
FM DIRECTIONAL BROADCAST ANTENNA
PROOF-OF-PERFORMANCE

MODEL JMPC-4 RFR DA

SERIAL NUMBER 12632

KVFG

Victorville, CA



6340 Sky Creek Drive • Sacramento, California USA 95828
(916) 383-1177 phone • (916) 383-1182 fax



6340 Sky Creek Drive, Sacramento, California 95828
P.O. Box 292880, Sacramento, California 95829-2880

(916) 383-1177 FAX (916) 383-1182

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DATE: August 4, 2005

ANTENNA GAIN	<u>H-pol</u>	<u>V-pol</u>
relative	2.52	2.52
(dBd)	(4.01)	(4.01)

RMS OF THE
AZIMUTH PATTERNS:

FM ANTENNA FOR:

STATION: **KVFG**

LOCATION: **Victorville, CA**

MODEL NUMBER: **JMPC-4 RFR DA**

FREQUENCY & ERP: **103.1 MHz, 0.25 kW**

ANTENNA INPUT POWER: **0.099 k W**

ANTENNA BOOM HEADING: **116° T.**

Composite	<u>H-pol</u>	<u>V-pol</u>
0.800	0.718	0.720

CERTIFICATION

This certification, along with the accompanying antenna specification sheet, antenna mounting sketches, and azimuth and elevation patterns, certifies the construction and measurement of the *JAMPRO* FM CP antenna to the station's requirements, as measured at the *JAMPRO* antenna site in Sacramento, California. The following is an outline of construction methods, pattern measurements, installation requirements, recommended maintenance and equipment used.

CONSTRUCTION

A standard CP FM antenna model was used and parasitic reflectors were added to create the required directional patterns. From experience and by repeated measurements, these elements were adjusted as to position until the final configuration was determined and the pattern requirements were met. These additional elements are steel, hot dipped galvanized and either bolted or welded in place. Measurements to establish their exact location are shown on the antenna mounting sketches.

MEASUREMENT

The full scale antenna was mounted on an exact duplicate of its final support at the station. We were careful to duplicate conduits, cables and anything peculiar to this mounting. This was then placed on a turntable at the *JAMPRO* antenna range. This directional antenna was used for receiving the radiation from a transmitting antenna that is elevated 25 feet above ground and located at a distance of 4,500 feet. This transmitting antenna is capable of transmitting either horizontal or vertical polarization. The frequency of the signal generator was accurately set to station frequency by use of a frequency counter. A spectrum analyzer was used to continuously measure field strength as the antenna under test was rotated. Field strength at each azimuth was then plotted.



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Station: **KVFG**

Model: **JMPC-4 RFR DA**

INSTALLATION

The antenna must be installed in exactly the manner in which it was measured at the factory. This is shown in detail on the antenna mounting sketch, including the azimuth bearing of the elements. This boom must be verified by a surveyor at the site when installation is being completed. No other antennas may be installed on the tower in the aperture of this antenna within 5 feet above the top bay or 5 feet below the bottom bay. Good engineering practices should be followed in any details not covered by specific instructions.

MAINTENANCE

Annual or regular inspection should be made on the antenna system. At this time, tightness of U-bolts, or other fastenings, should be routinely checked. Any deterioration of the antenna due to lightning, or other causes should be promptly repaired.

EQUIPMENT

MODEL: -3000 WAVETEK SIGNAL GENERATOR, SERIAL #66479
-8591E H.P. SPECTRUM ANALYZER, SERIAL #3308A01312, CAL'd 1/16/03
-TUNED CAVITY DIPOLE

CONCLUSION

In the development of this pattern, JAMPRO antennas, Inc. observed known requirements of the FCC, as stated on the station construction permit, *with the exception of meeting the 85% rms criterium. Since the rms value of the measured composite pattern is less than 85% of the rms of the authorized pattern, the permittee should file a request with FCC to modify its authorized pattern so that this criterium is met.*

Gain figures and required input power to achieve station ERP, as well as other details, are found on the first page.

This certification, with its calculations were performed by J. Dane Jubera, B.S.E.E., Electrical Engineer, JAMPRO Antennas, Inc.

