

TEST REPORT

CERTIFICATE OF CONFORMITY

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)
47 CFR FCC Part 15, Subpart E (Section 15.407)

Report No.: RFBEMI-WTW-P25020702-8

FCC ID: NOIKBN365B

Product: Electronic Display Device

Brand: Rakuten kobo

Model No.: N365B

Received Date: 2025/2/28

Test Date: 2025/4/21 ~ 2025/4/24

Issued Date: 2025/6/3

Applicant: NETRONIX, INC.

Address: No. 945, Boai St., Jubei City, Hsin-Chu, 30265, Taiwan

Factory: (1) NETRONIX, INC.

(2) NTX Electronics YANGZHOU CO., LTD.

Address: (1) No. 945, Boai St., Jubei City, Hsin-Chu, 30265, Taiwan

(2) No. 8, Wuzhou West Road, Economic and technological Development Zone,
Yangzhou, Jiangsu Province, 225009, China

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

Lab Address: No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

FCC Registration / 788550 / TW0003

Designation Number:

Approved by: _____

Jeremy Lin

Date: _____

2025/6/3

Jeremy Lin / Project Engineer

This test report consists of 33 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 : Vera Huang / Specialist

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

Table of Contents

Release Control Record	3
1 Certificate.....	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty	5
2.2 Supplementary Information	5
3 General Information	6
3.1 General Description of EUT	6
3.2 Antenna Description of EUT	7
3.3 Test Mode Applicability and Tested Channel Detail.....	8
3.4 Test Program Used and Operation Descriptions	9
3.5 Connection Diagram of EUT and Peripheral Devices	9
3.6 Configuration of Peripheral Devices and Cable Connections	9
4 Test Instruments	10
4.1 Unwanted Emissions below 1 GHz	10
4.2 Unwanted Emissions above 1 GHz.....	11
4.3 Conducted Out of Band Emissions	11
5 Limits of Test Items.....	12
5.1 Unwanted Emissions below 1 GHz	12
5.2 Unwanted Emissions above 1 GHz.....	13
5.3 Conducted Out of Band Emissions	13
6 Test Arrangements.....	14
6.1 Unwanted Emissions below 1 GHz	14
6.1.1 Test Setup	14
6.1.2 Test Procedure.....	15
6.2 Unwanted Emissions above 1 GHz.....	16
6.2.1 Test Setup	16
6.2.2 Test Procedure.....	16
6.3 Conducted Out of Band Emissions	17
6.3.1 Test Setup	17
6.3.2 Test Procedure.....	17
7 Test Results of Test Item	18
7.1 Unwanted Emissions below 1 GHz	18
7.2 Unwanted Emissions above 1 GHz.....	22
7.3 Conducted Out of Band Emissions	31
8 Pictures of Test Arrangements	32
9 Information of the Testing Laboratories	33



Release Control Record

Issue No.	Description	Date Issued
RFBEMI-WTW-P25020702-8	Original Release	2025/6/3

1 Certificate

Product: Electronic Display Device

Brand: Rakuten kobo

Test Model: N365B

Sample Status: Engineering sample

Applicant: NETRONIX, INC.

Test Date: 2025/4/21 ~ 2025/4/24

Standard: 47 CFR FCC Part 15, Subpart C (Section 15.247)

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

Measurement procedure: ANSI C63.10-2013

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

Standard / Clause	Test Item	Result	Remark
15.205 /15.209 /15.247(d) 15.407(b)(9)	Unwanted Emissions below 1 GHz	Pass	Meet the requirement of limit.
15.205 /15.209 /15.247(d) 15.407(b) (1/2/3/4(i)/10)	Unwanted Emissions above 1 GHz	Pass	Meet the requirement of limit.
15.247(d)	Conducted Out of Band Emissions	Pass	Meet the requirement of limit.

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:

Parameter	Specification	Uncertainty (±)
Radiated Spurious Emissions below 1GHz	9 kHz ~ 30 MHz	2.44 dB
	30 MHz ~ 1 GHz	2.95 dB
Radiated Spurious Emissions above 1GHz	1 GHz ~ 18 GHz	2.26 dB
	18 GHz ~ 40 GHz	1.94 dB
Conducted Out of Band Emissions	9 kHz ~ 40 GHz	2.79 dB

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

2.2 Supplementary Information

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

3 General Information

3.1 General Description of EUT

Product	Electronic Display Device	
Brand	Rakuten kobo	
Test Model	N365B	
Modulation Technology	BT-EDR	FHSS
	BT-LE	DTS
	WLAN	DSSS, OFDM
Operating Frequency	BT	2.402 GHz ~ 2.48 GHz
	WLAN	2.412 GHz ~ 2.462 GHz
		5.18 GHz ~ 5.24 GHz
		5.745 GHz ~ 5.825 GHz

Note:

1. The EUT uses following accessories.

Item	Brand	Model	Supplier Model	Color	Specification	Material	TID number
1st source USB Cable	LUXSHARE-ICT	LB93US005-1H	-	Black	Signal Line : Shielded: Y, 1.0M, Core: N/A	TPE	-
2nd source USB Cable	Yih Fone	SH-0846	YF-USB2-A-C-1M(K)	Black	Signal Line : Shielded: Y, 1.0M, Core: N/A	TPE	12574

2. The EUT will be supported with the following eMMC and DRAM LP-DDR4 sources.

Item	Brand	Model
1st source eMMC	Phison	PTE7A0YJ-16GE
2nd source eMMC	Kingston	EMMC16G-PJ30-GA02
3rd source eMMC	FORESEE	FEMDNN016G-A3A55
1st source DRAM LP-DDR4	Nanya	NT6AN256M16AV-J2
2nd source DRAM LP-DDR4	Leahkinn	LTHS0005GS4-ZPI1
3rd source DRAM LP-DDR4	Micron	MT53E256M16D1DS-046

3. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4 GHz)	Bluetooth
2	WLAN (5 GHz)	Bluetooth

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.

