November 2004
KECH(FM) Channel 237CØ Sun Valley, ID
KYZK(FM) Channel 298CØ Sun Valley, ID
NIER Analysis

Facilities Proposed

The proposed KECH operation will be on Channel 237CØ (95.3 MHz) with an effective radiated power of 47 kilowatts. The proposed KYZK operation will be on Channel 298CØ (95.3 MHz) with an effective radiated power of 47 kilowatts. Combined operation of these two stations with KSKI Channel 279C is proposed with a 6-element circularly-polarized omni-directional 0.9-wavelength-spaced antenna. The antenna will be side-mounted on a an existing tower located at Seattle Ridge near Sun Valley.

The proposed antenna support structure will 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.

NIER Calculations

In addition to the three FM stations to be combined on a single antenna, the following broadcast facilities are also located at this transmitter site: KBSS 216C2 Sun Valley, KIDA-TV Ch 5 Sun Valley, KSVX-LP Ch 18 Hailey, and KSVT-LP Ch 20 Ketchum. There are also two FM translator stations at this site, but each operates with less than 100 Watts ERP and is therefore excluded from further study.

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 KECH-KSKI-KYZK 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 for the combined operations of the three stations occurs at a distance of 14 meters from the base of the antenna support structure. At this point the power density is calculated to be 236.2 μW/cm², which is 118.1% of 200 μW/cm² (the FCC standard for uncontrolled environments at VHF frequencies).

Calculations of the power density produced by the KBSS antenna system assume a Type 6 element pattern, which is the element pattern for the Shively 6810-1R-DA antenna used by that station. The highest calculated ground level power density occurs at a distance of 9 meters from the base of the antenna support structure. At this point the power density is calculated to be 122.9 μW/cm², which is 61.5% of 200 μW/cm² (the FCC standard for uncontrolled environments at VHF frequencies).

Power density levels produced by the KIDA-TV antenna system were calculated for an elevation of 2 meters above ground level (14 meters below the antenna radiation center). According to the material submitted with the KIDA-TV application, the worst case power density levels occur at depression angles between 70° and 90° below the horizontal, for the PSI CR/5 antenna used by that facility. The calculations in this report assume a worst case relative field value of 0.350 at these angles. Assuming this relative field value and 5% aural power as represented in the KIDA-TV application, the worst-case power density is calculated to be 96.3 μW/cm², which is 48.2% of 200 μW/cm^2 (the FCC standard for uncontrolled environments at VHF frequencies).

Power density levels produced by the KSVX-LP antenna system were calculated for an elevation of 2 meters above ground level (12 meters below the antenna radiation center). The calculations in this report assume a worst case relative field value of 0.375 for the Scala 4DR-4S antenna used by this station. This relative field value occurs at 90 degrees below the horizontal according to the manufacturer's pattern. Assuming this relative field value and 20% aural power, the worst-case power density is calculated to be 29.4 μW/cm², which is 8.9% of 330.2 μW/cm^2 (the FCC standard for uncontrolled environments at the Ch 18 frequency).

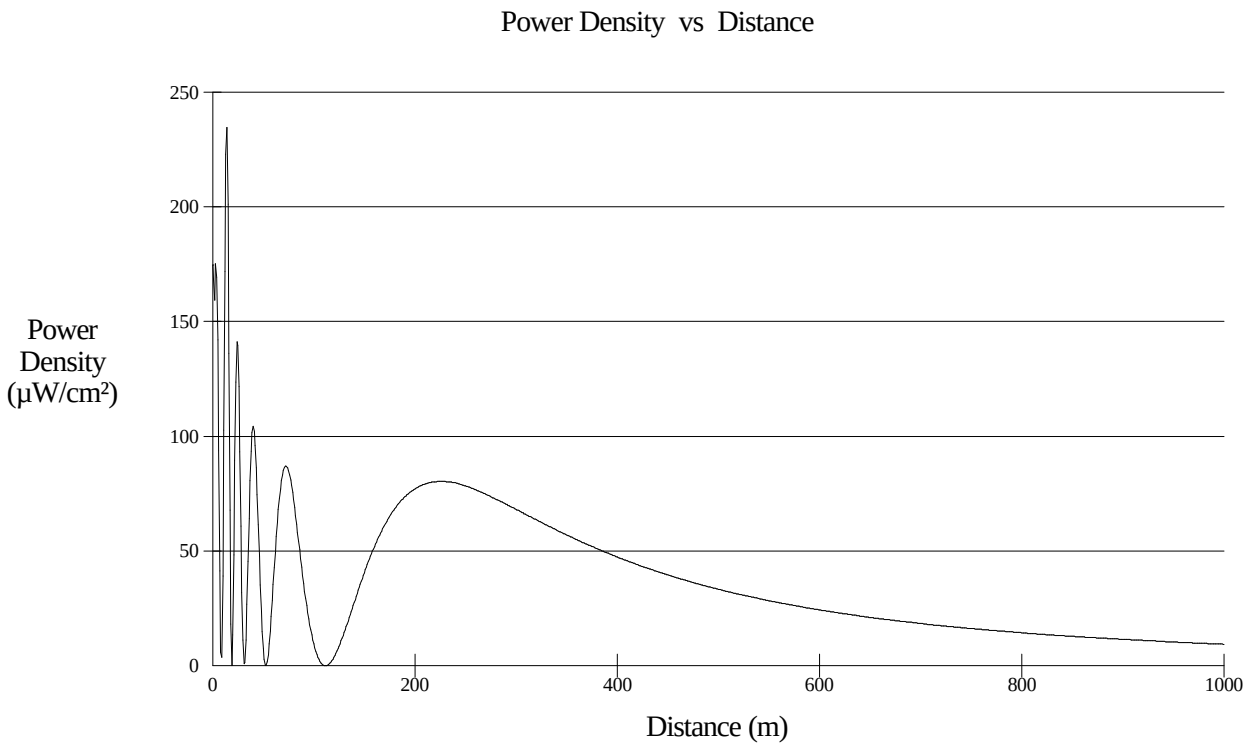
Power density levels produced by the KSVT-LP antenna system were calculated for an elevation of 2 meters above ground level (7 meters below the antenna radiation center). The calculations in this report assume a worst case relative field value of 0.375 for the

