FCC Test Report

Report No.:	RF180619C29-2
FCC ID:	2AP7A-AMBER12
Test Model:	AM12
Received Date:	Jun. 19, 2018
Test Date:	Jul. 12, 2018 ~ Aug. 17, 2018
Issued Date:	Oct. 24, 2018
Applicant:	LatticeWork, Inc.
Address:	2210 O'Toole Ave, Suite 250, San Jose, CA 95131
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C)
Test Location:	No.19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan, R.O.C.
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

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Release Control Record

Issue No.	Description	Date Issued
RF180619C29-2	Original Release	Oct. 24, 2018

1 Certificate of Conformity

Product:	Amber Life
Brand:	LatticeWork
Test Model:	AM12
Sample Status:	Engineering Sample
Applicant:	LatticeWork, Inc.
Test Date:	Jul. 12, 2018 ~ Aug. 17, 2018
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

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

Prepared by : Rona Chen , **Date:** Oct. 24, 2018

Rona Chen / Specialist

Approved by : , **Date:** Oct. 24, 2018

Dylan Chiou / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	**Test Item**	**Result**	**Remarks**
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -12.41 dB at 0.16575 MHz.
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 -1.2 dB at 5470.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6 dB Bandwidth	N/A	(U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is IPEX.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.

2.1 Measurement Uncertainty

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

Measurement	**Frequency**	**Expended Uncertainty (k=2) (±)**
Conducted Emissions at mains ports	150 kHz ~ 30 MHz	2.44 dB
Radiated Emissions up to 1 GHz	30 MHz ~ 200 MHz	3.86 dB
	200 MHz ~ 1000 MHz	3.87 dB
Radiated Emissions above 1 GHz	1 GHz ~ 18 GHz	2.29 dB
	18 GHz ~ 40 GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Amber Life	
Brand	LatticeWork	
Test Model	AM12	
Status of EUT	Engineering Sample	
Power Supply Rating	19.0 Vdc (Adapter)	
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK	
Modulation Technology	OFDM	
Transfer Rate	802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps 802.11n: up to 600.0 Mbps 802.11ac: up to 1733.3 Mbps	
Operating Frequency	5260 ~ 5320 MHz, 5500 ~ 5700 MHz	
Number of Channel	5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 2 for 802.11n (HT40), 802.11ac (VHT40) 1 for 802.11ac (VHT80) 5500 ~ 5700 MHz: 11 for 802.11a, 802.11n (HT20), 802.11ac (VHT20) 5 for 802.11n (HT40), 802.11ac (VHT40) 2 for 802.11ac (VHT80) Simultaneous Transmission: 9 for 802.11ac (VHT80+80)	
Output Power	CDD Mode: 189.961 mW for 5260 ~ 5320 MHz 183.672 mW for 5500 ~ 5700 MHz Beamforming Mode: 101.932 mW for 5260 ~ 5320 MHz 101.563 mW for 5500 ~ 5700 MHz	
Antenna Type	Dipole antenna with 4.13 dBi gain (Chain-0) PIFA antenna with 3.36 dBi gain (Chain-1) Dipole antenna with 3.70 dBi gain (Chain-2) Dipole antenna with 3.73 dBi gain (Chain-3)	(5180 ~ 5240 MHz)
	Dipole antenna with 4.58 dBi gain (Chain-0) PIFA antenna with 3.81 dBi gain (Chain-1) Dipole antenna with 3.37 dBi gain (Chain-2) Dipole antenna with 3.76 dBi gain (Chain-3)	(5260 ~ 5320 MHz)
	Dipole antenna with 4.36 dBi gain (Chain-0) PIFA antenna with 3.91 dBi gain (Chain-1) Dipole antenna with 3.62 dBi gain (Chain-2) Dipole antenna with 3.70 dBi gain (Chain-3)	(5500 ~ 5700 MHz)
	Dipole antenna with 5.12 dBi gain (Chain-0) PIFA antenna with 3.88 dBi gain (Chain-1) Dipole antenna with 4.41 dBi gain (Chain-2) Dipole antenna with 3.87 dBi gain (Chain-3)	(5745 ~ 5825 MHz)
Antenna Connector	IPEX	
Accessory Device	Refer to Note as below	

Data Cable Supplied	Refer to Note as below

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

Modulation Mode	Tx Function	CDD	Beamforming
802.11a	4TX	Support	Not Support
802.11n (HT20)	4TX	Support	Support
802.11n (HT40)	4TX	Support	Support
802.11ac (VHT20)	4TX	Support	Support
802.11ac (VHT40)	4TX	Support	Support
802.11ac (VHT80)	4TX	Support	Support
802.11ac (VHT80+80)	2TX+2TX	Support	Support

*** The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)**

*** CDD mode and Beamforming mode are presented in output power test item. For other test items, CDD mode is the worst case for final tests after pretesting.**

2. For 802.11ac (VHT80+80), the available channels are listed as below:

Modulation Mode	Available Channel				
802.11ac (VHT80+80)	42+58	42+106	42+122	58+106	58+122
	58+155	106+122	106+155	122+155	

***The device subject to multi-channel operation conditions, therefore some of test mode were selected for representative mode via pretest. These modes and test procedure have accepted by FCC. (KDB inquiry – "Tracking Number 337427")**

After pretesting above channels, the worst case was found in Ch 42+58, Ch 58+106 and Ch106+122. Therefore, only these three channels were as representative modes in test report. (Final test mode refer section 3.2.1)

3. The EUT contains following accessory devices.

Product	Brand	Model	Description
Adapter	Chicony	A12-065N2A	I/P: 100-240 Vac, 50-60 Hz, 1.7 A O/P: 19 Vdc, 3.42 A, 65W 1.7m shielded DC cable with 1 core 0.9m non-shielded AC cable w/o core
Cat.5e Cable	N/A	N/A	1.75m non-shielded cable w/o core

4. The worst case spurious emission of the simultaneous operation mode is listed as below and the test data please refer to BV CPS report no.: RF180619C29-4.

No.	Mode
1	WLAN 2.4GHz + WLAN 5GHz

5. 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 ~ 5320 MHz

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

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

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

Channel	Frequency (MHz)	Channel	Frequency (MHz)
54	5270	62	5310

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency (MHz)
58	5290

For 5500 ~ 5700 MHz

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency (MHz)	Channel	Frequency (MHz)
106	5530	122	5610

For Simultaneous Transmission:

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Note:
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
2. "-" means no effect.

Radiated Emission Test (Above 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		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
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		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
-	5260-5320+ 5500-5700	802.11ac (VHT80+80)	58+106	58+106	OFDM	BPSK	29.3
-	5500-5700+ 5500-5700		106+122	106+122	OFDM	BPSK	29.3

Radiated Emission Test (Below 1 GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5700	802.11ac (VHT40)	102 to 134	110	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5500-5700	802.11ac (VHT40)	102 to 134	110	OFDM	BPSK	13.5

Antenna Port Conducted Measurement:

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Frequency Band (MHz)	Mode	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
-	5260-5320	802.11a	52 to 64	52, 60, 64	OFDM	BPSK	6.0
-		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
-	5500-5700	802.11a	100 to 140	100, 116, 140	OFDM	BPSK	6.0
-		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
-	5180-5240+ 5260-5320	802.11ac (VHT80+80)	42+58	42+58	OFDM	BPSK	29.3
-	5260-5320+ 5500-5700		58+106	58+106	OFDM	BPSK	29.3
-	5500-5700+ 5500-5700		106+122	106+122	OFDM	BPSK	29.3

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested by
RE≥1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Adair Peng
RE<1G	25 deg. C, 65 % RH	120 Vac, 60 Hz	Adair Peng
PLC	25 deg. C, 65 % RH	120 Vac, 60 Hz	Adair Peng
APCM	25 deg. C, 65 % RH	19.0 Vdc	Frank Chiu

3.3 Duty Cycle of Test Signal

MODULATION TYPE: BPSK

802.11a: Duty cycle of test signal is ≥ 98 %, duty factor is not required.

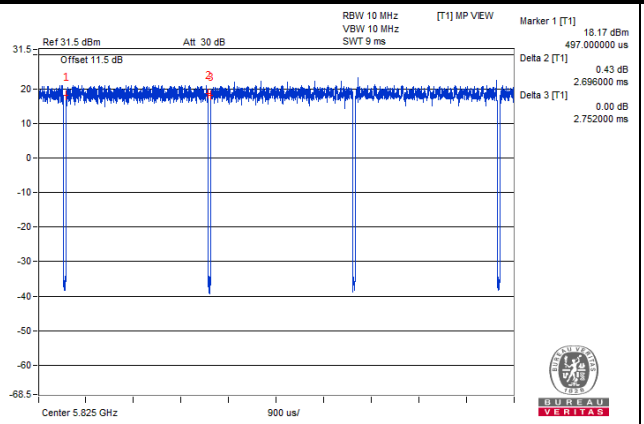
802.11ac (VHT20): Duty cycle = 1.897/1.953 = 0.971, Duty factor = 10 * log(1/0.971) = 0.13

802.11ac (VHT40): Duty cycle = 0.938/1.006 = 0.932, Duty factor = 10 * log(1/0.932) = 0.30

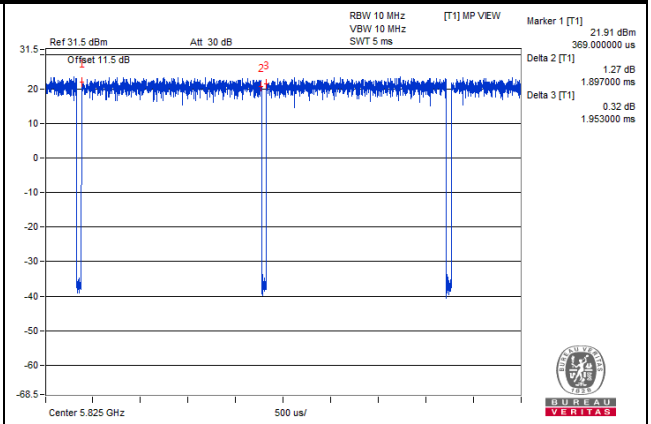
802.11ac (VHT80): Duty cycle = 1.680/1.752 = 0.959, Duty factor = 10 * log(1/0.959) = 0.18

802.11ac (VHT80+80): Duty cycle = 1.139/1.209 = 0.942, Duty factor = 10 * log(1/0.942) = 0.26

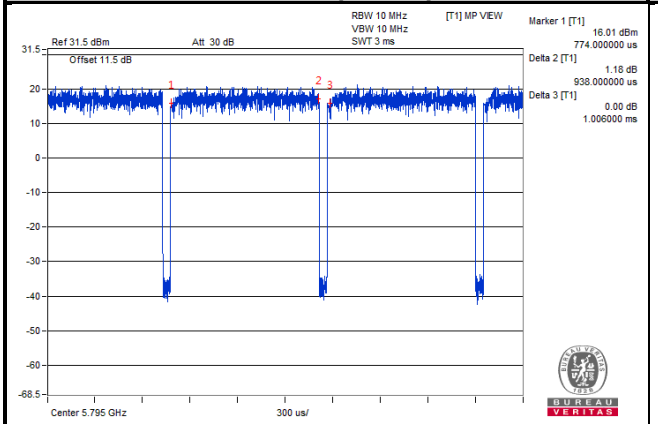
802.11a



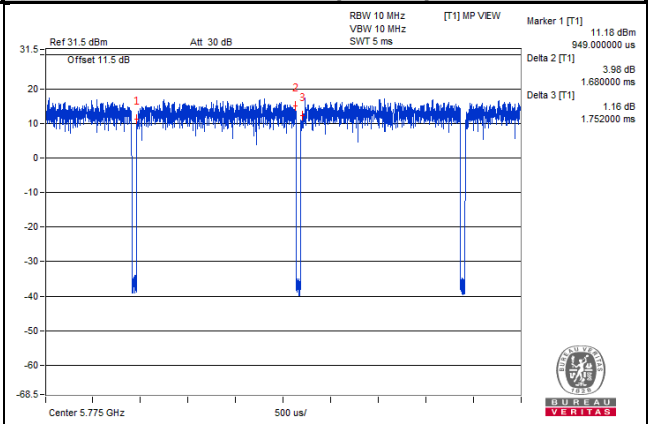
802.11ac (VHT20)



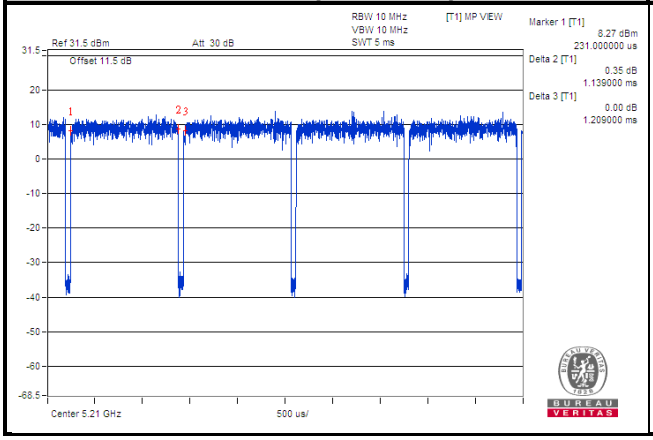
802.11ac (VHT40)



802.11ac (VHT80)



802.11ac (VHT80+80)



3.4 Description of Support Units

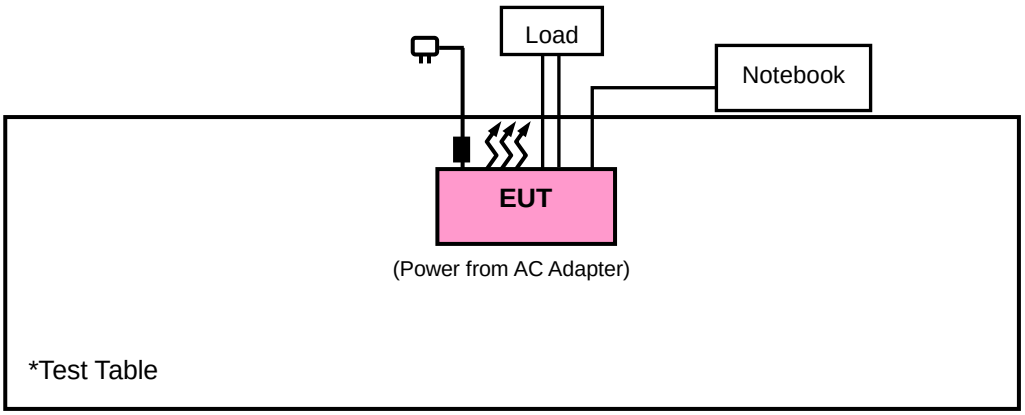
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

No.	Product	Brand	Model No.	Serial No.	FCC ID
1.	Load	N/A	N/A	N/A	N/A
2.	Notebook	DELL	E5410	1HC2XM1	N/A

No.	Signal Cable Description Of The Above Support Units
1.	1.75m shielded adapter cable with 1 core
2.	1.5m non-shielded LAN Cable
3.	1.5m non-shielded LAN Cable
4.	5m non-shielded LAN Cable

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedures 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. Other emissions shall be at least 20 dB below the highest level of the desired power:

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 1000 MHz, 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 20 dB under any condition of modulation.

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

Applicable To		Limit	
789033 D02 General UNII Test Procedures New Rules v02r01		Field Strength at 3 m	
		PK: 74 (dBμV/m)	AV: 54 (dBμV/m)
Frequency Band	**Applicable To**	**EIRP Limit**	**Equivalent Field Strength at 3 m**
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:

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

4.1.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 29, 2018	May 28, 2019
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 12, 2017	Dec. 11, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	9120D	209	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	9170-480	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 21, 2017	Aug. 20, 2018
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Apr. 03, 2018	Apr. 02, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 21, 2017	Aug. 20, 2018
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM-8000	Cable-CH3-03 (309224+170907)	Aug. 21, 2017	Aug. 20, 2018
Power Meter Anritsu	ML2495A	1232002	Dec. 07, 2017	Dec. 06, 2018
Power Sensor Anritsu	MA2411B	1207325	Dec. 07, 2017	Dec. 06, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
26GHz ~ 40GHz Amplifier Agilent	8449B	3008A01963	Aug. 21, 2017	Aug. 20, 2018
Temperature & Humidity Chamber	GTH-120-40-CP-AR	MAA1306-019	Sep. 08, 2017	Sep. 07, 2018
DC Power Supply Topward	33010D	807748	Oct. 25, 2016	Oct. 24, 2018
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HwaYa Chamber 3.

3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1 GHz if tested.

4. The IC Site Registration No. is IC7450F-3.

4.1.4 Test Procedures

For Radiated Emission below 30 MHz

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 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 9 kHz at frequency below 30 MHz.

