CARRIE A. WARD
ASSOCIATE COUNSEL

December 16, 2011

VIA OVERNIGHT DELIVERY
Federal Communications Commission
Media Bureau Services
P.O. Box 979089
St. Louis, MO 63197-9000

Re: KFXX(AM), Portland, OR
Facility Id. No. 57830

Dear Sir or Madam:

On behalf of Entercom Portland License, LLC ("Licensee"), licensee of KFXX(AM) (Facility Id. No. 57830) ("Station"), enclosed in triplicate, is an application on FCC Form 302-AM requesting a license to cover BP-20080717AAW. Licensee also hereby respectfully requests that the Commission grant Station program test authority pursuant to Section 73.1620(a)(4). Enclosed also is a completed FCC Form 159 and a check payable to the FCC in the amount of $1,365.00 to cover the applicable filing fee.

The undersigned counsel is authorized to represent that neither the licensee nor any party holding an attributable interest in the licensee is subject to a denial of federal benefits under Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. §862.

If any information is desired in connection with this matter, please feel free to contact the undersigned. Kindly date stamp the enclosed "return copy" of this filing acknowledging its receipt by your office and return it to me in the enclosed self-addressed stamped envelope.

Sincerely,

Carrie Ward

Carrie Ward

Enclosure

cc: Erin Hubert
Gary Hilliard (KFXX(AM) Authorizations & Public File)

AMN

SNV 01/04/12

Federal Communications Commission
Washington, D. C. 20554

Approved by OMB
3060-0627
Expires 01/31/98

FOR FCC USE ONLY

FCC 302-AM
APPLICATION FOR AM BROADCAST STATION LICENSE

(Please read instructions before filling out form.)

FOR COMMISSION USE ONLY
FILE NO. BAML-20111223ABU

SECTION I - APPLICANT FEE INFORMATION

1. PAYOR NAME (Last, First, Middle Initial)

Entercom Portland License, LLC

MAILING ADDRESS (Line 1) (Maximum 35 characters)
401 City Avenue, Suite 809

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
Bala Cynwyd	PA	19004

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
(610) 660-5610	KFXX	57830

2. A. Is a fee submitted with this application? [✓] Yes [ ] No

B. If No, indicate reason for fee exemption (see 47 C.F.R. Section

[ ] Governmental Entity [ ] Noncommercial educational licensee [ ] Other (Please explain):

C. If Yes, provide the following information:

Enter in Column (A) the correct Fee Type Code for the service you are applying for. Fee Type Codes may be found in the "Mass Media Services Fee Filing Guide." Column (B) lists the Fee Multiple applicable for this application. Enter fee amount due in Column (C).

(A) FEE TYPE CODE	(B) FEE MULTIPLE	(C) FEE DUE FOR FEE TYPE CODE IN COLUMN (A)	FOR FCC USE ONLY
M M R	0 0 0 1	$ 635.00	

To be used only when you are requesting concurrent actions which result in a requirement to list more than one Fee Type Code.

(A)	(B)	(C)	FOR FCC USE ONLY
M O R	0 0 0 1	$ 730.00	

	TOTAL AMOUNT REMITTED WITH THIS APPLICATION	FOR FCC USE ONLY
ADD ALL AMOUNTS SHOWN IN COLUMN C, AND ENTER THE TOTAL HERE. THIS AMOUNT SHOULD EQUAL YOUR ENCLOSED REMITTANCE.	$ 1,365.00	

SECTION II - APPLICANT INFORMATION		
1. NAME OF APPLICANT Entercom Portland License, LLC		
MAILING ADDRESS 401 City Avenue, Suite 809		
CITY Bala Cynwyd	STATE PA	ZIP CODE 19004

2. This application is for:

☑ Commercial ☐ Noncommercial

☑ AM Directional ☐ AM Non-Directional

Call letters	Community of License	Construction Permit File No.	Modification of Construction Permit File No(s).	Expiration Date of Last Construction Permit
KFXX	Portland, OR	BP-20080717AAW	n/a	February 6, 2012

3. Is the station now operating pursuant to automatic program test authority in accordance with 47 C.F.R. Section 73.1620?

☐ Yes ☑ No

If No, explain in an Exhibit.

Exhibit No. 1

4. Have all the terms, conditions, and obligations set forth in the above described construction permit been fully met?

☑ Yes ☐ No

If No, state exceptions in an Exhibit.

Exhibit No.

5. Apart from the changes already reported, has any cause or circumstance arisen since the grant of the underlying construction permit which would result in any statement or representation contained in the construction permit application to be now incorrect?

☐ Yes ☑ No

If Yes, explain in an Exhibit.

Exhibit No.

6. Has the permittee filed its Ownership Report (FCC Form 323) or ownership certification in accordance with 47 C.F.R. Section 73.3615(b)?

☐ Yes ☐ No

☑ Does not apply

If No, explain in an Exhibit.

Exhibit No.

7. Has an adverse finding been made or an adverse final action been taken by any court or administrative body with respect to the applicant or parties to the application in a civil or criminal proceeding, brought under the provisions of any law relating to the following: any felony; mass media related antitrust or unfair competition; fraudulent statements to another governmental unit; or discrimination?

☐ Yes ☑ No

If the answer is Yes, attach as an Exhibit a full disclosure of the persons and matters involved, including an identification of the court or administrative body and the proceeding (by dates and file numbers), and the disposition of the litigation. Where the requisite information has been earlier disclosed in connection with another application or as required by 47 U.S.C. Section 1.65(c), the applicant need only provide: (i) an identification of that previous submission by reference to the file number in the case of an application, the call letters of the station regarding which the application or Section 1.65 information was filed, and the date of filing; and (ii) the disposition of the previously reported matter.

Exhibit No.

8. Does the applicant, or any party to the application, have a petition on file to migrate to the expanded band (1605-1705 kHz) or a permit or license either in the existing band or expanded band that is held in combination (pursuant to the 5 year holding period allowed) with the AM facility proposed to be modified herein?

☐ Yes ☑ No

If Yes, provide particulars as an Exhibit.

Exhibit No.

The APPLICANT hereby waives any claim to the use of any particular frequency or of the electromagnetic spectrum as against the regulatory power of the United States because use of the same, whether by license or otherwise, and requests and authorization in accordance with this application. (See Section 304 of the Communications Act of 1934, as amended).

The APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as set out in full in

CERTIFICATION

1. By checking Yes, the applicant certifies, that, in the case of an individual applicant, he or she is not subject to a denial of federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. Section 862, or, in the case of a non-individual applicant (e.g., corporation, partnership or other unincorporated association), no party to the application is subject to a denial of federal benefits that includes FCC benefits pursuant to that section. For the definition of a "party" for these purposes, see 47 C.F.R. Section 1.2002(b).

☑ Yes ☐ No

2. I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Name	Signature	
John C. Donlevie		
Title	Date	Telephone Number
Executive Vice President	12-14-2011	(610)660-5610

WILLFUL FALSE STATEMENTS ON THIS FORM ARE PUNISHABLE BY FINE AND/OR IMPRISONMENT (U.S. CODE, TITLE 18, SECTION 1001), AND/OR REVOCATION OF ANY STATION LICENSE OR CONSTRUCTION

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT AND THE PAPERWORK REDUCTION ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The Commission will use the information provided in this form to determine whether grant of the application is in the public interest. In reaching that determination, or for law enforcement purposes, it may become necessary to refer personal information contained in this form to another government agency. In addition, all information provided in this form will be available for public inspection. If information requested on the form is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Your response is required to obtain the requested authorization.

Public reporting burden for this collection of information is estimated to average 639 hours and 53 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, can be sent to the Federal Communications Commission, Records Management Branch, Paperwork Reduction Project (3060-0627), Washington, D. C. 20554. Do NOT send completed forms to this address.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P.L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a(e)(3), AND THE PAPERWORK REDUCTION ACT OF 1980, P.L. 96-511, DECEMBER 11, 1980, 44 U.S.C. 3507.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

ENTERCOM PORTLAND LICENSE, LLC

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

[X] Station License [ ] Direct Measurement of Power

1. Facilities authorized in construction permit

Call Sign	File No. of Construction Permit (if applicable)	Frequency (kHz)	Hours of Operation	Power in kilowatts	
				Night	Day
KFXX	BP-20080717AAW	1080	UNL	9	50

2. Station location

State	City or Town
OR	Portland

3. Transmitter location

State	County	City or Town	Street address (or other identification)
OR	Multnomah	Portland	16899 NE Cameron Blvd

4. Main studio location

State	County	City or Town	Street address (or other identification)
OR	Multnomah	Portland	0700 SW Bancroft St.

5. Remote control point location (specify only if authorized directional antenna)

State	County	City or Town	Street address (or other identification)
OR	Multnomah	Portland	0700 SW Bancroft St.

