TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart E (Section 15.407)**
Report No.:	RFBCIC-WTW-P24100659A-1
FCC ID:	U8G-P1MT01
Product:	Peplink Pepwave Wireless Product
Brand:	peplink PEPWAVE
Model No.:	MAX BR1 Mini
Series Model:	MAX-BR1-MINI-LTE-US-T-PRM, MAX-BR1-MINI-LTEA-US-T-PRM, MAX-BR1-MINI-LTE-US-DC-T-PRM, MAX-BR1-MINI-LTEA-US-DC-T-PRM, AP One Rugged, APO-AC-RUG, MAX BR1 Mini 5G, MAX-BR1-MINI-5GN-T-PRM, MAX-BR1-MINI-5GN-DC-T-PRM (refer to item 3.1 for more details)
Received Date:	2024/12/27
Test Date:	2025/1/9 ~ 2025/1/15
Issued Date:	2025/2/19
Applicant:	PISMO LABS TECHNOLOGY LIMITED
Address:	A8, 5/F, HK Spinners Industrial Building, Phase 6, 481 Castle Peak Road, Cheung Sha Wan, Hong Kong
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003

Approved by: Jeremy Lin , **Date:** 2025/2/19

Jeremy Lin / Project Engineer

This test report consists of 36 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The test results in the report only apply to the tested sample. The test results in this report are traceable to the national or international standards.

Prepared by : Lena Wang / Specialist

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/ and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.

Table of Contents

Release Control Record **3**

1 Certificate **4**

2 Summary of Test Results **5**

2.1 Measurement Uncertainty 5
2.2 Supplementary Information 5

3 General Information **6**

3.1 General Description of EUT 6
3.2 Antenna Description of EUT 7
3.3 Channel List 8
3.4 Test Mode Applicability and Tested Channel Detail 9
3.5 Duty Cycle of Test Signal 10
3.6 Test Program Used and Operation Descriptions 11
3.7 Connection Diagram of EUT and Peripheral Devices 11
3.8 Configuration of Peripheral Devices and Cable Connections 11

4 Test Instruments **12**

4.1 RF Output Power 12
4.2 AC Power Conducted Emissions 12
4.3 Unwanted Emissions below 1 GHz 13
4.4 Unwanted Emissions above 1 GHz 14

5 Limits of Test Items **15**

5.1 RF Output Power 15
5.2 AC Power Conducted Emissions 15
5.3 Unwanted Emissions below 1 GHz 15
5.4 Unwanted Emissions above 1 GHz 16

6 Test Arrangements **17**

6.1 RF Output Power 17
6.1.1 Test Setup 17
6.1.2 Test Procedure 17
6.2 AC Power Conducted Emissions 17
6.2.1 Test Setup 17
6.2.2 Test Procedure 17
6.3 Unwanted Emissions below 1 GHz 18
6.3.1 Test Setup 18
6.3.2 Test Procedure 19
6.4 Unwanted Emissions above 1 GHz 20
6.4.1 Test Setup 20
6.4.2 Test Procedure 20

7 Test Results of Test Item **21**

7.1 RF Output Power 21
7.2 AC Power Conducted Emissions 22
7.3 Unwanted Emissions below 1 GHz 24
7.4 Unwanted Emissions above 1 GHz 26

8 Pictures of Test Arrangements **35**

9 Information of the Testing Laboratories **36**

Release Control Record

Issue No.	Description	Date Issued
RFBCIC-WTW-P24100659A-1	Original release.	2025/2/19

1 Certificate

Product:	Peplink Pepwave Wireless Product
Brand:	peplink PEPWAVE
Test Model:	MAX BR1 Mini
Series Model:	MAX-BR1-MINI-LTE-US-T-PRM, MAX-BR1-MINI-LTEA-US-T-PRM, MAX-BR1-MINI-LTE-US-DC-T-PRM, MAX-BR1-MINI-LTEA-US-DC-T-PRM, AP One Rugged, APO-AC-RUG, MAX BR1 Mini 5G, MAX-BR1-MINI-5GN-T-PRM, MAX-BR1-MINI-5GN-DC-T-PRM (refer to item 3.1 for more details)
Sample Status:	Prototype
Applicant:	PISMO LABS TECHNOLOGY LIMITED
Test Date:	2025/1/9 ~ 2025/1/15
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	N/A	Refer to note
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
15.407(e)	6 dB Bandwidth	N/A	Refer to note
---	Occupied Bandwidth	N/A	Refer to note
15.407(b)(9)	AC Power Conducted Emissions	Pass	Minimum passing margin is -5.06 dB at 0.35782 MHz
15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -7.3 dB at 135.73 MHz
15.407(b) (1/10) 15.407(b) (4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.4 dB at 5150.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is RP-SMA not a standard connector.

Notes:

1. Only test items of RF Output Power, AC Power Conducted Emissions and Unwanted Emissions tests were verified and recorded in this report. Other testing data please refer to original 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	3.59 dB
	30 MHz ~ 1 GHz	3.6 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 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	peplink PEPWAVE
Test Model	MAX BR1 Mini
Series Model	MAX-BR1-MINI-LTE-US-T-PRM, MAX-BR1-MINI-LTEA-US-T-PRM, MAX-BR1-MINI-LTE-US-DC-T-PRM, MAX-BR1-MINI-LTEA-US-DC-T-PRM, AP One Rugged, APO-AC-RUG, MAX BR1 Mini 5G, MAX-BR1-MINI-5GN-T-PRM, MAX-BR1-MINI-5GN-DC-T-PRM
Model Difference	Refer to Note as below
Status of EUT	Prototype
Power Supply Rating	Refer to Note as below
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	OFDM
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 300 Mbps 802.11ac: up to 866.7 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): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	5.18 GHz ~ 5.24 GHz : 149.632 mW (21.75 dBm) – Master as the representative mode. 5.745 GHz ~ 5.825 GHz : 139.916 mW (21.46 dBm)
EUT Category	Indoor Access Point

Note:

1. This report is issued as a supplementary report to BV CPS report no.: RFBCIC-WTW-P24100659-1. The differences compared with original report are listed as below. Therefore, only test items of RF Output Power, AC Power Conducted Emissions and Unwanted Emissions tests were verified and recorded in this report. Other testing data please refer to original report.
   - Adding WWAN Module: Quectel / RM520N-GL.
   - Adding Models: MAX BR1 Mini 5G, MAX-BR1-MINI-5GN-T-PRM, MAX-BR1-MINI-5GN-DC-T-PRM for 5G for marketing.
   - Adding New appearance (WWAN antenna connector*4, GPS cancel) for model: MAX BR1 Mini 5G, MAX-BR1-MINI-5GN-T-PRM and MAX-BR1-MINI-5GN-DC-T-PRM.

2. All models are listed as below. (New models are marked in gray)

Brand	Model	Difference
peplink PEPWAVE	MAX BR1 Mini	For marketing purpose (with Cellular & GPS feature)
	MAX-BR1-MINI-LTE-US-T-PRM	
	MAX-BR1-MINI-LTEA-US-T-PRM	
	MAX-BR1-MINI-LTE-US-DC-T-PRM	
	MAX-BR1-MINI-LTEA-US-DC-T-PRM	
	AP One Rugged	For marketing purpose (without Cellular & GPS feature)
	APO-AC-RUG	
	MAX BR1 Mini 5G	For marketing purpose (without GPS feature)
	MAX-BR1-MINI-5GN-T-PRM	
	MAX-BR1-MINI-5GN-DC-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 power adapter model 'MU24D1120200-A1' was used as a representative adapter for testing.

