Report No.:	RF160822E04N-1
FCC ID:	KA2AP2610A1
Test Model:	DAP-2610
Received Date:	Oct. 24, 2017
Test Date:	Nov. 10 to 17, 2017
Issued Date:	Dec. 01, 2017
Applicant:	D-Link Corporation
Address:	No.289, Xinhu 3rd Rd., Neihu District, Taipei City 11494, Taiwan, R.O.C.
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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Report Issue History Record

Attachment No.	Issue Date	Description
RF160822E04-1	Oct. 28, 2016	Original.
RF160822E04N-1	Dec. 01, 2017	Add DFS band <5.26~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66 ~ 5.70GHz >

Release Control Record

Issue No.	Description	Date Issued
RF160822E04N-1	Original release.	Dec. 01, 2017

1 Certificate of Conformity

Product:	Wireless AC1300 Concurrent Dual Band PoE Access Point
Brand:	D-Link
Test Model:	DAP-2610
Sample Status:	ENGINEERING SAMPLE
Applicant:	D-Link Corporation
Test Date:	Nov. 10 to 17, 2017
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 : Mary Ko , **Date:** Dec. 01, 2017

Mary Ko / Specialist

Approved by : , **Date:** Dec. 01, 2017

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 -3.65dB at 0.26719MHz.
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 5350MHz, 5470MHz, 5725MHz.
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	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 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 AC1300 Concurrent Dual Band PoE Access Point
Brand	D-Link
Test Model	DAP-2610
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from adapter or DC 48V from POE
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	5.26 ~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66 ~ 5.70GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 5 802.11ac (VHT80): 2
Output Power	**5.26GHz ~ 5.32GHz:** **CDD Mode:** 210.368mW **Beamforming Mode:** 209.22mW **5.50 ~ 5.58GHz & 5.66 ~ 5.70GHz:** **CDD Mode:** 198.556mW **Beamforming Mode:** 198.556mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. This report is prepared for FCC class II change. The difference compared with the Report No.: RF160822E04-1 as the following infomatiion:
   - ◆ Add DFS band <5.26~ 5.32GHz, 5.50 ~ 5.58GHz & 5.66 ~ 5.70GHz >.
2. According to above condition, all test items need to be performed. And all data were 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 antennas provided to the EUT, please refer to the following table:

Antenna No	Brand	Model	Antenna Gain (dBi) <Including cable loss>	Frequency range (GHz)	Antenna Type	Connecter Type	Cable Length (mm)
Chain (1)	NA	290-20302	3.07	2.4~2.4835	PIFA	i-pex(MHF)	47
			3.46	5.15~5.85			
Chain (2)	NA	290-20301	2.85	2.4~2.4835	PIFA	i-pex(MHF)	81
			3.75	5.15~5.85			

5. The EUT must be supplied with a PoE or power adapter and following below table:

Adapter		
Brand	Model No.	Spec.
D-Link	AMS135-1201000FU	Input: 100-240V, 0.5A, 50/60Hz Output: 12V, 1A DC output cable (unshielded, 1.2m)
POE (test only not sale together and use only with adapter No.: MU24A5480050-A1)		
Brand	Model No.	Spec.
WAHSONIC	PE03G	12-48V, 1A
*** Adapter** (test only not sale together and use only with PoE)		
Brand	Model No.	Spec.
LEI	MU24A5480050-A1	Input: 100-240V, 50/60Hz, 0.7A Output: 48V, 0.5A DC output cable (unshielded, 1.2m)
From the above adapter and POE, the worst case was found in **POE**. Therefore only the test data of the modes were recorded in this report.		

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
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)	MCS 0~8, Nss=1	2TX	2RX
	MCS 0~8, Nss=2	2TX	2RX
802.11ac (VHT40)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX
802.11ac (VHT80)	MCS 0~9, Nss=1	2TX	2RX
	MCS 0~9, Nss=2	2TX	2RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. 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)

7. The above EUT information is declared by manufacturer and for more detailed features description, please refer 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 ~ 5580MHz & 5660 ~ 5700MHz

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	116	5580 MHz
104	5520 MHz	132	5660 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 MHz

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

Channel	Frequency
102	5510 MHz
110	5550 MHz
134	5670 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
106	5530 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE≥1G	RE<1G	PLC	APCM	
1	√	√	√	√	Power from POE
2	-	-	√	-	Power from adapter

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

NOTE:
1. The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **Y-plane (below 1GHz) & X-plane (above 1GHz)**.
2. "-"means no effect.

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	5500-5580 & 5660-5700	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	106	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)
802.11a	5260-5320	52 to 64 100 to 140	52	OFDM	BPSK	6

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)
802.11a	5260-5320	52 to 64	52	OFDM	BPSK	6

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	5500-5580 & 5660-5700	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	106	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)	5500-5580 & 5660-5700	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	106	OFDM	BPSK	29.3

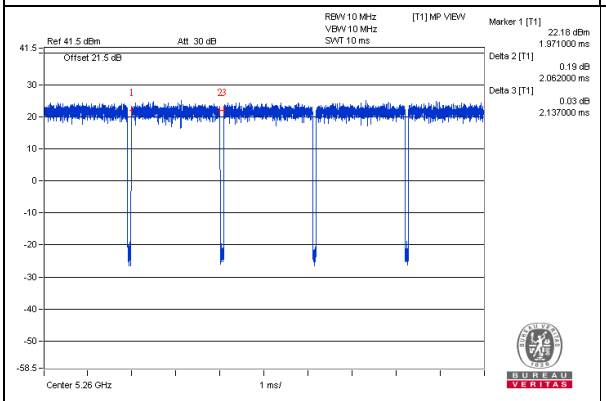
Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	25deg. C, 63%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	23deg. C, 63%RH	120Vac, 60Hz	Jyunchun Lin
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

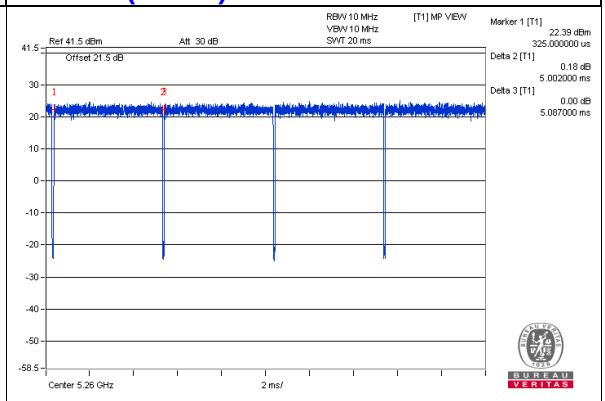
3.3 Duty Cycle of Test Signal

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 = 2.062 ms/2.137 ms = 0.965, Duty factor = 10 * log(1/0.965) = 0.16
802.11ac (VHT20): Duty cycle = 5.002 ms/5.087 ms = 0.983
802.11ac (VHT40): Duty cycle = 2.436 ms/2.515 ms = 0.969, Duty factor = 10 * log(1/0.969) = 0.14
802.11ac (VHT80): Duty cycle = 1.147 ms/1.248 ms = 0.919, Duty factor = 10 * log(1/0.919) = 0.37

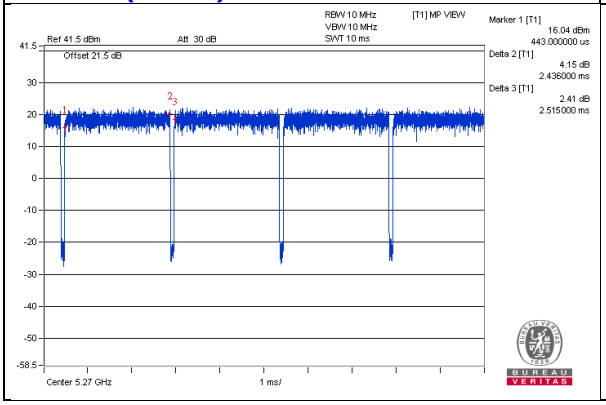
802.11a



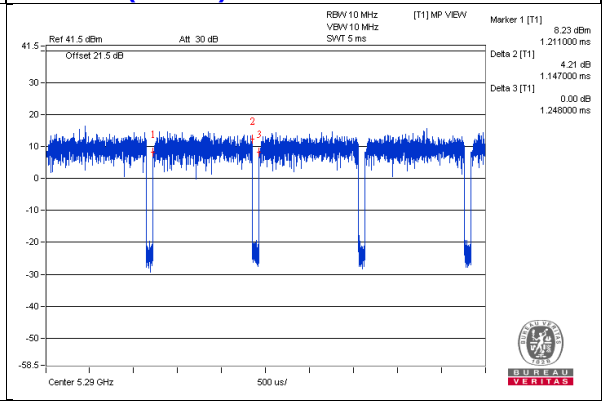
802.11ac (VHT20)



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.	Laptop	DELL	PP27L	7YLB32S	FCC DoC	Provided by Lab
B.	POE	PowerDsine	PD-3501/AC	NA	NA	Supplied by client

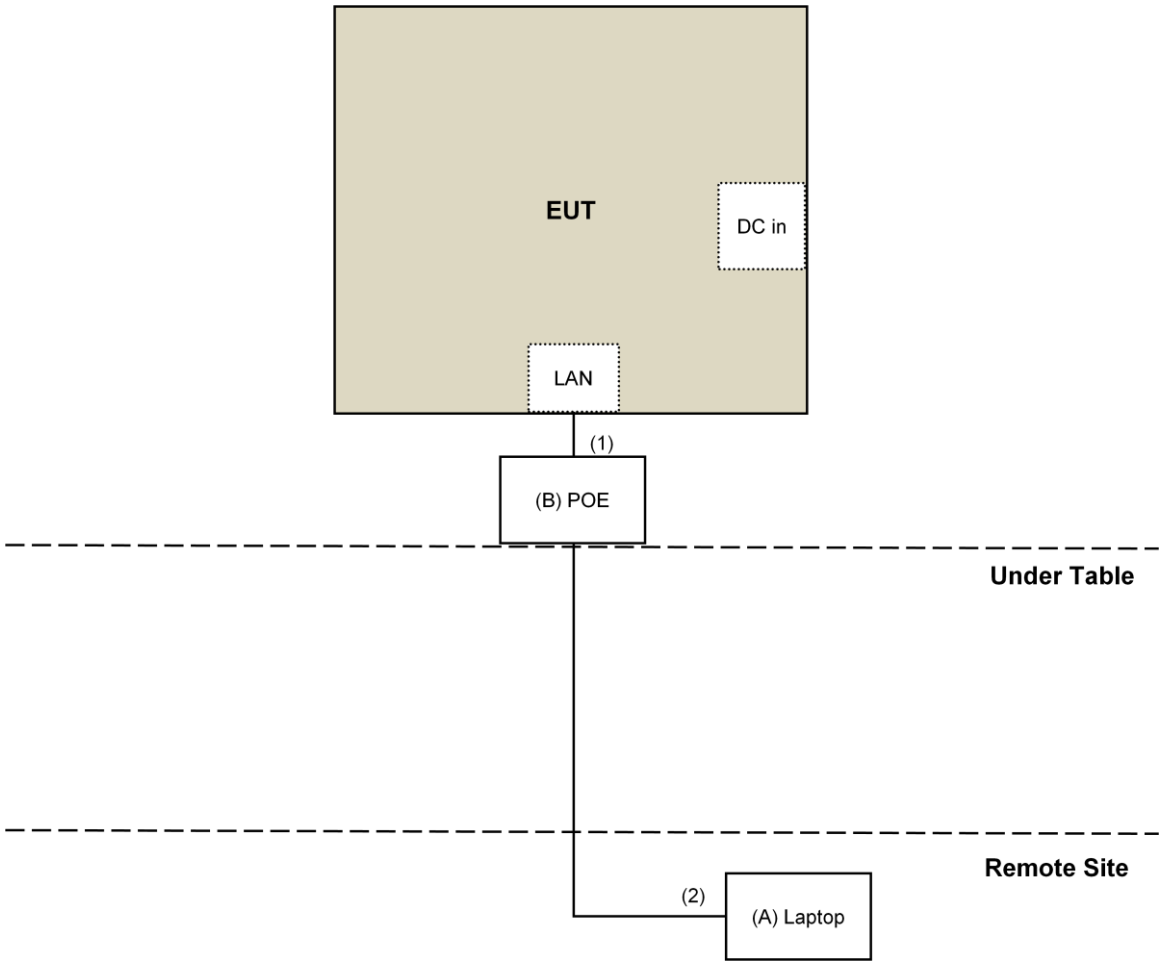
Note:

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

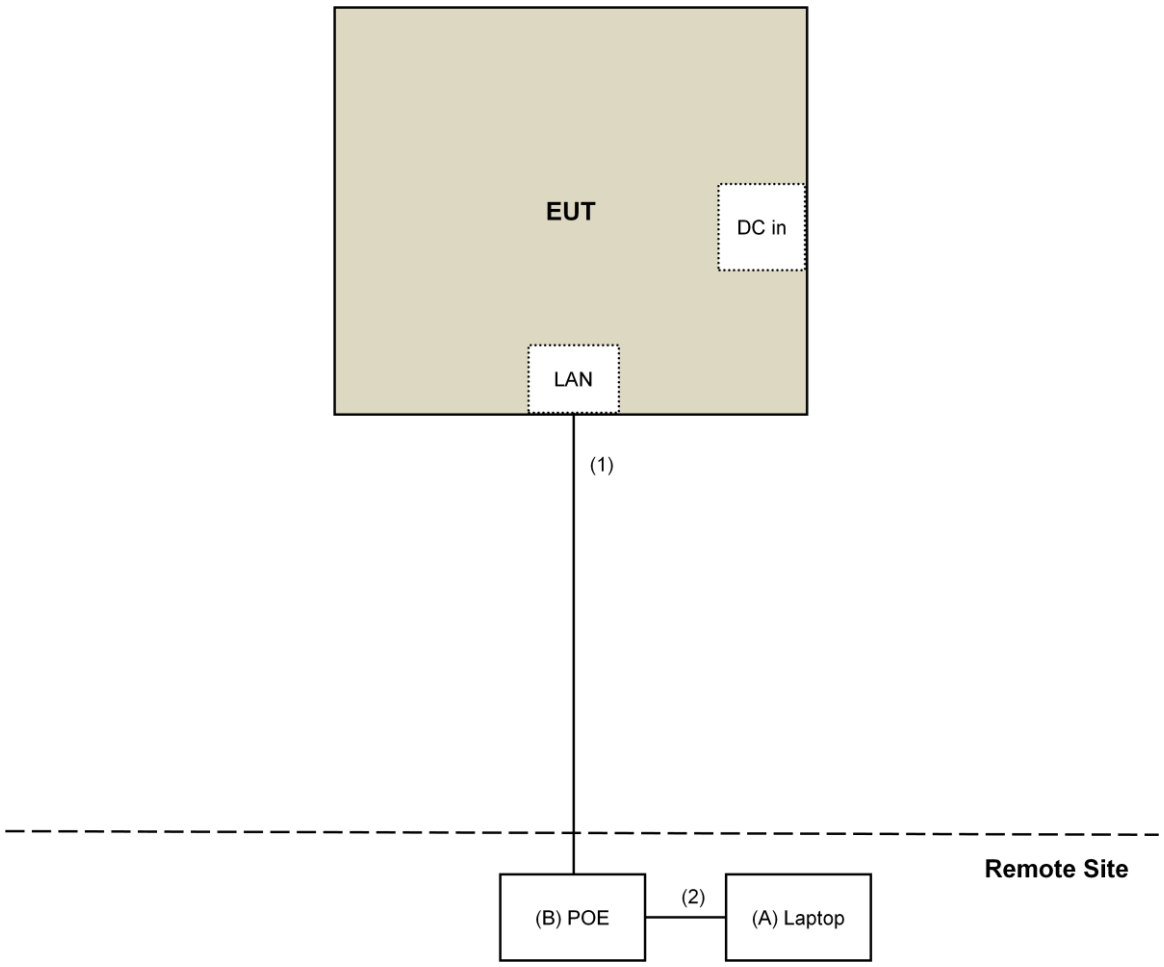
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	3	No	0	Provided by Lab
3.	DC Cable	1	1.2	No	0	Supplied by client

3.4.1 Configuration of System under Test

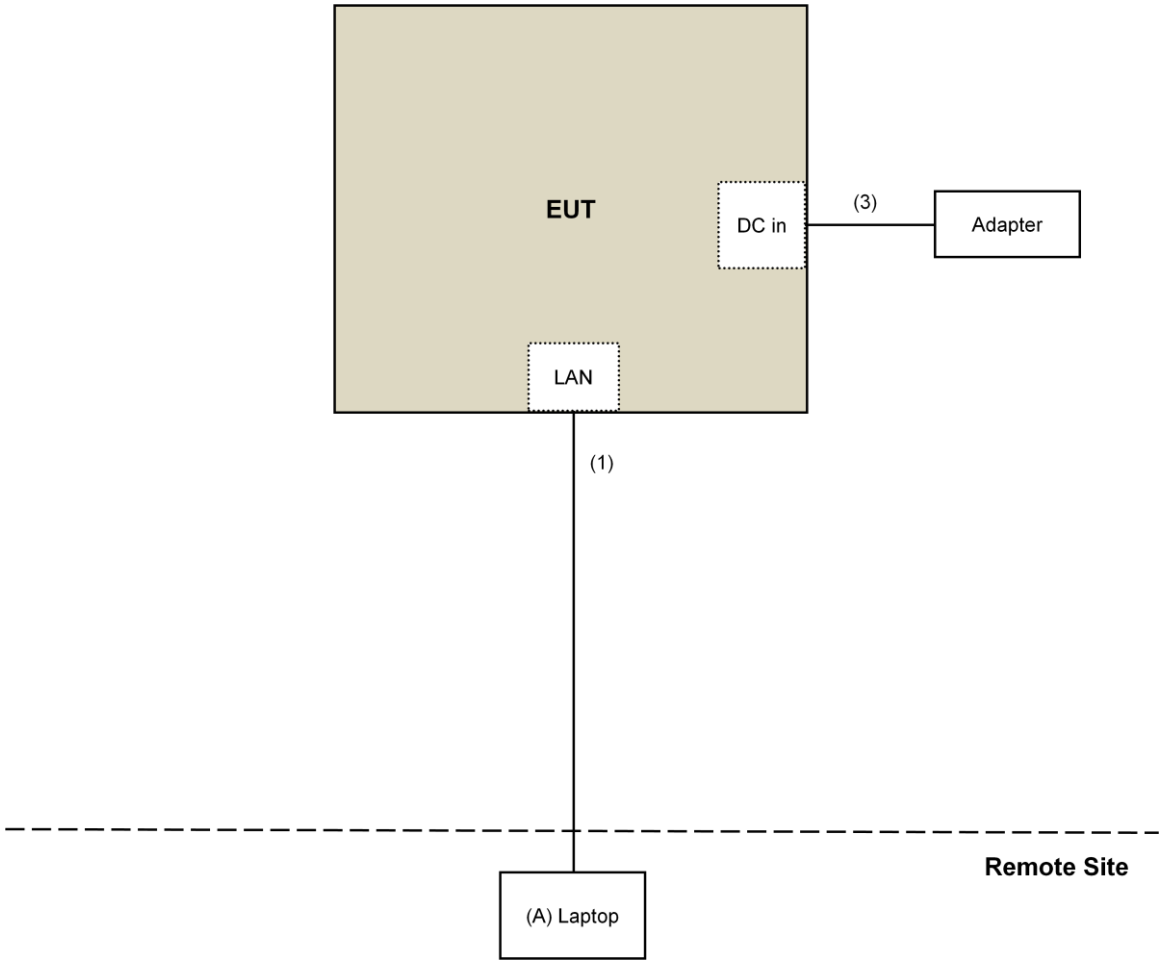
For conducted emission test (Mode 1):



For other test items (Mode 1):



For Mode 2:



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 v01r04
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

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="2">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="2" rowspan="2">789033 D02 General UNII Test Procedure New Rules v01r04</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="4">*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 Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 09, 2017	Nov. 08, 2018
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 03, 2017	Oct. 02, 2018
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSV40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 11, 2017	Jan. 10, 2018

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. 4.
4. The CANADA Site Registration No. is 20331-2
5. Loop antenna was used for all emissions below 30 MHz.
6. Tested Date: Nov. 10 to 15, 2017

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. Both X and Y axes 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:

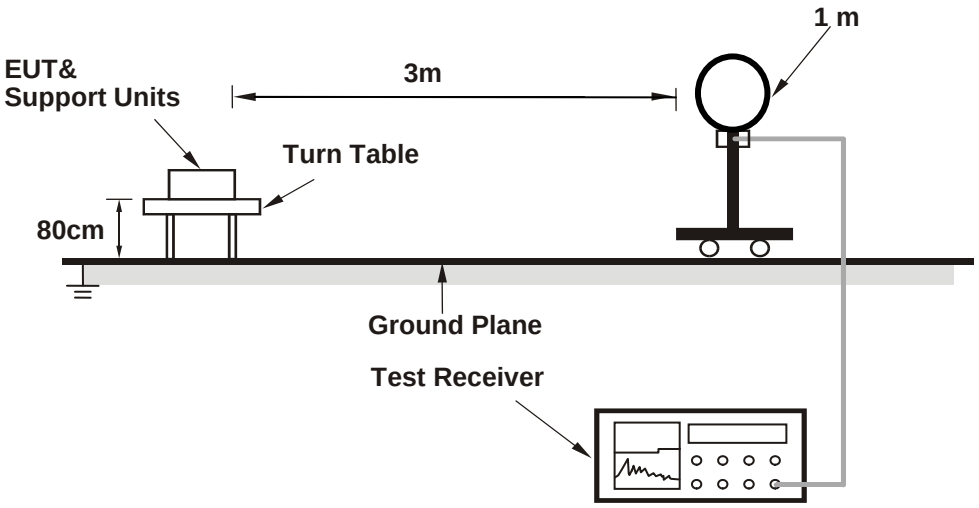
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

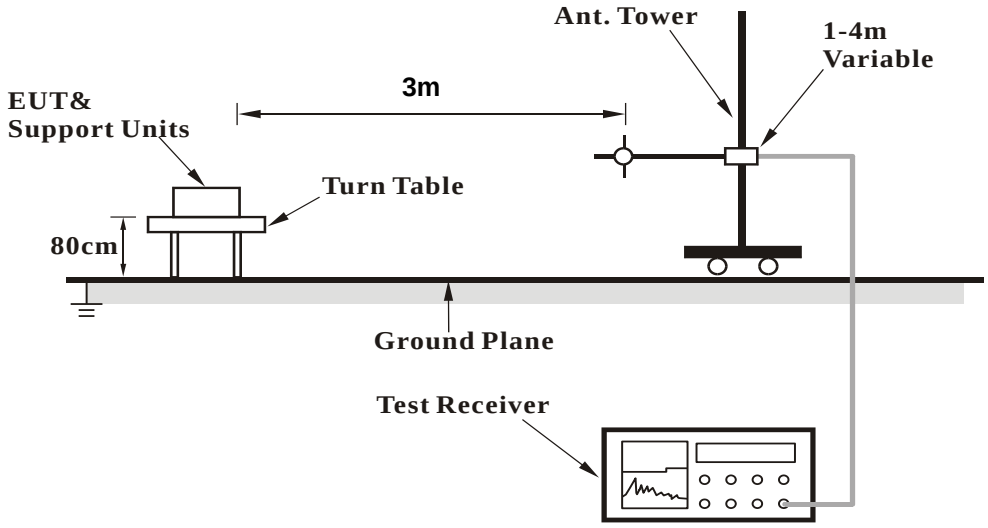
No deviation.

