

RF EXPOSURE EVALUATION

EUT Specification

EUT	NETWORK DAC/PREAMP
Model Number	N-05XD
FCC ID	XEG-N05XD
Antenna gain (Max)	1.54 dBi
Operation Frequency	2402MHz-2480MHz
Input Rating	AC 120V 60Hz
Classification Per Stipulated Test Standard	§15.247(i), §2.1093
Modulation	BT: GFSK, pi/4-DQPSK, 8DPSK BLE: GFSK
Max. output power	-1.17dBm for BT -0.33 dBm for BLE

Test Requirement:

RF EXPOSURE EVALUATION

According to FCC 1.1310: 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)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

1 Friis transmission formula: $P_d = \frac{P_{out} \cdot G}{4 \cdot \pi \cdot R^2}$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in mW

G = Numeric gain of the antenna relative to isotropic antenna

π = 3.1416

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

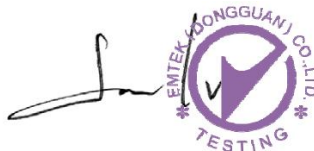
P_d the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and total power input to the antenna, through the calculation, we will know the distance where the MPE limit is reached.

2 Measurement Result

Operating Mode	Frequency (MHz)	Output Power (dBm)	Tune up tolerance (dBm)	Max tune up conducted power (dBm)	Output Peak power (mW)	Ant. Gain (dBi)	Ant. Gain (numeric)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
GFSK	2402	-4.14	-4±1	-3	0.501	1.54	1.426	0.000142	1
	2441	-3.13	-3±1	-2	0.631	1.54	1.426	0.000179	1
	2480	-2.49	-2±1	-1	0.794	1.54	1.426	0.000225	1
pi/4-DQPSK	2402	-3.29	-3±1	-2	0.631	1.54	1.426	0.000179	1
	2441	-2.3	-2±1	-1	0.794	1.54	1.426	0.000225	1
	2480	-2.55	-2±1	-1	0.794	1.54	1.426	0.000225	1
8-DPSK	2402	-2.76	-2±1	-1	0.794	1.54	1.426	0.000225	1
	2441	-1.73	-1±1	0	1.000	1.54	1.426	0.000284	1
	2480	-1.17	-1±1	0	1.000	1.54	1.426	0.000284	1

Operating Mode	Frequency (MHz)	Output Power (dBm)	Tune up tolerance (dBm)	Max tune up conducted power (dBm)	Output Peak power (mW)	Ant. Gain (dBi)	Ant. Gain (numeric)	Power density at 20cm (mW/cm ²)	Power density Limits (mW/cm ²)
GFSK	2402	-0.48	0±1	1	1.259	1.54	1.426	0.000357	1
	2440	-0.33	0±1	1	1.259	1.54	1.426	0.000357	1
	2480	-0.56	0±1	1	1.259	1.54	1.426	0.000357	1

Signature:



Sam Lv

Date: 2021-06-17