

FCC Test Report

Report No.: RFBASM-WTW-P20120918-2

FCC ID: QYLAX201NG

Test Model: AX201NGW

Received Date: Dec. 29, 2020

Test Date: Jan. 06 ~ Mar. 30, 2021

Issued Date: Apr. 08, 2021

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FCC Registration / 788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RFBASM-WTW-P20120918-2	Original Release	Apr. 08, 2021

1 Certificate of Conformity

Product: WLAN and BT, 2x2 PCIe M.2 2230 adapter card

Brand: Intel® Wi-Fi 6 AX201

Test Model: AX201NGW

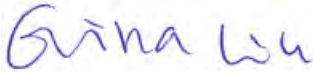
Sample Status: Mass Product


Applicant: Getac Technology Corporation.

Test Date: Jan. 06 ~ Mar. 30, 2021

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

Prepared by : , **Date:** Apr. 08, 2021
Gina Liu / Specialist

Approved by : , **Date:** Apr. 08, 2021
Dylan Chiou / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -18.56 dB at 0.71800 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.02 dB at 2483.5 MHz.
15.247(d)	Antenna Port Emission	Pass	Meet the requirement of limit.
15.247(a)(2)	6 dB Bandwidth	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Reference only
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is SMA. (The device is professionally installed)

Note:

- For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.79 dB
Radiated Emissions up to 1 GHz	9 kHz ~ 30 MHz	3.04 dB
	30 MHz ~ 200 MHz	2.0153 dB
	200 MHz ~ 1000 MHz	2.0224 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	1.0121 dB
	18 GHz ~ 40 GHz	1.1508 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WLAN and BT, 2x2 PCIe M.2 2230 adapter card
Brand	Intel® Wi-Fi 6 AX201
Test Model	AX201NGW
Status of EUT	Mass Product
Power Supply Rating	19 Vdc (adapter) 11.1 & 14.4 Vdc (battery)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: 11.0 / 5.5 / 2.0 / 1.0 Mbps 802.11g: 54.0 / 48.0 / 36.0 / 24.0 / 18.0 / 12.0 / 9.0 / 6.0 Mbps 802.11n: up to 400.0 Mbps 802.11ax: up to 573.5 Mbps
Operating Frequency	2412 ~ 2472 MHz
Number of Channel	13 for 802.11b, 802.11g, 802.11n (HT20/VHT20) , 802.11ax (HE20) 9 for 802.11n (HT40/VHT40), 802.11ax (HE40)
Output Power	293.309 mW
Antenna Type	PIFA antenna with 2.42 dBi gain
Antenna Connector	N/A
Accessory Device	Refer to Note as below
Data Cable Supplied	Refer to Note as below

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Tx Function
802.11b	1TX
802.11g	1TX
802.11n (HT20/VHT20)	2TX
802.11n (HT40/VHT40)	2TX
802.11ax (HE20)	2TX
802.11ax (HE40)	2TX

* The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 / VHT20 / VHT40 and 802.11ax mode for HE20 / HE40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT is authorized for use in specific End-product. Please refer to below for more details.

Product	Brand	Model	Description
Tablet	Getac	K120	For marketing purpose
		K120G2	
		K120Y (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	

3. The End-product contains following accessory devices.

Product	Brand	Model	Description
Adapter	Chicony	A15-090P1A	INPUT: 100-240Vac, 1.2A max, 50-60Hz OUTPUT: 19.0Vdc, 4.74A, 90W
Battery	Getac	BP3S1P2100S-01	Rating: 11.1Vdc 2040mAh, 23Wh Typical Capacity: 2100mAh, 24Wh
Battery	Getac	BP4S1P3450P-01	Rating: 14.4Vdc 3300mAh, 48Wh Typical Capacity: 3450mAh, 50Wh
Earphone	N/A	N/A	--
USB Cable	N/A	N/A	--
LCD Panel	Innolux	N125HCE-HN1	FHD
Camera	Foxlink	FN20FF-679H	FHD
	Foxlink	FN80AF-443H-2	8M
	FOXLINK	FO20FF-790H	FHD

4. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
5. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432	12	2467
6	2437	13	2472
7	2442		

9 channels are provided for 802.11n (HT40/VHT40) and 802.11ax (HE40):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	8	2447
4	2427	9	2452
5	2432	10	2457
6	2437	11	2462
7	2442		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G**: Radiated Emission above 1 GHz **RE<1G**: Radiated Emission below 1 GHz
PLC: Power Line Conducted Emission **APCM**: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.
NOTE: “-” means no effect.

Radiated Emission Test (Above 1 GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 6, 11, 12, 13	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9, 10, 11	OFDM	BPSK	13.5
-	802.11ax (HE20)	1 to 13	1, 6, 11, 12, 13	OFDMA	BPSK	MCS0
-	802.11ax (HE40)	3 to 11	3, 6, 9, 10, 11	OFDMA	BPSK	MCS0

Radiated Emission Test (Below 1 GHz):

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 13	13	OFDM	BPSK	6.0

Power Line Conducted Emission Test:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11g	1 to 13	13	OFDM	BPSK	6.0

Bandedge Measurement:

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

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 11, 12, 13	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 11, 12, 13	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 11, 12, 13	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 9, 10, 11	OFDM	BPSK	13.5
-	802.11ax (HE20)	1 to 13	1, 6, 11, 12, 13	OFDMA	BPSK	MCS0
-	802.11ax (HE40)	3 to 11	3, 6, 9, 10, 11	OFDMA	BPSK	MCS0

Antenna Port Conducted Measurement:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- 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).
- Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	802.11b	1 to 13	1, 6, 11, 12, 13	DSSS	DBPSK	1.0
-	802.11g	1 to 13	1, 6, 11, 12, 13	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 13	1, 6, 11, 12, 13	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 11	3, 9, 10, 11	OFDM	BPSK	13.5
-	802.11ax (HE20)	1 to 13	1, 6, 11, 12, 13	OFDMA	BPSK	MCS0
-	802.11ax (HE40)	3 to 11	3, 6, 9, 10, 11	OFDMA	BPSK	MCS0

For the measurement performed on the antenna port, except for the transmitter power measurement chain 0, chain 1, chain 0 + 1, the other measurement items are only the worst chain 0 for 1TX mode and the worst chain 0+1 for 2TX mode measurement.

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE \geq 1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Karl Lee
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Cookie Ku
APCM	25 deg. C, 65 % RH	120 Vac, 60 Hz	Gavin Wu

3.3 Duty Cycle of Test Signal

802.11b: Duty cycle = $8.351/8.398 = 0.994$, Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11g: Duty cycle = $2.086/2.132 = 0.978$, Duty factor = $10 * \log(1/0.978) = 0.09$

802.11n (HT20): Duty cycle = $3.974/4.022 = 0.988$, Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11n (HT40): Duty cycle = $3.97/4.035 = 0.984$, Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11ax (HE20): Duty cycle = $3.965/4.013 = 0.988$, Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

802.11ax (HE40): Duty cycle = $3.965/4.013 = 0.988$, Duty cycle of test signal is $\geq 98\%$, duty factor is not required.



4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

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

NOTE:

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.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver Agilent	N9038A	MY52260177	Aug. 24, 2020	Aug. 23, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	100115	Feb. 07, 2020	Feb. 06, 2021
			Feb. 03, 2021	Feb. 02, 2022
Spectrum Analyzer ROHDE & SCHWARZ	FSU43	101261	Apr. 16, 2020	Apr. 15, 2021
HORN Antenna ETS-Lindgren	3117	00143293	Nov. 22, 2020	Nov. 21, 2021
BILOG Antenna SCHWARZBECK	VULB 9168	9168-616	Nov. 09, 2020	Nov. 08, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Nov. 22, 2020	Nov. 21, 2021
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
Loop Antenna	EM-6879	269	Sep. 17, 2020	Sep. 16, 2021
MXG Vector signal generator Agilent	N5182B	MY53050430	Nov. 25, 2020	Nov. 24, 2021
Preamplifier Agilent	310N	187226	Jun. 17, 2020	Jun. 16, 2021
Preamplifier Agilent	83017A	MY39501357	Jun. 17, 2020	Jun. 16, 2021
Preamplifier EMCI	EMC 184045	980116	Oct. 07, 2020	Oct. 06, 2021
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 13, 2020	Jul. 12, 2021
RF signal cable ETS-LINDGREN	5D-FB	Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400)	Jun. 17, 2020	Jun. 16, 2021
RF signal cable ETS-LINDGREN	8D-FB	Cable-CH1-02(RFC-SMS-100-SMS-24)	Jun. 17, 2020	Jun. 17, 2021
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Software BV ADT	E3 8.130425b	NA	NA	NA
Antenna Tower MF	NA	NA	NA	NA
Turn Table MF	NA	NA	NA	NA
Antenna Tower & Turn Table Controller MF	MF-7802	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HsinTien Chamber 1.

4.1.3 Test Procedures

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 a 3 meter chamber room. 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.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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.
- f. The test-receiver system was set to peak and average detected 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.

Note:

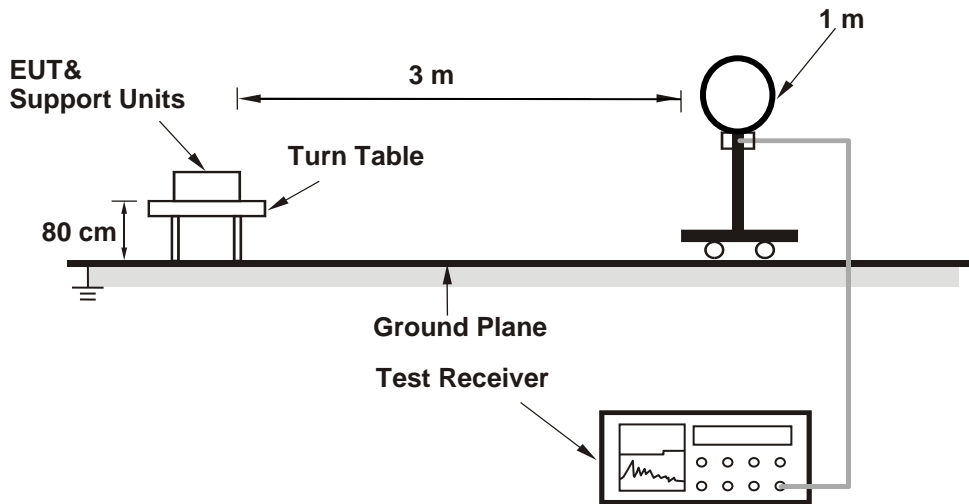
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. 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 ≥ 98 %) for Average detection (AV) at frequency above 1 GHz.
(11b: RBW = 1 MHz, VBW = 10 Hz ; 11g: RBW = 1 MHz, VBW = 1 kHz ;
11n (HT20): RBW = 1 MHz, VBW = 10 Hz ; 11n (HT40): RBW = 1 MHz, VBW = 10 Hz ;
11ax (HE20): RBW = 1 MHz, VBW = 10 Hz ; 11ax (HE40): RBW = 1 MHz, VBW = 10 Hz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

