

KLEIN BROADCAST ENGINEERING, L.L.C.

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

JANAURY 2009

REQUEST FOR STA SPECIAL TEMPORARY AUTHORITY

**MARICOPA COUNTY COMMUNITY COLLEGE DISTRICT
K B A Q (FM)
FCC FACILITY ID# 40096
FM CHANNEL 208 C1 / 89.5mHz
PHOENIX, ARIZONA**

INTRODUCTION and ENGINEERING STATEMENT

This Engineering Statement and Supporting Exhibits are being filed in support of a request for Special Temporary Authority (STA) to operate FM Broadcast Station KBAQ from the site specified in FCC FM Broadcast Station Construction Permit, FCC File Number: BPED20060227AHT, with the facility as specified herein.

BACKGROUND

In February of 2006 Maricopa County Community College District filed an application, FCC Form 340, for FM Broadcast Station Construction Permit. The application specified facilities that required the cooperation and simultaneous filing and grant for Station KLVK, modified facilities at Fountain Hills, Arizona. The licensee of Station KLVK, Educational Media Foundation, consented to work with the licensee of Station KBAQ and the two licensees filed FCC Form 340 applications on the same day, February 27, 2006. A grant of the applications was contingent upon each other.

On January 7, 2009, the Commission granted both applications for the respective modified facilities. The KBAQ Construction Permit assigned FCC File Number BPED20060227AHT and the KLVK Construction Permit assigned FCC File Number BPED20060227AIH. The site specified in the KBAQ Construction Permit is that of commonly owned Station KJZZ, Phoenix, Arizona. The site specified in the KLVK Construction Permit is the existing licensed site of Station KBAQ. A grant of this STA will allow Station KBAQ to operate from the site specified in the BPED20060227AHT construction permit and will allow Station KBAQ to immediately vacate its existing licensed site. Doing so , will allow Station KLVK to immediately start construction on its modified facility as specified in BPED20060227AIH.

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

KBAQ(FM)

Page two:

PROPOSED KBAQ STA OPERATION

Station KBAQ proposes to operate an STA facility as specified herein:

Geographic Coordinates: NL: 33-19-58 / WL: 112-03-53 (NAD-27)

Effective Radiated Power: 12.0kW H & V

Height of radiation center above ground: 33 meters

Height of radiation center above mean sea level: 830 meters

Height of radiation center above average terrain: 463 meters

Antenna Structure Registration Number: 10003590

Exhibit E-1 is a copy of the KBAQ FM Broadcast Station Construction Permit, FCC File Number BPED20060227AHT. It is included herein to aid Commission Staff in the processing of this STA Request.

The antenna to be employed is a non-directional antenna manufactured by Electronic Research, Inc. (ERI), model SHPX-4AC, described as a four (4) section, center fed, full wavelength antenna array. Operating with the proposed 12.0kW Effective Radiated Power, the protected 60dBu f(50,50) contour is wholly contained within the protected 60dBu contour as authorized in FCC FM Broadcast Station Construction Permit for Station KBAQ, BPED20060227AHT. Additionally the co-channel interfering contour of 40dBu f(50,10) is wholly contained within the authorized 40dBu f(50,10) contour in the KBAQ construction permit and is wholly contained within the Borders of the United States of America . Exhibit E-2 has these contours plotted upon it to show the Commission graphically that the proposed pertinent STA contours are wholly contained within the same value contours as authorized in FCC Construction Permit BPED20060227AHT.

The applicant and permittee has also studied the proposed STA facility for its compliance with FCC O.E.T. Bulletin #65 as amended. The proposed STA facility complies with all applicable Rules and Regulations with regard to Human Exposure to Non-Ionizing RF Radiation. Details of compliance may be found in Exhibit E-10 attached and made a part of this STA request. Since the proposed KBAQ STA facility and the KBAQ construction permit specify the same identical site and that site has an existing tower that requires no modification or construction, no antenna support structure construction is proposed or necessary.

REQUEST FOR SPECIAL TEMPORARY AUTHORITY

KBAQ(FM)

Page three:

Stations KBAQ and KLVK are ready to construct the facilities authorized in their respective FCC FM Broadcast Station Construction Permits as captioned herein.

