

## **Technical Report K232AG Minor Modification**

This technical report is submitted for a minor modification to K232AG at Chester, Etc., CA, FCC file no. BLFT-19901029TD. A change to channel 229, with corresponding correction of the tower coordinates, modification of the current antenna, and an increase in ERP are requested for the translator to serve as a fill-in to rebroadcast the primary signal of KJDX(FM) 227C0 at Susanville, CA, FCC facility I.D. 50306.

The following exhibits are provided for the FCC form 349 application:

- E-1 K232AG Mod. Overlap Study
- E-2 60 dBu Plots within KJDX(FM) and Overlap to K232AG Lic.
- E-3 Scala Directional Composite Antenna Pattern

### **K232AG Modification Analysis:**

An overlap study in exhibit E-1 shows K232AG at channel 229 will be located within the second adjacent protected contour of its primary KJDX(FM) 227 C0 facility. The +40 100 dBu F(50-10) contour is well outside of the primary KJDX(FM) Susanville, CA community of license, as allowed by CFR 74.1203(d). It is also noted the 229D application at East Quincy, CA will be dismissed concurrent with this application.

### **Antenna System:**

K232AG will remain at its current site at corrected coordinates:

**40 14 21 N 121 01 54 W NAD 27**

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The existing Scala HDCA-5 directional composite antenna will be rotated to 160 and 310 degree azimuths, and operate at 0.250 kW ERP at a COR AGL of 4 meters. The facility overlaps the current licensed K232AG, and is contained within the 60 dBu KJDX(FM) contour (exhibit E-2).

## **RF Exposure Calculation:**

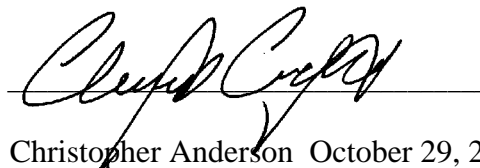
The RF contribution was calculated using the formula from the OET Bulletin 65:

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

The Scala HDCA-5 directional composite antenna with only horizontal polarization has a highest field value to the ground of 0.230 (exhibit E-3). The resulting RF is calculated to be 110.43  $\mu\text{W/cm}^2$ , which is below the 200  $\mu\text{W/cm}^2$  permissible for general public exposure.

## **Conclusion:**

It is concluded that the modification of K232AG complies with all Commission rules and policies.



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E-1 K232AG Overlap Study

REFERENCE

CH# 229D - 93.7 MHz, Pwr= 0.25 kW DA, HAAT= 749.0 M, COR= 2283 M

DISPLAY DATES

40 14 21.0 N.

Average Protected F(50-50)= 36.6 km

DATA 10-30-10

121 01 54.0 W.

