FCC Test Report (WLAN)

Report No.:	RF191219E11-1
FCC ID:	PY320100477
Test Model:	CBR750
Received Date:	Dec. 20, 2019
Test Date:	Jan. 03 to 27, 2020
Issued Date:	Feb. 10, 2020
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
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
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
RF191219E11-1	Original release.	Feb. 10, 2020

1 Certificate of Conformity

Product:	Orbi Cable Modem Router
Brand:	NETGEAR
Test Model:	CBR750
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	Jan. 03 to 27, 2020
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 : Phoenix Huang , **Date:** Feb. 10, 2020

Phoenix Huang / Specialist

Approved by : , **Date:** Feb. 10, 2020

Clark Lin / Technical 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 -16.06 dB at 0.50547 MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement*	Pass	Meet the requirement of limit. Minimum passing margin is -0.1 dB at 5150.00 MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	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.

Note:

Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.8 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.0 dB
	30MHz ~ 1GHz	4.9 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.1 dB
	6GHz ~ 18GHz	4.9 dB
	18GHz ~ 40GHz	5.2 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	Orbi Cable Modem Router
Brand	NETGEAR
Test Model	CBR750
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	19Vdc from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode and VHT (20/40) mode in 2.4GHz 1024QAM for OFDMA in 11ax HE mode
Modulation Technology	DSSS, OFDM, OFDMA
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 600 Mbps 802.11ac: up to 1733.3 Mbps 802.11ax: up to 2401.9 Mbps
Operating Frequency	**2.4GHz:** 2.412 ~ 2.462 GHz **5GHz:** 5.18~ 5.24 GHz, 5.745 ~ 5.825 GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20), VHT20, 802.11ax (HE20): 11 802.11n (HT40), VHT40, 802.11ax (HE40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 9 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 4 802.11ac (VHT80), 802.11ax (HE80): 2
Output Power	**CDD Mode:** **2.412 ~ 2.462GHz:** 985.266 mW **5.18 ~ 5.24GHz:** 834.824 mW **5.745 ~ 5.825GHz:** 995.5 mW **Beamforming Mode:** **2.412 ~ 2.462GHz:** 624.53 mW **5.18 ~ 5.24GHz:** 825.342 mW **5.745 ~ 5.825GHz:** 793.985 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	RJ-45 Cable x 1 (Unshielded, 1.8 m)

Note:

1. There is WLAN technology used for the EUT. The EUT has below radios as following table:

Radio 1	Radio 2	Radio 3
WLAN (2.4GHz)	WLAN (5GHz LB)	WLAN (5GHz HB)

2. Simultaneously transmission condition.

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

3. The EUT must be supplied one power adapter and following different models could be chosen as following table:

No.	Brand	Model No.	P/N	Spec.
1	NETGEAR	2ABS060K 1 NJ	332-11475-01	Input: 100-120Vac, 1.7A, 50/60Hz Output: 19V, 3.16A DC Output cable: Unshielded, 1.8m
2	NETGEAR	AD2003F10	332-11488-01	Input: 100-120Vac, 1.5A, 50/60Hz Output: 19V, 3.16A DC Output cable: Unshielded, 1.8m
Note: From the above adapters, the AC Power Conducted Emission and Radiated Emissions worse case was found in **Adapter No. 2**. Therefore only the test data of the mode was recorded in this report.				

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

Frequency Range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.4835	5.34	Dipole	i-pex(MHF)
5.15 ~ 5.25	5.52		
5.25 ~ 5.35	5.45		
5.47 ~ 5.725	6.88		
5.725 ~ 5.85	6.97		
Note: More detailed information, please refer to antenna specification.			

5. The EUT incorporates a MIMO function:

2.4GHz Band (Radio 1)				
MODULATION MODE	**TX & RX CONFIGURATION**			
802.11b	2TX		2RX	
802.11g	2TX		2RX	
802.11n (HT20)	2TX		2RX	
802.11n (HT40)	2TX		2RX	
VHT20	2TX		2RX	
VHT40	2TX		2RX	
802.11ax (HE20)	2TX		2RX	
802.11ax (HE40)	2TX		2RX	
MODULATION MODE	**5GHz Low Band (Radio 2)**		**5GHz Hign Band (Radio 3)**	
	TX & RX CONFIGURATION			
802.11a	2TX	2RX	4TX	4RX
802.11n (HT20)	2TX	2RX	4TX	4RX
802.11n (HT40)	2TX	2RX	4TX	4RX
802.11ac (VHT20)	2TX	2RX	4TX	4RX
802.11ac (VHT40)	2TX	2RX	4TX	4RX
802.11ac (VHT80)	2TX	2RX	4TX	4RX
802.11ax (HE20)	2TX	2RX	4TX	4RX
802.11ax (HE40)	2TX	2RX	4TX	4RX
802.11ax (HE80)	2TX	2RX	4TX	4RX

Note:
1. All of modulation mode support beamforming function except 802.11a/b/g modulation mode.
2. 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.
3. The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz), 802.11ac mode for 20MHz (40MHz, 80MHz) and 802.11ax mode for 20MHz (40MHz, 80MHz), therefore the manufacturer will control the power for 802.11n/ac mode is the same as the 802.11ax or more lower than it and investigated worst case to representative mode in test report. (Final test mode refer to section 3.2.1)

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

3.2 Description of Test Modes

FOR 5180 ~ 5240MHz

4 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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

2 channels are provided for 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

Channel	Frequency
42	5210MHz

FOR 5745 ~ 5825MHz:

5 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20):

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), 802.11ax (HE40):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (VHT80), 802.11ax (HE80):

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

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.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6Mb/s
802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0
802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6Mb/s
802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0
802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0

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.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11a	5180-5240	36 to 48	40	OFDM	BPSK	6Mb/s
802.11ax (HE20)	5745-5825	149 to 165	157	OFDMA	BPSK	MCS0

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.

CDD Mode						
Mode	FREQ. Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Modulation Type	Data Rate Parameter
802.11a	5180-5240	36 to 48	40	OFDM	BPSK	6Mb/s
802.11ax (HE20)	5745-5825	149 to 165	157	OFDMA	BPSK	MCS0

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.

CDD						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (output power only)		36 to 48	36, 40, 48	OFDM	BPSK	MCS0
802.11ac (VHT40) (output power only)		38 to 46	38, 46	OFDM	BPSK	MCS0
802.11ac (VHT80) (output power only)		42	42	OFDM	BPSK	MCS0
802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0
802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0
802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	6Mb/s
802.11ac (VHT20) (output power only)		149 to 165	149, 157, 165	OFDM	BPSK	MCS0
802.11ac (VHT40) (output power only)		151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (VHT80) (output power only)		155	155	OFDM	BPSK	MCS0
802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0
802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0
Beamforming Mode (output power only)						
Mode	**FREQ. Band (MHz)**	**Available Channel**	**Tested Channel**	**Modulation Technology**	**Modulation Type**	**Data Rate Parameter**
802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	BPSK	MCS0
802.11ac (VHT40)		38 to 46	38, 46	OFDM	BPSK	MCS0
802.11ac (VHT80)		42	42	OFDM	BPSK	MCS0
802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	BPSK	MCS0
802.11ax (HE40)		38 to 46	38, 46	OFDMA	BPSK	MCS0
802.11ax (HE80)		42	42	OFDMA	BPSK	MCS0
802.11ac (VHT20)	5745-5825	149 to 165	149, 157, 165	OFDM	BPSK	MCS0
802.11ac (VHT40)		151 to 159	151, 159	OFDM	BPSK	MCS0
802.11ac (VHT80)		155	155	OFDM	BPSK	MCS0
802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	BPSK	MCS0
802.11ax (HE40)		151 to 159	151, 159	OFDMA	BPSK	MCS0
802.11ax (HE80)		155	155	OFDMA	BPSK	MCS0

Test Condition:

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	24deg. C, 74%RH, 23deg. C, 69%RH	120Vac, 60Hz	Kevin Ko
RE<1G	24deg. C, 63%RH	120Vac, 60Hz	Kevin Ko
PLC	25deg. C, 75%RH	120Vac, 60Hz	Kevin Ko
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

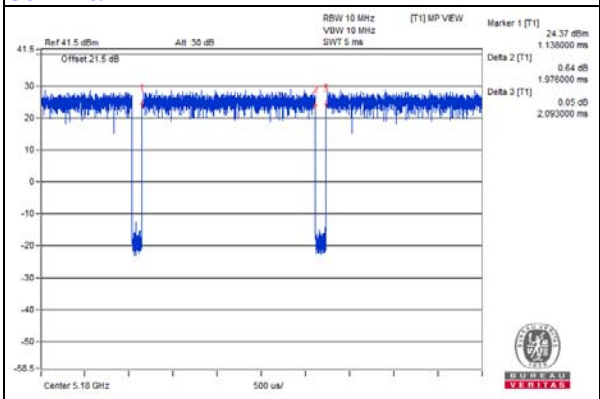
3.3 Duty Cycle of Test Signal

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

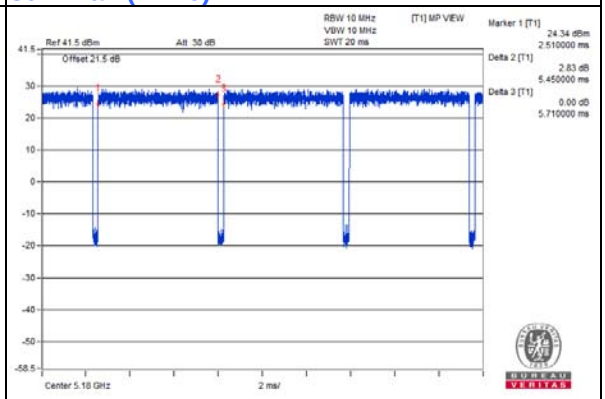
For Radio 2 (U-NII-1 Band)

802.11a: Duty cycle = 1.976 ms/2.093 ms = 0.944, Duty factor = 10 * log (1/Duty cycle) = 0.25 dB
802.11ax (HE20): Duty cycle = 5.45 ms/5.71 ms = 0.954, Duty factor = 10 * log (1/Duty cycle) = 0.2 dB
802.11ax (HE40): Duty cycle = 5.45 ms/5.785 ms = 0.942, Duty factor = 10 * log (1/Duty cycle) = 0.26 dB
802.11ax (HE 80): Duty cycle = 5.44 ms/5.68 ms = 0.958, Duty factor = 10 * log (1/Duty cycle) = 0.19 dB

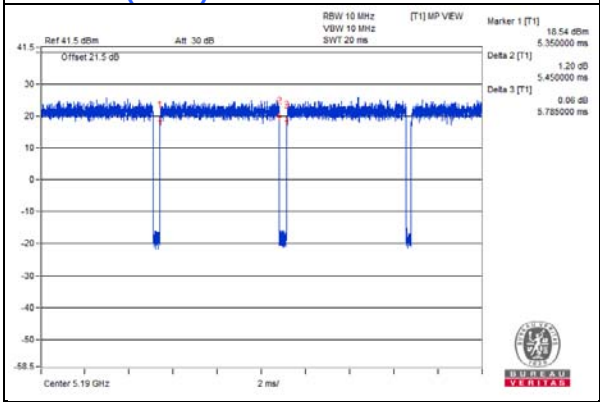
802.11a



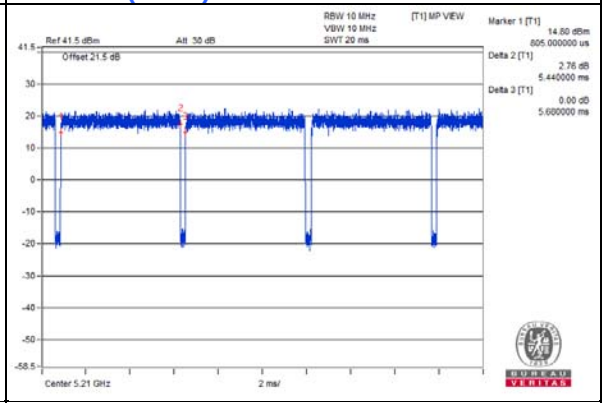
802.11ax (HE20)



802.11ax (HE40)



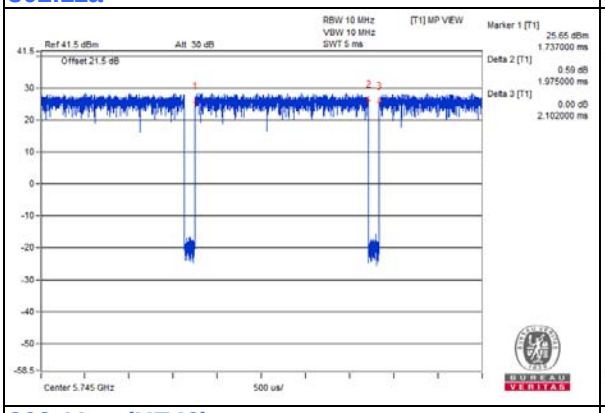
802.11ax (HE80)



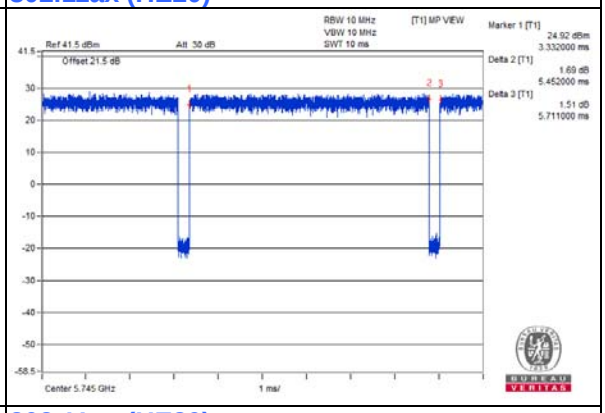
For Radio 3 (U-NII-3 Band)

802.11a: Duty cycle = 1.975 ms/2.102 ms = 0.94, Duty factor = 10 * log (1/Duty cycle) = 0.27 dB
802.11ax (HE20): Duty cycle = 5.452 ms/5.711 ms = 0.955, Duty factor = 10 * log (1/Duty cycle) = 0.2 dB
802.11ax (HE40): Duty cycle = 5.448 ms/5.718 ms = 0.953, Duty factor = 10 * log (1/Duty cycle) = 0.21 dB
802.11ax (HE80): Duty cycle = 5.449 ms/5.739 ms = 0.949, Duty factor = 10 * log (1/Duty cycle) = 0.23 dB

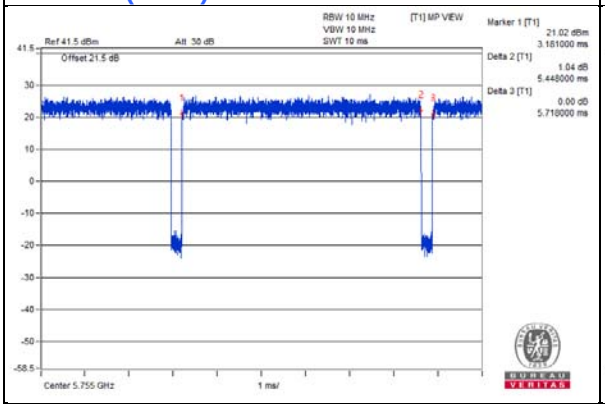
802.11a



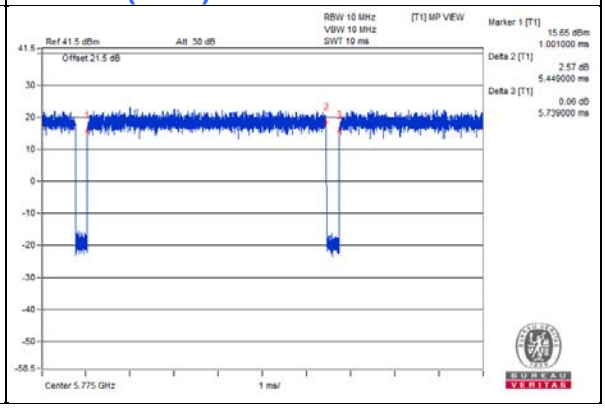
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



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.