For Radiated Emission above 30 MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) 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 detected 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:

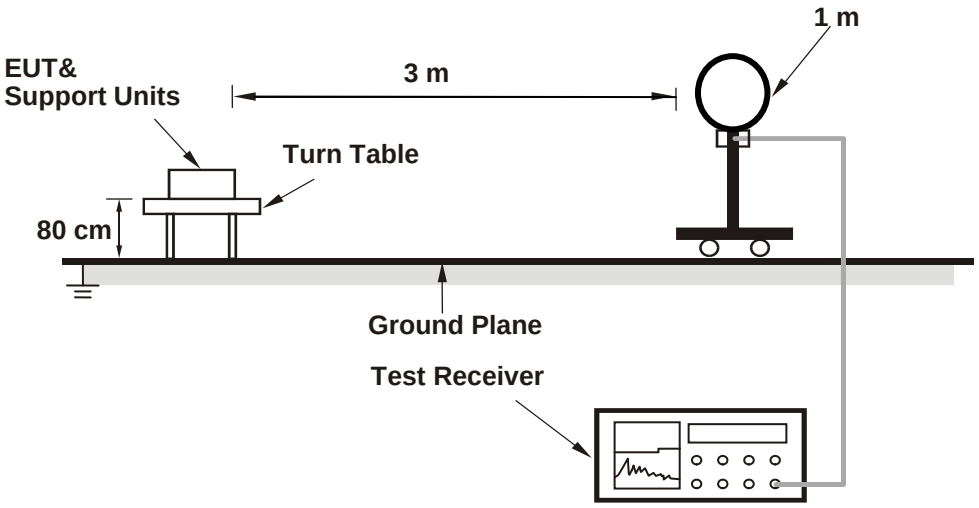
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (11a: RBW = 1 MHz, VBW = 1 kHz ; 11ac (VHT20): RBW = 1 MHz, VBW = 1 kHz ; 11ac (VHT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 1 kHz ; 11ac (VHT80+80): RBW = 1 MHz, VBW = 1 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

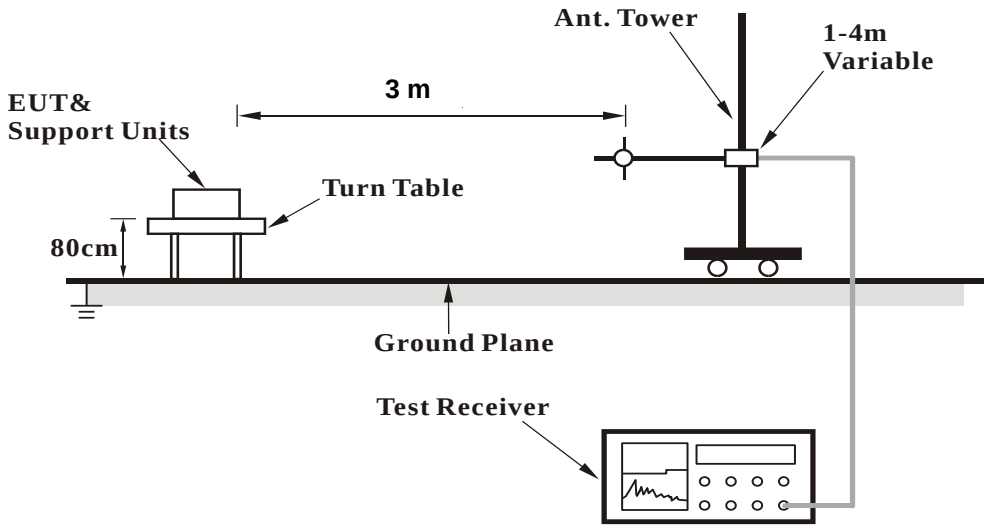
No deviation.

4.1.6 Test Setup

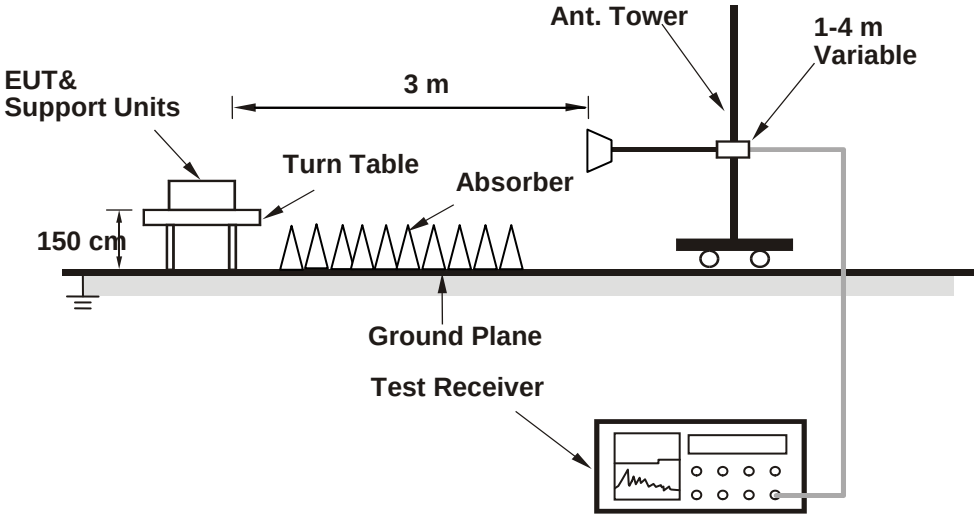
<Radiated Emission below 30 MHz>



<Radiated Emission 30 MHz to 1 GHz>



<Radiated Emission above 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.7 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.8 Test Results

Above 1 GHz Data：

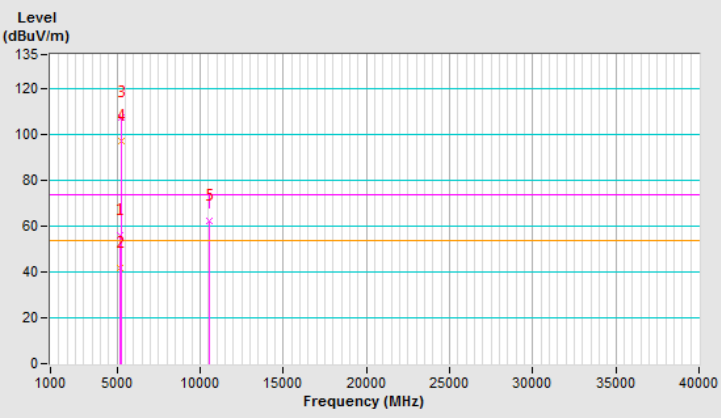
802.11a

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	55.8 PK	74.0	-18.2	2.11 H	141	51.9	3.9
2	5150.00	41.9 AV	54.0	-12.1	2.11 H	141	38.0	3.9
3	*5260.00	107.6 PK			2.49 H	129	68.2	39.4
4	*5260.00	97.0 AV			2.49 H	129	57.6	39.4
5	#10520.00	62.4 PK	68.2	-5.8	1.71 H	110	45.6	16.8

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.

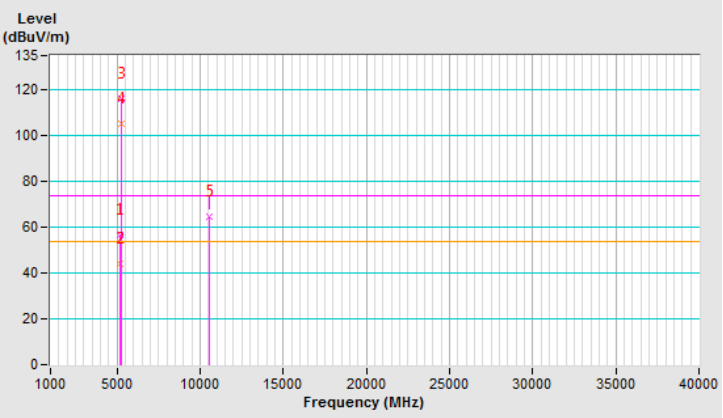


CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	56.4 PK	74.0	-17.6	1.62 V	7	52.5	3.9
2	5150.00	44.2 AV	54.0	-9.8	1.62 V	7	40.3	3.9
3	*5260.00	116.1 PK			1.65 V	167	76.7	39.4
4	*5260.00	105.1 AV			1.65 V	167	65.7	39.4
5	#10520.00	64.9 PK	68.2	-3.3	1.68 V	121	48.1	16.8

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.

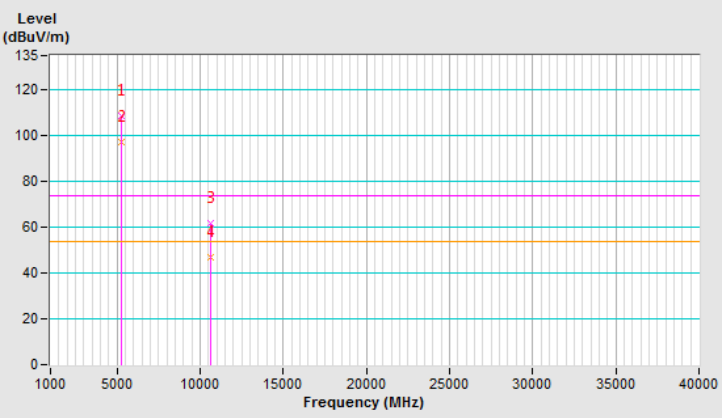


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	108.5 PK			2.41 H	143	69.1	39.4
2	*5300.00	97.4 AV			2.41 H	143	58.0	39.4
3	10600.00	61.9 PK	74.0	-12.1	1.81 H	121	44.9	17.0
4	10600.00	47.0 AV	54.0	-7.0	1.81 H	121	30.0	17.0

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.

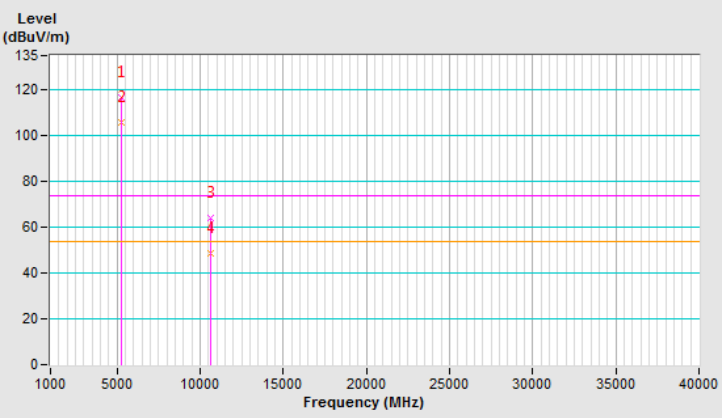


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.9 PK			1.62 V	169	77.5	39.4
2	*5300.00	105.9 AV			1.62 V	169	66.5	39.4
3	10600.00	63.8 PK	74.0	-10.2	2.19 V	114	46.8	17.0
4	10600.00	48.7 AV	54.0	-5.3	2.19 V	114	31.7	17.0

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.

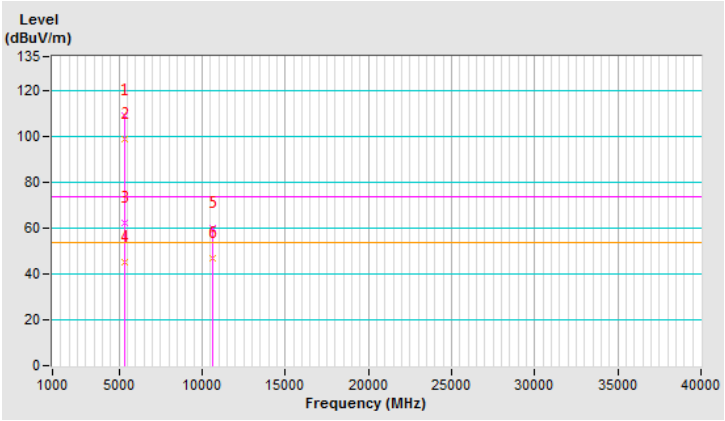


CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	109.1 PK			2.29 H	120	69.6	39.5
2	*5320.00	98.9 AV			2.29 H	120	59.4	39.5
3	5350.00	62.6 PK	74.0	-11.4	2.13 H	151	58.6	4.0
4	5350.00	45.1 AV	54.0	-8.9	2.13 H	151	41.1	4.0
5	10640.00	59.8 PK	74.0	-14.2	1.79 H	115	42.8	17.0
6	10640.00	47.1 AV	54.0	-6.9	1.79 H	115	30.1	17.0

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.

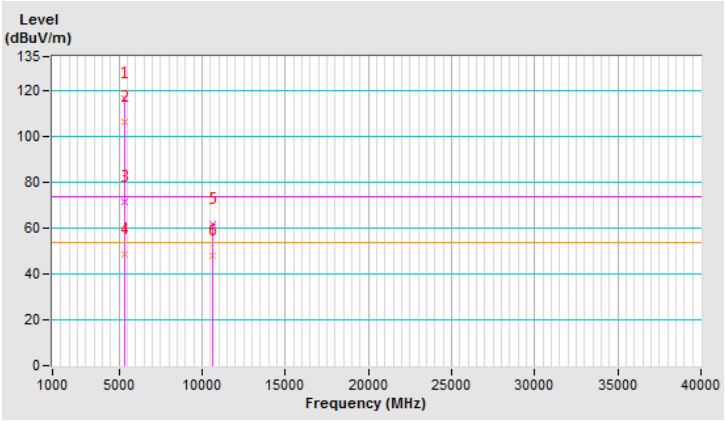


CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.9 PK			1.39 V	168	77.4	39.5
2	*5320.00	106.6 AV			1.39 V	168	67.1	39.5
3	5350.00	71.4 PK	74.0	-2.6	1.86 V	13	67.4	4.0
4	5350.00	48.9 AV	54.0	-5.1	1.86 V	13	44.9	4.0
5	10640.00	61.6 PK	74.0	-12.4	1.82 V	149	44.6	17.0
6	10640.00	47.9 AV	54.0	-6.1	1.82 V	149	30.9	17.0

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.

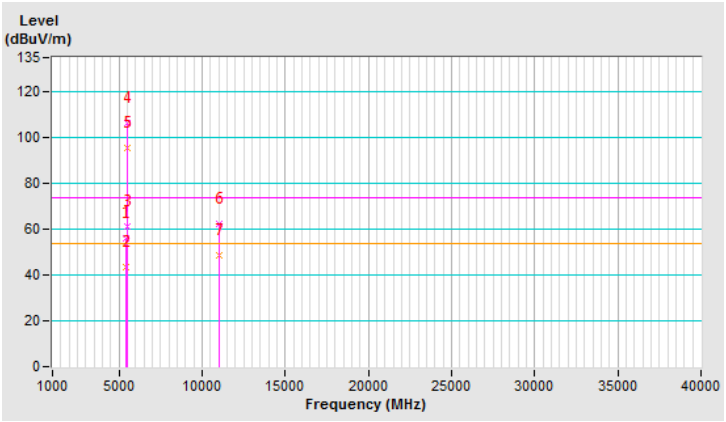


CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.9 PK	74.0	-18.1	2.10 H	155	51.5	4.4
2	5460.00	43.3 AV	54.0	-10.7	2.10 H	155	38.9	4.4
3	#5470.00	61.3 PK	68.2	-6.9	1.93 H	166	56.9	4.4
4	*5500.00	106.3 PK			2.65 H	173	66.2	40.1
5	*5500.00	95.6 AV			2.65 H	173	55.5	40.1
6	11000.00	62.5 PK	74.0	-11.5	2.71 H	105	43.8	18.7
7	11000.00	48.8 AV	54.0	-5.2	2.71 H	105	30.1	18.7

REMARKS:

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

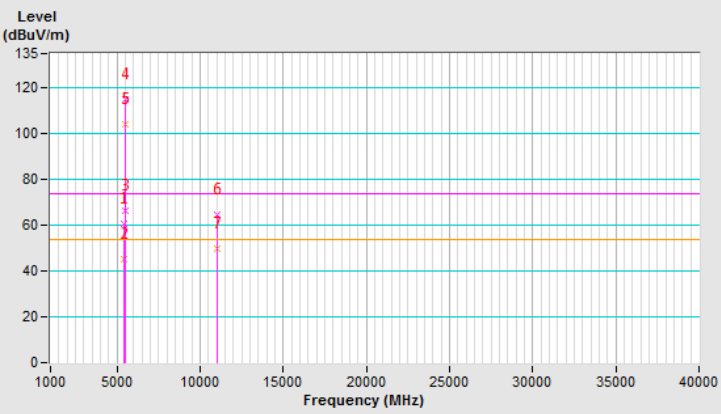


CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	60.4 PK	74.0	-13.6	1.69 V	133	56.0	4.4
2	5460.00	45.2 AV	54.0	-8.8	1.69 V	133	40.8	4.4
3	#5470.00	66.5 PK	68.2	-1.7	1.46 V	158	62.1	4.4
4	*5500.00	114.9 PK			1.70 V	1	74.8	40.1
5	*5500.00	104.1 AV			1.70 V	1	64.0	40.1
6	11000.00	64.6 PK	74.0	-9.4	1.45 V	81	45.9	18.7
7	11000.00	49.9 AV	54.0	-4.1	1.45 V	81	31.2	18.7

REMARKS:

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

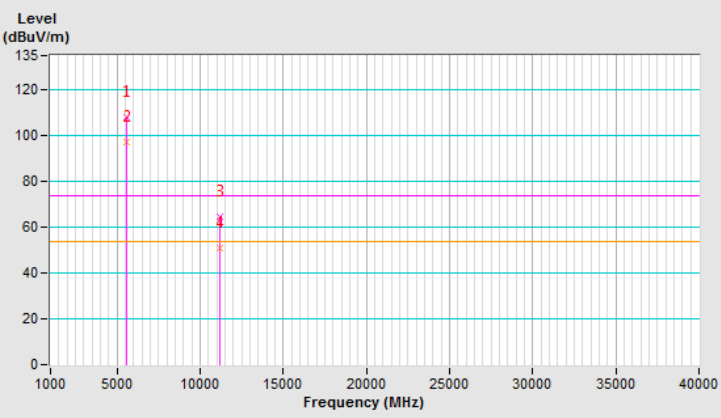


CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	108.4 PK			2.63 H	169	68.4	40.0
2	*5580.00	97.1 AV			2.63 H	169	57.1	40.0
3	11160.00	64.5 PK	74.0	-9.5	2.47 H	119	47.0	17.5
4	11160.00	50.9 AV	54.0	-3.1	2.47 H	119	33.4	17.5

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.

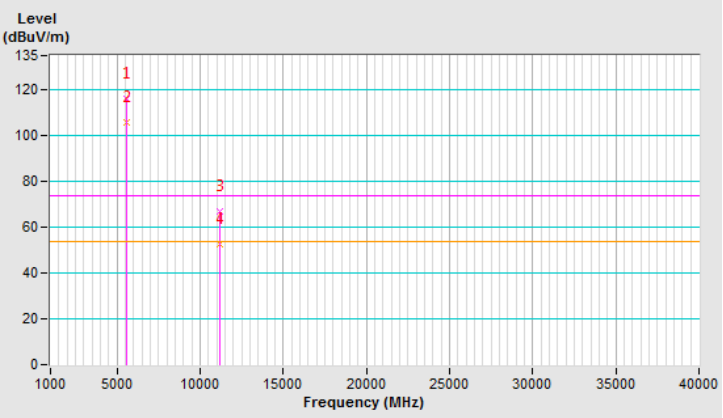


CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	116.2 PK			1.89 V	22	76.2	40.0
2	*5580.00	105.6 AV			1.89 V	22	65.6	40.0
3	11160.00	66.9 PK	74.0	-7.1	1.70 V	115	49.4	17.5
4	11160.00	52.5 AV	54.0	-1.5	1.70 V	115	35.0	17.5

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.

