KLEIN BROADCAST ENGINEERING, L.L.C.

dedicated to improving the science and technology of radio & television communications

JULY 2009

FCC FORM 349 APPLICATION
FOR
MODIFICATION of EXISTING FM BOOSTER STATION
for
CONSTRUCTION PERMIT

HUTTON BROADCASTING, L.L.C.
KQBA-FM1
(FCC FACLIITY ID# 123369)
FM CHANNEL 298 / 107.5mHz.
SANTA FE, NEW MEXICO

INTRODUCTION and ENGINEERING STATEMENT

The engineering portion of this application was prepared by the firm of Klein Broadcast Engineering, L.L.C., in support of an of an application filed by Hutton Broadcasting, L.L.C., for an FM Booster Station Construction Permit to modify its existing FM Booster Station KQBA-FM1 at Santa Fe, New Mexico.

The information supplied herein supports the requested minor change as filed on FCC Form 349.

The proposed minor changes for FM Booster Station KQBA-FM1 is for operation with its parent station FM Broadcast Station KQBA(FM) at Los Alamos, New Mexico, on FM Channel 298C1/107.5mHz. (FCC Facility ID# 35534) FM Booster Station KQBA-FM1 serves the Community of Santa Fe, New Mexico.

INTRODUCTION and ENGINEERING STATEMENT cont'd page two: KQBA-FM1

The facility proposed will use a Kathrein-Scala (SCA) model, CL-FM/VRM/50N, an eight element log periodic type antenna to be used in the vertical plane only. The antenna will be a composite directional antenna comprised of two of the above captioned antenna types with one antenna oriented at 105 degrees true and the other antenna oriented at 165 degrees true with a 50%/50% power split. The composite antenna pattern orientation will be maximum at 135 degrees true for operation on FM Channel 298/107.5 mHz., with 12.0 kW effective radiated power (ERP).

The center of radiation (COR) for the proposed composite directional antenna will be 35 meters AGL, on an existing tower structure. The ground level at the site is 2121.4 meters AMSL.

The antenna location is proposed at NL:35-41-20 / WL:105-58-42 (NAD-27)

The equipment to be used will be type accepted by the Commission.

Overall Antenna Support Structure Height Above Ground	**60.6**	**meters**
Elevation of Site Above Mean Sea Level	**2121.4**	**meters**
Height of Antenna Radiation Center AMSL	**2156.4**	**meters**
Height of Antenna Radiation Center AGL	**35.0**	**meters**
Major Lobe Direction	**135 degrees True**	

Antenna Support Registration Number (ASR#) 1224069

INTRODUCTION and ENGINEERING STATEMENT cont'd page three: KQBA-FM1

FM ALLOCATION CONSIDERATIONS

Engineering Exhibit E-1 is an FCC FM Channel Spacing Study for the Proposed Modified FM Booster Station. The proposed booster station was studied as a Class C3 station. The exhibit shows short spacing to the co-channel KQBA(FM) Main site, for which this proposed booster will re-transmit. There are no first adjacent channel or I.F. channel short-spacings shown or known to exist.

Engineering Exhibit E-2 is an analysis of the proposed 60dBu f(50,50) contour proposed for KQBA-FM1 Booster Station and also plotted thereon is the 60dBu f(50,50) contour of the primary FM Station KQBA(FM) on FM channel 298C1 / 107.5mHz at Los Alamos, New Mexico. The exhibit shows clearly the proposed 60dBu contour of the proposed Modified FM Booster Station is wholly contained within the f(50,50) 60dBu contour of the main station KQBA(FM).

Exhibit E-3 is a plot of the azimuth pattern to be used on the proposed directional antenna. Included in this exhibit is a tabulation of the proposed directional antenna pattern. The antenna proposed is a Kathrein-Scala (SCA) CL-FM/VRM/50N, vertically polarized FM log periodic type eight element, composite directional antenna using two of the above captioned antenna types and model as described elsewhere in this FCC Form 349 application.

INTRODUCTION and ENGINEERING STATEMENT cont'd page four: KQBA-FM1

FAA NOTIFICATION

The proposed FM Booster station antenna will be mounted on an existing tower. No new antenna support construction is proposed. Notification to the FAA was not made.

ENVIRONMENTAL STATEMENT

The proposed facility for the new KQBA-FM1 Booster Station, will have its antenna mounted on an existing antenna support structure. The applicant will cooperate with other users of the site with regard to the cessation of operation or the reduction of operating power, whatever is necessary to comply with the Commission's Rules, Regulations and Guidelines on Human Exposure to Non-Ionizing RF Radiation. Details of actual compliance with the Commission's RFR Guidelines may be found in Exhibit E-10RHS. Engineering Exhibit E-10RHS is a detailed study of the proposed FM booster station facility with regard to its contribution to RFR levels on the site.

PROPOSED DIPLEXED OPERATIONS

It should be noted that KQBA-FM1 will diplex its proposed operation into a common antenna system with FM Booster Station KKIM-FM1(FCC Facility ID# 123368). The licensee of KKIM-FM1, AGM, Nevada, L.L.C., will be filing an FCC Form 349 application to modify the facility of KKIM-FM1 as similarly proposed herein but with a lower proposed E.R.P.

<u>INTRODUCTION and ENGINEERING STATEMENT</u> cont'd page five: KQBA-FM1

The applicant, Hutton Broadcasting, L.L.C., respectfully requests the Commission consider and grant this instant application for the requested facility for KQBA-FM1 FM Booster Station for operation with KQBA(FM).

