

FCC Test Report

Report No.: RF200115C20-1

FCC ID: A8J-EWS357APV3

Test Model: EWS357AP v3

Series Model: ECW620 v2, ECW220 v2 (refer to item 3.1 for more details)

Received Date: Jan. 15, 2020

Test Date: Feb. 6 to Mar. 5, 2020

Issued Date: Apr. 1, 2020

Applicant: EnGenius Technologies

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**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
RF200115C20-1	Original release	Apr. 1, 2020

1 Certificate of Conformity

Product: 802.11AX Indoor Ceiling Mount Access Point

Brand: EnGenius

Test Model: EWS357AP v3

Series Model: ECW620 v2, ECW220 v2 (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: EnGenius Technologies

Test Date: Feb. 6 to Mar. 5, 2020

Standards: 47 CFR FCC Part 15, Subpart E (Section 15.407)
ANSI C63.10:2013

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

Prepared by : Annie Chang, **Date:** Apr. 1, 2020
Annie Chang / Senior Specialist

Approved by : Rex Lai, **Date:** Apr. 1, 2020
Rex Lai / Associate Technical Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -6.47dB at 0.46936MHz.
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 -0.4dB at 50.78MHz.
15.407(a)(1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a)(1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is IPEX not a standard connector.

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	2.94 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.04 dB
	30MHz ~ 200MHz	3.86 dB
	200MHz ~ 1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	802.11AX Indoor Ceiling Mount Access Point
Brand	EnGenius
Test Model	EWS357AP v3
Series Model	ECW620 v2, ECW220 v2
Model Difference	Refer to note for more details
Sample Status	Engineering sample
Power Supply Rating	12Vdc from Adapter 54Vdc from PoE
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK for OFDM 1024QAM for OFDMA
Modulation Technology	OFDM, OFDMA
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n (HT20/40): up to MCS15 802.11ac (VHT20/40/80): up to MCS17 802.11ax: up to MCS11
Operating Frequency	5180 ~ 5240MHz, 5745 ~ 5825MHz
Number of Channel	<u>5GHz traffic radio:</u> 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 <u>Scanning radio:</u> 5180 ~ 5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1

Output Power	5180 ~ 5240MHz: 5G traffic radio: CDD Mode: 353.223mW 5G traffic radio: Beamforming Mode: 176.623mW Scanning radio: CDD Mode: 31.769mW 5745 ~ 5825MHz: 5G traffic radio: CDD Mode: 291.536mW 5G traffic radio: Beamforming Mode: 145.778mW Scanning radio: CDD Mode: 86.497mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Cable Supplied	NA

Note:

1. The following models are provided to this EUT. The model EWS357AP v3 was chosen for final test.

Brand	Test Model	Difference
EnGenius	EWS357AP v3	Marketing Differentiation
	ECW620 v2	
	ECW220 v2	

2. The EUT incorporates a MIMO function. Physically, the EUT provides 2 completed transmitters and 2 receivers.

Modulation Mode	CDD Mode	Beamforming Mode	TX Function	Radio
802.11a	Support	Not Support	2TX	5G traffic radio
802.11n (HT20)	Support	Not Support	2TX	
802.11n (HT40)	Support	Not Support	2TX	
802.11ac (VHT20)	Support	Support	2TX	
802.11ac (VHT40)	Support	Support	2TX	
802.11ac (VHT80)	Support	Support	2TX	
802.11ax (HE20)	Support	Support	2TX	
802.11ax (HE40)	Support	Support	2TX	
802.11ax (HE80)	Support	Support	2TX	
802.11a	Support	Not Support	1TX	
802.11n (HT20)	Support	Not Support	1TX	
802.11n (HT40)	Support	Not Support	1TX	
802.11ac (VHT20)	Support	Not Support	1TX	
802.11ac (VHT40)	Support	Not Support	1TX	
802.11ac (VHT80)	Support	Not Support	1TX	

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

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

3. The EUT consumes power from the following adapter and POE.

Adapter (support units only)	
Brand	JG
Model	ZZU1588-150120-2A
Input Power	100-240V~1.5A Max 50-60Hz
Output Power	12V / 1.5A
Power Line	1.5m cable without core attached on adapter

POE (support units only)	
Brand	EnGenius
Model	EPA5006GP
Input Power	100-240VAC~0.8A, 50-60Hz
Output Power	54V / 0.6A PIN 4,5:54V PIN 7,8:RETURN

4. The following antennas were provided to the EUT.

Antenna Type	PIFA					
Antenna Connector	IPEX					
Antenna No.	Gain (dBi)					
	2400MHz	2450MHz	2500MHz	5150MHz	5500MHz	5850MHz
2G1	3.35	3.46	3.41	4.22	4.85	4.75
2G2	3.13	3.40	3.31	4.22	4.52	3.77

Antenna Type	PCB	
Antenna Connector	IPEX	
Antenna No.	Gain (dBi)	
	2.4GHz	5GHz
Scanning	3.40	6.78
BT	5.58	-

5. 2G traffic radio, 5G traffic radio, Scanning radio (5G) and BT technologies can transmit at same time. But 5G traffic radio and Scanning radio (5G) cannot transmit in the same band at same time. 2G traffic radio and Scanning radio (2.4G) cannot transmit at same time.

6. Spurious emission of the simultaneous operation (2G traffic radio, 5G traffic radio, Scanning radio (5G) and BT technologies) 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≥1G	RE<1G	PLC	APCM	EUT Model	Power
A	√	√	√	√	EWS357AP v3	Power from adapter
B	-	√	√	-		Power from PoE

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

Note:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Z-plane**.
2. Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.
3. "-": Means no effect.

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)	Remark
CDD Mode							
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	5G traffic radio
A	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0	
A	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0	
A	802.11ax (HE80)		42	42	OFDMA	MCS0	
A	802.11a		36 to 48	36, 40, 48	OFDM	6.0	Scanning radio
A	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5	
A	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5	
A	802.11ac (VHT80)		42	42	OFDM	65.0	
A	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0	5G traffic radio
A	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0	
A	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0	
A	802.11ax (HE80)		155	155	OFDMA	MCS0	
A	802.11a		149 to 165	149, 157, 165	OFDM	6.0	Scanning radio
A	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5	
A	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5	
A	802.11ac (VHT80)		155	155	OFDM	65.0	

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
CDD Mode							
A, B	802.11ax (HE20)	5180-5240	36 to 48	48	OFDM	MCS0	5G traffic radio
		5745-5825	149 to 165				
A, B	802.11n (HT20)	5180-5240	36 to 48	165	OFDM	MCS0	Scanning radio
		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
CDD Mode							
A, B	802.11ax (HE20)	5180-5240	36 to 48	48	OFDM	MCS0	5G traffic radio
		5745-5825	149 to 165				
A, B	802.11n (HT20)	5180-5240	36 to 48	165	OFDM	MCS0	Scanning radio
		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
CDD Mode							
A	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0	5G traffic radio
A	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5	
A	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5	
A	802.11ac (VHT20)		36 to 48	36, 40, 48	OFDM	6.5	
A	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	
A	802.11ac (VHT80)		42	42	OFDM	65.0	
A	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0	
A	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0	
A	802.11ax (HE80)		42	42	OFDMA	MCS0	
A	802.11a		36 to 48	36, 40, 48	OFDM	6.0	Scanning radio
A	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5	
A	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5	
A	802.11ac (VHT80)		42	42	OFDM	65.0	
A	802.11a		5745-5825	149 to 165	149, 157, 165	OFDM	6.0
A	802.11n (HT20)	149 to 165		149, 157, 165	OFDM	6.5	
A	802.11n (HT40)	151 to 159		151, 159	OFDM	13.5	
A	802.11ac (VHT20)	149 to 165		149, 157, 165	OFDM	6.5	
A	802.11ac (VHT40)	151 to 159		151, 159	OFDM	13.5	
A	802.11ac (VHT80)	155		155	OFDM	65.0	
A	802.11ax (HE20)	149 to 165		149, 157, 165	OFDMA	MCS0	
A	802.11ax (HE40)	151 to 159		151, 159	OFDMA	MCS0	
A	802.11ax (HE80)	155		155	OFDMA	MCS0	
A	802.11a	149 to 165		149, 157, 165	OFDM	6.0	Scanning radio
A	802.11n (HT20)	149 to 165	149, 157, 165	OFDM	6.5		
A	802.11n (HT40)	151 to 159	151, 159	OFDM	13.5		
A	802.11ac (VHT80)	155	155	OFDM	65.0		

*802.11n (HT20), 802.11n (HT40), 802.11ac (VHT20), 802.11ac (VHT40), 802.11ac (VHT80) are for Conducted Output Power Measurement only.

Beamforming Mode(Conducted Power Measurement only)							
A	802.11ac (VHT20)	5180-5240	36 to 48	36, 40, 48	OFDM	6.5	5G traffic radio
A	802.11ac (VHT40)		38 to 46	38, 46	OFDM	13.5	
A	802.11ac (VHT80)		42	42	OFDM	65.0	
A	802.11ax (HE20)		36 to 48	36, 40, 48	OFDMA	MCS0	
A	802.11ax (HE40)		38 to 46	38, 46	OFDMA	MCS0	
A	802.11ax (HE80)		42	42	OFDMA	MCS0	
A	802.11ac (VHT20)	5745-5825	149 to 165	149, 157, 165	OFDM	6.5	5G traffic radio
A	802.11ac (VHT40)		151 to 159	151, 159	OFDM	13.5	
A	802.11ac (VHT80)		155	155	OFDM	65.0	
A	802.11ax (HE20)		149 to 165	149, 157, 165	OFDMA	MCS0	
A	802.11ax (HE40)		151 to 159	151, 159	OFDMA	MCS0	
A	802.11ax (HE80)		155	155	OFDMA	MCS0	

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE \geq 1G	23 deg. C, 67% RH	120Vac, 60Hz	Adair Peng
RE<1G	23 deg. C, 67% RH	120Vac, 60Hz	Titan Hsu, Adair Peng
PLC	23 deg. C, 68% RH	120Vac, 60Hz	Titan Hsu
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Jisyong Wang

3.3 Duty Cycle of Test Signal

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

Test Mode A

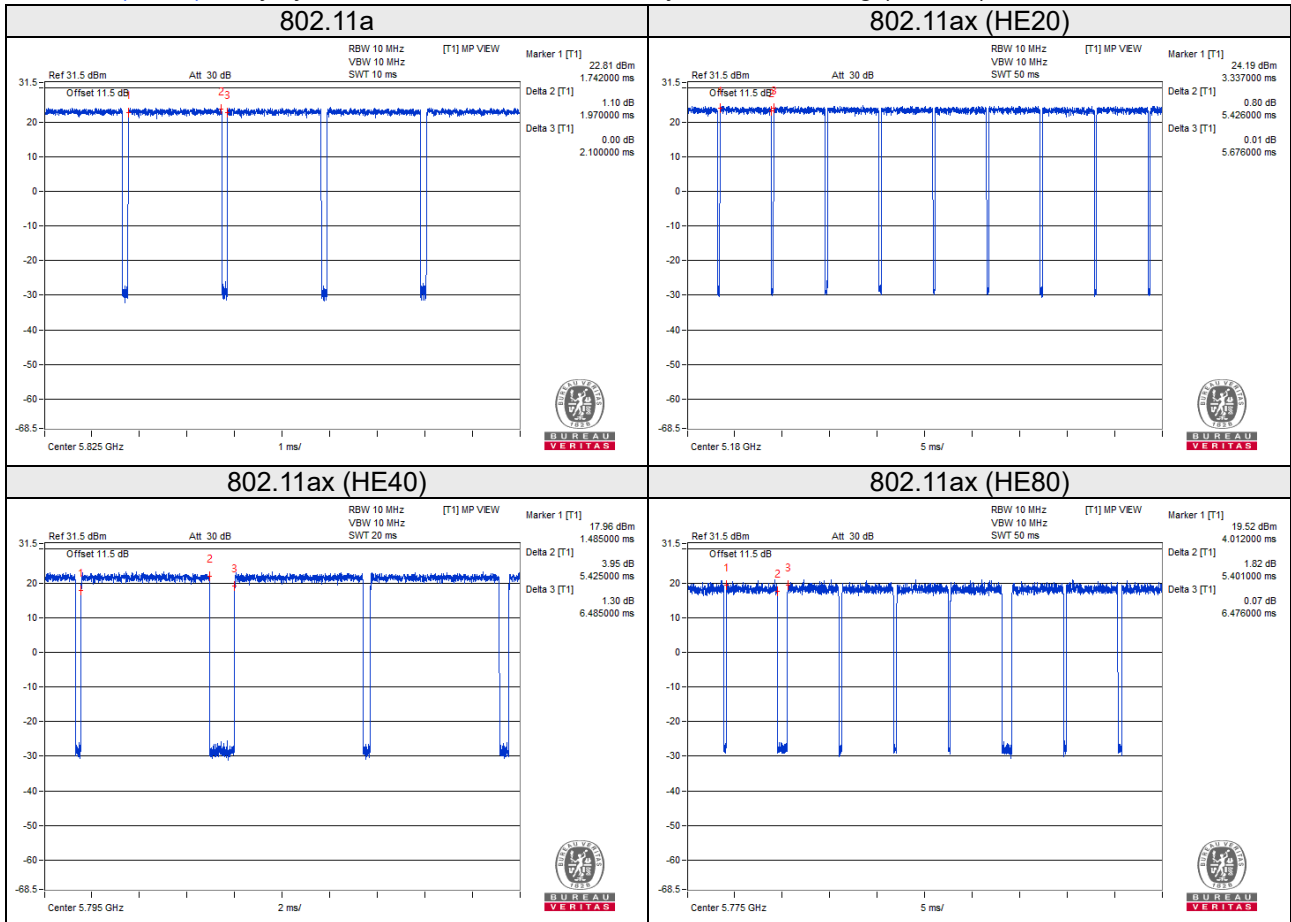
5G traffic radio: CDD Mode

802.11a: Duty cycle = $1.97/2.1 = 0.938$, Duty factor = $10 * \log(1/0.938) = 0.28$

802.11ax (HE20): Duty cycle = $5.412/5.712 = 0.947$, Duty factor = $10 * \log(1/0.947) = 0.23$

802.11ax (HE40): Duty cycle = $5.425/6.485 = 0.837$, Duty factor = $10 * \log(1/0.837) = 0.78$

802.11ax (HE80): Duty cycle = $5.401/6.476 = 0.834$, Duty factor = $10 * \log(1/0.834) = 0.79$



Test Mode A

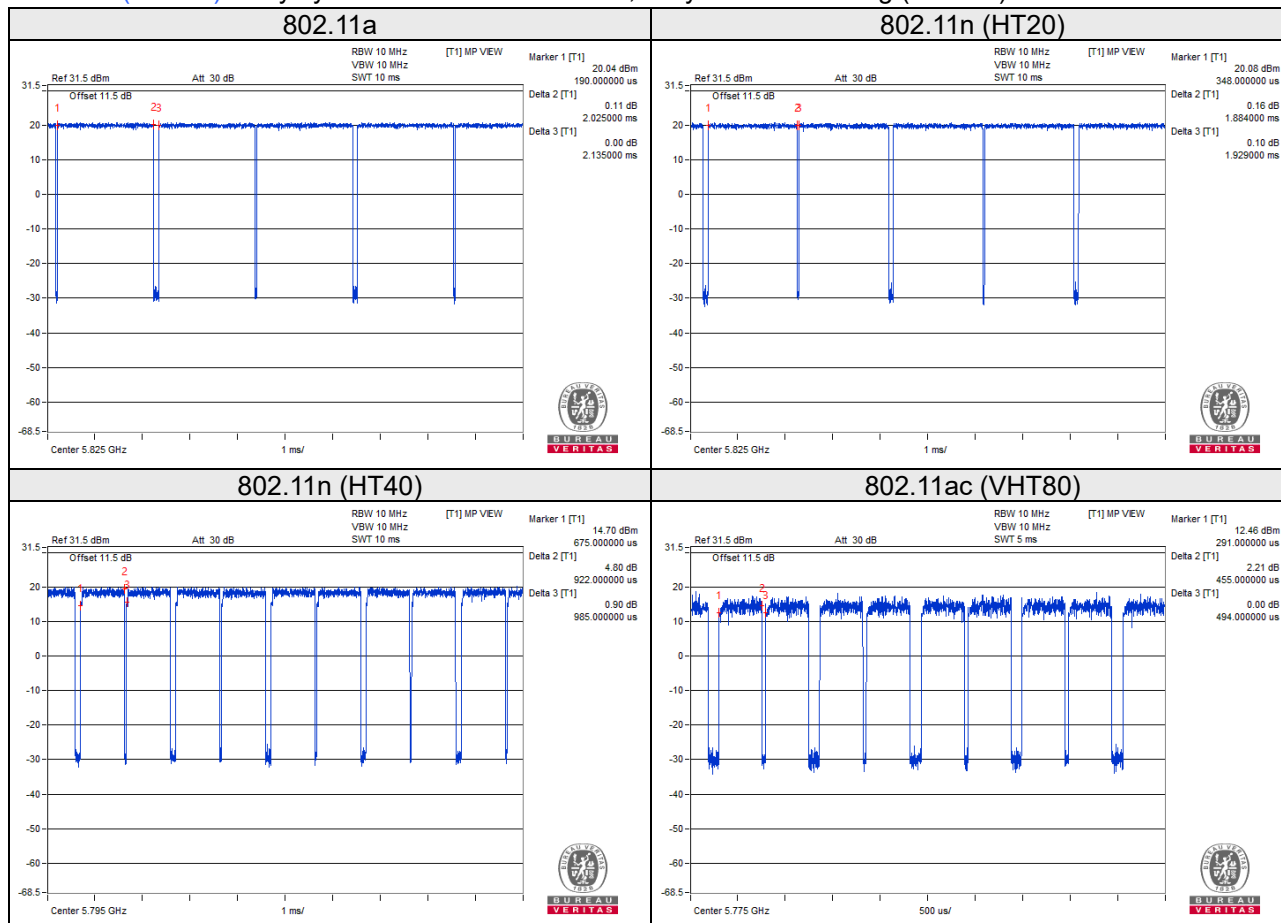
Scanning radio: CDD Mode

802.11a: Duty cycle = $2.025/2.135 = 0.948$, Duty factor = $10 * \log(1/0.948) = 0.23$

802.11n (HT20): Duty cycle = $1.884/1.929 = 0.977$, Duty factor = $10 * \log(1/0.977) = 0.10$

802.11n (HT40): Duty cycle = $0.922/0.985 = 0.936$, Duty factor = $10 * \log(1/0.936) = 0.29$

802.11ac (VHT80): Duty cycle = $0.455/0.494 = 0.921$, Duty factor = $10 * \log(1/0.921) = 0.36$



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.	Adapter	JG	ZZU1588-150120-2A	NA	NA	Provided by client
C.	POE	EnGenius	EPA5006GP	NA	NA	Provided by client

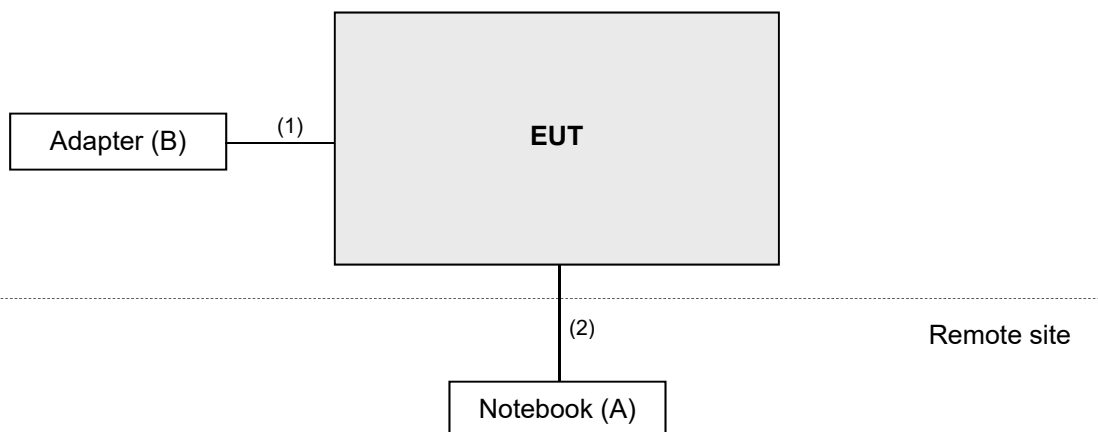
Note:

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

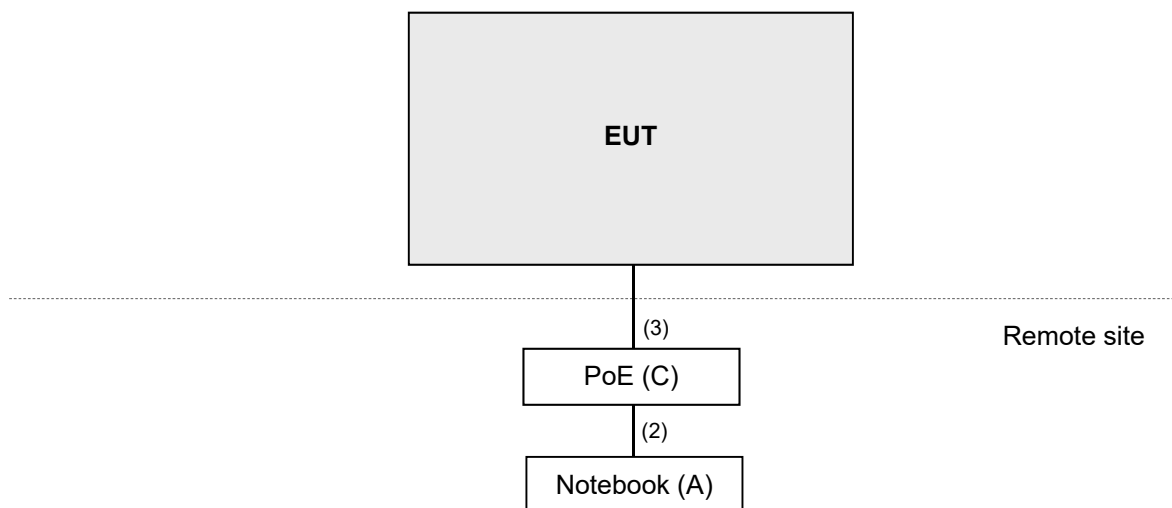
ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Power cable	1	1.5	-	0	Provided by client
2.	LAN	1	7.0	N	0	RJ45, Cat5e
3.	LAN	1	1.5	N	0	RJ45, Cat5e

3.4.1 Configuration of System under Test

Mode A



Mode B



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:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 30, 2019	May 29, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 11, 2019	Nov. 10, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 20, 2019	Aug. 19, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 27, 2019	Mar. 26, 2020
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM- SM-8000	Cable-CH3-03 (309224+170907)	Aug. 20, 2019	Aug. 19, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 05, 2019	Sep. 04, 2020
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/MY 55210005	Jul. 15, 2019	Jul. 14, 2020

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

4.1.3 Test Procedures

For Radiated emission below 30MHz

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

Note:

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

For Radiated emission above 30MHz

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

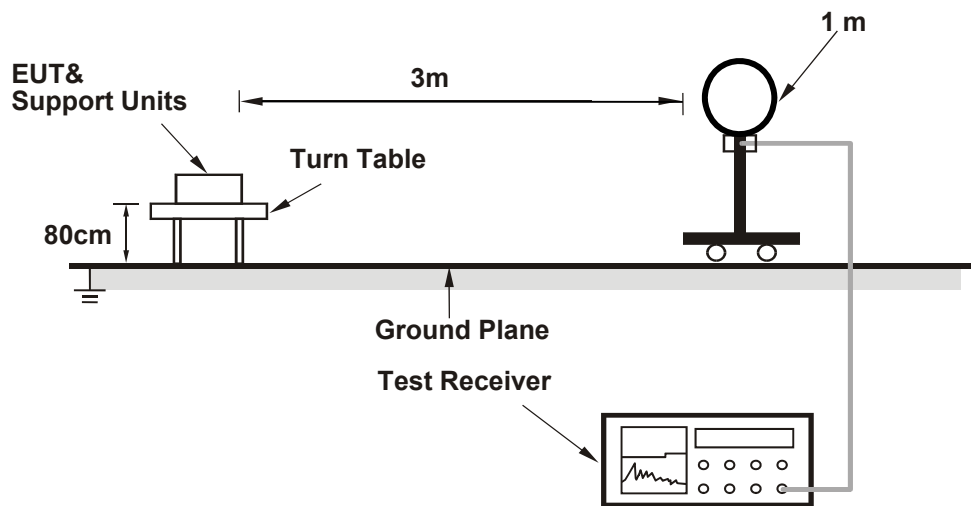
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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: 802.11a: RBW = 1MHz, VBW = 1kHz; 802.11ax (HE20): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE40): RBW = 1MHz, VBW = 1kHz; 802.11ax (HE80): RBW = 1MHz, VBW = 1kHz;
Scanning radio: 802.11a: RBW = 1MHz, VBW = 1kHz; 802.11n (HT20): RBW = 1MHz, VBW = 1kHz; 802.11n (HT40): RBW = 1MHz, VBW = 1kHz; 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

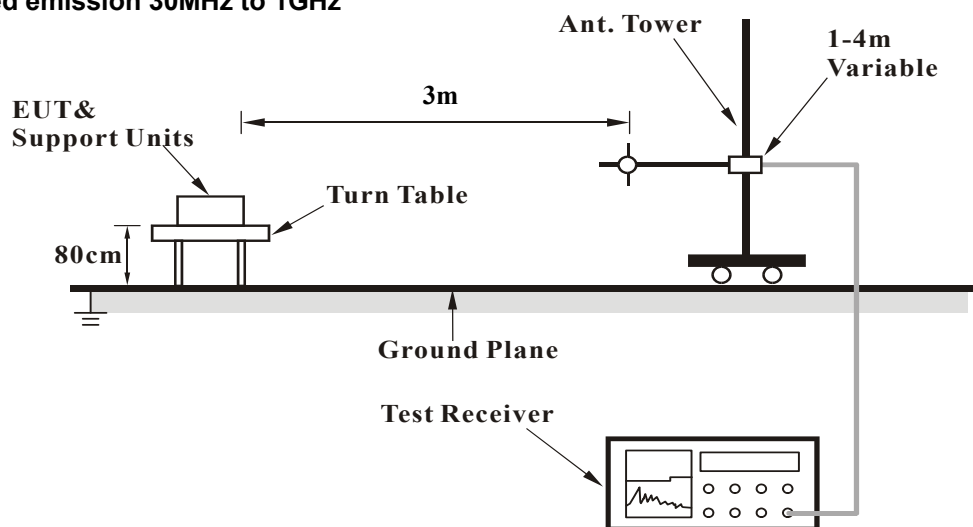
No deviation.

