7.6 Gold Canyon Public Radio I		8.7	
257L1 Gold Canyon	KRWV-LP	CP _HY AZ	74.7 254.8	29.60 0000101893	33 20 31.30 111 25 57.80	0.100 -40	573	7.7 Gold Canyon Public Radio I		8.8	
257C3 Payson	KEMP	LIC _CN AZ	20.0 200.2	108.03 BLH20070813ABX	34 11 04.10 111 20 18.40	17.000 123	88.2 1457	60.3 Kemp Communications, Inc.	11.1	35.3	
202C1 Phoenix	KVCP	LIC _CN AZ	317.9 137.7	48.63 BLED19920121KC	33 35 47.10 112 05 31.50	22.500 304	37.2 704	24.8 Vcy America, Inc.	21.5R	27.1M	
202C1 Phoenix	KPHF	LIC _CN AZ	317.9 137.7	48.67 BLED19990716KB	33 35 47.10 112 05 33.50	22.500 297	37.2 704	24.8 Family Stations, Inc.	21.5R	27.2M	
258C Tucson	KIIM-FM	LIC _CN AZ	152.7 333.0	127.79 BLH19850131LP	32 14 56.20 111 07 01.30	93.000 621	13.5 1385	91.5 Radio License Holding Cbc,	106.8	35.2	
256B Sonoi ta	XHSI TFM	LIC DHN SO	214.1 33.5	188.35	31 51 52.20 112 51 32.60	50.000 150	132.0 621	65.0	46.0	73.8	
256B Sonoi ta	XHSI TFM	USE ____ SO	214.1 33.5	188.35	31 51 52.25 112 51 32.56	50.000 150	132.0 621	65.0	46.0	73.8	

Terrain database is GLOBE 30 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.
All separation margins (if shown) include rounding.
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 restricted contour.
« = Station meets FCC minimum distance spacing for its class.
Reference station has protected zone issue: Mexico

(1) The +40 125.37 F(50-10) dBu contour within the second-adjacent KMVP-FM 254C facility (exhibit E-2)
lowest point = 28.4 meters above the site elevation and does not reach any buildings, roads or
population (exhibit E-4). Based on this showing, a waiver of Section 74.1204 is requested, in
accordance with Living Way Ministries, Inc. (FCC 08-242).

E-2 K256DK Mod. +40 125.37 F(50-10) dBu Tabulation Within KMVP-FM 254C

K256DK Phoenix, AZ, Showing Protection to KMVP-FM, Channel: 254
Geographic Coordinates: N. 33 16 19.20 W. 111 44 24.50
74.1204(d) Study - Using GLOBE 30 SEC Terrain Database
Translator or LPFM Maximum Licensed ERP = 0.25 kW, Channel: 256
Translator or LPFM Antenna Height AG = 54.9 meters
K275CL Antenna Model = BKG-77-1

Protected Station's Contour = 85.37083 dBu
Translator's or LPFM's full Interference contour 125.37083

Review Azimuth = 0 Degrees True
Horizontal Relative Field at Review Azimuth = 1.000
Translator/LPFM ERP on the horizontal at Review Azimuth = 0.25 kW
Distance between stations = 30.8 km
Protected Station= KMVP-FM, 100 kW, 911 M meters COR AMSL

