

FCC Test Report

Report No.: RFBDIS-WTW-P21030161-1

FCC ID: Q6G-AP430CR

Test Model: AP430CR

Received Date: Mar. 11, 2021

Test Date: Mar. 18 ~ Apr. 19, 2021

Issued Date: May 03, 2021

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Release Control Record

Issue No.	Description	Date Issued
RFBDYS-WTW-P21030161-1	Original Release	May 03, 2021

1 Certificate of Conformity

Product: Wireless Access Point
Brand: WatchGuard
Test Model: AP430CR
Sample Status: Engineering Sample
Applicant: WatchGuard Technologies, Inc.
Test Date: Mar. 18 ~ Apr. 19, 2021
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:** May 03, 2021
Pettie Chen / Senior Specialist

Approved by : Bruce Chen, **Date:** May 03, 2021
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 -13.58dB at 29.93000MHz.
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 -0.9dB at 37.75, 5150MHz.
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 R-N type(F) not a standard connector.

Note:

1. For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB 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) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Access Point
Brand	WatchGuard
Test Model	AP430CR
Sample Status	Engineering sample
Power Supply Rating	54Vdc from POE
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM, 256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to 600Mbps 802.11ac (VHT20/40): up to 800Mbps 802.11ax: up to 4803.9Mbps
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	<p>5G traffic radio (Radio 2): 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</p> <p>Scanning radio (Radio 3): 5180 ~ 5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1</p>

Output Power	5G traffic radio (Radio 2): CDD Mode: 5180 ~ 5240MHz: 191.137mW 5745 ~ 5825MHz: 757.413mW Beamforming Mode: 5180 ~ 5240MHz: 47.791mW 5745 ~ 5825MHz: 189.380mW Scanning radio (Radio 3): CDD Mode: 5180 ~ 5240MHz: 203.863mW 5745 ~ 5825MHz: 231.774mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

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

Radio	Modulation Mode	Beamforming Mode	TX Function
5G traffic radio (Radio 2)	802.11a	Not Support	4TX
	802.11n (HT20)	Not Support	4TX
	802.11n (HT40)	Not Support	4TX
	802.11ac (VHT20)	Support	4TX
	802.11ac (VHT40)	Support	4TX
	802.11ac (VHT80)	Support	4TX
	802.11ax (HE20)	Support	4TX
	802.11ax (HE40)	Support	4TX
	802.11ax (HE80)	Support	4TX
Scanning radio (Radio 3)	802.11a	Not Support	2TX
	802.11n (HT20)	Not Support	2TX
	802.11n (HT40)	Not Support	2TX
	802.11ac (VHT20)	Not Support	2TX
	802.11ac (VHT40)	Not Support	2TX
	802.11ac (VHT80)	Not Support	2TX

* The bandwidth and modulation are similar for HT20/HT40 on 802.11n mode and VHT20/VHT40/VHT80 on 802.11ac mode and HE20/HE40/HE80 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, CDD mode and Beamforming mode are presented in power output test item. For other test items, CDD mode is the worst case for final tests after pretesting.

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


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

3. The following antennas were provided to the EUT.

Antenna Type	Dipole
Antenna Connector	N-type Plug
Frequency (MHz)	Gain (dBi)
2400	5.1
2450	5.0
2500	5.5
4900	6.1
5150	6.5
5250	6.4
5350	6.7
5450	7.2
5550	6.6
5650	6.6
5750	7.0
5850	6.9

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

4. The EUT will install at outdoor area, the highest antenna gain from the horizon above 30 degrees as below, for more detail information please refer to antenna specification and user manual.

Item	Antenna gain	Antenna install degree
Radio 2 Band 1	-1.88 dBi	
Radio 3 Band 1	-2.16 dBi	

* Due to device Will restricted installation position as above photo, thus consider to above 30 degrees highest antenna gain are chosen from XY and YZ Plane (antenna specification of 30~150 dug and 210~330 dug)

* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

5. 5GHz traffic radio (Radio 2) and 5G Scanning radio (Radio 3) cannot transmit in the same band at same time. 2G traffic radio (Radio 1) and 2G Scanning radio (Radio 3) cannot transmit at same time. Spurious emission of the simultaneous operation has been evaluated and no non-compliance was found.

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 \geq 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
- Radiated emission test (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)	Remark
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	Radio 2
	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	
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	Radio 3
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT80)		42	42	OFDM	29.3	
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT80)		155	155	OFDM	29.3	

Radiated Emission Test (Below 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
-	802.11ax (HE40)	5180-5240	38 to 46	159	OFDMA	MCS0	Radio 2
		5745-5825	151 to 159				
-	802.11a	5180-5240	36 to 48	157	OFDM	6.0	Radio 3
		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)	Remark
-	802.11ax (HE40)	5180-5240	38 to 46	159	OFDMA	MCS0	Radio 2
		5745-5825	151 to 159				
-	802.11a	5180-5240	36 to 48	157	OFDM	6.0	Radio 3
		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)	Remark
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	Radio 2
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT80)		42	42	OFDM	29.3	
	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	Radio 2
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT80)		155	155	OFDM	29.3	
	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	
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	Radio 3
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	
	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	
	802.11ac (VHT80)		42	42	OFDM	29.3	
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	Radio 3
	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT20)		149 to 165	149, 157, 165	OFDM	6.5	
	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	
	802.11ac (VHT80)		155	155	OFDM	29.3	

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE \geq 1G	23 deg. C, 66% RH	54Vdc	Edison Lee Titan Hsu
RE $<$ 1G	23 deg. C, 67% RH	54Vdc	Edison Lee
PLC	23 deg. C, 69% RH	54Vdc	Edison Lee
APCM	25 deg. C, 60% RH	54Vdc	Jisyong Wang

3.3 Duty Cycle of Test Signal

5G traffic radio (Radio 2)

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

802.11a: Duty cycle = $1.965/2.108 = 0.932$, Duty factor = $10 * \log(1/0.932) = 0.31$

802.11ax (HE20): Duty cycle = $5.425/5.7 = 0.952$, Duty factor = $10 * \log(1/0.952) = 0.21$

802.11ax (HE40): Duty cycle = $5.363/5.763 = 0.931$, Duty factor = $10 * \log(1/0.931) = 0.31$

802.11ax (HE80): Duty cycle = $5.375/5.787 = 0.929$, Duty factor = $10 * \log(1/0.929) = 0.32$



Scanning radio (Radio 3)

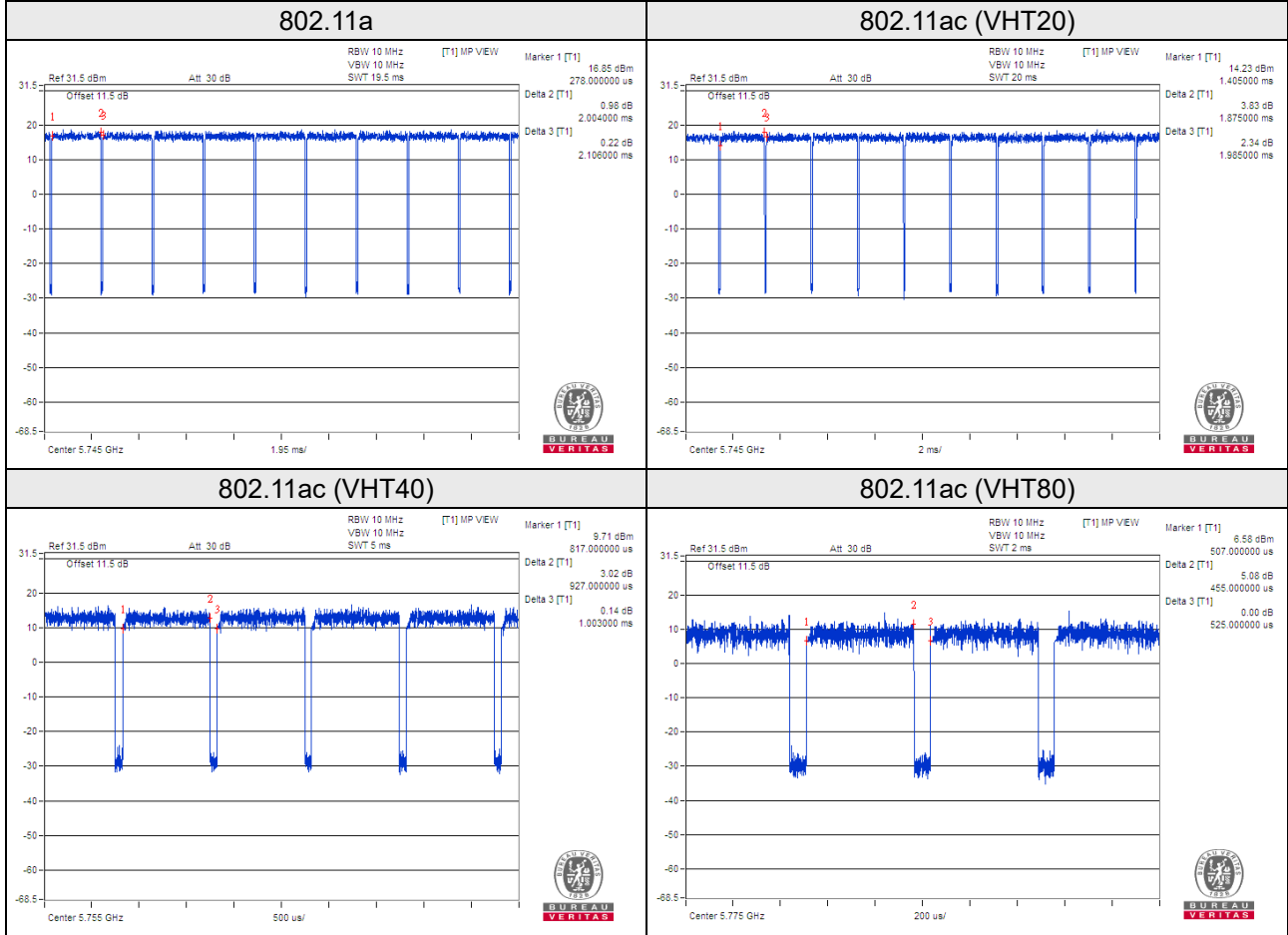
Duty cycle of test signal is < 98%, duty factor is required.

802.11a: Duty cycle = 2.004/2.106 = 0.952, Duty factor = $10 \cdot \log(1/0.952) = 0.22$

802.11ac (VHT20): Duty cycle = 1.875/1.985 = 0.945, Duty factor = $10 \cdot \log(1/0.945) = 0.25$

802.11ac (VHT40): Duty cycle = 0.927/1.003 = 0.924, Duty factor = $10 \cdot \log(1/0.924) = 0.34$

802.11ac (VHT80): Duty cycle = 0.455/0.525 = 0.867, Duty factor = $10 \cdot \log(1/0.867) = 0.62$



3.4 Description of Support Units

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

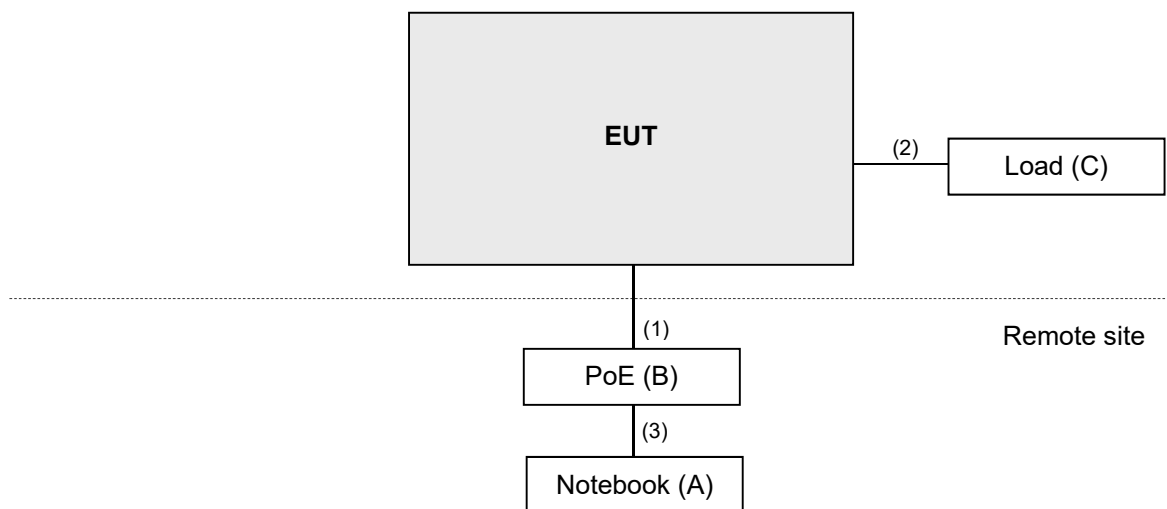
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
B.	POE	EnGenius	EPA5006GAT	NA	NA	-
C.	Load	NA	NA	NA	NA	-

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN	1	1.5	N	0	RJ45, Cat5e
2.	LAN	1	1.5	N	0	RJ45, Cat5e
3.	LAN	1	7	N	0	RJ45, Cat5e

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart E (15.407)

ANSI C63.10:2013

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

References Test Guidance:

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

Limits of unwanted emission out of the restricted bands

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

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102579	Jul. 07, 2020	Jul. 06, 2021
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100269	Jun. 09, 2020	Jun. 08, 2021
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 04, 2020	Nov. 03, 2021
HORN Antenna SCHWARZBECK	9120D	209	Nov. 22, 2020	Nov. 21, 2021
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 22, 2020	Nov. 21, 2021
Loop Antenna TESEQ	HLA 6121	45745	Jul. 06, 2020	Jul. 05, 2021
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 16, 2020	Aug. 15, 2021
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 22, 2021	Mar. 21, 2022
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 16, 2020	Aug. 15, 2021
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM- SM-8000	Cable-CH3-03 (309224+170907)	Aug. 16, 2020	Aug. 15, 2021
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 13, 2020	Jul. 12, 2021
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 04, 2020	Sep. 03, 2021

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

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

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

For Radiated emission above 30MHz

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

Note:

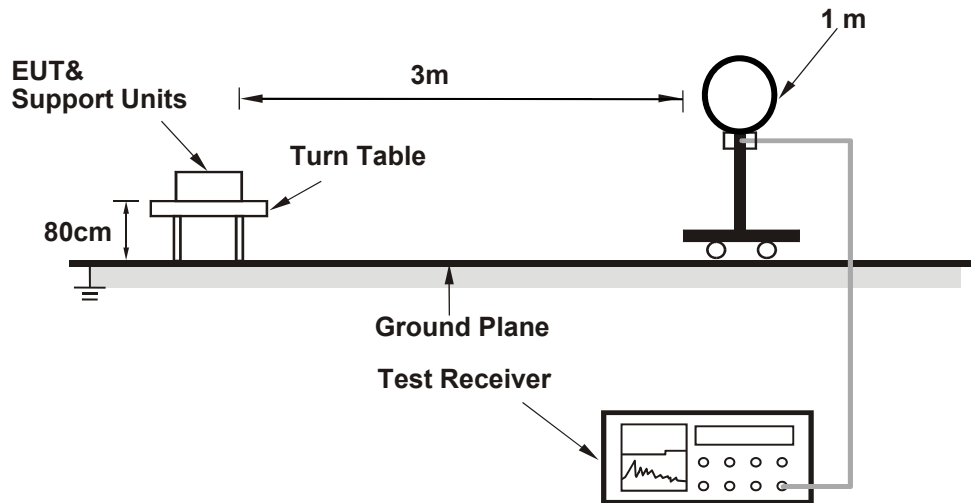
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5G traffic radio (Radio 2): RBW = 1MHz, VBW = 1kHz
Scanning radio (Radio 3)
(802.11a: RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT20): RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT40): RBW = 1MHz, VBW = 3kHz; 802.11ac (VHT80): RBW = 1MHz, VBW = 3kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

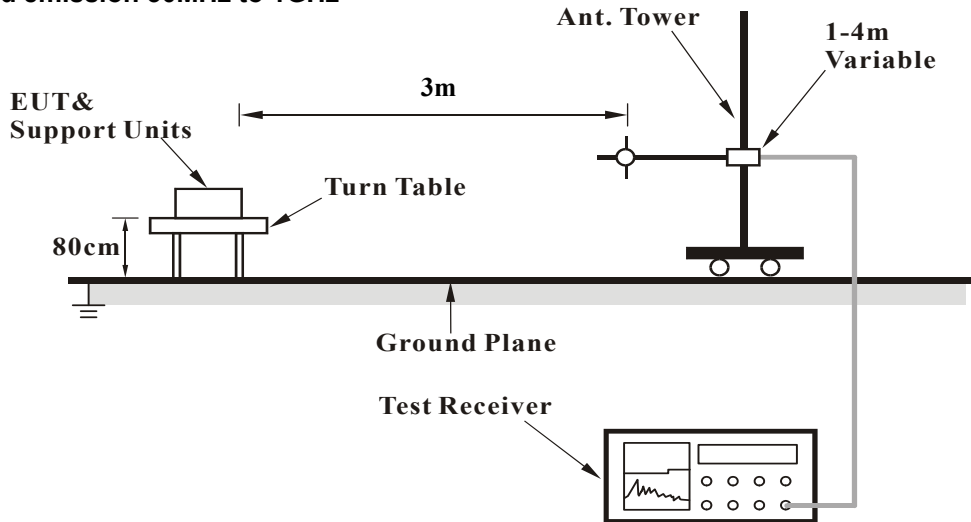
No deviation.

4.1.5 Test Setup

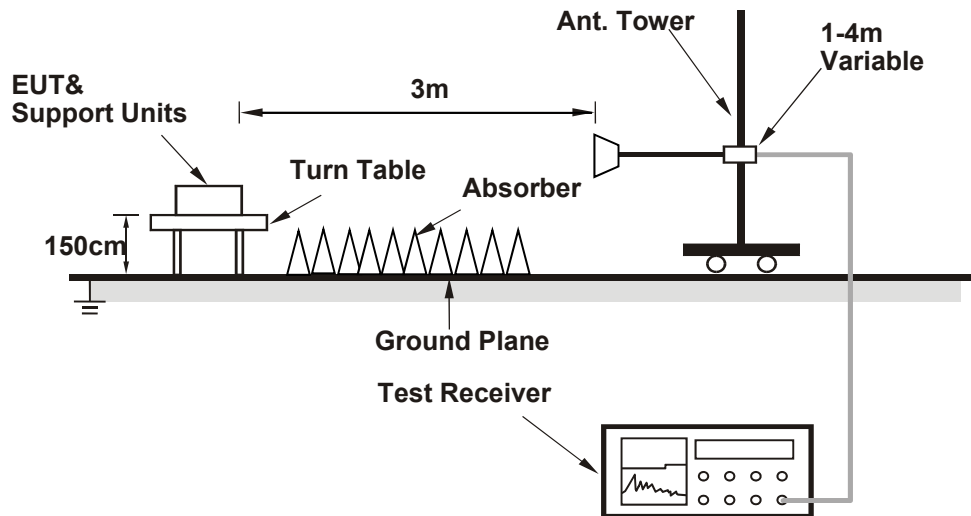
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz data:

5G traffic radio (Radio 2)

RF Mode	TX 802.11a	Channel	CH 36 : 5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.7 PK	74.0	-15.3	2.38 H	110	52.1	6.6
2	5150.00	44.4 AV	54.0	-9.6	2.38 H	110	37.8	6.6
3	*5180.00	107.8 PK			2.16 H	104	65.6	42.2
4	*5180.00	97.0 AV			2.16 H	104	54.8	42.2
5	#10360.00	58.3 PK	68.2	-9.9	1.59 H	311	41.6	16.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.2 PK	74.0	-7.8	1.64 V	3	59.6	6.6
2	5150.00	52.9 AV	54.0	-1.1	1.64 V	3	46.3	6.6
3	*5180.00	125.9 PK			1.46 V	321	83.7	42.2
4	*5180.00	116.2 AV			1.46 V	321	74.0	42.2
5	#10360.00	58.4 PK	68.2	-9.8	1.46 V	164	41.7	16.7

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.

RF Mode	TX 802.11a	Channel	CH 40 : 5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	109.4 PK			2.07 H	133	67.3	42.1
2	*5200.00	100.3 AV			2.07 H	133	58.2	42.1
3	#10400.00	58.7 PK	68.2	-9.5	1.55 H	309	41.8	16.9

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	127.5 PK			1.46 V	328	85.4	42.1
2	*5200.00	118.3 AV			1.46 V	328	76.2	42.1
3	#10400.00	57.1 PK	68.2	-11.1	1.43 V	169	40.2	16.9

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 48 : 5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	107.8 PK			2.21 H	131	65.8	42.0
2	*5240.00	98.9 AV			2.21 H	131	56.9	42.0
3	5350.00	57.6 PK	74.0	-16.4	2.35 H	129	51.2	6.4
4	5350.00	44.0 AV	54.0	-10.0	2.35 H	129	37.6	6.4
5	#10480.00	59.3 PK	68.2	-8.9	1.57 H	323	41.6	17.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	127.7 PK			1.46 V	322	85.7	42.0
2	*5240.00	118.0 AV			1.46 V	322	76.0	42.0
3	5350.00	61.2 PK	74.0	-12.8	1.66 V	328	54.8	6.4
4	5350.00	49.3 AV	54.0	-4.7	1.66 V	328	42.9	6.4
5	#10480.00	58.0 PK	68.2	-10.2	1.46 V	166	40.3	17.7

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 149 : 5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5624.40	57.2 PK	68.2	-11.0	1.61 H	193	51.0	6.2
2	*5745.00	106.7 PK			1.61 H	193	64.5	42.2
3	*5745.00	97.3 AV			1.61 H	193	55.1	42.2
4	#5945.20	58.5 PK	68.2	-9.7	1.61 H	193	51.2	7.3
5	11490.00	60.6 PK	74.0	-13.4	1.59 H	282	42.3	18.3
6	11490.00	47.3 AV	54.0	-6.7	1.59 H	282	29.0	18.3

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5625.20	61.9 PK	68.2	-6.3	1.84 V	14	55.7	6.2
2	*5745.00	125.1 PK			1.84 V	14	82.9	42.2
3	*5745.00	116.2 AV			1.84 V	14	74.0	42.2
4	#5960.80	60.0 PK	68.2	-8.2	1.84 V	14	52.7	7.3
5	11490.00	60.9 PK	74.0	-13.1	1.84 V	5	42.6	18.3
6	11490.00	48.9 AV	54.0	-5.1	1.84 V	5	30.6	18.3

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5616.00	57.1 PK	68.2	-11.1	1.55 H	202	50.9	6.2
2	*5785.00	106.7 PK			1.55 H	202	64.5	42.2
3	*5785.00	96.9 AV			1.55 H	202	54.7	42.2
4	#5988.40	58.1 PK	68.2	-10.1	1.55 H	202	50.9	7.2
5	11570.00	60.2 PK	74.0	-13.8	1.72 H	285	42.2	18.0
6	11570.00	46.7 AV	54.0	-7.3	1.72 H	285	28.7	18.0

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5646.00	61.0 PK	68.2	-7.2	1.80 V	11	54.7	6.3
2	*5785.00	125.2 PK			1.80 V	11	83.0	42.2
3	*5785.00	115.8 AV			1.80 V	11	73.6	42.2
4	#5979.20	61.0 PK	68.2	-7.2	1.80 V	11	53.8	7.2
5	11570.00	61.8 PK	74.0	-12.2	1.84 V	1	43.8	18.0
6	11570.00	50.0 AV	54.0	-4.0	1.84 V	1	32.0	18.0

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5646.00	57.2 PK	68.2	-11.0	1.42 H	239	50.9	6.3
2	*5825.00	106.7 PK			1.42 H	239	64.4	42.3
3	*5825.00	96.8 AV			1.42 H	239	54.5	42.3
4	#5940.40	58.0 PK	68.2	-10.2	1.42 H	239	50.7	7.3
5	11650.00	60.3 PK	74.0	-13.7	1.69 H	288	42.3	18.0
6	11650.00	46.8 AV	54.0	-7.2	1.69 H	288	28.8	18.0

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5638.00	61.8 PK	68.2	-6.4	1.81 V	11	55.5	6.3
2	*5825.00	124.3 PK			1.81 V	11	82.0	42.3
3	*5825.00	115.2 AV			1.81 V	11	72.9	42.3
4	#5927.60	60.2 PK	68.2	-8.0	1.81 V	11	52.9	7.3
5	11650.00	62.3 PK	74.0	-11.7	1.85 V	14	44.3	18.0
6	11650.00	50.7 AV	54.0	-3.3	1.85 V	14	32.7	18.0

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 36 : 5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (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	2.33 H	136	50.0	6.6
2	5150.00	43.6 AV	54.0	-10.4	2.33 H	136	37.0	6.6
3	*5180.00	109.5 PK			2.32 H	135	67.3	42.2
4	*5180.00	96.3 AV			2.32 H	135	54.1	42.2
5	#10360.00	58.5 PK	68.2	-9.7	1.60 H	333	41.8	16.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.0 PK	74.0	-8.0	1.55 V	327	59.4	6.6
2	5150.00	52.5 AV	54.0	-1.5	1.55 V	327	45.9	6.6
3	*5180.00	126.8 PK			1.35 V	326	84.6	42.2
4	*5180.00	113.6 AV			1.35 V	326	71.4	42.2
5	#10360.00	58.9 PK	68.2	-9.3	1.52 V	177	42.2	16.7

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.

RF Mode	TX 802.11ax (HE20)	Channel	CH 40 : 5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	113.0 PK			2.24 H	132	70.9	42.1
2	*5200.00	100.6 AV			2.24 H	132	58.5	42.1
3	#10400.00	58.9 PK	68.2	-9.3	1.55 H	325	42.0	16.9

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	130.7 PK			1.68 V	327	88.6	42.1
2	*5200.00	118.3 AV			1.68 V	327	76.2	42.1
3	#10400.00	59.2 PK	68.2	-9.0	1.58 V	179	42.3	16.9

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 48 : 5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	110.5 PK			2.24 H	106	68.5	42.0
2	*5240.00	97.6 AV			2.24 H	106	55.6	42.0
3	5350.00	57.3 PK	74.0	-16.7	2.23 H	110	50.9	6.4
4	5350.00	44.0 AV	54.0	-10.0	2.23 H	110	37.6	6.4
5	#10480.00	59.2 PK	68.2	-9.0	1.51 H	318	41.5	17.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	130.3 PK			1.45 V	327	88.3	42.0
2	*5240.00	117.2 AV			1.45 V	327	75.2	42.0
3	5350.00	61.0 PK	74.0	-13.0	1.57 V	323	54.6	6.4
4	5350.00	48.6 AV	54.0	-5.4	1.57 V	323	42.2	6.4
5	#10480.00	59.8 PK	68.2	-8.4	1.52 V	187	42.1	17.7

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 149 : 5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5633.60	56.6 PK	68.2	-11.6	1.65 H	195	50.3	6.3
2	*5745.00	110.6 PK			1.65 H	195	68.4	42.2
3	*5745.00	98.0 AV			1.65 H	195	55.8	42.2
4	#5982.80	58.2 PK	68.2	-10.0	1.65 H	195	51.0	7.2
5	11490.00	60.4 PK	74.0	-13.6	1.62 H	284	42.1	18.3
6	11490.00	47.1 AV	54.0	-6.9	1.62 H	284	28.8	18.3

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.40	60.7 PK	68.2	-7.5	1.83 V	14	54.4	6.3
2	*5745.00	129.2 PK			1.83 V	14	87.0	42.2
3	*5745.00	116.0 AV			1.83 V	14	73.8	42.2
4	#5942.80	60.1 PK	68.2	-8.1	1.83 V	14	52.8	7.3
5	11490.00	61.4 PK	74.0	-12.6	1.80 V	15	43.1	18.3
6	11490.00	48.3 AV	54.0	-5.7	1.80 V	15	30.0	18.3

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 157 : 5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5631.60	57.2 PK	68.2	-11.0	1.65 H	194	50.9	6.3
2	*5785.00	110.6 PK			1.65 H	194	68.4	42.2
3	*5785.00	97.6 AV			1.65 H	194	55.4	42.2
4	#5961.20	58.4 PK	68.2	-9.8	1.65 H	194	51.1	7.3
5	11570.00	60.2 PK	74.0	-13.8	1.66 H	291	42.2	18.0
6	11570.00	47.0 AV	54.0	-7.0	1.66 H	291	29.0	18.0

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5639.60	60.3 PK	68.2	-7.9	1.89 V	9	54.0	6.3
2	*5785.00	128.9 PK			1.89 V	9	86.7	42.2
3	*5785.00	115.7 AV			1.89 V	9	73.5	42.2
4	#5980.00	60.2 PK	68.2	-8.0	1.89 V	9	53.0	7.2
5	11570.00	63.6 PK	74.0	-10.4	1.81 V	11	45.6	18.0
6	11570.00	49.9 AV	54.0	-4.1	1.81 V	11	31.9	18.0

Remarks:

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

RF Mode	TX 802.11ax (HE20)	Channel	CH 165 : 5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5618.00	57.4 PK	68.2	-10.8	1.67 H	196	51.2	6.2
2	*5825.00	108.9 PK			1.67 H	196	66.6	42.3
3	*5825.00	96.4 AV			1.67 H	196	54.1	42.3
4	#5963.20	58.5 PK	68.2	-9.7	1.67 H	196	51.2	7.3
5	11650.00	60.2 PK	74.0	-13.8	1.62 H	287	42.2	18.0
6	11650.00	47.1 AV	54.0	-6.9	1.62 H	287	29.1	18.0

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5628.80	61.5 PK	68.2	-6.7	1.90 V	11	55.3	6.2
2	*5825.00	128.7 PK			1.90 V	11	86.4	42.3
3	*5825.00	115.3 AV			1.90 V	11	73.0	42.3
4	#5929.20	60.6 PK	68.2	-7.6	1.90 V	11	53.3	7.3
5	11650.00	62.5 PK	74.0	-11.5	1.88 V	16	44.5	18.0
6	11650.00	50.2 AV	54.0	-3.8	1.88 V	16	32.2	18.0

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 38 : 5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.1 PK	74.0	-15.9	2.20 H	129	51.5	6.6
2	5150.00	44.6 AV	54.0	-9.4	2.20 H	129	38.0	6.6
3	*5190.00	104.1 PK			2.24 H	130	62.0	42.1
4	*5190.00	92.4 AV			2.24 H	130	50.3	42.1
5	#10380.00	58.7 PK	68.2	-9.5	1.62 H	340	41.9	16.8

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.3 PK	74.0	-7.7	1.54 V	334	59.7	6.6
2	5150.00	53.1 AV	54.0	-0.9	1.54 V	334	46.5	6.6
3	*5190.00	120.5 PK			1.52 V	332	78.4	42.1
4	*5190.00	108.6 AV			1.52 V	332	66.5	42.1
5	#10380.00	58.0 PK	68.2	-10.2	1.65 V	180	41.2	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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 46 : 5230 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	110.5 PK			2.12 H	130	68.5	42.0
2	*5230.00	96.9 AV			2.12 H	130	54.9	42.0
3	5350.00	57.4 PK	74.0	-16.6	2.22 H	131	51.0	6.4
4	5350.00	44.2 AV	54.0	-9.8	2.22 H	131	37.8	6.4
5	#10460.00	59.2 PK	68.2	-9.0	1.47 H	318	41.8	17.4

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	128.3 PK			1.53 V	325	86.3	42.0
2	*5230.00	114.6 AV			1.53 V	325	72.6	42.0
3	5350.00	65.0 PK	74.0	-9.0	1.56 V	321	58.6	6.4
4	5350.00	48.5 AV	54.0	-5.5	1.56 V	321	42.1	6.4
5	#10460.00	58.6 PK	68.2	-9.6	1.60 V	175	41.2	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.

