FCC Test Report

Report No.:	RF200609C14-1
FCC ID:	PY320100484
Test Model:	SXR80
Series Model:	SXS80
Received Date:	Jun. 09, 2020
Test Date:	Jul. 01 ~ Jul. 10, 2020
Issued Date:	Jul. 16, 2020
Applicant:	NETGEAR, INC.
Address:	350 East Plumeria Drive, San Jose, CA 95134, USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location (1):	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan
FCC Registration / Designation Number(1):	788550 / TW0003
Test Location (2):	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan.
FCC Registration / Designation Number(2):	723255 / TW2022

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
RF200609C14-1	Original release	Jul. 16, 2020

1 Certificate of Conformity

Product:	Orbi Pro WiFi 6 Router / Orbi Pro WiFi 6 Satellite
Brand:	NETGEAR
Test Model:	SXR80
Series Model:	SXS80
Sample Status:	Engineering sample
Applicant:	NETGEAR, INC.
Test Date:	Jul. 01 ~ Jul. 10, 2020
Standards:	47 CFR FCC Part 15, Subpart E (Section 15.407) ANSI C63.10:2013

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

Prepared by : Pettie Chen , **Date:** Jul. 16, 2020

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Jul. 16, 2020

Bruce Chen / Senior Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -7.79dB at 0.33750MHz.
15.407(b) (1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.1dB at 5139.60, 5150.00, 5649.41MHz.
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 not a standard connector.

Note:
1. For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.
2. For U-NII-1 band compliance with rule 15.407(b) of the band-edge items, the test plots were recorded in Annex B. Test Procedures refer to report 4.1.3.
3. 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	1 GHz ~ 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

Product	Orbi Pro WiFi 6 Router / Orbi Pro WiFi 6 Satellite
Brand	NETGEAR
Test Model	SXR80
Series Model	SXS80
Model Difference	Refer to Note for more details
Sample Status	Engineering sample
Power Supply Rating	12Vdc (adapter)
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to MCS31 802.11ac (VHT20/40/80): up to MCS9 802.11ax: up to MCS11
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 4 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1 5745~5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20), 802.11ax (HE20): 5 802.11n (HT40), 802.11ac (VHT40), 802.11ax (HE40): 2 802.11ac (VHT80), 802.11ax (HE80): 1
Output Power	CDD Mode: 5180 ~ 5240MHz: 904.311mW 5745 ~ 5825MHz: 978.116mW Beamforming Mode: 5180 ~ 5240MHz: 693.931mW 5745 ~ 5825MHz: 645.219mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter
Cable Supplied	NA

Note:

1. All models are electrically identical except software firmware. Model: SXR80 is the representative for final test.

Brand	Model	Product Name	RF module	Difference
NETGEAR	SXR80	Orbi Pro WiFi 6 Router	RF module 1	Software firmware: SXR80-V1.0.0.34 Master mode only
			RF module 2	
	SXS80	Orbi Pro WiFi 6 Satellite	RF module 1	Software firmware: SXS80-V1.0.0.34 Master mode and Client mode
			RF module 2	

*RF module 1: 5GHz Band 4 only, RF module 2: 2.4GHz Band & 5GHz Band 1 only

2. The EUT uses following adapters.

Adapter 1	
Brand	NETGEAR
Model	AD2150F10
P/N	332-11093-01
Input Power	100-120Vac~50/60Hz 1.0A
Output Power	12Vdc / 3.5A
Power Cable	1.8m non-shielded power cable without core

Adapter 2	
Brand	NETGEAR
Model	2ABN042F NA
P/N	332-10888-01
Input Power	100-240Vac~50/60Hz 1.3A
Output Power	12.0Vdc / 3.5A
Power Cable	1.85m non-shielded power cable without core

*After pre-testing, Adapter 2 is the worst case for the final tests.

3. The EUT incorporates a MIMO function. Physically, the EUT provides 4 completed transmitters and 4 receivers.

Modulation Mode	CDD Mode	Beamforming Mode	TX Function
802.11a	Support	Not Support	4TX
802.11n (HT20)	Support	Not Support	4TX
802.11n (HT40)	Support	Not Support	4TX
802.11ac (VHT20)	Support	Support	4TX
802.11ac (VHT40)	Support	Support	4TX
802.11ac (VHT80)	Support	Support	4TX
802.11ax (HE20)	Support	Support	4TX
802.11ax (HE40)	Support	Support	4TX
802.11ax (HE80)	Support	Support	4TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40 on 802.11n mode and HE20/HE40 on 802.11ax mode. Therefore the investigated worst case is the representative mode in test report. (Final test mode refer section 3.2.1)

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

4. The EUT uses following antennas.

Antenna Type	Dipole	
Antenna Connector	i-pex(MHF)	
Directional Gain (dBi)		
2.4GHz Band	5GHz U-NII-1	5GHz U-NII-3
6.81	7.56	7.88

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	
-	√	√	√	√	Power from adapter 2

Where RE≥1G: Radiated Emission above 1GHz & Bandedge Measurement RE<1G: Radiated Emission below 1GHz

PLC: Power Line Conducted Emission APCM: Antenna Port Conducted Measurement

Note:

1. The EUT is designed to be positioned on the X-plane only.
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

Radiated Emission Test (Above 1GHz):

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
-	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0
-	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0
-	802.11ax (HE80)		42	42	OFDMA	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
-	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0
-	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0
-	802.11ax (HE80)		155	155	OFDMA	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.

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11ax (HE20)	5180-5240	36 to 48	157	OFDMA	MCS0
		5745-5825	149 to 165			

Power Line Conducted Emission Test:

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

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11ax (HE20)	5180-5240	36 to 48	157	OFDMA	MCS0
		5745-5825	149 to 165			

Antenna Port Conducted Measurement:

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
-	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	MCS0
-	802.11ac (VHT40)		38 to 46	38, 46	OFDM	MCS0
-	802.11ac (VHT80)		42	42	OFDM	MCS0
-	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0
-	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0
-	802.11ax (HE80)		42	42	OFDMA	MCS0
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
-	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	MCS0
-	802.11ac (VHT40)		151 to 159	151, 159	OFDM	MCS0
-	802.11ac (VHT80)		155	155	OFDM	MCS0
-	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0
-	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0
-	802.11ax (HE80)		155	155	OFDMA	MCS0

*802.11n (VHT20), 802.11n (VHT40), 802.11n (VHT80) are for Conducted Output Power Measurement only.

Test Condition:

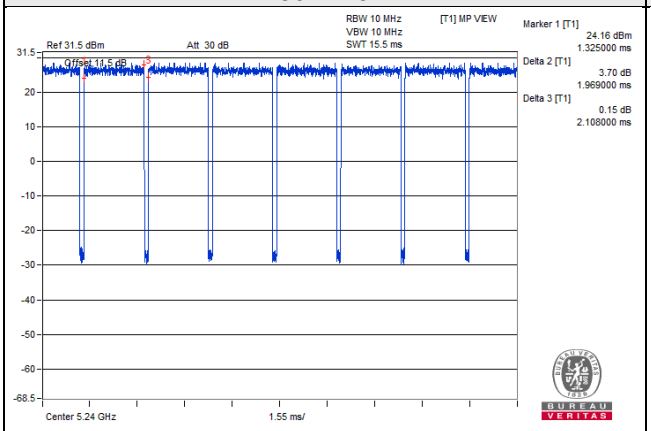
Applicable to	Environmental Conditions	Input Power	Tested by
RE≥1G	22 deg. C, 70% RH	120Vac, 60Hz	Ryan Du
RE<1G	22 deg. C, 70% RH	120Vac, 60Hz	Ryan Du
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Sampson Chen
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Frank Liu

3.3 Duty Cycle of Test Signal

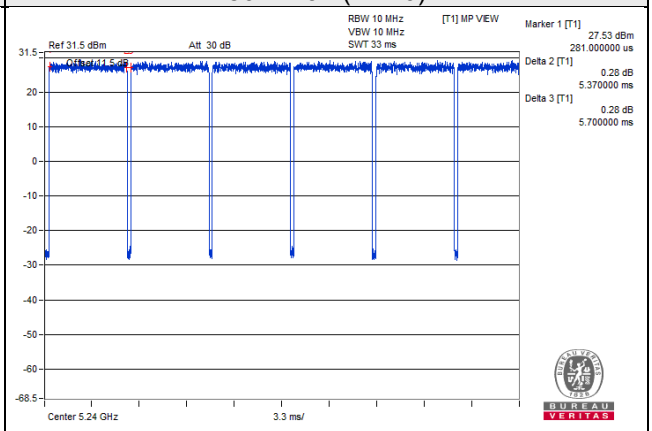
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 1.969/2.108 = 0.934, Duty factor = 10 * log (1/0.934) = 0.30
802.11ax (HE20): Duty cycle = 5.37/5.7 = 0.942, Duty factor = 10 * log (1/0.943) = 0.26
802.11ax (HE40): Duty cycle = 5.452/5.735 = 0.951, Duty factor = 10 * log (1/0.951) = 0.22
802.11ax (HE80): Duty cycle = 5.375/5.738 = 0.937, Duty factor = 10 * log (1/0.937) = 0.28

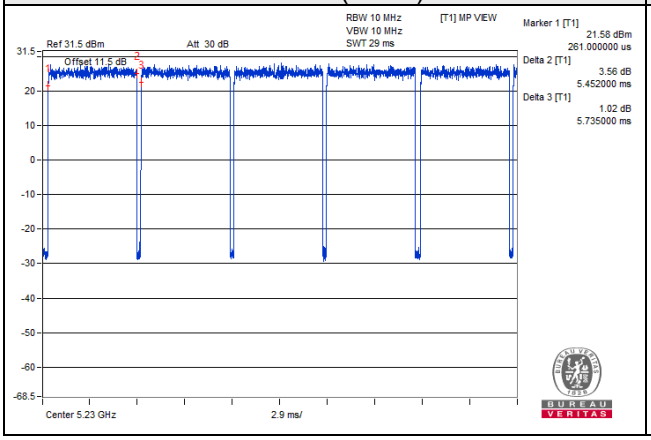
802.11a



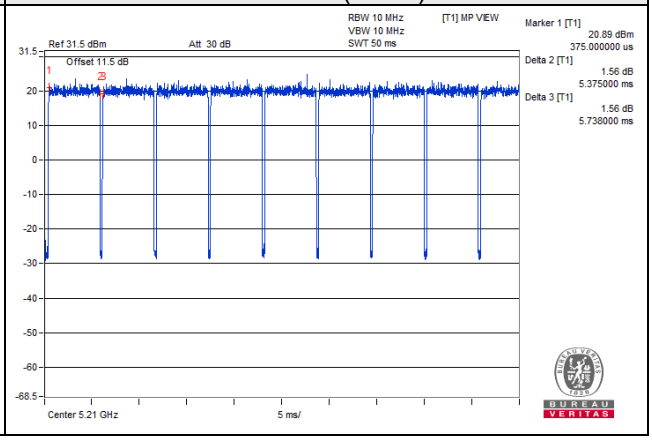
802.11ax (HE20)



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.

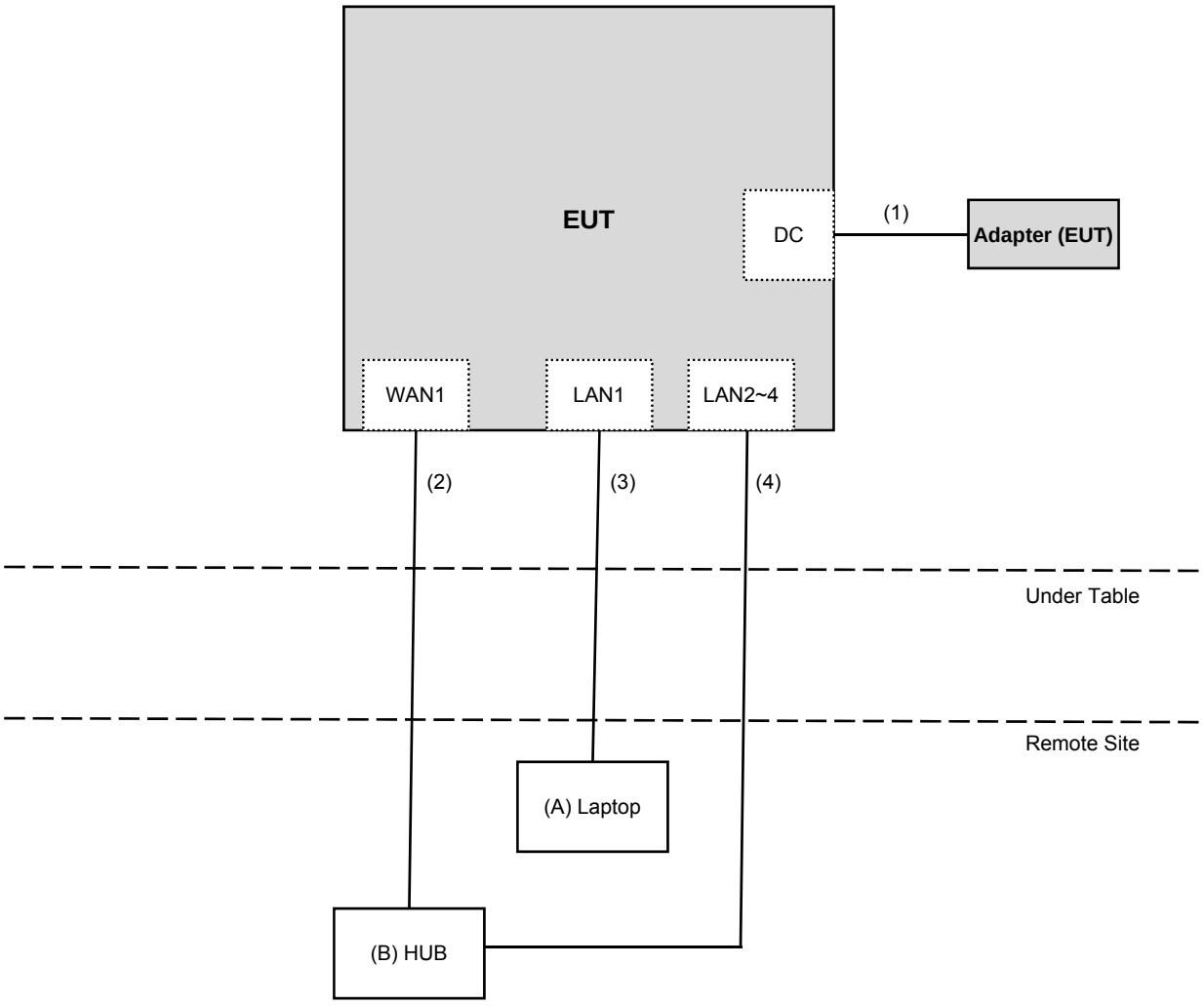
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Lenovo	81A4	YD02YN76	PD93165NGU	-
B.	HUB	ZyXEL	ES-116P	S060H02000215	FCC DoC Approved	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC cable	1	1.85	N	0	Accessory of EUT
2.	RJ45 cable	1	10	N	0	-
3.	RJ45 cable	1	10	N	0	-
4.	RJ45 cable	3	10	N	0	-

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards 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="3">Applicable To</td><td colspan="2">Limit</td></tr>
<tr><td colspan="3" 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

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 25, 2020	May 24, 2021
Loop Antenna Electro-Metrics	EM-6879	264	Feb. 18, 2020	Feb. 17, 2021
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. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-2	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-3	Mar. 18, 2020	Mar. 17, 2021
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	EMC104-SM-SM-2000	180502	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 2021
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
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 Hsinchu 966 Chamber No. 4.

4.1.3 Test Procedures

For Radiated emission below 30MHz

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

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

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

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

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

Note:

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

For Radiated emission above 30MHz

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

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

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

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

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

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

Note:

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

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

3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 98%) for Average detection (AV) at frequency above 1GHz. (RBW = 1MHz, VBW = 1kHz)

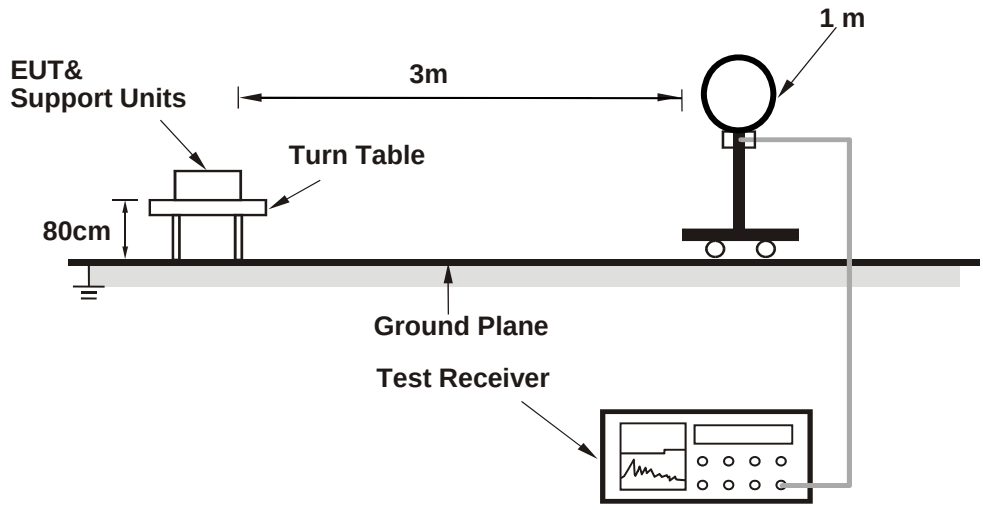
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

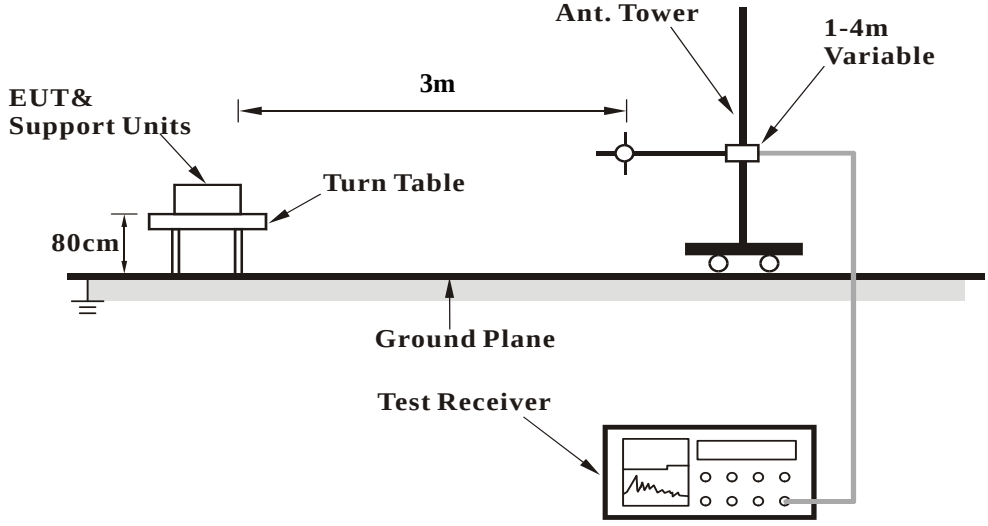
No deviation.