EXECUTED THIS 4th DAY OF August, 2005

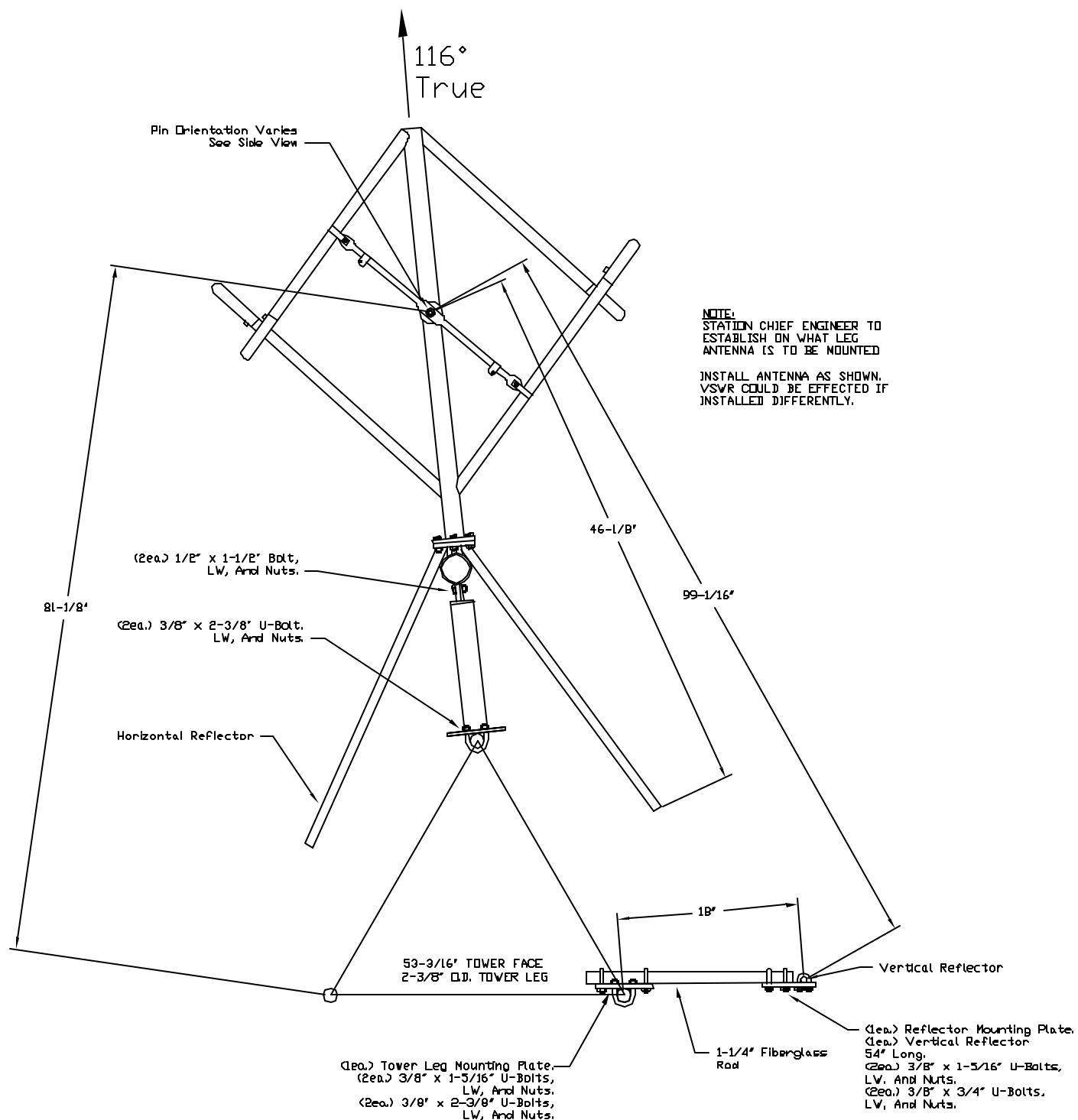
BY:

J. Dane Jubera, B.S.E.E. JAMPRO Antennas, Inc.



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Voice: (916)383-1177
FAX: (916)383-1182



TITLE:

12632 SIDE

JOB NO.