RF Mode	TX 802.11ax (HE40)	Channel	CH 151 : 5755 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5648.40	56.6 PK	68.2	-11.6	1.68 H	195	50.3	6.3
2	#5650.00	58.1 PK	68.2	-10.1	1.65 H	192	51.8	6.3
3	*5755.00	108.0 PK			1.68 H	195	65.7	42.3
4	*5755.00	94.6 AV			1.68 H	195	52.3	42.3
5	#5972.40	58.4 PK	68.2	-9.8	1.68 H	195	51.2	7.2
6	11510.00	60.3 PK	74.0	-13.7	1.62 H	284	42.1	18.2
7	11510.00	47.0 AV	54.0	-7.0	1.62 H	284	28.8	18.2

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5634.40	63.8 PK	68.2	-4.4	1.89 V	11	57.5	6.3
2	#5650.00	66.7 PK	68.2	-1.5	1.90 V	12	60.4	6.3
3	*5755.00	125.5 PK			1.89 V	11	83.2	42.3
4	*5755.00	112.9 AV			1.89 V	11	70.6	42.3
5	#5942.00	60.7 PK	68.2	-7.5	1.89 V	11	53.4	7.3
6	11510.00	62.1 PK	74.0	-11.9	1.82 V	14	43.9	18.2
7	11510.00	48.1 AV	54.0	-5.9	1.82 V	14	29.9	18.2

Remarks:

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

RF Mode	TX 802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5636.00	56.8 PK	68.2	-11.4	1.69 H	195	50.5	6.3
2	*5795.00	107.7 PK			1.69 H	195	65.5	42.2
3	*5795.00	95.5 AV			1.69 H	195	53.3	42.2
4	#5925.00	59.1 PK	68.2	-9.1	1.65 H	194	51.8	7.3
5	#5940.80	58.0 PK	68.2	-10.2	1.69 H	195	50.7	7.3
6	11590.00	59.9 PK	74.0	-14.1	1.66 H	285	42.1	17.8
7	11590.00	46.6 AV	54.0	-7.4	1.66 H	285	28.8	17.8

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5629.60	61.2 PK	68.2	-7.0	1.72 V	14	55.0	6.2
2	*5795.00	126.1 PK			1.72 V	14	83.9	42.2
3	*5795.00	113.5 AV			1.72 V	14	71.3	42.2
4	#5925.00	60.9 PK	68.2	-7.3	1.75 V	16	53.6	7.3
5	#5961.20	60.3 PK	68.2	-7.9	1.72 V	14	53.0	7.3
6	11590.00	61.2 PK	74.0	-12.8	1.95 V	13	43.4	17.8
7	11590.00	47.5 AV	54.0	-6.5	1.95 V	13	29.7	17.8

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 42 : 5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	2.29 H	135	51.6	6.6
2	5150.00	45.5 AV	54.0	-8.5	2.29 H	135	38.9	6.6
3	*5210.00	102.0 PK			2.37 H	129	60.0	42.0
4	*5210.00	88.3 AV			2.37 H	129	46.3	42.0
5	5350.00	57.5 PK	74.0	-16.5	2.40 H	135	51.1	6.4
6	5350.00	44.3 AV	54.0	-9.7	2.40 H	135	37.9	6.4
7	#10420.00	59.0 PK	68.2	-9.2	1.60 H	329	41.8	17.2

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.8 PK	74.0	-6.2	1.31 V	322	61.2	6.6
2	5150.00	52.6 AV	54.0	-1.4	1.31 V	322	46.0	6.6
3	*5210.00	117.4 PK			1.75 V	327	75.4	42.0
4	*5210.00	105.8 AV			1.75 V	327	63.8	42.0
5	5350.00	59.4 PK	74.0	-14.6	1.33 V	316	53.0	6.4
6	5350.00	46.0 AV	54.0	-8.0	1.33 V	316	39.6	6.4
7	#10420.00	59.2 PK	68.2	-9.0	1.52 V	173	42.0	17.2

Remarks:

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

RF Mode	TX 802.11ax (HE80)	Channel	CH 155 : 5775 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5610.80	57.7 PK	68.2	-10.5	1.46 H	197	51.5	6.2
2	#5650.00	59.5 PK	68.2	-8.7	1.42 H	195	53.2	6.3
3	*5775.00	103.3 PK			1.46 H	197	61.1	42.2
4	*5775.00	90.7 AV			1.46 H	197	48.5	42.2
5	#5925.00	59.5 PK	68.2	-8.7	1.48 H	200	52.2	7.3
6	#5948.40	58.5 PK	68.2	-9.7	1.46 H	197	51.2	7.3
7	11550.00	60.3 PK	74.0	-13.7	1.62 H	288	42.2	18.1
8	11550.00	46.9 AV	54.0	-7.1	1.62 H	288	28.8	18.1

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5649.60	64.3 PK	68.2	-3.9	1.71 V	11	58.0	6.3
2	#5650.00	66.8 PK	68.2	-1.4	1.66 V	9	60.5	6.3
3	*5775.00	122.4 PK			1.71 V	11	80.2	42.2
4	*5775.00	109.1 AV			1.71 V	11	66.9	42.2
5	#5925.00	64.9 PK	68.2	-3.3	1.69 V	10	57.6	7.3
6	#5934.40	60.8 PK	68.2	-7.4	1.71 V	11	53.5	7.3
7	11550.00	61.3 PK	74.0	-12.7	1.86 V	16	43.2	18.1
8	11550.00	47.6 AV	54.0	-6.4	1.86 V	16	29.5	18.1

Remarks:

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

Scanning radio (Radio 3)

RF Mode	TX 802.11a	Channel	CH 36 : 5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.8 PK	74.0	-15.2	1.60 H	187	52.4	6.4
2	5150.00	45.4 AV	54.0	-8.6	1.60 H	187	39.0	6.4
3	*5180.00	104.2 PK			1.66 H	191	62.0	42.2
4	*5180.00	94.3 AV			1.66 H	191	52.1	42.2
5	#10360.00	57.5 PK	68.2	-10.7	1.62 H	33	41.0	16.5

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.4 PK	74.0	-6.6	1.55 V	195	61.0	6.4
2	5150.00	53.0 AV	54.0	-1.0	1.55 V	195	46.6	6.4
3	*5180.00	116.9 PK			1.73 V	190	74.7	42.2
4	*5180.00	107.2 AV			1.73 V	190	65.0	42.2
5	#10360.00	63.9 PK	68.2	-4.3	1.91 V	189	47.4	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.

RF Mode	TX 802.11a	Channel	CH 40 : 5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	103.5 PK			1.72 H	181	61.4	42.1
2	*5200.00	94.0 AV			1.72 H	181	51.9	42.1
3	#10400.00	58.6 PK	68.2	-9.6	1.90 H	25	42.1	16.5

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	118.6 PK			1.76 V	189	76.5	42.1
2	*5200.00	108.7 AV			1.76 V	189	66.6	42.1
3	#10400.00	60.5 PK	68.2	-7.7	1.81 V	183	44.0	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.

RF Mode	TX 802.11a	Channel	CH 48 : 5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	103.2 PK			1.79 H	184	61.2	42.0
2	*5240.00	94.0 AV			1.79 H	184	52.0	42.0
3	5350.00	57.6 PK	74.0	-16.4	1.71 H	182	51.3	6.3
4	5350.00	44.8 AV	54.0	-9.2	1.71 H	182	38.5	6.3
5	#10480.00	60.6 PK	68.2	-7.6	1.71 H	19	42.5	18.1

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	117.8 PK			1.75 V	188	75.8	42.0
2	*5240.00	108.3 AV			1.75 V	188	66.3	42.0
3	5350.00	63.0 PK	74.0	-11.0	1.77 V	182	56.7	6.3
4	5350.00	50.1 AV	54.0	-3.9	1.77 V	182	43.8	6.3
5	#10480.00	62.7 PK	68.2	-5.5	1.99 V	189	44.6	18.1

Remarks:

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

RF Mode	TX 802.11a	Channel	CH 149 : 5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5624.00	57.2 PK	68.2	-11.0	1.72 H	280	51.0	6.2
2	*5745.00	98.9 PK			1.72 H	280	56.7	42.2
3	*5745.00	89.2 AV			1.72 H	280	47.0	42.2
4	#5980.40	59.3 PK	68.2	-8.9	1.72 H	280	52.2	7.1
5	11490.00	59.8 PK	74.0	-14.2	1.92 H	38	41.2	18.6
6	11490.00	46.2 AV	54.0	-7.8	1.92 H	38	27.6	18.6

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5632.40	61.8 PK	68.2	-6.4	1.52 V	329	55.5	6.3
2	*5745.00	120.2 PK			1.52 V	329	78.0	42.2
3	*5745.00	108.2 AV			1.52 V	329	66.0	42.2
4	#5941.60	59.7 PK	68.2	-8.5	1.52 V	329	52.4	7.3
5	11490.00	60.7 PK	74.0	-13.3	2.01 V	152	42.1	18.6
6	11490.00	47.1 AV	54.0	-6.9	2.01 V	152	28.5	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.

RF Mode	TX 802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5606.80	56.2 PK	68.2	-12.0	1.75 H	279	50.0	6.2
2	*5785.00	99.5 PK			1.75 H	279	57.3	42.2
3	*5785.00	89.5 AV			1.75 H	279	47.3	42.2
4	#5966.40	58.3 PK	68.2	-9.9	1.75 H	279	51.0	7.3
5	11570.00	59.5 PK	74.0	-14.5	1.88 H	35	41.1	18.4
6	11570.00	45.7 AV	54.0	-8.3	1.88 H	35	27.3	18.4

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.20	62.0 PK	68.2	-6.2	1.52 V	332	55.8	6.2
2	*5785.00	119.1 PK			1.52 V	332	76.9	42.2
3	*5785.00	107.7 AV			1.52 V	332	65.5	42.2
4	#5932.80	60.0 PK	68.2	-8.2	1.52 V	332	52.7	7.3
5	11570.00	60.2 PK	74.0	-13.8	2.04 V	159	41.8	18.4
6	11570.00	46.7 AV	54.0	-7.3	2.04 V	159	28.3	18.4

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.

RF Mode	TX 802.11a	Channel	CH 165 : 5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.00	57.2 PK	68.2	-11.0	1.87 H	278	51.0	6.2
2	*5825.00	101.6 PK			1.87 H	278	59.3	42.3
3	*5825.00	91.1 AV			1.87 H	278	48.8	42.3
4	#5960.00	57.6 PK	68.2	-10.6	1.87 H	278	50.3	7.3
5	11650.00	59.4 PK	74.0	-14.6	1.77 H	39	41.3	18.1
6	11650.00	45.7 AV	54.0	-8.3	1.77 H	39	27.6	18.1

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5633.20	62.9 PK	68.2	-5.3	1.59 V	330	56.6	6.3
2	*5825.00	119.3 PK			1.59 V	330	77.0	42.3
3	*5825.00	108.0 AV			1.59 V	330	65.7	42.3
4	#5942.40	59.9 PK	68.2	-8.3	1.59 V	330	52.6	7.3
5	11650.00	59.7 PK	74.0	-14.3	2.02 V	157	41.6	18.1
6	11650.00	46.4 AV	54.0	-7.6	2.02 V	157	28.3	18.1

Remarks:

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

RF Mode	TX 802.11ac (VHT20)	Channel	CH 36 : 5180 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (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	57.8 PK	74.0	-16.2	1.81 H	193	51.4	6.4
2	5150.00	45.2 AV	54.0	-8.8	1.81 H	193	38.8	6.4
3	*5180.00	102.4 PK			1.77 H	187	60.2	42.2
4	*5180.00	92.2 AV			1.77 H	187	50.0	42.2
5	#10360.00	58.6 PK	68.2	-9.6	1.88 H	34	42.1	16.5

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	67.7 PK	74.0	-6.3	1.76 V	194	61.3	6.4
2	5150.00	53.0 AV	54.0	-1.0	1.76 V	194	46.6	6.4
3	*5180.00	116.3 PK			1.75 V	191	74.1	42.2
4	*5180.00	106.4 AV			1.75 V	191	64.2	42.2
5	#10360.00	60.7 PK	68.2	-7.5	1.88 V	175	44.2	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.

RF Mode	TX 802.11ac (VHT20)	Channel	CH 40 : 5200 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	104.3 PK			1.69 H	187	62.2	42.1
2	*5200.00	94.2 AV			1.69 H	187	52.1	42.1
3	#10400.00	58.3 PK	68.2	-9.9	1.68 H	37	41.8	16.5

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	118.1 PK			1.76 V	188	76.0	42.1
2	*5200.00	108.5 AV			1.76 V	188	66.4	42.1
3	#10400.00	60.7 PK	68.2	-7.5	1.95 V	183	44.2	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.

RF Mode	TX 802.11ac (VHT20)	Channel	CH 48 : 5240 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	104.4 PK			1.60 H	190	62.4	42.0
2	*5240.00	94.5 AV			1.60 H	190	52.5	42.0
3	5350.00	57.6 PK	74.0	-16.4	1.65 H	184	51.3	6.3
4	5350.00	44.7 AV	54.0	-9.3	1.65 H	184	38.4	6.3
5	#10480.00	59.8 PK	68.2	-8.4	1.73 H	29	41.7	18.1

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	118.0 PK			1.75 V	192	76.0	42.0
2	*5240.00	108.1 AV			1.75 V	192	66.1	42.0
3	5350.00	62.3 PK	74.0	-11.7	1.88 V	186	56.0	6.3
4	5350.00	49.6 AV	54.0	-4.4	1.88 V	186	43.3	6.3
5	#10480.00	62.0 PK	68.2	-6.2	2.00 V	192	43.9	18.1

Remarks:

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

RF Mode	TX 802.11ac (VHT20)	Channel	CH 149 : 5745 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5635.60	57.5 PK	68.2	-10.7	1.85 H	284	51.2	6.3
2	*5745.00	98.5 PK			1.85 H	284	56.3	42.2
3	*5745.00	89.5 AV			1.85 H	284	47.3	42.2
4	#5961.60	57.9 PK	68.2	-10.3	1.85 H	284	50.6	7.3
5	11490.00	60.1 PK	74.0	-13.9	1.85 H	45	41.5	18.6
6	11490.00	46.2 AV	54.0	-7.8	1.85 H	45	27.6	18.6

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5629.60	61.5 PK	68.2	-6.7	1.61 V	334	55.3	6.2
2	*5745.00	117.8 PK			1.61 V	334	75.6	42.2
3	*5745.00	107.8 AV			1.61 V	334	65.6	42.2
4	#5928.40	59.5 PK	68.2	-8.7	1.61 V	334	52.2	7.3
5	11490.00	60.5 PK	74.0	-13.5	2.05 V	155	41.9	18.6
6	11490.00	47.0 AV	54.0	-7.0	2.05 V	155	28.4	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.

RF Mode	TX 802.11ac (VHT20)	Channel	CH 157 : 5785 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5609.60	56.9 PK	68.2	-11.3	1.93 H	279	50.7	6.2
2	*5785.00	101.1 PK			1.93 H	279	58.9	42.2
3	*5785.00	90.6 AV			1.93 H	279	48.4	42.2
4	#5955.60	58.2 PK	68.2	-10.0	1.93 H	279	50.9	7.3
5	11570.00	60.2 PK	74.0	-13.8	1.85 H	55	41.8	18.4
6	11570.00	46.3 AV	54.0	-7.7	1.85 H	55	27.9	18.4

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5636.00	63.2 PK	68.2	-5.0	1.53 V	327	56.9	6.3
2	*5785.00	117.6 PK			1.53 V	327	75.4	42.2
3	*5785.00	107.3 AV			1.53 V	327	65.1	42.2
4	#5929.20	59.7 PK	68.2	-8.5	1.53 V	327	52.4	7.3
5	11570.00	60.0 PK	74.0	-14.0	2.08 V	154	41.6	18.4
6	11570.00	47.0 AV	54.0	-7.0	2.08 V	154	28.6	18.4

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.

RF Mode	TX 802.11ac (VHT20)	Channel	CH 165 : 5825 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5644.00	57.1 PK	68.2	-11.1	1.82 H	281	50.9	6.2
2	*5825.00	100.7 PK			1.82 H	281	58.4	42.3
3	*5825.00	90.5 AV			1.82 H	281	48.2	42.3
4	#5990.40	58.0 PK	68.2	-10.2	1.82 H	281	50.9	7.1
5	11650.00	59.1 PK	74.0	-14.9	1.79 H	44	41.0	18.1
6	11650.00	45.4 AV	54.0	-8.6	1.79 H	44	27.3	18.1

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5633.60	61.7 PK	68.2	-6.5	1.56 V	334	55.4	6.3
2	*5825.00	118.6 PK			1.56 V	334	76.3	42.3
3	*5825.00	107.4 AV			1.56 V	334	65.1	42.3
4	#5927.20	59.3 PK	68.2	-8.9	1.56 V	334	52.0	7.3
5	11650.00	59.6 PK	74.0	-14.4	2.01 V	158	41.5	18.1
6	11650.00	46.6 AV	54.0	-7.4	2.01 V	158	28.5	18.1

Remarks:

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

RF Mode	TX 802.11ac (VHT40)	Channel	CH 38 : 5190 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	58.5 PK	74.0	-15.5	1.72 H	183	52.1	6.4
2	5150.00	45.2 AV	54.0	-8.8	1.72 H	183	38.8	6.4
3	*5190.00	93.8 PK			1.73 H	182	51.7	42.1
4	*5190.00	84.1 AV			1.73 H	182	42.0	42.1
5	#10380.00	57.8 PK	68.2	-10.4	1.71 H	21	41.2	16.6

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.4 PK	74.0	-7.6	1.69 V	195	60.0	6.4
2	5150.00	52.6 AV	54.0	-1.4	1.69 V	195	46.2	6.4
3	*5190.00	108.2 PK			1.74 V	192	66.1	42.1
4	*5190.00	98.5 AV			1.74 V	192	56.4	42.1
5	#10380.00	58.9 PK	68.2	-9.3	1.99 V	179	42.3	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.

RF Mode	TX 802.11ac (VHT40)	Channel	CH 46 : 5230 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	101.4 PK			1.73 H	190	59.4	42.0
2	*5230.00	92.0 AV			1.73 H	190	50.0	42.0
3	5350.00	57.7 PK	74.0	-16.3	1.73 H	192	51.4	6.3
4	5350.00	44.7 AV	54.0	-9.3	1.73 H	192	38.4	6.3
5	#10460.00	59.1 PK	68.2	-9.1	1.72 H	38	41.4	17.7

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	114.7 PK			1.80 V	192	72.7	42.0
2	*5230.00	105.4 AV			1.80 V	192	63.4	42.0
3	5350.00	61.6 PK	74.0	-12.4	1.81 V	187	55.3	6.3
4	5350.00	47.8 AV	54.0	-6.2	1.81 V	187	41.5	6.3
5	#10460.00	59.8 PK	68.2	-8.4	1.85 V	177	42.1	17.7

Remarks:

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

RF Mode	TX 802.11ac (VHT40)	Channel	CH 151 : 5755 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5638.80	57.1 PK	68.2	-11.1	1.93 H	280	50.8	6.3
2	*5755.00	99.9 PK			1.93 H	280	57.6	42.3
3	*5755.00	89.6 AV			1.93 H	280	47.3	42.3
4	#5984.00	58.7 PK	68.2	-9.5	1.93 H	280	51.6	7.1
5	11510.00	60.2 PK	74.0	-13.8	1.89 H	60	41.6	18.6
6	11510.00	45.7 AV	54.0	-8.3	1.89 H	60	27.1	18.6

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5628.80	63.1 PK	68.2	-5.1	1.59 V	329	56.9	6.2
2	*5755.00	116.5 PK			1.59 V	329	74.2	42.3
3	*5755.00	105.9 AV			1.59 V	329	63.6	42.3
4	#5931.20	60.3 PK	68.2	-7.9	1.59 V	329	53.0	7.3
5	11510.00	60.3 PK	74.0	-13.7	2.03 V	156	41.7	18.6
6	11510.00	47.1 AV	54.0	-6.9	2.03 V	156	28.5	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.

RF Mode	TX 802.11ac (VHT40)	Channel	CH 159 : 5795 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5643.20	56.6 PK	68.2	-11.6	1.75 H	274	50.4	6.2
2	*5795.00	98.6 PK			1.75 H	274	56.4	42.2
3	*5795.00	89.2 AV			1.75 H	274	47.0	42.2
4	#5954.40	58.4 PK	68.2	-9.8	1.75 H	274	51.1	7.3
5	11590.00	59.1 PK	74.0	-14.9	1.93 H	65	40.9	18.2
6	11590.00	45.3 AV	54.0	-8.7	1.93 H	65	27.1	18.2

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5620.00	59.6 PK	68.2	-8.6	1.54 V	332	53.4	6.2
2	*5795.00	115.4 PK			1.54 V	332	73.2	42.2
3	*5795.00	105.2 AV			1.54 V	332	63.0	42.2
4	#5945.20	58.8 PK	68.2	-9.4	1.54 V	332	51.5	7.3
5	11590.00	60.0 PK	74.0	-14.0	2.08 V	157	41.8	18.2
6	11590.00	46.4 AV	54.0	-7.6	2.08 V	157	28.2	18.2

Remarks:

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

RF Mode	TX 802.11ac (VHT80)	Channel	CH 42 : 5210 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	57.7 PK	74.0	-16.3	1.60 H	193	51.3	6.4
2	5150.00	46.4 AV	54.0	-7.6	1.60 H	193	40.0	6.4
3	*5210.00	90.7 PK			1.59 H	195	48.7	42.0
4	*5210.00	81.3 AV			1.59 H	195	39.3	42.0
5	5350.00	57.8 PK	74.0	-16.2	1.61 H	195	51.5	6.3
6	5350.00	45.6 AV	54.0	-8.4	1.61 H	195	39.3	6.3
7	#10420.00	58.2 PK	68.2	-10.0	1.66 H	28	41.2	17.0

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	66.0 PK	74.0	-8.0	1.87 V	197	59.6	6.4
2	5150.00	52.9 AV	54.0	-1.1	1.87 V	197	46.5	6.4
3	*5210.00	104.9 PK			1.85 V	184	62.9	42.0
4	*5210.00	94.5 AV			1.85 V	184	52.5	42.0
5	5350.00	61.6 PK	74.0	-12.4	1.88 V	192	55.3	6.3
6	5350.00	49.2 AV	54.0	-4.8	1.88 V	192	42.9	6.3
7	#10420.00	58.9 PK	68.2	-9.3	1.99 V	169	41.9	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.

RF Mode	TX 802.11ac (VHT80)	Channel	CH 155 : 5775 MHz
Frequency Range	1GHz ~ 40GHz	Detector Function	Peak (PK) Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5614.00	57.2 PK	68.2	-11.0	1.85 H	280	51.0	6.2
2	#5650.00	58.0 PK	68.2	-10.2	1.86 H	287	51.8	6.2
3	*5775.00	96.1 PK			1.85 H	280	53.9	42.2
4	*5775.00	85.0 AV			1.85 H	280	42.8	42.2
5	#5925.00	59.3 PK	68.2	-8.9	1.84 H	281	52.0	7.3
6	#5942.00	58.6 PK	68.2	-9.6	1.85 H	280	51.3	7.3
7	11550.00	59.5 PK	74.0	-14.5	1.76 H	32	41.1	18.4
8	11550.00	45.7 AV	54.0	-8.3	1.76 H	32	27.3	18.4

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.60	66.5 PK	68.2	-1.7	1.50 V	10	60.3	6.2
2	#5650.00	66.5 PK	68.2	-1.7	1.50 V	10	60.3	6.2
3	*5775.00	113.1 PK			1.56 V	334	70.9	42.2
4	*5775.00	101.5 AV			1.56 V	334	59.3	42.2
5	#5925.00	60.3 PK	68.2	-7.9	1.50 V	10	53.0	7.3
6	#5931.20	59.9 PK	68.2	-8.3	1.50 V	10	52.6	7.3
7	11550.00	60.3 PK	74.0	-13.7	2.06 V	156	41.9	18.4
8	11550.00	46.9 AV	54.0	-7.1	2.06 V	156	28.5	18.4

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.

