FCC Test Report

Report No.:	RF181019C20F
FCC ID:	PY318300427
Test Model:	SRC60
Series Model:	WAC540 (refer to item 3.1 for more details)
Received Date:	Oct. 19, 2018
Test Date:	Dec. 24 ~ Dec. 28, 2018 (For Radiated Emission Test) Sep. 10 ~ Sep. 11, 2019 (For all tests except Radiated Emission Test)
Issued Date:	Sep. 11, 2019
Applicant:	NETGEAR, INC.
Address:	350 East Plumeria Drive San Jose, CA 95134
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

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF181019C20F	Original release	Sep. 11, 2019

1 Certificate of Conformity

Product:	Orbi Pro AC3000 Tri-band Ceiling Add-on Satellite SRC60, Insight Managed Smart Cloud Wireless Access Point (WAC540)
Brand:	NETGEAR
Test Model:	SRC60
Series Model:	WAC540 (refer to item 3.1 for more details)
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Dec. 24 ~ Dec. 28, 2018 (For Radiated Emission Test) Sep. 10 ~ Sep. 11, 2019 (For all tests except Radiated Emission Test)
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 : Pettie Chen , **Date:** Sep. 11, 2019

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Sep. 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 -10.68dB at 0.15802MHz.
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 -0.1dB at 5350.00MHz.
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(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.64 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	Orbi Pro AC3000 Tri-band Ceiling Add-on Satellite SRC60, Insight Managed Smart Cloud Wireless Access Point (WAC540)
Brand	NETGEAR
Test Model	SRC60
Series Model	WAC540
Model Difference	Refer to Note
Sample Status	Engineering sample
Power Supply Rating	12Vdc (Adapter) 54Vdc (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 ~ 5700MHz
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 ~ 5700MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 11 802.11n (HT40), 802.11ac (VHT40): 5 802.11ac (VHT80): 2
Conducted Output Power	CDD Mode: 5260 ~ 5320MHz: 210.167mW 5500 ~ 5700MHz: 215.548mW Beamforming Mode: 5260 ~ 5320MHz: 206.401mW 5500 ~ 5700MHz: 163.177mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
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.: RF181019C20-1) are adding 5.26GHz to 5.32GHz and 5.50GHz to 5.70GHz by software.

2. All models are listed as below. Model SRC60 is the representative for final test.

Brand	Product Name	Model	Difference
NETGEAR	Orbi Pro AC3000 Tri-band Ceiling Add-on Satellite SRC60	SRC60	Main test model. Same PCB with WAC540, only LED location and enclosures difference.
	Insight Managed Smart Cloud Wireless Access Point (WAC540)	WAC540	Series model.

3. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Band	Modulation Mode	Beamforming Mode	TX Function
5GHz Band 2	802.11a	Not Support	2TX
	802.11n (HT20)	Support	2TX
	802.11n (HT40)	Support	2TX
	802.11ac (VHT20)	Support	2TX
	802.11ac (VHT40)	Support	2TX
	802.11ac (VHT80)	Support	2TX
5GHz Band 3	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

* 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.

* The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for 20MHz/40MHz, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

4. The following RF Modules are for the EUT.

RF Module	Band	Antenna No.
Module 1	UNII-2A	5, 6
Module 2	UNII-2C	1, 2, 3, 4

5. The EUT consumes power from the following adapters and POE.

Adapter 1	
Brand	NETGEAR
Model	2ABL030F1 NJ
P/N	332-10948-01
Input	100-120Vac, 50/60Hz, 1.0A
Output	12Vdc, 2.5A
Power Line	1.8m DC cable without core attached on adapter

Adapter 2	
Brand	NETGEAR
Model	AD2067M20
P/N	332-11074-01
Input	100-240Vac, 50/60Hz, 1.0A
Output	12Vdc, 2.5A
Power Line	1.8m DC cable without core attached on adapter

POE (Support unit only)	
Brand	NETGEAR
Model	GS110TP
Input Power	100-240Vac, 50/60Hz
Output Power	54Vdc, 1.25A

POE ‘s adapter (Support unit only)	
Brand	NETGEAR
Model	2ACL068S
P/N	332-11059-01
Input	100-240Vac, 50/60Hz, 1.7A Max
Output	54Vdc, 1.25A
Power Line	1.5m DC cable without core attached on adapter

6. The following antennas were provided to the EUT.

Ant. Type	Dipole	
Connecter Type	i-pex(MHF)	
Directional Antenna Gain (dBi)		
Item	UNII-2A	UNII-2C
-	4.15	7.04

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 ~ 5700MHz:

11 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		

5 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		

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE≥1G	RE<1G	PLC	APCM	
A	-	√	√	-	Powered by adapter 1
B	√	√	√	√	Powered by adapter 2
C	-	√	√	-	Powered by 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. "-" means no effect.
3. Radiated emission (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)	TX Function
B	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0	2TX
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5	2TX
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5	2TX
	802.11ac (VHT80)		58	58	OFDM	29.3	2TX
B	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0	4TX
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5	4TX
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	13.5	4TX
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	29.3	4TX

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)	TX Function
A, B, C	802.11a	5260-5320	52 to 64	60	OFDM	6.0	2TX
A, B, C	802.11ac (VHT80)	5500-5700	106 to 122	122	OFDM	29.3	4TX

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)	TX Function
A, B, C	802.11a	5260-5320	52 to 64	60	OFDM	6.0	2TX
A, B, C	802.11ac (VHT80)	5500-5700	106 to 122	122	OFDM	29.3	4TX

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)	TX Function
B	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0	2TX
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5	2TX
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5	2TX
	802.11ac (VHT80)		58	58	OFDM	29.3	2TX
B	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0	4TX
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5	4TX
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	13.5	4TX
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	29.3	4TX

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 68% RH	120Vac, 60Hz	Luis Lee
RE<1G	25 deg. C, 70% RH	120Vac, 60Hz 54Vdc	Noah Chang
PLC	25 deg. C, 67% RH	120Vac, 60Hz 54Vdc	Noah Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ivan Tseng

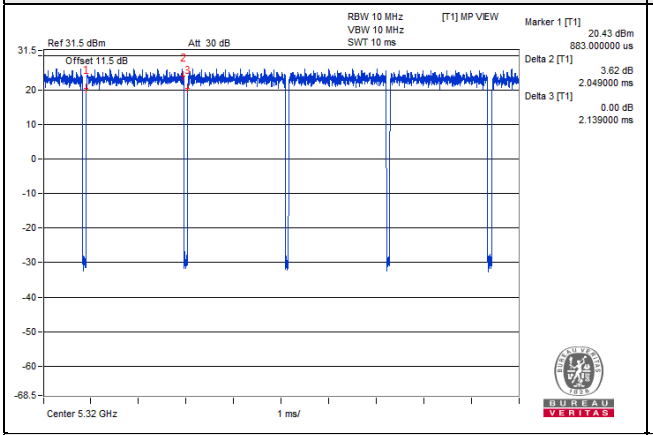
3.3 Duty Cycle of Test Signal

For 5260-5320MHz:

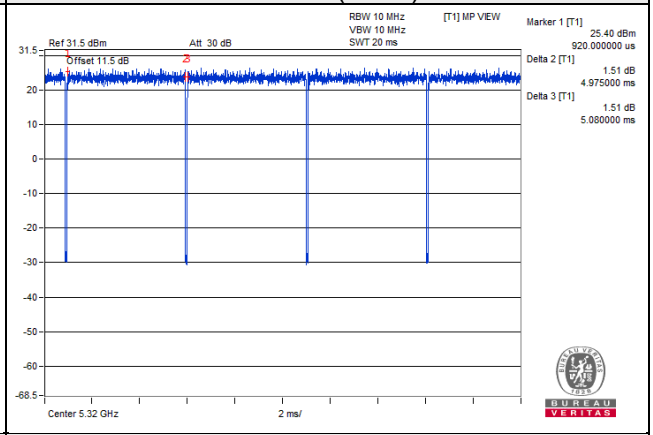
Duty cycle of test signal is > 98%, duty factor is not required
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 2.049/2.139 = 0.958, Duty factor = 10 * log(1/0.958) = 0.19
802.11n (HT20): Duty cycle = 4.975/5.08 = 0.979, Duty factor = 10 * log(1/0.979) = 0.09
802.11n (HT40): Duty cycle = 2.41/2.522 = 0.956, Duty factor = 10 * log(1/0.956) = 0.20
802.11ac (VHT80): Duty cycle = 1.137/1.226 = 0.927, Duty factor = 10 * log(1/0.927) = 0.33

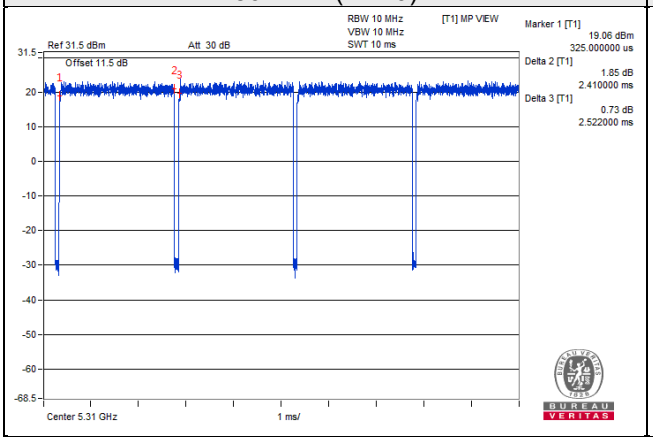
802.11a



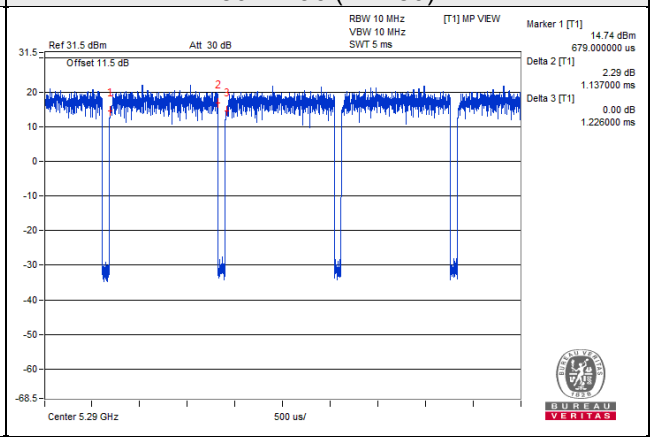
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

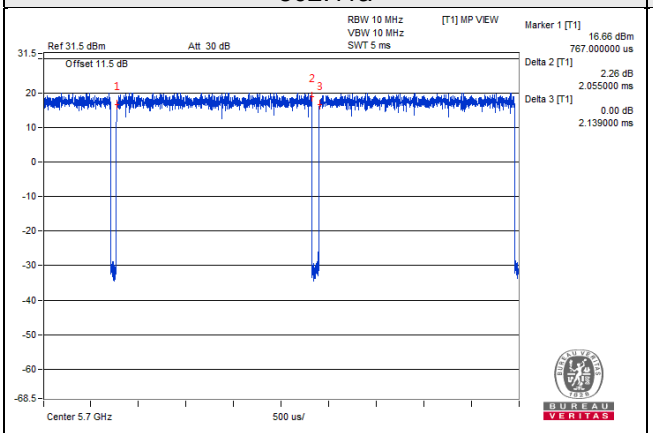


For 5500-5700MHz:

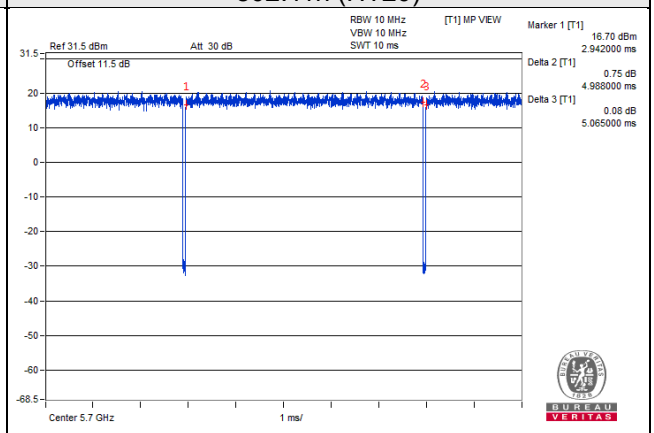
Duty cycle of test signal is > 98%, duty factor is not required
Duty cycle of test signal is < 98 %, duty factor is required

802.11a: Duty cycle = 2.055/2.139 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17
802.11n (HT20): Duty cycle = 4.988/5.065 = 0.985
802.11n (HT40): Duty cycle = 2.418/2.505 = 0.965, Duty factor = 10 * log(1/0.965) = 0.15
802.11ac (VHT80): Duty cycle = 1.144/1.211 = 0.945, Duty factor = 10 * log(1/0.945) = 0.25

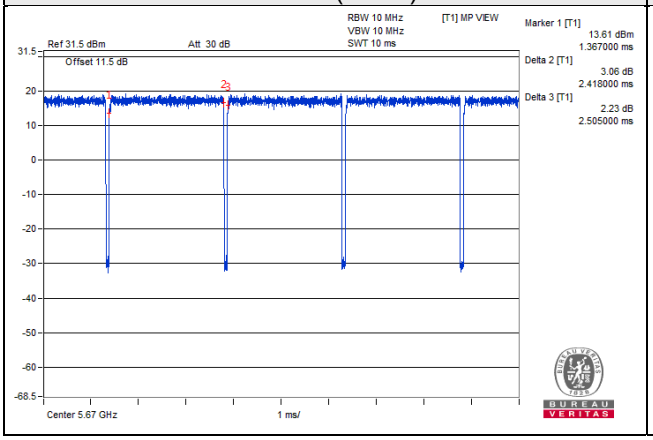
802.11a



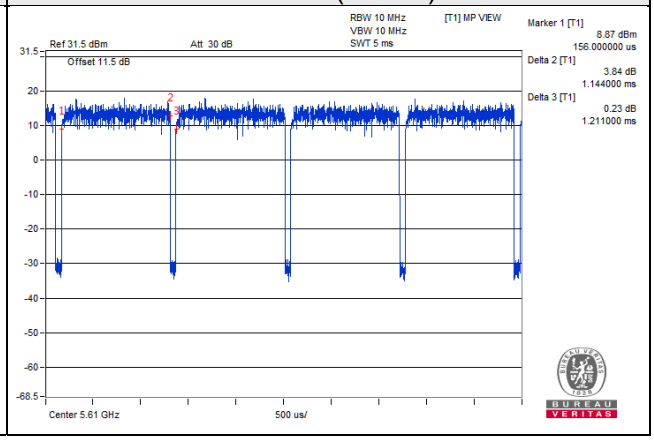
802.11n (HT20)



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	Lenovo	81A4	YD02TWF5	PPD-QCNFA435	-
B.	Load	NA	NA	NA	NA	-
C.	POE	NETGEAR	GS110TP	NA	NA	Provided by client

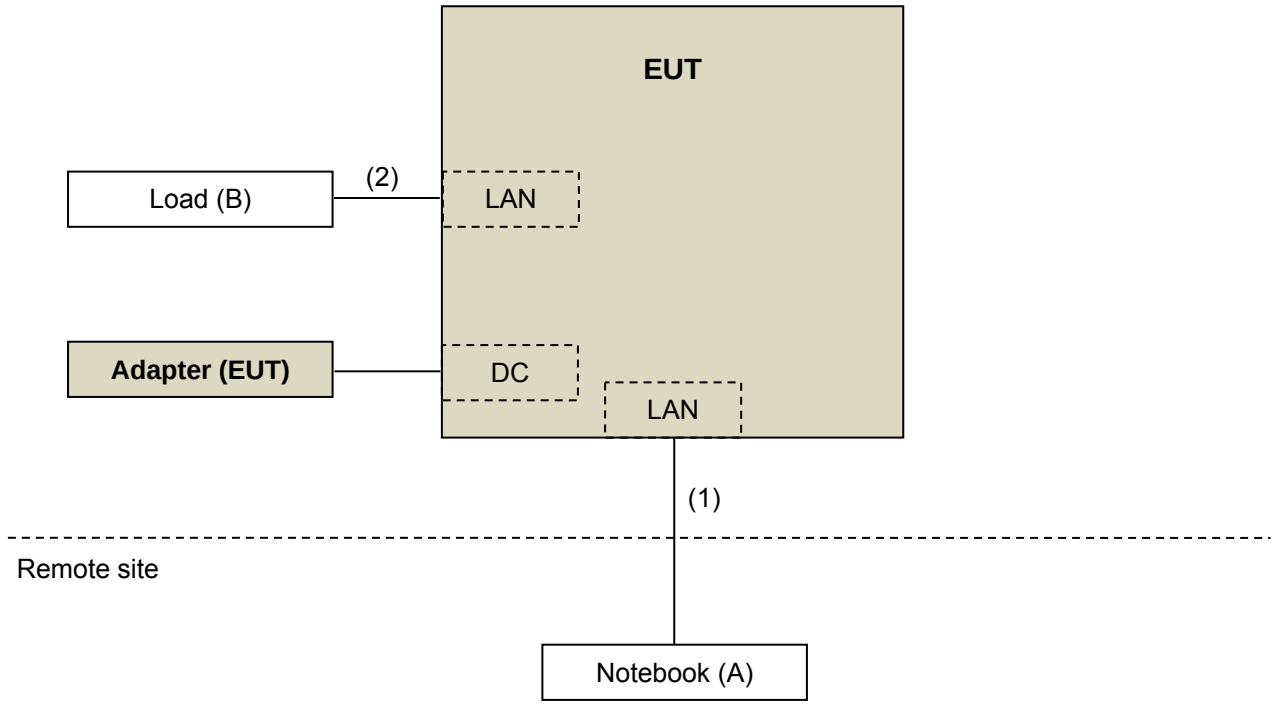
Note:

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.

