

TECHNICAL STATEMENT  
K257CD PHOENIX, ARIZONA, CH. 257D  
LPFM BROADCASTING, LLC  
MINOR CHANGE APPLICATION  
DECEMBER 2023

This Technical Statement is made in support of a minor modification of FM translator station, K257CD at Phoenix, Arizona, facility ID 38482. K257CD seeks to relocate to an adjacent tower site located just 0.1 kilometers away on the same “Shaw Butte” communication site and remain a “fill-in” for KQFN(AM) Tempe, Arizona, facility ID 7701. K257CD seeks to make a minor technical change to replace its current directional antenna. No other changes are being made. The following will show that the new proposed operation of K257CD will meet all of the Commissions technical requirements for an FM translator station.

The new proposed operation of K257CD specifies a maximum Effective Radiated Power of 0.25 kilowatts (250 watts). It will operate with a directional antenna with an “off the shelf” type antenna, or a BEXT TFC2K-D custom composite pattern with circular polarization. The antenna will be mounted on an existing non-registered tower, at the Shaw Butte communications tower site, with an overall height of 24 meters above the ground. The antenna will be mounted with a Center of Radiation of 14 meters above the ground, and 659 meters Above Mean Sea Level. The coordinates of this tower are located at N 33° 35’ 39.2”, W 112° 05’ 10.5”, NAD 83.

Figure 1 is a detailed interference study conducted on channel 257D with these new proposed facilities. It shows that the new operation of K257CD will not cause any interference to any existing or proposed FM stations on any of the pertinent same channel

or adjacent channels to channel 257 with the exception of third adjacent channel stations, KMVP-FM Phoenix, Arizona, facility ID 52514, operating on channel 254C and KESZ Phoenix, Arizona, facility ID 40992, channel 260C.

The proposed operation of K257CD on 257D is located within the protected 60 dB $\mu$  contour of 3rd adjacent channel of KMVP-FM. Figure 2 shows the predicted F(50-50) field strength of KMVP-FM at the proposed K257CD transmitter site is 87.4 dB $\mu$ . Therefore, the respective predicted interfering contour F(50-10) generated by the proposed K257CD on channel 257D is an additional 40 dB $\mu$  or 127.4 dB $\mu$ .

The proposed operation of K257CD on 257D is located within the protected 60 dB $\mu$  contour of 3rd adjacent channel of KESZ(FM). Figure 3 shows the predicted F(50-50) field strength of KESZ(FM) at the proposed K257CD transmitter site is 86.9 dB $\mu$ . Therefore, the respective predicted interfering contour F(50-10) generated by the proposed K257CD on channel 257D is an additional 40 dB $\mu$  or 126.9 dB $\mu$ .

Figure 4 shows the coverage area for the worse case 126.9 dB $\mu$  interference contour F(50-10) and shows that there is no population in the area of interference. The applicant, LPFM Broadcasting, LLC, respectfully requests a waiver of C.F.R. 74.1204(d) of the Commission's rules based on the fact that there is no population within the area of predicted interference. There are no homes nearby the proposed existing tower site, which is a privately owned on 1/2 acres with private access. The transmitter building is uninhabited and does not have indoor plumbing. The area around the tower base is fenced. Figure 11 is a vertical pattern study with KESZ utilizing the proposed BEXT TFC2K-D. It shows that the proposed interference contour will not extend more than 45 meters from the base of the tower. It should be noted that the new proposed operation of

K257CD will only be 0.1 kilometers from the currently licensed 250 watt ERP operation of K257CD. No interference complaints have been received from the multi-year operation of K257CD. Should any unforeseen actual interference be caused, the licensee will immediately cease broadcasting with K257CD until such interference can be eliminated.

Figure 5 shows the directional antenna data for the new proposed operation of K257CD.

Figure 6 is a more detailed interference study with KEMP(FM) Payson, AZ, facility ID 164203, on channel 257C3.

Figure 7 is a more detailed interference study with a new pending LPFM application (file no. 0000233082), facility ID 788541 at Komatke, AZ on channel 256D.

Figure 8 is a more detailed interference study with KRPB-FM1 Morristown, AZ, facility ID 189907, on channel 258D.

The proposed operation of K257CD Phoenix, Arizona will be considered a “Fill-In” operation for KQFN(AM) Tempe, Arizona. KQFN(AM) operates with 24 kilowatts daytime with a non-directional antenna system on 1580 kHz. Figure 9 shows that the proposed 60 dB $\mu$  contour for the proposed K257CD will not extend beyond the daytime 2.0 mV/m contour of KQFN. Since this is a “Fill-In” translator, the maximum ERP will not exceed the maximum permissible ERP of 250 watts in any azimuth.

Figure 10 shows the present and proposed 60 dB $\mu$  for K257CD.

It was found that the new proposed operation of K257CD Phoenix, Arizona on channel 257D, will satisfy all of the required commission rules and regulations for an FM translator station.

FIGURE 1 - DETAILED CHANNEL INTERFERENCE STUDY

K257CD PHOENIX, AZ, CH. 257D

REFERENCE 33 35 39.20 N. CH# 257D - 99.3 MHz, Pwr= 0.25 kW DA, HAAT= 257.8 M, COR= 659 M DISPLAY DATES  
 112 05 10.50 W. Average Protected F(50-50)= 20.98 km DATA 12-19-23  
 Standard Directional SEARCH 12-19-23

