

# ***KLEIN BROADCAST ENGINEERING, L.L.C.***

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

**FCC FORM 301 APPLICATION  
for  
FM BROADCAST STATION CONSTRUCTION PERMIT  
(A MINOR CHANGE APPLICATION)  
WINTON ROAD BROADCASTING COMPANY, L.L.C.  
K R W N (FM)  
(FCC FACILITY ID# 47096)  
FM CHANNEL 223 C1 / 92.5 mHz.  
FARMINGTON, NEW MEXICO**

**SEPTEMBER 2008**

## **INTRODUCTION and ENGINEERING STATEMENT**

The firm of Klein Broadcast Engineering, L.L.C., has been retained by the applicant, Winton Road Broadcasting Company, L.L.C., to prepare this FCC Form 301 application. The instant application requests a minor change to the main transmission facility of FM Broadcast Station KRWN(FM), Farmington, New Mexico. The change requested is to change frequency to FM Channel 223 Class C1, and install a omni-directional antenna system as specified herein.

The applicant wishes to specify operation of Station KRWN at Farmington, New Mexico, on FM Channel 223 Class C1 and requests the Commission amend 47 C.F.R. Section 73.202 and the station's license accordingly.

This minor change application specifies Class C1 facilities with 63.0 kW E.R.P. in both the Horizontal and Vertical Planes. The applicant proposed the use of a new omni-directional antenna. The model as specified is an Electronics Research, Inc.(ERI) , SHPX-10AC-HW-SP. The antenna is described as a ten (10) bay, half wave length spaced, center fed, non-directional antenna system. The antenna specified uses -0.70 degree of beam tilt and uses no null fill.

**INTRODUCTION and ENGINEERING STATEMENT cont'd page two: KRWN(FM)**

The proposed Class C1 facility is specified as follows:

Geographic Coordinate Site Location: NL: 36-41-45 / WL: 108-13-23 (NAD-1927)

Overall Tower Height above Ground Level:	74.6 meters
Height of Radiation Center Above Mean Sea Level:	1383 meters
Height of Radiation Center Above Ground Level:	56 meters
Height of Radiation Center Above Average Terrain:	122 meters
Ground Level at Site Above Mean Sea Level:	1774 meters
Effective Radiated Power H&V:	63.0 kW
Tower Structure Registration (ASR) Number:	1007187

Geographic Coordinate Site Location for Reference Coordinates for the Allotment of FM Channel 223

Class C1 (223 C1) to Farmington, New Mexico: NL: 36-41-02 / WL: 108-17-29 (NAD-1927)

The terrain data used in the instant application was derived from the DMA 3 Arc Second Digitized Terrain Datafile for the Continental United States of America (Conus).

If there were any radials with calculated negative elevations, they were treated as if they had an elevation of 30 meters for the purposes of contour calculations as specified in 47 C.F.R. 73.313.

Exhibit E-1 is an FM Channel Spacing Study under 47 CFR Section 73.207 & 73.215. This exhibit was prepared using the site coordinates for the actual transmitter site for Station KRWN on FM Channel 223C1 at Farmington, New Mexico, as requested in this instant application. This exhibit demonstrates FM Channel 223 Class C1 at the actual transmitter site specified is in compliance with 47 C.F.R. Section 73.207. Regarding Station KDUR at Durango, Colorado operating on FM Channel 220A, this exhibit shows compliance with 47 C.F.R. Section 73.215. The applicant requests Commission processing under 47 C.F.R. Section 73.215 with respect to Station KDUR at Durango, Colorado.

## **INTRODUCTION and ENGINEERING STATEMENT cont'd page three: KRWN(FM)**

Exhibit E-1A is an FM Channel Spacing Study under 47 CFR Section 73.207 & 73.215. This exhibit was prepared using the site coordinates for the allotment of FM Channel 223C1 to Farmington, New Mexico, as requested in this instant application. This exhibit demonstrates FM Channel 223 Class C1 may be allotted to the Principal Community of Farmington, New Mexico, in compliance with 47 CFR Section 73.207 of the Commission's Rules. The applicant requests the FM Table of Allotments, 47 CFR Section 73.202, be amended accordingly.

Exhibit E-2 is a contour map demonstrating the required 70dBu f(50,50) City Grade contour covers the entire proposed Principal Community, Hazelton, Idaho, in compliance with 47 CFR Section 73.315 of the Commission's Rules. This exhibit and the contour plotted thereon was calculated by the FCC Standard Contour Prediction Method f(50,50), 360 Radials.

Exhibit E-2A is a contour map demonstrating the Reference Site Location for the Allotment of FM Channel 223 C1 to the Principal Community of Farmington, New Mexico, is in compliance with 47 C.F.R. Section 73.315 of the Commission's Rules. The contour plotted thereon is a Class C1 70dBu contour without regard for terrain. There is also a 70dBu f(50,50) contour plotted on the map showing a 70dBu contour from a maximum Class C1 facility that considers terrain, both 70dBu contours show 100% coverage of the proposed Principal Community, Farmington, New Mexico, from the FM Channel Allotment Site Coordinates as required by the Commission's Rules.

Exhibit E-3 is a contour map showing the proposed Protected and Interfering Contours from Station KRWN and Station KDUR on FM Channel 220A at Durango, Colorado. This exhibit demonstrates the proposed Protected and Interfering contours for Station KRWN as a Class C1 facility with 63.0kW Effective Radiated Power at 122 meters HAAT, using an omni-directional antenna, complies with 47 CFR Section 73.215 of the Commission's Rules.

**INTRODUCTION and ENGINEERING STATEMENT cont'd page four: KRWN(FM)**

Exhibit E-10 is a complete and comprehensive RF Radiation Hazard Study/Evaluation of the facility proposed in this instant application. Based on the calculations, analysis, findings and conclusions contained therein, the proposed new main class C1 transmission facility proposed for Station KRWN, FM Broadcast Station at Farmington, New Mexico, complies with all of the requirements of the FCC O.S.T. Bulletin, Guidelines for Human Exposure to Non-Ionizing Radio Frequency Radiation, as amended to date.

The applicant proposed no new antenna support structure construction. There will be no change to the existing antenna support structure now in use at Station KRWN(FM).