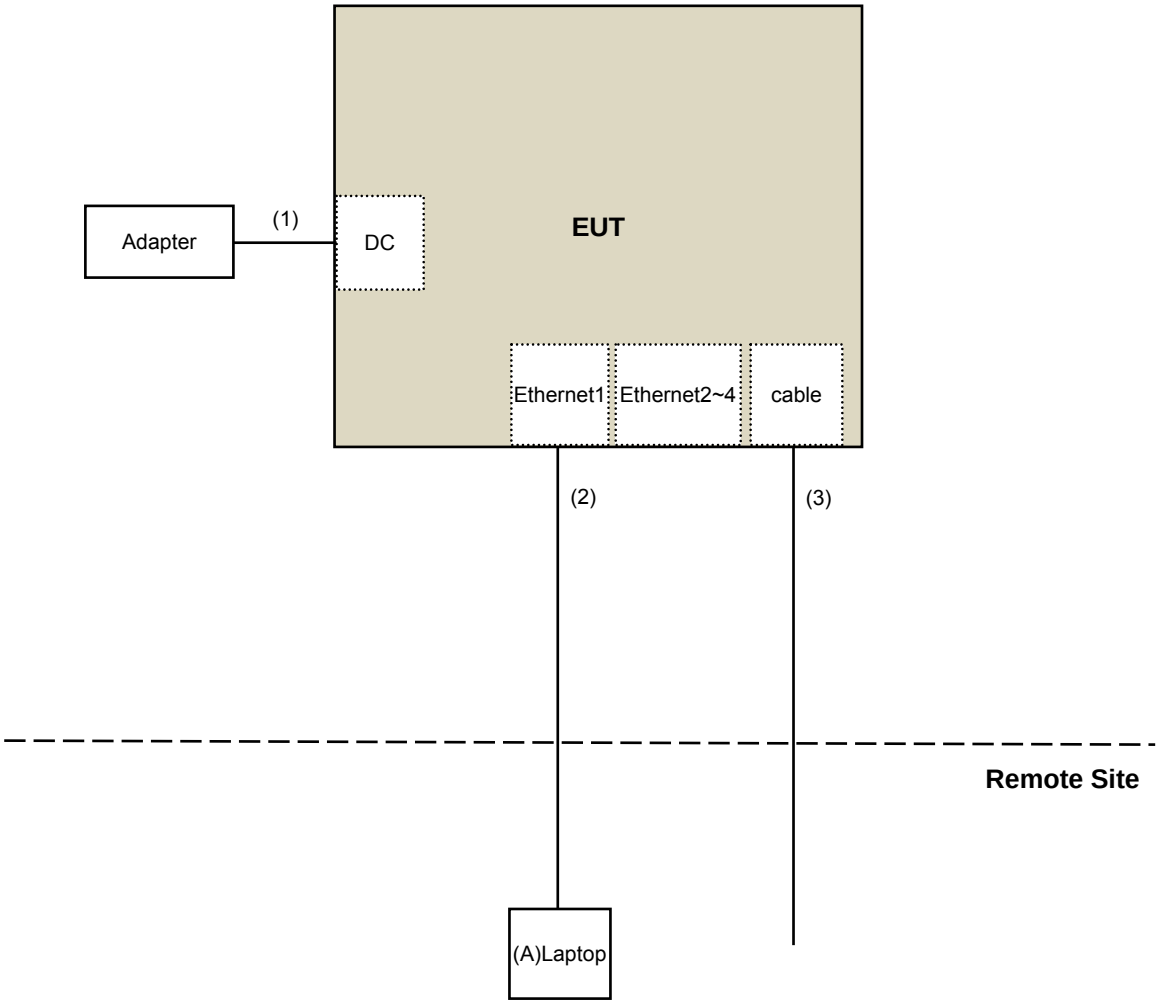
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab

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.	DC Cable	1	1.8	No	0	Supplied by client
2.	RJ-45 Cable	1	10	No	0	Provided by Lab
3.	Coaxial Cable	1	10	Yes	0	Provided by Lab

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:
FCC Part 15, Subpart E (15.407)
ANSI C63.10-2013

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

References Test Guidance:
KDB 789033 D02 General UNII Test Procedure New Rules v02r01
KDB 662911 D01 Multiple Transmitter Output v02r01

All test items have been performed as a reference to the above KDB test guidance.

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 v02r01</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="5">*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 Radiated Emission Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	264	Jan. 22, 2019	Jan. 21, 2020
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 23, 2019	Oct. 22, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-4-1	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-2	Mar. 19, 2019	Mar. 18, 2020
RF Cable	8D	966-4-3	Mar. 19, 2019	Mar. 18, 2020
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 26, 2019	Sep. 25, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 15, 2019	Aug. 14, 2020
RF Cable	EMC104-SM-SM-1200	160923	Jan. 15, 2020	Jan. 14, 2021
RF Cable	104 RF cable	131215	Jan. 09, 2020	Jan. 08, 2021
RF Cable	EMC104-SM-SM-6000	180418	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Jan. 18, 2020

For OOBE Test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 15, 2019	Aug. 14, 2020
RF Cable	EMC104-SM-SM-1200	160923	Jan. 28, 2019	Jan. 27, 2020
RF Cable	104 RF cable	131215	Jan. 10, 2019	Jan. 09, 2020
RF Cable	EMC104-SM-SM-6000	180418	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 28, 2019	Jan. 27, 2020
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 28, 2019	Jan. 27, 2020
RF Cable	EMC102-KM-KM-1200	160925	Jan. 28, 2019	Jan. 27, 2020
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Jan. 03, 2020

For other test items:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
AC Power Source Extech Electronics	6205	1440452	NA	NA
Temperature & Humidity Chamber Giant Force	GTH-150-40-SP-AR	MAA0812-008	Jan. 16, 2020	Jan. 15, 2021
True RMS Clamp Meter FLUKE	325	31130711WS	May 21, 2019	May 20, 2020

Note: 1. The test was performed in Oven room 2.
2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. Tested Date: Jan. 27, 2020

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. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

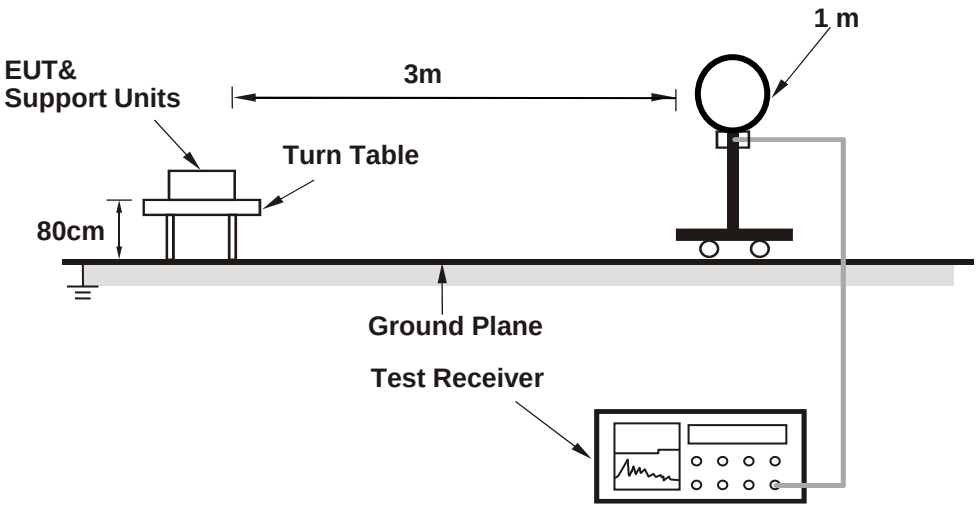
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

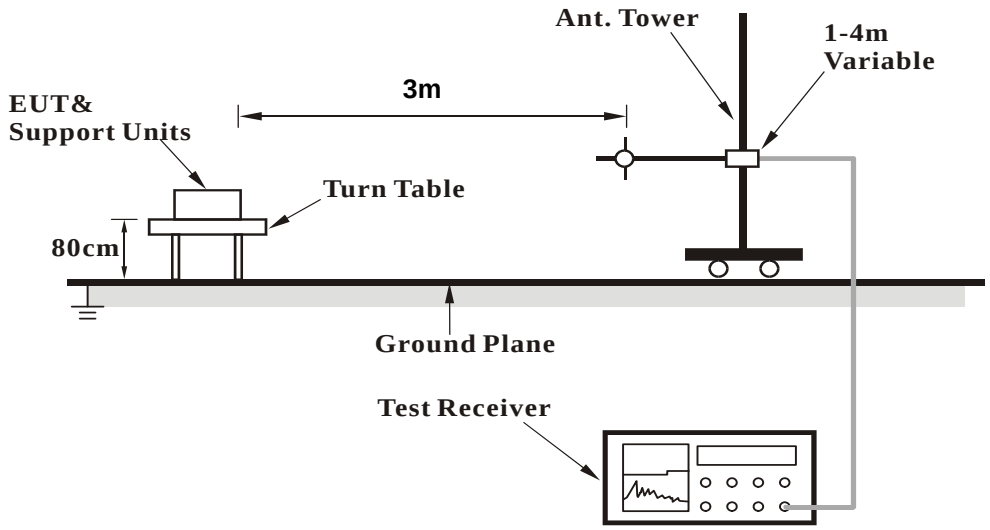
No deviation.

4.1.5 Test Setup

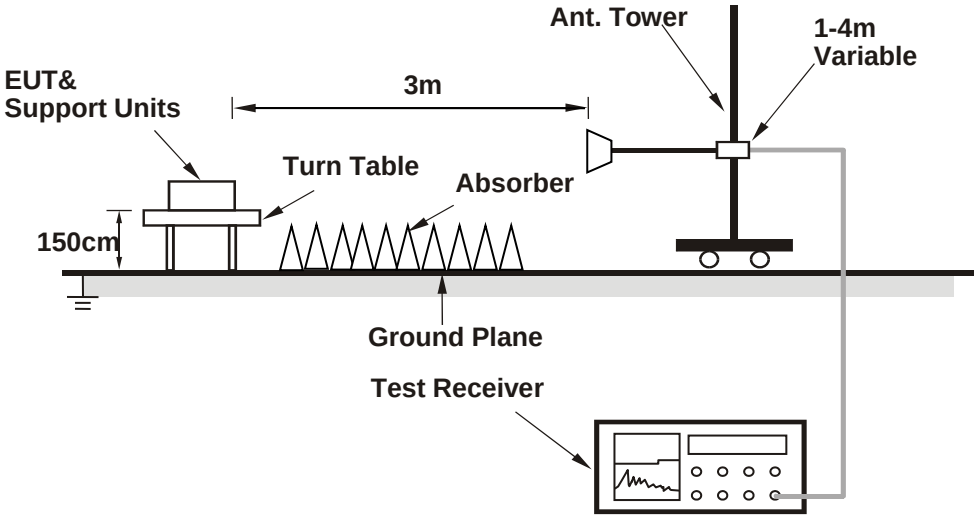
For Radiated emission below 30MHz



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. Controlling software (QSPR (5.0-00140)) has been activated to set the EUT under transmission condition continuously.

4.1.7 Test Results

CDD Mode

Above 1GHz Data:

For Radio 2 (U-NII-1 Band)

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	54.3 PK	74.0	-19.7	1.50 H	316	51.2	3.1
2	5150.00	44.8 AV	54.0	-9.2	1.50 H	316	41.7	3.1
3	*5180.00	108.4 PK			1.50 H	316	105.3	3.1
4	*5180.00	99.3 AV			1.50 H	316	96.2	3.1
5	#10360.00	53.9 PK	68.2	-14.3	1.48 H	332	41.0	12.9
6	15540.00	46.6 PK	74.0	-27.4	2.30 H	173	33.3	13.3
7	15540.00	34.7 AV	54.0	-19.3	2.30 H	173	21.4	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	64.8 PK	74.0	-9.2	1.11 V	360	61.7	3.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.11 V**	**360**	**50.8**	**3.1**
3	*5180.00	116.5 PK			1.11 V	360	113.4	3.1
4	*5180.00	108.4 AV			1.11 V	360	105.3	3.1
5	#10360.00	54.7 PK	68.2	-13.5	2.80 V	212	41.8	12.9
6	15540.00	46.2 PK	74.0	-27.8	2.60 V	262	32.9	13.3
7	15540.00	34.4 AV	54.0	-19.6	2.60 V	262	21.1	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	5150.00	59.3 PK	74.0	-14.7	1.50 H	317	56.2	3.1
2	5150.00	45.7 AV	54.0	-8.3	1.50 H	317	42.6	3.1
3	*5200.00	112.1 PK			1.50 H	317	109.1	3.0
4	*5200.00	104.4 AV			1.50 H	317	101.4	3.0
5	#10400.00	54.5 PK	68.2	-13.7	1.02 H	44	41.4	13.1
6	15600.00	45.7 PK	74.0	-28.3	1.44 H	326	32.6	13.1
7	15600.00	34.5 AV	54.0	-19.5	1.44 H	326	21.4	13.1
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	5150.00	67.9 PK	74.0	-6.1	1.23 V	21	64.8	3.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.23 V**	**21**	**50.8**	**3.1**
3	*5200.00	120.9 PK			1.23 V	21	117.9	3.0
4	*5200.00	112.6 AV			1.23 V	21	109.6	3.0
5	#10400.00	53.5 PK	68.2	-14.7	1.73 V	58	40.4	13.1
6	15600.00	46.7 PK	74.0	-27.3	2.54 V	279	33.6	13.1
7	15600.00	33.7 AV	54.0	-20.3	2.54 V	279	20.6	13.1

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	5150.00	43.1 PK	74.0	-30.9	1.69 H	222	40.0	3.1
2	5150.00	32.2 AV	54.0	-21.8	1.69 H	222	29.1	3.1
3	*5240.00	111.6 PK			1.69 H	222	108.7	2.9
4	*5240.00	104.2 AV			1.69 H	222	101.3	2.9
5	5350.00	47.3 PK	74.0	-26.7	1.69 H	222	44.2	3.1
6	5350.00	31.8 AV	54.0	-22.2	1.69 H	222	28.7	3.1
7	#10480.00	53.1 PK	68.2	-15.1	2.40 H	103	39.9	13.2
8	15720.00	45.7 PK	74.0	-28.3	2.62 H	270	33.0	12.7
9	15720.00	33.4 AV	54.0	-20.6	2.62 H	270	20.7	12.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	52.3 PK	74.0	-21.7	1.31 V	348	49.2	3.1
2	5150.00	41.5 AV	54.0	-12.5	1.31 V	348	38.4	3.1
3	*5240.00	120.7 PK			1.31 V	348	117.8	2.9
4	*5240.00	112.3 AV			1.31 V	348	109.4	2.9
5	5350.00	55.6 PK	74.0	-18.4	1.31 V	348	52.5	3.1
6	5350.00	41.6 AV	54.0	-12.4	1.31 V	348	38.5	3.1
7	#10480.00	54.1 PK	68.2	-14.1	2.47 V	84	40.9	13.2
8	15720.00	45.7 PK	74.0	-28.3	1.76 V	217	33.0	12.7
9	15720.00	34.6 AV	54.0	-19.4	1.76 V	217	21.9	12.7

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ax (HE20)

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	56.7 PK	74.0	-17.3	1.12 H	15	53.6	3.1
2	5150.00	45.2 AV	54.0	-8.8	1.12 H	15	42.1	3.1
3	*5180.00	110.9 PK			1.12 H	15	107.8	3.1
4	*5180.00	99.6 AV			1.12 H	15	96.5	3.1
5	#10360.00	54.9 PK	68.2	-13.3	1.45 H	319	42.0	12.9
6	15540.00	45.8 PK	74.0	-28.2	1.01 H	253	32.5	13.3
7	15540.00	33.6 AV	54.0	-20.4	1.01 H	253	20.3	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	65.9 PK	74.0	-8.1	1.26 V	1	62.8	3.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.26 V**	**1**	**50.8**	**3.1**
3	*5180.00	120.1 PK			1.26 V	1	117.0	3.1
4	*5180.00	108.7 AV			1.26 V	1	105.6	3.1
5	#10360.00	54.8 PK	68.2	-13.4	1.76 V	337	41.9	12.9
6	15540.00	46.3 PK	74.0	-27.7	1.28 V	300	33.0	13.3
7	15540.00	33.5 AV	54.0	-20.5	1.28 V	300	20.2	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	5150.00	55.9 PK	74.0	-18.1	1.74 H	29	52.8	3.1
2	5150.00	44.7 AV	54.0	-9.3	1.74 H	29	41.6	3.1
3	*5200.00	113.3 PK			1.74 H	29	110.3	3.0
4	*5200.00	102.5 AV			1.74 H	29	99.5	3.0
5	#10400.00	54.9 PK	68.2	-13.3	1.91 H	29	41.8	13.1
6	15600.00	46.4 PK	74.0	-27.6	1.24 H	4	33.3	13.1
7	15600.00	34.6 AV	54.0	-19.4	1.24 H	4	21.5	13.1
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	5150.00	64.4 PK	74.0	-9.6	1.44 V	360	61.3	3.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.44 V**	**360**	**50.8**	**3.1**
3	*5200.00	123.0 PK			1.44 V	360	120.0	3.0
4	*5200.00	112.2 AV			1.44 V	360	109.2	3.0
5	#10400.00	53.3 PK	68.2	-14.9	1.87 V	178	40.2	13.1
6	15600.00	45.3 PK	74.0	-28.7	1.09 V	54	32.2	13.1
7	15600.00	33.5 AV	54.0	-20.5	1.09 V	54	20.4	13.1