Gain (dBi)	Frequency range	Antenna Type	Connector Type
3.91	2.4~2.5GHz	Chip	N/A
3.41	5.15~5.85GHz	Chip	N/A

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

2. The EUT provides 1 completed transmitter and 1 receiver.

2.4 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11b	1TX	1RX
802.11g	1TX	1RX
802.11n (HT20)	1TX	1RX
5 GHz Band		
Modulation Mode	TX & RX Configuration	
802.11a	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
802.11ac (VHT20)	1TX	1RX
802.11ac (VHT40)	1TX	1RX
802.11ac (VHT80)	1TX	1RX

3.3 Test Mode Applicability and Tested Channel Detail

Pre-Scan:	<p>1. For Radiated, pre-scan Power from AC Adpeter via USB Cable / Laptop via USB Cable / Battery and find the worst case as a representative test condition.</p> <p>2. EUT can be used in the following ways: X-axis / Y-axis / Z-axis. Pre-scan these ways and find the worst case as a representative test condition.</p> <p>3. The USB Cable has the following models: LB93US005-1H / SH-0846. Pre-scan these models of USB Cables and find the worst case as a representative test condition.</p> <p>4. The eMMC has the following models: PTE7A0YJ-16GE / EMMC16G-PJ30-GA02 / FEMDNN016G-A3A55. Pre-scan these models of eMMC and find the worst case as a representative test condition.</p> <p>5. The DRAM LP-DDR4 has the following models: NT6AN256M16AV-J2 / LTHS0005GS4-ZPI1 / MT53E256M16D1DS-046. Pre-scan these models of DRAM LP-DDR4 and find the worst case as a representative test condition.</p> <p>6. Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).</p>
Worst Case:	<p>1. For Radiated Worst Condition: Power from AC Adpeter via USB Cable</p> <p>2. X-axis / Y-axis / Z-axis Worst Condition: Y-axis</p> <p>3. USB Cable Worst Condition: SH-0846</p> <p>4. eMMC Worst Condition: FEMDNN016G-A3A55</p> <p>5. DRAM LP-DDR4 Worst Condition: MT53E256M16D1DS-046</p>

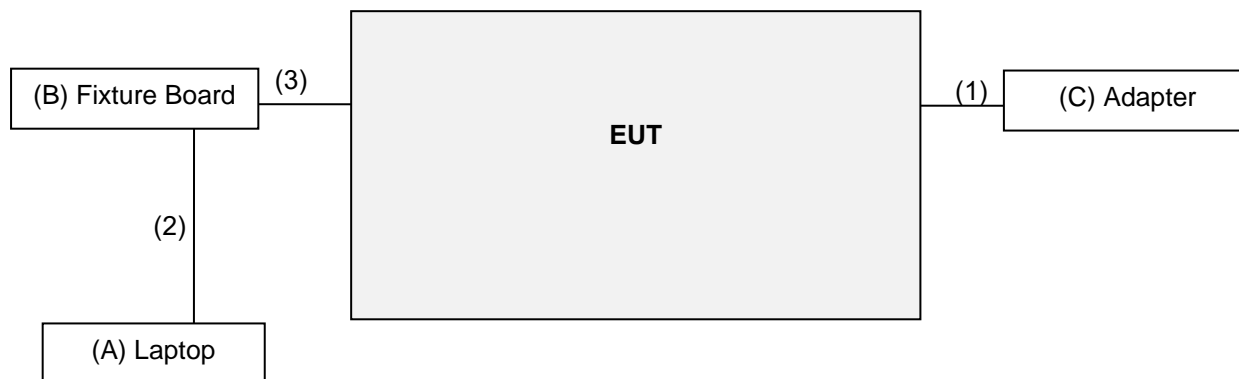
Following channel(s) was (were) selected for the final test as listed below:

Test Item	Combination	Mode	Tested Channel
Unwanted Emissions below 1 GHz	1	802.11n (HT20)	6
		GFSK	78
	2	802.11ac (VHT20)	149
		GFSK	78
Unwanted Emissions above 1 GHz	1	802.11n (HT20)	6
		GFSK	78
	2	802.11ac (VHT20)	149
		GFSK	78
Conducted Out of Band Emissions	1	802.11n (HT20)	6
		GFSK	78
	2	802.11ac (VHT20)	149
		GFSK	78

3.4 Test Program Used and Operation Descriptions

Controlling software Tera Term version 4.106 has been activated to set the EUT under transmission condition continuously at specific channel frequency.

3.5 Connection Diagram of EUT and Peripheral Devices



Under Table

3.6 Configuration of Peripheral Devices and Cable Connections

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	L470	PF0U96K5	N/A	Provided by Lab
B.	Fixture Board	Netronix	N365B console board(1.8V)	N/A	N/A	Supplied by applicant
C.	Adapter	LITEON	PA-1050-39	N/A	N/A	Provided by Lab

No.	Cable Descriptions	Qty.	Length (m)	Shielded (Yes/ No)	Cores (Qty.)	Remark
1.	USB Cable	1	1	Yes	0	Accessory of EUT
2.	USB Cable	1	1	Yes	0	Supplied by applicant
3.	Console Cable	1	0.6	No	0	Supplied by applicant, Attached on Fixture Board

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 Unwanted Emissions below 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Bi_Log Antenna Schwarzbeck	VULB 9168	9168-472	2024/10/14	2025/10/13
EXA Signal Analyzer Agilent	N9010A	MY52220207	2024/12/30	2025/12/29
Loop Antenna TESEQ	HLA 6121	45745	2024/8/21	2025/8/20
MXE EMI Receiver Keysight	N9038A	MY55420137	2024/5/8	2025/5/7
Preamplifier EMCI	EMC 330H	980112	2024/9/24	2025/9/23
	EMC001340	980201	2024/9/24	2025/9/23
RF Coaxial Cable Woken	8D-FB	Cable-Ch10-01	2024/9/24	2025/9/23
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/4/21

