

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)

Report No.: RFBCIC-WTW-P24100653A-1

FCC ID: U8G-P1AX02

Product: Peplink Pepwave Wireless Product

Brand:  **PEPWAVE**

Model No.: MAX BR1 Pro 5G

Series Model: MAX-BR1-PRO-5GK-T-PRM (refer to item 3.1 for more details)

Received Date: 2025/3/17

Test Date: 2025/5/15 ~ 2025/6/3

Issued Date: 2025/6/9

Applicant: PISMO LABS TECHNOLOGY LIMITED

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FCC Registration /

Designation Number: 788550 / TW0003

Approved by:  , **Date:** 2025/6/9

Jeremy Lin / Senior Engineer

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Prepared by : Pettie Chen / Senior Specialist



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Release Control Record

Issue No.	Description	Date Issued
RFBCIC-WTW-P24100653A-1	Original release.	2025/6/9

1 Certificate

Product: Peplink Pepwave Wireless Product

Brand:  **PEPWAVE**

Model No.: MAX BR1 Pro 5G

Series Model: MAX-BR1-PRO-5GK-T-PRM (refer to item 3.1 for more details)

Sample Status: Prototype

Applicant: PISMO LABS TECHNOLOGY LIMITED

Test Date: 2025/5/15 ~ 2025/6/3

Standard: 47 CFR FCC Part 15, Subpart E (Section 15.407)

Measurement procedure: ANSI C63.10-2013

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
Clause	Test Item	Result	Remark
15.407(a)(2)	26 dB Bandwidth	-	For U-NII-2A U-NII-2C Band output power limitation is determined based on 26dBc bandwidth.
15.407(a)(1) 15.407(a)(3)	RF Output Power	Pass	Meet the requirement of limit.
15.407(a)(1) 15.407(a)(3)	Power Spectral Density	N/A	Refer to Note 1
15.407(e)	6 dB Bandwidth	N/A	Refer to Note 1
---	Occupied Bandwidth	-	Reference only.
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -5.98 dB at 0.35400 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -6.2 dB at 34.85 MHz
15.407(b) (1/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.1 dB at 4828.24 MHz
15.203	Antenna Requirement	Pass	Antenna connector is SMA a standard connector.

Note:

1. Only test item of RF Output Power, AC Power Conducted Emissions and Unwanted Emissions tests were performed for this report. Other testing data please refer to Sporton report No.: FR131219B, FR131219C certified report.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Specification	Expanded Uncertainty (k=2) (±)
RF Output Power	-	1.371 dB
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.90 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB

The other instruments specified are routine verified to remain within the calibrated levels, no measurement uncertainty is required to be calculated.

2.2 Supplementary Information

There is not any deviation from the test standards for the test method, and no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Peplink Pepwave Wireless Product
Brand	
Model No.	MAX BR1 Pro 5G
Series Model	MAX-BR1-PRO-5GK-T-PRM
Status of EUT	Prototype
Power Supply Rating	10-30Vdc from Molex Power Port; 12Vdc from Adapter PoE 802.3at
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode 1024QAM for OFDMA in 11ax mode
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: up to 54 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 Mbps 802.11ax: up to 1201.0 Mbps
Operating Frequency	5.18 GHz ~ 5.24 GHz 5.745 GHz ~ 5.825 GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	5.18 GHz ~ 5.24 GHz : 341.856 mW (25.34 dBm) 5.745 GHz ~ 5.825 GHz : 421.945 mW (26.25 dBm)
EUT Category	Indoor Access Point

Note:

1. This report is issued as a supplementary report. The differences compared with the original report are adding CPU DDR4 DRAM, PoE input feature and eMMC components. Therefore, only the RF Output Power, AC Power Conducted Emissions and Unwanted Emissions tests had been an addendum test to this report.
2. All models are listed as below.

Brand	Model	Difference
	MAX BR1 Pro 5G	For marketing purpose
	MAX-BR1-PRO-5GK-T-PRM	

3. The EUT uses following accessories.

Item	Brand	Model	AC Input	DC Output	DC Output Cable
Adapter	LEI	MU24D1120200-A1	100-240Vac 50/60Hz 0.7A	12Vdc 2.0A	Non-Shielded, 1.5m

*The AC adapter model "MU24D1120200-A1" was used as a representative adapter for testing.

4. Simultaneously transmission combination.

Combination	Technology		
1	WLAN 2.4 GHz	WLAN 5 GHz	WWAN

Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.

5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Antenna Description of EUT

1. The antenna information is listed as below.

Antenna No.	RF Chain No.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
WiFi_2-1 / WiFi_2-2 (Newly)	0/1	WIESON	ARY121-1976-001-00	2.25	2.4 ~ 2.4835 GHz	Omni-directional	RP-SMA
				2.55	5.15 ~ 5.25 GHz		
				3.36	5.725 ~ 5.85 GHz		
WiFi_1-1 / WiFi_1-2 (original)	0/1	Master Wave	98614PRSX000	2.44	2.4 ~ 2.4835 GHz	Omni-directional	RP-SMA
				4.1	5.15 ~ 5.25 GHz		
				4.73	5.725 ~ 5.85 GHz		

* The newly antenna was added in 2025/1/16 Class II Permissive Change

* Antenna WiFi_1-1 / WiFi_1-2 with the maximum gain was for the final tests.

* Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2. The EUT incorporates a MIMO function:

5 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11a	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
802.11ac (VHT20)	2TX	2RX
802.11ac (VHT40)	2TX	2RX
802.11ac (VHT80)	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX
802.11ax (HE80)	2TX	2RX

3.3 Channel List

FOR 5180 ~ 5240 MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
42	5210 MHz

FOR 5745 ~ 5825 MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
149	5745 MHz	161	5805 MHz
153	5765 MHz	165	5825 MHz
157	5785 MHz		

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
155	5775 MHz

3.4 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	1. EUT has the following operations/ usages: 10Vdc from Molex Power Port / 30Vdc from Molex Power Port / 12Vdc from Adapter / PoE 802.3at via PoE injector. Pre-scan these operations/ usages and find the worst case as a representative test condition. 2. EUT can be used in the following ways: Lying / Wall Mount. Pre-scan these ways and find the worst case as a representative test condition. 3. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
Worst Case:	1. Worst Condition: 12Vdc from Adapter / PoE 802.3at via PoE injector 2. Worst Condition: Lying

Following channel(s) was (were) selected for the final test as listed below:

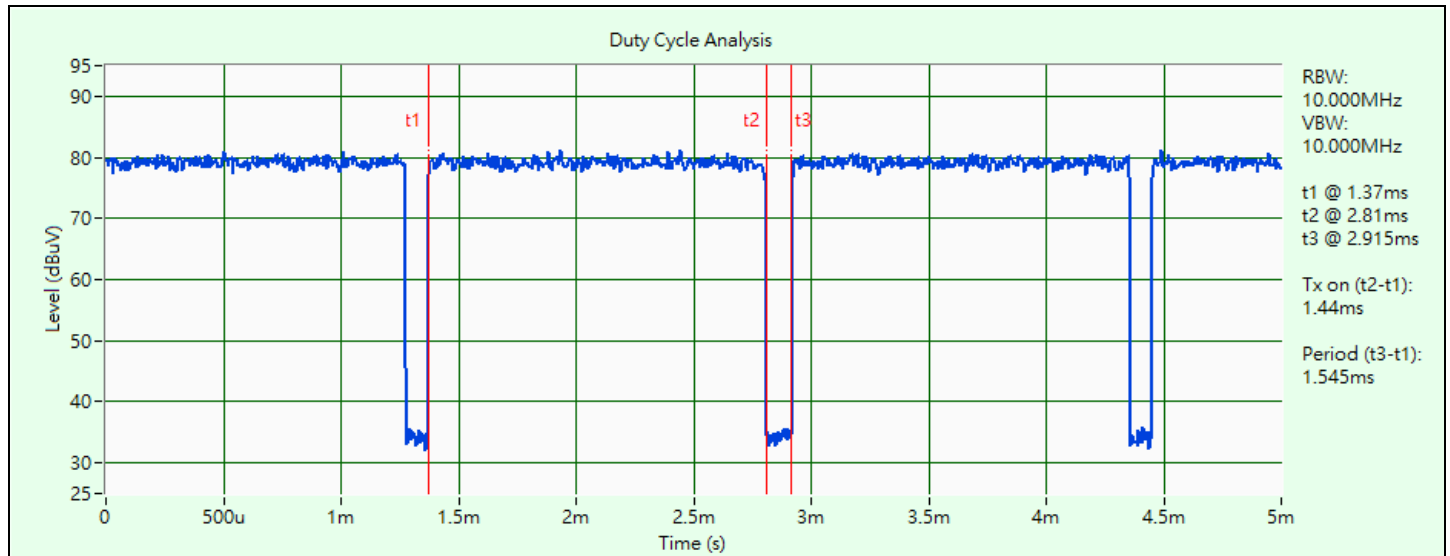
Test Item	EUT Configure Mode	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	A	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
		802.11n (HT20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
		802.11n (HT40)	CDD	38, 46, 151, 159	BPSK	MCS0
		802.11ac (VHT20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
		802.11ac (VHT40)	CDD	38, 46, 151, 159	BPSK	MCS0
		802.11ac (VHT80)	CDD	42, 155	BPSK	MCS0
		802.11ax (HE20)	CDD	36, 40, 48, 149, 157, 165	BPSK	MCS0
		802.11ax (HE40)	CDD	38, 46, 151, 159	BPSK	MCS0
		802.11ax (HE80)	CDD	42, 155	BPSK	MCS0
AC Power Conducted Emissions	A, B	802.11a	CDD	165	BPSK	6Mb/s
Unwanted Emissions below 1 GHz	A, B	802.11a	CDD	165	BPSK	6Mb/s
Unwanted Emissions above 1 GHz	A	802.11a	CDD	36, 165	BPSK	6Mb/s
		802.11n (HT20)	CDD	36, 165	BPSK	MCS0
		802.11ax (HE80)	CDD	165	BPSK	MCS0
EUT Configure Mode:	A	12Vdc from Adapter				
	B	PoE 802.3at via PoE injector				

