FCC Test Report (WLAN)

Report No.:	RF170313E12-1
FCC ID:	2ACTO-APX320
Test Model:	APX 320
Received Date:	Mar. 13, 2017
Test Date:	Mar. 18 to May 04, 2017
Issued Date:	May 28, 2017
Applicant:	Sophos Ltd
Address:	The Pentagon, Abingdon Science Park, Abingdon, OX14 3YP, United Kingdom
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (1):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.
Test Location (2):	No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien 307, Taiwan R.O.C.

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Release Control Record

Issue No.	Description	Date Issued
RF170313E12-1	Original release.	May 28, 2017

1 Certificate of Conformity

Product:	Sophos Access Point
Brand:	SOPHOS
Test Model:	APX 320
Sample Status:	ENGINEERING SAMPLE
Applicant:	Sophos Ltd
Test Date:	Mar. 18 to May 04, 2017
Standard:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10: 2013

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

Prepared by : Wendy Wu , **Date:** May 28, 2017

Wendy Wu / Specialist

Approved by : , **Date:** May 28, 2017

May Chen / Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -4.48dB at 25.11856MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5150.00MHz.
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 i-pex(MHF) not a standard connector.

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

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Sophos Access Point
Brand	SOPHOS
Test Model	APX 320
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 48V from POE
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 300Mbps 802.11ac: up to 866.7Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462GHz **5GHz:** 5.18~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.4GHz:** **2TX** **CDD Mode:** 983.291mW **Beamforming Mode:** 857.609mW **1TX** 530.884mW **5.18 ~ 5.24GHz** **2TX** **CDD Mode:** 214.161mW **Beamforming Mode:** 207.745mW **1TX** 146.218mW **5.745 ~ 5.825GHz** **2TX** **CDD Mode:** 688.492mW **Beamforming Mode:** 414.046mW **1TX** 389.942mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. Simultaneously transmission condition.

Condition	Technology		
1	WLAN (Radio 1) (2.4GHz)	WLAN (Radio 2) (5GHz-UNII-1)	Bluetooth
2	WLAN (Radio 1) (5GHz-UNII-3)	WLAN (Radio 2) (5GHz-UNII-1)	Bluetooth
Note: The emission of the simultaneous operation has been evaluated and no non-compliance was found.			

2. The EUT must be supplied with a POE (only for test not for sale) as following table:

Brand	Model No.	Spec.
PowerDsine	PD-3501G/AC	Input: 100-240Vac, 50/60Hz, 0.43A Output: 48Vdc, 0.35A

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

Radio 1							
WLAN - 2.4GHz + 5GHz							
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connecter Type
1	Chain (0)	WNC	NA	3.48 6.79	2.4~2.4835 5.47~5.85	PIFA	i-pex(MHF)
2	Chain (1)	WNC	NA	3.74 6.16	2.4~2.4835 5.47~5.85	PIFA	i-pex(MHF)
Radio 2							
WLAN 5GHz							
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connecter Type
1	Chain (0)	WNC	NA	4.87	5.15~5.35	PIFA	i-pex(MHF)
2	Chain (1)	WNC	NA	5.64	5.15~5.35	PIFA	i-pex(MHF)
Radio 3							
Bluetooth - 2.4GHz							
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connecter Type
1	Chain (0)	WNC	NA	1.87	2.4~2.4835	PIFA	i-pex(MHF)
Note: For 1TX configuration mode, max gain was selected for the final test.							

4. The EUT incorporates a MIMO function:

2.4GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11b	1 ~ 11Mbps	2TX/1TX diversity	2TX/1TX diversity
802.11g	6 ~ 54Mbps	2TX/1TX diversity	2TX/1TX diversity
802.11n HT20	MCS 0~7	2TX/1TX diversity	2TX/1TX diversity
	MCS 8~15	2TX	2TX
802.11n HT40	MCS 0~7	2TX/1TX diversity	2TX/1TX diversity
	MCS 8~15	2TX	2TX
5GHz Band			
MODULATION MODE	**DATA RATE (MCS)**	**TX & RX CONFIGURATION**	
802.11a	6 ~ 54Mbps	2TX/1TX diversity	2TX/1TX diversity
802.11n HT20	MCS 0~7	2TX/1TX diversity	2TX/1TX diversity
	MCS 8~15	2TX	2TX
802.11n HT40	MCS 0~7	2TX/1TX diversity	2TX/1TX diversity
	MCS 8~15	2TX	2TX
802.11ac VHT20	MCS0~8 Nss=1	2TX/1TX diversity	2TX/1TX diversity
	MCS0~8 Nss=2	2TX	2TX
802.11ac VHT40	MCS0~9 Nss=1	2TX/1TX diversity	2TX/1TX diversity
	MCS0~9 Nss=2	2TX	2TX
802.11ac VHT80	MCS0~9 Nss=1	2TX/1TX diversity	2TX/1TX diversity
	MCS0~9 Nss=2	2TX	2TX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. 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)
3. The EUT support Beamforming and CDD mode, therefore both mode were investigated and the worst case scenario was identified. The worst case data were presented in test report.

5. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

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

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

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

Channel	Frequency	Channel	Frequency
38	5190MHz	46	5230MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

FOR 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≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

Radiated Emission Test (Above 1GHz):

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

2TX Configuration- CDD Mode						
Radio 2						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 1						
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3
1TX Configuration						
Radio 2						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate (Mbps)**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 1						
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

Radiated Emission Test (Below 1GHz):

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

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

2TX Configuration - CDD Mode						
Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	40	OFDM	BPSK	6
Radio 1						
802.11ac (VHT40)	5745-5825	151 to 159	159	OFDM	BPSK	13.5

Power Line Conducted Emission Test:

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

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

2TX Configuration - CDD Mode						
Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	40	OFDM	BPSK	6
Radio 1						
802.11ac (VHT40)	5745-5825	151 to 159	159	OFDM	BPSK	13.5

Antenna Port Conducted Measurement:

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

2TX Configuration- CDD Mode						
Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 1						
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3
2TX Configuration- Beamforming Mode (Output power only)						
Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 1						
802.11ac (VHT20)	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3
1TX Configuration						
Radio 2						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate (Mbps)
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6
802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	BPSK	6.5
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	13.5
802.11ac (VHT80)		42	42	OFDM	BPSK	29.3
Radio 1						
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6
802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	BPSK	6.5
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	13.5
802.11ac (VHT80)		155	155	OFDM	BPSK	29.3

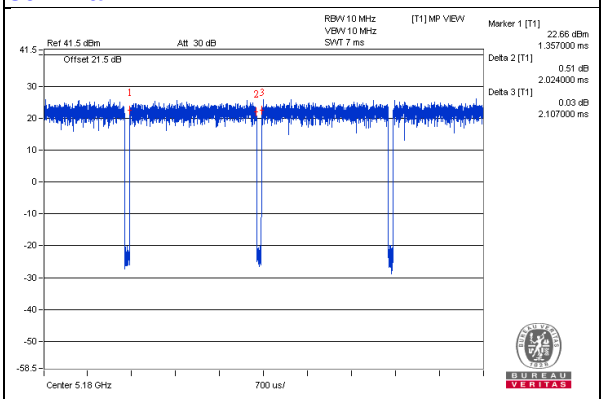
Test Condition:

Applicable To	Environmental Conditions	Input Power (System)	Tested By
RE≥1G	24deg. C, 65%RH	120Vac, 60Hz	Terry Huang
RE<1G	23deg. C, 62%RH	120Vac, 60Hz	Weiwei Lo
PLC	24deg. C, 74%RH	120Vac, 60Hz	Andy Ho
APCM	25deg. C, 60%RH	120Vac, 60Hz	Robert Cheng

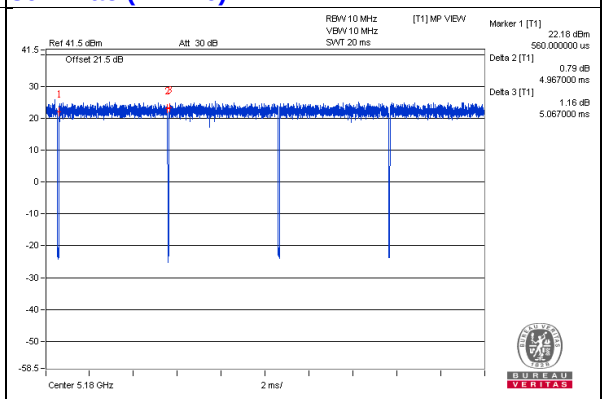
3.3 Duty Cycle of Test Signal

If duty cycle of test signal is ≥ 98 %, duty factor is not required.
If duty cycle of test signal is < 98%, duty factor shall be considered.
802.11a: Duty cycle = 2.024 ms/2.107 ms = 0.961, Duty factor = 10 * log(1/0.961) = 0.17
802.11ac (VHT20): Duty cycle = 4.967 ms/5.067 ms = 0.98
802.11ac (VHT40): Duty cycle = 2.413 ms/2.503 ms = 0.964, Duty factor = 10 * log(1/0.964) = 0.16
802.11ac (VHT80): Duty cycle = 1.134 ms/1.213 ms = 0.935, Duty factor = 10 * log(1/0.935) = 0.29

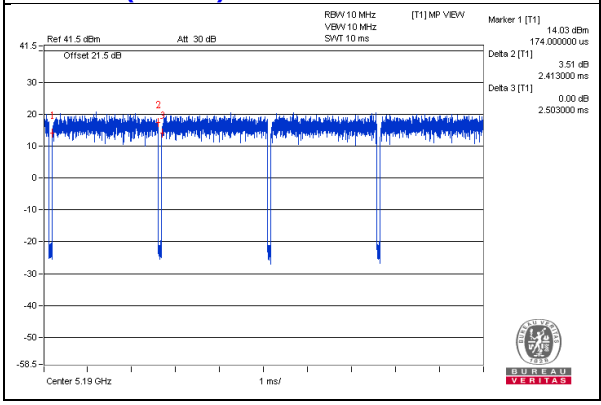
802.11a



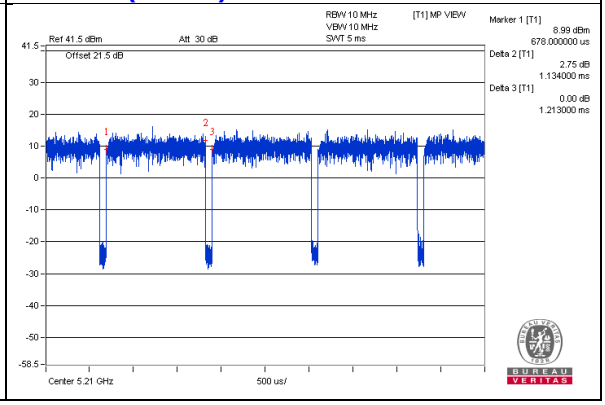
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



3.4 Description of Support Units

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

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	POE	PowerDsine	PD-3501G/AC	NA	NA	Supplied by client

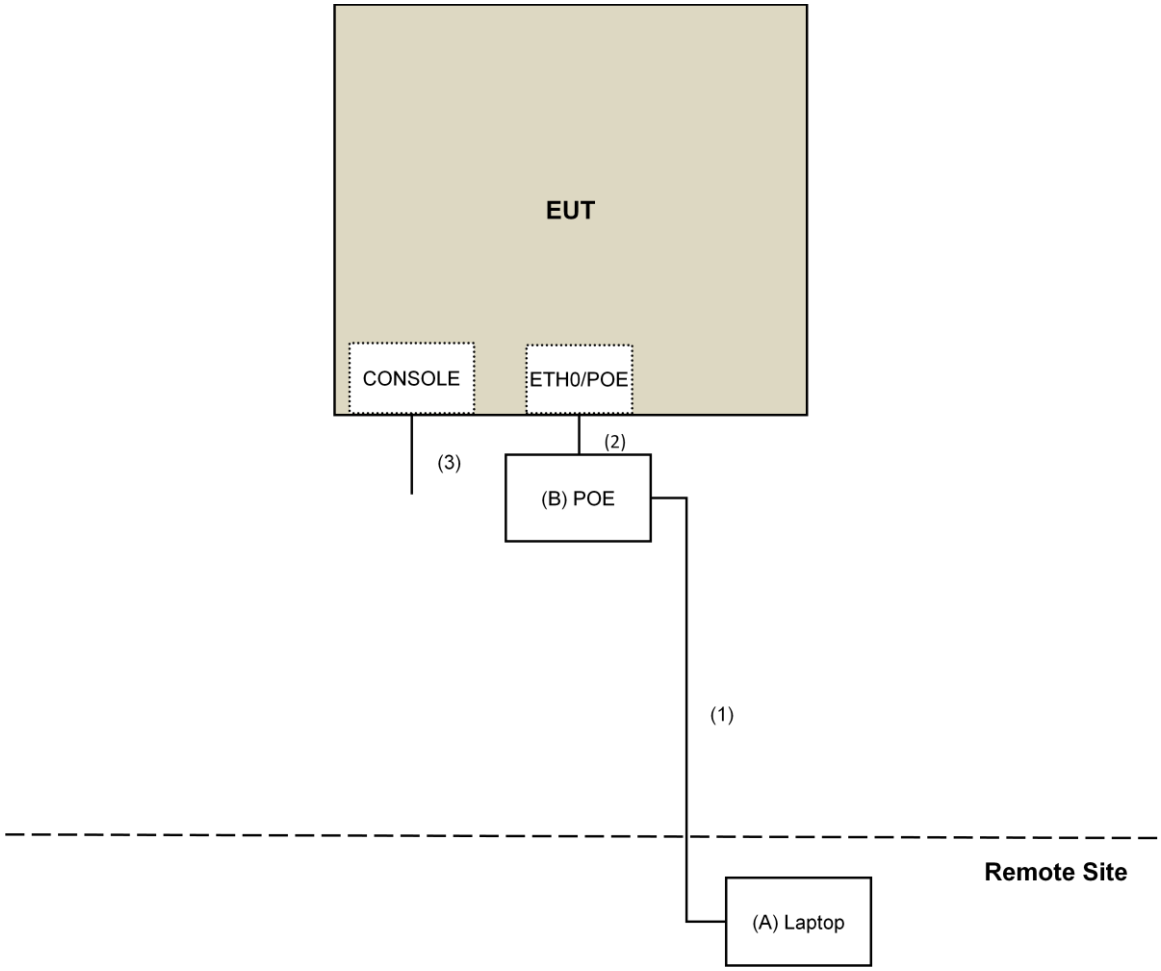
Note:

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

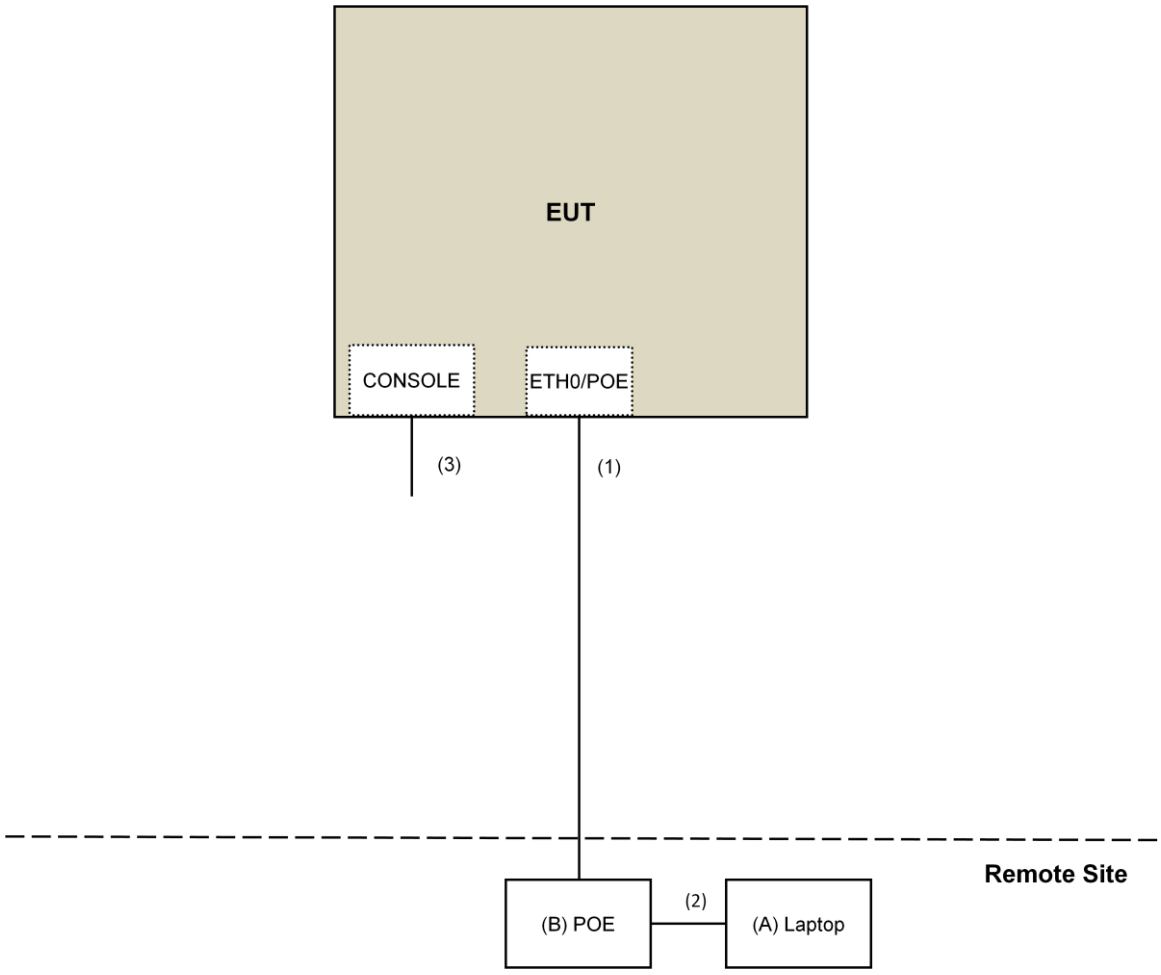
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	RJ-45 Cable	1	10	No	0	Provided by Lab
2.	RJ-45 Cable	1	3	No	0	Provided by Lab
3.	Console Cable	1	1.8	No	0	Provided by Lab

3.4.1 Configuration of System under Test

For Conducted Emission:



For other test:



3.5 General Description of Applied Standard

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

FCC Part 15, Subpart E (15.407)
KDB 789033 D02 General UNII Test Procedure New Rules v01r04
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

NOTE:

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

<table>
<tr><td colspan="2">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="2" rowspan="2">789033 D02 General UNII Test Procedure New Rules v01r04</td><td colspan="2">Field Strength at 3m</td></tr>
<tr><td>PK:74 (dBμV/m)</td><td>AV:54 (dBμV/m)</td></tr>
<tr><td>Frequency Band</td><td colspan="2">Applicable To</td><td>EIRP Limit</td><td>Equivalent Field Strength at 3m</td></tr>
<tr><td>5150~5250 MHz</td><td colspan="2">15.407(b)(1)</td><td rowspan="3">PK:-27 (dBm/MHz)</td><td rowspan="3">PK:68.2(dBμV/m)</td></tr>
<tr><td>5250~5350 MHz</td><td colspan="2">15.407(b)(2)</td></tr>
<tr><td>5470~5725 MHz</td><td colspan="2">15.407(b)(3)</td></tr>
<tr><td rowspan="2">5725~5850 MHz</td><td>☒</td><td>15.407(b)(4)(i)</td><td>PK:-27 (dBm/MHz) *1
PK:10 (dBm/MHz) *2
PK:15.6 (dBm/MHz) *3
PK:27 (dBm/MHz) *4</td><td>PK: 68.2(dBμV/m) *1
PK:105.2 (dBμV/m) *2
PK: 110.8(dBμV/m) *3
PK:122.2 (dBμV/m) *4</td></tr>
<tr><td>☐</td><td>15.407(b)(4)(ii)</td><td colspan="2">Emission limits in section 15.247(d)</td></tr>
<tr><td colspan="4">*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.</td></tr>
</table>

Note:

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

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

4.1.2 Test Instruments

For OOBE test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 20, 2016	July 19, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-2000 EMC104-SM-SM-5000 EMC104-SM-SM-5000	160923 150318 150323	Feb. 02, 2017 Mar. 30, 2016 Mar. 30, 2016	Feb. 01, 2018 Mar. 29, 2017 Mar. 29, 2017
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	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 966 Chamber No. 4.
3. The FCC Site Registration No. is 292998
4. The CANADA Site Registration No. is 20331-2
5. Tested Date: Mar. 18, 2017

For other test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 20, 2016	July 19, 2017
Pre-Amplifier(*) EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna(*) Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150323	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSv40	100964	June 28, 2016	June 27, 2017
Power meter Anritsu	ML2495A	1014008	May 5, 2016	May 4, 2017
Power sensor Anritsu	MA2411B	0917122	May 5, 2016	May 4, 2017

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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. The FCC Site Registration No. is 292998
5. The CANADA Site Registration No. is 20331-2
6 Loop antenna was used for all emissions below 30 MHz.
7. Tested Date: Apr. 28 to May 04, 2017

4.1.3 Test Procedure

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

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

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

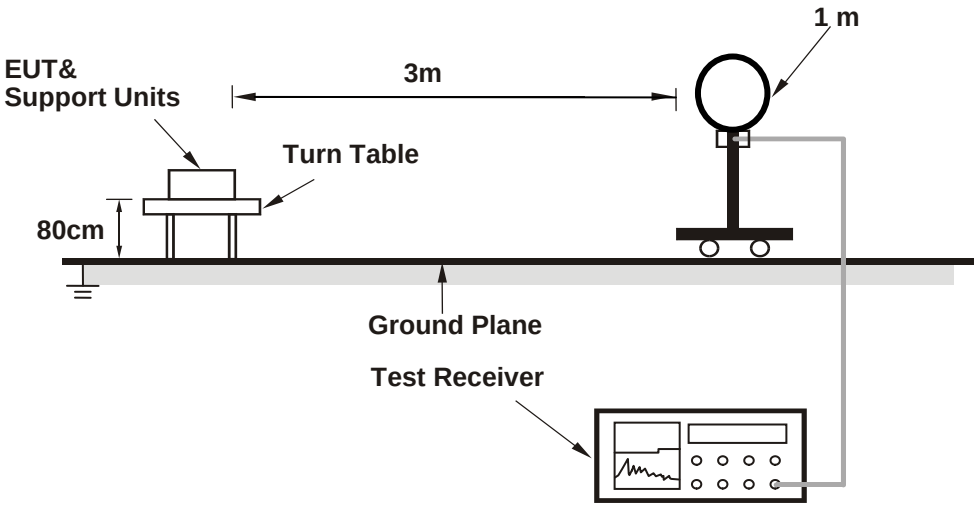
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

4.1.4 Deviation from Test Standard

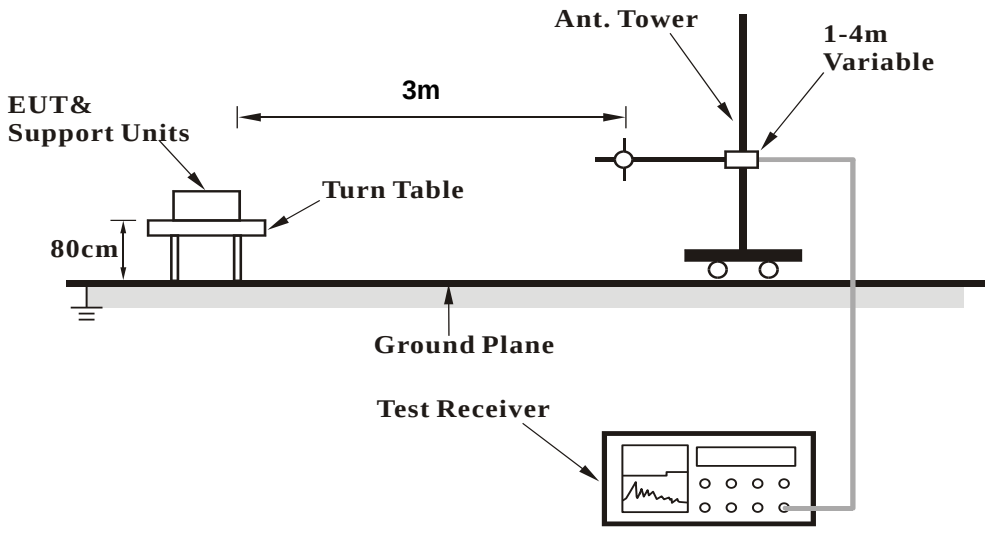
No deviation.

