FCC Test Report

Report No.:	RF181019C20-1
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, 2018 ~ Jan. 03, 2019
Issued Date:	Jan. 22, 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
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)
FCC Registration / Designation Number:	788550 / TW0003

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Release Control Record

Issue No.	Description	Date Issued
RF181019C20-1	Original release	Jan. 22, 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, 2018 ~ Jan. 03, 2019
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Jan. 22, 2019

Celine Chou / Senior Specialist

Approved by : Bruce Chen , **Date:** Jan. 22, 2019

Bruce Chen / 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 -8.60dB at 0.30234MHz.
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 5145.00MHz and 5150.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

Note:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.

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	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 for more details
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 600.0Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180 ~ 5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	CDD Mode: 5180 ~ 5240MHz: 758.703mW 5745 ~ 5825MHz: 927.751mW Beamforming Mode: 5180 ~ 5240MHz: 758.703mW 5745 ~ 5825MHz: 748.914mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	N/A

Note:

1. 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 1	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 4	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)

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 following RF Modules are for the EUT.

RF Module	Band	Antenna No.
Module 1	2.4G	5, 6
	UNII-1	5, 6
Module 2	UNII-3	1, 2, 3, 4

4. 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

5. The following antennas were provided to the EUT.

Ant. Type	Dipole		
Connecter Type	i-pex(MHF)		
Directional Antenna Gain (dBi)			
Item	2.4G	UNII-1	UNII-3
-	4.27	4.42	7.09

3.2 Description of Test Modes

For 5180 ~ 5240MHz:

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

Channel	Frequency	Channel	Frequency
36	5180 MHz	44	5220 MHz
40	5200 MHz	48	5240 MHz

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

For 5745 ~ 5825MHz:

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

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

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: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.

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	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	2TX
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	2TX
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	2TX
	802.11ac (VHT80)		42	42	OFDM	29.3	2TX
B	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	4TX
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5	4TX
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	4TX
	802.11ac (VHT80)		155	155	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	5180-5240	36 to 48	40	OFDM	6.0	2TX
A, B, C	802.11a	5745-5825	149 to 165	157	OFDM	6.0	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	5180-5240	36 to 48	40	OFDM	6.0	2TX
A, B, C	802.11a	5745-5825	149 to 165	157	OFDM	6.0	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	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	2TX
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	2TX
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	2TX
	802.11ac (VHT80)		42	42	OFDM	29.3	2TX
B	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	4TX
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5	4TX
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	4TX
	802.11ac (VHT80)		155	155	OFDM	29.3	4TX

Test Condition:

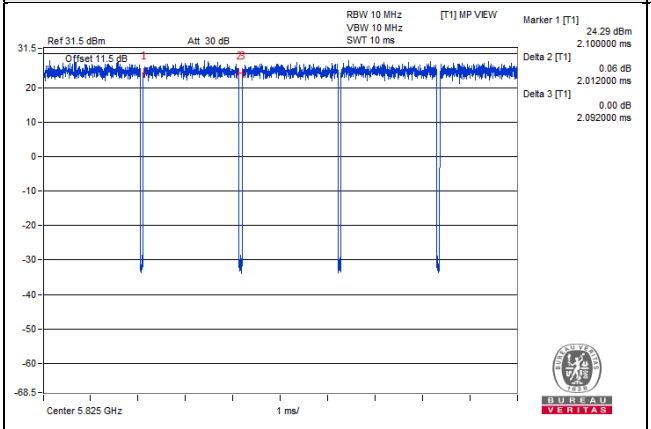
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 70% RH	120Vac, 60Hz	Luis Lee
RE<1G	25 deg. C, 70% RH	120Vac, 60Hz 54Vdc	Noah Chang
PLC	25 deg. C, 75% RH	120Vac, 60Hz 54Vdc	Noah Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ted Chang

3.3 Duty Cycle of Test Signal

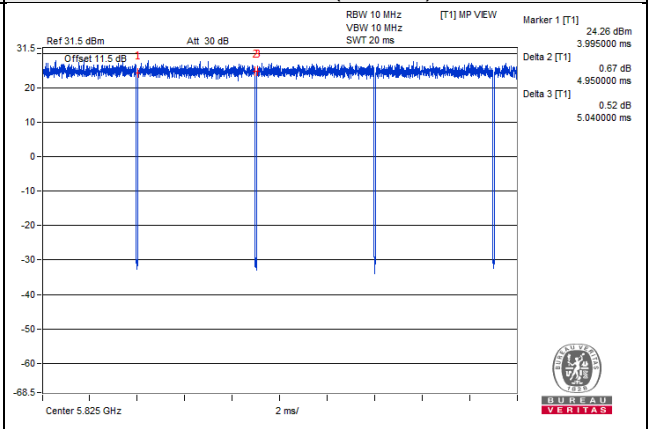
802.11ac (VHT20): Duty cycle of test signal is ≥ 98%, duty factor is not required.
802.11a, 802.11ac (VHT40), 802.11ac (VHT80): Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.012/2.092 = 0.962, Duty factor = 10 * log (1/0.962) = 0.17
802.11ac (VHT20): Duty cycle = 4.950/5.040 = 0.982
802.11ac (VHT40): Duty cycle = 2.402/2.475 = 0.971, Duty factor = 10 * log (1/0.971) = 0.13
802.11ac (VHT80): Duty cycle = 1.133/1.203 = 0.942, Duty factor = 10 * log (1/0.942) = 0.26

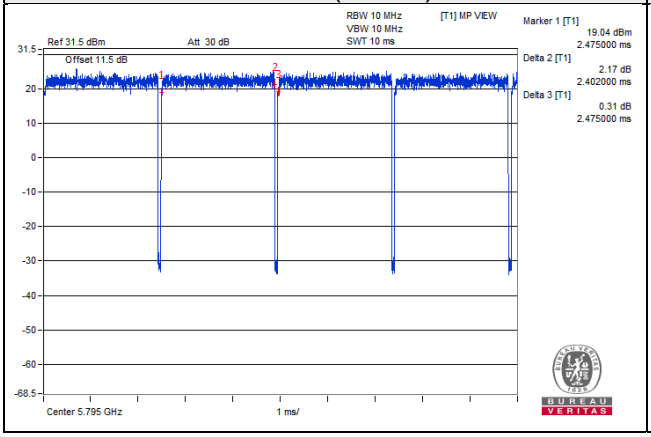
802.11a



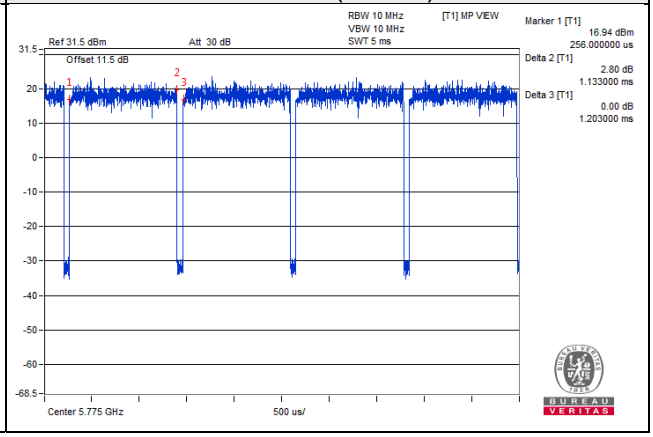
802.11ac (VHT20)



802.11ac (VHT40)



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

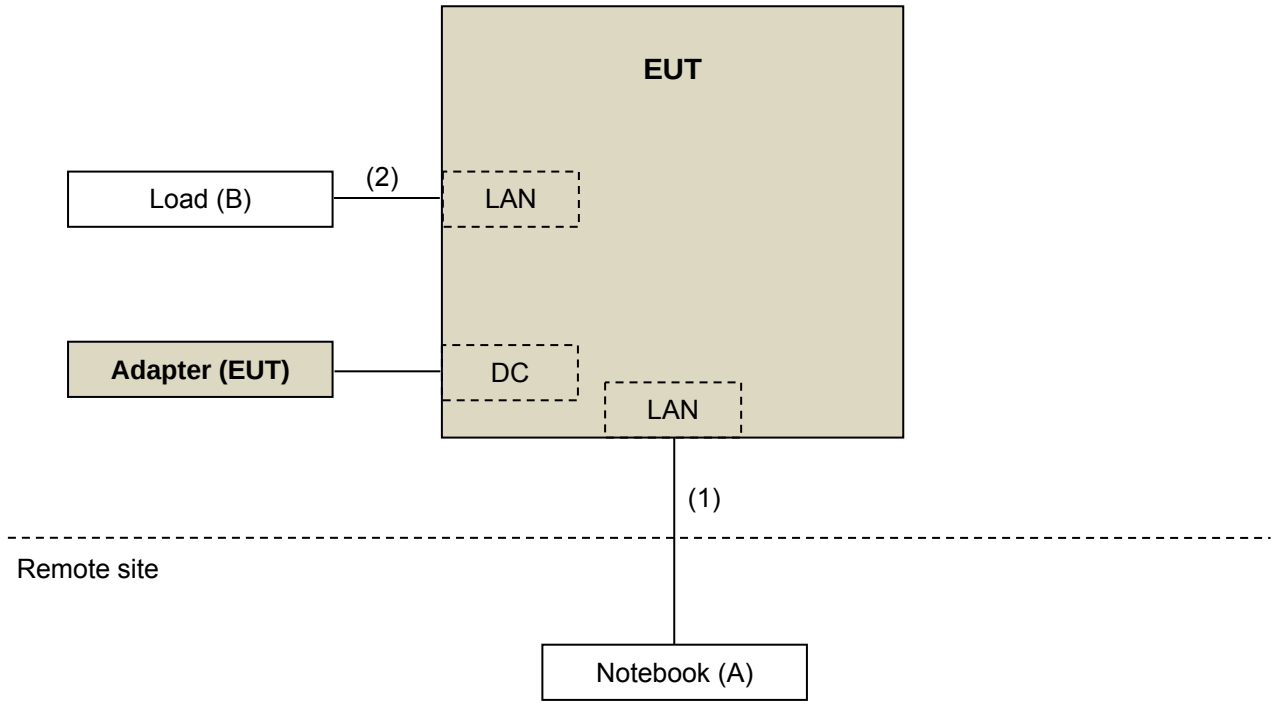
Note:

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.

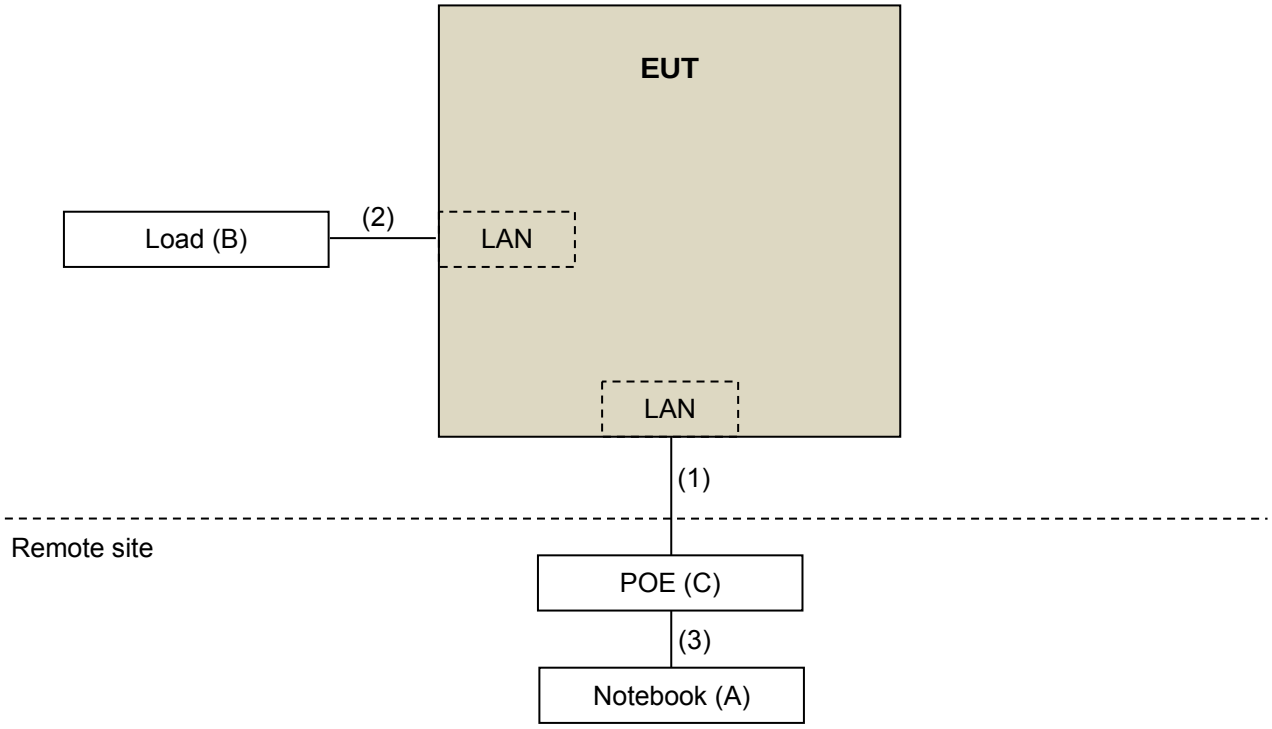
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	5	N	0	-
2.	RJ45, Cat5e	1	1.5	N	0	-
3.	RJ45, Cat5e	1	1	N	0	-

3.4.1 Configuration of System under Test

Test Mode A



Test Mode B



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

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

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.
3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
4. The IC Site Registration No. is 7450F-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.

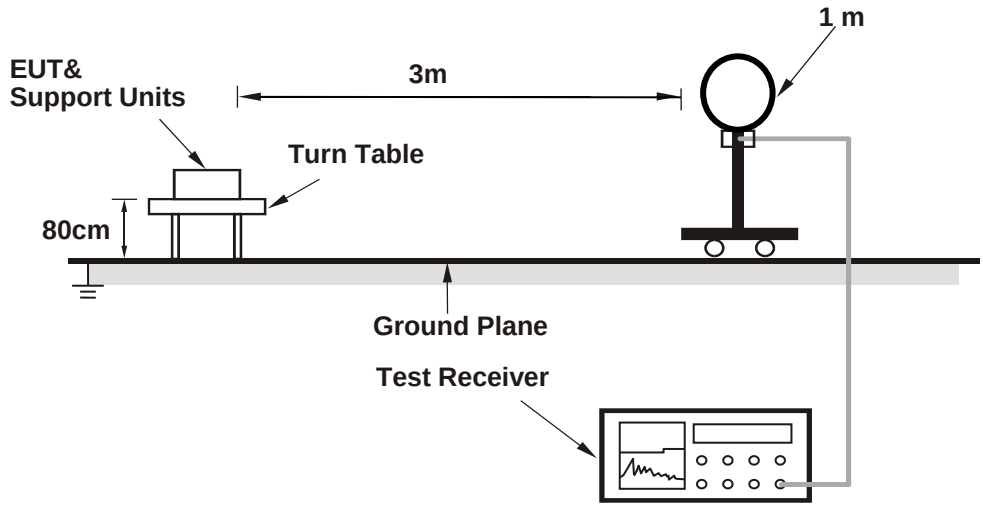
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

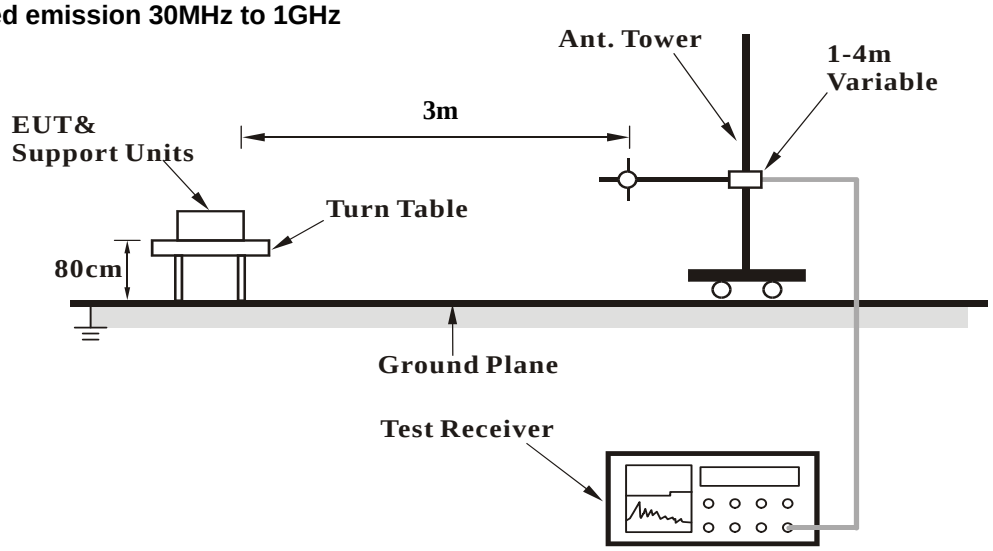
No deviation.