3.5 Duty Cycle of Test Signal

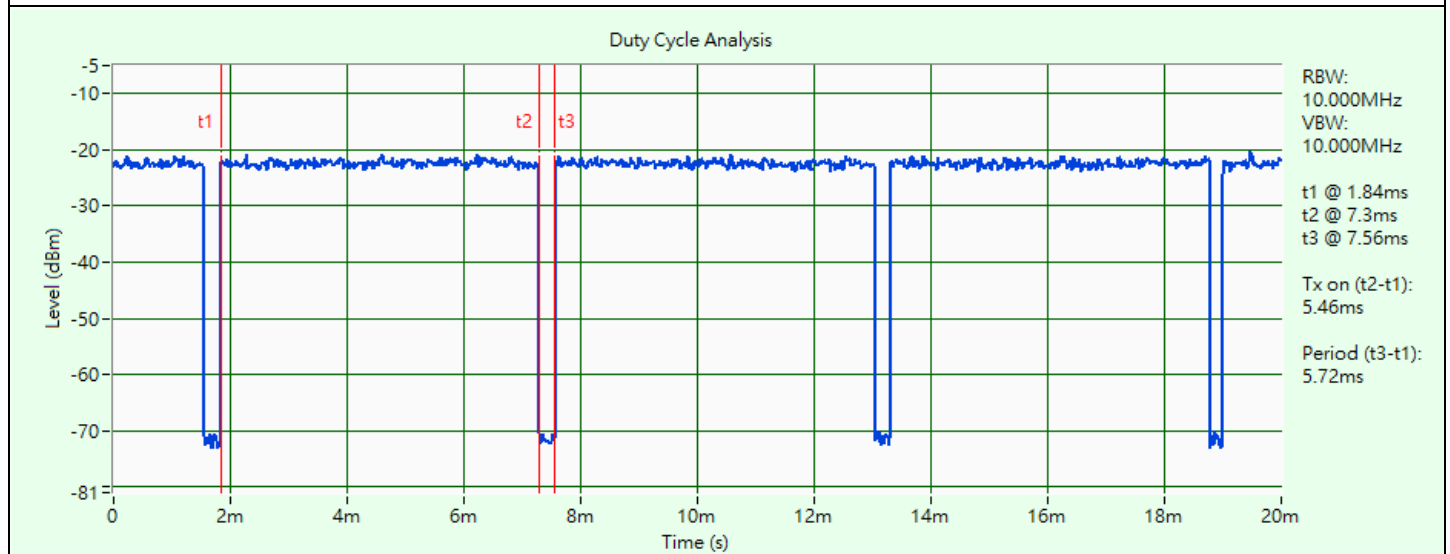
802.11a: Duty cycle = $1.44 \text{ ms} / 1.545 \text{ ms} \times 100\% = 93.2\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.31 \text{ dB}$

802.11n (HT20): Duty cycle = $5.46 \text{ ms} / 5.72 \text{ ms} \times 100\% = 95.5\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.20 \text{ dB}$

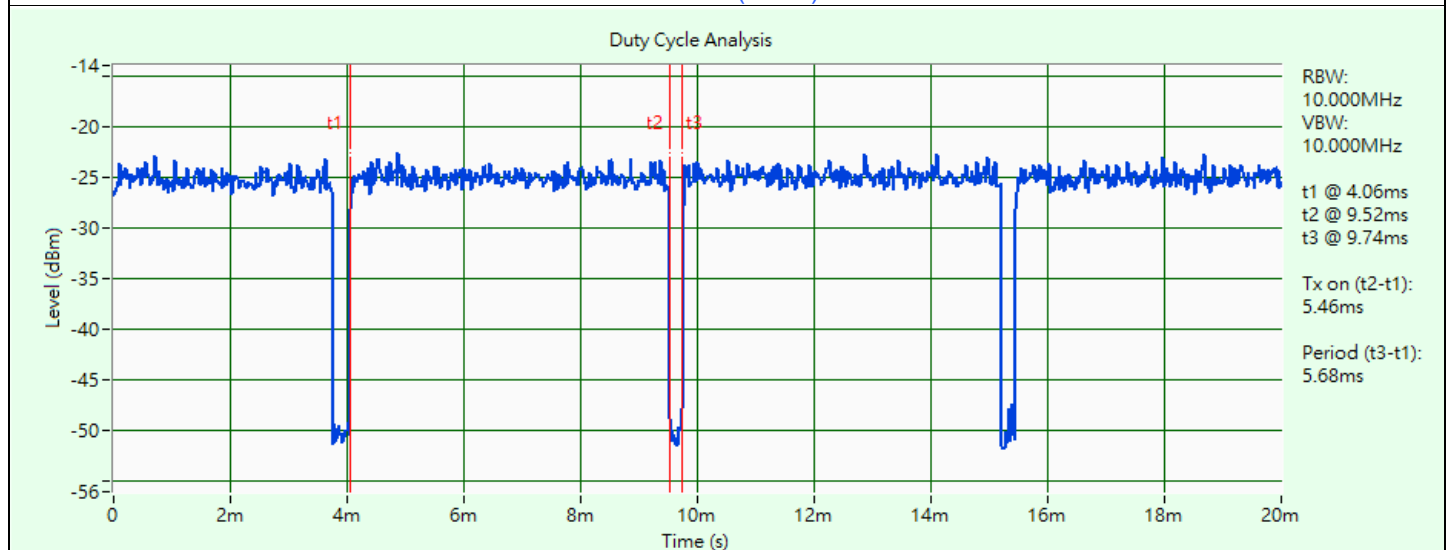
802.11ax (HE80): Duty cycle = $5.46 \text{ ms} / 5.68 \text{ ms} \times 100\% = 96.1\%$, duty factor = $10 * \log (1/\text{Duty cycle}) = 0.17 \text{ dB}$



802.11a



802.11n (HT20)



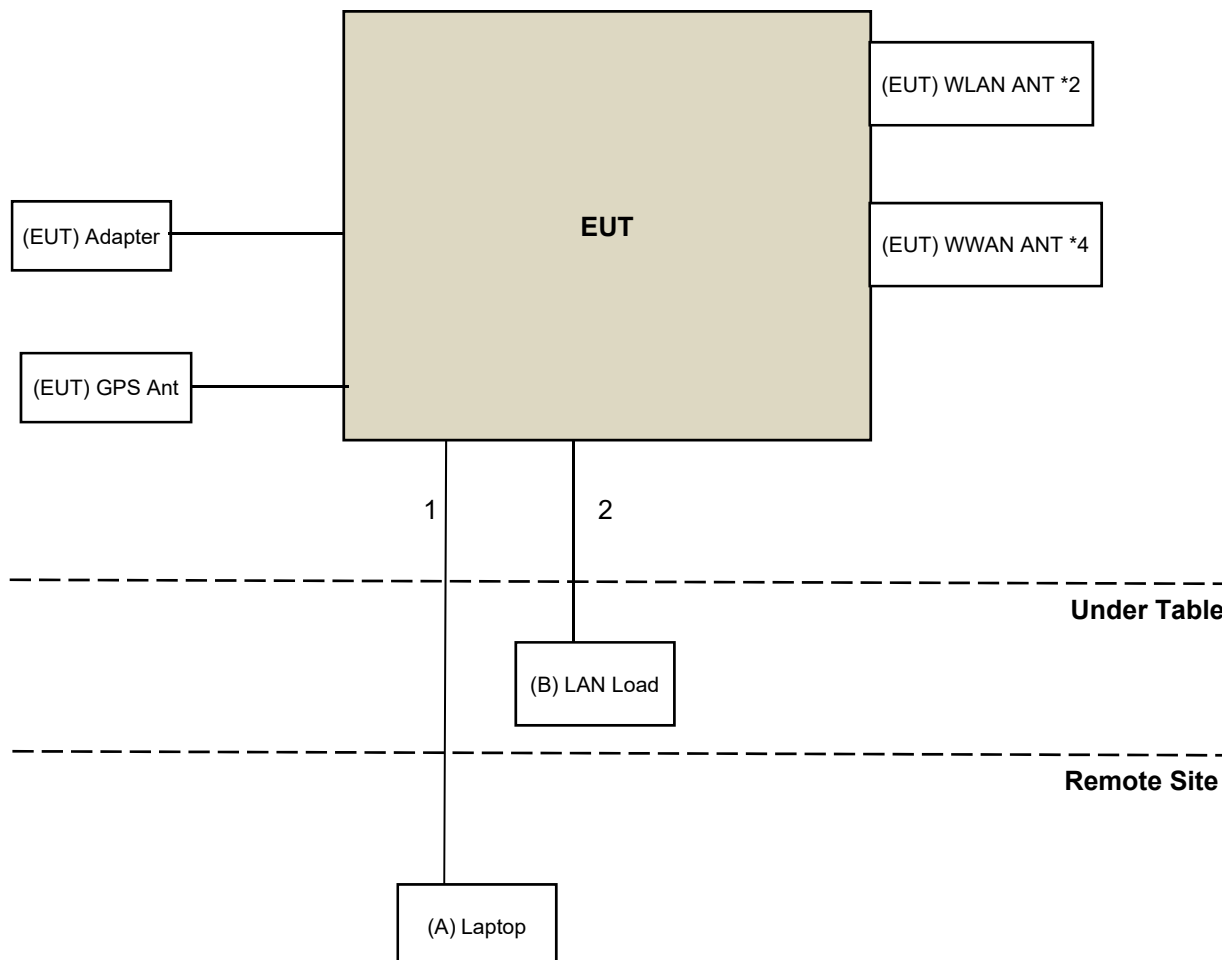
802.11ax (HE80)