The applicant, Maricopa County Community College District, requests the Commission consider and grant this STA request, being in the Public Interest to facilitate the construction of the authorized KBAQ and KLVK improved facilities to provide the general public with greatly improved service from these stations.

Respectfully submitted,

**Elliott Kurt Klein,
Consulting Broadcast Engineer**

29 January 2009

**Maricopa County Community College District
FM Station KBAQ
Phoenix, Arizona**

EXHIBIT E-1

United States of America

**FEDERAL COMMUNICATIONS COMMISSION
FM BROADCAST STATION CONSTRUCTION PERMIT**

Authorizing Official:

Official Mailing Address:

MARICOPA COUNTY COMMUNITY COLLEGE DISTRICT
2323 W. 14TH STREET
TEMPE AZ 85281

Rodolfo F. Bonacci
Assistant Chief
Audio Division
Media Bureau

Facility ID: 40096

Call Sign: KBAQ

Permit File Number: BPED-20060227AHT

Grant Date: January 07, 2009

This permit expires 3:00 a.m.
local time, 36 months after the
grant date specified above.

Subject to the provisions of the Communications Act of 1934, as amended, subsequent acts and treaties, and all regulations heretofore or hereafter made by this Commission, and further subject to the conditions set forth in this permit, the permittee is hereby authorized to construct the radio transmitting apparatus herein described. Installation and adjustment of equipment not specifically set forth herein shall be in accordance with representations contained in the permittee's application for construction permit except for such modifications as are presently permitted, without application, by the Commission's Rules.

Commission rules which became effective on February 16, 1999, have a bearing on this construction permit. See Report & Order, Streamlining of Mass Media Applications, MM Docket No. 98-43, 13 FCC RCD 23056, Para. 77-90 (November 25, 1998); 63 Fed. Reg. 70039 (December 18, 1998). Pursuant to these rules, this construction permit will be subject to automatic forfeiture unless construction is complete and an application for license to cover is filed prior to expiration. See Section 73.3598.

Equipment and program tests shall be conducted only pursuant to Sections 73.1610 and 73.1620 of the Commission's Rules.

Name of Permittee: MARICOPA COUNTY COMMUNITY COLLEGE DISTRICT

Station Location: AZ-PHOENIX

Frequency (MHz): 89.5

Channel: 208

Class: C1

Hours of Operation: Unlimited

Transmitter: Type Accepted. See Sections 73.1660, 73.1665 and 73.1670 of the Commission's Rules.

Transmitter output power: As required to achieve authorized ERP.

Antenna type: Directional

Antenna Coordinates: North Latitude: 33 deg 19 min 58 sec
West Longitude: 112 deg 03 min 53 sec

	Horizontally Polarized Antenna	Vertically Polarized Antenna
Effective radiated power in the Horizontal Plane (kW):	30.0	30.0
Maximum effective radiated power (kW):	30.0	30.0
Height of radiation center above ground (Meters):	44	44
Height of radiation center above mean sea level (Meters):	841	841
Height of radiation center above average terrain (Meters):	474	474

Antenna structure registration number: 1003590

Overall height of antenna structure above ground (including obstruction lighting if any) see the registration for this antenna structure.

Special operating conditions or restrictions:

- 1 BEFORE PROGRAM TESTS ARE AUTHORIZED, permittee shall submit the results of a complete proof-of-performance to establish the horizontal plane radiation patterns for both the horizontally and vertically polarized radiation components. This proof-of-performance may be accomplished using the complete full size antenna, or individual bays therefrom, mounted on a supporting structure of identical dimensions and configuration as the proposed structure, including all braces, ladders, conduits, coaxial lines, and other appurtenances; or using a carefully manufactured scale model of the entire antenna, or individual bays therefrom, mounted on an equally scaled model of the proposed supporting structure, including all appurtenances. Engineering exhibits should include a description of the antenna testing facilities and equipment employed, including appropriate photographs or sketches and a description of the testing procedures, including scale factor, measurements frequency, and equipment calibration.
- 2 BEFORE PROGRAM TESTS ARE AUTHORIZED, permittee/licensee shall submit an affidavit that the installation of the directional antenna system was overseen by a qualified engineer. This affidavit shall include a certification by the engineer that the antenna was installed pursuant to the manufacturer's instructions and list the qualifications of the certifying engineer.

