Code Corporation
12393 S. Gateway Park Place, Suite 600
Draper, UT 84020

Product: CRA-A111_01

RF Exposure / Power Information

§ 1.1310 Radiofrequency radiation exposure limits:

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE): Used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices which shall be evaluated according to the provisions of § 2.1093. Further information on evaluating compliance with these limits can be found in the FCC's OST/OET Bulletin Number 65, ''Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Radiation''.

Table 1	***Frequency Range (MHz)***	***Electric field strength (V/m)***	***Magnetic field strength (A/m)***	***Power density (mW/cm^2)***	***Ave time (minutes)***
Limits for Occupational / Controlled Exposures	0.3 - 3.0	614	1.63	*(100)	6
	3.0 - 30	1842/f	4.89/f	*(900/f^2)	6
	30 – 300	61.4	0.136	1.0	6
	300 – 1500	……	……	f/300	6
	1500 – 100,000	……	……	5	6

Table 2	***Frequency Range (MHz)***	***Electric field strength (V/m)***	***Magnetic field strength (A/m)***	***Power density (mW/cm^2)***	***Ave time (minutes)***
Limits for General Population / Uncontrolled Exposure	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

Table1: Apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/ controlled limits apply provided he or she is made aware of the potential for exposure.

Table 2: Apply in situations where the general public may be exposed, where persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure, or they cannot exercise control over their exposure.

Calculations:

The limit for radio frequency exposure for an uncontrolled environment is $1mW/cm^2$ for the frequencies used in this device. The worst-cast antenna gain is used for the calculation below. The power density is calculated at 20 cm distance. Assume 100% duty cycle for this calculation.

$Pd = (Pout * G) / (4 * \pi * r^2)$ or $Pd = EIRP / (4 * \pi * r^2)$

Where
Pd = power density in mW/cm^2
Pout = output power to antenna in mW
G = gain of antenna in linear scale
$\pi = 3.1416$
r = distance from transmitter in cm

Antenna type: TE 1513349-1; Peak gain of 0 dBi (gain of 1.0 in linear scale [1.0 = 10^(0/10)])
Calculated Peak Conducted RF output power from section 6.2.6 of FCC Part 15, subpart C report: 0.82mW

From equations above:
Pd = (Pout * G) / (4 * π * r^2)
Pd = (0.82mW *1.0) / (4 * 3.1416 * $(20cm)^2$) = **0.000163mW/cm^2**

Conclusion:

The calculated power density is less than the specified limit of 1.0mW/cm^2 and is, therefore, acceptable

Test Conditions:

Bluetooth Version:	BT 2.0 + EDR
Modulation:	Basic Rate: GFSK (1Mbps) EDR: π/4-DQPSK (2Mbps) or 8DPSK (3Mbps) (adjustment via Firmware)
Hardware Version:	CRA-A111_01
Firmware Version:	1098