4.1.5 Test Setup

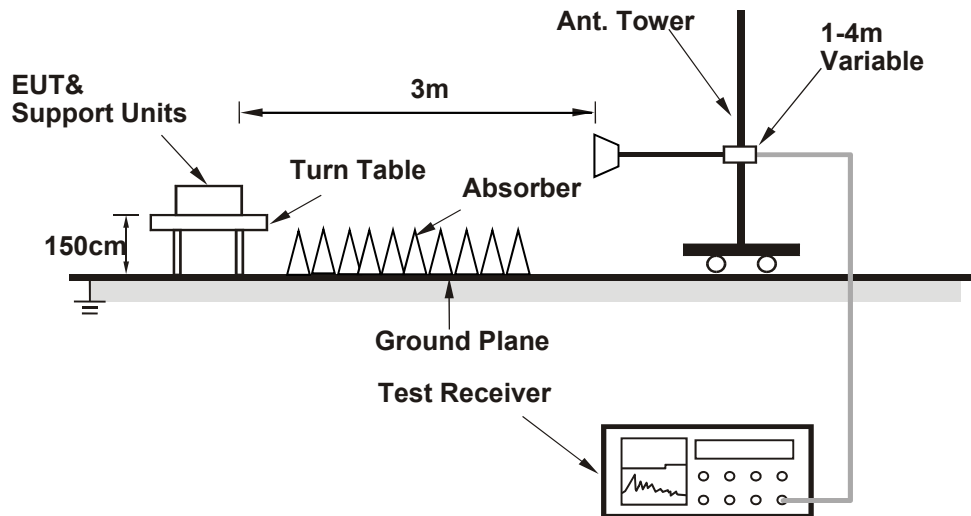
For Radiated emission below 30MHz



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

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

4.1.7 Test Results

Above 1GHz data:

Test Mode A

5G traffic radio: CDD Mode

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.1 PK	74.0	-6.9	2.40 H	323	63.0	4.1
2	5150.00	53.0 AV	54.0	-1.0	2.40 H	323	48.9	4.1
3	*5180.00	114.1 PK			2.32 H	325	74.8	39.3
4	*5180.00	103.6 AV			2.32 H	325	64.3	39.3
5	#10360.00	61.0 PK	68.2	-7.2	1.76 H	221	43.8	17.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.6 PK	74.0	-8.4	1.84 V	3	61.5	4.1
2	5150.00	52.3 AV	54.0	-1.7	1.84 V	3	48.2	4.1
3	*5180.00	115.5 PK			2.00 V	343	76.2	39.3
4	*5180.00	105.0 AV			2.00 V	343	65.7	39.3
5	#10360.00	60.2 PK	68.2	-8.0	2.06 V	340	43.0	17.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	62.4 PK	74.0	-11.6	1.29 H	261	58.3	4.1
2	5150.00	50.5 AV	54.0	-3.5	1.29 H	261	46.4	4.1
3	*5200.00	117.5 PK			1.19 H	253	78.2	39.3
4	*5200.00	106.4 AV			1.19 H	253	67.1	39.3
5	#10400.00	61.2 PK	68.2	-7.0	1.69 H	45	43.8	17.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.1 PK	74.0	-8.9	1.81 V	339	61.0	4.1
2	5150.00	51.0 AV	54.0	-3.0	1.81 V	339	46.9	4.1
3	*5200.00	118.9 PK			1.82 V	336	79.6	39.3
4	*5200.00	107.8 AV			1.82 V	336	68.5	39.3
5	#10400.00	60.6 PK	68.2	-7.6	2.39 V	23	43.2	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	118.6 PK			1.27 H	252	79.5	39.1
2	*5240.00	107.3 AV			1.27 H	252	68.2	39.1
3	5350.00	57.1 PK	74.0	-16.9	1.22 H	263	53.0	4.1
4	5350.00	44.0 AV	54.0	-10.0	1.22 H	263	39.9	4.1
5	#10480.00	61.5 PK	68.2	-6.7	1.57 H	42	43.5	18.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	120.0 PK			1.95 V	19	80.9	39.1
2	*5240.00	108.8 AV			1.95 V	19	69.7	39.1
3	5350.00	57.6 PK	74.0	-16.4	1.85 V	22	53.5	4.1
4	5350.00	44.2 AV	54.0	-9.8	1.85 V	22	40.1	4.1
5	#10480.00	60.8 PK	68.2	-7.4	2.27 V	19	42.8	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	116.3 PK			2.24 H	21	76.3	40.0
2	*5745.00	105.8 AV			2.24 H	21	65.8	40.0
3	11490.00	61.2 PK	74.0	-12.8	1.46 H	15	42.4	18.8
4	11490.00	49.5 AV	54.0	-4.5	1.46 H	15	30.7	18.8
5	#17235.00	66.8 PK	68.2	-1.4	1.96 H	280	43.2	23.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	118.7 PK			1.64 V	17	78.7	40.0
2	*5745.00	107.6 AV			1.64 V	17	67.6	40.0
3	11490.00	60.9 PK	74.0	-13.1	1.63 V	120	42.1	18.8
4	11490.00	47.3 AV	54.0	-6.7	1.63 V	120	28.5	18.8
5	#17235.00	66.5 PK	68.2	-1.7	1.31 V	352	42.9	23.6

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	115.9 PK			1.94 H	5	75.7	40.2
2	*5785.00	105.2 AV			1.94 H	5	65.0	40.2
3	11570.00	61.0 PK	74.0	-13.0	1.57 H	354	42.5	18.5
4	11570.00	49.9 AV	54.0	-4.1	1.57 H	354	31.4	18.5
5	#17355.00	67.0 PK	68.2	-1.2	2.27 H	35	42.2	24.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	117.7 PK			1.50 V	348	77.5	40.2
2	*5785.00	107.4 AV			1.50 V	348	67.2	40.2
3	11570.00	60.4 PK	74.0	-13.6	1.81 V	123	41.9	18.5
4	11570.00	47.6 AV	54.0	-6.4	1.81 V	123	29.1	18.5
5	#17355.00	66.8 PK	68.2	-1.4	1.50 V	359	42.0	24.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	116.4 PK			2.08 H	348	76.0	40.4
2	*5825.00	105.8 AV			2.08 H	348	65.4	40.4
3	11650.00	61.3 PK	74.0	-12.7	1.61 H	16	42.8	18.5
4	11650.00	50.5 AV	54.0	-3.5	1.61 H	16	32.0	18.5
5	#17475.00	67.1 PK	68.2	-1.1	1.59 H	285	40.9	26.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	117.7 PK			1.55 V	351	77.3	40.4
2	*5825.00	107.1 AV			1.55 V	351	66.7	40.4
3	11650.00	60.9 PK	74.0	-13.1	1.70 V	113	42.4	18.5
4	11650.00	48.4 AV	54.0	-5.6	1.70 V	113	29.9	18.5
5	#17475.00	66.9 PK	68.2	-1.3	1.23 V	344	40.7	26.2

REMARKS:

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

802.11ax (HE20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.1 PK	74.0	-8.9	1.19 H	262	61.0	4.1
2	5150.00	52.0 AV	54.0	-2.0	1.19 H	262	47.9	4.1
3	*5180.00	116.3 PK			1.25 H	253	77.0	39.3
4	*5180.00	102.4 AV			1.25 H	253	63.1	39.3
5	#10360.00	60.7 PK	68.2	-7.5	1.71 H	49	43.5	17.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.3 PK	74.0	-6.7	1.54 V	339	63.2	4.1
2	5150.00	52.4 AV	54.0	-1.6	1.54 V	339	48.3	4.1
3	*5180.00	117.7 PK			1.56 V	339	78.4	39.3
4	*5180.00	103.8 AV			1.56 V	339	64.5	39.3
5	#10360.00	60.3 PK	68.2	-7.9	2.47 V	12	43.1	17.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.2 PK	74.0	-9.8	1.27 H	251	60.1	4.1
2	5150.00	50.0 AV	54.0	-4.0	1.27 H	251	45.9	4.1
3	*5200.00	119.6 PK			1.19 H	260	80.3	39.3
4	*5200.00	106.5 AV			1.19 H	260	67.2	39.3
5	#10400.00	61.1 PK	68.2	-7.1	1.79 H	53	43.7	17.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.6 PK	74.0	-7.4	2.01 V	359	62.5	4.1
2	5150.00	50.5 AV	54.0	-3.5	2.01 V	359	46.4	4.1
3	*5200.00	121.1 PK			2.05 V	21	81.8	39.3
4	*5200.00	108.0 AV			2.05 V	21	68.7	39.3
5	#10400.00	60.6 PK	68.2	-7.6	2.63 V	22	43.2	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	84.5 PK			1.29 H	259	80.7	3.8
2	*5240.00	71.3 AV			1.29 H	259	67.5	3.8
3	5350.00	55.3 PK	74.0	-18.7	1.21 H	263	51.2	4.1
4	5350.00	43.9 AV	54.0	-10.1	1.21 H	263	39.8	4.1
5	#10480.00	61.5 PK	68.2	-6.7	1.61 H	53	43.5	18.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	121.3 PK			1.98 V	21	82.2	39.1
2	*5240.00	108.1 AV			1.98 V	21	69.0	39.1
3	5350.00	57.2 PK	74.0	-16.8	1.85 V	12	53.1	4.1
4	5350.00	44.1 AV	54.0	-9.9	1.85 V	12	40.0	4.1
5	#10480.00	60.9 PK	68.2	-7.3	2.65 V	23	42.9	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	118.4 PK			2.14 H	26	78.4	40.0
2	*5745.00	104.8 AV			2.14 H	26	64.8	40.0
3	11490.00	61.6 PK	74.0	-12.4	1.55 H	20	42.8	18.8
4	11490.00	49.6 AV	54.0	-4.4	1.55 H	20	30.8	18.8
5	#17235.00	66.9 PK	68.2	-1.3	1.97 H	285	43.3	23.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	119.9 PK			1.71 V	20	79.9	40.0
2	*5745.00	106.7 AV			1.71 V	20	66.7	40.0
3	11490.00	61.2 PK	74.0	-12.8	1.83 V	129	42.4	18.8
4	11490.00	49.3 AV	54.0	-4.7	1.83 V	129	30.5	18.8
5	#17235.00	66.6 PK	68.2	-1.6	1.22 V	342	43.0	23.6

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	118.9 PK			2.14 H	25	78.7	40.2
2	*5785.00	105.3 AV			2.14 H	25	65.1	40.2
3	11570.00	61.1 PK	74.0	-12.9	1.61 H	20	42.6	18.5
4	11570.00	50.0 AV	54.0	-4.0	1.61 H	20	31.5	18.5
5	#17355.00	67.1 PK	68.2	-1.1	2.01 H	277	42.3	24.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	119.9 PK			1.68 V	28	79.7	40.2
2	*5785.00	106.5 AV			1.68 V	28	66.3	40.2
3	11570.00	60.7 PK	74.0	-13.3	1.77 V	128	42.2	18.5
4	11570.00	49.5 AV	54.0	-4.5	1.77 V	128	31.0	18.5
5	#17355.00	66.8 PK	68.2	-1.4	1.37 V	349	42.0	24.8

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	118.4 PK			2.19 H	27	78.0	40.4
2	*5825.00	105.3 AV			2.19 H	27	64.9	40.4
3	11650.00	61.5 PK	74.0	-12.5	1.75 H	12	43.0	18.5
4	11650.00	50.7 AV	54.0	-3.3	1.75 H	12	32.2	18.5
5	#17475.00	67.2 PK	68.2	-1.0	1.69 H	283	41.0	26.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	119.9 PK			1.63 V	29	79.5	40.4
2	*5825.00	106.4 AV			1.63 V	29	66.0	40.4
3	11650.00	61.0 PK	74.0	-13.0	1.66 V	128	42.5	18.5
4	11650.00	50.5 AV	54.0	-3.5	1.66 V	128	32.0	18.5
5	#17475.00	66.9 PK	68.2	-1.3	1.50 V	350	40.7	26.2

REMARKS:

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

802.11ax (HE40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.0 PK	74.0	-5.0	1.31 H	260	64.9	4.1
2	5150.00	51.9 AV	54.0	-2.1	1.31 H	260	47.8	4.1
3	*5190.00	113.8 PK			1.20 H	255	74.5	39.3
4	*5190.00	100.5 AV			1.20 H	255	61.2	39.3
5	#10380.00	61.2 PK	68.2	-7.0	1.69 H	53	43.8	17.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.1 PK	74.0	-2.9	2.22 V	354	67.0	4.1
2	5150.00	52.3 AV	54.0	-1.7	2.22 V	354	48.2	4.1
3	*5190.00	115.2 PK			2.20 V	358	75.9	39.3
4	*5190.00	101.9 AV			2.20 V	358	62.6	39.3
5	#10380.00	60.6 PK	68.2	-7.6	2.17 V	8	43.2	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.2 PK	74.0	-6.8	1.30 H	266	63.1	4.1
2	5150.00	52.5 AV	54.0	-1.5	1.30 H	266	48.4	4.1
3	*5230.00	115.7 PK			1.28 H	253	76.6	39.1
4	*5230.00	102.3 AV			1.28 H	253	63.2	39.1
5	#10460.00	61.3 PK	68.2	-6.9	1.58 H	44	43.5	17.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	69.5 PK	74.0	-4.5	1.65 V	313	65.4	4.1
2	5150.00	52.9 AV	54.0	-1.1	1.65 V	313	48.8	4.1
3	*5230.00	117.2 PK			1.97 V	20	78.1	39.1
4	*5230.00	103.7 AV			1.97 V	20	64.6	39.1
5	#10460.00	60.6 PK	68.2	-7.6	2.29 V	11	42.8	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	116.0 PK			2.15 H	24	76.0	40.0
2	*5755.00	102.8 AV			2.15 H	24	62.8	40.0
3	11510.00	61.8 PK	74.0	-12.2	1.61 H	7	42.9	18.9
4	11510.00	49.9 AV	54.0	-4.1	1.61 H	7	31.0	18.9
5	#17265.00	66.5 PK	68.2	-1.7	1.69 H	284	43.0	23.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	117.6 PK			1.71 V	29	77.6	40.0
2	*5755.00	104.5 AV			1.71 V	29	64.5	40.0
3	11510.00	61.3 PK	74.0	-12.7	1.71 V	112	42.4	18.9
4	11510.00	49.5 AV	54.0	-4.5	1.71 V	112	30.6	18.9
5	#17265.00	66.0 PK	68.2	-2.2	1.41 V	333	42.5	23.5

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	115.8 PK			2.10 H	30	75.5	40.3
2	*5795.00	103.1 AV			2.10 H	30	62.8	40.3
3	11590.00	61.4 PK	74.0	-12.6	1.66 H	20	43.0	18.4
4	11590.00	49.5 AV	54.0	-4.5	1.66 H	20	31.1	18.4
5	#17385.00	66.9 PK	68.2	-1.3	1.81 H	288	41.3	25.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	117.7 PK			1.71 V	27	77.4	40.3
2	*5795.00	104.6 AV			1.71 V	27	64.3	40.3
3	11590.00	61.1 PK	74.0	-12.9	1.61 V	125	42.7	18.4
4	11590.00	49.1 AV	54.0	-4.9	1.61 V	125	30.7	18.4
5	#17385.00	66.6 PK	68.2	-1.6	1.51 V	359	41.0	25.6

REMARKS:

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

802.11ax (HE80)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	70.1 PK	74.0	-3.9	1.27 H	83	66.0	4.1
2	5150.00	51.9 AV	54.0	-2.1	1.27 H	83	47.8	4.1
3	*5210.00	110.8 PK			1.19 H	259	71.6	39.2
4	*5210.00	97.7 AV			1.19 H	259	58.5	39.2
5	5350.00	62.6 PK	74.0	-11.4	1.44 H	101	58.5	4.1
6	5350.00	47.3 AV	54.0	-6.7	1.44 H	101	43.2	4.1
7	#10420.00	60.9 PK	68.2	-7.3	1.77 H	53	43.3	17.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	71.2 PK	74.0	-2.8	1.87 V	20	67.1	4.1
2	5150.00	52.4 AV	54.0	-1.6	1.87 V	20	48.3	4.1
3	*5210.00	111.8 PK			1.98 V	19	72.6	39.2
4	*5210.00	99.2 AV			1.98 V	19	60.0	39.2
5	5350.00	65.2 PK	74.0	-8.8	1.91 V	25	61.1	4.1
6	5350.00	48.3 AV	54.0	-5.7	1.91 V	25	44.2	4.1
7	#10420.00	60.2 PK	68.2	-8.0	2.22 V	22	42.6	17.6

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.00	65.5 PK	68.2	-2.7	2.09 H	26	61.1	4.4
2	*5775.00	109.6 PK			2.02 H	24	69.5	40.1
3	*5775.00	97.1 AV			2.02 H	24	57.0	40.1
4	#5925.00	63.6 PK	68.2	-4.6	2.06 H	29	58.3	5.3
5	11550.00	60.6 PK	74.0	-13.4	1.63 H	31	41.9	18.7
6	11550.00	48.0 AV	54.0	-6.0	1.63 H	31	29.3	18.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.00	67.1 PK	68.2	-1.1	1.76 V	15	62.7	4.4
2	*5775.00	111.9 PK			1.64 V	20	71.8	40.1
3	*5775.00	99.4 AV			1.64 V	20	59.3	40.1
4	#5925.00	65.4 PK	68.2	-2.8	1.85 V	23	60.1	5.3
5	11550.00	60.0 PK	74.0	-14.0	1.43 V	342	41.3	18.7
6	11550.00	47.7 AV	54.0	-6.3	1.43 V	342	29.0	18.7

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.

Test Mode A

Scanning radio: CDD Mode

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.4 PK	74.0	-17.6	1.59 H	11	52.3	4.1
2	5150.00	43.1 AV	54.0	-10.9	1.59 H	11	39.0	4.1
3	*5180.00	103.6 PK			1.51 H	7	64.3	39.3
4	*5180.00	93.4 AV			1.51 H	7	54.1	39.3
5	#10360.00	61.6 PK	68.2	-6.6	3.81 H	283	44.4	17.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.2 PK	74.0	-17.8	3.87 V	26	52.1	4.1
2	5150.00	42.9 AV	54.0	-11.1	3.87 V	26	38.8	4.1
3	*5180.00	103.3 PK			3.99 V	24	64.0	39.3
4	*5180.00	93.3 AV			3.99 V	24	54.0	39.3
5	#10360.00	67.2 PK	68.2	-1.0	3.96 V	1	50.0	17.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	104.2 PK			1.63 H	12	64.9	39.3
2	*5200.00	94.1 AV			1.63 H	12	54.8	39.3
3	#10400.00	61.4 PK	68.2	-6.8	3.74 H	279	44.0	17.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	103.0 PK			3.98 V	23	63.7	39.3
2	*5200.00	92.9 AV			3.98 V	23	53.6	39.3
3	#10400.00	66.9 PK	68.2	-1.3	3.90 V	341	49.5	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.8 PK			1.57 H	14	67.7	39.1
2	*5240.00	96.4 AV			1.57 H	14	57.3	39.1
3	5350.00	56.4 PK	74.0	-17.6	1.63 H	10	52.3	4.1
4	5350.00	43.5 AV	54.0	-10.5	1.63 H	10	39.4	4.1
5	#10480.00	61.5 PK	68.2	-6.7	3.89 H	286	43.5	18.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	105.5 PK			3.90 V	24	66.4	39.1
2	*5240.00	95.1 AV			3.90 V	24	56.0	39.1
3	5350.00	56.1 PK	74.0	-17.9	3.85 V	25	52.0	4.1
4	5350.00	42.3 AV	54.0	-11.7	3.85 V	25	38.2	4.1
5	#10480.00	67.0 PK	68.2	-1.2	3.86 V	1	49.0	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	112.0 PK			1.21 H	350	72.0	40.0
2	*5745.00	101.3 AV			1.21 H	350	61.3	40.0
3	11490.00	62.4 PK	74.0	-11.6	1.58 H	308	43.6	18.8
4	11490.00	49.3 AV	54.0	-4.7	1.58 H	308	30.5	18.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	109.9 PK			2.53 V	0	69.9	40.0
2	*5745.00	99.1 AV			2.53 V	0	59.1	40.0
3	11490.00	62.3 PK	74.0	-11.7	1.44 V	336	43.5	18.8
4	11490.00	48.7 AV	54.0	-5.3	1.44 V	336	29.9	18.8

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	111.7 PK			1.13 H	350	71.5	40.2
2	*5785.00	100.8 AV			1.13 H	350	60.6	40.2
3	11570.00	62.2 PK	74.0	-11.8	1.65 H	313	43.7	18.5
4	11570.00	49.0 AV	54.0	-5.0	1.65 H	313	30.5	18.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	110.5 PK			2.73 V	348	70.3	40.2
2	*5785.00	99.8 AV			2.73 V	348	59.6	40.2
3	11570.00	62.5 PK	74.0	-11.5	1.58 V	340	44.0	18.5
4	11570.00	49.3 AV	54.0	-4.7	1.58 V	340	30.8	18.5

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	111.7 PK			1.20 H	352	71.3	40.4
2	*5825.00	100.9 AV			1.20 H	352	60.5	40.4
3	11650.00	62.2 PK	74.0	-11.8	1.63 H	310	43.7	18.5
4	11650.00	49.1 AV	54.0	-4.9	1.63 H	310	30.6	18.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.6 PK			2.72 V	346	69.2	40.4
2	*5825.00	99.0 AV			2.72 V	346	58.6	40.4
3	11650.00	62.4 PK	74.0	-11.6	1.61 V	333	43.9	18.5
4	11650.00	49.4 AV	54.0	-4.6	1.61 V	333	30.9	18.5

REMARKS:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.9 PK	74.0	-17.1	1.74 H	19	52.8	4.1
2	5150.00	43.5 AV	54.0	-10.5	1.74 H	19	39.4	4.1
3	*5180.00	105.8 PK			1.58 H	7	66.5	39.3
4	*5180.00	94.9 AV			1.58 H	7	55.6	39.3
5	#10360.00	61.3 PK	68.2	-6.9	3.74 H	293	44.1	17.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.6 PK	74.0	-17.4	3.91 V	22	52.5	4.1
2	5150.00	43.3 AV	54.0	-10.7	3.91 V	22	39.2	4.1
3	*5180.00	104.6 PK			3.83 V	16	65.3	39.3
4	*5180.00	93.7 AV			3.83 V	16	54.4	39.3
5	#10360.00	66.8 PK	68.2	-1.4	3.63 V	328	49.6	17.2

