

FCC Test Report (DFS Band)

Report No.: RF170116E03L-1

FCC ID: KA2IR882A1

Test Model: DIR-882

Received Date: Dec. 19, 2018

Test Date: Mar. 26 to 30, 2019

Issued Date: Apr. 16, 2019

Applicant: D-Link Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RF170116E03L-1	Original release.	Apr. 16, 2019

1 Certificate of Conformity

Product: AC2600 MU-MIMO Wi-Fi Gigabit Router

Brand: D-Link

Test Model: DIR-882

Sample Status: ENGINEERING SAMPLE

Applicant: D-Link Corporation

Test Date: Mar. 26 to 30, 2019

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 : Wendy Wu , **Date:** Apr. 16, 2019
Wendy Wu / Specialist

Approved by : May Chen , **Date:** Apr. 16, 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 -12.61dB at 19.33594MHz.
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 -0.3dB at 5350.00MHz and 5470.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(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	1.8 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	4.9 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (DFS Band)

Product	AC2600 MU-MIMO Wi-Fi Gigabit Router
Brand	D-Link
Test Model	DIR-882
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	12Vdc from power adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode
Modulation Technology	OFDM
Transfer Rate	802.11a: up to 54Mbps 802.11n: up to 600Mbps 802.11ac: up to 1733.3Mbps
Operating Frequency	5.26 ~ 5.32GHz, 5.50 ~ 5.70GHz
Number of Channel	802.11a, 802.11n (HT20), 802.11ac (VHT20): 15 802.11n (HT40), 802.11ac (VHT40): 7 802.11ac (VHT80): 3 802.11ac (VHT80+80): 9 set
Output Power	For 802.11ac (VHT80+80): 141.537 mW For other modulation mode: 5.26 ~ 5.32GHz CDD Mode: 160.485mW Beamforming Mode: 80.503mW 5.5 ~ 5.7GHz CDD Mode: 235.762mW Beamforming Mode: 81.012mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x1
Data Cable Supplied	NA

Note:

- This report is prepared for FCC Class II change. The difference compared with the Report No.: RF170116E03-1 design is as the following:
 - ◆ Add DFS band <5.26~ 5.32GHz, 5.50 ~ 5.70GHz>.
 - ◆ Remove Antenna set 1.
- According to above condition, all test items need to be performed. And all data were verified to meet the requirements.
- 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.

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

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Connector Type
2.4~2.4835	10.06	Dipole	i-pex(MHF)
5.15~5.85	10.90	Dipole	i-pex(MHF)

Note: More detailed information, please refer to operating description.

- The EUT must be supplied from power adapter as following table:

Brand	Model No.	Spec.
Shenzhen Gongjin Electronics Co., Ltd	S36B52-120A250-04	AC Input: 100-240V, 1A, 50/60Hz DC Output: 12V, 2.5A DC Output cable: unshielded, 1.1m

- The EUT incorporates a MIMO function

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	4TX	4RX
802.11g	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
VHT20	4TX	4RX
VHT40	4TX	4RX
5GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11a	4TX	4RX
802.11n (HT20)	4TX	4RX
802.11n (HT40)	4TX	4RX
802.11ac (VHT20)	4TX	4RX
802.11ac (VHT40)	4TX	4RX
802.11ac (VHT80)	4TX	4RX
802.11ac (VHT80+80)	2TX+2TX	2RX+2RX

Note:

- All of modulation mode support beamforming function except 2.4GHz & 802.11a modulation mode.
- 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.
- 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)

- 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

For simultaneous transmission:

9 sets are provided for 802.11ac (VHT80+80):

Channel	Frequency	Channel	Frequency
42+58	5210MHz + 5290MHz	106+122	5530MHz + 5610MHz
42+106	5210MHz + 5530MHz	106+155	5530MHz + 5775MHz
42+122	5210MHz + 5610MHz	122+155	5610MHz + 5775MHz
58+106	5290MHz + 5530MHz		
58+122	5290MHz + 5610MHz		
58+155	5290MHz + 5775MHz		

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: The EUT had been pre-tested on the positioned of each 2 axis. The worst case was found when positioned on **X-plane (below 1GHz) & Y-plane (above 1GHz)**.

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 to 122	106, 122	OFDM	BPSK	29.3
802.11ac (VHT80+80)	5260-5320 5500-5700	42+58, 42+106, 42+122, 58+106, 58+122 58+155, 106+122 106+155 122+155	58+106 106+122	OFDM	BPSK	58.5

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 (VHT80)	5260-5320 5500-5700	58, 106 to 122	122	OFDM	BPSK	29.3

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 (VHT80)	5260-5320 5500-5700	58, 106 to 122	122	OFDM	BPSK	29.3

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 to 122	106, 122	OFDM	BPSK	29.3
802.11ac (VHT80+80)	5260-5320 5500-5700	42+58, 42+106, 42+122, 58+106, 58+122 58+155, 106+122 106+155 122+155	58+106 106+122	OFDM	BPSK	58.5

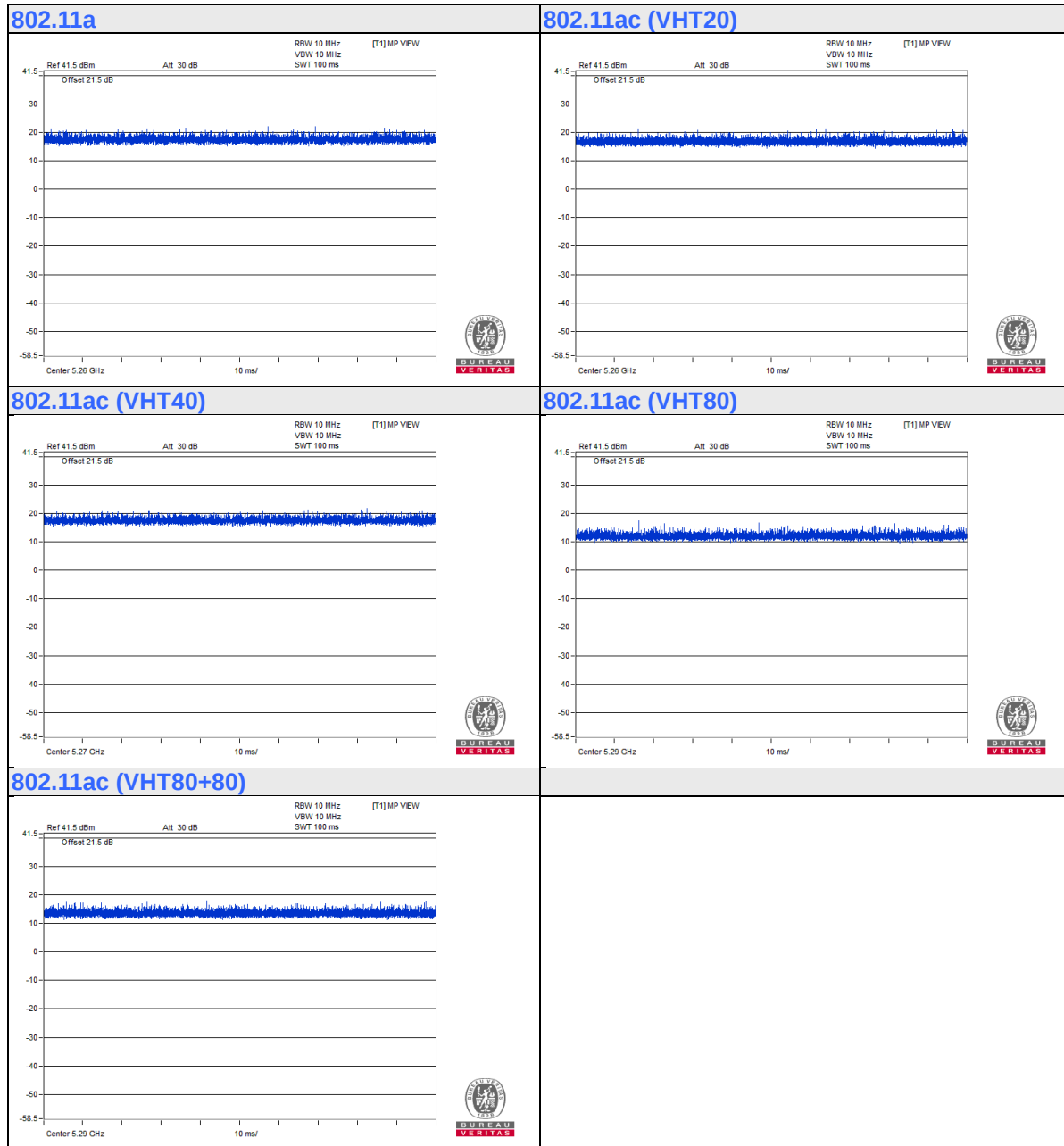
Beamforming Mode (output power only)						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	BPSK	6.5
802.11ac (VHT40)		54 to 62	54, 62	OFDM	BPSK	13.5
802.11ac (VHT80)		58	58	OFDM	BPSK	29.3
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 to 122	106, 122	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE $\geq$ 1G	25deg. C, 69%RH	120Vac, 60Hz	Ryan Du
RE<1G	23deg. C, 61%RH	120Vac, 60Hz	Frank Chuang
PLC	25deg. C, 75%RH	120Vac, 60Hz	Frank Chuang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is 100 %, duty factor is not required.



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.