4.1.5 Test Setup

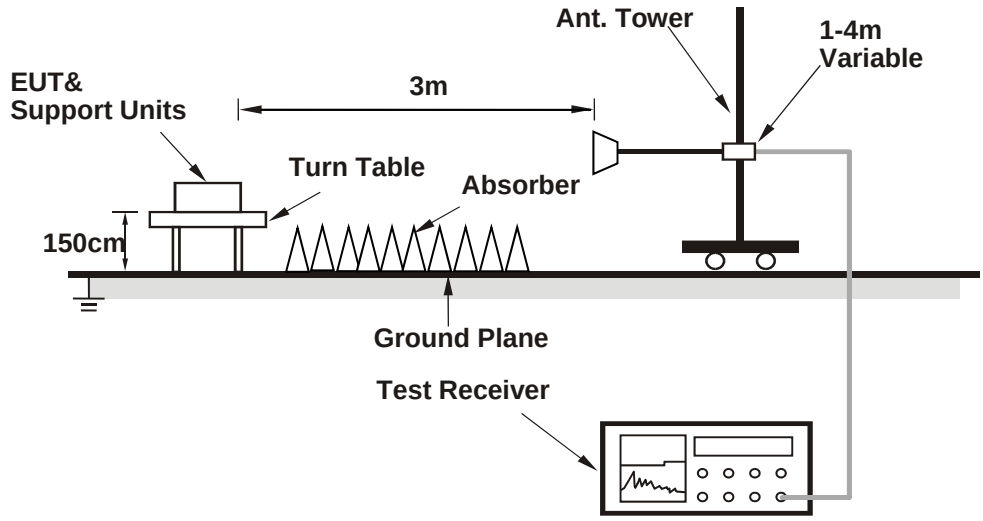
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.6 PK	74.0	-16.4	1.27 H	222	54.6	3.0
2	5150.00	45.8 AV	54.0	-8.2	1.27 H	222	42.8	3.0
3	*5180.00	111.6 PK			1.27 H	222	108.6	3.0
4	*5180.00	103.3 AV			1.27 H	222	100.3	3.0
5	#10360.00	57.4 PK	68.2	-10.8	2.41 H	299	44.2	13.2
6	15540.00	52.0 PK	74.0	-22.0	1.50 H	210	38.4	13.6
7	15540.00	39.3 AV	54.0	-14.7	1.50 H	210	25.7	13.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.9 PK	74.0	-10.1	2.20 V	189	60.9	3.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**2.20 V**	**189**	**50.9**	**3.0**
3	*5180.00	120.6 PK			2.20 V	189	117.6	3.0
4	*5180.00	112.4 AV			2.20 V	189	109.4	3.0
5	#10360.00	50.3 PK	68.2	-17.9	1.10 V	146	37.1	13.2
6	15540.00	51.7 PK	74.0	-22.3	1.51 V	201	38.1	13.6
7	15540.00	39.4 AV	54.0	-14.6	1.51 V	201	25.8	13.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	53.5 PK	74.0	-20.5	1.55 H	325	50.5	3.0
2	5150.00	42.3 AV	54.0	-11.7	1.55 H	325	39.3	3.0
3	*5200.00	115.9 PK			1.55 H	325	113.0	2.9
4	*5200.00	107.0 AV			1.55 H	325	104.1	2.9
5	#10400.00	57.1 PK	68.2	-11.1	2.31 H	294	43.8	13.3
6	15600.00	51.5 PK	74.0	-22.5	1.43 H	225	37.6	13.9
7	15600.00	38.9 AV	54.0	-15.1	1.43 H	225	25.0	13.9
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	5150.00	68.4 PK	74.0	-5.6	1.51 V	2	65.4	3.0
2	5150.00	53.8 AV	54.0	-0.2	1.51 V	2	50.8	3.0
3	*5200.00	124.7 PK			1.51 V	2	121.8	2.9
4	*5200.00	115.6 AV			1.51 V	2	112.7	2.9
5	#10400.00	50.1 PK	68.2	-18.1	1.02 V	148	36.8	13.3
6	15600.00	51.4 PK	74.0	-22.6	1.54 V	190	37.5	13.9
7	15600.00	39.0 AV	54.0	-15.0	1.54 V	190	25.1	13.9

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 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	50.5 PK	74.0	-23.5	1.24 H	219	47.5	3.0
2	5150.00	40.6 AV	54.0	-13.4	1.24 H	219	37.6	3.0
3	*5240.00	115.6 PK			1.24 H	219	112.7	2.9
4	*5240.00	106.8 AV			1.24 H	219	103.9	2.9
5	#10480.00	57.1 PK	68.2	-11.1	2.35 H	298	43.6	13.5
6	15720.00	51.6 PK	74.0	-22.4	1.48 H	226	38.2	13.4
7	15720.00	39.2 AV	54.0	-14.8	1.48 H	226	25.8	13.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.9 PK	74.0	-10.1	1.82 V	180	60.9	3.0
2	5150.00	53.5 AV	54.0	-0.5	1.82 V	180	50.5	3.0
3	*5240.00	124.4 PK			1.82 V	180	121.5	2.9
4	*5240.00	117.4 AV			1.82 V	180	114.5	2.9
5	#10480.00	50.7 PK	68.2	-17.5	1.06 V	153	37.2	13.5
6	15720.00	51.2 PK	74.0	-22.8	1.49 V	205	37.8	13.4
7	15720.00	39.1 AV	54.0	-14.9	1.49 V	205	25.7	13.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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 149	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5632.02	60.5 PK	68.2	-7.7	1.35 H	198	57.1	3.4
2	*5745.00	121.2 PK			1.35 H	198	117.4	3.8
3	*5745.00	112.5 AV			1.35 H	198	108.7	3.8
4	#5944.24	54.7 PK	68.2	-13.5	1.35 H	198	50.7	4.0
5	11490.00	58.2 PK	74.0	-15.8	2.15 H	171	44.2	14.0
6	11490.00	46.1 AV	54.0	-7.9	2.15 H	171	32.1	14.0
7	#17235.00	53.1 PK	68.2	-15.1	1.55 H	112	36.6	16.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5648.92	65.2 PK	68.2	-3.0	1.51 V	274	62.0	3.2
2	*5745.00	125.0 PK			1.51 V	274	121.2	3.8
3	*5745.00	115.9 AV			1.51 V	274	112.1	3.8
4	#5941.98	55.9 PK	68.2	-12.3	1.51 V	274	52.1	3.8
5	11490.00	50.4 PK	74.0	-23.6	1.33 V	55	36.4	14.0
6	11490.00	38.8 AV	54.0	-15.2	1.33 V	55	24.8	14.0
7	#17235.00	51.1 PK	68.2	-17.1	1.76 V	6	34.6	16.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	#5592.27	55.7 PK	68.2	-12.5	1.41 H	206	52.3	3.4
2	*5785.00	121.6 PK			1.41 H	206	117.7	3.9
3	*5785.00	112.9 AV			1.41 H	206	109.0	3.9
4	#5933.34	55.8 PK	68.2	-12.4	1.41 H	206	51.8	4.0
5	11570.00	58.0 PK	74.0	-16.0	2.12 H	178	44.4	13.6
6	11570.00	46.1 AV	54.0	-7.9	2.12 H	178	32.5	13.6
7	#17355.00	52.6 PK	68.2	-15.6	1.52 H	121	35.6	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	#5586.22	58.4 PK	68.2	-9.8	1.90 V	90	55.3	3.1
2	*5785.00	126.4 PK			1.90 V	90	122.5	3.9
3	*5785.00	117.4 AV			1.90 V	90	113.5	3.9
4	#5972.89	57.8 PK	68.2	-10.4	1.90 V	90	54.0	3.8
5	11570.00	50.3 PK	74.0	-23.7	1.37 V	45	36.7	13.6
6	11570.00	38.8 AV	54.0	-15.2	1.37 V	45	25.2	13.6
7	#17355.00	50.8 PK	68.2	-17.4	1.81 V	19	33.8	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.

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	#5627.64	58.2 PK	68.2	-10.0	1.34 H	194	54.8	3.4
2	*5825.00	121.9 PK			1.34 H	194	117.8	4.1
3	*5825.00	112.9 AV			1.34 H	194	108.8	4.1
4	#5925.87	60.1 PK	68.2	-8.1	1.34 H	194	56.2	3.9
5	11650.00	58.1 PK	74.0	-15.9	2.15 H	158	44.6	13.5
6	11650.00	45.7 AV	54.0	-8.3	2.15 H	158	32.2	13.5
7	#17475.00	52.8 PK	68.2	-15.4	1.55 H	117	34.2	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5637.63	59.3 PK	68.2	-8.9	1.61 V	91	56.2	3.1
2	*5825.00	125.1 PK			1.61 V	91	121.0	4.1
3	*5825.00	116.2 AV			1.61 V	91	112.1	4.1
4	#5940.38	62.8 PK	68.2	-5.4	1.61 V	91	59.0	3.8
5	11650.00	50.2 PK	74.0	-23.8	1.31 V	66	36.7	13.5
6	11650.00	38.4 AV	54.0	-15.6	1.31 V	66	24.9	13.5
7	#17475.00	51.1 PK	68.2	-17.1	1.74 V	3	32.5	18.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	5148.55	58.8 PK	74.0	-15.2	1.53 H	221	55.8	3.0
2	5148.55	46.4 AV	54.0	-7.6	1.53 H	221	43.4	3.0
3	*5180.00	115.3 PK			1.53 H	221	112.3	3.0
4	*5180.00	103.8 AV			1.53 H	221	100.8	3.0
5	#10360.00	50.5 PK	68.2	-17.7	2.12 H	161	37.3	13.2
6	15540.00	49.0 PK	74.0	-25.0	1.55 H	117	35.4	13.6
7	15540.00	39.0 AV	54.0	-15.0	1.55 H	117	25.4	13.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5146.50	64.7 PK	74.0	-9.3	1.80 V	348	61.7	3.0
2	5146.50	53.7 AV	54.0	-0.3	1.80 V	348	50.7	3.0
3	*5180.00	126.7 PK			1.80 V	348	123.7	3.0
4	*5180.00	114.7 AV			1.80 V	348	111.7	3.0
5	#10360.00	47.1 PK	68.2	-21.1	1.28 V	67	33.9	13.2
6	15540.00	48.6 PK	74.0	-25.4	1.72 V	14	35.0	13.6
7	15540.00	38.8 AV	54.0	-15.2	1.72 V	14	25.2	13.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	56.6 PK	74.0	-17.4	1.57 H	231	53.6	3.0
2	5150.00	44.8 AV	54.0	-9.2	1.57 H	231	41.8	3.0
3	*5200.00	118.4 PK			1.57 H	231	115.5	2.9
4	*5200.00	107.0 AV			1.57 H	231	104.1	2.9
5	#10400.00	50.5 PK	68.2	-17.7	2.16 H	155	37.2	13.3
6	15600.00	48.4 PK	74.0	-25.6	1.57 H	120	34.5	13.9
7	15600.00	38.7 AV	54.0	-15.3	1.57 H	120	24.8	13.9
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	5150.00	70.5 PK	74.0	-3.5	1.60 V	356	67.5	3.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.60 V**	**356**	**50.9**	**3.0**
3	*5200.00	126.6 PK			1.60 V	356	123.7	2.9
4	*5200.00	115.0 AV			1.60 V	356	112.1	2.9
5	#10400.00	47.0 PK	68.2	-21.2	1.34 V	53	33.7	13.3
6	15600.00	48.5 PK	74.0	-25.5	1.78 V	23	34.6	13.9
7	15600.00	38.8 AV	54.0	-15.2	1.78 V	23	24.9	13.9

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 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	5146.63	54.1 PK	74.0	-19.9	1.47 H	222	51.1	3.0
2	5146.63	42.5 AV	54.0	-11.5	1.47 H	222	39.5	3.0
3	*5240.00	118.8 PK			1.47 H	222	115.9	2.9
4	*5240.00	107.7 AV			1.47 H	222	104.8	2.9
5	#10480.00	50.7 PK	68.2	-17.5	2.13 H	163	37.2	13.5
6	15720.00	49.4 PK	74.0	-24.6	1.55 H	114	36.0	13.4
7	15720.00	39.4 AV	54.0	-14.6	1.55 H	114	26.0	13.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.7 PK	74.0	-11.3	1.66 V	343	59.7	3.0
2	5150.00	53.5 AV	54.0	-0.5	1.66 V	343	50.5	3.0
3	*5240.00	127.6 PK			1.66 V	343	124.7	2.9
4	*5240.00	115.7 AV			1.66 V	343	112.8	2.9
5	#10480.00	47.1 PK	68.2	-21.1	1.33 V	52	33.6	13.5
6	15720.00	48.1 PK	74.0	-25.9	1.76 V	8	34.7	13.4
7	15720.00	38.5 AV	54.0	-15.5	1.76 V	8	25.1	13.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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 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	#5642.04	66.0 PK	68.2	-2.2	1.45 H	206	62.5	3.5
2	*5745.00	123.5 PK			1.45 H	206	119.7	3.8
3	*5745.00	112.1 AV			1.45 H	206	108.3	3.8
4	#5943.55	55.6 PK	68.2	-12.6	1.45 H	206	51.6	4.0
5	11490.00	50.2 PK	74.0	-23.8	2.14 H	151	36.2	14.0
6	11490.00	38.8 AV	54.0	-15.2	2.14 H	151	24.8	14.0
7	#17235.00	48.6 PK	68.2	-19.6	1.57 H	129	32.1	16.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	**#5649.41**	**68.1 PK**	**68.2**	**-0.1**	**1.52 V**	**270**	**64.9**	**3.2**
2	*5745.00	127.2 PK			1.52 V	270	123.4	3.8
3	*5745.00	115.1 AV			1.52 V	270	111.3	3.8
4	#5942.55	57.3 PK	68.2	-10.9	1.52 V	270	53.5	3.8
5	11490.00	46.9 PK	74.0	-27.1	1.27 V	72	32.9	14.0
6	11490.00	36.2 AV	54.0	-17.8	1.27 V	72	22.2	14.0
7	#17235.00	48.4 PK	68.2	-19.8	1.71 V	21	31.9	16.5

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	#5648.22	59.0 PK	68.2	-9.2	1.38 H	211	55.5	3.5
2	*5785.00	123.2 PK			1.38 H	211	119.3	3.9
3	*5785.00	119.9 AV			1.38 H	211	116.0	3.9
4	#5928.61	58.2 PK	68.2	-10.0	1.38 H	211	54.2	4.0
5	11570.00	49.8 PK	74.0	-24.2	2.14 H	173	36.2	13.6
6	11570.00	28.8 AV	54.0	-25.2	2.14 H	173	15.2	13.6
7	#17355.00	48.6 PK	68.2	-19.6	1.49 H	118	31.6	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	#5599.79	59.2 PK	68.2	-9.0	1.67 V	91	56.1	3.1
2	*5785.00	128.1 PK			1.67 V	91	124.2	3.9
3	*5785.00	116.2 AV			1.67 V	91	112.3	3.9
4	#5925.53	59.8 PK	68.2	-8.4	1.67 V	91	56.1	3.7
5	11570.00	46.9 PK	74.0	-27.1	1.28 V	52	33.3	13.6
6	11570.00	36.3 AV	54.0	-17.7	1.28 V	52	22.7	13.6
7	#17355.00	47.9 PK	68.2	-20.3	1.78 V	14	30.9	17.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	#5633.12	55.8 PK	68.2	-12.4	1.47 H	209	52.4	3.4
2	*5825.00	123.5 PK			1.47 H	209	119.4	4.1
3	*5825.00	112.3 AV			1.47 H	209	108.2	4.1
4	#5943.18	60.5 PK	68.2	-7.7	1.47 H	209	56.5	4.0
5	11650.00	50.5 PK	74.0	-23.5	2.08 H	165	37.0	13.5
6	11650.00	39.3 AV	54.0	-14.7	2.08 H	165	25.8	13.5
7	#17475.00	49.2 PK	68.2	-19.0	1.56 H	127	30.6	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5638.31	59.5 PK	68.2	-8.7	1.61 V	125	56.4	3.1
2	*5825.00	126.9 PK			1.61 V	125	122.8	4.1
3	*5825.00	114.7 AV			1.61 V	125	110.6	4.1
4	#5925.93	67.6 PK	68.2	-0.6	1.61 V	125	63.9	3.7
5	11650.00	46.8 PK	74.0	-27.2	1.26 V	53	33.3	13.5
6	11650.00	36.3 AV	54.0	-17.7	1.26 V	53	22.8	13.5
7	#17475.00	48.2 PK	68.2	-20.0	1.68 V	13	29.6	18.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	53.4 PK	74.0	-20.6	1.36 H	225	50.4	3.0
2	5150.00	42.6 AV	54.0	-11.4	1.36 H	225	39.6	3.0
3	*5190.00	110.7 PK			1.36 H	225	107.7	3.0
4	*5190.00	99.7 AV			1.36 H	225	96.7	3.0
5	#10380.00	50.6 PK	68.2	-17.6	2.08 H	166	37.4	13.2
6	15570.00	49.0 PK	74.0	-25.0	1.61 H	103	35.2	13.8
7	15570.00	39.3 AV	54.0	-14.7	1.61 H	103	25.5	13.8
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	64.8 PK	74.0	-9.2	1.49 V	354	61.8	3.0
2	**5150.00**	**53.9 AV**	**54.0**	**-0.1**	**1.49 V**	**354**	**50.9**	**3.0**
3	*5190.00	118.7 PK			1.49 V	354	115.7	3.0
4	*5190.00	107.6 AV			1.49 V	354	104.6	3.0
5	#10380.00	47.4 PK	68.2	-20.8	1.23 V	74	34.2	13.2
6	15570.00	47.8 PK	74.0	-26.2	1.77 V	9	34.0	13.8
7	15570.00	38.3 AV	54.0	-15.7	1.77 V	9	24.5	13.8

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	60.1 PK	74.0	-13.9	1.16 H	224	57.1	3.0
2	5150.00	45.8 AV	54.0	-8.2	1.16 H	224	42.8	3.0
3	*5230.00	113.1 PK			1.16 H	224	110.2	2.9
4	*5230.00	102.6 AV			1.16 H	224	99.7	2.9
5	#10460.00	50.6 PK	68.2	-17.6	2.17 H	170	37.1	13.5
6	15690.00	49.4 PK	74.0	-24.6	1.56 H	129	35.9	13.5
7	15690.00	39.2 AV	54.0	-14.8	1.56 H	129	25.7	13.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5139.60	66.8 PK	74.0	-7.2	1.66 V	353	63.8	3.0
2	**5139.60**	**53.9 AV**	**54.0**	**-0.1**	**1.66 V**	**353**	**50.9**	**3.0**
3	*5230.00	122.4 PK			1.66 V	353	119.5	2.9
4	*5230.00	111.4 AV			1.66 V	353	108.5	2.9
5	#10460.00	47.1 PK	68.2	-21.1	1.26 V	57	33.6	13.5
6	15690.00	48.3 PK	74.0	-25.7	1.67 V	10	34.8	13.5
7	15690.00	38.7 AV	54.0	-15.3	1.67 V	10	25.2	13.5

