

**August 2009**  
**KPKR(FM) Channel 247C3**  
**Parker, AZ**  
**NIER Analysis**

**Facilities Constructed**

The constructed operation is on Channel 247C3 (97.3 MHz) with an effective radiated power of 1.7 kilowatts. Operation is with a 1-element circularly-polarized omni-directional antenna. The construction permit BPH-20090406AFT bears a condition requiring post-construction RF field strength measurements, but such measurements are not believed to be necessary in this particular case.

The condition on the KPKR permit was apparently applied because FM station KWFH holds a construction permit BPED-20090128ABE to operate on Channel 212C1 at this site, which permit was granted a little more than one month prior to grant of the KPKR permit. The KWFH permit triggers a measurement condition due to the fact that the KWFH licensee did not include any exposure calculations in their application, nor did they specify an antenna make and model. Under a worst-case assumption of a 1-bay ring-stub antenna for KWFH operating with 20 kW ERP, the highest calculated ground-level exposure from the KWFH permit facility alone is 16,406  $\mu\text{W}/\text{cm}^2$ .

The KWFH permit facility has not yet been constructed. Therefore, and as detailed by the calculations below, it is not believed necessary for the KPKR licensee to undertake measurements as a condition for licensing its own station. The KWFH licensee will (in accordance with its own construction permit) be required to perform post-construction measurements following installation of the 20 kW KWFH facility.

**NIER Calculations**

The power density calculations shown below were made using the techniques outlined in OET Bulletin No. 65. "Ground level" calculations in this report have been made at a reference height of 2 meters above ground to provide a worst-case estimate of exposure for persons standing on the ground in the vicinity of the tower. The equation shown below was used to calculate the ground level power density figures from each antenna.

$$S(\text{mW} / \text{cm}^2) = \frac{33.40981 \times \text{AdjERP}(\text{Watts})}{D^2}$$

Where: *AdjERP(Watts)* is the maximum lobe effective radiated power times the element pattern factor times the array pattern factor.

*D* is the distance in meters from the center of radiation to the calculation point.

Ground level power densities have been calculated for locations extending from the base of the tower to a distance of 1000 meters. Values past this point are increasingly negligible.

Calculations of the power density produced by the KPKR antenna system assume a Type 2 element pattern, which is the element pattern for PSI FML-1 antenna which has been installed for use. The highest calculated ground level power density occurs at a distance of 7 meters from the base of the antenna support structure. At this point the power density is calculated to be 637.5  $\mu\text{W}/\text{cm}^2$ , which is 63.8% of 1000  $\mu\text{W}/\text{cm}^2$  (the FCC standard for controlled environments such as this one).

