

FCC Test Report

Report No.: RF180108C15D-3

FCC ID: Q6G-AP225W

Test Model: W-118

Received Date: Jan. 08, 2018

Test Date: Oct. 25 ~ Nov. 04, 2019

Issued Date: Nov. 11, 2019

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FCC Registration / 788550 / TW0003
Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
RF180108C15D-3	Original release.	Nov. 11, 2019

1 Certificate of Conformity

Product: AP225W

Brand: WatchGuard

Test Model: W-118

Sample Status: Engineering sample

Applicant: WatchGuard Technologies, Inc.

Test Date: Oct. 25 ~ Nov. 04, 2019

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 : Pettie Chen , **Date:** Nov. 11, 2019
Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Nov. 11, 2019
Bruce Chen / Senior 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 -4.49dB at 0.37421MHz.
15.407(b)(1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.4dB at 10400.00, 11650.00MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is IPEX not a standard connector.

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A. Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.94 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 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	AP225W
Brand	WatchGuard
Test Model	W-118
Sample Status	Engineering sample
Power Supply Rating	12Vdc from Adapter 54Vdc from POE
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, 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 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	Radio 2: CDD Mode: 5180 ~ 5240MHz: 264.627mW 5745 ~ 5825MHz: 455.118mW Beamforming Mode: 5180 ~ 5240MHz: 129.777mW 5745 ~ 5825MHz: 227.574mW Radio 3: CDD Mode: 5180 ~ 5240MHz: 52.457mW 5745 ~ 5825MHz: 48.367mW
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.

Modulation Mode	TX Function	Beamforming Mode	Remark
802.11a	2TX	Not Support	Radio 2 (Master)
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	
802.11a	2TX	Not Support	Radio 3 (Client)
802.11n (HT20)	2TX	Not Support	
802.11n (HT40)	2TX	Not Support	
802.11ac (VHT20)	2TX	Not Support	
802.11ac (VHT40)	2TX	Not Support	
802.11ac (VHT80)	2TX	Not Support	

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

* For 802.11n and 802.11ac, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

2. The EUT consumes power from following Adapter and POE. (Support unit only)

Adapter	
Brand	Powertron Electronics Corp.
Model	PA1024-120IB200
Input Power	100-240Vac, 50-60Hz, 0.6A
Output Power	12Vdc / 2.0A 24W Max
Power Cord	1.5m non-shielded cable with one core 0.5m non-shielded cable without core

POE	
Brand	EnGenius
Model	EPA5006GAT
Input Power	100-240Vac, 50-60Hz, 0.8A
Output Power	54Vdc, 0.6A

3. The EUT uses following antennas.

Type	PIFA						PIFA
Connector	IPEX						-
Radio	1		2		3		BT/Zigbee
Frequency (MHz)	2400-2500		5150-5850		2400-2500 & 5150-5850		2400-2500
Antenna	1	2	3	4	5	6	BT/Zigbee
Gain (dBi)	3.67	4.31	5.72	5.99	2.51 / 4.83	2.78 / 4.80	2.76

4. Spurious emission of the simultaneous operation mode as below and the test data please refer to report no.: RF180108C15D-4.

No	Mode
1	Radio 1 + Radio 2 + Radio 3(2.4GHz) + BT LE
2	Radio 1 + Radio 3(5GHz) + BT LE
3	Radio 1 + Radio 2 + Radio 3(2.4GHz)+ Zigbee
4	Radio 1 + Radio 3(5GHz) + Zigbee

*The Radio 2 and Radio 3(5GHz) cannot transmit simultaneously.

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	5210MHz

5745~5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable to				Description	
	RE $\geq$ 1G	RE<1G	PLC	APCM	Radio	Power
A	√	√	√	√	Radio 2	Power from adapter
B	-	√	√	-		Power from PoE
C	√	√	√	√	Radio 3	Power from adapter
D	-	√	√	-		Power from PoE

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

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane (For Test Mode A, B), Z-plane (For Test Mode C, D)**.
- "-" means no effect.

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, C	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	58.5
A, C	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	58.5

Radiated Emission Test (Below 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
A, B, C, D	802.11a	5180-5240	36 to 48	165	OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0

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)
A, B, C, D	802.11a	5180-5240	36 to 48	165	OFDM	6.0
	802.11a	5745-5825	149 to 165		OFDM	6.0

Transmit Power 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)
A, C	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	58.5
A, C	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	58.5

Peak Power Spectral Density, Bandwidth and Frequency Stability 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)
A, C	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	58.5
A, C	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
	802.11ac (VHT80)		155	155	OFDM	58.5

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	22 deg. C, 68% RH	120Vac, 60Hz	Adair Peng
RE<1G	23 deg. C, 67% RH	120Vac, 60Hz	Adair Peng
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Jisyong Wang

3.3 Duty Cycle of Test Signal

Test Mode A

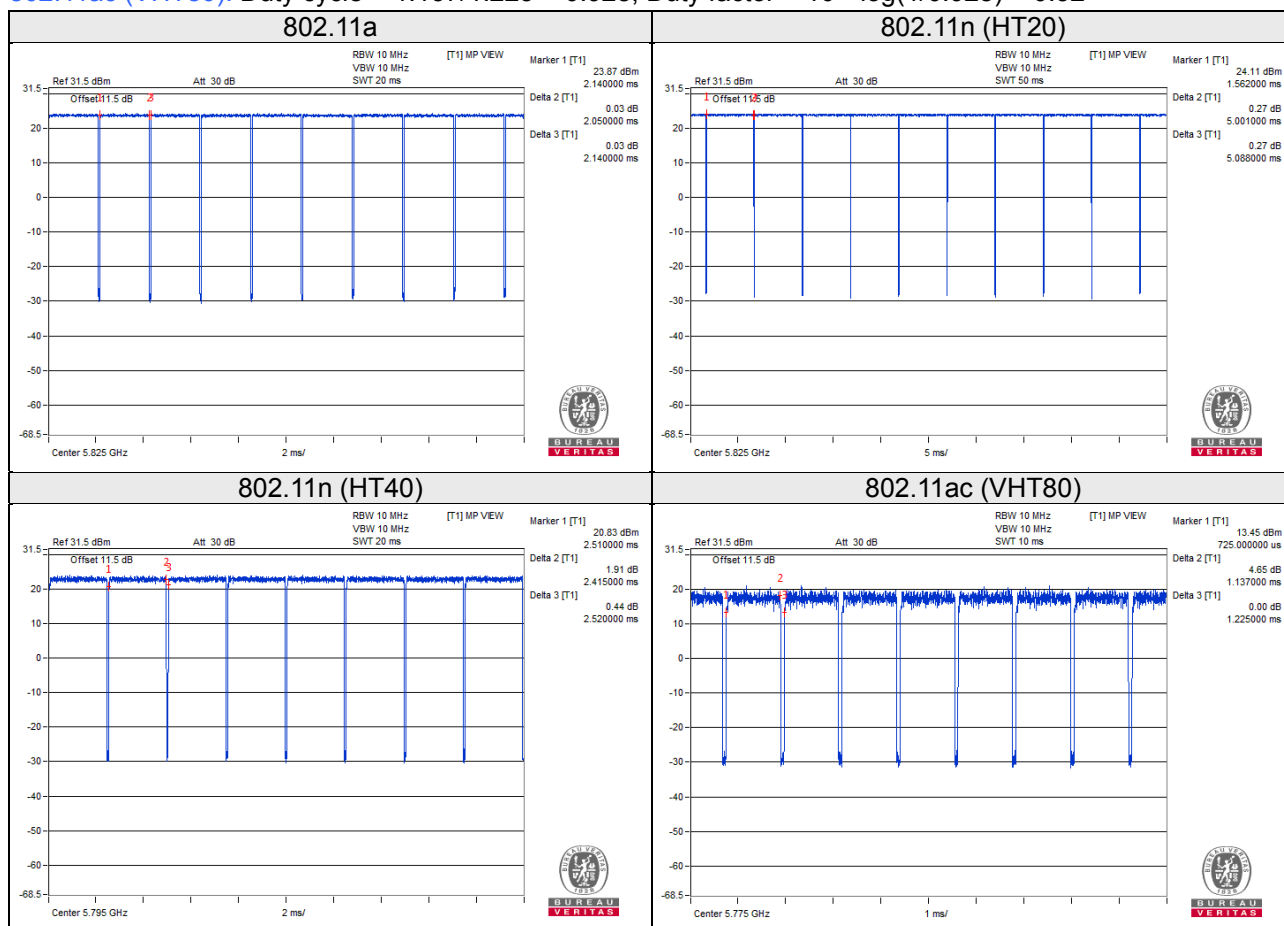
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.05/2.14 = 0.958, Duty factor = $10 * \log(1/0.958) = 0.19$

802.11n (HT20): Duty cycle = 5.001/5.088 = 0.983

802.11n (HT40): Duty cycle = 2.415/2.520 = 0.958, Duty factor = $10 * \log(1/0.958) = 0.18$

802.11ac (VHT80): Duty cycle = 1.137/1.225 = 0.928, Duty factor = $10 * \log(1/0.928) = 0.32$



Test Mode C

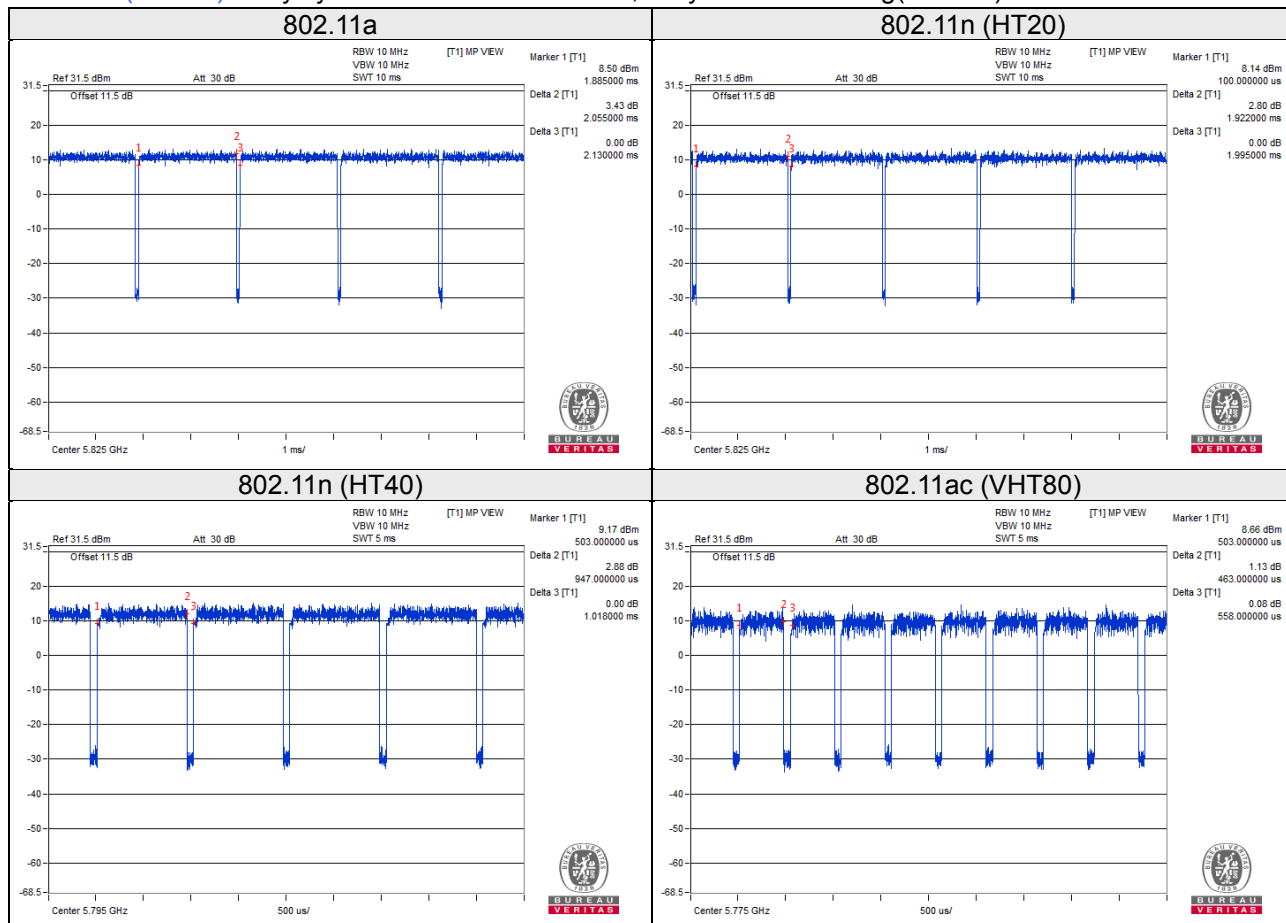
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = $2.055/2.130 = 0.965$, Duty factor = $10 * \log(1/0.965) = 0.16$

802.11n (HT20): Duty cycle = $1.922/1.995 = 0.963$, Duty factor = $10 * \log(1/0.963) = 0.16$

802.11n (HT40): Duty cycle = $0.947/1.018 = 0.930$, Duty factor = $10 * \log(1/0.930) = 0.31$

802.11ac (VHT80): Duty cycle = $0.463/0.558 = 0.830$, 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	-
B.	Adapter	Powertron	PA1024-120IB200	NA	NA	Provided by manufacturer
C.	Load	NA	NA	NA	NA	-
D.	POE	EnGenius	EPA5006GAT	NA	NA	Provided by manufacturer

Note:

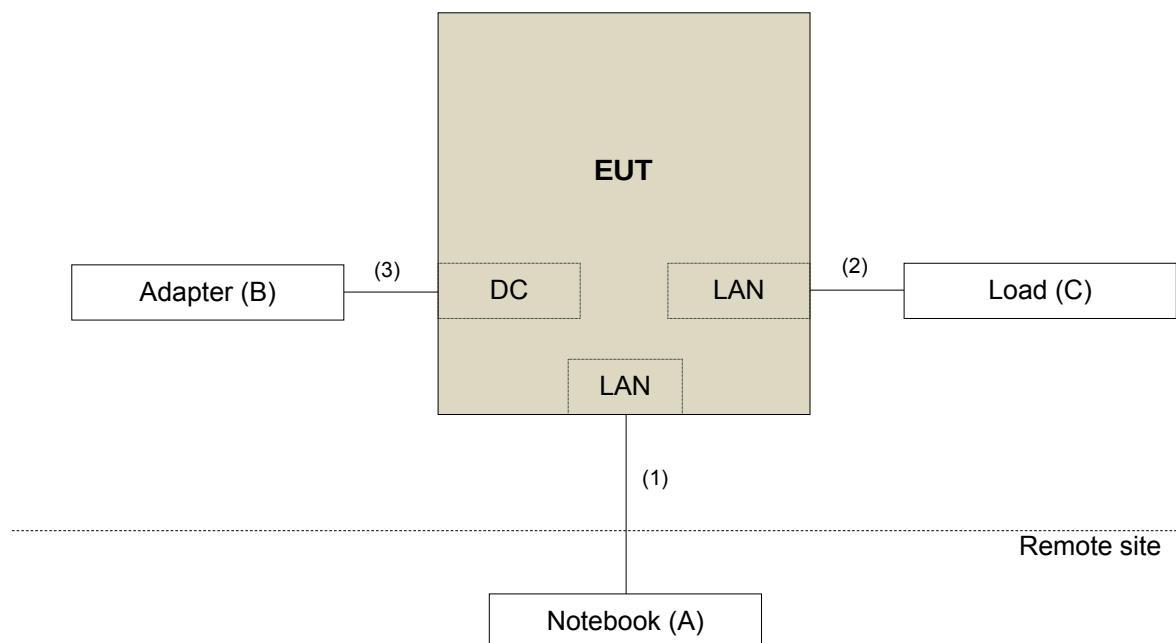
1. All power cords of the above support units are non-shielded (1.8m).
2. Item A acted as a communication partner to transfer data.

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ45, Cat5e	1	10	N	0	-
2.	RJ45, Cat5e	4	3	N	0	-
3.	Power Cord	1	1.0	N	0	-
4.	RJ45, Cat5e	1	3	N	0	-

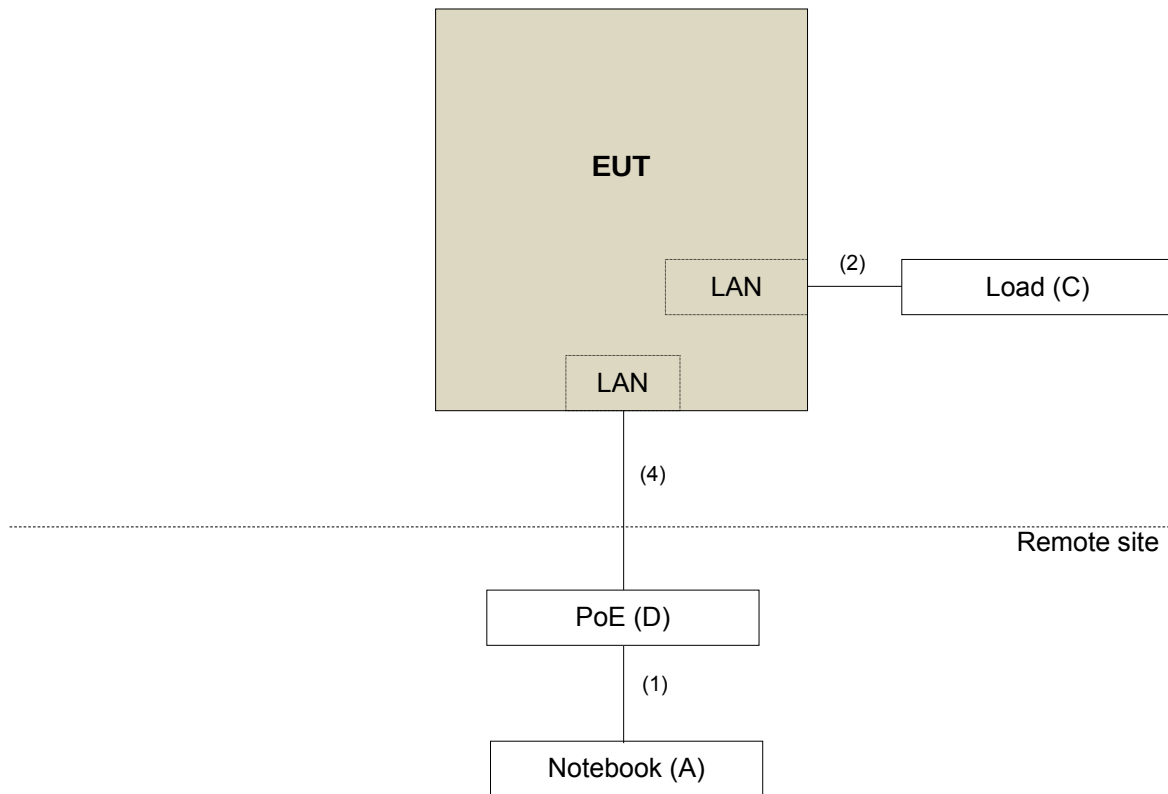
Note: The core(s) is(are) originally attached to the cable(s).

3.4.1 Configuration of System under Test

Test Mode A, C



Test Mode B, D



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:

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

Limits of unwanted emission out of the restricted bands

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:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 30, 2019	May 29, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 22, 2018	Nov. 21, 2019
HORN Antenna SCHWARZBECK	9120D	209	Nov. 25, 2018	Nov. 24, 2019
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 25, 2018	Nov. 24, 2019
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 20, 2019	Aug. 19, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 27, 2019	Mar. 26, 2020
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM- SM-8000	Cable-CH3-03 (309224+170907)	Aug. 20, 2019	Aug. 19, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55 190004/MY5519000 7/MY55210005	Jul. 15, 2019	Jul. 14, 2020

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.

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 detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

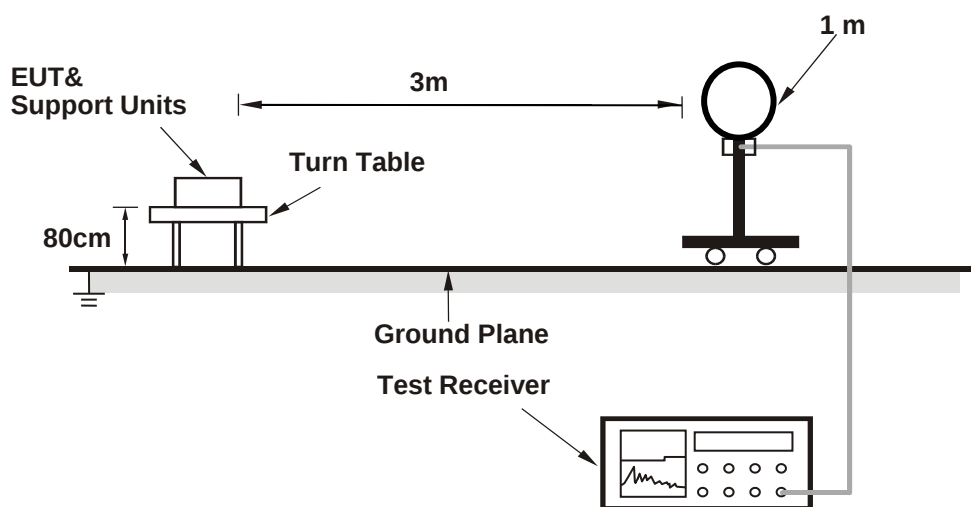
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

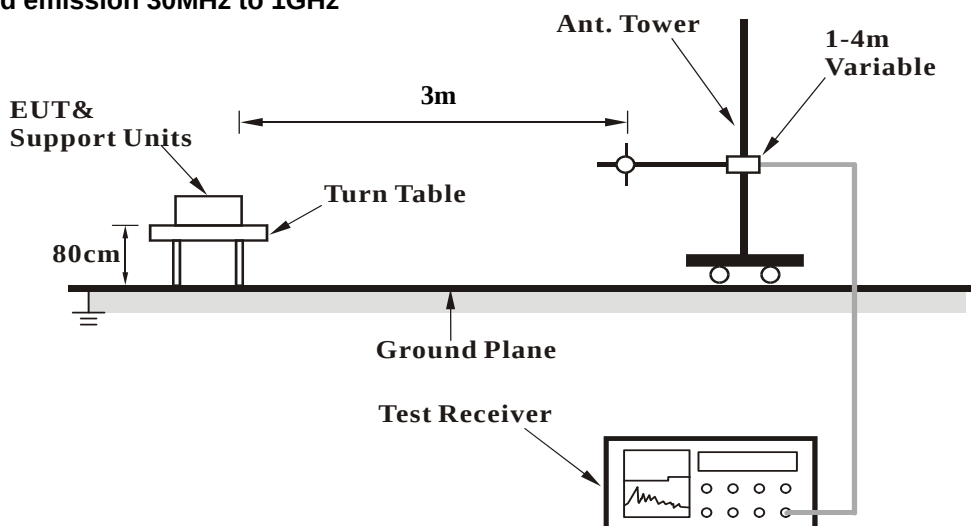
No deviation.

