

**February 2014  
KHYX(FM) Channel 274C2  
Winnemucca, Nevada  
RF Exposure Study**

**Facilities Proposed**

The proposed operation will be on Channel 274C2 (102.7 MHz) with an effective radiated power of 0.500 kilowatts. Operation is proposed with an antenna which will be installed on an existing tower at Winnemucca Mountain. Duplexed operation is proposed with FM translator K232BK.

The antenna support structure does not exceed 60.96 meters (200 feet) above ground and does not require notification to the Federal Aviation Administration. Therefore, this structure does not require an Antenna Structure Registration Number.

**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 KHYX antenna system assume a Type 1 element pattern, which is the "worst case" element pattern. Under this worst-case assumption, the highest calculated ground level power density from KHYX alone occurs at a distance of 4 meters from the base of the antenna support structure. At this point the power density is calculated

to be  $78.4 \mu\text{W}/\text{cm}^2$ , which is 39.2% of the  $200 \mu\text{W}/\text{cm}^2$  FCC General Population standard at FM frequencies.

FM translator K232BK is also proposed to be located at this site. Calculations of the power density produced by the proposed K232BK antenna system assume a Type 1 element pattern, which is the “worst case” element pattern. Under this worst-case assumption, the highest calculated ground level power density from K232BK alone occurs at a distance of 4 meters from the base of the antenna support structure. At this point the power density is calculated to be  $39.2 \mu\text{W}/\text{cm}^2$ , which is 19.6% of the  $200 \mu\text{W}/\text{cm}^2$  FCC General Population standard at FM frequencies.

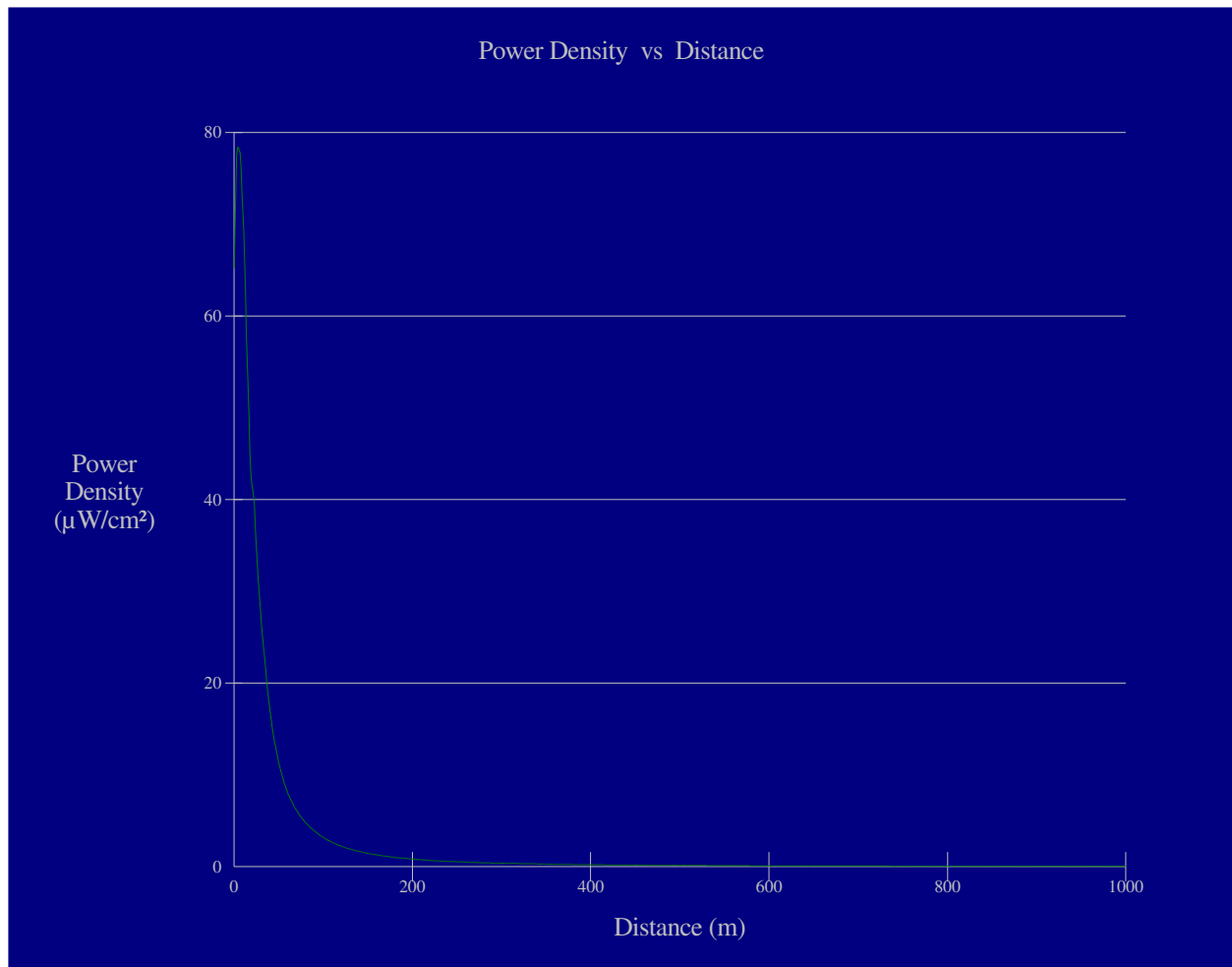
TV translator K17HB-D operates from an adjacent tower at this site. Calculations of the power density produced by the proposed K17HB-D antenna system have been made using the manufacturer's vertical plane pattern for the Scala 4DR-4-S antenna used by that station. The highest calculated ground level power density from K17HB-D alone occurs at a distance of 2 meters from the base of the antenna support structure. At this point the power density is calculated to be  $36.1 \mu\text{W}/\text{cm}^2$ , which is 11.1% of the  $325 \mu\text{W}/\text{cm}^2$  FCC General Population standard at the Channel 17 frequency.