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	5150.00	43.8 PK	74.0	-30.2	1.16 H	294	40.7	3.1
2	5150.00	31.8 AV	54.0	-22.2	1.16 H	294	28.7	3.1
3	*5240.00	112.4 PK			1.16 H	294	109.5	2.9
4	*5240.00	102.8 AV			1.16 H	294	99.9	2.9
5	5350.00	44.1 PK	74.0	-29.9	1.16 H	294	41.0	3.1
6	5350.00	32.3 AV	54.0	-21.7	1.16 H	294	29.2	3.1
7	#10480.00	53.7 PK	68.2	-14.5	2.48 H	119	40.5	13.2
8	15720.00	46.5 PK	74.0	-27.5	2.05 H	151	33.8	12.7
9	15720.00	34.0 AV	54.0	-20.0	2.05 H	151	21.3	12.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	53.4 PK	74.0	-20.6	1.53 V	353	50.3	3.1
2	5150.00	41.3 AV	54.0	-12.7	1.53 V	353	38.2	3.1
3	*5240.00	121.4 PK			1.53 V	353	118.5	2.9
4	*5240.00	111.2 AV			1.53 V	353	108.3	2.9
5	5350.00	52.5 PK	74.0	-21.5	1.53 V	353	49.4	3.1
6	5350.00	40.9 AV	54.0	-13.1	1.53 V	353	37.8	3.1
7	#10480.00	54.8 PK	68.2	-13.4	1.74 V	259	41.6	13.2
8	15720.00	46.7 PK	74.0	-27.3	1.14 V	330	34.0	12.7
9	15720.00	34.4 AV	54.0	-19.6	1.14 V	330	21.7	12.7

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ax (HE40)

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	54.2 PK	74.0	-19.8	1.16 H	24	51.1	3.1
2	5150.00	44.0 AV	54.0	-10.0	1.16 H	24	40.9	3.1
3	*5190.00	105.4 PK			1.16 H	24	102.3	3.1
4	*5190.00	94.8 AV			1.16 H	24	91.7	3.1
5	#10380.00	54.1 PK	68.2	-14.1	1.98 H	311	41.1	13.0
6	15570.00	45.6 PK	74.0	-28.4	2.20 H	174	32.4	13.2
7	15570.00	34.2 AV	54.0	-19.8	2.20 H	174	21.0	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	62.9 PK	74.0	-11.1	1.13 V	360	59.8	3.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.13 V**	**360**	**50.8**	**3.1**
3	*5190.00	114.2 PK			1.13 V	360	111.1	3.1
4	*5190.00	103.4 AV			1.13 V	360	100.3	3.1
5	#10380.00	54.4 PK	68.2	-13.8	2.07 V	272	41.4	13.0
6	15570.00	46.3 PK	74.0	-27.7	2.40 V	247	33.1	13.2
7	15570.00	34.2 AV	54.0	-19.8	2.40 V	247	21.0	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	57.7 PK	74.0	-16.3	2.60 H	200	54.6	3.1
2	5150.00	44.0 AV	54.0	-10.0	2.60 H	200	40.9	3.1
3	*5230.00	110.0 PK			2.60 H	200	107.1	2.9
4	*5230.00	99.3 AV			2.60 H	200	96.4	2.9
5	5350.00	47.6 PK	74.0	-26.4	2.60 H	200	44.5	3.1
6	5350.00	36.2 AV	54.0	-17.8	2.60 H	200	33.1	3.1
7	#10460.00	53.2 PK	68.2	-15.0	1.97 H	271	40.0	13.2
8	15690.00	45.5 PK	74.0	-28.5	2.51 H	49	32.7	12.8
9	15690.00	33.5 AV	54.0	-20.5	2.51 H	49	20.7	12.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.3 PK	74.0	-7.7	1.00 V	14	63.2	3.1
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.00 V**	**14**	**50.8**	**3.1**
3	*5230.00	118.5 PK			1.00 V	14	115.6	2.9
4	*5230.00	108.3 AV			1.00 V	14	105.4	2.9
5	5350.00	56.5 PK	74.0	-17.5	1.00 V	14	53.4	3.1
6	5350.00	44.7 AV	54.0	-9.3	1.00 V	14	41.6	3.1
7	#10460.00	53.7 PK	68.2	-14.5	1.03 V	151	40.5	13.2
8	15690.00	45.6 PK	74.0	-28.4	1.88 V	111	32.8	12.8
9	15690.00	34.7 AV	54.0	-19.3	1.88 V	111	21.9	12.8

REMARKS:

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

802.11ax (HE80)

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	57.1 PK	74.0	-16.9	1.89 H	242	54.0	3.1
2	5150.00	45.7 AV	54.0	-8.3	1.89 H	242	42.6	3.1
3	*5210.00	102.4 PK			1.89 H	242	99.4	3.0
4	*5210.00	93.0 AV			1.89 H	242	90.0	3.0
5	5350.00	45.2 PK	74.0	-28.8	1.89 H	242	42.1	3.1
6	5350.00	34.6 AV	54.0	-19.4	1.89 H	242	31.5	3.1
7	#10420.00	54.7 PK	68.2	-13.5	1.56 H	316	41.5	13.2
8	15630.00	46.1 PK	74.0	-27.9	2.00 H	213	33.1	13.0
9	15630.00	34.5 AV	54.0	-19.5	2.00 H	213	21.5	13.0
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	65.6 PK	74.0	-8.4	1.00 V	0	62.5	3.1
2	5150.00	53.7 AV	54.0	-0.3	1.00 V	0	50.6	3.1
3	*5210.00	111.5 PK			1.00 V	0	108.5	3.0
4	*5210.00	101.4 AV			1.00 V	0	98.4	3.0
5	5350.00	53.9 PK	74.0	-20.1	1.00 V	0	50.8	3.1
6	5350.00	43.4 AV	54.0	-10.6	1.00 V	0	40.3	3.1
7	#10420.00	52.9 PK	68.2	-15.3	1.70 V	4	39.7	13.2
8	15630.00	46.2 PK	74.0	-27.8	2.41 V	4	33.2	13.0
9	15630.00	33.9 AV	54.0	-20.1	2.41 V	4	20.9	13.0

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

For Radio 3 (U-NII-3 Band)

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	#5613.02	53.9 PK	68.2	-14.3	1.63 H	71	50.2	3.7
2	*5745.00	117.9 PK			1.63 H	71	114.3	3.6
3	*5745.00	109.2 AV			1.63 H	71	105.6	3.6
4	#5944.37	52.0 PK	68.2	-16.2	1.63 H	71	47.5	4.5
5	11490.00	54.2 PK	74.0	-19.8	2.00 H	211	40.5	13.7
6	11490.00	52.5 AV	54.0	-1.5	2.00 H	211	38.8	13.7
7	#17235.00	46.8 PK	68.2	-21.4	1.17 H	19	30.0	16.8
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	#5625.83	60.1 PK	68.2	-8.1	1.57 V	87	56.4	3.7
2	*5745.00	125.1 PK			1.57 V	87	121.5	3.6
3	*5745.00	116.7 AV			1.57 V	87	113.1	3.6
4	#5937.24	56.8 PK	68.2	-11.4	1.57 V	87	52.3	4.5
5	11490.00	54.5 PK	74.0	-19.5	2.69 V	46	40.8	13.7
6	11490.00	51.5 AV	54.0	-2.5	2.69 V	46	37.8	13.7
7	#17235.00	46.4 PK	68.2	-21.8	1.11 V	99	29.6	16.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5592.44	54.4 PK	68.2	-13.8	1.79 H	120	50.7	3.7
2	*5785.00	120.1 PK			1.79 H	120	116.4	3.7
3	*5785.00	110.3 AV			1.79 H	120	106.6	3.7
4	#5994.07	52.6 PK	68.2	-15.6	1.79 H	120	48.1	4.5
5	11570.00	53.0 PK	74.0	-21.0	1.16 H	82	39.5	13.5
6	11570.00	52.3 AV	54.0	-1.7	1.16 H	82	38.8	13.5
7	#17355.00	46.0 PK	68.2	-22.2	1.40 H	57	28.8	17.2
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	#5594.04	57.4 PK	68.2	-10.8	1.46 V	275	53.7	3.7
2	*5785.00	124.9 PK			1.46 V	275	121.2	3.7
3	*5785.00	116.8 AV			1.46 V	275	113.1	3.7
4	#5978.40	52.9 PK	68.2	-15.3	1.46 V	275	48.4	4.5
5	11570.00	54.3 PK	74.0	-19.7	2.24 V	19	40.8	13.5
6	11570.00	51.6 AV	54.0	-2.4	2.24 V	19	38.1	13.5
7	#17355.00	45.2 PK	68.2	-23.0	1.24 V	215	28.0	17.2

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5628.28	55.4 PK	68.2	-12.8	1.08 H	250	51.7	3.7
2	*5825.00	118.6 PK			1.08 H	250	114.6	4.0
3	*5825.00	109.8 AV			1.08 H	250	105.8	4.0
4	#5923.30	52.8 PK	69.5	-16.7	1.08 H	250	48.5	4.3
5	11650.00	53.2 PK	74.0	-20.8	2.37 H	328	39.9	13.3
6	11650.00	51.5 AV	54.0	-2.5	2.37 H	328	38.2	13.3
7	#17475.00	45.8 PK	68.2	-22.4	1.43 H	14	27.5	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	#5633.71	56.1 PK	68.2	-12.1	1.39 V	276	52.4	3.7
2	*5825.00	125.8 PK			1.39 V	276	121.8	4.0
3	*5825.00	117.1 AV			1.39 V	276	113.1	4.0
4	#5923.55	57.6 PK	69.3	-11.7	1.39 V	276	53.3	4.3
5	11650.00	53.9 PK	74.0	-20.1	1.99 V	144	40.6	13.3
6	11650.00	52.4 AV	54.0	-1.6	1.99 V	144	39.1	13.3
7	#17475.00	46.4 PK	68.2	-21.8	1.05 V	276	28.1	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ax (HE20)

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	#5641.82	55.4 PK	68.2	-12.8	1.31 H	320	51.6	3.8
2	*5745.00	121.5 PK			1.31 H	320	117.9	3.6
3	*5745.00	109.5 AV			1.31 H	320	105.9	3.6
4	#5941.80	52.0 PK	68.2	-16.2	1.31 H	320	47.5	4.5
5	11490.00	53.6 PK	74.0	-20.4	1.45 H	334	39.9	13.7
6	11490.00	51.0 AV	54.0	-3.0	1.45 H	334	37.3	13.7
7	#17235.00	46.5 PK	68.2	-21.7	2.34 H	226	29.7	16.8
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	#5640.37	58.7 PK	68.2	-9.5	1.52 V	89	55.0	3.7
2	*5745.00	126.3 PK			1.52 V	89	122.7	3.6
3	*5745.00	115.9 AV			1.52 V	89	112.3	3.6
4	#5929.22	54.7 PK	68.2	-13.5	1.52 V	89	50.3	4.4
5	11490.00	53.0 PK	74.0	-21.0	2.67 V	125	39.3	13.7
6	11490.00	52.7 AV	54.0	-1.3	2.67 V	125	39.0	13.7
7	#17235.00	46.7 PK	68.2	-21.5	2.05 V	268	29.9	16.8

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5646.77	53.7 PK	68.2	-14.5	1.11 H	55	49.9	3.8
2	*5785.00	120.2 PK			1.11 H	55	116.5	3.7
3	*5785.00	109.6 AV			1.11 H	55	105.9	3.7
4	#5924.56	50.9 PK	68.5	-17.6	1.11 H	55	46.6	4.3
5	11570.00	53.7 PK	74.0	-20.3	1.86 H	294	40.2	13.5
6	11570.00	51.5 AV	54.0	-2.5	1.86 H	294	38.0	13.5
7	#17355.00	45.5 PK	68.2	-22.7	2.47 H	275	28.3	17.2
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	#5590.46	55.2 PK	68.2	-13.0	1.35 V	266	51.5	3.7
2	*5785.00	126.3 PK			1.35 V	266	122.6	3.7
3	*5785.00	115.3 AV			1.35 V	266	111.6	3.7
4	#5936.07	52.6 PK	68.2	-15.6	1.35 V	266	48.1	4.5
5	11570.00	54.2 PK	74.0	-19.8	2.43 V	70	40.7	13.5
6	11570.00	52.8 AV	54.0	-1.2	2.43 V	70	39.3	13.5
7	#17355.00	46.3 PK	68.2	-21.9	1.12 V	347	29.1	17.2

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5594.07	54.7 PK	68.2	-13.5	1.62 H	296	51.0	3.7
2	*5825.00	123.3 PK			1.62 H	296	119.3	4.0
3	*5825.00	112.3 AV			1.62 H	296	108.3	4.0
4	#5929.18	53.4 PK	68.2	-14.8	1.62 H	296	49.0	4.4
5	11650.00	54.0 PK	74.0	-20.0	2.58 H	283	40.7	13.3
6	11650.00	51.2 AV	54.0	-2.8	2.58 H	283	37.9	13.3
7	#17475.00	45.6 PK	68.2	-22.6	1.35 H	155	27.3	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	#5628.74	56.9 PK	68.2	-11.3	1.39 V	87	53.2	3.7
2	*5825.00	126.4 PK			1.39 V	87	122.4	4.0
3	*5825.00	113.9 AV			1.39 V	87	109.9	4.0
4	#5930.23	59.3 PK	68.2	-8.9	1.39 V	87	54.8	4.5
5	11650.00	53.0 PK	74.0	-21.0	1.83 V	281	39.7	13.3
6	11650.00	52.5 AV	54.0	-1.5	1.83 V	281	39.2	13.3
7	#17475.00	45.1 PK	68.2	-23.1	2.39 V	230	26.8	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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ax (HE40)

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	#5644.25	65.1 PK	68.2	-3.1	1.68 H	282	61.3	3.8
2	*5755.00	120.3 PK			1.68 H	282	116.7	3.6
3	*5755.00	109.2 AV			1.68 H	282	105.6	3.6
4	#5928.15	53.6 PK	68.2	-14.6	1.68 H	282	49.3	4.3
5	11510.00	54.4 PK	74.0	-19.6	1.17 H	100	40.8	13.6
6	11510.00	51.5 AV	54.0	-2.5	1.17 H	100	37.9	13.6
7	#17265.00	46.0 PK	68.2	-22.2	1.04 H	144	29.1	16.9
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	#5637.14	66.8 PK	68.2	-1.4	1.63 V	278	63.1	3.7
2	*5755.00	122.8 PK			1.63 V	278	119.2	3.6
3	*5755.00	112.8 AV			1.63 V	278	109.2	3.6
4	#5930.69	55.1 PK	68.2	-13.1	1.63 V	278	50.6	4.5
5	11510.00	53.2 PK	74.0	-20.8	2.42 V	207	39.6	13.6
6	11510.00	51.5 AV	54.0	-2.5	2.42 V	207	37.9	13.6
7	#17265.00	46.3 PK	68.2	-21.9	2.32 V	308	29.4	16.9

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
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	#5645.80	58.5 PK	68.2	-9.7	1.01 H	148	54.7	3.8
2	*5795.00	120.9 PK			1.01 H	148	117.2	3.7
3	*5795.00	109.5 AV			1.01 H	148	105.8	3.7
4	#5928.53	58.3 PK	68.2	-9.9	1.01 H	148	54.0	4.3
5	11590.00	55.1 PK	74.0	-18.9	2.46 H	38	41.5	13.6
6	11590.00	51.6 AV	54.0	-2.4	2.46 H	38	38.0	13.6
7	#17385.00	45.5 PK	68.2	-22.7	1.25 H	54	28.3	17.2
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	#5646.02	61.4 PK	68.2	-6.8	1.45 V	90	57.6	3.8
2	*5795.00	125.2 PK			1.45 V	90	121.5	3.7
3	*5795.00	113.1 AV			1.45 V	90	109.4	3.7
4	#5923.55	65.0 PK	69.3	-4.3	1.45 V	90	60.7	4.3
5	11590.00	53.0 PK	74.0	-21.0	2.30 V	2	39.4	13.6
6	11590.00	51.1 AV	54.0	-2.9	2.30 V	2	37.5	13.6
7	#17385.00	45.6 PK	68.2	-22.6	2.20 V	319	28.4	17.2

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. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

802.11ax (HE80)

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	#5651.82	64.8 PK	69.6	-4.8	2.40 H	246	61.0	3.8
2	*5775.00	115.4 PK			2.40 H	246	111.7	3.7
3	*5775.00	103.9 AV			2.40 H	246	100.2	3.7
4	#5926.31	57.5 PK	68.2	-10.7	2.40 H	246	53.2	4.3
5	11550.00	53.6 PK	74.0	-20.4	1.16 H	280	40.0	13.6
6	11550.00	51.1 AV	54.0	-2.9	1.16 H	280	37.5	13.6
7	#17325.00	45.8 PK	68.2	-22.4	1.03 H	260	28.8	17.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5632.74	66.4 PK	68.2	-1.8	1.59 V	85	62.7	3.7
2	*5775.00	117.1 PK			1.59 V	85	113.4	3.7
3	*5775.00	106.7 AV			1.59 V	85	103.0	3.7
4	#5933.68	59.2 PK	68.2	-9.0	1.59 V	85	54.7	4.5
5	11550.00	53.4 PK	74.0	-20.6	1.15 V	320	39.8	13.6
6	11550.00	52.0 AV	54.0	-2.0	1.15 V	320	38.4	13.6
7	#17325.00	46.3 PK	68.2	-21.9	1.66 V	84	29.3	17.0

REMARKS:

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

Below 1GHz Data:

For Radio 2 (U-NII-1 Band)