4.1.5 Test Setup

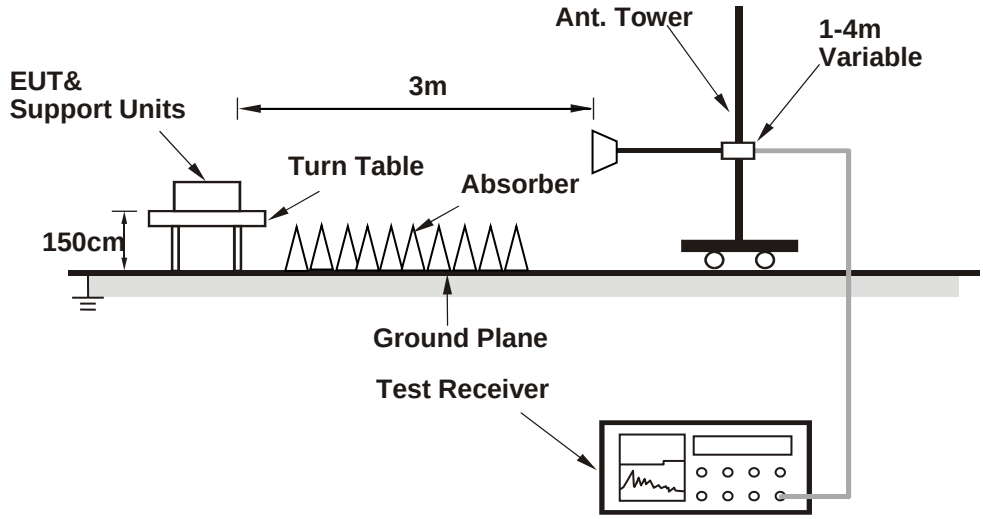
For Radiated emission below 30MHz



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 36	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	71.1 PK	74.0	-2.9	1.27 H	55	58.5	12.6
2	5150.00	53.7 AV	54.0	-0.3	1.27 H	55	41.1	12.6
3	*5180.00	118.2 PK			1.27 H	55	76.7	41.5
4	*5180.00	107.8 AV			1.27 H	55	66.3	41.5
5	#10360.00	61.0 PK	68.2	-7.2	2.98 H	155	38.5	22.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.8 PK	74.0	-8.2	1.01 V	160	53.2	12.6
2	5150.00	50.9 AV	54.0	-3.1	1.01 V	160	38.3	12.6
3	*5180.00	113.2 PK			1.01 V	160	71.7	41.5
4	*5180.00	102.4 AV			1.01 V	160	60.9	41.5
5	#10360.00	60.5 PK	68.2	-7.7	2.62 V	233	38.0	22.5

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

CHANNEL	TX Channel 40	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	68.7 PK	74.0	-5.3	1.17 H	50	56.1	12.6
2	5150.00	53.5 AV	54.0	-0.5	1.17 H	50	40.9	12.6
3	*5200.00	121.4 PK			1.17 H	50	79.9	41.5
4	*5200.00	110.6 AV			1.17 H	50	69.1	41.5
5	#10400.00	61.8 PK	68.2	-6.4	1.62 H	216	38.9	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	63.8 PK	74.0	-10.2	1.21 V	159	51.2	12.6
2	5150.00	50.5 AV	54.0	-3.5	1.21 V	159	37.9	12.6
3	*5200.00	116.4 PK			1.21 V	159	74.9	41.5
4	*5200.00	115.6 AV			1.21 V	159	74.1	41.5
5	#10400.00	61.5 PK	68.2	-6.7	2.15 V	239	38.6	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 48	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	*5240.00	121.7 PK			1.22 H	53	80.5	41.2
2	*5240.00	111.0 AV			1.22 H	53	69.8	41.2
3	5350.00	60.6 PK	74.0	-13.4	1.22 H	53	48.2	12.4
4	5350.00	47.4 AV	54.0	-6.6	1.22 H	53	35.0	12.4
5	#10480.00	61.4 PK	68.2	-6.8	1.96 H	285	38.6	22.8
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	*5240.00	116.7 PK			1.03 V	159	75.5	41.2
2	*5240.00	95.7 AV			1.03 V	159	54.5	41.2
3	5350.00	60.5 PK	74.0	-13.5	1.00 V	176	48.1	12.4
4	5350.00	47.4 AV	54.0	-6.6	1.00 V	176	35.0	12.4
5	#10480.00	60.9 PK	68.2	-7.3	2.33 V	263	38.1	22.8

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

CHANNEL	TX Channel 149	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	#5646.40	64.0 PK	68.2	-4.2	1.16 H	85	51.4	12.6
2	*5745.00	124.2 PK			1.16 H	85	81.7	42.5
3	*5745.00	113.8 AV			1.16 H	85	71.3	42.5
4	#5987.20	64.9 PK	68.2	-3.3	1.16 H	85	51.1	13.8
5	11490.00	64.4 PK	74.0	-9.6	2.41 H	153	40.3	24.1
6	11490.00	51.2 AV	54.0	-2.8	2.41 H	153	27.1	24.1
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	#5635.20	63.9 PK	68.2	-4.3	2.44 V	83	51.2	12.7
2	*5745.00	118.7 PK			2.44 V	83	76.2	42.5
3	*5745.00	107.8 AV			2.44 V	83	65.3	42.5
4	#5971.20	63.3 PK	68.2	-4.9	2.44 V	83	49.6	13.7
5	11490.00	63.8 PK	74.0	-10.2	1.85 V	223	39.7	24.1
6	11490.00	50.6 AV	54.0	-3.4	1.85 V	223	26.5	24.1

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 157	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	#5613.60	63.3 PK	68.2	-4.9	1.48 H	87	50.6	12.7
2	*5785.00	124.0 PK			1.48 H	87	81.4	42.6
3	*5785.00	113.8 AV			1.48 H	87	71.2	42.6
4	#5944.00	63.7 PK	68.2	-4.5	1.48 H	87	50.1	13.6
5	11570.00	64.5 PK	74.0	-9.5	2.65 H	188	40.5	24.0
6	11570.00	51.3 AV	54.0	-2.7	2.65 H	188	27.3	24.0
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	#5608.80	62.5 PK	68.2	-5.7	2.47 V	87	49.8	12.7
2	*5785.00	119.9 PK			2.47 V	87	77.3	42.6
3	*5785.00	109.0 AV			2.47 V	87	66.4	42.6
4	#5942.40	63.1 PK	68.2	-5.1	2.47 V	87	49.5	13.6
5	11570.00	63.9 PK	74.0	-10.1	2.01 V	142	39.9	24.0
6	11570.00	50.8 AV	54.0	-3.2	2.01 V	142	26.8	24.0

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 165	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	#5610.40	62.3 PK	68.2	-5.9	1.33 H	91	49.6	12.7
2	*5825.00	123.8 PK			1.33 H	91	81.2	42.6
3	*5825.00	113.8 AV			1.33 H	91	71.2	42.6
4	#5928.00	63.9 PK	68.2	-4.3	1.33 H	91	50.3	13.6
5	11650.00	64.3 PK	74.0	-9.7	2.52 H	180	40.7	23.6
6	11650.00	50.8 AV	54.0	-3.2	2.52 H	180	27.2	23.6
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	#5637.60	63.1 PK	68.2	-5.1	2.47 V	83	50.4	12.7
2	*5825.00	118.5 PK			2.47 V	83	75.9	42.6
3	*5825.00	107.9 AV			2.47 V	83	65.3	42.6
4	#5990.40	63.7 PK	68.2	-4.5	2.47 V	83	49.9	13.8
5	11650.00	63.3 PK	74.0	-10.7	1.38 V	228	39.7	23.6
6	11650.00	50.5 AV	54.0	-3.5	1.38 V	228	26.9	23.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 (VHT20)

CHANNEL	TX Channel 36	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	70.2 PK	74.0	-3.8	1.13 H	59	57.6	12.6
2	5150.00	53.8 AV	54.0	-0.2	1.13 H	59	41.2	12.6
3	*5180.00	117.9 PK			1.13 H	59	76.4	41.5
4	*5180.00	106.9 AV			1.13 H	59	65.4	41.5
5	#10360.00	61.2 PK	68.2	-7.0	1.67 H	210	38.7	22.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.8 PK	74.0	-7.2	1.08 V	176	54.2	12.6
2	5150.00	51.1 AV	54.0	-2.9	1.08 V	176	38.5	12.6
3	*5180.00	111.6 PK			1.08 V	176	70.1	41.5
4	*5180.00	101.2 AV			1.08 V	176	59.7	41.5
5	#10360.00	60.7 PK	68.2	-7.5	3.25 V	263	38.2	22.5

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

CHANNEL	TX Channel 40	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	69.8 PK	74.0	-4.2	1.17 H	51	57.2	12.6
2	5150.00	53.6 AV	54.0	-0.4	1.17 H	51	41.0	12.6
3	*5200.00	121.6 PK			1.17 H	51	80.1	41.5
4	*5200.00	111.2 AV			1.17 H	51	69.7	41.5
5	#10400.00	61.6 PK	68.2	-6.6	1.83 H	260	38.7	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	67.4 PK	74.0	-6.6	1.10 V	169	54.8	12.6
2	5150.00	50.1 AV	54.0	-3.9	1.10 V	169	37.5	12.6
3	*5200.00	116.6 PK			1.10 V	169	75.1	41.5
4	*5200.00	106.2 AV			1.10 V	169	64.7	41.5
5	#10400.00	60.9 PK	68.2	-7.3	2.96 V	287	38.0	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 48	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	*5240.00	121.2 PK			1.02 H	56	80.0	41.2
2	*5240.00	111.0 AV			1.02 H	56	69.8	41.2
3	5350.00	61.9 PK	74.0	-12.1	1.02 H	56	49.5	12.4
4	5350.00	47.6 AV	54.0	-6.4	1.02 H	56	35.2	12.4
5	#10480.00	61.3 PK	68.2	-6.9	1.94 H	271	38.5	22.8
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	*5240.00	116.2 PK			1.03 V	168	75.0	41.2
2	*5240.00	106.0 AV			1.03 V	168	64.8	41.2
3	5350.00	61.6 PK	74.0	-12.4	1.03 V	168	49.2	12.4
4	5350.00	47.4 AV	54.0	-6.6	1.03 V	168	35.0	12.4
5	#10480.00	60.8 PK	68.2	-7.4	3.33 V	322	38.0	22.8

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

CHANNEL	TX Channel 149	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	#5621.60	62.8 PK	68.2	-5.4	1.17 H	81	50.1	12.7
2	*5745.00	123.3 PK			1.17 H	81	80.8	42.5
3	*5745.00	112.8 AV			1.17 H	81	70.3	42.5
4	#5962.40	65.0 PK	68.2	-3.2	1.17 H	81	51.3	13.7
5	11490.00	64.6 PK	74.0	-9.4	2.69 H	233	40.5	24.1
6	11490.00	51.4 AV	54.0	-2.6	2.69 H	233	27.3	24.1
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	#5648.80	62.5 PK	68.2	-5.7	2.59 V	81	49.9	12.6
2	*5745.00	118.1 PK			2.59 V	81	75.6	42.5
3	*5745.00	107.4 AV			2.59 V	81	64.9	42.5
4	#5984.80	63.4 PK	68.2	-4.8	2.59 V	81	49.6	13.8
5	11490.00	63.8 PK	74.0	-10.2	1.63 V	225	39.7	24.1
6	11490.00	50.9 AV	54.0	-3.1	1.63 V	225	26.8	24.1

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 157	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	#5632.80	62.9 PK	68.2	-5.3	1.41 H	81	50.2	12.7
2	*5785.00	123.6 PK			1.41 H	81	81.0	42.6
3	*5785.00	113.1 AV			1.41 H	81	70.5	42.6
4	#5928.00	63.5 PK	68.2	-4.7	1.41 H	81	49.9	13.6
5	11570.00	64.4 PK	74.0	-9.6	2.17 H	114	40.4	24.0
6	11570.00	51.1 AV	54.0	-2.9	2.17 H	114	27.1	24.0
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	#5608.80	63.4 PK	68.2	-4.8	2.60 V	79	50.7	12.7
2	*5785.00	119.5 PK			2.60 V	79	76.9	42.6
3	*5785.00	108.5 AV			2.60 V	79	65.9	42.6
4	#5977.60	64.0 PK	68.2	-4.2	2.60 V	79	50.2	13.8
5	11570.00	63.9 PK	74.0	-10.1	1.78 V	235	39.9	24.0
6	11570.00	50.8 AV	54.0	-3.2	1.78 V	235	26.8	24.0

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 165	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	#5627.20	64.2 PK	68.2	-4.0	1.41 H	83	51.5	12.7
2	*5825.00	123.8 PK			1.41 H	83	81.2	42.6
3	*5825.00	112.8 AV			1.41 H	83	70.2	42.6
4	#5935.20	64.5 PK	68.2	-3.7	1.41 H	83	50.9	13.6
5	11650.00	64.3 PK	74.0	-9.7	1.98 H	260	40.7	23.6
6	11650.00	51.0 AV	54.0	-3.0	1.98 H	260	27.4	23.6
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	#5613.60	63.0 PK	68.2	-5.2	2.60 V	80	50.3	12.7
2	*5825.00	119.7 PK			2.60 V	80	77.1	42.6
3	*5825.00	108.5 AV			2.60 V	80	65.9	42.6
4	#5959.20	64.0 PK	68.2	-4.2	2.60 V	80	50.4	13.6
5	11650.00	63.2 PK	74.0	-10.8	3.10 V	175	39.6	23.6
6	11650.00	50.3 AV	54.0	-3.7	3.10 V	175	26.7	23.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 (VHT40)

