

RF EXPOSURE EVALUATION

EUT Specification

EUT	Bluetooth Adaptor
Model Number	AK-BT10
FCC ID	XEG-AKBT10
Antenna gain (Max)	0dBi
Operation Frequency	2408MHz-2480MHz
Input Rating	DC 3.3V
Classification Per Stipulated Test Standard	§15.247(i), §2.1093
Modulation	BT EDR:GFSK, $\pi/4$ -DQPSK, 8DPSK BT BLE:GFSK
Max. output power	BT EDR:1.99 dBm(0.00158W) BT BLE:1.84 dBm(0.00153W)

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

Operation Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max tune up conducted power (dBm)	Output Peak power (mW)	Power density at 20cm (mW/cm ²)	Limit	Verdict
GFSK	2402	1.99	1±1	2	1.585	0.000315	1	PASS
	2441	1.68	1±1	2	1.585	0.000315	1	PASS
	2480	1.14	1±1	2	1.585	0.000315	1	PASS
Π/4-DQ PSK	2402	1.92	1±1	2	1.585	0.000315	1	PASS
	2441	1.47	1±1	2	1.585	0.000315	1	PASS
	2480	1.17	1±1	2	1.585	0.000315	1	PASS
8DPSK	2402	1.94	1±1	2	1.585	0.000315	1	PASS
	2441	1.66	1±1	2	1.585	0.000315	1	PASS
	2480	1.18	1±1	2	1.585	0.000315	1	PASS

Operation Mode	Channel Frequency (MHz)	Measured Power (dBm)	Tune up tolerance (dBm)	Max tune up conducted power (dBm)	Output Peak power (mW)	Power density at 20cm (mW/cm ²)	Limit	Verdict
GFSK	2402	-0.24	0±1	1	1.259	0.000250	1	PASS
	2440	0.96	0±1	1	1.259	0.000250	1	PASS
	2480	1.84	1±1	2	1.585	0.000315	1	PASS

Signature:



A handwritten signature in black ink is written over a circular purple stamp. The stamp contains the text "EMTEK (DONGGUAN) CO., LTD." around the top edge and "TESTING" at the bottom. In the center of the stamp is a checkmark symbol.

Sam Lv

Date: 2021-06-17