

**47 C.F.R. Part 1, Subpart I, Section 1.1310
47 C.F.R. Part 2, Subpart J, Section 2.1091
Maximum Permissible Exposure Calculations**

For FCC ID: YQN-B2-0027

EUT Device Category = General Population/Uncontrolled Exposure, 20cm

EUT consists of ISM band transceiver operating in the 902MHz – 928MHz and 2400 MHz – 2483.5 MHz bands.

MPE Summary:

According subpart 1.1307 (b)(1) and 2.1091 systems operating under the provisions of this section shall be operated in a manner that ensures the public is not exposed to RF energy level in excess of the communication guidelines.

Limits for General Population/Uncontrolled Exposure

Limits for General Population/Uncontrolled Exposure					
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)	
0.3-1.34	614	1.63	*(100)	30	
1.34-30	824/f	2.19/f	*(180/f ²)	30	
30-300	27.5	0.073	0.2	30	
300-1500	/	/	f/1500	30	
1500-100,000	/	/	1.0	30	

f = frequency in MHz; * = Plane-wave equivalent power density

Calculated Formulary:

Predication of MPE limit at a given distance

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

S = power density (in appropriate units, e.g. mW/cm²)

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

PG = EIRP

MPE and Limit are calculated for this device as follows:

The maximum peak RF power measured using conducted measurements.

Device can only transmit 1 mode, no simultaneous transmissions. Worst case emissions will be used for calculation.

Table 1: 900MHz DTS, HG908P-RTP Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
902.8	12.8	8.0	20.8	120.2	0.0239	0.602	0.5781
915.0	11.1	8.0	19.1	81.3	0.0162	0.610	0.5938
927.2	11.2	8.0	19.2	83.2	0.0166	0.618	0.6014

Table 2: 900MHz DTS, HG908UP Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
902.8	12.8	8.0	20.8	120.2	0.0239	0.602	0.5781
915.0	11.1	8.0	19.1	81.3	0.0162	0.610	0.5938
927.2	11.2	8.0	19.2	83.2	0.0166	0.618	0.6014

Table 3: 900MHz DTS, SW915-TH12 Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
902.8	12.8	2.2	15.0	31.6	0.0063	0.602	0.5957
915.0	11.1	2.2	13.3	21.4	0.0043	0.610	0.6057
927.2	11.2	2.2	13.4	21.9	0.0044	0.618	0.6136

Table 4: 2400MHz DTS, RE14P Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
2405	-1.76	14	12.24	16.7	0.0033	1.000	0.9967
2440	-1.38	14	12.62	18.3	0.0036	1.000	0.9964
2475	-1.51	14	12.49	17.7	0.0035	1.000	0.9965

Table 5: 2400MHz DTS, HG2415U-PRO Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
2405	-1.76	15	13.24	21.1	0.0042	1.000	0.9958
2440	-1.38	15	13.62	23.0	0.0046	1.000	0.9954
2475	-1.51	15	13.49	22.3	0.0044	1.000	0.9956

Table 6: 2400MHz DTS, 2450AT43B100E Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
2405	-1.76	1.3	-0.46	0.9	0.0002	1.000	0.9998
2440	-1.38	1.3	-0.08	1.0	0.0002	1.000	0.9998
2475	-1.51	1.3	-0.21	1.0	0.0002	1.000	0.9998

Table 7: 900MHz FHSS, HG908P-RTP Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
902.2	17.3	8.0	25.3	338.8	0.0674	0.602	0.5346
915.0	16.9	8.0	24.9	309.0	0.0615	0.610	0.5485
927.8	16.1	8.0	24.1	257.0	0.0511	0.619	0.5679

Table 8: 900MHz FHSS, HG908UP Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
902.2	17.3	8.0	25.3	338.8	0.0674	0.602	0.5346
915.0	16.9	8.0	24.9	309.0	0.0615	0.610	0.5485
927.8	16.1	8.0	24.1	257.0	0.0511	0.619	0.5679

Table 9: 900MHz FHSS, SW915-TH12 Antenna

Freq	Conducted Power (dBm)	Antenna Gain (dBi)	Max EIRP (dBm)	Max EIRP (mW)	Power Density at 20 cm (mW/cm ²)	Limit (mW/cm ²)	Margin (mW/cm ²)
902.2	17.3	2.2	19.5	89.1	0.0177	0.602	0.5843
915.0	16.9	2.2	19.1	81.2	0.0162	0.610	0.5938
927.8	16.1	2.2	18.3	67.6	0.0134	0.619	0.6056

Result: The device meets FCC MPE limit at 20 cm for General Population/Uncontrolled Exposure as specified in 47 CFR §1.1310 and §2.1091.