FCC Test Report (DFS Band)

Report No.:	RF181009E01A-1
FCC ID:	KA2AP2620A1
Test Model:	DAP-2620
Received Date:	Oct. 09, 2018
Test Date:	Oct. 23 to Nov. 14, 2018
Issued Date:	Mar. 27, 2019
Applicant:	D-Link Corporation
Address:	17595 Mt. Herrmann Street Fountain Valley, CA92708 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF181009E01A-1	Original release.	Mar. 27, 2019

1 Certificate of Conformity

Product:	Wireless AC1200 Wave 2 Dual-Band wall-plate PoE AP
Brand:	D-Link
Test Model:	DAP-2620
Sample Status:	ENGINEERING SAMPLE
Applicant:	D-Link Corporation
Test Date:	Oct. 23 to Nov. 14, 2018
Standard:	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 EMC characteristics under the conditions specified in this report.

Prepared by : Phoenix Huang , **Date:** Mar. 27, 2019

Phoenix Huang / Specialist

Approved by : , **Date:** Mar. 27, 2019

May Chen / Manager

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 -7.35dB at 19.81250MHz.
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 5725.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is i-pex(MHF) not a standard connector.

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	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.53 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.08 dB
	6GHz ~ 18GHz	4.98 dB
	18GHz ~ 40GHz	5.19 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	Wireless AC1200 Wave 2 Dual-Band wall-plate PoE AP
Brand	D-Link
Test Model	DAP-2620
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	48Vdc from POE
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5.26GHz ~ 5.32GHz, 5.5GHz ~ 5.7GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 15 802.11n (HT40), 802.11ac (VHT40): 7 802.11ac (VHT80): 3
Output Power	**5.26 ~ 5.32GHz:** **CDD Mode:** 244.474mW **Beamforming Mode:** 181.141mW **5.5 ~ 5.7GHz:** **CDD Mode:** 229.306mW **Beamforming Mode:** 185.071mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II change. The difference compared with the Report No.: RF181009E01-1 as the following:
   - ◆ Add DFS band <5.26GHz ~ 5.32GHz, 5.50GHz ~ 5.70GHz>
2. According to above condition, all test items need to be performed. And all data weres verified to meet the requirements.
3. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	WLAN (5GHz)
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.		

4. The EUT must be supplied with a PoE as following table:

(Only for test not for sale)		
Brand	Model No.	Spec.
Bullet	BPI100-GH	Input: 100-240Vac, 50-60Hz Output: 48Vdc

5. The antennas provided to the EUT, please refer to the following table:

Ant No.	Transmitter Circuit	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type	Cable Length (mm)
1	Chain (1)	3	2.4~2.4835	PCB	i-pex(MHF)	55
		4.5	5.15~5.85	PCB	i-pex(MHF)	
2	Chain (0)	2.8	2.4~2.4835	PCB	i-pex(MHF)	35
		4.1	5.15~5.85	PCB	i-pex(MHF)	

6. The EUT incorporates a MIMO function:

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	2TX	2RX
802.11g	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
VHT20	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
VHT40	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	2TX	2RX
802.11n (HT20)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11n (HT40)	MCS 0~7	2TX	2RX
	MCS 8~15	2TX	2RX
802.11ac (VHT20)	MCS0~8 Nss=1	2TX	2RX
	MCS0~8 Nss=2	2TX	2RX
802.11ac (VHT40)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX
802.11ac (VHT80)	MCS0~9 Nss=1	2TX	2RX
	MCS0~9 Nss=2	2TX	2RX

Note:
1. All of modulation mode support beamforming function except 2.4GHz & 802.11a modulation mode.
2. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.
3. 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.

7. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5260 ~ 5320MHz

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

FOR 5500 ~ 5700MHz

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Note: In the original report, the EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-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.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106, 122	106, 122	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT40)	5260-5320, 5500-5700	54 to 62, 102 to 134	54	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT40)	5260-5320, 5500-5700	54 to 62, 102 to 134	54	OFDM	BPSK	13.5

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

CDD Mode						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6
802.11ac (VHT20)		52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6
802.11ac (VHT20)		100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106, 122	106, 122	OFDM	BPSK	29.3
Beamforming Mode (output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
802.11ac (VHT20)	5500-5700	100 to 140	100, 116, 140	OFDM	BPSK	6.5
802.11ac (VHT40)		102 to 134	102, 110, 134	OFDM	BPSK	13.5
802.11ac (VHT80)		106, 122	106, 122	OFDM	BPSK	29.3

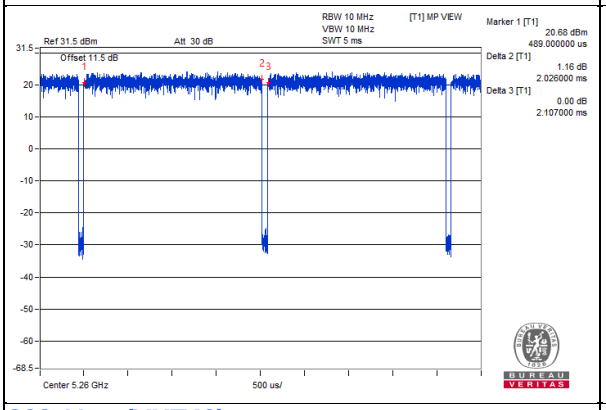
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	22deg. C, 66%RH	120Vac, 60Hz (System)	Steven Chiang
RE<1G	22deg. C, 67%RH	120Vac, 60Hz (System)	Steven Chiang
PLC	23deg. C, 75%RH	120Vac, 60Hz (System)	Andy Ho
APCM	25eg. C, 60%RH	48Vdc	Robert Cheng

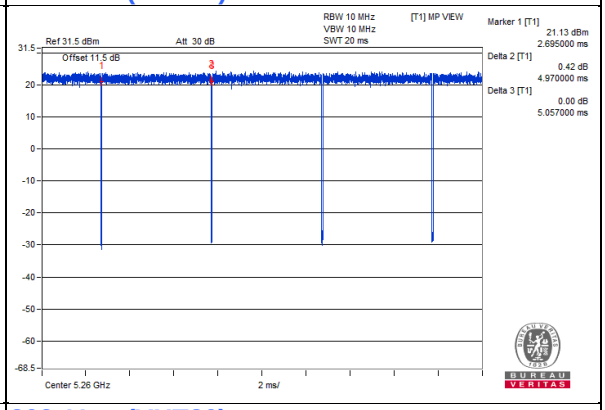
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.026 ms/2.107 ms = 0.962, Duty factor = 10 * log (1/Duty cycle) = 0.17
802.11ac (VHT20): Duty cycle = 4.97 ms/5.057 ms = 0.983
802.11ac (VHT40): Duty cycle = 2.414 ms/2.477 ms = 0.975, Duty factor = 10 * log (1/Duty cycle) = 0.11
802.11ac (VHT80): Duty cycle = 1.135 ms/1.2 ms = 0.946, Duty factor = 10 * log (1/Duty cycle) = 0.24

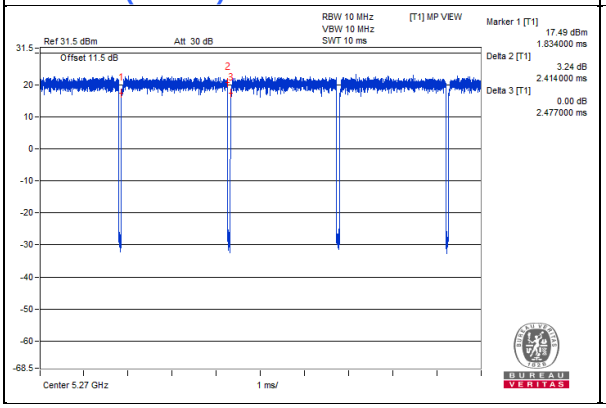
802.11a



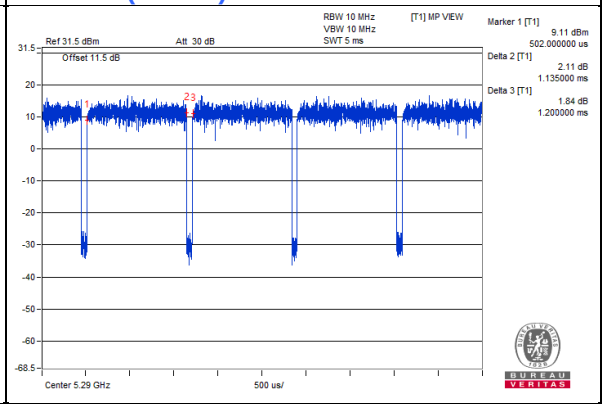
802.11ac (VHT20)



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.	Telephone	DAISHO	DS-03	NA	NA	Provided by Lab
B.	POE	Bullet	BPI100-GH	NA	NA	Supplied by client
C.	Laptop	Dell	Inspiron 15-3567	FV34LJ2	NA	Provided by Lab