Depression Angle From Degree(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) (1)
00.00	1.0	1.0	0.2500	059.7625	059.7625	054.900
01.00	1.0	1.0	0.2499	059.7505	059.7414	053.857
02.00	1.0	1.0	0.2498	059.7386	059.7022	052.815
03.00	0.999	1.0	0.2497	059.7266	059.6448	051.774
04.00	0.999	1.0	0.2496	059.7147	059.5692	050.735
05.00	0.999	1.0	0.2495	059.7027	059.4755	049.697
06.00	0.996	1.0	0.2478	059.4995	059.1736	048.681
07.00	0.992	1.0	0.2461	059.2963	058.8543	047.674
08.00	0.989	1.0	0.2444	059.0931	058.5180	046.676
09.00	0.985	1.0	0.2428	058.8899	058.1649	045.688
10.00	0.982	1.0	0.2411	058.6867	057.7952	044.709
11.00	0.976	1.0	0.2383	058.3521	057.2800	043.766
12.00	0.971	1.0	0.2356	058.0174	056.7496	042.838
13.00	0.965	1.0	0.2329	057.6827	056.2043	041.924
14.00	0.96	1.0	0.2302	057.3481	055.6446	041.026
15.00	0.954	1.0	0.2275	057.0134	055.0707	040.144
16.00	0.947	1.0	0.2241	056.5831	054.3912	039.304
17.00	0.94	1.0	0.2207	056.1528	053.6992	038.483
18.00	0.932	1.0	0.2173	055.7225	052.9953	037.681
19.00	0.925	1.0	0.2140	055.2922	052.2798	036.899
20.00	0.918	1.0	0.2107	054.8619	051.5534	036.136
21.00	0.909	1.0	0.2065	054.3121	050.7047	035.436
22.00	0.9	1.0	0.2023	053.7623	049.8475	034.760
23.00	0.89	1.0	0.1982	053.2125	048.9824	034.108
24.00	0.881	1.0	0.1941	052.6627	048.1098	033.480
25.00	0.872	1.0	0.1901	052.1129	047.2303	032.876
26.00	0.861	1.0	0.1854	051.4674	046.2586	032.338
27.00	0.85	1.0	0.1808	050.8220	045.2827	031.827
28.00	0.84	1.0	0.1762	050.1766	044.3033	031.344
29.00	0.829	1.0	0.1717	049.5311	043.3209	030.887
30.00	0.818	1.0	0.1673	048.8857	042.3363	030.457
31.00	0.806	1.0	0.1624	048.1685	041.2885	030.091
32.00	0.794	1.0	0.1576	047.4514	040.2411	029.755
33.00	0.782	1.0	0.1529	046.7342	039.1946	029.447
34.00	0.77	1.0	0.1482	046.0171	038.1499	029.168
35.00	0.758	1.0	0.1436	045.2999	037.1075	028.917
36.00	0.745	1.0	0.1386	044.4991	036.0006	028.744
37.00	0.731	1.0	0.1337	043.6983	034.8990	028.602
38.00	0.718	1.0	0.1288	042.8975	033.8037	028.490
39.00	0.704	1.0	0.1240	042.0967	032.7153	028.408
40.00	0.691	1.0	0.1194	041.2959	031.6345	028.356 (1)
41.00	0.676	1.0	0.1142	040.3994	030.4898	028.396
42.00	0.661	1.0	0.1092	039.5030	029.3564	028.467
43.00	0.646	1.0	0.1043	038.6066	028.2350	028.570
44.00	0.631	1.0	0.0995	037.7101	027.1264	028.704
45.00	0.616	1.0	0.0949	036.8137	026.0312	028.869
46.00	0.6	1.0	0.0901	035.8814	024.9253	029.089
47.00	0.585	1.0	0.0855	034.9491	023.8352	029.340
48.00	0.569	1.0	0.0810	034.0168	022.7617	029.621
49.00	0.554	1.0	0.0766	033.0845	021.7054	029.931
50.00	0.538	1.0	0.0724	032.1522	020.6670	030.270
51.00	0.523	1.0	0.0685	031.2797	019.6849	030.591
52.00	0.509	1.0	0.0647	030.4071	018.7205	030.939
53.00	0.494	1.0	0.0611	029.5346	017.7744	031.313
54.00	0.48	1.0	0.0575	028.6621	016.8471	031.712
55.00	0.465	1.0	0.0541	027.7895	015.9394	032.136
56.00	0.45	1.0	0.0507	026.9051	015.0451	032.595
57.00	0.435	1.0	0.0474	026.0206	014.1718	033.077
58.00	0.421	1.0	0.0442	025.1361	013.3201	033.583
59.00	0.406	1.0	0.0412	024.2516	012.4905	034.112
60.00	0.391	1.0	0.0382	023.3671	011.6836	034.663
61.00	0.375	1.0	0.0352	022.4348	010.8766	035.278
62.00	0.36	1.0	0.0324	021.5025	010.0948	035.914
63.00	0.344	1.0	0.0296	020.5702	009.3387	036.572
64.00	0.329	1.0	0.0270	019.6379	008.6087	037.250
65.00	0.313	1.0	0.0245	018.7057	007.9053	037.947
66.00	0.298	1.0	0.0222	017.8212	007.2485	038.620
67.00	0.283	1.0	0.0201	016.9367	006.6177	039.310
68.00	0.269	1.0	0.0180	016.0522	006.0133	040.017
69.00	0.254	1.0	0.0161	015.1677	005.4356	040.740
70.00	0.239	1.0	0.0143	014.2832	004.8852	041.478
71.00	0.226	1.0	0.0128	013.5302	004.4050	042.107
72.00	0.214	1.0	0.0114	012.7772	003.9484	042.748