4. There are WLAN (2.4 GHz/5 GHz) and WWAN (WCDMA/LTE/5GNR) technology used for the EUT.

5. 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.			

6. The above EUT information is declared by manufacturer and for more detailed features description, please refer 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 GHz ~ 2.4835 GHz	Omni-directional	RP-SMA
				2.55	5.15 GHz ~ 5.25 GHz		
				3.36	5.725 GHz ~ 5.85 GHz		
WiFi_1-1 / WiFi_1-2 (Original)	0/1	YUAN CHEN	ACA-0040-6G1A1-A10	3.15	2.4 GHz ~ 2.4835 GHz	Omni-directional	RP-SMA
				3.29	5.15 GHz ~ 5.25 GHz		
				4.76	5.725 GHz ~ 5.85 GHz		

* 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
Note: The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz), 802.11ac mode for 20 MHz (40 MHz, 80 MHz). Therefore, the investigated worst case is the representative mode in test report.		

3.3 Channel List

FOR 5180 ~ 5240 MHz

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

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):

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):

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):

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

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. Pre-scan these operations/ usages and find the worst case as a representative test condition. 2. EUT has the following operations/ usages: eSIM_1 WP68-M002c-MFOCMW / eSIM_2 MFXS-M006b-MFOCMW. Pre-scan these operations/ usages and find the worst case as a representative test condition. 3. 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. 4. 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. 10Vdc from Molex Power Port / 30Vdc from Molex Power Port / 12Vdc from Adapter / POE Worst Condition: 12Vdc from Adapter 2. eSIM_1 WP68-M002c-MFOCMW / eSIM_2 MFXS-M006b-MFOCMW Worst Condition: eSIM_1 WP68-M002c-MFOCMW 3. Lying/ Wall Mount Worst Condition:Wall Mount

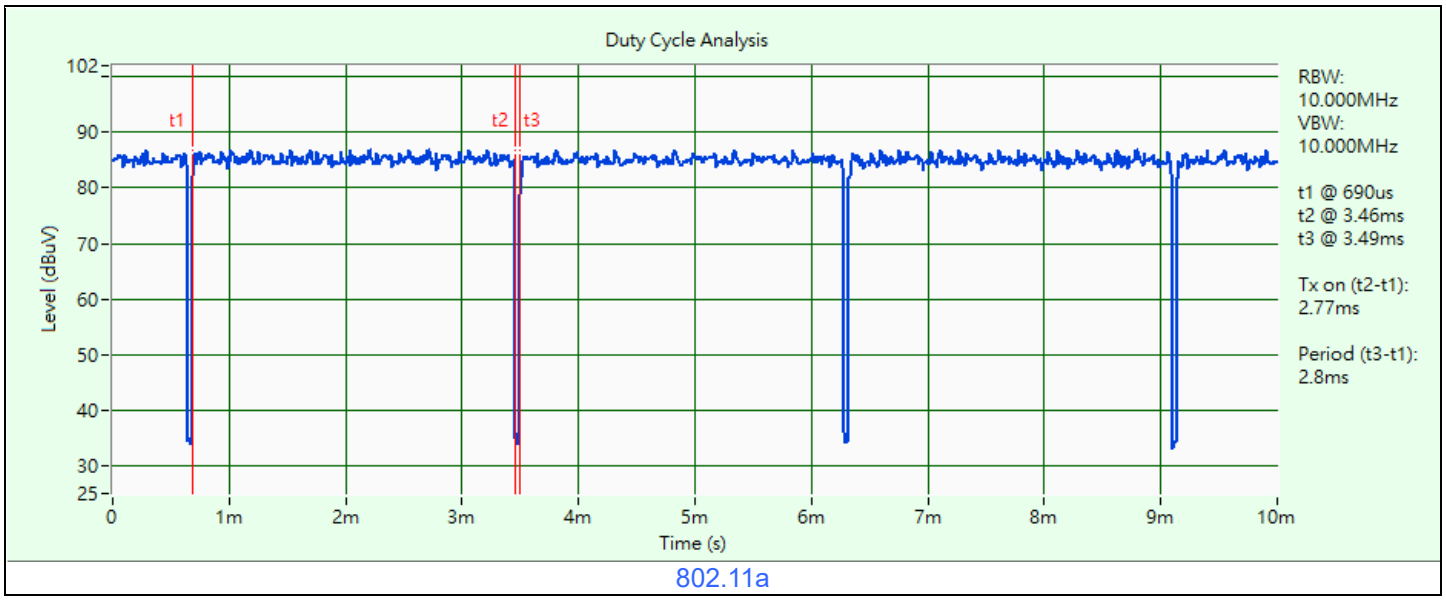
Following channel(s) was (were) selected for the final test as listed below:

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
AC Power Conducted Emissions	A	802.11a	CDD	36	BPSK	6Mb/s
Unwanted Emissions below 1 GHz	A	802.11a	CDD	36	BPSK	6Mb/s
Unwanted Emissions above 1 GHz	A	802.11a	CDD	36, 40, 48, 149, 157, 165	BPSK	6Mb/s
EUT Configure Mode:	A	EUT with WWAN module : RM520N-GL with the below antennas: WiFi antennas: ACA-0040-6G1A1-A10 WWAN antennas: DAM-D13-S1-N0-000-08-20				

Note:
1. The above evaluation models and related information are based on the original WiFi certification report and the information provided by the manufacturer.
2. This evaluation mainly focuses on output power and radiated spurious emission with worst condition.
3. After evaluation, the WiFi antennas was used with the highest gain as the representative antenna for testing.
4. The above EUT worst configuration conditions are referenced to the original case - BCIC-WTW-P24100659.

