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. BMML-20130718AHZ

SECTION I - APPLICANT FEE INFORMATION

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

Bonneville International Corporation

MAILING ADDRESS (Line 1) (Maximum 35 characters)
55 North 300 West, 2nd Floor

MAILING ADDRESS (Line 2) (Maximum 35 characters)

CITY	STATE OR COUNTRY (if foreign address)	ZIP CODE
Salt Lake City	UT	84101

TELEPHONE NUMBER (include area code)	CALL LETTERS	OTHER FCC IDENTIFIER (If applicable)
8015755874	KTAR	FIN 52515

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
MMR	0001	$ 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
MOR	0001	$ 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 Bonneville International Corporation		
MAILING ADDRESS 55 North 300 West, 2nd Floor		
CITY Salt Lake City	STATE UT	ZIP CODE 84101

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
KTAR	Phoenix, AZ	N/A	N/A	N/A

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

☐ Yes ☐ No

N/A

Exhibit No.

If No, explain in an Exhibit.

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

☐ Yes ☐ No

N/A

Exhibit No.

If No, state exceptions in an Exhibit.

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

N/A

Exhibit No.

If Yes, explain in an Exhibit.

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	
Michael Dowdle		
Title	Date	Telephone Number
Vice President and General Counsel	7/16/13	801/575-5874

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.

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ENGINEERING REPORT:

APPLICATION FOR LICENSE
and Direct Power Measurement

RADIO STATION KTAR-AM Phoenix, AZ
620 kHz, 5.0 kW, DA-N
Facility ID #52515

July, 2013

APPLICATION FOR LICENSE
and Direct Power Measurement

RADIO STATION KTAR-AM Phoenix, AZ
620 kHz, 5.0 kW, DA-N
Facility ID #52515

ORIGINAL

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July 17, 2013

VIA OVERNIGHT DELIVERY
Federal Communications Commission
c/o U.S. Bank - Government Lockbox #979089
SL-MO-C2-GL
1005 Convention Plaza
St. Louis, MO 63101

Attention: FCC Government Lockbox

Re: Lockbox No. 979089
FCC 302-AM License Application
for KTAR(AM), Phoenix, Arizona (FIN 52515)
Fee Codes: MMR and MOR; Total Fee Amount: $1,365.00

Dear Sir/Madam,

Bonneville International Corporation (FRN 0006165955), licensee of KTAR(AM), Phoenix, Arizona (FIN 52515), by its counsel, hereby submits in triplicate an FCC 302-AM application for a moment method license for KTAR(AM).

Enclosed is a check made payable to the Federal Communications Commission in the total amount of $1,365.00 to cover the requisite filing fees, along with a Form 159 (FCC Remittance Advice).

It is respectfully requested that you stamp the receive date on the enclosed copy marked "Stamp and Return" and return it to us for our files. Any questions regarding this matter should be directed to the undersigned.

WILKINSON BARKER KNAUER, LLP

By: _____
Patricia M. Chuh

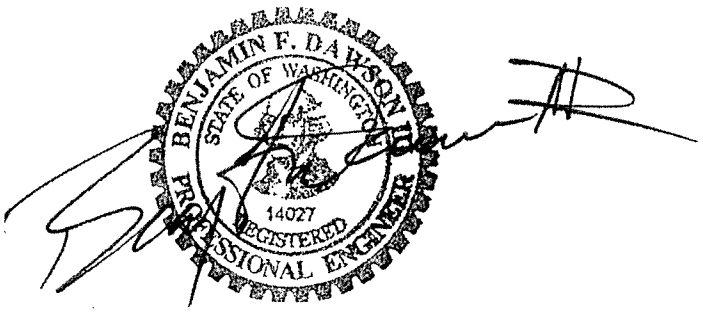
Encl.

Purpose of Application

This engineering exhibit supports an application for a "moment method license" for the presently authorized and unmodified antenna radiation pattern of radio station KTAR, Phoenix, AZ. KTAR is authorized per license to operate on 620 kHz with a power of 5.0 kW day and night, employing a directional antenna for the nighttime operation.

The antenna towers and ground system are unmodified from their long-established conditions and adjustments of the antenna parameters were made in accordance with the terms of the license and specifications provided for the previous licensing of the station. Information is provided herein demonstrating that the directional antenna parameters for the pattern authorized by the station license 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. Measurements described in this report were made by Gary Smith, Director of Engineering for Bonneville Phoenix.

Benjamin F. Dawson III, P.E.



July 12, 2013

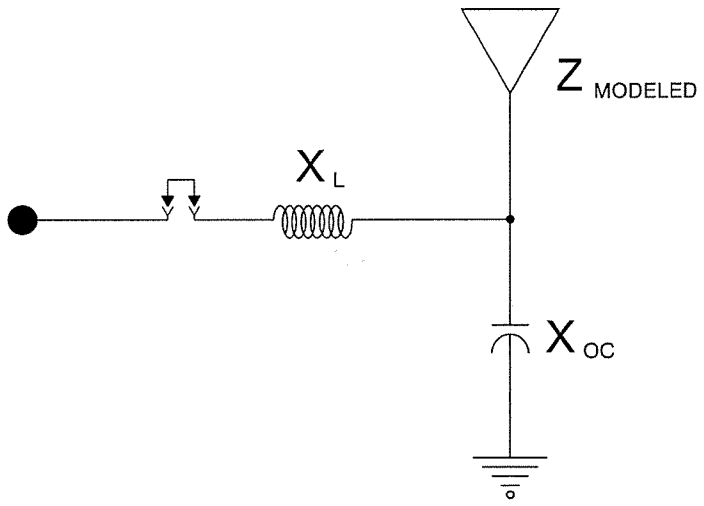
Item 1

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

Tower impedance measurements were made at the locations of the sample system current transformers using an Agilent 4395A 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 feed points to those at the current sample device locations as shown in the table. 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. The lighting and static drain chokes used have such high impedances at this frequency that they have not been included in the models.

In addition to the page showing the schematic of the assumed circuit and tabulation of calculated values, a page with the result of calculations using the NETBW circuit analysis program is shown. These calculations show the impedance transformations and phase shifts between the tower base values produced by the MININEC moment method model and the location of the current sample devices used to produce the antenna monitor input signals.



	X_L	X_{OC}	Z MODELED	Z ATU MODELED	Z ATU MEASURED
TWR #1 WITH TWR #2 OPEN CIRCUITED	+j21.9	-j1200	33.615 -j14.3	32.8 +j6.90	32.53 +j6.85
TWR #1 WITH TWR #2 GROUNDED	+j21.9	-j1200	34.98 -j14.1	34.14 +j6.98	33.575 +j6.98

	X_L	X_{OC}	Z MODELED	Z ATU MODELED	Z ATU MEASURED
TWR #2 WITH TWR #1 GROUNDED	+j5.75	-j1200	16.932 -j66.75	15.19 +j57.7	15.183 -j57.68
TWR #2 WITH TWR #1 OPEN CIRCUITED	+j5.75	-j1200	15.19 -j64.8	13.67 -j55.9	14.203 -j55.59

NETBW CALCULATION OF IMPEDANCE AT ATU OUTPUT (SAMPLE DEVICE/IMPEDANCE MEASUREMENT LOCATION) AS MODIFIED BY BASE CAPACITANCE AND FEED PIPE SERIES INDUCTANCE

FOR MODELING PARAMETER CALCULATION

TOWER #1 (S) WITH TOWER 2 OPEN CIRCUITED AND LOADED WITH -J1200

FREQUENCY (KHZ)	LOAD RESISTANCE	LOAD REACTANCE	INPUT RESISTANCE	INPUT REACTANCE
620	33.615	-14.259	32.80501	6.900285
-1.585746				

TOWER #1 (S) WITH TOWER 2 SHORT CIRCUITED

FREQUENCY (KHZ)	LOAD RESISTANCE	LOAD REACTANCE	INPUT RESISTANCE	INPUT REACTANCE
620	34.981	-14.1	34.14487	6.979958
-1.650366				

TOWER #2 (N) WITH TOWER 1 OPEN CIRCUITED AND LOADED WITH -J1200

FREQUENCY (KHZ)	LOAD RESISTANCE	LOAD REACTANCE	INPUT RESISTANCE	INPUT REACTANCE
620	15.186	-64.803	13.66777	-55.89688
-0.6878953				

TOWER #2 (N) WITH TOWER 1 SHORT CIRCUITED

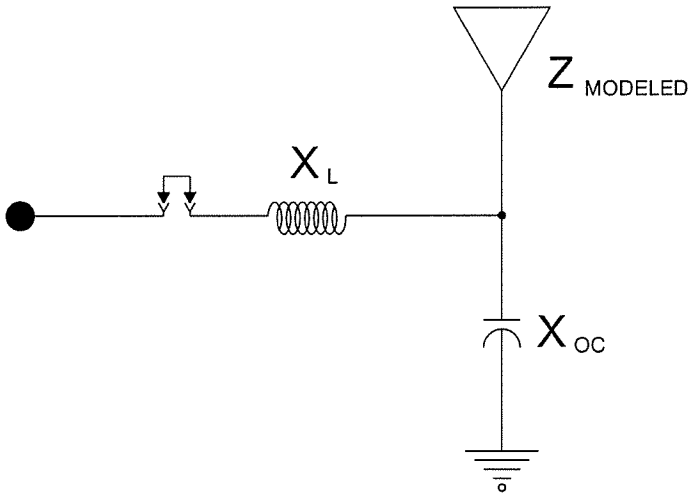
FREQUENCY (KHZ)	LOAD RESISTANCE	LOAD REACTANCE	INPUT RESISTANCE	INPUT REACTANCE
620	16.932	-66.747	15.19194	-57.68305
-0.7657996				

Item 2

Derivation of Operating Parameters for Directional Antenna - KTAR

The method of moments model of the array, following verification with the measured individual open circuited base impedances, was used for directional antenna calculations. Calculations were made to determine the complex voltage values for sources located at ground level at the base of 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 and phases were calculated. 14 and 15 segments were used for towers in the moment method model. The currents and voltages at the tower bases (segments 1, and 15) were used to calculate the currents at the sample device locations by Kirchoff's law, using the analysis program NETBW.