CHANNEL	TX Channel 38	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	5145.00	72.1 PK	74.0	-1.9	1.24 H	50	59.5	12.6
2	**5145.00**	**53.9 AV**	**54.0**	**-0.1**	**1.24 H**	**50**	**41.3**	**12.6**
3	*5190.00	113.9 PK			1.24 H	50	72.4	41.5
4	*5190.00	104.4 AV			1.24 H	50	62.9	41.5
5	#10380.00	61.2 PK	68.2	-7.0	1.68 H	220	38.5	22.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5145.00	67.5 PK	74.0	-6.5	1.10 V	168	54.9	12.6
2	5145.00	50.5 AV	54.0	-3.5	1.10 V	168	37.9	12.6
3	*5190.00	108.9 PK			1.10 V	168	67.4	41.5
4	*5190.00	99.4 AV			1.10 V	168	57.9	41.5
5	#10380.00	60.6 PK	68.2	-7.6	3.15 V	345	37.9	22.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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 46	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	69.3 PK	74.0	-4.7	1.44 H	54	56.7	12.6
2	5150.00	53.8 AV	54.0	-0.2	1.44 H	54	41.2	12.6
3	*5230.00	118.1 PK			1.44 H	54	76.8	41.3
4	*5230.00	108.2 AV			1.44 H	54	66.9	41.3
5	#10460.00	61.5 PK	68.2	-6.7	1.96 H	204	38.6	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	66.3 PK	74.0	-7.7	1.09 V	169	53.7	12.6
2	5150.00	50.8 AV	54.0	-3.2	1.09 V	169	38.2	12.6
3	*5230.00	113.1 PK			1.09 V	169	71.8	41.3
4	*5230.00	103.2 AV			1.09 V	169	61.9	41.3
5	#10460.00	60.8 PK	68.2	-7.4	2.96 V	274	37.9	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 151	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	#5617.60	63.6 PK	68.2	-4.6	1.30 H	83	50.9	12.7
2	*5755.00	121.9 PK			1.30 H	83	79.4	42.5
3	*5755.00	111.7 AV			1.30 H	83	69.2	42.5
4	#5926.40	63.8 PK	68.2	-4.4	1.30 H	83	50.2	13.6
5	11510.00	64.2 PK	74.0	-9.8	2.38 H	177	40.3	23.9
6	11510.00	51.1 AV	54.0	-2.9	2.38 H	177	27.2	23.9
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	#5620.00	63.1 PK	68.2	-5.1	2.64 V	85	50.4	12.7
2	*5755.00	116.6 PK			2.64 V	85	74.1	42.5
3	*5755.00	106.4 AV			2.64 V	85	63.9	42.5
4	#5992.80	63.9 PK	68.2	-4.3	2.64 V	85	50.1	13.8
5	11510.00	63.6 PK	74.0	-10.4	1.63 V	220	39.7	23.9
6	11510.00	50.5 AV	54.0	-3.5	1.63 V	220	26.6	23.9

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 159	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	#5625.60	63.3 PK	68.2	-4.9	1.25 H	83	50.6	12.7
2	*5795.00	121.6 PK			1.25 H	83	79.0	42.6
3	*5795.00	111.8 AV			1.25 H	83	69.2	42.6
4	#5933.60	66.6 PK	68.2	-1.6	1.25 H	83	53.0	13.6
5	11590.00	64.0 PK	74.0	-10.0	2.26 H	159	40.2	23.8
6	11590.00	50.7 AV	54.0	-3.3	2.26 H	159	26.9	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	#5636.80	64.7 PK	68.2	-3.5	2.50 V	79	52.0	12.7
2	*5795.00	117.2 PK			2.50 V	79	74.6	42.6
3	*5795.00	107.2 AV			2.50 V	79	64.6	42.6
4	#5928.00	63.8 PK	68.2	-4.4	2.50 V	79	50.2	13.6
5	11590.00	63.5 PK	74.0	-10.5	1.86 V	303	39.7	23.8
6	11590.00	50.7 AV	54.0	-3.3	1.86 V	303	26.9	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 42	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	66.5 PK	74.0	-7.5	1.45 H	55	53.9	12.6
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.45 H**	**55**	**41.3**	**12.6**
3	*5210.00	109.7 PK			1.45 H	55	68.3	41.4
4	*5210.00	99.5 AV			1.45 H	55	58.1	41.4
5	5350.00	61.3 PK	74.0	-12.7	1.45 H	55	48.9	12.4
6	5350.00	38.5 AV	54.0	-15.5	1.45 H	55	26.1	12.4
7	#10420.00	61.7 PK	68.2	-6.5	2.66 H	174	38.9	22.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	1.10 V	168	52.7	12.6
2	5150.00	50.4 AV	54.0	-3.6	1.10 V	168	37.8	12.6
3	*5210.00	104.5 PK			1.10 V	168	63.1	41.4
4	*5210.00	94.5 AV			1.10 V	168	53.1	41.4
5	5350.00	60.2 PK	74.0	-13.8	1.10 V	168	47.8	12.4
6	5350.00	46.6 AV	54.0	-7.4	1.10 V	168	34.2	12.4
7	#10420.00	61.0 PK	68.2	-7.2	2.96 V	275	38.2	22.8

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

CHANNEL	TX Channel 155	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	#5648.80	67.0 PK	68.2	-1.2	1.00 H	346	54.4	12.6
2	*5775.00	115.7 PK			1.00 H	346	73.1	42.6
3	*5775.00	106.1 AV			1.00 H	346	63.5	42.6
4	#5931.20	67.7 PK	68.2	-0.5	1.00 H	346	54.1	13.6
5	11550.00	64.3 PK	74.0	-9.7	1.96 H	241	40.4	23.9
6	11550.00	51.2 AV	54.0	-2.8	1.96 H	241	27.3	23.9
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	#5632.80	64.0 PK	68.2	-4.2	2.36 V	108	51.3	12.7
2	*5775.00	111.1 PK			2.36 V	108	68.5	42.6
3	*5775.00	101.2 AV			2.36 V	108	58.6	42.6
4	#5942.40	64.0 PK	68.2	-4.2	2.36 V	108	50.4	13.6
5	11550.00	63.7 PK	74.0	-10.3	1.55 V	136	39.8	23.9
6	11550.00	50.6 AV	54.0	-3.4	1.55 V	136	26.7	23.9

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

Below 1GHz Worst-Case Data:

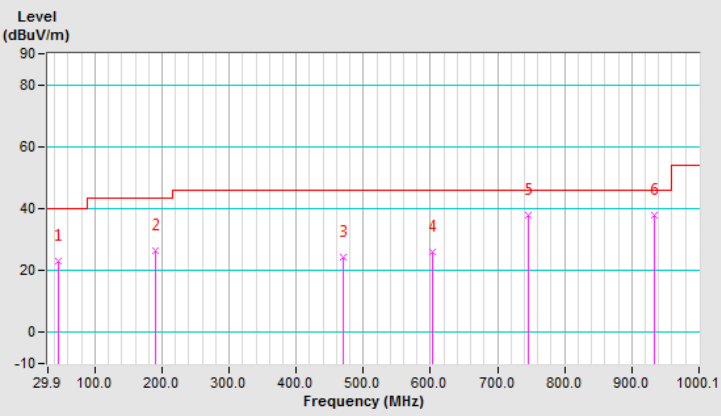
802.11a

CHANNEL	TX Channel 40	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	45.42	22.9 QP	40.0	-17.1	1.50 H	147	31.9	-9.0
2	190.95	26.4 QP	43.5	-17.1	1.00 H	271	37.6	-11.2
3	470.37	24.3 QP	46.0	-21.7	1.00 H	313	29.7	-5.4
4	602.32	26.2 QP	46.0	-19.8	1.00 H	196	28.5	-2.3
5	745.91	37.7 QP	46.0	-8.3	1.00 H	288	36.9	0.8
6	934.13	37.8 QP	46.0	-8.2	1.50 H	8	33.9	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

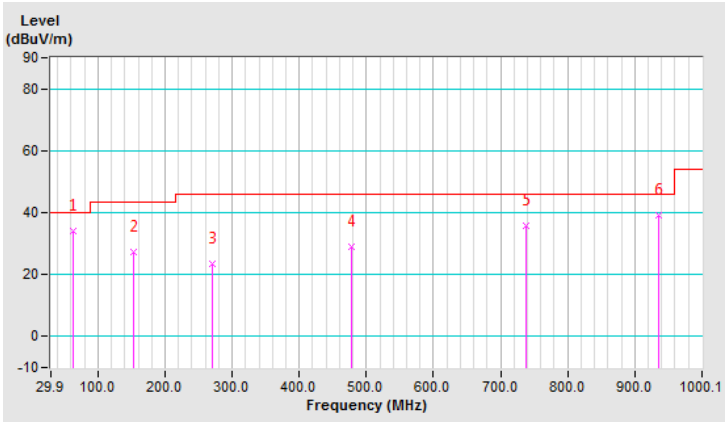


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

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	62.89	34.0 QP	40.0	-6.0	1.50 V	287	44.0	-10.0
2	154.09	27.2 QP	43.5	-16.3	1.00 V	291	35.8	-8.6
3	270.51	23.6 QP	46.0	-22.4	1.00 V	106	32.3	-8.7
4	478.13	28.8 QP	46.0	-17.2	1.00 V	256	34.1	-5.3
5	738.15	35.9 QP	46.0	-10.1	1.50 V	37	35.2	0.7
6	936.07	39.2 QP	46.0	-6.8	1.00 V	135	35.2	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

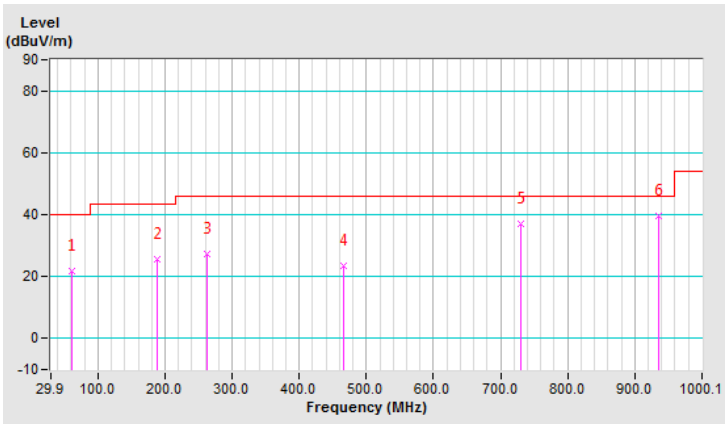


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	21.9 QP	40.0	-18.1	2.00 H	10	32.0	-10.1
2	189.01	25.4 QP	43.5	-18.1	1.00 H	308	36.5	-11.1
3	262.75	27.2 QP	46.0	-18.8	1.00 H	85	36.3	-9.1
4	466.49	23.5 QP	46.0	-22.5	1.00 H	36	28.9	-5.4
5	730.38	37.1 QP	46.0	-8.9	1.00 H	288	36.7	0.4
6	936.07	39.6 QP	46.0	-6.4	1.00 H	157	35.6	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

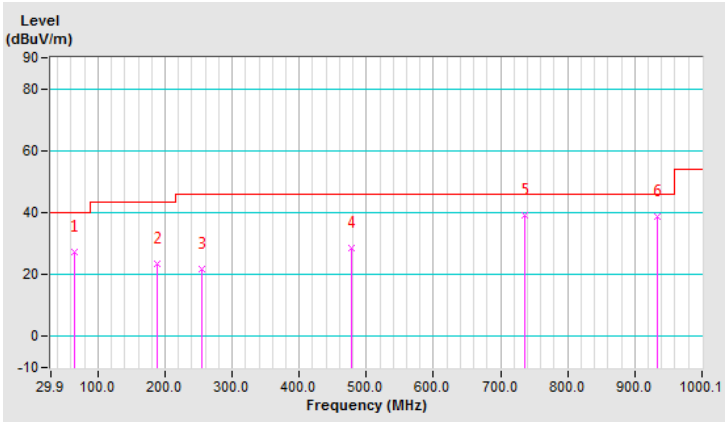


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	64.83	27.3 QP	40.0	-12.7	1.50 V	29	37.8	-10.5
2	189.01	23.5 QP	43.5	-20.0	1.00 V	299	34.6	-11.1
3	254.99	21.9 QP	46.0	-24.1	1.00 V	220	31.2	-9.3
4	478.13	28.6 QP	46.0	-17.4	1.00 V	339	33.9	-5.3
5	736.21	39.2 QP	46.0	-6.8	1.50 V	12	38.7	0.5
6	934.13	38.6 QP	46.0	-7.4	1.00 V	95	34.7	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

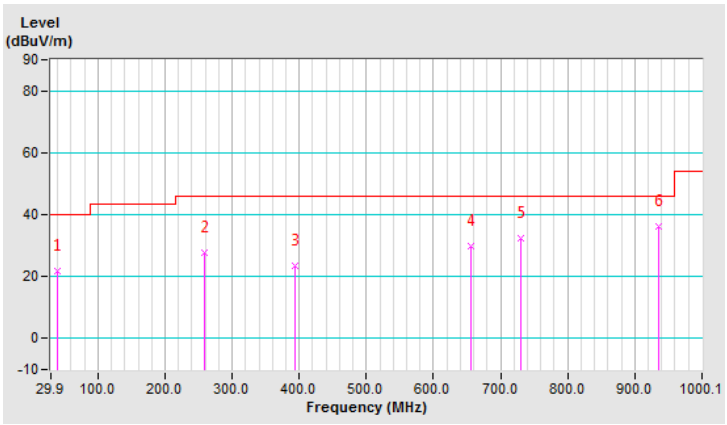


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	C		

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	39.60	21.8 QP	40.0	-18.2	2.00 H	101	31.2	-9.4
2	258.87	27.9 QP	46.0	-18.1	1.00 H	246	37.1	-9.2
3	394.70	23.5 QP	46.0	-22.5	1.00 H	143	30.1	-6.6
4	656.65	29.9 QP	46.0	-16.1	1.00 H	218	31.4	-1.5
5	730.38	32.3 QP	46.0	-13.7	1.50 H	10	31.9	0.4
6	936.07	36.3 QP	46.0	-9.7	1.50 H	44	32.3	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

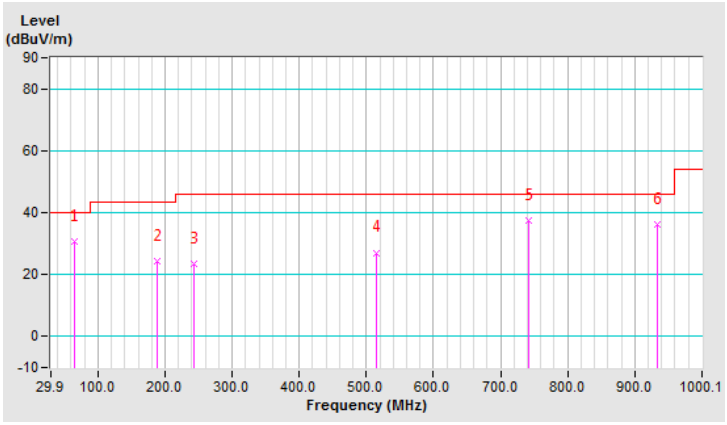


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	C		

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	64.83	30.6 QP	40.0	-9.4	1.50 V	18	41.1	-10.5
2	189.01	24.2 QP	43.5	-19.3	1.50 V	259	35.3	-11.1
3	243.34	23.3 QP	46.0	-22.7	1.00 V	243	32.9	-9.6
4	515.00	27.1 QP	46.0	-18.9	1.00 V	253	31.8	-4.7
5	742.03	37.5 QP	46.0	-8.5	1.00 V	53	36.7	0.8
6	934.13	36.1 QP	46.0	-9.9	1.00 V	99	32.2	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

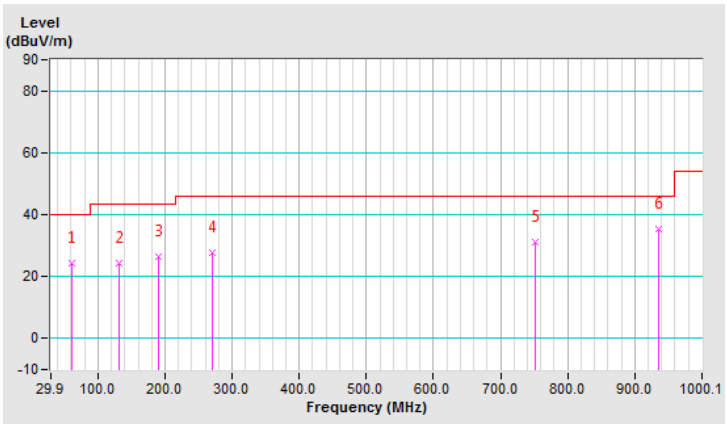


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

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	60.95	24.2 QP	40.0	-15.8	2.00 H	133	34.3	-10.1
2	130.80	24.4 QP	43.5	-19.1	1.00 H	277	34.5	-10.1
3	190.95	26.3 QP	43.5	-17.2	1.00 H	256	37.5	-11.2
4	270.51	27.6 QP	46.0	-18.4	1.00 H	120	36.3	-8.7
5	751.73	31.1 QP	46.0	-14.9	1.50 H	89	30.2	0.9
6	936.07	35.4 QP	46.0	-10.6	1.00 H	285	31.4	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