Standard Directional

SEARCH 10-30-10

CH	CALL	TYPE	ANT	AZI.	DIST	LAT.	Pwr(kW)	INT(km)	PRO(km)	*IN*	*OUT*
CITY		STATE		<--	FILE #	LNG.	HAAT(M)	COR(M)	LICENSEE	(Overlap	in km)
232D	K232AG	LIC	DHN	0.0	0.0	40 14 22.0	0.048	0.2	16.0	-21.5*<	-16.4*<
Chester, Etc.		CA		180.0	BLFT19901029TD	121 01 54.0	928	2265	Sierra Broadcasting Corpor		
(1)229D	637423	APP	C	169.3	40.2	39 53 00.4	0.010	63.6	16.6	-59.7*<	-81.4<
East Quincy		CA		349.4	BNPFT20030317CLG	120 56 40.2		2163	Radio Assist Ministry, Inc		
(2)227C0	KJDX	LIC	CX	58.5	45.8	40 27 13.0	100.000	12.0	82.4	31.2	-36.6*<
Susanville		CA		238.8	BLH20091110ABN	120 34 14.0	352	1822	Sierra Broadcasting Corpor		
232D	644354	APP	C	165.1	35.4	39 55 50.7	0.019	0.3	8.7	-2.5*<	25.7
East Quincy		CA		345.2	BNPFT20030317FKF	120 55 28.4		1231	Radio Assist Ministry, Inc		
231D	644349	APP	C	165.1	35.4	39 55 50.7	0.019	0.3	8.7	-2.5*<	25.7
East Quincy		CA		345.2	BNPFT20030317FJZ	120 55 28.4		1231	Radio Assist Ministry, Inc		
229D	K229AF	APP	V	308.8	104.8	40 49 32.0	0.002	6.7	2.2	60.1	2.0
Eureka		CA		128.2	BPFT20030207ABD	122 00 05.0		584	Calvary Chapel Of Twin Fal		
229C	KTMT-FM	LIC	C	326.0	248.8	42 04 52.0	31.000	205.3	96.6	8.0	57.7
Medford		OR		144.8	BMLH20091214AFD	122 43 09.0	980	2297	Mapleton License Of Medfor		
230B1	KFMF	LIC	CN	241.2	67.2	39 56 46.0	2.000	34.4	26.8	12.7	12.8
Chico		CA		60.7	BLH19880811LB	121 43 17.0	344	1044	Mapleton License Of Chico,		
229A	KWNZ	LIC	ZCX	124.3	128.1	39 35 02.0	3.600	76.2	28.3	14.5	16.5
Sun Valley		NV		305.1	BLH20020416AAT	119 47 54.0	129	1687	Flinn Broadcasting Corpora		
230D	650086	APP	C	136.6	100.8	39 34 41.5	0.200	36.7	24.7	25.5	19.2
Reno		NV		317.1	BNPFT20030317MNZ	120 13 25.2		2089	Cameron Cravey		
229B1	KQJK	LIC	CN	185.4	167.2	38 44 22.0	25.000	106.6	35.8	25.8	31.9
Roseville		CA		5.3	BLH19940615KA	121 12 50.0	100	203	Amfm Texas Licenses Llc		
231D	649602	APP	C	135.6	72.9	39 46 09.0	0.010	0.2	12.5	35.4	59.4
Portola		CA		316.0	BNPFT20030317GZC	120 26 08.0		2215	Ihr Educational Broadcasti		
232A	KRBN	LIC	HX	318.8	94.3	40 52 28.0	0.220	1.0	21.5	58.3	71.7
Burney		CA		138.3	BLH20100624AMK	121 46 15.0	438	1624	S & S Venegas, Llc		
231A	KNCO-FM	LIC	CX	177.0	110.5	39 14 44.0	0.660	1.6	28.0	75.3	81.4
Grass Valley		CA		357.0	BLH20030430AAA	120 57 52.0	299	1190	Nevada County Broadcasters		
230A	KRLT	LIC	NCN	146.4	170.0	38 57 38.0	3.000	34.5	23.2	94.2	85.2
South Lake Tahoe		CA		327.1	BLH20000208ABR	119 56 32.0	-32	1989	Ccr-lake Tahoe Iv, Llc		
231D	648095	APP	DC	126.9	119.1	39 35 31.0	0.010	0.2	12.3	88.9	105.7
Reno		NV		307.6	BNPFT20030317CGQ	119 55 17.0		2310	American Educational Broad		
228B	KMKX	LIC	C	246.1	193.4	39 30 59.0	0.890	69.2	63.1	99.6	98.8
Willits		CA		64.7	BLH19991118AAU	123 05 21.0	876	1839	Radio Millennium L L C		
282C	KSHA	LIC	CN	290.6	134.4	40 39 14.0	100.000	42.3	27.8	28.5R	105.9M
Redding		CA		109.6	BLH19921102KC	122 31 12.0	475	998	Mapleton License Of Reddin		
283C	KDOT	LIC	CN	136.0	142.3	39 18 48.0	25.000	42.3	27.8	28.5R	113.8M
Reno		NV		316.7	BMLH19950831KA	119 52 59.0	893	2967	Lotus Radio Corp.		

Terrain database is NGDC 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 = 2, 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.

- (1) The 229D application at East Quincy, CA is to be dismissed concurrent with the K232AG modification application.  
(2) KJDX(FM) 227C0 is the primary facility of the K232AG modification to channel 229. The 100 dBu +40 F(50-10) contour does not overlap any portion of the KJDX(FM) Susanville, CA community of license, following CFR 74.1203(d).

