Referencing Test Data

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1. Original General Descriptions of EUT

Equipment		Referenced Device	Model Variant Device
FCC ID		RAXHT3000W	RAXWR3200
FCC Granted Date		11/18/2021	NA
Test Model		HT3000W	WR3200
RF characteristics		2TX WLAN 2.4GHz 2412 – 2462 MHz	2TX WLAN 2.4GHz 2412 – 2462 MHz
		2TX WLAN 5GHz 5180.0 - 5240.0 MHz 5260.0 - 5320.0 MHz 5500.0 - 5720.0 MHz 5745.0 - 5825.0 MHz	2TX WLAN 5GHz 5180.0 - 5240.0 MHz 5260.0 - 5320.0 MHz 5500.0 - 5720.0 MHz 5745.0 - 5825.0 MHz
Hardware	Difference	1. W/O MoCA component	1. Add MoCA component 2. DC Jack change
	Identical	Identical internal printed circuit board layouts	
		Have a common design and components except MoCA component WLAN CHIP:WLAN 2.4GHz: QCN5022/ WLAN 5GHz: QCN5052	

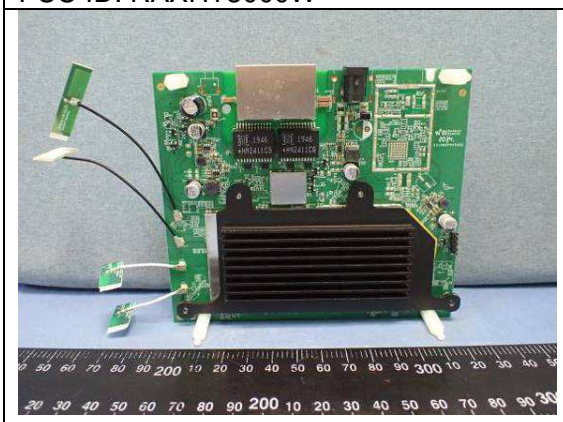
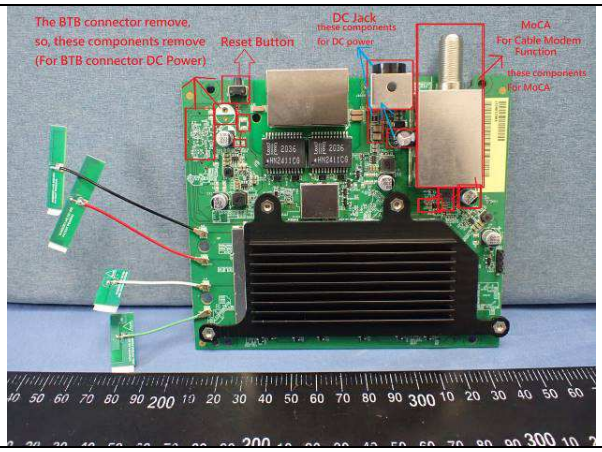
Variant spot-check test results are within the tune-up tolerance range specified and are compliant with applicable rule part(s).

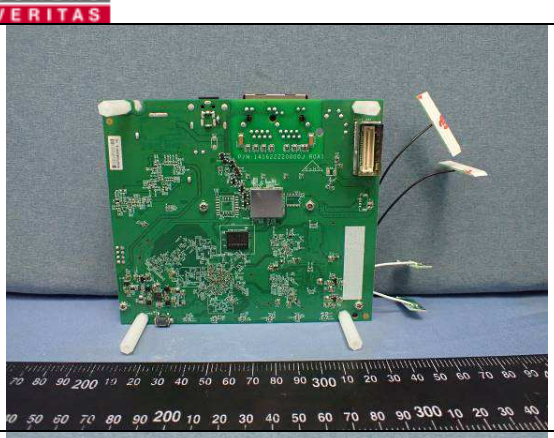
2. Form Factor and Photos

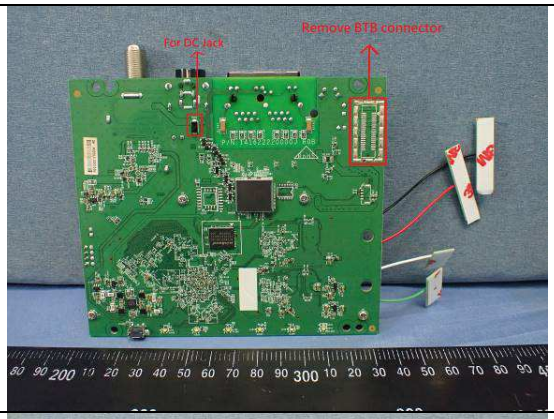
base on FCC KDB guidance 484596 Rules ,
The printed circuit board layouts the same ; RF technologies the same (WiFi 2.4G & WiFi 5G)
Difference : add MoCA component and Change DC Jack