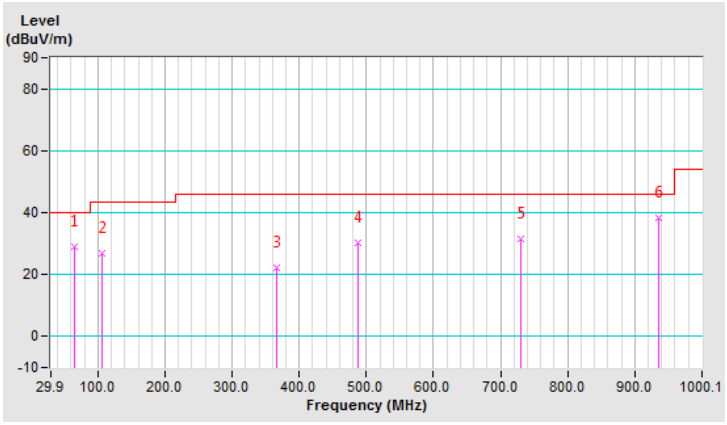


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

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	64.83	28.8 QP	40.0	-11.2	1.50 V	294	39.3	-10.5
2	105.58	26.8 QP	43.5	-16.7	1.00 V	311	39.3	-12.5
3	365.59	22.0 QP	46.0	-24.0	1.00 V	244	29.1	-7.1
4	487.83	30.4 QP	46.0	-15.6	1.00 V	111	35.6	-5.2
5	730.38	31.5 QP	46.0	-14.5	1.50 V	9	31.1	0.4
6	936.07	38.3 QP	46.0	-7.7	1.00 V	9	34.3	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

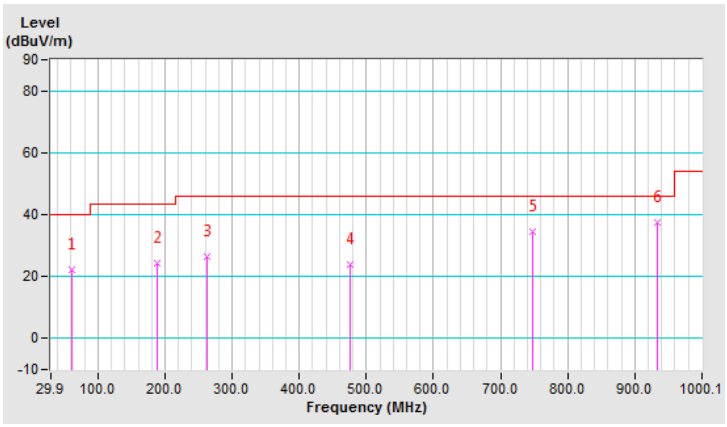


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	22.2 QP	40.0	-17.8	1.50 H	193	32.3	-10.1
2	189.01	24.4 QP	43.5	-19.1	1.00 H	297	35.5	-11.1
3	262.75	26.6 QP	46.0	-19.4	1.00 H	100	35.7	-9.1
4	476.19	24.0 QP	46.0	-22.0	1.00 H	143	29.3	-5.3
5	747.85	34.4 QP	46.0	-11.6	1.00 H	210	33.5	0.9
6	934.13	37.4 QP	46.0	-8.6	2.00 H	72	33.5	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

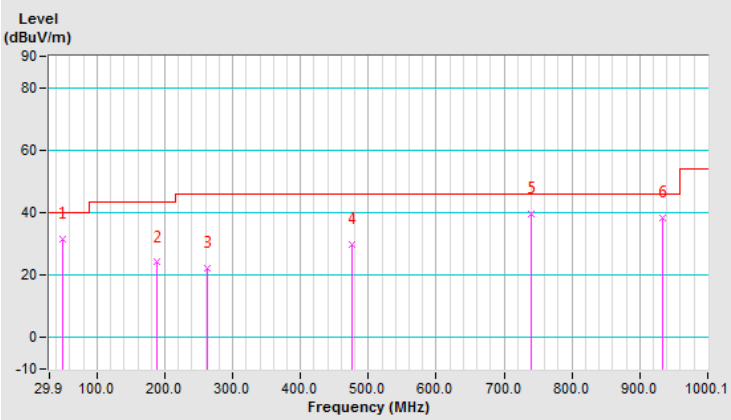


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	49.30	31.7 QP	40.0	-8.3	1.00 V	76	40.6	-8.9
2	189.01	24.1 QP	43.5	-19.4	1.00 V	232	35.2	-11.1
3	262.75	22.3 QP	46.0	-23.7	1.00 V	33	31.4	-9.1
4	476.19	29.8 QP	46.0	-16.2	1.00 V	91	35.1	-5.3
5	740.09	39.4 QP	46.0	-6.6	1.00 V	63	38.7	0.7
6	934.13	38.1 QP	46.0	-7.9	1.00 V	338	34.2	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

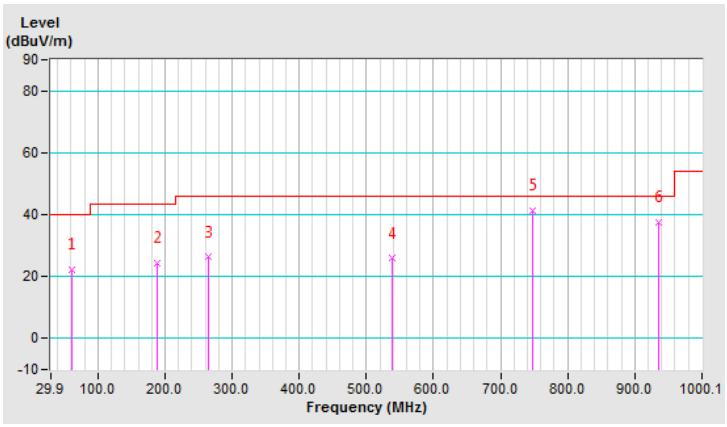


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	C		

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	22.0 QP	40.0	-18.0	1.50 H	267	32.1	-10.1
2	189.01	24.4 QP	43.5	-19.1	1.00 H	304	35.5	-11.1
3	264.69	26.2 QP	46.0	-19.8	1.00 H	88	35.2	-9.0
4	538.28	25.8 QP	46.0	-20.2	1.00 H	9	30.2	-4.4
5	747.85	41.4 QP	46.0	-4.6	2.00 H	136	40.5	0.9
6	936.07	37.4 QP	46.0	-8.6	1.00 H	276	33.4	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

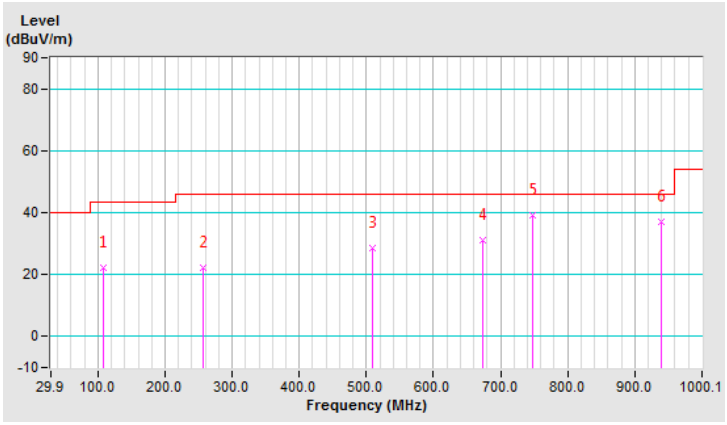


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	C		

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	107.52	22.3 QP	43.5	-21.2	1.00 V	180	34.5	-12.2
2	256.93	22.2 QP	46.0	-23.8	1.00 V	313	31.5	-9.3
3	509.18	28.5 QP	46.0	-17.5	1.00 V	29	33.3	-4.8
4	674.11	31.3 QP	46.0	-14.7	1.00 V	343	32.4	-1.1
5	747.85	39.1 QP	46.0	-6.9	1.00 V	139	38.2	0.9
6	939.95	37.0 QP	46.0	-9.0	1.00 V	68	33.0	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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 10, 2018	Dec. 09, 2019
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
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-2040.

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.

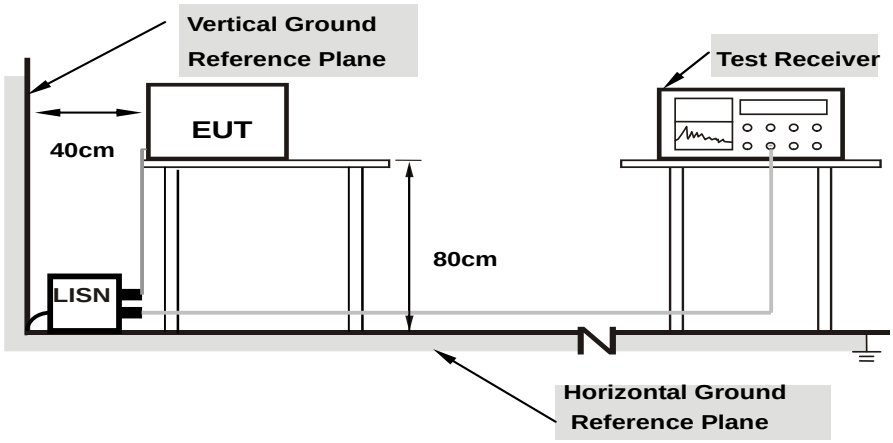
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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:

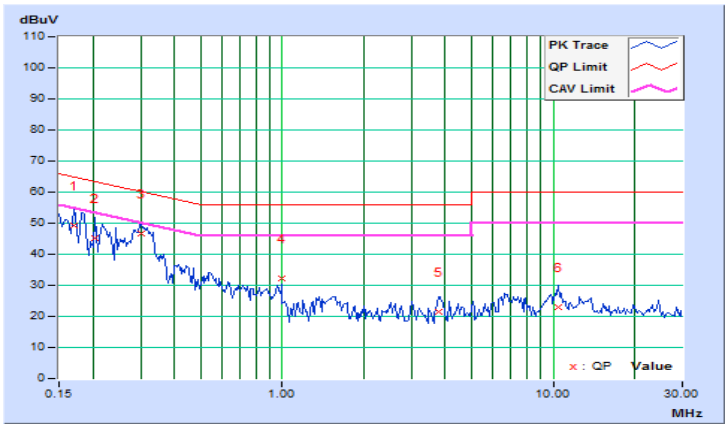
802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	40	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	0.16953	9.67	39.65	28.86	49.32	38.53	64.98	54.98	-15.66	-16.45
2	0.20469	9.67	35.42	24.72	45.09	34.39	63.42	53.42	-18.33	-19.03
3	**0.30234**	**9.66**	**37.10**	**31.92**	**46.76**	**41.58**	**60.18**	**50.18**	**-13.42**	**-8.60**
4	0.99766	9.65	22.61	19.58	32.26	29.23	56.00	46.00	-23.74	-16.77
5	3.76563	9.72	11.69	7.66	21.41	17.38	56.00	46.00	-34.59	-28.62
6	10.42578	9.85	13.07	7.62	22.92	17.47	60.00	50.00	-37.08	-32.53

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.

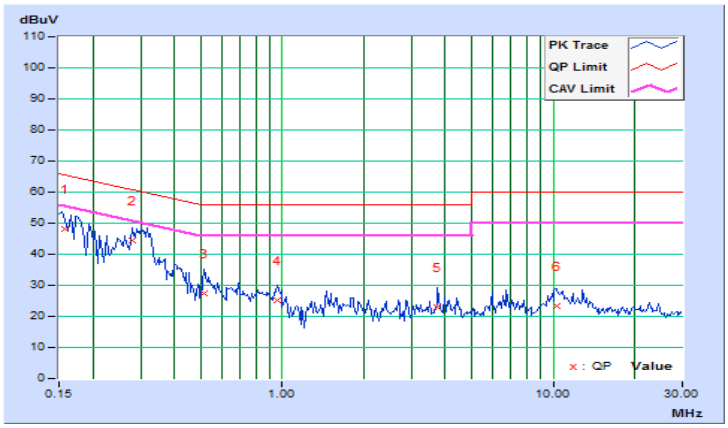


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	40	Test Mode	A

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	0.15781	9.68	38.60	24.57	48.28	34.25	65.58	55.58	-17.30	-21.33
2	0.27891	9.67	34.86	28.14	44.53	37.81	60.85	50.85	-16.32	-13.04
3	0.51719	9.67	17.75	13.41	27.42	23.08	56.00	46.00	-28.58	-22.92
4	0.95859	9.65	15.36	11.67	25.01	21.32	56.00	46.00	-30.99	-24.68
5	3.75000	9.72	13.37	9.44	23.09	19.16	56.00	46.00	-32.91	-26.84
6	10.26172	9.86	13.65	9.00	23.51	18.86	60.00	50.00	-36.49	-31.14

Remarks:

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

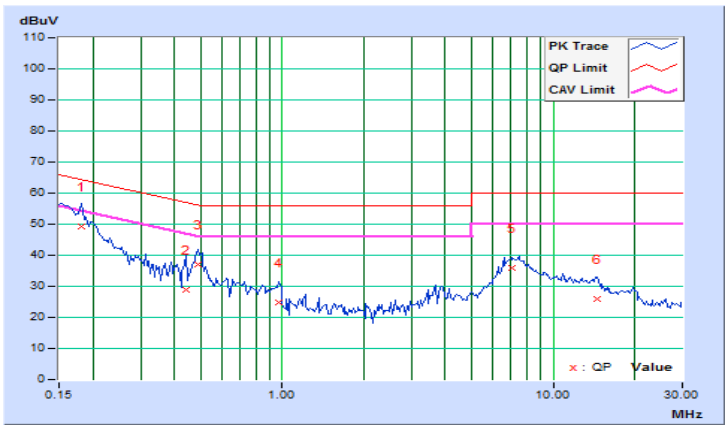


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	40	Test Mode	B

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	0.18125	9.67	39.73	25.02	49.40	34.69	64.43	54.43	-15.03	-19.74
2	0.43906	9.66	19.40	10.41	29.06	20.07	57.08	47.08	-28.02	-27.01
3	0.48984	9.66	27.55	19.55	37.21	29.21	56.17	46.17	-18.96	-16.96
4	0.96641	9.65	15.02	7.91	24.67	17.56	56.00	46.00	-31.33	-28.44
5	7.08594	9.79	26.07	21.48	35.86	31.27	60.00	50.00	-24.14	-18.73
6	14.55469	9.88	16.17	11.16	26.05	21.04	60.00	50.00	-33.95	-28.96

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.