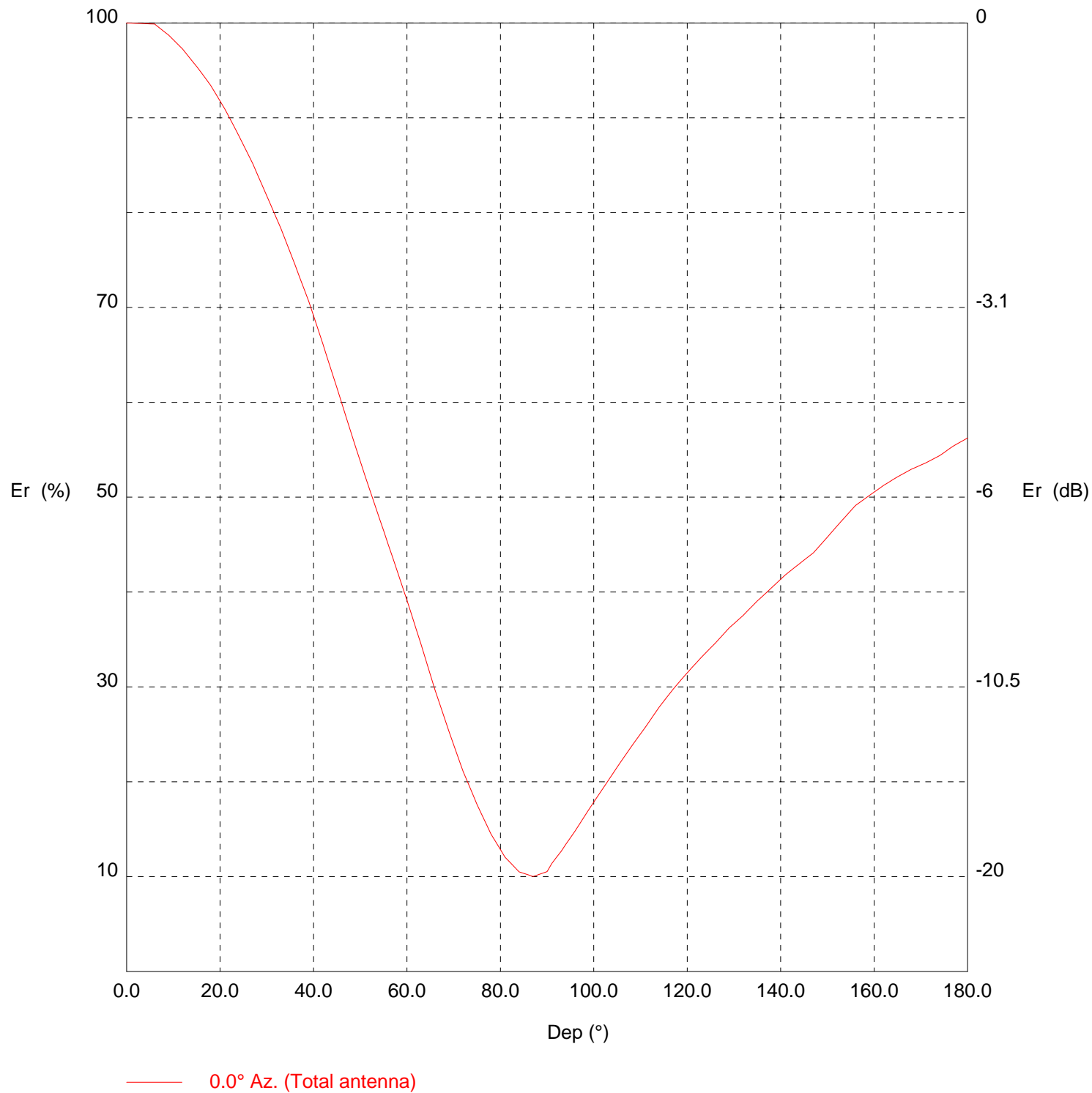
E-2 K256DK Mod. +40 125.37 F(50-10) dBu Tabulation Within KMVP-FM 254C, cont.