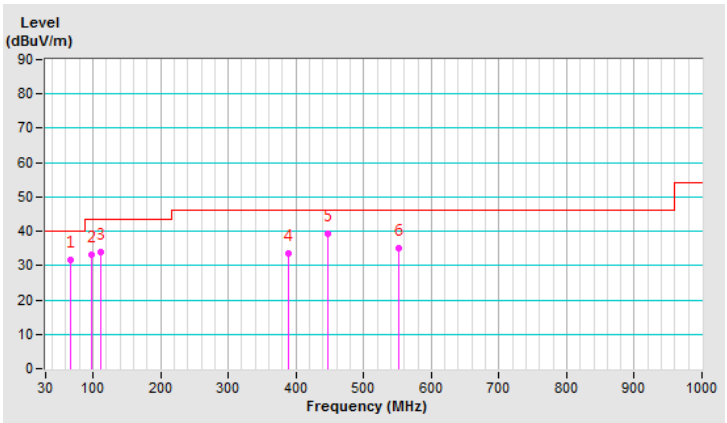
802.11a

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	66.67	31.5 QP	40.0	-8.5	1.50 H	0	40.7	-9.2
2	98.51	33.3 QP	43.5	-10.2	2.00 H	270	45.7	-12.4
3	110.78	33.8 QP	43.5	-9.7	2.00 H	268	44.4	-10.6
4	389.24	33.6 QP	46.0	-12.4	1.00 H	48	38.0	-4.4
5	447.08	39.1 QP	46.0	-6.9	2.00 H	154	41.8	-2.7
6	552.32	35.1 QP	46.0	-10.9	1.50 H	93	35.7	-0.6

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

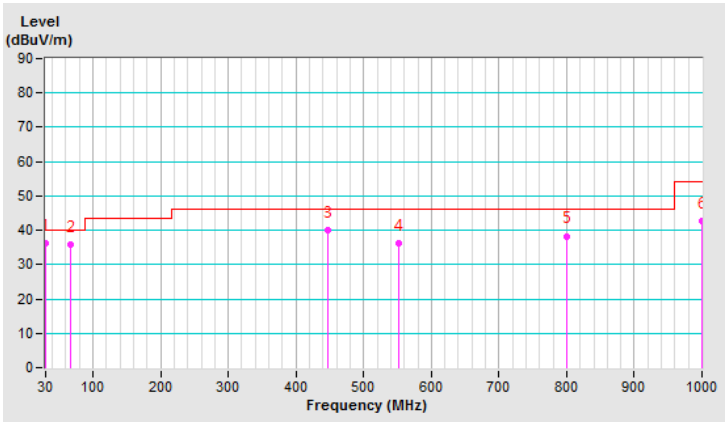


CHANNEL	TX Channel 40	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.58	36.1 QP	40.0	-3.9	1.00 V	316	45.3	-9.2
2	66.64	35.7 QP	40.0	-4.3	1.00 V	131	44.9	-9.2
3	448.00	40.1 QP	46.0	-5.9	1.00 V	163	42.7	-2.6
4	551.93	36.1 QP	46.0	-9.9	1.00 V	330	36.7	-0.6
5	799.99	38.3 QP	46.0	-7.7	1.50 V	174	33.7	4.6
6	1000.00	42.8 QP	54.0	-11.2	1.00 V	200	34.8	8.0

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



For Radio 3 (U-NII-3 Band)

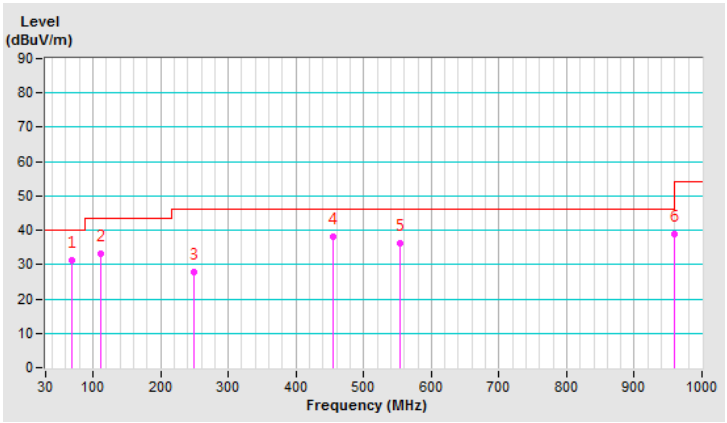
802.11ax (HE20)

CHANNEL	TX Channel 157	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	69.02	31.2 QP	40.0	-8.8	1.50 H	63	41.3	-10.1
2	110.75	33.3 QP	43.5	-10.2	1.50 H	274	43.9	-10.6
3	250.00	27.9 QP	46.0	-18.1	1.00 H	298	36.6	-8.7
4	455.39	38.2 QP	46.0	-7.8	2.00 H	163	40.6	-2.4
5	554.31	36.2 QP	46.0	-9.8	1.50 H	103	36.7	-0.5
6	960.01	38.7 QP	54.0	-15.3	1.50 H	329	31.4	7.3

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

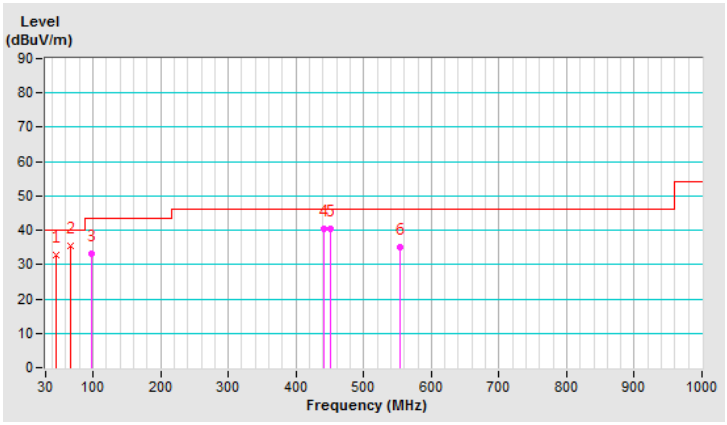


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	45.01	32.9 QP	40.0	-7.1	1.00 V	4	40.7	-7.8
2	66.62	35.4 QP	40.0	-4.6	2.00 V	115	44.6	-9.2
3	98.43	33.2 QP	43.5	-10.3	1.50 V	360	45.6	-12.4
4	441.84	40.4 QP	46.0	-5.6	1.50 V	292	43.2	-2.8
5	451.20	40.4 QP	46.0	-5.6	1.00 V	164	43.0	-2.6
6	553.17	35.0 QP	46.0	-11.0	1.00 V	324	35.5	-0.5

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

4.2.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 17, 2019	Mar. 16, 2020
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	003	Mar. 14, 2019	Mar. 13, 2020
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 Conduction 1.
3 Tested Date: Jan. 15, 2020

4.2.3 Test Procedure

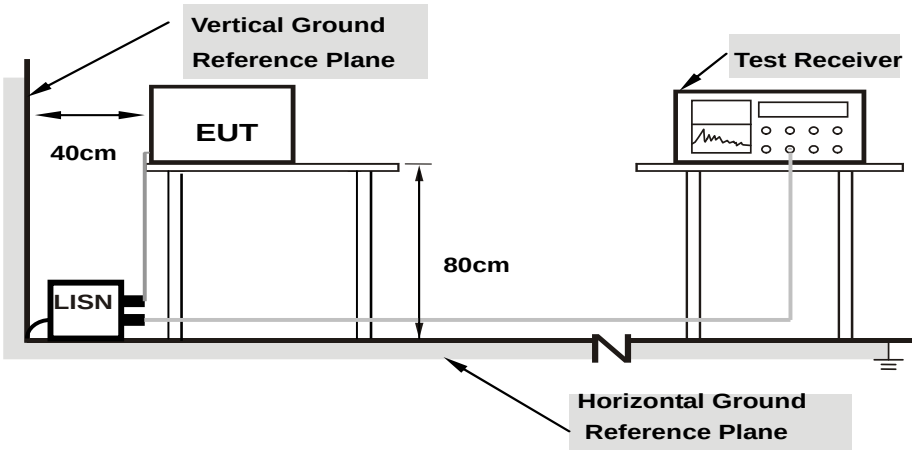
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling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

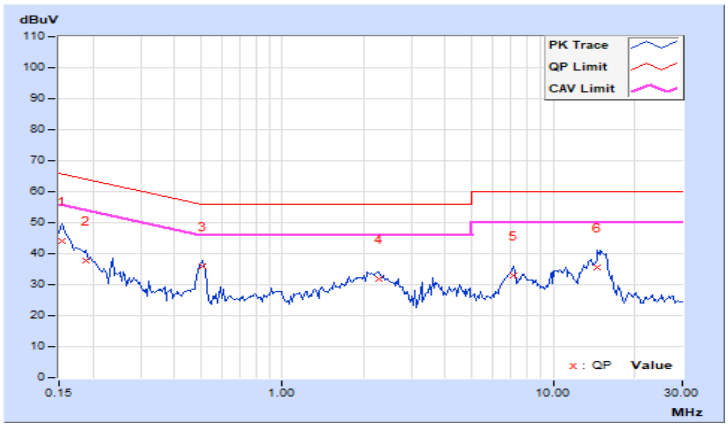
For Radio 2 (U-NII-1 Band)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.99	34.16	20.49	44.15	30.48	65.79	55.79	-21.64	-25.31
2	0.18906	9.99	27.66	12.24	37.65	22.23	64.08	54.08	-26.43	-31.85
3	0.50938	10.01	25.79	18.87	35.80	28.88	56.00	46.00	-20.20	-17.12
4	2.26953	10.14	21.57	15.98	31.71	26.12	56.00	46.00	-24.29	-19.88
5	7.11719	10.46	22.56	16.67	33.02	27.13	60.00	50.00	-26.98	-22.87
6	14.55078	10.98	24.70	18.06	35.68	29.04	60.00	50.00	-24.32	-20.96

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

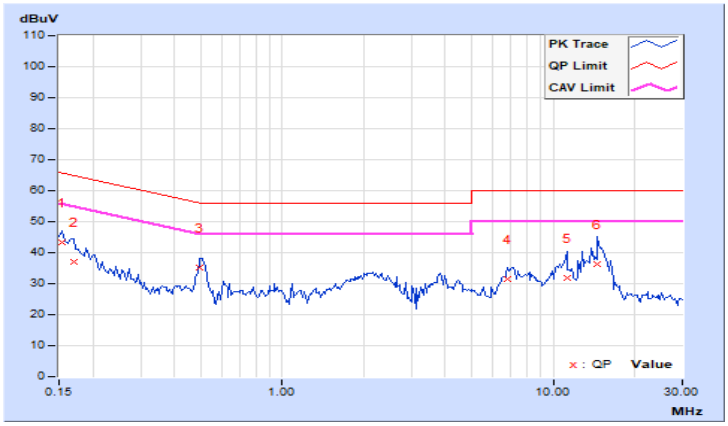


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.99	33.21	20.21	43.20	30.20	65.79	55.79	-22.59	-25.59
2	0.16953	9.99	26.92	8.76	36.91	18.75	64.98	54.98	-28.07	-36.23
3	0.49766	10.02	25.19	18.09	35.21	28.11	56.04	46.04	-20.83	-17.93
4	6.81250	10.39	21.12	15.09	31.51	25.48	60.00	50.00	-28.49	-24.52
5	11.23047	10.65	21.16	15.68	31.81	26.33	60.00	50.00	-28.19	-23.67
6	14.57422	10.83	25.54	19.02	36.37	29.85	60.00	50.00	-23.63	-20.15

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



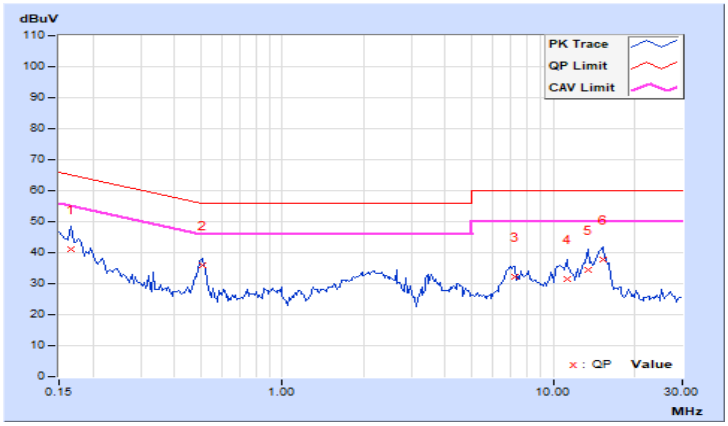
For Radio 3 (U-NII-3 Band)

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

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	9.99	31.14	13.65	41.13	23.64	65.18	55.18	-24.05	-31.54
2	0.50547	10.01	25.97	19.15	35.98	29.16	56.00	46.00	-20.02	-16.84
3	7.20703	10.47	21.83	16.38	32.30	26.85	60.00	50.00	-27.70	-23.15
4	11.23828	10.74	20.86	15.25	31.60	25.99	60.00	50.00	-28.40	-24.01
5	13.40625	10.90	23.40	18.17	34.30	29.07	60.00	50.00	-25.70	-20.93
6	15.21875	11.03	26.84	21.56	37.87	32.59	60.00	50.00	-22.13	-17.41

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

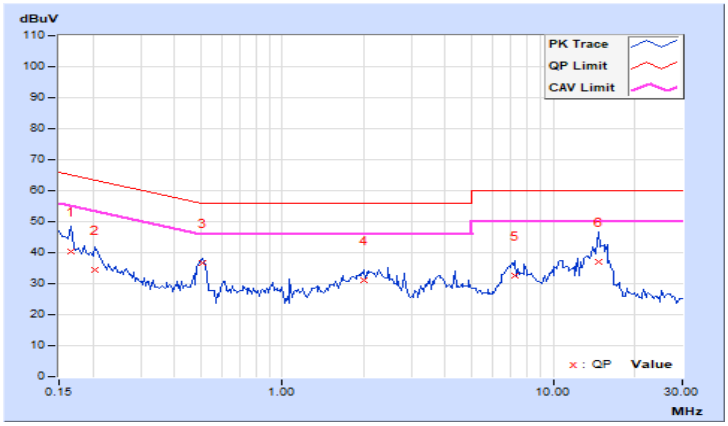


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16562	9.99	30.22	14.45	40.21	24.44	65.18	55.18	-24.97	-30.74
2	0.20469	9.99	24.31	12.39	34.30	22.38	63.42	53.42	-29.12	-31.04
3	**0.50547**	**10.02**	**26.60**	**19.92**	**36.62**	**29.94**	**56.00**	**46.00**	**-19.38**	**-16.06**
4	1.99219	10.12	20.89	14.72	31.01	24.84	56.00	46.00	-24.99	-21.16
5	7.18750	10.41	22.26	16.49	32.67	26.90	60.00	50.00	-27.33	-23.10
6	14.71484	10.83	26.36	20.17	37.19	31.00	60.00	50.00	-22.81	-19.00

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p ≦ 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)
		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 Results

For Radio 2 (U-NII-1 Band)

CDD Mode:

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
36	5180	22.72	22.30	356.893	25.53	30.00	Pass
40	5200	26.28	26.13	834.824	29.22	30.00	Pass
48	5240	25.72	24.45	651.862	28.14	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
36	5180	22.38	22.22	339.706	25.31	30.00	Pass
40	5200	25.93	25.81	772.808	28.88	30.00	Pass
48	5240	25.42	24.23	613.187	27.88	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
38	5190	20.29	20.02	207.367	23.17	30.00	Pass
46	5230	24.57	23.72	521.923	27.18	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
42	5210	20.21	19.75	199.36	23.00	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
36	5180	22.66	22.43	359.486	25.56	30.00	Pass
40	5200	26.25	26.06	825.342	29.17	30.00	Pass
48	5240	25.65	24.51	649.77	28.13	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
38	5190	20.63	20.33	223.506	23.49	30.00	Pass
46	5230	24.77	24.02	552.264	27.42	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
42	5210	20.33	19.93	206.296	23.14	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

Beamforming Mode:

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
36	5180	22.38	22.22	339.706	25.31	30.00	Pass
40	5200	25.93	25.81	772.808	28.88	30.00	Pass
48	5240	25.42	24.23	613.187	27.88	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
38	5190	20.29	20.02	207.367	23.17	30.00	Pass
46	5230	24.57	23.72	521.923	27.18	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
42	5210	20.21	19.75	199.36	23.00	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
36	5180	22.66	22.43	359.486	25.56	30.00	Pass
40	5200	26.25	26.06	825.342	29.17	30.00	Pass
48	5240	25.65	24.51	649.77	28.13	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
38	5190	20.63	20.33	223.506	23.49	30.00	Pass
46	5230	24.77	24.02	552.264	27.42	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1				
42	5210	20.33	19.93	206.296	23.14	30.00	Pass

Note: The directional gain = 5.52 dBi < 6dBi, so the power limit shall not be reduced.