CH CITY	CALL	TYPE STATE	ANT AZI <--	DIST FILE #	LAT LNG	PWR(kw) HAAT(M)	INT(km) COR(M)	PRO(km) LICENSEE	*IN* (Overlap in km)	*OUT*
257D Phoenix	K257CD	LIC DCN AZ	285.1 105.1	0.10 BLFT20180213AAA	33 35 40.10 112 05 14.50	0.250	671	---Reference---		
254C Phoenix	KMVP-FM *	LIC _CN AZ	175.9 355.9	29.06 BMLH20040707ABN	33 19 58.20 112 03 50.50	100.000 545	13.4 911	90.9	-4.6	-62.6*
260C Phoenix	KESZ *	LIC _CN AZ	175.4 355.5	28.91 0000204196	33 20 03.70 112 03 41.20	100.000 506	13.0 874	89.1	-4.4	-60.9*
257C3 Payson	KEMP	LIC _CN AZ	46.2 226.7	95.24 BLH20070813ABX	34 11 04.10 111 20 18.40	17.000 123	119.1 1457	41.6	-34.8*	3.5
258C2 Morristown	KRPH	LIC NCN AZ	317.4 137.0	90.61 0000106194	34 11 32.10 112 45 13.00	7.900 371	96.2 1577	60.9	-20.4*	3.1
258D Wittman	KRPH-FM1	LIC _CN AZ	318.1 137.9	53.92 BLFTB20121210ACV	33 57 17.10 112 28 36.60	0.625	48.0 1123	30.7	-8.5	0.6
256L1 Komatke	NEW	APP _CN AZ	191.5 11.5	32.05 0000233082	33 18 39.70 112 09 18.50	0.100 16	395		2.7	0.5
257L1 Gold Canyon	KRWV-LP	LIC _CN AZ	114.6 295.0	66.88 0000146928	33 20 31.30 111 25 57.80	0.100	573		23.5R	43.4M
256D Phoenix	K256DK	LIC DHN AZ	105.2 285.4	42.89 0000125313	33 29 33.50 111 38 26.10	0.250	19.3 772	1.5	10.3	4.2
256D Phoenix	K256DK	CP _CN AZ	138.0 318.2	48.09 0000129785	33 16 19.20 111 44 24.50	0.250	15.8 451	10.8	10.8	5.2
258L1 Gilbert	NEW	APP _CN AZ	138.4 318.5	42.98 0000232408	33 18 17.10 111 46 44.10	0.100 14	401		13.4	5.7
258L1 Mesa	KWSF-LP	LIC _VN AZ	105.2 285.5	42.90 0000143687	33 29 32.60 111 38 26.30	0.000 260	763		23.8	15.4
258C Tucson	KIIM-FM	LIC _CN AZ	148.6 329.1	174.57 BLH19850131LP	32 14 56.20 111 07 01.30	93.000 621	135.6 1385	91.2	16.8	50.3
204C3 Chandler	KVIT	LIC DCN AZ	171.6 351.6	66.18 BLED20150812AAS	33 00 14.20 111 58 55.50	15.000 113	46.6 503	131.8	11.5R	54.7M
257C2 Parker	DKVEZ	VAC _N AZ	287.3 106.1	205.25	34 07 22.06 114 12 42.82	50.000 150	128.0 378	42.5	57.7	104.0
256A Prescott	KTMG	LIC _CN AZ	341.7 161.5	114.66 BLH19930510KC	34 34 29.10 112 28 47.60	6.000 61	23.5 1759	15.8	72.8	73.6

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

\* No actual interference will be caused to either KMVP-FM or KESZ since the 127.4 dbu interference contour will not cover any population. It should also be noted that K257CD is moving only 0.1 kilometer to an adjacent tower site located on the same "Shaw Butte" communication sites with the same 250 watts maximum ERP. No interference complaints have ever been filed against K257CD to date.