4.2 Unwanted Emissions above 1 GHz

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Antenna Tower & Turn Max-Full	MFA-440H	AT93021705	N/A	N/A
Boresight antenna tower fixture BV	BAF-02	7	N/A	N/A
EXA Signal Analyzer Agilent	N9010A	MY52220207	2024/12/30	2025/12/29
Horn Antenna Schwarzbeck	BBHA 9120D	9120D-969	2024/11/10	2025/11/9
	BBHA 9170	148	2024/11/10	2025/11/9
MXE EMI Receiver Keysight	N9038A	MY55420137	2024/5/8	2025/5/7
Preamplifier EMCI	EMC 012645	980115	2024/9/24	2025/9/23
	EMC 184045	980116	2024/9/24	2025/9/23
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	2024/7/6	2025/7/5
	EMC102-KM-KM-3000	150929	2024/7/6	2025/7/5
	EMC104-SM-SM- 8000+3000	171005	2024/9/24	2025/9/23
RF Coaxial Cable HUBER+SUHNER	SUCOFLEX 104	EMC104-SM-SM- 1000(140807)	2024/9/24	2025/9/23
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	N/A	N/A	N/A
Turn Table Max-Full	MFT-201SS	N/A	N/A	N/A
Turn Table Controller Max-Full	MG-7802	N/A	N/A	N/A

Notes:

1. The test was performed in HY - 966 chamber 5.
2. Tested Date: 2025/4/21 ~ 2025/4/23

4.3 Conducted Out of Band Emissions

Description Manufacturer	Model No.	Serial No.	Calibrated Date	Calibrated Until
Signal & Spectrum Analyzer R&S	FSV3044	101504	2024/6/18	2025/6/17
Software BV	ADT_RF Test Software V7.6.5.4	N/A	N/A	N/A

Notes:

1. The test was performed in Oven room.
2. Tested Date: 2025/4/24

5 Limits of Test Items

5.1 Unwanted Emissions below 1 GHz

For FCC 15.247:

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).

For FCC 15.407:

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

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

Notes:

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

5.2 Unwanted Emissions above 1 GHz

For FCC 15.247:

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.

For FCC 15.407 transmitters operating in the 5.150-5.850 GHz band:

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

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

Notes:

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

Limits of unwanted emission out of the restricted bands

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

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

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

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

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

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

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

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

5.3 Conducted Out of Band Emissions

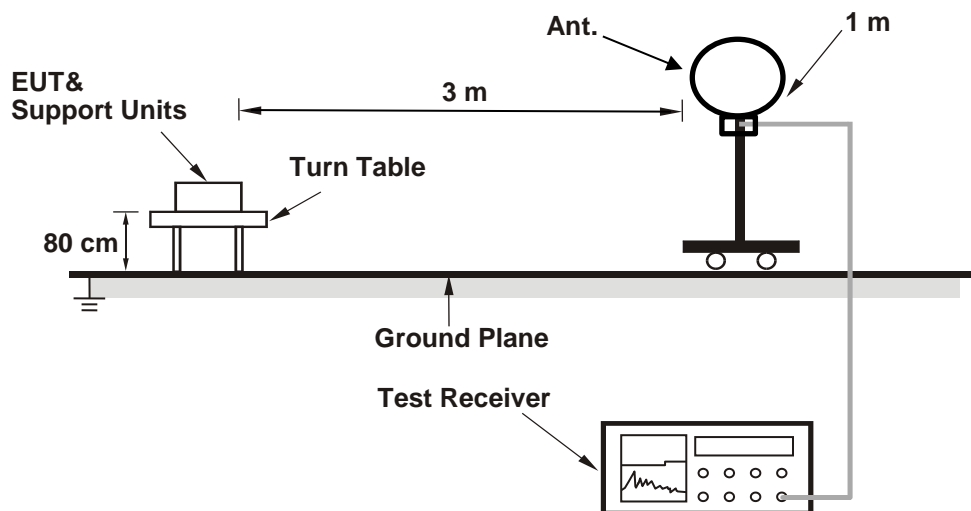
Below 30 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

6 Test Arrangements

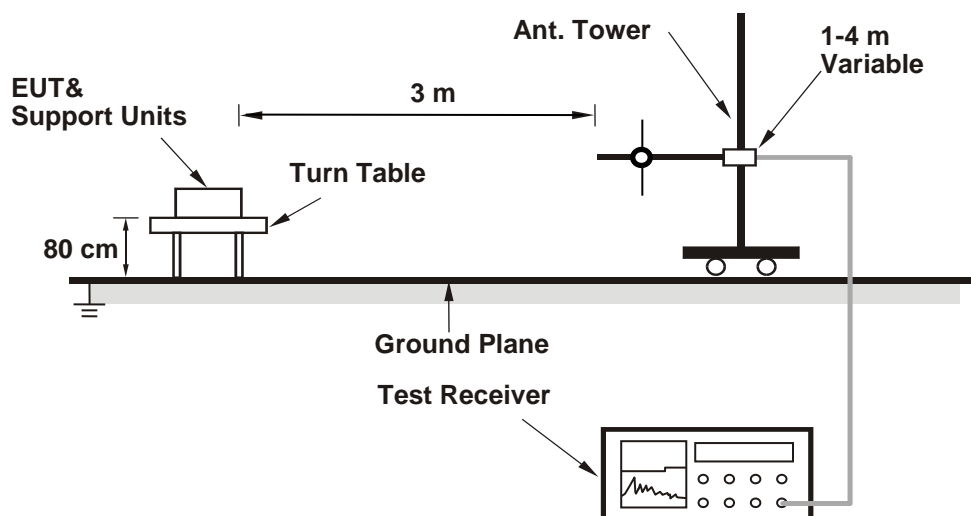
6.1 Unwanted Emissions below 1 GHz

6.1.1 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).