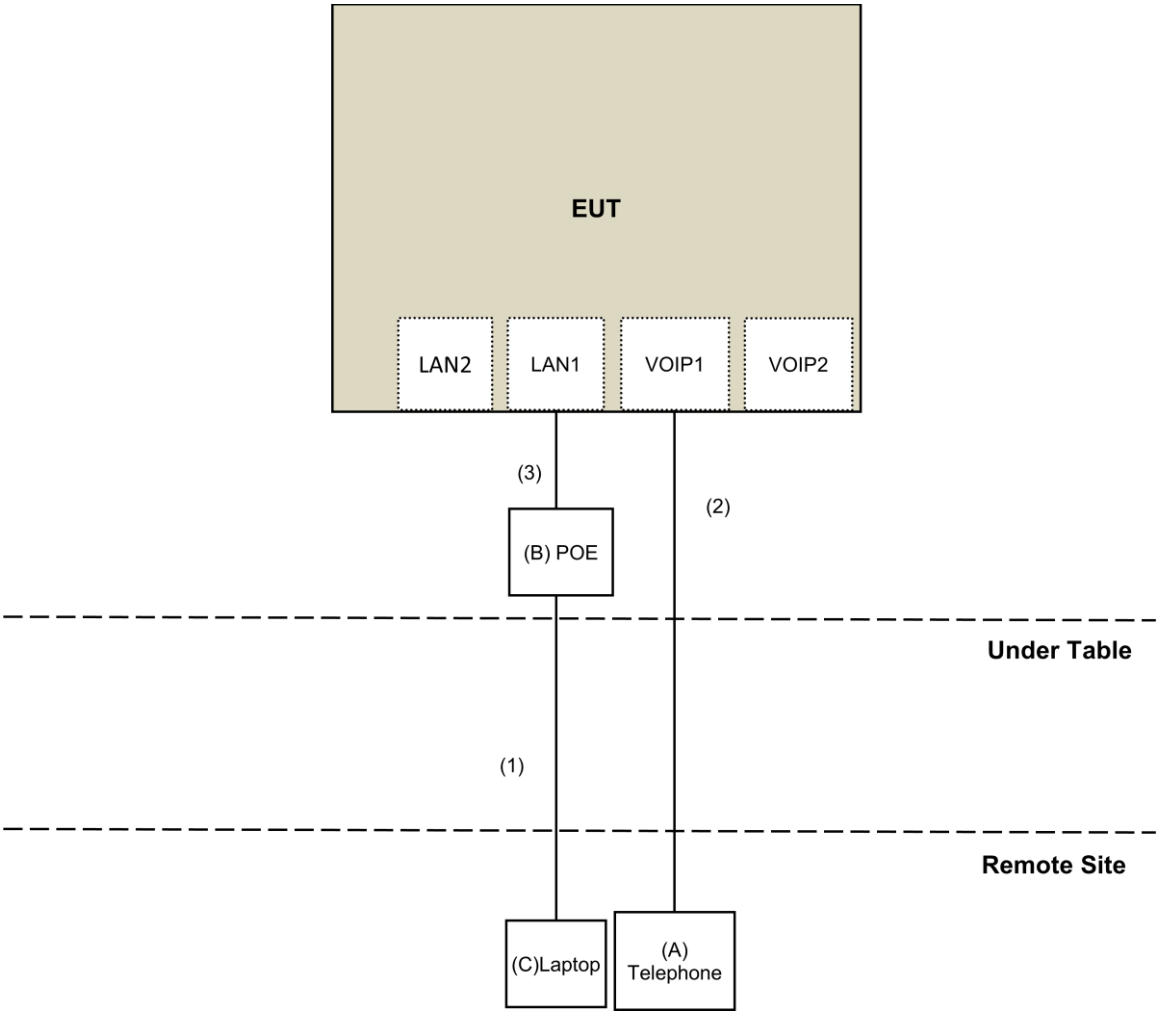
Note:

1. All power cords of the above support units are non-shielded (1.8m).

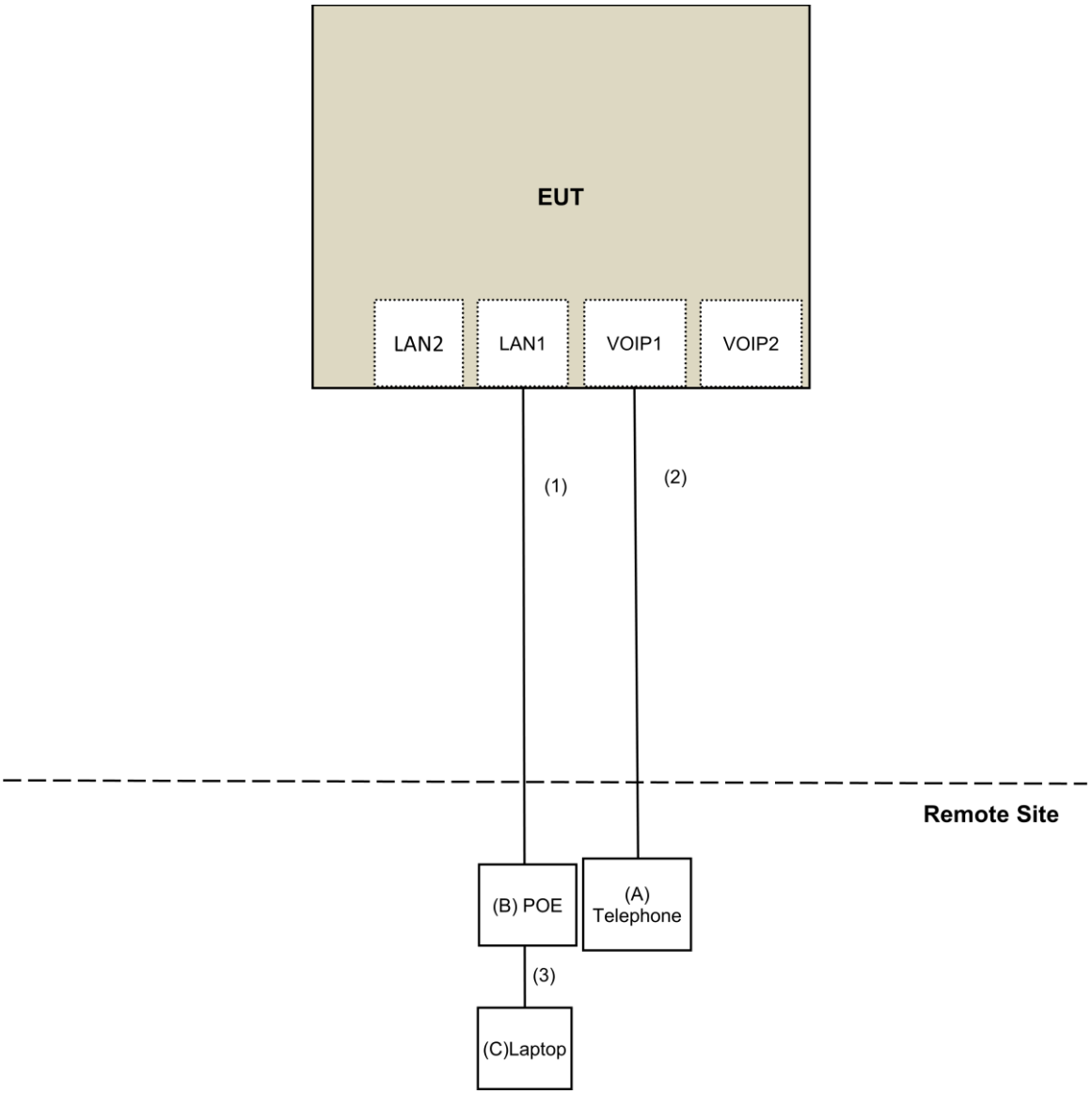
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-11Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	1	No	0	Provided by Lab

3.4.1 Configuration of System under Test

For conducted emission test:



For radiated emission test:



3.5 General Description of Applied Standard

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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY50010156	July 12, 2018	July 11, 2019
Pre-Amplifier EMCI	EMC001340	980142	Feb. 09, 2018	Feb. 08, 2019
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001	Jan. 15, 2018	Jan. 14, 2019
RF Cable	NA	LOOPCAB-002	Jan. 15, 2018	Jan. 14, 2019
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-05	May 05, 2018	May 04, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-361	Nov. 29, 2017	Nov. 28, 2018
RF Cable	8D	966-3-1	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-2	Mar. 20, 2018	Mar. 19, 2019
RF Cable	8D	966-3-3	Mar. 20, 2018	Mar. 19, 2019
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-3-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA9120-D	9120D-406	Dec. 12, 2017	Dec. 11, 2018
Pre-Amplifier EMCI	EMC12630SE	980384	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-1200	160922	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-2000	150317	Jan. 29, 2018	Jan. 28, 2019
RF Cable	EMC104-SM-SM-5000	150322	Jan. 29, 2018	Jan. 28, 2019
Spectrum Analyzer Keysight	N9030A	MY54490679	July 23, 2018	July 22, 2019
Pre-Amplifier EMCI	EMC184045SE	980386	Jan. 29, 2018	Jan. 28, 2019
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 14, 2017	Dec. 13, 2018
RF Cable	EMC102-KM-KM-1200	160924	Jan. 29, 2018	Jan. 28, 2019
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208406	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019
DC Power Supply Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 2019
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 3.
4. The CANADA Site Registration No. is 20331-1
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Oct. 23 to Nov. 14, 2018

4.1.3 Test Procedure

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 detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

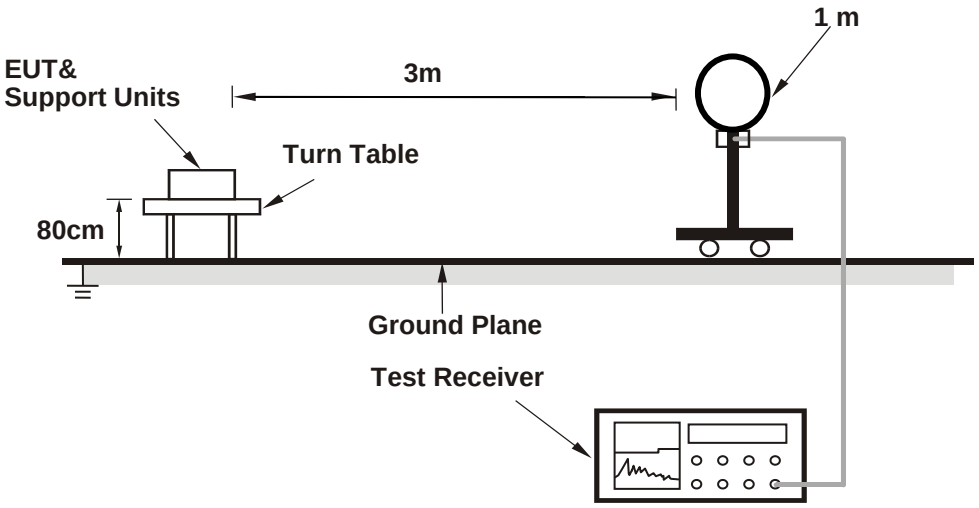
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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

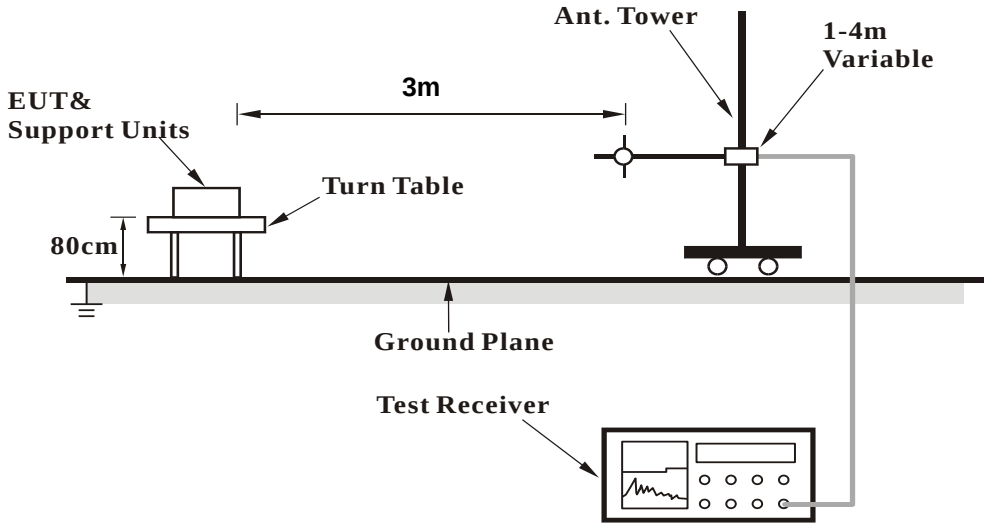
No deviation.