Respectfully submitted,

Elliott Kurt Klein, Consulting Broadcast Engineer

Hutton Broadcasting, L.L.C.
FM Broadcast Station KQBA(FM)
Los Alamos, New Mexico

23 July 2009

base: FCC CDBS 2009_Jul_22.fmd
20 Lon: W105:58:42 NAD-27(Proposed KQBA-FM1 Geographic Coordinates)
8 Class: C3
nsed, Construction Permit, Application, Addition, Vacant/Reserved
o-Channel, 1st Adj, 2nd Adj, 3rd Adj, IF, TV6
km
No Comments
EXHIBIT E-1 FCC FM CHANNEL SPACING STUDY KQBA-FM1 20090722

tude (NAD27	Longitude (NAD27	City	State	Serv	Channel	Class	ERP	HAAT	Status	73 207 Min	73 207 Clear	73 215 Min	73 215 Clear	Adjacenc
6:05:21	W106:01:41	LOS ALAMOS	NM	FM	298 : 107.5 MHz	C1	100.00	243	LIC	211	-166.36	200	-155.36	Co-Chan
5:12:43	W106:26:57	ALBUQUERQU	NM	FM	300 : 107.9 MHz	C	22.50	1259	LIC	96	-27.98	90	-21.98	2nd Adj
5:40:41	W105:59:26	LOS ALAMOS&	NM	FM	298 : 107.5 MHz	DB	0.00	0	LIC	0	1.63	0	1.63	Co-Chan
5:36:33	W105:09:31	LAS VEGAS	NM	FM	296 : 107.1 MHz	A	0.00	0	VAC	42	32.76	36	38.76	2nd Adj
5:53:09	W106:23:16	LOS ALAMOS	NM	FM	296 : 107.1 MHz	DX	0.01	0	APP	0	42.98	0	42.98	2nd Adj
6:05:21	W106:01:41	ESPANOLA	NM	FM	296 : 107.1 MHz	DX	0.01	0	APP	0	44.64	0	44.64	2nd Adj
6:03:15	W106:51:31	ARMIJO	NM	FM	296 : 107.1 MHz	C2	17.50	215	LIC	56	50.57	50	56.57	2nd Adj
5:36:16	W105:15:35	LAS VEGAS	NM	FM	244 : 96.7 MHz	A	4.40	116	LIC	12	53.75	12	53.75	IF
4:25:01	W107:30:04	ALAMO COMM	NM	FM	298 : 107.5 MHz	A	0.00	0	VAC	142	56.02	119	79.02	Co-Chan
5:37:59	W105:14:10	LAS VEGAS	NM	FM	296 : 107.1 MHz	DX	0.00	62	LIC	0	67.49	0	67.49	2nd Adj
5:13:02	W106:27:08	ALBUQUERQU	NM	FM	244 : 96.7 MHz	DX	0.01	0	APP	0	67.74	0	67.74	IF
5:12:50	W106:27:01	ALBUQUERQU	NM	FM	245 : 96.9 MHz	DX	0.01	0	APP	0	67.91	0	67.91	IF
4:11:34	W103:16:44	CLOVIS	NM	FM	298 : 107.5 MHz	C1	100.00	165	LIC	211	86.26	200	97.26	Co-Chan

FM Channel Spacing Study shows the proposed location for KQBA-FM1 is not short-spaced to any known, station,
on permit, proposed allotment or vacant allotment on either the first adjacent channel above or below the proposed c
or I.F. channel either 53 or 54 channels removed from the proposed operation for KQBA-FM1 on FM Channel 298D
conducted with Class C3 equivilant facilites.

EXHIBIT E-2 KQBA Main & Proposed KQBA-FM1 60dBu Contour Analysis

Klein Broadcast Engineering, L.L.C.
Job: KQBA-FM1 SBA SITE 20090720.fmj
Master Database: FCC CDBS 2009_Jul_15.fmd Date: 7/22/2009
Lat: N35:41:20 Lon: W105:58:42 NAD-27
Scale: 1:500000
Channel: 298 Class: DB
Status: Application, Reserved
Terrain Database: DMA 3 Arc Second Digitized Terrain Datafile, Conus.
Contour Prediction Method: FCC Standard f(50,50), 360 Radials
Comments: Analysis of KQBA FCC Licensed Main Facility & Proposed KQBA-FM1 Facility
Description: EXHIBIT E-2 KQBA Main & Proposed KQBA-FM1 60dBu Contour Analysis 20090722