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.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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	#5631.14	65.7 PK	68.2	-2.5	1.45 H	169	62.3	3.4
2	*5755.00	120.8 PK			1.45 H	169	117.0	3.8
3	*5755.00	109.0 AV			1.45 H	169	105.2	3.8
4	#5933.53	55.6 PK	68.2	-12.6	1.45 H	169	51.6	4.0
5	11510.00	50.6 PK	74.0	-23.4	2.13 H	167	36.8	13.8
6	11510.00	39.2 AV	54.0	-14.8	2.13 H	167	25.4	13.8
7	#17265.00	49.5 PK	68.2	-18.7	1.54 H	125	32.9	16.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5636.39	67.6 PK	68.2	-0.6	1.65 V	91	64.5	3.1
2	*5755.00	124.0 PK			1.65 V	91	120.2	3.8
3	*5755.00	112.6 AV			1.65 V	91	108.8	3.8
4	#5932.65	57.9 PK	68.2	-10.3	1.65 V	91	54.1	3.8
5	11510.00	47.0 PK	74.0	-27.0	1.23 V	82	33.2	13.8
6	11510.00	36.6 AV	54.0	-17.4	1.23 V	82	22.8	13.8
7	#17265.00	48.9 PK	68.2	-19.3	1.75 V	4	32.3	16.6

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	#5635.08	60.2 PK	68.2	-8.0	1.33 H	201	56.8	3.4
2	*5795.00	121.6 PK			1.33 H	201	117.7	3.9
3	*5795.00	109.4 AV			1.33 H	201	105.5	3.9
4	#5935.64	63.4 PK	68.2	-4.8	1.33 H	201	59.4	4.0
5	11590.00	50.5 PK	74.0	-23.5	2.12 H	145	36.9	13.6
6	11590.00	39.3 AV	54.0	-14.7	2.12 H	145	25.7	13.6
7	#17385.00	48.5 PK	68.2	-19.7	1.60 H	125	31.1	17.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.69	66.8 PK	68.2	-1.4	1.70 V	95	63.6	3.2
2	*5795.00	123.9 PK			1.70 V	95	120.0	3.9
3	*5795.00	113.3 AV			1.70 V	95	109.4	3.9
4	#5931.27	68.0 PK	68.2	-0.2	1.70 V	95	64.2	3.8
5	11590.00	47.1 PK	74.0	-26.9	1.25 V	51	33.5	13.6
6	11590.00	36.8 AV	54.0	-17.2	1.25 V	51	23.2	13.6
7	#17385.00	49.1 PK	68.2	-19.1	1.70 V	0	31.7	17.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m).
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB).
3. 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	5148.82	58.1 PK	74.0	-15.9	1.34 H	221	55.1	3.0
2	5148.82	44.8 AV	54.0	-9.2	1.34 H	221	41.8	3.0
3	*5210.00	108.2 PK			1.34 H	221	105.2	3.0
4	*5210.00	97.3 AV			1.34 H	221	94.3	3.0
5	5350.00	50.9 PK	74.0	-23.1	1.34 H	221	47.9	3.0
6	5350.00	39.4 AV	54.0	-14.6	1.34 H	221	36.4	3.0
7	#10420.00	50.0 PK	68.2	-18.2	2.07 H	155	36.7	13.3
8	15630.00	49.3 PK	74.0	-24.7	1.50 H	119	35.6	13.7
9	15630.00	39.2 AV	54.0	-14.8	1.50 H	119	25.5	13.7
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	5147.40	64.5 PK	74.0	-9.5	1.71 V	330	61.5	3.0
2	5147.40	53.8 AV	54.0	-0.2	1.71 V	330	50.8	3.0
3	*5210.00	116.5 PK			1.71 V	330	113.5	3.0
4	*5210.00	104.6 AV			1.71 V	330	101.6	3.0
5	5350.00	51.4 PK	74.0	-22.6	1.71 V	330	48.4	3.0
6	5350.00	42.6 AV	54.0	-11.4	1.71 V	330	39.6	3.0
7	#10420.00	46.9 PK	68.2	-21.3	1.28 V	60	33.6	13.3
8	15630.00	48.1 PK	74.0	-25.9	1.81 V	24	34.4	13.7
9	15630.00	38.6 AV	54.0	-15.4	1.81 V	24	24.9	13.7

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.

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	#5646.61	67.0 PK	68.2	-1.2	1.36 H	180	63.5	3.5
2	*5775.00	116.2 PK			1.36 H	180	112.3	3.9
3	*5775.00	105.1 AV			1.36 H	180	101.2	3.9
4	#5926.65	58.5 PK	68.2	-9.7	1.36 H	180	54.6	3.9
5	11550.00	50.7 PK	74.0	-23.3	2.13 H	148	37.0	13.7
6	11550.00	39.4 AV	54.0	-14.6	2.13 H	148	25.7	13.7
7	#17325.00	48.5 PK	68.2	-19.7	1.53 H	115	31.7	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	#5641.24	67.2 PK	68.2	-1.0	1.84 V	90	64.1	3.1
2	*5775.00	120.8 PK			1.84 V	90	116.9	3.9
3	*5775.00	109.1 AV			1.84 V	90	105.2	3.9
4	#5943.28	59.5 PK	68.2	-8.7	1.84 V	90	55.7	3.8
5	11550.00	47.0 PK	74.0	-27.0	1.30 V	76	33.3	13.7
6	11550.00	36.4 AV	54.0	-17.6	1.30 V	76	22.7	13.7
7	#17325.00	48.6 PK	68.2	-19.6	1.77 V	26	31.8	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.

Below 1GHz Worst-Case Data:

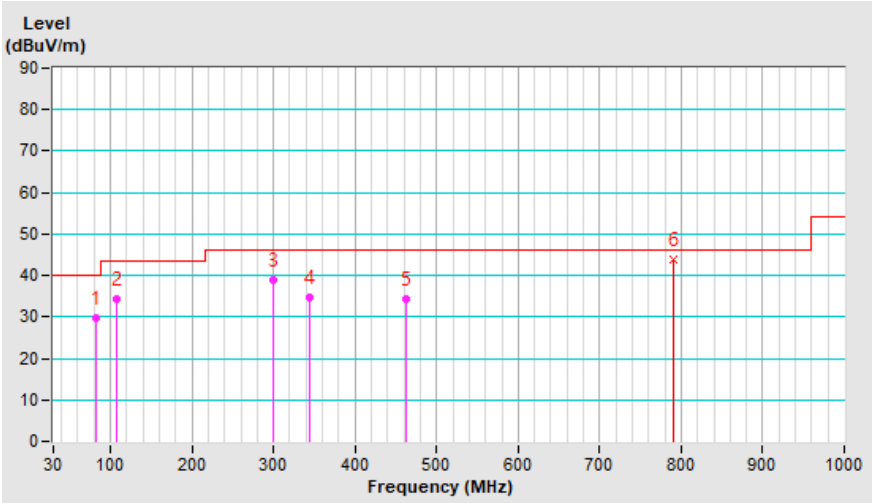
802.11ax (HE20)

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	81.64	29.7 QP	40.0	-10.3	2.00 H	254	42.7	-13.0
2	107.97	34.4 QP	43.5	-9.1	3.00 H	248	45.0	-10.6
3	299.08	38.9 QP	46.0	-7.1	1.00 H	93	45.4	-6.5
4	344.85	34.8 QP	46.0	-11.2	1.00 H	337	40.3	-5.5
5	462.68	34.3 QP	46.0	-11.7	2.00 H	162	36.2	-1.9
6	790.77	43.8 QP	46.0	-2.2	1.00 H	213	38.8	5.0

Remarks:

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

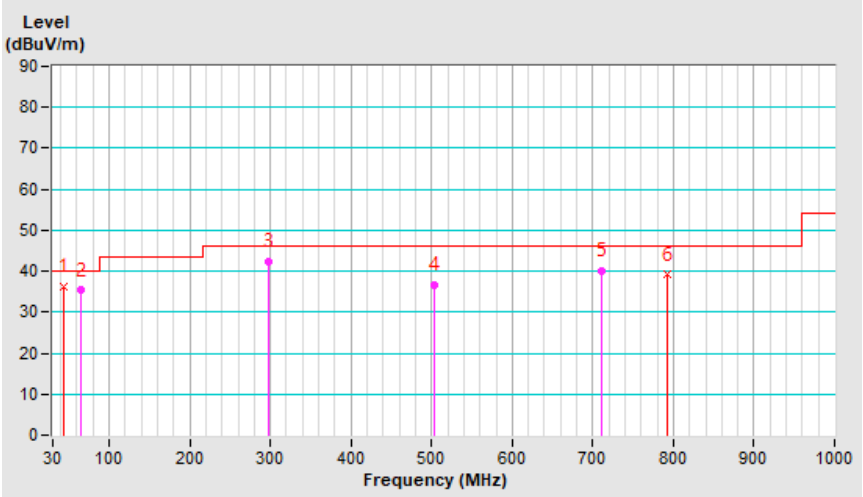


CHANNEL	TX Channel 157	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	43.26	36.4 QP	40.0	-3.6	1.00 V	178	44.4	-8.0
2	64.49	35.5 QP	40.0	-4.5	3.00 V	177	44.5	-9.0
3	296.95	42.5 QP	46.0	-3.5	2.00 V	157	49.0	-6.5
4	503.68	36.8 QP	46.0	-9.2	1.00 V	229	38.0	-1.2
5	710.99	40.2 QP	46.0	-5.8	1.50 V	93	37.4	2.8
6	792.04	39.2 QP	46.0	-6.8	1.99 V	224	34.1	5.1

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit of frequency range 30MHz ~ 1000MHz
4. Margin value = Emission Level – Limit value
5. The emission levels were very low against the limit of frequency range 9kHz ~ 30MHz: the amplitude of spurious emissions attenuated more than 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.	Cal. Date	Cal. Due
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. 19, 2020	Mar. 18, 2021
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	005	Aug. 30, 2019	Aug. 29, 2020
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

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

4.2.3 Test Procedures

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.

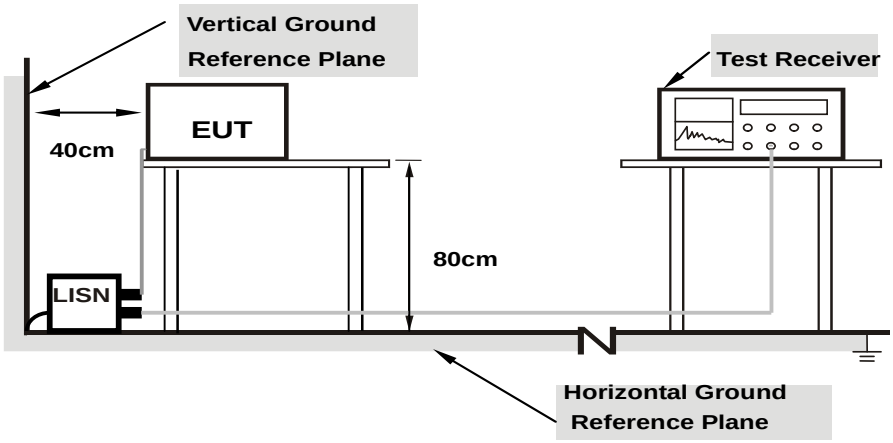
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

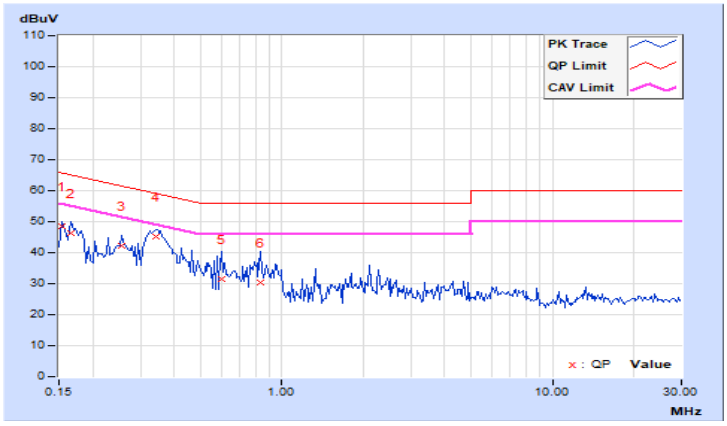
802.11ax (HE20)

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

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	9.98	38.56	24.42	48.54	34.40	65.79	55.79	-17.25	-21.39
2	0.16562	9.98	36.48	23.67	46.46	33.65	65.18	55.18	-18.72	-21.53
3	0.25547	10.00	32.24	24.31	42.24	34.31	61.58	51.58	-19.34	-17.27
4	0.34141	10.00	35.35	28.29	45.35	38.29	59.17	49.17	-13.82	-10.88
5	0.59922	10.02	21.64	13.11	31.66	23.13	56.00	46.00	-24.34	-22.87
6	0.83359	10.04	20.31	14.09	30.35	24.13	56.00	46.00	-25.65	-21.87

Remarks:

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

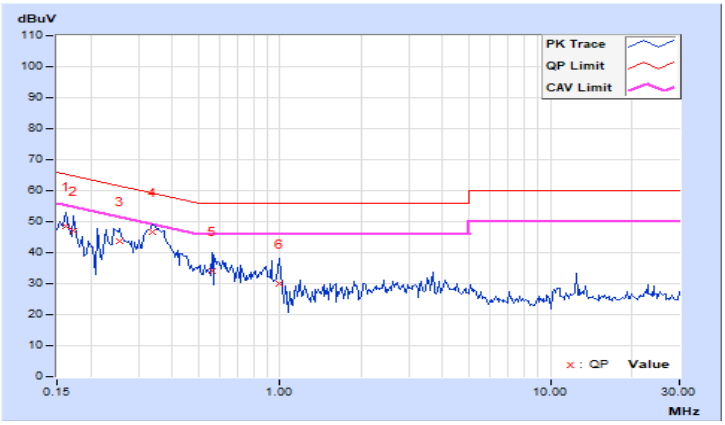


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.99	38.54	24.82	48.53	34.81	65.38	55.38	-16.85	-20.57
2	0.17344	9.99	37.12	22.48	47.11	32.47	64.79	54.79	-17.68	-22.32
3	0.25547	10.01	33.79	24.95	43.80	34.96	61.58	51.58	-17.78	-16.62
4	**0.33750**	**10.02**	**36.70**	**31.45**	**46.72**	**41.47**	**59.26**	**49.26**	**-12.54**	**-7.79**
5	0.56016	10.05	24.07	10.91	34.12	20.96	56.00	46.00	-21.88	-25.04
6	0.99766	10.09	19.78	13.38	29.87	23.47	56.00	46.00	-26.13	-22.53

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)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

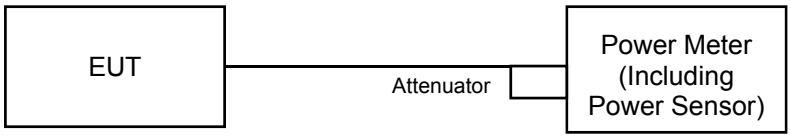
*B is the 26 dB emission bandwidth in megahertz

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

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

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement
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 and set the detector to average. Duty factor is not added to measured value.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	22.47	21.81	22.23	22.56	675.720	28.30	30.00	Pass
40	5200	21.89	21.97	22.71	22.54	678.035	28.31	30.00	Pass
48	5240	22.01	22.03	22.23	22.77	674.786	28.29	30.00	Pass
149	5745	23.33	23.76	23.78	24.06	946.426	29.76	30.00	Pass
157	5785	23.03	24.33	23.65	23.91	949.705	29.78	30.00	Pass
165	5825	23.36	23.53	23.62	23.91	918.375	29.63	30.00	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	22.19	22.13	22.31	22.51	677.336	28.31	30.00	Pass
40	5200	22.00	22.21	22.45	22.54	680.096	28.33	30.00	Pass
48	5240	22.04	22.14	22.22	22.68	675.715	28.30	30.00	Pass
149	5745	23.04	24.57	23.10	23.99	942.575	29.74	30.00	Pass
157	5785	23.01	23.80	24.04	24.26	960.068	29.82	30.00	Pass
165	5825	23.43	23.82	23.53	23.72	922.212	29.65	30.00	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	20.40	20.68	20.87	20.89	471.522	26.74	30.00	Pass
46	5230	23.23	23.19	23.70	23.83	894.796	29.52	30.00	Pass
151	5755	23.07	23.85	23.43	23.87	909.503	29.59	30.00	Pass
159	5795	23.55	23.83	23.78	23.96	955.677	29.80	30.00	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	19.33	19.48	19.43	19.54	352.069	25.47	30.00	Pass
155	5775	23.41	23.64	23.81	24.09	947.372	29.77	30.00	Pass

802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	22.21	22.13	22.27	22.56	678.604	28.32	30.00	Pass
40	5200	22.05	22.23	22.57	22.69	693.931	28.41	30.00	Pass
48	5240	22.15	22.22	22.42	22.71	692.004	28.40	30.00	Pass
149	5745	23.14	24.62	23.19	24.06	958.929	29.82	30.00	Pass
157	5785	23.08	23.86	24.15	24.34	**978.116**	29.90	30.00	Pass
165	5825	23.53	23.83	23.64	23.82	939.167	29.73	30.00	Pass

802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	20.47	20.66	20.97	20.92	476.463	26.78	30.00	Pass
46	5230	23.27	23.21	23.77	23.88	**904.311**	29.56	30.00	Pass
151	5755	23.17	23.95	23.53	23.89	926.135	29.67	30.00	Pass
159	5795	23.64	23.94	23.80	24.02	971.180	29.87	30.00	Pass

802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	19.35	19.50	19.47	19.52	353.273	25.48	30.00	Pass
155	5775	23.52	23.74	23.92	24.18	969.920	29.87	30.00	Pass

Beamforming Mode

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	22.19	22.13	22.31	22.51	677.336	28.31	28.44	Pass
40	5200	22.00	22.21	22.45	22.54	680.096	28.33	28.44	Pass
48	5240	22.04	22.14	22.22	22.68	675.715	28.30	28.44	Pass
149	5745	21.56	22.83	21.36	22.28	640.903	28.07	28.12	Pass
157	5785	21.36	21.93	22.17	22.45	633.337	28.02	28.12	Pass
165	5825	21.93	22.16	21.88	22.07	635.627	28.03	28.12	Pass

Note:

For 5180~5240MHz: Directional gain = 7.56dBi > 6dBi, so the power limit shall be reduced to 30-(7.56-6) = 28.44dBm.

For 5745~5825MHz: Directional gain = 7.88dBi > 6dBi, so the power limit shall be reduced to 30-(7.88-6) = 28.12dBm.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	20.40	20.68	20.87	20.89	471.522	26.74	28.44	Pass
46	5230	22.02	21.96	22.47	22.57	673.578	28.28	28.44	Pass
151	5755	21.83	22.29	21.86	22.29	644.735	28.09	28.12	Pass
159	5795	21.94	22.00	21.95	22.12	634.409	28.02	28.12	Pass

Note:

For 5180~5240MHz: Directional gain = 7.56dBi > 6dBi, so the power limit shall be reduced to 30-(7.56-6) = 28.44dBm.