6. Has type-approved stereo generating equipment been installed? [ ] Yes [X] No

7. Does the sampling system meet the requirements of 47 C.F.R. Section 73.68? [X] Yes [ ] No [ ] Not Applicable

Attach as an Exhibit a detailed description of the sampling system as installed. Exhibit No. Eng Rpt

8. Operating constants:

RF common point or antenna current (in amperes) without modulation for night system	RF common point or antenna current (in amperes) without modulation for day system
13.77	32.45

Measured antenna or common point resistance (in ohms) at operating frequency		Measured antenna or common point reactance (in ohms) at operating frequency	
Night	Day	Night	Day
50	50	j0	j0

Antenna indications for directional operation

Towers	Antenna monitor Phase reading(s) in degrees		Antenna monitor sample current ratio(s)		Antenna base currents	
	Night	Day	Night	Day	Night	Day
1 (W)	-98	-105	0.503	0.508	No	
2 (C)	0	0	1.0	1.0	Longer	
3 (E)	+107.6	---	0.452	---	Required	

Manufacturer and type of antenna monitor: Gorman-Redlich CMR

SECTION III - Page 2

9. Description of antenna system ((f directional antenna is used, the information requested below should be given for each element of the array. Use separate sheets if necessary.)

Type Radiator	Overall height in meters of radiator above base insulator, or above base, if grounded.	Overall height in meters above ground (without obstruction lighting)	Overall height in meters above ground (include obstruction lighting)	If antenna is either top loaded or sectionalized, describe fully in an Exhibit.
Uniform cross-section guyed steel towers	82.3	83.2	83.8	Exhibit No. N/A

Excitation [X] Series [ ] Shunt

Geographic coordinates to nearest second. For directional antenna give coordinates of center of array. For single vertical radiator give tower location.

North Latitude	West Longitude
45 ° 33 ' 31 "	122 ° 28 ' 57 "

If not fully described above, attach as an Exhibit further details and dimensions including any other antenna mounted on tower and associated isolation circuits. Exhibit No. Eng Rpt

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. As described in BP-20080717AAW Exhibit No.

10. In what respect, if any, does the apparatus constructed differ from that described in the application for construction permit or in the permit?

Coordinate correction of 1 second based on as built survey.

11. Give reasons for the change in antenna or common point resistance.

None. New antenna array

I certify that I represent the applicant in the capacity indicated below and that I have examined the foregoing statement of technical information and that it is true to the best of my knowledge and belief.

Name (Please Print or Type)	Signature (check appropriate box below)
Thomas S. Gorton P.E.	
Address (include ZIP Code)	Date
Hatfield & Dawson Consulting Engineers 9500 Greenwood Ave N Seattle, WA 98103	December 12, 2011
	Telephone No. (Include Area Code) 206-783-9151

[ ] Technical Director

[X] Registered Professional Engineer

[ ] Chief Operator

[ ] Technical Consultant

[ ] Other (specify)

Agreement between KKSN(AM) and KFXX(AM) per CP Condition #6

KKSN(AM), Vancouver, WA Facility ID #35033 and KFXX(AM), Portland, OR Facility ID #57830 are both licensed to Entercom Portland License, LLC. The stations have construction permits to co-locate at a new transmitter site utilizing a new common antenna system. In response to special operating condition or restriction #6 on the KKSN(AM) Permit File #BMP-20101213AAR, the Licensee states that it is the sole responsible party for the installation and continued maintenance of adequate filters, traps and other equipment necessary to prevent interaction, intermodulation and/or the generation of spurious radiation products which may be caused by common usage of the same antenna system.

Exhibit 1

CARRIE A. WARD
ASSOCIATE COUNSEL

December 16, 2011

VIA OVERNIGHT DELIVERY
Federal Communications Commission
Media Bureau Services
P.O. Box 979089
St. Louis, MO 63197-9000

Re: KFXX(AM), Portland, OR
Facility Id. No. 57830

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If any information is desired in connection with this matter, please feel free to contact the undersigned. Kindly date stamp the enclosed "return copy" of this filing acknowledging its receipt by your office and return it to me in the enclosed self-addressed stamped envelope.

Sincerely,

Carrie Ward

Carrie Ward

Enclosure

cc: Erin Hubert
Gary Hilliard (KFXX(AM) Authorizations & Public File)

BENJAMIN F. DAWSON III, PE
THOMAS M. ECKELS, PE
STEPHEN S. LOCKWOOD, PE
DAVID J. PINION, PE
ERIK C. SWANSON, PE

THOMAS S. GORTON, PE
MICHAEL H. MEHIGAN, EIT

HATFIELD & DAWSON
CONSULTING ELECTRICAL ENGINEERS
9500 GREENWOOD AVE. N.
SEATTLE, WASHINGTON 98103

TELEPHONE (206) 783-9151
FACSIMILE (206) 789-9834
E-MAIL hatdaw@hatdaw.com

JAMES B. HATFIELD, PE
CONSULTANT

MAURY L. HATFIELD, PE
(1942-2009)
PAUL W. LEONARD, PE
(1925-2011)

Application for License to Cover Construction Permit

BP-20080717AAW

KFXX-AM

Portland, OR

Facility ID No. 57830

1080 kHz

50 kW Day, 9 kW Night DA-2

Entercom Portland License, LLC

December 2011

APPLICATION FOR LICENSE

RADIO STATION KFXX-AM Portland, OR
1080 kHz, 50 kW Day, 9 kW Night DA-2

Purpose of Application

Item 1	Tower Impedance Measurements and Verification of Method of Moments Model
Item 2	Derivation of Operating Parameters for Directional Antenna
Item 3	Method of Moments Model Details for Towers Driven Individually
Item 4	Method of Moments Model Details for Directional Antenna Patterns
Item 5	Summary of Post Construction Certified Array Geometry
Item 6	Sampling System Measurements
Item 7	Reference Field Strength Measurements
Item 8	Direct Measurement of Power
Item 9	Antenna Monitor and Sampling System
Item 10	Intemodulation Considerations - Construction Permit Condition #3
Appendix A	Certified Post Construction Array Geometry Survey
Appendix B	Reference Point Descriptions and Field Strength Readings
Appendix C	Construction Permit BMP - 20101213AAR
Appendix D	FCC Form 302-AM

Purpose of Application

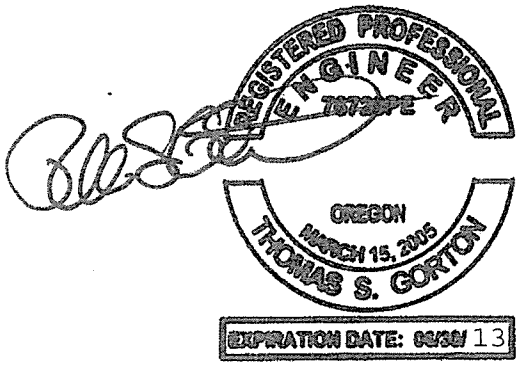
This engineering exhibit supports an application for license for the newly authorized directional antenna system for radio station KFXX, Portland, OR. KFXX will operate on 1080 kHz with a daytime power of 50 kW and a nighttime power of 9 kW, with different directional patterns for day and night operation.

The KFXX move to this site was authorized by FCC construction permit number BP-20080717AAW.

The antenna towers and ground system were constructed in accordance with the terms of the construction permit and specifications that were provided in the application for construction permit.

Information is provided herein demonstrating that the directional antenna parameters for the patterns authorized by the construction permit have been determined in accordance with the requirements of section 73.151(c) of the FCC Rules. The system has been adjusted to produce antenna monitor parameters within +/- 5 percent in ratio and +/- 3 degrees in phase of the modeled values, as required by the Rules.

All measurements used in this report were made by, Stephen Lockwood, PE, Thomas Gorton, PE, Benjamin F. Dawson, PE, and/or James Boyd.



Item 1

Analysis of Tower Impedance Measurements to Verify Method of Moments Model - KFXX

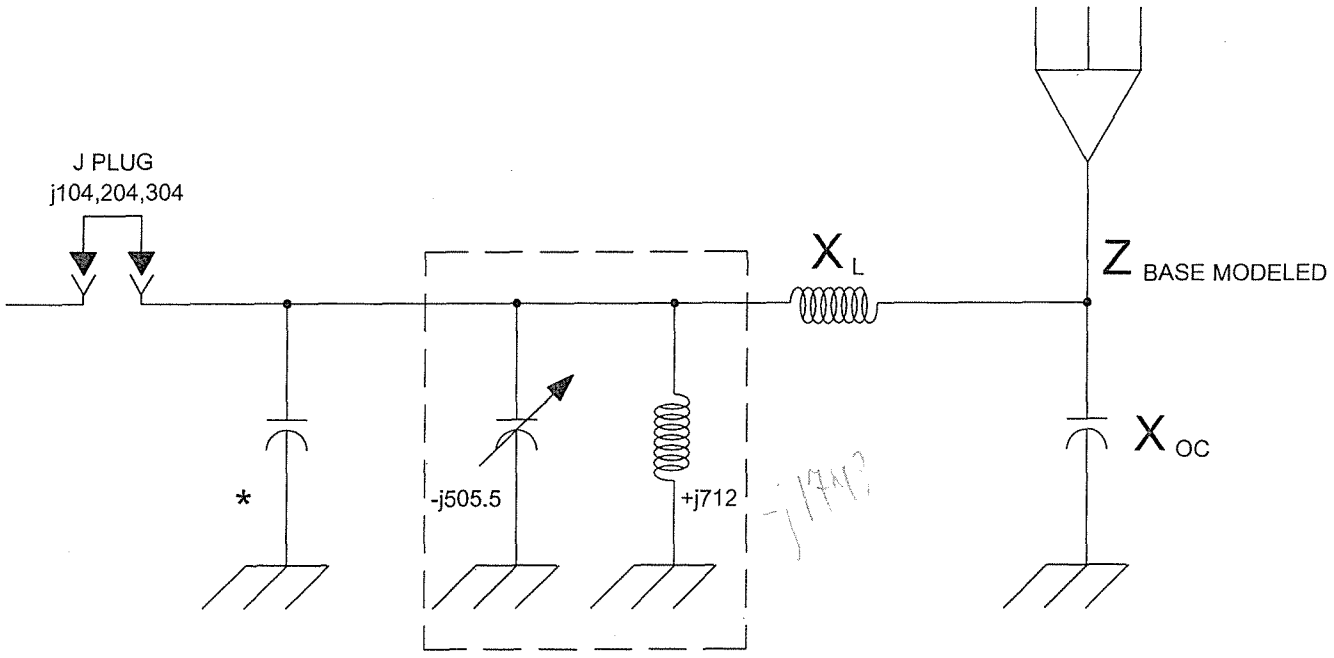
Tower base impedance measurements were made at the locations of the outputs of the antenna coupling units and diplexing filtering equipment using an HP-8751A network analyzer in a calibrated measurement system. The other towers were open circuited at the same point where impedance measurements were made (the "reference points") for each of the measurements.