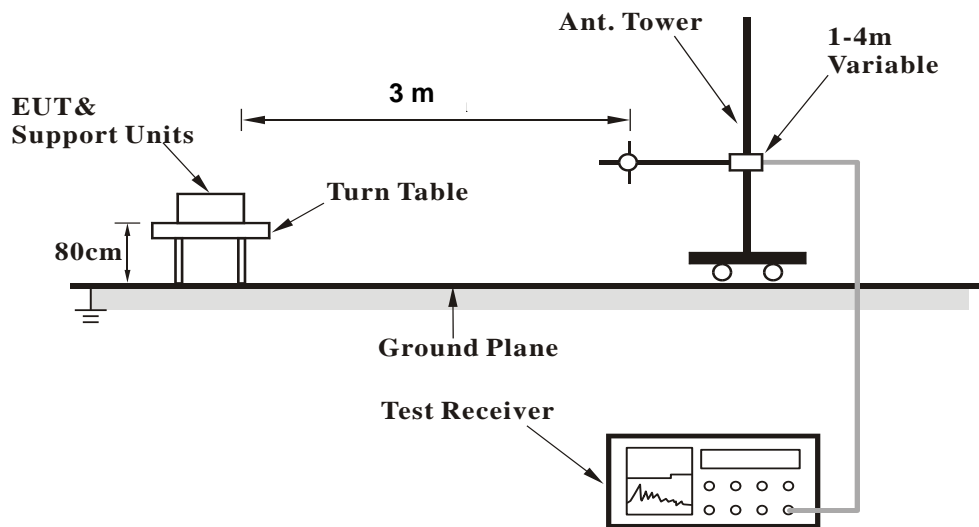
No deviation.

4.1.5 Test Set Up

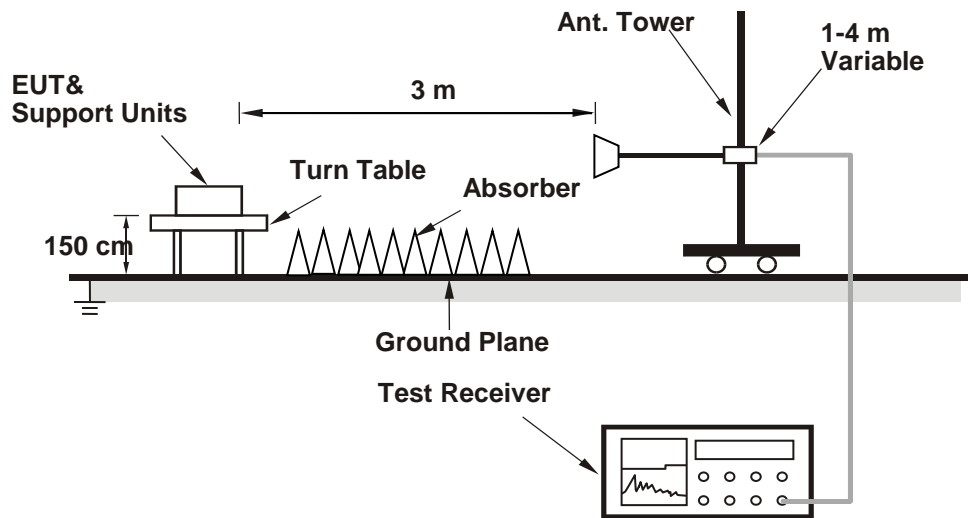
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



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

4.1.6 EUT Operating Conditions

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1 GHz Data :
802.11b

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	43.88	39.38	4.5	54	-10.12	209	229	Average
2390	53.17	48.67	4.5	74	-20.83	209	229	Peak
2412	106.63	102.08	4.55			209	229	Average
2412	109.46	104.91	4.55			209	229	Peak
4824	41.55	31.26	10.29	54	-12.45	152	22	Average
4824	49.28	38.99	10.29	74	-24.72	152	22	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	42.94	38.44	4.5	54	-11.06	304	85	Average
2390	51.87	47.37	4.5	74	-22.13	304	85	Peak
2412	104.15	99.6	4.55			304	85	Average
2412	108.29	103.74	4.55			304	85	Peak
4824	41.43	31.14	10.29	54	-12.57	113	254	Average
4824	48.73	38.44	10.29	74	-25.27	113	254	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	41.79	37.29	4.5	54	-12.21	209	229	Average
2390	52.19	47.69	4.5	74	-21.81	209	229	Peak
2437	107.07	102.48	4.59			209	229	Average
2437	110.74	106.15	4.59			209	229	Peak
2483.5	42.75	38.09	4.66	54	-11.25	209	229	Average
2483.5	53.68	49.02	4.66	74	-20.32	209	229	Peak
4874	41.5	31.29	10.21	54	-12.5	132	22	Average
4874	49.96	39.75	10.21	74	-24.04	132	22	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	42.28	37.78	4.5	54	-11.72	304	85	Average
2390	52.13	47.63	4.5	74	-21.87	304	85	Peak
2437	106.22	101.63	4.59			304	85	Average
2437	109.43	104.84	4.59			304	85	Peak
2483.5	43.08	38.42	4.66	54	-10.92	304	85	Average
2483.5	52.86	48.2	4.66	74	-21.14	304	85	Peak
4874	41.54	31.33	10.21	54	-12.46	125	50	Average
4874	50.04	39.83	10.21	74	-23.96	125	50	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	107.77	103.15	4.62			196	227	Average
2462	111.06	106.44	4.62			196	227	Peak
2483.5	44	39.34	4.66	54	-10	196	227	Average
2483.5	53.83	49.17	4.66	74	-20.17	196	227	Peak
4924	41.36	31.11	10.25	54	-12.64	155	187	Average
4924	48.54	38.29	10.25	74	-25.46	155	187	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	104.34	99.72	4.62			310	287	Average
2462	107.68	103.06	4.62			310	287	Peak
2483.5	42.79	38.13	4.66	54	-11.21	310	287	Average
2483.5	52.19	47.53	4.66	74	-21.81	310	287	Peak
4924	41.3	31.05	10.25	54	-12.7	124	21	Average
4924	50.14	39.89	10.25	74	-23.86	124	21	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	106.29	101.66	4.63			196	227	Average
2467	109.45	104.82	4.63			196	227	Peak
2483.5	45.81	41.15	4.66	54	-8.19	196	227	Average
2483.5	54.45	49.79	4.66	74	-19.55	196	227	Peak
4934	41.4	31.14	10.26	54	-12.6	159	9	Average
4934	48.15	37.89	10.26	74	-25.85	159	9	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	103.28	98.65	4.63			312	289	Average
2467	106.58	101.95	4.63			312	289	Peak
2483.5	44.91	40.25	4.66	54	-9.09	312	289	Average
2483.5	53.61	48.95	4.66	74	-20.39	312	289	Peak
4934	41.51	31.25	10.26	54	-12.49	122	254	Average
4934	48.32	38.06	10.26	74	-25.68	122	254	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	104.24	99.6	4.64			157	198	Average
2472	107.22	102.58	4.64			157	198	Peak
2483.5	52.81	48.15	4.66	54	-1.19	157	198	Average
2483.5	66.74	62.08	4.66	74	-7.26	157	198	Peak
4944	40.69	30.34	10.35	54	-13.31	140	203	Average
4944	47.32	36.97	10.35	74	-26.68	140	203	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	100.73	96.09	4.64			225	104	Average
2472	103.98	99.34	4.64			225	104	Peak
2483.5	50.36	45.7	4.66	54	-3.64	225	104	Average
2483.5	63.12	58.46	4.66	74	-10.88	225	104	Peak
4944	42.37	32.02	10.35	54	-11.63	261	201	Average
4944	48.21	37.86	10.35	74	-25.79	261	201	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2472 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	43.92	39.42	4.5	54	-10.08	209	229	Average
2390	53.37	48.87	4.5	74	-20.63	209	229	Peak
2412	101.43	96.88	4.55			209	229	Average
2412	109.83	105.28	4.55			209	229	Peak
4824	41.61	31.32	10.29	54	-12.39	105	241	Average
4824	47.91	37.62	10.29	74	-26.09	105	241	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.68	36.18	4.5	54	-13.32	304	85	Average
2390	52.88	48.38	4.5	74	-21.12	304	85	Peak
2412	99.1	94.55	4.55			304	85	Average
2412	107.15	102.6	4.55			304	85	Peak
4824	41.51	31.22	10.29	54	-12.49	199	9	Average
4824	48.53	38.24	10.29	74	-25.47	199	9	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	45.47	40.97	4.5	54	-8.53	209	229	Average
2390	57.09	52.59	4.5	74	-16.91	209	229	Peak
2437	105.57	100.98	4.59			209	229	Average
2437	112.86	108.27	4.59			209	229	Peak
2483.5	48.83	44.17	4.66	54	-5.17	209	229	Average
2483.5	63.3	58.64	4.66	74	-10.7	209	229	Peak
4874	41.49	31.28	10.21	54	-12.51	199	29	Average
4874	48.59	38.38	10.21	74	-25.41	199	29	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	42.5	38	4.5	54	-11.5	304	85	Average
2390	52.48	47.98	4.5	74	-21.52	304	85	Peak
2437	102.89	98.3	4.59			304	85	Average
2437	110.93	106.34	4.59			304	85	Peak
2483.5	43.89	39.23	4.66	54	-10.11	304	85	Average
2483.5	55.98	51.32	4.66	74	-18.02	304	85	Peak
4874	41.37	31.16	10.21	54	-12.63	105	241	Average
4874	48.12	37.91	10.21	74	-25.88	105	241	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	104.73	100.11	4.62			196	227	Average
2462	110.16	105.54	4.62			196	227	Peak
2483.5	44.08	39.42	4.66	54	-9.92	196	227	Average
2483.5	54.67	50.01	4.66	74	-19.33	196	227	Peak
4924	41.73	31.48	10.25	54	-12.27	144	4	Average
4924	48.15	37.9	10.25	74	-25.85	144	4	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.28	94.66	4.62			310	287	Average
2462	107.23	102.61	4.62			310	287	Peak
2483.5	42.24	37.58	4.66	54	-11.76	310	287	Average
2483.5	52.92	48.26	4.66	74	-21.08	310	287	Peak
4924	41.66	31.41	10.25	54	-12.34	148	198	Average
4924	48.8	38.55	10.25	74	-25.2	148	198	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	100.92	96.29	4.63			196	227	Average
2467	108.53	103.9	4.63			196	227	Peak
2483.5	47.44	42.78	4.66	54	-6.56	196	227	Average
2483.5	57.45	52.79	4.66	74	-16.55	196	227	Peak
4934	41.67	31.41	10.26	54	-12.33	199	54	Average
4934	47.55	37.29	10.26	74	-26.45	199	54	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	95.79	91.16	4.63			312	289	Average
2467	103.96	99.33	4.63			312	289	Peak
2483.5	46.34	41.68	4.66	54	-7.66	312	289	Average
2483.5	58.05	53.39	4.66	74	-15.95	312	289	Peak
4934	41.54	31.28	10.26	54	-12.46	115	4	Average
4934	48.53	38.27	10.26	74	-25.47	115	4	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	97.64	93	4.64			187	226	Average
2472	104.73	100.09	4.64			187	226	Peak
2483.5	52.98	48.32	4.66	54	-1.02	187	226	Average
2483.5	72.66	68	4.66	74	-1.34	187	226	Peak
4944	41.71	31.36	10.35	54	-12.29	199	256	Average
4944	47.8	37.45	10.35	74	-26.2	199	256	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	94.44	89.8	4.64			312	294	Average
2472	101.04	96.4	4.64			312	294	Peak
2483.5	50.53	45.87	4.66	54	-3.47	312	294	Average
2483.5	69.03	64.37	4.66	74	-4.97	312	294	Peak
4944	41.56	31.21	10.35	54	-12.44	117	78	Average
4944	48.48	38.13	10.35	74	-25.52	117	78	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2472 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11n (HT20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	43.85	39.35	4.5	54	-10.15	284	62	Average
2390	53.52	49.02	4.5	74	-20.48	284	62	Peak
2412	100.43	95.88	4.55			284	62	Average
2412	107.22	102.67	4.55			284	62	Peak
4824	41.43	31.14	10.29	54	-12.57	188	54	Average
4824	48.3	38.01	10.29	74	-25.7	188	54	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	41.52	37.02	4.5	54	-12.48	104	126	Average
2390	52.21	47.71	4.5	74	-21.79	104	126	Peak
2412	97.44	92.89	4.55			104	126	Average
2412	104.34	99.79	4.55			104	126	Peak
4824	41.54	31.25	10.29	54	-12.46	122	264	Average
4824	48.29	38	10.29	74	-25.71	122	264	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	41.02	36.52	4.5	54	-12.98	284	62	Average
2390	52.63	48.13	4.5	74	-21.37	284	62	Peak
2437	104.14	99.55	4.59			284	62	Average
2437	111	106.41	4.59			284	62	Peak
2483.5	41.51	36.85	4.66	54	-12.49	284	62	Average
2483.5	52.49	47.83	4.66	74	-21.51	284	62	Peak
4874	41.72	31.51	10.21	54	-12.28	113	209	Average
4874	49.44	39.23	10.21	74	-24.56	113	209	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.62	36.12	4.5	54	-13.38	104	126	Average
2390	51.86	47.36	4.5	74	-22.14	104	126	Peak
2437	100.21	95.62	4.59			104	126	Average
2437	107.53	102.94	4.59			104	126	Peak
2483.5	41.11	36.45	4.66	54	-12.89	104	126	Average
2483.5	52.51	47.85	4.66	74	-21.49	104	126	Peak
4874	41.62	31.41	10.21	54	-12.38	140	154	Average
4874	48.86	38.65	10.21	74	-25.14	140	154	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	99.27	94.65	4.62			284	62	Average
2462	106.89	102.27	4.62			284	62	Peak
2483.5	43.34	38.68	4.66	54	-10.66	284	62	Average
2483.5	54.38	49.72	4.66	74	-19.62	284	62	Peak
4924	41.42	31.17	10.25	54	-12.58	174	4	Average
4924	48.94	38.69	10.25	74	-25.06	174	4	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	96.46	91.84	4.62			104	126	Average
2462	103.16	98.54	4.62			104	126	Peak
2483.5	42.17	37.51	4.66	54	-11.83	104	126	Average
2483.5	53.42	48.76	4.66	74	-20.58	104	126	Peak
4924	41.51	31.26	10.25	54	-12.49	154	255	Average
4924	48.31	38.06	10.25	74	-25.69	154	255	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	98.39	93.76	4.63			284	62	Average
2467	105.27	100.64	4.63			284	62	Peak
2483.5	45.76	41.1	4.66	54	-8.24	284	62	Average
2483.5	56.73	52.07	4.66	74	-17.27	284	62	Peak
4934	41.59	31.33	10.26	54	-12.41	188	15	Average
4934	48.3	38.04	10.26	74	-25.7	188	15	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	95.11	90.48	4.63			104	126	Average
2467	102.08	97.45	4.63			104	126	Peak
2483.5	45.03	40.37	4.66	54	-8.97	104	126	Average
2483.5	54.52	49.86	4.66	74	-19.48	104	126	Peak
4934	41.47	31.21	10.26	54	-12.53	133	25	Average
4934	48.16	37.9	10.26	74	-25.84	133	25	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	95.46	90.82	4.64			284	62	Average
2472	102.53	97.89	4.64			284	62	Peak
2483.5	49.51	44.85	4.66	54	-4.49	284	62	Average
2483.5	68.85	64.19	4.66	74	-5.15	284	62	Peak
4944	41.87	31.52	10.35	54	-12.13	148	288	Average
4944	47.73	37.38	10.35	74	-26.27	148	288	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	92.37	87.73	4.64			104	126	Average
2472	99.17	94.53	4.64			104	126	Peak
2483.5	45.87	41.21	4.66	54	-8.13	104	126	Average
2483.5	65.63	60.97	4.66	74	-8.37	104	126	Peak
4944	41.46	31.11	10.35	54	-12.54	155	54	Average
4944	48.56	38.21	10.35	74	-25.44	155	54	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2472 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11n (HT40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	48.01	43.51	4.5	54	-5.99	284	62	Average
2390	57.67	53.17	4.5	74	-16.33	284	62	Peak
2422	97.49	92.93	4.56			284	62	Average
2422	104.54	99.98	4.56			284	62	Peak
2483.5	41.06	36.4	4.66	54	-12.94	284	62	Average
2483.5	52.4	47.74	4.66	74	-21.6	284	62	Peak
4844	41.57	31.34	10.23	54	-12.43	199	354	Average
4844	48.96	38.73	10.23	74	-25.04	199	354	Peak

