FCC RADIO TEST REPORT

FCC ID	:	**TX2-RTL8822CE**
Equipment	:	**802.11a/b/g/n/ac RTL8822CE Combo module**
Brand Name	:	**Realtek**
Model Name	:	**RTL8822CE**
Applicant	:	**Realtek Semiconductor Corp. No. 2 Innovation Road II, Hsinchu Science Park Hsinchu 300, Taiwan**
Standard	:	**FCC Part 15 Subpart C §15.247**

The product was received on Sep. 12, 2024 and testing was performed from Sep. 24, 2024 to Oct. 17, 2024. We, Sporton International Inc. Wensan Laboratory, would like to declare that the tested sample has been evaluated in accordance with the test procedures and has been in compliance with the applicable technical standards.

The test results in this partial report apply exclusively to the tested model / sample. Without written approval from Sporton International Inc. Wensan Laboratory, the test report shall not be reproduced except in full.

Louis Wu

Approved by: Louis Wu

Sporton International Inc. Wensan Laboratory

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History of this test report

Report No.	Version	Description	Issue Date
FR0D1216-04A	01	Initial issue of report	Nov. 11, 2024
FR0D1216-04A	02	Revise Appendix C This report is an updated version, replacing the report issued on Nov. 11, 2024.	Nov. 25, 2024

Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
3.1	15.247(b)	Power Output Measurement	Pass	-
3.2	15.247(d)	Radiated Band Edges and Radiated Spurious Emission	Pass	1.76 dB under the limit at 4824.00 MHz
3.3	15.207	AC Conducted Emission	Pass	10.43 dB under the limit at 0.20 MHz
3.4	15.203	Antenna Requirement	Pass	-

Note: The test plans were defined by manufacturer.

Conformity Assessment Condition:
1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacturer who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the section “Measurement Uncertainty”.
Disclaimer:
The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Yun Huang

Report Producer: Wilda Wei

1 General Description

1.1 Product Feature of Equipment Under Test

Product Feature	
General Specs	Wi-Fi 2.4GHz 802.11b/g/n/ac and Wi-Fi 5GHz 802.11a/n/ac.
Sample 1	EUT with Host 1
Sample 2	EUT with Host 2
Sample 3	EUT with Host 3
Sample 4	EUT with Host 4
Sample 5	EUT with Host 5
Sample 6	EUT with Host 6
Sample 7	EUT with Host 7
Antenna Type	WLAN: **<Main>**: PIFA Antenna **<Aux.>**: PIFA Antenna

Antenna information		
2400 MHz ~ 2483.5 MHz	Peak Gain (dBi)	Main: 3.30 Aux.: 3.47

Remark: The EUT's information above is declared by manufacturer. Please refer to Disclaimer in report summary.

The product was installed into Notebook
(Brand Name: Getac, Model Name: S410, S410G4, S410-4012C, S410-4212D, S410-4212E, S410G5 S410Y (Y= 10 characters, Y can be 0-9, a-z, A-Z, “-“, “_” or blank for marketing purpose and no impact safety related critical components and constructions.)) during test, and the host information was recorded in the following table.

Host Information	
Host 1	Host with SKU A
Host 2	Host with SKU B
Host 3	Host with SKU C
Host 4	Host with SKU D
Host 5	Host with SKU E
Host 6	Host with SKU F
Host 7	Host with SKU G

SKU List				
DVT SKUs	**SKU A**	**SKU B**	**SKU C**	**SKU D**
CPU	i5	i5	i5	i5
Display Resolution	FHD	FHD	FHD	FHD
Discrete Graphics	Not Support	Not Support	Not Support	Not Support
Wifi/BT	Support (RTL8822CE) (AX201NGW)	Support (RTL8822CE) (AX201NGW)	Support (RTL8822CE) (AX201NGW)	Support (RTL8822CE) (AX201NGW)
Touch	Not Support	Not Support	Not Support	Not Support
Sunlight Readable	Support	Support	Support	Support
Main Storage	SSD 1TB	SSD 1 TB	SSD 1TB	SSD 1TB
Battery	Main	Main	Main	Main
2nd Storage	2nd Battery	Not Support	2nd Battery	Not Support
Webcam	Support	Support	Support	Support
Smart Card	Support	Support	Support	Support
Option I/O Ports	RS232 + LAN + Fischer	RS232 + LAN + Fischer	RS232 + LAN + Display	S232 + LAN + Fischer
Discrete GPS	Not Support	Not Support	Not Support	Not Support
Finger Print	Not Support	Not Support	Not Support	Not Support
Contactless Smart Card(NFC)	Not Support	Not Support	Not Support	Not Support
LTE	Not Support	Support	Not Support	Not Support

SKU List			
DVT SKUs	**SKU E**	**SKU F**	**SKU G**
CPU	i5	i5	i5
Display Resolution	FHD	FHD	FHD
Discrete Graphics	Not Support	Not Support	Not Support
Wifi/BT	Support (RTL8822CE) (AX201NGW)	Support (RTL8822CE) (AX211NGW)	Support (RTL8822CE) (AX211NGW)
Touch	Not Support	Not Support	Not Support
Sunlight Readable	Support	Support	Support
Main Storage	SSD 1TB	SSD 1TB	SSD 1TB
Battery	Main	Main	Main
2nd Storage	2nd Battery	2nd Battery	2nd Battery
Webcam	Support	Support	Support
Smart Card	Support	Support	Support
Option I/O Ports	RS232 + LAN + Display	RS232 + LAN + Fischer	RS232 + LAN + Fischer
Discrete GPS	Not Support	Support	Not Support
Finger Print	Not Support	Not Support	Not Support
Contactless Smart Card(NFC)	Not Support	Not Support	Not Support
LTE	Not Support	Support	Not Support

1.1.1 Antenna Directional Gain

<For CDD Mode>

Follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01 F)2)f)ii)

Directional gain = G_{ANT} + Array Gain, where Array Gain is as follows:

For power measurements on IEEE 802.11 devices,

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

G_{ANT} is set equal to the gain of the antenna having the highest gain.

For PSD measurements, the directional gain calculation.

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;
N_{SS} = the number of independent spatial streams of data;
N_{ANT} = the total number of antennas
$g_{j,k} = 10^{G_k / 20}$ if the kth antenna is being fed by spatial stream j, or zero if it is not;
G_k is the gain in dBi of the kth antenna.

As minimum N_{SS}=1 is supported by EUT, the formula can be simplified as:

Directional gain = $10*\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}]$ dBi

Where G1, G2….GN denote single antenna gain.

The directional gain “DG” is calculated as following table.

	Chain 1 (dBi)	Chain 2 (dBi)	DG for Power (dBi)	DG for PSD (dBi)	Power Limit Reduction (dB)	PSD Limit Reduction (dB)
2.4GHz	3.47	3.30	3.47	6.40	0.00	0.40

Calculation example:

If a device has two antenna, $C_{hain\ 1}$= 3.47dBi; $C_{hain\ 2}$ =3.30dBi

Directional gain of power measurement = max(3.47, 3.30) + 0 = 3.47 dBi

Directional gain of PSD derived from formula which is

10 x log { { [10^ (3.47 dBi / 20) + 10^ (3.30 dBi / 20)] ^ 2 } / 2 }

= 6.40 dBi

Power and PSD limit reduction = Composite gain – 6dBi, (min = 0)

1.2 Modification of EUT

No modifications made to the EUT during the testing.

1.3 Testing Location

Test Site	Sporton International Inc. EMC & Wireless Communications Laboratory
Test Site Location	No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.) TEL: +886-3-327-3456 FAX: +886-3-328-4978
Test Site No.	**Sporton Site No.**
	CO05-HY (TAF Code: 1190)
Remark	The AC Conducted Emission test item subcontracted to Sporton International Inc. EMC & Wireless Communications Laboratory.

Note: The test site complies with ANSI C63.4 2014 requirement.

Test Site	Sporton International Inc. Wensan Laboratory
Test Site Location	No.58, Aly. 75, Ln. 564, Wenhua 3rd, Rd., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: +886-3-327-0868 FAX: +886-3-327-0855
Test Site No.	**Sporton Site No.**
	TH05-HY, 03CH11-HY

Note: The test site complies with ANSI C63.4 2014 requirement.

FCC designation No.: TW1190 and TW3786

1.4 Applicable Standards

According to the specifications declared by the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC Part 15 Subpart C §15.247
- FCC KDB Publication No. 558074 D01 15.247 Meas Guidance v05r02
- FCC KDB 414788 D01 Radiated Test Site v01r01.
- FCC KDB 662911 D01 Multiple Transmitter Output v02r01.
- ANSI C63.10-2013

Remark:

1. All the test items were validated and recorded in accordance with the standards without any modification during the testing.
2. The TAF code is not including all the FCC KDB listed without accreditation.

2 Test Configuration of Equipment Under Test

a. The EUT has been associated with peripherals and configuration operated in a manner tended to maximize its emission characteristics in a typical application. Frequency range investigated: conduction emission (150 kHz to 30 MHz), radiation emission (9 kHz to the 10th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

b. AC power line Conducted Emission was tested under maximum output power.

2.1 Carrier Frequency and Channel

Frequency Band	Channel	Freq. (MHz)	Channel	Freq. (MHz)
2400-2483.5 MHz	1	2412	7	2442
	2	2417	8	2447
	3	2422	9	2452
	4	2427	10	2457
	5	2432	11	2462
	6	2437		

2.2 Test Mode

The SISO mode conducted power is covered by MIMO mode per chain, so only the MIMO mode is tested.

The final test modes include the worst data rates for each modulation shown in the table below.

MIMO Antenna

Modulation	Data Rate
802.11b	1 Mbps
802.11ac VHT40	MCS0

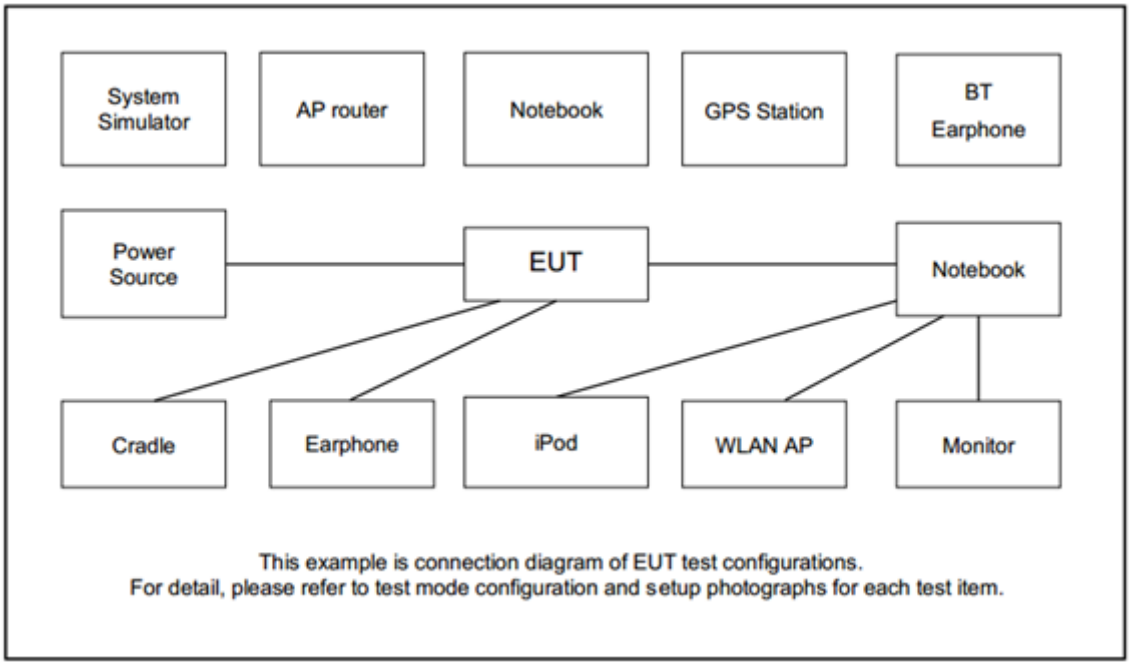
Remark: The conducted power level of each chain in MIMO mode is equal or higher than SISO mode.