3.6 Test Program Used and Operation Descriptions

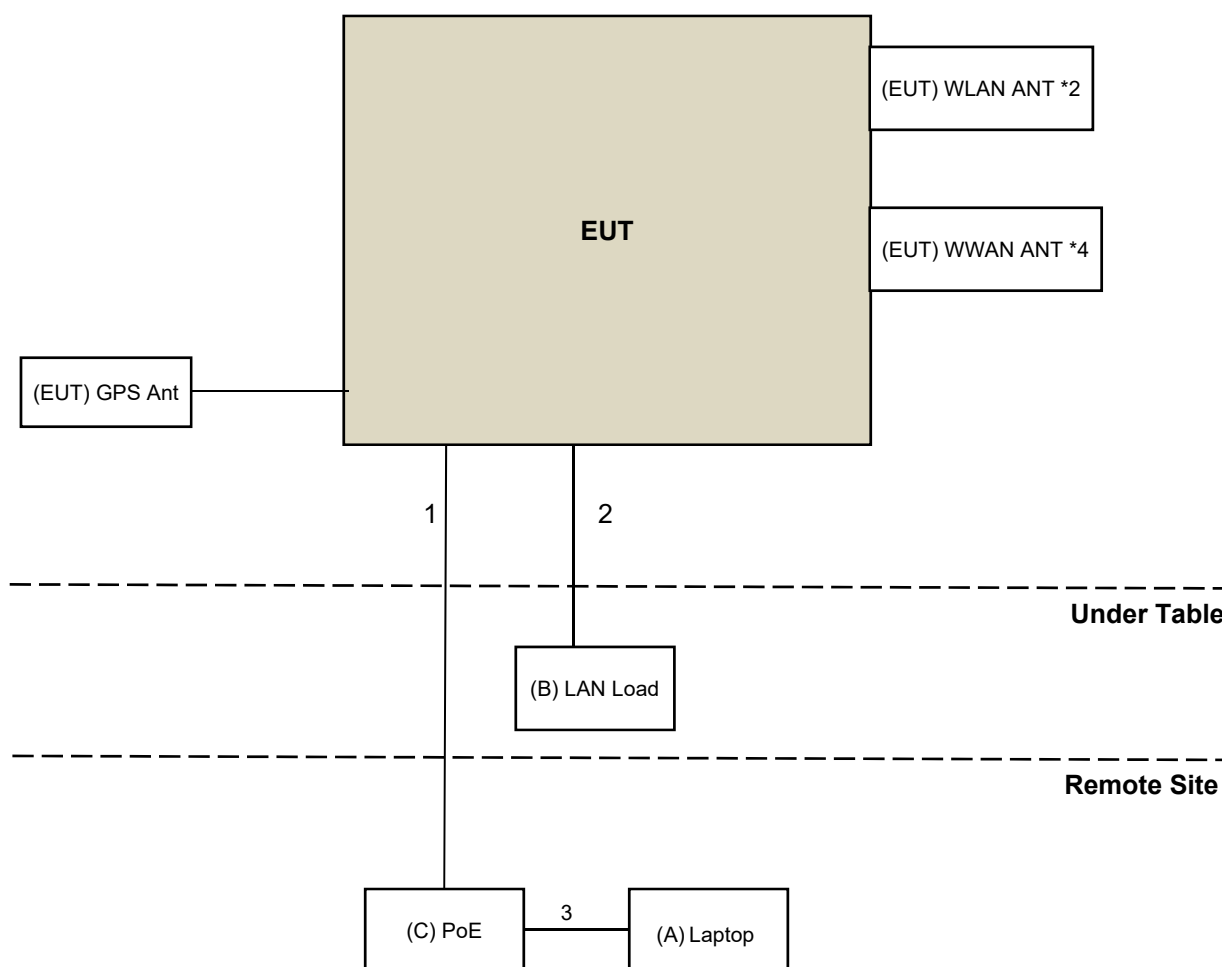
Controlling software QSPR has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.7 Connection Diagram of EUT and Peripheral Devices

Test Mode A



Test Mode B



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	Laptop	DELL	Inspiron 14R	8LRKKW1	N/A	Provided by Lab
B	LAN Load	N/A	N/A	N/A	N/A	Provided by Lab
C	PoE	N/A	N/A	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	10	No	0	Provided by Lab
2	RJ-45 Cable	2	1.5	No	0	Provided by Lab
3	RJ-45 Cable	1	1.5	No	0	Provided by Lab

4 Test Instruments

The calibration interval of the all test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

4.1 RF Output Power

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Peak Power Analyzer Keysight	8990B	MY51000485	2025/1/20	2026/1/19
Wideband Power Sensor Keysight	N1923A	MY58020002	2025/1/21	2026/1/20
		MY58140009	2025/1/21	2026/1/20

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/5/23

4.2 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance	E1-011279	04	2024/11/28	2025/11/27
	E1-011280	05	2024/11/28	2025/11/27
	E1-011311	09	2024/11/28	2025/11/27
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2024/11/5	2025/11/4
EMI Test Receiver R&S	ESR3	102783	2024/12/17	2025/12/16
Fixed Attenuator STI	BNC5W10dB	PAD-COND2-01	2024/8/25	2025/8/24
LISN R&S	ESH2-Z5	100100	2025/3/5	2026/3/4
	ESH3-Z5	100312	2024/9/9	2025/9/8
RF Coaxial Cable Woken	5D-FB	Cable-cond2-01	2024/8/25	2025/8/24
Software BVADT	BVADT_Cond_ V7.4.1.0	N/A	N/A	N/A
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2024/8/28	2025/8/27

Notes:

1. The test was performed in HY - Conduction 2.
2. Tested Date: 2025/5/16 ~ 2025/6/3

4.3 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2024/10/14	2025/10/13
EXA Signal Analyzer Agilent	N9010A	MY52220207	2024/12/30	2025/12/29
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
MXE EMI Receiver Agilent	N9038A	MY51210203	2024/8/27	2025/8/26
Preamplifier EMCI	EMC 330H	980112	2024/9/24	2025/9/23
	EMC001340	980201	2024/9/24	2025/9/23
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2024/9/24	2025/9/23
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/5/16

4.4 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
EXA Signal Analyzer Agilent	N9010A	MY52220207	2024/12/30	2025/12/29
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2024/11/10	2025/11/9
	BBHA 9170	148	2024/11/10	2025/11/9
MXE EMI Receiver Agilent	N9038A	MY51210203	2024/8/27	2025/8/26
Preamplifier EMCI	EMC 012645	980115	2024/9/24	2025/9/23
	EMC 184045	980116	2024/9/24	2025/9/23
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2024/7/6	2025/7/5
	EMC102-KM-KM-3000	150929	2024/7/6	2025/7/5
	EMC104-SM-SM- 8000+3000	171005	2024/9/24	2025/9/23
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2024/9/24	2025/9/23
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/5/15

5 Limits of Test Items

5.1 RF Output Power

Operation Band	EUT Category	Limit
U-NII-1	Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Points	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Client devices	250mW (24 dBm)

Operation Band	Limit
U-NII-3	1 Watt (30 dBm)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less, for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

5.2 AC Power Conducted Emissions

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

5.3 Unwanted Emissions below 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	$2400/F(\text{kHz})$	300
0.490 ~ 1.705	$24000/F(\text{kHz})$	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = $20 \log$ Emission level (uV/m).

5.4 Unwanted Emissions above 1 GHz

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
Above 960	500	3

Notes:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To	Limit	
789033 D02 General UNII Test Procedure New Rules v02r01	Field Strength at 3 m	
	PK: 74 (dBμV/m)	AV: 54 (dBμV/m)

For transmitters operating in the 5.15-5.25 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(1)	PK: -27 (dBm/MHz)	PK: 68.2 (dBμV/m)

For transmitters operating in the 5.725-5.850 GHz band:

Applicable To	EIRP Limit	Equivalent Field Strength at 3 m
15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1}	PK: 68.2 (dBμV/m) ^{*1}
	PK: 10 (dBm/MHz) ^{*2}	PK: 105.2 (dBμV/m) ^{*2}
	PK: 15.6 (dBm/MHz) ^{*3}	PK: 110.8 (dBμV/m) ^{*3}
	PK: 27 (dBm/MHz) ^{*4}	PK: 122.2 (dBμV/m) ^{*4}

^{*1} beyond 75 MHz or more above of the band edge.