Antenna Polarity & Test Distance: Vertical at 3 m

Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	43.46	38.96	4.5	54	-10.54	104	126	Average
2390	54.17	49.67	4.5	74	-19.83	104	126	Peak
2422	94.35	89.79	4.56			104	126	Average
2422	101.79	97.23	4.56			104	126	Peak
2483.5	40.87	36.21	4.66	54	-13.13	104	126	Average
2483.5	52.31	47.65	4.66	74	-21.69	104	126	Peak
4844	41.52	31.29	10.23	54	-12.48	154	185	Average
4844	48.15	37.92	10.23	74	-25.85	154	185	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2422 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	43.1	38.6	4.5	54	-10.9	284	62	Average
2390	55.5	51	4.5	74	-18.5	284	62	Peak
2437	98.91	94.32	4.59			284	62	Average
2437	105.58	100.99	4.59			284	62	Peak
2483.5	45.36	40.7	4.66	54	-8.64	284	62	Average
2483.5	58.83	54.17	4.66	74	-15.17	284	62	Peak
4874	41.61	31.4	10.21	54	-12.39	188	5	Average
4874	48.41	38.2	10.21	74	-25.59	188	5	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	41.57	37.07	4.5	54	-12.43	104	126	Average
2390	52.04	47.54	4.5	74	-21.96	104	126	Peak
2437	95.47	90.88	4.59			104	126	Average
2437	102.12	97.53	4.59			104	126	Peak
2483.5	42.94	38.28	4.66	54	-11.06	104	126	Average
2483.5	55.91	51.25	4.66	74	-18.09	104	126	Peak
4874	41.46	31.25	10.21	54	-12.54	124	319	Average
4874	48.24	38.03	10.21	74	-25.76	124	319	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.74	36.24	4.5	54	-13.26	284	62	Average
2390	51.68	47.18	4.5	74	-22.32	284	62	Peak
2452	97.37	92.77	4.6			284	62	Average
2452	104.11	99.51	4.6			284	62	Peak
2483.5	49.21	44.55	4.66	54	-4.79	284	62	Average
2483.5	60.27	55.61	4.66	74	-13.73	284	62	Peak
4904	41.43	31.29	10.14	54	-12.57	154	122	Average
4904	48.04	37.9	10.14	74	-25.96	154	122	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.53	36.03	4.5	54	-13.47	104	126	Average
2390	51.85	47.35	4.5	74	-22.15	104	126	Peak
2452	94.33	89.73	4.6			104	126	Average
2452	101.22	96.62	4.6			104	126	Peak
2483.5	44.17	39.51	4.66	54	-9.83	104	126	Average
2483.5	56.32	51.66	4.66	74	-17.68	104	126	Peak
4904	41.3	31.16	10.14	54	-12.7	119	24	Average
4904	48.58	38.44	10.14	74	-25.42	119	24	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2452 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 10	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.41	35.91	4.5	54	-13.59	284	62	Average
2390	51.82	47.32	4.5	74	-22.18	284	62	Peak
2457	94.17	89.55	4.62			284	62	Average
2457	101.16	96.54	4.62			284	62	Peak
2483.5	48.94	44.28	4.66	54	-5.06	284	62	Average
2483.5	58.36	53.7	4.66	74	-15.64	284	62	Peak
4914	41.61	31.46	10.15	54	-12.39	154	1	Average
4914	48.11	37.96	10.15	74	-25.89	154	1	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.31	35.81	4.5	54	-13.69	104	126	Average
2390	51.87	47.37	4.5	74	-22.13	104	126	Peak
2457	91.16	86.54	4.62			104	126	Average
2457	98.11	93.49	4.62			104	126	Peak
2483.5	44.72	40.06	4.66	54	-9.28	104	126	Average
2483.5	55.1	50.44	4.66	74	-18.9	104	126	Peak
4914	41.56	31.41	10.15	54	-12.44	133	258	Average
4914	47.88	37.73	10.15	74	-26.12	133	258	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2457 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.51	36.01	4.5	54	-13.49	284	62	Average
2390	51.4	46.9	4.5	74	-22.6	284	62	Peak
2462	94.37	89.75	4.62			284	62	Average
2462	101.33	96.71	4.62			284	62	Peak
2483.5	52.91	48.25	4.66	54	-1.09	121	236	Average
2483.5	68.59	63.93	4.66	74	-5.41	121	236	Peak
4924	41.58	31.33	10.25	54	-12.42	195	5	Average
4924	48.14	37.89	10.25	74	-25.86	195	5	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.35	35.85	4.5	54	-13.65	104	126	Average
2390	51.48	46.98	4.5	74	-22.52	104	126	Peak
2462	91.33	86.71	4.62			104	126	Average
2462	98.32	93.7	4.62			104	126	Peak
2483.5	46.79	42.13	4.66	54	-7.21	104	126	Average
2483.5	61.96	57.3	4.66	74	-12.04	104	126	Peak
4924	41.5	31.25	10.25	54	-12.5	154	144	Average
4924	49.07	38.82	10.25	74	-24.93	154	144	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11ax (HE20)