Test Cases	
AC Conducted Emission	Mode 1 :: WLAN (2.4GHz) Link + AC Adapter for Sample 6
Remark: For Radiated Test Cases, the tests were performed with Sample 6.	

Ch. #	2400-2483.5 MHz	
	802.11b	802.11n HT40
Low	01	-
Middle	-	-
High	-	10

Remark: For radiation spurious emission, the modulation and the data rate picked for testing are determined by the Max. RF conducted power.

2.3 Connection Diagram of Test System



2.4 Support Unit used in test configuration and system

Item	Equipment	Brand Name	Model Name	FCC ID	Data Cable	Power Cord
1.	WLAN AP	ASUS	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Latitude 3420	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	iPod Earphone	Apple	N/A	Verification	Unshielded, 1.0 m	N/A
4.	USB HD	ADATA	HV620S-1T	FCC DoC	Shielded, 1.0m	N/A
5.	Router	ASUS	GT-AX6000	MSQ-RTAX5600	N/A	N/A
6.	Router Adapter	Ac Bel	ADH011	N/A	N/A	N/A
7.	Earphone	Sony	MH410C	N/A	Unshielded, 1.5m	N/A

2.5 EUT Operation Test Setup

The RF test items, utility “MP Version 0.0001.1020.2018” was installed in Notebook which was programmed in order to make the EUT get into the engineering modes to provide channel selection, power level, data rate and the application type and for continuous transmitting signals.

3 Test Result

3.1 Output Power Measurement

3.1.1 Limit of Output Power

For systems using digital modulation in the 2400-2483.5 MHz, the limit for output power is 30 dBm. If transmitting antenna with directional gain greater than 6 dBi is used, the peak output power from the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the antenna exceeds 6 dBi. In case of point-to-point operation, the limit has to be reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

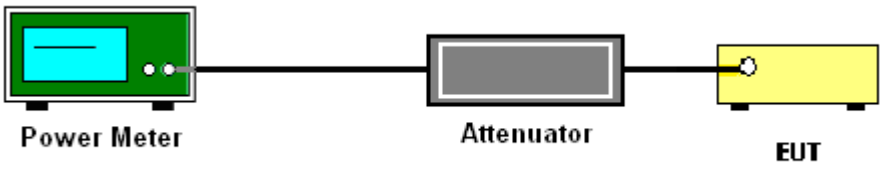
3.1.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.1.3 Test Procedures

1. For Peak Power, the testing follows ANSI C63.10 Section 11.9.1.3 PKPM1
2. For Average Power, the testing follows ANSI C63.10 Section 11.9.2.3.2 Method AVGPM-G
3. The RF output of EUT is connected to the power meter by RF cable and attenuator. The path loss is compensated to the results for each measurement.
4. Set the maximum power setting and enable the EUT to transmit continuously.
5. Measure the conducted output power and record the results in the test report.
6. For MIMO mode, calculation method follows FCC KDB 662911 D01 Multiple Transmitter Output v02r01.

3.1.4 Test Setup



3.1.5 Test Result of Peak Output Power

Please refer to Appendix A.

3.1.6 Test Result of Average Output Power (Reporting Only)

Please refer to Appendix A.

3.2 Radiated Band Edges and Spurious Emission Measurement

3.2.1 Limit of Radiated band edge and Spurious Emission Measurement

In any 100 kHz bandwidth outside the intentional radiator frequency band, all harmonics/spurious must be at least 20 dB below the highest emission level within the authorized band. If the output power of this device is measured by spectrum analyzer, the attenuation under this paragraph shall be 30 dB instead of 20 dB. In addition, radiated emissions which fall in the restricted bands must also comply with the limits as below.

Frequency (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

3.2.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

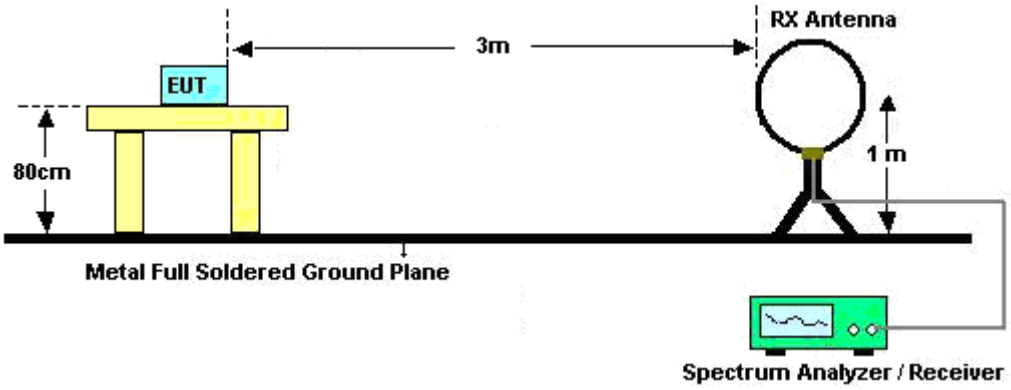
3.2.3 Test Procedures

1. The testing follows the ANSI C63.10 Section 11.12.1 Radiated emission measurements.
2. The EUT is arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level.
3. The EUT is placed on a turntable with 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz respectively above ground.
4. The EUT is set 3 meters away from the receiving antenna, which is mounted on the top of a variable height antenna tower.
5. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level
6. Radiated testing below 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading. When there is no suspected emission found and the emission level is with at least 6 dB margin against QP limit line, the position is marked as “-“.

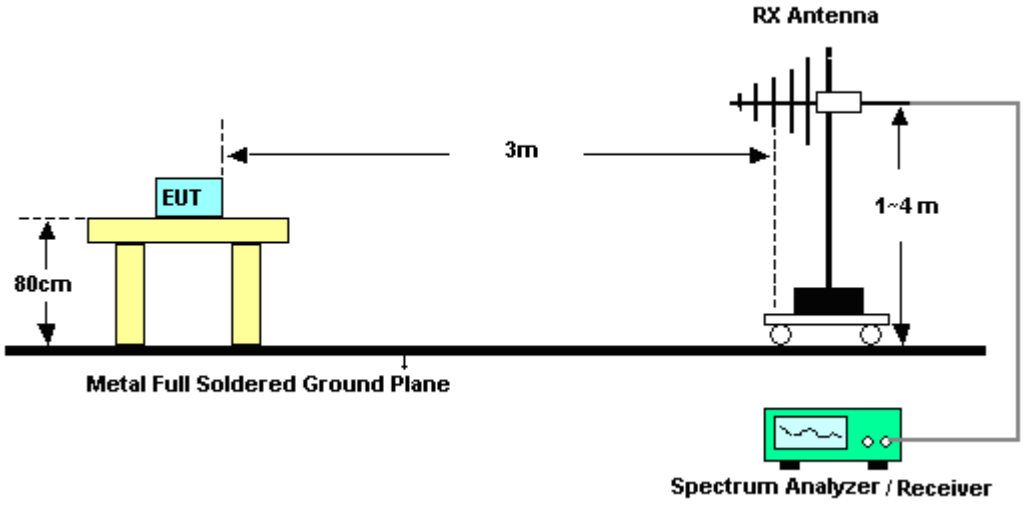
7. Radiated testing above 1 GHz is performed by adjusting the antenna tower from 1 m to 4 m and by rotating the turn table from 0 degree to 360 degrees to find the peak maximum hold reading for scanning all frequencies. When there is no suspected emission found and the harmonic emission level is with at least 6 dB margin against average limit line, the position is marked as "-".
8. Use the following spectrum analyzer settings:
   (1) Span shall wide enough to fully capture the emission being measured;
   (2) Set RBW = 100 kHz for f < 1 GHz; VBW ≥ RBW; Sweep = auto; Detector function = peak; Trace = max hold;
   (3) Set RBW = 1 MHz, VBW= 3 MHz for f ≥ 1 GHz for peak measurement.
   For average measurement:
   - VBW = 10 Hz, when duty cycle is no less than 98 percent.
   - VBW ≥ 1/T, when duty cycle is less than 98 percent where T is the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

3.2.4 Test Setup

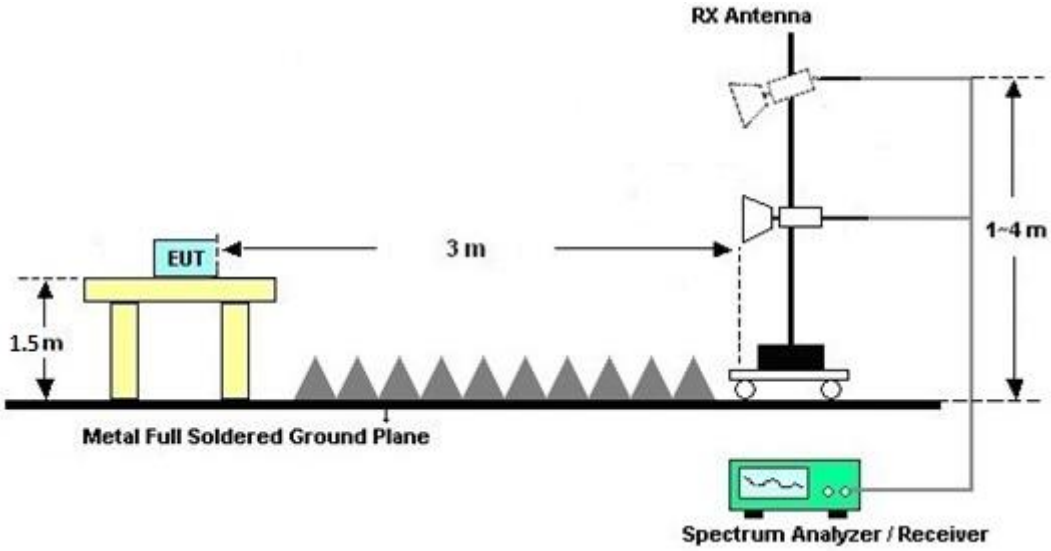
For radiated emissions below 30MHz



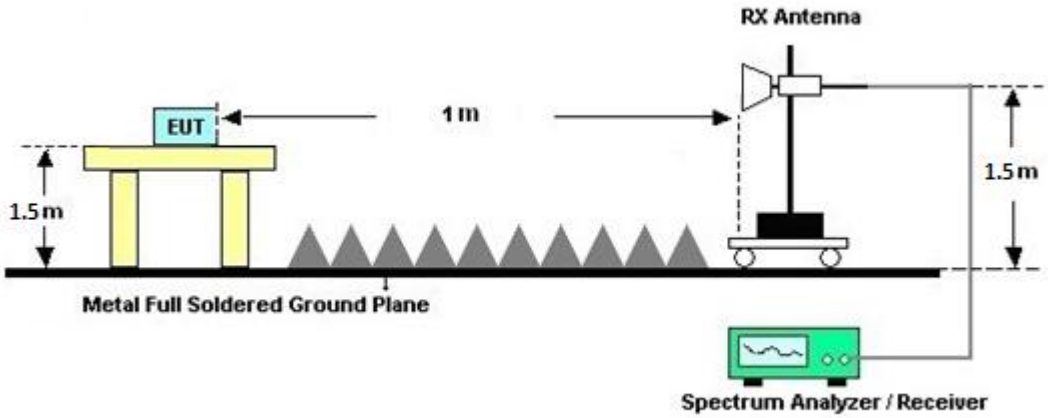
For radiated emissions from 30MHz to 1GHz



For radiated test from 1GHz to 18GHz



For radiated test above 18GHz



3.2.5 Test Results of Radiated Spurious Emissions (9kHz ~ 30MHz)

The low frequency, which starts from 9 kHz to 30 MHz, is pre-scanned and the result which is 20 dB lower than the limit line is not reported.