**K257CD Proposed**

BLFT20180213AAA

Latitude: 33-35-39.20 N

Longitude: 112-05-10.50 W

ERP: 0.25 kW

Channel: 257

Frequency: 99.3 MHz

AMSL Height: 659.0 m

Elevation: 645.485 m

Horiz. Pattern: Directional

Vert. Pattern: No

Prop Model: None

**KMVP-FM**

BMLH20040707ABN

Latitude: 33-19-58.03 N

Longitude: 112-03-47.97 W

ERP: 100.00 kW

Channel: 254

Frequency: 98.7 MHz

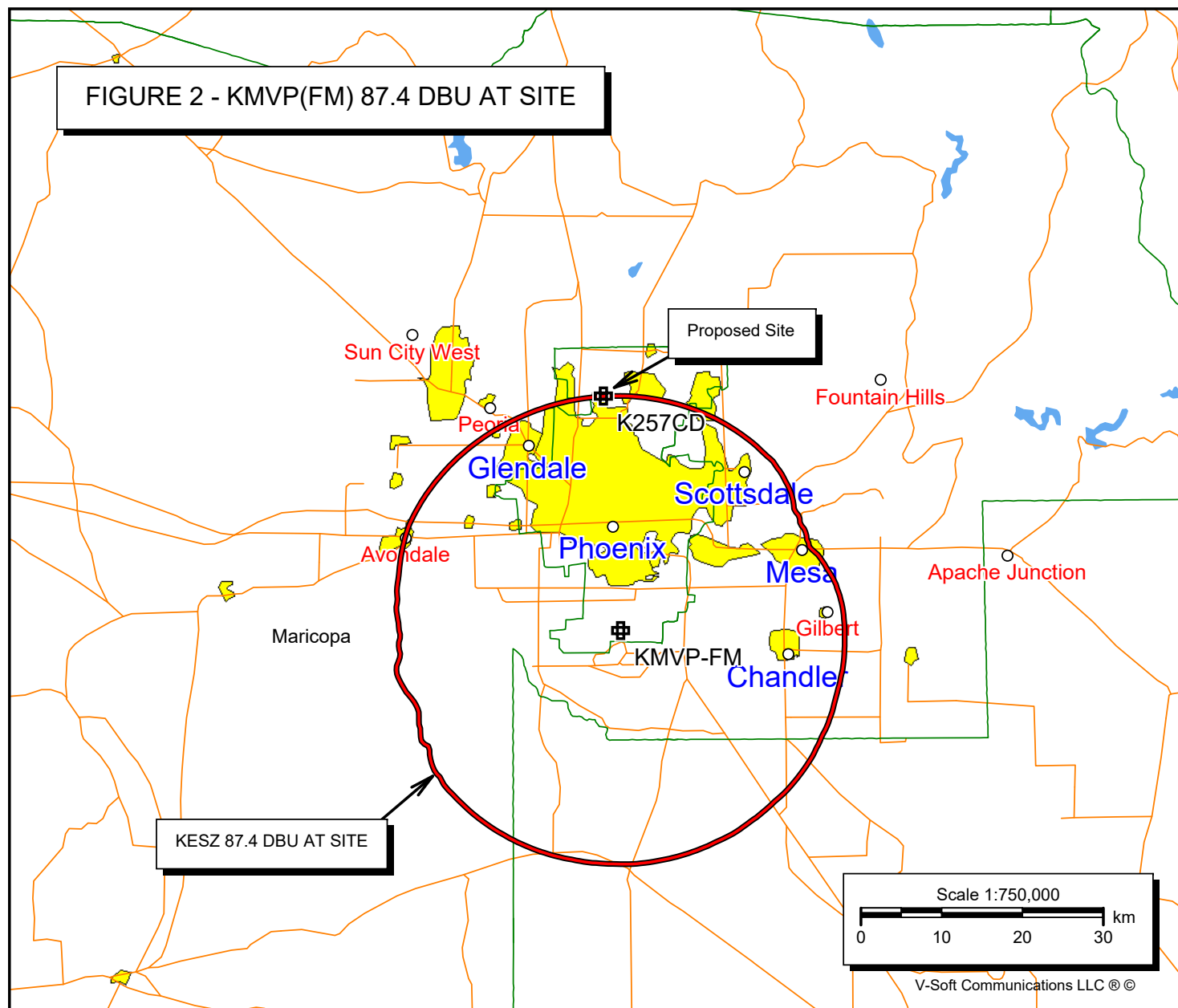
AMSL Height: 911.0 m

Elevation: 810.0 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

**FIGURE 2 - KMVP(FM) 87.4 DBU AT SITE**

**K257CD Proposed**

BLFT20180213AAA

Latitude: 33-35-39.20 N

Longitude: 112-05-10.50 W

ERP: 0.25 kW

Channel: 257

Frequency: 99.3 MHz

AMSL Height: 659.0 m

Elevation: 645.485 m

Horiz. Pattern: Directional

Vert. Pattern: No

Prop Model: None

**KESZ**

0000204196

Latitude: 33-20-03.53 N

Longitude: 112-03-38.67 W

ERP: 100.00 kW

Channel: 260

Frequency: 99.9 MHz

AMSL Height: 874.0 m

Elevation: 796.0 m

Horiz. Pattern: Omni

Vert. Pattern: No

Prop Model: None

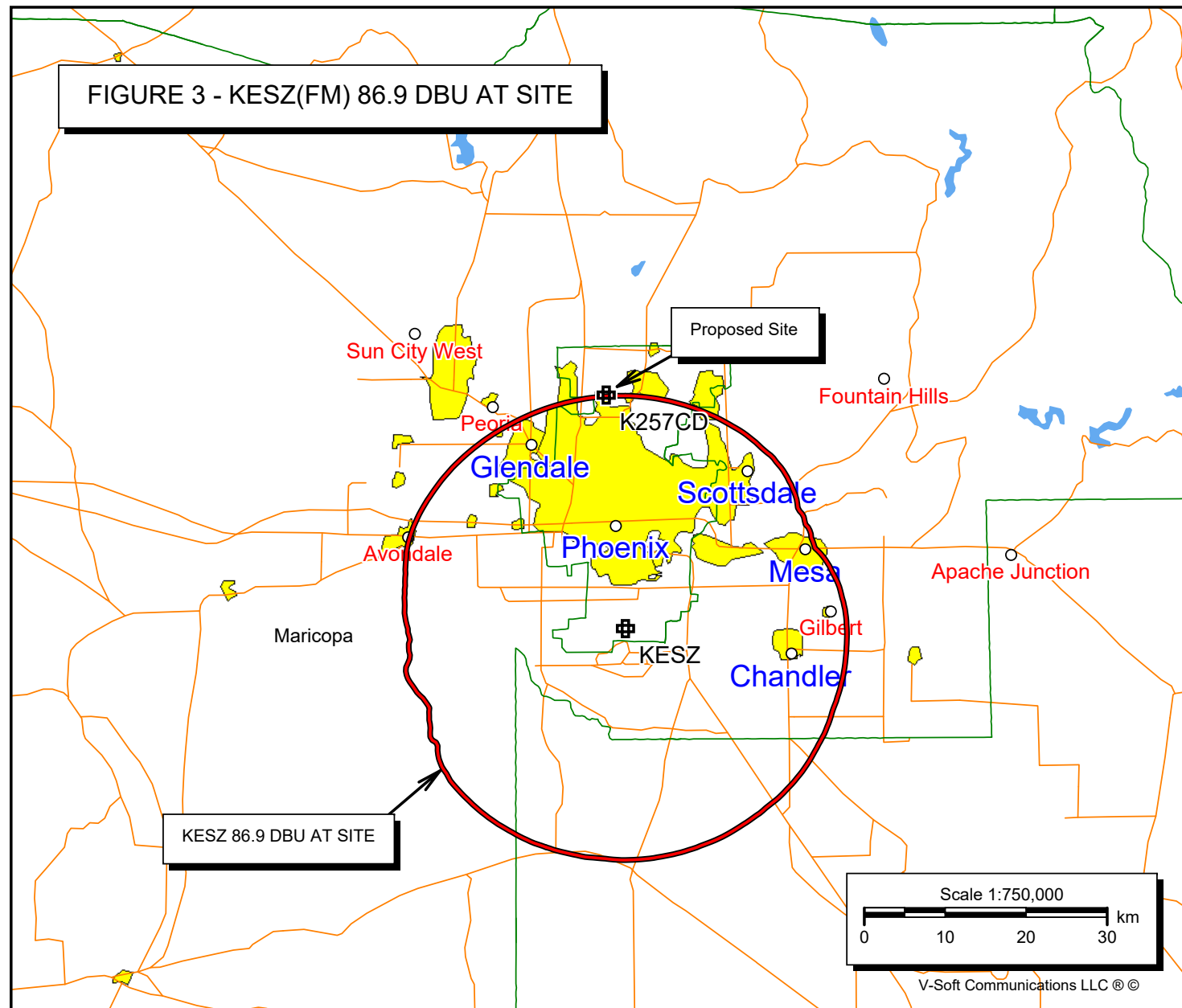
**FIGURE 3 - KESZ(FM) 86.9 DBU AT SITE**

FIGURE 4 - PREDICTED 126.9 DBU INTERFERENCE CONTOUR  
K257CD PHOENIX, AZ, CH. 257D

Coverage Study - GLOBE 30 Sec  
12-19-2023

K257CD CH257 D , 0.25 kW, 257.8m HAAT, 659.0m COR AMSL  
Interference Contour = 127 dBu. Population = 0

