FCC Test Report

Report No.:	RF190918C14A
FCC ID:	2ARXKVHH10
Test Model:	VHH10
Series Model:	VHH10XXX (X=A-Z, 0-9, blank or "-")
Received Date:	Sep. 18, 2019
Test Date:	Oct. 29 ~ Nov. 29, 2019
Issued Date:	Dec. 11, 2019
Applicant:	Veea Inc
Address:	164 E 83rd Street, New York NY, 10028, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF190918C14A	Original release	Dec. 11, 2019

1 Certificate of Conformity

Product:	veeaHub
Brand:	veeaHub
Test Model:	VHH10
Series Model:	VHH10XXX (X=A-Z, 0-9, blank or "-")
Sample Status:	Engineering sample
Applicant:	Veea Inc
Test Date:	Oct. 29 ~ Nov. 29, 2019
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) 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 : Celine Chou , **Date:** Dec. 11, 2019

Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Dec. 11, 2019

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -0.69dB at 0.48600MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.2dB at 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	veeaHub
Brand	veeaHub
Test Model	VHH10
Series Model	VHH10XXX (X=A-Z, 0-9, blank or "-")
Model Difference	Marketing purposes
Sample Status	Engineering sample
Power Supply Rating	48Vdc (Adapter and POE)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	5260 ~ 5320MHz, 5500 ~ 5720MHz
Number of Channel	5260 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500 ~ 5720MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 6 802.11ac (VHT80): 3
Output Power	CDD Mode: 5260 ~ 5320MHz: 249.356mW 5500 ~ 5720MHz: 236.870mW Beamforming Mode: 5260 ~ 5320MHz: 62.348mW 5500 ~ 5720MHz: 59.227mW
Antenna Type	Chip antenna with 2.1dBi gain
Antenna Connector	NA
Accessory Device	NA
Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The differences compared with the original report (BV CPS report no.: RF190918C14A) are adding 5.26GHz to 5.32GHz and 5.50GHz to 5.72GHz by software.
2. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitter and 4 receivers.

Modulation Mode	Beamforming Mode	TX Function
802.11a	Not Support	4TX
802.11n (HT20)	Support	4TX
802.11n (HT40)	Support	4TX
802.11ac (VHT20)	Support	4TX
802.11ac (VHT40)	Support	4TX
802.11ac (VHT80)	Support	4TX

* The modulation and bandwidth are similar for 802.11n mode for HT20/HT40 and 802.11ac mode for VHT20/VHT40. After pre-testing, 802.11ac (VHT20/VHT40) power is lower than 802.11n (HT20/HT40), therefore 802.11n (HT20/HT40) is the worst case to representative mode in test report. (Final test mode refer section 3.2.1)

* For 802.11n, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

3. The EUT has two sale types.

Type	Description
A	Without LTE function, BT internal ant.
B	With LTE function, BT external ant.

4. The following RF Modules are for the EUT.

RF Module	Band
Module 1	5180 ~ 5240MHz, 5260 ~ 5320MHz
Module 2	5500 ~ 5720MHz, 5745 ~ 5825MHz
Module 3	2412 ~ 2462MHz

5. The EUT uses following adapter and POE.

Adapter (Support unit)	
Brand	EDACPOWER ELEC.
Model	EA1062SGR-480
Input Power	100-240Vac, 50-60Hz, 2.5A
Output Power	48Vdc, 1.35A
Power Line	1.2m DC cable with one core

POE (Support unit)	
Model	APOE02-WM
Output Power	48Vdc

6. WLAN, zigbee and Bluetooth technology can transmit at same time.

3.2 Description of Test Modes

For 5260 ~ 5320MHz:

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

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

For 5500 ~ 5720MHz:

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

6 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz
138	5690 MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from adapter
B	-	√	√	-	Power from POE

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane.**
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

Radiated Emission Test (Above 1GHz):

☒ 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	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

Radiated Emission Test (Below 1GHz):

☒ 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	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B	802.11n (HT40)	5260-5320	54 to 62	54	OFDM	13.5
A, B	802.11n (HT40)	5500-5720	102 to 142		OFDM	13.5

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	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B	802.11n (HT40)	5260-5320	54 to 62	54	OFDM	13.5
A, B	802.11n (HT40)	5500-5720	102 to 142		OFDM	13.5

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	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
A	802.11a	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.0
	802.11n (HT20)		100 to 144	100, 116, 140, 144	OFDM	6.5
	802.11n (HT40)		102 to 142	102, 110, 134, 142	OFDM	13.5
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3

Test Condition:

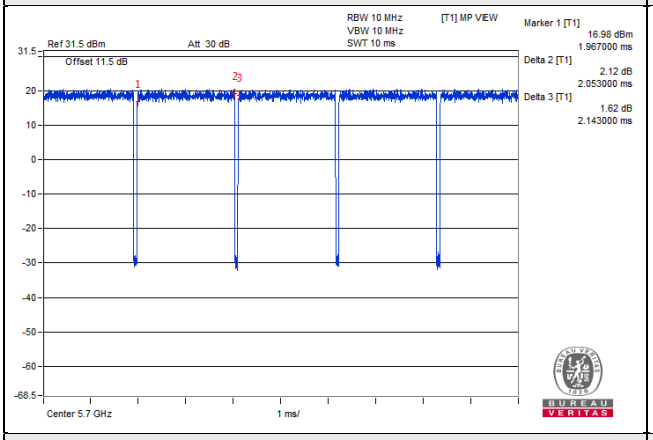
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	23 deg. C, 68% RH	120Vac, 60Hz	Adair Peng
RE<1G	22 deg. C, 66% RH	120Vac, 60Hz 48Vdc	Adair Peng
PLC	25 deg. C, 75% RH	120Vac, 60Hz 48Vdc	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ted Chang

3.3 Duty Cycle of Test Signal

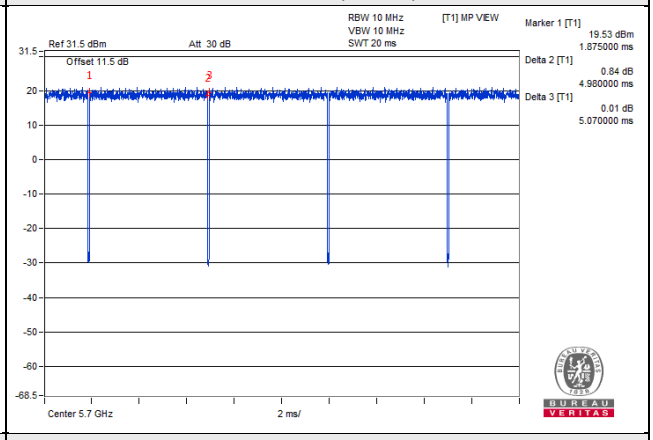
802.11n (HT20): Duty cycle of test signal is ≥ 98%, duty factor is not required.
802.11a, 802.11n (HT40), 802.11ac (VHT80): Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.053/2.143 = 0.958, Duty factor = 10 * log (1/0.958) = 0.19
802.11n (HT20): Duty cycle = 4.980/5.070 = 0.982
802.11n (HT40): Duty cycle = 2.417/2.497 = 0.968, Duty factor = 10 * log (1/0.968) = 0.14
802.11ac (VHT80): Duty cycle = 1.143/1.217 = 0.939, Duty factor = 10 * log (1/0.939) = 0.27

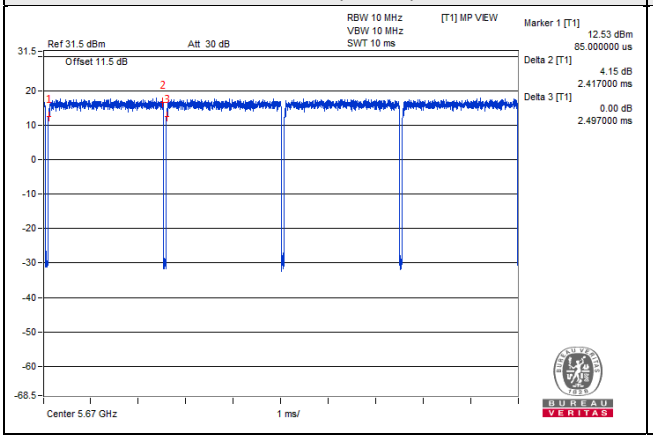
802.11a



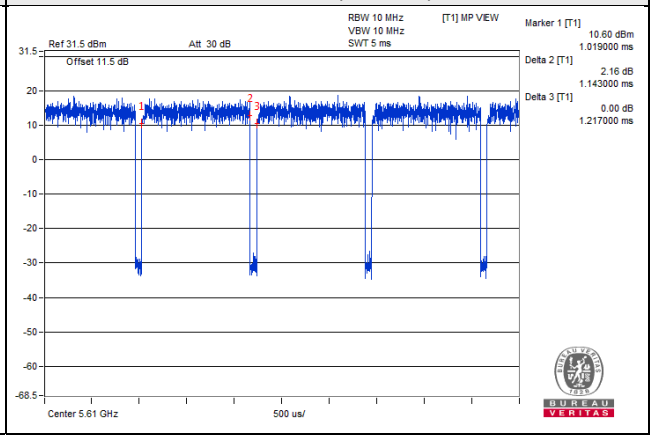
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	NA	APOE02-WM	NA	NA	Provided by manufacturer

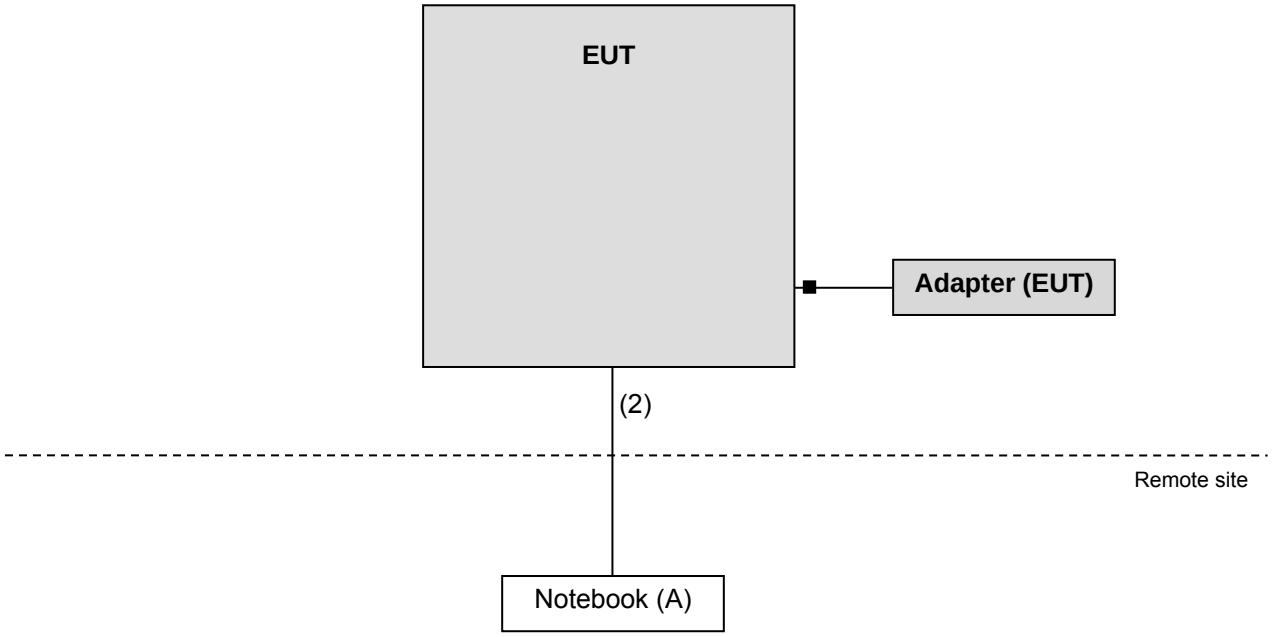
Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

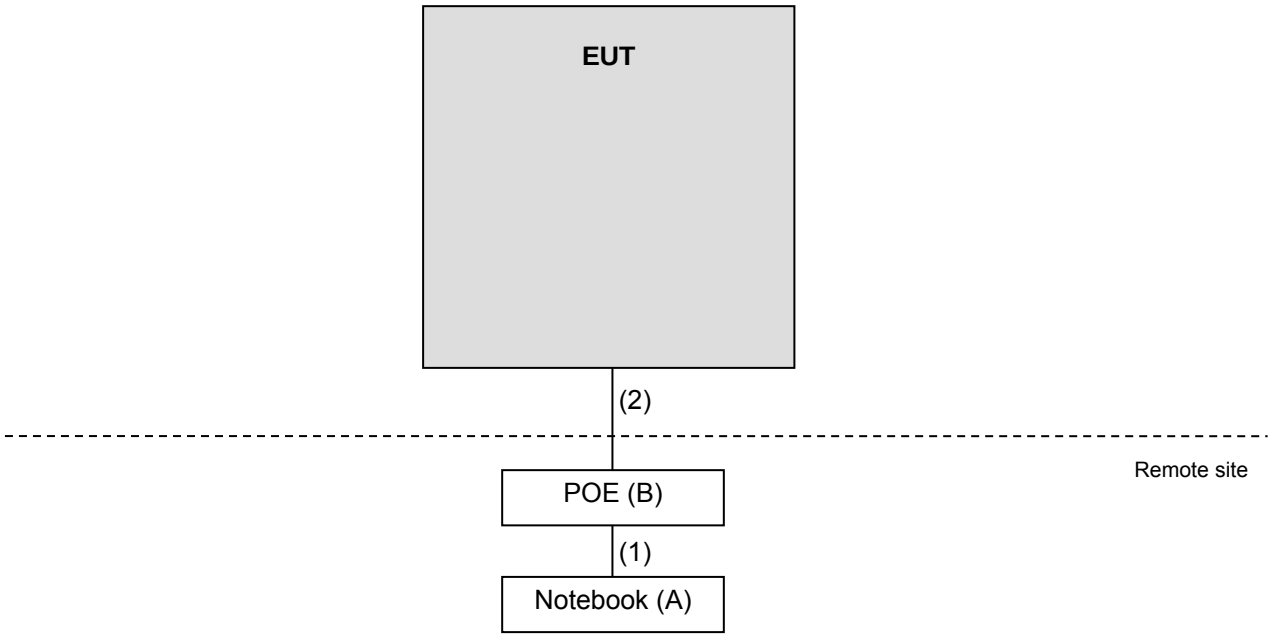
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN cable	1	1.5	N	0	RJ45, Cat5e
2.	LAN cable	1	5	N	0	RJ45, Cat5e

3.4.1 Configuration of System under Test

Adapter Mode



POE Mode



3.5 General Description of Applied Standards and References

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test standard:
FCC Part 15, Subpart E (15.407)
ANSI C63.10:2013

All test items have been performed and recorded as per the above standards.

