RFR Engineering Statement
WREW (FM) Aux Antenna

A power density calculation can be made using the techniques outlined in the V-Soft Ver. 2.4.6 software program:

Data plugged into the program:
Antenna parameters: 7.8 KW Horizontal, 7.8 KW Vertical
Number of bays/spacing: 2 bays at a spacing of 1 full wavelength
COR Meters above ground level: 163.3 meters
Distance in Meters to tower base: 1 meter to 200 meters
Antenna manufacturer: ERI J8CP Roto-tiller type

In this first calculation, the program reveals that the maximum RFR level at any ground level **is 2.81 uW/cm^2** at 110 meters from the base of the tower or **1.40%** of allowable RFR in an un-controlled environment. This level is significantly below the 5% of maximum allowable and therefore the WREW(FM) Aux antenna would not be included as a >5% contributor when added to other transmitters in the area for a total RFR level at the site.

A second calculation is made using the "*RFS, RF Specialties Technical Program Disk", Version 2.48.* Under section II, FM *Antenna Calculations*. The power density calculations for the proposed ERI 2- Bay "roto" antenna result in a maximum power density at 110 meters from the base of the antenna support structure of **2.20 uW/cm^2**. This is just **1.1%** of the 200 uW/cm^2 (the ANSI standard for un-controlled environments). This calculation level is also significantly below the 5% of maximum allowable and therefore the WREW(FM) Aux antenna would not be included as a >5% contributor when added to other transmitters in the area for a total RFR level at the site.

Careful measurements using a calibrated meter will be taken after construction and during initial turn-on to prove this facility meets specifications outlined in bulletin O.E.T. 65.

The permit tee/licensee in coordination with other users of the site have a written program in place to reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radio frequency radiation in excess of FCC guidelines.

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RFHAZ (TM) Ver 2.4.6 - (C) V-Soft Communications '98-'09

Study
- (•) FM
- ( ) TV
- ( ) DTV

Method
- ( ) OET #65
- (•) OET Mod

Scale = µW/sq cm
- (•) 50 ( ) 100 ( ) 200 ( ) 500 ( ) 1000 ( ) 2000 ( ) 3000

Graph Distance: 250

Antenna Parameters
- H kW: 7.8
- V kW: 7.8
- # of Bays: 2
- Spacing: 1
- COR Meters Above Ground: 163.3
- Dist. in Meters to Tower Base: 110

- Phelps-Dodge "Ring Stub" (EPA)
- ERI "Dual Cycloid"
- Jampro "Double V" (EPA)
- **ERI/JAMPRO JBCP "Roto" (EPA)**
- RCA "BFC" (EPA)
- RCA "BFG" (EPA)
- Shively 6800 series
- Shively 6810
- Dielectric DCRM
- Dielectric DCRQ
- Dielectric DCRC
- Shively 6513/6510 Vert. Dipole