Tower	Modeled Current Pulse	Base Current Magnitude	Base Current Phase	Antenna Monitor Sample Ratio	Antenna Monitor Sample Phase
1 S	1	11.0889	10.5	1.0	0
2 N	15	8.95317	82.9	0.828	70.8



TOWER	$X_L(\Omega)$	$X_{OC}(\Omega)$	INPUT Z	LOAD Z	CURRENT PHASE DELTA
TWR #1	+j21.9	-j1200	36.53 -j8.1	38.385 -j29.565	-1.788
TWR #2	+j5.75	-j1200	3.16 -j52.5	3.493 -j61.23	-0.159

Bob Allen, H&D 6/21/2013 3:10 PM KTAR CIRCUIT MOM TABLES.dwg

HATFIELD & DAWSON
CONSULTING ENGINEERS

BASE TRANSFORMATIONS

RADIO STATION KTAR PHOENIX, AZ 06/2013

NETBW CALCULATION OF IMPEDANCE AT ATU OUTPUT (SAMPLE DEVICE LOCATION) AS MODIFIED BY BASE CAPACITANCE AND FEED PIPE SERIES INDUCTANCE

FOR DIRECTIONAL OPERATION PARAMETER CALCULATION

TOWER #1 (S)

FREQUENCY (KHZ)	LOAD RESISTANCE	LOAD REACTANCE	INPUT RESISTANCE	INPUT REACTANCE
620	38.385	-29.565	36.52565	-8.094378
-1.7881				

TOWER #2 (N)

FREQUENCY (KHZ)	LOAD RESISTANCE	LOAD REACTANCE	INPUT RESISTANCE	INPUT REACTANCE
620	3.493	-61.23	3.162053	-52.51618
-0.1586814				

Item 3

Method of Moments Model Details for Towers Driven Individually - KTAR

The array of towers was modeled using MININEC. Because the towers are tapered, self-supporting structures, five wires were used to represent each tower. The top and bottom wire end points were specified using the theoretical directional antenna specifications in electrical degrees. The towers were modeled using 2 wire segments for the bottom (base region) wire of the taller tower and 3 segments for the upper wires on the taller tower and for the shorter tower, with the wire radii calculated to be identical to the average radius for each wire. The towers are physically 90.8 and 68.1 degrees in electrical height, 400 and 300 feet respectively.* The taller tower was modeled with a correction of 0.5% and the shorter tower with a correction of 6.0%. The maximum and minimum segment lengths are 9.123 and 4.81 electrical degrees respectively.

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.

Tower #	Physical Height (degrees)	Modeled Height (degrees)	Modeled Percentage of Height	Modeled Radius (feet)	Percent of Equivalent Radius
1 SW	90.77	91.22	100.5	See Drawing	100.0
2 NE	68.08	72.16	106.0	Item 11	100.0

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

*Note that the station's authorizations show the correct physical heights for the towers, but electrical heights which are truncated to the nearest 0.1 degree rather than properly rounded.

TOWER #1 DRIVEN WITH TOWER #2 LOADED WITH -J1200

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KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	13.153	2
		0	0	80.4		
2	none	0	0	80.4	9.772	3
		0	0	160.8		
3	none	0	0	160.8	7.254	3
		0	0	241.2		
4	none	0	0	241.2	4.736	3
		0	0	321.6		
5	none	0	0	321.6	2.532	3
		0	0	402.		
6	none	793.	27.	0	9.457	3
		793.	27.	63.6		
7	none	793.	27.	63.6	7.569	3
		793.	27.	127.2		
8	none	793.	27.	127.2	5.68	3
		793.	27.	190.8		
9	none	793.	27.	190.8	3.791	3
		793.	27.	254.4		
10	none	793.	27.	254.4	2.218	3
		793.	27.	318.		

Number of wires = 10
current nodes = 29

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	9	21.2	1	40.2
segment/radius ratio	6	2.24173	5	10.5845
radius	10	2.218	1	13.153

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.62	0	1	.0133632	.0253397

Sources

source	node	sector	magnitude	phase	type
1	1	1	690.242	340.5	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	15	0	-1,200.	0	0	0

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IMPEDANCE
   normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.62	33.615	-14.259	36.514	337.	1.6884	-11.833	-.29453

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CURRENT rms
Frequency = .62 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	12.1959	3.5	12.1734	.741405
2	0	0	40.2	11.6015	357.8	11.5931	-.440208
END	0	0	80.4	10.9644	355.8	10.9352	-.799684
2J1	0	0	80.4	10.9644	355.8	10.9352	-.799684
4	0	0	107.2	10.5031	354.9	10.4608	-.94221
5	0	0	134.	9.90077	353.9	9.84546	-1.04506
END	0	0	160.8	9.13308	353.1	9.06609	-1.10416
2J2	0	0	160.8	9.13308	353.1	9.06609	-1.10416
7	0	0	187.6	8.41913	352.4	8.34517	-1.1135
8	0	0	214.4	7.55768	351.7	7.47934	-1.08537
END	0	0	241.2	6.52035	351.1	6.44134	-1.012
2J3	0	0	241.2	6.52035	351.1	6.44134	-1.012
10	0	0	268.	5.64972	350.6	5.57351	-.924796
11	0	0	294.8	4.63168	350.1	4.56225	-.798955
END	0	0	321.6	3.44138	349.5	3.384	-.62583
2J4	0	0	321.6	3.44138	349.5	3.384	-.62583
13	0	0	348.4	2.50659	349.1	2.46159	-.47282
14	0	0	375.2	1.41954	348.7	1.39207	-.277924
END	0	0	402.	0	0	0	0
GND	706.568	-360.014	0	.0946757	148.	-.0803019	.0501506
16	706.568	-360.014	21.2	.323648	148.	-.274469	.171507
17	706.568	-360.014	42.4	.374196	148.	-.317219	.198482
END	706.568	-360.014	63.6	.419566	147.9	-.355489	.222852
2J6	706.568	-360.014	63.6	.419566	147.9	-.355489	.222852
19	706.568	-360.014	84.8	.440718	147.9	-.373199	.234424
20	706.568	-360.014	106.	.45012	147.8	-.380892	.239852
END	706.568	-360.014	127.2	.446482	147.7	-.377483	.238439
2J7	706.568	-360.014	127.2	.446482	147.7	-.377483	.238439
22	706.568	-360.014	148.4	.433318	147.6	-.366056	.231878
23	706.568	-360.014	169.6	.409143	147.6	-.345299	.219468
END	706.568	-360.014	190.8	.371641	147.5	-.313282	.199928
2J8	706.568	-360.014	190.8	.371641	147.5	-.313282	.199928
25	706.568	-360.014	212.	.334117	147.4	-.281367	.180186
26	706.568	-360.014	233.2	.285115	147.3	-.239815	.154206
END	706.568	-360.014	254.4	.222229	147.1	-.186654	.120607
2J9	706.568	-360.014	254.4	.222229	147.1	-.186654	.120607
28	706.568	-360.014	275.6	.166517	147.	-.139692	.0906312

```
 29     706.568   -360.014  296.8      .0976542 146.9  -.0818071 .0533286
END     706.568   -360.014  318.       0        0      0         0
```

TOWER #1 DRIVEN WITH TOWER #2 BASE SHORTED TO GROUND

```
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KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground

wire  caps Distance     Angle        Z            radius      segs
 1    none 0            0            0            13.153       2
           0            0            80.4
 2    none 0            0            80.4         9.772        3
           0            0            160.8
 3    none 0            0            160.8        7.254        3
           0            0            241.2
 4    none 0            0            241.2        4.736        3
           0            0            321.6
 5    none 0            0            321.6        2.532        3
           0            0            402.
 6    none 793.         27.          0            9.457        3
           793.         27.          63.6
 7    none 793.         27.          63.6         7.569        3
           793.         27.          127.2
 8    none 793.         27.          127.2        5.68         3
           793.         27.          190.8
 9    none 793.         27.          190.8        3.791        3
           793.         27.          254.4
 10   none 793.         27.          254.4        2.218        3
           793.         27.          318.

Number of wires          =  10
          current nodes  =  29

                         minimum                  maximum
Individual wires      wire    value              wire  value
segment length         9      21.2               1    40.2
segment/radius ratio   6      2.24173            5    10.5845
radius                 10     2.218              1    13.153


ELECTRICAL DESCRIPTION
Frequencies (MHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   .62          0             1      .0133632       .0253397

Sources
```

source	node	sector	magnitude	phase	type
1	1	1	690.242	340.5	voltage

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.62	34.981	-14.1	37.716	338.	1.6286	-12.427	-.25576

