Appendix A: FCC Part 1.1307, 1.1310, 2.1091, 2.1093: RF Exposure

RF Conducted Output Power - Measured

Channel Number	Frequency (MHz)	Power (dBm)	Power (W)
14	473	46.07	40.5
25	539	46.09	40.6
36	605	46.02	40.0

RF Exposure Calculations

The maximum permissible RF exposure for an uncontrolled environment is specified in FCC 1.1310 Table 1.

From OET 65, $S = EIRP / 4\pi R^2$

where:
S = Power density (mw/cm^2)
EIRP = Equivalent Isotropic Radiated Power
R = 20 cm separation distance

Power Density of the EUT

The worst case MPE limit for the above device operating at 473 MHz for uncontrolled environments is 0.3 mW/cm^2.

Worst case EUT fundamental conducted output power = 46.09 dBm. The tune-up tolerance = 1 dB.

Manufacturer-recommended antenna gain (Theory of Operations, Page 2) = 18 dBi (63.1 numeric gain)

The total output power = 46.09 dBm + 1 dB = 47.09 dBm = 51.2 W = 51,200 mW

EIRP = 51,200 mW × 63.1 = 3,230,720 mW

Occupational/Controlled exposure @ 473 MHz (worst case) = 1.6 mW/cm^2 = 3,230,720 mW / 4π
113 cm minimum distance

General Population/Uncontrolled exposure @ 473 MHz (worst case) = 0.3 mW/cm^2 = 3,230,720 mW / 4π
260 cm minimum distance

LPTV antenna towers are typically mounted for line of sight, above tree level. Typically, over 150 meters (15,000 cm), the power density S = 0.00009 mW/cm^2, which is far below the FCC's limit.

Thus, the EUT will meet the FCC's RF exposure limit when RF Exposure is determined during site licensing.