

FCC Test Report

Report No.: RF170828C01-2

FCC ID: AZ489FT7105

Test Model: N7001A

Received Date: Aug. 28, 2017

Test Date: Aug. 30 ~ Sep. 21, 2017

Issued Date: Sep. 28, 2017

Applicant: Motorola Solutions, Inc.

Address: 8000 West Sunrise Boulevard, Fort Lauderdale, Florida 33322

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 No.: 788550

IC Site Registration No.: IC7450F-4



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by TAF or any government agencies.

Table of Contents

Release Control Record	4
1 Certificate of Conformity	5
2 Summary of Test Results	6
2.1 Measurement Uncertainty	6
2.2 Modification Record	6
3 General Information	7
3.1 General Description of EUT	7
3.2 Description of Test Modes	10
3.2.1 Test Mode Applicability and Tested Channel Detail	12
3.3 Duty Cycle of Test Signal	14
3.4 Description of Support Units	15
3.4.1 Configuration of System under Test	15
3.5 General Description of Applied Standards	15
4 Test Types and Results	16
4.1 Radiated Emission and Bandedge Measurement	16
4.1.1 Limits of Radiated Emission and Bandedge Measurement	16
4.1.2 Test Instruments	17
4.1.3 Test Procedures	18
4.1.4 Deviation from Test Standard	19
4.1.5 Test Setup	19
4.1.6 EUT Operating Conditions	20
4.1.7 Test Results	21
4.2 Conducted Emission Measurement	51
4.2.1 Limits of Conducted Emission Measurement	51
4.2.2 Test Instruments	51
4.2.3 Test Procedures	52
4.2.4 Deviation from Test Standard	52
4.2.5 Test Setup	52
4.2.6 EUT Operating Conditions	52
4.2.7 Test Results	53
4.3 Transmit Power Measurement	55
4.3.1 Limits of Transmit Power Measurement	55
4.3.2 Test Setup	55
4.3.3 Test Instruments	56
4.3.4 Test Procedure	56
4.3.5 Deviation from Test Standard	56
4.3.6 EUT Operating Conditions	56
4.3.7 Test Result	57
4.4 Occupied Bandwidth Measurement	62
4.4.1 Test Setup	62
4.4.2 Test Instruments	62
4.4.3 Test Procedure	62
4.4.4 Test Result	63
4.5 Peak Power Spectral Density Measurement	66
4.5.1 Limits of Peak Power Spectral Density Measurement	66
4.5.2 Test Setup	66
4.5.3 Test Instruments	66
4.5.4 Test Procedures	67
4.5.5 Deviation from Test Standard	67
4.5.6 EUT Operating Conditions	67
4.5.7 Test Results	68
4.6 Frequency Stability	72

4.6.1	Limits of Frequency Stability Measurement.....	72
4.6.2	Test Setup.....	72
4.6.3	Test Instruments	72
4.6.4	Test Procedure	72
4.6.5	Deviation from Test Standard	72
4.6.6	EUT Operating Condition	72
4.6.7	Test Results	73
4.7	6dB Bandwidth Measurement.....	74
4.7.1	Limits of 6dB Bandwidth Measurement.....	74
4.7.2	Test Setup.....	74
4.7.3	Test Instruments	74
4.7.4	Test Procedure	74
4.7.5	Deviation from Test Standard	74
4.7.6	EUT Operating Condition	74
4.7.7	Test Results	75
5	Pictures of Test Arrangements.....	77
	Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 Band).....	78
	Appendix – Information on the Testing Laboratories	80

Release Control Record

Issue No.	Description	Date Issued
RF170828C01-2	Original release.	Sep. 28, 2017

1 Certificate of Conformity

Product: Video Speaker Microphone (VSM)

Brand: Motorola Solutions

Test Model: N7001A

Sample Status: P2B

Applicant: Motorola Solutions, Inc.

Test Date: Aug. 30 ~ Sep. 21, 2017

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 EMC characteristics under the conditions specified in this report.

Prepared by : Sunt Lee , **Date:** Sep. 28, 2017
Sunt Lee / Specialist

Approved by : Ken Liu , **Date:** Sep. 28, 2017
Ken Liu / Senior Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -15.90dB at 0.27400MHz.
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 -1.1dB at 5470.00, 5350.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.63 dB
	200MHz ~ 1000MHz	3.64 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Video Speaker Microphone (VSM)
Brand	Motorola Solutions
Test Model	N7001A
Sample Status	P2B
Power Supply Rating	5Vdc (charger, host equipment) 3.7Vdc (battery)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz, 5500~5720MHz, 5720~5825MHz
Number of Channel	5180~5240MHz: 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5260~5320MHz: 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500~5720MHz: 802.11n (HT20), 802.11ac (VHT20): 12 802.11n (HT40), 802.11ac (VHT40): 6 802.11ac (VHT80): 3 5720~5825MHz: 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	5180~5240MHz: 42.560mW 5260~5320MHz: 42.462mW 5500~5700MHz: 46.666mW 5720~5825MHz: 42.756mW
Antenna Type	2.4GHz: Integral antenna with 0.13dBi gain 5.0GHz: Integral antenna with 2.856dBi gain
Antenna Connector	NA
Accessory Device	Refer to Note
Cable Supplied	Refer to Note

Note:

1. The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX
802.11ac (VHT20)	1TX
802.11ac (VHT40)	1TX
802.11ac (VHT80)	1TX

* The modulation and bandwidth are similar for 802.11n mode for 20MHz/40MHz and 802.11ac mode for 20MHz/40MHz, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT uses following devices and cables.

Item	Brand	Model	Specification	Remark
Charger 1	Motorola Solutions	PS000150A11	Micro USB Wall Charger Input: 100-240Vac, 50/60Hz, 250mA Output: 5Vdc, 1500mA 1m DC cable with 1 core attached	Accessory
Charger 2	Motorola Solutions	PMPN4084A	Multi Unit Charger base (supports charging 6 Si devices or Si batteries only) Input: 100-240Vac, 50/60Hz, 1500mA Output: 5Vdc, 1500mA 1.2m AC cable without core attached	Accessory
Charger 3	Motorola Solutions	PMPN4169A	Vehicle Charger Input: 10.8-33Vdc Output: 5Vdc, 1500mA 0.8m DC cable with 1 core attached	Accessory
Charger 4	Motorola Solutions	NNTN8895A	Collaborative MUC(supports charging 6 APX and 6 Si devices) MUC Adapter: Brand: MEAN WELL Model: GST220A15 Input: 100-240Vac, 50/60Hz, 4.0A Output: 15Vdc, 13.4A, 201W MAX. 1.05m DC cable with 1 core attached 1.2m AC cable without core attached	Accessory
Charger 5	Motorola Solutions	NNTN8845A	APX Single Unit Charger (support charging APX radio, Si device and battery only charger via USB ports) SUC Adapter: Brand: Motorola Solutions Model: ML36-4145250-A1 Input: 110-120Vac, 60Hz, 1.0A Output: 14.5Vdc, 2.5A 1.0m DC cable with 1 core attached	Accessory
Charger 6	Motorola Solutions	PMPN4119A	Battery Charging Tray Input: 110-220Vac, 50/60Hz, 1000mA Output: 5Vdc, 1500A 1.0m DC cable without core attached	Accessory
Battery 1	Motorola Solutions	PMNN4530A	Ultra High Capacity IMPRES battery Rating: 3.7Vdc, 3750mA	Accessory
Battery 2	Motorola Solutions	NNTN8921A	Rating: 7.4Vdc, 4500mA	Support Unit
Cable 1	Motorola Solutions	CB000262A01	CABLE, MICRO USB PROGRAMMING CABLE 1.2m shielded USB cable without core	Accessory

3.2 Description of Test Modes

5180~5240MHz:

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210 MHz

5260~5320MHz:

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

5500~5720MHz:

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

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz	144	5720 MHz

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

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz	142	5710 MHz

3 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz
122	5610 MHz		

5745~5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where RE $\geq$ 1G: Radiated Emission above 1GHz & Bandedge Measurement
RE<1G: Radiated Emission below 1GHz
PLC: Power Line Conducted Emission
APCM: Antenna Port Conducted Measurement

Note:

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

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	6.5	-
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	-
	802.11ac (VHT80)		42	42	OFDM	29.3	-
	802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	6.5	-
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	13.5	-
	802.11ac (VHT80)		58	58	OFDM	29.3	-
	802.11ac (VHT20)	5500-5720	100 to 144	100, 116, 140, 144	OFDM	6.5	-
	802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	13.5	-
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	29.3	-
	802.11ac (VHT20)	5745-5825	144 to 165	149, 157, 165	OFDM	6.5	-
	802.11ac (VHT40)		142 to 159	151, 159	OFDM	13.5	-
	802.11ac (VHT80)		138 to 155	155	OFDM	29.3	-

Radiated Emission Test (Below 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	802.11ac (VHT20)	5180-5240	36 to 48	36	OFDM	6.5	-
		5260-5320	52 to 64		OFDM	6.5	-
		5500-5720	100 to 144		OFDM	6.5	-
		5745-5825	144 to 165		OFDM	6.5	-

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	802.11ac (VHT20)	5180-5240	36 to 48	36	OFDM	6.5	-
		5260-5320	52 to 64		OFDM	6.5	-
		5500-5720	100 to 144		OFDM	6.5	-
		5745-5825	144 to 165		OFDM	6.5	-

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	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	6.5	-
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	-
	802.11ac (VHT80)		42	42	OFDM	29.3	-
	802.11ac (VHT20)	5260-5320	52 to 64	52, 60, 64	OFDM	26.0	-
	802.11ac (VHT40)		54 to 62	54, 62	OFDM	54.0	-
	802.11ac (VHT80)		58	58	OFDM	130.0	-
	802.11ac (VHT20)	5500-5720	100 to 144	100, 116, 140, 144	OFDM	26.0	-
	802.11ac (VHT40)		102 to 142	102, 110, 134, 142	OFDM	54.0	-
	802.11ac (VHT80)		106 to 138	106, 122, 138	OFDM	130.0	-
	802.11ac (VHT20)	5745-5825	144 to 165	144, 149, 157, 165	OFDM	26.0	-
	802.11ac (VHT40)		142 to 159	142, 151, 159	OFDM	54.0	-
	802.11ac (VHT80)		138 to 155	138, 155	OFDM	130.0	-

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	25 deg. C, 70% RH	120Vac, 60Hz	Matthew Yang Luis Lee
RE<1G	25 deg. C, 70% RH	120Vac, 60Hz	Matthew Yang
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Chris Lin
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Cedric Wu Frank Liu

3.3 Duty Cycle of Test Signal

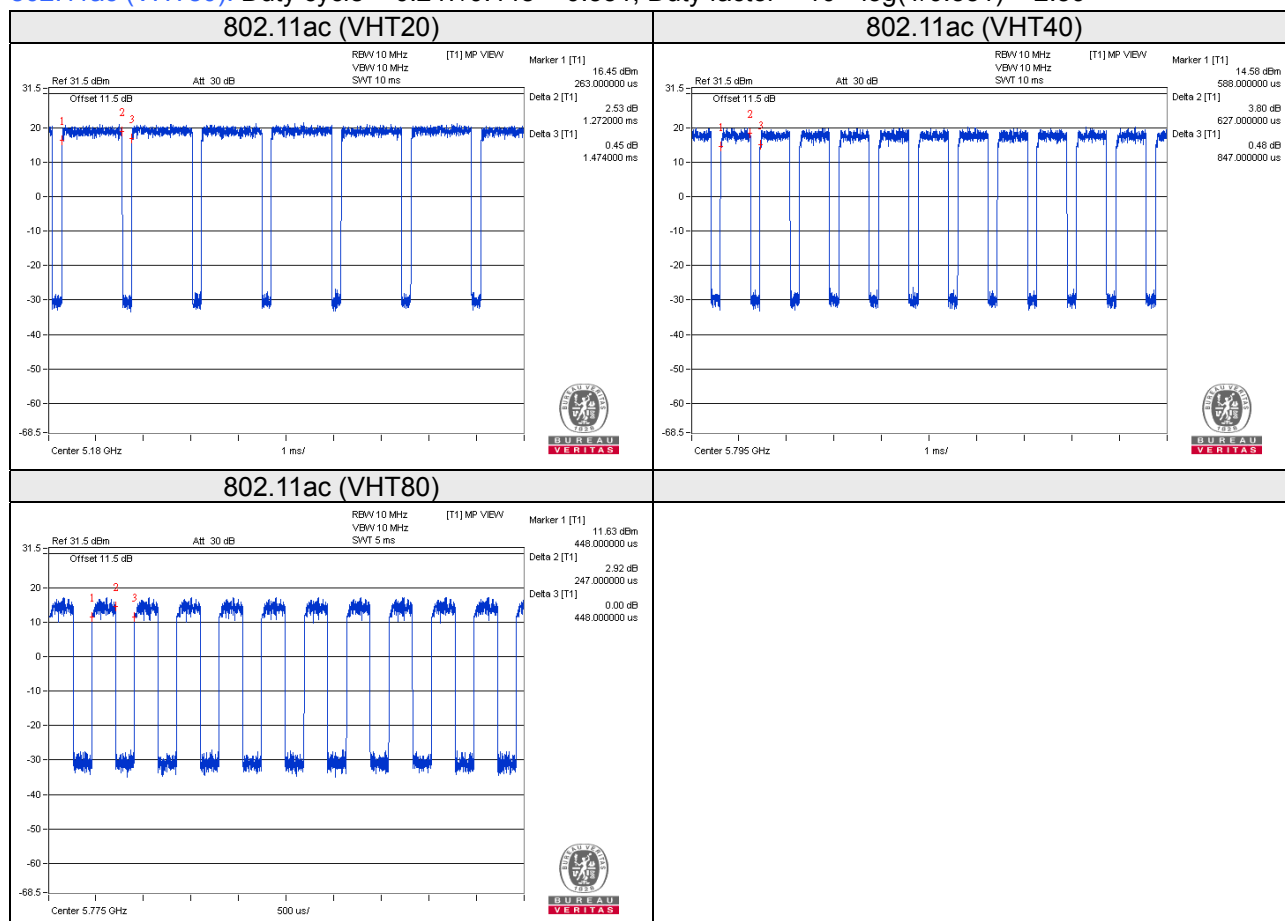
Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

Duty cycle of test signal is $< 98\%$, duty factor shall be considered.