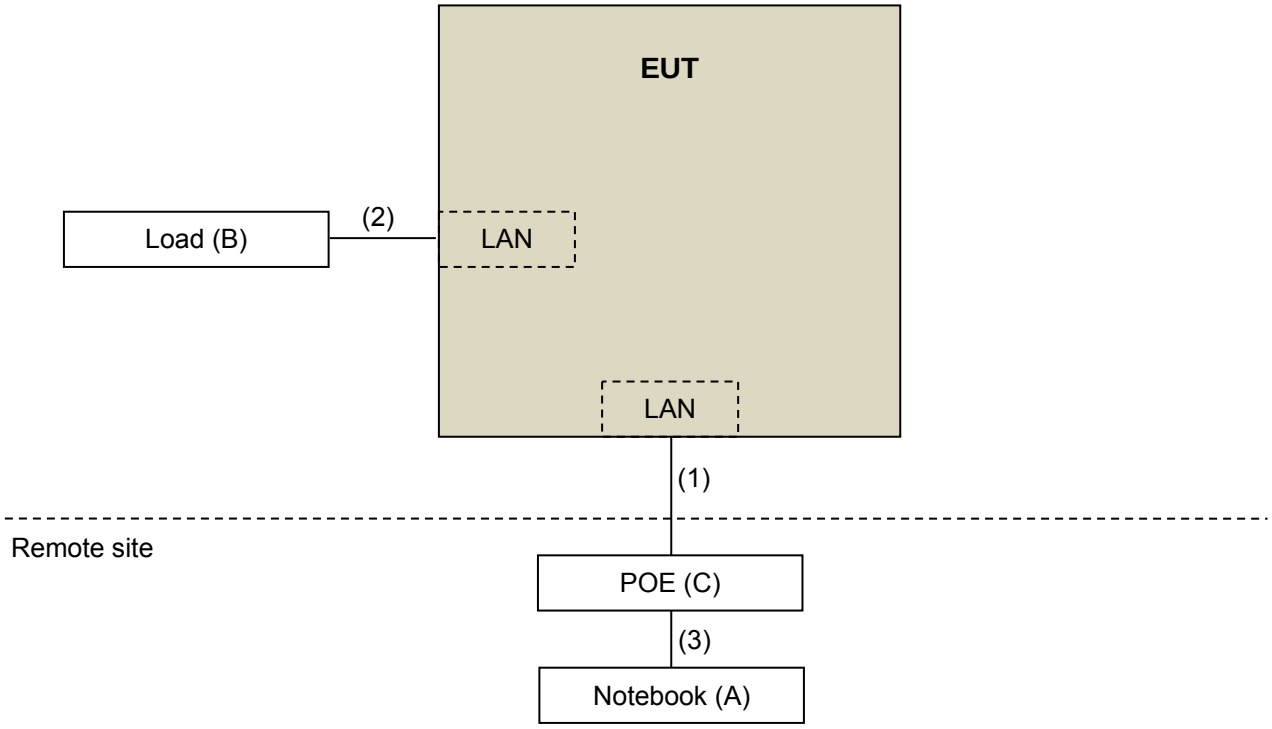
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	5	N	0	-
2.	RJ45, Cat5e	1	1.5	N	0	-
3.	RJ45, Cat5e	1	1	N	0	-

3.4.1 Configuration of System under Test

Test Mode A, B



Test Mode C



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10:2013

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

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:

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

4.1.2 Test Instruments

Test Date: Dec. 24 ~ Dec. 28, 2018

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 29, 2018	May 28, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 25, 2018	Sep. 24, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Nov. 21, 2018	Nov. 20, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Aug. 08, 2018	Aug. 07, 2019
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jul. 02, 2018	Jul. 01, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2018	Aug. 07, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2018	Aug. 07, 2019
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Nov. 14, 2018	Nov. 13, 2019
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 17, 2018	Jul. 16, 2019
Peak Power Analyzer KEYSIGHT (For 8TX & 160M bandwidth)	8990B	MY51000485	Feb. 09, 2018	Feb. 08, 2019

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 4.

Test Date: Sep. 10 ~ Sep. 11, 2019

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Jan. 03, 2019	Jan. 02, 2020
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 25, 2018	Sep. 24, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Nov. 21, 2018	Nov. 20, 2019
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Jul. 11, 2019	Jul. 10, 2020
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jun. 11, 2019	Jun. 10, 2020
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH4-01	Aug. 20, 2019	Aug. 19, 2020
RF Coaxial Cable EMCI	EMC102-KM-KM-3000	150929	Aug. 20, 2019	Aug. 19, 2020
RF Coaxial Cable EMCI	EMC102-KM-KM-600	150928	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Jul. 11, 2019	Jul. 10, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Jul. 11, 2019	Jul. 10, 2020
Software BV ADT	ADT_Radiated_V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Nov. 14, 2018	Nov. 13, 2019
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190004/MY55190007/MY55210005	Jul. 15, 2019	Jul. 14, 2020
Peak Power Analyzer KEYSIGHT (For 8TX & 160M bandwidth)	8990B	MY51000485	Jan. 14, 2019	Jan. 13, 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 4.

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:

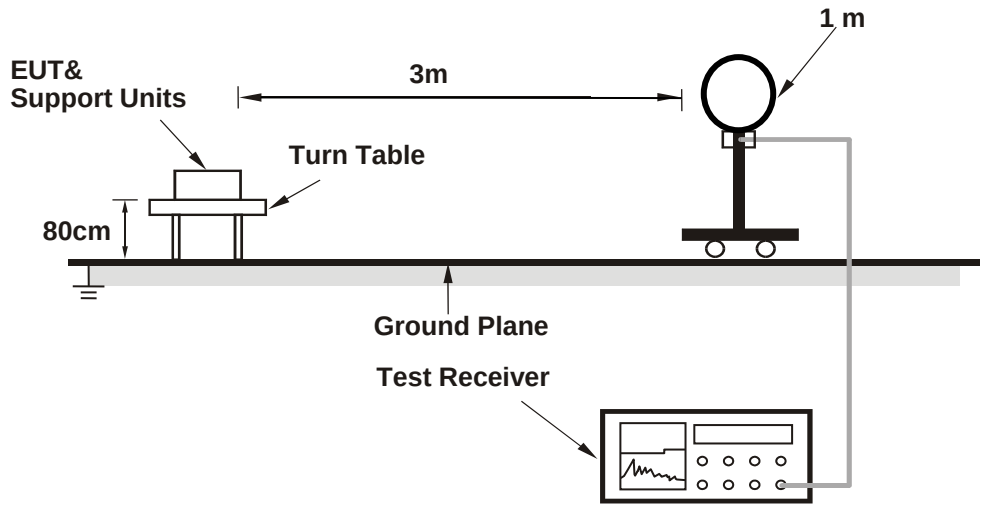
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.
4. (For 5GHz Band 2: 802.11a: RBW = 1MHz, VBW =1kHz; 802.11n (HT20): RBW = 1MHz, VBW = 1kHz; 802.11n (HT40): RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT80): RBW = 1MHz, VBW = 1kHz;
   For 5GHz Band 3: 802.11a: RBW = 1MHz, VBW =1kHz; 802.11n (HT20): RBW = 1MHz, VBW = 10Hz; 802.11n (HT40): RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT80): RBW = 1 MHz, VBW = 1kHz)
5. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

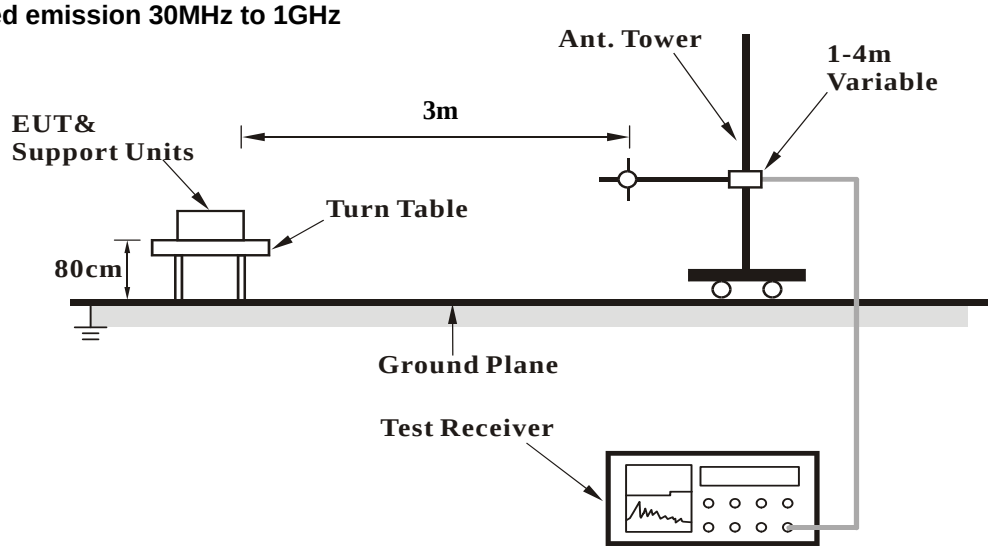
No deviation.

4.1.5 Test Setup

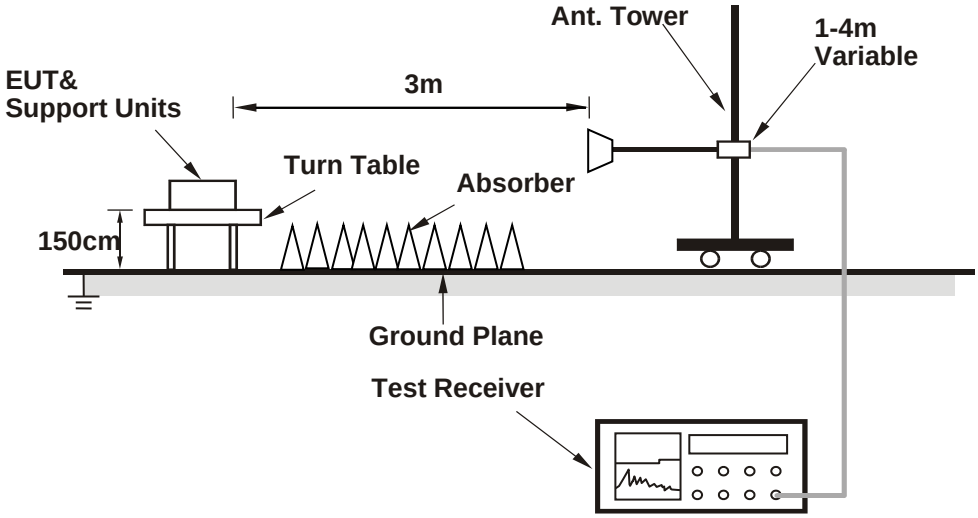
For Radiated emission below 30MHz



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 (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
d. The communication partner sent data to EUT by command "PING".

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	61.1 PK	74.0	-12.9	1.03 H	55	48.5	12.6
2	5150.00	48.5 AV	54.0	-5.5	1.03 H	55	35.9	12.6
3	*5260.00	118.6 PK			1.03 H	55	77.5	41.1
4	*5260.00	109.0 AV			1.03 H	55	67.9	41.1
5	#10520.00	62.5 PK	68.2	-5.7	1.69 H	271	39.5	23.0
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	60.8 PK	74.0	-13.2	1.06 V	172	48.2	12.6
2	5150.00	47.1 AV	54.0	-6.9	1.06 V	172	34.5	12.6
3	*5260.00	112.3 PK			1.06 V	172	71.2	41.1
4	*5260.00	102.6 AV			1.06 V	172	61.5	41.1
5	#10520.00	62.0 PK	68.2	-6.2	2.69 V	158	39.0	23.0

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	117.8 PK			1.03 H	54	76.7	41.1
2	*5300.00	107.9 AV			1.03 H	54	66.8	41.1
3	10600.00	62.9 PK	74.0	-11.1	1.86 H	230	39.7	23.2
4	10600.00	50.0 AV	54.0	-4.0	1.86 H	230	26.8	23.2
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	*5300.00	111.5 PK			1.09 V	180	70.4	41.1
2	*5300.00	101.4 AV			1.09 V	180	60.3	41.1
3	10600.00	62.1 PK	74.0	-11.9	2.41 V	195	38.9	23.2
4	10600.00	49.5 AV	54.0	-4.5	2.41 V	195	26.3	23.2

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	117.9 PK			1.12 H	54	76.7	41.2
2	*5320.00	107.4 AV			1.12 H	54	66.2	41.2
3	5350.00	68.7 PK	74.0	-5.3	1.12 H	54	56.3	12.4
4	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**1.12 H**	**54**	**41.5**	**12.4**
5	10640.00	62.6 PK	74.0	-11.4	1.79 H	243	39.4	23.2
6	10640.00	49.8 AV	54.0	-4.2	1.79 H	243	26.6	23.2
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	*5320.00	112.7 PK			1.12 V	169	71.5	41.2
2	*5320.00	101.3 AV			1.12 V	169	60.1	41.2
3	5350.00	62.5 PK	74.0	-11.5	1.12 V	169	50.1	12.4
4	5350.00	49.4 AV	54.0	-4.6	1.12 V	169	37.0	12.4
5	10640.00	62.3 PK	74.0	-11.7	2.36 V	196	39.1	23.2
6	10640.00	49.1 AV	54.0	-4.9	2.36 V	196	25.9	23.2

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	62.3 PK	74.0	-11.7	1.14 H	93	49.5	12.8
2	5460.00	49.0 AV	54.0	-5.0	1.14 H	93	36.2	12.8
3	#5470.00	62.5 PK	68.2	-5.7	1.14 H	93	49.6	12.9
4	*5500.00	115.6 PK			1.14 H	93	73.6	42.0
5	*5500.00	105.8 AV			1.14 H	93	63.8	42.0
6	11000.00	63.2 PK	74.0	-10.8	2.08 H	173	39.8	23.4
7	11000.00	49.3 AV	54.0	-4.7	2.08 H	173	25.9	23.4
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	62.0 PK	74.0	-12.0	2.44 V	110	49.2	12.8
2	5460.00	48.7 AV	54.0	-5.3	2.44 V	110	35.9	12.8
3	#5470.00	62.2 PK	68.2	-6.0	2.44 V	110	49.3	12.9
4	*5500.00	111.5 PK			2.44 V	110	69.5	42.0
5	*5500.00	101.6 AV			2.44 V	110	59.6	42.0
6	11000.00	62.6 PK	74.0	-11.4	1.26 V	207	39.2	23.4
7	11000.00	48.8 AV	54.0	-5.2	1.26 V	207	25.4	23.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	115.6 PK			1.17 H	72	73.8	41.8
2	*5580.00	105.5 AV			1.17 H	72	63.7	41.8
3	11160.00	63.1 PK	74.0	-10.9	2.75 H	184	39.8	23.3
4	11160.00	49.1 AV	54.0	-4.9	2.75 H	184	25.8	23.3
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	*5580.00	111.5 PK			2.35 V	103	69.7	41.8
2	*5580.00	101.2 AV			2.35 V	103	59.4	41.8
3	11160.00	62.8 PK	74.0	-11.2	1.74 V	215	39.5	23.3
4	11160.00	48.7 AV	54.0	-5.3	1.74 V	215	25.4	23.3

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	116.4 PK			1.23 H	79	74.3	42.1
2	*5700.00	105.6 AV			1.23 H	79	63.5	42.1
3	#5725.00	62.1 PK	68.2	-6.1	1.23 H	79	49.2	12.9
4	11400.00	63.9 PK	74.0	-10.1	1.87 H	201	39.5	24.4
5	11400.00	50.3 AV	54.0	-3.7	1.87 H	201	25.9	24.4
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	112.3 PK			2.51 V	127	70.2	42.1
2	*5700.00	101.9 AV			2.51 V	127	59.8	42.1
3	#5725.00	61.8 PK	68.2	-6.4	2.51 V	127	48.9	12.9
4	11400.00	63.6 PK	74.0	-10.4	1.38 V	300	39.2	24.4
5	11400.00	50.0 AV	54.0	-4.0	1.38 V	300	25.6	24.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	61.2 PK	74.0	-12.8	1.13 H	52	48.6	12.6
2	5150.00	38.5 AV	54.0	-15.5	1.13 H	52	25.9	12.6
3	*5260.00	118.4 PK			1.13 H	52	77.3	41.1
4	*5260.00	108.1 AV			1.13 H	52	67.0	41.1
5	#10520.00	62.9 PK	68.2	-5.3	1.96 H	205	39.9	23.0
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	61.1 PK	74.0	-12.9	1.01 V	172	48.5	12.6
2	5150.00	38.0 AV	54.0	-16.0	1.01 V	172	25.4	12.6
3	*5260.00	112.1 PK			1.01 V	172	71.0	41.1
4	*5260.00	102.3 AV			1.01 V	172	61.2	41.1
5	#10520.00	62.3 PK	68.2	-5.9	2.08 V	133	39.3	23.0

