RF EXPOSURE EVALUATION

EUT Specification

EUT	PHIIMAX3D PANORAMIC CAMERA
Frequency band (Operating)	☐WLAN: 2.412GHz ~ 2.462GHz ☒WLAN: 5.18GHz ~ 5.24GHz ☐WLAN: 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	14.92 dBm (31.05mW) for 5G WIFI Band1 15.52 dBm (35.65mW) for 5G WIFI Band4
Antenna gain	Ant_0: 3dBi Ant_1: 3dBi MIMO Gain: 6.01dBi
Evaluation applied	☒MPE Evaluation ☐SAR Evaluation

According to KDB 662911 D01 Multiple Transmitter Output v02r01 (F) (d):
MIMO gain: 3dBi+10log(2)=6.01dBi

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)
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	6.01	5180	12.04	±0.5	17.95	0.0142	1
Middle	6.01	5200	12.11	±0.5	18.24	0.1445	1
High	6.01	5240	14.92	±0.5	34.83	0.0276	1
Test Mode: 802.11ac(VHT20)							
Low	6.01	5180	12.01	±0.5	17.82	0.0141	1
Middle	6.01	5200	12.06	±0.5	18.03	0.0143	1
High	6.01	5240	14.84	±0.5	34.20	0.0271	1
Test Mode: 802.11n(HT40)							
Low	6.01	5190	11.89	±0.5	17.34	0.0138	1
High	6.01	5230	13.25	±0.5	23.71	0.0188	1
Test Mode: 802.11ac(VHT40)							
Low	6.01	5190	11.96	±0.5	17.62	0.0140	1
High	6.01	5230	13.27	±0.5	23.82	0.0189	1
Test Mode: 802.11ac(VHT80)							
---	6.01	5210	12.30	±0.5	19.05	0.0151	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	6.01	5745	14.85	±0.5	34.28	0.0272	1
Middle	6.01	5785	15.03	±0.5	35.73	0.0284	1
High	6.01	5825	14.80	±0.5	33.88	0.0269	1
Test Mode: 802.11ac(VHT20)							
Low	6.01	5745	14.84	±0.5	34.20	0.0271	1
Middle	6.01	5785	15.08	±0.5	36.14	0.0287	1
High	6.01	5825	14.81	±0.5	33.96	0.0270	1
Test Mode: 802.11n(HT40)							
Low	6.01	5755	14.78	±0.5	33.73	0.0268	1
High	6.01	5795	15.52	±0.5	39.99	0.0317	1
Test Mode: 802.11ac(VHT40)							
Low	6.01	5755	14.75	±0.5	33.50	0.0266	1
High	6.01	5795	15.07	±0.5	36.06	0.0286	1
Test Mode: 802.11ac(VHT80)							
---	6.01	5775	14.86	±0.5	34.36	0.0273	1