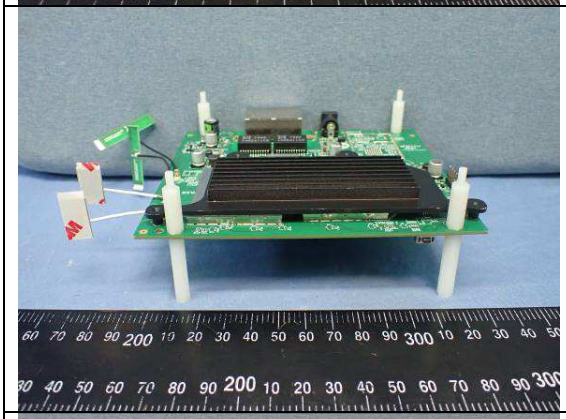
Change DC Jack ; For difference PSU Adapter

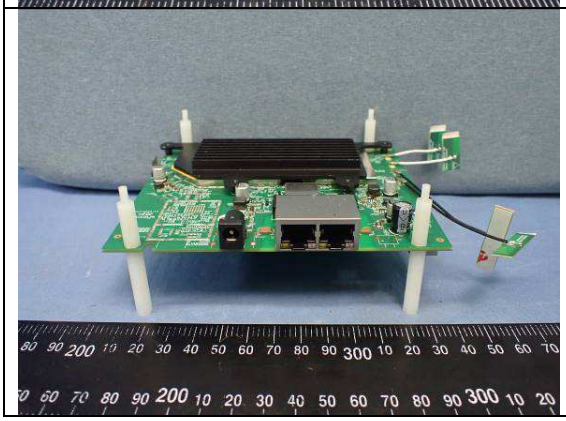
MoCA : For Cable Modem Function

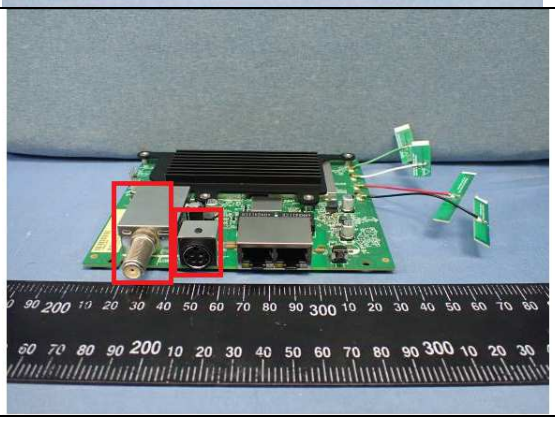
Referenced Device	Model variant
FCC ID: RAXHT3000W	FCC ID: RAXWR3200
	



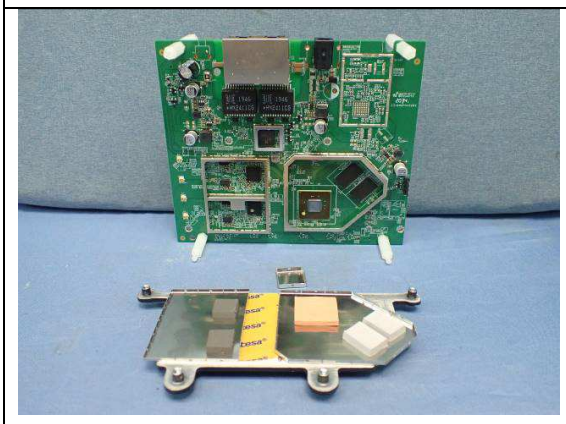
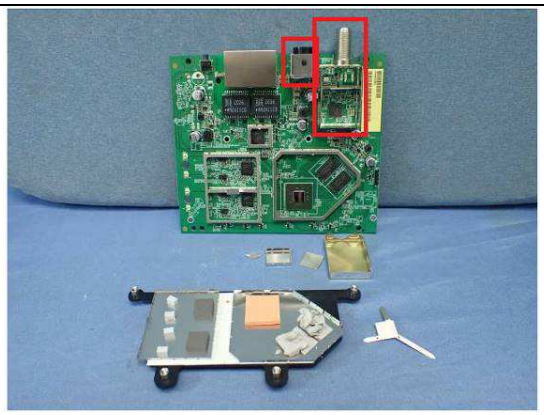