References Test Guidance:
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

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.

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 1000MHz, 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 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

<table>
<tr><td colspan="3">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="3" rowspan="2">789033 D02 General UNII Test Procedure New Rules v02r01</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK: 74 (dBμV/m)</td><td>AV: 54 (dBμV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK: -27 (dBm/MHz)</td><td rowspan="3">PK: 68.2(dBμV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK: -27 (dBm/MHz) *1
PK: 10 (dBm/MHz) *2
PK: 15.6 (dBm/MHz) *3
PK: 27 (dBm/MHz) *4</td><td>PK: 68.2(dBμV/m) *1
PK: 105.2 (dBμV/m) *2
PK: 110.8(dBμV/m) *3
PK: 122.2 (dBμV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="5">*1 beyond 75 MHz or more above of the band edge.
*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.
*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.
*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.</td></tr>
</table>

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 30, 2019	May 29, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 22, 2018	Nov. 21, 2019
			Nov. 11, 2019	Nov. 10, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 25, 2018	Nov. 24, 2019
			Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
			Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 20, 2019	Aug. 19, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 27, 2019	Mar. 26, 2020
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-S M-8000	Cable-CH3-03 (309224+170907)	Aug. 20, 2019	Aug. 19, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 05, 2019	Sep. 04, 2020
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 15, 2019	Jul. 14, 2020

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 Chamber 3.

4.1.3 Test Procedures

For Radiated emission below 30MHz

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 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) 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 detect 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 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.

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 1GHz.

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz. (802.11a: RBW = 1MHz, VBW = 1kHz; 802.11n (HT20): RBW = 1MHz, VBW = 10Hz; 802.11n (HT40): RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT80): RBW = 1MHz, VBW = 1kHz)

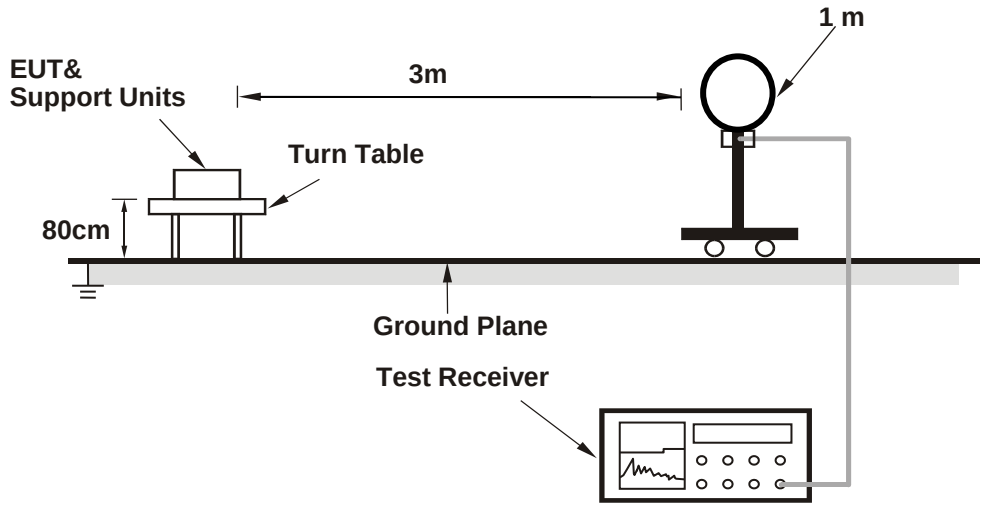
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

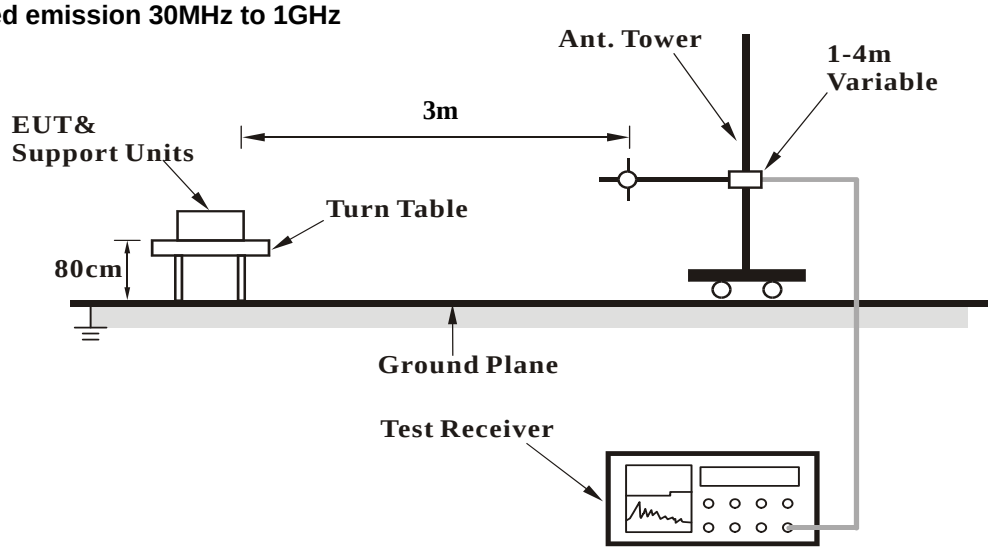
No deviation.

4.1.5 Test Setup

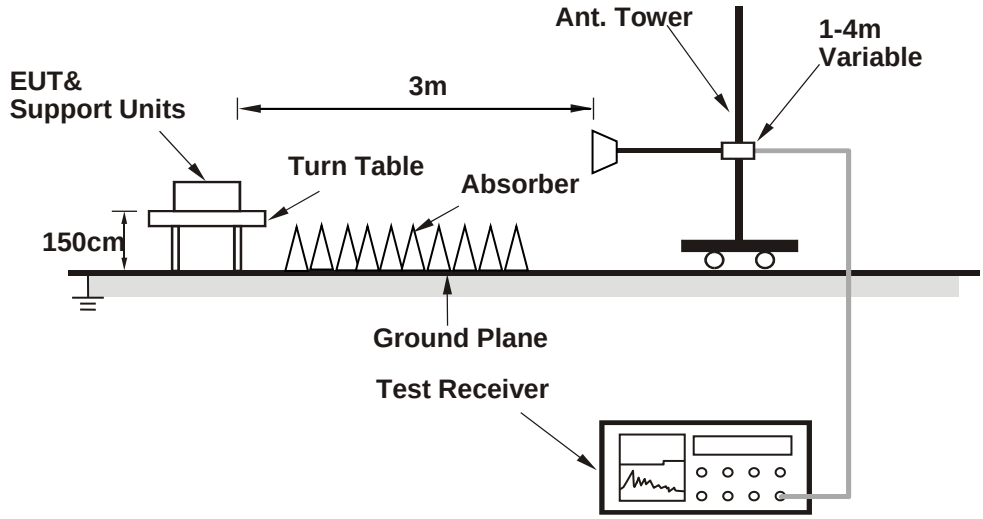
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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 the testing table.
b. Prepared a notebook to act as a communication partner and placed it outside of testing area.
c. The communication partner connected with EUT via a RJ45 cable and ran a test program (CMD) to enable EUT under transmission condition continuously at specific channel frequency.
d. The necessary accessories enable the system in full functions.

4.1.7 Test Results

Above 1GHz data:

802.11a

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.9 PK	74.0	-17.1	1.45 H	5	52.7	4.2
2	5150.00	42.9 AV	54.0	-11.1	1.45 H	5	38.7	4.2
3	*5260.00	115.7 PK			1.43 H	360	76.6	39.1
4	*5260.00	105.5 AV			1.43 H	360	66.4	39.1
5	#10520.00	61.2 PK	68.2	-7.0	1.52 H	206	42.5	18.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.5 PK	74.0	-17.5	2.41 V	323	52.3	4.2
2	5150.00	42.8 AV	54.0	-11.2	2.41 V	323	38.6	4.2
3	*5260.00	114.4 PK			2.36 V	316	75.3	39.1
4	*5260.00	104.1 AV			2.36 V	316	65.0	39.1
5	#10520.00	61.4 PK	68.2	-6.8	1.69 V	223	42.7	18.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	116.6 PK			1.21 H	345	77.5	39.1
2	*5300.00	106.4 AV			1.21 H	345	67.3	39.1
3	10600.00	61.8 PK	74.0	-12.2	1.56 H	211	42.7	19.1
4	10600.00	47.3 AV	54.0	-6.7	1.56 H	211	28.2	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	114.9 PK			2.34 V	318	75.8	39.1
2	*5300.00	104.1 AV			2.34 V	318	65.0	39.1
3	10600.00	61.6 PK	74.0	-12.4	1.69 V	203	42.5	19.1
4	10600.00	47.7 AV	54.0	-6.3	1.69 V	203	28.6	19.1

Remarks:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	117.2 PK			1.09 H	342	78.0	39.2
2	*5320.00	106.6 AV			1.09 H	342	67.4	39.2
3	5350.00	56.5 PK	74.0	-17.5	1.12 H	345	52.4	4.1
4	5350.00	42.8 AV	54.0	-11.2	1.12 H	345	38.7	4.1
5	10640.00	59.3 PK	74.0	-14.7	1.62 H	213	40.4	18.9
6	10640.00	46.3 AV	54.0	-7.7	1.62 H	213	27.4	18.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	114.7 PK			2.24 V	316	75.5	39.2
2	*5320.00	104.2 AV			2.24 V	316	65.0	39.2
3	5350.00	59.4 PK	74.0	-14.6	2.66 V	350	55.3	4.1
4	5350.00	45.0 AV	54.0	-9.0	2.66 V	350	40.9	4.1
5	10640.00	59.4 PK	74.0	-14.6	1.92 V	223	40.5	18.9
6	10640.00	46.6 AV	54.0	-7.4	1.92 V	223	27.7	18.9

Remarks:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.3 PK	74.0	-14.7	1.88 H	350	54.8	4.5
2	5460.00	46.8 AV	54.0	-7.2	1.88 H	350	42.3	4.5
3	#5470.00	61.4 PK	68.2	-6.8	2.05 H	345	56.9	4.5
4	*5500.00	119.5 PK			1.92 H	343	79.7	39.8
5	*5500.00	108.4 AV			1.92 H	343	68.6	39.8
6	11000.00	61.5 PK	74.0	-12.5	2.87 H	40	41.5	20.0
7	11000.00	47.4 AV	54.0	-6.6	2.87 H	40	27.4	20.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.2 PK	74.0	-15.8	3.23 V	15	53.7	4.5
2	5460.00	46.4 AV	54.0	-7.6	3.23 V	15	41.9	4.5
3	#5470.00	60.2 PK	68.2	-8.0	3.30 V	4	55.7	4.5
4	*5500.00	116.3 PK			3.14 V	11	76.5	39.8
5	*5500.00	105.4 AV			3.14 V	11	65.6	39.8
6	11000.00	60.9 PK	74.0	-13.1	2.45 V	133	40.9	20.0
7	11000.00	47.0 AV	54.0	-7.0	2.45 V	133	27.0	20.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	118.3 PK			1.93 H	343	78.6	39.7
2	*5580.00	107.5 AV			1.93 H	343	67.8	39.7
3	11160.00	60.5 PK	74.0	-13.5	2.67 H	45	41.3	19.2
4	11160.00	46.4 AV	54.0	-7.6	2.67 H	45	27.2	19.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	115.0 PK			3.19 V	15	75.3	39.7
2	*5580.00	104.2 AV			3.19 V	15	64.5	39.7
3	11160.00	60.0 PK	74.0	-14.0	2.37 V	129	40.8	19.2
4	11160.00	46.0 AV	54.0	-8.0	2.37 V	129	26.8	19.2

Remarks:

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

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	117.7 PK			1.71 H	342	77.9	39.8
2	*5700.00	106.8 AV			1.71 H	342	67.0	39.8
3	#5725.00	62.6 PK	68.2	-5.6	1.83 H	350	57.9	4.7
4	11400.00	60.8 PK	74.0	-13.2	2.93 H	42	41.7	19.1
5	11400.00	46.6 AV	54.0	-7.4	2.93 H	42	27.5	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	114.5 PK			3.23 V	10	74.7	39.8
2	*5700.00	103.8 AV			3.23 V	10	64.0	39.8
3	#5725.00	58.0 PK	68.2	-10.2	3.31 V	15	53.3	4.7
4	11400.00	60.4 PK	74.0	-13.6	2.60 V	135	41.3	19.1
5	11400.00	46.3 AV	54.0	-7.7	2.60 V	135	27.2	19.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5720.00	116.9 PK			1.82 H	341	76.9	40.0
2	*5720.00	105.8 AV			1.82 H	341	65.8	40.0
3	#5825.00	57.6 PK	68.2	-10.6	1.90 H	357	52.4	5.2
4	11440.00	60.1 PK	74.0	-13.9	2.69 H	53	40.9	19.2
5	11440.00	46.3 AV	54.0	-7.7	2.69 H	53	27.1	19.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5720.00	113.7 PK			3.23 V	13	73.7	40.0
2	*5720.00	102.7 AV			3.23 V	13	62.7	40.0
3	#5825.00	56.9 PK	68.2	-11.3	3.07 V	14	51.7	5.2
4	11440.00	59.5 PK	74.0	-14.5	2.53 V	128	40.3	19.2
5	11440.00	46.0 AV	54.0	-8.0	2.53 V	128	26.8	19.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (HT20)