For 5745~5825MHz: Directional gain = 7.88dBi > 6dBi, so the power limit shall be reduced to 30-(7.88-6) = 28.12dBm.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	19.33	19.48	19.43	19.54	352.069	25.47	28.44	Pass
155	5775	21.72	21.88	21.99	22.34	632.284	28.01	28.12	Pass

Note:

For 5180~5240MHz: Directional gain = 7.56dBi > 6dBi, so the power limit shall be reduced to 30-(7.56-6) = 28.44dBm.

For 5745~5825MHz: Directional gain = 7.88dBi > 6dBi, so the power limit shall be reduced to 30-(7.88-6) = 28.12dBm.

802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	22.21	22.13	22.27	22.56	678.604	28.32	28.44	Pass
40	5200	22.05	22.23	22.57	22.69	**693.931**	28.41	28.44	Pass
48	5240	22.15	22.22	22.42	22.71	692.004	28.40	28.44	Pass
149	5745	21.45	22.86	21.45	22.31	642.686	28.08	28.12	Pass
157	5785	21.59	21.99	22.24	22.44	**645.219**	28.10	28.12	Pass
165	5825	21.93	22.18	21.99	22.17	644.092	28.09	28.12	Pass

Note:

For 5180~5240MHz: Directional gain = 7.56dBi > 6dBi, so the power limit shall be reduced to 30-(7.56-6) = 28.44dBm.

For 5745~5825MHz: Directional gain = 7.88dBi > 6dBi, so the power limit shall be reduced to 30-(7.88-6) = 28.12dBm.

802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	20.47	20.66	20.97	20.92	476.463	26.78	28.44	Pass
46	5230	22.07	21.96	22.54	22.65	681.651	28.34	28.44	Pass
151	5755	21.54	22.42	21.96	22.31	644.395	28.09	28.12	Pass
159	5795	21.84	22.16	21.99	22.19	640.896	28.07	28.12	Pass

Note:

For 5180~5240MHz: Directional gain = 7.56dBi > 6dBi, so the power limit shall be reduced to 30-(7.56-6) = 28.44dBm.

For 5745~5825MHz: Directional gain = 7.88dBi > 6dBi, so the power limit shall be reduced to 30-(7.88-6) = 28.12dBm.

802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	19.35	19.50	19.47	19.52	353.273	25.48	28.44	Pass
155	5775	21.77	21.92	22.05	22.33	637.237	28.04	28.12	Pass

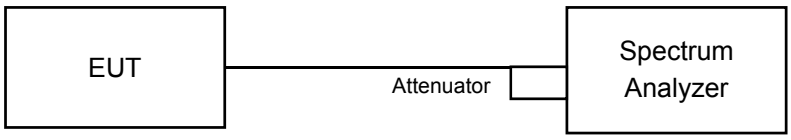
Note:

For 5180~5240MHz: Directional gain = 7.56dBi > 6dBi, so the power limit shall be reduced to 30-(7.56-6) = 28.44dBm.

For 5745~5825MHz: Directional gain = 7.88dBi > 6dBi, so the power limit shall be reduced to 30-(7.88-6) = 28.12dBm.

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Result

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.80	16.44	16.44	16.44
40	5200	16.44	16.44	16.44	16.44
48	5240	16.44	16.44	16.56	16.44

802.11ax (HE20)

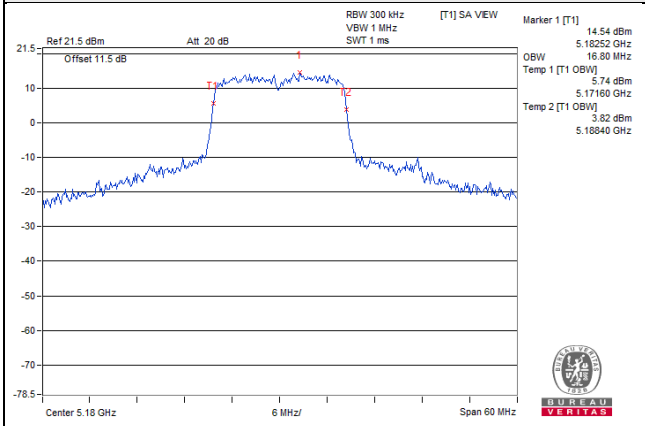
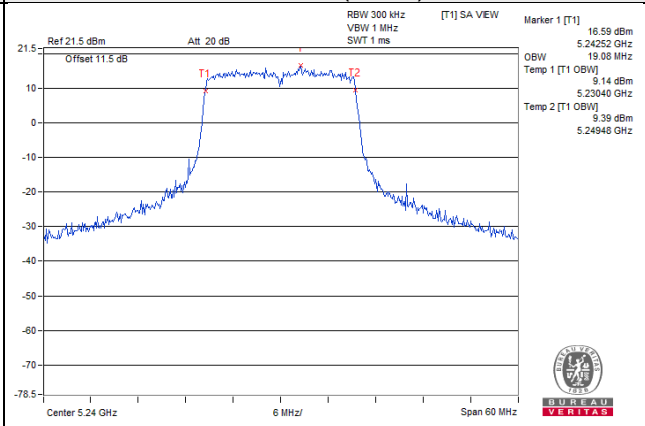
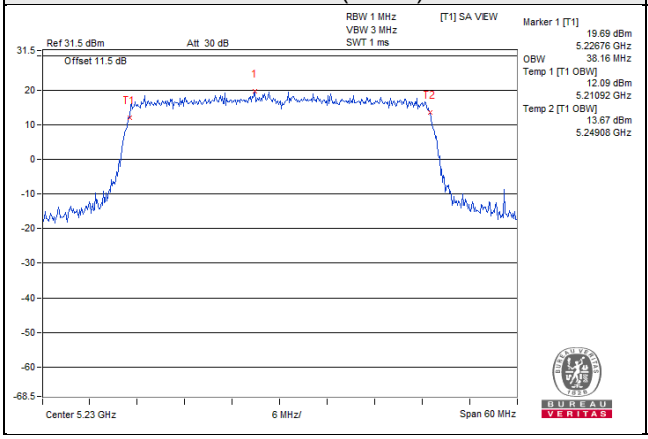
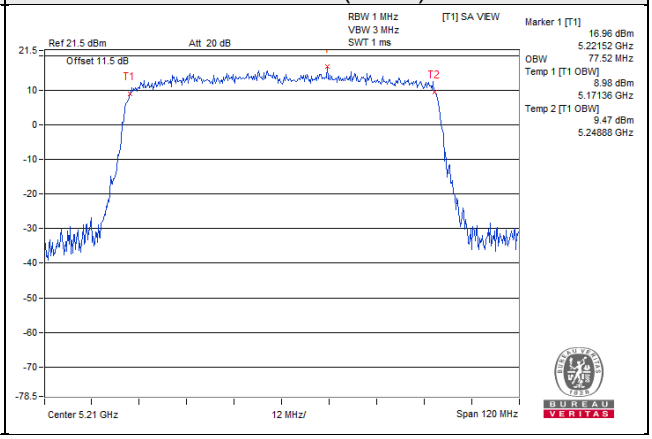
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	18.96	18.96	18.96	18.96
40	5200	18.84	18.96	19.08	19.08
48	5240	19.08	18.96	19.08	19.08

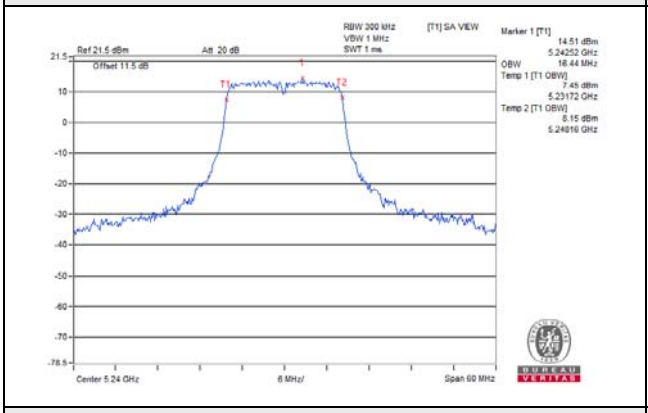
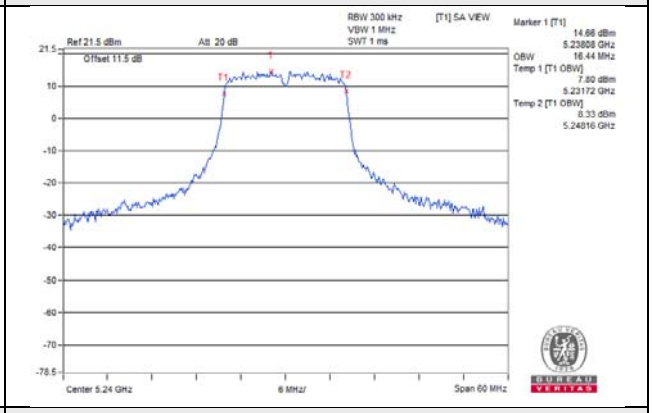
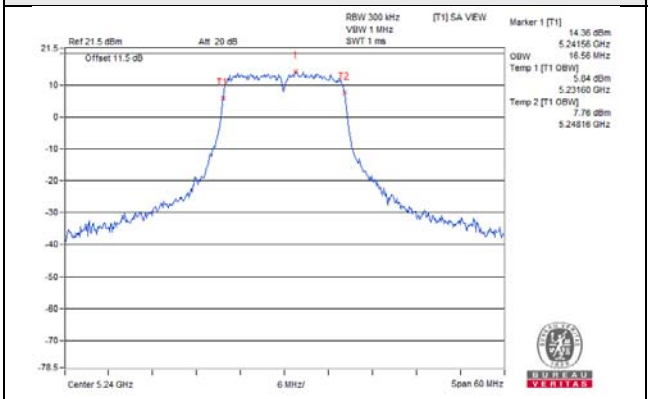
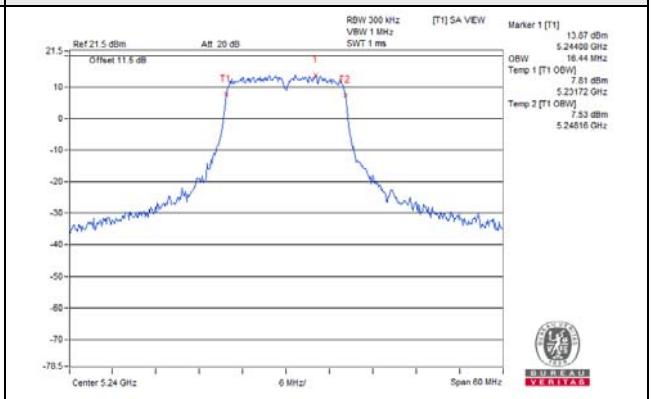
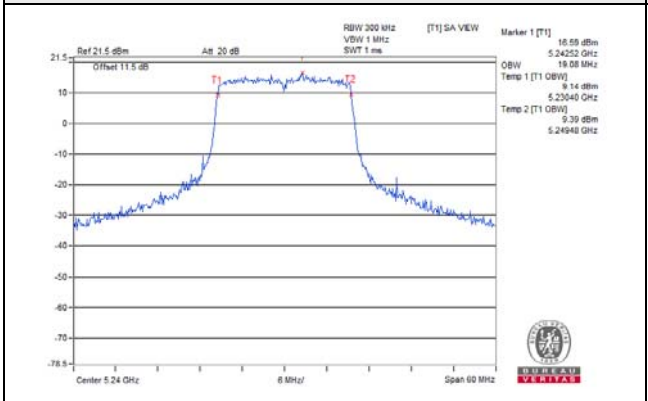
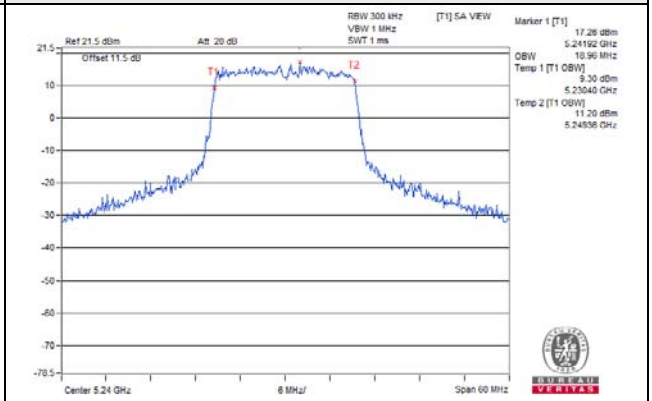
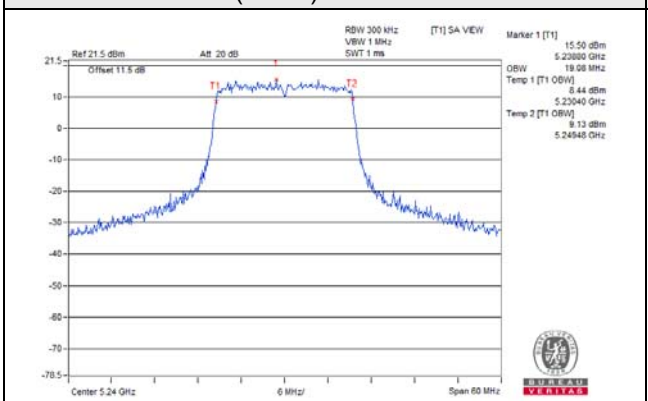
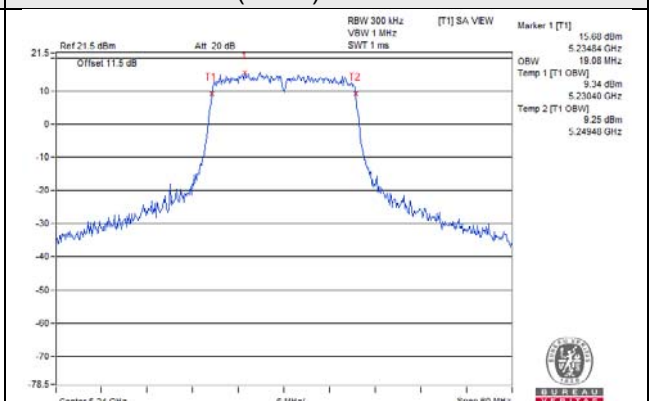
802.11ax (HE40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
38	5190	37.92	38.04	38.16	37.92
46	5230	38.16	38.04	38.04	38.04

802.11ax (HE80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	77.28	77.04	77.52	77.52

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

Spectrum Plot for near By DFS Band	
802.11a / Chain 0 / CH 48	802.11a / Chain 1 / CH 48
	
802.11a / Chain 2 / CH 48	802.11a / Chain 3 / CH 48
	
802.11ax (HE20) / Chain 0 / CH 48	802.11ax (HE20) / Chain 1 / CH 48
	
802.11ax (HE20) / Chain 2 / CH 48	802.11ax (HE20) / Chain 3 / CH 48
	

Spectrum Plot for near By DFS Band	
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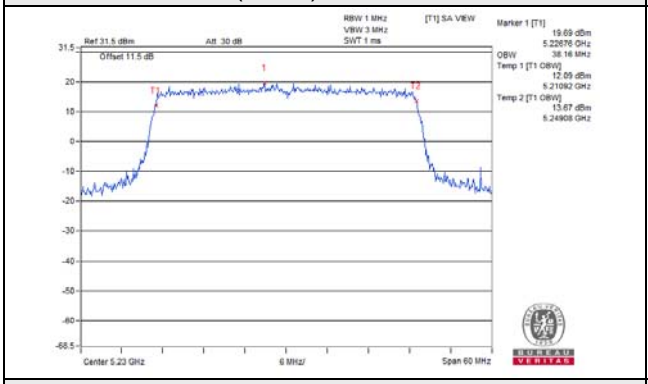
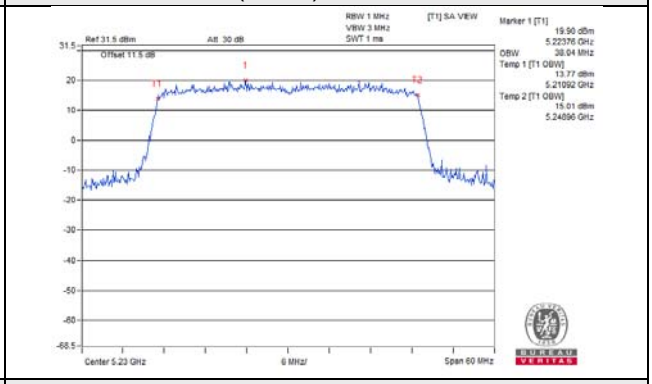
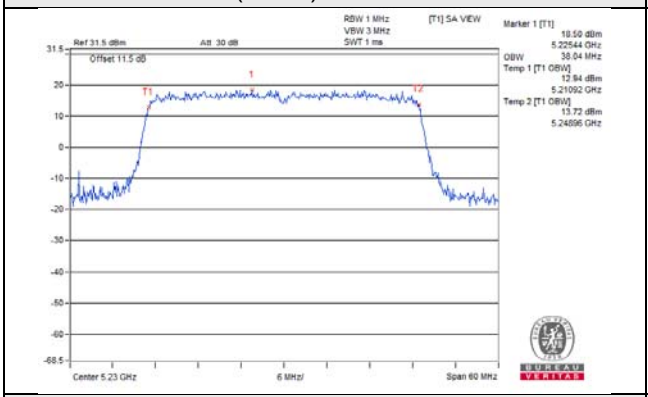
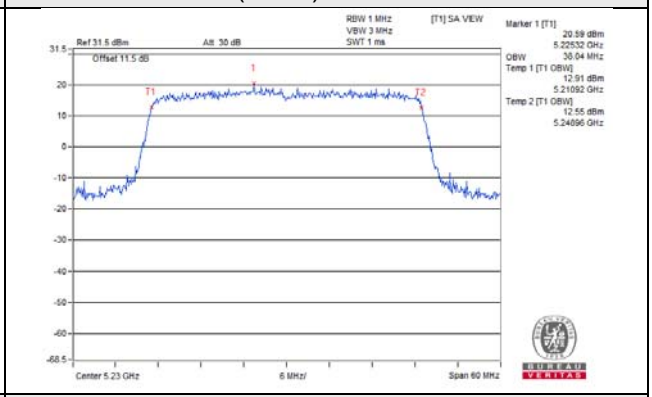
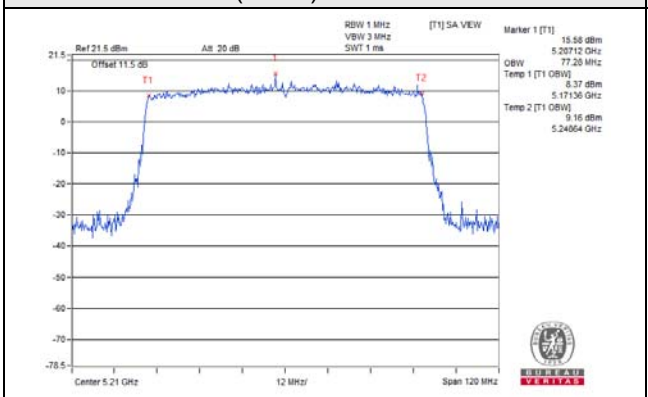
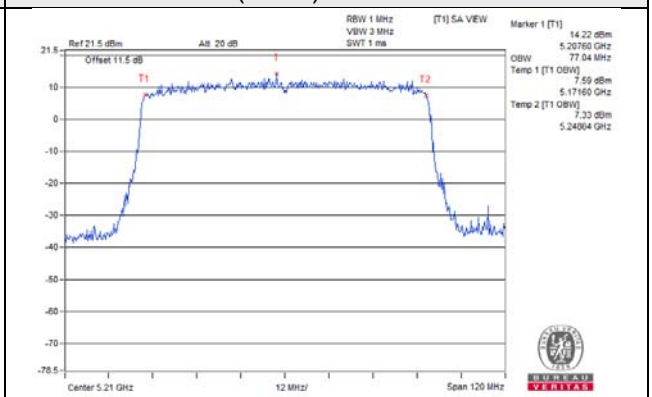
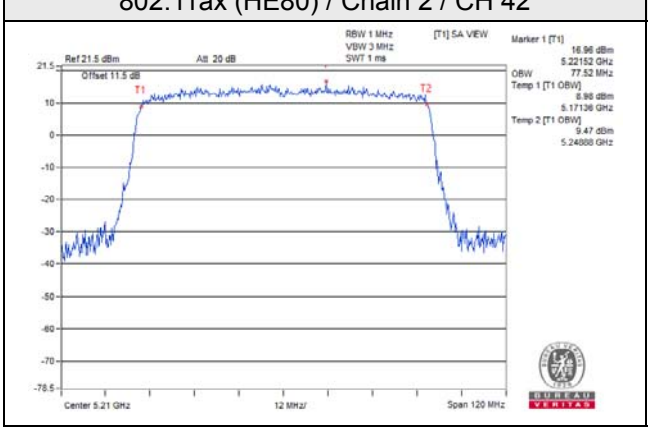
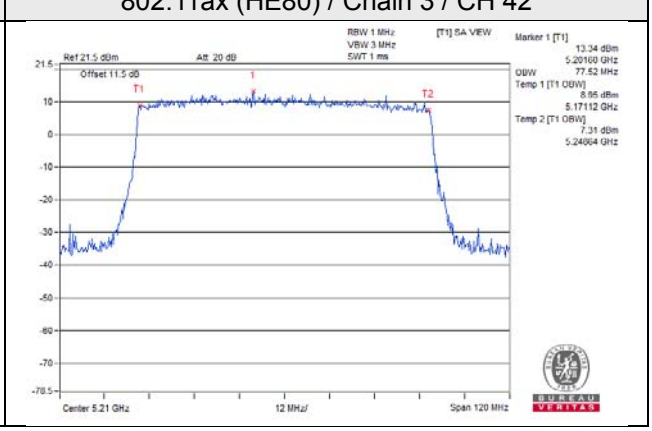
	