12632

ANTENNA MODEL:

JMPC-4 RFR DA

FREQ:

103.1 MHz

REV:

0

DATE:

8/3/05

CUSTOMER:

KVFG-FM

CALL SIGN:

KVFG

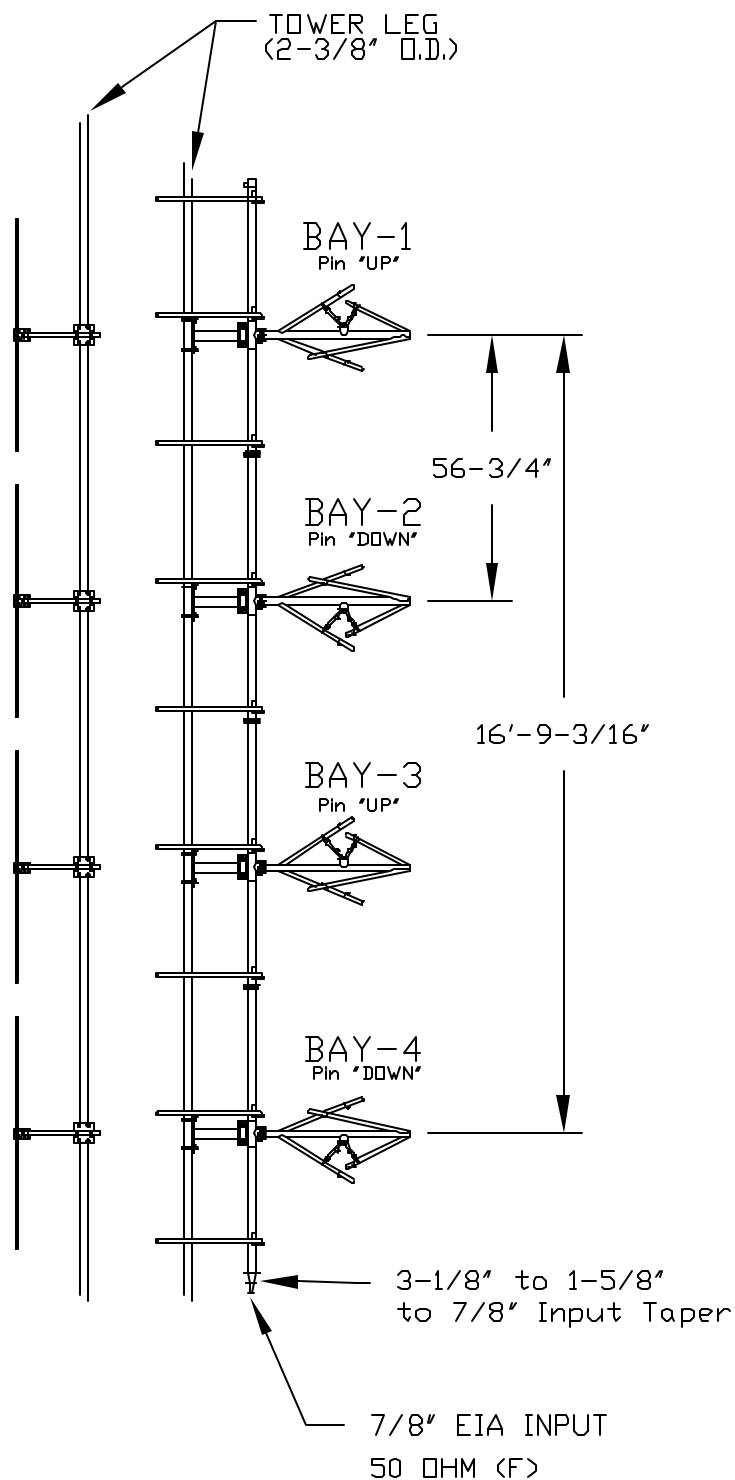
SHEET:

1 of 2

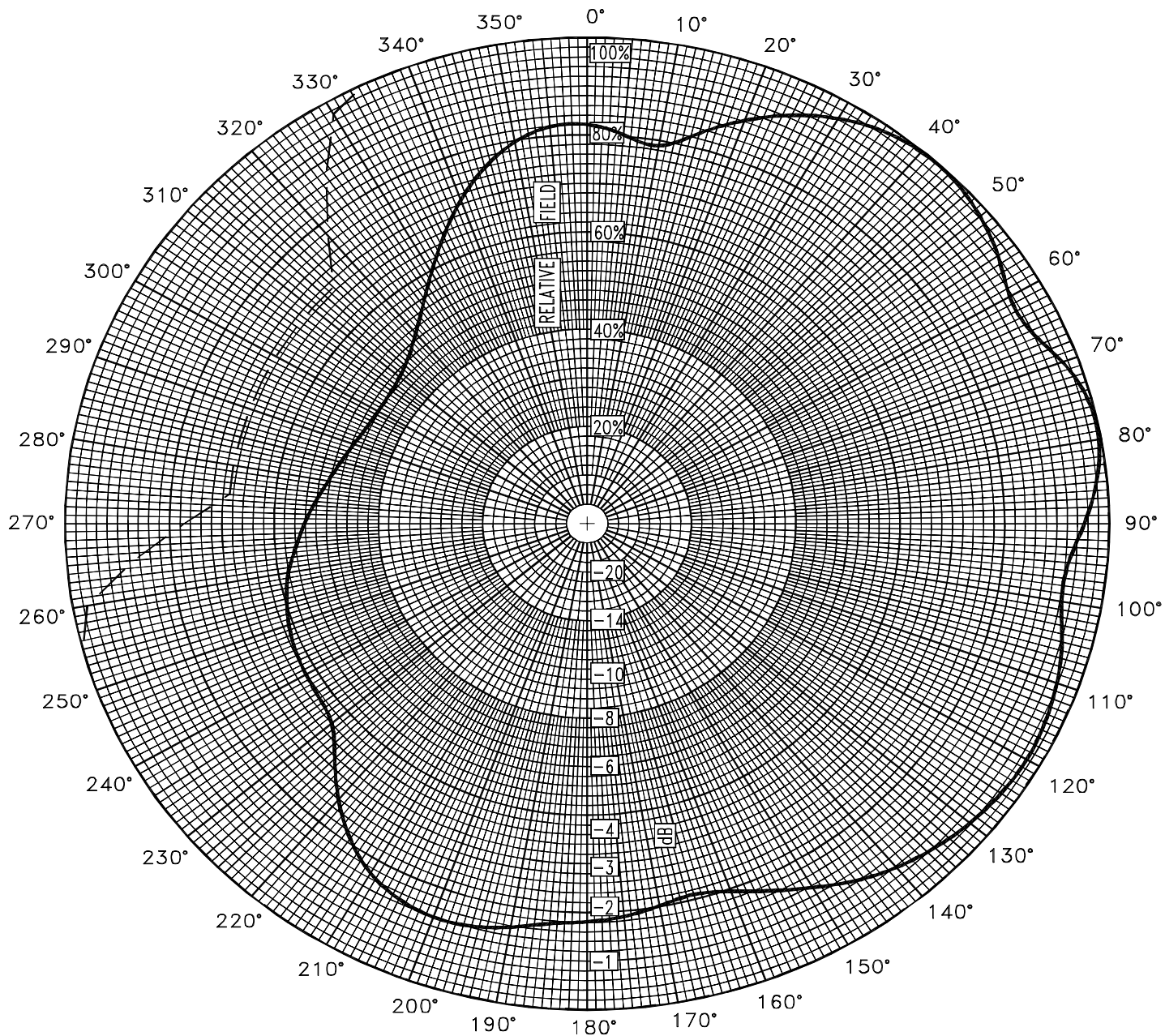


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TITLE: 12632 SIDE	JOB NO. 12632	ANTENNA MODEL: JMPC-4 RFR DA	FREQ: 103.1 MHz	REV: 0
	DATE: 8/3/05	CUSTOMER: KVFG-FM	CALL SIGN: KVFG	SHEET: 1 of 2



Azimuth Pattern

Customer: KVFG

Date: August 1, 2005

Frequency: 103.1 MHz

Type Number: JMPC-4 RFR DA

Notes:

COMPOSITE PATTERN ENVELOPE (H & V)