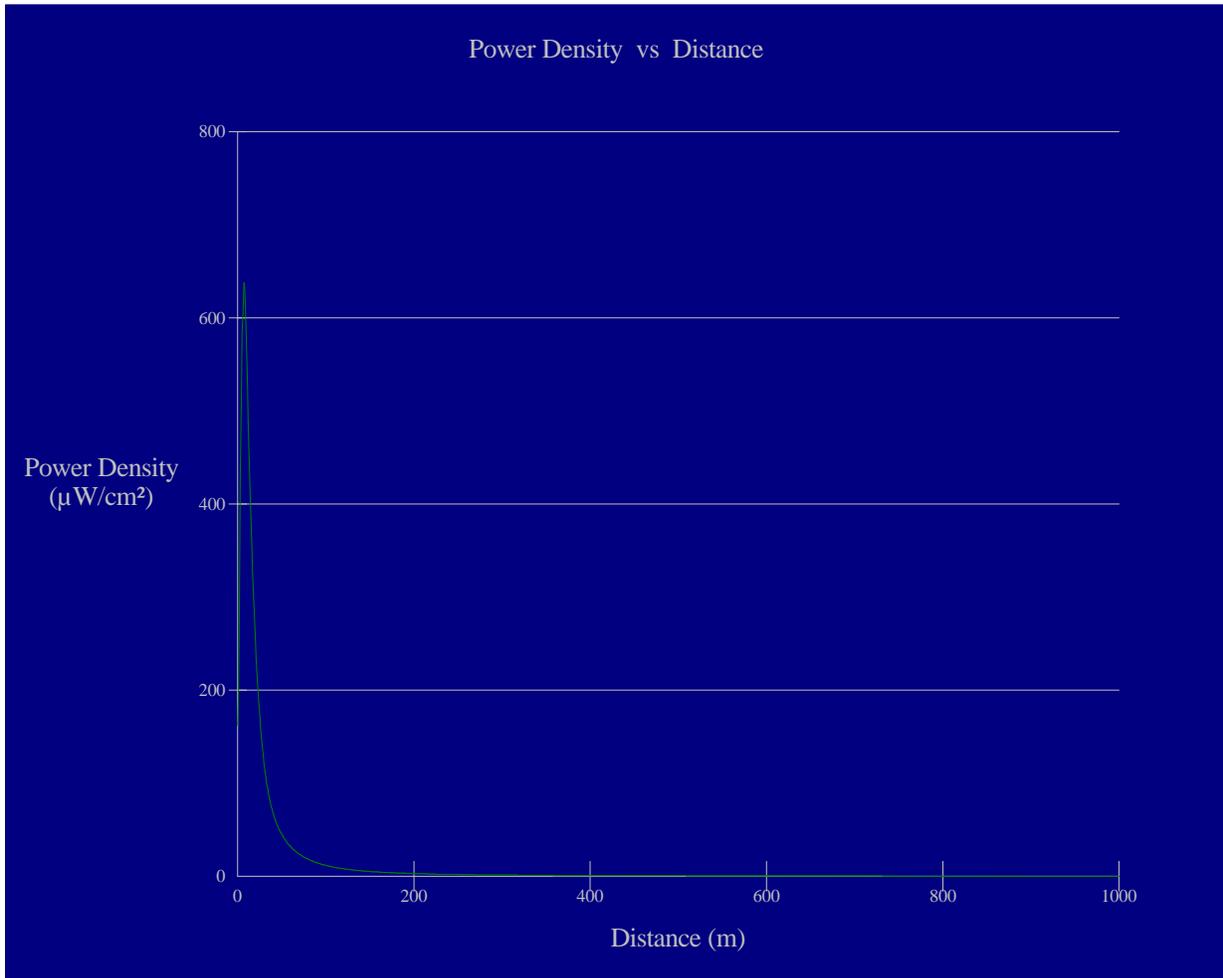
Analog TV translator station K02MT Parker is licensed for operation from a nearby transmitter site, with a maximum lobe peak ERP of 39 Watts at 9 meters AGL. Under a worst-case assumption that the K02MT antenna will radiate 100% average power of 19.5 Watts straight down, the highest calculated ground level power density occurs at the base of the antenna support structure. At this point the power density is calculated to be 13.3  $\mu\text{W}/\text{cm}^2$ , which is 1.3% of 1000  $\mu\text{W}/\text{cm}^2$  (the FCC standard for controlled environments such as this one).

These calculations show that the maximum calculated power density produced at two meters above ground level by KPKR and K02MT (were their maxima to coincide, which they do not) is 65.1% of the FCC standard for controlled environments.

According to information provided by the KPKR licensee, the Black Peak communications site is considered to be a controlled-access site. The site can only be accessed by a single unimproved access road which dead-ends at the transmitter site. There are no public facilities at the site or anywhere along the road, and the transmitter site is not “on the way” to any other destination. The final 1.9 kilometers of road (from the base of Black Peak to the communications site at the summit) gains 328 meters in elevation, representing an average grade of 17%. In places the grade can

reach as high as 25%. The road is subject to washouts and due to rocky obstacles can only be traveled by a high clearance vehicle. In short, this site is not believed to be accessed by anyone other than trained electronics technicians with business at the transmitter site.

Pursuant to OET Bulletin No. 65, all station personnel and contractors are required to follow appropriate safety procedures before any work is commenced on the antenna tower, including reduction in power or discontinuance of operation before any maintenance work is undertaken.



**Ground-Level NIER**

**OET FMModel**

**KPKR 247C3 Parker**

Antenna Type: PSI FML-1

No. of Elements: 1

Element Spacing: dna

Distance: 1000 meters

Horizontal ERP: 1.7 kW

Vertical ERP: 1.7 kW

Antenna Height: 9 meters AGL

Maximum Power Density is 637.5 :  $\text{W}/\text{cm}^2$  at 7 meters from the antenna structure.