^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

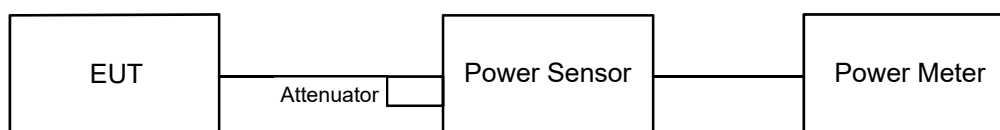
Note: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000 \sqrt{30P}}{3} \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

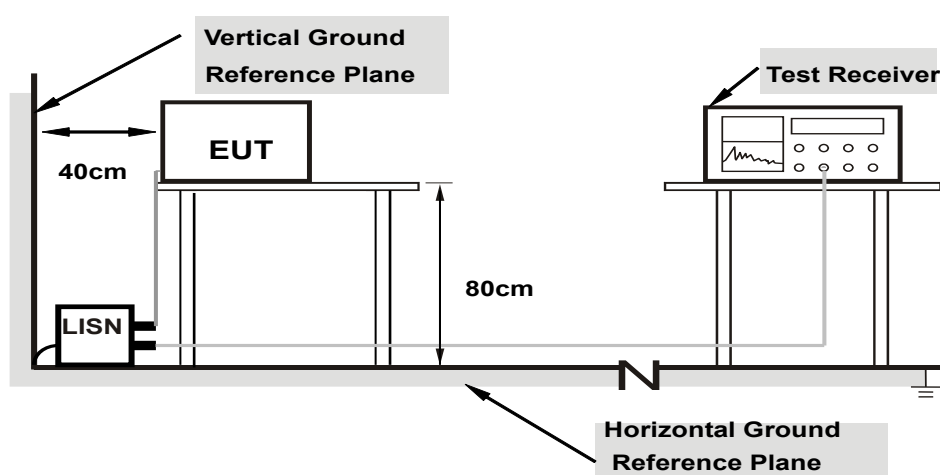


6.1.2 Test Procedure

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to average. Duty factor is not added to measured value.

6.2 AC Power Conducted Emissions

6.2.1 Test Setup



Note: 1.Support units were connected to second LISN.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.2.2 Test Procedure

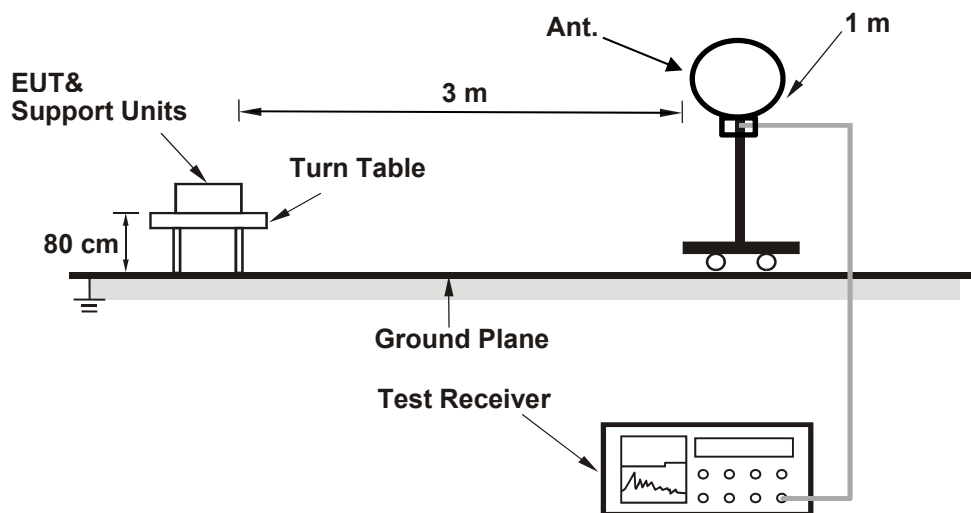
- The EUT was placed on a 0.8 meter to the top of table and placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50 uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz-30 MHz.

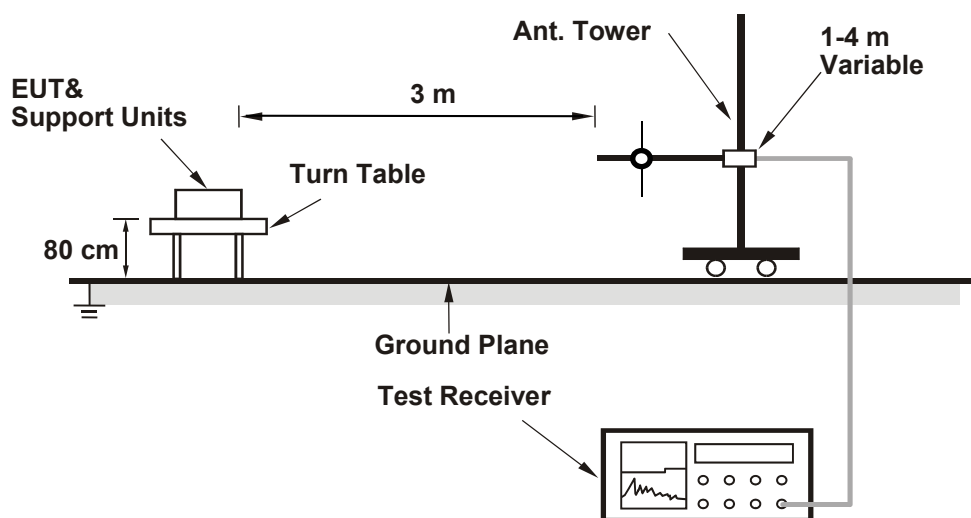
6.3 Unwanted Emissions below 1 GHz

6.3.1 Test Setup

For Radiated emission below 30 MHz



For Radiated emission above 30 MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.3.2 Test Procedure

For Radiated emission below 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode, except for the frequency band (9 kHz to 90 kHz and 110 kHz to 490 kHz) set to average detect function and peak detect function.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 200 Hz at frequency below 150 kHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz or 10 kHz at frequency (150 kHz to 30 MHz).
3. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated emission above 30 MHz

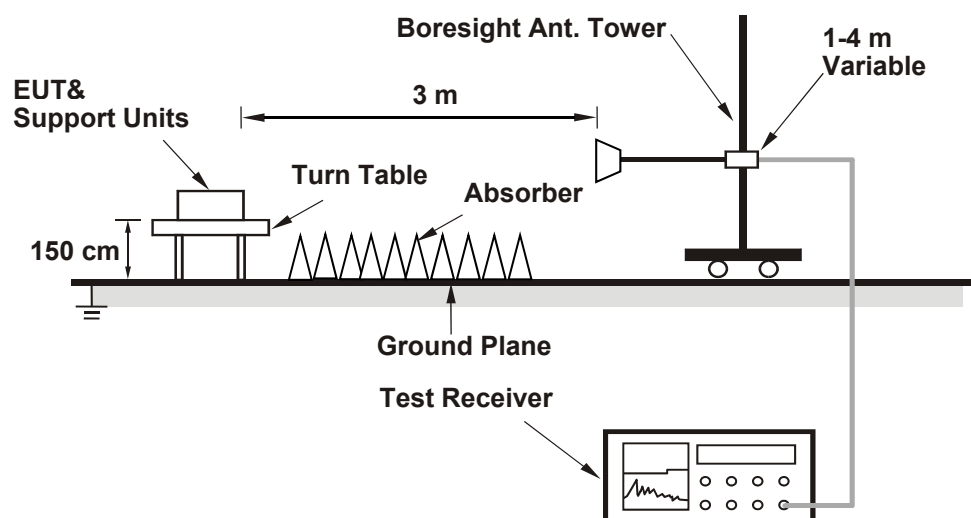
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

Notes:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

6.4 Unwanted Emissions above 1 GHz

6.4.1 Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

6.4.2 Test Procedure

- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Notes:

- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) and Average detection (AV) at frequency above 1 GHz.
- For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10 Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1 GHz.
- All modes of operation were investigated and the worst-case emissions are reported.