For DC Jack
Remove BTB connector







3. PCB Photos

Referenced Device	Model variant
FCC ID: RAXHT3000W	FCC ID: RAXWR3200
	

4. Referencing test items

Part 15C

FCC Clause	Test Items	Referenced Test Data	Note
15.247(b)	Conducted Output Power	Y	
15.207	AC Power Line Conducted Emission	N	
15.205/ 15.209/ 15.247(d)	Radiated Emissions and Band Edge Measurement	Y	
15.247(d)	Antenna Port Emission	Y	
15.247(a)(2)	6dB bandwidth	Y	
15.247(e)	Power Density	Y	

Part 15E

FCC Clause	Test Items	Referenced Test Data	Note
15.407(a)(1/2/3)	Conducted Output Power	Y	
15.207	AC Power Line Conducted Emission	N	
15.407(b) (1/2/3/4 (i/ii)	Radiated Emissions and Band Edge Measurement	Y	
15.407(a)(1/2/3)	26dBc bandwidth	Y	
-	99% Occupied bandwidth	Y	
15.407(e)	6dB bandwidth	Y	
15.407(a)(1/2/3)	Power Density	Y	
15.407(g)	Frequency Stability	Y	
15.407(h)	DFS	N	

Variant spot-check test results are within the tune-up tolerance range specified and are compliant with applicable rule part(s).

5. Spot- Check Test Plan

Amount of test samples: 1 sample

Equipment Class	Rule Part	Test Items	Frequency Band	Test Modes	Test Channel
DTS	Part 15C	Conducted output power	2412-2462 MHz	802.11 b/g/n/ax	Low/ Mid/ High
		Radiated emission – Band edge and Harmonics (Above 1GHz)		One channel with maximum power among 802.11 b/g/n/ax	One channel with maximum power
		Radiated emission (Below 1GHz)			
		AC Power Line Conducted Emission			
NII	Part 15E	Conducted output power	5180-5240MHz, 5260-5320MHz, 5500-5720MHz 5745-5825MHz	802.11 a/n/ac/ax	Low/ Mid/ High for each sub band
		Radiated emission – Band edge and Harmonics (Above 1GHz)		One channel with maximum power among 802.11 a/n/ac/ax	One channel with maximum power
		Radiated emission (Below 1GHz)			
		AC Power Line Conducted Emission			
		DFS	5500-5720MHz	ALL Re-test	ALL Re-test

Note: RF Conducted output power were confirmed and the same as Referenced Device (FCC ID: RAXHT3000W)

Variant spot-check test results are within the tune-up tolerance range specified and are compliant with applicable rule part(s).

Original Report Test Data:
Please find attached the PDF File:
RAXHT3000W (Referenced Device) original Data.PDF

6. output power

RF Conducted output power were confirmed within 0.5dB

2.4G Power

Composite Antenna Gain Type		Antenna Gain (dBi)			Chain0	Chain1	Directional Gain		Certification Power
Correlated		2400 ~ 2483.5 MHz:			1.90	2.10	2.10		Power Meter Average Sensor
Mode	Data Rate	Channel	Frequency (MHz)	Power Setting	Chain0 Avg (dBm)	Chain1 Avg (dBm)	Total Avg (dBm)	Limit Avg (dBm)	PASS / FAIL
11b	1Mbps	1	2412	23.5	23.65	24.04	26.86	30.00	PASS
		6	2437	23.5	23.83	24.13	26.99	30.00	PASS
		11	2462	23.5	23.88	24.11	27.01	30.00	PASS
11g	6Mbps	1	2412	21	21.07	21.77	24.44	30.00	PASS
		6	2437	23.5	23.72	24.05	26.90	30.00	PASS
		11	2462	22.5	22.68	23.27	26.00	30.00	PASS
VHT20 2.4G	MCS0NSS1	1	2412	21.5	21.00	21.60	24.32	30.00	PASS
		6	2437	23.5	23.10	23.64	26.39	30.00	PASS
		11	2462	21.5	20.99	21.59	24.31	30.00	PASS
VHT40 2.4G	MCS0NSS1	3	2422	16.5	16.86	16.91	19.90	30.00	PASS
		6	2437	22	21.94	22.49	25.23	30.00	PASS
		9	2452	16.5	16.77	17.07	19.93	30.00	PASS
11ax20 2.4G	MCS0 6.5Mbps	1	2412	21.5	21.11	21.68	24.41	30.00	PASS
		6	2437	23.5	23.21	23.77	26.51	30.00	PASS
		11	2462	21.5	21.10	21.76	24.45	30.00	PASS
11ax40 2.4G	MCS0 6.5Mbps	3	2422	16.5	16.98	17.03	20.02	30.00	PASS
		6	2437	22	22.07	22.62	25.36	30.00	PASS
		9	2452	16.5	16.90	17.22	20.07	30.00	PASS