Below 1GHz Worst-Case Data:

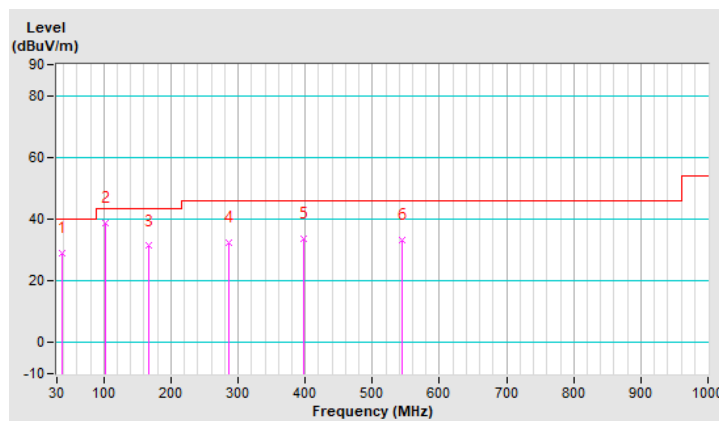
5G traffic radio (Radio 2)

RF Mode	TX 802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37.03	28.8 QP	40.0	-11.2	2.00 H	71	38.8	-10.0
2	103.10	38.7 QP	43.5	-4.8	1.00 H	108	51.4	-12.7
3	166.36	31.3 QP	43.5	-12.2	1.00 H	126	39.9	-8.6
4	285.86	32.2 QP	46.0	-13.8	1.50 H	261	39.0	-6.8
5	396.91	33.6 QP	46.0	-12.4	1.50 H	149	38.4	-4.8
6	544.52	33.3 QP	46.0	-12.7	1.00 H	133	34.7	-1.4

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

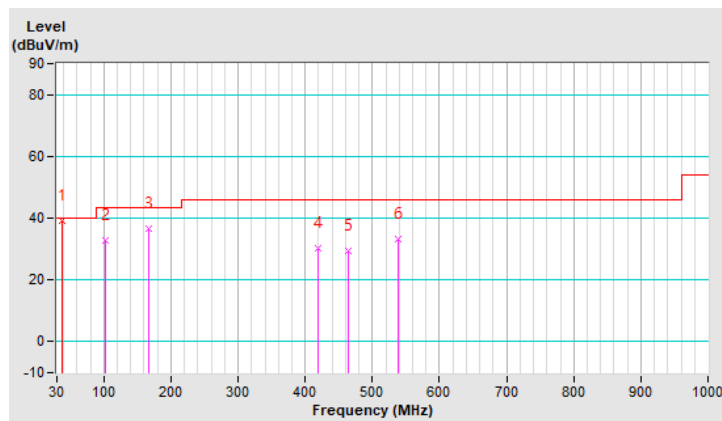


RF Mode	TX 802.11ax (HE40)	Channel	CH 159 : 5795 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37.72	39.0 QP	40.0	-1.0	2.00 V	15	49.0	-10.0
2	103.10	32.8 QP	43.5	-10.7	1.00 V	183	45.5	-12.7
3	166.36	36.6 QP	43.5	-6.9	1.00 V	186	45.2	-8.6
4	419.41	30.3 QP	46.0	-15.7	1.00 V	243	34.4	-4.1
5	464.39	29.3 QP	46.0	-16.7	1.50 V	89	32.2	-2.9
6	538.90	33.1 QP	46.0	-12.9	1.00 V	58	34.5	-1.4

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



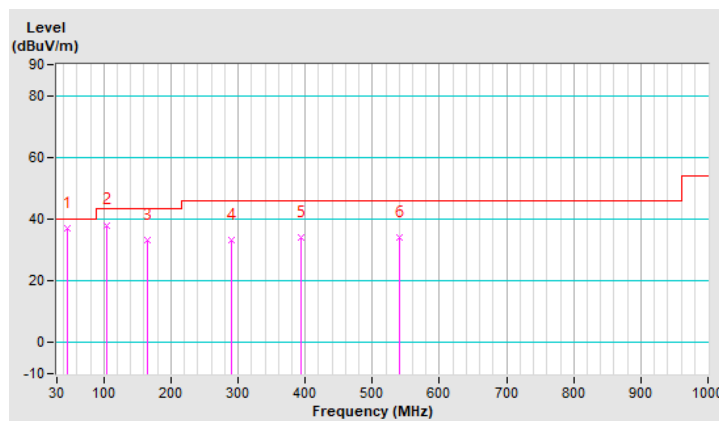
Scanning radio (Radio 3)

RF Mode	TX 802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	45.46	36.9 QP	40.0	-3.1	1.50 H	75	46.0	-9.1
2	104.51	38.1 QP	43.5	-5.4	1.00 H	106	50.6	-12.5
3	164.96	33.4 QP	43.5	-10.1	1.50 H	139	42.0	-8.6
4	290.07	33.3 QP	46.0	-12.7	1.00 H	261	40.0	-6.7
5	394.10	33.9 QP	46.0	-12.1	2.00 H	148	38.7	-4.8
6	540.30	33.9 QP	46.0	-12.1	2.00 H	141	35.3	-1.4

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

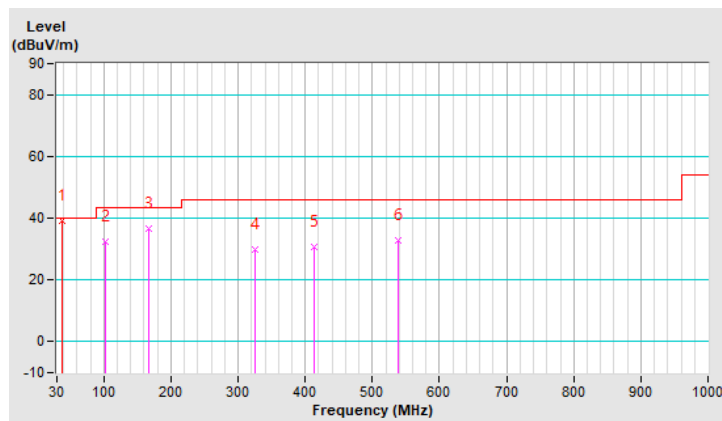


RF Mode	TX 802.11a	Channel	CH 157 : 5785 MHz
Frequency Range	30MHz ~ 1GHz	Detector Function	Quasi-Peak (QP)

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	37.75	39.1 QP	40.0	-0.9	1.50 V	9	49.1	-10.0
2	101.70	32.5 QP	43.5	-11.0	1.00 V	99	45.6	-13.1
3	167.77	36.7 QP	43.5	-6.8	2.00 V	200	45.4	-8.7
4	325.22	29.9 QP	46.0	-16.1	1.00 V	212	35.8	-5.9
5	412.38	30.5 QP	46.0	-15.5	2.00 V	243	35.0	-4.5
6	538.90	32.9 QP	46.0	-13.1	1.00 V	244	34.3	-1.4

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2020	Sep. 03, 2021
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 28, 2021	Jan. 27, 2022
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Aug. 18, 2020	Aug. 17, 2021
Software ADT	BV ADT_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 HwaYa Shielded Room 2 (Conduction 2).

3. The VCCI Site Registration No. is C-12047.

4.2.3 Test Procedures

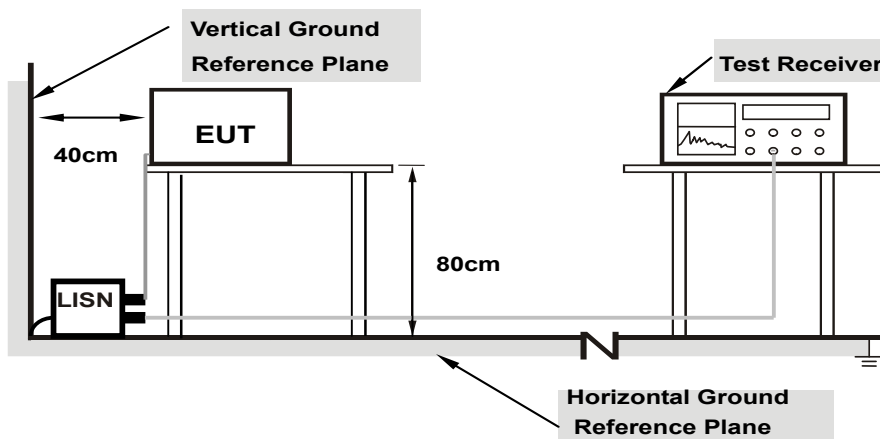
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

5G traffic radio (Radio 2)

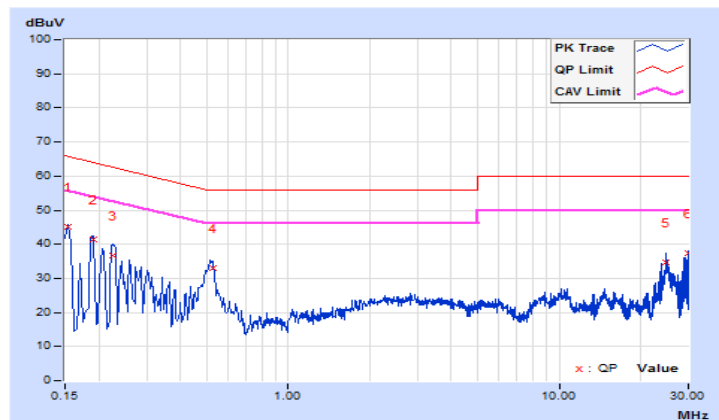
802.11ax (HE40)

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.07	35.01	23.35	45.08	33.42	65.78	55.78	-20.70	-22.36
2	0.19000	10.08	31.22	16.81	41.30	26.89	64.04	54.04	-22.74	-27.15
3	0.22600	10.08	26.66	9.40	36.74	19.48	62.60	52.60	-25.86	-33.12
4	0.52567	10.10	22.81	16.92	32.91	27.02	56.00	46.00	-23.09	-18.98
5	24.70600	10.33	24.46	20.19	34.79	30.52	60.00	50.00	-25.21	-19.48
6	29.93000	10.20	27.05	25.62	37.25	35.82	60.00	50.00	-22.75	-14.18

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

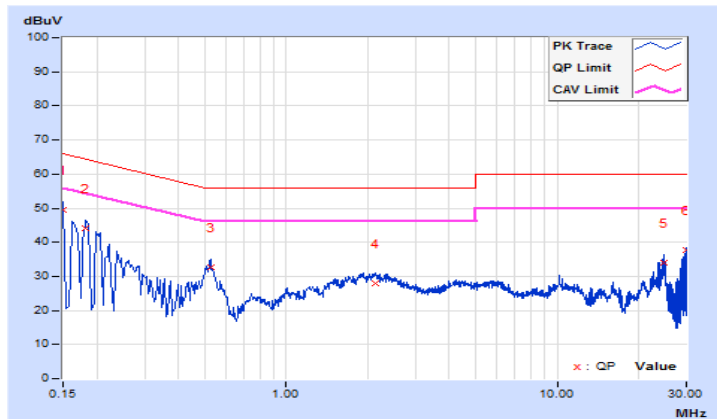


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.08	39.42	20.87	49.50	30.95	66.00	56.00	-16.50	-25.05
2	0.18200	10.08	34.07	16.84	44.15	26.92	64.39	54.39	-20.24	-27.47
3	0.52567	10.11	22.46	17.10	32.57	27.21	56.00	46.00	-23.43	-18.79
4	2.12200	10.18	17.73	13.25	27.91	23.43	56.00	46.00	-28.09	-22.57
5	24.70600	10.52	23.62	19.90	34.14	30.42	60.00	50.00	-25.86	-19.58
6	29.93000	10.38	27.19	26.04	37.57	36.42	60.00	50.00	-22.43	-13.58

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



Scanning radio (Radio 3)

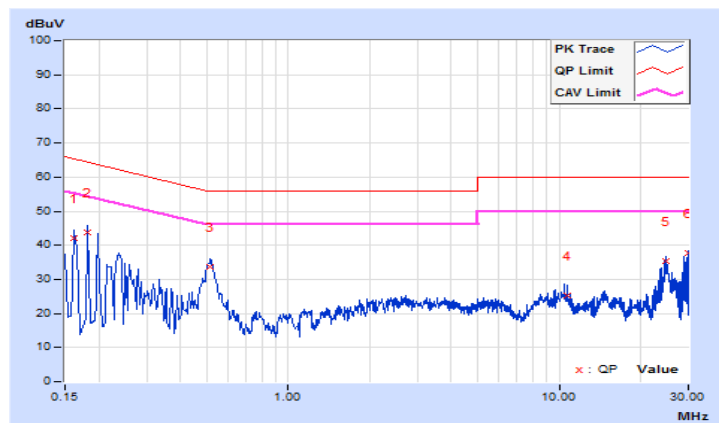
802.11a

Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16200	10.07	31.91	20.06	41.98	30.13	65.36	55.36	-23.38	-25.23
2	0.18200	10.07	33.63	16.15	43.70	26.22	64.39	54.39	-20.69	-28.17
3	0.51400	10.10	23.62	16.86	33.72	26.96	56.00	46.00	-22.28	-19.04
4	10.69000	10.33	14.78	10.25	25.11	20.58	60.00	50.00	-34.89	-29.42
5	24.70600	10.33	24.88	20.63	35.21	30.96	60.00	50.00	-24.79	-19.04
6	29.93000	10.20	27.35	26.14	37.55	36.34	60.00	50.00	-22.45	-13.66

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

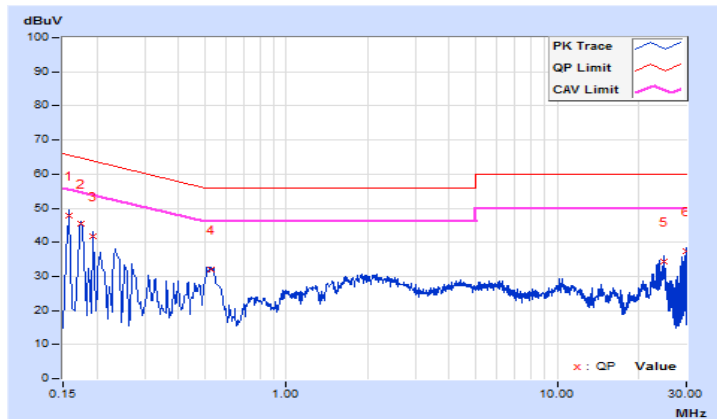


Frequency Range	150kHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9kHz
Input Power	120Vac, 60Hz	Environmental Conditions	23°C, 69%RH
Tested by	Edison Lee	Test Date	2021/03/25

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	10.08	37.66	21.24	47.74	31.32	65.57	55.57	-17.83	-24.25
2	0.17400	10.08	35.36	17.97	45.44	28.05	64.77	54.77	-19.33	-26.72
3	0.19400	10.08	31.72	15.12	41.80	25.20	63.86	53.86	-22.06	-28.66
4	0.52984	10.11	22.04	15.95	32.15	26.06	56.00	46.00	-23.85	-19.94
5	24.70600	10.52	23.85	20.01	34.37	30.53	60.00	50.00	-25.63	-19.47
6	29.93000	10.38	27.14	26.00	37.52	36.38	60.00	50.00	-22.48	-13.62

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,

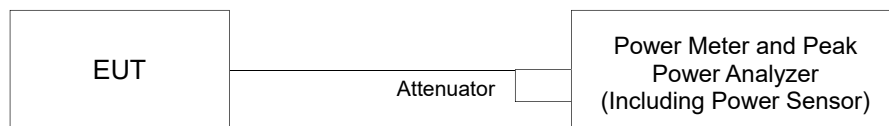
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

5G traffic radio (Radio 2)

CDD Mode (For U-NII-1 Band - Outdoor Access Point)

802.11a

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
36	5180	16.44	16.73	16.33	16.78	181.750	22.59	29.50	-1.88	20.71	21.00	Pass
40	5200	16.81	16.19	16.42	17.14	185.178	22.68	29.50	-1.88	20.80	21.00	Pass
48	5240	16.77	16.18	16.48	17.09	184.660	22.66	29.50	-1.88	20.78	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to $30 - (6.5 - 6) = 29.50\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$).

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
36	5180	16.73	16.90	16.52	16.90	189.928	22.79	29.50	-1.88	20.91	21.00	Pass
40	5200	16.16	16.91	16.11	17.46	186.946	22.72	29.50	-1.88	20.84	21.00	Pass
48	5240	16.00	16.31	16.46	17.77	186.667	22.71	29.50	-1.88	20.83	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to $30 - (6.5 - 6) = 29.50\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$).

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
38	5190	16.44	16.15	16.62	16.92	180.389	22.56	29.50	-1.88	20.68	21.00	Pass
46	5230	16.42	16.56	16.52	17.17	186.137	22.70	29.50	-1.88	20.82	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to $30 - (6.5 - 6) = 29.50\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
42	5210	16.31	16.90	16.30	17.02	184.742	22.67	29.50	-1.88	20.79	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
36	5180	16.77	16.92	16.54	16.93	191.137	22.81	29.50	-1.88	20.93	21.00	Pass
40	5200	16.18	16.92	16.13	17.48	187.696	22.73	29.50	-1.88	20.85	21.00	Pass
48	5240	16.01	16.33	16.48	17.80	187.575	22.73	29.50	-1.88	20.85	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
38	5190	16.46	16.17	16.65	16.94	181.328	22.58	29.50	-1.88	20.70	21.00	Pass
46	5230	16.44	16.58	16.54	17.19	186.996	22.72	29.50	-1.88	20.84	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Ant. Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
42	5210	16.35	16.92	16.32	17.05	185.910	22.69	29.50	-1.88	20.81	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-1.88dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

CDD Mode (For U-NII-3 Band)

802.11a

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	21.95	22.31	23.08	23.05	731.963	28.64	29.00	Pass
157	5785	21.98	22.28	23.12	22.98	730.531	28.64	29.00	Pass
165	5825	22.03	22.21	23.08	23.09	732.869	28.65	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	21.90	22.33	23.08	22.95	726.361	28.61	29.00	Pass
157	5785	22.06	22.34	23.02	22.91	727.971	28.62	29.00	Pass
165	5825	21.98	22.83	22.96	22.96	745.022	28.72	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	21.33	21.66	21.55	22.02	584.496	27.67	29.00	Pass
159	5795	21.87	23.05	22.87	23.10	753.468	28.77	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	20.60	20.72	20.66	21.31	484.467	26.85	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	21.92	22.36	23.11	22.97	730.581	28.64	29.00	Pass
157	5785	22.08	22.37	23.05	22.93	732.192	28.65	29.00	Pass
165	5825	22.01	22.85	22.99	22.98	749.284	28.75	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	21.35	21.68	21.57	22.06	587.933	27.69	29.00	Pass
159	5795	21.89	23.08	22.89	23.12	757.413	28.79	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	20.62	20.75	20.68	21.34	487.290	26.88	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

Beamforming Mode (For U-NII-1 Band - Outdoor Access Point)

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
36	5180	10.71	10.88	10.50	10.88	47.489	16.77	23.48	4.14	20.91	21.00	Pass
40	5200	10.14	10.89	10.09	11.44	46.743	16.70	23.48	4.14	20.84	21.00	Pass
48	5240	9.98	10.29	10.44	11.75	46.673	16.69	23.48	4.14	20.83	21.00	Pass

Note:

1. Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52 \text{ dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (12.52 - 6) = 23.48\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. Beamforming gain = 6.02dBi
4. EIRP = average power + (-1.88dBi) + beamforming gain (6.02dBi).

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
38	5190	10.42	10.13	10.60	10.90	45.103	16.54	23.48	4.14	20.68	21.00	Pass
46	5230	10.40	10.54	10.50	11.15	46.541	16.68	23.48	4.14	20.82	21.00	Pass

Note:

1. Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52 \text{ dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (12.52 - 6) = 23.48\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. Beamforming gain = 6.02dBi
4. EIRP = average power + (-1.88dBi) + beamforming gain (6.02dBi).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
42	5210	10.29	10.88	10.28	11.00	46.192	16.65	23.48	4.14	20.79	21.00	Pass

Note:

1. Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52 \text{ dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (12.52 - 6) = 23.48\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. Beamforming gain = 6.02dBi
4. EIRP = average power + (-1.88dBi) + beamforming gain (6.02dBi).

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
36	5180	10.75	10.90	10.52	10.91	47.791	16.79	23.48	4.14	20.93	21.00	Pass
40	5200	10.16	10.90	10.11	11.46	46.930	16.71	23.48	4.14	20.85	21.00	Pass
48	5240	9.99	10.31	10.46	11.78	46.900	16.71	23.48	4.14	20.85	21.00	Pass

Note:

1. Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52 \text{ dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (12.52 - 6) = 23.48\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. Beamforming gain = 6.02dBi
4. EIRP = average power + (-1.88dBi) + beamforming gain (6.02dBi).

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
38	5190	10.44	10.15	10.63	10.92	45.338	16.56	23.48	4.14	20.70	21.00	Pass
46	5230	10.42	10.56	10.52	11.17	46.755	16.70	23.48	4.14	20.84	21.00	Pass

Note:

1. Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52 \text{ dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (12.52 - 6) = 23.48\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. Beamforming gain = 6.02dBi
4. EIRP = average power + (-1.88dBi) + beamforming gain (6.02dBi).

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Directional Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3							
42	5210	10.33	10.90	10.30	11.03	46.484	16.67	23.48	4.14	20.81	21.00	Pass

Note:

1. Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52 \text{ dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (12.52 - 6) = 23.48\text{dBm}$.
2. Antenna gain = -1.88dBi (above 30 degrees from the horizon).
3. Beamforming gain = 6.02dBi
4. EIRP = average power + (-1.88dBi) + beamforming gain (6.02dBi).

Beamforming Mode (For U-NII-3 Band)

802.11ac (VHT20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	15.88	16.31	17.06	16.93	181.615	22.59	22.98	Pass
157	5785	16.04	16.32	17.00	16.89	182.018	22.60	22.98	Pass
165	5825	15.96	16.81	16.94	16.94	186.281	22.70	22.98	Pass

Note: Directional gain = 7.0 dBi + 10log(4) = 13.02 dBi > 6dBi, so the power limit shall be reduced to 30 - (13.02 - 6) = 22.98dBm.

802.11ac (VHT40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	15.31	15.64	15.53	16.00	146.144	21.65	22.98	Pass
159	5795	15.85	17.03	16.85	17.08	188.393	22.75	22.98	Pass

Note: Directional gain = 7.0 dBi + 10log(4) = 13.02 dBi > 6dBi, so the power limit shall be reduced to 30 - (13.02 - 6) = 22.98dBm.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	14.58	14.70	14.64	15.29	121.134	20.83	22.98	Pass

Note: Directional gain = 7.0 dBi + 10log(4) = 13.02 dBi > 6dBi, so the power limit shall be reduced to 30 - (13.02 - 6) = 22.98dBm.

802.11ax (HE20)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
149	5745	15.90	16.34	17.09	16.95	182.670	22.62	22.98	Pass
157	5785	16.06	16.35	17.03	16.91	183.073	22.63	22.98	Pass
165	5825	15.99	16.83	16.97	16.96	187.347	22.73	22.98	Pass

Note: Directional gain = 7.0 dBi + 10log(4) = 13.02 dBi > 6dBi, so the power limit shall be reduced to 30 - (13.02 - 6) = 22.98dBm.

802.11ax (HE40)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
151	5755	15.33	15.66	15.55	16.04	147.003	21.67	22.98	Pass
159	5795	15.87	17.06	16.87	17.10	189.380	22.77	22.98	Pass

Note: Directional gain = 7.0 dBi + 10log(4) = 13.02 dBi > 6dBi, so the power limit shall be reduced to 30 - (13.02 - 6) = 22.98dBm.

802.11ax (HE80)

Chan.	Freq. (MHz)	Average Power (dBm)				Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3				
155	5775	14.60	14.73	14.66	15.32	121.839	20.86	22.98	Pass

Note: Directional gain = 7.0 dBi + 10log(4) = 13.02 dBi > 6dBi, so the power limit shall be reduced to 30 - (13.02 - 6) = 22.98dBm.

Scanning radio (Radio 3)

For U-NII-1 Band - Outdoor Access Point

802.11a

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	19.16	20.15	185.928	22.69	29.50	-2.16	20.53	21.00	Pass
40	5200	19.37	20.12	189.298	22.77	29.50	-2.16	20.61	21.00	Pass
48	5240	19.65	20.33	200.152	23.01	29.50	-2.16	20.85	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -2.16dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-2.16dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ac (VHT20)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
36	5180	19.34	20.47	197.331	22.95	29.50	-2.16	20.79	21.00	Pass
40	5200	19.08	20.15	184.424	22.66	29.50	-2.16	20.50	21.00	Pass
48	5240	19.81	20.34	203.863	23.09	29.50	-2.16	20.93	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -2.16dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-2.16dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ac (VHT40)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
38	5190	13.59	14.57	51.498	17.12	29.50	-2.16	14.96	21.00	Pass
46	5230	19.67	19.89	190.182	22.79	29.50	-2.16	20.63	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to 30 - (6.5 - 6) = 29.50dBm.
2. Antenna gain = -2.16dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-2.16dBi) + array gain = (0 dB (i.e., no array gain) for $N_{ANT} \leq 4$).

802.11ac (VHT80)

Chan.	Freq. (MHz)	Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Gain (dBi)	EIRP (dBm)	EIRP limit (dBm)	Pass / Fail
		Chain 0	Chain 1							
42	5210	12.59	13.92	42.816	16.32	29.50	-2.16	14.16	21.00	Pass

Note:

1. Antenna gain = 6.5dBi > 6dBi, so the power limit shall be reduced to $30 - (6.5 - 6) = 29.50\text{dBm}$.
2. Antenna gain = -2.16dBi (above 30 degrees from the horizon).
3. EIRP = average power + (-2.16dBi) + array gain = (0 dB (i.e., no array gain) for $N_{\text{ANT}} \leq 4$).

For U-NII-3 Band

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
149	5745	20.21	20.78	224.628	23.51	29.00	Pass
157	5785	20.33	20.93	231.774	23.65	29.00	Pass
165	5825	20.34	20.89	230.887	23.63	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

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				
149	5745	20.27	20.88	228.876	23.60	29.00	Pass
157	5785	20.42	20.82	230.935	23.63	29.00	Pass
165	5825	20.34	20.74	226.720	23.55	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

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				
151	5755	20.21	20.92	228.549	23.59	29.00	Pass
159	5795	19.12	19.85	178.263	22.51	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

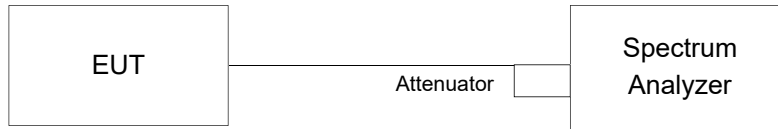
802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
155	5775	19.12	19.85	178.263	22.51	29.00	Pass

Note: Antenna gain = 7dBi > 6dBi, so the power limit shall be reduced to $30 - (7 - 6) = 29.00$ dBm.

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to 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

5G traffic radio (Radio 2)

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	16.43	16.52	16.43	16.43
40	5200	16.44	16.44	16.44	16.44
48	5240	16.56	16.44	16.44	16.44
149	5745	16.56	16.44	16.44	16.56
157	5785	16.56	16.44	16.56	16.56
165	5825	16.56	16.32	16.56	16.56

802.11ax (HE20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
36	5180	18.84	18.96	18.96	18.84
40	5200	19.08	19.08	18.84	18.96
48	5240	18.84	18.84	18.96	18.84
149	5745	19.08	18.84	19.08	19.08
157	5785	18.96	18.96	19.08	18.96
165	5825	18.96	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	38.04	38.04
46	5230	38.04	38.04	38.04	38.04
151	5755	37.92	37.80	37.92	38.04
159	5795	37.92	37.92	38.16	38.28

802.11ax (HE80)

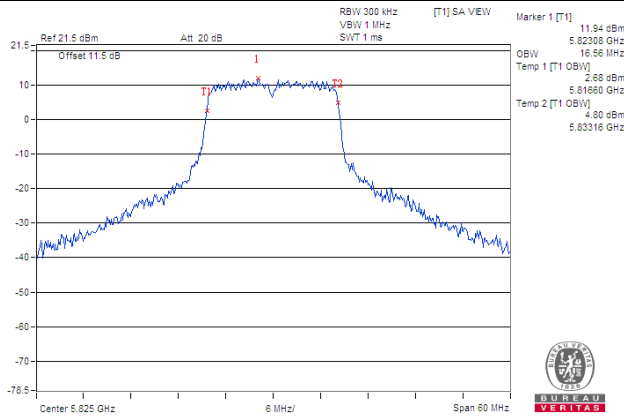
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)			
		Chain 0	Chain 1	Chain 2	Chain 3
42	5210	77.28	77.28	77.52	77.28
155	5775	77.28	76.80	77.52	77.04



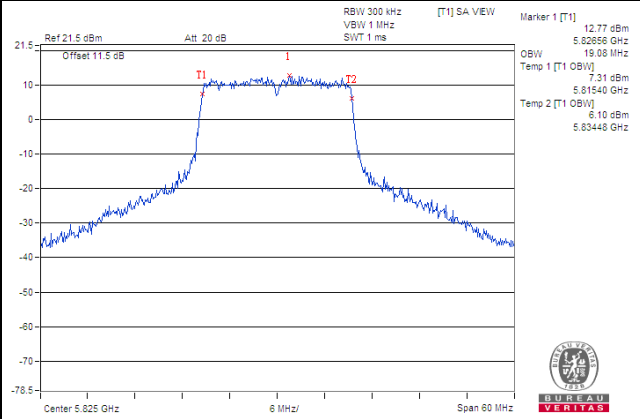
BUREAU VERITAS

Spectrum Plot of Worst Value

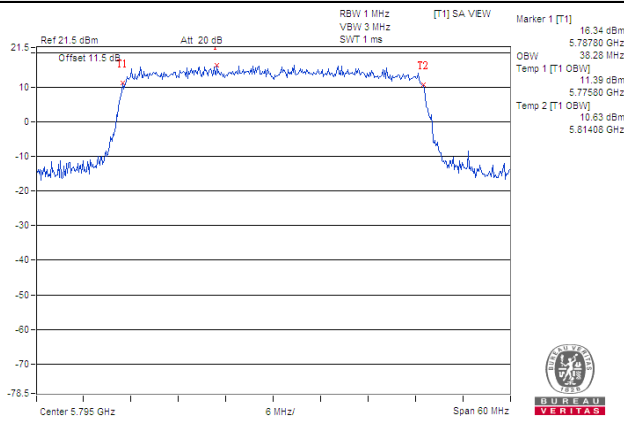
802.11a



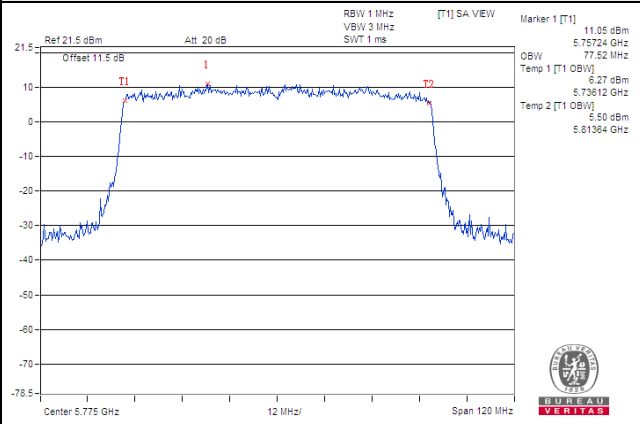
802.11ax (HE20)