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CURRENT rms
Frequency = .62 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	11.9556	2.5	11.9446	.511781
2	0	0	40.2	11.3826	356.6	11.3622	-.681394
END	0	0	80.4	10.7627	354.5	10.7129	-1.03471
2J1	0	0	80.4	10.7627	354.5	10.7129	-1.03471
4	0	0	107.2	10.3126	353.5	10.2459	-1.17051
5	0	0	134.	9.72371	352.5	9.64134	-1.26303
END	0	0	160.8	8.9721	351.6	8.8763	-1.30764
2J2	0	0	160.8	8.9721	351.6	8.8763	-1.30764
7	0	0	187.6	8.27242	350.9	8.1692	-1.30269
8	0	0	214.4	7.42756	350.3	7.32048	-1.25664
END	0	0	241.2	6.40942	349.6	6.30339	-1.16101
2J3	0	0	241.2	6.40942	349.6	6.30339	-1.16101
10	0	0	268.	5.55449	349.1	5.45344	-1.05469
11	0	0	294.8	4.55437	348.5	4.46333	-.906097
END	0	0	321.6	3.38454	348.	3.3101	-.70595
2J4	0	0	321.6	3.38454	348.	3.3101	-.70595
13	0	0	348.4	2.4655	347.6	2.40754	-.531446
14	0	0	375.2	1.39646	347.1	1.36133	-.311285
END	0	0	402.	0	0	0	0
GND	706.568	-360.014	0	1.7636	134.5	-1.23713	1.2569
16	706.568	-360.014	21.2	1.75361	134.5	-1.23006	1.24983
17	706.568	-360.014	42.4	1.72361	134.5	-1.20885	1.22861
END	706.568	-360.014	63.6	1.67097	134.5	-1.17164	1.19138
2J6	706.568	-360.014	63.6	1.67097	134.5	-1.17164	1.19138
19	706.568	-360.014	84.8	1.6097	134.5	-1.12836	1.14801
20	706.568	-360.014	106.	1.52728	134.5	-1.07017	1.08965
END	706.568	-360.014	127.2	1.4198	134.5	-.99434	1.01347
2J7	706.568	-360.014	127.2	1.4198	134.5	-.99434	1.01347
22	706.568	-360.014	148.4	1.31719	134.4	-.922011	.940681
23	706.568	-360.014	169.6	1.19216	134.4	-.833971	.851896
END	706.568	-360.014	190.8	1.0398	134.3	-.726822	.743585
2J8	706.568	-360.014	190.8	1.0398	134.3	-.726822	.743585
25	706.568	-360.014	212.	.908452	134.3	-.634569	.650083
26	706.568	-360.014	233.2	.753585	134.3	-.525952	.53969

END	706.568	-360.014	254.4	.570919	134.2	-.398056	.409268
2J9	706.568	-360.014	254.4	.570919	134.2	-.398056	.409268
28	706.568	-360.014	275.6	.419117	134.2	-.29196	.300696
29	706.568	-360.014	296.8	.240733	134.1	-.167522	.172884
END	706.568	-360.014	318.	0	0	0	0

TOWER #2 DRIVEN WITH TOWER #1 LOADED WITH -J1200

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KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	13.153	2
		0	0	80.4		
2	none	0	0	80.4	9.772	3
		0	0	160.8		
3	none	0	0	160.8	7.254	3
		0	0	241.2		
4	none	0	0	241.2	4.736	3
		0	0	321.6		
5	none	0	0	321.6	2.532	3
		0	0	402.		
6	none	793.	27.	0	9.457	3
		793.	27.	63.6		
7	none	793.	27.	63.6	7.569	3
		793.	27.	127.2		
8	none	793.	27.	127.2	5.68	3
		793.	27.	190.8		
9	none	793.	27.	190.8	3.791	3
		793.	27.	254.4		
10	none	793.	27.	254.4	2.218	3
		793.	27.	318.		

Number of wires = 10
current nodes = 29

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	9	21.2	1	40.2
segment/radius ratio	6	2.24173	5	10.5845
radius	10	2.218	1	13.153

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.62	0	1	.0133632	.0253397

Sources

source	node	sector	magnitude	phase	type
1	15	1	690.242	340.5	voltage

Lumped loads

load	node	resistance (ohms)	reactance (ohms)	inductance (mH)	capacitance (uF)	passive circuit
1	1	0	-1,200.	0	0	0

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IMPEDANCE

normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 15, sector 1							
.62	15.186	-64.803	66.558	283.2	9.0158	-1.9348	-4.4431

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CURRENT rms

Frequency = .62 MHz

Input power = 5,000. watts

Efficiency = 100. %

coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	.146713	200.9	-.137017	-.0524518
2	0	0	40.2	.635921	200.9	-.594081	-.226855
END	0	0	80.4	.765819	200.8	-.715979	-.271761
2J1	0	0	80.4	.765819	200.8	-.715979	-.271761
4	0	0	107.2	.809071	200.7	-.756816	-.286051
5	0	0	134.	.829657	200.6	-.776572	-.292005
END	0	0	160.8	.824959	200.5	-.772786	-.288721
2J2	0	0	160.8	.824959	200.5	-.772786	-.288721
7	0	0	187.6	.80106	200.4	-.750932	-.278922
8	0	0	214.4	.755404	200.2	-.708728	-.26142
END	0	0	241.2	.683628	200.1	-.642031	-.234827
2J3	0	0	241.2	.683628	200.1	-.642031	-.234827
10	0	0	268.	.612524	200.	-.575737	-.209076
11	0	0	294.8	.519301	199.8	-.488592	-.175932
END	0	0	321.6	.399357	199.6	-.376179	-.134071
2J4	0	0	321.6	.399357	199.6	-.376179	-.134071
13	0	0	348.4	.297999	199.5	-.280966	-.0993039
14	0	0	375.2	.17302	199.3	-.163307	-.0571555
END	0	0	402.	0	0	0	0
GND	706.568	-360.014	0	18.1452	57.3	9.7998	15.2713
16	706.568	-360.014	21.2	15.6766	55.3	8.92976	12.8847
17	706.568	-360.014	42.4	14.8334	54.7	8.57777	12.1017
END	706.568	-360.014	63.6	13.7995	54.	8.11391	11.1621
2J6	706.568	-360.014	63.6	13.7995	54.	8.11391	11.1621
19	706.568	-360.014	84.8	12.9207	53.5	7.68639	10.3857
20	706.568	-360.014	106.	11.9332	53.	7.17889	9.53235
END	706.568	-360.014	127.2	10.808	52.5	6.57362	8.57905
2J7	706.568	-360.014	127.2	10.808	52.5	6.57362	8.57905

22	706.568	-360.014	148.4	9.83239	52.2	6.03015	7.76616
23	706.568	-360.014	169.6	8.72653	51.8	5.39695	6.85749
END	706.568	-360.014	190.8	7.46089	51.4	4.6541	5.83131
2J8	706.568	-360.014	190.8	7.46089	51.4	4.6541	5.83131
25	706.568	-360.014	212.	6.42246	51.1	4.03219	4.99895
26	706.568	-360.014	233.2	5.24653	50.8	3.316	4.06573
END	706.568	-360.014	254.4	3.91133	50.5	2.48962	3.01667
2J9	706.568	-360.014	254.4	3.91133	50.5	2.48962	3.01667
28	706.568	-360.014	275.6	2.83686	50.2	1.81534	2.17998
29	706.568	-360.014	296.8	1.60889	49.9	1.03534	1.2315
END	706.568	-360.014	318.	0	0	0	0

TOWER #2 DRIVEN WITH TOWER #1 BASE SHORTED TO GROUND

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KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	13.153	2
		0	0	80.4		
2	none	0	0	80.4	9.772	3
		0	0	160.8		
3	none	0	0	160.8	7.254	3
		0	0	241.2		
4	none	0	0	241.2	4.736	3
		0	0	321.6		
5	none	0	0	321.6	2.532	3
		0	0	402.		
6	none	793.	27.	0	9.457	3
		793.	27.	63.6		
7	none	793.	27.	63.6	7.569	3
		793.	27.	127.2		
8	none	793.	27.	127.2	5.68	3
		793.	27.	190.8		
9	none	793.	27.	190.8	3.791	3
		793.	27.	254.4		
10	none	793.	27.	254.4	2.218	3
		793.	27.	318.		