4.1.5 Test Setup

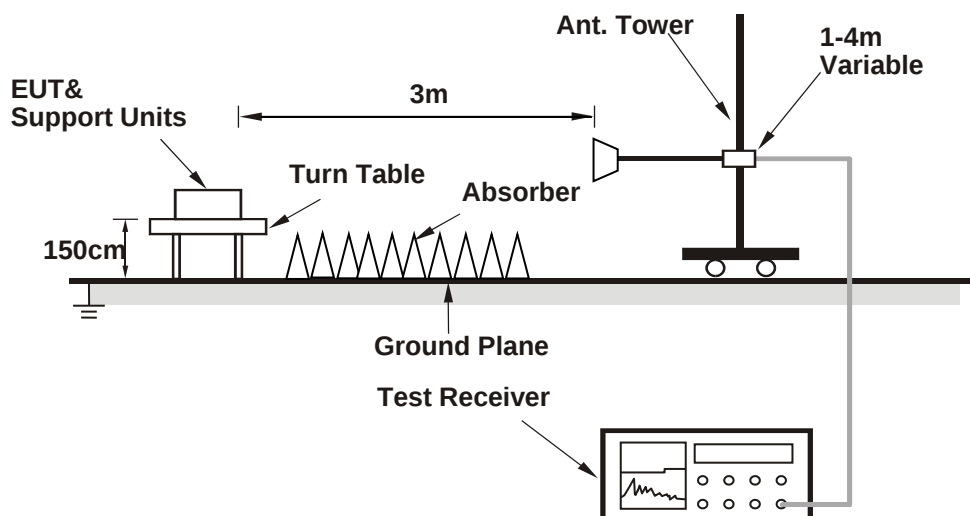
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Prepared a notebook to act as a communication partner and placed it outside of testing area.
- The communication partner connected with EUT via a RJ45 cable and ran a test program (provided by manufacturer) to enable EUT under transmission condition continuously at specific channel frequency.
- The communication partner sent data to EUT by command "PING".

4.1.7 Test Results

Above 1GHz data:

Test Mode A

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	69.8 PK	74.0	-4.2	1.11 H	44	65.6	4.2
2	5150.00	52.0 AV	54.0	-2.0	1.11 H	44	47.8	4.2
3	*5180.00	114.5 PK			1.23 H	51	75.1	39.4
4	*5180.00	103.7 AV			1.23 H	51	64.3	39.4
5	#10360.00	60.0 PK	68.2	-8.2	1.75 H	201	42.5	17.5
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	71.1 PK	74.0	-2.9	2.22 V	359	66.9	4.2
2	5150.00	52.4 AV	54.0	-1.6	2.22 V	359	48.2	4.2
3	*5180.00	115.4 PK			2.03 V	9	76.0	39.4
4	*5180.00	104.6 AV			2.03 V	9	65.2	39.4
5	#10360.00	59.8 PK	68.2	-8.4	2.05 V	299	42.3	17.5

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.0 PK	74.0	-7.0	1.53 H	301	63.3	3.7
2	5150.00	49.3 AV	54.0	-4.7	1.53 H	300	45.6	3.7
3	*5200.00	118.1 PK			1.48 H	313	78.5	39.6
4	*5200.00	107.6 AV			1.48 H	313	68.0	39.6
5	#10400.00	57.6 PK	68.2	-10.6	1.89 H	255	42.0	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.3 PK	74.0	-3.7	2.20 V	359	66.6	3.7
2	5150.00	52.1 AV	54.0	-1.9	2.20 V	359	48.4	3.7
3	*5200.00	119.4 PK			2.18 V	1	79.8	39.6
4	*5200.00	108.5 AV			2.18 V	1	68.9	39.6
5	#10400.00	57.8 PK	68.2	-10.4	1.79 V	320	42.2	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.1 PK	74.0	-14.9	1.46 H	44	55.4	3.7
2	5150.00	44.5 AV	54.0	-9.5	1.46 H	44	40.8	3.7
3	*5240.00	117.5 PK			1.22 H	33	78.1	39.4
4	*5240.00	106.8 AV			1.22 H	33	67.4	39.4
5	5350.00	57.8 PK	74.0	-16.2	1.35 H	50	54.0	3.8
6	5350.00	42.9 AV	54.0	-11.1	1.35 H	50	39.1	3.8
7	#10480.00	57.5 PK	68.2	-10.7	2.13 H	220	40.9	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	1.95 V	3	54.5	3.7
2	5150.00	44.0 AV	54.0	-10.0	1.95 V	3	40.3	3.7
3	*5240.00	118.1 PK			2.04 V	4	78.7	39.4
4	*5240.00	107.2 AV			2.04 V	4	67.8	39.4
5	5350.00	56.8 PK	74.0	-17.2	1.99 V	12	53.0	3.8
6	5350.00	43.0 AV	54.0	-11.0	1.99 V	13	39.2	3.8
7	#10480.00	57.6 PK	68.2	-10.6	1.66 V	299	41.0	16.6

Remarks:

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

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	#5602.40	57.6 PK	68.2	-10.6	1.15 H	63	53.1	4.5
2	*5745.00	117.8 PK			1.15 H	63	77.7	40.1
3	*5745.00	107.2 AV			1.15 H	63	67.1	40.1
4	#5946.40	57.9 PK	68.2	-10.3	1.15 H	63	52.5	5.4
5	11490.00	59.7 PK	74.0	-14.3	2.99 H	177	40.4	19.3
6	11490.00	46.0 AV	54.0	-8.0	2.99 H	177	26.7	19.3
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	#5627.20	58.2 PK	68.2	-10.0	1.43 V	313	53.8	4.4
2	*5745.00	120.0 PK			1.43 V	313	79.9	40.1
3	*5745.00	109.6 AV			1.43 V	313	69.5	40.1
4	#5944.00	57.9 PK	68.2	-10.3	1.43 V	313	52.5	5.4
5	11490.00	59.0 PK	74.0	-15.0	2.20 V	233	39.7	19.3
6	11490.00	46.1 AV	54.0	-7.9	2.20 V	233	26.8	19.3

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5622.40	58.1 PK	68.2	-10.1	1.23 H	43	53.7	4.4
2	*5785.00	118.5 PK			1.18 H	108	78.2	40.3
3	*5785.00	107.5 AV			1.18 H	108	67.2	40.3
4	#5938.40	58.3 PK	68.2	-9.9	1.23 H	43	52.9	5.4
5	11570.00	60.0 PK	74.0	-14.0	2.35 H	144	41.0	19.0
6	11570.00	45.8 AV	54.0	-8.2	2.35 H	144	26.8	19.0
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	#5601.60	58.6 PK	68.2	-9.6	1.35 V	323	54.1	4.5
2	*5785.00	120.4 PK			1.35 V	323	80.1	40.3
3	*5785.00	109.6 AV			1.35 V	323	69.3	40.3
4	#5988.80	59.3 PK	68.2	-8.9	1.35 V	323	53.8	5.5
5	11570.00	59.3 PK	74.0	-14.7	1.71 V	222	40.3	19.0
6	11570.00	46.0 AV	54.0	-8.0	1.71 V	222	27.0	19.0

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5608.00	57.9 PK	68.2	-10.3	1.17 H	52	53.4	4.5
2	*5825.00	118.1 PK			1.17 H	52	77.7	40.4
3	*5825.00	107.9 AV			1.17 H	52	67.5	40.4
4	#5957.60	57.5 PK	68.2	-10.7	1.17 H	52	52.1	5.4
5	11650.00	59.0 PK	74.0	-15.0	2.01 H	222	40.1	18.9
6	11650.00	45.8 AV	54.0	-8.2	2.01 H	222	26.9	18.9
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	#5605.60	57.5 PK	68.2	-10.7	1.35 V	333	53.0	4.5
2	*5825.00	120.3 PK			1.35 V	333	79.9	40.4
3	*5825.00	109.8 AV			1.35 V	333	69.4	40.4
4	#5964.00	57.9 PK	68.2	-10.3	1.35 V	333	52.5	5.4
5	11650.00	58.9 PK	74.0	-15.1	1.93 V	222	40.0	18.9
6	11650.00	45.7 AV	54.0	-8.3	1.93 V	222	26.8	18.9

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.

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.1 PK	74.0	-5.9	1.63 H	303	64.4	3.7
2	5150.00	51.2 AV	54.0	-2.8	1.63 H	303	47.5	3.7
3	*5180.00	113.4 PK			1.26 H	59	73.8	39.6
4	*5180.00	103.3 AV			1.26 H	59	63.7	39.6
5	#10360.00	57.1 PK	68.2	-11.1	1.66 H	254	41.5	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.4 PK	74.0	-5.6	1.29 V	11	64.7	3.7
2	5150.00	51.4 AV	54.0	-2.6	1.29 V	11	47.7	3.7
3	*5180.00	115.4 PK			1.93 V	0	75.8	39.6
4	*5180.00	104.2 AV			1.93 V	0	64.6	39.6
5	#10360.00	57.4 PK	68.2	-10.8	1.82 V	286	41.8	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.3 PK	74.0	-2.7	1.76 H	53	67.6	3.7
2	5150.00	52.5 AV	54.0	-1.5	1.76 H	53	48.8	3.7
3	*5200.00	118.3 PK			1.40 H	59	78.7	39.6
4	*5200.00	107.5 AV			1.40 H	59	67.9	39.6
5	#10400.00	57.4 PK	68.2	-10.8	2.76 H	269	41.8	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.4 PK	74.0	-4.6	1.30 V	33	65.7	3.7
2	5150.00	52.1 AV	54.0	-1.9	1.30 V	33	48.4	3.7
3	*5200.00	116.6 PK			1.25 V	28	77.0	39.6
4	*5200.00	106.3 AV			1.25 V	28	66.7	39.6
5	#10400.00	56.8 PK	68.2	-11.4	1.83 V	352	41.2	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.3 PK	74.0	-15.7	1.48 H	301	54.6	3.7
2	5150.00	43.8 AV	54.0	-10.2	1.48 H	301	40.1	3.7
3	*5240.00	116.7 PK			1.39 H	298	77.3	39.4
4	*5240.00	105.7 AV			1.39 H	298	66.3	39.4
5	5350.00	58.2 PK	74.0	-15.8	1.35 H	311	54.4	3.8
6	5350.00	43.1 AV	54.0	-10.9	1.35 H	311	39.3	3.8
7	#10480.00	59.0 PK	68.2	-9.2	1.88 H	277	42.4	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	5150.00	58.9 PK	74.0	-15.1	1.90 V	3	55.2	3.7
2	5150.00	43.8 AV	54.0	-10.2	1.90 V	3	40.1	3.7
3	*5240.00	117.4 PK			1.97 V	4	78.0	39.4
4	*5240.00	106.2 AV			1.97 V	4	66.8	39.4
5	5350.00	58.6 PK	74.0	-15.4	1.82 V	6	54.8	3.8
6	5350.00	44.3 AV	54.0	-9.7	1.82 V	6	40.5	3.8
7	#10480.00	58.8 PK	68.2	-9.4	2.01 V	267	42.2	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 149	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5630.40	58.2 PK	68.2	-10.0	1.09 H	25	53.8	4.4
2	*5745.00	119.0 PK			1.09 H	25	78.9	40.1
3	*5745.00	108.1 AV			1.09 H	25	68.0	40.1
4	#5929.60	57.6 PK	68.2	-10.6	1.09 H	25	52.2	5.4
5	11490.00	59.9 PK	74.0	-14.1	2.01 H	222	40.6	19.3
6	11490.00	45.7 AV	54.0	-8.3	2.01 H	222	26.4	19.3
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	#5618.40	58.4 PK	68.2	-9.8	1.43 V	343	53.9	4.5
2	*5745.00	120.0 PK			1.43 V	343	79.9	40.1
3	*5745.00	109.1 AV			1.43 V	343	69.0	40.1
4	#5964.00	58.1 PK	68.2	-10.1	1.43 V	343	52.7	5.4
5	11490.00	59.1 PK	74.0	-14.9	1.91 V	233	39.8	19.3
6	11490.00	45.3 AV	54.0	-8.7	1.91 V	233	26.0	19.3

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5602.40	57.7 PK	68.2	-10.5	1.23 H	33	53.2	4.5
2	*5785.00	118.8 PK			1.23 H	33	78.5	40.3
3	*5785.00	107.9 AV			1.23 H	33	67.6	40.3
4	#5960.00	57.3 PK	68.2	-10.9	1.23 H	33	51.9	5.4
5	11570.00	59.2 PK	74.0	-14.8	1.75 H	277	40.2	19.0
6	11570.00	46.1 AV	54.0	-7.9	1.75 H	277	27.1	19.0
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	#5601.60	58.0 PK	68.2	-10.2	1.43 V	350	53.5	4.5
2	*5785.00	120.1 PK			1.43 V	350	79.8	40.3
3	*5785.00	109.2 AV			1.43 V	350	68.9	40.3
4	#5988.00	58.2 PK	68.2	-10.0	1.43 V	350	52.7	5.5
5	11570.00	58.7 PK	74.0	-15.3	2.21 V	153	39.7	19.0
6	11570.00	45.6 AV	54.0	-8.4	2.21 V	153	26.6	19.0

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5617.60	56.7 PK	68.2	-11.5	1.17 H	45	52.2	4.5
2	*5825.00	119.2 PK			1.17 H	45	78.8	40.4
3	*5825.00	108.2 AV			1.17 H	45	67.8	40.4
4	#5934.40	57.7 PK	68.2	-10.5	1.17 H	45	52.3	5.4
5	11650.00	58.0 PK	74.0	-16.0	2.53 H	170	39.1	18.9
6	11650.00	45.1 AV	54.0	-8.9	2.53 H	170	26.2	18.9
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	#5616.80	58.7 PK	68.2	-9.5	1.44 V	322	54.2	4.5
2	*5825.00	120.1 PK			1.44 V	322	79.7	40.4
3	*5825.00	109.2 AV			1.44 V	322	68.8	40.4
4	#5941.60	58.4 PK	68.2	-9.8	1.44 V	322	53.0	5.4
5	11650.00	58.2 PK	74.0	-15.8	2.22 V	193	39.3	18.9
6	11650.00	45.0 AV	54.0	-9.0	2.22 V	193	26.1	18.9

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.

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.0 PK	74.0	-7.0	1.27 H	25	63.3	3.7
2	5150.00	52.3 AV	54.0	-1.7	1.27 H	25	48.6	3.7
3	*5190.00	109.1 PK			1.46 H	22	69.5	39.6
4	*5190.00	98.8 AV			1.46 H	22	59.2	39.6
5	#10380.00	57.3 PK	68.2	-10.9	1.97 H	333	41.7	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.7 PK	74.0	-6.3	2.10 V	358	64.0	3.7
2	5150.00	52.3 AV	54.0	-1.7	2.10 V	358	48.6	3.7
3	*5190.00	108.9 PK			2.00 V	356	69.3	39.6
4	*5190.00	98.8 AV			2.00 V	356	59.2	39.6
5	#10380.00	55.6 PK	68.2	-12.6	2.11 V	316	40.0	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.6 PK	74.0	-8.4	1.17 H	20	61.9	3.7
2	5150.00	49.1 AV	54.0	-4.9	1.17 H	20	45.4	3.7
3	*5230.00	113.0 PK			1.21 H	16	73.6	39.4
4	*5230.00	103.0 AV			1.21 H	16	63.6	39.4
5	5350.00	64.5 PK	74.0	-9.5	1.23 H	22	60.7	3.8
6	5350.00	49.2 AV	54.0	-4.8	1.23 H	22	45.4	3.8
7	#10460.00	57.2 PK	68.2	-11.0	1.94 H	296	41.0	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	5150.00	67.8 PK	74.0	-6.2	2.13 V	6	64.1	3.7
2	5150.00	51.4 AV	54.0	-2.6	2.13 V	6	47.7	3.7
3	*5230.00	115.1 PK			2.01 V	10	75.7	39.4
4	*5230.00	104.6 AV			2.01 V	10	65.2	39.4
5	5350.00	67.3 PK	74.0	-6.7	2.00 V	14	63.5	3.8
6	5350.00	51.3 AV	54.0	-2.7	2.00 V	14	47.5	3.8
7	#10460.00	58.1 PK	68.2	-10.1	1.70 V	267	41.9	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	#5648.00	61.4 PK	68.2	-6.8	1.22 H	22	57.0	4.4
2	#5650.00	64.9 PK	68.2	-3.3	1.11 H	60	60.5	4.4
3	*5755.00	117.0 PK			1.22 H	22	76.9	40.1
4	*5755.00	105.9 AV			1.22 H	22	65.8	40.1
5	#5933.60	59.2 PK	68.2	-9.0	1.22 H	22	53.8	5.4
6	11510.00	59.2 PK	74.0	-14.8	1.70 H	233	39.8	19.4
7	11510.00	45.7 AV	54.0	-8.3	1.70 H	233	26.3	19.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5638.40	61.3 PK	68.2	-6.9	1.21 V	359	56.9	4.4
2	#5650.00	65.7 PK	68.2	-2.5	1.11 V	350	61.3	4.4
3	*5755.00	118.1 PK			1.21 V	359	78.0	40.1
4	*5755.00	107.4 AV			1.21 V	359	67.3	40.1
5	#5997.60	57.9 PK	68.2	-10.3	1.21 V	359	52.4	5.5
6	11510.00	59.0 PK	74.0	-15.0	2.01 V	222	39.6	19.4
7	11510.00	45.7 AV	54.0	-8.3	2.01 V	222	26.3	19.4

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5645.60	60.3 PK	68.2	-7.9	1.07 H	55	55.9	4.4
2	*5795.00	116.7 PK			1.07 H	55	76.3	40.4
3	*5795.00	105.9 AV			1.07 H	55	65.5	40.4
4	#5925.00	65.9 PK	68.2	-2.3	1.23 H	60	60.5	5.4
5	#5939.20	62.8 PK	68.2	-5.4	1.07 H	55	57.4	5.4
6	11590.00	59.3 PK	74.0	-14.7	1.91 H	254	40.4	18.9
7	11590.00	46.2 AV	54.0	-7.8	1.91 H	254	27.3	18.9
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	#5631.20	57.9 PK	68.2	-10.3	1.35 V	350	53.5	4.4
2	*5795.00	116.8 PK			1.35 V	350	76.4	40.4
3	*5795.00	105.9 AV			1.35 V	350	65.5	40.4
4	#5925.00	65.9 PK	68.2	-2.3	1.23 V	333	60.5	5.4
5	#5933.60	59.0 PK	68.2	-9.2	1.35 V	350	53.6	5.4
6	11590.00	59.3 PK	74.0	-14.7	1.93 V	252	40.4	18.9
7	11590.00	46.1 AV	54.0	-7.9	1.93 V	252	27.2	18.9

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.

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	65.0 PK	74.0	-9.0	1.23 H	333	61.3	3.7
2	5150.00	52.2 AV	54.0	-1.8	1.23 H	333	48.5	3.7
3	*5210.00	104.4 PK			1.28 H	326	64.9	39.5
4	*5210.00	94.5 AV			1.28 H	326	55.0	39.5
5	5350.00	50.5 PK	74.0	-23.5	1.28 H	337	46.7	3.8
6	5350.00	39.2 AV	54.0	-14.8	1.28 H	337	35.4	3.8
7	#10420.00	57.3 PK	68.2	-10.9	1.91 H	288	41.5	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	5150.00	65.1 PK	74.0	-8.9	2.31 V	0	61.4	3.7
2	5150.00	52.4 AV	54.0	-1.6	2.31 V	0	48.7	3.7
3	*5210.00	105.2 PK			2.27 V	1	65.7	39.5
4	*5210.00	95.1 AV			2.27 V	1	55.6	39.5
5	5350.00	55.6 PK	74.0	-18.4	2.39 V	3	51.8	3.8
6	5350.00	44.0 AV	54.0	-10.0	2.39 V	3	40.2	3.8
7	#10420.00	57.4 PK	68.2	-10.8	1.89 V	290	41.6	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	#5629.60	63.6 PK	68.2	-4.6	1.14 H	31	59.2	4.4
2	#5650.00	65.8 PK	68.2	-2.4	1.60 H	20	61.4	4.4
3	*5775.00	109.6 PK			1.14 H	31	69.4	40.2
4	*5775.00	99.4 AV			1.14 H	31	59.2	40.2
5	#5925.00	63.0 PK	68.2	-5.2	1.33 H	23	57.6	5.4
6	#5925.60	60.0 PK	68.2	-8.2	1.14 H	31	54.6	5.4
7	11550.00	58.4 PK	74.0	-15.6	2.82 H	155	39.2	19.2
8	11550.00	45.7 AV	54.0	-8.3	2.82 H	155	26.5	19.2
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	#5649.60	63.5 PK	68.2	-4.7	1.45 V	351	59.1	4.4
2	#5650.00	66.1 PK	68.2	-2.1	1.20 V	333	61.7	4.4
3	*5775.00	111.3 PK			1.45 V	351	71.1	40.2
4	*5775.00	101.1 AV			1.45 V	351	60.9	40.2
5	#5925.00	64.8 PK	68.2	-3.4	2.21 V	336	59.4	5.4
6	#5936.00	59.8 PK	68.2	-8.4	1.45 V	351	54.4	5.4
7	11550.00	58.7 PK	74.0	-15.3	1.83 V	244	39.5	19.2
8	11550.00	45.9 AV	54.0	-8.1	1.83 V	244	26.7	19.2

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.