4.1.5 Test Setup

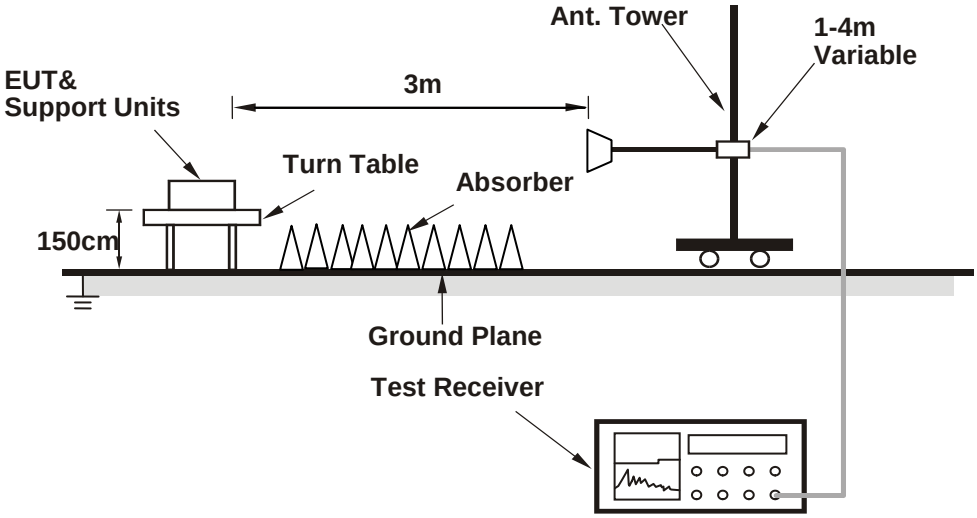
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Condition

a. Connected the EUT with the Laptop which is placed on remote site.

b. Contorlling software (QRCT_3.0.219.0) has been activated to set the EUT on specific status.

4.1.7 Test Results

2TX Mode

Radio 2

Above 1GHz Data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	65.8 PK	74.0	-8.2	1.00 H	60	61.8	4.0
2	5150.00	53.7 AV	54.0	-0.3	1.00 H	60	49.7	4.0
3	*5180.00	116.8 PK			1.00 H	60	112.8	4.0
4	*5180.00	105.8 AV			1.00 H	60	101.8	4.0
5	#10360.00	50.8 PK	74.0	-23.2	1.00 H	284	37.2	13.6
6	#10360.00	39.2 AV	54.0	-14.8	1.00 H	284	25.6	13.6
7	15540.00	44.7 PK	74.0	-29.3	1.53 H	45	31.5	13.2
8	15540.00	32.7 AV	54.0	-21.3	1.53 H	45	19.5	13.2
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	59.7 PK	74.0	-14.3	1.05 V	109	55.7	4.0
2	5150.00	47.5 AV	54.0	-6.5	1.05 V	109	43.5	4.0
3	*5180.00	107.6 PK			1.05 V	109	103.6	4.0
4	*5180.00	97.9 AV			1.05 V	109	93.9	4.0
5	#10360.00	53.0 PK	74.0	-21.0	2.15 V	341	39.4	13.6
6	#10360.00	41.7 AV	54.0	-12.3	2.15 V	341	28.1	13.6
7	15540.00	45.8 PK	74.0	-28.2	1.63 V	121	32.6	13.2
8	15540.00	33.0 AV	54.0	-21.0	1.63 V	121	19.8	13.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.0 PK	74.0	-10.0	1.01 H	61	60.0	4.0
2	5150.00	50.2 AV	54.0	-3.8	1.01 H	61	46.2	4.0
3	*5200.00	118.3 PK			1.01 H	61	114.3	4.0
4	*5200.00	107.5 AV			1.01 H	61	103.5	4.0
5	5350.00	48.0 PK	74.0	-26.0	1.01 H	61	43.6	4.4
6	5350.00	35.6 AV	54.0	-18.4	1.01 H	61	31.2	4.4
7	#10400.00	51.9 PK	74.0	-22.1	1.00 H	287	38.3	13.6
8	#10400.00	40.2 AV	54.0	-13.8	1.00 H	287	26.6	13.6
9	15600.00	44.9 PK	74.0	-29.1	1.55 H	40	31.5	13.4
10	15600.00	32.9 AV	54.0	-21.1	1.55 H	40	19.5	13.4
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	5150.00	57.5 PK	74.0	-16.5	1.00 V	108	53.5	4.0
2	5150.00	43.9 AV	54.0	-10.1	1.00 V	108	39.9	4.0
3	*5200.00	109.8 PK			1.00 V	108	105.8	4.0
4	*5200.00	99.5 AV			1.00 V	108	95.5	4.0
5	5350.00	47.9 PK	74.0	-26.1	1.00 V	108	43.5	4.4
6	5350.00	35.4 AV	54.0	-18.6	1.00 V	108	31.0	4.4
7	#10400.00	53.9 PK	74.0	-20.1	2.08 V	360	40.3	13.6
8	#10400.00	42.3 AV	54.0	-11.7	2.08 V	360	28.7	13.6
9	15600.00	47.2 PK	74.0	-26.8	1.64 V	128	33.8	13.4
10	15600.00	34.5 AV	54.0	-19.5	1.64 V	128	21.1	13.4

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	117.1 PK			1.00 H	62	112.9	4.2
2	*5240.00	105.7 AV			1.00 H	62	101.5	4.2
3	5350.00	49.2 PK	74.0	-24.8	1.00 H	62	44.8	4.4
4	5350.00	37.2 AV	54.0	-16.8	1.00 H	62	32.8	4.4
5	#10480.00	50.4 PK	74.0	-23.6	1.00 H	298	36.7	13.7
6	#10480.00	38.8 AV	54.0	-15.2	1.00 H	298	25.1	13.7
7	15720.00	44.7 PK	74.0	-29.3	1.48 H	35	30.7	14.0
8	15720.00	32.7 AV	54.0	-21.3	1.48 H	35	18.7	14.0
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	*5240.00	107.1 PK			1.02 V	104	102.9	4.2
2	*5240.00	97.6 AV			1.02 V	104	93.4	4.2
3	5350.00	50.9 PK	74.0	-23.1	1.02 V	104	46.5	4.4
4	5350.00	37.3 AV	54.0	-16.7	1.02 V	104	32.9	4.4
5	#10480.00	51.8 PK	74.0	-22.2	2.16 V	341	38.1	13.7
6	#10480.00	40.8 AV	54.0	-13.2	2.16 V	341	27.1	13.7
7	15720.00	46.6 PK	74.0	-27.4	1.69 V	133	32.6	14.0
8	15720.00	33.6 AV	54.0	-20.4	1.69 V	133	19.6	14.0

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 (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.8 PK	74.0	-7.2	1.02 H	60	62.8	4.0
2	5150.00	53.8 AV	54.0	-0.2	1.02 H	60	49.8	4.0
3	*5180.00	116.8 PK			1.02 H	60	112.8	4.0
4	*5180.00	106.2 AV			1.02 H	60	102.2	4.0
5	#10360.00	50.7 PK	74.0	-23.3	1.01 H	297	37.1	13.6
6	#10360.00	39.1 AV	54.0	-14.9	1.01 H	297	25.5	13.6
7	15540.00	44.3 PK	74.0	-29.7	1.57 H	30	31.1	13.2
8	15540.00	32.3 AV	54.0	-21.7	1.57 H	30	19.1	13.2
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	60.0 PK	74.0	-14.0	1.06 V	111	56.0	4.0
2	5150.00	47.7 AV	54.0	-6.3	1.06 V	111	43.7	4.0
3	*5180.00	108.6 PK			1.06 V	111	104.6	4.0
4	*5180.00	97.8 AV			1.06 V	111	93.8	4.0
5	#10360.00	52.6 PK	74.0	-21.4	2.10 V	355	39.0	13.6
6	#10360.00	41.2 AV	54.0	-12.8	2.10 V	355	27.6	13.6
7	15540.00	46.7 PK	74.0	-27.3	1.62 V	133	33.5	13.2
8	15540.00	33.9 AV	54.0	-20.1	1.62 V	133	20.7	13.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.6 PK	74.0	-9.4	1.05 H	65	60.6	4.0
2	5150.00	47.7 AV	54.0	-6.3	1.05 H	65	43.7	4.0
3	*5200.00	117.2 PK			1.05 H	65	113.2	4.0
4	*5200.00	107.4 AV			1.05 H	65	103.4	4.0
5	5350.00	48.2 PK	74.0	-25.8	1.05 H	65	43.8	4.4
6	5350.00	35.4 AV	54.0	-18.6	1.05 H	65	31.0	4.4
7	#10400.00	51.5 PK	74.0	-22.5	1.01 H	300	37.9	13.6
8	#10400.00	39.9 AV	54.0	-14.1	1.01 H	300	26.3	13.6
9	15600.00	45.1 PK	74.0	-28.9	1.55 H	44	31.7	13.4
10	15600.00	33.2 AV	54.0	-20.8	1.55 H	44	19.8	13.4
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	5150.00	58.8 PK	74.0	-15.2	1.02 V	115	54.8	4.0
2	5150.00	41.7 AV	54.0	-12.3	1.02 V	115	37.7	4.0
3	*5200.00	110.5 PK			1.02 V	115	106.5	4.0
4	*5200.00	99.9 AV			1.02 V	115	95.9	4.0
5	5350.00	49.1 PK	74.0	-24.9	1.02 V	115	44.7	4.4
6	5350.00	36.5 AV	54.0	-17.5	1.02 V	115	32.1	4.4
7	#10400.00	53.7 PK	74.0	-20.3	2.12 V	355	40.1	13.6
8	#10400.00	42.1 AV	54.0	-11.9	2.12 V	355	28.5	13.6
9	15600.00	47.2 PK	74.0	-26.8	1.61 V	144	33.8	13.4
10	15600.00	34.6 AV	54.0	-19.4	1.61 V	144	21.2	13.4

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	117.5 PK			1.00 H	67	113.3	4.2
2	*5240.00	106.2 AV			1.00 H	67	102.0	4.2
3	5350.00	59.4 PK	74.0	-14.6	1.00 H	67	55.0	4.4
4	5350.00	45.2 AV	54.0	-8.8	1.00 H	67	40.8	4.4
5	#10480.00	50.7 PK	74.0	-23.3	1.00 H	279	37.0	13.7
6	#10480.00	38.8 AV	54.0	-15.2	1.00 H	279	25.1	13.7
7	15720.00	44.8 PK	74.0	-29.2	1.50 H	30	30.8	14.0
8	15720.00	32.8 AV	54.0	-21.2	1.50 H	30	18.8	14.0
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	*5240.00	108.2 PK			1.00 V	105	104.0	4.2
2	*5240.00	97.5 AV			1.00 V	105	93.3	4.2
3	5350.00	52.2 PK	74.0	-21.8	1.00 V	105	47.8	4.4
4	5350.00	38.2 AV	54.0	-15.8	1.00 V	105	33.8	4.4
5	#10480.00	52.5 PK	74.0	-21.5	2.13 V	344	38.8	13.7
6	#10480.00	41.2 AV	54.0	-12.8	2.13 V	344	27.5	13.7
7	15720.00	46.3 PK	74.0	-27.7	1.68 V	137	32.3	14.0
8	15720.00	33.5 AV	54.0	-20.5	1.68 V	137	19.5	14.0

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 (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.6 PK	74.0	-7.4	1.03 H	62	62.6	4.0
2	5150.00	53.8 AV	54.0	-0.2	1.03 H	62	49.8	4.0
3	*5190.00	110.0 PK			1.03 H	62	106.0	4.0
4	*5190.00	99.9 AV			1.03 H	62	95.9	4.0
5	5350.00	47.9 PK	74.0	-26.1	1.03 H	62	43.5	4.4
6	5350.00	35.5 AV	54.0	-18.5	1.03 H	62	31.1	4.4
7	#10380.00	48.3 PK	74.0	-25.7	2.15 H	170	34.7	13.6
8	#10380.00	36.1 AV	54.0	-17.9	2.15 H	170	22.5	13.6
9	15570.00	45.4 PK	74.0	-28.6	1.49 H	55	32.1	13.3
10	15570.00	33.7 AV	54.0	-20.3	1.49 H	55	20.4	13.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.9 PK	74.0	-14.1	1.30 V	118	55.9	4.0
2	5150.00	48.4 AV	54.0	-5.6	1.30 V	118	44.4	4.0
3	*5190.00	102.1 PK			1.30 V	118	98.1	4.0
4	*5190.00	91.3 AV			1.30 V	118	87.3	4.0
5	5350.00	47.4 PK	74.0	-26.6	1.30 V	118	43.0	4.4
6	5350.00	35.2 AV	54.0	-18.8	1.30 V	118	30.8	4.4
7	#10380.00	49.8 PK	74.0	-24.2	1.67 V	187	36.2	13.6
8	#10380.00	37.2 AV	54.0	-16.8	1.67 V	187	23.6	13.6
9	15570.00	45.0 PK	74.0	-29.0	1.00 V	113	31.7	13.3
10	15570.00	33.3 AV	54.0	-20.7	1.00 V	113	20.0	13.3

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.3 PK	74.0	-8.7	1.00 H	65	61.3	4.0
2	5150.00	52.8 AV	54.0	-1.2	1.00 H	65	48.8	4.0
3	*5230.00	113.9 PK			1.00 H	65	109.7	4.2
4	*5230.00	103.0 AV			1.00 H	65	98.8	4.2
5	5350.00	47.9 PK	74.0	-26.1	1.00 H	65	43.5	4.4
6	5350.00	36.0 AV	54.0	-18.0	1.00 H	65	31.6	4.4
7	#10460.00	52.0 PK	74.0	-22.0	2.20 H	162	38.3	13.7
8	#10460.00	39.7 AV	54.0	-14.3	2.20 H	162	26.0	13.7
9	15690.00	45.4 PK	74.0	-28.6	1.51 H	55	31.4	14.0
10	15690.00	33.5 AV	54.0	-20.5	1.51 H	55	19.5	14.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.5 PK	74.0	-15.5	1.31 V	121	54.5	4.0
2	5150.00	47.3 AV	54.0	-6.7	1.31 V	121	43.3	4.0
3	*5230.00	104.2 PK			1.31 V	121	100.0	4.2
4	*5230.00	94.6 AV			1.31 V	121	90.4	4.2
5	5350.00	49.8 PK	74.0	-24.2	1.31 V	121	45.4	4.4
6	5350.00	37.1 AV	54.0	-16.9	1.31 V	121	32.7	4.4
7	#10460.00	53.5 PK	74.0	-20.5	1.69 V	182	39.8	13.7
8	#10460.00	41.1 AV	54.0	-12.9	1.69 V	182	27.4	13.7
9	15690.00	45.7 PK	74.0	-28.3	1.00 V	105	31.7	14.0
10	15690.00	33.8 AV	54.0	-20.2	1.00 V	105	19.8	14.0

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.5 PK	74.0	-7.5	1.00 H	62	62.5	4.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.00 H**	**62**	**49.9**	**4.0**
3	*5210.00	103.7 PK			1.00 H	62	99.6	4.1
4	*5210.00	93.9 AV			1.00 H	62	89.8	4.1
5	5350.00	47.3 PK	74.0	-26.7	1.00 H	62	42.9	4.4
6	5350.00	36.7 AV	54.0	-17.3	1.00 H	62	32.3	4.4
7	#10420.00	48.0 PK	74.0	-26.0	2.27 H	178	34.4	13.6
8	#10420.00	33.9 AV	54.0	-20.1	2.27 H	178	20.3	13.6
9	15630.00	45.6 PK	74.0	-28.4	1.49 H	50	32.0	13.6
10	15630.00	33.2 AV	54.0	-20.8	1.49 H	50	19.6	13.6
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	60.9 PK	74.0	-13.1	1.38 V	110	56.9	4.0
2	5150.00	48.1 AV	54.0	-5.9	1.38 V	110	44.1	4.0
3	*5210.00	96.1 PK			1.38 V	110	92.0	4.1
4	*5210.00	86.3 AV			1.38 V	110	82.2	4.1
5	5350.00	47.4 PK	74.0	-26.6	1.38 V	110	43.0	4.4
6	5350.00	37.1 AV	54.0	-16.9	1.38 V	110	32.7	4.4
7	#10420.00	47.5 PK	74.0	-26.5	1.70 V	180	33.9	13.6
8	#10420.00	33.8 AV	54.0	-20.2	1.70 V	180	20.2	13.6
9	15630.00	45.5 PK	74.0	-28.5	1.01 V	114	31.9	13.6
10	15630.00	33.6 AV	54.0	-20.4	1.01 V	114	20.0	13.6

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.

Below 1GHz Data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	98.77	30.4 QP	43.5	-13.1	2.00 H	117	43.3	-12.9
2	165.00	32.9 QP	43.5	-10.6	2.00 H	285	41.0	-8.1
3	225.02	30.7 QP	46.0	-15.3	1.00 H	125	42.3	-11.6
4	275.02	29.2 QP	46.0	-16.8	1.00 H	74	37.5	-8.3
5	375.03	31.0 QP	46.0	-15.0	1.00 H	80	36.8	-5.8
6	500.01	29.2 QP	46.0	-16.8	3.00 H	0	32.0	-2.8
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	38.08	35.9 QP	40.0	-4.1	1.00 V	260	44.2	-8.3
2	84.83	35.6 QP	40.0	-4.4	1.00 V	360	49.4	-13.8
3	165.02	28.6 QP	43.5	-14.9	1.00 V	104	36.7	-8.1
4	224.99	31.9 QP	46.0	-14.1	1.00 V	29	43.6	-11.7
5	375.00	33.0 QP	46.0	-13.0	1.00 V	38	38.8	-5.8
6	625.00	28.8 QP	46.0	-17.2	1.00 V	179	28.9	-0.1

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

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Above 1GHz Data:

802.11a

CHANNEL	TX Channel 149	**DETECTOR FUNCTION**	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	#5632.65	56.3 PK	68.2	-11.9	1.00 H	293	52.6	3.7
2	*5745.00	119.4 PK			1.00 H	293	114.4	5.0
3	*5745.00	108.1 AV			1.00 H	293	103.1	5.0
4	#5947.10	57.4 PK	68.2	-10.8	1.00 H	293	53.1	4.3
5	11490.00	66.5 PK	74.0	-7.5	3.61 H	149	52.4	14.1
6	11490.00	53.7 AV	54.0	-0.3	3.61 H	149	39.6	14.1
7	#17235.00	55.4 PK	74.0	-18.6	1.95 H	360	37.1	18.3
8	#17235.00	42.6 AV	54.0	-11.4	1.95 H	360	24.3	18.3
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	#5568.05	57.2 PK	68.2	-11.0	1.17 V	244	53.7	3.5
2	*5745.00	111.2 PK			1.17 V	244	106.2	5.0
3	*5745.00	100.5 AV			1.17 V	244	95.5	5.0
4	#5986.05	57.4 PK	68.2	-10.8	1.17 V	244	53.0	4.4
5	11490.00	64.3 PK	74.0	-9.7	1.71 V	225	50.2	14.1
6	11490.00	51.7 AV	54.0	-2.3	1.71 V	225	37.6	14.1
7	#17235.00	51.4 PK	74.0	-22.6	3.88 V	215	33.1	18.3
8	#17235.00	39.6 AV	54.0	-14.4	3.88 V	215	21.3	18.3

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5593.23	56.2 PK	68.2	-12.0	1.01 H	292	52.6	3.6
2	*5785.00	119.2 PK			1.01 H	293	114.2	5.0
3	*5785.00	107.8 AV			1.01 H	293	102.8	5.0
4	#5995.07	57.0 PK	68.2	-11.2	1.01 H	292	52.6	4.4
5	11570.00	65.9 PK	74.0	-8.1	3.65 H	151	51.9	14.0
6	11570.00	53.3 AV	54.0	-0.7	3.65 H	151	39.3	14.0
7	#17355.00	54.9 PK	74.0	-19.1	2.00 H	352	36.0	18.9
8	#17355.00	42.2 AV	54.0	-11.8	2.00 H	352	23.3	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	#5553.80	56.6 PK	68.2	-11.6	1.17 V	239	53.2	3.4
2	*5785.00	110.8 PK			1.17 V	250	105.8	5.0
3	*5785.00	100.0 AV			1.17 V	250	95.0	5.0
4	#6012.65	56.0 PK	68.2	-12.2	1.17 V	239	51.5	4.5
5	11570.00	64.4 PK	74.0	-9.6	1.70 V	226	50.4	14.0
6	11570.00	51.9 AV	54.0	-2.1	1.70 V	226	37.9	14.0
7	#17355.00	51.4 PK	74.0	-22.6	3.87 V	215	32.5	18.9
8	#17355.00	39.6 AV	54.0	-14.4	3.87 V	215	20.7	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5617.93	57.4 PK	68.2	-10.8	1.04 H	294	53.7	3.7
2	*5825.00	119.5 PK			1.04 H	294	114.3	5.2
3	*5825.00	108.8 AV			1.04 H	294	103.6	5.2
4	#5928.10	62.4 PK	68.2	-5.8	1.04 H	294	58.1	4.3
5	11650.00	66.7 PK	74.0	-7.3	3.71 H	150	52.6	14.1
6	11650.00	53.8 AV	54.0	-0.2	3.71 H	150	39.7	14.1
7	#17475.00	55.6 PK	74.0	-18.4	1.92 H	360	35.9	19.7
8	#17475.00	43.0 AV	54.0	-11.0	1.92 H	360	23.3	19.7
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	#5590.37	56.7 PK	68.2	-11.5	1.18 V	238	53.1	3.6
2	*5825.00	111.1 PK			1.18 V	238	105.9	5.2
3	*5825.00	100.6 AV			1.18 V	238	95.4	5.2
4	#5966.10	56.9 PK	68.2	-11.3	1.18 V	238	52.5	4.4
5	11650.00	63.8 PK	74.0	-10.2	1.72 V	235	49.7	14.1
6	11650.00	51.3 AV	54.0	-2.7	1.72 V	235	37.2	14.1
7	#17475.00	51.7 PK	74.0	-22.3	3.91 V	201	32.0	19.7
8	#17475.00	39.9 AV	54.0	-14.1	3.91 V	201	20.2	19.7

REMARKS:

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

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5623.57	56.7 PK	68.2	-11.5	2.75 H	293	53.0	3.7
2	*5745.00	121.4 PK			2.75 H	293	116.4	5.0
3	*5745.00	110.5 AV			2.75 H	293	105.5	5.0
4	#5982.90	57.5 PK	68.2	-10.7	2.75 H	293	53.1	4.4
5	11490.00	65.7 PK	74.0	-8.3	3.88 H	152	51.6	14.1
6	11490.00	51.9 AV	54.0	-2.1	3.88 H	152	37.8	14.1
7	#17235.00	57.5 PK	74.0	-16.5	1.92 H	360	39.2	18.3
8	#17235.00	43.2 AV	54.0	-10.8	1.92 H	360	24.9	18.3
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	#5568.45	57.1 PK	68.2	-11.1	1.40 V	244	53.6	3.5
2	*5745.00	112.3 PK			1.40 V	244	107.3	5.0
3	*5745.00	101.9 AV			1.40 V	244	96.9	5.0
4	#6024.50	56.8 PK	68.2	-11.4	1.40 V	244	52.4	4.4
5	11490.00	64.4 PK	74.0	-9.6	2.01 V	150	50.3	14.1
6	11490.00	50.2 AV	54.0	-3.8	2.01 V	150	36.1	14.1
7	#17235.00	55.8 PK	74.0	-18.2	3.36 V	158	37.5	18.3
8	#17235.00	42.7 AV	54.0	-11.3	3.36 V	158	24.4	18.3