There is adequate comparison measurement of both open-field test site and alternative test site - semi-Anechoic chamber according to 414788 D01 Radiated Test Site v01r01, and the result comes out very similar.

3.2.6 Test Result of Radiated Spurious at Band Edges

Please refer to Appendix C.

3.2.7 Duty Cycle

Please refer to Appendix D.

3.2.8 Test Result of Radiated Spurious Emission (30MHz ~ 10th Harmonic)

Please refer to Appendix C.

3.3 AC Conducted Emission Measurement

3.3.1 Limit of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-Peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

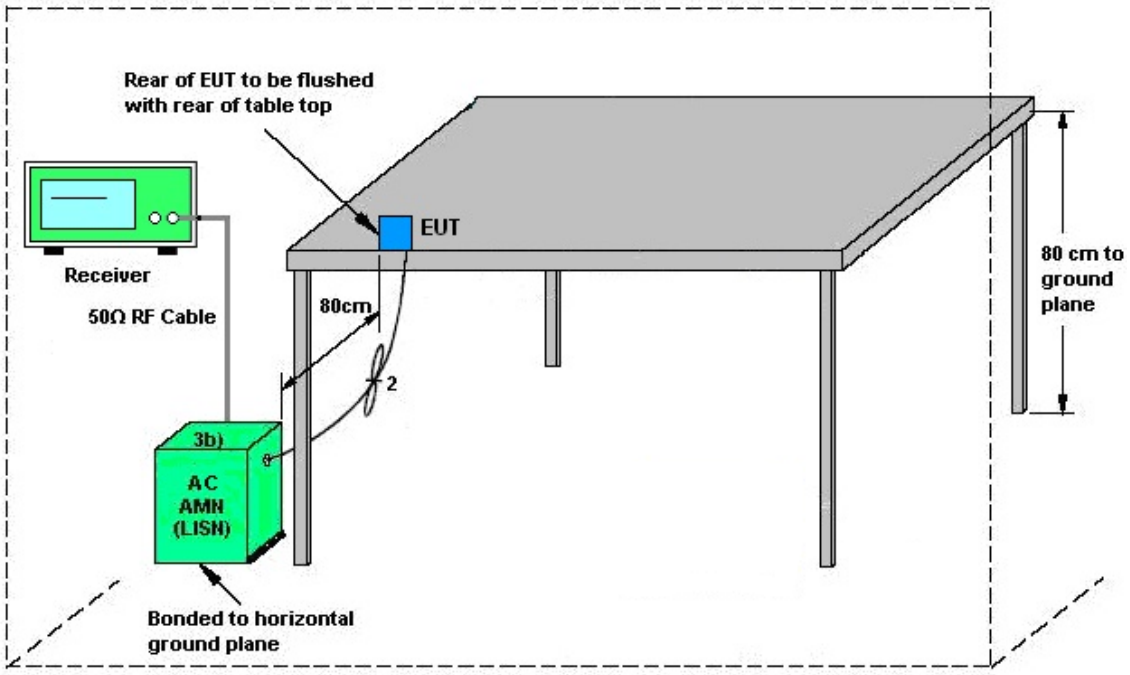
3.3.2 Measuring Instruments

Please refer to the measuring equipment list in this test report.

3.3.3 Test Procedures

1. The EUT is placed 0.4 meter away from the conducting wall of the shielding room, and is kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
5. The FCC states that a 50 ohm, 50 microhenry LISN shall be used.
6. Both Line and Neutral shall be tested in order to find out the maximum conducted emission.
7. The frequency range from 150 kHz to 30 MHz is scanned.
8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF bandwidth = 9kHz) with Maximum Hold Mode.

3.3.4 Test Setup



AMN = Artificial mains network (LISN)
AE = Associated equipment
EUT = Equipment under test
ISN = Impedance stabilization network

3.3.5 Test Result of AC Conducted Emission

Please refer to Appendix B.

3.4 Antenna Requirements

3.4.1 Standard Applicable

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

3.4.2 Antenna Anti-Replacement Construction

Antenna permanently attached.

4 List of Measuring Equipment

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Bilog Antenna	TESEQ	CBL 6111D & N-6-06	35414 & AT-N0602	30MHz~1GHz	Oct. 05, 2024	Oct. 14, 2024~ Oct. 17, 2024	Oct. 04, 2025	Radiation (03CH11-HY)
Horn Antenna	SCHWARZBECK	BBHA 9120 D	9120D-01620	1GHz~18GHz	Aug. 28, 2024	Oct. 14, 2024~ Oct. 17, 2024	Aug. 27, 2025	Radiation (03CH11-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	00993	18GHz~40GHz	Nov. 24, 2023	Oct. 14, 2024~ Oct. 17, 2024	Nov. 23, 2024	Radiation (03CH11-HY)
Amplifier	SONOMA	310N	187312	9kHz~1GHz	Dec. 08, 2023	Oct. 14, 2024~ Oct. 17, 2024	Dec. 07, 2024	Radiation (03CH11-HY)
Preamplifier	Keysight	83017A	MY53270080	1GHz~26.5GHz	Mar. 25, 2024	Oct. 14, 2024~ Oct. 17, 2024	Mar. 24, 2025	Radiation (03CH11-HY)
Preamplifier	Jet-Power	JPA0118-55-303	1710001800055007	1GHz~18GHz	Jun. 13, 2024	Oct. 14, 2024~ Oct. 17, 2024	Jun. 12, 2025	Radiation (03CH11-HY)
Preamplifier	EMEC	EM18G40G	060715	18GHz~40GHz	Dec. 07, 2023	Oct. 14, 2024~ Oct. 17, 2024	Dec. 06, 2024	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200486	10Hz~44GHz	Oct. 14, 2024	Oct. 17, 2024	Oct. 13, 2025	Radiation (03CH11-HY)
Spectrum Analyzer	Keysight	N9010A	MY54200485	10Hz~44GHz	May 13, 2024.	Oct. 14, 2024~ Oct. 16, 2024	May 12, 2025	Radiation (03CH11-HY)
EMI Test Receiver	Keysight	N9038A(MXE)	MY55420170	20MHz~8.4GHz	Jul. 19, 2024	Oct. 14, 2024~ Oct. 17, 2024	Jul. 18, 2025	Radiation (03CH11-HY)
Controller	EMEC	EM 1000	N/A	Control Turn table & Ant Mast	N/A	Oct. 14, 2024~ Oct. 17, 2024	N/A	Radiation (03CH11-HY)
Antenna Mast	EMEC	AM-BS-4500-B	N/A	1~4m	N/A	Oct. 14, 2024~ Oct. 17, 2024	N/A	Radiation (03CH11-HY)
Turn Table	EMEC	TT 2000	N/A	0~360 Degree	N/A	Oct. 14, 2024~ Oct. 17, 2024	N/A	Radiation (03CH11-HY)
Software	Audix	E3 6.2009-8-24	RK-001053	N/A	N/A	Oct. 14, 2024~ Oct. 17, 2024	N/A	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	804013/2	30M~40G	May 23, 2024	Oct. 14, 2024~ Oct. 17, 2024	May 22, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	MY2859/2	30MHz~40GHz	Mar. 06, 2024	Oct. 14, 2024~ Oct. 17, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	9K~30M	Mar. 06, 2024	Oct. 14, 2024~ Oct. 17, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
RF Cable	HUBER + SUHNER	SUCOFLEX 102	803951/2	30M~40G	Mar. 06, 2024	Oct. 14, 2024~ Oct. 17, 2024	Mar. 05, 2025	Radiation (03CH11-HY)
Attenuator	HONOVA	5910 SMA-50-005	0028	N/A	Jul. 09, 2024	Oct. 14, 2024~ Oct. 17, 2024	Jul. 08, 2025	Radiation (03CH11-HY)
Filter	Wainwright	WHKX12-2700-3000-18000-60SS	SN3	3GHz High Pass Filter	Sep. 10, 2024	Oct. 14, 2024~ Oct. 17, 2024	Sep. 09, 2025	Radiation (03CH11-HY)
Filter	Wainwright	WLK4-1000-1530-8000-40SS	SN11	1.53GHz Low Pass Filter	Sep. 10, 2024	Oct. 14, 2024~ Oct. 17, 2024	Sep. 09, 2025	Radiation (03CH11-HY)
Hygrometer	TECPEL	DTM-303B	TP140325	N/A	Dec. 08, 2023	Oct. 14, 2024~ Oct. 17, 2024	Dec. 07, 2024	Radiation (03CH11-HY)

Instrument	Brand Name	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
AC Power Source	ChainTek	APC-1000W	N/A	N/A	N/A	Sep. 24, 2024	N/A	Conduction (CO05-HY)
EMI Test Receiver	Rohde & Schwarz	ESR3	102388	9kHz~3.6GHz	Dec. 06, 2023	Sep. 24, 2024	Dec. 05, 2024	Conduction (CO05-HY)
Hygrometer	Testo	608-H1	34913912	N/A	Oct. 26, 2023	Sep. 24, 2024	Oct. 25, 2024	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100080	9kHz~30MHz	Dec. 08, 2023	Sep. 24, 2024	Dec. 07, 2024	Conduction (CO05-HY)
LISN	Rohde & Schwarz	ENV216	100081	9kHz~30MHz	Nov. 22, 2023	Sep. 24, 2024	Nov. 21, 2024	Conduction (CO05-HY)
Software	Rohde & Schwarz	EMC32	N/A	N/A	N/A	Sep. 24, 2024	N/A	Conduction (CO05-HY)
Pulse Limiter	SCHWARZBECK	VTSD 9561-F N	00691	N/A	Jul. 30, 2024	Sep. 24, 2024	Jul. 29, 2025	Conduction (CO05-HY)
RF Cable	HUBER + SUHNER	RG 214/U	1358175	9kHz~30MHz	Mar. 14, 2024	Sep. 24, 2024	Mar. 13, 2025	Conduction (CO05-HY)
Hygrometer	TECPEL	DTM-303A	TP201996	N/A	Nov. 07, 2023	Sep. 24, 2024	Nov. 06, 2024	Conducted (TH05-HY)
Power Meter	Anritsu	ML2495A	1036004	N/A	Jul. 04, 2024	Sep. 24, 2024	Jul. 03, 2025	Conducted (TH05-HY)
Power Sensor	Anritsu	MA2411B	1027253	300MHz~40GHz	Jul. 04, 2024	Sep. 24, 2024	Jul. 03, 2025	Conducted (TH05-HY)
Signal Analyzer	Rohde & Schwarz	FSV40	101566	10Hz~40GHz	Aug. 23, 2024	Sep. 24, 2024	Aug. 22, 2025	Conducted (TH05-HY)
Switch Control Mainframe	Burgeon	ETF-058	EC1300484 (BOX3)	N/A	May 20, 2024	Sep. 24, 2024	May 19, 2025	Conducted (TH05-HY)
Software	Sporton	BTWIFI_Final_version_240513	N/A	Conducted Other Test Item	N/A	Sep. 24, 2024	N/A	Conducted (TH05-HY)

5 Measurement Uncertainty

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**3.5 dB**

Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**6.4 dB**

Uncertainty of Radiated Emission Measurement (1000 MHz ~ 6000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.1 dB**

Uncertainty of Radiated Emission Measurement (6000 MHz ~ 18000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.3 dB**

Uncertainty of Radiated Emission Measurement (18000 MHz ~ 40000 MHz)

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**5.3 dB**

Appendix A. Test Result of Conducted Test Items

Test Engineer:	Eason Huang	Temperature:	21~25	°C
Test Date:	2024/9/24	Relative Humidity:	51~54	%
Remark: For Conducted Test Items, Ant. A means Chain 1 (Aux.) and Ant. B means Chain 2 (Main).				