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	105.2 PK			1.63 H	9	65.9	39.3
2	*5200.00	95.1 AV			1.63 H	9	55.8	39.3
3	#10400.00	60.9 PK	68.2	-7.3	3.97 H	290	43.5	17.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	104.0 PK			3.77 V	17	64.7	39.3
2	*5200.00	93.8 AV			3.77 V	17	54.5	39.3
3	#10400.00	66.6 PK	68.2	-1.6	3.83 V	4	49.2	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	107.5 PK			1.68 H	23	68.4	39.1
2	*5240.00	96.6 AV			1.68 H	23	57.5	39.1
3	5350.00	55.8 PK	74.0	-18.2	1.59 H	17	51.7	4.1
4	5350.00	42.4 AV	54.0	-11.6	1.59 H	17	38.3	4.1
5	#10480.00	61.4 PK	68.2	-6.8	3.95 H	279	43.4	18.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.2 PK			3.91 V	15	67.1	39.1
2	*5240.00	95.3 AV			3.91 V	15	56.2	39.1
3	5350.00	55.5 PK	74.0	-18.5	3.84 V	20	51.4	4.1
4	5350.00	42.1 AV	54.0	-11.9	3.84 V	20	38.0	4.1
5	#10480.00	67.0 PK	68.2	-1.2	3.86 V	2	49.0	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	111.4 PK			1.21 H	349	71.4	40.0
2	*5745.00	100.9 AV			1.21 H	349	60.9	40.0
3	11490.00	62.5 PK	74.0	-11.5	1.59 H	307	43.7	18.8
4	11490.00	49.2 AV	54.0	-4.8	1.59 H	307	30.4	18.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5745.00	109.8 PK			2.66 V	355	69.8	40.0
2	*5745.00	99.0 AV			2.66 V	355	59.0	40.0
3	11490.00	62.8 PK	74.0	-11.2	1.54 V	325	44.0	18.8
4	11490.00	49.5 AV	54.0	-4.5	1.54 V	325	30.7	18.8

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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	111.7 PK			1.18 H	350	71.5	40.2
2	*5785.00	101.0 AV			1.18 H	350	60.8	40.2
3	11570.00	61.7 PK	74.0	-12.3	1.63 H	302	43.2	18.5
4	11570.00	48.6 AV	54.0	-5.4	1.63 H	302	30.1	18.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5785.00	110.4 PK			2.75 V	349	70.2	40.2
2	*5785.00	99.4 AV			2.75 V	349	59.2	40.2
3	11570.00	61.9 PK	74.0	-12.1	1.39 V	319	43.4	18.5
4	11570.00	48.8 AV	54.0	-5.2	1.39 V	319	30.3	18.5

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	112.4 PK			1.46 H	353	72.0	40.4
2	*5825.00	101.3 AV			1.46 H	353	60.9	40.4
3	11650.00	61.9 PK	74.0	-12.1	1.53 H	299	43.4	18.5
4	11650.00	48.8 AV	54.0	-5.2	1.53 H	299	30.3	18.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5825.00	109.9 PK			2.72 V	356	69.5	40.4
2	*5825.00	98.9 AV			2.72 V	356	58.5	40.4
3	11650.00	62.2 PK	74.0	-11.8	1.53 V	330	43.7	18.5
4	11650.00	49.0 AV	54.0	-5.0	1.53 V	330	30.5	18.5

REMARKS:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.7 PK	74.0	-8.3	1.69 H	20	61.6	4.1
2	5150.00	51.6 AV	54.0	-2.4	1.69 H	20	47.5	4.1
3	*5190.00	103.8 PK			1.66 H	15	64.5	39.3
4	*5190.00	93.3 AV			1.66 H	15	54.0	39.3
5	#10380.00	60.9 PK	68.2	-7.3	3.87 H	285	43.5	17.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.4 PK	74.0	-8.6	3.68 V	19	61.3	4.1
2	5150.00	51.3 AV	54.0	-2.7	3.68 V	19	47.2	4.1
3	*5190.00	102.5 PK			3.83 V	20	63.2	39.3
4	*5190.00	91.9 AV			3.83 V	20	52.6	39.3
5	#10380.00	66.6 PK	68.2	-1.6	3.94 V	343	49.2	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	104.4 PK			1.56 H	13	65.3	39.1
2	*5230.00	94.1 AV			1.56 H	13	55.0	39.1
3	5350.00	56.7 PK	74.0	-17.3	1.69 H	9	52.6	4.1
4	5350.00	42.6 AV	54.0	-11.4	1.69 H	9	38.5	4.1
5	#10460.00	61.2 PK	68.2	-7.0	3.97 H	290	43.4	17.8

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	103.6 PK			3.70 V	15	64.5	39.1
2	*5230.00	92.9 AV			3.70 V	15	53.8	39.1
3	5350.00	56.4 PK	74.0	-17.6	3.88 V	23	52.3	4.1
4	5350.00	42.3 AV	54.0	-11.7	3.88 V	23	38.2	4.1
5	#10460.00	66.6 PK	68.2	-1.6	3.97 V	348	48.8	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.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	108.4 PK			1.13 H	353	68.4	40.0
2	*5755.00	97.6 AV			1.13 H	353	57.6	40.0
3	11510.00	62.0 PK	74.0	-12.0	1.61 H	312	43.1	18.9
4	11510.00	48.9 AV	54.0	-5.1	1.61 H	312	30.0	18.9

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5755.00	107.3 PK			2.77 V	348	67.3	40.0
2	*5755.00	96.3 AV			2.77 V	348	56.3	40.0
3	11510.00	62.3 PK	74.0	-11.7	1.53 V	342	43.4	18.9
4	11510.00	49.3 AV	54.0	-4.7	1.53 V	342	30.4	18.9

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	108.7 PK			1.19 H	352	68.4	40.3
2	*5795.00	97.8 AV			1.19 H	352	57.5	40.3
3	11590.00	61.4 PK	74.0	-12.6	1.19 H	352	43.0	18.4
4	11590.00	48.1 AV	54.0	-5.9	1.19 H	352	29.7	18.4

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5795.00	107.6 PK			2.75 V	346	67.3	40.3
2	*5795.00	96.7 AV			2.75 V	346	56.4	40.3
3	11590.00	61.7 PK	74.0	-12.3	1.56 V	341	43.3	18.4
4	11590.00	48.4 AV	54.0	-5.6	1.56 V	341	30.0	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.

802.11ac (VHT80)

CHANNEL	TX Channel 42	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.1 PK	74.0	-8.9	1.66 H	7	61.0	4.1
2	5150.00	52.4 AV	54.0	-1.6	1.66 H	7	48.3	4.1
3	*5210.00	99.9 PK			1.55 H	6	60.7	39.2
4	*5210.00	90.0 AV			1.55 H	6	50.8	39.2
5	5350.00	56.7 PK	74.0	-17.3	1.71 H	12	52.6	4.1
6	5350.00	44.1 AV	54.0	-9.9	1.71 H	12	40.0	4.1
7	#10420.00	61.1 PK	68.2	-7.1	3.83 H	288	43.5	17.6

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	65.0 PK	74.0	-9.0	3.70 V	20	60.9	4.1
2	5150.00	52.2 AV	54.0	-1.8	3.70 V	20	48.1	4.1
3	*5210.00	98.4 PK			3.73 V	17	59.2	39.2
4	*5210.00	88.8 AV			3.73 V	17	49.6	39.2
5	5350.00	55.7 PK	74.0	-18.3	3.81 V	13	51.6	4.1
6	5350.00	43.6 AV	54.0	-10.4	3.81 V	13	39.5	4.1
7	#10420.00	62.4 PK	68.2	-5.8	3.73 V	4	44.8	17.6

REMARKS:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.00	66.5 PK	68.2	-1.7	1.24 H	354	62.1	4.4
2	*5775.00	105.8 PK			1.21 H	345	65.7	40.1
3	*5775.00	94.9 AV			1.21 H	345	54.8	40.1
4	#5925.00	62.7 PK	68.2	-5.5	1.17 H	347	57.4	5.3
5	11550.00	61.7 PK	74.0	-12.3	1.68 H	300	43.0	18.7
6	11550.00	49.1 AV	54.0	-4.9	1.68 H	300	30.4	18.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5650.00	63.7 PK	68.2	-4.5	2.61 V	2	59.3	4.4
2	*5775.00	104.1 PK			2.54 V	0	64.0	40.1
3	*5775.00	103.5 AV			2.54 V	0	63.4	40.1
4	#5925.00	60.2 PK	68.2	-8.0	2.59 V	357	54.9	5.3
5	11550.00	62.3 PK	74.0	-11.7	1.53 V	320	43.6	18.7
6	11550.00	49.5 AV	54.0	-4.5	1.53 V	320	30.8	18.7

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.

Below 1GHz Worst-Case Data:

Test Mode A

5G traffic radio: CDD Mode

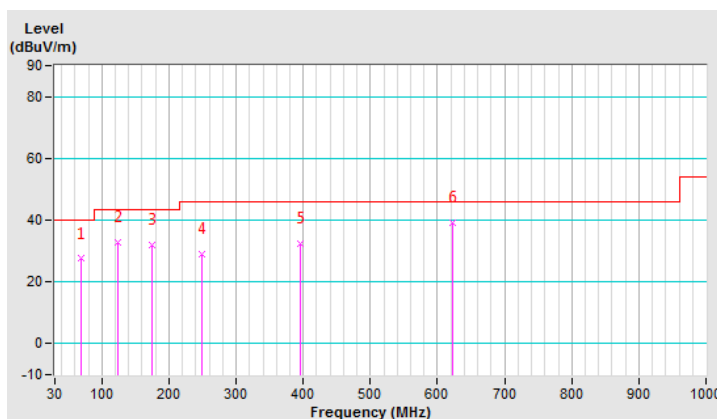
802.11ax (HE20)

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	69.36	27.5 QP	40.0	-12.5	1.00 H	151	38.3	-10.8
2	124.19	32.7 QP	43.5	-10.8	1.51 H	61	43.3	-10.6
3	174.80	32.0 QP	43.5	-11.5	1.51 H	267	41.2	-9.2
4	249.30	29.1 QP	46.0	-16.9	1.00 H	71	38.6	-9.5
5	395.51	32.4 QP	46.0	-13.6	2.00 H	37	37.0	-4.6
6	623.25	39.3 QP	46.0	-6.7	1.00 H	12	37.9	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.

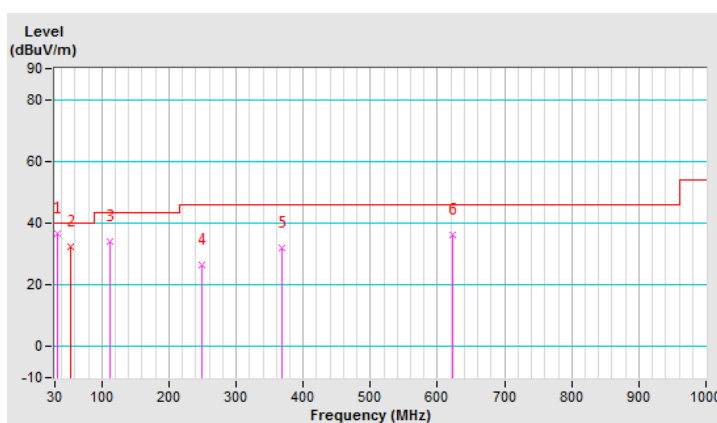


CHANNEL	TX Channel 48	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	34.22	36.6 QP	40.0	-3.4	1.00 V	310	46.9	-10.3
2	54.21	32.3 QP	40.0	-7.7	1.50 V	7	41.3	-9.0
3	111.54	34.1 QP	43.5	-9.4	1.00 V	74	45.9	-11.8
4	249.30	26.6 QP	46.0	-19.4	1.00 V	128	36.1	-9.5
5	367.39	31.9 QP	46.0	-14.1	1.50 V	160	37.3	-5.4
6	621.84	36.0 QP	46.0	-10.0	1.00 V	145	34.6	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.



Test Mode A

Scanning radio: CDD Mode

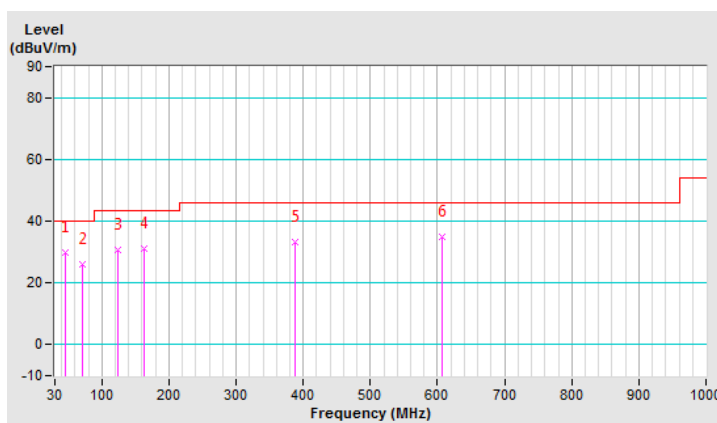
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	45.46	29.8 QP	40.0	-10.2	1.50 H	251	38.7	-8.9
2	70.77	26.1 QP	40.0	-13.9	1.50 H	246	37.0	-10.9
3	124.19	30.5 QP	43.5	-13.0	1.50 H	51	41.1	-10.6
4	162.14	31.1 QP	43.5	-12.4	1.00 H	253	39.7	-8.6
5	387.07	33.1 QP	46.0	-12.9	1.50 H	290	38.0	-4.9
6	606.38	35.0 QP	46.0	-11.0	2.00 H	51	33.9	1.1

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

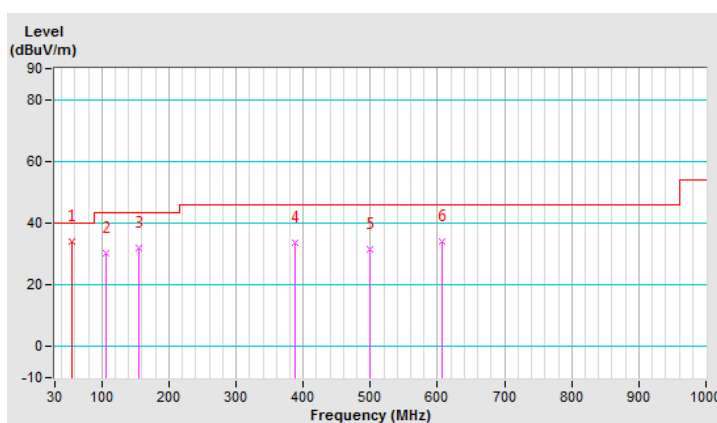


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	55.51	34.1 QP	40.0	-5.9	1.00 V	15	42.9	-8.8
2	105.91	30.4 QP	43.5	-13.1	1.00 V	84	42.7	-12.3
3	155.12	32.0 QP	43.5	-11.5	1.00 V	285	40.6	-8.6
4	388.48	33.7 QP	46.0	-12.3	1.99 V	281	38.5	-4.8
5	499.54	31.6 QP	46.0	-14.4	1.00 V	87	33.1	-1.5
6	606.38	34.1 QP	46.0	-11.9	1.00 V	238	33.0	1.1

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 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.



Test Mode B

5G traffic radio: CDD Mode

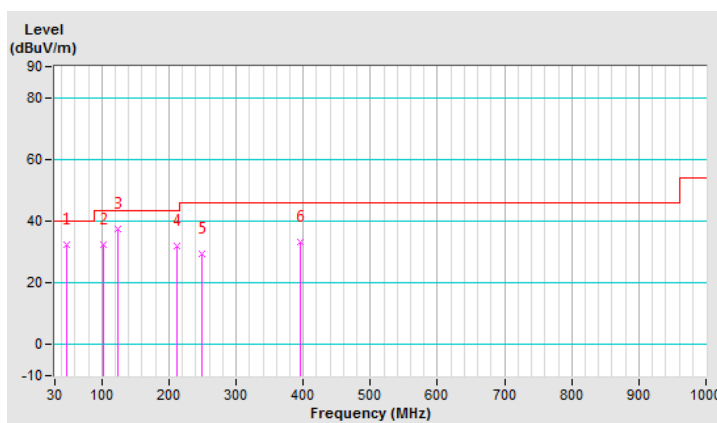
802.11ax (HE20)

CHANNEL	TX Channel 48	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	48.28	32.4 QP	40.0	-7.6	1.99 H	60	41.1	-8.7
2	103.10	32.3 QP	43.5	-11.2	1.99 H	238	45.0	-12.7
3	124.19	37.4 QP	43.5	-6.1	1.49 H	248	48.0	-10.6
4	211.35	31.8 QP	43.5	-11.7	1.00 H	256	43.2	-11.4
5	249.30	29.2 QP	46.0	-16.8	1.00 H	216	38.7	-9.5
6	395.51	33.2 QP	46.0	-12.8	1.00 H	16	37.8	-4.6

REMARKS:

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

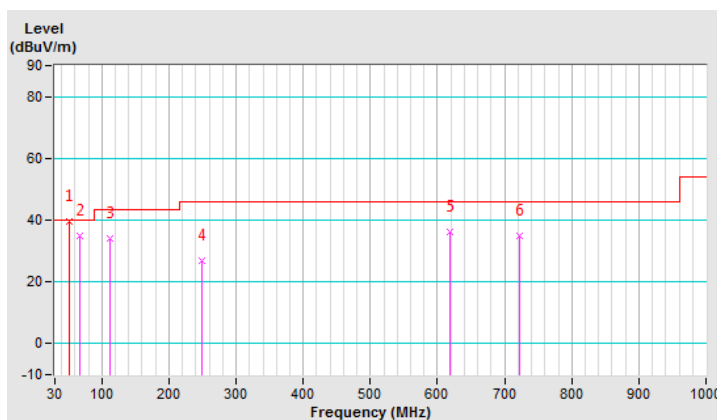


CHANNEL	TX Channel 48	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	50.78	39.6 QP	40.0	-0.4	1.00 V	280	48.3	-8.7
2	66.55	34.9 QP	40.0	-5.1	1.00 V	317	44.9	-10.0
3	111.54	34.2 QP	43.5	-9.3	1.00 V	10	46.0	-11.8
4	249.30	27.0 QP	46.0	-19.0	1.00 V	201	36.5	-9.5
5	619.03	36.1 QP	46.0	-9.9	1.00 V	190	34.8	1.3
6	721.65	34.8 QP	46.0	-11.2	1.49 V	35	32.5	2.3

REMARKS:

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



Test Mode B

Scanning radio: CDD Mode

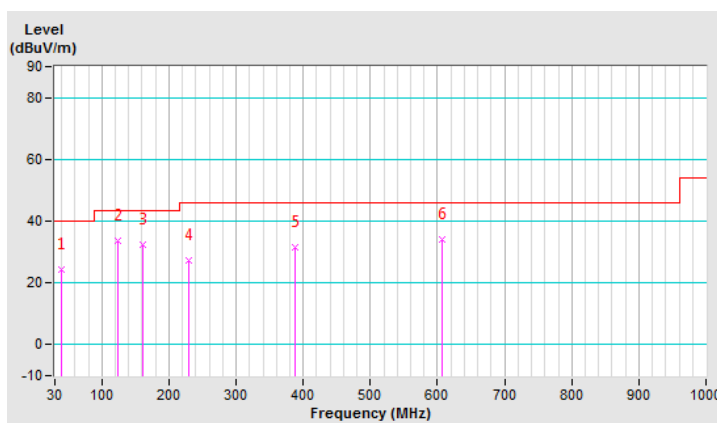
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.84	24.5 QP	40.0	-15.5	1.50 H	86	34.0	-9.5
2	124.19	33.8 QP	43.5	-9.7	1.50 H	231	44.4	-10.6
3	160.74	32.5 QP	43.5	-11.0	1.00 H	258	41.1	-8.6
4	229.62	27.1 QP	46.0	-18.9	1.50 H	284	38.1	-11.0
5	388.48	31.7 QP	46.0	-14.3	1.50 H	262	36.5	-4.8
6	606.38	34.2 QP	46.0	-11.8	2.00 H	307	33.1	1.1

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

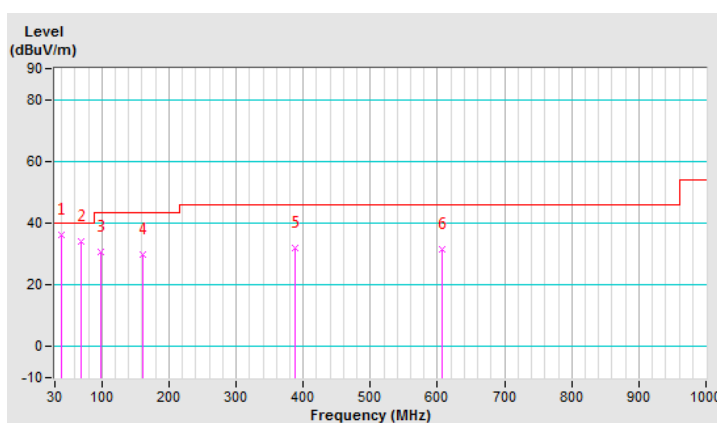


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	39.84	36.0 QP	40.0	-4.0	1.00 V	261	45.5	-9.5
2	69.36	34.1 QP	40.0	-5.9	1.00 V	323	44.9	-10.8
3	98.88	30.5 QP	43.5	-13.0	1.50 V	90	43.8	-13.3
4	160.74	29.7 QP	43.5	-13.8	1.50 V	270	38.3	-8.6
5	388.48	32.0 QP	46.0	-14.0	1.50 V	208	36.8	-4.8
6	606.38	31.4 QP	46.0	-14.6	1.00 V	227	30.3	1.1

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 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

Test Date: Feb. 7, 2020

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 11, 2019	Dec. 10, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 21, 2019	Feb. 20, 2020
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 22, 2019	Aug. 21, 2020
Software ADT	BV ADT_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 1.

3. The VCCI Site Registration No. is C-12040.

4.2.3 Test Procedures

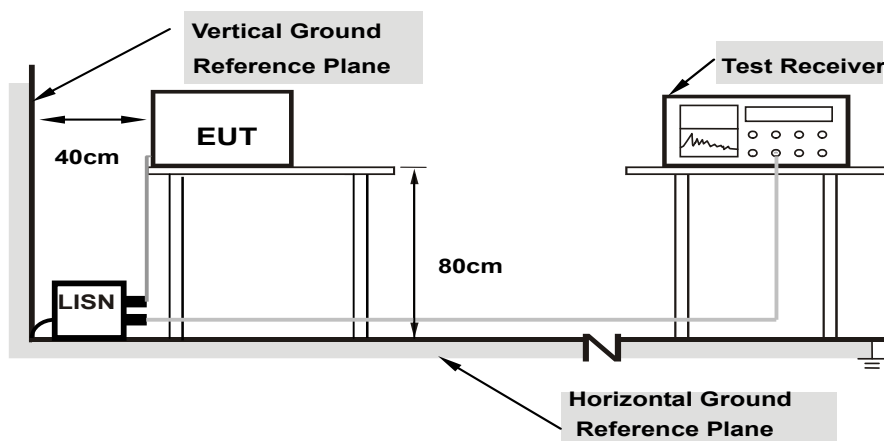
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

Test Mode A

5G traffic radio: CDD Mode

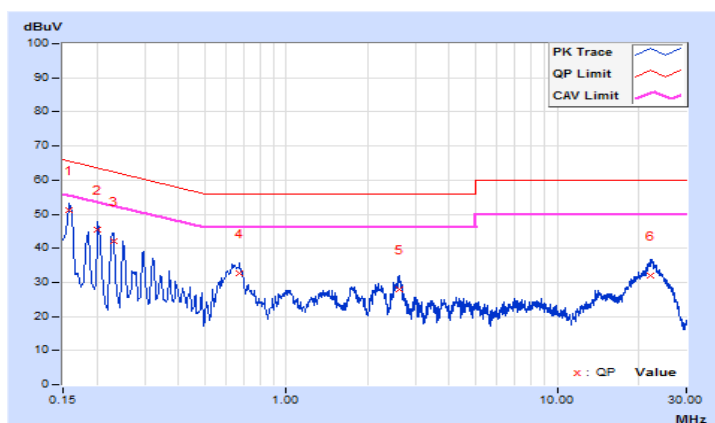
802.11ax (HE20)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.71	41.49	25.52	51.20	35.23	65.57	55.57	-14.37	-20.34
2	0.20200	9.78	35.69	19.33	45.47	29.11	63.53	53.53	-18.06	-24.42
3	0.22985	9.80	32.21	17.78	42.01	27.58	62.46	52.46	-20.45	-24.88
4	0.66985	9.95	22.64	16.15	32.59	26.10	56.00	46.00	-23.41	-19.90
5	2.61000	10.12	17.79	9.79	27.91	19.91	56.00	46.00	-28.09	-26.09
6	22.11800	10.42	21.58	15.95	32.00	26.37	60.00	50.00	-28.00	-23.63

Remarks:

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

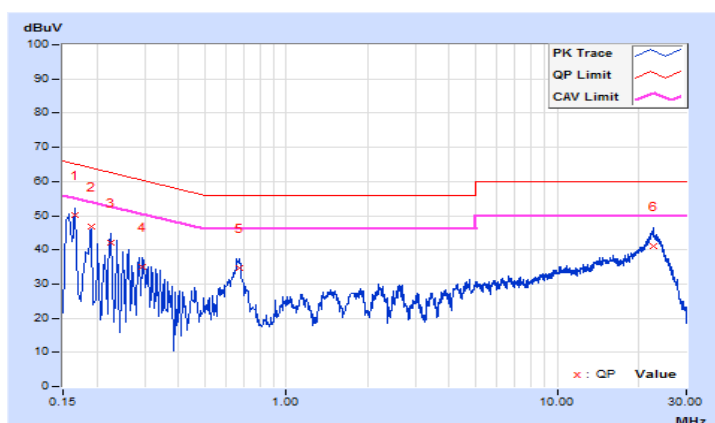


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16600	9.72	40.42	25.09	50.14	34.81	65.16	55.16	-15.02	-20.35
2	0.19000	9.78	36.92	19.81	46.70	29.59	64.04	54.04	-17.34	-24.45
3	0.22600	9.81	32.34	15.84	42.15	25.65	62.60	52.60	-20.45	-26.95
4	0.29400	9.83	25.06	9.86	34.89	19.69	60.41	50.41	-25.52	-30.72
5	0.67339	9.91	24.81	18.24	34.72	28.15	56.00	46.00	-21.28	-17.85
6	22.54200	10.51	30.72	25.12	41.23	35.63	60.00	50.00	-18.77	-14.37

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.