3.5 Duty Cycle of Test Signal

802.11a: Duty cycle = 2.77 ms / 2.8 ms x 100% = 98.9%

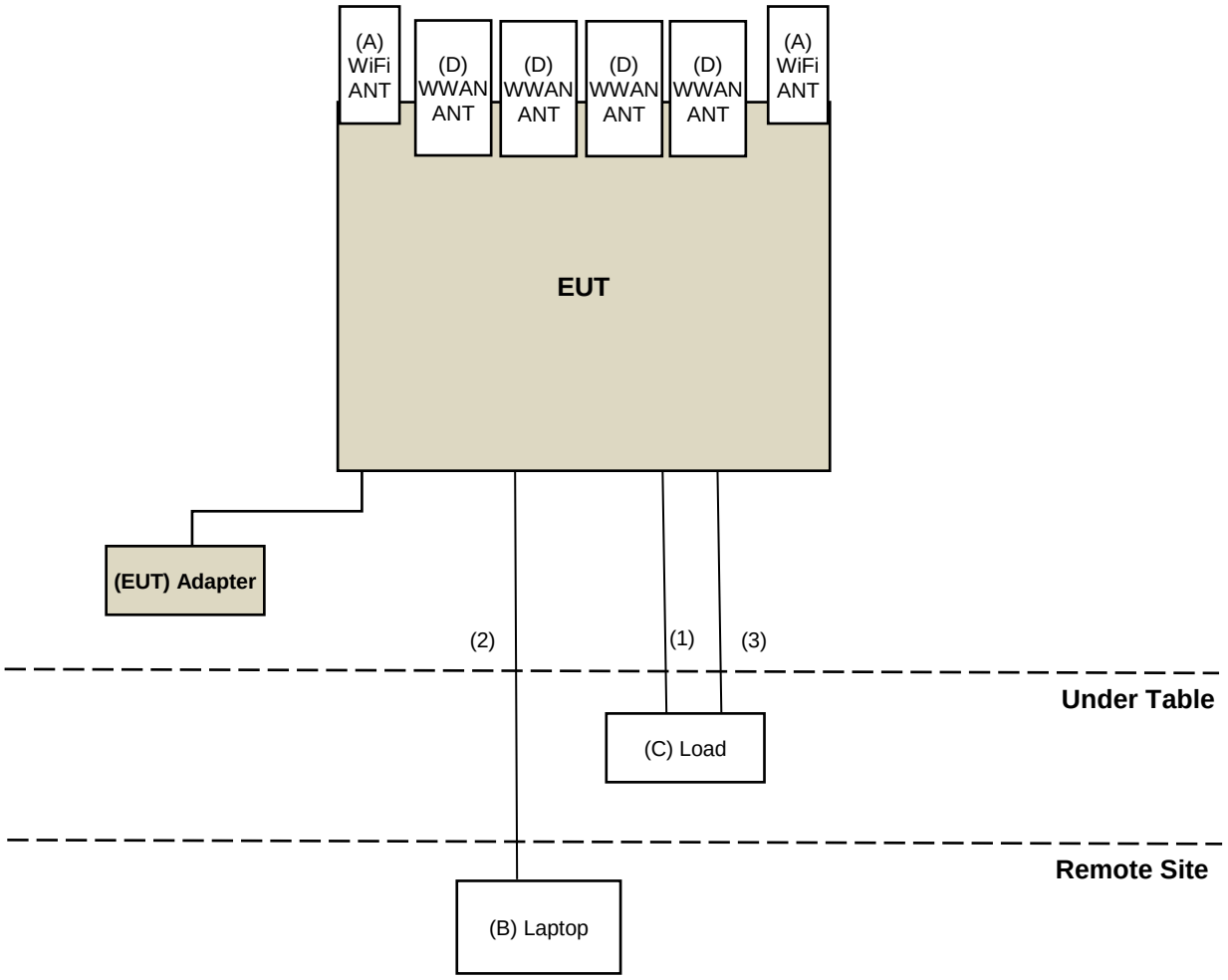


802.11a

3.6 Test Program Used and Operation Descriptions

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

3.7 Connection Diagram of EUT and Peripheral Devices



3.8 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A	WIFI ANT	YUAN CHEN	ACA-0040-6G1A1-A10	N/A	N/A	Supplied by applicant
B	Laptop	Lenovo	L470	PF0TALPX	N/A	Provided by Lab
C	Load	N/A	N/A	N/A	N/A	Provided by Lab
D	WWAN ANT	INPAQ	DAM-D13-S1-N0-000-08-20	N/A	N/A	Supplied by applicant

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45	1	1.5	N	0	Provided by Lab
2	RJ-45	1	10	N	0	Provided by Lab
3	RJ-45	1	1.5	N	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	2024/1/21	2025/1/20
Wideband Power Sensor Keysight	N1923A	MY58020002	2024/1/18	2025/1/17
		MY58140009	2024/1/18	2025/1/17

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/1/15

4.2 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
50 ohm terminal resistance HUBER+SUHNER	E1-011277	02	2024/10/25	2025/10/24
	E1-011313	11	2024/2/1	2025/1/31
	E1-011595	21	2024/3/8	2025/3/7
DC-LISN Schwarzbeck	NNBM 8126G	8126G-069	2024/11/5	2025/11/4
EMI Test Receiver R&S	ESCI	100613	2024/11/25	2025/11/24
Fixed Attenuator Mini-Circuits	HAT-10+	PAD-COND1-01	2025/1/5	2026/1/4
LISN R&S	ENV216	101826	2024/3/25	2025/3/24
	ESH3-Z5	100311	2024/9/5	2025/9/4
RF Coaxial Cable Woken	5D-FB	Cable-cond1-01	2025/1/5	2026/1/4
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 1.
2. Tested Date: 2025/1/10

4.3 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-160	2024/10/9	2025/10/8
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
MXE EMI Receiver Keysight	N9038B	MY60180018	2024/3/13	2025/3/12
Preamplifier Agilent	8447D	2944A10638	2024/5/1	2025/4/30
RF Coaxial Cable Woken	8D-FB	Cable-CH9-01	2024/5/1	2025/4/30
Signal & Spectrum Analyzer R&S	FSW43	101866	2024/3/26	2025/3/25
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2025/1/14

4.4 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower &Turn BV ADT	AT100	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	5	N/A	N/A
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-1169	2024/11/10	2025/11/9
	BBHA 9170	9170-480	2024/11/10	2025/11/9
		BBHA9170243	2024/11/10	2025/11/9
MXE EMI Receiver Keysight	N9038B	MY60180018	2024/3/13	2025/3/12
Preamplifier Agilent	8449B	3008A02367	2025/1/5	2026/1/4
Preamplifier EMCI	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
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	CABLE-CH9-(250795/4)	2025/1/5	2026/1/4
RF Coaxial Cable HUBER+SUHNER&EMCI	SUCOFLEX 104& EMC104-SM-SM8000	CABLE-CH9-02 (248780+171006)	2025/1/5	2026/1/4
Signal & Spectrum Analyzer R&S	FSW43	101866	2024/3/26	2025/3/25
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table BV ADT	TT100	TT93021705	N/A	N/A
Turn Table Controller BV ADT	SC100	SC93021705	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 4.
2. Tested Date: 2025/1/9

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 ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
	Fixed point-to-point Access Point	1 Watt (30 dBm)
	Indoor Access Point	1 Watt (30 dBm)
	Mobile and Portable client device	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(kHz)	300
0.490 ~ 1.705	24000/F(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: 10 (dBm/MHz) *2 PK: 15.6 (dBm/MHz) *3 PK: 27 (dBm/MHz) *4	PK: 68.2 (dBμV/m) *1 PK: 105.2 (dBμV/m) *2 PK: 110.8 (dBμV/m) *3 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:

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

6 Test Arrangements

6.1 RF Output Power

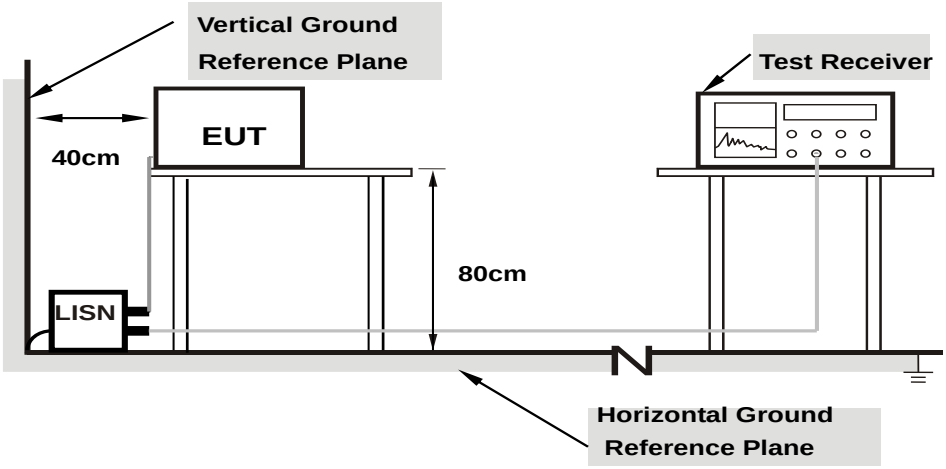
6.1.1 Test Setup

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

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

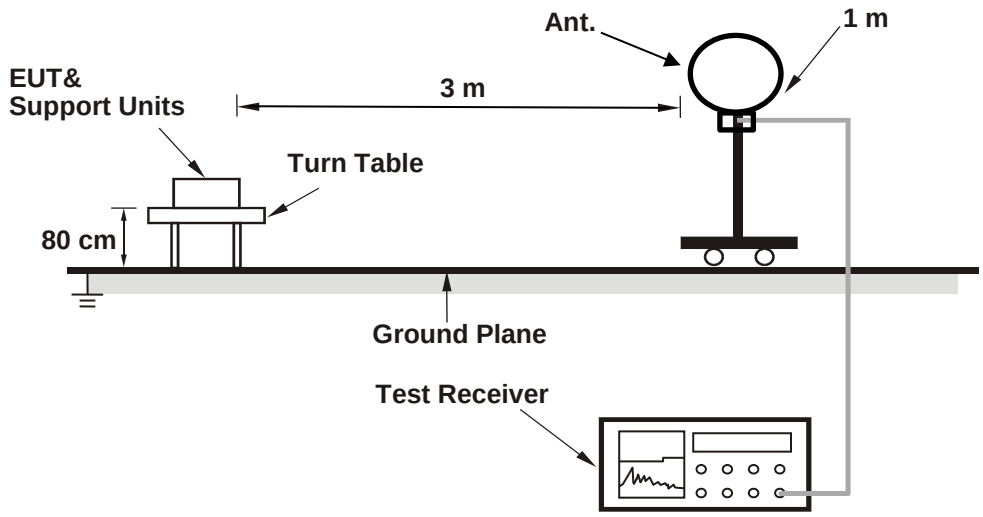
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

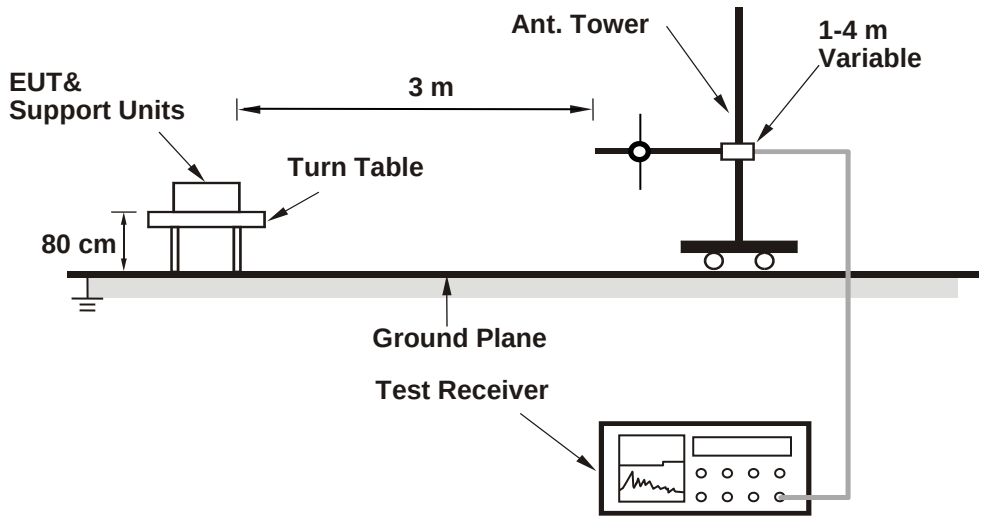
6.3 Unwanted Emissions below 1 GHz

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.

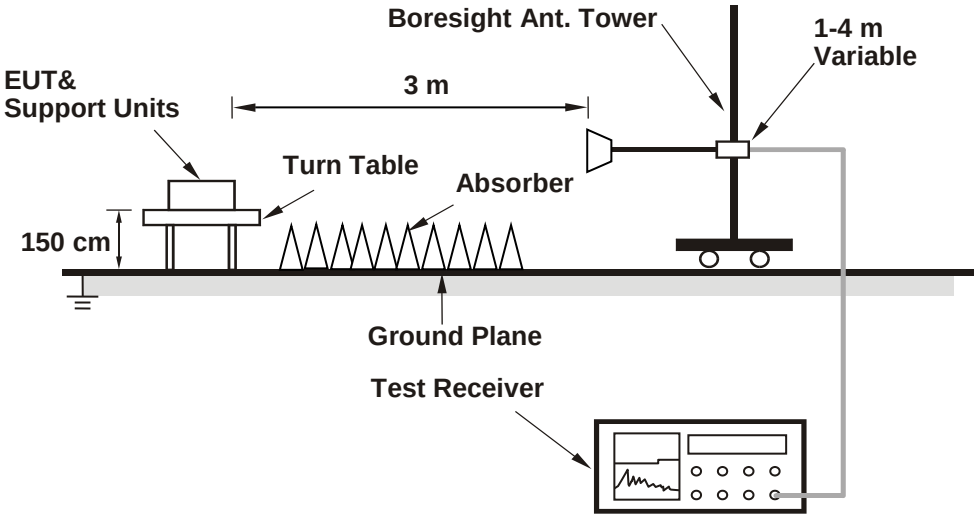
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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

a. 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.

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 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:

1. 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.
2. For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10 Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1 GHz.
3. 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

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	19.35	18.03	149.632	21.75	30	Pass
40	5200	19.15	17.66	140.569	21.48	30	Pass
48	5240	19.09	17.11	132.5	21.22	30	Pass
149	5745	18.45	18.23	136.512	21.35	30	Pass
157	5785	18.71	18.17	139.916	21.46	30	Pass
165	5825	18.33	17.95	130.45	21.15	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. For U-NII-1, the maximum gain is 3.29 dBi < 6 dBi, so the output power limit shall not be reduced.
3. For U-NII-3, the maximum gain is 4.76 dBi < 6 dBi, so the output power limit shall not be reduced.

