TEST REPORT

CERTIFICATE OF CONFORMITY

Standard:	**47 CFR FCC Part 15, Subpart C (Section 15.247)**
Report No.:	RFBHQL-WTW-P23020458
FCC ID:	A8J-EWS850APA
Product:	AX1800 Outdoor Access Point
Brand:	EnGenius
Model No.:	EWS850APA
Received Date:	2022/12/9
Test Date:	2022/12/21 ~ 2023/3/2
Issued Date:	2023/3/20
Applicant:	EnGenius Technologies, Inc.
Address:	1580 Scenic Ave, Costa Mesa, CA 92626, USA
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 (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kewi Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number:	788550 / TW0003
Test Location (2):	No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
FCC Registration / Designation Number:	281270 / TW0032

Approved by: Jeremy Lin , **Date:** 2023/3/20

Jeremy Lin / Project Engineer

This test report consists of 63 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 : Celine Chou / Senior Specialist

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RFBHQL-WTW-P23020458	Original release.	2023/3/20

1 Certificate

Product:	AX1800 Outdoor Access Point
Brand:	EnGenius
Test Model:	EWS850APA
Sample Status:	Engineering sample
Applicant:	EnGenius Technologies, Inc.
Test Date:	2022/12/21 ~ 2023/3/2
Standard:	47 CFR FCC Part 15, Subpart C (Section 15.247)
Measurement procedure:	ANSI C63.10-2013 KDB 558074 D01 15.247 Meas Guidance v05r02 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 C (Section 15.247)			
Standard / Clause	Test Item	Result	Remark
15.247(b)	RF Output Power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.
15.207	AC Power Conducted Emissions	Pass	Minimum passing margin is -5.50 dB at 0.47186 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions below 1 GHz	Pass	Minimum passing margin is -1.1 dB at 108.57 MHz
15.205 / 15.209 / 15.247(d)	Unwanted Emissions above 1 GHz	Pass	Minimum passing margin is -0.3 dB at 2390.00, 7311.00 MHz
15.203	Antenna Requirement	Pass	Antenna connector is R-SMA not a standard connector.

Note: 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) (±)
AC Power Conducted Emissions	9 kHz ~ 30 MHz	2.99 dB
Unwanted Emissions below 1 GHz	9 kHz ~ 30 MHz	3.00 dB
	30 MHz ~ 1 GHz	2.93 dB
Unwanted Emissions above 1 GHz	1 GHz ~ 18 GHz	1.76 dB
	18 GHz ~ 40 GHz	1.77 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

Product	AX1800 Outdoor Access Point
Brand	EnGenius
Test Model	EWS850APA
Status of EUT	Engineering sample
Power Supply Rating	54 Vdc (POE)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b:11/5.5/2/1 Mbps 802.11g: 54/48/36/24/18/12/9/6 Mbps 802.11n: up to 300 Mbps VHT: up to 400 Mbps 802.11ax: up to 574 Mbps
Operating Frequency	2412 ~ 2462 MHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7
Output Power	CDD Mode: 366.226 mW (25.64 dBm) Beamforming Mode: 318.405 mW (25.03 dBm)

Note:

1. The EUT uses following accessories.

PoE		
Brand	Model	Specification
EnGenius	EPA5006GR	AC Input : 100-240 Vac, 0.8 A, 50-60 Hz DC Output : 54 Vdc, 0.6 A; PIN 4,5: 54 Vdc; PIN 7,8 RETURN Power Line : 0.5m non-shielded AC power cable without core
Ground Cable		
Brand	Model	Specification
BO YAO TECHNOLOGY CO., LTD.	EM22053001	1.8m non-shielded ground cable without core

2. There are two radios for the EUT.

Radio	Function	TX/RX Function
1	WLAN 2.4GHz	2TX / 2RX
2	WLAN 5GHz	2TX / 2RX

3. Simultaneously transmission condition.

Condition	Technology	
1	WLAN 2.4GHz	WLAN 5GHz
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

4. 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.

Ant. Type	Dipole					
Connector	R-SMA					
Frequency (MHz)	2400MHz	2450MHz	2500MHz	5150MHz	5550MHz	5850MHz
Gain (dBi)	5.08	5.13	5.17	5.12	5.09	5.17

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

2. The EUT incorporates a MIMO function:

2.4 GHz Band		
Modulation Mode	Tx & Rx Configuration	
802.11b	2TX	2RX
802.11g	2TX	2RX
802.11n (HT20)	2TX	2RX
802.11n (HT40)	2TX	2RX
VHT20	2TX	2RX
VHT40	2TX	2RX
802.11ax (HE20)	2TX	2RX
802.11ax (HE40)	2TX	2RX

Note:
1. All of modulation mode support beamforming function except 802.11b and 802.11g modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. The modulation and bandwidth are similar for 802.11n mode for 20 MHz (40 MHz) and VHT mode for 20 MHz (40 MHz), therefore the manufacturer will control the power for 802.11n/VHT mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report.

3.3 Channel List

11 channels are provided for 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20):

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

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

Channel	Frequency	Channel	Frequency
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		

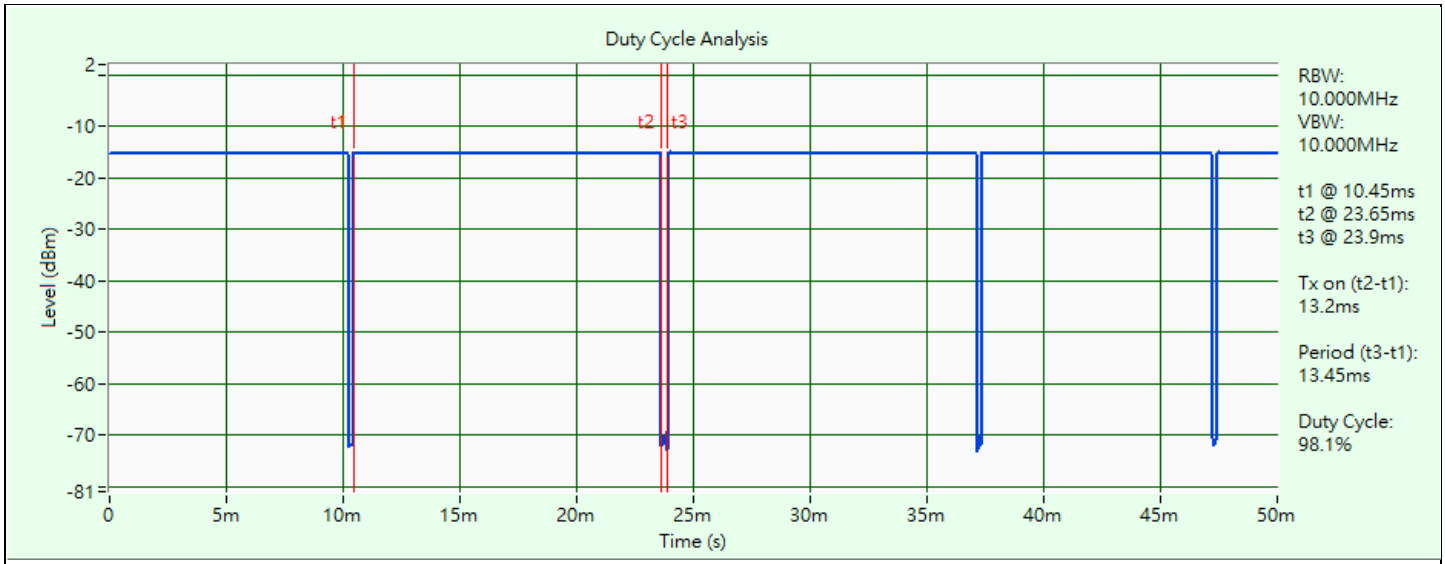
3.4 Test Mode Applicability and Tested Channel Detail

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

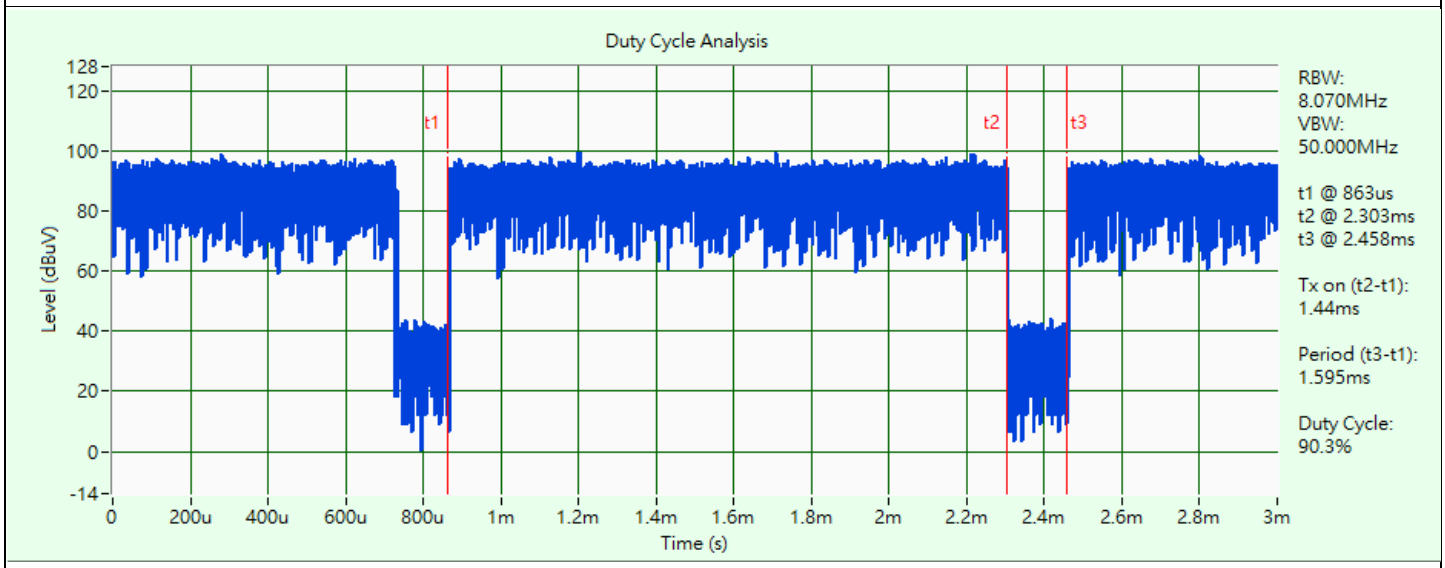
Test Item	Mode	Signal Mode	Tested Channel	Modulation	Data Rate Parameter
RF Output Power	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
	802.11g		1, 6, 11	BPSK	6Mb/s
	802.11n (HT20)	CDD & Beamforming	1, 6, 11	BPSK	MCS0
	802.11n (HT40)		3, 6, 9	BPSK	MCS0
	VHT20		1, 6, 11	BPSK	MCS0
	VHT40		3, 6, 9	BPSK	MCS0
	802.11ax (HE20)		1, 6, 11	BPSK	MCS0
	802.11ax (HE40)		3, 6, 9	BPSK	MCS0
Power Spectral Density	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
	802.11g		1, 6, 11	BPSK	6Mb/s
	802.11ax (HE20)		1, 6, 11	BPSK	MCS0
	802.11ax (HE40)		3, 6, 9	BPSK	MCS0
6 dB Bandwidth / Conducted Out of Band Emissions	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
	802.11g		1, 6, 11	BPSK	6Mb/s
	802.11ax (HE20)		1, 6, 11	BPSK	MCS0
	802.11ax (HE40)		3, 6, 9	BPSK	MCS0
AC Power Conducted Emissions	802.11g	CDD	6	BPSK	6Mb/s
Unwanted Emissions below 1 GHz	802.11g	CDD	6	BPSK	6Mb/s
Unwanted Emissions above 1 GHz	802.11b	CDD	1, 6, 11	DBPSK	1Mb/s
	802.11g		1, 6, 11	BPSK	6Mb/s
	802.11ax (HE20)		1, 6, 11	BPSK	MCS0
	802.11ax (HE40)		3, 6, 9	BPSK	MCS0

3.5 Duty Cycle of Test Signal

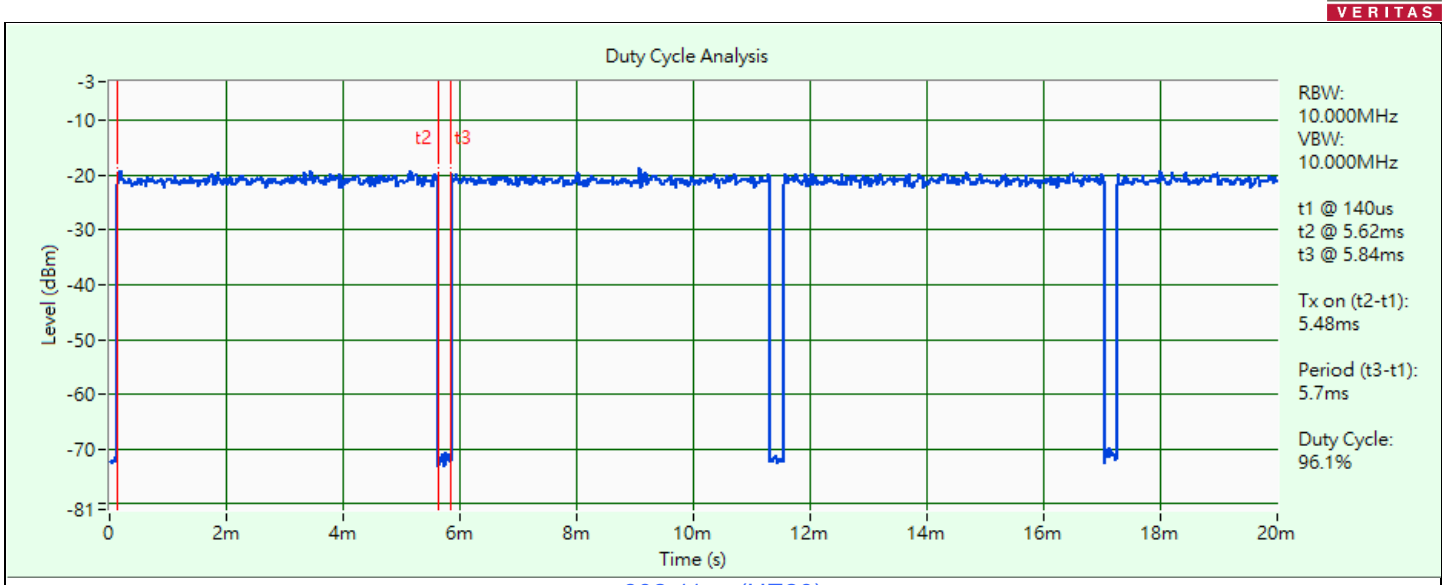
802.11b: Duty cycle = 13.2 ms / 13.45 ms x 100% = 98.1%
802.11g: Duty cycle = 1.44 ms / 1.595 ms x 100% = 90.3%, duty factor = 10 * log (1/Duty cycle) = 0.44 dB
802.11ax (HE20): Duty cycle = 5.48 ms / 5.7 ms x 100% = 96.1%, duty factor = 10 * log (1/Duty cycle) = 0.17 dB
802.11ax (HE40): Duty cycle = 5.48 ms / 5.76 ms x 100% = 95.1%, duty factor = 10 * log (1/Duty cycle) = 0.22 dB



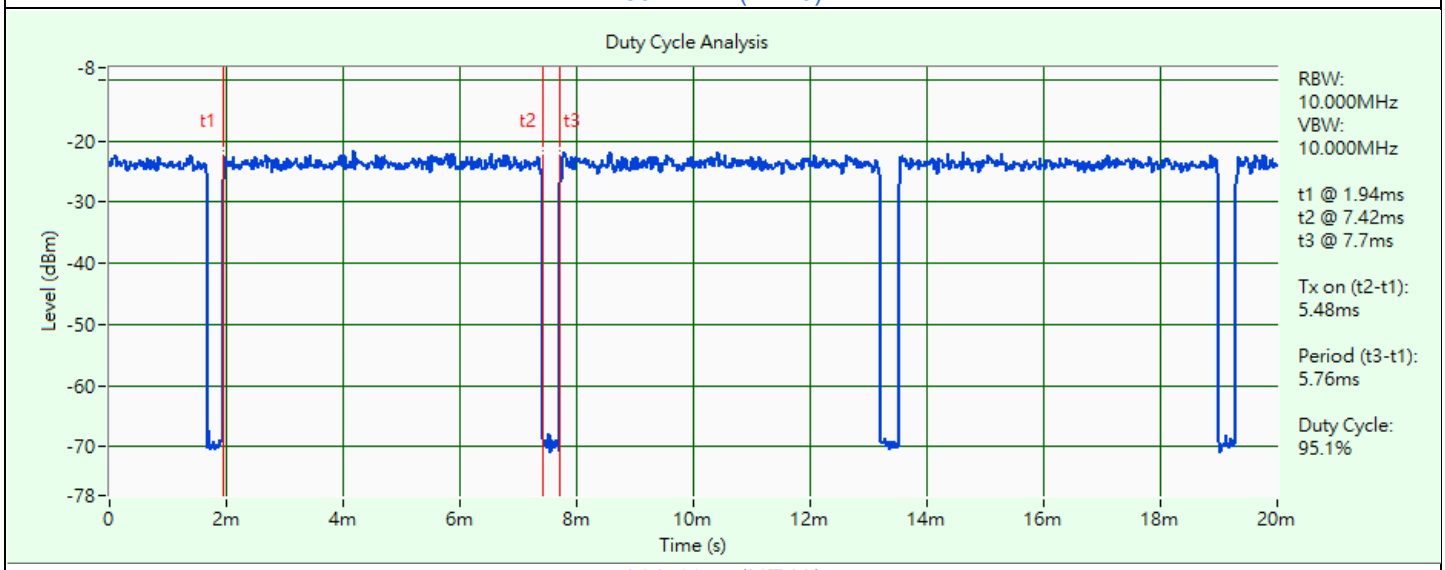
802.11b



802.11g



802.11ax (HE20)

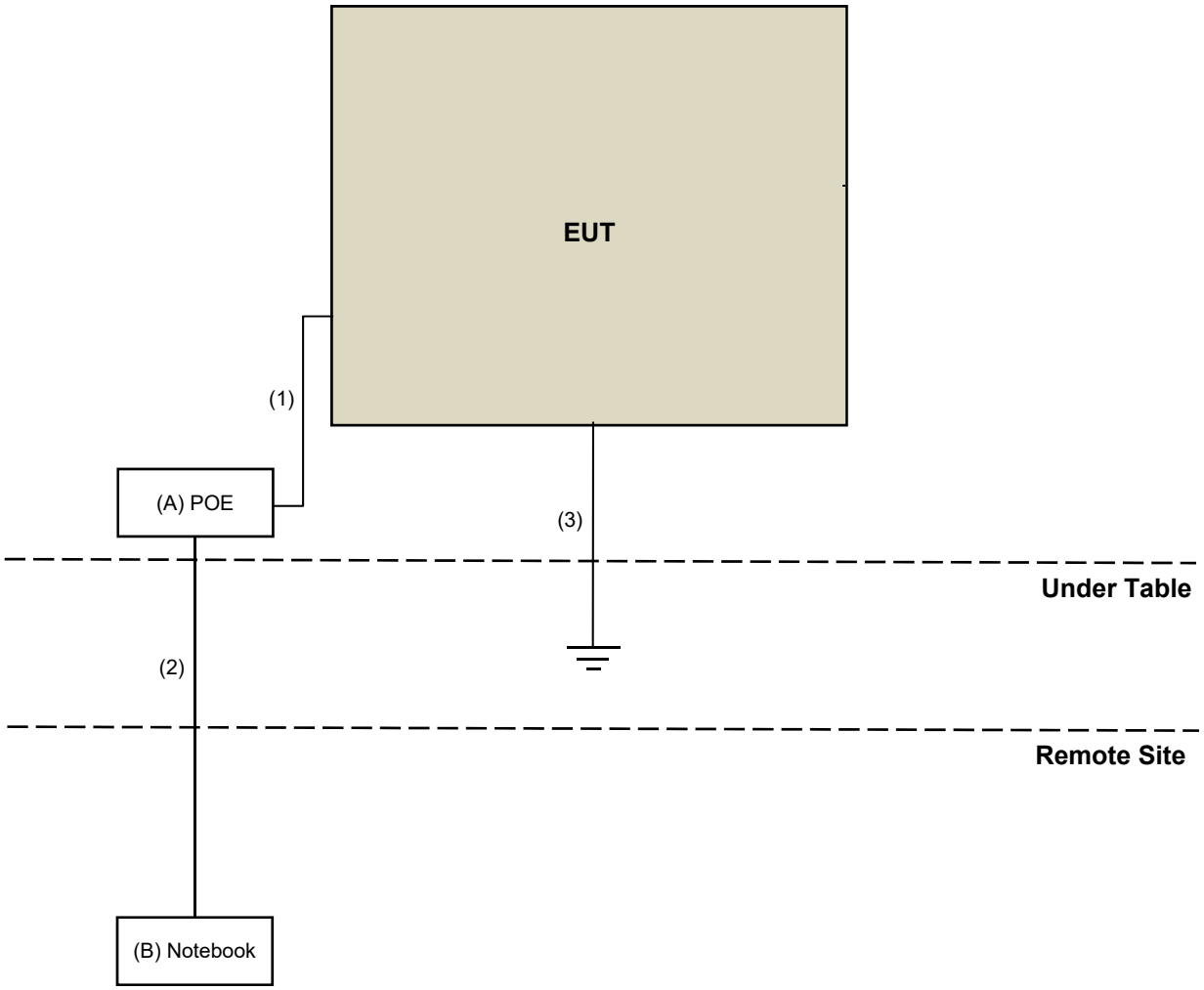


802.11ax (HE40)

3.6 Test Program Used and Operation Descriptions

Controlling software QSPR V5.0-00196 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	POE	EnGenius	EPA5006GR	N/A	N/A	Accessory of EUT
B	Notebook	Lenovo	L440	R9-0GFJKK	N/A	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1	RJ-45 Cable	1	1.0	N	0	Provided by Lab
2	RJ-45 Cable	1	3.0	N	0	Provided by Lab
3	Ground Cable	1	1.8	N	0	Accessory of EUT

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
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	2022/7/13	2023/7/12

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/3/2

4.2 Power Spectral Density

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Software BV	ADT_RF Test Software V6.6.5.4	N/A	N/A	N/A
Spectrum Analyzer R&S	FSV40	100979	2022/3/25	2023/3/24

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2023/3/2

4.3 6 dB Bandwidth

Refer to section 4.2 to get information of the instruments.