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operations of KHYX and K232BK and the present operation of K17HB-D (were their maxima to coincide, which they do not) is 69.9% of the FCC General Population standard.<sup>1</sup>

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.

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<sup>1</sup> Three nearby FM translators all operate with only 10 watts ERP, and thus are categorically excluded from this study.



### Ground-Level RF Exposure

OET FMModel

#### KQGD 274C2 Winnemucca

Antenna Type: "ring stub" assumed for this study

No. of Elements: 1

Element Spacing: dna wavelength

Distance: 1000 meters

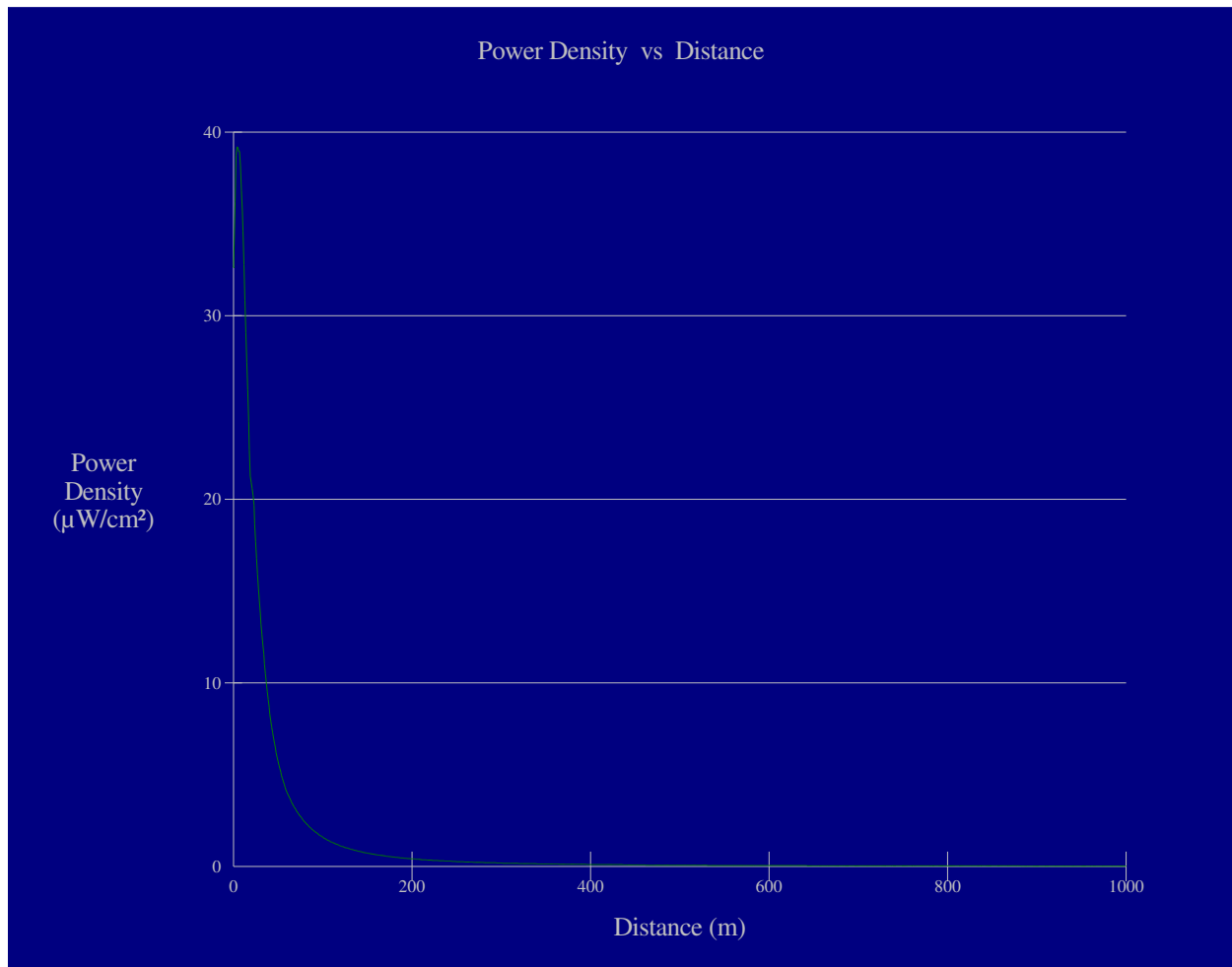
Horizontal ERP: 500 watts

Vertical ERP: 500 watts

Antenna Height: 18 meters AGL

Maximum Calculated Power Density is  $78.4 \mu\text{W}/\text{cm}^2$  at 4 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers



## Ground-Level RF Exposure

## OET FMModel

### K232BK Winnemucca

Antenna Type: "ring stub" assumed for this study

No. of Elements: 1

Element Spacing: dna wavelength

Distance: 1000 meters

Horizontal ERP: 250 watts

Vertical ERP: 250 watts

Antenna Height: 18 meters AGL

Maximum Calculated Power Density is  $39.2 \mu\text{W}/\text{cm}^2$  at 4 meters from the antenna structure.

Hatfield & Dawson Consulting Engineers