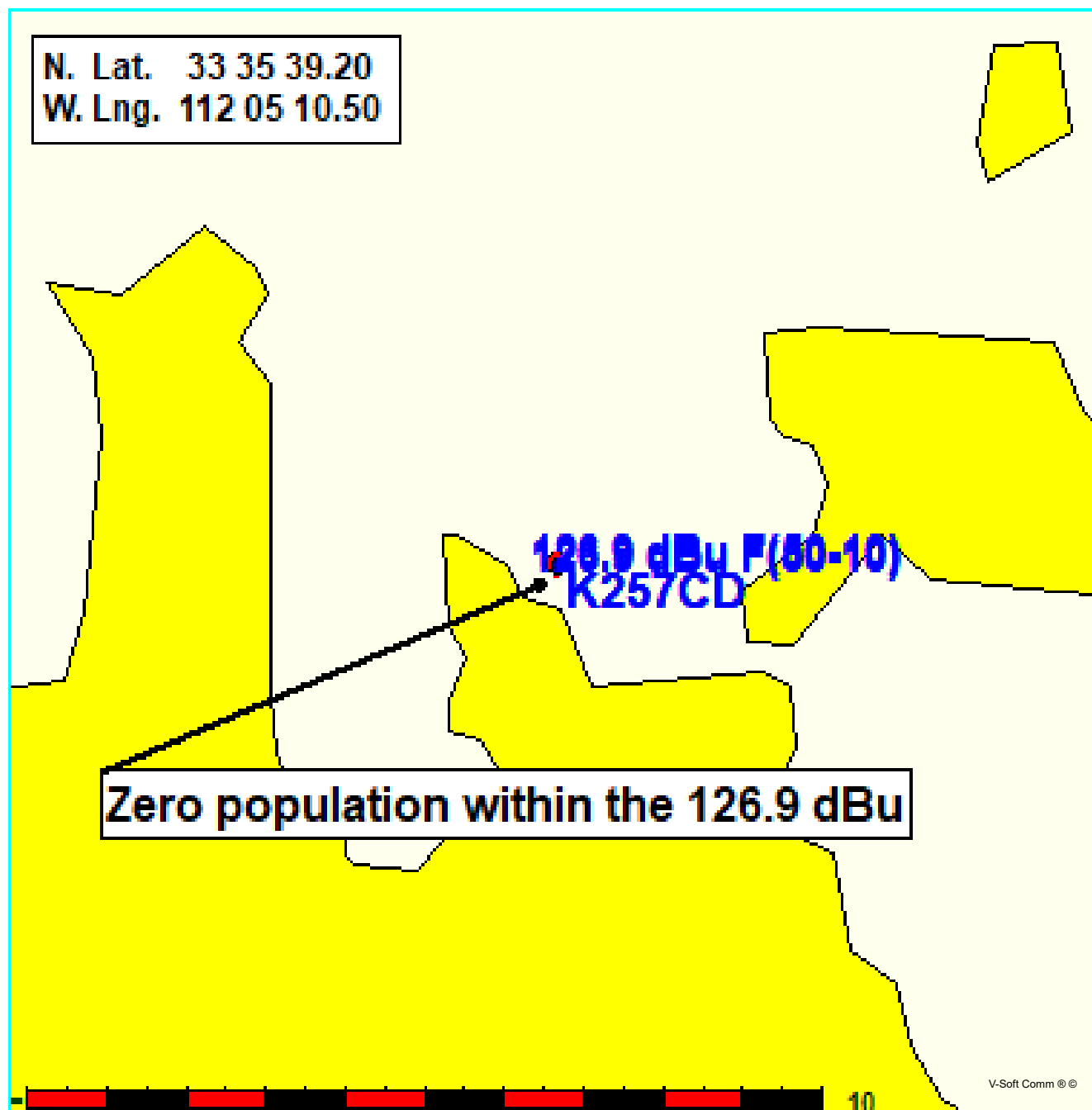


FIGURE 5 - DIRECTIONAL ANTENNA DATA

K257CD

12-19-2023

RMS(V)= .767

Graph is Relative Field

Azi	Field	dbk	kw
000	0.890	-07.033	0.198
010	0.930	-06.651	0.216
020	0.890	-07.033	0.198
030	0.820	-07.744	0.168
040	0.650	-09.762	0.106
050	0.540	-11.373	0.073
060	0.490	-12.217	0.060
070	0.455	-12.860	0.052
080	0.480	-12.396	0.058
090	0.640	-09.897	0.102
100	0.780	-08.179	0.152
110	0.930	-06.651	0.216
120	1.000	-06.021	0.250
130	1.000	-06.021	0.250
140	1.000	-06.021	0.250
150	0.980	-06.196	0.240
160	0.930	-06.651	0.216
170	0.790	-08.068	0.156
180	0.590	-10.604	0.087
190	0.400	-13.979	0.040
200	0.400	-13.979	0.040
210	0.610	-10.314	0.093
220	0.800	-07.959	0.160
230	0.920	-06.745	0.212
240	1.000	-06.021	0.250
250	0.980	-06.196	0.240
260	0.930	-06.651	0.216
270	0.850	-07.432	0.181
280	0.760	-08.404	0.144
290	0.635	-09.965	0.101
300	0.550	-11.213	0.076
310	0.520	-11.701	0.068
320	0.505	-11.955	0.064
330	0.525	-11.617	0.069
340	0.690	-09.244	0.119
350	0.885	-07.082	0.196