4.4 Conducted Out of Band Emissions

Refer to section 4.2 to get information of the instruments.

4.5 AC Power Conducted Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
LISN R&S	ESH3-Z5	100311	2022/9/12	2023/9/11
LISN ROHDE & SCHWARZ	ENV216	101826	2022/3/14	2023/3/13
RF Coaxial Cable WOKEN	5D-FB	Cable-cond1-01	2022/1/15	2023/1/14
Software BVADT	BVADT_Cond_ V7.3.7.4	N/A	N/A	N/A
Test Receiver Rohde&Schwarz	ESCI	100613	2022/12/5	2023/12/4
V-LISN Schwarzbeck	NNBL 8226-2	8226-142	2022/8/31	2023/8/30

Notes:

1. The test was performed in HY - Conduction 1.
2. Tested Date: 2022/12/21

4.6 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Bi-log Broadband Antenna Schwarzbeck	VULB9168	9168-1213	2022/10/20	2023/10/19
Loop Antenna EMCI	EM-6879	269	2022/9/19	2023/9/18
Loop Antenna TESEQ	HLA 6121	45745	2022/7/27	2023/7/26
Pre-amplifier EMCI	EMC001340	980201	2022/9/23	2023/9/22
Pre_Amplifier EMCI	EMC330N	980782	2022/1/17	2023/1/16
RF Coaxial Cable EMCI	5D-NM-BM	140903+140902	2022/1/15	2023/1/14
	EMCCFD400-NM-NM-500	201233	2022/1/17	2023/1/16
	EMCCFD400-NM-NM-3000	201235	2022/1/17	2023/1/16
	EMCCFD400-NM-NM-9000	201236	2022/1/17	2023/1/16
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101866	2022/1/14	2023/1/13
Test Receiver R&S	ESR3+	102782	2022/12/12	2023/12/11
Turn Table Max-Full	MF-7802BS	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208674	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 8.
2. Tested Date: 2022/12/21

4.7 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower Max-Full	MFT-151SS-0.5T	N/A	N/A	N/A
Horn Antenna RFSPIN	DRH18-E	210103A18E	2022/11/13	2023/11/12
Horn Antenna Schwarzbeck	BBHA 9170	9170-1049	2022/11/13	2023/11/12
Pre_Amplifier EMCI	EMC118A45SE	980808	2022/12/29	2023/12/28
	EMC184045SE	980788	2022/1/17	2023/1/16
RF Coaxial Cable EMCI	EMC101G-KM-KM-2000	201254	2022/1/17	2023/1/16
	EMC101G-KM-KM-3000	201257	2022/1/17	2023/1/16
	EMC101G-KM-KM-5000	201260	2022/1/17	2023/1/16
	EMC104-SM-SM-1000	210102	2022/1/17	2023/1/16
	EMC104-SM-SM-3000	201231	2022/1/17	2023/1/16
	EMC104-SM-SM-9000	201243	2022/1/17	2023/1/16
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Spectrum Analyzer R&S	FSW43	101866	2022/1/14	2023/1/13
Test Receiver R&S	ESR3+	102782	2022/12/12	2023/12/11
Turn Table Max-Full	MF-7802BS	N/A	N/A	N/A
Turn Table Controller Max-Full	MF-7802BS	MF780208674	N/A	N/A

Notes:

1. The test was performed in WM - 966 chamber 8.
2. Tested Date: 2022/12/27 ~ 2023/1/6

5 Limits of Test Items

5.1 RF Output Power

For systems using digital modulation in the 2400–2483.5 MHz bands: 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 Power Spectral Density

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz.

5.3 6 dB Bandwidth

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

5.4 Conducted Out of Band Emissions

Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

5.5 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.

5.6 Unwanted Emissions below 1 GHz

Radiated emissions up to 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30 dB below the highest level of the desired power:

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).

5.7 Unwanted Emissions above 1 GHz

Radiated emissions above 1 GHz which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30 dB below the highest level of the desired power:

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

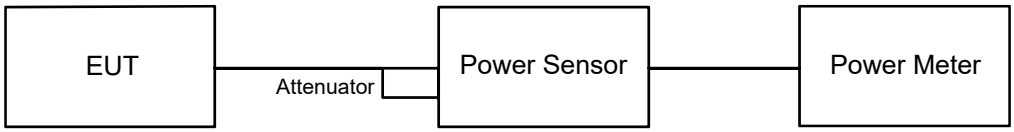
Notes:

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.

6 Test Arrangements

6.1 RF Output Power

6.1.1 Test Setup

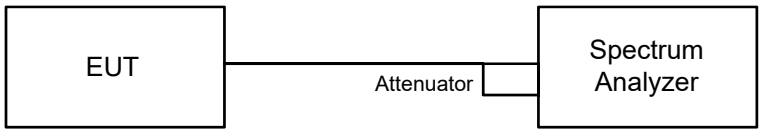


6.1.2 Test Procedure

Average Power:
Average power sensor was 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. Duty factor is not added to measured value.

6.2 Power Spectral Density

6.2.1 Test Setup

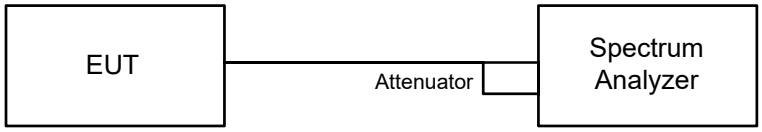


6.2.2 Test Procedure

a. Measure the duty cycle (x).
b. Set instrument center frequency to DTS channel center frequency.
c. Set span to at least 1.5 times the OBW.
d. Set RBW to: 3 kHz.
e. Set VBW ≥3 x RBW.
f. Detector = power averaging (RMS) or sample detector (when RMS not available).
g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h. Sweep time = auto couple.
i. Do not use sweep triggering. Allow sweep to “free run”.
j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
k. Use the peak marker function to determine the maximum amplitude level.
l. Note: If Duty cycle < 98%, Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

6.3 6 dB Bandwidth

6.3.1 Test Setup

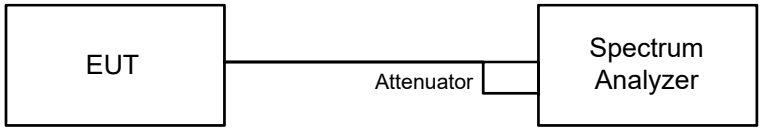


6.3.2 Test Procedure

a. Set resolution bandwidth (RBW) = 100 kHz.
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.4 Conducted Out of Band Emissions

6.4.1 Test Setup



6.4.2 Test Procedure

MEASUREMENT PROCEDURE REF

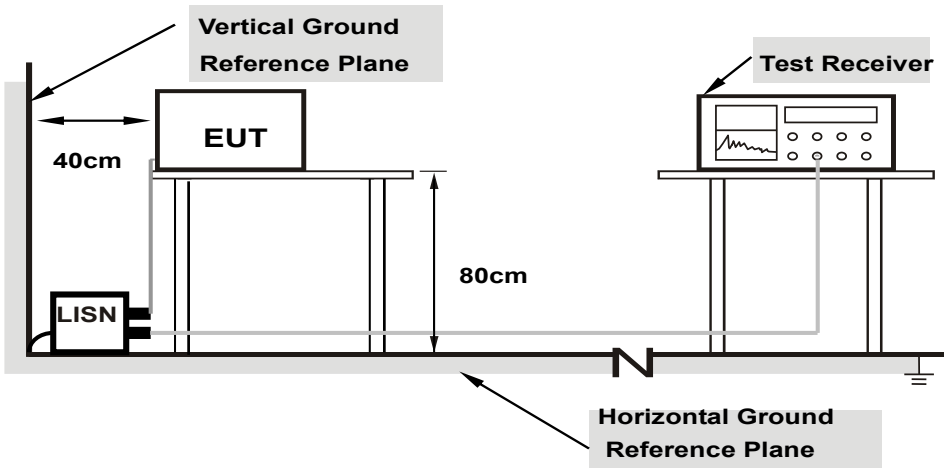
a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Detector = peak.
d. Sweep = auto couple.
e. Trace Mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum amplitude level.

6.5 AC Power Conducted Emissions

6.5.1 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).

6.5.2 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.

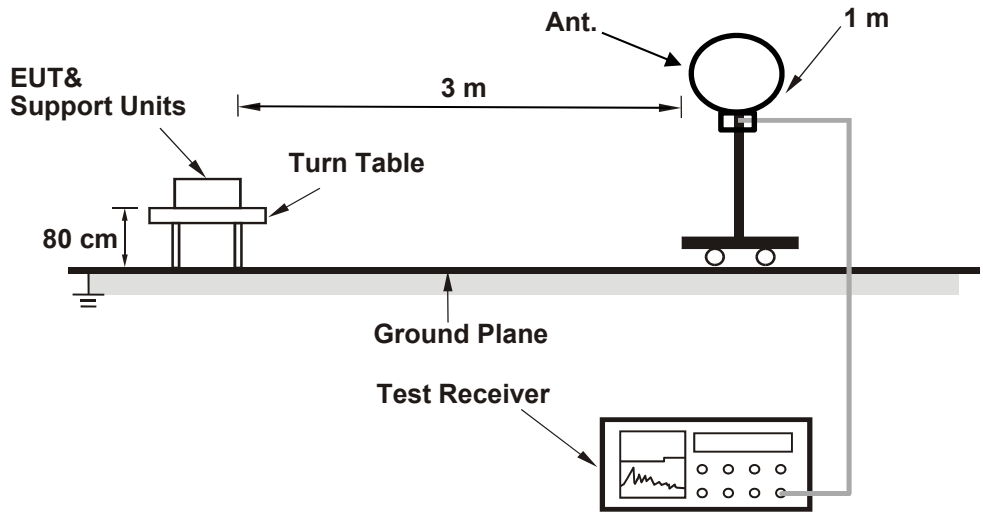
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

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.

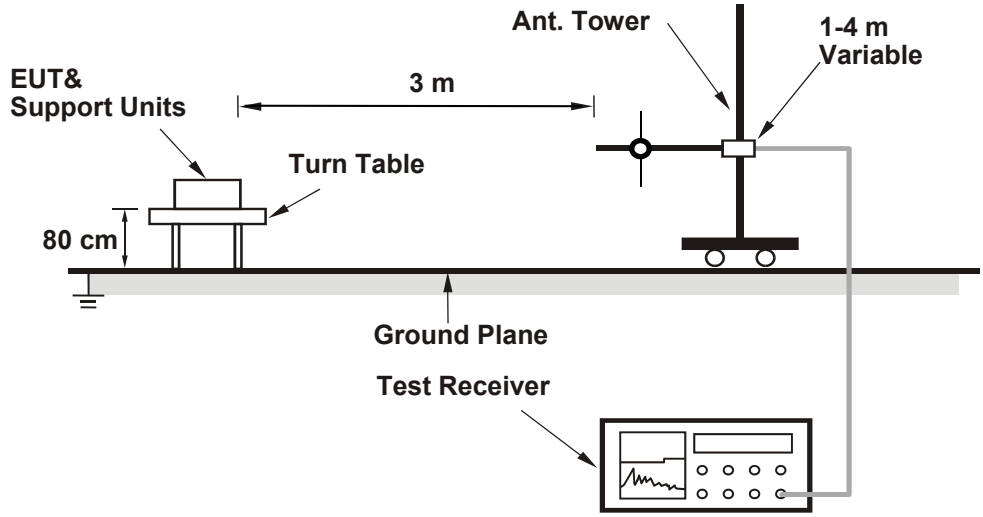
6.6 Unwanted Emissions below 1 GHz

6.6.1 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).

6.6.2 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.

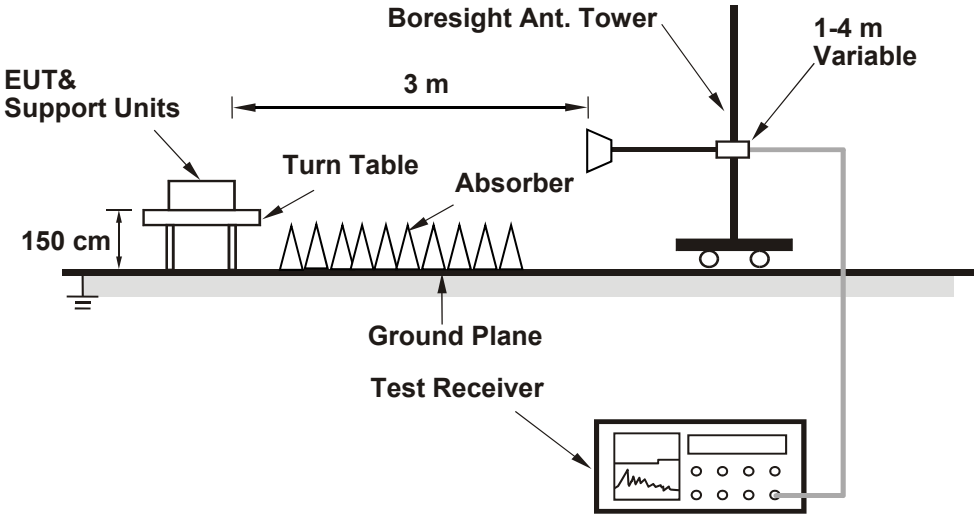
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

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.

6.7 Unwanted Emissions above 1 GHz

6.7.1 Test Setup



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

6.7.2 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:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	20.54	20.06	214.631	23.32	30	Pass
6	2437	22.75	22.24	355.859	25.51	30	Pass
11	2462	20.89	20.13	225.783	23.54	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	19.32	18.74	160.324	22.05	30	Pass
6	2437	22.87	22.37	366.226	25.64	30	Pass
11	2462	17.93	17.26	115.298	20.62	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 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				
1	2412	17.58	16.74	104.486	20.19	30	Pass
6	2437	21.99	21.42	296.800	24.72	30	Pass
11	2462	16.01	15.14	72.561	18.61	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 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				
3	2422	14.99	14.29	58.403	17.66	30	Pass
6	2437	16.04	15.41	74.933	18.75	30	Pass
9	2452	13.57	12.73	41.501	16.18	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	17.72	16.98	109.045	20.38	30	Pass
6	2437	22.17	21.58	308.696	24.90	30	Pass
11	2462	16.28	15.33	76.581	18.84	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 dBi < 6 dBi, so the output power limit shall not be reduced.

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	15.12	14.33	59.611	17.75	30	Pass
6	2437	16.29	15.61	78.951	18.97	30	Pass
9	2452	13.67	12.98	43.142	16.35	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 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				
1	2412	17.87	17.07	112.168	20.50	30	Pass
6	2437	22.36	21.65	318.405	25.03	30	Pass
11	2462	16.35	15.54	78.962	18.97	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 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				
3	2422	15.24	14.48	61.474	17.89	30	Pass
6	2437	16.46	15.78	82.103	19.14	30	Pass
9	2452	13.78	13.12	44.390	16.47	30	Pass

Notes:

1. Directional gain is the maximum gain of antennas.
2. The maximum gain is 5.17 dBi < 6 dBi, so the output power limit shall not be reduced.

802.11n (HT20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	17.58	16.74	104.486	20.19	27.82	Pass
6	2437	21.99	21.42	296.800	24.72	27.82	Pass
11	2462	16.01	15.14	72.561	18.61	27.82	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 8.18 dBi > 6 dBi, so the output power limit shall be reduced to 30-(8.18-6) = 27.82 dBm.

802.11n (HT40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	14.99	14.29	58.403	17.66	27.82	Pass
6	2437	16.04	15.41	74.933	18.75	27.82	Pass
9	2452	13.57	12.73	41.501	16.18	27.82	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 8.18 dBi > 6 dBi, so the output power limit shall be reduced to 30-(8.18-6) = 27.82 dBm.

VHT20 Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	17.72	16.98	109.045	20.38	27.82	Pass
6	2437	22.17	21.58	308.696	24.90	27.82	Pass
11	2462	16.28	15.33	76.581	18.84	27.82	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 8.18 dBi > 6 dBi, so the output power limit shall be reduced to 30-(8.18-6) = 27.82 dBm.

VHT40 Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	15.12	14.33	59.611	17.75	27.82	Pass
6	2437	16.29	15.61	78.951	18.97	27.82	Pass
9	2452	13.67	12.98	43.142	16.35	27.82	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 8.18 dBi > 6 dBi, so the output power limit shall be reduced to 30-(8.18-6) = 27.82 dBm.

802.11ax (HE20) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
1	2412	17.87	17.07	112.168	20.50	27.82	Pass
6	2437	22.36	21.65	318.405	25.03	27.82	Pass
11	2462	16.35	15.54	78.962	18.97	27.82	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 8.18 dBi > 6 dBi, so the output power limit shall be reduced to 30-(8.18-6) = 27.82 dBm.

802.11ax (HE40) Beamforming

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Test Result
		Chain 0	Chain 1				
3	2422	15.24	14.48	61.474	17.89	27.82	Pass
6	2437	16.46	15.78	82.103	19.14	27.82	Pass
9	2452	13.78	13.12	44.390	16.47	27.82	Pass

Notes:

1. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
2. The directional gain is 8.18 dBi > 6 dBi, so the output power limit shall be reduced to 30-(8.18-6) = 27.82 dBm.

7.2 Power Spectral Density

Input Power:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1			
1	2412	-17.92	-18.15	-15.02	5.82	Pass
6	2437	-14.85	-15.43	-12.12	5.82	Pass
11	2462	-17.61	-17.52	-14.55	5.82	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 8.18 dBi > 6 dBi, so the power density limit shall be reduced to 8-(8.18-6) = 5.82 dBm/3kHz.

802.11g

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1				
1	2412	-13.41	-13.88	0.44	-10.18	5.82	Pass
6	2437	-9.22	-9.48	0.44	-5.89	5.82	Pass
11	2462	-14.22	-14.59	0.44	-10.95	5.82	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 8.18 dBi > 6 dBi, so the power density limit shall be reduced to 8-(8.18-6) = 5.82 dBm/3kHz.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1				
1	2412	-18.23	-19.00	0.17	-15.42	5.82	Pass
6	2437	-14.44	-15.43	0.17	-11.73	5.82	Pass
11	2462	-19.48	-20.38	0.17	-16.73	5.82	Pass

Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 8.18 dBi > 6 dBi, so the power density limit shall be reduced to 8-(8.18-6) = 5.82 dBm/3kHz.