4.1.5 Test Setup

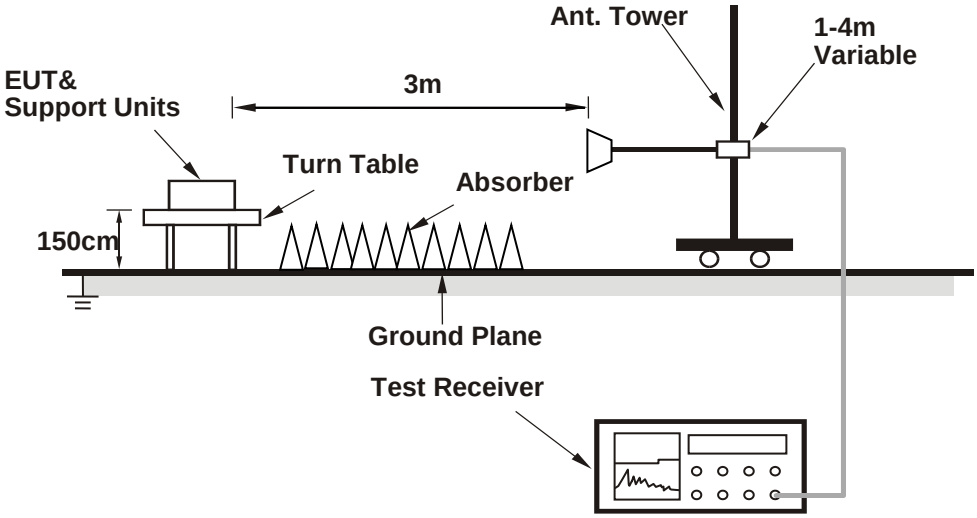
For Radiated emission below 30MHz



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 Condition

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (QDART-Connectivity (1.0.40)) has been activated to set the EUT on specific status.

4.1.7 Test Results

Above 1GHz Data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	48.8 PK	74.0	-25.2	1.91 H	282	46.2	2.6
2	5150.00	37.0 AV	54.0	-17.0	1.91 H	282	34.4	2.6
3	*5260.00	112.2 PK			1.91 H	282	110.1	2.1
4	*5260.00	102.5 AV			1.91 H	282	100.4	2.1
5	#10520.00	53.3 PK	68.2	-14.9	1.84 H	304	40.9	12.4
6	15780.00	60.5 PK	74.0	-13.5	1.52 H	327	49.0	11.5
7	15780.00	46.1 AV	54.0	-7.9	1.52 H	327	34.6	11.5
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	50.4 PK	74.0	-23.6	1.88 V	192	47.8	2.6
2	5150.00	38.6 AV	54.0	-15.4	1.88 V	192	36.0	2.6
3	*5260.00	115.5 PK			1.88 V	192	113.4	2.1
4	*5260.00	105.6 AV			1.88 V	192	103.5	2.1
5	#10520.00	51.9 PK	68.2	-16.3	1.55 V	209	39.5	12.4
6	15780.00	56.3 PK	74.0	-17.7	1.97 V	199	44.8	11.5
7	15780.00	43.6 AV	54.0	-10.4	1.97 V	199	32.1	11.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	112.8 PK			1.96 H	295	110.6	2.2
2	*5300.00	103.1 AV			1.96 H	295	100.9	2.2
3	10600.00	52.9 PK	74.0	-21.1	1.80 H	305	41.2	11.7
4	10600.00	40.6 AV	54.0	-13.4	1.80 H	305	28.9	11.7
5	15900.00	60.3 PK	74.0	-13.7	1.56 H	326	49.1	11.2
6	15900.00	45.7 AV	54.0	-8.3	1.56 H	326	34.5	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	115.8 PK			1.91 V	188	113.6	2.2
2	*5300.00	105.9 AV			1.91 V	188	103.7	2.2
3	10600.00	52.7 PK	74.0	-21.3	1.58 V	222	41.0	11.7
4	10600.00	40.6 AV	54.0	-13.4	1.58 V	222	28.9	11.7
5	15900.00	56.1 PK	74.0	-17.9	1.95 V	223	44.9	11.2
6	15900.00	43.4 AV	54.0	-10.6	1.95 V	223	32.2	11.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	112.2 PK			1.95 H	266	109.9	2.3
2	*5320.00	102.5 AV			1.95 H	266	100.2	2.3
3	5350.00	63.0 PK	74.0	-11.0	1.95 H	266	60.7	2.3
4	5350.00	48.9 AV	54.0	-5.1	1.95 H	266	46.6	2.3
5	10640.00	53.9 PK	74.0	-20.1	1.80 H	308	42.2	11.7
6	10640.00	41.5 AV	54.0	-12.5	1.80 H	308	29.8	11.7
7	15960.00	60.4 PK	74.0	-13.6	1.54 H	310	49.0	11.4
8	15960.00	45.5 AV	54.0	-8.5	1.54 H	310	34.1	11.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	115.1 PK			1.84 V	191	112.8	2.3
2	*5320.00	105.2 AV			1.84 V	191	102.9	2.3
3	5350.00	64.7 PK	74.0	-9.3	1.84 V	191	62.4	2.3
4	5350.00	50.6 AV	54.0	-3.4	1.84 V	191	48.3	2.3
5	10640.00	52.5 PK	74.0	-21.5	1.61 V	229	40.8	11.7
6	10640.00	40.5 AV	54.0	-13.5	1.61 V	229	28.8	11.7
7	15960.00	56.3 PK	74.0	-17.7	2.01 V	227	44.9	11.4
8	15960.00	43.7 AV	54.0	-10.3	2.01 V	227	32.3	11.4

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.6 PK	74.0	-17.4	1.89 H	267	54.0	2.6
2	5460.00	46.2 AV	54.0	-7.8	1.89 H	267	43.6	2.6
3	#5470.00	63.2 PK	68.2	-5.0	1.89 H	267	60.6	2.6
4	*5500.00	112.4 PK			1.89 H	267	109.9	2.5
5	*5500.00	102.7 AV			1.89 H	267	100.2	2.5
6	11000.00	53.0 PK	74.0	-21.0	1.76 H	312	40.8	12.2
7	11000.00	41.1 AV	54.0	-12.9	1.76 H	312	28.9	12.2
8	#16500.00	59.9 PK	68.2	-8.3	1.54 H	329	46.2	13.7
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	5460.00	58.9 PK	74.0	-15.1	1.13 V	183	56.3	2.6
2	5460.00	48.5 AV	54.0	-5.5	1.13 V	183	45.9	2.6
3	#5470.00	65.5 PK	68.2	-2.7	1.13 V	183	62.9	2.6
4	*5500.00	115.5 PK			1.13 V	183	113.0	2.5
5	*5500.00	105.3 AV			1.13 V	183	102.8	2.5
6	11000.00	52.1 PK	74.0	-21.9	1.58 V	204	39.9	12.2
7	11000.00	39.7 AV	54.0	-14.3	1.58 V	204	27.5	12.2
8	#16500.00	56.8 PK	68.2	-11.4	2.01 V	198	43.1	13.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	112.5 PK			1.85 H	272	109.7	2.8
2	*5580.00	102.9 AV			1.85 H	272	100.1	2.8
3	11160.00	53.2 PK	74.0	-20.8	1.82 H	323	41.2	12.0
4	11160.00	40.8 AV	54.0	-13.2	1.82 H	323	28.8	12.0
5	#16740.00	60.2 PK	68.2	-8.0	1.56 H	318	46.0	14.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	115.8 PK			1.05 V	186	113.0	2.8
2	*5580.00	105.6 AV			1.05 V	186	102.8	2.8
3	11160.00	52.0 PK	74.0	-22.0	1.56 V	207	40.0	12.0
4	11160.00	39.8 AV	54.0	-14.2	1.56 V	207	27.8	12.0
5	#16740.00	57.0 PK	68.2	-11.2	2.05 V	200	42.8	14.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	113.4 PK			1.86 H	285	110.5	2.9
2	*5700.00	103.7 AV			1.86 H	285	100.8	2.9
3	#5725.00	66.3 PK	68.2	-1.9	1.86 H	285	63.4	2.9
4	11400.00	53.4 PK	74.0	-20.6	1.79 H	313	40.4	13.0
5	11400.00	41.2 AV	54.0	-12.8	1.79 H	313	28.2	13.0
6	#17100.00	60.7 PK	68.2	-7.5	1.63 H	306	44.6	16.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.5 PK			1.03 V	182	113.6	2.9
2	*5700.00	106.4 AV			1.03 V	182	103.5	2.9
3	#5725.00	68.0 PK	68.2	-0.2	1.03 V	182	65.1	2.9
4	11400.00	52.0 PK	74.0	-22.0	1.63 V	212	39.0	13.0
5	11400.00	39.9 AV	54.0	-14.1	1.63 V	212	26.9	13.0
6	#17100.00	56.7 PK	68.2	-11.5	2.07 V	223	40.6	16.1

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.