6.1.2 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

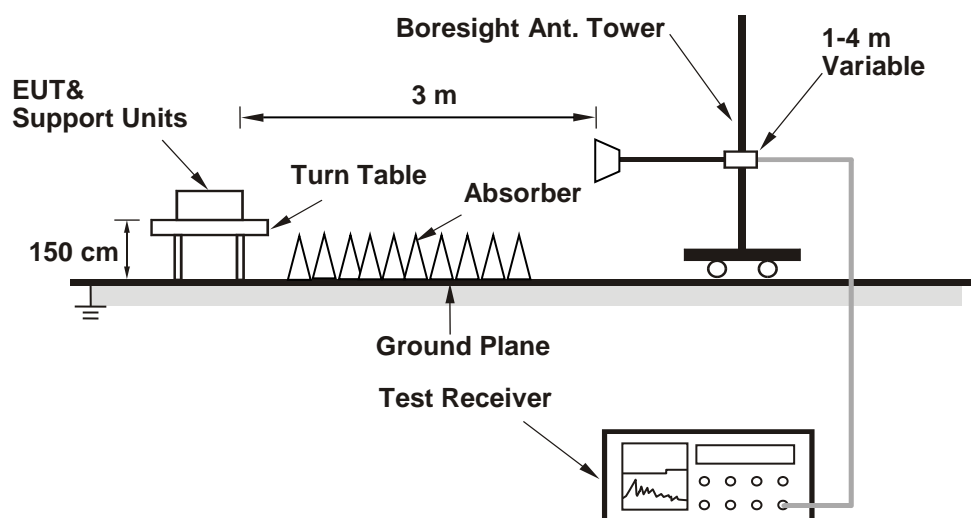
- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the 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.

6.2 Unwanted Emissions above 1 GHz

6.2.1 Test Setup



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

6.2.2 Test Procedure

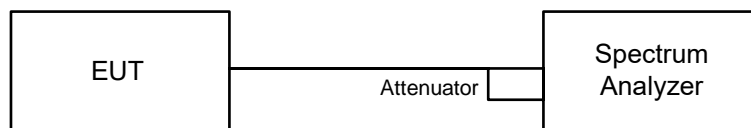
- The EUT was placed on the top of a rotating table 1.5 meters above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top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

Notes:

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

6.3 Conducted Out of Band Emissions

6.3.1 Test Setup



6.3.2 Test Procedure

MEASUREMENT PROCEDURE REF

- Set the RBW = 100 kHz.
- Set the VBW \geq 300 kHz.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

- Set RBW = 100 kHz.
- Set VBW \geq 300 kHz.
- Detector = peak.
- Sweep = auto couple.
- Trace Mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level.

7 Test Results of Test Item

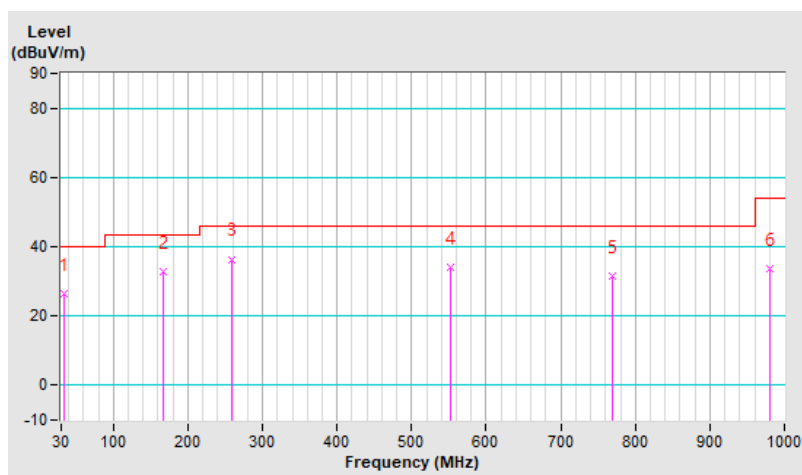
7.1 Unwanted Emissions below 1 GHz

Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	18 °C, 67 % RH
Tested By	Rex Wang		

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	33.88	26.4 QP	40.0	-13.6	2.00 H	57	39.3	-12.9
2	167.74	32.8 QP	43.5	-10.7	1.00 H	171	45.3	-12.5
3	258.92	36.4 QP	46.0	-9.6	1.00 H	202	49.6	-13.2
4	551.86	34.0 QP	46.0	-12.0	1.00 H	278	39.8	-5.8
5	769.14	31.6 QP	46.0	-14.4	1.00 H	281	32.2	-0.6
6	979.63	33.5 QP	54.0	-20.5	1.00 H	248	32.6	0.9

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 frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

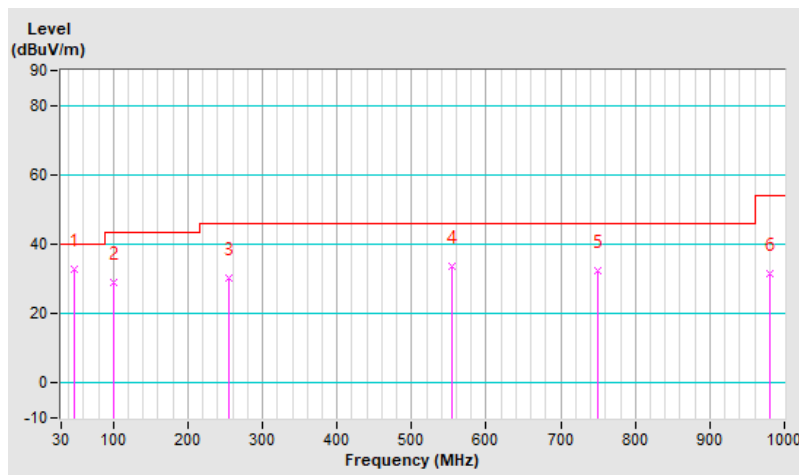


Combination	1		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	18 °C, 67 % RH
Tested By	Rex Wang		

