

RF EXPOSURE EVALUATION

EUT Specification

EUT	PHIIMAX3D PANORAMIC CAMERA
Frequency band (Operating)	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input checked="" type="checkbox"/> WLAN: 5.18GHz ~ 5.24GHz <input type="checkbox"/> WLAN: 5.50GHz ~ 5.70GHz <input checked="" type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Others(Bluetooth: 2.402GHz ~ 2.480GHz)
Device category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others ____
Antenna diversity	<input type="checkbox"/> Single antenna <input checked="" type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input type="checkbox"/> Tx/Rx diversity
Max. output power	14.92 dBm (31.05mW) for 5G WIFI Band1 15.52 dBm (35.65mW) for 5G WIFI Band4
Antenna gain	3dBi
Evaluation applied	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> 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: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm^2

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, $1mW/cm^2$. 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)
5G WIFI Band1							
Test Mode: 802.11a							
Low	3	5180	10.39	± 0.5	12.27	0.0049	1
Middle	3	5200	9.29	± 0.5	9.53	0.0038	1
High	3	5240	11.22	± 0.5	14.86	0.0059	1
Test Mode: 802.11n(HT20)							
Low	3	5180	12.04	± 0.5	17.95	0.0071	1
Middle	3	5200	12.11	± 0.5	18.24	0.0072	1
High	3	5240	14.92	± 0.5	34.83	0.0138	1
Test Mode: 802.11ac(VHT20)							
Low	3	5180	12.01	± 0.5	17.82	0.0071	1
Middle	3	5200	12.06	± 0.5	18.03	0.0072	1
High	3	5240	14.84	± 0.5	34.20	0.0136	1
Test Mode: 802.11n(HT40)							
Low	3	5190	11.89	± 0.5	17.34	0.0069	1
High	3	5230	13.25	± 0.5	23.71	0.0094	1
Test Mode: 802.11ac(VHT40)							
Low	3	5190	11.96	± 0.5	17.62	0.0070	1
High	3	5230	13.27	± 0.5	23.82	0.0095	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)
5G WIFI Band4							
Test Mode: 802.11a							
Low	3	5745	13.25	±0.5	23.71	0.0094	1
Middle	3	5785	13.95	±0.5	27.86	0.0111	1
High	3	5825	13.31	±0.5	24.04	0.0095	1
Test Mode: 802.11n(HT20)							
Low	3	5745	14.85	±0.5	34.28	0.0136	1
Middle	3	5785	15.03	±0.5	35.73	0.0142	1
High	3	5825	14.80	±0.5	33.88	0.0134	1
Test Mode: 802.11ac(VHT20)							
Low	3	5745	14.84	±0.5	34.20	0.0136	1
Middle	3	5785	15.08	±0.5	36.14	0.0143	1
High	3	5825	14.81	±0.5	33.96	0.0135	1
Test Mode: 802.11n(HT40)							
Low	3	5755	14.78	±0.5	33.73	0.0134	1
High	3	5795	15.52	±0.5	39.99	0.0159	1
Test Mode: 802.11ac(VHT40)							
Low	3	5755	14.75	±0.5	33.50	0.0133	1
High	3	5795	15.07	±0.5	36.06	0.0143	1