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	48.7 PK	74.0	-25.3	1.90 H	289	46.1	2.6
2	5150.00	37.5 AV	54.0	-16.5	1.90 H	289	34.9	2.6
3	*5260.00	113.1 PK			1.90 H	289	111.0	2.1
4	*5260.00	102.4 AV			1.90 H	289	100.3	2.1
5	#10520.00	52.8 PK	68.2	-15.4	1.84 H	309	40.4	12.4
6	15780.00	60.3 PK	74.0	-13.7	1.60 H	328	48.8	11.5
7	15780.00	46.0 AV	54.0	-8.0	1.60 H	328	34.5	11.5
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	49.4 PK	74.0	-24.6	2.22 V	182	46.8	2.6
2	5150.00	38.3 AV	54.0	-15.7	2.22 V	182	35.7	2.6
3	*5260.00	115.4 PK			2.22 V	182	113.3	2.1
4	*5260.00	104.8 AV			2.22 V	182	102.7	2.1
5	#10520.00	52.7 PK	68.2	-15.5	1.55 V	222	40.3	12.4
6	15780.00	55.9 PK	74.0	-18.1	1.95 V	200	44.4	11.5
7	15780.00	43.6 AV	54.0	-10.4	1.95 V	200	32.1	11.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	113.0 PK			1.89 H	288	110.8	2.2
2	*5300.00	101.8 AV			1.89 H	288	99.6	2.2
3	10600.00	53.1 PK	74.0	-20.9	1.78 H	301	41.4	11.7
4	10600.00	41.0 AV	54.0	-13.0	1.78 H	301	29.3	11.7
5	15900.00	60.3 PK	74.0	-13.7	1.58 H	326	49.1	11.2
6	15900.00	45.4 AV	54.0	-8.6	1.58 H	326	34.2	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	115.2 PK			2.08 V	193	113.0	2.2
2	*5300.00	104.5 AV			2.08 V	193	102.3	2.2
3	10600.00	51.9 PK	74.0	-22.1	1.60 V	231	40.2	11.7
4	10600.00	39.7 AV	54.0	-14.3	1.60 V	231	28.0	11.7
5	15900.00	56.0 PK	74.0	-18.0	2.03 V	212	44.8	11.2
6	15900.00	43.6 AV	54.0	-10.4	2.03 V	212	32.4	11.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	113.1 PK			1.87 H	279	110.8	2.3
2	*5320.00	102.0 AV			1.87 H	279	99.7	2.3
3	5350.00	63.7 PK	74.0	-10.3	1.87 H	279	61.4	2.3
4	5350.00	49.6 AV	54.0	-4.4	1.87 H	279	47.3	2.3
5	10640.00	53.9 PK	74.0	-20.1	1.80 H	298	42.2	11.7
6	10640.00	41.5 AV	54.0	-12.5	1.80 H	298	29.8	11.7
7	15960.00	60.4 PK	74.0	-13.6	1.57 H	300	49.0	11.4
8	15960.00	45.9 AV	54.0	-8.1	1.57 H	300	34.5	11.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	115.3 PK			1.98 V	191	113.0	2.3
2	*5320.00	104.6 AV			1.98 V	191	102.3	2.3
3	5350.00	65.4 PK	74.0	-8.6	1.98 V	191	63.1	2.3
4	5350.00	51.4 AV	54.0	-2.6	1.98 V	191	49.1	2.3
5	10640.00	52.3 PK	74.0	-21.7	1.63 V	231	40.6	11.7
6	10640.00	40.1 AV	54.0	-13.9	1.63 V	231	28.4	11.7
7	15960.00	56.6 PK	74.0	-17.4	1.99 V	211	45.2	11.4
8	15960.00	44.2 AV	54.0	-9.8	1.99 V	211	32.8	11.4

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.5 PK	74.0	-16.5	1.92 H	268	54.9	2.6
2	5460.00	46.3 AV	54.0	-7.7	1.92 H	268	43.7	2.6
3	#5470.00	65.3 PK	68.2	-2.9	1.92 H	268	62.7	2.6
4	*5500.00	112.5 PK			1.92 H	268	110.0	2.5
5	*5500.00	101.6 AV			1.92 H	268	99.1	2.5
6	11000.00	53.1 PK	74.0	-20.9	1.85 H	318	40.9	12.2
7	11000.00	41.1 AV	54.0	-12.9	1.85 H	318	28.9	12.2
8	#16500.00	60.6 PK	68.2	-7.6	1.58 H	306	46.9	13.7
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	5460.00	59.0 PK	74.0	-15.0	1.09 V	181	56.4	2.6
2	5460.00	48.0 AV	54.0	-6.0	1.09 V	181	45.4	2.6
3	#5470.00	67.1 PK	68.2	-1.1	1.09 V	181	64.5	2.6
4	*5500.00	115.0 PK			1.09 V	181	112.5	2.5
5	*5500.00	104.3 AV			1.09 V	181	101.8	2.5
6	11000.00	51.7 PK	74.0	-22.3	1.53 V	220	39.5	12.2
7	11000.00	39.8 AV	54.0	-14.2	1.53 V	220	27.6	12.2
8	#16500.00	55.7 PK	68.2	-12.5	2.05 V	198	42.0	13.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	112.8 PK			1.88 H	279	110.0	2.8
2	*5580.00	101.9 AV			1.88 H	279	99.1	2.8
3	11160.00	53.6 PK	74.0	-20.4	1.73 H	297	41.6	12.0
4	11160.00	41.2 AV	54.0	-12.8	1.73 H	297	29.2	12.0
5	#16740.00	60.8 PK	68.2	-7.4	1.57 H	308	46.6	14.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	115.3 PK			1.11 V	186	112.5	2.8
2	*5580.00	104.6 AV			1.11 V	186	101.8	2.8
3	11160.00	52.1 PK	74.0	-21.9	1.62 V	227	40.1	12.0
4	11160.00	39.8 AV	54.0	-14.2	1.62 V	227	27.8	12.0
5	#16740.00	55.9 PK	68.2	-12.3	1.96 V	211	41.7	14.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	113.7 PK			1.91 H	296	110.8	2.9
2	*5700.00	102.9 AV			1.91 H	296	100.0	2.9
3	#5725.00	65.6 PK	68.2	-2.6	1.91 H	296	62.7	2.9
4	11400.00	53.5 PK	74.0	-20.5	1.83 H	304	40.5	13.0
5	11400.00	41.1 AV	54.0	-12.9	1.83 H	304	28.1	13.0
6	#17100.00	60.5 PK	68.2	-7.7	1.56 H	301	44.4	16.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	116.1 PK			1.85 V	179	113.2	2.9
2	*5700.00	105.7 AV			1.85 V	179	102.8	2.9
3	**#5725.00**	**68.1 PK**	**68.2**	**-0.1**	**1.85 V**	**179**	**65.2**	**2.9**
4	11400.00	52.6 PK	74.0	-21.4	1.63 V	216	39.6	13.0
5	11400.00	40.3 AV	54.0	-13.7	1.63 V	216	27.3	13.0
6	#17100.00	56.6 PK	68.2	-11.6	2.04 V	207	40.5	16.1

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.

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	49.2 PK	74.0	-24.8	1.90 H	281	46.6	2.6
2	5150.00	37.6 AV	54.0	-16.4	1.90 H	281	35.0	2.6
3	*5270.00	111.3 PK			1.90 H	281	109.2	2.1
4	*5270.00	101.5 AV			1.90 H	281	99.4	2.1
5	#10540.00	53.4 PK	68.2	-14.8	1.81 H	297	41.2	12.2
6	15810.00	60.5 PK	74.0	-13.5	1.52 H	314	49.2	11.3
7	15810.00	45.8 AV	54.0	-8.2	1.52 H	314	34.5	11.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	50.3 PK	74.0	-23.7	2.22 V	181	47.7	2.6
2	5150.00	38.4 AV	54.0	-15.6	2.22 V	181	35.8	2.6
3	*5270.00	114.1 PK			2.22 V	181	112.0	2.1
4	*5270.00	104.2 AV			2.22 V	181	102.1	2.1
5	#10540.00	52.4 PK	68.2	-15.8	1.52 V	231	40.2	12.2
6	#10540.00	40.3 AV	54.0	-13.7	1.52 V	231	28.1	12.2
7	15810.00	55.7 PK	74.0	-18.3	1.97 V	207	44.4	11.3
8	15810.00	43.4 AV	54.0	-10.6	1.97 V	207	32.1	11.3

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	108.0 PK			1.93 H	281	105.8	2.2
2	*5310.00	98.2 AV			1.93 H	281	96.0	2.2
3	5350.00	64.5 PK	74.0	-9.5	1.93 H	281	62.2	2.3
4	5350.00	51.4 AV	54.0	-2.6	1.93 H	281	49.1	2.3
5	10620.00	52.6 PK	74.0	-21.4	1.80 H	296	40.9	11.7
6	10620.00	40.4 AV	54.0	-13.6	1.80 H	296	28.7	11.7
7	15930.00	59.3 PK	74.0	-14.7	1.56 H	301	48.1	11.2
8	15930.00	44.9 AV	54.0	-9.1	1.56 H	301	33.7	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	110.4 PK			1.84 V	190	108.2	2.2
2	*5310.00	100.9 AV			1.84 V	190	98.7	2.2
3	5350.00	66.8 PK	74.0	-7.2	1.84 V	190	64.5	2.3
4	5350.00	53.6 AV	54.0	-0.4	1.84 V	190	51.3	2.3
5	10620.00	51.1 PK	74.0	-22.9	1.60 V	215	39.4	11.7
6	10620.00	38.8 AV	54.0	-15.2	1.60 V	215	27.1	11.7
7	15930.00	55.3 PK	74.0	-18.7	2.00 V	207	44.1	11.2
8	15930.00	43.0 AV	54.0	-11.0	2.00 V	207	31.8	11.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.3 PK	74.0	-11.7	1.93 H	271	59.7	2.6
2	5460.00	48.3 AV	54.0	-5.7	1.93 H	271	45.7	2.6
3	#5470.00	65.2 PK	68.2	-3.0	1.93 H	271	62.6	2.6
4	*5510.00	109.2 PK			1.93 H	271	106.7	2.5
5	*5510.00	98.8 AV			1.93 H	271	96.3	2.5
6	11020.00	52.1 PK	74.0	-21.9	1.75 H	313	39.8	12.3
7	11020.00	40.5 AV	54.0	-13.5	1.75 H	313	28.2	12.3
8	#16530.00	58.8 PK	68.2	-9.4	1.62 H	326	44.9	13.9
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	5460.00	64.1 PK	74.0	-9.9	1.03 V	178	61.5	2.6
2	5460.00	50.0 AV	54.0	-4.0	1.03 V	178	47.4	2.6
3	#5470.00	67.6 PK	68.2	-0.6	1.03 V	178	65.0	2.6
4	*5510.00	111.1 PK			1.03 V	178	108.6	2.5
5	*5510.00	101.5 AV			1.03 V	178	99.0	2.5
6	11020.00	51.8 PK	74.0	-22.2	1.57 V	205	39.5	12.3
7	11020.00	39.8 AV	54.0	-14.2	1.57 V	205	27.5	12.3
8	#16530.00	55.6 PK	68.2	-12.6	2.02 V	202	41.7	13.9