Depression Angle From Degree (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) (1)
73.00	0.201	1.0	0.0101	012.0242	003.5155	043.401
74.00	0.189	1.0	0.0089	011.2712	003.1068	044.065
75.00	0.176	1.0	0.0077	010.5182	002.7223	044.740
76.00	0.167	1.0	0.0069	009.9564	002.4087	045.239
77.00	0.157	1.0	0.0062	009.3947	002.1133	045.746
78.00	0.148	1.0	0.0055	008.8329	001.8365	046.260
79.00	0.138	1.0	0.0048	008.2711	001.5782	046.781
80.00	0.129	1.0	0.0042	007.7094	001.3387	047.308
81.00	0.124	1.0	0.0038	007.3986	001.1574	047.592
82.00	0.119	1.0	0.0035	007.0878	000.9864	047.881
83.00	0.113	1.0	0.0032	006.7771	000.8259	048.173
84.00	0.108	1.0	0.0029	006.4663	000.6759	048.469
85.00	0.103	1.0	0.0027	006.1555	000.5365	048.768
86.00	0.083	1.0	0.0017	004.9722	000.3468	049.940
87.00	0.063	1.0	0.0010	003.7889	000.1983	051.116
88.00	0.044	1.0	0.0005	002.6056	000.0909	052.296
89.00	0.024	1.0	0.0001	001.4223	000.0248	053.478
90.00	0.004	1.0	0.0000	000.2390	000.0000	054.661

(1) The +40 125.37 F(50-10) dBu contour lowest point = 28.4 meters above the site elevation, which does not reach any buildings, roads or population (exhibit E-4).

