

**June 2009**  
**KYVA-FM Channel 279C0 Church Rock, NM**  
**KKOR(FM) Channel 233C0 Gallup, NM**  
**KXXI (FM) Channel 229C0 Gallup, NM**  
**NIER Analysis**

**Facilities**

Millennium Media has consolidated KYVA-FM, KKOR and KXXI on a new tower located on Gibson Peak in New Mexico. The construction permits for KYVA-FM and KKOR require RF field strength measurements be made due to the high contribution of RF fields by an earlier proposal for the KXXI facility, in which KXXI would be located on a separate antenna lower on the tower. In addition, the subsequently-issued KXXI construction permit bears a condition relating to use of a 10-bay antenna.

All three stations will be using the same 12-element antenna with effective radiated powers of 100 kilowatts for KYVA-FM and KXXI, and 85 kilowatts for KKOR. The antenna is a circularly-polarized omni-directional full-wave-spaced antenna and is side-mounted on a uniform cross-section guyed tower. The calculations below will show that the site is well within the FCC standard for uncontrolled environments and that measurements will not be required. Millennium Media hereby requests program test authority for all three stations.

The FM Translator K235BR is also co-located at the site and is included in this study.

**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.

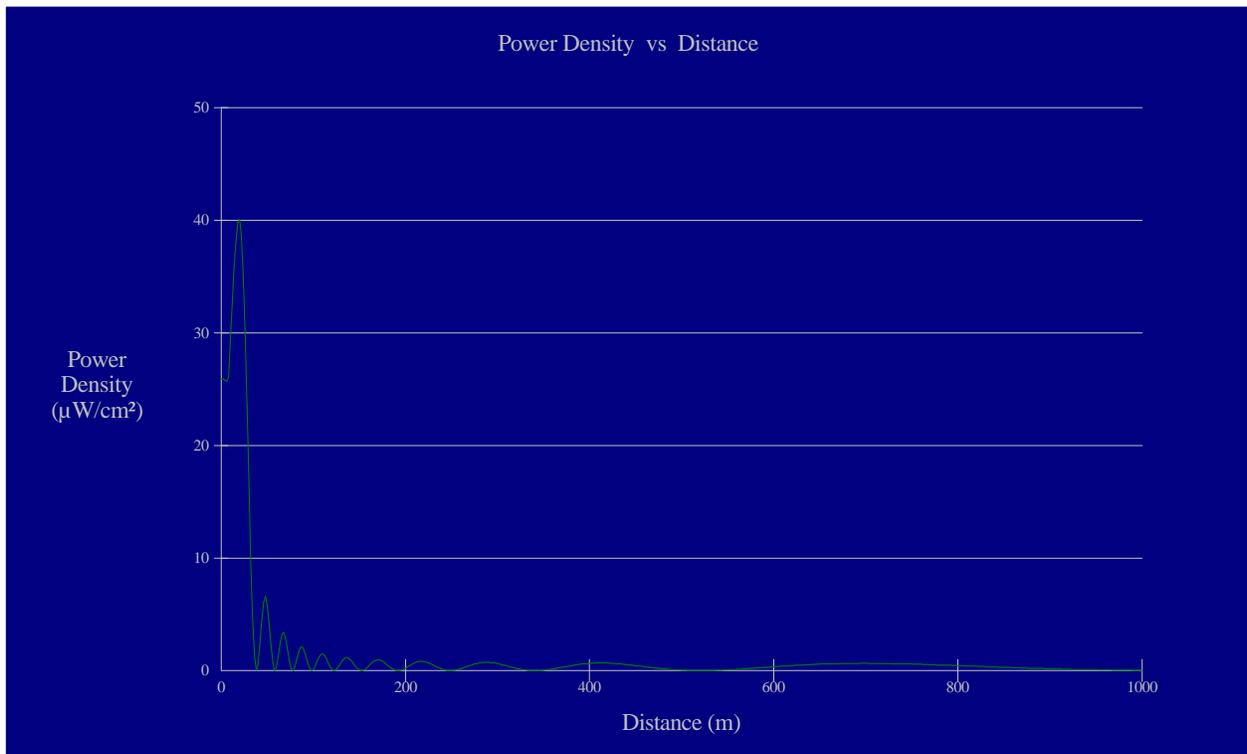
Calculations of the power density produced by the proposed facilities at this transmitter site are summarized in the following table:

Call	Avg or Peak ERP Antenna Model	Relative Field	Height AGL	Calculated Exposure	Gen Pub FCC Limit	% of Limit
KYVA-FM	100 kW avg ERI Rototiller	FMMModel	90 m	40.1 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	20.1%
KKOR(FM)	85 kW avg ERI Rototiller	FMMModel	90 m	34.0 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	17.0%
KXXI(FM)	100kW avg ERI Rototiller	FMMModel	90 m	40.1 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	20.1%
K235BR	0.24 kW avg SCA CA2V	FMMModel	27 m	12.2 $\mu\text{W}/\text{cm}^2$	200 $\mu\text{W}/\text{cm}^2$	6.1%

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operations of KYVA-FM, KKOR ,KXXI and K235BR (were their maxima to coincide) is 126.4  $\mu\text{W}/\text{cm}^2$ , which is 12.6% of 1000  $\mu\text{W}/\text{cm}^2$  (the FCC standard for controlled environments) and 63.2% of 200  $\mu\text{W}/\text{cm}^2$  (the FCC standard for uncontrolled environments).

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.

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 radiation in excess of FCC guidelines.



**Ground-Level NIER**

**OET FMModel**

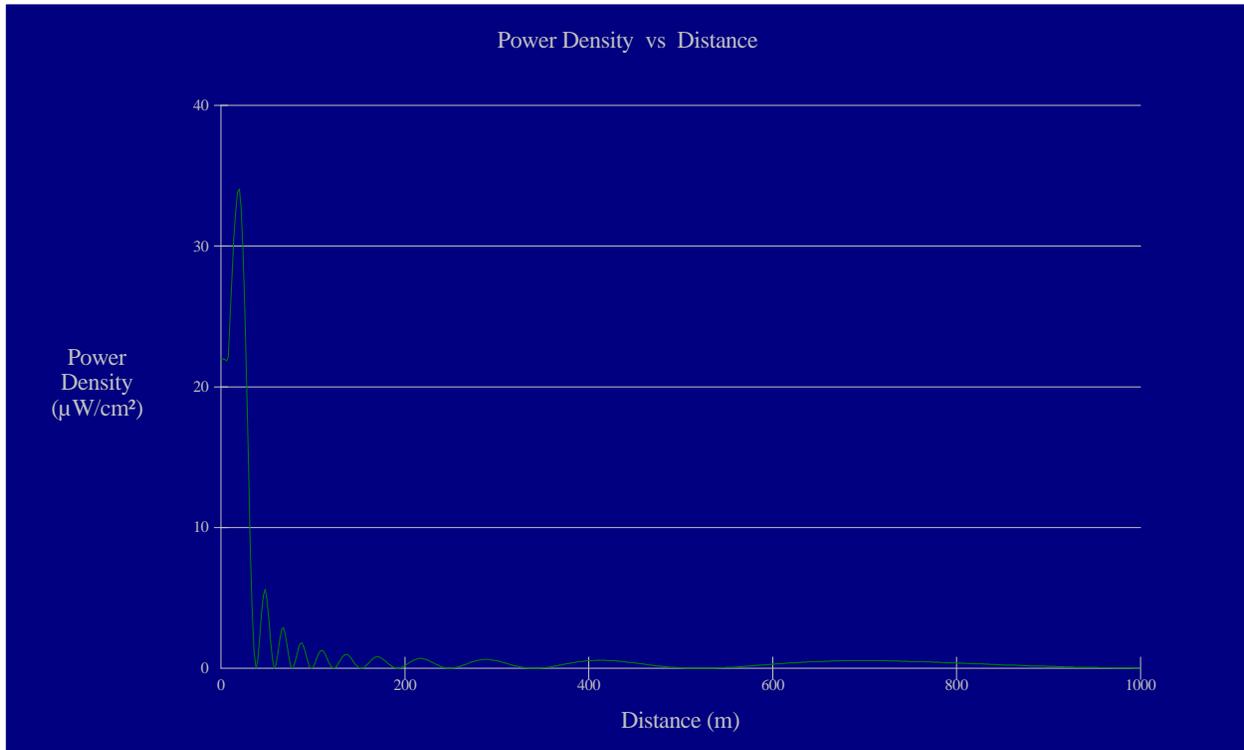
**KYVA-FM Church Rock, NM**

Antenna Type: ERI "rototiller"  
 No. of Elements: 12  
 Element Spacing: 1.0 wavelength

Distance: 1000 meters  
 Horizontal ERP: 100 kW  
 Vertical ERP: 100 kW

Antenna Height: 90 meters AGL

Maximum Power Density is 40.1  $\mu\text{W}/\text{cm}^2$  at 20 meters from the antenna structure.