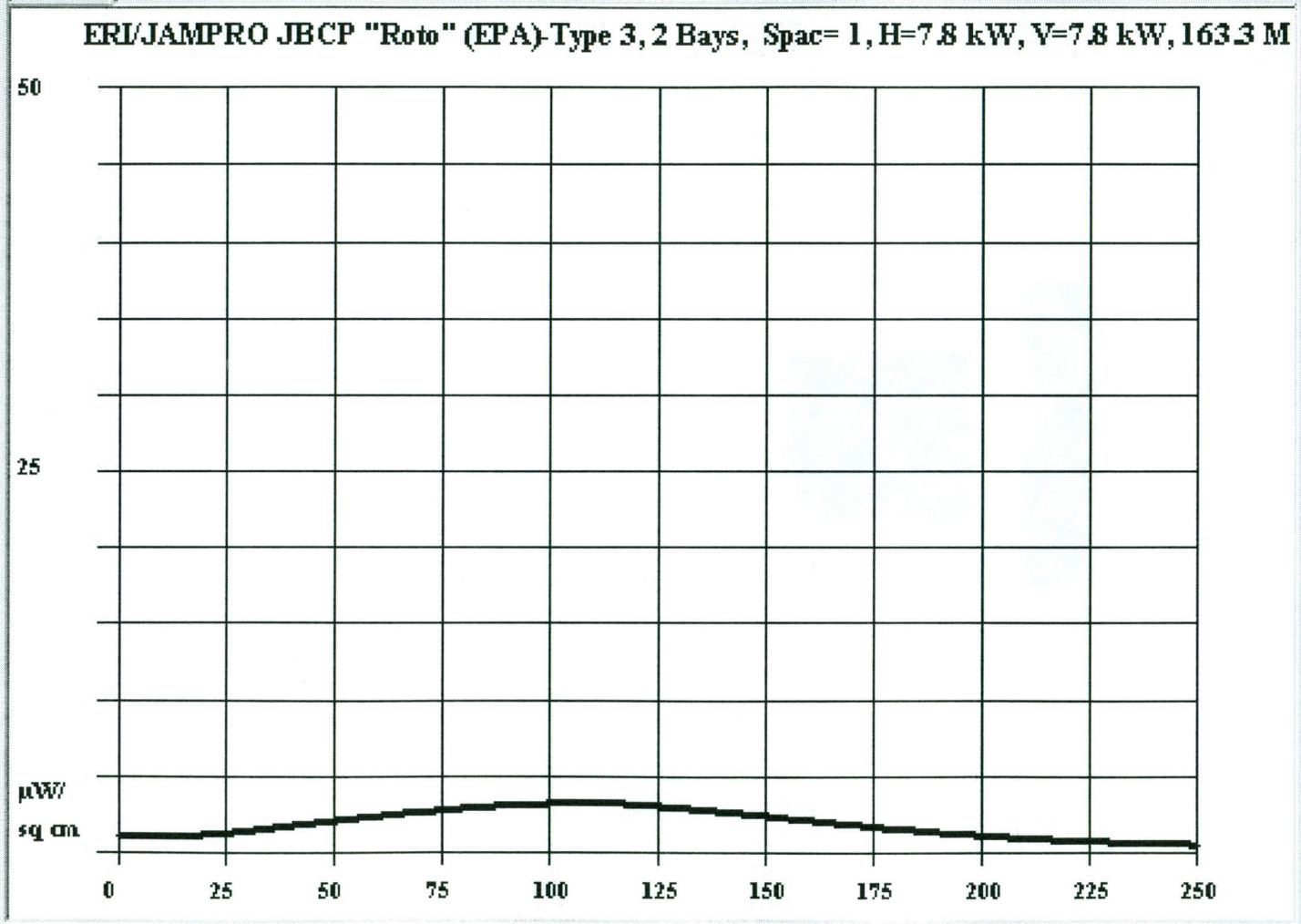
Max = 200 µW/sq cm

Pwr Density µW/sq cm: 2.80685

% of Max: 1.4034

Controlled
- ( ) Yes
- (•) No

Title: WREW-FM AUX ANTENNA



Print Tab | Print Screen | Disk Write | To Clipboard | Other RF

RF SPECIALTIES -- POWER DENSITY TABLE
DATE: FEBRUARY 10, 1911
MODEL: ERI-2-2 RMS GAIN= 1
PREPARED FOR: WREW-FM AUX ANTENNA

