April 2014
KDGS(FM)   Channel 228C3
Andover, Kansas
RF Exposure Study

Facilities Proposed

The proposed operation will be on Channel 228C3 (93.5 MHz) with an effective radiated power of 13 kilowatts. Operation is proposed with a 8-element circularly-polarized omni-directional antenna. The antenna will be side-mounted on an existing tower with FCC Antenna Structure Registration Number 1052177. This is the tower used for the daytime operation of KNSS(AM), and is also Tower #1 in the KNSS nighttime array.

RF Exposure 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.

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

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 3 element pattern, which is the element pattern for the ERI antenna proposed for use. The highest calculated ground level power density occurs at a distance of 30 meters from the base of the antenna support structure. At this point the power density is calculated to be 4.3 μW/cm², which is 0.4% of 1000 μW/cm² (the FCC standard for controlled environments) and 2.2% of 200 μW/cm² (the FCC standard for uncontrolled environments).
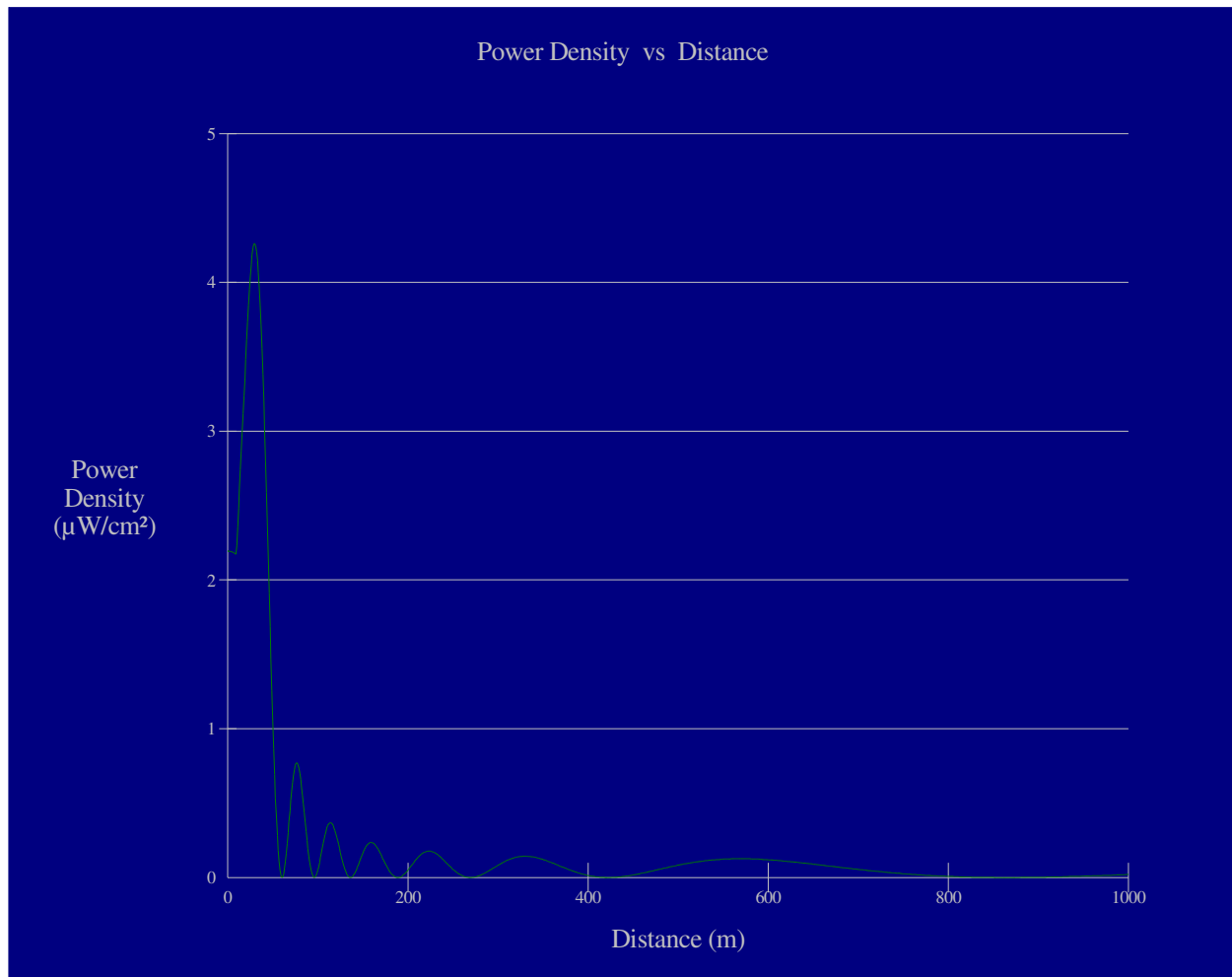
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These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KDGS alone is less than 5% of the applicable FCC exposure limit at all locations between 1 and 1000 meters from the base of the antenna support structure. Section 1.1307(b)(3) of the Commission's Rules excludes applications for new facilities or modifications to existing facilities from the requirement of preparing an environmental assessment when the calculated emissions from the applicant's proposed facility are predicted to be less than 5% of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 *et seq* and no further analysis of RF exposure at this site is required in this application.

The permittee/licensee in coordination with other users of the site must reduce power or cease operation as necessary to protect persons having access to the site, tower or antenna from radiofrequency exposure in excess of FCC guidelines.

KNSS(AM) 1330 kHz Wichita

KNSS operates with 5000 Watts nondirectional daytime and 5000 watts directional nighttime. The towers are and 202 and 109 electrical degrees tall, or 56% and 30% of the station wavelength. Using Tables 1-4 in OET Bulletin No. 65, the fencing distance requirement for the KNSS towers is 2 meters from the tower bases. The towers are fenced to a distance exceeding 2 meters from the tower bases.

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Power Density vs Distance

Power Density (µW/cm²) — Distance (m)

Ground-Level RF Exposure   **OET FMModel**

KDGS 228C3 Andover

Antenna Type:	ERI MPC-8C "rototiller"
No. of Elements:	8
Element Spacing:	1.0 wavelength

Distance:	1000 meters
Horizontal ERP:	13 kW
Vertical ERP:	13 kW

Antenna Height:	111 meters AGL

Maximum Calculated Power Density is 4.3 µW/cm^2 at 30 meters from the antenna structure.

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