Circuit calculations were performed to relate the method of moments modeled impedances at the tower base feed points to those at the measurement locations as shown in the table on the following page. The base conditions shown for each tower, which includes the stray capacitances, were used in the moment method model as a load at ground level for the open circuited case. Tower #1 has an isocoupler for an STL transmission line, and each tower has a parallel resonated isolation inductor for the sample line, and the manufacturer's or measured values of impedance for each were used in the models. Towers 1 and 3 each have a lighting isolation inductor, the effects of which were found to be negligible, and which are not included in the computation.

The following table shows the allowable range of modeled impedance values.

KFXX Tower Measurement Matrix

Tower #	R open (Measured)	Hi Limit (Model)	Lo Limit (Model)	Xopen (Measured)	Hi Limit (Model)	Lo Limit (Model)
1	123.5	130.4	116.6	220.7	231.5	209.9
2	115.2	121.8	108.6	228.5	239.6	217.4
3	108.4	114.7	102.1	217.2	227.9	206.5



SAMPLE ISOLATION INDUCTOR
AND RESONATING CAPACITOR

* ISOCOUPLER TOWER 1 ONLY -j4911

TOWER	X_L	X_{OC}	Z BASE MODELED	Z ATU MODELED	Z ATU MEASURED
1	+j55	-j4300	84.0 +j138.3	123.9 +j221.2	123.5 +j220.7
2	+j50	-j4300	84.1 +j153.5	116.1 +j228.5	115.2 +j228.5
3	+j58	-j10000	84.0 +j138.3	109.5 +j216.6	108.4 +j217.2

Bob Allen, H&D 12/6/2011 12:11 PM KFXX METHOD OF MOMENTS.dwg

Hatfield & Dawson
Consulting Engineers

ANALYSIS OF TOWER IMPEDANCE MEASUREMENTS TO VERIFY METHOD OF MOMENTS MODEL

RADIO STATION KFXX PORTLAND, OR 12/2011

Item 2

Derivation of Operating Parameters for Directional Antenna - KFXX

The method of moments model of the array, following verification with the measured individual open circuited base impedances, was utilized for directional antenna calculations. Calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna patterns. With these voltage sources, the tower currents were calculated. Twenty-one segments were used for each tower.

DAY PATTERN

Tower	Modeled Current Pulse	Current Magnitude	Current Phase	Antenna Monitor Ratio	Antenna Monitor Phase
1	8	12.7981	255°	.508	-105.0°
2	29	25.1762	0°	1.0	0°
3	50	DETUNED			

NIGHT PATTERN

Tower	Modeled Current Pulse	Current Magnitude	Current Phase	Antenna Monitor Ratio	Antenna Monitor Phase
1	8	4.89219	262°	.503	-98.0°
2	29	9.72046	0°	1.0	0°
3	50	4.39224	125.0°	0.452	107.6°

For the 21 segment moment method model, no segment elevation current magnitude or phase values match the far field condition exactly for either the day or night patterns. The selection of segment 8 above the base of each tower (approximately 1/3 of the tower height) was based, as shown the attached model data[1], on the basis of the elevation where the current is minimum with a tower of the modeled characteristics detuned for minimum horizontal plane radiation, as described in 73.151(c)(2)(I). The sample loops are therefore located at 90 feet above the base insulators.

[1]See page 18 of this report, which shows the current distribution in tower #3 of the array, which is unused and detuned during daytime operation. In this model, tower #3 is detuned by a lumped load of +j480 ohms at its base. The current minimum occurs at segment #50, which is the 8th segment above the tower base.

Item 3

Method of Moments Model Details for Towers Driven Individually - KFXX

The array of towers was modeled using MININEC Ver. 14.0.
One wire was used to represent each tower. The top and bottom wire end points were specified using electrical degrees in the geographic coordinate system, using the theoretical directional antenna specifications. Each tower was modeled using 21 wire segments. As the towers are physically 106.7 degrees in electrical height, the segment length is 5.08 electrical degrees.

Each tower's modeled height relative to its physical height falls within the required range of 75 to 125 percent and each modeled radius falls within the required range of 80 percent to 150 percent of the radius of a circle having a circumference equal to the sum of the widths of the tower sides. The array consists of identical, uniform cross section towers having a face width of 18 inches, or an equivalent radius of 0.218 meters.

Tower	Physical Height (degrees)	Modeled Height (degrees)	Modeled Percentage of Height	Modeled Radius (meters)	Percent of Equivalent Radius
1, 3	106.7	108.6	101.78	0.18	82.5
2	106.7	110.4	103.47	0.18	82.5

The following pages show the details of the method of moments models for the individually driven towers.

Tower #2 Driven with Towers #1 and #3 Open

(Complete Printout of Summary Data from MININEC)

```
E:\MiniNec\KKFX Matrix1  12-07-2011   15:51:08

KFXX

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire  caps Distance     Angle        Z            radius      segs
 1    none 0            0            0            .18          21
           0            0            108.6
 2    none 100.         90.          0            .18          21
           100.         90.          110.4
 3    none 200.         90.          0            .18          21
           200.         90.          108.6

Number of wires          =  3
          current nodes  =  63

                         minimum                  maximum
Individual wires       wire    value            wire  value
segment length          1      5.17143           2    5.25714
radius                  1      .18               1    .18


ELECTRICAL DESCRIPTION
Frequencies (KHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step          steps   minimum        maximum
 1   1,080.       0              1      .0143651       .0146032

Sources
source node    sector  magnitude      phase          type
 1      22      1       1.             0              voltage

Lumped loads
              resistance    reactance     inductance  capacitance passive
load  node    (ohms)        (ohms)        (mH)        (uF)        circuit
 1     43     1.E+06        0             0           0            0
 2     1      1.E+06        0             0           0            0

E:\MiniNec\KKFX Matrix1  12-07-2011   15:51:08

IMPEDANCE
   normalization = 50.
freq      resist    react     imped     phase     VSWR     S11       S12
(KHz)     (ohms)    (ohms)    (ohms)    (deg)              dB        dB
source =  1; node 22, sector 1
1,080.    84.122    153.47    175.01    61.3      7.7472   -2.2549   -3.9253
```