BEXT TFC2K-D

oriented at 130 degrees

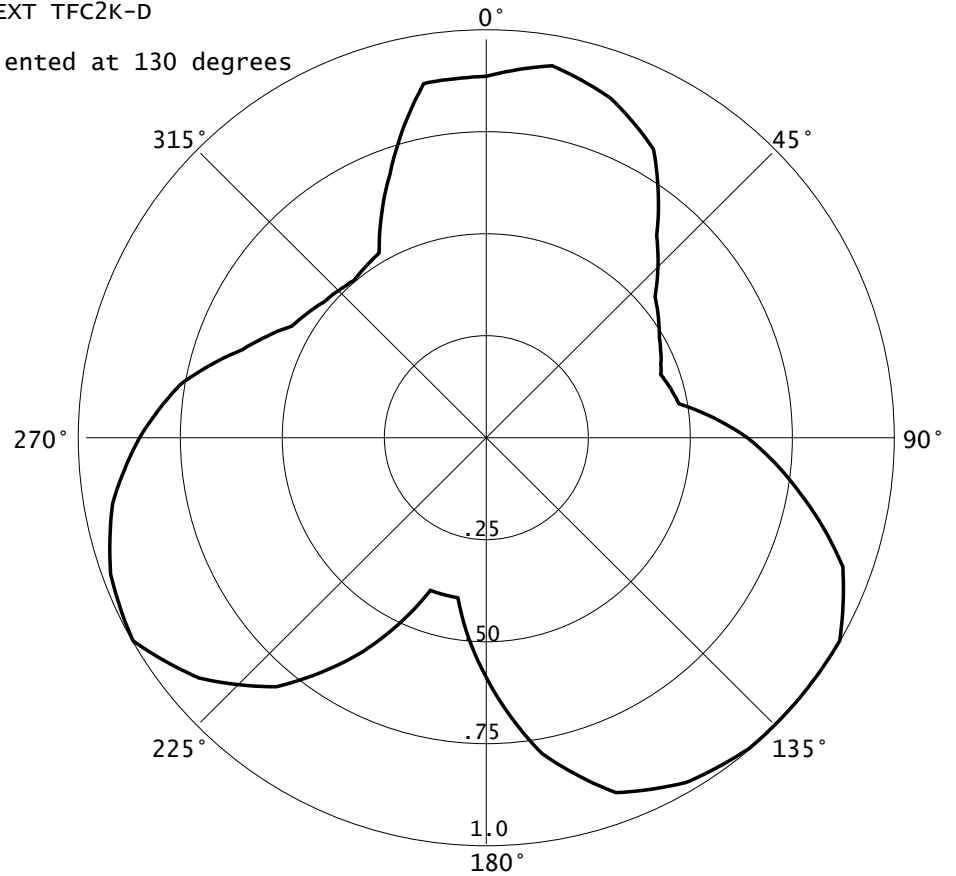




FIGURE 6 - Detailed channel interference study KEMP(FM)  
K257CD PHOENIX, AZ, CH. 257D

FMCommander Single Allocation Study - 12-19-2023 - GLOBE 30 Sec  
K257CD's Overlaps (In= -34.76 km, Out= 3.54 km)

K257CD CH 257 D DA  
Lat= 33 35 39.20, Lng= 112 05 10.50  
0.25 kW 257.8 m HAAT, 659 m COR  
Prot.= 60 dBu, Intef.= 40 dBu

KEMP CH 257 C3 BLH20070813ABX  
Lat= 34 11 04.10, Lng= 111 20 18.40  
17.0 kW 123 m HAAT, 1457 m COR  
Prot.= 60 dBu, Intef.= 40 dBu

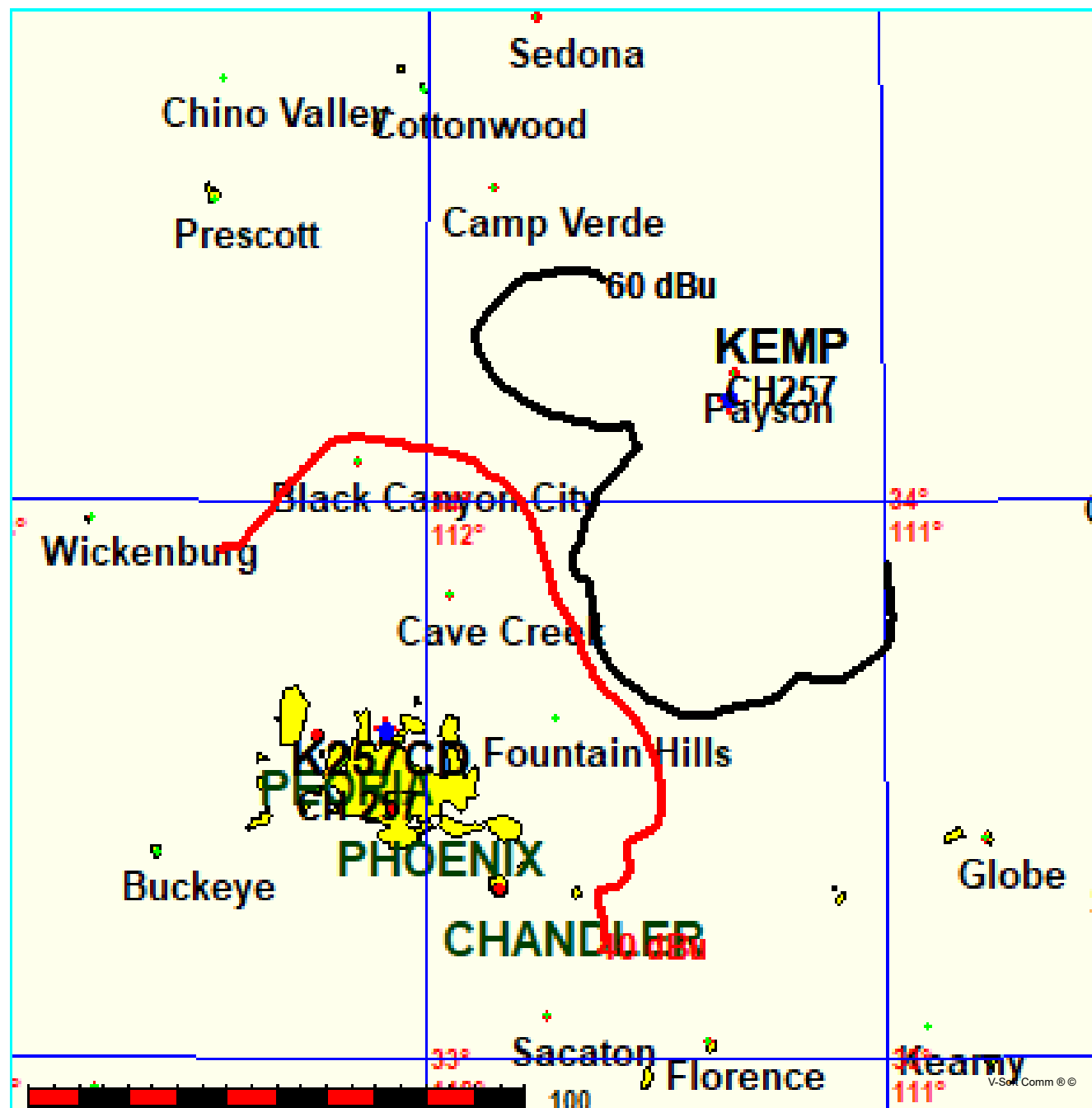


FIGURE 7 - Detailed channel interference study New LPFM  
K257CD PHOENIX, AZ, CH. 257D

FMCommander Single Allocation Study - 12-19-2023 - GLOBE 30 Sec  
K257CD's Overlaps (In= 2.7 km, Out= 0.49 km)

K257CD CH 257 D DA  
Lat= 33 35 39.20, Lng= 112 05 10.50  
0.25 kW 257.8 m HAAT, 659 m COR  
Prot.= 60 dBu, Intef.= 54 dBu

NEW-A CH 256 L1 0000233082  
Lat= 33 18 39.70, Lng= 112 09 18.50  
0.1 kW 16.13 m HAAT, 395.3 m COR  
Prot.= 60 dBu, Intef.= 54 dBu