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	111.4 PK			1.93 H	296	108.7	2.7
2	*5550.00	101.6 AV			1.93 H	296	98.9	2.7
3	11100.00	52.7 PK	74.0	-21.3	1.74 H	314	40.6	12.1
4	11100.00	40.6 AV	54.0	-13.4	1.74 H	314	28.5	12.1
5	#16650.00	59.7 PK	68.2	-8.5	1.53 H	331	45.5	14.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	113.9 PK			1.03 V	179	111.2	2.7
2	*5550.00	104.1 AV			1.03 V	179	101.4	2.7
3	11100.00	52.2 PK	74.0	-21.8	1.58 V	212	40.1	12.1
4	11100.00	40.0 AV	54.0	-14.0	1.58 V	212	27.9	12.1
5	#16650.00	56.4 PK	68.2	-11.8	2.03 V	208	42.2	14.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	111.6 PK			1.85 H	288	108.7	2.9
2	*5670.00	101.9 AV			1.85 H	288	99.0	2.9
3	#5725.00	66.7 PK	68.2	-1.5	1.85 H	288	63.8	2.9
4	11340.00	53.2 PK	74.0	-20.8	1.74 H	324	40.3	12.9
5	11340.00	41.0 AV	54.0	-13.0	1.74 H	324	28.1	12.9
6	#17010.00	60.6 PK	68.2	-7.6	1.62 H	319	44.8	15.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	113.8 PK			1.11 V	180	110.9	2.9
2	*5670.00	104.4 AV			1.11 V	180	101.5	2.9
3	**#5725.00**	**68.1 PK**	**68.2**	**-0.1**	**1.11 V**	**180**	**65.2**	**2.9**
4	11340.00	52.7 PK	74.0	-21.3	1.55 V	207	39.8	12.9
5	11340.00	40.6 AV	54.0	-13.4	1.55 V	207	27.7	12.9
6	#17010.00	56.9 PK	68.2	-11.3	1.98 V	216	41.1	15.8

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	50.4 PK	74.0	-23.6	1.97 H	281	47.8	2.6
2	5150.00	38.2 AV	54.0	-15.8	1.97 H	281	35.6	2.6
3	*5290.00	103.3 PK			1.97 H	281	101.2	2.1
4	*5290.00	93.7 AV			1.97 H	281	91.6	2.1
5	5350.00	63.3 PK	74.0	-10.7	1.97 H	281	61.0	2.3
6	5350.00	51.2 AV	54.0	-2.8	1.97 H	281	48.9	2.3
7	#10580.00	52.1 PK	68.2	-16.1	1.83 H	311	40.3	11.8
8	15870.00	59.9 PK	74.0	-14.1	1.59 H	308	48.7	11.2
9	15870.00	45.1 AV	54.0	-8.9	1.59 H	308	33.9	11.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.8 PK	74.0	-22.2	1.99 V	182	49.2	2.6
2	5150.00	39.5 AV	54.0	-14.5	1.99 V	182	36.9	2.6
3	*5290.00	105.6 PK			1.99 V	182	103.5	2.1
4	*5290.00	96.3 AV			1.99 V	182	94.2	2.1
5	5350.00	65.5 PK	74.0	-8.5	1.99 V	182	63.2	2.3
6	5350.00	53.5 AV	54.0	-0.5	1.99 V	182	51.2	2.3
7	#10580.00	51.2 PK	68.2	-17.0	1.55 V	207	39.4	11.8
8	15870.00	55.4 PK	74.0	-18.6	2.07 V	201	44.2	11.2
9	15870.00	42.6 AV	54.0	-11.4	2.07 V	201	31.4	11.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.5 PK	74.0	-11.5	1.90 H	277	59.9	2.6
2	5460.00	49.8 AV	54.0	-4.2	1.90 H	277	47.2	2.6
3	#5470.00	65.3 PK	68.2	-2.9	1.90 H	277	62.7	2.6
4	*5530.00	104.6 PK			1.90 H	277	102.0	2.6
5	*5530.00	94.8 AV			1.90 H	277	92.2	2.6
6	#5725.00	50.3 PK	68.2	-17.9	1.90 H	277	47.4	2.9
7	11060.00	52.6 PK	74.0	-21.4	1.84 H	320	40.5	12.1
8	11060.00	40.4 AV	54.0	-13.6	1.84 H	320	28.3	12.1
9	#16590.00	59.3 PK	68.2	-8.9	1.54 H	304	45.1	14.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.7 PK	74.0	-9.3	1.04 V	173	62.1	2.6
2	5460.00	52.1 AV	54.0	-1.9	1.04 V	173	49.5	2.6
3	#5470.00	67.7 PK	68.2	-0.5	1.04 V	179	65.1	2.6
4	*5530.00	107.2 PK			1.04 V	173	104.6	2.6
5	*5530.00	97.5 AV			1.04 V	173	94.9	2.6
6	#5725.00	51.1 PK	68.2	-17.1	1.04 V	173	48.2	2.9
7	11060.00	51.6 PK	74.0	-22.4	1.54 V	203	39.5	12.1
8	11060.00	39.5 AV	54.0	-14.5	1.54 V	203	27.4	12.1
9	#16590.00	55.6 PK	68.2	-12.6	1.96 V	216	41.4	14.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5610.00	108.1 PK			1.95 H	267	105.3	2.8
2	*5610.00	98.4 AV			1.95 H	267	95.6	2.8
3	#5725.00	66.2 PK	68.2	-2.0	1.95 H	267	63.3	2.9
4	11220.00	52.6 PK	74.0	-21.4	1.80 H	315	40.3	12.3
5	11220.00	40.7 AV	54.0	-13.3	1.80 H	315	28.4	12.3
6	#16830.00	60.5 PK	68.2	-7.7	1.63 H	313	45.9	14.6
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	*5610.00	110.7 PK			1.03 V	175	107.9	2.8
2	*5610.00	101.1 AV			1.03 V	175	98.3	2.8
3	**#5725.00**	**68.1 PK**	**68.2**	**-0.1**	**1.03 V**	**175**	**65.2**	**2.9**
4	11220.00	52.2 PK	74.0	-21.8	1.54 V	204	39.9	12.3
5	11220.00	40.0 AV	54.0	-14.0	1.54 V	204	27.7	12.3
6	#16830.00	56.1 PK	68.2	-12.1	2.06 V	215	41.5	14.6

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.

Below 1GHz Data:

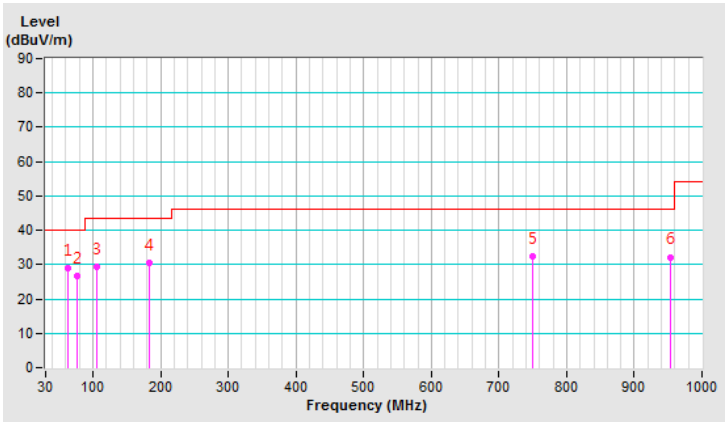
802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	62.84	28.8 QP	40.0	-11.2	1.50 H	236	37.7	-8.9
2	76.32	26.7 QP	40.0	-13.3	1.50 H	262	38.4	-11.7
3	104.79	29.2 QP	43.5	-14.3	2.00 H	276	40.7	-11.5
4	182.69	30.6 QP	43.5	-12.9	2.00 H	96	40.2	-9.6
5	750.02	32.4 QP	46.0	-13.6	1.00 H	138	29.1	3.3
6	954.12	32.2 QP	46.0	-13.8	1.50 H	188	26.5	5.7

REMARKS:

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

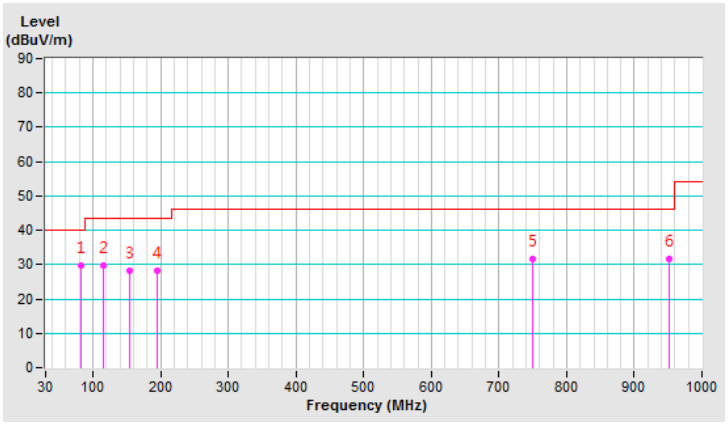


CHANNEL	TX Channel 54	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	82.19	29.6 QP	40.0	-10.4	2.00 V	360	42.7	-13.1
2	114.39	29.8 QP	43.5	-13.7	1.00 V	186	39.9	-10.1
3	153.83	28.2 QP	43.5	-15.3	1.00 V	208	35.8	-7.6
4	194.52	28.1 QP	43.5	-15.4	2.00 V	32	38.8	-10.7
5	750.02	31.6 QP	46.0	-14.4	1.50 V	305	28.3	3.3
6	950.96	31.5 QP	46.0	-14.5	2.00 V	1	25.9	5.6