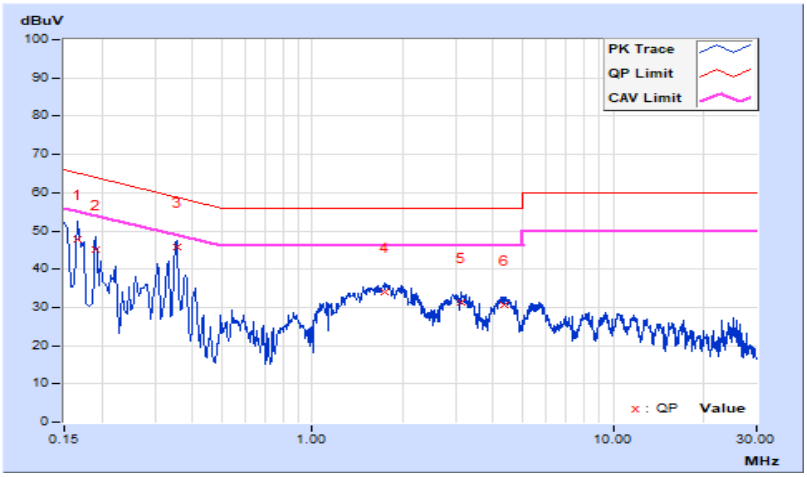
7.2 AC Power Conducted Emissions

RF Mode	802.11a	**Channel**	CH 36：5180 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**	23 °C, 67 % RH
Tested By	Adair Peng		

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	9.76	37.96	16.94	47.72	26.70	65.16	55.16	-17.44	-28.46
2	0.19000	9.76	35.49	16.11	45.25	25.87	64.04	54.04	-18.79	-28.17
3	0.35400	9.84	35.84	32.48	45.68	42.32	58.87	48.87	-13.19	-6.55
4	1.75000	10.03	24.10	17.47	34.13	27.50	56.00	46.00	-21.87	-18.50
5	3.11800	10.12	21.06	13.76	31.18	23.88	56.00	46.00	-24.82	-22.12
6	4.34600	10.21	20.45	13.27	30.66	23.48	56.00	46.00	-25.34	-22.52

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

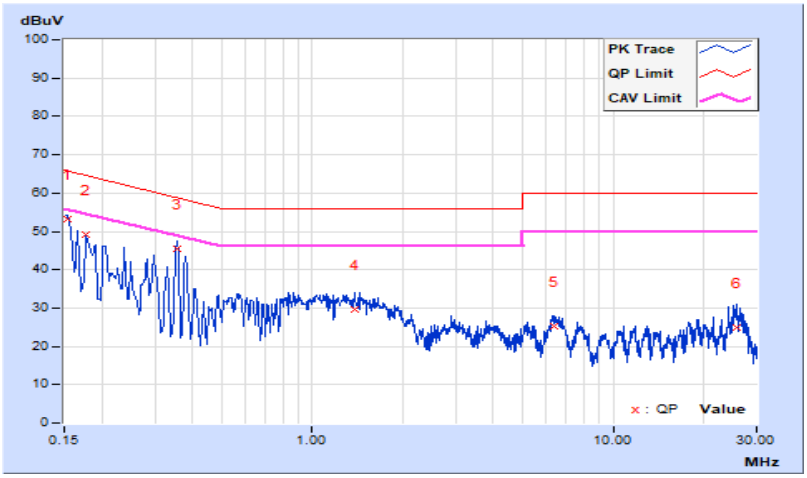


RF Mode	802.11a	Channel	CH 36：5180 MHz
Frequency Range	150 kHz ~ 30 MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	9.71	43.62	29.13	53.33	38.84	65.78	55.78	-12.45	-16.94
2	0.17800	9.72	39.42	26.23	49.14	35.95	64.58	54.58	-15.44	-18.63
3	**0.35782**	**9.87**	**35.66**	**33.85**	**45.53**	**43.72**	**58.78**	**48.78**	**-13.25**	**-5.06**
4	1.38200	10.08	19.45	11.13	29.53	21.21	56.00	46.00	-26.47	-24.79
5	6.34600	10.38	14.83	8.47	25.21	18.85	60.00	50.00	-34.79	-31.15
6	25.81000	11.28	13.55	7.97	24.83	19.25	60.00	50.00	-35.17	-30.75

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



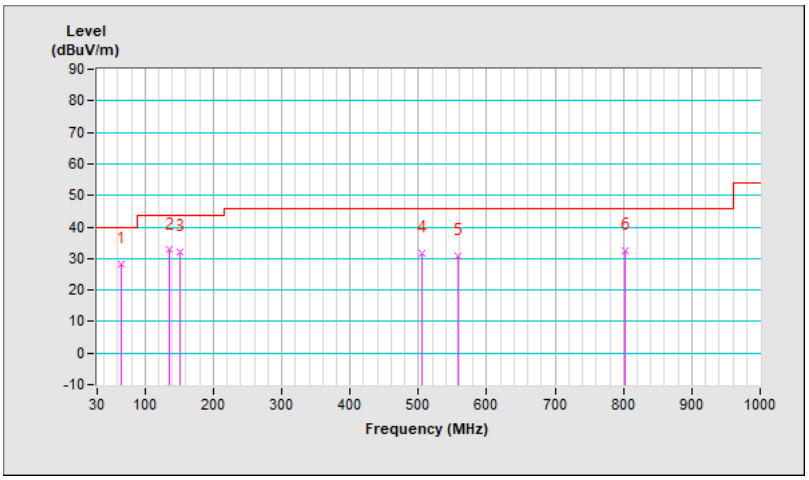
7.3 Unwanted Emissions below 1 GHz

RF Mode	802.11a	**Channel**	CH 36：5180 MHz
Frequency Range	30 MHz ~ 1 GHz	**Detector Function & Bandwidth**	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23 °C, 67 % RH
Tested By	Adair Peng		

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	65.89	28.0 QP	40.0	-12.0	1.00 H	268	38.1	-10.1
2	135.73	32.7 QP	43.5	-10.8	1.49 H	315	41.8	-9.1
3	151.25	32.1 QP	43.5	-11.4	1.00 H	322	40.4	-8.3
4	504.33	31.6 QP	46.0	-14.4	1.99 H	314	34.5	-2.9
5	557.68	30.9 QP	46.0	-15.1	1.49 H	271	32.9	-2.0
6	803.09	32.3 QP	46.0	-13.7	1.00 H	207	29.2	3.1

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.

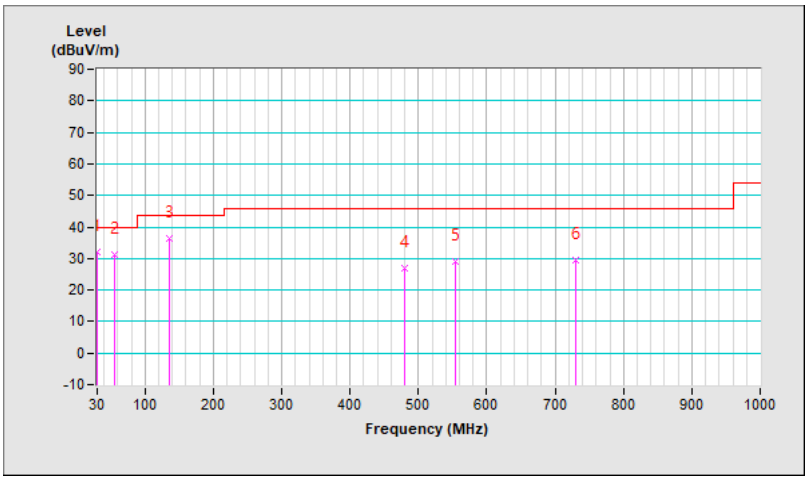


RF Mode	802.11a	Channel	CH 36：5180 MHz
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	30.00	32.0 QP	40.0	-8.0	1.01 V	143	42.3	-10.3
2	55.22	31.2 QP	40.0	-8.8	1.01 V	304	40.1	-8.9
3	**135.73**	**36.2 QP**	**43.5**	**-7.3**	**1.01 V**	**219**	**45.3**	**-9.1**
4	480.08	27.1 QP	46.0	-18.9	1.01 V	10	30.4	-3.3
5	554.77	29.0 QP	46.0	-17.0	1.50 V	196	31.1	-2.1
6	729.37	29.3 QP	46.0	-16.7	1.50 V	15	28.0	1.3