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	48.43	32.7 QP	40.0	-7.3	1.00 V	99	44.9	-12.2
2	100.81	29.1 QP	43.5	-14.4	1.00 V	244	45.7	-16.6
3	254.07	30.1 QP	46.0	-15.9	1.00 V	213	43.5	-13.4
4	554.77	33.6 QP	46.0	-12.4	1.50 V	167	39.5	-5.9
5	749.74	32.2 QP	46.0	-13.8	1.00 V	269	33.1	-0.9
6	979.63	31.7 QP	54.0	-22.3	1.00 V	38	30.8	0.9

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 frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

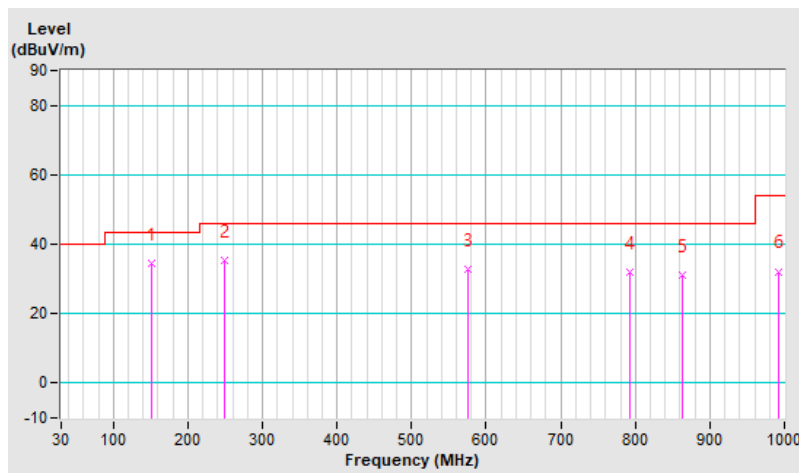


Combination	2		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	18 °C, 67 % RH
Tested By	Rex Wang		

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	150.28	34.3 QP	43.5	-9.2	1.00 H	192	46.5	-12.2
2	248.25	35.3 QP	46.0	-10.7	1.00 H	189	48.9	-13.6
3	575.14	32.8 QP	46.0	-13.2	1.00 H	263	38.2	-5.4
4	792.42	31.9 QP	46.0	-14.1	1.50 H	52	32.7	-0.8
5	863.23	31.3 QP	46.0	-14.7	1.00 H	7	31.7	-0.4
6	992.24	32.2 QP	54.0	-21.8	1.00 H	156	31.3	0.9

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 frequency range 9 kHz ~ 30 MHz: all emissions are more than 20 dB below the limit, therefore do not be recorded in this report.

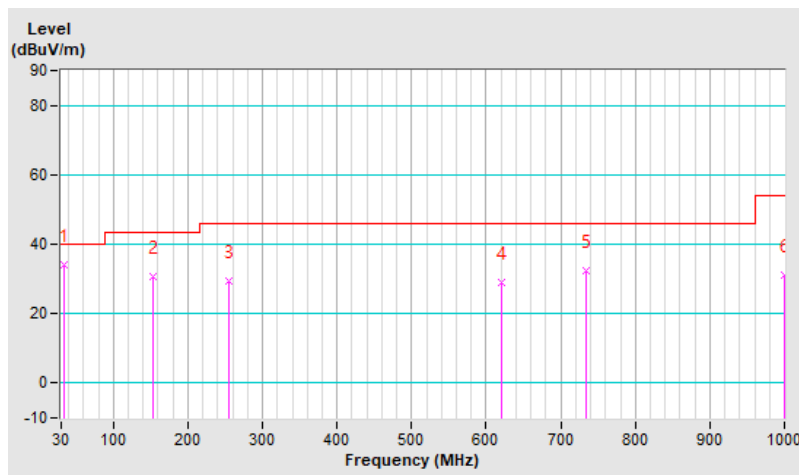


Combination	2		
Frequency Range	30 MHz ~ 1 GHz	Detector Function & Bandwidth	QP: RB=120kHz, DET=Quasi-Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	18 °C, 67 % RH
Tested By	Rex Wang		

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	34.0 QP	40.0	-6.0	1.00 V	303	46.9	-12.9
2	153.19	30.6 QP	43.5	-12.9	1.00 V	260	42.9	-12.3
3	255.04	29.2 QP	46.0	-16.8	1.00 V	218	42.5	-13.3
4	620.73	29.0 QP	46.0	-17.0	1.00 V	62	33.1	-4.1
5	734.22	32.3 QP	46.0	-13.7	1.00 V	2	33.9	-1.6
6	1000.00	31.3 QP	54.0	-22.7	1.50 V	24	30.2	1.1

Remarks:

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



7.2 Unwanted Emissions above 1 GHz

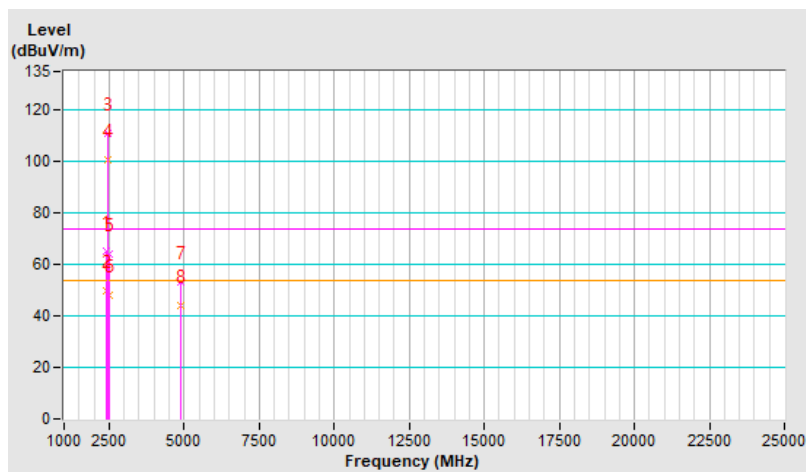
FCC 15.247: 802.11n (HT20)