4.1.5 Test Setup

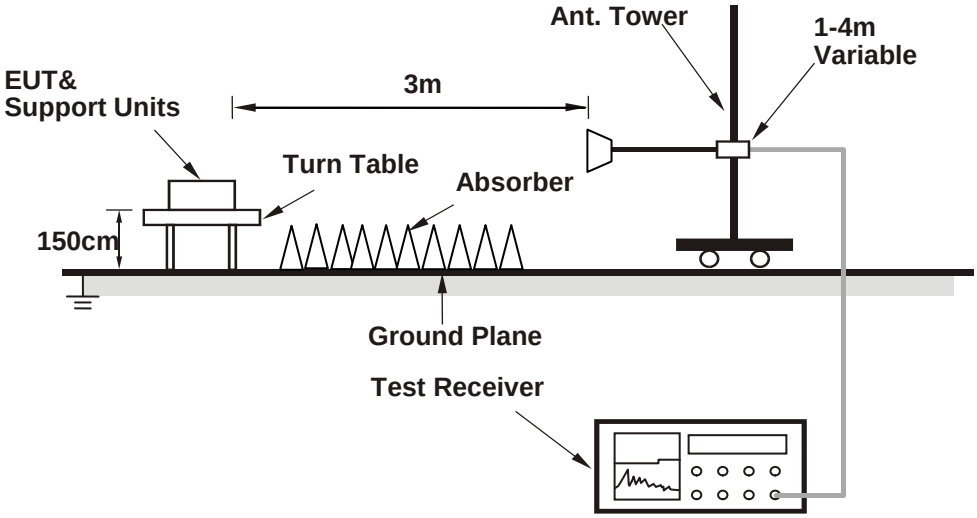
For Radiated emission below 30MHz



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 Condition

a. Connected the EUT with the Laptop which is placed on remote site.
b. Contorlling software (QDART-Connectivity1000036.exe) 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	49.1 PK	74.0	-24.9	1.00 H	341	45.1	4.0
2	5150.00	37.5 AV	54.0	-16.5	1.00 H	341	33.5	4.0
3	*5260.00	110.5 PK			1.00 H	341	106.3	4.2
4	*5260.00	101.0 AV			1.00 H	341	96.8	4.2
5	#10520.00	46.4 PK	74.0	-27.6	1.58 H	217	32.6	13.8
6	#10520.00	34.0 AV	54.0	-20.0	1.58 H	217	20.2	13.8
7	15780.00	48.5 PK	74.0	-25.5	1.58 H	301	34.4	14.1
8	15780.00	35.8 AV	54.0	-18.2	1.58 H	301	21.7	14.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	50.6 PK	74.0	-23.4	1.02 V	90	46.6	4.0
2	5150.00	38.4 AV	54.0	-15.6	1.02 V	90	34.4	4.0
3	*5260.00	112.7 PK			1.02 V	90	108.5	4.2
4	*5260.00	104.0 AV			1.02 V	90	99.8	4.2
5	#10520.00	48.1 PK	74.0	-25.9	2.90 V	360	34.3	13.8
6	#10520.00	37.4 AV	54.0	-16.6	2.90 V	360	23.6	13.8
7	15780.00	52.2 PK	74.0	-21.8	2.08 V	169	38.1	14.1
8	15780.00	39.5 AV	54.0	-14.5	2.08 V	169	25.4	14.1

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

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	48.1 PK	74.0	-25.9	1.09 H	353	44.1	4.0
2	5150.00	37.3 AV	54.0	-16.7	1.09 H	353	33.3	4.0
3	*5300.00	111.5 PK			1.09 H	353	107.2	4.3
4	*5300.00	102.2 AV			1.09 H	353	97.9	4.3
5	5350.00	62.1 PK	74.0	-11.9	1.09 H	353	57.7	4.4
6	5350.00	42.6 AV	54.0	-11.4	1.09 H	353	38.2	4.4
7	10600.00	46.2 PK	74.0	-27.8	1.61 H	223	32.4	13.8
8	10600.00	34.0 AV	54.0	-20.0	1.61 H	223	20.2	13.8
9	15900.00	47.8 PK	74.0	-26.2	1.61 H	297	34.6	13.2
10	15900.00	35.4 AV	54.0	-18.6	1.61 H	297	22.2	13.2
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	48.3 PK	74.0	-25.7	1.40 V	94	44.3	4.0
2	5150.00	37.5 AV	54.0	-16.5	1.40 V	94	33.5	4.0
3	*5300.00	113.6 PK			1.40 V	94	109.3	4.3
4	*5300.00	105.2 AV			1.40 V	94	100.9	4.3
5	5350.00	64.3 PK	74.0	-9.7	1.40 V	94	59.9	4.4
6	5350.00	43.8 AV	54.0	-10.2	1.40 V	94	39.4	4.4
7	10600.00	47.7 PK	74.0	-26.3	2.85 V	350	33.9	13.8
8	10600.00	37.1 AV	54.0	-16.9	2.85 V	350	23.3	13.8
9	15900.00	52.9 PK	74.0	-21.1	2.02 V	166	39.7	13.2
10	15900.00	39.9 AV	54.0	-14.1	2.02 V	166	26.7	13.2

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	110.6 PK			1.12 H	352	106.3	4.3
2	*5320.00	100.9 AV			1.12 H	352	96.6	4.3
3	5350.00	67.5 PK	74.0	-6.5	1.12 H	352	63.1	4.4
4	5350.00	51.8 AV	54.0	-2.2	1.12 H	352	47.4	4.4
5	10640.00	46.6 PK	74.0	-27.4	1.54 H	220	32.6	14.0
6	10640.00	33.9 AV	54.0	-20.1	1.54 H	220	19.9	14.0
7	15960.00	48.1 PK	74.0	-25.9	1.63 H	296	34.6	13.5
8	15960.00	35.5 AV	54.0	-18.5	1.63 H	296	22.0	13.5
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	*5320.00	112.8 PK			1.02 V	93	108.5	4.3
2	*5320.00	103.9 AV			1.02 V	93	99.6	4.3
3	5350.00	69.2 PK	74.0	-4.8	1.02 V	93	64.8	4.4
4	5350.00	53.6 AV	54.0	-0.4	1.02 V	93	49.2	4.4
5	10640.00	48.3 PK	74.0	-25.7	2.85 V	360	34.3	14.0
6	10640.00	37.7 AV	54.0	-16.3	2.85 V	360	23.7	14.0
7	15960.00	52.6 PK	74.0	-21.4	2.05 V	165	39.1	13.5
8	15960.00	39.9 AV	54.0	-14.1	2.05 V	165	26.4	13.5

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.

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	#5470.00	65.1 PK	74.0	-8.9	1.17 H	360	60.6	4.5
2	#5470.00	51.6 AV	54.0	-2.4	1.17 H	360	47.1	4.5
3	*5500.00	112.8 PK			1.17 H	360	108.3	4.5
4	*5500.00	102.1 AV			1.17 H	360	97.6	4.5
5	11000.00	46.5 PK	74.0	-27.5	1.54 H	222	31.7	14.8
6	11000.00	33.9 AV	54.0	-20.1	1.54 H	222	19.1	14.8
7	#16500.00	48.6 PK	74.0	-25.4	1.52 H	303	33.0	15.6
8	#16500.00	36.2 AV	54.0	-17.8	1.52 H	303	20.6	15.6
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	#5470.00	66.9 PK	74.0	-7.1	2.25 V	94	62.4	4.5
2	#5470.00	53.4 AV	54.0	-0.6	2.25 V	94	48.9	4.5
3	*5500.00	115.0 PK			2.25 V	94	110.5	4.5
4	*5500.00	106.1 AV			2.25 V	94	101.6	4.5
5	11000.00	48.6 PK	74.0	-25.4	2.88 V	347	33.8	14.8
6	11000.00	37.9 AV	54.0	-16.1	2.88 V	347	23.1	14.8
7	#16500.00	52.4 PK	74.0	-21.6	2.07 V	155	36.8	15.6
8	#16500.00	39.4 AV	54.0	-14.6	2.07 V	155	23.8	15.6

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.

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	113.6 PK			1.18 H	360	109.0	4.6
2	*5580.00	103.1 AV			1.18 H	360	98.5	4.6
3	11160.00	46.4 PK	74.0	-27.6	1.61 H	229	32.0	14.4
4	11160.00	34.2 AV	54.0	-19.8	1.61 H	229	19.8	14.4
5	#16740.00	48.7 PK	74.0	-25.3	1.59 H	301	32.2	16.5
6	#16740.00	36.0 AV	54.0	-18.0	1.59 H	301	19.5	16.5
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	*5580.00	115.8 PK			2.63 V	359	111.2	4.6
2	*5580.00	107.0 AV			2.63 V	359	102.4	4.6
3	11160.00	48.4 PK	74.0	-25.6	2.86 V	360	34.0	14.4
4	11160.00	37.9 AV	54.0	-16.1	2.86 V	360	23.5	14.4
5	#16740.00	52.4 PK	74.0	-21.6	2.04 V	172	35.9	16.5
6	#16740.00	39.5 AV	54.0	-14.5	2.04 V	172	23.0	16.5

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 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	109.5 PK			1.12 H	353	104.7	4.8
2	*5700.00	99.4 AV			1.12 H	353	94.6	4.8
3	#5725.00	69.9 PK	74.0	-4.1	1.12 H	360	65.0	4.9
4	#5725.00	51.7 AV	54.0	-2.3	1.12 H	360	46.8	4.9
5	11400.00	46.2 PK	74.0	-27.8	1.61 H	219	31.8	14.4
6	11400.00	34.1 AV	54.0	-19.9	1.61 H	219	19.7	14.4
7	#17100.00	48.3 PK	74.0	-25.7	1.59 H	293	29.8	18.5
8	#17100.00	35.5 AV	54.0	-18.5	1.59 H	293	17.0	18.5
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	*5700.00	111.7 PK			2.46 V	354	106.9	4.8
2	*5700.00	103.3 AV			2.46 V	354	98.5	4.8
3	#5725.00	71.5 PK	74.0	-2.5	2.46 V	354	66.6	4.9
4	**#5725.00**	**53.9 AV**	**54.0**	**-0.1**	**2.46 V**	**354**	**49.0**	**4.9**
5	11400.00	48.5 PK	74.0	-25.5	2.88 V	360	34.1	14.4
6	11400.00	37.9 AV	54.0	-16.1	2.88 V	360	23.5	14.4
7	#17100.00	52.6 PK	74.0	-21.4	2.00 V	169	34.1	18.5
8	#17100.00	39.8 AV	54.0	-14.2	2.00 V	169	21.3	18.5

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.