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5591.95	57.2 PK	68.2	-11.0	2.70 H	301	53.6	3.6
2	*5785.00	121.2 PK			2.70 H	301	116.2	5.0
3	*5785.00	109.8 AV			2.70 H	301	104.8	5.0
4	#5963.01	57.2 PK	68.2	-11.0	2.70 H	301	52.8	4.4
5	11570.00	66.4 PK	74.0	-7.6	3.83 H	155	52.4	14.0
6	11570.00	52.4 AV	54.0	-1.6	3.83 H	155	38.4	14.0
7	#17355.00	57.0 PK	74.0	-17.0	1.87 H	360	38.1	18.9
8	#17355.00	42.7 AV	54.0	-11.3	1.87 H	360	23.8	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	#5642.19	56.5 PK	68.2	-11.7	1.43 V	251	52.8	3.7
2	*5785.00	112.4 PK			1.43 V	251	107.4	5.0
3	*5785.00	102.0 AV			1.43 V	251	97.0	5.0
4	#5963.35	55.7 PK	68.2	-12.5	1.43 V	251	51.3	4.4
5	11570.00	64.2 PK	74.0	-9.8	2.03 V	139	50.2	14.0
6	11570.00	49.8 AV	54.0	-4.2	2.03 V	139	35.8	14.0
7	#17355.00	55.6 PK	74.0	-18.4	3.31 V	144	36.7	18.9
8	#17355.00	42.3 AV	54.0	-11.7	3.31 V	144	23.4	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5557.92	57.7 PK	68.2	-10.5	2.72 H	290	54.2	3.5
2	*5825.00	122.0 PK			2.72 H	290	116.8	5.2
3	*5825.00	111.2 AV			2.72 H	290	106.0	5.2
4	#5931.00	60.8 PK	68.2	-7.4	2.72 H	290	56.5	4.3
5	11650.00	66.1 PK	74.0	-7.9	3.87 H	137	52.0	14.1
6	11650.00	52.1 AV	54.0	-1.9	3.87 H	137	38.0	14.1
7	#17475.00	56.9 PK	74.0	-17.1	1.96 H	360	37.2	19.7
8	#17475.00	42.9 AV	54.0	-11.1	1.96 H	360	23.2	19.7
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	#5628.07	56.6 PK	68.2	-11.6	1.45 V	246	52.9	3.7
2	*5825.00	113.5 PK			1.45 V	246	108.3	5.2
3	*5825.00	102.6 AV			1.45 V	246	97.4	5.2
4	#5996.73	56.2 PK	68.2	-12.0	1.45 V	246	51.8	4.4
5	11650.00	64.2 PK	74.0	-9.8	1.97 V	150	50.1	14.1
6	11650.00	50.2 AV	54.0	-3.8	1.97 V	150	36.1	14.1
7	#17475.00	56.3 PK	74.0	-17.7	3.34 V	147	36.6	19.7
8	#17475.00	43.2 AV	54.0	-10.8	3.34 V	147	23.5	19.7

REMARKS:

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

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.23	58.4 PK	68.4	-10.0	1.06 H	298	54.8	3.6
2	*5755.00	116.6 PK			1.06 H	298	111.6	5.0
3	*5755.00	105.8 AV			1.06 H	298	100.8	5.0
4	#5972.27	57.9 PK	68.2	-10.3	1.06 H	298	53.5	4.4
5	11510.00	64.2 PK	74.0	-9.8	3.81 H	147	50.2	14.0
6	11510.00	50.3 AV	54.0	-3.7	3.81 H	147	36.3	14.0
7	#17265.00	54.8 PK	74.0	-19.2	1.93 H	360	36.3	18.5
8	#17265.00	40.6 AV	54.0	-13.4	1.93 H	360	22.1	18.5
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	#5619.82	55.8 PK	68.2	-12.4	1.21 V	249	52.1	3.7
2	*5755.00	108.5 PK			1.21 V	249	103.5	5.0
3	*5755.00	98.5 AV			1.21 V	249	93.5	5.0
4	#5961.35	56.5 PK	68.2	-11.7	1.21 V	249	52.1	4.4
5	11510.00	61.6 PK	74.0	-12.4	1.94 V	154	47.6	14.0
6	11510.00	47.8 AV	54.0	-6.2	1.94 V	154	33.8	14.0
7	#17265.00	53.8 PK	74.0	-20.2	3.30 V	147	35.3	18.5
8	#17265.00	40.9 AV	54.0	-13.1	3.30 V	147	22.4	18.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5645.95	59.8 PK	68.2	-8.4	1.10 H	295	56.1	3.7
2	*5795.00	117.0 PK			1.10 H	295	111.9	5.1
3	*5795.00	106.5 AV			1.10 H	295	101.4	5.1
4	#5938.55	62.6 PK	68.2	-5.6	1.10 H	295	58.3	4.3
5	11590.00	64.1 PK	74.0	-9.9	3.86 H	144	50.1	14.0
6	11590.00	50.0 AV	54.0	-4.0	3.86 H	144	36.0	14.0
7	#17385.00	55.0 PK	74.0	-19.0	1.88 H	360	35.9	19.1
8	#17385.00	40.6 AV	54.0	-13.4	1.88 H	360	21.5	19.1
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	#5635.02	56.6 PK	68.2	-11.6	1.15 V	243	52.9	3.7
2	*5795.00	109.2 PK			1.15 V	243	104.1	5.1
3	*5795.00	99.0 AV			1.15 V	243	93.9	5.1
4	#5928.10	56.6 PK	68.2	-11.6	1.15 V	243	52.3	4.3
5	11590.00	61.4 PK	74.0	-12.6	1.90 V	145	47.4	14.0
6	11590.00	47.3 AV	54.0	-6.7	1.90 V	145	33.3	14.0
7	#17385.00	53.3 PK	74.0	-20.7	3.30 V	135	34.2	19.1
8	#17385.00	40.5 AV	54.0	-13.5	3.30 V	135	21.4	19.1

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5634.55	66.4 PK	68.2	-1.8	1.25 H	296	62.7	3.7
2	*5775.00	111.5 PK			1.25 H	296	106.5	5.0
3	*5775.00	102.9 AV			1.25 H	296	97.9	5.0
4	#5931.43	66.0 PK	68.2	-2.2	1.25 H	296	61.7	4.3
5	11550.00	58.7 PK	74.0	-15.3	3.91 H	157	44.7	14.0
6	11550.00	44.8 AV	54.0	-9.2	3.91 H	157	30.8	14.0
7	#17325.00	49.7 PK	74.0	-24.3	1.86 H	360	31.1	18.6
8	#17325.00	35.3 AV	54.0	-18.7	1.86 H	360	16.7	18.6
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	#5648.80	63.8 PK	68.2	-4.4	3.61 V	359	60.1	3.7
2	*5775.00	106.7 PK			3.61 V	359	101.7	5.0
3	*5775.00	94.9 AV			3.61 V	359	89.9	5.0
4	#5929.05	60.6 PK	68.2	-7.6	3.61 V	359	56.3	4.3
5	11550.00	55.8 PK	74.0	-18.2	1.85 V	133	41.8	14.0
6	11550.00	41.6 AV	54.0	-12.4	1.85 V	133	27.6	14.0
7	#17325.00	48.2 PK	74.0	-25.8	3.28 V	131	29.6	18.6
8	#17325.00	35.1 AV	54.0	-18.9	3.28 V	131	16.5	18.6

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.

Below 1GHz Data:

802.11ac (VHT40)

CHANNEL	TX Channel 159	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	62.42	31.2 QP	40.0	-8.8	2.00 H	76	40.2	-9.0
2	95.11	31.2 QP	43.5	-12.3	2.00 H	108	44.7	-13.5
3	164.76	31.1 QP	43.5	-12.4	2.00 H	268	39.1	-8.0
4	300.00	29.2 QP	46.0	-16.8	1.00 H	326	36.8	-7.6
5	375.03	30.2 QP	46.0	-15.8	1.00 H	90	36.0	-5.8
6	499.99	29.4 QP	46.0	-16.6	2.00 H	0	32.2	-2.8
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	225.02	31.7 QP	46.0	-14.3	1.00 V	10	43.3	-11.6
2	275.00	27.4 QP	46.0	-18.6	1.00 V	58	35.7	-8.3
3	375.03	32.2 QP	46.0	-13.8	2.00 V	360	38.0	-5.8
4	716.69	38.5 QP	46.0	-7.5	2.00 V	360	37.4	1.1
5	738.90	41.8 QP	46.0	-4.2	2.00 V	360	39.7	2.1
6	805.56	42.8 QP	46.0	-3.2	2.00 V	360	40.3	2.5

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

1TX Mode

Above 1GHz Data:

Radio 2

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	**FREQ. (MHz)**	**EMISSION LEVEL (dBuV/m)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**ANTENNA HEIGHT (m)**	**TABLE ANGLE (Degree)**	**RAW VALUE (dBuV)**	**CORRECTION FACTOR (dB/m)**
1	5150.00	70.8 PK	74.0	-3.2	1.06 H	57	66.8	4.0
2	5150.00	53.2 AV	54.0	-0.8	1.06 H	57	49.2	4.0
3	*5180.00	112.6 PK			1.06 H	57	108.6	4.0
4	*5180.00	101.5 AV			1.06 H	57	97.5	4.0
5	#10360.00	53.3 PK	74.0	-20.7	1.01 H	89	39.7	13.6
6	#10360.00	41.2 AV	54.0	-12.8	1.01 H	89	27.6	13.6
7	15540.00	44.9 PK	74.0	-29.1	1.57 H	317	31.7	13.2
8	15540.00	33.3 AV	54.0	-20.7	1.57 H	317	20.1	13.2
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	65.9 PK	74.0	-8.1	1.00 V	352	61.9	4.0
2	5150.00	48.9 AV	54.0	-5.1	1.00 V	352	44.9	4.0
3	*5180.00	109.2 PK			1.00 V	352	105.2	4.0
4	*5180.00	97.1 AV			1.00 V	352	93.1	4.0
5	#10360.00	53.6 PK	74.0	-20.4	1.42 V	230	40.0	13.6
6	#10360.00	41.4 AV	54.0	-12.6	1.42 V	230	27.8	13.6
7	15540.00	45.5 PK	74.0	-28.5	1.52 V	186	32.3	13.2
8	15540.00	33.3 AV	54.0	-20.7	1.52 V	186	20.1	13.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	112.3 PK			1.00 H	58	108.3	4.0
2	*5200.00	101.0 AV			1.00 H	58	97.0	4.0
3	#10400.00	52.9 PK	74.0	-21.1	1.04 H	90	39.3	13.6
4	#10400.00	40.8 AV	54.0	-13.2	1.04 H	90	27.2	13.6
5	15600.00	44.9 PK	74.0	-29.1	1.52 H	315	31.5	13.4
6	15600.00	33.2 AV	54.0	-20.8	1.52 H	315	19.8	13.4
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	*5200.00	108.9 PK			1.08 V	356	104.9	4.0
2	*5200.00	96.6 AV			1.08 V	356	92.6	4.0
3	#10400.00	53.5 PK	74.0	-20.5	1.41 V	214	39.9	13.6
4	#10400.00	41.5 AV	54.0	-12.5	1.41 V	214	27.9	13.6
5	15600.00	45.5 PK	74.0	-28.5	1.58 V	191	32.1	13.4
6	15600.00	33.5 AV	54.0	-20.5	1.58 V	191	20.1	13.4

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	112.4 PK			1.02 H	65	108.2	4.2
2	*5240.00	101.5 AV			1.02 H	65	97.3	4.2
3	5350.00	48.2 PK	74.0	-25.8	1.02 H	65	43.8	4.4
4	5350.00	35.9 AV	54.0	-18.1	1.02 H	65	31.5	4.4
5	#10480.00	53.3 PK	74.0	-20.7	1.04 H	83	39.6	13.7
6	#10480.00	41.2 AV	54.0	-12.8	1.04 H	83	27.5	13.7
7	15720.00	45.5 PK	74.0	-28.5	1.49 H	312	31.5	14.0
8	15720.00	33.6 AV	54.0	-20.4	1.49 H	312	19.6	14.0
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	*5240.00	109.5 PK			1.06 V	354	105.3	4.2
2	*5240.00	97.2 AV			1.06 V	354	93.0	4.2
3	5350.00	48.0 PK	74.0	-26.0	1.06 V	354	43.6	4.4
4	5350.00	35.8 AV	54.0	-18.2	1.06 V	354	31.4	4.4
5	#10480.00	52.9 PK	74.0	-21.1	1.36 V	214	39.2	13.7
6	#10480.00	41.0 AV	54.0	-13.0	1.36 V	214	27.3	13.7
7	15720.00	45.2 PK	74.0	-28.8	1.56 V	190	31.2	14.0
8	15720.00	33.1 AV	54.0	-20.9	1.56 V	190	19.1	14.0

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 (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.0 PK	74.0	-7.0	1.00 H	59	63.0	4.0
2	5150.00	53.7 AV	54.0	-0.3	1.00 H	59	49.7	4.0
3	*5180.00	111.7 PK			1.00 H	59	107.7	4.0
4	*5180.00	101.3 AV			1.00 H	59	97.3	4.0
5	#10360.00	53.1 PK	74.0	-20.9	1.06 H	101	39.5	13.6
6	#10360.00	41.0 AV	54.0	-13.0	1.06 H	101	27.4	13.6
7	15540.00	44.9 PK	74.0	-29.1	1.57 H	304	31.7	13.2
8	15540.00	33.4 AV	54.0	-20.6	1.57 H	304	20.2	13.2
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	65.7 PK	74.0	-8.3	1.00 V	356	61.7	4.0
2	5150.00	48.8 AV	54.0	-5.2	1.00 V	356	44.8	4.0
3	*5180.00	109.4 PK			1.00 V	360	105.4	4.0
4	*5180.00	97.2 AV			1.00 V	360	93.2	4.0
5	#10360.00	53.4 PK	74.0	-20.6	1.42 V	223	39.8	13.6
6	#10360.00	41.1 AV	54.0	-12.9	1.42 V	223	27.5	13.6
7	15540.00	44.9 PK	74.0	-29.1	1.54 V	177	31.7	13.2
8	15540.00	33.0 AV	54.0	-21.0	1.54 V	177	19.8	13.2

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.5 PK	74.0	-14.5	1.00 H	61	55.5	4.0
2	5150.00	45.8 AV	54.0	-8.2	1.00 H	61	41.8	4.0
3	*5200.00	112.6 PK			1.00 H	61	108.6	4.0
4	*5200.00	102.3 AV			1.00 H	61	98.3	4.0
5	5350.00	47.9 PK	74.0	-26.1	1.00 H	61	43.5	4.4
6	5350.00	35.7 AV	54.0	-18.3	1.00 H	61	31.3	4.4
7	#10400.00	52.9 PK	74.0	-21.1	1.04 H	90	39.3	13.6
8	#10400.00	40.8 AV	54.0	-13.2	1.04 H	90	27.2	13.6
9	15600.00	44.9 PK	74.0	-29.1	1.52 H	315	31.5	13.4
10	15600.00	33.2 AV	54.0	-20.8	1.52 H	315	19.8	13.4
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	5150.00	55.3 PK	74.0	-18.7	1.05 V	351	51.3	4.0
2	5150.00	41.6 AV	54.0	-12.4	1.05 V	351	37.6	4.0
3	*5200.00	108.1 PK			1.05 V	351	104.1	4.0
4	*5200.00	97.9 AV			1.05 V	351	93.9	4.0
5	5350.00	47.6 PK	74.0	-26.4	1.05 V	351	43.2	4.4
6	5350.00	35.5 AV	54.0	-18.5	1.05 V	351	31.1	4.4
7	#10400.00	53.5 PK	74.0	-20.5	1.44 V	214	39.9	13.6
8	#10400.00	41.5 AV	54.0	-12.5	1.44 V	214	27.9	13.6
9	15600.00	45.5 PK	74.0	-28.5	1.58 V	191	32.1	13.4
10	15600.00	33.5 AV	54.0	-20.5	1.58 V	191	20.1	13.4

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	113.0 PK			1.06 H	66	108.8	4.2
2	*5240.00	102.0 AV			1.06 H	66	97.8	4.2
3	5350.00	48.3 PK	74.0	-25.7	1.06 H	66	43.9	4.4
4	5350.00	35.8 AV	54.0	-18.2	1.06 H	66	31.4	4.4
5	#10480.00	52.8 PK	74.0	-21.2	1.08 H	95	39.1	13.7
6	#10480.00	40.5 AV	54.0	-13.5	1.08 H	95	26.8	13.7
7	15720.00	45.3 PK	74.0	-28.7	1.50 H	306	31.3	14.0
8	15720.00	33.5 AV	54.0	-20.5	1.50 H	306	19.5	14.0
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	*5240.00	108.4 PK			1.05 V	360	104.2	4.2
2	*5240.00	98.2 AV			1.05 V	360	94.0	4.2
3	5350.00	47.9 PK	74.0	-26.1	1.05 V	360	43.5	4.4
4	5350.00	35.5 AV	54.0	-18.5	1.05 V	360	31.1	4.4
5	#10480.00	53.8 PK	74.0	-20.2	1.42 V	227	40.1	13.7
6	#10480.00	41.1 AV	54.0	-12.9	1.42 V	227	27.4	13.7
7	15720.00	45.7 PK	74.0	-28.3	1.57 V	178	31.7	14.0
8	15720.00	33.9 AV	54.0	-20.1	1.57 V	178	19.9	14.0

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 (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	68.5 PK	74.0	-5.5	1.00 H	69	64.5	4.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.00 H**	**69**	**49.9**	**4.0**
3	*5190.00	107.7 PK			1.00 H	69	103.7	4.0
4	*5190.00	96.5 AV			1.00 H	69	92.5	4.0
5	5350.00	47.9 PK	74.0	-26.1	1.00 H	69	43.5	4.4
6	5350.00	36.0 AV	54.0	-18.0	1.00 H	69	31.6	4.4
7	#10380.00	50.1 PK	74.0	-23.9	1.04 H	70	36.5	13.6
8	#10380.00	38.1 AV	54.0	-15.9	1.04 H	70	24.5	13.6
9	15570.00	46.0 PK	74.0	-28.0	1.56 H	300	32.7	13.3
10	15570.00	34.4 AV	54.0	-19.6	1.56 H	300	21.1	13.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.4 PK	74.0	-8.6	1.09 V	22	61.4	4.0
2	5150.00	49.5 AV	54.0	-4.5	1.09 V	22	45.5	4.0
3	*5190.00	105.3 PK			1.09 V	22	101.3	4.0
4	*5190.00	94.3 AV			1.09 V	22	90.3	4.0
5	5350.00	48.2 PK	74.0	-25.8	1.09 V	22	43.8	4.4
6	5350.00	35.8 AV	54.0	-18.2	1.09 V	22	31.4	4.4
7	#10380.00	50.8 PK	74.0	-23.2	1.41 V	208	37.2	13.6
8	#10380.00	38.5 AV	54.0	-15.5	1.41 V	208	24.9	13.6
9	15570.00	44.9 PK	74.0	-29.1	1.58 V	162	31.6	13.3
10	15570.00	33.4 AV	54.0	-20.6	1.58 V	162	20.1	13.3

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.3 PK	74.0	-13.7	1.00 H	63	56.3	4.0
2	5150.00	48.3 AV	54.0	-5.7	1.00 H	63	44.3	4.0
3	*5230.00	110.0 PK			1.00 H	63	105.8	4.2
4	*5230.00	98.0 AV			1.00 H	63	93.8	4.2
5	5350.00	48.8 PK	74.0	-25.2	1.00 H	63	44.4	4.4
6	5350.00	36.0 AV	54.0	-18.0	1.00 H	63	31.6	4.4
7	#10460.00	52.2 PK	74.0	-21.8	1.12 H	82	38.5	13.7
8	#10460.00	39.8 AV	54.0	-14.2	1.12 H	82	26.1	13.7
9	15690.00	45.5 PK	74.0	-28.5	1.54 H	317	31.5	14.0
10	15690.00	33.9 AV	54.0	-20.1	1.54 H	317	19.9	14.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.1 PK	74.0	-17.9	1.06 V	24	52.1	4.0
2	5150.00	44.2 AV	54.0	-9.8	1.06 V	24	40.2	4.0
3	*5230.00	107.6 PK			1.06 V	24	103.4	4.2
4	*5230.00	95.8 AV			1.06 V	24	91.6	4.2
5	5350.00	48.2 PK	74.0	-25.8	1.06 V	24	43.8	4.4
6	5350.00	35.8 AV	54.0	-18.2	1.06 V	24	31.4	4.4
7	#10460.00	53.0 PK	74.0	-21.0	1.31 V	202	39.3	13.7
8	#10460.00	40.5 AV	54.0	-13.5	1.31 V	202	26.8	13.7
9	15690.00	45.2 PK	74.0	-28.8	1.54 V	165	31.2	14.0
10	15690.00	33.6 AV	54.0	-20.4	1.54 V	165	19.6	14.0

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) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.1 PK	74.0	-6.9	1.03 H	66	63.1	4.0
2	5150.00	53.8 AV	54.0	-0.2	1.03 H	66	49.8	4.0
3	*5210.00	101.5 PK			1.03 H	66	97.4	4.1
4	*5210.00	92.1 AV			1.03 H	66	88.0	4.1
5	5350.00	47.9 PK	74.0	-26.1	1.03 H	66	43.5	4.4
6	5350.00	36.5 AV	54.0	-17.5	1.03 H	66	32.1	4.4
7	#10420.00	49.5 PK	74.0	-24.5	1.06 H	84	35.9	13.6
8	#10420.00	36.3 AV	54.0	-17.7	1.06 H	84	22.7	13.6
9	15630.00	45.6 PK	74.0	-28.4	1.49 H	309	32.0	13.6
10	15630.00	34.2 AV	54.0	-19.8	1.49 H	309	20.6	13.6
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	63.3 PK	74.0	-10.7	1.11 V	21	59.3	4.0
2	5150.00	49.7 AV	54.0	-4.3	1.11 V	21	45.7	4.0
3	*5210.00	99.6 PK			1.11 V	21	95.5	4.1
4	*5210.00	89.7 AV			1.11 V	21	85.6	4.1
5	5350.00	48.2 PK	74.0	-25.8	1.11 V	21	43.8	4.4
6	5350.00	35.8 AV	54.0	-18.2	1.11 V	21	31.4	4.4
7	#10420.00	49.7 PK	74.0	-24.3	1.44 V	209	36.1	13.6
8	#10420.00	36.5 AV	54.0	-17.5	1.44 V	209	22.9	13.6
9	15630.00	44.8 PK	74.0	-29.2	1.62 V	167	31.2	13.6
10	15630.00	33.3 AV	54.0	-20.7	1.62 V	167	19.7	13.6

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.