EUT Test Condition		Measurement Detail	
Channel	Channel 1	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	44.59	40.09	4.5	54	-9.41	284	62	Average
2390	55.12	50.62	4.5	74	-18.88	284	62	Peak
2412	103.65	99.1	4.55			284	62	Average
2412	110.28	105.73	4.55			284	62	Peak
4824	42.53	32.24	10.29	54	-11.47	165	105	Average
4824	48.72	38.43	10.29	74	-25.28	165	105	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	42.37	37.87	4.5	54	-11.63	104	126	Average
2390	53.56	49.06	4.5	74	-20.44	104	126	Peak
2412	100.36	95.81	4.55			104	126	Average
2412	107.06	102.51	4.55			104	126	Peak
4824	42.63	32.34	10.29	54	-11.37	190	214	Average
4824	48.87	38.58	10.29	74	-25.13	190	214	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2412 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	41.02	36.52	4.5	54	-12.98	284	62	Average
2390	52.03	47.53	4.5	74	-21.97	284	62	Peak
2437	105.56	100.97	4.59			284	62	Average
2437	112.07	107.48	4.59			284	62	Peak
2483.5	41.68	37.02	4.66	54	-12.32	284	62	Average
2483.5	52.83	48.17	4.66	74	-21.17	284	62	Peak
4874	41.74	31.53	10.21	54	-12.26	143	82	Average
4874	47.94	37.73	10.21	74	-26.06	143	82	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.51	36.01	4.5	54	-13.49	104	126	Average
2390	52.76	48.26	4.5	74	-21.24	104	126	Peak
2437	101.14	96.55	4.59			104	126	Average
2437	108.03	103.44	4.59			104	126	Peak
2483.5	41.1	36.44	4.66	54	-12.9	104	126	Average
2483.5	53.01	48.35	4.66	74	-20.99	104	126	Peak
4874	41.85	31.64	10.21	54	-12.15	270	134	Average
4874	47.91	37.7	10.21	74	-26.09	270	134	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	101.64	97.02	4.62			284	62	Average
2462	108.01	103.39	4.62			284	62	Peak
2483.5	44.5	39.84	4.66	54	-9.5	284	62	Average
2483.5	55.49	50.83	4.66	74	-18.51	284	62	Peak
4924	41.8	31.55	10.25	54	-12.2	199	104	Average
4924	47.96	37.71	10.25	74	-26.04	199	104	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2462	98.48	93.86	4.62			104	126	Average
2462	105.69	101.07	4.62			104	126	Peak
2483.5	42.89	38.23	4.66	54	-11.11	104	126	Average
2483.5	53.69	49.03	4.66	74	-20.31	104	126	Peak
4924	42.39	32.14	10.25	54	-11.61	148	175	Average
4924	48.7	38.45	10.25	74	-25.3	148	175	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 12	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	99.84	95.21	4.63			284	62	Average
2467	106.52	101.89	4.63			284	62	Peak
2483.5	49.07	44.41	4.66	54	-4.93	282	61	Average
2483.5	60.28	55.62	4.66	74	-13.72	282	61	Peak
4934	41.94	31.68	10.26	54	-12.06	326	251	Average
4934	48.1	37.84	10.26	74	-25.9	326	251	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2467	96.3	91.67	4.63			104	126	Average
2467	103	98.37	4.63			104	126	Peak
2483.5	45.1	40.44	4.66	54	-8.9	104	126	Average
2483.5	57.01	52.35	4.66	74	-16.99	104	126	Peak
4934	41.24	30.98	10.26	54	-12.76	180	289	Average
4934	47.49	37.23	10.26	74	-26.51	180	289	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2467 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	96.17	91.53	4.64			283	62	Average
2472	103.61	98.97	4.64			283	62	Peak
2483.5	52.81	48.15	4.66	54	-1.19	283	62	Average
2483.5	72.41	67.75	4.66	74	-1.59	283	62	Peak
4944	42.14	31.79	10.35	54	-11.86	261	198	Average
4944	48.2	37.85	10.35	74	-25.8	261	198	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2472	93.67	89.03	4.64			104	126	Average
2472	100.54	95.9	4.64			104	126	Peak
2483.5	45.95	41.29	4.66	54	-8.05	104	126	Average
2483.5	69.71	65.05	4.66	74	-4.29	104	126	Peak
4944	42.95	32.6	10.35	54	-11.05	158	131	Average
4944	49.25	38.9	10.35	74	-24.75	158	131	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2472 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

802.11ax (HE40)

EUT Test Condition		Measurement Detail	
Channel	Channel 3	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	46.12	41.62	4.5	54	-7.88	284	62	Average
2390	58.16	53.66	4.5	74	-15.84	284	62	Peak
2422	98.59	94.03	4.56			284	62	Average
2422	105.19	100.63	4.56			284	62	Peak
2483.5	41.32	36.66	4.66	54	-12.68	284	62	Average
2483.5	53.19	48.53	4.66	74	-20.81	284	62	Peak
4844	42.65	32.42	10.23	54	-11.35	174	115	Average
4844	49.03	38.8	10.23	74	-24.97	174	115	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	45.56	41.06	4.5	54	-8.44	104	126	Average
2390	54.51	50.01	4.5	74	-19.49	104	126	Peak
2422	95.39	90.83	4.56			104	126	Average
2422	102.32	97.76	4.56			104	126	Peak
2483.5	41.1	36.44	4.66	54	-12.9	104	126	Average
2483.5	52.38	47.72	4.66	74	-21.62	104	126	Peak
4844	42.18	31.95	10.23	54	-11.82	126	49	Average
4844	48.32	38.09	10.23	74	-25.68	126	49	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2422 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 6	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	42.24	37.74	4.5	54	-11.76	284	62	Average
2390	52.76	48.26	4.5	74	-21.24	284	62	Peak
2437	99.63	95.04	4.59			284	62	Average
2437	106.23	101.64	4.59			284	62	Peak
2483.5	43.29	38.63	4.66	54	-10.71	284	62	Average
2483.5	55.69	51.03	4.66	74	-18.31	284	62	Peak
4874	41.56	31.35	10.21	54	-12.44	144	174	Average
4874	49.15	38.94	10.21	74	-24.85	144	174	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	41.26	36.76	4.5	54	-12.74	104	126	Average
2390	51.71	47.21	4.5	74	-22.29	104	126	Peak
2437	96.11	91.52	4.59			104	126	Average
2437	103	98.41	4.59			104	126	Peak
2483.5	42.15	37.49	4.66	54	-11.85	104	126	Average
2483.5	54.25	49.59	4.66	74	-19.75	104	126	Peak
4874	41.45	31.24	10.21	54	-12.55	155	208	Average
4874	48.54	38.33	10.21	74	-25.46	155	208	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2437 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 9	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.82	36.32	4.5	54	-13.18	284	62	Average
2390	51.5	47	4.5	74	-22.5	284	62	Peak
2452	98.43	93.83	4.6			284	62	Average
2452	105.52	100.92	4.6			284	62	Peak
2483.5	47.35	42.69	4.66	54	-6.65	284	62	Average
2483.5	56.47	51.81	4.66	74	-17.53	284	62	Peak
4904	41.38	31.24	10.14	54	-12.62	199	32	Average
4904	48.08	37.94	10.14	74	-25.92	199	32	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.53	36.03	4.5	54	-13.47	104	126	Average
2390	52.37	47.87	4.5	74	-21.63	104	126	Peak
2452	95.19	90.59	4.6			104	126	Average
2452	102.64	98.04	4.6			104	126	Peak
2483.5	44.49	39.83	4.66	54	-9.51	104	126	Average
2483.5	55.36	50.7	4.66	74	-18.64	104	126	Peak
4904	41.48	31.34	10.14	54	-12.52	184	320	Average
4904	48.68	38.54	10.14	74	-25.32	184	320	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2452 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 10	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.49	35.99	4.5	54	-13.51	284	62	Average
2390	51.92	47.42	4.5	74	-22.08	284	62	Peak
2457	96.18	91.56	4.62			284	62	Average
2457	103.17	98.55	4.62			284	62	Peak
2483.5	51.12	46.46	4.66	54	-2.88	280	62	Average
2483.5	62.75	58.09	4.66	74	-11.25	280	62	Peak
4914	41.55	31.4	10.15	54	-12.45	125	1	Average
4914	48.95	38.8	10.15	74	-25.05	125	1	Peak
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.39	35.89	4.5	54	-13.61	104	126	Average
2390	52.03	47.53	4.5	74	-21.97	104	126	Peak
2457	93.94	89.32	4.62			104	126	Average
2457	100.02	95.4	4.62			104	126	Peak
2483.5	49.55	44.89	4.66	54	-4.45	104	126	Average
2483.5	60.38	55.72	4.66	74	-13.62	104	126	Peak
4914	41.43	31.28	10.15	54	-12.57	154	155	Average
4914	48.42	38.27	10.15	74	-25.58	154	155	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2457 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

EUT Test Condition		Measurement Detail	
Channel	Channel 11	Frequency Range	1 GHz ~ 25 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Peak (PK) Average (AV)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.49	35.99	4.5	54	-13.51	283	222	Average
2390	51.7	47.2	4.5	74	-22.3	283	222	Peak
2462	95.34	90.72	4.62			284	62	Average
2462	102	97.38	4.62			284	62	Peak
2483.5	52.58	47.92	4.66	54	-1.42	283	222	Average
2483.5	68.04	63.38	4.66	74	-5.96	283	222	Peak
4924	41.27	31.02	10.25	54	-12.73	177	14	Average
4924	48.23	37.98	10.25	74	-25.77	177	14	Peak

Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
2390	40.36	35.86	4.5	54	-13.64	104	126	Average
2390	51.3	46.8	4.5	74	-22.7	104	126	Peak
2462	92.18	87.56	4.62			104	126	Average
2462	99.06	94.44	4.62			104	126	Peak
2483.5	47.9	43.24	4.66	54	-6.1	104	126	Average
2483.5	62.72	58.06	4.66	74	-11.28	104	126	Peak
4924	41.5	31.25	10.25	54	-12.5	154	14	Average
4924	49.65	39.4	10.25	74	-24.35	154	14	Peak

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value
- 2462 MHz: Fundamental frequency.
- The emission levels of other frequencies were very low against the limit.