**Ground-Level NIER**

**OET FMModel**

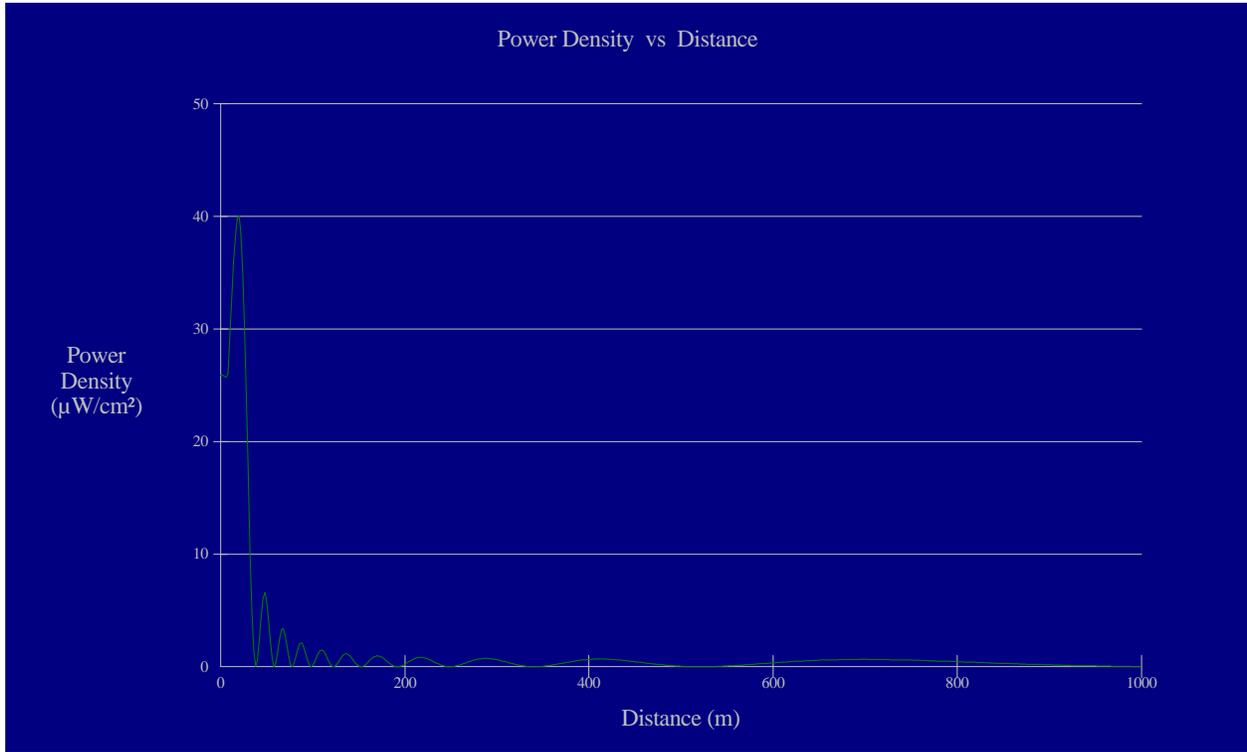
**KKOR Gallup, NM**

Antenna Type: ERI "rototiller"  
 No. of Elements: 12  
 Element Spacing: 1.0 wavelength

Distance: 1000 meters  
 Horizontal ERP: 85 kW  
 Vertical ERP: 85 kW

Antenna Height: 90 meters AGL

Maximum Power Density is 34.0  $\mu\text{W}/\text{cm}^2$  at 20 meters from the antenna structure.



**Ground-Level NIER**

**OET FMModel**

**KXXI Gallup, NM**

Antenna Type: ERI "rototiller"  
 No. of Elements: 12  
 Element Spacing: 1.0 wavelength

Distance: 1000 meters  
 Horizontal ERP: 100 kW  
 Vertical ERP: 100 kW

Antenna Height: 90 meters AGL

Maximum Power Density is 40.1  $\mu\text{W}/\text{cm}^2$  at 20 meters from the antenna structure.