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 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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	**Environmental Conditions**	23 °C, 67 % RH
Tested By	Adair Peng		

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	5150.00	61.2 PK	74.0	-12.8	2.23 H	51	39.5	21.7
2	5150.00	47.3 AV	54.0	-6.7	2.23 H	51	25.6	21.7
3	*5180.00	104.1 PK			2.23 H	51	62.1	42.0
4	*5180.00	94.6 AV			2.23 H	51	52.6	42.0
5	#10360.00	63.7 PK	68.2	-4.5	1.76 H	105	39.3	24.4
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	5150.00	69.6 PK	74.0	-4.4	2.77 V	212	47.9	21.7
2	**5150.00**	**53.6 AV**	**54.0**	**-0.4**	**2.77 V**	**212**	**31.9**	**21.7**
3	*5180.00	119.9 PK			2.77 V	212	77.9	42.0
4	*5180.00	110.6 AV			2.77 V	212	68.6	42.0
5	#10360.00	64.3 PK	68.2	-3.9	1.95 V	166	39.9	24.4

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.
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 40：5200 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	*5200.00	103.1 PK			2.20 H	55	61.1	42.0
2	*5200.00	94.3 AV			2.20 H	55	52.3	42.0
3	#10400.00	63.7 PK	68.2	-4.5	1.81 H	110	39.0	24.7
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	*5200.00	118.6 PK			2.63 V	213	76.6	42.0
2	*5200.00	109.8 AV			2.63 V	213	67.8	42.0
3	#10400.00	64.0 PK	68.2	-4.2	2.02 V	171	39.3	24.7

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 48：5240 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	5150.00	60.9 PK	74.0	-13.1	2.00 H	54	39.2	21.7
2	5150.00	48.1 AV	54.0	-5.9	2.00 H	54	26.4	21.7
3	*5240.00	102.0 PK			2.00 H	54	60.3	41.7
4	*5240.00	92.5 AV			2.00 H	54	50.8	41.7
5	5350.00	60.7 PK	74.0	-13.3	2.00 H	54	39.3	21.4
6	5350.00	47.7 AV	54.0	-6.3	2.00 H	54	26.3	21.4
7	#10480.00	63.6 PK	68.2	-4.6	1.82 H	109	38.8	24.8
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	5150.00	65.0 PK	74.0	-9.0	2.70 V	212	43.3	21.7
2	5150.00	51.6 AV	54.0	-2.4	2.70 V	212	29.9	21.7
3	*5240.00	118.5 PK			2.70 V	212	76.8	41.7
4	*5240.00	109.5 AV			2.70 V	212	67.8	41.7
5	5350.00	63.7 PK	74.0	-10.3	2.70 V	212	42.3	21.4
6	5350.00	50.7 AV	54.0	-3.3	2.70 V	212	29.3	21.4
7	#10480.00	64.0 PK	68.2	-4.2	1.94 V	173	39.2	24.8

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 149：5745 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	#5646.00	61.7 PK	68.2	-6.5	3.39 H	108	39.7	22.0
2	*5745.00	103.2 PK			3.39 H	108	60.9	42.3
3	*5745.00	94.4 AV			3.39 H	108	52.1	42.3
4	#5996.40	61.7 PK	68.2	-6.5	3.39 H	108	39.1	22.6
5	11490.00	64.0 PK	74.0	-10.0	1.83 H	111	37.8	26.2
6	11490.00	50.9 AV	54.0	-3.1	1.83 H	111	24.7	26.2
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	#5644.40	63.4 PK	68.2	-4.8	2.97 V	211	41.4	22.0
2	*5745.00	118.5 PK			2.97 V	211	76.2	42.3
3	*5745.00	109.0 AV			2.97 V	211	66.7	42.3
4	#5938.40	63.6 PK	68.2	-4.6	2.97 V	211	41.3	22.3
5	11490.00	64.2 PK	74.0	-9.8	1.96 V	164	38.0	26.2
6	11490.00	51.0 AV	54.0	-3.0	1.96 V	164	24.8	26.2

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.
5. " * ": Fundamental frequency, the limit was restricted at the RF Output Power.

RF Mode	802.11a	Channel	CH 157：5785 MHz
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	#5613.20	60.9 PK	68.2	-7.3	3.28 H	108	39.2	21.7
2	*5785.00	104.5 PK			3.28 H	108	62.2	42.3
3	*5785.00	95.1 AV			3.28 H	108	52.8	42.3
4	#5949.20	62.2 PK	68.2	-6.0	3.28 H	108	39.8	22.4
5	11570.00	64.1 PK	74.0	-9.9	1.79 H	104	38.2	25.9
6	11570.00	50.6 AV	54.0	-3.4	1.79 H	104	24.7	25.9
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	#5631.20	62.6 PK	68.2	-5.6	3.04 V	211	40.8	21.8
2	*5785.00	118.4 PK			3.04 V	211	76.1	42.3
3	*5785.00	109.0 AV			3.04 V	211	66.7	42.3
4	#5940.00	62.8 PK	68.2	-5.4	3.04 V	211	40.5	22.3
5	11570.00	64.3 PK	74.0	-9.7	2.00 V	168	38.4	25.9
6	11570.00	50.9 AV	54.0	-3.1	2.00 V	168	25.0	25.9

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=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	23 °C, 67 % RH
Tested By	Adair Peng		

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	#5626.40	60.5 PK	68.2	-7.7	3.27 H	108	38.7	21.8
2	*5825.00	104.2 PK			3.27 H	108	61.8	42.4
3	*5825.00	94.8 AV			3.27 H	108	52.4	42.4
4	#5928.80	61.4 PK	68.2	-6.8	3.27 H	108	39.1	22.3
5	11650.00	63.2 PK	74.0	-10.8	1.81 H	113	37.6	25.6
6	11650.00	49.8 AV	54.0	-4.2	1.81 H	113	24.2	25.6
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	#5649.60	61.6 PK	68.2	-6.6	2.70 V	211	39.6	22.0
2	*5825.00	117.8 PK			2.70 V	211	75.4	42.4
3	*5825.00	108.3 AV			2.70 V	211	65.9	42.4
4	#5941.60	63.8 PK	68.2	-4.4	2.70 V	211	41.5	22.3
5	11650.00	63.4 PK	74.0	-10.6	1.99 V	168	37.8	25.6
6	11650.00	49.9 AV	54.0	-4.1	1.99 V	168	24.3	25.6

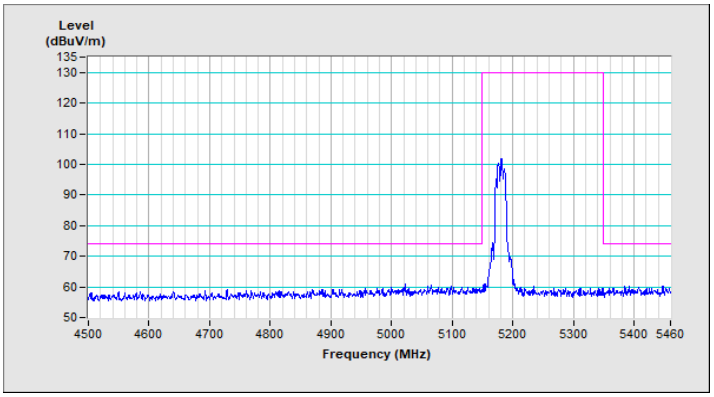
Remarks:

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.