802.11ac (VHT20): Duty cycle = $1.272/1.474 = 0.863$, Duty factor = $10 * \log(1/0.863) = 0.64$

802.11ac (VHT40): Duty cycle = $0.627/0.847 = 0.740$, Duty factor = $10 * \log(1/0.740) = 1.31$

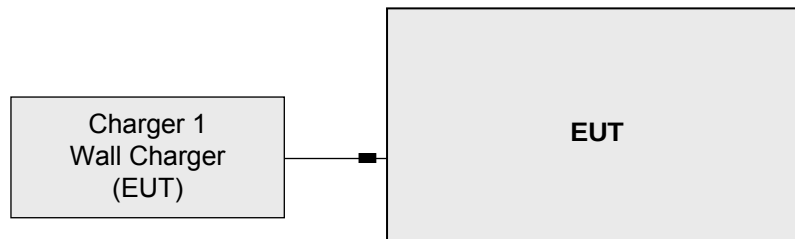
802.11ac (VHT80): Duty cycle = $0.247/0.448 = 0.551$, Duty factor = $10 * \log(1/0.551) = 2.59$



3.4 Description of Support Units

The EUT has been tested as an independent unit.

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 Procedure New Rules v01r04

ANSI C63.10:2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table.

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

Limits of unwanted emission out of the restricted bands

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v01r04			Field Strength at 3m	
			PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK: -27 (dBm/MHz)	PK: 68.2(dBµV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2(dBµV/m) ^{*1} PK: 105.2 (dBµV/m) ^{*2} PK: 110.8(dBµV/m) ^{*3} PK: 122.2 (dBµV/m) ^{*4}
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
^{*1} beyond 75 MHz or more above of the band edge.			^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.	
^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.			^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 24, 2016	Oct. 23, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 18, 2017	Aug. 17, 2018
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 28, 2016	Dec. 27, 2017
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Dec. 15, 2016	Dec. 14, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 14, 2016	Dec. 13, 2017
Loop Antenna EMCI	EM-6879	269	Aug. 11, 2017	Aug. 10, 2018
Preamplifier Agilent	8449B	3008A01960	Aug. 08, 2017	Aug. 07, 2018
Preamplifier Agilent	8447D	2944A10631	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2017	Aug. 07, 2018
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2017	Aug. 07, 2018
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021703	NA	NA
Turn Table BV ADT	TT100	TT93021703	NA	NA
Turn Table Controller BV ADT	SC100	SC93021703	NA	NA
26GHz ~ 40GHz Amplifier	EM26400	815221	Oct. 17, 2016	Oct. 16, 2017
High Speed Peak Power Meter	ML2495A	0824012	Aug. 18, 2017	Aug. 17, 2018
Power Sensor	MA2411B	0738171	Aug. 18, 2017	Aug. 17, 2018
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 07, 2017	Jun. 06, 2018

- Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 4.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
5. The IC Site Registration No. is IC7450F-4.

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Both X and Y axes of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

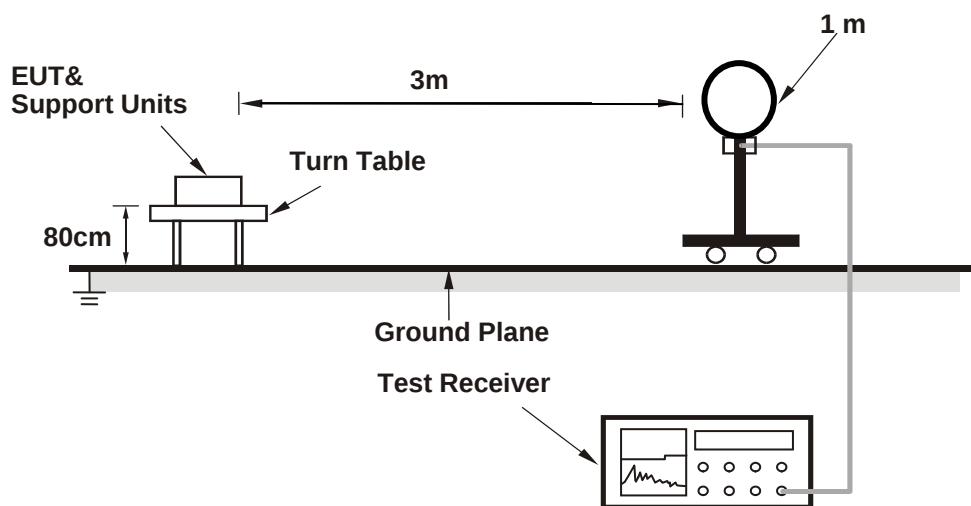
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

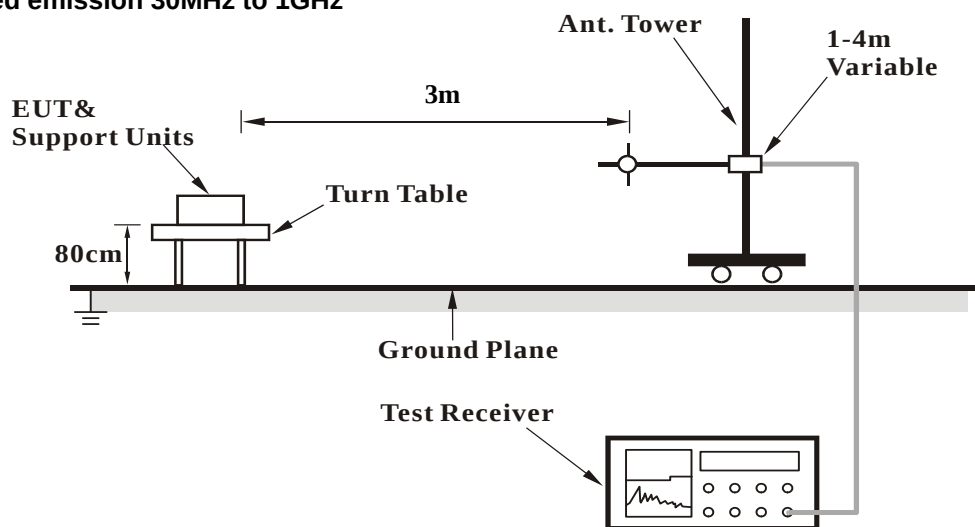
No deviation.

4.1.5 Test Setup

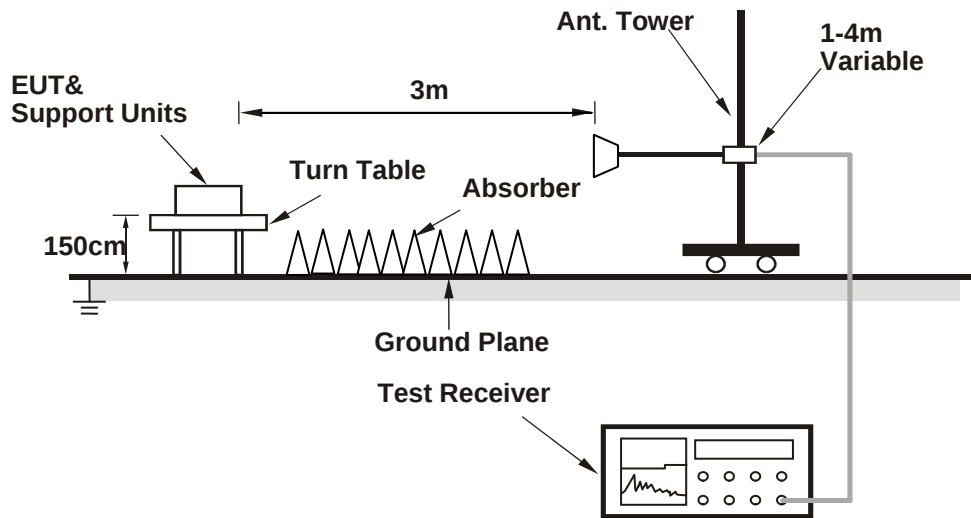
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- a. Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz data:

802.11ac (VHT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.8 PK	74.0	-13.2	2.31 H	110	53.4	7.4
2	5150.00	47.9 AV	54.0	-6.1	2.31 H	110	40.5	7.4
3	*5180.00	104.8 PK			2.81 H	119	63.5	41.3
4	*5180.00	94.5 AV			2.81 H	119	53.2	41.3
5	#10360.00	62.2 PK	74.0	-11.8	2.31 H	266	42.2	20.0
6	#10360.00	49.2 AV	54.0	-4.8	2.31 H	266	29.2	20.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.8 PK	74.0	-11.2	3.25 V	71	55.4	7.4
2	5150.00	47.1 AV	54.0	-6.9	3.25 V	71	39.7	7.4
3	*5180.00	101.2 PK			3.28 V	59	59.9	41.3
4	*5180.00	91.5 AV			3.28 V	59	50.2	41.3
5	#10360.00	62.4 PK	74.0	-11.6	1.45 V	309	42.4	20.0
6	#10360.00	49.4 AV	54.0	-4.6	1.45 V	309	29.4	20.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	104.1 PK			2.91 H	118	62.8	41.3
2	*5200.00	94.0 AV			2.91 H	118	52.7	41.3
3	#10400.00	62.1 PK	74.0	-11.9	2.14 H	234	41.9	20.2
4	#10400.00	49.4 AV	54.0	-4.6	2.14 H	234	29.2	20.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	102.8 PK			3.38 V	72	61.5	41.3
2	*5200.00	92.3 AV			3.38 V	72	51.0	41.3
3	#10400.00	62.3 PK	74.0	-11.7	2.55 V	278	42.1	20.2
4	#10400.00	49.5 AV	54.0	-4.5	2.55 V	278	29.3	20.2

Remarks:

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

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	105.0 PK			2.78 H	124	63.5	41.5
2	*5240.00	94.8 AV			2.78 H	124	53.3	41.5
3	5350.00	59.9 PK	74.0	-14.1	3.09 H	144	51.9	8.0
4	5350.00	46.9 AV	54.0	-7.1	3.09 H	144	38.9	8.0
5	#10480.00	61.7 PK	74.0	-12.3	2.27 H	287	41.4	20.3
6	#10480.00	48.9 AV	54.0	-5.1	2.27 H	287	28.6	20.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	100.0 PK			2.92 V	65	58.5	41.5
2	*5240.00	90.6 AV			2.92 V	65	49.1	41.5
3	5350.00	59.7 PK	74.0	-14.3	3.13 V	130	51.7	8.0
4	5350.00	47.0 AV	54.0	-7.0	3.13 V	130	39.0	8.0
5	#10480.00	62.3 PK	74.0	-11.7	2.17 V	252	42.0	20.3
6	#10480.00	49.1 AV	54.0	-4.9	2.17 V	252	28.8	20.3

