EIRP of Magnetek's 750mW VHF MLTX / SLTX Transmitters

This document will show that Magnetek's Part 90, 750mW, MLTX / SLTX antennas have an effective isotropic radiated power (EIRP) significantly below the low threshold of $60/f_{GHz}$ mW for the "General Population" exposure category.

It can be shown that the E field, is related to the power output of an isotropic radiator three meters away by the following equation:

$$P_{trans\_dBm} = E_{dB\mu V/m} - 95.23$$

The attached test report, published by L.S. Research, dated 4/15/05, shows maximum field strength of 81.65 dBμV/m for our 100mW MLTX transmitter. The 750mW MLTX transmitter supplied to L.S. Research for compliance testing measured 769.13mW, which is an 8.86dB higher output power than the 100mw transmitter. Using the above equation we get:

$$P_{trans\_dBm} = (81.65\ dB\mu V/m + 8.86\ dB) - 95.23 = -4.72\ dBm$$

Or, in mW:

$$P_{trans\_mW} = 10^{-4.72dBm/10} = 0.34mW$$

The low threshold for the general population exposure category from the *TCB Handbook, Appendix A: TCB Exclusions List* supplied to me by L.S. Compliance is:

$$P_{threshold\_mW} = 60/f_{GHz} = 60/.076GHz = 789.47mW$$

Comparing the two power levels shows the Magnetek MLTX transmitter to be 33.7dB below this threshold:

$$10 \times Log\left(0.34mW/789.47mW\right) = -33.7dB$$

Since Magnetek's SLTX transmitter uses the same antenna concept as the MLTX transmitter, it will exhibit similar field strength.

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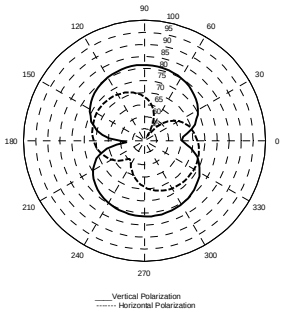
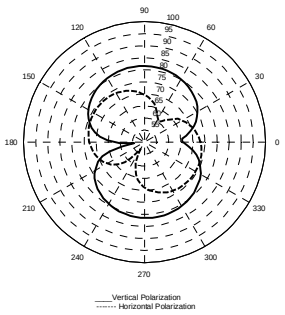
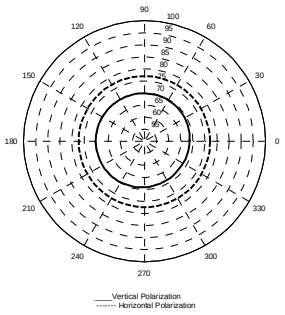
Equipment Under Test: MLTX (72.16 MHz, nominal frequency).



Blue Magnetek 72.16 MHz			
Device Orientation	polarization	[dBuV/m]	
		Max	Avg
(V)	vertical	81.53	76.26
(V)	horizontal	73.63	68.56
(H)	vertical	81.65	76.20
(H)	horizontal	74.46	69.64
(F)	vertical	70.23	69.47
(F)	horizontal	77.39	77.19





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