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.3 PK	74.0	-17.7	1.31 H	343	52.1	4.2
2	5150.00	42.5 AV	54.0	-11.5	1.31 H	343	38.3	4.2
3	*5260.00	116.3 PK			1.26 H	341	77.2	39.1
4	*5260.00	106.0 AV			1.26 H	341	66.9	39.1
5	#10520.00	61.4 PK	68.2	-6.8	1.62 H	214	42.7	18.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.5 PK	74.0	-17.5	2.41 V	323	52.3	4.2
2	5150.00	42.8 AV	54.0	-11.2	2.41 V	323	38.6	4.2
3	*5260.00	114.5 PK			2.36 V	318	75.4	39.1
4	*5260.00	104.0 AV			2.36 V	318	64.9	39.1
5	#10520.00	61.0 PK	68.2	-7.2	1.66 V	215	42.3	18.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	116.0 PK			1.14 H	342	76.9	39.1
2	*5300.00	105.5 AV			1.14 H	342	66.4	39.1
3	10600.00	61.9 PK	74.0	-12.1	1.58 H	216	42.8	19.1
4	10600.00	47.6 AV	54.0	-6.4	1.58 H	216	28.5	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	113.7 PK			2.76 V	345	74.6	39.1
2	*5300.00	103.4 AV			2.76 V	345	64.3	39.1
3	10600.00	62.0 PK	74.0	-12.0	1.63 V	209	42.9	19.1
4	10600.00	47.7 AV	54.0	-6.3	1.63 V	209	28.6	19.1

Remarks:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	116.4 PK			1.38 H	344	77.2	39.2
2	*5320.00	106.0 AV			1.38 H	344	66.8	39.2
3	5350.00	56.5 PK	74.0	-17.5	1.44 H	346	52.4	4.1
4	5350.00	42.9 AV	54.0	-11.1	1.44 H	346	38.8	4.1
5	10640.00	61.2 PK	74.0	-12.8	1.65 H	221	42.3	18.9
6	10640.00	47.0 AV	54.0	-7.0	1.65 H	221	28.1	18.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	114.2 PK			2.45 V	345	75.0	39.2
2	*5320.00	103.3 AV			2.45 V	345	64.1	39.2
3	5350.00	58.3 PK	74.0	-15.7	2.86 V	284	54.2	4.1
4	5350.00	44.3 AV	54.0	-9.7	2.86 V	284	40.2	4.1
5	10640.00	61.5 PK	74.0	-12.5	1.67 V	226	42.6	18.9
6	10640.00	47.2 AV	54.0	-6.8	1.67 V	226	28.3	18.9

Remarks:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.7 PK	74.0	-14.3	1.88 H	333	55.2	4.5
2	5460.00	46.4 AV	54.0	-7.6	1.88 H	333	41.9	4.5
3	#5470.00	60.7 PK	68.2	-7.5	1.91 H	349	56.2	4.5
4	*5500.00	118.6 PK			1.95 H	343	78.8	39.8
5	*5500.00	107.8 AV			1.95 H	343	68.0	39.8
6	11000.00	61.8 PK	74.0	-12.2	2.99 H	69	41.8	20.0
7	11000.00	47.5 AV	54.0	-6.5	2.99 H	69	27.5	20.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.9 PK	74.0	-16.1	3.17 V	7	53.4	4.5
2	5460.00	43.6 AV	54.0	-10.4	3.17 V	7	39.1	4.5
3	#5470.00	57.9 PK	68.2	-10.3	3.08 V	11	53.4	4.5
4	*5500.00	115.4 PK			3.21 V	13	75.6	39.8
5	*5500.00	104.6 AV			3.21 V	13	64.8	39.8
6	11000.00	61.2 PK	74.0	-12.8	2.60 V	137	41.2	20.0
7	11000.00	47.1 AV	54.0	-6.9	2.60 V	137	27.1	20.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	117.6 PK			1.76 H	343	77.9	39.7
2	*5580.00	106.9 AV			1.76 H	343	67.2	39.7
3	11160.00	60.6 PK	74.0	-13.4	2.85 H	53	41.4	19.2
4	11160.00	46.7 AV	54.0	-7.3	2.85 H	53	27.5	19.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	114.5 PK			3.16 V	13	74.8	39.7
2	*5580.00	103.7 AV			3.16 V	13	64.0	39.7
3	11160.00	60.1 PK	74.0	-13.9	2.48 V	137	40.9	19.2
4	11160.00	46.3 AV	54.0	-7.7	2.48 V	137	27.1	19.2

Remarks:

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

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.9 PK			1.92 H	344	77.1	39.8
2	*5700.00	106.0 AV			1.92 H	344	66.2	39.8
3	#5725.00	63.6 PK	68.2	-4.6	1.88 H	347	58.9	4.7
4	11400.00	61.1 PK	74.0	-12.9	2.84 H	49	42.0	19.1
5	11400.00	46.4 AV	54.0	-7.6	2.84 H	49	27.3	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	113.8 PK			3.23 V	17	74.0	39.8
2	*5700.00	101.9 AV			3.23 V	17	62.1	39.8
3	#5725.00	59.8 PK	68.2	-8.4	3.10 V	8	55.1	4.7
4	11400.00	60.2 PK	74.0	-13.8	2.54 V	136	41.1	19.1
5	11400.00	45.9 AV	54.0	-8.1	2.54 V	136	26.8	19.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 144	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5720.00	116.5 PK			1.89 H	342	76.5	40.0
2	*5720.00	105.3 AV			1.89 H	342	65.3	40.0
3	#5825.00	57.9 PK	68.2	-10.3	1.99 H	349	52.7	5.2
4	11440.00	60.3 PK	74.0	-13.7	2.81 H	48	41.1	19.2
5	11440.00	46.4 AV	54.0	-7.6	2.81 H	48	27.2	19.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5720.00	113.2 PK			3.18 V	11	73.2	40.0
2	*5720.00	102.0 AV			3.18 V	11	62.0	40.0
3	#5825.00	56.1 PK	68.2	-12.1	3.02 V	18	50.9	5.2
4	11440.00	59.9 PK	74.0	-14.1	2.50 V	130	40.7	19.2
5	11440.00	45.9 AV	54.0	-8.1	2.50 V	130	26.7	19.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11n (HT40)

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.3 PK	74.0	-17.7	1.42 H	338	52.1	4.2
2	5150.00	42.6 AV	54.0	-11.4	1.42 H	338	38.4	4.2
3	*5270.00	113.6 PK			1.39 H	345	74.5	39.1
4	*5270.00	103.8 AV			1.39 H	345	64.7	39.1
5	#10540.00	61.4 PK	68.2	-6.8	1.63 H	214	42.6	18.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.0 PK	74.0	-18.0	2.35 V	321	51.8	4.2
2	5150.00	42.7 AV	54.0	-11.3	2.35 V	321	38.5	4.2
3	*5270.00	111.2 PK			2.31 V	315	72.1	39.1
4	*5270.00	101.5 AV			2.31 V	315	62.4	39.1
5	#10540.00	61.3 PK	68.2	-6.9	1.66 V	224	42.5	18.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	113.8 PK			1.26 H	343	74.6	39.2
2	*5310.00	103.8 AV			1.26 H	343	64.6	39.2
3	5350.00	56.8 PK	74.0	-17.2	1.31 H	346	52.7	4.1
4	5350.00	42.9 AV	54.0	-11.1	1.31 H	346	38.8	4.1
5	10620.00	60.4 PK	74.0	-13.6	1.62 H	213	41.4	19.0
6	10620.00	47.2 AV	54.0	-6.8	1.62 H	213	28.2	19.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	110.5 PK			2.72 V	347	71.3	39.2
2	*5310.00	100.8 AV			2.72 V	347	61.6	39.2
3	5350.00	61.1 PK	74.0	-12.9	2.82 V	353	57.0	4.1
4	5350.00	48.2 AV	54.0	-5.8	2.82 V	353	44.1	4.1
5	10620.00	60.5 PK	74.0	-13.5	2.55 V	163	41.5	19.0
6	10620.00	47.4 AV	54.0	-6.6	2.55 V	163	28.4	19.0

Remarks:

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

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.8 PK	74.0	-11.2	1.58 H	342	58.3	4.5
2	5460.00	49.3 AV	54.0	-4.7	1.58 H	342	44.8	4.5
3	#5470.00	65.0 PK	68.2	-3.2	1.79 H	346	60.5	4.5
4	*5510.00	115.4 PK			1.63 H	343	75.6	39.8
5	*5510.00	105.8 AV			1.63 H	343	66.0	39.8
6	11020.00	60.5 PK	74.0	-13.5	2.76 H	37	40.7	19.8
7	11020.00	47.0 AV	54.0	-7.0	2.76 H	37	27.2	19.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.4 PK	74.0	-14.6	3.21 V	18	54.9	4.5
2	5460.00	45.3 AV	54.0	-8.7	3.21 V	18	40.8	4.5
3	#5470.00	61.0 PK	68.2	-7.2	3.31 V	13	56.5	4.5
4	*5510.00	112.3 PK			3.12 V	14	72.5	39.8
5	*5510.00	102.7 AV			3.12 V	14	62.9	39.8
6	11020.00	59.9 PK	74.0	-14.1	2.41 V	127	40.1	19.8
7	11020.00	46.4 AV	54.0	-7.6	2.41 V	127	26.6	19.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	115.1 PK			1.81 H	343	75.4	39.7
2	*5550.00	105.5 AV			1.81 H	343	65.8	39.7
3	11100.00	60.1 PK	74.0	-13.9	2.90 H	43	40.8	19.3
4	11100.00	46.3 AV	54.0	-7.7	2.90 H	43	27.0	19.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	111.9 PK			3.21 V	14	72.2	39.7
2	*5550.00	102.2 AV			3.21 V	14	62.5	39.7
3	11100.00	59.4 PK	74.0	-14.6	2.60 V	138	40.1	19.3
4	11100.00	45.7 AV	54.0	-8.3	2.60 V	138	26.4	19.3

Remarks:

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

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	115.3 PK			1.80 H	344	75.6	39.7
2	*5670.00	104.9 AV			1.80 H	344	65.2	39.7
3	#5725.00	59.8 PK	68.2	-8.4	1.73 H	350	55.1	4.7
4	11340.00	59.8 PK	74.0	-14.2	2.89 H	43	40.5	19.3
5	11340.00	46.2 AV	54.0	-7.8	2.89 H	43	26.9	19.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	112.1 PK			3.16 V	12	72.4	39.7
2	*5670.00	101.7 AV			3.16 V	12	62.0	39.7
3	#5725.00	57.8 PK	68.2	-10.4	3.23 V	20	53.1	4.7
4	11340.00	59.3 PK	74.0	-14.7	2.54 V	121	40.0	19.3
5	11340.00	45.7 AV	54.0	-8.3	2.54 V	121	26.4	19.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 142	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5710.00	113.7 PK			1.45 H	343	73.8	39.9
2	*5710.00	103.6 AV			1.45 H	343	63.7	39.9
3	#5825.00	56.7 PK	68.2	-11.5	1.63 H	340	51.5	5.2
4	11420.00	59.6 PK	74.0	-14.4	2.84 H	43	40.5	19.1
5	11420.00	46.2 AV	54.0	-7.8	2.84 H	43	27.1	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5710.00	110.5 PK			3.16 V	9	70.6	39.9
2	*5710.00	100.4 AV			3.16 V	9	60.5	39.9
3	#5825.00	55.7 PK	68.2	-12.5	3.30 V	18	50.5	5.2
4	11420.00	59.1 PK	74.0	-14.9	2.50 V	136	40.0	19.1
5	11420.00	45.5 AV	54.0	-8.5	2.50 V	136	26.4	19.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT80)

CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.7 PK	74.0	-16.3	1.51 H	357	53.5	4.2
2	5150.00	45.0 AV	54.0	-9.0	1.51 H	357	40.8	4.2
3	*5290.00	110.0 PK			1.34 H	346	70.9	39.1
4	*5290.00	99.9 AV			1.34 H	346	60.8	39.1
5	5350.00	62.8 PK	74.0	-11.2	1.83 H	358	58.7	4.1
6	5350.00	48.7 AV	54.0	-5.3	1.83 H	358	44.6	4.1
7	#10580.00	61.7 PK	68.2	-6.5	1.72 H	226	42.7	19.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.7 PK	74.0	-16.3	2.49 V	324	53.5	4.2
2	5150.00	44.4 AV	54.0	-9.6	2.49 V	324	40.2	4.2
3	*5290.00	107.4 PK			2.37 V	318	68.3	39.1
4	*5290.00	97.5 AV			2.37 V	318	58.4	39.1
5	5350.00	63.0 PK	74.0	-11.0	2.74 V	311	58.9	4.1
6	5350.00	49.5 AV	54.0	-4.5	2.74 V	311	45.4	4.1
7	#10580.00	61.1 PK	68.2	-7.1	2.51 V	153	42.1	19.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	65.2 PK	74.0	-8.8	1.47 H	340	60.7	4.5
2	5460.00	51.7 AV	54.0	-2.3	1.47 H	340	47.2	4.5
3	**#5470.00**	**67.0 PK**	**68.2**	**-1.2**	**1.63 H**	**347**	**62.5**	**4.5**
4	*5530.00	110.9 PK			1.78 H	341	71.1	39.8
5	*5530.00	100.5 AV			1.78 H	341	60.7	39.8
6	#5725.00	57.2 PK	68.2	-11.0	1.69 H	349	52.5	4.7
7	11060.00	60.6 PK	74.0	-13.4	2.80 H	49	41.1	19.5
8	11060.00	47.5 AV	54.0	-6.5	2.80 H	49	28.0	19.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	60.2 PK	74.0	-13.8	3.27 V	172	55.7	4.5
2	5460.00	47.1 AV	54.0	-6.9	3.27 V	172	42.6	4.5
3	#5470.00	61.7 PK	68.2	-6.5	3.31 V	179	57.2	4.5
4	*5530.00	106.1 PK			3.21 V	175	66.3	39.8
5	*5530.00	95.6 AV			3.21 V	175	55.8	39.8
6	#5725.00	56.4 PK	68.2	-11.8	3.20 V	181	51.7	4.7
7	11060.00	60.1 PK	74.0	-13.9	2.23 V	123	40.6	19.5
8	11060.00	46.9 AV	54.0	-7.1	2.23 V	123	27.4	19.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.2 PK	74.0	-15.8	1.67 H	350	53.7	4.5
2	5460.00	44.4 AV	54.0	-9.6	1.67 H	350	39.9	4.5
3	#5470.00	58.5 PK	68.2	-9.7	1.59 H	349	54.0	4.5
4	*5610.00	111.8 PK			1.70 H	345	72.0	39.8
5	*5610.00	101.6 AV			1.70 H	345	61.8	39.8
6	#5725.00	60.7 PK	68.2	-7.5	1.77 H	342	56.0	4.7
7	11220.00	60.6 PK	74.0	-13.4	2.93 H	63	41.3	19.3
8	11220.00	47.2 AV	54.0	-6.8	2.93 H	63	27.9	19.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.6 PK	74.0	-16.4	3.47 V	183	53.1	4.5
2	5460.00	43.8 AV	54.0	-10.2	3.47 V	183	39.3	4.5
3	#5470.00	57.6 PK	68.2	-10.6	3.21 V	176	53.1	4.5
4	*5610.00	106.6 PK			3.29 V	176	66.8	39.8
5	*5610.00	96.8 AV			3.29 V	176	57.0	39.8
6	#5725.00	59.0 PK	68.2	-9.2	3.33 V	180	54.3	4.7
7	11220.00	60.2 PK	74.0	-13.8	2.34 V	117	40.9	19.3
8	11220.00	46.7 AV	54.0	-7.3	2.34 V	117	27.4	19.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 138	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.4 PK	74.0	-16.6	1.71 H	340	52.9	4.5
2	5460.00	43.6 AV	54.0	-10.4	1.71 H	340	39.1	4.5
3	#5470.00	57.6 PK	68.2	-10.6	1.57 H	345	53.1	4.5
4	*5690.00	110.8 PK			1.65 H	342	71.0	39.8
5	*5690.00	100.5 AV			1.65 H	342	60.7	39.8
6	#5825.00	58.1 PK	68.2	-10.1	1.59 H	353	52.9	5.2
7	11380.00	60.6 PK	74.0	-13.4	2.79 H	57	41.5	19.1
8	11380.00	47.2 AV	54.0	-6.8	2.79 H	57	28.1	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.3 PK	74.0	-16.7	3.20 V	179	52.8	4.5
2	5460.00	43.5 AV	54.0	-10.5	3.20 V	179	39.0	4.5
3	#5470.00	57.1 PK	68.2	-11.1	3.12 V	188	52.6	4.5
4	*5690.00	105.5 PK			3.27 V	172	65.7	39.8
5	*5690.00	95.8 AV			3.27 V	172	56.0	39.8
6	#5825.00	57.9 PK	68.2	-10.3	3.33 V	180	52.7	5.2
7	11380.00	60.1 PK	74.0	-13.9	2.15 V	119	41.0	19.1
8	11380.00	46.8 AV	54.0	-7.2	2.15 V	119	27.7	19.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. Margin value = Emission Level – Limit value.
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Below 1GHz Worst-Case Data:

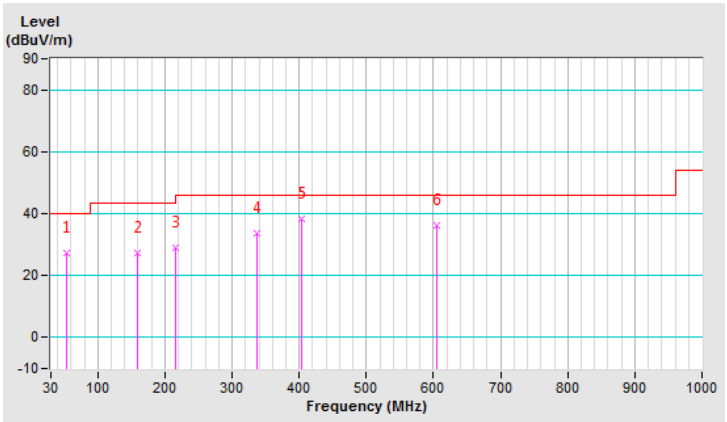
802.11n (HT40)

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	53.28	27.5 QP	40.0	-12.5	1.00 H	322	36.6	-9.1
2	159.98	27.2 QP	43.5	-16.3	1.00 H	226	36.0	-8.8
3	216.24	29.1 QP	46.0	-16.9	1.50 H	256	39.8	-10.7
4	336.52	33.8 QP	46.0	-12.2	1.00 H	293	40.2	-6.4
5	404.42	38.4 QP	46.0	-7.6	2.00 H	293	42.8	-4.4
6	604.24	36.0 QP	46.0	-10.0	1.50 H	330	34.9	1.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

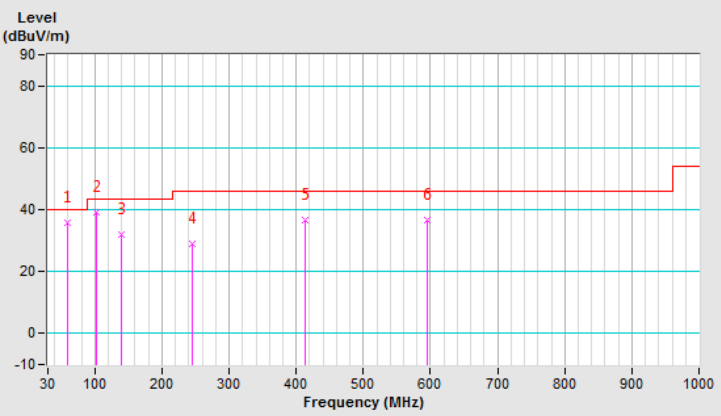


CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.10	35.6 QP	40.0	-4.4	1.50 V	10	45.0	-9.4
2	101.78	39.2 QP	43.5	-4.3	2.00 V	8	52.0	-12.8
3	138.64	31.9 QP	43.5	-11.6	1.00 V	14	41.1	-9.2
4	245.34	28.9 QP	46.0	-17.1	2.00 V	10	38.2	-9.3
5	414.12	36.5 QP	46.0	-9.5	2.00 V	8	40.5	-4.0
6	594.54	36.6 QP	46.0	-9.4	1.00 V	10	35.8	0.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

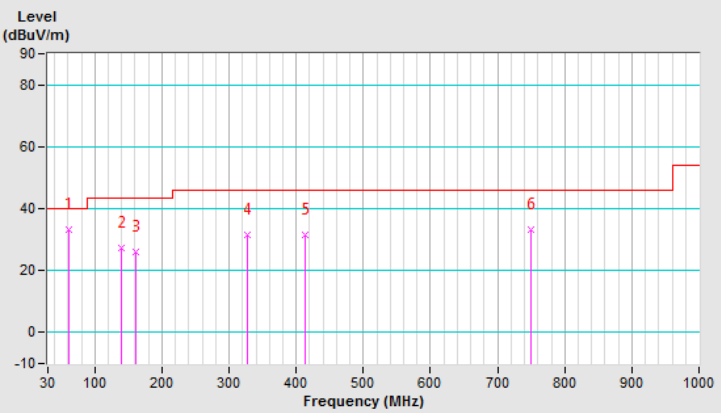


CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	60.94	33.3 QP	40.0	-6.7	1.50 H	29	43.1	-9.8
2	139.21	27.3 QP	43.5	-16.2	1.00 H	244	36.5	-9.2
3	160.77	26.2 QP	43.5	-17.3	1.50 H	288	34.9	-8.7
4	326.82	31.6 QP	46.0	-14.4	2.00 H	277	38.3	-6.7
5	414.12	31.5 QP	46.0	-14.5	1.00 H	313	35.5	-4.0
6	749.74	33.1 QP	46.0	-12.9	1.50 H	294	30.3	2.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

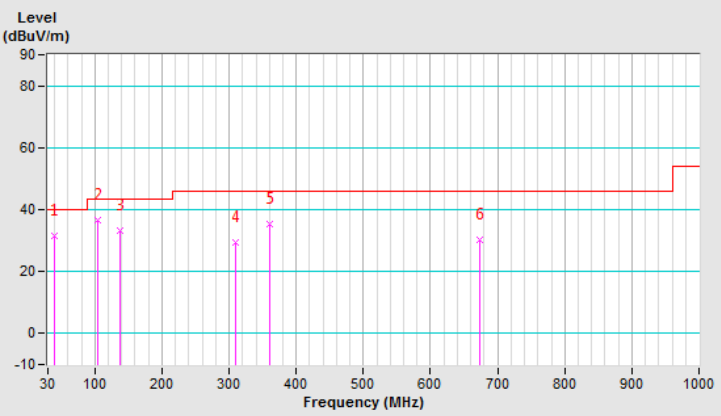


CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	40.13	31.4 QP	40.0	-8.6	1.50 V	99	41.1	-9.7
2	104.57	36.8 QP	43.5	-6.7	1.00 V	15	49.2	-12.4
3	137.97	33.1 QP	43.5	-10.4	1.50 V	11	42.3	-9.2
4	310.12	29.2 QP	46.0	-16.8	1.00 V	193	36.3	-7.1
5	361.23	35.4 QP	46.0	-10.6	2.00 V	331	41.2	-5.8
6	674.08	30.1 QP	46.0	-15.9	1.00 V	120	28.3	1.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz.
4. Margin value = Emission Level – Limit value.
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



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 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 10, 2018	Dec. 09, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 22, 2019	Aug. 21, 2020
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 1.
3. The VCCI Site Registration No. is C-12040.

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/ 50uH of coupling impedance for the measuring instrument.

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

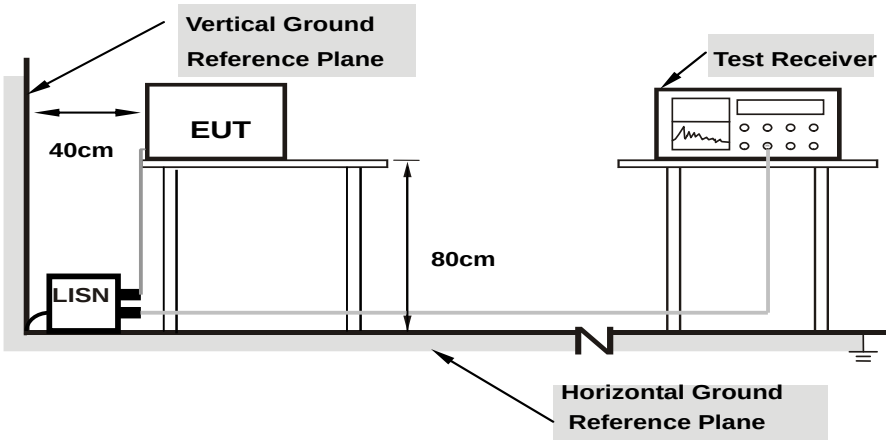
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

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

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

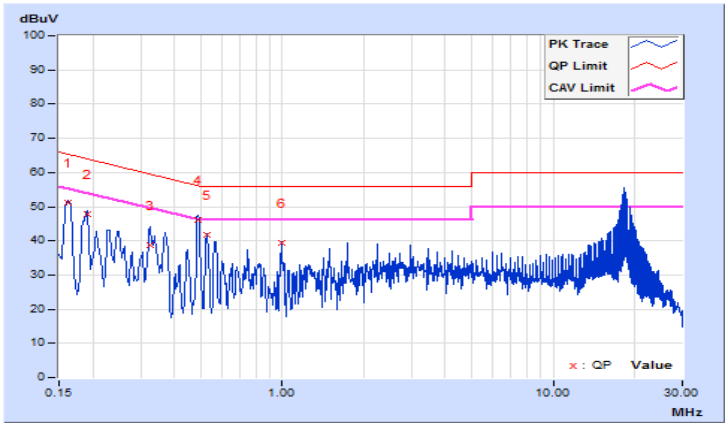
802.11n (HT40)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	9.67	41.62	27.63	51.29	37.30	65.37	55.37	-14.08	-18.07
2	0.19000	9.66	38.22	29.89	47.88	39.55	64.04	54.04	-16.16	-14.49
3	0.32544	9.68	29.05	12.56	38.73	22.24	59.57	49.57	-20.84	-27.33
4	0.48600	9.70	36.39	32.49	46.09	42.19	56.24	46.24	-10.15	-4.05
5	0.53000	9.70	32.01	30.24	41.71	39.94	56.00	46.00	-14.29	-6.06
6	0.99400	9.73	29.62	29.58	39.35	39.31	56.00	46.00	-16.65	-6.69

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.

