

FCC RF Exposure

EUT Description: UltraBARX

Model No.: UBX01, UBX02, UBX03, UBX04, UBX05, CB01, CB02, CB03, CB04, CB05, VC01, VC02, VC03, VC04, VC05, SC01, SC02, SC03, SC04, SC05, DK01, DK02, DK03, DK04, DK05, KK01, KK02, KK03, KK04, KK05, FK01, FK02, FK03, FK04, FK05

FCC ID: 2BDZT-UBX01

Equipment type: mobile equipment

RF Exposure Evaluation

Limits

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)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3–3.0	614	1.63	*(100)	6
3.0–30	1842/f	4.89/f	*(900/f ²)	6
30–300	61.4	0.163	1.0	6
300–1500			f/300	6
1500–100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500			f/1500	30
1500–100,000			1.0	30

f = frequency in MHz

Friis transmission formula: $Pd = (Pout * G) / (4 * \pi * r^2)$

Where

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

Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.



1. Test Result of RF Exposure Evaluation

BT

Frequency(MHz)	Output power(dBm)	Max tune-up(mW)	Min. distance(cm)	Calc. thresholds	Limit	Result
2402	3.05	2.0184	20.00	0.00071	1.0000	Pass
2441	3.39	2.1827	20.00	0.00077	1.0000	Pass
2480	3.42	2.1979	20.00	0.00078	1.0000	Pass

BLE

Frequency(MHz)	Output power(dBm)	Max tune-up(mW)	Min. distance(cm)	Calc. thresholds	Limit	Result
2402	2.64	1.8365	20.00	0.00065	1.0000	Pass
2440	2.56	1.8030	20.00	0.00064	1.0000	Pass
2480	2.90	1.9498	20.00	0.00069	1.0000	Pass

WiFi

TestModel	Conducted power (dBm)	Max tune-up(mW)	Min. distance(cm)	Calc. thresholds	Limit	Result
802.11b	9.25	8.4140	20.00	0.00298	1.0000	Pass
802.11g	9.14	8.2035	20.00	0.00290	1.0000	Pass
802.11n20	9.29	8.4918	20.00	0.00300	1.0000	Pass

BT+WIFI

MAX Power Density (S) (mW/cm2) Bluetooth	MAX Power Density (S) (mW/cm2) WiFi	Total Ratio	Limit	Result
0.00078	0.00300	0.00378	1	Pass

Conclusion: No SAR is required