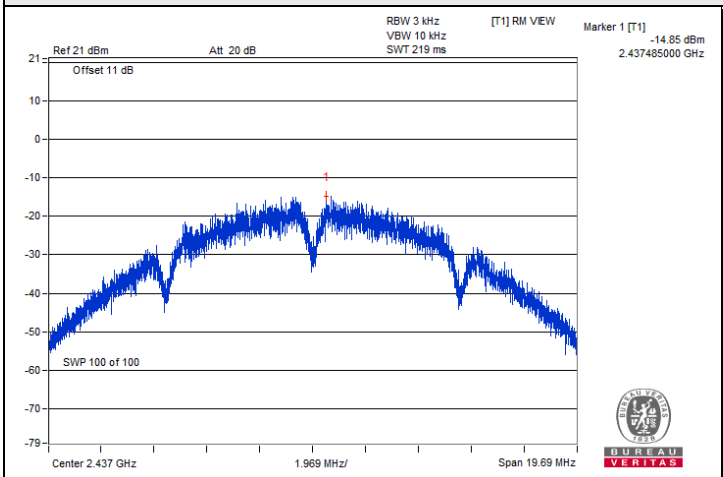
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/3kHz)		Duty Factor (dB)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Test Result
		Chain 0	Chain 1				
3	2422	-22.63	-22.75	0.22	-19.46	5.82	Pass
6	2437	-20.91	-21.86	0.22	-18.13	5.82	Pass
9	2452	-23.49	-23.87	0.22	-20.45	5.82	Pass

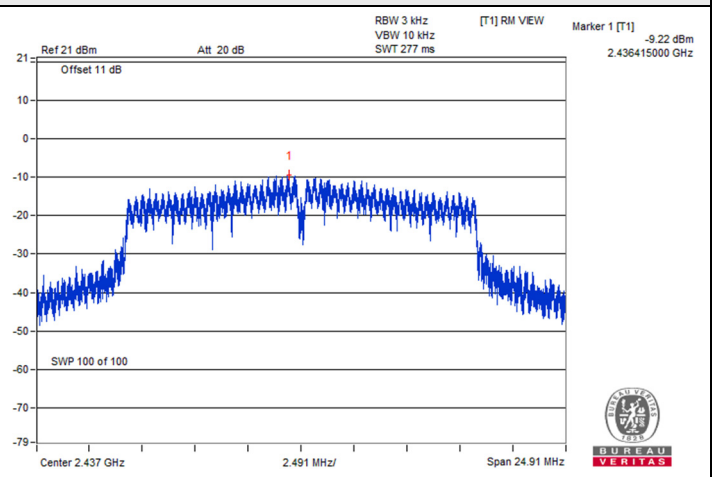
Notes:

1. Method E) 2) b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. Directional gain = gain of antenna element + 10 log (2 of TX antenna elements)
3. The directional gain is 8.18 dBi > 6 dBi, so the power density limit shall be reduced to 8-(8.18-6) = 5.82 dBm/3kHz.

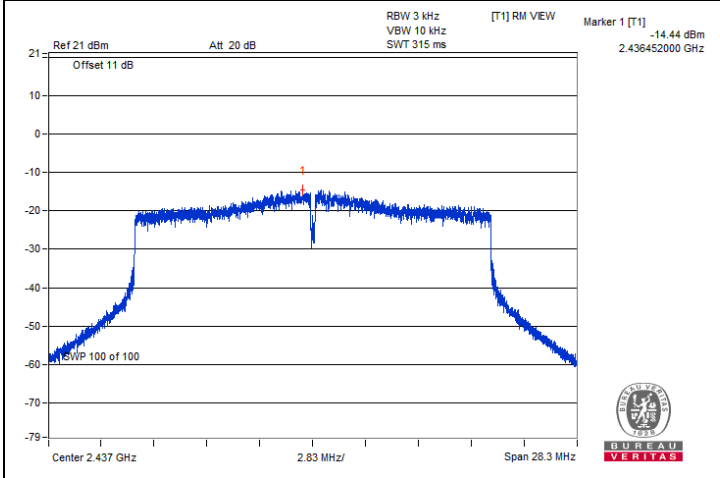
Spectrum Plot of Maximum Value



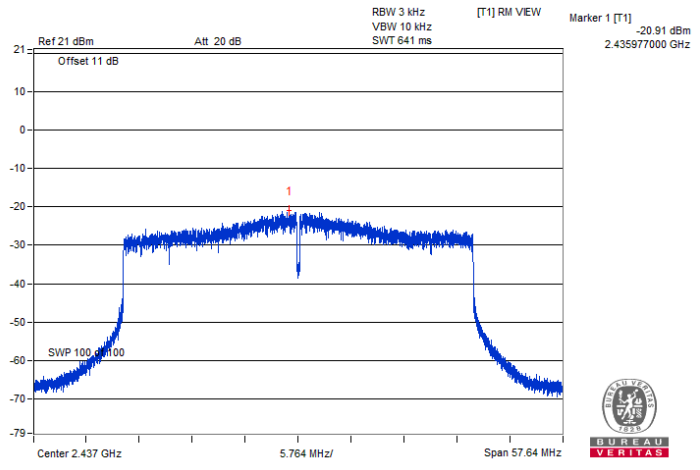
802.11b / Chain 0 : CH 6



802.11g / Chain 0 : CH 6



802.11ax (HE20) / Chain 0 : CH 6



802.11ax (HE40) / Chain 0 : CH 6

7.3 6 dB Bandwidth

Input Power:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	8.09	8.54	0.5	Pass
6	2437	7.53	7.12	0.5	Pass
11	2462	8.07	7.10	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	15.16	15.16	0.5	Pass
6	2437	15.15	15.14	0.5	Pass
11	2462	15.10	15.14	0.5	Pass

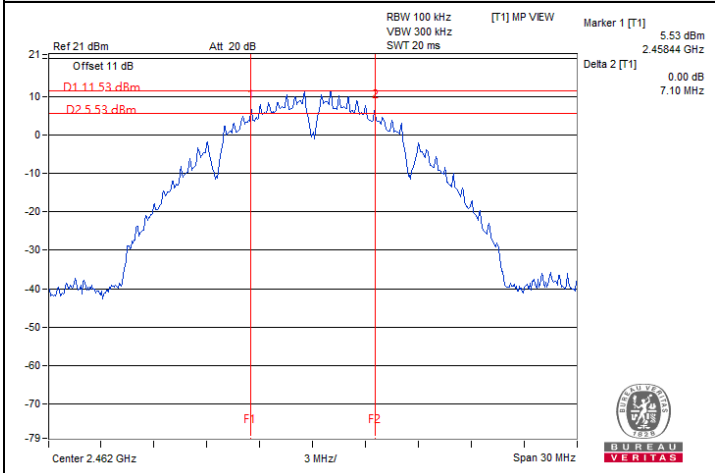
802.11ax (HE20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
1	2412	15.14	15.19	0.5	Pass
6	2437	15.77	15.12	0.5	Pass
11	2462	15.17	15.15	0.5	Pass

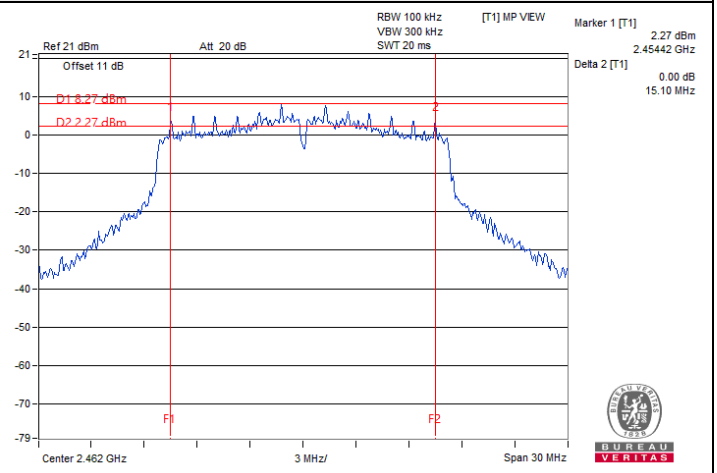
802.11ax (HE40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Test Result
		Chain 0	Chain 1		
3	2422	35.16	36.05	0.5	Pass
6	2437	35.13	35.16	0.5	Pass
9	2452	35.14	33.90	0.5	Pass

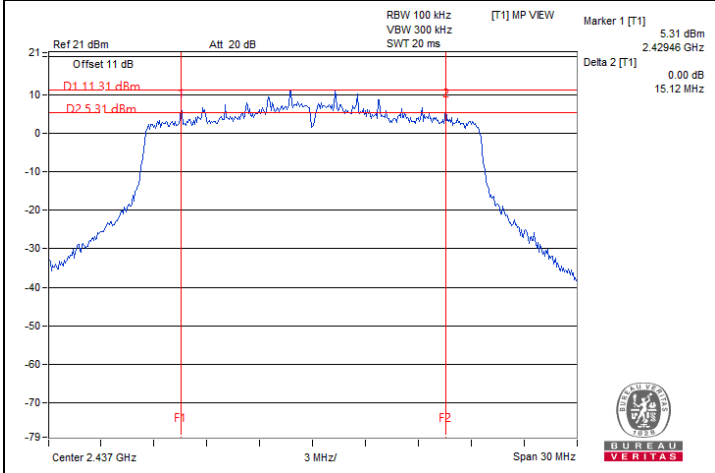
Spectrum Plot of Minimum Value



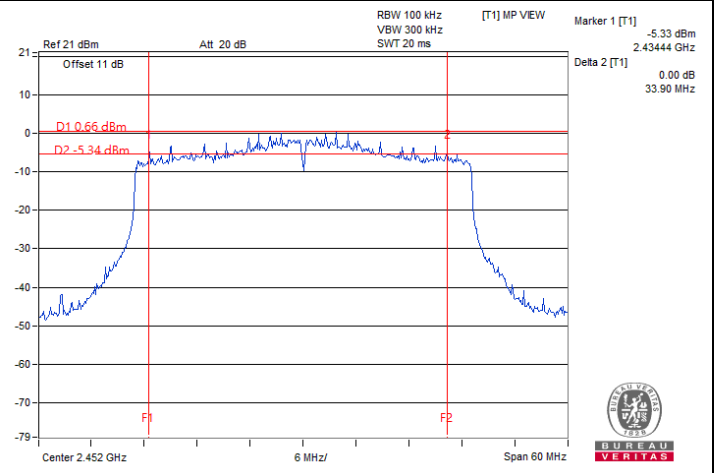
802.11b / Chain 1 : CH 11



802.11g / Chain 0 : CH 11



802.11ax (HE20) / Chain 1 : CH 6

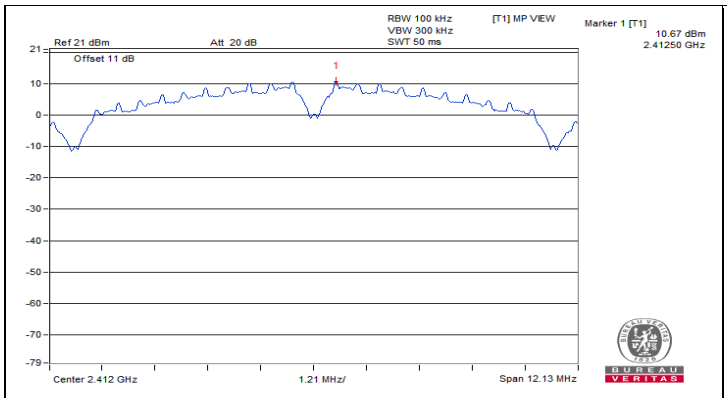


802.11ax (HE40) / Chain 1 : CH 9

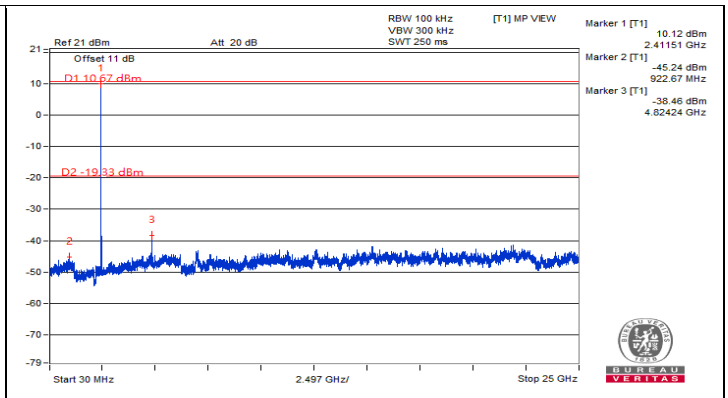
7.4 Conducted Out of Band Emissions

Input Power:	54 Vdc	Environmental Conditions:	25°C, 60% RH	Tested By:	Jisyong Wang