Test Mode A

Scanning radio: CDD Mode

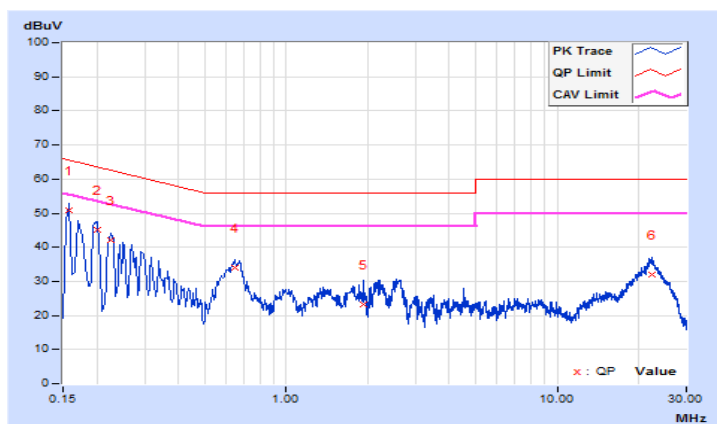
802.11n (HT20)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	9.71	41.04	24.85	50.75	34.56	65.57	55.57	-14.82	-21.01
2	0.19989	9.78	35.47	20.76	45.25	30.54	63.62	53.62	-18.37	-23.08
3	0.22565	9.80	32.16	18.03	41.96	27.83	62.61	52.61	-20.65	-24.78
4	0.64559	9.95	23.96	16.36	33.91	26.31	56.00	46.00	-22.09	-19.69
5	1.93000	10.09	13.00	6.67	23.09	16.76	56.00	46.00	-32.91	-29.24
6	22.32600	10.43	21.72	16.17	32.15	26.60	60.00	50.00	-27.85	-23.40

Remarks:

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

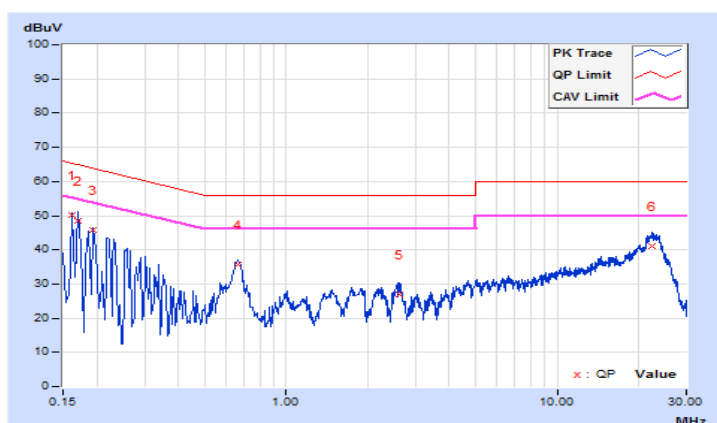


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16200	9.71	40.46	25.63	50.17	35.34	65.36	55.36	-15.19	-20.02
2	0.17000	9.73	38.89	20.74	48.62	30.47	64.96	54.96	-16.34	-24.49
3	0.19400	9.79	36.05	20.45	45.84	30.24	63.86	53.86	-18.02	-23.62
4	0.66282	9.90	25.81	19.11	35.71	29.01	56.00	46.00	-20.29	-16.99
5	2.62200	10.07	16.86	9.02	26.93	19.09	56.00	46.00	-29.07	-26.91
6	22.41400	10.50	30.67	24.94	41.17	35.44	60.00	50.00	-18.83	-14.56

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.



Test Mode B

5G traffic radio: CDD Mode

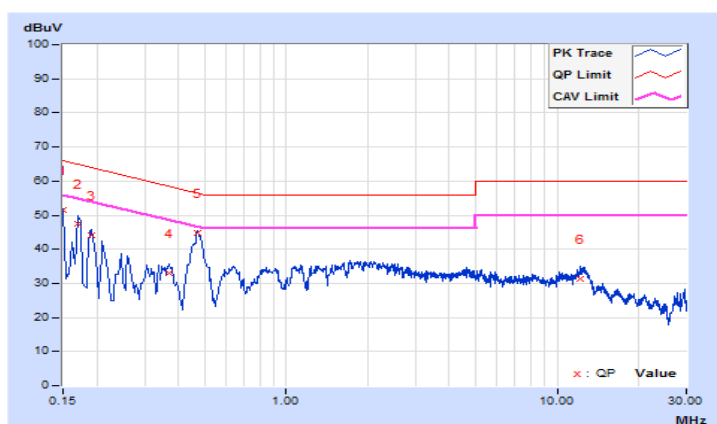
802.11ax (HE20)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.70	41.67	25.59	51.37	35.29	66.00	56.00	-14.63	-20.71
2	0.17000	9.73	37.67	21.81	47.40	31.54	64.96	54.96	-17.56	-23.42
3	0.19000	9.76	34.47	19.59	44.23	29.35	64.04	54.04	-19.81	-24.69
4	0.37000	9.88	23.14	16.93	33.02	26.81	58.50	48.50	-25.48	-21.69
5	0.46936	9.91	34.73	30.15	44.64	40.06	56.53	46.53	-11.89	-6.47
6	12.24200	10.34	20.81	15.89	31.15	26.23	60.00	50.00	-28.85	-23.77

Remarks:

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

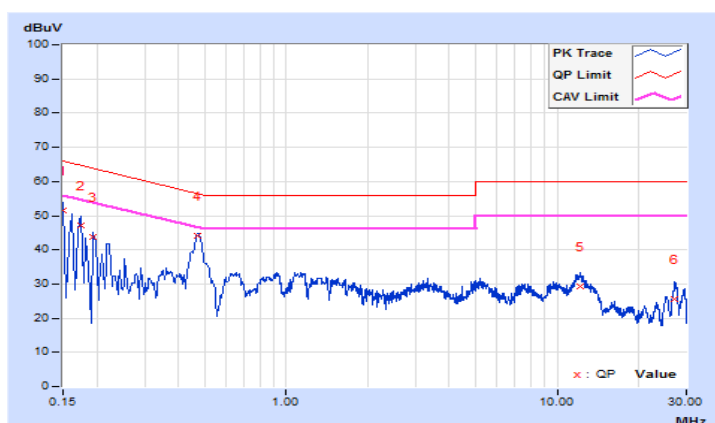


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	9.68	41.89	25.53	51.57	35.21	66.00	56.00	-14.43	-20.79
2	0.17400	9.74	37.26	22.09	47.00	31.83	64.77	54.77	-17.77	-22.94
3	0.19400	9.79	33.90	17.99	43.69	27.78	63.86	53.86	-20.17	-26.08
4	0.46813	9.87	34.34	29.77	44.21	39.64	56.55	46.55	-12.34	-6.91
5	12.11400	10.30	18.90	13.79	29.20	24.09	60.00	50.00	-30.80	-25.91
6	27.11000	10.54	15.11	10.52	25.65	21.06	60.00	50.00	-34.35	-28.94

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.



Test Mode B

Scanning radio: CDD Mode

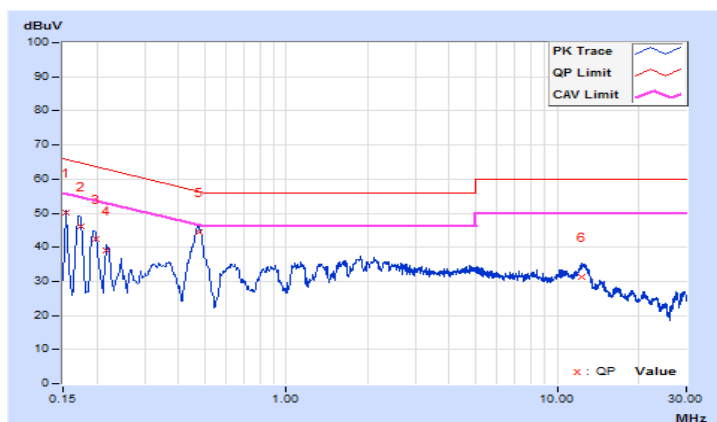
802.11n (HT20)

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

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.71	40.38	26.18	50.09	35.89	65.78	55.78	-15.69	-19.89
2	0.17400	9.74	36.52	21.98	46.26	31.72	64.77	54.77	-18.51	-23.05
3	0.19800	9.78	32.66	17.53	42.44	27.31	63.69	53.69	-21.25	-26.38
4	0.21800	9.79	29.17	15.24	38.96	25.03	62.89	52.89	-23.93	-27.86
5	0.47400	9.91	34.61	29.35	44.52	39.26	56.44	46.44	-11.92	-7.18
6	12.27800	10.34	20.87	15.95	31.21	26.29	60.00	50.00	-28.79	-23.71

Remarks:

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

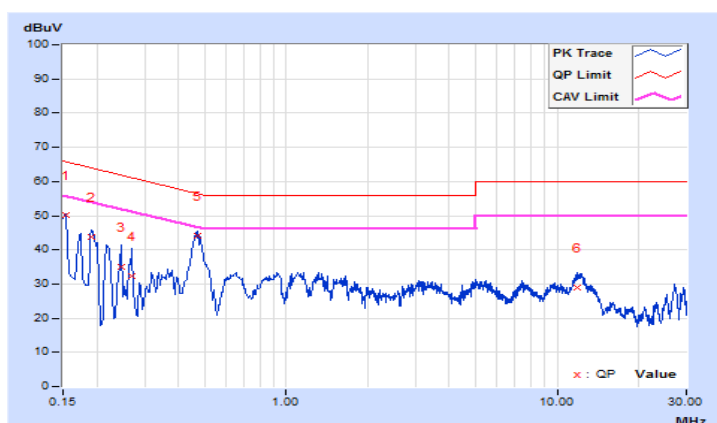


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	9.69	40.56	26.06	50.25	35.75	65.78	55.78	-15.53	-20.03
2	0.19000	9.78	34.11	18.42	43.89	28.20	64.04	54.04	-20.15	-25.84
3	0.24600	9.81	25.32	11.59	35.13	21.40	61.89	51.89	-26.76	-30.49
4	0.27000	9.82	22.56	10.30	32.38	20.12	61.12	51.12	-28.74	-31.00
5	0.46813	9.87	34.40	29.87	44.27	39.74	56.55	46.55	-12.28	-6.81
6	11.90200	10.30	18.68	13.41	28.98	23.71	60.00	50.00	-31.02	-26.29

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

Operation Band	EUT Category		Limit
U-NII-1		Outdoor Access Point	1 Watt (30 dBm) (Max. e.i.r.p \leq 125mW(21 dBm) at any elevation angle above 30 degrees as measured from the horizon)
		Fixed point-to-point Access Point	1 Watt (30 dBm)
	√	Indoor Access Point	1 Watt (30 dBm)
		Mobile and Portable client device	250mW (24 dBm)
U-NII-2A			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C			250mW (24 dBm) or 11 dBm+10 log B*
U-NII-3	√		1 Watt (30 dBm)

*B is the 26 dB emission bandwidth in megahertz

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

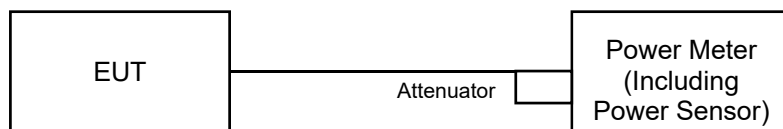
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

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

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

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

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

For Average Power Measurement

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst and set the detector to average. Duty factor is not added to measured value.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

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

4.3.7 Test Result

Test Mode A

5G traffic radio: CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.49	19.91	209.893	23.22	30.00	Pass
40	5200	22.44	22.20	341.347	25.33	30.00	Pass
48	5240	22.55	22.31	350.103	25.44	30.00	Pass
149	5745	21.65	21.50	287.472	24.59	30.00	Pass
157	5785	21.56	21.41	281.576	24.50	30.00	Pass
165	5825	21.33	21.34	271.975	24.35	30.00	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.44	20.29	217.567	23.38	30.00	Pass
40	5200	22.45	22.21	342.133	25.34	30.00	Pass
48	5240	22.41	22.28	343.225	25.36	30.00	Pass
149	5745	21.36	21.11	265.895	24.25	30.00	Pass
157	5785	21.29	21.17	265.504	24.24	30.00	Pass
165	5825	21.17	21.38	268.322	24.29	30.00	Pass

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	19.76	19.36	180.922	22.57	30.00	Pass
46	5230	20.78	20.45	230.591	23.63	30.00	Pass
151	5755	21.77	21.33	286.145	24.57	30.00	Pass
159	5795	21.39	21.40	275.759	24.41	30.00	Pass

802.11ac (VHT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.41	20.33	217.796	23.38	30.00	Pass
40	5200	22.49	22.25	345.299	25.38	30.00	Pass
48	5240	22.40	22.33	344.782	25.38	30.00	Pass
149	5745	21.33	21.18	267.051	24.27	30.00	Pass
157	5785	21.27	21.19	265.490	24.24	30.00	Pass
165	5825	21.28	21.39	271.997	24.35	30.00	Pass

802.11ac (VHT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	19.78	19.33	180.764	22.57	30.00	Pass
46	5230	20.79	20.51	232.410	23.66	30.00	Pass
151	5755	21.82	21.31	287.262	24.58	30.00	Pass
159	5795	21.42	21.39	276.397	24.42	30.00	Pass

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.16	19.11	163.884	22.15	30.00	Pass
155	5775	19.56	19.61	181.776	22.60	30.00	Pass

802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	20.53	20.39	222.376	23.47	30.00	Pass
40	5200	22.60	22.31	352.186	25.47	30.00	Pass
48	5240	22.51	22.43	353.223	25.48	30.00	Pass
149	5745	21.41	21.21	270.487	24.32	30.00	Pass
157	5785	21.33	21.21	267.961	24.28	30.00	Pass
165	5825	21.33	21.48	276.436	24.42	30.00	Pass

802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	19.87	19.45	185.156	22.68	30.00	Pass
46	5230	20.87	20.54	235.420	23.72	30.00	Pass
151	5755	21.87	21.39	291.536	24.65	30.00	Pass
159	5795	21.45	21.46	279.596	24.47	30.00	Pass

802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	19.23	19.15	165.977	22.20	30.00	Pass
155	5775	19.65	19.70	185.582	22.69	30.00	Pass

Test Mode A

5G traffic radio: Beamforming Mode

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.43	17.28	108.791	20.37	28.77	Pass
40	5200	19.44	19.20	171.078	22.33	28.77	Pass
48	5240	19.40	19.27	171.624	22.35	28.77	Pass
149	5745	18.35	18.10	132.956	21.24	28.72	Pass
157	5785	18.28	18.16	132.762	21.23	28.72	Pass
165	5825	18.16	18.37	134.171	21.28	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	16.75	16.35	90.467	19.56	28.77	Pass
46	5230	17.77	17.44	115.304	20.62	28.77	Pass
151	5755	18.76	18.32	143.082	21.56	28.72	Pass
159	5795	18.38	18.39	137.889	21.40	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

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				
36	5180	17.40	17.32	108.905	20.37	28.77	Pass
40	5200	19.48	19.24	172.662	22.37	28.77	Pass
48	5240	19.39	19.32	172.403	22.37	28.77	Pass
149	5745	18.32	18.17	133.535	21.26	28.72	Pass
157	5785	18.26	18.18	132.754	21.23	28.72	Pass
165	5825	18.27	18.38	136.008	21.34	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

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				
38	5190	16.77	16.32	90.389	19.56	28.77	Pass
46	5230	17.78	17.50	116.213	20.65	28.77	Pass
151	5755	18.81	18.30	143.641	21.57	28.72	Pass
159	5795	18.41	18.38	138.208	21.41	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	16.15	16.10	81.948	19.14	28.77	Pass
155	5775	16.55	16.60	90.895	19.59	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

802.11ax (HE20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
36	5180	17.52	17.38	111.196	20.46	28.77	Pass
40	5200	19.59	19.30	176.105	22.46	28.77	Pass
48	5240	19.50	19.42	176.623	22.47	28.77	Pass
149	5745	18.40	18.20	135.252	21.31	28.72	Pass
157	5785	18.32	18.20	133.989	21.27	28.72	Pass
165	5825	18.32	18.47	138.227	21.41	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

802.11ax (HE40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
38	5190	16.86	16.44	92.584	19.67	28.77	Pass
46	5230	17.86	17.53	117.718	20.71	28.77	Pass
151	5755	18.86	18.38	145.778	21.64	28.72	Pass
159	5795	18.44	18.45	139.807	21.46	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

802.11ax (HE80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
42	5210	16.22	16.14	82.994	19.19	28.77	Pass
155	5775	16.64	16.69	92.798	19.68	28.72	Pass

Note:

For 5180~5240MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.23 - 6) = 28.77\text{dBm}$.

For 5745~5825MHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.

Test Mode A

Scanning radio: CDD Mode

802.11a

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	14.158	11.51	29.22	Pass
40	5200	17.742	12.49	29.22	Pass
48	5240	28.576	14.56	29.22	Pass
149	5745	80.724	19.07	29.22	Pass
157	5785	85.114	19.30	29.22	Pass
165	5825	83.176	19.20	29.22	Pass

Note: Antenna gain = 6.78dBi > 6dBi, so the power limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	18.239	12.61	29.22	Pass
40	5200	18.880	12.76	29.22	Pass
48	5240	31.696	15.01	29.22	Pass
149	5745	79.983	19.03	29.22	Pass
157	5785	85.704	19.33	29.22	Pass
165	5825	86.497	19.37	29.22	Pass

Note: Antenna gain = 6.78dBi > 6dBi, so the power limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	27.733	14.43	29.22	Pass
46	5230	31.769	15.02	29.22	Pass
151	5755	79.983	19.03	29.22	Pass
159	5795	85.901	19.34	29.22	Pass

Note: Antenna gain = 6.78dBi > 6dBi, so the power limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.

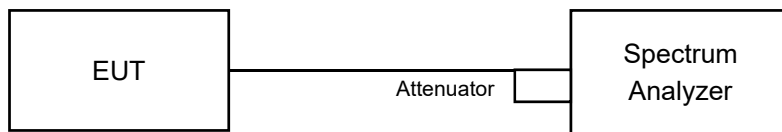
802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	18.072	12.57	29.22	Pass
155	5775	79.616	19.01	29.22	Pass

Note: Antenna gain = 6.78dBi > 6dBi, so the power limit shall be reduced to $30-(6.78-6) = 29.22$ 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

Test Mode A

5G traffic radio: CDD Mode

802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	16.44	16.44
40	5200	19.20	17.40
48	5240	17.88	17.40

802.11ax (HE20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
36	5180	19.08	19.08
40	5200	19.56	19.32
48	5240	19.32	19.56

802.11ax (HE40)

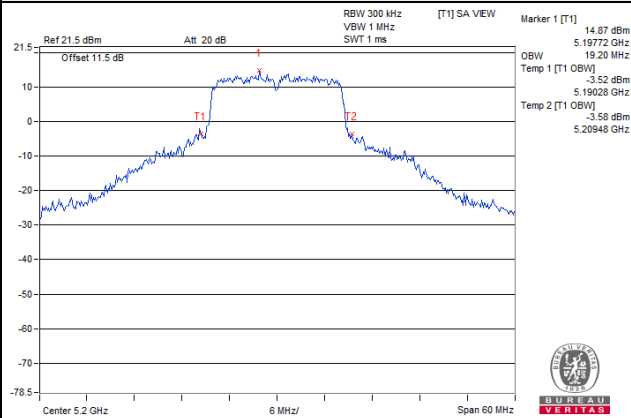
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
38	5190	37.92	38.04
46	5230	38.04	38.04

802.11ax (HE80)

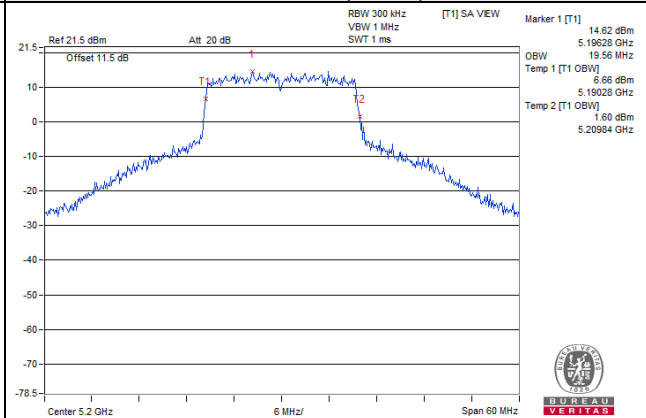
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
42	5210	77.28	77.28

Spectrum Plot of Worst Value

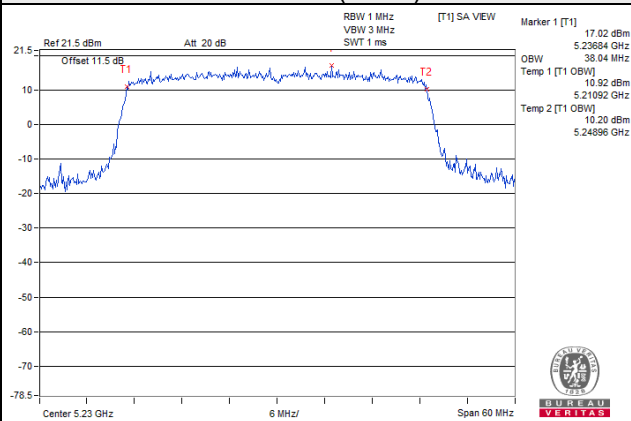
802.11a



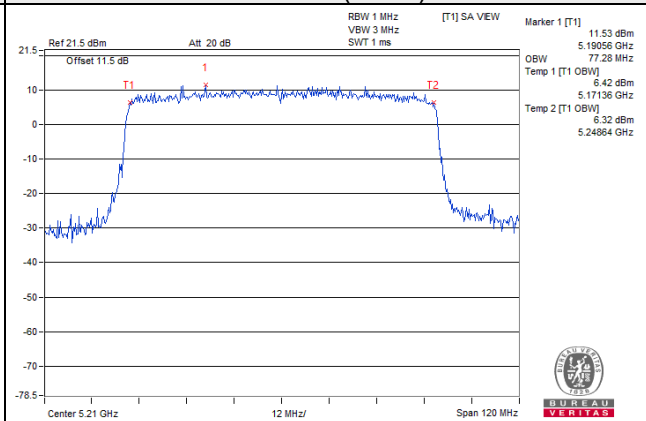
802.11ax (HE20)