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KVFG

ERP = 0.25 kW

August 1, 2005

JMPC-4 RFR DA

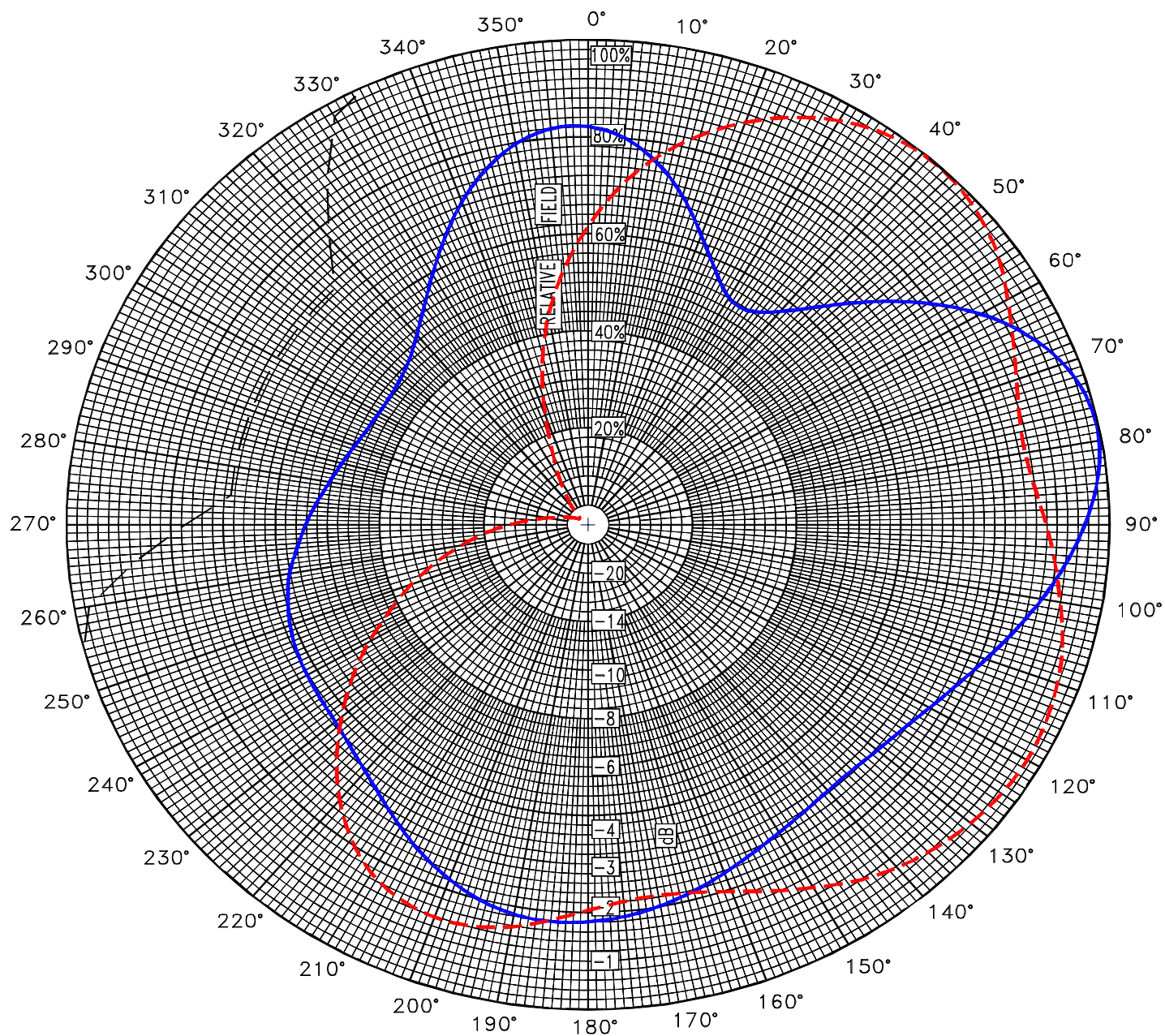
TABULATION OF RELATIVE FIELD

COMPOSITE MEASURED PATTERN (H & V)

<u>BEARING</u>	<u>FIELD</u>	<u>ERP</u> <u>(kW)</u>	<u>dBk</u>
0	0.825	0.17	-7.69
10	0.775	0.15	-8.23
20	0.885	0.20	-7.08
30	0.965	0.23	-6.33
40	1.000	0.25	-6.02
50	0.985	0.24	-6.15
60	0.930	0.22	-6.65
70	0.975	0.24	-6.24
80	1.000	0.25	-6.02
90	0.956	0.23	-6.42
100	0.920	0.21	-6.74
110	0.960	0.23	-6.38
120	0.975	0.24	-6.24
130	0.960	0.23	-6.38
140	0.925	0.21	-6.70
150	0.865	0.19	-7.28
160	0.805	0.16	-7.90
170	0.800	0.16	-7.96
180	0.821	0.17	-7.73
190	0.845	0.18	-7.48
200	0.865	0.19	-7.28
210	0.835	0.17	-7.59
220	0.745	0.14	-8.58
230	0.633	0.10	-10.00
240	0.623	0.10	-10.14
250	0.610	0.09	-10.32
260	0.584	0.09	-10.69
270	0.543	0.07	-11.33
280	0.504	0.06	-11.98
290	0.476	0.06	-12.47
300	0.462	0.05	-12.72
310	0.468	0.05	-12.61
320	0.510	0.07	-11.87
330	0.598	0.09	-10.49
340	0.711	0.13	-8.98
350	0.802	0.16	-7.94

