

FCC Test Report

Report No.: RF180920C28-1

FCC ID: PY318300429

Test Model: A6150

Received Date: Sep. 20, 2018

Test Date: Sep. 26 ~ Oct. 06, 2018

Issued Date: Oct. 17, 2018

Applicant: NETGEAR, Inc.

Address: 350 East Plumeria Drive San Jose, CA 95134

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 / 788550 / TW0003
Designation Number:



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. This report should 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	9
3.2.1 Test Mode Applicability and Tested Channel Detail	11
3.3 Duty Cycle of Test Signal	13
3.4 Description of Support Units	14
3.4.1 Configuration of System under Test	14
3.5 General Description of Applied Standards	14
4 Test Types and Results	15
4.1 Radiated Emission and Bandedge Measurement	15
4.1.1 Limits of Radiated Emission and Bandedge Measurement	15
4.1.2 Test Instruments	16
4.1.3 Test Procedures	17
4.1.4 Deviation from Test Standard	18
4.1.5 Test Setup	18
4.1.6 EUT Operating Conditions	19
4.1.7 Test Results	20
4.2 Conducted Emission Measurement	60
4.2.1 Limits of Conducted Emission Measurement	60
4.2.2 Test Instruments	60
4.2.3 Test Procedures	61
4.2.4 Deviation from Test Standard	61
4.2.5 Test Setup	61
4.2.6 EUT Operating Conditions	61
4.2.7 Test Results	62
4.3 Transmit Power Measurement	64
4.3.1 Limits of Transmit Power Measurement	64
4.3.2 Test Setup	64
4.3.3 Test Instruments	65
4.3.4 Test Procedure	65
4.3.5 Deviation from Test Standard	65
4.3.6 EUT Operating Conditions	65
4.3.7 Test Result	66
4.4 Occupied Bandwidth Measurement	77
4.4.1 Test Setup	77
4.4.2 Test Instruments	77
4.4.3 Test Procedure	77
4.4.4 Test Result	78
4.5 Peak Power Spectral Density Measurement	81
4.5.1 Limits of Peak Power Spectral Density Measurement	81
4.5.2 Test Setup	81
4.5.3 Test Instruments	81
4.5.4 Test Procedures	82
4.5.5 Deviation from Test Standard	82
4.5.6 EUT Operating Conditions	82
4.5.7 Test Results	83
4.6 Frequency Stability	88
4.6.1 Limits of Frequency Stability Measurement	88

4.6.2 Test Setup	88
4.6.3 Test Instruments	88
4.6.4 Test Procedure	88
4.6.5 Deviation from Test Standard	89
4.6.6 EUT Operating Condition	89
4.6.7 Test Results	89
4.7 6dB Bandwidth Measurement	90
4.7.1 Limits of 6dB Bandwidth Measurement	90
4.7.2 Test Setup	90
4.7.3 Test Instruments	90
4.7.4 Test Procedure	90
4.7.5 Deviation from Test Standard	90
4.7.6 EUT Operating Condition	90
4.7.7 Test Results	91
5 Pictures of Test Arrangements	93
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)	94
Appendix – Information on the Testing Laboratories	97

Release Control Record

Issue No.	Description	Date Issued
RF180920C28-1	Original release.	Oct. 17, 2018

1 Certificate of Conformity

Product: Wireless Adapter

Brand: Netgear

Test Model: A6150

Sample Status: Engineering sample

Applicant: NETGEAR, Inc.

Test Date: Sep. 26 ~ Oct. 06, 2018

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2013

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

Prepared by : Sunt Lee , **Date:** Oct. 17, 2018
Sunt Lee / Specialist

Approved by : Bruce Chen , **Date:** Oct. 17, 2018
Bruce Chen / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -18.69dB at 0.16139MHz.
15.407(b)(1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5725.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	Pass	Meet the requirement of limit.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit.
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 OOBE test plots were recorded in Annex A.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
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	Wireless Adapter
Brand	Netgear
Test Model	A6150
Sample Status	Engineering sample
Power Supply Rating	5Vdc (host equipment)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 867Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5260~5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500~5700MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 11 802.11n (HT40), 802.11ac (VHT40): 5 802.11ac (VHT80): 2 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	Non-beamforming mode: 5180~5240MHz: 78.442mW 5260~5320MHz: 77.276mW 5500~5700MHz: 77.546mW 5745~5825MHz: 77.013mW Beamforming mode: 5180~5240MHz: 78.442mW 5260~5320MHz: 77.276mW 5500~5700MHz: 77.546mW 5745~5825MHz: 77.013mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	NA

Note:

1. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers. The EUT has diversity function for 802.11a, and chain 0 is the worst case for final test.

Modulation Mode	TX Function	Beamforming
802.11a	1TX	Not Support
802.11n (HT20)	2TX	Support
802.11n (HT40)	2TX	Support
802.11ac (VHT20)	2TX	Support
802.11ac (VHT40)	2TX	Support
802.11ac (VHT80)	2TX	Support

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

* Non-beamforming mode and Beamforming mode are presented in output power test item. For other test items, Non-beamforming mode is the worst case for final tests.

2. The EUT uses following antenna.

Antenna Type	Monopole		Connector Type	NA	
Frequency Band	Chain 0	Chain 1	Directional Gain (dBi)		
			Non-beamforming	Beamforming	
2.4G	1.76	0.36	1.76	4.10	
5G Band 1	0.08	-0.23	0.08	2.94	
5G Band 2	0.54	1.51	1.51	4.05	
5G Band 3	1.65	-3.07	1.65	2.62	
5G Band 4	1.71	-4.13	1.71	2.28	

3.2 Description of Test Modes

5180~5240MHz:

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290 MHz

5500~5700MHz:

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

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

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

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

5745~5825MHz:

5 channels are provided for 802.11a, 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

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
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	-
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	7.2	-
	802.11n (HT40)		38 to 46	38, 46	OFDM	15.0	-
	802.11ac (VHT80)		42	42	OFDM	65.0	-
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0	-
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	7.2	-
	802.11n (HT40)		54 to 62	54, 62	OFDM	15.0	-
	802.11ac (VHT80)		58	58	OFDM	65.0	-
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0	-
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	7.2	-
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	15.0	-
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	65.0	-
	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	-
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	7.2	-
	802.11n (HT40)		151 to 159	151, 159	OFDM	15.0	-
	802.11ac (VHT80)		155	155	OFDM	65.0	-

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
-	802.11n (HT20)	5180-5240	36 to 48	40	OFDM	7.2	-
		5260-5320	52 to 64		OFDM	7.2	-
		5500-5700	100 to 140		OFDM	7.2	-
		5745-5825	149 to 165		OFDM	7.2	-

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
-	802.11n (HT20)	5180-5240	36 to 48	40	OFDM	7.2	-
		5260-5320	52 to 64		OFDM	7.2	-
		5500-5700	100 to 140		OFDM	7.2	-
		5745-5825	149 to 165		OFDM	7.2	-

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
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	-
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	7.2	-
	802.11n (HT40)		38 to 46	38, 46	OFDM	15.0	-
	802.11ac (VHT80)		42	42	OFDM	65.0	-
	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0	-
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	7.2	-
	802.11n (HT40)		54 to 62	54, 62	OFDM	15.0	-
	802.11ac (VHT80)		58	58	OFDM	65.0	-
	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0	-
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	7.2	-
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	15.0	-
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	65.0	-
	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	-
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	7.2	-
	802.11n (HT40)		151 to 159	151, 159	OFDM	15.0	-
	802.11ac (VHT80)		155	155	OFDM	65.0	-

Test Condition:

Applicable to	Environmental Conditions	Input Power (system)	Tested by
RE $\geq$ 1G	25deg. C, 65%RH	120Vac, 60Hz	Han Wu
RE<1G	25deg. C, 65%RH	120Vac, 60Hz	Tim Chen
PLC	25deg. C, 75%RH	120Vac, 60Hz	Greg Lin
APCM	25deg. C, 60%RH	120Vac, 60Hz	Chris Lin

3.3 Duty Cycle of Test Signal

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

802.11a: Duty cycle = $1.345/1.412 = 0.953$, Duty factor = $10 * \log(1/0.953) = 0.21$

802.11n (HT20): Duty cycle = $1.264/1.32 = 0.958$, Duty factor = $10 * \log(1/0.958) = 0.19$

802.11n (HT40): Duty cycle = $0.631/0.688 = 0.917$, Duty factor = $10 * \log(1/0.917) = 0.38$

802.11ac (VHT80): Duty cycle = $0.313/0.377 = 0.830$, Duty factor = $10 * \log(1/0.830) = 0.81$



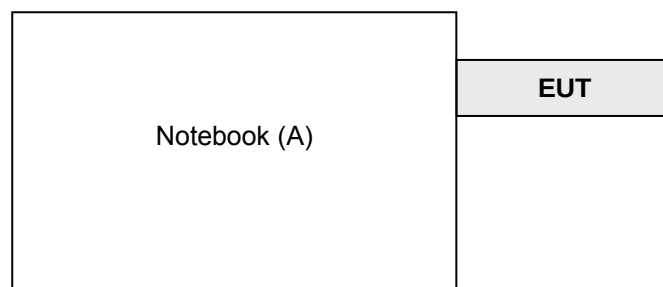
3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	Lenovo	80Q7	PF0KUGU6	FCC DoC Approved	-

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart E (15.407)

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

Limits of unwanted emission out of the restricted bands

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3m	
			PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK: -27 (dBm/MHz)	PK: 68.2(dBµV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	15.407(b)(4)(i)	PK: -27 (dBm/MHz) ^{*1} PK: 10 (dBm/MHz) ^{*2} PK: 15.6 (dBm/MHz) ^{*3} PK: 27 (dBm/MHz) ^{*4}	PK: 68.2(dBµV/m) ^{*1} PK: 105.2 (dBµV/m) ^{*2} PK: 110.8(dBµV/m) ^{*3} PK: 122.2 (dBµV/m) ^{*4}
	☐	15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
^{*1} beyond 75 MHz or more above of the band edge.			^{*2} below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.	
^{*3} below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.			^{*4} from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.	

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100424	Oct. 17, 2017	Oct. 16, 2018
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 25, 2018	Sep. 24, 2019
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Dec. 11, 2017	Dec. 10, 2018
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-1170	Dec. 13, 2017	Dec. 12, 2018
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Dec. 01, 2017	Nov. 30, 2018
Loop Antenna TESEQ	HLA 6121	45745	Jun. 14, 2018	Jun. 13, 2019
Preamplifier Agilent (Below 1GHz)	8447D	2944A10631	Aug. 08, 2018	Aug. 07, 2019
Preamplifier KEYSIGHT (Above 1GHz)	83017A	MY53270295	Jul. 02, 2018	Jul. 01, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	MY 13380+295012/04	Aug. 08, 2018	Aug. 07, 2019
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH4-03 (250724)	Aug. 08, 2018	Aug. 07, 2019
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	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
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Nov. 14, 2017	Nov. 13, 2018
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519000 4/MY55190007/MY55210 005	Jul. 17, 2018	Jul. 16, 2019

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 2. The test was performed in HwaYa Chamber 4.
 3. The FCC Designation Number is TW0003. The number will be varied with the Lab location and scope as attached.
 4. The IC Site Registration No. is IC 7450F-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. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

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

For Radiated emission above 30MHz

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

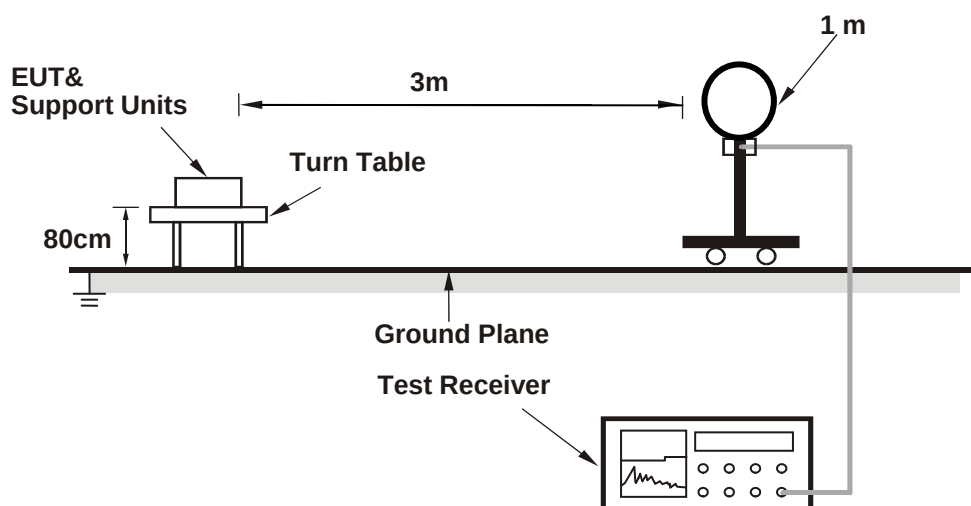
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

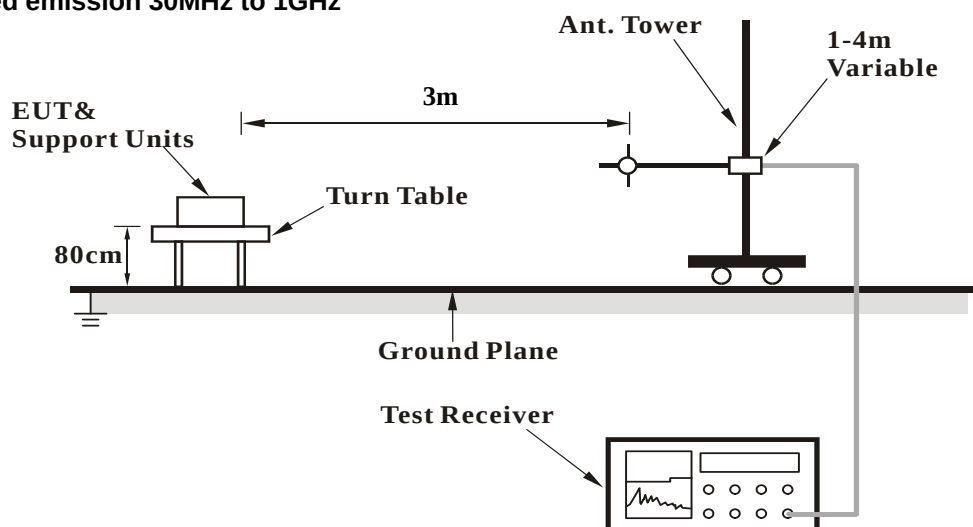
No deviation.