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.3 PK	74.0	-14.7	2.85 H	140	51.9	7.4
2	5150.00	46.3 AV	54.0	-7.7	2.85 H	140	38.9	7.4
3	*5260.00	104.3 PK			2.72 H	122	62.8	41.5
4	*5260.00	94.7 AV			2.72 H	122	53.2	41.5
5	#10520.00	61.9 PK	74.0	-12.1	3.11 H	207	41.6	20.3
6	#10520.00	48.9 AV	54.0	-5.1	3.11 H	207	28.6	20.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.6 PK	74.0	-15.4	3.26 V	80	51.2	7.4
2	5150.00	46.0 AV	54.0	-8.0	3.26 V	80	38.6	7.4
3	*5260.00	102.2 PK			3.42 V	67	60.7	41.5
4	*5260.00	92.6 AV			3.42 V	67	51.1	41.5
5	#10520.00	61.6 PK	74.0	-12.4	1.87 V	332	41.3	20.3
6	#10520.00	48.8 AV	54.0	-5.2	1.87 V	332	28.5	20.3

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	104.6 PK			2.77 H	120	63.0	41.6
2	*5300.00	95.1 AV			2.77 H	120	53.5	41.6
3	10600.00	62.6 PK	74.0	-11.4	3.06 H	214	41.8	20.8
4	10600.00	49.5 AV	54.0	-4.5	3.06 H	214	28.7	20.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	102.6 PK			3.39 V	65	61.0	41.6
2	*5300.00	93.0 AV			3.39 V	65	51.4	41.6
3	10600.00	62.3 PK	74.0	-11.7	1.75 V	338	41.5	20.8
4	10600.00	49.4 AV	54.0	-4.6	1.75 V	338	28.6	20.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	105.5 PK			2.83 H	119	63.9	41.6
2	*5320.00	95.5 AV			2.83 H	119	53.9	41.6
3	5350.00	59.9 PK	74.0	-14.1	2.65 H	128	51.9	8.0
4	5350.00	47.5 AV	54.0	-6.5	2.65 H	128	39.5	8.0
5	10640.00	62.6 PK	74.0	-11.4	3.08 H	196	41.8	20.8
6	10640.00	49.5 AV	54.0	-4.5	3.08 H	196	28.7	20.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	101.8 PK			3.39 V	66	60.2	41.6
2	*5320.00	92.1 AV			3.39 V	66	50.5	41.6
3	5350.00	59.6 PK	74.0	-14.4	3.44 V	76	51.6	8.0
4	5350.00	46.7 AV	54.0	-7.3	3.44 V	76	38.7	8.0
5	10640.00	62.3 PK	74.0	-11.7	2.88 V	325	41.5	20.8
6	10640.00	49.3 AV	54.0	-4.7	2.88 V	325	28.5	20.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.2 PK	74.0	-14.8	2.47 H	124	51.0	8.2
2	5460.00	46.3 AV	54.0	-7.7	2.47 H	124	38.1	8.2
3	#5470.00	62.7 PK	74.0	-11.3	2.58 H	114	54.5	8.2
4	#5470.00	47.9 AV	54.0	-6.1	2.58 H	114	39.7	8.2
5	*5500.00	106.0 PK			2.53 H	115	64.0	42.0
6	*5500.00	95.1 AV			2.53 H	115	53.1	42.0
7	11000.00	64.5 PK	74.0	-9.5	1.98 H	301	43.1	21.4
8	11000.00	51.2 AV	54.0	-2.8	1.98 H	301	29.8	21.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.4 PK	74.0	-15.6	1.57 V	82	50.2	8.2
2	5460.00	46.2 AV	54.0	-7.8	1.57 V	82	38.0	8.2
3	#5470.00	60.2 PK	74.0	-13.8	1.44 V	89	52.0	8.2
4	#5470.00	46.6 AV	54.0	-7.4	1.44 V	89	38.4	8.2
5	*5500.00	99.0 PK			1.18 V	81	57.0	42.0
6	*5500.00	87.8 AV			1.18 V	81	45.8	42.0
7	11000.00	63.8 PK	74.0	-10.2	2.64 V	199	42.4	21.4
8	11000.00	50.6 AV	54.0	-3.4	2.64 V	199	29.2	21.4

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	106.0 PK			2.75 H	118	63.8	42.2
2	*5580.00	95.2 AV			2.75 H	118	53.0	42.2
3	11160.00	63.9 PK	74.0	-10.1	1.58 H	227	42.4	21.5
4	11160.00	50.2 AV	54.0	-3.8	1.58 H	227	28.7	21.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	99.7 PK			3.28 V	68	57.5	42.2
2	*5580.00	88.8 AV			3.28 V	68	46.6	42.2
3	11160.00	63.6 PK	74.0	-10.4	2.29 V	320	42.1	21.5
4	11160.00	50.4 AV	54.0	-3.6	2.29 V	320	28.9	21.5

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	107.3 PK			2.69 H	118	64.8	42.5
2	*5700.00	95.8 AV			2.69 H	118	53.3	42.5
3	#5725.00	66.0 PK	74.0	-8.0	2.56 H	116	57.3	8.7
4	#5725.00	52.4 AV	54.0	-1.6	2.56 H	116	43.7	8.7
5	11400.00	64.3 PK	74.0	-9.7	3.38 H	214	42.8	21.5
6	11400.00	50.9 AV	54.0	-3.1	3.38 H	214	29.4	21.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	100.0 PK			3.10 V	110	57.5	42.5
2	*5700.00	88.8 AV			3.10 V	110	46.3	42.5
3	#5725.00	61.1 PK	74.0	-12.9	3.19 V	87	52.4	8.7
4	#5725.00	47.8 AV	54.0	-6.2	3.19 V	87	39.1	8.7
5	11400.00	63.6 PK	74.0	-10.4	2.24 V	187	42.1	21.5
6	11400.00	50.4 AV	54.0	-3.6	2.24 V	187	28.9	21.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.6 PK	74.0	-14.4	3.05 H	123	51.4	8.2
2	#5470.00	46.0 AV	54.0	-8.0	3.05 H	123	37.8	8.2
3	*5720.00	98.7 PK			3.00 H	119	56.2	42.5
4	*5720.00	88.8 AV			3.00 H	119	46.3	42.5
5	#5850.00	60.5 PK	74.0	-13.5	2.96 H	115	51.3	9.2
6	#5850.00	47.0 AV	54.0	-7.0	2.96 H	115	37.8	9.2
7	11440.00	63.9 PK	74.0	-10.1	2.16 H	269	42.2	21.7
8	11440.00	50.9 AV	54.0	-3.1	2.16 H	269	29.2	21.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	60.4 PK	74.0	-13.6	3.32 V	109	52.2	8.2
2	#5470.00	46.0 AV	54.0	-8.0	3.32 V	109	37.8	8.2
3	*5720.00	92.7 PK			3.40 V	105	50.2	42.5
4	*5720.00	82.9 AV			3.40 V	105	40.4	42.5
5	#5850.00	60.9 PK	74.0	-13.1	3.43 V	99	51.7	9.2
6	#5850.00	47.2 AV	54.0	-6.8	3.43 V	99	38.0	9.2
7	11440.00	63.6 PK	74.0	-10.4	1.77 V	320	41.9	21.7
8	11440.00	50.6 AV	54.0	-3.4	1.77 V	320	28.9	21.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5629.60	62.1 PK	68.2	-6.1	2.62 H	116	53.6	8.5
2	*5745.00	107.1 PK			2.62 H	116	64.4	42.7
3	*5745.00	96.0 AV			2.62 H	116	53.3	42.7
4	#5967.20	62.1 PK	68.2	-6.1	2.62 H	116	52.5	9.6
5	11490.00	64.3 PK	74.0	-9.7	1.69 H	224	42.5	21.8
6	11490.00	51.1 AV	54.0	-2.9	1.69 H	224	29.3	21.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5620.00	61.5 PK	68.2	-6.7	1.10 V	87	53.0	8.5
2	*5745.00	101.2 PK			1.10 V	87	58.5	42.7
3	*5745.00	90.3 AV			1.10 V	87	47.6	42.7
4	#5951.20	61.9 PK	68.2	-6.3	1.10 V	87	52.5	9.4
5	11490.00	64.1 PK	74.0	-9.9	1.74 V	155	42.3	21.8
6	11490.00	50.9 AV	54.0	-3.1	1.74 V	155	29.1	21.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5635.20	60.8 PK	68.2	-7.4	2.62 H	117	52.3	8.5
2	*5785.00	106.7 PK			2.62 H	117	64.0	42.7
3	*5785.00	95.6 AV			2.62 H	117	52.9	42.7
4	#5969.60	62.1 PK	68.2	-6.1	2.62 H	117	52.5	9.6
5	11570.00	64.1 PK	74.0	-9.9	1.62 H	228	42.3	21.8
6	11570.00	51.5 AV	54.0	-2.5	1.62 H	228	29.7	21.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5608.00	61.6 PK	68.2	-6.6	1.21 V	87	53.1	8.5
2	*5785.00	100.6 PK			1.21 V	87	57.9	42.7
3	*5785.00	90.0 AV			1.21 V	87	47.3	42.7
4	#5938.40	62.4 PK	68.2	-5.8	1.21 V	87	53.0	9.4
5	11570.00	63.9 PK	74.0	-10.1	1.96 V	208	42.1	21.8
6	11570.00	50.4 AV	54.0	-3.6	1.96 V	208	28.6	21.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5621.60	62.1 PK	68.2	-6.1	2.63 H	118	53.6	8.5
2	*5825.00	107.2 PK			2.63 H	118	64.3	42.9
3	*5825.00	95.5 AV			2.63 H	118	52.6	42.9
4	#5948.80	63.8 PK	68.2	-4.4	2.63 H	118	54.4	9.4
5	11650.00	63.5 PK	74.0	-10.5	2.24 H	186	42.1	21.4
6	11650.00	50.3 AV	54.0	-3.7	2.24 H	186	28.9	21.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5602.40	61.1 PK	68.2	-7.1	1.22 V	145	52.6	8.5
2	*5825.00	100.6 PK			1.22 V	145	57.7	42.9
3	*5825.00	89.8 AV			1.22 V	145	46.9	42.9
4	#5995.20	62.0 PK	68.2	-6.2	1.22 V	145	52.3	9.7
5	11650.00	63.3 PK	74.0	-10.7	2.69 V	306	41.9	21.4
6	11650.00	50.2 AV	54.0	-3.8	2.69 V	306	28.8	21.4

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.5 PK	74.0	-4.5	2.66 H	121	62.1	7.4
2	5150.00	52.6 AV	54.0	-1.4	2.66 H	121	45.2	7.4
3	*5190.00	101.5 PK			3.01 H	125	60.2	41.3
4	*5190.00	90.5 AV			3.01 H	125	49.2	41.3
5	#10380.00	61.6 PK	74.0	-12.4	2.28 H	306	41.6	20.0
6	#10380.00	48.7 AV	54.0	-5.3	2.28 H	306	28.7	20.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.2 PK	74.0	-6.8	3.28 V	66	59.8	7.4
2	5150.00	50.9 AV	54.0	-3.1	3.28 V	66	43.5	7.4
3	*5190.00	99.1 PK			3.47 V	67	57.8	41.3
4	*5190.00	88.7 AV			3.47 V	67	47.4	41.3
5	#10380.00	61.6 PK	74.0	-12.4	2.69 V	253	41.6	20.0
6	#10380.00	48.9 AV	54.0	-5.1	2.69 V	253	28.9	20.0

Remarks:

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

CHANNEL	TX Channel 46	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	103.4 PK			2.82 H	122	62.0	41.4
2	*5230.00	92.9 AV			2.82 H	122	51.5	41.4
3	5350.00	59.5 PK	74.0	-14.5	2.94 H	120	51.5	8.0
4	5350.00	47.2 AV	54.0	-6.8	2.94 H	120	39.2	8.0
5	#10460.00	62.0 PK	74.0	-12.0	2.47 H	320	41.8	20.2
6	#10460.00	49.1 AV	54.0	-4.9	2.47 H	320	28.9	20.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	100.6 PK			3.38 V	64	59.2	41.4
2	*5230.00	90.8 AV			3.38 V	64	49.4	41.4
3	5350.00	59.3 PK	74.0	-14.7	3.15 V	72	51.3	8.0
4	5350.00	46.8 AV	54.0	-7.2	3.15 V	72	38.8	8.0
5	#10380.00	61.7 PK	74.0	-12.3	2.77 V	240	41.7	20.0
6	#10380.00	49.0 AV	54.0	-5.0	2.77 V	240	29.0	20.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.0 PK	74.0	-15.0	2.88 H	128	51.6	7.4
2	5150.00	46.9 AV	54.0	-7.1	2.88 H	128	39.5	7.4
3	*5270.00	103.8 PK			2.80 H	115	62.3	41.5
4	*5270.00	93.2 AV			2.80 H	115	51.7	41.5
5	#10540.00	62.5 PK	74.0	-11.5	2.55 H	311	42.0	20.5
6	#10540.00	49.6 AV	54.0	-4.4	2.55 H	311	29.1	20.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.9 PK	74.0	-15.1	3.24 V	79	51.5	7.4
2	5150.00	46.7 AV	54.0	-7.3	3.24 V	79	39.3	7.4
3	*5270.00	101.3 PK			3.30 V	66	59.8	41.5
4	*5270.00	91.2 AV			3.30 V	66	49.7	41.5
5	#10540.00	62.3 PK	74.0	-11.7	2.69 V	228	41.8	20.5
6	#10540.00	49.7 AV	54.0	-4.3	2.69 V	228	29.2	20.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	101.4 PK			2.71 H	118	59.8	41.6
2	*5310.00	91.1 AV			2.71 H	118	49.5	41.6
3	5350.00	69.1 PK	74.0	-4.9	2.78 H	110	61.1	8.0
4	5350.00	52.6 AV	54.0	-1.4	2.78 H	110	44.6	8.0
5	10620.00	63.1 PK	74.0	-10.9	2.46 H	304	42.3	20.8
6	10620.00	50.2 AV	54.0	-3.8	2.46 H	304	29.4	20.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	99.8 PK			3.36 V	68	58.2	41.6
2	*5310.00	89.2 AV			3.36 V	68	47.6	41.6
3	5350.00	64.7 PK	74.0	-9.3	3.21 V	92	56.7	8.0
4	5350.00	50.9 AV	54.0	-3.1	3.21 V	92	42.9	8.0
5	10620.00	62.8 PK	74.0	-11.2	2.41 V	269	42.0	20.8
6	10620.00	50.0 AV	54.0	-4.0	2.41 V	269	29.2	20.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	62.6 PK	74.0	-11.4	2.71 H	130	54.4	8.2
2	5460.00	48.0 AV	54.0	-6.0	2.71 H	130	39.8	8.2
3	#5470.00	70.5 PK	74.0	-3.5	2.66 H	117	62.3	8.2
4	#5470.00	52.9 AV	54.0	-1.1	2.66 H	117	44.7	8.2
5	*5510.00	102.8 PK			1.00 H	105	60.8	42.0
6	*5510.00	91.4 AV			1.00 H	105	49.4	42.0
7	11020.00	63.8 PK	74.0	-10.2	2.59 H	307	42.5	21.3
8	11020.00	50.5 AV	54.0	-3.5	2.59 H	307	29.2	21.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.4 PK	74.0	-14.6	1.76 V	189	51.2	8.2
2	5460.00	46.4 AV	54.0	-7.6	1.76 V	189	38.2	8.2
3	#5470.00	63.7 PK	74.0	-10.3	1.67 V	177	55.5	8.2
4	#5470.00	48.1 AV	54.0	-5.9	1.67 V	177	39.9	8.2
5	*5510.00	95.3 PK			1.61 V	183	53.3	42.0
6	*5510.00	84.5 AV			1.61 V	183	42.5	42.0
7	11020.00	63.4 PK	74.0	-10.6	2.36 V	142	42.1	21.3
8	11020.00	49.9 AV	54.0	-4.1	2.36 V	142	28.6	21.3

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	103.2 PK			2.75 H	119	61.0	42.2
2	*5550.00	92.3 AV			2.75 H	119	50.1	42.2
3	11100.00	64.0 PK	74.0	-10.0	2.47 H	143	42.7	21.3
4	11100.00	51.1 AV	54.0	-2.9	2.47 H	143	29.8	21.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	98.0 PK			1.44 V	180	55.8	42.2
2	*5550.00	86.6 AV			1.44 V	180	44.4	42.2
3	11100.00	63.4 PK	74.0	-10.6	2.99 V	157	42.1	21.3
4	11100.00	50.1 AV	54.0	-3.9	2.99 V	157	28.8	21.3

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	104.7 PK			2.55 H	117	62.3	42.4
2	*5670.00	93.1 AV			2.55 H	117	50.7	42.4
3	#5725.00	62.5 PK	74.0	-11.5	2.52 H	114	53.8	8.7
4	#5725.00	49.2 AV	54.0	-4.8	2.52 H	114	40.5	8.7
5	11340.00	64.1 PK	74.0	-9.9	2.98 H	173	42.6	21.5
6	11340.00	50.9 AV	54.0	-3.1	2.98 H	173	29.4	21.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	97.3 PK			1.44 V	186	54.9	42.4
2	*5670.00	86.6 AV			1.44 V	186	44.2	42.4
3	#5725.00	60.6 PK	74.0	-13.4	1.50 V	193	51.9	8.7
4	#5725.00	47.4 AV	54.0	-6.6	1.50 V	193	38.7	8.7
5	11340.00	63.8 PK	74.0	-10.2	2.48 V	119	42.3	21.5
6	11340.00	50.6 AV	54.0	-3.4	2.48 V	119	29.1	21.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.4 PK	74.0	-14.6	3.02 H	119	51.2	8.2
2	#5470.00	45.8 AV	54.0	-8.2	3.02 H	119	37.6	8.2
3	*5710.00	96.7 PK			3.10 H	123	54.2	42.5
4	*5710.00	86.1 AV			3.10 H	123	43.6	42.5
5	#5850.00	60.5 PK	74.0	-13.5	3.13 H	132	51.3	9.2
6	#5850.00	47.1 AV	54.0	-6.9	3.13 H	132	37.9	9.2
7	11420.00	63.6 PK	74.0	-10.4	2.08 H	275	41.9	21.7
8	11420.00	50.7 AV	54.0	-3.3	2.08 H	275	29.0	21.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.8 PK	74.0	-14.2	3.35 V	108	51.6	8.2
2	#5470.00	46.1 AV	54.0	-7.9	3.35 V	108	37.9	8.2
3	*5710.00	90.3 PK			3.39 V	104	47.8	42.5
4	*5710.00	80.1 AV			3.39 V	104	37.6	42.5
5	#5850.00	60.1 PK	74.0	-13.9	3.41 V	110	50.9	9.2
6	#5850.00	46.9 AV	54.0	-7.1	3.41 V	110	37.7	9.2
7	11420.00	63.3 PK	74.0	-10.7	1.79 V	322	41.6	21.7
8	11420.00	50.5 AV	54.0	-3.5	1.79 V	322	28.8	21.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5616.80	59.8 PK	68.2	-8.4	2.61 H	120	51.3	8.5
2	*5755.00	105.4 PK			2.61 H	120	62.7	42.7
3	*5755.00	94.8 AV			2.61 H	120	52.1	42.7
4	#5970.40	61.4 PK	68.2	-6.8	2.61 H	120	51.8	9.6
5	11510.00	64.2 PK	74.0	-9.8	1.74 H	268	42.5	21.7
6	11510.00	51.3 AV	54.0	-2.7	1.74 H	268	29.6	21.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5649.60	60.5 PK	68.2	-7.7	1.44 V	196	51.9	8.6
2	*5755.00	97.9 PK			1.44 V	196	55.2	42.7
3	*5755.00	87.8 AV			1.44 V	196	45.1	42.7
4	#5950.40	61.0 PK	68.2	-7.2	1.44 V	196	51.6	9.4
5	11510.00	63.9 PK	74.0	-10.1	1.26 V	114	42.2	21.7
6	11510.00	51.0 AV	54.0	-3.0	1.26 V	114	29.3	21.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5630.40	59.7 PK	68.2	-8.5	2.66 H	125	51.2	8.5
2	*5795.00	104.9 PK			2.66 H	125	62.2	42.7
3	*5795.00	94.3 AV			2.66 H	125	51.6	42.7
4	#5936.00	62.0 PK	68.2	-6.2	2.66 H	125	52.6	9.4
5	11590.00	64.0 PK	74.0	-10.0	1.78 H	256	42.3	21.7
6	11590.00	51.1 AV	54.0	-2.9	1.78 H	256	29.4	21.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5640.80	59.8 PK	68.2	-8.4	1.08 V	270	51.2	8.6
2	*5795.00	97.4 PK			1.08 V	270	54.7	42.7
3	*5795.00	87.5 AV			1.08 V	270	44.8	42.7
4	#5963.20	60.7 PK	68.2	-7.5	1.08 V	270	51.1	9.6
5	11590.00	63.8 PK	74.0	-10.2	1.31 V	119	42.1	21.7
6	11590.00	50.9 AV	54.0	-3.1	1.31 V	119	29.2	21.7

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)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.2 PK	74.0	-6.8	2.61 H	122	59.8	7.4
2	5150.00	52.7 AV	54.0	-1.3	2.61 H	122	45.3	7.4
3	*5210.00	98.8 PK			2.94 H	119	57.4	41.4
4	*5210.00	88.4 AV			2.94 H	119	47.0	41.4
5	5350.00	59.5 PK	74.0	-14.5	2.68 H	115	51.5	8.0
6	5350.00	46.9 AV	54.0	-7.1	2.68 H	115	38.9	8.0
7	#10420.00	61.5 PK	74.0	-12.5	3.24 H	189	41.5	20.0
8	#10420.00	48.7 AV	54.0	-5.3	3.24 H	189	28.7	20.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.1 PK	74.0	-7.9	3.28 V	72	58.7	7.4
2	5150.00	51.3 AV	54.0	-2.7	3.28 V	72	43.9	7.4
3	*5210.00	98.0 PK			3.40 V	65	56.6	41.4
4	*5210.00	87.6 AV			3.40 V	65	46.2	41.4
5	5350.00	59.6 PK	74.0	-14.4	3.31 V	89	51.6	8.0
6	5350.00	46.8 AV	54.0	-7.2	3.31 V	89	38.8	8.0
7	#10420.00	61.7 PK	74.0	-12.3	2.88 V	215	41.7	20.0
8	#10420.00	48.5 AV	54.0	-5.5	2.88 V	215	28.5	20.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.2 PK	74.0	-14.8	2.65 H	124	51.8	7.4
2	5150.00	46.0 AV	54.0	-8.0	2.65 H	124	38.6	7.4
3	*5290.00	97.5 PK			2.72 H	119	56.0	41.5
4	*5290.00	86.8 AV			2.72 H	119	45.3	41.5
5	5350.00	68.5 PK	74.0	-5.5	2.85 H	133	60.5	8.0
6	5350.00	52.9 AV	54.0	-1.1	2.85 H	133	44.9	8.0
7	#10580.00	62.3 PK	74.0	-11.7	3.12 H	185	41.7	20.6
8	#10580.00	49.1 AV	54.0	-4.9	3.12 H	185	28.5	20.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	48.6 PK	74.0	-25.4	3.45 V	79	41.2	7.4
2	5150.00	46.0 AV	54.0	-8.0	3.45 V	79	38.6	7.4
3	*5290.00	94.8 PK			3.38 V	65	53.3	41.5
4	*5290.00	84.6 AV			3.38 V	65	43.1	41.5
5	5350.00	64.3 PK	74.0	-9.7	3.26 V	90	56.3	8.0
6	5350.00	51.1 AV	54.0	-2.9	3.26 V	90	43.1	8.0
7	#10580.00	62.1 PK	74.0	-11.9	2.68 V	352	41.5	20.6
8	#10580.00	49.0 AV	54.0	-5.0	2.68 V	352	28.4	20.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	66.1 PK	74.0	-7.9	2.51 H	103	57.9	8.2
2	5460.00	52.0 AV	54.0	-2.0	2.51 H	103	43.8	8.2
3	#5470.00	67.3 PK	74.0	-6.7	2.63 H	117	59.1	8.2
4	#5470.00	52.7 AV	54.0	-1.3	2.63 H	117	44.5	8.2
5	*5530.00	98.5 PK			2.61 H	119	56.4	42.1
6	*5530.00	87.8 AV			2.61 H	119	45.7	42.1
7	#5725.00	61.0 PK	74.0	-13.0	2.49 H	125	52.3	8.7
8	#5725.00	48.1 AV	54.0	-5.9	2.49 H	125	39.4	8.7
9	11060.00	63.8 PK	74.0	-10.2	1.52 H	319	42.5	21.3
10	11060.00	51.1 AV	54.0	-2.9	1.52 H	319	29.8	21.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.4 PK	74.0	-14.6	1.78 V	192	51.2	8.2
2	5460.00	46.3 AV	54.0	-7.7	1.78 V	192	38.1	8.2
3	#5470.00	61.5 PK	74.0	-12.5	1.61 V	182	53.3	8.2
4	#5470.00	47.8 AV	54.0	-6.2	1.61 V	182	39.6	8.2
5	*5530.00	91.4 PK			1.63 V	188	49.3	42.1
6	*5530.00	80.6 AV			1.63 V	188	38.5	42.1
7	#5725.00	60.5 PK	74.0	-13.5	1.55 V	171	51.8	8.7
8	#5725.00	47.0 AV	54.0	-7.0	1.55 V	171	38.3	8.7
9	11060.00	63.4 PK	74.0	-10.6	2.47 V	193	42.1	21.3
10	11060.00	50.5 AV	54.0	-3.5	2.47 V	193	29.2	21.3