Test Mode C

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	61.7 PK	74.0	-12.3	1.70 H	344	58.0	3.7
2	5150.00	46.0 AV	54.0	-8.0	1.70 H	344	42.3	3.7
3	*5180.00	104.6 PK			2.10 H	353	65.0	39.6
4	*5180.00	94.6 AV			2.10 H	353	55.0	39.6
5	#10360.00	65.9 PK	68.2	-2.3	2.56 H	33	50.3	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.7 PK	74.0	-8.3	2.00 V	0	62.0	3.7
2	5150.00	50.2 AV	54.0	-3.8	2.00 V	0	46.5	3.7
3	*5180.00	109.6 PK			1.56 V	355	70.0	39.6
4	*5180.00	99.5 AV			1.56 V	355	59.9	39.6
5	#10360.00	59.5 PK	68.2	-8.7	1.40 V	266	43.9	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	104.3 PK			1.90 H	340	64.7	39.6
2	*5200.00	94.2 AV			1.90 H	340	54.6	39.6
3	#10400.00	66.8 PK	68.2	-1.4	2.18 H	339	51.2	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	110.2 PK			1.79 V	359	70.6	39.6
2	*5200.00	100.1 AV			1.79 V	359	60.5	39.6
3	#10400.00	59.0 PK	68.2	-9.2	1.65 V	260	43.4	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	103.8 PK			2.02 H	347	64.4	39.4
2	*5240.00	93.3 AV			2.02 H	347	53.9	39.4
3	5350.00	55.2 PK	74.0	-18.8	2.00 H	301	51.4	3.8
4	5350.00	45.5 AV	54.0	-8.5	2.00 H	301	41.7	3.8
5	#10480.00	66.6 PK	68.2	-1.6	2.75 H	31	50.0	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	*5240.00	111.4 PK			1.70 V	349	72.0	39.4
2	*5240.00	100.7 AV			1.70 V	349	61.3	39.4
3	5350.00	55.8 PK	74.0	-18.2	1.76 V	345	52.0	3.8
4	5350.00	45.0 AV	54.0	-9.0	1.76 V	345	41.2	3.8
5	#10480.00	59.1 PK	68.2	-9.1	1.48 V	273	42.5	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 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	#5605.60	57.2 PK	68.2	-11.0	2.22 H	333	52.7	4.5
2	*5745.00	105.0 PK			2.22 H	333	64.9	40.1
3	*5745.00	96.3 AV			2.22 H	333	56.2	40.1
4	#5996.80	57.1 PK	68.2	-11.1	2.22 H	333	51.6	5.5
5	11490.00	65.2 PK	74.0	-8.8	1.59 H	25	47.4	17.8
6	11490.00	52.3 AV	54.0	-1.7	1.59 H	25	34.5	17.8
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	#5615.20	58.6 PK	68.2	-9.6	1.99 V	43	54.1	4.5
2	*5745.00	107.3 PK			1.99 V	43	67.2	40.1
3	*5745.00	98.4 AV			1.99 V	43	58.3	40.1
4	#5941.60	59.2 PK	68.2	-9.0	1.99 V	43	53.8	5.4
5	11490.00	61.4 PK	74.0	-12.6	1.89 V	266	43.6	17.8
6	11490.00	48.4 AV	54.0	-5.6	1.89 V	266	30.6	17.8

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5629.60	57.4 PK	68.2	-10.8	2.35 H	353	53.0	4.4
2	*5785.00	99.8 PK			2.35 H	353	59.5	40.3
3	*5785.00	90.2 AV			2.35 H	353	49.9	40.3
4	#5926.40	57.8 PK	68.2	-10.4	2.35 H	353	52.4	5.4
5	11570.00	65.3 PK	74.0	-8.7	1.59 H	0	47.2	18.1
6	11570.00	52.0 AV	54.0	-2.0	1.59 H	0	33.9	18.1
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	#5644.00	56.2 PK	68.2	-12.0	1.95 V	22	51.8	4.4
2	*5785.00	103.0 PK			1.95 V	22	62.7	40.3
3	*5785.00	93.4 AV			1.95 V	22	53.1	40.3
4	#5988.00	58.5 PK	68.2	-9.7	1.95 V	22	53.0	5.5
5	11570.00	60.2 PK	74.0	-13.8	1.96 V	34	42.1	18.1
6	11570.00	46.7 AV	54.0	-7.3	1.96 V	342	28.6	18.1

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5606.40	56.6 PK	68.2	-11.6	2.35 H	335	52.1	4.5
2	*5825.00	99.1 PK			2.35 H	335	58.6	40.5
3	*5825.00	90.3 AV			2.35 H	335	49.8	40.5
4	#5979.20	57.0 PK	68.2	-11.2	2.35 H	335	51.6	5.4
5	11650.00	65.2 PK	74.0	-8.8	1.35 H	39	47.5	17.7
6	11650.00	52.0 AV	54.0	-2.0	1.35 H	39	34.3	17.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5644.80	58.2 PK	68.2	-10.0	1.88 V	11	53.8	4.4
2	*5825.00	102.1 PK			1.83 V	340	61.6	40.5
3	*5825.00	93.0 AV			1.83 V	325	52.5	40.5
4	#5928.80	57.5 PK	68.2	-10.7	1.88 V	11	52.1	5.4
5	11650.00	59.3 PK	74.0	-14.7	2.10 V	34	41.6	17.7
6	11650.00	46.3 AV	54.0	-7.7	2.10 V	34	28.6	17.7

Remarks:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.7 PK	74.0	-13.3	1.71 H	340	57.0	3.7
2	5150.00	46.7 AV	54.0	-7.3	1.71 H	340	43.0	3.7
3	*5180.00	103.3 PK			2.02 H	355	63.7	39.6
4	*5180.00	93.6 AV			2.02 H	355	54.0	39.6
5	#10360.00	64.4 PK	68.2	-3.8	2.24 H	303	48.8	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.7 PK	74.0	-8.3	1.98 V	335	62.0	3.7
2	5150.00	51.7 AV	54.0	-2.3	1.98 V	335	48.0	3.7
3	*5180.00	108.9 PK			1.74 V	351	69.3	39.6
4	*5180.00	99.6 AV			1.74 V	351	60.0	39.6
5	#10360.00	59.3 PK	68.2	-8.9	1.57 V	282	43.7	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	105.1 PK			1.66 H	349	65.5	39.6
2	*5200.00	95.1 AV			1.66 H	349	55.5	39.6
3	#10400.00	66.1 PK	68.2	-2.1	2.06 H	33	50.5	15.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	109.8 PK			1.89 V	350	70.2	39.6
2	*5200.00	99.6 AV			1.89 V	350	60.0	39.6
3	#10400.00	57.7 PK	68.2	-10.5	1.66 V	29	42.1	15.6

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	104.8 PK			1.84 H	23	65.4	39.4
2	*5240.00	94.9 AV			1.84 H	23	55.5	39.4
3	5350.00	55.8 PK	74.0	-18.2	1.88 H	0	52.0	3.8
4	5350.00	44.0 AV	54.0	-10.0	1.88 H	0	40.2	3.8
5	#10480.00	65.8 PK	68.2	-2.4	1.95 H	340	49.2	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	*5240.00	111.0 PK			1.60 V	340	71.6	39.4
2	*5240.00	101.5 AV			1.60 V	340	62.1	39.4
3	5350.00	55.9 PK	74.0	-18.1	1.71 V	300	52.1	3.8
4	5350.00	43.9 AV	54.0	-10.1	1.71 V	300	40.1	3.8
5	#10480.00	59.5 PK	68.2	-8.7	1.63 V	27	42.9	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 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	#5611.20	57.1 PK	68.2	-11.1	2.25 H	329	52.6	4.5
2	*5745.00	104.3 PK			2.25 H	329	64.2	40.1
3	*5745.00	95.1 AV			2.25 H	329	55.0	40.1
4	#5960.00	57.2 PK	68.2	-11.0	2.25 H	329	51.8	5.4
5	11490.00	66.2 PK	74.0	-7.8	1.76 H	354	48.4	17.8
6	11490.00	52.3 AV	54.0	-1.7	1.76 H	354	34.5	17.8
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	#5602.40	57.5 PK	68.2	-10.7	2.05 V	23	53.0	4.5
2	*5745.00	106.8 PK			2.05 V	23	66.7	40.1
3	*5745.00	97.0 AV			2.05 V	23	56.9	40.1
4	#5988.80	58.3 PK	68.2	-9.9	2.05 V	23	52.8	5.5
5	11490.00	59.3 PK	74.0	-14.7	2.39 V	284	41.5	17.8
6	11490.00	48.0 AV	54.0	-6.0	2.39 V	284	30.2	17.8

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5626.40	57.3 PK	68.2	-10.9	2.35 H	303	52.9	4.4
2	*5785.00	102.1 PK			2.35 H	303	61.8	40.3
3	*5785.00	92.3 AV			2.35 H	303	52.0	40.3
4	#5964.00	57.4 PK	68.2	-10.8	2.35 H	303	52.0	5.4
5	11570.00	66.3 PK	74.0	-7.7	1.50 H	26	48.2	18.1
6	11570.00	52.2 AV	54.0	-1.8	1.50 H	26	34.1	18.1
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	#5613.60	57.6 PK	68.2	-10.6	1.84 V	22	53.1	4.5
2	*5785.00	103.1 PK			1.84 V	22	62.8	40.3
3	*5785.00	93.0 AV			1.84 V	22	52.7	40.3
4	#5936.80	57.5 PK	68.2	-10.7	1.84 V	22	52.1	5.4
5	11570.00	61.3 PK	74.0	-12.7	1.94 V	306	43.2	18.1
6	11570.00	48.2 AV	54.0	-5.8	1.94 V	306	30.1	18.1

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5636.00	57.4 PK	68.2	-10.8	2.35 H	303	53.0	4.4
2	*5825.00	100.3 PK			1.93 H	1	59.8	40.5
3	*5825.00	90.0 AV			1.93 H	1	49.5	40.5
4	#5928.00	57.1 PK	68.2	-11.1	2.35 H	303	51.7	5.4
5	11650.00	66.1 PK	74.0	-7.9	1.46 H	22	48.4	17.7
6	11650.00	52.6 AV	54.0	-1.4	1.46 H	22	34.9	17.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5613.60	57.7 PK	68.2	-10.5	1.93 V	1	53.2	4.5
2	*5825.00	103.1 PK			1.93 V	1	62.6	40.5
3	*5825.00	93.2 AV			1.93 V	1	52.7	40.5
4	#5975.20	58.7 PK	68.2	-9.5	1.93 V	1	53.3	5.4
5	11650.00	60.0 PK	74.0	-14.0	1.77 V	283	42.3	17.7
6	11650.00	47.2 AV	54.0	-6.8	1.77 V	283	29.5	17.7

Remarks:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.0 PK	74.0	-14.0	1.93 H	299	55.8	4.2
2	5150.00	47.7 AV	54.0	-6.3	1.93 H	299	43.5	4.2
3	*5190.00	95.6 PK			1.85 H	309	56.3	39.3
4	*5190.00	87.2 AV			1.85 H	309	47.9	39.3
5	#10380.00	62.0 PK	68.2	-6.2	2.05 H	313	44.3	17.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.3 PK	74.0	-7.7	2.29 V	350	62.1	4.2
2	5150.00	52.2 AV	54.0	-1.8	2.29 V	350	48.0	4.2
3	*5190.00	101.9 PK			1.99 V	339	62.6	39.3
4	*5190.00	92.8 AV			1.99 V	339	53.5	39.3
5	#10380.00	61.4 PK	68.2	-6.8	1.69 V	301	43.7	17.7

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	101.6 PK			1.69 H	330	62.2	39.4
2	*5230.00	92.4 AV			1.69 H	330	53.0	39.4
3	5350.00	57.3 PK	74.0	-16.7	1.66 H	300	53.5	3.8
4	5350.00	45.8 AV	54.0	-8.2	1.66 H	300	42.0	3.8
5	#10460.00	63.0 PK	68.2	-5.2	1.89 H	353	46.8	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	*5230.00	107.4 PK			1.70 V	8	68.0	39.4
2	*5230.00	97.7 AV			1.70 V	8	58.3	39.4
3	5350.00	58.3 PK	74.0	-15.7	1.59 V	22	54.5	3.8
4	5350.00	46.3 AV	54.0	-7.7	1.59 V	22	42.5	3.8
5	#10460.00	58.2 PK	68.2	-10.0	1.35 V	269	42.0	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	#5616.00	56.8 PK	68.2	-11.4	2.66 H	20	52.3	4.5
2	*5755.00	103.4 PK			2.66 H	20	63.3	40.1
3	*5755.00	94.1 AV			2.66 H	20	54.0	40.1
4	#5930.40	56.7 PK	68.2	-11.5	2.66 H	20	51.3	5.4
5	11510.00	65.3 PK	74.0	-8.7	1.60 H	28	47.5	17.8
6	11510.00	52.1 AV	54.0	-1.9	1.60 H	28	34.3	17.8
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	#5603.20	57.1 PK	68.2	-11.1	1.44 V	333	52.6	4.5
2	*5755.00	105.6 PK			1.44 V	333	65.5	40.1
3	*5755.00	97.0 AV			1.44 V	333	56.9	40.1
4	#5970.40	57.1 PK	68.2	-11.1	1.44 V	333	51.7	5.4
5	11510.00	60.0 PK	74.0	-14.0	2.22 V	299	42.2	17.8
6	11510.00	47.0 AV	54.0	-7.0	2.22 V	299	29.2	17.8

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5614.40	56.7 PK	68.2	-11.5	3.01 H	11	52.2	4.5
2	*5795.00	101.4 PK			3.01 H	11	61.1	40.3
3	*5795.00	92.0 AV			3.01 H	11	51.7	40.3
4	#5959.20	57.4 PK	68.2	-10.8	3.01 H	11	52.0	5.4
5	11590.00	65.0 PK	74.0	-9.0	1.43 H	359	47.0	18.0
6	11590.00	52.3 AV	54.0	-1.7	1.43 H	359	34.3	18.0
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	#5607.20	56.7 PK	68.2	-11.5	1.66 V	334	52.2	4.5
2	*5795.00	102.2 PK			1.66 V	334	61.9	40.3
3	*5795.00	93.0 AV			1.66 V	334	52.7	40.3
4	#5968.00	57.6 PK	68.2	-10.6	1.66 V	334	52.2	5.4
5	11590.00	59.2 PK	74.0	-14.8	2.22 V	290	41.2	18.0
6	11590.00	46.1 AV	54.0	-7.9	2.22 V	290	28.1	18.0

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.

802.11ac (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	60.9 PK	74.0	-13.1	1.79 H	9	57.2	3.7
2	5150.00	47.8 AV	54.0	-6.2	1.79 H	9	44.1	3.7
3	*5210.00	92.6 PK			1.66 H	10	53.1	39.5
4	*5210.00	81.2 AV			1.66 H	10	41.7	39.5
5	5350.00	55.8 PK	74.0	-18.2	1.57 H	4	52.0	3.8
6	5350.00	46.1 AV	54.0	-7.9	1.57 H	4	42.3	3.8
7	#10420.00	59.1 PK	68.2	-9.1	2.01 H	268	43.3	15.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.7 PK	74.0	-8.3	2.25 V	339	62.0	3.7
2	5150.00	52.0 AV	54.0	-2.0	2.25 V	339	48.3	3.7
3	*5210.00	99.6 PK			2.03 V	346	60.1	39.5
4	*5210.00	88.8 AV			2.03 V	346	49.3	39.5
5	5350.00	56.3 PK	74.0	-17.7	2.11 V	358	52.5	3.8
6	5350.00	44.2 AV	54.0	-9.8	2.11 V	358	40.4	3.8
7	#10420.00	58.9 PK	68.2	-9.3	1.50 V	255	43.1	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	#5641.60	59.2 PK	68.2	-9.0	2.93 H	11	54.8	4.4
2	#5650.00	60.5 PK	68.2	-7.7	2.99 H	35	56.2	4.3
3	*5775.00	103.5 PK			2.99 H	11	63.3	40.2
4	*5775.00	91.5 AV			2.99 H	11	51.3	40.2
5	#5925.00	59.2 PK	68.2	-9.0	2.99 H	33	54.3	4.9
6	#5979.20	57.5 PK	68.2	-10.7	2.93 H	11	52.1	5.4
7	11550.00	65.0 PK	74.0	-9.0	1.55 H	358	47.0	18.0
8	11550.00	51.3 AV	54.0	-2.7	1.55 H	358	33.3	18.0
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	#5637.60	61.1 PK	68.2	-7.1	1.61 V	343	56.7	4.4
2	#5650.00	62.1 PK	68.2	-6.1	1.50 V	342	57.8	4.3
3	*5775.00	105.0 PK			1.61 V	343	64.8	40.2
4	*5775.00	93.1 AV			1.61 V	343	52.9	40.2
5	#5925.00	58.1 PK	68.2	-10.1	1.52 V	351	53.2	4.9
6	#5960.80	58.3 PK	68.2	-9.9	1.61 V	343	52.9	5.4
7	11550.00	59.1 PK	74.0	-14.9	2.44 V	28	41.1	18.0
8	11550.00	45.0 AV	54.0	-9.0	2.44 V	28	27.0	18.0

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.

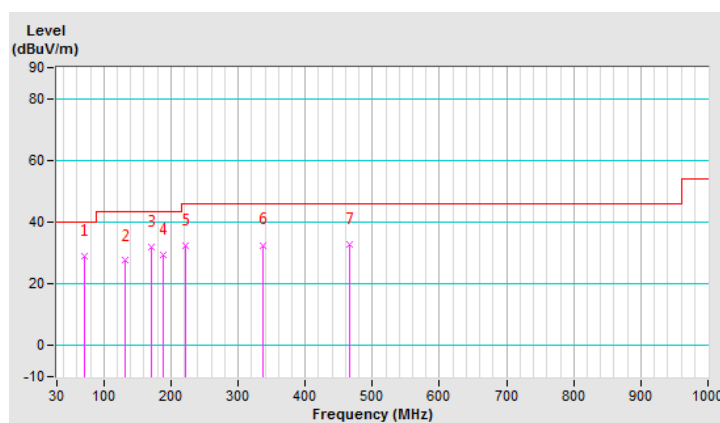
Below 1GHz Worst-Case Data: 802.11a

CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

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	70.77	29.0 QP	40.0	-11.0	2.00 H	88	40.2	-11.2
2	131.22	27.5 QP	43.5	-16.0	2.00 H	255	37.5	-10.0
3	170.58	32.1 QP	43.5	-11.4	1.51 H	234	41.1	-9.0
4	187.45	29.6 QP	43.5	-13.9	1.00 H	250	40.1	-10.5
5	221.19	32.5 QP	46.0	-13.5	1.51 H	235	43.1	-10.6
6	336.46	32.6 QP	46.0	-13.4	2.00 H	326	39.0	-6.4
7	465.80	32.8 QP	46.0	-13.2	2.00 H	292	35.1	-2.3

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. 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.

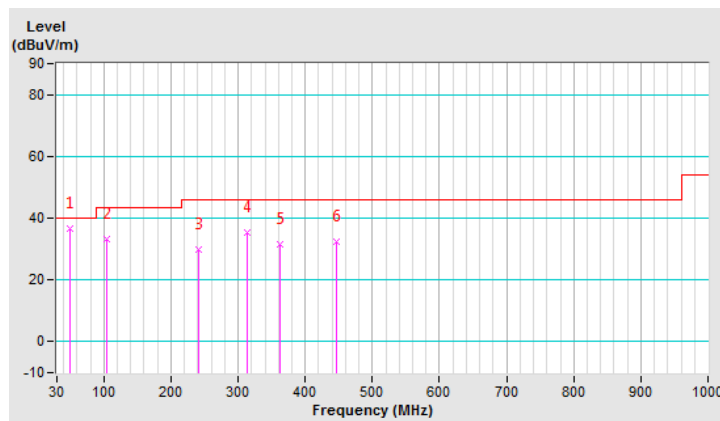


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	A		

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	49.68	36.5 QP	40.0	-3.5	1.00 V	335	45.5	-9.0
2	104.51	33.2 QP	43.5	-10.3	1.00 V	64	45.6	-12.4
3	240.87	29.7 QP	46.0	-16.3	1.00 V	181	39.2	-9.5
4	313.97	35.4 QP	46.0	-10.6	1.49 V	180	42.4	-7.0
5	361.77	31.7 QP	46.0	-14.3	1.00 V	212	37.5	-5.8
6	447.52	32.2 QP	46.0	-13.8	1.99 V	277	34.9	-2.7

Remarks:

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

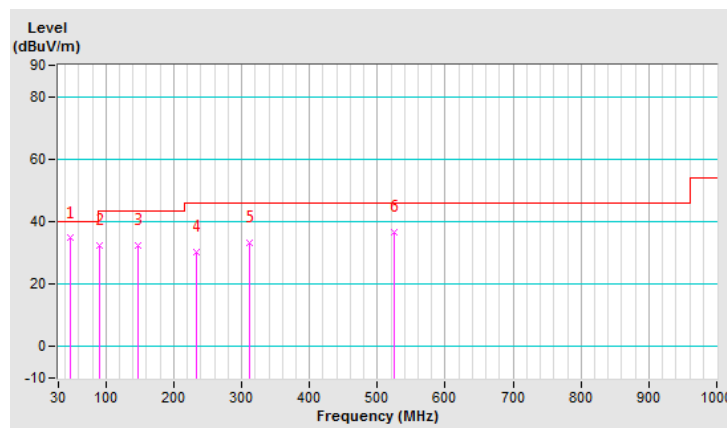


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	46.87	34.7 QP	40.0	-5.3	2.00 H	232	43.8	-9.1
2	90.45	32.3 QP	43.5	-11.2	2.00 H	82	46.3	-14.0
3	146.68	32.5 QP	43.5	-11.0	2.00 H	225	41.3	-8.8
4	233.84	30.3 QP	46.0	-15.7	1.49 H	216	40.4	-10.1
5	311.16	33.1 QP	46.0	-12.9	1.00 H	209	40.1	-7.0
6	524.84	36.5 QP	46.0	-9.5	1.49 H	189	37.5	-1.0

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. 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.

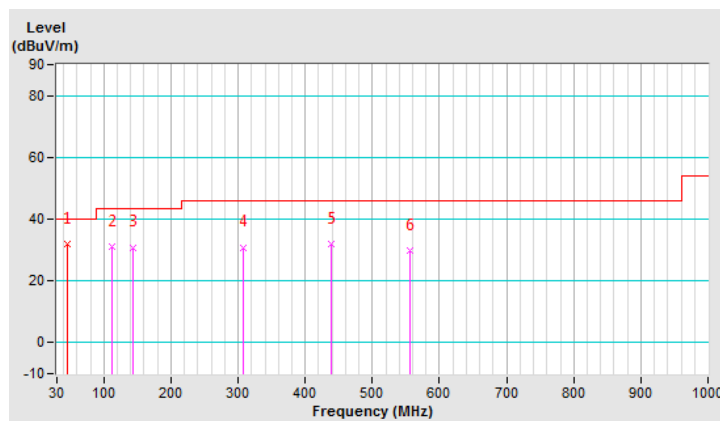


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	B		

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	46.11	31.8 QP	40.0	-8.2	1.50 V	12	40.8	-9.0
2	111.54	30.9 QP	43.5	-12.6	1.01 V	51	42.7	-11.8
3	143.87	30.9 QP	43.5	-12.6	1.01 V	254	39.8	-8.9
4	306.94	30.9 QP	46.0	-15.1	1.51 V	298	38.0	-7.1
5	439.09	32.1 QP	46.0	-13.9	1.01 V	131	34.9	-2.8
6	555.77	30.0 QP	46.0	-16.0	1.01 V	205	30.5	-0.5

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. 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.

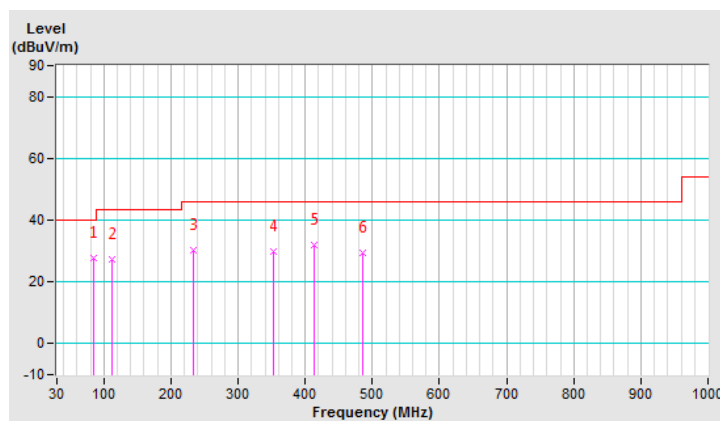


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	C		

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	84.83	27.8 QP	40.0	-12.2	2.00 H	102	41.6	-13.8
2	111.54	27.5 QP	43.5	-16.0	2.00 H	78	39.3	-11.8
3	233.84	30.3 QP	46.0	-15.7	1.00 H	230	40.4	-10.1
4	353.33	29.8 QP	46.0	-16.2	1.00 H	267	36.0	-6.2
5	412.38	32.0 QP	46.0	-14.0	1.00 H	40	36.1	-4.1
6	485.48	29.4 QP	46.0	-16.6	1.00 H	184	31.3	-1.9

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. 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.

