

RF EXPOSURE EVALUATION

According to FCC 1.1310: 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)

FCC ID: 2BBWA-MAO1

EUT Specification

EUT	Mology Magic Camera
Frequency band (Operating)	☒ WLAN: 2.412GHz ~ 2.462GHz ☒ WLAN: 5.18GHz ~ 5.24GHz ☒ WLAN: 5.745GHz ~ 5.825GHz ☒ Others: 2.402GHz~2.480GHz BLE
Device category	☐ Portable (<20cm separation) ☒ Mobile (>20cm separation) ☐ Others ____
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm ²) ☒ General Population/Uncontrolled exposure (S=1mW/cm ²)
Antenna diversity	☐ Single antenna ☒ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	BLE: -1.06dBm (0.0008W) 2.4G WiFi: 20.11dBm (0.1026W) 5.1G WiFi: 13.04dBm (0.02014W) 5.8G WiFi: 17.38dBm (0.0547W)
Antenna gain (Max)	BLE: 0.03 dBi 2.4G WiFi: 0.86 dBi 5.1G WiFi: 1.40 dBi 5.8G WiFi: 2.10 dBi
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)	Average Time
(A) Limits for Occupational/Control Exposures				
300-1500	--	--	F/300	6
1500-100000	--	--	5	6
(B) Limits for General Population/Uncontrol Exposures				
300-1500	--	--	F/1500	6
1500-100000	--	--	1	30

Friis transmission formula: $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

P_d = Power density in mW/cm²

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/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

2.4GHz WiFi:

Operating Mode	Channel Frequency	Measured Power	Tune up tolerance	Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits (mW/cm ²)
	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(mW/ cm ²)	
802.11b	2412	17.80	17.80±1	18.80	0.86	0.0184	1
	2437	17.57	17.57±1	18.57	0.86	0.0174	1
	2462	17.29	17.29±1	18.29	0.86	0.0164	1
802.11g	2412	20.11	20.11±1	21.11	0.86	0.0313	1
	2437	19.76	19.76±1	20.76	0.86	0.0289	1
	2462	17.25	17.25±1	18.25	0.86	0.0162	1
802.11n (HT20)	2412	16.90	16.90±1	17.90	0.86	0.0150	1
	2437	16.75	16.75±1	17.75	0.86	0.0144	1
	2462	16.68	16.68±1	17.68	0.86	0.0142	1
802.11n (HT40)	2422	17.09	17.09±1	18.09	0.86	0.0156	1
	2437	16.79	16.79±1	17.79	0.86	0.0146	1
	2452	16.90	16.90±1	17.90	0.86	0.0150	1
BLE 1M	2402	-1.12	-1.12±1	-0.12	0.03	0.0002	1
	2440	-1.95	-1.95±1	-0.95	0.03	0.0002	1
	2480	-2.25	-2.25±1	-1.25	0.03	0.0002	1
BLE 2M	2402	-1.06	-1.06±1	-0.06	0.03	0.0002	1
	2440	-1.91	-1.91±1	-0.91	0.03	0.0002	1
	2480	-2.23	-2.23±1	-1.23	0.03	0.0002	1

5.1G WiFi:

Operating Mode	Channel Frequency	Measured Power	Tune up tolerance	Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits
	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(mW/ cm ²)	(mW/cm ²)
802.11a	5180	13.04	13.04 ± 1	14.04	1.40	0.0070	1
	5200	12.70	12.70 ± 1	13.70	1.40	0.0064	1
	5240	12.95	12.95 ± 1	13.95	1.40	0.0068	1
802.11n20	5180	4.38	4.38 ± 1	5.38	1.40	0.0009	1
	5200	3.84	3.84 ± 1	4.84	1.40	0.0008	1
	5240	3.94	3.94 ± 1	4.94	1.40	0.0009	1
802.11ac20	5180	12.43	12.43 ± 1	13.43	1.40	0.0060	1
	5200	11.14	11.14 ± 1	12.14	1.40	0.0045	1
	5240	11.05	11.05 ± 1	12.05	1.40	0.0044	1
802.11n40	5190	4.09	4.09 ± 1	5.09	1.40	0.0009	1
	5230	3.67	3.67 ± 1	4.67	1.40	0.0008	1
802.11ac40	5190	5.80	5.80 ± 1	6.80	1.40	0.0013	1
	5230	11.05	11.05 ± 1	12.05	1.40	0.0044	1

5.8G WiFi:

Operating Mode	Channel Frequency	Measured Power	Tune up tolerance	Max. Tune up Power	Antenna Gain	Power density at 20cm	Power density Limits
	(MHz)	(dBm)	(dBm)	(dBm)	(dBi)	(mW/ cm ²)	(mW/cm ²)
802.11a	5745	17.38	17.38 ± 1	18.38	2.10	0.0222	1
	5785	17.05	17.05 ± 1	18.05	2.10	0.0206	1
	5825	16.17	16.17 ± 1	17.17	2.10	0.0168	1
802.11n20	5745	9.42	9.42 ± 1	10.42	2.10	0.0036	1
	5785	8.91	8.91 ± 1	9.91	2.10	0.0032	1
	5825	7.72	7.72 ± 1	8.72	2.10	0.0024	1
802.11ac20	5745	12.08	12.08 ± 1	13.08	2.10	0.0066	1
	5785	11.30	11.30 ± 1	12.30	2.10	0.0055	1
	5825	9.84	9.84 ± 1	10.84	2.10	0.0039	1
802.11n40	5755	9.38	9.38 ± 1	10.38	2.10	0.0035	1
	5795	8.50	8.50 ± 1	9.50	2.10	0.0029	1
802.11ac40	5755	11.76	11.76 ± 1	12.76	2.10	0.0061	1
	5795	10.91	10.91 ± 1	11.91	2.10	0.0050	1

Note: BT and WIFI cannot support simultaneous transmission.