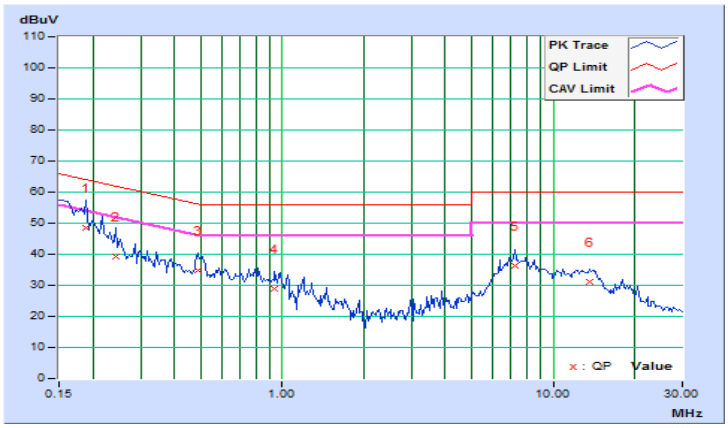


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	40	Test Mode	B

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	0.18906	9.67	39.01	24.02	48.68	33.69	64.08	54.08	-15.40	-20.39
2	0.24375	9.67	29.65	17.52	39.32	27.19	61.97	51.97	-22.65	-24.78
3	0.48594	9.67	25.15	13.99	34.82	23.66	56.24	46.24	-21.42	-22.58
4	0.93906	9.65	19.29	12.82	28.94	22.47	56.00	46.00	-27.06	-23.53
5	7.25781	9.80	26.49	21.72	36.29	31.52	60.00	50.00	-23.71	-18.48
6	13.61719	9.92	21.32	15.97	31.24	25.89	60.00	50.00	-28.76	-24.11

Remarks:

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

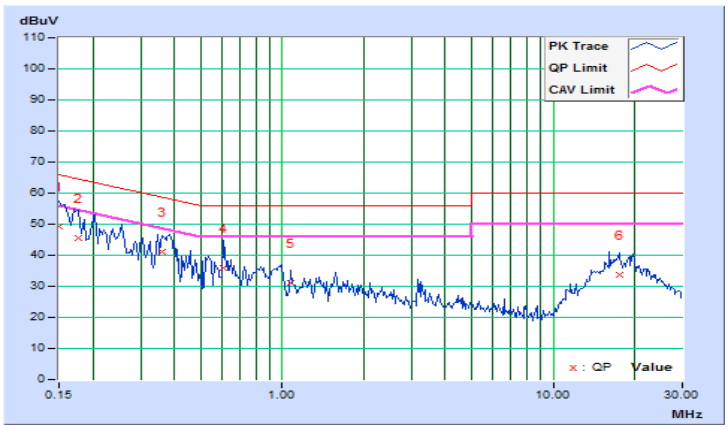


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	40	Test Mode	C

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	0.15000	9.67	39.71	25.94	49.38	35.61	66.00	56.00	-16.62	-20.39
2	0.17734	9.67	35.80	21.05	45.47	30.72	64.61	54.61	-19.14	-23.89
3	0.36094	9.66	31.62	28.09	41.28	37.75	58.71	48.71	-17.43	-10.96
4	0.60703	9.66	26.26	26.01	35.92	35.67	56.00	46.00	-20.08	-10.33
5	1.07813	9.65	21.54	17.39	31.19	27.04	56.00	46.00	-24.81	-18.96
6	17.64063	9.90	23.62	18.79	33.52	28.69	60.00	50.00	-26.48	-21.31

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.

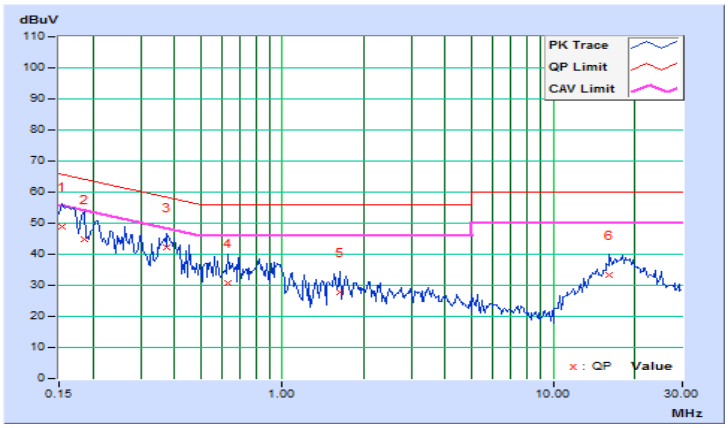


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	40	Test Mode	C

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	9.68	39.36	23.97	49.04	33.65	65.79	55.79	-16.75	-22.14
2	0.18516	9.67	35.06	20.74	44.73	30.41	64.25	54.25	-19.52	-23.84
3	0.37656	9.67	32.42	28.48	42.09	38.15	58.35	48.35	-16.26	-10.20
4	0.63438	9.66	20.95	17.97	30.61	27.63	56.00	46.00	-25.39	-18.37
5	1.64453	9.67	18.14	12.23	27.81	21.90	56.00	46.00	-28.19	-24.10
6	16.18359	9.96	23.22	18.77	33.18	28.73	60.00	50.00	-26.82	-21.27

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.

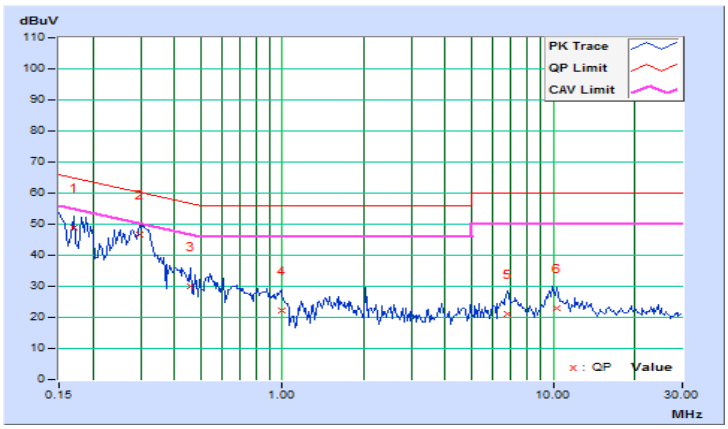


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	157	Test Mode	A

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	0.16953	9.67	39.25	28.44	48.92	38.11	64.98	54.98	-16.06	-16.87
2	0.29844	9.67	37.00	30.97	46.67	40.64	60.29	50.29	-13.62	-9.65
3	0.45859	9.66	20.25	10.53	29.91	20.19	56.72	46.72	-26.81	-26.53
4	0.98984	9.65	12.60	9.19	22.25	18.84	56.00	46.00	-33.75	-27.16
5	6.75781	9.79	11.39	3.95	21.18	13.74	60.00	50.00	-38.82	-36.26
6	10.30469	9.85	13.21	8.08	23.06	17.93	60.00	50.00	-36.94	-32.07

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.

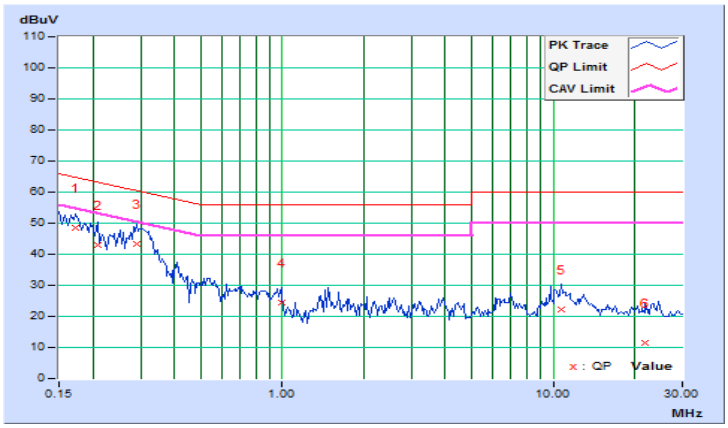


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	157	Test Mode	A

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	0.17344	9.68	38.98	27.94	48.66	37.62	64.79	54.79	-16.13	-17.17
2	0.20859	9.67	33.17	22.34	42.84	32.01	63.26	53.26	-20.42	-21.25
3	0.29063	9.67	33.76	26.37	43.43	36.04	60.51	50.51	-17.08	-14.47
4	0.99375	9.65	14.94	11.09	24.59	20.74	56.00	46.00	-31.41	-25.26
5	10.70703	9.87	12.33	8.42	22.20	18.29	60.00	50.00	-37.80	-31.71
6	21.87500	10.02	1.64	1.21	11.66	11.23	60.00	50.00	-48.34	-38.77

Remarks:

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

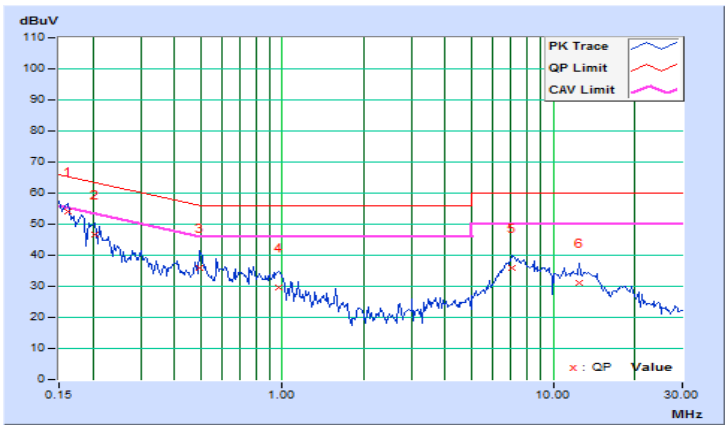


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	157	Test Mode	B

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	0.16172	9.67	44.24	30.22	53.91	39.89	65.38	55.38	-11.47	-15.49
2	0.20469	9.67	36.94	26.50	46.61	36.17	63.42	53.42	-16.81	-17.25
3	0.49375	9.66	26.23	18.62	35.89	28.28	56.10	46.10	-20.21	-17.82
4	0.97422	9.65	20.15	14.17	29.80	23.82	56.00	46.00	-26.20	-22.18
5	7.08984	9.79	26.09	21.48	35.88	31.27	60.00	50.00	-24.12	-18.73
6	12.50391	9.87	21.33	15.60	31.20	25.47	60.00	50.00	-28.80	-24.53

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.

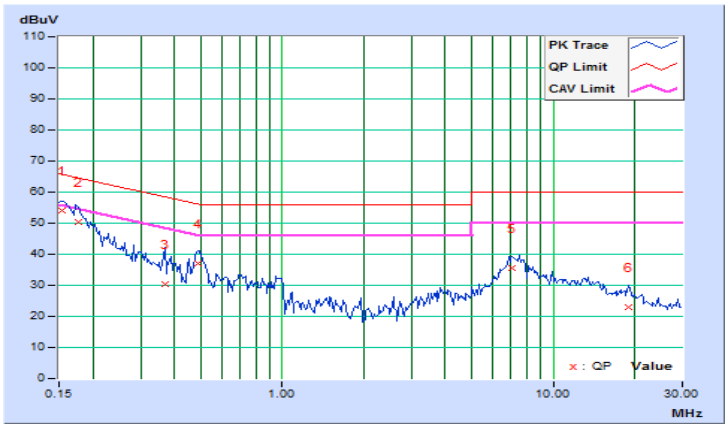


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	157	Test Mode	B

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	9.68	44.48	28.72	54.16	38.40	65.79	55.79	-11.63	-17.39
2	0.17734	9.67	40.57	24.97	50.24	34.64	64.61	54.61	-14.37	-19.97
3	0.36875	9.67	20.58	10.15	30.25	19.82	58.53	48.53	-28.28	-28.71
4	0.48594	9.67	27.33	20.47	37.00	30.14	56.24	46.24	-19.24	-16.10
5	7.08594	9.80	25.71	21.19	35.51	30.99	60.00	50.00	-24.49	-19.01
6	18.91797	9.99	12.94	8.63	22.93	18.62	60.00	50.00	-37.07	-31.38

Remarks:

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

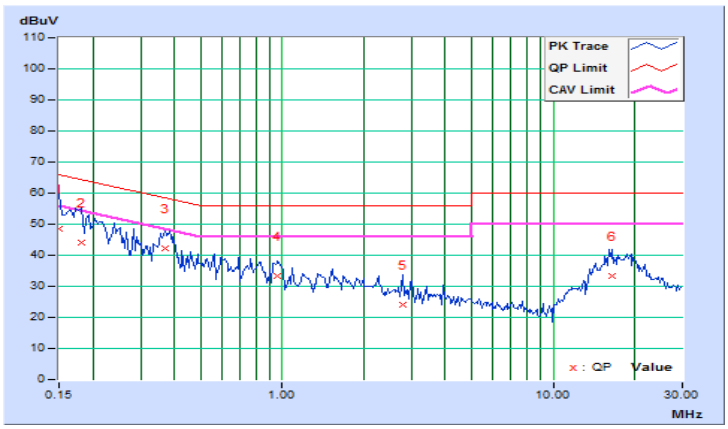


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	157	Test Mode	C

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	0.15000	9.67	39.01	24.20	48.68	33.87	66.00	56.00	-17.32	-22.13
2	0.18125	9.67	34.56	20.20	44.23	29.87	64.43	54.43	-20.20	-24.56
3	0.36875	9.66	32.40	29.05	42.06	38.71	58.53	48.53	-16.47	-9.82
4	0.96250	9.65	23.74	19.13	33.39	28.78	56.00	46.00	-22.61	-17.22
5	2.77344	9.70	14.45	8.74	24.15	18.44	56.00	46.00	-31.85	-27.56
6	16.61328	9.89	23.41	18.40	33.30	28.29	60.00	50.00	-26.70	-21.71

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.

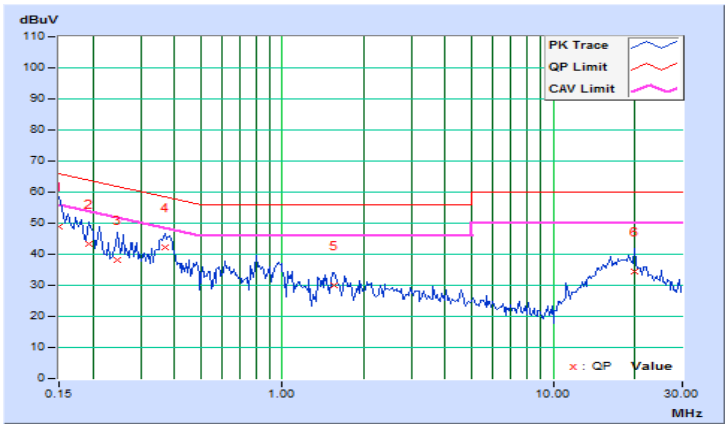


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Channel	157	Test Mode	C

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	0.15000	9.68	39.21	24.48	48.89	34.16	66.00	56.00	-17.11	-21.84
2	0.19297	9.67	33.57	21.08	43.24	30.75	63.91	53.91	-20.67	-23.16
3	0.24766	9.67	28.61	19.24	38.28	28.91	61.84	51.84	-23.56	-22.93
4	0.36875	9.67	32.67	28.95	42.34	38.62	58.53	48.53	-16.19	-9.91
5	1.55859	9.67	20.44	16.00	30.11	25.67	56.00	46.00	-25.89	-20.33
6	19.91797	10.01	24.50	19.24	34.51	29.25	60.00	50.00	-25.49	-20.75

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)

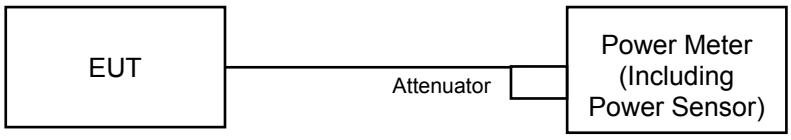
*B is the 26 dB emission bandwidth in megahertz

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



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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

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:

For U-NII-1 Band

CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	21.66	21.54	289.116	24.61	30.00	Pass
40	5200	25.63	25.62	730.349	28.64	30.00	Pass
48	5240	25.56	25.45	710.501	28.52	30.00	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.66	22.35	356.293	25.52	30.00	Pass
40	5200	25.73	25.85	**758.703**	28.80	30.00	Pass
48	5240	25.51	25.48	708.814	28.51	30.00	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	20.45	20.56	224.680	23.52	30.00	Pass
46	5230	24.65	24.56	577.502	27.62	30.00	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.88	19.69	190.386	22.80	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	22.66	22.35	356.293	25.52	30.00	Pass
40	5200	25.73	25.85	**758.703**	28.80	30.00	Pass
48	5240	25.51	25.48	708.814	28.51	30.00	Pass

Note: Directional gain = 4.42dBi < 6dBi, so the power limit no need to be reduced.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	20.45	20.56	224.680	23.52	30.00	Pass
46	5230	24.65	24.56	577.502	27.62	30.00	Pass

Note: Directional gain = 4.42dBi < 6dBi, so the power limit no need to be reduced.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.88	19.69	190.386	22.80	30.00	Pass

Note: Directional gain = 4.42dBi < 6dBi, so the power limit no need to be reduced.