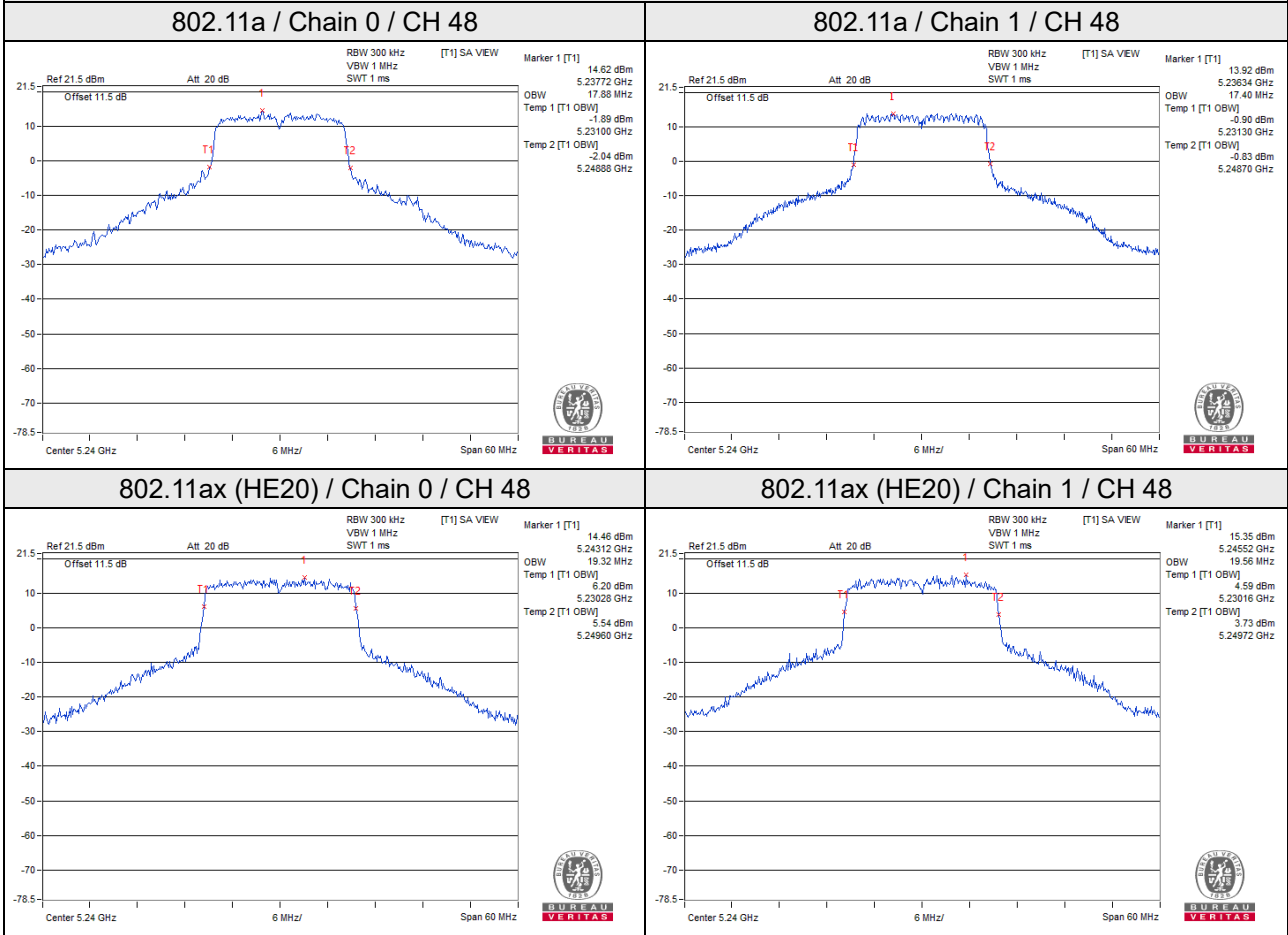
802.11ax (HE40)



802.11ax (HE80)

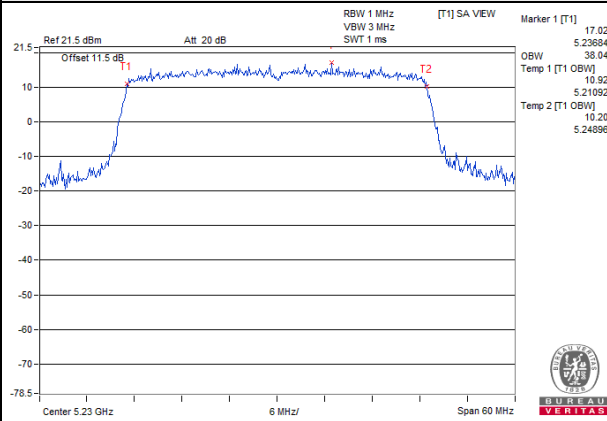


Spectrum Plot for near By DFS Band

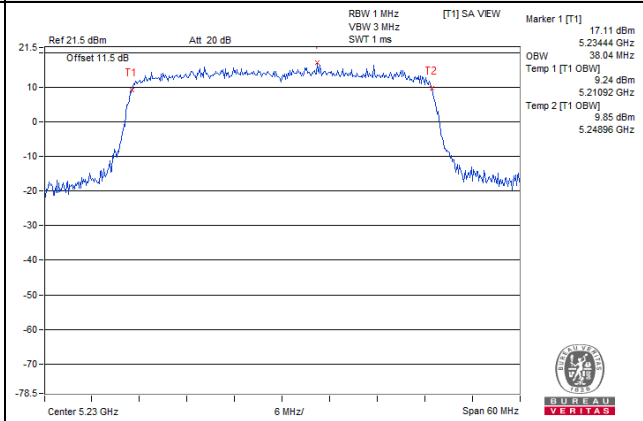


Spectrum Plot for near By DFS Band

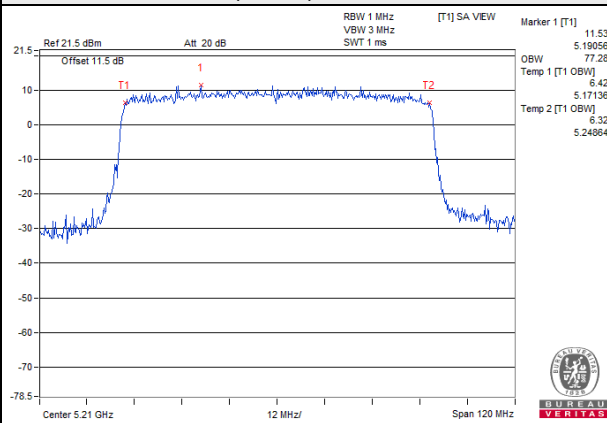
802.11ax (HE40) / Chain 0 / CH 46



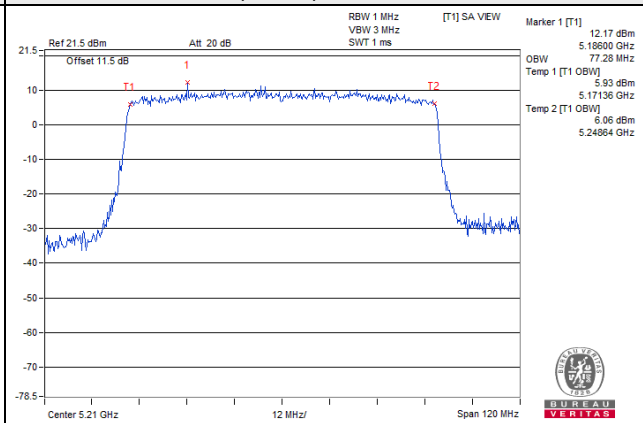
802.11ax (HE40) / Chain 1 / CH 46



802.11ax (HE80) / Chain 0 / CH 42



802.11ax (HE80) / Chain 1 / CH 42



802.11a

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
149	5745	21.12	16.68
157	5785	19.80	18.72
165	5825	17.04	17.88

802.11ax (HE20)

Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
149	5745	19.56	19.08
157	5785	19.32	19.20
165	5825	19.08	19.08

802.11ax (HE40)

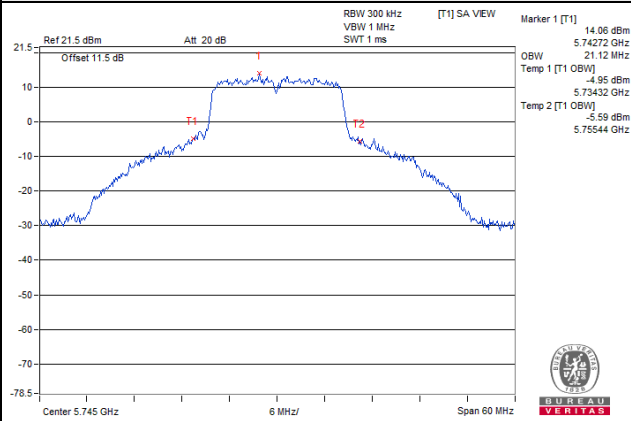
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
151	5755	39.36	38.64
159	5795	38.88	38.76

802.11ax (HE80)

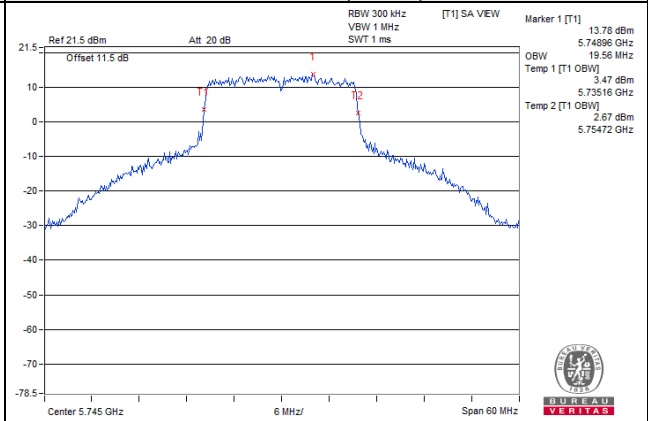
Chan.	Freq. (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
155	5775	77.28	77.28

Spectrum Plot of Worst Value

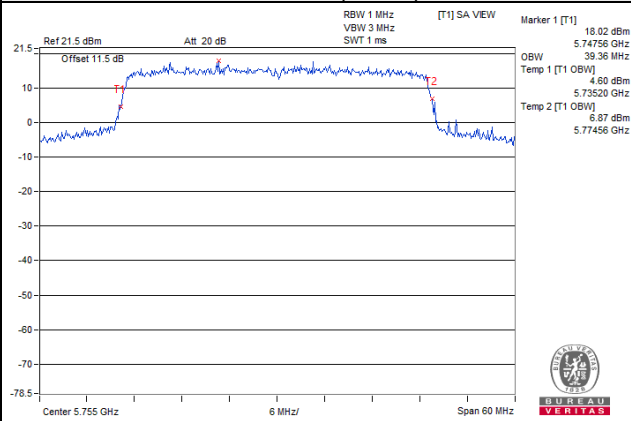
802.11a



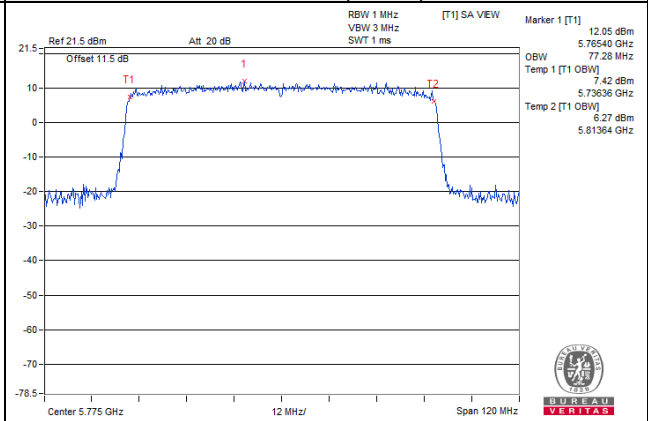
802.11ax (HE20)



802.11ax (HE40)

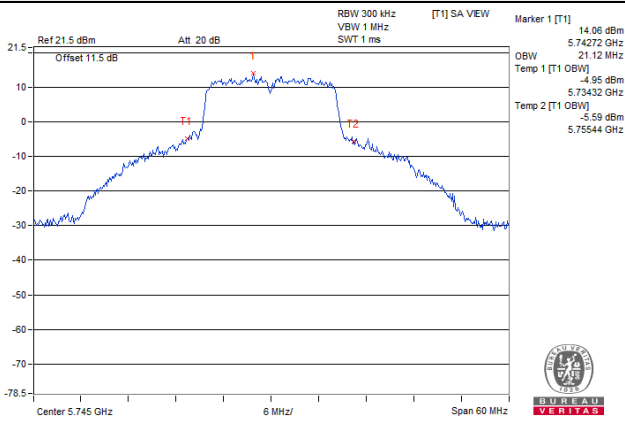


802.11ax (HE80)

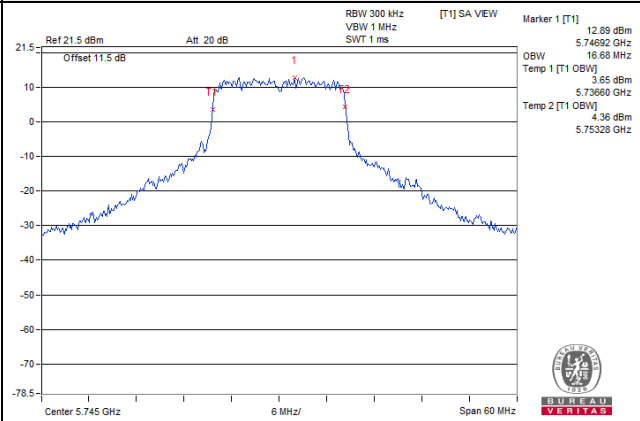


Spectrum Plot for near By DFS Band

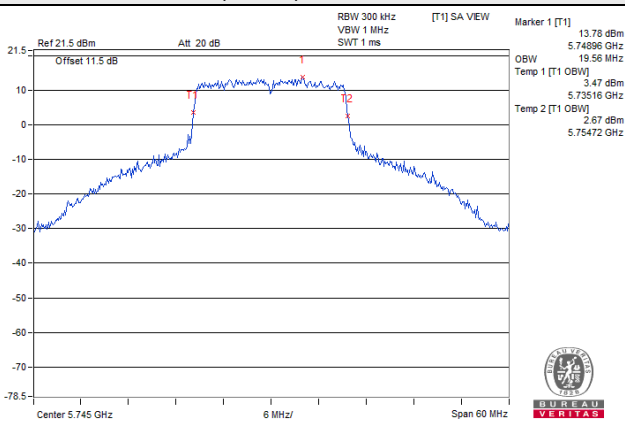
802.11a / Chain 0 / CH 149



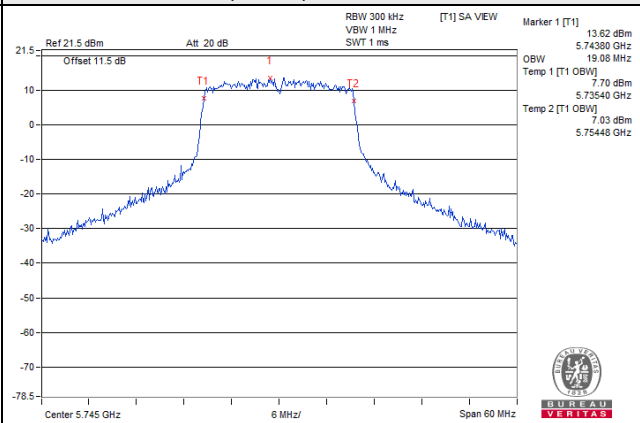
802.11a / Chain 1 / CH 149



802.11ax (HE20) / Chain 0 / CH 149

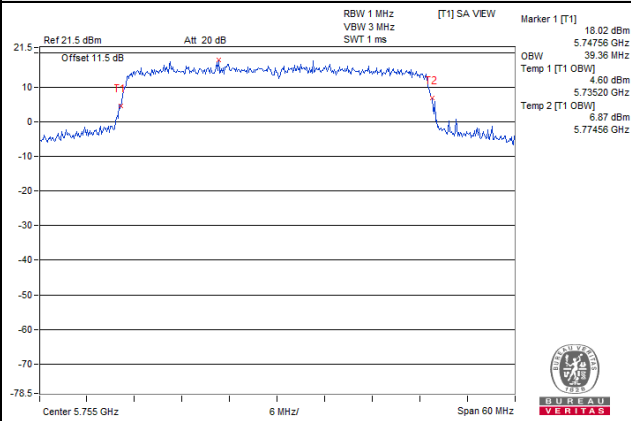


802.11ax (HE20) / Chain 1 / CH 149

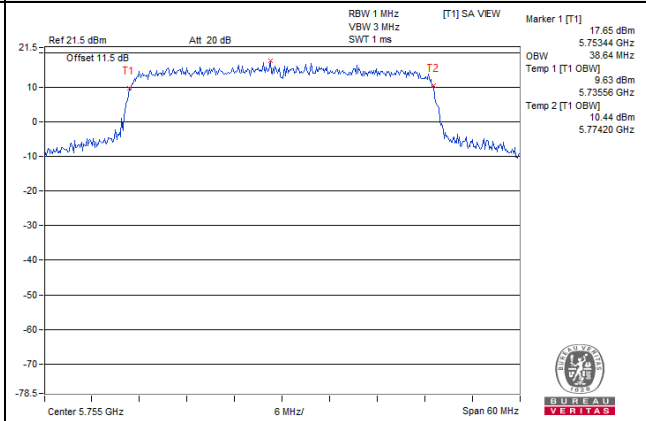


Spectrum Plot for near By DFS Band

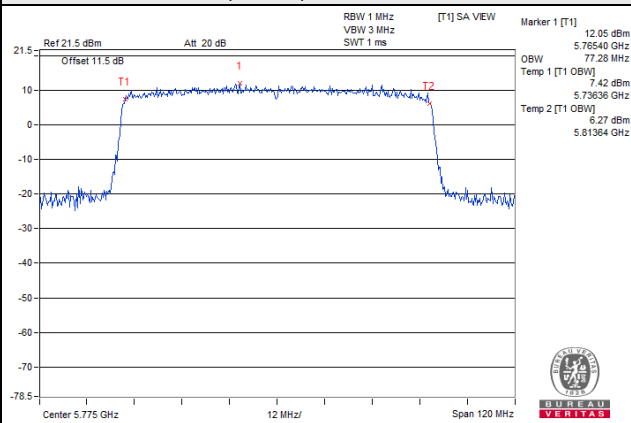
802.11ax (HE40) / Chain 0 / CH 151



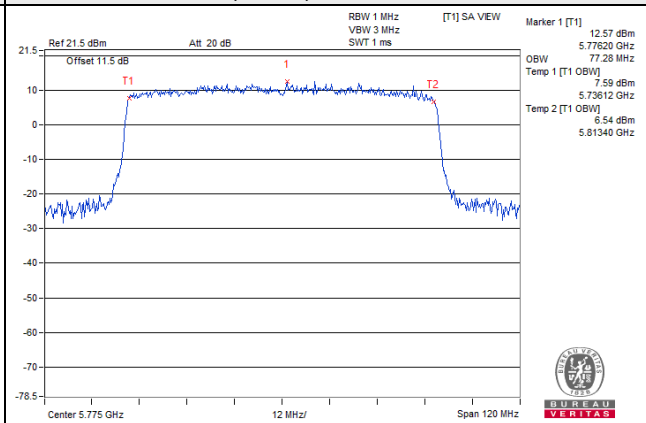
802.11ax (HE40) / Chain 1 / CH 151



802.11ax (HE80) / Chain 0 / CH 155



802.11ax (HE80) / Chain 1 / CH 155



Test Mode A

Scanning radio: CDD Mode

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.04
40	5200	17.04
48	5240	17.28

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	18.24
40	5200	18.24
48	5240	18.24

802.11n (HT40)

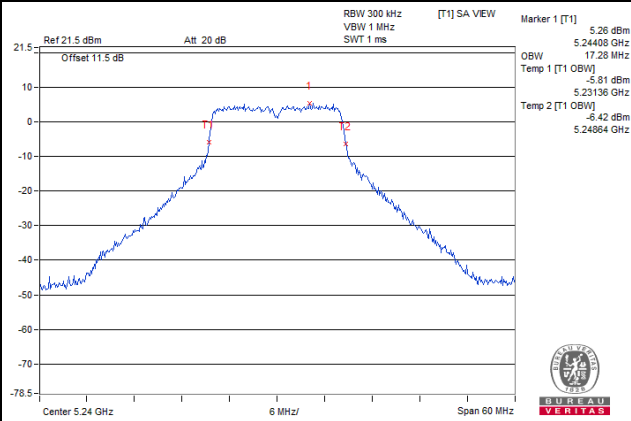
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	37.32
46	5230	37.44

802.11ac (VHT80)

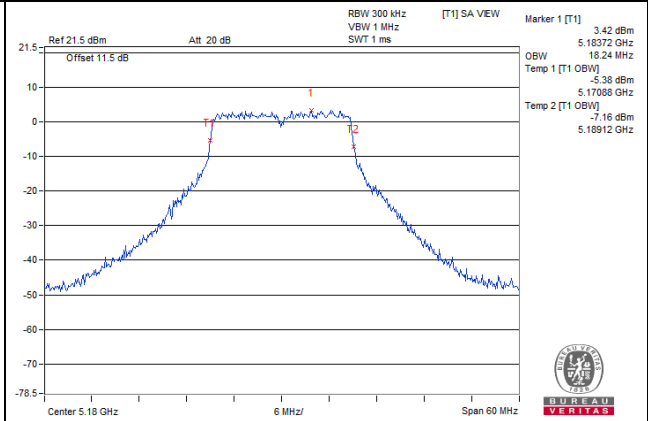
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	76.56

Spectrum Plot of Worst Value

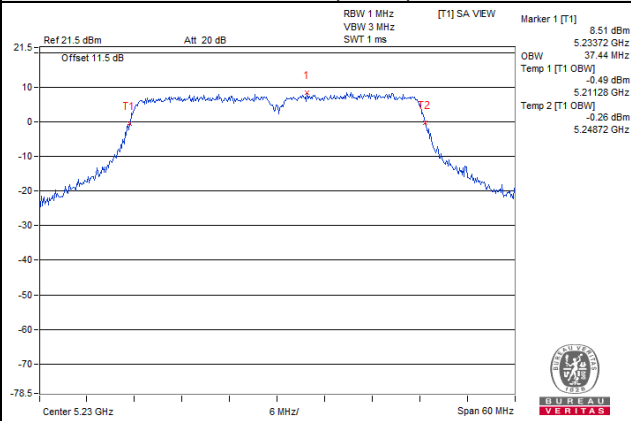
802.11a



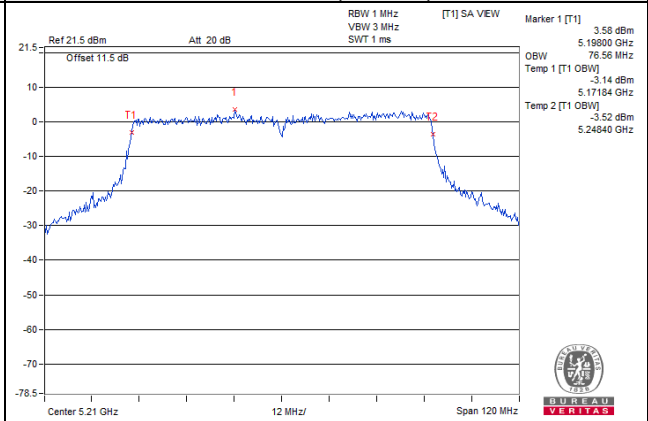
802.11n (HT20)



802.11n (HT40)

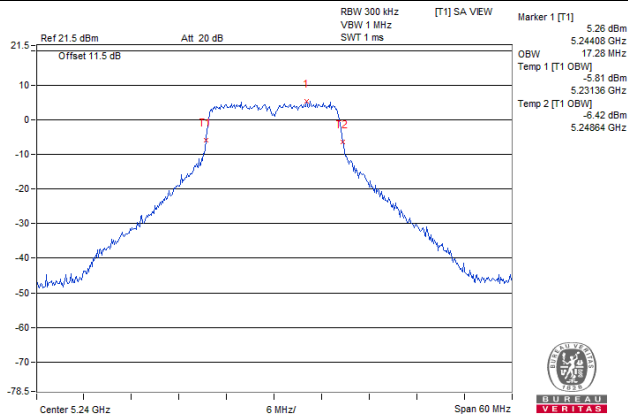


802.11ac (VHT80)