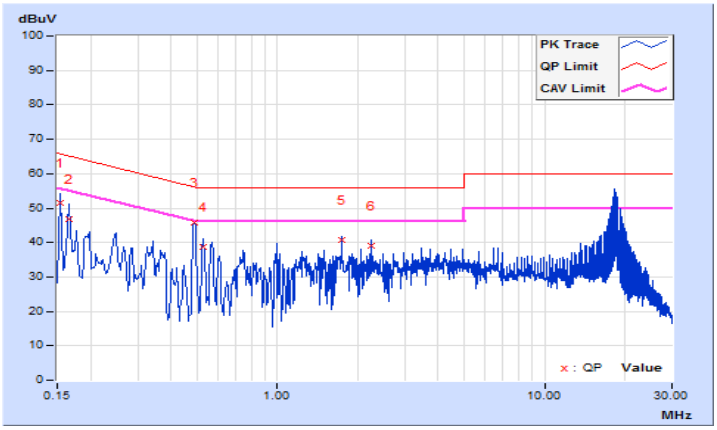


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.64	41.98	29.02	51.62	38.66	65.78	55.78	-14.16	-17.12
2	0.16600	9.64	37.02	20.43	46.66	30.07	65.16	55.16	-18.50	-25.09
3	0.48957	9.67	36.12	35.53	45.79	45.20	56.18	46.18	-10.39	-0.98
4	0.53000	9.67	29.19	27.66	38.86	37.33	56.00	46.00	-17.14	-8.67
5	1.73800	9.74	30.98	27.84	40.72	37.58	56.00	46.00	-15.28	-8.42
6	2.23400	9.76	29.39	27.60	39.15	37.36	56.00	46.00	-16.85	-8.64

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.

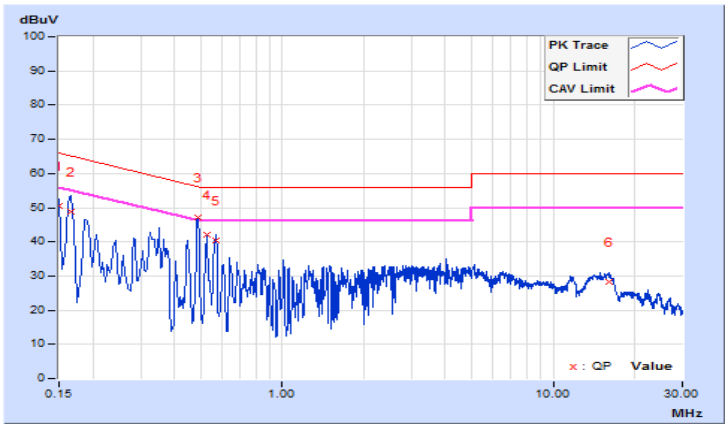


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.67	40.76	22.01	50.43	31.68	66.00	56.00	-15.57	-24.32
2	0.16579	9.67	39.20	28.07	48.87	37.74	65.17	55.17	-16.30	-17.43
3	**0.48600**	**9.70**	**37.29**	**35.85**	**46.99**	**45.55**	**56.24**	**46.24**	**-9.25**	**-0.69**
4	0.52567	9.70	32.43	32.23	42.13	41.93	56.00	46.00	-13.87	-4.07
5	0.56600	9.70	30.65	29.01	40.35	38.71	56.00	46.00	-15.65	-7.29
6	16.09400	9.97	18.42	9.77	28.39	19.74	60.00	50.00	-31.61	-30.26

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.

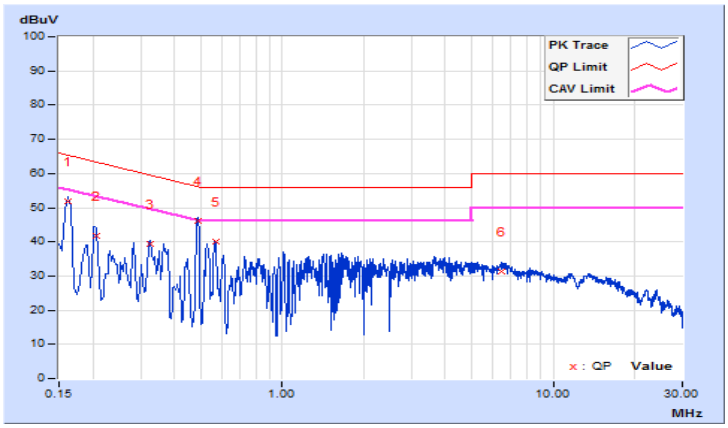


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16190	9.64	42.35	29.71	51.99	39.35	65.37	55.37	-13.38	-16.02
2	0.20600	9.64	31.97	20.88	41.61	30.52	63.37	53.37	-21.76	-22.85
3	0.32458	9.65	29.81	26.48	39.46	36.13	59.59	49.59	-20.13	-13.46
4	0.48829	9.67	36.39	34.64	46.06	44.31	56.20	46.20	-10.14	-1.89
5	0.56600	9.67	30.53	29.47	40.20	39.14	56.00	46.00	-15.80	-6.86
6	6.46200	9.85	21.42	12.02	31.27	21.87	60.00	50.00	-28.73	-28.13

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 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

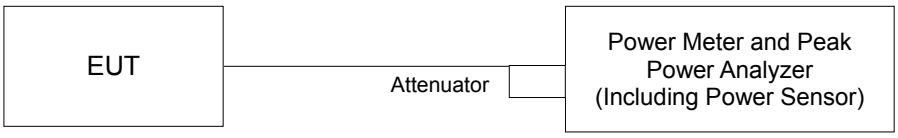
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

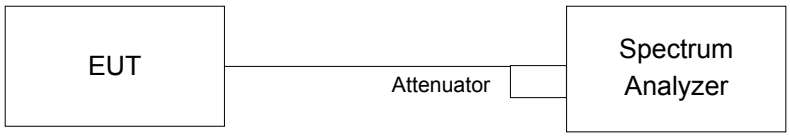
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

For Power Output



For 26dB Bandwidth



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to average. Duty factor is not added to measured value.

For 26dB Bandwidth

a. Set RBW = approximately 1% of the emission bandwidth.

b. Set the VBW > RBW.

c. Detector = Peak.

d. Trace mode = max hold.

e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

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 Result

Power Output:

CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	15.88	16.89	14.17	15.43	148.627	21.72	23.97	Pass
60	5300	15.98	17.02	14.08	15.55	151.456	21.80	23.97	Pass
64	5320	15.42	16.84	14.02	14.81	138.644	21.42	23.97	Pass
100	5500	15.01	15.08	14.19	14.13	116.031	20.65	23.91	Pass
116	5580	14.55	14.42	13.24	13.84	101.475	20.06	23.89	Pass
140	5700	15.78	15.53	14.95	14.71	134.412	21.28	23.96	Pass
144	5720 (For U-NII-2C)	13.21	14.04	12.15	12.43	83.712	19.23	22.70	Pass
144	5720 (For U-NII-3)	7.62	6.98	6.28	7.12	21.052	13.23	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (19.95) = 23.99 < 24dBm
2. 11dBm + 10log (20.06) = 24.02 > 24dBm
3. 11dBm + 10log (20.01) = 24.01 > 24dBm
4. 11dBm + 10log (19.99) = 24.00 < 24dBm
5. 11dBm + 10log (20.08) = 24.02 > 24dBm
6. 11dBm + 10log (20.43) = 24.10 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.76) = 22.82 < 24dBm
Chain 1
1. 11dBm + 10log (19.97) = 24.00 < 24dBm
2. 11dBm + 10log (19.85) = 23.97 < 24dBm
3. 11dBm + 10log (19.83) = 23.97 < 24dBm
4. 11dBm + 10log (19.55) = 23.91 < 24dBm
5. 11dBm + 10log (19.47) = 23.89 < 24dBm
6. 11dBm + 10log (19.81) = 23.96 < 24dBm
7. 11dBm + 10log (5725.00 - 5709.90) = 22.78 < 24dBm
Chain 2
1. 11dBm + 10log (19.95) = 23.99 < 24dBm
2. 11dBm + 10log (20.04) = 24.01 > 24dBm
3. 11dBm + 10log (19.93) = 23.99 < 24dBm
4. 11dBm + 10log (19.83) = 23.97 < 24dBm
5. 11dBm + 10log (19.47) = 23.89 < 24dBm
6. 11dBm + 10log (19.78) = 23.96 < 24dBm
7. 11dBm + 10log (5725.00 - 5710.20) = 22.70 < 24dBm
Chain 3
1. 11dBm + 10log (19.82) = 23.97 < 24dBm
2. 11dBm + 10log (20.02) = 24.01 > 24dBm
3. 11dBm + 10log (19.95) = 23.99 < 24dBm
4. 11dBm + 10log (19.69) = 23.94 < 24dBm
5. 11dBm + 10log (20.03) = 24.01 > 24dBm
6. 11dBm + 10log (20.25) = 24.06 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.95) = 22.77 < 24dBm

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	16.67	17.47	14.67	16.00	171.419	22.34	24.00	Pass
60	5300	16.05	17.34	14.29	15.75	158.909	22.01	24.00	Pass
64	5320	16.51	17.57	14.63	15.61	167.351	22.24	24.00	Pass
100	5500	15.27	15.41	14.55	14.68	126.291	21.01	24.00	Pass
116	5580	14.67	14.48	13.42	14.35	106.569	20.28	24.00	Pass
140	5700	14.28	14.33	13.74	13.86	101.875	20.08	24.00	Pass
144	5720 (For U-NII-2C)	13.59	13.28	12.34	12.54	79.224	18.99	22.81	Pass
144	5720 (For U-NII-3)	9.15	8.69	7.72	7.88	27.672	14.42	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (20.67) = 24.15 > 24dBm
2. 11dBm + 10log (20.66) = 24.15 > 24dBm
3. 11dBm + 10log (20.55) = 24.12 > 24dBm
4. 11dBm + 10log (20.59) = 24.13 > 24dBm
5. 11dBm + 10log (20.68) = 24.15 > 24dBm
6. 11dBm + 10log (20.97) = 24.21 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.55) = 22.88 < 24dBm
Chain 1
1. 11dBm + 10log (20.72) = 24.16 > 24dBm
2. 11dBm + 10log (20.90) = 24.20 > 24dBm
3. 11dBm + 10log (20.66) = 24.15 > 24dBm
4. 11dBm + 10log (20.60) = 24.13 > 24dBm
5. 11dBm + 10log (20.38) = 24.09 > 24dBm
6. 11dBm + 10log (20.56) = 24.13 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.72) = 22.84 < 24dBm
Chain 2
1. 11dBm + 10log (20.85) = 24.19 > 24dBm
2. 11dBm + 10log (20.82) = 24.18 > 24dBm
3. 11dBm + 10log (20.73) = 24.16 > 24dBm
4. 11dBm + 10log (20.60) = 24.13 > 24dBm
5. 11dBm + 10log (20.60) = 24.13 > 24dBm
6. 11dBm + 10log (20.60) = 24.13 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.80) = 22.81 < 24dBm
Chain 3
1. 11dBm + 10log (20.65) = 24.14 > 24dBm
2. 11dBm + 10log (20.51) = 24.11 > 24dBm
3. 11dBm + 10log (20.57) = 24.13 > 24dBm
4. 11dBm + 10log (20.43) = 24.10 > 24dBm
5. 11dBm + 10log (20.59) = 24.13 > 24dBm
6. 11dBm + 10log (20.74) = 24.16 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.65) = 22.86 < 24dBm

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	18.15	19.33	16.02	17.66	**249.356**	23.97	24.00	Pass
62	5310	17.83	19.11	15.88	17.35	235.195	23.71	24.00	Pass
102	5510	17.95	18.05	17.45	17.41	**236.870**	23.75	24.00	Pass
110	5550	17.58	17.63	16.69	16.78	209.532	23.21	24.00	Pass
134	5670	16.79	16.88	15.84	16.22	176.756	22.47	24.00	Pass
142	5710 (For U-NII-2C)	17.20	17.28	16.17	16.21	195.380	22.91	24.00	Pass
142	5710 (For U-NII-3)	9.04	9.16	8.06	7.94	29.834	14.75	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (40.77) = 27.10 > 24dBm
2. 11dBm + 10log (40.77) = 27.10 > 24dBm
3. 11dBm + 10log (40.73) = 27.09 > 24dBm
4. 11dBm + 10log (40.78) = 27.10 > 24dBm
5. 11dBm + 10log (40.63) = 27.08 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.80) = 26.46 > 24dBm

Chain 1
1. 11dBm + 10log (40.67) = 27.09 > 24dBm
2. 11dBm + 10log (41.00) = 27.12 > 24dBm
3. 11dBm + 10log (40.94) = 27.12 > 24dBm
4. 11dBm + 10log (40.84) = 27.11 > 24dBm
5. 11dBm + 10log (40.97) = 27.12 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.56) = 26.49 > 24dBm

Chain 2
1. 11dBm + 10log (40.33) = 27.05 > 24dBm
2. 11dBm + 10log (40.49) = 27.07 > 24dBm
3. 11dBm + 10log (40.75) = 27.10 > 24dBm
4. 11dBm + 10log (40.83) = 27.10 > 24dBm
5. 11dBm + 10log (40.97) = 27.12 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.73) = 26.47 > 24dBm

Chain 3
1. 11dBm + 10log (40.59) = 27.08 > 24dBm
2. 11dBm + 10log (40.84) = 27.11 > 24dBm
3. 11dBm + 10log (41.21) = 27.15 > 24dBm
4. 11dBm + 10log (40.80) = 27.10 > 24dBm
5. 11dBm + 10log (40.51) = 27.07 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.86) = 26.45 > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	17.62	18.61	15.77	17.11	219.582	23.42	24.00	Pass
106	5530	17.33	17.25	16.28	16.35	192.777	22.85	24.00	Pass
122	5610	17.77	17.82	16.85	17.60	226.336	23.55	24.00	Pass
138	5690 (For U-NII-2C)	17.72	17.77	16.86	16.69	228.059	23.58	24.00	Pass
138	5690 (For U-NII-3)	7.28	7.49	6.64	6.07	20.885	13.20	30.00	Pass