Number of wires = 10
current nodes = 29

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	9	21.2	1	40.2
segment/radius ratio	6	2.24173	5	10.5845
radius	10	2.218	1	13.153

ELECTRICAL DESCRIPTION
Frequencies (MHz)

no.	frequency lowest	step	no. of steps	segment length (wavelengths) minimum	maximum
1	.62	0	1	.0133632	.0253397

Sources

source	node	sector	magnitude	phase	type
1	15	1	690.242	340.5	voltage

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IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 15, sector 1							
.62	16.932	-66.747	68.861	284.2	8.4356	-2.0691	-4.2136

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CURRENT rms
Frequency = .62 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	4.62943	134.6	-3.24777	3.29904
2	0	0	40.2	4.56693	134.5	-3.20369	3.25473
END	0	0	80.4	4.36192	134.5	-3.0591	3.10938
2J1	0	0	80.4	4.36192	134.5	-3.0591	3.10938
4	0	0	107.2	4.19813	134.5	-2.9437	2.99315
5	0	0	134.	3.97432	134.5	-2.78607	2.83426
END	0	0	160.8	3.68084	134.5	-2.57948	2.62581
2J2	0	0	160.8	3.68084	134.5	-2.57948	2.62581
7	0	0	187.6	3.40301	134.5	-2.38403	2.42835
8	0	0	214.4	3.06361	134.5	-2.14544	2.18696
END	0	0	241.2	2.65086	134.4	-1.8555	1.89319
2J3	0	0	241.2	2.65086	134.4	-1.8555	1.89319
10	0	0	268.	2.30184	134.4	-1.61055	1.64457
11	0	0	294.8	1.89134	134.4	-1.32268	1.35192
END	0	0	321.6	1.40873	134.3	-.98459	1.00752
2J4	0	0	321.6	1.40873	134.3	-.98459	1.00752
13	0	0	348.4	1.02793	134.3	-.718099	.73551
14	0	0	375.2	.583291	134.3	-.407252	.417581
END	0	0	402.	0	0	0	0
GND	706.568	-360.014	0	17.1843	56.3	9.54311	14.2909
16	706.568	-360.014	21.2	14.7812	54.	8.69094	11.9563
17	706.568	-360.014	42.4	13.9687	53.3	8.34697	11.2006
END	706.568	-360.014	63.6	12.9772	52.5	7.89408	10.3
2J6	706.568	-360.014	63.6	12.9772	52.5	7.89408	10.3
19	706.568	-360.014	84.8	12.1388	52.	7.47706	9.56267
20	706.568	-360.014	106.	11.2007	51.4	6.98236	8.75794
END	706.568	-360.014	127.2	10.1352	50.9	6.39265	7.86487

2J7	706.568	-360.014	127.2	10.1352	50.9	6.39265	7.86487
22	706.568	-360.014	148.4	9.21392	50.5	5.86341	7.10751
23	706.568	-360.014	169.6	8.17185	50.1	5.24699	6.26484
END	706.568	-360.014	190.8	6.98159	49.6	4.52407	5.31746
2J8	706.568	-360.014	190.8	6.98159	49.6	4.52407	5.31746
25	706.568	-360.014	212.	6.00659	49.3	3.91903	4.55196
26	706.568	-360.014	233.2	4.90402	48.9	3.2225	3.69661
END	706.568	-360.014	254.4	3.65376	48.5	2.41902	2.7383
2J9	706.568	-360.014	254.4	3.65376	48.5	2.41902	2.7383
28	706.568	-360.014	275.6	2.64883	48.3	1.76361	1.97635
29	706.568	-360.014	296.8	1.50152	47.9	1.00569	1.11497
END	706.568	-360.014	318.	0	0	0	0

Method of Moments Model Details for Directional Antenna- KTAR

The array was modeled using MININEC with the individual tower characteristics that were verified by the respective 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 model of the directional antenna pattern.

Tower	Wire	Base Node
1 SW	1	1
2 NE	6	15

MOMENT METHOD MODEL FOR DRIVEN ARRAY

ARRAY SYNTHESIS TO PRODUCE DRIVE VOLTAGES

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MEDIUM WAVE ARRAY SYNTHESIS FROM FIELD RATIOS

Frequency = .62 MHz

tower	field ratio magnitude	phase (deg)
1	1.	0
2	.55	82.

VOLTAGES AND CURRENTS - rms

source node	voltage magnitude	phase (deg)	current magnitude	phase (deg)
1	482.89	342.3	11.0889	10.5
15	549.117	356.2	8.95318	82.9

Sum of square of source currents = 406.246
Total power = 5,000. watts

TOWER ADMITTANCE MATRIX

admittance	real (mhos)	imaginary (mhos)
Y(1, 1)	.0245917	.00991245
Y(1, 2)	-.0035178	.00171185
Y(2, 1)	-.00351675	.00171175
Y(2, 2)	.00357071	.0140761

TOWER IMPEDANCE MATRIX

impedance	real (ohms)	imaginary (ohms)
Z(1, 1)	33.5436	-14.2844
Z(1, 2)	-5.60219	-8.06451
Z(2, 1)	-5.60284	-8.06708
Z(2, 2)	15.111	-64.8284

MOMENT METHOD MODEL WITH DIRECTIONAL DRIVE VOLTAGES

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KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	13.153	2
		0	0	80.4		
2	none	0	0	80.4	9.772	3
		0	0	160.8		

```
 3     none 0            0            160.8        7.254        3
            0            0            241.2
 4     none 0            0            241.2        4.736        3
            0            0            321.6
 5     none 0            0            321.6        2.532        3
            0            0            402.
 6     none 793.         27.          0            9.457        3
            793.         27.          63.6
 7     none 793.         27.          63.6         7.569        3
            793.         27.          127.2
 8     none 793.         27.          127.2        5.68         3
            793.         27.          190.8
 9     none 793.         27.          190.8        3.791        3
            793.         27.          254.4
 10    none 793.         27.          254.4        2.218        3
            793.         27.          318.

Number of wires          =  10
          current nodes  =  29

                          minimum                    maximum
Individual wires       wire    value              wire  value
segment length          9      21.2                1    40.2
segment/radius ratio    6      2.24173             5    10.5845
radius                  10     2.218               1    13.153


ELECTRICAL DESCRIPTION
Frequencies (MHz)
     frequency                 no. of  segment length (wavelengths)
 no. lowest       step         steps   minimum        maximum
 1   .62          0             1      .0133632       .0253397

Sources
source node    sector  magnitude      phase          type
 1      1       1      682.909        342.3          voltage
 2      15      1      776.568        356.2          voltage

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IMPEDANCE
   normalization = 50.
freq     resist   react    imped    phase    VSWR    S11      S12
(MHz)    (ohms)   (ohms)   (ohms)   (deg)            dB       dB
source =  1; node 1, sector 1
.62      38.385   -20.565  43.547   331.8    1.7037  -11.692  -.30462

source =  2; node 15, sector 1
.62      3.493    -61.232  61.332   273.3    35.824  -.48504  -9.7603


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CURRENT rms
Frequency   = .62 MHz
Input power = 5,000. watts
```

Efficiency = 100. %
coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	11.0889	10.5	10.9027	2.02343
2	0	0	40.2	10.3699	3.9	10.3455	.71207
END	0	0	80.4	9.74893	1.6	9.74533	.264846
2J1	0	0	80.4	9.74893	1.6	9.74533	.264846
4	0	0	107.2	9.31657	.4	9.31633	.0660413
5	0	0	134.	8.76337	359.3	8.76274	-.104914
END	0	0	160.8	8.06759	358.3	8.06384	-.246077
2J2	0	0	160.8	8.06759	358.3	8.06384	-.246077
7	0	0	187.6	7.42623	357.5	7.41896	-.328712
8	0	0	214.4	6.65698	356.7	6.64576	-.386401
END	0	0	241.2	5.73519	355.9	5.72025	-.413756
2J3	0	0	241.2	5.73519	355.9	5.72025	-.413756
10	0	0	268.	4.96438	355.3	4.94746	-.409407
11	0	0	294.8	4.06561	354.7	4.04791	-.378916
END	0	0	321.6	3.01748	354.	3.00093	-.315639
2J4	0	0	321.6	3.01748	354.	3.00093	-.315639
13	0	0	348.4	2.1961	353.5	2.18207	-.247861
14	0	0	375.2	1.24267	353.	1.23345	-.151089
END	0	0	402.	0	0	0	0
GND	706.568	-360.014	0	8.95317	82.9	1.10277	8.885
16	706.568	-360.014	21.2	7.79515	82.5	1.02284	7.72775
17	706.568	-360.014	42.4	7.39124	82.3	.987438	7.32498
END	706.568	-360.014	63.6	6.89152	82.2	.939228	6.82722
2J6	706.568	-360.014	63.6	6.89152	82.2	.939228	6.82722
19	706.568	-360.014	84.8	6.46259	82.1	.893273	6.40056
20	706.568	-360.014	106.	5.97746	81.9	.837532	5.91849
END	706.568	-360.014	127.2	5.42152	81.8	.769925	5.36657
2J7	706.568	-360.014	127.2	5.42152	81.8	.769925	5.36657
22	706.568	-360.014	148.4	4.93745	81.8	.708435	4.88636
23	706.568	-360.014	169.6	4.3869	81.7	.636069	4.34054
END	706.568	-360.014	190.8	3.75487	81.6	.550389	3.71431
2J8	706.568	-360.014	190.8	3.75487	81.6	.550389	3.71431
25	706.568	-360.014	212.	3.235	81.5	.478104	3.19948
26	706.568	-360.014	233.2	2.64506	81.4	.39431	2.6155
END	706.568	-360.014	254.4	1.9738	81.3	.296973	1.95133
2J9	706.568	-360.014	254.4	1.9738	81.3	.296973	1.95133
28	706.568	-360.014	275.6	1.43265	81.3	.217076	1.41611
29	706.568	-360.014	296.8	.813157	81.2	.124139	.803626
END	706.568	-360.014	318.	0	0	0	0

CURRENT MOMENT VALUES GENERATED FROM MININEC MODEL OF DRIVEN ARRAY

C:\Expert MBPro V.14\ktar5wire7 06-20-2013 15:34:55

CURRENT MOMENTS(amp-feet) rms

Frequency = .62 MHz
Input power = 5,000. watts

vertical current moment

wire	magnitude	phase (deg)	magnitude	phase (deg)
1	359.609	5.1	359.609	5.1
2	311.722	359.9	311.722	359.9
3	242.398	357.1	242.398	357.1
4	154.865	355.1	154.865	355.1
5	57.1536	353.5	57.1536	353.5
6	211.173	82.5	211.173	82.5
7	169.941	82.	169.941	82.
8	127.137	81.7	127.137	81.7
9	79.9091	81.5	79.9091	81.5
10	29.5415	81.3	29.5415	81.3

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

tower	magnitude	phase (deg)	normalized
1	1,123.07	0.0	1.0 / 0
2	617.688	82.	0.55 / 82.0

Item 5
Array Geometry – KTAR

Per the provisions of the Commission's Public Notice DA 09-2340, October 29, 2009, paragraph 5, licensed stations applying to be re-licensed under the MM Docket 93-177 Rules are exempt from the requirement to submit an as-built surveyor's certification when there is no change in the theoretical patterns, as is the case in this application.