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	59.6 PK	74.0	-14.4	2.72 H	108	51.4	8.2
2	5460.00	46.3 AV	54.0	-7.7	2.72 H	108	38.1	8.2
3	#5470.00	60.3 PK	74.0	-13.7	2.54 H	119	52.1	8.2
4	#5470.00	46.4 AV	54.0	-7.6	2.54 H	119	38.2	8.2
5	*5610.00	100.0 PK			2.59 H	116	57.7	42.3
6	*5610.00	89.4 AV			2.59 H	116	47.1	42.3
7	#5725.00	60.5 PK	74.0	-13.5	2.66 H	105	51.8	8.7
8	#5725.00	47.9 AV	54.0	-6.1	2.66 H	105	39.2	8.7
9	11220.00	64.3 PK	74.0	-9.7	1.67 H	228	42.6	21.7
10	11220.00	51.4 AV	54.0	-2.6	1.67 H	228	29.7	21.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.6 PK	74.0	-15.4	1.58 V	162	50.4	8.2
2	5460.00	46.1 AV	54.0	-7.9	1.58 V	162	37.9	8.2
3	#5470.00	59.3 PK	74.0	-14.7	1.72 V	183	51.1	8.2
4	#5470.00	46.4 AV	54.0	-7.6	1.72 V	183	38.2	8.2
5	*5610.00	94.7 PK			1.65 V	177	52.4	42.3
6	*5610.00	83.7 AV			1.65 V	177	41.4	42.3
7	#5725.00	61.1 PK	74.0	-12.9	1.89 V	165	52.4	8.7
8	#5725.00	47.2 AV	54.0	-6.8	1.89 V	165	38.5	8.7
9	11220.00	63.8 PK	74.0	-10.2	2.29 V	126	42.1	21.7
10	11220.00	50.3 AV	54.0	-3.7	2.29 V	126	28.6	21.7

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.3 PK	74.0	-14.7	3.18 H	128	51.1	8.2
2	#5470.00	45.9 AV	54.0	-8.1	3.18 H	128	37.7	8.2
3	*5690.00	98.0 PK			3.13 H	124	55.6	42.4
4	*5690.00	87.4 AV			3.13 H	124	45.0	42.4
5	#5850.00	61.1 PK	74.0	-12.9	3.08 H	104	51.9	9.2
6	#5850.00	47.1 AV	54.0	-6.9	3.08 H	104	37.9	9.2
7	11380.00	63.8 PK	74.0	-10.2	2.04 H	280	42.3	21.5
8	11380.00	50.7 AV	54.0	-3.3	2.04 H	280	29.2	21.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5470.00	59.7 PK	74.0	-14.3	3.10 V	129	51.5	8.2
2	#5470.00	46.0 AV	54.0	-8.0	3.10 V	129	37.8	8.2
3	*5690.00	90.8 PK			3.42 V	106	48.4	42.4
4	*5690.00	80.9 AV			3.42 V	106	38.5	42.4
5	#5850.00	60.9 PK	74.0	-13.1	3.21 V	112	51.7	9.2
6	#5850.00	47.0 AV	54.0	-7.0	3.21 V	112	37.8	9.2
7	11380.00	63.5 PK	74.0	-10.5	2.11 V	279	42.0	21.5
8	11380.00	50.3 AV	54.0	-3.7	2.11 V	279	28.8	21.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5628.00	60.9 PK	68.2	-7.3	2.60 H	126	52.4	8.5
2	*5775.00	102.3 PK			2.60 H	126	59.6	42.7
3	*5775.00	92.3 AV			2.60 H	126	49.6	42.7
4	#5942.40	61.1 PK	68.2	-7.1	2.60 H	126	51.7	9.4
5	11550.00	64.5 PK	74.0	-9.5	1.66 H	294	42.7	21.8
6	11550.00	51.3 AV	54.0	-2.7	1.66 H	294	29.5	21.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5619.20	60.4 PK	68.2	-7.8	1.42 V	194	51.9	8.5
2	*5775.00	95.7 PK			1.42 V	194	53.0	42.7
3	*5775.00	85.5 AV			1.42 V	194	42.8	42.7
4	#5954.40	61.6 PK	68.2	-6.6	1.42 V	194	52.1	9.5
5	11550.00	64.2 PK	74.0	-9.8	1.18 V	106	42.4	21.8
6	11550.00	51.1 AV	54.0	-2.9	1.18 V	106	29.3	21.8

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.

Below 1GHz worst-case data: 802.11ac (VHT20)

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	45.42	18.7 QP	40.0	-21.3	1.99 H	118	33.4	-14.7
2	161.85	17.1 QP	43.5	-26.4	1.00 H	33	30.7	-13.6
3	375.29	20.7 QP	46.0	-25.3	1.99 H	283	31.4	-10.7
4	567.39	24.3 QP	46.0	-21.7	1.50 H	244	31.4	-7.1
5	730.38	39.1 QP	46.0	-6.9	1.00 H	7	42.5	-3.4
6	936.07	36.8 QP	46.0	-9.2	1.50 H	314	36.6	0.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.60	27.4 QP	40.0	-12.6	1.24 V	188	42.5	-15.1
2	441.26	22.4 QP	46.0	-23.6	1.00 V	29	31.7	-9.3
3	542.17	23.7 QP	46.0	-22.3	1.00 V	12	31.4	-7.7
4	730.38	29.1 QP	46.0	-16.9	1.24 V	343	32.5	-3.4
5	881.74	29.9 QP	46.0	-16.1	1.00 V	128	30.9	-1.0
6	936.07	37.4 QP	46.0	-8.6	1.50 V	13	37.2	0.2

Remarks:

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

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 21, 2016	Nov. 20, 2017
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Dec. 22, 2016	Dec. 21, 2017
LISN ROHDE & SCHWARZ (EUT)	ESH3-Z5	835239/001	Mar. 10, 2017	Mar. 09, 2018
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 15, 2017	Aug. 14, 2018
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

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

2. The test was performed in HwaYa Shielded Room 1.

3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

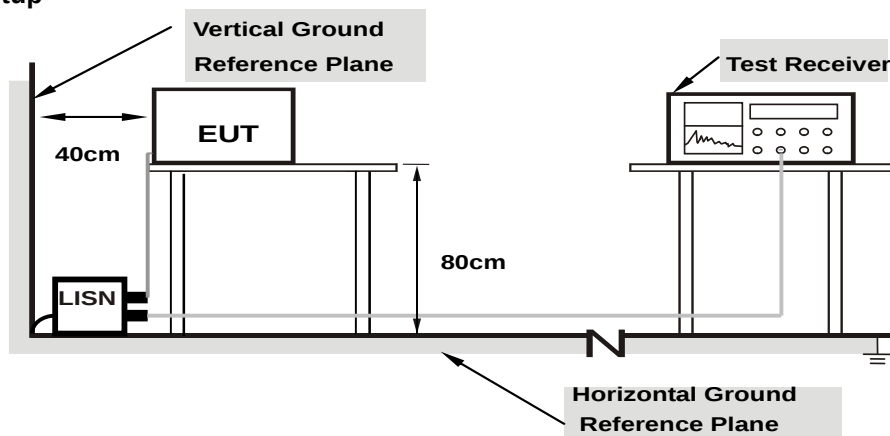
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



Note: 1.Support units were connected to second LISN.

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

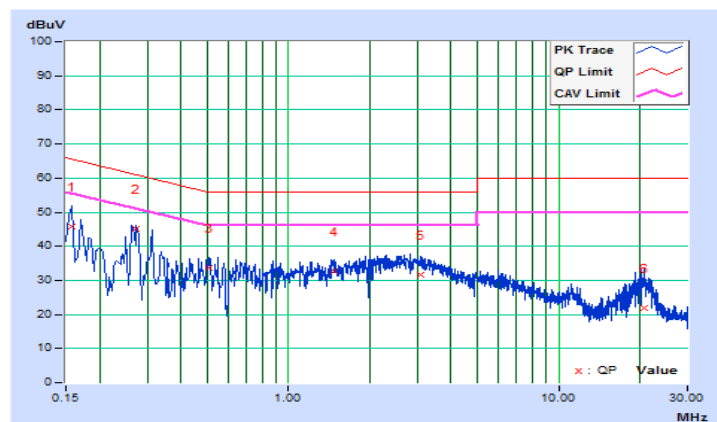
4.2.7 Test Results

Worst-case data: 802.11ac (VHT20)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)							
No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]	(dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15770	10.45	35.38	16.39	45.83	26.84	65.58	55.58	-19.75	-28.74
2	0.27400	10.48	34.62	21.13	45.10	31.61	61.00	51.00	-15.90	-19.39
3	0.51065	10.51	23.13	10.71	33.64	21.22	56.00	46.00	-22.36	-24.78
4	1.47800	10.50	22.12	8.16	32.62	18.66	56.00	46.00	-23.38	-27.34
5	3.09800	10.59	21.06	9.27	31.65	19.86	56.00	46.00	-24.35	-26.14
6	20.76600	11.45	10.47	-0.62	21.92	10.83	60.00	50.00	-38.08	-39.17

REMARKS:

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

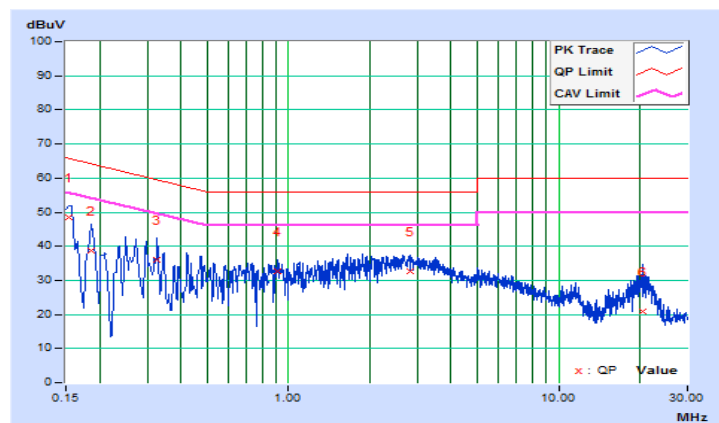


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	-----------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.21	38.22	19.91	48.43	30.12	65.78	55.78	-17.35	-25.66
2	0.18600	10.22	28.47	11.26	38.69	21.48	64.21	54.21	-25.52	-32.73
3	0.32600	10.23	25.66	7.84	35.89	18.07	59.55	49.55	-23.66	-31.48
4	0.91000	10.26	22.25	7.54	32.51	17.80	56.00	46.00	-23.49	-28.20
5	2.82200	10.35	22.42	9.78	32.77	20.13	56.00	46.00	-23.23	-25.87
6	20.57800	11.07	9.92	-0.64	20.99	10.43	60.00	50.00	-39.01	-39.57

REMARKS:

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



4.3 Transmit Power Measurement

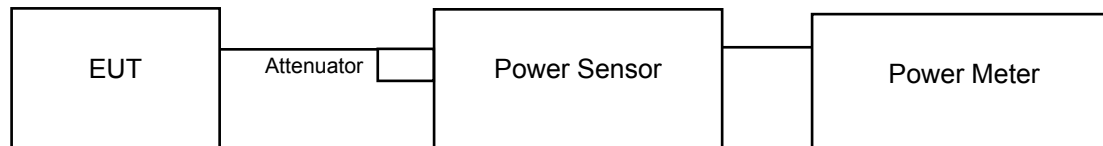
4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		LIMIT
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p $\leq$ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
		Indoor Access Point	1 Watt (30 dBm)
	√	Mobile and Portable client device	250mW (24 dBm)
U-NII-2A	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	√		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

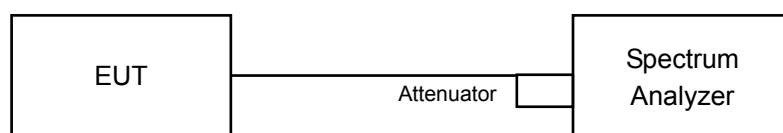
*B is the 26 dB emission bandwidth in megahertz

4.3.2 Test Setup

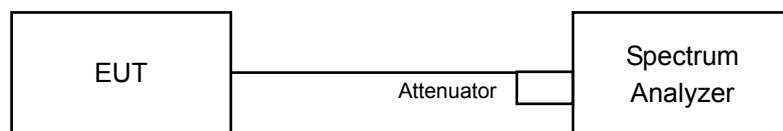
For Power Output
802.11ac (VHT20), 802.11ac (VHT40)



802.11ac (VHT80)



For Bandwidth



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

For 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.