Special operating conditions or restrictions:

- 3 BEFORE PROGRAM TESTS ARE AUTHORIZED, permittee shall submit an affidavit from a licensed surveyor to establish that the directional antenna has been oriented at the proper azimuth.

- 4 The relative field strength of neither the measured horizontally nor vertically polarized radiation component shall exceed at any azimuth the value indicated on the composite radiation pattern authorized by this construction permit.

A relative field strength of 1.0 on the composite radiation pattern herein authorized corresponds to the following effective radiated power:

. 30.0 kilowatts (H&V) .

Principal minima and their associated field strength limits:

110	-	170	degrees True:	13.147 kilowatts
190	-	200	degrees True:	14.995 kilowatts
220	-	240	degrees True:	15.038 kilowatts

- 5 Permittee has specified use of the antenna listed below to demonstrate compliance with the FCC radiofrequency electromagnetic field exposure guidelines. If any other type or size of antenna is to be used with the facilities authorized herein, a FORMAL REQUEST FOR PROGRAM TEST AUTHORITY must be filed in conjunction with FCC Form 302-FM, application for license, BEFORE program tests will be authorized. The request must include a revised RF field showing to demonstrate continued compliance with the FCC guidelines.

ERI rototiller (EPA Type 3), ten sections, one-half-wavelength spaced

- 6 The permittee shall submit a copy of the vertical plane radiation pattern for the beam tilt antenna with the FCC Form 302-FM Application for License.
- 7 This application is being granted prior to the completion of the international notification process. Therefore, any construction of and operation with the facilities specified herein is at applicant's own risk and subject to modification, suspension or termination without right to hearing, if objected to by the Comisión Federal de Telecomunicaciones (COFETEL) in Mexico or if found by the Commission or the COFETEL to be necessary in order to conform to the 1992 USA-Mexico FM Broadcasting Agreement. This condition will be removed if formal acceptance of the facilities granted herein is received from COFETEL.
- 8 Since the application proposes to mount its FM antenna above the co-located existing directional antenna of K207CO(FX), Sun Lakes, Arizona, (Facility Id# 88473) the permittee shall submit an exhibit including a statement from the manufacturer of K207CO(FX)'s directional antenna stating that the proposed antenna will have no adverse effect on the K207CO(FX) directional antenna pattern.

Special operating conditions or restrictions:

- 9 Program tests for KBAQ(FM), Phoenix, Arizona (Facility ID No. 40096) and KLVK(FM), Fountain Hills, Arizona (Facility ID No. 76329) with the facilities authorized in construction permits BPED-20060227AHT and BPED-20060227AIH respectively, must commence simultaneously. Furthermore, the licenses to cover these permits will be granted simultaneously.
- 10 Further modifications to the facilities of station KLVK(FM), Fountain Hills, Arizona will not be construed as a per se modification of KBAQ(FM)'s authorization. (See Educational Information Corporation, 6 FCC Rcd. 2207 (1991)).
- 11 The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency electromagnetic fields in excess of FCC guidelines.

*** END OF AUTHORIZATION ***

EXHIBIT E-2 KBAQ Protected & Interfering Contour Analysis

Klein Broadcast Engineering, L.L.C.

Job: KBAQ South MTN 20090126.fmj

Master Database: 2009_Jan_26.fmd

Lat: N33:19:58 Lon: W112:03:53 NAD-27(Map Center & KBAQ CP Site)