802.11ax (HE40) / Chain 2 / CH 46	802.11ax (HE40) / Chain 3 / CH 46
	
802.11ax (HE80) / Chain 0 / CH 42	802.11ax (HE80) / Chain 1 / CH 42
	
802.11ax (HE80) / Chain 2 / CH 42	802.11ax (HE80) / Chain 3 / CH 42
	

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	16.43	16.43	16.43	16.52
157	5785	16.44	16.44	16.56	16.56
165	5825	16.56	16.44	16.44	16.44

802.11ax (HE20)

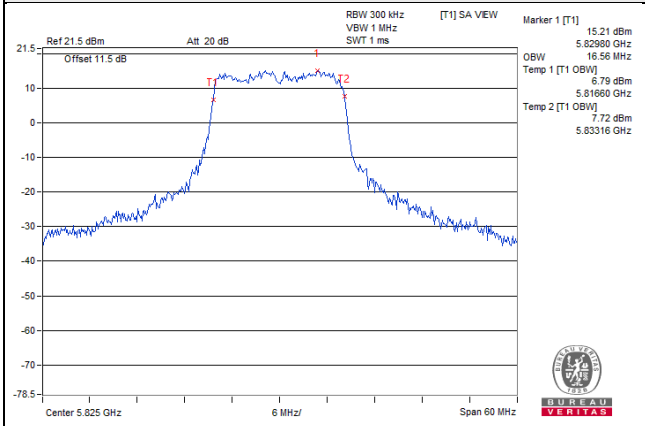
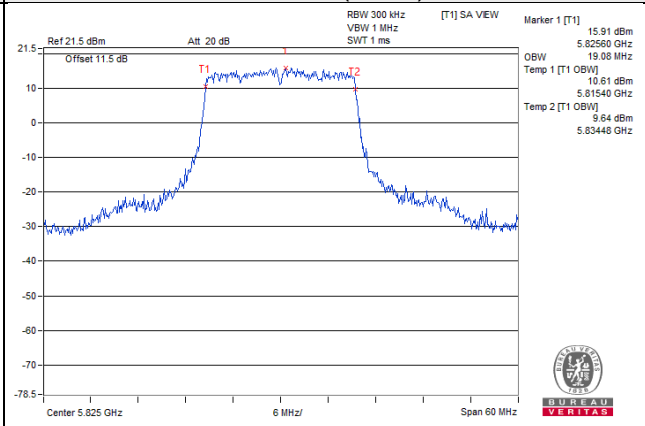
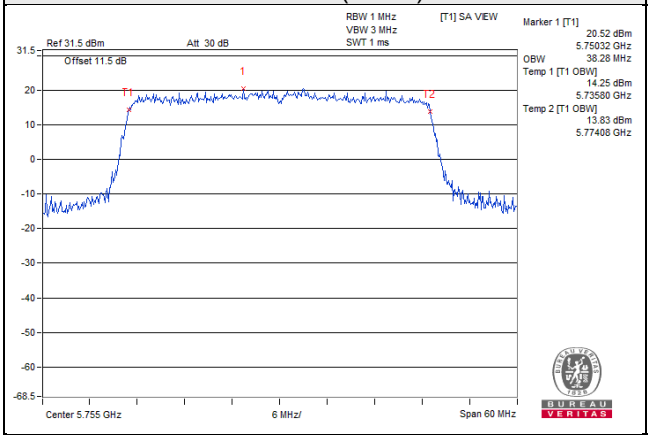
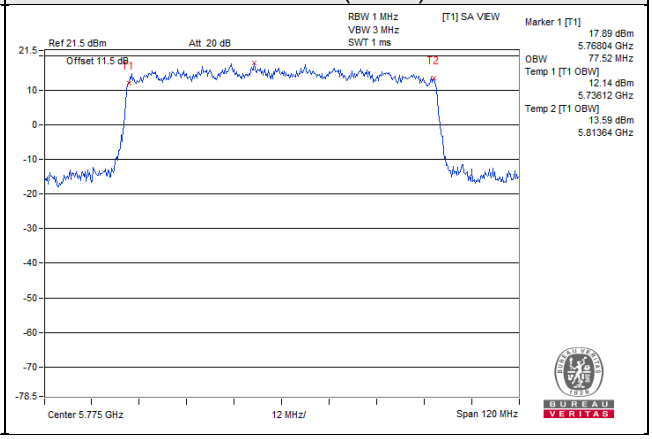
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
149	5745	19.05	19.05	18.87	19.05
157	5785	19.08	18.96	18.84	18.96
165	5825	19.08	18.96	18.96	18.96

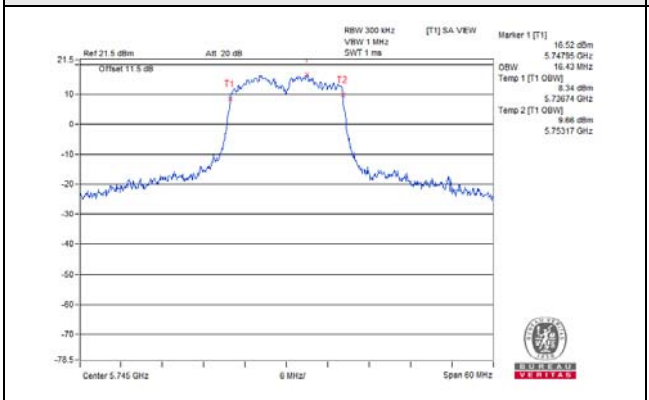
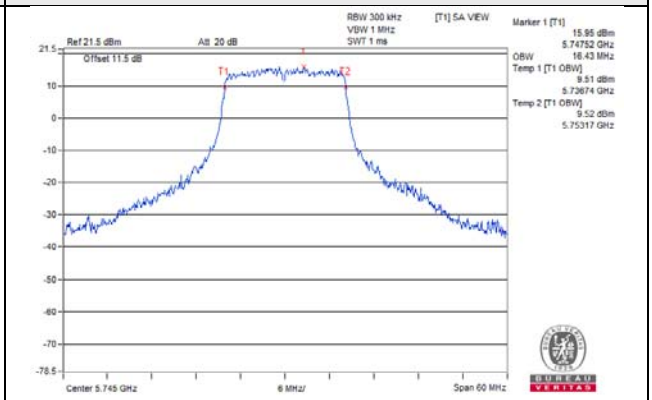
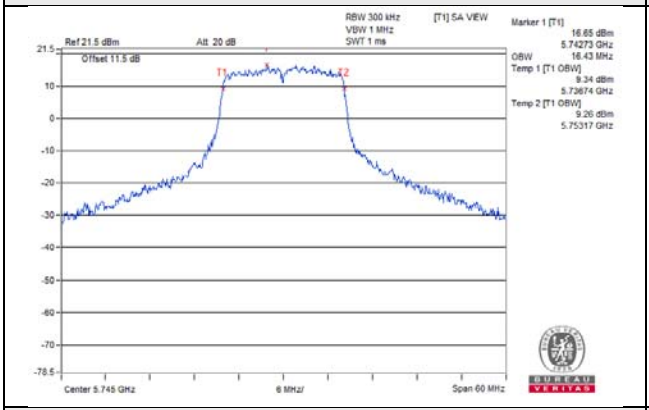
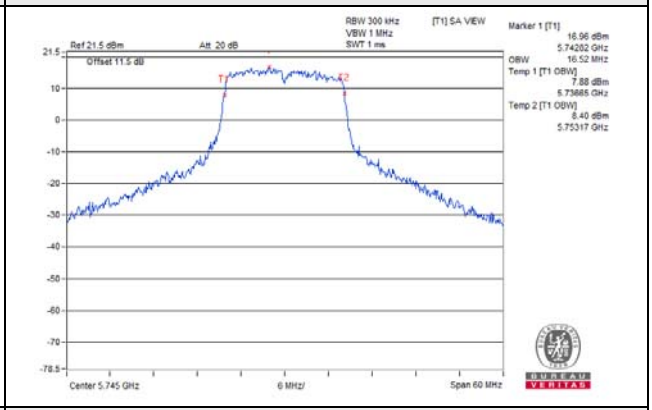
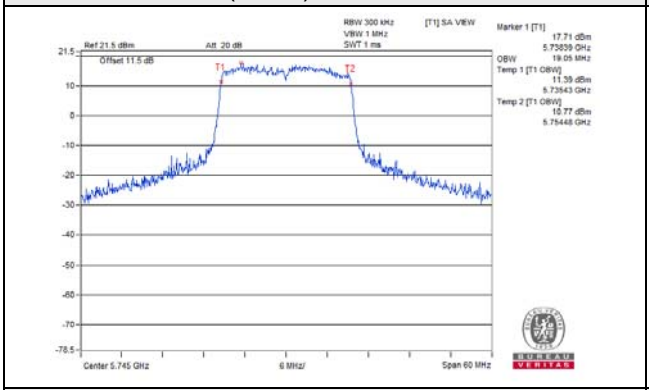
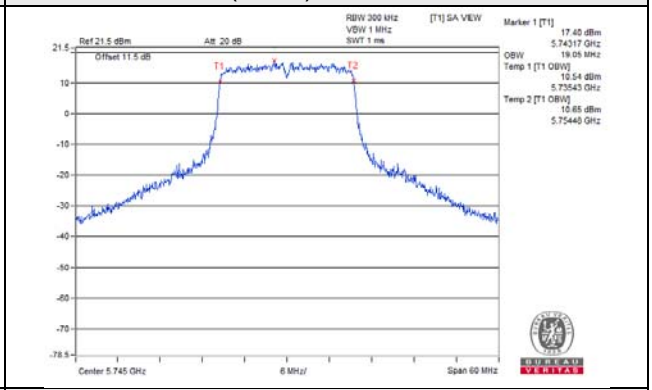
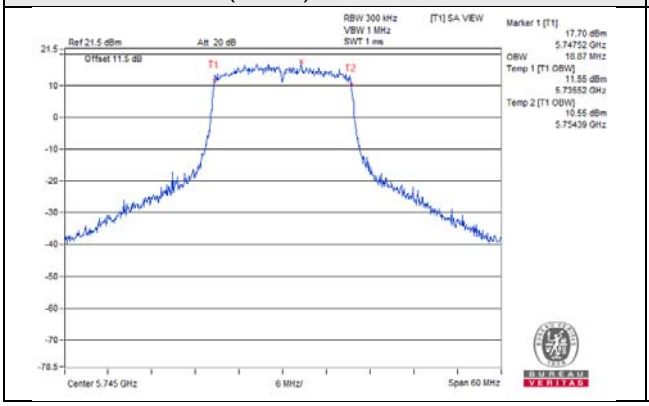
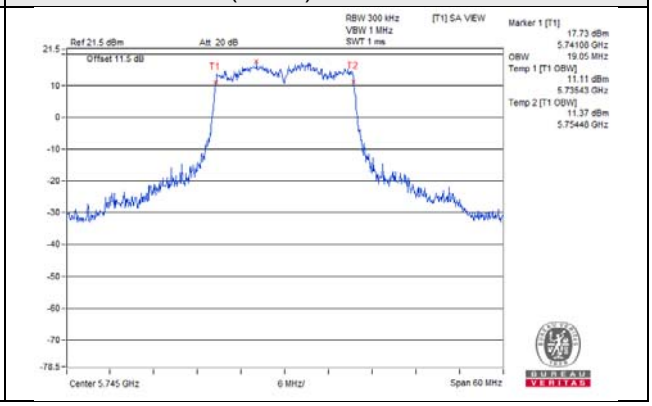
802.11ax (HE40)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
151	5755	38.16	38.28	38.16	37.92
159	5795	38.04	37.92	38.16	38.04

802.11ax (HE80)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
155	5775	77.28	77.28	77.52	77.52

Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

Spectrum Plot for near By DFS Band	
802.11a / Chain 0 / CH 149	802.11a / Chain 1 / CH 149
	
802.11a / Chain 2 / CH 149	802.11a / Chain 3 / CH 149
	
802.11ax (HE20) / Chain 0 / CH 149	802.11ax (HE20) / Chain 1 / CH 149
	
802.11ax (HE20) / Chain 2 / CH 149	802.11ax (HE20) / Chain 3 / CH 149
	

Spectrum Plot for near By DFS Band	
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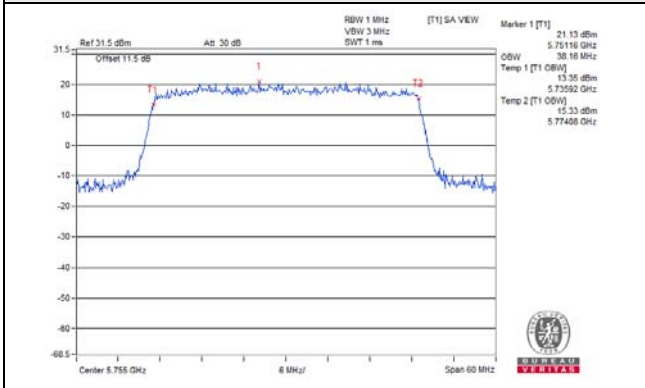
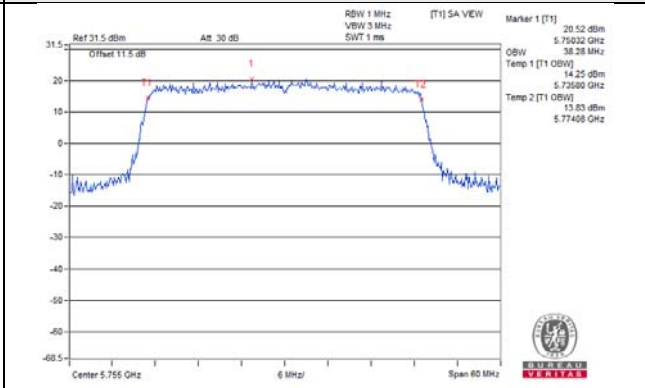
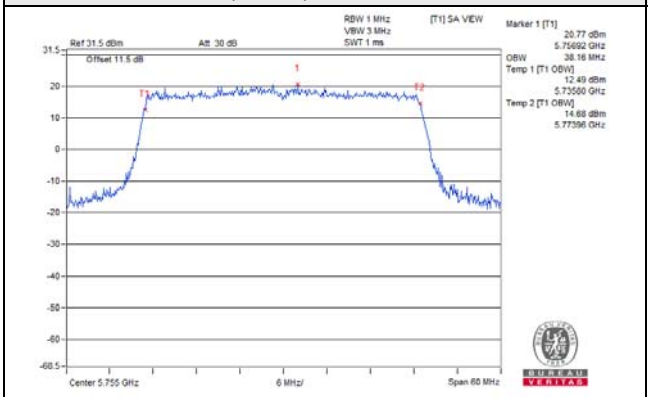
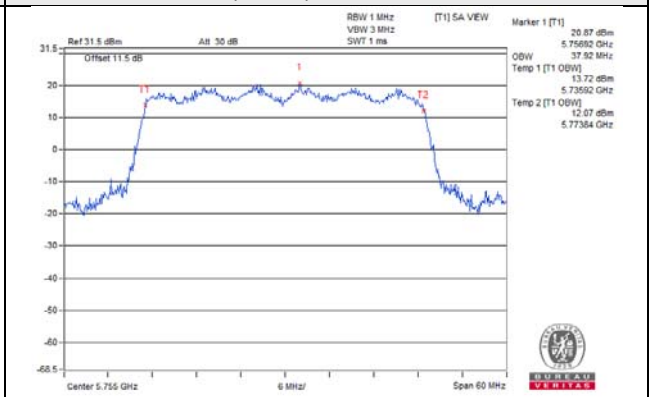
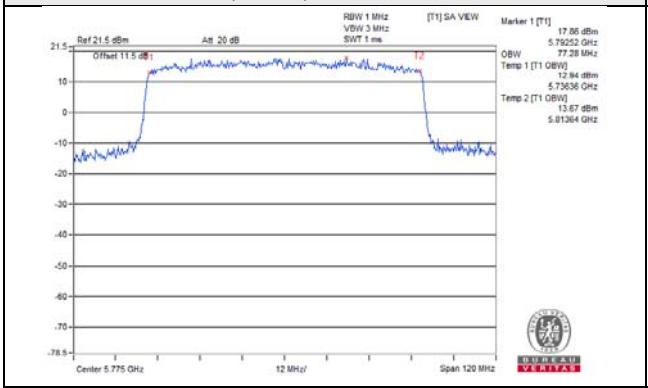
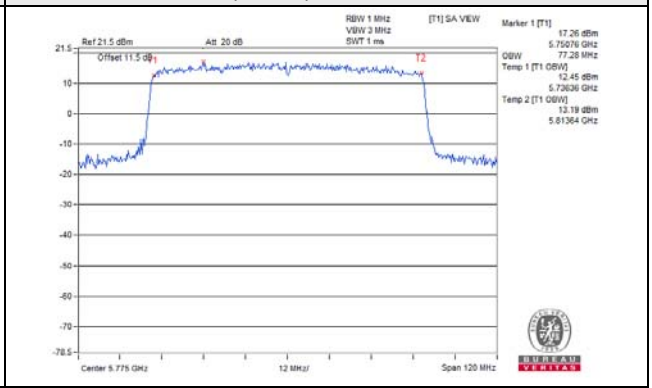
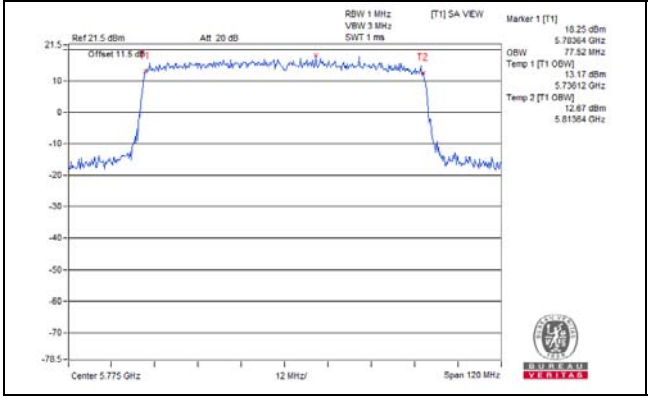
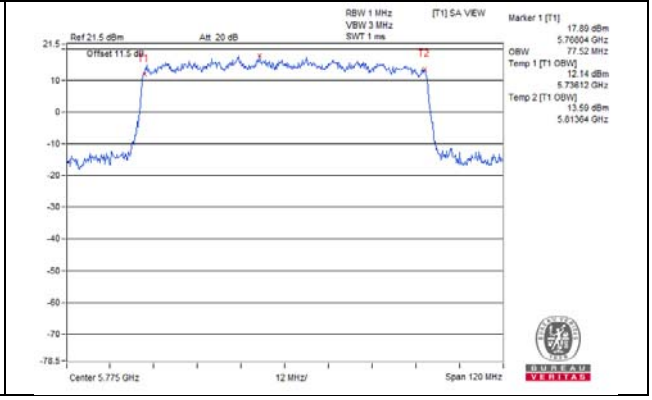
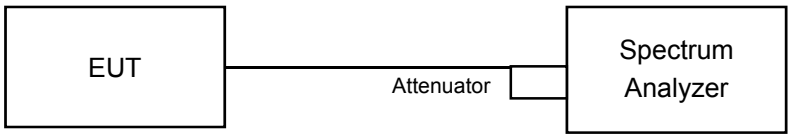
	