7 Test Results of Test Item

7.1 RF Output Power

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	25°C, 60% RH	Tested By:	Chris Lin
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802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	22.49	22.16	341.856	25.34	30	Pass
40	5200	22.48	22.14	340.693	25.32	30	Pass
48	5240	22.43	22.11	337.54	25.28	30	Pass
149	5745	23.36	23.01	416.757	26.20	30	Pass
157	5785	22.42	22.26	342.85	25.35	30	Pass
165	5825	23.38	23.10	421.945	26.25	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	22.15	21.57	307.608	24.88	30	Pass
40	5200	22.04	21.42	298.631	24.75	30	Pass
48	5240	21.92	21.33	291.428	24.65	30	Pass
149	5745	22.42	22.21	340.923	25.33	30	Pass
157	5785	21.74	21.57	292.828	24.67	30	Pass
165	5825	22.78	22.46	365.868	25.63	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	12.42	12.01	33.344	15.23	30	Pass
46	5230	20.52	20.08	214.579	23.32	30	Pass
151	5755	20.63	20.47	227.041	23.56	30	Pass
159	5795	20.07	19.98	201.165	23.04	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	22.01	21.46	298.813	24.75	30	Pass
40	5200	21.97	21.39	295.119	24.70	30	Pass
48	5240	21.86	21.29	288.048	24.59	30	Pass
149	5745	20.98	20.77	244.713	23.89	30	Pass
157	5785	20.26	20.11	208.735	23.20	30	Pass
165	5825	21.35	21.02	262.932	24.20	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	12.54	12.10	34.165	15.34	30	Pass
46	5230	20.66	20.19	220.885	23.44	30	Pass
151	5755	20.76	20.68	236.074	23.73	30	Pass
159	5795	20.21	20.04	205.88	23.14	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	10.31	11.29	24.198	13.84	30	Pass
155	5775	20.20	19.96	203.796	23.09	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
36	5180	22.10	21.55	305.07	24.84	30	Pass
40	5200	22.08	21.46	301.395	24.79	30	Pass
48	5240	21.96	21.38	294.44	24.69	30	Pass
149	5745	21.02	20.89	249.218	23.97	30	Pass
157	5785	20.33	20.18	212.126	23.27	30	Pass
165	5825	21.42	21.13	268.394	24.29	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
38	5190	12.68	12.17	35.017	15.44	30	Pass
46	5230	20.80	20.25	226.152	23.54	30	Pass
151	5755	20.88	20.75	241.312	23.83	30	Pass
159	5795	20.34	20.14	211.42	23.25	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
42	5210	10.28	11.49	24.759	13.94	30	Pass
155	5775	20.26	20.11	208.735	23.20	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 4.1 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.73 dBi < 6 dBi, so the output power limit shall not be reduced.

7.2 AC Power Conducted Emissions

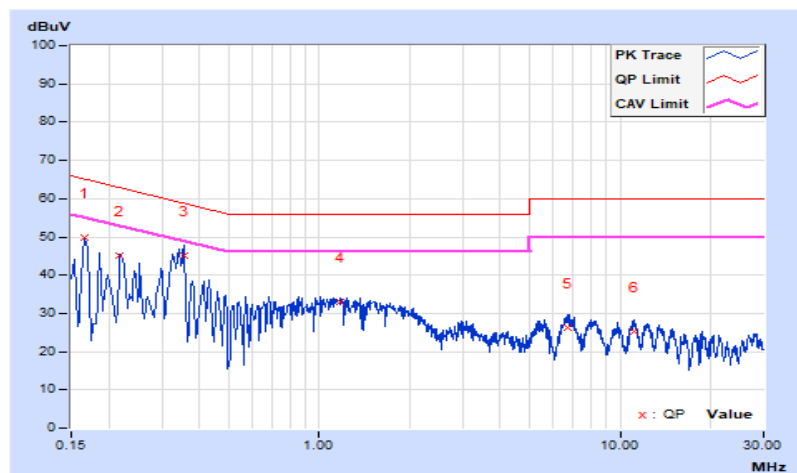
Test Mode A

RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 74 % RH
Tested By	Thomas Cheng		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16600	10.30	39.56	30.06	49.86	40.36	65.16	55.16	-15.30	-14.80
2	0.21800	10.33	34.65	26.01	44.98	36.34	62.89	52.89	-17.91	-16.55
3	0.35688	10.35	34.89	30.75	45.24	41.10	58.80	48.80	-13.56	-7.70
4	1.17800	10.44	22.68	15.98	33.12	26.42	56.00	46.00	-22.88	-19.58
5	6.68600	10.60	15.65	8.62	26.25	19.22	60.00	50.00	-33.75	-30.78
6	11.10200	10.64	14.56	7.08	25.20	17.72	60.00	50.00	-34.80	-32.28

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

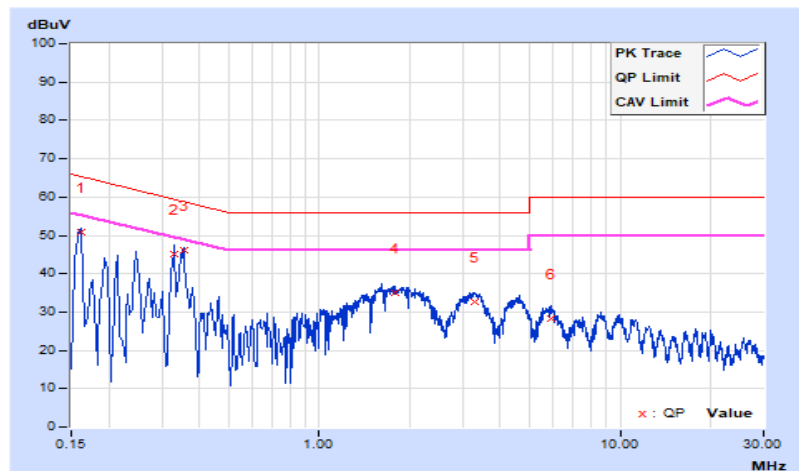


RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 74 % RH
Tested By	Thomas Cheng		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	10.34	40.53	29.63	50.87	39.97	65.37	55.37	-14.50	-15.40
2	0.33000	10.38	34.83	27.77	45.21	38.15	59.45	49.45	-14.24	-11.30
3	0.35400	10.38	35.68	32.51	46.06	42.89	58.87	48.87	-12.81	-5.98
4	1.79000	10.50	24.40	15.40	34.90	25.90	56.00	46.00	-21.10	-20.10
5	3.28600	10.59	22.13	14.18	32.72	24.77	56.00	46.00	-23.28	-21.23
6	5.92600	10.67	17.59	9.25	28.26	19.92	60.00	50.00	-31.74	-30.08

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



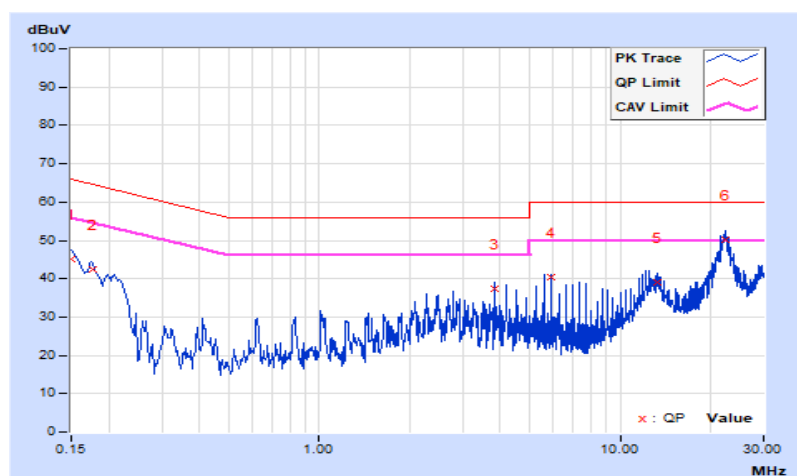
Test Mode B

RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 69 % RH
Tested By	Thomas Cheng		

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.25	34.88	21.88	45.13	32.13	66.00	56.00	-20.87	-23.87
2	0.17800	10.26	32.18	19.53	42.44	29.79	64.58	54.58	-22.14	-24.79
3	3.83800	10.42	27.03	24.34	37.45	34.76	56.00	46.00	-18.55	-11.24
4	5.93000	10.43	29.98	29.02	40.41	39.45	60.00	50.00	-19.59	-10.55
5	13.25400	10.49	28.62	24.12	39.11	34.61	60.00	50.00	-20.89	-15.39
6	22.30600	10.60	39.44	28.29	50.04	38.89	60.00	50.00	-9.96	-11.11

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

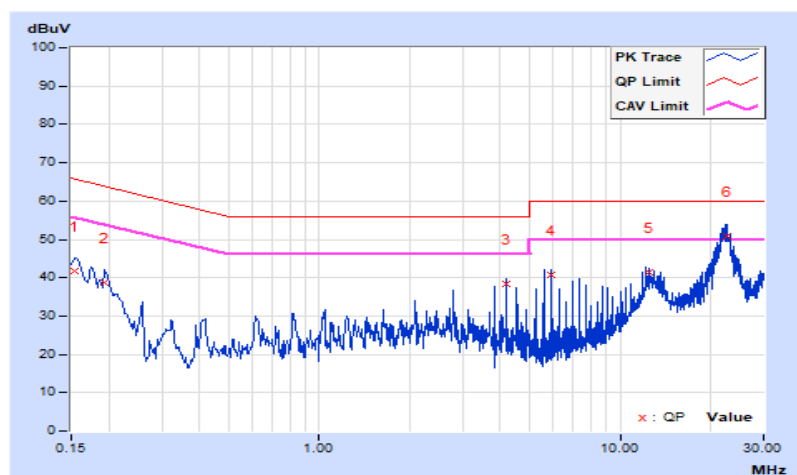


RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 69 % RH
Tested By	Thomas Cheng		

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.30	31.60	19.16	41.90	29.46	65.78	55.78	-23.88	-26.32
2	0.19400	10.30	28.58	22.05	38.88	32.35	63.86	53.86	-24.98	-21.51
3	4.18600	10.47	27.92	27.15	38.39	37.62	56.00	46.00	-17.61	-8.38
4	5.93000	10.50	30.40	29.57	40.90	40.07	60.00	50.00	-19.10	-9.93
5	12.55800	10.62	30.64	26.66	41.26	37.28	60.00	50.00	-18.74	-12.72
6	22.69400	10.80	40.02	28.58	50.82	39.38	60.00	50.00	-9.18	-10.62