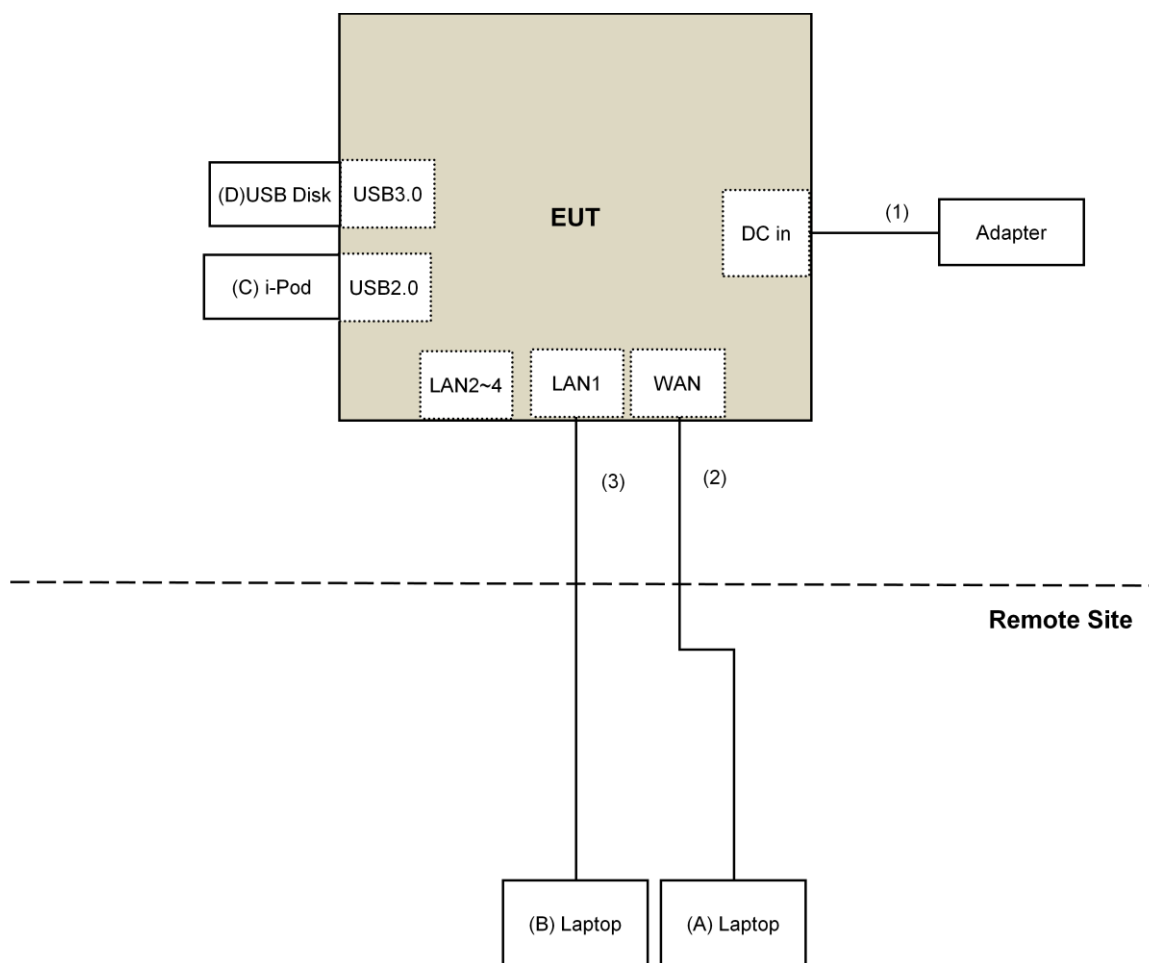
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	4YV4VY1	FCC DoC	Provided by Lab
B.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
C.	iPod	Apple	MD778TA/A	CC4JG680F4T1	NA	Provided by Lab
D.	USB Disk	Transcend	16G	NA	NA	Provided by Lab

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.	DC Cable	1	1.1	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	RJ-45 Cable	1	10	No	0	Provided by Lab

3.4.1 Configuration of System under 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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3m	
			PK:74 (dBμV/m)	AV:54 (dBμV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK:-27 (dBm/MHz)	PK:68.2(dBμV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☐	15.407(b)(4)(i)	PK:-27 (dBm/MHz) ^{*1} PK:10 (dBm/MHz) ^{*2} PK:15.6 (dBm/MHz) ^{*3} PK:27 (dBm/MHz) ^{*4}	PK: 68.2(dBμV/m) ^{*1} PK:105.2 (dBμV/m) ^{*2} PK: 110.8(dBμV/m) ^{*3} PK:122.2 (dBμV/m) ^{*4}
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
^{*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.	

Note:

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

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

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 05, 2018	July 04, 2019
Pre-Amplifier EMCI	EMC001340	980142	Jan. 25, 2019	Jan. 24, 2020
Loop Antenna Electro-Metrics	EM-6879	269	Sep. 07, 2018	Sep. 06, 2019
RF Cable	NA	LOOPCAB-001	Jan. 14, 2019	Jan. 13, 2020
RF Cable	NA	LOOPCAB-002	Jan. 14, 2019	Jan. 13, 2020
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 30, 2018	Oct. 29, 2019
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 22, 2018	Nov. 21, 2019
RF Cable	8D	966-4-1	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-2	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-3	Mar. 19, 2019	Mar. 18, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 27, 2018	Sep. 26, 2019
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 25, 2018	Nov. 24, 2019
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 16, 2018	Aug. 15, 2019
RF Cable	EMC104-SM-SM-1200	160923	Jan. 28, 2019	Jan. 27, 2020
RF Cable	104 RF cable	131215	Jan. 10, 2019	Jan. 09, 2020
RF Cable	EMC104-SM-SM-6000	180418	May 07, 2018	May 06, 2019
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 25, 2018	Nov. 24, 2019
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 09, 2019	Jan. 08, 2020
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 test was performed in 966 Chamber No. 4.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Mar. 26 to 30, 2019

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:

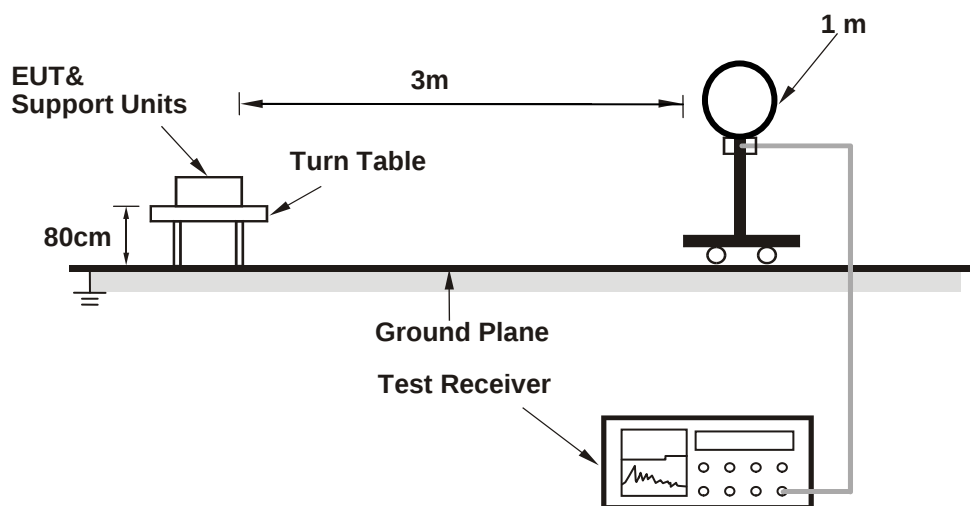
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) 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

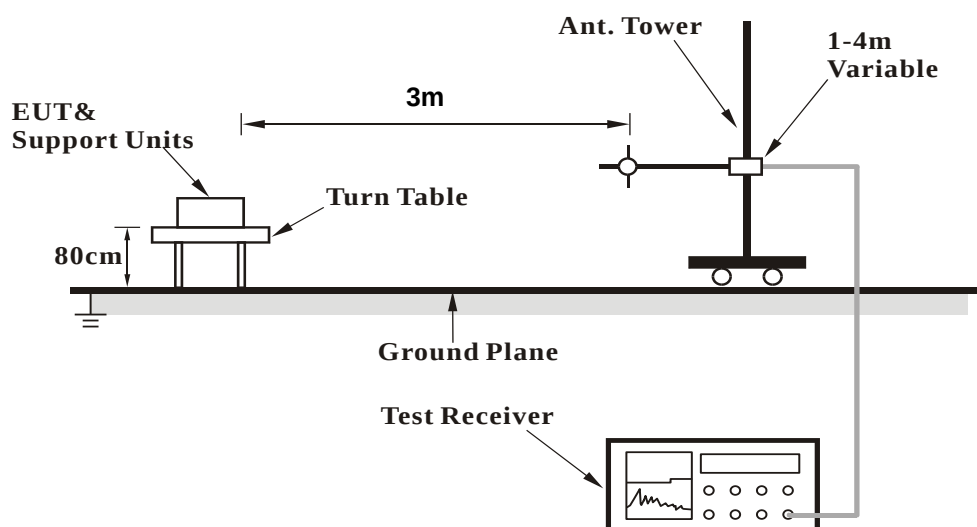
No deviation.

4.1.5 Test Setup

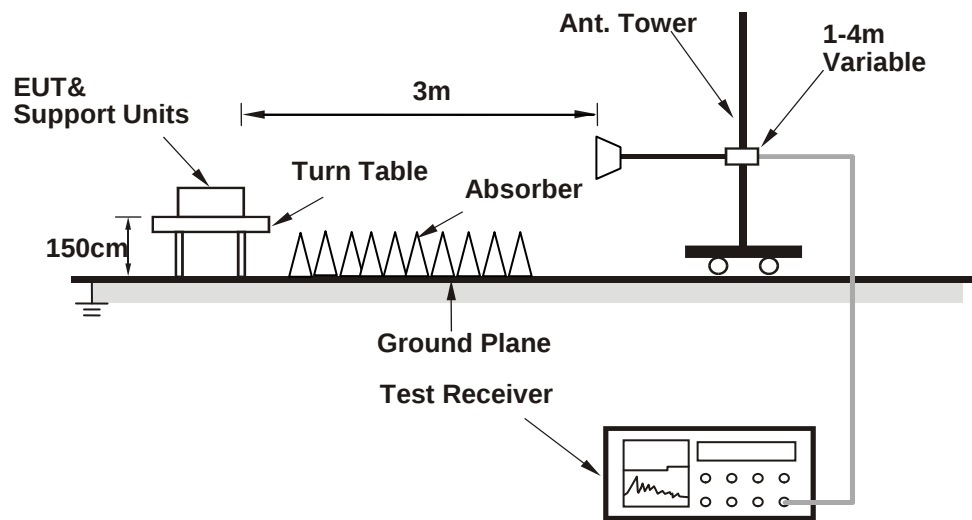
For Radiated emission below 30MHz



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

- Connected the EUT with the Laptop which is placed on remote site.
- Contorlling software (MT7615 QA 0.0.1.73) 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)
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	47.4 PK	74.0	-26.6	2.38 H	326	44.7	2.7
2	5150.00	35.0 AV	54.0	-19.0	2.38 H	326	32.3	2.7
3	*5260.00	101.3 PK			2.38 H	326	99.0	2.3
4	*5260.00	90.9 AV			2.38 H	326	88.6	2.3
5	#10520.00	57.4 PK	68.2	-10.8	1.65 H	164	44.4	13.0
6	15780.00	57.8 PK	74.0	-16.2	3.04 H	53	45.8	12.0
7	15780.00	47.2 AV	54.0	-6.8	3.04 H	53	35.2	12.0
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	51.3 PK	74.0	-22.7	2.14 V	348	48.6	2.7
2	5150.00	39.1 AV	54.0	-14.9	2.14 V	348	36.4	2.7
3	*5260.00	109.8 PK			2.14 V	348	107.5	2.3
4	*5260.00	100.6 AV			2.14 V	348	98.3	2.3
5	#10520.00	55.4 PK	68.2	-12.8	2.89 V	182	42.4	13.0
6	15780.00	57.3 PK	74.0	-16.7	2.14 V	293	45.3	12.0
7	15780.00	47.9 AV	54.0	-6.1	2.14 V	293	35.9	12.0

REMARKS:

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

CHANNEL	TX Channel 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	*5300.00	101.1 PK			2.37 H	339	98.7	2.4
2	*5300.00	90.7 AV			2.37 H	339	88.3	2.4
3	10600.00	56.8 PK	74.0	-17.2	1.66 H	177	44.1	12.7
4	10600.00	44.5 AV	54.0	-9.5	1.66 H	177	31.8	12.7
5	15900.00	58.6 PK	74.0	-15.4	3.11 H	36	46.5	12.1
6	15900.00	47.4 AV	54.0	-6.6	3.11 H	36	35.3	12.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	109.9 PK			2.14 V	338	107.5	2.4
2	*5300.00	100.8 AV			2.14 V	338	98.4	2.4
3	10600.00	55.0 PK	74.0	-19.0	2.90 V	181	42.3	12.7
4	10600.00	43.5 AV	54.0	-10.5	2.90 V	181	30.8	12.7
5	15900.00	58.0 PK	74.0	-16.0	2.15 V	291	45.9	12.1
6	15900.00	48.2 AV	54.0	-5.8	2.15 V	291	36.1	12.1

REMARKS:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
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	*5320.00	101.9 PK			2.40 H	322	99.3	2.6
2	*5320.00	91.4 AV			2.40 H	322	88.8	2.6
3	5350.00	47.2 PK	74.0	-26.8	2.40 H	322	44.6	2.6
4	5350.00	35.1 AV	54.0	-18.9	2.40 H	322	32.5	2.6
5	10640.00	57.1 PK	74.0	-16.9	1.75 H	155	44.3	12.8
6	10640.00	44.9 AV	54.0	-9.1	1.75 H	155	32.1	12.8
7	15960.00	58.3 PK	74.0	-15.7	3.01 H	28	45.9	12.4
8	15960.00	47.4 AV	54.0	-6.6	3.01 H	28	35.0	12.4
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	109.6 PK			2.19 V	339	107.0	2.6
2	*5320.00	100.3 AV			2.19 V	339	97.7	2.6
3	5350.00	51.6 PK	74.0	-22.4	2.19 V	339	49.0	2.6
4	5350.00	39.3 AV	54.0	-14.7	2.19 V	339	36.7	2.6
5	10640.00	55.4 PK	74.0	-18.6	2.83 V	189	42.6	12.8
6	10640.00	43.4 AV	54.0	-10.6	2.83 V	189	30.6	12.8
7	15960.00	57.7 PK	74.0	-16.3	2.16 V	293	45.3	12.4
8	15960.00	47.8 AV	54.0	-6.2	2.16 V	293	35.4	12.4

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
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	53.2 PK	68.2	-15.0	2.41 H	320	50.3	2.9
2	*5500.00	98.2 PK			2.41 H	320	95.4	2.8
3	*5500.00	88.0 AV			2.41 H	320	85.2	2.8
4	11000.00	56.5 PK	74.0	-17.5	1.68 H	172	42.9	13.6
5	11000.00	44.4 AV	54.0	-9.6	1.68 H	172	30.8	13.6
6	#16500.00	58.4 PK	68.2	-9.8	3.04 H	52	43.7	14.7
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	#5470.00	55.6 PK	68.2	-12.6	2.17 V	135	52.7	2.9
2	*5500.00	108.6 PK			2.17 V	135	105.8	2.8
3	*5500.00	99.2 AV			2.17 V	135	96.4	2.8
4	11000.00	54.9 PK	74.0	-19.1	2.89 V	180	41.3	13.6
5	11000.00	43.0 AV	54.0	-11.0	2.89 V	180	29.4	13.6
6	#16500.00	57.9 PK	68.2	-10.3	2.14 V	296	43.2	14.7

REMARKS:

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

CHANNEL	TX Channel 116	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	*5580.00	98.2 PK			2.42 H	307	95.3	2.9
2	*5580.00	88.0 AV			2.42 H	307	85.1	2.9
3	11160.00	57.5 PK	74.0	-16.5	1.65 H	178	44.4	13.1
4	11160.00	45.0 AV	54.0	-9.0	1.65 H	178	31.9	13.1
5	#16740.00	57.9 PK	68.2	-10.3	3.07 H	34	41.8	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	*5580.00	108.5 PK			2.22 V	131	105.6	2.9
2	*5580.00	98.8 AV			2.22 V	131	95.9	2.9
3	11160.00	54.9 PK	74.0	-19.1	2.80 V	190	41.8	13.1
4	11160.00	43.0 AV	54.0	-11.0	2.80 V	190	29.9	13.1
5	#16740.00	57.8 PK	68.2	-10.4	2.13 V	273	41.7	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	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	*5700.00	98.1 PK			2.46 H	320	94.8	3.3
2	*5700.00	88.0 AV			2.46 H	320	84.7	3.3
3	#5725.00	53.1 PK	68.2	-15.1	2.46 H	320	49.9	3.2
4	11400.00	57.3 PK	74.0	-16.7	1.73 H	155	43.8	13.5
5	11400.00	45.1 AV	54.0	-8.9	1.73 H	155	31.6	13.5
6	#17100.00	57.6 PK	68.2	-10.6	3.12 H	42	41.4	16.2
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	*5700.00	108.6 PK			2.20 V	125	105.3	3.3
2	*5700.00	99.1 AV			2.20 V	125	95.8	3.3
3	#5725.00	55.9 PK	68.2	-12.3	2.20 V	125	52.7	3.2
4	11400.00	55.3 PK	74.0	-18.7	2.84 V	172	41.8	13.5
5	11400.00	43.3 AV	54.0	-10.7	2.84 V	172	29.8	13.5
6	#17100.00	57.4 PK	68.2	-10.8	2.18 V	286	41.2	16.2

REMARKS:

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

802.11ac (VHT20)

CHANNEL	TX Channel 52	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	47.3 PK	74.0	-26.7	2.41 H	321	44.6	2.7
2	5150.00	35.1 AV	54.0	-18.9	2.41 H	321	32.4	2.7
3	*5260.00	101.3 PK			2.41 H	321	99.0	2.3
4	*5260.00	91.0 AV			2.41 H	321	88.7	2.3
5	#10520.00	57.0 PK	68.2	-11.2	1.69 H	167	44.0	13.0
6	15780.00	58.2 PK	74.0	-15.8	3.06 H	37	46.2	12.0
7	15780.00	47.3 AV	54.0	-6.7	3.06 H	37	35.3	12.0
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	51.3 PK	74.0	-22.7	2.28 V	171	48.6	2.7
2	5150.00	39.2 AV	54.0	-14.8	2.28 V	171	36.5	2.7
3	*5260.00	110.3 PK			2.28 V	171	108.0	2.3
4	*5260.00	101.1 AV			2.28 V	171	98.8	2.3
5	#10520.00	55.2 PK	68.2	-13.0	2.86 V	175	42.2	13.0
6	15780.00	57.9 PK	74.0	-16.1	2.12 V	286	45.9	12.0
7	15780.00	48.3 AV	54.0	-5.7	2.12 V	286	36.3	12.0

REMARKS:

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

CHANNEL	TX Channel 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	*5300.00	101.4 PK			2.41 H	330	99.0	2.4
2	*5300.00	90.9 AV			2.41 H	330	88.5	2.4
3	10600.00	56.8 PK	74.0	-17.2	1.71 H	163	44.1	12.7
4	10600.00	44.7 AV	54.0	-9.3	1.71 H	163	32.0	12.7
5	15900.00	58.0 PK	74.0	-16.0	3.06 H	38	45.9	12.1
6	15900.00	47.0 AV	54.0	-7.0	3.06 H	38	34.9	12.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	110.5 PK			2.24 V	169	108.1	2.4
2	*5300.00	101.3 AV			2.24 V	169	98.9	2.4
3	10600.00	55.1 PK	74.0	-18.9	2.82 V	181	42.4	12.7
4	10600.00	43.5 AV	54.0	-10.5	2.82 V	181	30.8	12.7
5	15900.00	57.6 PK	74.0	-16.4	2.10 V	283	45.5	12.1
6	15900.00	47.8 AV	54.0	-6.2	2.10 V	283	35.7	12.1

REMARKS:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK)
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	*5320.00	101.1 PK			2.41 H	322	98.5	2.6
2	*5320.00	90.9 AV			2.41 H	322	88.3	2.6
3	5350.00	47.5 PK	74.0	-26.5	2.41 H	322	44.9	2.6
4	5350.00	35.3 AV	54.0	-18.7	2.41 H	322	32.7	2.6
5	10640.00	57.1 PK	74.0	-16.9	1.70 H	160	44.3	12.8
6	10640.00	45.0 AV	54.0	-9.0	1.70 H	160	32.2	12.8
7	15960.00	57.8 PK	74.0	-16.2	3.09 H	25	45.4	12.4
8	15960.00	47.1 AV	54.0	-6.9	3.09 H	25	34.7	12.4
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	111.2 PK			2.13 V	349	108.6	2.6
2	*5320.00	101.8 AV			2.13 V	349	99.2	2.6
3	5350.00	53.9 PK	74.0	-20.1	2.13 V	349	51.3	2.6
4	5350.00	41.7 AV	54.0	-12.3	2.13 V	349	39.1	2.6
5	10640.00	54.9 PK	74.0	-19.1	2.85 V	174	42.1	12.8
6	10640.00	43.2 AV	54.0	-10.8	2.85 V	174	30.4	12.8
7	15960.00	57.7 PK	74.0	-16.3	2.15 V	283	45.3	12.4
8	15960.00	48.0 AV	54.0	-6.0	2.15 V	283	35.6	12.4

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
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	53.3 PK	68.2	-14.9	2.39 H	317	50.4	2.9
2	*5500.00	99.7 PK			2.39 H	317	96.9	2.8
3	*5500.00	89.1 AV			2.39 H	317	86.3	2.8
4	11000.00	56.9 PK	74.0	-17.1	1.70 H	163	43.3	13.6
5	11000.00	44.4 AV	54.0	-9.6	1.70 H	163	30.8	13.6
6	#16500.00	58.7 PK	68.2	-9.5	3.01 H	34	44.0	14.7
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	#5470.00	55.8 PK	68.2	-12.4	2.12 V	125	52.9	2.9
2	*5500.00	109.9 PK			2.12 V	125	107.1	2.8
3	*5500.00	100.4 AV			2.12 V	125	97.6	2.8
4	11000.00	55.3 PK	74.0	-18.7	2.88 V	166	41.7	13.6
5	11000.00	43.6 AV	54.0	-10.4	2.88 V	166	30.0	13.6
6	#16500.00	57.6 PK	68.2	-10.6	2.12 V	292	42.9	14.7

REMARKS:

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

CHANNEL	TX Channel 116	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	*5580.00	100.1 PK			2.38 H	301	97.2	2.9
2	*5580.00	89.5 AV			2.38 H	301	86.6	2.9
3	11160.00	56.8 PK	74.0	-17.2	1.75 H	171	43.7	13.1
4	11160.00	44.8 AV	54.0	-9.2	1.75 H	171	31.7	13.1
5	#16740.00	58.2 PK	68.2	-10.0	3.09 H	32	42.1	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	*5580.00	110.1 PK			2.13 V	352	107.2	2.9
2	*5580.00	100.5 AV			2.13 V	352	97.6	2.9
3	11160.00	54.6 PK	74.0	-19.4	2.81 V	194	41.5	13.1
4	11160.00	43.1 AV	54.0	-10.9	2.81 V	194	30.0	13.1
5	#16740.00	57.5 PK	68.2	-10.7	2.05 V	271	41.4	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	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	*5700.00	100.1 PK			2.41 H	317	96.8	3.3
2	*5700.00	89.3 AV			2.41 H	317	86.0	3.3
3	#5725.00	52.9 PK	68.2	-15.3	2.41 H	317	49.7	3.2
4	11400.00	56.8 PK	74.0	-17.2	1.66 H	182	43.3	13.5
5	11400.00	44.8 AV	54.0	-9.2	1.66 H	182	31.3	13.5
6	#17100.00	58.3 PK	68.2	-9.9	3.05 H	31	42.1	16.2
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	*5700.00	110.9 PK			2.15 V	351	107.6	3.3
2	*5700.00	101.4 AV			2.15 V	351	98.1	3.3
3	#5725.00	55.1 PK	68.2	-13.1	2.15 V	351	51.9	3.2
4	11400.00	55.5 PK	74.0	-18.5	2.77 V	189	42.0	13.5
5	11400.00	43.9 AV	54.0	-10.1	2.77 V	189	30.4	13.5
6	#17100.00	58.0 PK	68.2	-10.2	2.15 V	297	41.8	16.2

REMARKS:

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

802.11ac (VHT40)

CHANNEL	TX Channel 54	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	48.0 PK	74.0	-26.0	2.39 H	323	45.3	2.7
2	5150.00	35.7 AV	54.0	-18.3	2.39 H	323	33.0	2.7
3	*5270.00	97.7 PK			2.39 H	323	95.4	2.3
4	*5270.00	86.5 AV			2.39 H	323	84.2	2.3
5	#10540.00	56.5 PK	68.2	-11.7	1.69 H	159	43.5	13.0
6	15810.00	58.4 PK	74.0	-15.6	3.05 H	38	46.3	12.1
7	15810.00	47.5 AV	54.0	-6.5	3.05 H	38	35.4	12.1
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	54.2 PK	74.0	-19.8	2.11 V	346	51.5	2.7
2	5150.00	41.9 AV	54.0	-12.1	2.11 V	346	39.2	2.7
3	*5270.00	106.4 PK			2.11 V	346	104.1	2.3
4	*5270.00	96.8 AV			2.11 V	346	94.5	2.3
5	#10540.00	55.1 PK	68.2	-13.1	2.86 V	179	42.1	13.0
6	15810.00	57.5 PK	74.0	-16.5	2.05 V	272	45.4	12.1
7	15810.00	48.0 AV	54.0	-6.0	2.05 V	272	35.9	12.1

REMARKS:

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

CHANNEL	TX Channel 62	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	*5310.00	97.2 PK			2.40 H	324	94.7	2.5
2	*5310.00	86.0 AV			2.40 H	324	83.5	2.5
3	5350.00	47.8 PK	74.0	-26.2	2.40 H	324	45.2	2.6
4	5350.00	35.3 AV	54.0	-18.7	2.40 H	324	32.7	2.6
5	10620.00	57.4 PK	74.0	-16.6	1.67 H	155	44.7	12.7
6	10620.00	44.9 AV	54.0	-9.1	1.67 H	155	32.2	12.7
7	15930.00	58.6 PK	74.0	-15.4	3.02 H	37	46.5	12.1
8	15930.00	47.7 AV	54.0	-6.3	3.02 H	37	35.6	12.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	106.3 PK			2.10 V	356	103.8	2.5
2	*5310.00	96.9 AV			2.10 V	356	94.4	2.5
3	5350.00	54.2 PK	74.0	-19.8	2.10 V	356	51.6	2.6
4	5350.00	42.1 AV	54.0	-11.9	2.10 V	356	39.5	2.6
5	10620.00	55.7 PK	74.0	-18.3	2.78 V	192	43.0	12.7
6	10620.00	43.8 AV	54.0	-10.2	2.78 V	192	31.1	12.7
7	15930.00	57.5 PK	74.0	-16.5	2.11 V	288	45.4	12.1
8	15930.00	47.5 AV	54.0	-6.5	2.11 V	288	35.4	12.1

REMARKS:

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

CHANNEL	TX Channel 102	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	57.6 PK	68.2	-10.6	2.45 H	337	54.7	2.9
2	*5510.00	94.4 PK			2.45 H	337	91.6	2.8
3	*5510.00	82.9 AV			2.45 H	337	80.1	2.8
4	11020.00	57.0 PK	74.0	-17.0	1.68 H	180	43.5	13.5
5	11020.00	44.7 AV	54.0	-9.3	1.68 H	180	31.2	13.5
6	#16530.00	57.7 PK	68.2	-10.5	3.07 H	23	43.0	14.7
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	#5470.00	67.9 PK	68.2	-0.3	2.05 V	360	65.0	2.9
2	*5510.00	103.5 PK			2.05 V	360	100.7	2.8
3	*5510.00	84.3 AV			2.05 V	360	81.5	2.8
4	11020.00	55.1 PK	74.0	-18.9	2.85 V	178	41.6	13.5
5	11020.00	43.7 AV	54.0	-10.3	2.85 V	178	30.2	13.5
6	#16530.00	57.7 PK	68.2	-10.5	2.16 V	274	43.0	14.7

REMARKS:

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

CHANNEL	TX Channel 110	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	*5550.00	96.9 PK			2.41 H	316	94.0	2.9
2	*5550.00	85.1 AV			2.41 H	316	82.2	2.9
3	11100.00	57.0 PK	74.0	-17.0	1.64 H	167	44.0	13.0
4	11100.00	45.1 AV	54.0	-8.9	1.64 H	167	32.1	13.0
5	#16650.00	57.7 PK	68.2	-10.5	3.08 H	26	42.2	15.5
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	*5550.00	105.7 PK			2.17 V	337	102.8	2.9
2	*5550.00	95.6 AV			2.17 V	337	92.7	2.9
3	11100.00	55.3 PK	74.0	-18.7	2.79 V	168	42.3	13.0
4	11100.00	43.5 AV	54.0	-10.5	2.79 V	168	30.5	13.0
5	#16650.00	58.0 PK	68.2	-10.2	2.05 V	290	42.5	15.5

REMARKS:

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

CHANNEL	TX Channel 134	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	*5670.00	96.7 PK			2.36 H	300	93.6	3.1
2	*5670.00	84.8 AV			2.36 H	300	81.7	3.1
3	#5725.00	57.0 PK	68.2	-11.2	2.36 H	300	53.8	3.2
4	11340.00	57.4 PK	74.0	-16.6	1.68 H	161	44.0	13.4
5	11340.00	45.2 AV	54.0	-8.8	1.68 H	161	31.8	13.4
6	#17010.00	57.5 PK	68.2	-10.7	3.02 H	43	40.9	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	*5670.00	105.3 PK			2.20 V	338	102.2	3.1
2	*5670.00	95.5 AV			2.20 V	338	92.4	3.1
3	#5725.00	66.3 PK	68.2	-1.9	2.20 V	338	63.1	3.2
4	11340.00	55.1 PK	74.0	-18.9	2.82 V	191	41.7	13.4
5	11340.00	43.5 AV	54.0	-10.5	2.82 V	191	30.1	13.4
6	#17010.00	57.9 PK	68.2	-10.3	2.15 V	284	41.3	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ac (VHT80)

CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK)
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	48.4 PK	74.0	-25.6	2.40 H	327	45.7	2.7
2	5150.00	36.2 AV	54.0	-17.8	2.40 H	327	33.5	2.7
3	*5290.00	94.1 PK			2.40 H	327	91.7	2.4
4	*5290.00	83.1 AV			2.40 H	327	80.7	2.4
5	5350.00	56.2 PK	74.0	-17.8	2.40 H	327	53.6	2.6
6	5350.00	46.3 AV	54.0	-7.7	2.40 H	327	43.7	2.6
7	#10580.00	57.1 PK	68.2	-11.1	1.74 H	155	44.3	12.8
8	15870.00	57.6 PK	74.0	-16.4	3.06 H	36	45.5	12.1
9	15870.00	46.9 AV	54.0	-7.1	3.06 H	36	34.8	12.1
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	54.0 PK	74.0	-20.0	2.10 V	347	51.3	2.7
2	5150.00	41.6 AV	54.0	-12.4	2.10 V	347	38.9	2.7
3	*5290.00	102.7 PK			2.10 V	347	100.3	2.4
4	*5290.00	94.2 AV			2.10 V	347	91.8	2.4
5	5350.00	66.3 PK	74.0	-7.7	2.10 V	347	63.7	2.6
6	5350.00	53.7 AV	54.0	-0.3	2.10 V	347	51.1	2.6
7	#10580.00	55.3 PK	68.2	-12.9	2.87 V	178	42.5	12.8
8	15870.00	57.3 PK	74.0	-16.7	2.11 V	294	45.2	12.1
9	15870.00	47.5 AV	54.0	-6.5	2.11 V	294	35.4	12.1

REMARKS:

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

CHANNEL	TX Channel 106	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	60.3 PK	68.2	-7.9	2.35 H	326	57.4	2.9
2	*5530.00	93.0 PK			2.35 H	326	90.1	2.9
3	*5530.00	82.2 AV			2.35 H	326	79.3	2.9
4	#5725.00	55.2 PK	68.2	-13.0	2.35 H	326	52.0	3.2
5	11060.00	57.4 PK	74.0	-16.6	1.72 H	166	44.1	13.3
6	11060.00	44.9 AV	54.0	-9.1	1.72 H	166	31.6	13.3
7	#16590.00	58.6 PK	68.2	-9.6	3.06 H	39	43.6	15.0
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	#5470.00	67.7 PK	68.2	-0.5	2.07 V	333	64.8	2.9
2	*5530.00	101.7 PK			2.07 V	333	98.8	2.9
3	*5530.00	93.3 AV			2.07 V	333	90.4	2.9
4	#5725.00	65.3 PK	68.2	-2.9	2.07 V	333	62.1	3.2
5	11060.00	54.8 PK	74.0	-19.2	2.86 V	172	41.5	13.3
6	11060.00	43.0 AV	54.0	-11.0	2.86 V	172	29.7	13.3
7	#16590.00	57.5 PK	68.2	-10.7	2.14 V	277	42.5	15.0

REMARKS:

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

CHANNEL	TX Channel 122	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	*5610.00	95.4 PK			2.19 H	340	92.4	3.0
2	*5610.00	83.9 AV			2.19 H	340	80.9	3.0
3	#5725.00	54.8 PK	68.2	-13.4	2.19 H	340	51.6	3.2
4	11220.00	56.7 PK	74.0	-17.3	1.63 H	164	43.6	13.1
5	11220.00	44.4 AV	54.0	-9.6	1.63 H	164	31.3	13.1
6	#16830.00	58.7 PK	68.2	-9.5	3.01 H	50	42.4	16.3
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	*5610.00	104.3 PK			2.11 V	347	101.3	3.0
2	*5610.00	95.7 AV			2.11 V	347	92.7	3.0
3	#5725.00	65.6 PK	68.2	-2.6	2.11 V	347	62.4	3.2
4	11220.00	54.9 PK	74.0	-19.1	2.86 V	191	41.8	13.1
5	11220.00	43.6 AV	54.0	-10.4	2.86 V	191	30.5	13.1
6	#16830.00	57.4 PK	68.2	-10.8	2.16 V	290	41.1	16.3

REMARKS:

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

802.11ac (VHT80+80)

CHANNEL	TX Channel 58+106	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	*5290.00	92.2 PK			2.24 H	333	89.8	2.4
2	*5290.00	85.4 AV			2.24 H	333	83.0	2.4
3	5350.00	57.3 PK	74.0	-16.7	2.24 H	333	54.7	2.6
4	5350.00	45.6 AV	54.0	-8.4	2.24 H	333	43.0	2.6
5	5460.00	48.0 PK	74.0	-26.0	2.14 H	328	45.1	2.9
6	5460.00	35.7 AV	54.0	-18.3	2.14 H	328	32.8	2.9
7	#5470.00	54.6 PK	68.2	-13.6	2.14 H	328	51.7	2.9
8	*5530.00	86.6 PK			2.14 H	328	83.7	2.9
9	*5530.00	79.7 AV			2.14 H	328	76.8	2.9
10	#5725.00	54.5 PK	68.2	-13.7	2.14 H	328	51.3	3.2
11	#10580.00	56.6 PK	68.2	-11.6	1.68 H	176	43.8	12.8
12	11060.00	56.3 PK	74.0	-17.7	1.68 H	157	43.0	13.3
13	11060.00	44.3 AV	54.0	-9.7	1.68 H	157	31.0	13.3
14	15870.00	58.3 PK	74.0	-15.7	3.08 H	22	46.2	12.1
15	15870.00	47.5 AV	54.0	-6.5	3.08 H	22	35.4	12.1
16	#16590.00	58.0 PK	68.2	-10.2	3.07 H	45	43.0	15.0
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	*5290.00	102.3 PK			2.08 V	358	99.9	2.4
2	*5290.00	95.6 AV			2.08 V	358	93.2	2.4
3	5350.00	66.1 PK	74.0	-7.9	2.08 V	358	63.5	2.6
4	5350.00	53.5 AV	54.0	-0.5	2.08 V	358	50.9	2.6
5	5460.00	54.2 PK	74.0	-19.8	2.07 V	331	51.3	2.9
6	5460.00	42.3 AV	54.0	-11.7	2.07 V	331	39.4	2.9
7	#5470.00	65.8 PK	68.2	-2.4	2.07 V	331	62.9	2.9
8	*5530.00	97.2 PK			2.07 V	331	94.3	2.9
9	*5530.00	90.3 AV			2.07 V	331	87.4	2.9
10	#5725.00	65.7 PK	68.2	-2.5	2.07 V	331	62.5	3.2
11	#10580.00	55.0 PK	68.2	-13.2	2.82 V	167	42.2	12.8
12	11060.00	55.3 PK	74.0	-18.7	2.82 V	180	42.0	13.3
13	11060.00	43.8 AV	54.0	-10.2	2.82 V	180	30.5	13.3
14	15870.00	58.0 PK	74.0	-16.0	2.16 V	298	45.9	12.1
15	15870.00	48.1 AV	54.0	-5.9	2.16 V	298	36.0	12.1
16	#16590.00	57.7 PK	68.2	-10.5	2.15 V	270	42.7	15.0

REMARKS:

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

CHANNEL	TX Channel 106+122	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	5460.00	48.1 PK	74.0	-25.9	2.34 H	332	45.2	2.9
2	5460.00	36.8 AV	54.0	-17.2	2.34 H	332	33.9	2.9
3	#5470.00	57.3 PK	68.2	-10.9	2.34 H	332	54.4	2.9
4	*5530.00	91.6 PK			2.34 H	332	88.7	2.9
5	*5530.00	84.5 AV			2.34 H	332	81.6	2.9
6	*5610.00	90.4 PK			2.39 H	310	87.4	3.0
7	*5610.00	84.0 AV			2.39 H	310	81.0	3.0
8	#5725.00	54.1 PK	68.2	-14.1	2.39 H	310	50.9	3.2
9	11060.00	56.7 PK	74.0	-17.3	1.74 H	161	43.4	13.3
10	11060.00	44.5 AV	54.0	-9.5	1.74 H	161	31.2	13.3
11	11220.00	57.1 PK	74.0	-16.9	1.68 H	173	44.0	13.1
12	11220.00	44.8 AV	54.0	-9.2	1.68 H	173	31.7	13.1
13	#16590.00	58.7 PK	68.2	-9.5	3.07 H	52	43.7	15.0
14	#16830.00	58.5 PK	68.2	-9.7	3.10 H	22	42.2	16.3

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	54.3 PK	74.0	-19.7	2.09 V	360	51.4	2.9
2	5460.00	43.1 AV	54.0	-10.9	2.09 V	360	40.2	2.9
3	#5470.00	67.8 PK	68.2	-0.4	2.09 V	360	64.9	2.9
4	*5530.00	101.4 PK			2.09 V	360	98.5	2.9
5	*5530.00	94.3 AV			2.09 V	360	91.4	2.9
6	*5610.00	100.9 PK			2.03 V	331	97.9	3.0
7	*5610.00	93.9 AV			2.03 V	331	90.9	3.0
8	#5725.00	65.8 PK	68.2	-2.4	2.03 V	331	62.6	3.2
9	11060.00	55.7 PK	74.0	-18.3	2.86 V	196	42.4	13.3
10	11060.00	43.9 AV	54.0	-10.1	2.86 V	196	30.6	13.3
11	11220.00	54.9 PK	74.0	-19.1	2.84 V	167	41.8	13.1
12	11220.00	43.3 AV	54.0	-10.7	2.84 V	167	30.2	13.1
13	#16590.00	57.3 PK	68.2	-10.9	2.05 V	295	42.3	15.0
14	#16830.00	57.5 PK	68.2	-10.7	2.04 V	289	41.2	16.3

REMARKS:

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

Below 1GHz Data:

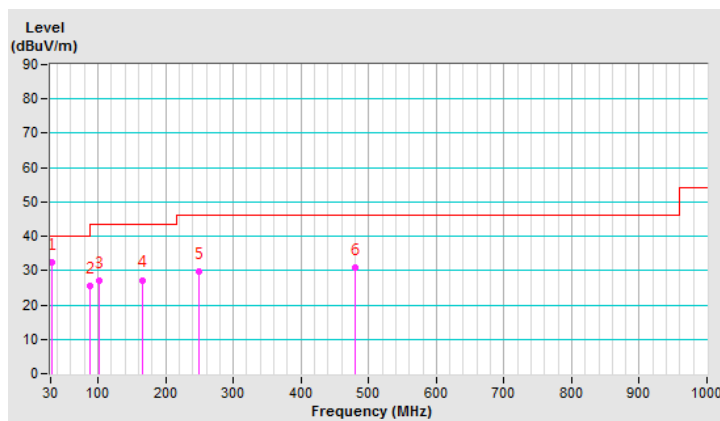
802.11ac (VHT80)

CHANNEL	TX Channel 122	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	31.47	32.4 QP	40.0	-7.6	1.00 H	4	42.0	-9.6
2	88.83	25.6 QP	43.5	-17.9	2.00 H	222	39.0	-13.4
3	101.93	26.9 QP	43.5	-16.6	2.00 H	236	38.7	-11.8
4	165.95	27.3 QP	43.5	-16.2	2.50 H	102	35.5	-8.2
5	250.05	29.7 QP	46.0	-16.3	1.50 H	189	38.4	-8.7
6	479.96	30.7 QP	46.0	-15.3	1.00 H	260	33.1	-2.4

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. 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.

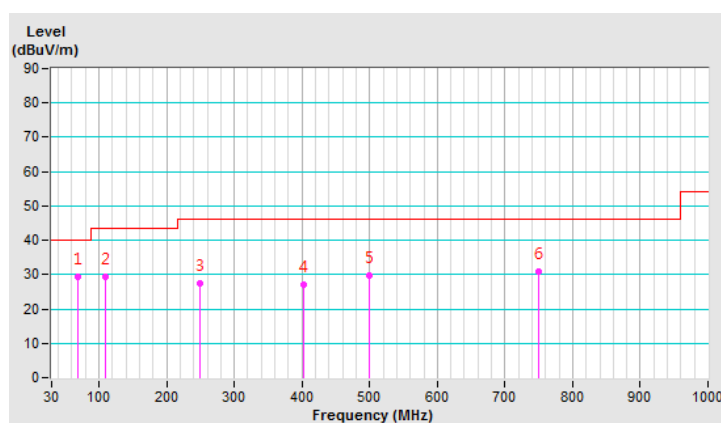


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	68.97	29.5 QP	40.0	-10.5	1.00 V	203	39.9	-10.4
2	108.83	29.5 QP	43.5	-14.0	1.00 V	105	40.3	-10.8
3	249.99	27.3 QP	46.0	-18.7	1.00 V	133	36.0	-8.7
4	401.56	27.2 QP	46.0	-18.8	1.50 V	354	31.6	-4.4
5	499.98	29.8 QP	46.0	-16.2	1.50 V	357	31.7	-1.9
6	749.99	30.8 QP	46.0	-15.2	1.00 V	273	27.4	3.4

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. 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
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2018	Oct. 23, 2019
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 22, 2018	Oct. 21, 2019
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	N/A	3	Oct. 22, 2018	Oct. 21, 2019
RF Cable	5D-FB	COCCAB-001	Sep. 28, 2018	Sep. 27, 2019
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
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 Conduction 1.
- 3 Tested Date: Mar. 26, 2019

4.2.3 Test Procedure

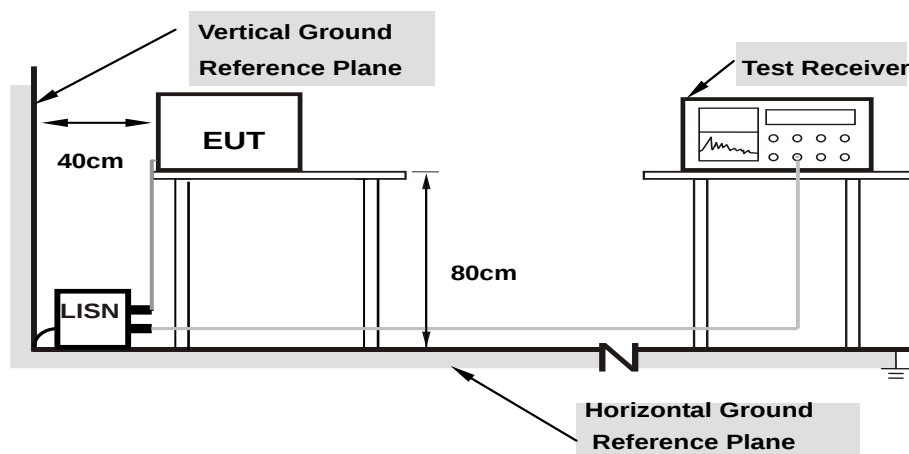
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- 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.