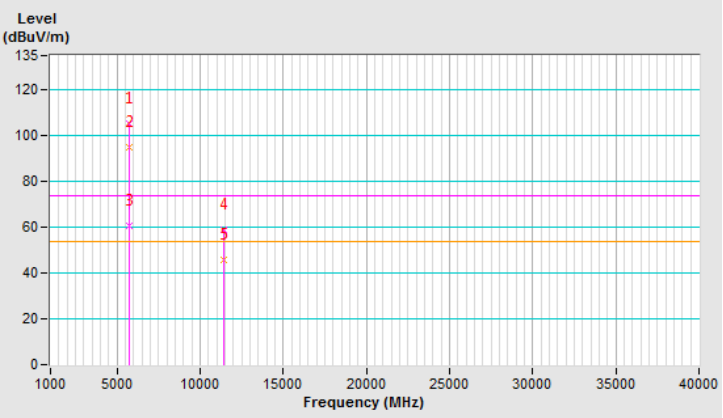


CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	105.4 PK			2.55 H	170	65.4	40.0
2	*5700.00	95.0 AV			2.55 H	170	55.0	40.0
3	#5725.00	60.4 PK	68.2	-7.8	2.03 H	133	56.0	4.4
4	11400.00	58.9 PK	74.0	-15.1	2.22 H	101	41.5	17.4
5	11400.00	45.7 AV	54.0	-8.3	2.22 H	101	28.3	17.4

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.

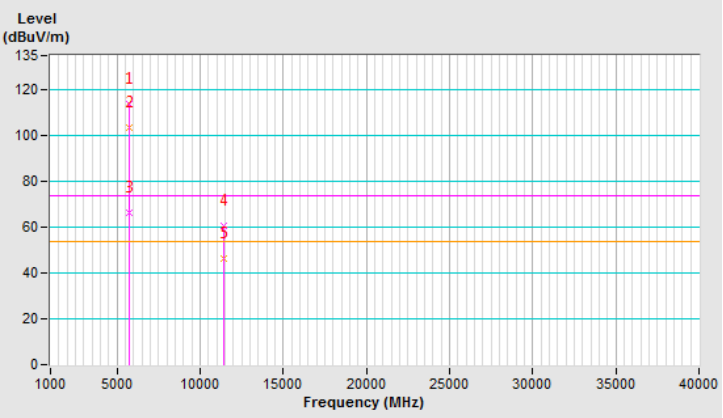


CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	113.8 PK			1.94 V	18	73.8	40.0
2	*5700.00	103.3 AV			1.94 V	18	63.3	40.0
3	#5725.00	66.5 PK	68.2	-1.7	1.59 V	45	62.1	4.4
4	11400.00	60.9 PK	74.0	-13.1	1.83 V	0	43.5	17.4
5	11400.00	46.3 AV	54.0	-7.7	1.83 V	0	28.9	17.4

REMARKS:

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



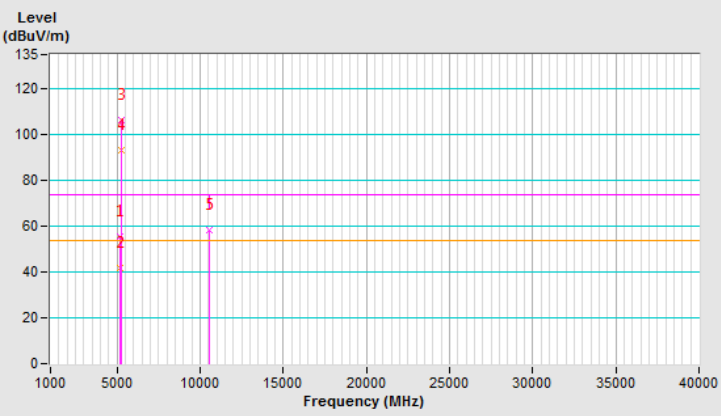
802.11ac (VHT20)

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	55.5 PK	74.0	-18.5	2.10 H	144	51.6	3.9
2	5150.00	42.0 AV	54.0	-12.0	2.10 H	144	38.1	3.9
3	*5260.00	106.3 PK			1.89 H	127	66.9	39.4
4	*5260.00	93.2 AV			1.89 H	127	53.8	39.4
5	#10520.00	58.1 PK	68.2	-10.1	2.09 H	131	41.3	16.8

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.

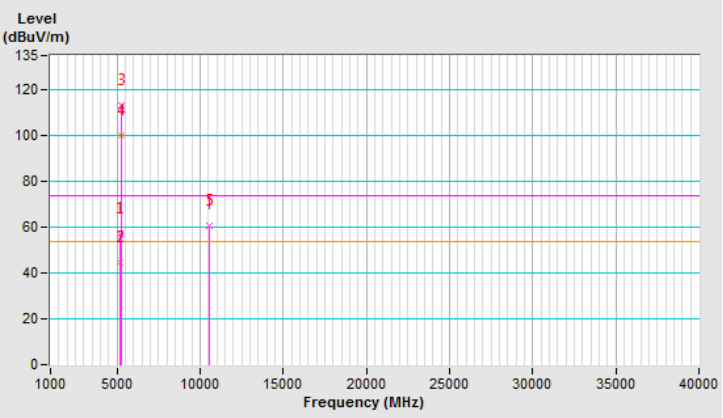


CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	57.3 PK	74.0	-16.7	1.77 V	357	53.4	3.9
2	5150.00	44.5 AV	54.0	-9.5	1.77 V	357	40.6	3.9
3	*5260.00	113.4 PK			1.63 V	9	74.0	39.4
4	*5260.00	100.0 AV			1.63 V	9	60.6	39.4
5	#10520.00	60.4 PK	68.2	-7.8	1.32 V	104	43.6	16.8

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.

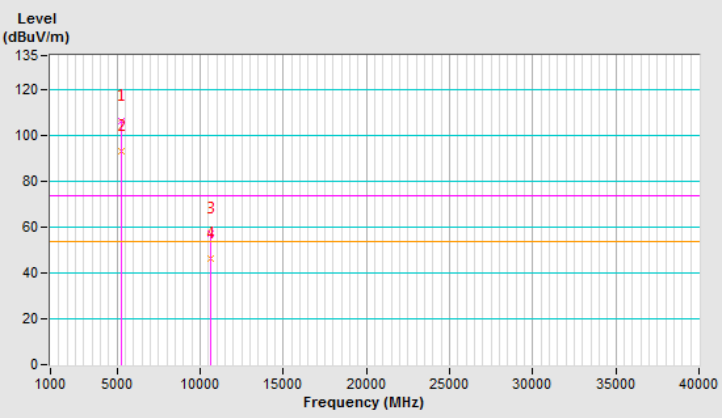


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	106.3 PK			2.13 H	147	66.9	39.4
2	*5300.00	93.3 AV			2.13 H	147	53.9	39.4
3	10600.00	57.2 PK	74.0	-16.8	1.97 H	139	40.2	17.0
4	10600.00	46.1 AV	54.0	-7.9	1.97 H	139	29.1	17.0

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.

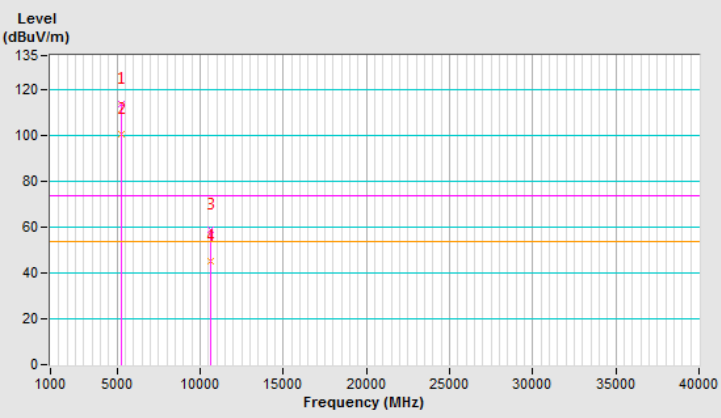


CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	113.6 PK			1.63 V	167	74.2	39.4
2	*5300.00	100.8 AV			1.63 V	167	61.4	39.4
3	10600.00	58.7 PK	74.0	-15.3	1.44 V	119	41.7	17.0
4	10600.00	45.0 AV	54.0	-9.0	1.44 V	119	28.0	17.0

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.

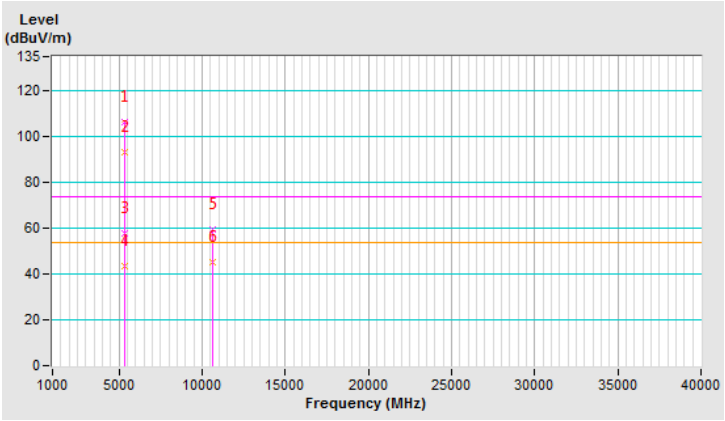


CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	106.2 PK			1.93 H	140	66.7	39.5
2	*5320.00	93.2 AV			1.93 H	140	53.7	39.5
3	5350.00	57.7 PK	74.0	-16.3	2.09 H	111	53.7	4.0
4	5350.00	43.5 AV	54.0	-10.5	2.09 H	111	39.5	4.0
5	10640.00	59.7 PK	74.0	-14.3	2.30 H	143	42.7	17.0
6	10640.00	45.1 AV	54.0	-8.9	2.30 H	143	28.1	17.0

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.

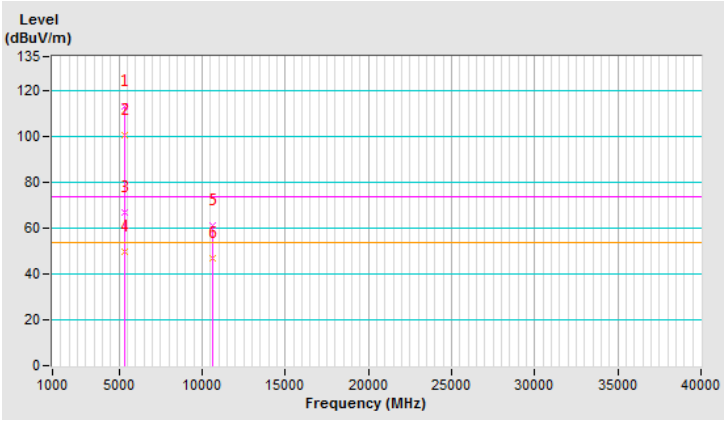


CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	113.4 PK			1.53 V	166	73.9	39.5
2	*5320.00	100.8 AV			1.53 V	166	61.3	39.5
3	5350.00	67.1 PK	74.0	-6.9	1.48 V	168	63.1	4.0
4	5350.00	49.5 AV	54.0	-4.5	1.48 V	168	45.5	4.0
5	10640.00	61.0 PK	74.0	-13.0	2.27 V	114	44.0	17.0
6	10640.00	46.7 AV	54.0	-7.3	2.27 V	114	29.7	17.0

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.

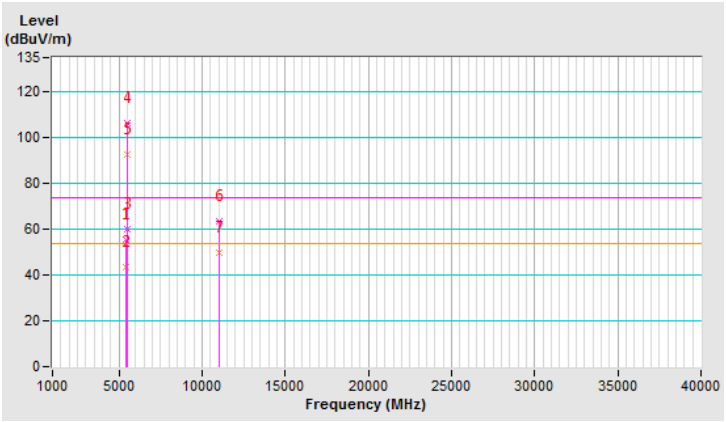


CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.7 PK	74.0	-18.3	1.77 H	21	51.3	4.4
2	5460.00	43.4 AV	54.0	-10.6	1.77 H	21	39.0	4.4
3	#5470.00	59.9 PK	68.2	-8.3	1.81 H	20	55.5	4.4
4	*5500.00	106.4 PK			1.69 H	40	66.3	40.1
5	*5500.00	92.6 AV			1.69 H	40	52.5	40.1
6	11000.00	63.5 PK	74.0	-10.5	1.61 H	133	44.8	18.7
7	11000.00	49.8 AV	54.0	-4.2	1.61 H	133	31.1	18.7

REMARKS:

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

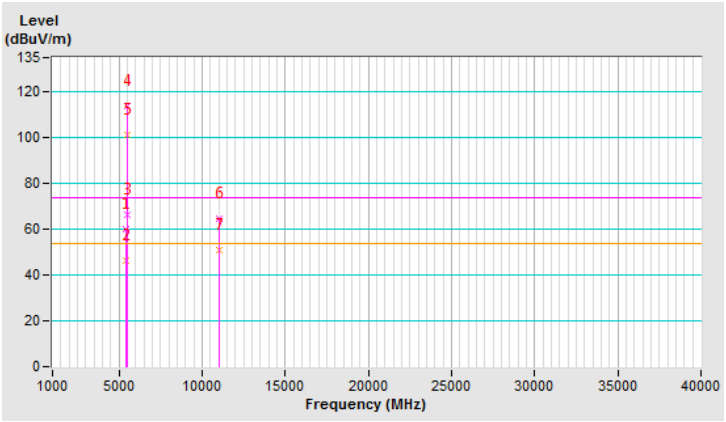


CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	60.1 PK	74.0	-13.9	2.21 V	357	55.7	4.4
2	5460.00	46.4 AV	54.0	-7.6	2.21 V	357	42.0	4.4
3	#5470.00	66.5 PK	68.2	-1.7	1.88 V	10	62.1	4.4
4	*5500.00	114.1 PK			1.53 V	9	74.0	40.1
5	*5500.00	101.2 AV			1.53 V	9	61.1	40.1
6	11000.00	64.9 PK	74.0	-9.1	2.05 V	73	46.2	18.7
7	11000.00	50.7 AV	54.0	-3.3	2.05 V	73	32.0	18.7

REMARKS:

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

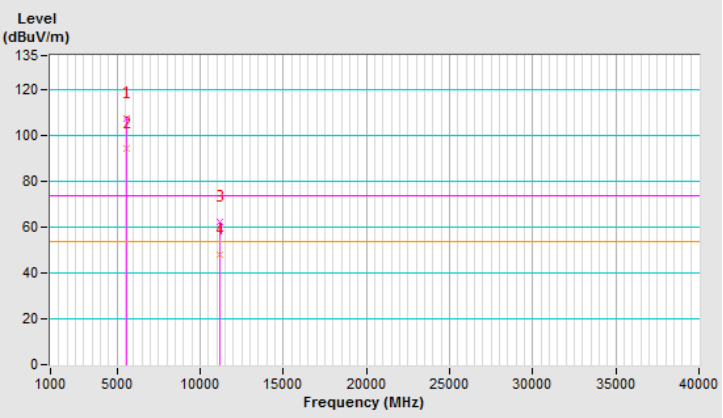


CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	107.5 PK			1.75 H	43	67.5	40.0
2	*5580.00	94.4 AV			1.75 H	43	54.4	40.0
3	11160.00	62.1 PK	74.0	-11.9	1.55 H	141	44.6	17.5
4	11160.00	48.2 AV	54.0	-5.8	1.55 H	141	30.7	17.5

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.

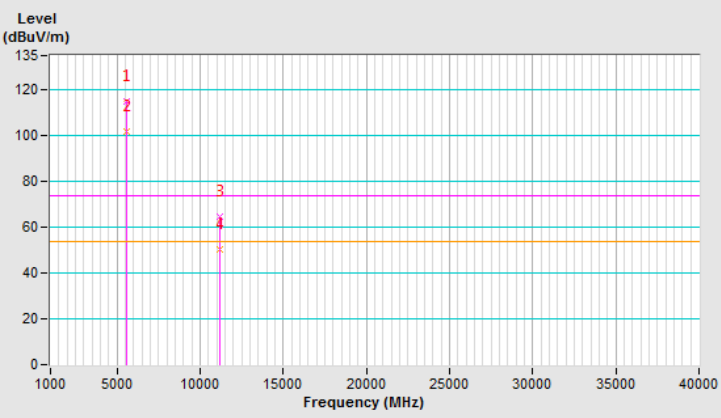


CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	114.7 PK			1.71 V	5	74.7	40.0
2	*5580.00	101.6 AV			1.71 V	5	61.6	40.0
3	11160.00	64.4 PK	74.0	-9.6	1.74 V	114	46.9	17.5
4	11160.00	50.3 AV	54.0	-3.7	1.74 V	114	32.8	17.5

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.

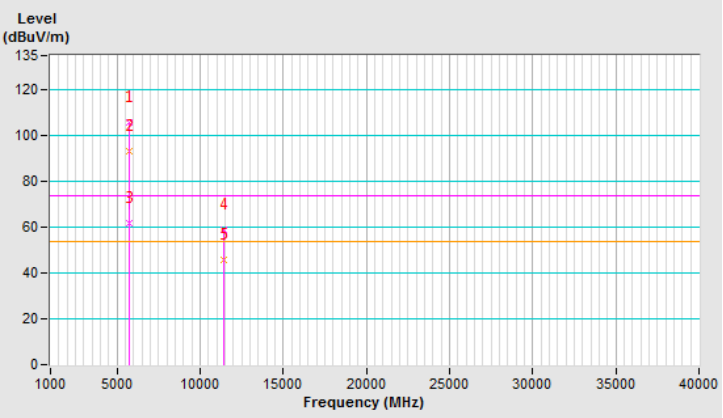


CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	106.1 PK			1.67 H	308	66.1	40.0
2	*5700.00	93.5 AV			1.67 H	308	53.5	40.0
3	#5725.00	61.5 PK	68.2	-6.7	1.77 H	288	57.1	4.4
4	11400.00	59.1 PK	74.0	-14.9	1.49 H	139	41.7	17.4
5	11400.00	45.5 AV	54.0	-8.5	1.49 H	139	28.1	17.4

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.