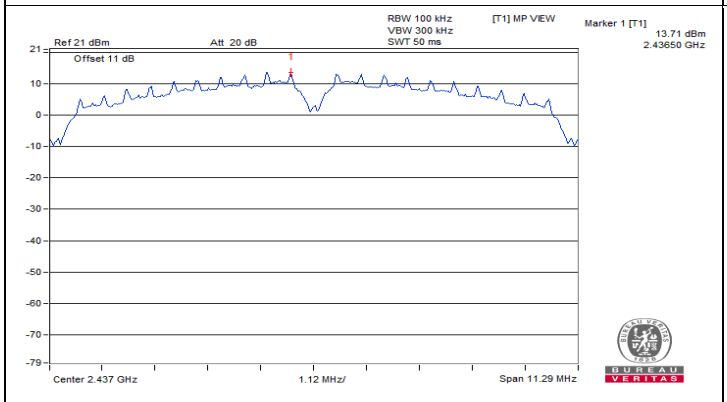
802.11b



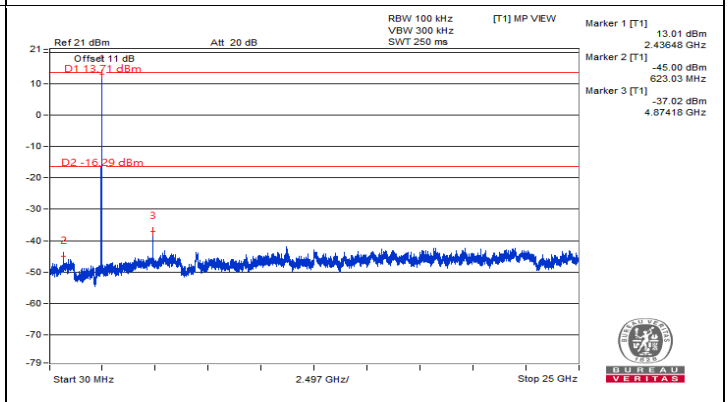
Chain 0 : CH 1



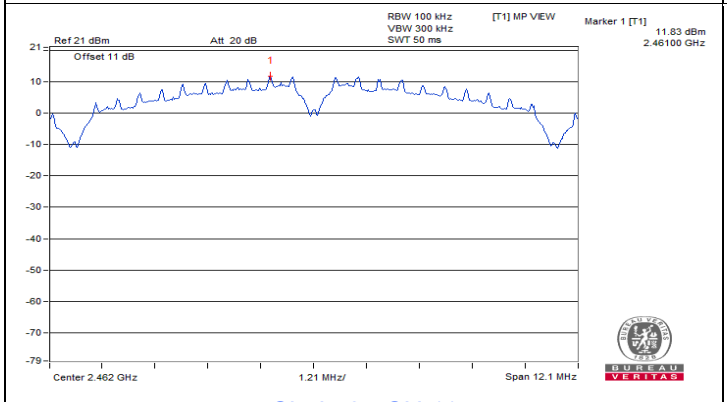
Chain 0 : CH 1



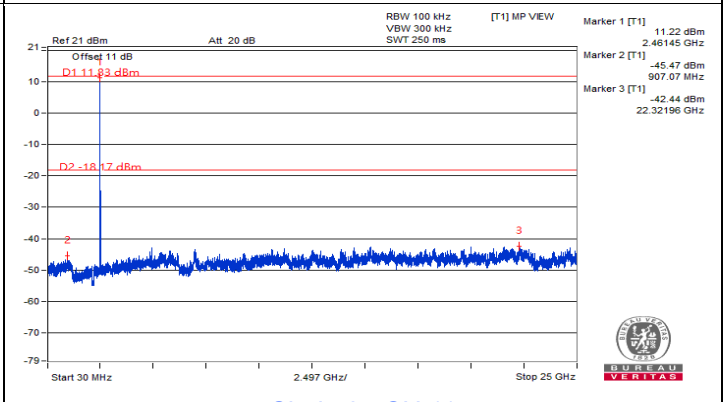
Chain 0 : CH 6



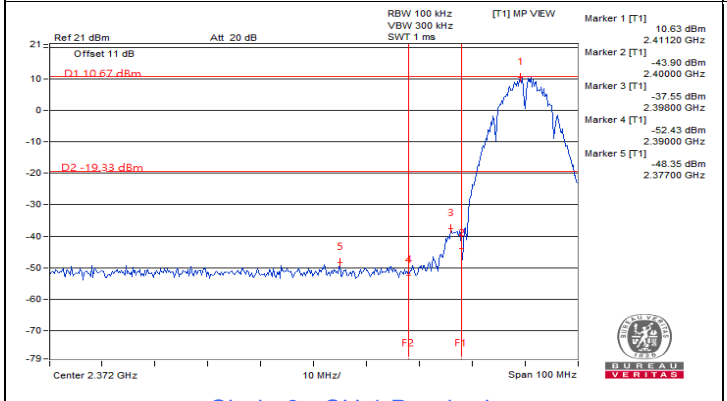
Chain 0 : CH 6



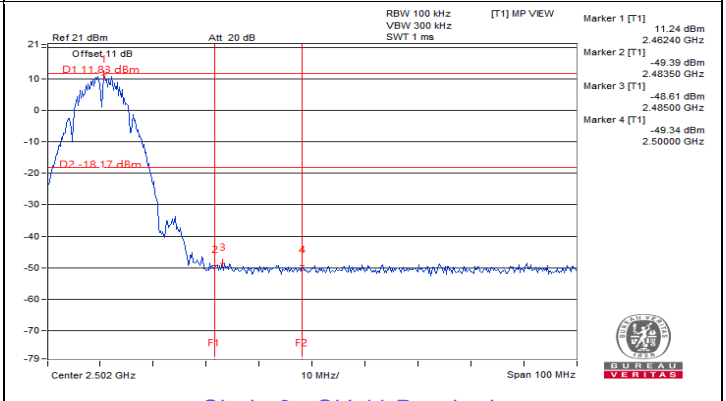
Chain 0 : CH 11



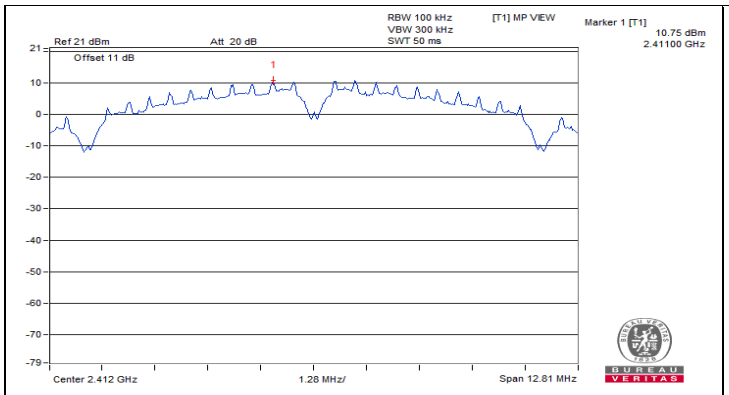
Chain 0 : CH 11



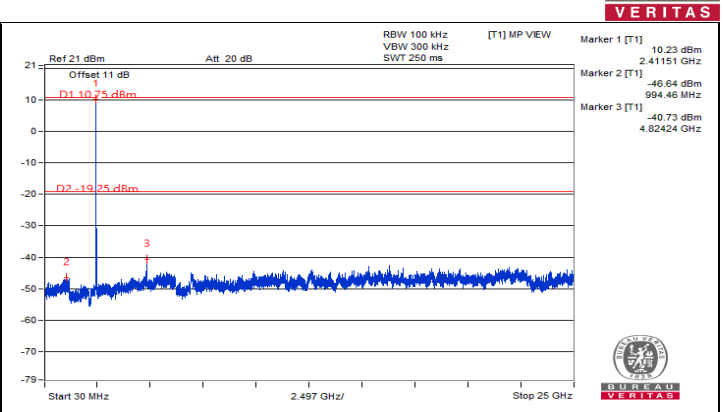
Chain 0 : CH 1 Band edge



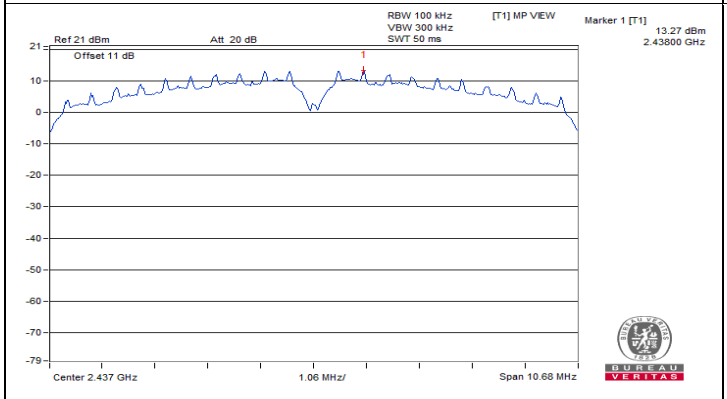
Chain 0 : CH 11 Band edge



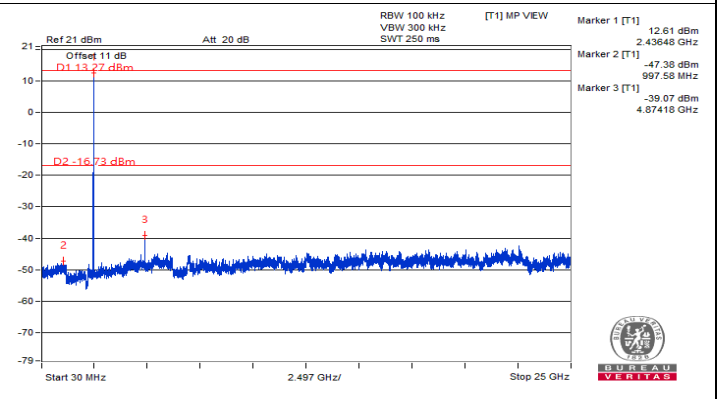
Chain 1 : CH 1



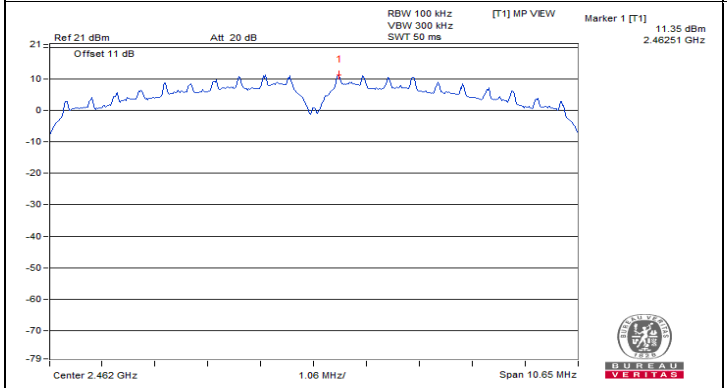
Chain 1 : CH 1



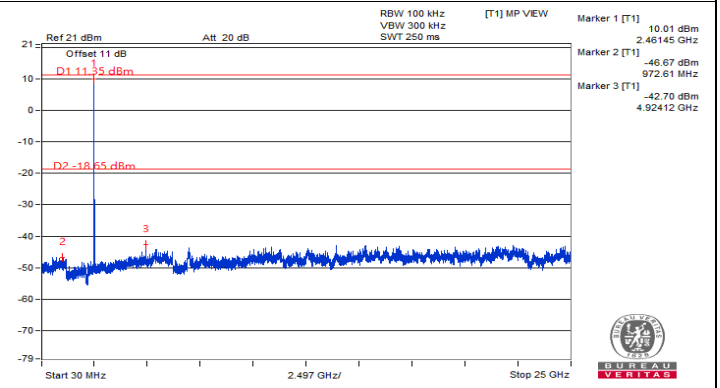
Chain 1 : CH 6



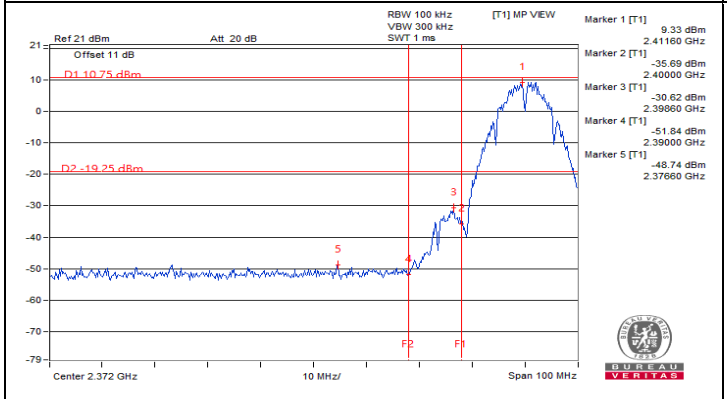
Chain 1 : CH 6



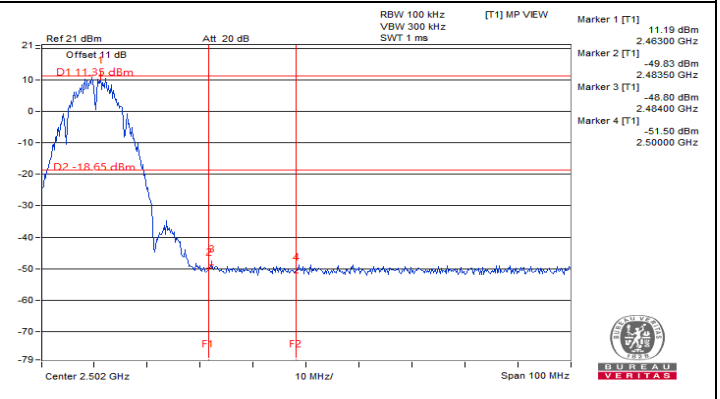
Chain 1 : CH 11



Chain 1 : CH 11

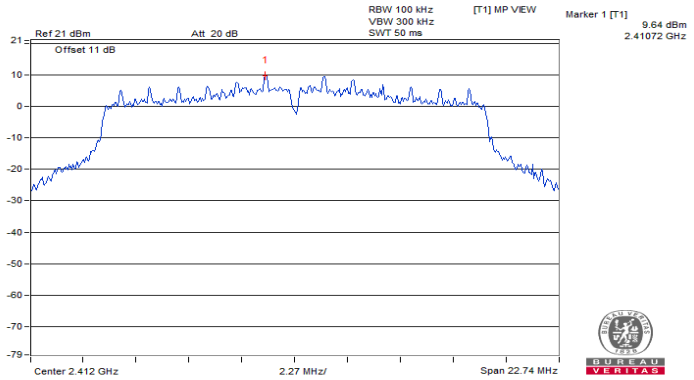


Chain 1 : CH 1 Band edge

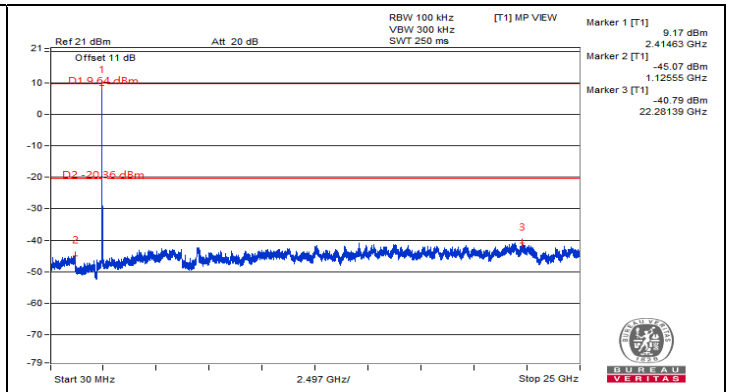


Chain 1 : CH 11 Band edge

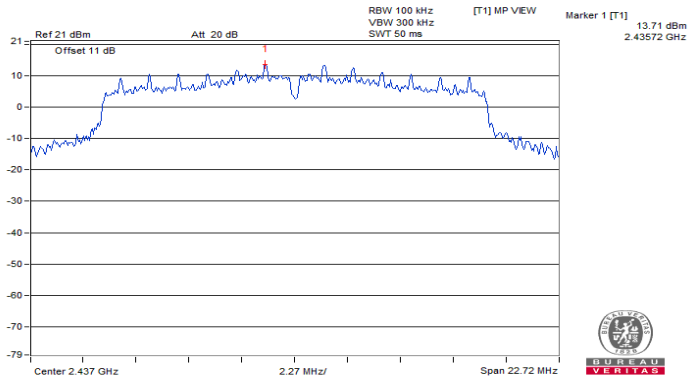
802.11g



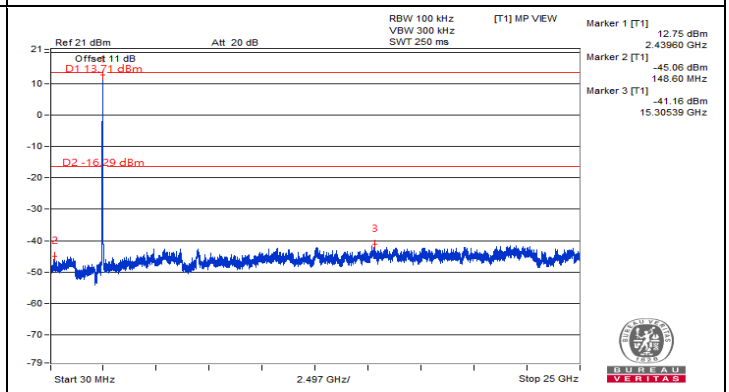
Chain 0 : CH 1



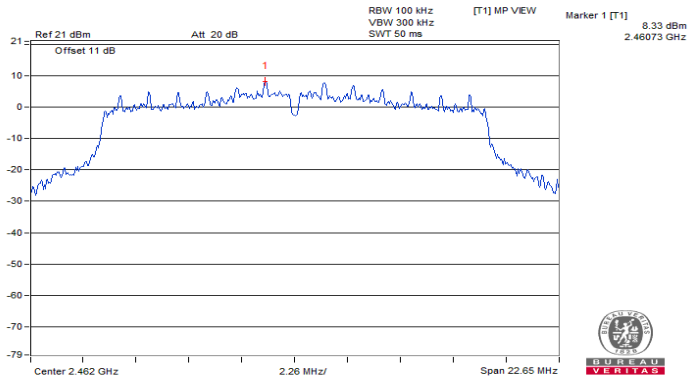
Chain 0 : CH 1



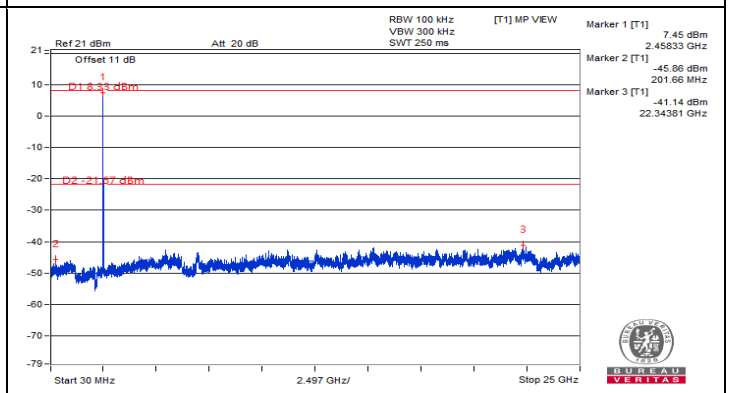
Chain 0 : CH 6



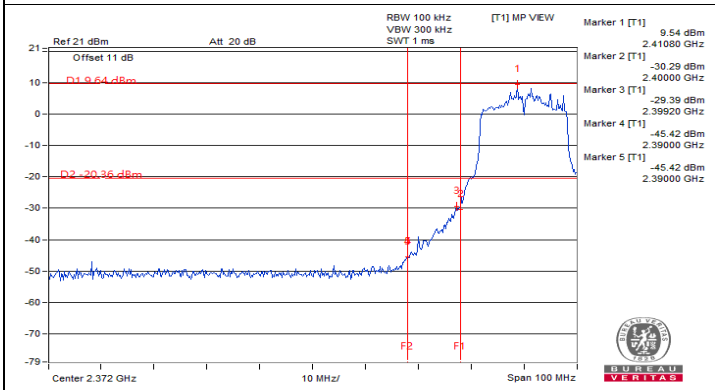
Chain 0 : CH 6



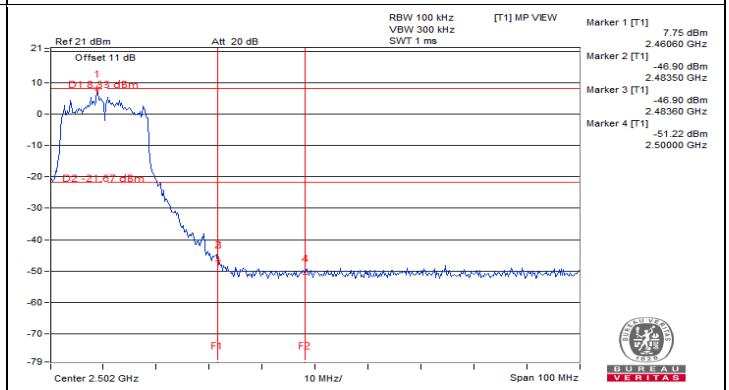
Chain 0 : CH 11



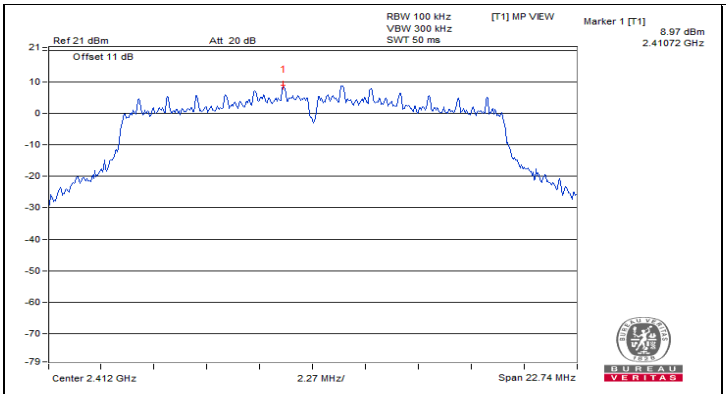
Chain 0 : CH 11



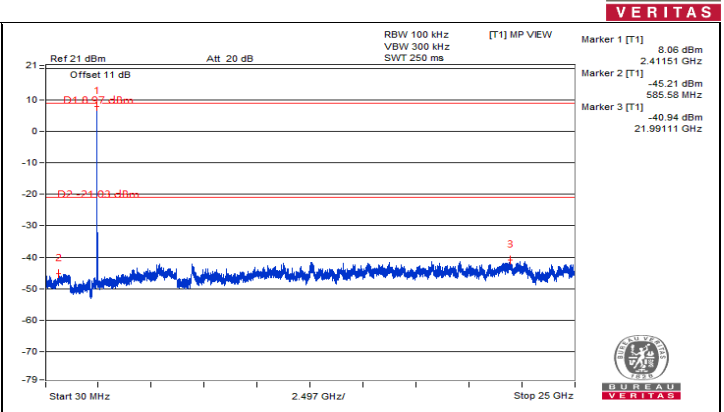
Chain 0 : CH 1 Band edge



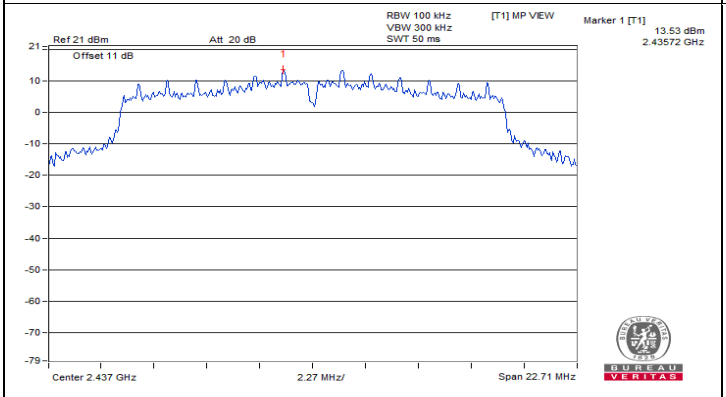
Chain 0 : CH 11 Band edge



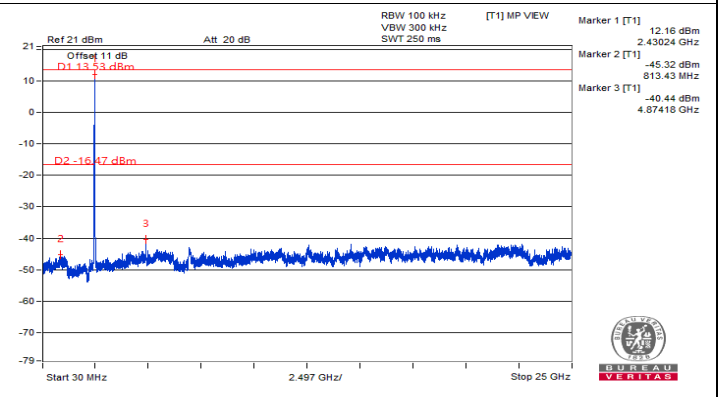
Chain 1 : CH 1



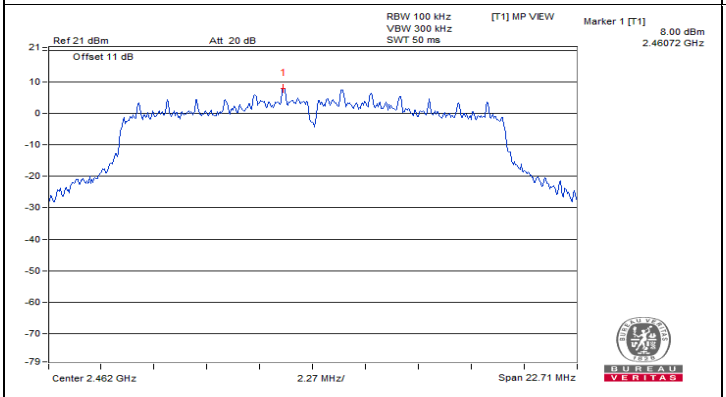
Chain 1 : CH 1



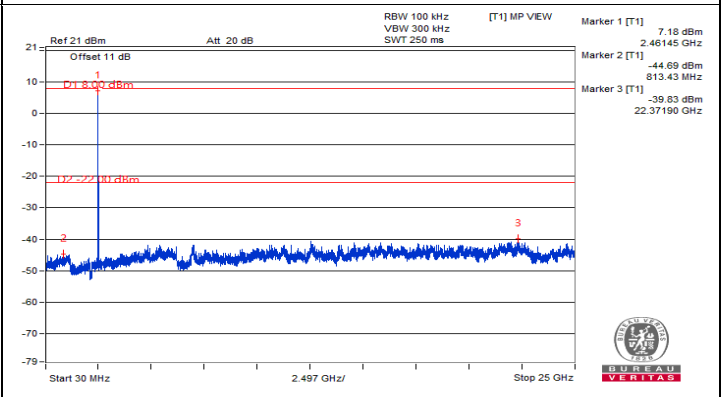
Chain 1 : CH 6



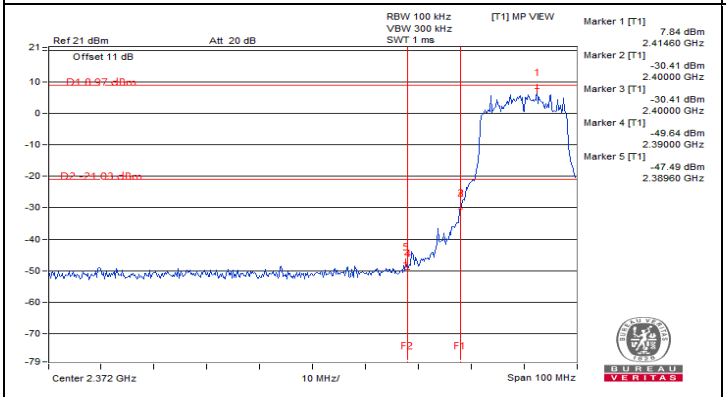
Chain 1 : CH 6



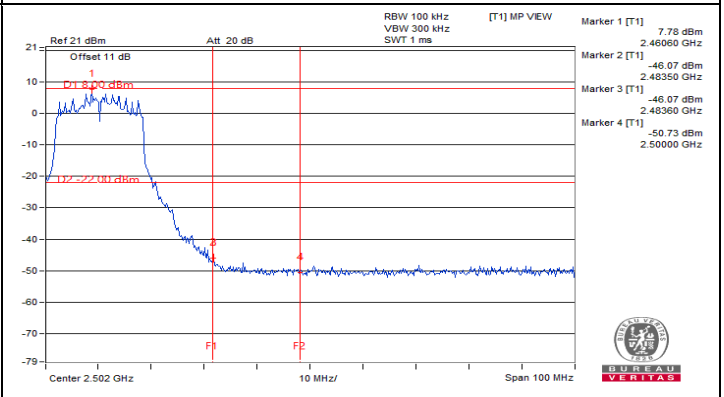
Chain 1 : CH 11



Chain 1 : CH 11

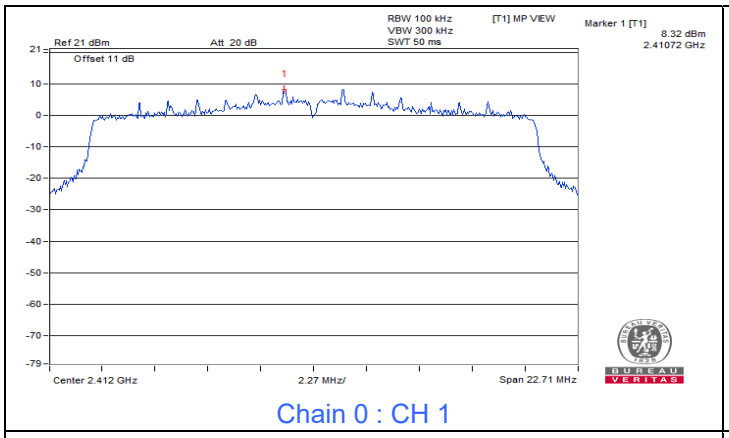


Chain 1 : CH 1 Band edge

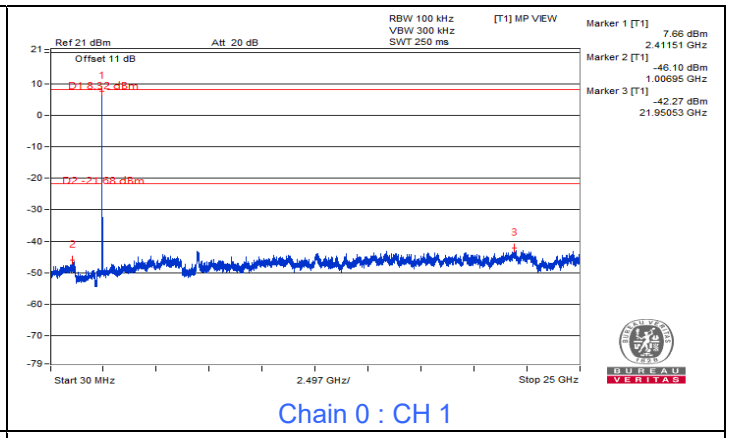


Chain 1 : CH 11 Band edge

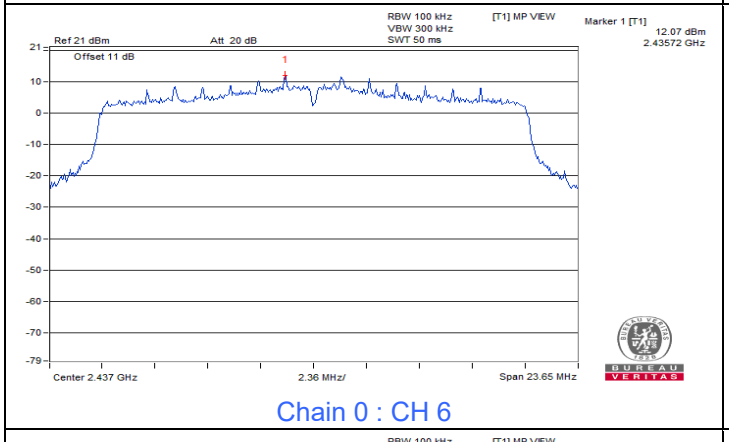
802.11ax (HE20)