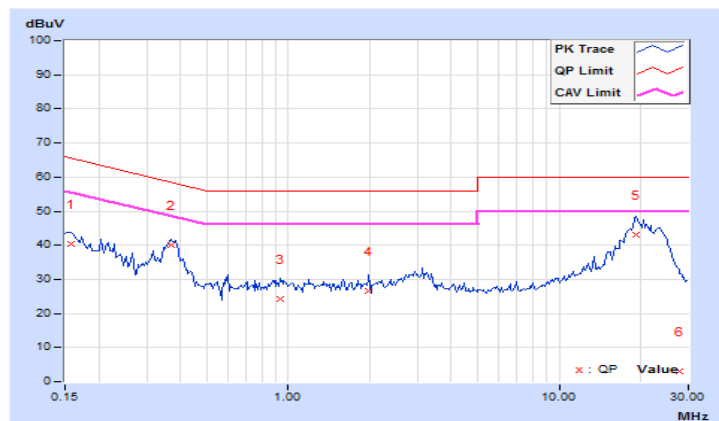
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15781	10.03	30.22	17.42	40.25	27.45	65.58	55.58	-25.33	-28.13
2	0.36875	10.08	29.87	22.78	39.95	32.86	58.53	48.53	-18.58	-15.67
3	0.93125	10.12	14.28	5.77	24.40	15.89	56.00	46.00	-31.60	-30.11
4	1.98828	10.19	16.52	8.22	26.71	18.41	56.00	46.00	-29.29	-27.59
5	19.33594	11.32	31.66	26.07	42.98	37.39	60.00	50.00	-17.02	-12.61
6	27.84766	11.55	-8.38	-12.47	3.17	-0.92	60.00	50.00	-56.83	-50.92

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)
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No	Freq.	Corr.	Reading Value		Emission Level		Limit		Margin	
	[MHz]	Factor	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.94	33.72	17.38	43.66	27.32	66.00	56.00	-22.34	-28.68
2	0.37656	9.98	26.85	18.82	36.83	28.80	58.35	48.35	-21.52	-19.55
3	0.82578	9.99	15.25	6.87	25.24	16.86	56.00	46.00	-30.76	-29.14
4	2.16797	10.08	12.52	5.55	22.60	15.63	56.00	46.00	-33.40	-30.37
5	8.67969	10.45	17.17	10.38	27.62	20.83	60.00	50.00	-32.38	-29.17
6	19.30078	11.10	28.72	23.57	39.82	34.67	60.00	50.00	-20.18	-15.33

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 $\leq$ 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	$\sqrt{}$		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	$\sqrt{}$		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3			1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

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

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

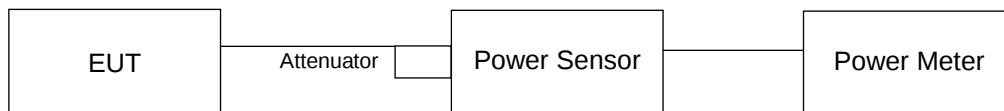
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

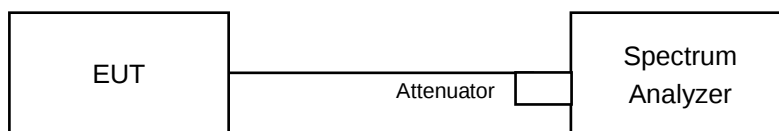
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

FOR POWER OUTPUT 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 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	Chain 2	Chain 3				
52	5260	13.21	12.67	12.86	13.20	79.647	19.01	24.00	Pass
60	5300	13.46	12.94	13.02	12.79	80.917	19.08	24.00	Pass
64	5320	13.41	12.95	13.06	12.77	80.805	19.07	24.00	Pass
100	5500	12.96	12.24	13.13	13.22	78.067	18.92	24.00	Pass
116	5580	13.21	12.51	13.08	13.12	79.601	19.01	24.00	Pass
140	5700	13.25	12.42	12.54	12.89	75.994	18.81	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	20.30	20.37	20.21	20.38
60	5300	20.53	20.36	20.29	20.42
64	5320	20.39	20.35	20.44	20.35
100	5500	20.42	20.34	20.05	20.16
116	5580	20.22	20.19	20.22	20.43
140	5700	20.22	20.23	20.31	20.19

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	20.21	24.05 > 24
60	5300	20.29	24.07 > 24
64	5320	20.35	24.08 > 24
100	5500	20.05	24.02 > 24
116	5580	20.19	24.05 > 24
140	5700	20.19	24.05 > 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	Chain 2	Chain 3				
52	5260	13.16	12.41	12.69	13.12	77.209	18.88	24.00	Pass
60	5300	13.15	12.53	12.79	13.22	78.56	18.95	24.00	Pass
64	5320	13.16	12.79	12.93	13.25	80.481	19.06	24.00	Pass
100	5500	13.12	12.69	13.05	13.12	79.786	19.02	24.00	Pass
116	5580	13.22	12.78	13.02	13.15	80.655	19.07	24.00	Pass
140	5700	13.20	12.89	13.08	13.10	81.088	19.09	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	20.63	20.42	20.59	20.72
60	5300	20.61	20.47	20.47	20.77
64	5320	20.67	20.60	20.77	20.59
100	5500	20.55	20.60	20.58	20.58
116	5580	20.59	20.58	20.66	20.62
140	5700	20.61	20.58	20.55	20.54

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	20.42	24.1 > 24
60	5300	20.47	24.11 > 24
64	5320	20.59	24.13 > 24
100	5500	20.55	24.12 > 24
116	5580	20.58	24.13 > 24
140	5700	20.54	24.12 > 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	Chain 2	Chain 3				
54	5270	16.10	15.72	16.00	16.21	159.657	22.03	24.00	Pass
62	5310	16.14	15.74	16.02	16.22	160.485	22.05	24.00	Pass
102	5510	13.20	12.22	13.12	12.30	75.059	18.75	24.00	Pass
110	5550	16.22	15.59	16.15	16.12	160.239	22.05	24.00	Pass
134	5670	16.25	15.60	16.18	16.22	161.852	22.09	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	42.03	41.96	41.94	41.80
62	5310	41.96	41.50	41.97	41.84
102	5510	41.80	41.63	41.58	41.86
110	5550	41.90	42.01	41.71	41.86
134	5670	41.87	42.18	41.71	41.96

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	41.80	27.21 > 24
62	5310	41.50	27.18 > 24
102	5510	41.58	27.18 > 24
110	5550	41.71	27.2 > 24
134	5670	41.71	27.2 > 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	Chain 2	Chain 3				
58	5290	14.54	14.10	15.36	14.65	117.679	20.71	24.00	Pass
106	5530	13.87	14.37	14.28	15.82	116.717	20.67	24.00	Pass
122	5610	17.36	18.44	16.95	17.92	235.762	23.72	24.00	Pass

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	82.10	81.85	81.87	81.79
106	5530	81.74	81.86	81.79	81.69
122	5610	81.95	82.22	82.10	82.30

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	81.79	30.12 > 24
106	5530	81.69	30.12 > 24
122	5610	81.95	30.13 > 24

802.11ac (VHT80+80)

POWER OUTPUT

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58+106	5290	16.21	16.19	-	-	83.374	19.21	24.00	Pass
	5530	-	-	2.80	2.65	3.746	5.74	24.00	Pass
106+122	5530	15.77	14.25	-	-	141.537	21.51	24.00	Pass
	5610	-	-	16.14	15.57				

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58+106	5290	81.73	81.38	-	-
	5530	-	-	81.91	81.67
106+122	5530	81.85	81.84	-	-
	5610	-	-	81.83	81.89

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+106	5290	81.38	30.1 > 24
	5530	81.67	30.12 > 24
106+122	5530	81.84	30.12 > 24
	5610	81.83	30.12 > 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	Chain 2	Chain 3				
52	5260	13.16	12.41	12.69	13.12	77.209	18.88	19.10	Pass
60	5300	13.15	12.53	12.79	13.22	78.56	18.95	19.10	Pass
64	5320	13.16	12.79	12.93	13.25	80.481	19.06	19.10	Pass
100	5500	12.65	12.33	12.22	12.85	71.455	18.54	19.10	Pass
116	5580	12.63	12.35	12.25	12.89	71.744	18.56	19.10	Pass
140	5700	12.60	12.45	12.29	12.88	72.128	18.58	19.10	Pass

Note: The directional gain = 10.9dBi > 6dBi, so the power limit shall be reduced to "Determined Conducted Limit-(10.9-6).

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	20.63	20.42	20.59	20.72
60	5300	20.61	20.47	20.47	20.77
64	5320	20.67	20.60	20.77	20.59
100	5500	20.55	20.60	20.58	20.58
116	5580	20.59	20.58	20.66	20.62
140	5700	20.61	20.58	20.55	20.54

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	20.42	24.1 > 24
60	5300	20.47	24.11 > 24
64	5320	20.59	24.13 > 24
100	5500	20.55	24.12 > 24
116	5580	20.58	24.13 > 24
140	5700	20.54	24.12 > 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	Chain 2	Chain 3				
54	5270	13.55	12.58	12.83	13.12	80.458	19.06	19.10	Pass
62	5310	13.56	12.60	12.82	13.11	80.503	19.06	19.10	Pass
102	5510	13.26	12.46	13.12	13.22	80.305	19.05	19.10	Pass
110	5550	13.28	12.44	13.10	13.12	79.749	19.02	19.10	Pass
134	5670	13.12	12.48	13.02	13.10	78.675	18.96	19.10	Pass

Note: The directional gain = 10.9dBi > 6dBi, so the power limit shall be reduced to "Determined Conducted Limit-(10.9-6).

26dB OCCUPIED BANDWIDTH

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	42.03	41.96	41.94	41.80
62	5310	41.96	41.50	41.97	41.84
102	5510	41.80	41.63	41.58	41.86
110	5550	41.90	42.01	41.71	41.86
134	5670	41.87	42.18	41.71	41.96

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	41.80	27.21 > 24
62	5310	41.50	27.18 > 24
102	5510	41.58	27.18 > 24
110	5550	41.71	27.2 > 24
134	5670	41.71	27.2 > 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	Chain 2	Chain 3				
58	5290	13.02	12.44	12.76	13.12	76.976	18.86	19.10	Pass
106	5530	13.54	12.58	12.88	13.02	80.161	19.04	19.10	Pass
122	5610	13.52	12.60	12.99	13.10	81.012	19.09	19.10	Pass

Note: The directional gain = 10.9dBi > 6dBi, so the power limit shall be reduced to "Determined Conducted Limit-(10.9-6).