Scale: 1:1750000

Channel: 208 Class: C1

Status: Construction Permit

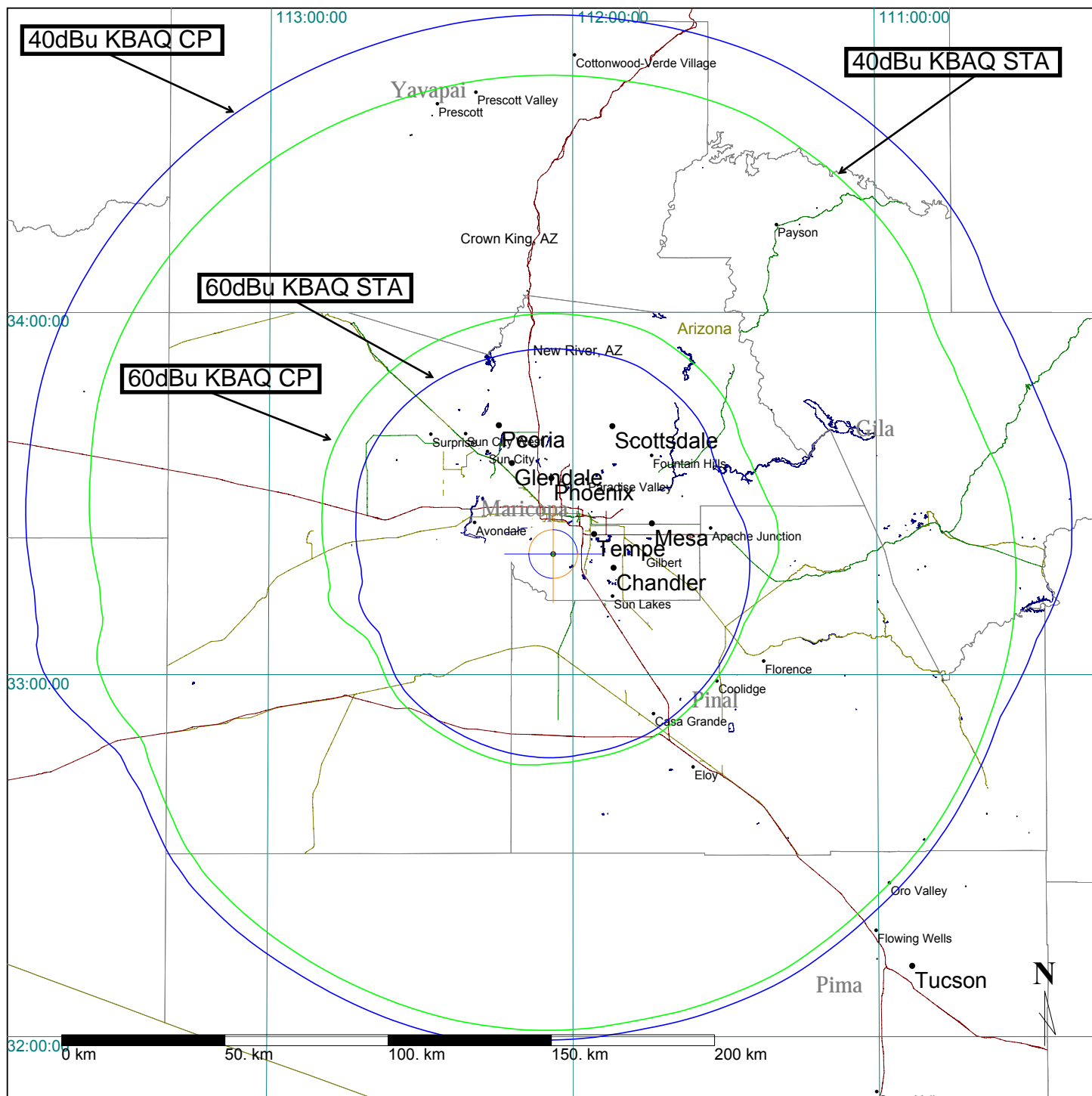
Terrain Database: DMA 3 Arc Second Digitized Terrain Datafile, Conus.