Combination	1		
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390	65.4 PK	74.0	-8.6	1.59 H	49	29.9	35.5
2	2390	49.8 AV	54.0	-4.2	1.59 H	49	14.3	35.5
3	*2437	110.8 PK			1.59 H	49	75.5	35.3
4	*2437	100.4 AV			1.59 H	49	65.1	35.3
5	2483.5	63.8 PK	74.0	-10.2	1.59 H	49	28.5	35.3
6	2483.5	48.2 AV	54.0	-5.8	1.59 H	49	12.9	35.3
7	4874	53.0 PK	74.0	-21.0	2.43 H	123	48.4	4.6
8	4874	43.8 AV	54.0	-10.2	2.43 H	123	39.2	4.6

Remarks:

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

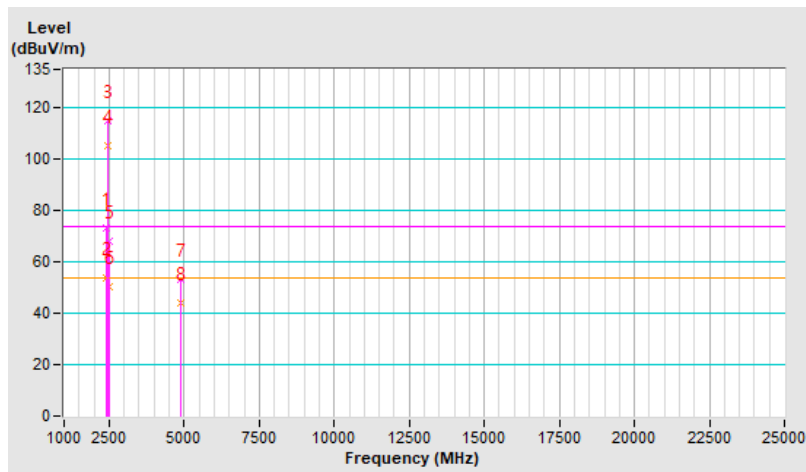


Combination	1		
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

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	73.0 PK	74.0	-1.0	1.69 V	181	37.5	35.5
2	2390	53.5 AV	54.0	-0.5	1.69 V	181	18.0	35.5
3	*2437	115.1 PK			1.69 V	181	79.8	35.3
4	*2437	105.0 AV			1.69 V	181	69.7	35.3
5	2483.5	68.2 PK	74.0	-5.8	1.69 V	181	32.9	35.3
6	2483.5	50.4 AV	54.0	-3.6	1.69 V	181	15.1	35.3
7	4874	53.3 PK	74.0	-20.7	2.38 V	99	48.7	4.6
8	4874	44.2 AV	54.0	-9.8	2.38 V	99	39.6	4.6

Remarks:

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



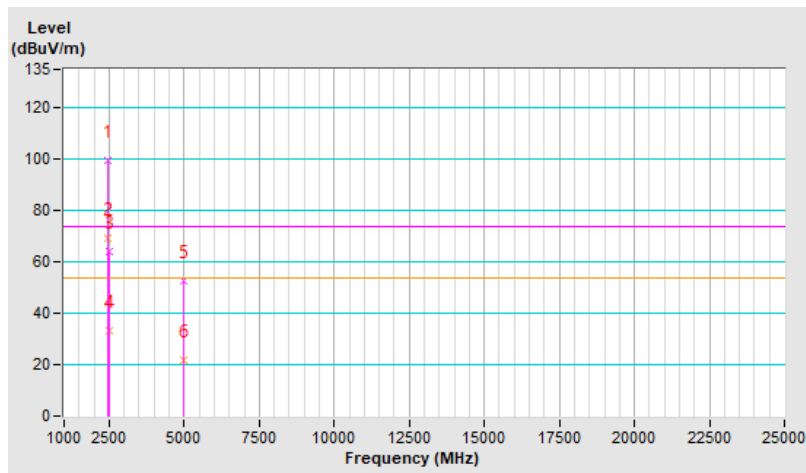
FCC 15.247: GFSK

Combination	1		
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480	99.6 PK			1.35 H	153	64.3	35.3
2	*2480	69.1 AV			1.35 H	153	33.8	35.3
3	2483.5	63.8 PK	74.0	-10.2	1.59 H	49	63.6	0.2
4	2483.5	33.3 AV	54.0	-20.7	1.59 H	49	33.1	0.2
5	4960	52.4 PK	74.0	-21.6	1.65 H	214	47.6	4.8
6	4960	21.9 AV	54.0	-32.1	1.65 H	214	17.1	4.8

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.



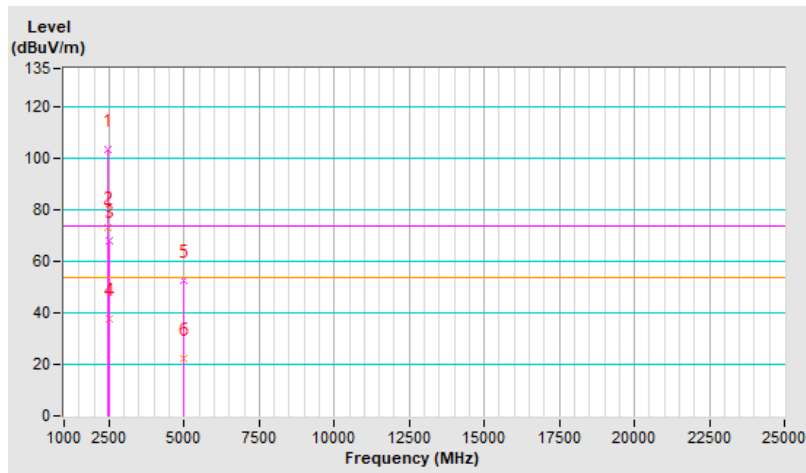
Combination	1		
Frequency Range	1 GHz ~ 25 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

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	*2480	103.5 PK			1.42 V	159	68.2	35.3
2	*2480	73.0 AV			1.42 V	159	37.7	35.3
3	2483.5	68.2 PK	74.0	-5.8	1.69 V	181	68.0	0.2
4	2483.5	37.7 AV	54.0	-16.3	1.69 V	181	37.5	0.2
5	4960	52.8 PK	74.0	-21.2	2.14 V	86	48.0	4.8
6	4960	22.3 AV	54.0	-31.7	2.14 V	86	17.5	4.8

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.