For U-NII-3 Band

CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.48	23.81	23.79	23.52	927.517	29.67	30.00	Pass
157	5785	23.38	23.61	23.90	23.57	920.367	29.64	30.00	Pass
165	5825	23.56	23.80	23.70	23.48	924.136	29.66	30.00	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	23.52	23.78	23.72	23.59	**927.751**	29.67	30.00	Pass
157	5785	23.60	23.46	23.92	23.58	925.545	29.66	30.00	Pass
165	5825	23.62	23.74	23.61	23.46	918.171	29.63	30.00	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	23.58	23.57	23.47	23.61	907.490	29.58	30.00	Pass
159	5795	23.72	23.54	23.42	23.89	926.141	29.67	30.00	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	21.89	21.90	21.66	22.02	615.183	27.89	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	22.59	22.85	22.79	22.66	**748.914**	28.74	28.91	Pass
157	5785	22.67	22.53	22.99	22.65	747.132	28.73	28.91	Pass
165	5825	22.69	22.81	22.68	22.53	741.179	28.70	28.91	Pass

Note: Directional gain = 7.09dBi > 6dBi, so the power limit shall be reduced to 30-(7.09-6) = 28.91dBm.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	22.65	22.64	22.54	22.68	732.557	28.65	28.91	Pass
159	5795	22.79	22.61	22.49	22.96	747.614	28.74	28.91	Pass

Note: Directional gain = 7.09dBi > 6dBi, so the power limit shall be reduced to 30-(7.09-6) = 28.91dBm.

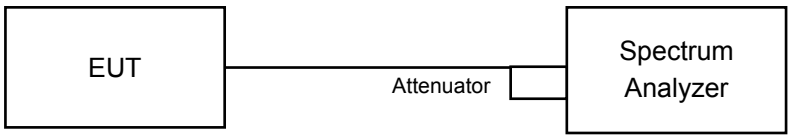
802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	21.89	21.90	21.66	22.02	615.183	27.89	28.91	Pass

Note: Directional gain = 7.09dBi > 6dBi, so the power limit shall be reduced to 30-(7.09-6) = 28.91dBm.

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-1 Band

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.56	16.44
40	5200	16.92	17.16
48	5240	16.68	16.68

802.11ac (VHT20)

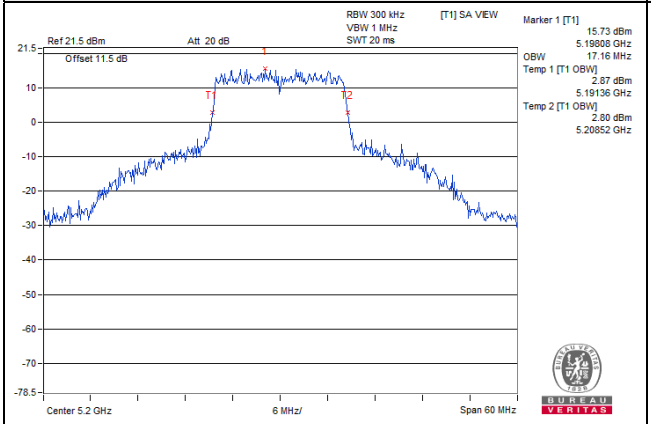
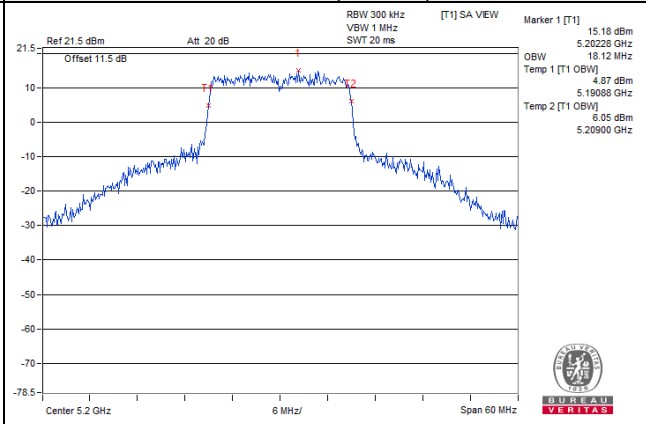
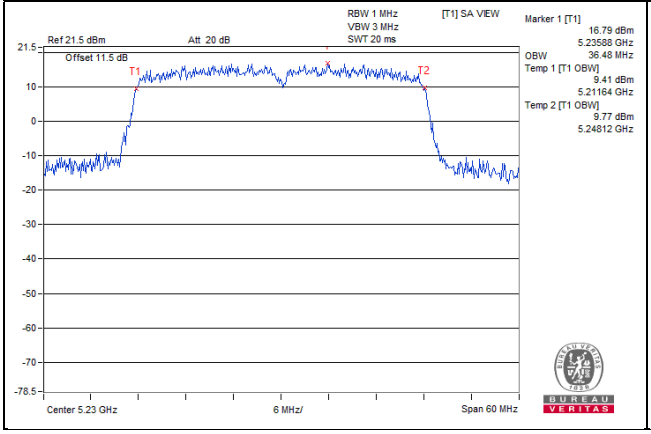
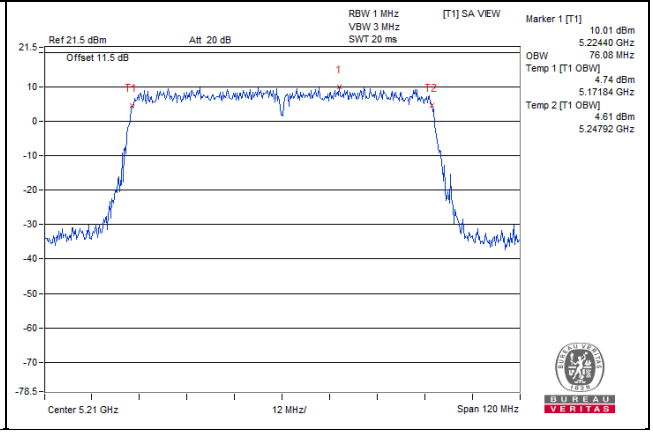
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.76	17.64
40	5200	18.12	18.12
48	5240	17.88	17.88

802.11ac (VHT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.12	36.36
46	5230	36.48	36.48

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.84	76.08

Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

For U-NII-3 Band

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	16.44	16.44	16.44	16.56
157	5785	16.68	16.56	16.56	16.56
165	5825	16.68	16.68	16.68	16.56

802.11ac (VHT20)

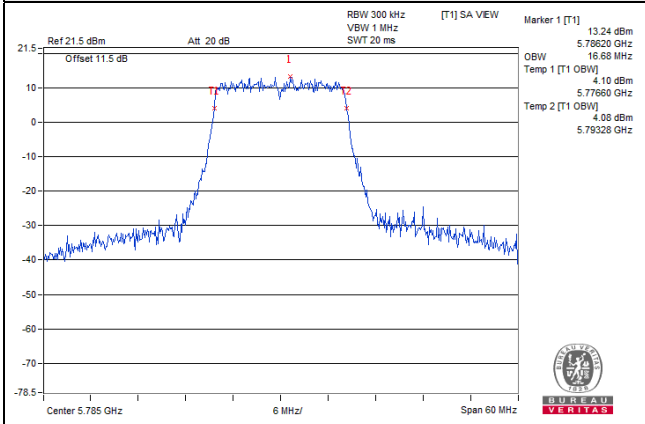
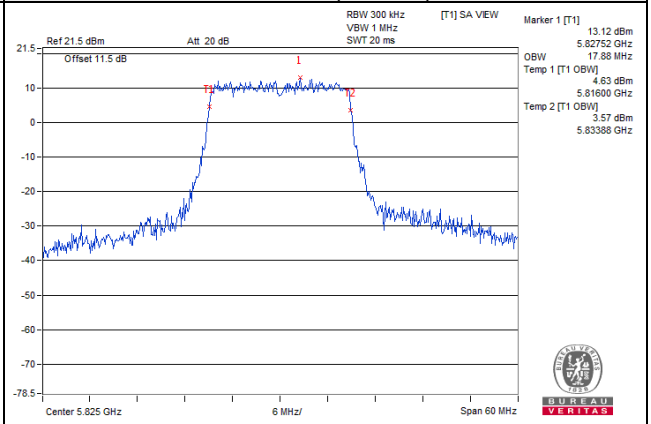
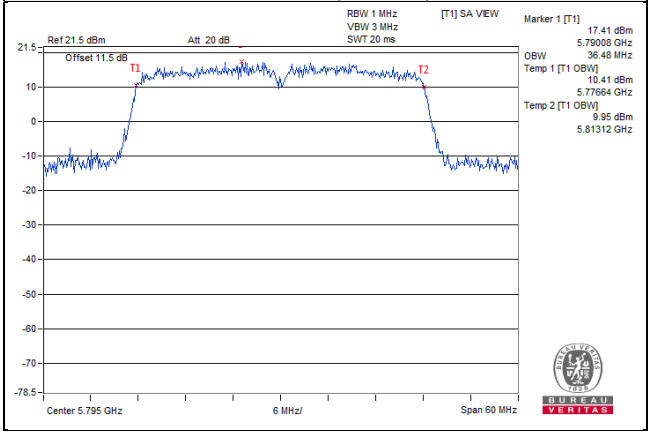
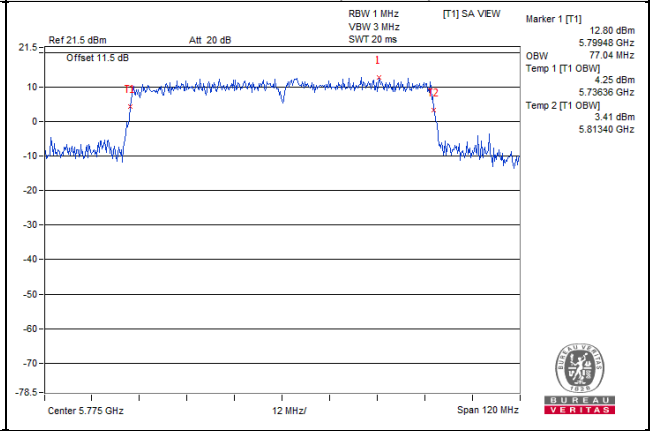
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	17.64	17.64	17.64	17.64
157	5785	17.64	17.76	17.64	17.88
165	5825	17.88	17.76	17.76	17.76

802.11ac (VHT40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
151	5755	36.24	36.36	36.36	36.48
159	5795	36.24	36.36	36.48	36.24

802.11ac (VHT80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
155	5775	76.08	76.08	76.32	77.04

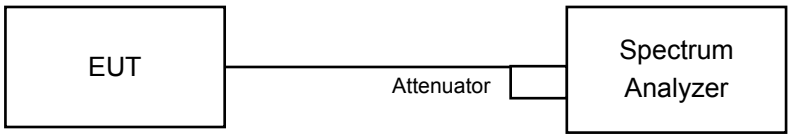
Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

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-1 band:

Duty cycle of test signal is > 98%

Using method SA-1

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

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

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

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

e. Record the max value

Duty cycle of test signal is < 98%

Using method SA-2

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

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

c. Set Channel power measure = 1MHz

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

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

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

For U-NII-3 band:

Duty cycle of test signal is > 98%

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

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

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

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

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

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

g. Record the max value

Duty cycle of test signal is < 98%

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

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

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

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

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

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

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-1 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				
36	5180	7.40	7.55	0.17	10.66	17.00	Pass
40	5200	10.38	10.64	0.17	13.69	17.00	Pass
48	5240	9.47	9.99	0.17	12.92	17.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 4.42dBi < 6dBi, so the power density limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Freq. (MHz)	PSD (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	7.01	7.62	10.34	17.00	Pass
40	5200	10.00	10.69	13.37	17.00	Pass
48	5240	9.38	9.81	12.61	17.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 4.42dBi < 6dBi, so the power density limit no need to be reduced.

802.11ac (VHT40)

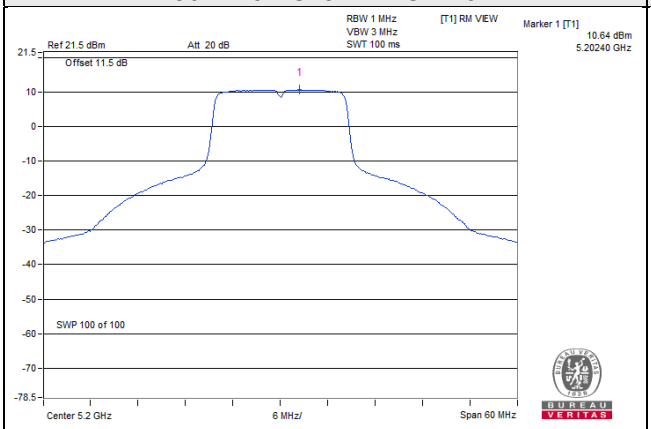
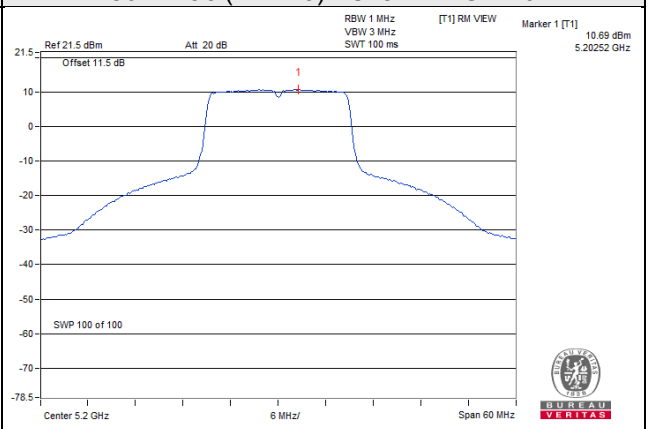
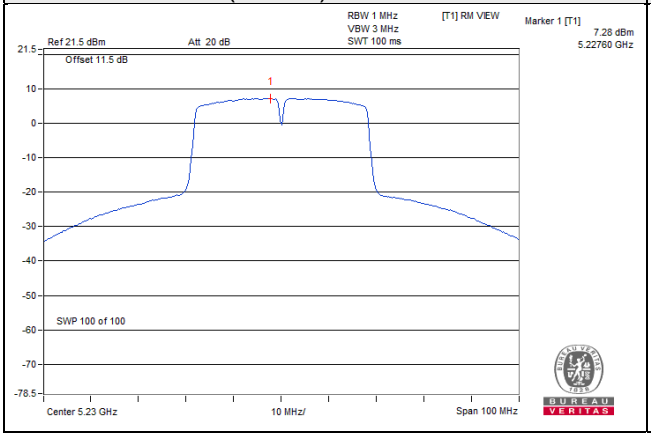
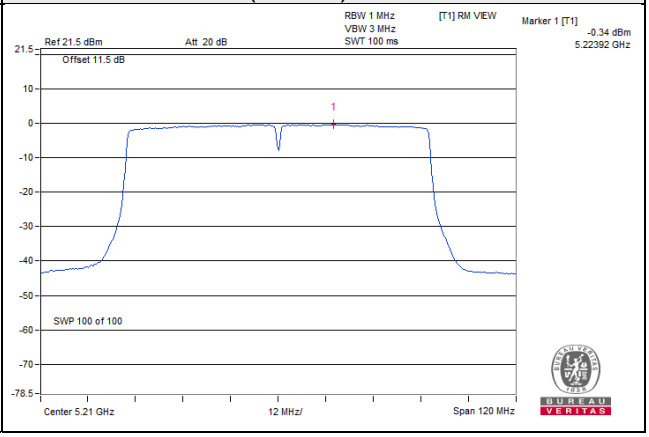
Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	2.65	3.58	0.13	6.28	17.00	Pass
46	5230	6.58	7.25	0.13	10.07	17.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 4.42dBi < 6dBi, so the power density limit no need to be 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				
42	5210	-0.72	-0.52	0.26	2.65	17.00	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 4.42dBi < 6dBi, so the power density limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a / Chain 1 / CH 40	802.11ac (VHT20) / Chain 1 / CH 40
	