26dB OCCUPIED BANDWIDTH

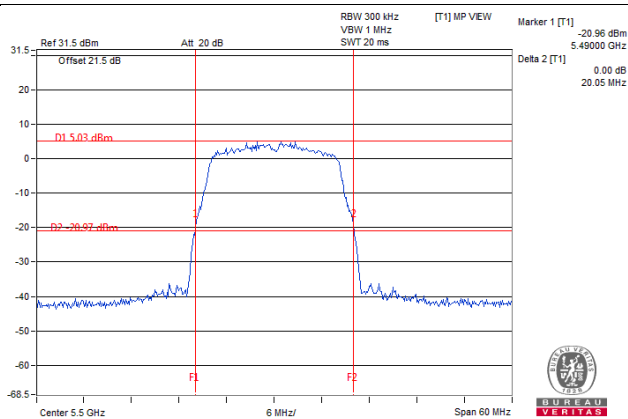
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	82.10	81.85	81.87	81.79
106	5530	81.74	81.86	81.79	81.69
122	5610	81.95	82.22	82.10	82.30

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

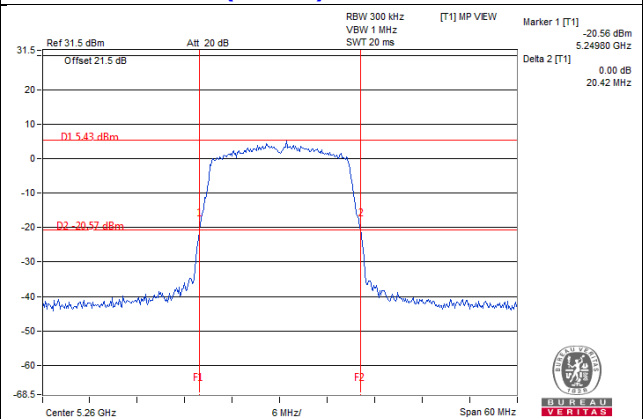
Power Limit = 11dBm + 10logB < U-NII-2A, U-NII-2C >			
Channel Number	Freq.(MHz)	Min. B(MHz)	Determined Conducted Limit (dBm)
58	5290	81.79	30.12 > 24
106	5530	81.69	30.12 > 24
122	5610	81.95	30.13 > 24

Spectrum Plot of Worst Value

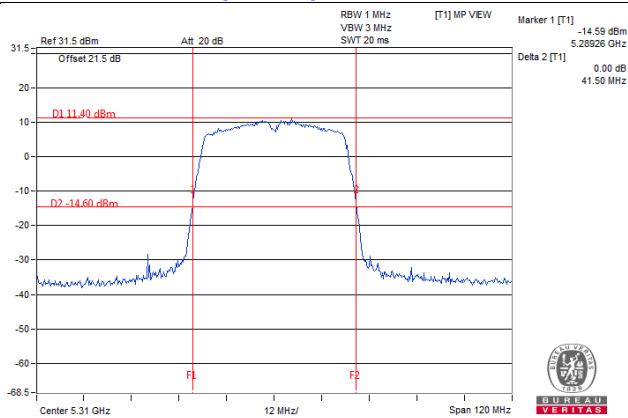
802.11a_Chain 2 / CH100



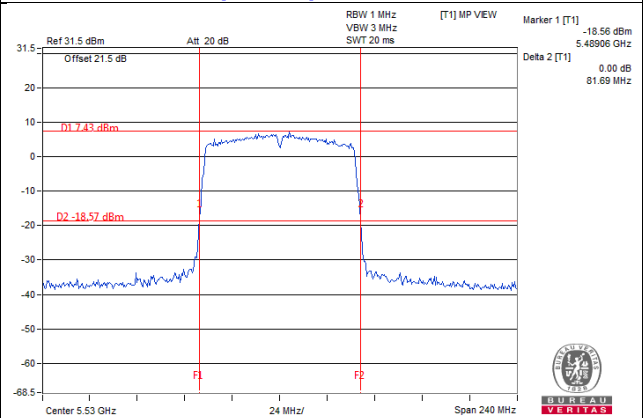
802.11ac (VHT20)_Chain 1 / CH52



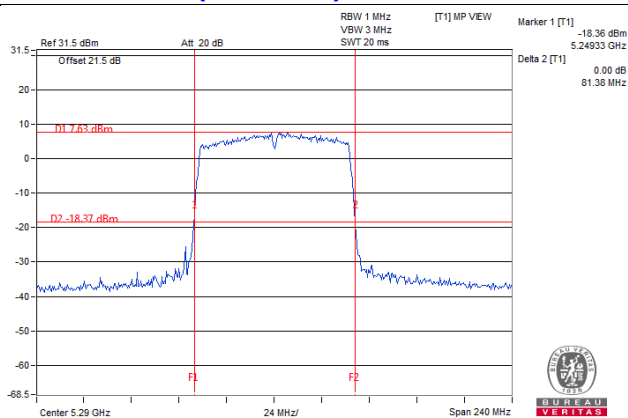
802.11ac (VHT40)_Chain 1 / CH62



802.11ac (VHT80)_Chain 3 / CH106

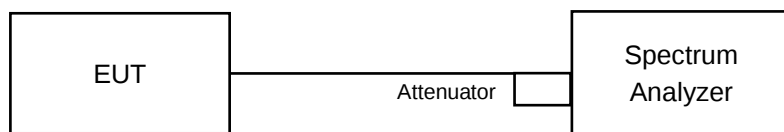


802.11ac (VHT80+80)_Chain 1 / CH58



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

CDD Mode

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	16.56	16.68	16.68	16.68
60	5300	16.56	16.44	16.44	16.56
64	5320	16.56	16.44	16.56	16.56
100	5500	16.44	16.68	16.56	16.68
116	5580	16.56	16.68	16.68	16.68
140	5700	16.56	16.56	16.56	16.56

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	17.64	17.76	17.64	17.64
60	5300	17.76	17.64	17.76	17.64
64	5320	17.64	17.64	17.64	17.64
100	5500	17.76	17.64	17.64	17.64
116	5580	17.76	17.76	17.76	17.76
140	5700	17.76	17.76	17.76	17.76

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	36.24	36.24	36.48	36.24
62	5310	36.24	36.24	36.24	36.24
102	5510	36.48	36.24	36.48	36.24
110	5550	36.24	36.24	36.24	36.24
134	5670	36.24	36.48	36.24	36.24

802.11ac (VHT80)

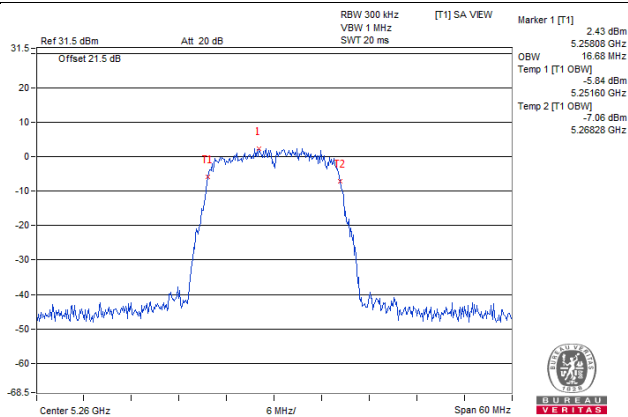
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	75.84	75.84	75.84	75.84
106	5530	75.36	75.84	75.84	75.84
122	5610	76.32	75.84	75.36	75.36

802.11ac (VHT80+80)

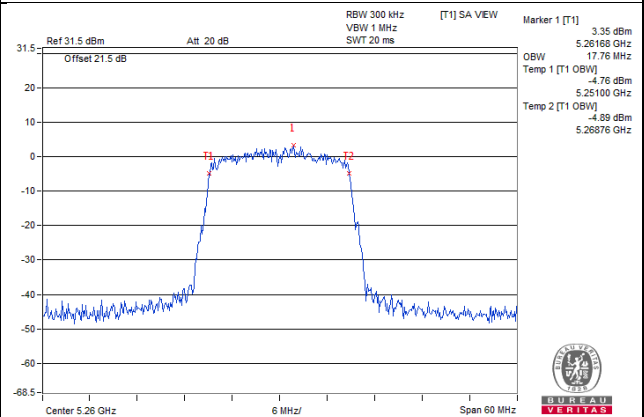
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58+106	5290	75.36	75.36	-	-
	5530	-	-	75.84	75.84
106+122	5530	75.36	75.84	-	-
	5610	-	-	75.36	75.84

Spectrum Plot of Max Value

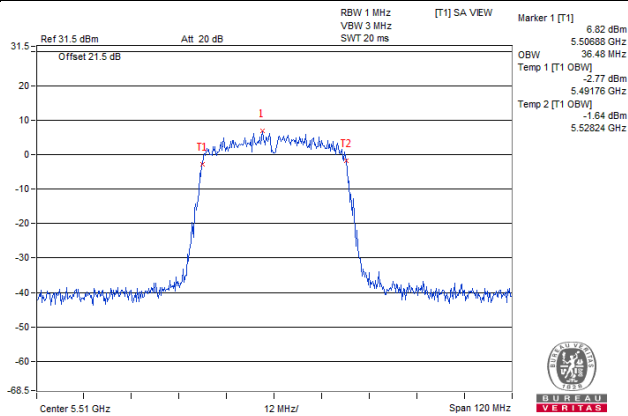
802.11a_Chain 1 / CH52



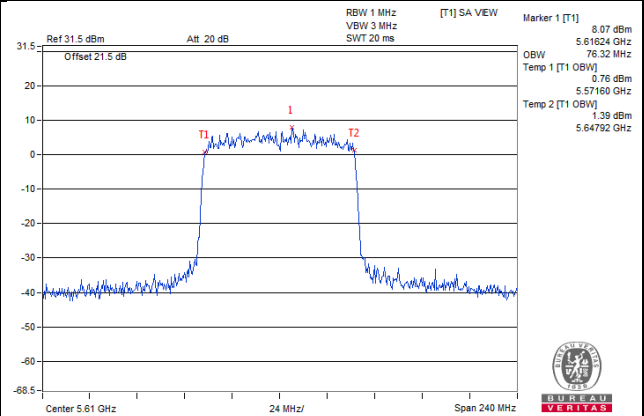
802.11ac (VHT20)_Chain 1 / CH52



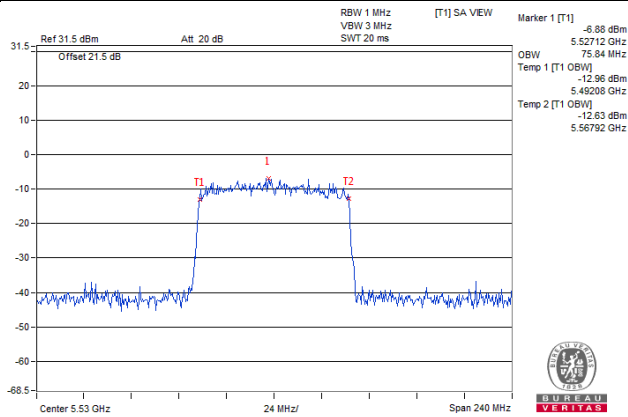
802.11ac (VHT40)_Chain 0 / CH102



802.11ac (VHT80)_Chain 0 / CH122



802.11ac (VHT80+80)_Chain 2 / CH106

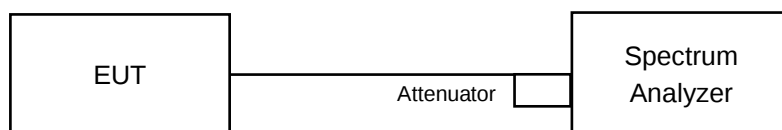


4.5 Peak Power Spectral Density Measurement

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

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

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
52	5260	-0.05	-0.48	-0.35	0.59	5.97	6.10	Pass
60	5300	0.34	-0.08	-0.19	0.02	6.05	6.10	Pass
64	5320	0.51	-0.52	0.01	0.17	6.08	6.10	Pass
100	5500	0.00	-0.52	0.18	0.47	6.07	6.10	Pass
116	5580	0.18	-0.59	0.14	0.28	6.04	6.10	Pass
140	5700	0.35	-0.16	-0.48	0.19	6.01	6.10	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 = 10.9dBi > 6dBi, so the power density limit shall be reduced to $11-(10.9-6) = 6.10\text{dBm}$.