For Radio 3 (U-NII-3 Band)

CDD Mode:

802.11a

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
149	5745	23.41	24.32	23.17	24.55	982.27	29.92	30.00	Pass
157	5785	23.21	24.41	23.15	24.73	989.174	29.95	30.00	Pass
165	5825	23.29	24.37	23.10	24.62	980.74	29.92	30.00	Pass

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
149	5745	22.85	24.19	22.96	24.36	925.769	29.67	30.00	Pass
157	5785	22.77	24.41	23.08	24.31	938.302	29.72	30.00	Pass
165	5825	22.80	24.09	23.03	24.37	921.431	29.64	30.00	Pass

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
151	5755	22.76	23.94	23.50	24.01	912.181	29.60	30.00	Pass
159	5795	22.84	24.08	23.43	24.13	927.282	29.67	30.00	Pass

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
155	5775	21.01	22.51	21.94	22.56	641.037	28.07	30.00	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
149	5745	23.11	24.39	23.28	24.70	987.369	29.94	30.00	Pass
157	5785	23.11	24.67	23.33	24.51	995.5	29.98	30.00	Pass
165	5825	23.04	24.37	23.31	24.63	979.591	29.91	30.00	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
151	5755	23.08	24.26	23.82	24.34	982.556	29.92	30.00	Pass
159	5795	23.14	24.41	23.71	24.42	993.778	29.97	30.00	Pass

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
155	5775	21.25	22.82	22.21	22.86	684.316	28.35	30.00	Pass

Beamforming Mode:

802.11ac (VHT20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
149	5745	21.79	23.02	21.94	23.36	724.54	28.60	29.03	Pass
157	5785	21.78	23.31	22.21	23.25	742.64	28.71	29.03	Pass
165	5825	21.71	23.03	21.89	23.21	713.098	28.53	29.03	Pass

Note: The directional gain is 6.97 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.97-6) = 29.03 dBm.

802.11ac (VHT40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
151	5755	21.78	23.09	22.67	23.07	742.06	28.70	29.03	Pass
159	5795	21.78	23.23	22.57	23.11	746.4	28.73	29.03	Pass

Note: The directional gain is 6.97 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.97-6) = 29.03 dBm.

802.11ac (VHT80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
155	5775	21.01	22.51	21.94	22.56	641.037	28.07	29.03	Pass

Note: The directional gain is 6.97 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.97-6) = 29.03 dBm.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
149	5745	22.03	23.31	22.27	23.67	775.341	28.89	29.03	Pass
157	5785	22.09	23.59	22.41	23.52	789.454	28.97	29.03	Pass
165	5825	22.06	23.31	22.19	23.51	764.948	28.84	29.03	Pass

Note: The directional gain is 6.97 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.97-6) = 29.03 dBm.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
151	5755	22.07	23.35	22.91	23.41	792.051	28.99	29.03	Pass
159	5795	22.11	23.51	22.85	23.31	793.985	29.00	29.03	Pass

Note: The directional gain is 6.97 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.97-6) = 29.03 dBm.

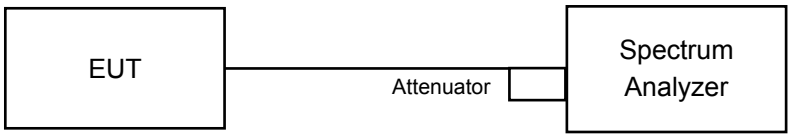
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3				
155	5775	21.25	22.82	22.21	22.86	684.316	28.35	29.03	Pass

Note: The directional gain is 6.97 dBi > 6 dBi, so the power limit shall be reduced to 30-(6.97-6) = 29.03 dBm.

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

For Radio 2 (U-NII-1 Band)

CDD Mode:

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.44
40	5200	17.16	21.60
48	5240	16.80	16.80

802.11ax (HE20)

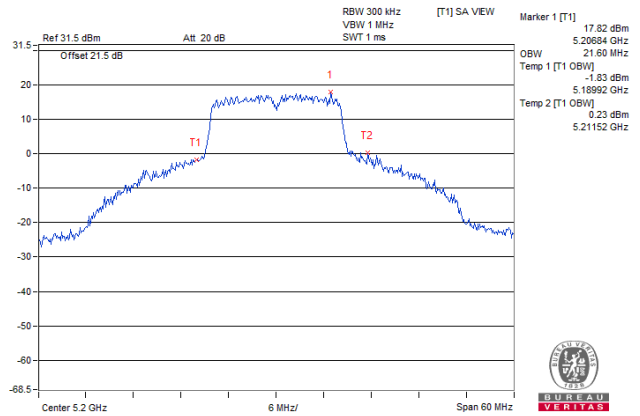
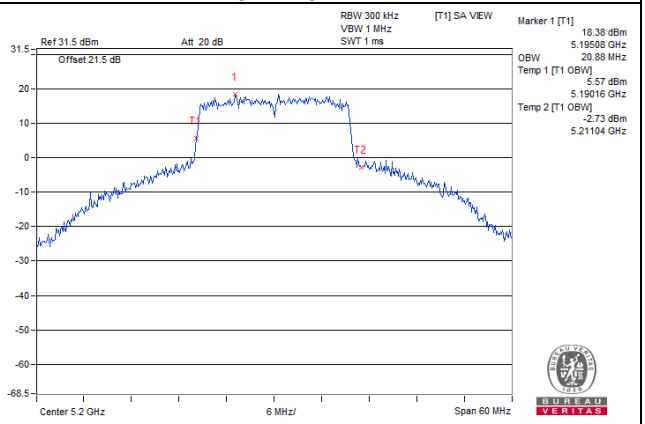
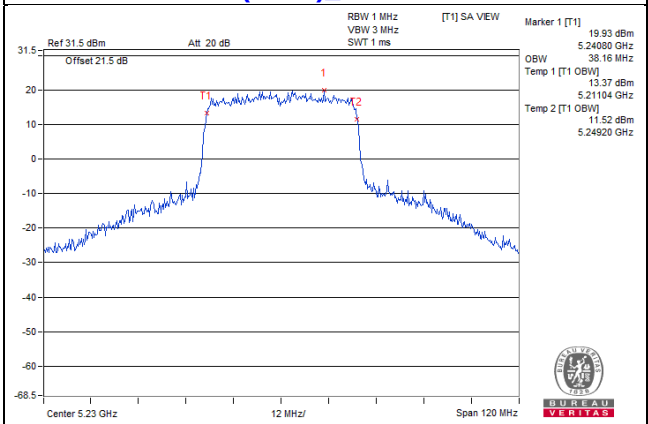
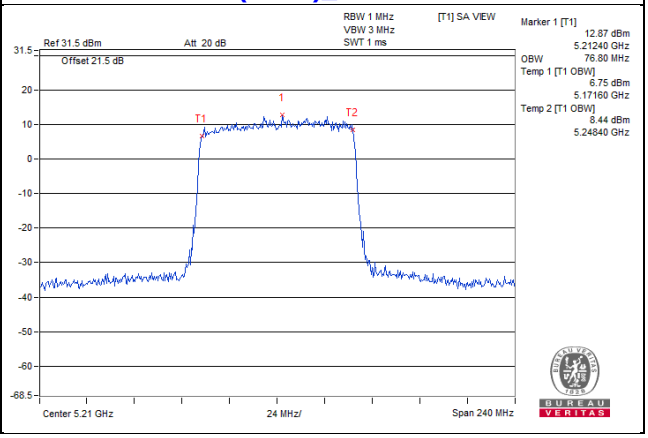
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.96	18.96
40	5200	19.20	20.88
48	5240	19.20	19.08

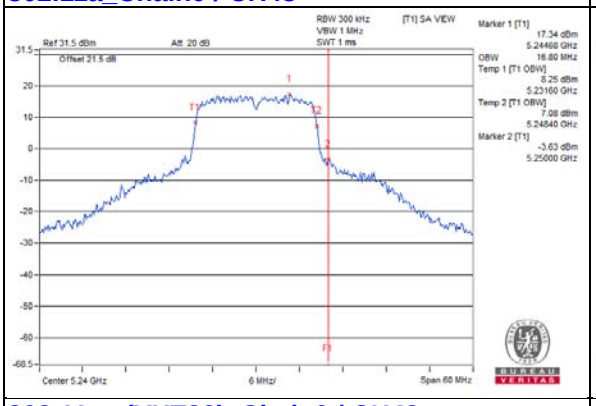
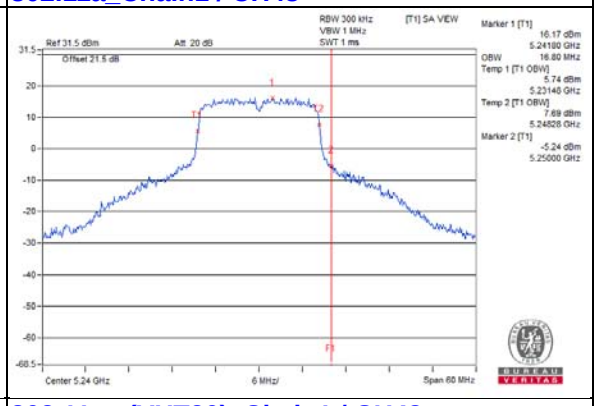
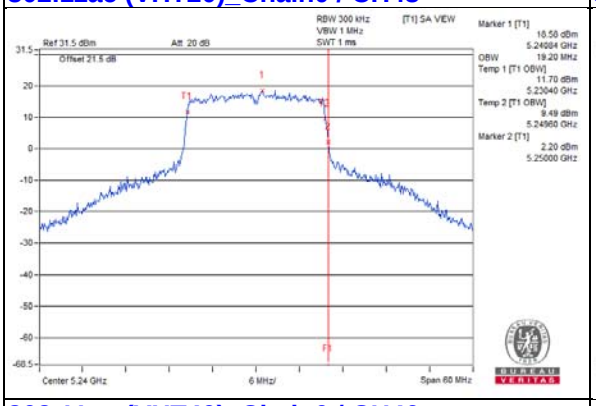
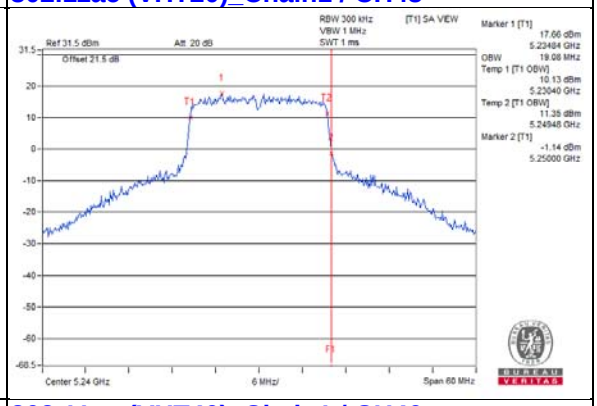
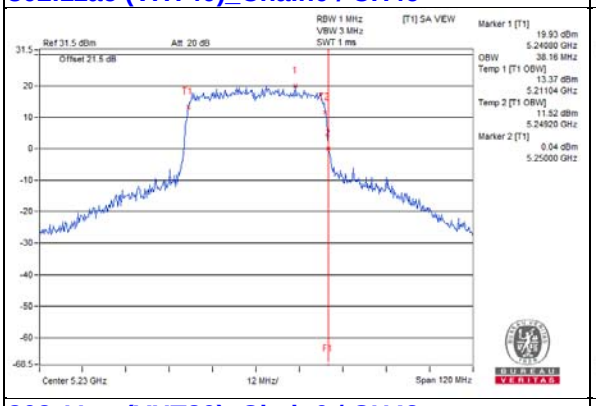
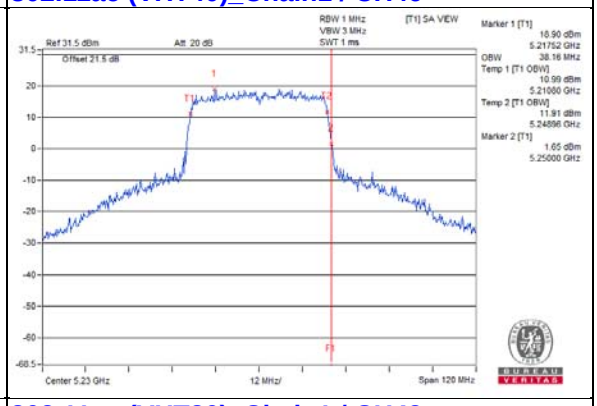
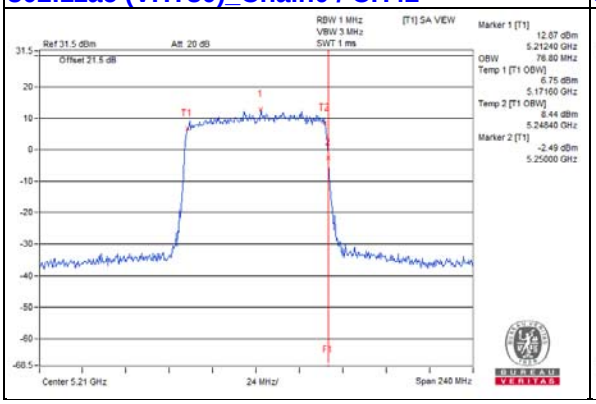
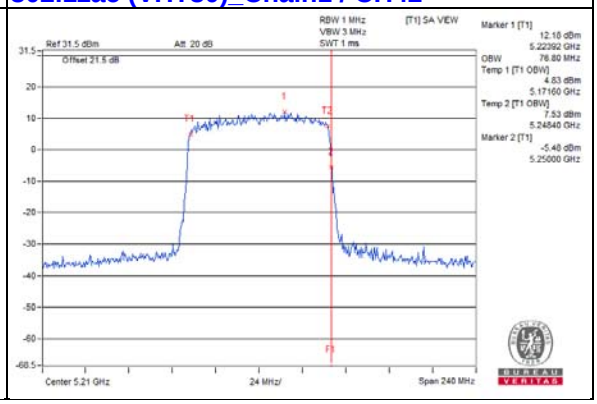
802.11ax (HE40)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.92	37.92
46	5230	38.16	38.16

802.11ax (HE80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.80	76.80

Spectrum Plot of Max. Value	
802.11a_Chain 1 / CH40	**802.11ax (HE20)_Chain 1 / CH40**
	
802.11ax (HE40)_Chain 0 / CH46	**802.11ax (HE80)_Chain 0 / CH42**
	

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**
	

For Radio 3 (U-NII-3 Band)

CDD Mode:

802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	16.61	16.43	16.43	16.43
157	5785	16.56	16.44	16.44	16.68
165	5825	16.44	16.44	16.44	16.44

802.11ax (HE20)

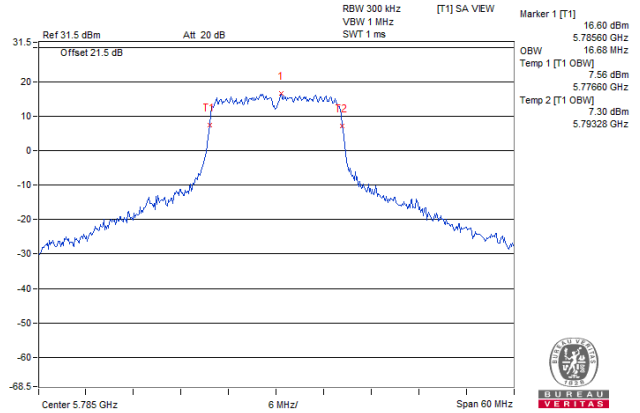
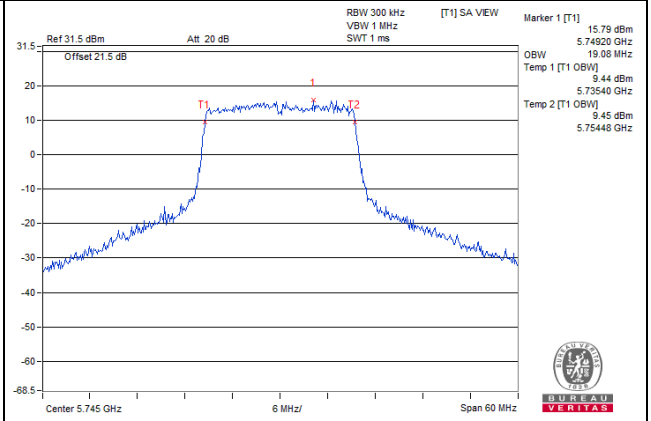
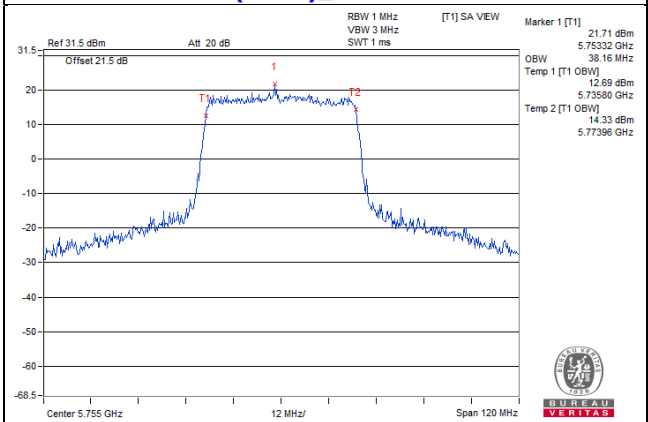
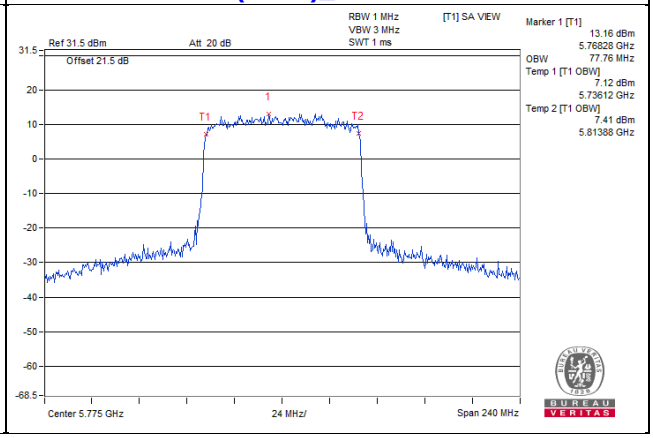
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	19.08	18.96	18.96	19.08
157	5785	18.96	18.84	19.08	19.08
165	5825	18.84	18.96	18.96	19.08