802.11ax (HE40)

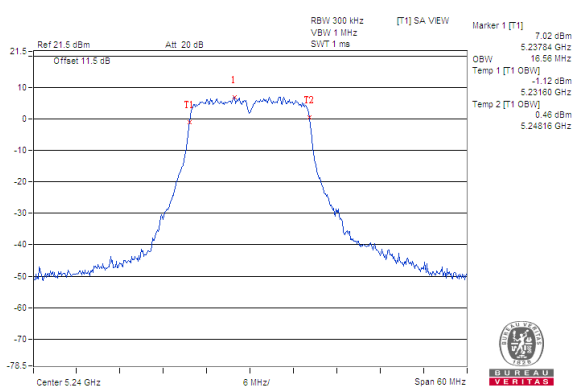


802.11ax (HE80)

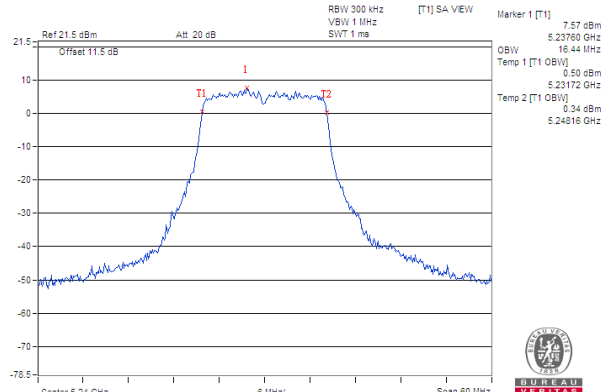


Spectrum Plot for near By DFS Band

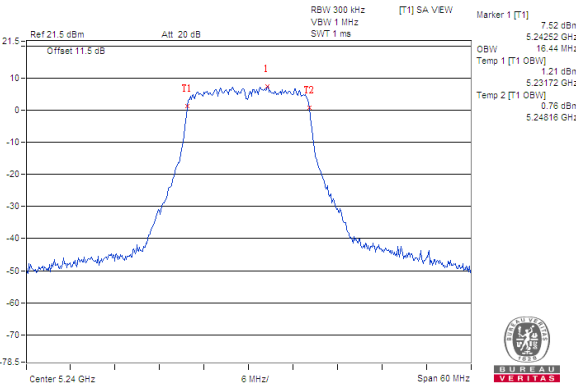
802.11a / Chain 0 / CH 48



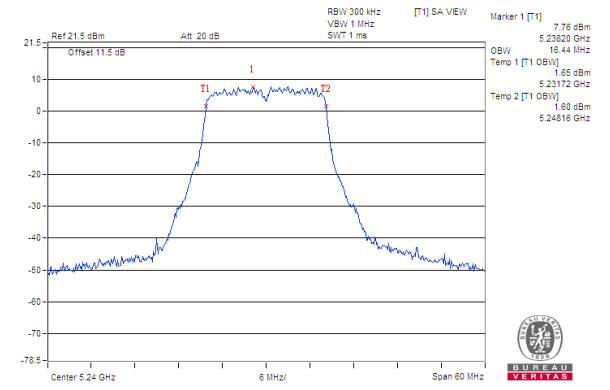
802.11a / Chain 1 / CH 48



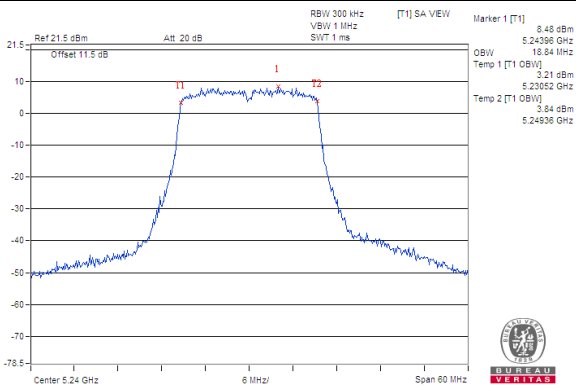
802.11a / Chain 2 / CH 48



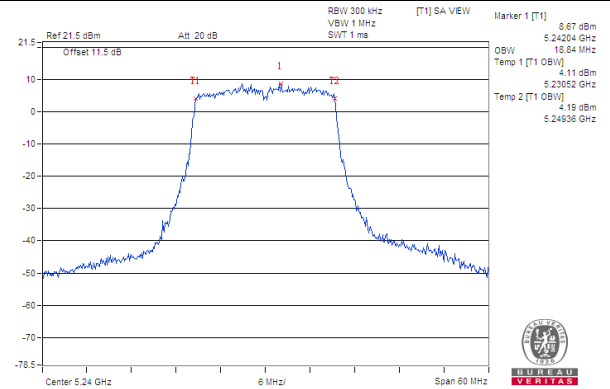
802.11a / Chain 3 / CH 48



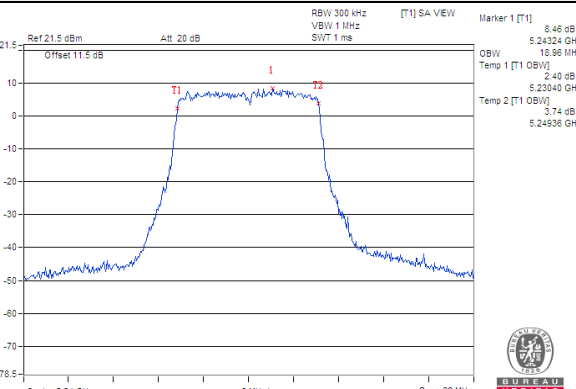
802.11ax (HE20) / Chain 0 / CH 48



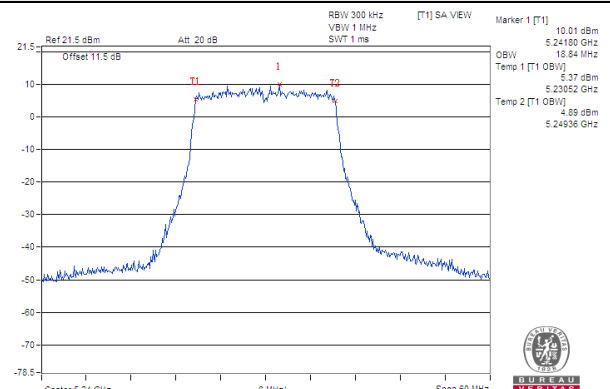
802.11ax (HE20) / Chain 1 / CH 48



802.11ax (HE20) / Chain 2 / CH 48



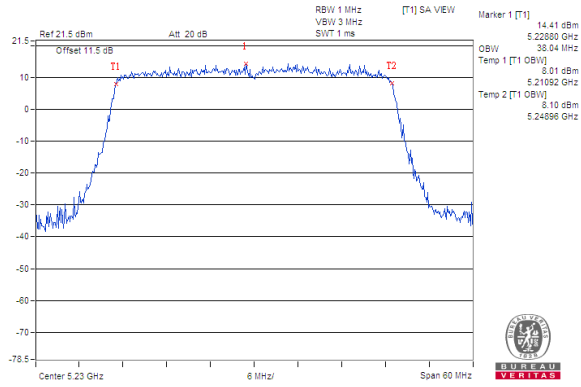
802.11ax (HE20) / Chain 3 / CH 48



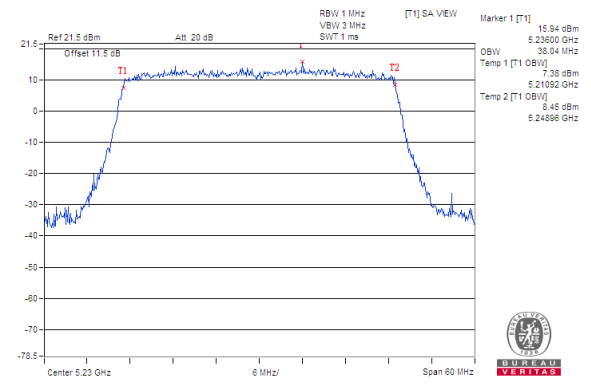


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VERITAS

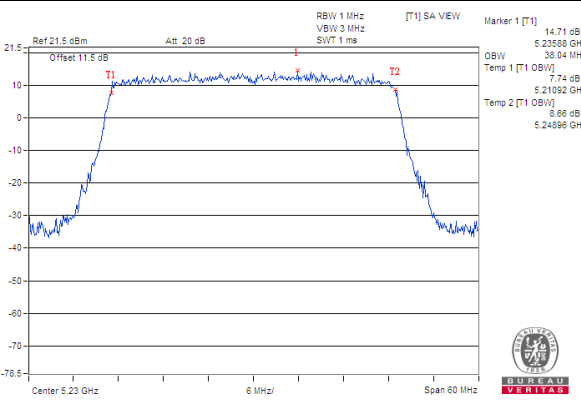
802.11ax (HE40) / Chain 0 / CH 46



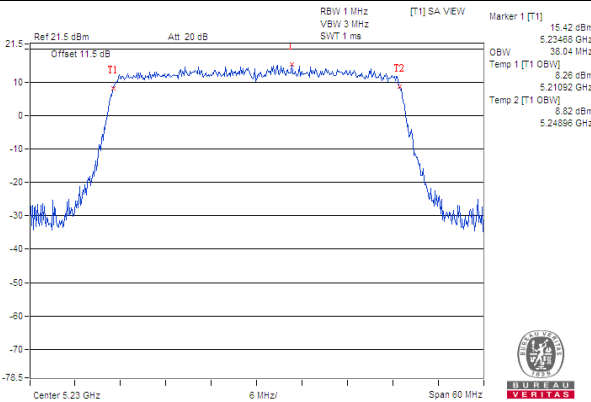
802.11ax (HE40) / Chain 1 / CH 46



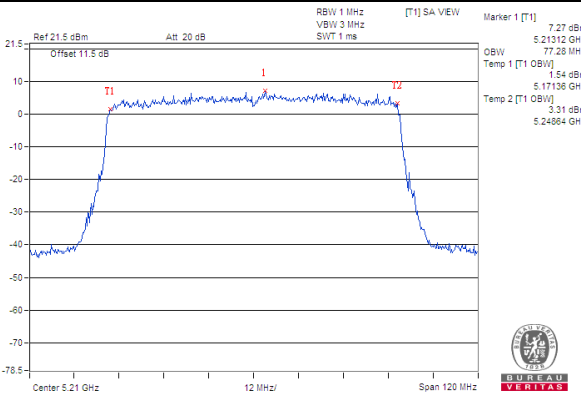
802.11ax (HE40) / Chain 2 / CH 46



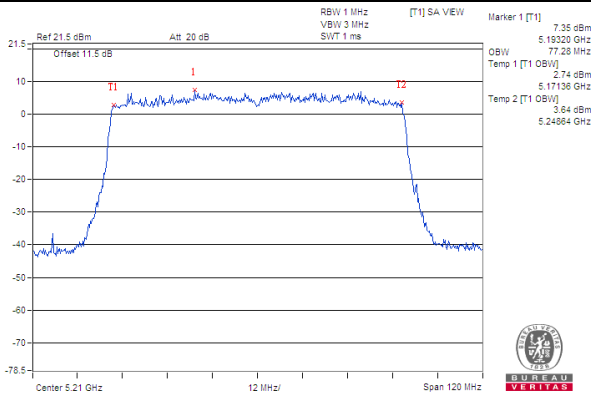
802.11ax (HE40) / Chain 3 / CH 46



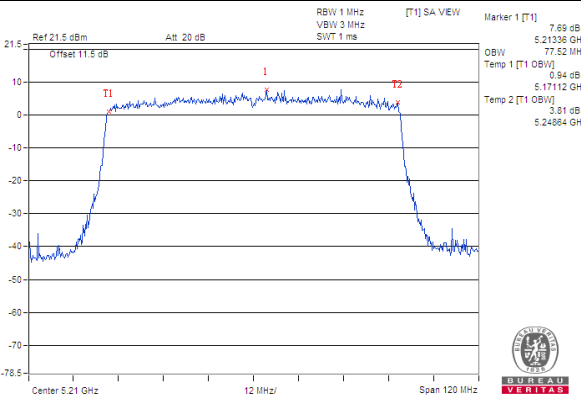
802.11ax (HE80) / Chain 0 / CH 42



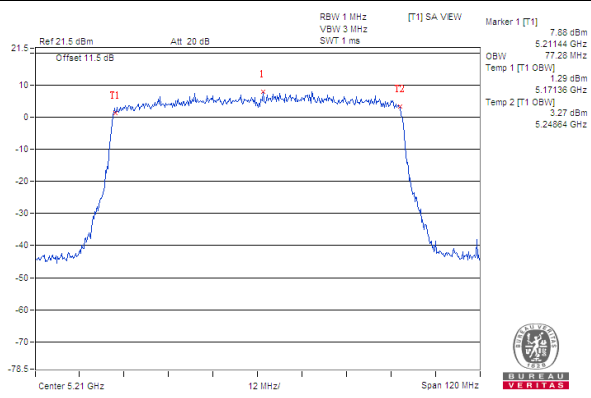
802.11ax (HE80) / Chain 1 / CH 42



802.11ax (HE80) / Chain 2 / CH 42

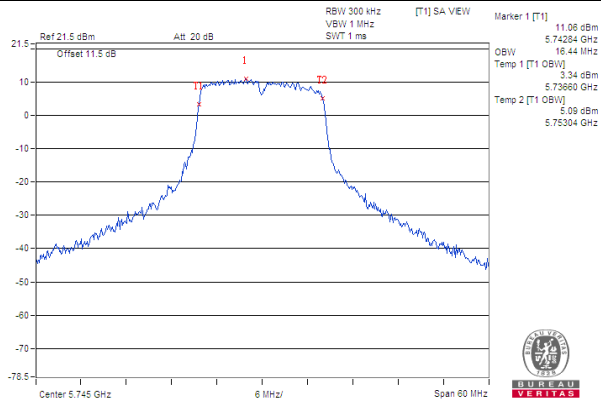


802.11ax (HE80) / Chain 3 / CH 42

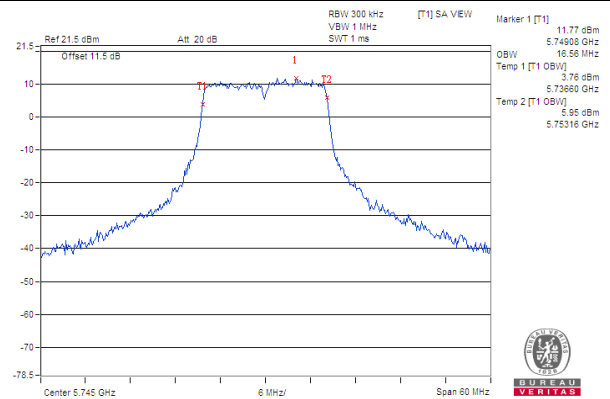


Spectrum Plot for near By DFS Band

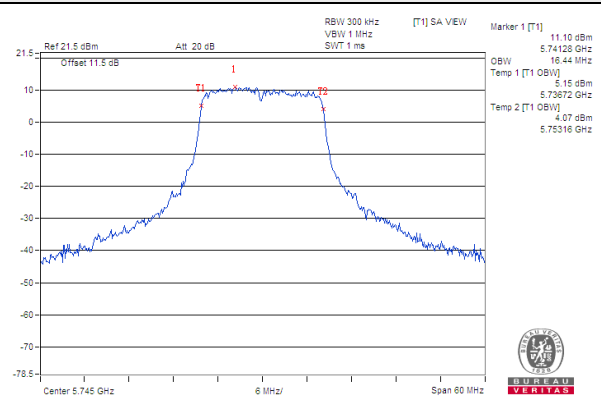
802.11a / Chain 0 / CH 149



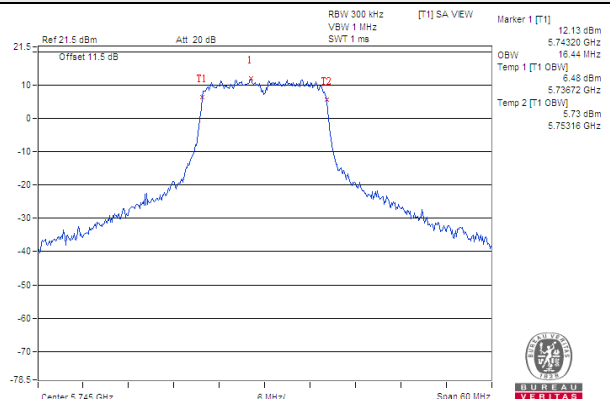
802.11a / Chain 1 / CH 149



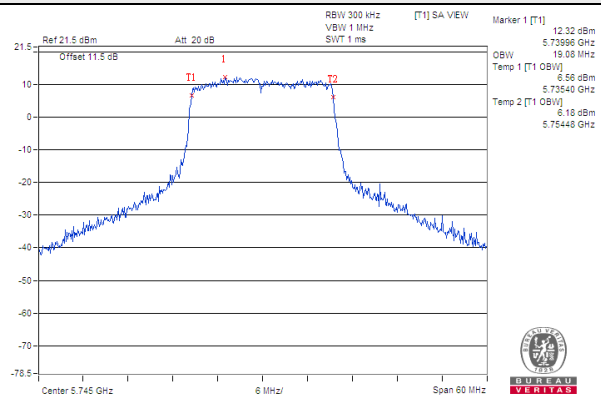
802.11a / Chain 2 / CH 149



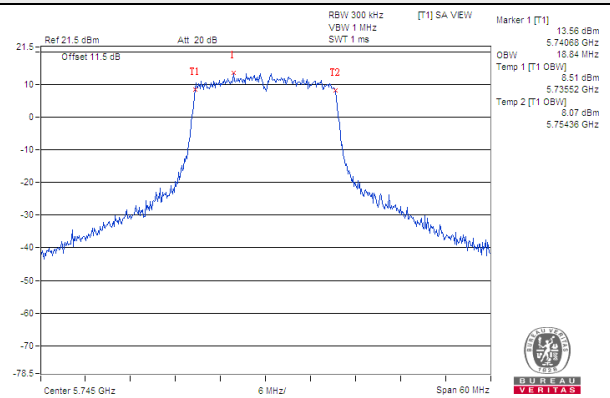
802.11a / Chain 3 / CH 149



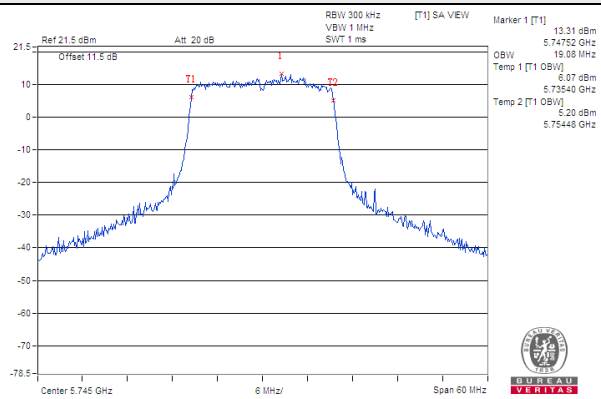
802.11ax (HE20) / Chain 0 / CH 149



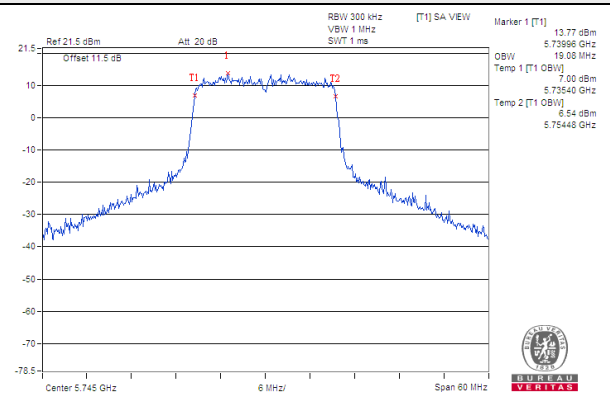
802.11ax (HE20) / Chain 1 / CH 149



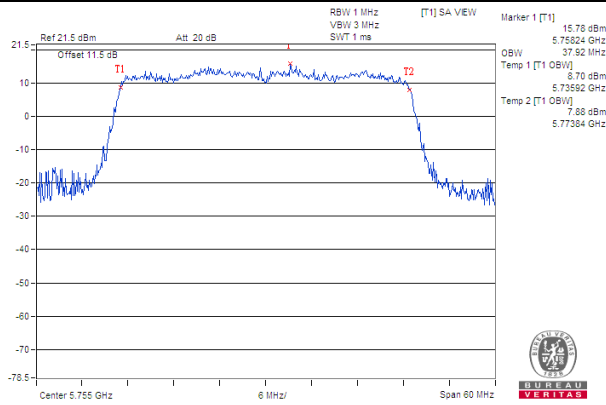
802.11ax (HE20) / Chain 2 / CH 149



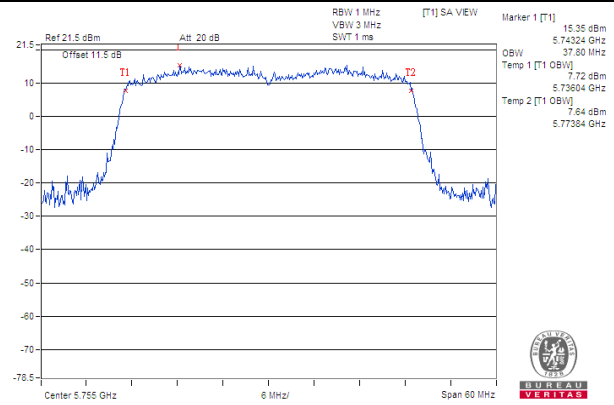
802.11ax (HE20) / Chain 3 / CH 149



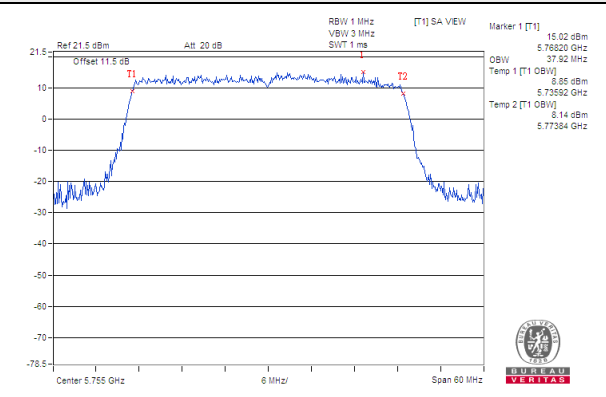
802.11ax (HE40) / Chain 0 / CH 151



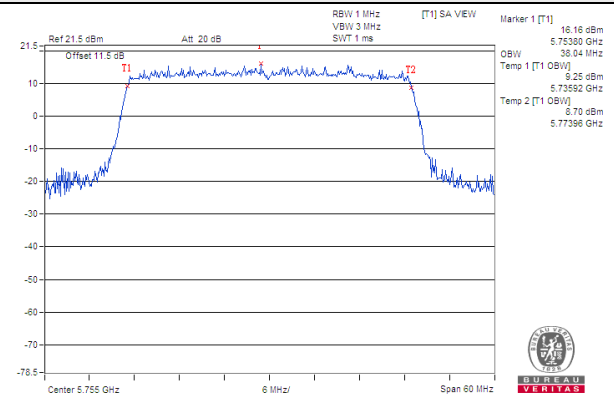
802.11ax (HE40) / Chain 1 / CH 151



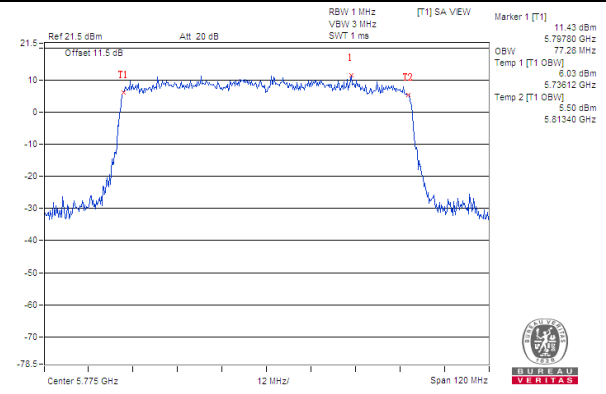
802.11ax (HE40) / Chain 2 / CH 151



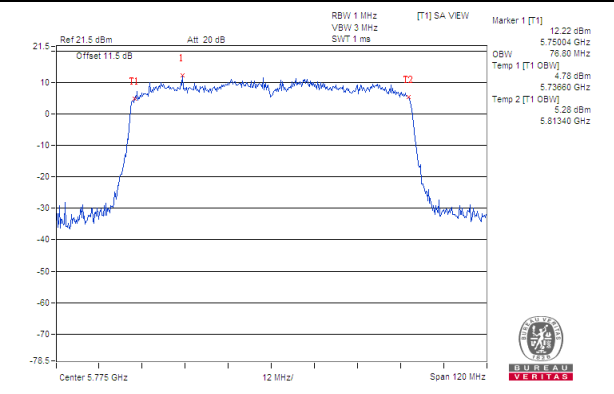
802.11ax (HE40) / Chain 3 / CH 151



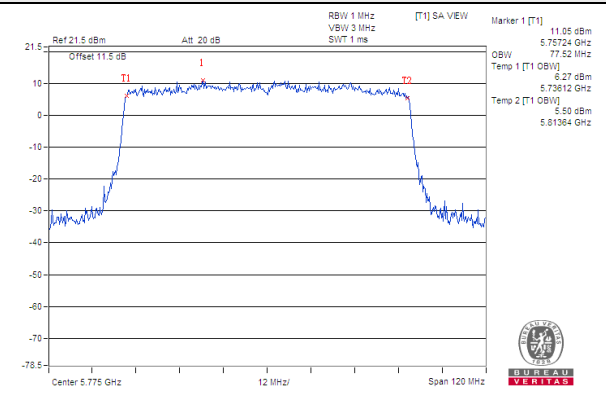
802.11ax (HE80) / Chain 0 / CH 155



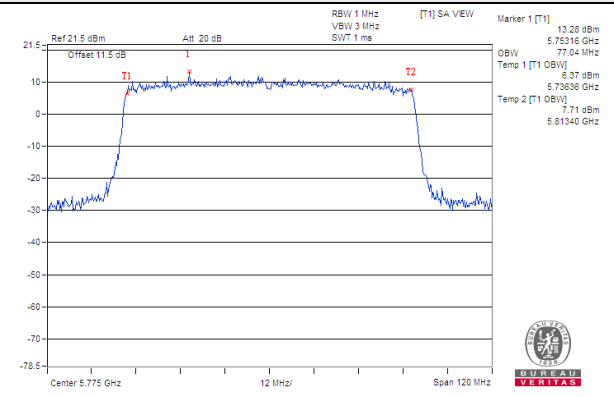
802.11ax (HE80) / Chain 1 / CH 155



802.11ax (HE80) / Chain 2 / CH 155



802.11ax (HE80) / Chain 3 / CH 155



Scanning radio (Radio 3)

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	17.52	17.52
40	5200	20.04	20.64
48	5240	18.52	18.00
149	5745	17.28	17.28
157	5785	17.88	17.76
165	5825	17.40	17.28

802.11ac (VHT20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	18.48	18.24
40	5200	21.12	21.00
48	5240	19.48	18.87
149	5745	18.24	18.36
157	5785	18.84	18.72
165	5825	18.36	18.36

802.11ac (VHT40)

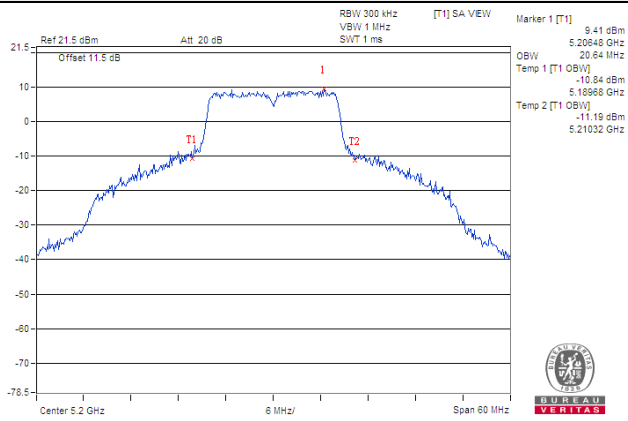
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.08	37.20
46	5230	37.92	37.92
151	5755	37.80	37.80
159	5795	37.92	37.92

802.11ac (VHT80)

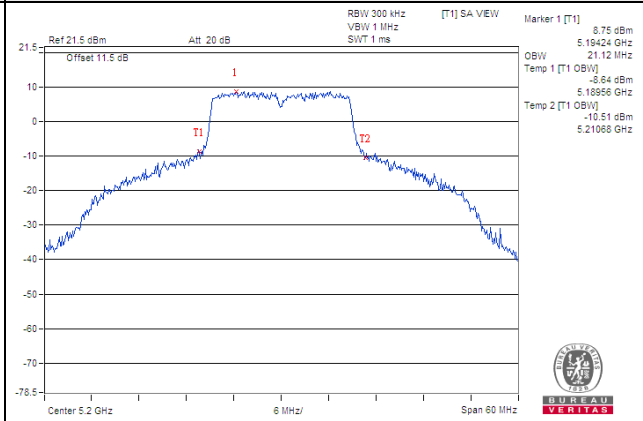
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	76.08	76.08
155	5775	76.80	76.56