802.11ac (VHT40) / Chain 1 / CH 46	802.11ac (VHT80) / Chain 1 / 42
	

For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	0.89	3.11	6.02	0.17	9.30	28.91	Pass
	157	5785	1.18	3.40	6.02	0.17	9.59	28.91	Pass
	165	5825	1.35	3.57	6.02	0.17	9.76	28.91	Pass
1	149	5745	1.07	3.29	6.02	0.17	9.48	28.91	Pass
	157	5785	1.27	3.49	6.02	0.17	9.68	28.91	Pass
	165	5825	1.41	3.63	6.02	0.17	9.82	28.91	Pass
2	149	5745	1.16	3.38	6.02	0.17	9.57	28.91	Pass
	157	5785	1.43	3.65	6.02	0.17	9.84	28.91	Pass
	165	5825	2.16	4.38	6.02	0.17	10.57	28.91	Pass
3	149	5745	1.18	3.40	6.02	0.17	9.59	28.91	Pass
	157	5785	1.00	3.22	6.02	0.17	9.41	28.91	Pass
	165	5825	1.26	3.48	6.02	0.17	9.67	28.91	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.09dBi > 6dBi, so the power density limit shall be reduced to 30-(7.09-6) = 28.91dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/300 kHz)	PSD (dBm/500 kHz)	10 log (N=4) dB	Total PSD (dBm/500 kHz)	Limit (dBm/500 kHz)	Pass / Fail
0	149	5745	0.36	2.58	6.02	8.60	28.91	Pass
	157	5785	0.64	2.86	6.02	8.88	28.91	Pass
	165	5825	0.73	2.95	6.02	8.97	28.91	Pass
1	149	5745	0.61	2.83	6.02	8.85	28.91	Pass
	157	5785	0.74	2.96	6.02	8.98	28.91	Pass
	165	5825	0.93	3.15	6.02	9.17	28.91	Pass
2	149	5745	0.53	2.75	6.02	8.77	28.91	Pass
	157	5785	0.99	3.21	6.02	9.23	28.91	Pass
	165	5825	1.66	3.88	6.02	9.90	28.91	Pass
3	149	5745	0.54	2.76	6.02	8.78	28.91	Pass
	157	5785	0.26	2.48	6.02	8.50	28.91	Pass
	165	5825	-0.27	1.95	6.02	7.97	28.91	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.09dBi > 6dBi, so the power density limit shall be reduced to 30-(7.09-6) = 28.91dBm.

802.11ac (VHT40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-1.67	0.55	6.02	0.13	6.70	28.91	Pass
	159	5795	-1.31	0.91	6.02	0.13	7.06	28.91	Pass
1	151	5755	-1.52	0.70	6.02	0.13	6.85	28.91	Pass
	159	5795	-1.32	0.90	6.02	0.13	7.05	28.91	Pass
2	151	5755	-1.27	0.95	6.02	0.13	7.10	28.91	Pass
	159	5795	-0.89	1.33	6.02	0.13	7.48	28.91	Pass
3	151	5755	-1.78	0.44	6.02	0.13	6.59	28.91	Pass
	159	5795	-2.56	-0.34	6.02	0.13	5.81	28.91	Pass

Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.09dBi > 6dBi, so the power density limit shall be reduced to 30-(7.09-6) = 28.91dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

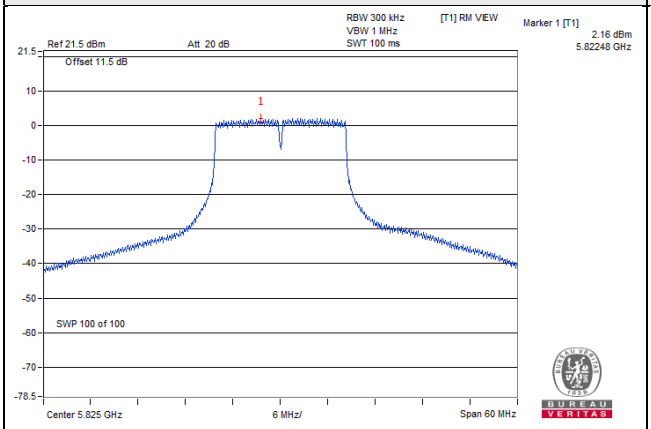
802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-4.76	-2.54	6.02	0.26	3.74	28.91	Pass
1	155	5775	-4.55	-2.33	6.02	0.26	3.95	28.91	Pass
2	155	5775	-4.60	-2.38	6.02	0.26	3.90	28.91	Pass
3	155	5775	-5.44	-3.22	6.02	0.26	3.06	28.91	Pass

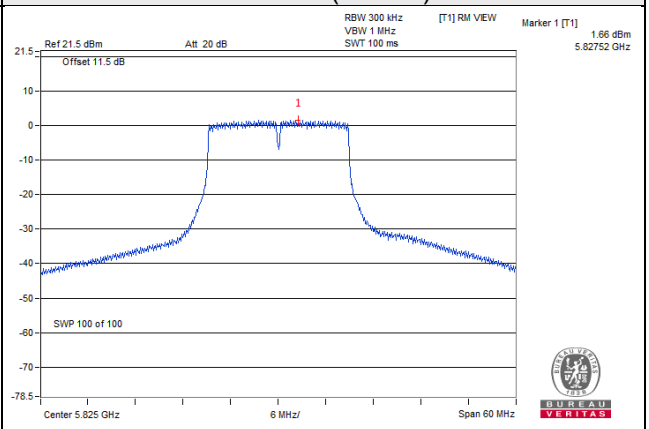
Note:
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.09dBi > 6dBi, so the power density limit shall be reduced to 30-(7.09-6) = 28.91dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

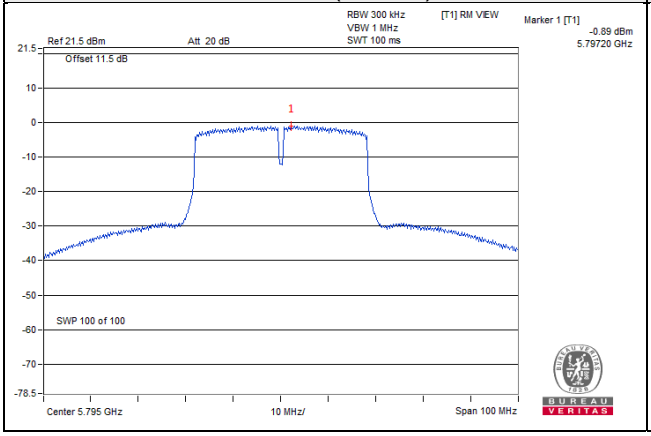
802.11a



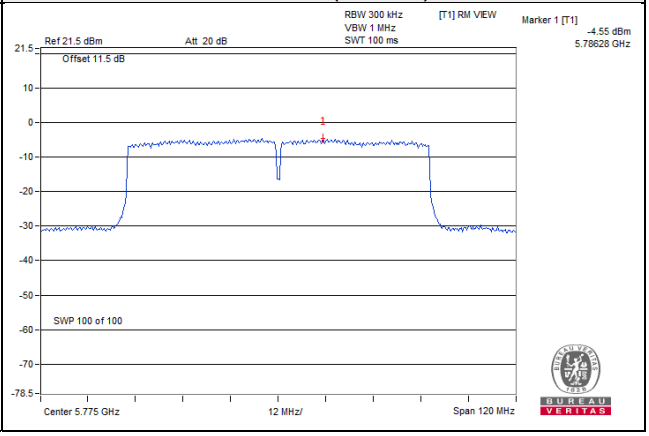
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

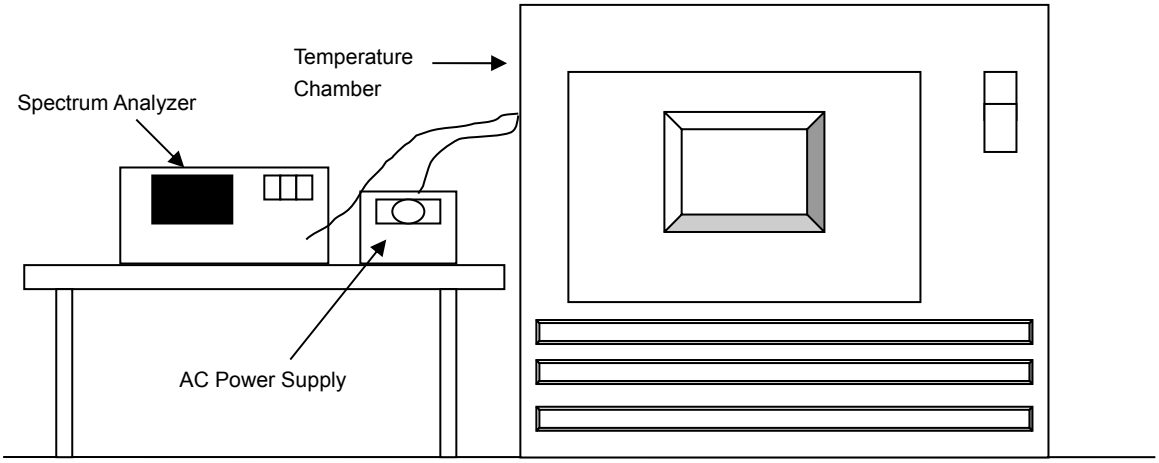


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 11, 2018	Jun. 10, 2019
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 04, 2018	Jun. 03, 2019
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019
AC Power Supply Extech	CFW-105	E000603	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.

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

For U-NII-1 band:

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
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
40	120	5180.0245	Pass	5180.0275	Pass	5180.0242	Pass	5180.0259	Pass
30	120	5179.9932	Pass	5179.9979	Pass	5179.9971	Pass	5179.9957	Pass
20	120	5180.0074	Pass	5180.0064	Pass	5180.007	Pass	5180.0034	Pass
10	120	5180.0181	Pass	5180.0156	Pass	5180.0163	Pass	5180.016	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
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	5180.007	Pass	5180.0074	Pass	5180.0069	Pass	5180.0043	Pass
	120	5180.0074	Pass	5180.0064	Pass	5180.007	Pass	5180.0034	Pass
	102	5180.0076	Pass	5180.0069	Pass	5180.0064	Pass	5180.0039	Pass

For U-NII-3 band:

Frequency Stability Versus Temp.									
Operating Frequency: 5745MHz									
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
40	120	5745.0237	Pass	5745.0205	Pass	5745.0219	Pass	5745.0229	Pass
30	120	5744.9956	Pass	5744.9919	Pass	5744.9917	Pass	5744.9971	Pass
20	120	5745.0211	Pass	5745.024	Pass	5745.021	Pass	5745.0251	Pass
10	120	5745.0171	Pass	5745.0166	Pass	5745.0193	Pass	5745.016	Pass
0	120	5744.9782	Pass	5744.9739	Pass	5744.9761	Pass	5744.9766	Pass

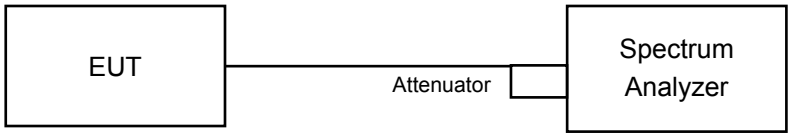
Frequency Stability Versus Voltage									
Operating Frequency: 5745MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5745.0182	Pass	5745.0166	Pass	5745.0203	Pass	5745.0153	Pass
	120	5745.0171	Pass	5745.0166	Pass	5745.0193	Pass	5745.016	Pass
	102	5745.0182	Pass	5745.016	Pass	5745.0184	Pass	5745.017	Pass

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	16.39	16.41	16.39	16.40	0.5	Pass
157	5785	16.41	16.42	16.39	16.41	0.5	Pass
165	5825	16.40	16.43	16.39	16.38	0.5	Pass

802.11ac (VHT20)

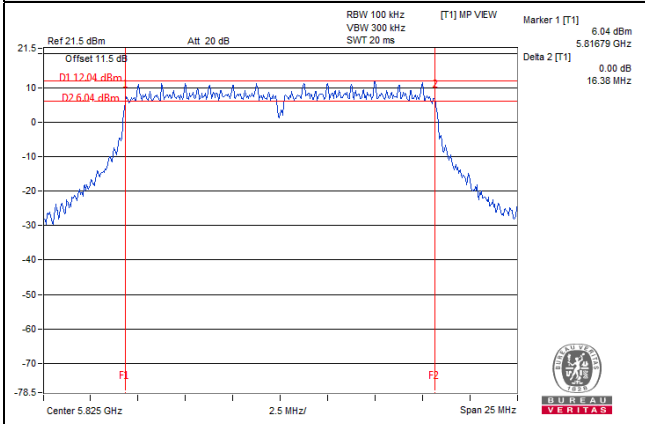
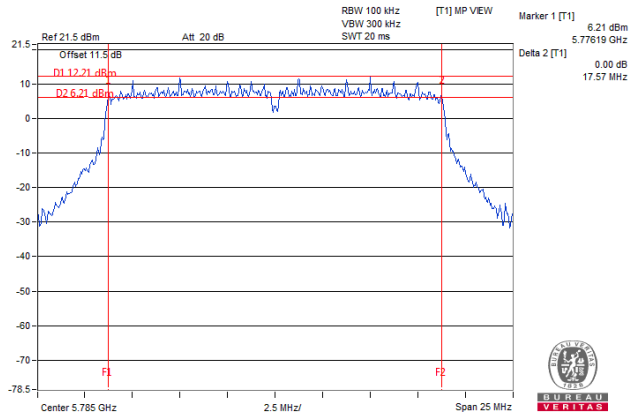
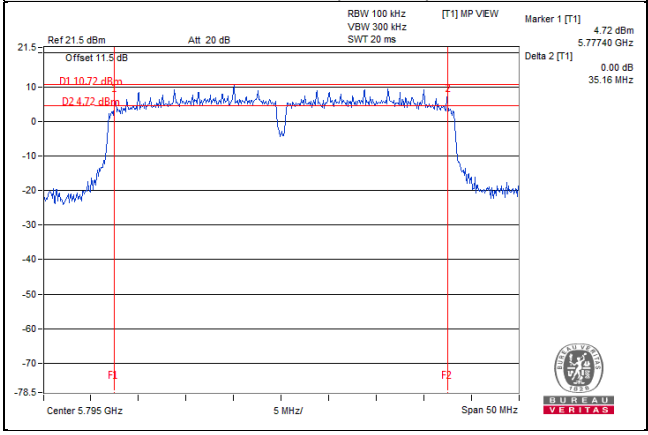
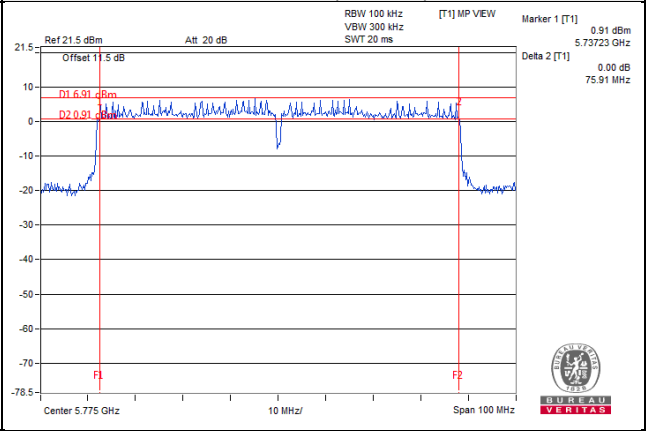
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	17.63	17.63	17.62	17.62	0.5	Pass
157	5785	17.63	17.64	17.57	17.63	0.5	Pass
165	5825	17.61	17.62	17.59	17.63	0.5	Pass