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The 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.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 20, 2018	June 19, 2019
Spectrum Analyzer Agilent	E4446A	MY48250254	Nov. 21, 2017	Nov. 20, 2018
Power meter Anritsu	ML2495A	1014008	May 09, 2018	May 08, 2019
Power sensor Anritsu	MA2411B	0917122	May 09, 2018	May 08, 2019
AC Power Source Extech Electronics	6205	1440452	NA	NA
DC Power Supply Topward	6603D	795558	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 10, 2018	Jan. 09, 2019
True RMS Clamp Meter FLUKE	325	31130711WS	May 22, 2018	May 21, 2019
ESG Vector signal generator Agilent	E4438C	MY45094468/005 506 602 UK6 UNJ	Nov. 26, 2017	Nov. 25, 2018
Mech Switch Absorptive Mini-Circuits	MSP4TA-18+	0140	Feb. 12, 2018	Feb. 11, 2019
FXD ATTEN Mini-Circuits	BW-S3W2+	MN71981	Feb. 12, 2018	Feb. 11, 2019
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

NOTE: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Oct. 26, 2018

4.2.3 Test Procedure

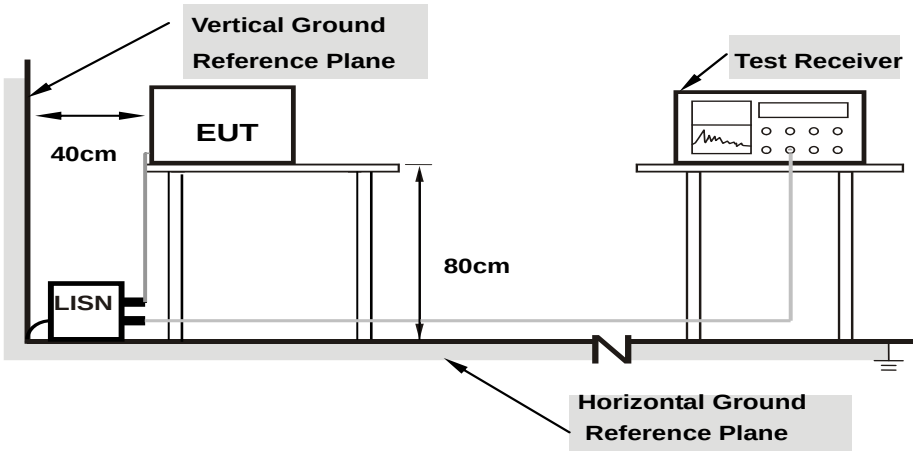
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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: All modes of operation were investigated and the worst-case emissions are reported.

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 Condition

Same as 4.1.6.

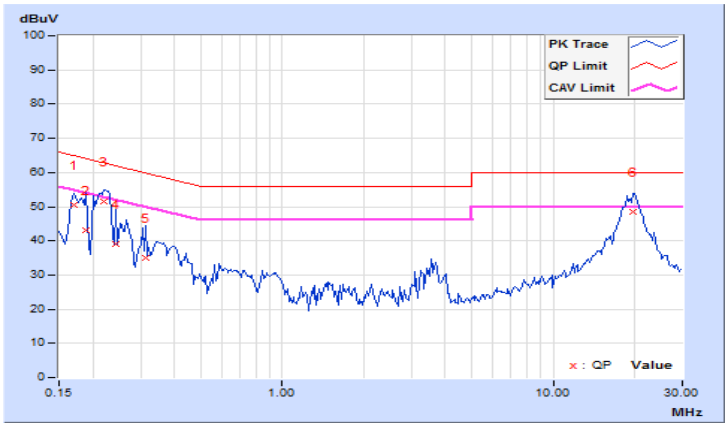
4.2.7 Test Results

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16953	10.03	40.43	23.94	50.46	33.97	64.98	54.98	-14.52	-21.01
2	0.18906	10.04	32.99	13.66	43.03	23.70	64.08	54.08	-21.05	-30.38
3	0.22031	10.04	41.62	32.91	51.66	42.95	62.81	52.81	-11.15	-9.86
4	0.24375	10.05	28.86	5.88	38.91	15.93	61.97	51.97	-23.06	-36.04
5	0.31406	10.06	24.87	14.48	34.93	24.54	59.86	49.86	-24.93	-25.32
6	**19.81250**	**11.06**	**37.42**	**31.59**	**48.48**	**42.65**	**60.00**	**50.00**	**-11.52**	**-7.35**

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

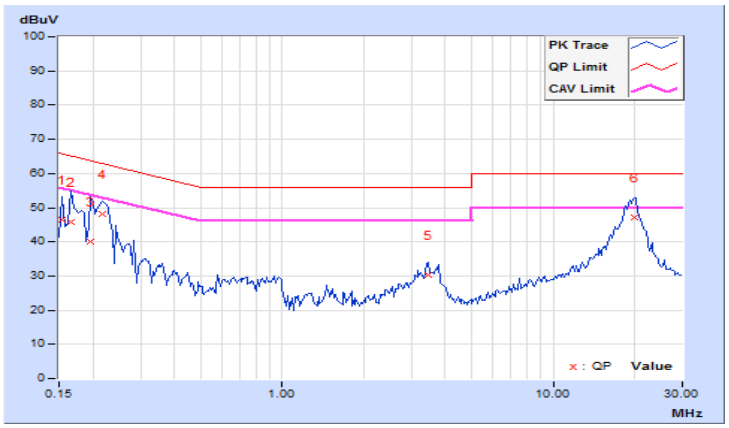


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.93	36.41	12.81	46.34	22.74	65.79	55.79	-19.45	-33.05
2	0.16562	9.93	35.96	15.80	45.89	25.73	65.18	55.18	-19.29	-29.45
3	0.19687	9.94	30.11	6.56	40.05	16.50	63.74	53.74	-23.69	-37.24
4	0.21641	9.94	38.31	26.31	48.25	36.25	62.96	52.96	-14.71	-16.71
5	3.44141	10.10	20.08	10.03	30.18	20.13	56.00	46.00	-25.82	-25.87
6	19.92188	10.87	36.35	30.05	47.22	40.92	60.00	50.00	-12.78	-9.08

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)
		Client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3			1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

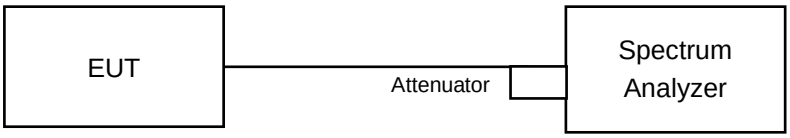
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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

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

4.3.2 Test Setup

FOR 26dB OCCUPIED BANDWIDTH



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

FOR POWER OUTPUT 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. Duty factor is not added to measured value.

FOR 26dB OCCUPIED BANDWIDTH

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Results

CDD Mode

802.11a

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	18.98	19.73	173.04	22.38	24.00	Pass
60	5300	18.96	19.74	172.894	22.38	24.00	Pass
64	5320	18.95	19.71	172.065	22.36	23.94	Pass
100	5500	19.38	19.73	180.668	22.57	24.00	Pass
116	5580	19.05	19.76	174.977	22.43	24.00	Pass
140	5700	18.62	19.98	172.319	22.36	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.28	20.22
60	5300	20.22	19.99
64	5320	20.17	19.71
100	5500	20.65	20.01
116	5580	20.27	20.03
140	5700	20.01	20.30

Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.22	24.05 > 24
60	5300	19.99	24 = 24
64	5320	19.71	23.94 < 24
100	5500	20.01	24.01 > 24
116	5580	20.03	24.01 > 24
140	5700	20.01	24.01 > 24

802.11ac (VHT20)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	19.11	19.98	181.011	22.58	24.00	Pass
60	5300	19.08	20.01	181.141	22.58	24.00	Pass
64	5320	19.06	19.97	179.85	22.55	24.00	Pass
100	5500	19.39	19.92	185.071	22.67	24.00	Pass
116	5580	19.16	19.87	179.465	22.54	24.00	Pass
140	5700	18.66	20.22	178.647	22.52	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	21.22	20.74
60	5300	21.12	21.15
64	5320	20.92	21.04
100	5500	21.51	21.13
116	5580	21.09	21.28
140	5700	20.72	21.25

Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.74	24.16 > 24
60	5300	21.12	24.24 > 24
64	5320	20.92	24.2 > 24
100	5500	21.13	24.24 > 24
116	5580	21.09	24.24 > 24
140	5700	20.72	24.16 > 24

802.11ac (VHT40)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.36	21.33	244.474	23.88	24.00	Pass
62	5310	17.41	18.36	123.63	20.92	24.00	Pass
102	5510	17.92	18.88	139.212	21.44	24.00	Pass
110	5550	20.17	20.98	229.306	23.60	24.00	Pass
134	5670	18.97	20.61	193.966	22.88	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	43.62	41.59
62	5310	40.62	40.47
102	5510	40.80	40.69
110	5550	41.68	41.62
134	5670	40.68	40.71

Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.59	27.18 > 24
62	5310	40.47	27.07 > 24
102	5510	40.69	27.09 > 24
110	5550	41.62	27.19 > 24
134	5670	40.68	27.09 > 24

802.11ac (VHT80)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	14.91	15.97	70.511	18.48	24.00	Pass
106	5530	16.41	17.02	94.102	19.74	24.00	Pass
122	5610	18.70	19.51	163.462	22.13	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.19	83.13
106	5530	84.20	83.05
122	5610	84.20	83.43

Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.13	30.19 > 24
106	5530	83.05	30.19 > 24
122	5610	83.43	30.21 > 24

Beamforming Mode

802.11ac (VHT20)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	19.11	19.98	181.011	22.58	22.69	Pass
60	5300	19.08	20.01	181.141	22.58	22.69	Pass
64	5320	19.06	19.97	179.85	22.55	22.69	Pass
100	5500	19.39	19.92	185.071	22.67	22.69	Pass
116	5580	19.16	19.87	179.465	22.54	22.69	Pass
140	5700	18.66	20.22	178.647	22.52	22.69	Pass

Note: 1. The directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 7.31dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(7.31-6)”.