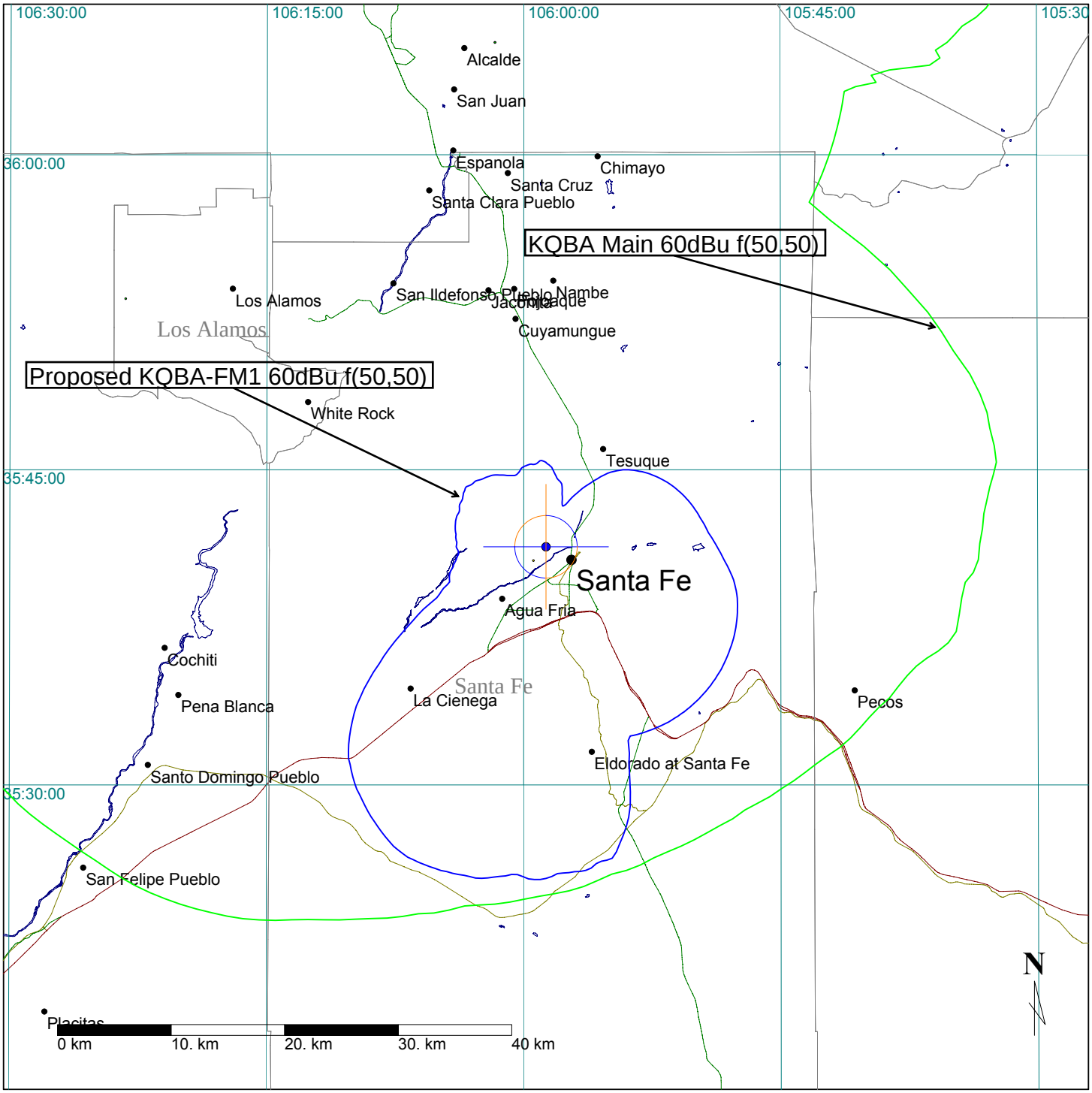
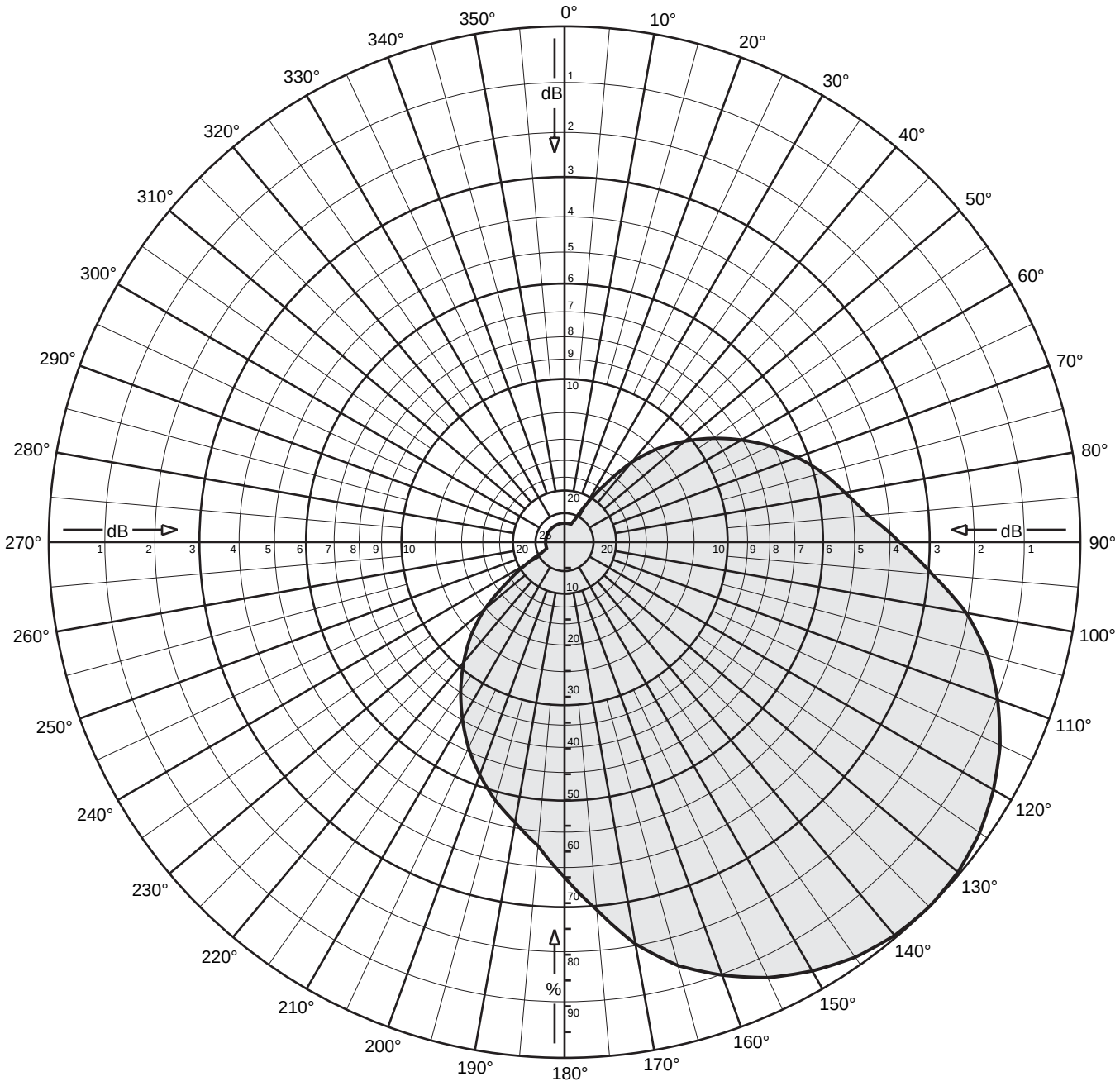


