

RF Exposure Report

FCC ID: 2AGM4-WUS14

Applicant: Dongguan Digital AV Technology Corp., Ltd

Exposure category: General population/uncontrolled environment

EUT Type: Production Unit

Device Type: Mobile Device

Refer Standard: FCC Part 2.1091: Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands)

FCC MPE Limited:

Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

Test Data

Predication of MPE limit at a given distance

$$S = \frac{PG}{4\pi R^2}$$

Where: S = power density

P = power input to the antenna

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

Antenna Gain information

2.4GHz/5GHz)Antenna Gain0: 3.0dBi

2.4GHz/5GHz)Antenna Gain1: 3.0dBi

2.4GHz/5GHz)Antenna Gain0+1: 6.01dBi

Note 1: According to KDB 662911, all transmit signals are completely correlated with each other.

2. Directional gain = $G_{ANT} + 10 \log(N_{ANT})$ dBi

Conducted Output Power (dBm)

802.11b mode

Channel	Frequency (MHz)	Output Power(dBm)		Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	
1	2412	23.62	23.07	22.5 ± 1
6	2437	23.30	22.72	22.5 ± 1
11	2462	23.55	22.07	22.5 ± 1

802.11g Test mode

Channel	Frequency (MHz)	Output Power(dBm)		Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	
1	2412	23.03	22.98	22.5 ± 1
6	2437	23.01	22.56	22.5 ± 1
11	2462	23.12	22.05	22.5 ± 1

802.11n-20MHz Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	Ant. 0+1	
1	2412	21.59	21.49	24.55	24.5 ± 1
6	2437	21.56	21.23	24.41	24.5 ± 1
11	2462	21.64	21.29	24.48	24.5 ± 1

802.11n-40MHz Test mode

Channel	Frequency (MHz)	Output Power(dBm)			Tune Up tolerance(dBm)
		Ant. 0	Ant. 1	Ant. 0+1	
3	2422	22.12	21.70	24.93	24.5 ± 1
6	2437	21.85	21.68	24.78	24.5 ± 1
9	2452	21.89	21.59	24.75	24.5 ± 1

Conducted Power Test results of band U-NII-1 (5150 ~ 5250 MHz)

802.11a mode				
Frequency (MHz)	Conducted Output Power (dBm)		Tune Up tolerance(dBm)	
	Antenna 0	Antenna 1		
5180	14.15	13.95	14 ± 1	
5220	13.97	14.08	14 ± 1	
5240	13.92	13.84	14 ± 1	
802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5180	13.12	13.02	16.08	16 ± 1
5220	12.95	13.06	16.02	16 ± 1
5240	13.04	13.11	16.09	16 ± 1
802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5190	13.33	13.58	16.47	16 ± 1
5230	13.51	13.69	16.61	16 ± 1
802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5180	13.02	13.21	16.13	16 ± 1
5220	13.10	13.09	16.11	16 ± 1
5240	13.05	12.98	16.03	16 ± 1
802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5190	13.46	13.71	16.60	16 ± 1
5230	13.55	13.91	16.74	16 ± 1
802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5210	13.56	13.49	16.54	16 ± 1

Conducted Power Test results of band U-NII-2A (5250 ~ 5350 MHz)

802.11a mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1		
5260	13.84	13.83		14 ± 1
5300	14.06	13.69		14 ± 1
5320	14.04	13.86		14 ± 1
802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5260	13.87	13.24	16.58	16 ± 1
5300	13.90	13.65	16.79	16 ± 1
5320	13.76	13.59	16.69	16 ± 1
802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5270	13.61	13.99	16.81	16 ± 1
5310	13.87	13.76	16.83	16 ± 1
802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5260	13.75	13.70	16.74	16 ± 1
5300	13.85	13.46	16.67	16 ± 1
5320	13.63	13.34	16.50	16 ± 1
802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5270	13.49	13.89	16.70	16 ± 1
5310	13.72	13.92	16.83	16 ± 1
802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5290	13.63	13.39	16.52	16 ± 1

Conducted Power Test results of band U-NII-2C (5470 ~ 5725 MHz)