Radio 1

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5568.52	59.1 PK	68.2	-9.1	1.15 H	255	55.6	3.5
2	*5745.00	116.3 PK			1.15 H	255	111.3	5.0
3	*5745.00	104.5 AV			1.15 H	255	99.5	5.0
4	#5935.23	60.1 PK	68.2	-8.1	1.15 H	255	55.8	4.3
5	11490.00	62.0 PK	74.0	-12.0	2.10 H	168	47.9	14.1
6	11490.00	47.9 AV	54.0	-6.1	2.10 H	168	33.8	14.1
7	#17235.00	53.3 PK	74.0	-20.7	1.10 H	209	35.0	18.3
8	#17235.00	40.8 AV	54.0	-13.2	1.10 H	209	22.5	18.3
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	#5597.98	57.1 PK	68.2	-11.1	1.75 V	267	53.5	3.6
2	*5745.00	111.0 PK			1.75 V	267	106.0	5.0
3	*5745.00	98.9 AV			1.75 V	267	93.9	5.0
4	#6011.70	57.2 PK	68.2	-11.0	1.75 V	267	52.7	4.5
5	11490.00	54.5 PK	74.0	-19.5	4.00 V	207	40.4	14.1
6	11490.00	42.0 AV	54.0	-12.0	4.00 V	207	27.9	14.1
7	#17235.00	52.7 PK	74.0	-21.3	2.42 V	167	34.4	18.3
8	#17235.00	41.2 AV	54.0	-12.8	2.42 V	167	22.9	18.3

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5572.32	58.7 PK	68.2	-9.5	1.18 H	259	55.2	3.5
2	*5785.00	116.7 PK			1.18 H	259	111.7	5.0
3	*5785.00	104.6 AV			1.18 H	259	99.6	5.0
4	#5965.62	58.3 PK	68.2	-9.9	1.18 H	259	53.9	4.4
5	11570.00	62.2 PK	74.0	-11.8	2.12 H	182	48.2	14.0
6	11570.00	48.1 AV	54.0	-5.9	2.12 H	182	34.1	14.0
7	#17355.00	53.7 PK	74.0	-20.3	1.07 H	196	34.8	18.9
8	#17355.00	41.0 AV	54.0	-13.0	1.07 H	196	22.1	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	#5589.90	57.4 PK	68.2	-10.8	1.74 V	266	53.8	3.6
2	*5785.00	110.8 PK			1.74 V	266	105.8	5.0
3	*5785.00	99.0 AV			1.74 V	266	94.0	5.0
4	#5943.30	58.2 PK	68.2	-10.0	1.74 V	266	53.9	4.3
5	11570.00	54.7 PK	74.0	-19.3	3.96 V	219	40.7	14.0
6	11570.00	42.4 AV	54.0	-11.6	3.96 V	219	28.4	14.0
7	#17355.00	52.8 PK	74.0	-21.2	2.45 V	156	33.9	18.9
8	#17355.00	41.1 AV	54.0	-12.9	2.45 V	156	22.2	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5581.82	57.9 PK	68.2	-10.3	1.21 H	261	54.3	3.6
2	*5825.00	117.0 PK			1.21 H	261	111.8	5.2
3	*5825.00	104.2 AV			1.21 H	261	99.0	5.2
4	#5941.40	59.2 PK	68.2	-9.0	1.21 H	261	54.9	4.3
5	11650.00	62.5 PK	74.0	-11.5	2.12 H	165	48.4	14.1
6	11650.00	48.3 AV	54.0	-5.7	2.12 H	165	34.2	14.1
7	#17475.00	53.8 PK	74.0	-20.2	1.05 H	199	34.1	19.7
8	#17475.00	41.0 AV	54.0	-13.0	1.05 H	199	21.3	19.7
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	#5644.52	57.3 PK	68.2	-10.9	1.76 V	257	53.6	3.7
2	*5825.00	110.5 PK			1.76 V	257	105.3	5.2
3	*5825.00	99.3 AV			1.76 V	257	94.1	5.2
4	#6011.70	58.1 PK	68.2	-10.1	1.76 V	257	53.6	4.5
5	11650.00	55.0 PK	74.0	-19.0	3.99 V	219	40.9	14.1
6	11650.00	42.2 AV	54.0	-11.8	3.99 V	219	28.1	14.1
7	#17475.00	52.4 PK	74.0	-21.6	2.36 V	177	32.7	19.7
8	#17475.00	40.9 AV	54.0	-13.1	2.36 V	177	21.2	19.7

REMARKS:

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

802.11ac (VHT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5598.45	58.6 PK	68.2	-9.6	1.00 H	293	55.0	3.6
2	*5745.00	117.1 PK			1.00 H	293	112.1	5.0
3	*5745.00	105.9 AV			1.00 H	293	100.9	5.0
4	#5952.80	58.9 PK	68.2	-9.3	1.00 H	293	54.6	4.3
5	11490.00	61.9 PK	74.0	-12.1	2.13 H	180	47.8	14.1
6	11490.00	48.0 AV	54.0	-6.0	2.13 H	180	33.9	14.1
7	#17235.00	53.4 PK	74.0	-20.6	1.03 H	192	35.1	18.3
8	#17235.00	40.7 AV	54.0	-13.3	1.03 H	192	22.4	18.3
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	#5587.52	57.7 PK	68.2	-10.5	1.71 V	261	54.1	3.6
2	*5745.00	110.2 PK			1.71 V	261	105.2	5.0
3	*5745.00	99.0 AV			1.71 V	261	94.0	5.0
4	#5973.70	58.0 PK	68.2	-10.2	1.71 V	261	53.6	4.4
5	11490.00	54.8 PK	74.0	-19.2	3.96 V	224	40.7	14.1
6	11490.00	42.3 AV	54.0	-11.7	3.96 V	224	28.2	14.1
7	#17235.00	52.4 PK	74.0	-21.6	2.38 V	175	34.1	18.3
8	#17235.00	41.2 AV	54.0	-12.8	2.38 V	175	22.9	18.3

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5627.90	57.5 PK	68.2	-10.7	1.05 H	288	53.8	3.7
2	*5785.00	116.2 PK			1.05 H	288	111.2	5.0
3	*5785.00	105.3 AV			1.05 H	288	100.3	5.0
4	#5947.57	57.7 PK	68.2	-10.5	1.05 H	288	53.4	4.3
5	11570.00	62.1 PK	74.0	-11.9	2.15 H	155	48.1	14.0
6	11570.00	48.2 AV	54.0	-5.8	2.15 H	155	34.2	14.0
7	#17355.00	54.1 PK	74.0	-19.9	1.09 H	192	35.2	18.9
8	#17355.00	41.1 AV	54.0	-12.9	1.09 H	192	22.2	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	#5596.55	58.7 PK	68.2	-9.5	1.73 V	260	55.1	3.6
2	*5785.00	110.1 PK			1.73 V	260	105.1	5.0
3	*5785.00	99.5 AV			1.73 V	260	94.5	5.0
4	#5958.02	58.2 PK	68.2	-10.0	1.73 V	260	53.8	4.4
5	11570.00	55.2 PK	74.0	-18.8	4.00 V	235	41.2	14.0
6	11570.00	42.6 AV	54.0	-11.4	4.00 V	235	28.6	14.0
7	#17355.00	52.8 PK	74.0	-21.2	2.30 V	189	33.9	18.9
8	#17355.00	41.3 AV	54.0	-12.7	2.30 V	189	22.4	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5613.65	57.7 PK	68.2	-10.5	1.08 H	292	54.0	3.7
2	*5825.00	116.8 PK			1.08 H	292	111.6	5.2
3	*5825.00	105.6 AV			1.08 H	292	100.4	5.2
4	#5953.75	58.5 PK	68.2	-9.7	1.08 H	292	54.2	4.3
5	11650.00	63.0 PK	74.0	-11.0	2.11 H	154	48.9	14.1
6	11650.00	48.7 AV	54.0	-5.3	2.11 H	154	34.6	14.1
7	#17475.00	54.0 PK	74.0	-20.0	1.08 H	211	34.3	19.7
8	#17475.00	41.4 AV	54.0	-12.6	1.08 H	211	21.7	19.7
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	#5608.43	59.9 PK	68.2	-8.3	1.75 V	264	56.2	3.7
2	*5825.00	110.4 PK			1.75 V	264	105.2	5.2
3	*5825.00	99.7 AV			1.75 V	264	94.5	5.2
4	#5933.80	59.0 PK	68.2	-9.2	1.75 V	264	54.7	4.3
5	11650.00	54.6 PK	74.0	-19.4	3.95 V	226	40.5	14.1
6	11650.00	41.7 AV	54.0	-12.3	3.95 V	226	27.6	14.1
7	#17475.00	52.9 PK	74.0	-21.1	2.31 V	185	33.2	19.7
8	#17475.00	41.3 AV	54.0	-12.7	2.31 V	185	21.6	19.7

REMARKS:

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

802.11ac (VHT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5647.55	60.9 PK	68.2	-7.3	1.00 H	295	57.2	3.7
2	*5755.00	113.6 PK			1.00 H	295	108.6	5.0
3	*5755.00	102.7 AV			1.00 H	295	97.7	5.0
4	#5927.90	58.5 PK	68.2	-9.7	1.00 H	295	54.2	4.3
5	11510.00	61.8 PK	74.0	-12.2	2.18 H	167	47.8	14.0
6	11510.00	47.6 AV	54.0	-6.4	2.18 H	167	33.6	14.0
7	#17265.00	54.0 PK	74.0	-20.0	1.13 H	194	35.5	18.5
8	#17265.00	41.5 AV	54.0	-12.5	1.13 H	194	23.0	18.5
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	#5627.72	58.4 PK	68.2	-9.8	1.79 V	269	54.7	3.7
2	*5755.00	107.1 PK			1.79 V	269	102.1	5.0
3	*5755.00	96.3 AV			1.79 V	269	91.3	5.0
4	#5978.73	58.3 PK	68.2	-9.9	1.79 V	269	53.9	4.4
5	11510.00	54.4 PK	74.0	-19.6	3.90 V	219	40.4	14.0
6	11510.00	41.5 AV	54.0	-12.5	3.90 V	219	27.5	14.0
7	#17265.00	53.1 PK	74.0	-20.9	2.30 V	184	34.6	18.5
8	#17265.00	41.7 AV	54.0	-12.3	2.30 V	184	23.2	18.5

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5631.90	58.9 PK	68.2	-9.3	1.00 H	299	55.2	3.7
2	*5795.00	113.4 PK			1.00 H	299	108.3	5.1
3	*5795.00	102.0 AV			1.00 H	299	96.9	5.1
4	#5934.81	58.6 PK	68.2	-9.6	1.00 H	299	54.3	4.3
5	11590.00	62.8 PK	74.0	-11.2	2.19 H	167	48.8	14.0
6	11590.00	48.4 AV	54.0	-5.6	2.19 H	167	34.4	14.0
7	#17385.00	54.5 PK	74.0	-19.5	1.05 H	197	35.4	19.1
8	#17385.00	41.6 AV	54.0	-12.4	1.05 H	197	22.5	19.1
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	#5597.37	58.1 PK	68.2	-10.1	1.81 V	266	54.5	3.6
2	*5795.00	107.0 PK			1.81 V	266	101.9	5.1
3	*5795.00	96.1 AV			1.81 V	266	91.0	5.1
4	#5933.62	58.7 PK	68.2	-9.5	1.81 V	266	54.4	4.3
5	11590.00	54.2 PK	74.0	-19.8	3.91 V	221	40.2	14.0
6	11590.00	41.2 AV	54.0	-12.8	3.91 V	221	27.2	14.0
7	#17385.00	53.2 PK	74.0	-20.8	2.29 V	189	34.1	19.1
8	#17385.00	41.6 AV	54.0	-12.4	2.29 V	189	22.5	19.1

REMARKS:

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

802.11ac (VHT80)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5648.17	67.5 PK	68.2	-0.7	1.00 H	292	63.8	3.7
2	*5775.00	109.3 PK			1.00 H	292	104.3	5.0
3	*5775.00	99.2 AV			1.00 H	292	94.2	5.0
4	#5934.57	62.8 PK	68.2	-5.4	1.00 H	292	58.5	4.3
5	11550.00	60.8 PK	74.0	-13.2	2.10 H	185	46.8	14.0
6	11550.00	46.5 AV	54.0	-7.5	2.10 H	185	32.5	14.0
7	#17325.00	55.9 PK	74.0	-18.1	1.01 H	209	37.3	18.6
8	#17325.00	42.7 AV	54.0	-11.3	1.01 H	209	24.1	18.6
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	#5649.07	61.5 PK	68.2	-6.7	1.77 V	258	57.8	3.7
2	*5775.00	103.1 PK			1.77 V	258	98.1	5.0
3	*5775.00	93.6 AV			1.77 V	258	88.6	5.0
4	#5984.27	58.5 PK	68.2	-9.7	1.77 V	258	54.1	4.4
5	11550.00	54.5 PK	74.0	-19.5	3.86 V	207	40.5	14.0
6	11550.00	41.4 AV	54.0	-12.6	3.86 V	207	27.4	14.0
7	#17325.00	53.4 PK	74.0	-20.6	2.24 V	183	34.8	18.6
8	#17325.00	41.6 AV	54.0	-12.4	2.24 V	183	23.0	18.6

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.

4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 13, 2016	June 12, 2017
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 20, 2016	June 19, 2017
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:
1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. 1.
3 Tested Date: Mar. 31, 2017

4.2.3 Test Procedure

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

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

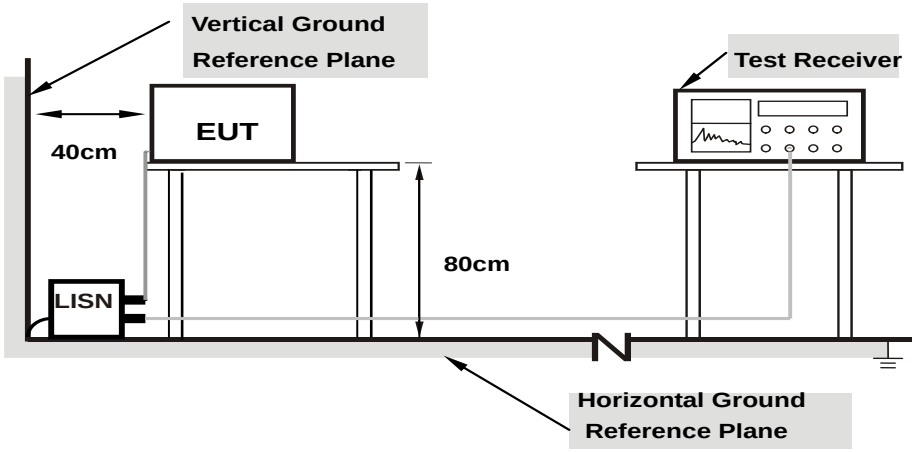
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Condition

Same as 4.1.6.

4.2.7 Test Results

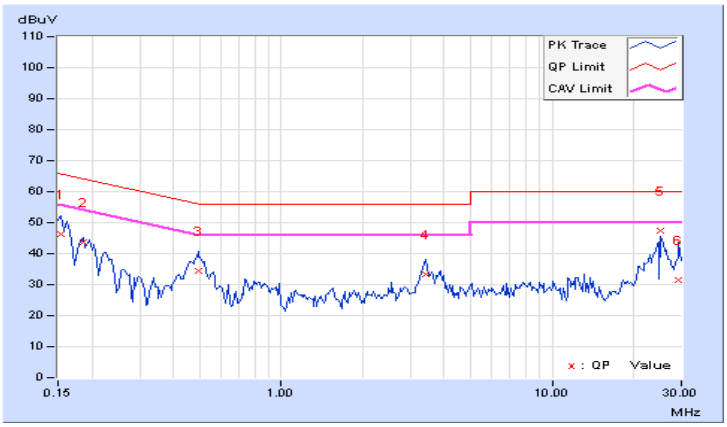
Radio 2

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.19	36.23	25.48	46.42	35.67	65.79	55.79	-19.37	-20.12
2	0.18516	10.19	33.58	24.43	43.77	34.62	64.25	54.25	-20.48	-19.63
3	0.49375	10.23	24.37	17.70	34.60	27.93	56.10	46.10	-21.50	-18.17
4	3.39844	10.24	23.14	12.44	33.38	22.68	56.00	46.00	-22.62	-23.32
5	25.12109	11.43	35.85	33.70	47.28	45.13	60.00	50.00	-12.72	-4.87
6	29.36719	11.46	19.84	-0.46	31.30	11.00	60.00	50.00	-28.70	-39.00

REMARKS:

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

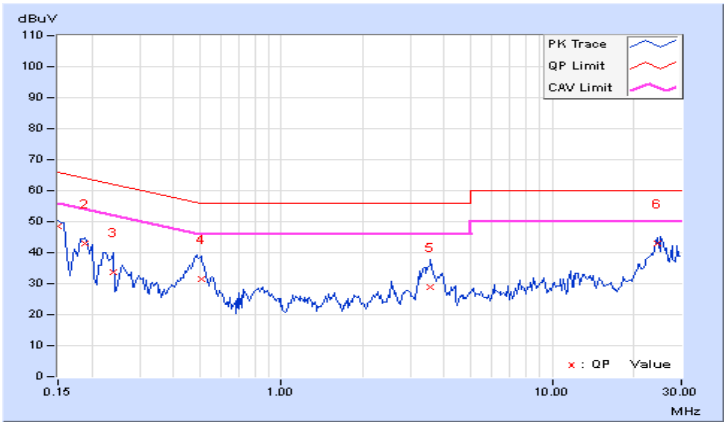


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.18	38.44	29.14	48.62	39.32	66.00	56.00	-17.38	-16.68
2	0.18906	10.16	32.89	23.31	43.05	33.47	64.08	54.08	-21.03	-20.61
3	0.23984	10.17	23.38	4.61	33.55	14.78	62.10	52.10	-28.55	-37.32
4	0.50547	10.21	21.40	13.27	31.61	23.48	56.00	46.00	-24.39	-22.52
5	3.56250	10.19	18.74	11.83	28.93	22.02	56.00	46.00	-27.07	-23.98
6	24.39063	11.08	31.71	30.77	42.79	41.85	60.00	50.00	-17.21	-8.15

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.



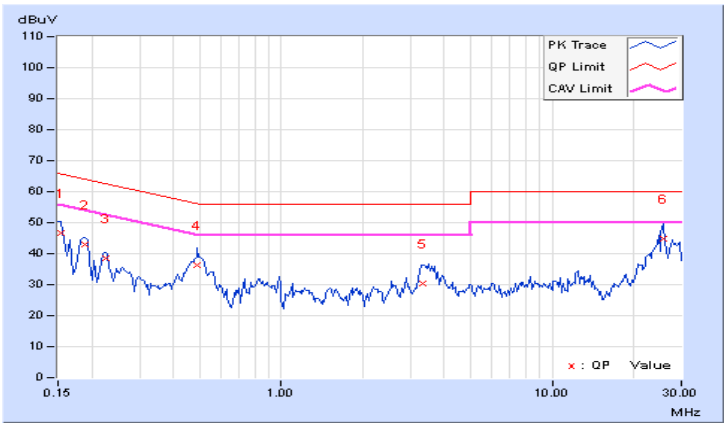
Radio 1

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

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.19	36.51	25.93	46.70	36.12	65.79	55.79	-19.09	-19.67
2	0.18906	10.19	32.85	23.94	43.04	34.13	64.08	54.08	-21.04	-19.95
3	0.22422	10.19	28.36	19.44	38.55	29.63	62.66	52.66	-24.11	-23.03
4	0.48984	10.23	26.03	20.60	36.26	30.83	56.17	46.17	-19.91	-15.34
5	3.33984	10.24	20.26	13.86	30.50	24.10	56.00	46.00	-25.50	-21.90
6	25.60822	11.43	33.55	31.22	44.98	42.65	60.00	50.00	-15.02	-7.35

REMARKS:

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

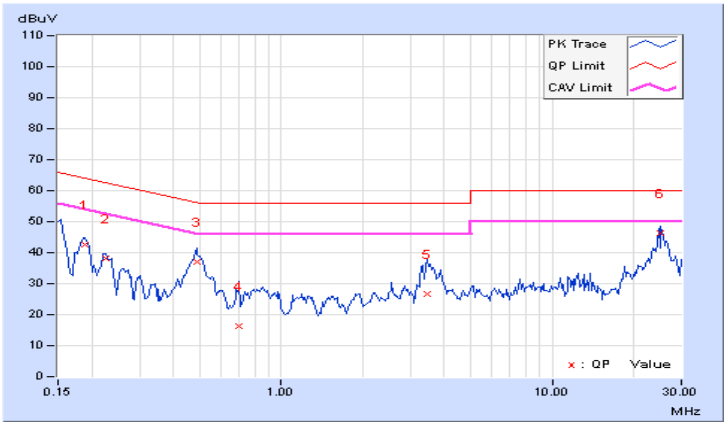


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.18906	10.16	32.54	23.22	42.70	33.38	64.08	54.08	-21.38	-20.70
2	0.22422	10.17	27.98	18.09	38.15	28.26	62.66	52.66	-24.51	-24.40
3	0.48594	10.21	26.96	23.80	37.17	34.01	56.24	46.24	-19.07	-12.23
4	0.70078	10.22	6.15	-1.38	16.37	8.84	56.00	46.00	-39.63	-37.16
5	3.46875	10.19	16.41	14.65	26.60	24.84	56.00	46.00	-29.40	-21.16
6	**25.11856**	**11.07**	**35.06**	**34.45**	**46.13**	**45.52**	**60.00**	**50.00**	**-13.87**	**-4.48**

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 Measurment

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 ≦ 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

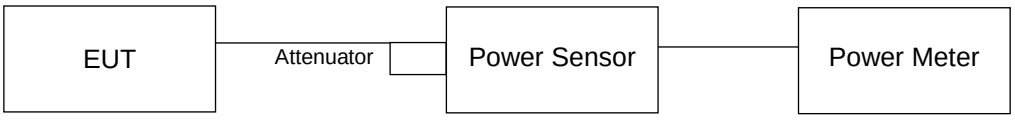
*B is the 26 dB emission bandwidth in megahertz

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

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

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.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Condition

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

4.3.7 Test Result

2TX Mode

Radio 2

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.34	19.26	170.234	22.31	30.00	Pass
40	5200	20.43	20.16	214.161	23.31	30.00	Pass
48	5240	19.27	18.83	160.912	22.07	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.10	19.14	163.318	22.13	30.00	Pass
40	5200	20.16	20.17	207.745	23.18	30.00	Pass
48	5240	19.26	18.76	159.495	22.03	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	16.01	15.63	76.461	18.83	30.00	Pass
46	5230	19.26	18.84	160.893	22.07	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.04	11.80	31.132	14.93	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	19.10	19.14	163.318	22.13	27.73	Pass
40	5200	20.16	20.17	207.745	23.18	27.73	Pass
48	5240	19.26	18.76	159.495	22.03	27.73	Pass

Note: 1. Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 8.27dBi > 6dBi , so the power limit shall be reduced to 30-(8.27-6) = 27.73dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	16.01	15.63	76.461	18.83	27.73	Pass
46	5230	19.26	18.84	160.893	22.07	27.73	Pass

Note: 1. Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 8.27dBi > 6dBi , so the power limit shall be reduced to 30-(8.27-6) = 27.73dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	12.04	11.80	31.132	14.93	27.73	Pass

Note: 1. Directional gain = 10 log[($10^{G1/20}$ + $10^{G2/20}$)^2 / 2] = 8.27dBi > 6dBi , so the power limit shall be reduced to 30-(8.27-6) = 27.73dBm.

Radio 1

CDD Mode

802.11a

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	25.24	25.03	652.615	28.15	29.21	Pass
157	5785	24.06	24.66	547.098	27.38	29.21	Pass
165	5825	25.91	24.63	680.344	28.33	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	25.15	24.98	642.116	28.08	29.21	Pass
157	5785	24.08	24.62	545.593	27.37	29.21	Pass
165	5825	25.87	24.63	676.769	28.30	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	24.73	25.20	628.298	27.98	29.21	Pass
159	5795	25.70	25.01	688.492	28.38	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	22.91	21.73	344.37	25.37	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

Beamforming Mode

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	22.52	22.47	355.253	25.51	26.51	Pass
157	5785	22.68	22.86	378.55	25.78	26.51	Pass
165	5825	22.77	21.98	346.995	25.40	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power limit shall be reduced to 30-(9.49-6) = 26.51dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
151	5755	23.12	23.20	414.046	26.17	26.51	Pass
159	5795	22.40	21.80	325.136	25.12	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power limit shall be reduced to 30-(9.49-6) = 26.51dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	22.91	21.73	344.37	25.37	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power limit shall be reduced to 30-(9.49-6) = 26.51dBm.

1TX Mode

Radio 2

802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
36	5180	131.522	21.19	30.00	Pass
40	5200	133.968	21.27	30.00	Pass
48	5240	122.462	20.88	30.00	Pass

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
36	5180	126.474	21.02	30.00	Pass
40	5200	146.218	21.65	30.00	Pass
48	5240	122.18	20.87	30.00	Pass

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
38	5190	72.611	18.61	30.00	Pass
46	5230	102.329	20.10	30.00	Pass

802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
42	5210	40.458	16.07	30.00	Pass

Radio 1

802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
149	5745	334.195	25.24	29.21	Pass
157	5785	254.683	24.06	29.21	Pass
165	5825	389.942	25.91	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
149	5745	327.341	25.15	29.21	Pass
157	5785	255.859	24.08	29.21	Pass
165	5825	386.367	25.87	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

802.11ac (VHT40)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
151	5755	297.167	24.73	29.21	Pass
159	5795	371.535	25.70	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

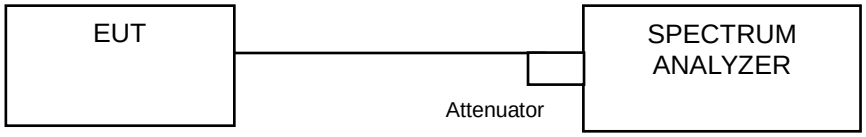
802.11ac (VHT80)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass/Fail
155	5775	271.019	24.33	29.21	Pass

Note: 1. The max.antenna gain is 6.79dBi > 6dBi, therefore the limit needs to reduce, so the power limit shall be reduced to 30-(6.79-6) = 29.21dBm.

