



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

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

DATE: JANUARY 11, 1994

CIRCULARLY POLARIZED DIRECTIONAL
FM ANTENNA FOR:

ANTENNA GAIN	H-pol	V-pol
relative	2.82	2.82
(dBd)	(4.5)	(4.5)

STATION: WRFX-FM
LOCATION: Charlotte, NC
MODEL NUMBER: JADP-3/3/1(DA)
FREQUENCY & ERP: 99.7 MHz, 84.0 KW
ANTENNA INPUT POWER: 29.8 KW
ANTENNA BOOM HEADING: as detailed
in drawings

RMS OF THE	H-pol	V-pol
AZIMUTH PATTERNS:	.67	.67

CERTIFICATION

THIS CERTIFICATION, ALONG WITH THE ACCOMPANYING TECHNICAL SPECIFICATION SHEET, ANTENNA MOUNTING SKETCHES, AZIMUTH AND ELEVATION PATTERNS, CERTIFY 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

CAVITY BACKED FM ELEMENTS WERE MOUNTED AROUND THE TOWER, AND FED WITH A SPECIFIC FEED SYSTEM SO THAT THE RESULTANT PATTERN AND SPECIFICATIONS COMPLY WITH THE STATIONS CONSTRUCTION PERMIT. 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 IT'S 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 7,000 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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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 MAIN BOOM OF THE ELEMENTS. THIS BOOM MUST BE VERIFIED BY A SURVEYOR AT THE SITE WHEN INSTALLATION IS BEING COMPLETED. 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 WAVETEC SIGNAL GENERATOR, SERIAL #66479
-8555B H.P. SPECTRUM ANALYZER, SERIAL #1829AO4558,
CALIBRATED 2/88
-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.

GAIN FIGURES AND REQUIRED INPUT POWER TO ACHIEVE STATION ERP, AS WELL AS OTHER DETAILS, ARE TO BE FOUND ON THE ACCOMPANYING PAGES.

THESE ADJUSTMENTS AND TESTS WERE PERFORMED UNDER THE SUPERVISION OF ERIC DYE, B.S.E.E., ELECTRICAL ENGINEER, JAMPRO ANTENNAS, INC.

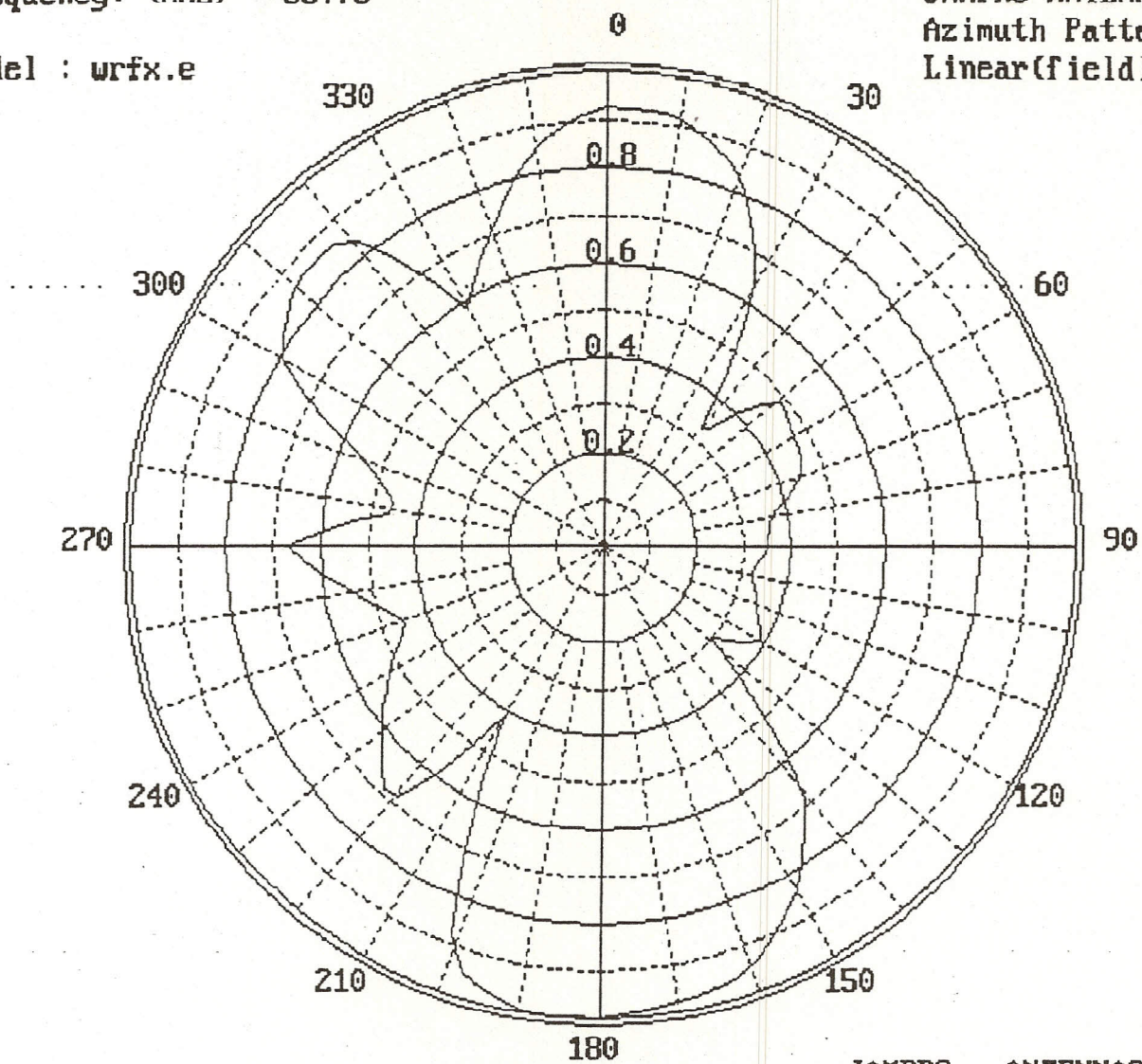
EXECUTED THIS 11th DAY OF January, 19 94