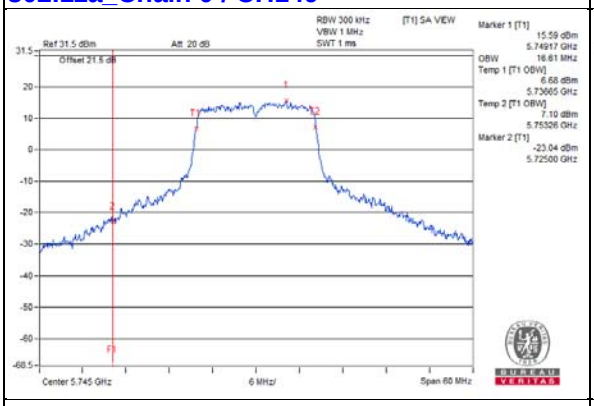
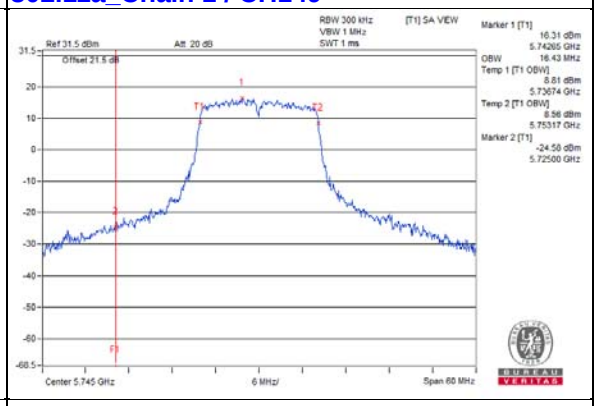
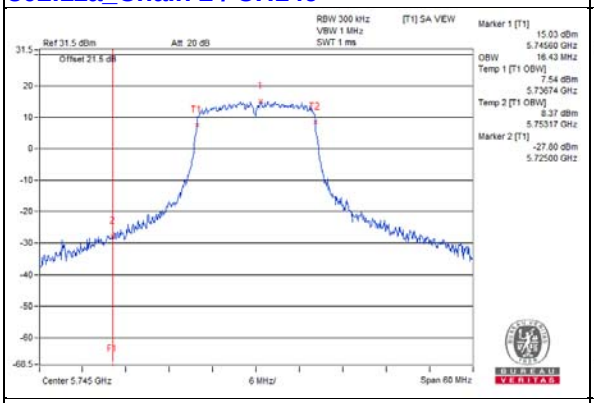
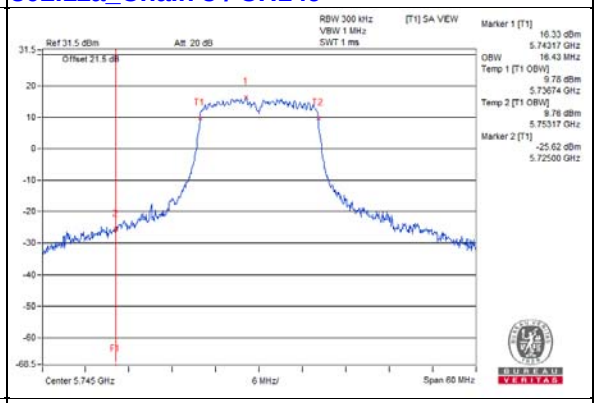
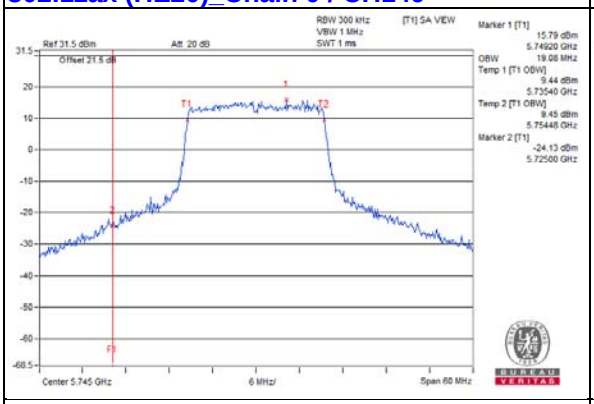
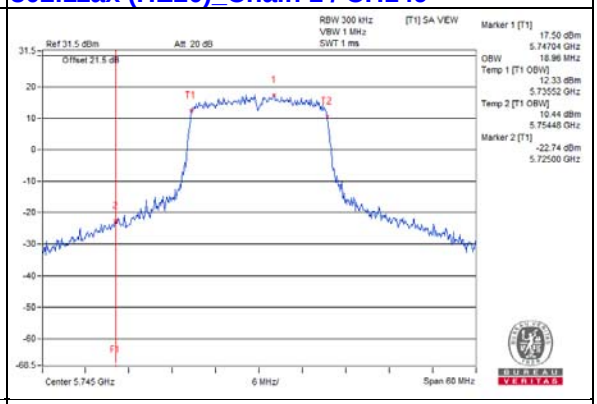
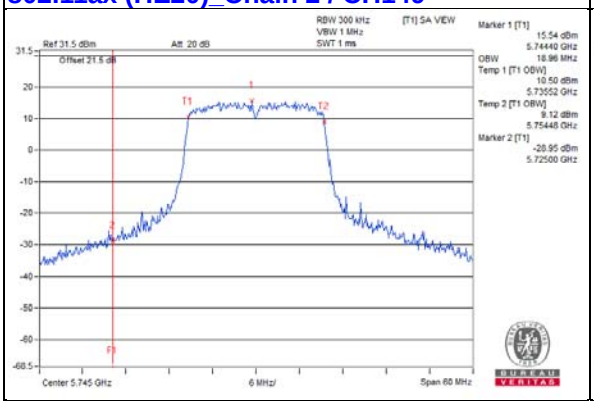
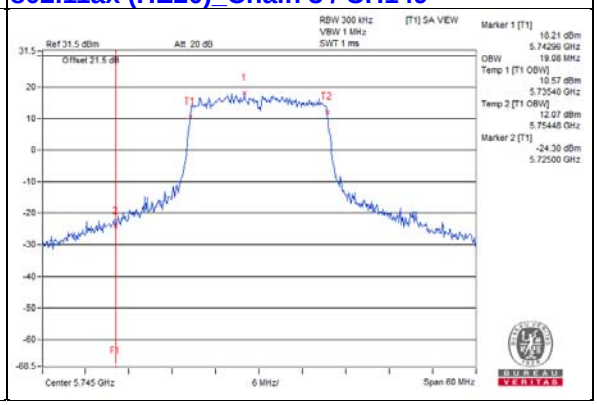
802.11ax (HE40)

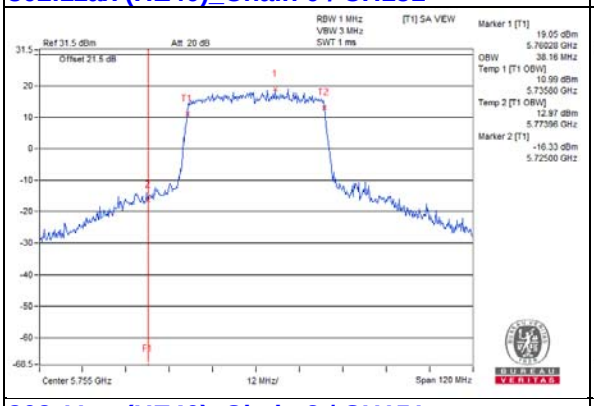
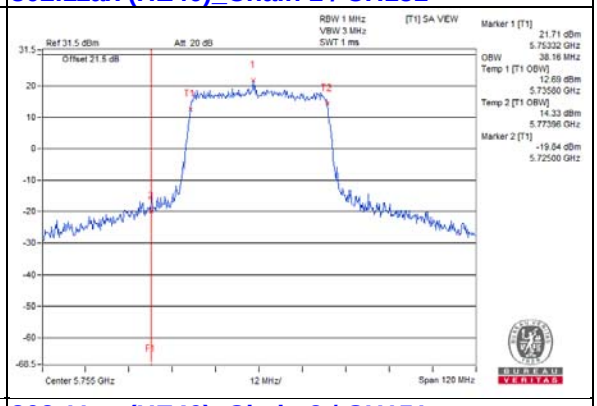
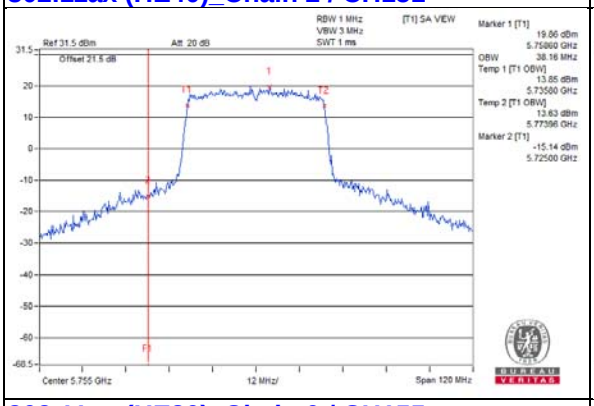
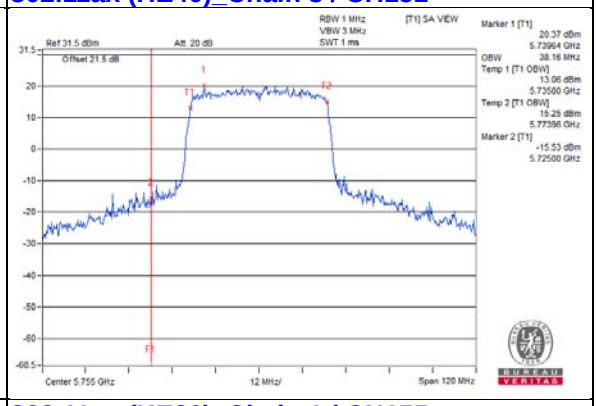
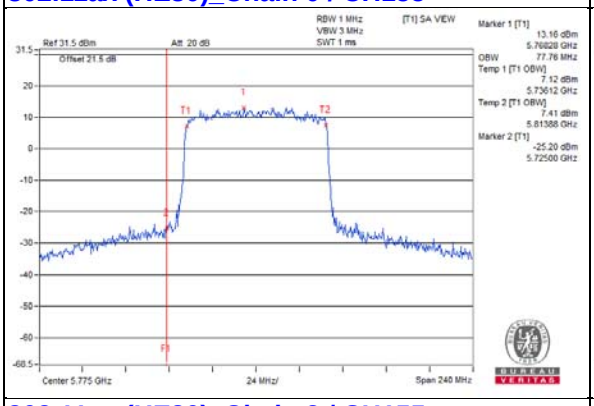
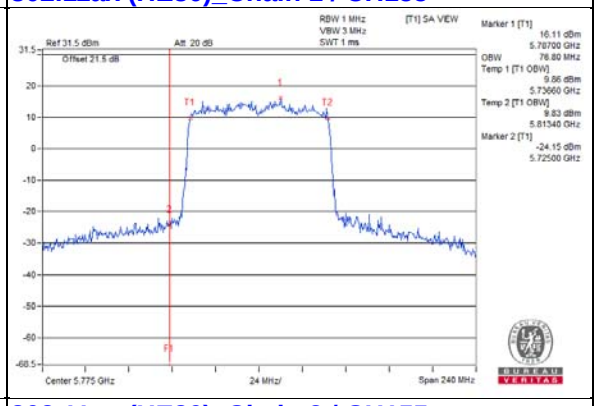
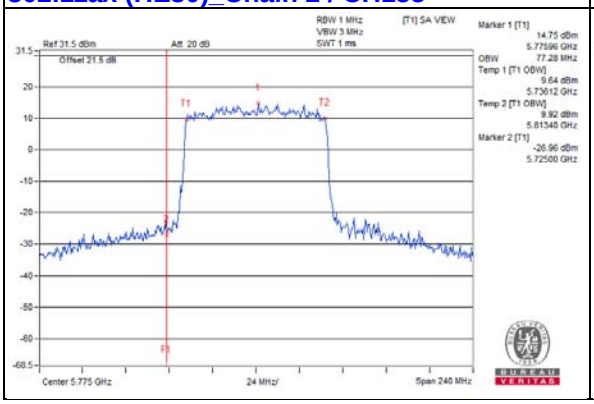
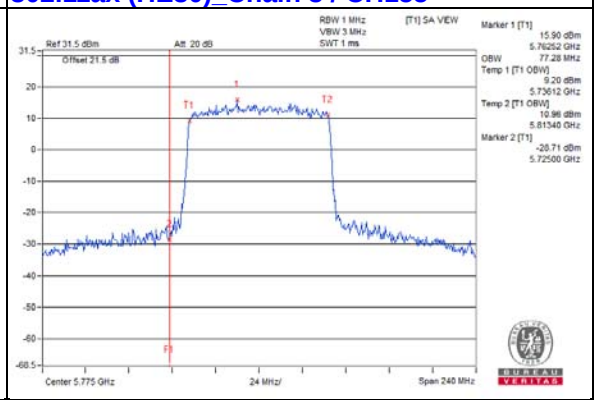
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
151	5755	38.16	38.16	38.16	38.16
159	5795	38.16	37.92	38.16	38.16

802.11ax (HE80)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
155	5775	77.76	76.80	77.28	77.28

Spectrum Plot of Max. Value	
802.11a_Chain 3 / CH157	**802.11ax (HE20)_Chain 0 / CH149**
	
802.11ax (HE40)_Chain 0 / CH151	**802.11ax (HE80)_Chain 0 / CH155**
	

Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2C band)	
802.11a_Chain 0 / CH149	**802.11a_Chain 1 / CH149**
	
802.11a_Chain 2 / CH149	**802.11a_Chain 3 / CH149**
	
802.11ax (HE20)_Chain 0 / CH149	**802.11ax (HE20)_Chain 1 / CH149**
	
802.11ax (HE20)_Chain 2 / CH149	**802.11ax (HE20)_Chain 3 / CH149**
	

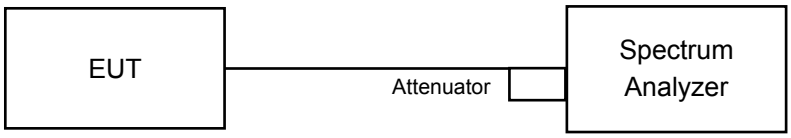
Spectrum Plot for near by DFS band (DFS is required, if 99% OCP straddle into U-NII-2C band)	
802.11ax (HE40)_Chain 0 / CH151	**802.11ax (HE40)_Chain 1 / CH151**
	
802.11ax (HE40)_Chain 2 / CH151	**802.11ax (HE40)_Chain 3 / CH151**
	
802.11ax (HE80)_Chain 0 / CH155	**802.11ax (HE80)_Chain 1 / CH155**
	
802.11ax (HE80)_Chain 2 / CH155	**802.11ax (HE80)_Chain 3 / 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	
		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

For U-NII-1 band:

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 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(500kHz/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

For Radio 2 (U-NII-1 Band)

CDD Mode:

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1				
36	5180	9.25	8.79	0.25	12.04	17.00	Pass
40	5200	13.12	12.16	0.25	15.68	17.00	Pass
48	5240	11.45	11.40	0.25	14.44	17.00	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. The directional gain = 5.52 dBi < 6dBi, so the power density limit shall not be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1				
36	5180	8.59	8.65	0.20	11.63	17.00	Pass
40	5200	12.35	11.29	0.20	14.86	17.00	Pass
48	5240	10.57	10.62	0.20	13.61	17.00	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. The directional gain = 5.52 dBi < 6dBi, so the power density limit shall not be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1				
38	5190	2.70	2.35	0.26	5.54	17.00	Pass
46	5230	7.58	6.51	0.26	10.09	17.00	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. The directional gain = 5.52 dBi < 6dBi, so the power density limit shall not be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