Scala 4DR-4S antenna used by this station. This relative field value occurs at 90 degrees below the horizontal according to the manufacturer's pattern. Assuming this relative field value and 20% aural power, the worst-case power density is calculated to be 2.7 μW/cm², which is 0.8% of 338.2 μW/cm^2 (the FCC standard for uncontrolled environments at the Ch 20 frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the proposed operation of KSKI-KECH-KYZK and the present operations of the other stations at this site (were their maxima to all coincide, which they do not) is 238% of the FCC standard for uncontrolled environments. If required by the Commission, the applicant will make on-site RFR measurements following construction in order to demonstrate real-world compliance with the FCC exposure guidelines.

The antenna tower is posted with warning signs. 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.



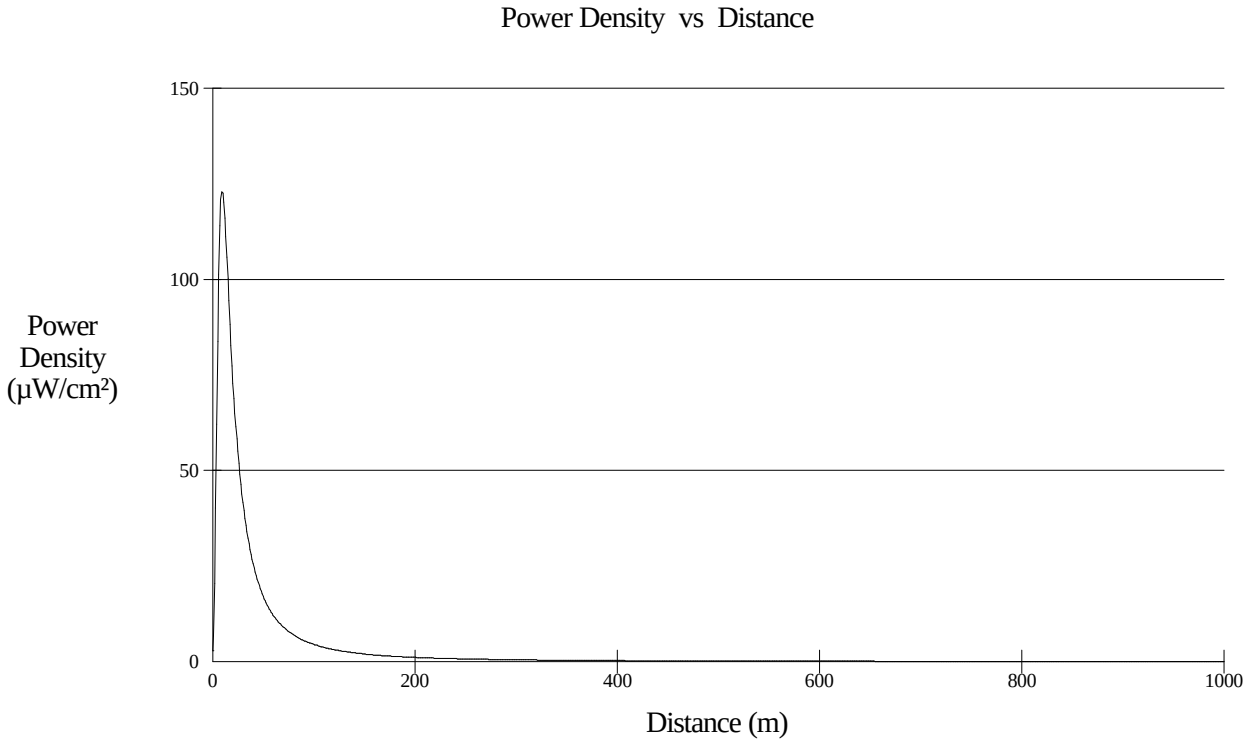
Ground-Level NIER Analysis OET FMModel

KECH (47 kW) + KSKI (53 kW) + KYZK (47 kW)
Antenna Type: ERI "rototiller"
Number of Elements: 6
Element Spacing: 0.9 wavelength

Distance: 1000 meters
Horizontal ERP: 147 kW
Vertical ERP: 147 kW

Antenna Height: 23 meters AGL

Maximum Power Density is 236.2 µW/cm2 at 14 meters from the antenna structure.



Ground-Level NIER Analysis OET FMModel

KBSS Sun Valley
Antenna Type: Shively 6810-1R-DA
Number of Elements: 1
Element Spacing: dna

Distance: 1000 meters
Horizontal ERP: 700 W
Vertical ERP: 700 W

Antenna Height: 11 meters AGL

Maximum Power Density is 122.9 µW/cm2 at 9 meters from the antenna structure.