RF Exposure/Safety Calculation for LPR

The EUT is ceiling mounted. The typical distance between the E.U.T. and the general population is >20cm.

Calculation of Maximum Permissible Exposure (MPE) based on 47 CFR § 1.1310 - Radiofrequency radiation exposure limits requirements:

(a)

1. (WCS) FCC limit at 2357.5 MHz is: $1\frac{mW}{cm^2}$
2. (PCS) FCC limit at 1940.0 MHz is: $1\frac{mW}{cm^2}$
3. (AWS) FCC limit at 2155.0 MHz is: $1\frac{mW}{cm^2}$

   Using table 1 of Section 1.1310 "Limits for Maximum Permissible Exposure (MPE)", the above levels are an average over 30 minutes.

(b) The power density produced by the EUT is

$$S = \frac{P_t G_t}{4\pi R^2}$$

P_t - Transmitted Peak Power (worst case) (antenna gain already included)

R- Distance from Transmitter 20 cm

(c) Peak power density at worst case continuous transmission:

Band	Modulation	P_t (dBm)	P_t (mW)	R (cm)	S_{AV} (mW/cm^2)	Limit (mW/cm^2)
WCS	QPSK	22.01	159	20	0.00636	1
	16QAM	22.01	159	20	0.00636	1
	64QAM	22.27	169	20	0.00672	1
PCS	QPSK	25.51	356	20	0.01416	1
	16QAM	25.56	360	20	0.01432	1
	64QAM	25.56	360	20	0.01432	1
AWS	QPSK	25.66	368	20	0.01642	1
	16QAM	25.71	372	20	0.01480	1
	64QAM	25.66	368	20	0.01642	1

(d) This is below the FCC limit.