802.11a mode				
Frequency (MHz)	Conducted Output Power (dBm)		Tune Up tolerance(dBm)	
	Antenna 0	Antenna 1		
5500	13.57	13.67		14 ± 1
5580	13.60	13.64		14 ± 1
5700	13.63	13.37		14 ± 1
802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5500	13.28	13.37	16.34	16 ± 1
5580	13.54	13.46	16.51	16 ± 1
5700	13.69	13.65	16.68	16 ± 1
802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5510	15.92	15.83	18.89	18 ± 1
5670	15.41	15.78	18.61	18 ± 1
802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5500	13.24	13.55	16.41	16 ± 1
5580	13.38	13.29	16.35	16 ± 1
5700	13.69	13.34	16.53	16 ± 1
802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5510	15.79	15.73	18.77	18 ± 1
5670	15.73	15.80	18.78	18 ± 1
802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5530	16.55	16.42	19.50	19 ± 1

Conducted Power Test results of band U-NII-3 (5725 ~ 5850 MHz)

802.11a mode				
Frequency (MHz)	Conducted Output Power (dBm)		Tune Up tolerance(dBm)	
	Antenna 0	Antenna 1		
5745	18.46	18.26	18±1	
5785	18.96	18.34	18±1	
5825	18.85	18.92	18±1	
802.11n-HT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5745	18.48	18.27	21.39	21±1
5785	18.63	18.44	21.55	21±1
5825	18.84	18.76	21.81	21±1
802.11n-HT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5755	18.98	18.74	21.87	21±1
5795	19.06	18.83	21.96	21±1
802.11ac-VHT20 mode				
Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)
	Antenna 0	Antenna 1	Total	
5745	18.58	18.22	21.41	21±1
5785	18.83	18.26	21.56	21±1
5825	18.86	18.67	21.78	21±1
802.11ac-VHT40 mode				
Frequency (MHz)	Conducted Output Power (dBm)			Tune Up tolerance(dBm)
	Antenna 0	Antenna 1	Total	
5755	18.90	18.65	21.79	21±1
5795	18.95	18.89	21.93	21±1
802.11ac-VHT80 mode				
Frequency (MHz)	Conducted Output Power (dBm)			FCC Limit (dBm)
	Antenna 0	Antenna 1	Total	
5775	18.09	17.97	21.04	21±1

Calculation results (for 2.4G WIFI): Worst-case mode

Antenna	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	2412	25.5	20	0.112	1.0
	2437	25.5	20	0.112	
	2462	25.5	20	0.112	
	2422	25.5	20	0.112	
	2452	25.5	20	0.112	

Calculation results (for 5.2G WIFI band U-NII-1): Worst-Case mode

Antenna	Mode	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	N20	5180	17	20	0.016	1.0
		5220	17	20	0.016	
		5240	17	20	0.016	
	N40	5190	17	20	0.016	
		5230	17	20	0.016	
	AC20	5180	17	20	0.016	
		5220	17	20	0.016	
		5240	17	20	0.016	
	AC40	5190	17	20	0.016	
		5230	17	20	0.016	
	AC80	5210	17	20	0.016	

Calculation results (for 5.3G WIFI band U-NII-2A): Worst-Case mode

Antenna	Mode	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	N20	5260	17	20	0.016	1.0
		5300	17	20	0.016	
		5320	17	20	0.016	
	N40	5270	17	20	0.016	
		5310	17	20	0.016	
	AC20	5260	17	20	0.016	
		5300	17	20	0.016	
		5320	17	20	0.016	
	AC40	5270	17	20	0.016	
		5310	17	20	0.016	
	AC80	5290	17	20	0.016	

Calculation results (for 5.6G WIFI band U-NII-2C): Worst-Case mode

Antenna	Mode	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	N20	5500	17	20	0.016	1.0
		5580	17	20	0.016	
		5700	17	20	0.016	
	N40	5510	19	20	0.025	
		5670	19	20	0.025	
	AC20	5500	17	20	0.016	
		5580	17	20	0.016	
		5700	17	20	0.016	
	AC40	5510	19	20	0.025	
		5670	19	20	0.025	
	AC80	5530	20	20	0.032	

Calculation results (for 5.8G WIFI band U-NII-3): Worst-Case mode

Antenna	Mode	Frequency (MHz)	Maximum tune up power(dBm)	RF distance(cm)	Result (mW/cm2)	Limit (mW/cm2)
0+1(MIMO)	N20	5745	22	20	0.05	1.0
		5785	22	20	0.05	
		5825	22	20	0.05	
	N40	5755	22	20	0.05	
		5795	22	20	0.05	
	AC20	5745	22	20	0.05	
		5785	22	20	0.05	
		5825	22	20	0.05	
	AC40	5755	22	20	0.05	
		5795	22	20	0.05	
	AC80	5775	22	20	0.05	

Note: 2.4GHz WLAN and 5GHz WLAN cannot transmit at the same time.