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	21.22	20.74
60	5300	21.12	21.15
64	5320	20.92	21.04
100	5500	21.51	21.13
116	5580	21.09	21.28
140	5700	20.72	21.25

Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
52	5260	20.74	24.16 > 24
60	5300	21.12	24.24 > 24
64	5320	20.92	24.2 > 24
100	5500	21.13	24.24 > 24
116	5580	21.09	24.24 > 24
140	5700	20.72	24.16 > 24

802.11ac (VHT40)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	18.93	19.83	174.324	22.41	22.69	Pass
62	5310	17.41	18.36	123.63	20.92	22.69	Pass
102	5510	17.92	18.88	139.212	21.44	22.69	Pass
110	5550	19.13	20.07	183.471	22.64	22.69	Pass
134	5670	18.52	19.99	170.891	22.33	22.69	Pass

Note: 1. The directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 7.31dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(7.31-6)”.

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	43.62	41.59
62	5310	40.62	40.47
102	5510	40.80	40.69
110	5550	41.68	41.62
134	5670	40.68	40.71

Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
54	5270	41.59	27.18 > 24
62	5310	40.47	27.07 > 24
102	5510	40.69	27.09 > 24
110	5550	41.62	27.19 > 24
134	5670	40.68	27.09 > 24

802.11ac (VHT80)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	14.91	15.97	70.511	18.48	22.69	Pass
106	5530	16.41	17.02	94.102	19.74	22.69	Pass
122	5610	18.70	19.51	163.462	22.13	22.69	Pass

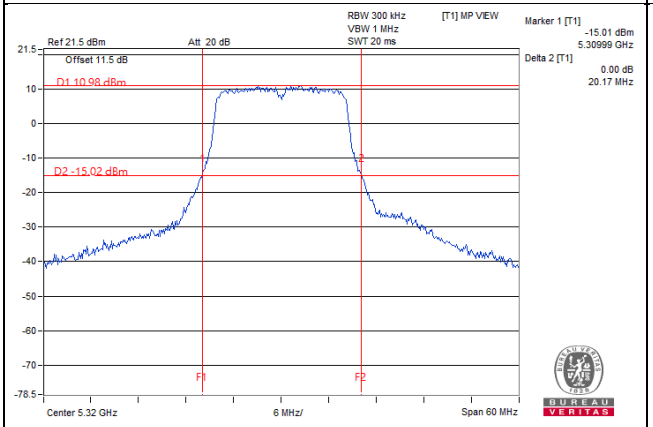
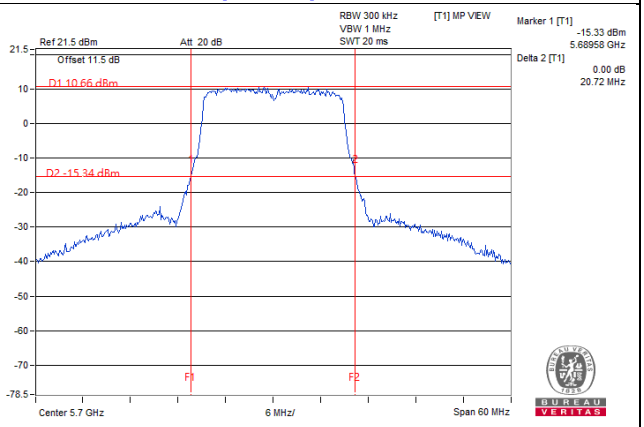
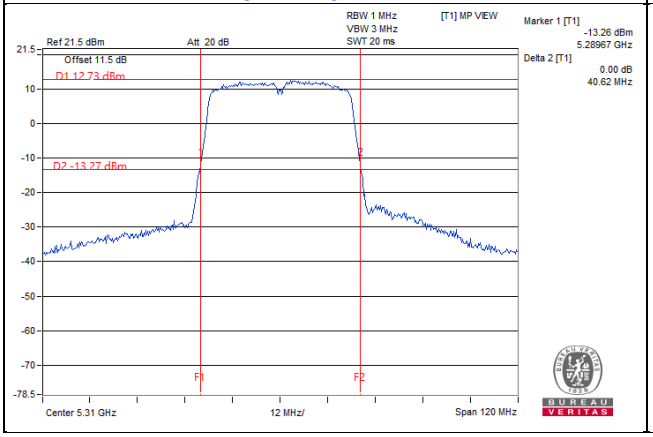
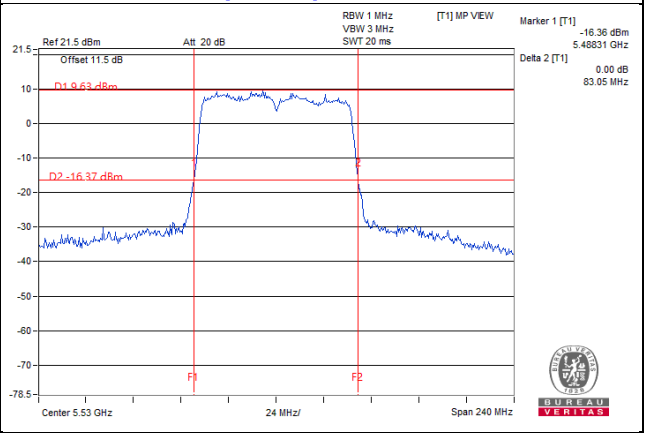
Note: 1. The directional gain = 10 log[($10^{Chain0/20}$ + $10^{Chain1/20}$)^2 / 2] = 7.31dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to “Determined Conducted Limit-(7.31-6)”.

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.19	83.13
106	5530	84.20	83.05
122	5610	84.20	83.43

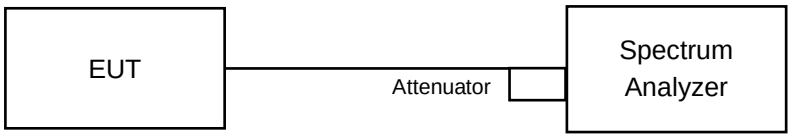
Note: For U-NII-2A Band output power limitation is determined based on 26dBc bandwidth.

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	83.13	30.19 > 24
106	5530	83.05	30.19 > 24
122	5610	83.43	30.21 > 24

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH64	**802.11ac (VHT20)_Chain 0 / CH140**
	
8802.11ac (VHT40)_Chain 1 / CH62	**802.11ac (VHT80)_Chain 1 / CH106**
	

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 SAMPLE. 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 Results

CDD Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	16.56	16.44
60	5300	16.56	16.44
64	5320	16.56	16.32
100	5500	16.56	16.56
116	5580	16.56	16.56
140	5700	16.44	16.44

802.11ac (VHT20)

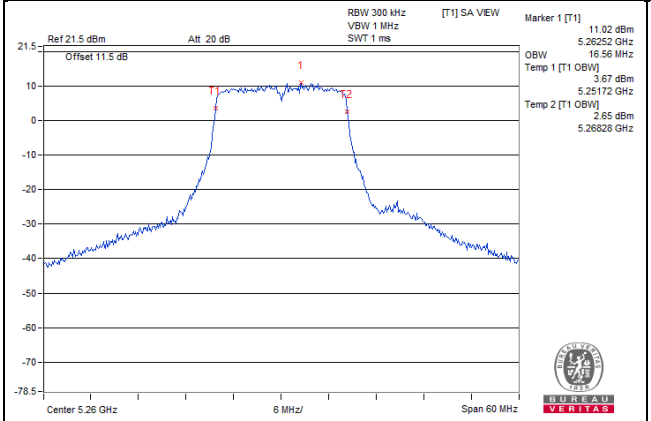
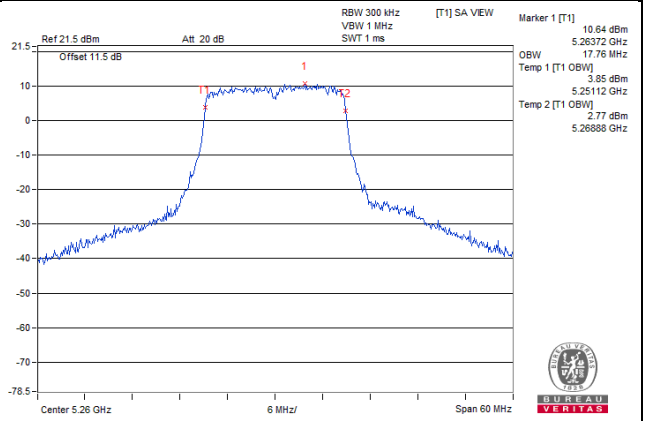
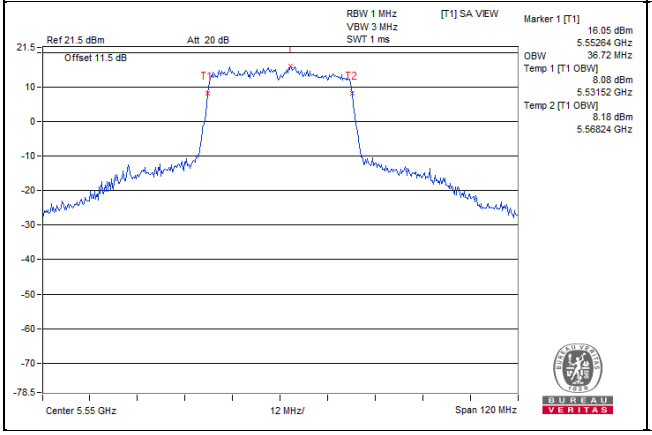
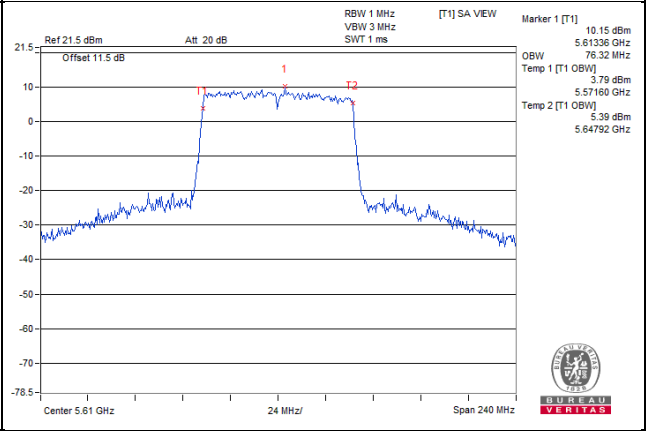
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.76	17.64
60	5300	17.76	17.76
64	5320	17.64	17.64
100	5500	17.64	17.64
116	5580	17.64	17.76
140	5700	17.64	17.76

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.48	36.48
62	5310	36.24	36.00
102	5510	36.24	36.24
110	5550	36.24	36.72
134	5670	36.00	36.00

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	75.84	75.84
106	5530	75.84	75.84
122	5610	76.32	75.36

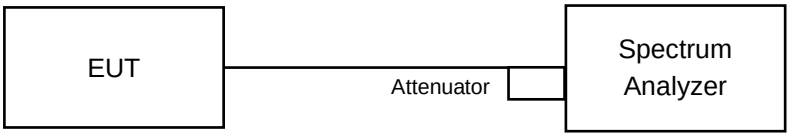
Spectrum Plot of Max Value	
802.11a_Chain 0 / CH52	**802.11ac (VHT20)_Chain 0 / CH52**
	
802.11ac (VHT40)_Chain 1 / CH110	**802.11ac (VHT80)_Chain 0 / CH122**
	

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	
		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 Procedure

For 802.11ac (VHT20):

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

For 802.11a, 802.11ac (VHT40), 802.11ac (VHT80):

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. 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 Condition

Same as Item 4.3.6.