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	117.6 PK			1.14 H	55	76.5	41.1
2	*5300.00	107.5 AV			1.14 H	55	66.4	41.1
3	10600.00	62.9 PK	74.0	-11.1	1.89 H	215	39.7	23.2
4	10600.00	50.0 AV	54.0	-4.0	1.89 H	215	26.8	23.2
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	*5300.00	111.4 PK			1.32 V	186	70.3	41.1
2	*5300.00	101.3 AV			1.32 V	186	60.2	41.1
3	10600.00	62.4 PK	74.0	-11.6	2.08 V	165	39.2	23.2
4	10600.00	49.6 AV	54.0	-4.4	2.08 V	165	26.4	23.2

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	118.1 PK			1.13 H	55	76.9	41.2
2	*5320.00	108.1 AV			1.13 H	55	66.9	41.2
3	5350.00	68.5 PK	74.0	-5.5	1.13 H	55	56.1	12.4
4	5350.00	52.8 AV	54.0	-1.2	1.13 H	55	40.4	12.4
5	10640.00	63.1 PK	74.0	-10.9	1.99 H	217	39.9	23.2
6	10640.00	50.0 AV	54.0	-4.0	1.99 H	217	26.8	23.2
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	*5320.00	111.6 PK			1.10 V	174	70.4	41.2
2	*5320.00	101.7 AV			1.10 V	174	60.5	41.2
3	5350.00	63.4 PK	74.0	-10.6	1.10 V	174	51.0	12.4
4	5350.00	50.3 AV	54.0	-3.7	1.10 V	174	37.9	12.4
5	10640.00	62.4 PK	74.0	-11.6	2.27 V	183	39.2	23.2
6	10640.00	49.6 AV	54.0	-4.4	2.27 V	183	26.4	23.2

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	62.0 PK	74.0	-12.0	1.32 H	125	49.2	12.8
2	5460.00	49.5 AV	54.0	-4.5	1.32 H	125	36.7	12.8
3	#5470.00	62.5 PK	68.2	-5.7	1.32 H	125	49.6	12.9
4	*5500.00	115.9 PK			1.32 H	125	73.9	42.0
5	*5500.00	105.3 AV			1.32 H	125	63.3	42.0
6	11000.00	62.3 PK	74.0	-11.7	2.13 H	165	38.9	23.4
7	11000.00	49.3 AV	54.0	-4.7	2.13 H	165	25.9	23.4
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	61.8 PK	74.0	-12.2	2.47 V	108	49.0	12.8
2	5460.00	49.0 AV	54.0	-5.0	2.47 V	108	36.2	12.8
3	#5470.00	62.3 PK	68.2	-5.9	2.47 V	108	49.4	12.9
4	*5500.00	111.6 PK			2.47 V	108	69.6	42.0
5	*5500.00	101.0 AV			2.47 V	108	59.0	42.0
6	11000.00	62.0 PK	74.0	-12.0	1.47 V	288	38.6	23.4
7	11000.00	49.2 AV	54.0	-4.8	1.47 V	288	25.8	23.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	116.1 PK			1.22 H	80	74.3	41.8
2	*5580.00	105.4 AV			1.22 H	80	63.6	41.8
3	11160.00	62.1 PK	74.0	-11.9	2.33 H	167	38.8	23.3
4	11160.00	49.0 AV	54.0	-5.0	2.33 H	167	25.7	23.3
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	*5580.00	111.8 PK			2.37 V	125	70.0	41.8
2	*5580.00	101.0 AV			2.37 V	125	59.2	41.8
3	11160.00	61.8 PK	74.0	-12.2	1.72 V	208	38.5	23.3
4	11160.00	48.7 AV	54.0	-5.3	1.72 V	208	25.4	23.3

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	116.6 PK			1.22 H	80	74.5	42.1
2	*5700.00	105.6 AV			1.22 H	80	63.5	42.1
3	#5725.00	62.4 PK	68.2	-5.8	1.22 H	80	49.5	12.9
4	11400.00	63.3 PK	74.0	-10.7	2.60 H	127	38.9	24.4
5	11400.00	50.0 AV	54.0	-4.0	2.60 H	127	25.6	24.4
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	111.9 PK			2.45 V	107	69.8	42.1
2	*5700.00	101.7 AV			2.45 V	107	59.6	42.1
3	#5725.00	62.2 PK	68.2	-6.0	2.45 V	107	49.3	12.9
4	11400.00	63.1 PK	74.0	-10.9	1.83 V	211	38.7	24.4
5	11400.00	49.7 AV	54.0	-4.3	1.83 V	211	25.3	24.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	61.4 PK	74.0	-12.6	1.00 H	54	48.8	12.6
2	5150.00	48.4 AV	54.0	-5.6	1.00 H	54	35.8	12.6
3	*5270.00	114.4 PK			1.00 H	54	73.3	41.1
4	*5270.00	105.0 AV			1.00 H	54	63.9	41.1
5	#10540.00	62.6 PK	68.2	-5.6	1.93 H	241	39.7	22.9
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	5150.00	61.1 PK	74.0	-12.9	1.00 V	179	48.5	12.6
2	5150.00	48.0 AV	54.0	-6.0	1.00 V	179	35.4	12.6
3	*5270.00	108.3 PK			1.00 V	179	67.2	41.1
4	*5270.00	98.1 AV			1.00 V	179	57.0	41.1
5	#10540.00	62.4 PK	68.2	-5.8	2.45 V	163	39.5	22.9

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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			1.30 H	54	72.6	41.2
2	*5310.00	104.1 AV			1.30 H	54	62.9	41.2
3	5350.00	69.8 PK	74.0	-4.2	1.30 H	54	57.4	12.4
4	5350.00	53.7 AV	54.0	-0.3	1.30 H	54	41.3	12.4
5	10620.00	62.8 PK	74.0	-11.2	1.84 H	216	39.7	23.1
6	10620.00	49.9 AV	54.0	-4.1	1.84 H	216	26.8	23.1
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	*5310.00	107.4 PK			1.06 V	177	66.2	41.2
2	*5310.00	97.3 AV			1.06 V	177	56.1	41.2
3	5350.00	63.7 PK	74.0	-10.3	1.06 V	177	51.3	12.4
4	5350.00	50.4 AV	54.0	-3.6	1.06 V	177	38.0	12.4
5	10620.00	62.5 PK	74.0	-11.5	2.47 V	180	39.4	23.1
6	10620.00	49.6 AV	54.0	-4.4	2.47 V	180	26.5	23.1

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
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

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	61.8 PK	74.0	-12.2	1.36 H	76	49.0	12.8
2	5460.00	49.5 AV	54.0	-4.5	1.36 H	76	36.7	12.8
3	#5470.00	62.4 PK	68.2	-5.8	1.36 H	76	49.5	12.9
4	*5510.00	114.2 PK			1.36 H	76	72.3	41.9
5	*5510.00	104.1 AV			1.36 H	76	62.2	41.9
6	11020.00	61.9 PK	74.0	-12.1	1.99 H	136	38.6	23.3
7	11020.00	48.7 AV	54.0	-5.3	1.99 H	136	25.4	23.3
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	61.5 PK	74.0	-12.5	2.49 V	117	48.7	12.8
2	5460.00	49.2 AV	54.0	-4.8	2.49 V	117	36.4	12.8
3	#5470.00	62.1 PK	68.2	-6.1	2.49 V	117	49.2	12.9
4	*5510.00	110.0 PK			2.49 V	117	68.1	41.9
5	*5510.00	99.9 AV			2.49 V	117	58.0	41.9
6	11020.00	61.7 PK	74.0	-12.3	2.11 V	197	38.4	23.3
7	11020.00	48.6 AV	54.0	-5.4	2.11 V	197	25.3	23.3

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": 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	113.9 PK			1.32 H	76	72.1	41.8
2	*5550.00	103.9 AV			1.32 H	76	62.1	41.8
3	11100.00	63.1 PK	74.0	-10.9	2.17 H	149	39.7	23.4
4	11100.00	49.1 AV	54.0	-4.9	2.17 H	149	25.7	23.4
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	109.7 PK			2.49 V	128	67.9	41.8
2	*5550.00	99.5 AV			2.49 V	128	57.7	41.8
3	11100.00	62.9 PK	74.0	-11.1	1.96 V	247	39.5	23.4
4	11100.00	48.7 AV	54.0	-5.3	1.96 V	247	25.3	23.4

Remarks:

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

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	113.8 PK			1.17 H	79	71.9	41.9
2	*5670.00	103.7 AV			1.17 H	79	61.8	41.9
3	#5725.00	62.4 PK	68.2	-5.8	1.17 H	79	49.5	12.9
4	11340.00	63.7 PK	74.0	-10.3	2.15 H	192	39.9	23.8
5	11340.00	49.5 AV	54.0	-4.5	2.15 H	192	25.7	23.8
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	*5670.00	109.4 PK			2.46 V	118	67.5	41.9
2	*5670.00	99.2 AV			2.46 V	118	57.3	41.9
3	#5725.00	62.1 PK	68.2	-6.1	2.46 V	118	49.2	12.9
4	11340.00	63.5 PK	74.0	-10.5	2.36 V	197	39.7	23.8
5	11340.00	49.1 AV	54.0	-4.9	2.36 V	197	25.3	23.8

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
4. Margin value = Emission Level – Limit value
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	63.9 PK	74.0	-10.1	1.33 H	58	51.3	12.6
2	5150.00	50.8 AV	54.0	-3.2	1.33 H	58	38.2	12.6
3	*5290.00	110.0 PK			1.33 H	58	68.9	41.1
4	*5290.00	100.2 AV			1.33 H	58	59.1	41.1
5	5350.00	68.5 PK	74.0	-5.5	1.33 H	58	56.1	12.4
6	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**1.33 H**	**58**	**41.5**	**12.4**
7	#10580.00	62.8 PK	68.2	-5.4	1.93 H	281	39.7	23.1
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	5150.00	60.9 PK	74.0	-13.1	1.00 V	174	48.3	12.6
2	5150.00	48.2 AV	54.0	-5.8	1.00 V	174	35.6	12.6
3	*5290.00	103.9 PK			1.00 V	174	62.8	41.1
4	*5290.00	94.8 AV			1.00 V	174	53.7	41.1
5	5350.00	62.7 PK	74.0	-11.3	1.00 V	174	50.3	12.4
6	5350.00	49.5 AV	54.0	-4.5	1.00 V	174	37.1	12.4
7	#10580.00	62.3 PK	68.2	-5.9	2.31 V	114	39.2	23.1

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
4. Margin value = Emission Level – Limit value
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	62.3 PK	74.0	-11.7	1.20 H	76	49.5	12.8
2	5460.00	51.3 AV	54.0	-2.7	1.20 H	76	38.5	12.8
3	#5470.00	65.4 PK	68.2	-2.8	1.20 H	76	52.5	12.9
4	*5530.00	109.9 PK			1.20 H	76	68.0	41.9
5	*5530.00	100.7 AV			1.20 H	76	58.8	41.9
6	#5725.00	61.6 PK	68.2	-6.6	1.20 H	76	48.7	12.9
7	11060.00	63.0 PK	74.0	-11.0	2.64 H	175	39.6	23.4
8	11060.00	49.2 AV	54.0	-4.8	2.64 H	175	25.8	23.4
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	62.2 PK	74.0	-11.8	2.40 V	115	49.4	12.8
2	5460.00	51.1 AV	54.0	-2.9	2.40 V	115	38.3	12.8
3	#5470.00	62.8 PK	68.2	-5.4	2.40 V	115	49.9	12.9
4	*5530.00	105.7 PK			2.40 V	115	63.8	41.9
5	*5530.00	95.5 AV			2.40 V	115	53.6	41.9
6	#5725.00	61.4 PK	68.2	-6.8	2.40 V	115	48.5	12.9
7	11060.00	62.8 PK	74.0	-11.2	1.89 V	263	39.4	23.4
8	11060.00	49.0 AV	54.0	-5.0	1.89 V	263	25.6	23.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
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	62.1 PK	74.0	-11.9	1.19 H	79	49.3	12.8
2	5460.00	49.3 AV	54.0	-4.7	1.19 H	79	36.5	12.8
3	#5470.00	62.3 PK	68.2	-5.9	1.19 H	79	49.4	12.9
4	*5610.00	110.0 PK			1.19 H	79	68.2	41.8
5	*5610.00	100.0 AV			1.19 H	79	58.2	41.8
6	#5725.00	63.2 PK	68.2	-5.0	1.19 H	79	50.3	12.9
7	11220.00	62.7 PK	74.0	-11.3	1.95 H	217	39.5	23.2
8	11220.00	48.6 AV	54.0	-5.4	1.95 H	217	25.4	23.2
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	5460.00	61.8 PK	74.0	-12.2	2.43 V	109	49.0	12.8
2	5460.00	49.0 AV	54.0	-5.0	2.43 V	109	36.2	12.8
3	#5470.00	61.9 PK	68.2	-6.3	2.43 V	109	49.0	12.9
4	*5610.00	105.7 PK			2.43 V	109	63.9	41.8
5	*5610.00	96.3 AV			2.43 V	109	54.5	41.8
6	#5725.00	62.5 PK	68.2	-5.7	2.43 V	109	49.6	12.9
7	11220.00	62.4 PK	74.0	-11.6	1.99 V	201	39.2	23.2
8	11220.00	48.3 AV	54.0	-5.7	1.99 V	201	25.1	23.2

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. The other emission levels were very low against the limit
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency
6. " # ": The radiated frequency is out of the restricted band

Below 1GHz Worst-Case Data:

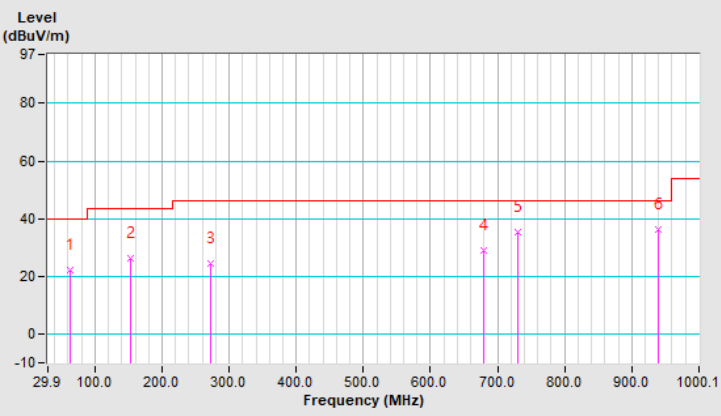
802.11a

CHANNEL	TX Channel 60	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	62.89	22.2 QP	40.0	-17.8	1.00 H	178	32.2	-10.0
2	154.09	26.4 QP	43.5	-17.1	1.00 H	286	35.0	-8.6
3	272.45	24.4 QP	46.0	-21.6	1.00 H	117	33.0	-8.6
4	679.93	28.8 QP	46.0	-17.2	1.00 H	216	29.8	-1.0
5	730.38	35.5 QP	46.0	-10.5	1.00 H	294	35.1	0.4
6	939.95	36.1 QP	46.0	-9.9	1.00 H	30	32.1	4.0

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. 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

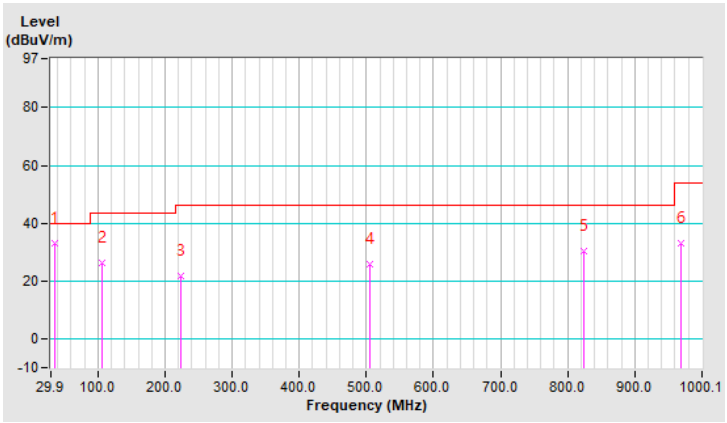


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	A

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	35.72	33.1 QP	40.0	-6.9	1.00 V	251	43.4	-10.3
2	105.58	26.4 QP	43.5	-17.1	1.00 V	27	38.9	-12.5
3	223.94	21.7 QP	46.0	-24.3	1.00 V	10	32.7	-11.0
4	505.30	25.8 QP	46.0	-20.2	1.00 V	324	30.6	-4.8
5	823.52	30.3 QP	46.0	-15.7	1.00 V	174	28.2	2.1
6	969.05	33.0 QP	54.0	-21.0	1.00 V	295	28.5	4.5