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	48.2 PK	74.0	-25.8	1.07 H	360	44.2	4.0
2	5150.00	35.5 AV	54.0	-18.5	1.07 H	360	31.5	4.0
3	*5260.00	111.3 PK			1.07 H	40	107.1	4.2
4	*5260.00	101.8 AV			1.07 H	40	97.6	4.2
5	#10520.00	46.1 PK	74.0	-27.9	1.66 H	237	32.3	13.8
6	#10520.00	33.9 AV	54.0	-20.1	1.66 H	237	20.1	13.8
7	15780.00	48.6 PK	74.0	-25.4	1.62 H	305	34.5	14.1
8	15780.00	36.1 AV	54.0	-17.9	1.62 H	305	22.0	14.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	49.7 PK	74.0	-24.3	1.06 V	92	45.7	4.0
2	5150.00	37.1 AV	54.0	-16.9	1.06 V	92	33.1	4.0
3	*5260.00	113.7 PK			1.06 V	92	109.5	4.2
4	*5260.00	104.9 AV			1.06 V	92	100.7	4.2
5	#10520.00	48.4 PK	74.0	-25.6	2.82 V	360	34.6	13.8
6	#10520.00	37.9 AV	54.0	-16.1	2.82 V	360	24.1	13.8
7	15780.00	53.1 PK	74.0	-20.9	2.05 V	182	39.0	14.1
8	15780.00	40.3 AV	54.0	-13.7	2.05 V	182	26.2	14.1

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 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	110.9 PK			1.04 H	17	106.6	4.3
2	*5300.00	101.7 AV			1.04 H	17	97.4	4.3
3	10600.00	46.0 PK	74.0	-28.0	1.57 H	229	32.2	13.8
4	10600.00	33.9 AV	54.0	-20.1	1.57 H	229	20.1	13.8
5	15900.00	49.2 PK	74.0	-24.8	1.56 H	298	36.0	13.2
6	15900.00	36.3 AV	54.0	-17.7	1.56 H	298	23.1	13.2
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	113.3 PK			1.00 V	89	109.0	4.3
2	*5300.00	104.8 AV			1.00 V	89	100.5	4.3
3	10600.00	48.6 PK	74.0	-25.4	2.84 V	360	34.8	13.8
4	10600.00	37.8 AV	54.0	-16.2	2.84 V	360	24.0	13.8
5	15900.00	52.5 PK	74.0	-21.5	2.04 V	172	39.3	13.2
6	15900.00	39.9 AV	54.0	-14.1	2.04 V	172	26.7	13.2

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	110.5 PK			1.02 H	18	106.2	4.3
2	*5320.00	100.7 AV			1.02 H	18	96.4	4.3
3	5350.00	66.2 PK	74.0	-7.8	1.02 H	360	61.8	4.4
4	5350.00	51.6 AV	54.0	-2.4	1.02 H	360	47.2	4.4
5	10640.00	46.4 PK	74.0	-27.6	1.55 H	238	32.4	14.0
6	10640.00	34.1 AV	54.0	-19.9	1.55 H	238	20.1	14.0
7	15960.00	49.2 PK	74.0	-24.8	1.62 H	299	35.7	13.5
8	15960.00	36.5 AV	54.0	-17.5	1.62 H	299	23.0	13.5
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	*5320.00	112.9 PK			1.08 V	95	108.6	4.3
2	*5320.00	103.8 AV			1.08 V	95	99.5	4.3
3	5350.00	67.8 PK	74.0	-6.2	1.08 V	95	63.4	4.4
4	5350.00	53.5 AV	54.0	-0.5	1.08 V	95	49.1	4.4
5	10640.00	48.8 PK	74.0	-25.2	2.90 V	360	34.8	14.0
6	10640.00	38.3 AV	54.0	-15.7	2.90 V	360	24.3	14.0
7	15960.00	53.0 PK	74.0	-21.0	1.95 V	172	39.5	13.5
8	15960.00	40.2 AV	54.0	-13.8	1.95 V	172	26.7	13.5

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.

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

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	#5470.00	70.8 PK	74.0	-3.2	1.04 H	360	66.3	4.5
2	#5470.00	51.7 AV	54.0	-2.3	1.04 H	360	47.2	4.5
3	*5500.00	108.8 PK			1.04 H	22	104.3	4.5
4	*5500.00	99.2 AV			1.04 H	22	94.7	4.5
5	11000.00	46.9 PK	74.0	-27.1	1.64 H	229	32.1	14.8
6	11000.00	34.5 AV	54.0	-19.5	1.64 H	229	19.7	14.8
7	#16500.00	48.4 PK	74.0	-25.6	1.63 H	306	32.8	15.6
8	#16500.00	35.9 AV	54.0	-18.1	1.63 H	306	20.3	15.6
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	#5470.00	72.5 PK	74.0	-1.5	1.35 V	186	68.0	4.5
2	#5470.00	53.5 AV	54.0	-0.5	1.35 V	186	49.0	4.5
3	*5500.00	111.1 PK			1.35 V	186	106.6	4.5
4	*5500.00	102.3 AV			1.35 V	186	97.8	4.5
5	11000.00	48.1 PK	74.0	-25.9	2.87 V	360	33.3	14.8
6	11000.00	37.6 AV	54.0	-16.4	2.87 V	360	22.8	14.8
7	#16500.00	52.3 PK	74.0	-21.7	2.00 V	179	36.7	15.6
8	#16500.00	39.6 AV	54.0	-14.4	2.00 V	179	24.0	15.6

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.

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	#5470.00	48.2 PK	74.0	-25.8	1.04 H	360	43.7	4.5
2	#5470.00	35.1 AV	54.0	-18.9	1.04 H	360	30.6	4.5
3	*5580.00	111.3 PK			1.04 H	15	106.7	4.6
4	*5580.00	100.5 AV			1.04 H	15	95.9	4.6
5	#5725.00	49.2 PK	74.0	-24.8	1.04 H	360	44.3	4.9
6	#5725.00	37.5 AV	54.0	-16.5	1.04 H	360	32.6	4.9
7	11160.00	46.3 PK	74.0	-27.7	1.61 H	226	31.9	14.4
8	11160.00	33.9 AV	54.0	-20.1	1.61 H	226	19.5	14.4
9	#16740.00	48.4 PK	74.0	-25.6	1.55 H	287	31.9	16.5
10	#16740.00	35.7 AV	54.0	-18.3	1.55 H	287	19.2	16.5
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	#5470.00	49.4 PK	74.0	-24.6	2.84 V	355	44.9	4.5
2	#5470.00	36.3 AV	54.0	-17.7	2.84 V	355	31.8	4.5
3	*5580.00	114.7 PK			2.84 V	355	110.1	4.6
4	*5580.00	103.6 AV			2.84 V	355	99.0	4.6
5	#5725.00	51.0 PK	74.0	-23.0	2.84 V	355	46.1	4.9
6	#5725.00	39.8 AV	54.0	-14.2	2.84 V	355	34.9	4.9
7	11160.00	48.6 PK	74.0	-25.4	2.85 V	354	34.2	14.4
8	11160.00	38.0 AV	54.0	-16.0	2.85 V	354	23.6	14.4
9	#16740.00	52.3 PK	74.0	-21.7	1.95 V	162	35.8	16.5
10	#16740.00	39.3 AV	54.0	-14.7	1.95 V	162	22.8	16.5

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 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	107.8 PK			1.07 H	32	103.0	4.8
2	*5700.00	97.7 AV			1.07 H	32	92.9	4.8
3	#5725.00	67.9 PK	74.0	-6.1	1.07 H	360	63.0	4.9
4	#5725.00	51.5 AV	54.0	-2.5	1.07 H	360	46.6	4.9
5	11400.00	46.7 PK	74.0	-27.3	1.65 H	233	32.3	14.4
6	11400.00	34.6 AV	54.0	-19.4	1.65 H	233	20.2	14.4
7	#17100.00	48.8 PK	74.0	-25.2	1.63 H	289	30.3	18.5
8	#17100.00	36.1 AV	54.0	-17.9	1.63 H	289	17.6	18.5
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	*5700.00	111.2 PK			2.87 V	355	106.4	4.8
2	*5700.00	100.8 AV			2.87 V	355	96.0	4.8
3	#5725.00	69.9 PK	74.0	-4.1	2.87 V	355	65.0	4.9
4	#5725.00	53.8 AV	54.0	-0.2	2.87 V	355	48.9	4.9
5	11400.00	48.7 PK	74.0	-25.3	2.87 V	353	34.3	14.4
6	11400.00	38.2 AV	54.0	-15.8	2.87 V	353	23.8	14.4
7	#17100.00	52.8 PK	74.0	-21.2	1.97 V	163	34.3	18.5
8	#17100.00	40.0 AV	54.0	-14.0	1.97 V	163	21.5	18.5

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.

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	53.5 PK	74.0	-20.5	1.12 H	360	49.5	4.0
2	5150.00	36.8 AV	54.0	-17.2	1.12 H	360	32.8	4.0
3	*5270.00	108.2 PK			1.12 H	308	104.0	4.2
4	*5270.00	99.5 AV			1.12 H	308	95.3	4.2
5	#10540.00	46.6 PK	74.0	-27.4	1.65 H	235	32.9	13.7
6	#10540.00	34.3 AV	54.0	-19.7	1.65 H	235	20.6	13.7
7	15810.00	48.9 PK	74.0	-25.1	1.62 H	295	34.9	14.0
8	15810.00	36.5 AV	54.0	-17.5	1.62 H	295	22.5	14.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	55.7 PK	74.0	-18.3	2.70 V	252	51.7	4.0
2	5150.00	38.2 AV	54.0	-15.8	2.70 V	252	34.2	4.0
3	*5270.00	111.6 PK			2.70 V	252	107.4	4.2
4	*5270.00	102.6 AV			2.70 V	252	98.4	4.2
5	#10540.00	48.4 PK	74.0	-25.6	2.91 V	360	34.7	13.7
6	#10540.00	37.7 AV	54.0	-16.3	2.91 V	360	24.0	13.7
7	15810.00	52.5 PK	74.0	-21.5	2.01 V	177	38.5	14.0
8	15810.00	39.5 AV	54.0	-14.5	2.01 V	177	25.5	14.0

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 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	103.8 PK			1.15 H	300	99.5	4.3
2	*5310.00	94.9 AV			1.15 H	300	90.6	4.3
3	5350.00	69.9 PK	74.0	-4.1	1.15 H	300	65.5	4.4
4	5350.00	51.5 AV	54.0	-2.5	1.15 H	300	47.1	4.4
5	10620.00	46.8 PK	74.0	-27.2	1.68 H	219	32.9	13.9
6	10620.00	34.5 AV	54.0	-19.5	1.68 H	219	20.6	13.9
7	15930.00	49.3 PK	74.0	-24.7	1.64 H	276	36.0	13.3
8	15930.00	36.4 AV	54.0	-17.6	1.64 H	276	23.1	13.3
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	*5310.00	107.2 PK			2.66 V	253	102.9	4.3
2	*5310.00	98.0 AV			2.66 V	253	93.7	4.3
3	5350.00	71.8 PK	74.0	-2.2	2.66 V	253	67.4	4.4
4	5350.00	53.8 AV	54.0	-0.2	2.66 V	253	49.4	4.4
5	10620.00	48.1 PK	74.0	-25.9	2.87 V	348	34.2	13.9
6	10620.00	36.4 AV	54.0	-17.6	2.87 V	348	22.5	13.9
7	15930.00	50.7 PK	74.0	-23.3	1.97 V	153	37.4	13.3
8	15930.00	37.9 AV	54.0	-16.1	1.97 V	153	24.6	13.3

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.