5G Power

Composite Antenna	Antenna Gain (dBi)	Chain	Chain1	Directional	Certification Power

Gain Type			0		Gain	
Correlated		5150 ~ 5250 MHz:	2.50	3.00	3.00	Power Meter Average Sensor
		5250 ~ 5350 MHz:	2.50	3.00	3.00	
		5470 ~ 5725 MHz:	2.50	3.00	3.00	
		5725 ~ 5850 MHz:	2.50	3.00	3.00	

Mode	Data Rate	Channel	Frequency (MHz)	Power Setting	Chain 0	Chain1	Total	Limit	
					Avg (dBm)	Avg (dBm)	Avg (dBm)	Avg (dBm)	PASS / FAIL
11a	6Mbps	36	5180	23.5	23.89	24.50	27.22	30.00	PASS
		40	5200	23.5	23.62	23.77	26.71	30.00	PASS
		48	5240	23.5	23.18	22.93	26.07	30.00	PASS
		52	5260	20.5	20.50	20.24	23.38	24.00	PASS
		60	5300	20.5	20.45	20.03	23.26	24.00	PASS
		64	5320	21	20.32	20.21	23.28	24.00	PASS
		100	5500	20.5	20.46	20.49	23.49	24.00	PASS
		116	5580	20.5	20.69	20.50	23.61	24.00	PASS
		140	5700	22	20.76	20.36	23.57	24.00	PASS
		144	5720	22	20.62	20.30	23.47	24.00	PASS
		149	5745	25	23.57	22.90	26.26	30.00	PASS
		157	5785	25	23.30	23.05	26.19	30.00	PASS
		165	5825	25.5	23.59	23.27	26.44	30.00	PASS
11ac20 5G	MCS0NSS1	36	5180	23.5	23.19	22.26	25.76	30.00	PASS
		40	5200	24	23.19	22.93	26.07	30.00	PASS
		48	5240	24	23.00	22.84	25.93	30.00	PASS
		52	5260	21	20.19	19.95	23.08	24.00	PASS
		60	5300	21.5	20.51	20.37	23.45	24.00	PASS
		64	5320	22	20.68	20.28	23.49	24.00	PASS
		100	5500	21	20.32	20.37	23.36	24.00	PASS
		116	5580	21	20.54	20.25	23.41	24.00	PASS
		140	5700	22.5	20.50	20.11	23.32	24.00	PASS
		144	5720	22.5	20.52	20.20	23.37	24.00	PASS
		149	5745	25.5	23.17	22.56	25.89	30.00	PASS
		157	5785	26	23.34	23.12	26.24	30.00	PASS
		165	5825	26	23.35	22.94	26.16	30.00	PASS
11ac40	MCS0NSS1	38	5190	22	22.09	21.69	24.90	30.00	PASS

5G		46	5230	23.5	23.12	22.94	26.04	30.00	PASS
		54	5270	20.5	20.57	20.19	23.39	24.00	PASS
		62	5310	20.5	18.83	20.08	22.51	24.00	PASS
		102	5510	20	19.86	20.10	22.99	24.00	PASS
		110	5550	20	20.25	20.17	23.22	24.00	PASS
		134	5670	21.5	20.46	20.17	23.33	24.00	PASS
		142	5710	21.5	20.50	20.16	23.34	24.00	PASS
		151	5755	25	23.17	22.79	25.99	30.00	PASS
		159	5795	24.5	22.53	22.46	25.51	30.00	PASS

11ac80 5G	MCS0NSS1	42	5210	21	20.73	20.62	23.69	30.00	PASS
		58	5290	18	17.69	17.51	20.61	24.00	PASS
		106	5530	20.5	20.00	20.33	23.18	24.00	PASS
		122	5610	19.5	20.10	20.37	23.25	24.00	PASS
		138	5690	19.5	20.08	20.28	23.19	24.00	PASS
		155	5775	23	21.01	20.64	23.84	30.00	PASS