Item 6

Sampling System Measurements – KTAR

The KTAR sample system has a single solid outer conductor foam insulated coaxial cable to each tower. At each tower the coaxial cable is directly connected to the current transformer. Impedance measurements were made of the antenna monitor sampling system using an Agilent 4395A network analyzer and calibrated measurement system.

The measurements were made looking into the antenna monitor ends of the sampling lines for two conditions: with the far end open circuited for length and impedance determination, and with the current sampling device connected as in normal operation.

The following table shows the frequency closest to the carrier frequency where resonance (zero reactance corresponding with low resistance) was found. As frequencies of series 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 270 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 620 kHz (Degrees)	620 kHz Measured Impedance with Sample Device Connected
Tower 1 (SW)	746.0	224.40	56.0 -j 1.3
Tower 2 (NE)	745.3	224.6	58.1 -j 2.0

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 $R_1 + j X_1$ and $R_2 + j X_2$ are the measured impedances of the +45 and -45 degree offset frequencies, respectively:

$$Zo = ((R1^2 + X1^2)^{1/2} \times (R2^2 + X2^2)^{1/2})^{1/2}$$

Line #	high R	high X	Low R	low X	Z high	Z low	Z average
1	10.389	49.82	8.389	-52.477	50.89	53.114	52.00
2	10.521	49,89	8.664	-53.125	50.99	53.83	52.41

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

The current sample devices were calibrated by measuring their outputs with the Agilent 4395A network analyzer. The two sample devices were placed side by side monitoring the output of an amplifier used with the network analyzer terminated in a load. Their outputs were connected to the inputs of the network analyzer with equal short lengths of coaxial cable.

Tower #	Serial Number	Current	Phase
1	18130	0.690	-0.2
2	18128	0.690	-0.1

All transformers are Delta Electronics model TCT-3.
Indicated current error zero with a manufacturer's tolerance of 4% (+/- 2%).
Indicated phase error 0.1 degree with a manufacturer's tolerance of 4 degrees (+/-2°).

The station's antenna monitor, a Potomac Instruments AM-1901, was calibrated by reference to the network analyzer.

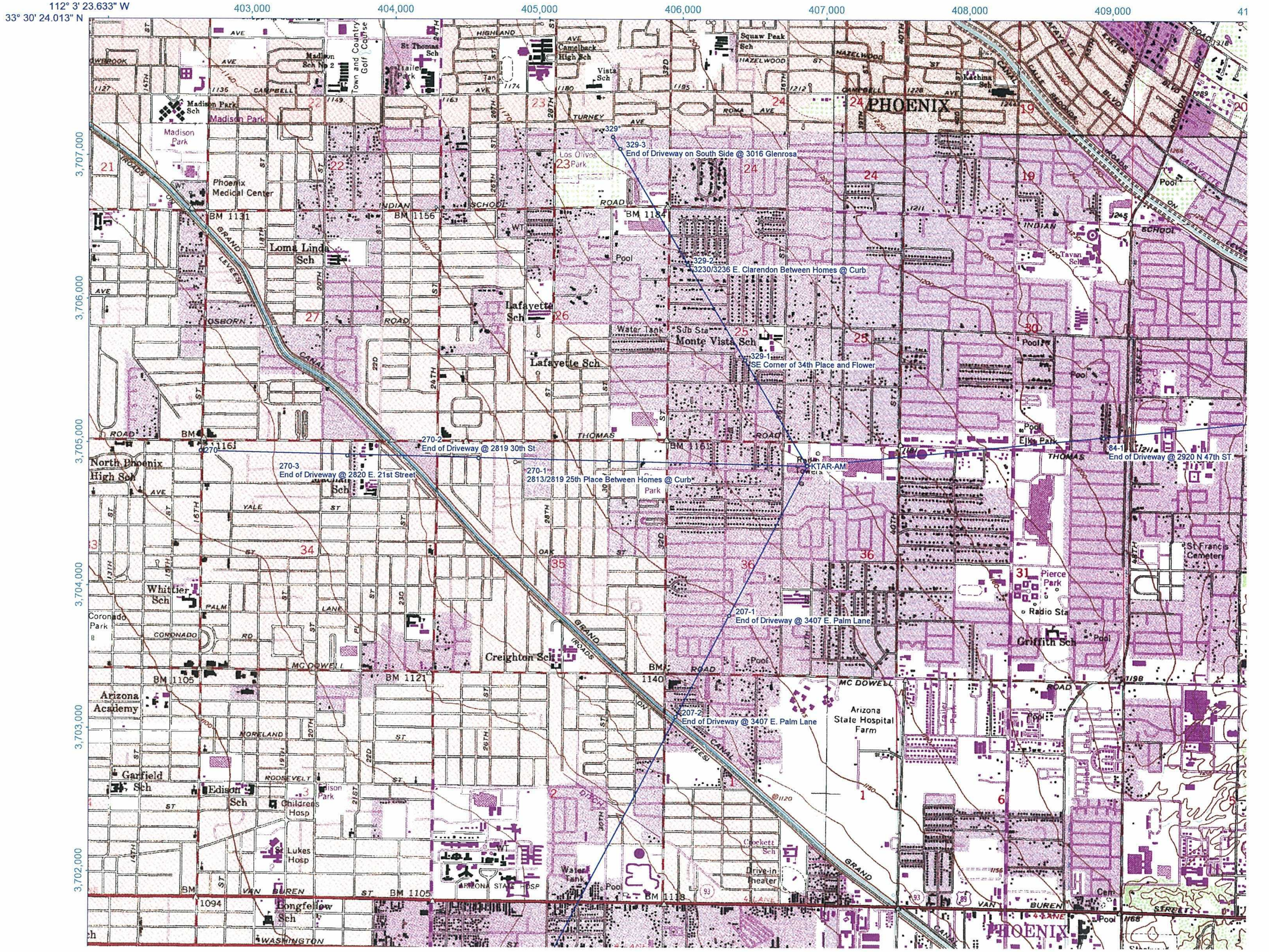
Item 7

Reference Field Strength Measurements - KTAR

Reference field strength measurements were made along radials at the azimuths with radiation values specified on the current license and additionally on the major lobe radials for the directional pattern. The measurements were made with a Potomac Instruments model FIM-41, serial number 666. This meter has had its indications compared on all scales and at frequencies throughout the MF band with those of Potomac Instruments FIM-41 serial number 647, owned by Hatfield & Dawson, which was calibrated by the manufacturer on April 11, 2013. The indications were found to agree well within the manufacturer's rated accuracy for the instrument.

The measured field strengths, point descriptions, and measured coordinates (WGS-84) are shown on the following page.

KTAR AM Reference Points					
Radial	**Point**	**Lat/Long**	**Dist**	**Reading**	**Description**
84°	1	33.48094251 -111.98010838 NAD83	2.07 kM	150 mv	End of Driveway @ 2920 N 47th ST.
	2	33.48261898 -111.96118172 NAD83	3.8 kM	85 mv	End of Driveway at 3018 E. N 56th St. Frontage Rd.
	3	33.48400574 -111.94574060 NAD83	5.2 kM	66 mv	End of Driveway @ 6261 E. Earll
207°	1	33.46947371 -112.00810902 NAD83	1.1 kM	600 mv	End of Driveway @ 3407 E. Palm Lane
	2	33.46303288 -112.01205657 NAD83	1.9 kM	350 mv	Canal North side East of 32nd St. @ Steps
	3	33.44403418 -112.02346814 NAD83	4.3 kM	112 mv	Air Lane East of Gate 108 North Side
270°	1	33.47913757 -112.01724087 NAD83	1.3 kM	680 mv	End of Driveway @ 2819 30th St.
	2	33.47922224 -112.02704003 NAD83	2.28 kM	420 mv	2813/2819 25th Place Between Homes @ Curb
	3	33.47929506 -112.03685817 NAD83	3.2 kM	320 mv	End of Driveway @ 2820 E. 21st Street
329°	1	33.48557695 -112.00713329 NAD83	.83 kM	300 mv	SE Corner of 34th Place and Flower
	2	33.49155890 -112.01149880 NAD83	1.6 kM	175 mv	3230/3236 E. Clarendon Between Homes @ Curb
	3	33.49877519 -112.01665508 NAD83	2.56 kM	130 mv	End of Driveway on South Side @ 3016 Glenrosa
Antenna Monitor Ratio .828 Phase +70.8° Common Point 50+j0 10.4 Amps 5,408 Watts					
Power as per 47 CFR 73.51 2 (b) (1) which states shall exceed nominal by 8% for station 5000 watts and under on directional antenna					


112° 3' 23.633" W
33° 30' 24.013" N
403,000
404,000
405,000
406,000
407,000
408,000
409,000
3,707,000
3,706,000
3,705,000
3,704,000
3,703,000
3,702,000
PHOENIX
329°
329-3
End of Driveway on South Side @ 3016 Glenrosa
329-2
3230/3236 E. Clarendon Between Homes @ Curb
329-1
SE Corner of 34th Place and Flower
270-2
End of Driveway @ 2819 30th St
270-3
End of Driveway @ 2820 E. 21st Street
270-1
2813/2819 25th Place Between Homes @ Curb
270
KTAR-AM
84-1
End of Driveway @ 2920 N 47th ST.
207-1
End of Driveway @ 3407 E. Palm Lane
207-2
End of Driveway @ 3407 E. Palm Lane
Phoenix Medical Center
Madison Park
Loma Linda Sch
Lafayette Sch
Monte Vista Sch
North Phoenix High Sch
Whittier Sch
Creighton Sch
Arizona Academy
Garfield Sch
Edison Sch
Longfellow Sch
Arizona State Hospital Farm
Griffith Sch
Pierce Park
St Francis Cemetery

Item 8

Direct Measurement of Power - KTAR

Common point impedance measurements were made with an Agilent 4395A network analyzer in a calibrated measurement system. The measurements were made at the phasor cabinet input adjacent to the common point current meter used to determine operating power. The impedance measured at this point was adjusted to a value of 50 ohms +/- j0 for the night common point network.