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to SAMPLE. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 %of the total mean power of a given emission.

4.4.4 Test Results

2TX Mode

Radio 2

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
36	5180	16.56	16.44
40	5200	17.04	17.40
48	5240	17.76	17.76

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
36	5180	17.64	17.76
40	5200	17.88	18.36
48	5240	18.60	18.12

802.11ac (VHT40)

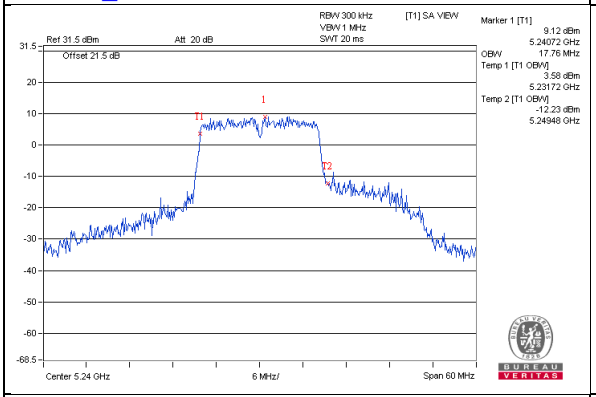
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
38	5190	36.48	36.48
46	5230	36.96	37.20

802.11ac (VHT80)

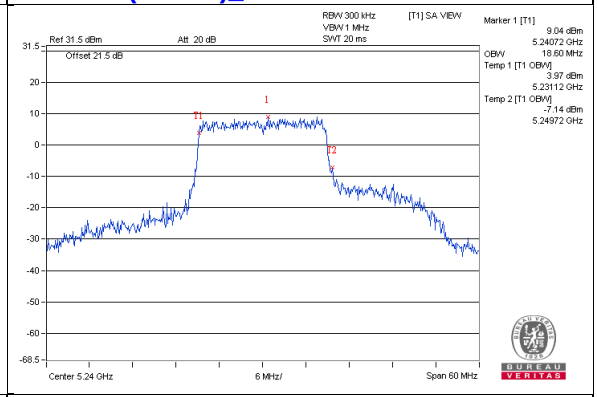
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
42	5210	76.32	76.32

Spectrum Plot of Worst Value

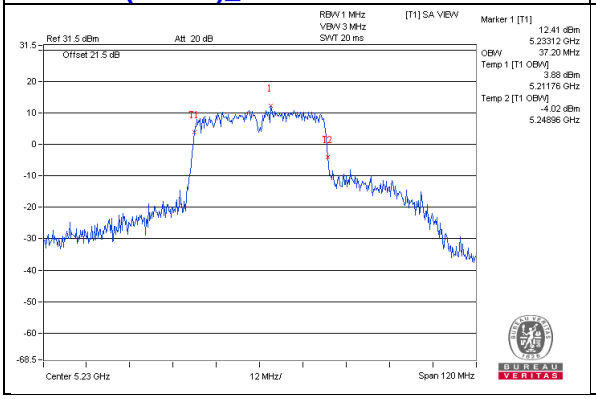
802.11a_Chain0 / CH48



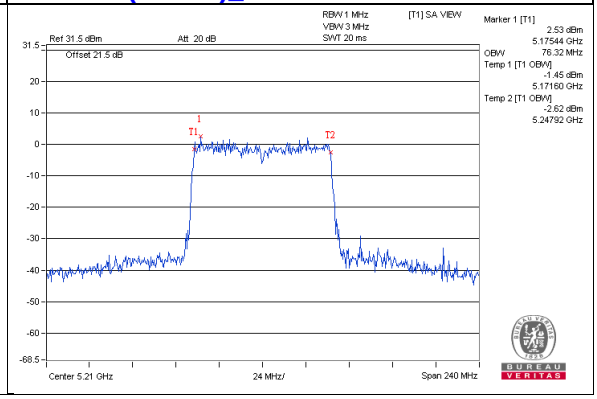
802.11ac (VHT20)_Chain0 / CH48



802.11ac (VHT40)_Chain1 / CH46



802.11ac (VHT80)_Chain0 / CH42



Radio 1

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
149	5745	17.16	17.04
157	5785	17.76	17.64
165	5825	31.92	17.88

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
149	5745	18.00	18.12
157	5785	18.84	18.72
165	5825	34.68	18.84

802.11ac (VHT40)

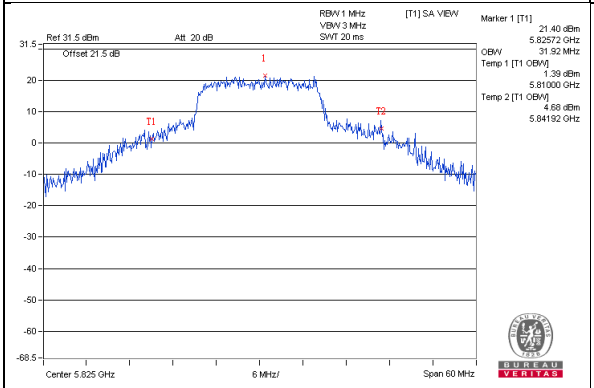
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
151	5755	36.96	37.20
159	5795	59.52	36.96

802.11ac (VHT80)

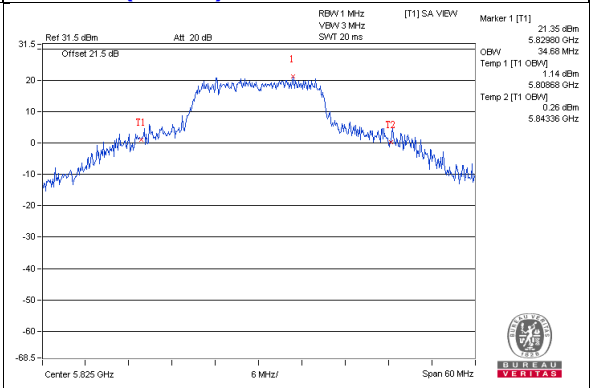
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		CHAIN 0	CHAIN 1
155	5775	75.84	75.84

Spectrum Plot of Worst Value

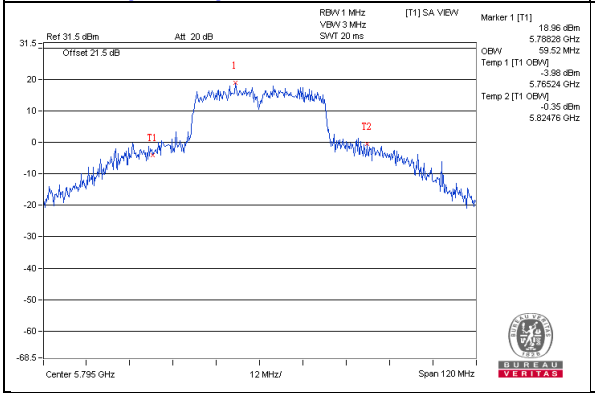
802.11a_Chain0 / CH165



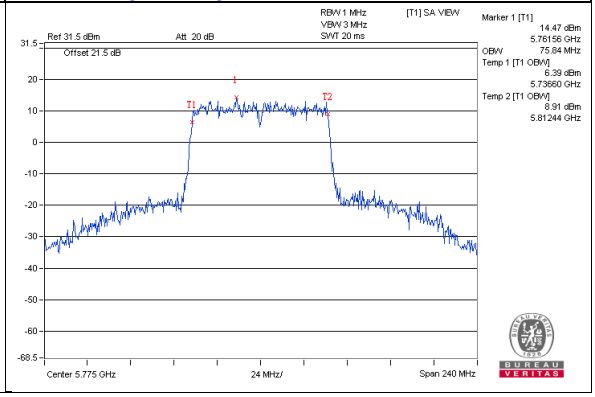
802.11ac (VHT20)_Chain0 / CH165



802.11ac (VHT40)_Chain0 / CH159



802.11ac (VHT80)_Chain0 / CH155



1TX Mode

Radio 2

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.64
40	5200	18.96
48	5240	18.36

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	18.60
40	5200	19.32
48	5240	18.96

802.11ac (VHT40)

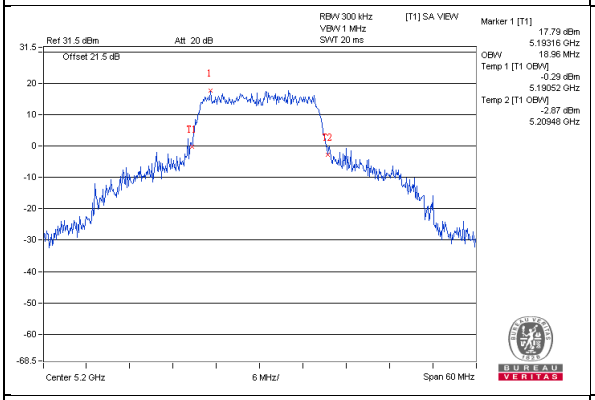
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.24
46	5230	36.96

802.11ac (VHT80)

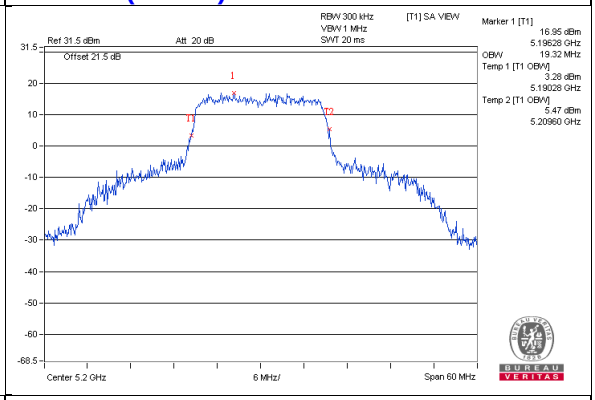
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	76.32

Spectrum Plot of Worst Value

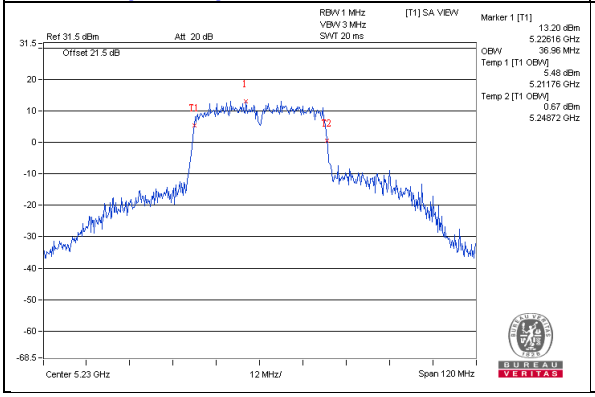
802.11a / CH40



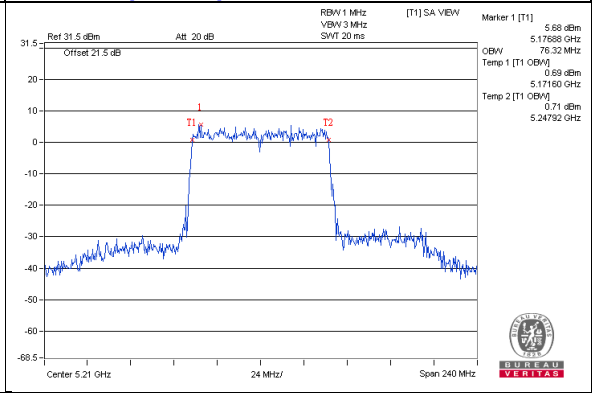
802.11ac (VHT20) / CH40



802.11ac (VHT40) / CH46



802.11ac (VHT80) / CH42



Radio 1

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
149	5745	17.16
157	5785	17.76
165	5825	31.92

802.11ac (VHT20)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
149	5745	18.00
157	5785	18.84
165	5825	34.68

802.11ac (VHT40)

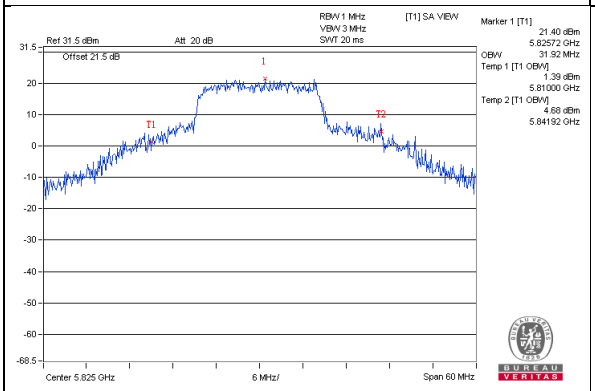
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
151	5755	36.96
159	5795	59.52

802.11ac (VHT80)

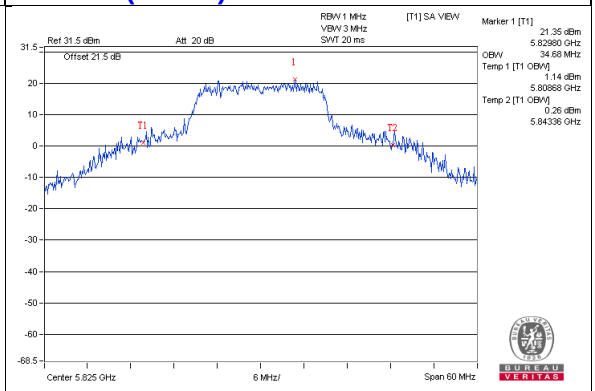
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
155	5775	77.76

Spectrum Plot of Worst Value

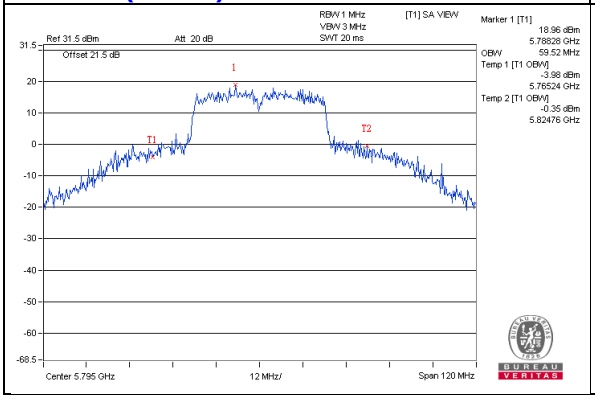
802.11a / CH165



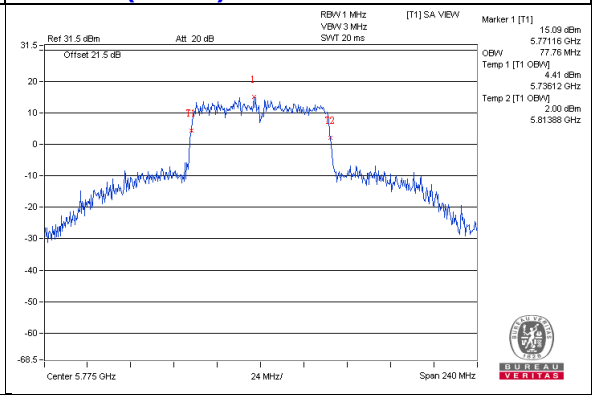
802.11ac (VHT20) / CH165



802.11ac (VHT40) / CH159



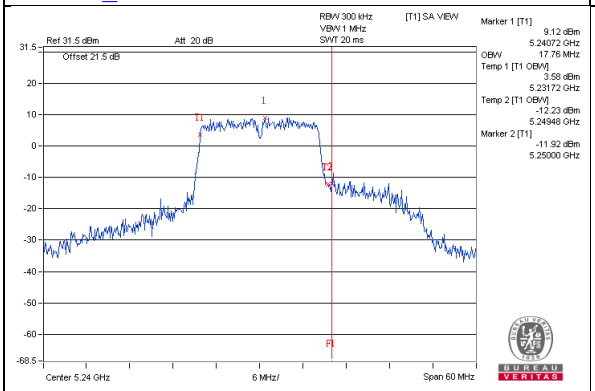
802.11ac (VHT80) / CH155



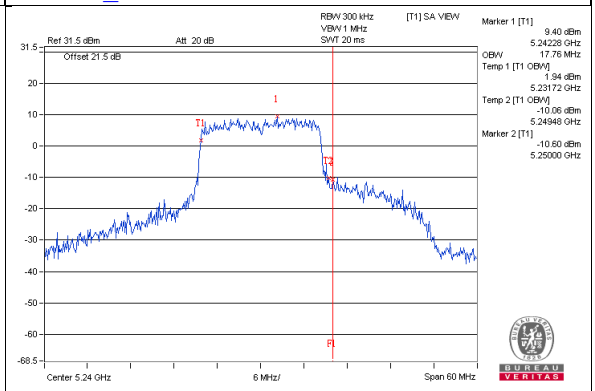
2TX Mode

Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2A band)