TEST RESULTS DATA
Peak Output Power

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Peak Conducted Power (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant A	Ant B	SUM	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	
11b	1Mbps	2	1	2412	21.89	21.60	24.76	30.00		3.47		28.23		36.00		Pass
VHT40	MCS0	2	10	2457	20.03	20.11	23.08	30.00		3.47		26.55		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

TEST RESULTS DATA
Average Output Power (Reporting Only)

2.4GHz Band MIMO																
Mod.	Data Rate	NTX	CH.	Freq. (MHz)	Average Conducted Power with duty factor (dBm)			Conducted Power Limit (dBm)		DG (dBi)		EIRP Power (dBm)		EIRP Power Limit (dBm)		Pass /Fail
					Ant A	Ant B	SUM	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	Ant A	Ant B	
11b	1Mbps	2	1	2412	19.89	19.66	22.79	30.00		3.47		26.26		36.00		Pass
VHT40	MCS0	2	10	2457	10.40	10.20	13.31	30.00		3.47		16.78		36.00		Pass

Note: Measured power (dBm) has offset with cable loss.

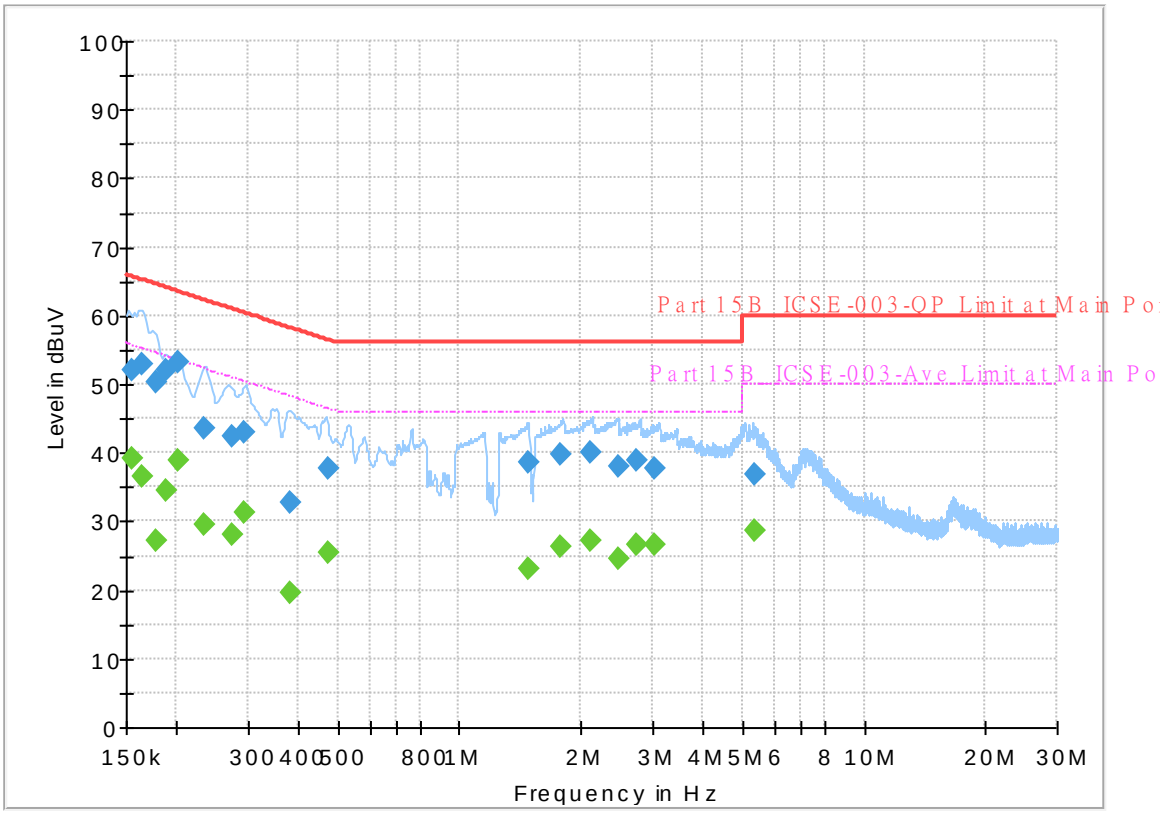
Appendix B. AC Conducted Emission Test Results

Test Engineer :	Calvin Wang	**Temperature :**	23~26℃
		Relative Humidity :	45~55%

EUT Information

Report NO :	0D1216-04
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Line

Full Spectrum



Final_Result

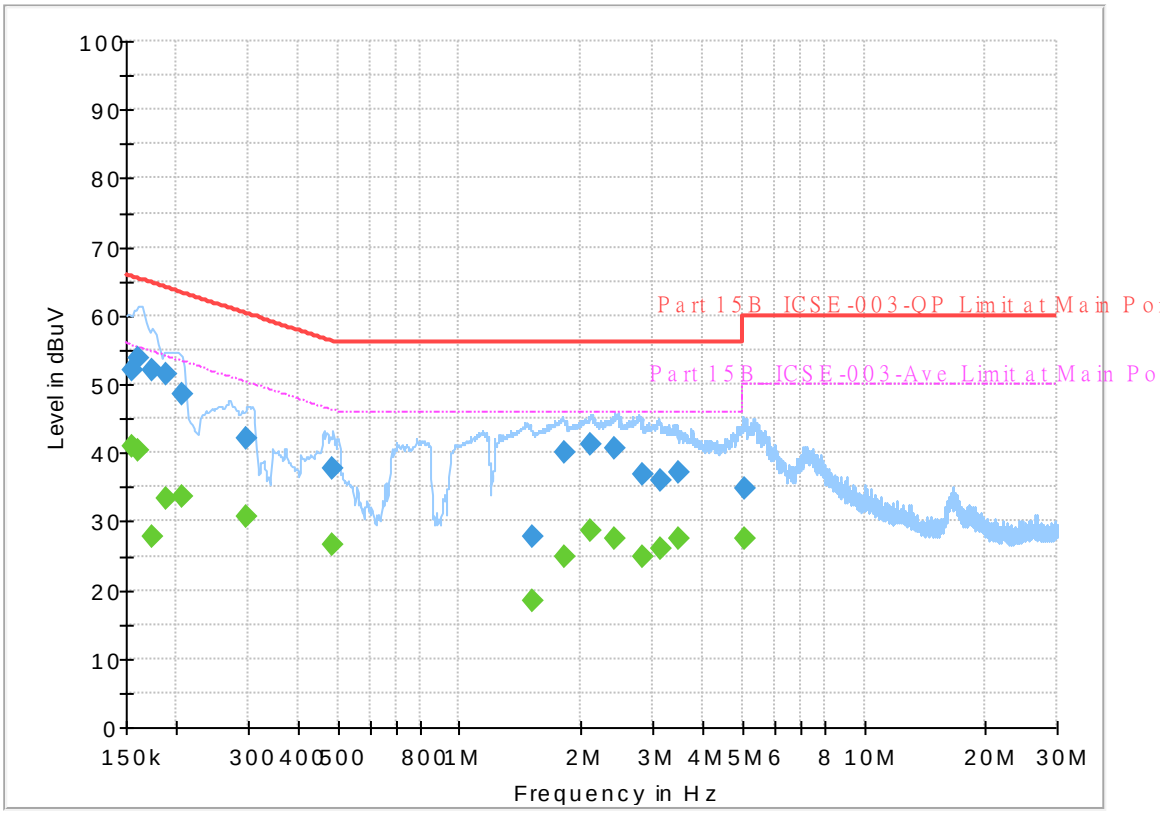
Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	---	39.13	55.75	16.62	L1	OFF	19.8
0.154500	51.90	---	65.75	13.85	L1	OFF	19.8
0.163500	---	36.67	55.28	18.61	L1	OFF	19.8
0.163500	52.90	---	65.28	12.38	L1	OFF	19.8
0.177000	---	27.22	54.63	27.41	L1	OFF	19.8
0.177000	50.20	---	64.63	14.43	L1	OFF	19.8
0.188250	---	34.50	54.11	19.61	L1	OFF	19.8
0.188250	51.97	---	64.11	12.14	L1	OFF	19.8
0.201750	---	38.78	53.54	14.76	L1	OFF	19.8
0.201750	53.11	---	63.54	10.43	L1	OFF	19.8
0.233250	---	29.47	52.33	22.86	L1	OFF	19.8
0.233250	43.70	---	62.33	18.63	L1	OFF	19.8
0.273750	---	27.93	51.00	23.07	L1	OFF	19.8
0.273750	42.41	---	61.00	18.59	L1	OFF	19.8
0.294000	---	31.24	50.41	19.17	L1	OFF	19.8
0.294000	43.02	---	60.41	17.39	L1	OFF	19.8
0.384000	---	19.65	48.19	28.54	L1	OFF	19.8
0.384000	32.73	---	58.19	25.46	L1	OFF	19.8
0.471750	---	25.46	46.48	21.02	L1	OFF	19.8
0.471750	37.75	---	56.48	18.73	L1	OFF	19.8
1.484250	---	23.11	46.00	22.89	L1	OFF	19.8

1.484250	38.62	---	56.00	17.38	L1	OFF	19.8
1.783500	---	26.32	46.00	19.68	L1	OFF	19.8
1.783500	39.84	---	56.00	16.16	L1	OFF	19.8
2.105250	---	27.16	46.00	18.84	L1	OFF	19.8
2.105250	39.93	---	56.00	16.07	L1	OFF	19.8
2.472000	---	24.68	46.00	21.32	L1	OFF	19.8
2.472000	38.07	---	56.00	17.93	L1	OFF	19.8
2.746500	---	26.67	46.00	19.33	L1	OFF	19.8
2.746500	38.84	---	56.00	17.16	L1	OFF	19.8
3.039000	---	26.57	46.00	19.43	L1	OFF	19.8
3.039000	37.64	---	56.00	18.36	L1	OFF	19.8
5.352000	---	28.79	50.00	21.21	L1	OFF	19.8
5.352000	36.79	---	60.00	23.21	L1	OFF	19.8

EUT Information

Report NO :	0D1216-04
Test Mode :	Mode 1
Test Voltage :	120Vac/60Hz
Phase :	Neutral