9 kHz ~ 30 MHz Data:

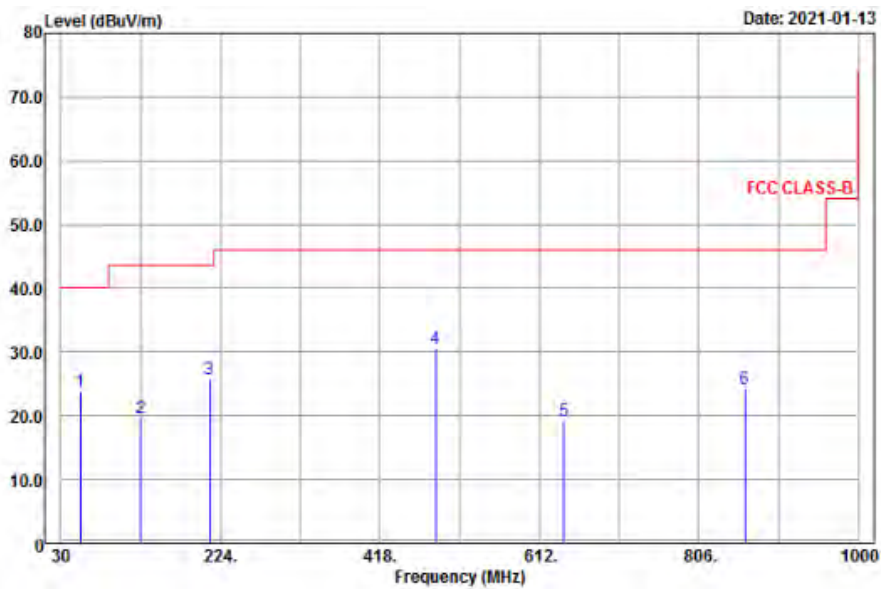
The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

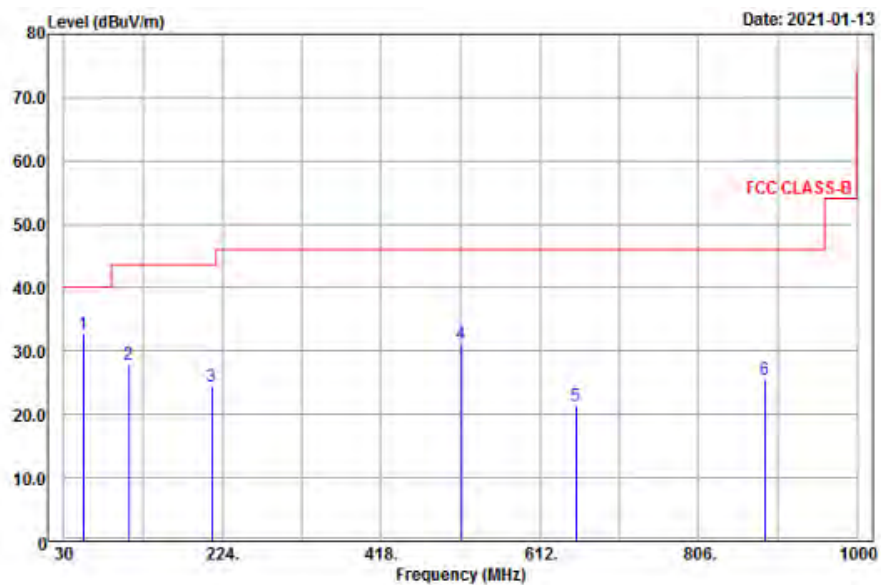
802.11g

EUT Test Condition		Measurement Detail	
Channel	Channel 13	Frequency Range	30 MHz ~ 1 GHz
Input Power	120 Vac, 60 Hz	Detector Function	Quasi-peak (QP)
Environmental Conditions	25 deg. C, 65 % RH	Tested By	Karl Lee

Horizontal



Vertical



Antenna Polarity & Test Distance: Horizontal at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
53.76	23.72	39.08	-15.36	40	-16.28	263	108	QP
127.74	19.63	39.91	-20.28	43.5	-23.87	191	125	QP
211.17	25.83	43.94	-18.11	43.5	-17.67	134	118	QP
486.2	30.53	43.13	-12.6	46	-15.47	164	274	QP
642.3	19.28	29.53	-10.25	46	-26.72	251	42	QP
862.1	24.26	30.78	-6.52	46	-21.74	188	43	QP
Antenna Polarity & Test Distance: Vertical at 3 m								
Frequency (MHz)	Emission Level (dBuV/m)	Read Level (dBuV)	Factor (dB/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (cm)	Table Angle (Degree)	Remark
54.03	32.63	48.06	-15.43	40	-7.37	154	73	QP
109.65	27.94	45.49	-17.55	43.5	-15.56	190	36	QP
211.17	24.34	42.45	-18.11	43.5	-19.16	286	234	QP
516.3	31.1	43.24	-12.14	46	-14.9	180	212	QP
656.3	21.39	31.34	-9.95	46	-24.61	241	173	QP
887.3	25.43	31.52	-6.09	46	-20.57	128	97	QP

Remarks:

- Emission Level = Read Level + Factor
Margin value = Emission level – Limit value.
- The emission levels of other frequencies were very low against the limit.

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Jan. 06, 2021	Jan. 05, 2022
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 18, 2021	Jan. 17, 2022
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 2021
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Shielded Room 2 (Conduction 2).
 3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

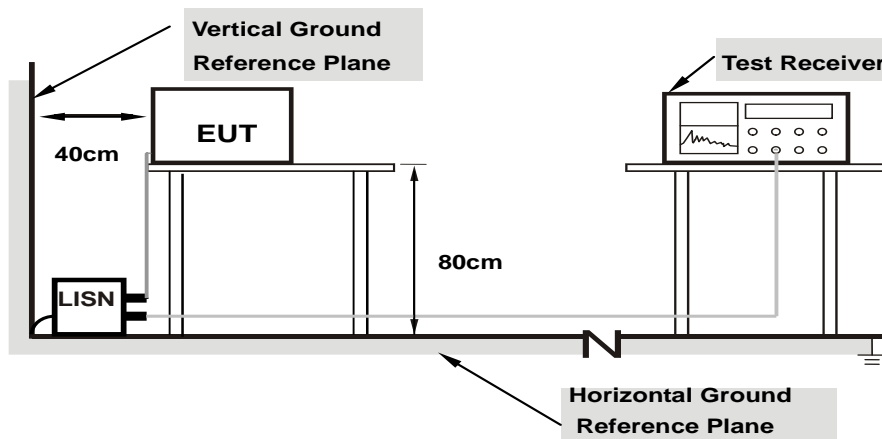
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

- a. Placed the EUT on a testing table.
- b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

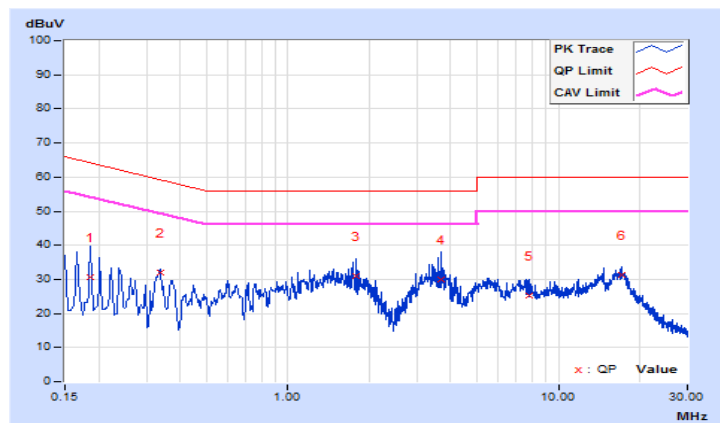
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	22°C, 66%RH
Tested by	Cookie Ku	Test Date	2021/3/30

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18600	10.08	20.70	4.12	30.78	14.20	64.21	54.21	-33.43	-40.01
2	0.33767	10.09	21.80	9.53	31.89	19.62	59.26	49.26	-27.37	-29.64
3	1.78600	10.16	20.65	9.42	30.81	19.58	56.00	46.00	-25.19	-26.42
4	3.71000	10.21	19.91	8.01	30.12	18.22	56.00	46.00	-25.88	-27.78
5	7.82200	10.28	15.02	6.55	25.30	16.83	60.00	50.00	-34.70	-33.17
6	17.06200	10.41	21.00	15.26	31.41	25.67	60.00	50.00	-28.59	-24.33

Remarks:

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

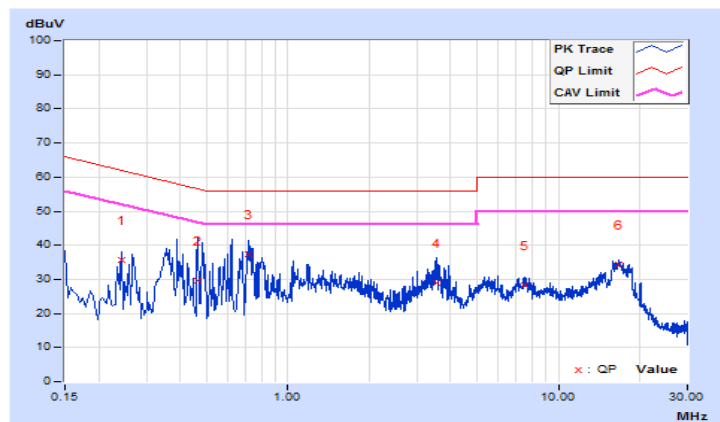


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	22°C, 66%RH
Tested by	Cookie Ku	Test Date	2021/3/30

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.24200	10.08	25.49	7.70	35.57	17.78	62.03	52.03	-26.46	-34.25
2	0.46200	10.11	19.61	0.88	29.72	10.99	56.66	46.66	-26.94	-35.67
3	0.71800	10.13	27.31	9.92	37.44	20.05	56.00	46.00	-18.56	-25.95
4	3.53800	10.24	18.71	7.64	28.95	17.88	56.00	46.00	-27.05	-28.12
5	7.49800	10.35	17.93	8.21	28.28	18.56	60.00	50.00	-31.72	-31.44
6	16.74600	10.57	23.72	11.46	34.29	22.03	60.00	50.00	-25.71	-27.97

Remarks:

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

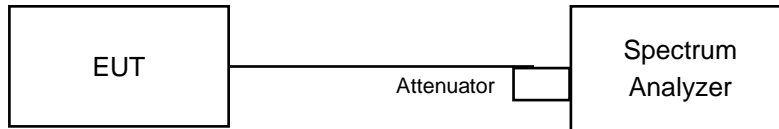


4.3 6 dB Bandwidth Measurement

4.3.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

802.11b

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	9.01	0.5	Pass
6	2437	9.05	0.5	Pass
11	2462	8.54	0.5	Pass
12	2467	9.06	0.5	Pass
13	2472	9.05	0.5	Pass