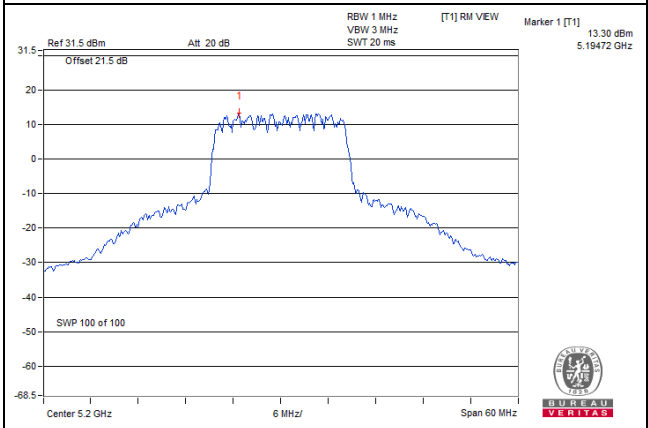
802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD (dBm/MHz)	Max. PSD Limit (dBm/MHz)	Pass / Fail
		Chain0	Chain1				
42	5210	0.04	-0.79	0.19	2.66	17.00	Pass

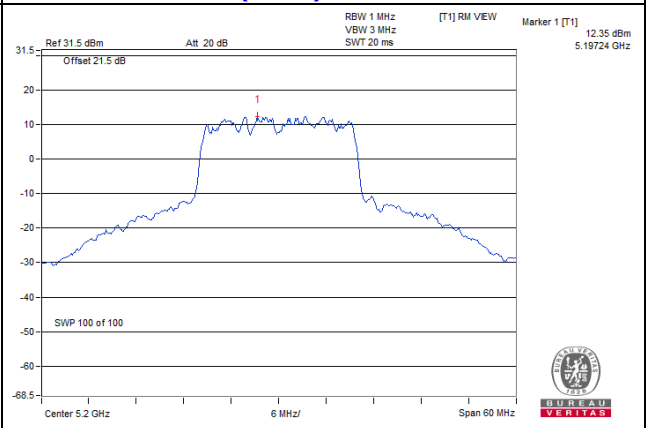
Note: 1. Method a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. The directional gain = 5.52 dBi < 6dBi, so the power density limit shall not be reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

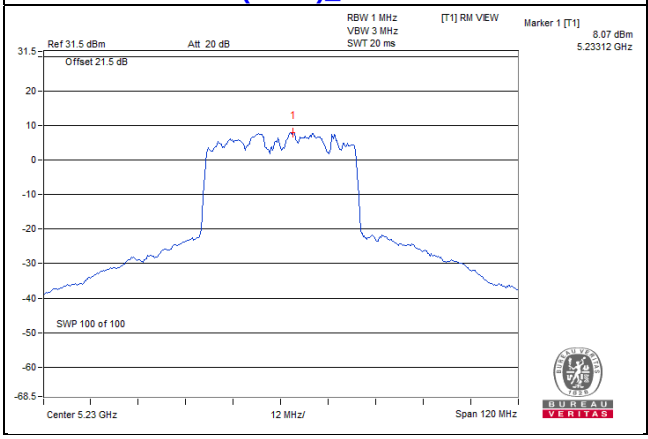
802.11a_Chain 0 / CH40



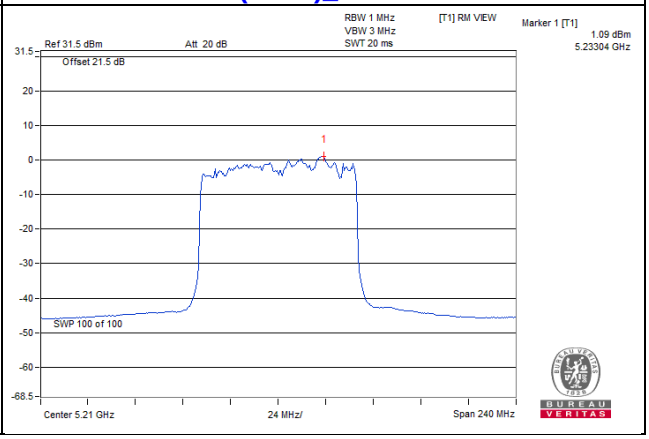
802.11ax (HE20)_Chain 0 / CH40



802.11ax (HE40)_Chain 0 / CH46



802.11ax (HE80)_Chain 0 / CH42



For Radio 3 (U-NII-3 Band)

CDD Mode:

802.11a

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/ 300kHz)	Total PSD (dBm/ 500kHz)	PSD Limit (dBm/ 500kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3					
149	5745	2.08	2.83	1.05	1.91	0.27	8.30	10.52	29.03	Pass
157	5785	1.51	2.99	0.72	3.21	0.27	8.52	10.74	29.03	Pass
165	5825	1.49	3.07	1.81	2.75	0.27	8.62	10.84	29.03	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/ 300kHz)	Total PSD (dBm/ 500kHz)	PSD Limit (dBm/ 500kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3					
149	5745	0.22	1.38	-0.08	1.79	0.20	7.12	9.34	29.03	Pass
157	5785	-0.63	2.01	0.49	1.16	0.20	7.08	9.30	29.03	Pass
165	5825	-0.16	1.83	0.71	1.68	0.20	7.31	9.53	29.03	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/ 300kHz)	Total PSD (dBm/ 500kHz)	PSD Limit (dBm/ 500kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3					
151	5755	-2.48	-1.28	-2.20	-2.15	0.21	4.23	6.45	29.03	Pass
159	5795	-3.03	-1.25	-1.42	-1.51	0.21	4.48	6.70	29.03	Pass

Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.
2. The directional gain = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

Chan.	Chan. Freq. (MHz)	PSD w/o Duty Factor (dBm/300kHz)				Duty Factor (dB)	Total PSD (dBm/ 300kHz)	Total PSD (dBm/ 500kHz)	PSD Limit (dBm/ 500kHz)	Pass / Fail
		Chain0	Chain1	Chain2	Chain3					
155	5775	-7.38	-5.20	-6.48	-6.25	0.23	-0.01	2.21	29.03	Pass

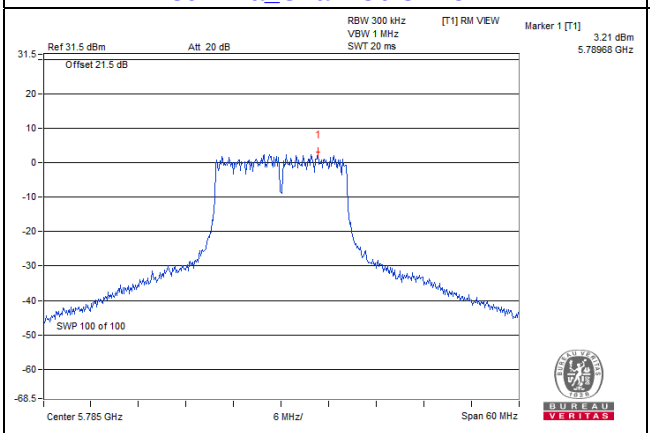
Note: 1. Method b) Measure and sum spectral maxima across the outputs of KDB 662911 is using for calculating total power density.

2. The directional gain = 6.97dBi > 6dBi, so the power density limit shall be reduced to 30-(6.97-6) = 29.03dBm.

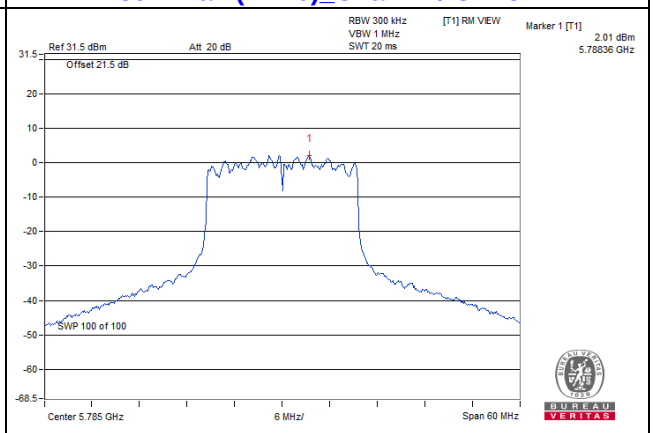
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

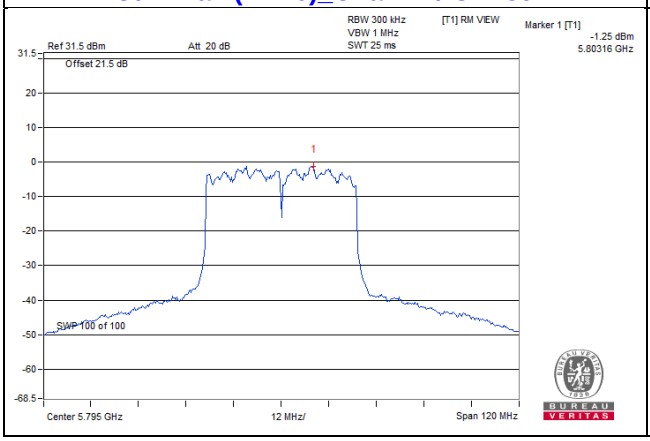
802.11a_Chain 3 / CH157



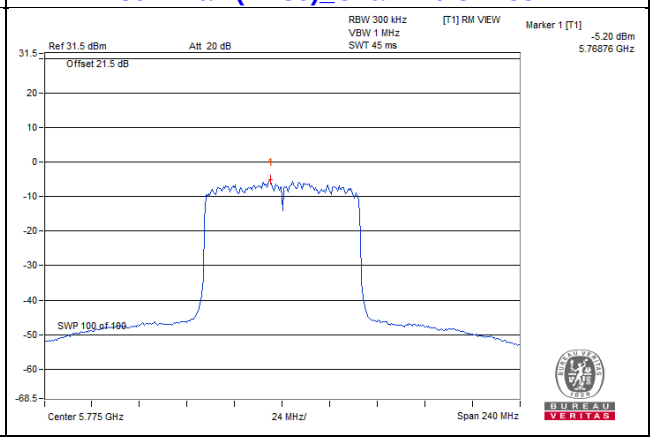
802.11ax (HE20)_Chain 1 / CH157



802.11ax (HE40)_Chain 1 / CH159



802.11ax (HE80)_Chain 1 / CH155

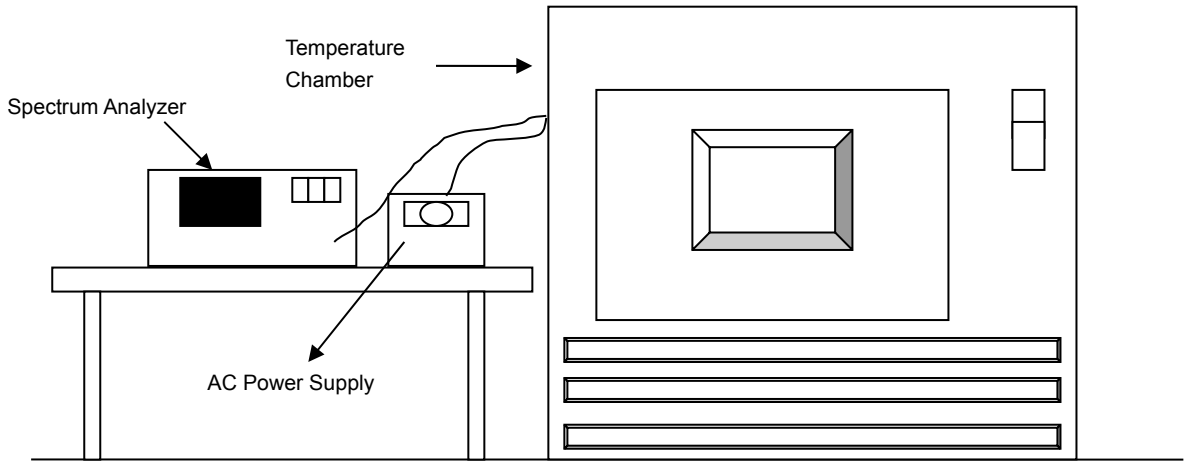


4.6 Frequency Stability Measurement

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 (d) with the temperature chamber set to the next desired temperature until measurements down to the lowest specified temperature have been completed.

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

For Radio 2 (U-NII-1 Band)

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
40	120	5179.99	Pass	5179.994	Pass	5179.9939	Pass	5179.9896	Pass
30	120	5179.9911	Pass	5179.9924	Pass	5179.9881	Pass	5179.9878	Pass
20	120	5179.9928	Pass	5179.9935	Pass	5179.9905	Pass	5179.9941	Pass
10	120	5180.0045	Pass	5180.0076	Pass	5180.0053	Pass	5180.0057	Pass
0	120	5180.0166	Pass	5180.0139	Pass	5180.0153	Pass	5180.0151	Pass

Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5179.9933	Pass	5179.9932	Pass	5179.9913	Pass	5179.9932	Pass
	120	5179.9928	Pass	5179.9935	Pass	5179.9905	Pass	5179.9941	Pass
	102	5179.9922	Pass	5179.9945	Pass	5179.9902	Pass	5179.9944	Pass

For Radio 3 (U-NII-3 Band)

Frequency Stability Versus Temp.									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
40	120	5745.0138	Pass	5745.0129	Pass	5745.0125	Pass	5745.0151	Pass
30	120	5744.9948	Pass	5744.9939	Pass	5744.9932	Pass	5744.9934	Pass
20	120	5745.0056	Pass	5745.0061	Pass	5745.0042	Pass	5745.0069	Pass
10	120	5744.9834	Pass	5744.9823	Pass	5744.9831	Pass	5744.9848	Pass
0	120	5744.9916	Pass	5744.9889	Pass	5744.9914	Pass	5744.9876	Pass

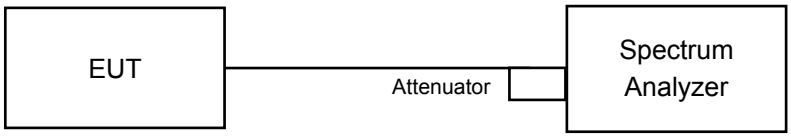
Frequency Stability Versus Voltage									
Operating Frequency: 5745 MHz									
TEMP. (℃)	Power Supply (Vac)	0 Minute		2 Minutes		5 Minutes		10 Minutes	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5745.005	Pass	5745.0058	Pass	5745.0051	Pass	5745.0071	Pass
	120	5745.0056	Pass	5745.0061	Pass	5745.0042	Pass	5745.0069	Pass
	102	5745.0066	Pass	5745.007	Pass	5745.0045	Pass	5745.0071	Pass

4.7 6dB Bandwidth Measurement

4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

4.7.2 Test Setup



4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.7.4 Test Procedure

MEASUREMENT PROCEDURE REF

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

CDD Mode

For Radio 3 (U-NII-3 Band)

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	15.95	15.58	15.66	15.70	0.5	Pass
157	5785	15.58	15.40	15.47	16.02	0.5	Pass
165	5825	15.67	15.39	15.46	16.04	0.5	Pass

802.11ax (HE20)

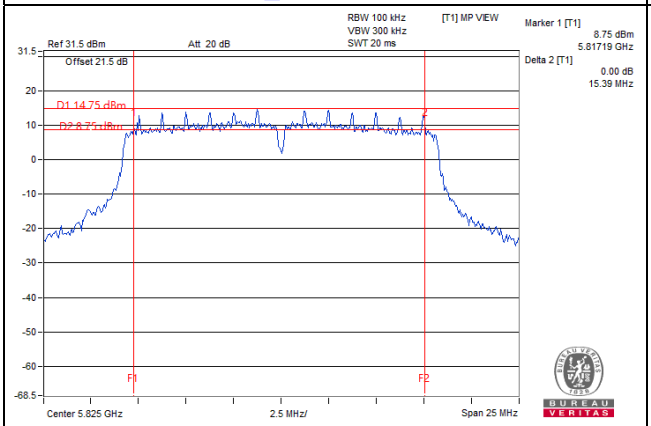
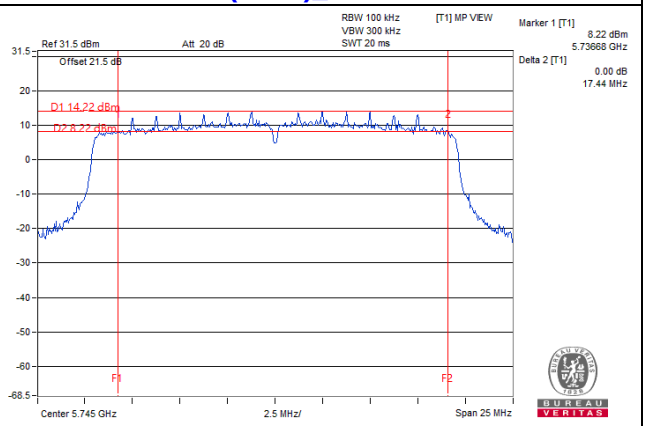
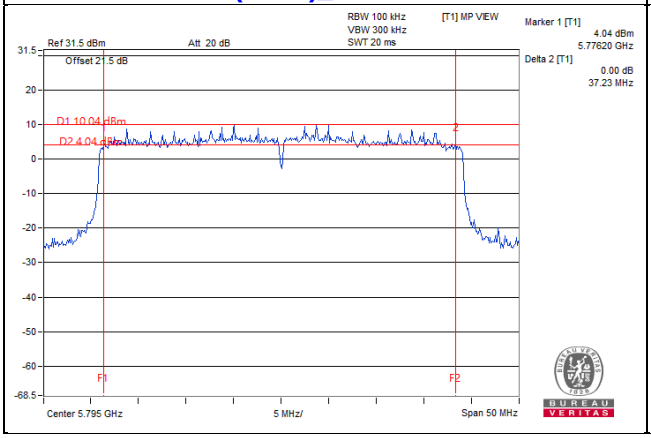
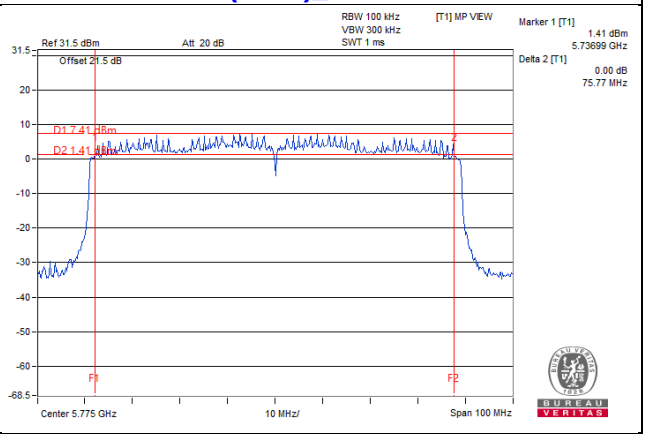
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	18.89	17.44	17.48	18.71	0.5	Pass
157	5785	18.63	18.32	18.79	18.77	0.5	Pass
165	5825	18.41	18.64	17.92	18.71	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.67	37.87	37.92	37.74	0.5	Pass
159	5795	37.23	37.52	37.94	37.86	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	77.02	75.77	77.74	77.27	0.5	Pass