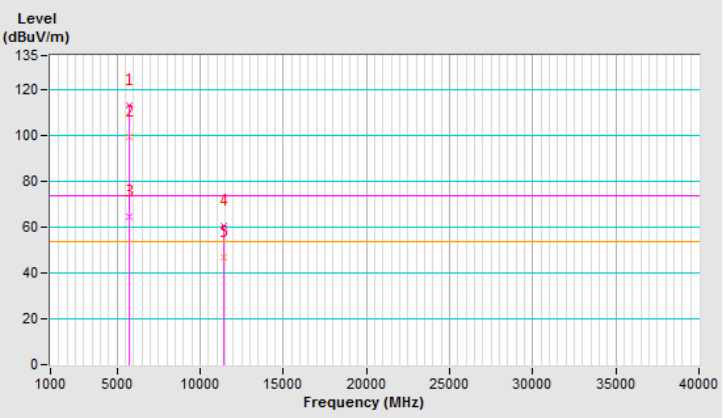


CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	113.3 PK			1.58 V	3	73.3	40.0
2	*5700.00	99.5 AV			1.58 V	3	59.5	40.0
3	#5725.00	64.7 PK	68.2	-3.5	1.57 V	15	60.3	4.4
4	11400.00	60.8 PK	74.0	-13.2	1.58 V	131	43.4	17.4
5	11400.00	46.7 AV	54.0	-7.3	1.58 V	131	29.3	17.4

REMARKS:

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



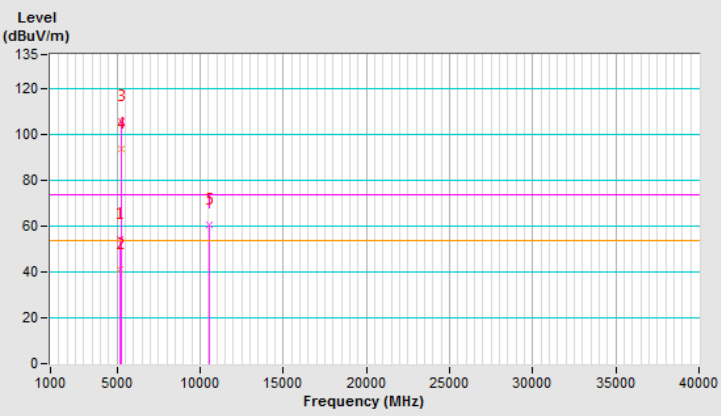
802.11ac (VHT40)

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	54.3 PK	74.0	-19.7	1.88 H	173	50.4	3.9
2	5150.00	41.2 AV	54.0	-12.8	1.88 H	173	37.3	3.9
3	*5270.00	105.9 PK			2.02 H	131	66.5	39.4
4	*5270.00	93.6 AV			2.02 H	131	54.2	39.4
5	#10540.00	60.6 PK	68.2	-7.6	2.22 H	150	43.7	16.9

REMARKS:

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

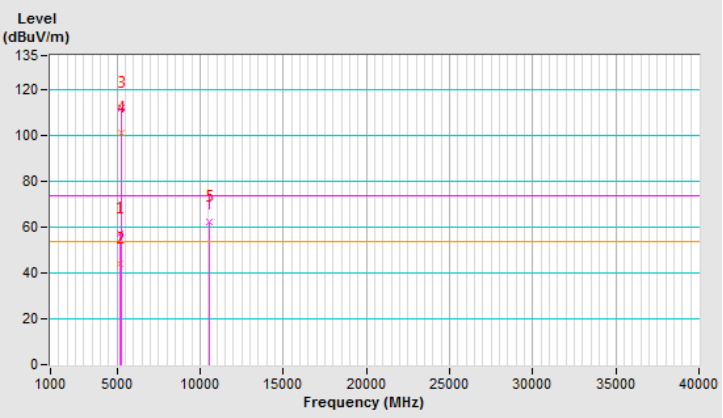


CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	57.1 PK	74.0	-16.9	1.63 V	166	53.2	3.9
2	5150.00	44.0 AV	54.0	-10.0	1.63 V	166	40.1	3.9
3	*5270.00	112.3 PK			1.10 V	350	72.9	39.4
4	*5270.00	101.1 AV			1.10 V	350	61.7	39.4
5	#10540.00	62.6 PK	68.2	-5.6	2.30 V	111	45.7	16.9

REMARKS:

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

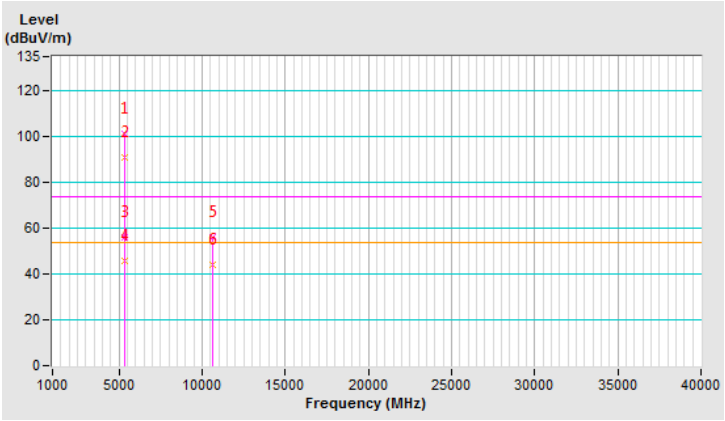


CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	101.2 PK			1.61 H	38	61.8	39.4
2	*5310.00	90.7 AV			1.61 H	38	51.3	39.4
3	5350.00	56.2 PK	74.0	-17.8	1.65 H	35	52.2	4.0
4	5350.00	45.5 AV	54.0	-8.5	1.65 H	35	41.5	4.0
5	10620.00	56.0 PK	74.0	-18.0	2.29 H	140	38.9	17.1
6	10620.00	44.3 AV	54.0	-9.7	2.29 H	140	27.2	17.1

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.

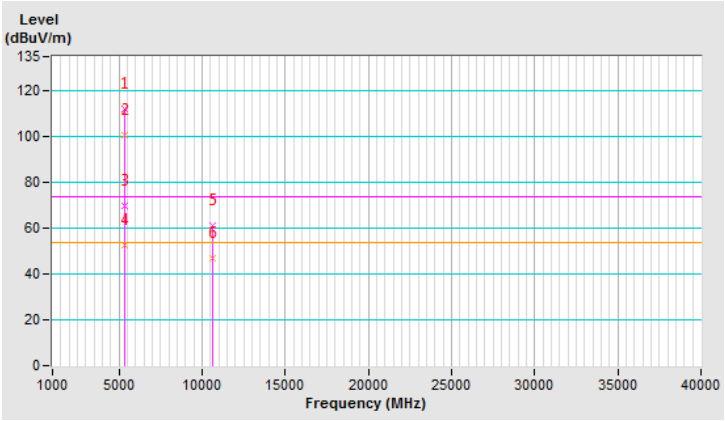


CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	112.4 PK			1.48 V	166	73.0	39.4
2	*5310.00	100.9 AV			1.48 V	166	61.5	39.4
3	5350.00	69.7 PK	74.0	-4.3	1.35 V	152	65.7	4.0
4	5350.00	52.6 AV	54.0	-1.4	1.35 V	152	48.6	4.0
5	10620.00	61.1 PK	74.0	-12.9	2.53 V	104	44.0	17.1
6	10620.00	47.1 AV	54.0	-6.9	2.53 V	104	30.0	17.1

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.

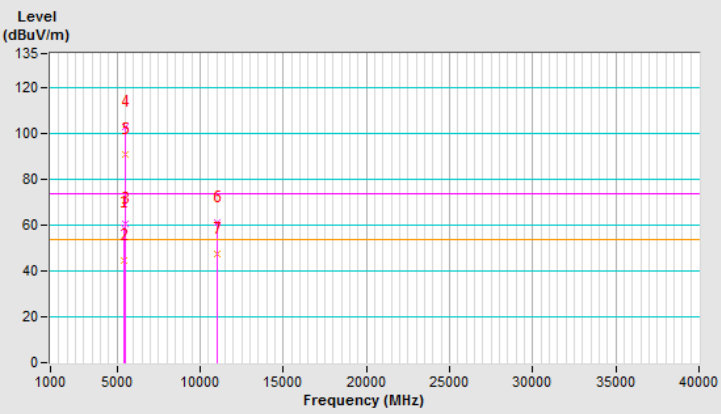


CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.9 PK	74.0	-15.1	1.88 H	193	54.5	4.4
2	5460.00	44.6 AV	54.0	-9.4	1.88 H	193	40.2	4.4
3	#5470.00	60.9 PK	68.2	-7.3	1.99 H	203	56.5	4.4
4	*5510.00	102.9 PK			1.81 H	179	62.8	40.1
5	*5510.00	91.1 AV			1.81 H	179	51.0	40.1
6	11020.00	61.2 PK	74.0	-12.8	2.22 H	153	42.8	18.4
7	11020.00	47.3 AV	54.0	-6.7	2.22 H	153	28.9	18.4

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.

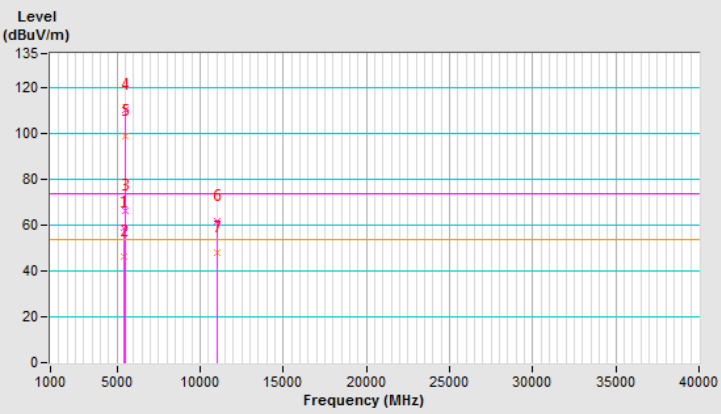


CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.9 PK	74.0	-15.1	1.66 V	18	54.5	4.4
2	5460.00	46.6 AV	54.0	-7.4	1.66 V	18	42.2	4.4
3	#5470.00	66.6 PK	68.2	-1.6	1.56 V	347	62.2	4.4
4	*5510.00	110.3 PK			1.70 V	355	70.2	40.1
5	*5510.00	99.1 AV			1.70 V	355	59.0	40.1
6	11020.00	61.9 PK	74.0	-12.1	1.81 V	58	43.5	18.4
7	11020.00	48.3 AV	54.0	-5.7	1.81 V	58	29.9	18.4

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.

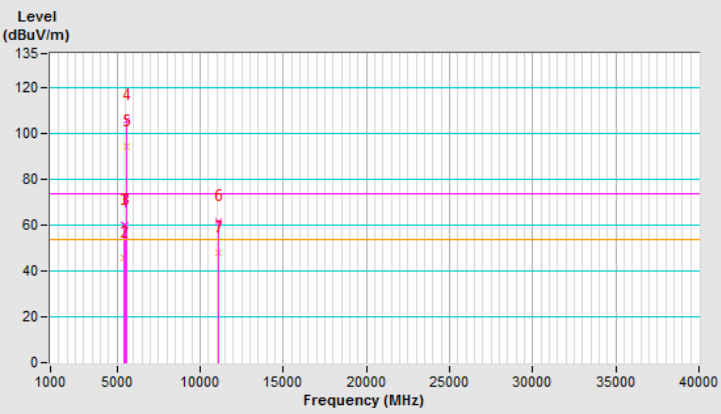


CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	5460.00	59.9 PK	74.0	-14.1	1.99 H	201	55.5	4.4
2	5460.00	45.5 AV	54.0	-8.5	1.99 H	201	41.1	4.4
3	#5470.00	59.9 PK	68.2	-8.3	1.99 H	188	55.5	4.4
4	*5550.00	106.0 PK			1.91 H	170	66.0	40.0
5	*5550.00	94.5 AV			1.91 H	170	54.5	40.0
6	11100.00	61.6 PK	74.0	-12.4	2.09 H	166	44.1	17.5
7	11100.00	47.8 AV	54.0	-6.2	2.09 H	166	30.3	17.5

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.

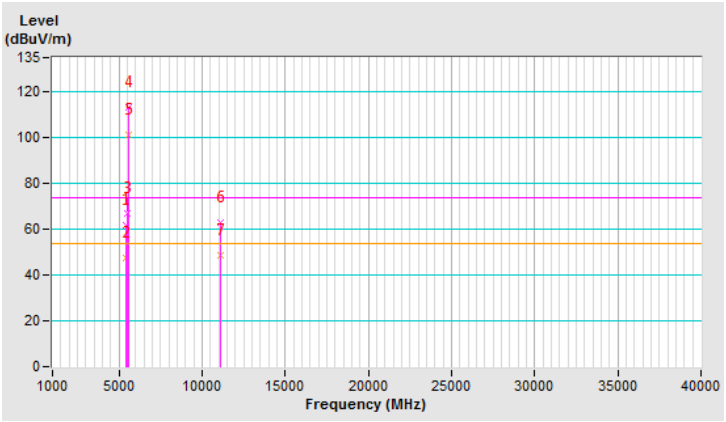


CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.7 PK	74.0	-12.3	1.55 V	357	57.3	4.4
2	5460.00	47.6 AV	54.0	-6.4	1.55 V	357	43.2	4.4
3	**#5470.00**	**67.0 PK**	**68.2**	**-1.2**	**1.69 V**	**19**	**62.6**	**4.4**
4	*5550.00	113.3 PK			1.66 V	8	73.3	40.0
5	*5550.00	101.5 AV			1.66 V	8	61.5	40.0
6	11100.00	62.9 PK	74.0	-11.1	1.93 V	77	45.4	17.5
7	11100.00	48.6 AV	54.0	-5.4	1.93 V	77	31.1	17.5

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.

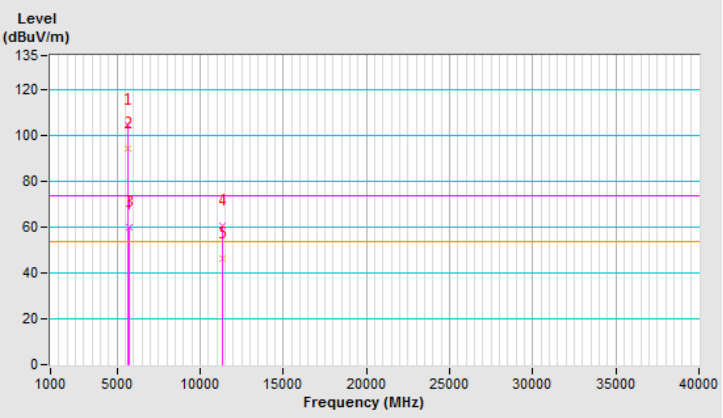


CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	104.4 PK			1.85 H	180	64.3	40.1
2	*5670.00	94.1 AV			1.85 H	180	54.0	40.1
3	#5725.00	59.9 PK	68.2	-8.3	1.77 H	163	55.5	4.4
4	11340.00	60.5 PK	74.0	-13.5	2.19 H	143	42.7	17.8
5	11340.00	46.3 AV	54.0	-7.7	2.19 H	143	28.5	17.8

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.

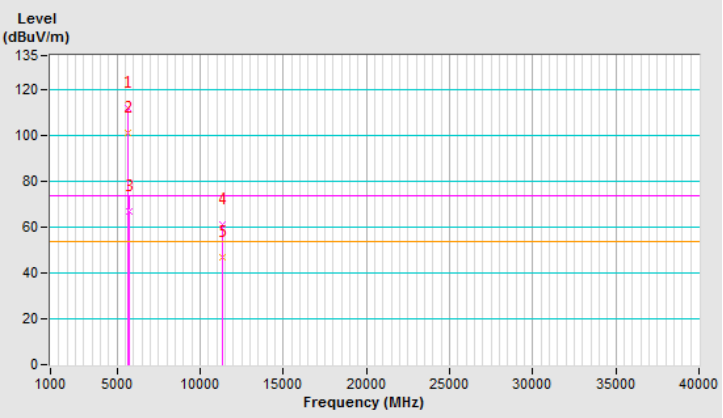


CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	112.4 PK			1.66 V	357	72.3	40.1
2	*5670.00	101.1 AV			1.66 V	357	61.0	40.1
3	#5725.00	66.8 PK	68.2	-1.4	1.94 V	6	62.4	4.4
4	11340.00	61.0 PK	74.0	-13.0	1.80 V	66	43.2	17.8
5	11340.00	46.9 AV	54.0	-7.1	1.80 V	66	29.1	17.8

REMARKS:

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



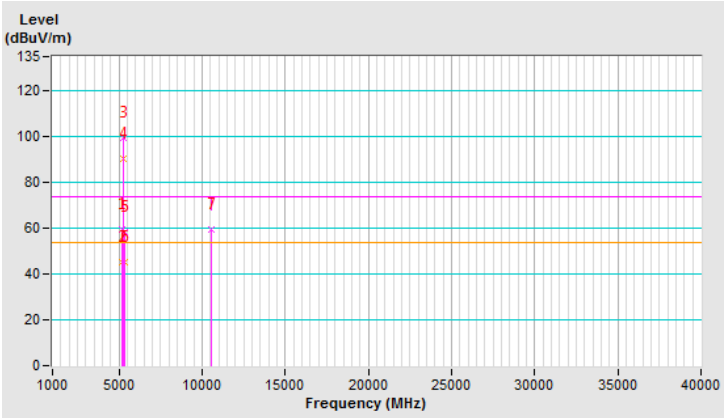
802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.4 PK	74.0	-14.6	2.13 H	191	55.5	3.9
2	5150.00	45.2 AV	54.0	-8.8	2.13 H	191	41.3	3.9
3	*5290.00	99.8 PK			2.08 H	173	60.4	39.4
4	*5290.00	90.2 AV			2.08 H	173	50.8	39.4
5	5350.00	58.1 PK	74.0	-15.9	1.89 H	203	54.1	4.0
6	5350.00	45.0 AV	54.0	-9.0	1.89 H	203	41.0	4.0
7	#10580.00	59.4 PK	68.2	-8.8	2.03 H	144	42.3	17.1

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.