802.11ax (HE40) / Chain 2 / CH 151	802.11ax (HE40) / Chain 3 / CH 151
	
802.11ax (HE80) / Chain 0 / CH 155	802.11ax (HE80) / Chain 1 / CH 155
	
802.11ax (HE80) / Chain 2 / CH 155	802.11ax (HE80) / Chain 3 / CH 155
	

4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

For U-NII-1 band:

Using method SA-2

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 1MHz, Set VBW ≥ 3 MHz, Detector = RMS

c. Set Channel power measure = 1MHz

d. Sweep time = auto, trigger set to “free run”.

e. Trace average at least 100 traces in power averaging mode.

f. Record the max value and add 10 log (1/duty cycle)

For U-NII-3 band:

a. Set span to encompass the entire emission bandwidth (EBW) of the signal.

b. Set RBW = 300 kHz, Set VBW ≥ 1 MHz, Detector = RMS

c. Use the peak marker function to determine the maximum power level in any 300 kHz band segment within the fundamental EBW.

d. Scale the observed power level to an equivalent value in 500 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where BWCF = 10log(500 kHz / 300 kHz)

e. Sweep time = auto, trigger set to “free run”.

f. Trace average at least 100 traces in power averaging mode.

g. Record the max value and add 10 log (1/duty cycle)

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

For U-NII-1 band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	9.52	8.65	9.36	8.86	0.30	15.43	15.44	Pass
40	5200	7.96	7.96	8.86	8.75	0.30	14.72	15.44	Pass
48	5240	8.89	7.62	8.75	6.16	0.30	14.31	15.44	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.56dBi > 6dBi, so the power density limit shall be reduced to 17-(7.56-6) = 15.44dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
36	5180	9.30	9.06	8.64	8.85	0.26	15.25	15.44	Pass
40	5200	8.49	5.43	7.96	9.52	0.26	14.37	15.44	Pass
48	5240	9.16	8.04	6.48	7.84	0.26	14.26	15.44	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.56dBi > 6dBi, so the power density limit shall be reduced to 17-(7.56-6) = 15.44dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
38	5190	2.74	4.93	3.61	4.26	0.22	10.20	15.44	Pass
46	5230	6.97	7.34	6.27	4.84	0.22	12.70	15.44	Pass

Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.56dBi > 6dBi, so the power density limit shall be reduced to 17-(7.56-6) = 15.44dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

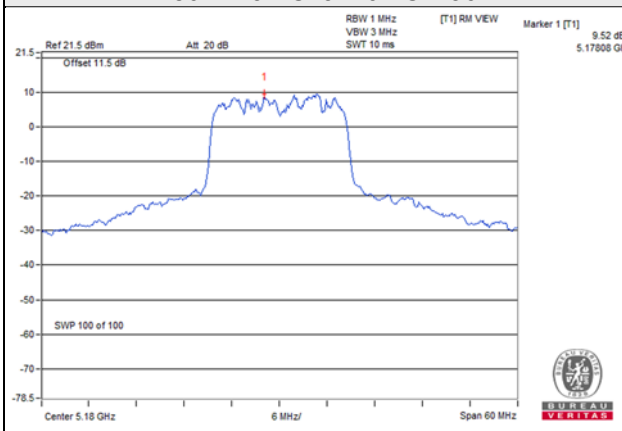
802.11ax (HE80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)				Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
42	5210	0.89	-0.32	0.72	0.92	0.28	6.88	15.44	Pass

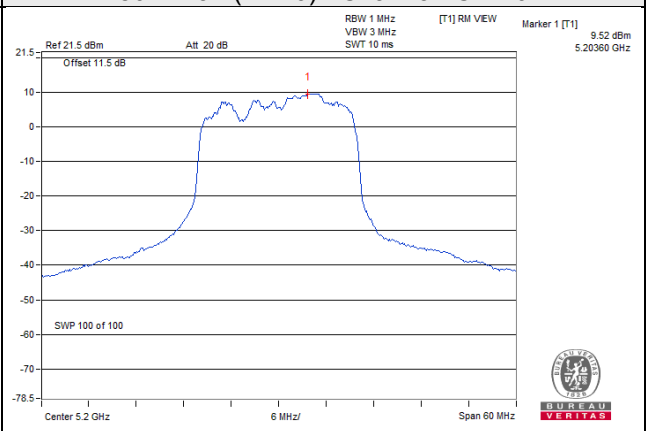
Note:
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 7.56dBi > 6dBi, so the power density limit shall be reduced to 17-(7.56-6) = 15.44dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

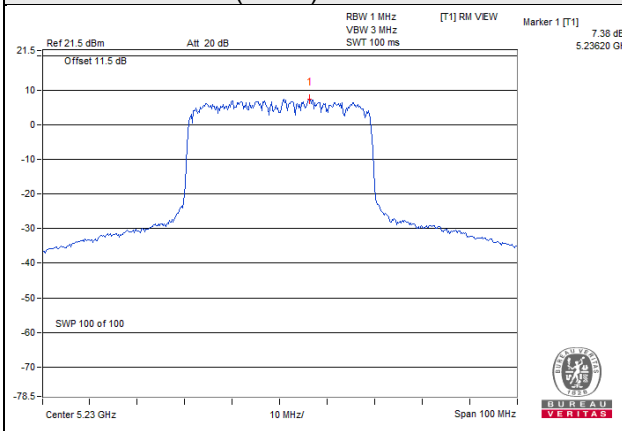
802.11a / Chain 0 / CH 36



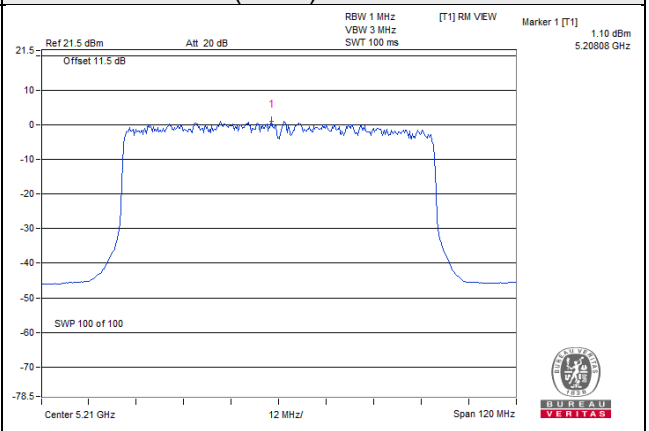
802.11ax (HE20) / Chain 3 / CH 40



802.11ax (HE40) / Chain 1 / CH 46



802.11ax (HE80) / Chain 3 / CH 42



For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	3.60	5.82	6.02	0.30	12.14	28.12	Pass
	157	5785	3.39	5.61	6.02	0.30	11.93	28.12	Pass
	165	5825	3.01	5.23	6.02	0.30	11.55	28.12	Pass
1	149	5745	2.95	5.17	6.02	0.30	11.49	28.12	Pass
	157	5785	2.88	5.10	6.02	0.30	11.42	28.12	Pass
	165	5825	2.53	4.75	6.02	0.30	11.07	28.12	Pass
2	149	5745	3.46	5.68	6.02	0.30	12.00	28.12	Pass
	157	5785	3.22	5.44	6.02	0.30	11.76	28.12	Pass
	165	5825	2.76	4.98	6.02	0.30	11.30	28.12	Pass
3	149	5745	3.62	5.84	6.02	0.30	12.16	28.12	Pass
	157	5785	3.10	5.32	6.02	0.30	11.64	28.12	Pass
	165	5825	2.69	4.91	6.02	0.30	11.23	28.12	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional gain = 7.88dBi > 6dBi, so the power density limit shall be reduced to 30-(7.88-6) = 28.12dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE20)

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	2.03	4.25	6.02	0.26	10.53	28.12	Pass
	157	5785	1.88	4.10	6.02	0.26	10.38	28.12	Pass
	165	5825	1.32	3.54	6.02	0.26	9.82	28.12	Pass
1	149	5745	1.37	3.59	6.02	0.26	9.87	28.12	Pass
	157	5785	1.57	3.79	6.02	0.26	10.07	28.12	Pass
	165	5825	0.85	3.07	6.02	0.26	9.35	28.12	Pass
2	149	5745	1.54	3.76	6.02	0.26	10.04	28.12	Pass
	157	5785	0.98	3.20	6.02	0.26	9.48	28.12	Pass
	165	5825	0.69	2.91	6.02	0.26	9.19	28.12	Pass
3	149	5745	1.65	3.87	6.02	0.26	10.15	28.12	Pass
	157	5785	1.42	3.64	6.02	0.26	9.92	28.12	Pass
	165	5825	1.66	3.88	6.02	0.26	10.16	28.12	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional gain = 7.88dBi > 6dBi, so the power density limit shall be reduced to 30-(7.88-6) = 28.12dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-0.67	1.55	6.02	0.22	7.79	28.12	Pass
	159	5795	-1.42	0.80	6.02	0.22	7.04	28.12	Pass
1	151	5755	-0.82	1.40	6.02	0.22	7.64	28.12	Pass
	159	5795	-1.54	0.68	6.02	0.22	6.92	28.12	Pass
2	151	5755	-1.35	0.87	6.02	0.22	7.11	28.12	Pass
	159	5795	-1.18	1.04	6.02	0.22	7.28	28.12	Pass
3	151	5755	-1.13	1.09	6.02	0.22	7.33	28.12	Pass
	159	5795	-1.13	1.09	6.02	0.22	7.33	28.12	Pass

Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional gain = 7.88dBi > 6dBi, so the power density limit shall be reduced to 30-(7.88-6) = 28.12dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

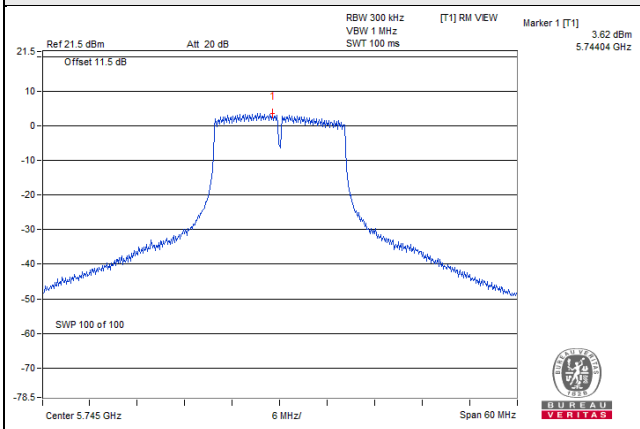
802.11ax (HE80)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/ 500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-2.64	-0.42	6.02	0.28	5.88	28.12	Pass
1	155	5775	-3.87	-1.65	6.02	0.28	4.65	28.12	Pass
2	155	5775	-4.19	-1.97	6.02	0.28	4.33	28.12	Pass
3	155	5775	-3.69	-1.47	6.02	0.28	4.83	28.12	Pass

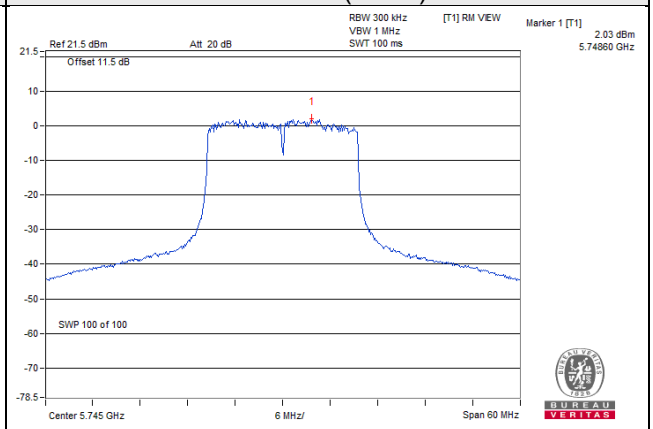
Note:
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add 10 log (N_{ANT}) dB.
2. Directional gain = 7.88dBi > 6dBi, so the power density limit shall be reduced to 30-(7.88-6) = 28.12dBm.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

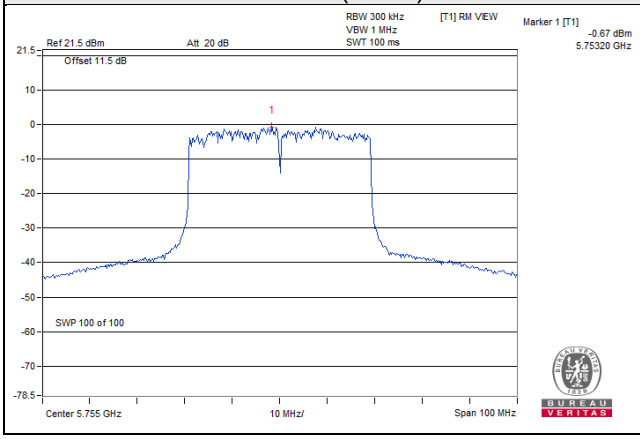
802.11a



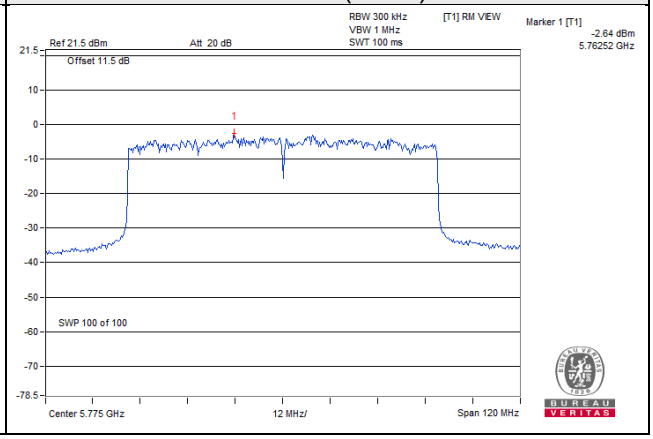
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)

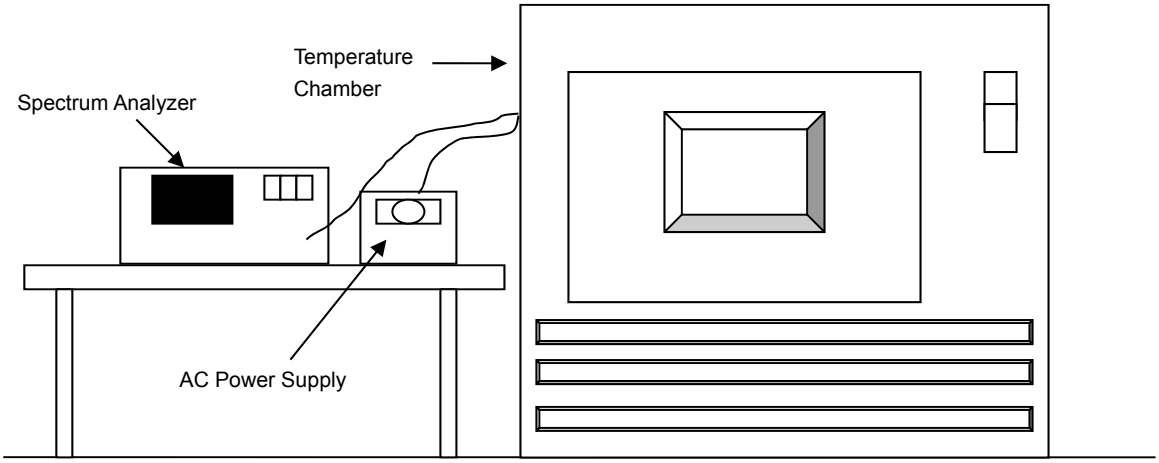


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2020	Jun. 11, 2021
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 01, 2020	May 31, 2021
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2020	Jun. 22, 2021
AC Power Supply Extech	CFW-105	E000603	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.

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.