Contour Prediction Method: FCC Standard f(50,50) & f(50,10), 360 Radials

Comments: STA Facility 12kW ERP HAAT 463 meters COR 33 meters AGL

Description: EXHIBIT E-2 PROTECTED & INTERFERING CONTOURS KBAQ 60dBu f(50,50 & 40dBu f(50,10)

Date: 1/26/2009



KLEIN BROADCAST ENGINEERING, L.L.C.

dedicated to improving the science of radio and television communications

JANUARY 2009

EXHIBIT E-10RHS REQUEST FOR SPECIAL TEMPORARY AUTHORITY

MARICOPA COUNTY COMMUNITY COLLEGE DISTRICT
K B A Q (FM)
FCC FACILITY ID# 40096
FM CHANNEL 208 C1 / 89.5 mHz.
PHOENIX, ARIZONA

RF RADIATION HAZARD COMPLIANCE STATEMENT

The facilities constructed 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 19.4 meters height above ground level requirement for the radiation center of the proposed four (4) bay, full wavelength spaced FM broadcast antenna. A combined vertical and horizontal effective radiated power of 24.0 kilowatts was used for this study and determination (12.0 kW Horiz. & 12.0 kW Vert.) The radiation center of the FM broadcast antenna system is located at 33 meters above ground level (AGL), well within the requirement for the antenna as determined from the above referenced documents. The antenna specified and installed is an Electronics Research, Inc., model SHPX-4AC, EPA Type 3, four (4) section, full wavelength spaced, 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 uses no 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 72.3706 microwatts/cm² at a distance of 12.75 meters from the base of the antenna support structure at a height of 2.0 meters above ground level. This is 36.2% of the allowable RF power density for Uncontrolled areas under the FCC and ANSI/EPA Guidelines, being limited to: 200.0 microwatts/cm² for Uncontrolled areas and 1.00mW/cm² or (1,000 microwatts/cm²) for Controlled areas (areas within fencing). 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. There are other sources of significant RFR levels at the KBAQ site. The site is located in the South Mountain Electronic Communications Site, Phoenix, Arizona. The firm of Hammett & Edison has been retained to create and maintain a complete RFR study and analysis of the entire South Mountain site. The most recent copy of which has been filed with the Commission previously. The proposed STA facility for KBAQ will be coordinated and included in the master site RFR study and analysis.

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" EPA Type 3 element is used on the Electronics Research, Inc., model SHPX-4AC, EPA Type 3 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. The antenna support structure base is protected by two separate locked gates, security cameras that are monitored 24 hours per day, seven days per week and chain link fence around the entire perimeter of the KBAQ South Mountain Site. In fact the fence encompasses the entire South Mountain Electronic Communications Site. Only authorized personnel have access to the locked gate. This will prevent General Public access to the actual antenna support structure base.

The applicant, permittee or licensee, has installed and posted RF Radiation Hazard Warning Signs in and around the site at approximately eye level for additional warning and safety. The posted signs are in English and Spanish.

A vertical pattern plot of the Electronics Research, Inc., model SHPX-4AC (EPA Type 3) antenna employed at KBAQ(FM) 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/cm² vs. distance. This plot shows the calculated maximum predicted power density of 72.3706 uW/cm² occurring at 12.75 meters distant from the base of the antenna support structure, 2 meters above ground level. 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 12.75 meter distance for the maximum calculated RFR level is over 100 meters inside the South Mountain Electronic Communications Site perimeter fence.

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 STA transmission facility for KBAQ, FM Broadcast Station 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.



EXHIBIT E-10 FIGURE #1.