FREQ: 94.9 mHz
BEAM TILT= 0 Deg
NULL FILL= 0%
SPACING: 1 Wave

H-ERP: 7.8 kW -- V-ERP: 7.8 kW -- CENTER OF RADIATION HAGL: 163.3 Meters

ANGLE OF ELEVATION	HORIZONTAL ERP	VERTICAL ERP	DISTANCE FROM TOWER	VOLTAGE RATIO	POWER DENSITY
-2°	7.693 kW	7.693 kW	4,676.31 m	.993	.02 uW/cm2
-4°	7.380 kW	7.380 kW	2,335.30 m	.973	.09 uW/cm2
-6°	6.880 kW	6.880 kW	1,553.70 m	.939	.19 uW/cm2
-8°	6.226 kW	6.226 kW	1,161.94 m	.893	.30 uW/cm2
-10°	5.458 kW	5.458 kW	926.12 m	.836	.41 uW/cm2
-12°	4.622 kW	4.622 kW	768.27 m	.770	.50 uW/cm2
-14°	3.765 kW	3.765 kW	654.96 m	.695	.55 uW/cm2
-16°	2.933 kW	2.933 kW	569.49 m	.613	.56 uW/cm2
-18°	2.165 kW	2.165 kW	502.59 m	.527	.52 uW/cm2
-20°	1.492 kW	1.492 kW	448.66 m	.437	.44 uW/cm2
-22°	.938 kW	.938 kW	404.18 m	.347	.33 uW/cm2
-24°	.514 kW	.514 kW	366.78 m	.257	.21 uW/cm2
-26°	.222 kW	.222 kW	334.81 m	.169	.11 uW/cm2
-28°	.055 kW	.055 kW	307.12 m	.084	.03 uW/cm2
-30°	.000 kW	.000 kW	282.84 m	.004	.00 uW/cm2
-32°	.038 kW	.038 kW	261.33 m	.069	.03 uW/cm2
-34°	.146 kW	.146 kW	242.10 m	.137	.11 uW/cm2
-36°	.302 kW	.302 kW	224.76 m	.197	.26 uW/cm2
-38°	.485 kW	.485 kW	209.01 m	.249	.46 uW/cm2
-40°	.675 kW	.675 kW	194.61 m	.294	.70 uW/cm2
-42°	.856 kW	.856 kW	181.36 m	.331	.96 uW/cm2
-44°	1.015 kW	1.015 kW	169.10 m	.361	1.23 uW/cm2
-46°	1.145 kW	1.145 kW	157.70 m	.383	1.48 uW/cm2
-48°	1.239 kW	1.239 kW	147.04 m	.399	1.72 uW/cm2
-50°	1.298 kW	1.298 kW	137.02 m	.408	1.91 uW/cm2
-52°	1.322 kW	1.322 kW	127.58 m	.412	2.06 uW/cm2
-54°	1.314 kW	1.314 kW	118.64 m	.410	2.15 uW/cm2
-56°	1.279 kW	1.279 kW	110.15 m	.405	2.20 uW/cm2
-58°	1.221 kW	1.221 kW	102.04 m	.396	2.20 uW/cm2
-60°	1.147 kW	1.147 kW	94.28 m	.383	2.15 uW/cm2
-62°	1.060 kW	1.060 kW	86.83 m	.369	2.07 uW/cm2
-64°	.967 kW	.967 kW	79.65 m	.352	1.96 uW/cm2
-66°	.872 kW	.872 kW	72.71 m	.334	1.82 uW/cm2
-68°	.776 kW	.776 kW	65.98 m	.315	1.67 uW/cm2
-70°	.684 kW	.684 kW	59.44 m	.296	1.51 uW/cm2
-72°	.597 kW	.597 kW	53.06 m	.277	1.35 uW/cm2
-74°	.516 kW	.516 kW	46.83 m	.257	1.19 uW/cm2
-76°	.442 kW	.442 kW	40.72 m	.238	1.04 uW/cm2
-78°	.376 kW	.376 kW	34.71 m	.220	.90 uW/cm2
-80°	.317 kW	.317 kW	28.79 m	.202	.77 uW/cm2
-82°	.266 kW	.266 kW	22.95 m	.185	.65 uW/cm2
-84°	.221 kW	.221 kW	17.16 m	.168	.55 uW/cm2
-86°	.183 kW	.183 kW	11.42 m	.153	.46 uW/cm2
-88°	.150 kW	.150 kW	5.70 m	.139	.37 uW/cm2
-90°	.122 kW	.122 kW	.00 m	.125	.31 uW/cm2