For 802.11ac (VHT80)

- 1) Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- 2) Set sweep trigger to "free run".
- 3) Set RBW = 1 MHz.
- 4) Set VBW $\geq$ 3 MHz.
- 5) Number of points in sweep $\geq$ 2 Span / RBW.
- 6) Sweep time $\leq$ (number of points in sweep) * T
- 7) Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
- 8) Detector = RMS.
- 9) Add the duty factor.
- 10) Trace mode = max hold.
- 11) Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
- 12) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

For 26dB Bandwidth

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	41.305	16.16	24	Pass
40	5200	40.551	16.08	24	Pass
48	5240	40.832	16.11	24	Pass
52	5260	41.400	16.17	24	Pass
60	5300	42.267	16.26	24	Pass
64	5320	42.462	16.28	24	Pass
100	5500	39.174	15.93	24	Pass
116	5580	39.446	15.96	24	Pass
140	5700	39.994	16.02	24	Pass
144	5720 For U-NII-2C	16.312	12.13	24	Pass
144	5720 For U-NII-3	4.814	6.83	30	Pass
149	5745	40.087	16.03	30	Pass
157	5785	42.170	16.25	30	Pass
165	5825	41.879	16.22	30	Pass

Note:

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

1. $11\text{dBm} + 10\log (41.12) = 27.14 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (40.93) = 27.12 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (42.65) = 27.30 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (38.86) = 26.90 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (39.01) = 26.91 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (41.54) = 27.18 \text{ dBm} > 24\text{dBm}$
7. $11\text{dBm} + 10\log (5725.00 - 5702.30) = 24.56 \text{ dBm} > 24\text{dBm}$

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	33.497	15.25	24	Pass
46	5230	42.560	16.29	24	Pass
54	5270	42.364	16.27	24	Pass
62	5310	30.200	14.80	24	Pass
102	5510	32.734	15.15	24	Pass
110	5550	46.559	16.68	24	Pass
134	5670	46.666	16.69	24	Pass
142	5710 For U-NII-2C	24.142	13.83	24	Pass
142	5710 For U-NII-3	1.972	2.95	30	Pass
151	5755	42.073	16.24	30	Pass
159	5795	42.267	16.26	30	Pass

Note:

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

1. $11\text{dBm} + 10\log (94.01) = 30.73 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (84.87) = 30.29 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (72.12) = 29.58 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (87.39) = 30.41 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (91.29) = 30.60 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (5725.00 - 5670.19) = 28.39 \text{ dBm} > 24\text{dBm}$

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	32.961	15.18	24	Pass
58	5290	25.704	14.10	24	Pass
106	5530	29.242	14.66	24	Pass
122	5610	43.652	16.40	24	Pass
138	5690 For U-NII-2C	40.630	16.09	24	Pass
138	5690 For U-NII-3	0.966	-0.15	30	Pass
155	5775	42.756	16.31	30	Pass

Note:

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

1. $11\text{dBm} + 10\log (129.49) = 32.12 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (105.22) = 31.22 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (137.32) = 32.38 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (5725.00 - 5608.59) = 31.66 \text{ dBm} > 24\text{dBm}$

26dB Bandwidth:

802.11ac (VHT20)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
36	5180	41.68
40	5200	42.13
48	5240	43.81
52	5260	41.12
60	5300	40.93
64	5320	42.65
100	5500	38.86
116	5580	39.01
140	5700	41.54
144	5720 For U-NII-2C	22.70
144	5720 For U-NII-3	13.17

802.11ac (VHT40)

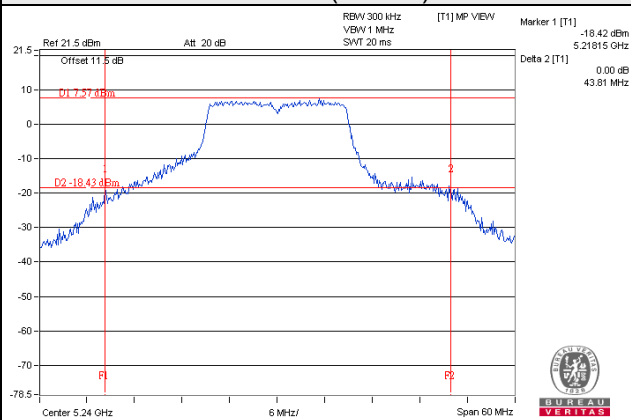
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
38	5190	81.81
46	5230	95.83
54	5270	94.01
62	5310	84.87
102	5510	72.12
110	5550	87.39
134	5670	91.29
142	5710 For U-NII-2C	54.81
142	5710 For U-NII-3	27.02

802.11ac (VHT80)

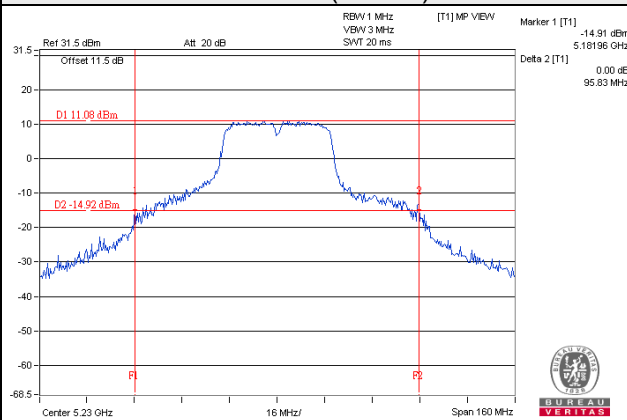
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
42	5210	135.23
58	5290	129.49
106	5530	105.22
122	5610	137.32
138	5690 For U-NII-2C	116.41
138	5690 For U-NII-3	47.54

Spectrum Plot of Worst Value

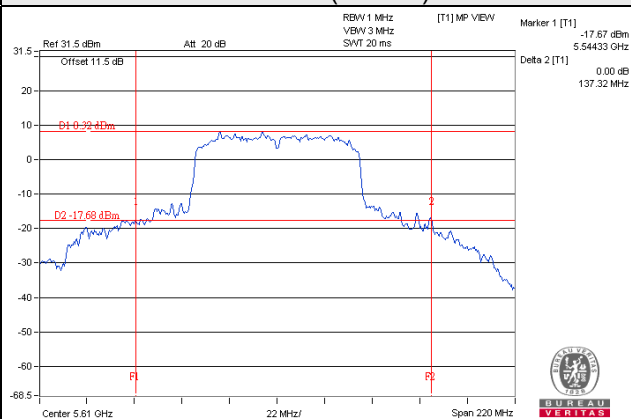
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



EUT Maximum Conducted Power

802.11ac (VHT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	42.462	16.28
5470~5725	39.994	16.02

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

802.11ac (VHT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	42.364	16.27
5470~5725	46.666	16.69

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

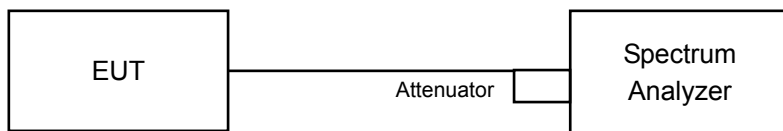
802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	25.704	14.10
5470~5725	43.652	16.40

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 sampling. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Test Result

802.11ac (VHT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	20.40
40	5200	20.28
48	5240	20.76
52	5260	20.88
60	5300	20.76
64	5320	21.12
100	5500	19.44
116	5580	19.20
140	5700	19.32
144	5720 For U-NII-2C	14.00
144	5720 For U-NII-3	4.00
149	5745	20.16
157	5785	20.64
165	5825	19.56

802.11ac (VHT40)

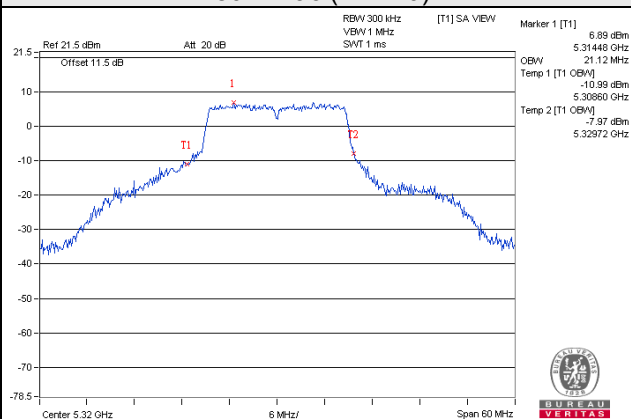
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	38.04
46	5230	39.00
54	5270	39.00
62	5310	38.04
102	5510	37.08
110	5550	37.68
134	5670	37.56
142	5710 For U-NII-2C	33.84
142	5710 For U-NII-3	3.48
151	5755	39.00
159	5795	38.64

802.11ac (VHT80)

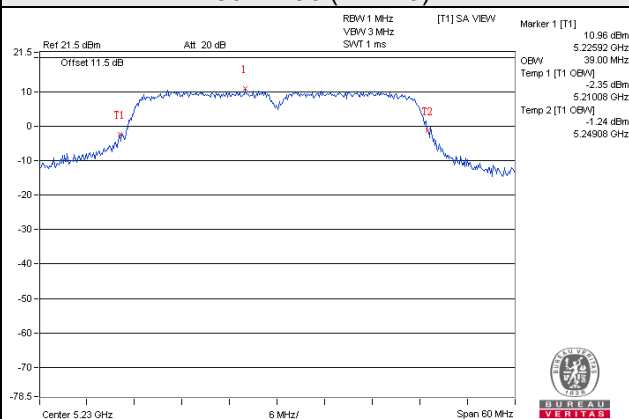
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	75.60
58	5290	75.36
106	5530	75.12
122	5610	75.60
138	5690 For U-NII-2C	73.16
138	5690 For U-NII-3	2.92
155	5775	76.80

Spectrum Plot of Worst Value

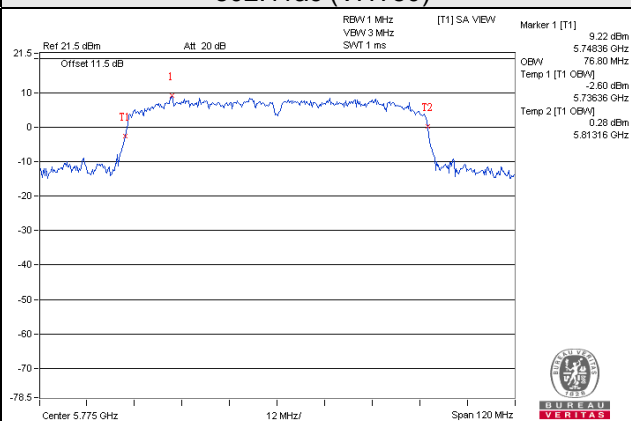
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

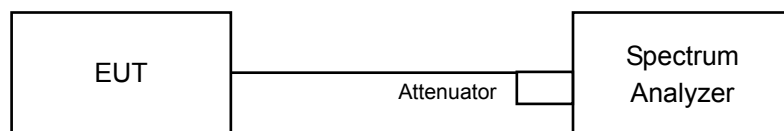


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-1, U-NII-2A, U-NII-2C band:

Duty cycle of test signal is $\geq 98\%$

Using method SA-1

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

Duty cycle of test signal is $< 98\%$

Using method SA-2

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS
- 3) Set Channel power measure = 1MHz
- 4) Sweep time = auto, trigger set to "free run".
- 5) Trace average at least 100 traces in power averaging mode.
- 6) Record the max value and add $10 \log (1/\text{duty cycle})$

For U-NII-3 band:

Duty cycle of test signal is $\geq 98\%$

Using method SA-1

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS.
- 3) Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- 4) Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $\text{BWCF} = 10\log(500 \text{ kHz} / 300 \text{ kHz})$.
- 5) Sweep time = auto, trigger set to "free run".
- 6) Trace average at least 100 traces in power averaging mode.
- 7) Record the max value.