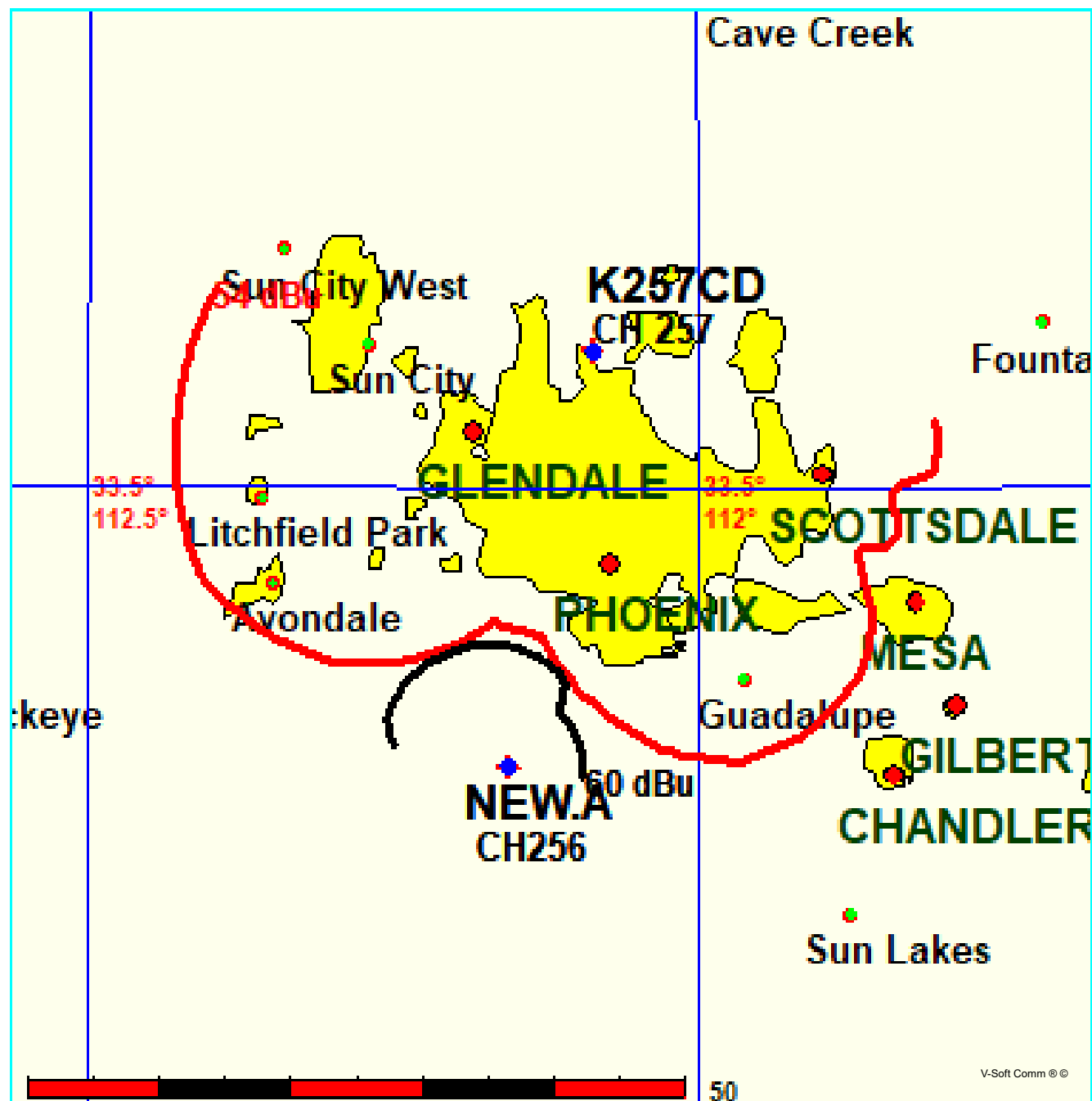


FIGURE 8 - Detailed channel interference study KRPB-FM1  
K257CD PHOENIX, AZ, CH. 257D

FMCommander Single Allocation Study - 12-19-2023 - GLOBE 30 Sec  
K257CD's Overlaps (In= -8.54 km, Out= 0.59 km)

K257CD CH 257 D DA  
Lat= 33 35 39.20, Lng= 112 05 10.50  
0.25 kW 257.8 m HAAT, 659 m COR  
Prot.= 60 dBu, Intef.= 54 dBu

KRPB-FM1 CH 258 D BLFTB20121210ACV  
Lat= 33 57 17.10, Lng= 112 28 36.60  
0.625 kW 0 m HAAT, 1123 m COR  
Prot.= 60 dBu, Intef.= 54 dBu