Spectrum Plot of Worst Value	
802.11a_Chain 1 / CH165	**802.11ax (HE20)_Chain 1 / CH149**
	
802.11ax (HE40)_Chain 0 / CH159	**802.11ax (HE80)_Chain 1 / CH155**
	

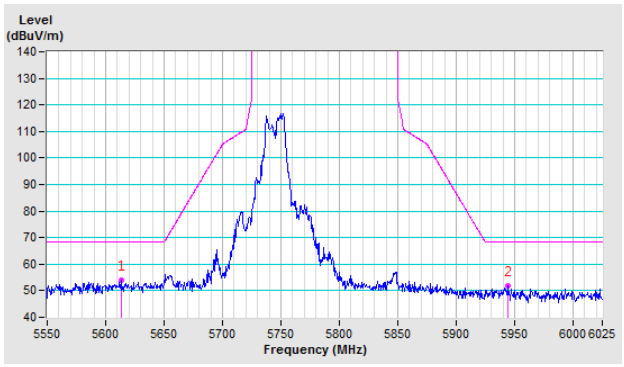
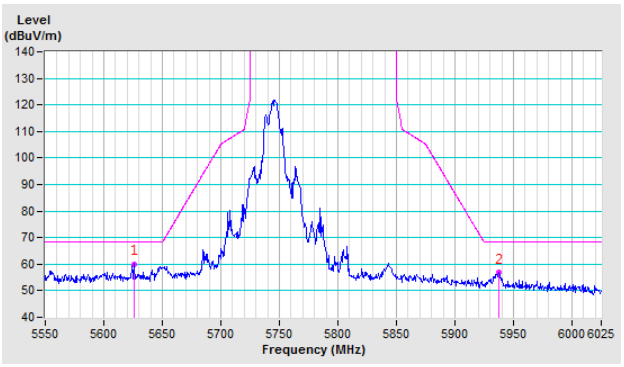
5 Pictures of Test Arrangements

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

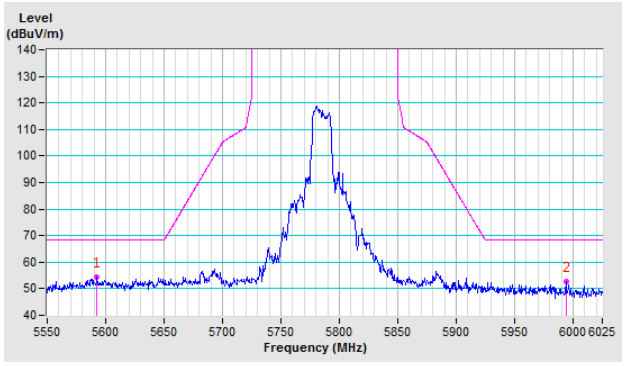
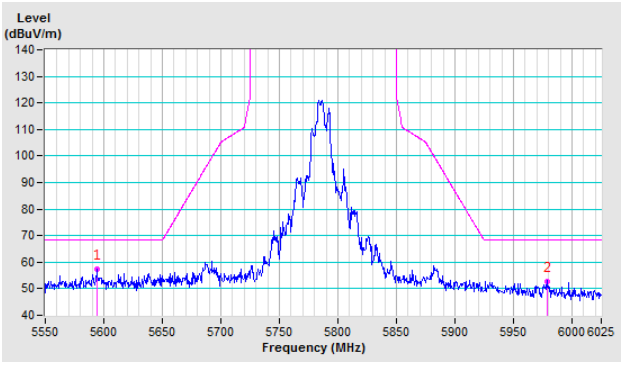
Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

802.11a

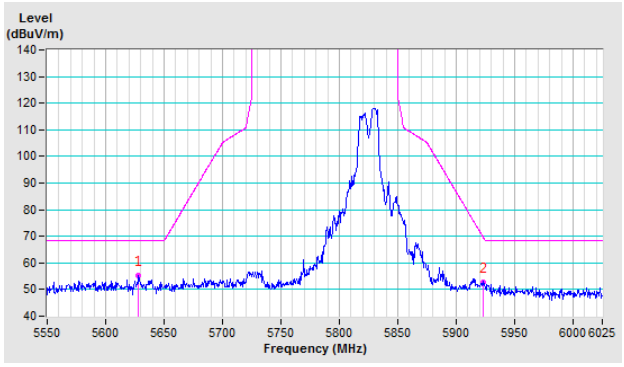
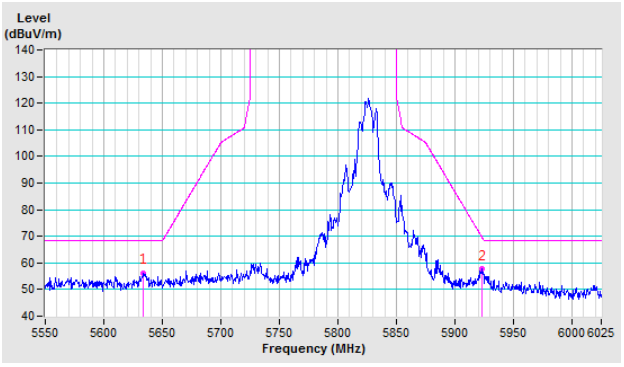
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

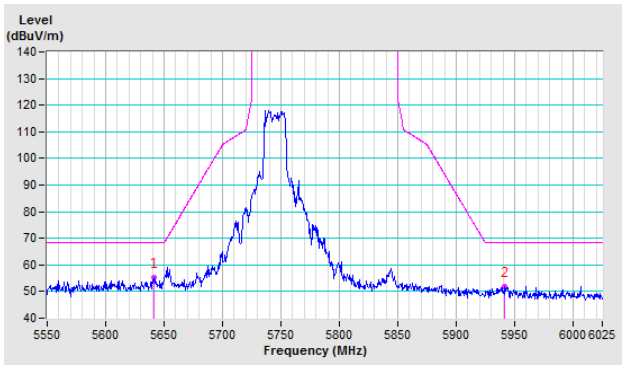
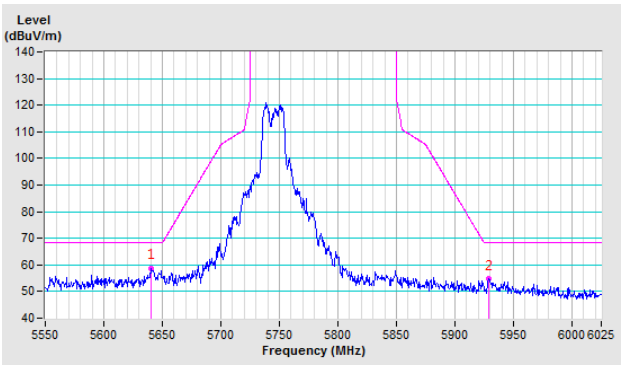
Horizontal	Vertical
	

CH 165 5825 MHz

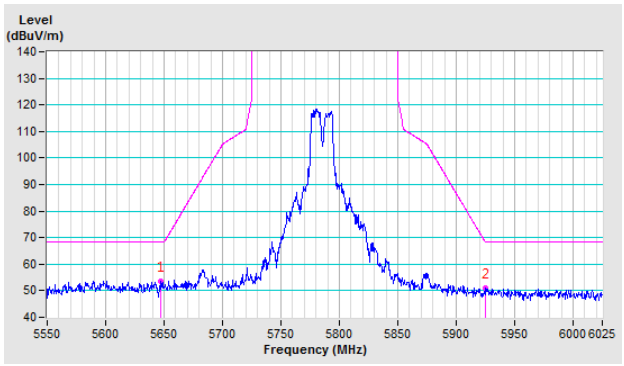
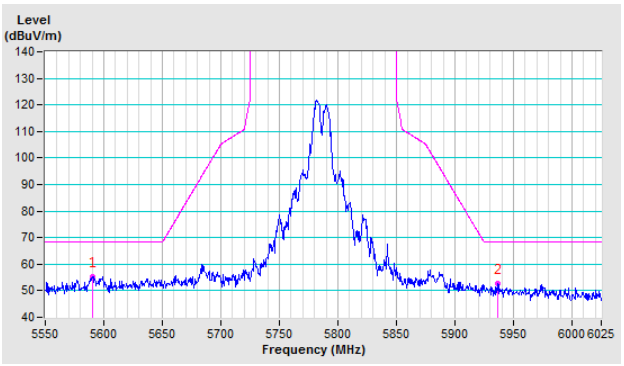
Horizontal	Vertical
	

802.11ac (VHT20)

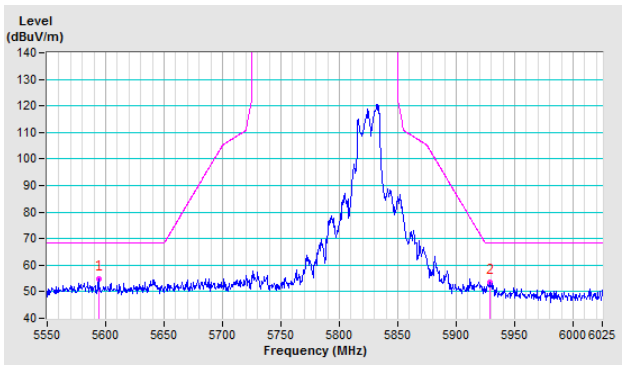
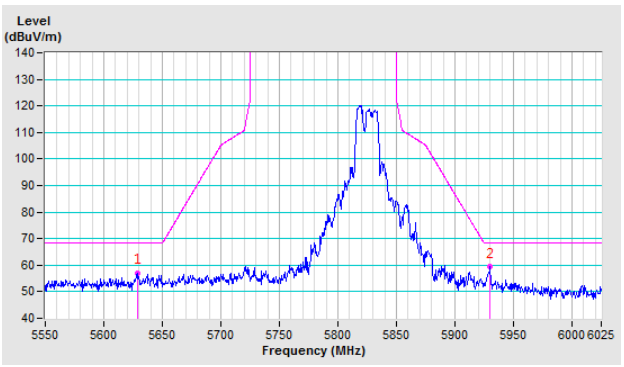
CH 149 5745 MHz

Horizontal	Vertical
	

CH 157 5785 MHz

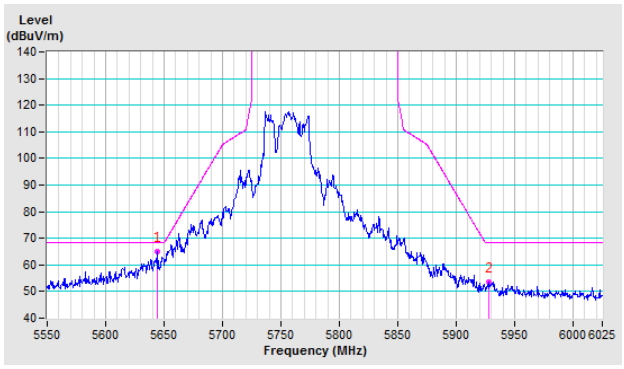
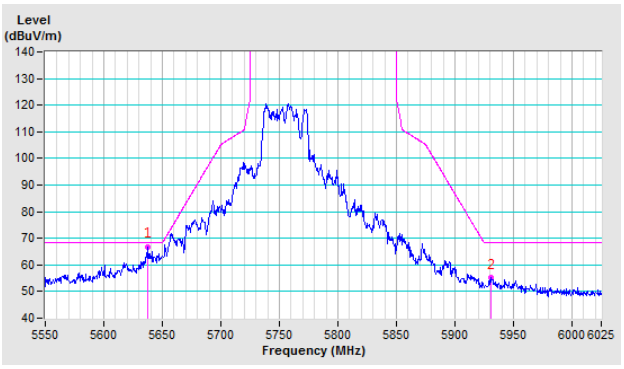
Horizontal	Vertical
	

CH 165 5825 MHz

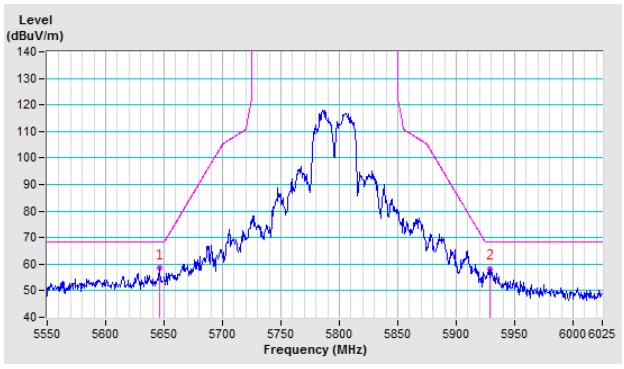
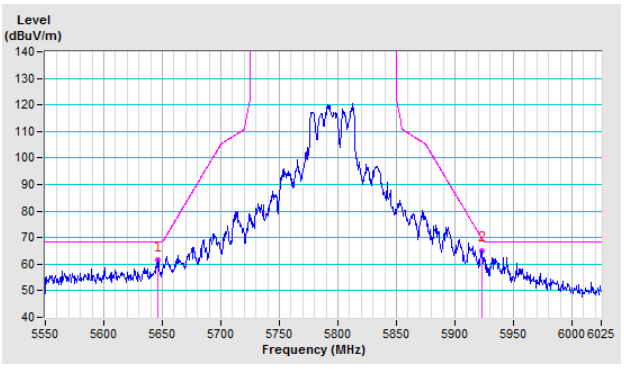
Horizontal	Vertical
	

802.11ac (VHT40)

CH 151 5755 MHz

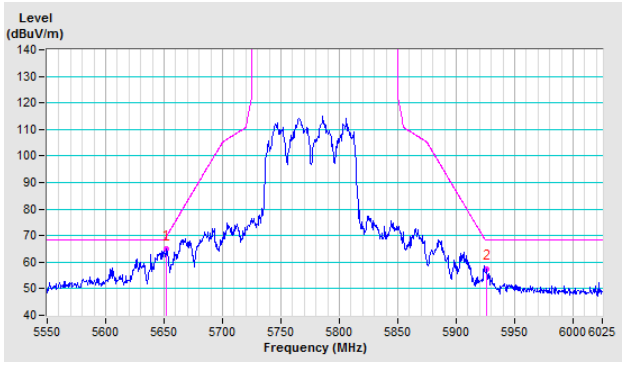
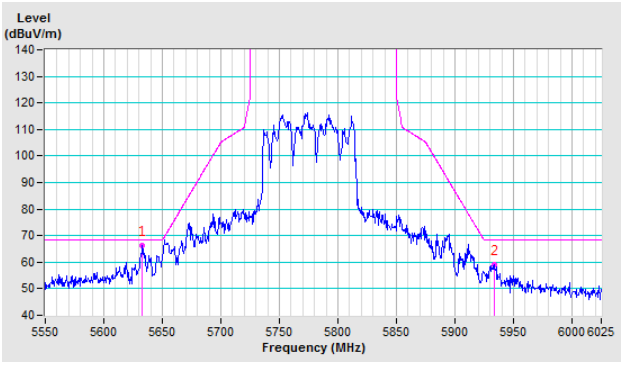
Horizontal	Vertical
	

CH 159 5795 MHz

Horizontal	Vertical
	

802.11ac (VHT80)

CH 155 5775 MHz

Horizontal	Vertical
	

Appendix – Information of the Testing Laboratories

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

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Email: service.adt@tw.bureauveritas.com
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The address and road map of all our labs can be found in our web site also.

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