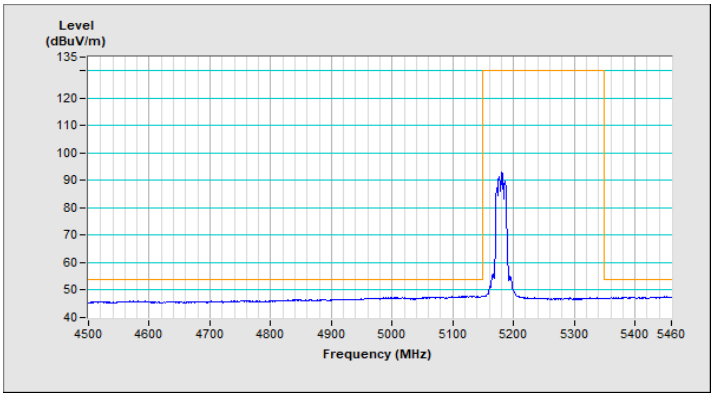
Plot of Band Edge

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=10 Hz, DET=Peak

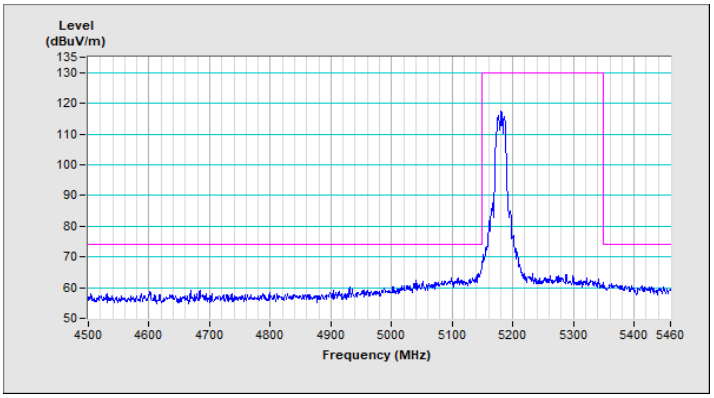
802.11a Channel 36



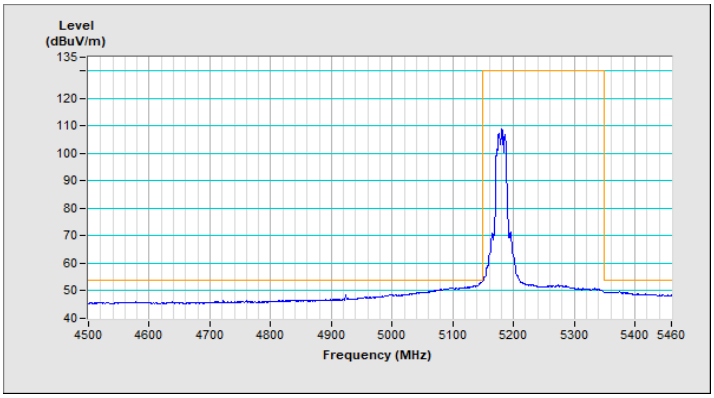
Horizontal (Peak)



Horizontal (Average)

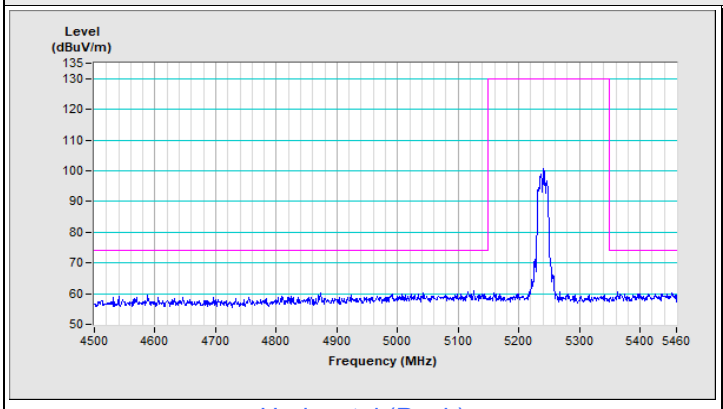


Vertical (Peak)

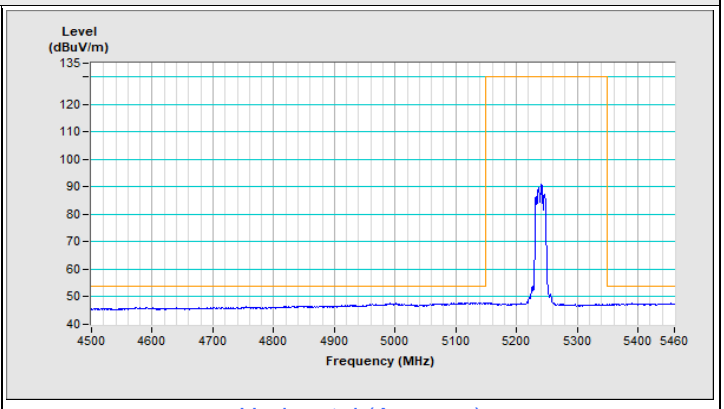


Vertical (Average)

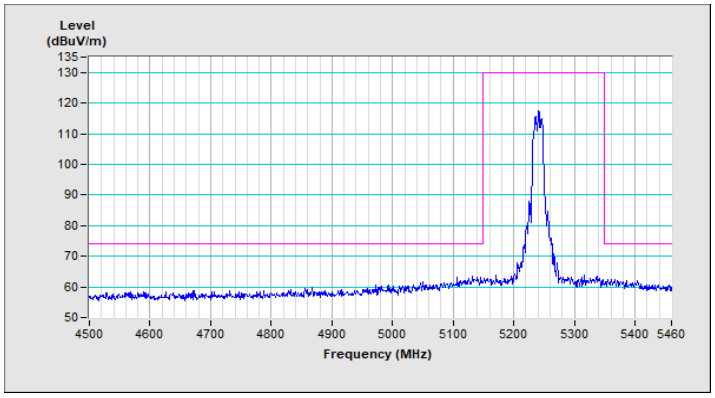
802.11a Channel 48



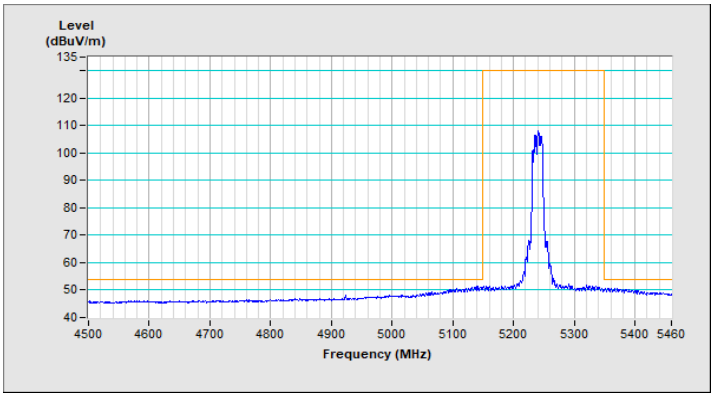
Horizontal (Peak)