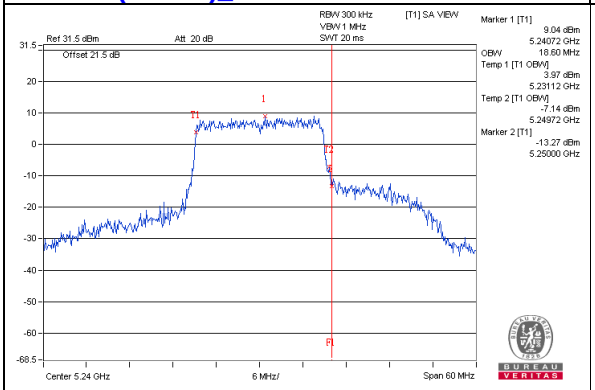
802.11a_Chain0 / CH48



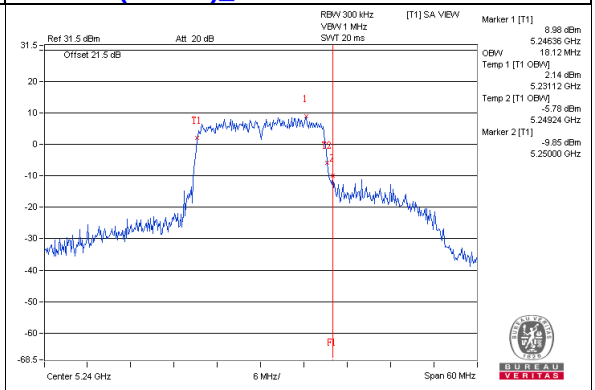
802.11a_Chain1 / CH48



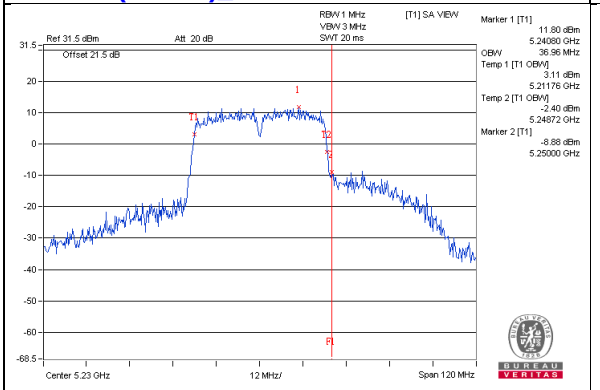
802.11ac(VHT20)_Chain0 / CH48



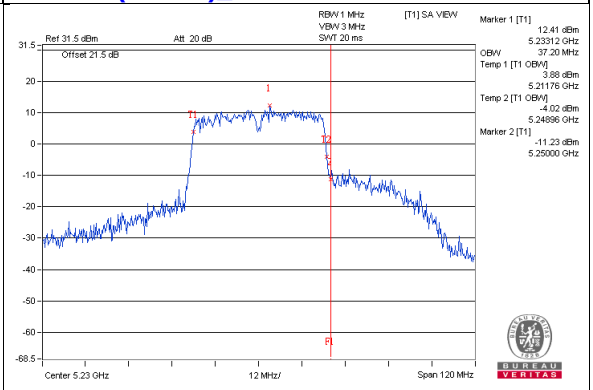
802.11ac(VHT20)_Chain1 / CH48



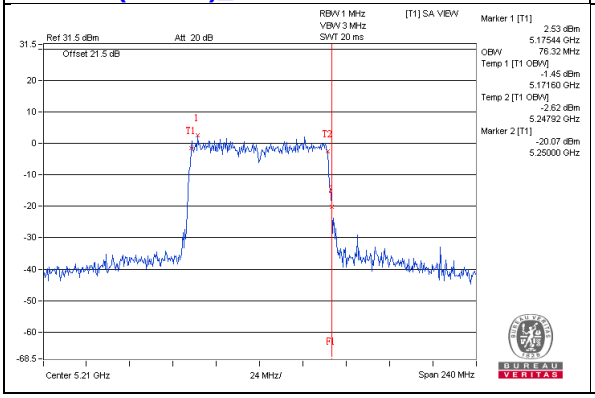
802.11ac(VHT40)_Chain0 / CH46



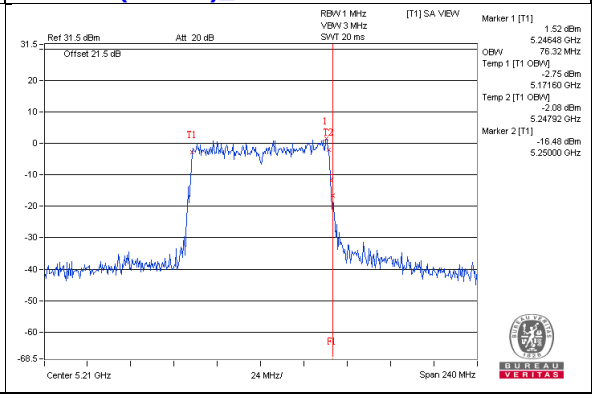
802.11ac(VHT40)_Chain1 / CH46



802.11ac(VHT80)_Chain0 / CH42

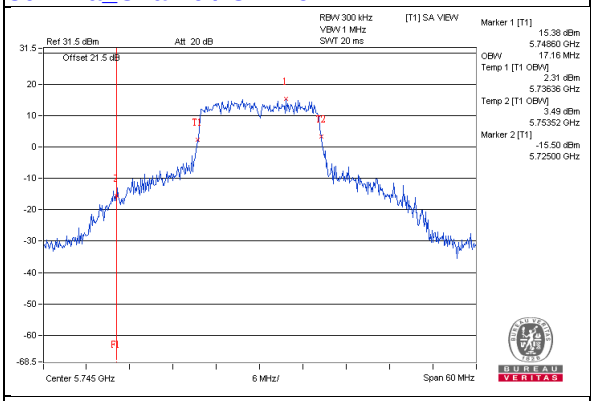


802.11ac(VHT80)_Chain1 / CH42

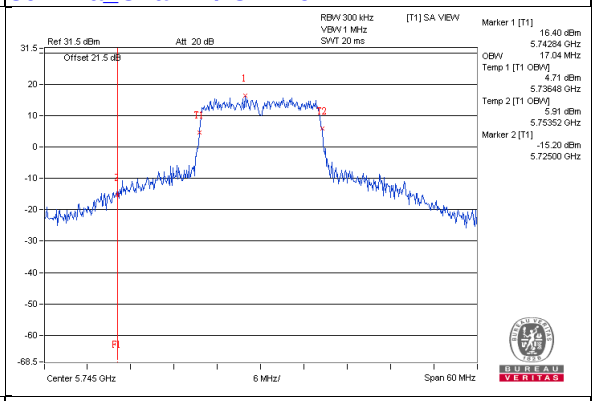


Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

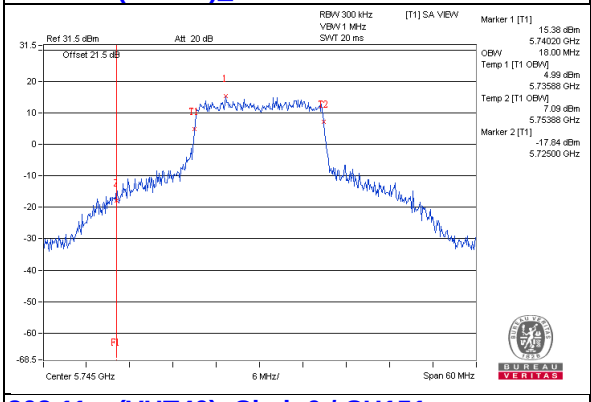
802.11a_Chain0 / CH149



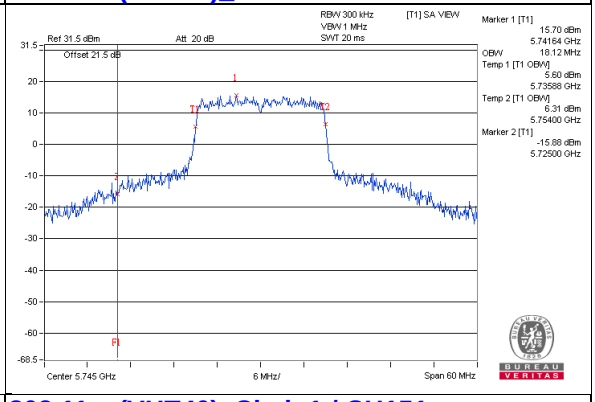
802.11a_Chain1 / CH149



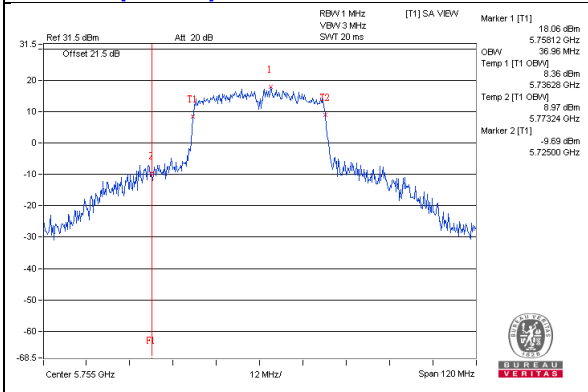
802.11ac(VHT20)_Chain0 / CH149



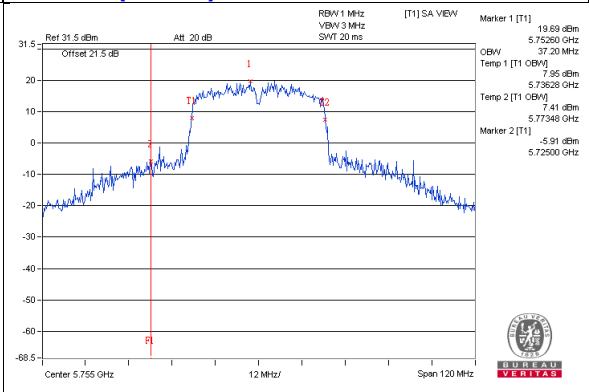
802.11ac(VHT20)_Chain1 / CH149



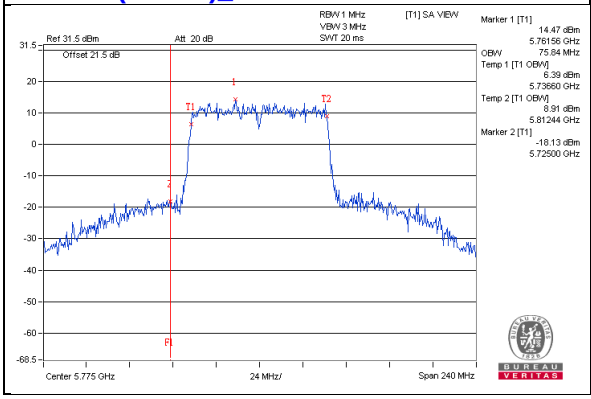
802.11ac(VHT40)_Chain0 / CH151



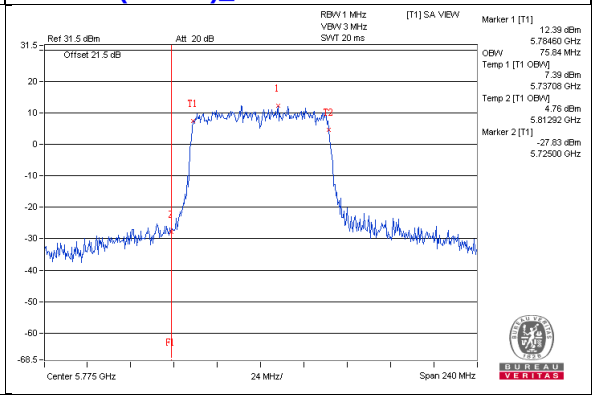
802.11ac(VHT40)_Chain1 / CH151



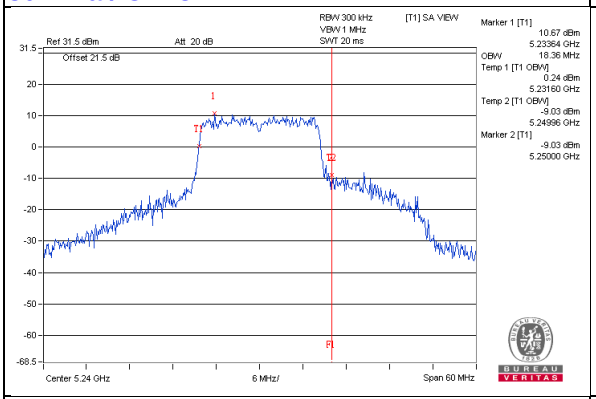
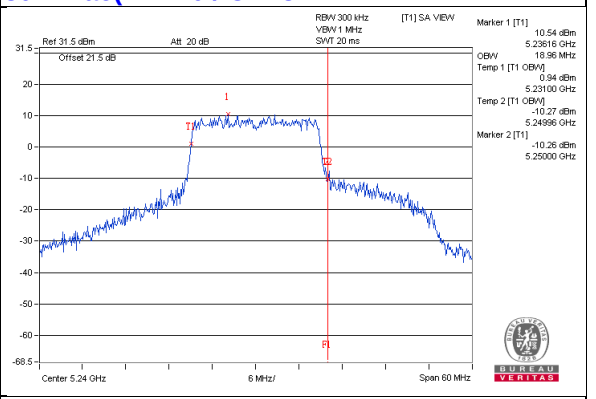
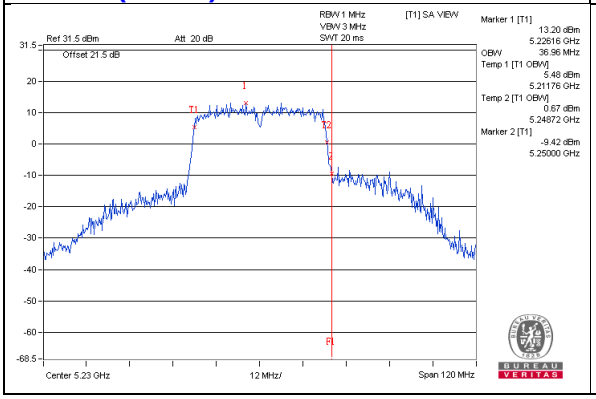
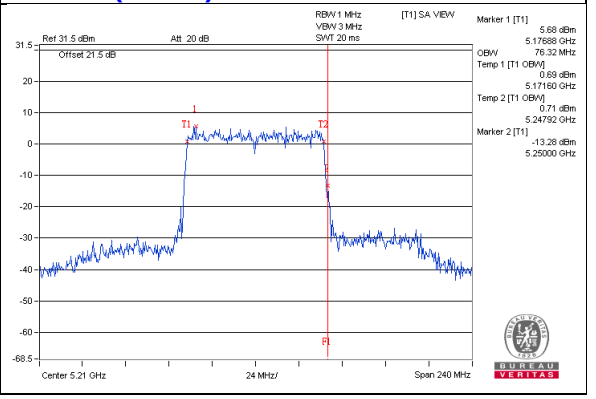
802.11ac(VHT80)_Chain0 / CH155



802.11ac(VHT80)_Chain1 / CH155

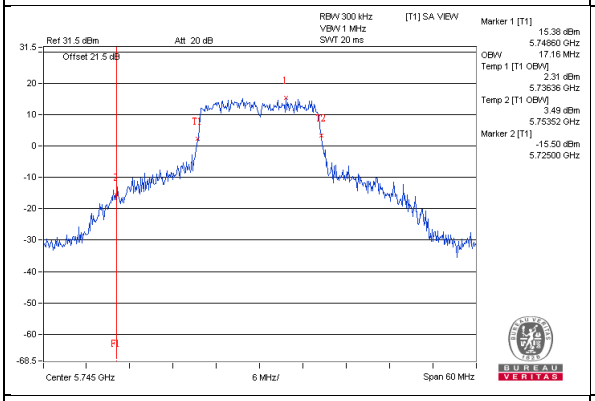


1TX Mode

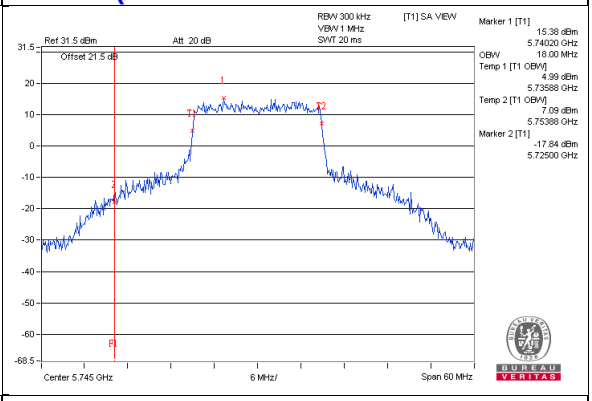
Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2A band)	
802.11a / CH48	**802.11ac(VHT20 / CH48**
	
802.11ac(VHT40) / CH46	**802.11ac(VHT80) / CH42**
	

Spectrum Plot for near by DFS band
(DFS is required, if 99% OCP straddle into U-NII-2C band)

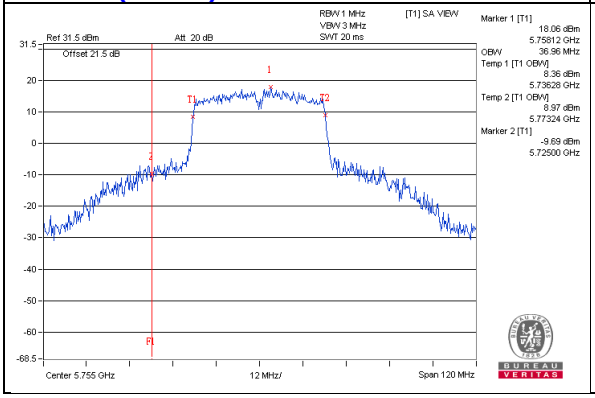
802.11a / CH149



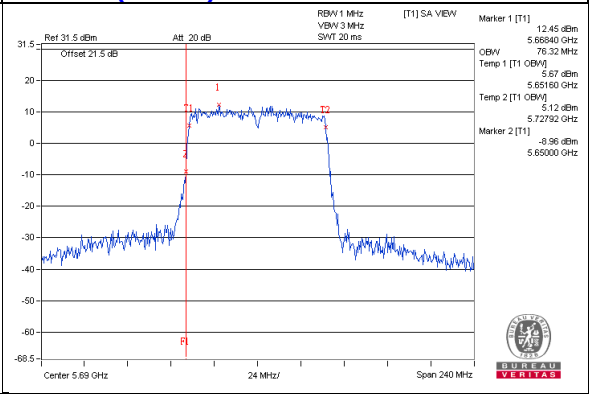
802.11ac(VHT20 / CH149



802.11ac(VHT40) / CH151



802.11ac(VHT80) / CH155

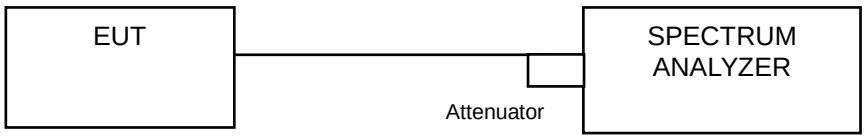


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

802.11ac (VHT20)

For U-NII-1:

Using method SA-1

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

For U-NII-3:

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

802.11a, 802.11ac (VHT40), 802.11ac (VHT80)

For U-NII-1:

Using method SA-2

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

For U-NII-3:

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6.

4.5.7 Test Results

Radio 2

2TX Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	5.07	5.33	0.17	8.39	14.73	Pass
40	5200	5.70	5.98	0.17	9.03	14.73	Pass
48	5240	4.74	5.01	0.17	8.06	14.73	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.27dBi > 6dBi , so the power density limit shall be reduced to 17-(8.27-6) = 14.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)		Total Power Density (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
36	5180	5.00	5.21	8.12	14.73	Pass
40	5200	5.41	5.90	8.67	14.73	Pass
48	5240	4.91	4.48	7.71	14.73	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.27dBi > 6dBi , so the power density limit shall be reduced to 17-(8.27-6) = 14.73dBm.

802.11ac (VHT40)

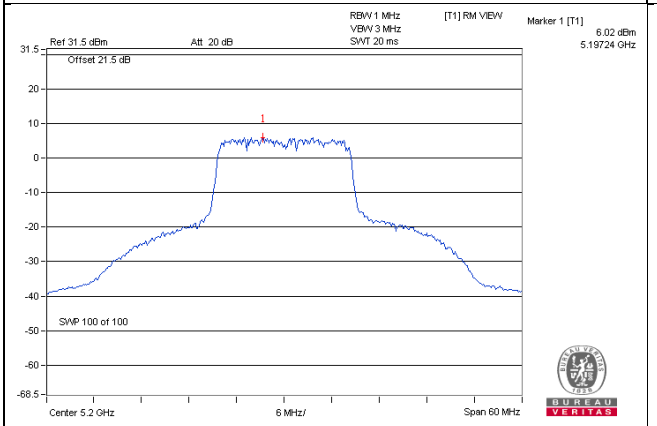
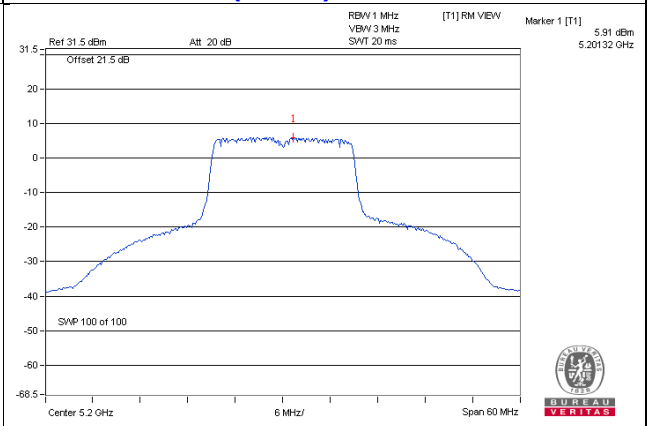
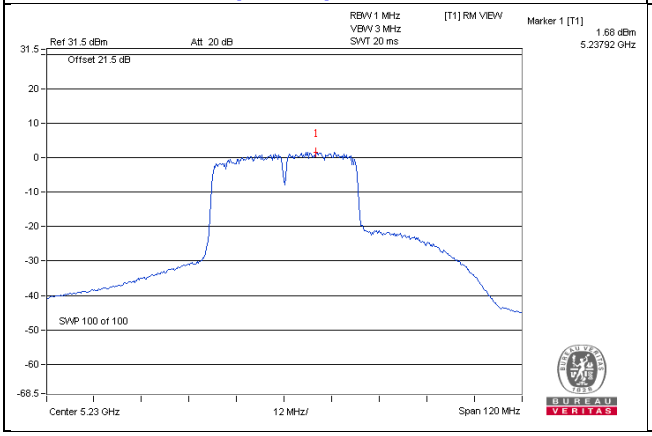
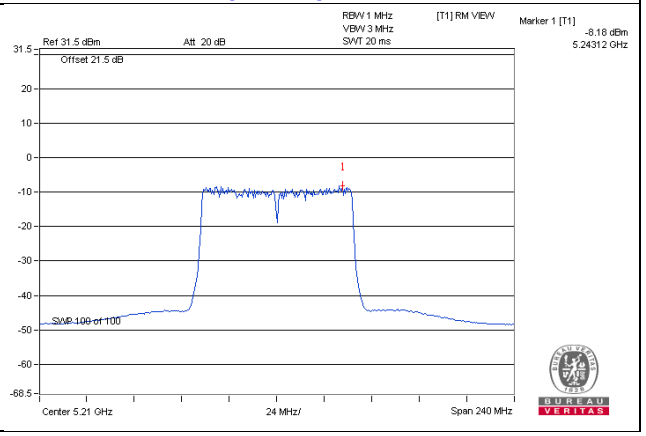
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-0.99	-1.57	0.16	1.90	14.73	Pass
46	5230	1.48	1.62	0.16	4.72	14.73	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.27dBi > 6dBi , so the power density limit shall be reduced to 17-(8.27-6) = 14.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm)		Duty Factor (dB)	Total PSD With Duty Factor (dBm)	MAX. Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-8.22	-8.79	0.29	-5.19	14.73	Pass

Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 8.27dBi > 6dBi , so the power density limit shall be reduced to 17-(8.27-6) = 14.73dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH40	**802.11ac (VHT20)_Chain 1 / CH40**
	
802.11ac (VHT40)_Chain 1 / CH46	**802.11ac (VHT80)_Chain 0 / CH42**
	

1TX Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	6.97	0.17	7.14	17.00	Pass
40	5200	7.58	0.17	7.75	17.00	Pass
48	5240	6.22	0.17	6.39	17.00	Pass

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

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	6.39	17.00	Pass
40	5200	7.28	17.00	Pass
48	5240	6.21	17.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
38	5190	1.31	0.16	1.47	17.00	Pass
46	5230	3.19	0.16	3.35	17.00	Pass

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

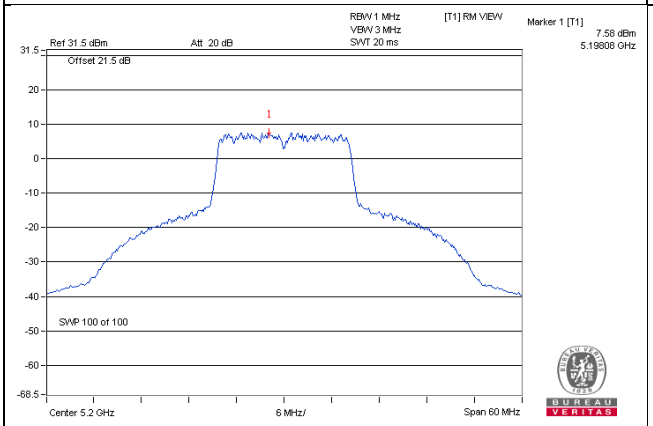
802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
42	5210	-4.98	0.29	-4.69	17.00	Pass

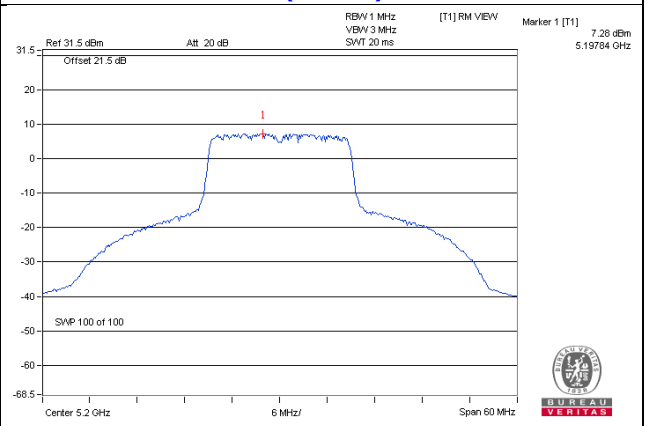
Note: 1. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

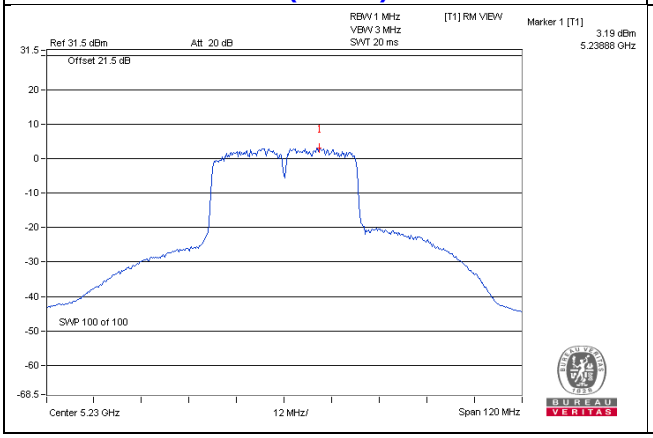
802.11a / CH40



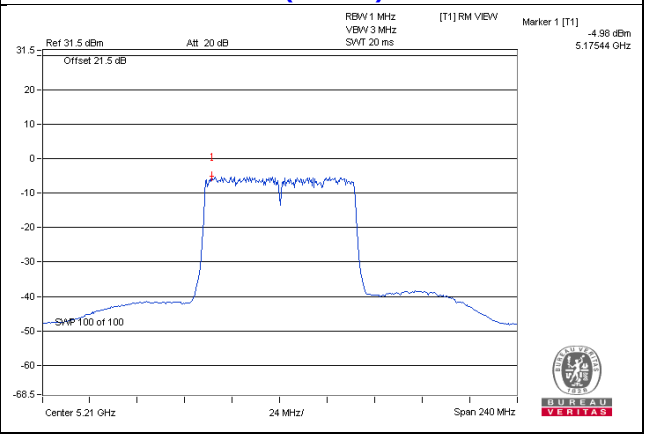
802.11ac (VHT20) / CH40



802.11ac (VHT40) / CH46



802.11ac (VHT80) / CH42



Radio 1

2TX Mode

802.11a

TX chain	Chan.	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	2.42	4.64	3.01	0.17	7.82	26.51	Pass
	157	5785	1.24	3.46	3.01	0.17	6.64	26.51	Pass
	165	5825	2.92	5.14	3.01	0.17	8.32	26.51	Pass
1	149	5745	3.38	5.60	3.01	0.17	8.78	26.51	Pass
	157	5785	3.07	5.29	3.01	0.17	8.47	26.51	Pass
	165	5825	2.88	5.10	3.01	0.17	8.28	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power density limit shall be reduced to 30-(9.49-6) = 26.51dBm.

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

802.11ac (VHT20)

TX chain	Channel	Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	10 log (N=2) dB	Total PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
0	149	5745	2.37	4.59	3.01	7.60	26.51	Pass
	157	5785	1.17	3.39	3.01	6.40	26.51	Pass
	165	5825	3.10	5.32	3.01	8.33	26.51	Pass
1	149	5745	3.70	5.92	3.01	8.93	26.51	Pass
	157	5785	3.18	5.40	3.01	8.41	26.51	Pass
	165	5825	3.08	5.30	3.01	8.31	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power density limit shall be reduced to 30-(9.49-6) = 26.51dBm.

802.11ac (VHT40)

TX chain	Chan.	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	-1.16	1.06	3.01	0.16	4.23	26.51	Pass
	159	5795	-0.25	1.97	3.01	0.16	5.14	26.51	Pass
1	151	5755	0.63	2.85	3.01	0.16	6.02	26.51	Pass
	159	5795	-0.04	2.18	3.01	0.16	5.35	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power density limit shall be reduced to 30-(9.49-6) = 26.51dBm.