An analysis of the engineering and other data presented herein demonstrates compliance of the proposed facility with all of the applicable Rules and Regulations of the Federal Communications Commission as amended to date. Therefore, the applicant requests the Commission consider and GRANT the instant application for the facility specified herein for Station KRWN(FM), Farmington, New Mexico.

Respectfully submitted,

Elliott Kurt Klein, Consulting Broadcast Engineer

For the firm:

KLEIN BROADCAST ENGINEERING, L.L.C.

24 September 2008

Klein Broadcast Engineering, L.L.C.  
 Job: KRWN 20080924.fmj  
 Master Database: 2008\_Sep\_24.fmd  
 Lat: N36:41:45 Lon: W108:13:23 NAD-27  
 Channel: 223 Class: C1

# EXHIBIT E-1 FCC FM CHANNEL SPACING STUDY

Page 1 of 1  
 Date: 9/24/2008

Status: Licensed, Construction Permit, Application, Addition, Vacant/Reserved  
 Channels: Co-Channel, 1st Adj, 2nd Adj, 3rd Adj, IF, TV6  
 Range: 100 km  
 Comments: No Comments  
 Description: EXHIBIT E-1 FCC FM CHANNEL SPACING STUDY KRWN 20080924

Callsign	Latitude (NAD27)	Longitude (NAD27)	City	State	Serv	Channel	Class	ERP	HAAT	Status	73 207 Min	73 207 Clear	73 215 Min	73 215 Clear	Adjacency	Distance	Beari
*KAYF	N37:13:51	W107:35:11	BAYFIELD	CO	FM	223 : 92.5 MHz	A	0.10	0	LIC	200	-117.90	178	-95.90	Co-Chan	82.10	044
KRWN	N36:41:45	W108:13:23	FARMINGTON	NM	FM	225 : 92.9 MHz	C1	62.00	120	LIC	82	-82.00	76	-76.00	2nd Adj	0.00	000
#KDUR	N37:16:31	W107:52:00	DURANGO	CO	FM	220 : 91.9 MHz	A	0.20	-137	LIC	75	-3.29	0	71.71	3rd Adj	71.71	026
#KDUR	N37:16:41	W107:52:21	DURANGO	CO	FM	220 : 91.9 MHz	A	0.00	0	CP	75	-3.25	0	71.75	3rd Adj	71.75	026
KDSK	N35:10:57	W107:36:13	GRANTS	NM	FM	224 : 92.7 MHz	C1	45.00	412	CP	177	-0.03	158	18.97	1st Adj	176.97	162
K221DJ	N36:41:43	W108:13:14	FARMINGTON	NM	FM	221 : 92.1 MHz	DX	0.10	97	LIC	0	0.23	0	0.23	2nd Adj	0.23	105
KAYF	N37:20:21	W107:49:25	USER ADD	XX	ED	225 : 92.9 MHz	C2	9.20	344	LIC	79	0.75	73	6.75	2nd Adj	79.75	026
KBDX	N37:50:24	W109:27:41	BLANDING	UT	FM	224 : 92.7 MHz	C2	0.59	1038	LIC	158	9.90	144	23.90	1st Adj	167.90	319
KDSK	N35:07:09	W107:54:08	GRANTS	NM	FM	224 : 92.7 MHz	C2	26.00	52	LIC	158	19.31	144	33.31	1st Adj	177.31	171
KRST	N35:12:55	W106:27:02	ALBUQUERQUE	NM	FM	222 : 92.3 MHz	C	22.00	1268	LIC	209	20.25	188	41.25	1st Adj	229.25	136
K220EM	N36:25:03	W107:50:39	DZILTH-NA-O-DIN	NM	FM	220 : 91.9 MHz	DX	0.01	235	LIC	0	45.88	0	45.88	3rd Adj	45.88	132
KTHQ	N34:15:06	W109:35:06	EAGAR	AZ	FM	223 : 92.5 MHz	C1	58.10	365	LIC	245	53.01	224	74.01	Co-Chan	298.01	205
KJYE	N39:04:00	W108:44:41	GRAND JUNCTI	CO	FM	222 : 92.3 MHz	C	100.00	420	LIC	209	58.12	188	79.12	1st Adj	267.12	350
KRDC	N36:21:06	W109:49:51	MANY FARMS	AZ	FM	220 : 91.9 MHz	C1	5.50	496	CP	82	66.99	0	148.99	3rd Adj	148.99	255
NEW	N37:15:43	W107:54:19	DURANGO	CO	FM	277 : 103.3 MHz	DX	0.25	0	APP	0	68.90	0	68.90	IF	68.90	024
NEW	N37:20:18	W107:49:21	DURANGO	CO	FM	277 : 103.3 MHz	DX	0.03	0	APP	0	79.72	0	79.72	IF	79.72	027
K277AY	N36:27:39	W109:05:44	CHINLE	AZ	FM	277 : 103.3 MHz	DX	0.01	0	LIC	0	82.33	0	82.33	IF	82.33	252
NEW	N37:21:53	W107:46:56	DURANGO	CO	FM	277 : 103.3 MHz	DX	0.01	0	APP	0	83.96	0	83.96	IF	83.96	028
K222AD	N37:22:45	W108:46:04	CORTEZ	CO	FM	222 : 92.3 MHz	DX	0.00	213	LIC	0	90.00	0	90.00	1st Adj	90.00	327
K220DZ	N37:28:07	W108:32:48	DOLORES	CO	FM	220 : 91.9 MHz	DX	0.00	34	LIC	0	90.46	0	90.46	3rd Adj	90.46	341
KCRT-FM	N36:59:33	W104:28:24	TRINIDAD	CO	FM	223 : 92.5 MHz	C1	38.50	311	LIC	245	91.08	224	112.08	Co-Chan	336.08	084

\* Station KAYF is filing an application to move its main transmission facility, change FM channel and class to C2.