E-3 Nicom BKG77-1 Antenna Vertical Elevation Pattern and Tabulation

Vertical diagram



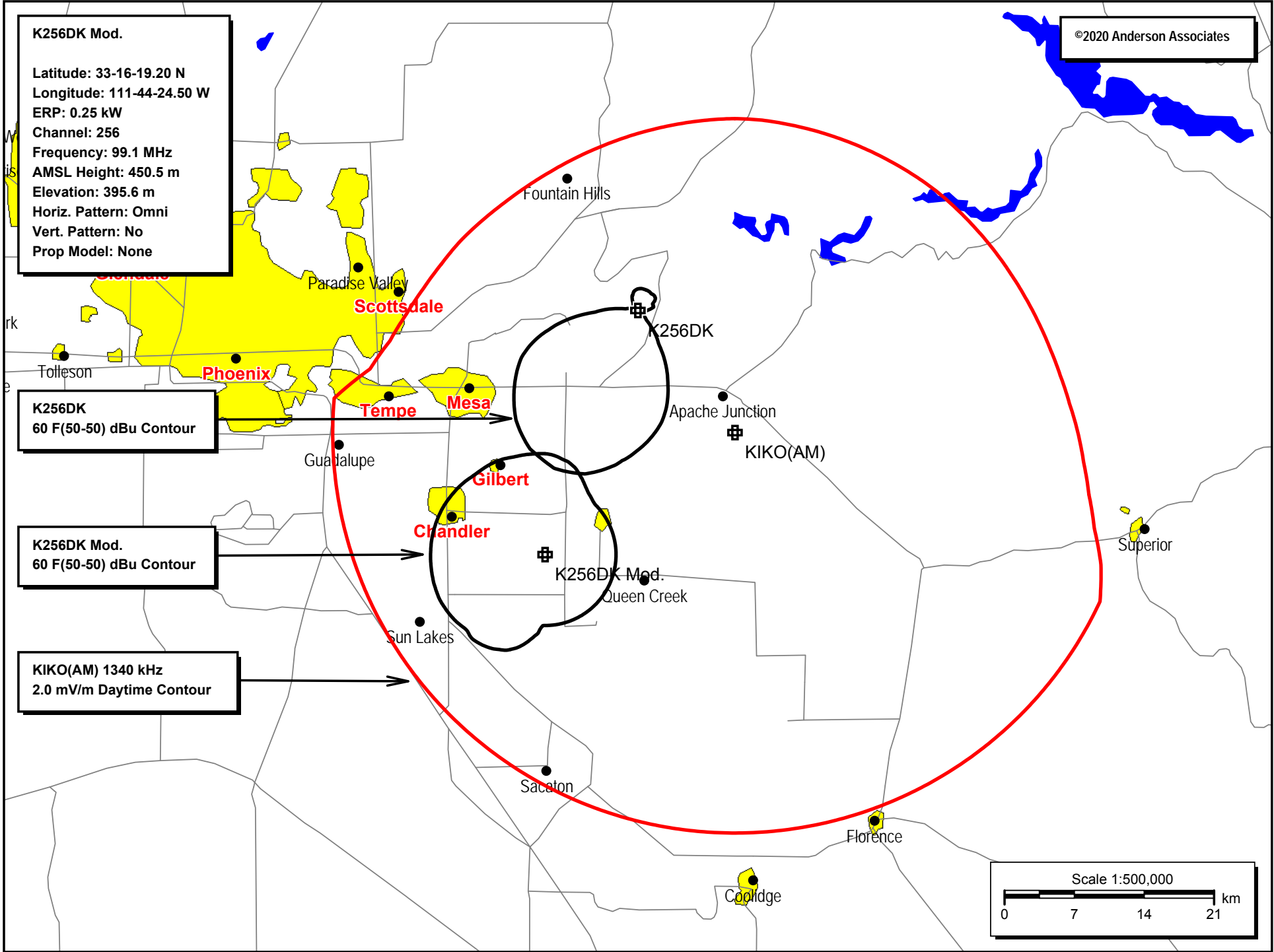
Frequency: 100.00 MHz

Vertical diagram at an azimuth of 0° degrees

Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)	Dep (°)	Er (%)	ERP (W)
0.0	100.0	373.6	60.0	39.1	57.2	120.0	31.5	37.0
1.0	100.0	373.5	61.0	37.6	52.8	121.0	32.0	38.3
2.0	100.0	373.4	62.0	36.1	48.6	122.0	32.6	39.6
3.0	99.9	373.3	63.0	34.5	44.6	123.0	33.1	41.0
4.0	99.9	373.1	64.0	32.9	40.5	124.0	33.6	42.2
5.0	99.9	372.9	65.0	31.3	36.6	125.0	34.1	43.5
6.0	99.9	372.8	66.0	29.7	33.0	126.0	34.6	44.7
7.0	99.5	369.9	67.0	28.2	29.8	127.0	35.2	46.2
8.0	99.1	367.0	68.0	26.8	26.8	128.0	35.7	47.6
9.0	98.7	364.1	69.0	25.3	23.9	129.0	36.2	49.1
10.0	98.2	360.5	70.0	23.9	21.3	130.0	36.7	50.3
11.0	97.7	356.9	71.0	22.5	18.9	131.0	37.1	51.5
12.0	97.2	353.3	72.0	21.1	16.6	132.0	37.6	52.7
13.0	96.6	348.9	73.0	19.9	14.8	133.0	38.1	54.1
14.0	96.0	344.5	74.0	18.8	13.2	134.0	38.6	55.6
15.0	95.4	340.1	75.0	17.6	11.6	135.0	39.1	57.0
16.0	94.7	335.4	76.0	16.6	10.2	136.0	39.5	58.4
17.0	94.1	330.8	77.0	15.5	9.0	137.0	40.0	59.7
18.0	93.4	326.1	78.0	14.5	7.8	138.0	40.4	61.1
19.0	92.6	320.4	79.0	13.7	7.0	139.0	40.9	62.5
20.0	91.8	314.7	80.0	12.9	6.2	140.0	41.4	63.9
21.0	91.0	309.1	81.0	12.0	5.4	141.0	41.8	65.3
22.0	90.0	302.7	82.0	11.5	5.0	142.0	42.2	66.5
23.0	89.1	296.5	83.0	11.0	4.5	143.0	42.6	67.8
24.0	88.1	290.3	84.0	10.5	4.1	144.0	43.0	69.0
25.0	87.2	283.8	85.0	10.3	4.0	145.0	43.4	70.3
26.0	86.2	277.4	86.0	10.2	3.9	146.0	43.8	71.6