802.11g

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.12	0.5	Pass
6	2437	15.15	0.5	Pass
11	2462	15.16	0.5	Pass
12	2467	15.14	0.5	Pass
13	2472	16.37	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.14	15.71	0.5	Pass
6	2437	15.09	15.70	0.5	Pass
11	2462	15.15	15.13	0.5	Pass
12	2467	15.03	15.72	0.5	Pass
13	2472	17.61	17.63	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.10	35.12	0.5	Pass
6	2437	35.10	33.91	0.5	Pass
9	2452	35.12	35.12	0.5	Pass
10	2457	35.06	35.10	0.5	Pass
11	2462	37.06	37.81	0.5	Pass

802.11ax (HE20)

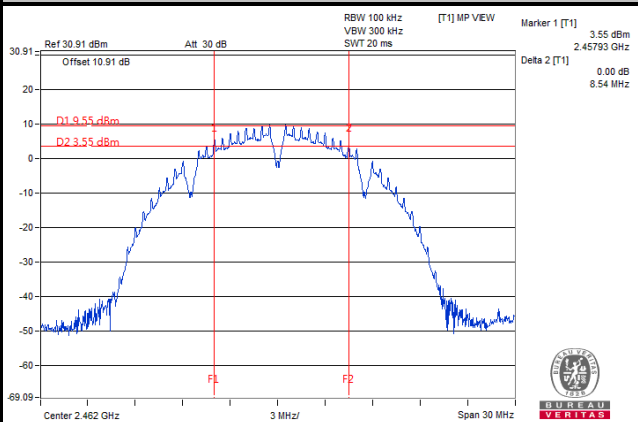
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.29	15.15	0.5	Pass
6	2437	15.15	15.13	0.5	Pass
11	2462	15.64	15.10	0.5	Pass
12	2467	15.40	15.16	0.5	Pass
13	2472	18.81	18.79	0.5	Pass

802.11ax (HE40)

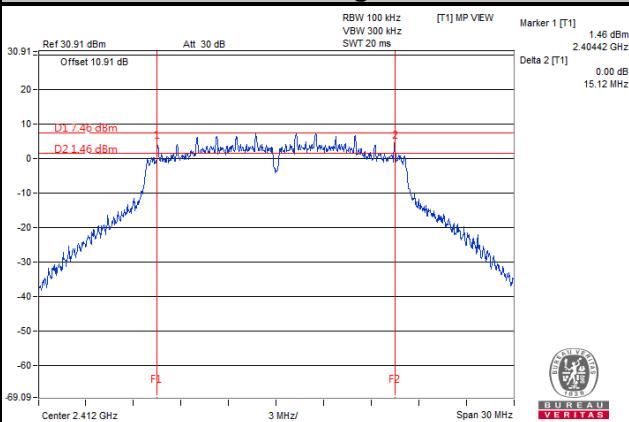
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	35.16	35.11	0.5	Pass
6	2437	35.12	35.08	0.5	Pass
9	2452	35.13	35.15	0.5	Pass
10	2457	35.06	35.12	0.5	Pass
11	2462	37.70	37.38	0.5	Pass

Spectrum Plot of Worst Value

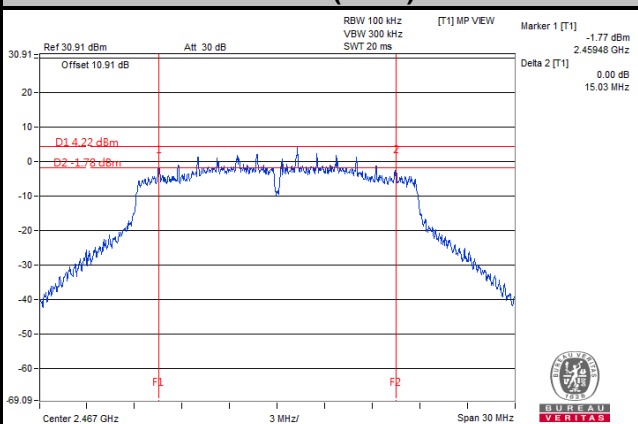
802.11b



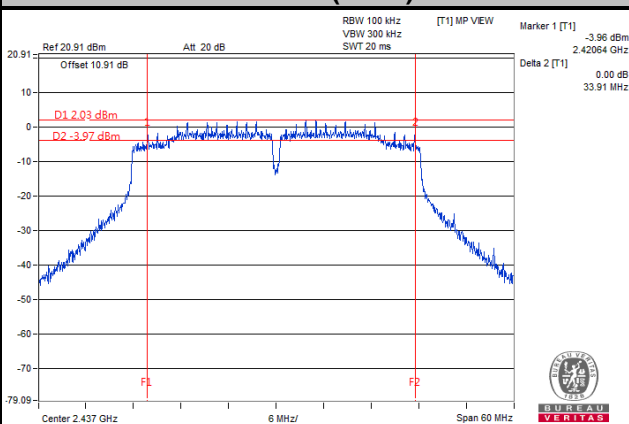
802.11g



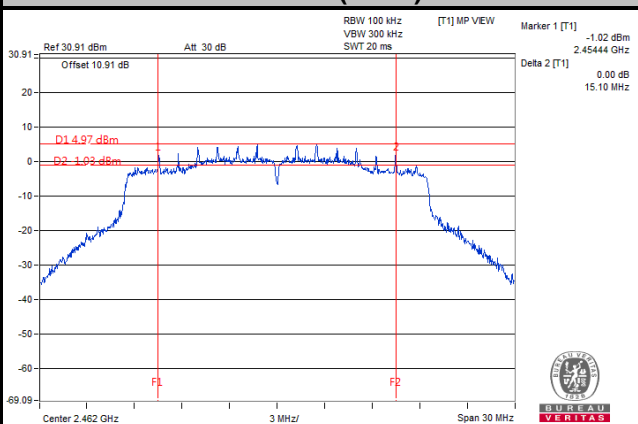
802.11n (HT20)



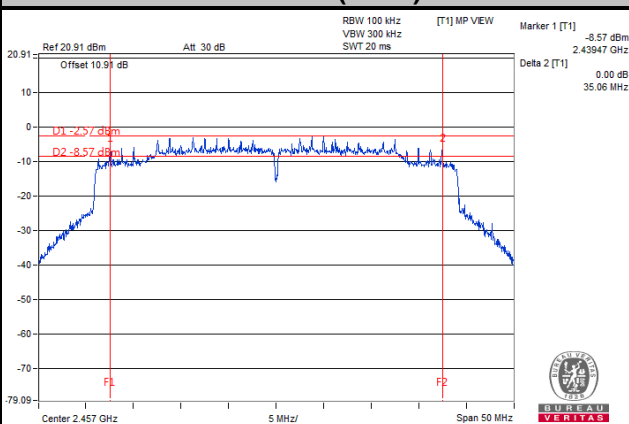
802.11n (HT40)



802.11ax (HE20)

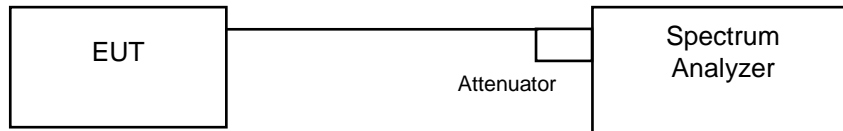


802.11ax (HE40)



4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1 % to 5 % of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.4.4 Deviation from Test Standard

No deviation.

4.4.5 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.4.6 Test Results

802.11b

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	2412	13.44
6	2437	13.50
11	2462	13.44
12	2467	13.44
13	2472	13.32

802.11g

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
1	2412	16.80
6	2437	16.80
11	2462	16.74
12	2467	16.74
13	2472	16.50

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	17.82	17.70
6	2437	17.82	17.76
11	2462	17.88	17.76
12	2467	17.82	17.76
13	2472	17.64	17.64

802.11n (HT40)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	2422	36.24	36.12
6	2437	36.24	36.12
9	2452	36.00	36.00
10	2457	36.24	36.12
11	2462	37.68	37.80

802.11ax (HE20)

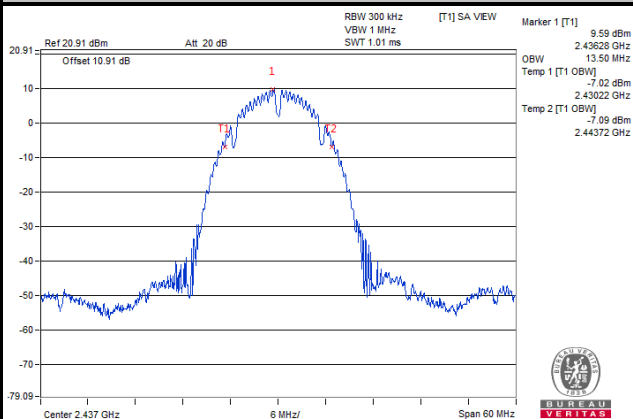
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
1	2412	19.02	19.02
6	2437	19.02	19.02
11	2462	19.02	18.96
12	2467	18.96	18.96
13	2472	18.78	18.84

802.11ax (HE40)

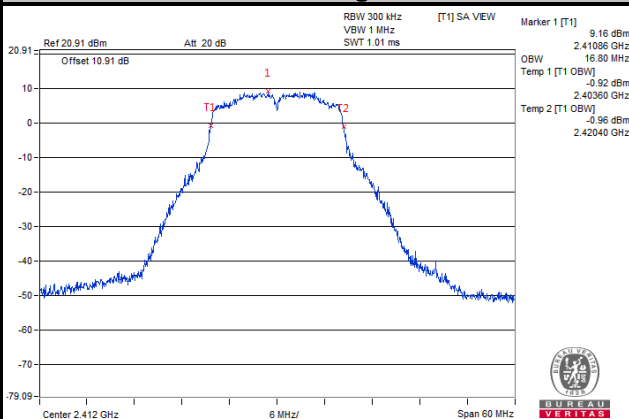
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
3	2422	37.68	37.68
6	2437	37.68	37.68
9	2452	37.80	37.68
10	2457	37.68	37.68
11	2462	37.80	37.80