Full Spectrum



Final_Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154500	---	41.06	55.75	14.69	N	OFF	19.8
0.154500	52.11	---	65.75	13.64	N	OFF	19.8
0.161250	---	40.41	55.40	14.99	N	OFF	19.8
0.161250	53.93	---	65.40	11.47	N	OFF	19.8
0.174750	---	27.86	54.73	26.87	N	OFF	19.8
0.174750	52.01	---	64.73	12.72	N	OFF	19.8
0.188250	---	33.26	54.11	20.85	N	OFF	19.8
0.188250	51.37	---	64.11	12.74	N	OFF	19.8
0.206250	---	33.52	53.36	19.84	N	OFF	19.8
0.206250	48.53	---	63.36	14.83	N	OFF	19.8
0.296250	---	30.83	50.35	19.52	N	OFF	19.8
0.296250	42.11	---	60.35	18.24	N	OFF	19.8
0.485250	---	26.68	46.25	19.57	N	OFF	19.8
0.485250	37.81	---	56.25	18.44	N	OFF	19.8
1.509000	---	18.53	46.00	27.47	N	OFF	19.8
1.509000	27.63	---	56.00	28.37	N	OFF	19.8
1.810500	---	24.92	46.00	21.08	N	OFF	19.8
1.810500	39.95	---	56.00	16.05	N	OFF	19.8
2.114250	---	28.78	46.00	17.22	N	OFF	19.8
2.114250	41.36	---	56.00	14.64	N	OFF	19.8
2.429250	---	27.45	46.00	18.55	N	OFF	19.8

2.429250	40.55	---	56.00	15.45	N	OFF	19.8
2.820750	---	24.87	46.00	21.13	N	OFF	19.8
2.820750	36.96	---	56.00	19.04	N	OFF	19.8
3.147000	---	26.16	46.00	19.84	N	OFF	19.8
3.147000	36.11	---	56.00	19.89	N	OFF	19.8
3.493500	---	27.55	46.00	18.45	N	OFF	19.8
3.493500	37.21	---	56.00	18.79	N	OFF	19.8
5.086500	---	27.42	50.00	22.58	N	OFF	19.9
5.086500	34.77	---	60.00	25.23	N	OFF	19.9

Appendix C. Radiated Spurious Emission Test Data

Test Engineer :	Kevin Hsu, Fu Chen and Troye Hsieh	**Temperature :**	20.1~24℃
		Relative Humidity :	43.7~51.3%

Remark: For Radiated Spurious Emission Test Data, Ant. A means Chain 1 (Aux.) and Ant. B means Chain 2 (Main).

Note symbol

-L	**Low channel location**
-R	**High channel location**

C1. Radiated Spurious Emission Test Modes

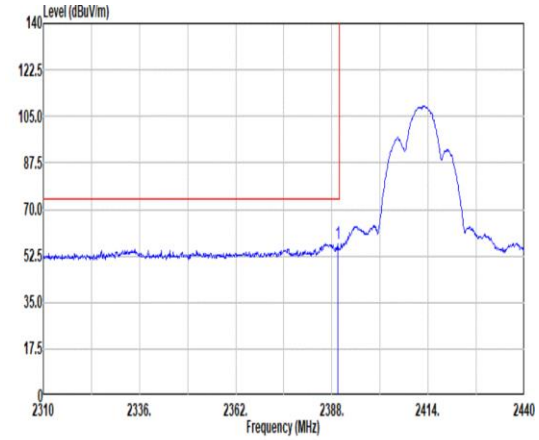
Mode	Band (MHz)	Antenna	Modulation	Channel	Frequency	Data Rate	RU	Remark
Mode 1	2400-2483.5	A+B	802.11b	01	2412	1Mbps	-	-
Mode 2	2400-2483.5	A+B	802.11ac VHT40	10	2457	MCS0	-	-
Mode 3	2400-2483.5	A+B	802.11b	01	2412	1Mbps	-	SHF
Mode 4	2400-2483.5	A+B	802.11b	01	2412	1Mbps	-	LF

C2. Summary of each worse mode

Mode	Modulation	Ch.	Freq. (MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Pol.	Peak Avg.	Result	RU	Remark
1	802.11b	01	2386.05	51.28	54.00	-2.72	V	Avg.	Pass	-	Band Edge
	802.11b	01	4824.00	52.24	54.00	-1.76	V	Avg.	Pass	-	Harmonic
2	802.11ac VHT40	10	2483.53	47.43	54.00	-6.57	V	Avg.	Pass	-	Band Edge
	802.11ac VHT40	10	7371.00	43.56	74.00	-30.44	H	Peak	Pass	-	Harmonic
3	SHF	01	24825.76	40.79	74.00	-33.21	V	Peak	Pass	-	SHF
4	LF	01	30.00	31.09	40.00	-8.91	V	Peak	Pass	-	LF

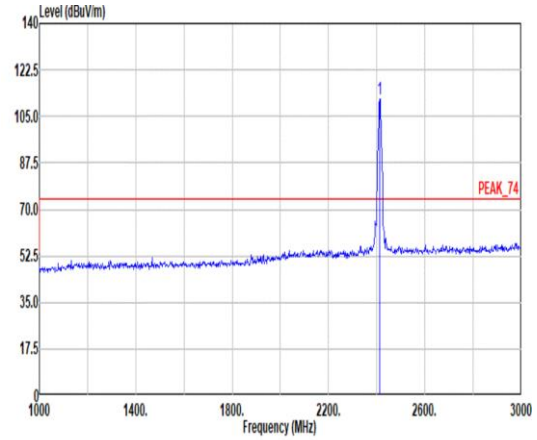
Mode	1	
	Band Edge	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	A+B	
Pol.	Horizontal	Fundamental

Peak



Site : 03CH11-HY
Condition: PEAK_BE_74 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

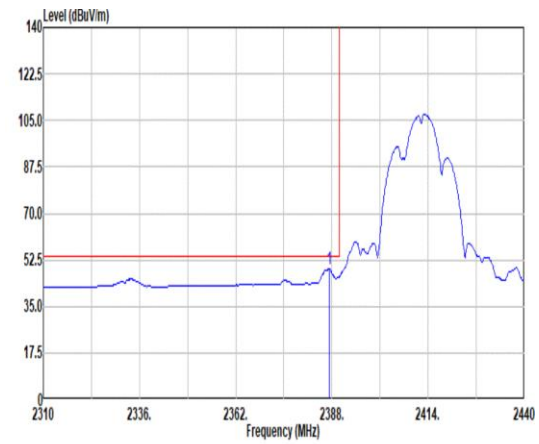
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2389.69	57.17	74.00	-16.83	46.40	27.30	6.78	33.34	10.03	100	92	PEAK



Site : 03CH11-HY
Condition: PEAK_74 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

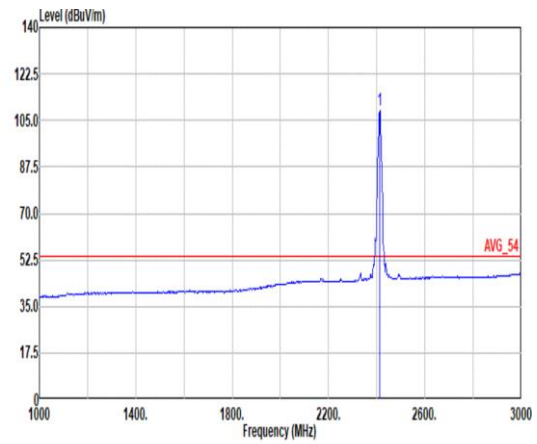
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2412.00	111.44	------	------	100.48	27.44	6.81	33.32	10.03	100	92	PEAK

Avg



Site : 03CH11-HY
Condition: AVG_BE_54 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2387.22	49.09	54.00	-4.91	38.35	27.27	6.78	33.34	10.03	100	92	AVERAGE

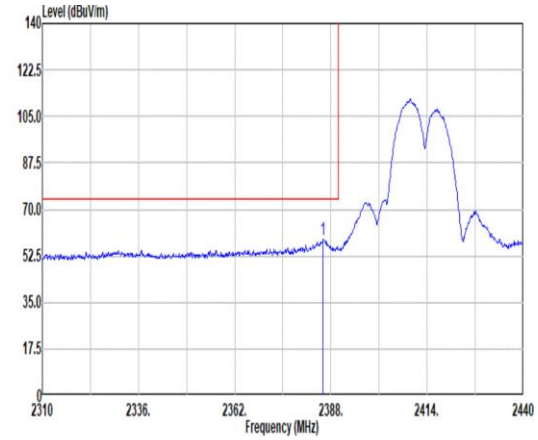


Site : 03CH11-HY
Condition: AVG_54 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2412.00	108.60	------	------	97.64	27.44	6.81	33.32	10.03	100	92	AVERAGE

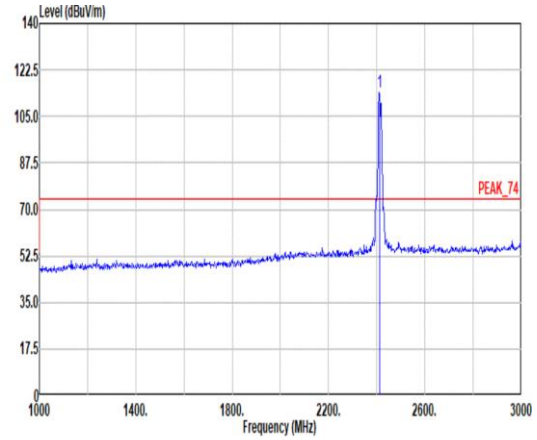
Mode	1	
	Band Edge	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	A+B	
Pol.	Vertical	Fundamental

Peak



Site : 03CH11-HY
Condition: PEAK_BE_74 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

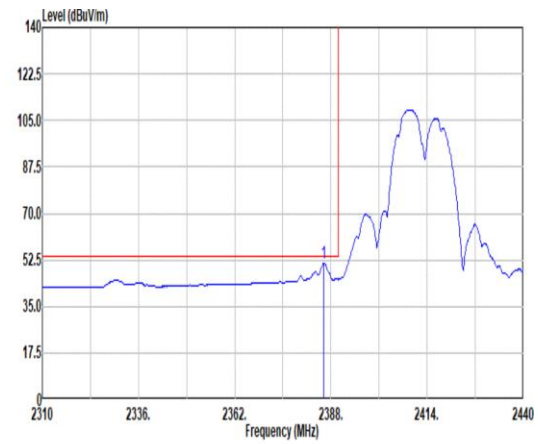
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2385.92	58.44	74.00	-15.56	47.71	27.26	6.78	33.34	10.03	318	249	PEAK



Site : 03CH11-HY
Condition: PEAK_74 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

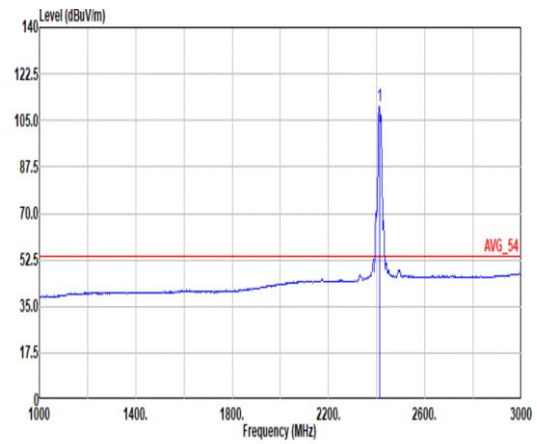
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2412.00	113.92	------	------	103.02	27.40	6.80	33.33	10.03	318	249	PEAK