27.0	85.2	271.1	87.0	10.0	3.7	147.0	44.1	72.8
28.0	84.0	263.9	88.0	10.2	3.9	148.0	44.7	74.7
29.0	82.9	256.8	89.0	10.4	4.0	149.0	45.3	76.5
30.0	81.8	249.8	90.0	10.5	4.1	150.0	45.8	78.4
31.0	80.6	242.9	91.0	11.4	4.8	151.0	46.4	80.3
32.0	79.5	236.1	92.0	12.0	5.4	152.0	46.9	82.3
33.0	78.3	229.3	93.0	12.7	6.0	153.0	47.5	84.3
34.0	77.1	222.0	94.0	13.4	6.7	154.0	48.0	86.2
35.0	75.8	214.7	95.0	14.1	7.4	155.0	48.6	88.2
36.0	74.5	207.6	96.0	14.8	8.2	156.0	49.1	90.2
37.0	73.2	200.4	97.0	15.6	9.1	157.0	49.5	91.5
38.0	71.9	193.3	98.0	16.4	10.0	158.0	49.8	92.8
39.0	70.6	186.3	99.0	17.1	11.0	159.0	50.2	94.1
40.0	69.1	178.6	100.0	17.9	11.9	160.0	50.5	95.4
41.0	67.6	170.9	101.0	18.6	12.9	161.0	50.9	96.8
42.0	66.1	163.5	102.0	19.3	13.9	162.0	51.2	98.1
43.0	64.6	156.0	103.0	20.1	15.0	163.0	51.5	99.2
44.0	63.1	148.7	104.0	20.8	16.2	164.0	51.8	100.4
45.0	61.6	141.6	105.0	21.5	17.3	165.0	52.1	101.6
46.0	60.0	134.4	106.0	22.3	18.5	166.0	52.4	102.7
47.0	58.4	127.5	107.0	23.0	19.7	167.0	52.7	103.7
48.0	56.8	120.7	108.0	23.7	21.0	168.0	53.0	104.8
49.0	55.3	114.4	109.0	24.4	22.2	169.0	53.2	105.7
50.0	53.8	108.2	110.0	25.1	23.5	170.0	53.4	106.5
51.0	52.3	102.2	111.0	25.7	24.8	171.0	53.6	107.4
52.0	50.8	96.6	112.0	26.5	26.2	172.0	53.9	108.4
53.0	49.4	91.1	113.0	27.2	27.6	173.0	54.1	109.4
54.0	47.9	85.8	114.0	27.9	29.0	174.0	54.4	110.5
55.0	46.5	80.7	115.0	28.5	30.4	175.0	54.7	111.9
56.0	45.0	75.7	116.0	29.2	31.8	176.0	55.1	113.3
57.0	43.6	71.0	117.0	29.8	33.1	177.0	55.4	114.7
58.0	42.1	66.2	118.0	30.4	34.4	178.0	55.7	115.9
59.0	40.6	61.6	119.0	30.9	35.7	179.0	56.0	117.0