Horizontal (Average)



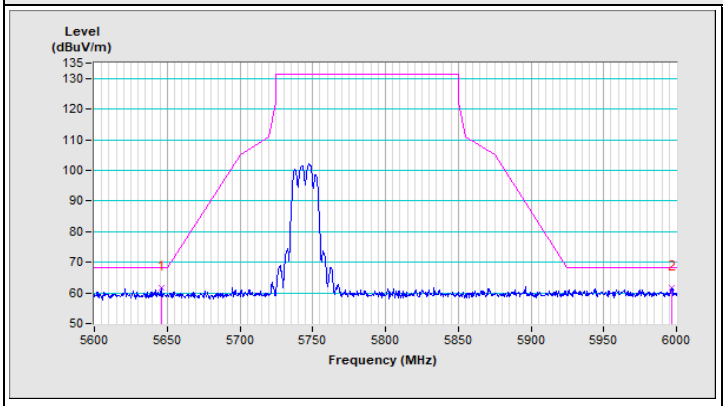
Vertical (Peak)



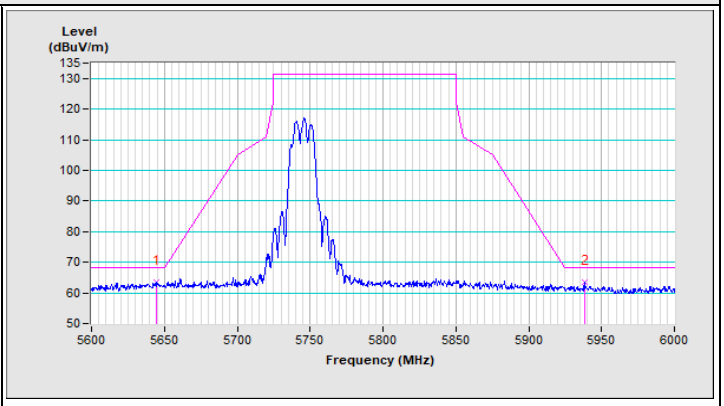
Vertical (Average)

Frequency Range	5.6 GHz ~ 6 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak

802.11a Channel 149

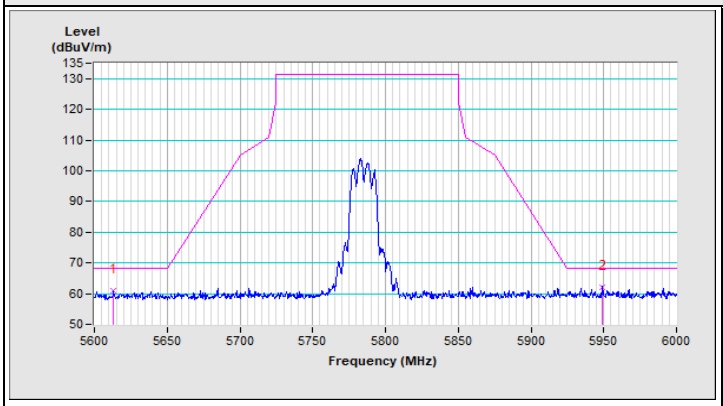


Horizontal (Peak)

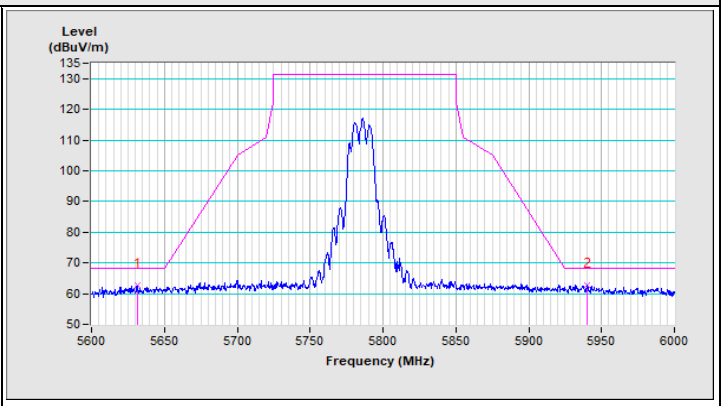


Vertical (Peak)

802.11a Channel 157

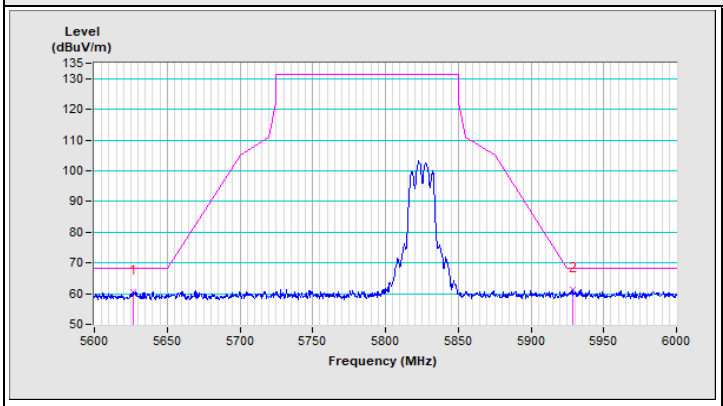


Horizontal (Peak)

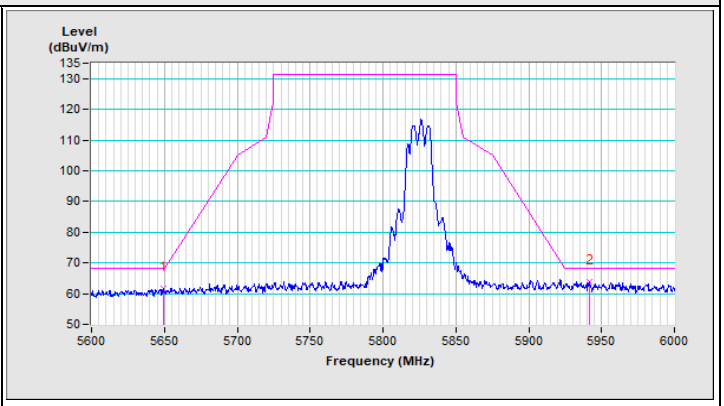


Vertical (Peak)

802.11a Channel 165



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:

Lin Kou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@bureauveritas.com
Web Site: http://ee.bureauveritas.com.tw

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

--- END ---