Note:
For U-NII-2A, U-NII-2C Band:
Chain 0
1. 11dBm + 10log (84.03) = 30.24 > 24dBm
2. 11dBm + 10log (83.86) = 30.23 > 24dBm
3. 11dBm + 10log (83.84) = 30.23 > 24dBm
4. 11dBm + 10log (5725.00 - 5647.97) = 29.87 > 24dBm

Chain 1
1. 11dBm + 10log (83.75) = 30.22 > 24dBm
2. 11dBm + 10log (84.39) = 30.26 > 24dBm
3. 11dBm + 10log (83.79) = 30.23 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.15) = 29.86 > 24dBm

Chain 2
1. 11dBm + 10log (83.44) = 30.21 > 24dBm
2. 11dBm + 10log (84.83) = 30.28 > 24dBm
3. 11dBm + 10log (84.25) = 30.25 > 24dBm
4. 11dBm + 10log (5725.00 - 5647.97) = 29.87 > 24dBm

Chain 3
1. 11dBm + 10log (83.58) = 30.22 > 24dBm
2. 11dBm + 10log (83.74) = 30.22 > 24dBm
3. 11dBm + 10log (83.20) = 30.20 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.51) = 29.84 > 24dBm

Beamforming Mode

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	10.65	11.45	8.65	9.98	42.860	16.32	21.88	Pass
60	5300	10.03	11.32	8.27	9.73	39.732	15.99	21.88	Pass
64	5320	10.49	11.55	8.61	9.59	41.843	16.22	21.88	Pass
100	5500	9.25	9.39	8.53	8.66	31.578	14.99	21.88	Pass
116	5580	8.65	8.46	7.40	8.33	26.646	14.26	21.88	Pass
140	5700	8.26	8.31	7.72	7.84	25.472	14.06	21.88	Pass
144	5720 (For U-NII-2C)	7.56	7.26	6.32	6.52	19.795	12.97	20.69	Pass
144	5720 (For U-NII-3)	3.12	2.67	1.69	1.86	6.911	8.40	27.88	Pass

Note:

1. 5260~5320MHz Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
2. 5500~5700MHz Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
3. 5720MHz (For U-NII-2C) Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 22.81-(8.12-6) = 20.69dBm.
4. 5720MHz (For U-NII-3) Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11dBm + 10log (20.67) = 24.15 > 24dBm
2. 11dBm + 10log (20.66) = 24.15 > 24dBm
3. 11dBm + 10log (20.55) = 24.12 > 24dBm
4. 11dBm + 10log (20.59) = 24.13 > 24dBm
5. 11dBm + 10log (20.68) = 24.15 > 24dBm
6. 11dBm + 10log (20.97) = 24.21 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.55) = 22.88 < 24dBm

Chain 1

1. 11dBm + 10log (20.72) = 24.16 > 24dBm
2. 11dBm + 10log (20.90) = 24.20 > 24dBm
3. 11dBm + 10log (20.66) = 24.15 > 24dBm
4. 11dBm + 10log (20.60) = 24.13 > 24dBm
5. 11dBm + 10log (20.38) = 24.09 > 24dBm
6. 11dBm + 10log (20.56) = 24.13 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.72) = 22.84 < 24dBm

Chain 2

1. 11dBm + 10log (20.85) = 24.19 > 24dBm
2. 11dBm + 10log (20.82) = 24.18 > 24dBm
3. 11dBm + 10log (20.73) = 24.16 > 24dBm
4. 11dBm + 10log (20.60) = 24.13 > 24dBm
5. 11dBm + 10log (20.60) = 24.13 > 24dBm
6. 11dBm + 10log (20.60) = 24.13 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.80) = 22.81 < 24dBm

Chain 3

1. 11dBm + 10log (20.65) = 24.14 > 24dBm
2. 11dBm + 10log (20.51) = 24.11 > 24dBm
3. 11dBm + 10log (20.57) = 24.13 > 24dBm
4. 11dBm + 10log (20.43) = 24.10 > 24dBm
5. 11dBm + 10log (20.59) = 24.13 > 24dBm
6. 11dBm + 10log (20.74) = 24.16 > 24dBm
7. 11dBm + 10log (5725.00 - 5709.65) = 22.86 < 24dBm

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	12.13	13.31	10.00	11.64	**62.348**	17.95	21.88	Pass
62	5310	11.81	13.09	9.86	11.33	58.807	17.69	21.88	Pass
102	5510	11.93	12.03	11.43	11.39	**59.227**	17.73	21.88	Pass
110	5550	11.56	11.61	10.67	10.76	52.39	17.19	21.88	Pass
134	5670	10.77	10.86	9.82	10.20	44.195	16.45	21.88	Pass
142	5710 (For U-NII-2C)	11.18	11.25	10.14	10.18	48.771	16.88	21.88	Pass
142	5710 (For U-NII-3)	3.02	3.14	2.03	1.92	7.456	8.73	27.88	Pass

Note:
1. 5260~5320MHz Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
2. 5500~5700MHz Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
3. 5710MHz (For U-NII-2C) Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
4. 5710MHz (For U-NII-3) Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11dBm + 10log (40.77) = 27.10 > 24dBm
2. 11dBm + 10log (40.77) = 27.10 > 24dBm
3. 11dBm + 10log (40.73) = 27.09 > 24dBm
4. 11dBm + 10log (40.78) = 27.10 > 24dBm
5. 11dBm + 10log (40.63) = 27.08 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.80) = 26.46 > 24dBm

Chain 1

1. 11dBm + 10log (40.67) = 27.09 > 24dBm
2. 11dBm + 10log (41.00) = 27.12 > 24dBm
3. 11dBm + 10log (40.94) = 27.12 > 24dBm
4. 11dBm + 10log (40.84) = 27.11 > 24dBm
5. 11dBm + 10log (40.97) = 27.12 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.56) = 26.49 > 24dBm

Chain 2

1. 11dBm + 10log (40.33) = 27.05 > 24dBm
2. 11dBm + 10log (40.49) = 27.07 > 24dBm
3. 11dBm + 10log (40.75) = 27.10 > 24dBm
4. 11dBm + 10log (40.83) = 27.10 > 24dBm
5. 11dBm + 10log (40.97) = 27.12 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.73) = 26.47 > 24dBm

Chain 3

1. 11dBm + 10log (40.59) = 27.08 > 24dBm
2. 11dBm + 10log (40.84) = 27.11 > 24dBm
3. 11dBm + 10log (41.21) = 27.15 > 24dBm
4. 11dBm + 10log (40.80) = 27.10 > 24dBm
5. 11dBm + 10log (40.51) = 27.07 > 24dBm
6. 11dBm + 10log (5725.00 - 5689.86) = 26.45 > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	11.60	12.59	9.75	11.09	54.903	17.40	21.88	Pass
106	5530	11.31	11.23	10.26	10.33	48.201	16.83	21.88	Pass
122	5610	11.75	11.80	10.83	11.58	56.592	17.53	21.88	Pass
138	5690 (For U-NII-2C)	11.70	11.75	10.83	10.66	56.964	17.56	21.88	Pass
138	5690 (For U-NII-3)	1.26	1.46	0.61	0.04	5.214	7.17	27.88	Pass

Note:
1. 5260~5320MHz Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
2. 5500~5700MHz Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
3. 5690MHz (For U-NII-2C) Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 24-(8.12-6) = 21.88dBm.
4. 5690MHz (For U-NII-3) Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11dBm + 10log (84.03) = 30.24 > 24dBm
2. 11dBm + 10log (83.86) = 30.23 > 24dBm
3. 11dBm + 10log (83.84) = 30.23 > 24dBm
4. 11dBm + 10log (5725.00 - 5647.97) = 29.87 > 24dBm

Chain 1

1. 11dBm + 10log (83.75) = 30.22 > 24dBm
2. 11dBm + 10log (84.39) = 30.26 > 24dBm
3. 11dBm + 10log (83.79) = 30.23 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.15) = 29.86 > 24dBm

Chain 2

1. 11dBm + 10log (83.44) = 30.21 > 24dBm
2. 11dBm + 10log (84.83) = 30.28 > 24dBm
3. 11dBm + 10log (84.25) = 30.25 > 24dBm
4. 11dBm + 10log (5725.00 - 5647.97) = 29.87 > 24dBm

Chain 3

1. 11dBm + 10log (83.58) = 30.22 > 24dBm
2. 11dBm + 10log (83.74) = 30.22 > 24dBm
3. 11dBm + 10log (83.20) = 30.20 > 24dBm
4. 11dBm + 10log (5725.00 - 5648.51) = 29.84 > 24dBm

26dB Bandwidth:

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	19.95	19.97	19.95	19.82
60	5300	20.06	19.85	20.04	20.02
64	5320	20.01	19.83	19.93	19.95
100	5500	19.99	19.55	19.83	19.69
116	5580	20.08	19.47	19.47	20.03
140	5700	20.43	19.81	19.78	20.25
144	5720 (For U-NII-2C)	15.24	15.10	14.80	15.05
144	5720 (For U-NII-3)	5.22	4.75	4.68	5.17

802.11n (HT20)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	20.67	20.72	20.85	20.65
60	5300	20.66	20.90	20.82	20.51
64	5320	20.55	20.66	20.73	20.57
100	5500	20.59	20.60	20.60	20.43
116	5580	20.68	20.38	20.60	20.59
140	5700	20.97	20.56	20.60	20.74
144	5720 (For U-NII-2C)	15.45	15.28	15.20	15.35
144	5720 (For U-NII-3)	5.56	5.31	5.24	5.25

802.11n (HT40)

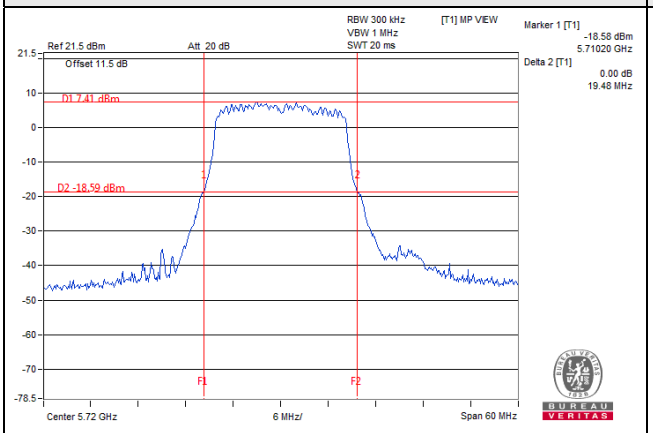
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	40.77	40.67	40.33	40.59
62	5310	40.77	41.00	40.49	40.84
102	5510	40.73	40.94	40.75	41.21
110	5550	40.78	40.84	40.83	40.80
134	5670	40.63	40.97	40.97	40.51
142	5710 (For U-NII-2C)	35.20	35.44	35.27	35.14
142	5710 (For U-NII-3)	5.38	5.47	5.45	5.24

802.11ac (VHT80)

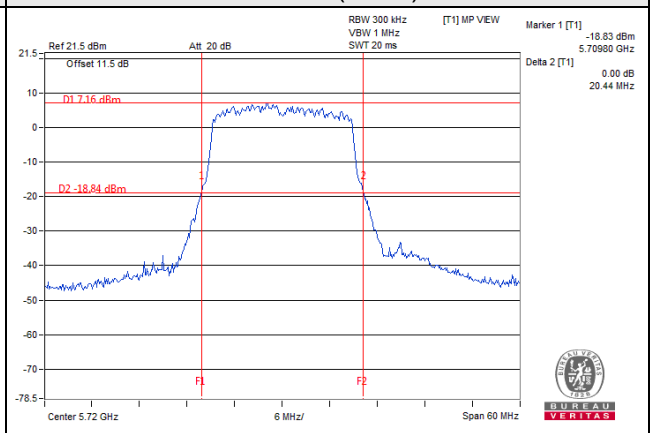
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	84.03	83.75	83.44	83.58
106	5530	83.86	84.39	84.83	83.74
122	5610	83.84	83.79	84.25	83.20
138	5690 (For U-NII-2C)	77.03	76.85	77.03	76.49
138	5690 (For U-NII-3)	6.96	7.20	7.33	6.63

Spectrum Plot of Worst Value

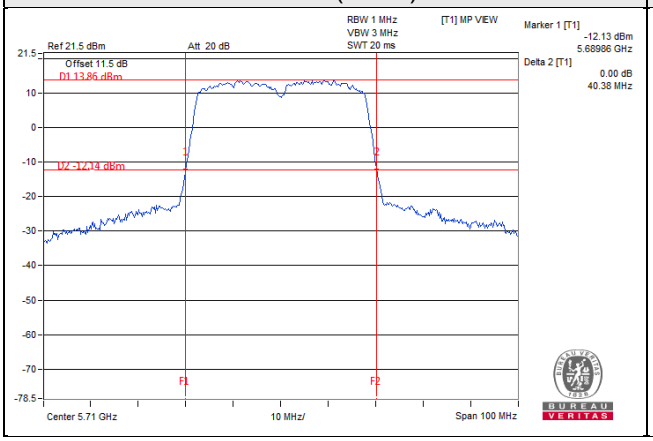
802.11a



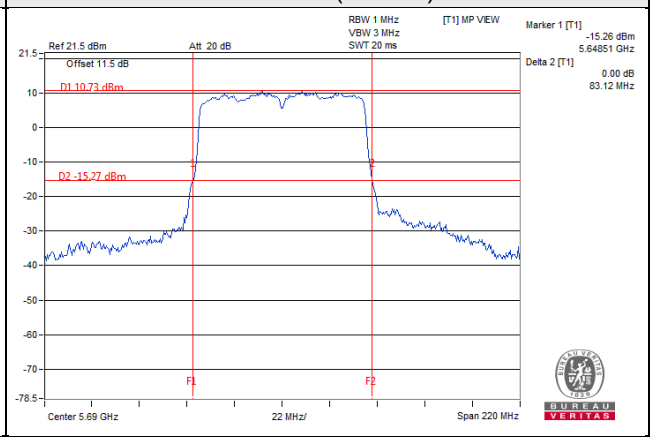
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



