

Statement of Hammett & Edison, Inc., Consulting Engineers

The firm of Hammett & Edison, Inc., Consulting Engineers, has been retained by the Arizona Board of Regents, University of Arizona, licensee of Station KUAZ-FM, to conduct field measurements at the permitted transmitting site to determine compliance with appropriate guidelines limiting human exposure to radio frequency electromagnetic fields.

Background

Station KUAZ-FM is presently permitted (FCC File No. BPED-20030304AAY) to construct new transmitting facilities operating at 1.6 kW ERP at the Tumamoc Hill communications site, located in Tucson, Arizona. In accordance with the special condition included on the construction permit for this facility, radio frequency electromagnetic field strength measurements throughout the transmitter site area have been made to determine if there are any areas that exceed the FCC guidelines for human exposure to RF fields. This statement reports on the results of the measurements.

Prevailing Exposure Standards

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 most restrictive threshold for exposures of unlimited duration to radio frequency (“RF”) energy in the 30–300 MHz range is 0.2 mW/cm², applying in areas for which access by the general public is uncontrolled.



Site Description

The permitted KUAZ-FM transmitter site was visited by the undersigned on October 18, 2005. The site is located near the summit of Tumamoc Hill, within the Tucson, Arizona, city limits. The KUAZ-FM transmitting antenna is installed on the same tower as the licensed, diplexed, transmitting antenna of Stations KUAS-TV, NTSC Channel 27, operating at 30.2 kW ERP, and KUAS-DT, DTV Channel 28, operating at 50 kW ERP. Additionally, licensed FM translator station K209AF operates with 38 watts ERP from an immediately adjacent tower, and three licensed TV translator stations, K02BW, K16EO, and K64BV, operate from nearby support structures. While the two associated transmitter buildings are secured by locked entry doors, access to the overall site is not restricted. Thus, it is my professional opinion that the site should be considered a public, uncontrolled environment.

Measurement Method and Results

During site measurements, the permitted KUAZ-FM transmitting facilities were operated at full authorized power into the installed Dielectric Model DCR-H3E5 3-bay transmitting antenna, which employs half-wave-spaced elements. The measurement equipment used was a Wandel & Goltermann Type EMR-300 Radiation Meter (Serial No. P-0008) with a Type 25.2 Frequency-Shaped Isotropic Electric Field Probe (Serial No. E-0001). Both meter and probe were under current calibration by the manufacturer. The maximum observed power density level measured at any accessible location within the transmitter site area was 48% of the public limit, as observed on the northern side of the pad supporting the KUAZ-FM tower.

Conclusion

Based on the information and analysis above, it is the undersigned's professional opinion that the permitted KUAZ-FM operation, along with the other collocated transmitting facilities operating at the time of measurement, comply with the FCC guidelines limiting public and occupational exposure to radio frequency energy and, therefore, does not for this reason cause a significant impact on the environment. Further, I conclude that assuming no other significant facilities changes at the site, RF exposure levels for future operation of the station employing in-band, on-channel (IBOC) digital audio broadcasting will remain below the public exposure limit.



Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-14217, which expires on June 30, 2007. This work has been carried out by him, and all statements are true and correct of his own knowledge.

October 27, 2005



A handwritten signature of Stanley Salek in black ink, written over a horizontal line.

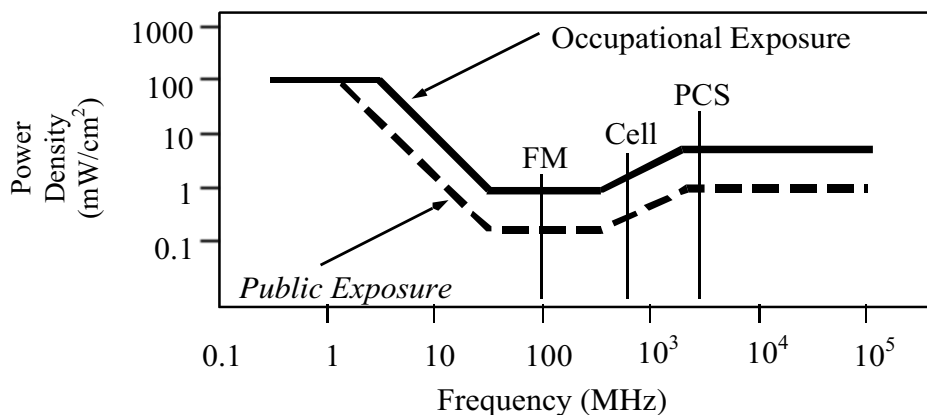
Stanley Salek, P.E.

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 ²)	
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/f²</i>
3.0 – 30	1842/ f	<i>823.8/f</i>	4.89/ f	<i>2.19/f</i>	900/ f ²	<i>180/f²</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.