Item 9
Stability Analysis of Self-Supporting Tower Model

The method of moments model of the KTAR array uses a "wedding cake" characterization of each tower to account for its vertical taper. The towers are not equal in physical height. Five wires, cascading down in radius with increasing height, were used to represent each tower. Each wire was modeled with three segments except the bottom segment on the #1 (S) taller tower, for which two segments were used.

All wire segments, when checked using the "problem definition evaluation" function of MININEC Broadcast Professional Version 14, have no errors relative to the software's specified geometry guidelines. As shown on the evaluation summary of the following page, however, "warnings" are given due to the segment length-to-radius ratio for certain of the largest radius segments. Under the guidelines, which consider a segment length-to-radius ratio under 2.0 to constitute an error, a warning is given for a ratio between 2.0 and 8.0 as a cautionary measure.

In order to evaluate the stability of the KTAR directional antenna Method of Moments model, additional models were run with the same wire lengths and radius values but with smaller and larger numbers of segments per wire. The model used for analyzing the KTAR directional antenna pattern has 14 (#1) or 15 (#2) segments per tower. Additional models were run with one less segment per wire, having a total of 9 or 10 segments per tower, and with an additional segment per wire, having a total of 19 or 20 segments per tower.

Tower 1, which is taller, has the largest bottom-wire modeled radius. The tower 1 base impedance was calculated using each of the three stability evaluation models. Tower 2 was modeled with the base grounded to compare with the base impedance measurement calculation model.

Total Segments for Towers	Minimum Segment Length to Radius Ratio	Resistance (Ohms)	Difference (Ohms)	Reactance (Ohms)	Difference (Ohms)
19	3.36	34.657	0.324	-14.814	0.714
29	2.24	34.981	Reference	-14.1	Reference
39	1.68	35.072	0.091	-13.757	0.343

The MININEC modeled base resistances and reactances remain well within the +/- 2 ohm and +/- 4 percent range required for matching measured and modeled resistance and reactance by the FCC Rules. Remaining essentially unchanged with segment lengths both smaller and greater than used in the KTAR directional antenna pattern model, the real and imaginary components indicate convergence of the results. The model is therefore valid with regard to the characteristics of the self-supporting towers of the KTAR array.

Item 10

Method of Moments Model Detail for Stability Analysis

MININEC EVALUATION FOR SEGMENTATION USED IN ANALYSIS OF ARRAY

```
C:\Expert MBPro V.14\ktar5wire7norm seg for st  06-24-2013   08:36:50

PROBLEM DEFINITION EVALUATION
maximum frequency = .62 MHz
shortest wavelength = 483.548 meters
number of wires =  10

INDIVIDUAL WIRES
segment length to wavelength ratio: No detected violations!
segment length to radius ratio:
  wire  1  - warning  3.056337
  wire  2  - warning  2.74253
  wire  3  - warning  3.694513
  wire  4  - warning  5.658784
  wire  6  - warning  2.241726
  wire  7  - warning  2.800898
  wire  8  - warning  3.732395
  wire  9  - warning  5.592191
radius to wavelength ratio:         No detected violations!
checking for wires in groud plane:  No detected violations!

WIRE JUNCTIONS
junction segment length ratio:      No detected violations!
junction radius ratio:              No detected violations!

ELECTRICAL DESCRIPTION
    No detected violations!
```

STABILITY ANALYSIS USING ONE LESS SEGMENT FOR EACH WIRE

```
C:\Expert MBPro V.14\ktar5wire7  06-20-2013   13:37:12

KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground
```

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	13.153	1
		0	0	80.4		
2	none	0	0	80.4	9.772	2
		0	0	160.8		
3	none	0	0	160.8	7.254	2
		0	0	241.2		
4	none	0	0	241.2	4.736	2
		0	0	321.6		
5	none	0	0	321.6	2.532	2
		0	0	402.		

6	none	793.	27.	0	9.457	2
		793.	27.	63.6		
7	none	793.	27.	63.6	7.569	2
		793.	27.	127.2		
8	none	793.	27.	127.2	5.68	2
		793.	27.	190.8		
9	none	793.	27.	190.8	3.791	2
		793.	27.	254.4		
10	none	793.	27.	254.4	2.218	2
		793.	27.	318.		

Number of wires = 10
current nodes = 19

	minimum		maximum	
Individual wires	wire	value	wire	value
segment length	9	31.8	1	80.4
segment/radius ratio	6	3.36259	5	15.8768
radius	10	2.218	1	13.153

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.62	0	1	.0200449	.0506795

Sources

source	node	sector	magnitude	phase	type
1	1	1	690.242	340.5	voltage

C:\Expert MBPro V.14\ktar5wire7 06-20-2013 13:37:12

IMPEDANCE
normalization = 50.

freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.62	34.657	-14.814	37.69	336.9	1.6602	-12.105	-.27605

C:\Expert MBPro V.14\ktar5wire7 06-20-2013 13:37:12

CURRENT rms
Frequency = .62 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
1	0	0	0	12.0113	3.6	11.987	.763579
END	0	0	80.4	10.8365	356.9	10.8209	-.582091
2J1	0	0	80.4	10.8365	356.9	10.8209	-.582091
3	0	0	120.6	10.0759	355.7	10.0472	-.760116
END	0	0	160.8	8.99279	354.3	8.94826	-.893901
2J2	0	0	160.8	8.99279	354.3	8.94826	-.893901
5	0	0	201.	7.86963	353.3	7.81556	-.920844
END	0	0	241.2	6.40277	352.3	6.34435	-.862904
2J3	0	0	241.2	6.40277	352.3	6.34435	-.862904

7	0	0	281.4	5.04798	351.5	4.99228	-.747812
END	0	0	321.6	3.36478	350.7	3.32015	-.546174
2J4	0	0	321.6	3.36478	350.7	3.32015	-.546174
9	0	0	361.8	1.91691	350.	1.88796	-.331872
END	0	0	402.	0	0	0	0
GND	706.568	-360.014	0	1.73966	137.6	-1.28502	1.17267
11	706.568	-360.014	31.8	1.7175	137.6	-1.26853	1.15786
END	706.568	-360.014	63.6	1.64768	137.6	-1.21659	1.11119
2J6	706.568	-360.014	63.6	1.64768	137.6	-1.21659	1.11119
13	706.568	-360.014	95.4	1.54852	137.6	-1.14288	1.04486
END	706.568	-360.014	127.2	1.39846	137.5	-1.03144	.944363
2J7	706.568	-360.014	127.2	1.39846	137.5	-1.03144	.944363
15	706.568	-360.014	159.	1.23702	137.5	-.911701	.836079
END	706.568	-360.014	190.8	1.02223	137.4	-.752639	.691735
2J8	706.568	-360.014	190.8	1.02223	137.4	-.752639	.691735
17	706.568	-360.014	222.6	.817333	137.4	-.601171	.553738
END	706.568	-360.014	254.4	.558918	137.3	-.410555	.379255
2J9	706.568	-360.014	254.4	.558918	137.3	-.410555	.379255
19	706.568	-360.014	286.2	.323087	137.2	-.237021	.219559
END	706.568	-360.014	318.	0	0	0	0

STABILITY ANALYSIS USING AN ADDITIONAL SEGMENT FOR EACH WIRE

C:\Expert MBPro V.14\ktar5wire7 06-20-2013 15:15:57

KTARtest4

GEOMETRY
Dimensions in feet
Environment: perfect ground

wire	caps	Distance	Angle	Z	radius	segs
1	none	0	0	0	13.153	3
		0	0	80.4		
2	none	0	0	80.4	9.772	4
		0	0	160.8		
3	none	0	0	160.8	7.254	4
		0	0	241.2		
4	none	0	0	241.2	4.736	4
		0	0	321.6		
5	none	0	0	321.6	2.532	4
		0	0	402.		
6	none	793.	27.	0	9.457	4
		793.	27.	63.6		
7	none	793.	27.	63.6	7.569	4
		793.	27.	127.2		
8	none	793.	27.	127.2	5.68	4
		793.	27.	190.8		
9	none	793.	27.	190.8	3.791	4
		793.	27.	254.4		
10	none	793.	27.	254.4	2.218	4
		793.	27.	318.		