E:\MiniNec\KKFX Matrix1 12-07-2011 15:51:08

CURRENT rms
Frequency = 1080 KHz
Input power = .00137327 watts
Efficiency = 99.99 %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	2.2E-07	63.7	9.75E-08	1.97E-07
2	0	0	5.17143	1.13E-04	153.5	-1.02E-04	5.05E-05
3	0	0	10.3429	1.88E-04	153.6	-1.68E-04	8.36E-05
4	0	0	15.5143	2.49E-04	153.6	-2.23E-04	1.11E-04
5	0	0	20.6857	3.E-04	153.6	-2.68E-04	1.33E-04
6	0	0	25.8571	3.42E-04	153.6	-3.06E-04	1.52E-04
7	0	0	31.0286	3.75E-04	153.6	-3.36E-04	1.67E-04
8	0	0	36.2	4.01E-04	153.6	-3.59E-04	1.78E-04
9	0	0	41.3714	4.19E-04	153.6	-3.75E-04	1.86E-04
10	0	0	46.5429	4.29E-04	153.6	-3.84E-04	1.91E-04
11	0	0	51.7143	4.32E-04	153.6	-3.87E-04	1.92E-04
12	0	0	56.8857	4.27E-04	153.6	-3.82E-04	1.9E-04
13	0	0	62.0571	4.15E-04	153.6	-3.72E-04	1.85E-04
14	0	0	67.2286	3.96E-04	153.6	-3.55E-04	1.76E-04
15	0	0	72.4	3.71E-04	153.6	-3.32E-04	1.65E-04
16	0	0	77.5714	3.38E-04	153.6	-3.03E-04	1.51E-04
17	0	0	82.7429	3.E-04	153.6	-2.68E-04	1.33E-04
18	0	0	87.9143	2.55E-04	153.6	-2.28E-04	1.13E-04
19	0	0	93.0857	2.04E-04	153.6	-1.83E-04	9.08E-05
20	0	0	98.2571	1.47E-04	153.6	-1.31E-04	6.53E-05
21	0	0	103.429	8.19E-05	153.6	-7.33E-05	3.64E-05
END	0	0	108.6	0	0	0	0
GND	0	-100.	0	4.04E-03	298.7	1.94E-03	-3.54E-03
23	0	-100.	5.25714	4.36E-03	296.4	1.94E-03	-3.9E-03
24	0	-100.	10.5143	4.54E-03	295.	1.92E-03	-4.12E-03
25	0	-100.	15.7714	4.67E-03	293.9	1.89E-03	-4.26E-03
26	0	-100.	21.0286	4.74E-03	293.	1.85E-03	-4.36E-03
27	0	-100.	26.2857	4.77E-03	292.3	1.81E-03	-4.41E-03
28	0	-100.	31.5429	4.75E-03	291.6	1.75E-03	-4.42E-03
29	0	-100.	36.8	4.69E-03	291.	1.68E-03	-4.38E-03
30	0	-100.	42.0571	4.59E-03	290.4	1.6E-03	-4.3E-03
31	0	-100.	47.3143	4.44E-03	290.	1.52E-03	-4.18E-03
32	0	-100.	52.5714	4.26E-03	289.5	1.42E-03	-4.01E-03
33	0	-100.	57.8286	4.04E-03	289.1	1.32E-03	-3.81E-03
34	0	-100.	63.0857	3.78E-03	288.7	1.21E-03	-3.58E-03
35	0	-100.	68.3429	3.49E-03	288.3	1.1E-03	-3.31E-03
36	0	-100.	73.6	3.16E-03	288.	9.76E-04	-3.01E-03
37	0	-100.	78.8572	2.81E-03	287.7	8.51E-04	-2.67E-03
38	0	-100.	84.1143	2.42E-03	287.4	7.22E-04	-2.31E-03
39	0	-100.	89.3714	2.01E-03	287.1	5.9E-04	-1.92E-03
40	0	-100.	94.6286	1.57E-03	286.8	4.54E-04	-1.51E-03
41	0	-100.	99.8857	1.11E-03	286.5	3.14E-04	-1.06E-03
42	0	-100.	105.143	6.05E-04	286.2	1.69E-04	-5.81E-04
END	0	-100.	110.4	0	0	0	0
GND	0	-200.	0	2.2E-07	63.7	9.75E-08	1.97E-07
44	0	-200.	5.17143	1.13E-04	153.5	-1.02E-04	5.05E-05
45	0	-200.	10.3429	1.88E-04	153.6	-1.68E-04	8.36E-05

46	0	-200.	15.5143	2.49E-04	153.6	-2.23E-04	1.11E-04
47	0	-200.	20.6857	3.E-04	153.6	-2.68E-04	1.33E-04
48	0	-200.	25.8571	3.42E-04	153.6	-3.06E-04	1.52E-04
49	0	-200.	31.0286	3.75E-04	153.6	-3.36E-04	1.67E-04
50	0	-200.	36.2	4.01E-04	153.6	-3.59E-04	1.78E-04
51	0	-200.	41.3714	4.19E-04	153.6	-3.75E-04	1.86E-04
52	0	-200.	46.5429	4.29E-04	153.6	-3.84E-04	1.91E-04
53	0	-200.	51.7143	4.32E-04	153.6	-3.87E-04	1.92E-04
54	0	-200.	56.8857	4.27E-04	153.6	-3.82E-04	1.9E-04
55	0	-200.	62.0571	4.15E-04	153.6	-3.72E-04	1.85E-04
56	0	-200.	67.2286	3.96E-04	153.6	-3.55E-04	1.76E-04
57	0	-200.	72.4	3.71E-04	153.6	-3.32E-04	1.65E-04
58	0	-200.	77.5714	3.38E-04	153.6	-3.03E-04	1.51E-04
59	0	-200.	82.7429	3.E-04	153.6	-2.68E-04	1.33E-04
60	0	-200.	87.9143	2.55E-04	153.6	-2.28E-04	1.13E-04
61	0	-200.	93.0857	2.04E-04	153.6	-1.83E-04	9.08E-05
62	0	-200.	98.2571	1.47E-04	153.6	-1.31E-04	6.53E-05
63	0	-200.	103.429	8.19E-05	153.6	-7.33E-05	3.64E-05
END	0	-200.	108.6	0	0	0	0

Tower #1 Driven with Towers #2 and #3 Open
(Impedance Data Only)

E:\MiniNec\KKFX Matrix1 12-07-2011 15:57:29

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,080.	83.977	138.3	161.8	58.7	6.6807	-2.62	-3.4392

Tower #3 Driven with Towers #2 and #1 Open
(Impedance Data Only)

E:\MiniNec\KKFX Matrix1 12-07-2011 15:59:00

IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 43, sector 1							
1,080.	83.976	138.3	161.8	58.7	6.6806	-2.62	-3.4392

Item 4

Method of Moments Model Details for Directional Antenna- KFXX

The array of towers was modeled using MININEC with the individual tower characteristics that were verified by the individual tower impedance measurements. Calculations were made to determine the complex voltage values for sources located at ground level under each tower of the array to produce current moment sums for the towers that, when normalized, equated to the theoretical field parameters of the authorized directional antenna pattern. The following pages contain details of the method of moments models of the directional antenna patterns.

Tower	Wire	Base Node
1	1	1
2	2	22
3	3	43

KFXX Day Driven Array

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KFXX

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.18	21
		0	0	108.6		
2	none	100.	90.	0	.18	21
		100.	90.	110.4		
3	none	200.	90.	0	.18	21
		200.	90.	108.6		

Number of wires = 3
current nodes = 63

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.17143	2	5.25714
radius	1	.18	1	.18

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,080.	0	1	.0143651	.0146032

Sources

source	node	sector	magnitude	phase	type
1	1	1	3,938.8	320.1	voltage
2	22	1	4,910.56	71.2	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	43	0	480.	0	0	0

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IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,080.	181.84	219.37	284.93	50.3	9.0948	-1.9178	-4.4734

source = 2; node 22, sector 1
1,080. 66.352 141.72 156.48 64.9 8.0097 -2.1802 -4.0374

E:\MiniNec\KKFX DA-D 12-08-2011 10:39:44

CURRENT rms
Frequency = 1080 KHz
Input power = 50,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	9.77047	269.8	-.0416894	-9.77038
2	0	0	5.17143	10.8877	264.9	-.963213	-10.845
3	0	0	10.3429	11.5931	262.2	-1.56826	-11.4865
4	0	0	15.5143	12.1206	260.2	-2.06434	-11.9435
5	0	0	20.6857	12.4972	258.6	-2.47813	-12.249
6	0	0	25.8571	12.7327	257.2	-2.81996	-12.4165
7	0	0	31.0286	12.832	256.	-3.09445	-12.4533
8	**0**	**0**	**36.2**	**12.7981**	**255.**	**-3.30402**	**-12.3643**
9	0	0	41.3714	12.6337	254.2	-3.45011	-12.1534
10	0	0	46.5429	12.3415	253.4	-3.53382	-11.8247
11	0	0	51.7143	11.9246	252.6	-3.55615	-11.382
12	0	0	56.8857	11.3869	252.	-3.5182	-10.8298
13	0	0	62.0571	10.7327	251.4	-3.42122	-10.1728
14	0	0	67.2286	9.96635	250.9	-3.26667	-9.41578
15	0	0	72.4	9.09317	250.4	-3.05611	-8.56423
16	0	0	77.5714	8.11807	249.9	-2.79124	-7.62312
17	0	0	82.7429	7.04607	249.4	-2.47369	-6.59758
18	0	0	87.9143	5.88096	249.	-2.10476	-5.49142
19	0	0	93.0857	4.62416	248.6	-1.68485	-4.30629
20	0	0	98.2571	3.27082	248.3	-1.21194	-3.038
21	0	0	103.429	1.79838	247.9	-.677144	-1.66603
END	0	0	108.6	0	0	0	0
GND	0	-100.	0	22.1798	6.3	22.0463	2.42951
23	0	-100.	5.25714	23.7695	4.4	23.6983	1.83885
24	0	-100.	10.5143	24.6828	3.3	24.6411	1.43328
25	0	-100.	15.7714	25.2825	2.5	25.2593	1.08248
26	0	-100.	21.0286	25.6158	1.7	25.6042	.769925
27	0	-100.	26.2857	25.7024	1.1	25.6978	.489517
28	0	-100.	31.5429	25.5533	.5	25.5522	.238831
29	**0**	**-100.**	**36.8**	**25.1762**	**0.0**	**25.1762**	**.0169508**
30	0	-100.	42.0571	24.5782	359.6	24.5776	-.176353
31	0	-100.	47.3143	23.7665	359.2	23.764	-.341001
32	0	-100.	52.5714	22.7489	358.8	22.7439	-.476797
33	0	-100.	57.8286	21.5339	358.4	21.526	-.58353
34	0	-100.	63.0857	20.131	358.1	20.1201	-.661039
35	0	-100.	68.3429	18.5499	357.8	18.5363	-.709246
36	0	-100.	73.6	16.8012	357.5	16.7854	-.728146
37	0	-100.	78.8572	14.8952	357.2	14.8779	-.717833
38	0	-100.	84.1143	12.8418	357.	12.8239	-.678438
39	0	-100.	89.3714	10.6491	356.7	10.6316	-.610024
40	0	-100.	94.6286	8.32055	356.5	8.30476	-.512411