EUT Maximum Conducted Power

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	21.80	151.456
5470~5725	21.28	134.412

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	22.34	171.419
5470~5725	21.01	126.291

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.97	249.356
5470~5725	23.75	236.870

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	23.42	219.582
5470~5725	23.58	228.059

Beamforming Mode

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	16.32	42.860
5470~5725	14.99	31.578

802.11n (HT40)

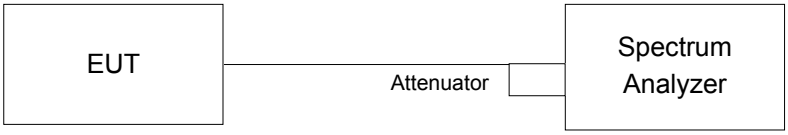
Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	17.95	62.348
5470~5725	17.73	59.227

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	17.40	54.903
5470~5725	17.56	56.964

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 Test Result

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	16.44	16.44	16.56	16.44
60	5300	16.44	16.44	16.56	16.44
64	5320	16.44	16.56	16.44	16.44
100	5500	16.52	16.52	16.52	16.43
116	5580	16.56	16.44	16.44	16.44
140	5700	16.56	16.44	16.44	16.44
144	5720 (For U-NII-2C)	13.28	13.28	13.16	13.28
144	5720 (For U-NII-3)	3.16	3.16	3.16	3.16

802.11n (HT20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	17.64	17.64	17.64	17.64
60	5300	17.64	17.64	17.64	17.64
64	5320	17.64	17.64	17.64	17.64
100	5500	17.64	17.64	17.64	17.64
116	5580	17.64	17.52	17.64	17.64
140	5700	17.64	17.64	17.64	17.64
144	5720 (For U-NII-2C)	13.88	13.88	13.76	13.88
144	5720 (For U-NII-3)	3.76	3.76	3.76	3.76

802.11n (HT40)

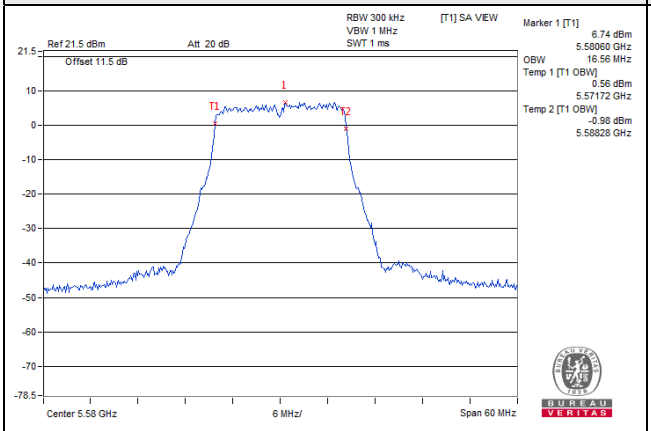
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	36.00	36.00	35.88	36.00
62	5310	36.00	36.00	36.00	36.24
102	5510	36.00	36.12	36.00	36.12
110	5550	36.00	36.12	36.24	36.12
134	5670	36.00	36.24	36.24	35.88
142	5710 (For U-NII-2C)	33.00	33.00	33.00	33.00
142	5710 (For U-NII-3)	3.00	3.12	3.12	3.00

802.11ac (VHT80)

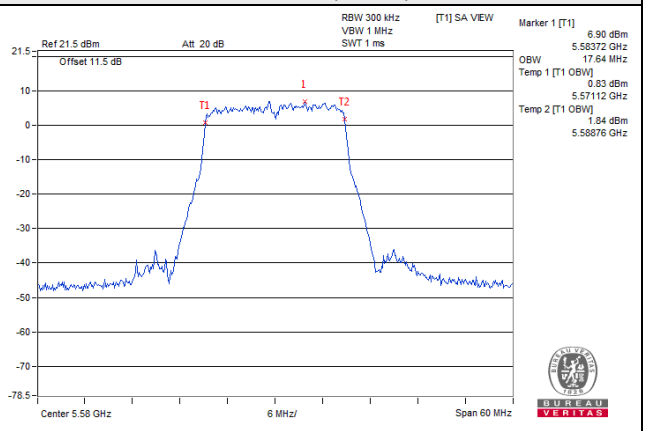
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	75.84	76.08	76.08	75.84
106	5530	75.84	75.84	76.08	75.84
122	5610	75.84	75.84	76.08	75.84
138	5690 (For U-NII-2C)	72.92	73.16	73.16	72.68
138	5690 (For U-NII-3)	2.92	2.92	2.92	2.92

Spectrum Plot of Worst Value

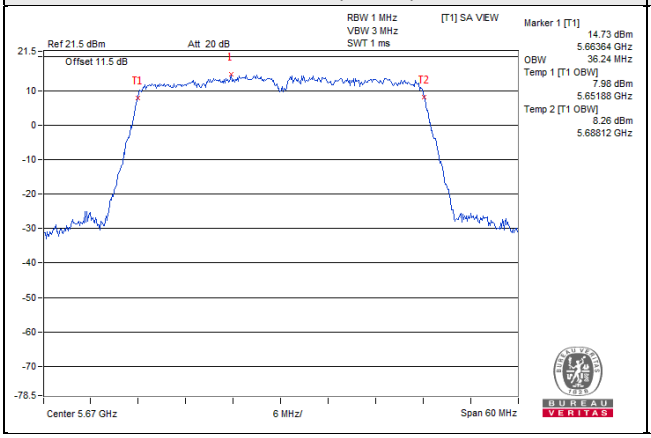
802.11a



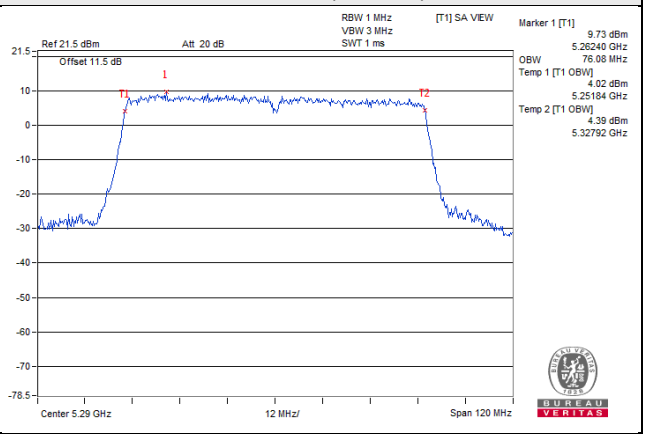
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

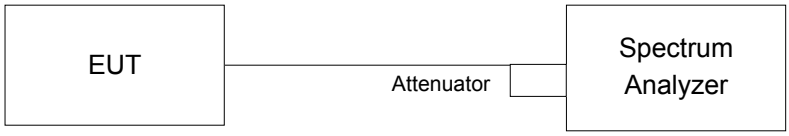


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17dBm/ MHz
		Fixed point-to-point Access Point	
		Indoor Access Point	
		Mobile and Portable client device	11dBm/ MHz
U-NII-2A	√		11dBm/ MHz
U-NII-2C	√		11dBm/ MHz
U-NII-3	√		30dBm/ 500kHz

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

For U-NII-2A and U-NII-2C band:

Duty cycle of test signal is > 98%

Using method SA-1

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Sweep time = auto, trigger set to “free run”.

d. Trace average at least 100 traces in power averaging mode.

e. Record the max value

Duty cycle of test signal is < 98%

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

Duty cycle of test signal is > 98%

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz/300kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value

Duty cycle of test signal is < 98%

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-2A and U-NII-2C band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	2.36	3.44	1.19	2.29	0.19	8.60	8.88	Pass
60	5300	2.51	3.67	1.40	2.08	0.19	8.71	8.88	Pass
64	5320	2.20	3.77	1.53	1.73	0.19	8.61	8.88	Pass
100	5500	2.13	3.08	1.78	2.73	0.19	8.67	8.88	Pass
116	5580	1.98	3.45	1.96	2.44	0.19	8.71	8.88	Pass
140	5700	2.70	3.03	2.39	2.40	0.19	8.85	8.88	Pass
144	5720	2.65	3.65	1.70	2.33	0.19	8.85	8.88	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 11-(8.12-6) = 8.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/MHz)				Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
52	5260	2.50	3.79	1.29	2.60	8.66	8.88	Pass
60	5300	2.38	3.66	1.11	2.12	8.43	8.88	Pass
64	5320	2.36	4.16	1.79	2.09	8.73	8.88	Pass
100	5500	1.97	3.29	1.44	3.03	8.52	8.88	Pass
116	5580	2.08	3.85	1.98	2.29	8.64	8.88	Pass
140	5700	1.81	3.21	1.85	2.19	8.32	8.88	Pass
144	5720	2.39	3.29	1.48	2.10	8.39	8.88	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 11-(8.12-6) = 8.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

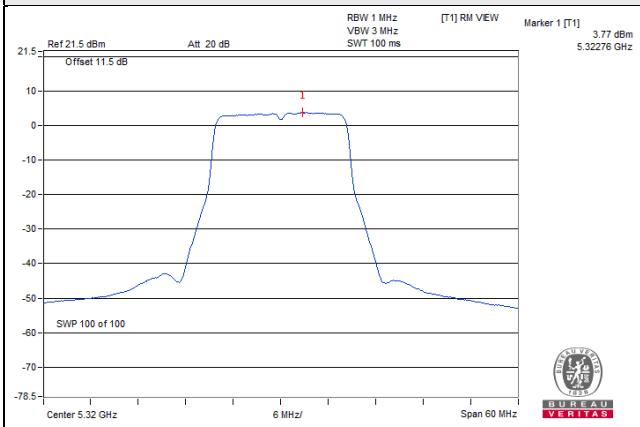
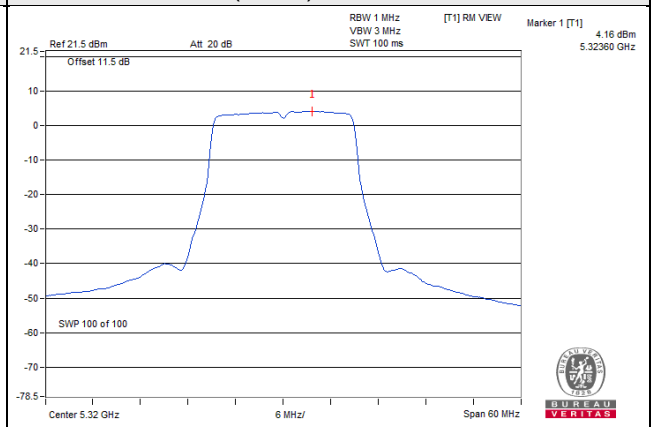
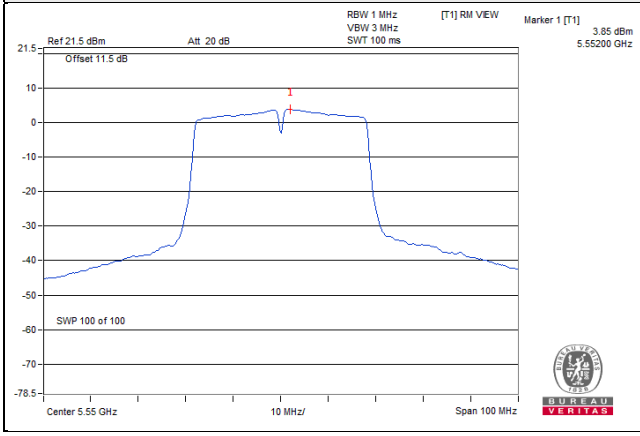
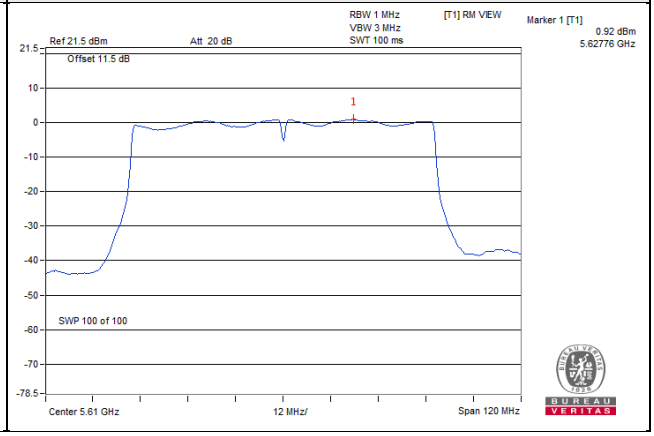
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	1.75	3.13	-0.10	1.26	0.14	7.82	8.88	Pass
62	5310	1.23	2.42	0.79	0.50	0.14	7.46	8.88	Pass
102	5510	1.95	3.40	2.14	2.70	0.14	8.75	8.88	Pass
110	5550	2.05	3.83	1.94	2.30	0.14	8.76	8.88	Pass
134	5670	1.52	3.23	2.07	1.72	0.14	8.35	8.88	Pass
142	5710	2.58	3.41	1.53	2.21	0.14	8.65	8.88	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 11-(8.12-6) = 8.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	-2.59	-1.29	-3.69	-2.94	0.27	3.75	8.88	Pass
106	5530	-2.68	-0.81	-2.56	-1.79	0.27	4.40	8.88	Pass
122	5610	-0.36	0.92	-1.26	-0.65	0.27	6.03	8.88	Pass
138	5690	-0.20	0.17	-1.59	-0.51	0.27	5.81	8.88	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 11-(8.12-6) = 8.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 1 / CH 64	802.11n (HT20) / Chain 1 / CH 64
	