# Station KDUR is afforded contour protection under 47 C.F.R. Section 73.215 by the facility proposed for KRWN herein.

Klein Broadcast Engineering, L.L.C.  
 Job: KRWN 20080924.fmj  
 Master Database: 2008\_Sep\_24.fmd  
 Lat: N36:41:02 Lon: W108:17:29 NAD-27  
 Channel: 223 Class: C1

EXHIBIT E-1A FCC FM CHANNEL SPACING STUDY KRWN 223C1 Reference Site

Page 1 of 1  
 Date: 9/24/2008

Status: Licensed, Construction Permit, Application, Addition, Vacant/Reserved  
 Channels: Co-Channel, 1st Adj, 2nd Adj, 3rd Adj, IF, TV6  
 Range: 100 km  
 Comments: No Comments  
 Description: EXHIBIT E-1A FCC FM CHANNEL SPACING STUDY REFERENCE SITE FOR 223C1 FARMINGTON NM 20080924

Callsign	Latitude (NAD27	Longitude (NAD27	City	State	Serv	Channel	Class	ERP	HAAT	Status	73 207 Min	73 207 Clear	73 215 Min	73 215 Clear	Adjacency	Distance	Beari
*KAYF	N37:13:51	W107:35:11	BAYFIELD	CO	FM	223 : 92.5 MHz	A	0.10	0	LIC	200	-112.67	178	-90.67	Co-Chan	87.33	046
KRWN	N36:41:45	W108:13:23	FARMINGTON	NM	FM	225 : 92.9 MHz	C1	62.00	120	LIC	82	-75.75	76	-69.75	2nd Adj	6.25	078
KDUR	N37:16:31	W107:52:00	DURANGO	CO	FM	220 : 91.9 MHz	A	0.20	-137	LIC	75	0.75	0	75.75	3rd Adj	75.75	030
KDUR	N37:16:41	W107:52:21	DURANGO	CO	FM	220 : 91.9 MHz	A	0.00	0	CP	75	0.76	0	75.76	3rd Adj	75.76	029
KDSK	N35:10:57	W107:36:13	GRANTS	NM	FM	224 : 92.7 MHz	C1	45.00	412	CP	177	0.77	158	19.77	1st Adj	177.77	160
KAYF	N37:20:21	W107:49:25	USER ADD	XX	ED	225 : 92.9 MHz	C2	9.20	344	LIC	79	4.80	73	10.80	2nd Adj	83.80	030
K221DJ	N36:41:43	W108:13:14	FARMINGTON	NM	FM	221 : 92.1 MHz	DX	0.10	97	LIC	0	6.46	0	6.46	2nd Adj	6.46	079
KBDX	N37:50:24	W109:27:41	BLANDING	UT	FM	224 : 92.7 MHz	C2	0.59	1038	LIC	158	7.03	144	21.03	1st Adj	165.03	321
KDSK	N35:07:09	W107:54:08	GRANTS	NM	FM	224 : 92.7 MHz	C2	26.00	52	LIC	158	19.12	144	33.12	1st Adj	177.12	169
KRST	N35:12:55	W106:27:02	ALBUQUERQUE	NM	FM	222 : 92.3 MHz	C	22.00	1268	LIC	209	23.67	188	44.67	1st Adj	232.67	134
KTHQ	N34:15:06	W109:35:06	EAGAR	AZ	FM	223 : 92.5 MHz	C1	58.10	365	LIC	245	49.27	224	70.27	Co-Chan	294.27	204
K220EM	N36:25:03	W107:50:39	DZILTH-NA-O-DIN	NM	FM	220 : 91.9 MHz	DX	0.01	235	LIC	0	49.77	0	49.77	3rd Adj	49.77	126
KJYE	N39:04:00	W108:44:41	GRAND JUNCTI	CO	FM	222 : 92.3 MHz	C	100.00	420	LIC	209	58.46	188	79.46	1st Adj	267.46	351
KRDC	N36:21:06	W109:49:51	MANY FARMS	AZ	FM	220 : 91.9 MHz	C1	5.50	496	CP	82	60.74	0	142.74	3rd Adj	142.74	255
NEW	N37:15:43	W107:54:19	DURANGO	CO	FM	277 : 103.3 MHz	DX	0.25	0	APP	0	72.79	0	72.79	IF	72.79	028
K277AY	N36:27:39	W109:05:44	CHINLE	AZ	FM	277 : 103.3 MHz	DX	0.01	0	LIC	0	76.11	0	76.11	IF	76.11	251
NEW	N37:20:18	W107:49:21	DURANGO	CO	FM	277 : 103.3 MHz	DX	0.03	0	APP	0	83.77	0	83.77	IF	83.77	030
K222AD	N37:22:45	W108:46:04	CORTEZ	CO	FM	222 : 92.3 MHz	DX	0.00	213	LIC	0	88.04	0	88.04	1st Adj	88.04	331
NEW	N37:21:53	W107:46:56	DURANGO	CO	FM	277 : 103.3 MHz	DX	0.01	0	APP	0	88.11	0	88.11	IF	88.11	031
K220DZ	N37:28:07	W108:32:48	DOLORES	CO	FM	220 : 91.9 MHz	DX	0.00	34	LIC	0	90.00	0	90.00	3rd Adj	90.00	345
KCRT-FM	N36:59:33	W104:28:24	TRINIDAD	CO	FM	223 : 92.5 MHz	C1	38.50	311	LIC	245	97.31	224	118.31	Co-Chan	342.31	084

\* Station KAYF has filed an application with the Commission to change FM channel, change main transmitter site location and class to C2.

## EXHIBIT E-2 Proposed KRWN FCC FM Service Contours

Klein Broadcast Engineering, L.L.C.

Job: KRWN 20080924.fmj

Master Database: FCC CDBS 2008\_Sep\_24.fmd

Date: 9/24/2008

Lat: N36:41:45 Lon: W108:13:23 NAD-27 (Map Center & KRWN Transmitter Site)