41	0	-100.	99.8857	5.84874	356.2	5.83608	-.384624
42	0	-100.	105.143	3.19516	356.	3.18734	-.223284
END	0	-100.	110.4	0	0	0	0
GND	0	-200.	0	1.35737	55.6	.766772	1.12005
44	0	-200.	5.17143	1.01745	55.6	.574889	.839474
45	0	-200.	10.3429	.785656	55.6	.444329	.64794
46	0	-200.	15.5143	.586309	55.5	.332353	.483011
47	0	-200.	20.6857	.409795	55.3	.233513	.336754
48	0	-200.	25.8571	.252498	54.7	.145746	.206187
49	0	-200.	31.0286	.112965	52.9	.0681733	.0900753
50	**0**	**-200.**	**36.2**	**.0121099**	**271.8**	**3.9E-04**	**-.0121037**
51	0	-200.	41.3714	.115981	240.1	-.0578028	-.10055
52	0	-200.	46.5429	.205143	238.7	-.106521	-.175319
53	0	-200.	51.7143	.277788	238.3	-.145862	-.236411
54	0	-200.	56.8857	.333932	238.2	-.17594	-.283823
55	0	-200.	62.0571	.373657	238.2	-.196898	-.31757
56	0	-200.	67.2286	.397108	238.3	-.208922	-.337707
57	0	-200.	72.4	.40448	238.4	-.212237	-.344325
58	0	-200.	77.5714	.396016	238.5	-.207097	-.337549
59	0	-200.	82.7429	.371978	238.6	-.193778	-.317519
60	0	-200.	87.9143	.332589	238.8	-.172531	-.284339
61	0	-200.	93.0857	.277925	238.9	-.143536	-.237991
62	0	-200.	98.2571	.207622	239.1	-.106736	-.178085
63	0	-200.	103.429	.120018	239.2	-.0614101	-.103117
END	0	-200.	108.6	0	0	0	0

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CURRENT MOMENTS(amp-degrees) rms

Frequency = 1080 KHz
Input power = 50,000. watts

wire	magnitude	phase (deg)	vertical current moment magnitude	phase (deg)
1	1,118.8	255.1	1,118.8	255.1
2	2,237.91	0.0	2,237.91	0.0
3	1.23608	332.	1.23608	332.

Medium wave array vertical current moment (amps-degrees) rms
(Calculation assumes tower wires are grouped together.
The first wire of each group must contain the source.)

tower	magnitude	phase (deg)
1	1,118.8	255.1
2	2,237.91	0.0
3	1.23608	332.

These current moment summations show the model produces the correct far-field amplitude and phase relationships, and that the #3 tower is properly detuned, with a far field contribution of less than 0.1% of that of the reference tower.

KKSN Night Driven Array

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KFXX

GEOMETRY
Wire coordinates in degrees; other dimensions in meters
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	.18	21
		0	0	108.6		
2	none	100.	90.	0	.18	21
		100.	90.	110.4		
3	none	200.	90.	0	.18	21
		200.	90.	108.6		

Number of wires = 3
current nodes = 63

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	1	5.17143	2	5.25714
radius	1	.18	1	.18

ELECTRICAL DESCRIPTION
Frequencies (KHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	1,080.	0	1	.0143651	.0146032

Sources

source	node	sector	magnitude	phase	type
1	1	1	1,651.86	325.6	voltage
2	22	1	2,110.73	69.8	voltage
3	43	1	623.06	190.4	voltage

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IMPEDANCE
normalization = 50.

freq (KHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
1,080.	224.99	232.41	323.47	45.9	9.4172	-1.8517	-4.5952
source = 2; node 22, sector 1							
1,080.	83.924	158.95	179.74	62.2	8.1728	-2.1363	-4.1057
source = 3; node 43, sector 1							
1,080.	16.257	104.94	106.19	81.2	16.888	-1.0298	-6.7549

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CURRENT rms
Frequency = 1080 KHz
Input power = 9,000. watts
Efficiency = 100. %
coordinates in degrees

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	3.61097	279.7	.60761	-3.55949
2	0	0	5.17143	4.05562	273.8	.265399	-4.04692
3	0	0	10.3429	4.34375	270.5	.0364775	-4.3436
4	0	0	15.5143	4.56441	268.	-.155769	-4.56175
5	0	0	20.6857	4.72702	266.1	-.321119	-4.7161
6	0	0	25.8571	4.83498	264.5	-.463289	-4.81273
7	0	0	31.0286	4.88974	263.1	-.583875	-4.85475
8	**0**	**0**	**36.2**	**4.89219**	**262.**	**-.68362**	**-4.84419**
9	0	0	41.3714	4.84313	260.9	-.762891	-4.78267
10	0	0	46.5429	4.74347	260.	-.821899	-4.67172
11	0	0	51.7143	4.59429	259.2	-.860818	-4.51293
12	0	0	56.8857	4.39691	258.5	-.879825	-4.30798
13	0	0	62.0571	4.15284	257.8	-.879153	-4.05872
14	0	0	67.2286	3.86382	257.2	-.859093	-3.76711
15	0	0	72.4	3.53172	256.6	-.81999	-3.43521
16	0	0	77.5714	3.15846	256.	-.762219	-3.06511
17	0	0	82.7429	2.74587	255.5	-.68616	-2.65876
18	0	0	87.9143	2.29542	255.1	-.59211	-2.21774
19	0	0	93.0857	1.80759	254.6	-.480097	-1.74267
20	0	0	98.2571	1.28042	254.2	-.349445	-1.23182
21	0	0	103.429	.705015	253.7	-.197418	-.67681
END	0	0	108.6	0	0	0	0
GND	0	-100.	0	8.30356	7.6	8.22967	1.1053
23	0	-100.	5.25714	8.97612	5.3	8.93734	.833425
24	0	-100.	10.5143	9.37144	4.	9.34909	.646919
25	0	-100.	15.7714	9.64121	2.9	9.62896	.485775
26	0	-100.	21.0286	9.80458	2.	9.7986	.342379
27	0	-100.	26.2857	9.86965	1.2	9.86733	.213916
28	0	-100.	31.5429	9.84061	.6	9.8401	.0992616
29	**0**	**-100.**	**36.8**	**9.72046**	**360.**	**9.72046**	**-2.02E-03**
30	0	-100.	42.0571	9.5118	359.5	9.51137	-.0900487
31	0	-100.	47.3143	9.21741	359.	9.21594	-.16481
32	0	-100.	52.5714	8.84018	358.5	8.83728	-.226236
33	0	-100.	57.8286	8.38342	358.1	8.37894	-.274257
34	0	-100.	63.0857	7.85058	357.7	7.84451	-.308827
35	0	-100.	68.3429	7.24554	357.4	7.23802	-.32994
36	0	-100.	73.6	6.57238	357.1	6.5637	-.337635
37	0	-100.	78.8572	5.83507	356.7	5.82562	-.331981
38	0	-100.	84.1143	5.03749	356.4	5.02775	-.313072
39	0	-100.	89.3714	4.18273	356.1	4.17328	-.280972
40	0	-100.	94.6286	3.27218	355.9	3.26368	-.235624
41	0	-100.	99.8857	2.30284	355.6	2.29606	-.176606
42	0	-100.	105.143	1.25951	355.3	1.25534	-.102391
END	0	-100.	110.4	0	0	0	0
GND	0	-200.	0	4.14898	109.2	-1.36653	3.91747

44	0	-200.	5.17143	4.36218	108.8	-1.40373	4.13015
45	0	-200.	10.3429	4.47517	108.5	-1.41895	4.24426
46	0	-200.	15.5143	4.53872	108.3	-1.42153	4.31036
47	0	-200.	20.6857	4.55971	108.	-1.4128	4.33531
48	0	-200.	25.8571	4.54116	107.9	-1.39344	4.32209
49	0	-200.	31.0286	4.48487	107.7	-1.36388	4.27246
50	**0**	**-200.**	**36.2**	**4.39224**	**107.6**	**-1.32455**	**4.18777**
51	0	-200.	41.3714	4.26457	107.4	-1.27586	4.06924
52	0	-200.	46.5429	4.10316	107.3	-1.21824	3.91814
53	0	-200.	51.7143	3.90944	107.1	-1.1522	3.7358
54	0	-200.	56.8857	3.68493	107.	-1.07825	3.52364
55	0	-200.	62.0571	3.43125	106.9	-.996972	3.28322
56	0	-200.	67.2286	3.15015	106.8	-.908944	3.01617
57	0	-200.	72.4	2.84338	106.7	-.814778	2.72414
58	0	-200.	77.5714	2.51274	106.5	-.71509	2.40884
59	0	-200.	82.7429	2.15986	106.4	-.610444	2.0718
60	0	-200.	87.9143	1.78605	106.3	-.501314	1.71425
61	0	-200.	93.0857	1.39188	106.2	-.387962	1.33672
62	0	-200.	98.2571	.976051	106.1	-.270145	.937921
63	0	-200.	103.429	.532123	105.9	-.146218	.51164
END	0	-200.	108.6	0	0	0	0

E:\MiniNec\KKFX DA-N 12-07-2011 16:21:07

CURRENT MOMENTS(amp-degrees) rms

Frequency = 1080 KHz
Input power = 9,000. watts

			vertical current moment	
wire	magnitude	phase (deg)	magnitude	phase (deg)
1	427.617	262.	427.617	262.
2	863.872	360.	863.872	360.
3	384.423	107.5	384.423	107.5

Medium wave array vertical current moment (amps-degrees) rms
(Calculation assumes tower wires are grouped together.
The first wire of each group must contain the source.)

tower	magnitude	phase (deg)
1	427.617	262.
2	863.872	360.
3	384.423	107.5

These current moment summations show the model produces the correct far-field amplitude and phase relationships.