Avg



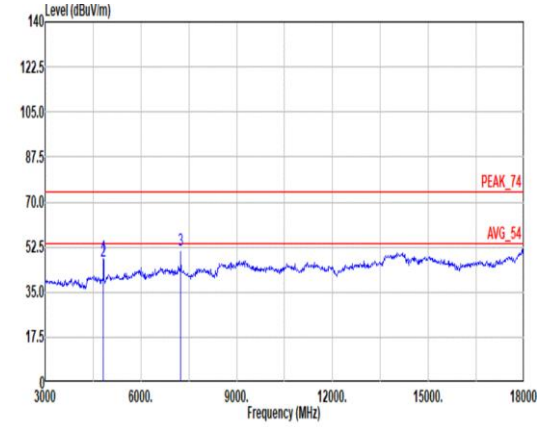
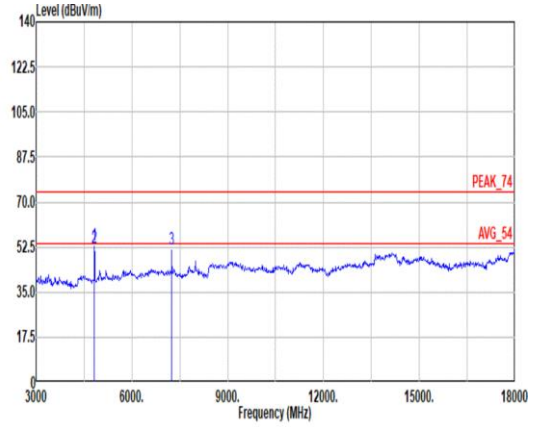
Site : 03CH11-HY
Condition: AVG_BE_54 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

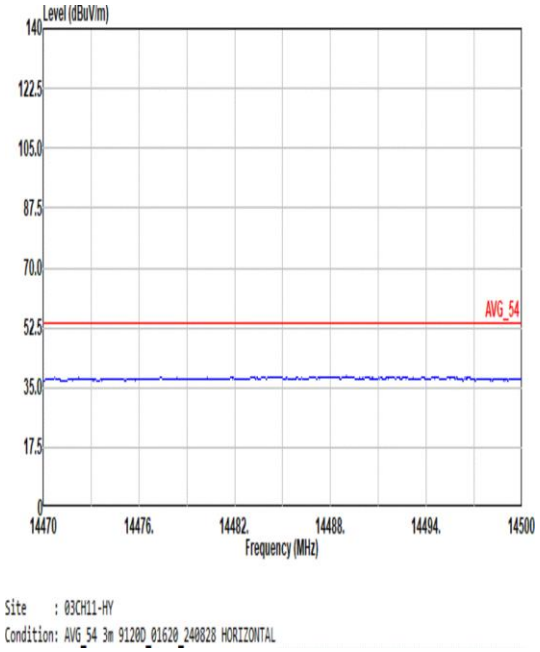
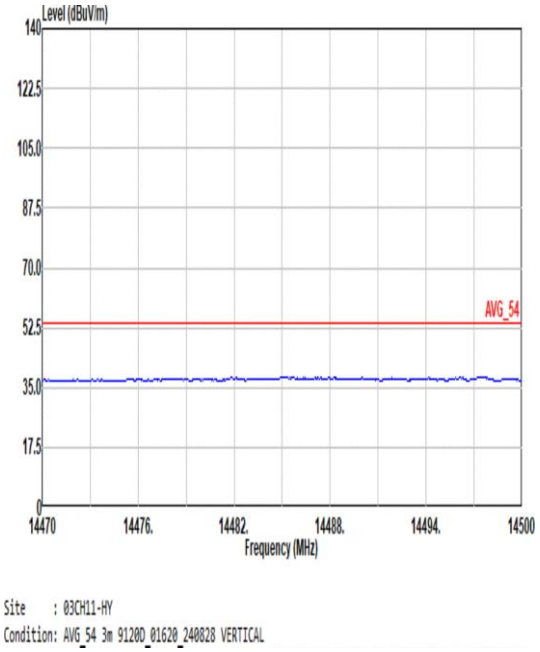
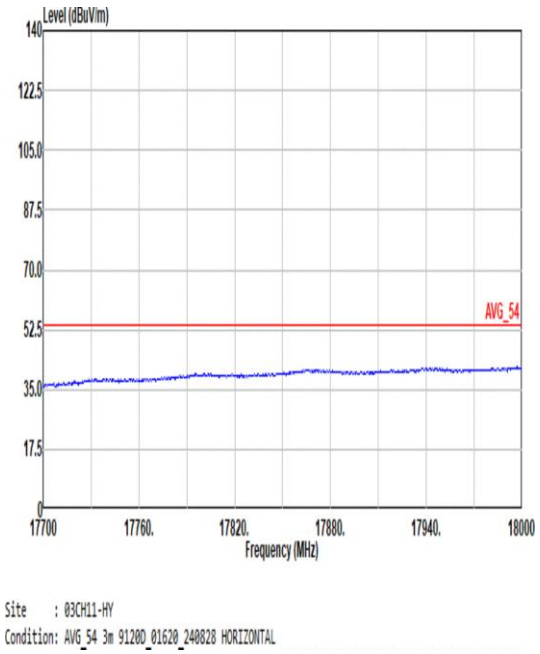
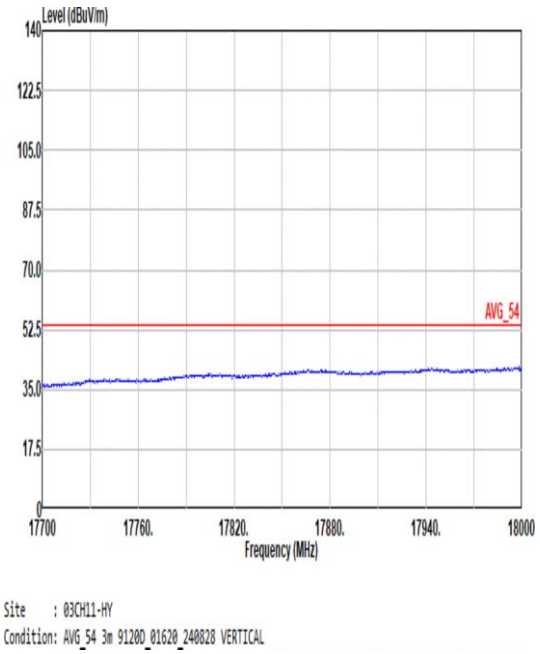
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2386.05	51.28	54.00	-2.72	40.55	27.26	6.78	33.34	10.03	318	249	AVERAGE



Site : 03CH11-HY
Condition: AVG_54 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

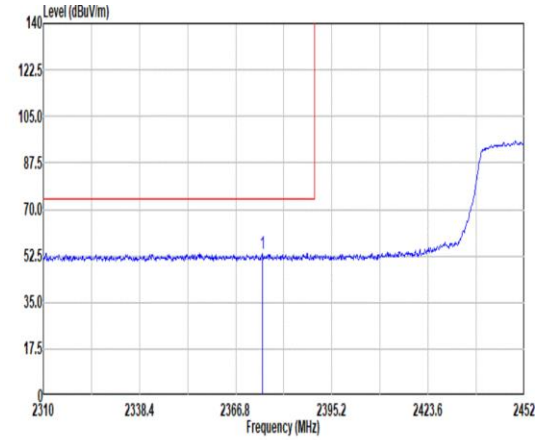
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2412.00	110.67	------	------	99.77	27.40	6.80	33.33	10.03	318	249	AVERAGE

Mode	1	
	Harmonic	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	A+B	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_240828 HORIZONTAL Freq Level Limit Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 4824.00 48.66 74.00 -25.34 62.89 32.44 11.36 58.54 0.51 100 75 PEAK 2 4824.00 46.77 54.00 -7.23 61.00 32.44 11.36 58.54 0.51 100 75 AVERAGE	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_240828 VERTICAL Freq Level Limit Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 4824.00 53.33 74.00 -20.67 67.56 32.44 11.36 58.54 0.51 256 260 PEAK 2 4824.00 52.24 54.00 -1.76 66.47 32.44 11.36 58.54 0.51 256 260 AVERAGE
Remark :#3 can be ignored since it falls within the non-restricted band and meet the requirements of 15.247 (d).		

Mode	1	
	Harmonic	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	A+B	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg		
17.7G ~18G Avg		

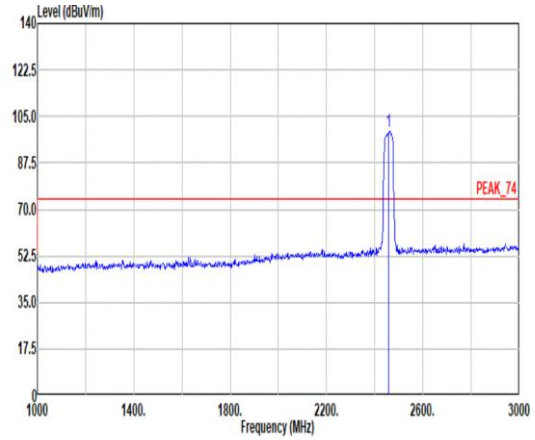
Mode	2	
	Band Edge - L	
	2400-2483.5_802.11ac VHT40_CH10_2457MHz	
ANT	A+B	
Pol.	Horizontal	Fundamental

Peak



Site : 03CH11-HY
Condition: PEAK_BE_74 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

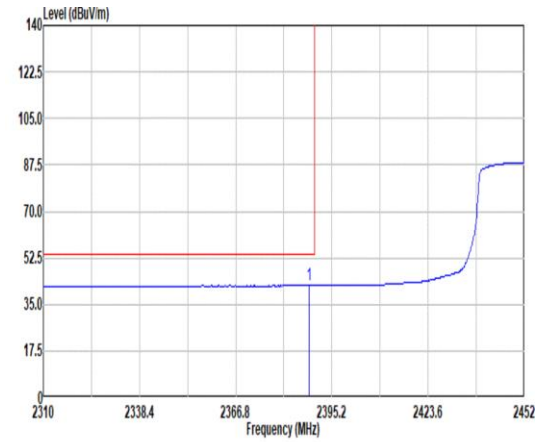
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2374.61	53.61	74.00	-20.39	42.97	27.20	6.77	33.35	10.02	376	91	PEAK



Site : 03CH11-HY
Condition: PEAK_74 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

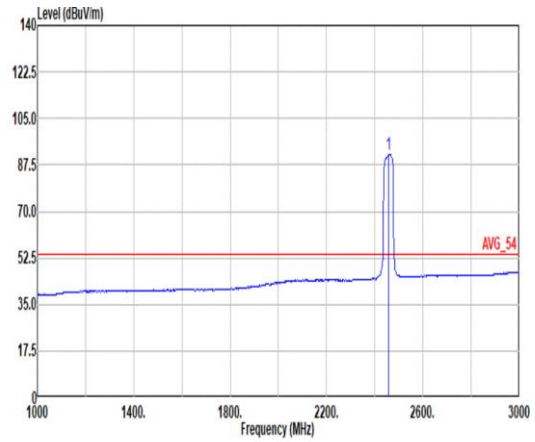
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2457.00	99.30	------	------	88.04	27.64	6.88	33.29	10.03	376	91	PEAK