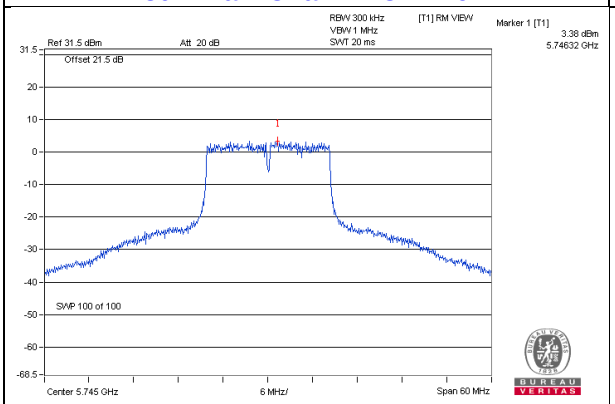
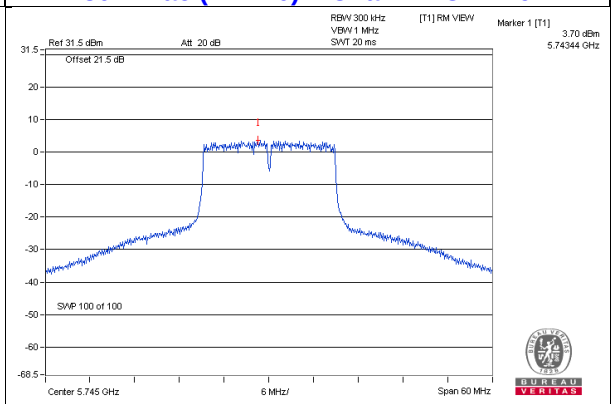
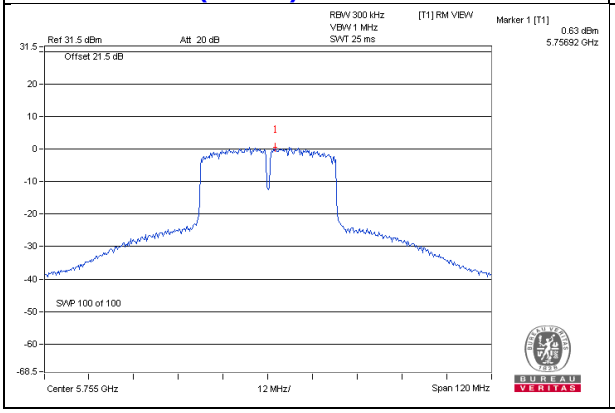
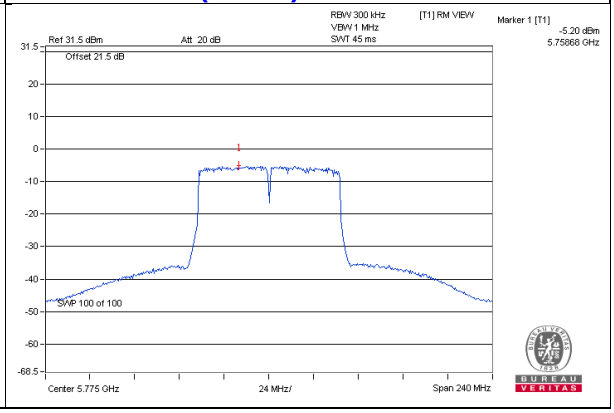
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

TX chain	Chan.	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	-5.20	-2.98	3.01	0.29	0.32	26.51	Pass
1	155	5775	-6.41	-4.19	3.01	0.29	-0.89	26.51	Pass

Note: 1. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20})^2$ / 2] = 9.49dBi > 6dBi , so the power density limit shall be reduced to 30-(9.49-6) = 26.51dBm.

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

Spectrum Plot of Worst Value	
802.11a – Chain 1: CH 149	**802.11ac (VHT20) – Chain 1: CH 149**
	
802.11ac (VHT40) – Chain 1: CH 151	**802.11ac (VHT80) – Chain 0: CH 155**
	

1TX Mode

802.11a

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
149	5745	2.42	4.64	0.17	4.81	29.21	Pass
157	5785	1.24	3.46	0.17	3.63	29.21	Pass
165	5825	2.92	5.14	0.17	5.31	29.21	Pass

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

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/300kHz)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	2.37	4.59	29.21	Pass
157	5785	1.17	3.39	29.21	Pass
165	5825	3.10	5.32	29.21	Pass

802.11ac (VHT40)

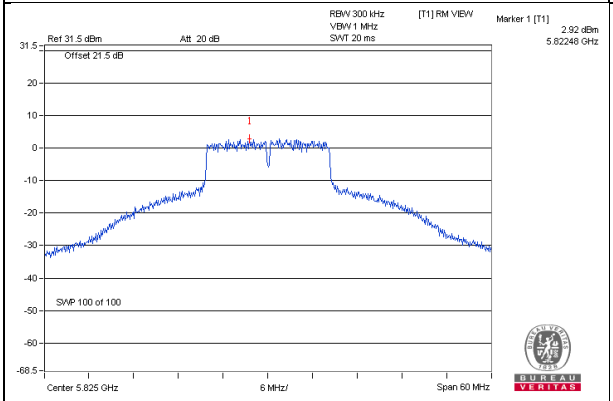
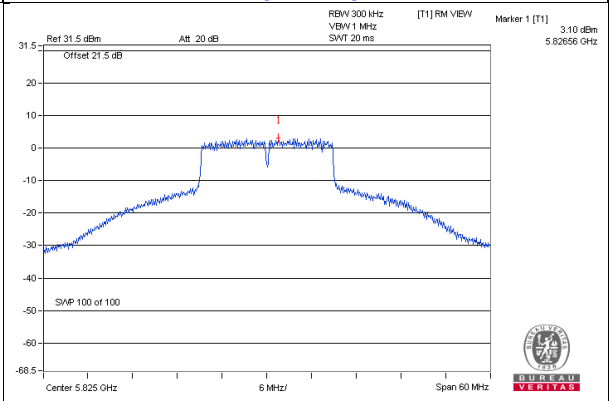
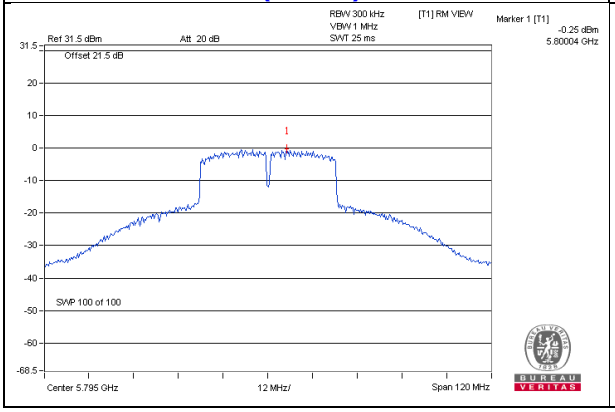
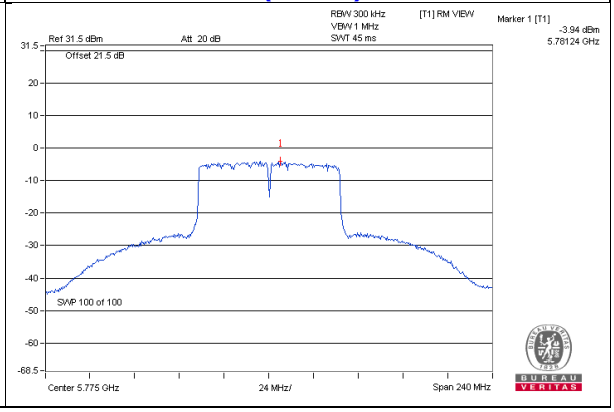
Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
151	5755	-1.16	1.06	0.16	1.22	29.21	Pass
159	5795	-0.25	1.97	0.16	2.13	29.21	Pass

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

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	PSD W/O Duty Factor		Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
		(dBm/300kHz)	(dBm/500kHz)				
155	5775	-3.94	-1.72	0.29	-1.43	29.21	Pass

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

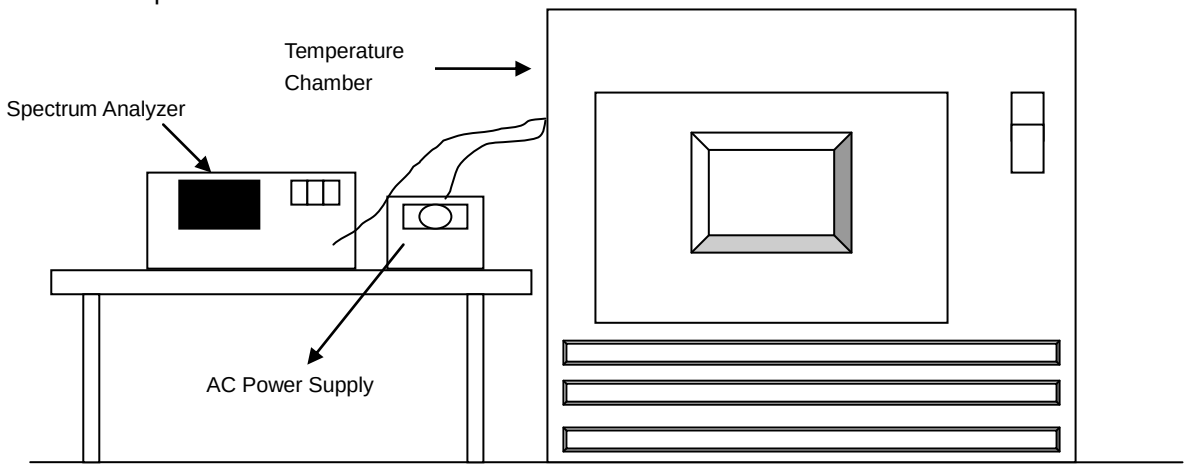
Spectrum Plot of Worst Value	
802.11a: CH 165	**802.11ac (VHT20): CH 165**
	
802.11ac (VHT40): CH 159	**802.11ac (VHT80): CH 155**
	

4.6 Frequency Stability Measurement

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

a. The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
b. Turn the EUT on and couple its output to a spectrum analyzer.
c. Turn the EUT off and set the chamber to the highest temperature specified.
d. 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.
e. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
f. 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

Radio 2

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5180.0066	PASS	5180.0082	PASS	5180.0074	PASS	5180.0063	PASS
40	120	5180.0167	PASS	5180.0162	PASS	5180.015	PASS	5180.0159	PASS
30	120	5179.992	PASS	5179.9952	PASS	5179.9946	PASS	5179.9967	PASS
20	120	5179.9776	PASS	5179.9782	PASS	5179.9771	PASS	5179.9753	PASS
10	120	5180.024	PASS	5180.0246	PASS	5180.0245	PASS	5180.0232	PASS
0	120	5180.0067	PASS	5180.0058	PASS	5180.0078	PASS	5180.0086	PASS
-10	120	5180.0029	PASS	5180.0011	PASS	5180.0021	PASS	5180.0032	PASS
-20	120	5179.9784	PASS	5179.9774	PASS	5179.9796	PASS	5179.9783	PASS
-30	120	5180.0208	PASS	5180.0172	PASS	5180.0191	PASS	5180.0174	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5179.9781	PASS	5179.978	PASS	5179.9776	PASS	5179.9746	PASS
	120	5179.9776	PASS	5179.9782	PASS	5179.9771	PASS	5179.9753	PASS
	102	5179.977	PASS	5179.9784	PASS	5179.977	PASS	5179.9749	PASS

Radio 1

Frequency Stability Versus Temp.									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5745.0165	PASS	5745.0149	PASS	5745.0136	PASS	5745.0171	PASS
40	120	5744.9785	PASS	5744.9767	PASS	5744.9771	PASS	5744.9794	PASS
30	120	5745.0135	PASS	5745.01	PASS	5745.0136	PASS	5745.0125	PASS
20	120	5744.9983	PASS	5745.0028	PASS	5744.9994	PASS	5744.9988	PASS
10	120	5745.0112	PASS	5745.0127	PASS	5745.0109	PASS	5745.0122	PASS
0	120	5745.0206	PASS	5745.0245	PASS	5745.0215	PASS	5745.0216	PASS
-10	120	5744.9718	PASS	5744.9711	PASS	5744.9747	PASS	5744.9722	PASS
-20	120	5745.017	PASS	5745.0151	PASS	5745.0175	PASS	5745.017	PASS
-30	120	5744.9815	PASS	5744.9799	PASS	5744.9815	PASS	5744.9789	PASS

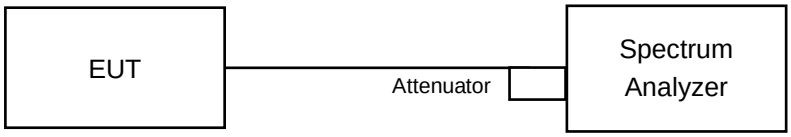
Frequency Stability Versus Voltage									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5744.9982	PASS	5745.0018	PASS	5744.9988	PASS	5744.9991	PASS
	120	5744.9983	PASS	5745.0028	PASS	5744.9994	PASS	5744.9988	PASS
	102	5744.9972	PASS	5745.0025	PASS	5744.9994	PASS	5744.9981	PASS

4.7 6dB Bandwidth Measurment

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

a. Set resolution bandwidth (RBW) = 100kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. 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

2TX Mode

802.11a

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

802.11ac (VHT20)

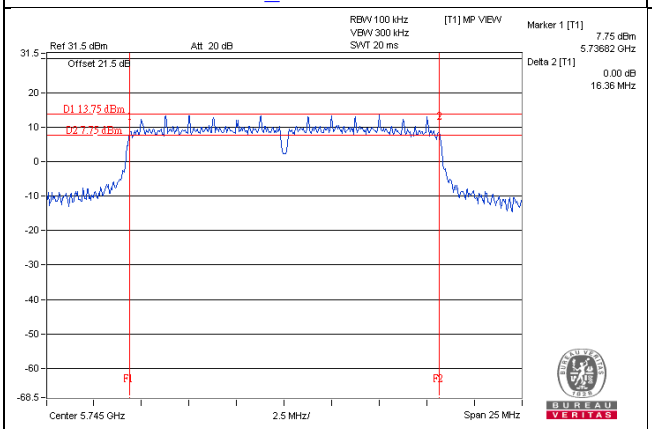
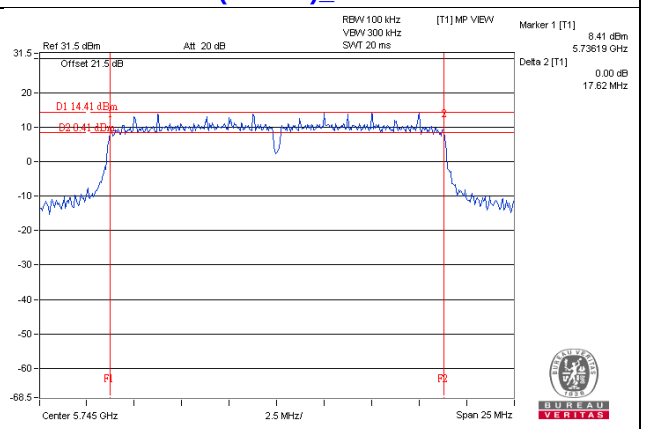
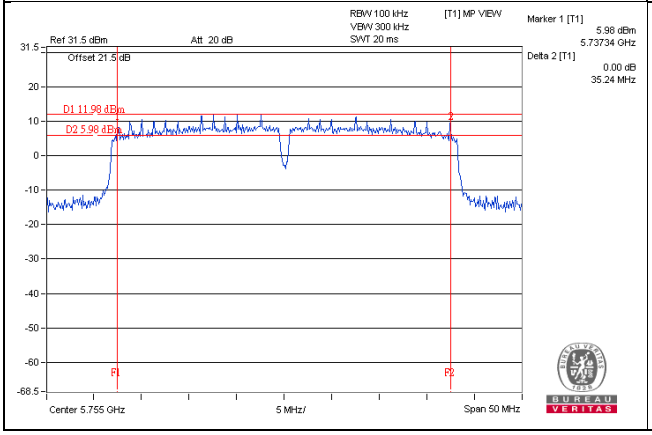
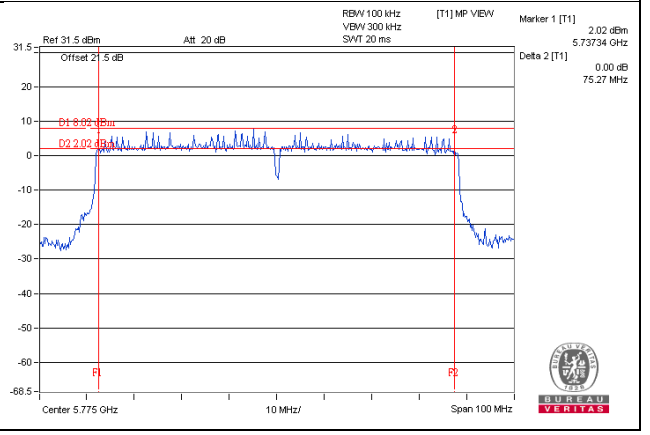
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.63	17.62	0.5	PASS
157	5785	17.62	17.63	0.5	PASS
165	5825	17.63	17.63	0.5	PASS

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	35.29	35.24	0.5	PASS
159	5795	36.12	35.25	0.5	PASS

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	75.27	75.82	0.5	PASS

Spectrum Plot of Worst Value	
802.11a_Chain 0 / CH149	**802.11ac (VHT20)_Chain 1 / CH149**
	
802.11ac (VHT40)_Chain 1 / CH151	**802.11ac (VHT80)_Chain 0 / CH155**
	

1TX Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	16.36	0.5	PASS
157	5785	16.39	0.5	PASS
165	5825	16.39	0.5	PASS

802.11ac (VHT20)

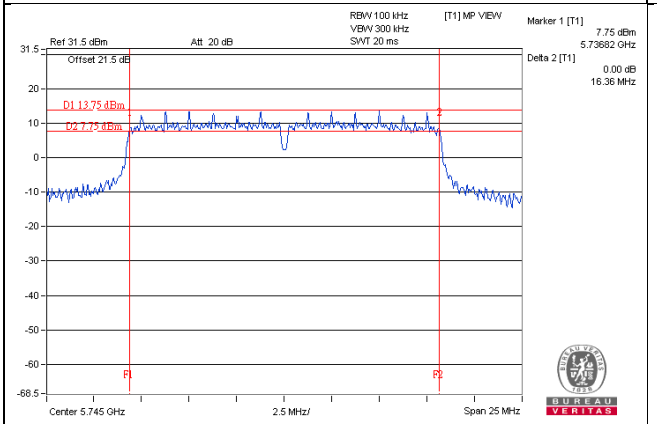
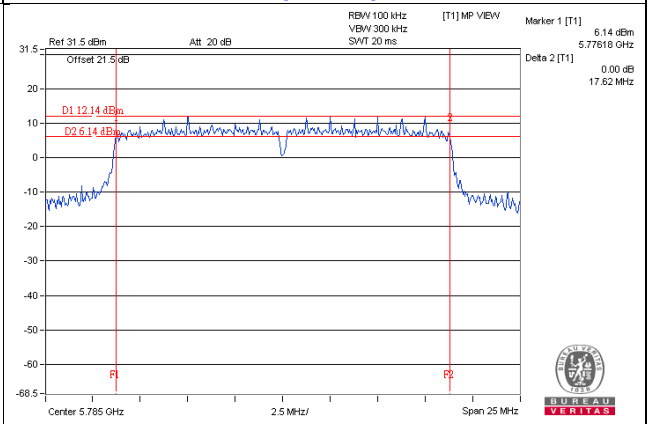
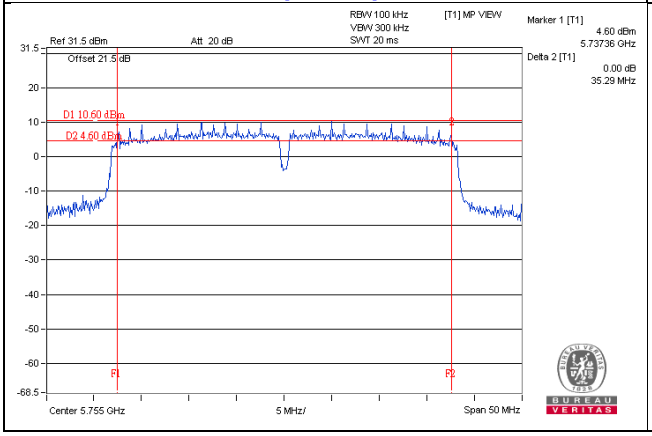
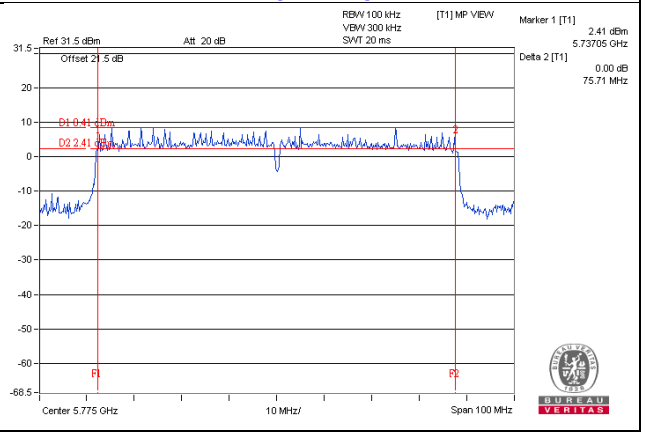
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.63	0.5	PASS
157	5785	17.62	0.5	PASS
165	5825	17.63	0.5	PASS

802.11ac (VHT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	35.29	0.5	PASS
159	5795	36.12	0.5	PASS

802.11ac (VHT80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	75.71	0.5	PASS

Spectrum Plot of Worst Value	
802.11a / CH149	**802.11ac (VHT20) / CH157**
	
802.11ac (VHT40) / CH151	**802.11ac (VHT80) / CH155**
	

5 Pictures of Test Arrangements

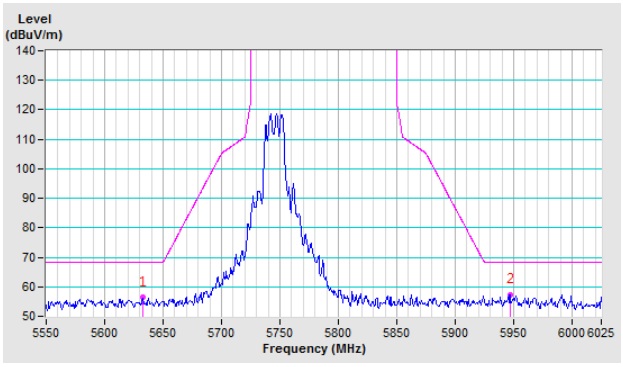
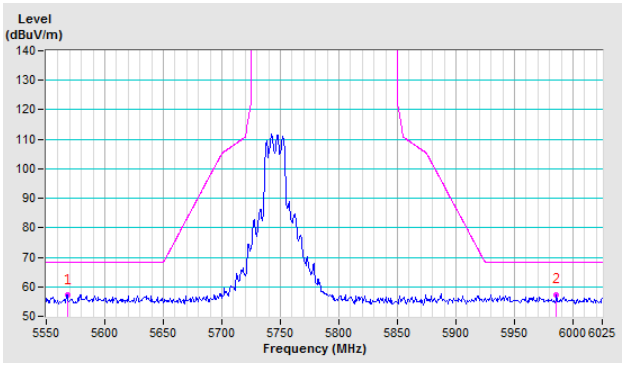
Please refer to the attached file (Test Setup Photo).