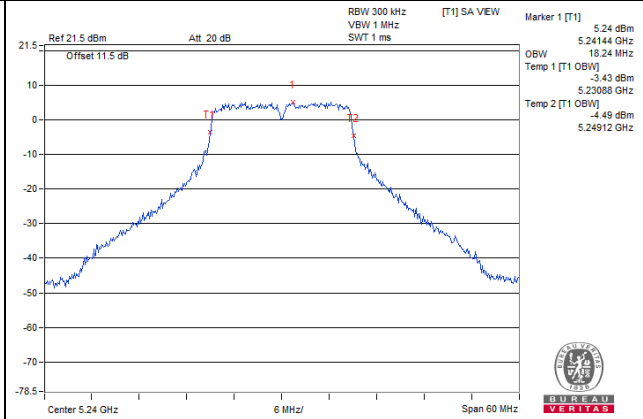


Spectrum Plot for near By DFS Band

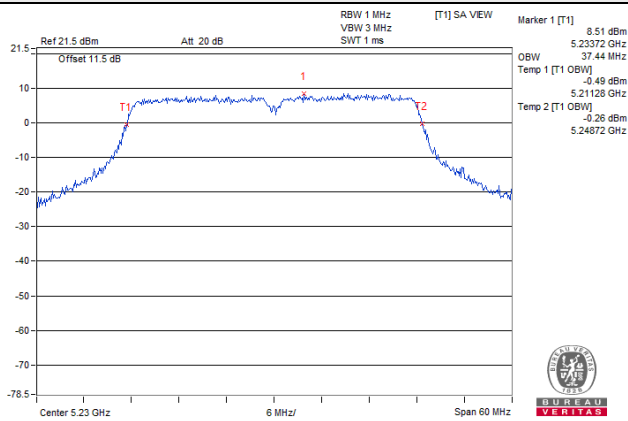
802.11a / CH 48



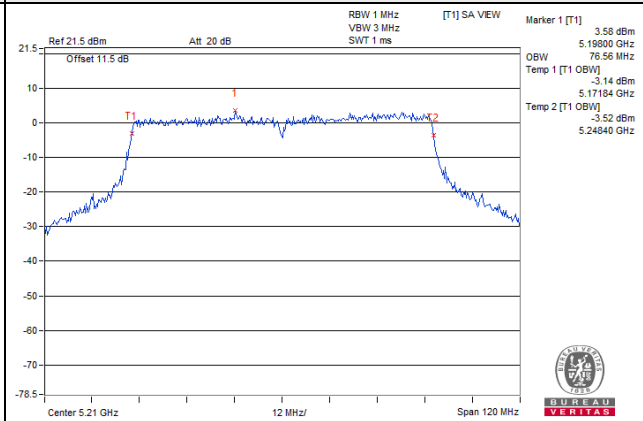
802.11n (HT20) / CH 48



802.11n (HT40) / CH 46



802.11ac (VHT80) / CH 42



802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
149	5745	26.16
157	5785	27.24
165	5825	27.48

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
149	5745	27.24
157	5785	29.76
165	5825	29.52

802.11n (HT40)

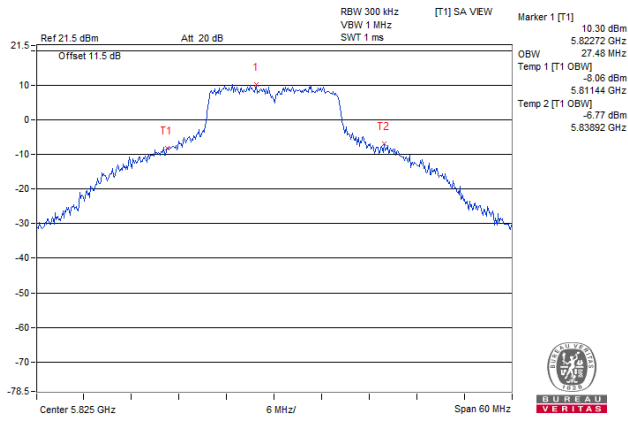
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
151	5755	40.32
159	5795	41.40

802.11ac (VHT80)

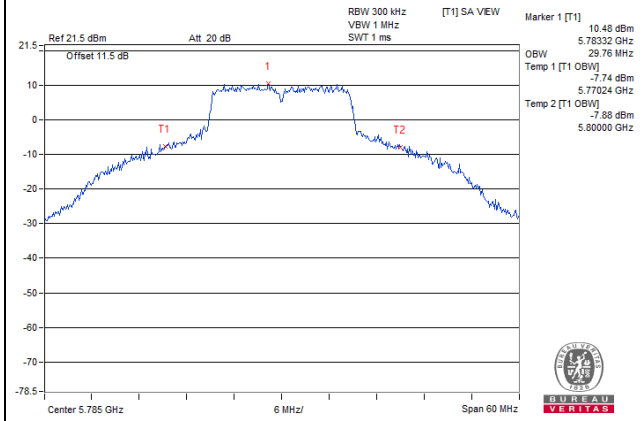
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
155	5775	81.60

Spectrum Plot of Worst Value

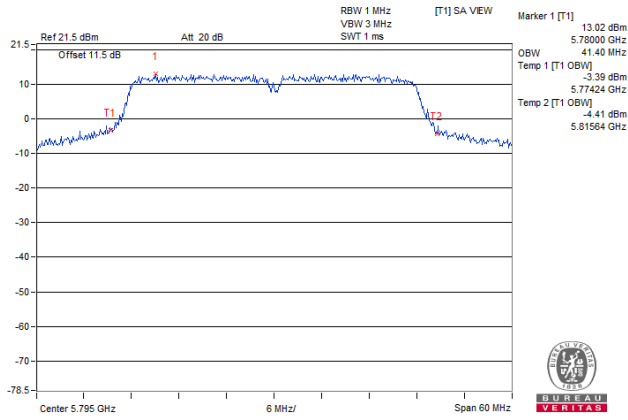
802.11a



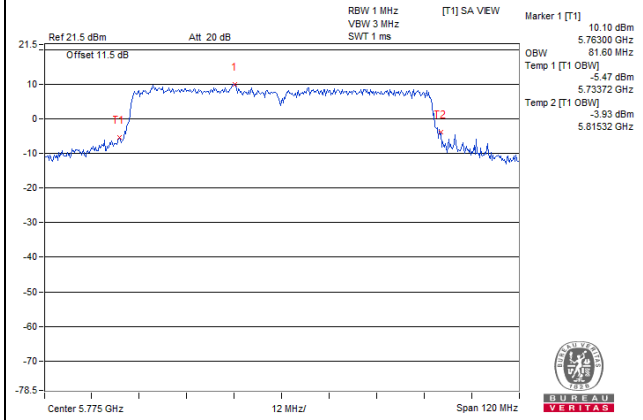
802.11n (HT20)



802.11n (HT40)

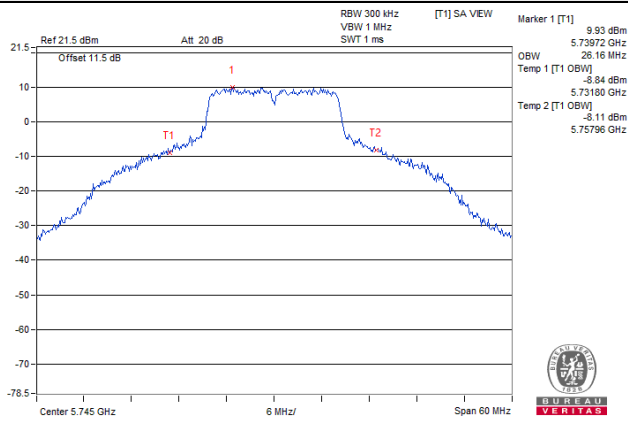


802.11ac (VHT80)

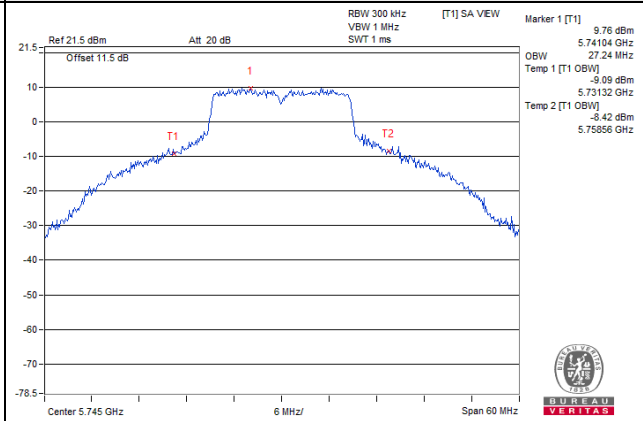


Spectrum Plot for near By DFS Band

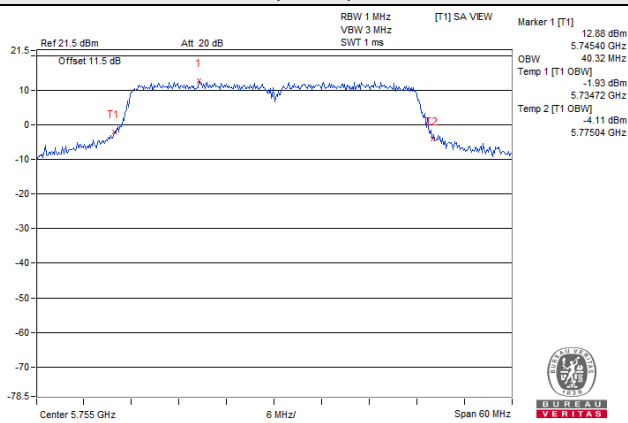
802.11a / CH 149



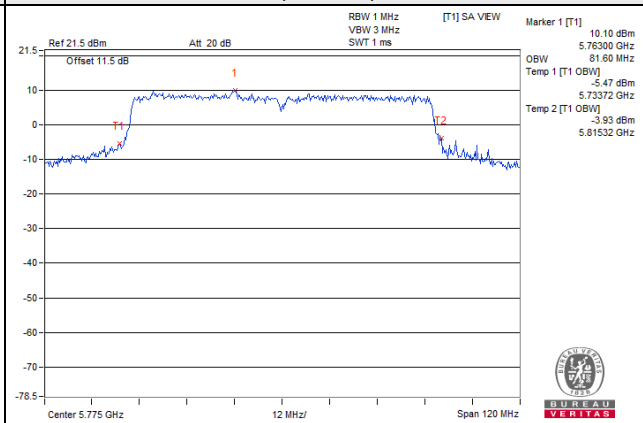
802.11n (HT20) / CH 149



802.11n (HT40) / CH 151



802.11ac (VHT80) / CH 155

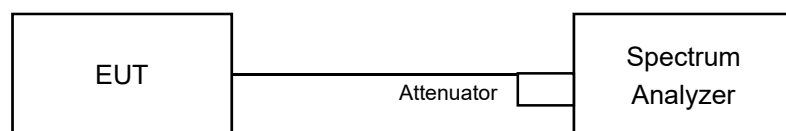


4.5 Peak Power Spectral Density Measurement

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 (reducing) 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

Test Mode A

5G traffic radio: CDD Mode

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	7.23	6.88	0.28	10.35	15.77	Pass
40	5200	9.33	8.79	0.28	12.36	15.77	Pass
48	5240	9.16	9.42	0.28	12.58	15.77	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (7.23 - 6) = 15.77\text{dBm}$.
- 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				
36	5180	6.14	5.62	0.23	9.13	15.77	Pass
40	5200	8.42	7.52	0.23	11.23	15.77	Pass
48	5240	7.99	8.64	0.23	11.57	15.77	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (7.23 - 6) = 15.77\text{dBm}$.
- 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				
38	5190	2.37	2.47	0.78	6.21	15.77	Pass
46	5230	4.27	3.09	0.78	7.51	15.77	Pass

Note:

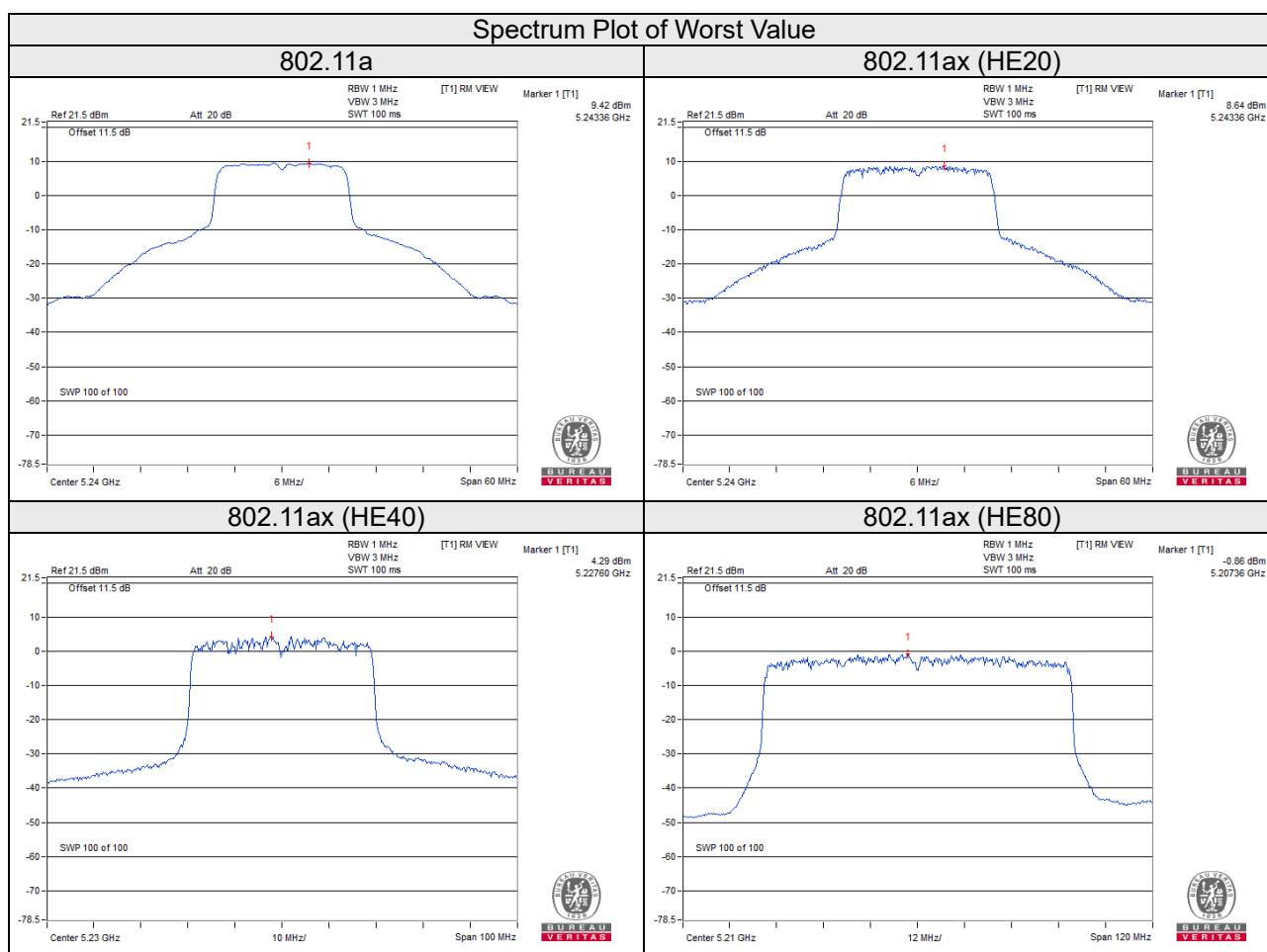
- Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
- Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $17 - (7.23 - 6) = 15.77\text{dBm}$.
- 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				
42	5210	-1.33	-0.86	0.79	2.71	15.77	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.23 \text{dBi} > 6 \text{dBi}$, so the power density limit shall be reduced to $17 - (7.23 - 6) = 15.77 \text{dBm}$.
- Refer to section 3.3 for duty cycle spectrum plot.



For U-NII-3 band:

802.11a

TX chain	Chan.	Freq. (MHz)	PSD w/o Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	0.09	2.31	3.01	0.28	5.60	28.72	Pass
	157	5785	-0.17	2.05	3.01	0.28	5.34	28.72	Pass
	165	5825	-0.38	1.84	3.01	0.28	5.13	28.72	Pass
1	149	5745	-0.15	2.07	3.01	0.28	5.36	28.72	Pass
	157	5785	-0.12	2.10	3.01	0.28	5.39	28.72	Pass
	165	5825	-0.04	2.18	3.01	0.28	5.47	28.72	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.
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=2) dB	Duty Factor (dB)	Total PSD with Duty Factor (dBm/500kHz)	Limit (dBm/500 kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	149	5745	-1.76	0.46	3.01	0.23	3.70	28.72	Pass
	157	5785	-1.94	0.28	3.01	0.23	3.52	28.72	Pass
	165	5825	-2.34	-0.12	3.01	0.23	3.12	28.72	Pass
1	149	5745	-2.07	0.15	3.01	0.23	3.39	28.72	Pass
	157	5785	-1.91	0.31	3.01	0.23	3.55	28.72	Pass
	165	5825	-1.84	0.38	3.01	0.23	3.62	28.72	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE40)

TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	151	5755	-4.30	-2.08	3.01	0.78	1.71	28.72	Pass
	159	5795	-4.74	-2.52	3.01	0.78	1.27	28.72	Pass
1	151	5755	-4.35	-2.13	3.01	0.78	1.66	28.72	Pass
	159	5795	-4.53	-2.31	3.01	0.78	1.48	28.72	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 = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ax (HE80)

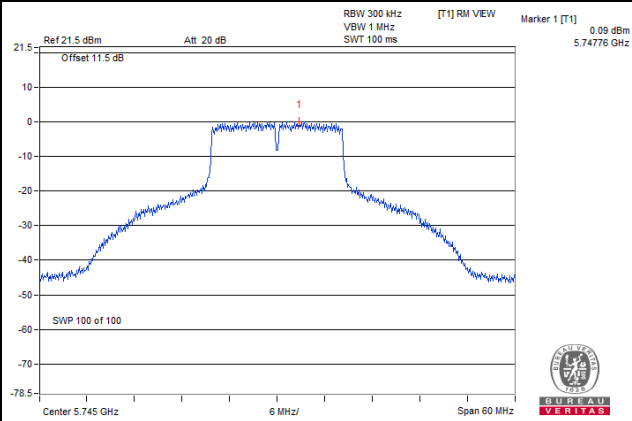
TX chain	Chan.	Freq. (MHz)	PSD W/O Duty Factor		10 log (N=2) dB	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass / Fail
			(dBm/300kHz)	(dBm/500kHz)					
0	155	5775	-9.35	-7.13	3.01	0.79	-3.33	28.72	Pass
1	155	5775	-9.11	-6.89	3.01	0.79	-3.09	28.72	Pass

Note:

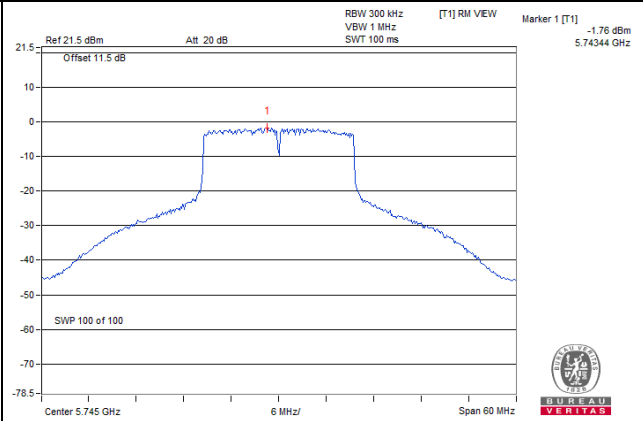
1. Method E) 2) c) of power density measurement of KDB 662911 is using for calculating total power density, Measure and add $10 \log (N_{ANT})$ dB.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 7.28\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $30 - (7.28 - 6) = 28.72\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

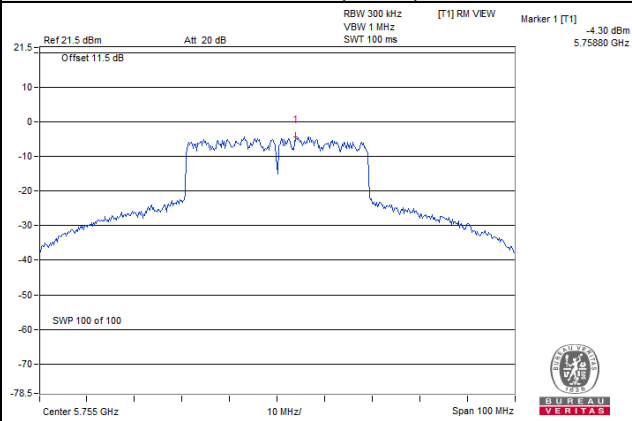
802.11a



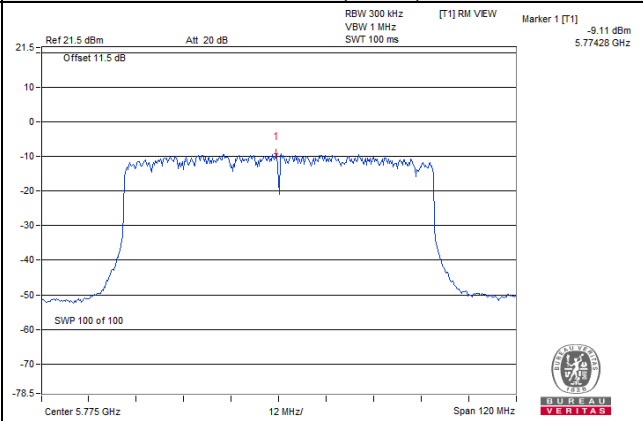
802.11ax (HE20)



802.11ax (HE40)



802.11ax (HE80)



Test Mode A

Scanning radio: CDD Mode

For U-NII-1 band:

802.11a

Chan.	Freq. (MHz)	PSD w/o duty factor (dBm)	Duty factor	PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
36	5180	-1.47	0.23	-1.24	16.22	Pass
40	5200	-1.38	0.23	-1.15	16.22	Pass
48	5240	0.82	0.23	1.05	16.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $17-(6.78-6) = 16.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD w/o duty factor (dBm)	Duty factor	PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
36	5180	-0.93	0.10	-0.83	16.22	Pass
40	5200	-1.33	0.10	-1.23	16.22	Pass
48	5240	0.74	0.10	0.84	16.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $17-(6.78-6) = 16.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD w/o duty factor (dBm)	Duty factor	PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
38	5190	-2.70	0.29	-2.41	16.22	Pass
46	5230	-2.17	0.29	-1.88	16.22	Pass

Note:

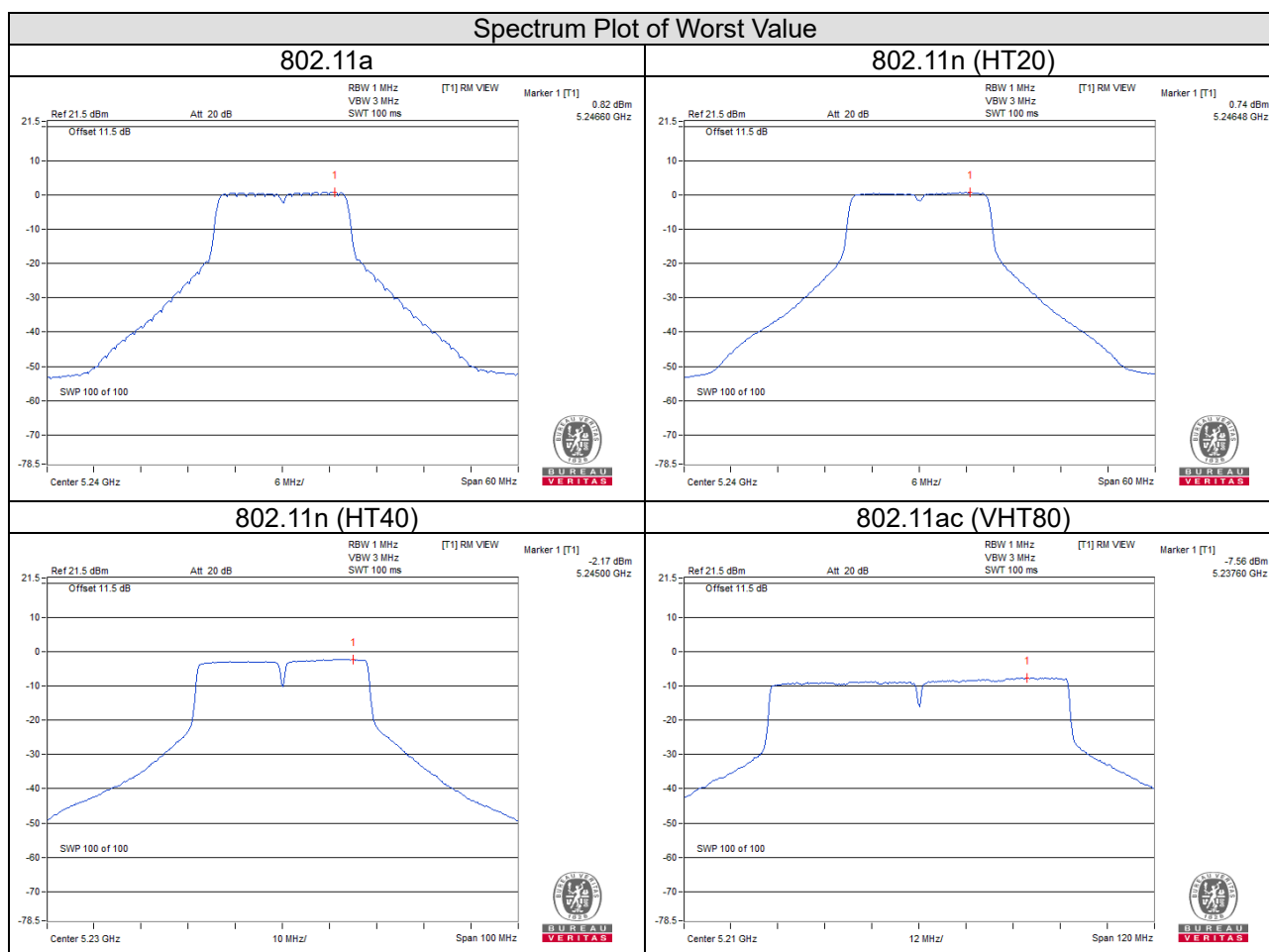
1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $17-(6.78-6) = 16.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD w/o duty factor (dBm)	Duty factor	PSD with duty factor (dBm)	Max. Limit (dBm)	Pass / Fail
42	5210	-7.56	0.36	-7.20	16.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to 17-(6.78-6) = 16.22dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.