Spectrum Plot of Worst Value

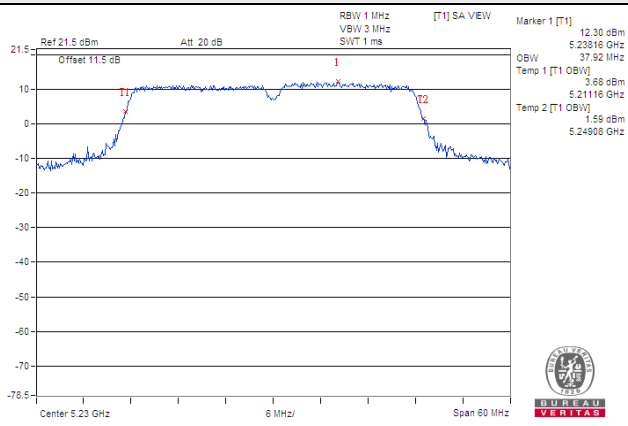
802.11a



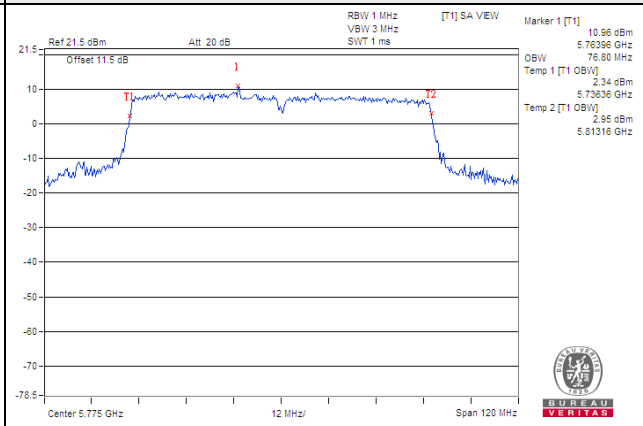
802.11ac (VHT20)



802.11ac (VHT40)

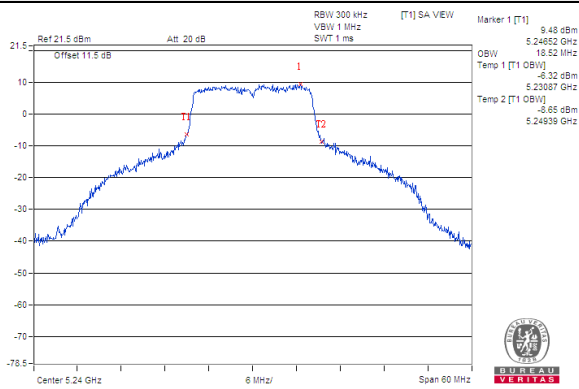


802.11ac (VHT80)

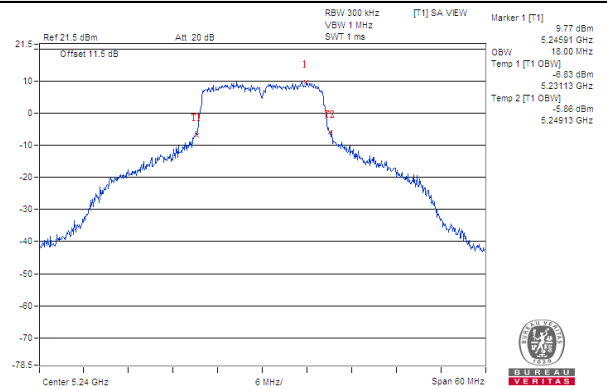


Spectrum Plot for near By DFS Band

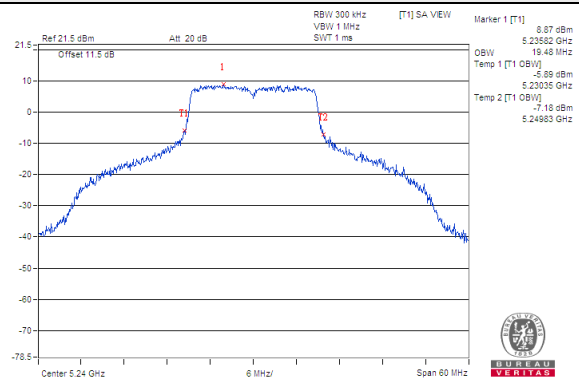
802.11a / Chain 0 / CH 48



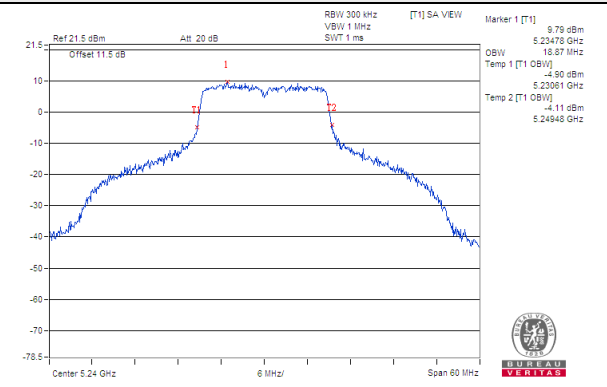
802.11a / Chain 1 / CH 48



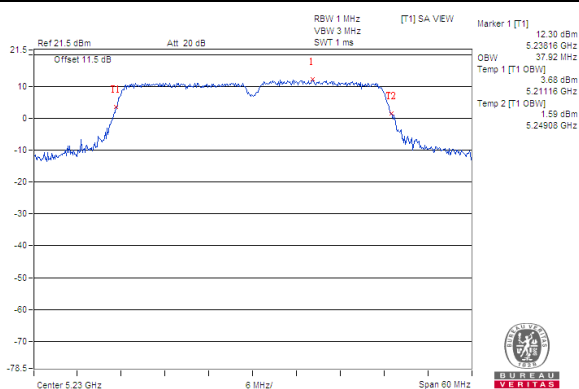
802.11ac (VHT20) / Chain 0 / CH 48



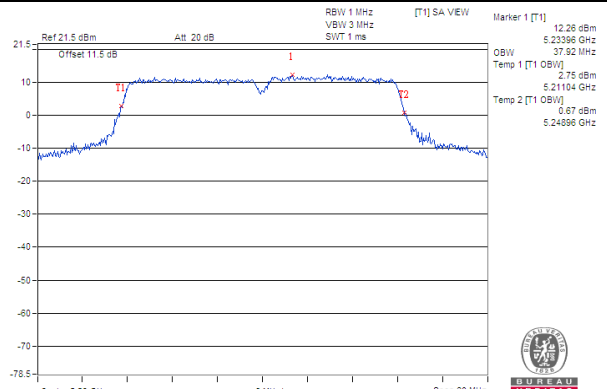
802.11ac (VHT20) / Chain 1 / CH 48



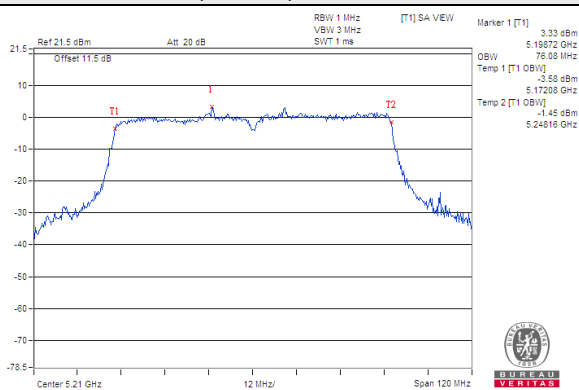
802.11ac (VHT40) / Chain 0 / CH 46



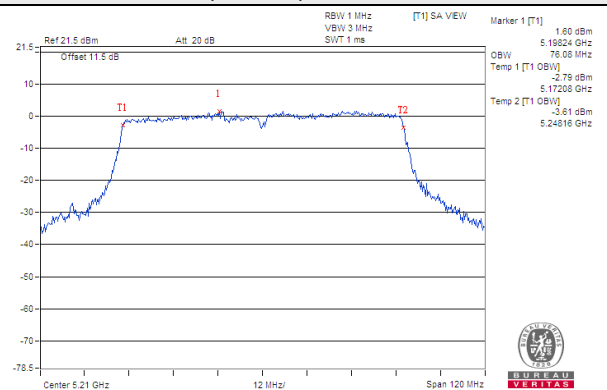
802.11ac (VHT40) / Chain 1 / CH 46



802.11ac (VHT80) / Chain 0 / CH 42

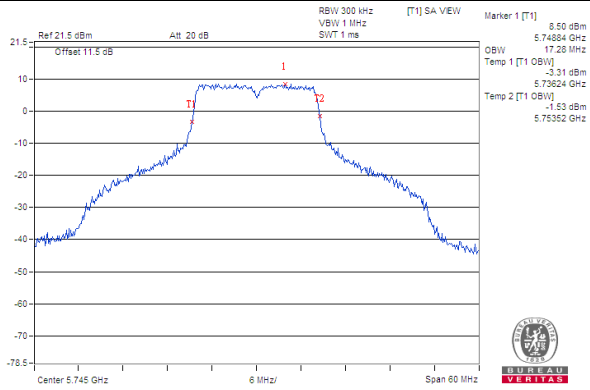


802.11ac (VHT80) / Chain 1 / CH 42

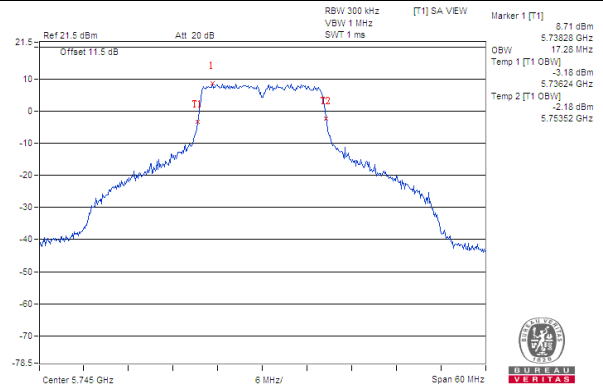


Spectrum Plot for near By DFS Band

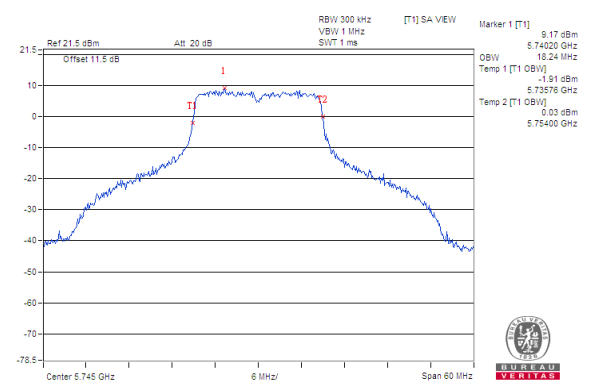
802.11a / Chain 0 / CH 149



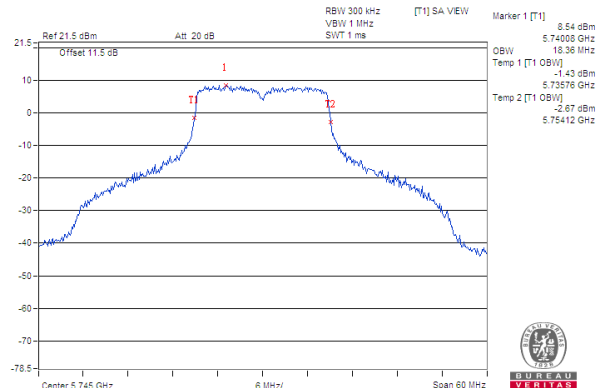
802.11a / Chain 1 / CH 149



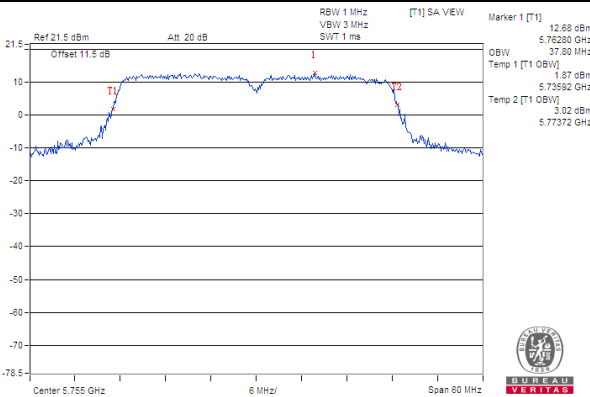
802.11ac (VHT20) / Chain 0 / CH 149



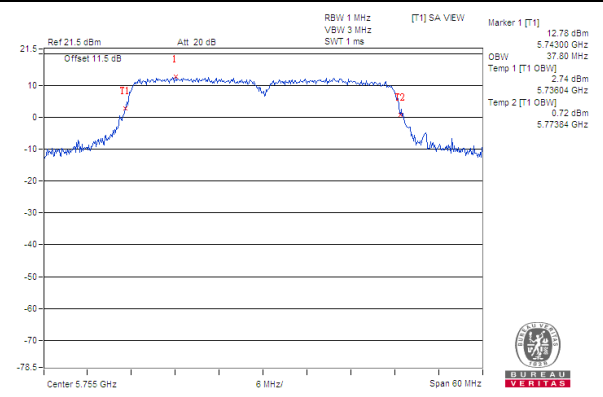
802.11ac (VHT20) / Chain 1 / CH 149



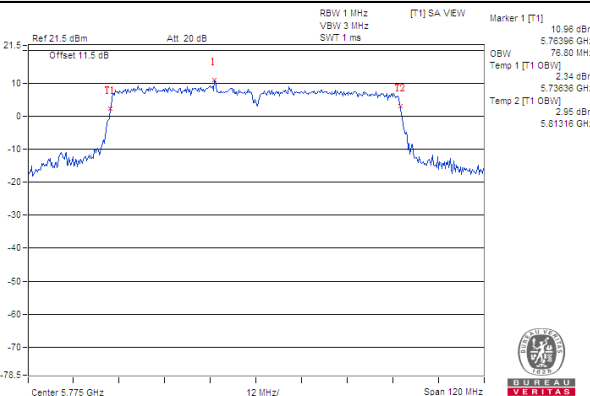
802.11ac (VHT40) / Chain 0 / CH 151



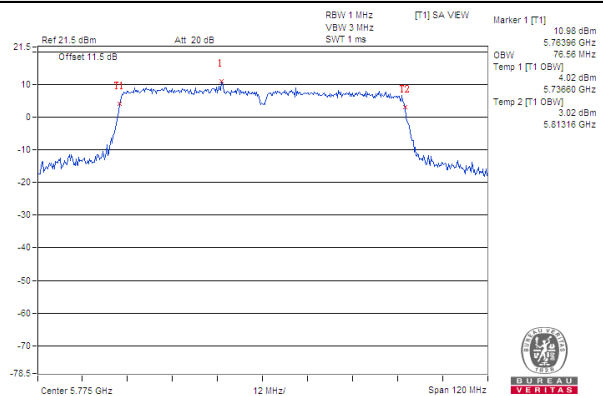
802.11ac (VHT40) / Chain 1 / CH 151



802.11ac (VHT80) / Chain 0 / CH 155



802.11ac (VHT80) / Chain 1 / CH 155

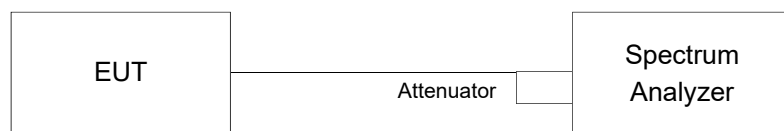


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

Operation Band	EUT Category		Limit
U-NII-1	√	Outdoor Access Point	17dBm/ MHz
	-	Fixed point-to-point Access Point	
	-	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

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

For U-NII-3 band:

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

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

5G traffic radio (Radio 2)

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	4.00	3.98	3.73	3.80	0.31	10.20	10.48	Pass
40	5200	3.90	3.77	3.37	3.29	0.31	9.92	10.48	Pass
48	5240	3.91	4.11	3.35	3.45	0.31	10.04	10.48	Pass

Note:

- 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.
- Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (12.52 - 6) = 10.48\text{dBm}$.
- 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	3.62	3.59	3.80	3.97	0.21	9.98	10.48	Pass
40	5200	3.71	3.56	3.58	4.01	0.21	9.95	10.48	Pass
48	5240	3.89	3.61	3.61	3.52	0.21	9.89	10.48	Pass

Note:

- 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.
- Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (12.52 - 6) = 10.48\text{dBm}$.
- 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	-1.16	-1.12	-1.79	-1.02	0.31	5.07	10.48	Pass
46	5230	2.87	2.98	3.67	3.90	0.31	9.71	10.48	Pass

Note:

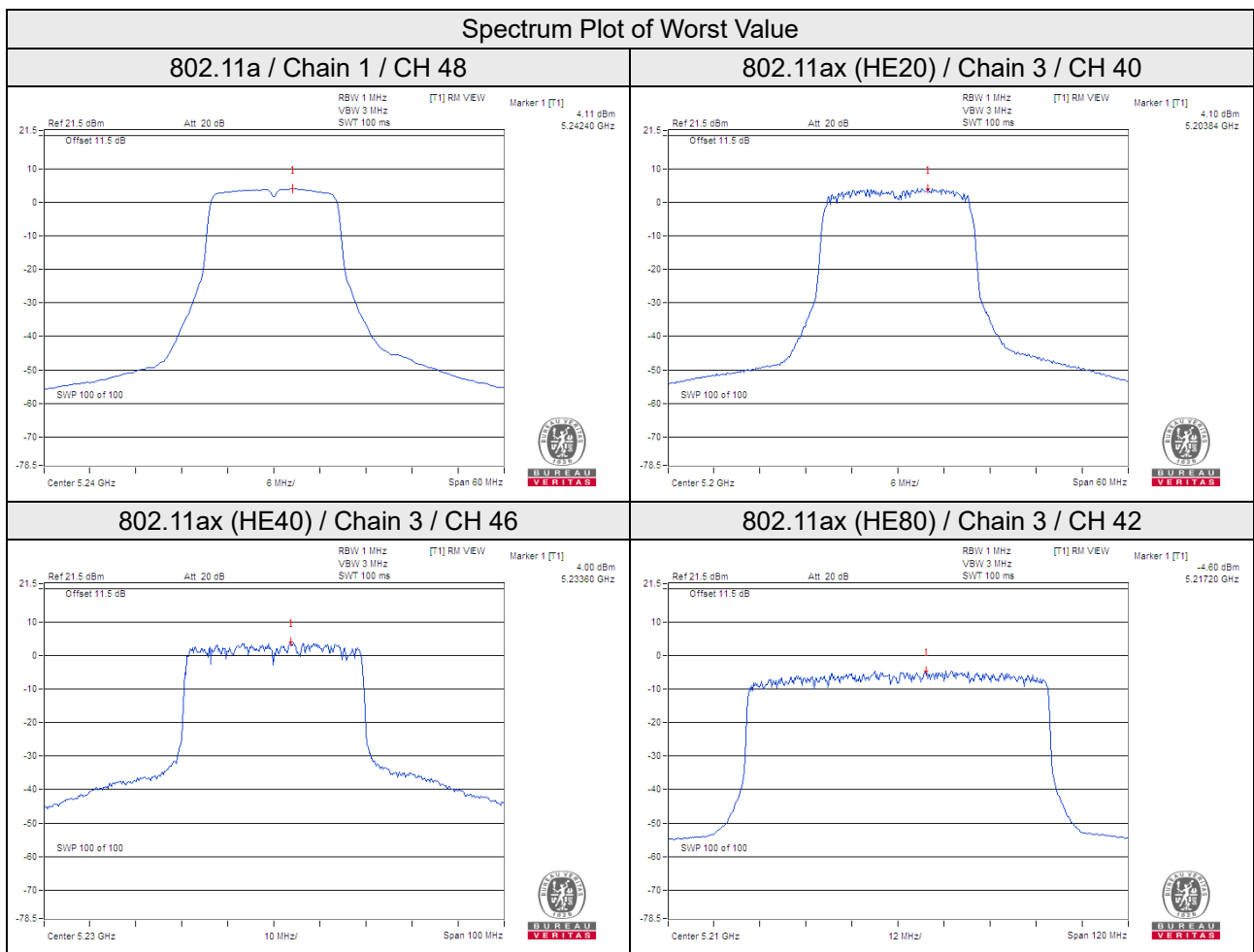
- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $6.5 \text{ dBi} + 10\log(4) = 12.52\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (12.52 - 6) = 10.48\text{dBm}$.
- 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	-5.81	-6.16	-5.33	-5.12	0.32	0.76	10.48	10.48

Note:

- 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.
- Directional gain = 6.5 dBi + 10log(4) = 12.52dBi > 6dBi, so the power density limit shall be reduced to 17 - (12.52 - 6) = 10.48dBm.
- Refer to section 3.3 for duty cycle spectrum plot.



For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-1.61	0.61	6.02	0.31	6.94	22.98	Pass
	157	5785	-1.44	0.78	6.02	0.31	7.11	22.98	Pass
	165	5825	-1.56	0.66	6.02	0.31	6.99	22.98	Pass
1	149	5745	-1.27	0.95	6.02	0.31	7.28	22.98	Pass
	157	5785	-1.35	0.87	6.02	0.31	7.20	22.98	Pass
	165	5825	-1.27	0.95	6.02	0.31	7.28	22.98	Pass
2	149	5745	-1.46	0.76	6.02	0.31	7.09	22.98	Pass
	157	5785	-1.72	0.5	6.02	0.31	6.83	22.98	Pass
	165	5825	-1.33	0.89	6.02	0.31	7.22	22.98	Pass
3	149	5745	-1.20	1.02	6.02	0.31	7.35	22.98	Pass
	157	5785	-0.76	1.46	6.02	0.31	7.79	22.98	Pass
	165	5825	-1.25	0.97	6.02	0.31	7.30	22.98	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 = $7.0 \text{ dBi} + 10 \log(4) = 13.02 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $30 - (13.02 - 6) = 22.98 \text{ dBm}$.
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/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-2.37	-0.15	6.02	0.21	6.08	22.98	Pass
	157	5785	-2.90	-0.68	6.02	0.21	5.55	22.98	Pass
	165	5825	-2.71	-0.49	6.02	0.21	5.74	22.98	Pass
1	149	5745	-2.03	0.19	6.02	0.21	6.42	22.98	Pass
	157	5785	-2.20	0.02	6.02	0.21	6.25	22.98	Pass
	165	5825	-2.58	-0.36	6.02	0.21	5.87	22.98	Pass
2	149	5745	-2.54	-0.32	6.02	0.21	5.91	22.98	Pass
	157	5785	-2.70	-0.48	6.02	0.21	5.75	22.98	Pass
	165	5825	-3.00	-0.78	6.02	0.21	5.45	22.98	Pass
3	149	5745	-2.26	-0.04	6.02	0.21	6.19	22.98	Pass
	157	5785	-1.90	0.32	6.02	0.21	6.55	22.98	Pass
	165	5825	-2.16	0.06	6.02	0.21	6.29	22.98	Pass

Note:

- 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.
- Directional gain = $7.0 \text{ dBi} + 10\log(4) = 13.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (13.02 - 6) = 22.98\text{dBm}$.
- 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	-6.34	-4.12	6.02	0.31	2.21	22.98	Pass
	159	5795	-6.04	-3.82	6.02	0.31	2.51	22.98	Pass
1	151	5755	-5.99	-3.77	6.02	0.31	2.56	22.98	Pass
	159	5795	-5.15	-2.93	6.02	0.31	3.40	22.98	Pass
2	151	5755	-5.89	-3.67	6.02	0.31	2.66	22.98	Pass
	159	5795	-4.85	-2.63	6.02	0.31	3.70	22.98	Pass
3	151	5755	-6.01	-3.79	6.02	0.31	2.54	22.98	Pass
	159	5795	-4.52	-2.30	6.02	0.31	4.03	22.98	Pass

Note:

- 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.
- Directional gain = $7.0 \text{ dBi} + 10\log(4) = 13.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (13.02 - 6) = 22.98\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

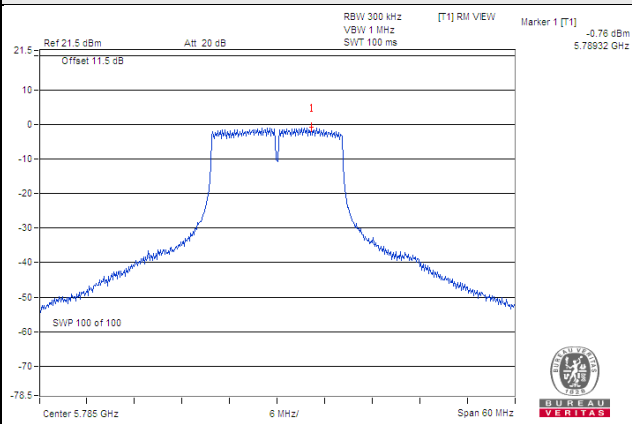
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=4) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-9.88	-7.66	6.02	0.32	-1.32	22.98	Pass
1	155	5775	-10.14	-7.92	6.02	0.32	-1.58	22.98	Pass
2	155	5775	-10.47	-8.25	6.02	0.32	-1.91	22.98	Pass
3	155	5775	-9.59	-7.37	6.02	0.32	-1.03	22.98	Pass

Note:

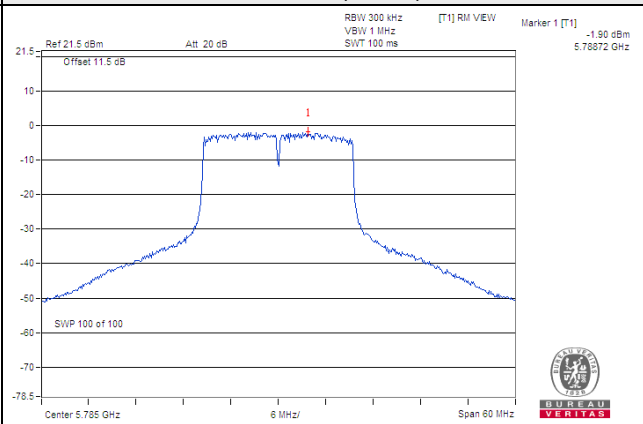
- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add $10 \log (N_{ANT})$ dB.
- Directional gain = $7.0 \text{ dBi} + 10\log(4) = 13.02\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (13.02 - 6) = 22.98\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

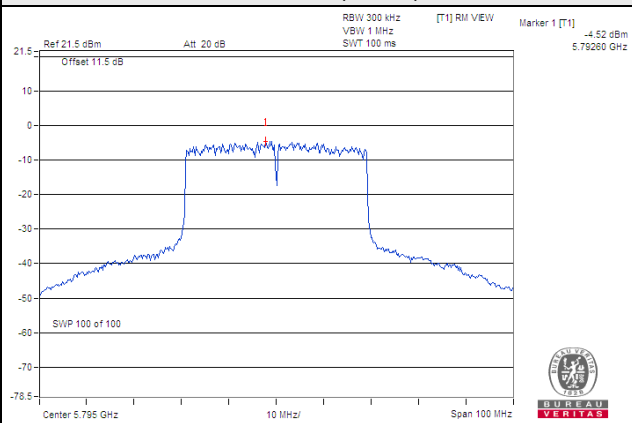
802.11a



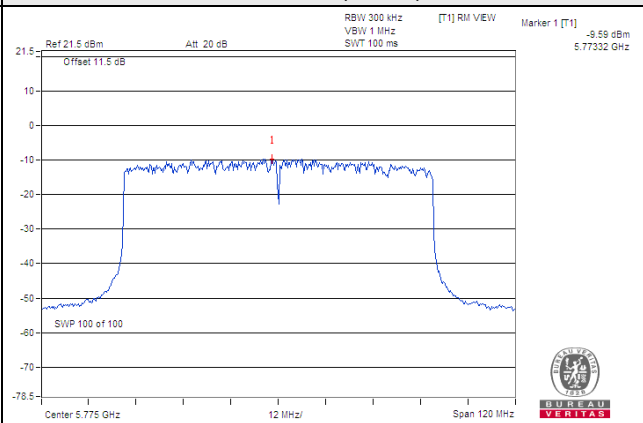
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



Scanning radio (Radio 3)

For U-NII-1 band:

802.11a

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	3.69	5.86	0.22	8.14	13.49	Pass
40	5200	5.49	6.21	0.22	9.09	13.49	Pass
48	5240	5.73	6.27	0.22	9.23	13.49	Pass

Note:

- 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.
- Directional gain = $6.5 \text{ dBi} + 10\log(2) = 9.51\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (9.51 - 6) = 13.49\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
36	5180	3.43	4.89	0.25	7.48	13.49	Pass
40	5200	4.79	6.32	0.25	8.88	13.49	Pass
48	5240	4.92	6.60	0.25	9.10	13.49	Pass