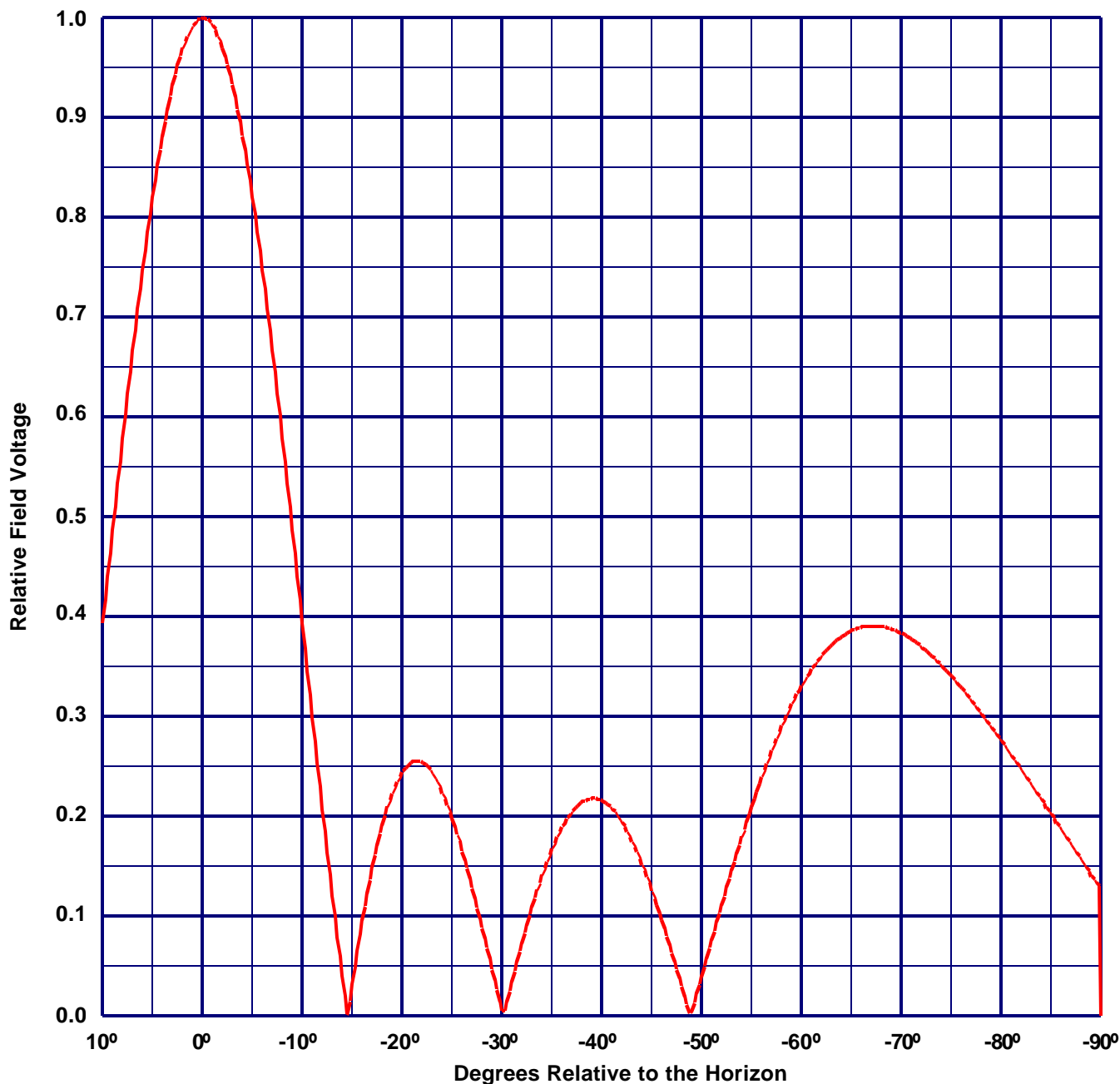
Vertical Plane Relative Field Pattern

ERI TYPE SHP, SHPX, MP, MPX, LP OR LPX ELEMENTS

KBAQ STA Antenna

A 4 level, 1 wave-length spaced non directional antenna

with 0° beam tilt, 0% null fill and a H/V maximum power ratio of 1.000



Vertical Polarization Gain:

Maximum: 2.133 (3.290 dB)

Horizontal Plane: 2.133 (3.290 dB)