Scale: 1:750000

Channel: 223 Class: C1

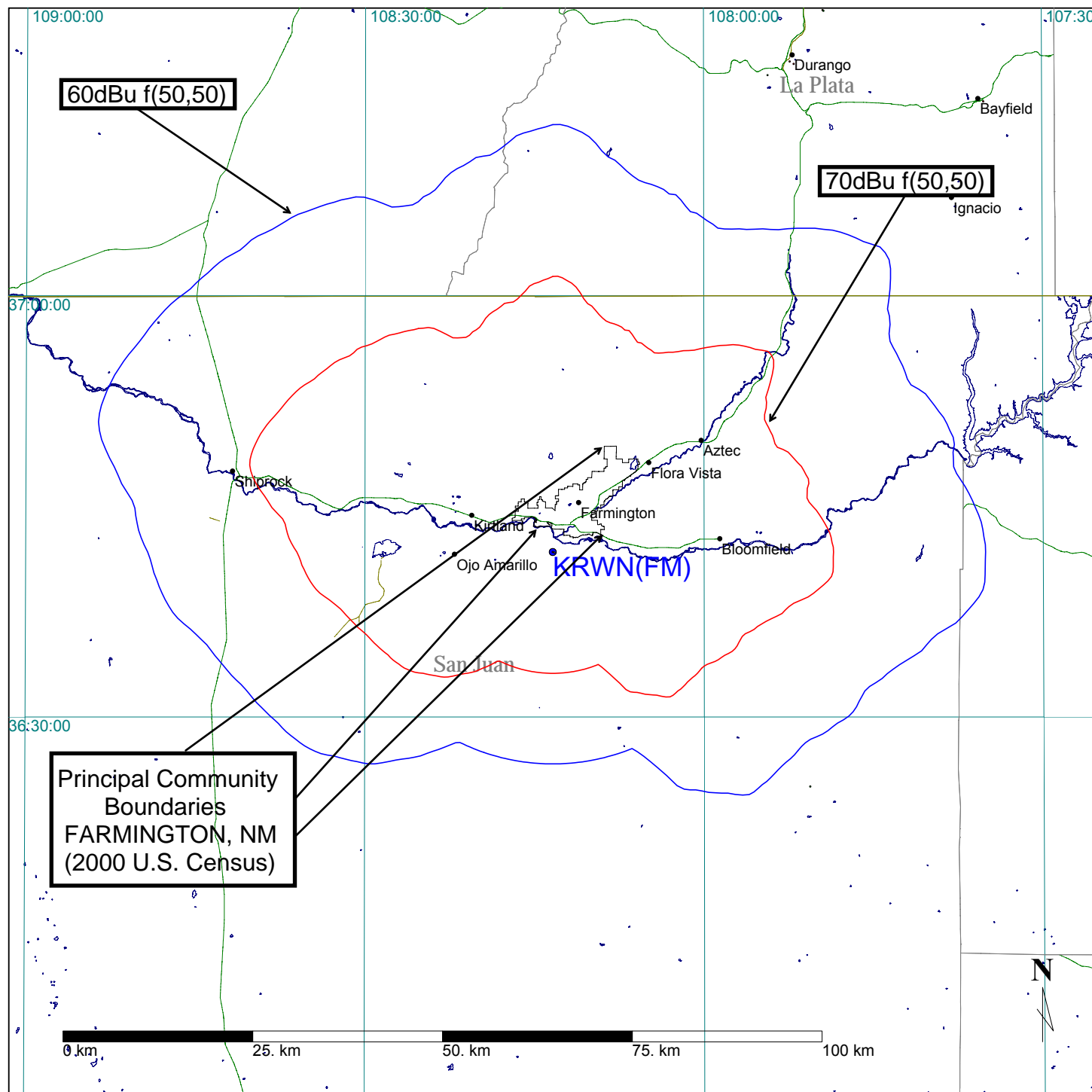
Status: Application

Terrain Database: DMA 3 Arc Second Digitized Terrain Datafile, Conus.

Contour Prediction Method: FCC Standard f(50,50), 360 Radials.

Comments: Proposed Facility 63.0kW ERP H & V at 122 meters HAAT, COR 56 meters AGL.

Description: EXHIBIT E- FCC FM SERVICE CONTOURS KRWN 20080924



## EXHIBIT E-2A FM Channel 223 C1 Reference Site 70dBu Contour Analysis

Klein Broadcast Engineering, L.L.C.

Job: KRWN REFERENCE SITE 20080924.fmj

Master Database: FCC CDBS 2008\_Sep\_24.fmd

Date: 9/24/2008

Lat: N36:41:02 Lon: W108:17:29 NAD-27 (Reference Site Coordinates for FM Channel 223 C1 at Farmington, NM)