Note:

- 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.
- Directional gain = $6.5 \text{ dBi} + 10\log(2) = 9.51\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (9.51 - 6) = 13.49\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
38	5190	-5.94	-3.28	0.34	-1.06	13.49	Pass
46	5230	1.50	3.49	0.34	5.96	13.49	Pass

Note:

- 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.
- Directional gain = $6.5 \text{ dBi} + 10\log(2) = 9.51 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (9.51 - 6) = 13.49 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

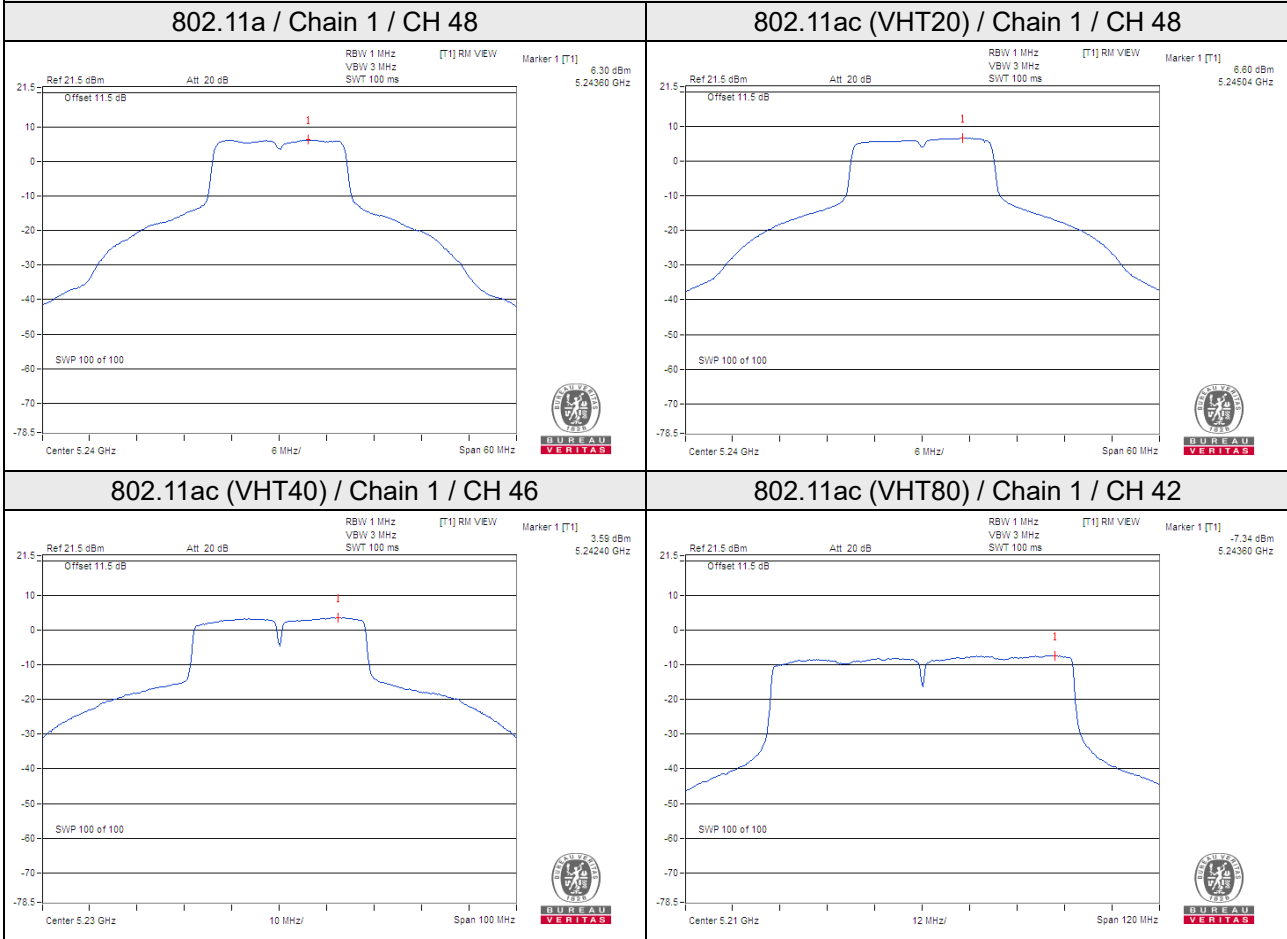
802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD with Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
42	5210	-9.07	-7.34	0.62	-4.49	13.49	Pass

Note:

- 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.
- Directional gain = $6.5 \text{ dBi} + 10\log(2) = 9.51 \text{ dBi} > 6 \text{ dBi}$, so the power density limit shall be reduced to $17 - (9.51 - 6) = 13.49 \text{ dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value



For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-3.86	-1.64	3.01	0.22	1.59	25.99	Pass
	157	5785	-3.18	-0.96	3.01	0.22	2.27	25.99	Pass
	165	5825	-3.86	-1.64	3.01	0.22	1.59	25.99	Pass
1	149	5745	-2.52	-0.30	3.01	0.22	2.93	25.99	Pass
	157	5785	-2.12	0.10	3.01	0.22	3.33	25.99	Pass
	165	5825	-2.64	-0.42	3.01	0.22	2.81	25.99	Pass

Note:

- 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.
- Directional gain = $7\text{dBi} + 10\log(2) = 10.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (10.01 - 6) = 25.99\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT20)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-4.14	-1.92	3.01	0.25	1.34	25.99	Pass
	157	5785	-3.50	-1.28	3.01	0.25	1.98	25.99	Pass
	165	5825	-3.99	-1.77	3.01	0.25	1.49	25.99	Pass
1	149	5745	-3.36	-1.14	3.01	0.25	2.12	25.99	Pass
	157	5785	-2.51	-0.29	3.01	0.25	2.97	25.99	Pass
	165	5825	-2.90	-0.68	3.01	0.25	2.58	25.99	Pass

Note:

- 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.
- Directional gain = $7\text{dBi} + 10\log(2) = 10.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (10.01 - 6) = 25.99\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-6.49	-4.27	3.01	0.34	-0.92	25.99	Pass
	159	5795	-6.33	-4.11	3.01	0.34	-0.76	25.99	Pass
1	151	5755	-5.63	-3.41	3.01	0.34	-0.06	25.99	Pass
	159	5795	-5.22	-3.00	3.01	0.34	0.35	25.99	Pass

Note:

- 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.
- Directional gain = $7\text{dBi} + 10\log(2) = 10.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (10.01 - 6) = 25.99\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

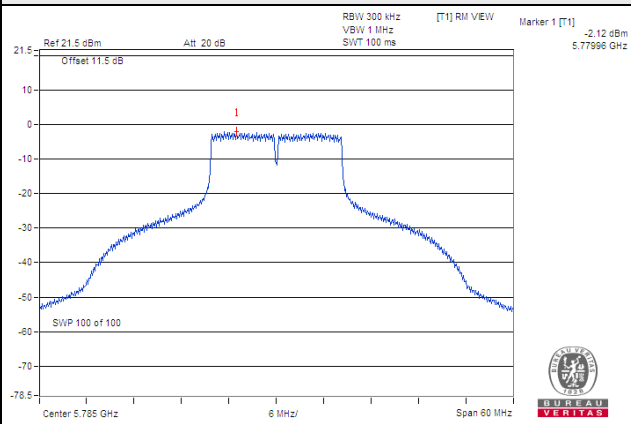
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-10.23	-8.01	3.01	0.62	-4.38	25.99	Pass
1	155	5775	-9.02	-6.80	3.01	0.62	-3.17	25.99	Pass

Note:

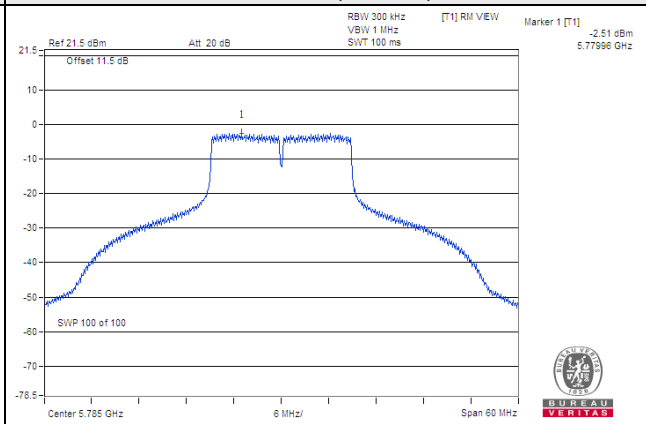
- Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add $10 \log (N_{ANT})$ dB.
- Directional gain = $7\text{dBi} + 10\log(2) = 10.01\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (10.01 - 6) = 25.99\text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

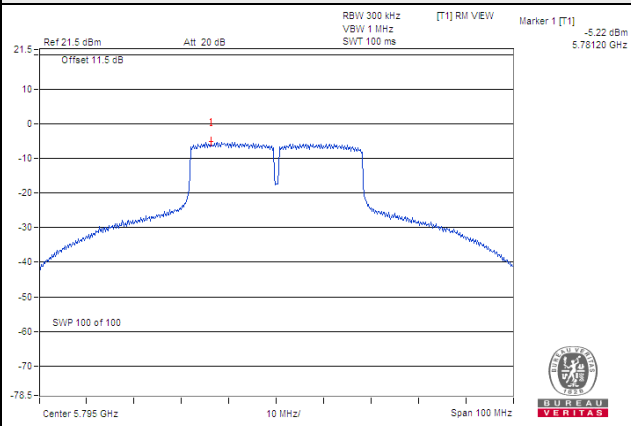
802.11a



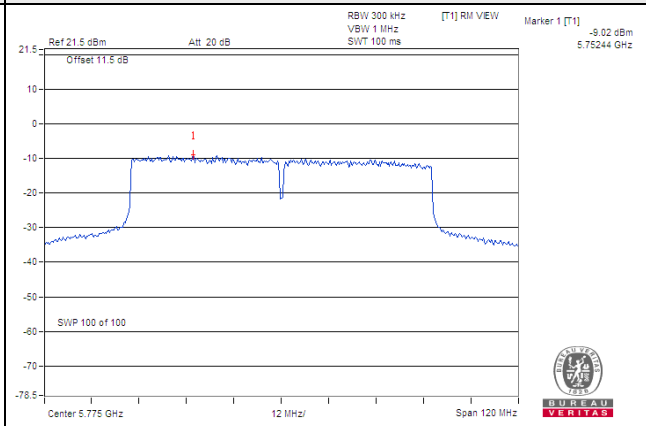
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

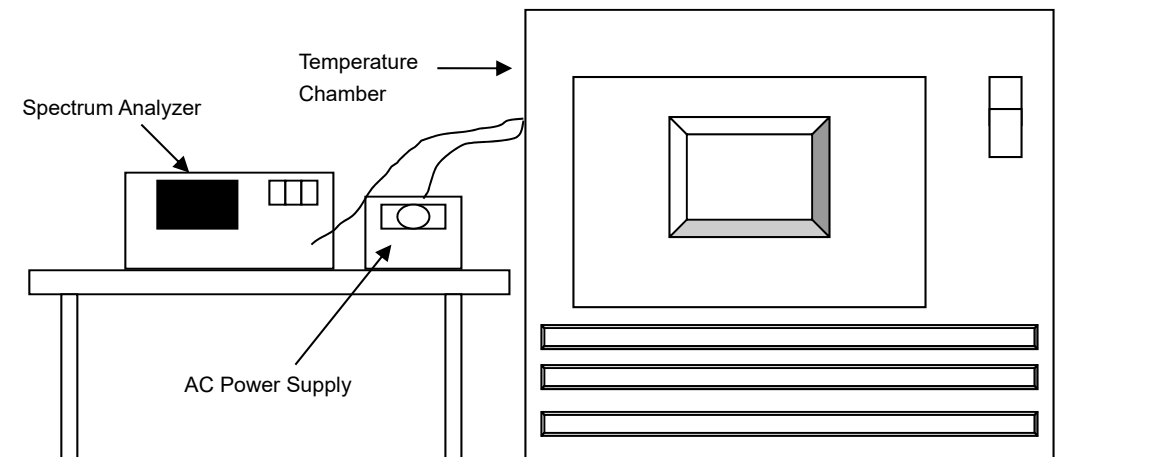


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 16, 2020	Sep. 15, 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 Exttech	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

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step d with every 10 degrees reduction until the lowest temperature achieved.
- 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

5G traffic radio (Radio 2)

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
60	120	5180.0046	PASS	5180.0012	PASS	5180.0009	PASS	5180.0004	PASS
50	120	5180.0234	PASS	5180.0242	PASS	5180.0214	PASS	5180.0254	PASS
40	120	5179.9825	PASS	5179.9795	PASS	5179.9802	PASS	5179.9831	PASS
30	120	5180.0071	PASS	5180.0078	PASS	5180.0061	PASS	5180.0072	PASS
20	120	5180.0254	PASS	5180.0261	PASS	5180.0216	PASS	5180.0253	PASS
10	120	5179.9854	PASS	5179.9857	PASS	5179.9863	PASS	5179.9843	PASS
0	120	5179.9949	PASS	5179.9974	PASS	5179.9993	PASS	5179.9976	PASS
-10	120	5180.0136	PASS	5180.0162	PASS	5180.0173	PASS	5180.0151	PASS
-20	120	5180.0184	PASS	5180.0163	PASS	5180.0199	PASS	5180.0153	PASS
-30	120	5179.9751	PASS	5179.9765	PASS	5179.9785	PASS	5179.9745	PASS

Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0256	PASS	5180.0257	PASS	5180.0224	PASS	5180.0260	PASS
	120	5180.0254	PASS	5180.0261	PASS	5180.0216	PASS	5180.0253	PASS
	102	5180.0246	PASS	5180.0257	PASS	5180.0222	PASS	5180.0250	PASS

Scanning radio (Radio 3)

Frequency Stability Versus Temp.									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
60	120	5180.0075	PASS	5180.0044	PASS	5180.0064	PASS	5180.0049	PASS
50	120	5180.0014	PASS	5180.0010	PASS	5180.0022	PASS	5180.0029	PASS
40	120	5179.9873	PASS	5179.9887	PASS	5179.9898	PASS	5179.9871	PASS
30	120	5180.0191	PASS	5180.0188	PASS	5180.0207	PASS	5180.0195	PASS
20	120	5179.9922	PASS	5179.9922	PASS	5179.9930	PASS	5179.9919	PASS
10	120	5179.9765	PASS	5179.9809	PASS	5179.9805	PASS	5179.9797	PASS
0	120	5179.9987	PASS	5179.9970	PASS	5179.9993	PASS	5179.9967	PASS
-10	120	5179.9943	PASS	5179.9943	PASS	5179.9935	PASS	5179.9951	PASS
-20	120	5180.0221	PASS	5180.0218	PASS	5180.0235	PASS	5180.0201	PASS
-30	120	5179.9831	PASS	5179.9809	PASS	5179.9841	PASS	5179.9795	PASS

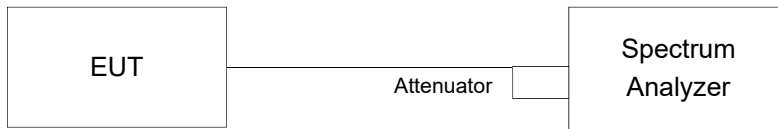
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5179.9912	PASS	5179.9919	PASS	5179.9925	PASS	5179.9917	PASS
	120	5179.9922	PASS	5179.9922	PASS	5179.993	PASS	5179.9919	PASS
	102	5179.9928	PASS	5179.9928	PASS	5179.9922	PASS	5179.9927	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

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.7.5 Deviation from Test Standard

No deviation.

4.7.6 EUT Operating Condition

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

4.7.7 Test Results

5G traffic radio (Radio 2)

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
149	5745	15.94	16.40	16.13	16.33	0.50	Pass
157	5785	16.37	16.37	16.09	16.35	0.50	Pass
165	5825	16.37	16.35	16.08	16.33	0.50	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	19.05	18.88	18.57	18.91	0.50	Pass
157	5785	18.57	18.98	18.90	18.88	0.50	Pass
165	5825	18.40	18.54	18.76	18.95	0.50	Pass

802.11ax (HE40)

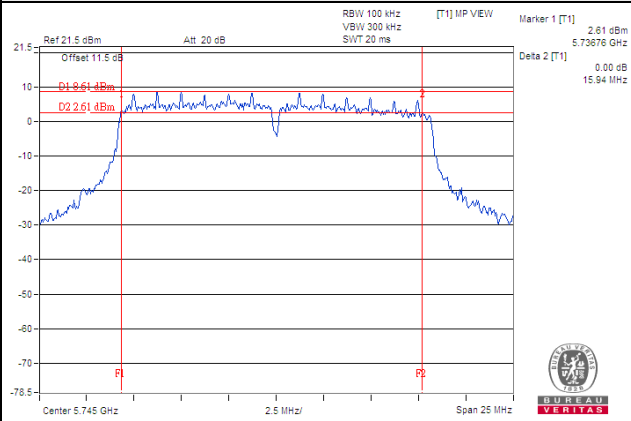
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
151	5755	37.58	37.76	38.00	37.90	0.50	Pass
159	5795	37.67	37.83	37.87	37.62	0.50	Pass

802.11ax (HE80)

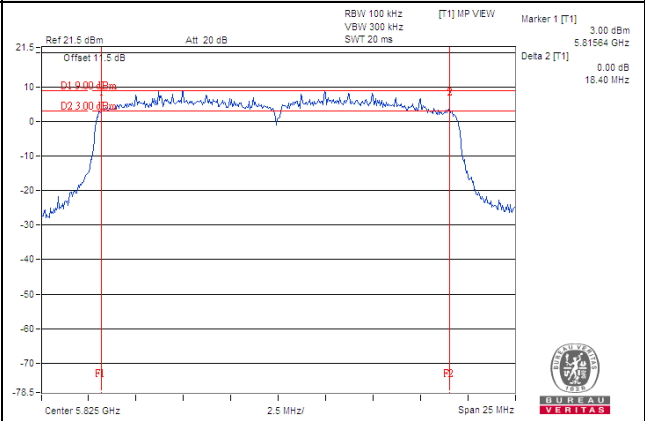
Channel	Frequency (MHz)	6dB Bandwidth (MHz)				Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1	Chain 2	Chain 3		
155	5775	76.62	75.76	77.10	77.64	0.50	Pass

Spectrum Plot of Worst Value

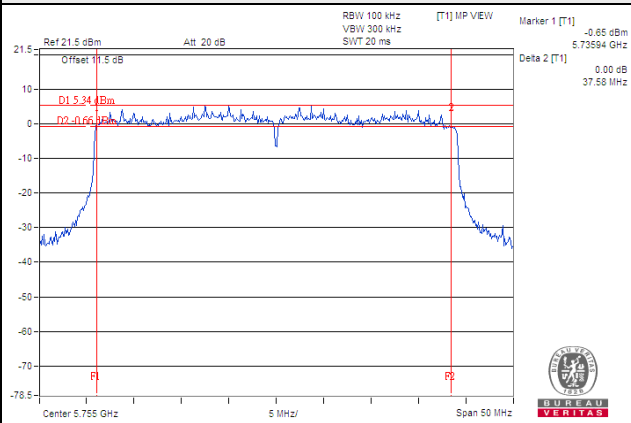
802.11a



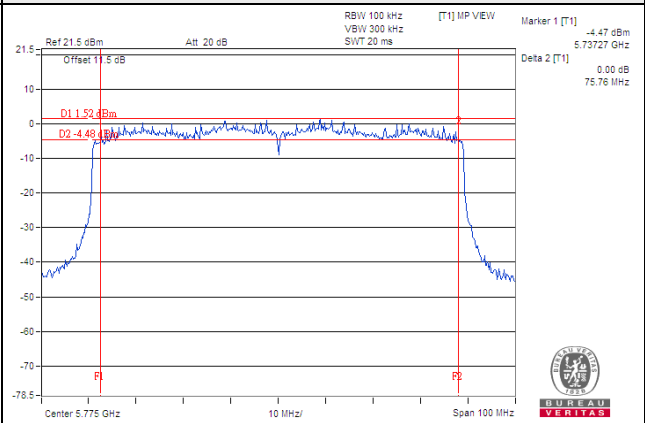
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



Scanning radio (Radio 3)

802.11a

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

802.11ac (VHT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	17.58	17.62	0.5	Pass
157	5785	17.59	17.59	0.5	Pass
165	5825	17.60	17.61	0.5	Pass

802.11ac (VHT40)

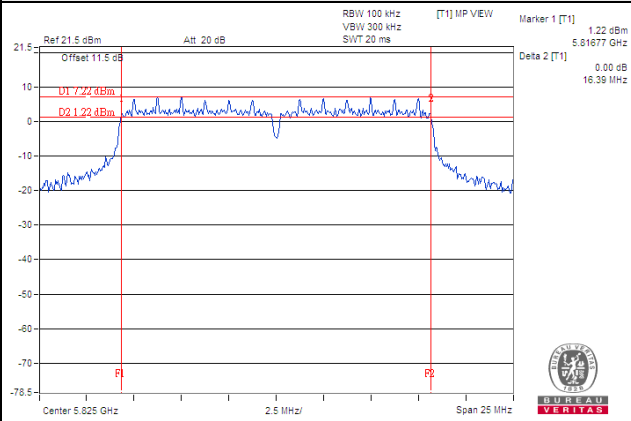
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	36.40	36.10	0.5	Pass
159	5795	36.46	36.18	0.5	Pass

802.11ac (VHT80)

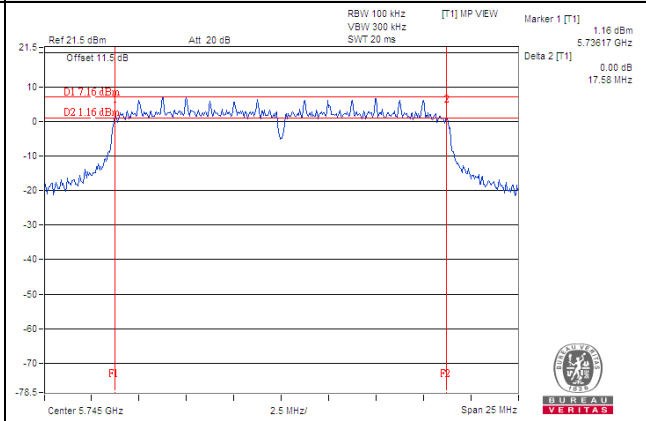
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	73.31	73.43	0.5	Pass

Spectrum Plot of Worst Value

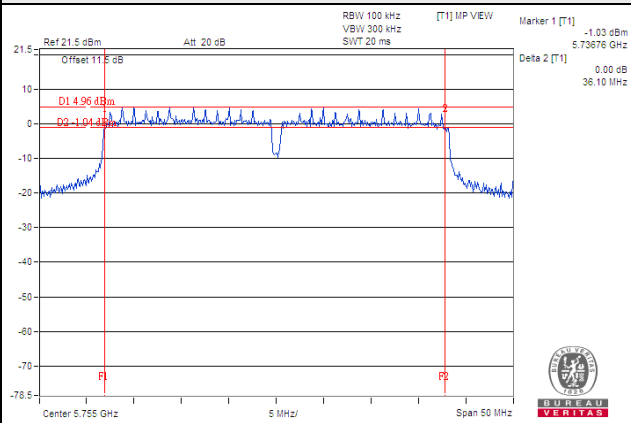
802.11a



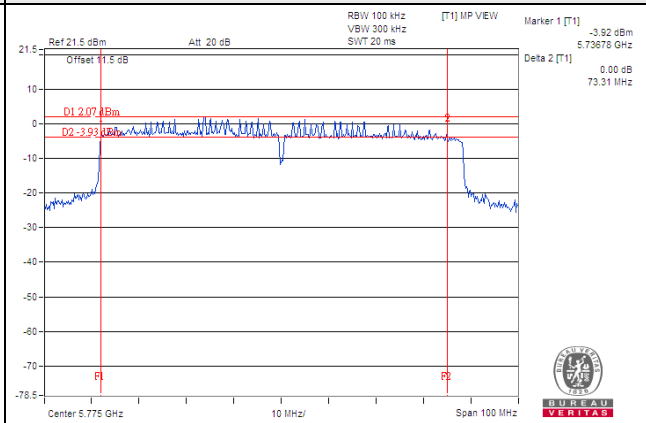
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)



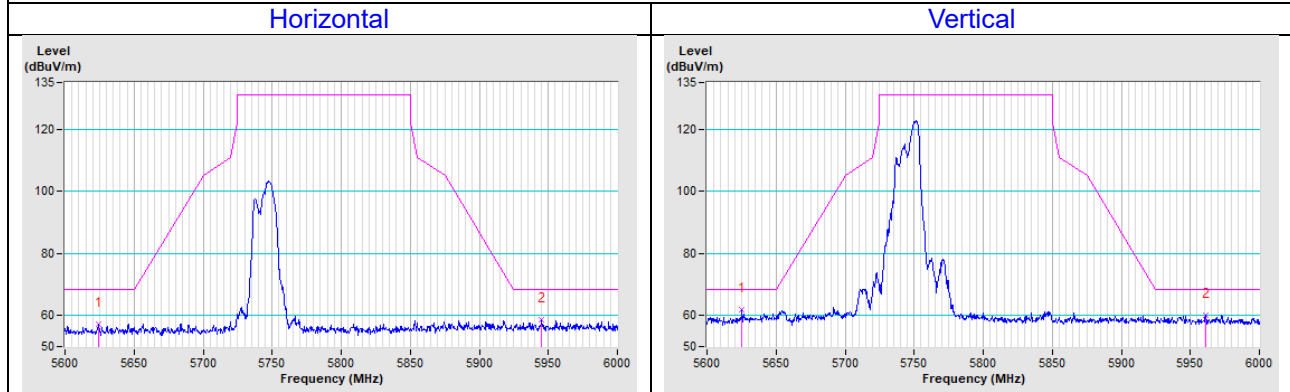
5 Pictures of Test Arrangements

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

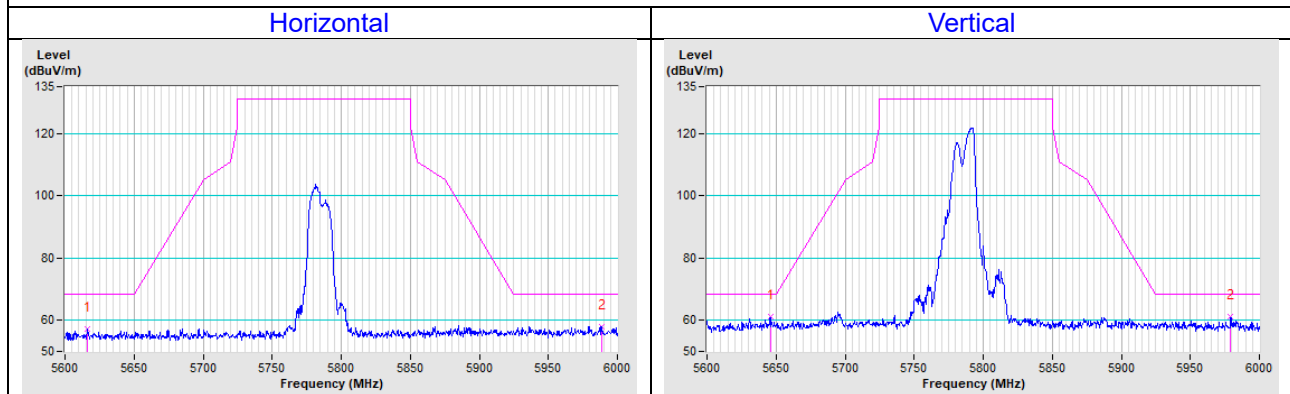
Annex A - Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

5G traffic radio (Radio 2)