4.1.5 Test Setup

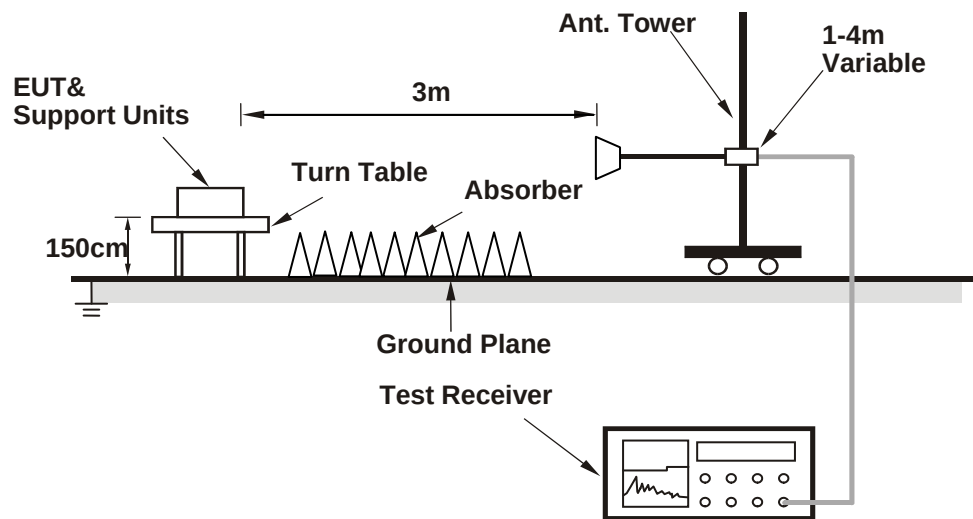
For Radiated emission below 30MHz



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:

802.11a

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	52.7 PK	74.0	-21.3	1.00 H	357	50.9	1.8
2	5150.00	38.6 AV	54.0	-15.4	1.00 H	357	36.8	1.8
3	*5180.00	94.5 PK			1.00 H	357	55.9	38.6
4	*5180.00	84.8 AV			1.00 H	357	46.2	38.6
5	#10360.00	56.7 PK	68.2	-11.5	1.15 H	257	42.2	14.5
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	54.3 PK	74.0	-19.7	1.08 V	288	52.5	1.8
2	5150.00	40.7 AV	54.0	-13.3	1.08 V	288	38.9	1.8
3	*5180.00	97.2 PK			1.08 V	288	58.6	38.6
4	*5180.00	87.0 AV			1.08 V	288	48.4	38.6
5	#10360.00	52.9 PK	68.2	-15.3	1.21 V	126	38.4	14.5

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 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	94.0 PK			1.00 H	357	55.5	38.5
2	*5200.00	83.2 AV			1.00 H	357	44.7	38.5
3	#10400.00	56.7 PK	68.2	-11.5	1.07 H	239	41.9	14.8
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	*5200.00	97.8 PK			1.08 V	288	59.3	38.5
2	*5200.00	87.1 AV			1.08 V	288	48.6	38.5
3	#10400.00	53.5 PK	68.2	-14.7	1.04 V	211	38.7	14.8

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 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	93.2 PK			1.00 H	351	54.8	38.4
2	*5240.00	82.8 AV			1.00 H	351	44.4	38.4
3	5350.00	51.4 PK	74.0	-22.6	1.00 H	351	49.8	1.6
4	5350.00	38.0 AV	54.0	-16.0	1.00 H	351	36.4	1.6
5	#10480.00	56.4 PK	68.2	-11.8	1.28 H	238	41.3	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	97.1 PK			1.34 V	229	58.7	38.4
2	*5240.00	86.3 AV			1.34 V	229	47.9	38.4
3	5350.00	51.4 PK	74.0	-22.6	1.34 V	229	49.8	1.6
4	5350.00	38.4 AV	54.0	-15.6	1.34 V	229	36.8	1.6
5	#10480.00	53.6 PK	68.2	-14.6	1.00 V	130	38.5	15.1

Remarks:

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

CHANNEL	TX Channel 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	50.7 PK	74.0	-23.3	1.19 H	359	48.9	1.8
2	5150.00	37.5 AV	54.0	-16.5	1.19 H	359	35.7	1.8
3	*5260.00	93.5 PK			1.19 H	359	55.2	38.3
4	*5260.00	82.8 AV			1.19 H	359	44.5	38.3
5	#10520.00	57.2 PK	68.2	-11.0	1.03 H	249	42.0	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.5 PK	74.0	-22.5	1.00 V	205	49.7	1.8
2	5150.00	38.9 AV	54.0	-15.1	1.00 V	205	37.1	1.8
3	*5260.00	97.9 PK			1.00 V	205	59.6	38.3
4	*5260.00	87.4 AV			1.00 V	205	49.1	38.3
5	#10520.00	53.5 PK	68.2	-14.7	1.00 V	251	38.3	15.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	92.5 PK			1.00 H	350	54.2	38.3
2	*5300.00	81.9 AV			1.00 H	350	43.6	38.3
3	10600.00	57.1 PK	74.0	-16.9	1.21 H	237	42.1	15.0
4	10600.00	43.4 AV	54.0	-10.6	1.21 H	237	28.4	15.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	97.2 PK			1.00 V	205	58.9	38.3
2	*5300.00	87.3 AV			1.00 V	205	49.0	38.3
3	10600.00	53.5 PK	74.0	-20.5	1.03 V	245	38.5	15.0
4	10600.00	40.5 AV	54.0	-13.5	1.03 V	245	25.5	15.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	92.8 PK			1.00 H	347	54.4	38.4
2	*5320.00	82.3 AV			1.00 H	347	43.9	38.4
3	5350.00	52.4 PK	74.0	-21.6	1.00 H	347	50.8	1.6
4	5350.00	38.3 AV	54.0	-15.7	1.00 H	347	36.7	1.6
5	10640.00	56.5 PK	74.0	-17.5	1.14 H	241	41.3	15.2
6	10640.00	42.2 AV	54.0	-11.8	1.14 H	241	27.0	15.2
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	*5320.00	97.8 PK			1.00 V	204	59.4	38.4
2	*5320.00	87.4 AV			1.00 V	204	49.0	38.4
3	5350.00	57.0 PK	74.0	-17.0	1.00 V	204	55.4	1.6
4	5350.00	40.6 AV	54.0	-13.4	1.00 V	204	39.0	1.6
5	10640.00	51.8 PK	74.0	-22.2	1.28 V	247	36.6	15.2
6	10640.00	39.1 AV	54.0	-14.9	1.28 V	247	23.9	15.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	52.9 PK	74.0	-21.1	1.50 H	349	50.9	2.0
2	5460.00	38.9 AV	54.0	-15.1	1.50 H	349	36.9	2.0
3	#5470.00	56.3 PK	68.2	-11.9	1.50 H	349	54.3	2.0
4	*5500.00	91.1 PK			1.50 H	349	52.1	39.0
5	*5500.00	80.8 AV			1.50 H	349	41.8	39.0
6	11000.00	58.8 PK	74.0	-15.2	1.14 H	248	41.7	17.1
7	11000.00	45.7 AV	54.0	-8.3	1.14 H	248	28.6	17.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.1 PK	74.0	-16.9	1.04 V	291	55.1	2.0
2	5460.00	40.8 AV	54.0	-13.2	1.04 V	291	38.8	2.0
3	#5470.00	62.7 PK	68.2	-5.5	1.04 V	291	60.7	2.0
4	*5500.00	96.2 PK			1.04 V	291	57.2	39.0
5	*5500.00	85.5 AV			1.04 V	291	46.5	39.0
6	11000.00	57.1 PK	74.0	-16.9	1.00 V	247	40.0	17.1
7	11000.00	43.5 AV	54.0	-10.5	1.00 V	247	26.4	17.1

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	91.5 PK			1.10 H	336	52.4	39.1
2	*5580.00	81.0 AV			1.10 H	336	41.9	39.1
3	11160.00	57.9 PK	74.0	-16.1	1.30 H	234	41.8	16.1
4	11160.00	43.5 AV	54.0	-10.5	1.30 H	234	27.4	16.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	95.7 PK			1.00 V	294	56.6	39.1
2	*5580.00	85.0 AV			1.00 V	294	45.9	39.1
3	11160.00	60.2 PK	74.0	-13.8	1.00 V	297	44.1	16.1
4	11160.00	46.4 AV	54.0	-7.6	1.00 V	297	30.3	16.1

Remarks:

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

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	93.2 PK			1.14 H	358	54.0	39.2
2	*5700.00	83.2 AV			1.14 H	358	44.0	39.2
3	#5725.00	59.7 PK	68.2	-8.5	1.14 H	358	57.2	2.5
4	11400.00	58.3 PK	74.0	-15.7	1.09 H	266	42.4	15.9
5	11400.00	44.1 AV	54.0	-9.9	1.09 H	266	28.2	15.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	94.9 PK			1.00 V	295	55.7	39.2
2	*5700.00	84.8 AV			1.00 V	295	45.6	39.2
3	#5725.00	60.9 PK	68.2	-7.3	1.00 V	295	58.4	2.5
4	11400.00	59.4 PK	74.0	-14.6	1.00 V	243	43.5	15.9
5	11400.00	44.7 AV	54.0	-9.3	1.00 V	243	28.8	15.9

Remarks:

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

CHANNEL	TX Channel 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	#5617.60	54.9 PK	68.2	-13.3	1.23 H	354	52.7	2.2
2	*5745.00	98.3 PK			1.23 H	354	58.7	39.6
3	*5745.00	88.2 AV			1.23 H	354	48.6	39.6
4	#5984.00	56.0 PK	68.2	-12.2	1.23 H	354	52.4	3.6
5	11490.00	57.1 PK	74.0	-16.9	1.05 H	257	41.8	15.3
6	11490.00	43.7 AV	54.0	-10.3	1.05 H	257	28.4	15.3
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	#5648.00	51.9 PK	68.2	-16.3	3.16 V	260	49.6	2.3
2	*5745.00	95.5 PK			3.16 V	260	55.9	39.6
3	*5745.00	85.7 AV			3.16 V	260	46.1	39.6
4	#5988.80	52.7 PK	68.2	-15.5	3.16 V	260	49.1	3.6
5	11490.00	55.3 PK	74.0	-18.7	1.00 V	225	40.0	15.3
6	11490.00	41.4 AV	54.0	-12.6	1.00 V	225	26.1	15.3

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 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	#5627.20	56.5 PK	68.2	-11.7	1.11 H	352	54.2	2.3
2	*5785.00	97.4 PK			1.11 H	352	57.6	39.8
3	*5785.00	87.4 AV			1.11 H	352	47.6	39.8
4	#5997.60	58.1 PK	68.2	-10.1	1.11 H	352	54.6	3.5
5	11570.00	57.5 PK	74.0	-16.5	1.26 H	263	42.4	15.1
6	11570.00	43.8 AV	54.0	-10.2	1.26 H	263	28.7	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5630.40	54.9 PK	68.2	-13.3	3.12 V	260	52.6	2.3
2	*5785.00	96.1 PK			3.12 V	260	56.3	39.8
3	*5785.00	85.5 AV			3.12 V	260	45.7	39.8
4	#5975.20	55.3 PK	68.2	-12.9	3.12 V	260	51.8	3.5
5	11570.00	59.1 PK	74.0	-14.9	1.00 V	288	44.0	15.1
6	11570.00	45.0 AV	54.0	-9.0	1.00 V	288	29.9	15.1

Remarks:

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

CHANNEL	TX Channel 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	#5643.20	56.8 PK	68.2	-11.4	1.38 H	353	54.5	2.3
2	*5825.00	97.6 PK			1.38 H	353	57.6	40.0
3	*5825.00	87.5 AV			1.38 H	353	47.5	40.0
4	#5932.00	58.1 PK	68.2	-10.1	1.38 H	353	54.5	3.6
5	11650.00	57.1 PK	74.0	-16.9	1.13 H	266	42.1	15.0
6	11650.00	43.3 AV	54.0	-10.7	1.13 H	266	28.3	15.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5620.80	53.1 PK	68.2	-15.1	2.54 V	260	50.9	2.2
2	*5825.00	96.9 PK			2.54 V	260	56.9	40.0
3	*5825.00	86.5 AV			2.54 V	260	46.5	40.0
4	#5955.20	54.0 PK	68.2	-14.2	2.54 V	260	50.5	3.5
5	11650.00	57.6 PK	74.0	-16.4	2.17 V	244	42.6	15.0
6	11650.00	43.9 AV	54.0	-10.1	2.17 V	244	28.9	15.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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.