Relative fields at other azimuths:

45	1.000	225	0.685
135	0.945	315	0.483



Azimuth Pattern

Customer: KVFG

Date: August 1, 2005

Frequency: 103.1 MHz

Type Number: JMPC-4 RFR DA

Notes: MEASURED PATTERN IN FULL SCALE

———— HPOL VPOL - - - - LIMITS



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KVFG

ERP = 0.25 kW

August 1, 2005

JMPC-4 RFR DA

TABULATION OF MEASURED FIELDS

<u>BEARING</u>	<u>HORIZONTAL POLARIZATION</u>		<u>VERTICAL POLARIZATION</u>	
	<u>FIELD</u>	<u>ERP(kW)</u>	<u>FIELD</u>	<u>ERP(kW)</u>
0	0.825	0.17	0.620	0.10
10	0.763	0.15	0.775	0.15
20	0.636	0.10	0.885	0.20
30	0.535	0.07	0.965	0.23
40	0.571	0.08	1.000	0.25
50	0.720	0.13	0.985	0.24
60	0.874	0.19	0.930	0.22
70	0.975	0.24	0.875	0.19
80	1.000	0.25	0.850	0.18
90	0.956	0.23	0.880	0.19
100	0.886	0.20	0.920	0.21
110	0.813	0.17	0.960	0.23
120	0.757	0.14	0.975	0.24
130	0.725	0.13	0.960	0.23
140	0.716	0.13	0.925	0.21
150	0.734	0.13	0.865	0.19
160	0.766	0.15	0.805	0.16
170	0.800	0.16	0.775	0.15
180	0.821	0.17	0.795	0.16
190	0.819	0.17	0.845	0.18
200	0.780	0.15	0.865	0.19
210	0.721	0.13	0.835	0.17
220	0.665	0.11	0.745	0.14
230	0.633	0.10	0.620	0.10
240	0.623	0.10	0.490	0.06
250	0.610	0.09	0.365	0.03
260	0.584	0.09	0.250	0.02
270	0.543	0.07	0.155	0.01
280	0.504	0.06	0.080	0.00
290	0.476	0.06	0.045	0.00
300	0.462	0.05	0.025	0.00
310	0.468	0.05	0.020	0.00
320	0.510	0.07	0.050	0.00
330	0.598	0.09	0.115	0.00
340	0.711	0.13	0.250	0.02
350	0.802	0.16	0.445	0.05
MAXIMUM FIELDS:				
80	1.000	0.25		
45			1	0.25
MINIMUM FIELDS:				
305	0.462	0.05		
310			0.02	0.00