11ax20 5G	MCS0NSS1	36	5180	23.5	23.35	22.31	25.87	30.00	PASS
		40	5200	24	23.40	23.16	26.29	30.00	PASS
		48	5240	24	23.22	22.94	26.09	30.00	PASS
		52	5260	21	20.28	20.01	23.16	24.00	PASS
		60	5300	21.5	20.57	20.45	23.52	24.00	PASS
		64	5320	22	20.73	20.33	23.54	24.00	PASS
		100	5500	21	20.46	20.49	23.49	24.00	PASS
		116	5580	21	20.71	20.44	23.59	24.00	PASS
		140	5700	22.5	20.69	20.31	23.51	24.00	PASS
		144	5720	22.5	20.70	20.34	23.53	24.00	PASS
		149	5745	25.5	23.32	22.67	26.02	30.00	PASS
		157	5785	26	23.46	23.24	26.36	30.00	PASS
		165	5825	26	23.47	23.08	26.29	30.00	PASS

11ax40 5G	MCS0NSS1	38	5190	22	22.27	21.90	25.10	30.00	PASS
		46	5230	23.5	23.30	23.15	26.24	30.00	PASS
		54	5270	20.5	20.71	20.34	23.54	24.00	PASS
		62	5310	20.5	19.07	20.28	22.73	24.00	PASS
		102	5510	20	20.02	20.25	23.15	24.00	PASS
		110	5550	20	20.53	20.42	23.49	24.00	PASS

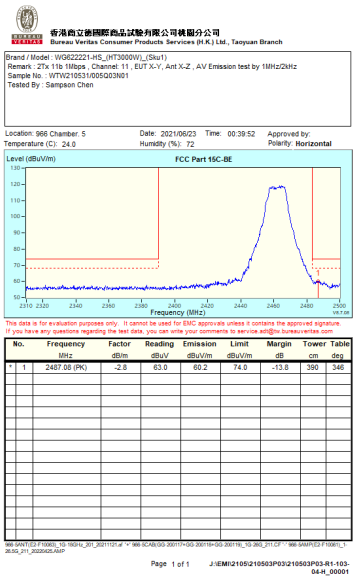
		134	5670	21.5	20.73	20.40	23.58	24.00	PASS
		142	5710	21.5	20.70	20.31	23.52	24.00	PASS
		151	5755	25	23.41	22.95	26.20	30.00	PASS
		159	5795	24.5	22.71	22.72	25.73	30.00	PASS

11ax80 5G	MCS0NSS1	42	5210	21	20.95	20.82	23.90	30.00	PASS
		58	5290	18	17.82	17.69	20.77	24.00	PASS
		106	5530	20.5	20.25	20.47	23.37	24.00	PASS
		122	5610	19.5	20.30	20.58	23.45	24.00	PASS
		138	5690	19.5	20.29	20.52	23.42	24.00	PASS
		155	5775	23	21.18	20.81	24.01	30.00	PASS

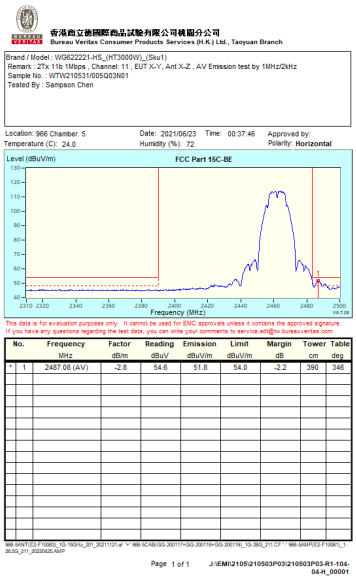
7. Radiated emission – Band edge and Harmonics (Above 1GHz)

802.11b Channel 11

Horizontal (Peak)