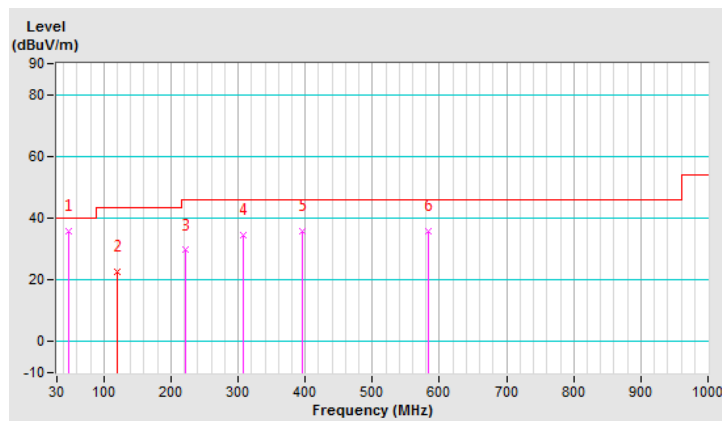


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	C		

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	48.28	35.9 QP	40.0	-4.1	1.99 V	15	44.8	-8.9
2	120.39	22.6 QP	43.5	-20.9	1.00 V	250	33.5	-10.9
3	222.59	29.6 QP	46.0	-16.4	1.49 V	3	40.1	-10.5
4	308.35	34.7 QP	46.0	-11.3	1.49 V	172	41.8	-7.1
5	395.51	35.8 QP	46.0	-10.2	1.99 V	318	40.4	-4.6
6	582.48	35.8 QP	46.0	-10.2	1.99 V	320	35.4	0.4

Remarks:

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

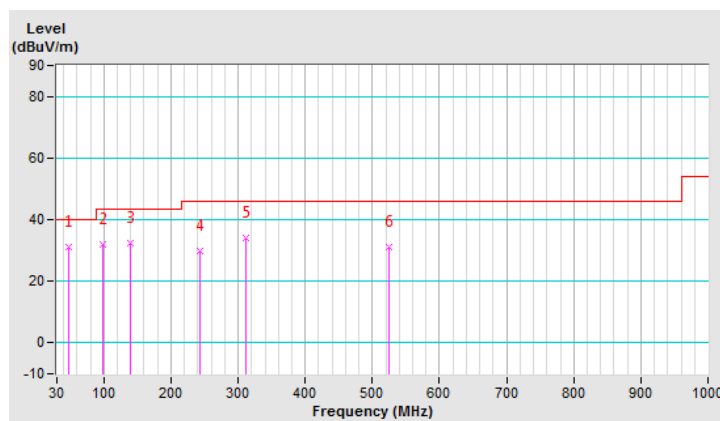


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	D		

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	46.87	31.3 QP	40.0	-8.7	2.00 H	79	40.4	-9.1
2	97.48	32.0 QP	43.5	-11.5	2.00 H	88	45.2	-13.2
3	139.65	32.2 QP	43.5	-11.3	2.00 H	228	41.4	-9.2
4	242.28	29.8 QP	46.0	-16.2	1.00 H	218	39.2	-9.4
5	311.16	34.1 QP	46.0	-11.9	1.00 H	211	41.1	-7.0
6	524.84	31.3 QP	46.0	-14.7	1.49 H	198	32.3	-1.0

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. 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.

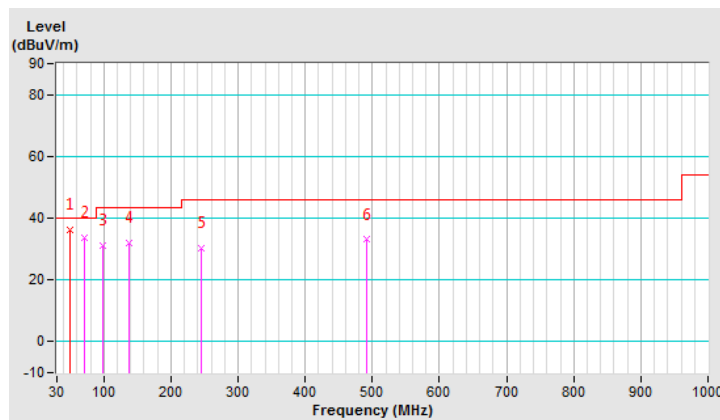


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		
TEST MODE	D		

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	49.10	36.3 QP	40.0	-3.7	1.00 V	288	45.3	-9.0
2	70.77	33.8 QP	40.0	-6.2	1.99 V	327	45.0	-11.2
3	98.88	31.3 QP	43.5	-12.2	1.00 V	79	44.4	-13.1
4	138.25	31.8 QP	43.5	-11.7	1.00 V	244	41.0	-9.2
5	245.09	30.2 QP	46.0	-15.8	1.49 V	310	39.5	-9.3
6	491.10	33.0 QP	46.0	-13.0	1.49 V	307	34.7	-1.7

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. 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.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 10, 2018	Dec. 09, 2019
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 22, 2019	Aug. 21, 2020
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-12040.

4.2.3 Test Procedures

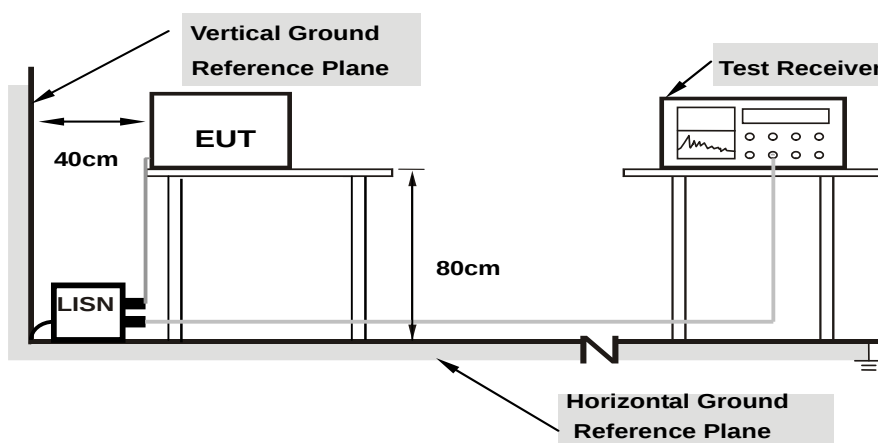
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

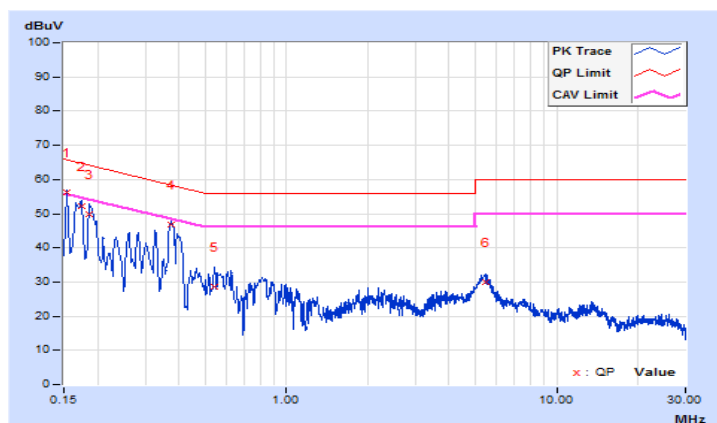
Worst-case data: 802.11a

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.67	46.40	31.88	56.07	41.55	65.78	55.78	-9.71	-14.23
2	0.17384	9.67	42.40	29.36	52.07	39.03	64.77	54.77	-12.70	-15.74
3	0.18600	9.66	40.09	25.57	49.75	35.23	64.21	54.21	-14.46	-18.98
4	0.37421	9.69	37.25	34.23	46.94	43.92	58.41	48.41	-11.47	-4.49
5	0.54200	9.70	18.84	12.90	28.54	22.60	56.00	46.00	-27.46	-23.40
6	5.47400	9.86	20.22	13.24	30.08	23.10	60.00	50.00	-29.92	-26.90

Remarks:

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

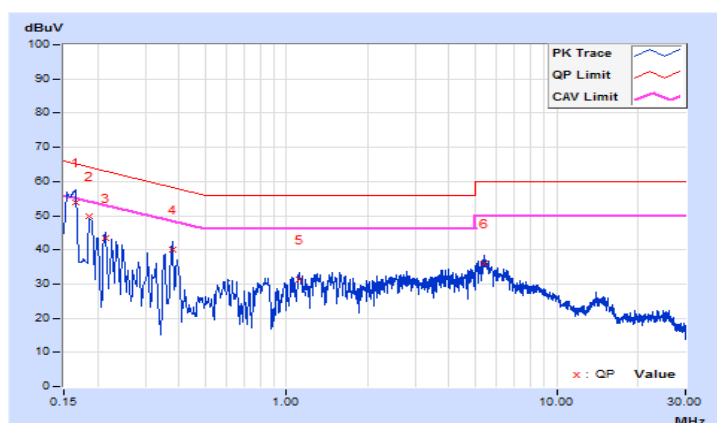


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

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	0.16579	9.64	44.15	28.12	53.79	37.76	65.17	55.17	-11.38	-17.41
2	0.18617	9.64	40.29	24.15	49.93	33.79	64.21	54.21	-14.28	-20.42
3	0.21400	9.64	33.67	19.31	43.31	28.95	63.05	53.05	-19.74	-24.10
4	0.37800	9.66	30.45	23.79	40.11	33.45	58.32	48.32	-18.21	-14.87
5	1.11967	9.71	21.52	12.26	31.23	21.97	56.00	46.00	-24.77	-24.03
6	5.39000	9.83	26.07	17.48	35.90	27.31	60.00	50.00	-24.10	-22.69

Remarks:

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

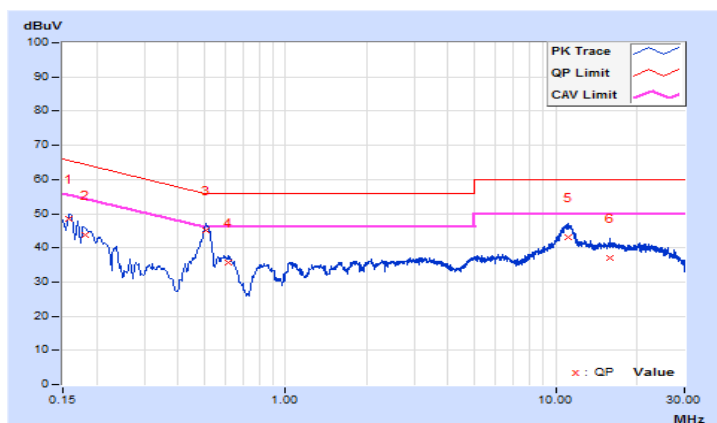


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	0.15811	9.67	38.76	23.69	48.43	33.36	65.56	55.56	-17.13	-22.20
2	0.18200	9.66	34.26	19.33	43.92	28.99	64.39	54.39	-20.47	-25.40
3	0.51000	9.70	35.46	30.22	45.16	39.92	56.00	46.00	-10.84	-6.08
4	0.61731	9.70	25.91	20.57	35.61	30.27	56.00	46.00	-20.39	-15.73
5	11.12600	9.94	33.02	27.96	42.96	37.90	60.00	50.00	-17.04	-12.10
6	15.98600	9.97	27.10	21.91	37.07	31.88	60.00	50.00	-22.93	-18.12

Remarks:

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

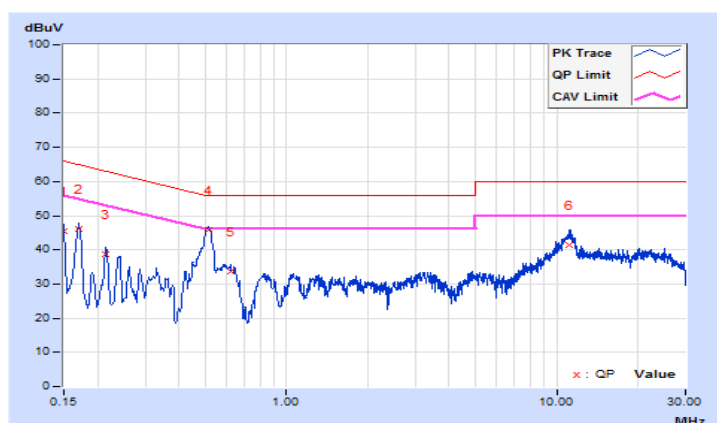


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	0.15000	9.64	35.90	18.61	45.54	28.25	66.00	56.00	-20.46	-27.75
2	0.17000	9.64	36.39	18.60	46.03	28.24	64.96	54.96	-18.93	-26.72
3	0.21406	9.64	28.98	14.27	38.62	23.91	63.05	53.05	-24.43	-29.14
4	0.51400	9.67	36.04	30.44	45.71	40.11	56.00	46.00	-10.29	-5.89
5	0.62200	9.67	24.16	18.79	33.83	28.46	56.00	46.00	-22.17	-17.54
6	11.13000	9.93	31.33	26.02	41.26	35.95	60.00	50.00	-18.74	-14.05

Remarks:

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

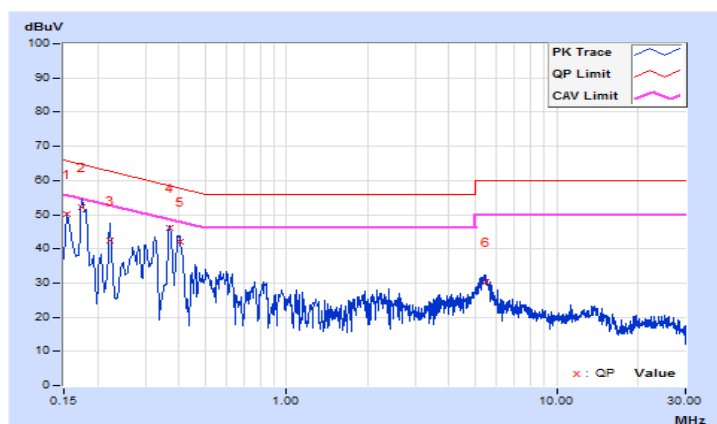


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	C		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.67	40.36	31.92	50.03	41.59	65.78	55.78	-15.75	-14.19
2	0.17400	9.67	42.53	29.49	52.20	39.16	64.77	54.77	-12.57	-15.61
3	0.22200	9.66	32.90	19.24	42.56	28.90	62.74	52.74	-20.18	-23.84
4	0.37028	9.69	36.38	31.32	46.07	41.01	58.49	48.49	-12.42	-7.48
5	0.40179	9.69	32.56	27.08	42.25	36.77	57.82	47.82	-15.57	-11.05
6	5.44200	9.86	20.40	13.26	30.26	23.12	60.00	50.00	-29.74	-26.88

Remarks:

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

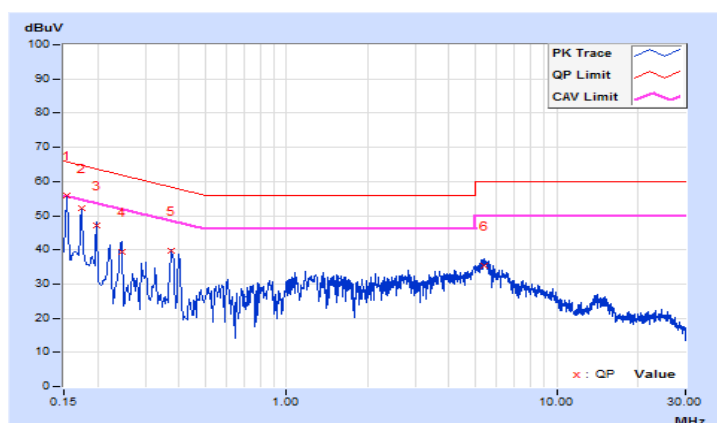


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	C		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.64	46.38	31.52	56.02	41.16	65.78	55.78	-9.76	-14.62
2	0.17400	9.64	42.68	28.31	52.32	37.95	64.77	54.77	-12.45	-16.82
3	0.19800	9.64	37.52	23.26	47.16	32.90	63.69	53.69	-16.53	-20.79
4	0.24485	9.64	29.61	14.30	39.25	23.94	61.93	51.93	-22.68	-27.99
5	0.37400	9.66	29.92	24.88	39.58	34.54	58.41	48.41	-18.83	-13.87
6	5.40200	9.83	25.66	17.73	35.49	27.56	60.00	50.00	-24.51	-22.44

Remarks:

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

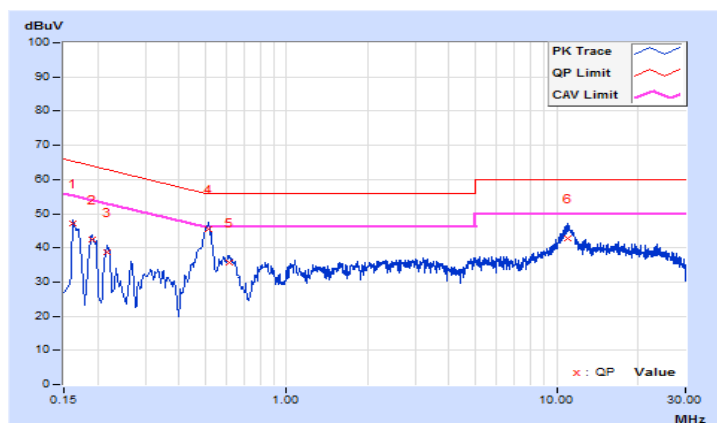


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	D		

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	0.16200	9.67	37.35	22.62	47.02	32.29	65.36	55.36	-18.34	-23.07
2	0.19013	9.66	32.75	17.55	42.41	27.21	64.03	54.03	-21.62	-26.82
3	0.21748	9.66	28.91	15.41	38.57	25.07	62.91	52.91	-24.34	-27.84
4	0.51400	9.70	35.74	30.16	45.44	39.86	56.00	46.00	-10.56	-6.14
5	0.61084	9.70	25.92	21.36	35.62	31.06	56.00	46.00	-20.38	-14.94
6	11.01800	9.94	32.91	27.73	42.85	37.67	60.00	50.00	-17.15	-12.33

Remarks:

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

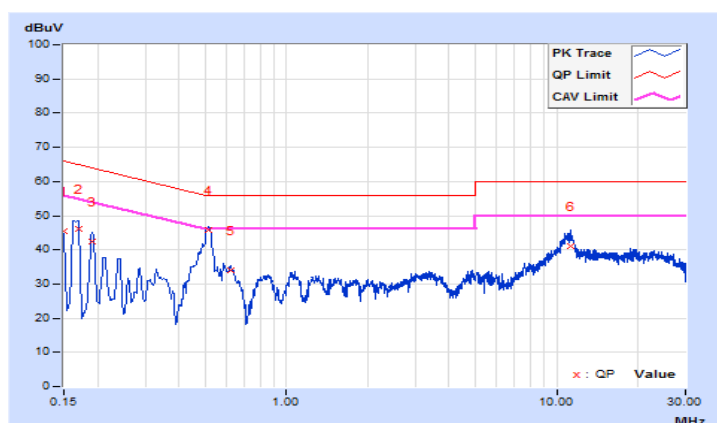


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	D		

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	0.15000	9.64	35.81	18.69	45.45	28.33	66.00	56.00	-20.55	-27.67
2	0.16932	9.64	36.56	19.00	46.20	28.64	64.99	54.99	-18.79	-26.35
3	0.19013	9.64	32.80	16.71	42.44	26.35	64.03	54.03	-21.59	-27.68
4	0.51335	9.67	36.22	30.64	45.89	40.31	56.00	46.00	-10.11	-5.69
5	0.61894	9.67	24.36	18.89	34.03	28.56	56.00	46.00	-21.97	-17.44
6	11.24200	9.93	31.15	25.95	41.08	35.88	60.00	50.00	-18.92	-14.12

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)
	√ (Test Mode A)	Indoor Access Point	1 Watt (30 dBm)
	√ (Test Mode C)	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 $N_{ANT} \leq 4$;

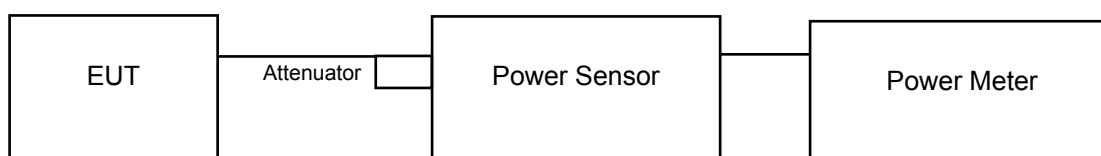
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

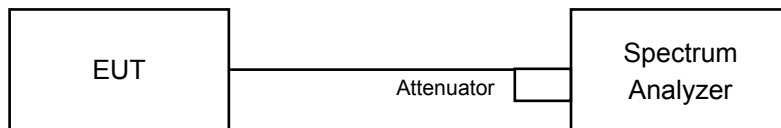
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

For Power Output
802.11a, 802.11n (HT20), 802.11n (HT40)



802.11ac (VHT80)



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.

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:

Test Mode A

CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.64	17.79	118.193	20.73	30.00	Pass
40	5200	21.12	21.31	264.627	24.23	30.00	Pass
48	5240	20.01	20.03	200.924	23.03	30.00	Pass
149	5745	21.95	22.48	333.686	25.23	30.00	Pass
157	5785	23.05	23.40	420.613	26.24	30.00	Pass
165	5825	22.91	23.21	404.845	26.07	30.00	Pass

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	17.41	17.76	114.785	20.60	30.00	Pass
40	5200	21.01	21.25	259.535	24.14	30.00	Pass
48	5240	20.06	20.15	204.905	23.12	30.00	Pass
149	5745	21.80	22.43	326.341	25.14	30.00	Pass
157	5785	22.45	22.78	365.463	25.63	30.00	Pass
165	5825	23.11	23.26	416.480	26.20	30.00	Pass

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	14.77	15.02	61.761	17.91	30.00	Pass
46	5230	19.33	19.61	177.115	22.48	30.00	Pass
151	5755	23.66	23.48	455.118	26.58	30.00	Pass
159	5795	23.17	23.34	423.265	26.27	30.00	Pass

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	13.58	13.82	46.902	16.71	30.00	Pass
155	5775	19.46	19.65	180.565	22.57	30.00	Pass

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	14.40	14.75	57.396	17.59	27.00	Pass
40	5200	18.00	18.24	129.777	21.13	27.00	Pass
48	5240	17.05	17.14	102.460	20.11	27.00	Pass
149	5745	18.79	19.42	163.181	22.13	27.00	Pass
157	5785	19.44	19.77	182.744	22.62	27.00	Pass
165	5825	20.10	20.25	208.254	23.19	27.00	Pass

Note: Directional Gain = $5.99 + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.

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	11.76	12.01	30.882	14.90	27.00	Pass
46	5230	16.32	16.60	88.564	19.47	27.00	Pass
151	5755	20.65	20.47	227.574	23.57	27.00	Pass
159	5795	20.16	20.33	211.648	23.26	27.00	Pass

Note: Directional Gain = $5.99 + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.

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	10.57	10.81	23.452	13.70	27.00	Pass
155	5775	16.45	16.64	90.289	19.56	27.00	Pass

Note: Directional Gain = $5.99 + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.