802.11a

Chan.	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	Duty factor	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	Pass / Fail
149	5745	-3.02	-0.80	0.23	-0.57	29.22	Pass
157	5785	-2.68	-0.46	0.23	-0.23	29.22	Pass
165	5825	-2.73	-0.51	0.23	-0.28	29.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	Duty factor	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	Pass / Fail
149	5745	-3.39	-1.17	0.10	-1.07	29.22	Pass
157	5785	-2.96	-0.74	0.10	-0.64	29.22	Pass
165	5825	-2.94	-0.72	0.10	-0.62	29.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	Duty factor	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	Pass / Fail
151	5755	-7.06	-4.84	0.29	-4.55	29.22	Pass
159	5795	-6.46	-4.24	0.29	-3.95	29.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

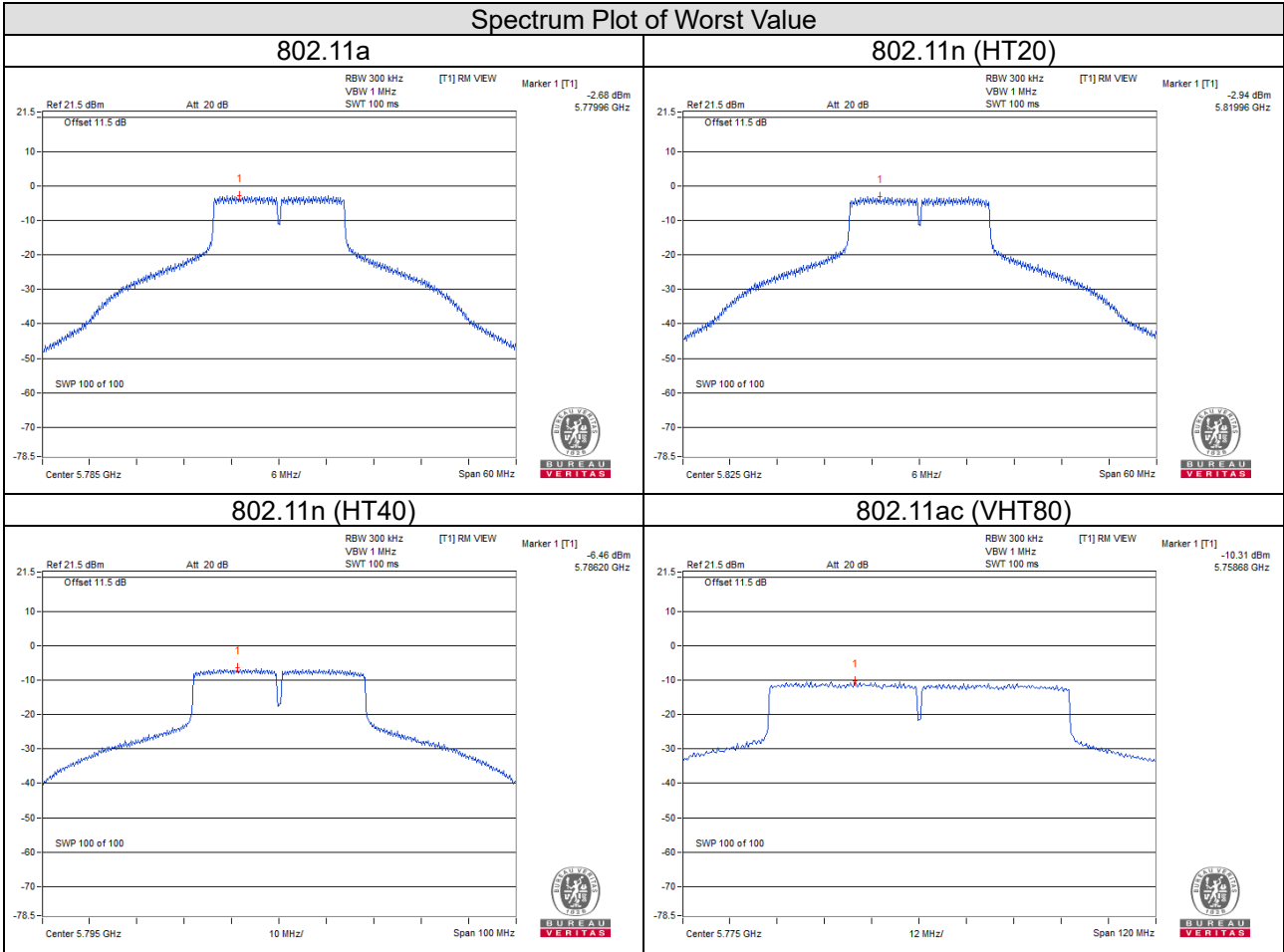
802.11ac (VHT80)

Chan.	Freq. (MHz)	PSD (dBm/300k Hz)	PSD (dBm/500k Hz)	Duty factor	Total PSD (dBm/500k Hz)	Limit (dBm/500k Hz)	Pass / Fail
155	5775	-10.31	-8.09	0.36	-7.73	29.22	Pass

Note:

1. Antenna gain = 6.78dBi > 6dBi, so the power density limit shall be reduced to $30-(6.78-6) = 29.22$ dBm.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

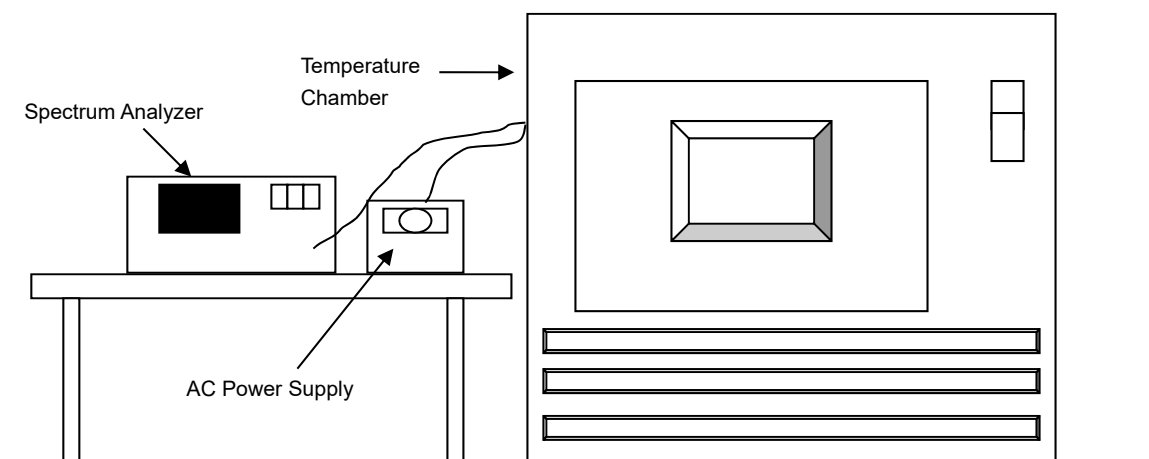


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 12, 2019	Jun. 11, 2020
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 03, 2019	Jun. 02, 2020
Digital Multimeter Fluke	87-III	70360742	Jun. 27, 2019	Jun. 26, 2020
AC Power Supply Extech	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 the temperature chamber set to the next desired temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

Test Mode A

5G traffic radio: CDD Mode

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
40	120	5180.0106	Pass	5180.0069	Pass	5180.0057	Pass	5180.0087	Pass
30	120	5179.9782	Pass	5179.9811	Pass	5179.9831	Pass	5179.9812	Pass
20	120	5179.9945	Pass	5179.9969	Pass	5179.9948	Pass	5179.9967	Pass
10	120	5179.9941	Pass	5179.9989	Pass	5179.9959	Pass	5179.9989	Pass
0	120	5179.9927	Pass	5179.9926	Pass	5179.9936	Pass	5179.9917	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	5179.995	Pass	5179.9964	Pass	5179.9942	Pass	5179.9974	Pass
	120	5179.9945	Pass	5179.9969	Pass	5179.9948	Pass	5179.9967	Pass
	102	5179.9942	Pass	5179.996	Pass	5179.994	Pass	5179.996	Pass

Test Mode A

Scanning radio: CDD Mode

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
40	120	5180.0249	Pass	5180.022	Pass	5180.0234	Pass	5180.0239	Pass
30	120	5180.006	Pass	5180.0086	Pass	5180.0063	Pass	5180.0071	Pass
20	120	5180.0135	Pass	5180.0111	Pass	5180.0133	Pass	5180.0125	Pass
10	120	5179.9888	Pass	5179.9906	Pass	5179.9914	Pass	5179.9934	Pass
0	120	5180.0244	Pass	5180.0256	Pass	5180.0228	Pass	5180.0221	Pass

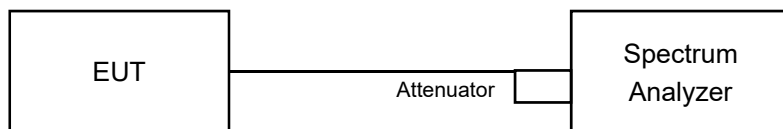
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0139	Pass	5180.0104	Pass	5180.0141	Pass	5180.0124	Pass
	120	5180.0135	Pass	5180.0111	Pass	5180.0133	Pass	5180.0125	Pass
	102	5180.0131	Pass	5180.0102	Pass	5180.0139	Pass	5180.0116	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

Test Mode A

5G traffic radio: CDD Mode

802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	16.07	16.33	0.5	Pass
157	5785	15.81	15.96	0.5	Pass
165	5825	16.06	15.79	0.5	Pass

802.11ax (HE20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
149	5745	18.71	18.42	0.5	Pass
157	5785	18.60	17.40	0.5	Pass
165	5825	18.60	18.20	0.5	Pass

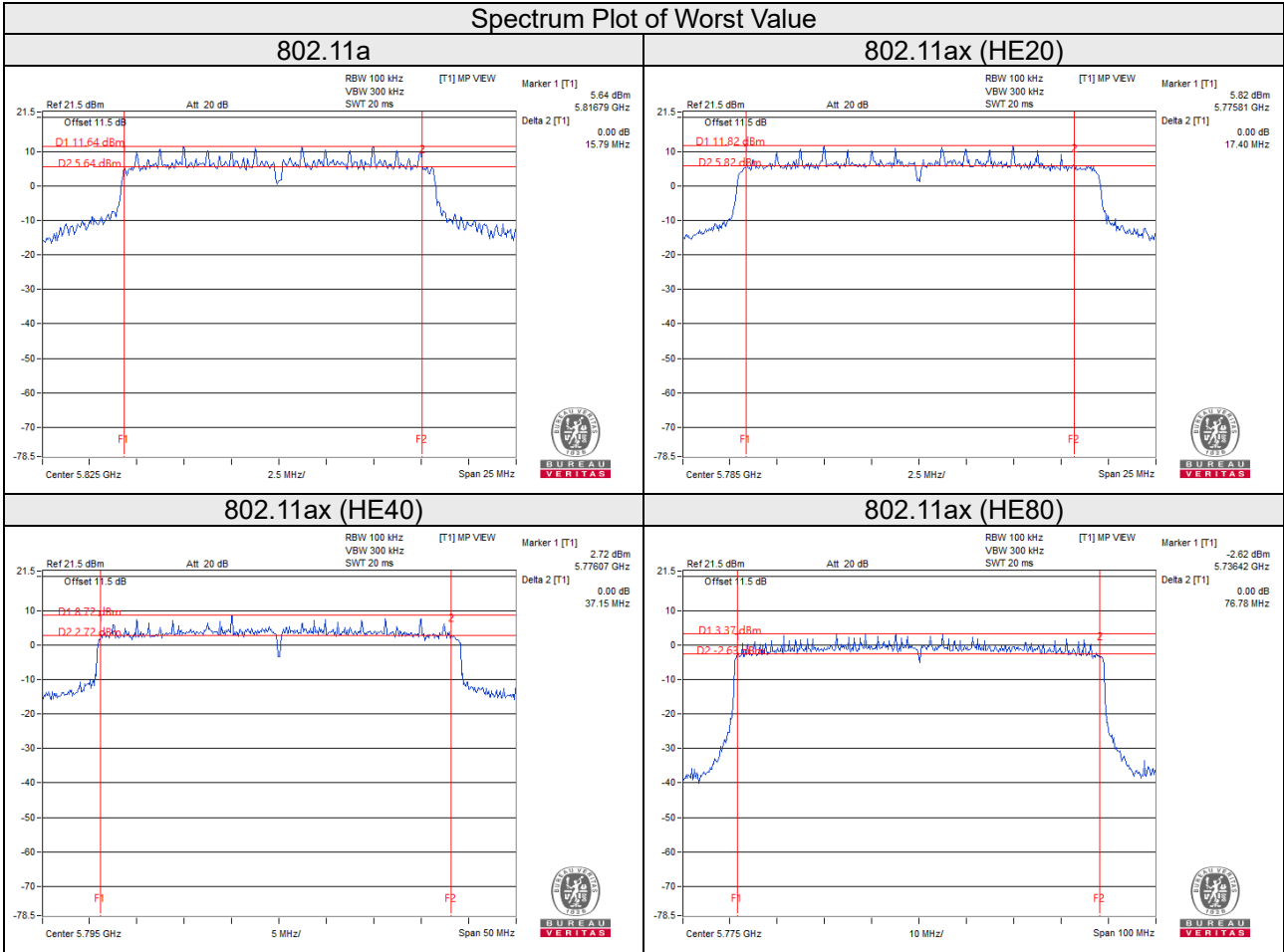
802.11ax (HE40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
151	5755	37.32	37.98	0.5	Pass
159	5795	38.09	37.15	0.5	Pass

802.11ax (HE80)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
155	5775	77.17	76.78	0.5	Pass

Spectrum Plot of Worst Value



Test Mode A

Scanning radio: CDD Mode

802.11a

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

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	17.63	0.5	Pass
157	5785	17.61	0.5	Pass
165	5825	17.61	0.5	Pass

802.11n (HT40)

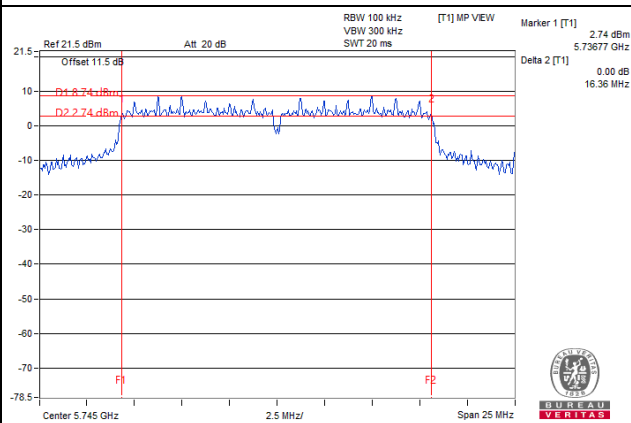
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	36.44	0.5	Pass
159	5795	35.08	0.5	Pass

802.11ac (VHT80)

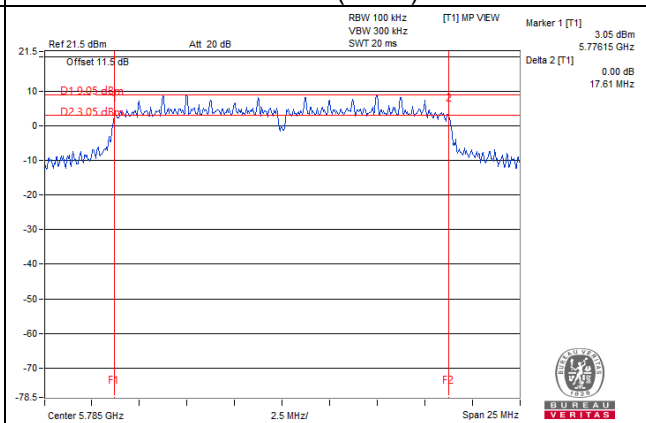
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	73.72	0.5	Pass

Spectrum Plot of Worst Value

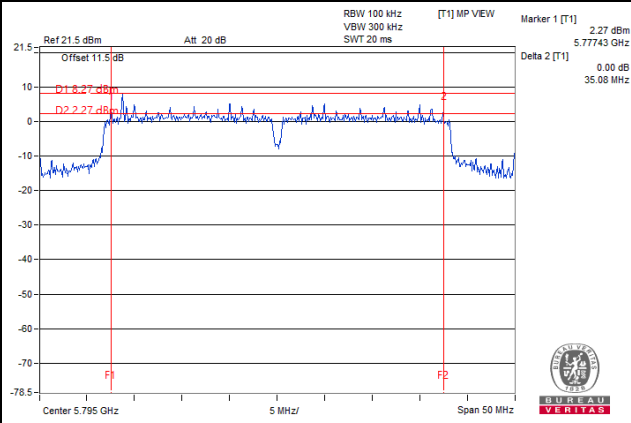
802.11a



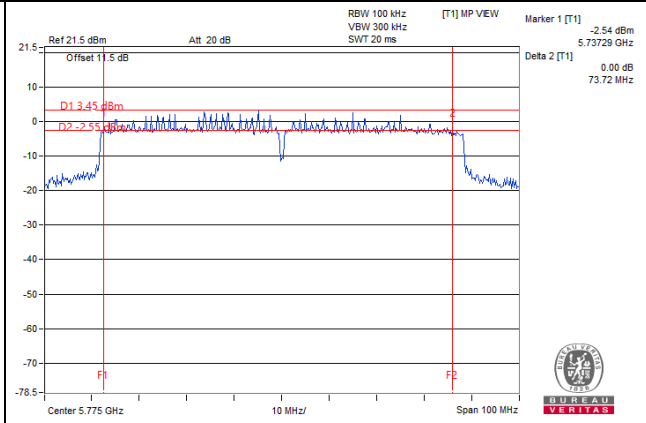
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



5 Pictures of Test Arrangements

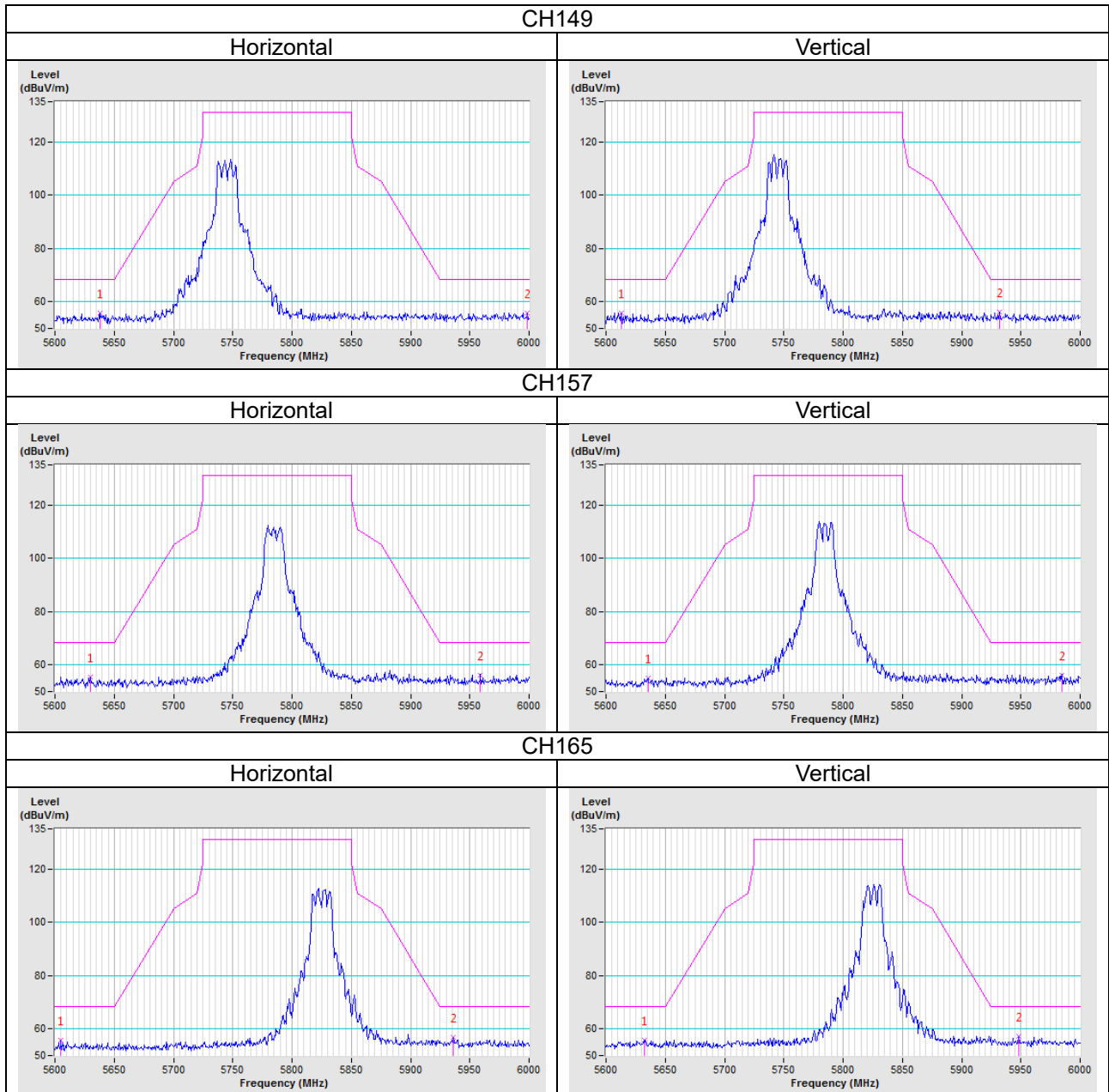
Please refer to the attached file (Test Setup Photo).