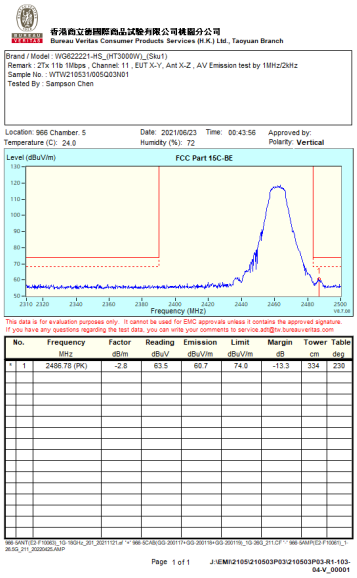


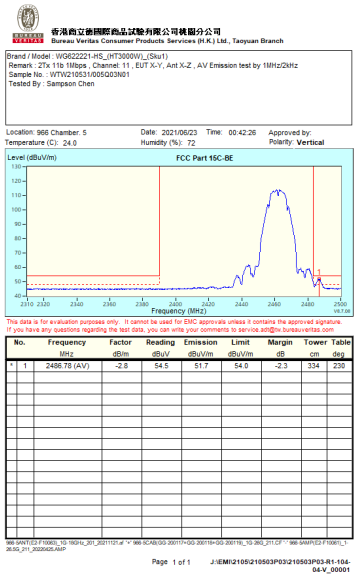
Horizontal (Average)



Vertical (Peak)

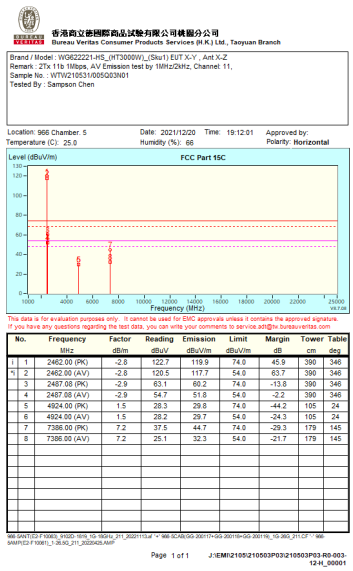
Vertical (Average)

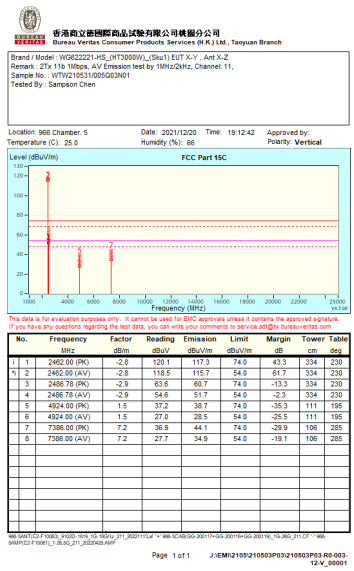




802.11b Channel 11

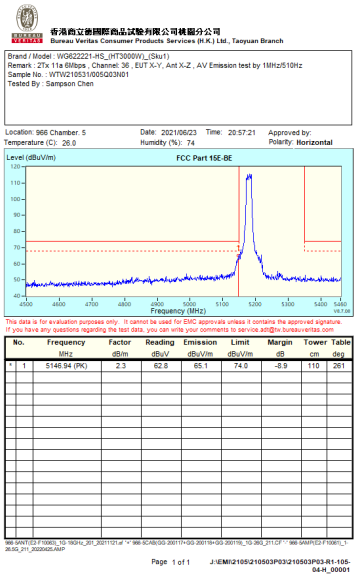
Horizontal	Vertical



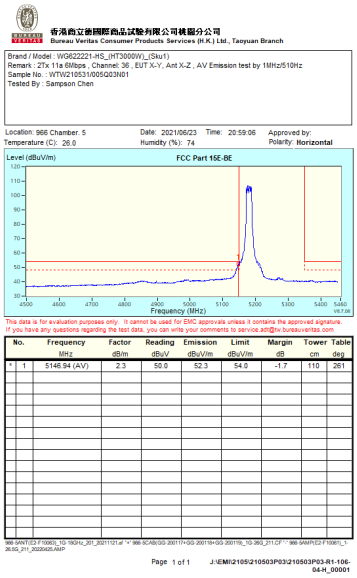


802.11a Channel 36

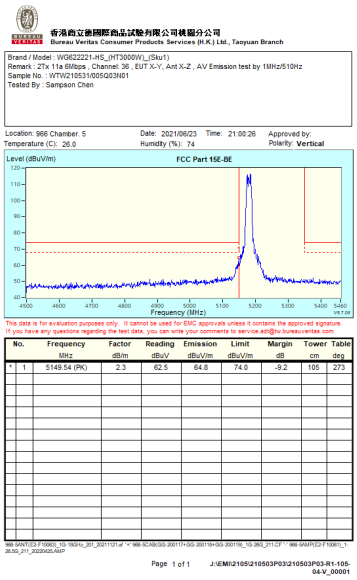
Horizontal (Peak)	Horizontal (Average)