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

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
45	120	5179.9999	PASS	5179.9963	PASS	5179.9963	PASS	5179.9962	PASS
40	120	5179.9955	PASS	5179.9938	PASS	5179.9941	PASS	5179.9913	PASS
30	120	5179.9822	PASS	5179.9809	PASS	5179.9789	PASS	5179.9833	PASS
20	120	5180.0122	PASS	5180.0092	PASS	5180.0116	PASS	5180.0105	PASS
10	120	5179.9845	PASS	5179.9846	PASS	5179.9866	PASS	5179.9874	PASS
0	120	5179.9999	PASS	5179.9963	PASS	5179.9963	PASS	5179.9962	PASS

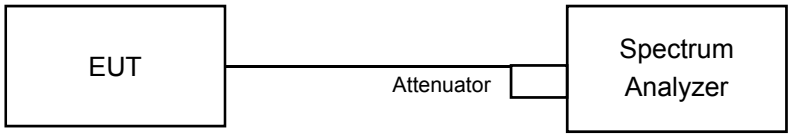
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (℃)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5179.9815	PASS	5179.9808	PASS	5179.9787	PASS	5179.9833	PASS
	120	5179.9822	PASS	5179.9809	PASS	5179.9789	PASS	5179.9833	PASS
	102	5179.9823	PASS	5179.9803	PASS	5179.9793	PASS	5179.9838	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

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

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	15.72	15.96	15.69	15.39	0.5	Pass
157	5785	15.48	15.65	15.98	16.11	0.5	Pass
165	5825	15.77	15.97	15.72	15.39	0.5	Pass

802.11ax (HE20)

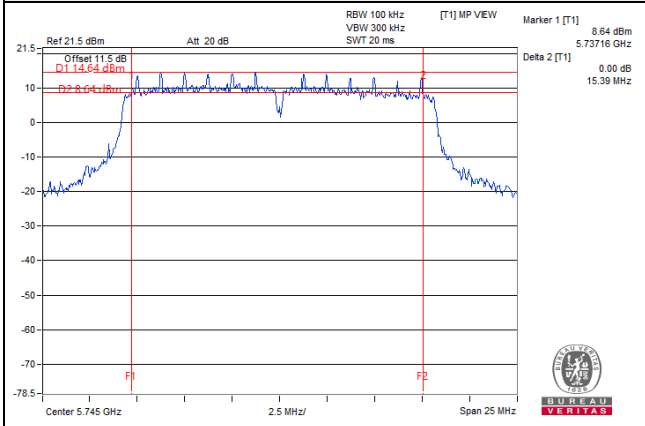
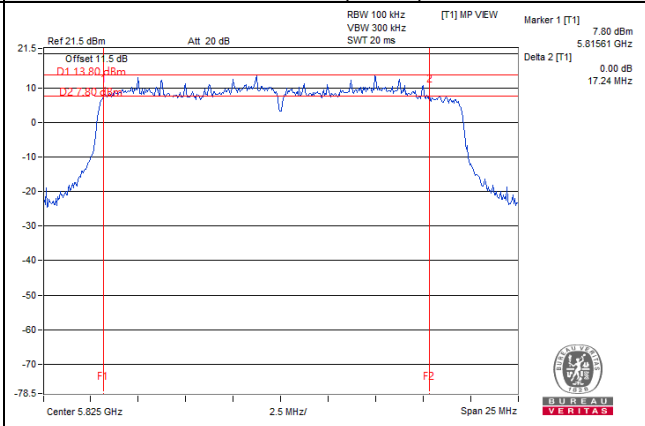
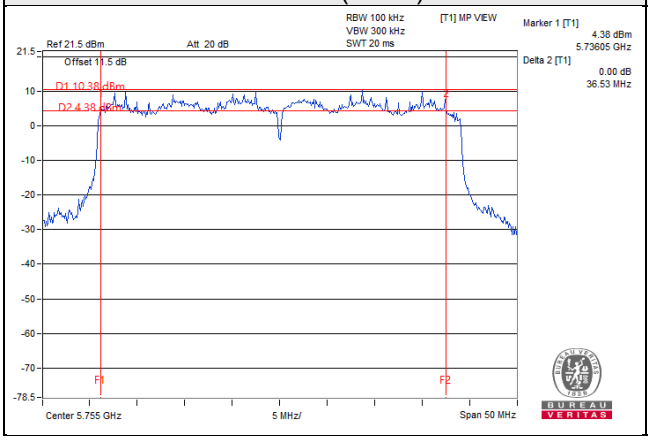
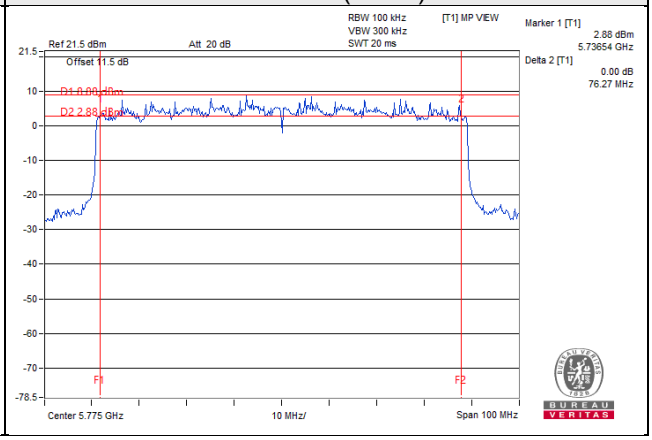
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	18.58	18.76	18.39	16.85	0.5	Pass
157	5785	18.71	18.74	18.64	17.26	0.5	Pass
165	5825	18.91	18.50	18.47	17.24	0.5	Pass

802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.70	37.92	37.98	36.53	0.5	Pass
159	5795	37.00	37.71	37.95	37.67	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	78.03	77.58	78.00	76.27	0.5	Pass

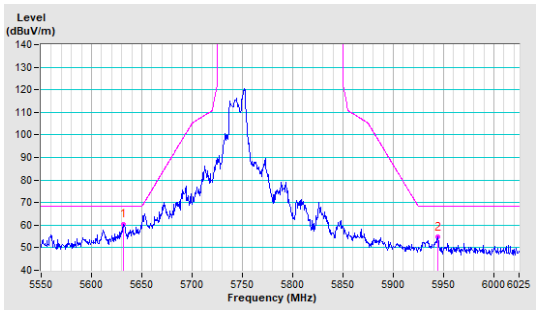
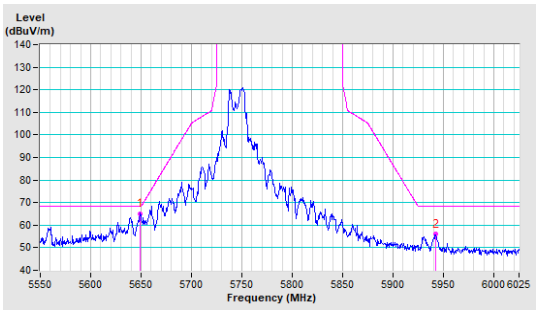
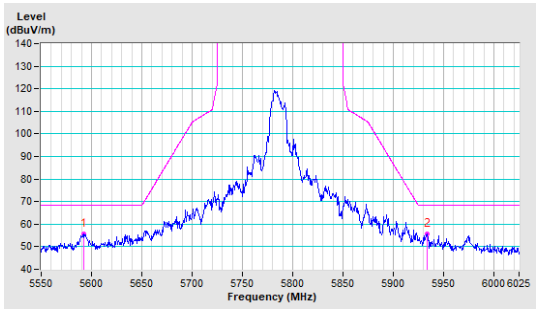
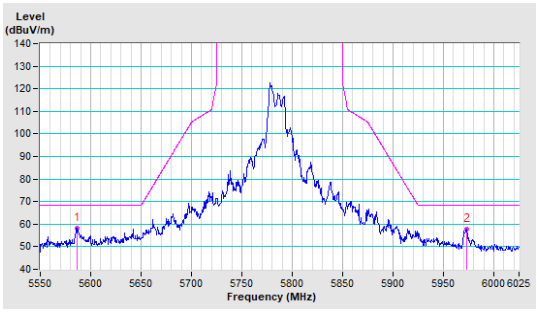
Spectrum Plot of Worst Value	
802.11a	802.11ax (HE20)
	
802.11ax (HE40)	802.11ax (HE80)
	

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

CH149	
Horizontal	Vertical
	
CH157	
Horizontal	Vertical
	
CH165	
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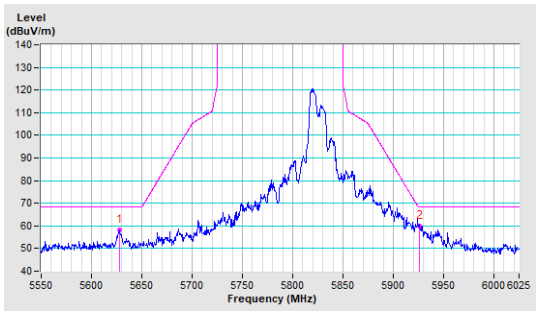
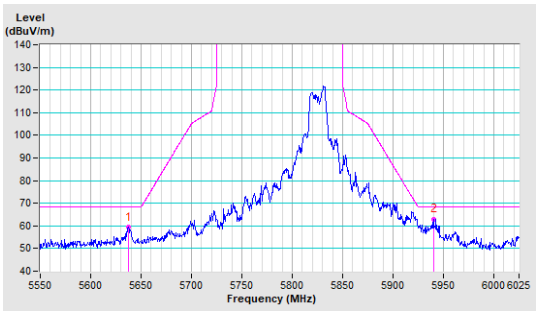
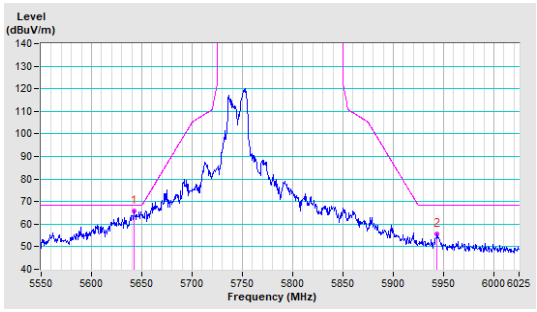
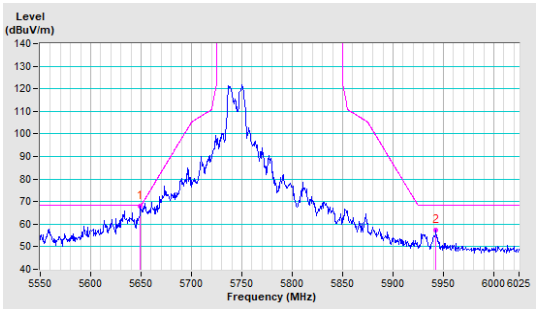
	

802.11ax (HE20)

CH149	
Horizontal	Vertical
	
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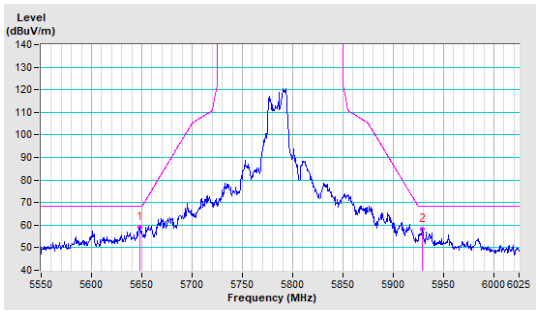
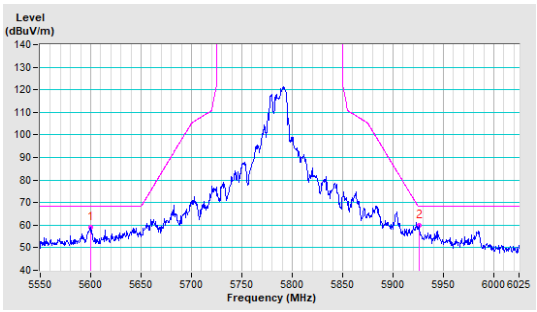
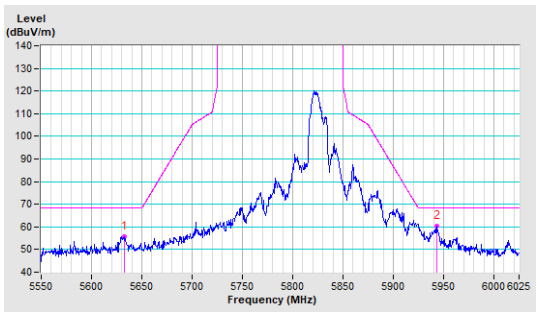
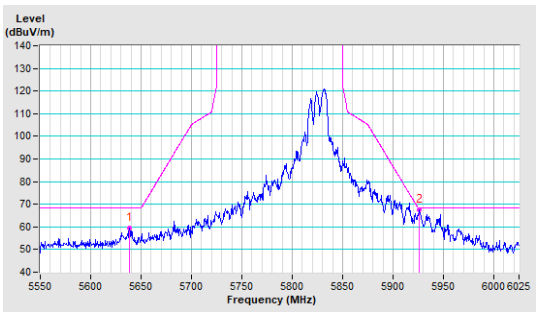
	
CH165	
Horizontal	Vertical
	

802.11ax (HE40)

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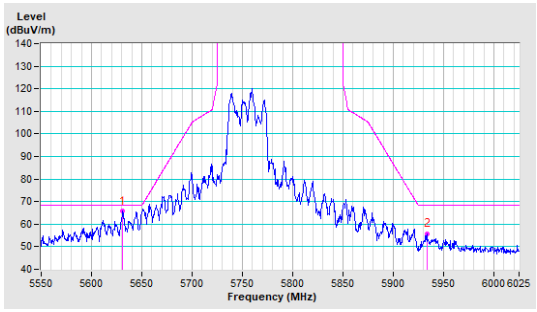
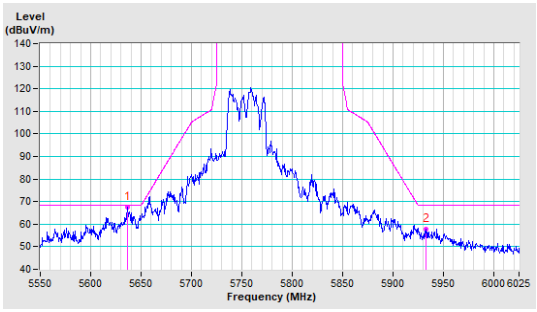
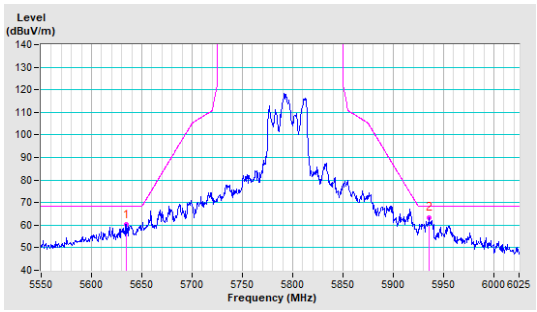
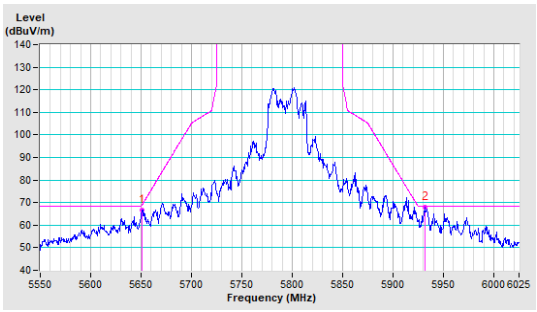
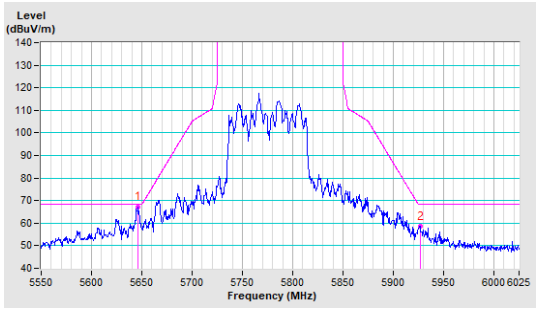
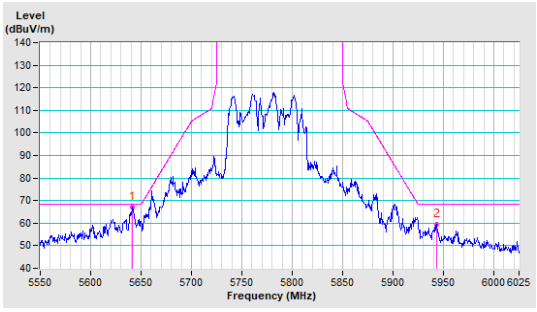
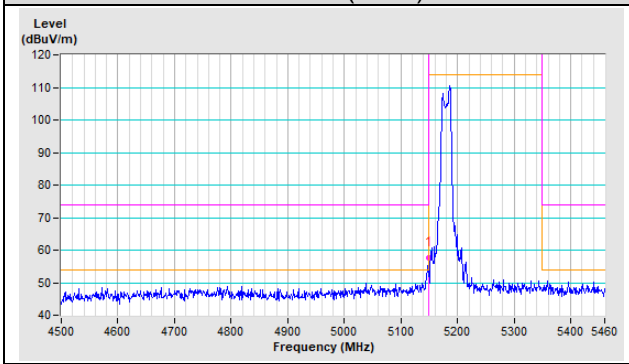
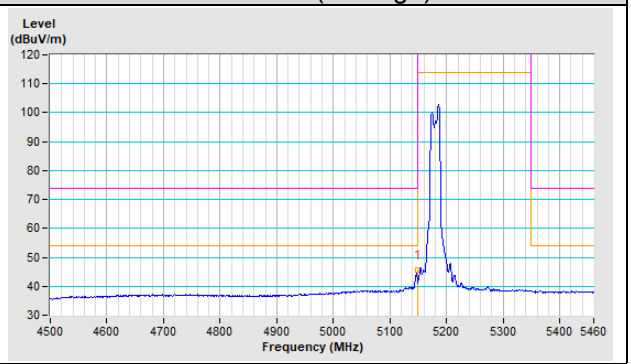
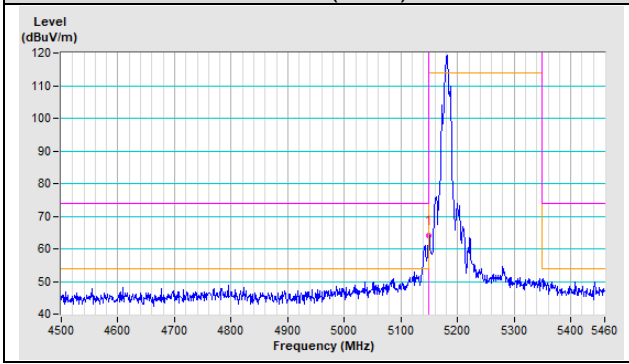
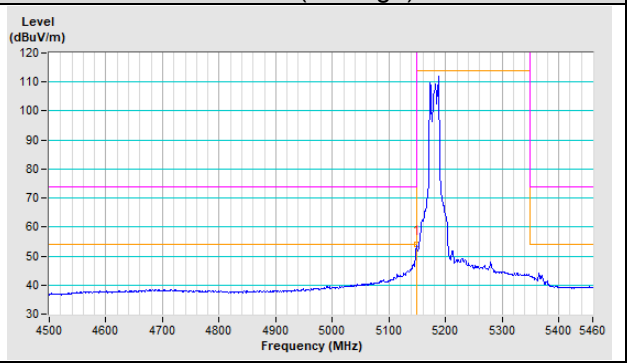
	
