

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)

FCC ID: 2BFGG-IM250

EUT Specification

EUT	Bluetooth Speaker					
Frequency band (Operating)	2.402GHz ~ 2.480GHz					
Device category	☐Portable (<20cm separation)					
	⊠Mobile (>20cm separation)					
Exposure classification	☐ Occupational/Controlled exposure (S =					
	5mW/cm ²)					
	⊠General Population/Uncontrolled exposure					
	(S=1mW/cm ²)					
Antenna diversity	⊠Single antenna					
	☐Multiple antennas					
	☐Tx diversity					
	☐Rx diversity					
	☐Tx/Rx diversity					
Max. output power(peak power)	6.97 dBm					
Antenna gain (Max)	4.35 dBi					
Evaluation applied	⊠MPE Evaluation					
	☐SAR Evaluation					

Limits for Maximum Permissible Exposure(MPE)

Zimite for Maximan Formedia Zxposars(m Z)								
Frequency	Electric Field	Magnetic Field	Power	Average				
Range(MHz)	Strength(V/m)	Strength(A/m)	Density(mW/cm ²)	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	1500		F/1500	6				
1500-100000			1	30				

Friis transmission formula: $P_d=(P_{out}*G)\setminus(4*pi*R^2)$

Where

P_d= Power density in mW/cm², P_{out}=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=20cm



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.

For multiple RF sources: Multiple RF sources are exempt if:

in the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation

$$\sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \le 1$$

Evaluated_k: the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation at the location of exposure.

Exposure Limit_k: either the general population/uncontrolled maximum permissible exposure (MPE) or specific Absorption rate (SAR) limit for each fixed, mobile, or portable RF source k.



Measurement Result

BR + EDR:

Mode	Max	Tune up	Max tune	Output	Ant.	Ant. Gain	Power	Power
	Measured	tolerance	ир	Peak	Gain	(numeric)	density at	density
	Power	(dBm)	conducted	power	(dBi)		20cm	Limits
	(dBm)		power(dBm)	(mW)			(mW/ cm ²)	(mW/
								cm ²)
GFSK	6.88	7±1	8	6.310	4.35	2.723	0.003418	1
π /4-DQPSK	6.92	7±1	8	6.310	4.35	2.723	0.003418	1
8DPSK	6.97	7±1	8	6.310	4.35	2.723	0.003418	1

