

## **South Fork Mountain Transmitter Site • Redding, California**

### **Statement of Hammett & Edison, Inc., Consulting Engineers**

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained to evaluate ground level radio frequency exposure conditions for proposed tower construction at the South Fork Mountain Transmitter Site, located 13 kilometers north-northeast of Redding, California.

#### **Electromagnetic Field Exposure Standard**

The U.S. Congress requires that the Federal Communications Commission (“FCC”) evaluate its actions for possible significant impact on the environment. In Docket 93-62, effective October 15, 1997, the FCC adopted the human exposure limits for field strength and power density recommended in Report No. 86, “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements (“NCRP”). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent Institute of Electrical and Electronics Engineers (“IEEE”) Standard C95.1-1999, “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” includes nearly identical exposure limits. A summary of the FCC’s exposure limits is shown in Figure 1. These limits apply for continuous exposures and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

The guidelines allow higher exposures for short time periods. Exposures can be averaged over a six-minute period, allowing, for example, a two-minute exposure to fields three times the limit if the remainder of the six-minute period does not include any significant exposure.

Restrictions on the access to strong fields may be achieved in different manners for casual public exposure than for occupational exposure. Persons who are authorized to be in a site area can be educated to follow procedures that will limit time-averaged exposures to levels not exceeding the guidelines.

#### **Site Description**

The South Fork Mountain Transmitter Site is located about 0.3 kilometers southwest of the mountain summit and approximately 0.5 kilometers west-southwest of another communications site. The site and the entire surrounding area is open to public access. Figure 2 provides summary information for each broadcast antenna at the subject site. As shown, it is proposed to construct a second tower at the site, having an overall height of 22 meters above ground, to support the relocated transmitting facility of FM Translator Station K227AE, 93.3 MHz, and the auxiliary transmitting facility of FM Station KNCQ, 97.3 MHz, both licensed to Redding, California.



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### Study Results

Calculations performed in accordance with FCC OET Bulletin No. 65 (August 1997, described in Figure 1) show a worst-case power density for the simultaneous operation of the facilities described in Figure 2 of 92.0% of the FCC public limit at a calculation height of 2 meters above ground level. Based on the results of these calculations, no restrictions to surrounding publicly accessible ground-level areas should be necessary.

### List of Figures

In carrying out these engineering studies, the following attached figures were prepared under my direct supervision:

1. FCC radio frequency protection guide
2. Summary of existing/proposed towers and broadcast station operating parameters.



A handwritten signature in black ink that reads "Stanley Salek".

Stanley Salek, P.E.

March 8, 2005

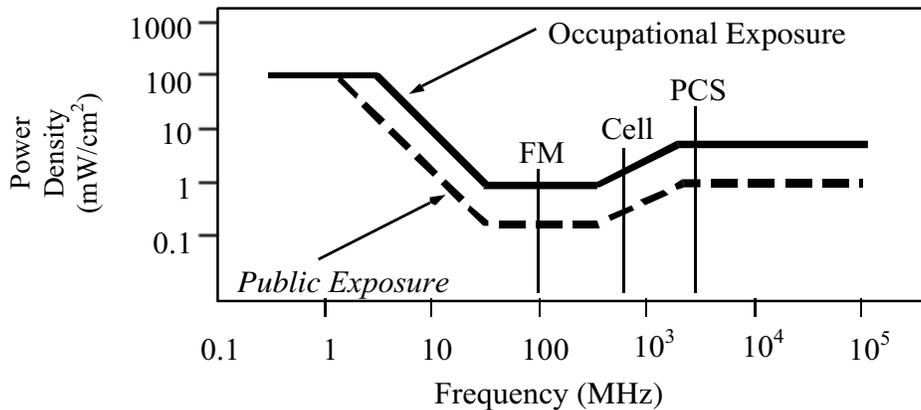


## FCC Radio Frequency Protection Guide

The U.S. Congress required (1996 Telecom Act) the Federal Communications Commission (“FCC”) to adopt a nationwide human exposure standard to ensure that its licensees do not, cumulatively, have a significant impact on the environment. The FCC adopted the limits from Report No. 86, “Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields,” published in 1986 by the Congressionally chartered National Council on Radiation Protection and Measurements, which are nearly identical to the more recent Institute of Electrical and Electronics Engineers Standard C95.1-1999, “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.” These limits apply for continuous exposures from all sources and are intended to provide a prudent margin of safety for all persons, regardless of age, gender, size, or health.

As shown in the table and chart below, separate limits apply for occupational and public exposure conditions, with the latter limits (in *italics* and/or dashed) up to five times more restrictive:

Frequency Applicable Range (MHz)	Electromagnetic Fields (f is frequency of emission in MHz)					
	Electric Field Strength (V/m)		Magnetic Field Strength (A/m)		Equivalent Far-Field Power Density (mW/cm <sup>2</sup> )	
0.3 – 1.34	614	<i>614</i>	1.63	<i>1.63</i>	100	<i>100</i>
1.34 – 3.0	614	<i>823.8/f</i>	1.63	<i>2.19/f</i>	100	<i>180/f<sup>2</sup></i>
3.0 – 30	1842/ f	<i>823.8/f</i>	4.89/ f	<i>2.19/f</i>	900/ f <sup>2</sup>	<i>180/f<sup>2</sup></i>
30 – 300	61.4	<i>27.5</i>	0.163	<i>0.0729</i>	1.0	<i>0.2</i>
300 – 1,500	3.54√f	<i>1.59√f</i>	√f/106	<i>√f/238</i>	f/300	<i>f/1500</i>
1,500 – 100,000	137	<i>61.4</i>	0.364	<i>0.163</i>	5.0	<i>1.0</i>



Higher levels are allowed for short periods of time, such that total exposure levels averaged over six or thirty minutes, for occupational or public settings, respectively, do not exceed the limits, and higher levels also are allowed for exposures to small areas, such that the spatially averaged levels do not exceed the limits. However, neither of these allowances is incorporated in the conservative calculation formulas in the FCC Office of Engineering and Technology Bulletin No. 65 (August 1997) for projecting field levels. Hammett & Edison has built those formulas into a proprietary program that calculates, at each location on an arbitrary rectangular grid, the total expected power density from any number of individual radio sources. The program allows for the description of buildings and uneven terrain, if required to obtain more accurate projections.



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## Towers and Broadcast Stations

### Existing Tower

40° 39' 06.0" N  
122° 31' 32.0" W NAD27

Site Elevation: 980 m AMSL  
Overall Tower Height: 37 m AGL, 1,017 m AMSL

Station	TV Channel or FM Frequency	COR Height (AGL)	Effective Radiated Power	Antenna Make and Model
KEWB(FM)	94.7 MHz	33 m	4.2 kW	ERI G5CPM-3E
KGEC-LP	Ch 26	27	37.8	Bogner B16UB
KESR(FM)	107.1 MHz	17	1.4	Jampro JMPC-3
KHRD(FM) Aux	103.1 MHz	14	0.7	Jampro JMPC-1

### Proposed Tower

40° 39' 06.1" N  
122° 31' 31.5" W NAD27

Site Elevation: 980 m AMSL  
Overall Tower Height: 22 m AGL, 1,002 m AMSL

Station	FM Frequency	COR Height (AGL)	Effective Radiated Power	Antenna Make and Model
K227AE	93.3 MHz	20.5 m*	0.25 kW	Scala CL-FM H/V
KNCQ(FM) Aux	97.3 MHz	15	0.25	Celwave CFMLP-3

\* Horizontal radiating element mounted at 21 m AGL, vertical radiating element mounted at 20 m AGL.

