

ENGINEERING STATEMENT
CONCERNING HUMAN EXPOSURE TO RF ELECTROMAGNETIC ENERGY
PREPARED FOR
EDUCATIONAL RADIO FOUNDATION OF EAST TEXAS, INC.
FM STATION KVNE(FM) (STA)
TYLER, TEXAS

This Engineering Statement was prepared on behalf of Educational Radio Foundation of East Texas, Inc., licensee of FM broadcast station KVNE(FM), Tyler, Texas. This statement concerns an evaluation of compliance of the KVNE(FM) Special Temporary Authority (STA) operation with Section 1.1307(b) of the FCC Rules^{*} regarding human exposure to radio frequency (RF) energy.[†] This RF exposure evaluation concerns the accessible area around the base in the vicinity of the tower.

The KVNE(FM) STA facility will employ a guyed tower located in Tyler, Texas (FCC Antenna Structure Registration No. 1052727).[‡] The overall tower height is 152 m above ground level (AGL). The tower supports other broadcast and non-broadcast facilities. However, since the 5% exclusion criterion is met in this instance, detailed analyses with respect to other broadcast facilities in the vicinity is not necessary. There is further discussion of the RF exposure analysis and the 5% exclusion criterion below.

The KVNE(FM) broadcast facility will operate with the following specifications:

^{*} See Rules of the United States Federal Communications Commission (FCC), generally at Title 47 of the Code of Federal Regulations (Telecommunication).

[†] See FCC Office of Engineering and Technology Bulletin No. 56 for background information on non-ionizing RF energy of the type discussed here. Internet web reference:
http://www.fcc.gov/Bureaus/Engineering_Technology/Documents/bulletins/oet56/oet56e4.pdf

[‡] Geographic coordinates: 31-22-02N / 100-02-49W (NAD83).

Frequency (MHz)	Effective Radiated Power (kW)	Radiation Center Height Above Ground (m)	Transmitting Antenna
89.5	16 kW (H) 16 kW (V)	107	Jampro, JHPC 4-bay full-wave antenna (See Appendix 1 for pattern)

The total effective radiated power is the combined power from both planes of polarization. There is a total effective radiated power of 32 kW for the KVNE(FM) facility.

The FCC Rules outline the maximum permissible exposure (MPE) limits applicable to the above facility. Specifically, according to Section 73.1310 of the FCC Rules, the MPE limits for 89.5 MHz are as follows:

Frequency (MHz)	MPE for Occupational/Controlled (O/C) Exposure (mW/cm ²)	MPE for General Population/Uncontrolled (GP/U) Exposure (mW/cm ²)
89.5	1.000	0.200

The subject facility was evaluated for RF exposure at 2-m above ground level using the procedures outlined in the FCC OET Bulletin No. 65, *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*[§] with the following results:

[§] *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Federal Communications Commission, Office of Engineering and Technology, OET Bulletin No. 65, Edition 97-01, August, 1997.

Radial Distance from Base of Tower Structure (m)	Angle from Horizontal (deg)	Antenna Downward Relative Field Factor	Distance From Transmitting Antenna (m)	Calculated Power Density ($\mu\text{W}/\text{cm}^2$)	Percent of GP/U MPE (%)
0	90.0	0.10	105.0	0.97	0.48
5	87.3	0.12	105.1	1.39	0.70
10	84.6	0.15	105.5	2.16	1.08
15	81.9	0.16	106.1	2.43	1.22
20	79.2	0.18	106.9	3.03	1.52
25	76.6	0.22	107.9	4.44	2.22
30	74.1	0.25	109.2	5.60	2.80
35	71.6	0.27	110.7	6.36	3.18
40	69.1	0.30	112.4	7.62	3.81
45	66.8	0.31	114.2	7.87	3.94
50	64.5	0.31	116.3	7.59	3.80
75	54.5	0.17	129.0	1.86	0.93
100	46.4	0.05	145.0	0.13	0.06
125	40.0	0.19	163.2	1.45	0.72
150	35.0	0.16	183.1	0.82	0.41
175	31.0	0.02	204.1	0.01	0.01
200	27.7	0.12	225.9	0.30	0.15
225	25.0	0.19	248.3	0.63	0.31
250	22.8	0.24	271.2	0.84	0.42
300	19.3	0.22	317.8	0.51	0.26
350	16.7	0.15	365.4	0.18	0.09
400	14.7	0.05	413.6	0.02	0.01
450	13.1	0.10	462.1	0.05	0.03
500	11.9	0.20	510.9	0.16	0.08
1000	6.0	0.70	1005.5	0.52	0.26

As indicated above the transmitting antenna relative field factor was employed in the calculations. This factor was based on the transmitting antenna vertical plane relative field elevation pattern. The manufacturer's radiation pattern for the KVNE(FM) transmitting antenna is included herein as Appendix 1.

The above calculations indicate that the overall RF field level at 2-m above ground level will not exceed 7.87 uW/cm^2 or 3.9% of the MPE for GP/U environments.** This is below the 5% exclusion level outlined in Section 1.1307 of the FCC Rules. Therefore, the KVNE(FM) facility is in compliance with the FCC RF exposure Rules without further consideration of other sources of RF energy at the site.

With regard to tower workers, the licensee of KVNE(FM) shall reduce power or cease the operation of the KVNE(FM) STA facility as necessary to protect persons having access to the tower or antenna from RF radiation in excess of the FCC guidelines.



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** This is 0.8% of the MPE for O/C environments.

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Manufacturer's Relative Field Elevation Pattern

