

**Station KUAT-DT • DTV Channel 30 • Tucson, Arizona**

**Exhibit 12 to FCC Form 302-DTV**

See the accompanying Engineering Statement regarding environmental protection.



## **Station KUAT-DT • DTV Channel 30 • Tucson, Arizona**

### **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 KUAT-TV, NTSC Channel 6, and permittee of Station KUAT-DT, DTV Channel 30, Tucson, Arizona, Facility ID No. 2731, to conduct field measurements at the KUAT transmitting site to determine compliance with appropriate guidelines limiting human exposure to radio frequency electromagnetic fields.

### **Background**

Station KUAT-DT is presently permitted (FCC File No. BPEDT-20000428ACY) to construct DTV transmitting facilities operating at 667.5 kW ERP at the Mt. Bigelow Communications site. In accordance with FCC Rules Section 73.1690(c)(1), a Dielectric Model TUA-O4-6/24H-1-R-B nondirectional transmitting antenna was substituted for the permitted nondirectional Jampro Model JUHD-6/4 (24) transmitting antenna. In accordance with the recommendations included with the technical portion of the original construction permit application 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 these 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/cm<sup>2</sup>, applying in areas for which access by the general public is uncontrolled. The public limit applicable to TV Channel 30 is 0.38 mW/cm<sup>2</sup>.



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### **Site Description**

The KUAT transmitter site was visited by the undersigned on July 23, 2004. The site is located near the summit of Mt. Bigelow, in the Coronado National Forest, 29 kilometers north-northeast of Tucson, Arizona. In addition to the licensed/permitted transmitting facilities of KUAT-TV/KUAT-DT, the multi-user site contains the transmitting facilities of six other full service TV/DTV stations, one Class A NTSC TV station, two full service FM stations, and several LPTV, TV translator, FM translator, and microwave facilities. A U.S. Forest Service observation platform and a public restroom building are also located in the immediate vicinity of the six towers supporting these facilities. While the associated transmitter buildings are secured by locked entry doors and RF radiation warning signs are posted, access to the overall site is not restricted. Thus, it is my professional opinion the site should be considered a public uncontrolled environment.

### **Measurement Results**

During site measurements, the KUAT-DT transmitting facilities were operated at full permitted power. The measurement equipment used was a Wandel & Goltermann Type EMR-300 Radiation Meter (Serial No. P-0008) with a Type 25 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 35% of the most restrictive public limit, observed at the highest openly accessible point on the steps leading to the U.S. Forest Service observation platform. Measurements made on the observation platform itself (not publicly accessible) yielded a maximum power density of 70% of the most restrictive public limit. Measurements made in the vast majority of the transmitter site area yielded results well under 25% of the most restrictive public limit.

### **Conclusion**

Based on the information and analysis above, it is the undersigned's professional opinion that the permitted KUAT-DT operation, along with the other site transmitting facilities as operating at the time of measurement, complies 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.



Authorship

The undersigned author of this statement is a qualified Professional Engineer, holding California Registration No. E-14217, which expires on June 30, 2005. This work has been carried out by him, and all statements are true and correct of his own knowledge.



A handwritten signature in black ink that reads "Stanley Salek". The signature is written over a horizontal line.

Stanley Salek, P.E.

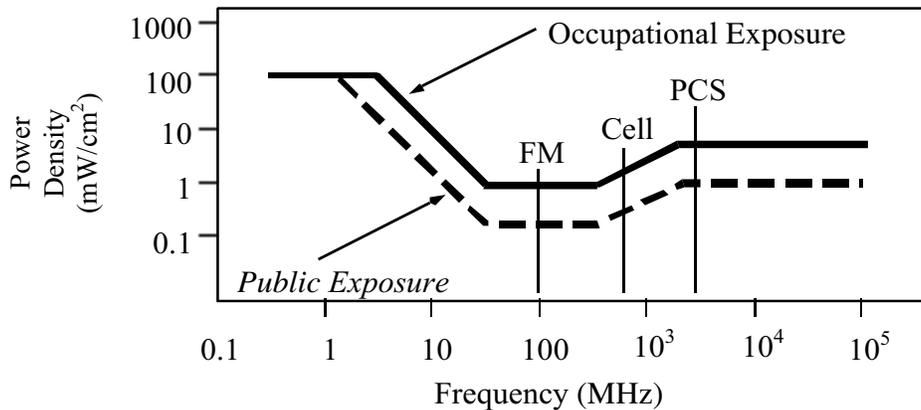
July 26, 2004

## 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.