802.11n (HT20)

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	53.3 PK	74.0	-20.7	1.23 H	297	51.5	1.8
2	5150.00	41.4 AV	54.0	-12.6	1.23 H	297	39.6	1.8
3	*5180.00	101.8 PK			1.23 H	297	63.2	38.6
4	*5180.00	91.8 AV			1.23 H	297	53.2	38.6
5	#10360.00	56.5 PK	68.2	-11.7	1.12 H	248	42.0	14.5
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	53.3 PK	74.0	-20.7	1.00 V	312	51.5	1.8
2	5150.00	40.3 AV	54.0	-13.7	1.00 V	312	38.5	1.8
3	*5180.00	98.4 PK			1.00 V	312	59.8	38.6
4	*5180.00	88.7 AV			1.00 V	312	50.1	38.6
5	#10360.00	54.3 PK	68.2	-13.9	1.48 V	84	39.8	14.5

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 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	102.6 PK			1.18 H	297	64.1	38.5
2	*5200.00	92.6 AV			1.18 H	297	54.1	38.5
3	#10400.00	58.2 PK	68.2	-10.0	1.14 H	255	43.4	14.8
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	*5200.00	100.7 PK			1.03 V	52	62.2	38.5
2	*5200.00	91.0 AV			1.03 V	52	52.5	38.5
3	#10400.00	54.5 PK	68.2	-13.7	1.34 V	269	39.7	14.8

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 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	103.1 PK			1.09 H	297	64.7	38.4
2	*5240.00	93.4 AV			1.09 H	297	55.0	38.4
3	5350.00	53.7 PK	74.0	-20.3	1.09 H	297	52.1	1.6
4	5350.00	41.9 AV	54.0	-12.1	1.09 H	297	40.3	1.6
5	#10480.00	57.9 PK	68.2	-10.3	1.27 H	253	42.8	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	100.9 PK			1.00 V	52	62.5	38.4
2	*5240.00	91.0 AV			1.00 V	52	52.6	38.4
3	5350.00	51.8 PK	74.0	-22.2	1.00 V	52	50.2	1.6
4	5350.00	38.4 AV	54.0	-15.6	1.00 V	52	36.8	1.6
5	#10480.00	57.1 PK	68.2	-11.1	1.12 V	255	42.0	15.1

Remarks:

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

CHANNEL	TX Channel 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	53.1 PK	74.0	-20.9	1.16 H	300	51.3	1.8
2	5150.00	41.5 AV	54.0	-12.5	1.16 H	300	39.7	1.8
3	*5260.00	103.6 PK			1.16 H	300	65.3	38.3
4	*5260.00	93.8 AV			1.16 H	300	55.5	38.3
5	#10520.00	57.6 PK	68.2	-10.6	1.26 H	267	42.4	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	51.5 PK	74.0	-22.5	1.00 V	53	49.7	1.8
2	5150.00	38.9 AV	54.0	-15.1	1.00 V	53	37.1	1.8
3	*5260.00	100.4 PK			1.00 V	53	62.1	38.3
4	*5260.00	90.5 AV			1.00 V	53	52.2	38.3
5	#10520.00	56.2 PK	68.2	-12.0	1.00 V	255	41.0	15.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	104.1 PK			1.23 H	297	65.8	38.3
2	*5300.00	94.2 AV			1.23 H	297	55.9	38.3
3	10600.00	57.8 PK	74.0	-16.2	1.18 H	243	42.8	15.0
4	10600.00	44.3 AV	54.0	-9.7	1.18 H	243	29.3	15.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	101.2 PK			1.00 V	53	62.9	38.3
2	*5300.00	91.1 AV			1.00 V	53	52.8	38.3
3	10600.00	54.2 PK	74.0	-19.8	1.02 V	255	39.2	15.0
4	10600.00	41.4 AV	54.0	-12.6	1.02 V	255	26.4	15.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	104.5 PK			1.05 H	298	66.1	38.4
2	*5320.00	94.5 AV			1.05 H	298	56.1	38.4
3	5350.00	56.2 PK	74.0	-17.8	1.05 H	298	54.6	1.6
4	5350.00	42.4 AV	54.0	-11.6	1.05 H	298	40.8	1.6
5	10640.00	57.4 PK	74.0	-16.6	1.09 H	254	42.2	15.2
6	10640.00	44.1 AV	54.0	-9.9	1.09 H	254	28.9	15.2
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	*5320.00	98.5 PK			1.02 V	330	60.1	38.4
2	*5320.00	88.5 AV			1.02 V	330	50.1	38.4
3	5350.00	53.5 PK	74.0	-20.5	1.02 V	330	51.9	1.6
4	5350.00	41.3 AV	54.0	-12.7	1.02 V	330	39.7	1.6
5	10640.00	54.3 PK	74.0	-19.7	1.52 V	210	39.1	15.2
6	10640.00	41.8 AV	54.0	-12.2	1.52 V	210	26.6	15.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.2 PK	74.0	-18.8	1.21 H	302	53.2	2.0
2	5460.00	41.3 AV	54.0	-12.7	1.21 H	302	39.3	2.0
3	#5470.00	60.1 PK	68.2	-8.1	1.21 H	302	58.1	2.0
4	*5500.00	104.4 PK			1.21 H	302	65.4	39.0
5	*5500.00	94.3 AV			1.21 H	302	55.3	39.0
6	11000.00	59.0 PK	74.0	-15.0	1.26 H	253	41.9	17.1
7	11000.00	45.8 AV	54.0	-8.2	1.26 H	253	28.7	17.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	52.4 PK	74.0	-21.6	1.08 V	52	50.4	2.0
2	5460.00	39.1 AV	54.0	-14.9	1.08 V	52	37.1	2.0
3	#5470.00	57.4 PK	68.2	-10.8	1.08 V	52	55.4	2.0
4	*5500.00	97.6 PK			1.08 V	52	58.6	39.0
5	*5500.00	87.2 AV			1.08 V	52	48.2	39.0
6	11000.00	55.5 PK	74.0	-18.5	1.00 V	294	38.4	17.1
7	11000.00	42.7 AV	54.0	-11.3	1.00 V	294	25.6	17.1

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	104.9 PK			1.18 H	296	65.8	39.1
2	*5580.00	94.5 AV			1.18 H	296	55.4	39.1
3	11160.00	57.6 PK	74.0	-16.4	1.01 H	241	41.5	16.1
4	11160.00	45.4 AV	54.0	-8.6	1.01 H	241	29.3	16.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	97.9 PK			1.00 V	25	58.8	39.1
2	*5580.00	87.8 AV			1.00 V	25	48.7	39.1
3	11160.00	56.6 PK	74.0	-17.4	1.00 V	295	40.5	16.1
4	11160.00	43.5 AV	54.0	-10.5	1.00 V	295	27.4	16.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	102.9 PK			1.18 H	299	63.7	39.2
2	*5700.00	92.5 AV			1.18 H	299	53.3	39.2
3	#5725.00	68.1 PK	68.2	-0.1	1.18 H	299	65.6	2.5
4	11400.00	57.2 PK	74.0	-16.8	1.06 H	247	41.3	15.9
5	11400.00	44.3 AV	54.0	-9.7	1.06 H	247	28.4	15.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	97.6 PK			1.00 V	290	58.4	39.2
2	*5700.00	89.0 AV			1.00 V	290	49.8	39.2
3	#5725.00	60.1 PK	68.2	-8.1	1.00 V	290	57.6	2.5
4	11400.00	56.5 PK	74.0	-17.5	1.07 V	266	40.6	15.9
5	11400.00	44.2 AV	54.0	-9.8	1.07 V	266	28.3	15.9

Remarks:

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

CHANNEL	TX Channel 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	#5649.60	61.3 PK	68.2	-6.9	1.21 H	300	59.0	2.3
2	*5745.00	104.0 PK			1.21 H	300	64.4	39.6
3	*5745.00	93.7 AV			1.21 H	300	54.1	39.6
4	#5938.40	54.9 PK	68.2	-13.3	1.21 H	300	51.4	3.5
5	11490.00	58.4 PK	74.0	-15.6	1.04 H	241	43.1	15.3
6	11490.00	44.5 AV	54.0	-9.5	1.04 H	241	29.2	15.3
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	#5643.20	53.6 PK	68.2	-14.6	1.00 V	23	51.3	2.3
2	*5745.00	101.7 PK			1.00 V	23	62.1	39.6
3	*5745.00	91.3 AV			1.00 V	23	51.7	39.6
4	#5970.40	54.5 PK	68.2	-13.7	1.00 V	23	51.0	3.5
5	11490.00	58.1 PK	74.0	-15.9	1.00 V	264	42.8	15.3
6	11490.00	44.0 AV	54.0	-10.0	1.00 V	264	28.7	15.3

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 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	#5648.80	60.9 PK	68.2	-7.3	1.18 H	290	58.6	2.3
2	*5785.00	104.1 PK			1.18 H	290	64.3	39.8
3	*5785.00	94.1 AV			1.18 H	290	54.3	39.8
4	#5945.60	58.4 PK	68.2	-9.8	1.18 H	290	54.9	3.5
5	11570.00	58.0 PK	74.0	-16.0	1.08 H	251	42.9	15.1
6	11570.00	44.3 AV	54.0	-9.7	1.08 H	251	29.2	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5646.40	54.4 PK	68.2	-13.8	1.00 V	51	52.1	2.3
2	*5785.00	98.1 PK			1.00 V	51	58.3	39.8
3	*5785.00	88.0 AV			1.00 V	51	48.2	39.8
4	#5989.60	52.2 PK	68.2	-16.0	1.00 V	51	48.7	3.5
5	11570.00	57.2 PK	74.0	-16.8	1.00 V	266	42.1	15.1
6	11570.00	43.3 AV	54.0	-10.7	1.00 V	266	28.2	15.1

Remarks:

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

CHANNEL	TX Channel 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	#5622.40	58.6 PK	68.2	-9.6	1.13 H	293	56.4	2.2
2	*5825.00	104.6 PK			1.13 H	293	64.6	40.0
3	*5825.00	94.4 AV			1.13 H	293	54.4	40.0
4	#5936.00	59.2 PK	68.2	-9.0	1.13 H	293	55.7	3.5
5	11650.00	57.6 PK	74.0	-16.4	1.27 H	256	42.6	15.0
6	11650.00	43.9 AV	54.0	-10.1	1.27 H	256	28.9	15.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5628.80	50.8 PK	68.2	-17.4	1.00 V	50	48.5	2.3
2	*5825.00	97.5 PK			1.00 V	50	57.5	40.0
3	*5825.00	87.5 AV			1.00 V	50	47.5	40.0
4	#5930.40	52.0 PK	68.2	-16.2	1.00 V	50	48.4	3.6
5	11650.00	55.9 PK	74.0	-18.1	1.00 V	263	40.9	15.0
6	11650.00	43.4 AV	54.0	-10.6	1.00 V	263	28.4	15.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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.

802.11n (HT40)

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	57.0 PK	74.0	-17.0	1.13 H	295	55.2	1.8
2	5150.00	45.2 AV	54.0	-8.8	1.13 H	295	43.4	1.8
3	*5190.00	99.9 PK			1.13 H	295	61.4	38.5
4	*5190.00	89.8 AV			1.13 H	295	51.3	38.5
5	#10380.00	57.2 PK	68.2	-11.0	1.21 H	247	42.6	14.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.3 PK	74.0	-15.7	1.00 V	52	56.5	1.8
2	5150.00	45.9 AV	54.0	-8.1	1.00 V	52	44.1	1.8
3	*5190.00	97.2 PK			1.00 V	52	58.7	38.5
4	*5190.00	88.1 AV			1.00 V	52	49.6	38.5
5	#10380.00	55.8 PK	68.2	-12.4	1.13 V	254	41.2	14.6

Remarks:

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

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	101.6 PK			1.33 H	299	63.2	38.4
2	*5230.00	91.6 AV			1.33 H	299	53.2	38.4
3	5350.00	53.4 PK	74.0	-20.6	1.33 H	299	51.8	1.6
4	5350.00	40.4 AV	54.0	-13.6	1.33 H	299	38.8	1.6
5	#10460.00	57.2 PK	68.2	-11.0	1.28 H	257	42.3	14.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	96.6 PK			1.00 V	204	58.2	38.4
2	*5230.00	86.9 AV			1.00 V	204	48.5	38.4
3	5350.00	52.1 PK	74.0	-21.9	1.00 V	204	50.5	1.6
4	5350.00	38.9 AV	54.0	-15.1	1.00 V	204	37.3	1.6
5	#10460.00	53.6 PK	68.2	-14.6	1.00 V	254	38.7	14.9

Remarks:

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

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK)
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	53.3 PK	74.0	-20.7	1.25 H	297	51.5	1.8
2	5150.00	40.5 AV	54.0	-13.5	1.25 H	297	38.7	1.8
3	*5270.00	102.1 PK			1.25 H	297	63.8	38.3
4	*5270.00	92.1 AV			1.25 H	297	53.8	38.3
5	#10540.00	56.5 PK	68.2	-11.7	1.19 H	267	41.3	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.6 PK	74.0	-21.4	2.54 V	31	50.8	1.8
2	5150.00	40.3 AV	54.0	-13.7	2.54 V	31	38.5	1.8
3	*5270.00	97.1 PK			2.54 V	31	58.8	38.3
4	*5270.00	86.7 AV			2.54 V	31	48.4	38.3
5	#10540.00	54.4 PK	68.2	-13.8	1.65 V	256	39.2	15.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	101.5 PK			1.26 H	297	63.2	38.3
2	*5310.00	91.1 AV			1.26 H	297	52.8	38.3
3	5350.00	67.3 PK	74.0	-6.7	1.26 H	297	65.7	1.6
4	5350.00	53.8 AV	54.0	-0.2	1.26 H	297	52.2	1.6
5	10620.00	56.3 PK	74.0	-17.7	1.09 H	257	41.1	15.2
6	10620.00	43.0 AV	54.0	-11.0	1.09 H	257	27.8	15.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	94.0 PK			1.00 V	330	55.7	38.3
2	*5310.00	84.2 AV			1.00 V	330	45.9	38.3
3	5350.00	57.5 PK	74.0	-16.5	1.00 V	330	55.9	1.6
4	5350.00	43.7 AV	54.0	-10.3	1.00 V	330	42.1	1.6
5	10620.00	56.0 PK	74.0	-18.0	1.08 V	267	40.8	15.2
6	10620.00	42.7 AV	54.0	-11.3	1.08 V	267	27.5	15.2

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 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	64.9 PK	74.0	-9.1	1.32 H	297	62.9	2.0
2	5460.00	47.3 AV	54.0	-6.7	1.32 H	297	45.3	2.0
3	#5470.00	67.9 PK	68.2	-0.3	1.32 H	297	65.9	2.0
4	*5510.00	101.1 PK			1.32 H	297	62.1	39.0
5	*5510.00	90.3 AV			1.32 H	297	51.3	39.0
6	11020.00	59.7 PK	74.0	-14.3	1.24 H	273	42.7	17.0
7	11020.00	46.4 AV	54.0	-7.6	1.24 H	273	29.4	17.0
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	5460.00	54.0 PK	74.0	-20.0	1.00 V	96	52.0	2.0
2	5460.00	40.3 AV	54.0	-13.7	1.00 V	96	38.3	2.0
3	#5470.00	58.7 PK	68.2	-9.5	1.00 V	96	56.7	2.0
4	*5510.00	92.6 PK			1.00 V	96	53.6	39.0
5	*5510.00	82.9 AV			1.00 V	96	43.9	39.0
6	11020.00	56.5 PK	74.0	-17.5	1.08 V	267	39.5	17.0
7	11020.00	43.9 AV	54.0	-10.1	1.08 V	267	26.9	17.0

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	102.9 PK			1.22 H	299	63.8	39.1
2	*5550.00	92.8 AV			1.22 H	299	53.7	39.1
3	11100.00	58.8 PK	74.0	-15.2	1.13 H	266	42.3	16.5
4	11100.00	45.3 AV	54.0	-8.7	1.13 H	266	28.8	16.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	96.3 PK			1.00 V	25	57.2	39.1
2	*5550.00	86.1 AV			1.00 V	25	47.0	39.1
3	11100.00	58.6 PK	74.0	-15.4	1.00 V	294	42.1	16.5
4	11100.00	46.0 AV	54.0	-8.0	1.00 V	294	29.5	16.5

Remarks:

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

CHANNEL	TX Channel 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	101.9 PK			1.16 H	300	62.7	39.2
2	*5670.00	91.8 AV			1.16 H	300	52.6	39.2
3	#5725.00	68.0 PK	68.2	-0.2	1.16 H	300	65.5	2.5
4	11340.00	60.1 PK	74.0	-13.9	1.08 H	244	43.9	16.2
5	11340.00	46.3 AV	54.0	-7.7	1.08 H	244	30.1	16.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	96.8 PK			1.00 V	52	57.6	39.2
2	*5670.00	86.9 AV			1.00 V	52	47.7	39.2
3	#5725.00	62.3 PK	68.2	-5.9	1.00 V	52	59.8	2.5
4	11340.00	57.9 PK	74.0	-16.1	1.00 V	266	41.7	16.2
5	11340.00	44.9 AV	54.0	-9.1	1.00 V	266	28.7	16.2

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	#5649.60	65.2 PK	68.2	-3.0	1.31 H	298	62.9	2.3
2	*5755.00	102.1 PK			1.31 H	298	62.4	39.7
3	*5755.00	91.3 AV			1.31 H	298	51.6	39.7
4	#5944.00	57.4 PK	68.2	-10.8	1.31 H	298	53.9	3.5
5	11510.00	56.6 PK	74.0	-17.4	1.42 H	279	41.4	15.2
6	11510.00	43.6 AV	54.0	-10.4	1.42 H	279	28.4	15.2
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	#5630.40	53.7 PK	68.2	-14.5	1.00 V	55	51.4	2.3
2	*5755.00	97.3 PK			1.00 V	55	57.6	39.7
3	*5755.00	87.9 AV			1.00 V	55	48.2	39.7
4	#5972.00	51.6 PK	68.2	-16.6	1.00 V	55	48.1	3.5
5	11510.00	56.6 PK	74.0	-17.4	1.00 V	270	41.4	15.2
6	11510.00	44.4 AV	54.0	-9.6	1.00 V	270	29.2	15.2

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 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	#5633.60	62.1 PK	68.2	-6.1	1.01 H	287	59.8	2.3
2	*5795.00	102.5 PK			1.01 H	287	62.6	39.9
3	*5795.00	91.0 AV			1.01 H	287	51.1	39.9
4	#5952.00	59.8 PK	68.2	-8.4	1.01 H	287	56.3	3.5
5	11590.00	56.6 PK	74.0	-17.4	1.06 H	257	41.5	15.1
6	11590.00	42.7 AV	54.0	-11.3	1.06 H	257	27.6	15.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5636.00	53.8 PK	68.2	-14.4	1.00 V	269	51.5	2.3
2	*5795.00	95.6 PK			1.00 V	269	55.7	39.9
3	*5795.00	86.4 AV			1.00 V	269	46.5	39.9
4	#5958.40	53.4 PK	68.2	-14.8	1.00 V	269	49.9	3.5
5	11590.00	55.1 PK	74.0	-18.9	1.00 V	62	40.0	15.1
6	11590.00	43.0 AV	54.0	-11.0	1.00 V	62	27.9	15.1

Remarks:

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

802.11ac (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	61.0 PK	74.0	-13.0	1.00 H	250	59.2	1.8
2	5150.00	48.8 AV	54.0	-5.2	1.00 H	250	47.0	1.8
3	*5210.00	97.9 PK			1.00 H	250	59.5	38.4
4	*5210.00	88.1 AV			1.00 H	250	49.7	38.4
5	5350.00	52.6 PK	74.0	-21.4	1.00 H	250	51.0	1.6
6	5350.00	39.6 AV	54.0	-14.4	1.00 H	250	38.0	1.6
7	#10420.00	56.4 PK	68.2	-11.8	1.15 H	256	41.6	14.8
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	5150.00	59.7 PK	74.0	-14.3	1.00 V	53	57.9	1.8
2	5150.00	48.0 AV	54.0	-6.0	1.00 V	53	46.2	1.8
3	*5210.00	95.6 PK			1.00 V	53	57.2	38.4
4	*5210.00	87.2 AV			1.00 V	53	48.8	38.4
5	5350.00	52.0 PK	74.0	-22.0	1.00 V	53	50.4	1.6
6	5350.00	39.8 AV	54.0	-14.2	1.00 V	53	38.2	1.6
7	#10420.00	55.7 PK	68.2	-12.5	1.00 V	254	40.9	14.8

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 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	52.4 PK	74.0	-21.6	1.00 H	243	50.6	1.8
2	5150.00	39.3 AV	54.0	-14.7	1.00 H	243	37.5	1.8
3	*5290.00	96.7 PK			1.00 H	243	58.4	38.3
4	*5290.00	86.5 AV			1.00 H	243	48.2	38.3
5	5350.00	62.6 PK	74.0	-11.4	1.00 H	243	61.0	1.6
6	5350.00	50.2 AV	54.0	-3.8	1.00 H	243	48.6	1.6
7	#10580.00	54.6 PK	68.2	-13.6	1.24 H	227	39.6	15.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.0 PK	74.0	-21.0	1.00 V	51	51.2	1.8
2	5150.00	40.4 AV	54.0	-13.6	1.00 V	51	38.6	1.8
3	*5290.00	94.1 PK			1.00 V	51	55.8	38.3
4	*5290.00	84.1 AV			1.00 V	51	45.8	38.3
5	5350.00	62.9 PK	74.0	-11.1	1.00 V	51	61.3	1.6
6	5350.00	50.1 AV	54.0	-3.9	1.00 V	51	48.5	1.6
7	#10580.00	54.0 PK	68.2	-14.2	1.00 V	254	39.0	15.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. 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	66.7 PK	74.0	-7.3	1.00 H	295	64.7	2.0
2	5460.00	53.6 AV	54.0	-0.4	1.00 H	295	51.6	2.0
3	#5470.00	67.5 PK	68.2	-0.7	1.00 H	295	65.5	2.0
4	*5530.00	100.1 PK			1.00 H	295	61.0	39.1
5	*5530.00	89.5 AV			1.00 H	295	50.4	39.1
6	#5725.00	55.1 PK	68.2	-13.1	1.00 H	295	52.6	2.5
7	11060.00	56.4 PK	74.0	-17.6	1.25 H	229	39.8	16.6
8	11060.00	44.0 AV	54.0	-10.0	1.25 H	229	27.4	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.6 PK	74.0	-17.4	1.00 V	296	54.6	2.0
2	5460.00	43.4 AV	54.0	-10.6	1.00 V	296	41.4	2.0
3	#5470.00	57.6 PK	68.2	-10.6	1.00 V	296	55.6	2.0
4	*5530.00	89.9 PK			1.00 V	296	50.8	39.1
5	*5530.00	80.8 AV			1.00 V	296	41.7	39.1
6	#5725.00	56.4 PK	68.2	-11.8	1.00 V	296	53.9	2.5
7	11060.00	56.1 PK	74.0	-17.9	1.07 V	269	39.5	16.6
8	11060.00	44.2 AV	54.0	-9.8	1.07 V	269	27.6	16.6

Remarks:

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

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	56.2 PK	74.0	-17.8	1.01 H	282	54.2	2.0
2	5460.00	41.1 AV	54.0	-12.9	1.01 H	282	39.1	2.0
3	#5470.00	61.6 PK	68.2	-6.6	1.01 H	282	59.6	2.0
4	*5610.00	100.3 PK			1.01 H	282	61.2	39.1
5	*5610.00	88.1 AV			1.01 H	282	49.0	39.1
6	#5725.00	60.7 PK	68.2	-7.5	1.01 H	282	58.2	2.5
7	11220.00	57.7 PK	74.0	-16.3	1.11 H	261	41.9	15.8
8	11220.00	44.6 AV	54.0	-9.4	1.11 H	261	28.8	15.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.0 PK	74.0	-19.0	1.00 V	26	53.0	2.0
2	5460.00	40.2 AV	54.0	-13.8	1.00 V	26	38.2	2.0
3	#5470.00	56.2 PK	68.2	-12.0	1.00 V	26	54.2	2.0
4	*5610.00	93.9 PK			1.00 V	26	54.8	39.1
5	*5610.00	84.6 AV			1.00 V	26	45.5	39.1
6	#5725.00	56.8 PK	68.2	-11.4	1.00 V	26	54.3	2.5
7	11220.00	64.6 PK	74.0	-9.4	1.00 V	297	48.8	15.8
8	11220.00	51.9 AV	54.0	-2.1	1.00 V	297	36.1	15.8

Remarks:

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

CHANNEL	TX Channel 155	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	#5620.00	60.1 PK	68.2	-8.1	1.01 H	289	57.9	2.2
2	#5650.00	59.8 PK	68.2	-8.4	1.01 H	289	57.6	2.2
3	*5775.00	100.9 PK			1.01 H	289	61.1	39.8
4	*5775.00	87.6 AV			1.01 H	289	47.8	39.8
5	#5925.00	59.4 PK	68.2	-8.8	1.01 H	289	55.8	3.6
6	#5927.20	60.0 PK	68.2	-8.2	1.01 H	289	56.4	3.6
7	11550.00	57.3 PK	74.0	-16.7	1.12 H	255	42.1	15.2
8	11550.00	43.7 AV	54.0	-10.3	1.12 H	255	28.5	15.2
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	#5621.60	54.2 PK	68.2	-14.0	1.00 V	270	52.0	2.2
2	#5650.00	55.3 PK	68.2	-12.9	1.00 V	270	53.1	2.2
3	*5775.00	94.4 PK			1.00 V	270	54.6	39.8
4	*5775.00	84.8 AV			1.00 V	270	45.0	39.8
5	#5925.00	56.7 PK	68.2	-11.5	1.00 V	270	53.1	3.6
6	#5928.00	52.5 PK	68.2	-15.7	1.00 V	270	48.9	3.6
7	11550.00	54.8 PK	74.0	-19.2	1.00 V	161	39.6	15.2
8	11550.00	42.4 AV	54.0	-11.6	1.00 V	161	27.2	15.2

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.

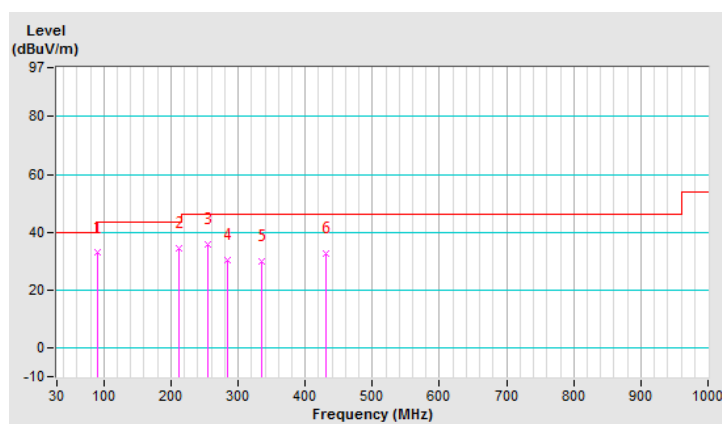
Below 1GHz worst-case data: 802.11n (HT20)

CHANNEL	TX Channel 40	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	91.11	32.8 QP	43.5	-10.7	1.99 H	198	47.5	-14.7
2	211.39	34.3 QP	43.5	-9.2	1.00 H	235	46.1	-11.8
3	255.04	35.6 QP	46.0	-10.4	1.00 H	318	45.1	-9.5
4	284.14	30.2 QP	46.0	-15.8	1.00 H	207	38.3	-8.1
5	335.55	30.1 QP	46.0	-15.9	1.00 H	282	37.1	-7.0
6	431.58	32.6 QP	46.0	-13.4	3.99 H	18	37.8	-5.2

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 of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB below the permissible value to be report.

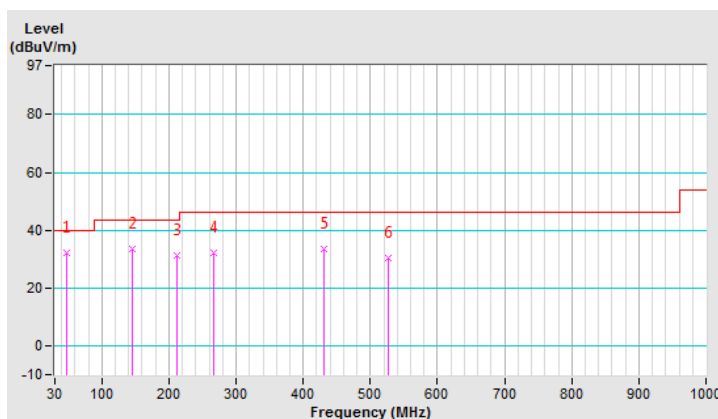


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.43	32.2 QP	40.0	-7.8	1.00 V	318	41.6	-9.4
2	144.46	33.4 QP	43.5	-10.1	2.00 V	15	42.7	-9.3
3	212.36	31.2 QP	43.5	-12.3	3.00 V	5	42.9	-11.7
4	265.71	32.3 QP	46.0	-13.7	2.00 V	228	41.3	-9.0
5	431.58	33.4 QP	46.0	-12.6	2.00 V	15	38.6	-5.2
6	527.61	30.3 QP	46.0	-15.7	1.00 V	190	34.1	-3.8

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 of frequency range 30MHz~1000MHz.
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Nov. 23, 2017	Nov. 22, 2018
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2018	Sep. 04, 2019
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 26, 2018	Feb. 25, 2019
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 19, 2018	Aug. 18, 2019
Software ADT	BV ADT_Conc_ V7.3.7.4	NA	NA	NA

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

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

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

4.2.3 Test Procedures

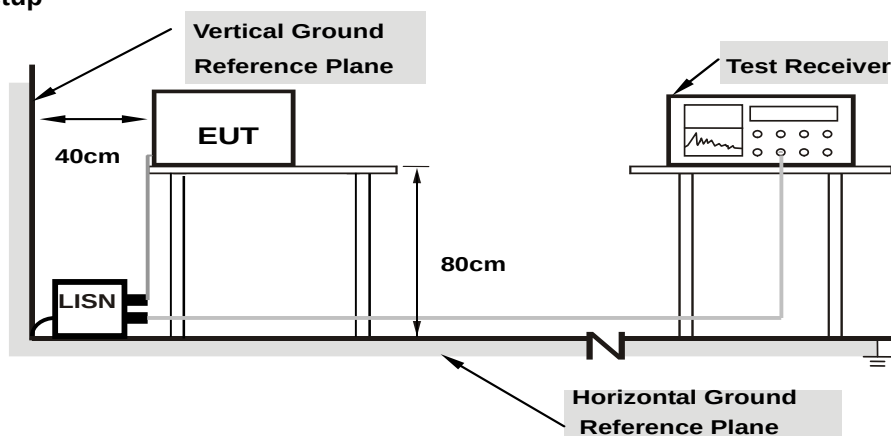
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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 item 4.1.6.