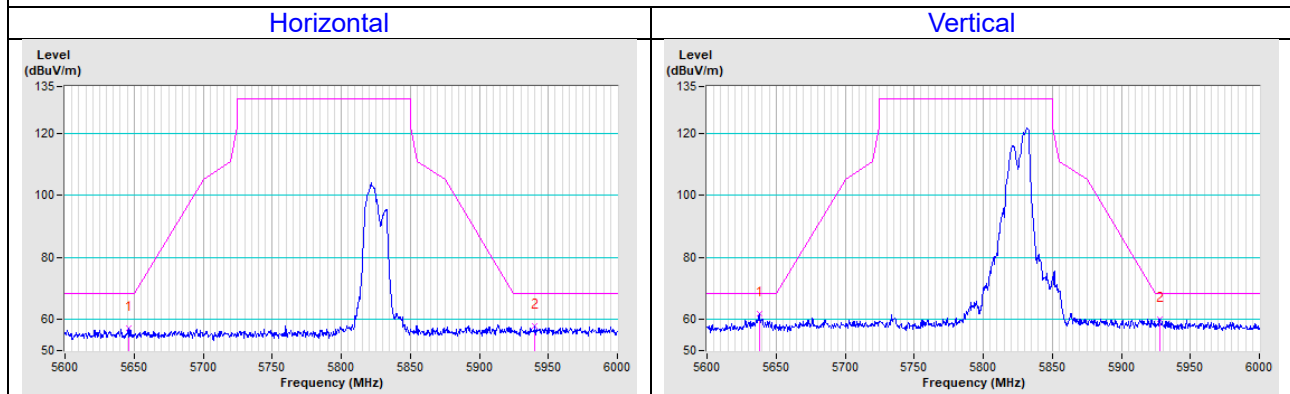
802.11a CH 149 : 5745 MHz



802.11a CH 157 : 5785 MHz

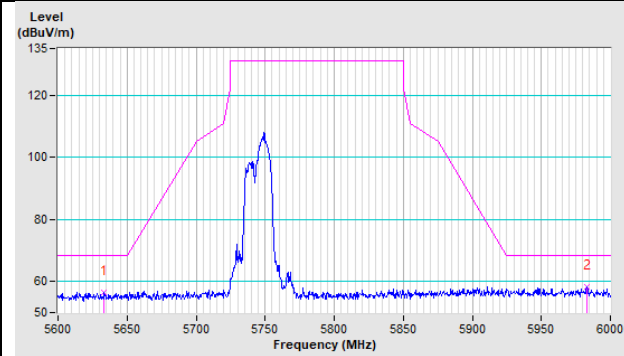


802.11a CH 165 : 5825 MHz

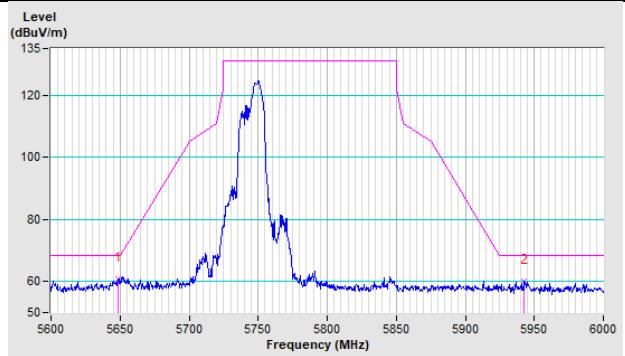


802.11ax (HE20) CH 149 : 5745 MHz

Horizontal

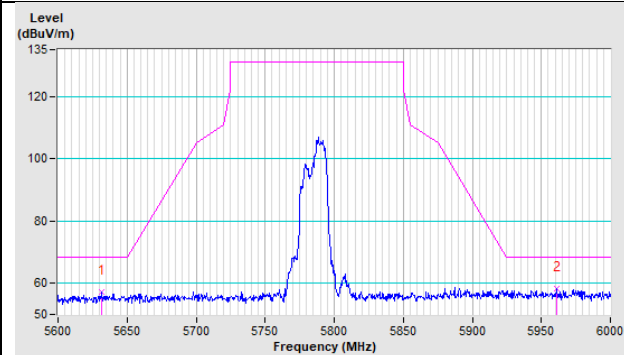


Vertical

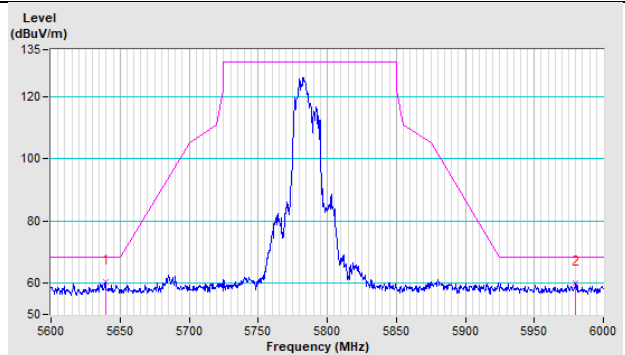


802.11ax (HE20) CH 157 : 5785 MHz

Horizontal

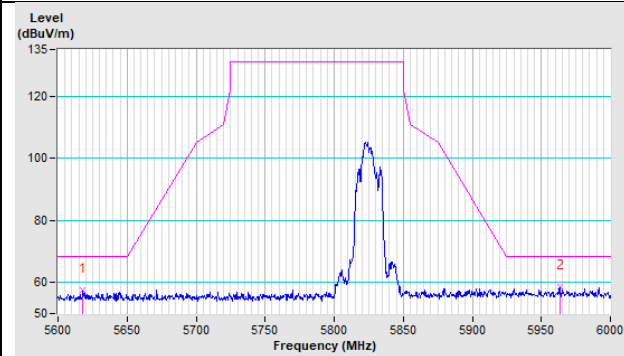


Vertical

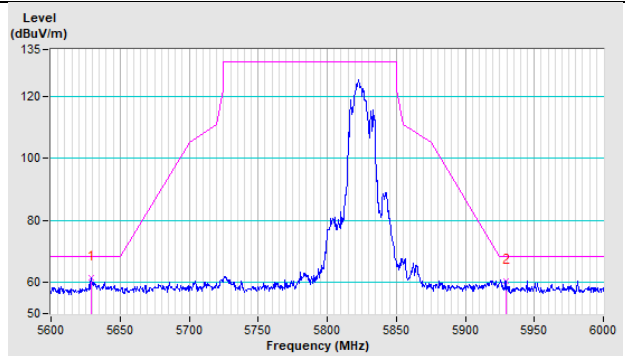


802.11ax (HE20) CH 165 : 5825 MHz

Horizontal

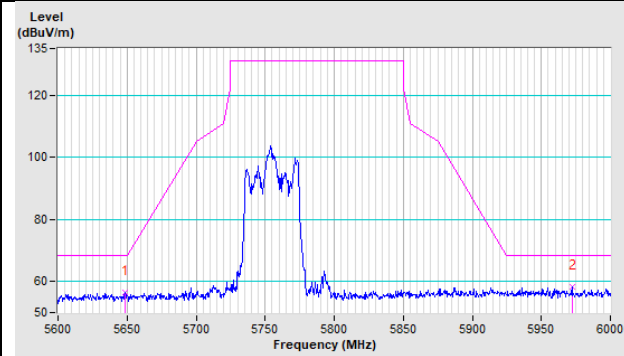


Vertical

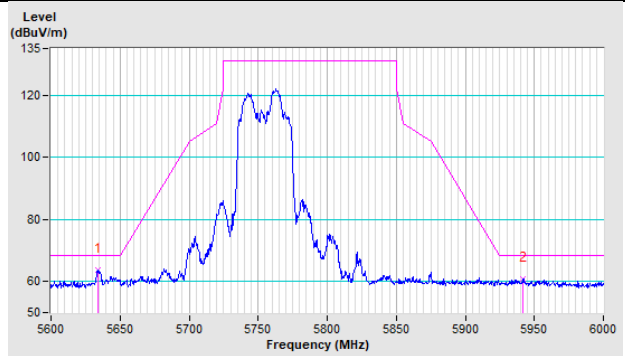


802.11ax (HE40) CH 151 : 5755 MHz

Horizontal

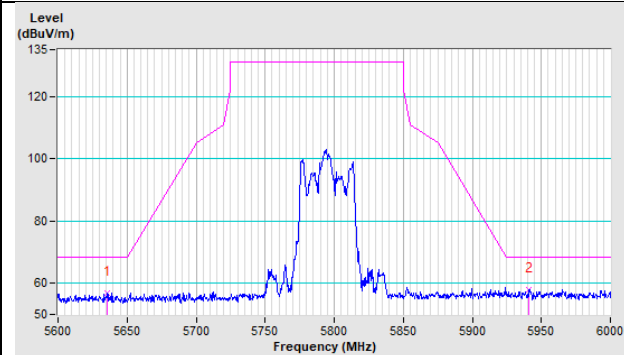


Vertical

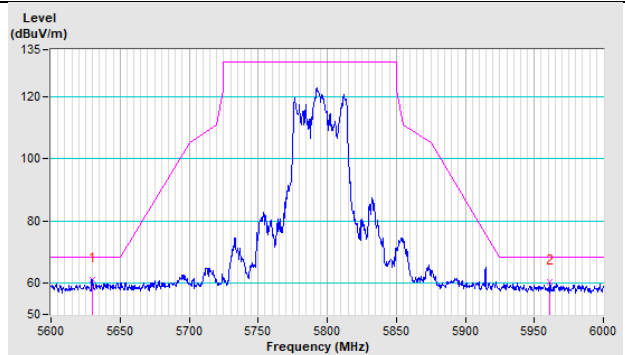


802.11ax (HE40) CH 159 : 5795 MHz

Horizontal

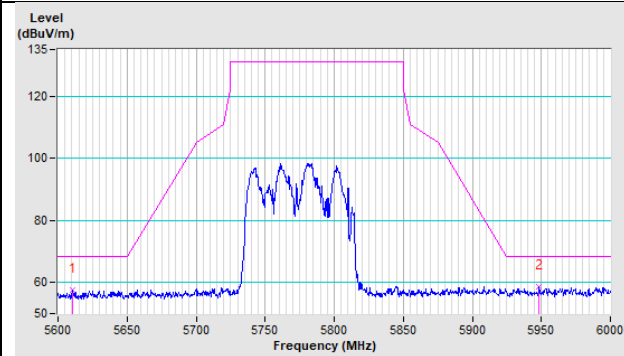


Vertical

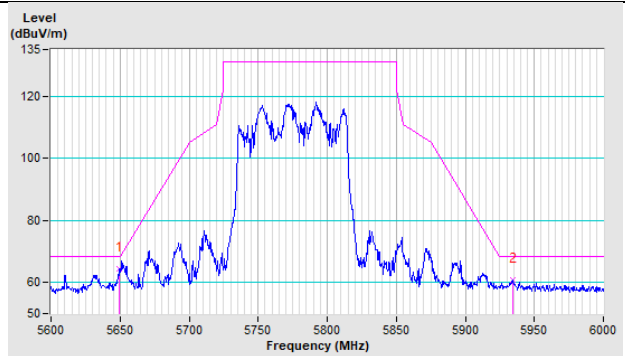


802.11ax (HE80) CH 155 : 5775 MHz

Horizontal

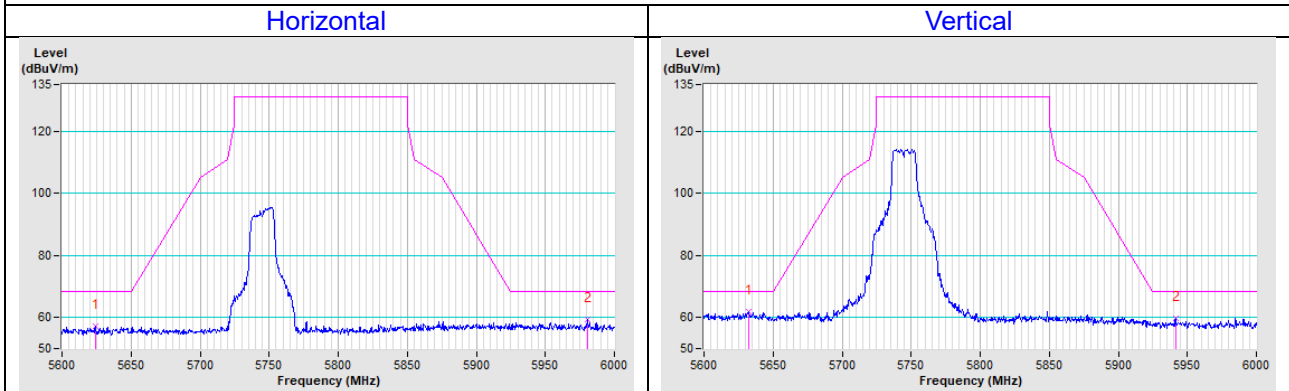


Vertical

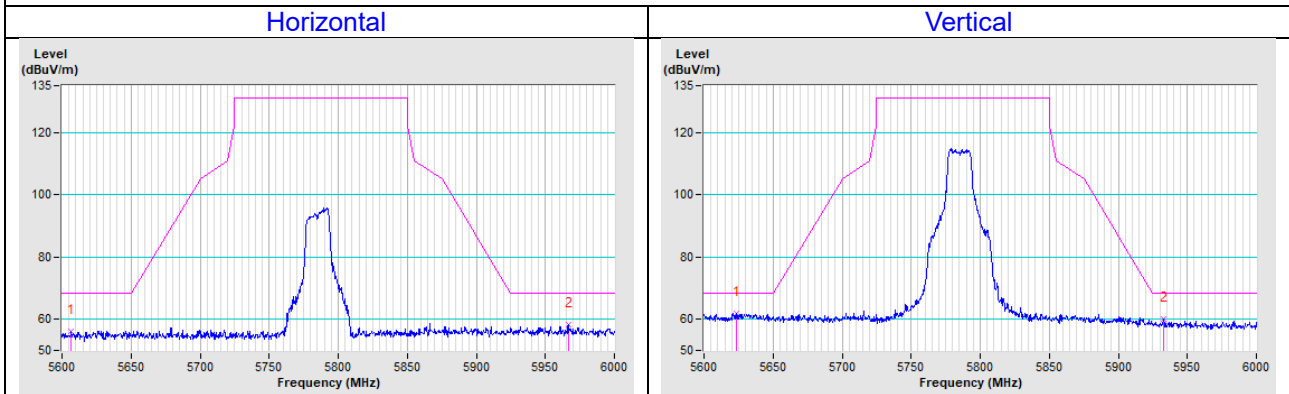


Scanning radio (Radio 3)

