RF EXPOSURE EVALUATION

EUT Specification

EUT	IoT-3288A
Frequency band (Operating)	☒WLAN: 2.412GHz ~ 2.462GHz ☐WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐WLAN: 5.745GHz ~ 5825GHz ☒Others(Bluetooth: 2.402GHz ~ 2.480GHz)
Device category	☐Portable (<20cm separation) ☒Mobile (>20cm separation) ☐Others ___
Antenna diversity	☒Single antenna ☐Multiple antennas ☐Tx diversity ☐Rx diversity ☐Tx/Rx diversity
Max. output power	15.22 dBm (33.266mW) for WIFI 6.249 dBm (4.216mW) for BT2.1+EDR 5.143 dBm (3.268mW) for BLE
Antenna gain	5 dBi for BT & WIFI
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)
300-1500	**--**	**--**	**F/1500**
1500-100000	**--**	**--**	**1**

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 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

Channel	Gain	Channel Frequency (MHz)	Max Output power (dBm)	Tolerance	Max Tune-UP power (mW)	Power density at 20cm (mW/ cm^2)	Power density Limits (mW/cm^2)
Test Mode: GFSK							
Low	5	2402	4.190	±0.5	2.944	0.0019	1
Middle	5	2441	4.663	±0.5	3.283	0.0021	1
High	5	2480	4.526	±0.5	3.181	0.0020	1
Test Mode:π/4-DQPSK							
Low	5	2402	5.530	±0.5	4.009	0.0025	1
Middle	5	2441	5.962	±0.5	4.428	0.0028	1
High	5	2480	5.730	±0.5	4.198	0.0026	1
Test Mode:8DPSK							
Low	5	2402	5.815	±0.5	4.281	0.0027	1
Middle	5	2441	6.249	±0.5	4.730	0.0030	1
High	5	2480	6.050	±0.5	4.519	0.0028	1
Test Mode: BLE							
Low	5	2402	4.656	±0.5	3.278	0.0021	1
Middle	5	2440	5.143	±0.5	3.667	0.0023	1
High	5	2480	4.974	±0.5	3.527	0.0022	1

Channel	Gain	Channel Frequency (MHz)	Max Output power (dBm)	Tolerance	Max Tune-UP power (mW)	Power density at 20cm (mW/ cm^2)	Power density Limits (mW/cm^2)
Test Mode: 802.11b							
Low	5	2412	13.63	±0.5	25.882	0.0163	1
Middle	5	2437	13.83	±0.5	27.102	0.0171	1
High	5	2462	12.31	±0.5	19.099	0.0120	1
Test Mode: 802.11g							
Low	5	2412	15.13	±0.5	36.559	0.0230	1
Middle	5	2437	15.22	±0.5	37.325	0.0235	1
High	5	2462	14.16	±0.5	29.242	0.0184	1
Test Mode: 802.11n(HT20)							
Low	5	2412	14.17	±0.5	29.309	0.0184	1
Middle	5	2437	14.72	±0.5	33.266	0.0209	1
High	5	2462	12.98	±0.5	22.284	0.0140	1
Test Mode: 802.11n(HT40)							
Low	5	2422	12.98	±0.5	22.284	0.0140	1
Middle	5	2437	13.62	±0.5	25.823	0.0162	1
High	5	2452	11.92	±0.5	17.458	0.0110	1