EXHIBIT E-3 Proposed KQBA-FM1 Directional Antenna Pattern Plot & Tabulation



Two CL-FM/VRM/50N Log-periodic Antennas
Oriented one ea at 105 and 165 deg
Frequency: 107.5 MHz
Gain: 7.7 dBd (x 5.89)
Vertical Polarization
Vertical Stacked
Horizontal plane Pattern

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Vertical Polarization
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Horizontal plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	0.037	-28.71	-21.01	0.01	180	0.650	-3.74	3.96	2.49
5	0.037	-28.71	-21.01	0.01	185	0.591	-4.57	3.13	2.06
10	0.037	-28.71	-21.01	0.01	190	0.552	-5.16	2.54	1.79
15	0.037	-28.71	-21.01	0.01	195	0.518	-5.71	1.99	1.58
20	0.037	-28.71	-21.01	0.01	200	0.480	-6.37	1.33	1.36
25	0.049	-26.21	-18.51	0.01	205	0.440	-7.12	0.58	1.14
30	0.086	-21.35	-13.65	0.04	210	0.396	-8.05	-0.35	0.92
35	0.135	-17.42	-9.72	0.11	215	0.351	-9.10	-1.40	0.72
40	0.202	-13.90	-6.20	0.24	220	0.304	-10.33	-2.63	0.55
45	0.257	-11.81	-4.11	0.39	225	0.257	-11.81	-4.11	0.39
50	0.304	-10.33	-2.63	0.55	230	0.202	-13.90	-6.20	0.24
55	0.351	-9.10	-1.40	0.72	235	0.135	-17.42	-9.72	0.11
60	0.396	-8.05	-0.35	0.92	240	0.086	-21.35	-13.65	0.04
65	0.440	-7.12	0.58	1.14	245	0.049	-26.21	-18.51	0.01
70	0.480	-6.37	1.33	1.36	250	0.037	-28.71	-21.01	0.01
75	0.518	-5.71	1.99	1.58	255	0.037	-28.71	-21.01	0.01
80	0.552	-5.16	2.54	1.79	260	0.037	-28.71	-21.01	0.01
85	0.591	-4.57	3.13	2.06	265	0.037	-28.71	-21.01	0.01
90	0.650	-3.74	3.96	2.49	270	0.037	-28.71	-21.01	0.01
95	0.716	-2.91	4.79	3.02	275	0.037	-28.71	-21.01	0.01
100	0.791	-2.04	5.66	3.69	280	0.037	-28.71	-21.01	0.01
105	0.850	-1.41	6.29	4.26	285	0.037	-28.71	-21.01	0.01
110	0.894	-0.98	6.72	4.70	290	0.037	-28.71	-21.01	0.01
115	0.932	-0.61	7.09	5.11	295	0.037	-28.71	-21.01	0.01
120	0.960	-0.35	7.35	5.43	300	0.037	-28.71	-21.01	0.01
125	0.983	-0.15	7.55	5.68	305	0.037	-28.71	-21.01	0.01
130	0.996	-0.04	7.66	5.84	310	0.037	-28.71	-21.01	0.01
135	1.000	0.00	7.70	5.89	315	0.037	-28.71	-21.01	0.01
140	0.996	-0.04	7.66	5.84	320	0.037	-28.71	-21.01	0.01
145	0.983	-0.15	7.55	5.68	325	0.037	-28.71	-21.01	0.01
150	0.960	-0.35	7.35	5.43	330	0.037	-28.71	-21.01	0.01
155	0.932	-0.61	7.09	5.11	335	0.037	-28.71	-21.01	0.01
160	0.894	-0.98	6.72	4.70	340	0.037	-28.71	-21.01	0.01
165	0.850	-1.41	6.29	4.26	345	0.037	-28.71	-21.01	0.01
170	0.791	-2.04	5.66	3.69	350	0.037	-28.71	-21.01	0.01
175	0.716	-2.91	4.79	3.02	355	0.037	-28.71	-21.01	0.01

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JULY 2009

EXHIBIT E-10RHS
FCC FORM 349 APPLICATION
FOR MODIFICATION FM BOOSTER STATION CONSTRUCTION PERMIT

KQBA-FM1
(FCC FACILITY ID# 123369)
HUTTON BROADCASTING, L.L.C.
FM CHANNEL 298 / 107.5 mHz.
SANTA FE , NEW MEXICO

RF RADIATION HAZARD COMPLIANCE STATEMENT

The facilities proposed herein by the applicant, permittee or licensee, in this Engineering Exhibit comply with FCC O.S.T. Bulletin #65 and #65A as revised (1997) and the ANSI C-95.1-1982 RF and ANSI C95.1992 and the NCRP exposure guidelines. The interpolation of the figures from the above referenced document, page 18, supplement "A", shows a BEST case requirement of 15.0 meters height above ground level requirement for the radiation center of the proposed single bay FM broadcast antenna. A total vertical effective radiated power of 12.0 kilowatts was used for this study and determination The radiation center of the FM broadcast antenna system is proposed to be at 35 meters above ground level (AGL), well within the requirement for the antenna as determined from the above referenced documents. The antenna specified for use is a Scala CL-FM/VRM/50N Vertically Polarized directional composite antenna.

Occupational compliance is certified by the reduction of operating power or the complete cessation of operation during such time maintenance personnel are no the antenna support structure. A transmitter "LOCK OUT" circuit has been installed to prevent accidental turn on of the transmission equipment during the time maintenance personnel are on the antenna support structure. The applicant, permittee or licensee will cooperate with other site users in order to comply with The FCC Guidelines on Human Exposure to Non-Ionizing RF Radiation.