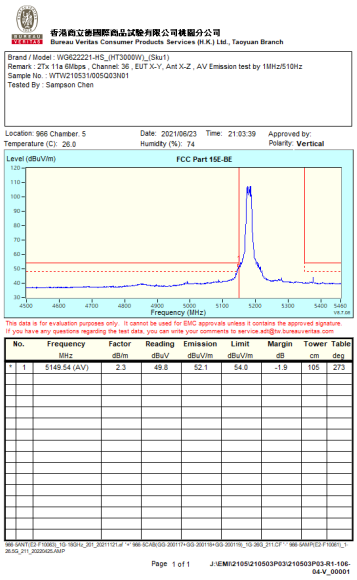


Vertical (Peak)

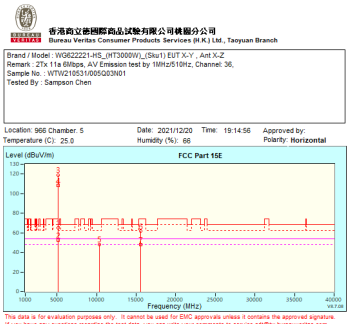


Vertical (Average)

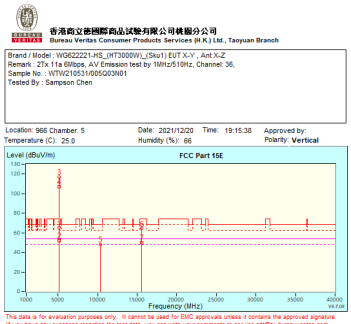




802.11a Channel 36	
Horizontal	**Vertical**



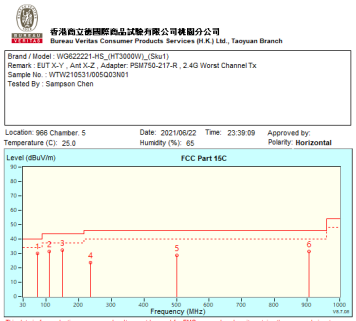
No.		Frequency MHz	Factor dB/m	Reading dBuV	Emission dBuV/m	Limit dBuV/m	Margin dB	Tower cm	Table deg
	1	5146.94 (PK)	2.4	62.7	65.1	74.0	-8.9	110	261
	2	5146.94 (AV)	2.4	49.9	52.3	54.0	-1.7	110	261
!	3	5180.00 (PK)	2.2	116.8	119.0	68.2	50.8	110	261
*!	4	5180.00 (AV)	2.2	106.0	108.2	54.0	54.2	110	261
	5	10360.00 (PK)	11.7	36.2	47.9	68.2	-20.3	175	128
	6	15540.00 (PK)	11.8	49.6	61.4	74.0	-12.6	112	227
	7	15540.00 (AV)	11.8	36.0	47.8	54.0	-6.2	112	227



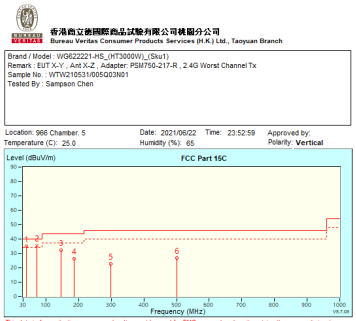
No.		Frequency MHz	Factor dB/m	Reading dBuV	Emission dBuV/m	Limit dBuV/m	Margin dB	Tower cm	Table deg
	1	5149.54 (PK)	2.4	62.4	64.8	74.0	-9.2	105	273
	2	5149.54 (AV)	2.4	49.7	52.1	54.0	-1.9	105	273
!	3	5180.00 (PK)	2.2	114.8	117.0	68.2	48.8	105	273
*!	4	5180.00 (AV)	2.2	104.9	107.1	54.0	53.1	105	273
	5	10360.00 (PK)	11.7	36.3	48.0	68.2	-20.2	109	151
	6	15540.00 (PK)	11.8	52.3	64.1	74.0	-9.9	106	244
	7	15540.00 (AV)	11.8	38.4	50.2	54.0	-3.8	106	244