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	#5470.00	69.9 PK	74.0	-4.1	1.15 H	294	65.4	4.5
2	#5470.00	52.5 AV	54.0	-1.5	1.15 H	294	48.0	4.5
3	*5510.00	103.7 PK			1.15 H	294	99.1	4.6
4	*5510.00	94.9 AV			1.15 H	294	90.3	4.6
5	11020.00	46.7 PK	74.0	-27.3	1.69 H	228	32.0	14.7
6	11020.00	34.3 AV	54.0	-19.7	1.69 H	228	19.6	14.7
7	#16530.00	48.5 PK	74.0	-25.5	1.62 H	280	32.7	15.8
8	#16530.00	36.1 AV	54.0	-17.9	1.62 H	280	20.3	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	#5470.00	71.8 PK	74.0	-2.2	2.62 V	250	67.3	4.5
2	#5470.00	53.8 AV	54.0	-0.2	2.62 V	250	49.3	4.5
3	*5510.00	107.7 PK			2.62 V	250	103.1	4.6
4	*5510.00	98.0 AV			2.62 V	250	93.4	4.6
5	11020.00	48.4 PK	74.0	-25.6	2.88 V	359	33.7	14.7
6	11020.00	36.9 AV	54.0	-17.1	2.88 V	359	22.2	14.7
7	#16530.00	50.5 PK	74.0	-23.5	2.02 V	167	34.7	15.8
8	#16530.00	37.5 AV	54.0	-16.5	2.02 V	167	21.7	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.

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	#5470.00	64.0 PK	74.0	-10.0	1.19 H	281	59.5	4.5
2	#5470.00	49.9 AV	54.0	-4.1	1.19 H	281	45.4	4.5
3	*5550.00	108.8 PK			1.19 H	281	104.3	4.5
4	*5550.00	99.8 AV			1.19 H	281	95.3	4.5
5	#5725.00	48.2 PK	74.0	-25.8	1.19 H	281	43.3	4.9
6	#5725.00	37.0 AV	54.0	-17.0	1.19 H	281	32.1	4.9
7	11100.00	46.7 PK	74.0	-27.3	1.60 H	226	32.3	14.4
8	11100.00	34.9 AV	54.0	-19.1	1.60 H	226	20.5	14.4
9	#16650.00	49.2 PK	74.0	-24.8	1.59 H	286	32.8	16.4
10	#16650.00	36.6 AV	54.0	-17.4	1.59 H	286	20.2	16.4
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	#5470.00	66.1 PK	74.0	-7.9	2.65 V	245	61.6	4.5
2	#5470.00	51.8 AV	54.0	-2.2	2.65 V	245	47.3	4.5
3	*5550.00	112.2 PK			2.65 V	245	107.7	4.5
4	*5550.00	103.1 AV			2.65 V	245	98.6	4.5
5	#5725.00	50.1 PK	74.0	-23.9	2.65 V	245	45.2	4.9
6	#5725.00	39.0 AV	54.0	-15.0	2.65 V	245	34.1	4.9
7	11100.00	48.2 PK	74.0	-25.8	2.94 V	360	33.8	14.4
8	11100.00	37.4 AV	54.0	-16.6	2.94 V	360	23.0	14.4
9	#16650.00	52.0 PK	74.0	-22.0	1.95 V	181	35.6	16.4
10	#16650.00	39.3 AV	54.0	-14.7	1.95 V	181	22.9	16.4

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	106.9 PK			1.09 H	290	102.1	4.8
2	*5670.00	97.3 AV			1.09 H	290	92.5	4.8
3	#5725.00	64.8 PK	74.0	-9.2	1.09 H	290	59.9	4.9
4	#5725.00	51.6 AV	54.0	-2.4	1.09 H	290	46.7	4.9
5	11340.00	46.9 PK	74.0	-27.1	1.60 H	243	32.5	14.4
6	11340.00	34.8 AV	54.0	-19.2	1.60 H	243	20.4	14.4
7	#17010.00	48.9 PK	74.0	-25.1	1.69 H	275	30.7	18.2
8	#17010.00	36.2 AV	54.0	-17.8	1.69 H	275	18.0	18.2
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	*5670.00	110.3 PK			2.56 V	246	105.5	4.8
2	*5670.00	100.6 AV			2.56 V	246	95.8	4.8
3	#5725.00	66.9 PK	74.0	-7.1	2.56 V	246	62.0	4.9
4	#5725.00	53.8 AV	54.0	-0.2	2.56 V	246	48.9	4.9
5	11340.00	49.1 PK	74.0	-24.9	2.93 V	347	34.7	14.4
6	11340.00	37.4 AV	54.0	-16.6	2.93 V	347	23.0	14.4
7	#17010.00	50.5 PK	74.0	-23.5	2.04 V	156	32.3	18.2
8	#17010.00	37.8 AV	54.0	-16.2	2.04 V	156	19.6	18.2

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.

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	49.2 PK	74.0	-24.8	1.11 H	290	45.2	4.0
2	5150.00	36.9 AV	54.0	-17.1	1.11 H	290	32.9	4.0
3	*5290.00	100.5 PK			1.11 H	290	96.2	4.3
4	*5290.00	91.2 AV			1.11 H	290	86.9	4.3
5	5350.00	67.1 PK	74.0	-6.9	1.11 H	290	62.7	4.4
6	5350.00	51.7 AV	54.0	-2.3	1.11 H	290	47.3	4.4
7	#10580.00	46.9 PK	74.0	-27.1	1.58 H	246	33.0	13.9
8	#10580.00	35.1 AV	54.0	-18.9	1.58 H	246	21.2	13.9
9	15870.00	49.1 PK	74.0	-24.9	1.65 H	264	35.7	13.4
10	15870.00	36.2 AV	54.0	-17.8	1.65 H	264	22.8	13.4
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	5150.00	51.0 PK	74.0	-23.0	2.72 V	254	47.0	4.0
2	5150.00	38.8 AV	54.0	-15.2	2.72 V	254	34.8	4.0
3	*5290.00	103.9 PK			2.72 V	254	99.6	4.3
4	*5290.00	94.5 AV			2.72 V	254	90.2	4.3
5	5350.00	69.0 PK	74.0	-5.0	2.72 V	254	64.6	4.4
6	**5350.00**	**53.9 AV**	**54.0**	**-0.1**	**2.72 V**	**254**	**49.5**	**4.4**
7	#10580.00	47.9 PK	74.0	-26.1	2.88 V	358	34.0	13.9
8	#10580.00	35.5 AV	54.0	-18.5	2.88 V	358	21.6	13.9
9	15870.00	49.3 PK	74.0	-24.7	2.07 V	165	35.9	13.4
10	15870.00	36.4 AV	54.0	-17.6	2.07 V	165	23.0	13.4

REMARKS:

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

CHANNEL	TX Channel 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	#5470.00	66.3 PK	74.0	-7.7	1.06 H	277	61.8	4.5
2	#5470.00	51.9 AV	54.0	-2.1	1.06 H	277	47.4	4.5
3	*5530.00	99.2 PK			1.06 H	277	94.7	4.5
4	*5530.00	90.4 AV			1.06 H	277	85.9	4.5
5	#5725.00	48.1 PK	74.0	-25.9	1.06 H	277	43.2	4.9
6	#5725.00	36.9 AV	54.0	-17.1	1.06 H	277	32.0	4.9
7	11060.00	47.0 PK	74.0	-27.0	1.63 H	231	32.5	14.5
8	11060.00	35.4 AV	54.0	-18.6	1.63 H	231	20.9	14.5
9	#16590.00	49.3 PK	74.0	-24.7	1.67 H	259	32.7	16.6
10	#16590.00	36.4 AV	54.0	-17.6	1.67 H	259	19.8	16.6
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	#5470.00	68.2 PK	74.0	-5.8	2.73 V	251	63.7	4.5
2	**#5470.00**	**53.9 AV**	**54.0**	**-0.1**	**2.73 V**	**251**	**49.4**	**4.5**
3	*5530.00	102.1 PK			2.73 V	251	97.6	4.5
4	*5530.00	93.6 AV			2.73 V	251	89.1	4.5
5	#5725.00	49.7 PK	74.0	-24.3	2.73 V	251	44.8	4.9
6	#5725.00	38.8 AV	54.0	-15.2	2.73 V	251	33.9	4.9
7	11060.00	48.3 PK	74.0	-25.7	2.82 V	353	33.8	14.5
8	11060.00	35.7 AV	54.0	-18.3	2.82 V	353	21.2	14.5
9	#16590.00	49.3 PK	74.0	-24.7	2.07 V	154	32.7	16.6
10	#16590.00	36.6 AV	54.0	-17.4	2.07 V	154	20.0	16.6

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:

802.11a

CHANNEL	TX Channel 52	**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	40.60	32.6 QP	40.0	-7.4	3.00 H	271	41.1	-8.5
2	125.01	37.1 QP	43.5	-6.4	2.50 H	308	46.7	-9.6
3	209.18	31.5 QP	43.5	-12.0	1.50 H	140	43.0	-11.5
4	250.00	33.2 QP	46.0	-12.8	1.00 H	99	42.7	-9.5
5	484.11	29.8 QP	46.0	-16.2	2.00 H	215	32.9	-3.1
6	874.99	33.6 QP	46.0	-12.4	1.00 H	351	30.0	3.6
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	94.72	32.8 QP	43.5	-10.7	1.50 V	255	46.5	-13.7
2	125.01	31.1 QP	43.5	-12.4	1.00 V	78	40.7	-9.6
3	163.81	30.4 QP	43.5	-13.1	1.00 V	354	38.3	-7.9
4	250.00	30.3 QP	46.0	-15.7	2.00 V	16	39.8	-9.5
5	483.06	32.6 QP	46.0	-13.4	1.00 V	146	35.7	-3.1
6	875.02	30.7 QP	46.0	-15.3	1.00 V	210	27.1	3.6

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

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
Test Receiver R&S	ESCS 30	847124/029	Nov. 01, 2017	Oct. 31, 2018
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Nov. 15, 20167	Nov. 14, 2018
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 22, 2017	Sep. 21, 2018
RF Cable	5D-FB	COCCAB-001	Sep. 29, 2017	Sep. 28, 2018
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
3. Tested Date: Nov. 17, 2017

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.