In addition to the preceding the applicant, permittee or licensee, has by computer program, performed additional calculations to predict RF power density at the base of the antenna support structure. This program predicts a maximum power density of 46.4822 uW/cM2 at a distance of 56.75 meters from the base of the antenna support structure at a height of 2.0 meters above ground level. This is less than 23.3% percent of the allowable RF power density for uncontrolled areas under the FCC and ANSI/EPA Guidelines, being limited to: 1.00mW/cM2 for controlled areas and 200.0 microwatts/cM2 for uncontrolled areas. All other power density was calculated to be below this maximum predicted level for a distance of 0 to 1000 meters distance from the base of the antenna support structure at 2.0 meters above ground level.

ENGINEERING EXHIBIT E-10RHS cont'd page two: KQBA-FM1

The computer program employed for the RFR analysis in this engineering exhibit uses either the Near Field or Far Field method for the calculation of power density and was written by the Commission's O.E.T. staff. In this particular case the Far Field Method was used. The formula used by the computer program was derived from the FCC O.S.T. Bulletin #65, as revised to date.

The formula may be stated in the following manner:

E(V/m) = 1.6*221.72*SQRT(ERP)*
(element pattern factor)*(array factor) / DIST

H(A/m) = 1.6*0.588*SQRT(ERP)*
(element pattern factor)*(array factor) / DIST

Where:

ERP = effective radiated power in kilowatts, relative to a half wave dipole.

DIST = distance in meters from the antenna radiation center to the observation point in meters.

The 1.6 factor found in the ANSI/EPA formula and used above at the beginning of each equation takes into account possible contributions from ground reflections. The element pattern factor in a linearly interpolated relative field value at the appropriate depression angle below the horizon as taken directly from the EPA data. The array factor is computed at the appropriate depression angle using the number of antenna elements, when normalized to 1.0 in the main lobe. This array factor only applies to antenna arrays of point sources where each source has equal power distribution and phase, and are uniformly spaced. The element patterns themselves can be associated with particular antenna designs. As of May 1986 there were six (6) element types identified for FM antennas as listed in the ANSI/EPA data and FCC Bulletin #65. The EPA Type 1 Dipole element is used on the Scala CL-FM/VRM/50N Antenna Type 1 is listed in the EPA data and was used for the calculations contained herein. There were two types listed for television, one for VHF and one for UHF.

The applicant has filed another FCC Form 349 application for FM Booster Station KBAC-FM1. This station proposes to use a composite directional antenna identical to the antenna type, model and manufacturer as specified for KQBA-FM1, however the center of radiation for KBAC-FM1 is proposed at 51 meters AGL. The RFR contribution for KBAC-FM1 to the RFR levels on the site are 10.0141 uW/cM2 at a distance of 84.25 meters from the base of the antenna support structure, 2 meters AGL. Additionally another FM Booster Station, KKIM-FM1 will diplex operations with KQBA-FM1. KKIM-FM1 will operate with an E.R.P. of 5.2kW in the vertical plane only and will contribute 20.1423 uW/cM2 at a distance of 56.75 meters from the base of the antenna support structure, 2 meters above ground level which will add to the total RFR levels on the common site.

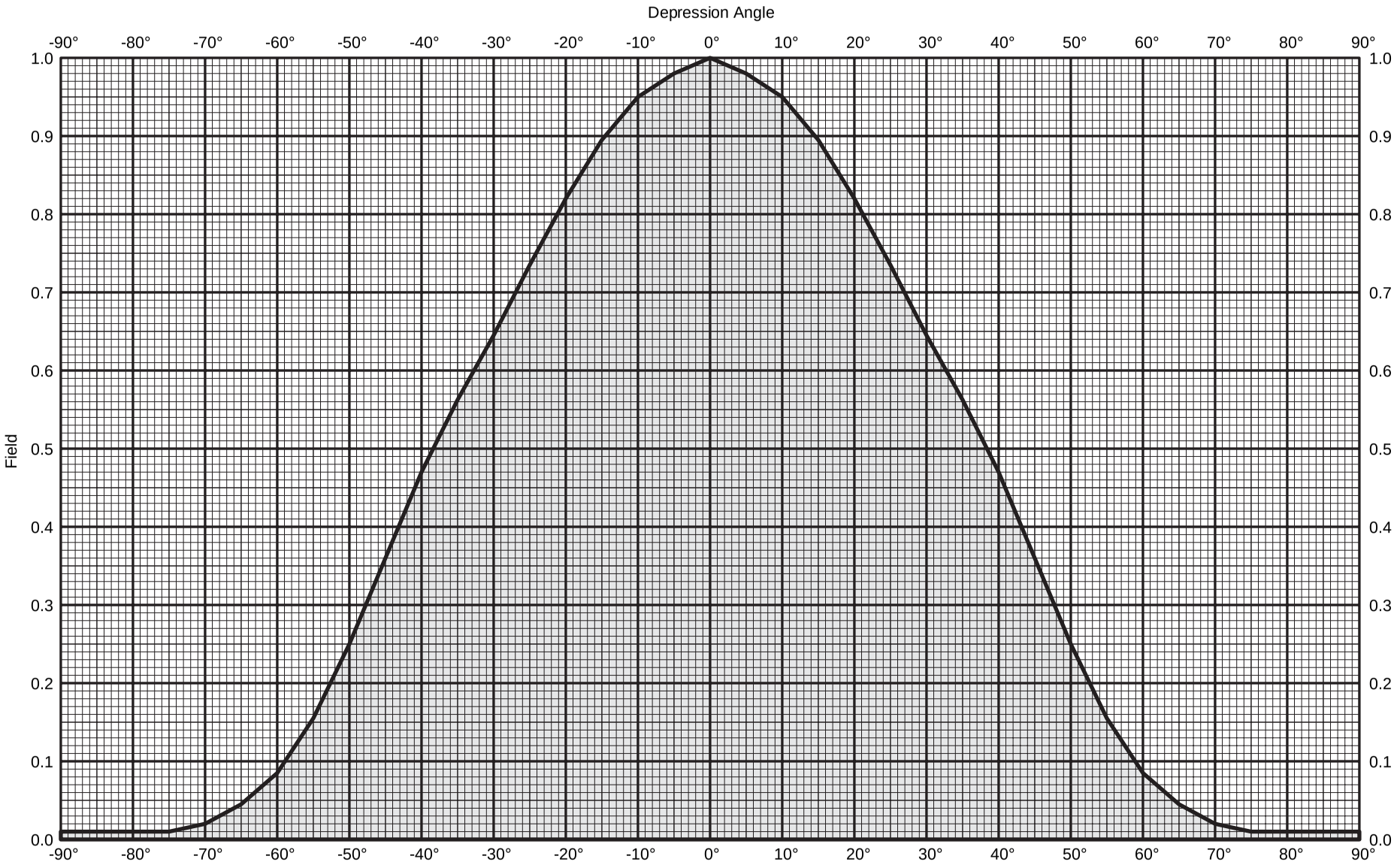
To arrive at a WORST case total for both KBAC-FM1, KQBA-FM1 and KKIM-FM1 operating from the same site as proposed one need only to add the maximum predicted RFR levels together of 10.0141 uW/cM2, 46.4822 uW/cM2 and 20.1423 uW/cM2 for a total RFR power density on the site of 76.6386 uW/cM2 for the worst case total RFR predicted for the common site. This total level is still only 38.3% of the allowable maximum RFR power density for Uncontrolled Exposure Areas.