Item 5

Summary of Post Construction Certified Array Geometry- KFXX

The tower relative distances provided in feet on the Certified Survey drawing of Appendix A were converted to electrical degrees at 1080 kilohertz and used along with the survey tower azimuths relative to True North to calculate the distance in electrical degrees from the location specified in the theoretical directional antenna pattern array geometry. This figure provides a tabulation showing those distances and other data that is relevant to their determination.

Tower	Specified Spacing (Deg)	Specified Spacing (Feet)	Specified Azimuth (Deg T)	Surveyed Spacing (Feet)*	Surveyed Azimuth (Deg T)*	Distance from Specified Location (Feet)	Distance from Specified Location (Deg)
1	ref	ref	ref	ref	ref	0	0
2	100.0	253.0	90.0	253.0	90.0	0.0	0.0
3	200.0	506.0	90.0	505.9	90.0	0.1	0.004

*From September 29, 2011 as built survey drawing prepared by D. Gary Hutcheson, RLS

The as built tower displacements from their specified locations expressed in electrical degrees at carrier frequency, which correspond to space phasing differences in the far-field radiation pattern of the array, are well below the guidelines in the FCC Public Notice DA 09-2340 (10/29/2009).

Item 6

Sampling System Measurements - KFXX

Impedance measurements were made of the antenna monitor sampling system using a Hewlett-Packard 8751A network analyzer in a calibrated measurement system. The measurements were made looking into the antenna monitor ends of the sampling lines for two conditions – with and without the sampling lines connected to the sampling loops at the towers.

The following table shows the frequency closest to the carrier frequency where resonance –zero reactance corresponding with low resistance – was found. As frequencies of resonance occur at odd multiples of 90 degrees electrical length, the sampling line length at the resonant frequency above carrier frequency – which is the closest one to the carrier frequency – was found to be 450 electrical degrees. The electrical length at carrier frequency appearing in the table below was calculated by ratioing the carrier frequency to the resonant frequency.

Tower	Sampling Line Open-Circuited Resonance (kHz)	Sampling Line Electrical Length at 1080 kHz	1080 kHz Measured Impedance with Sample Loop Connected
1	1037.05	468.64°	14.8 -j85.0
2	1036.75	468.77°	14.7 -j84.9
3	1035.40	469.38°	14.2 -j83.0

The sampling line lengths meet the requirement that they be equal in length within 1 electrical degree.

In order to determine the characteristic impedance values of the sampling lines, open-circuited measurements were made with frequencies offset to produce +/- 45 degrees of electrical length from resonance. The characteristic impedance was calculated using the following formula, where R1 +j X1 and R2 +j X2 are the measured impedances at the +45 and –45 degree offset frequencies, respectively:

$$Zo = ((R_1^2 + X_1^2)^{1/2} \times (R_2^2 + X_2^2)^{1/2})^{1/2}$$

Tower	-45° Offset Frequency (kHz)	-45° Measured Impedance (Ohms)	+45° Offset Frequency (kHz)	+45° Measured Impedance (Ohms)	Calculated Characteristic Impedance (Ohms)
1	933.345	6.9 -J49.9	1140.755	8.78 +J49.8	50.47
2	933.075	6.9 -J49.9	1140.425	8.7 +J49.9	50.51
3	931:860	6.9 -J49.9	1138.940	8.6 +J49.6	50.36

The sampling line measured characteristic impedances meet the requirement that they be equal within 2 ohms.

Item 7

Reference Field Strength Measurements - KFXX

Reference field strength measurements were made along radials at the azimuths with radiation values specified on the construction permit and, additionally, on the major lobe radial of each pattern.

Measurements were made using a Potomac Instruments field strength meter, model FIM-41, serial number 1302. This meter was last calibrated 12/29/10.

The measured field strengths and descriptions and GPS coordinates for the reference measurement points are shown in Appendix B

Item 8

Direct Measurement of Power - KFXX

Common point impedance measurements were made using a Hewlet-Packard 8751A network analyzer calibrated measurement system. The measurements were made at the phasor cabinet input jack adjacent to the common point current meter that is used to determine operating power. The impedance measured at this point was adjusted to a value of 50 +/- j0 for both the daytime and nighttime antenna patterns.

Item 9

Antenna Monitor and Sampling System - KFXX

The antenna monitor is a Gorman-Redlich model CMR. The sample loops are connected through equal lengths of ½ inch foam heliax solid outer conductor transmission lines (Andrew LDF-50A phase stabilized cable) to the antenna monitor. The three sample lines are routed to the towers such that they are subject to similar environmental conditions.

Item 10

Intermodulation Measurements

Measurements were made to observe any possible spurious emissions which might result from any interaction or intermodulation of KFXX and KKSN. Measurements were made with both stations operating with daytime antenna systems and then again with both stations operating with nighttime antenna systems.

On December 4, 2011, a Potomac Instruments FIM-41 Field Strength Meter was setup 1.1 kM from the transmitter site for the daytime measurements. The spectrum from 540 kHz through 5 MHz was scanned for any signs of spurious emissions. In addition possible third-order intermodulation products were checked. One of those products falls at 170 kHz (1080 kHz – 910 kHz) and is beyond the range of the FIM-41. For this measurement an Agilent E4402B spectrum analyzer connected to a shielded loop antenna was used to observe the region around 170 kHz. The results for the daytime investigation are listed below.

170 kHz	No signal observed on the Agilent E4402B Spectrum Analzer
570	Frequency is occupied by KVI in Seattle. No interference was observed
740	KXTG is on adjacent channel at 750 kHz. Sidebands preclude measurement of 740 kHz. There is no apparent interference to KXTG.
910	KKSN -- 320 mV/m (Reference)
1080	KFXX -- 1050 mV/m (Reference)
1250	32 μV/m -- 80 dB below KKSN and 90.32 dB below KFXX
1420	KBNP is on an adjacent channel at 1410 kHz. Sidebands preclude measurement of 1420 kHz. There is no apparent interference to KBNP
1990	No signal observed
2560	No signal observed
2900	No signal observed
3070	25 μV/m -- 82.1 dB below KKSN and 92.5 dB below KFXX
3410	No signal observed
4720	No Signal observed
4890	No signal observed

For the nighttime measurements, again a Potomac Instruments FIM-41 Field Strength Meter was setup 0.78 kM from the transmitter site. These measurements were made on November 12, 2011. The spectrum from 540 kHz through 5 MHz was scanned again for any signs of spurious emissions. In addition possible third-order intermodulation products were checked. One of those products falls at 170 kHz (1080 kHz – 910 kHz) and is beyond the range of the FIM-41. For this measurement an Agilent E4402B spectrum analyzer connected to a shielded loop antenna was used to observe the region around 170 kHz. The results for the nighttime investigation are listed below.

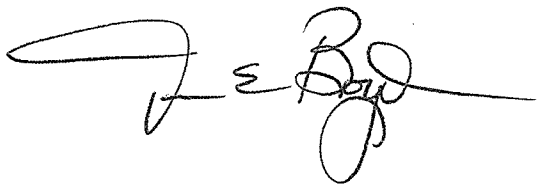
170 kHz	No signal observed on the Agilent E4402B Spectrum Analzer
570	Frequency is occupied by KVI in Seattle. No interference was observed
740	KXTG is on adjacent channel at 750 kHz. Sidebands preclude measurement of 740 kHz. There is no apparent interference to KXTG.
910	KKSN -- 1290 mV/m (Reference)
1080	KFXX -- 1700 mV/m (Reference)
1250	0.07 mV/m -- 85.3 dB below KKSN and 87.7 dB below KFXX

1420	KBNP is on an adjacent channel at 1410 kHz. Sidebands preclude measurement of 1420 kHz. There is no apparent interference to KBNP
1990	No signal observed
2560	No signal observed
2900	Less than 10 μV/m -- More than 102.2 dB below KKSN and more than 104.6 dB below KFXX
3070	Less than 10 μV/m -- More than 102.2 dB below KKSN and more than 104.6 dB below KFXX
3410	No signal observed
4720	No signal observed
4890	No signal observed

No other spurious emissions were observed.