Scale: 1:750000

Channel: 223 Class: C1

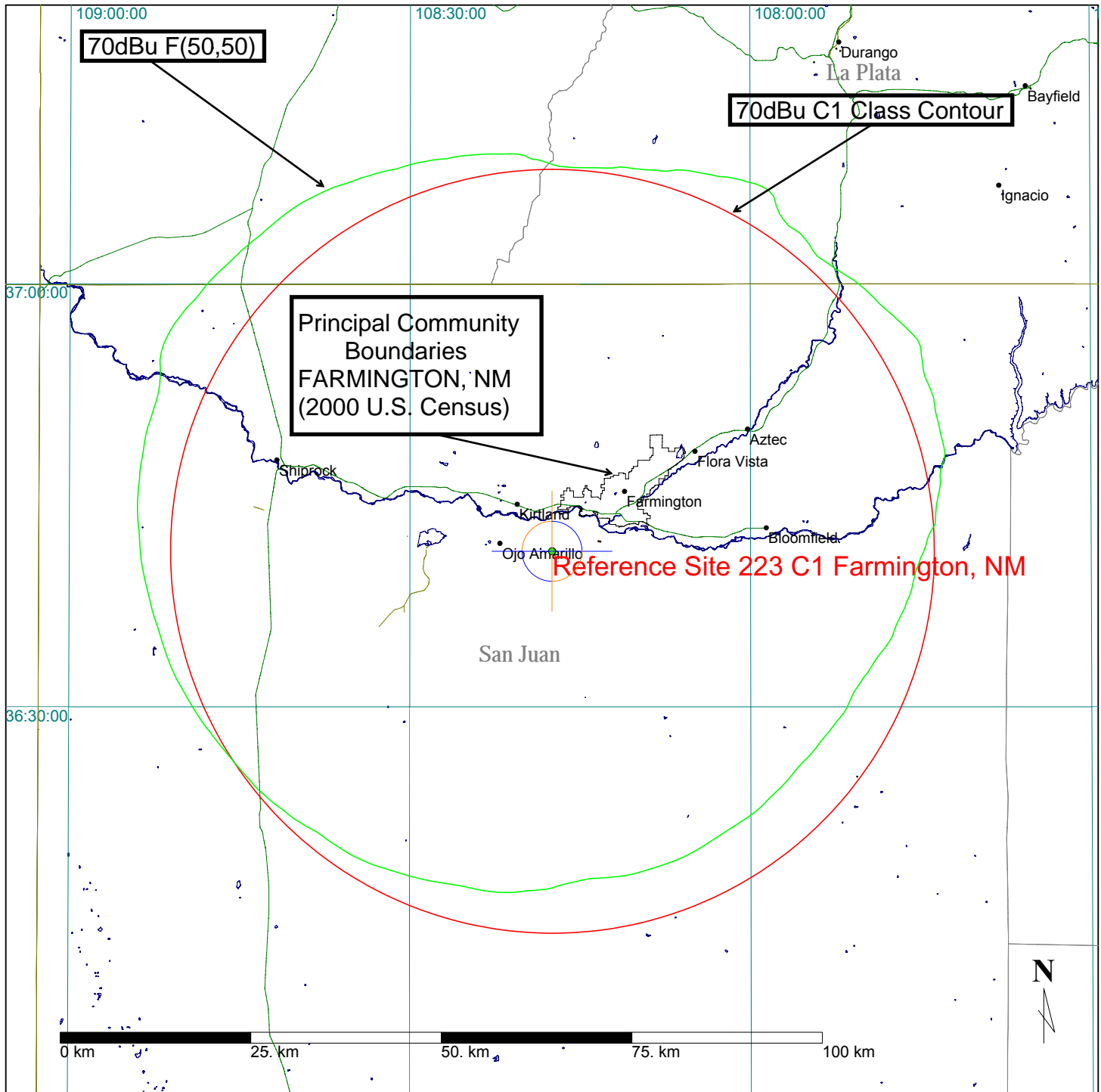
Status: Application

Terrain Database: DMA 3 Arc Second Digitized Terrain Datefile, Conus.

Contour Prediction Method: FCC Standard f(50,50), 360 Radials & FCC Class Distance for C1.

Comments: Maximum Class C1 70dBu Contour Analysis.

Description: EXHIBIT E-2A FM CHANNEL 223 C1 REFERENCE 70dBu CONTOUR ANALYSIS KRWN 20080924





## EXHIBIT E-3 FCC 47 C.F.R. Section 73.215 Contour Analysis KRWN & KDUR

Klein Broadcast Engineering, L.L.C.

Job: KRWN 20080924.fmj

Master Database: FCC CDBS2008\_Sep\_24.fmd

Lat: N37:00:03 Lon: W107:59:51 NAD-27 (Map Center)

Scale: 1:500000

Channel: 223 Class: C1

Status: Licensed, Application

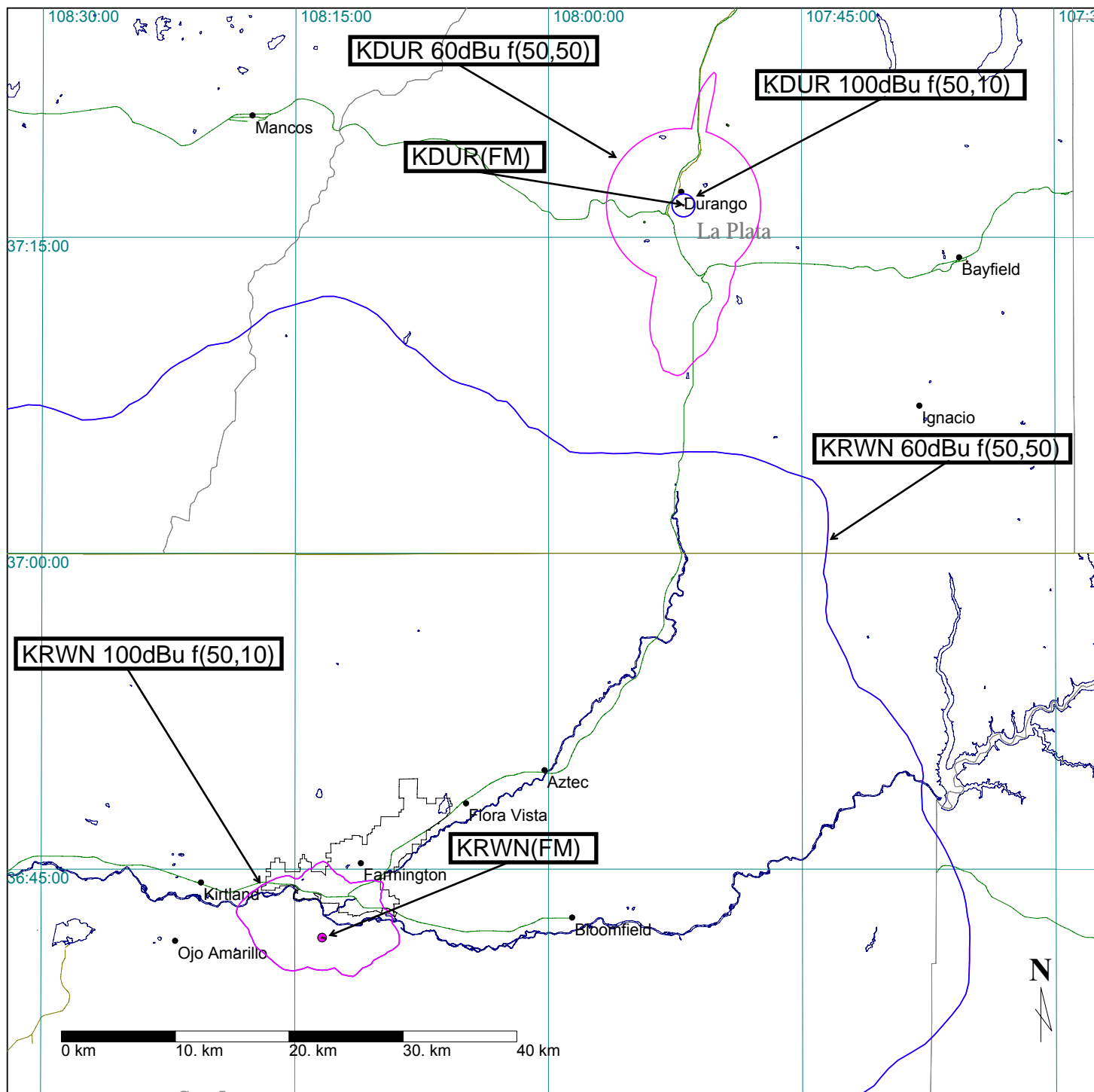
Channels: Co-Channel, 1st Adj, 2nd Adj, 3rd Adj, IF, TV6