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. 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



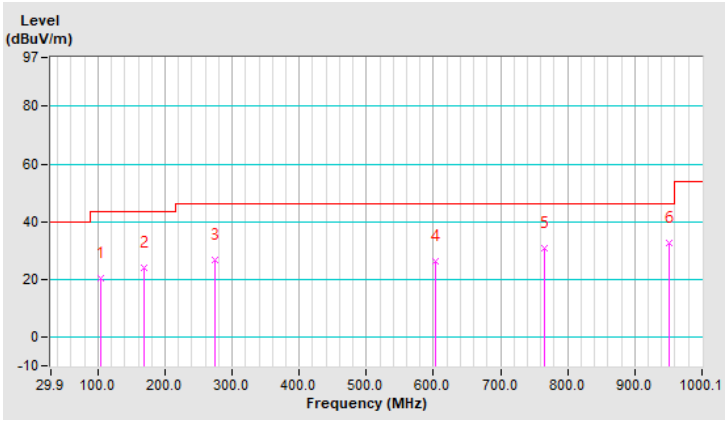
802.11ac (VHT80)

CHANNEL	TX Channel 122	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	103.64	20.4 QP	43.5	-23.1	1.00 H	281	33.1	-12.7
2	169.61	23.9 QP	43.5	-19.6	1.00 H	277	33.1	-9.2
3	274.39	26.8 QP	46.0	-19.2	1.00 H	131	35.3	-8.5
4	602.32	26.3 QP	46.0	-19.7	1.00 H	335	28.6	-2.3
5	765.31	30.7 QP	46.0	-15.3	1.00 H	158	29.4	1.3
6	951.59	32.7 QP	46.0	-13.3	1.00 H	193	28.4	4.3

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. 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

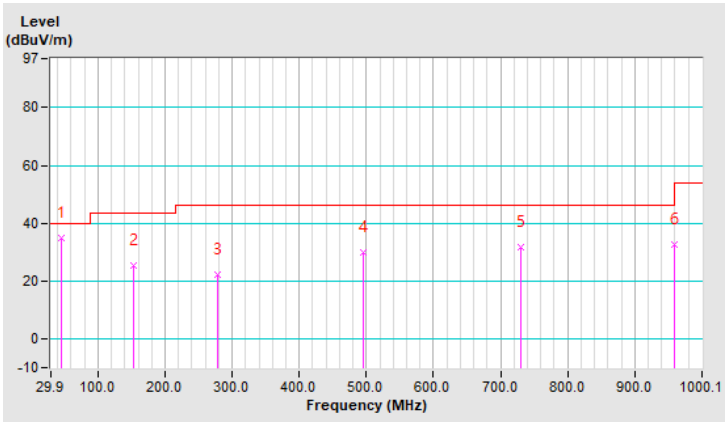


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	A

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	45.42	34.8 QP	40.0	-5.2	1.00 V	67	43.8	-9.0
2	154.09	25.4 QP	43.5	-18.1	1.00 V	310	34.0	-8.6
3	278.27	22.1 QP	46.0	-23.9	1.00 V	123	30.5	-8.4
4	495.60	30.0 QP	46.0	-16.0	1.00 V	99	35.1	-5.1
5	730.38	31.5 QP	46.0	-14.5	1.50 V	9	31.1	0.4
6	959.35	32.7 QP	46.0	-13.3	1.00 V	188	28.3	4.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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



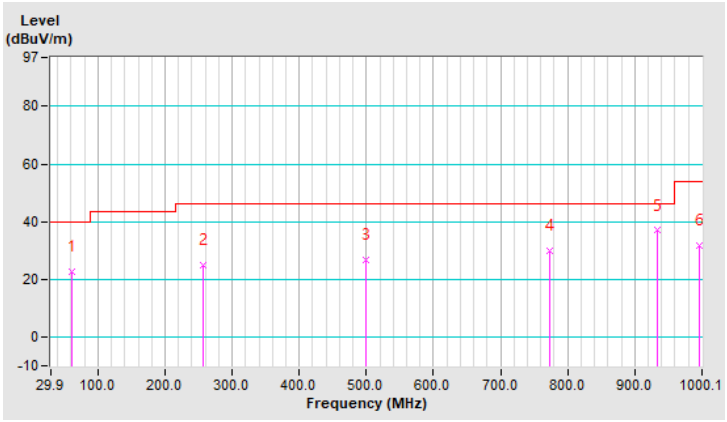
802.11a

CHANNEL	TX Channel 60	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	60.95	22.6 QP	40.0	-17.4	1.00 H	76	32.7	-10.1
2	256.93	24.9 QP	46.0	-21.1	1.00 H	259	34.2	-9.3
3	499.48	26.7 QP	46.0	-19.3	1.00 H	163	31.7	-5.0
4	773.07	29.9 QP	46.0	-16.1	1.00 H	170	28.5	1.4
5	934.13	36.9 QP	46.0	-9.1	1.00 H	16	33.0	3.9
6	996.22	31.6 QP	54.0	-22.4	1.00 H	124	27.2	4.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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

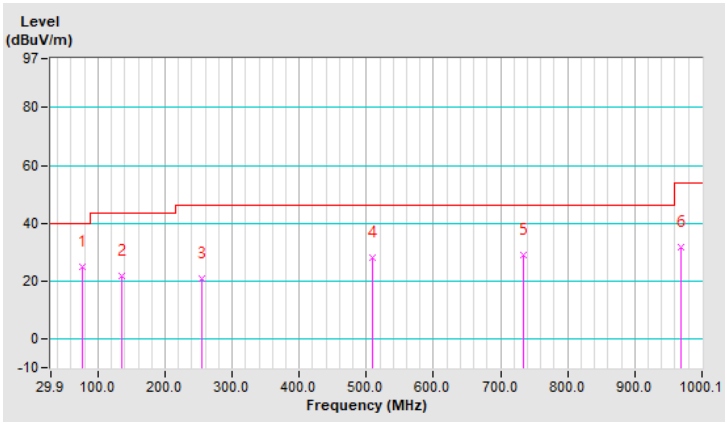


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	B

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	76.47	24.8 QP	40.0	-15.2	2.00 V	9	37.3	-12.5
2	134.68	21.6 QP	43.5	-21.9	1.00 V	268	31.2	-9.6
3	254.99	20.9 QP	46.0	-25.1	1.00 V	321	30.2	-9.3
4	509.18	28.0 QP	46.0	-18.0	1.00 V	11	32.8	-4.8
5	734.27	29.1 QP	46.0	-16.9	1.50 V	63	28.6	0.5
6	969.05	31.8 QP	54.0	-22.2	1.00 V	12	27.3	4.5

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. 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



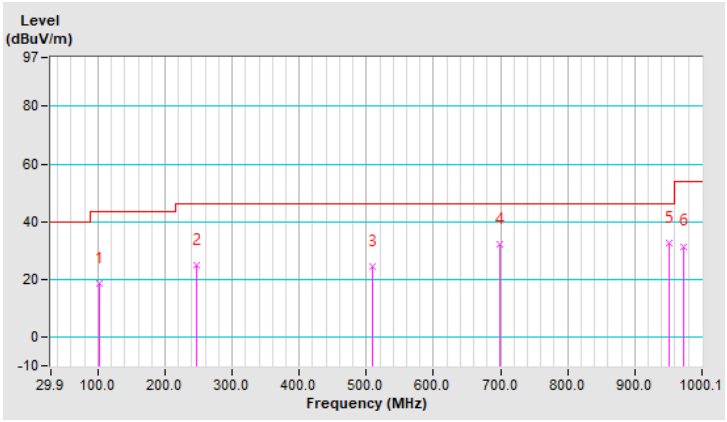
802.11ac (VHT80)

CHANNEL	TX Channel 122	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	101.69	18.4 QP	43.5	-25.1	2.00 H	117	31.4	-13.0
2	247.22	25.0 QP	46.0	-21.0	1.00 H	258	34.5	-9.5
3	509.18	24.6 QP	46.0	-21.4	1.00 H	248	29.4	-4.8
4	699.34	32.1 QP	46.0	-13.9	1.00 H	96	32.7	-0.6
5	951.59	32.4 QP	46.0	-13.6	1.50 H	112	28.1	4.3
6	972.93	31.5 QP	54.0	-22.5	1.00 H	146	27.1	4.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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

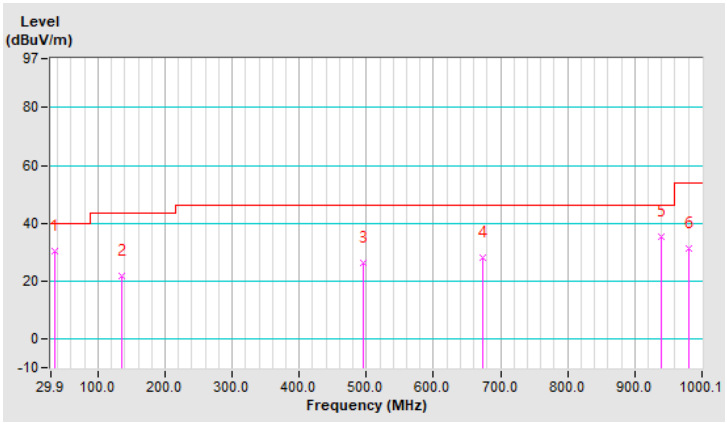


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	B

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	35.72	30.5 QP	40.0	-9.5	2.00 V	338	40.8	-10.3
2	134.68	21.6 QP	43.5	-21.9	1.00 V	274	31.2	-9.6
3	495.60	26.3 QP	46.0	-19.7	1.00 V	245	31.4	-5.1
4	674.11	28.0 QP	46.0	-18.0	1.50 V	351	29.1	-1.1
5	939.95	35.5 QP	46.0	-10.5	1.00 V	242	31.5	4.0
6	980.70	31.4 QP	54.0	-22.6	1.00 V	25	27.0	4.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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



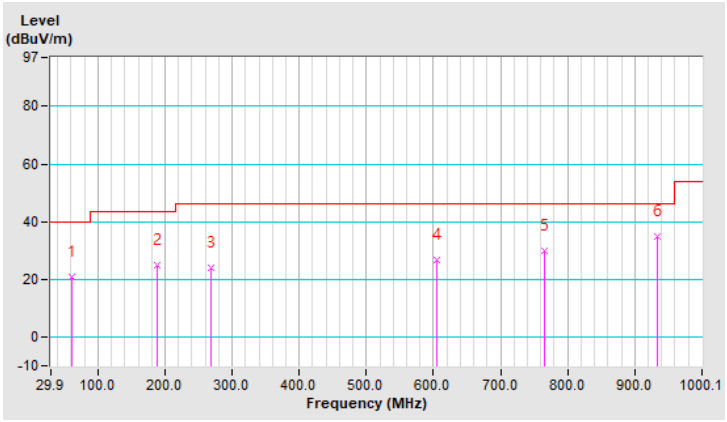
802.11a

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	C

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	60.95	20.9 QP	40.0	-19.1	1.00 H	322	31.0	-10.1
2	189.01	24.8 QP	43.5	-18.7	1.00 H	289	35.9	-11.1
3	268.57	24.2 QP	46.0	-21.8	1.00 H	94	33.1	-8.9
4	604.26	26.6 QP	46.0	-19.4	1.00 H	197	28.9	-2.3
5	765.31	29.8 QP	46.0	-16.2	1.00 H	180	28.5	1.3
6	934.13	35.0 QP	46.0	-11.0	1.00 H	157	31.1	3.9

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. 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

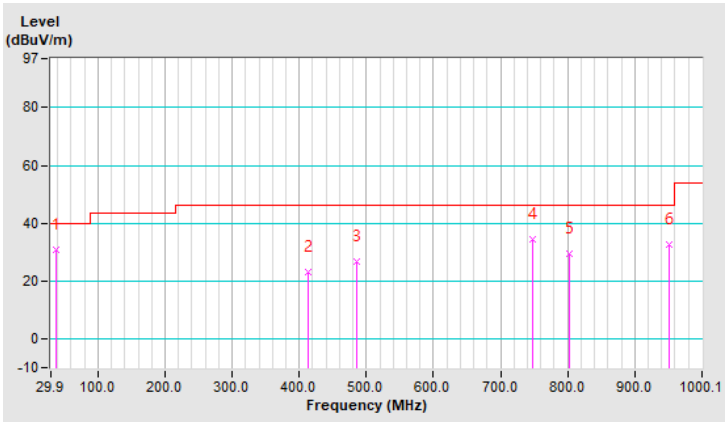


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	C

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	37.66	30.9 QP	40.0	-9.1	1.00 V	335	40.6	-9.7
2	414.10	22.9 QP	46.0	-23.1	1.00 V	343	29.3	-6.4
3	485.89	26.9 QP	46.0	-19.1	1.00 V	239	32.2	-5.3
4	747.85	34.5 QP	46.0	-11.5	1.00 V	10	33.6	0.9
5	802.18	29.3 QP	46.0	-16.7	1.00 V	153	27.5	1.8
6	951.59	32.6 QP	46.0	-13.4	1.00 V	79	28.3	4.3

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. 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



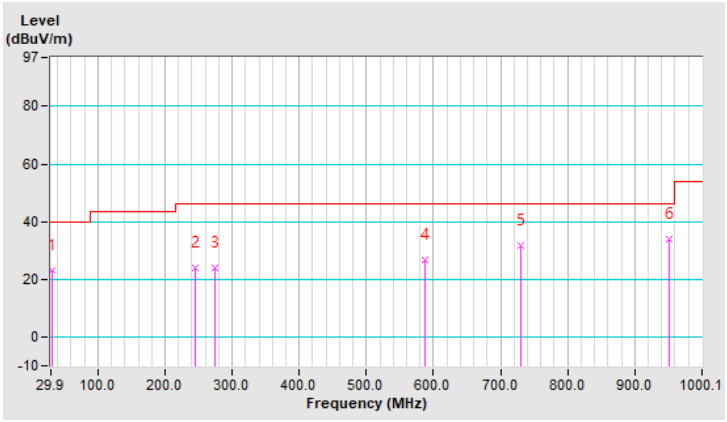
802.11ac (VHT80)

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	C

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	31.84	23.2 QP	40.0	-16.8	1.00 H	9	34.2	-11.0
2	245.28	23.9 QP	46.0	-22.1	1.00 H	272	33.4	-9.5
3	274.39	24.0 QP	46.0	-22.0	1.00 H	103	32.5	-8.5
4	586.79	26.6 QP	46.0	-19.4	1.00 H	9	29.6	-3.0
5	730.38	31.8 QP	46.0	-14.2	1.00 H	221	31.4	0.4
6	951.59	34.0 QP	46.0	-12.0	1.00 H	9	29.7	4.3

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. 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

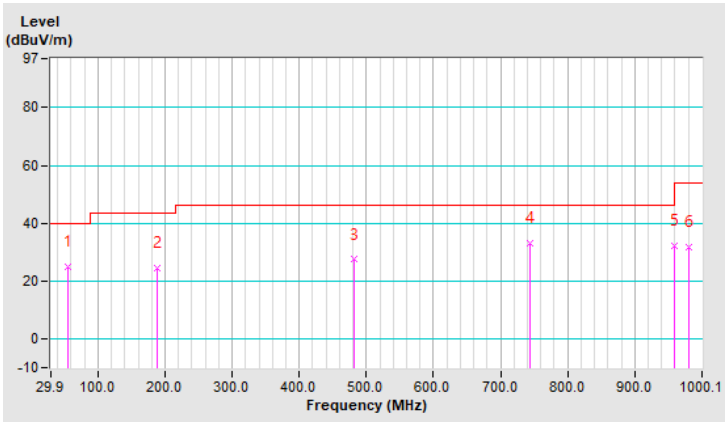


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz	TEST MODE	C

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	55.13	24.8 QP	40.0	-15.2	1.00 V	253	34.0	-9.2
2	189.01	24.3 QP	43.5	-19.2	1.00 V	241	35.4	-11.1
3	482.01	27.4 QP	46.0	-18.6	1.00 V	263	32.8	-5.4
4	743.97	33.2 QP	46.0	-12.8	1.00 V	138	32.4	0.8
5	959.35	32.3 QP	46.0	-13.7	1.00 V	353	27.9	4.4
6	980.70	31.5 QP	54.0	-22.5	1.00 V	79	27.1	4.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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

Test Date: Sep. 11, 2019

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.