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



7.3 Unwanted Emissions below 1 GHz

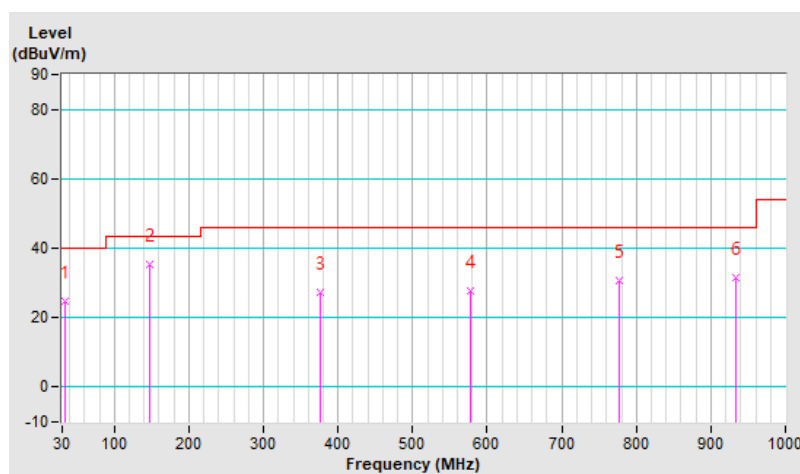
Test Mode A

RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 68 % RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	34.85	24.6 QP	40.0	-15.4	2.00 H	103	37.4	-12.8
2	147.37	35.3 QP	43.5	-8.2	1.00 H	208	47.6	-12.3
3	375.32	27.1 QP	46.0	-18.9	1.50 H	216	37.0	-9.9
4	578.05	27.9 QP	46.0	-18.1	1.00 H	101	33.2	-5.3
5	776.90	30.6 QP	46.0	-15.4	1.00 H	247	31.1	-0.5
6	934.04	31.7 QP	46.0	-14.3	1.50 H	119	31.3	0.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

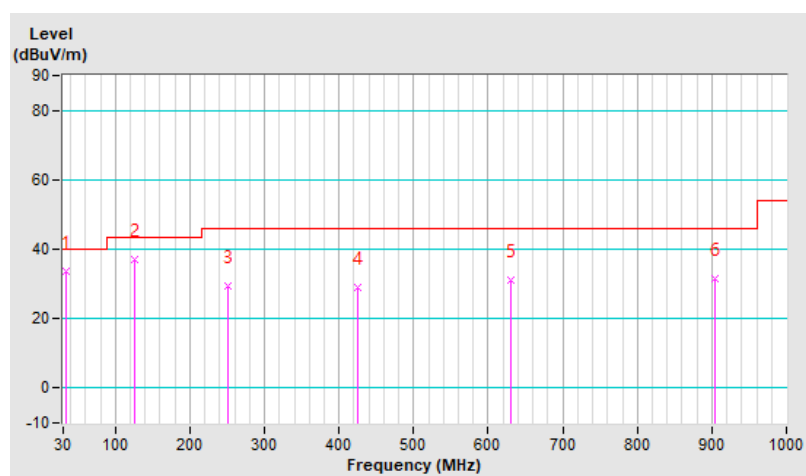


RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 68 % RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	34.85	33.8 QP	40.0	-6.2	1.00 V	85	46.6	-12.8
2	125.06	37.1 QP	43.5	-6.4	1.50 V	118	50.7	-13.6
3	250.19	29.6 QP	46.0	-16.4	2.00 V	334	43.2	-13.6
4	425.76	29.0 QP	46.0	-17.0	1.00 V	340	37.3	-8.3
5	629.46	31.1 QP	46.0	-14.9	2.00 V	184	35.1	-4.0
6	904.94	31.4 QP	46.0	-14.6	1.50 V	301	31.6	-0.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



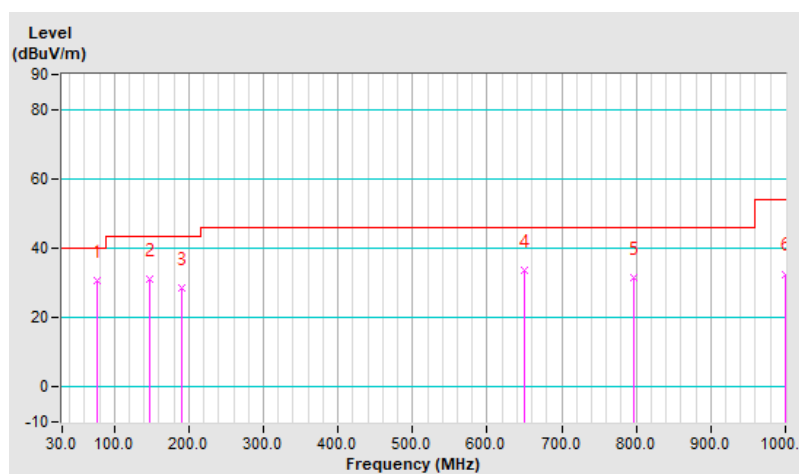
Test Mode B

RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 68 % RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	77.56	30.8 QP	40.0	-9.2	1.00 H	240	47.2	-16.4
2	146.40	30.9 QP	43.5	-12.6	1.00 H	107	43.2	-12.3
3	190.05	28.4 QP	43.5	-15.1	2.00 H	262	43.4	-15.0
4	649.74	33.5 QP	46.0	-12.5	1.01 H	172	37.2	-3.7
5	797.27	31.6 QP	46.0	-14.4	2.00 H	5	32.4	-0.8
6	1000.00	32.6 QP	54.0	-21.4	2.00 H	18	31.5	1.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

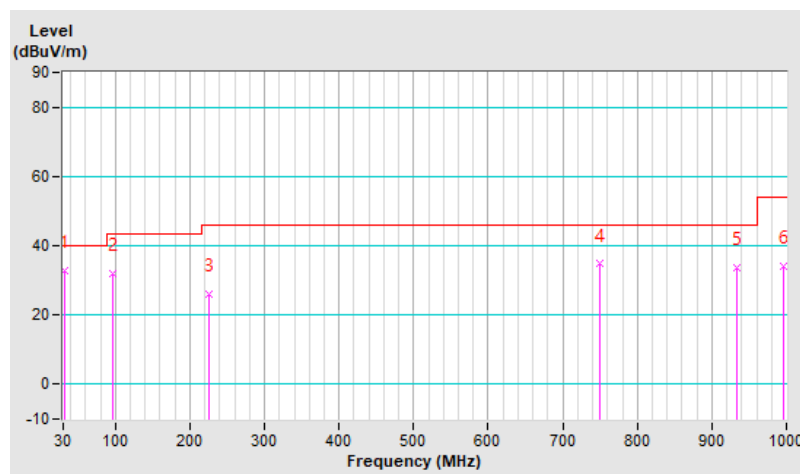


RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120 kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	24 °C, 68 % RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	31.94	33.0 QP	40.0	-7.0	1.00 V	354	45.9	-12.9
2	95.96	31.9 QP	43.5	-11.6	1.00 V	348	49.5	-17.6
3	224.97	26.0 QP	46.0	-20.0	1.00 V	176	41.7	-15.7
4	749.74	34.7 QP	46.0	-11.3	1.00 V	184	35.6	-0.9
5	934.04	33.8 QP	46.0	-12.2	1.00 V	226	33.4	0.4
6	995.15	33.9 QP	54.0	-20.1	1.00 V	150	32.9	1.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30 MHz ~ 1 GHz.
5. The frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.