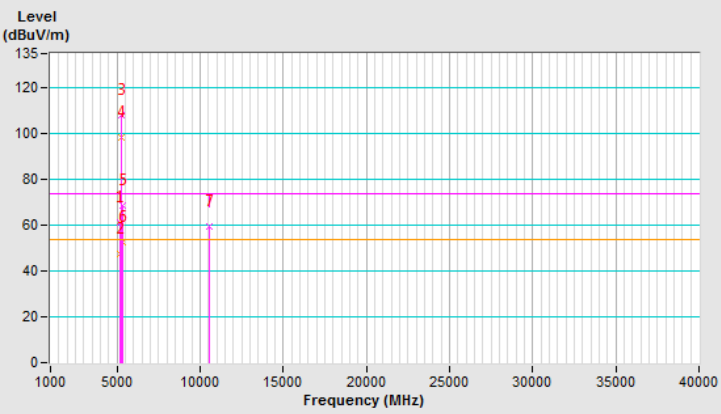


CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	61.4 PK	74.0	-12.6	1.88 V	303	57.5	3.9
2	5150.00	47.7 AV	54.0	-6.3	1.88 V	303	43.8	3.9
3	*5290.00	108.1 PK			1.67 V	283	68.7	39.4
4	*5290.00	98.4 AV			1.67 V	283	59.0	39.4
5	5350.00	68.9 PK	74.0	-5.1	2.17 V	0	64.9	4.0
6	5350.00	52.4 AV	54.0	-1.6	2.17 V	0	48.4	4.0
7	#10580.00	59.7 PK	68.2	-8.5	1.75 V	119	42.6	17.1

REMARKS:

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

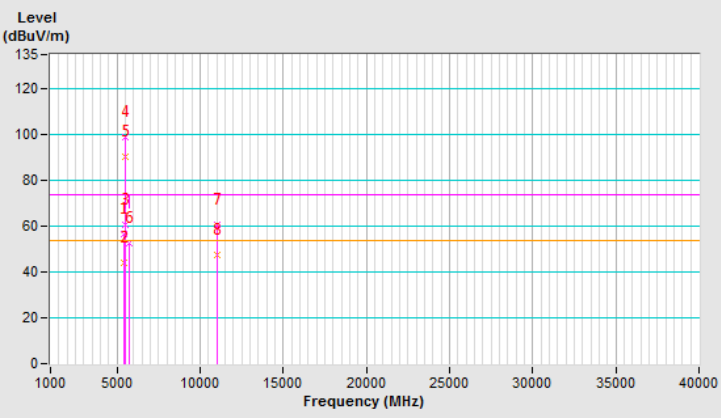


CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.5 PK	74.0	-17.5	1.69 H	303	52.1	4.4
2	5460.00	44.2 AV	54.0	-9.8	1.69 H	303	39.8	4.4
3	#5470.00	60.9 PK	68.2	-7.3	1.71 H	289	56.5	4.4
4	*5530.00	99.1 PK			1.81 H	303	59.0	40.1
5	*5530.00	90.4 AV			1.81 H	303	50.3	40.1
6	#5725.00	52.7 PK	68.2	-15.5	1.70 H	312	48.3	4.4
7	11060.00	60.8 PK	74.0	-13.2	2.10 H	161	42.9	17.9
8	11060.00	47.4 AV	54.0	-6.6	2.10 H	161	29.5	17.9

REMARKS:

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

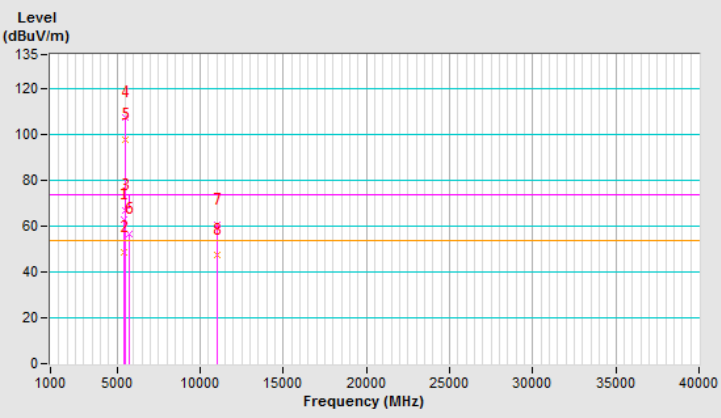


CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	63.0 PK	74.0	-11.0	1.63 V	159	58.6	4.4
2	5460.00	48.7 AV	54.0	-5.3	1.63 V	159	44.3	4.4
3	#5470.00	66.7 PK	68.2	-1.5	1.46 V	169	62.3	4.4
4	*5530.00	107.4 PK			1.82 V	358	67.3	40.1
5	*5530.00	98.1 AV			1.82 V	358	58.0	40.1
6	#5725.00	56.4 PK	68.2	-11.8	1.61 V	177	52.0	4.4
7	11060.00	60.9 PK	74.0	-13.1	2.03 V	101	43.0	17.9
8	11060.00	47.6 AV	54.0	-6.4	2.03 V	101	29.7	17.9

REMARKS:

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

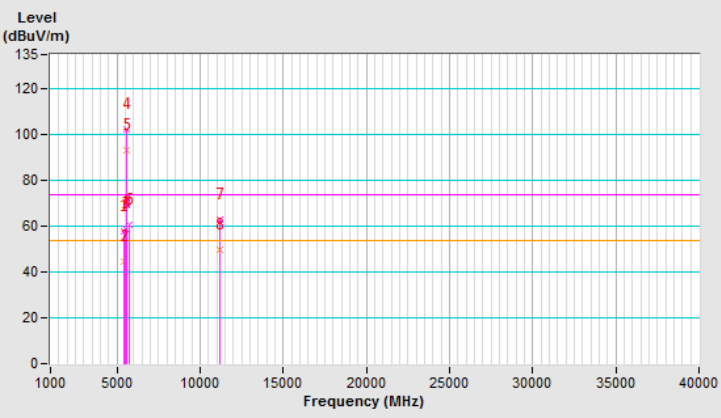


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.9 PK	74.0	-16.1	1.79 H	289	53.5	4.4
2	5460.00	44.4 AV	54.0	-9.6	1.79 H	289	40.0	4.4
3	#5470.00	58.9 PK	68.2	-9.3	1.71 H	333	54.5	4.4
4	*5610.00	102.6 PK			1.78 H	310	62.5	40.1
5	*5610.00	93.1 AV			1.78 H	310	53.0	40.1
6	#5725.00	60.9 PK	68.2	-7.3	1.61 H	291	56.5	4.4
7	11220.00	62.7 PK	74.0	-11.3	1.91 H	147	45.0	17.7
8	11220.00	49.9 AV	54.0	-4.1	1.91 H	147	32.2	17.7

REMARKS:

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

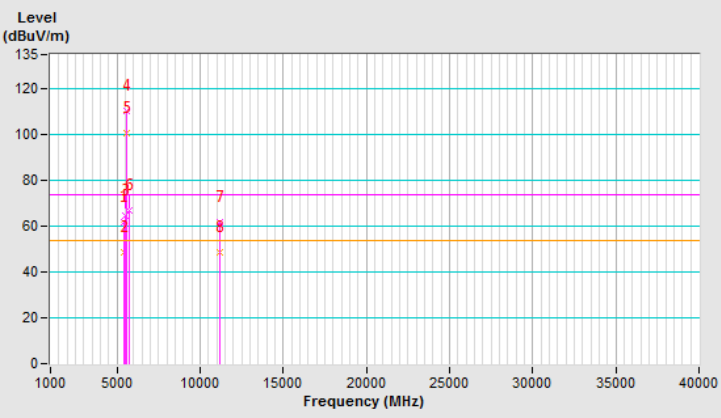


CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.9 PK	74.0	-12.1	1.40 V	12	57.5	4.4
2	5460.00	48.7 AV	54.0	-5.3	1.40 V	12	44.3	4.4
3	#5470.00	64.9 PK	68.2	-3.3	1.45 V	357	60.5	4.4
4	*5610.00	110.3 PK			1.87 V	357	70.2	40.1
5	*5610.00	100.6 AV			1.87 V	357	60.5	40.1
6	#5725.00	66.7 PK	68.2	-1.5	1.25 V	1	62.3	4.4
7	11220.00	61.9 PK	74.0	-12.1	1.99 V	123	44.2	17.7
8	11220.00	48.7 AV	54.0	-5.3	1.99 V	123	31.0	17.7

REMARKS:

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



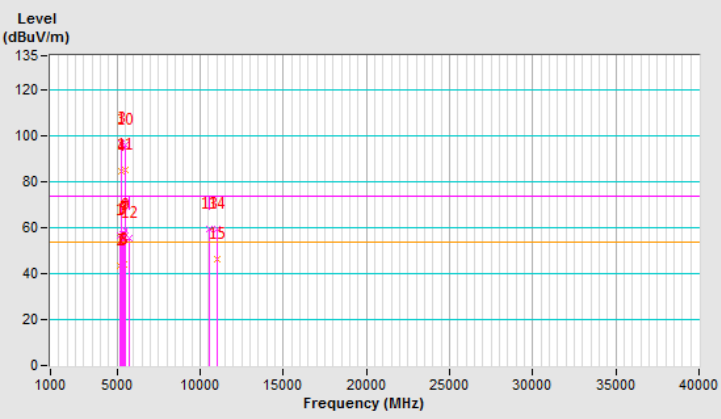
802.11ac (VHT80+80)

CHANNEL	TX Channel 58+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	5150.00	56.5 PK	74.0	-17.5	1.86 H	274	52.6	3.9
2	5150.00	43.7 AV	54.0	-10.3	1.86 H	274	39.8	3.9
3	*5290.00	96.9 PK			1.99 H	129	57.5	39.4
4	*5290.00	84.8 AV			1.99 H	129	45.4	39.4
5	5350.00	57.3 PK	74.0	-16.7	1.88 H	201	53.3	4.0
6	5350.00	43.6 AV	54.0	-10.4	1.88 H	201	39.6	4.0
7	5460.00	57.7 PK	74.0	-16.3	1.86 H	179	53.3	4.4
8	5460.00	44.3 AV	54.0	-9.7	1.86 H	179	39.9	4.4
9	#5470.00	59.0 PK	68.2	-9.2	1.96 H	180	54.6	4.4
10	*5530.00	96.0 PK			1.98 H	316	55.9	40.1
11	*5530.00	85.0 AV			1.98 H	316	44.9	40.1
12	#5725.00	55.4 PK	68.2	-12.8	1.78 H	186	51.0	4.4
13	#10580.00	59.3 PK	68.2	-8.9	2.53 H	196	42.2	17.1
14	11060.00	59.7 PK	74.0	-14.3	2.23 H	215	41.8	17.9
15	11060.00	46.5 AV	54.0	-7.5	2.23 H	215	28.6	17.9

REMARKS:

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

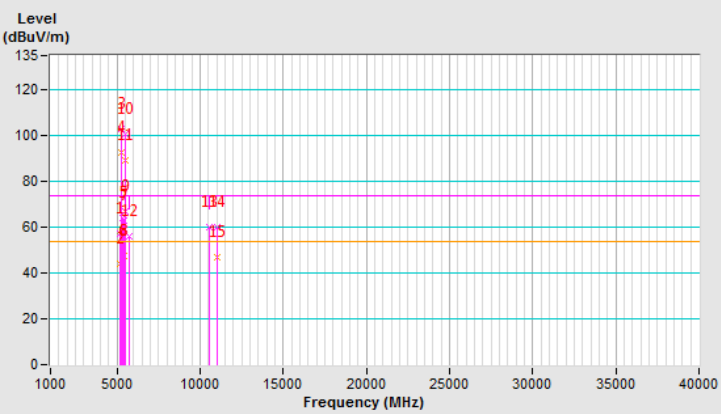


CHANNEL	TX Channel 58+106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	57.0 PK	74.0	-17.0	1.73 V	296	53.1	3.9
2	5150.00	44.1 AV	54.0	-9.9	1.73 V	296	40.2	3.9
3	*5290.00	102.9 PK			2.13 V	12	63.5	39.4
4	*5290.00	92.4 AV			2.13 V	12	53.0	39.4
5	5350.00	64.0 PK	74.0	-10.0	1.36 V	351	60.0	4.0
6	5350.00	47.7 AV	54.0	-6.3	1.36 V	351	43.7	4.0
7	5460.00	62.7 PK	74.0	-11.3	1.95 V	251	58.3	4.4
8	5460.00	47.6 AV	54.0	-6.4	1.95 V	251	43.2	4.4
9	#5470.00	66.7 PK	68.2	-1.5	1.92 V	245	62.3	4.4
10	*5530.00	100.6 PK			2.15 V	13	60.5	40.1
11	*5530.00	89.2 AV			2.15 V	13	49.1	40.1
12	#5725.00	56.0 PK	68.2	-12.2	2.12 V	285	51.6	4.4
13	#10580.00	60.0 PK	68.2	-8.2	2.32 V	256	42.9	17.1
14	11060.00	59.9 PK	74.0	-14.1	1.79 V	266	42.0	17.9
15	11060.00	47.0 AV	54.0	-7.0	1.79 V	266	29.1	17.9

REMARKS:

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

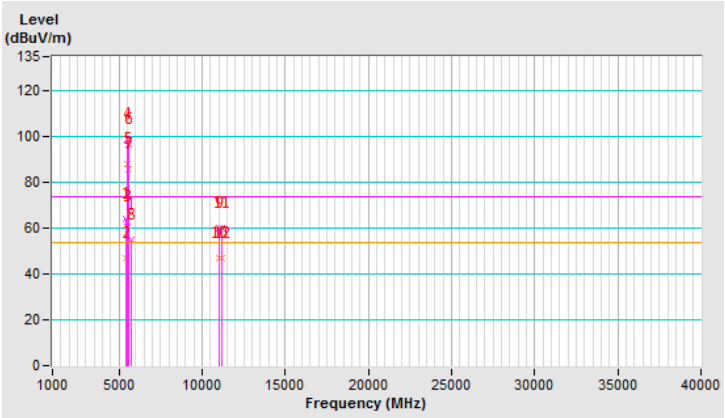


CHANNEL	TX Channel 106+122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	64.2 PK	74.0	-9.8	1.42 H	181	59.8	4.4
2	5460.00	46.9 AV	54.0	-7.1	1.42 H	181	42.5	4.4
3	#5470.00	63.0 PK	68.2	-5.2	1.38 H	179	58.6	4.4
4	*5530.00	99.1 PK			2.63 H	179	59.0	40.1
5	*5530.00	87.9 AV			2.63 H	179	47.8	40.1
6	*5610.00	96.4 PK			2.50 H	164	56.3	40.1
7	*5610.00	85.9 AV			2.50 H	164	45.8	40.1
8	#5725.00	55.2 PK	68.2	-13.0	2.50 H	191	50.8	4.4
9	11060.00	60.2 PK	74.0	-13.8	2.49 H	185	42.3	17.9
10	11060.00	46.7 AV	54.0	-7.3	2.49 H	185	28.8	17.9
11	11220.00	60.3 PK	74.0	-13.7	2.56 H	154	42.6	17.7
12	11220.00	47.0 AV	54.0	-7.0	2.56 H	154	29.3	17.7

REMARKS:

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

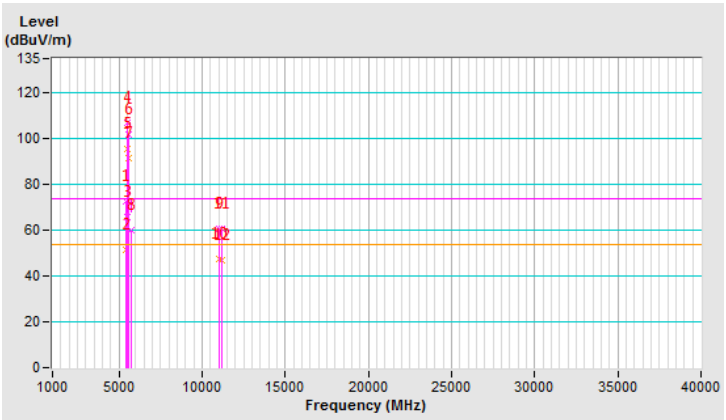


CHANNEL	TX Channel 106+122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

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	72.6 PK	74.0	-1.4	1.57 V	189	68.2	4.4
2	5460.00	51.4 AV	54.0	-2.6	1.57 V	189	47.0	4.4
3	#5470.00	66.0 PK	68.2	-2.2	1.66 V	187	61.6	4.4
4	*5530.00	106.7 PK			1.78 V	189	66.6	40.1
5	*5530.00	95.7 AV			1.78 V	189	55.6	40.1
6	*5610.00	101.9 PK			1.64 V	2	61.8	40.1
7	*5610.00	91.7 AV			1.64 V	2	51.6	40.1
8	#5725.00	59.9 PK	68.2	-8.3	1.79 V	247	55.5	4.4
9	11060.00	60.5 PK	74.0	-13.5	1.98 V	291	42.6	17.9
10	11060.00	47.4 AV	54.0	-6.6	1.98 V	291	29.5	17.9
11	11220.00	60.4 PK	74.0	-13.6	1.77 V	284	42.7	17.7
12	11220.00	47.1 AV	54.0	-6.9	1.77 V	284	29.4	17.7

REMARKS:

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



9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

30 MHz ~ 1 GHz Worst-Case Data:

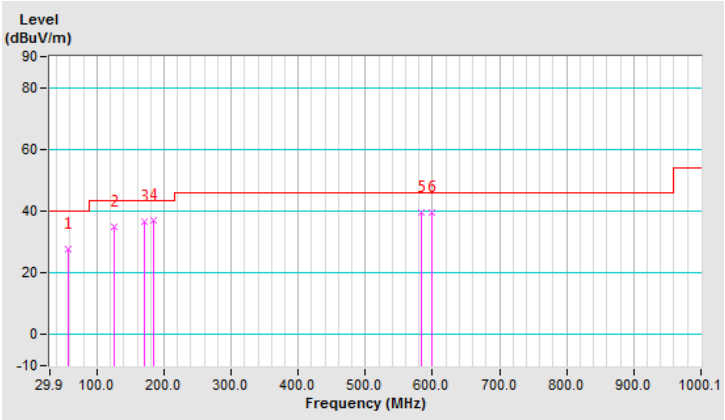
802.11ac (VHT40)

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 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	57.12	27.8 QP	40.0	-12.2	1.99 H	349	37.3	-9.5
2	125.17	35.1 QP	43.5	-8.4	1.50 H	248	46.0	-10.9
3	169.89	36.5 QP	43.5	-7.0	1.99 H	268	45.4	-8.9
4	183.50	37.2 QP	43.5	-6.3	1.50 H	258	47.6	-10.4
5	584.02	39.6 QP	46.0	-6.4	1.50 H	123	40.6	-1.0
6	599.58	39.5 QP	46.0	-6.5	1.50 H	132	39.9	-0.4