E-5 K256DK Mod. 60 F(50-50) dBu Contour Plot



E-6 Distance From K246CH Lic. to K256DK Mod. Calculation

Distance between:

35 14 38.2 N Latitude, 111 36 16.7 W Longitude (Point 1)

As decimals: 35.2439444 Latitude, -111.6046389 Longitude

and

33 16 19.2 N Latitude, 111 44 24.5 W Longitude (Point 2)

As decimals: 33.2720000 Latitude, -111.7401389 Longitude

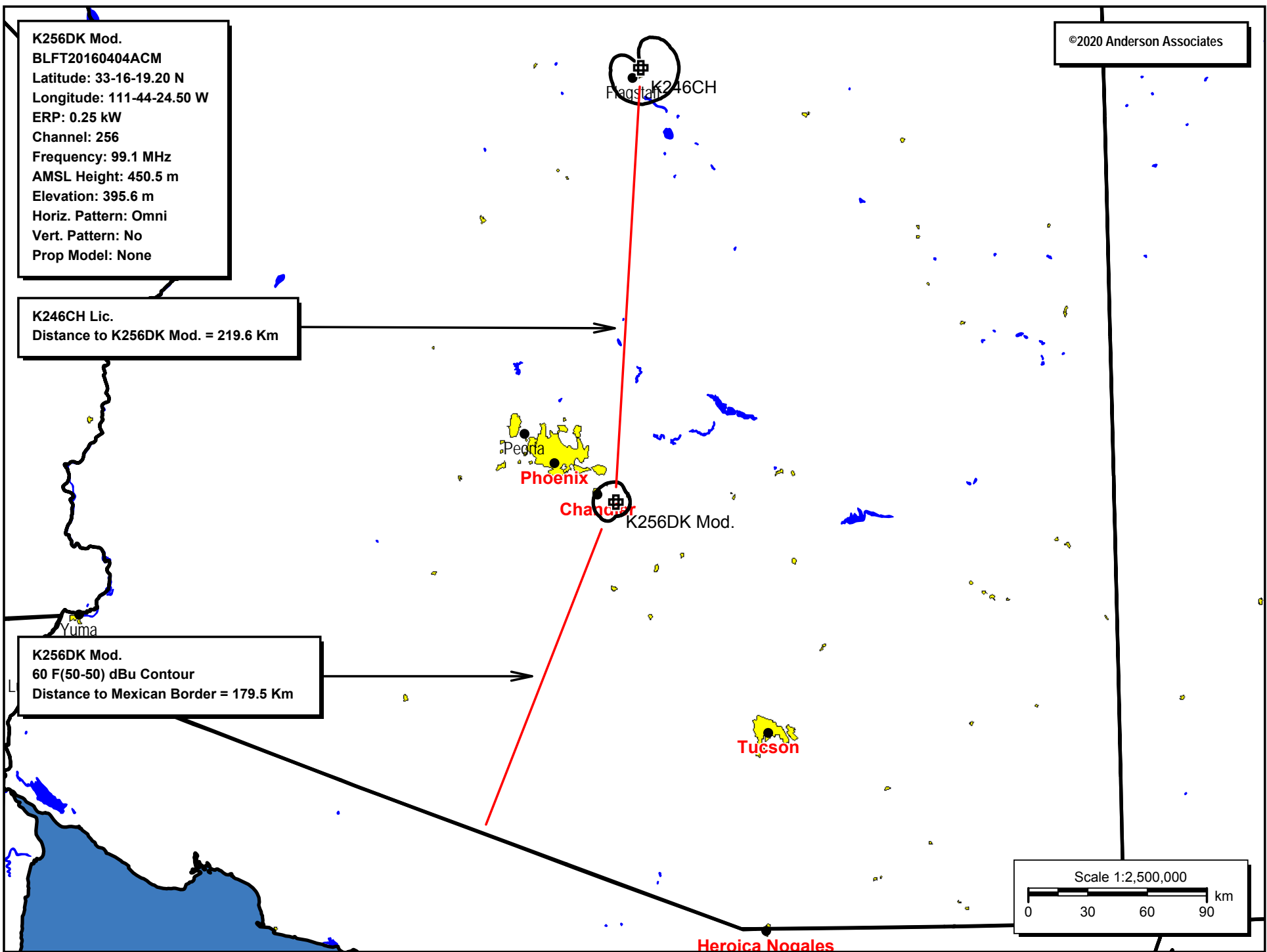
Distance = 219.594 km (136.449 miles)