Test Mode C

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	14.61	13.72	52.457	17.20	24.00	Pass
40	5200	14.43	13.92	52.393	17.19	24.00	Pass
48	5240	14.01	14.02	50.412	17.03	24.00	Pass
149	5745	12.30	11.11	29.894	14.76	30.00	Pass
157	5785	8.44	8.22	13.619	11.34	30.00	Pass
165	5825	9.11	7.66	13.981	11.46	30.00	Pass

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	14.57	13.69	52.030	17.16	24.00	Pass
40	5200	14.62	13.62	51.987	17.16	24.00	Pass
48	5240	14.26	13.90	51.216	17.09	24.00	Pass
149	5745	12.88	11.33	32.992	15.18	30.00	Pass
157	5785	10.01	8.90	17.785	12.50	30.00	Pass
165	5825	8.60	7.13	12.408	10.94	30.00	Pass

802.11n (HT40)

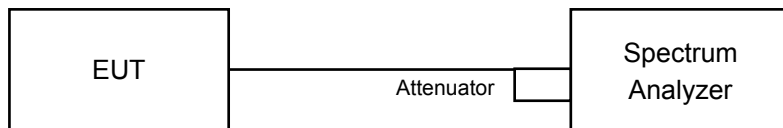
Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	10.50	9.81	20.792	13.18	24.00	Pass
46	5230	14.13	14.11	51.645	17.13	24.00	Pass
151	5755	13.33	13.35	43.155	16.35	30.00	Pass
159	5795	11.36	11.26	27.043	14.32	30.00	Pass

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	7.93	7.21	11.469	10.60	24.00	Pass
155	5775	13.79	13.88	48.367	16.85	30.00	Pass

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

Test Mode A

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.56	16.56
40	5200	23.52	25.80
48	5240	17.76	18.12
149	5745	21.48	23.28
157	5785	30.36	29.40
165	5825	32.40	31.20

802.11n (HT20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.76	17.76
40	5200	25.20	27.36
48	5240	18.48	19.32
149	5745	23.52	25.44
157	5785	30.00	29.04
165	5825	38.28	39.00

802.11n (HT40)

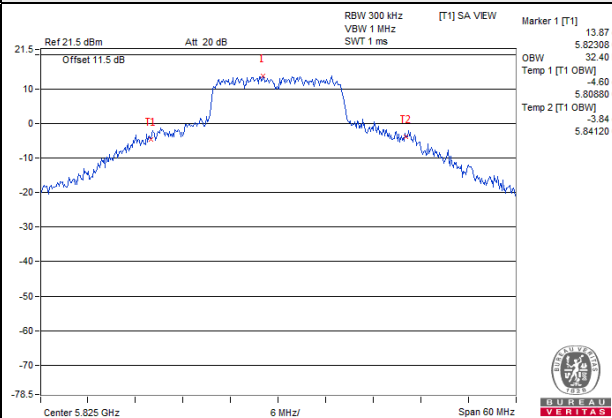
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	36.12	36.12
46	5230	36.60	36.84
151	5755	49.80	50.88
159	5795	49.44	51.72

802.11ac (VHT80)

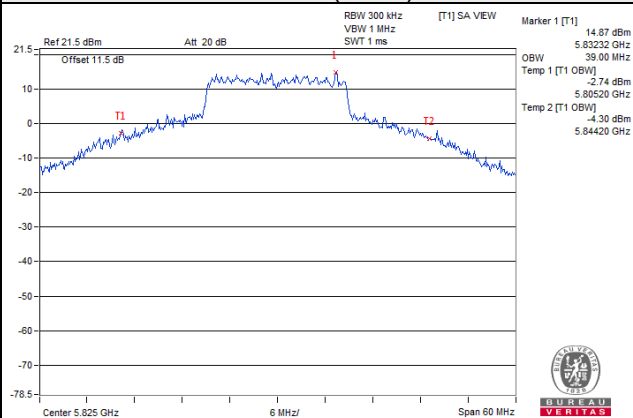
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	75.60	75.84
155	5775	76.08	76.08

Spectrum Plot of Worst Value

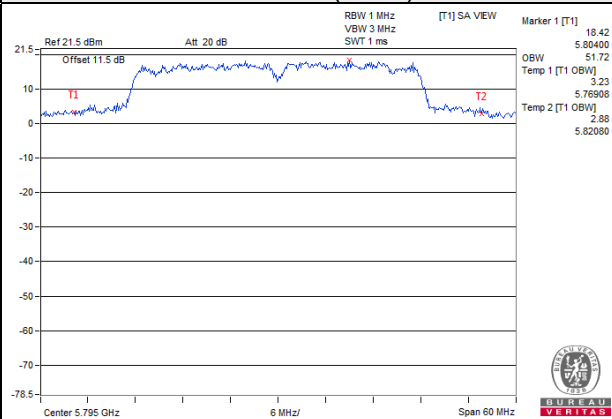
802.11a



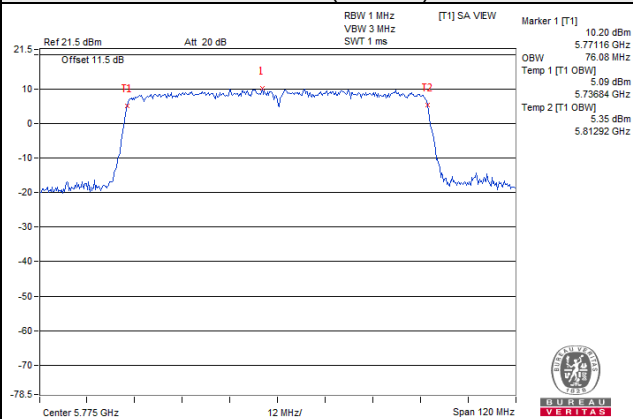
802.11n (HT20)



802.11n (HT40)

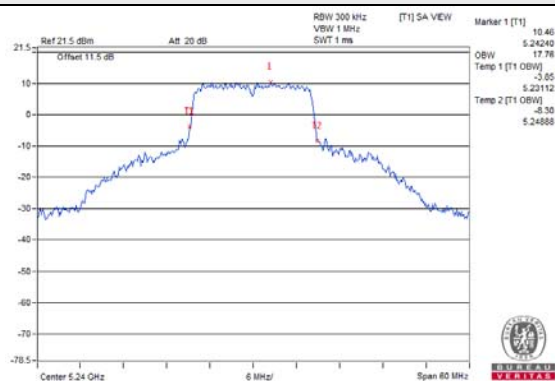


802.11ac (VHT80)

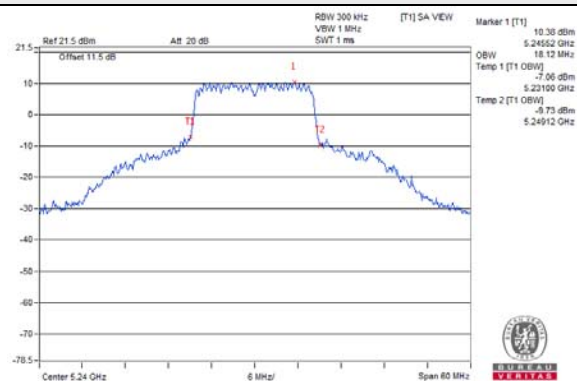


Spectrum Plot of Worst Value

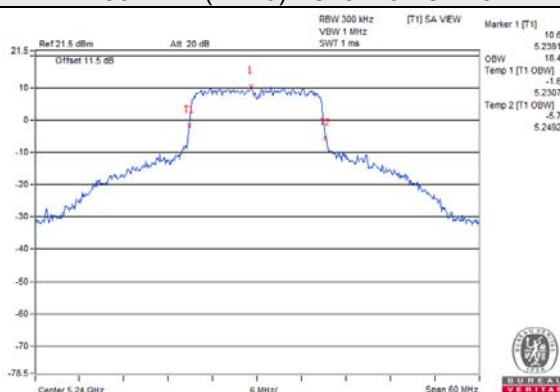
802.11a / Chain 0 / Ch 48



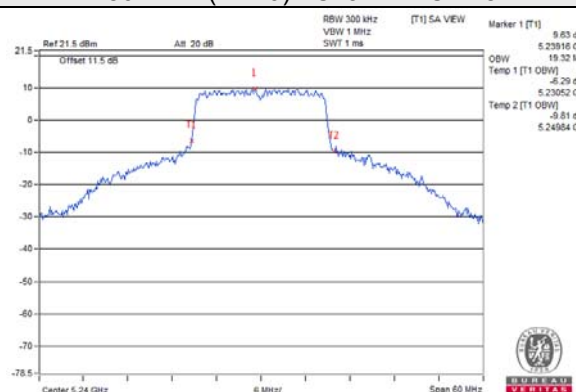
802.11a / Chain 1 / Ch 48



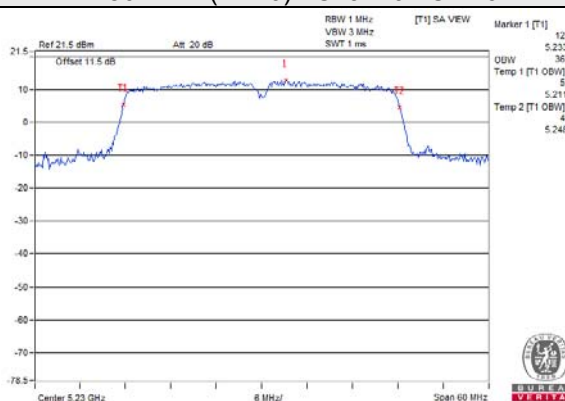
802.11n (HT20) / Chain 0 / Ch 48



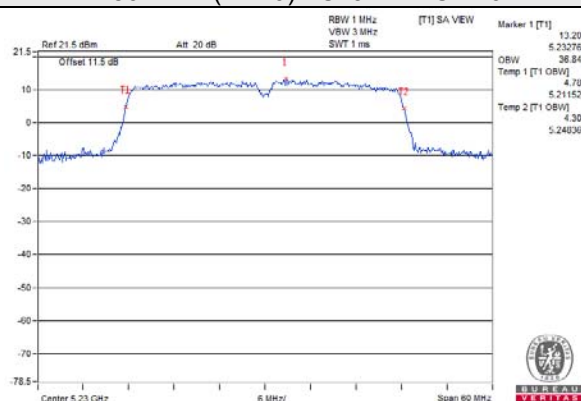
802.11n (HT20) / Chain 1 / Ch 48



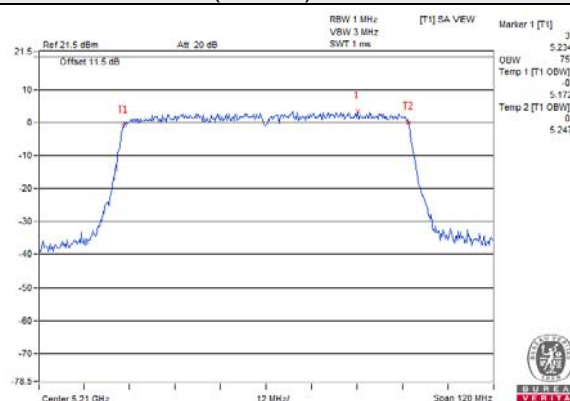
802.11n (HT40) / Chain 0 / Ch 46



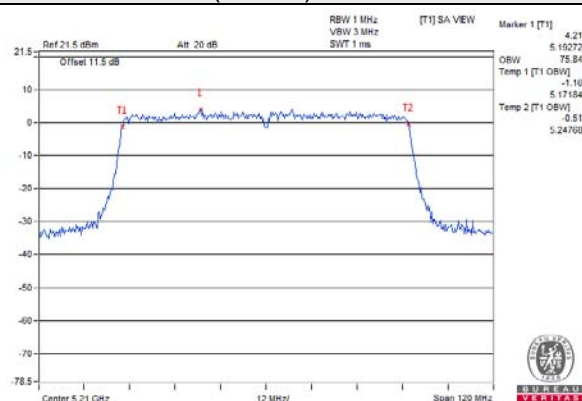
802.11n (HT40) / Chain 1 / Ch 46



802.11ac (VHT80) / Chain 0 / Ch 42

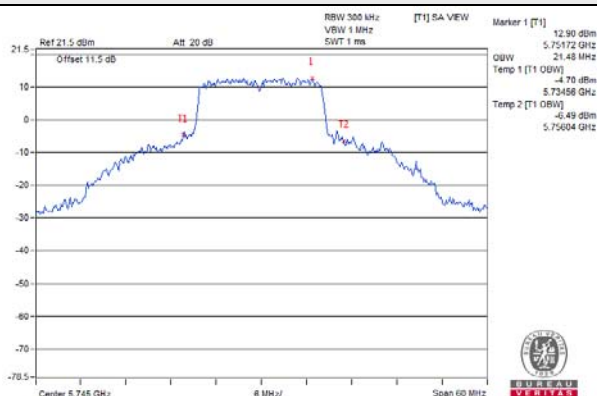


802.11ac (VHT80) / Chain 1 / Ch 42

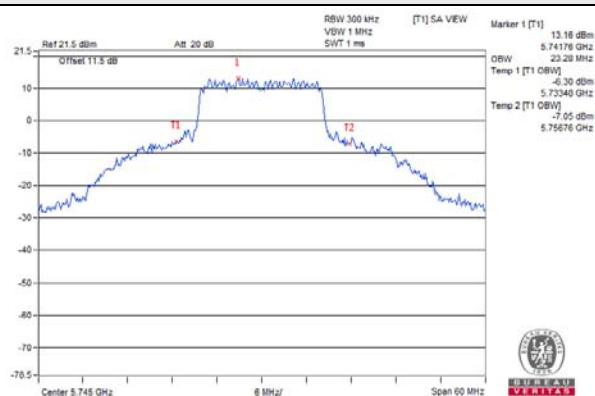


Spectrum Plot of Worst Value

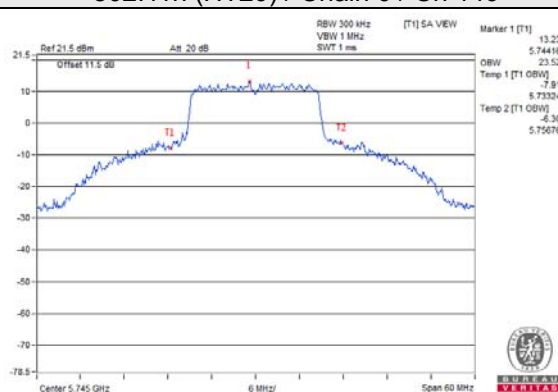
802.11a / Chain 0 / Ch 149



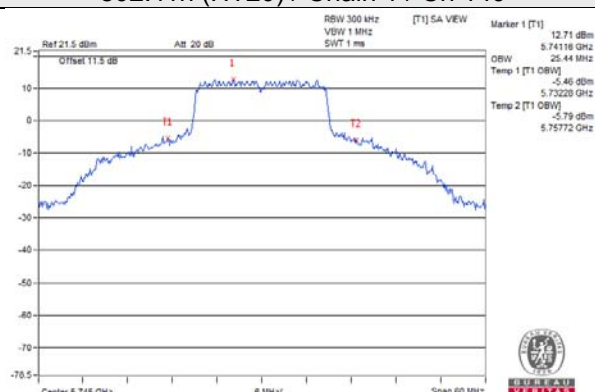
802.11a / Chain 1 / Ch 149



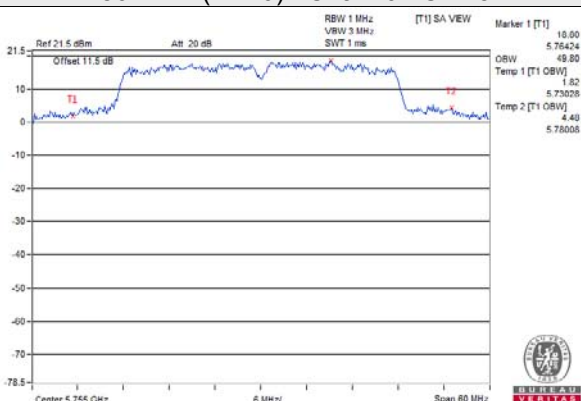
802.11n (HT20) / Chain 0 / Ch 149



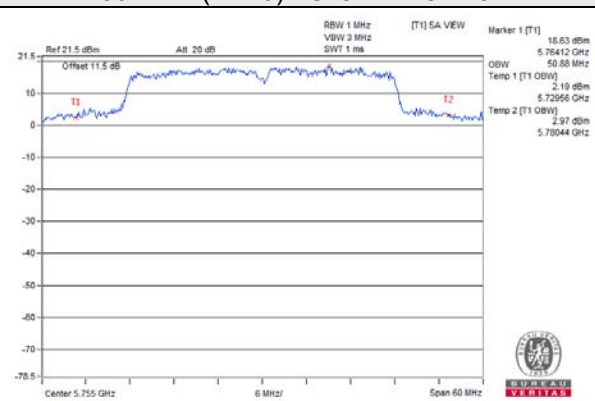
802.11n (HT20) / Chain 1 / Ch 149



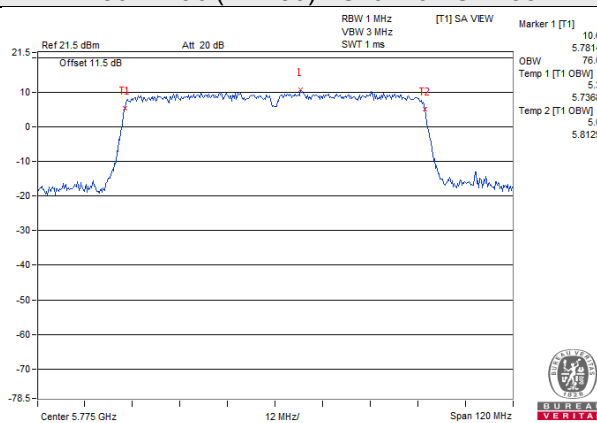
802.11n (HT40) / Chain 0 / Ch 151



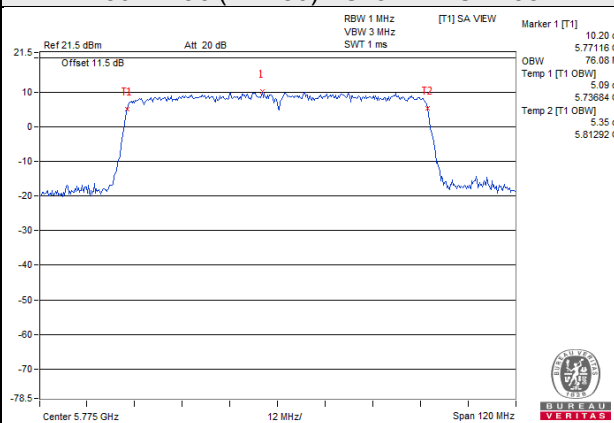
802.11n (HT40) / Chain 1 / Ch 151



802.11ac (VHT80) / Chain 0 / Ch 155



802.11ac (VHT80) / Chain 1 / Ch 155



Test Mode C

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.80	16.68
40	5200	16.80	16.68
48	5240	16.80	16.68
149	5745	16.80	16.68
157	5785	16.80	16.68
165	5825	16.80	16.56

802.11n (HT20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.12	17.88
40	5200	17.88	17.88
48	5240	17.88	18.00
149	5745	17.88	17.76
157	5785	17.88	17.76
165	5825	17.88	17.88

802.11n (HT40)

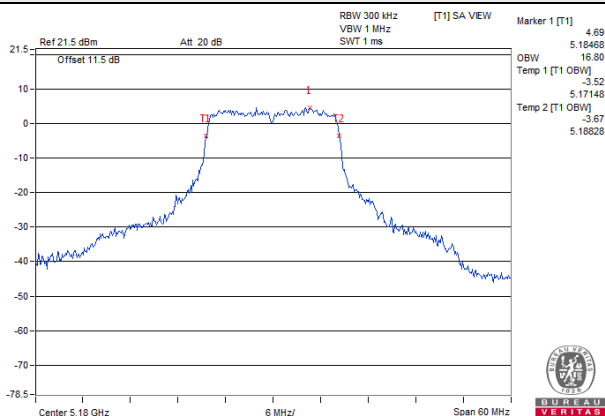
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.20	36.96
46	5230	36.96	37.08
151	5755	36.96	36.84
159	5795	36.96	36.84

802.11ac (VHT80)

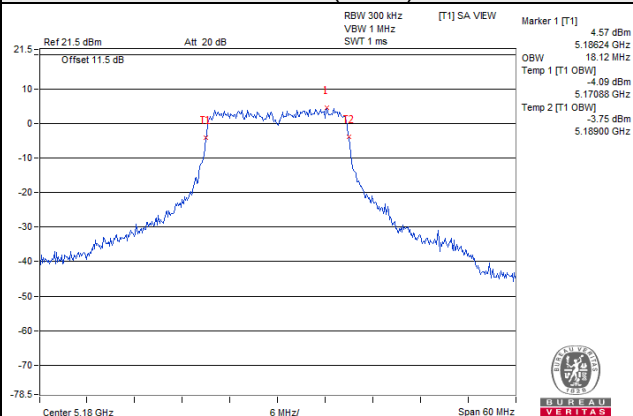
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.08	76.08
155	5775	76.08	76.08

Spectrum Plot of Worst Value

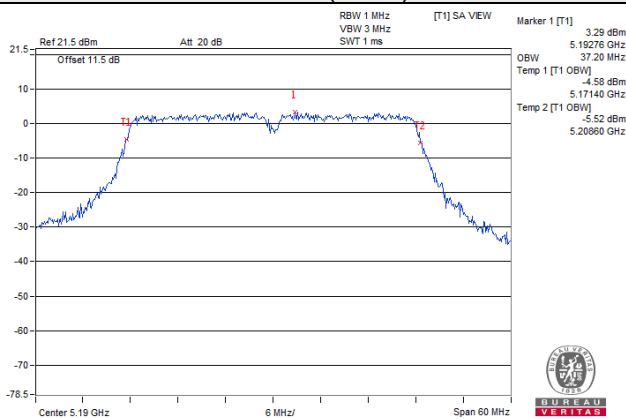
802.11a



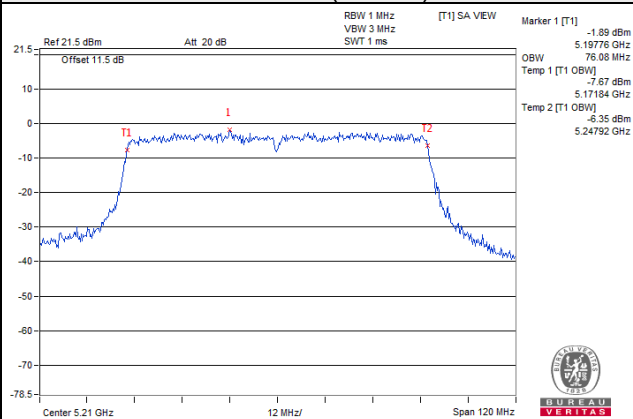
802.11n (HT20)



802.11n (HT40)

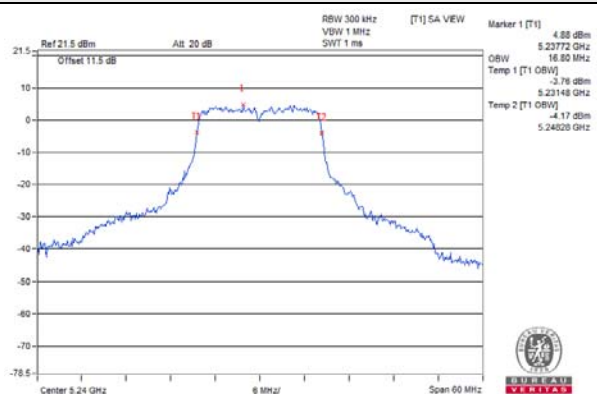


802.11ac (VHT80)