802.11 (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	35.17	35.42	35.22	35.16	0.5	Pass
159	5795	35.20	35.16	35.17	35.28	0.5	Pass

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	76.41	75.91	76.41	76.46	0.5	Pass

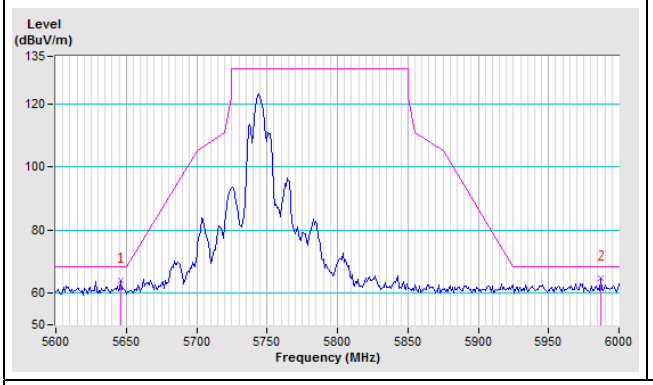
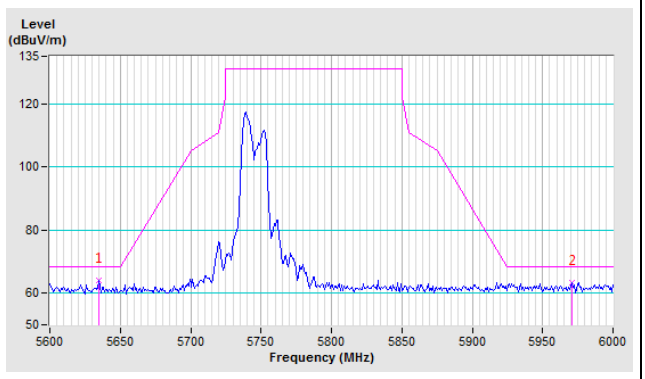
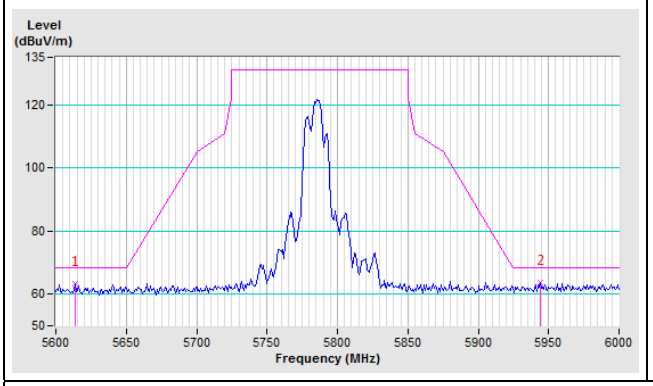
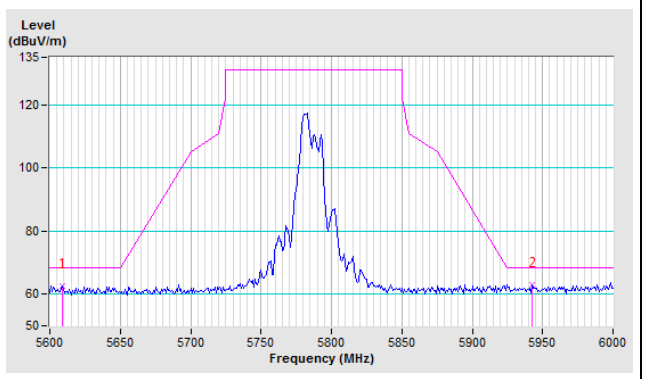
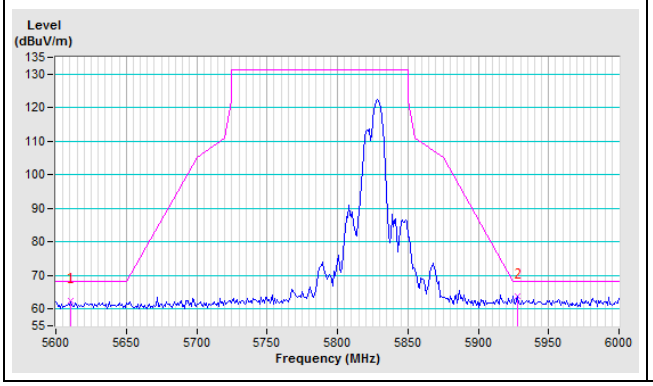
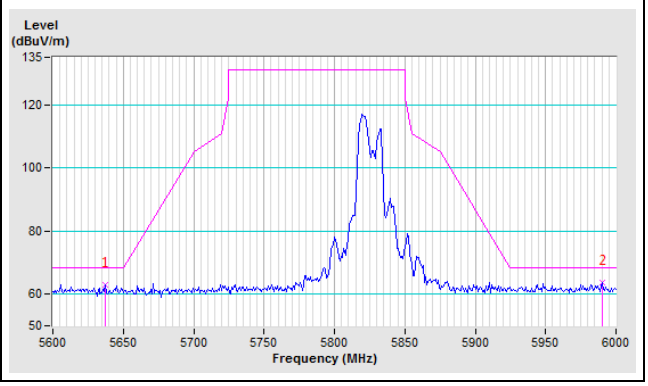
Spectrum Plot of Worst Value	
802.11a	802.11ac (VHT20)
	
802.11ac (VHT40)	802.11ac (VHT80)
	

5 Pictures of Test Arrangements

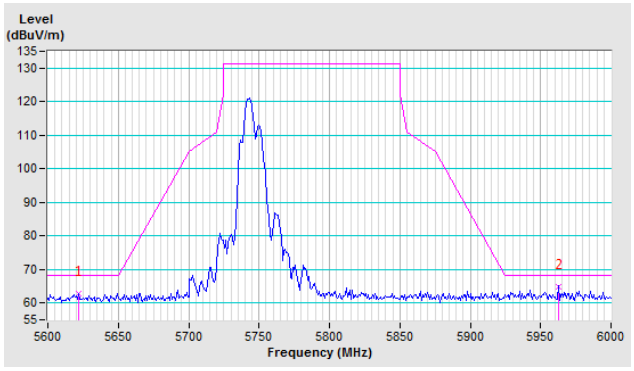
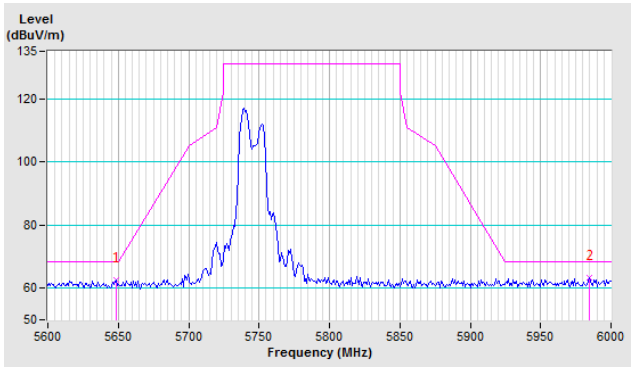
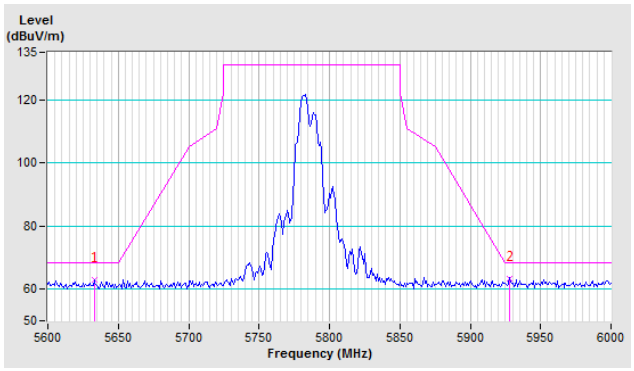
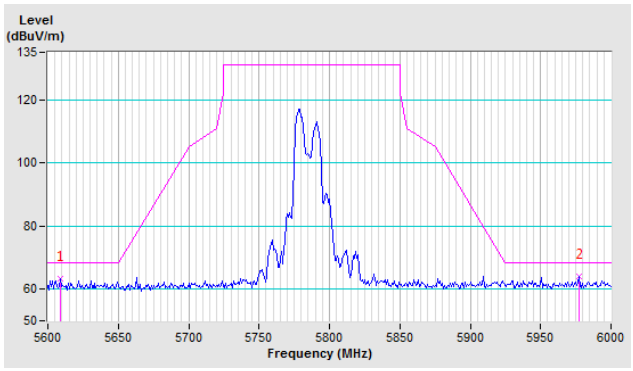
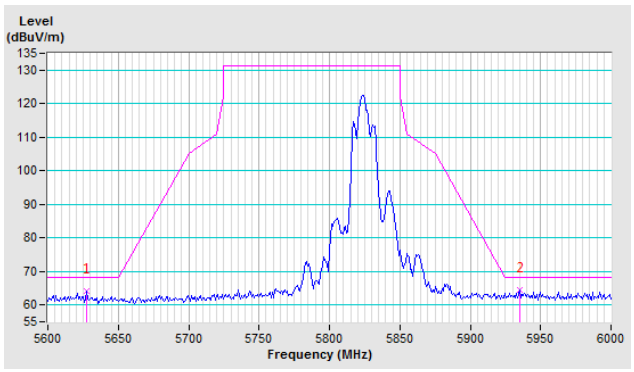
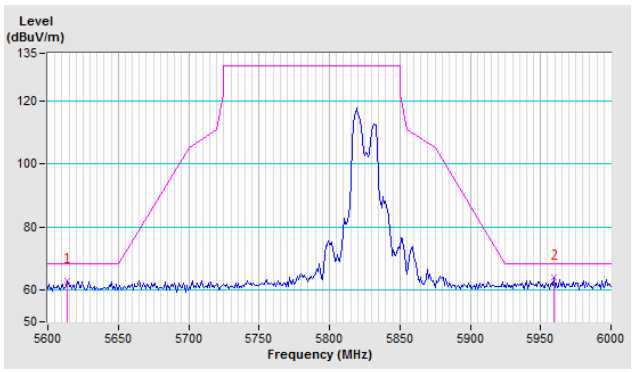
Please refer to the attached file (Test Setup Photo).

Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

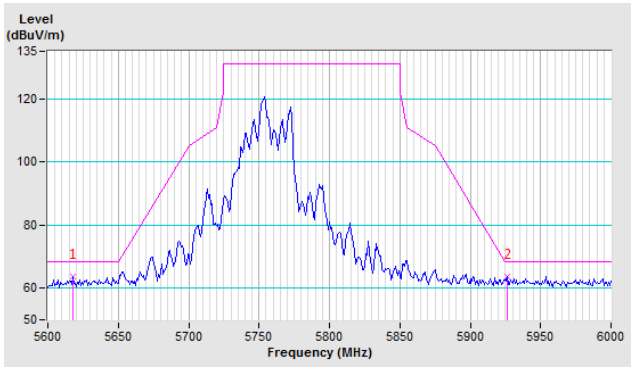
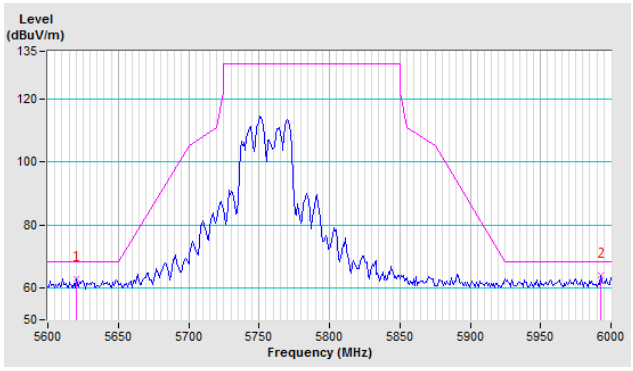
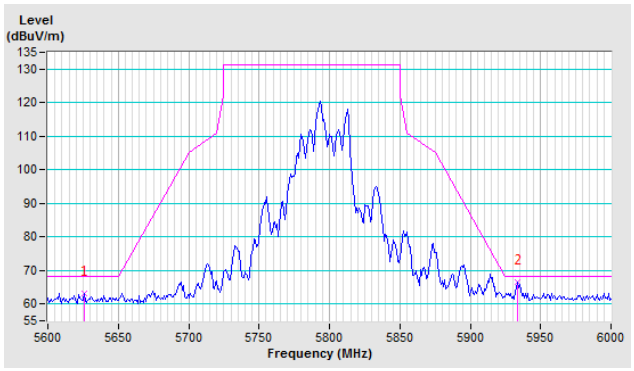
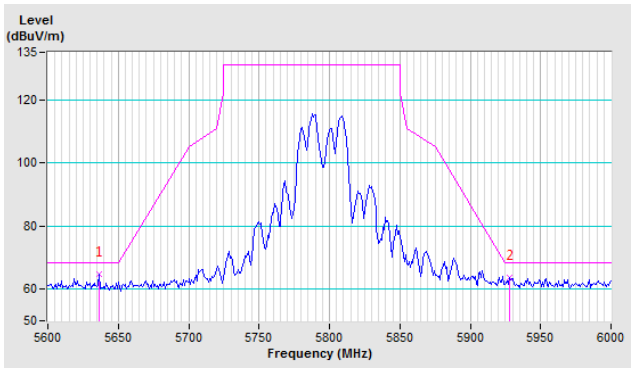
802.11a

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

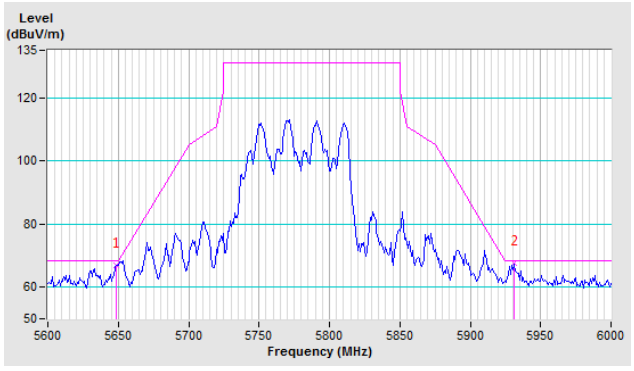
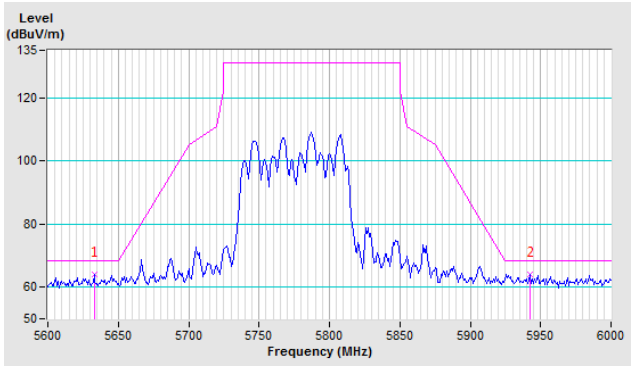
802.11ac (VHT20)

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
Horizontal	Vertical
	

802.11ac (VHT40)

CH151	
Horizontal	Vertical
	
CH159	
Horizontal	Vertical
	

802.11ac (VHT80)

CH155	
Horizontal	Vertical
	

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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