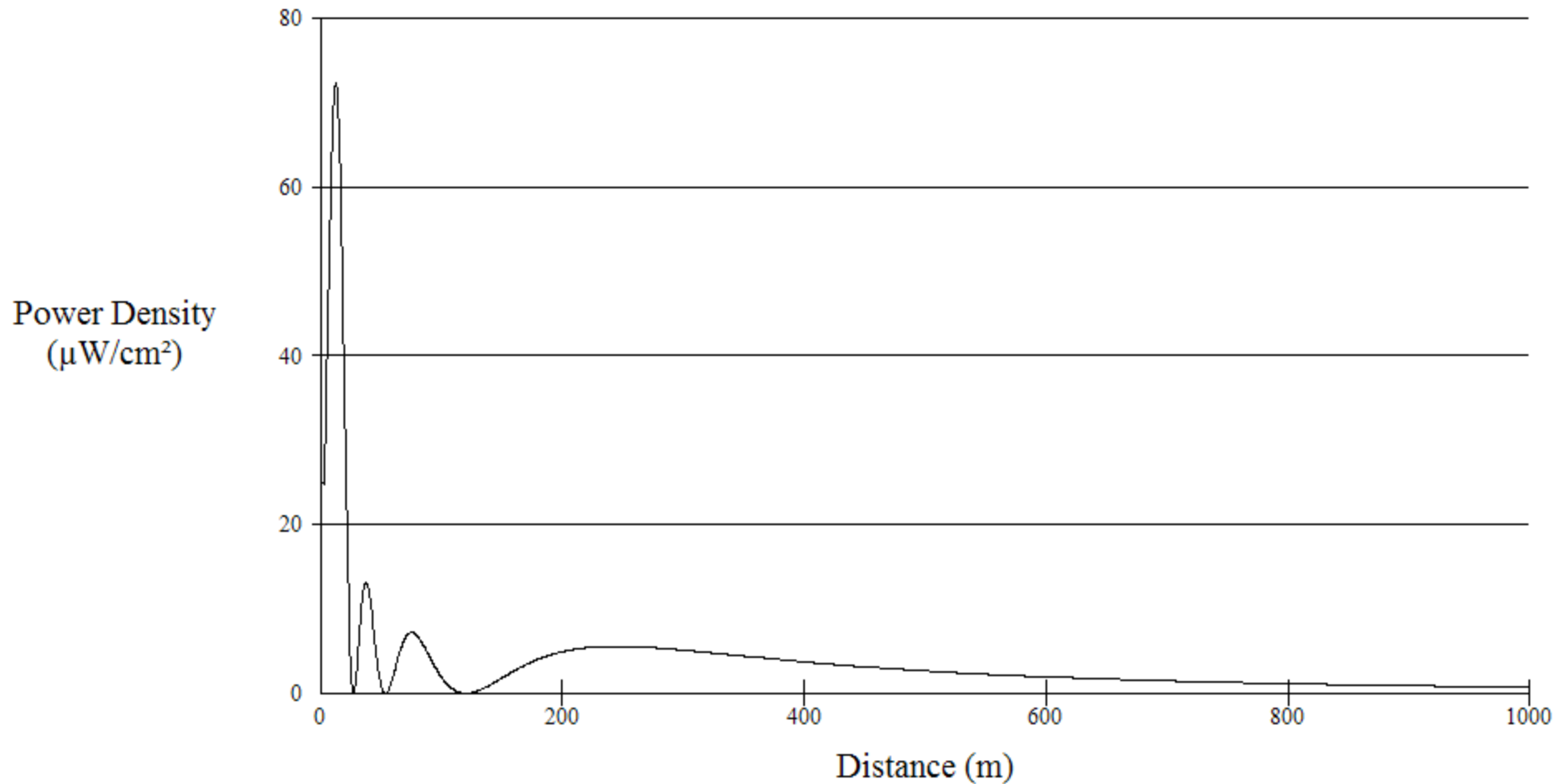
Horizontal Polarization Gain:

Maximum: 2.133 (3.290 dB)

Horizontal Plane: 2.133 (3.290 dB)

Power Density vs Distance

EXHIBIT E-10 FIGURE #2.



Office of Engineering and Technology

Distance (m): 1000 Antenna Type: ERI or JAMPRO JBCP "Rototiller" (EPA) ▼
Horizontal ERP (W): 12000 Number of Elements: 4
Vertical ERP (W): 12000 Element Spacing: 1
Antenna Height (m): 30

Maximum RFR Power Density = 72.3706 $\mu\text{W}/\text{cm}^2$ at a distance of 12.75 meters from the base of the antenna support structure, 2 meters AGL.

Antenna Manufacturer & Model: Electronics Research, Inc. (ERI) SHPX-4AC A four section, center fed, non-directional, full wavelength spaced FM antenna array.