Range: 100 km, Clearance: FCC

Comments: Interfering & Protected Contour Analysis of KRWN & KDUR under 47 C.F.R. Section 73.215

Description: EXHIBIT E-3 FCC SECTION 73.215 CONTOURS KRWN & KDUR 20080924

Date: 9/24/2008



# ***KLEIN BROADCAST ENGINEERING, L.L.C.***

dedicated to improving the science of radio and television communications

SEPTEMBER 2008

EXHIBIT E-10RHS  
NIER RFR STUDY & ANALYSIS  
WINTON ROAD BROADCASTING COMPANY, L.L.C.  
K R W N (FM)  
(FCC FACILITY ID# 47096)  
FM CHANNEL 223 C1 / 92.5 mHz.  
FARMINGTON , 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 29.4 meters height above ground level requirement for the radiation center of the proposed ten (10) bay 0.5 wave length spaced FM broadcast antenna. A combined vertical and horizontal effective radiated power of 126.0 kilowatts was used for this study and determination (63.0 kW Horiz. & 63.0 kW Vert.) The radiation center of the FM broadcast antenna system is to be located at 56 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 an Electronics Research, Inc., model SHPX-10AC-HW-SP, a ten (10) section, 0.5 wave length spaced, center fed, circularly polarized antenna. The antenna manufacturer, Electronics Research, Inc., states its antenna meets the BEST case requirements for downward radiation pattern according to the FCC O.S.T. Bulletin #65 Guidelines. The antenna proposed uses -0.70 degree of beam tilt and no null fill.

Occupational compliance is certified by the reduction of operating power or the complete cessation of operation during such time maintenance personnel are on 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 6.0036 microwatts/cm<sup>2</sup> at a distance of 541.75 meters from the base of the antenna support structure at a height of 2.0 meters above ground level. This is less than 3.1% (3.001%) of the allowable RF power density for Uncontrolled areas under the FCC and ANSI/EPA Guidelines, being limited to: 200.0 microwatts/cm<sup>2</sup> for Uncontrolled areas and 1.00mW/cm<sup>2</sup> or (1,000 microwatts/cm<sup>2</sup>) for Controlled areas (areas within fencing). All other power density was calculated to be below this maximum predicted level for the proposed facility, for a distance of 0 to 1000 meters distance from the base of the antenna support structure at 2.0 meters above ground level.

There are other sources of significant RFR levels at the KRWN site but because the contribution of this proposal is far less than 5% of the uncontrolled limit, under the "safe harbor" provision of 47 C.F.R. Section 1.1307(b)(3) no further RFR analysis is required.

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:

$$E(V/m) = \frac{1.6 * 221.72 * \text{SQRT}(\text{ERP}) * (\text{element pattern factor}) * (\text{array factor})}{\text{DIST}}$$

$$H(A/m) = \frac{1.6 * 0.588 * \text{SQRT}(\text{ERP}) * (\text{element pattern factor}) * (\text{array factor})}{\text{DIST}}$$

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.

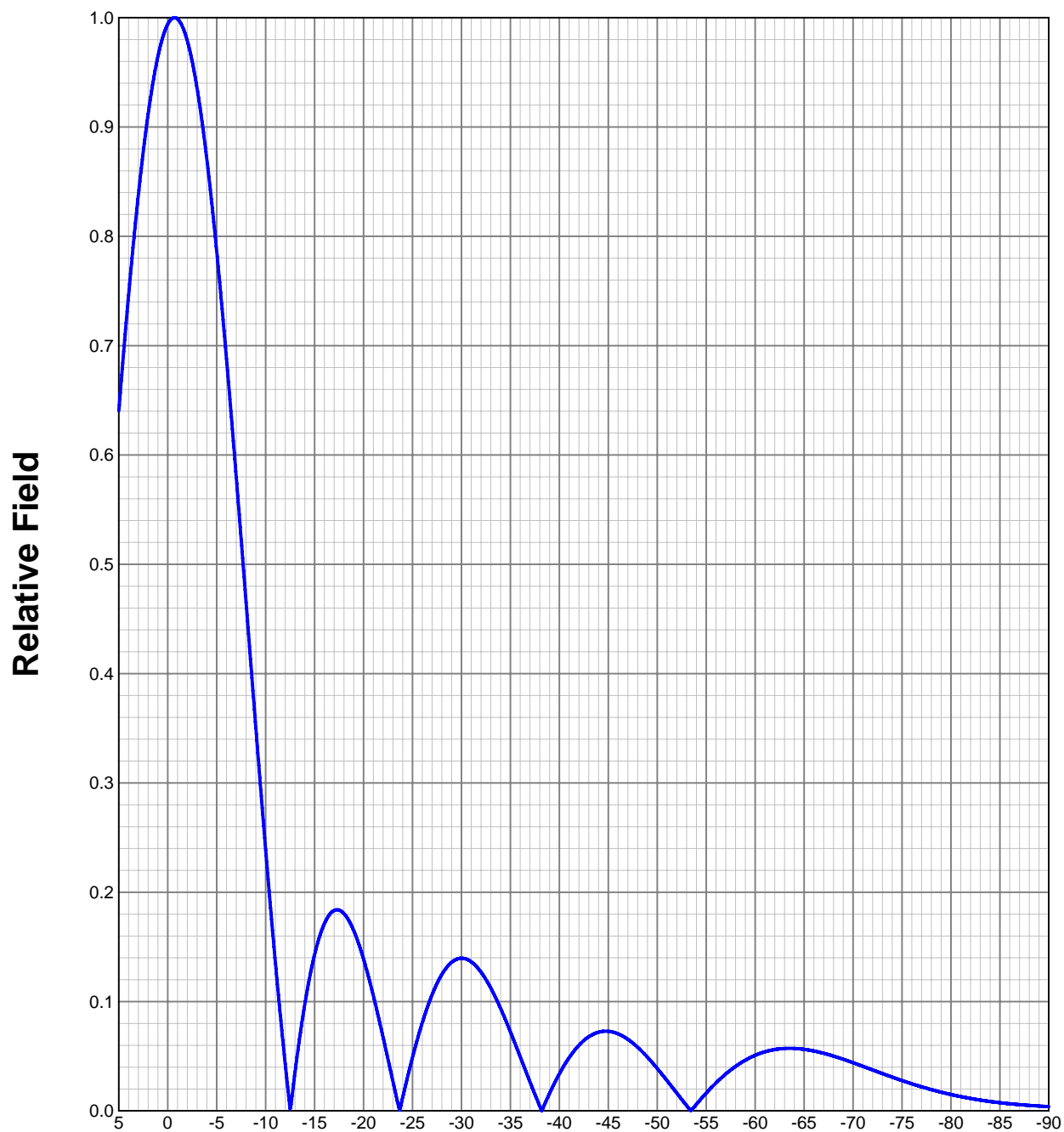
The 1.6 factor found in the ANSI/EPA formula and used above at the beginning of each equation takes into account possible contributions from ground reflections. The element pattern factor in a linearly interpolated relative field value at the appropriate depression angle below the horizon as taken directly 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 "Crossed Ring type" EPA Type #3 element used on the Electronics Research, Inc., model SHPX-10AC-HW-SP 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 General Public will not have access to the antenna support structure base because it is in a sparsely populated area. There is a locked gate and fence around the base of the antenna support structure preventing access to the area surrounding the antenna support structure and the support structure base itself. Only authorized personnel have access to the locked gate. This will prevent General Public access to the actual antenna support structure base and surrounding area.