8. Radiated emission (Below 1GHz)

802.11b Channel 11	
Horizontal	**Vertical**

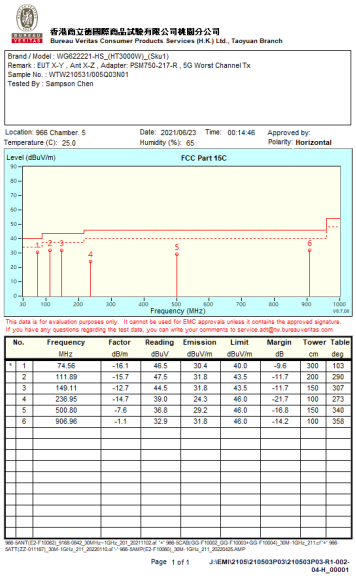


No.		Frequency MHz	Factor dB/m	Reading dBuV	Emission dBuV/m	Limit dBuV/m	Margin dB	Tower cm	Table deg
*	1	73.56	-15.9	45.8	29.9	40.0	-10.1	300	109
	2	110.90	-15.9	47.4	31.5	43.5	-12.0	200	295
	3	149.41	-12.7	44.8	32.1	43.5	-11.4	150	310
	4	235.80	-14.8	38.5	23.7	46.0	-22.3	100	275
	5	499.99	-7.6	36.3	28.7	46.0	-17.3	150	356
	6	906.29	-1.1	32.3	31.2	46.0	-14.8	100	354

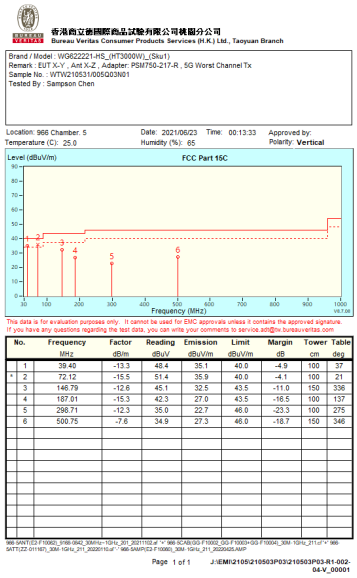


No.		Frequency MHz	Factor dB/m	Reading dBuV	Emission dBuV/m	Limit dBuV/m	Margin dB	Tower cm	Table deg
	1	39.07	-13.2	48.1	34.9	40.0	-5.1	100	40
*	2	71.42	-15.3	50.8	35.5	40.0	-4.5	100	0
	3	146.50	-12.7	45.1	32.4	43.5	-11.1	150	360
	4	185.84	-15.2	41.6	26.4	43.5	-17.1	100	126
	5	298.02	-12.4	35.0	22.6	46.0	-23.4	100	278
	6	500.04	-7.6	34.5	26.9	46.0	-19.1	150	360

802.11a Channel 36	
Horizontal	**Vertical**



No.		Frequency MHz	Factor dB/m	Reading dBuV	Emission dBuV/m	Limit dBuV/m	Margin dB	Tower cm	Table deg
*	1	74.56	-16.1	46.5	30.4	40.0	-9.6	300	103
*	2	111.89	-15.7	47.5	31.8	43.5	-11.7	200	290
	3	149.11	-12.7	44.5	31.8	43.5	-11.7	150	307
	4	236.95	-14.7	39.0	24.3	46.0	-21.7	100	273
	5	500.80	-7.6	36.8	29.2	46.0	-16.8	150	340
	6	906.96	-1.1	32.9	31.8	46.0	-14.2	100	358



No.		Frequency MHz	Factor dB/m	Reading dBuV	Emission dBuV/m	Limit dBuV/m	Margin dB	Tower cm	Table deg
	1	39.40	-13.3	48.4	35.1	40.0	-4.9	100	37
*	2	72.12	-15.5	51.4	35.9	40.0	-4.1	100	21
	3	146.79	-12.6	45.1	32.5	43.5	-11.0	150	336
	4	187.01	-15.3	42.3	27.0	43.5	-16.5	100	137
	5	298.71	-12.3	35.0	22.7	46.0	-23.3	100	275
	6	500.75	-7.6	34.9	27.3	46.0	-18.7	150	346

9. Acceptance criteria for spot check

Test Items	Frequency	Deviation Tolerance	Acceptance criteria
Conducted Output power	All operating band	-0.5 dB	The test result compare to the test result of Referenced device must be within Deviation Tolerance and must be lower than limitation for each operating band.
Spurious Emission up to 1GHz (Below 1GHz)	30MHz~1000MHz	+/- 3.0 dB	The worst value of test result for variant device compare to the test result of Referenced device must be within Deviation Tolerance and must be lower than limitation.
Spurious Emission above 1GHz	1GHz~40GHz	+/- 3.0 dB	The worst value of test result for variant device compare to the test result of Referenced device must be within Deviation Tolerance and must be lower than limitation.

Variant spot-check test results are within the tune-up tolerance range specified and are compliant with applicable rule part(s).