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: **2BGR4-KM-RWS-XP1**

EUT Specification

EUT	**roof speaker system**
Frequency band (Operating)	☐WLAN: 2.412GHz ~ 2.462GHz ☐WLAN: 5.18GHz ~ 5.24GHz ☐WLAN: 5.745GHz ~ 5.825GHz ☒Others: 2.402GHz~2.480GHz
Device category	☐Portable (<20cm separation) ☒Mobile (>20cm separation) ☐Others ___
Exposure classification	☐Occupational/Controlled exposure (S = 5mW/cm2) ☒General Population/Uncontrolled exposure (S=1mW/cm2)
Antenna diversity	☐Single antenna ☒Multiple antennas ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Max. output power	BT: 0.80 dBm (0.0012W) BLE: 0.63 dBm (0.0006W)
Antenna gain (Max)	BT: 2.76 dBi BLE: 3.38 dBi
Evaluation applied	☒MPE Evaluation ☐SAR Evaluation

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**

Friis transmission formula: Pd=(Pout*G)\(4*pi*R2)

Where
Pd= Power density in mW/cm^2
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 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.

Measurement Result

Test Mode	Frequency (MHz)	Measured Power (dBm)	Target Power (dBm)	Tune up tolerance (dBm)	Max. Tune up Power (dBm)	Antenna Gain (dBi)	Power density at 20cm (mW/cm^2)	Power density Limits (mW/cm^2)
BLE	2402	0.63	1	±1	2	3.38	0.0007	1
	2440	-1.39	-1	±1	0	3.38	0.0004	1
	2480	-2.64	-2	±1	-1	3.38	0.0003	1
BDR&EDR	2402	0.65	1	±1	2	2.76	0.0006	1
	2441	-1.32	-1	±1	0	2.76	0.0004	1
	2480	-2.54	-2	±1	-1	2.76	0.0003	1
	2402	0.80	1	±1	2	2.76	0.0006	1
	2441	-1.21	-1	±1	0	2.76	0.0004	1
	2480	-2.43	-2	±1	-1	2.76	0.0003	1
	2402	0.72	1	±1	2	2.76	0.0006	1
	2441	-1.30	-1	±1	0	2.76	0.0004	1
	2480	-2.52	-2	±1	-1	2.76	0.0003	1

Simultaneously Transmission MPE
The BT and BT LE share difference modular and antenna, BT and BT LE can support simultaneously transmission.

BT Maximum MPE Ratio	BT LE Maximum MPE Ratio	∑BT and BT LE Maximum MPE Ratio	Maximum MPE Ratio Limit	Results
0.0006	0.0007	0.0013	1.0	PASS

Test Verdict: Pass.