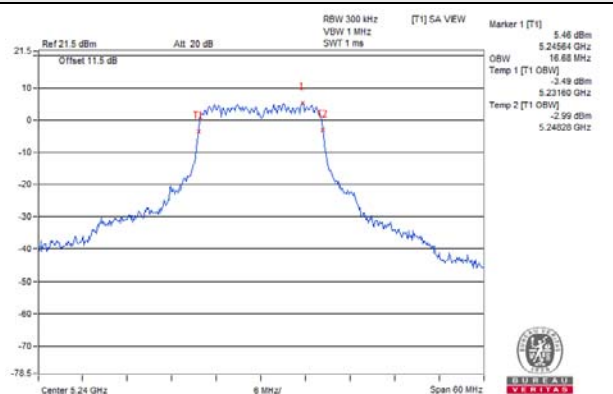


Spectrum Plot of Worst Value

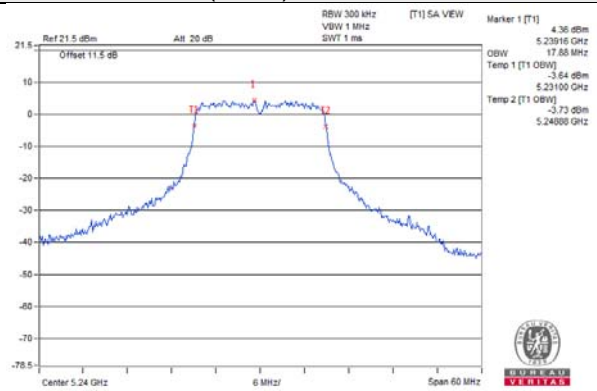
802.11a / Chain 0 / Ch 48



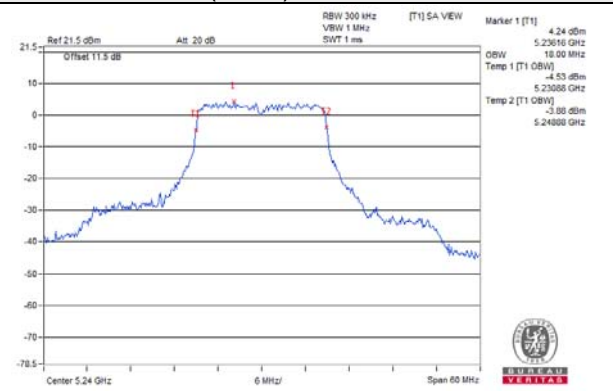
802.11a / Chain 1 / Ch 48



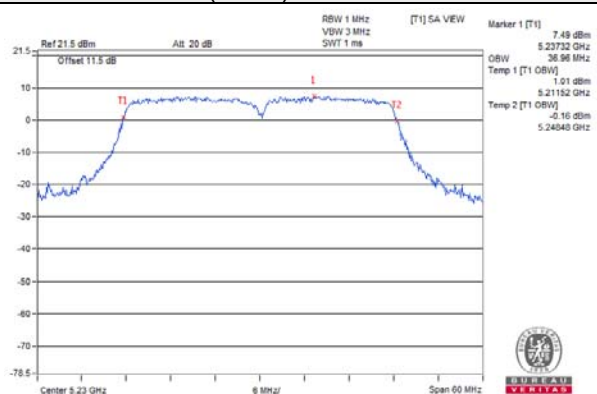
802.11n (HT20) / Chain 0 / Ch 48



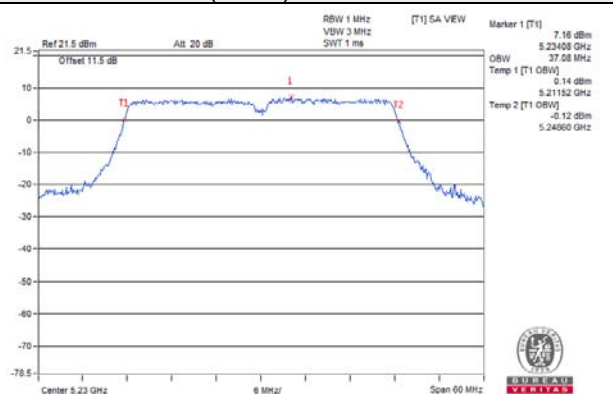
802.11n (HT20) / Chain 1 / Ch 48



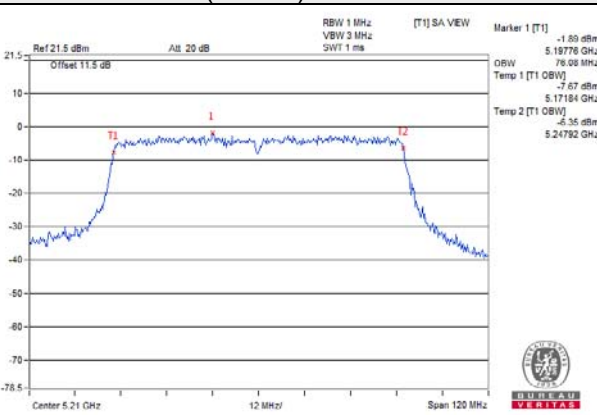
802.11n (HT40) / Chain 0 / Ch 46



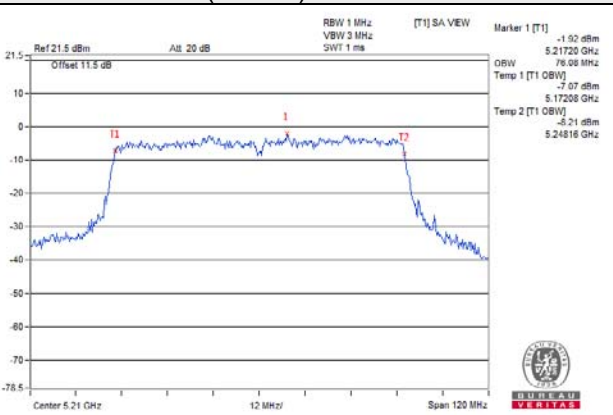
802.11n (HT40) / Chain 1 / Ch 46



802.11ac (VHT80) / Chain 0 / Ch 42

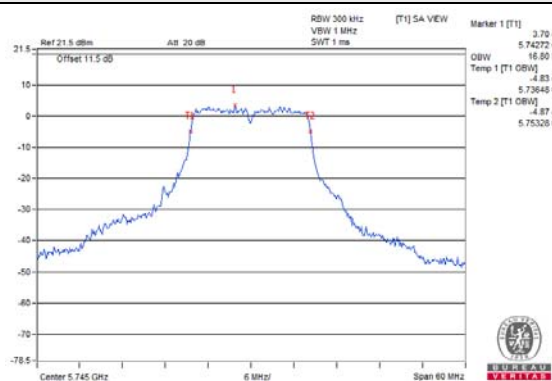


802.11ac (VHT80) / Chain 1 / Ch 42

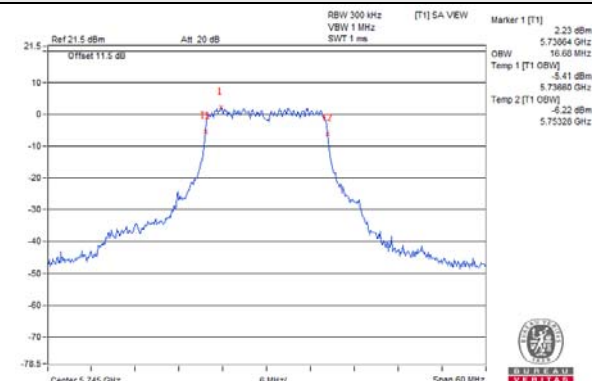


Spectrum Plot of Worst Value

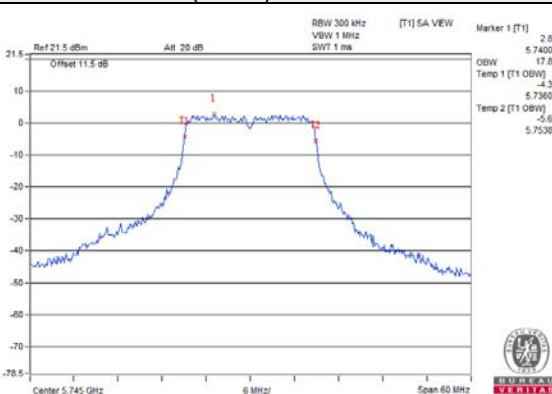
802.11a / Chain 0 / Ch 149



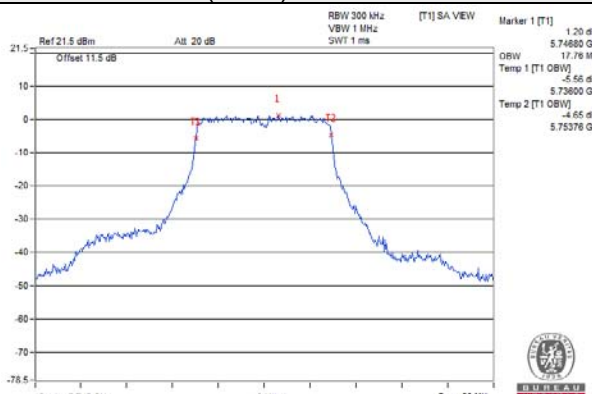
802.11a / Chain 1 / Ch 149



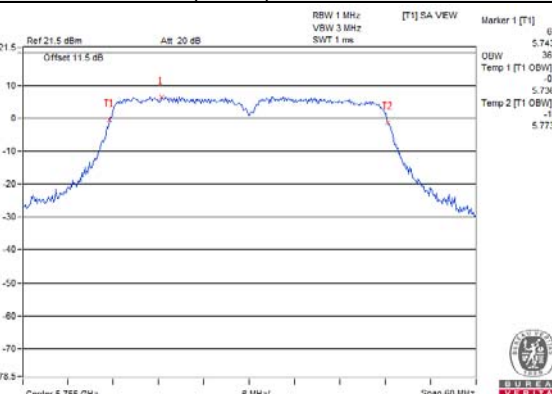
802.11n (HT20) / Chain 0 / Ch 149



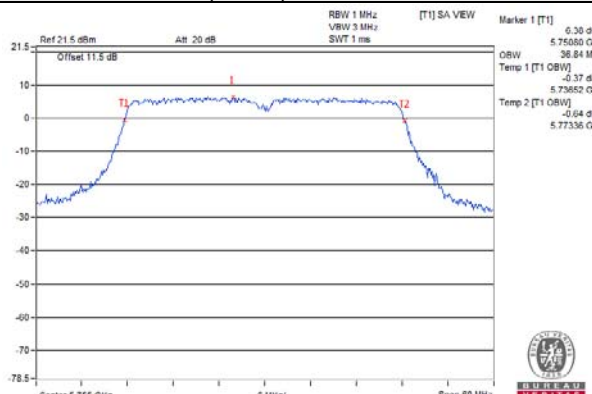
802.11n (HT20) / Chain 1 / Ch 149



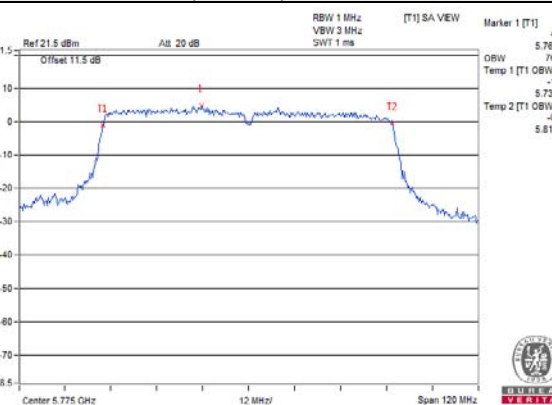
802.11n (HT40) / Chain 0 / Ch 151



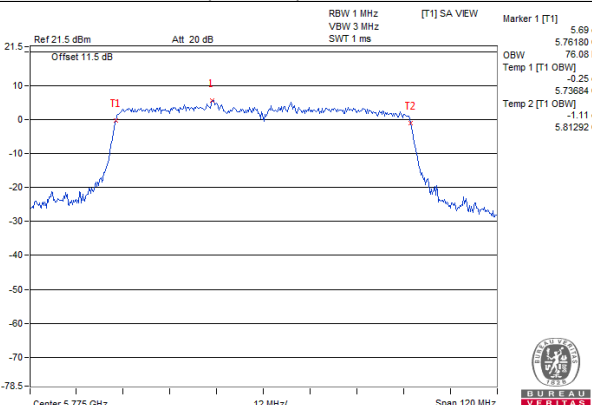
802.11n (HT40) / Chain 1 / Ch 151



802.11ac (VHT80) / Chain 0 / Ch 155



802.11ac (VHT80) / Chain 1 / Ch 155

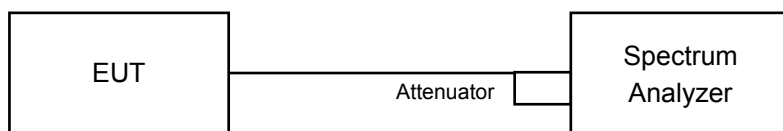


4.5 Peak Power Spectral Density Measurement

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	
	√ (Test Mode A)	Indoor Access Point	
	√ (Test Mode C)	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 band:

Duty cycle of test signal is < 98%

Using method SA-2

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

For U-NII-3 band:

Duty cycle of test signal is < 98%

- a. Set span to encompass the entire emission bandwidth (EBW) of the signal.
- b. Set RBW = 300 kHz, Set VBW $\geq$ 1 MHz, Detector = RMS
- c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.
- d. 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 $BWCF = 10\log(500 \text{ kHz} / 300 \text{ kHz})$
- e. Sweep time = auto, trigger set to "free run".
- f. Trace average at least 100 traces in power averaging mode.
- g. Record the max value and add $10 \log (1/\text{duty cycle})$

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

Test Mode A

For U-NII-1 Band

802.11a

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	3.88	3.35	0.19	6.82	14.00	Pass
40	5200	7.38	6.74	0.19	10.27	14.00	Pass
48	5240	5.95	5.93	0.19	9.14	14.00	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $17 - (9 - 6) = 14\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	3.40	3.43	6.43	14.00	Pass
40	5200	6.92	6.74	9.84	14.00	Pass
48	5240	5.84	5.77	8.82	14.00	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $17 - (9 - 6) = 14\text{dBm}$.

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	-2.04	-1.71	0.18	1.32	14.00	Pass
46	5230	2.52	2.92	0.18	5.91	14.00	Pass

Note:

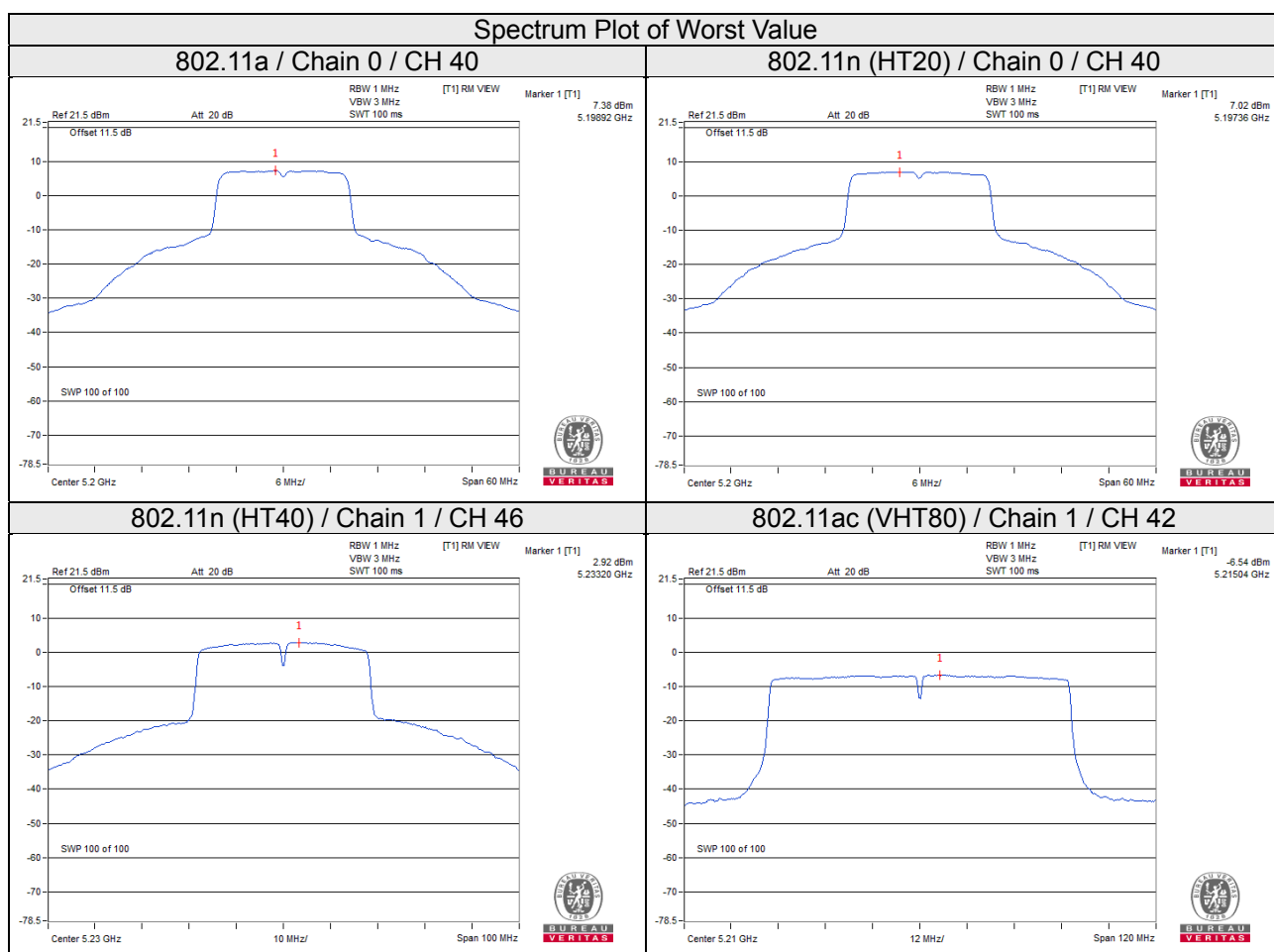
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $17 - (9 - 6) = 14\text{dBm}$.
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	-6.71	-6.59	0.32	-3.32	14.00	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $17 - (9 - 6) = 14\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.



For U-NII-3 Band

802.11a

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	0.22	2.44	3.01	0.19	5.64	27.00	Pass
	157	5785	1.38	3.60	3.01	0.19	6.80	27.00	Pass
	165	5825	1.40	3.62	3.01	0.19	6.82	27.00	Pass
1	149	5745	-0.28	1.94	3.01	0.19	5.14	27.00	Pass
	157	5785	0.41	2.63	3.01	0.19	5.83	27.00	Pass
	165	5825	0.17	2.39	3.01	0.19	5.59	27.00	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.
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	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)				
0	149	5745	0.41	2.63	3.01	5.64	27.00	Pass
	157	5785	0.69	2.91	3.01	5.92	27.00	Pass
	165	5825	1.17	3.39	3.01	6.40	27.00	Pass
1	149	5745	0.02	2.24	3.01	5.25	27.00	Pass
	157	5785	0.52	2.74	3.01	5.75	27.00	Pass
	165	5825	1.42	3.64	3.01	6.65	27.00	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.

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	-1.18	1.04	3.01	0.18	4.23	27.00	Pass
	159	5795	-1.60	0.62	3.01	0.18	3.81	27.00	Pass
1	151	5755	-1.40	0.82	3.01	0.18	4.01	27.00	Pass
	159	5795	-1.48	0.74	3.01	0.18	3.93	27.00	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

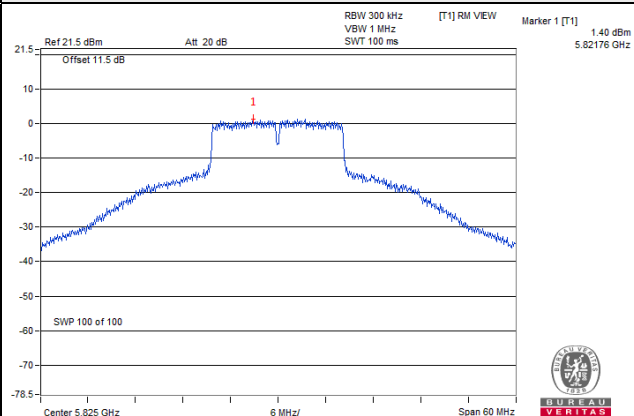
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-9.18	-6.96	3.01	0.32	-3.63	27.00	Pass
1	155	5775	-9.37	-7.15	3.01	0.32	-3.82	27.00	Pass

Note:

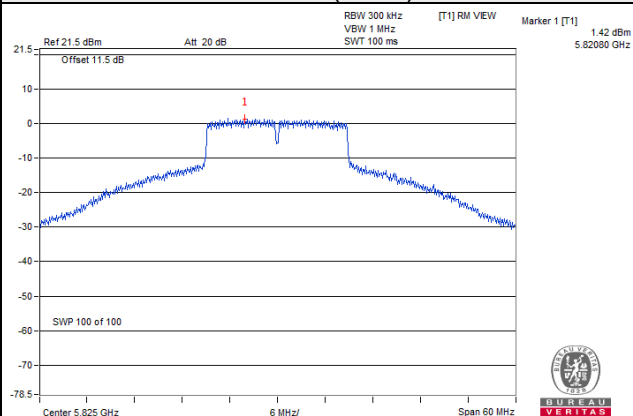
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $5.99\text{dBi} + 10\log(2) = 9\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (9 - 6) = 27\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

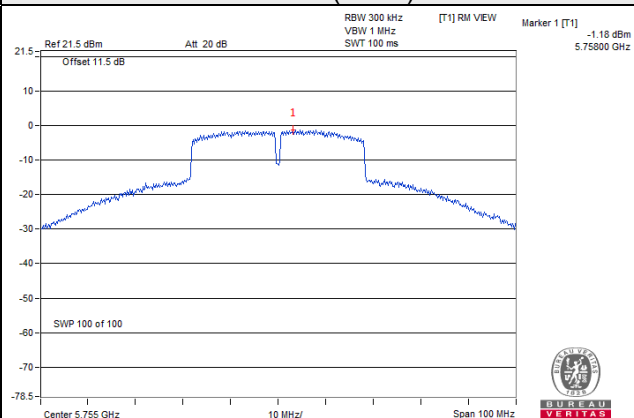
802.11a



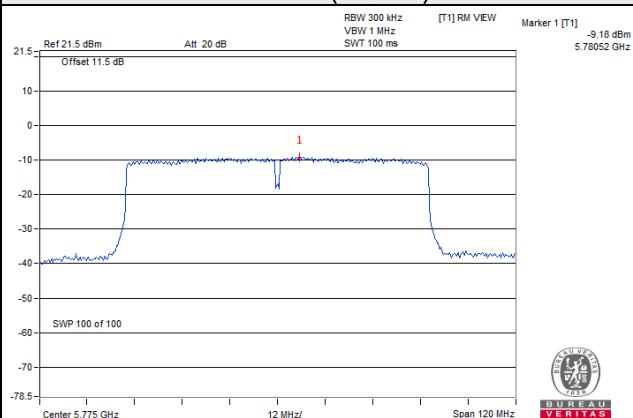
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Test Mode C
For U-NII-1 Band

802.11a

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	0.77	-0.37	0.16	3.41	9.16	Pass
40	5200	0.47	-0.02	0.16	3.40	9.16	Pass
48	5240	0.43	0.11	0.16	3.44	9.16	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (7.84 - 6) = 9.16\text{dBm}$.
3. 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	0.42	-0.78	0.16	3.03	9.16	Pass
40	5200	0.29	-0.76	0.16	2.97	9.16	Pass
48	5240	0.07	-0.10	0.16	3.16	9.16	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (7.84 - 6) = 9.16\text{dBm}$.
3. 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	-6.90	-7.24	0.31	-3.75	9.16	Pass
46	5230	-2.59	-3.42	0.31	0.34	9.16	Pass

Note:

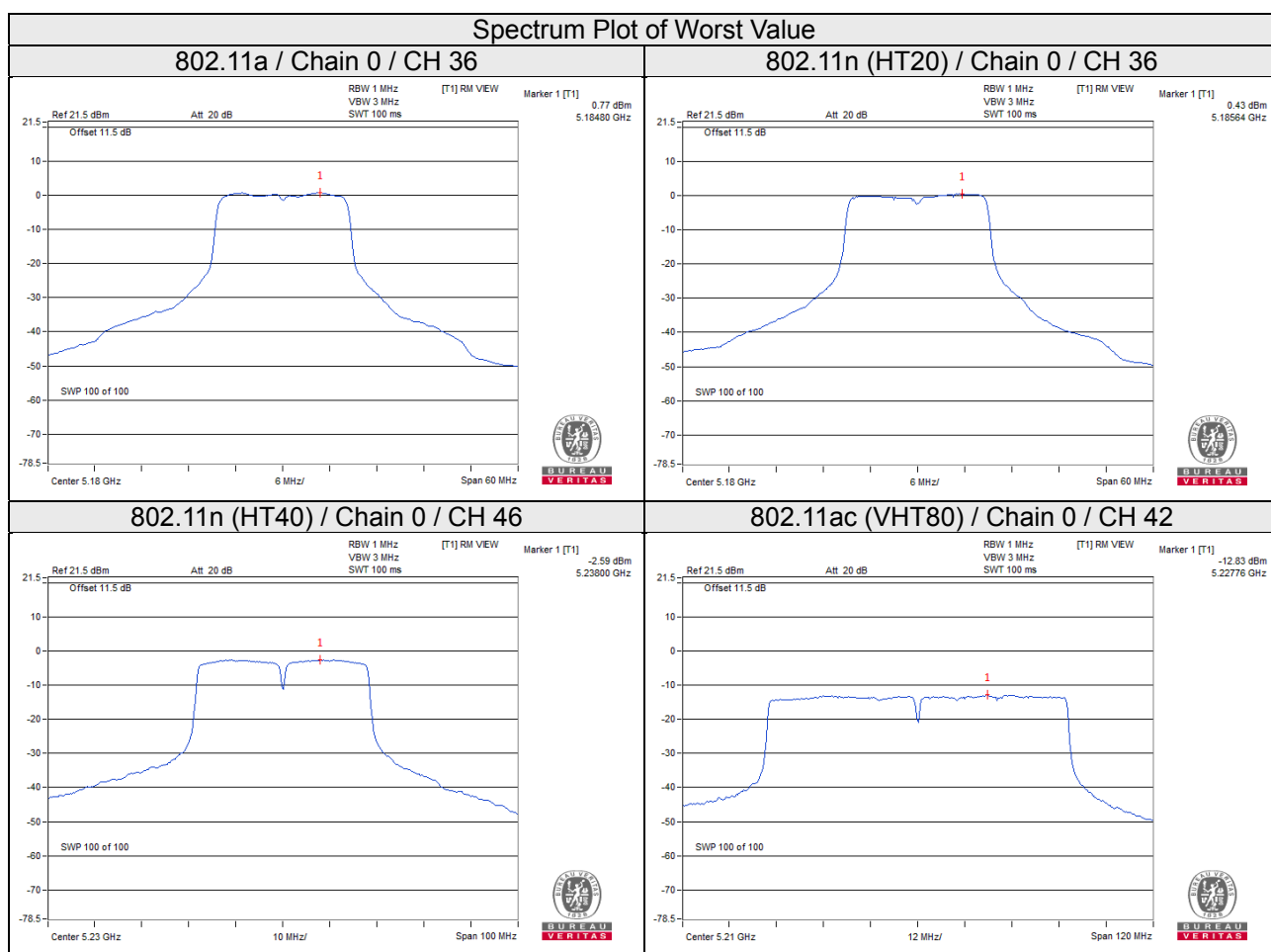
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (7.84 - 6) = 9.16\text{dBm}$.
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	-13.00	-13.14	0.81	-9.25	9.16	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11 - (7.84 - 6) = 9.16\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.