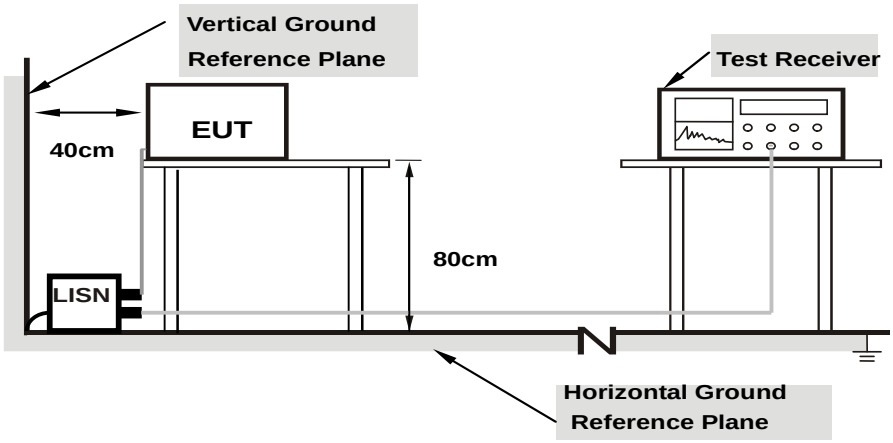
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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:

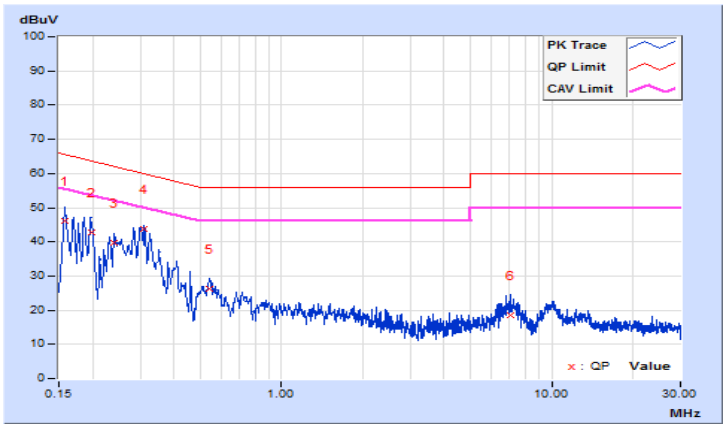
802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 60	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	0.15782	9.71	36.45	18.07	46.16	27.78	65.58	55.58	-19.42	-27.80
2	0.19717	9.78	32.90	19.08	42.68	28.86	63.73	53.73	-21.05	-24.87
3	0.23993	9.80	29.85	18.68	39.65	28.48	62.10	52.10	-22.45	-23.62
4	0.31031	9.85	34.05	26.48	43.90	36.33	59.96	49.96	-16.06	-13.63
5	0.54089	9.93	16.23	10.70	26.16	20.63	56.00	46.00	-29.84	-25.37
6	7.03942	10.26	8.15	0.90	18.41	11.16	60.00	50.00	-41.59	-38.84

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.

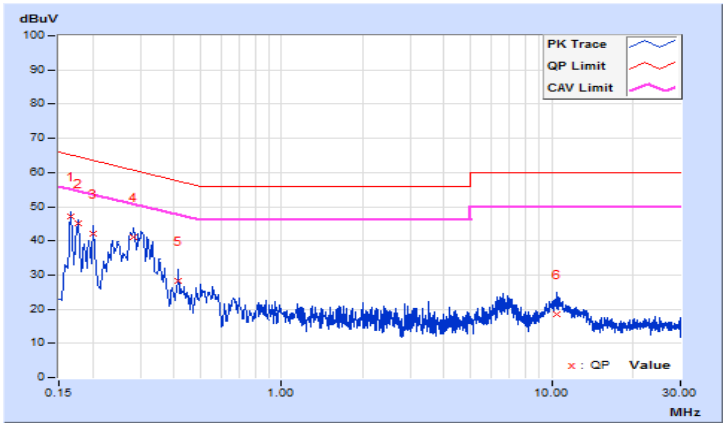


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 60	Test Mode	A

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	0.16564	9.72	37.53	20.85	47.25	30.57	65.18	55.18	-17.93	-24.61
2	0.17737	9.75	35.24	20.11	44.99	29.86	64.61	54.61	-19.62	-24.75
3	0.20084	9.80	32.40	18.37	42.20	28.17	63.58	53.58	-21.38	-25.41
4	0.28294	9.82	31.36	23.32	41.18	33.14	60.73	50.73	-19.55	-17.59
5	0.41588	9.86	18.26	9.69	28.12	19.55	57.53	47.53	-29.41	-27.98
6	10.44112	10.26	8.24	3.56	18.50	13.82	60.00	50.00	-41.50	-36.18

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.



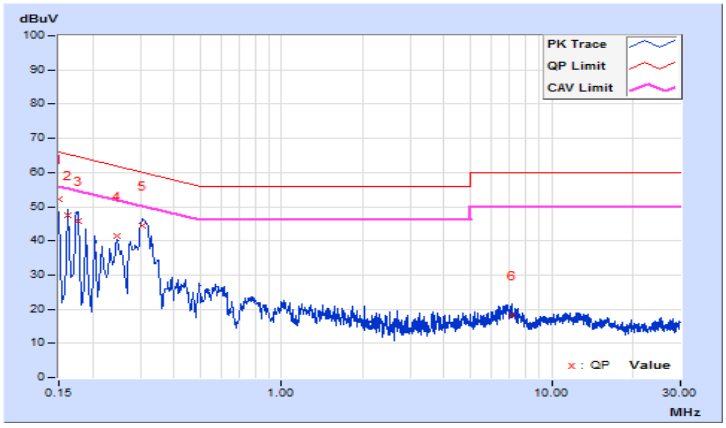
802.11ac (VHT80)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 122	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	0.15000	9.70	42.45	25.85	52.15	35.55	66.00	56.00	-13.85	-20.45
2	0.16173	9.72	37.76	19.60	47.48	29.32	65.37	55.37	-17.89	-26.05
3	0.17651	9.74	36.16	20.71	45.90	30.45	64.65	54.65	-18.75	-24.20
4	0.24731	9.81	31.48	20.70	41.29	30.51	61.85	51.85	-20.56	-21.34
5	0.30615	9.84	34.55	27.69	44.39	37.53	60.07	50.07	-15.68	-12.54
6	7.12935	10.26	7.87	0.85	18.13	11.11	60.00	50.00	-41.87	-38.89

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.

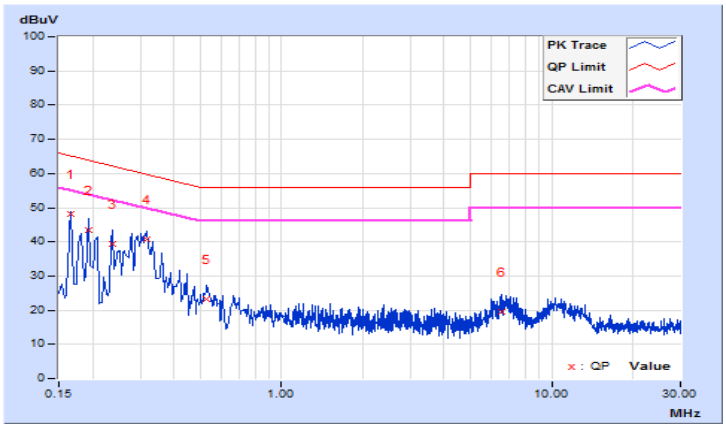


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 122	Test Mode	A

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	0.16564	9.72	38.31	21.41	48.03	31.13	65.18	55.18	-17.15	-24.05
2	0.19301	9.78	33.82	19.19	43.60	28.97	63.91	53.91	-20.31	-24.94
3	0.23602	9.81	29.45	16.49	39.26	26.30	62.24	52.24	-22.98	-25.94
4	0.31813	9.84	30.83	22.52	40.67	32.36	59.76	49.76	-19.09	-17.40
5	0.52960	9.88	13.42	6.66	23.30	16.54	56.00	46.00	-32.70	-29.46
6	6.53503	10.18	9.20	1.43	19.38	11.61	60.00	50.00	-40.62	-38.39

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.



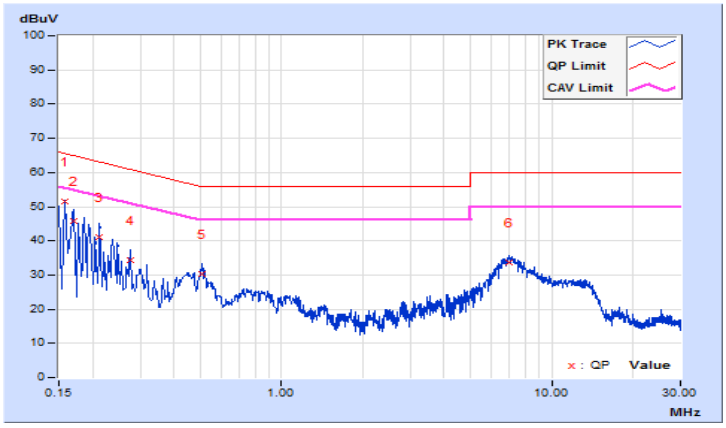
802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 60	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	0.15782	9.71	41.95	26.50	51.66	36.21	65.58	55.58	-13.92	-19.37
2	0.16955	9.73	36.00	17.23	45.73	26.96	64.98	54.98	-19.25	-28.02
3	0.21256	9.79	31.38	13.80	41.17	23.59	63.10	53.10	-21.93	-29.51
4	0.27512	9.83	24.43	12.32	34.26	22.15	60.96	50.96	-26.70	-28.81
5	0.50908	9.92	20.53	10.53	30.45	20.45	56.00	46.00	-25.55	-25.55
6	6.94948	10.25	23.50	17.51	33.75	27.76	60.00	50.00	-26.25	-22.24

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.

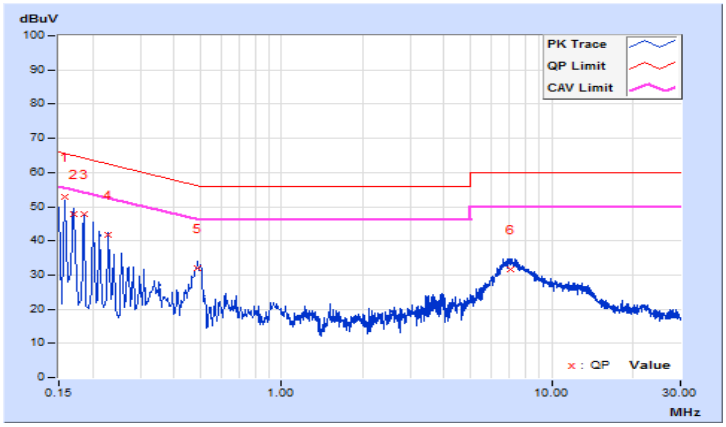


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 60	Test Mode	B

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	0.15782	9.70	43.02	27.61	52.72	37.31	65.58	55.58	-12.86	-18.27
2	0.16955	9.73	38.04	19.22	47.77	28.95	64.98	54.98	-17.21	-26.03
3	0.18519	9.76	38.03	22.11	47.79	31.87	64.25	54.25	-16.46	-22.38
4	0.22820	9.81	31.90	16.85	41.71	26.66	62.51	52.51	-20.80	-25.85
5	0.49017	9.88	22.22	12.87	32.10	22.75	56.16	46.16	-24.06	-23.41
6	7.08243	10.19	21.44	15.59	31.63	25.78	60.00	50.00	-28.37	-24.22

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.



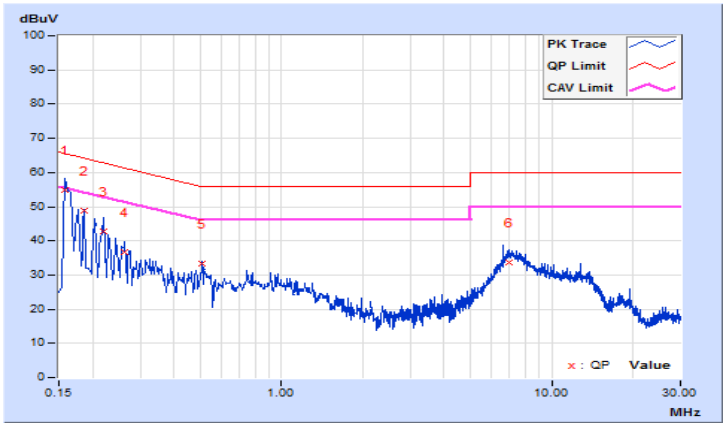
802.11ac (VHT80)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 122	Test Mode	B

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15802**	**9.71**	**45.18**	**29.82**	**54.89**	**39.53**	**65.57**	**55.57**	**-10.68**	**-16.04**
2	0.18519	9.76	39.00	23.80	48.76	33.56	64.25	54.25	-15.49	-20.69
3	0.22024	9.79	32.83	17.41	42.62	27.20	62.81	52.81	-20.19	-25.61
4	0.26339	9.82	26.78	13.84	36.60	23.66	61.32	51.32	-24.72	-27.66
5	0.50972	9.92	23.49	16.58	33.41	26.50	56.00	46.00	-22.59	-19.50
6	6.92212	10.25	23.45	18.09	33.70	28.34	60.00	50.00	-26.30	-21.66

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.

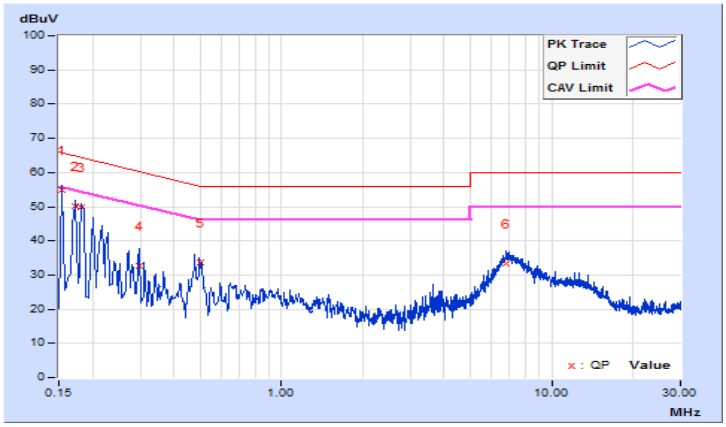


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 122	Test Mode	B

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	0.15391	9.69	45.29	28.02	54.98	37.71	65.79	55.79	-10.81	-18.08
2	0.17328	9.74	40.29	21.28	50.03	31.02	64.80	54.80	-14.77	-23.78
3	0.18128	9.76	40.09	25.17	49.85	34.93	64.43	54.43	-14.58	-19.50
4	0.29858	9.83	22.79	10.27	32.62	20.10	60.28	50.28	-27.66	-30.18
5	0.49846	9.88	23.75	16.96	33.63	26.84	56.03	46.03	-22.40	-19.19
6	6.75399	10.19	23.04	17.63	33.23	27.82	60.00	50.00	-26.77	-22.18

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.



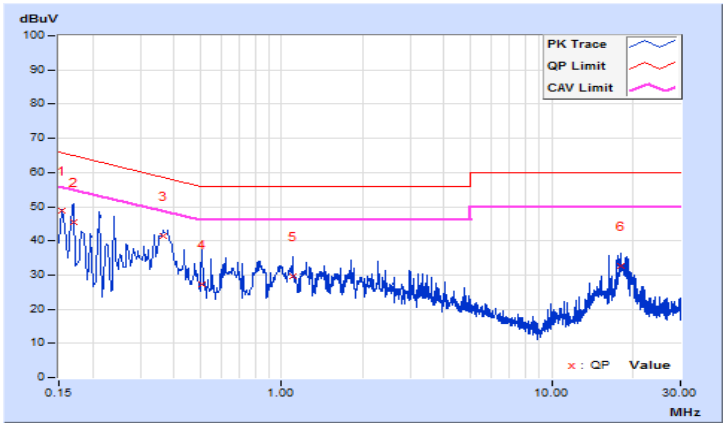
802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 60	Test Mode	C

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	0.15391	9.71	39.19	25.14	48.90	34.85	65.79	55.79	-16.89	-20.94
2	0.16955	9.73	35.61	18.28	45.34	28.01	64.98	54.98	-19.64	-26.97
3	0.36526	9.88	31.37	25.44	41.25	35.32	58.61	48.61	-17.36	-13.29
4	0.50581	9.92	17.49	10.56	27.41	20.48	56.00	46.00	-28.59	-25.52
5	1.09622	10.03	19.52	15.14	29.55	25.17	56.00	46.00	-26.45	-20.83
6	17.94832	10.39	22.29	19.13	32.68	29.52	60.00	50.00	-27.32	-20.48

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.