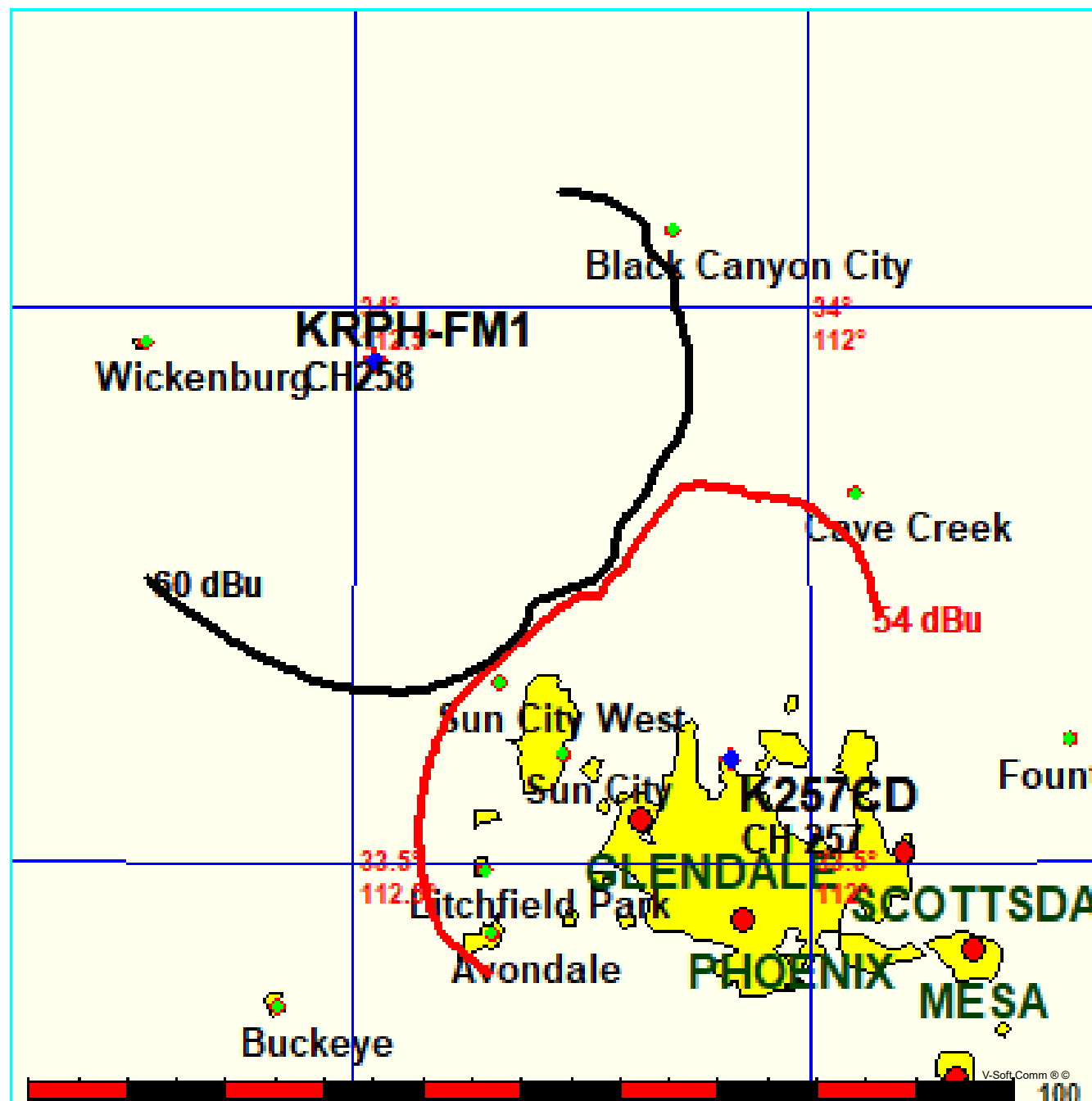


FIGURE 9 - FILL-IN MAP WITH KQFN(AM)  
K257CD PHOENIX, AZ, CH. 257D

Coverage Study - GLOBE 30 Sec  
12-19-2023

K257CD CH257 D , 0.25 kW, 257.8m HAAT, 659.0m COR AMSL  
Service Contour = 60 dBu.