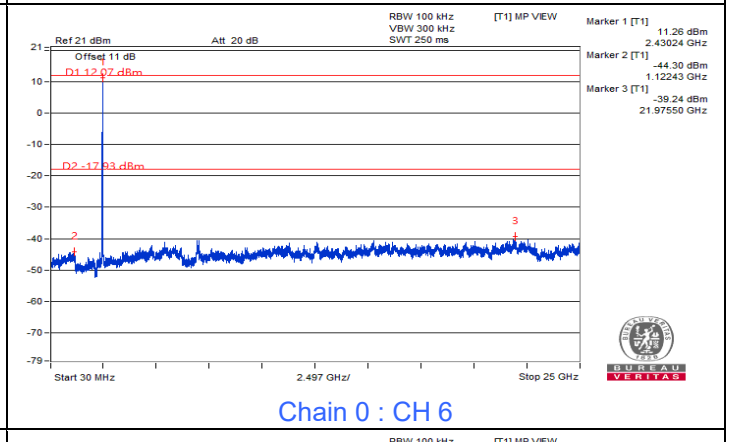
Chain 0 : CH 1



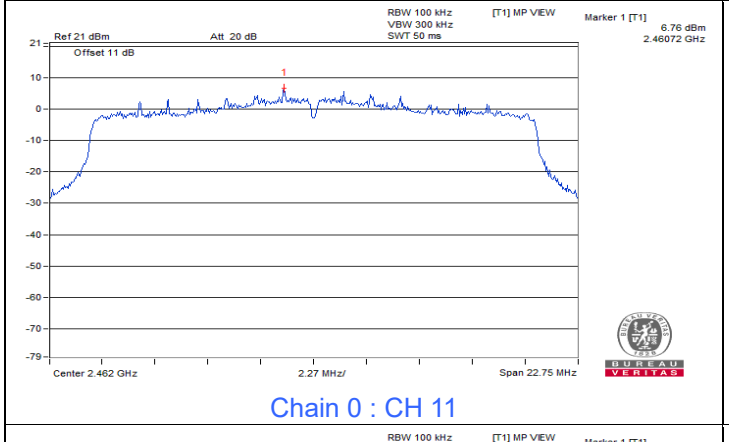
Chain 0 : CH 1



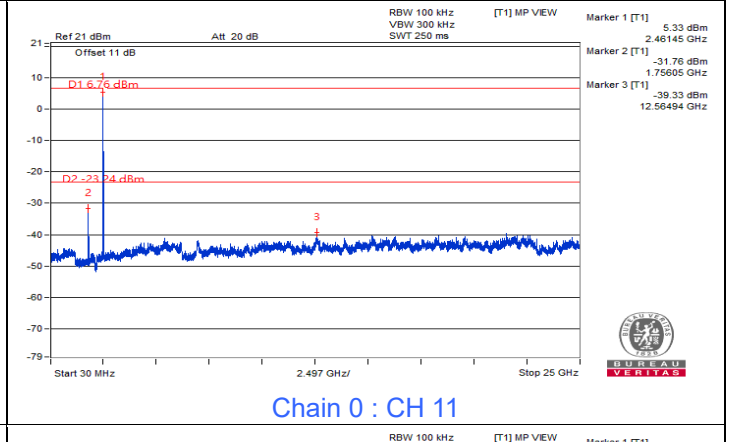
Chain 0 : CH 6



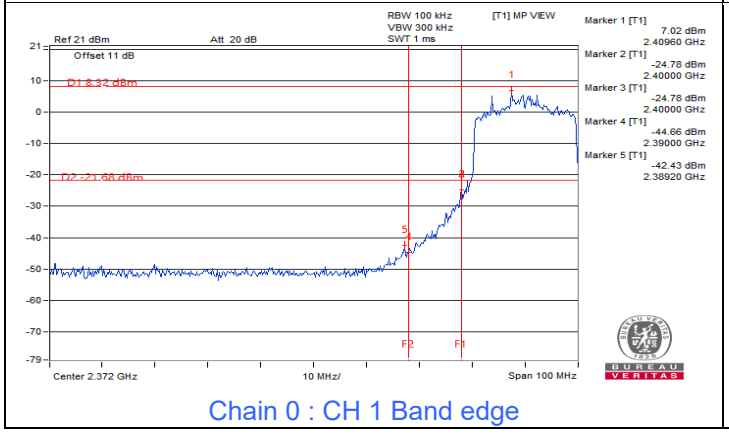
Chain 0 : CH 6



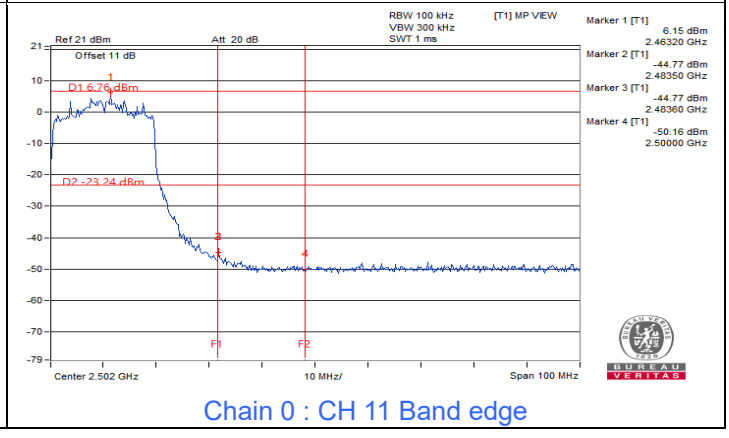
Chain 0 : CH 11



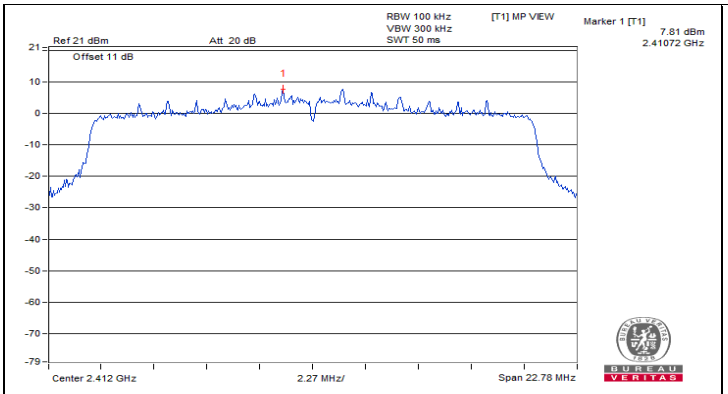
Chain 0 : CH 11



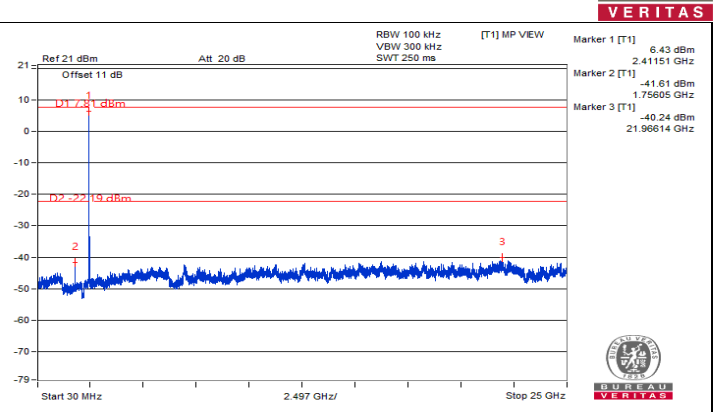
Chain 0 : CH 1 Band edge



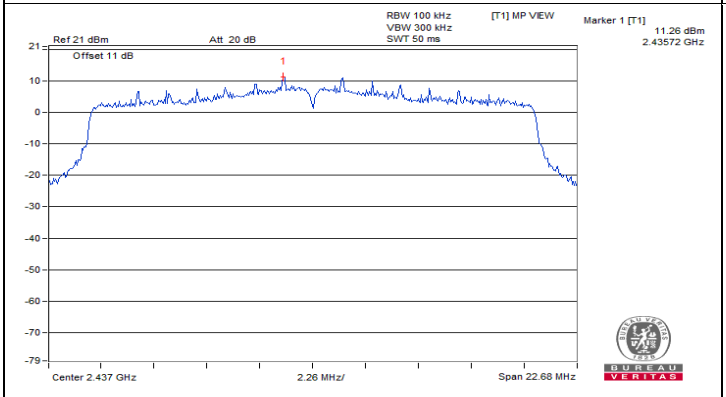
Chain 0 : CH 11 Band edge



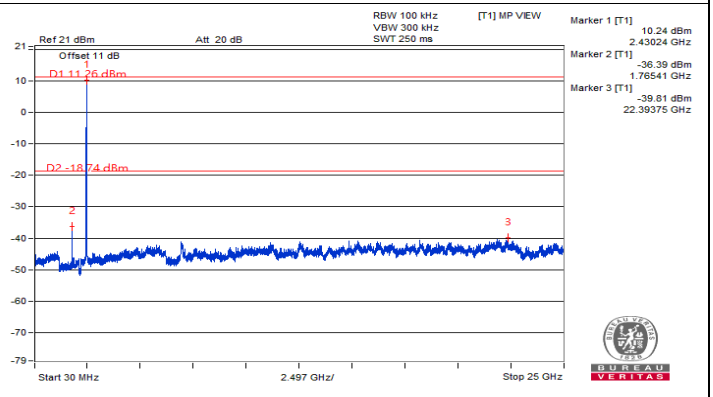
Chain 1 : CH 1



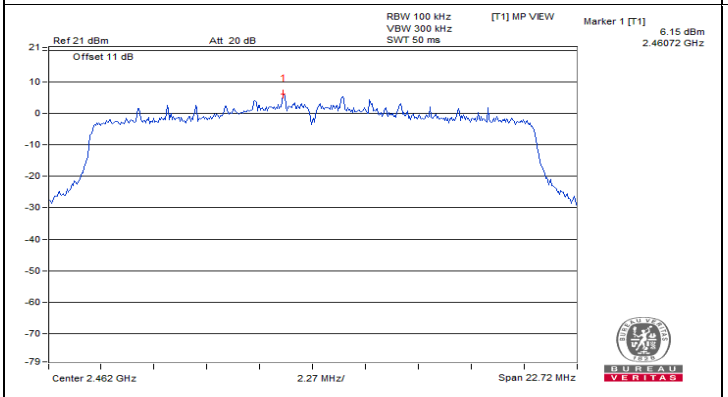
Chain 1 : CH 1



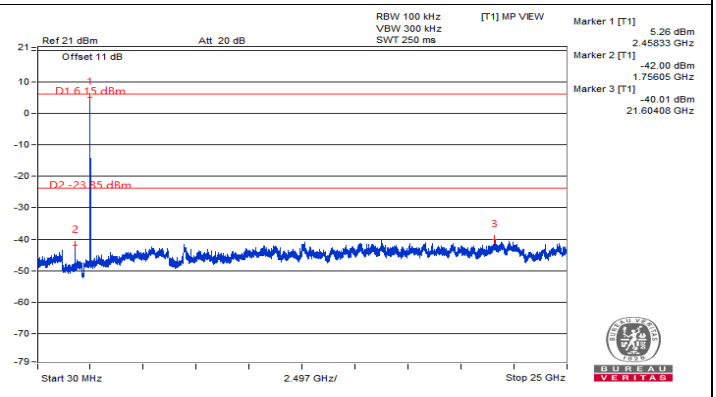
Chain 1 : CH 6



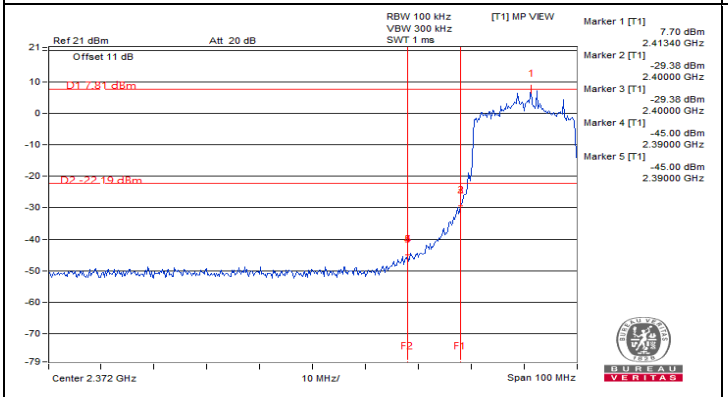
Chain 1 : CH 6



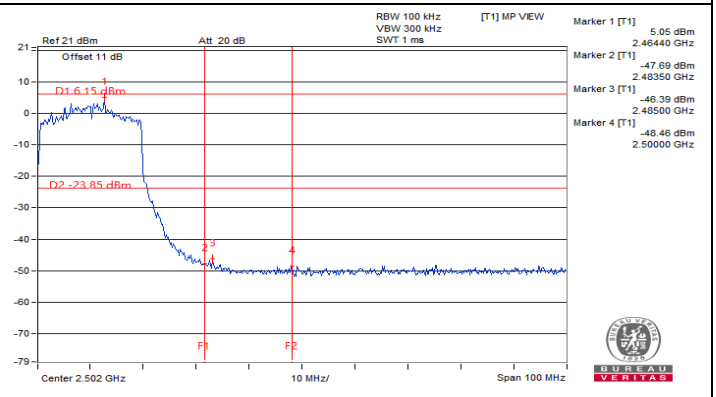
Chain 1 : CH 11



Chain 1 : CH 11

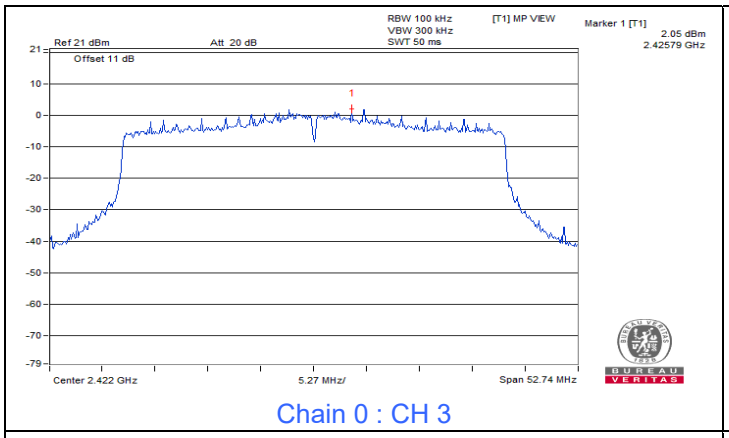


Chain 1 : CH 1 Band edge

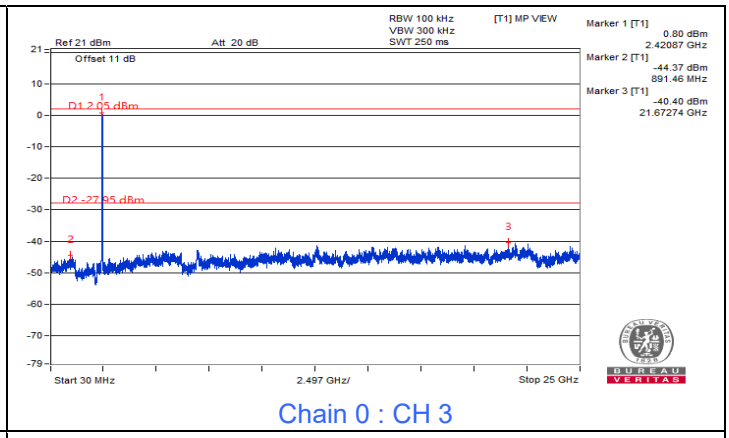


Chain 1 : CH 11 Band edge

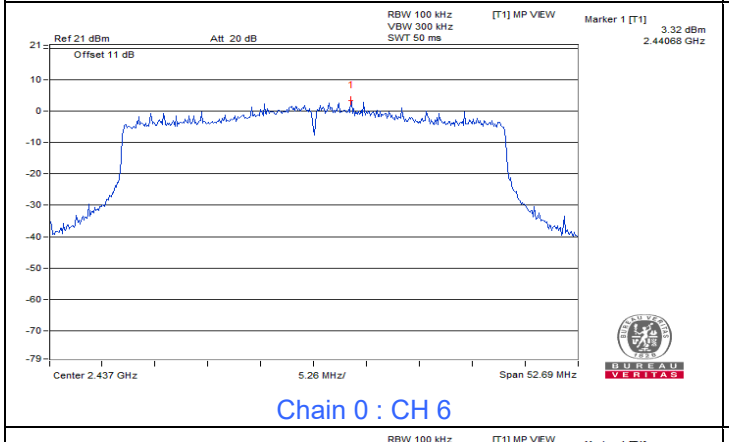
802.11ax (HE40)