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

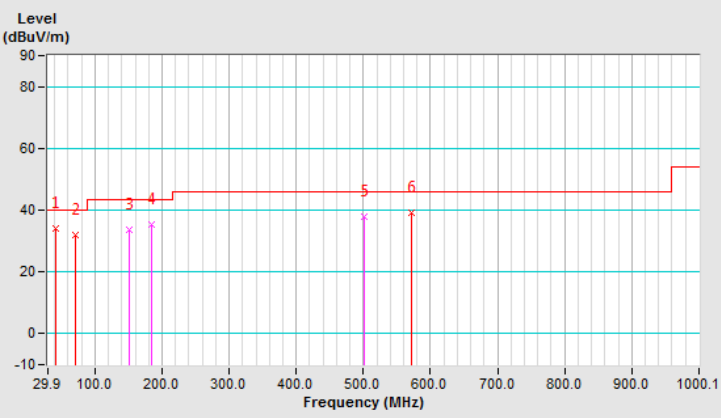


CHANNEL	TX Channel 110	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

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	41.66	33.9 QP	40.0	-6.1	1.00 V	256	43.6	-9.7
2	70.44	32.0 QP	40.0	-8.0	1.14 V	0	43.2	-11.2
3	150.45	33.6 QP	43.5	-9.9	1.00 V	5	42.3	-8.7
4	183.50	35.2 QP	43.5	-8.3	1.00 V	199	45.6	-10.4
5	500.42	37.8 QP	46.0	-8.2	1.00 V	79	40.7	-2.9
6	571.13	39.3 QP	46.0	-6.7	1.00 V	91	40.8	-1.5

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



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 0.50 MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date of Calibration	Due Date of Calibration
Test Receiver ROHDE & SCHWARZ	ESR3	102412	Feb. 08, 2018	Feb. 07, 2019
RF signal cable Woken	5D-FB	Cable-cond2-01	Sep. 08, 2017	Sep. 07, 2018
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Feb. 05, 2018	Feb. 04, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 13, 2018	Aug. 12, 2019
Software ADT	BV ADT_Cond_ V7.3.7.4	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

4.2.3 Test Procedures

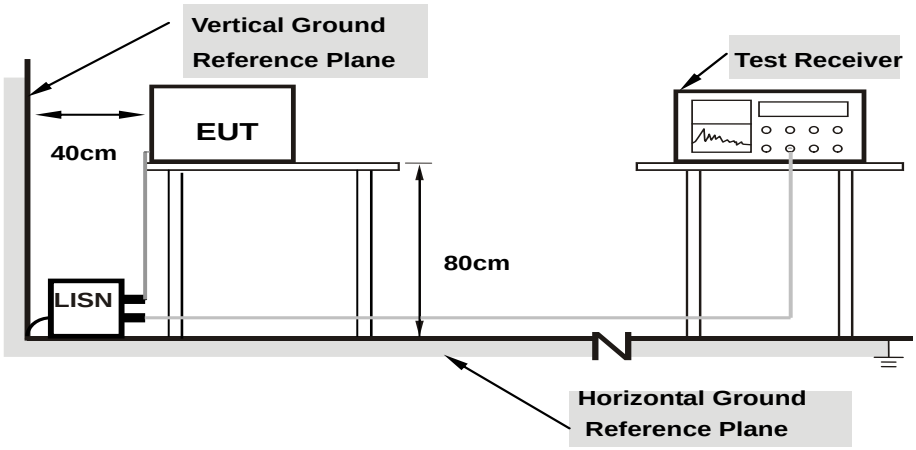
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit -20 dB) 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.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80
from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

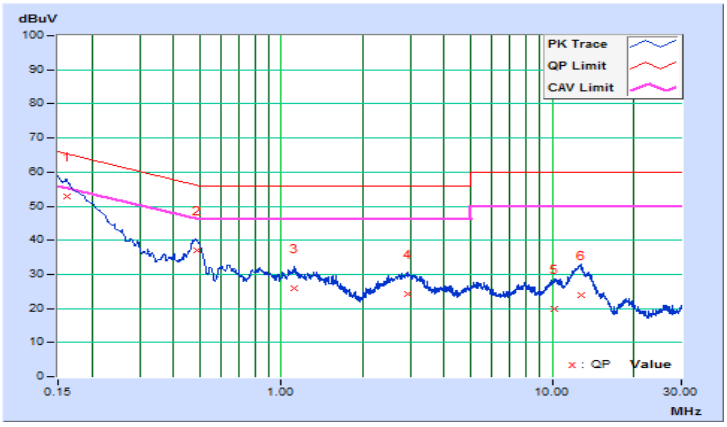
4.2.7 Test Results

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23℃, 66%RH
Tested by	Adair Peng	Test Date	2018/7/17

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16093	10.25	42.48	24.40	52.73	34.65	65.42	55.42	-12.69	-20.77
2	0.48780	10.28	26.72	17.36	37.00	27.64	56.21	46.21	-19.21	-18.57
3	1.11525	10.33	15.76	7.43	26.09	17.76	56.00	46.00	-29.91	-28.24
4	2.92209	10.41	13.70	7.94	24.11	18.35	56.00	46.00	-31.89	-27.65
5	10.22550	10.58	9.20	4.45	19.78	15.03	60.00	50.00	-40.22	-34.97
6	12.75225	10.64	13.42	7.17	24.06	17.81	60.00	50.00	-35.94	-32.19

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

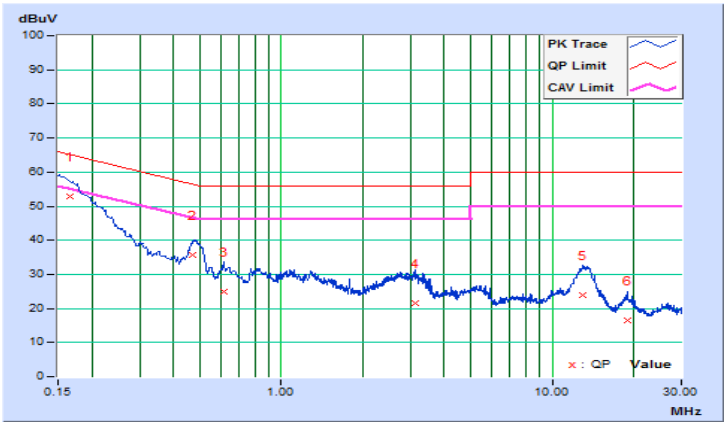


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23℃, 66%RH
Tested by	Adair Peng	Test Date	2018/7/17

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.16575**	**10.26**	**42.50**	**24.87**	**52.76**	**35.13**	**65.17**	**55.17**	**-12.41**	**-20.04**
2	0.47259	10.29	25.43	16.13	35.72	26.42	56.47	46.47	-20.75	-20.05
3	0.61575	10.30	14.57	5.28	24.87	15.58	56.00	46.00	-31.13	-30.42
4	3.13801	10.44	11.05	4.77	21.49	15.21	56.00	46.00	-34.51	-30.79
5	12.96825	10.74	13.09	7.66	23.83	18.40	60.00	50.00	-36.17	-31.60
6	19.06350	10.96	5.44	2.22	16.40	13.18	60.00	50.00	-43.60	-36.82

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 ≦ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250 mW (24 dBm)
U-NII-2A	√		250 mW (24 dBm) or 11 dBm + 10 log B*
U-NII-2C	√		250 mW (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 $N_{ANT} \leq 4$;

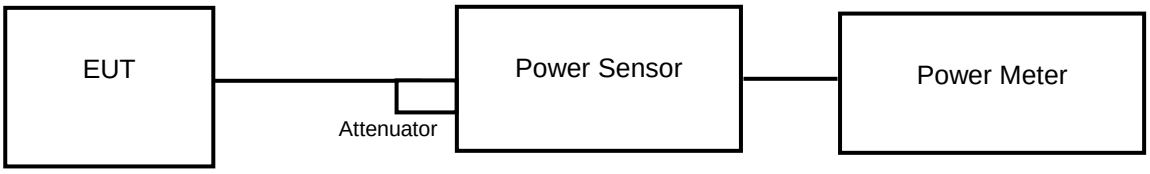
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};

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

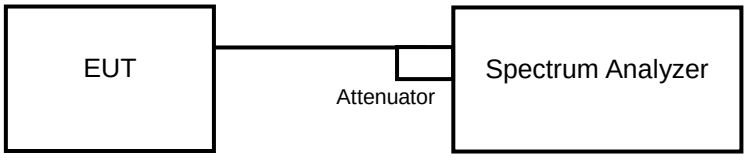
For power measurements on all other devices: Array Gain = 10 log(N_{ANT}/N_{SS}) dB.

4.3.2 Test Setup

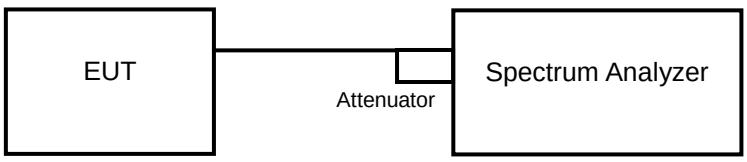
<Power Output Measurement>



or



<26 dB Bandwidth>



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

Average Power Measurement

<802.11a, 802.11ac (VHT20), 802.11ac (VHT40)>

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.

<802.11ac (VHT80), 802.11ac (VHT80+80)>

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz.
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW.
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS.
i. Trace mode = max hold.
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

26 dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Results

Power Output:

CDD Mode

802.11a

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	14.44	13.81	14.02	13.92	101.736	20.07	24	Pass
60	5300	14.26	13.98	13.77	14.05	100.905	20.04	24	Pass
64	5320	14.27	14.16	13.72	14.02	101.577	20.07	24	Pass
100	5500	12.21	12.47	12.29	12.37	68.495	18.36	24	Pass
116	5580	13.78	13.91	13.74	13.28	93.422	19.70	24	Pass
140	5700	12.25	12.41	12.26	11.96	66.737	18.24	24	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (24.66) = 24.92 dBm > 24 dBm.
2. 11 dBm + 10log (24.72) = 24.93 dBm > 24 dBm.
3. 11 dBm + 10log (20.08) = 24.03 dBm > 24 dBm.
4. 11 dBm + 10log (20.01) = 24.01 dBm > 24 dBm.
5. 11 dBm + 10log (30.10) = 25.79 dBm > 24 dBm.
6. 11 dBm + 10log (20.09) = 24.03 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (24.63) = 24.91 dBm > 24 dBm.
2. 11 dBm + 10log (23.76) = 24.76 dBm > 24 dBm.
3. 11 dBm + 10log (20.40) = 24.10 dBm > 24 dBm.
4. 11 dBm + 10log (20.29) = 24.07 dBm > 24 dBm.
5. 11 dBm + 10log (23.69) = 24.75 dBm > 24 dBm.
6. 11 dBm + 10log (20.32) = 24.08 dBm > 24 dBm.

Chain 2

1. 11 dBm + 10log (28.78) = 25.59 dBm > 24 dBm.
2. 11 dBm + 10log (27.75) = 25.43 dBm > 24 dBm.
3. 11 dBm + 10log (20.19) = 24.05 dBm > 24 dBm.
4. 11 dBm + 10log (20.11) = 24.03 dBm > 24 dBm.
5. 11 dBm + 10log (25.76) = 25.11 dBm > 24 dBm.
6. 11 dBm + 10log (20.14) = 24.04 dBm > 24 dBm.

Chain 3

1. 11 dBm + 10log (26.05) = 25.16 dBm > 24 dBm.
2. 11 dBm + 10log (27.68) = 25.42 dBm > 24 dBm.
3. 11 dBm + 10log (20.14) = 24.04 dBm > 24 dBm.
4. 11 dBm + 10log (20.35) = 24.09 dBm > 24 dBm.
5. 11 dBm + 10log (29.27) = 25.66 dBm > 24 dBm.
6. 11 dBm + 10log (20.15) = 24.04 dBm > 24 dBm.

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	14.14	14.20	13.85	13.91	101.115	20.05	24	Pass
60	5300	14.34	14.25	13.75	13.82	101.584	20.07	24	Pass
64	5320	14.39	14.30	13.74	13.78	101.931	20.08	24	Pass
100	5500	14.66	14.85	14.42	14.77	117.452	20.70	24	Pass
116	5580	14.34	14.08	13.85	13.90	101.563	20.07	24	Pass
140	5700	14.35	13.99	13.10	13.31	94.134	19.74	24	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (20.57) = 24.13 dBm > 24 dBm.
2. 11 dBm + 10log (20.47) = 24.11 dBm > 24 dBm.
3. 11 dBm + 10log (20.52) = 24.12 dBm > 24 dBm.
4. 11 dBm + 10log (20.53) = 24.12 dBm > 24 dBm.
5. 11 dBm + 10log (20.65) = 24.15 dBm > 24 dBm.
6. 11 dBm + 10log (20.52) = 24.12 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (20.48) = 24.11 dBm > 24 dBm.
2. 11 dBm + 10log (20.49) = 24.12 dBm > 24 dBm.
3. 11 dBm + 10log (20.48) = 24.11 dBm > 24 dBm.
4. 11 dBm + 10log (20.50) = 24.12 dBm > 24 dBm.
5. 11 dBm + 10log (20.47) = 24.11 dBm > 24 dBm.
6. 11 dBm + 10log (20.50) = 24.12 dBm > 24 dBm.

Chain 2

1. 11 dBm + 10log (20.50) = 24.12 dBm > 24 dBm.
2. 11 dBm + 10log (20.58) = 24.13 dBm > 24 dBm.
3. 11 dBm + 10log (20.42) = 24.10 dBm > 24 dBm.
4. 11 dBm + 10log (20.49) = 24.12 dBm > 24 dBm.
5. 11 dBm + 10log (20.45) = 24.11 dBm > 24 dBm.
6. 11 dBm + 10log (20.50) = 24.12 dBm > 24 dBm.

Chain 3

1. 11 dBm + 10log (21.33) = 24.29 dBm > 24 dBm.
2. 11 dBm + 10log (25.09) = 25.00 dBm > 24 dBm.
3. 11 dBm + 10log (20.62) = 24.14 dBm > 24 dBm.
4. 11 dBm + 10log (20.57) = 24.13 dBm > 24 dBm.
5. 11 dBm + 10log (25.50) = 25.07 dBm > 24 dBm.
6. 11 dBm + 10log (20.49) = 24.12 dBm > 24 dBm.

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	16.95	16.86	16.48	16.76	189.961	22.79	24	Pass
62	5310	16.13	15.86	16.13	15.92	159.672	22.03	24	Pass
102	5510	13.75	13.89	13.25	13.52	91.831	19.63	24	Pass
110	5550	16.50	16.48	16.01	16.28	171.495	22.34	24	Pass
134	5670	16.85	16.53	16.48	16.61	183.672	22.64	24	Pass

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (41.16) = 27.14 dBm > 24 dBm.
2. 11 dBm + 10log (41.13) = 27.14 dBm > 24 dBm.
3. 11 dBm + 10log (41.23) = 27.15 dBm > 24 dBm.
4. 11 dBm + 10log (41.10) = 27.14 dBm > 24 dBm.
5. 11 dBm + 10log (41.23) = 27.15 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (41.62) = 27.19 dBm > 24 dBm.
2. 11 dBm + 10log (41.29) = 27.16 dBm > 24 dBm.
3. 11 dBm + 10log (41.56) = 27.19 dBm > 24 dBm.
4. 11 dBm + 10log (41.44) = 27.17 dBm > 24 dBm.
5. 11 dBm + 10log (41.43) = 27.17 dBm > 24 dBm.

Chain 2

1. 11 dBm + 10log (41.75) = 27.21 dBm > 24 dBm.
2. 11 dBm + 10log (41.66) = 27.20 dBm > 24 dBm.
3. 11 dBm + 10log (41.46) = 27.18 dBm > 24 dBm.
4. 11 dBm + 10log (41.63) = 27.19 dBm > 24 dBm.
5. 11 dBm + 10log (41.59) = 27.19 dBm > 24 dBm.

Chain 3

1. 11 dBm + 10log (42.00) = 27.23 dBm > 24 dBm.
2. 11 dBm + 10log (41.94) = 27.23 dBm > 24 dBm.
3. 11 dBm + 10log (41.82) = 27.21 dBm > 24 dBm.
4. 11 dBm + 10log (41.98) = 27.23 dBm > 24 dBm.
5. 11 dBm + 10log (41.85) = 27.22 dBm > 24 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	12.78	12.63	13.02	12.55	75.324	18.77	24	Pass
106	5530	11.65	11.89	11.68	11.46	58.794	17.69	24	Pass
122	5610	15.31	15.17	14.78	15.23	130.252	21.15	24	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (80.48) = 30.06 dBm > 24 dBm.
2. 11 dBm + 10log (80.54) = 30.06 dBm > 24 dBm.
3. 11 dBm + 10log (80.61) = 30.06 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (80.65) = 30.07 dBm > 24 dBm.
2. 11 dBm + 10log (80.63) = 30.06 dBm > 24 dBm.
3. 11 dBm + 10log (80.78) = 30.07 dBm > 24 dBm.

Chain 2

1. 11 dBm + 10log (80.34) = 30.05 dBm > 24 dBm.
2. 11 dBm + 10log (80.07) = 30.03 dBm > 24 dBm.
3. 11 dBm + 10log (80.22) = 30.04 dBm > 24 dBm.

Chain 3

1. 11 dBm + 10log (81.82) = 30.13 dBm > 24 dBm.
2. 11 dBm + 10log (81.73) = 30.12 dBm > 24 dBm.
3. 11 dBm + 10log (82.15) = 30.15 dBm > 24 dBm.

802.11ac (VHT80+80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42+58	5210	13.76	14.10	-	-	49.472	16.94	30	Pass
	5290	-	-	12.03	11.99	31.771	15.02	24	Pass
58+106	5290	12.03	11.99	-	-	31.771	15.02	24	Pass
	5530	-	-	11.62	11.79	29.622	14.72	24	Pass
106+122	5530	13.79	14.23	-	-	50.418	17.03	24	Pass
	5610	-	-	13.74	13.96	48.548	16.86	24	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (80.62) = 30.06 dBm > 24 dBm.
2. 11 dBm + 10log (81.36) = 30.10 dBm > 24 dBm.

Chain 1

1. 11 dBm + 10log (80.92) = 30.08 dBm > 24 dBm.
2. 11 dBm + 10log (81.89) = 30.13 dBm > 24 dBm.

Chain 2

1. 11 dBm + 10log (80.62) = 30.06 dBm > 24 dBm.
2. 11 dBm + 10log (81.19) = 30.10 dBm > 24 dBm.
3. 11 dBm + 10log (80.93) = 30.08 dBm > 24 dBm.

