

**NIER Analysis for:
KTCL(FM) Channel 227C1 Wheat Ridge, Colorado**

Facilities Proposed

The proposed KTCL operation will be on Channel 227C1 (93.3 MHz) with a maximum lobe effective radiated power of 27.5 kilowatts. Operation is proposed with an 8-level circularly-polarized directional panel antenna (0.73 wavelength spacing at the KTCL frequency) to be shared with the KRFX and KFMD main facilities. The antenna will be side-mounted on an existing tower at the Lookout Mountain transmitter site east of Denver. The FCC Antenna Structure Registration Number for the tower is 1033691.

NIER Considerations

Several of the FM stations licensed with transmitter locations on Lookout Mountain have operated with Special Temporary Authority and/or at reduced power for at least the past year due to isolated instances where measurements of non-ionizing radiation density have exceeded the Commission's Maximum Permissible Exposure (MPE) levels for general public exposure (47CFR1.1310). One of the underlying purposes of the pending applications for facilities changes for KFMD, KRFX, KALC, and KBPI is to provide antenna installations which sharply reduce ground-level non-ionizing radiation density levels. This has been accomplished by careful selection of horizontal plane and vertical radiation patterns, using antenna systems with reduced vertical interbay spacings. The implementation of Advanced Digital Television service by the television stations located on the site used by KALC and KBPI (which is owned by Tribune Corporation, licensee of KWGN-TV) has also resulted in antenna system changes by KWGN-TV, K33DN, and K57BT.

The instant NIER analysis was made based on the "final configuration" of station changes at this transmitter site. This analysis was made in connection with the April 2003 KFMD, KRFX, KALC, and KBPI main facility applications. Additional broadcast stations operating from transmitter sites in excess of 1000 feet from the proposed FM operations are

sufficiently distant that the operation of those additional stations have negligible impact on the ground-level NIER levels in the vicinity of the FM towers, and those stations are therefore excluded from this analysis.

The resulting analysis is shown below. All of the antennas, antenna locations, effective radiated powers and other technical details assume the final post-construction facilities for all those stations which are proposed to be modified, with the exception of KTCL.

The analysis below uses as its geographic database a digitized survey of the area surrounding the KFMD/KRFX antenna site, showing buildings, towers, surface features, and topography at 5 foot intervals. The assumptions and caveats recommended by OET-65 as revised have been employed in the analysis. As a calibration technique, existing antenna operations were modeled in the same fashion, and the results compared well with the measured values of NIER shown in the reports "Baseline RF Exposure Measurements Taken March 4, 2002, Lookout Mountain, Vicinity of KWGN-TV and KFMD Broadcast Towers" and "Electromagnetic Field Measurements at Publicly Accessible Areas near the KHIH-FM Tower Site on Lookout Mountain, Colorado" dated April 19, 2000².

According to the April 2003 analysis, no location is predicted to have a maximum combined exposure (spatially averaged) of more than 36% of the uncontrolled environment standard. *Note that KTCL will operate from the same antenna as the KFMD and KRFX facilities, but with an ERP which is 5.6 dB lower. Therefore, the addition of the KTCL facility to the KFMD/KRFX antenna system would cause only an incremental increase to this figure.*

It is nevertheless anticipated that the Commission may choose to condition licensing of the proposed KTCL facility on actual measurement of ground level NIER values, requiring reduced power operation, if necessary, until all changes have been accomplished and

²The call letters of station KHIH-FM are now KFMD-FM.

measurements confirm the reduction of levels to below the public standard in all publicly accessible areas.

Public access to the tower sites is restricted and the antenna towers are 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 tower 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.

NIER Calculations

EXPOSURE HEIGHT = 2.0 METERS
 GRID SPACING = 5.0 METERS
 PERCENT-OF-LIMIT VALUES (GRID DIMENSIONS IN METERS):

-025	+000	+025	+050	+075	+100	+125	
+025	+025
+020	+020
+015	+015
+010	+010
+005	+005
+000	+000
-005	-005
-010	-010
-015	-015
-020	-020
-025	-025
-030	-030
-035	-035
-040	-040
-045	-045
-050	-050
-055	-055
-060	-060
-065	-065
-070	-070
-075	-075
-080	-080
-085	-085
-090	-090
-095	-095
-100	-100
-105	-105
-110	-110
-115	-115
-120	-120
-125	-125
-025	+000	+025	+050	+075	+100	+125	

TABLE OF STATION DATA

STATION	FREQ.(MHz)	X(m)	Y(m)	ERP(kW)	HT.(m)	ANTENNA	SPACING	M.P.E.
KFMD DA	95.700	0.0	0.0	200.000	2256.0	8 lvl panel	0.746	0.200
KRFX DA	103.500	0.0	0.0	200.000	2256.0	8 lvl panel	0.807	0.200
KALC ND	105.900	45.6	-43.8	200.000	2292.0	6 bay roto	0.868	0.200
KBPI ND	106.700	45.6	-43.8	200.000	2292.0	6 bay roto	0.874	0.200
KWGN-TV	55.250	45.6	-43.8	46.000	2342.0	RCA TF-4BL		0.200
KCEC-TV	687.250	45.6	-43.8	1155.000	2256.0	Bog BUI32N		0.458
K57BT	729.260	45.6	-43.8	22.490	2236.0	And ALP-16L6		0.486
KTFD-LP	645.260	63.0	-52.7	13.920	2242.0	Bog B16UC		0.430

SPATIALLY AVERAGED: (BLANK) LESS THAN 1% OF UNCONTROLLED AREA M.P.E.
 . 1% TO LESS THAN 5%
 - 5% TO LESS THAN 10%
 + 10% TO LESS THAN 20%
 * 20% TO LESS THAN 50%
 # 50% TO LESS THAN 100%
 & 100% TO LESS THAN 500%
 @ 500% TO LESS THAN 1000%
 M 1000% OR HIGHER
 X TOWER LOCATION

Hatfield & Dawson Consulting Engineers

TABLE OF INDIVIDUAL STATION MAXIMA						
STATION	FREQ.(MHz)	X(m)	Y(m)	PEAK(%)	S.A.(%)	%@BASE OF TOWER
KFMD DA	95.700	20.0	-35.0	11.691	10.908	6.455
KRFX DA	103.500	10.0	-20.0	13.932	13.372	7.058
KALC ND	105.900	45.6	-43.8	3.896	3.795	3.534
KBPI ND	106.700	45.6	-43.8	4.067	3.961	3.690
KWGN-TV	55.250	-25.0	-45.0	0.232	0.228	0.016
KCEC-TV	687.250	55.0	-45.0	11.700	11.117	4.813
K57BT	729.260	50.0	-40.0	14.009	12.567	2.154
KTFD-LP	645.260	85.0	-55.0	0.259	0.238	0.003
MAXIMUM EXPOSURE		50.0	-50.0		35.700	