4.2.7 Test Results

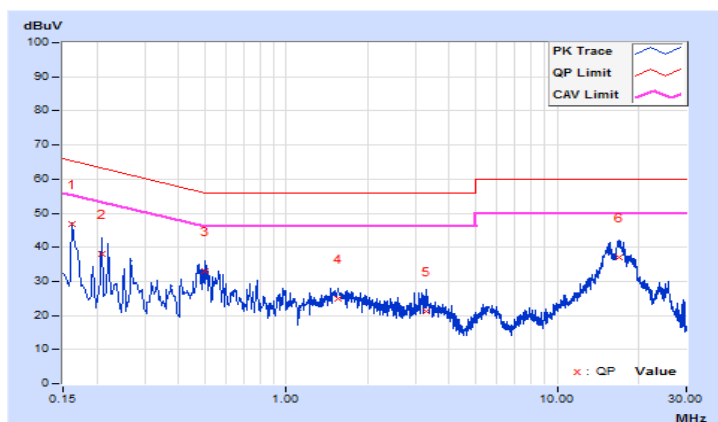
Worst-case data: 802.11n (HT20)

Channel	TX Channel 40	Detector Function	Quasi-Peak (QP) / Average (AV)
Phase	Line (L)		

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
	[MHz]		[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16139	9.67	37.03	21.25	46.70	30.92	65.39	55.39	-18.69	-24.47
2	0.20865	9.67	28.44	11.32	38.11	20.99	63.26	53.26	-25.15	-32.27
3	0.50190	9.66	23.37	15.75	33.03	25.41	56.00	46.00	-22.97	-20.59
4	1.55369	9.67	15.15	7.11	24.82	16.78	56.00	46.00	-31.18	-29.22
5	3.28191	9.71	11.65	3.85	21.36	13.56	56.00	46.00	-34.64	-32.44
6	16.99428	9.89	27.30	20.60	37.19	30.49	60.00	50.00	-22.81	-19.51

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.

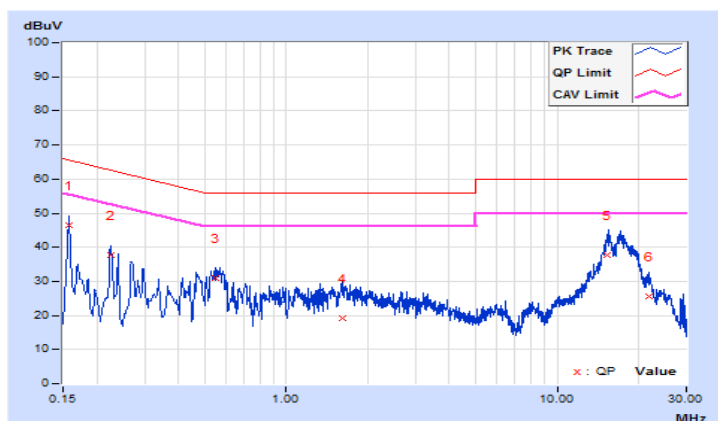


Channel	TX Channel 40	Detector Function	Quasi-Peak (QP) / Average (AV)
Phase	Neutral (N)		

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	0.15782	9.68	36.72	15.91	46.40	25.59	65.58	55.58	-19.18	-29.99
2	0.22434	9.67	28.18	13.33	37.85	23.00	62.66	52.66	-24.81	-29.66
3	0.54518	9.67	21.42	10.77	31.09	20.44	56.00	46.00	-24.91	-25.56
4	1.62016	9.67	9.38	4.04	19.05	13.71	56.00	46.00	-36.95	-32.29
5	15.31298	9.94	27.81	21.07	37.75	31.01	60.00	50.00	-22.25	-18.99
6	21.79967	10.02	15.68	9.17	25.70	19.19	60.00	50.00	-34.30	-30.81

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

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

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

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

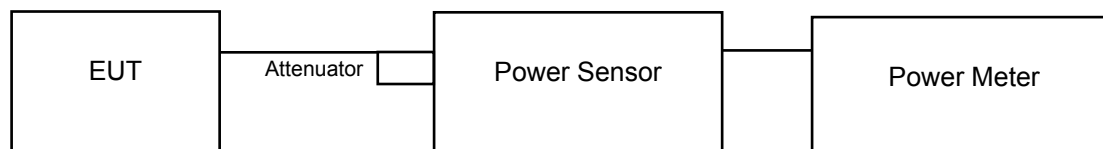
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

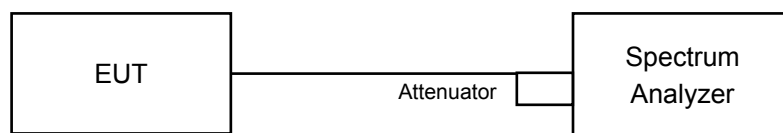
4.3.2 Test Setup

For Power Output

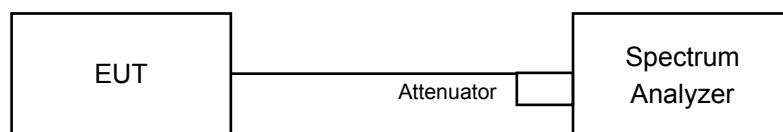
802.11a, 802.11n (HT20), 802.11n (HT40)



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 802.11a, 802.11n (HT20), 802.11n (HT40)

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)

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

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

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Power Output:

Non-beamforming Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	38.019	15.80	24	Pass
40	5200	37.154	15.70	24	Pass
48	5240	36.308	15.60	24	Pass
52	5260	38.019	15.80	24	Pass
60	5300	38.019	15.80	24	Pass
64	5320	38.019	15.80	24	Pass
100	5500	38.019	15.80	24	Pass
116	5580	36.308	15.60	24	Pass
140	5700	36.308	15.60	24	Pass
149	5745	38.905	15.90	30	Pass
157	5785	37.154	15.70	30	Pass
165	5825	36.308	15.60	30	Pass

Note:

5180~5240MHz Gain = 0.08dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Gain = 0.54dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Gain = 1.65dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Gain = 1.71dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

1. $11\text{dBm} + 10\log (34.39) = 26.36 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (34.90) = 26.43 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (36.83) = 26.66 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (56.68) = 28.53 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (46.60) = 27.68 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (43.08) = 27.34 \text{ dBm} > 24\text{dBm}$

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	15.70	15.60	73.462	18.66	24	Pass
40	5200	15.90	15.97	78.442	18.95	24	Pass
48	5240	15.70	15.70	74.308	18.71	24	Pass
52	5260	15.70	15.80	75.173	18.76	24	Pass
60	5300	15.70	15.85	75.613	18.79	24	Pass
64	5320	15.90	15.84	77.276	18.88	24	Pass
100	5500	15.70	15.76	74.824	18.74	24	Pass
116	5580	15.60	15.82	74.502	18.72	24	Pass
140	5700	15.13	14.84	63.063	18.00	24	Pass
149	5745	15.71	15.74	74.736	18.74	30	Pass
157	5785	15.72	15.79	75.256	18.77	30	Pass
165	5825	15.74	15.69	74.565	18.73	30	Pass

Note:

5180~5240MHz Directional Gain = 0.08dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Directional Gain = 1.51dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Directional Gain = 1.65dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Directional Gain = 1.71dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

Chain 0

1. $11\text{dBm} + 10\log (32.56) = 26.13 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (37.71) = 26.76 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (37.62) = 26.75 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (50.51) = 28.03 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (46.26) = 27.65 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (45.31) = 27.56 \text{ dBm} > 24\text{dBm}$

Chain 1

1. $11\text{dBm} + 10\log (33.58) = 26.26 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (33.75) = 26.28 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (34.62) = 26.39 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (40.54) = 27.08 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (35.20) = 26.47 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (29.97) = 25.77 \text{ dBm} > 24\text{dBm}$

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.70	15.54	72.964	18.63	24	Pass
46	5230	15.80	15.80	76.038	18.81	24	Pass
54	5270	15.69	15.89	75.883	18.80	24	Pass
62	5310	14.94	14.68	60.565	17.82	24	Pass
102	5510	14.48	14.21	54.417	17.36	24	Pass
110	5550	15.94	15.83	77.546	18.90	24	Pass
134	5670	15.74	15.93	76.671	18.85	24	Pass
151	5755	15.80	15.79	75.950	18.81	30	Pass
159	5795	15.73	15.79	75.342	18.77	30	Pass

Note:

5180~5240MHz Directional Gain = 0.08dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Directional Gain = 1.51dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Directional Gain = 1.65dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Directional Gain = 1.71dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

Chain 0

1. 11dBm + 10log (69.39) = 29.41 dBm > 24dBm
2. 11dBm + 10log (66.25) = 29.21 dBm > 24dBm
3. 11dBm + 10log (102.50) = 31.11 dBm > 24dBm
4. 11dBm + 10log (106.72) = 31.28 dBm > 24dBm
5. 11dBm + 10log (92.84) = 30.68 dBm > 24dBm

Chain 1

1. 11dBm + 10log (74.23) = 29.71 dBm > 24dBm
2. 11dBm + 10log (70.53) = 29.48 dBm > 24dBm
3. 11dBm + 10log (74.40) = 29.72 dBm > 24dBm
4. 11dBm + 10log (87.70) = 30.43 dBm > 24dBm
5. 11dBm + 10log (82.91) = 30.19 dBm > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	15.80	15.73	75.430	18.78	24	Pass
58	5290	15.90	15.80	76.924	18.86	24	Pass
106	5530	15.21	15.30	67.073	18.27	24	Pass
122	5610	15.11	15.30	66.318	18.22	24	Pass
155	5775	15.80	15.91	77.013	18.87	30	Pass

Note:

5180~5240MHz Directional Gain = 0.08dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Directional Gain = 1.51dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Directional Gain = 1.65dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Directional Gain = 1.71dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

Chain 0

$$1. \ 11\text{dBm} + 10\log (\ 121.29 \) = 31.84 \ \text{dBm} > 24\text{dBm}$$

$$2. \ 11\text{dBm} + 10\log (\ 126.39 \) = 32.02 \ \text{dBm} > 24\text{dBm}$$

$$3. \ 11\text{dBm} + 10\log (\ 131.31 \) = 32.18 \ \text{dBm} > 24\text{dBm}$$

Chain 1

$$1. \ 11\text{dBm} + 10\log (\ 123.55 \) = 31.92 \ \text{dBm} > 24\text{dBm}$$

$$2. \ 11\text{dBm} + 10\log (\ 127.53 \) = 32.06 \ \text{dBm} > 24\text{dBm}$$

$$3. \ 11\text{dBm} + 10\log (\ 130.90 \) = 32.17 \ \text{dBm} > 24\text{dBm}$$

Beamforming Mode

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	15.70	15.60	73.462	18.66	24	Pass
40	5200	15.90	15.97	78.442	18.95	24	Pass
48	5240	15.70	15.70	74.308	18.71	24	Pass
52	5260	15.70	15.80	75.173	18.76	24	Pass
60	5300	15.70	15.85	75.613	18.79	24	Pass
64	5320	15.90	15.84	77.276	18.88	24	Pass
100	5500	15.70	15.76	74.824	18.74	24	Pass
116	5580	15.60	15.82	74.502	18.72	24	Pass
140	5700	15.13	14.84	63.063	18.00	24	Pass
149	5745	15.71	15.74	74.736	18.74	30	Pass
157	5785	15.72	15.79	75.256	18.77	30	Pass
165	5825	15.74	15.69	74.565	18.73	30	Pass

Note:

5180~5240MHz Directional Gain = 2.94dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Directional Gain = 4.05dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Directional Gain = 2.62dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Directional Gain = 2.28dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

Chain 0

1. $11\text{dBm} + 10\log (32.56) = 26.13 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (37.71) = 26.76 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (37.62) = 26.75 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (50.51) = 28.03 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (46.26) = 27.65 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (45.31) = 27.56 \text{ dBm} > 24\text{dBm}$

Chain 1

1. $11\text{dBm} + 10\log (33.58) = 26.26 \text{ dBm} > 24\text{dBm}$
2. $11\text{dBm} + 10\log (33.75) = 26.28 \text{ dBm} > 24\text{dBm}$
3. $11\text{dBm} + 10\log (34.62) = 26.39 \text{ dBm} > 24\text{dBm}$
4. $11\text{dBm} + 10\log (40.54) = 27.08 \text{ dBm} > 24\text{dBm}$
5. $11\text{dBm} + 10\log (35.20) = 26.47 \text{ dBm} > 24\text{dBm}$
6. $11\text{dBm} + 10\log (29.97) = 25.77 \text{ dBm} > 24\text{dBm}$

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	15.70	15.54	72.964	18.63	24	Pass
46	5230	15.80	15.80	76.038	18.81	24	Pass
54	5270	15.69	15.89	75.883	18.80	24	Pass
62	5310	14.94	14.68	60.565	17.82	24	Pass
102	5510	14.48	14.21	54.417	17.36	24	Pass
110	5550	15.94	15.83	77.546	18.90	24	Pass
134	5670	15.74	15.93	76.671	18.85	24	Pass
151	5755	15.80	15.79	75.950	18.81	30	Pass
159	5795	15.73	15.79	75.342	18.77	30	Pass

Note:

5180~5240MHz Directional Gain = 2.94dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Directional Gain = 4.05dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Directional Gain = 2.62dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Directional Gain = 2.28dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

Chain 0

1. 11dBm + 10log (69.39) = 29.41 dBm > 24dBm
2. 11dBm + 10log (66.25) = 29.21 dBm > 24dBm
3. 11dBm + 10log (102.50) = 31.11 dBm > 24dBm
4. 11dBm + 10log (106.72) = 31.28 dBm > 24dBm
5. 11dBm + 10log (92.84) = 30.68 dBm > 24dBm

Chain 1

1. 11dBm + 10log (74.23) = 29.71 dBm > 24dBm
2. 11dBm + 10log (70.53) = 29.48 dBm > 24dBm
3. 11dBm + 10log (74.40) = 29.72 dBm > 24dBm
4. 11dBm + 10log (87.70) = 30.43 dBm > 24dBm
5. 11dBm + 10log (82.91) = 30.19 dBm > 24dBm

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	15.80	15.73	75.430	18.78	24	Pass
58	5290	15.90	15.80	76.924	18.86	24	Pass
106	5530	15.21	15.30	67.073	18.27	24	Pass
122	5610	15.11	15.30	66.318	18.22	24	Pass
155	5775	15.80	15.91	77.013	18.87	30	Pass

Note:

5180~5240MHz Directional Gain = 2.94dBi < 6dBi, so the limit no need to be reduced.

5260~5320MHz Directional Gain = 4.05dBi < 6dBi, so the limit no need to be reduced.