Chain 3

1. 11 dBm + 10log (80.92) = 30.08 dBm > 24 dBm.
2. 11 dBm + 10log (81.05) = 30.09 dBm > 24 dBm.
3. 11 dBm + 10log (80.82) = 30.08 dBm > 24 dBm.

Beamforming Mode

802.11ac (VHT20)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	14.14	14.20	13.85	13.91	101.114	20.05	20.09	Pass
60	5300	14.34	14.25	13.75	13.82	101.584	20.07	20.09	Pass
64	5320	14.39	14.30	13.74	13.78	101.932	20.08	20.09	Pass
100	5500	14.01	14.16	13.82	14.06	100.806	20.03	20.08	Pass
116	5580	14.34	14.08	13.85	13.90	101.563	20.07	20.08	Pass
140	5700	14.35	13.99	13.10	13.31	94.134	19.74	20.08	Pass

Note:

For U-NII-2A: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the output power limit shall be reduced to 24-(9.91-6) = 20.09 dBm.

For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the output power limit shall be reduced to 24-(9.92-6) = 20.08 dBm.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (20.57) = 24.13 dBm > 20.09 dBm.
2. 11 dBm + 10log (20.47) = 24.11 dBm > 20.09 dBm.
3. 11 dBm + 10log (20.52) = 24.12 dBm > 20.09 dBm.
4. 11 dBm + 10log (20.53) = 24.12 dBm > 20.08 dBm.
5. 11 dBm + 10log (20.65) = 24.15 dBm > 20.08 dBm.
6. 11 dBm + 10log (20.52) = 24.12 dBm > 20.08 dBm.

Chain 1

1. 11 dBm + 10log (20.48) = 24.11 dBm > 20.09 dBm.
2. 11 dBm + 10log (20.49) = 24.12 dBm > 20.09 dBm.
3. 11 dBm + 10log (20.48) = 24.11 dBm > 20.09 dBm.
4. 11 dBm + 10log (20.50) = 24.12 dBm > 20.08 dBm.
5. 11 dBm + 10log (20.47) = 24.11 dBm > 20.08 dBm.
6. 11 dBm + 10log (20.50) = 24.12 dBm > 20.08 dBm.

Chain 2

1. 11 dBm + 10log (20.50) = 24.12 dBm > 20.09 dBm.
2. 11 dBm + 10log (20.58) = 24.13 dBm > 20.09 dBm.
3. 11 dBm + 10log (20.42) = 24.10 dBm > 20.09 dBm.
4. 11 dBm + 10log (20.49) = 24.12 dBm > 20.08 dBm.
5. 11 dBm + 10log (20.45) = 24.11 dBm > 20.08 dBm.
6. 11 dBm + 10log (20.50) = 24.12 dBm > 20.08 dBm.

Chain 3

1. 11 dBm + 10log (21.33) = 24.29 dBm > 20.09 dBm.
2. 11 dBm + 10log (25.09) = 25.00 dBm > 20.09 dBm.
3. 11 dBm + 10log (20.62) = 24.14 dBm > 20.09 dBm.
4. 11 dBm + 10log (20.57) = 24.13 dBm > 20.08 dBm.
5. 11 dBm + 10log (25.50) = 25.07 dBm > 20.08 dBm.
6. 11 dBm + 10log (20.49) = 24.12 dBm > 20.08 dBm.

802.11ac (VHT40)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	14.31	14.15	13.75	14.02	101.928	20.08	20.09	Pass
62	5310	14.13	13.84	14.08	13.89	100.169	20.01	20.09	Pass
102	5510	13.75	13.89	13.25	13.52	91.830	19.63	20.08	Pass
110	5550	14.11	14.03	13.84	13.95	100.098	20.00	20.08	Pass
134	5670	13.98	13.91	13.76	13.82	97.475	19.89	20.08	Pass

Note:

For U-NII-2A: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the output power limit shall be reduced to 24-(9.91-6) = 20.09 dBm.

For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the output power limit shall be reduced to 24-(9.92-6) = 20.08 dBm.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (41.16) = 27.14 dBm > 20.09 dBm.
2. 11 dBm + 10log (41.13) = 27.14 dBm > 20.09 dBm.
3. 11 dBm + 10log (41.23) = 27.15 dBm > 20.08 dBm.
4. 11 dBm + 10log (41.10) = 27.14 dBm > 20.08 dBm.
5. 11 dBm + 10log (41.23) = 27.15 dBm > 20.08 dBm.

Chain 1

1. 11 dBm + 10log (41.62) = 27.19 dBm > 20.09 dBm.
2. 11 dBm + 10log (41.29) = 27.16 dBm > 20.09 dBm.
3. 11 dBm + 10log (41.56) = 27.19 dBm > 20.08 dBm.
4. 11 dBm + 10log (41.44) = 27.17 dBm > 20.08 dBm.
5. 11 dBm + 10log (41.43) = 27.17 dBm > 20.08 dBm.

Chain 2

1. 11 dBm + 10log (41.75) = 27.21 dBm > 20.09 dBm.
2. 11 dBm + 10log (41.66) = 27.20 dBm > 20.09 dBm.
3. 11 dBm + 10log (41.46) = 27.18 dBm > 20.08 dBm.
4. 11 dBm + 10log (41.63) = 27.19 dBm > 20.08 dBm.
5. 11 dBm + 10log (41.59) = 27.19 dBm > 20.08 dBm.

Chain 3

1. 11 dBm + 10log (42.00) = 27.23 dBm > 20.09 dBm.
2. 11 dBm + 10log (41.94) = 27.23 dBm > 20.09 dBm.
3. 11 dBm + 10log (41.82) = 27.21 dBm > 20.08 dBm.
4. 11 dBm + 10log (41.98) = 27.23 dBm > 20.08 dBm.
5. 11 dBm + 10log (41.85) = 27.22 dBm > 20.08 dBm.

802.11ac (VHT80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	12.78	12.63	13.02	12.55	75.324	18.77	20.09	Pass
106	5530	11.65	11.89	11.68	11.46	58.793	17.69	20.08	Pass
122	5610	14.22	14.1	13.82	14.04	101.578	20.07	20.08	Pass

Note:

For U-NII-2A: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the output power limit shall be reduced to 24-(9.91-6) = 20.09 dBm.

For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the output power limit shall be reduced to 24-(9.92-6) = 20.08 dBm.

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (80.48) = 30.06 dBm > 20.09 dBm.
2. 11 dBm + 10log (80.54) = 30.06 dBm > 20.08 dBm.
3. 11 dBm + 10log (80.61) = 30.06 dBm > 20.08 dBm.

Chain 1

1. 11 dBm + 10log (80.65) = 30.07 dBm > 20.09 dBm.
2. 11 dBm + 10log (80.63) = 30.06 dBm > 20.08 dBm.
3. 11 dBm + 10log (80.78) = 30.07 dBm > 20.08 dBm.

Chain 2

1. 11 dBm + 10log (80.34) = 30.05 dBm > 20.09 dBm.
2. 11 dBm + 10log (80.07) = 30.03 dBm > 20.08 dBm.
3. 11 dBm + 10log (80.22) = 30.04 dBm > 20.08 dBm.

Chain 3

1. 11 dBm + 10log (81.82) = 30.13 dBm > 20.09 dBm.
2. 11 dBm + 10log (81.73) = 30.12 dBm > 20.08 dBm.
3. 11 dBm + 10log (82.15) = 30.15 dBm > 20.08 dBm.

802.11ac (VHT80+80)

Channel	Frequency (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42+58	5210	13.76	14.10	-	-	49.472	16.94	29.24	Pass
	5290	-	-	12.03	11.99	31.771	15.02	23.42	Pass
58+106	5290	12.03	11.99	-	-	31.771	15.02	22.79	Pass
	5530	-	-	11.62	11.79	29.622	14.72	23.33	Pass
106+122	5530	13.79	14.23	-	-	50.418	17.03	22.85	Pass
	5610	-	-	13.74	13.96	48.548	16.86	23.33	Pass

Note:

For U-NII-2A, U-NII-2C Band:

Chain 0

1. 11 dBm + 10log (80.62) = 30.06 dBm > 22.79 dBm.
2. 11 dBm + 10log (81.36) = 30.10 dBm > 22.85 dBm.

Chain 1

1. 11 dBm + 10log (80.92) = 30.08 dBm > 22.79 dBm.
2. 11 dBm + 10log (81.89) = 30.13 dBm > 22.85 dBm.

Chain 2

1. 11 dBm + 10log (80.62) = 30.06 dBm > 22.79 dBm.
2. 11 dBm + 10log (81.19) = 30.10 dBm > 23.33 dBm.
3. 11 dBm + 10log (80.93) = 30.08 dBm > 23.33 dBm.

Chain 3

1. 11 dBm + 10log (80.92) = 30.08 dBm > 22.79 dBm.
2. 11 dBm + 10log (81.05) = 30.09 dBm > 23.33 dBm.
3. 11 dBm + 10log (80.82) = 30.08 dBm > 23.33 dBm.

For U-NII-1: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 6.76$ dBi > 6 dBi, so the output power limit shall be reduced to 30-(6.76-6) = 29.24 dBm.

For U-NII-2A:

Chain 0+1: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.21$ dBi > 6 dBi, so the output power limit shall be reduced to 24-(7.21-6) = 22.79 dBm.

Chain 2+3: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 6.58$ dBi > 6 dBi, so the output power limit shall be reduced to 24-(6.58-6) = 23.42 dBm.

For U-NII-2C:

Chain 0+1: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] = 7.15$ > 6 dBi, so the output power limit shall be reduced to 24-(7.15-6) = 22.85 dBm.

Chain 2+3: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] = 6.67$ > 6 dBi, so the output power limit shall be reduced to 24-(6.67-6) = 23.33 dBm.

26 dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	24.66	24.63	28.78	26.05
60	5300	24.72	23.76	27.75	27.68
64	5320	20.08	20.40	20.19	20.14
100	5500	20.01	20.29	20.11	20.35
116	5580	30.10	23.69	25.76	29.27
140	5700	20.09	20.32	20.14	20.15

802.11ac (VHT20)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	20.57	20.48	20.50	21.33
60	5300	20.47	20.49	20.58	25.09
64	5320	20.52	20.48	20.42	20.62
100	5500	20.53	20.50	20.49	20.57
116	5580	20.65	20.47	20.45	25.50
140	5700	20.52	20.50	20.50	20.49

802.11ac (VHT40)

Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	41.16	41.62	41.75	42.00
62	5310	41.13	41.29	41.66	41.94
102	5510	41.23	41.56	41.46	41.82
110	5550	41.10	41.44	41.63	41.98
134	5670	41.23	41.43	41.59	41.85

802.11ac (VHT80)

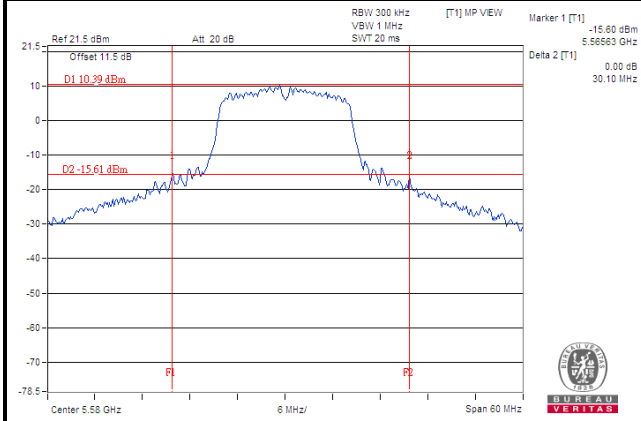
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	80.48	80.65	80.34	81.82
106	5530	80.54	80.63	80.07	81.73
122	5610	80.61	80.78	80.22	82.15

802.11ac (VHT80+80)

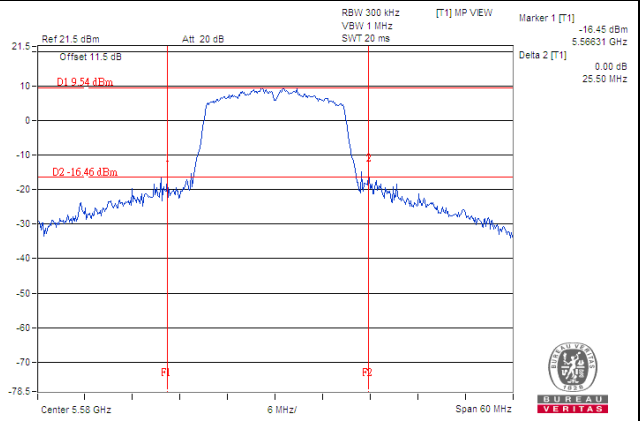
Channel	Frequency (MHz)	26 dBc Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42+58	5210	81.39	146.99	-	-
	5290	-	-	80.62	80.92
58+106	5290	80.62	80.92	-	-
	5530	-	-	81.19	81.05
106+122	5530	81.36	81.89	-	-
	5610	-	-	80.93	80.82

Spectrum Plot of Worst Value

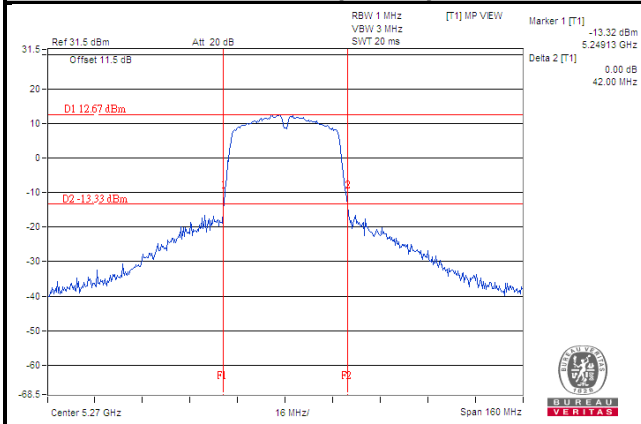
802.11a



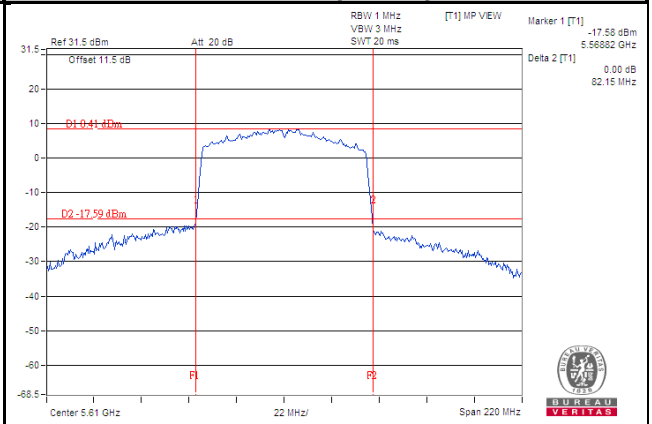
802.11ac (VHT20)



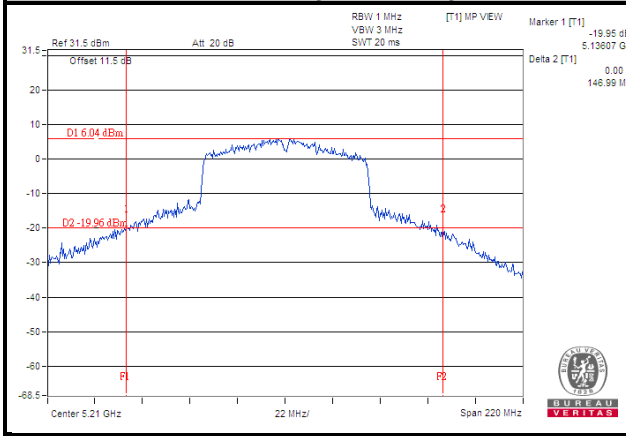
802.11ac (VHT40)



802.11ac (VHT80)



802.11ac (VHT80+80)



EUT HIGHEST AND LOWEST CONDUCTED POWER

CDD Mode

802.11a

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	101.736	20.07	100.905	20.04
5470~5725	93.422	19.70	66.737	18.24

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	101.931	20.08	101.115	20.05
5470~5725	117.452	20.70	94.134	19.74

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT40)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	189.961	22.79	159.672	22.03
5470~5725	183.672	22.64	91.831	19.63

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	75.324	18.77	75.324	18.77
5470~5725	130.252	21.15	58.794	17.69

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT80+80)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	31.771	15.02	31.771	15.02
5470~5725	50.418	17.03	29.622	14.72

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

Beamforming Mode

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	101.93	20.08	101.11	20.05
5470~5725	101.56	20.07	94.13	19.74

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT40)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	101.93	20.08	100.17	20.01
5470~5725	100.10	20.00	91.83	19.63

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	75.32	18.77	75.32	18.77
5470~5725	101.58	20.07	58.79	17.69

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

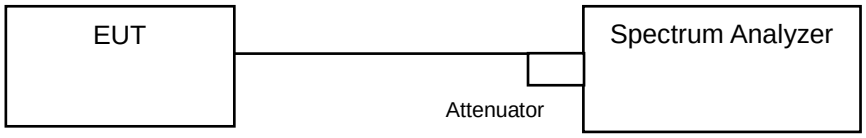
802.11ac (VHT80+80)

Frequency Band (MHz)	Max. Power		Min. Power	
	Output Power (mW)	Output Power (dBm)	Output Power (mW)	Output Power (dBm)
5250~5350	31.771	15.02	31.771	15.02
5470~5725	50.418	17.03	29.622	14.72

Note: Manufacturer provides Transmit Power Control description to meet this requirement.

