FCC§15.407(f) & IC RSS-102 - Maximum Permissible Exposure

Requirement

According to FCC section 15.407 (f) and 1.1307 (b) (1), systems operating under the provisions of this section shall be operated in a manner than ensures that the public is not exposed to RF energy level in excess of Commission's guidelines.

According to FCC 1.1310 and 2.1091 RF exposure is calculated.

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
1500~100000	/	/	1	30

Note: f=frequency in MHz

*=Plane-wave equivalent power density

Before equipment certification is granted, the procedure of IC RSS-102 must be followed concerning the exposure of humans to RF fields.
According to IC RSS-102 Issue 2 section 4.1, RF limits used for general public will be applied to the EUT.

Frequency range (MHz)	Electric field strength (V/m rms)	Magnetic field strength (A/m rms)	Power density (W/m^2)	Averaging time (minutes)
0.003~1	280	2.19	-	6
1~10	280/f	2.19/f	-	6
10~30	28	2.19/f	-	6
30~300	28	0.073	2*	6
300~1 500	$1.585\ f^{0.5}$	$0.0042\ f^{0.5}$	f/150	6
1 500~15 000	61.4	0.163	10	6
15 000~150 000	61.4	0.163	10	$616000/\ f^{1.2}$
150 000~300 000	$0.158\ f^{0.5}$	$4.21x10\text{-}4\ f^{0.5}$	$6.67x\ 10^{-5}$ f	$616000/\ f^{1.2}$

Note: f=frequency in MHz

*=Power density limit is applicable at frequencies greater than 100 MHz

Test Description

Predication of Maximum Permissible Exposure limit at a give distance

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

Where: S=power density (in appropriate units, e.g. mW/cm^2)

P=power input to the antenna (in appropriate units, e.g. mW)

G=power gain of the antenna in direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain (in appropriate units, e.g. dBi)

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

Test Result

The EUT meets the Maximum Permissible Exposure limit at 20cm distance

Frequency	Conducted Power		Antenna Gain		Evaluation Distance	Power Density	Power Density
(MHz)	(dBm)	(mW)	(dBi)	(num)	(cm)	(mW/cm^2)	(W/m^2)
5190	8.87	7.713	2	1.58	20	0.0024	0.024
5230	9.23	8.371	2	1.58	20	0.0026	0.026
5755	9.58	9.073	2	1.58	20	0.0029	0.029
5795	9.19	8.300	2	1.58	20	0.0026	0.026

Verdict: Pass