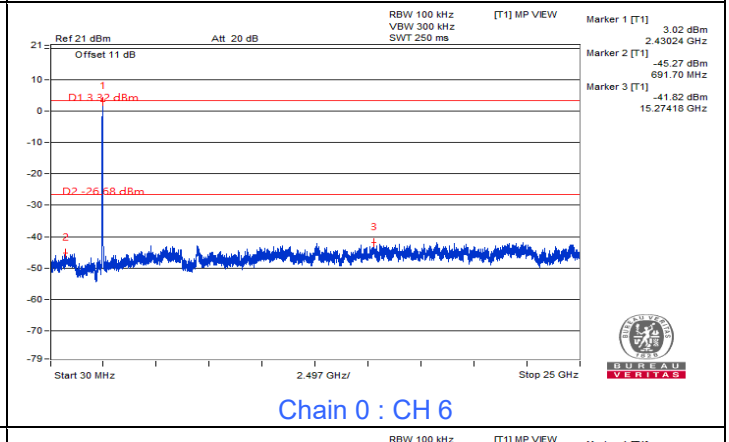
Chain 0 : CH 3



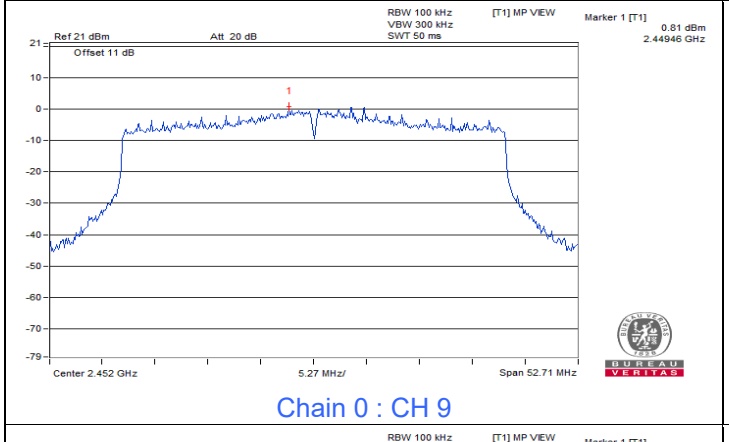
Chain 0 : CH 3



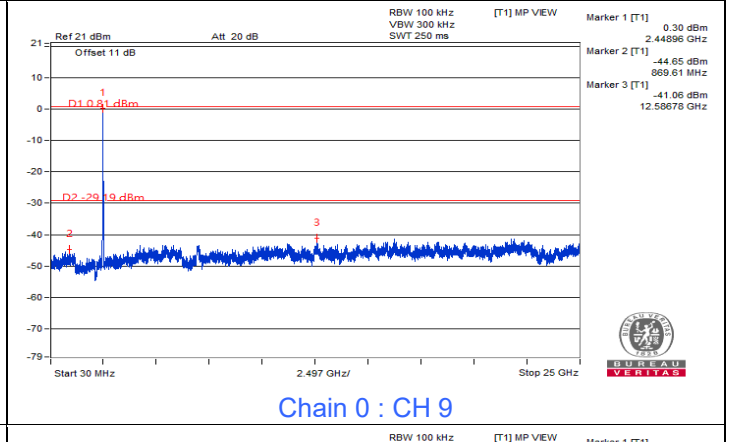
Chain 0 : CH 6



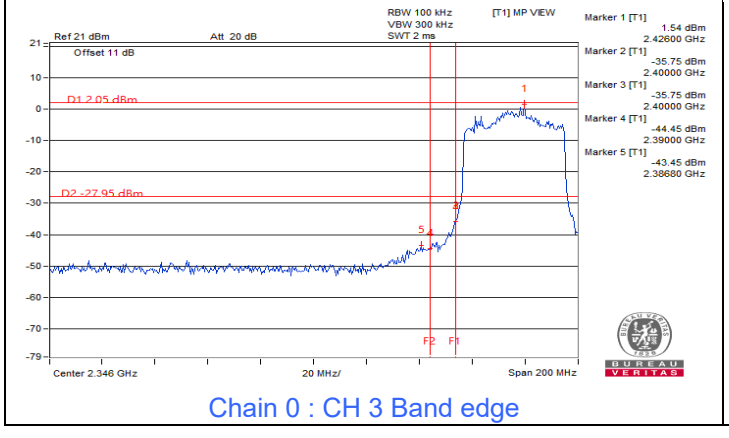
Chain 0 : CH 6



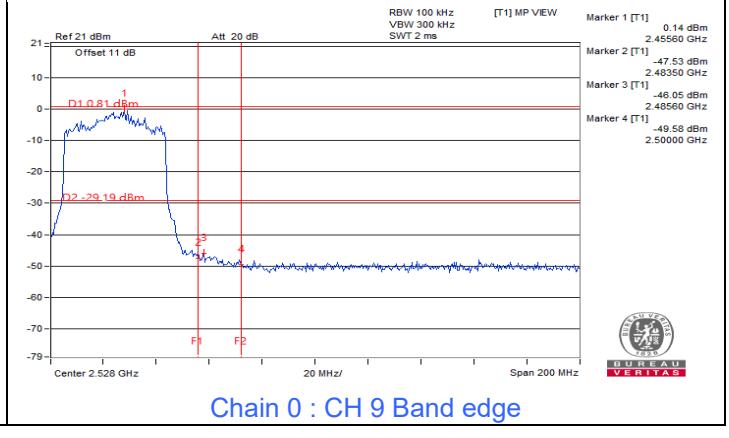
Chain 0 : CH 9



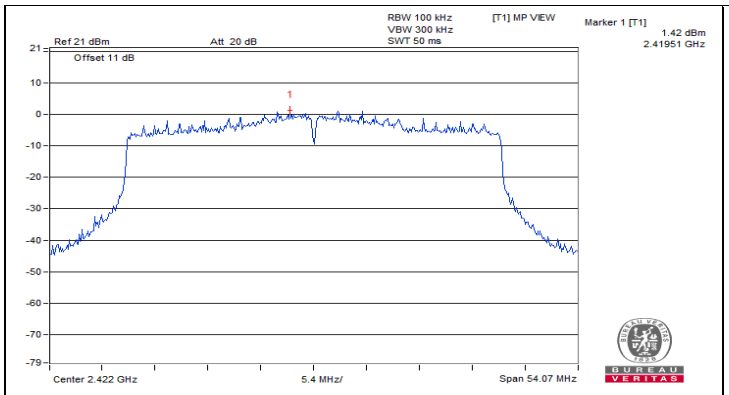
Chain 0 : CH 9



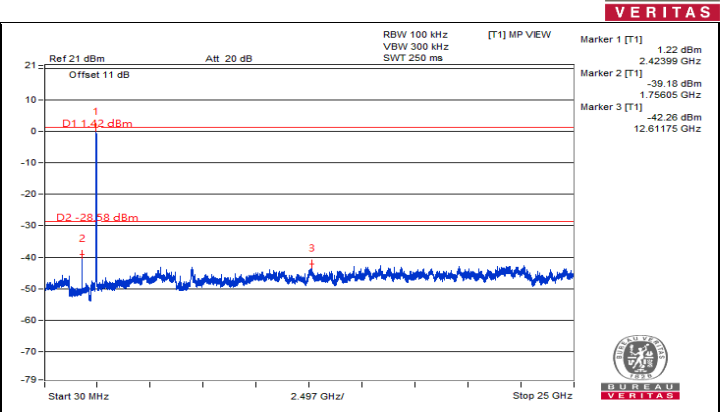
Chain 0 : CH 3 Band edge



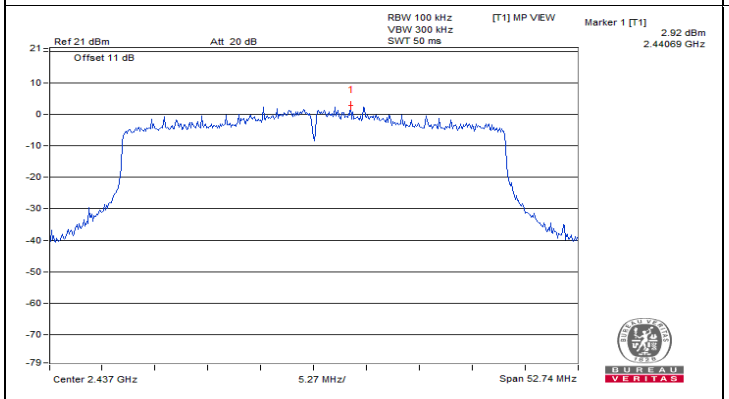
Chain 0 : CH 9 Band edge



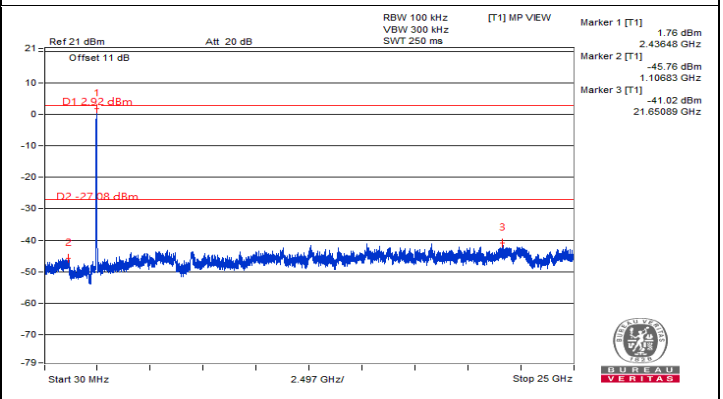
Chain 1 : CH 3



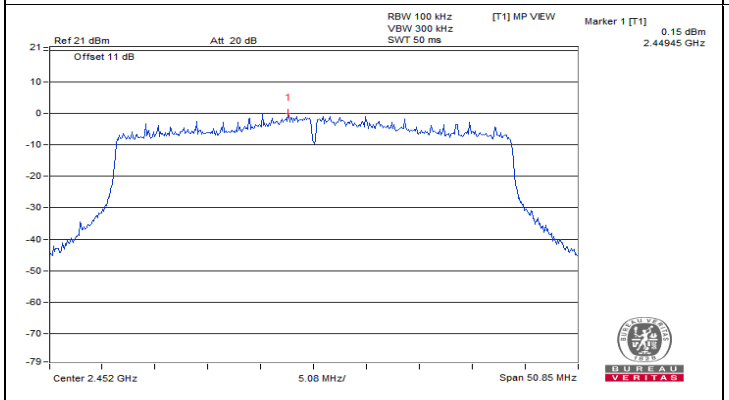
Chain 1 : CH 3



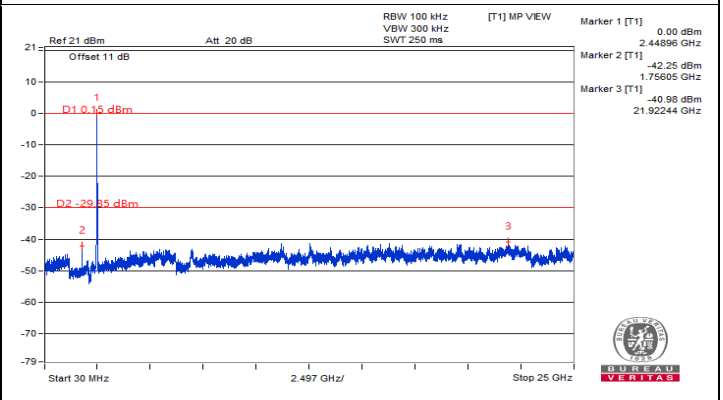
Chain 1 : CH 6



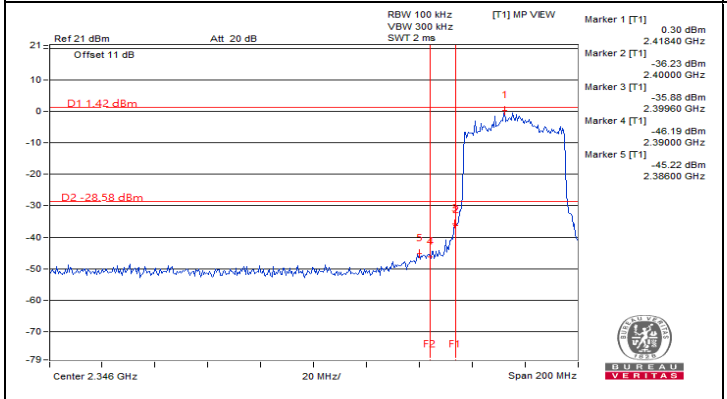
Chain 1 : CH 6



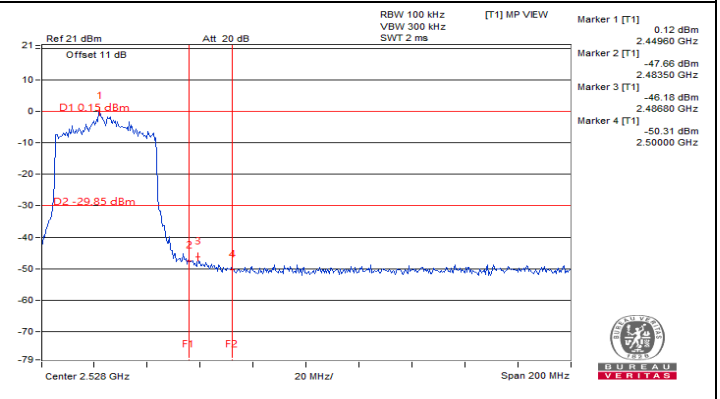
Chain 1 : CH 9



Chain 1 : CH 9



Chain 1 : CH 3 Band edge



Chain 1 : CH 9 Band edge

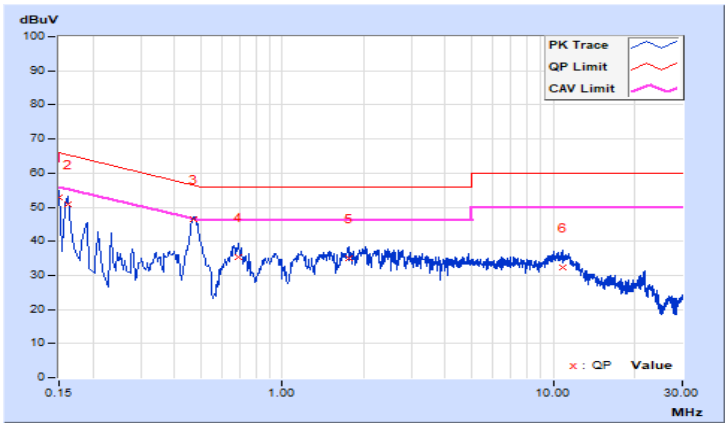
7.5 AC Power Conducted Emissions

RF Mode	802.11g	**Channel**	CH 6：2437 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	54 Vdc	**Environmental Conditions**	25°C, 75% RH
Tested By	Edison Lee		

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	9.62	43.09	27.16	52.71	36.78	66.00	56.00	-13.29	-19.22
2	0.16200	9.62	41.27	26.22	50.89	35.84	65.36	55.36	-14.47	-19.52
3	**0.47186**	**9.69**	**36.69**	**31.29**	**46.38**	**40.98**	**56.48**	**46.48**	**-10.10**	**-5.50**
4	0.69000	9.69	25.54	20.16	35.23	29.85	56.00	46.00	-20.77	-16.15
5	1.75400	9.72	25.42	20.87	35.14	30.59	56.00	46.00	-20.86	-15.41
6	10.87800	9.79	22.69	17.79	32.48	27.58	60.00	50.00	-27.52	-22.42

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

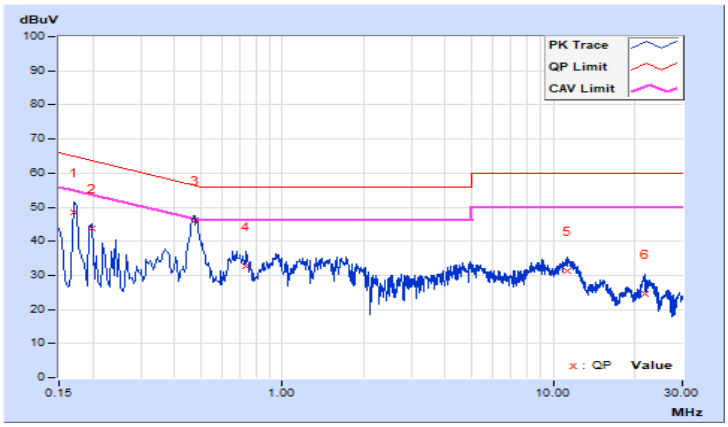


RF Mode	802.11g	**Channel**	CH 6：2437 MHz
Frequency Range	150kHz ~ 30MHz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	54 Vdc	**Environmental Conditions**	25°C, 75% RH
Tested By	Edison Lee		

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	0.17000	9.62	38.88	23.55	48.50	33.17	64.96	54.96	-16.46	-21.79
2	0.19800	9.63	33.99	18.02	43.62	27.65	63.69	53.69	-20.07	-26.04
3	0.47400	9.68	36.53	30.82	46.21	40.50	56.44	46.44	-10.23	-5.94
4	0.73800	9.69	23.01	17.41	32.70	27.10	56.00	46.00	-23.30	-18.90
5	11.34600	9.81	21.41	16.31	31.22	26.12	60.00	50.00	-28.78	-23.88
6	21.69800	9.83	14.88	9.57	24.71	19.40	60.00	50.00	-35.29	-30.60

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



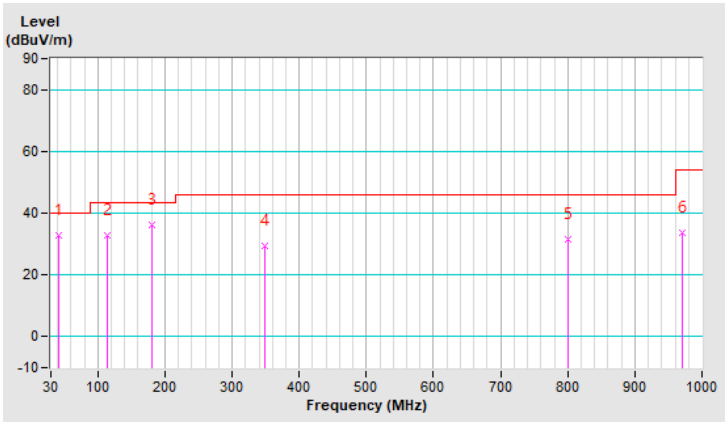
7.6 Unwanted Emissions below 1 GHz

RF Mode	802.11g	Channel	CH 6：2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	54 Vdc	Environmental Conditions	21°C, 69% 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	41.64	33.0 QP	40.0	-7.0	1.25 H	317	46.4	-13.4
2	114.39	32.9 QP	43.5	-10.6	1.00 H	238	48.6	-15.7
3	180.35	36.2 QP	43.5	-7.3	1.50 H	184	50.9	-14.7
4	349.13	29.6 QP	46.0	-16.4	1.25 H	291	41.2	-11.6
5	801.15	31.4 QP	46.0	-14.6	1.00 H	304	33.8	-2.4
6	970.90	33.5 QP	54.0	-20.5	1.50 H	195	33.7	-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 emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

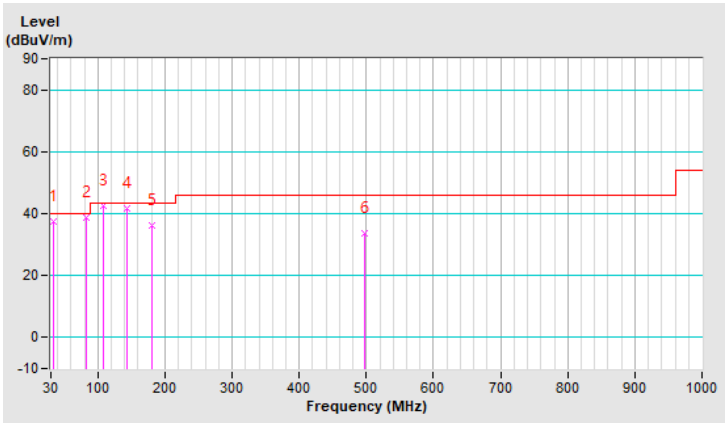


RF Mode	802.11g	Channel	CH 6：2437 MHz
Frequency Range	9 kHz ~ 1 GHz	Detector Function & Bandwidth	(QP) RB = 120kHz
Input Power	54 Vdc	Environmental Conditions	21°C, 69% RH
Tested By	Adair Peng		

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	33.88	37.3 QP	40.0	-2.7	1.50 V	34	51.5	-14.2
2	82.38	38.8 QP	40.0	-1.2	1.25 V	298	57.4	-18.6
3	**108.57**	**42.4 QP**	**43.5**	**-1.1**	**1.25 V**	**133**	**58.7**	**-16.3**
4	142.52	41.9 QP	43.5	-1.6	1.00 V	324	55.2	-13.3
5	180.35	36.1 QP	43.5	-7.4	1.50 V	335	50.8	-14.7
6	496.57	33.6 QP	46.0	-12.4	1.00 V	80	41.5	-7.9

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 of frequency range 30 MHz ~ 1 GHz.
5. The emission levels were very low against the limit of frequency range 9 kHz ~ 30 MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



7.7 Unwanted Emissions above 1 GHz

RF Mode	802.11b	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	54 Vdc	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	2387.20	58.6 PK	74.0	-15.4	1.38 H	293	24.8	33.8
2	2387.20	45.2 AV	54.0	-8.8	1.38 H	293	11.4	33.8
3	*2412.00	104.6 PK			1.24 H	288	70.8	33.8
4	*2412.00	102.0 AV			1.24 H	288	68.2	33.8
5	4824.00	52.7 PK	74.0	-21.3	2.57 H	58	42.0	10.7
6	4824.00	43.2 AV	54.0	-10.8	2.57 H	58	32.5	10.7
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	2387.20	59.9 PK	74.0	-14.1	1.52 V	10	26.1	33.8
2	2387.20	49.0 AV	54.0	-5.0	1.52 V	10	15.2	33.8
3	*2412.00	118.3 PK			1.61 V	2	84.5	33.8
4	*2412.00	117.0 AV			1.61 V	2	83.2	33.8
5	4824.00	57.2 PK	74.0	-16.8	1.31 V	16	46.5	10.7
6	4824.00	52.8 AV	54.0	-1.2	1.31 V	16	42.1	10.7

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.

RF Mode	802.11b	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	54 Vdc	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	2390.00	58.6 PK	74.0	-15.4	1.41 H	293	24.8	33.8
2	2390.00	46.2 AV	54.0	-7.8	1.41 H	293	12.4	33.8
3	*2437.00	106.8 PK			1.33 H	285	72.9	33.9
4	*2437.00	104.0 AV			1.33 H	285	70.1	33.9
5	2483.50	59.1 PK	74.0	-14.9	1.28 H	293	25.2	33.9
6	2483.50	47.5 AV	54.0	-6.5	1.28 H	293	13.6	33.9
7	4874.00	52.3 PK	74.0	-21.7	2.69 H	69	41.3	11.0
8	4874.00	42.1 AV	54.0	-11.9	2.69 H	69	31.1	11.0
9	7311.00	58.3 PK	74.0	-15.7	1.93 H	115	39.9	18.4
10	7311.00	45.0 AV	54.0	-9.0	1.93 H	115	26.6	18.4
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	2390.00	59.2 PK	74.0	-14.8	1.61 V	11	25.4	33.8
2	2390.00	47.0 AV	54.0	-7.0	1.61 V	11	13.2	33.8
3	*2437.00	120.4 PK			1.54 V	6	86.5	33.9
4	*2437.00	117.9 AV			1.54 V	6	84.0	33.9
5	2483.50	60.2 PK	74.0	-13.8	1.59 V	2	26.3	33.9
6	2483.50	48.9 AV	54.0	-5.1	1.59 V	2	15.0	33.9
7	4874.00	56.8 PK	74.0	-17.2	1.74 V	263	45.8	11.0
8	4874.00	51.3 AV	54.0	-2.7	1.74 V	263	40.3	11.0
9	7311.00	62.1 PK	74.0	-11.9	2.04 V	20	43.7	18.4
10	**7311.00**	**53.7 AV**	**54.0**	**-0.3**	**2.04 V**	**20**	**35.3**	**18.4**

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.

