

## **FM Station KSSX • 95.7 MHz, Channel 239B • Carlsbad, California**

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

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained on behalf of the licensee of FM Station KSSX, 95.7 MHz, Channel 239B, licensed to Carlsbad, California, to conduct field measurements at the permitted transmitting site to determine compliance with appropriate guidelines limiting human exposure to radio frequency (“RF”) electromagnetic fields.

### **Background**

KSSX is presently permitted to construct new transmitting facilities (FCC File No. 137527) operating from the KFMB-TV compound at the Soledad Mountain Telecommunications Site, located in La Jolla, California. The permitted facility consists of a six-bay half-wave-spaced circularly-polarized directional antenna, side-mounted on a guyed tower at an effective height of about 85 feet above ground, about 837 feet above mean sea level, employing no beam tilt and operating with a maximum effective radiated power of 30 kW for each polarization. In accordance with the special condition included in the construction permit for this facility, radio frequency electromagnetic field strength measurements throughout the transmitter site area and in surrounding locations have been made to determine if there are any areas in which exposure levels exceed the FCC guidelines for human exposure to RF fields.

### **Prevailing 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 standard, developed by the Institute of Electrical and Electronics Engineers IEEE C95.1-2019, “IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz,” includes similar 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 most restrictive threshold for exposures of unlimited duration to radio frequency (“RF”) energy in the 30–300 MHz range is  $0.2 \text{ mW/cm}^2$ , applying in areas for which access by the general public is uncontrolled.



### **Site Description**

The KFMB-TV compound was visited by Mr. David Kelly, a qualified field technician employed by Hammett & Edison, Inc., during normal business hours on August 12, 2021. The site is located in La Jolla, in western San Diego County, and is one of four discrete sites\* located in close proximity to each other and to a residential neighborhood. The KFMB-TV compound is located immediately southeast of the intersection of La Jolla Scenic Drive South and Via Casa Alta, and is surrounded by a locked, gated, fenced enclosure. Within the compound were observed two guyed towers – the southern tower supporting the KSSX antenna and the northern tower supporting the KFMB-TV main and auxiliary antennas and the seven-station “FM Master” main and auxiliary antennas. Access to the nearby streets and residential areas is not restricted.

### **Measurement Method and Results**

During site measurements, the permitted KSSX transmitting facility was reported to be operating at authorized power. The measurement equipment used was a Narda Type NBM-520 Broadband Field Meter with EA-5091 Isotropic Broadband Electric Field Probe (Serial No. 01035). Both meter and probe were under current calibration by the manufacturer. The probe is frequency-shaped to reflect the occupational exposure limits detailed in the FCC standard, allowing the meter to measure correctly the total exposure levels from the various emitters at the site. The meter conveniently reads directly in percent of the occupational limits of the standard.

Measurements were made at locations within the site compound, including at the tower guy anchors, and throughout the surrounding streets and residential areas. The maximum RF exposure levels measured at ground within the KFMB-TV site were generally found to be below the FCC public exposure limit, except for small areas near the guy anchors and near the base of the northern tower, where peak exposure levels were found to exceed the FCC public limit within 1½ feet. No accessible areas within the KFMB-TV compound were found that exceeded the FCC occupational exposure limit.

Exposure levels in the surrounding residential areas were found to be below the FCC public exposure limit; the maximum level observed at any location outside the compound was 43% of the applicable public exposure limit, near the gate to the U.S. Navy site.

---

\* The sites consist of the “KFMB-TV site,” the “KGTV site,” the “UCSD site,” and the “U.S. Navy site.”

## Recommendations

It is recommended that RF safety training be provided to all authorized personnel with access into the KFMB-TV compound. Further, it is recommended that blue NOTICE signs, visible from any angle of approach, be posted at the gates to the compound, at the guy anchors for the towers, and at the base of the northern tower. Recent FCC Rules<sup>†</sup> require the following information on all explanatory signs:

- Appropriate signal word and associated color in accord with IEEE C95.2-1999 (e.g., blue “NOTICE”)
- RF energy advisory symbol (Figure A.3 of IEEE C95.2-1999)
- Explanation of the RF source
- Behavior necessary to comply with the exposure limits (e.g., keep back 2 feet)
- Contact information to arrange for close access.

An example sign is provided in Figure 2; it is recommended that a similar sign be used and that any existing signs be updated to include this information, if necessary.

## Conclusion

Based on the information and analysis above, it is the undersigned’s professional opinion that the permitted KSSX operation, along with the other collocated transmitting facilities as installed and operating at the time of measurement, complies with the FCC guidelines limiting public exposure to radio frequency energy and, therefore, does not for this reason cause a significant impact on the environment. Training authorized personnel and posting signs is recommended to comply with occupational exposure guidelines.

## Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-18063, which expires on June 30, 2023. This work has been carried out under his direction, and all statements are true and correct of his own knowledge except, where noted, when data has been supplied by others, which data he believes to be correct.

*Rajat Mathur*

Rajat Mathur, P.E.  
707/996-5200



August 16, 2021

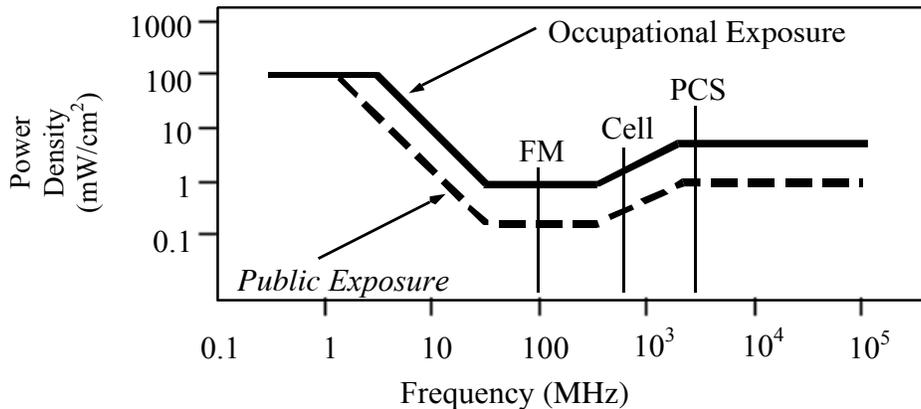
<sup>†</sup> Second Report and Order in the matter of Reassessment of Federal Communications Commission Radiofrequency Exposure Limits and Policies, ET Docket No. 13-84, and Proposed Changes in the Commission’s Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields, ET Docket No. 03-137.

## 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 (“NCRP”). Separate limits apply for occupational and public exposure conditions, with the latter limits generally five times more restrictive. The more recent standard, developed by the Institute of Electrical and Electronics Engineers and approved as American National Standard ANSI/IEEE C95.1-2006, “Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz,” includes similar limits. 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 incorporated those formulas in a computer program capable of calculating, at thousands of locations on an arbitrary grid, the total expected power density from any number of individual radio frequency sources. The program allows for the inclusion of uneven terrain in the vicinity, as well as any number of nearby buildings of varying heights, to obtain more accurate projections.



**NOTICE**

**RF energy advisory symbol**

**TRANSMITTING ANTENNAS**

**RADIO FREQUENCY FIELDS  
BEYOND THIS POINT MAY  
EXCEED FCC PUBLIC  
EXPOSURE LIMIT  
KEEP BACK  
2 FEET**

**CONTACT STATION FOR CLOSER ACCESS**

\_\_\_\_\_  
CONTACT TELEPHONE

\_\_\_\_\_  
STATION