Avg



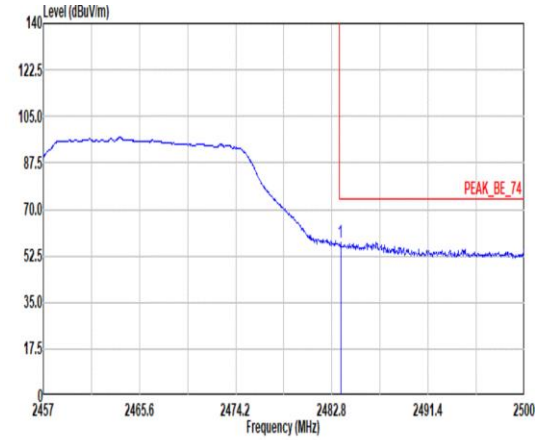
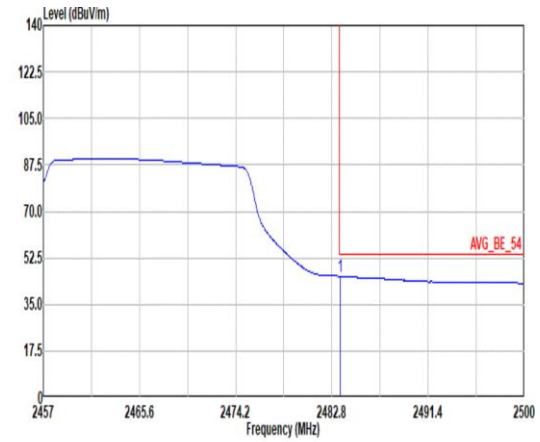
Site : 03CH11-HY
Condition: AVG_BE_54 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2388.53	42.18	54.00	-11.82	31.42	27.29	6.78	33.34	10.03	376	91	AVERAGE



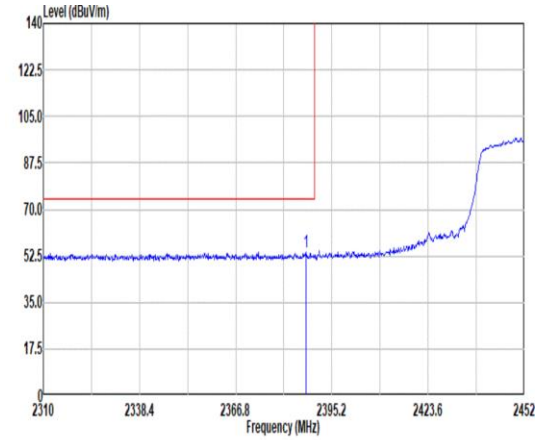
Site : 03CH11-HY
Condition: AVG_54 3m 9120D_01620_240828 HORIZONTAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2457.00	91.56	------	------	80.30	27.64	6.88	33.29	10.03	376	91	AVERAGE

Mode	2	
	Band Edge - R	
	2400-2483.5_802.11ac VHT40_CH10_2457MHz	
ANT	A+B	
Pol.	Horizontal	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_240828 HORIZONTAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 2483.57 57.57 74.00 -16.43 46.07 27.84 6.91 33.28 10.03 376 91 PEAK	Blank
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_240828 HORIZONTAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 2483.53 45.65 54.00 -8.35 34.15 27.84 6.91 33.28 10.03 376 91 AVERAGE	Blank

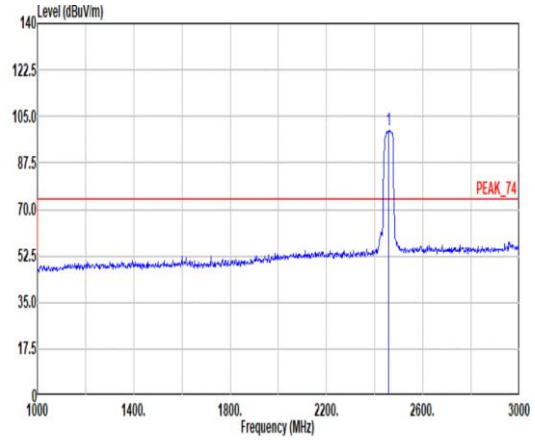
Mode	2	
	Band Edge - L	
	2400-2483.5_802.11ac VHT40_CH10_2457MHz	
ANT	A+B	
Pol.	Vertical	Fundamental

Peak



Site : 03CH11-HY
Condition: PEAK_BE_74 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

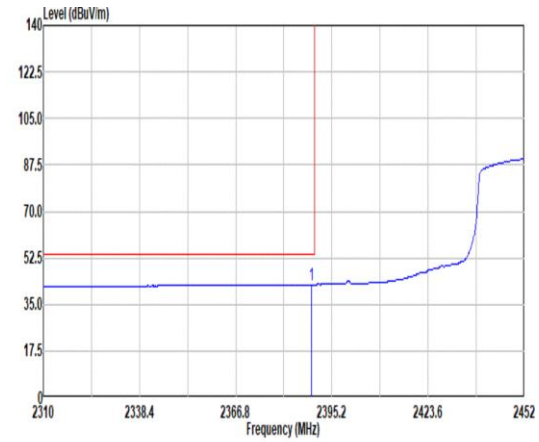
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2387.53	54.15	74.00	-19.85	43.40	27.28	6.78	33.34	10.03	300	252	PEAK



Site : 03CH11-HY
Condition: PEAK_74 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:3000.000kHz SWT:Auto

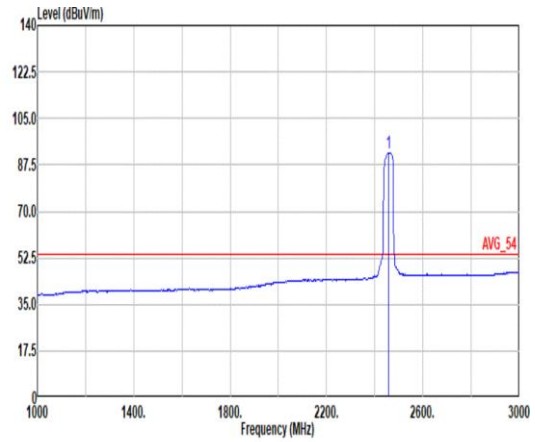
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2457.00	99.60	------	------	88.38	27.60	6.88	33.29	10.03	300	252	PEAK

Avg



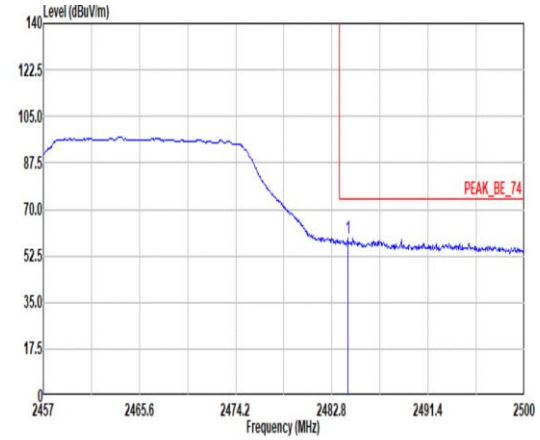
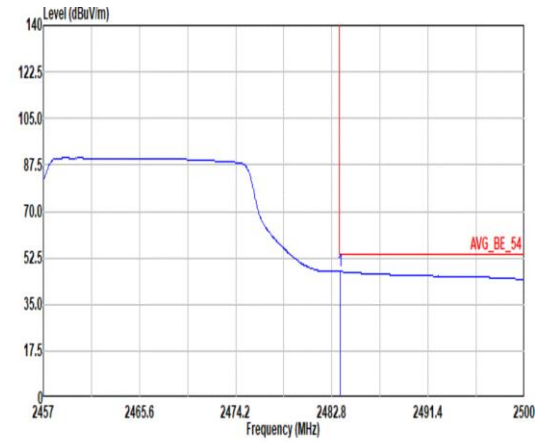
Site : 03CH11-HY
Condition: AVG_BE_54 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

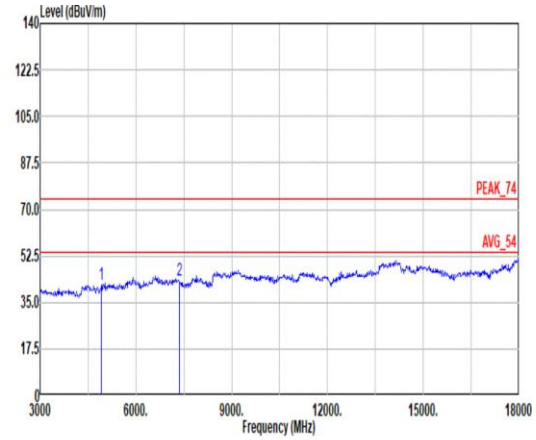
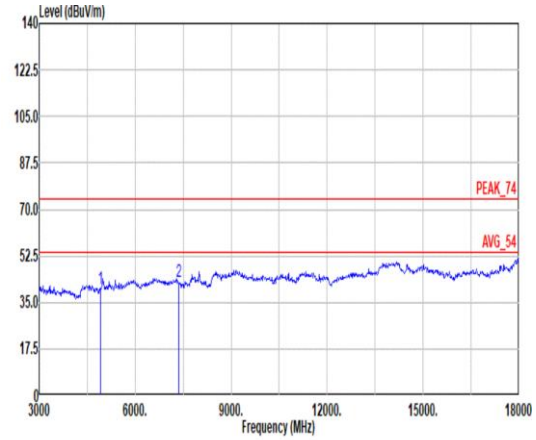
	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2389.09	42.52	54.00	-11.48	31.76	27.29	6.78	33.34	10.03	300	252	AVERAGE