The FIM-41 used for these measurements is serial number 1302 and was last calibrated on December 29, 2010.

All measurements were made by the undersigned.



James Boyd
Boyd Broadcast Technical Services

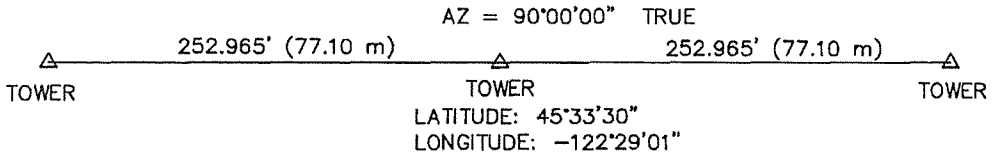
Appendix A

Certified Post Construction Array Geometry

ENTERCOM RADIO TOWERS
NE MARINE DRIVE
MULTNOMAH COUNTY, OREGON

5, OCT. 2011

THE DATA SHOWN HERE WAS DERIVED FROM A FIELD SURVEY PERFORMED 29, SEPT. 2011 AND IS BASED ON OREGON NAD 83/91.



REGISTERED
PROFESSIONAL
LAND SURVEYOR

OREGON
DECEMBER 2, 1983
D. GARY HUTCHESON
2072

10-06-11

RENEWS: 6/30/13

DAVID EVANS
AND ASSOCIATES INC.
2100 Southwest River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Appendix B

Reference Point Descriptions and Field Strength Readings

KFXX, 1080 kHz, Portland, OR

Reference Field Strength Measurements – DA-D

Radial Azimuth Degrees	Distance km	Field mV/m	GPS Coordinates NAD 83	Point Description
48.5	3.46	77	45-34-45.3 / 122-26-56.9	SW 6th Avenue, Camas, Washington
48.5	4.49	70	45-35-6.8 / 122-26-21.8	Center of NW Fremont Street at NW McIntosh Road, Camas, Washington
48.5	5.69	40	45-35-32.6 / 122-25-40.14	South shoulder of NW Forest Home Road
90	2.31	470	45-33-30.7 / 122-27-10.4	North shoulder of NE Marine Drive
90	3.77	179	45-33-30.4 / 122-26-2.7	Middle of NE 223rd Avenue
90	5.92	150	45-33-30.7 / 122-24-23.6	Middle of road at NW Sundial Road
131.5	1.11	760	45-33-6.7 / 122-28-18.8	NE Portal Way at NE 185th Avenue
131.5	2.16	380	45-32-44.2 / 122-27-42.3	North shoulder of NE Sandy Boulevard
131.5	3.29	230	45-32-19.8 / 122-27-3.5	Middle of street front of 20407 NE Thompson Street
270	2.07	1350	45-33-30.2 / 122-30-32.8	Mail box at 5031 NE 148th Avenue
270	3.52	640	45-33-30.6 / 122-31-39.9	Kiewit Columbia Shop sign on NE Whitaker Way
270	4.94	430	45-33-30.9 / 122-32-46.6	NE 112th Ave. across street from Baxter Auto Parts

KFXX, 1080 kHz, Portland, OR

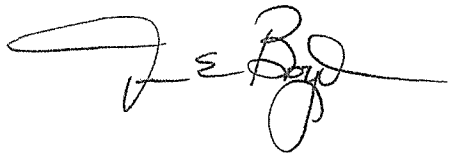
Reference Field Strength Measurements – DA-N

Radial Azimuth Degrees	Distance km	Field mV/m	GPS Coordinates NAD 83	Point Description
54.5	3.81	4.8	45-34-42.2 / 122-26-33.5	North side of SW 6th Street, Camas, WA
54.5	5.47	3.8	45-35-13.3 / 122-25-31.0	West side of NW Norwood Street, Camas
54.5	7.03	3.6	45-35-42.5 / 122-24-32.3	Middle of NW 22nd Ave. near Division Street, Camas
90	2.35	96	45-33-30.8 / 122-27-8.6	West side of NE Blue Lake Road
90	3.77	37	45-33-30.4 / 122-26-2.7	Middle of NE 223rd Avenue
90	5.92	14	45-33-30.9 / 122-24-23.5	Middle of NW Sundial Road
125.5	0.63	40	45-33-18.7 / 122-28-33.4	Across street from 18225 NE Riverside Parkway
125.5	2.65	17	45-32-40.7 / 122-27-17.3	SE Corner of CFN Cardlock Station on NE Sandy
125.5	3.99	10	45-32-15.4 / 122-26-27	Front of 710 San Rafael Street
270	2.07	680	45-33-30.3 / 122-30-33	Mail box at 5031 NE 148th Avenue
270	3.53	300	45-33-30.1 / 122-31-40.1	Kiewit Columbia Shop sign on NE Whitaker Way
270	4.97	210	45-33-31 / 122-32-46.8	NE 112th Ave. across street from Baxter Auto Parts

KFXX, 1080 kHz, Portland, OR

All measurements were made with a Potomac Instruments FIM-41, serial number 1302 last calibrated on December 29, 2010.

All measurements were made by the undersigned.



James Boyd
Boyd Broadcast Technical Services
21818 SW Columbia Circle
Tualatin, OR 97062
(503) 703-8360

Appendix C

Construction Permit BP-20080717AAW

United States of America

FEDERAL COMMUNICATIONS COMMISSION

AM BROADCAST STATION CONSTRUCTION PERMIT

Authorizing Official:

Official Mailing Address:

ENTERCOM PORTLAND LICENSE, LLC
401 CITY AVENUE
SUITE 409
BALA CYNWYD PA 19004

Son Nguyen
Supervisory Engineer
Audio Division
Media Bureau

Grant Date: February 06, 2009

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

Facility Id: 57830

Call Sign: KFXX

Permit File Number: BP-20080717AAW

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.

Hours of Operation: Unlimited

Average hours of sunrise and sunset:
Local Standard Time (Non-Advanced)

Jan.	7:45 AM	4:45 PM	Jul.	4:30 AM	8:00 PM
Feb.	7:15 AM	5:30 PM	Aug.	5:15 AM	7:15 PM
Mar.	6:30 AM	6:15 PM	Sep.	5:45 AM	6:30 PM
Apr.	5:30 AM	7:00 PM	Oct.	6:30 AM	5:30 PM
May	4:45 AM	7:30 PM	Nov.	7:15 AM	4:45 PM
Jun.	4:15 AM	8:00 PM	Dec.	7:45 AM	4:30 PM

Callsign: KFXX Permit No.: BP-20080717AAW

Name of Permittee: ENTERCOM PORTLAND LICENSE, LLC

Station Location: PORTLAND, OR

Frequency (kHz): 1080

Station Class: B

Antenna Coordinates:

	Day					
Latitude:	N	45	Deg	33	Min	30 Sec
Longitude:	W	122	Deg	28	Min	57 Sec

	Night					
Latitude:	N	45	Deg	33	Min	30 Sec
Longitude:	W	122	Deg	28	Min	57 Sec

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

Nominal Power (kW): Day: 50.0 Night: 9.0

Antenna Mode: Day: DA Night: DA

(DA=Directional Antenna, ND=Non-directional Antenna; CH=Critical Hours)

Antenna Registration Number(s):

Day:

Tower No.	ASRN	Overall Height (m)
1	1263410	
2	1263412	

Night:

Tower No.	ASRN	Overall Height (m)
1	1263410	
2	1263412	
3	1263413	

Callsign: KFXX Permit No.: BP-20080717AAW

DESCRIPTION OF DIRECTIONAL ANTENNA SYSTEM

Theoretical RMS (mV/m/km): Day: 2266.84 Night: 979.01

Standard RMS (mV/m/km): Day: 2381.34 Night: 1028.44

Augmented RMS (mV/m/km):

Q Factor: Day: Night:

Theoretical Parameters:

Day Directional Antenna:

Tower No.	Field Ratio	Phasing (Deg.)	Spacing (Deg.)	Orientation (Deg.)	Tower Ref Switch *	Height (Deg.)
1	0.5000	-105.000	0.0000	0.000	0	106.7
2	1.0000	0.000	100.0000	90.000	0	106.7

* Tower Reference Switch
0 = Spacing and orientation from reference tower
1 = Spacing and orientation from previous tower

Theoretical Parameters:

Night Directional Antenna:

Tower No.	Field Ratio	Phasing (Deg.)	Spacing (Deg.)	Orientation (Deg.)	Tower Ref Switch *	Height (Deg.)
1	0.4950	-98.000	0.0000	0.000	0	106.7
2	1.0000	0.000	100.0000	90.000	0	106.7
3	0.4450	107.500	200.0000	90.000	0	106.7

* Tower Reference Switch
0 = Spacing and orientation from reference tower
1 = Spacing and orientation from previous tower

Inverse Distance Field Strength:
The inverse distance field strength at a distance of one kilometer from the above antenna in the directions specified shall not exceed the following values:

Day:

Azimuth:	Radiation:	
48.5	1110.43	mV/m
131.5	1110.43	mV/m

Night:

Azimuth:	Radiation:	
54.5	90.2	mV/m
125.5	90.2	mV/m

Special operating conditions or restrictions:

1 The permittee must submit a proof of performance as set forth in either Section 73.151(a) or 73.151(c) of the rules before program tests are authorized.
A proof of performance based on field strength measurements, per Section 73.151(a), shall include a complete nondirectional proof of performance, in addition to a complete proof on the (day) and (night) directional antenna system. The nondirectional and directional field strength measurements must be made under similar environmental conditions. The proof(s) of performance submitted to the Commission must contain all of the data specified in Section 73.186 of the rules.
Permittees who elect to submit a moment method proof of performance, as set forth in Section 73.151(c), must use series-fed radiators. In addition, the sampling system must be constructed as described in Section 73.151(c) (2) (i).