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.

A vertical pattern plot of the Electronics Research, Inc., model SHPX-10AC-HW-SP antenna to be employed at KRWN is included with this exhibit and is marked Figure 1. This plot clearly shows this antenna has greatly reduced downward radiation and meets the BEST case requirements of FCC Bulletin #65, as amended to date. The plot Exhibit marked Figure 2. is a plot of the actual calculated power density in microwatts/cm<sup>2</sup> vs. distance. This plot shows the calculated maximum predicted power density of 6.0036 uW/cm<sup>2</sup> occurring at 541.75 meters distant from the base of the antenna support structure. It also shows, graphically, that all other calculated power density RFR levels are below this maximum between 0 meters and 1000 meters distant from the base of the antenna support structure.

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 KRWN FM Broadcast Station at Farmington, 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.

**ELEVATION PATTERN****Type:****SHPX10H****Channel:****223****Directivity:****Numeric****dBd****Location:****Main Lobe:****3.12****4.94****Beam Tilt:****-0.70****Horizontal:****3.08****4.88****Polarization:****Circular**

*Preliminary, subject to final design and review.*

## TABULATED DATA FOR ELEVATION PATTERN

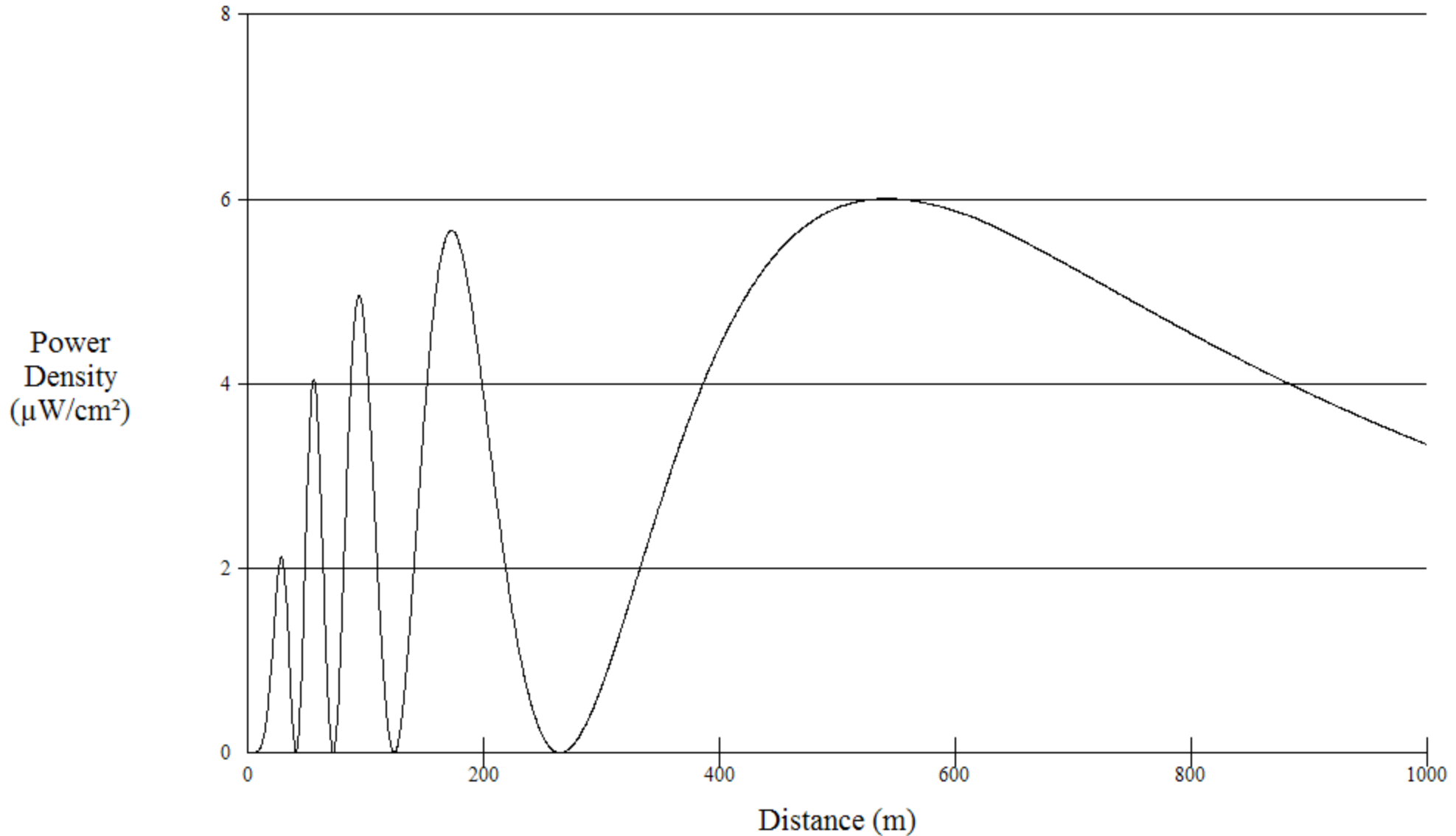
Type: SHPX10H

Polarization: Circular

ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB	ANGLEFIELD	dB
5.00	0.640	-3.87	-6.75	0.607	-4.33	-27.00	0.106	-19.47	-50.50
4.75	0.668	-3.51	-7.00	0.579	-4.74	-27.50	0.117	-18.67	-51.00
4.50	0.695	-3.16	-7.25	0.551	-5.17	-28.00	0.125	-18.07	-51.50
4.25	0.721	-2.84	-7.50	0.523	-5.63	-28.50	0.131	-17.63	-52.00
4.00	0.746	-2.54	-7.75	0.494	-6.13	-29.00	0.136	-17.33	-52.50
3.75	0.771	-2.26	-8.00	0.465	-6.65	-29.50	0.139	-17.16	-53.00
3.50	0.794	-2.00	-8.25	0.436	-7.20	-30.00	0.140	-17.10	-53.50
3.25	0.817	-1.76	-8.50	0.408	-7.80	-30.50	0.139	-17.15	-54.00
3.00	0.838	-1.53	-8.75	0.379	-8.43	-31.00	0.136	-17.30	-54.50
2.75	0.858	-1.33	-9.00	0.350	-9.11	-31.50	0.132	-17.56	-55.00
2.50	0.878	-1.13	-9.25	0.322	-9.85	-32.00	0.127	-17.93	-55.50
2.25	0.895	-0.96	-9.50	0.294	-10.64	-32.50	0.120	-18.40	-56.00
2.00	0.912	-0.80	-9.75	0.266	-11.50	-33.00	0.112	-18.99	-56.50
1.75	0.927	-0.66	-10.00	0.239	-12.44	-33.50	0.103	-19.71	-57.00
1.50	0.941	-0.53	-10.50	0.186	-14.62	-34.00	0.094	-20.57	-57.50
1.25	0.954	-0.41	-11.00	0.135	-17.38	-34.50	0.083	-21.59	-58.00
1.00	0.965	-0.31	-11.50	0.087	-21.17	-35.00	0.072	-22.81	-58.50