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	Chain 2	Chain 3
52	5260	16.80	16.92	16.92	16.92
60	5300	16.80	16.92	16.92	17.04
64	5320	16.56	16.68	16.68	16.80
100	5500	16.56	16.68	16.68	16.80
116	5580	16.92	16.92	16.92	17.16
140	5700	16.56	16.68	16.68	16.80

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
52	5260	17.64	17.76	17.76	17.76
60	5300	17.76	17.64	17.76	17.88
64	5320	17.64	17.64	17.64	17.64
100	5500	17.64	17.64	17.64	17.64
116	5580	17.76	17.76	17.64	17.88
140	5700	17.64	17.64	17.64	17.64

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
54	5270	36.24	36.24	36.36	36.36
62	5310	36.12	36.12	36.36	36.24
102	5510	36.24	36.24	36.24	36.48
110	5550	36.12	36.12	36.24	36.24
134	5670	36.12	36.12	36.24	36.36

802.11ac (VHT80)

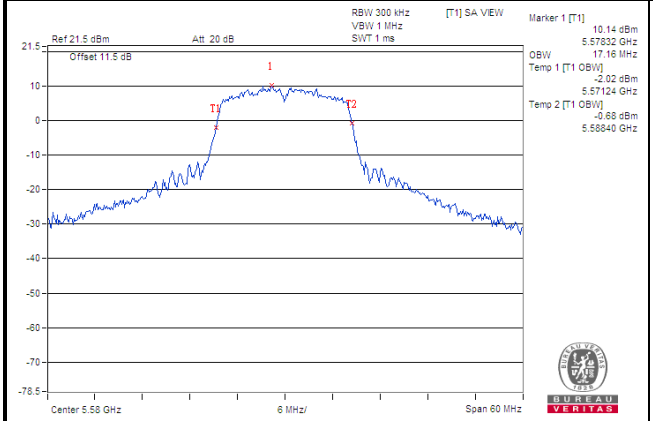
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
58	5290	75.12	75.12	74.88	75.12
106	5530	74.88	75.12	75.12	75.36
122	5610	75.12	74.88	74.88	75.36

802.11ac (VHT80+80)

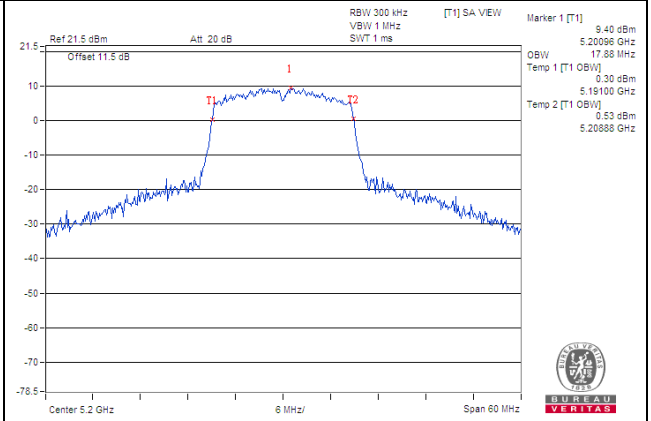
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42+58	5210	75.12	76.56	-	-
	5290	-	-	75.12	75.12
58+106	5290	75.12	75.12	-	-
	5530	-	-	75.12	75.12
106+122	5530	75.36	75.36	-	-
	5610	-	-	75.36	75.12

Spectrum Plot of Worst Value

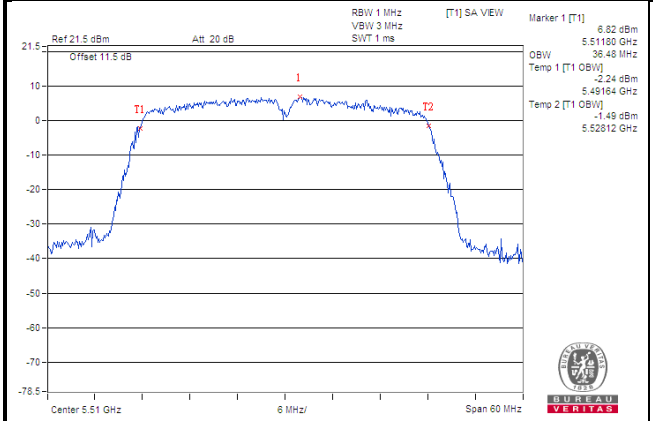
802.11a



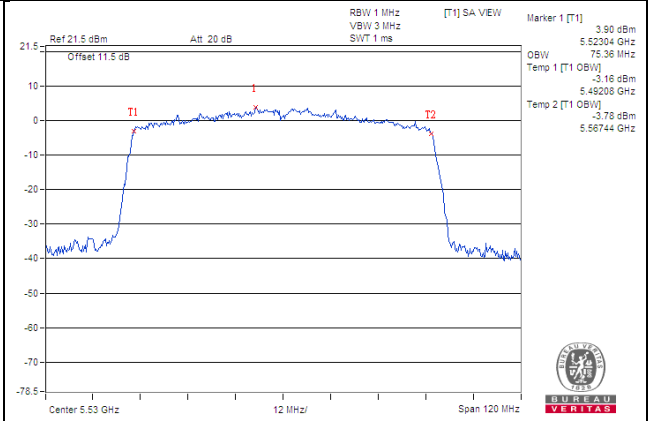
802.11ac (VHT20)



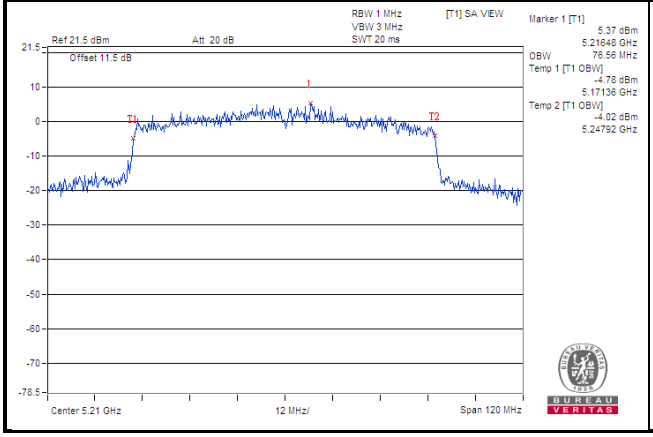
802.11ac (VHT40)



802.11ac (VHT80)



802.11ac (VHT80+80)

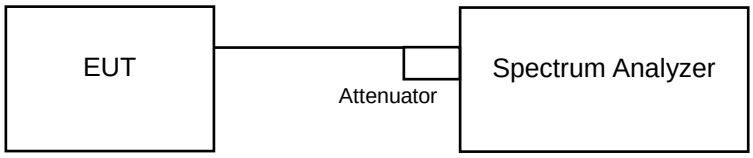


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	17 dBm/MHz
		Fixed point-to-point Access Point	
	√	Indoor Access Point	
		Mobile and Portable client device	11 dBm/MHz
U-NII-2A	√		11 dBm/MHz
U-NII-2C	√		11 dBm/MHz
U-NII-3	√		30 dBm/500 kHz

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-2A, U-NII-2C band:

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 RBW, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

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

4.5.7 Test Results

For U-NII-2A, U-NII-2C Band

802.11a

Channel	Frequency (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	0.95	0.95	0.34	0.12	6.72	7.09	Pass
60	5300	1.28	1.44	-0.98	0.59	6.79	7.09	Pass
64	5320	1.36	1.12	0.13	0.60	6.94	7.09	Pass
100	5500	-0.17	-0.70	-2.18	-2.16	4.90	7.08	Pass
116	5580	0.91	0.32	-0.57	-0.49	6.20	7.08	Pass
140	5700	-0.02	-0.64	-1.55	-1.89	5.15	7.08	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-2A:** Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the power density limit shall be reduced to 11-(9.91-6) = 7.09 dBm.
   For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the power density limit shall be reduced to 11-(9.92-6) = 7.08 dBm.

802.11ac (VHT20)

Channel	Frequency (MHz)	PSD (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
52	5260	0.67	0.80	0.11	0.11	0.13	6.58	7.09	Pass
60	5300	1.16	0.84	0.18	0.50	0.13	6.83	7.09	Pass
64	5320	0.91	0.81	-1.89	0.51	0.13	6.37	7.09	Pass
100	5500	1.67	1.33	0.11	0.32	0.13	7.05	7.08	Pass
116	5580	1.64	0.91	-0.20	1.01	0.13	7.04	7.08	Pass
140	5700	1.20	0.73	-0.09	0.32	0.13	6.71	7.08	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-2A:** Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the power density limit shall be reduced to 11-(9.91-6) = 7.09 dBm.
   For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the power density limit shall be reduced to 11-(9.92-6) = 7.08 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

Channel	Frequency (MHz)	PSD (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
54	5270	0.71	0.32	-0.39	-0.04	0.30	6.49	7.09	Pass
62	5310	0.63	0.67	-0.72	-0.39	0.30	6.42	7.09	Pass
102	5510	-2.29	-3.01	-3.91	-3.74	0.30	3.14	7.08	Pass
110	5550	0.57	0.15	-0.46	-0.37	0.30	6.32	7.08	Pass
134	5670	0.94	0.58	-0.67	-0.17	0.30	6.54	7.08	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-2A:** Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the power density limit shall be reduced to 11-(9.91-6) = 7.09 dBm.
   For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the power density limit shall be reduced to 11-(9.92-6) = 7.08 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Channel	Frequency (MHz)	PSD (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
58	5290	-5.62	-5.16	-6.96	-6.31	0.18	0.24	7.09	Pass
106	5530	-7.37	-7.75	-8.26	-8.59	0.18	-1.76	7.08	Pass
122	5610	-2.84	-3.14	-3.42	-3.81	0.18	2.92	7.08	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-2A:** Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 9.91$ dBi > 6 dBi, so the power density limit shall be reduced to 11-(9.91-6) = 7.09 dBm.
   For U-NII-2C: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 9.92$ > 6 dBi, so the power density limit shall be reduced to 11-(9.92-6) = 7.08 dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80+80)

Channel	Frequency (MHz)	PSD (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42+58	5210	-6.48	-5.47	-	-	0.26	-2.68	16.24	Pass
	5290	-	-	-6.91	-6.66	0.26	-3.51	10.42	Pass
58+106	5290	-6.91	-6.66	-	-	0.26	-3.51	9.79	Pass
	5530	-	-	-10.31	-9.15	0.26	-6.42	10.33	Pass
106+122	5530	-5.69	-5.70	-	-	0.26	-2.43	9.85	Pass
	5610	-	-	-6.10	-8.49	0.26	-3.86	10.33	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. **For U-NII-1:** Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 6.76$ dBi > 6 dBi, so the power density limit shall be reduced to 17-(6.76-6) = 16.24 dBm.

For U-NII-2A:

Chain 0+1: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 7.21$ dBi > 6 dBi, so the power density limit shall be reduced to 11-(7.21-6) = 9.79 dBm.

Chain 2+3: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 6.58$ dBi > 6 dBi, so the power density limit shall be reduced to 11-(6.58-6) = 10.42 dBm.

For U-NII-2C:

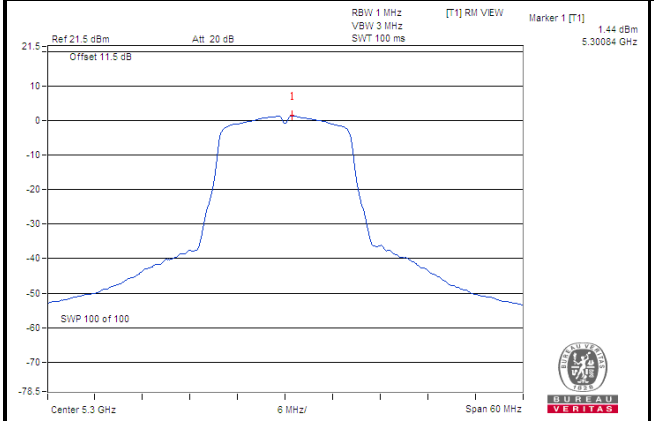
Chain 0+1: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] = 7.15$ > 6 dBi, so the power density limit shall be reduced to 11-(7.15-6) = 9.85 dBm.

Chain 2+3: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots + 10^{GN/20})^2 / N_{ANT}] = 6.67$ > 6 dBi, so the power density limit shall be reduced to 11-(6.67-6) = 10.33 dBm.

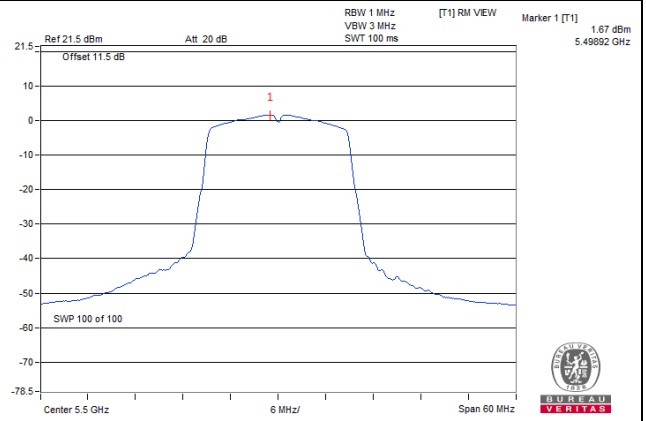
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

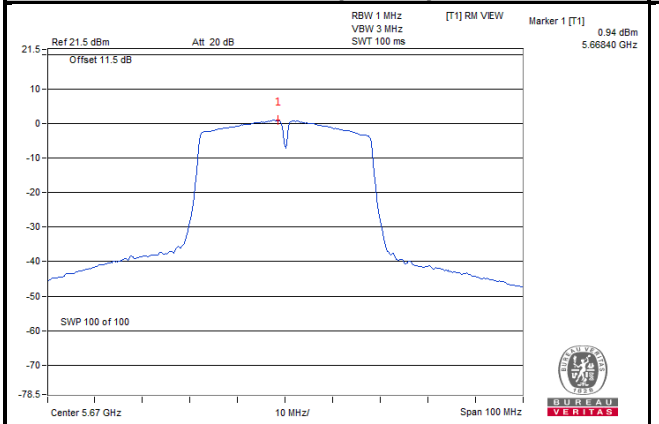
802.11a



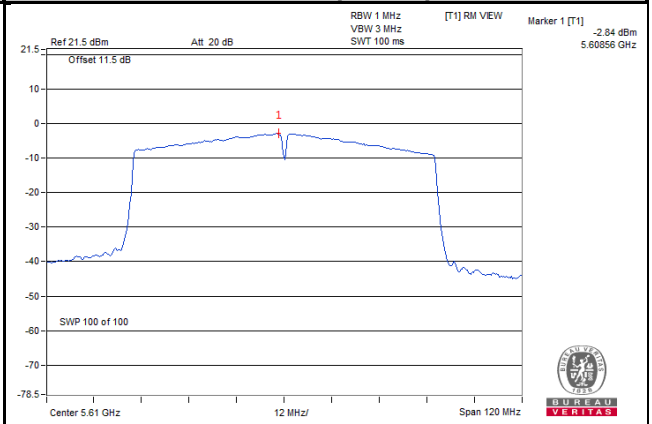
802.11ac (VHT20)



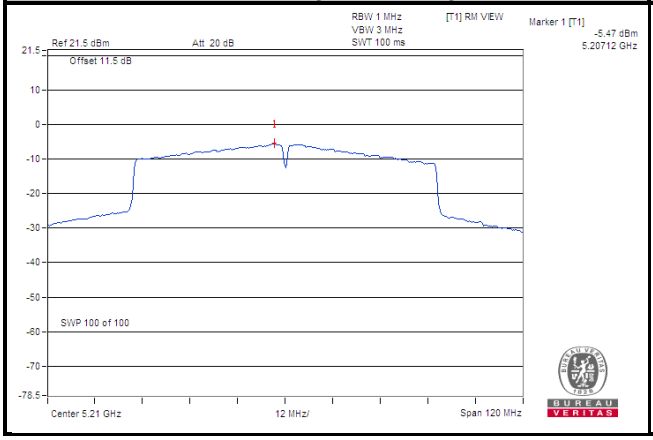
802.11ac (VHT40)



802.11ac (VHT80)



802.11ac (VHT80+80)

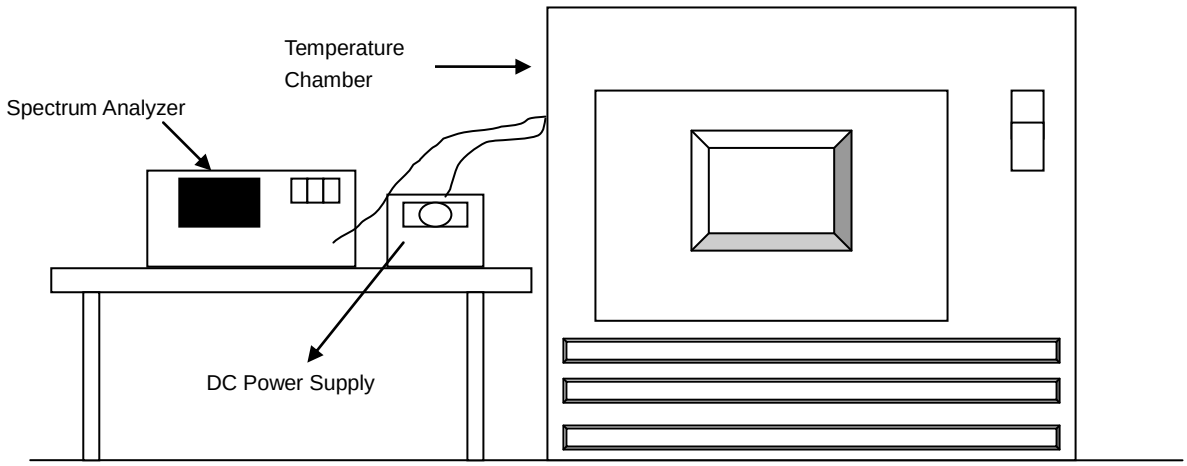


4.6 Frequency Stability

4.6.1 Limit 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 4.1.3 to get information of above instrument.

4.6.4 Test Procedure

a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

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: 5320 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
50	120	5320.0103	PASS	5320.0063	PASS	5320.0078	PASS	5320.0107	PASS
40	120	5320.0158	PASS	5320.0173	PASS	5320.0176	PASS	5320.0172	PASS
30	120	5319.9895	PASS	5319.9921	PASS	5319.9935	PASS	5319.9933	PASS
20	120	5320.0175	PASS	5320.0206	PASS	5320.0178	PASS	5320.0179	PASS
10	120	5319.9851	PASS	5319.988	PASS	5319.9866	PASS	5319.9871	PASS
0	120	5319.9855	PASS	5319.9883	PASS	5319.9894	PASS	5319.9882	PASS
-10	120	5319.9877	PASS	5319.9869	PASS	5319.9882	PASS	5319.987	PASS
-20	120	5320.0038	PASS	5320.0068	PASS	5320.0051	PASS	5320.0049	PASS
-30	120	5319.9811	PASS	5319.9785	PASS	5319.9787	PASS	5319.9816	PASS

Frequency Stability Versus Temp.									
Operating Frequency: 5320 MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5320.0184	PASS	5320.021	PASS	5320.0174	PASS	5320.0188	5320.0184
	120	5320.0175	PASS	5320.0206	PASS	5320.0178	PASS	5320.0179	5320.0175
	102	5320.0167	PASS	5320.0215	PASS	5320.0183	PASS	5320.0173	5320.0167

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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