4.5.7 Test Results

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	6.24	6.32	0.17	9.46	9.69	Pass
60	5300	6.09	6.67	0.17	9.57	9.69	Pass
64	5320	5.75	6.67	0.17	9.41	9.69	Pass
100	5500	6.24	6.35	0.17	9.48	9.69	Pass
116	5580	5.83	6.89	0.17	9.57	9.69	Pass
140	5700	5.33	7.42	0.17	9.68	9.69	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 7.31dBi > 6dBi , so the power density limit shall be reduced to 11-(7.31-6) = 9.69dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	5.98	6.80	9.42	9.69	Pass
60	5300	5.67	6.50	9.12	9.69	Pass
64	5320	6.05	7.01	9.57	9.69	Pass
100	5500	5.60	6.94	9.33	9.69	Pass
116	5580	5.57	6.79	9.23	9.69	Pass
140	5700	5.49	6.56	9.07	9.69	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 7.31dBi > 6dBi , so the power density limit shall be reduced to 11-(7.31-6) = 9.69dBm.

802.11ac (VHT40)

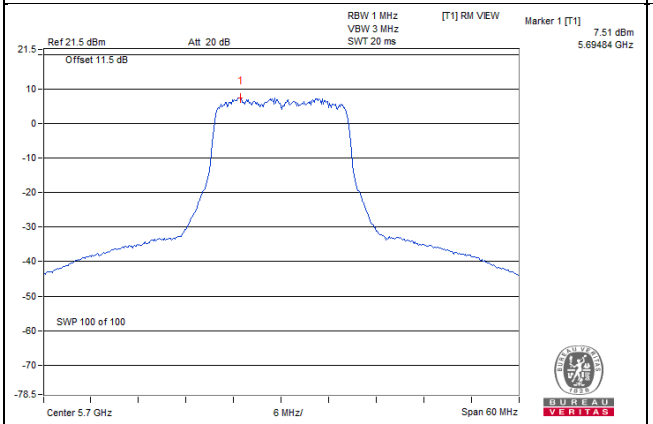
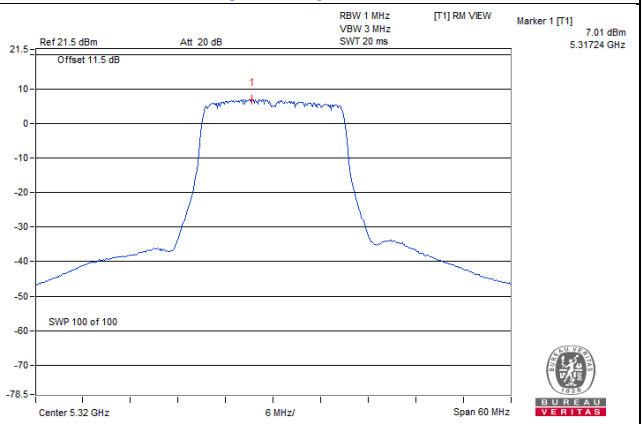
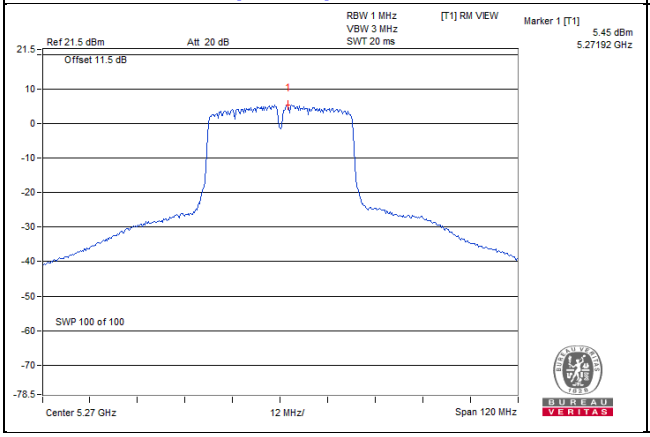
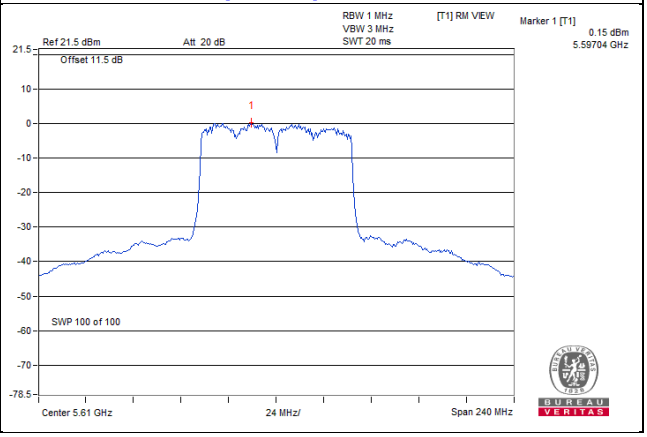
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	4.20	5.44	0.11	7.98	9.69	Pass
62	5310	1.44	2.49	0.11	5.12	9.69	Pass
102	5510	1.83	3.48	0.11	5.85	9.69	Pass
110	5550	4.22	5.27	0.11	7.90	9.69	Pass
134	5670	3.44	4.05	0.11	6.88	9.69	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 7.31dBi > 6dBi , so the power density limit shall be reduced to 11-(7.31-6) = 9.69dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	-4.12	-3.11	0.24	-0.33	9.69	Pass
106	5530	-3.68	-2.31	0.24	0.31	9.69	Pass
122	5610	-1.64	0.07	0.24	2.55	9.69	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10 log[$(10^{Chain0/20} + 10^{Chain1/20})^2$ / 2] = 7.31dBi > 6dBi , so the power density limit shall be reduced to 11-(7.31-6) = 9.69dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

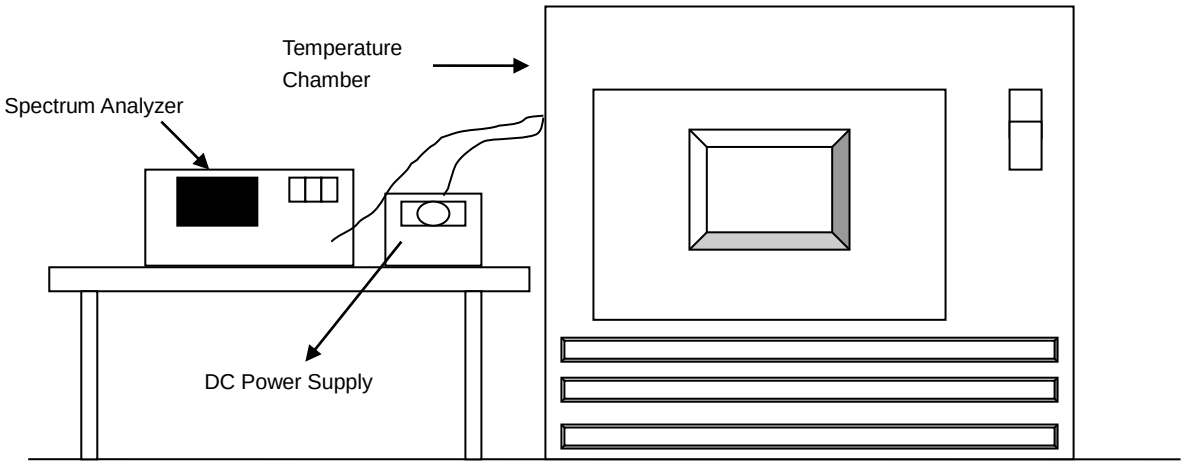
Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH140	**802.11ac (VHT20)_Chain 1 / CH64**
	
802.11ac (VHT40)_Chain 1 / CH54	**802.11ac (VHT80)_Chain 1 / CH122**
	

4.6 Frequency Stability Measurement

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

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

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

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

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

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

e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.

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

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	48	5259.9849	Pass	5259.9826	Pass	5259.9824	Pass	5259.9814	Pass
40	48	5260.0024	Pass	5260.0056	Pass	5260.0058	Pass	5260.0019	Pass
30	48	5259.9918	Pass	5259.9922	Pass	5259.989	Pass	5259.9902	Pass
20	48	5260.0183	Pass	5260.0164	Pass	5260.0194	Pass	5260.0152	Pass
10	48	5259.999	Pass	5260.002	Pass	5259.9993	Pass	5260.0025	Pass
0	48	5260.0258	Pass	5260.024	Pass	5260.0255	Pass	5260.0218	Pass
-10	48	5259.9729	Pass	5259.9734	Pass	5259.9772	Pass	5259.9772	Pass
-20	48	5260.0135	Pass	5260.0177	Pass	5260.0165	Pass	5260.0142	Pass
-30	48	5260.0081	Pass	5260.0052	Pass	5260.0097	Pass	5260.0073	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vdc)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	55.2	5260.018	Pass	5260.0167	Pass	5260.019	Pass	5260.0162	Pass
	48	5260.0183	Pass	5260.0164	Pass	5260.0194	Pass	5260.0152	Pass
	40.8	5260.0182	Pass	5260.0156	Pass	5260.019	Pass	5260.0157	Pass

5 Pictures of Test Arrangements

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

Appendix – Information on the Testing Laboratories

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

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

Linkou EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
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Email: service.adt@tw.bureauveritas.com
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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