Duty cycle of test signal is $< 98\%$

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS
- 3) Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- 4) Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $\text{BWCF} = 10\log(500 \text{ kHz} / 300 \text{ kHz})$
- 5) Sweep time = auto, trigger set to "free run".
- 6) Trace average at least 100 traces in power averaging mode.
- 7) Record the max value and add $10 \log (1/\text{duty cycle})$

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-1, U-NII-2A, U-NII-2C band:

802.11ac (VHT20)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
36	5180	2.06	0.64	2.70	11	Pass
40	5200	1.71	0.64	2.35	11	Pass
48	5240	2.14	0.64	2.78	11	Pass
52	5260	1.69	0.64	2.33	11	Pass
60	5300	1.73	0.64	2.37	11	Pass
64	5320	1.81	0.64	2.45	11	Pass
100	5500	2.11	0.64	2.75	11	Pass
116	5580	1.75	0.64	2.39	11	Pass
140	5700	2.12	0.64	2.76	11	Pass
144	5720 For U-NII-2C	1.15	0.64	1.79	11	Pass

Note:

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

802.11ac (VHT40)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
38	5190	-2.47	1.31	-1.16	11	Pass
46	5230	-1.26	1.31	0.05	11	Pass
54	5270	-0.82	1.31	0.49	11	Pass
62	5310	-2.88	1.31	-1.57	11	Pass
102	5510	-1.64	1.31	-0.33	11	Pass
110	5550	-1.22	1.31	0.09	11	Pass
134	5670	-1.15	1.31	0.16	11	Pass
142	5710 For U-NII-2C	-1.15	1.31	0.16	11	Pass

Note:

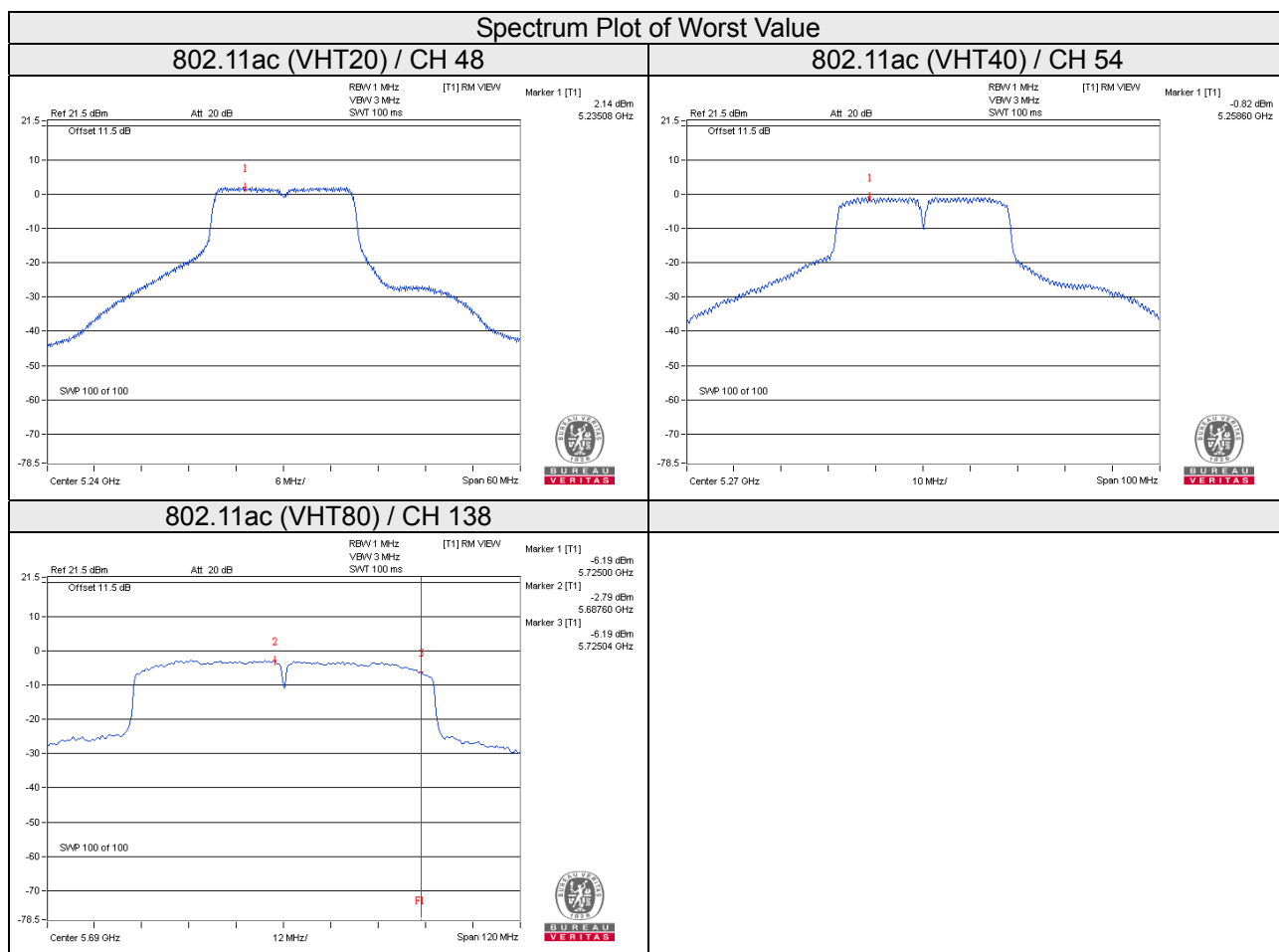
1. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
42	5210	-6.78	2.59	-4.19	11	Pass
58	5290	-8.16	2.59	-5.57	11	Pass
106	5530	-7.52	2.59	-4.93	11	Pass
122	5610	-5.18	2.59	-2.59	11	Pass
138	5690 For U-NII-2C	-2.79	2.59	-0.20	11	Pass

Note:

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



For U-NII-3 band:
802.11ac (VHT20)

Chan.	Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		(dBm/300kHz)	(dBm/500kHz)				
144	5720 For U-NII-3	-5.77	-3.55	0.64	-2.87	30	Pass
149	5745	-5.78	-3.56	0.64	-2.92	30	Pass
157	5785	-6.41	-4.19	0.64	-3.55	30	Pass
165	5825	-6.45	-4.23	0.64	-3.59	30	Pass

Note:

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

802.11ac (VHT40)

Chan.	Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		(dBm/300kHz)	(dBm/500kHz)				
142	5710 For U-NII-3	-9.80	-7.58	1.31	-6.27	30	Pass
151	5755	-9.11	-6.89	1.31	-5.58	30	Pass
159	5795	-9.14	-6.92	1.31	-5.61	30	Pass

Note:

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

802.11ac (VHT80)

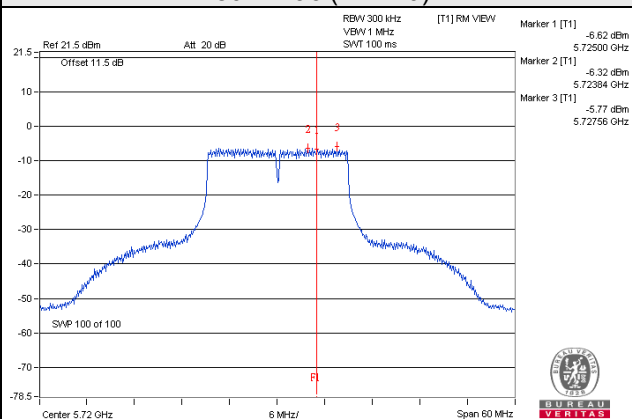
Chan.	Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
		(dBm/300kHz)	(dBm/500kHz)				
138	5690 For U-NII-3	-14.68	-12.46	2.59	-9.87	30	Pass
155	5775	-13.22	-11.00	2.59	-8.41	30	Pass

Note:

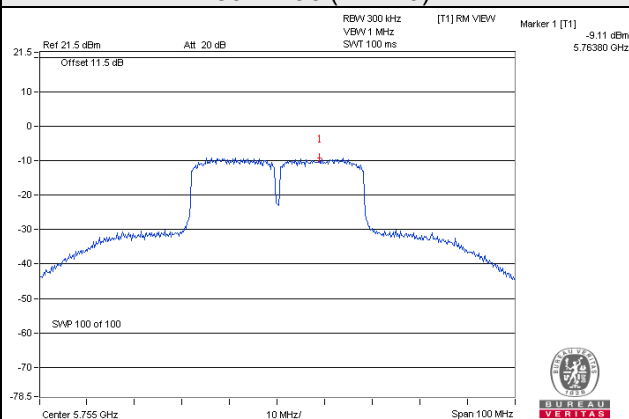
1. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

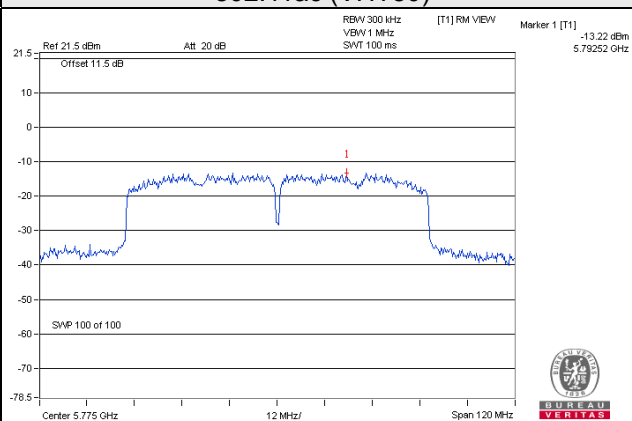
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

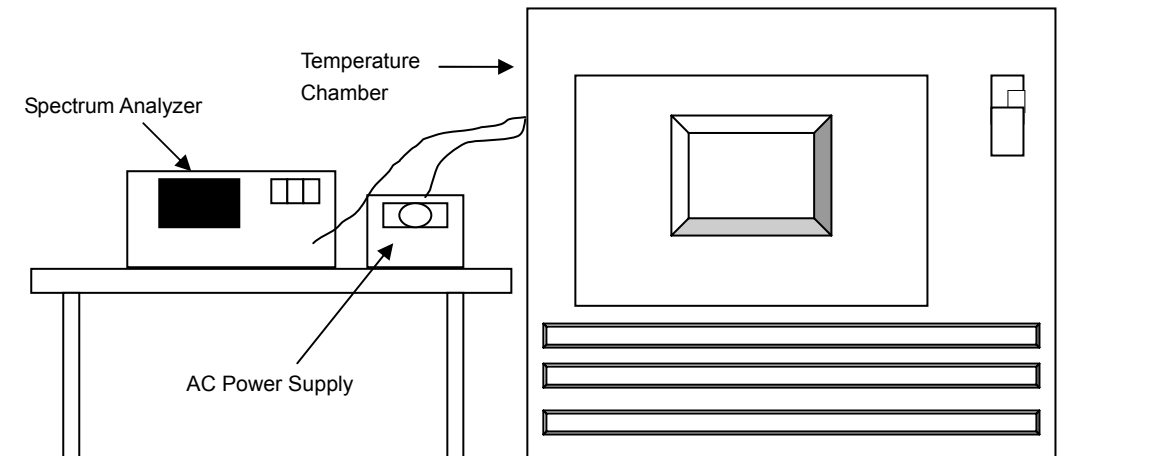


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

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

4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
50	120	5180.012	0.00023	5180.0096	0.00019	5180.0089	0.00017	5180.0123	0.00024
40	120	5180.0229	0.00044	5180.0232	0.00045	5180.0243	0.00047	5180.0246	0.00047
30	120	5180.0061	0.00012	5180.0075	0.00014	5180.0029	0.00006	5180.0036	0.00007
20	120	5180.019	0.00037	5180.0161	0.00031	5180.0174	0.00034	5180.017	0.00033
10	120	5179.9859	-0.00027	5179.9854	-0.00028	5179.9871	-0.00025	5179.985	-0.00029
0	120	5179.9973	-0.00005	5179.9994	-0.00001	5179.9974	-0.00005	5179.9955	-0.00009
-10	120	5179.9761	-0.00046	5179.9746	-0.00049	5179.9756	-0.00047	5179.9739	-0.00050
-20	120	5180.0254	0.00049	5180.0243	0.00047	5180.0237	0.00046	5180.024	0.00046
-30	120	5180.0063	0.00012	5180.0067	0.00013	5180.0057	0.00011	5180.007	0.00014

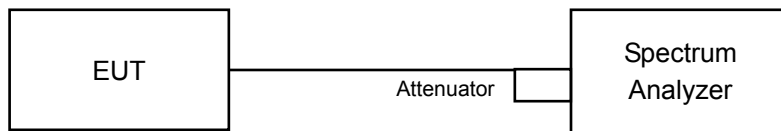
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)	Measured Frequency (MHz)	Frequency Drift (%)
20	138	5180.0199	0.00038	5180.0153	0.00030	5180.0173	0.00033	5180.0163	0.00031
	120	5180.019	0.00037	5180.0161	0.00031	5180.0174	0.00034	5180.017	0.00033
	102	5180.019	0.00037	5180.0169	0.00033	5180.0171	0.00033	5180.0161	0.00031