5500~5700MHz Directional Gain = 2.62dBi < 6dBi, so the limit no need to be reduced.

5745~5825MHz Directional Gain = 2.28dBi < 6dBi, so the limit no need to be reduced.

For 5260~5320MHz, 5500~5700MHz

Chain 0

$$1. \ 11\text{dBm} + 10\log (\ 121.29 \) = 31.84 \ \text{dBm} > 24\text{dBm}$$

$$2. \ 11\text{dBm} + 10\log (\ 126.39 \) = 32.02 \ \text{dBm} > 24\text{dBm}$$

$$3. \ 11\text{dBm} + 10\log (\ 131.31 \) = 32.18 \ \text{dBm} > 24\text{dBm}$$

Chain 1

$$1. \ 11\text{dBm} + 10\log (\ 123.55 \) = 31.92 \ \text{dBm} > 24\text{dBm}$$

$$2. \ 11\text{dBm} + 10\log (\ 127.53 \) = 32.06 \ \text{dBm} > 24\text{dBm}$$

$$3. \ 11\text{dBm} + 10\log (\ 130.90 \) = 32.17 \ \text{dBm} > 24\text{dBm}$$

26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
36	5180	29.74
40	5200	29.54
48	5240	29.42
52	5260	34.39
60	5300	34.90
64	5320	36.83
100	5500	56.68
116	5580	46.60
140	5700	43.08

802.11n (HT20)

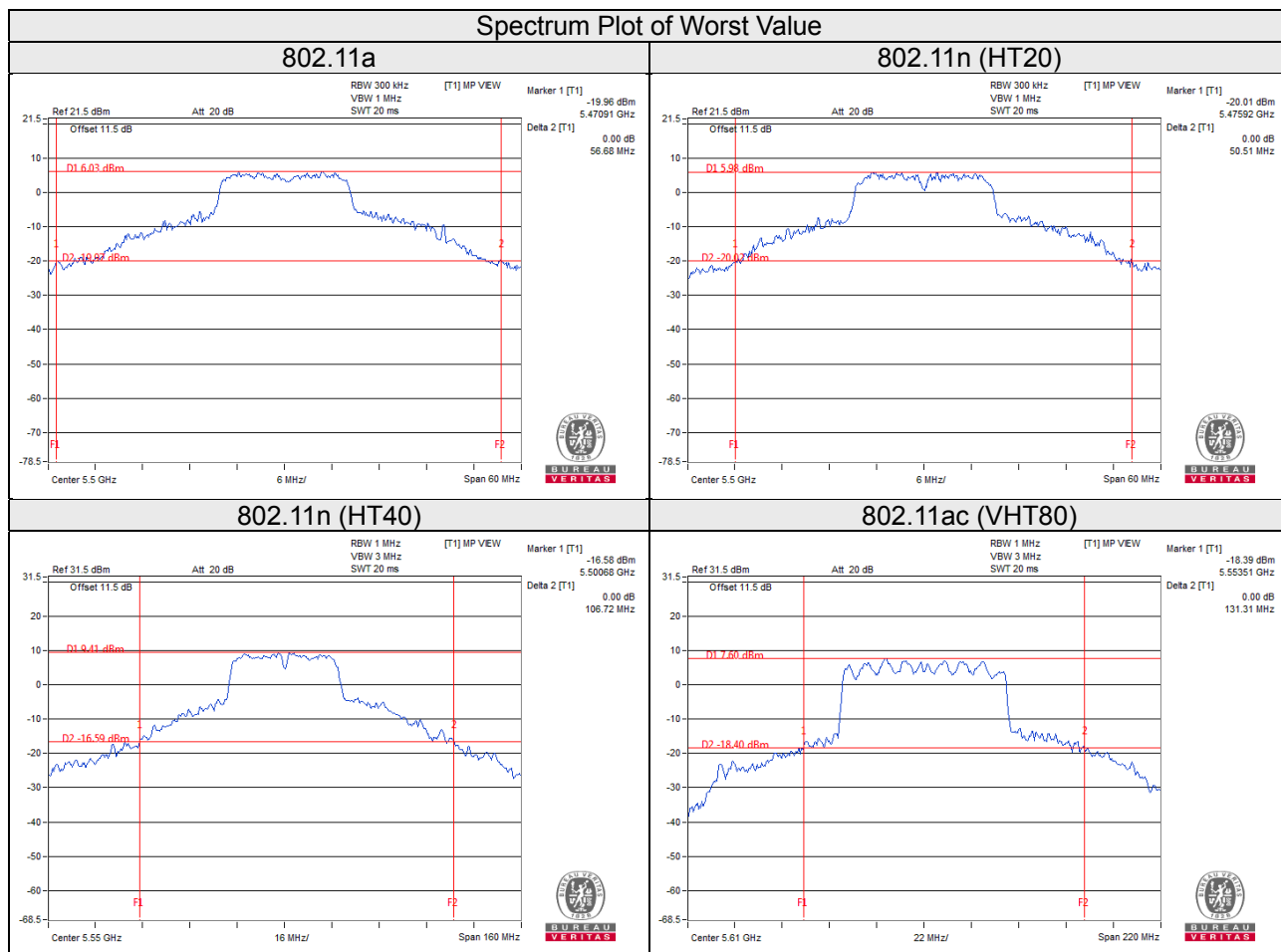
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	31.25	33.56
40	5200	31.29	34.88
48	5240	26.37	34.73
52	5260	32.56	33.58
60	5300	37.71	33.75
64	5320	37.62	34.62
100	5500	50.51	40.54
116	5580	46.26	35.20
140	5700	45.31	29.97

802.11n (HT40)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	61.06	69.80
46	5230	69.24	82.18
54	5270	69.39	74.23
62	5310	66.25	70.53
102	5510	102.50	74.40
110	5550	106.72	87.70
134	5670	92.84	82.91

802.11ac (VHT80)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	113.03	120.33
58	5290	121.29	123.55
106	5530	126.39	127.53
122	5610	131.31	130.90



EUT Maximum Conducted Power

Non-beamforming Mode

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	38.019	15.80
5470~5725	38.019	15.80

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

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	77.276	18.88
5470~5725	74.824	18.74

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

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	75.883	18.80
5470~5725	77.546	18.90

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	76.924	18.86
5470~5725	67.073	18.27

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

Beamforming Mode

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	77.276	18.88
5470~5725	74.824	18.74

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

802.11n (HT40)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	75.883	18.80
5470~5725	77.546	18.90

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

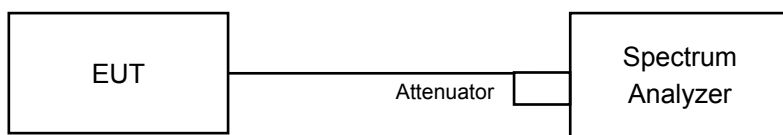
802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	76.924	18.86
5470~5725	67.073	18.27

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

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.28
40	5200	17.28
48	5240	17.16
52	5260	17.76
60	5300	17.76
64	5320	18.36
100	5500	36.60
116	5580	32.64
140	5700	28.32
149	5745	30.24
157	5785	26.16
165	5825	23.76

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.88	18.00
40	5200	17.88	18.24
48	5240	17.76	18.24
52	5260	18.00	18.24
60	5300	18.84	18.36
64	5320	18.36	18.36
100	5500	36.48	21.12
116	5580	32.52	18.48
140	5700	27.72	18.00
149	5745	29.04	18.12
157	5785	26.16	18.00
165	5825	22.92	17.88

802.11n (HT40)

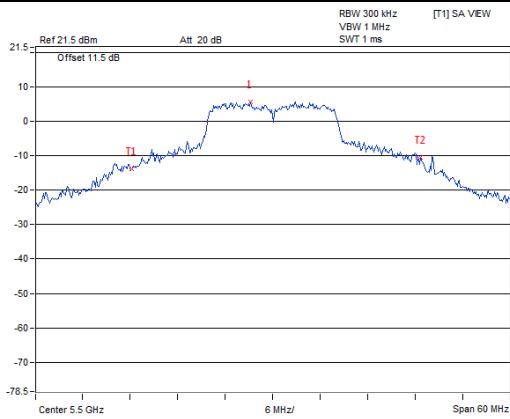
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.96	37.08
46	5230	37.20	37.80
54	5270	37.08	37.44
62	5310	36.96	37.08
102	5510	47.64	37.44
110	5550	49.80	38.04
134	5670	45.36	37.44
151	5755	42.72	37.20
159	5795	40.44	37.20

802.11ac (VHT80)

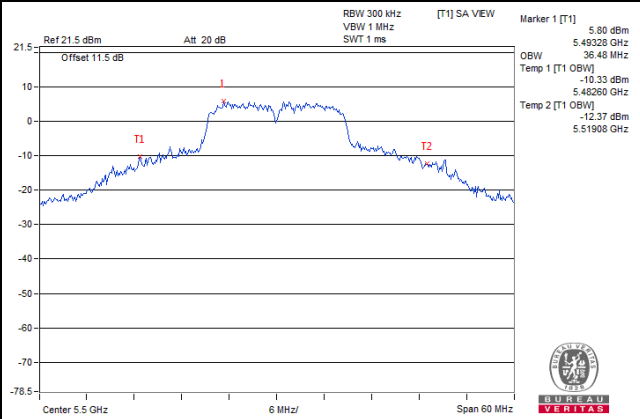
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.08	75.84
58	5290	75.84	75.84
106	5530	75.82	75.84
122	5610	76.08	75.84
155	5775	79.13	75.60

Spectrum Plot of Worst Value

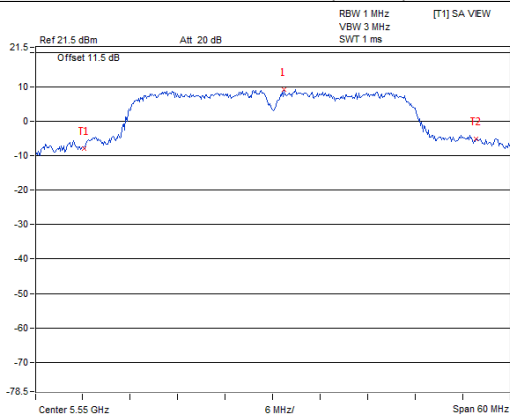
802.11a



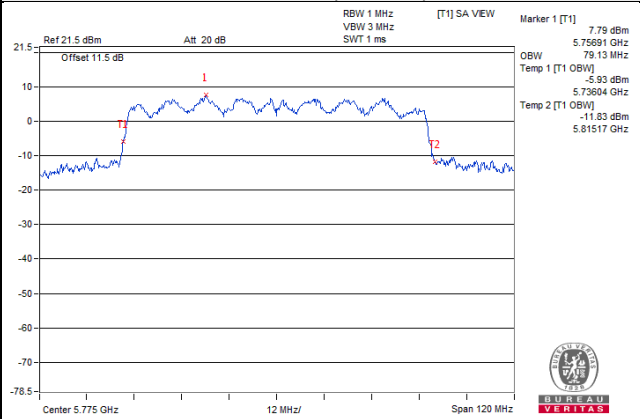
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

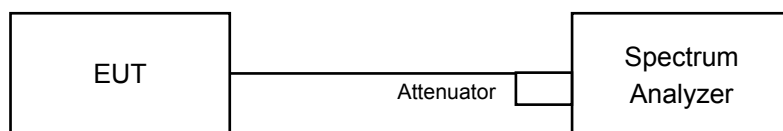


4.5 Peak Power Spectral Density Measurement

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 $\geq 98\%$

- 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.

Duty cycle $< 98\%$

- 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 item 4.3.6.

4.5.7 Test Results

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

802.11a

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	1.61	0.21	1.82	11	Pass
40	5200	1.48	0.21	1.69	11	Pass
48	5240	0.95	0.21	1.16	11	Pass
52	5260	1.68	0.21	1.89	11	Pass
60	5300	1.47	0.21	1.68	11	Pass
64	5320	1.73	0.21	1.94	11	Pass
100	5500	1.52	0.21	1.73	11	Pass
116	5580	1.66	0.21	1.87	11	Pass
140	5700	2.64	0.21	2.85	11	Pass

Note:

- Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- 5180~5240MHz Gain = 0.08dBi < 6dBi, so the limit no need to be reduced.
5260~5320MHz Gain = 0.54dBi < 6dBi, so the limit no need to be reduced.
5500~5700MHz Gain = 1.65dBi < 6dBi, so the limit no need to be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	1.02	1.46	0.19	4.44	11	Pass
40	5200	0.46	1.77	0.19	4.36	11	Pass
48	5240	-1.21	1.68	0.19	3.67	11	Pass
52	5260	0.62	1.67	0.19	4.38	11	Pass
60	5300	1.45	1.96	0.19	4.91	11	Pass
64	5320	0.73	2.07	0.19	4.65	11	Pass
100	5500	1.36	2.18	0.19	4.99	11	Pass
116	5580	1.07	1.59	0.19	4.54	11	Pass
140	5700	1.79	1.35	0.19	4.77	11	Pass

Note:

- Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- 5180~5240MHz Directional Gain = 2.94dBi < 6dBi, so the limit no need to be reduced.
5260~5320MHz Directional Gain = 4.05dBi < 6dBi, so the limit no need to be reduced.
5500~5700MHz Directional Gain = 2.62dBi < 6dBi, so the limit no need to be reduced.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-1.96	-1.35	0.38	1.74	11	Pass
46	5230	-1.36	-0.36	0.38	2.55	11	Pass
54	5270	-2.38	-1.12	0.38	1.68	11	Pass
62	5310	-2.58	-1.62	0.38	1.31	11	Pass
102	5510	-3.16	-1.80	0.38	0.96	11	Pass
110	5550	-1.28	-0.83	0.38	2.34	11	Pass
134	5670	-0.84	-0.50	0.38	2.72	11	Pass

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5180~5240MHz Directional Gain = 2.94dBi < 6dBi, so the limit no need to be reduced.
5260~5320MHz Directional Gain = 4.05dBi < 6dBi, so the limit no need to be reduced.
5500~5700MHz Directional Gain = 2.62dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