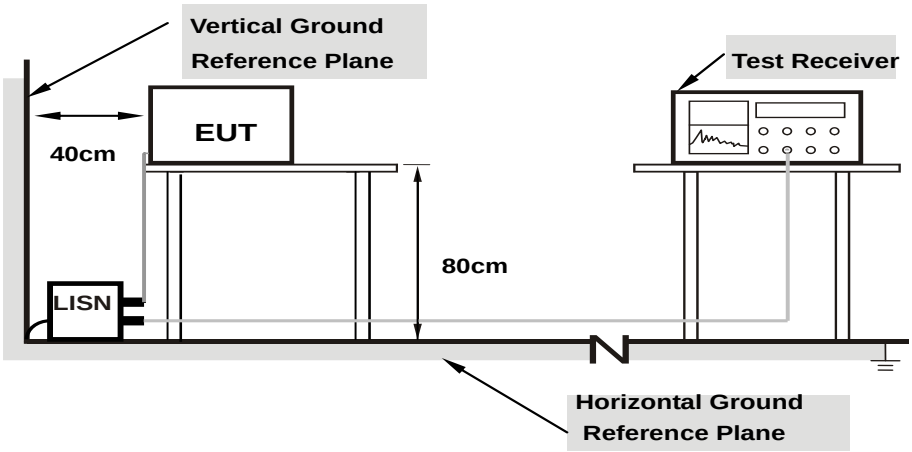
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

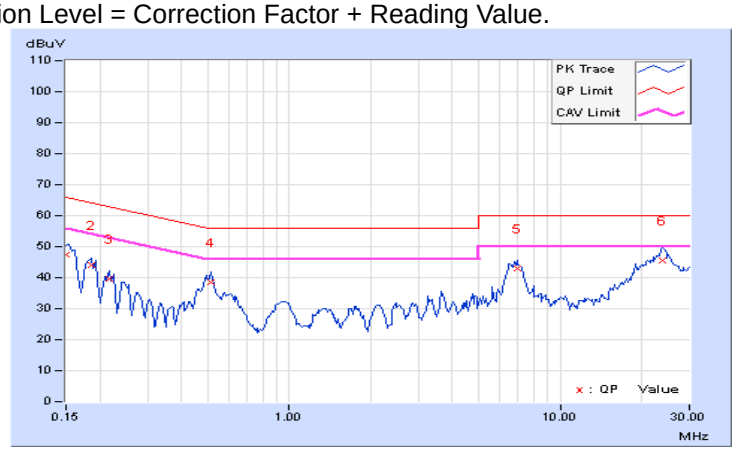
4.2.7 Test Results (Mode 1)

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	0.15000	10.08	37.48	28.77	47.56	38.85	66.00	56.00	-18.44	-17.15
2	0.18516	10.06	33.90	25.64	43.96	35.70	64.25	54.25	-20.29	-18.55
3	0.21641	10.06	29.58	20.81	39.64	30.87	62.96	52.96	-23.32	-22.09
4	0.51328	10.12	28.39	25.06	38.51	35.18	56.00	46.00	-17.49	-10.82
5	6.91797	10.45	32.34	23.83	42.79	34.28	60.00	50.00	-17.21	-15.72
6	23.73828	11.32	34.14	28.97	45.46	40.29	60.00	50.00	-14.54	-9.71

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.

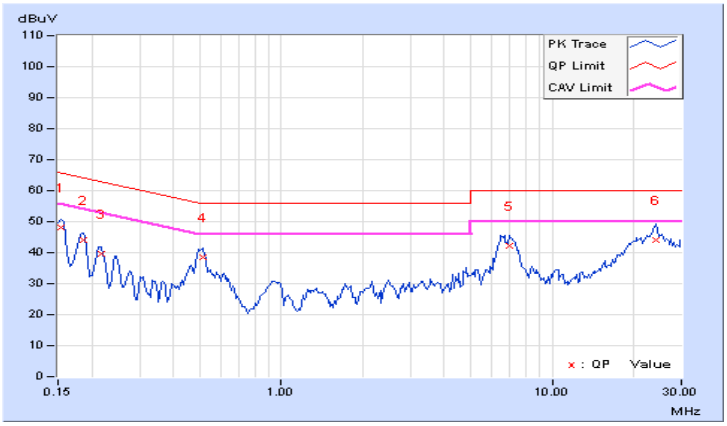


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	10.06	37.99	29.28	48.05	39.34	65.79	55.79	-17.74	-16.45
2	0.18516	10.04	33.88	25.18	43.92	35.22	64.25	54.25	-20.33	-19.03
3	0.21641	10.04	29.48	20.37	39.52	30.41	62.96	52.96	-23.44	-22.55
4	0.51328	10.10	28.33	24.90	38.43	35.00	56.00	46.00	-17.57	-11.00
5	6.97656	10.38	31.98	25.51	42.36	35.89	60.00	50.00	-17.64	-14.11
6	24.19141	10.98	33.14	28.01	44.12	38.99	60.00	50.00	-15.88	-11.01

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.



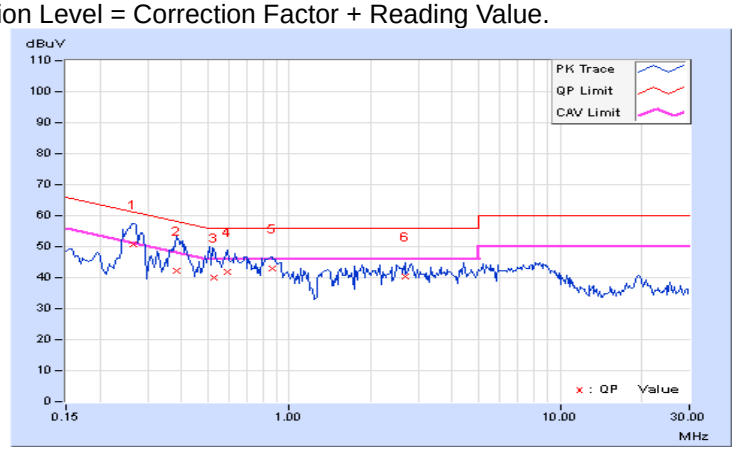
4.2.8 Test Results (Mode 2)

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	**0.26719**	**10.09**	**40.58**	**37.46**	**50.67**	**47.55**	**61.20**	**51.20**	**-10.53**	**-3.65**
2	0.38438	10.12	32.24	22.10	42.36	32.22	58.18	48.18	-15.82	-15.96
3	0.52709	10.13	29.90	24.26	40.03	34.39	56.00	46.00	-15.97	-11.61
4	0.59141	10.14	31.75	25.32	41.89	35.46	56.00	46.00	-14.11	-10.54
5	0.86094	10.16	32.90	27.64	43.06	37.80	56.00	46.00	-12.94	-8.20
6	2.67188	10.23	30.02	22.77	40.25	33.00	56.00	46.00	-15.75	-13.00

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.

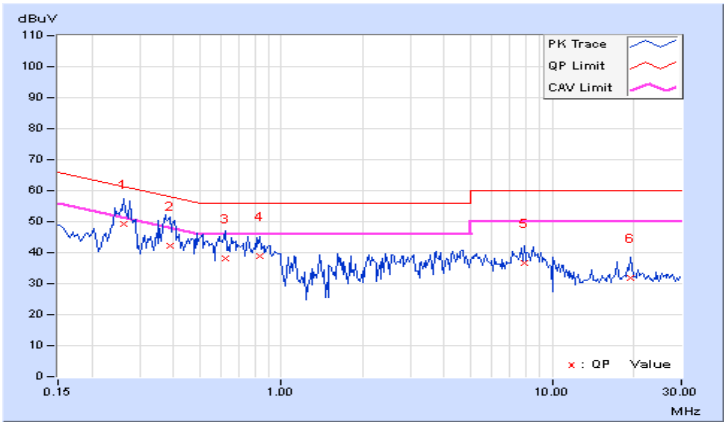


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

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	0.26328	10.07	39.22	32.76	49.29	42.83	61.33	51.33	-12.04	-8.50
2	0.38828	10.12	32.05	18.71	42.17	28.83	58.10	48.10	-15.93	-19.27
3	0.61875	10.12	27.93	21.51	38.05	31.63	56.00	46.00	-17.95	-14.37
4	0.83359	10.13	28.68	21.68	38.81	31.81	56.00	46.00	-17.19	-14.19
5	7.90234	10.55	26.17	18.19	36.72	28.74	60.00	50.00	-23.28	-21.26
6	19.52734	11.26	20.71	12.70	31.97	23.96	60.00	50.00	-28.03	-26.04

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 Measurment

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Wireless 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 Wireless Access Point	1 Watt (30 dBm)
		Indoor Wireless 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

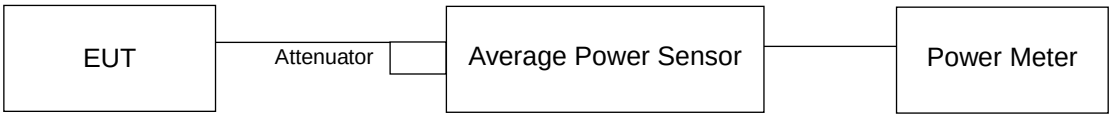
Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

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(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.

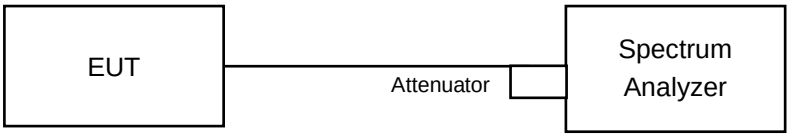
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

FOR POWER OUTPUT MEASUREMENT



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 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. 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 Result

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	20.56	19.85	210.368	23.23	24.00	Pass
60	5300	20.41	19.90	207.625	23.17	24.00	Pass
64	5320	18.71	18.57	146.247	21.65	24.00	Pass
100	5500	19.90	19.78	192.784	22.85	24.00	Pass
116	5580	19.80	19.43	183.199	22.63	24.00	Pass
140	5700	16.83	17.22	100.918	20.04	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	38.25	29.05
60	5300	36.05	27.56
64	5320	27.07	22.51
100	5500	28.16	26.35
116	5580	26.01	24.28
140	5700	23.78	22.62

Note: For U-NII-2A, U-NII-2C 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	29.05	25.63 > 24
60	5300	27.56	25.4 > 24
64	5320	22.51	24.52 > 24
100	5500	26.35	25.2 > 24
116	5580	24.28	24.85 > 24
140	5700	22.62	24.54 > 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	20.55	19.81	209.22	23.21	24.00	Pass
60	5300	20.37	19.91	206.842	23.16	24.00	Pass
64	5320	18.82	18.51	147.166	21.68	24.00	Pass
100	5500	19.94	19.81	194.347	22.89	24.00	Pass
116	5580	19.79	19.46	183.588	22.64	24.00	Pass
140	5700	16.82	17.20	100.565	20.02	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	42.55	25.64
60	5300	37.93	26.89
64	5320	29.86	27.90
100	5500	27.83	25.91
116	5580	26.91	26.31
140	5700	24.44	24.22