For U-NII-3 Band

802.11a

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	-9.31	-7.09	3.01	0.16	-3.92	28.16	Pass
	157	5785	-13.59	-11.37	3.01	0.16	-8.20	28.16	Pass
	165	5825	-13.51	-11.29	3.01	0.16	-8.12	28.16	Pass
1	149	5745	-10.99	-8.77	3.01	0.16	-5.60	28.16	Pass
	157	5785	-13.89	-11.67	3.01	0.16	-8.50	28.16	Pass
	165	5825	-14.08	-11.86	3.01	0.16	-8.69	28.16	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (7.84 - 6) = 28.16\text{dBm}$.
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	-9.66	-7.44	3.01	0.16	-4.27	28.16	Pass
	157	5785	-12.76	-10.54	3.01	0.16	-7.37	28.16	Pass
	165	5825	-14.34	-12.12	3.01	0.16	-8.95	28.16	Pass
1	149	5745	-11.12	-8.90	3.01	0.16	-5.73	28.16	Pass
	157	5785	-13.05	-10.83	3.01	0.16	-7.66	28.16	Pass
	165	5825	-14.94	-12.72	3.01	0.16	-9.55	28.16	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (7.84 - 6) = 28.16\text{dBm}$.
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	-12.14	-9.92	3.01	0.31	-6.60	28.16	Pass
	159	5795	-12.80	-10.58	3.01	0.31	-7.26	28.16	Pass
1	151	5755	-12.39	-10.17	3.01	0.31	-6.85	28.16	Pass
	159	5795	-15.01	-12.79	3.01	0.31	-9.47	28.16	Pass

Note:

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (7.84 - 6) = 28.16\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

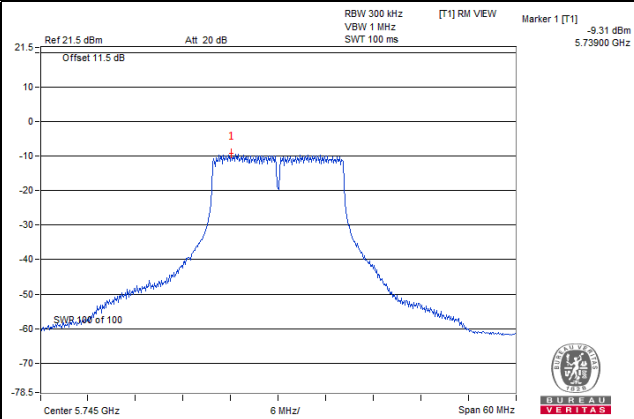
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-15.34	-13.12	3.01	0.81	-9.30	28.16	Pass
1	155	5775	-15.36	-13.14	3.01	0.81	-9.32	28.16	Pass

Note:

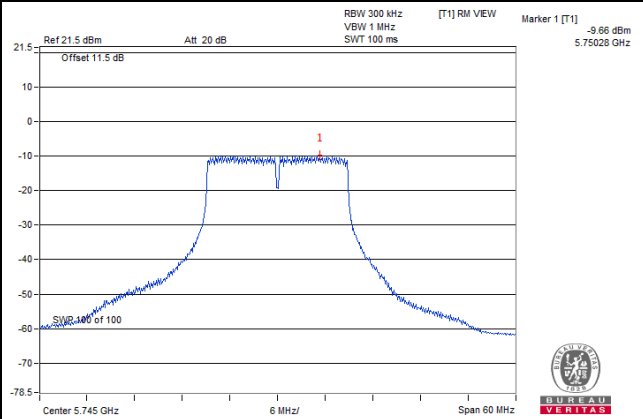
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $4.83\text{dBi} + 10\log(2) = 7.84\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $30 - (7.84 - 6) = 28.16\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

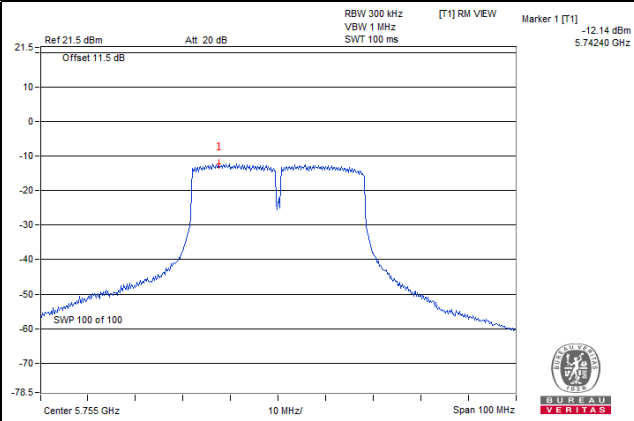
802.11a



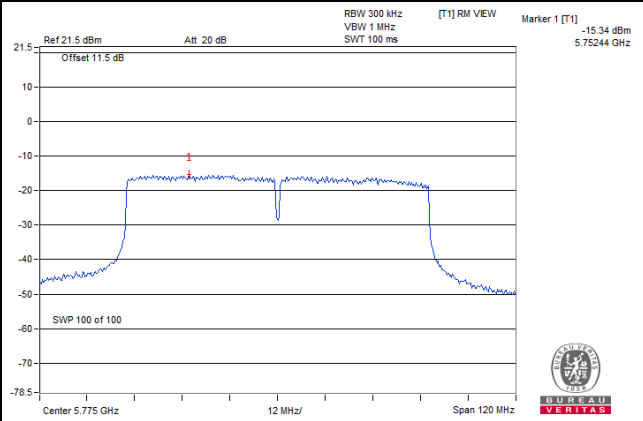
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

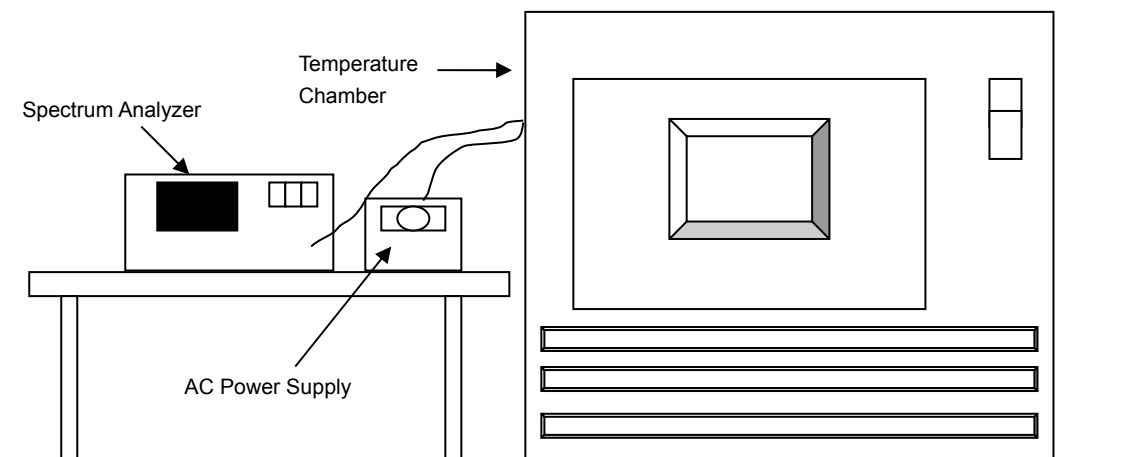


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 23, 2019	Sep. 22, 2020
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 03, 2019	Jun. 02, 2020
Digital Multimeter Fluke	87-III	70360742	Jun. 27, 2019	Jun. 26, 2020
AC Power Supply Extech	6905S	1991553	NA	NA
True RMS Clamp Meter / Fluke	325	31130711WS	May 21, 2019	May 20, 2020

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 d with the temperature chamber set to the next desired 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

Test Mode A

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	5180.0084	PASS	5180.0095	PASS	5180.0085	PASS	5180.0088	PASS
40	120	5180.0039	PASS	5179.9999	PASS	5180.0048	PASS	5180.0010	PASS
30	120	5179.9860	PASS	5179.9864	PASS	5179.9869	PASS	5179.9864	PASS
20	120	5179.9997	PASS	5179.9981	PASS	5179.9988	PASS	5180.0002	PASS
10	120	5180.0237	PASS	5180.0235	PASS	5180.0239	PASS	5180.0217	PASS
0	120	5179.9893	PASS	5179.9891	PASS	5179.9897	PASS	5179.9875	PASS
-10	120	5180.0134	PASS	5180.0144	PASS	5180.0152	PASS	5180.0177	PASS
-20	120	5179.9780	PASS	5179.9782	PASS	5179.9773	PASS	5179.9781	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	5180.0000	PASS	5179.9979	PASS	5179.9987	PASS	5179.9999	PASS
	120	5179.9997	PASS	5179.9981	PASS	5179.9988	PASS	5180.0002	PASS
	102	5179.9995	PASS	5179.9977	PASS	5179.9982	PASS	5179.9997	PASS

Test Mode C

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	5180.0207	PASS	5180.0225	PASS	5180.0196	PASS	5180.0205	PASS
40	120	5179.9943	PASS	5179.9943	PASS	5179.9966	PASS	5179.9943	PASS
30	120	5179.9908	PASS	5179.9884	PASS	5179.9911	PASS	5179.9883	PASS
20	120	5180.0050	PASS	5180.0017	PASS	5180.0019	PASS	5180.0026	PASS
10	120	5179.9825	PASS	5179.9823	PASS	5179.9840	PASS	5179.9858	PASS
0	120	5180.0228	PASS	5180.0256	PASS	5180.0229	PASS	5180.0252	PASS
-10	120	5179.9848	PASS	5179.9852	PASS	5179.9802	PASS	5179.9830	PASS
-20	120	5180.0135	PASS	5180.0116	PASS	5180.0123	PASS	5180.0136	PASS

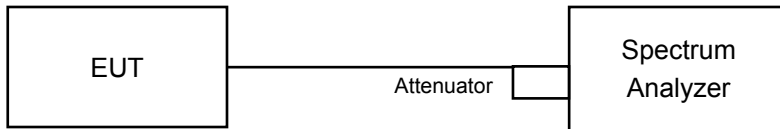
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0042	PASS	5180.0016	PASS	5180.0013	PASS	5180.0036	PASS
	120	5180.0050	PASS	5180.0017	PASS	5180.0019	PASS	5180.0026	PASS
	102	5180.0056	PASS	5180.0008	PASS	5180.0010	PASS	5180.0032	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

Test Mode A

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.33	16.36	0.5	Pass
157	5785	16.38	16.35	0.5	Pass
165	5825	16.41	16.38	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.59	17.57	0.5	Pass
157	5785	17.60	17.61	0.5	Pass
165	5825	17.64	17.63	0.5	Pass

802.11n (HT40)

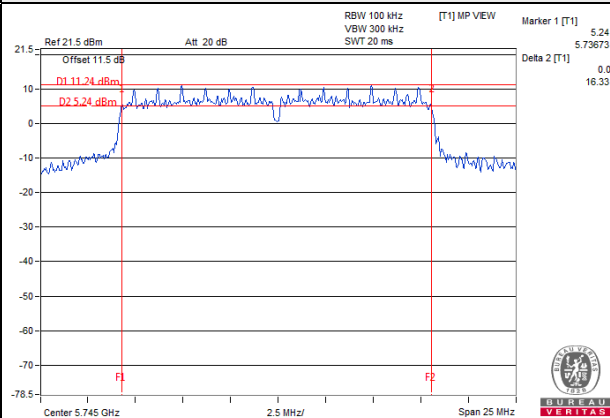
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.40	35.18	0.5	Pass
159	5795	35.40	33.61	0.5	Pass

802.11ac (VHT80)

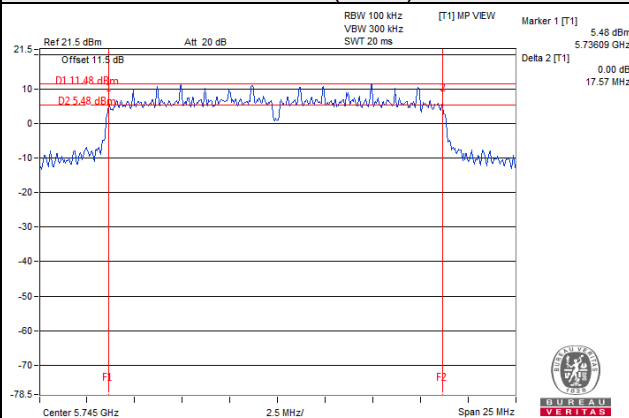
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.88	75.80	0.5	Pass

Spectrum Plot of Worst Value

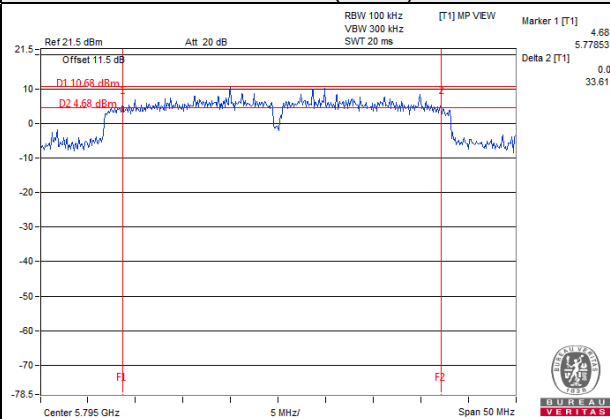
802.11a



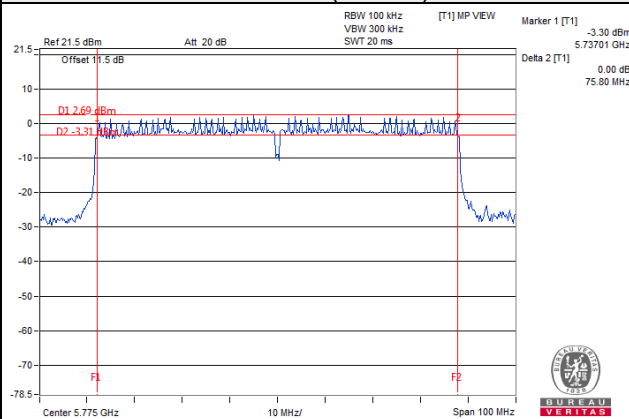
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Test Mode C

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.36	16.40	0.5	Pass
157	5785	16.39	16.41	0.5	Pass
165	5825	16.39	16.38	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.62	17.62	0.5	Pass
157	5785	17.61	17.61	0.5	Pass
165	5825	17.59	17.24	0.5	Pass

802.11n (HT40)

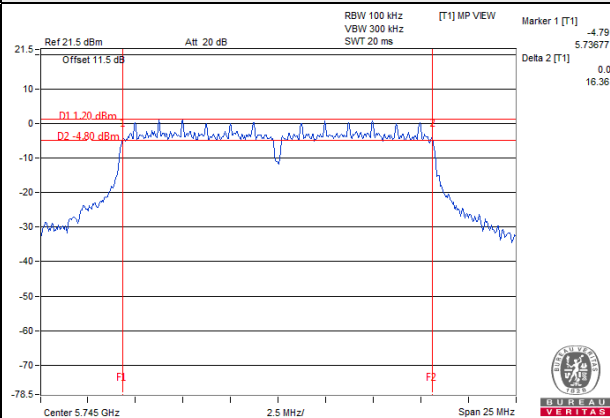
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.86	36.02	0.5	Pass
159	5795	35.87	35.84	0.5	Pass

802.11ac (VHT80)

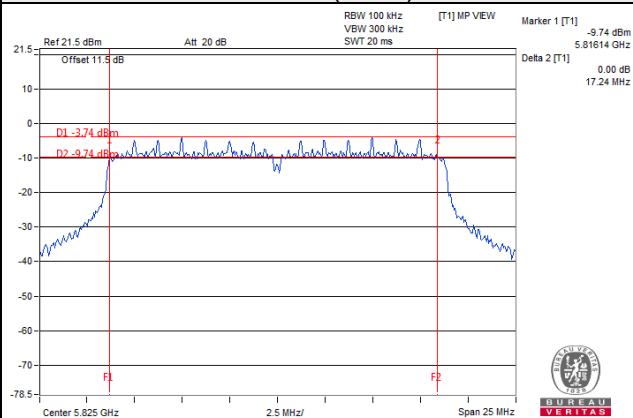
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.90	75.94	0.5	Pass

Spectrum Plot of Worst Value

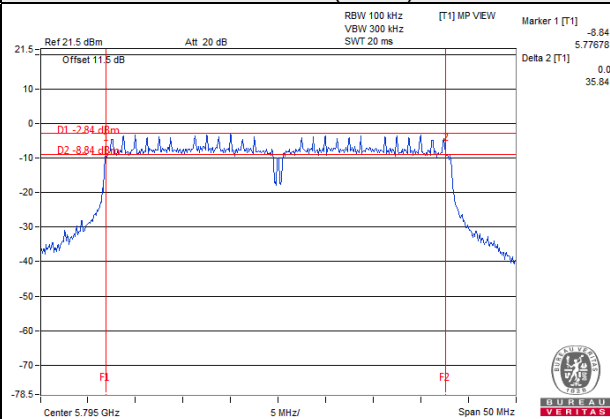
802.11a



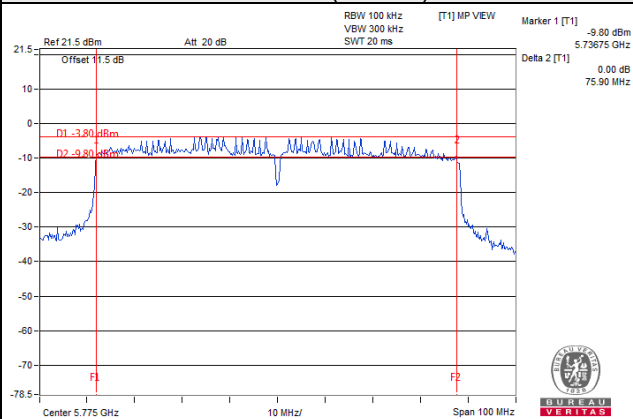
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



