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/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 id the limit of MPE, 1 mW/cm^2. 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

5G Wifi mode

Channel	Frequency (MHz)	Output power to antenna (dBm)	Output power to antenna (mW)	Power Density at R=20cm (mW/cm^2)	Limit (mW/cm^2)	Result
802.11a	5180	7.254	5.31	0.00106	1.0	PASS
	5200	7.124	5.16	0.00103	1.0	PASS
	5240	7.052	5.07	0.00101	1.0	PASS
802.11 n20M	5180	6.215	4.18	0.00083	1.0	PASS
	5200	6.121	4.09	0.00081	1.0	PASS
	5240	6.054	4.03	0.00080	1.0	PASS
802.11 n40M	5190	5.645	3.67	0.00073	1.0	PASS
	5230	5.523	3.57	0.00071	1.0	PASS
802.11 ac80M	5210	4.125	2.59	0.00051	1.0	PASS
802.11a	5745	6.586	4.56	0.00091	1.0	PASS
	5785	6.451	4.42	0.00088	1.0	PASS
	5825	6.235	4.20	0.00084	1.0	PASS
802.11 n20M	5745	5.568	3.60	0.00072	1.0	PASS
	5785	5.426	3.49	0.00069	1.0	PASS
	5825	5.234	3.34	0.00066	1.0	PASS
802.11 n40M	5755	4.263	2.67	0.00053	1.0	PASS
	5795	4.123	2.58	0.00051	1.0	PASS
802.11 ac80M	5755	3.265	2.12	0.00042	1.0	PASS

Remark: antenna gain=0dBi

The product cannot transmit BT and WiFi modes at the same time.