7.4 Unwanted Emissions above 1 GHz

RF Mode	802.11a	Channel	CH 36 : 5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4828.24	63.1 PK	74.0	-10.9	1.13 H	328	58.1	5.0
2	4828.24	45.4 AV	54.0	-8.6	1.13 H	328	40.4	5.0
3	5150.00	61.2 PK	74.0	-12.8	1.13 H	328	55.3	5.9
4	5150.00	48.5 AV	54.0	-5.5	1.13 H	328	42.6	5.9
5	*5180.00	115.3 PK			1.13 H	328	73.8	41.5
6	*5180.00	104.5 AV			1.13 H	328	63.0	41.5
7	#10360.00	60.2 PK	68.2	-8.0	1.89 H	59	47.6	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4828.24	73.9 PK	74.0	-0.1	2.35 V	334	68.9	5.0
2	4828.24	48.4 AV	54.0	-5.6	2.35 V	334	43.4	5.0
3	5150.00	64.7 PK	74.0	-9.3	2.35 V	334	58.8	5.9
4	5150.00	53.3 AV	54.0	-0.7	2.35 V	334	47.4	5.9
5	*5180.00	120.7 PK			2.35 V	334	79.2	41.5
6	*5180.00	110.3 AV			2.35 V	334	68.8	41.5
7	#10360.00	60.9 PK	68.2	-7.3	2.67 V	74	48.3	12.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5634.40	59.7 PK	68.2	-8.5	1.12 H	351	53.4	6.3
2	*5825.00	110.8 PK			1.12 H	351	68.4	42.4
3	*5825.00	100.9 AV			1.12 H	351	58.5	42.4
4	#5961.20	60.2 PK	68.2	-8.0	1.12 H	351	53.3	6.9
5	11650.00	58.9 PK	74.0	-15.1	3.63 H	329	47.4	11.5
6	11650.00	47.4 AV	54.0	-6.6	3.63 H	329	35.9	11.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5625.20	61.0 PK	68.2	-7.2	2.30 V	31	54.7	6.3
2	*5825.00	121.8 PK			2.30 V	31	79.4	42.4
3	*5825.00	111.4 AV			2.30 V	31	69.0	42.4
4	#5930.00	60.6 PK	68.2	-7.6	2.30 V	31	53.9	6.7
5	11650.00	59.2 PK	74.0	-14.8	1.50 V	311	47.7	11.5
6	11650.00	47.9 AV	54.0	-6.1	1.50 V	311	36.4	11.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11n (HT20)	Channel	CH 36 : 5180 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4812.01	62.7 PK	74.0	-11.3	1.20 H	326	57.7	5.0
2	4812.01	45.2 AV	54.0	-8.8	1.20 H	326	40.2	5.0
3	5150.00	63.8 PK	74.0	-10.2	1.20 H	326	57.9	5.9
4	5150.00	49.3 AV	54.0	-4.7	1.20 H	326	43.4	5.9
5	*5180.00	117.8 PK			1.20 H	326	76.3	41.5
6	*5180.00	104.7 AV			1.20 H	326	63.2	41.5
7	#10360.00	60.2 PK	68.2	-8.0	1.41 H	97	47.6	12.6
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	4812.01	70.4 PK	74.0	-3.6	2.29 V	13	65.4	5.0
2	4812.01	47.3 AV	54.0	-6.7	2.29 V	13	42.3	5.0
3	5150.00	66.1 PK	74.0	-7.9	2.29 V	13	60.2	5.9
4	5150.00	53.8 AV	54.0	-0.2	2.29 V	13	47.9	5.9
5	*5180.00	121.8 PK			2.29 V	13	80.3	41.5
6	*5180.00	109.0 AV			2.29 V	13	67.5	41.5
7	#10360.00	60.5 PK	68.2	-7.7	1.97 V	328	47.9	12.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.
6. " # ": The radiated frequency is out of the restricted band.

RF Mode	802.11n (HT20)	Channel	CH 165 : 5825 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5638.00	59.5 PK	68.2	-8.7	1.01 H	352	53.2	6.3
2	*5825.00	112.3 PK			1.01 H	352	69.9	42.4
3	*5825.00	99.0 AV			1.01 H	352	56.6	42.4
4	#5982.40	59.8 PK	68.2	-8.4	1.01 H	352	52.9	6.9
5	11650.00	58.9 PK	74.0	-15.1	2.81 H	60	47.4	11.5
6	11650.00	47.5 AV	54.0	-6.5	2.81 H	60	36.0	11.5
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5631.60	60.5 PK	68.2	-7.7	2.31 V	31	54.2	6.3
2	*5825.00	122.7 PK			2.31 V	31	80.3	42.4
3	*5825.00	109.7 AV			2.31 V	31	67.3	42.4
4	#5980.00	61.1 PK	68.2	-7.1	2.31 V	31	54.2	6.9
5	11650.00	59.3 PK	74.0	-14.7	2.54 V	345	47.8	11.5
6	11650.00	47.8 AV	54.0	-6.2	2.54 V	345	36.3	11.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11ax (HE80)	Channel	CH 155 : 5775 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 68 % RH
Tested By	Thomas Cheng		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5640.00	60.6 PK	68.2	-7.6	1.20 H	76	54.3	6.3
2	*5775.00	108.2 PK			1.20 H	76	66.2	42.0
3	*5775.00	96.1 AV			1.20 H	76	54.1	42.0
4	#5971.20	61.0 PK	68.2	-7.2	1.20 H	76	54.1	6.9
5	11550.00	60.3 PK	74.0	-13.7	3.88 H	180	48.0	12.3
6	11550.00	48.0 AV	54.0	-6.0	3.88 H	180	35.7	12.3
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5641.60	62.5 PK	68.2	-5.7	1.59 V	190	56.2	6.3
2	*5775.00	115.8 PK			1.59 V	190	73.8	42.0
3	*5775.00	103.5 AV			1.59 V	190	61.5	42.0
4	#5951.20	62.2 PK	68.2	-6.0	1.59 V	190	55.4	6.8
5	11550.00	60.5 PK	74.0	-13.5	1.05 V	58	48.2	12.3
6	11550.00	48.5 AV	54.0	-5.5	1.05 V	58	36.2	12.3

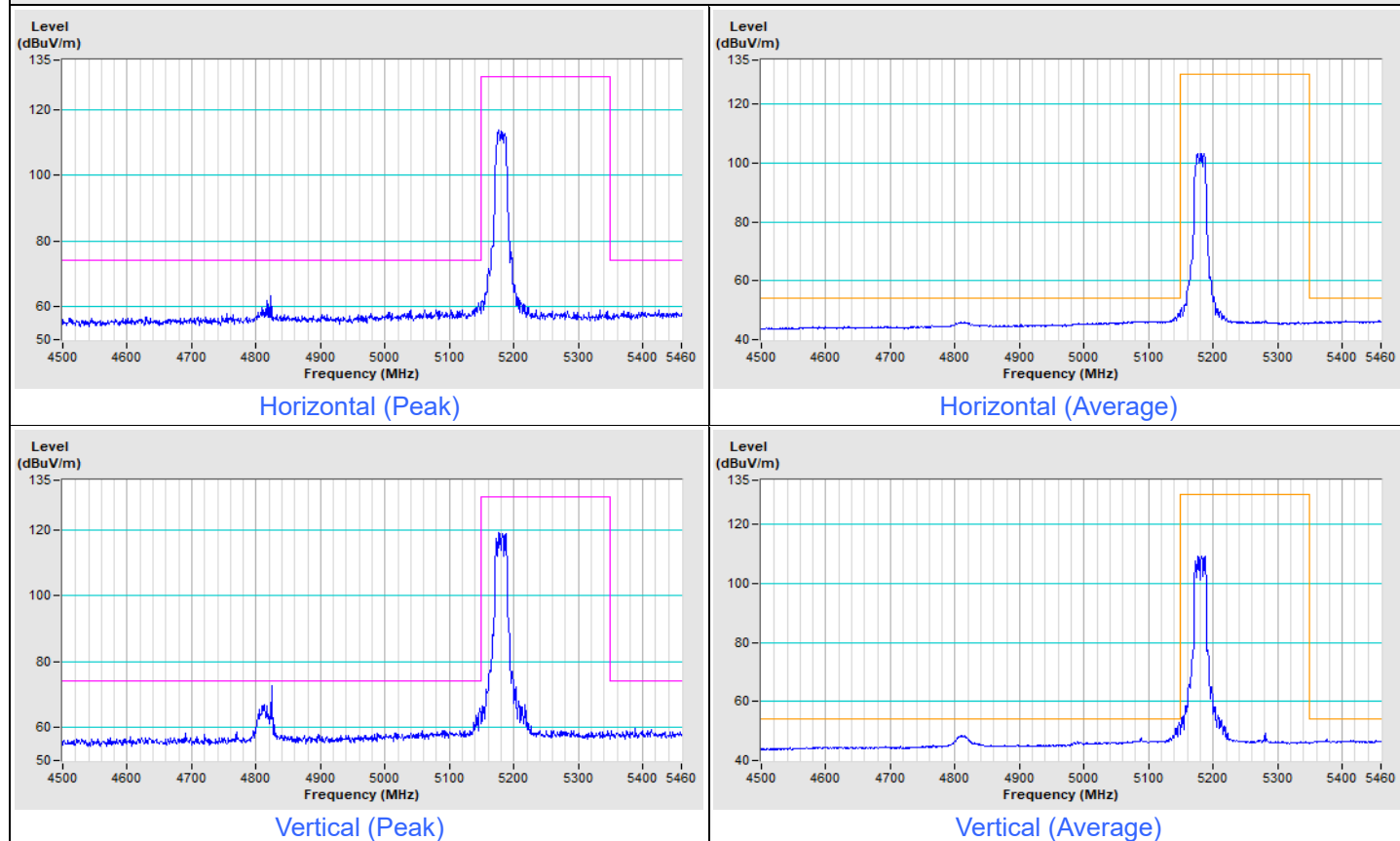
Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

