

FCC ID: 2BBLM-VEENIIX-V11

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/cm²)	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 id 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.



Test Result of RF Exposure Evaluation

BLE

Cha	Channel	Max output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result
	2402MHz	-6.84	0.21	0.0001	1.0	PASS

Remark: antenna gain=2.1dBi

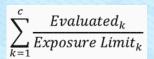
Wifi 5.2G

Channel	Max output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm ²)	Limit (mW/cm ²)	Result	
5200 MHz 802.11ac (HT20) MIMO	14.00	25.12	0.0087	1.0	PASS	
5180MHz 802.11ac (HT20) ANT 2	14.71	29.58	0.0102	1.0	PASS	

Remark: ANT 1: 2.4dBi

ANT 2: 2.4dBi MIMO: 2.4dBi

BT and WIFI Simultaneous Transmission:



BLE+5.2G WIFI MIMO =(0.0001/1)+(0.0102/1) =0.0001+0.0102=0.0103<1

The max power density is less than MPE exempt limit, so it is compliance.