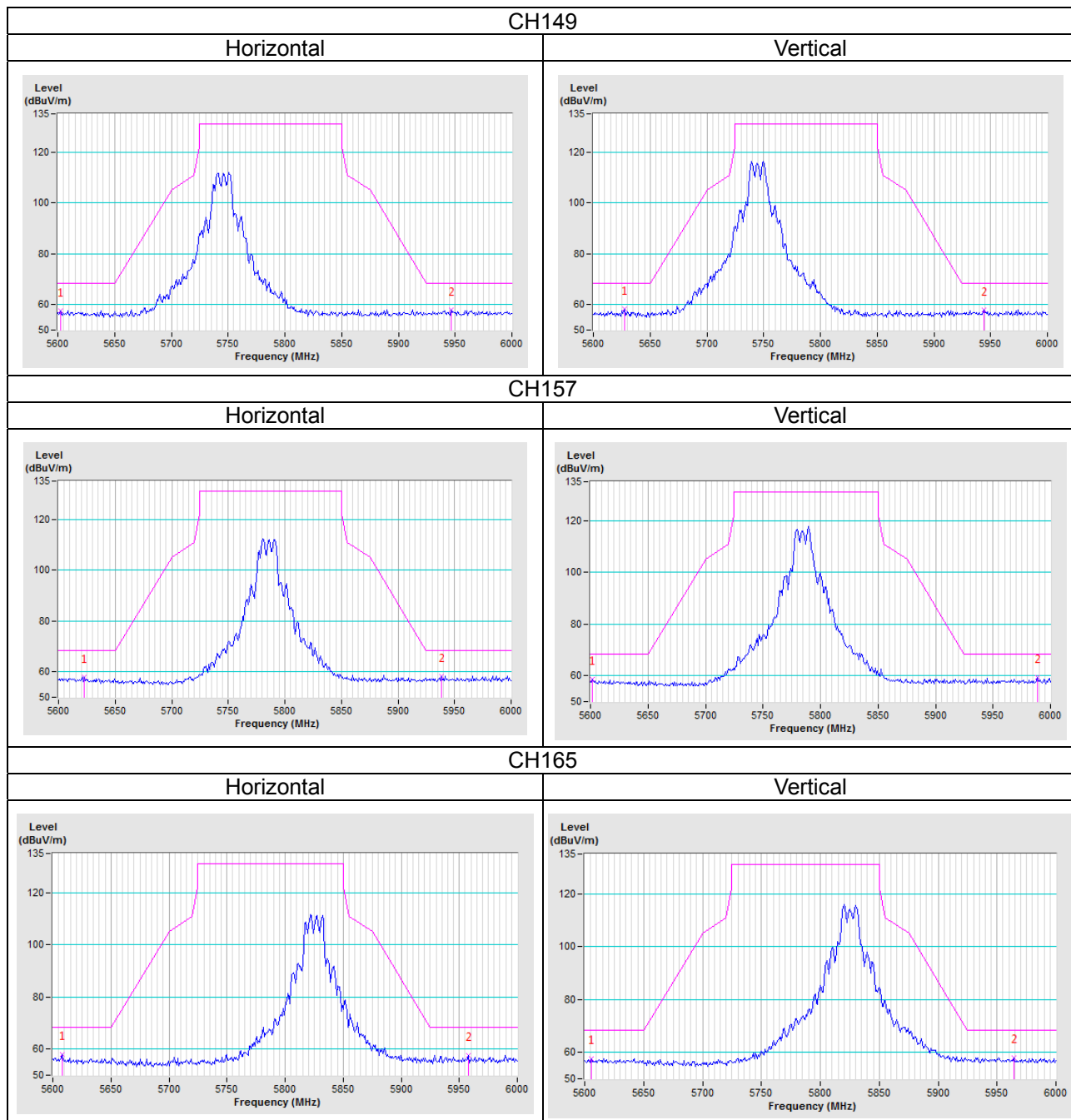
5 Pictures of Test Arrangements

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

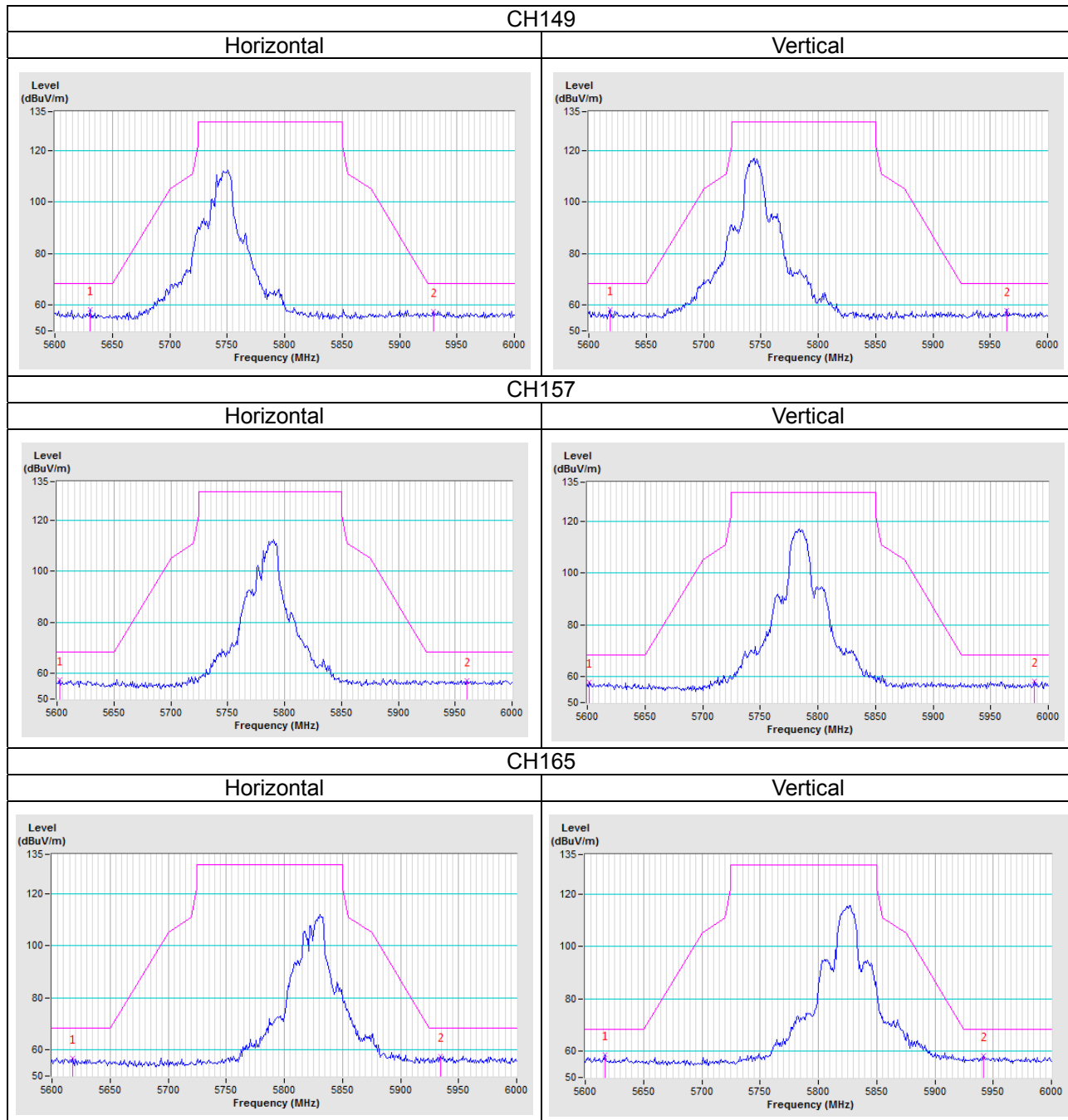
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

Test Mode A

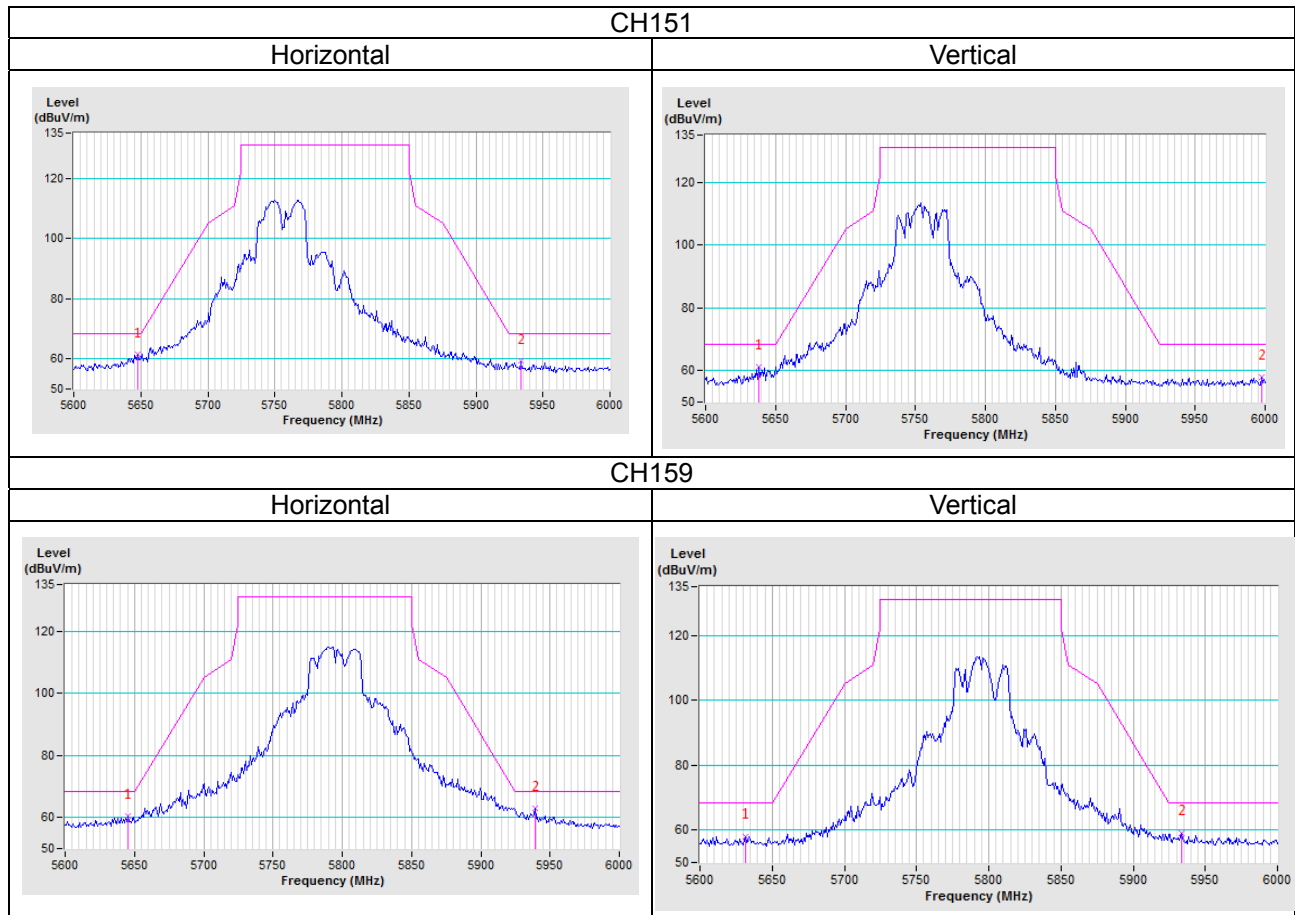
802.11a



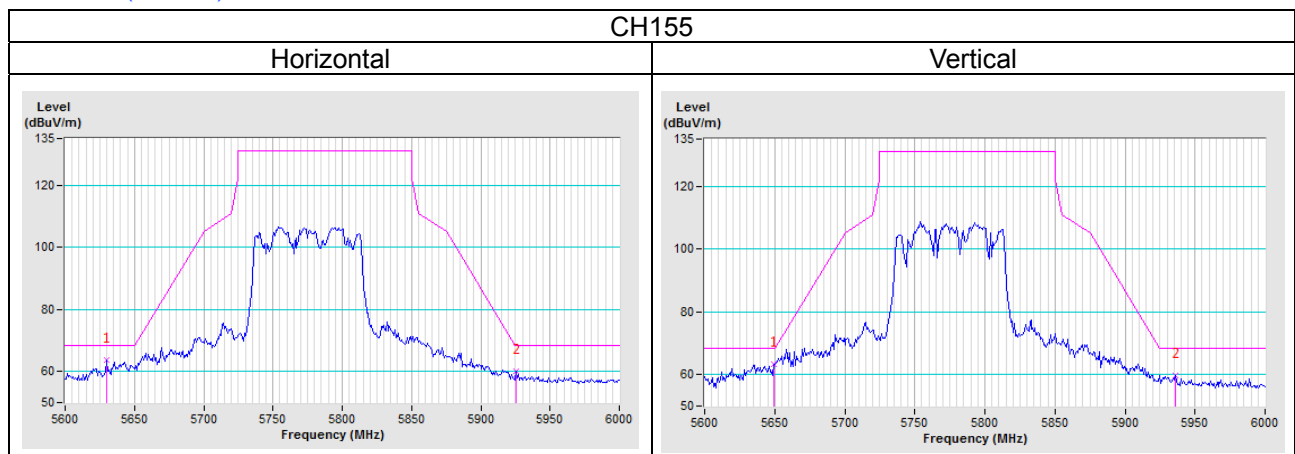
802.11n (HT20)



802.11n (HT40)

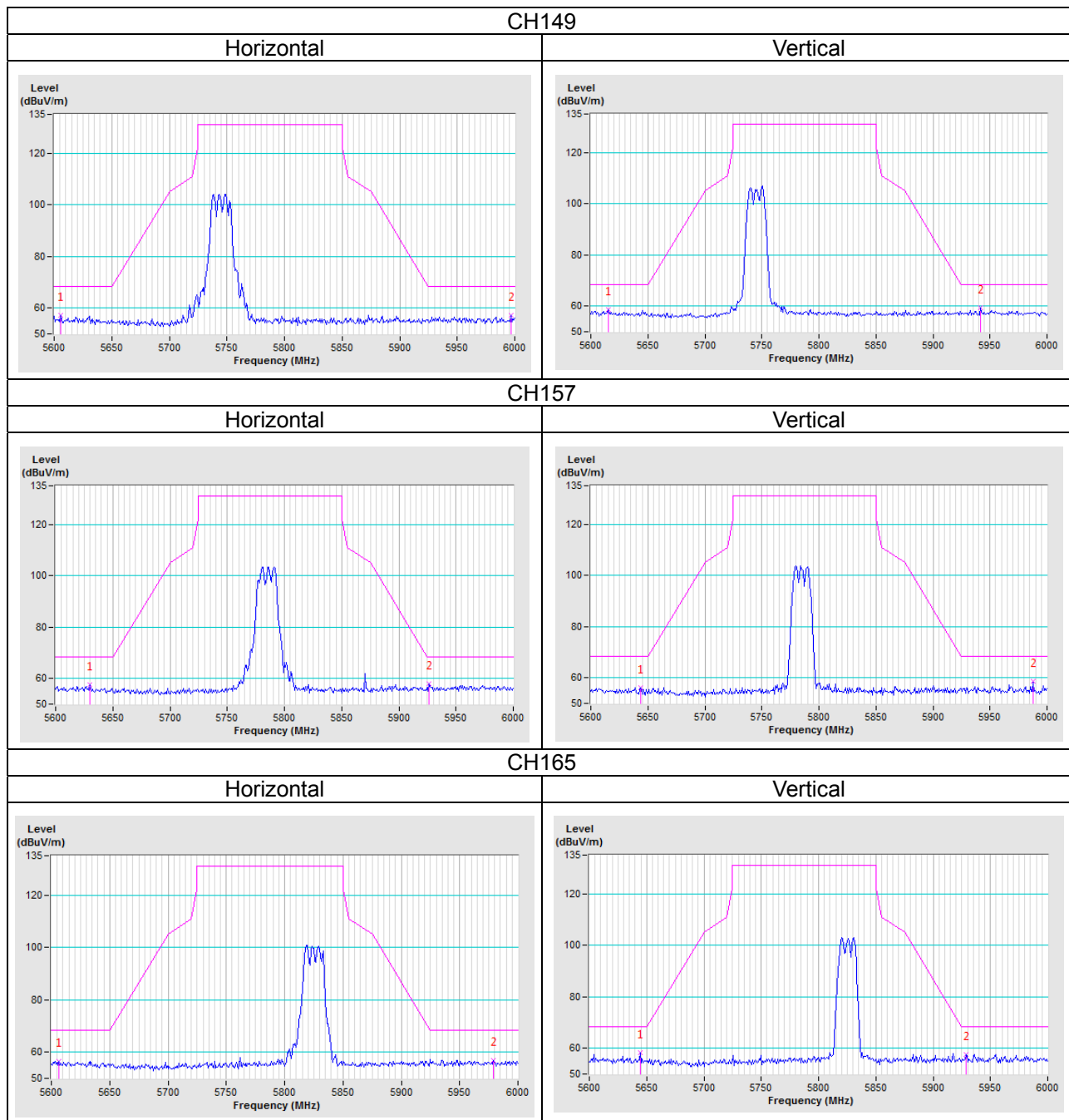


802.11ac (VHT80)

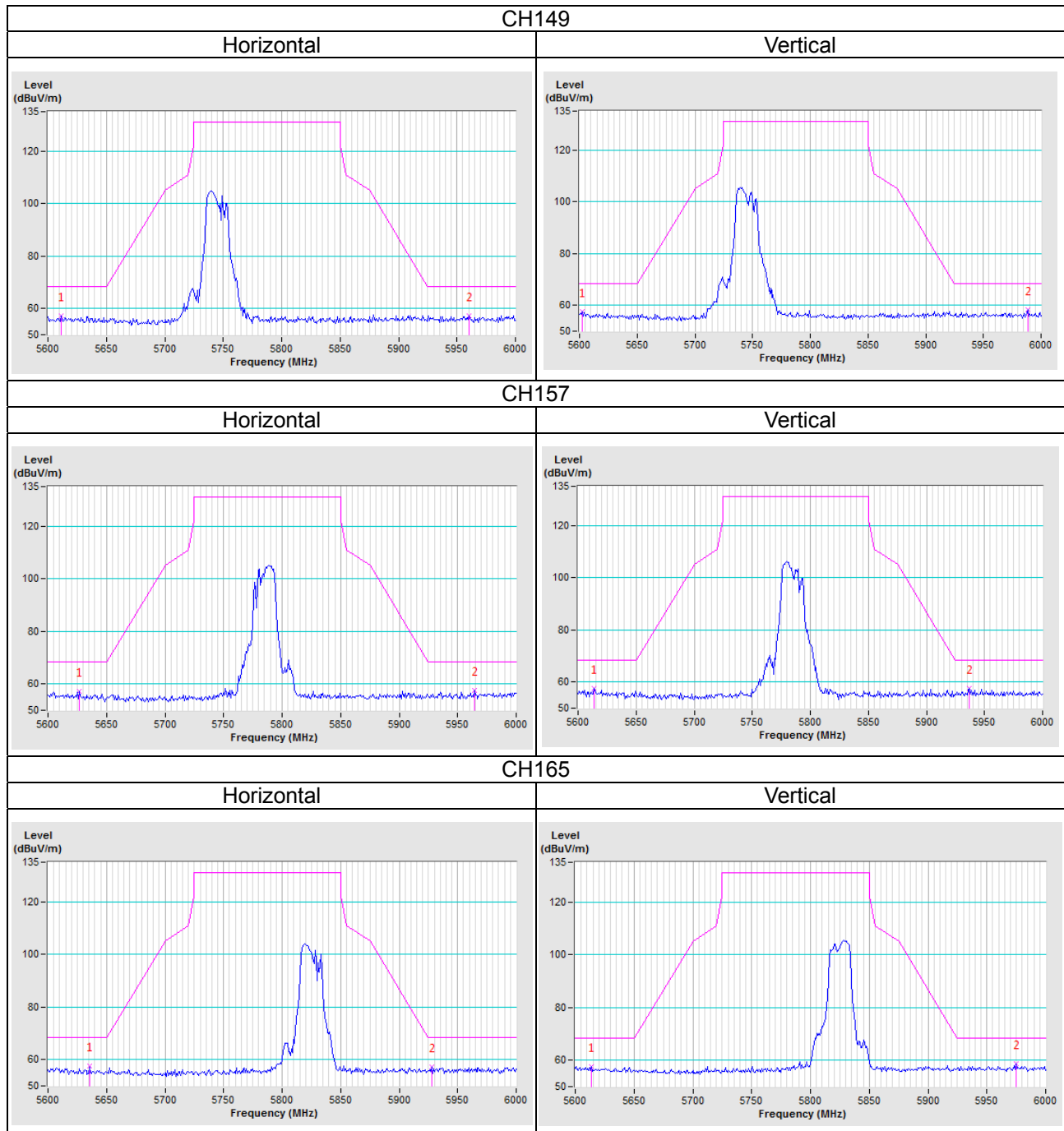


Test Mode C

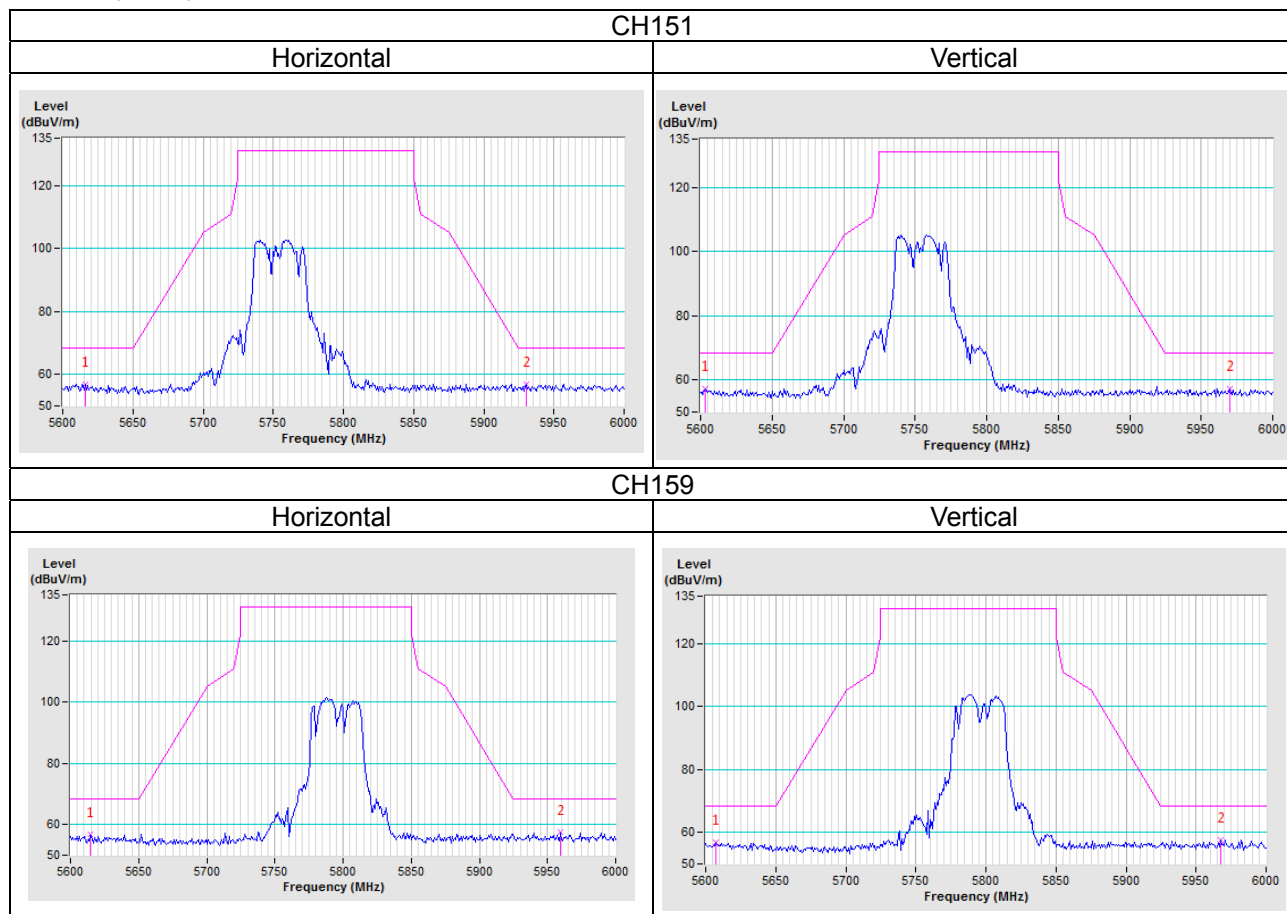
802.11a



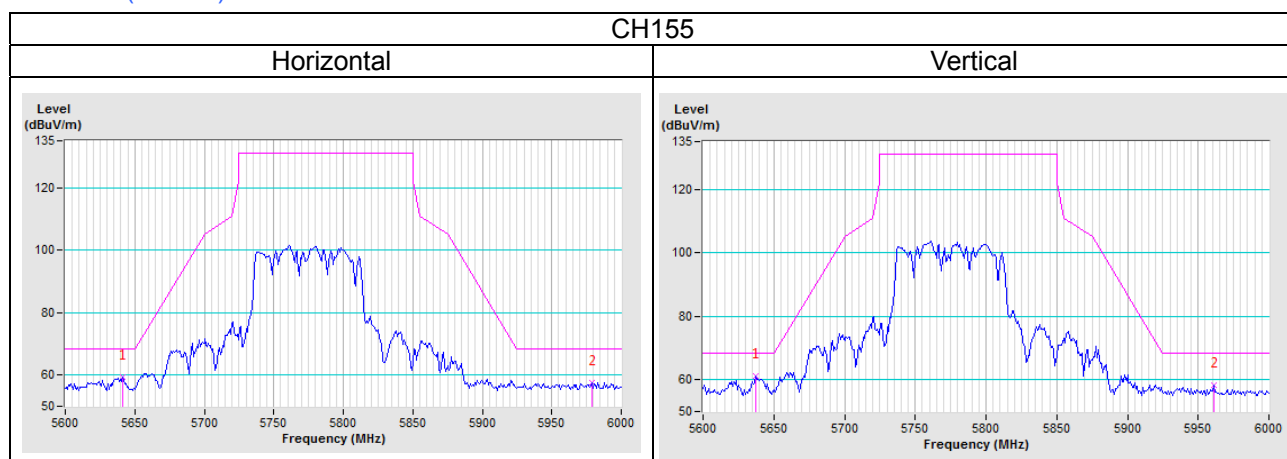
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Appendix – Information of the Testing Laboratories

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

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

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