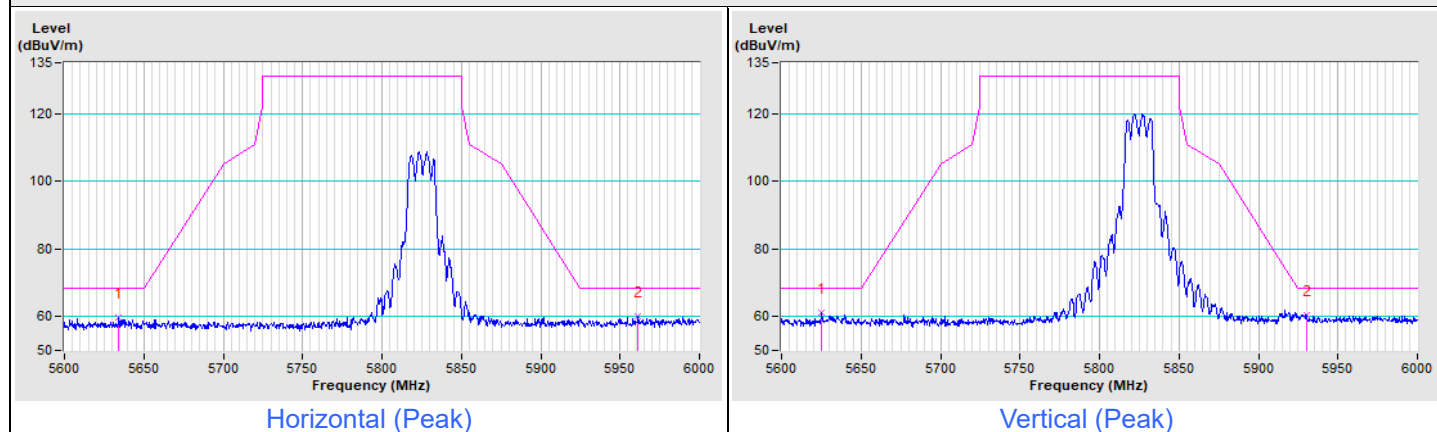
Plot of Band Edge

Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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802.11a Channel 36

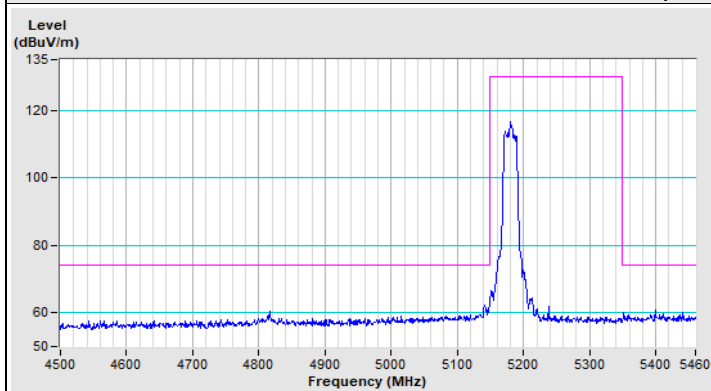


802.11a Channel 165

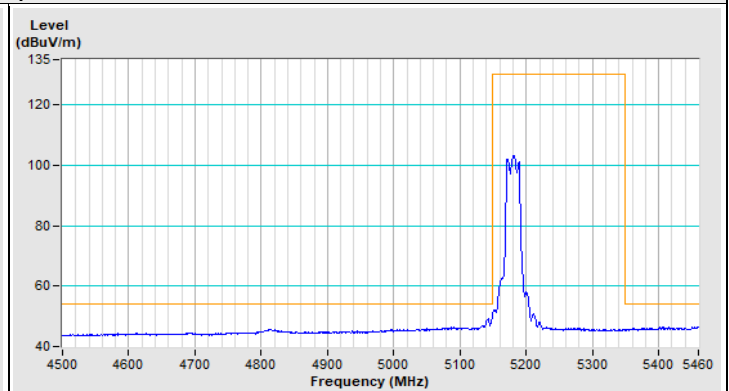


Frequency Range	4.5 GHz ~ 5.46 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=1 kHz, DET=Peak
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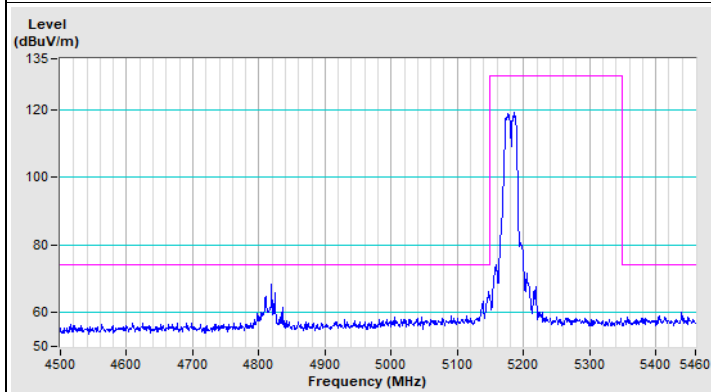
802.11n (HT20) Channel 36



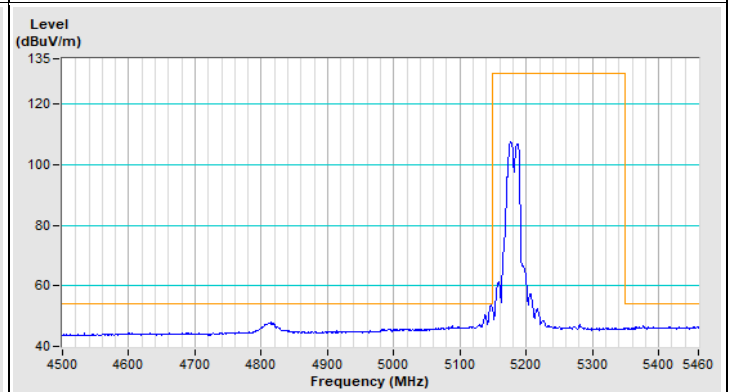
Horizontal (Peak)



Horizontal (Average)

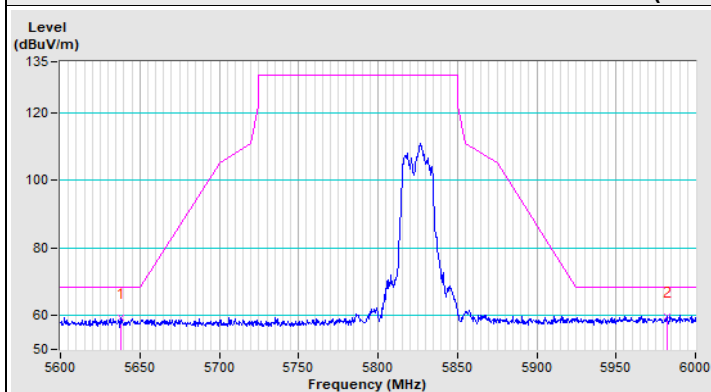


Vertical (Peak)

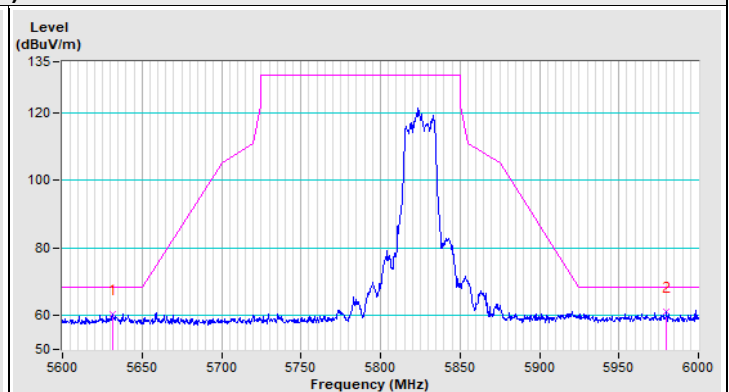


Vertical (Average)

802.11n (HT20) Channel 165



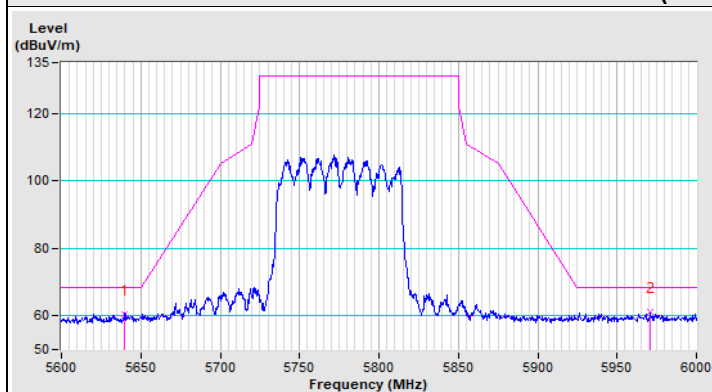
Horizontal (Peak)



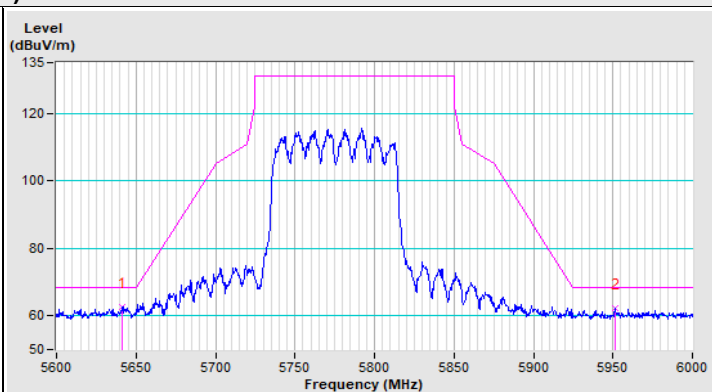
Vertical (Peak)

Frequency Range	5.6 GHz ~ 6 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak
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802.11ax (HE80) Channel 155



Horizontal (Peak)



Vertical (Peak)

8 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo)

9 Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Web Site: <http://ee.bureauveritas.com.tw>

The address and road map of all our labs can be found in our web site also.

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