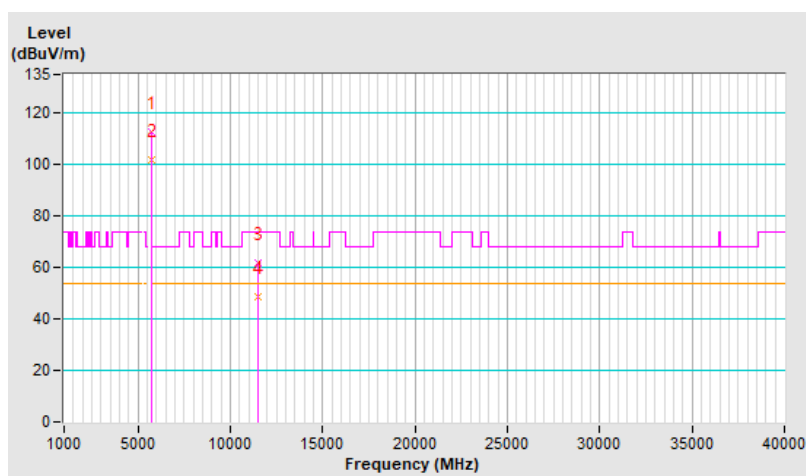
FCC 15.407: 802.11ac (VHT20)

Combination	2		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5745	112.7 PK			2.01 H	285	70.9	41.8
2	*5745	102.1 AV			2.01 H	285	60.3	41.8
3	11490	61.7 PK	74.0	-12.3	2.43 H	99	48.7	13.0
4	11490	48.6 AV	54.0	-5.4	2.43 H	99	35.6	13.0

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.

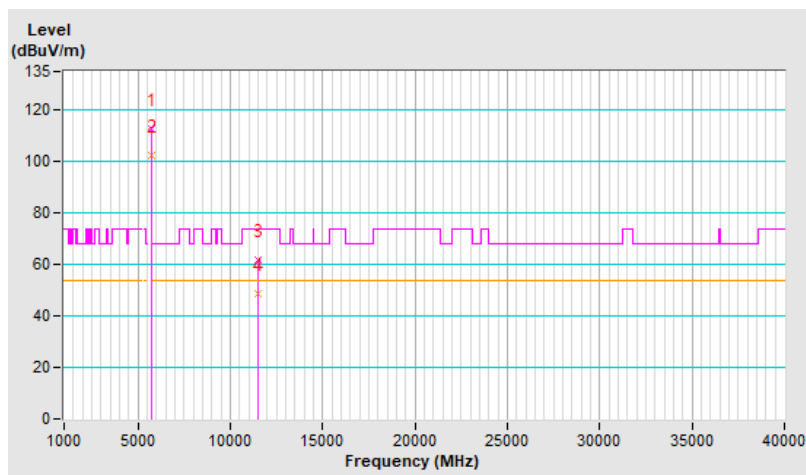


Combination	2		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=10 Hz, DET=Peak
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

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	*5745	112.8 PK			2.03 V	65	71.0	41.8
2	*5745	102.3 AV			2.03 V	65	60.5	41.8
3	11490	62.0 PK	74.0	-12.0	1.76 V	215	49.0	13.0
4	11490	48.9 AV	54.0	-5.1	1.76 V	215	35.9	13.0

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.



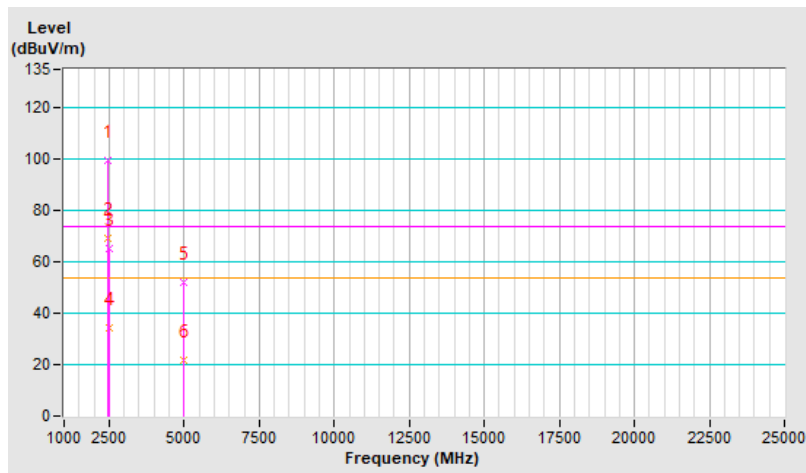
FCC 15.247: GFSK

Combination	2		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2480	99.6 PK			1.27 H	153	64.3	35.3
2	*2480	69.1 AV			1.27 H	153	33.8	35.3
3	2483.5	65.0 PK	74.0	-9.0	1.27 H	153	29.7	35.3
4	2483.5	34.5 AV	54.0	-19.5	1.27 H	153	-0.8	35.3
5	4960	52.2 PK	74.0	-21.8	1.83 H	221	47.4	4.8
6	4960	21.7 AV	54.0	-32.3	1.83 H	221	16.9	4.8

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.