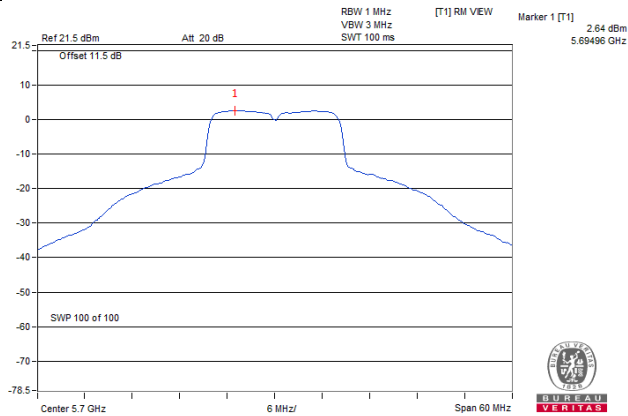
Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-4.33	-3.97	0.81	-0.33	11	Pass
58	5290	-3.87	-3.33	0.81	0.23	11	Pass
106	5530	-4.90	-4.30	0.81	-0.77	11	Pass
122	5610	-3.19	-3.37	0.81	0.54	11	Pass

Note:

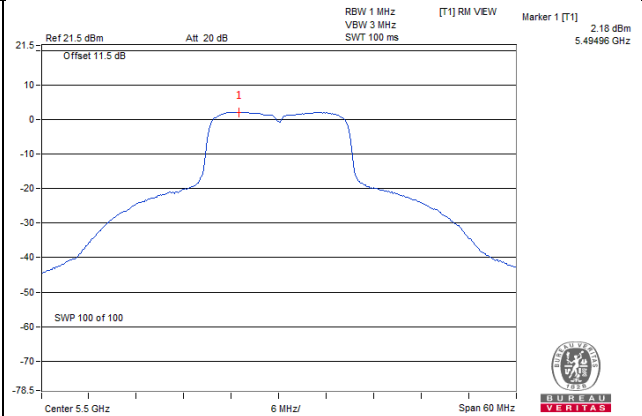
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5180~5240MHz Directional Gain = 2.94dBi < 6dBi, so the limit no need to be reduced.
5260~5320MHz Directional Gain = 4.05dBi < 6dBi, so the limit no need to be reduced.
5500~5700MHz Directional Gain = 2.62dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

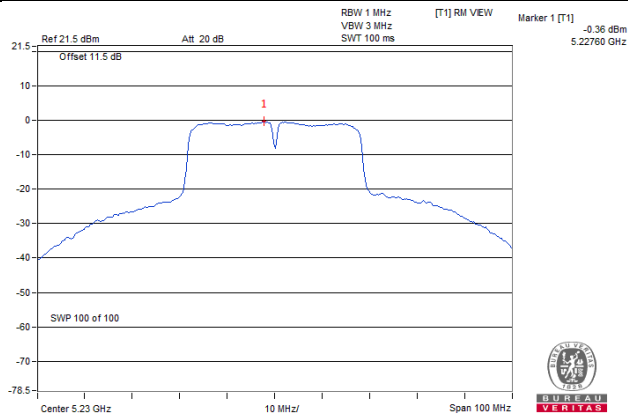
802.11a / CH 140



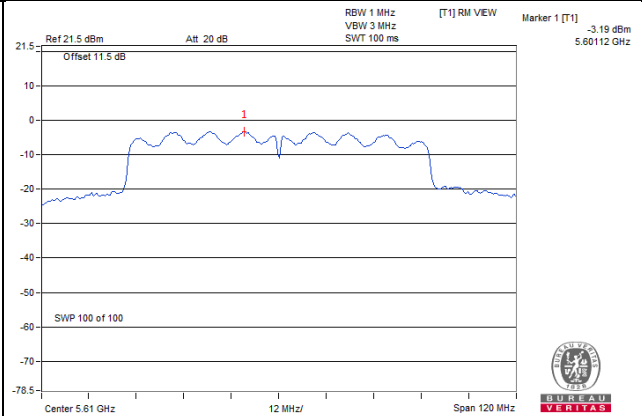
802.11n (HT20) / Chain 1 / CH 100



802.11n (HT40) / Chain 1 / CH 46



802.11ac (VHT80) / Chain 0 / CH 122



For U-NII-3 band

802.11a

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)				
149	5745	-5.54	-3.32	0.21	-3.11	30	Pass
157	5785	-5.76	-3.54	0.21	-3.33	30	Pass
165	5825	-5.79	-3.57	0.21	-3.36	30	Pass

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5745~5825MHz Directional Gain = 1.71dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-6.42	-4.20	3.01	0.19	-1.00	30	Pass
	157	5785	-6.31	-4.09	3.01	0.19	-0.89	30	Pass
	165	5825	-6.36	-4.14	3.01	0.19	-0.94	30	Pass
1	149	5745	-5.91	-3.69	3.01	0.19	-0.49	30	Pass
	157	5785	-6.02	-3.80	3.01	0.19	-0.60	30	Pass
	165	5825	-5.90	-3.68	3.01	0.19	-0.48	30	Pass

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5745~5825MHz Directional Gain = 2.28dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-9.92	-7.70	3.01	0.38	-4.31	30	Pass
	159	5795	-9.31	-7.09	3.01	0.38	-3.70	30	Pass
1	151	5755	-9.59	-7.37	3.01	0.38	-3.98	30	Pass
	159	5795	-9.36	-7.14	3.01	0.38	-3.75	30	Pass

Note:

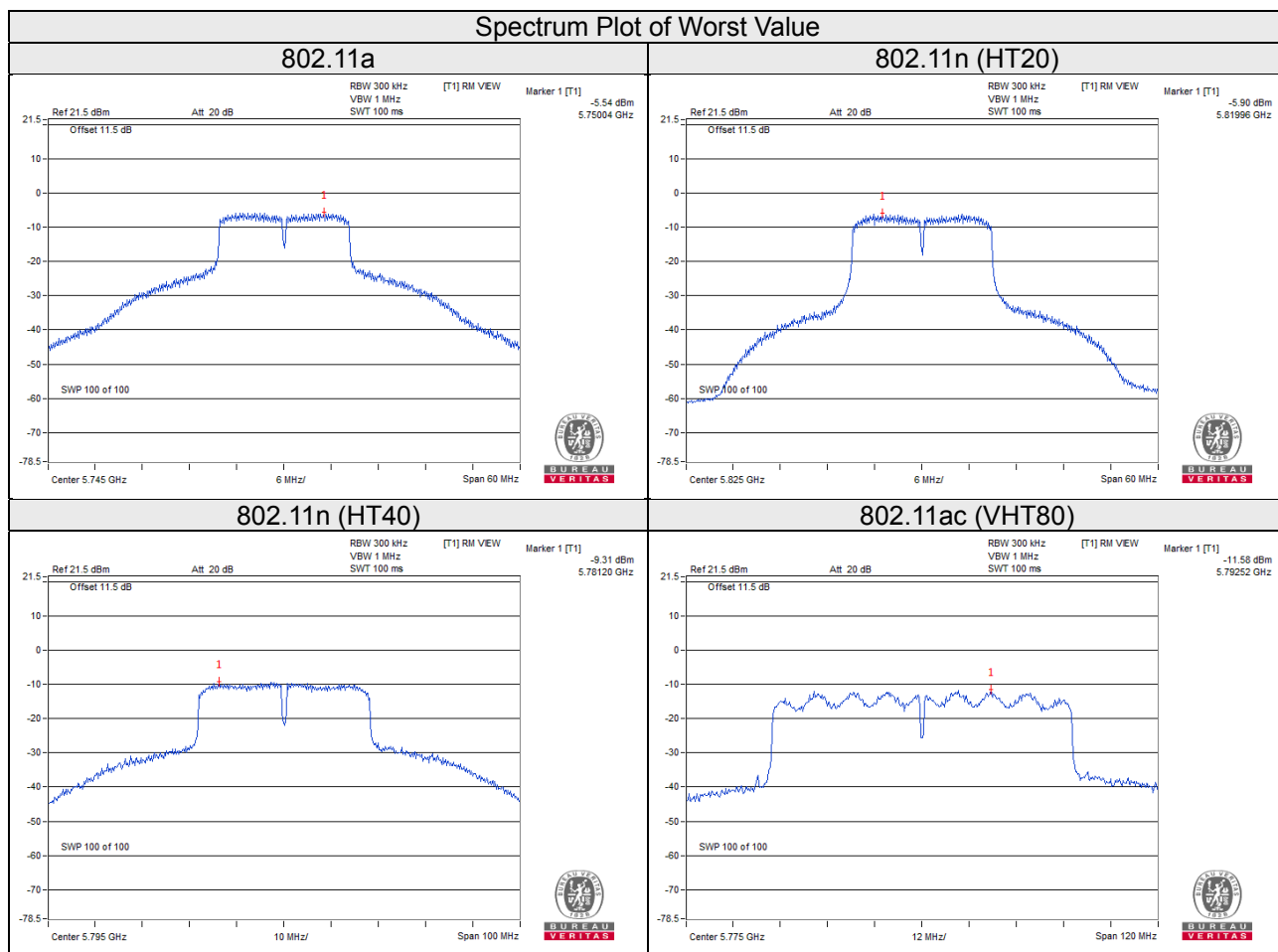
1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5745~5825MHz Directional Gain = 2.28dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-11.84	-9.62	3.01	0.81	-5.80	30	Pass
1	155	5775	-11.58	-9.36	3.01	0.81	-5.54	30	Pass

Note:

1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5745~5825MHz Directional Gain = 2.28dBi < 6dBi, so the limit no need to be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

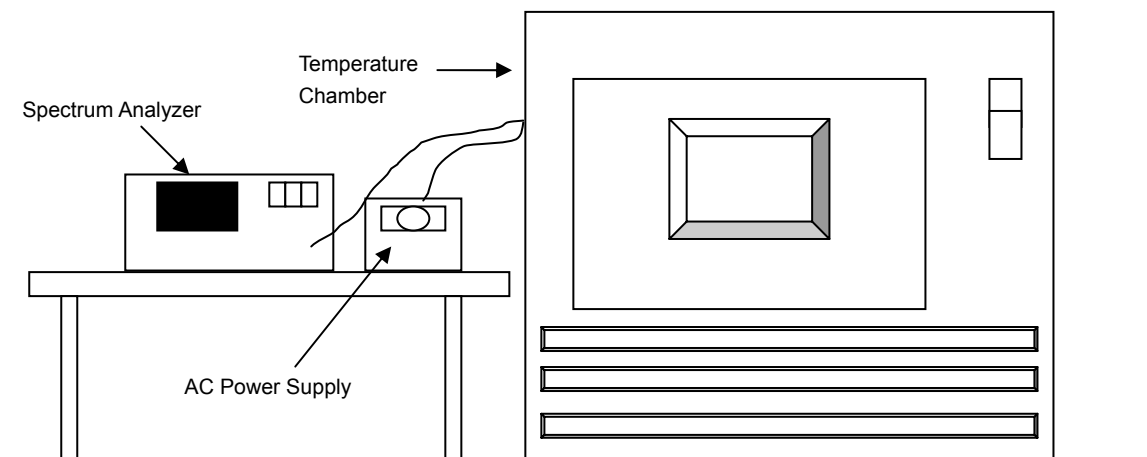


4.6 Frequency Stability

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

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 11, 2018	Jun. 10, 2019
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 04, 2018	Jun. 03, 2019
Digital Multimeter Fluke	87-III	70360742	Jun. 29, 2018	Jun. 28, 2019
AC Power Supply Extech	CFW-105	E000603	NA	NA

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)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
50	120	5180.0165	PASS	5180.0198	PASS	5180.0162	PASS	5180.0167	PASS
40	120	5180.0133	PASS	5180.0119	PASS	5180.0118	PASS	5180.0142	PASS
30	120	5179.9816	PASS	5179.9807	PASS	5179.9814	PASS	5179.9805	PASS
20	120	5179.993	PASS	5179.997	PASS	5179.992	PASS	5179.9938	PASS
10	120	5180.0036	PASS	5180.0071	PASS	5180.0057	PASS	5180.0067	PASS
0	120	5180.022	PASS	5180.0217	PASS	5180.0204	PASS	5180.0204	PASS
-10	120	5180.0192	PASS	5180.0182	PASS	5180.0214	PASS	5180.0169	PASS
-20	120	5179.9788	PASS	5179.9787	PASS	5179.9791	PASS	5179.9801	PASS
-30	120	5179.9839	PASS	5179.9837	PASS	5179.9829	PASS	5179.9825	PASS

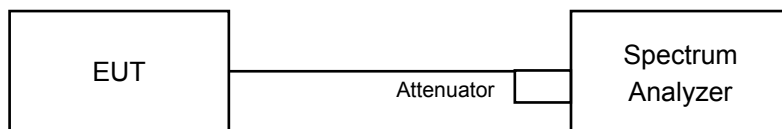
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5179.9928	PASS	5179.9966	PASS	5179.9922	PASS	5179.9944	PASS
	120	5179.993	PASS	5179.997	PASS	5179.992	PASS	5179.9938	PASS
	102	5179.9931	PASS	5179.9969	PASS	5179.9922	PASS	5179.9933	PASS

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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.59	0.5	Pass
157	5785	15.82	0.5	Pass
165	5825	15.83	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.32	15.82	0.5	Pass
157	5785	16.32	15.55	0.5	Pass
165	5825	16.31	15.58	0.5	Pass

802.11n (HT40)

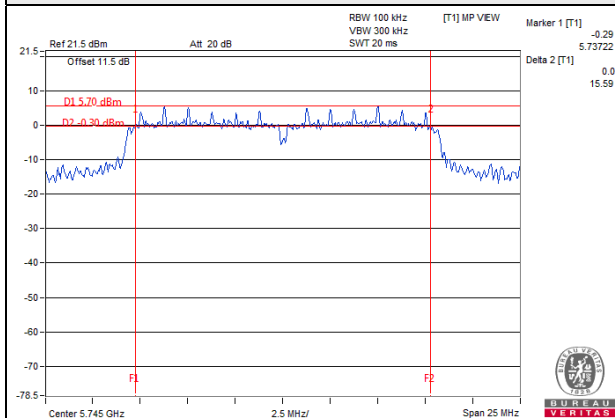
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.30	35.33	0.5	Pass
159	5795	35.31	35.33	0.5	Pass

802.11ac (VHT80)

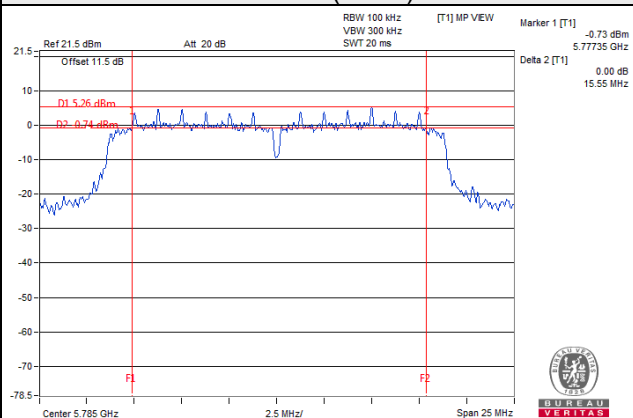
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.28	75.34	0.5	Pass