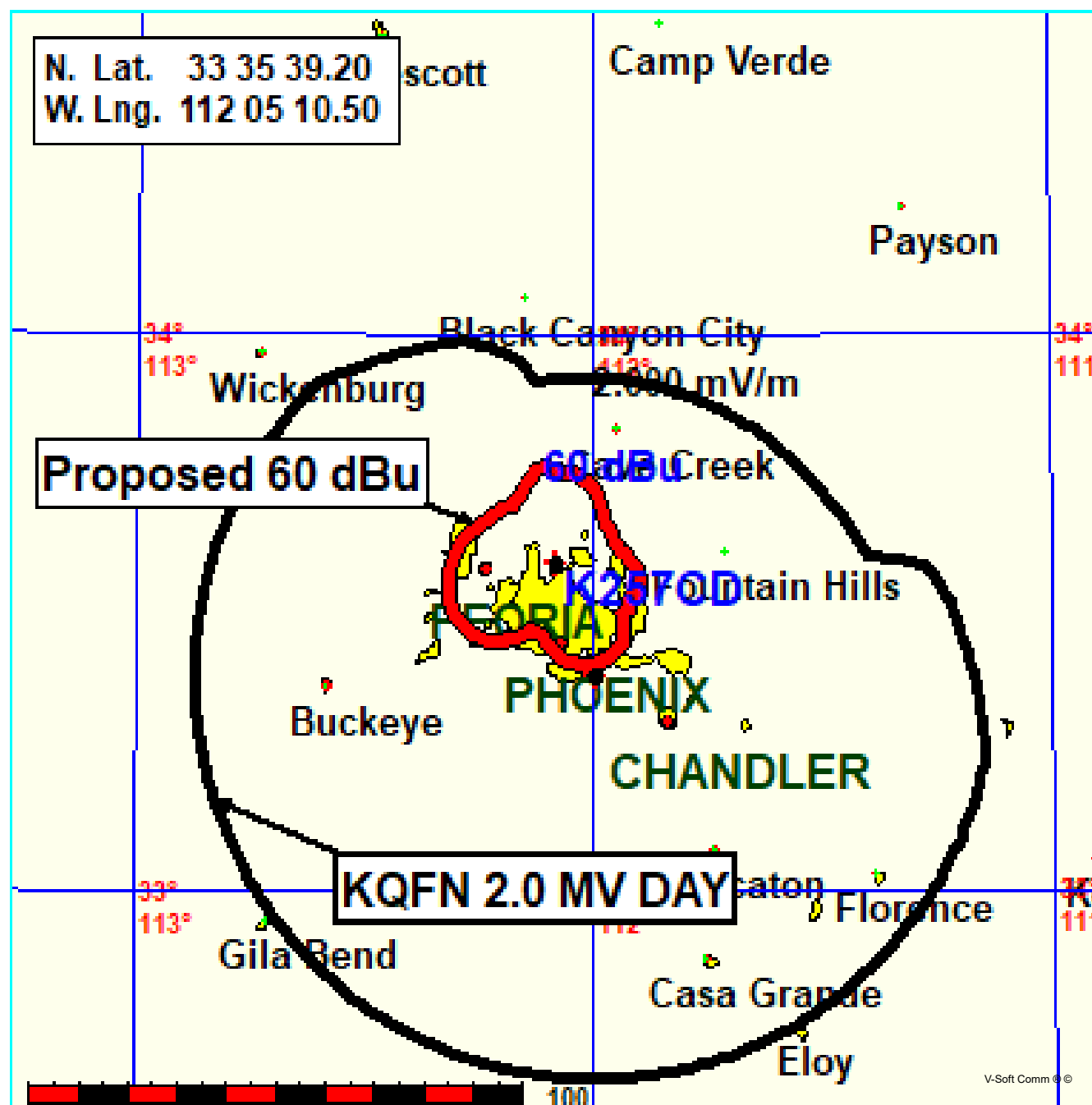


FIGURE 10 - PRESENT AND PROPOSED 60 DBU  
K257CD PHOENIX, AZ, CH. 257D

Coverage Study - GLOBE 30 Sec  
12-19-2023

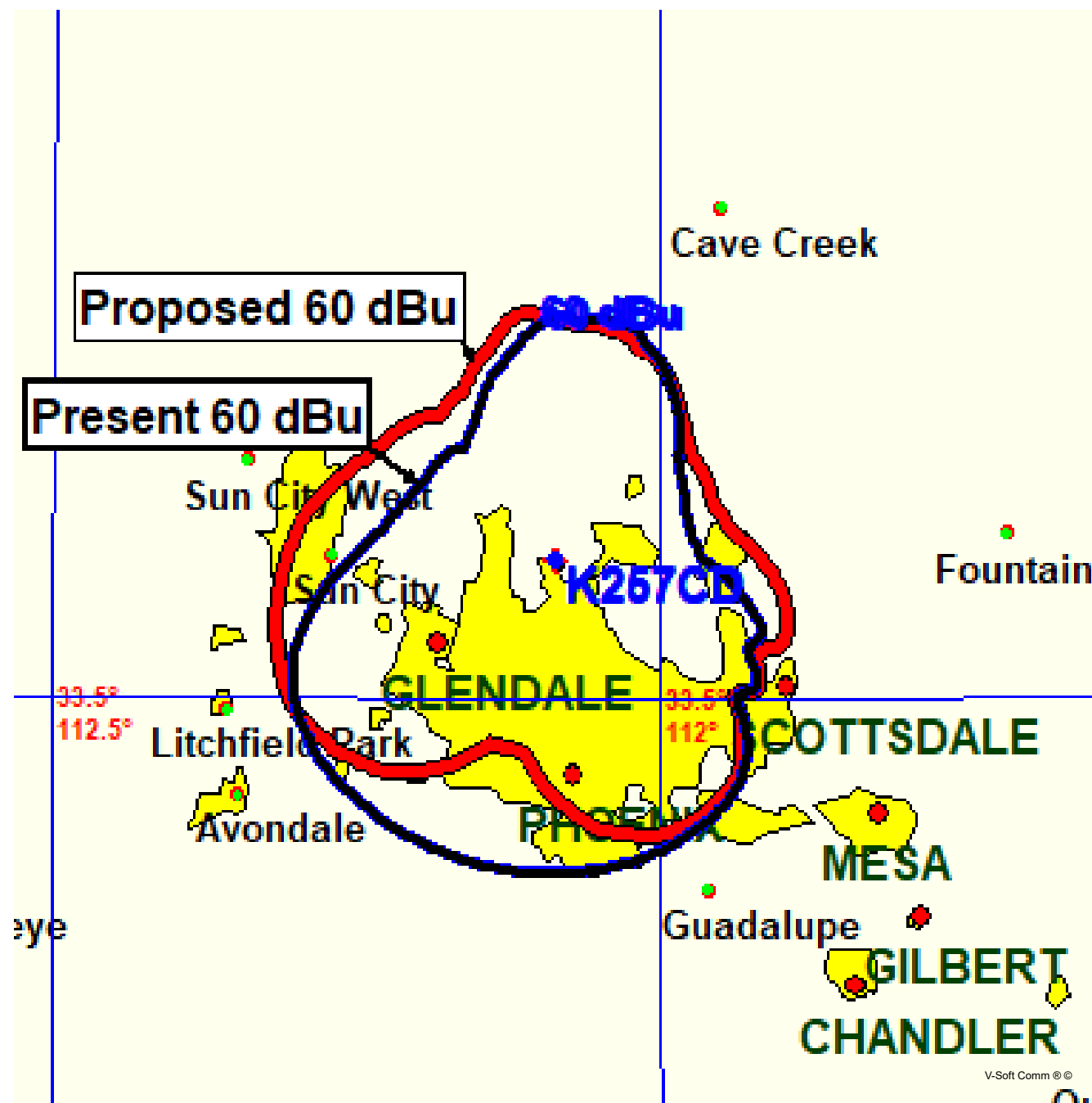


Figure 11 - Vertical Pattern Study with KESZ(FM)

K257CD Phoenix, AZ, Showing Protection to KESZ , Channel: 260  
 Geographic Coordinates: N. 333539.20 W. 112 05 10.50  
 74.1204(d) Study - Using USGS 03 SEC Terrain Database  
 Translator or LPFM Maximum Licensed ERP = 0.25 kW, Channel: 257  
 Translator or LPFM Antenna Height AG = 14 meters  
 K257CD Antenna Azimuth Model = Vertical Model Name = BEXT TFC2K-D One Bay

Protected Station's Contour = 86.9 dBu

Translator's or LPFM's full Interference contour 126.9

Review Azimuth = 0 Degrees True  
 Horizontal Relative Field at Review Azimuth = 0.890  
 Translator/LPFM ERP on the horizontal at Review Azimuth = 0.198 kW  
 Distance between stations = 29.0 km  
 Protected Station= KESZ, 100 kW, 874 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)
00.00	1.0	0.89	0.2225	049.0060	049.0060	014.000
05.00	0.993	0.89	0.2194	048.6630	048.4778	009.759
10.00	0.974	0.89	0.2111	047.7319	047.0067	005.711
15.00	0.941	0.89	0.1970	046.1147	044.5434	002.065
20.00	0.897	0.89	0.1790	043.9584	041.3074	-001.035
25.00	0.843	0.89	0.1581	041.3121	037.4415	-003.459
30.00	0.78	0.89	0.1354	038.2247	033.1036	-005.112
35.00	0.709	0.89	0.1118	034.7453	028.4617	-005.929
40.00	0.633	0.89	0.0892	031.0208	023.7633	-005.940 - Lowest Point
45.00	0.554	0.89	0.0683	027.1493	019.1975	-005.197
50.00	0.473	0.89	0.0498	023.1799	014.8997	-003.757
55.00	0.394	0.89	0.0345	019.3084	011.0748	-001.816
60.00	0.317	0.89	0.0224	015.5349	007.7675	000.546
65.00	0.245	0.89	0.0134	012.0065	005.0742	003.118
70.00	0.181	0.89	0.0073	008.8701	003.0337	005.665
75.00	0.124	0.89	0.0034	006.0767	001.5728	008.130
80.00	0.077	0.89	0.0013	003.7735	000.6553	010.284
85.00	0.041	0.89	0.0004	002.0092	000.1751	011.998
90.00	0.016	0.89	0.0001	000.7841	000.0000	013.216