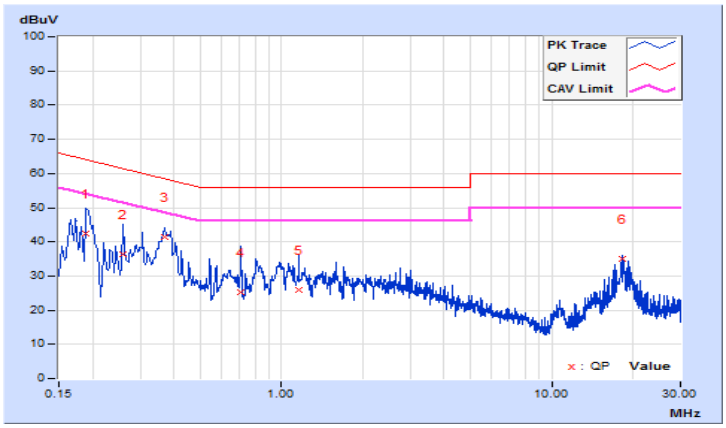


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 60	Test Mode	C

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	0.18953	9.77	32.60	19.42	42.37	29.19	64.06	54.06	-21.69	-24.87
2	0.25948	9.82	26.64	17.41	36.46	27.23	61.45	51.45	-24.99	-24.22
3	0.36896	9.85	31.71	25.90	41.56	35.75	58.52	48.52	-16.96	-12.77
4	0.70913	9.91	15.19	9.53	25.10	19.44	56.00	46.00	-30.90	-26.56
5	1.15878	9.97	15.98	10.09	25.95	20.06	56.00	46.00	-30.05	-25.94
6	18.19465	10.44	24.47	22.94	34.91	33.38	60.00	50.00	-25.09	-16.62

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.



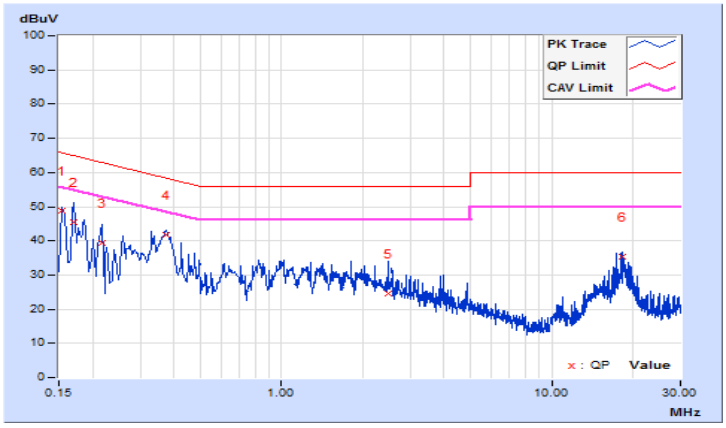
802.11ac (VHT80)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 122	Test Mode	C

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	0.15391	9.71	38.97	25.47	48.68	35.18	65.79	55.79	-17.11	-20.61
2	0.16967	9.73	35.66	18.56	45.39	28.29	64.98	54.98	-19.59	-26.69
3	0.21621	9.79	29.74	15.54	39.53	25.33	62.96	52.96	-23.43	-27.63
4	0.37304	9.88	31.93	26.74	41.81	36.62	58.43	48.43	-16.62	-11.81
5	2.47645	10.11	14.43	8.85	24.54	18.96	56.00	46.00	-31.46	-27.04
6	18.19465	10.39	25.08	23.34	35.47	33.73	60.00	50.00	-24.53	-16.27

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.

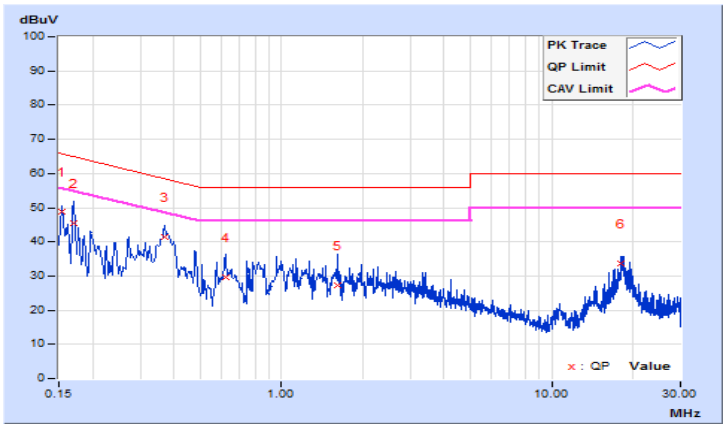


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Channel	TX Channel 122	Test Mode	C

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.69	39.09	25.18	48.78	34.87	65.79	55.79	-17.01	-20.92
2	0.16955	9.73	35.82	18.60	45.55	28.33	64.98	54.98	-19.43	-26.65
3	0.36913	9.85	31.72	25.97	41.57	35.82	58.52	48.52	-16.95	-12.70
4	0.61920	9.90	19.64	15.22	29.54	25.12	56.00	46.00	-26.46	-20.88
5	1.62016	10.01	17.30	12.34	27.31	22.35	56.00	46.00	-28.69	-23.65
6	17.95223	10.44	23.23	20.73	33.67	31.17	60.00	50.00	-26.33	-18.83

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

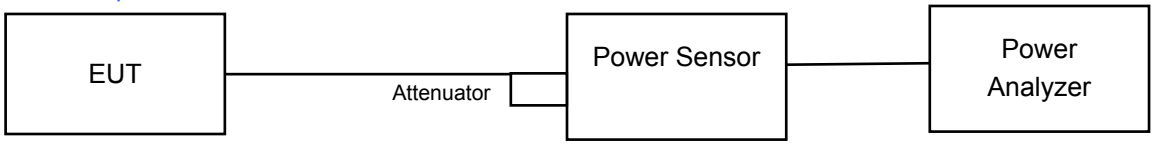
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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 $N_{ANT} \geq 5$.

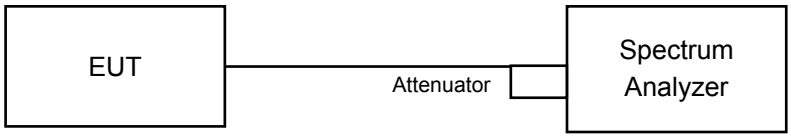
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

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

802.11a, 802.11n (HT20), 802.11n (HT40), 802.11ac (VHT80)

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

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	20.02	20.31	207.861	23.18	23.79	Pass
60	5300	20.16	20.27	**210.167**	23.23	23.85	Pass
64	5320	20.20	20.14	207.989	23.18	23.81	Pass

Note:

For U-NII-2A Band:

Chain 0

1. 11dBm + 10log (19.65) = 23.93 < 24dBm
2. 11dBm + 10log (19.52) = 23.90 < 24dBm
3. 11dBm + 10log (19.69) = 23.94 < 24dBm

Chain 1

1. 11dBm + 10log (19.04) = 23.79 < 24dBm
2. 11dBm + 10log (19.28) = 23.85 < 24dBm
3. 11dBm + 10log (19.10) = 23.81 < 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
100	5500	17.01	16.74	17.20	17.15	201.801	23.05	23.95	Pass
116	5580	17.13	17.17	17.18	17.04	206.583	23.15	23.91	Pass
140	5700	17.28	17.07	17.10	16.77	203.209	23.08	23.90	Pass

Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (19.98) = 24.00 = 24dBm
2. 11dBm + 10log (20.24) = 24.06 > 24dBm
3. 11dBm + 10log (20.10) = 24.03 > 24dBm

Chain 1
1. 11dBm + 10log (20.10) = 24.03 > 24dBm
2. 11dBm + 10log (19.91) = 23.99 < 24dBm
3. 11dBm + 10log (20.06) = 24.02 > 24dBm

Chain 2
1. 11dBm + 10log (20.08) = 24.02 > 24dBm
2. 11dBm + 10log (19.91) = 23.99 < 24dBm
3. 11dBm + 10log (19.51) = 23.90 < 24dBm

Chain 3
1. 11dBm + 10log (19.74) = 23.95 < 24dBm
2. 11dBm + 10log (19.58) = 23.91 < 24dBm
3. 11dBm + 10log (19.74) = 23.95 < 24dBm

802.11n (HT20)

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	19.98	20.22	204.737	23.11	24.00	Pass
60	5300	20.01	20.26	206.401	23.15	24.00	Pass
64	5320	20.18	20.03	204.925	23.12	24.00	Pass

Note:

For U-NII-2A Band:

Chain 0

1. 11dBm + 10log (20.43) = 24.10 > 24dBm
2. 11dBm + 10log (20.65) = 24.14 > 24dBm
3. 11dBm + 10log (20.54) = 24.12 > 24dBm

Chain 1

1. 11dBm + 10log (20.48) = 24.11 > 24dBm
2. 11dBm + 10log (20.49) = 24.11 > 24dBm
3. 11dBm + 10log (20.52) = 24.12 > 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
100	5500	17.06	17.09	17.02	17.03	202.800	23.07	24.00	Pass
116	5580	17.02	17.04	17.02	17.03	201.748	23.05	24.00	Pass
140	5700	17.09	17.01	17.06	16.95	201.763	23.05	24.00	Pass

Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (20.75) = 24.17 > 24dBm
2. 11dBm + 10log (20.87) = 24.19 > 24dBm
3. 11dBm + 10log (20.65) = 24.14 > 24dBm
Chain 1
1. 11dBm + 10log (20.99) = 24.22 > 24dBm
2. 11dBm + 10log (20.82) = 24.18 > 24dBm
3. 11dBm + 10log (21.08) = 24.23 > 24dBm
Chain 2
1. 11dBm + 10log (20.94) = 24.20 > 24dBm
2. 11dBm + 10log (20.73) = 24.16 > 24dBm
3. 11dBm + 10log (20.75) = 24.17 > 24dBm
Chain 3
1. 11dBm + 10log (20.78) = 24.17 > 24dBm
2. 11dBm + 10log (20.61) = 24.14 > 24dBm
3. 11dBm + 10log (20.94) = 24.20 > 24dBm

802.11n (HT40)

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	19.95	20.20	203.568	23.09	24.00	Pass
62	5310	19.92	20.16	201.928	23.05	24.00	Pass

Note:
For U-NII-2A Band:
Chain 0
1. 11dBm + 10log (40.90) = 27.11 > 24dBm
2. 11dBm + 10log (41.17) = 27.14 > 24dBm
Chain 1
1. 11dBm + 10log (40.53) = 27.07 > 24dBm
2. 11dBm + 10log (40.68) = 27.09 > 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
102	5510	17.03	17.10	17.03	17.06	203.034	23.08	24.00	Pass
110	5550	17.12	17.03	17.05	17.01	202.922	23.07	24.00	Pass
134	5670	17.11	16.95	17.02	17.00	201.418	23.04	24.00	Pass

Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (41.11) = 27.13 > 24dBm
2. 11dBm + 10log (40.92) = 27.11 > 24dBm
3. 11dBm + 10log (41.00) = 27.12 > 24dBm
Chain 1
1. 11dBm + 10log (40.93) = 27.12 > 24dBm
2. 11dBm + 10log (40.74) = 27.10 > 24dBm
3. 11dBm + 10log (40.92) = 27.11 > 24dBm
Chain 2
1. 11dBm + 10log (40.70) = 27.09 > 24dBm
2. 11dBm + 10log (40.70) = 27.09 > 24dBm
3. 11dBm + 10log (40.63) = 27.08 > 24dBm
Chain 3
1. 11dBm + 10log (40.40) = 27.06 > 24dBm
2. 11dBm + 10log (40.85) = 27.11 > 24dBm
3. 11dBm + 10log (40.72) = 27.09 > 24dBm

802.11ac (VHT80)

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	19.83	19.89	193.660	22.87	24.00	Pass

Note:
For U-NII-2A Band:
Chain 0
1. 11dBm + 10log (83.76) = 30.23 > 24dBm
Chain 1
1. 11dBm + 10log (83.58) = 30.22 > 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
106	5530	17.15	17.25	17.50	17.03	211.668	23.26	24.00	Pass
122	5610	17.36	17.51	17.26	17.12	**215.548**	23.34	24.00	Pass

Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (83.52) = 30.21 > 24dBm
2. 11dBm + 10log (84.74) = 30.28 > 24dBm
Chain 1
1. 11dBm + 10log (83.48) = 30.21 > 24dBm
2. 11dBm + 10log (83.84) = 30.23 > 24dBm
Chain 2
1. 11dBm + 10log (83.74) = 30.22 > 24dBm
2. 11dBm + 10log (83.14) = 30.19 > 24dBm
Chain 3
1. 11dBm + 10log (82.60) = 30.16 > 24dBm
2. 11dBm + 10log (83.67) = 30.22 > 24dBm

Beamforming Mode

802.11n (HT20)

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	19.98	20.22	204.737	23.11	24.00	Pass
60	5300	20.01	20.26	**206.401**	23.15	24.00	Pass
64	5320	20.18	20.03	204.925	23.12	24.00	Pass

*5260~5320MHz Directional Gain = 4.15 dBi < 6dBi, so the power limit no need to reduce.

Note:
For U-NII-2A Band:
Chain 0
1. 11dBm + 10log (20.43) = 24.10 > 24dBm
2. 11dBm + 10log (20.65) = 24.14 > 24dBm
3. 11dBm + 10log (20.54) = 24.12 > 24dBm

Chain 1
1. 11dBm + 10log (20.48) = 24.11 > 24dBm
2. 11dBm + 10log (20.49) = 24.11 > 24dBm
3. 11dBm + 10log (20.52) = 24.12 > 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
100	5500	16.01	16.10	16.08	16.09	161.835	22.09	22.96	Pass
116	5580	16.09	16.17	16.20	15.96	**163.177**	22.13	22.96	Pass
140	5700	16.14	15.99	16.03	16.16	162.226	22.10	22.96	Pass

*5500~5700MHz Directional Gain = 7.04 dBi > 6dBi, so the power limit shall be reduced to 24-(7.04-6) = 22.96dBm.

Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (20.75) = 24.17 > 24dBm
2. 11dBm + 10log (20.87) = 24.19 > 24dBm
3. 11dBm + 10log (20.65) = 24.14 > 24dBm

Chain 1
1. 11dBm + 10log (20.99) = 24.22 > 24dBm
2. 11dBm + 10log (20.82) = 24.18 > 24dBm
3. 11dBm + 10log (21.08) = 24.23 > 24dBm

Chain 2
1. 11dBm + 10log (20.94) = 24.20 > 24dBm
2. 11dBm + 10log (20.73) = 24.16 > 24dBm
3. 11dBm + 10log (20.75) = 24.17 > 24dBm

Chain 3
1. 11dBm + 10log (20.78) = 24.17 > 24dBm
2. 11dBm + 10log (20.61) = 24.14 > 24dBm
3. 11dBm + 10log (20.94) = 24.20 > 24dBm

802.11n (HT40)

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	19.95	20.20	203.568	23.09	24.00	Pass
62	5310	19.92	20.16	201.928	23.05	24.00	Pass

*5260~5320MHz Directional Gain = 4.15 dBi < 6dBi, so the power limit no need to reduce.

Note:
For U-NII-2A Band:
Chain 0
1. 11dBm + 10log (40.90) = 27.11 > 24dBm
2. 11dBm + 10log (41.17) = 27.14 > 24dBm
Chain 1
1. 11dBm + 10log (40.53) = 27.07 > 24dBm
2. 11dBm + 10log (40.68) = 27.09 > 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
102	5510	16.01	16.17	15.91	15.95	159.651	22.03	22.96	Pass
110	5550	16.01	15.97	16.14	16.19	162.145	22.10	22.96	Pass
134	5670	16.08	16.03	16.20	15.94	161.589	22.08	22.96	Pass

*5500~5700MHz Directional Gain = 7.04 dBi > 6dBi, so the power limit shall be reduced to 24-(7.04-6) = 22.96dBm.
Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (41.11) = 27.13 > 24dBm
2. 11dBm + 10log (40.92) = 27.11 > 24dBm
3. 11dBm + 10log (41.00) = 27.12 > 24dBm
Chain 1
1. 11dBm + 10log (40.93) = 27.12 > 24dBm
2. 11dBm + 10log (40.74) = 27.10 > 24dBm
3. 11dBm + 10log (40.92) = 27.11 > 24dBm
Chain 2
1. 11dBm + 10log (40.70) = 27.09 > 24dBm
2. 11dBm + 10log (40.70) = 27.09 > 24dBm
3. 11dBm + 10log (40.63) = 27.08 > 24dBm
Chain 3
1. 11dBm + 10log (40.40) = 27.06 > 24dBm
2. 11dBm + 10log (40.85) = 27.11 > 24dBm
3. 11dBm + 10log (40.72) = 27.09 > 24dBm

802.11ac (VHT80)

For U-NII-2A Band

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	19.83	19.89	193.660	22.87	24.00	Pass

*5260~5320MHz Directional Gain = 4.15 dBi < 6dBi, so the power limit no need to reduce.