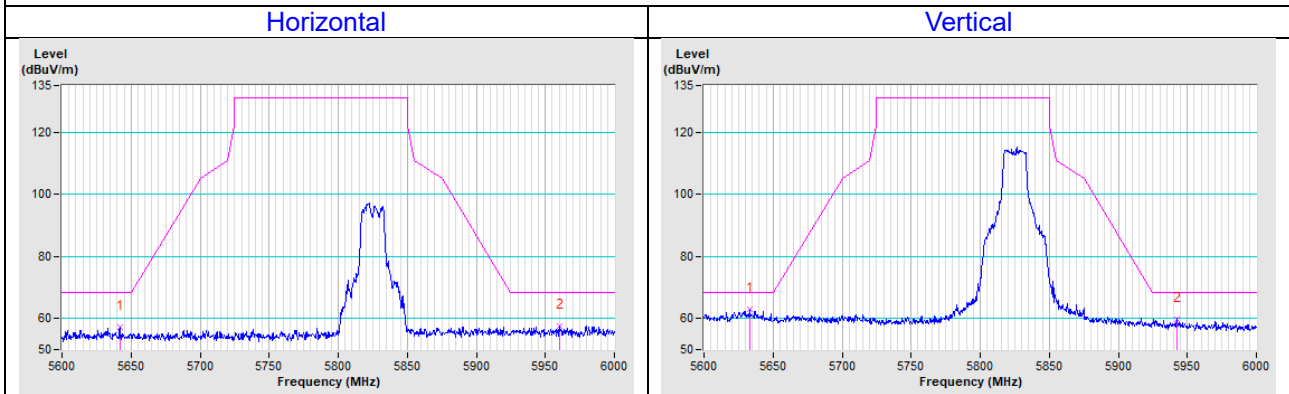
802.11a CH 149 : 5745 MHz



802.11a CH 157 : 5785 MHz

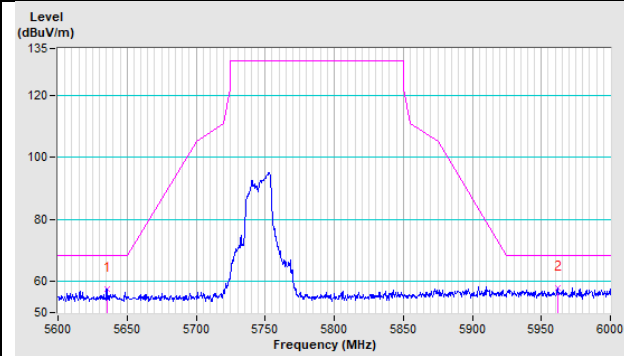


802.11a CH 165 : 5825 MHz

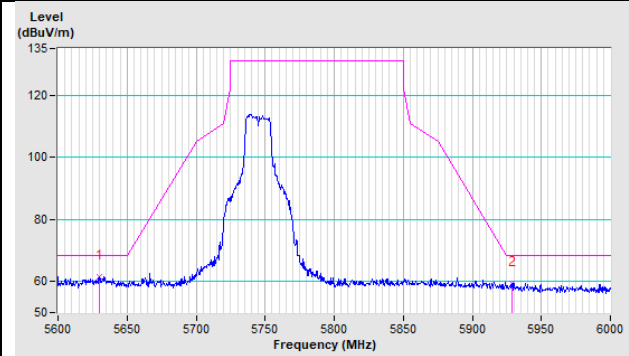


802.11ac (VHT20) CH 149 : 5745 MHz

Horizontal

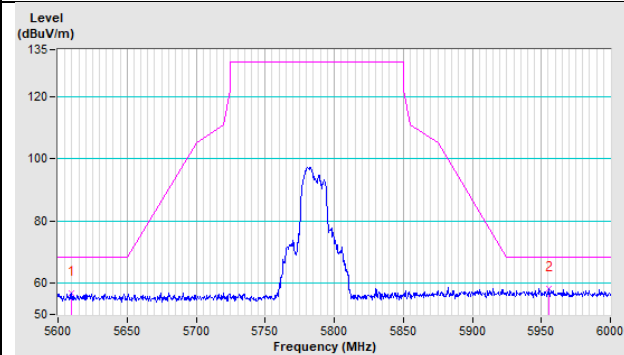


Vertical

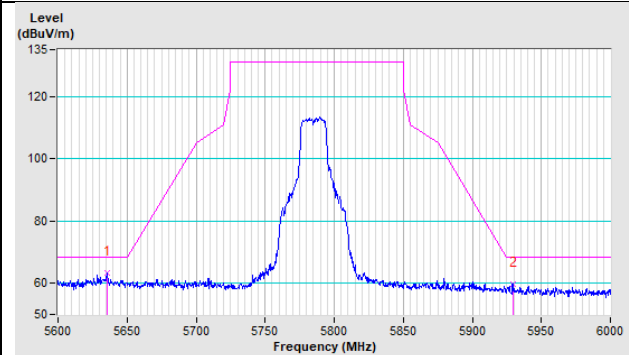


802.11ac (VHT20) CH 157 : 5785 MHz

Horizontal

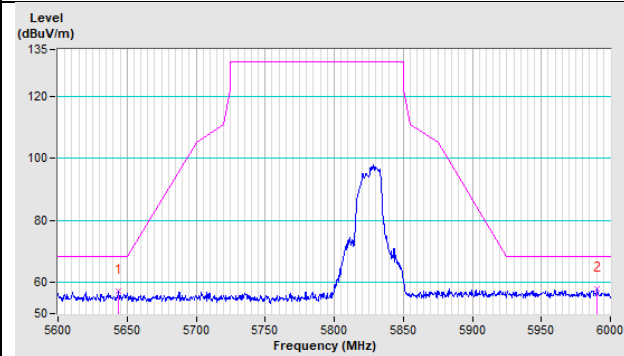


Vertical

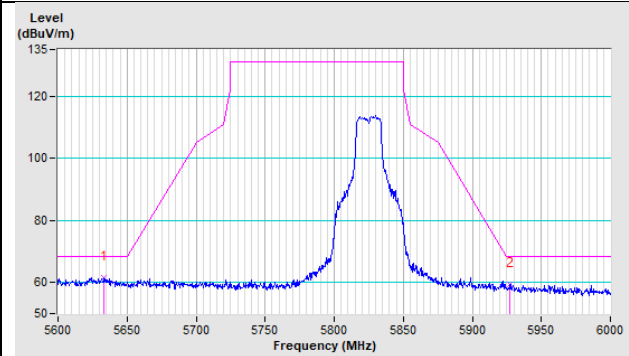


802.11ac (VHT20) CH 165 : 5825 MHz

Horizontal

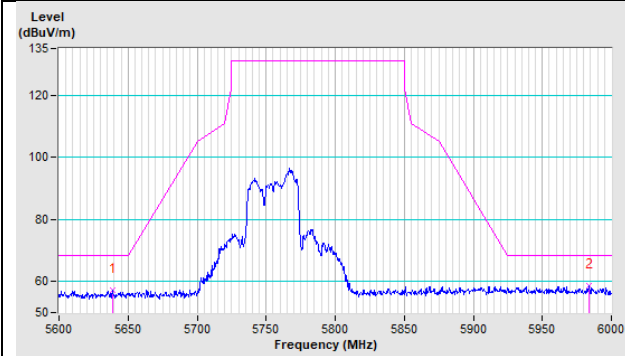


Vertical

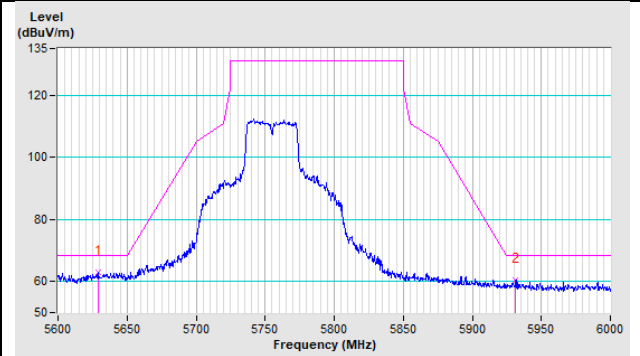


802.11ac (VHT40) CH 151 : 5755 MHz

Horizontal

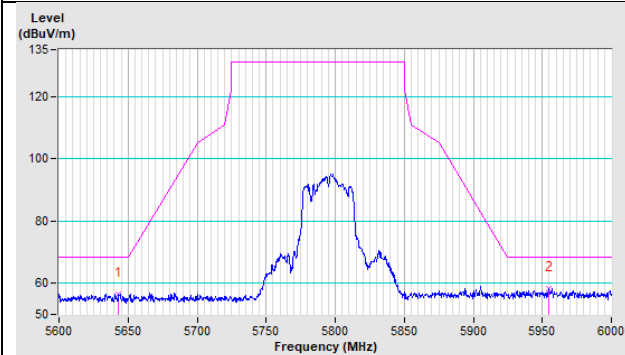


Vertical

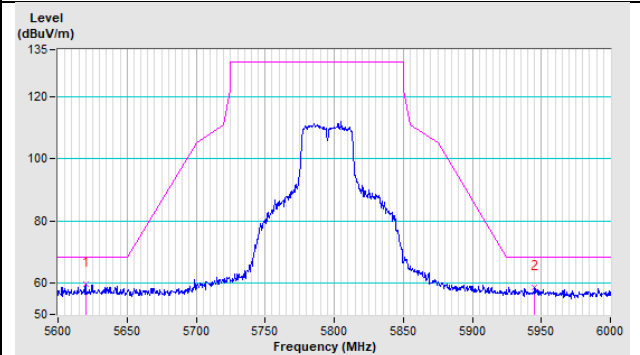


802.11ac (VHT40) CH 159 : 5795 MHz

Horizontal

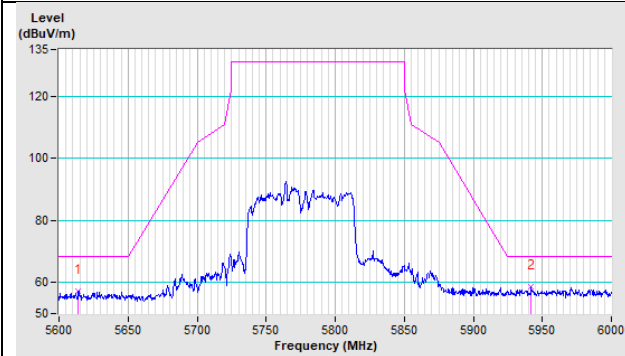


Vertical

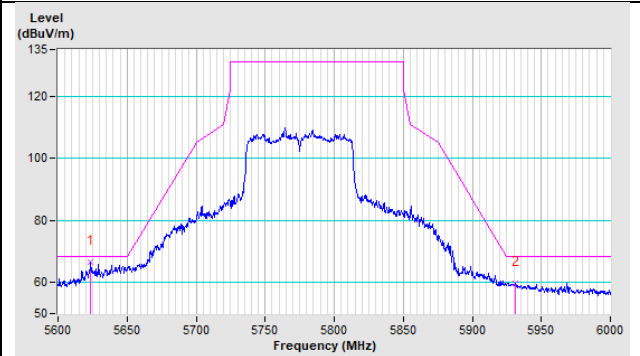


802.11ac (VHT80) CH 155 : 5775 MHz

Horizontal

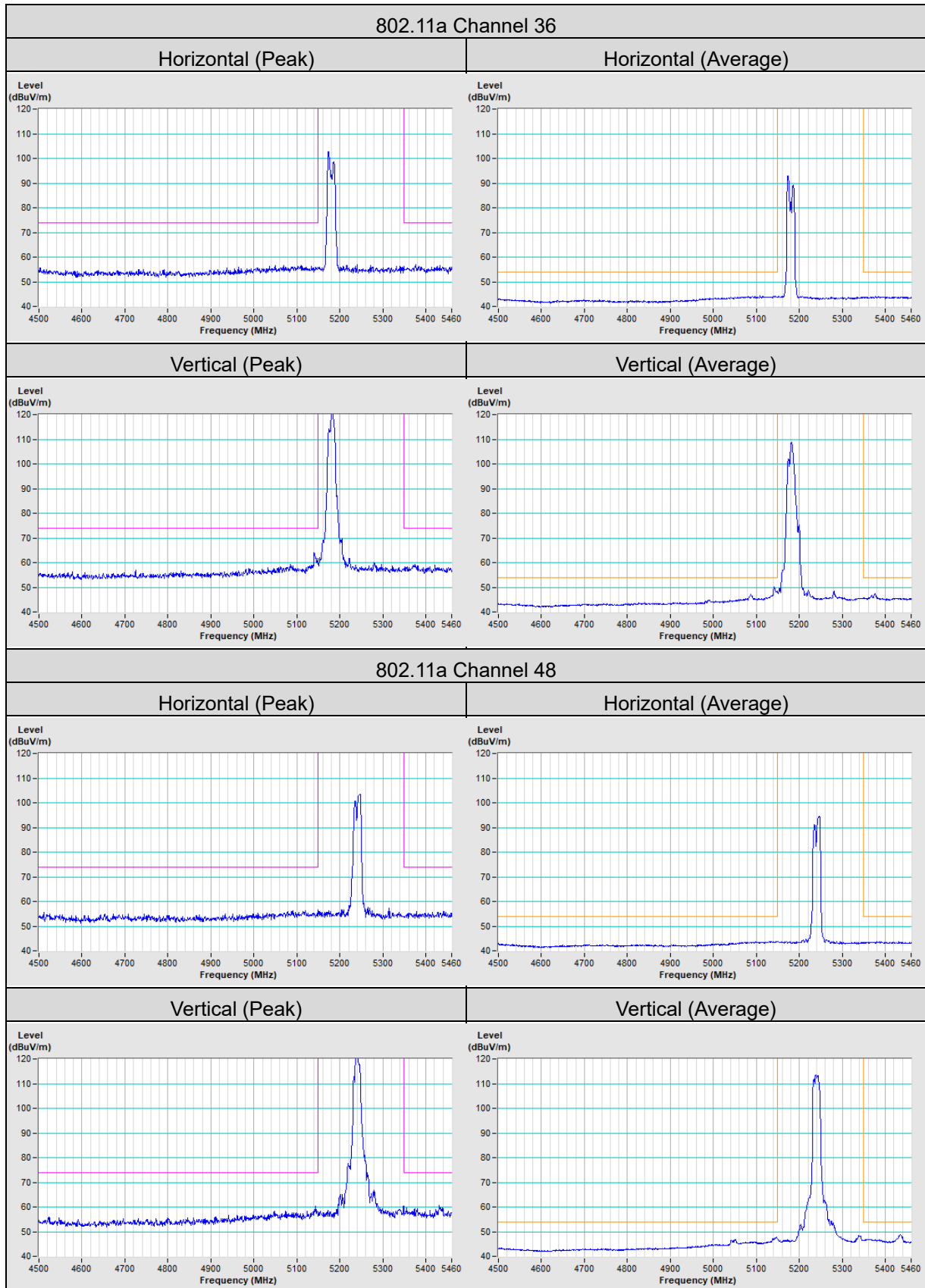


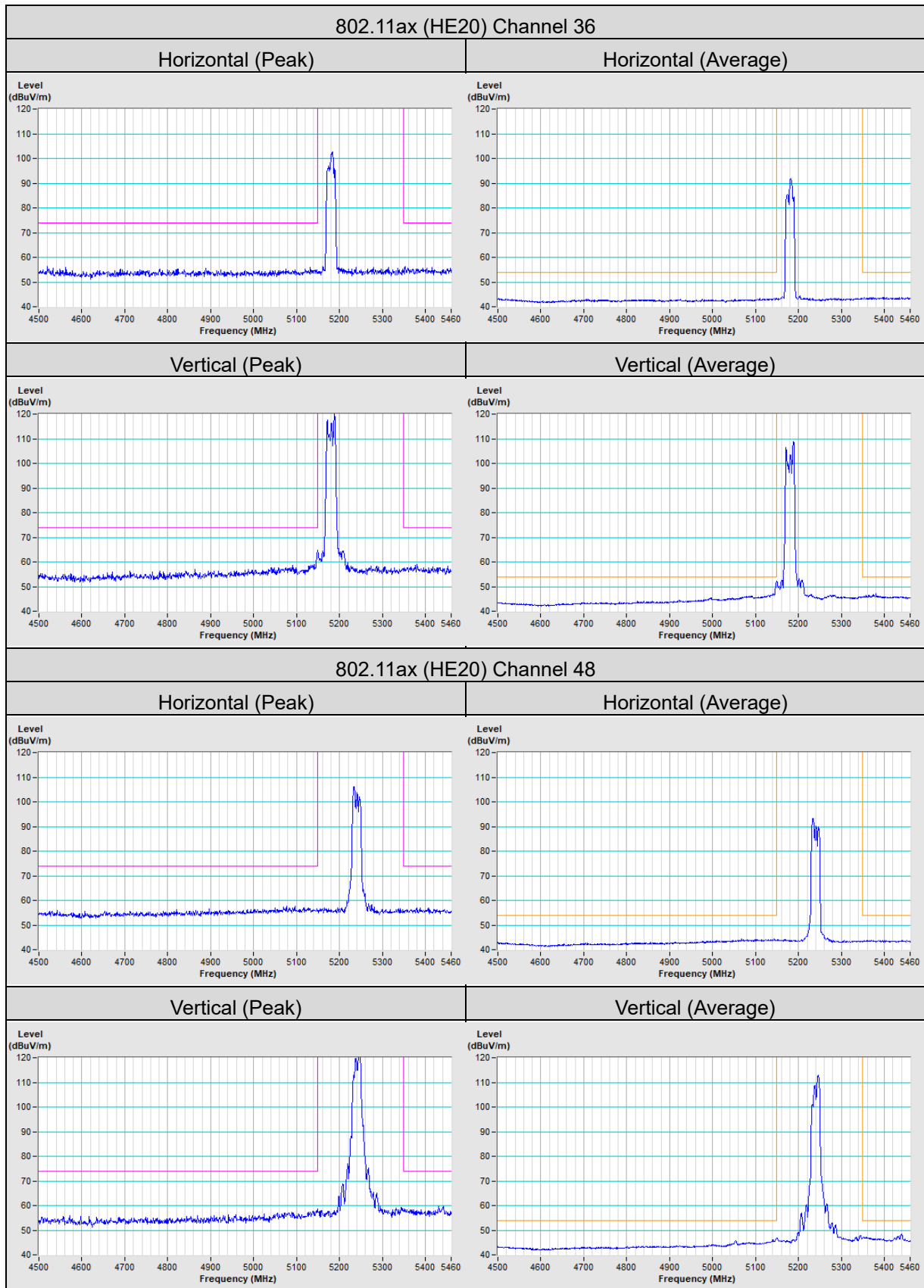
Vertical

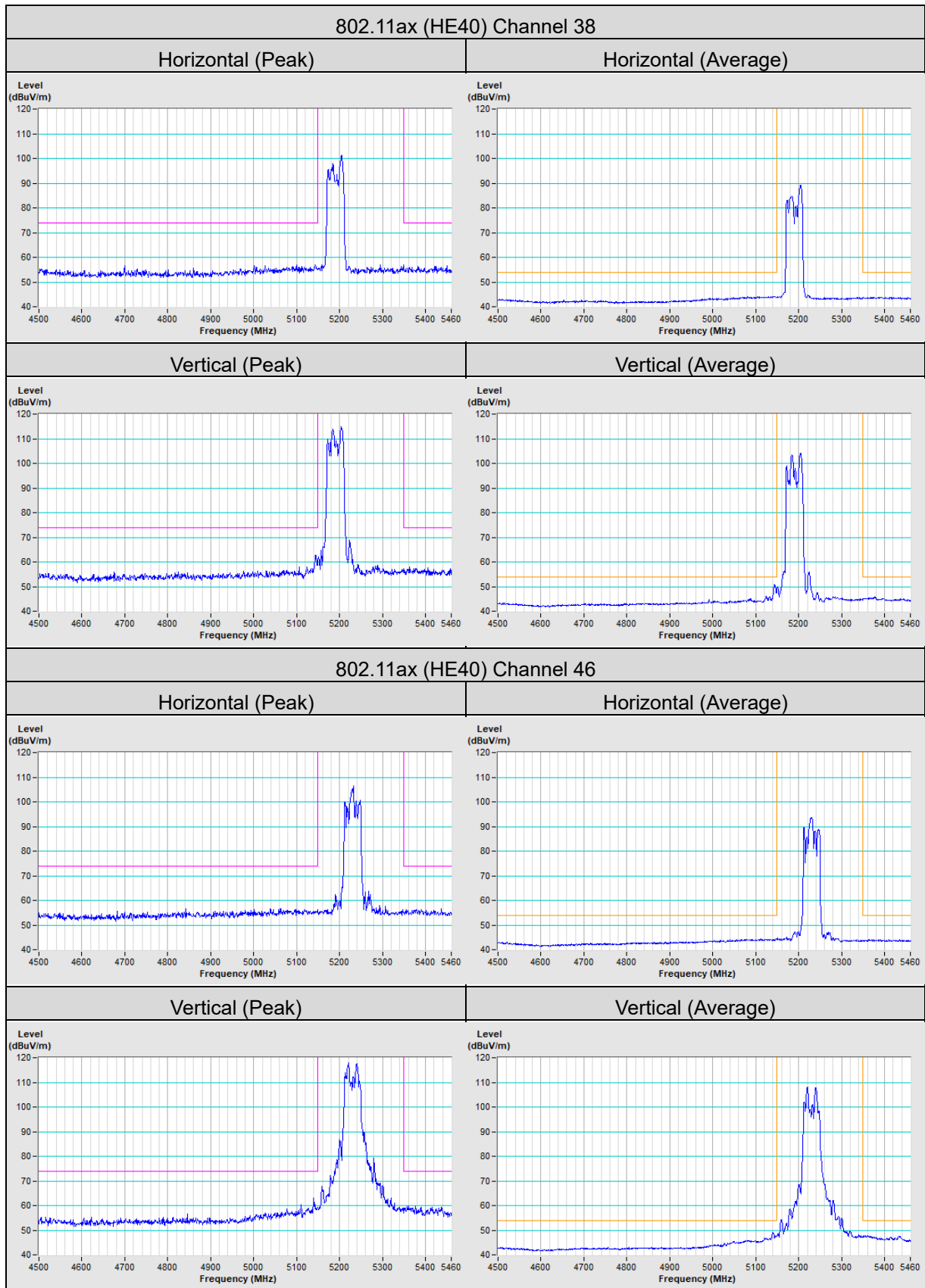


Annex B - Band Edge Measurement

5G traffic radio (Radio 2)

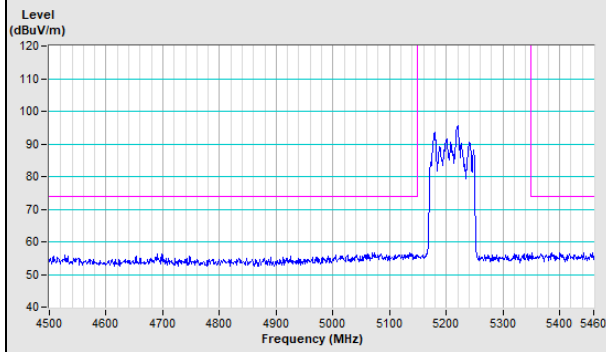




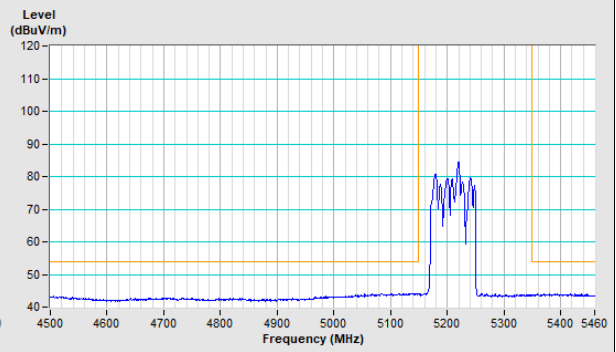


802.11ax (HE80) Channel 42

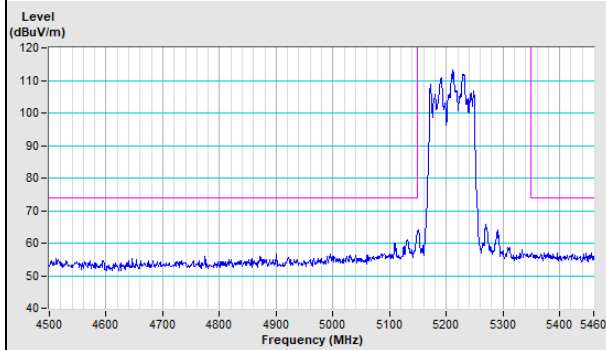
Horizontal (Peak)



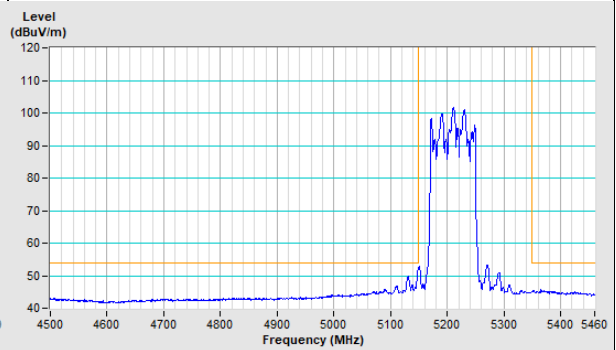
Horizontal (Average)



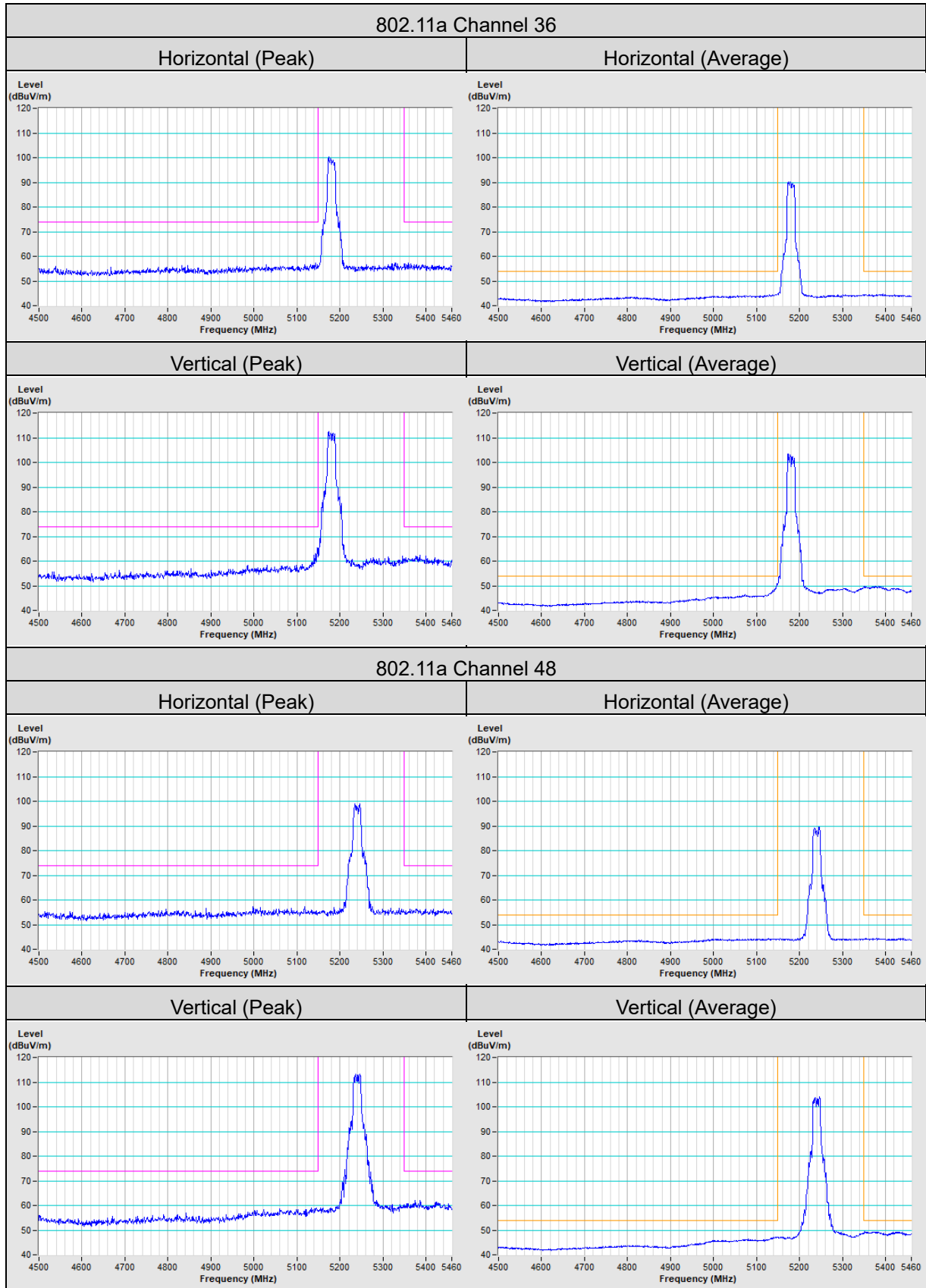
Vertical (Peak)



Vertical (Average)

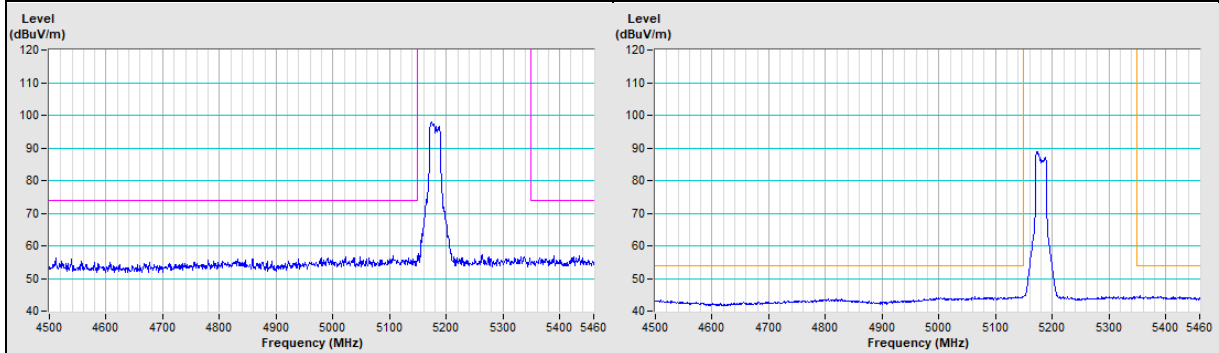


Scanning radio (Radio 3)

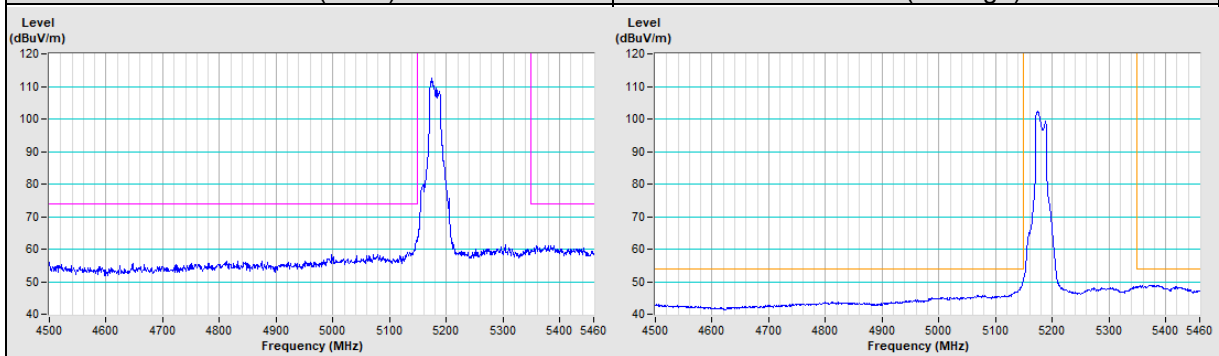


802.11ac (VHT20) Channel 36

Horizontal (Peak)	Horizontal (Average)
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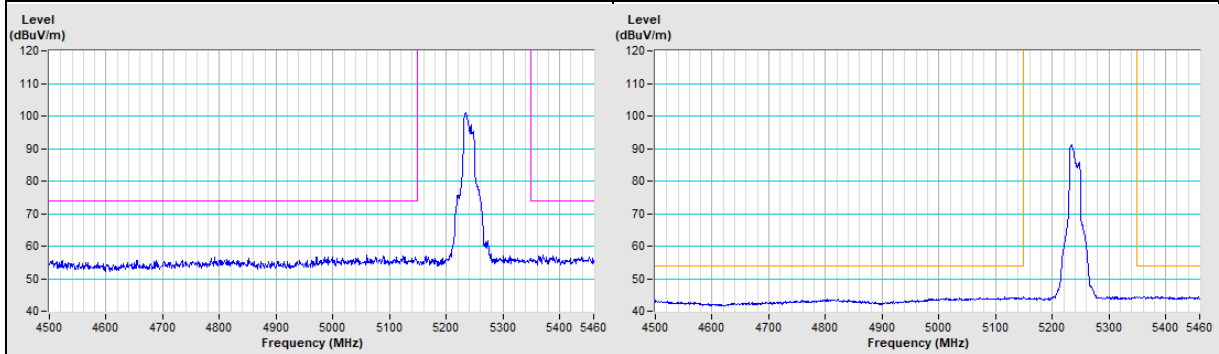


Vertical (Peak)	Vertical (Average)
------------------------	---------------------------

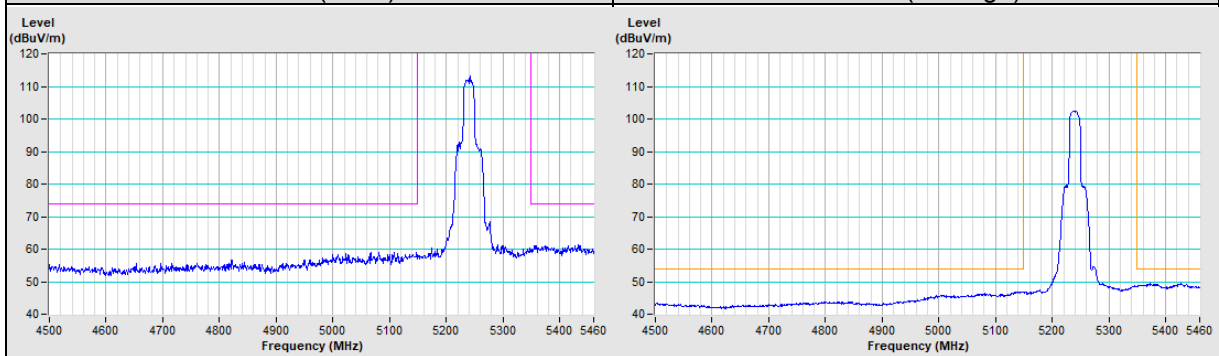


802.11ac (VHT20) Channel 48

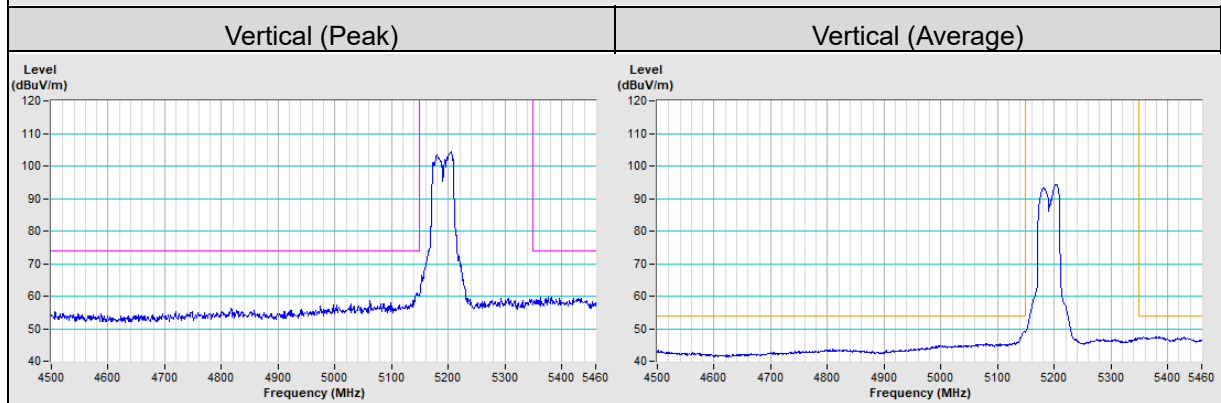
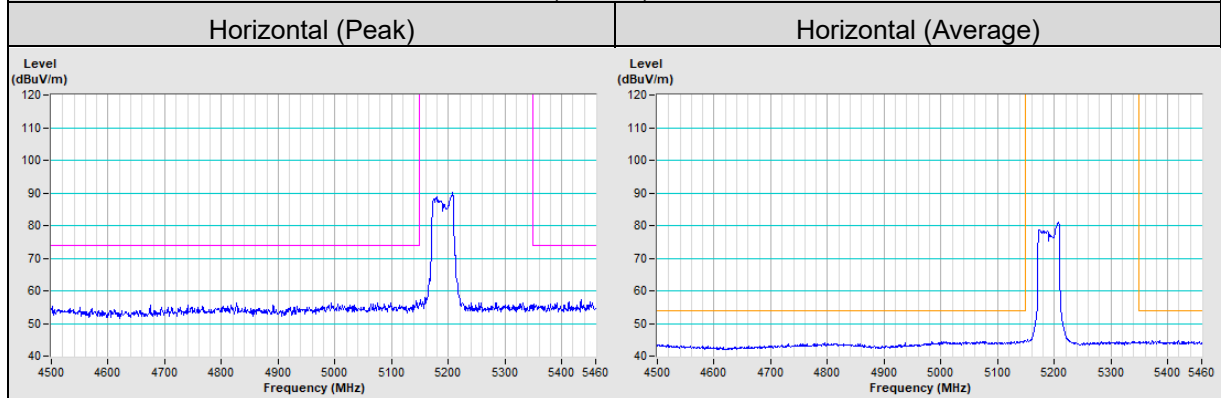
Horizontal (Peak)	Horizontal (Average)
--------------------------	-----------------------------



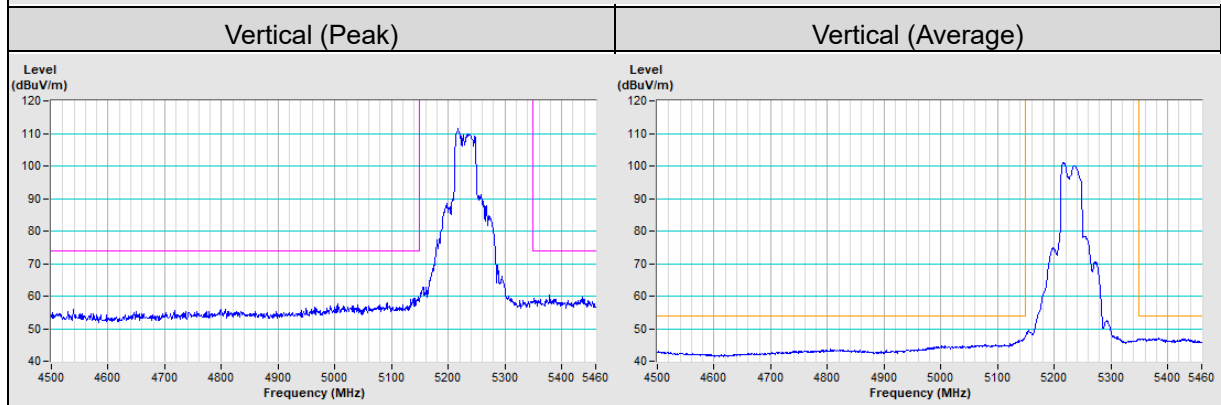
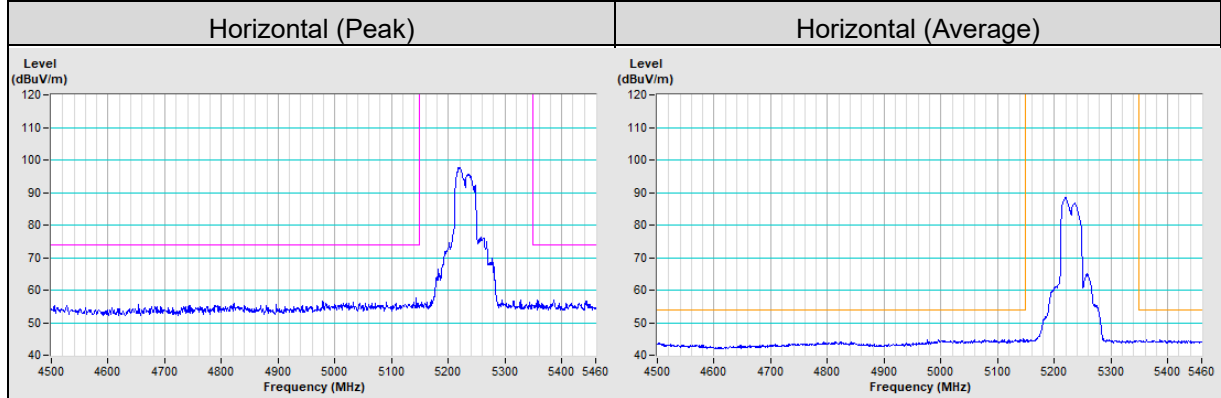
Vertical (Peak)	Vertical (Average)
------------------------	---------------------------

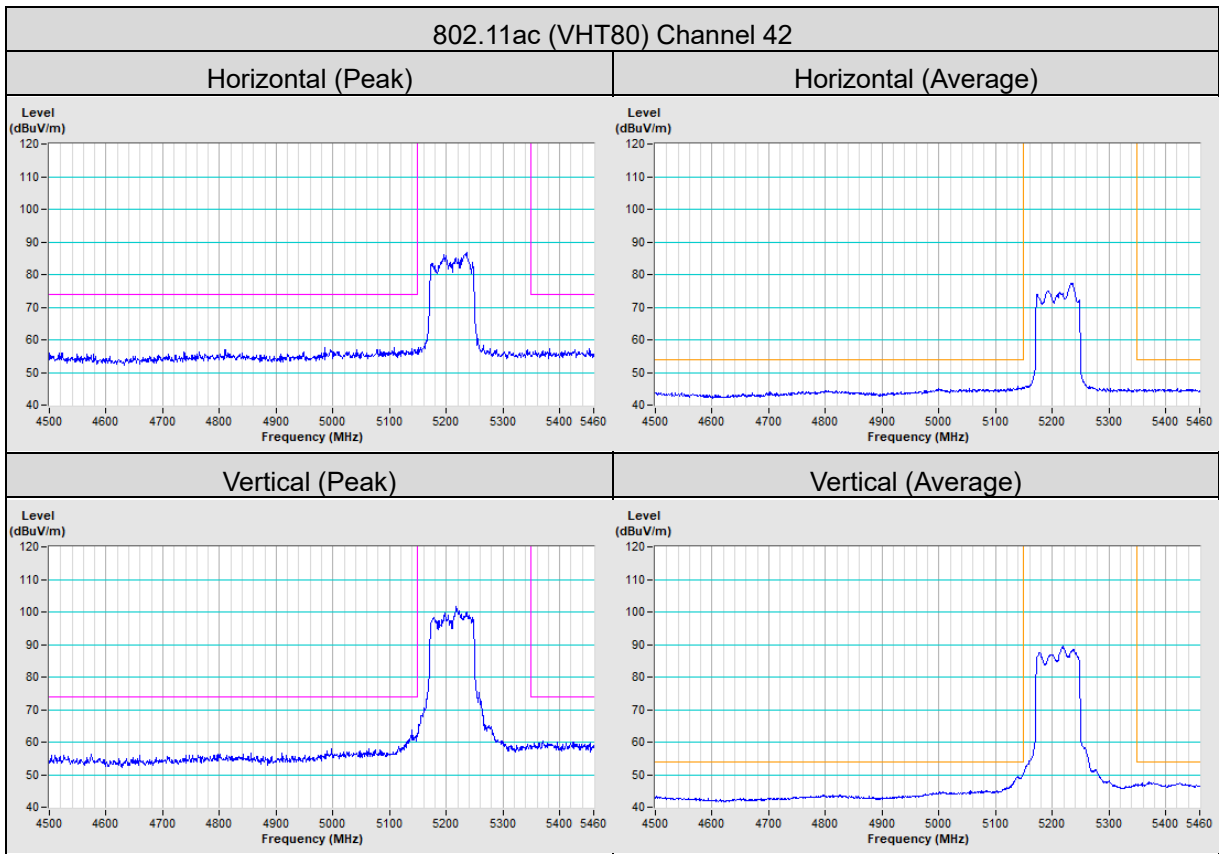


802.11ac (VHT40) Channel 38



802.11ac (VHT40) Channel 46





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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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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