RF Mode	802.11b	Channel	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 10 Hz
Input Power	54 Vdc	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	*2462.00	101.2 PK			1.46 H	290	67.2	34.0
2	*2462.00	98.5 AV			1.46 H	290	64.5	34.0
3	2483.50	59.1 PK	74.0	-14.9	1.37 H	282	25.2	33.9
4	2483.50	47.7 AV	54.0	-6.3	1.37 H	282	13.8	33.9
5	4924.00	51.2 PK	74.0	-22.8	2.35 H	52	40.2	11.0
6	4924.00	38.0 AV	54.0	-16.0	2.35 H	52	27.0	11.0
7	7386.00	59.0 PK	74.0	-15.0	2.15 H	104	39.8	19.2
8	7386.00	45.5 AV	54.0	-8.5	2.15 H	104	26.3	19.2
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	*2462.00	115.1 PK			1.68 V	10	81.1	34.0
2	*2462.00	112.2 AV			1.68 V	10	78.2	34.0
3	2483.50	59.6 PK	74.0	-14.4	1.51 V	19	25.7	33.9
4	2483.50	48.6 AV	54.0	-5.4	1.51 V	19	14.7	33.9
5	4924.00	52.8 PK	74.0	-21.2	1.77 V	23	41.8	11.0
6	4924.00	45.2 AV	54.0	-8.8	1.77 V	23	34.2	11.0
7	7386.00	60.2 PK	74.0	-13.8	1.93 V	12	41.0	19.2
8	7386.00	46.4 AV	54.0	-7.6	1.93 V	12	27.2	19.2

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	802.11g	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	2390.00	60.6 PK	74.0	-13.4	1.27 H	177	26.8	33.8
2	2390.00	48.1 AV	54.0	-5.9	1.27 H	177	14.3	33.8
3	*2412.00	107.3 PK			1.58 H	184	73.5	33.8
4	*2412.00	97.3 AV			1.58 H	184	63.5	33.8
5	4824.00	50.7 PK	74.0	-23.3	2.11 H	352	40.0	10.7
6	4824.00	37.8 AV	54.0	-16.2	2.11 H	352	27.1	10.7
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	2390.00	67.3 PK	74.0	-6.7	2.08 V	336	33.5	33.8
2	2390.00	53.6 AV	54.0	-0.4	2.08 V	336	19.8	33.8
3	*2412.00	119.9 PK			1.57 V	318	86.1	33.8
4	*2412.00	110.5 AV			1.57 V	318	76.7	33.8
5	4824.00	52.8 PK	74.0	-21.2	1.86 V	35	42.1	10.7
6	4824.00	42.7 AV	54.0	-11.3	1.86 V	35	32.0	10.7

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.

RF Mode	802.11g	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	2390.00	60.5 PK	74.0	-13.5	1.19 H	181	26.7	33.8
2	2390.00	47.0 AV	54.0	-7.0	1.19 H	181	13.2	33.8
3	*2437.00	109.7 PK			1.19 H	181	75.8	33.9
4	*2437.00	100.4 AV			1.19 H	181	66.5	33.9
5	2483.50	59.8 PK	74.0	-14.2	1.19 H	181	25.9	33.9
6	2483.50	46.9 AV	54.0	-7.1	1.19 H	181	13.0	33.9
7	4874.00	53.7 PK	74.0	-20.3	2.58 H	333	42.7	11.0
8	4874.00	39.8 AV	54.0	-14.2	2.58 H	333	28.8	11.0
9	7311.00	58.5 PK	74.0	-15.5	2.08 H	47	40.1	18.4
10	7311.00	45.3 AV	54.0	-8.7	2.08 H	47	26.9	18.4
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	2390.00	66.6 PK	74.0	-7.4	1.73 V	294	32.8	33.8
2	2390.00	53.5 AV	54.0	-0.5	1.73 V	294	19.7	33.8
3	*2437.00	124.5 PK			1.73 V	294	90.6	33.9
4	*2437.00	114.1 AV			1.73 V	294	80.2	33.9
5	2483.50	66.7 PK	74.0	-7.3	1.73 V	294	32.8	33.9
6	2483.50	53.5 AV	54.0	-0.5	1.73 V	294	19.6	33.9
7	4874.00	55.5 PK	74.0	-18.5	1.75 V	39	44.5	11.0
8	4874.00	44.7 AV	54.0	-9.3	1.75 V	39	33.7	11.0
9	7311.00	61.7 PK	74.0	-12.3	2.22 V	26	43.3	18.4
10	7311.00	50.3 AV	54.0	-3.7	2.22 V	26	31.9	18.4

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.

RF Mode	802.11g	Channel	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	*2462.00	105.6 PK			1.51 H	188	71.6	34.0
2	*2462.00	95.9 AV			1.51 H	188	61.9	34.0
3	2483.50	60.3 PK	74.0	-13.7	1.58 H	178	26.4	33.9
4	2483.50	48.3 AV	54.0	-5.7	1.58 H	178	14.4	33.9
5	4924.00	51.1 PK	74.0	-22.9	2.05 H	341	40.1	11.0
6	4924.00	47.9 AV	54.0	-6.1	2.05 H	341	36.9	11.0
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	*2462.00	118.1 PK			1.72 V	318	84.1	34.0
2	*2462.00	108.5 AV			1.72 V	318	74.5	34.0
3	2483.50	66.8 PK	74.0	-7.2	1.88 V	323	32.9	33.9
4	2483.50	53.5 AV	54.0	-0.5	1.88 V	323	19.6	33.9
5	4924.00	53.0 PK	74.0	-21.0	1.92 V	45	42.0	11.0
6	4924.00	42.8 AV	54.0	-11.2	1.92 V	45	31.8	11.0

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

RF Mode	802.11ax (HE20)	Channel	CH 1：2412 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	2390.00	59.6 PK	74.0	-14.4	1.38 H	191	25.8	33.8
2	2390.00	46.8 AV	54.0	-7.2	1.38 H	191	13.0	33.8
3	*2412.00	108.5 PK			1.46 H	189	74.7	33.8
4	*2412.00	96.2 AV			1.46 H	189	62.4	33.8
5	4824.00	50.5 PK	74.0	-23.5	1.99 H	346	39.8	10.7
6	4824.00	37.6 AV	54.0	-16.4	1.99 H	346	26.9	10.7
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	2390.00	66.0 PK	74.0	-8.0	1.69 V	305	32.2	33.8
2	**2390.00**	**53.7 AV**	**54.0**	**-0.3**	**1.69 V**	**305**	**19.9**	**33.8**
3	*2412.00	121.1 PK			1.59 V	316	87.3	33.8
4	*2412.00	108.9 AV			1.59 V	316	75.1	33.8
5	4824.00	52.5 PK	74.0	-21.5	2.02 V	32	41.8	10.7
6	4824.00	42.6 AV	54.0	-11.4	2.02 V	32	31.9	10.7

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.

RF Mode	802.11ax (HE20)	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	2390.00	60.4 PK	74.0	-13.6	1.51 H	173	26.6	33.8
2	2390.00	46.6 AV	54.0	-7.4	1.51 H	173	12.8	33.8
3	*2437.00	112.2 PK			1.55 H	186	78.3	33.9
4	*2437.00	99.4 AV			1.55 H	186	65.5	33.9
5	2483.50	60.4 PK	74.0	-13.6	1.40 H	180	26.5	33.9
6	2483.50	48.6 AV	54.0	-5.4	1.40 H	180	14.7	33.9
7	4874.00	51.2 PK	74.0	-22.8	2.26 H	355	40.2	11.0
8	4874.00	38.1 AV	54.0	-15.9	2.26 H	355	27.1	11.0
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	2390.00	62.5 PK	74.0	-11.5	1.67 V	316	28.7	33.8
2	2390.00	50.2 AV	54.0	-3.8	1.67 V	316	16.4	33.8
3	*2437.00	125.0 PK			1.52 V	299	91.1	33.9
4	*2437.00	112.5 AV			1.52 V	299	78.6	33.9
5	2483.50	63.5 PK	74.0	-10.5	1.53 V	291	29.6	33.9
6	2483.50	51.5 AV	54.0	-2.5	1.53 V	291	17.6	33.9
7	4874.00	53.3 PK	74.0	-20.7	2.13 V	45	42.3	11.0
8	4874.00	43.2 AV	54.0	-10.8	2.13 V	45	32.2	11.0

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

RF Mode	802.11ax (HE20)	Channel	CH 11：2462 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	*2462.00	106.5 PK			1.45 H	182	72.5	34.0
2	*2462.00	93.4 AV			1.45 H	182	59.4	34.0
3	2483.50	60.3 PK	74.0	-13.7	1.33 H	172	26.4	33.9
4	2483.50	48.4 AV	54.0	-5.6	1.33 H	172	14.5	33.9
5	4924.00	50.5 PK	74.0	-23.5	2.26 H	342	39.5	11.0
6	4924.00	37.7 AV	54.0	-16.3	2.26 H	342	26.7	11.0
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	*2462.00	119.2 PK			1.36 V	301	85.2	34.0
2	*2462.00	106.3 AV			1.36 V	301	72.3	34.0
3	2483.50	65.4 PK	74.0	-8.6	1.64 V	299	31.5	33.9
4	2483.50	53.5 AV	54.0	-0.5	1.64 V	299	19.6	33.9
5	4924.00	52.8 PK	74.0	-21.2	2.05 V	49	41.8	11.0
6	4924.00	42.8 AV	54.0	-11.2	2.05 V	49	31.8	11.0

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

RF Mode	802.11ax (HE40)	Channel	CH 3：2422 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	2390.00	58.9 PK	74.0	-15.1	1.37 H	190	25.1	33.8
2	2390.00	46.6 AV	54.0	-7.4	1.37 H	190	12.8	33.8
3	*2422.00	102.1 PK			1.44 H	187	68.3	33.8
4	*2422.00	89.8 AV			1.44 H	187	56.0	33.8
5	4844.00	49.5 PK	74.0	-24.5	2.18 H	350	38.7	10.8
6	4844.00	37.9 AV	54.0	-16.1	2.18 H	350	27.1	10.8
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	2390.00	66.1 PK	74.0	-7.9	1.62 V	297	32.3	33.8
2	2390.00	53.2 AV	54.0	-0.8	1.62 V	297	19.4	33.8
3	*2422.00	114.6 PK			1.53 V	308	80.8	33.8
4	*2422.00	102.9 AV			1.53 V	308	69.1	33.8
5	4844.00	51.6 PK	74.0	-22.4	1.97 V	40	40.8	10.8
6	4844.00	41.7 AV	54.0	-12.3	1.97 V	40	30.9	10.8

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.

RF Mode	802.11ax (HE40)	Channel	CH 6：2437 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	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	2390.00	59.4 PK	74.0	-14.6	1.38 H	183	25.6	33.8
2	2390.00	46.3 AV	54.0	-7.7	1.38 H	183	12.5	33.8
3	*2437.00	104.4 PK			1.47 H	180	70.5	33.9
4	*2437.00	91.4 AV			1.47 H	180	57.5	33.9
5	2483.50	60.4 PK	74.0	-13.6	1.41 H	172	26.5	33.9
6	2483.50	48.4 AV	54.0	-5.6	1.41 H	172	14.5	33.9
7	4874.00	50.2 PK	74.0	-23.8	2.15 H	346	39.2	11.0
8	4874.00	37.9 AV	54.0	-16.1	2.15 H	346	26.9	11.0
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	2390.00	65.8 PK	74.0	-8.2	1.71 V	312	32.0	33.8
2	2390.00	52.5 AV	54.0	-1.5	1.71 V	312	18.7	33.8
3	*2437.00	117.0 PK			1.50 V	308	83.1	33.9
4	*2437.00	104.3 AV			1.50 V	308	70.4	33.9
5	2483.50	65.2 PK	74.0	-8.8	1.17 V	308	31.3	33.9
6	2483.50	52.9 AV	54.0	-1.1	1.17 V	308	19.0	33.9
7	4874.00	52.3 PK	74.0	-21.7	1.93 V	37	41.3	11.0
8	4874.00	42.4 AV	54.0	-11.6	1.93 V	37	31.4	11.0

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

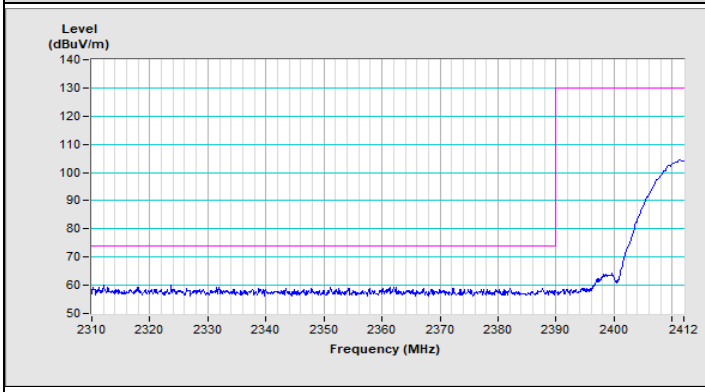
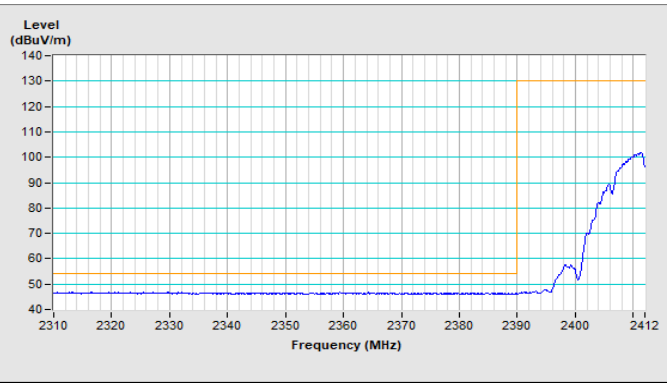
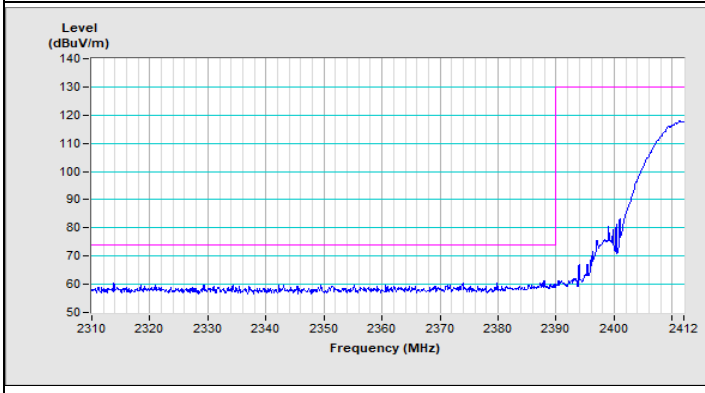
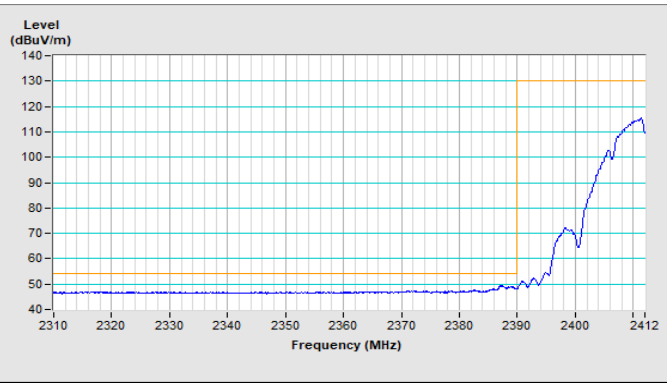
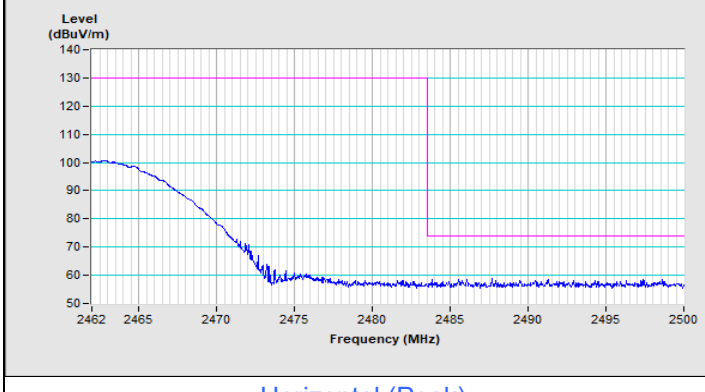
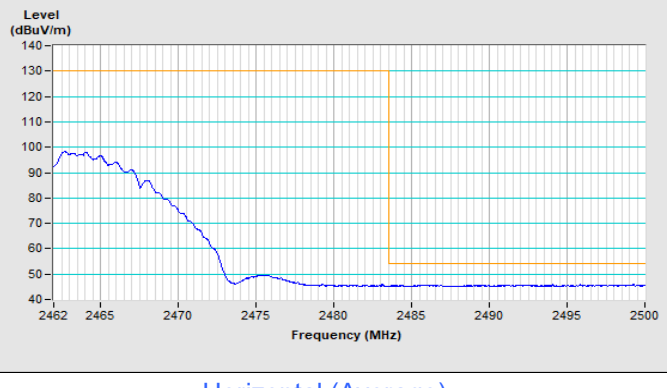
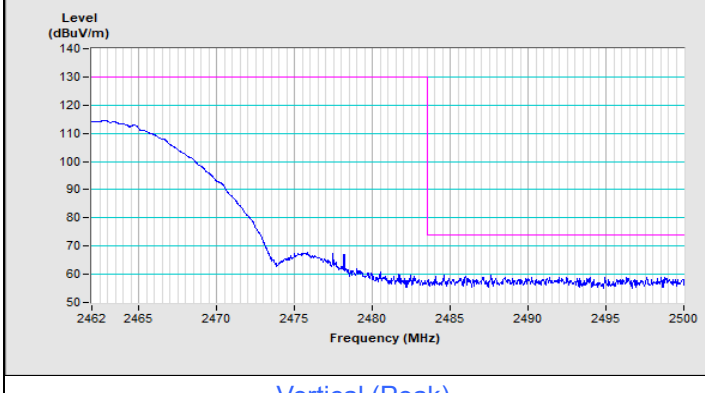
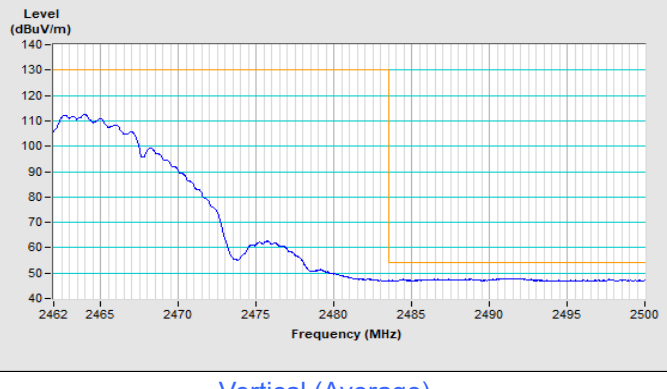
RF Mode	802.11ax (HE40)	Channel	CH 9：2452 MHz
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	(PK) RB = 1 MHz, VB = 3 MHz (AV) RB = 1 MHz, VB = 1 kHz
Input Power	54 Vdc	Environmental Conditions	23°C, 67% RH
Tested By	Adair Peng		

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	*2452.00	102.2 PK			1.52 H	189	68.2	34.0
2	*2452.00	89.1 AV			1.52 H	189	55.1	34.0
3	2483.50	59.0 PK	74.0	-15.0	1.41 H	172	25.1	33.9
4	2483.50	48.4 AV	54.0	-5.6	1.41 H	172	14.5	33.9
5	4904.00	50.1 PK	74.0	-23.9	2.17 H	342	39.1	11.0
6	4904.00	37.7 AV	54.0	-16.3	2.17 H	342	26.7	11.0
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	*2452.00	114.7 PK			1.44 V	305	80.7	34.0
2	*2452.00	102.0 AV			1.44 V	305	68.0	34.0
3	2483.50	66.9 PK	74.0	-7.1	1.62 V	311	33.0	33.9
4	2483.50	53.4 AV	54.0	-0.6	1.62 V	311	19.5	33.9
5	4904.00	51.9 PK	74.0	-22.1	1.97 V	43	40.9	11.0
6	4904.00	41.7 AV	54.0	-12.3	1.97 V	43	30.7	11.0

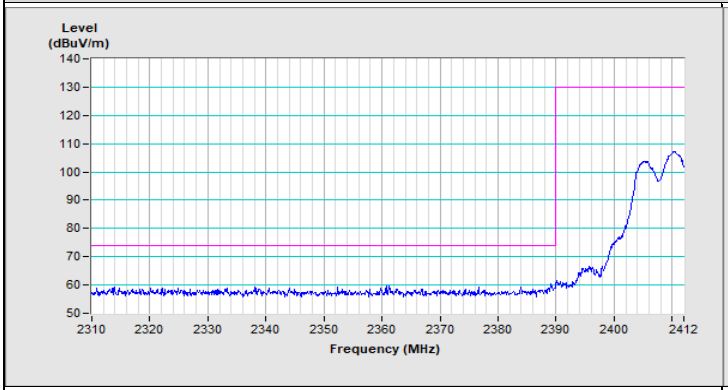
Remarks:

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

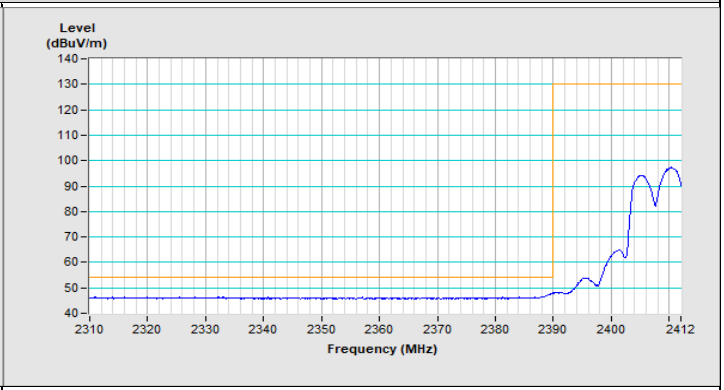
Plot of Band Edge

802.11b Channel 1	
	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
802.11b Channel 11	
	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)

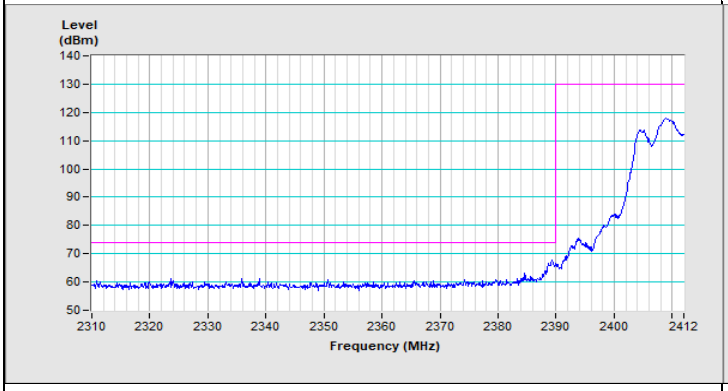
802.11g Channel 1



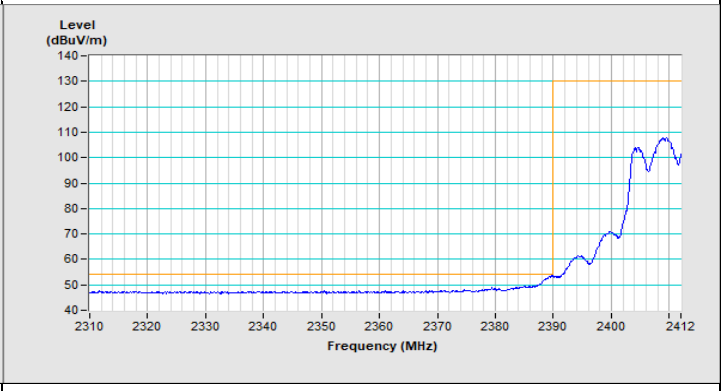
Horizontal (Peak)



Horizontal (Average)

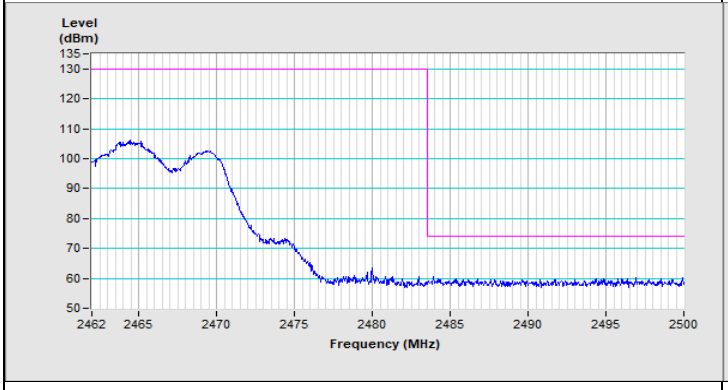


Vertical (Peak)

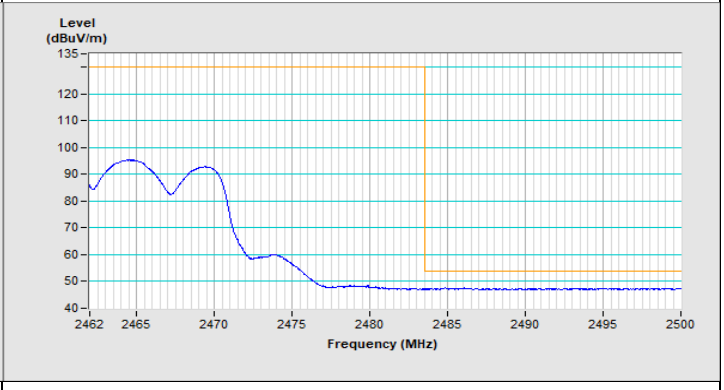


Vertical (Average)

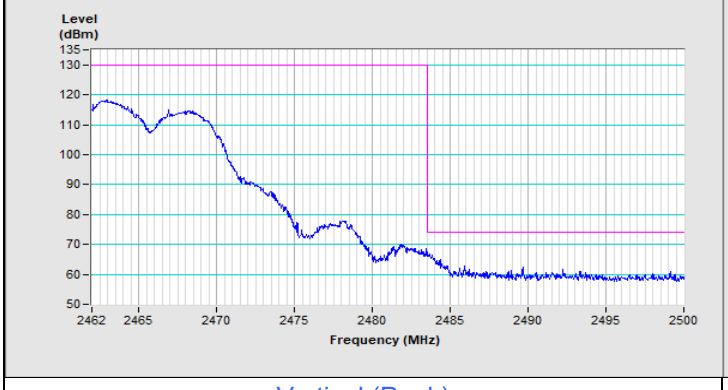
802.11g Channel 11



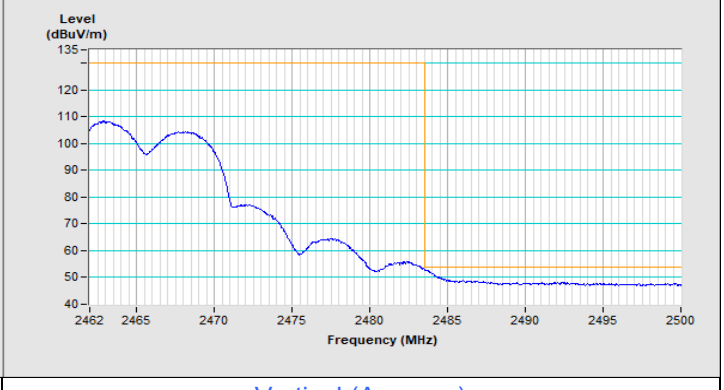
Horizontal (Peak)



Horizontal (Average)

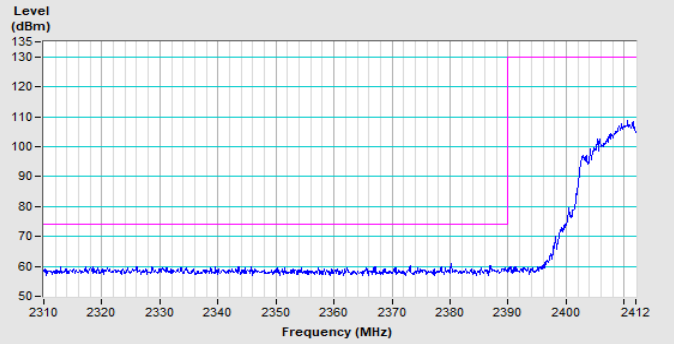


Vertical (Peak)

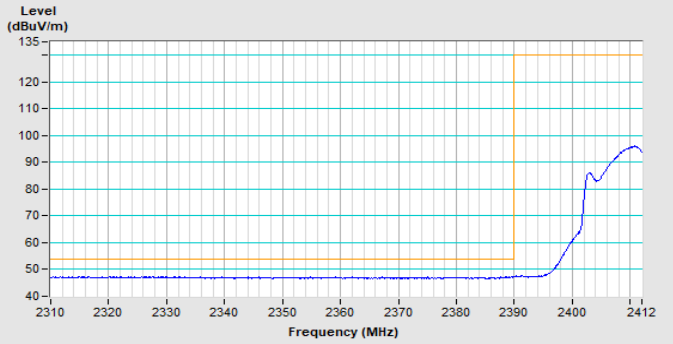


Vertical (Average)

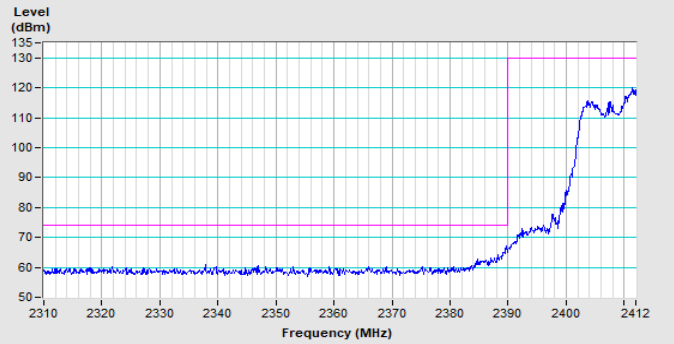
802.11ax (HE20) Channel 1



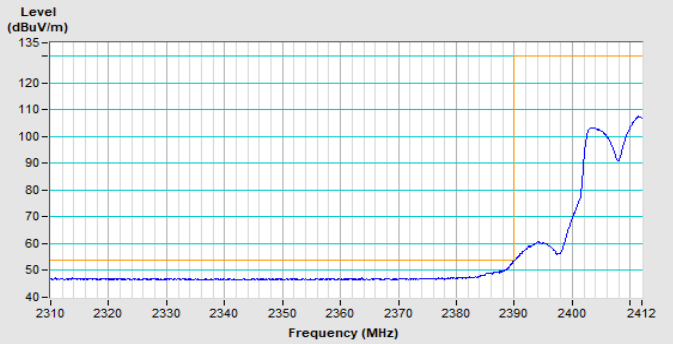
Horizontal (Peak)



Horizontal (Average)

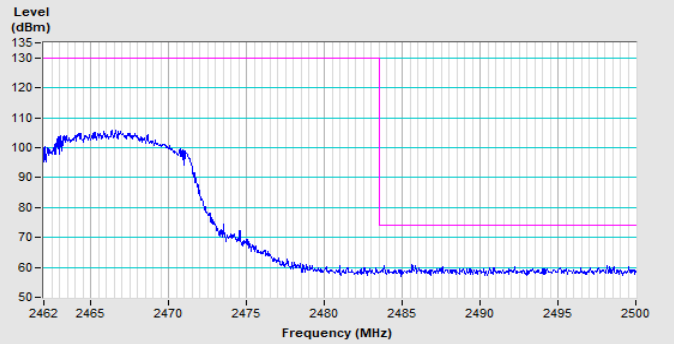


Vertical (Peak)

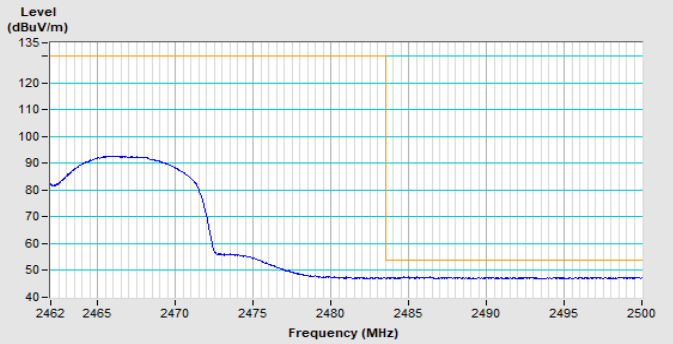


Vertical (Average)

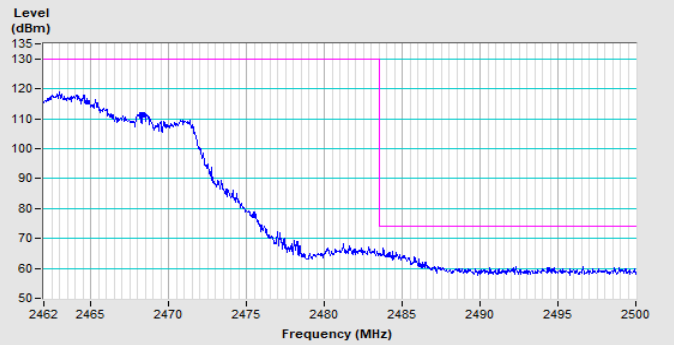
802.11ax (HE20) Channel 11



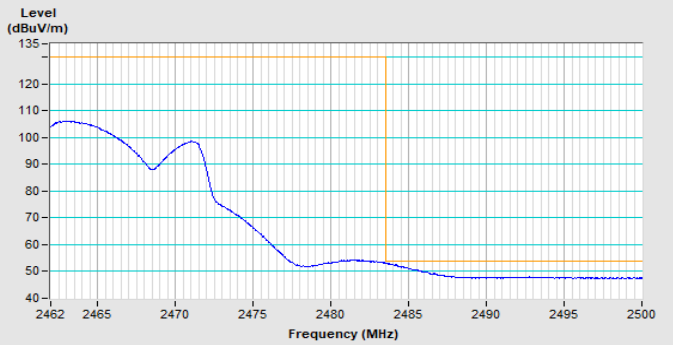
Horizontal (Peak)



Horizontal (Average)

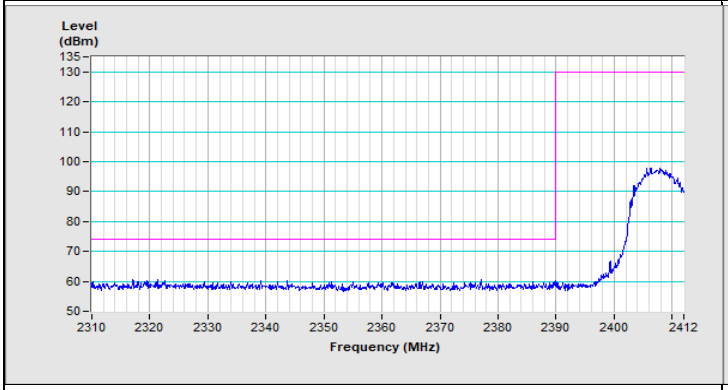


Vertical (Peak)

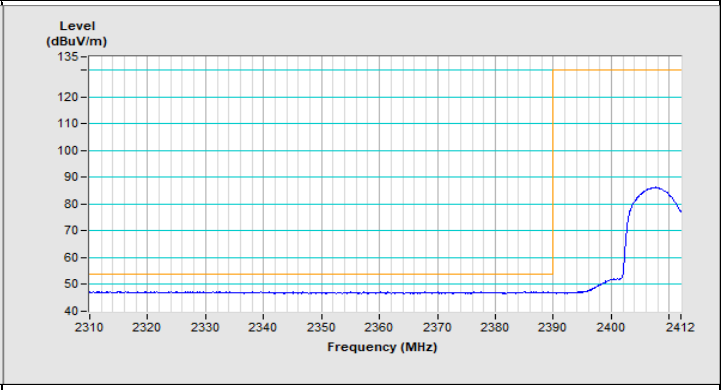


Vertical (Average)

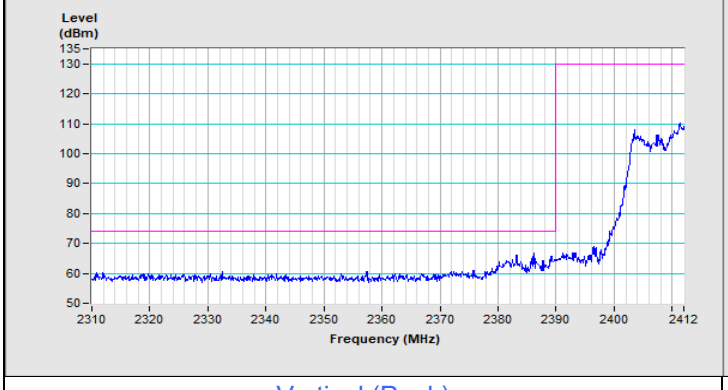
802.11ax (HE40) Channel 3



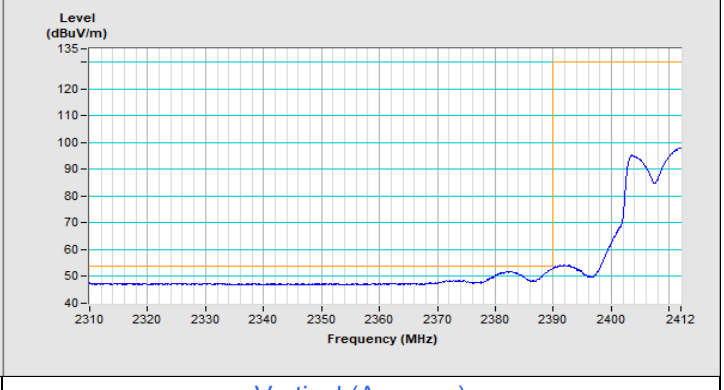
Horizontal (Peak)



Horizontal (Average)

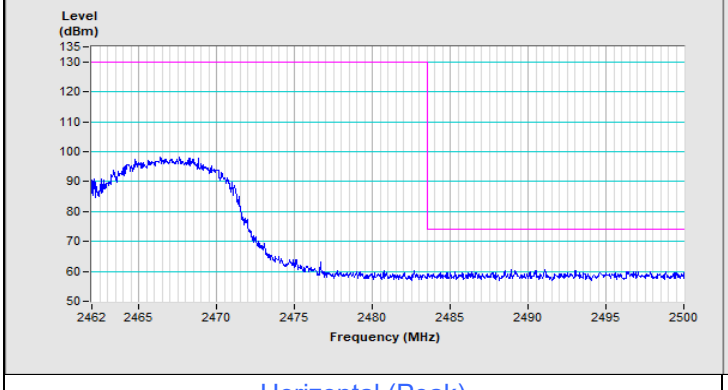


Vertical (Peak)

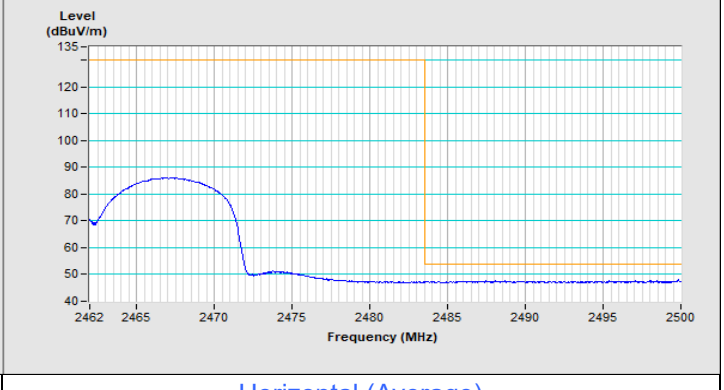


Vertical (Average)

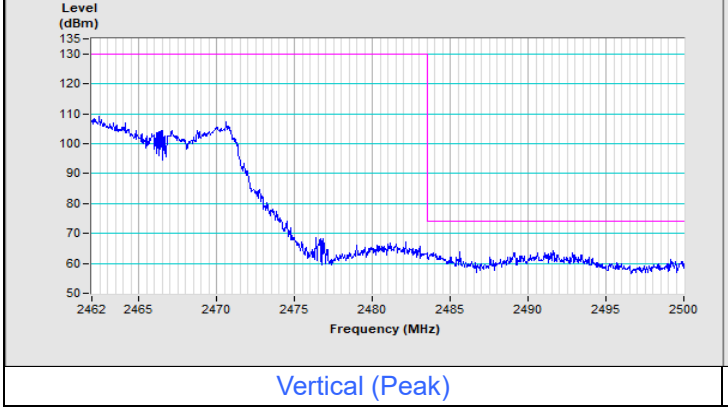
802.11ax (HE40) Channel 9



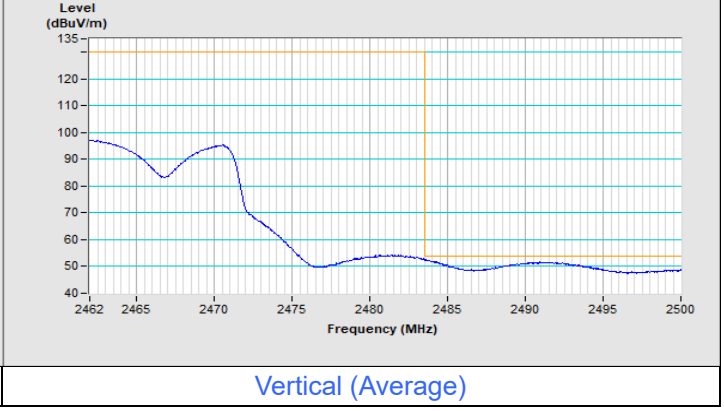
Horizontal (Peak)



Horizontal (Average)



Vertical (Peak)



Vertical (Average)

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 ---