Spectrum Plot of Worst Value

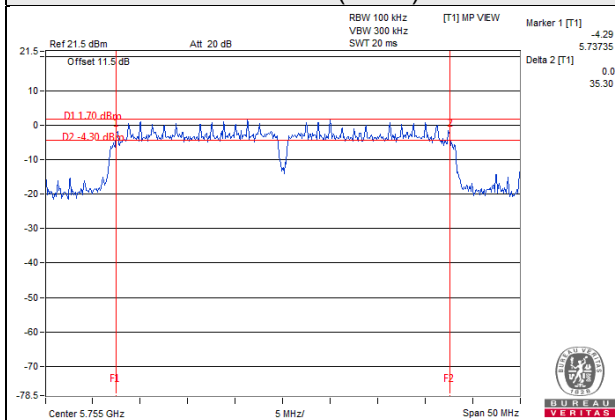
802.11a



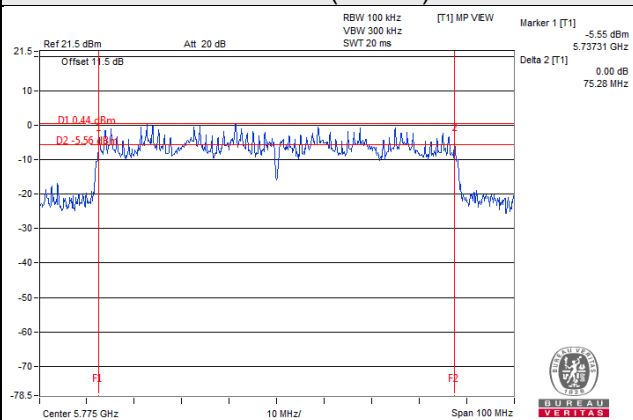
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

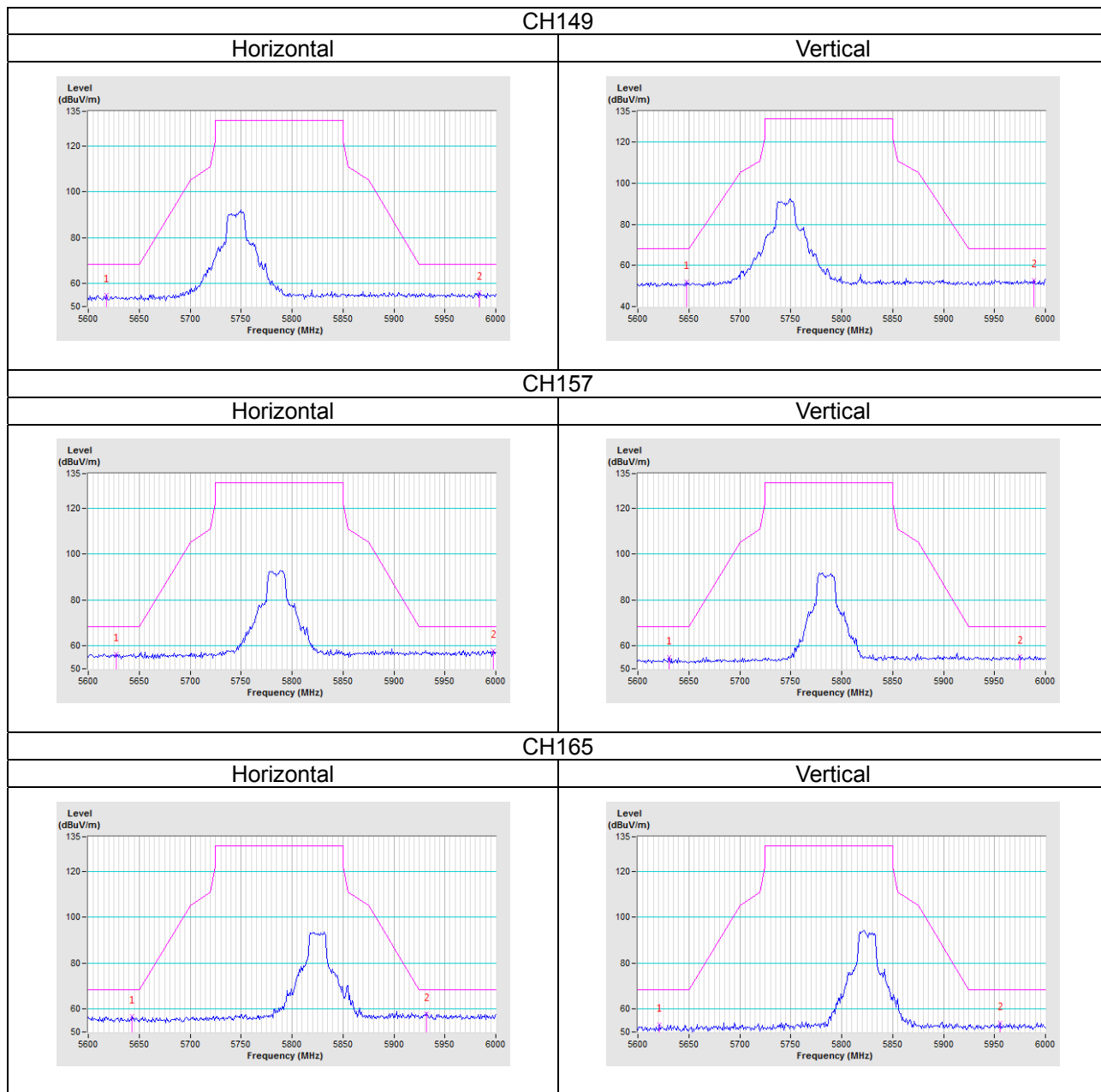


5 Pictures of Test Arrangements

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

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

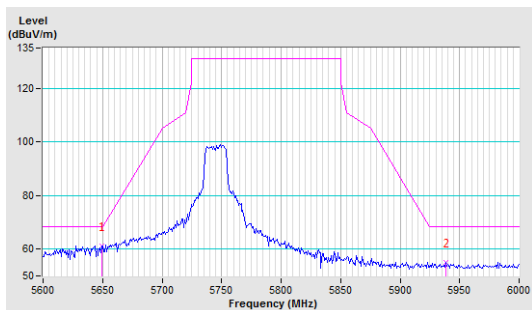
802.11a



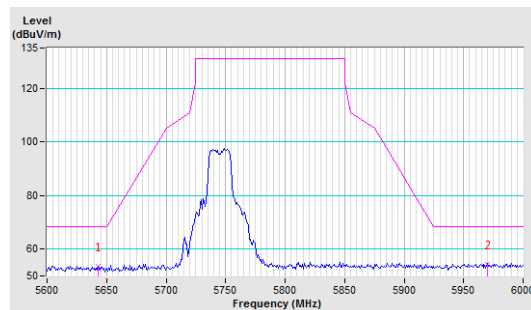
802.11n (HT20)

CH149

Horizontal

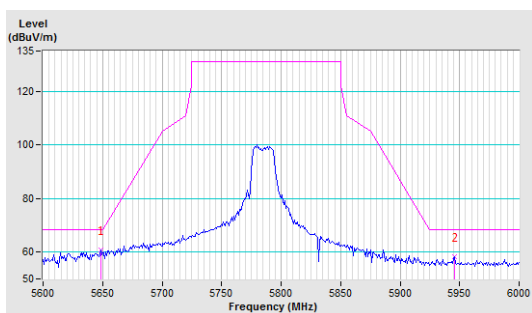


Vertical

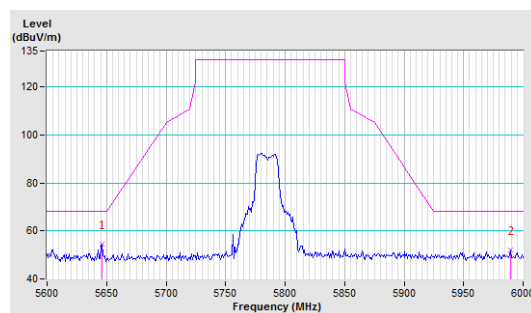


CH157

Horizontal

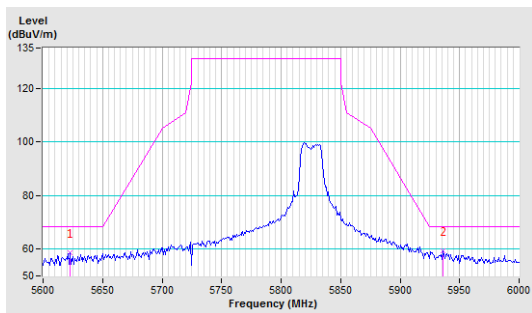


Vertical

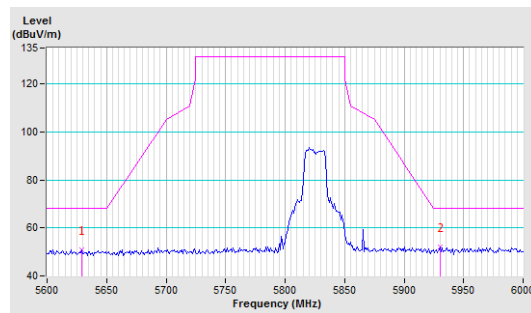


CH165

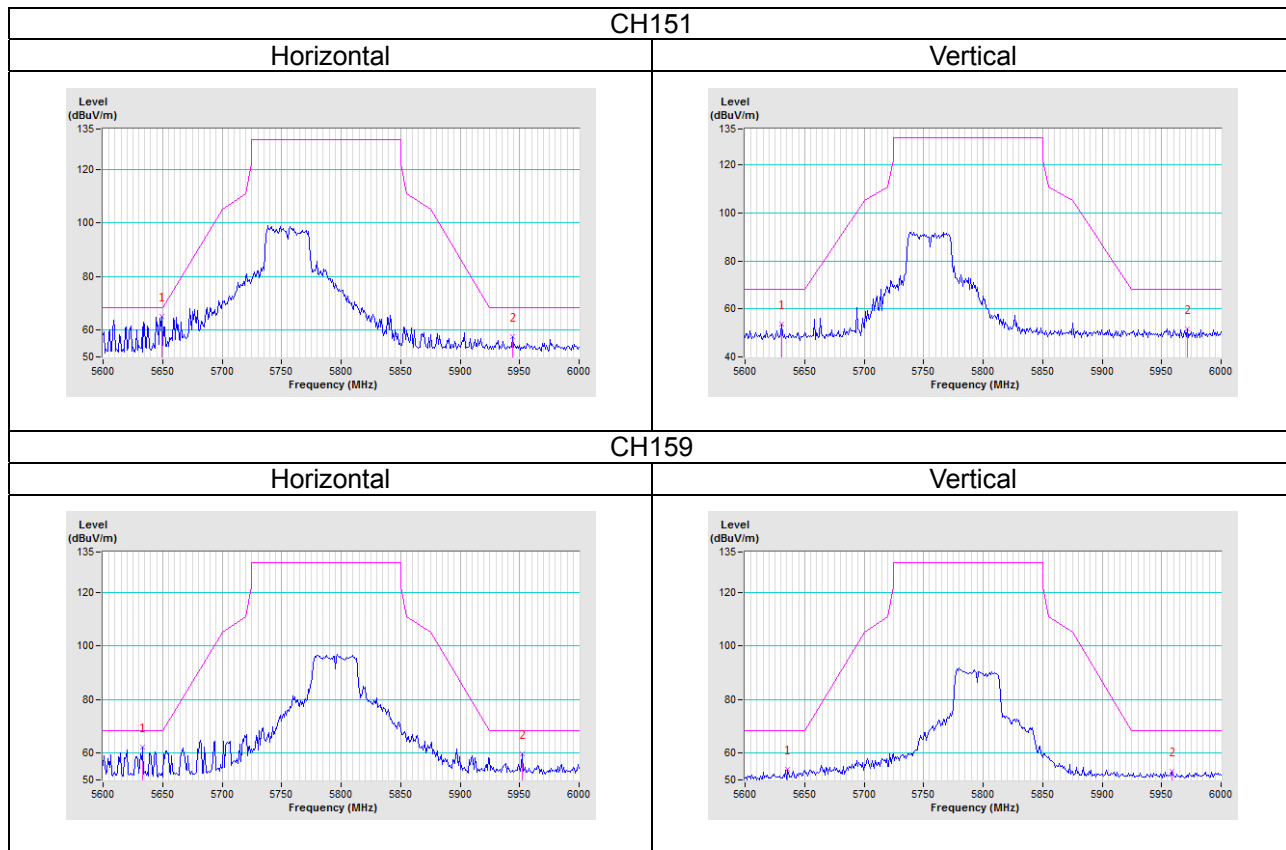
Horizontal



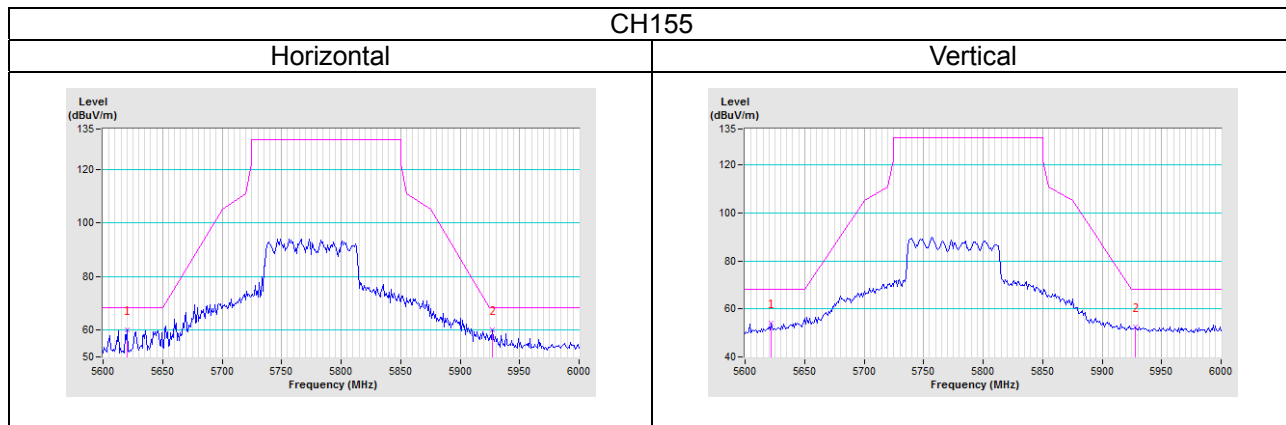
Vertical



802.11n (HT40)



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 ---