Number of wires = 10
current nodes = 39

minimum maximum

Individual wires	wire	value	wire	value
segment length	9	15.9	1	26.8
segment/radius ratio	6	1.68129	5	7.93839
radius	10	2.218	1	13.153

ELECTRICAL DESCRIPTION
Frequencies (MHz)

	frequency		no. of	segment length (wavelengths)	
no.	lowest	step	steps	minimum	maximum
1	.62	0	1	.0100224	.0168932

Sources

source	node	sector	magnitude	phase	type
1	1	1	690.242	340.5	voltage

C:\Expert MBPro V.14\ktar5wire7 06-20-2013 15:15:57

IMPEDANCE
normalization = 50.

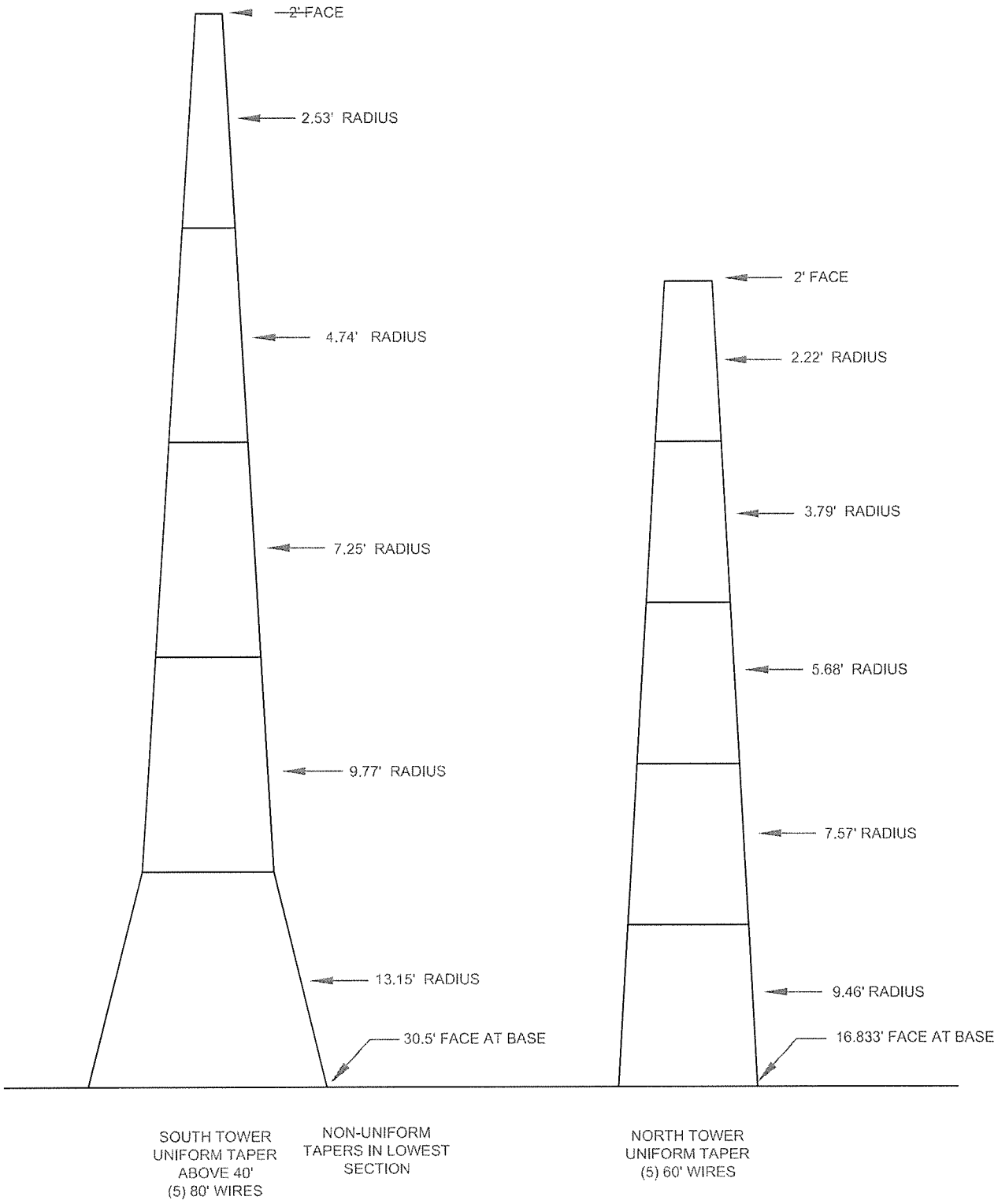
freq (MHz)	resist (ohms)	react (ohms)	imped (ohms)	phase (deg)	VSWR	S11 dB	S12 dB
source = 1; node 1, sector 1							
.62	35.072	-13.757	37.673	338.6	1.6163	-12.558	-.24794

C:\Expert MBPro V.14\ktar5wire7 06-20-2013 15:15:57

CURRENT rms
Frequency = .62 MHz
Input power = 5,000. watts
Efficiency = 100. %
coordinates in feet

current no.	X	Y	Z	mag (amps)	phase (deg)	real (amps)	imaginary (amps)
GND	0	0	0	11.9401	1.9	11.9334	.399444
2	0	0	26.8	11.4637	356.	11.4356	-.801402
3	0	0	53.6	11.1799	354.6	11.1301	-1.05418
END	0	0	80.4	10.7283	353.	10.6482	-1.30851
2J1	0	0	80.4	10.7283	353.	10.6482	-1.30851
5	0	0	100.5	10.4139	352.3	10.319	-1.40275
6	0	0	120.6	10.0137	351.5	9.90443	-1.47554
7	0	0	140.7	9.54004	350.8	9.41827	-1.51939
END	0	0	160.8	8.96305	350.1	8.83078	-1.53413
2J2	0	0	160.8	8.96305	350.1	8.83078	-1.53413
9	0	0	180.9	8.45987	349.6	8.32188	-1.52176
10	0	0	201.	7.86449	349.1	7.72318	-1.48419
11	0	0	221.1	7.20125	348.6	7.05963	-1.4211
END	0	0	241.2	6.41717	348.1	6.27901	-1.32444
2J3	0	0	241.2	6.41717	348.1	6.27901	-1.32444
13	0	0	261.3	5.79932	347.7	5.66647	-1.23418
14	0	0	281.4	5.08296	347.3	4.95893	-1.11605
15	0	0	301.5	4.30441	346.9	4.19272	-.974196
END	0	0	321.6	3.39994	346.5	3.30581	-.794462
2J4	0	0	321.6	3.39994	346.5	3.30581	-.794462
17	0	0	341.7	2.73441	346.2	2.65533	-.652877
18	0	0	361.8	1.96751	345.9	1.90796	-.480398
19	0	0	381.9	1.12574	345.5	1.09009	-.281065
END	0	0	402.	0	0	0	0

GND	706.568	-360.014	0	1.77306	132.9	-1.20663	1.29915
21	706.568	-360.014	15.9	1.76743	132.9	-1.20277	1.29505
22	706.568	-360.014	31.8	1.75051	132.9	-1.19116	1.28274
23	706.568	-360.014	47.7	1.72206	132.9	-1.17163	1.26205
END	706.568	-360.014	63.6	1.68027	132.9	-1.14296	1.23164
2J6	706.568	-360.014	63.6	1.68027	132.9	-1.14296	1.23164
25	706.568	-360.014	79.5	1.6364	132.8	-1.11288	1.19971
26	706.568	-360.014	95.4	1.58008	132.8	-1.07428	1.1587
27	706.568	-360.014	111.3	1.51238	132.8	-1.0279	1.10937
END	706.568	-360.014	127.2	1.42877	132.8	-.970664	1.04842
2J7	706.568	-360.014	127.2	1.42877	132.8	-.970664	1.04842
29	706.568	-360.014	143.1	1.35429	132.8	-.919716	.994099
30	706.568	-360.014	159.	1.26574	132.8	-.859187	.929458
31	706.568	-360.014	174.9	1.16628	132.7	-.791262	.856809
END	706.568	-360.014	190.8	1.04791	132.7	-.710499	.770265
2J8	706.568	-360.014	190.8	1.04791	132.7	-.710499	.770265
33	706.568	-360.014	206.7	.952292	132.7	-.645329	.700294
34	706.568	-360.014	222.6	.841061	132.6	-.569599	.618822
35	706.568	-360.014	238.5	.719145	132.6	-.486694	.529432
END	706.568	-360.014	254.4	.5771	132.5	-.390236	.425158
2J9	706.568	-360.014	254.4	.5771	132.5	-.390236	.425158
37	706.568	-360.014	270.3	.466452	132.5	-.315205	.343835
38	706.568	-360.014	286.2	.338426	132.5	-.228516	.249625
39	706.568	-360.014	302.1	.196255	132.4	-.132403	.144864
END	706.568	-360.014	318.	0	0	0	0



HATFIELD & DAWSON
CONSULTING ENGINEERS

TOWER DIMENSIONS SCALED FROM DESIGN DRAWING

RADIO STATION KTAR PHOENIX, AZ 06/2013

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

File No. BS-1993-A

Call Sign K T A R

Modification No.

MODIFICATION OF LICENSE

AM
(Class of station)

Phoenix Broadcasting, Inc.
c/o Station KTAR
515 N. 6th Street
St. Louis, MO 63101

Licensee: Phoenix Broadcasting, Inc.