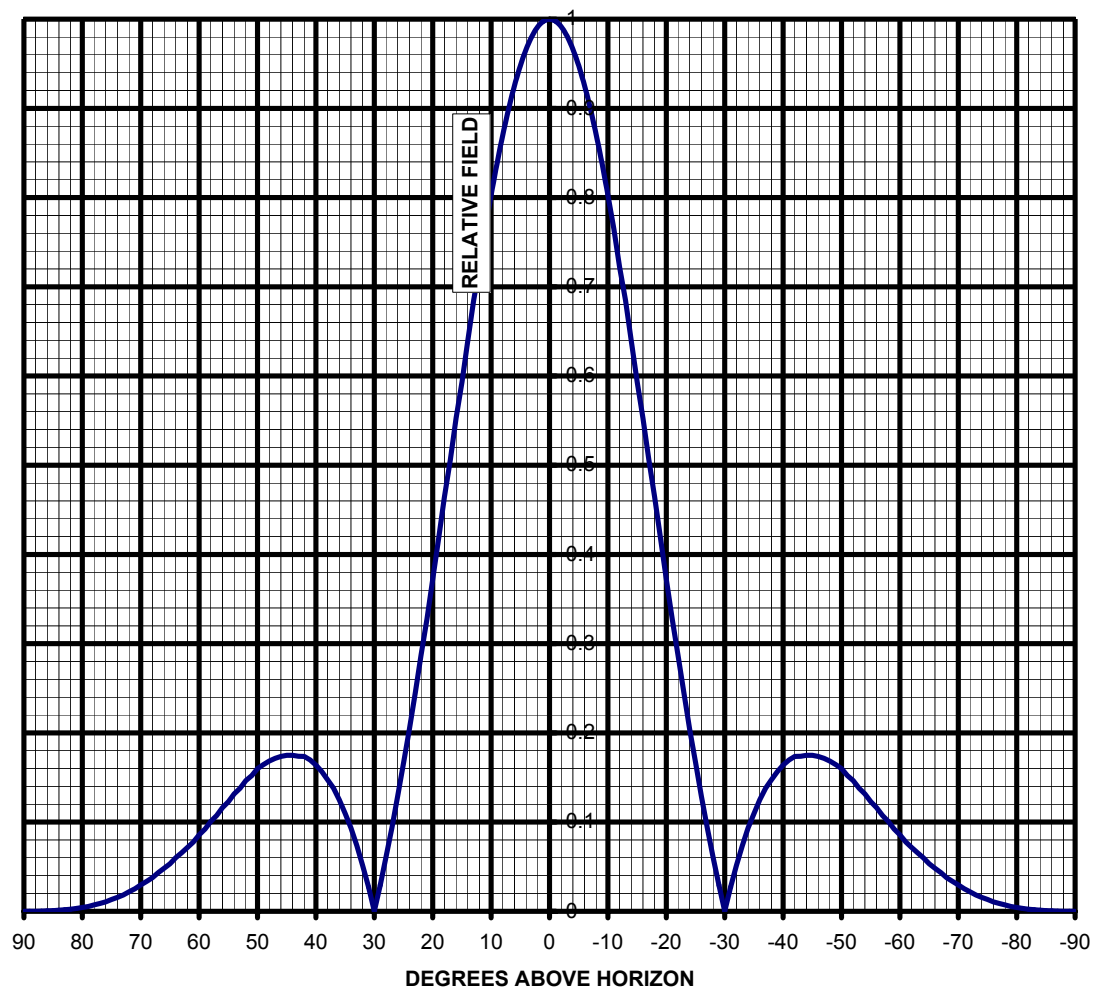


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PLOT OF ELEVATION PLANE PATTERN

STATION: KVFG 103.1 MHz JMPC-4 .50 lambda spacing





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TABULATION OF ELEVATION PLANE PATTERN

STATION: KVFG 103.1 MHz JMPC-4 .50 lambda spacing

<u>ELEVATION</u>	<u>RELATIVE</u>	<u>ELEVATION</u>	<u>RELATIVE</u>	<u>ELEVATION</u>	<u>RELATIVE</u>
<u>ANGLE</u>	<u>FIELD</u>	<u>ANGLE</u>	<u>FIELD</u>	<u>ANGLE</u>	<u>FIELD</u>
10	0.803	-25	0.167	-60	0.086
9	0.838	-26	0.129	-61	0.078
8	0.870	-27	0.094	-62	0.072
7	0.899	-28	0.061	-63	0.066
6	0.925	-29	0.029	-64	0.060
5	0.948	-30	0.000	-65	0.053
4	0.966	-31	0.027	-66	0.048
3	0.981	-32	0.051	-67	0.043
2	0.992	-33	0.073	-68	0.038
1	0.998	-34	0.093	-69	0.034
0	1.000	-35	0.110	-70	0.030
-1	0.998	-36	0.125	-71	0.025
-2	0.992	-37	0.138	-72	0.022
-3	0.981	-38	0.147	-73	0.018
-4	0.966	-39	0.157	-74	0.016
-5	0.948	-40	0.164	-75	0.013
-6	0.925	-41	0.170	-76	0.011
-7	0.899	-42	0.174	-77	0.009
-8	0.870	-43	0.174	-78	0.007
-9	0.838	-44	0.175	-79	0.005
-10	0.803	-45	0.175	-80	0.004
-11	0.765	-46	0.174	-81	0.003
-12	0.722	-47	0.171	-82	0.002
-13	0.685	-48	0.168	-83	0.002
-14	0.639	-49	0.164	-84	0.001
-15	0.593	-50	0.160	-85	0.001
-16	0.553	-51	0.152	-86	0.000
-17	0.506	-52	0.146	-87	0.000
-18	0.464	-53	0.138	-88	0.000
-19	0.418	-54	0.132	-89	0.000
-20	0.372	-55	0.123	-90	0.000
-21	0.327	-56	0.116		
-22	0.287	-57	0.107		
-23	0.245	-58	0.101		
-24	0.204	-59	0.092		