

January 2006
KFTS-DT Channel 33 Klamath Falls, OR
NIER Study

Facilities Proposed

The proposed operation will be on UHF Channel 33 (584-590 MHz) with a maximum effective radiated power of 9.6 kilowatts. Operation is proposed with a horizontally polarized Kathrein 771-304 omnidirectional antenna, top-mounted on an existing tower located atop Stukel Mountain near Klamath Falls, Oregon.

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

Study of the area within 1000 meters of the proposed site reveals no likely sources of non-ionizing radiation other than those listed in the attached table, and this proposal. Ground level NIER values near the base of the proposed structure from other sources are believed to be negligible.

OST Bulletin 65 Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields (Edition 97-01) states in part that:

When performing an evaluation for compliance with the FCC's RF guidelines all significant contributors to the ambient RF environment should be considered. . . For purposes of such consideration, significance can be taken to mean any transmitter producing more than 5% of the applicable exposure limit (in terms of power density or the square of the electric or magnetic field strength) at accessible locations.

As will be demonstrated below, the proposed operation of KFTS-DT will produce no more than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the proposed facility is categorically excluded from the requirement of further study. Therefore, pursuant to §1.1307(b)(3) of the Commission's Rules no calculations are required for the other FM and TV facilities in the vicinity, and precise calculations are made only with regard to the levels from this proposal.

The formula described in OST-65 for television transmitting antennas is based on the NTSC transmission standards, where the average power is normally much less than the peak power. For DTV facilities, the peak-to-average ratio is different from that of the NTSC ratio. The 9.6 kW ERP figure herein refers to the average power level. Therefore, the formula used for calculating DTV power density is the same as that employed for FM transmitting antennas.

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

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.

Power density levels produced by the proposed Channel 33 facility were calculated for an elevation of 2 meters above ground (37 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 45 and 90 degrees below the horizontal. The calculations in this report assume a worst-case relative field value of 0.2 at these angles, based on the manufacturer's vertical plane pattern for the horizontally-polarized Kathrein 771-304 antenna (0.75 degree electrical beam tilt) proposed in this application. This relative field

value yields a worst-case adjusted effective radiated power of 384 Watts at depression angles between 45 and 90 degrees below the horizontal. Assuming the shortest distance between the antenna radiation center and 2 meters above ground level (i.e. straight down), the highest calculated power density from the proposed antenna alone occurs at the base of the antenna support structure. At this point the power density is calculated to be $9.4 \mu\text{W}/\text{cm}^2$, which is 2.4% of $391 \mu\text{W}/\text{cm}^2$ (the FCC maximum at the Channel 33 frequency for uncontrolled environments).

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 applicants proposed facility are predicted to be 5% or less of the applicable FCC exposure limit. Therefore, the proposed facility is in compliance with Section 1.1301 et seq and no further analysis of non-ionizing radiation at this site is required in this application.

The Stukel Mountain site is remote and inaccessible to the general public. 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 will 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.