# E-2 K232AG Mod. 60 dBu Contour Plots

## K232AG Mod.

BLFT19901029TD  
Latitude: 40-14-21 N  
Longitude: 121-01-54 W  
ERP: 0.25 kW  
Channel: 229  
Frequency: 93.7 MHz  
AMSL Height: 2283.0 m  
Elevation: 2279.0 m  
Horiz. Pattern: Directional  
Vert. Pattern: No  
Prop Model: None

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## K232AG Lic.

60 dBu F(50-50) Contour

## K232AG Mod. at Ch. 229

60 dBu F(50-50) Contour

## KJDX(FM) 227C0

60 dBu F(50-50) Contour

KJDX(FM)  
Susanville

Chester

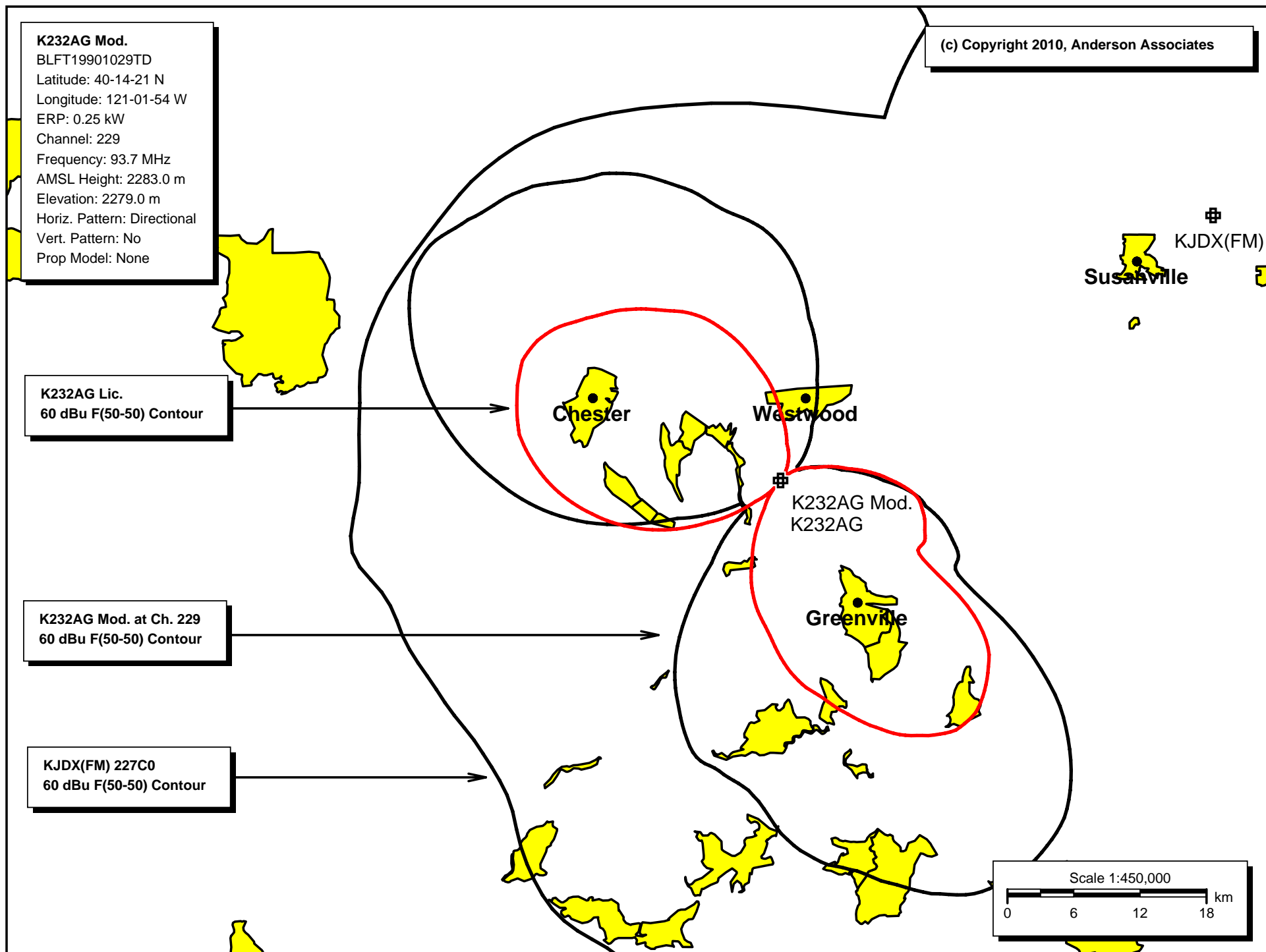
Westwood

K232AG Mod.  
K232AG

Greenville

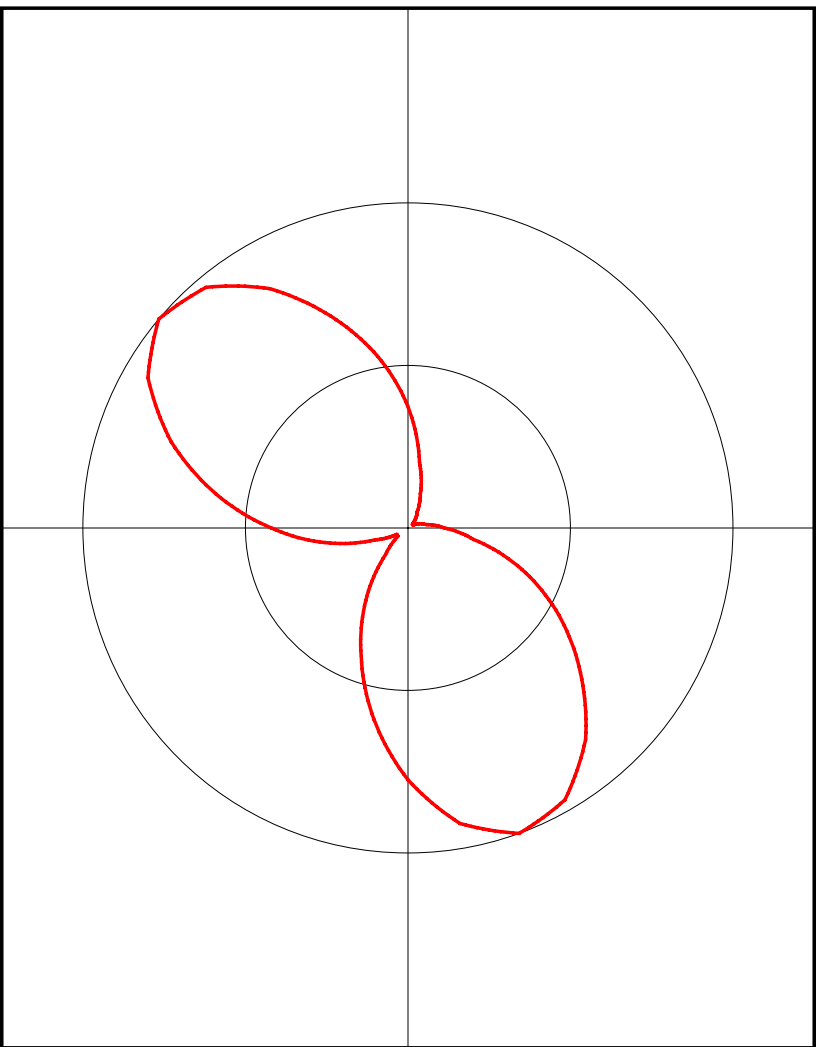
Scale 1:450,000

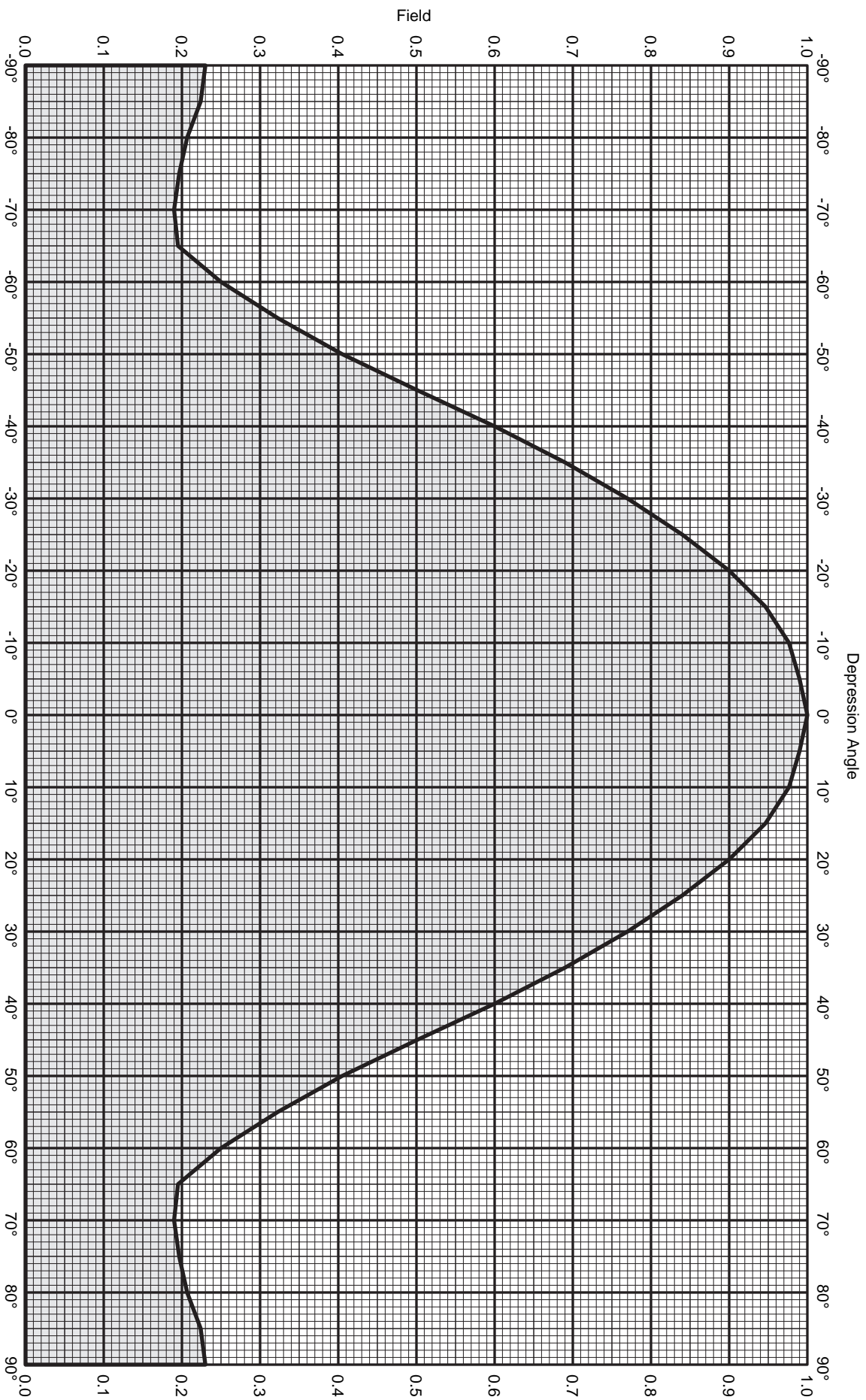
0 6 12 18 km



E-3 Scala HDCA-5 Directional Composite Antenna Pattern

Azimuth (deg)	Relative Field
0.0	0.373
10.0	0.205
20.0	0.112
30.0	0.058
40.0	0.036
50.0	0.018
60.0	0.018
70.0	0.036
80.0	0.058
90.0	0.112
100.0	0.205
110.0	0.373
120.0	0.536
130.0	0.693
140.0	0.850
150.0	0.966
160.0	1.000
170.0	0.923
180.0	0.775
190.0	0.599
200.0	0.420
210.0	0.259
220.0	0.107
230.0	0.040
240.0	0.040
250.0	0.107
260.0	0.259
270.0	0.420
280.0	0.599
290.0	0.775
300.0	0.923
310.0	1.000
320.0	0.966
330.0	0.850
340.0	0.693
350.0	0.536