Spectrum Plot of Worst Value

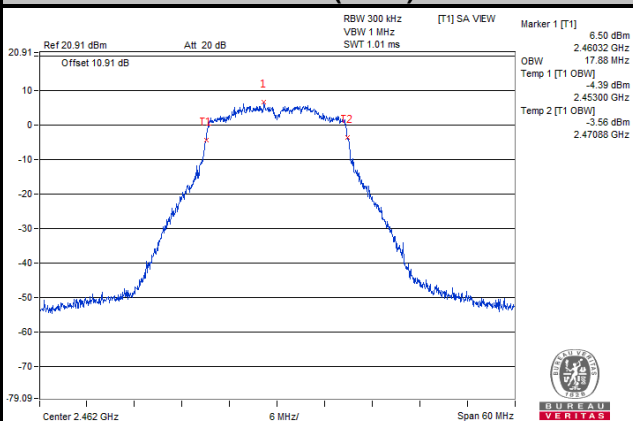
802.11b



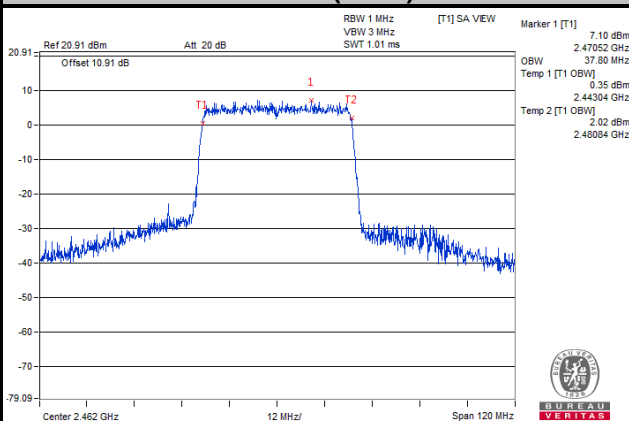
802.11g



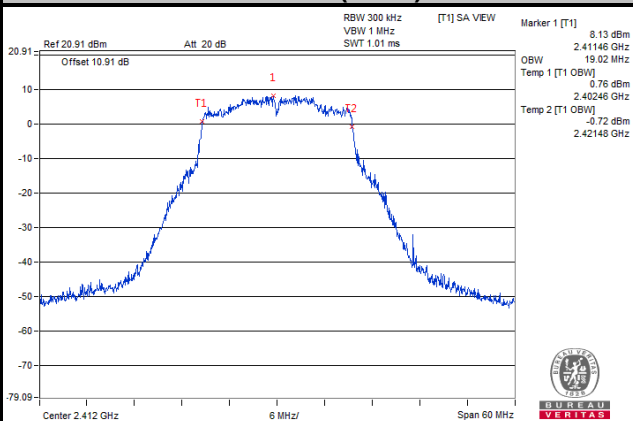
802.11n (HT20)



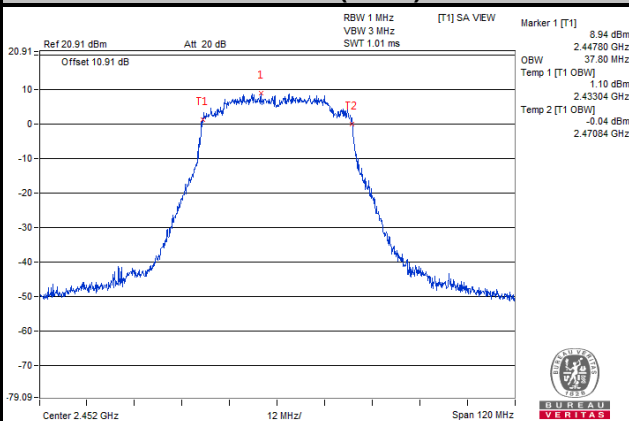
802.11n (HT40)



802.11ax (HE20)



802.11ax (HE40)



4.5 Conducted Output Power Measurement

4.5.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30 dBm)

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

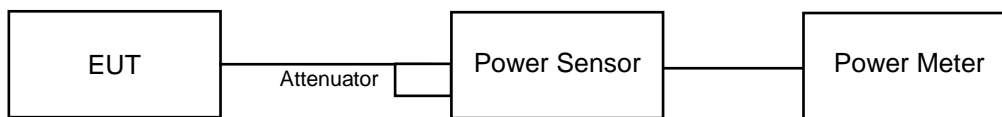
Array Gain = 0 dB (i.e., no array gain) for NANT \leq 4;

Array Gain = 0 dB (i.e., no array gain) for channel widths \geq 40 MHz for any NANT;

Array Gain = $5 \log(\text{NANT}/\text{NSS})$ dB or 3 dB, whichever is less for 20 MHz channel widths with NANT \geq 5.

For power measurements on all other devices: Array Gain = $10 \log(\text{NANT}/\text{NSS})$ dB.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

Peak Power

Chain 0

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	82.794	19.18	30	Pass
6	2437	81.47	19.11	30	Pass
11	2462	81.846	19.13	30	Pass
12	2467	81.658	19.12	30	Pass
13	2472	82.035	19.14	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	135.831	21.33	30	Pass
6	2437	145.546	21.63	30	Pass
11	2462	138.995	21.43	30	Pass
12	2467	89.95	19.54	30	Pass
13	2472	118.032	20.72	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	144.212	21.59	30	Pass
6	2437	142.889	21.55	30	Pass
11	2462	107.647	20.32	30	Pass
12	2467	98.175	19.92	30	Pass
13	2472	89.95	19.54	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	142.561	21.54	30	Pass
6	2437	130.317	21.15	30	Pass
9	2452	130.017	21.14	30	Pass
10	2457	54.576	17.37	30	Pass
11	2462	117.22	20.69	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	149.624	21.75	30	Pass
6	2437	99.083	19.96	30	Pass
11	2462	111.944	20.49	30	Pass
12	2467	99.541	19.98	30	Pass
13	2472	84.528	19.27	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	132.13	21.21	30	Pass
6	2437	129.42	21.12	30	Pass
9	2452	132.739	21.23	30	Pass
10	2457	56.234	17.50	30	Pass
11	2462	117.49	20.70	30	Pass

Chain 1
802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	45.92	16.62	30	Pass
6	2437	46.452	16.67	30	Pass
11	2462	46.559	16.68	30	Pass
12	2467	44.978	16.53	30	Pass
13	2472	46.132	16.64	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	75.858	18.80	30	Pass
6	2437	78.163	18.93	30	Pass
11	2462	77.446	18.89	30	Pass
12	2467	74.302	18.71	30	Pass
13	2472	118.577	20.74	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	75.336	18.77	30	Pass
6	2437	75.858	18.80	30	Pass
11	2462	76.033	18.81	30	Pass
12	2467	71.614	18.55	30	Pass
13	2472	119.399	20.77	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	92.257	19.65	30	Pass
6	2437	94.189	19.74	30	Pass
9	2452	88.92	19.49	30	Pass
10	2457	61.802	17.91	30	Pass
11	2462	171.791	22.35	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	75.509	18.78	30	Pass
6	2437	75.336	18.77	30	Pass
11	2462	71.779	18.56	30	Pass
12	2467	72.277	18.59	30	Pass
13	2472	93.756	19.72	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	80.91	19.08	30	Pass
6	2437	90.365	19.56	30	Pass
9	2452	80.724	19.07	30	Pass
10	2457	62.517	17.96	30	Pass
11	2462	132.434	21.22	30	Pass

MIMO

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	18.66	18.14	138.614	21.42	30	Pass
6	2437	21.82	21.50	293.309	24.67	30	Pass
11	2462	19.04	18.28	147.465	21.69	30	Pass
12	2467	16.89	16.80	96.728	19.86	30	Pass
13	2472	18.50	17.97	133.456	21.25	30	Pass

802.11n (HT40)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	18.95	18.78	154.033	21.88	30	Pass
6	2437	18.88	18.71	151.57	21.81	30	Pass
9	2452	18.18	17.93	127.853	21.07	30	Pass
10	2457	14.27	14.00	51.849	17.15	30	Pass
11	2462	18.65	18.67	146.903	21.67	30	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	20.90	20.13	226.065	23.54	30	Pass
6	2437	21.81	21.17	282.623	24.51	30	Pass
11	2462	19.14	18.65	155.318	21.91	30	Pass
12	2467	17.49	16.79	103.858	20.16	30	Pass
13	2472	19.11	19.76	176.094	22.46	30	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	20.11	19.46	190.873	22.81	30	Pass
6	2437	20.19	20.01	204.703	23.11	30	Pass
9	2452	19.42	19.18	170.293	22.31	30	Pass
10	2457	16.44	15.70	81.209	19.10	30	Pass
11	2462	21.26	21.27	267.627	24.28	30	Pass

Average Power
Chain 0
802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	51.05	17.08
6	2437	50.234	17.01
11	2462	50.466	17.03
12	2467	50.35	17.02
13	2472	50.582	17.04

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	47.098	16.73
6	2437	50.466	17.03
11	2462	48.195	16.83
12	2467	31.189	14.94
13	2472	15.668	11.95

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	50.699	17.05
6	2437	50.234	17.01
11	2462	37.844	15.78
12	2467	34.514	15.38
13	2472	13.709	11.37

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	43.053	16.34
6	2437	39.355	15.95
9	2452	39.264	15.94
10	2457	16.482	12.17
11	2462	17.14	12.34

802.11ax (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	50.35	17.02
6	2437	33.343	15.23
11	2462	37.67	15.76
12	2467	33.497	15.25
13	2472	10.447	10.19

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	40.832	16.11
6	2437	39.994	16.02
9	2452	41.02	16.13
10	2457	17.378	12.40
11	2462	16.634	12.21

Chain 1
802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	27.99	14.47
6	2437	28.379	14.53
11	2462	28.576	14.56
12	2467	27.669	14.42
13	2472	28.184	14.50

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	27.416	14.38
6	2437	27.606	14.41
11	2462	27.416	14.38
12	2467	26.73	14.27
13	2472	19.32	12.86

802.11n (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	26.915	14.30
6	2437	27.102	14.33
11	2462	27.102	14.33
12	2467	26.303	14.20
13	2472	19.861	12.98

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	28.314	14.52
6	2437	29.242	14.66
9	2452	27.99	14.47
10	2457	22.542	13.53
11	2462	22.491	13.52

802.11ax (HT20)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	26.424	14.22
6	2437	26.73	14.27
11	2462	26.792	14.28
12	2467	25.704	14.10
13	2472	18.75	12.73

802.11ax (HE40)

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
3	2422	26.915	14.30
6	2437	27.102	14.33
9	2452	27.04	14.32
10	2457	21.528	13.33
11	2462	23.388	13.69

MIMO
802.11n (HT20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	14.27	13.75	50.444	17.03
6	2437	17.43	17.11	106.739	20.28
11	2462	14.65	13.89	53.665	17.30
12	2467	12.50	12.41	35.201	15.47
13	2472	10.10	9.57	19.29	12.85

802.11n (HT40)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	14.19	14.02	51.477	17.12
6	2437	14.12	13.95	50.654	17.05
9	2452	13.42	13.17	42.728	16.31
10	2457	9.73	9.46	18.228	12.61
11	2462	10.45	10.65	22.706	13.56

802.11ax (HE20)

Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
1	2412	16.04	15.27	73.83	18.68
6	2437	16.95	16.31	92.301	19.65
11	2462	14.28	13.79	50.725	17.05
12	2467	12.63	11.93	33.919	15.30
13	2472	8.88	9.34	16.317	12.13

802.11ax (HE40)