Note: For U-NII-2A, U-NII-2C 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	25.64	25.08 > 24
60	5300	26.89	25.29 > 24
64	5320	27.90	25.45 > 24
100	5500	25.91	25.13 > 24
116	5580	26.31	25.2 > 24
140	5700	24.22	24.84 > 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	20.41	19.14	191.936	22.83	24.00	Pass
62	5310	16.15	16.01	81.112	19.09	24.00	Pass
102	5510	15.92	15.89	77.899	18.92	24.00	Pass
110	5550	20.14	19.79	198.556	22.98	24.00	Pass
134	5670	18.19	18.14	131.08	21.18	24.00	Pass

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	87.40	62.45
62	5310	47.86	46.26
102	5510	46.36	46.33
110	5550	63.94	68.71
134	5670	48.16	55.17

Note: For U-NII-2A, U-NII-2C 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	62.45	28.95 > 24
62	5310	46.26	27.65 > 24
102	5510	46.33	27.65 > 24
110	5550	63.94	29.05 > 24
134	5670	48.16	27.82 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	15.75	15.05	69.573	18.42	24.00	Pass
106	5530	14.70	14.32	56.552	17.52	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	90.52	87.74
106	5530	88.98	89.70

Note: For U-NII-2A, U-NII-2C 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	87.74	30.43 > 24
106	5530	88.98	30.49 > 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	20.55	19.81	209.22	23.21	23.38	Pass
60	5300	20.37	19.91	206.842	23.16	23.38	Pass
64	5320	18.82	18.51	147.166	21.68	23.38	Pass
100	5500	19.94	19.81	194.347	22.89	23.38	Pass
116	5580	19.79	19.46	183.588	22.64	23.38	Pass
140	5700	16.82	17.20	100.565	20.02	23.38	Pass

Note: 1. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.62dBi > 6dBi , so the power limit shall be reduced to 24-(6.62-6) = 23.38dBm.

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	42.55	25.64
60	5300	37.93	26.89
64	5320	29.86	27.90
100	5500	27.83	25.91
116	5580	26.91	26.31
140	5700	24.44	24.22

Note: For U-NII-2A, U-NII-2C 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	25.64	25.08 > 24
60	5300	26.89	25.29 > 24
64	5320	27.90	25.45 > 24
100	5500	25.91	25.13 > 24
116	5580	26.31	25.2 > 24
140	5700	24.22	24.84 > 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	20.41	19.14	191.936	22.83	23.38	Pass
62	5310	16.15	16.01	81.112	19.09	23.38	Pass
102	5510	15.92	15.89	77.899	18.92	23.38	Pass
110	5550	20.14	19.79	198.556	22.98	23.38	Pass
134	5670	18.19	18.14	131.08	21.18	23.38	Pass

Note: 1. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.62dBi > 6dBi , so the power limit shall be reduced to 24-(6.62-6) = 23.38dBm.

26dB BANDWIDTH:

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	87.40	62.45
62	5310	47.86	46.26
102	5510	46.36	46.33
110	5550	63.94	68.71
134	5670	48.16	55.17

Note: For U-NII-2A, U-NII-2C 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	62.45	28.95 > 24
62	5310	46.26	27.65 > 24
102	5510	46.33	27.65 > 24
110	5550	63.94	29.05 > 24
134	5670	48.16	27.82 > 24

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	15.75	15.05	69.573	18.42	23.38	Pass
106	5530	14.70	14.32	56.552	17.52	23.38	Pass

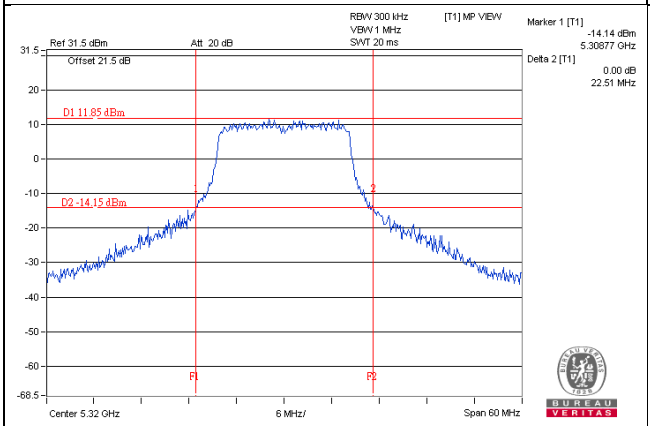
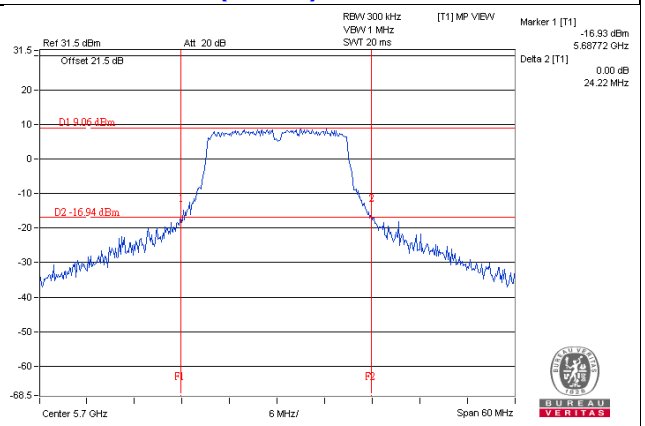
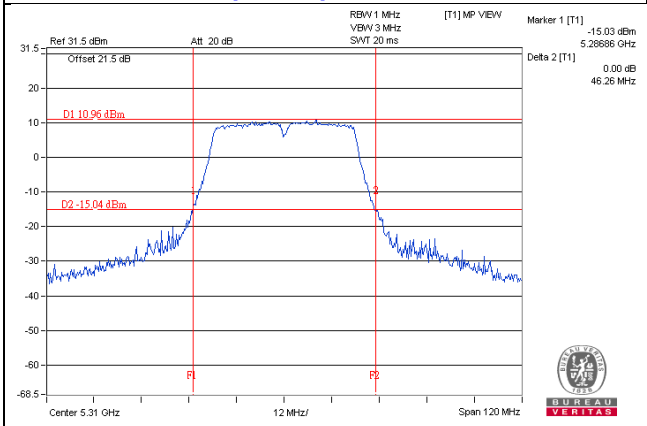
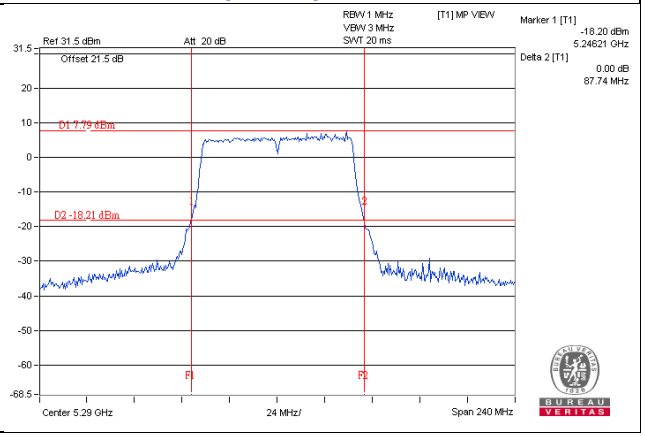
Note: 1. Directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$)^2 / 2] = 6.62dBi > 6dBi , so the power limit shall be reduced to 24-(6.62-6) = 23.38dBm.

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	90.52	87.74
106	5530	88.98	89.70

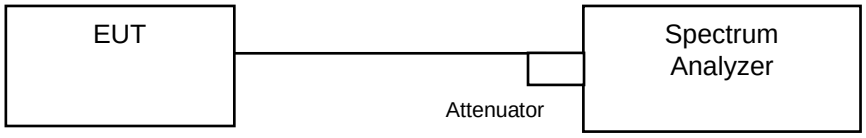
Note: For U-NII-2A, U-NII-2C Band output power limitation is determined based on 26dBc bandwidth

Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	87.74	30.43 > 24
106	5530	88.98	30.49 > 24

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH64	**802.11ac (VHT20)_Chain 1 / CH140**
	
802.11ac (VHT40) _Chain 1 / CH62	**802.11ac (VHT80) _Chain 1 / CH58**
	

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

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.76	17.04
60	5300	17.28	16.80
64	5320	16.92	16.92
100	5500	17.04	16.92
116	5580	16.92	16.68
140	5700	16.80	16.80

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	18.84	17.88
60	5300	18.60	18.12
64	5320	18.00	18.00
100	5500	18.00	17.88
116	5580	18.12	18.12
140	5700	17.88	18.00

802.11ac (VHT40)

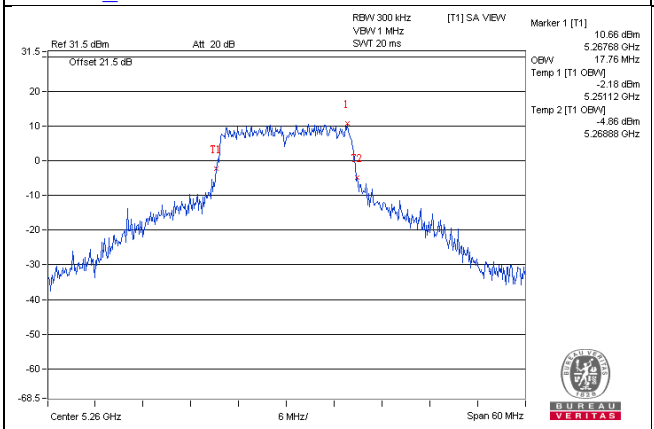
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	37.68	36.72
62	5310	36.96	37.20
102	5510	36.72	36.72
110	5550	37.20	36.96
134	5670	36.72	36.72

802.11ac (VHT80)

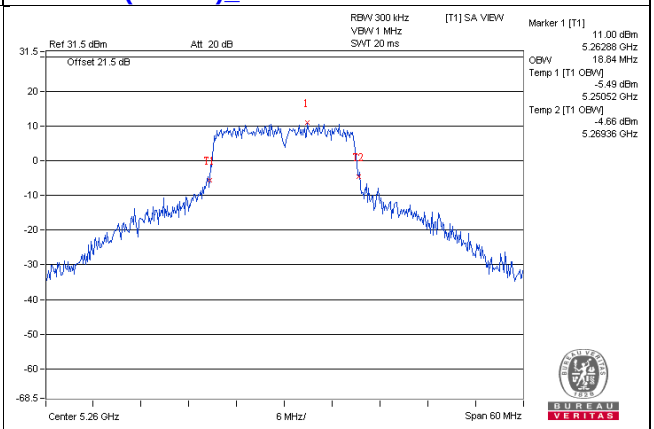
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	76.32	76.32
106	5530	76.32	76.32

