

# **RF Exposure Evaluation**

## Limits

The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)	
	(A) Limits	for Occupational/Controlled	Exposures		
0.3–3.0	614	1.63	*(100)	6	
3.0–30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6	
30–300	61.4	0.163	1.0	6	
300–1500			f/300	6	
1500–100,000			5	6	
	(B) Limits for	General Population/Uncontro	olled Exposure		
0.3–1.34	614	1.63	*(100)	30	
1.34–30	824/f	2.19/f	*(180/f <sup>2</sup> )	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

Friis transmission formula: Pd = (Pout\*G)/(4\*pi\*r<sup>2</sup>)

#### Where

Pd = power density in mW/cm<sup>2</sup>, Pout = output power to antenna in mW;

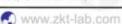
G = gain of antenna in linear scale, Pi = 3.1416;

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

## **Test Procedure**

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.





### Test Result of RF Exposure Evaluation

	<	BLE mode		144	
Mode	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )	Result
GFSK	5.19	3.30	0.000221	1.0	PASS

Remark: Antenna gain= -4.73dBi;



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