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

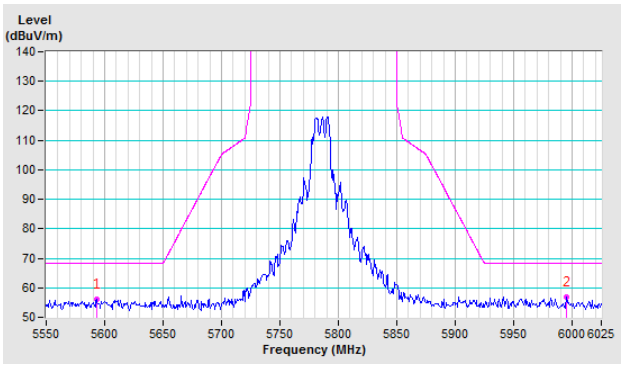
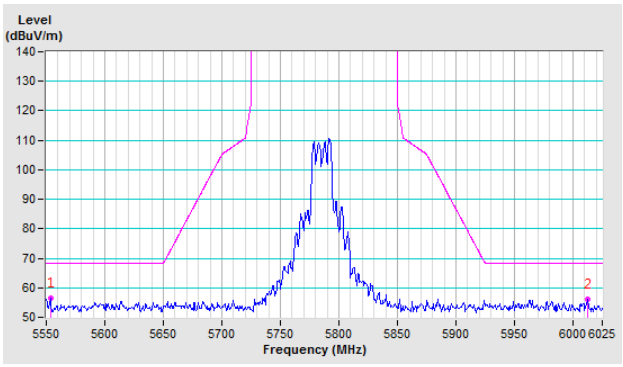
2TX Mode

802.11a

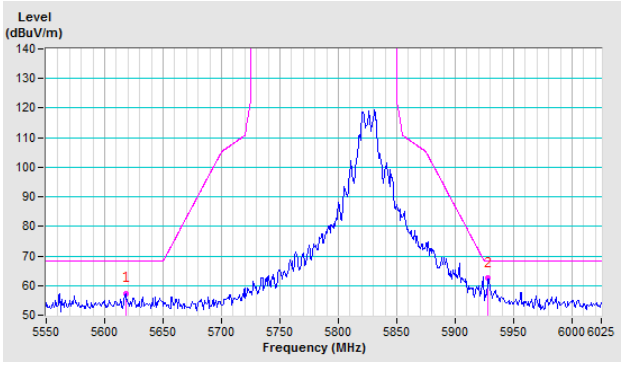
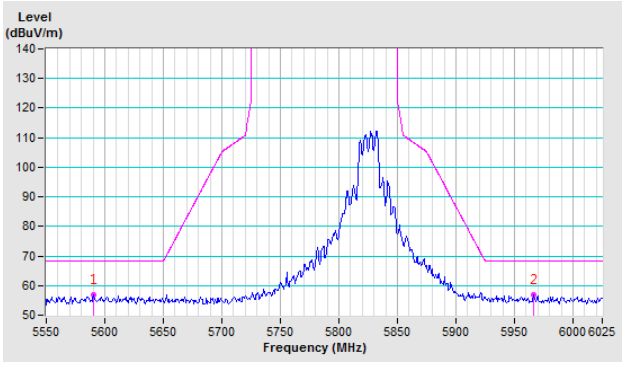
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

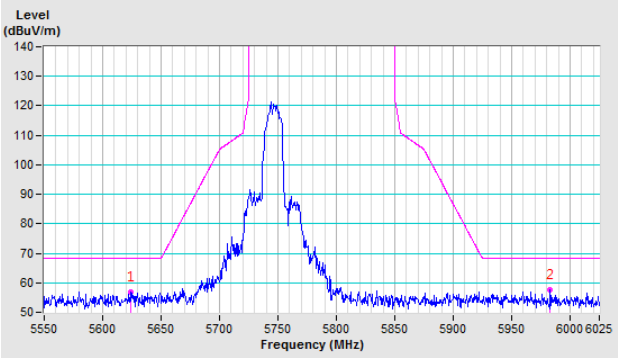
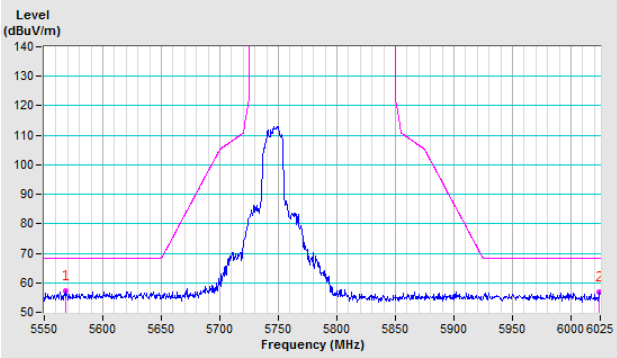
Horizontal	Vertical
	

CH 165 5825 MHz

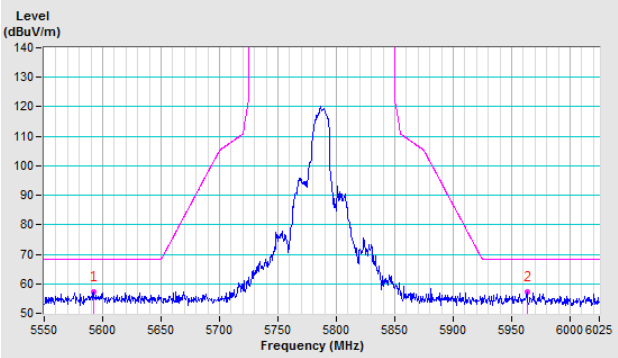
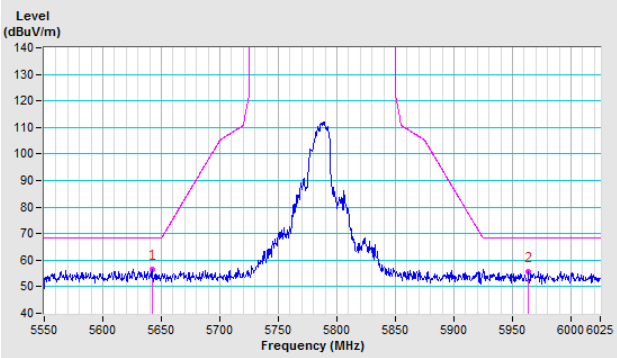
Horizontal	Vertical
	

802.11ac (VHT20)

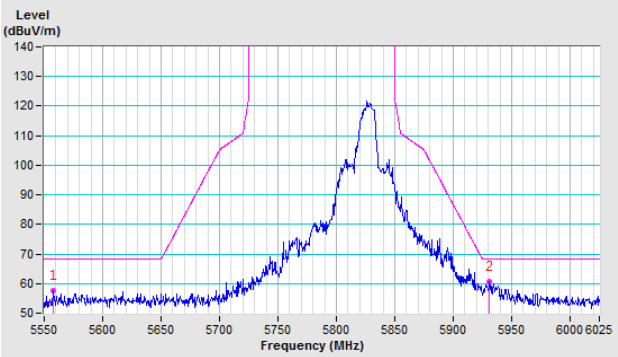
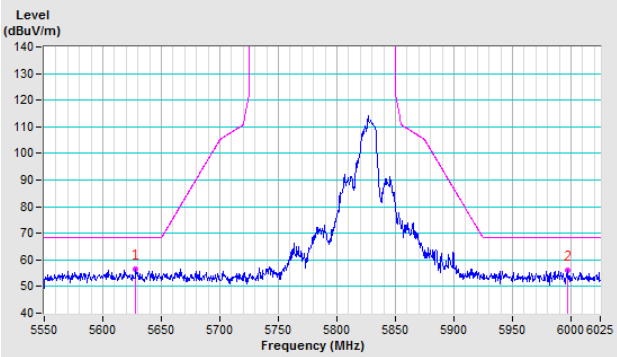
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

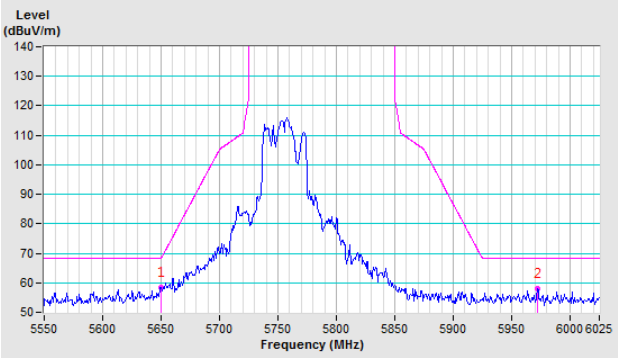
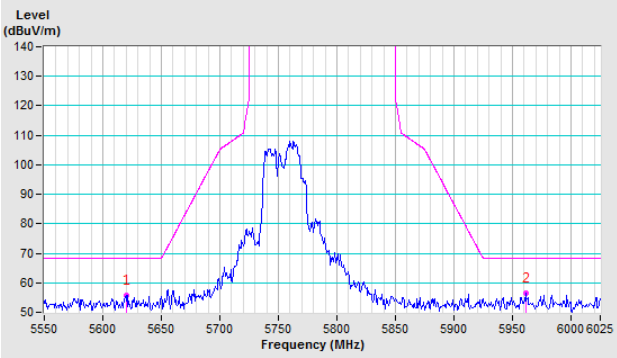
Horizontal	Vertical
	

CH 165 5825 MHz

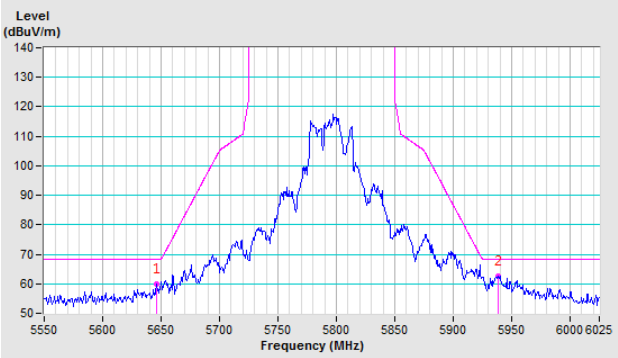
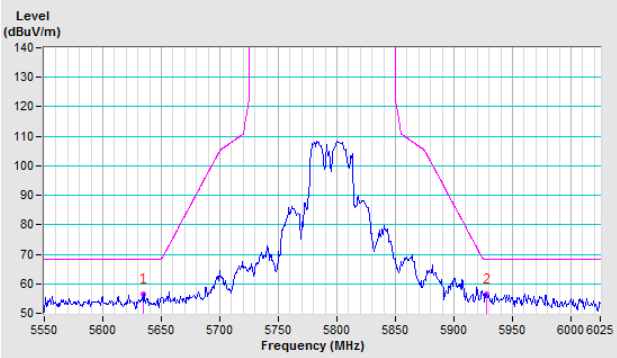
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

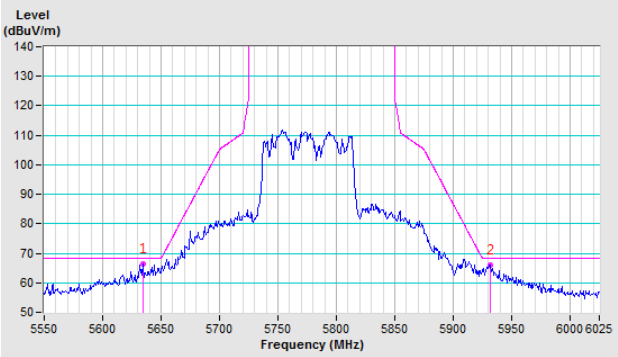
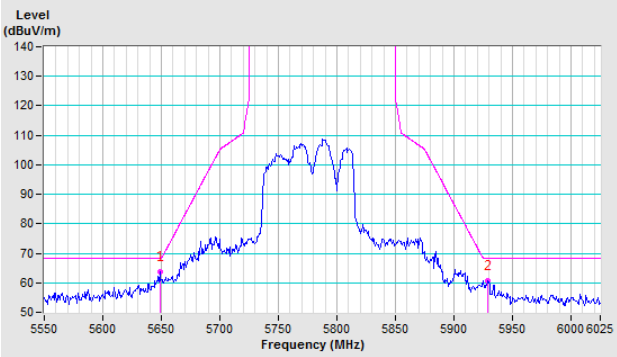
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

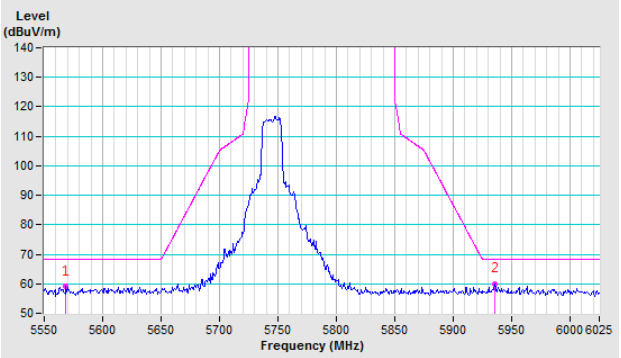
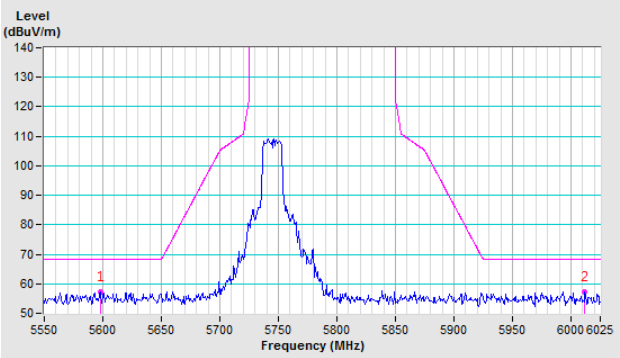
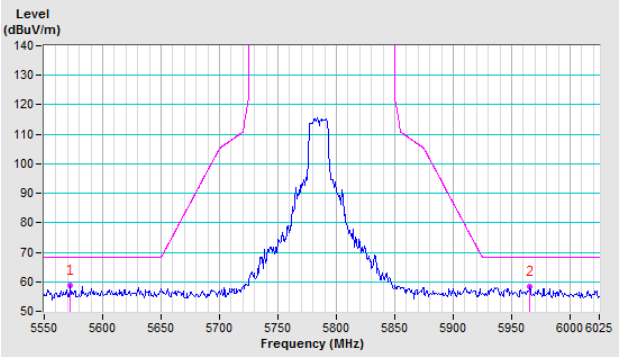
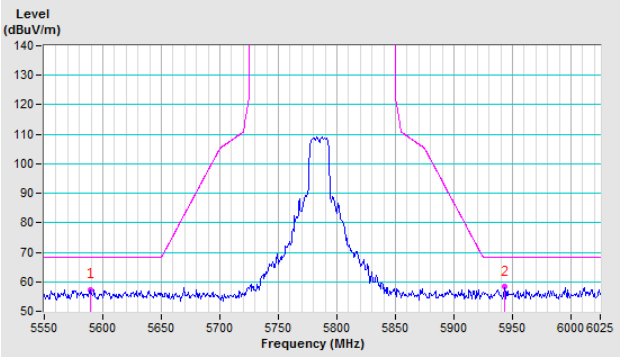
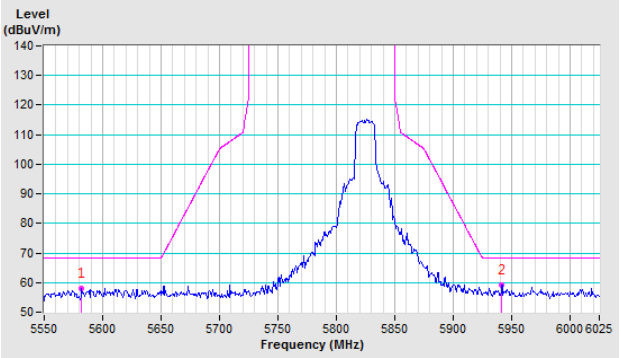
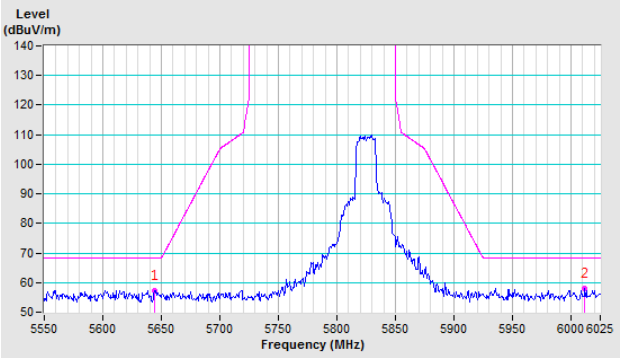
802.11ac (VHT80)

CH 155 5775 MHz

Horizontal	Vertical
	

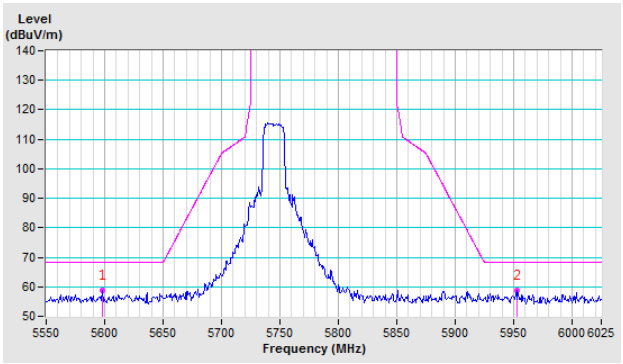
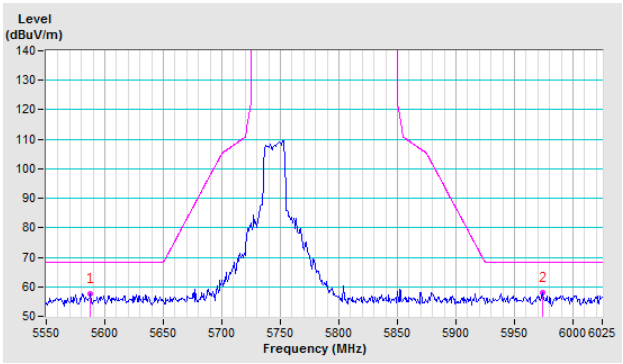
1TX Mode

802.11a

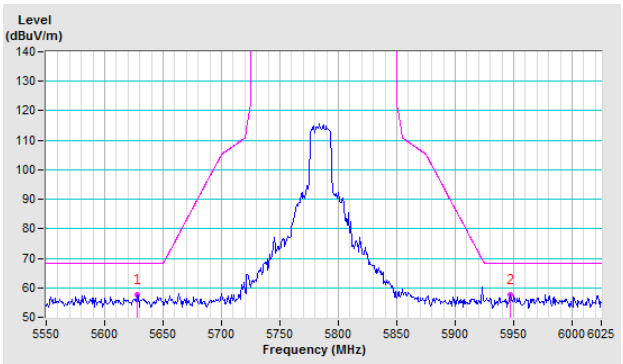
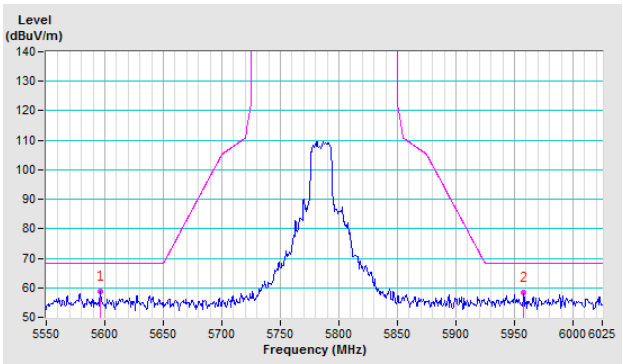
CH 149 5745 MHz	
Horizontal	**Vertical**
	
CH 157 5785 MHz	
Horizontal	**Vertical**
	
CH 165 5825 MHz	
Horizontal	**Vertical**
	

802.11ac (VHT20)

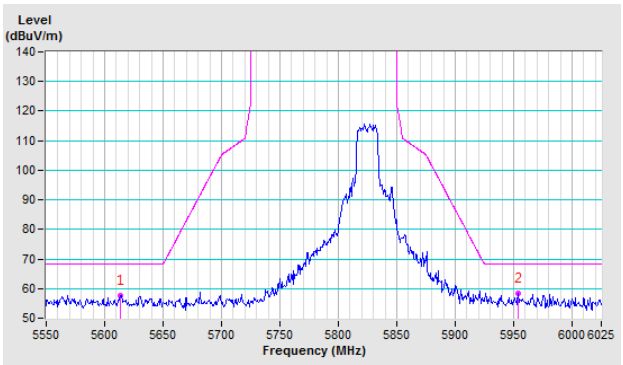
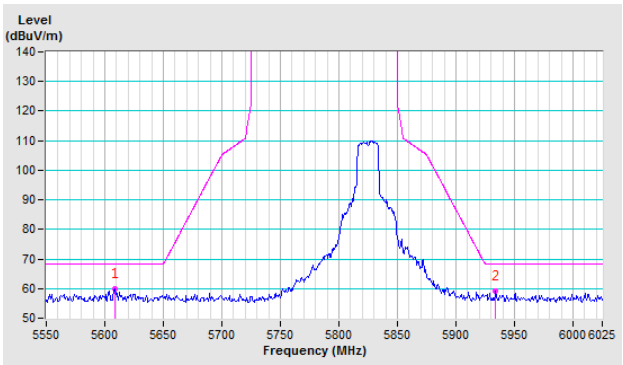
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

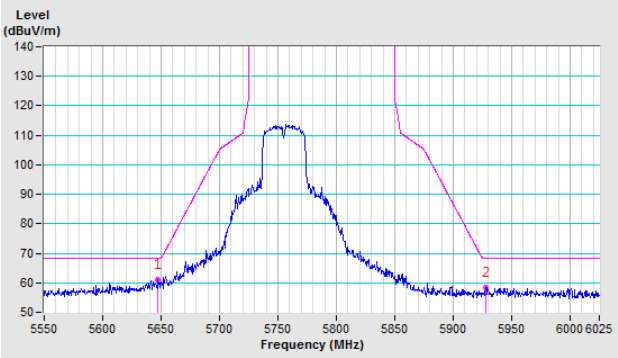
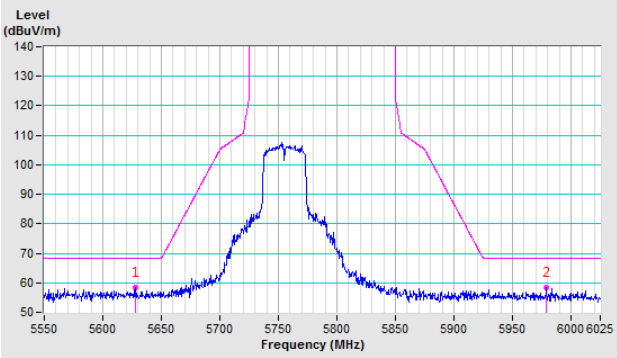
Horizontal	Vertical
	

CH 165 5825 MHz

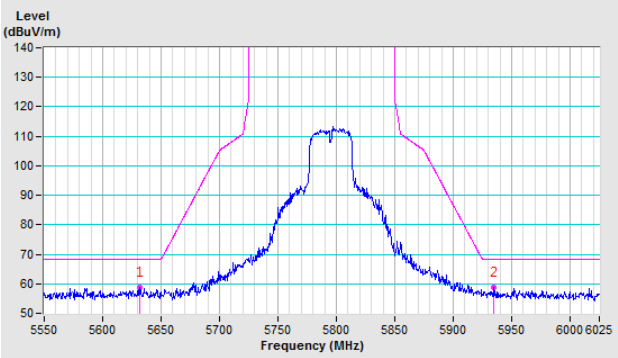
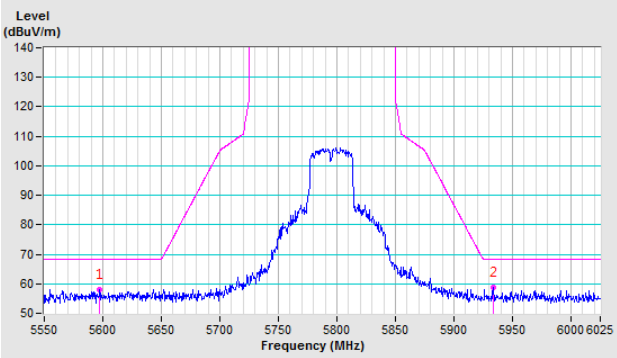
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

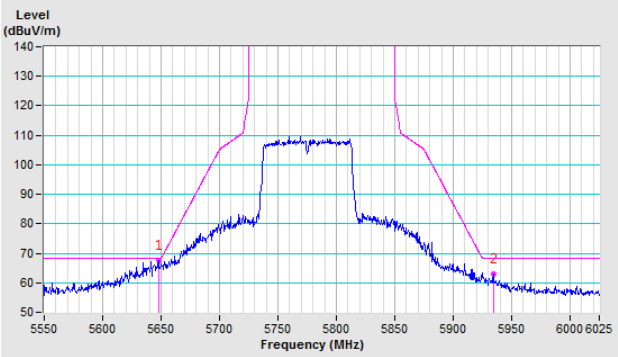
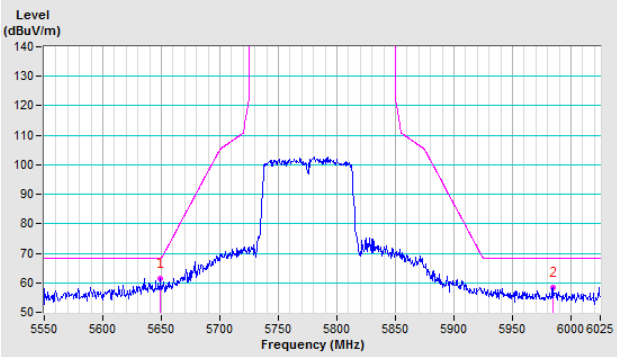
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ac (VHT80)

CH 155 5775 MHz

Horizontal	Vertical
	

Appendix – Information on the Testing Laboratories

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

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

Linko EMC/RF Lab
Tel: 886-2-26052180
Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab
Tel: 886-3-6668565
Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab
Tel: 886-3-3183232
Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

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

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