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Maximum Permissive Exposure

FCC ID: ARS-WCT5GM2511
EUT: WiFi +BT module
Model No.: WCT5GM2511

1. According to FCC CFR 47 §1.1310, the criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b).

Table 1 Limits for Maximum Permissible Exposure

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational / Control Exposures (f = frequency)				
30-300	61.4	0.163	1.0	6
300-1500	---	---	f/300	6
1500-100,000	---	---	5.0	6
(B) Limits for General Population / Uncontrolled Exposures (f = frequency)				
30-300	27.5	0.073	0.2	30
300-1500	---	---	f/1500	30
1500-100,000	---	---	1.0	30



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2. MPE Calculation

Top Victory Electronics(Taiwan) Co., Ltd. declares that the product described above has been evaluated and found to comply with the RF exposure limits for humans, as specified based on ANSI/FCC recommendation.

RF Exposure Calculations: $S = (P * G) / (4 * \pi * r^2)$ or $r = \sqrt{(P * G) / (4 * \pi * S)}$

2.1. Estimation Result

Bluetooth MPE:

Mode	Frequency (MHz)	Output power (dBm)	Output power (mW)	antenna Gain (dBi)	antenna Gain (linear)	MPE (mW/cm ²)
GFSK (DSS)	2402	6.990	5.00	1.72	1.49	0.001479
	2441	7.299	5.37	1.72	1.49	0.001588
	2480	7.746	5.95	1.72	1.49	0.001760
8-DPSK (DSS)	2402	6.978	4.99	1.72	1.49	0.001475
	2441	7.287	5.35	1.72	1.49	0.001584
	2480	7.747	5.95	1.72	1.49	0.001761
GFSK (DTS) (1Mbps)	2402	2.818	1.91	1.72	1.49	0.000566
	2440	3.153	2.07	1.72	1.49	0.000611
	2480	3.581	2.28	1.72	1.49	0.000675
GFSK (DTS) (2Mbps)	2402	2.745	1.88	1.72	1.49	0.000556
	2440	2.928	1.96	1.72	1.49	0.000580
	2480	3.442	2.21	1.72	1.49	0.000653

DTS Band MPE:

Mode	Frequency (MHz)	Output power (dBm)	Output power (mW)	antenna Gain (dBi)	antenna Gain (linear)	MPE (mW/cm ²)
11b	2412	16.69	46.67	5.05	3.20	0.029713
	2437	16.82	48.08	5.05	3.20	0.030616
	2462	16.96	49.66	5.05	3.20	0.031619
11g	2412	14.75	29.85	5.05	3.20	0.019009
	2437	14.79	30.13	5.05	3.20	0.019184
	2462	14.89	30.83	5.05	3.20	0.019631
11n HT20	2412	13.61	22.96	5.05	3.20	0.014620
	2437	13.67	23.28	5.05	3.20	0.014823
	2462	13.76	23.77	5.05	3.20	0.015134
11n HT40	2422	12.52	17.86	5.05	3.20	0.011375
	2437	12.60	18.20	5.05	3.20	0.011586
	2452	12.68	18.54	5.05	3.20	0.011802

U-NII-1 Band MPE:

Mode	Frequency (MHz)	Output power (dBm)	Output power (mW)	antenna Gain (dBi)	antenna Gain (linear)	MPE (mW/cm ²)
11a	5180	15.98	39.63	6.06	4.04	0.031838
	5200	16.13	41.02	6.06	4.04	0.032957
	5240	16.65	46.24	6.06	4.04	0.037149
11n HT20	5180	15.02	31.77	6.06	4.04	0.025524
	5200	14.92	31.05	6.06	4.04	0.024943
	5240	15.37	34.43	6.06	4.04	0.027666
11n HT40	5190	14.68	29.38	6.06	4.04	0.023602
	5230	14.40	27.54	6.06	4.04	0.022128
11ac VHT20	5180	14.77	29.99	6.06	4.04	0.024096
	5200	14.76	29.92	6.06	4.04	0.024041
	5240	15.26	33.57	6.06	4.04	0.026974
11ac VHT40	5190	14.46	27.93	6.06	4.04	0.022436
	5230	14.75	29.85	6.06	4.04	0.023986
11ac VHT80	5210	12.80	19.05	6.06	4.04	0.015309



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U-NII-3 Band MPE:

Mode	Frequency (MHz)	Output power (dBm)	Output power (mW)	antenna Gain (dBi)	antenna Gain (linear)	MPE (mW/cm ²)
11a	5745	15.46	35.16	6.1	4.07	0.028507
	5785	15.62	36.48	6.1	4.07	0.029577
	5825	15.42	34.83	6.1	4.07	0.028246
11n HT20	5745	14.75	29.85	6.1	4.07	0.024208
	5785	14.83	30.41	6.1	4.07	0.024658
	5825	14.74	29.79	6.1	4.07	0.024152
11n HT40	5755	14.16	26.06	6.1	4.07	0.021132
	5795	14.65	29.17	6.1	4.07	0.023656
11ac VHT20	5745	14.59	28.77	6.1	4.07	0.023332
	5785	14.81	30.27	6.1	4.07	0.024544
	5825	14.59	28.77	6.1	4.07	0.023332
11ac VHT40	5755	14.44	27.80	6.1	4.07	0.022540
	5795	14.54	28.44	6.1	4.07	0.023065
11ac VHT80	5775	12.24	16.75	6.1	4.07	0.013582

Based on **safety** distance (r) **20cm**, the antenna gain (G) is **4.04 Numerical**, and the highest power output (P) is **46.24mW**, the power density (S) is **0.037149mW/cm²**.

Bluetooth + WIFI MPE:

Bluetooth MPE (mW/cm ²)	WIFI MPE (mW/cm ²)	Max MPE (mW/cm ²)	Limit (mW/cm ²)	Compliance or not
0.001761	0.037149	0.038910	1	YES