Note:
For U-NII-2A Band:
Chain 0
1. 11dBm + 10log (83.76) = 30.23 > 24dBm
Chain 1
1. 11dBm + 10log (83.58) = 30.22 > 24dBm

For U-NII-2C Band

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
106	5530	16.12	15.98	15.95	16.18	161.404	22.08	22.96	Pass
122	5610	16.15	16.11	15.99	16.13	162.781	22.12	22.96	Pass

*5500~5700MHz Directional Gain = 7.04 dBi > 6dBi, so the power limit shall be reduced to 24-(7.04-6) = 22.96dBm.
Note:
For U-NII-2C Band:
Chain 0
1. 11dBm + 10log (83.52) = 30.21 > 24dBm
2. 11dBm + 10log (84.74) = 30.28 > 24dBm
Chain 1
1. 11dBm + 10log (83.48) = 30.21 > 24dBm
2. 11dBm + 10log (83.84) = 30.23 > 24dBm
Chain 2
1. 11dBm + 10log (83.74) = 30.22 > 24dBm
2. 11dBm + 10log (83.14) = 30.19 > 24dBm
Chain 3
1. 11dBm + 10log (82.60) = 30.16 > 24dBm
2. 11dBm + 10log (83.67) = 30.22 > 24dBm

26dB Bandwidth:

For U-NII-2A Band

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	19.65	19.04
60	5300	19.52	19.28
64	5320	19.69	19.10

802.11n (HT20)

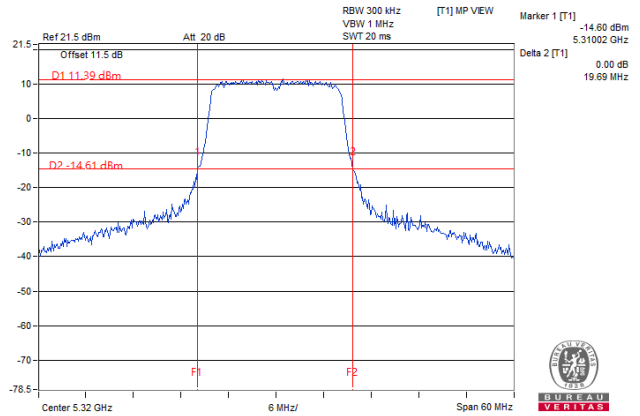
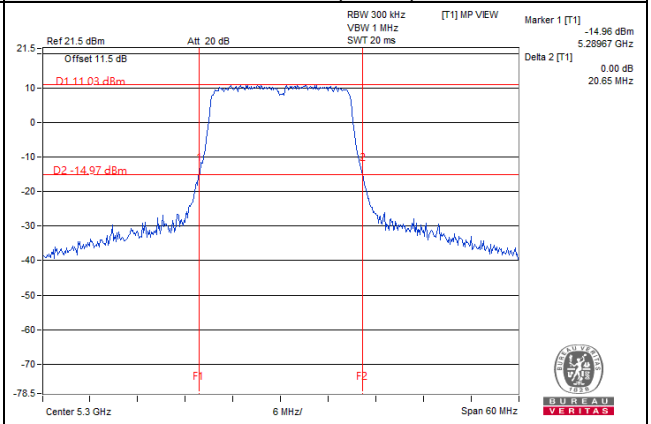
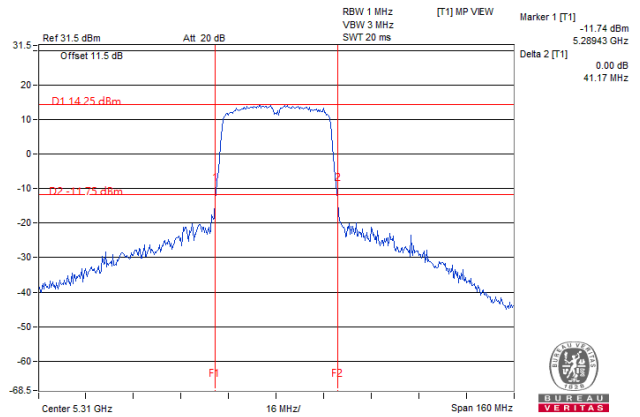
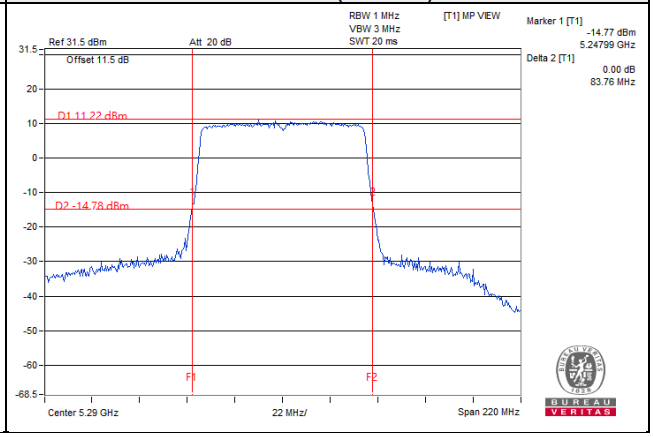
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.43	20.48
60	5300	20.65	20.49
64	5320	20.54	20.52

802.11n (HT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	40.90	40.53
62	5310	41.17	40.68

802.11ac (VHT80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	83.76	83.58

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

For U-NII-2C Band

802.11a

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
100	5500	19.98	20.10	20.08	19.74
116	5580	20.24	19.91	19.91	19.58
140	5700	20.10	20.06	19.51	19.74

802.11n (HT20)

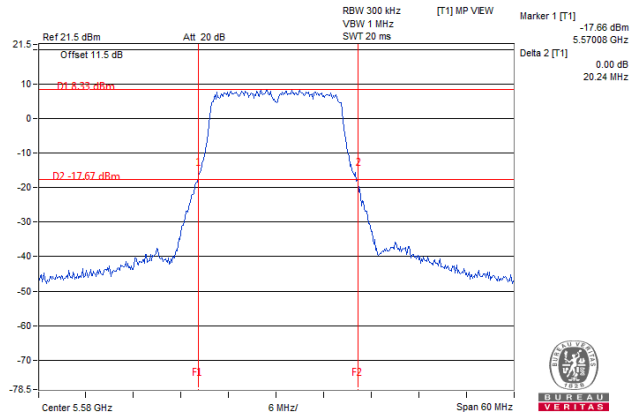
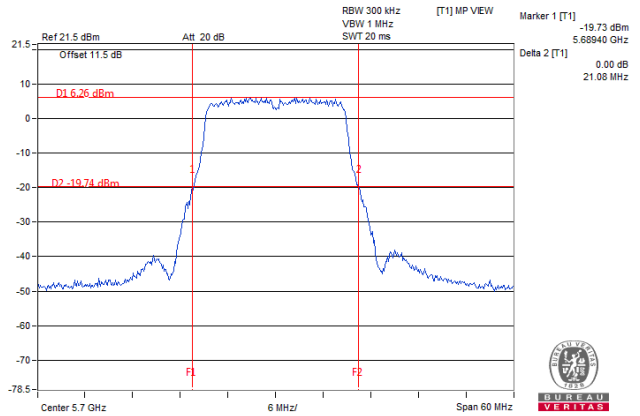
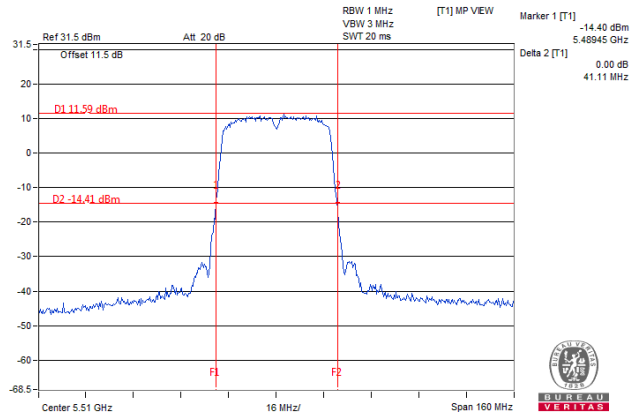
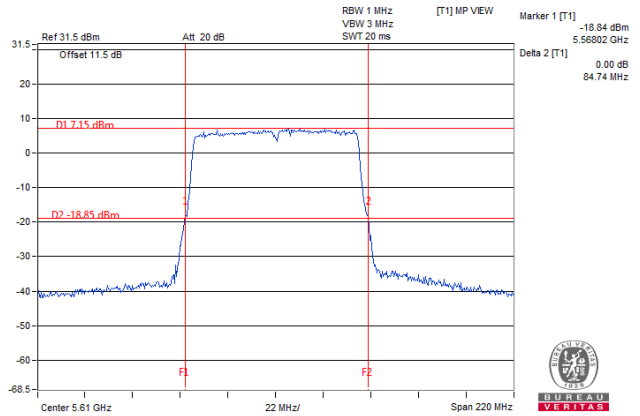
Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
100	5500	20.75	20.99	20.94	20.78
116	5580	20.87	20.82	20.73	20.61
140	5700	20.65	21.08	20.75	20.94

802.11n (HT40)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
102	5510	41.11	40.93	40.70	40.40
110	5550	40.92	40.74	40.70	40.85
134	5670	41.00	40.92	40.63	40.72

802.11ac (VHT80)

Chan.	Freq. (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
106	5530	83.52	83.48	83.74	82.60
122	5610	84.74	83.84	83.14	83.67

Spectrum Plot of Worst Value	
802.11a / Chain 0 / Ch 116	802.11n (HT20) / Chain 1 / Ch 140
	
802.11n (HT40) / Chain 0 / Ch 102	802.11ac (VHT80) / Chain 2 / Ch 122
	

EUT Maximum Conducted Power

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	210.167	23.23
5470~5725	206.583	23.15

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	206.401	23.15
5470~5725	202.800	23.07

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	203.568	23.09
5470~5725	203.034	23.08

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	193.660	22.87
5470~5725	215.548	23.34

Beamforming Mode

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	206.401	23.15
5470~5725	163.177	22.13

802.11n (HT40)

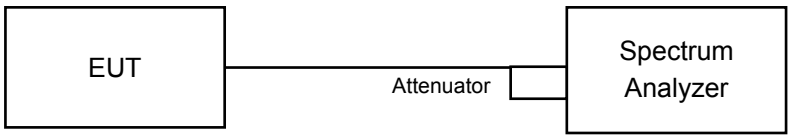
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	203.568	23.09
5470~5725	162.145	22.10

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	193.660	22.87
5470~5725	162.781	22.12

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

For U-NII-2A Band

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.44	16.44
60	5300	16.44	16.44
64	5320	16.44	16.56

802.11n (HT20)

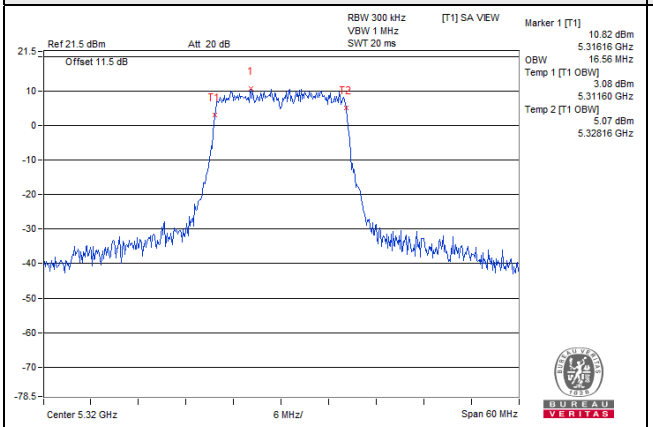
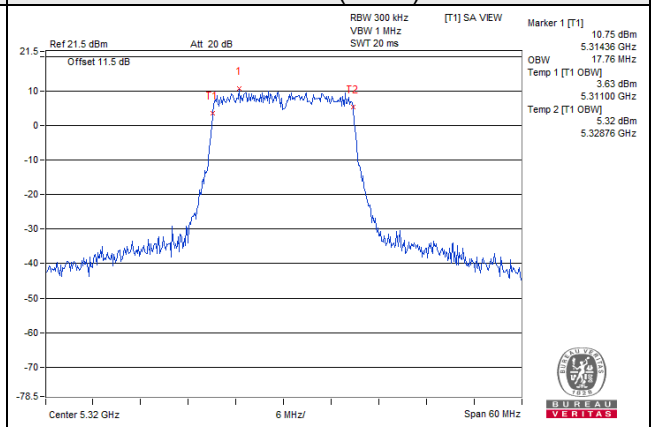
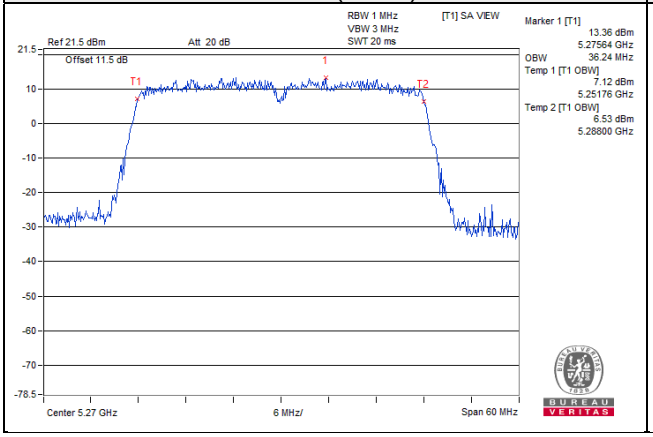
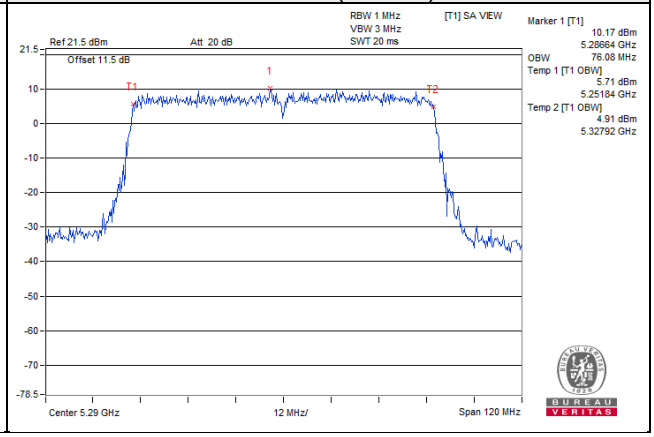
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.64	17.64
60	5300	17.64	17.64
64	5320	17.76	17.76

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.24	36.24
62	5310	36.12	36.24

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	76.08	75.84

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

For U-NII-2C Band

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
100	5500	16.56	16.56	16.44	16.56
116	5580	16.56	16.56	16.44	16.56
140	5700	16.56	16.44	16.44	16.56

802.11n (HT20)

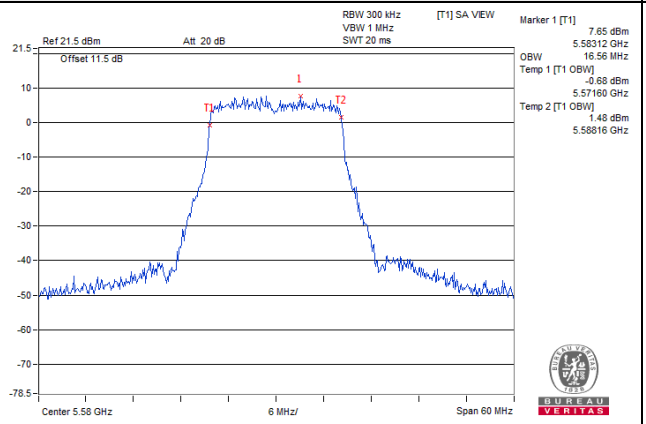
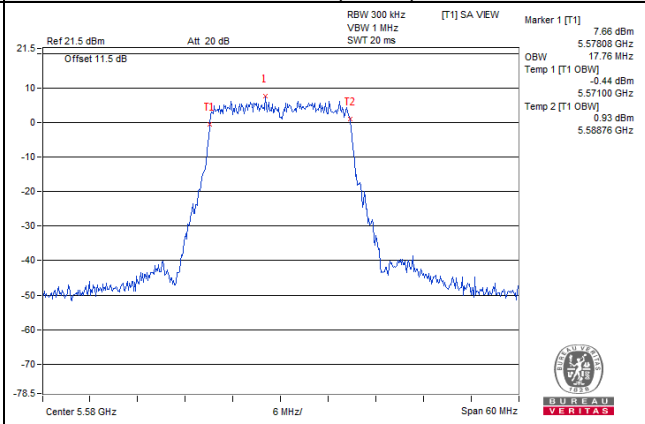
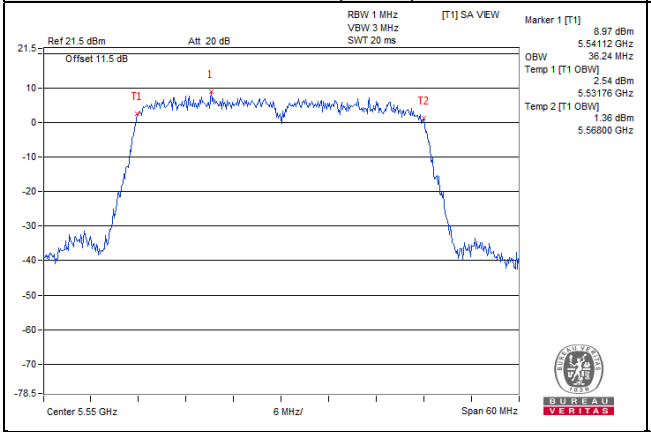
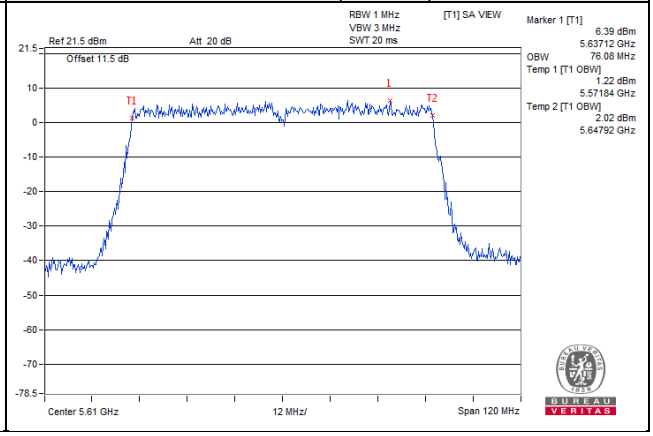
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
100	5500	17.64	17.76	17.64	17.64
116	5580	17.76	17.64	17.64	17.64
140	5700	17.64	17.64	17.64	17.64