Spectrum Plot of Worst Value

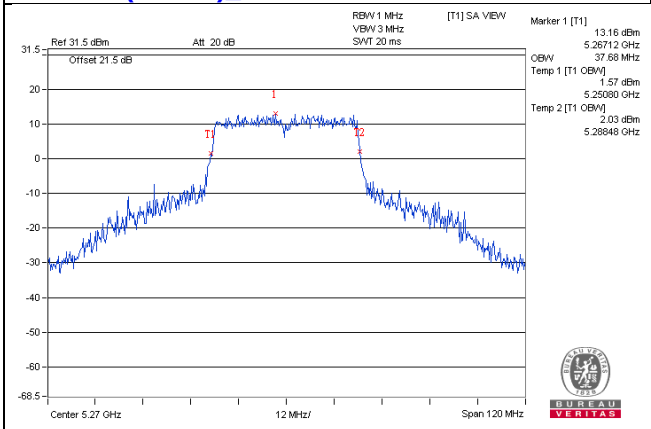
802.11a_Chain 0 / CH52



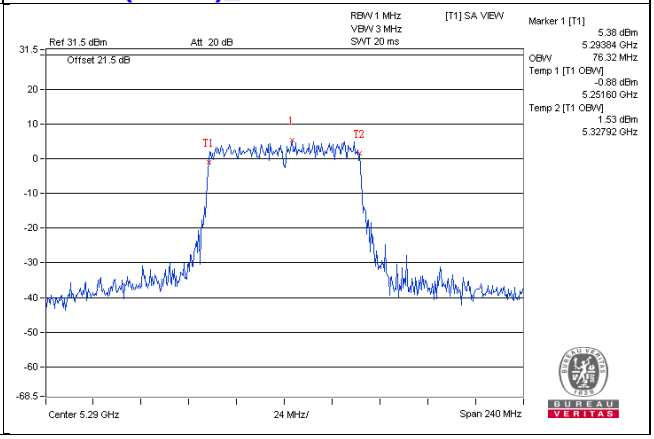
802.11ac (VHT20)_Chain 0 / CH52



802.11ac (VHT40)_Chain 0 / CH54



802.11ac (VHT80)_Chain 0 / CH58

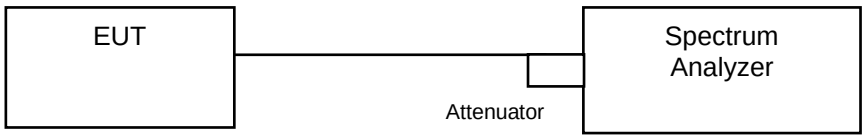


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Wireless Access Point	17dBm/ MHz
		Fixed point-to-point Wireless Access Point	
		Indoor Wireless 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

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)

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

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

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	6.35	6.21	0.16	9.45	10.38	Pass
60	5300	5.97	6.31	0.16	9.31	10.38	Pass
64	5320	5.34	5.04	0.16	8.36	10.38	Pass
100	5500	6.55	6.09	0.16	9.49	10.38	Pass
120	5600	6.27	5.76	0.16	9.19	10.38	Pass
140	5700	3.61	3.32	0.16	6.63	10.38	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. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.62dBi > 6dBi, so the power density limit shall be reduced to11-(6.62-6) = 10.38dBm.
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	6.66	5.69	9.21	10.38	Pass
60	5300	6.37	5.82	9.11	10.38	Pass
64	5320	5.03	5.32	8.19	10.38	Pass
100	5500	5.80	5.48	8.65	10.38	Pass
120	5600	5.82	6.03	8.94	10.38	Pass
140	5700	3.05	3.38	6.23	10.38	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. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.62dBi > 6dBi, so the power density limit shall be reduced to11-(6.62-6) = 10.38dBm.

802.11ac (VHT40)

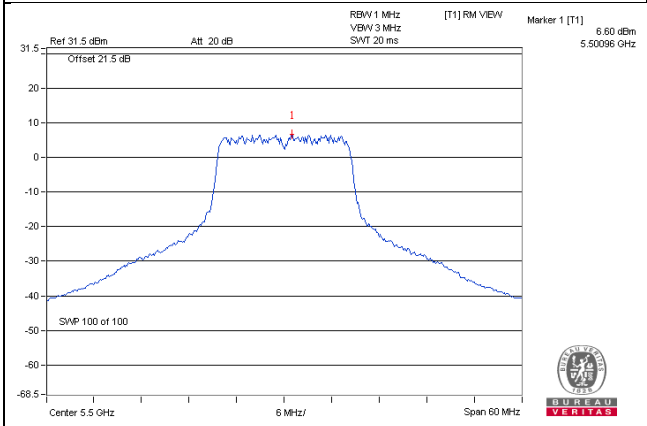
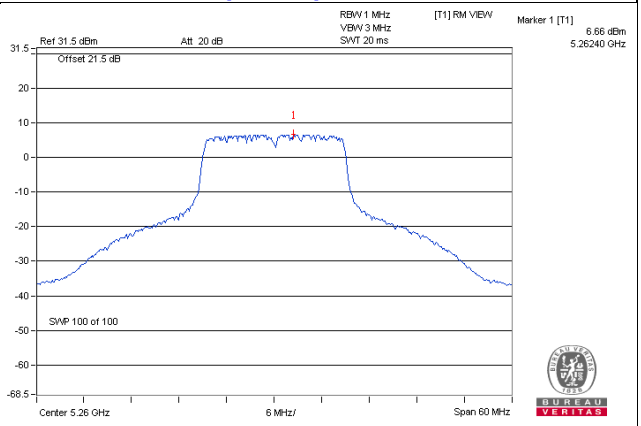
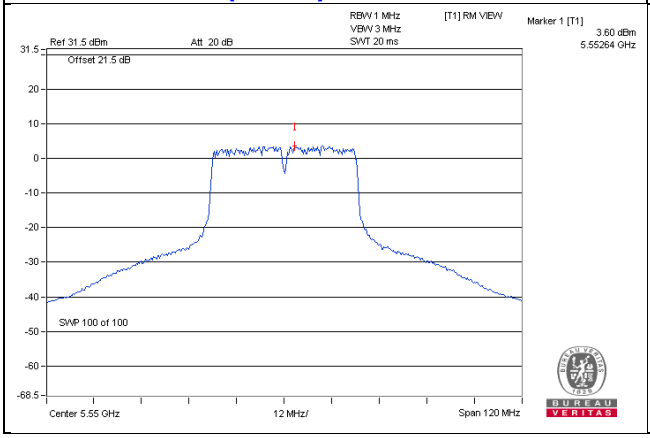
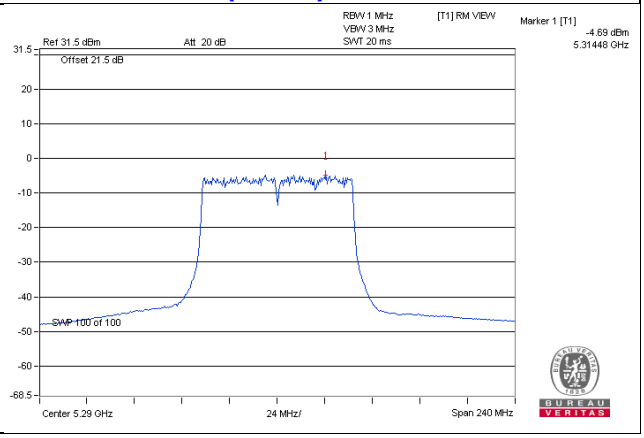
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	2.98	2.49	0.14	5.89	10.38	Pass
62	5310	-0.92	-0.95	0.14	2.21	10.38	Pass
102	5510	-1.55	-1.14	0.14	1.81	10.38	Pass
110	5550	3.16	3.60	0.14	6.53	10.38	Pass
134	5670	1.20	1.25	0.14	4.37	10.38	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. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.62dBi > 6dBi, so the power density limit shall be reduced to11-(6.62-6) = 10.38dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	-4.69	-5.99	0.37	-1.91	10.38	Pass
106	5530	-5.17	-5.12	0.37	-1.77	10.38	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. Directional gain = 10 log[$(10^{G0/20} + 10^{G1/20})^2$ / 2] = 6.62dBi > 6dBi, so the power density limit shall be reduced to11-(6.62-6) = 10.38dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

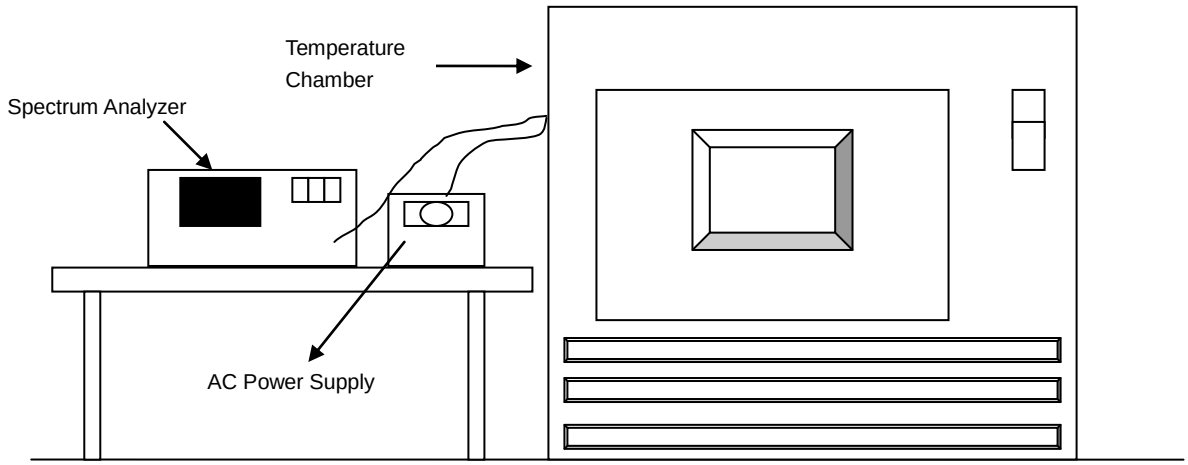
Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH100	**802.11ac (VHT20)_Chain 0 / CH52**
	
802.11ac (VHT40)_Chain 1 / CH110	**802.11ac (VHT80)_Chain 0 / CH58**
	

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 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.
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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 (Vac)	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	120	5260.0229	PASS	5260.0231	PASS	5260.0257	PASS	5260.0225	PASS
40	120	5259.9932	PASS	5259.9913	PASS	5259.9919	PASS	5259.9943	PASS
30	120	5259.9817	PASS	5259.9864	PASS	5259.983	PASS	5259.9832	PASS
20	120	5259.99	PASS	5259.9871	PASS	5259.9864	PASS	5259.9877	PASS
10	120	5260.0106	PASS	5260.0105	PASS	5260.0064	PASS	5260.0093	PASS
0	120	5259.9839	PASS	5259.984	PASS	5259.9861	PASS	5259.9881	PASS
-10	120	5259.9845	PASS	5259.9812	PASS	5259.9829	PASS	5259.9823	PASS
-20	120	5260.0067	PASS	5260.0105	PASS	5260.0088	PASS	5260.0077	PASS
-30	120	5259.9858	PASS	5259.9897	PASS	5259.989	PASS	5259.9876	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (℃)	Power Supply (Vac)	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	138	5259.9894	PASS	5259.9878	PASS	5259.9862	PASS	5259.9879	PASS
	120	5259.99	PASS	5259.9871	PASS	5259.9864	PASS	5259.9877	PASS
	102	5259.9892	PASS	5259.9861	PASS	5259.9866	PASS	5259.9876	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:

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

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