2 Permittee shall install a type accepted transmitter, or submit application (FCC Form 301) along with data prescribed in Section 73.1660(b) should non-type accepted transmitter be proposed.

3 Licensee shall be responsible for satisfying all reasonable complaints of blanketing interference within the 1 V/m contour as required by Section 73.88 of the Commission's rules.

4 Ground system consists of 120 equally spaced, buried, copper radials about the base of each tower, 170.9 meters in length for towers #1 and # 3 plus 198.9 meters in length for tower # 2(compensating for loss of ground system at property boundaries) except where terminated by property boundaries.

Special operating conditions or restrictions:

5 Before program test authority is authorized by the Commission: sufficient radiofrequency (RF) electromagnetic field measurements taken at the tower fence shall be submitted to show that the new power level RF radiation is in compliance with the American National Standards Institute Guidelines (OET Bulletin No. 65. August 1997); or a fence must be erected at such distances and in such a manner as to prevent the exposure human exposure to radiofrequency electromagnetic fields in excess of the FCC Guidelines (OET Bulletin No. 65. Edition 97-01, August 1997). The fence must be of a type which will preclude casual or inadvertent access, and must include warning signs at appropriate intervals which describe the nature of the hazard. Permittee shall submit documentation of compliance with this special operating condition along with the Form 302, application for license and the request for program test authority.

6 Before program tests are authorized, sufficient data shall be submitted to show that adequate filters, traps and other equipment has been installed and adjusted to prevent interaction, intermodulation and/or generation of spurious radiation products which may be caused by common usage of the same antenna system by Stations KTRO(AM), Vancouver, WA (Facility ID No. 35033) and there shall be filed with the license application copies of a firm agreement entered into by the 2 stations involved clearly fixing the responsibility of each with regard to the installation and maintenance of such equipment. In addition, field observations shall be made to determine whether spurious emissions exist and any objectionable problems resulting therefrom shall be eliminated. Following construction, and prior to authorization of program test under this grant, Stations KFXX(AM), Portland, OR (Facility ID No. 57830) and KTRO(AM), Vancouver, WA (Facility ID No. 35033) shall each measure antenna or common point resistance and submit FCC Form 302 as application notifying the return to direct measurement of power.

*** END OF AUTHORIZATION ***

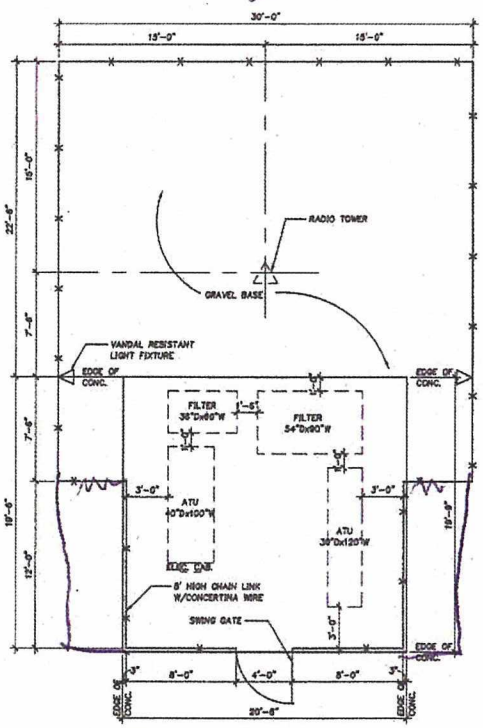
Appendix D

FCC Form 302-AM

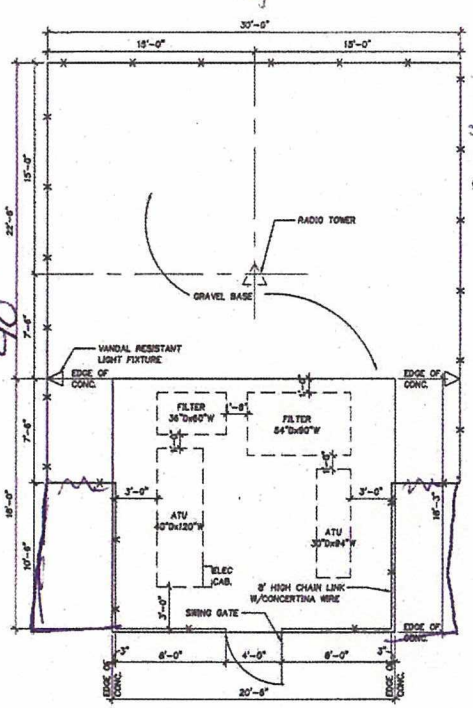
Appendix E

Special Operating Condition #5

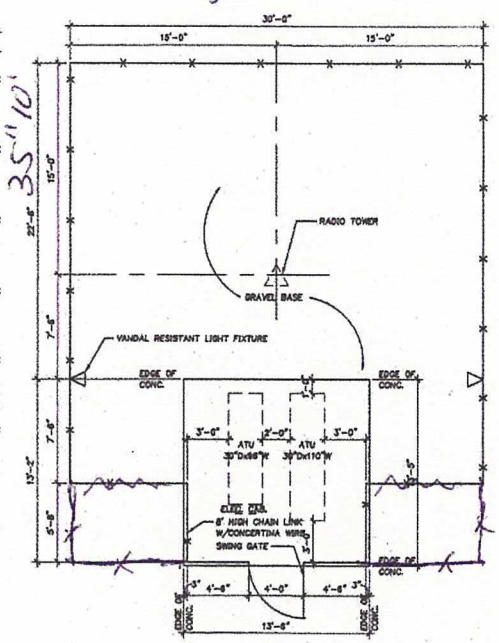
All three towers of the combined KFXX/KKSN (formerly KTRO) array are surrounded by chain-link fences, with locked gates. These fences are eight feet in height, and are topped with concertina (razor) wire. The fences are posted with Radiofrequency warning signs, as seen in the photograph below. The minimum distance between any tower and its surrounding fence is 15 feet, as shown on the construction drawings on the following page.



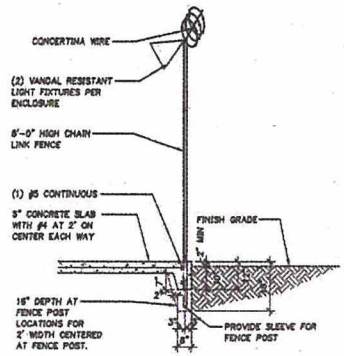
1 A1.3 TOWER BASE ENCLOSURE
WEST TOWER 1/4"=1'-0" WTOWER



2 A1.3 TOWER BASE ENCLOSURE
CENTER TOWER 1/4"=1'-0" CTOWER



3 A1.3 TOWER BASE ENCLOSURE
EAST TOWER 1/4"=1'-0" ETOWER



4 A1.3 FENCE AT CONC. SLAB
1/2"=1'-0" FENCE

GROUP MACKENZIE
Architecture
Interior Design
Land Use Planning
Civil Engineering
Structural Engineering
Transportation Planning
Landscape Architecture

Client
ENTERCOM PORTLAND LLC

Project
ENTERCOM PORTLAND, LLC AM RADIO TOWER

10660 NE CAMERO
PORTLAND, OREG

REGISTERED ARCHITECT
1998
ROBERT C. THOMPSON
PORTLAND, OREGON
STATE OF OREGON

REVISIONS:

NUMBER	DESCRIPTION	REVISION DATE	CLOSING DATE

SHEET TITLE:
TOWER BASE ENCLOSURE

DRAWN BY: ELJ
CHECKED BY: DEP
SHEET:
A1.3

JOB NO. 207023

BID SET - MARCH 21, 2011

Agreement between KKSN(AM) and KFXX(AM) per CP Condition #6

KKSN(AM), Vancouver, WA Facility ID #35033 and KFXX(AM), Portland, OR Facility ID #57830 are both licensed to Entercom Portland License, LLC. The stations have construction permits to co-locate at a new transmitter site utilizing a new common antenna system. In response to special operating condition or restriction #6 on the KKSN(AM) Permit File #BMP-20101213AAR, the Licensee states that it is the sole responsible party for the installation and continued maintenance of adequate filters, traps and other equipment necessary to prevent interaction, intermodulation and/or the generation of spurious radiation products which may be caused by common usage of the same antenna system.