The General Public will not have access to the site because the site wholly encompassed by seven foot high chain link fencing and a locked gate. The only access to the site is by the locked gate. Only authorized personnel have access to the locked gate. This will prevent General Public access to the actual site. There is no RFR level on the site that exceeds the General Public Uncontrolled Exposure Limit of 200.0 microwatts/cM2.

The applicant, permittee or licensee, will install and post RF Radiation Hazard Warning Signs in and around the site at approximately eye level for additional warning and safety.

The preceding assures compliance with the FCC, ANSI and NCRP requirements. Based on the preceding documents, tables, guidelines and calculations, the proposed operation of the main transmission facility for the proposed KQBA-FM1 FM Booster Station at Santa Fe, New Mexico, is in compliance with the FCC O.S.T. Bulletin #65 and the ANSI C-95.1-1992 and the NCRP RF Exposure Guidelines as amended to date. The applicant, permittee or licensee certifies compliance with the ANSI, NCRP and FCC Human Exposure Guidelines to Non-Ionizing RF Radiation. No new tower or antenna support structure construction is proposed, therefore no N.E.P.A., Section 106 analysis was performed and is not applicable.

EXHIBIT E-10 FIGURE #1. VERTICAL PATTERN PLOT & TABULATION



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Two CL-FM/VRM/50N Log-periodic Antennas

Oriented on ea at 105 and 165 deg

Frequency: 88-108 MHz

Gain: 7.7 dBd (x 5.89)

Vertical Polarization

Vertical stacked

Vertical plane Pattern

KATHREIN
SCALA DIVISION

Two CL-FM/VRM/50N Log-periodic Antennas
Oriented on ea at 105 and 165 deg
Frequency: 107.5 MHz
Gain: 7.7 dBd (x 5.89)