via the Great Circle method of computation

Azimuth, Point 1 to Point 2: 183.29° True

Azimuth, Point 2 to Point 1: 3.21 ° True

E-7 K256DK Mod. 250 Mile Distance Plot



Antenna Height Above Average Terrain Calculations -- Results

Input Data

Latitude **33° 16' 19.2"** North

Longitude **111° 44' 24.5"** West (NAD 83)

Height of antenna radiation center above mean sea level: **450.5** meters AMSL

Number of Evenly Spaced Radials = **12** 0° is referenced to True North

Results

Calculated HAAT = **46 meters**

Antenna Height Above Average Terrain calculated
using 1 km [GLOBE terrain data](#)

Individual "Radial HAAT" Values, in meters

0°	53.0 m
30°	37.1 m
60°	33.7 m
90°	31.2 m
120°	32.9 m
150°	-9.0 m
180°	24.9 m
210°	63.4 m
240°	68.3 m
270°	74.6 m
300°	73.6 m
330°	65.0 m

ASR Registration 1210712

Registration Detail

Reg Number	1210712	Status	Constructed
File Number	A0263804	Constructed	05/07/2002
EMI	No	Dismantled	
NEPA	No		

Antenna Structure

Structure Type TOWER - Free standing or Guyed Structure used for Commu

Location (in NAD83 Coordinates)

Lat/Long	33-16-19.2 N 111-44-24.5 W	Address	Germann & Greenfield Rd
City, State	Gilbert , AZ		
Zip	85296	County	MARICOPA
Center of AM Array		Position of Tower in Array	

Heights (meters)

Elevation of Site Above Mean Sea Level	Overall Height Above Ground (AGL)
395.6	82.3
Overall Height Above Mean Sea Level	Overall Height Above Ground w/o Appurtenances
477.9	76.2

Painting and Lighting Specifications

FAA Chapters 4, 8, 13
Paint and Light in Accordance with FAA Circular Number 70/7460-1J

FAA Notification

FAA Study	99-AWP-2308-OE	FAA Issue Date	12/09/1999
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Owner & Contact Information

FRN	0006160238	Owner Entity Type
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Owner

Exac Communications LLC	P: (480)497-6263
9201 South 156th Place	F:
Gilbert , AZ 85234	E:

Contact

Goebel , Stephen D	P: (480)497-6263
9201 South 156th Place	F:
Gilbert , AZ 85234	E:

Last Action Status

Status	Constructed	Received	05/07/2002
Purpose	Notification	Entered	05/07/2002
Mode	Interactive		