0.75	0.974	-0.23	-12.00	0.043	-27.36	-35.50	0.061	-24.29	-59.00
0.50	0.982	-0.15	-12.50	0.002	-54.73	-36.00	0.050	-26.10	-59.50
0.25	0.989	-0.10	-13.00	0.035	-29.02	-36.50	0.038	-28.41	-60.00
0.00	0.994	-0.05	-13.50	0.069	-23.27	-37.00	0.026	-31.54	-60.50
-0.25	0.998	-0.02	-14.00	0.098	-20.20	-37.50	0.015	-36.34	-61.00
-0.50	1.000	0.00	-14.50	0.123	-18.24	-38.00	0.004	-47.31	-61.50
-0.75	1.000	0.00	-15.00	0.143	-16.89	-38.50	0.006	-44.20	-62.00
-1.00	0.999	-0.01	-15.50	0.159	-15.95	-39.00	0.016	-35.87	-62.50
-1.25	0.996	-0.03	-16.00	0.171	-15.32	-39.50	0.025	-31.91	-63.00
-1.50	0.992	-0.07	-16.50	0.179	-14.93	-40.00	0.034	-29.38	-63.50
-1.75	0.986	-0.12	-17.00	0.183	-14.73	-40.50	0.042	-27.58	-64.00
-2.00	0.979	-0.19	-17.50	0.184	-14.72	-41.00	0.049	-26.24	-64.50
-2.25	0.970	-0.26	-18.00	0.181	-14.87	-41.50	0.055	-25.22	-65.00
-2.50	0.960	-0.36	-18.50	0.174	-15.18	-42.00	0.060	-24.42	-65.50
-2.75	0.948	-0.46	-19.00	0.165	-15.66	-42.50	0.064	-23.82	-66.00
-3.00	0.935	-0.58	-19.50	0.153	-16.31	-43.00	0.068	-23.37	-66.50
-3.25	0.921	-0.72	-20.00	0.139	-17.15	-43.50	0.070	-23.05	-67.00
-3.50	0.905	-0.87	-20.50	0.123	-18.21	-44.00	0.072	-22.85	-67.50
-3.75	0.888	-1.03	-21.00	0.105	-19.55	-44.50	0.073	-22.75	-68.00
-4.00	0.870	-1.21	-21.50	0.087	-21.24	-45.00	0.073	-22.76	-68.50
-4.25	0.851	-1.41	-22.00	0.067	-23.46	-45.50	0.072	-22.85	-69.00
-4.50	0.830	-1.62	-22.50	0.047	-26.53	-46.00	0.070	-23.04	-69.50
-4.75	0.809	-1.84	-23.00	0.027	-31.37	-46.50	0.068	-23.31	-70.00
-5.00	0.786	-2.09	-23.50	0.007	-43.06	-47.00	0.065	-23.68	-70.50
-5.25	0.763	-2.35	-24.00	0.012	-38.09	-47.50	0.062	-24.14	-71.00
-5.50	0.739	-2.63	-24.50	0.031	-30.11	-48.00	0.058	-24.70	-71.50
-5.75	0.714	-2.93	-25.00	0.049	-26.20	-48.50	0.054	-25.38	-72.00
-6.00	0.688	-3.25	-25.50	0.066	-23.67	-49.00	0.049	-26.17	-72.50
-6.25	0.662	-3.59	-26.00	0.081	-21.86	-49.50	0.044	-27.11	-73.00
-6.50	0.635	-3.95	-26.50	0.094	-20.50	-50.00	0.039	-28.22	-73.50

## Power Density vs Distance

EXHIBIT E-10 Figure#2.



Office of Engineering and Technology

Distance (m):  Antenna Type:

Horizontal ERP (W):  Number of Elements:

Vertical ERP (W):  Element Spacing:

Antenna Height (m):

Maximum RFR Power Density = 6.0036  $\mu\text{W}/\text{cm}^2$  at 541.75 meters distance from the base of the antenna support structure, 2 meters above ground level.  
Antenna Manufacturer & Model: Electronics Research, Inc. (ERI) SHPX-10AC-HW-SP, a ten section, center fed, half-wavelength spaced FM broadcast antenna array.