Vertical Polarization
Vertical stacked
Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
-90	0.010	-40.00	-32.30	0.00	-45	0.360	-8.87	-1.17	0.76
-89	0.010	-40.00	-32.30	0.00	-44	0.382	-8.36	-0.66	0.86
-88	0.010	-40.00	-32.30	0.00	-43	0.404	-7.87	-0.17	0.96
-87	0.010	-40.00	-32.30	0.00	-42	0.426	-7.41	0.29	1.07
-86	0.010	-40.00	-32.30	0.00	-41	0.448	-6.97	0.73	1.18
-85	0.010	-40.00	-32.30	0.00	-40	0.470	-6.56	1.14	1.30
-84	0.010	-40.00	-32.30	0.00	-39	0.488	-6.22	1.48	1.41
-83	0.010	-40.00	-32.30	0.00	-38	0.507	-5.90	1.80	1.51
-82	0.010	-40.00	-32.30	0.00	-37	0.525	-5.59	2.11	1.63
-81	0.010	-40.00	-32.30	0.00	-36	0.544	-5.29	2.41	1.74
-80	0.010	-40.00	-32.30	0.00	-35	0.562	-5.00	2.70	1.86
-79	0.010	-40.00	-32.30	0.00	-34	0.579	-4.75	2.95	1.97
-78	0.010	-40.00	-32.30	0.00	-33	0.595	-4.50	3.20	2.09
-77	0.010	-40.00	-32.30	0.00	-32	0.612	-4.26	3.44	2.21
-76	0.010	-40.00	-32.30	0.00	-31	0.628	-4.03	3.67	2.33
-75	0.010	-40.00	-32.30	0.00	-30	0.645	-3.81	3.89	2.45
-74	0.012	-38.42	-30.72	0.00	-29	0.663	-3.57	4.13	2.59
-73	0.014	-37.08	-29.38	0.00	-28	0.681	-3.34	4.36	2.73
-72	0.016	-35.92	-28.22	0.00	-27	0.699	-3.11	4.59	2.88
-71	0.018	-34.89	-27.19	0.00	-26	0.717	-2.89	4.81	3.03
-70	0.020	-33.98	-26.28	0.00	-25	0.735	-2.67	5.03	3.18
-69	0.025	-32.04	-24.34	0.00	-24	0.752	-2.48	5.22	3.33
-68	0.030	-30.46	-22.76	0.01	-23	0.769	-2.28	5.42	3.48
-67	0.035	-29.12	-21.42	0.01	-22	0.786	-2.09	5.61	3.64
-66	0.040	-27.96	-20.26	0.01	-21	0.803	-1.91	5.79	3.80
-65	0.045	-26.94	-19.24	0.01	-20	0.820	-1.72	5.98	3.96
-64	0.053	-25.51	-17.81	0.02	-19	0.835	-1.57	6.13	4.11
-63	0.061	-24.29	-16.59	0.02	-18	0.850	-1.41	6.29	4.25
-62	0.069	-23.22	-15.52	0.03	-17	0.865	-1.26	6.44	4.41
-61	0.077	-22.27	-14.57	0.03	-16	0.880	-1.11	6.59	4.56
-60	0.085	-21.41	-13.71	0.04	-15	0.895	-0.96	6.74	4.72
-59	0.099	-20.09	-12.39	0.06	-14	0.906	-0.86	6.84	4.83
-58	0.113	-18.94	-11.24	0.08	-13	0.917	-0.75	6.95	4.95
-57	0.127	-17.92	-10.22	0.09	-12	0.928	-0.65	7.05	5.07
-56	0.141	-17.02	-9.32	0.12	-11	0.939	-0.55	7.15	5.19
-55	0.155	-16.19	-8.49	0.14	-10	0.950	-0.45	7.25	5.31
-54	0.174	-15.19	-7.49	0.18	-9	0.956	-0.39	7.31	5.38
-53	0.193	-14.29	-6.59	0.22	-8	0.962	-0.34	7.36	5.45
-52	0.212	-13.47	-5.77	0.26	-7	0.968	-0.28	7.42	5.52
-51	0.231	-12.73	-5.03	0.31	-6	0.974	-0.23	7.47	5.59
-50	0.250	-12.04	-4.34	0.37	-5	0.980	-0.18	7.52	5.66
-49	0.272	-11.31	-3.61	0.44	-4	0.984	-0.14	7.56	5.70
-48	0.294	-10.63	-2.93	0.51	-3	0.988	-0.10	7.60	5.75
-47	0.316	-10.01	-2.31	0.59	-2	0.992	-0.07	7.63	5.79
-46	0.338	-9.42	-1.72	0.67	-1	0.996	-0.03	7.67	5.84
					0	1.000	0.00	7.70	5.89

KATHREIN
SCALA DIVISION

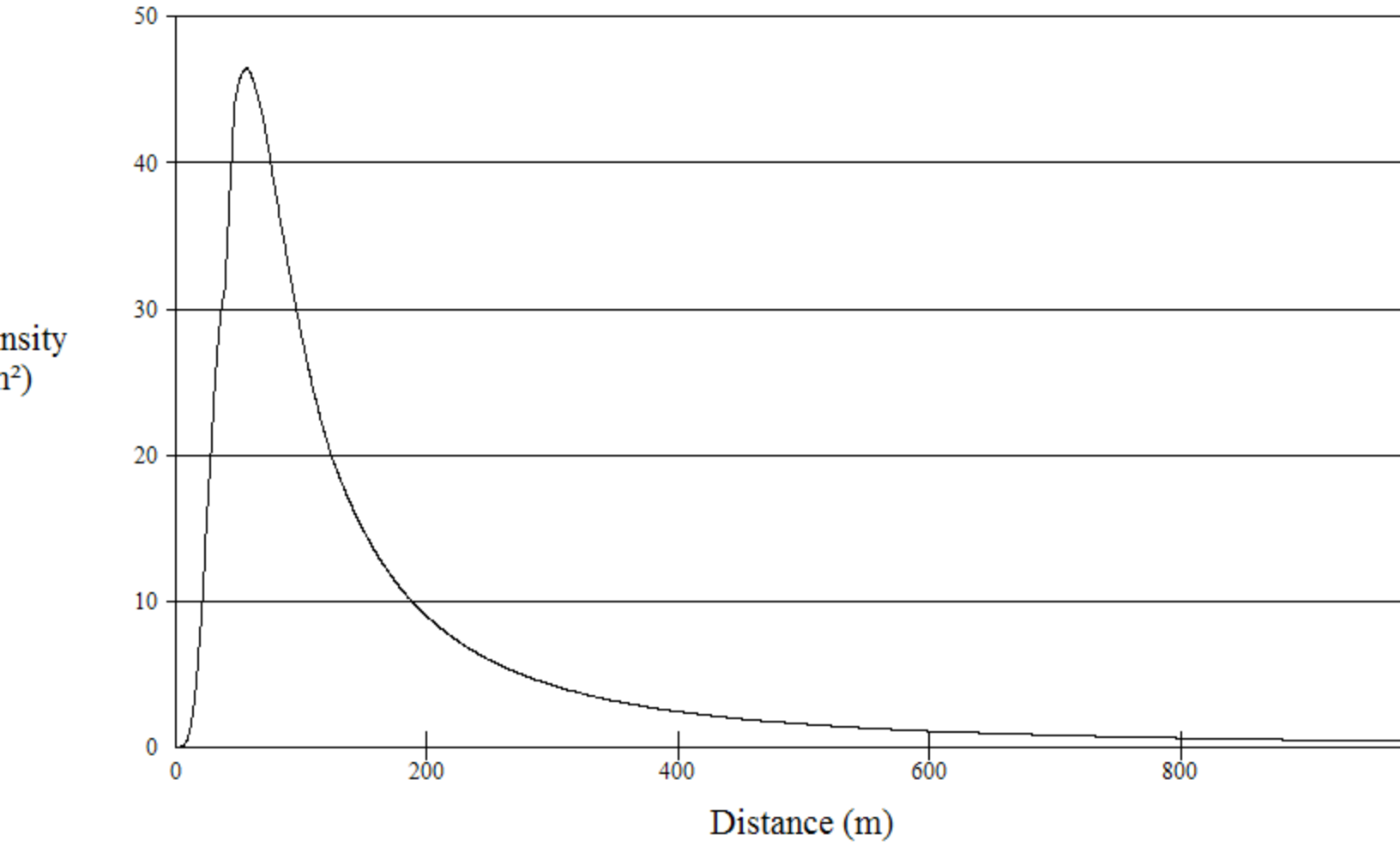
Two CL-FM/VRM/50N Log-periodic Antennas
Oriented on ea at 105 and 165 deg
Frequency: 107.5 MHz
Gain: 7.7 dBd (x 5.89)