CH159	
Horizontal	Vertical
	

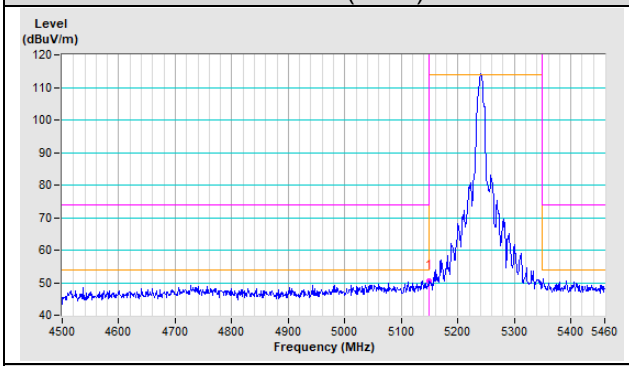
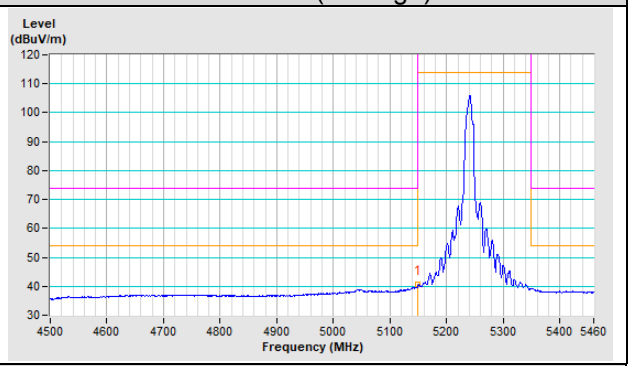
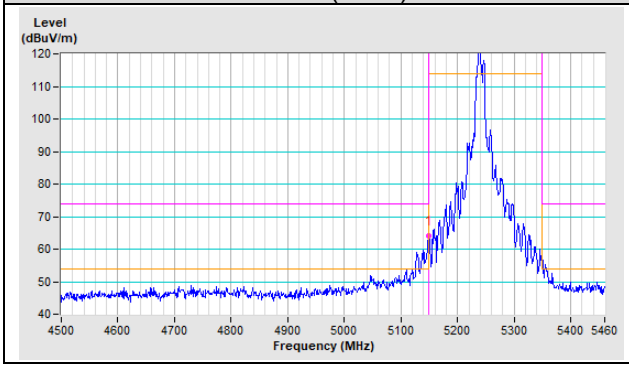
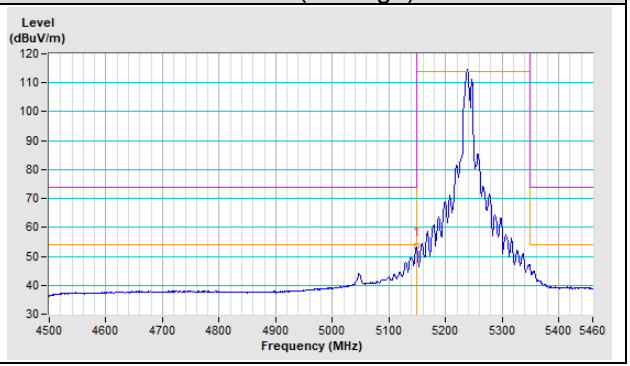
802.11ax (HE80)

CH155	
Horizontal	Vertical
	

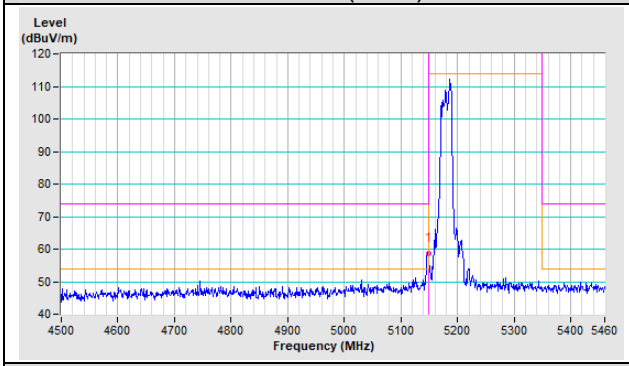
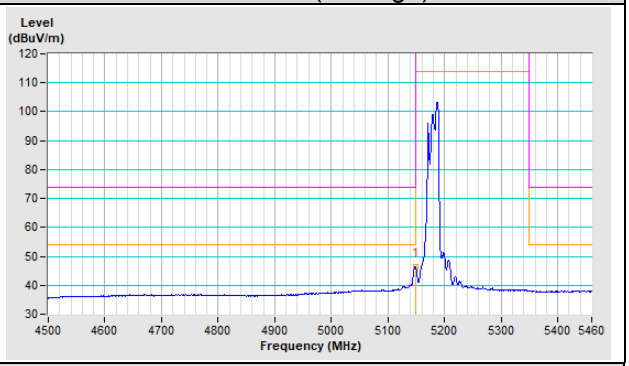
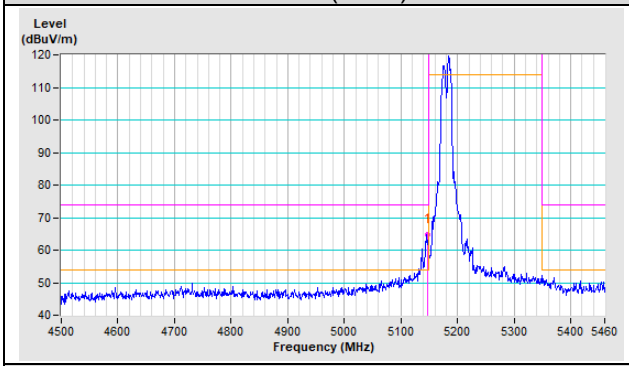
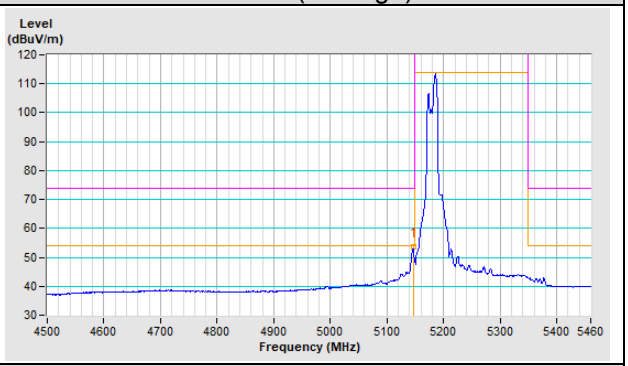
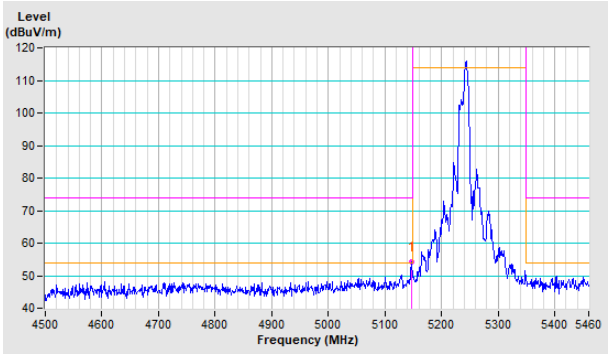
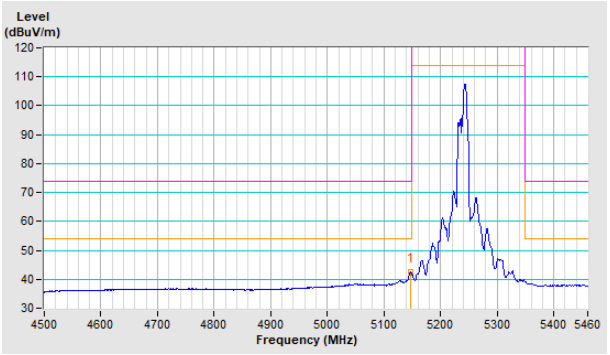
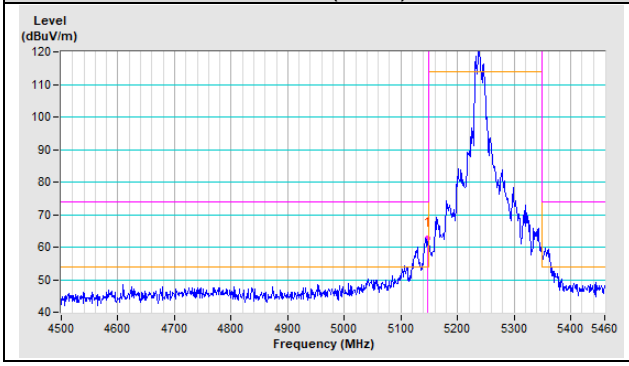
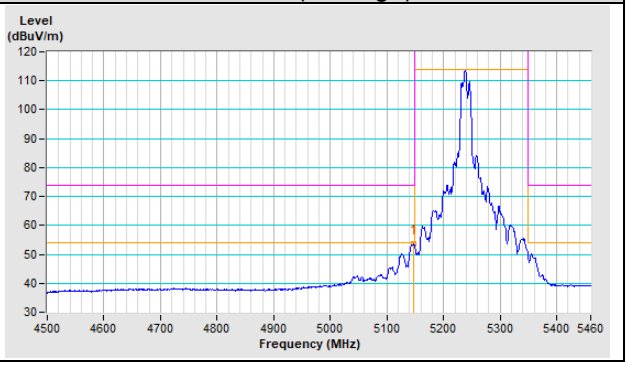
Annex B- Band Edge Measurement

802.11a

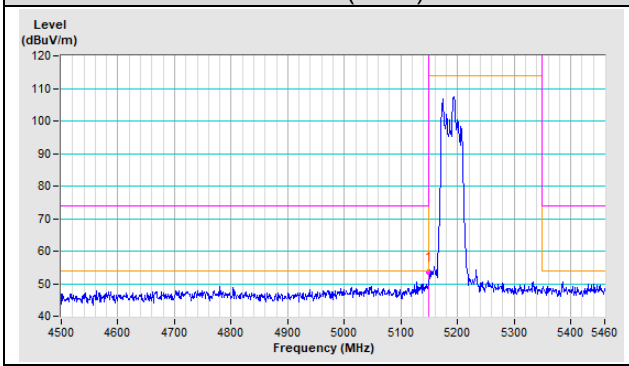
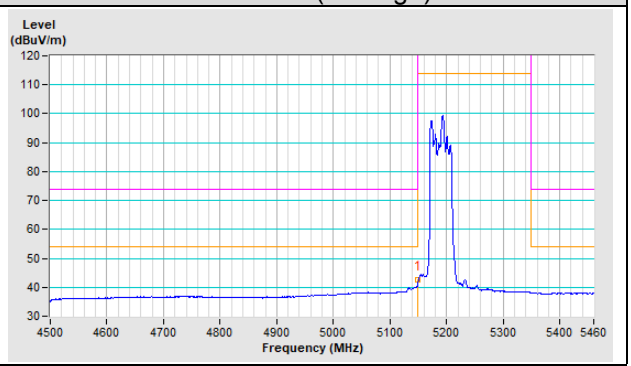
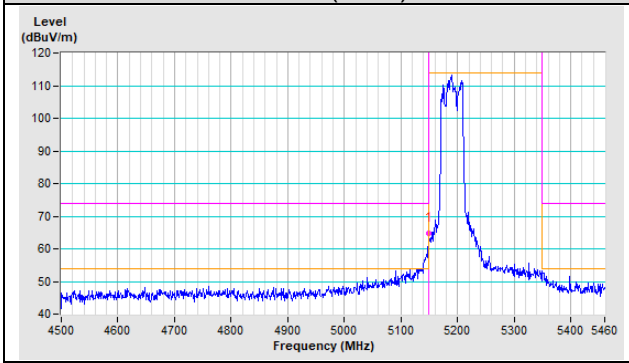
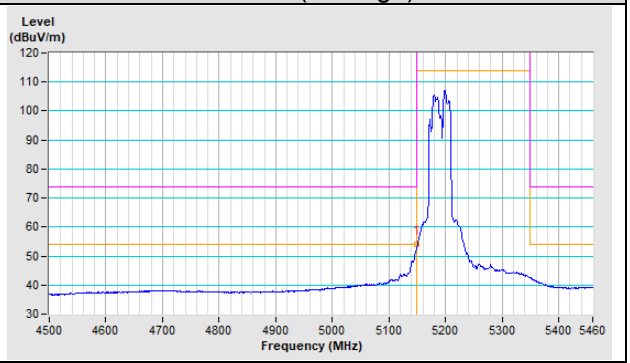
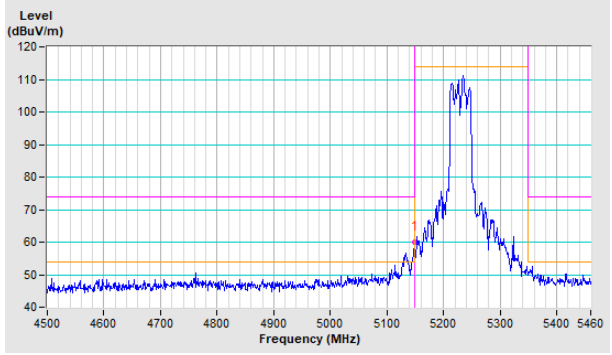
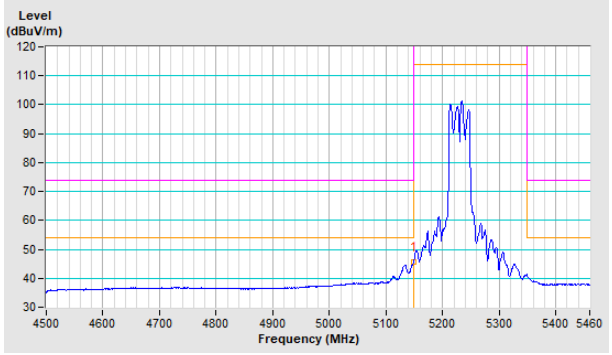
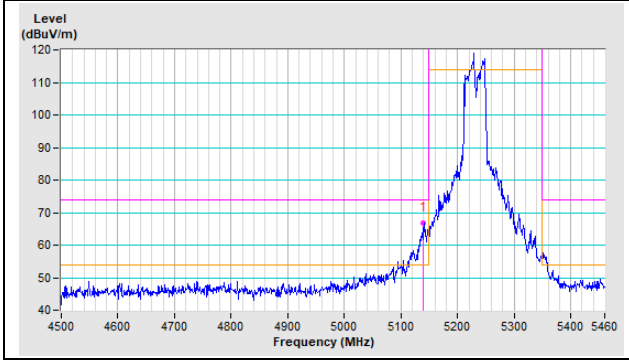
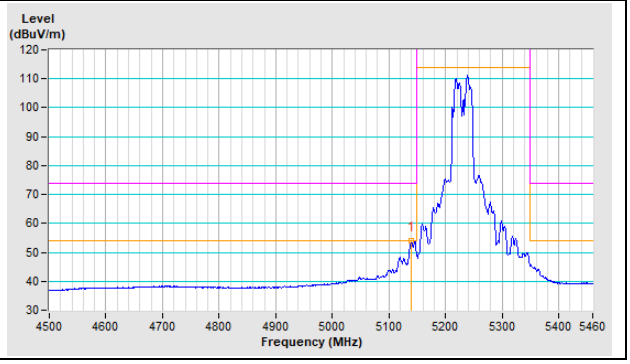
Channel 36	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

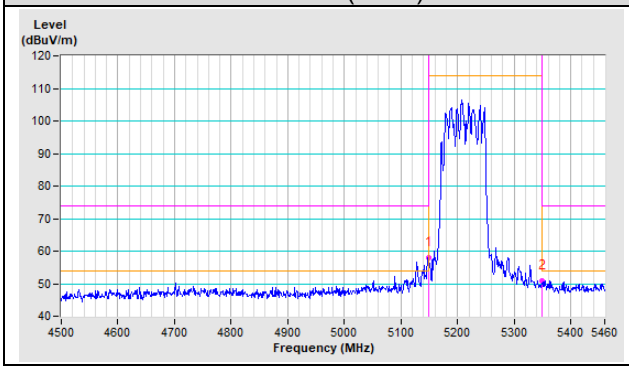
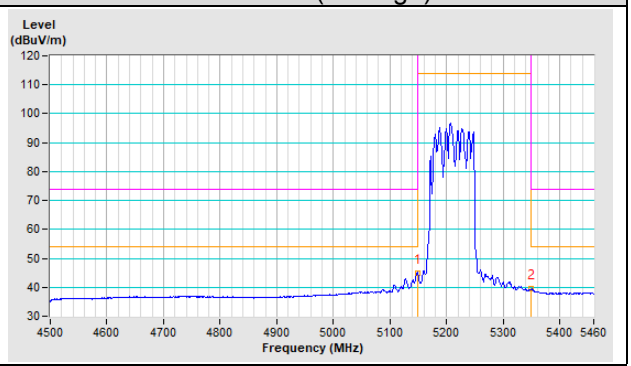
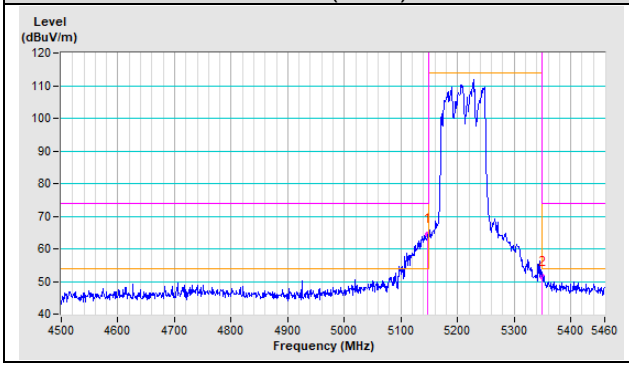
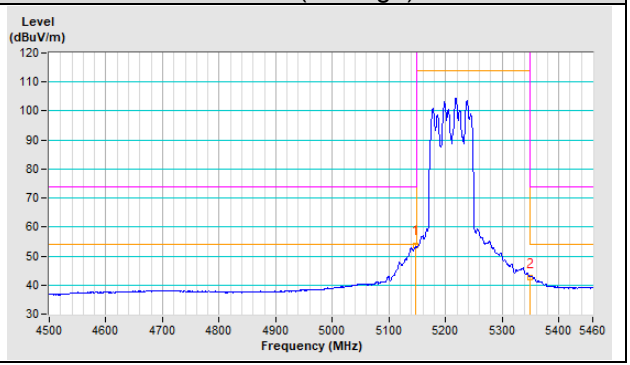
802.11ax (HE20)

Channel 36	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 48	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE40)

Channel 38	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	
Channel 46	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

802.11ax (HE80)

Channel 42	
Horizontal (Peak)	Horizontal (Average)
	
Vertical (Peak)	Vertical (Average)
	

Appendix – Information of the Testing Laboratories

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

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

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

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