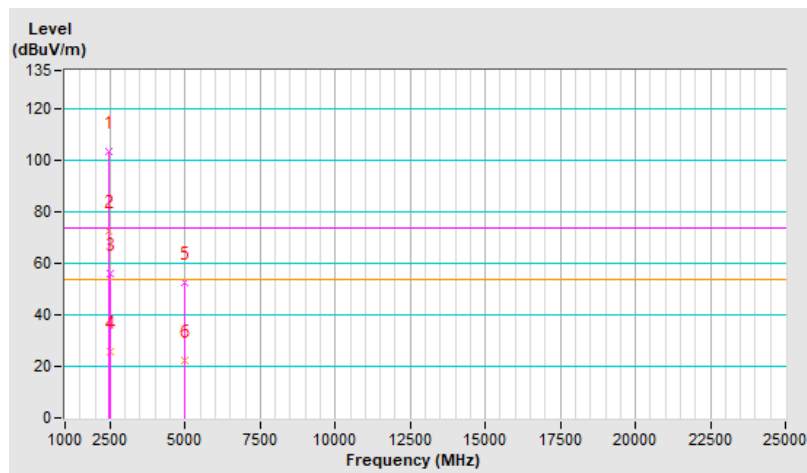


Combination	2		
Frequency Range	1 GHz ~ 40 GHz	Detector Function & Bandwidth	PK: RB=1 MHz, VB=3 MHz, DET=Peak AV: RB=1 MHz, VB=3 MHz, DET=RMS
Input Power	120 Vac, 60 Hz	Environmental Conditions	22 °C, 62 % RH
Tested By	Vincent Chen		

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	*2480	103.3 PK			1.39 V	153	68.0	35.3
2	*2480	72.8 AV			1.39 V	153	37.5	35.3
3	2483.5	56.2 PK	74.0	-17.8	1.39 V	153	20.9	35.3
4	2483.5	25.7 AV	54.0	-28.3	1.39 V	153	-9.6	35.3
5	4960	52.9 PK	74.0	-21.1	2.68 V	92	48.1	4.8
6	4960	22.4 AV	54.0	-31.6	2.68 V	92	17.6	4.8

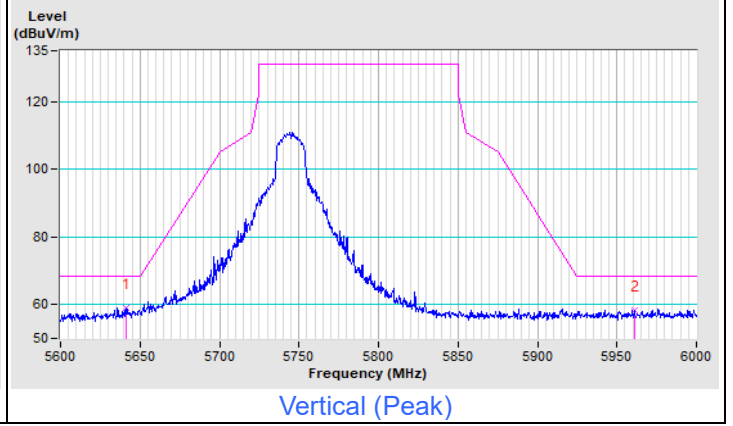
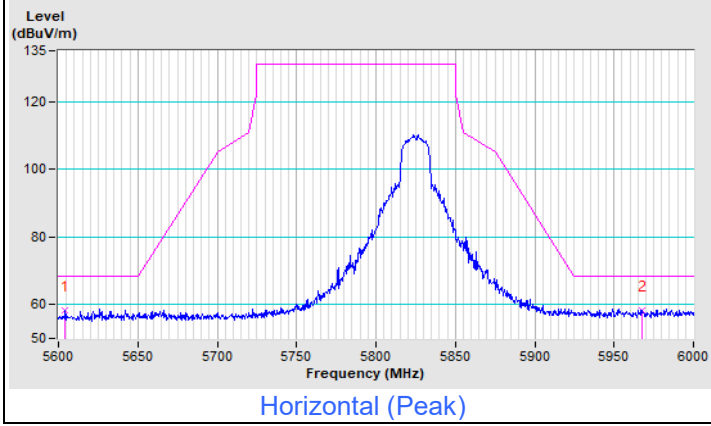
Remarks:

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.



Plot of Band Edge

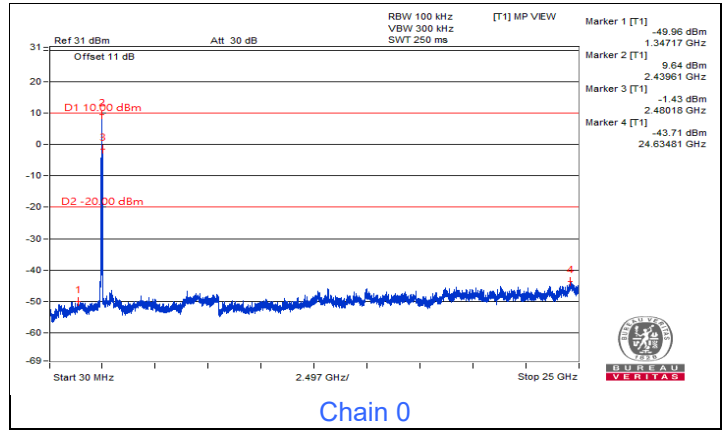
Combination 2



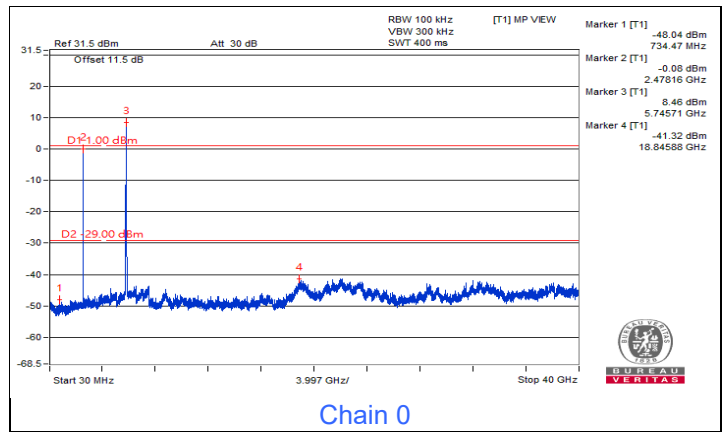
7.3 Conducted Out of Band Emissions

Input Power:	120 Vac, 60 Hz	Environmental Conditions:	23°C, 65% RH	Tested By:	Tim Chen
--------------	----------------	---------------------------	--------------	------------	----------

Combination 1



Combination 2



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 ---