

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: 2A83M-KR-0001

EUT Specification

EUT	CAR AI BOX
Frequency band (Operating)	☐ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5825GHz ☒ Others: BLE: 2402-2480MHz
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others _____
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	2.41 dBm (0.0017W)
Antenna gain (Max)	2.84 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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

P_{out} = output power to antenna in Mw

G = gain of antenna in linear scale

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.

Measurement Result

Operating Mode	Maximum output 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	2.41	2.41 ±1	3.41	2.84	0.0008	1

Note: module RTL8761BTv and module SS808 can transmit simultaneously:

1. LTE/WCDMA(SS808)+Bluetooth(SS808)+BLE(RTL8761BTv)
2. LTE/WCDMA(SS808)+WiFi 2.4G(SS808)+BLE(RTL8761BTv)
3. LTE/WCDMA(SS808)+WiFi 5G(SS808)+BLE(RTL8761BTv)

$$\sum_i \frac{S_i}{S_{Limit,i}}$$

No.	Mode	S(mw/cm ²)	Calculation result	Limit	Conclusion
1	WCDMA Band II	0.1773	0.1815	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
2	WCDMA Band II	0.1773	0.1971	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
3	WCDMA Band II	0.1773	0.2108	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
4	WCDMA Band IV	0.1617	0.1659	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			

5	WCDMA Band IV	0.1617	0.1815	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
6	WCDMA Band IV	0.1617	0.1952	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
7	WCDMA Band V	0.1984	0.2026	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
8	WCDMA Band V	0.1984	0.2182	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
9	WCDMA Band V	0.1984	0.2319	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
10	LTE Band 2	0.1580	0.1622	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
11	LTE Band 2	0.1580	0.1778	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
12	LTE Band 2	0.1580	0.1915	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
13	LTE Band 4	0.1441	0.1483	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
14	LTE Band 4	0.1441	0.1639	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
15	LTE Band 4	0.1441	0.1776	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
16	LTE Band 5	0.1772	0.1814	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
17	LTE Band 5	0.1772	0.1970	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
18	LTE Band 5	0.1772	0.2107	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
19	LTE Band 7	0.1276	0.1318	1.00	Pass

	BDR+EDR	0.0034			
	BLE	0.0008			
20	LTE Band 7	0.1276	0.1474	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
21	LTE Band 7	0.1276	0.1611	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
22	LTE Band 12	0.1949	0.1991	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
23	LTE Band 12	0.1949	0.2147	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
24	LTE Band 12	0.1949	0.2284	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
25	LTE Band 13	0.1750	0.1792	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
26	LTE Band 13	0.1750	0.1948	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
27	LTE Band 13	0.1750	0.2085	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
28	LTE Band 25	0.1580	0.1622	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
29	LTE Band 25	0.1580	0.1778	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
30	LTE Band 25	0.1580	0.1915	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
31	LTE Band 26	0.1794	0.1836	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
32	LTE Band 26	0.1794	0.1992	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
33	LTE Band 26	0.1794	0.2129	1.00	Pass
	WiFi5G	0.0327			

	BLE	0.0008			
34	LTE Band 41	0.1276	0.1318	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
35	LTE Band 41	0.1276	0.1474	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
36	LTE Band 41	0.1276	0.1611	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			
37	LTE Band 66	0.1441	0.1483	1.00	Pass
	BDR+EDR	0.0034			
	BLE	0.0008			
38	LTE Band 66	0.1441	0.1639	1.00	Pass
	WiFi 2.4G	0.0190			
	BLE	0.0008			
39	LTE Band 66	0.1441	0.1776	1.00	Pass
	WiFi5G	0.0327			
	BLE	0.0008			