January 2009
KPKR(FM)   Channel 239C3
Parker, AZ
NIER Analysis

Facilities Proposed

The proposed operation will be on Channel 239C3 (95.7 MHz) with an effective radiated power of 3.2 kilowatts. Operation is proposed with a 4-element circularly-polarized omni-directional half-wave-spaced antenna. The antenna will be side-mounted on an existing tower located atop Black Peak. This structure does not require an FCC Antenna Structure Registration Number.

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.

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

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 proposed antenna system assume a Type 2 element pattern, which is the element pattern for the "double V" antenna proposed for use. The highest calculated ground level power density occurs at a distance of 26 meters from the base of the antenna support structure. At this point the power density is calculated to be 118.7 µW/cm²,

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which is 11.9% of 1000 μW/cm^2 (the FCC standard for controlled environments) and 59.4% of 200 μW/cm^2 (the FCC standard for uncontrolled environments).
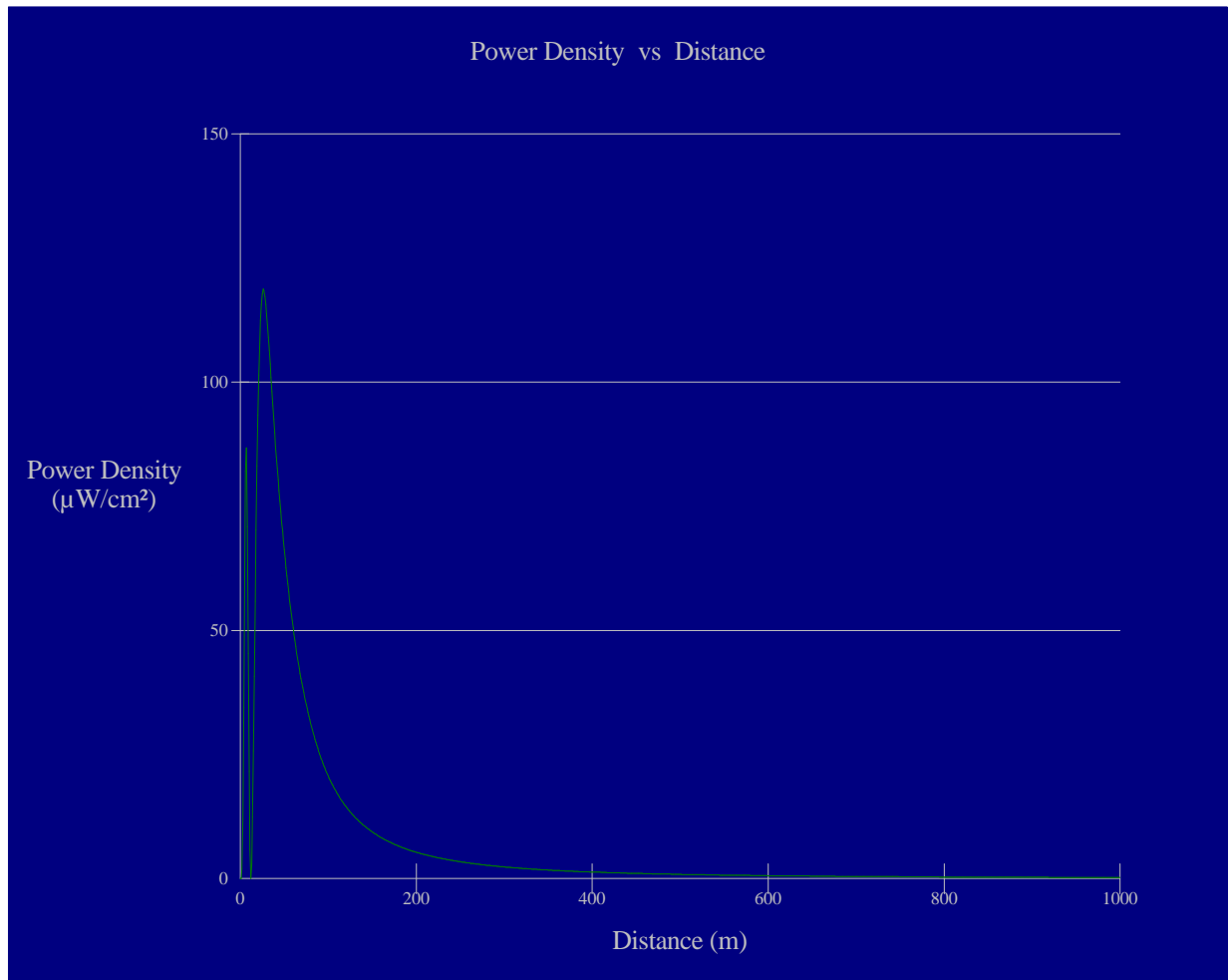
Analog TV translator station K02MT Parker is also licensed for operation from this transmitter site, with a maximum lobe peak ERP of 39 Watts at 9 meters AGL. Under a worst-case assumption that the K02MT antenna will radiate 100% average power of 19.5 Watts straight down, the highest calculated ground level power density occurs at the base of the antenna support structure. At this point the power density is calculated to be 13.3 μW/cm², which is 1.3% of 1000 μW/cm^2 (the FCC standard for controlled environments) and 6.7% of 200 μW/cm^2 (the FCC standard for uncontrolled environments).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KPKR and the present operation of K02MT (were their maxima to coincide, which they do not) is 132.0 μW/cm^2, which is 13.2% of 1000 μW/cm^2 (the FCC standard for controlled environments) and 66% of 200 μW/cm^2 (the FCC standard for uncontrolled environments).[1]

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.

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[1] It is noted that FM station KWFH Parker holds a construction permit for operation on Channel 212C1 at this transmitter site. The KWFH construction permit bears a measurement condition related to the fact that under a worst-case assumption of a 1-bay ring-stub antenna, the highest calculated ground-level exposure from that facility is 16,406 μW/cm^2. The KWFH construction permit will expire on March 8, 2009, just two months away, and it is anticipated that that facility will not be constucted within that time frame.

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Power Density vs Distance

Power Density
(µW/cm²)

Distance (m)

Ground-Level NIER   **OET FMModel**

KPKR 239C3 Parker
Antenna Type: "double V"
No. of Elements: 4
Element Spacing: 0.5 wavelength

Distance: 1000 meters
Horizontal ERP: 3.2 kW
Vertical ERP: 3.2 kW

Antenna Height: 9 meters AGL

Maximum Power Density is 118.7 : W/cm^2 at 26 meters from the antenna structure.

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