802.11n (HT40) / Chain 1 / CH 110	802.11ac (VHT80) / Chain 1 / 122
	

For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	144	5720	-5.49	-3.27	6.02	0.19	2.94	27.88	Pass
1	144	5720	-5.77	-3.55	6.02	0.19	2.66	27.88	Pass
2	144	5720	-7.41	-5.19	6.02	0.19	1.02	27.88	Pass
3	144	5720	-5.74	-3.52	6.02	0.19	2.69	27.88	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=4) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	144	5720	-5.80	-3.58	6.02	2.44	27.88	Pass
1	144	5720	-5.87	-3.65	6.02	2.37	27.88	Pass
2	144	5720	-8.09	-5.87	6.02	0.15	27.88	Pass
3	144	5720	-5.83	-3.61	6.02	2.41	27.88	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	142	5710	-6.88	-4.66	6.02	0.14	1.50	27.88	Pass
1	142	5710	-5.94	-3.72	6.02	0.14	2.44	27.88	Pass
2	142	5710	-7.79	-5.57	6.02	0.14	0.59	27.88	Pass
3	142	5710	-7.70	-5.48	6.02	0.14	0.68	27.88	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

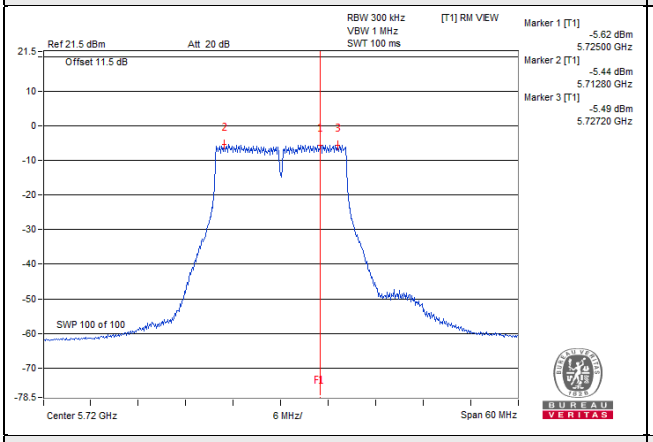
802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	138	5690	-9.90	-7.68	6.02	0.27	-1.39	27.88	Pass
1	138	5690	-9.21	-6.99	6.02	0.27	-0.70	27.88	Pass
2	138	5690	-10.41	-8.19	6.02	0.27	-1.90	27.88	Pass
3	138	5690	-10.18	-7.96	6.02	0.27	-1.67	27.88	Pass

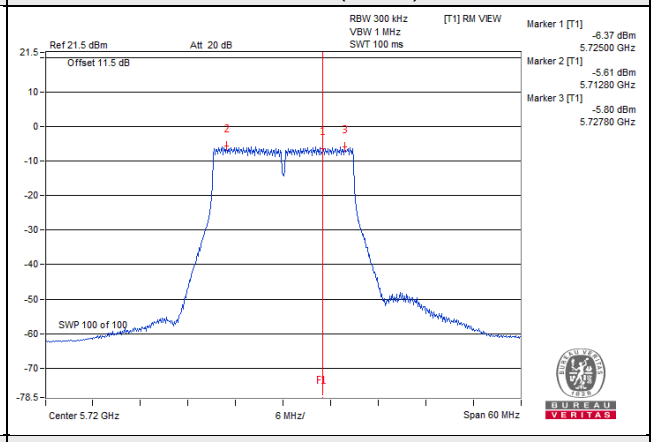
Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional Gain = 2.1dBi + 10log(4) = 8.12dBi > 6dBi, so the limit shall be reduced to 30-(8.12-6) = 27.88dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

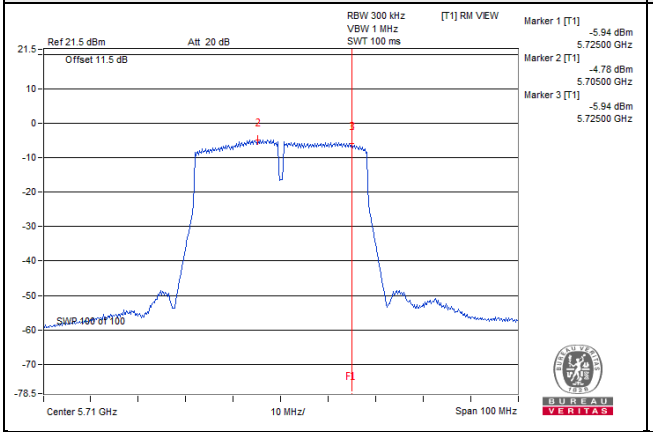
802.11a



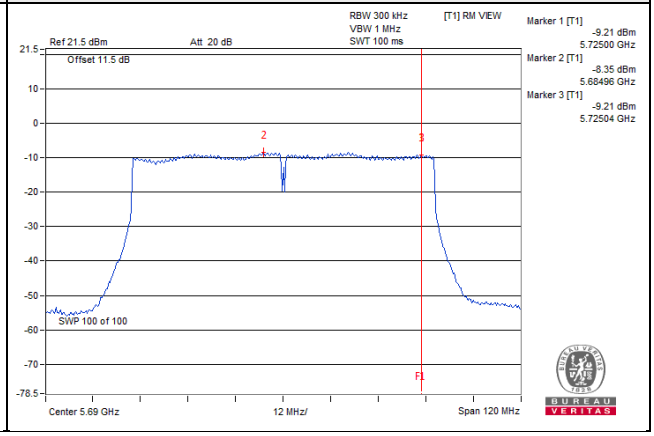
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

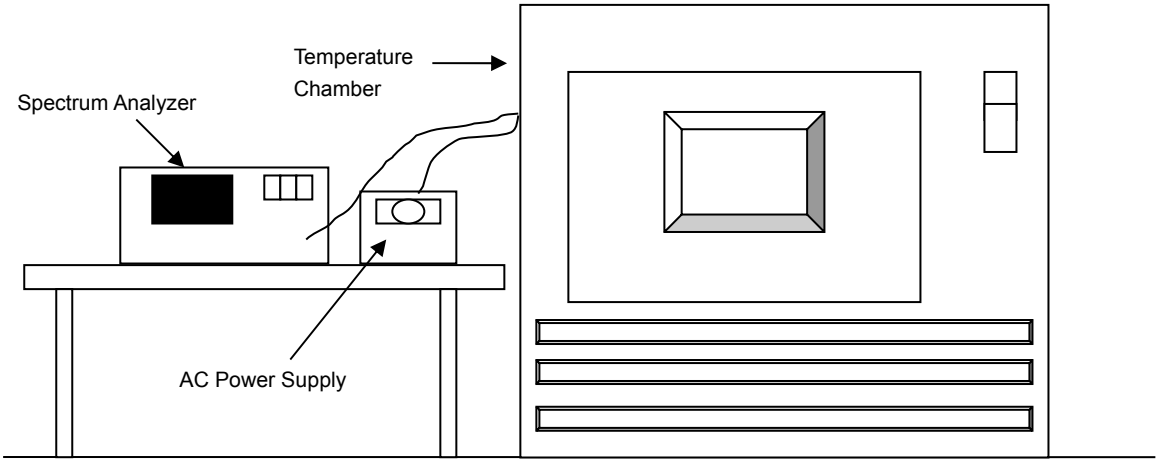


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 23, 2019	Sep. 22, 2020
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 03, 2019	Jun. 02, 2020
Digital Multimeter Fluke	87-III	70360742	Jun. 28, 2019	Jun. 27, 2020
AC Power Supply Extech	CFW-105	E000603	NA	NA
True RMS Clamp Meter Fluke	325	31130711WS	May 21, 2019	May 20, 2020

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

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.

b. Turn the EUT on and couple its output to a spectrum analyzer.

c. Turn the EUT off and set the chamber to the highest temperature specified.

d. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.

e. Repeat step c and d with every 10 degrees reduction until the lowest temperature achieved.

f. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
55	120	5260.0132	Pass	5260.0115	Pass	5260.0131	Pass	5260.0115	Pass
50	120	5259.9822	Pass	5259.9826	Pass	5259.9804	Pass	5259.9845	Pass
40	120	5259.9783	Pass	5259.9796	Pass	5259.98	Pass	5259.978	Pass
30	120	5259.9882	Pass	5259.9855	Pass	5259.9881	Pass	5259.9887	Pass
20	120	5259.987	Pass	5259.9861	Pass	5259.9832	Pass	5259.9865	Pass
10	120	5260.015	Pass	5260.0152	Pass	5260.0105	Pass	5260.0106	Pass
0	120	5259.9779	Pass	5259.9799	Pass	5259.9801	Pass	5259.9827	Pass
-10	120	5259.9802	Pass	5259.9773	Pass	5259.9787	Pass	5259.9776	Pass
-20	120	5260.0113	Pass	5260.0139	Pass	5260.0109	Pass	5260.015	Pass
-30	120	5259.9861	Pass	5259.9874	Pass	5259.9891	Pass	5259.9878	Pass
-40	120	5259.9914	Pass	5259.9901	Pass	5259.9936	Pass	5259.9909	Pass

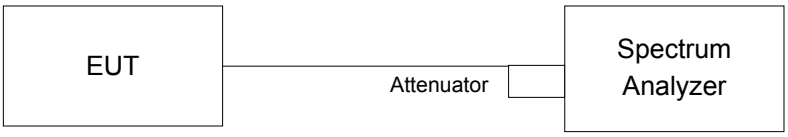
Frequency Stability Versus Voltage									
Operating Frequency: 5260MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5259.9875	Pass	5259.9864	Pass	5259.9823	Pass	5259.9864	Pass
	120	5259.987	Pass	5259.9861	Pass	5259.9832	Pass	5259.9865	Pass
	102	5259.9877	Pass	5259.9859	Pass	5259.9838	Pass	5259.9859	Pass

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

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

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

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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
144	5720 (For U-NII-3)	3.18	3.16	2.58	3.17	0.5	Pass

802.11n (HT20)

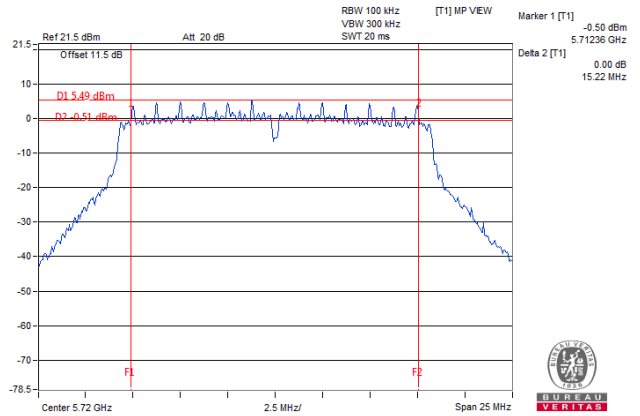
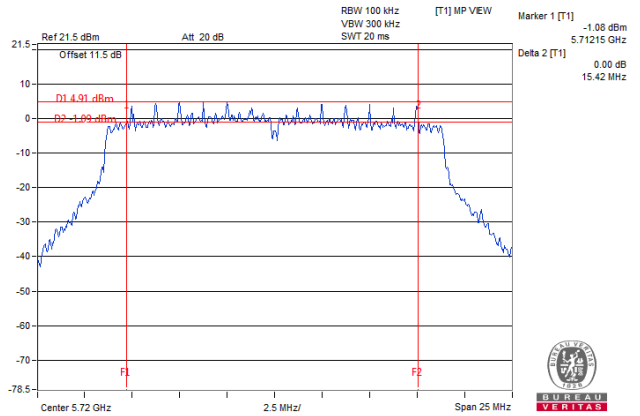
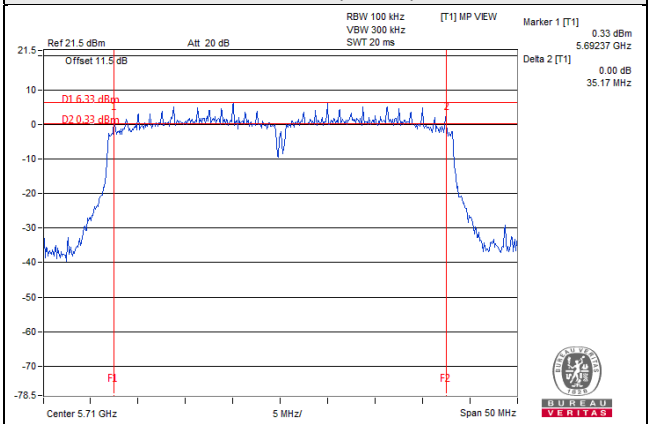
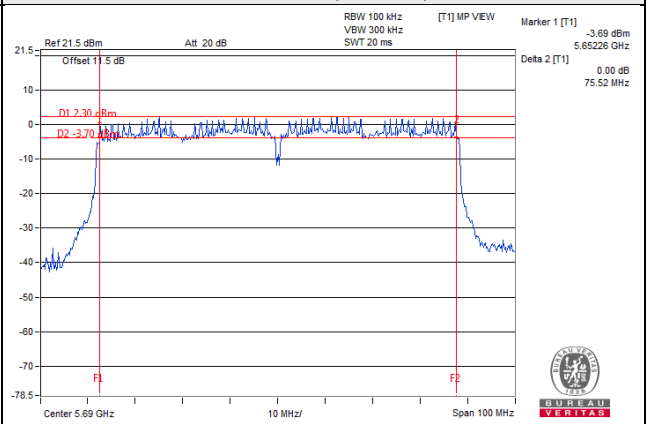
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
144	5720 (For U-NII-3)	3.80	3.54	2.57	3.80	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
142	5710 (For U-NII-2C)	2.64	2.62	2.57	2.54	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
138	5690 (For U-NII-2C)	3.11	3.17	3.23	2.78	0.5	Pass

Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

Note:

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH142 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH138 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information of the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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

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