802.11n (HT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
102	5510	36.12	36.00	36.12	36.12
110	5550	36.12	36.00	36.12	36.24
134	5670	36.12	36.12	36.12	36.12

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
106	5530	75.84	75.84	76.08	75.84
122	5610	76.08	76.08	75.84	75.84

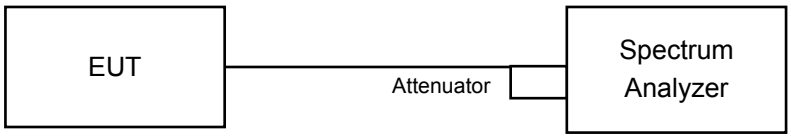
Spectrum Plot of Worst Value	
802.11a	802.11n (HT20)
	
802.11n (HT40)	802.11ac (VHT80)
	

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:

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:

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 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				
52	5260	6.15	5.98	0.19	9.27	11.00	Pass
60	5300	6.41	6.33	0.19	9.57	11.00	Pass
64	5320	6.43	6.44	0.19	9.64	11.00	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. 5260~5320MHz: Directional gain = 4.15dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

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				
52	5260	6.04	6.05	0.09	9.15	11.00	Pass
60	5300	6.27	6.28	0.09	9.38	11.00	Pass
64	5320	6.33	6.35	0.09	9.44	11.00	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. 5260~5320MHz: Directional gain = 4.15dBi < 6dBi, so the power density limit no need to reduced.
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				
54	5270	3.93	3.84	0.20	7.10	11.00	Pass
62	5310	3.95	4.08	0.20	7.23	11.00	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. 5260~5320MHz: Directional gain = 4.15dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

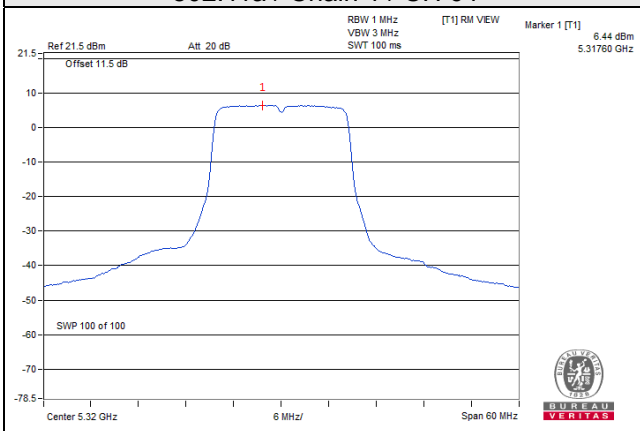
802.11ac (VHT80)

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				
58	5290	0.14	0.22	0.33	3.52	11.00	Pass

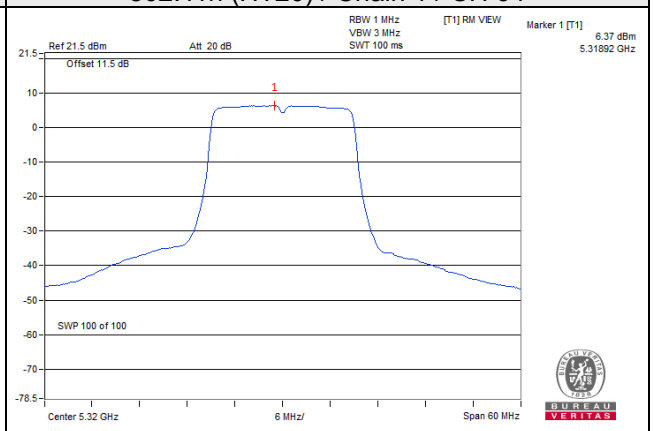
Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5260~5320MHz: Directional gain = 4.15dBi < 6dBi, so the power density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

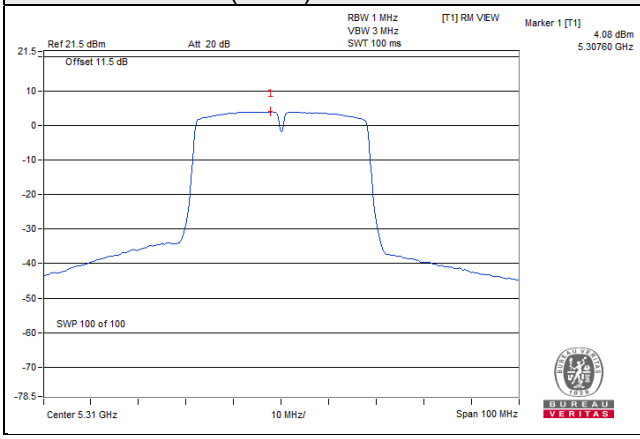
802.11a / Chain 1 / CH 64



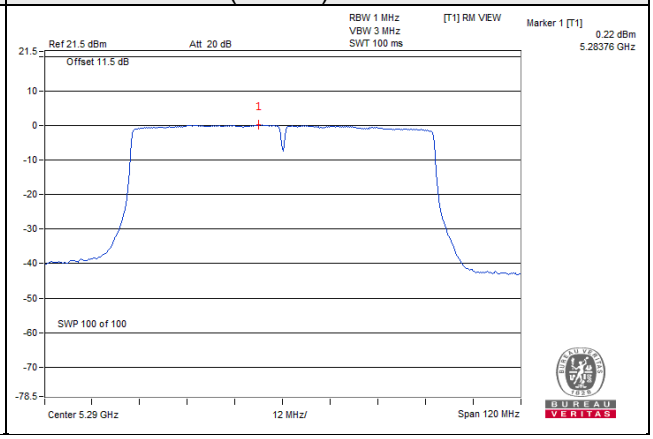
802.11n (HT20) / Chain 1 / CH 64



802.11n (HT40) / Chain 1 / CH 62



802.11ac (VHT80) / Chain 1 / CH 58



For 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				
100	5500	1.30	1.68	1.81	2.05	0.17	7.91	9.96	Pass
116	5580	1.88	1.47	2.39	2.06	0.17	8.15	9.96	Pass
140	5700	1.99	2.16	2.42	1.86	0.17	8.30	9.96	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. 5500~5700MHz: Directional gain = 7.04dBi > 6dBi, so the limit shall be reduced to 11-(7.04-6) = 9.96dBm
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
100	5500	0.67	0.93	1.61	1.13	7.12	9.96	Pass
116	5580	1.25	1.00	1.90	1.70	7.50	9.96	Pass
140	5700	1.38	1.65	2.06	1.50	7.68	9.96	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. 5500~5700MHz: Directional gain = 7.04dBi > 6dBi, so the limit shall be reduced to 11-(7.04-6) = 9.96dBm
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				
102	5510	-0.46	-0.27	0.58	0.14	0.15	6.19	9.96	Pass
110	5550	0.19	0.15	1.18	0.54	0.15	6.71	9.96	Pass
134	5670	0.34	0.44	1.11	0.04	0.15	6.67	9.96	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. 5500~5700MHz: Directional gain = 7.04dBi > 6dBi, so the limit shall be reduced to 11-(7.04-6) = 9.96dBm
3. Refer to section 3.3 for duty cycle spectrum plot.

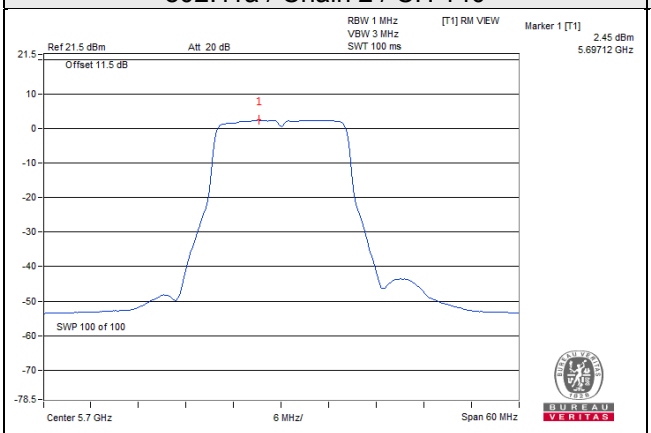
802.11ac (VHT80)

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				
106	5530	-3.43	-2.83	-2.40	-2.78	0.25	3.43	9.96	Pass
122	5610	-3.65	-2.97	-2.91	-3.38	0.25	3.05	9.96	Pass

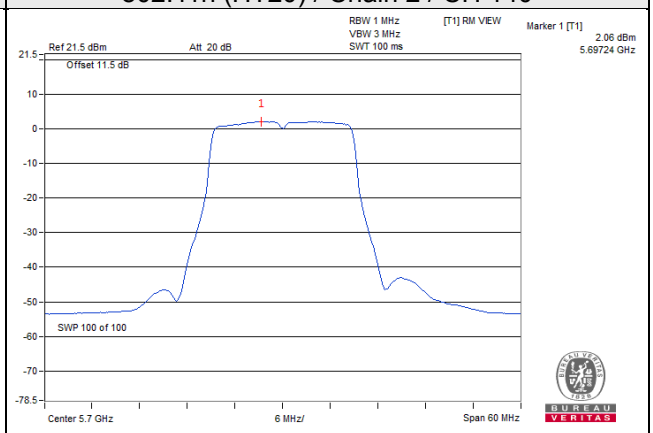
Note:
1. Method E)2)a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5500~5700MHz: Directional gain = 7.04dBi > 6dBi, so the limit shall be reduced to 11-(7.04-6) = 9.96dBm
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

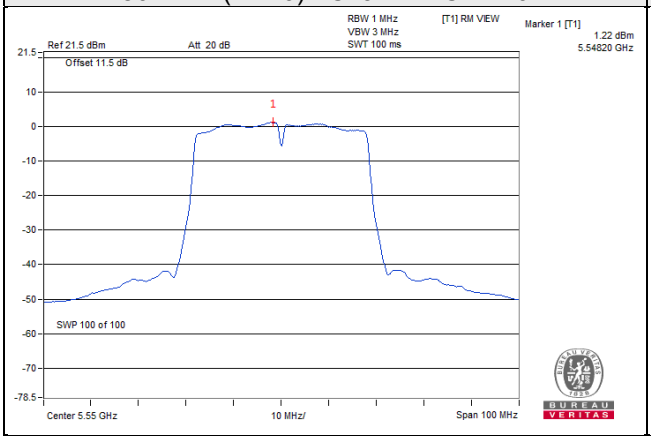
802.11a / Chain 2 / CH 140



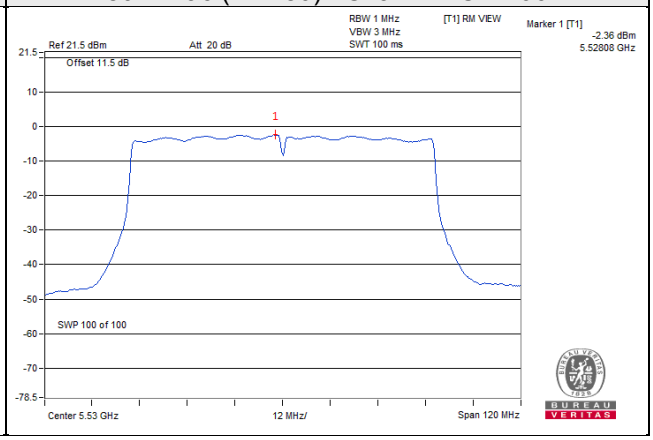
802.11n (HT20) / Chain 2 / CH 140



802.11n (HT40) / Chain 2 / CH 110



802.11ac (VHT80) / Chain 2 / CH 106

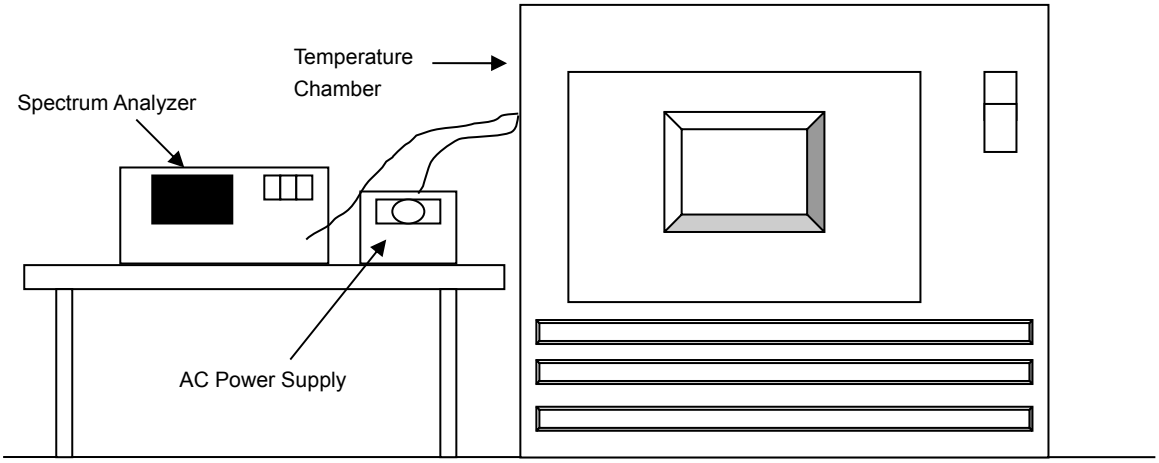


4.6 Frequency Stability

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. 25, 2018	Sep. 24, 2019
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 03, 2019	Jun. 02, 2020
Digital Multimeter Fluke	87-III	70360742	Jun. 27, 2019	Jun. 26, 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 2 and 3 with the temperature chamber set to the lowest temperature.

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
50	120	5259.9717	Pass	5259.9762	Pass	5259.9719	Pass	5259.9717	Pass
40	120	5259.9990	Pass	5260.0032	Pass	5259.9994	Pass	5260.0000	Pass
30	120	5259.9877	Pass	5259.9859	Pass	5259.9868	Pass	5259.9880	Pass
20	120	5260.0248	Pass	5260.0238	Pass	5260.0259	Pass	5260.0247	Pass
10	120	5260.0174	Pass	5260.0129	Pass	5260.0173	Pass	5260.0139	Pass
0	120	5259.9997	Pass	5259.9963	Pass	5259.9962	Pass	5259.9952	Pass
-10	120	5260.0070	Pass	5260.0081	Pass	5260.0078	Pass	5260.0060	Pass
-20	120	5259.9941	Pass	5259.9963	Pass	5259.9974	Pass	5259.9939	Pass
-30	120	5260.0253	Pass	5260.0243	Pass	5260.0232	Pass	5260.0209	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	5260.0247	Pass	5260.0237	Pass	5260.0262	Pass	5260.0257	Pass
	120	5260.0248	Pass	5260.0238	Pass	5260.0259	Pass	5260.0247	Pass
	102	5260.0243	Pass	5260.0246	Pass	5260.0255	Pass	5260.0248	Pass

Frequency Stability Versus Temp.									
Operating Frequency: 5500MHz									
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
50	120	5499.9714	Pass	5499.9742	Pass	5499.9711	Pass	5499.9736	Pass
40	120	5500.0210	Pass	5500.0218	Pass	5500.0244	Pass	5500.0231	Pass
30	120	5499.9799	Pass	5499.9806	Pass	5499.9807	Pass	5499.9805	Pass
20	120	5499.9822	Pass	5499.9830	Pass	5499.9811	Pass	5499.9826	Pass
10	120	5499.9741	Pass	5499.9738	Pass	5499.9776	Pass	5499.9778	Pass
0	120	5499.9969	Pass	5499.9990	Pass	5499.9998	Pass	5499.9973	Pass
-10	120	5499.9724	Pass	5499.9750	Pass	5499.9773	Pass	5499.9744	Pass
-20	120	5499.9841	Pass	5499.9840	Pass	5499.9831	Pass	5499.9814	Pass
-30	120	5499.9846	Pass	5499.9862	Pass	5499.9840	Pass	5499.9864	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5500MHz									
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	5499.9821	Pass	5499.9838	Pass	5499.9820	Pass	5499.9830	Pass
	120	5499.9822	Pass	5499.9830	Pass	5499.9811	Pass	5499.9826	Pass
	102	5499.9826	Pass	5499.9831	Pass	5499.9821	Pass	5499.9823	Pass

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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Web Site: www.bureauveritas-adt.com

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

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