

FCC RF Exposure

EUT Description: Wireless monitoring system

Model No.: SEM200

Series Model: SEM300, SEM400, SEM500, SEM600, SEM700, SEM800, SEM900

FCC ID: 2BDIS-SEM200

Equipment type: Mobile equipment

1. Limits

Test procedures according to the technical standards: KDB 447498 D01 V06 and FCC 2.1091.

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 ²)	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 ²)	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/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

Formula: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where :

Pd = power density in mW/cm²,

Pout = output power to antenna in mW;

G = gain of antenna in linear scale,

$\pi = 3.14$;

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

Pd is the limit of MPE, 1 mW/cm². 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.

2. Test Procedure

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

3. Test Result of RF Exposure Evaluation

BT

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna gain numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
GFSK	2402	4.25	2.6607	1.7	1.48	0.000783805	1
	2441	4.40	2.7542	1.7	1.48	0.000811372	1
	2480	5.20	3.3113	1.7	1.48	0.000975463	1

MIC

Modulation	Channel Freq. (MHz)	Conducted power (dBm)	Max tune-up power (mW)	Antenna Gain (dBi)	Antenna gain numeric	Evaluation result (mW/cm ²)	Power density Limits (mW/cm ²)
pi/4 DQPSK	550	5.23	3.334	2.5	1.78	0.00118	0.37
	574.75	4.68	2.937	2.5	1.78	0.00104	0.38
	599.75	4.57	2.864	2.5	1.78	0.00101	0.40

MIC Evaluation result: $0.00118/0.37=0.00486$

BT+MIC($0.000975463+0.00486=0.0058403$)

Conclusion: the max result : $0.0058403 \leq 1.0$ compliance with FCC's RF Exposure.