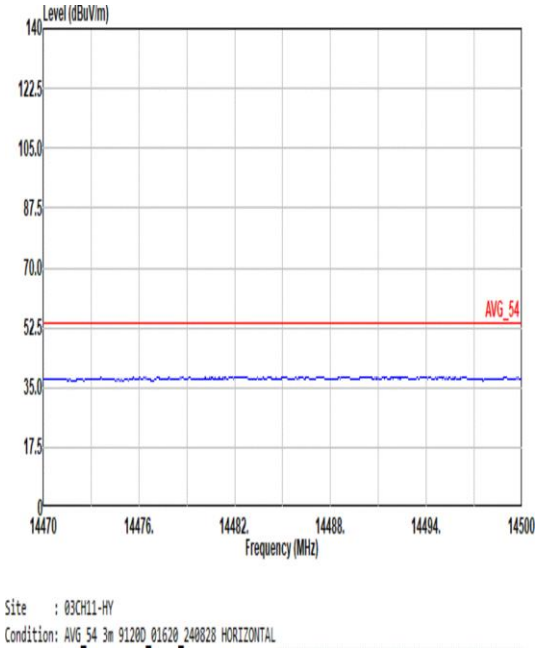
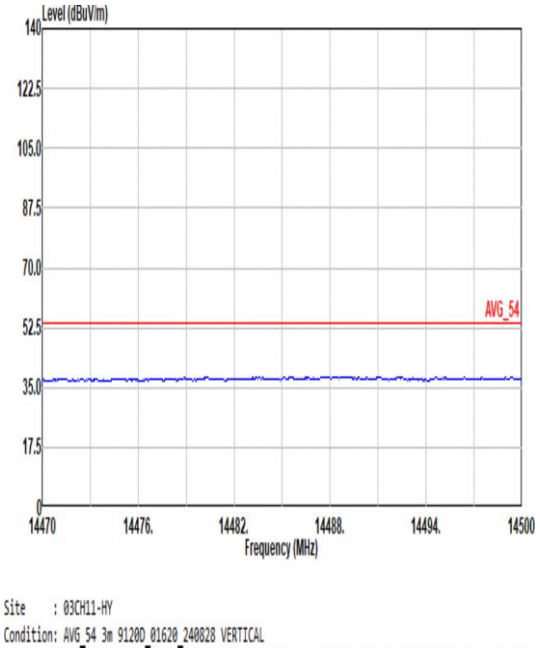
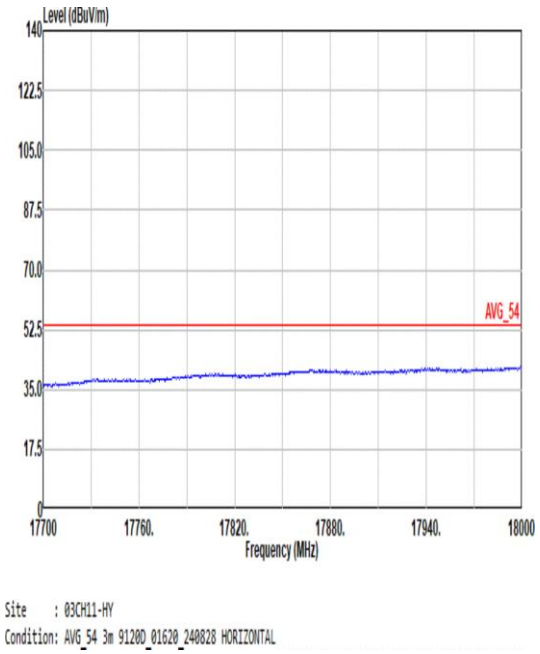
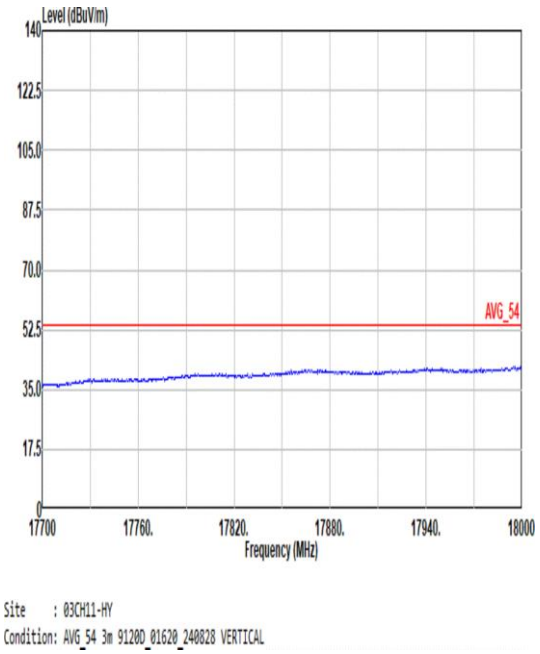


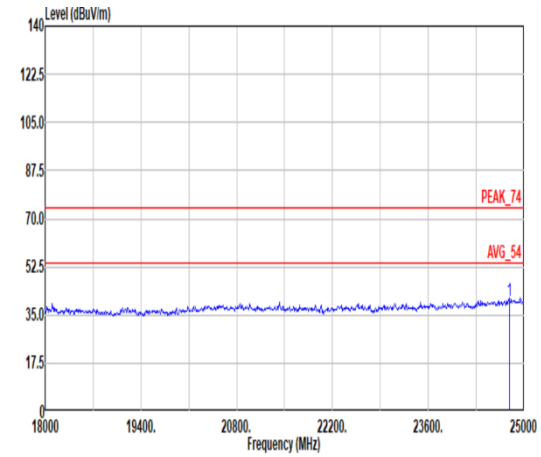
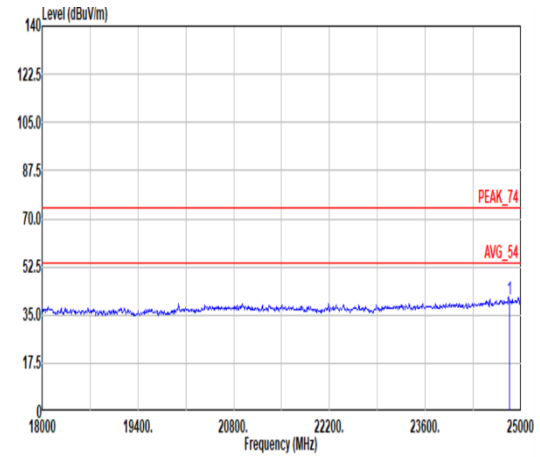
Site : 03CH11-HY
Condition: AVG_54 3m 9120D_01620_240828 VERTICAL
: RBW:1000.000kHz VBW:0.010kHz SWT:Auto

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	2457.00	91.87	------	------	80.65	27.60	6.88	33.29	10.03	300	252	AVERAGE

Mode	2	
	Band Edge - R	
	2400-2483.5_802.11ac VHT40_CH10_2457MHz	
ANT	A+B	
Pol.	Vertical	Fundamental
Peak	 Site : 03CH11-HY Condition: PEAK_BE_74 3m 9120D_01620_240828 VERTICAL : RBW:1000.000kHz VBW:3000.000kHz SWT:Auto Freq Level Limit Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 2484.26 59.16 74.00 -14.84 47.66 27.84 6.91 33.28 10.03 300 252 PEAK	Blank
Avg	 Site : 03CH11-HY Condition: AVG_BE_54 3m 9120D_01620_240828 VERTICAL : RBW:1000.000kHz VBW:0.010kHz SWT:Auto Freq Level Limit Margin Read Level Ant Factor Cable Loss Preamp Factor Aux Factor APos TPos Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 2483.53 47.43 54.00 -6.57 35.93 27.84 6.91 33.28 10.03 300 252 AVERAGE	Blank

Mode	2	
	Harmonic	
	2400-2483.5_802.11ac VHT40_CH10_2457MHz	
ANT	A+B	
Pol.	Horizontal	Vertical
Peak Avg	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_240828 HORIZONTAL Limit Read Ant Cable Preamp Aux APos TPos Freq Level Margin Level Factor Loss Factor Factor Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 4914.00 41.51 74.00 -32.49 55.20 32.86 11.51 58.61 0.55 -- -- PEAK 2 7371.00 43.56 74.00 -30.44 51.03 36.57 14.61 58.95 0.30 -- -- PEAK	 Site : 03CH11-HY Condition: PEAK_74 3m 9120D_01620_240828 VERTICAL Limit Read Ant Cable Preamp Aux APos TPos Freq Level Margin Level Factor Loss Factor Factor Remark MHz dBm dBm dB dBuV dB/m dB dB dB cm deg 1 4914.00 40.31 74.00 -33.69 54.00 32.86 11.51 58.61 0.55 -- -- PEAK 2 7371.00 42.95 74.00 -31.05 50.42 36.57 14.61 58.95 0.30 -- -- PEAK

Mode	2	
	Harmonic	
	2400-2483.5_802.11ac VHT40_CH10_2457MHz	
ANT	A+B	
Pol.	Horizontal	Vertical
14.47G ~14.5G Avg		
17.7G ~18G Avg		

Mode	3	
	SHF	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	A+B	
Pol.	Horizontal	Vertical
Peak		

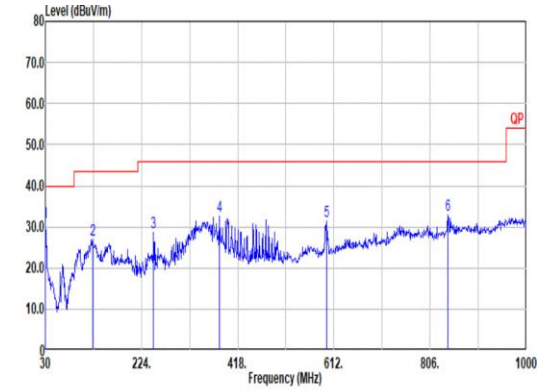
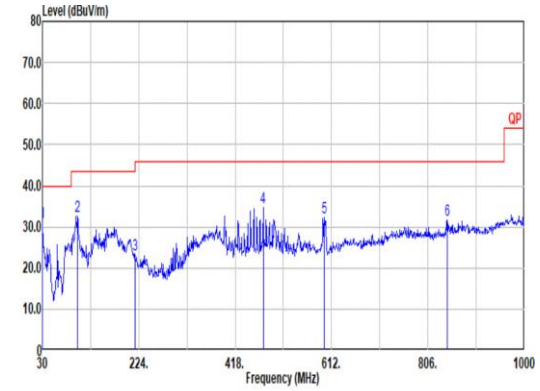
Site : 03CH11-HY
Condition: PEAK_74 1m SHF_00993_231124 HORIZONTAL

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	24782.96	40.07	74.00	-33.93	35.32	39.17	28.11	52.99	-9.54	--	--	PEAK

Level (dBuV/m)
140
122.5
105.0
87.5
70.0
52.5
35.0
17.5
0
PEAK_74
AVG_54
1
18000
19400.
20800.
22200.
23600.
25000
Frequency (MHz)

Site : 03CH11-HY
Condition: PEAK_74 1m SHF_00993_231124 VERTICAL

	Freq	Level	Limit Line	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	24825.76	40.79	74.00	-33.21	35.88	39.25	28.17	52.97	-9.54	--	--	PEAK

Mode	4	
	LF	
	2400-2483.5_802.11b_CH01_2412MHz	
ANT	A+B	
Pol.	Horizontal	Vertical
QP/ Peak		

Site : 03CH11-HY
Condition: QP 3m Bilog_35414_241005 HORIZONTAL

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	30.00	31.06	40.00	-8.94	38.60	24.34	0.50	32.46	0.08	--	--	Peak
2	125.06	26.82	43.50	-16.68	40.15	17.51	1.22	32.11	0.05	--	--	Peak
3	248.25	28.75	46.00	-17.25	40.79	18.03	1.93	32.17	0.17	--	--	Peak
4	381.14	32.53	46.00	-13.47	40.76	20.90	2.48	31.71	0.10	--	--	Peak
5	597.45	31.54	46.00	-14.46	34.94	25.69	3.17	32.38	0.12	--	--	Peak
6	841.89	32.83	46.00	-13.17	31.35	29.27	3.73	31.62	0.10	--	--	Peak

Site : 03CH11-HY
Condition: QP 3m Bilog_35414_241005 VERTICAL

	Freq	Level	Limit	Margin	Read Level	Ant Factor	Cable Loss	Preamp Factor	Aux Factor	APos	TPos	Remark
	MHz	dBm	dBm	dB	dBuV	dB/m	dB	dB	dB	cm	deg	
1	30.00	31.09	40.00	-8.91	38.63	24.34	0.50	32.46	0.08	--	--	Peak
2	99.84	32.65	43.50	-10.85	47.87	16.00	1.09	32.35	0.04	--	--	Peak
3	216.24	23.12	46.00	-22.88	38.74	14.78	1.76	32.30	0.14	--	--	Peak
4	474.26	34.66	46.00	-11.34	40.62	23.31	2.78	32.16	0.11	--	--	Peak
5	597.45	32.45	46.00	-13.55	35.85	25.69	3.17	32.38	0.12	--	--	Peak
6	844.80	31.70	46.00	-14.30	30.13	29.37	3.73	31.63	0.10	--	--	Peak

Appendix D. Duty Cycle Plots

Chain	Band	Duty Cycle(%)	T(us)	1/T(kHz)	VBW Setting
1+2	802.11b	100.00	-	-	-
1+2	2.4GHz 802.11ac VHT40	100.00	-	-	-

MIMO <Chain 1+2>

802.11b	2.4GHz 802.11ac VHT40