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	Chain 2	Chain 3			
52	5260	0.02	-0.38	-0.35	0.10	5.87	6.10	Pass
60	5300	0.32	-0.20	-0.17	0.09	6.04	6.10	Pass
64	5320	0.07	-0.21	0.09	0.27	6.08	6.10	Pass
100	5500	0.01	0.10	-0.30	-0.01	5.97	6.10	Pass
116	5580	0.24	-0.49	-0.32	-0.15	5.85	6.10	Pass
140	5700	0.19	-0.12	-0.38	0.18	5.99	6.10	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 = 10.9dBi > 6dBi, so the power density limit shall be reduced to $11-(10.9-6) = 6.10\text{dBm}$.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
54	5270	0.46	-0.31	-0.13	0.09	6.06	6.10	Pass
62	5310	-0.08	-0.02	-0.14	0.28	6.03	6.10	Pass
102	5510	-2.45	-3.37	-2.86	-3.44	3.01	6.10	Pass
110	5550	0.28	-0.20	-0.37	0.22	6.01	6.10	Pass
134	5670	0.14	-0.59	0.18	0.29	6.04	6.10	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 = 10.9dBi > 6dBi, so the power density limit shall be reduced to $11-(10.9-6) = 6.10\text{dBm}$.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
58	5290	-5.00	-5.77	-4.27	-4.78	1.10	6.10	Pass
106	5530	-5.58	-5.31	-5.24	-4.05	1.02	6.10	Pass
122	5610	-1.68	-1.13	-2.94	-1.30	4.31	6.10	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 = 10.9dBi > 6dBi, so the power density limit shall be reduced to $11-(10.9-6) = 6.10\text{dBm}$.

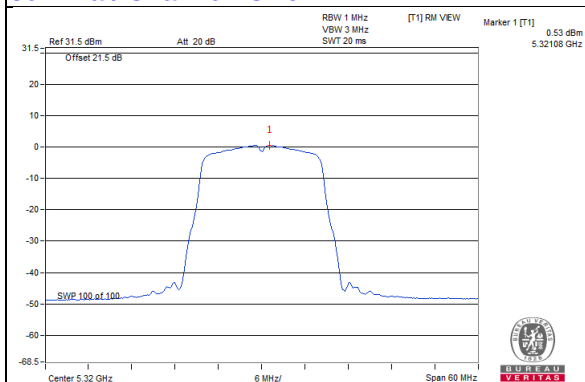
802.11ac (VHT80+80)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)				Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3			
58+106	5290	-3.20	-3.50	-	-	-0.34	6.10	Pass
	5530	-	-	-15.94	-15.81	-12.86	6.10	Pass
106+122	5530	-3.16	-5.22	-	-	2.35	6.10	Pass
	5610	-	-	-2.95	-3.68			

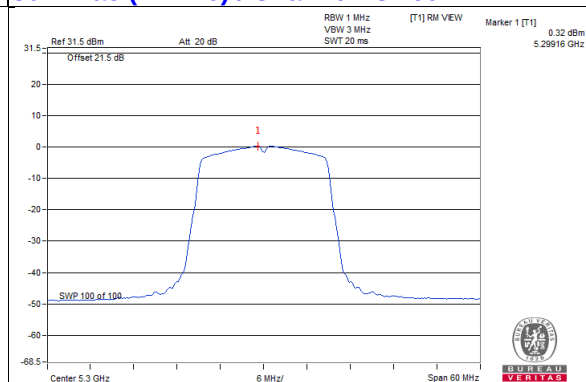
- Note:** 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 10.9dBi > 6dBi, so the power density limit shall be reduced to $11-(10.9-6) = 6.10\text{dBm}$.

Spectrum Plot of Worst Value

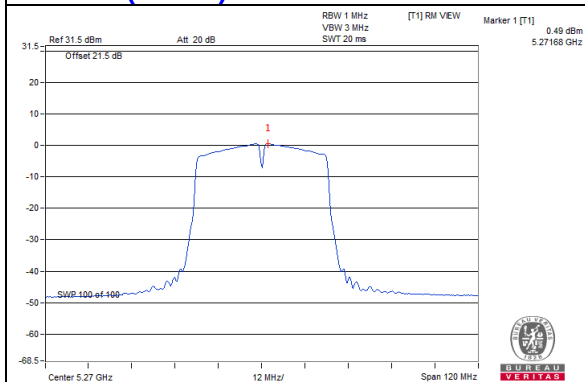
802.11a / Chain 0 : CH64



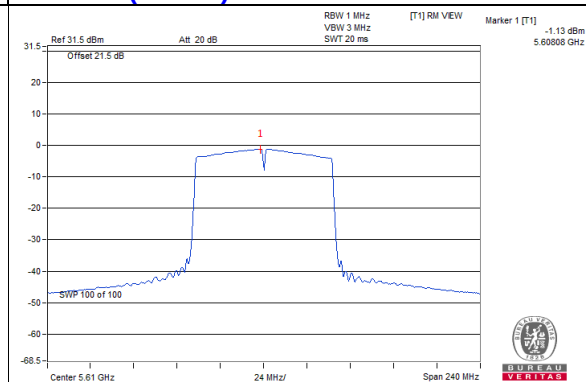
802.11ac (VHT20) / Chain 0 : CH60



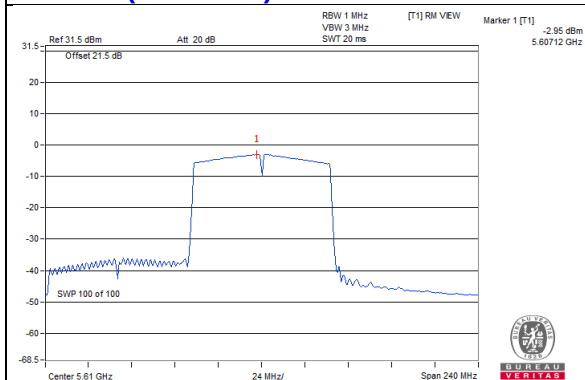
802.11ac (VHT40) / Chain 0: CH54



802.11ac (VHT80) / Chain 1 : CH122



802.11ac (VHT80+80) / Chain 2: CH122

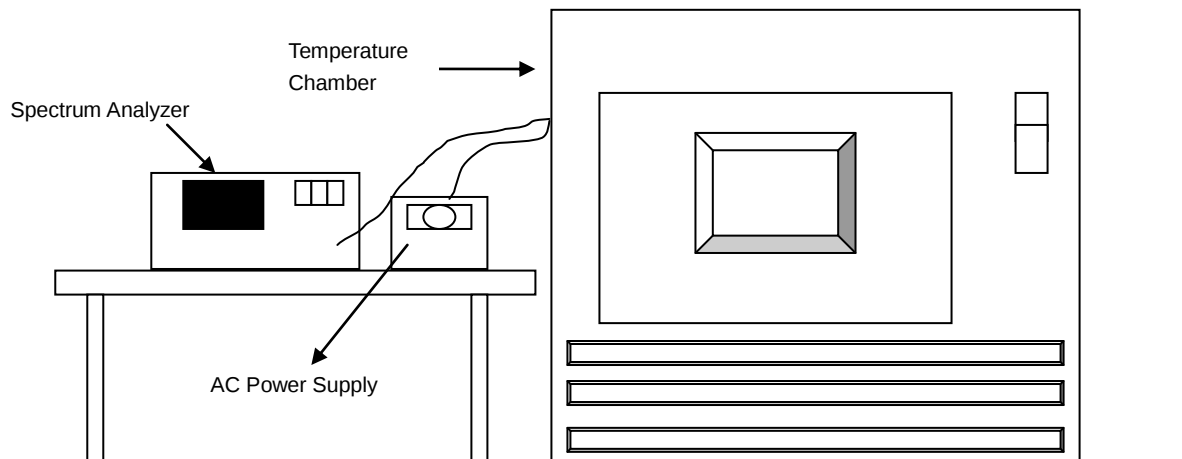


4.6 Frequency Stability Measurement

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

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- 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.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- 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. (°C)	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	5259.9938	PASS	5259.995	PASS	5259.9969	PASS	5259.9942	PASS
40	120	5260.0242	PASS	5260.0266	PASS	5260.0233	PASS	5260.0265	PASS
30	120	5260.0218	PASS	5260.0254	PASS	5260.025	PASS	5260.0223	PASS
20	120	5259.9847	PASS	5259.9853	PASS	5259.9855	PASS	5259.9864	PASS
10	120	5260.0102	PASS	5260.0134	PASS	5260.0122	PASS	5260.01	PASS
0	120	5260.0007	PASS	5260.0046	PASS	5260.0041	PASS	5260.0033	PASS
-10	120	5260.0001	PASS	5260.0024	PASS	5260.0029	PASS	5260.0017	PASS
-20	120	5260.0096	PASS	5260.0106	PASS	5260.0078	PASS	5260.0069	PASS
-30	120	5260.0074	PASS	5260.007	PASS	5260.0058	PASS	5260.004	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5260 MHz									
TEMP. (°C)	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	5259.9837	PASS	5259.9854	PASS	5259.9847	PASS	5259.9854	PASS
	120	5259.9847	PASS	5259.9853	PASS	5259.9855	PASS	5259.9864	PASS
	102	5259.9852	PASS	5259.9846	PASS	5259.9859	PASS	5259.9869	PASS

5 Pictures of Test Arrangements

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

Appendix – Information of the Testing Laboratories

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

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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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