Station location: Phoenix, AR

Associated Broadcast Station: K T A R

The Authority Contained in Authorization File No. BR-800602WE dated 11-17-90 granted to the Licensee listed above is hereby modified in part as follows:

The monitor point location for 207° bearing has been changed to reflect the following:

Direction of 207° True North. Exit Tower Plaza to 36th Street. Turn left (South) onto 36th Street from the Tower Plaza parking lot. Proceed west on McDowell Road to 24th Street. Turn left (South) onto 24th Street. Proceed south on 24th Street to Mohave Street. Turn right (west) onto Mohave Street. The proposed monitor point is located 640 feet from the intersection of 24th Street and Mohave. **The field intensity measured at this point should not exceed 355 mV/m.**

This modification of license shall be attached to and be made a part of the license of this station.

Except as herein expressly modified, the above-mentioned license, subject to all modifications heretofore granted by the Commission, is to continue in full force and effect in accordance with the terms and conditions thereof and for the period therein specified.

Dated: September 14, 1993

FEDERAL COMMUNICATIONS COMMISSION

JDS:yl

F.C.C. - WASHINGTON, D. C.

FCC Form 359
February 1990

FCC Form 352
February 1977

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

File No.: BR-800602WE

MODIFIED

Call Sign: K T A R

STANDARD BROADCAST STATION LICENSE

Subject to the provisions of the Communications Act of 1934, subsequent Acts, and Treaties, and Commission Rules made thereunder, and further subject to conditions set forth in this license, 1/ the LICENSEE

PHOENIX BROADCASTING, INC.

is hereby authorized to use and operate the radio transmitting apparatus hereinafter described for the purpose of broadcasting for the term ending 3 a.m. Local Time OCTOBER 1, 1983

The licensee shall use and operate said apparatus only in accordance with the following terms:

1. On a frequency of 620 kHz.
2. With nominal power of 5 kilo watts nighttime and 5 kilo watts daytime,
   with antenna input power of 5.4 kilowatts --- directional [COMMON POINT] current 10.2 amperes
   antenna nighttime ..... [COMMON POINT] resistance 52 ohms,
   and antenna input power of 5 kilo watts non directional [ANTENNA] current 11.7 amperes
   antenna daytime ..... [ANTENNA] resistance 36.5 ohms
3. Hours of operation: UNLIMITED:
   Average hours of sunrise and sunset:
   Jan. 7:30am to 5:45pm; Feb. 7:15am to 6:15pm;
   Mar. 6:45am to 6:30pm; Apr. 6:00am to 7:00pm;
   May 5:30am to 7:15pm; June 5:15am to 7:45pm;
   July 5:30am to 7:45pm; Aug. 5:45am to 7:15pm;
   Sep. 6:15am to 6:30pm; Oct. 6:30am to 6:00pm;
   Nov. 7:00am to 5:30pm; Dec. 7:30am to 5:15pm;
   MOUNTAIN STANDARD TIME (NON-ADVANCED)
4. With the station located at: PHOENIX, ARIZONA
5. With the main studio located at: 301 West Osborn Rd., Phoenix, Arizona
6. Remote control point: 301 West Osborn Rd., Phoenix, Arizona
7. Transmitter location: 3659 Thomas Road, Phoeniz, Arizona
   North Latitude: 33 o 28 ' 44 "
   West Longitude: 112 o 00 ' 06 "
8. Obstruction marking specifications in accordance with the following paragraphs of FCC Form 715: 1,3,12 & 21.
9. Transmitter(s): TYPE ACCEPTED
10. Conditions: ----

The Commission reserves the right during said license period of terminating this license or making effective any changes or modification of this license which may be necessary to comply with any decision of the Commission rendered as a result of any hearing held under the rules of the Commission prior to the commencement of this license period or any decision rendered as a result of any such hearing which has been designated but not held, prior to the commencement of this license period.

This license is issued on the licensee's representation that the statements contained in licensee's application are true and that the undertakings therein contained so far as they are consistent herewith, will be carried out in good faith. The licensee shall, during the term of this license, render such broadcasting service as will serve public interest, convenience, or necessity to the full extent of the privileges herein conferred.

This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequency designated in the license beyond the term hereof, nor in any other manner than authorized herein. Neither the license nor the right granted hereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934. This license is subject to the right of use or control by the Government of the United States conferred by Section 606 of the Communications Act of 1934.

1/ This license consists of this page and pages

Dated. November 17, 1980

FEDERAL COMMUNICATIONS COMMISSION

cjb

FCC Form 353-A
April 1973

File No.: BR-800602WE *Call Sign:* K T A R *Date:* 11-17-80

1. DESCRIPTION OF DIRECTIONAL ANTENNA SYSTEM DA-

No. and Type of Elements: Two (2) tapered, self supporting, series excited vertical

Height above Insulators:	#1 (S) - 400' (90.7°)	#2 (N) - 300' (68°)
Overall Height:	" 404'	" 304'

Spacing and Orientation: Spaced 793' (180°) on a line bearing 27° True.

Non-Directional Antenna: #1 (S) tower with #2 (N) tower floating

Ground System consists of 240 equally spaced, buried copper radials about each tower alternately 200' and 400' in length. Radials between towers terminate midway on a 4" copper strap. #2(N) tower has a 48' x 48' ground screen and the #1 (S) tower has a 96' ground screen.

2. THEORETICAL SPECIFICATIONS	#1(S)	#2(N)
Phasing:	0°	+82°
Field Ratio:	1.0	0.55
3. OPERATING SPECIFICATIONS Phase Indication*:	0°	76°
Antenna Base Current Ratio:	1.00	1.00
Current Ratio:	1.00	1.00

*As indicated by Potomac Instruments AM-19(204) antenna monitor.

Field intensity measuring equipment shall be available at all times and the field intensity at each of the monitoring points shall be measured at least once every thirty days and an appropriate record kept of all measurements so made.

DESCRIPTION OF AND FIELD INTENSITY AT MONITORING POINTS:

Direction of 84° true North. From the transmitter, proceed east 3.25 miles on Thomas Road to N 61st Place. Turn left onto N. 61st Place. The monitoring point is located 200 feet north of Thomas Road and 75 feet West of N. 61st Place. The field intensity measured at this point should not exceed 47.7 mv/m.

Direction of 207° true North. From the transmitter, proceed south 1.0 mile on 36th Street to McDowell Road. Turn right onto McDowell and proceed west 0.5 mile. Turn south onto 32nd Street and proceed 0.3 mile to East Moreland Street. The measuring point is located on the sidewalk north of 3138 E. Moreland Street. The field intensity measured at this point should not exceed 325 mv/m.

Direction of 329° true North. From the transmitter, proceed west on Thomas Road for 0.5 miles. Turn north onto 32nd Street, and proceed 1.2 miles to Glenrosa Avenue. Turn left onto Glenrosa Avenue and proceed 0.1 mile. Turn north onto 31st Place and proceed 0.05 miles. Turn left onto Glenrosa Avenue and proceed 0.1 mile. Turn left onto 31st Street. Proceed south to Heatherbrae Street and turn west to 3030 East Heatherbrae. The field intensity measured at this point should not exceed 95 mv/m.

DURING OPERATEION BY REMOTE CONTROL:

Remote indications of antenna base current for each tower, and common point current shall be read and entered in the operating log at least once each half-hour. The indications at the transmitter, of the common point current, base currents, phase monitor sample loop currents and phase indiactions shall be read and entered in the operating log once each day. These readings must be made within two hours after the commencement of operation with the directional antenna by remote control.

SECTION III - LICENSE APPLICATION ENGINEERING DATA

Name of Applicant

BONNEVILLE INTERNATIONAL CORPORATION

PURPOSE OF AUTHORIZATION APPLIED FOR: (check one)

[x] Station License [x] 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
KTAR	NOT APPLICABLE	620	UNLIMITED	5.0	5.0

2. Station location

State	City or Town
Arizona	Phoenix

3. Transmitter location

State	County	City or Town	Street address (or other identification)
AZ	Maricopa	Phoenix	3659 Thomas Rd.

4. Main studio location

State	County	City or Town	Street address (or other identification)
AZ	Maricopa	Phoenix	7740 N. 16th Suite 200

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

State	County	City or Town	Street address (or other identification)
AZ	Maricopa	Phoenix	7740 N. 16th Suite 200

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
10.39	10.0
Measured antenna or common point resistance (in ohms) at operating frequency Night: 50 Day: +/- j0	Measured antenna or common point reactance (in ohms) at operating frequency Night: 50 Day: +/-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 (S)	0	does not	1.0	does not	not	does not
2 (N)	70.8	apply	0.828	apply	required	apply

Manufacturer and type of antenna monitor: Potomac Instruments AM-1901

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.
two tapered self supporting series excited vertical towers	see below	see below	see below	Exhibit No. dna

Excitation ☐ 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
33 ° 28 ' 44 "	112 ° 00 ' 06 "

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. dna

Also, if necessary for a complete description, attach as an Exhibit a sketch of the details and dimensions of ground system. Exhibit No. no change

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

Tower #1 Reg. 1001096 121.9 M radiator ht., 123.1 M overall ht with and without lights
Tower #2 Reg. 1001095 91.44 M radiator ht., 92,7 M overall ht with and without lights

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

No change Day current read at same location as night common point current per 73.54(a)

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)
Benj. F. Dawson III, P.E.	
Address (include ZIP Code) Hatfield & Dawson Consulting Engineers 9500 Greenwood Avenue North Seattle, WA 98103 USA	Date July 12, 2013
	Telephone No. (Include Area Code) 206 783 9151

☐ Technical Director

☒ Registered Professional Engineer

☐ Chief Operator

☐ Technical Consultant

☒ Other (specify) Consulting Engineer