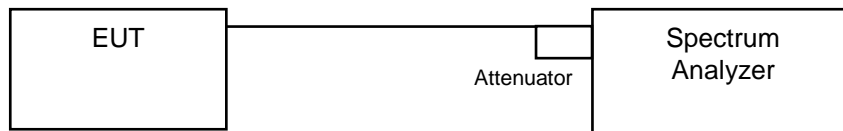
Channel	Frequency (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)
		Chain 0	Chain 1		
3	2422	14.21	13.56	49.062	16.91
6	2437	14.29	14.11	52.617	17.21
9	2452	13.52	13.28	43.772	16.41
10	2457	10.54	9.80	20.874	13.20
11	2462	10.21	10.22	21.015	13.23

4.6 Power Spectral Density Measurement

4.6.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set the VBW $\geq 3 \times \text{RBW}$.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.6.7 Test Results

802.11b

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-4.95	8	Pass
6	2437	-5.05	8	Pass
11	2462	-5.17	8	Pass
12	2467	-5.24	8	Pass
13	2472	-5.17	8	Pass

802.11g

Channel	Frequency (MHz)	PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
1	2412	-7.73	8	Pass
6	2437	-6.77	8	Pass
11	2462	-6.67	8	Pass
12	2467	-8.82	8	Pass
13	2472	-11.99	8	Pass

802.11n (HT20)

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-10.66	3.01	-7.65	8	Pass
	6	2437	-6.32	3.01	-3.31	8	Pass
	11	2462	-9.15	3.01	-6.14	8	Pass
	12	2467	-10.51	3.01	-7.5	8	Pass
	13	2472	-13.77	3.01	-10.76	8	Pass
1	1	2412	-10.91	3.01	-7.9	8	Pass
	6	2437	-6.54	3.01	-3.53	8	Pass
	11	2462	-9.76	3.01	-6.75	8	Pass
	12	2467	-10.82	3.01	-7.81	8	Pass
	13	2472	-14.15	3.01	-11.14	8	Pass

NOTE:

1. Directional gain = 2.42 dBi + 10log(2) = 5.43 dBi < 6 dBi, so the limit no need to be reduced.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

802.11n (HT40)

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	3	2422	-13.79	3.01	-10.78	8	Pass
	6	2437	-13.05	3.01	-10.04	8	Pass
	9	2452	-14.2	3.01	-11.19	8	Pass
	10	2457	-18.37	3.01	-15.36	8	Pass
	11	2462	-16.98	3.01	-13.97	8	Pass
1	3	2422	-13.93	3.01	-10.92	8	Pass
	6	2437	-13.13	3.01	-10.12	8	Pass
	9	2452	-14.37	3.01	-11.36	8	Pass
	10	2457	-18.69	3.01	-15.68	8	Pass
	11	2462	-16.99	3.01	-13.98	8	Pass

NOTE:

1. Directional gain = 2.42 dBi + 10log(2) = 5.43 dBi < 6 dBi, so the limit no need to be reduced.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

802.11ax (HE20)

TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	1	2412	-10.4	3.01	-7.39	8	Pass
	6	2437	-8.75	3.01	-5.74	8	Pass
	11	2462	-12.67	3.01	-9.66	8	Pass
	12	2467	-13.57	3.01	-10.56	8	Pass
	13	2472	-17.27	3.01	-14.26	8	Pass
1	1	2412	-10.64	3.01	-7.63	8	Pass
	6	2437	-8.7	3.01	-5.69	8	Pass
	11	2462	-13.05	3.01	-10.04	8	Pass
	12	2467	-13.97	3.01	-10.96	8	Pass
	13	2472	-16.93	3.01	-13.92	8	Pass

NOTE:

1. Directional gain = 2.42 dBi + 10log(2) = 5.43 dBi < 6 dBi, so the limit no need to be reduced.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

802.11ax (HE40)

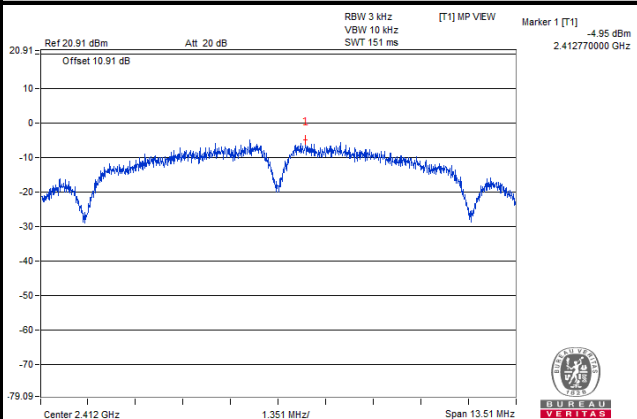
TX Chain	Channel	Freq. (MHz)	PSD (dBm/3 kHz)	10 log (N=2) dB	Total PSD (dBm/3 kHz)	Limit (dBm/3 kHz)	Pass / Fail
0	3	2422	-13.89	3.01	-10.88	8	Pass
	6	2437	-14.23	3.01	-11.22	8	Pass
	9	2452	-14.52	3.01	-11.51	8	Pass
	10	2457	-19.51	3.01	-16.5	8	Pass
	11	2462	-18.51	3.01	-15.5	8	Pass
1	3	2422	-14.06	3.01	-11.05	8	Pass
	6	2437	-14.19	3.01	-11.18	8	Pass
	9	2452	-14.63	3.01	-11.62	8	Pass
	10	2457	-19.64	3.01	-16.63	8	Pass
	11	2462	-17.33	3.01	-14.32	8	Pass

NOTE:

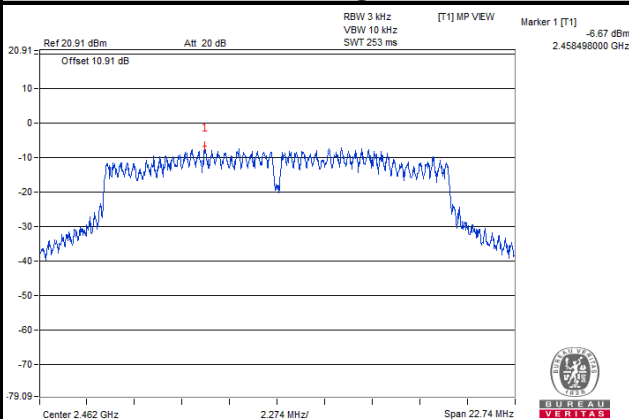
1. Directional gain = 2.42 dBi + 10log(2) = 5.43 dBi < 6 dBi, so the limit no need to be reduced.
2. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density.

Spectrum Plot of Worst Value

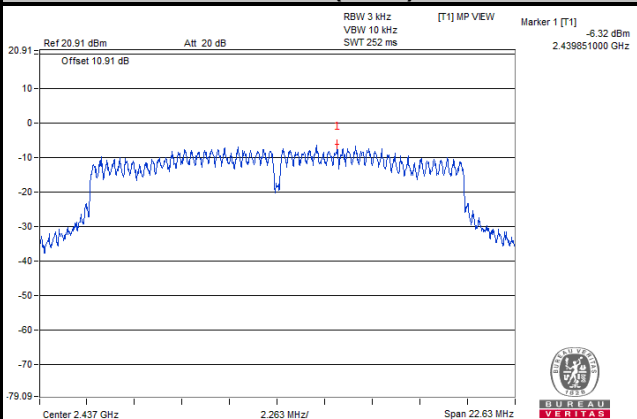
802.11b



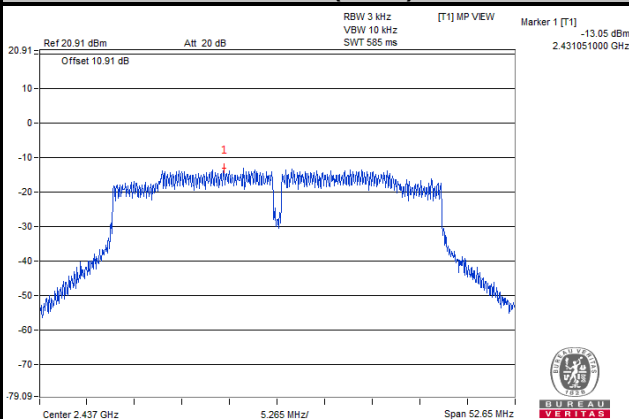
802.11g



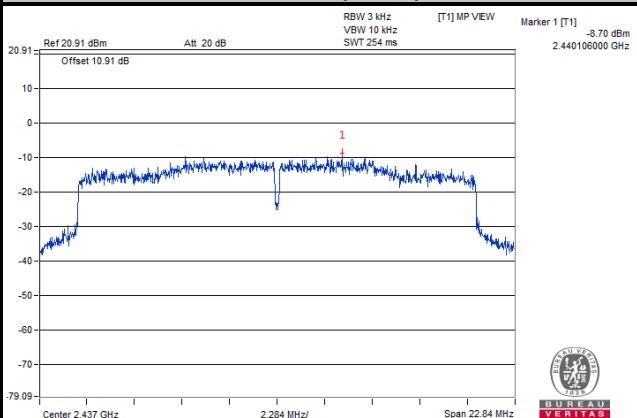
802.11n (HT20)



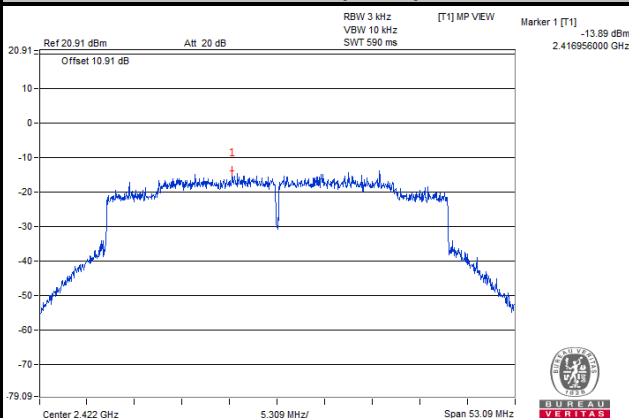
802.11n (HT40)



802.11ax (HE20)



802.11ax (HE40)

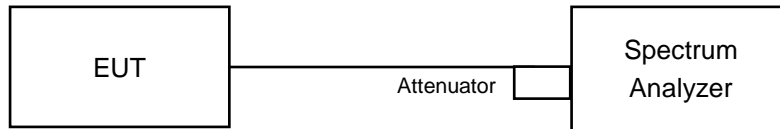


4.7 Conducted Out of Band Emission Measurement

4.7.1 Limits of Conducted Out of Band Emission Measurement

Below -20 dB of the highest emission level of operating band (in 100 kHz Resolution Bandwidth).

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

MEASUREMENT PROCEDURE OOB

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

The conducted emission test is performed on each TX port of operating mode without summing or adding 10log (N) since the limit is relative emission limit.

The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20 dB offset below D1. It shows compliance with the requirement.

802.11b