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

Measurement Procedure REF

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

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
144	5720 For U-NII-3	3.86	0.5	Pass
149	5745	17.68	0.5	Pass
157	5785	17.65	0.5	Pass
165	5825	17.66	0.5	Pass

802.11ac (VHT40)

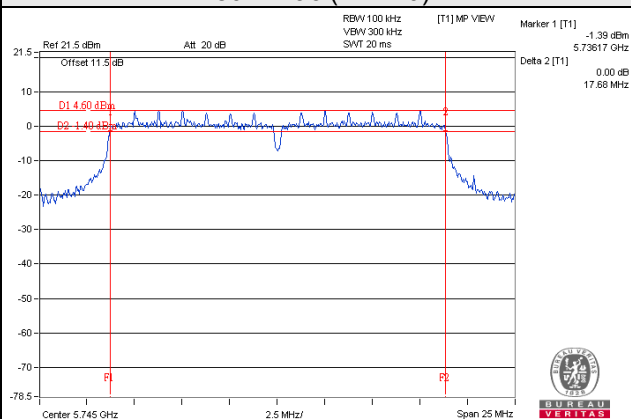
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
142	5710 For U-NII-3	2.68	0.5	Pass
151	5755	35.58	0.5	Pass
159	5795	35.35	0.5	Pass

802.11ac (VHT80)

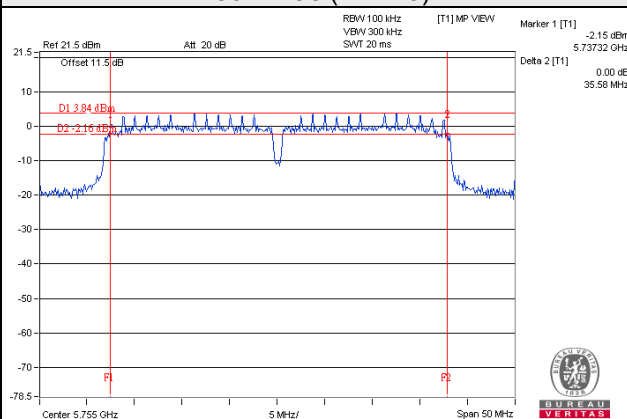
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
138	5690 For U-NII-3	2.60	0.5	Pass
155	5775	75.32	0.5	Pass

Spectrum Plot of Worst Value

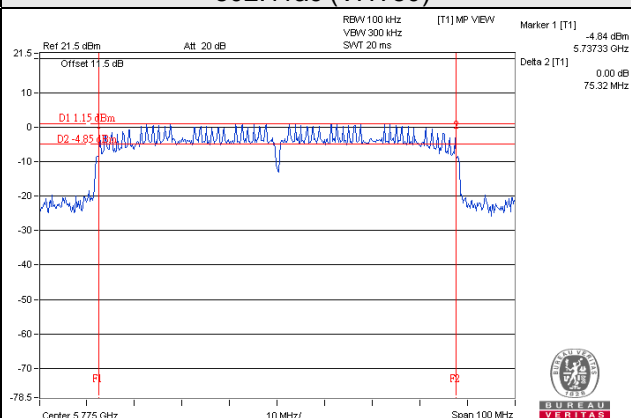
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



Note:

For CH144 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

For CH142 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

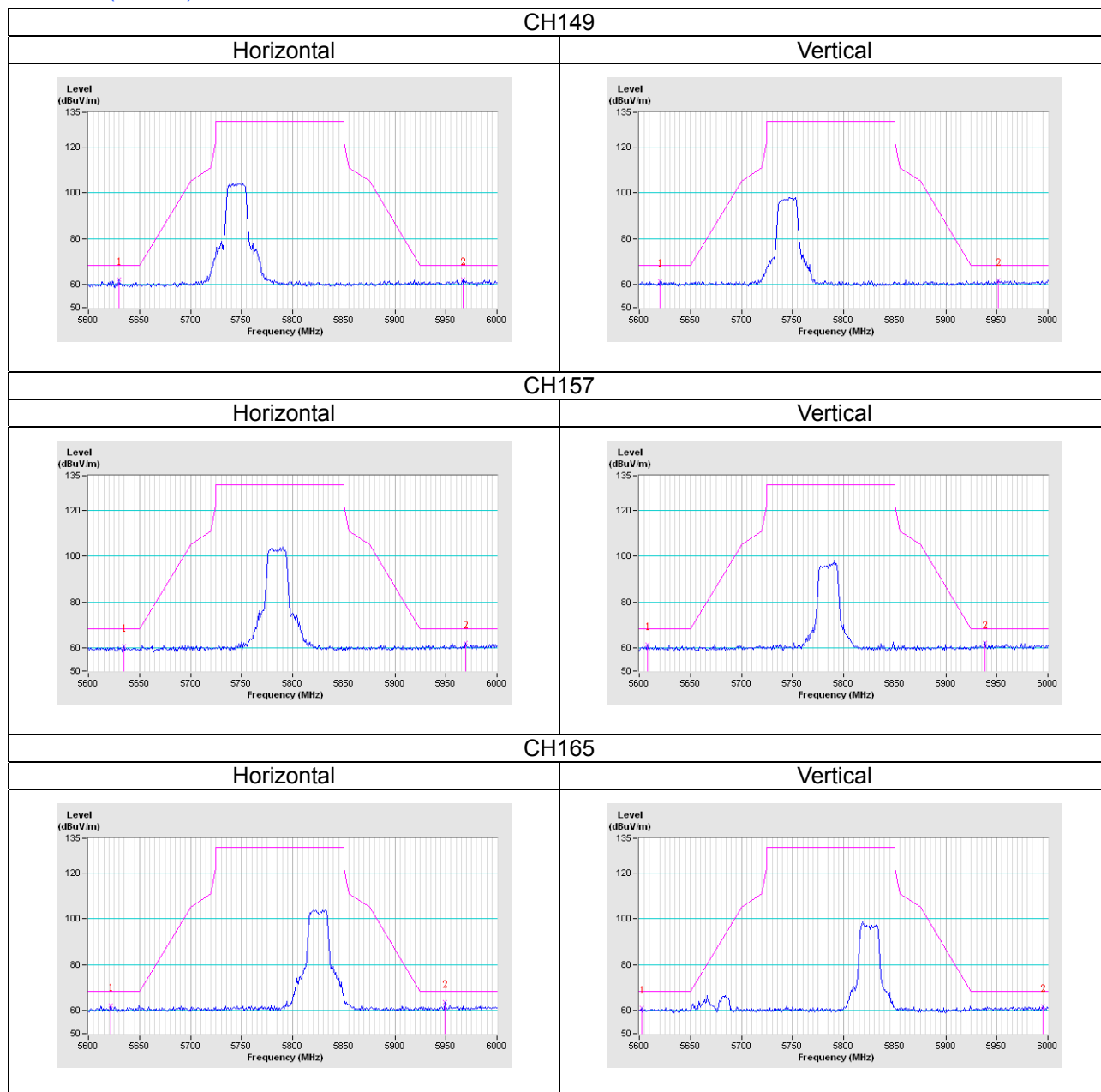
For CH138 (UNII-3 Band): The 6dB bandwidth above 5725MHz = Marker 1 + Delta 2 - 5725MHz

5 Pictures of Test Arrangements

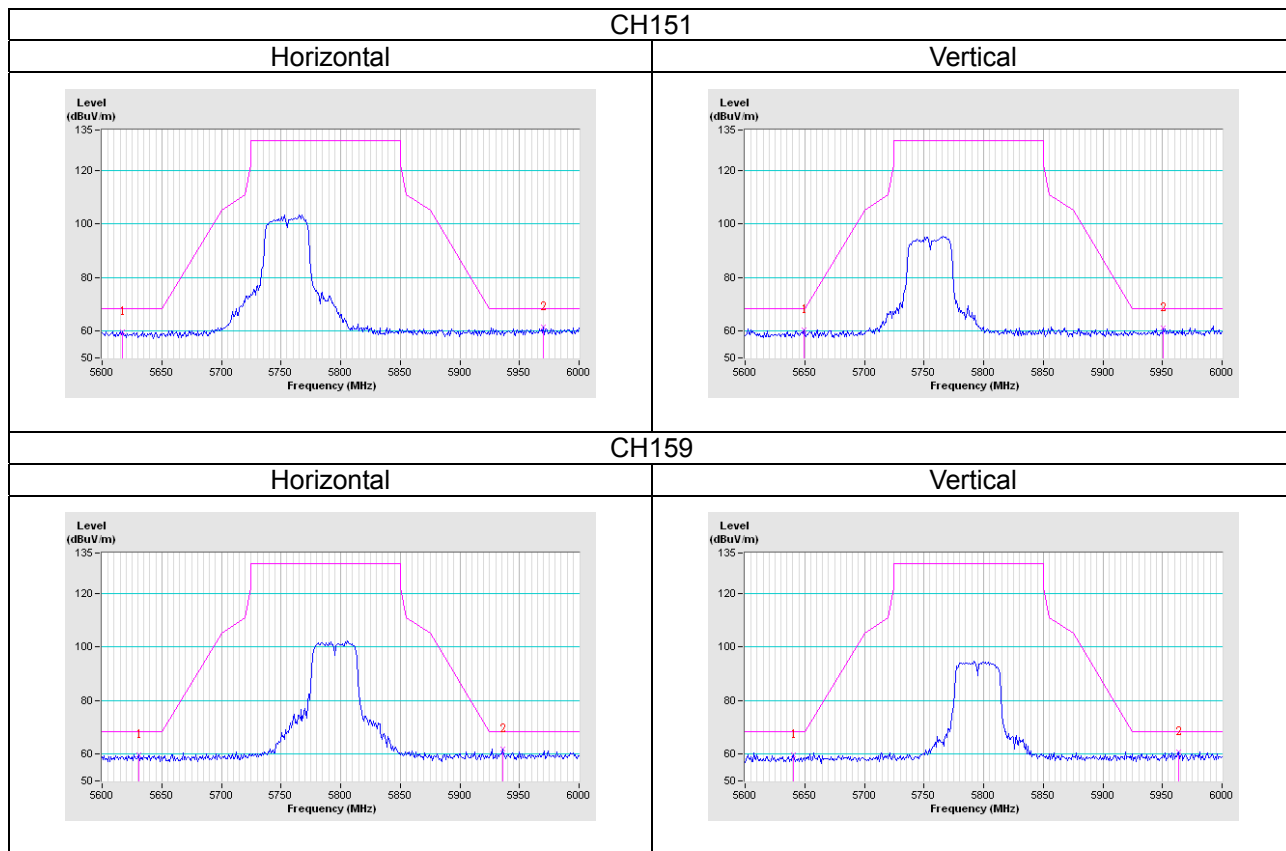
Please refer to the attached file (Test Setup Photo).

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

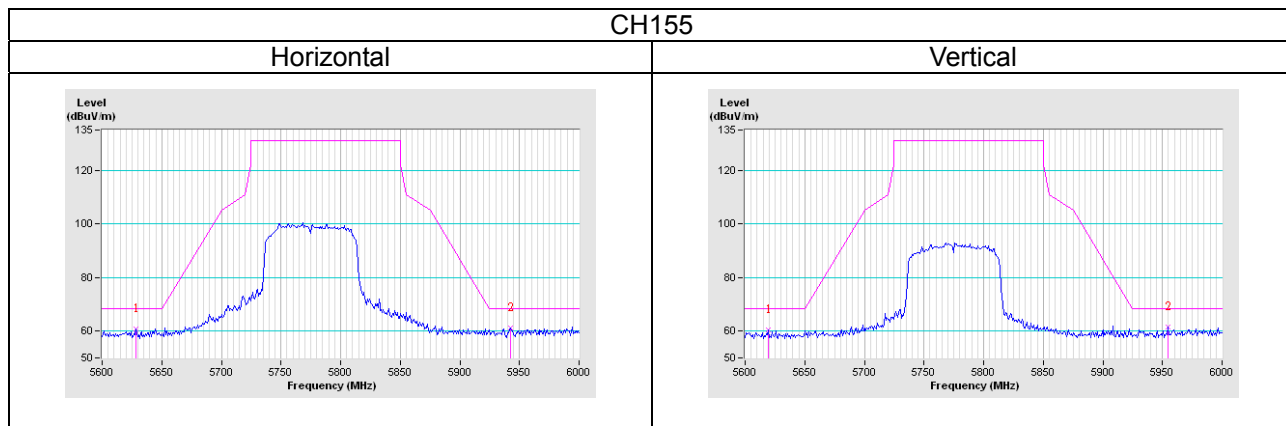
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



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 and approved according to ISO/IEC 17025.

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

Linko EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

Web Site: www.bureauveritas-adt.com

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

--- END ---