HDCA-5 Yagi

FM

Maximum gain: 7.5 dBd

Horizontal polarization

Vertical radiation pattern

0 degree electrical downtilt



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HDCA-5 Yagi

FM

Maximum gain: 7.5 dBd

Horizontal polarization

Vertical radiation pattern

0 degree electrical downtilt

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	7.50	5.62	45	0.501	-6.00	1.50	1.41
1	0.998	-0.02	7.48	5.60	46	0.482	-6.34	1.16	1.31
2	0.996	-0.03	7.47	5.58	47	0.463	-6.70	0.80	1.20
3	0.994	-0.05	7.45	5.56	48	0.443	-7.06	0.44	1.11
4	0.992	-0.07	7.43	5.53	49	0.424	-7.45	0.05	1.01
5	0.990	-0.09	7.41	5.51	50	0.405	-7.85	-0.35	0.92
6	0.987	-0.11	7.39	5.48	51	0.389	-8.21	-0.71	0.85
7	0.985	-0.13	7.37	5.45	52	0.372	-8.59	-1.09	0.78
8	0.982	-0.16	7.34	5.42	53	0.355	-8.98	-1.48	0.71
9	0.979	-0.18	7.32	5.39	54	0.339	-9.40	-1.90	0.65
10	0.977	-0.21	7.29	5.36	55	0.322	-9.83	-2.33	0.58
11	0.970	-0.26	7.24	5.30	56	0.308	-10.23	-2.73	0.53
12	0.965	-0.31	7.19	5.23	57	0.294	-10.65	-3.15	0.48
13	0.959	-0.37	7.13	5.17	58	0.279	-11.09	-3.59	0.44
14	0.952	-0.42	7.08	5.10	59	0.264	-11.55	-4.05	0.39
15	0.947	-0.48	7.02	5.04	60	0.250	-12.04	-4.54	0.35
16	0.937	-0.56	6.94	4.94	61	0.239	-12.43	-4.93	0.32
17	0.928	-0.65	6.85	4.84	62	0.228	-12.84	-5.34	0.29
18	0.919	-0.74	6.76	4.75	63	0.217	-13.27	-5.77	0.26
19	0.909	-0.83	6.67	4.65	64	0.206	-13.72	-6.22	0.24
20	0.900	-0.92	6.58	4.55	65	0.195	-14.20	-6.70	0.21
21	0.888	-1.03	6.47	4.43	66	0.194	-14.24	-6.74	0.21
22	0.876	-1.15	6.35	4.32	67	0.193	-14.29	-6.79	0.21
23	0.864	-1.27	6.23	4.20	68	0.192	-14.33	-6.83	0.21
24	0.852	-1.39	6.11	4.08	69	0.191	-14.38	-6.88	0.21
25	0.840	-1.51	5.99	3.97	70	0.190	-14.42	-6.92	0.20
26	0.826	-1.66	5.84	3.84	71	0.191	-14.37	-6.87	0.21
27	0.812	-1.81	5.69	3.71	72	0.193	-14.31	-6.81	0.21
28	0.798	-1.96	5.54	3.58	73	0.194	-14.25	-6.75	0.21
29	0.784	-2.11	5.39	3.46	74	0.195	-14.19	-6.69	0.21
30	0.770	-2.27	5.23	3.33	75	0.197	-14.13	-6.63	0.22
31	0.754	-2.45	5.05	3.20	76	0.199	-14.04	-6.54	0.22
32	0.738	-2.64	4.86	3.06	77	0.201	-13.95	-6.45	0.23
33	0.722	-2.83	4.67	2.93	78	0.203	-13.87	-6.37	0.23
34	0.706	-3.02	4.48	2.80	79	0.205	-13.78	-6.28	0.24
35	0.690	-3.22	4.28	2.68	80	0.207	-13.69	-6.19	0.24
36	0.672	-3.45	4.05	2.54	81	0.210	-13.55	-6.05	0.25
37	0.654	-3.69	3.81	2.41	82	0.214	-13.41	-5.91	0.26
38	0.636	-3.93	3.57	2.27	83	0.217	-13.27	-5.77	0.27
39	0.618	-4.18	3.32	2.15	84	0.221	-13.13	-5.63	0.27
40	0.600	-4.44	3.06	2.02	85	0.224	-13.00	-5.50	0.28
41	0.580	-4.73	2.77	1.89	86	0.225	-12.95	-5.45	0.29
42	0.560	-5.03	2.47	1.77	87	0.226	-12.90	-5.40	0.29
43	0.541	-5.34	2.16	1.64	88	0.228	-12.86	-5.36	0.29
44	0.521	-5.67	1.83	1.53	89	0.229	-12.81	-5.31	0.29
					90	0.230	-12.77	-5.27	0.30