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Rural Oregon Wireless Television
Madras TV Translators
NIER Calculations

Rural Oregon Wireless Television operates four television translator stations at Madras, Oregon: K56BV, K58BK, K63CC, and K69BI. These translators operate from the same transmitter site. This study has been made in support of displacement applications for the four translators, which will operate via a common antenna system.

OET 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 individual operations of each of the ROWT Madras translators produce less than 5% of the applicable exposure limit for both controlled and uncontrolled environments. Thus, the Madras translators are 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 TV facilities in the vicinity, and precise calculations are made only with regard to the levels from the Madras translators.

The power density calculations shown below were made using the techniques outlined in OET Bulletin 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 following equation was used to calculate the ground level power density from the television antennas at incremental distances from the base of the supporting tower.

$$S(mW/cm^2) = \frac{[(0.4)VERP + AERP] \times 33.40981 \times F^2}{D^2}$$

Where: VERP = total peak visual ERP in Watts
AERP = aural ERP in Watts
F = relative field factor in the downward direction
Distance = 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.

Power density levels produced by the proposed translator antenna (combined operation proposed for all four translators) were calculated for an elevation of 2 meters above ground level (17 meters below the antenna radiation center). The worst case power density levels occur at depression angles between 30E and 90E below the horizontal. The calculations in this report assume a worst case relative field value of 0.200 at these angles. This value occurs at a depression angle of 45E below the horizontal, according to vertical plane pattern data provided by the antenna manufacturer.

For the proposed Madras Ch. 30, Ch. 32, and Ch. 38, this relative field value yields a worst case adjusted effective radiated power of 48 Watts (20% aural assumed) at depression angles between

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30E and 90E below the horizontal. Assuming this worst-case effective radiated power and 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 5.5 FW/cm².

For Madras Ch. 30, this is 0.3% of 1891 FW/cm^2 (the FCC standard for controlled environments at the Ch. 30 visual carrier frequency), and 1.5% of 378 FW/cm^2 (the FCC standard for uncontrolled environments at the Ch. 30 visual carrier frequency).

For Madras Ch. 32, this is 0.3% of 1931 FW/cm^2 (the FCC standard for controlled environments at the Ch. 32 visual carrier frequency), and 1.4% of 386 FW/cm^2 (the FCC standard for uncontrolled environments at the Ch. 32 visual carrier frequency).

For Madras Ch. 38, this is 0.3% of 2051 FW/cm^2 (the FCC standard for controlled environments at the Ch. 38 visual carrier frequency), and 1.3% of 410 FW/cm^2 (the FCC standard for uncontrolled environments at the Ch. 38 visual carrier frequency).

For the proposed Madras Ch. 45, this relative field value yields a worst case adjusted effective radiated power of 41 Watts (20% aural assumed) at depression angles between 30E and 90E below the horizontal. Assuming this worst-case effective radiated power and 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

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antenna support structure. At this point the power density is calculated to be 4.7 FW/cm². This is 0.2% of 2191 FW/cm^2 (the FCC standard for controlled environments at the Ch. 45 visual carrier frequency), and 1.1% of 438 FW/cm^2 (the FCC standard for uncontrolled environments at the Ch. 45 visual carrier frequency).

These calculations show that the maximum calculated power density produced at two meters above ground level by the individual operation of each Madras translator 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 applicants 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 non-ionizing radiation at this site is required. Nevertheless, public access to the site will be restricted and the antenna tower will be 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 agrees to 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.

Signed this 9th day of February, 2004.

/S/

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