Vertical Polarization
Vertical stacked
Vertical plane Pattern

Angle	Field	Rel.dB	dBd	PwrMult	Angle	Field	Rel.dB	dBd	PwrMult
0	1.000	0.00	7.70	5.89	45	0.360	-8.87	-1.17	0.76
1	0.996	-0.03	7.67	5.84	46	0.338	-9.42	-1.72	0.67
2	0.992	-0.07	7.63	5.79	47	0.316	-10.01	-2.31	0.59
3	0.988	-0.10	7.60	5.75	48	0.294	-10.63	-2.93	0.51
4	0.984	-0.14	7.56	5.70	49	0.272	-11.31	-3.61	0.44
5	0.980	-0.18	7.52	5.66	50	0.250	-12.04	-4.34	0.37
6	0.974	-0.23	7.47	5.59	51	0.231	-12.73	-5.03	0.31
7	0.968	-0.28	7.42	5.52	52	0.212	-13.47	-5.77	0.26
8	0.962	-0.34	7.36	5.45	53	0.193	-14.29	-6.59	0.22
9	0.956	-0.39	7.31	5.38	54	0.174	-15.19	-7.49	0.18
10	0.950	-0.45	7.25	5.31	55	0.155	-16.19	-8.49	0.14
11	0.939	-0.55	7.15	5.19	56	0.141	-17.02	-9.32	0.12
12	0.928	-0.65	7.05	5.07	57	0.127	-17.92	-10.22	0.09
13	0.917	-0.75	6.95	4.95	58	0.113	-18.94	-11.24	0.08
14	0.906	-0.86	6.84	4.83	59	0.099	-20.09	-12.39	0.06
15	0.895	-0.96	6.74	4.72	60	0.085	-21.41	-13.71	0.04
16	0.880	-1.11	6.59	4.56	61	0.077	-22.27	-14.57	0.03
17	0.865	-1.26	6.44	4.41	62	0.069	-23.22	-15.52	0.03
18	0.850	-1.41	6.29	4.25	63	0.061	-24.29	-16.59	0.02
19	0.835	-1.57	6.13	4.11	64	0.053	-25.51	-17.81	0.02
20	0.820	-1.72	5.98	3.96	65	0.045	-26.94	-19.24	0.01
21	0.803	-1.91	5.79	3.80	66	0.040	-27.96	-20.26	0.01
22	0.786	-2.09	5.61	3.64	67	0.035	-29.12	-21.42	0.01
23	0.769	-2.28	5.42	3.48	68	0.030	-30.46	-22.76	0.01
24	0.752	-2.48	5.22	3.33	69	0.025	-32.04	-24.34	0.00
25	0.735	-2.67	5.03	3.18	70	0.020	-33.98	-26.28	0.00
26	0.717	-2.89	4.81	3.03	71	0.018	-34.89	-27.19	0.00
27	0.699	-3.11	4.59	2.88	72	0.016	-35.92	-28.22	0.00
28	0.681	-3.34	4.36	2.73	73	0.014	-37.08	-29.38	0.00
29	0.663	-3.57	4.13	2.59	74	0.012	-38.42	-30.72	0.00
30	0.645	-3.81	3.89	2.45	75	0.010	-40.00	-32.30	0.00
31	0.628	-4.03	3.67	2.33	76	0.010	-40.00	-32.30	0.00
32	0.612	-4.26	3.44	2.21	77	0.010	-40.00	-32.30	0.00
33	0.595	-4.50	3.20	2.09	78	0.010	-40.00	-32.30	0.00
34	0.579	-4.75	2.95	1.97	79	0.010	-40.00	-32.30	0.00
35	0.562	-5.00	2.70	1.86	80	0.010	-40.00	-32.30	0.00
36	0.544	-5.29	2.41	1.74	81	0.010	-40.00	-32.30	0.00
37	0.525	-5.59	2.11	1.63	82	0.010	-40.00	-32.30	0.00
38	0.507	-5.90	1.80	1.51	83	0.010	-40.00	-32.30	0.00
39	0.488	-6.22	1.48	1.41	84	0.010	-40.00	-32.30	0.00
40	0.470	-6.56	1.14	1.30	85	0.010	-40.00	-32.30	0.00
41	0.448	-6.97	0.73	1.18	86	0.010	-40.00	-32.30	0.00
42	0.426	-7.41	0.29	1.07	87	0.010	-40.00	-32.30	0.00
43	0.404	-7.87	-0.17	0.96	88	0.010	-40.00	-32.30	0.00
44	0.382	-8.36	-0.66	0.86	89	0.010	-40.00	-32.30	0.00
					90	0.010	-40.00	-32.30	0.00

Power Density vs Distance

EXHIBIT E-10 FIGURE #2.



ng and Technology

00 Antenna Type: Phelps-Dodge "Ring Stub" or Dipole (EF

W): 0

W): 12000

Number of Elements: 8

Element Spacing: 125

Maximum RFR Power Density = 46.4822 uW/cM2 at a d
56.75 meters from the base of the antenna support struc
above ground level.

Antenna Manufacturer & Model: Kathrein-Scala (SCA)
CL-FM/VRM/50N: A composite directional antenna array