BY: Eric Dye
ERIC DYE, B.S.E.E.

Frequency: <MHz> 99.70

Model : wrfx.e

JAMPRO ANTENNAS INC.
Azimuth Pattern
Linear(field) Scale



JAMPRO ANTENNAS INC.

COMPOSITE ENVELOPE (H+V)



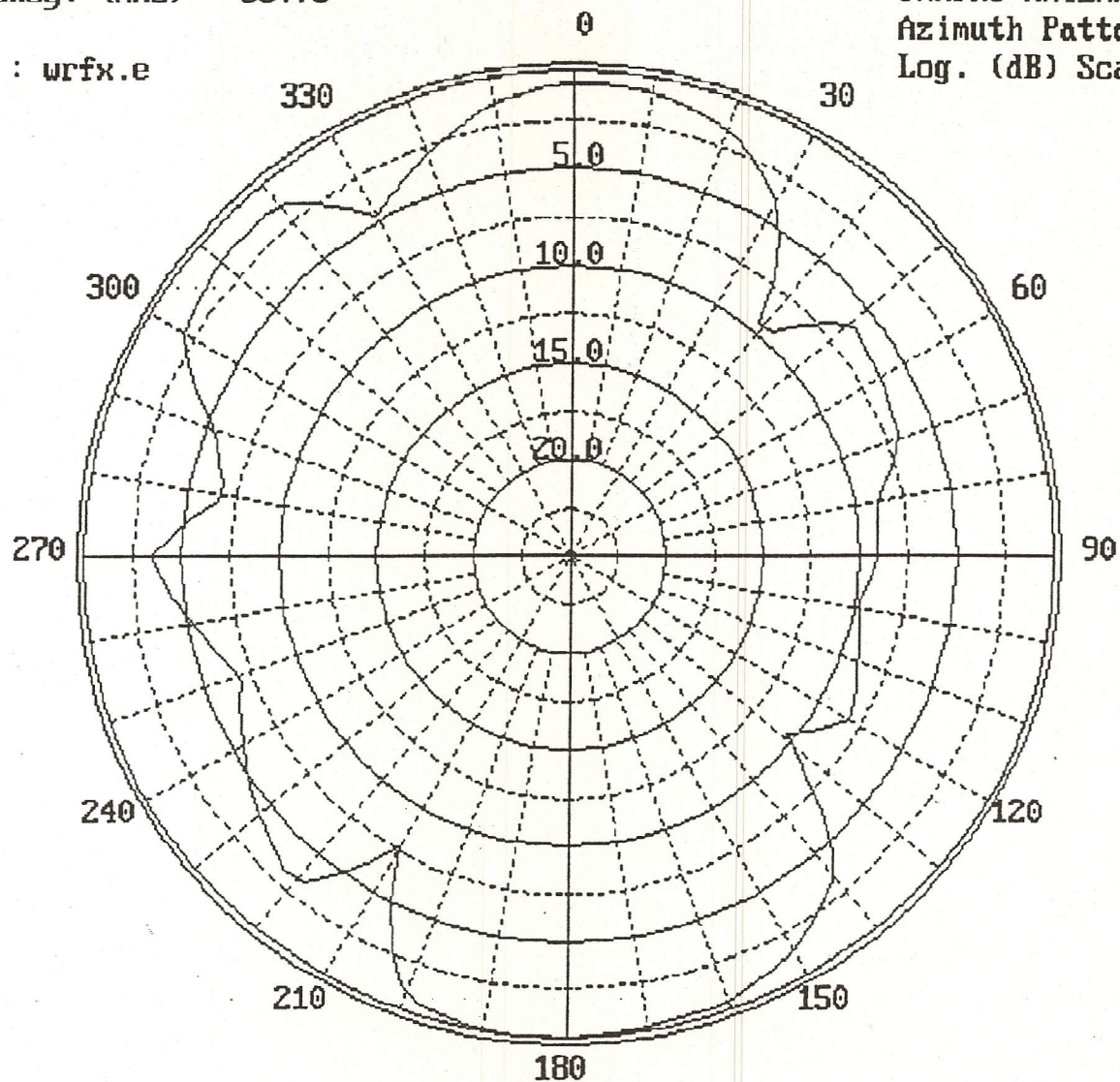
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Frequency: <MHz> 99.70

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JAMPRO ANTENNAS INC.
Azimuth Pattern
Log. (dB) Scale



COMPOSITE ENVELOPE (H+V)



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