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

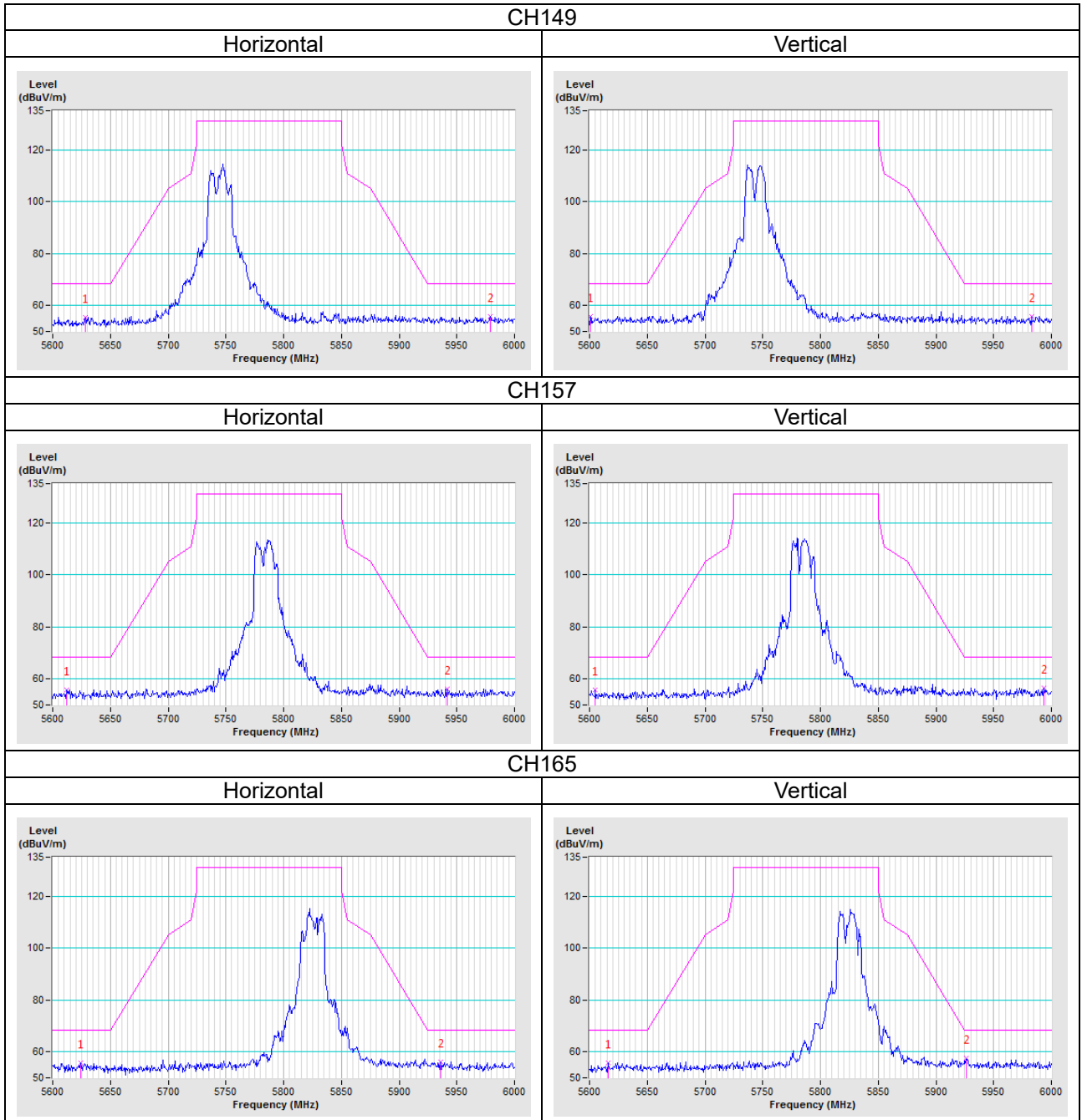
Test Mode A

5G traffic radio: CDD Mode

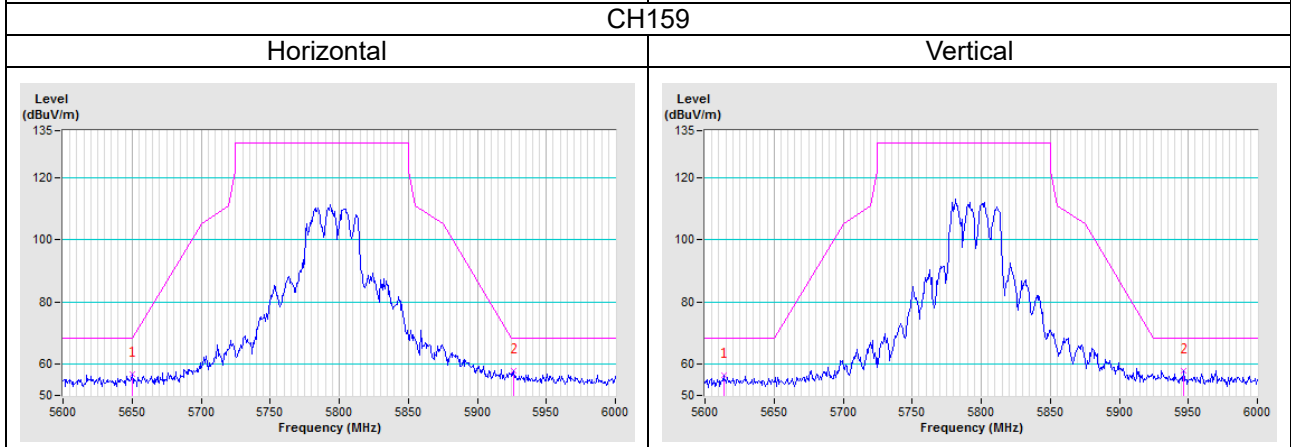
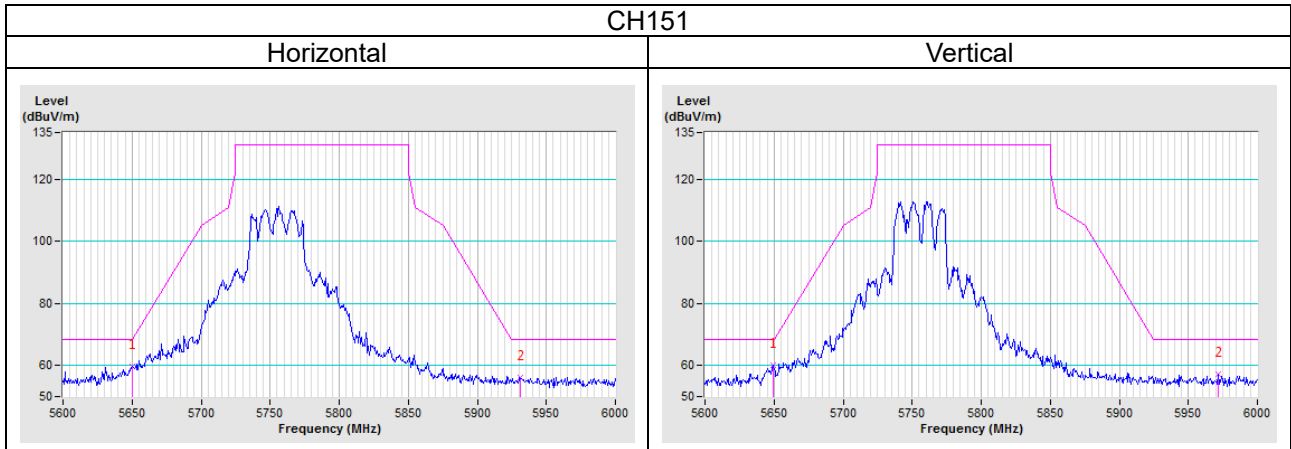
802.11a



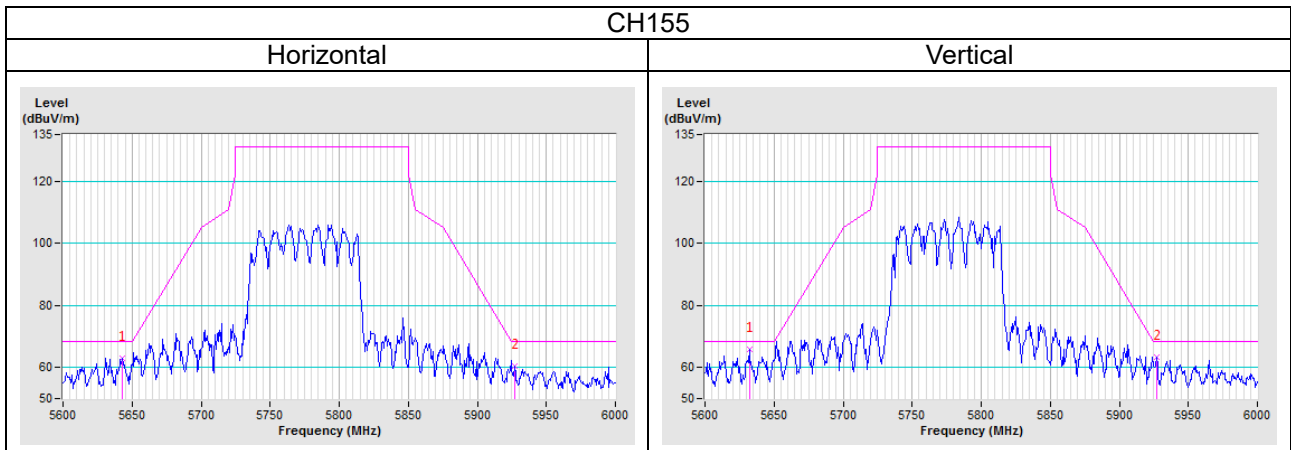
802.11ax (HE20)



802.11ax (HE40)



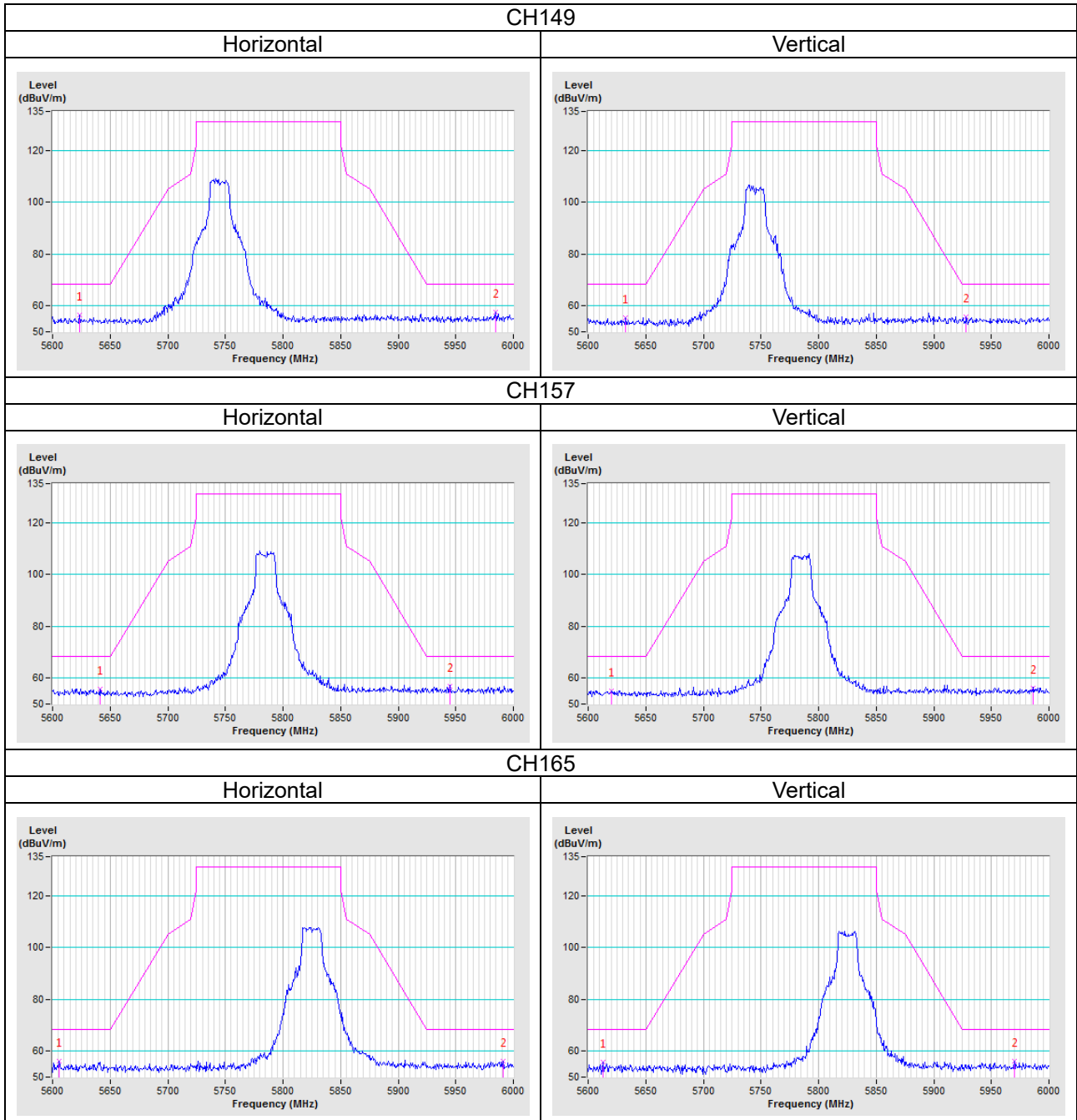
802.11ax (HE80)



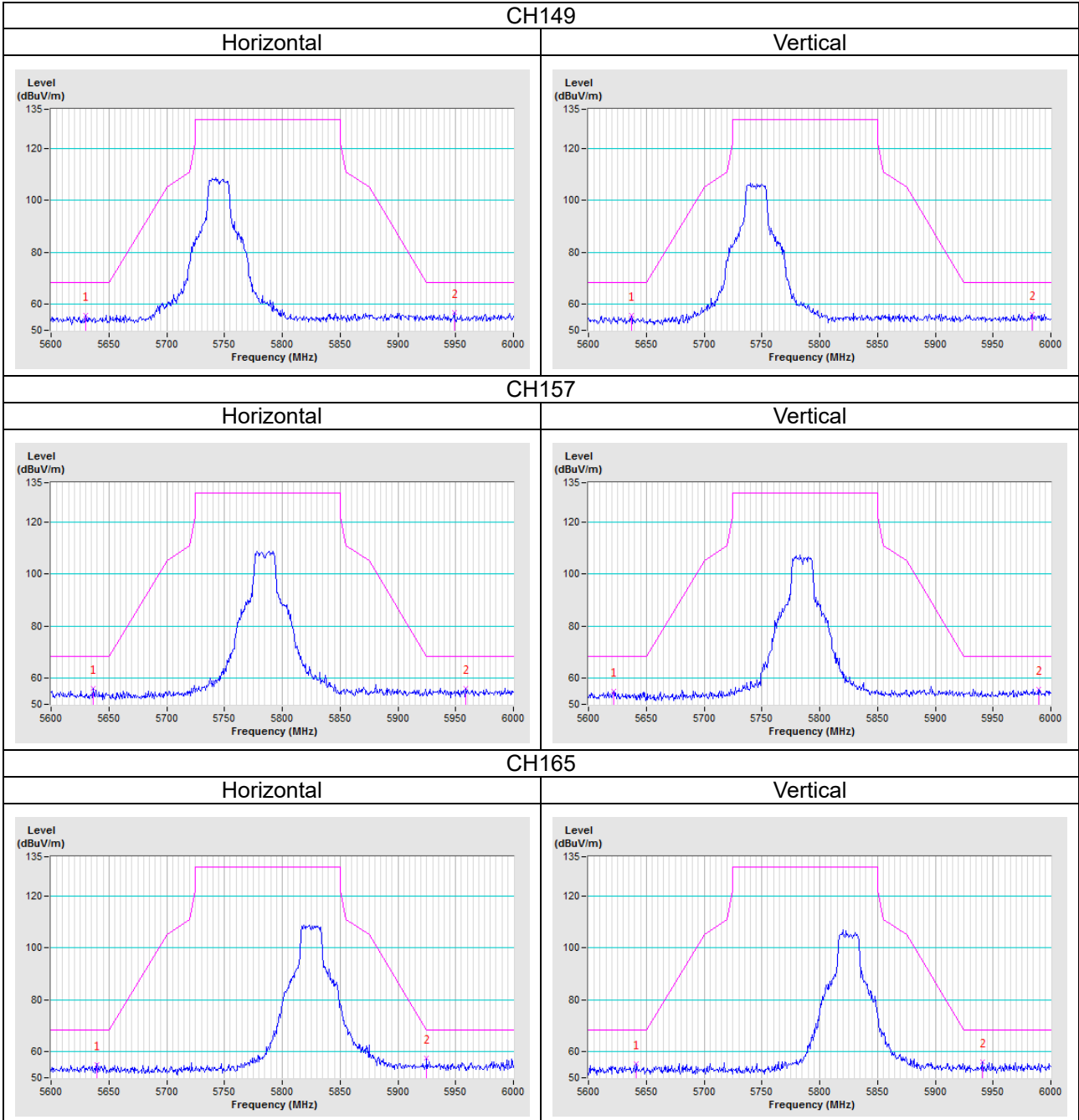
Test Mode A

Scanning radio: CDD Mode

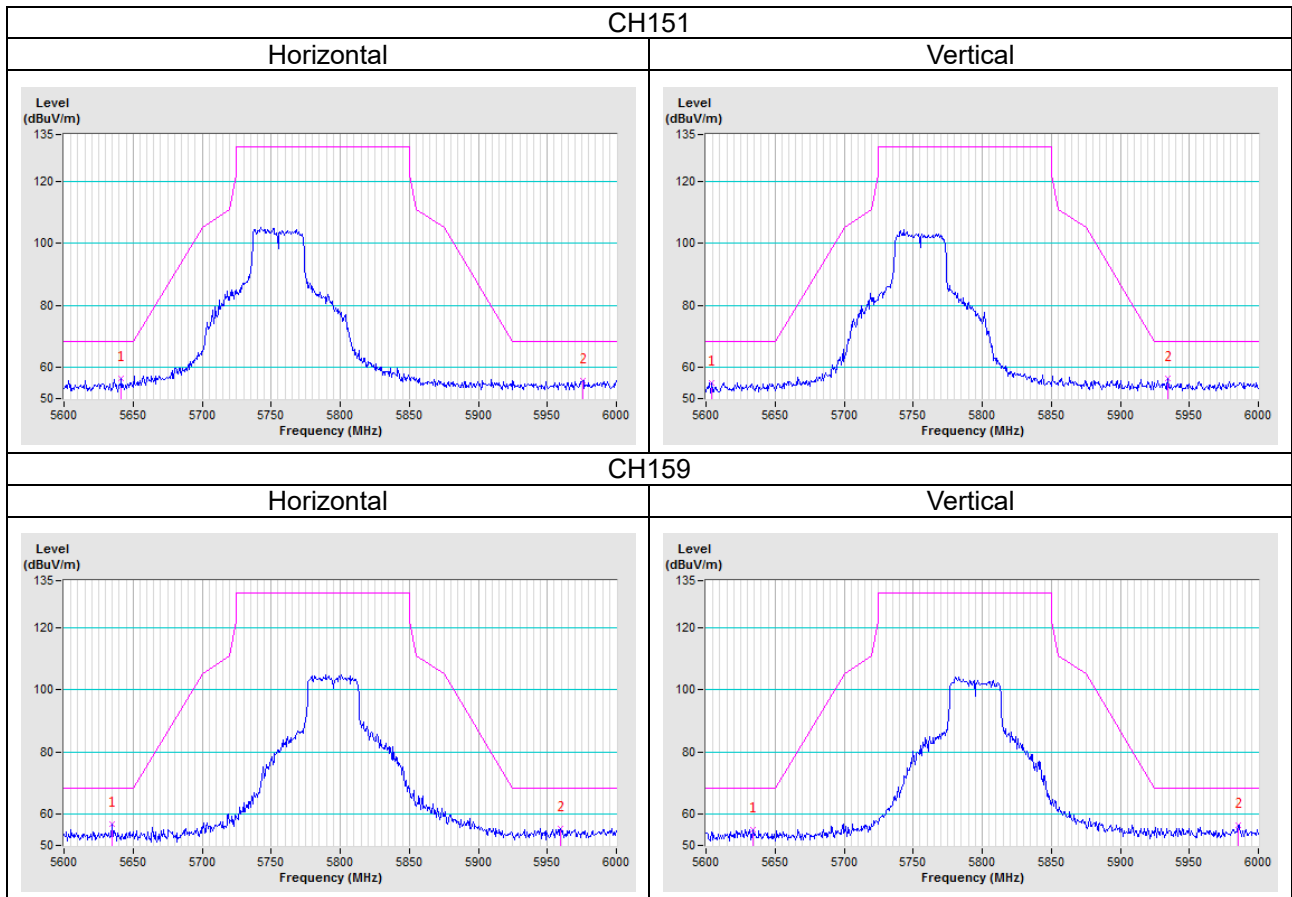
802.11a



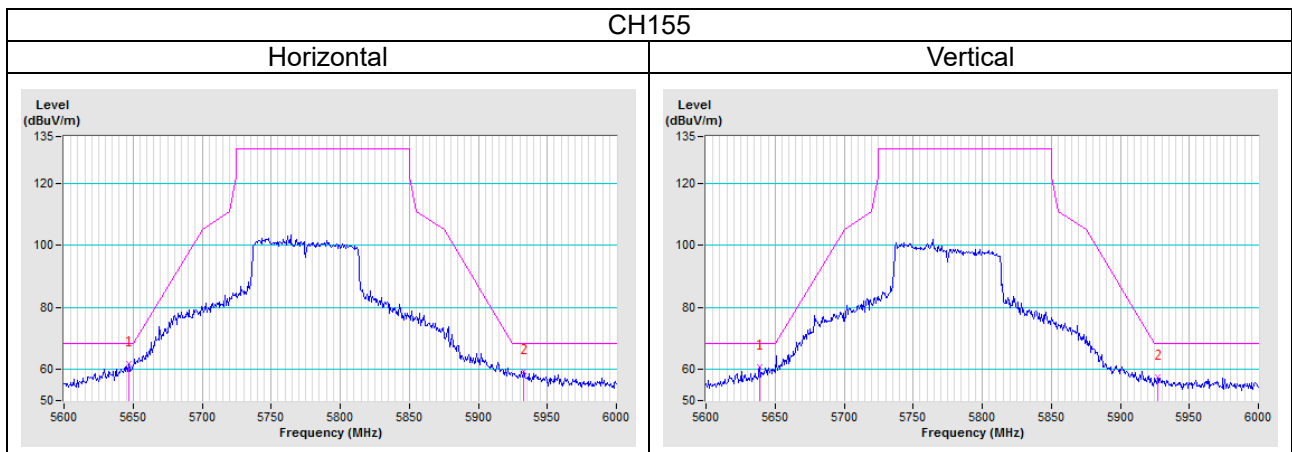
802.11ac (VHT20)



802.11ac (VHT40)



802.11ac (VHT80)

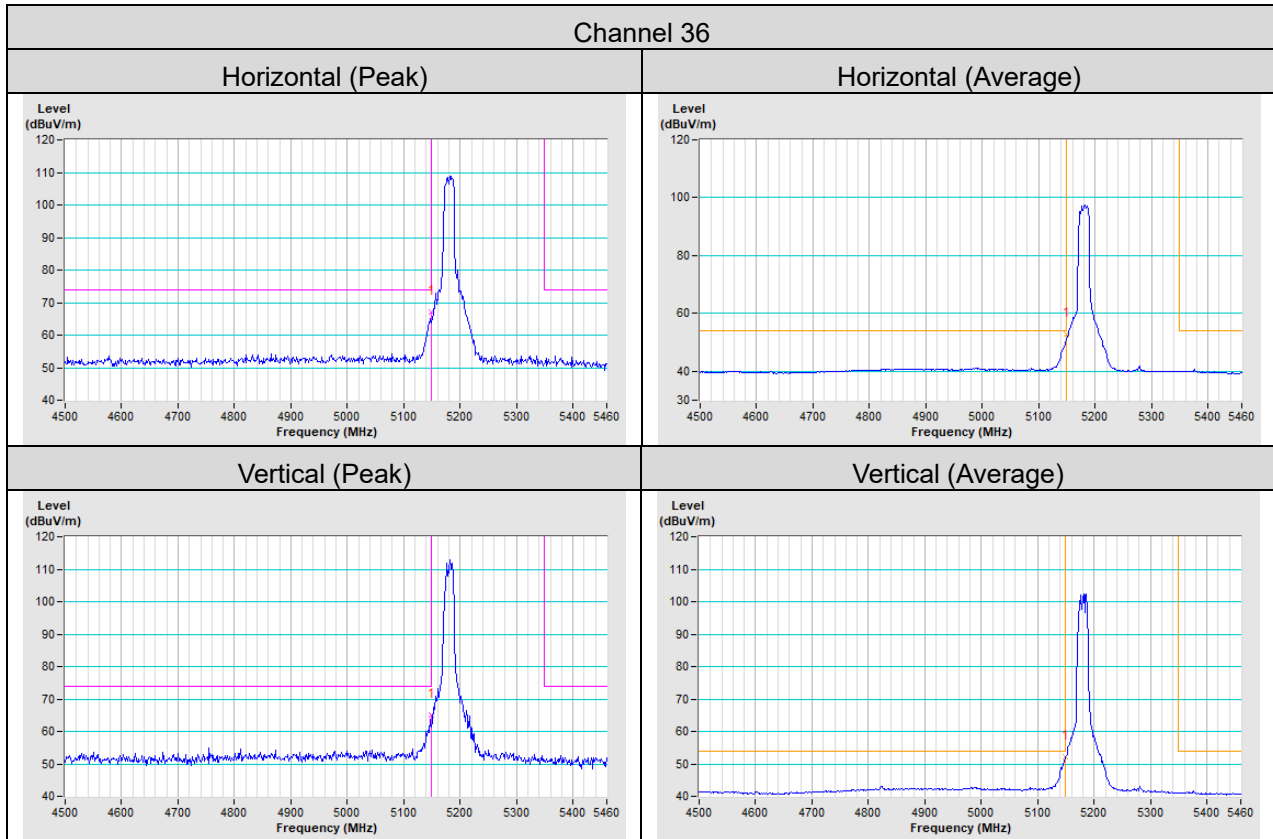


Annex B- Band Edge Measurement

Test Mode A

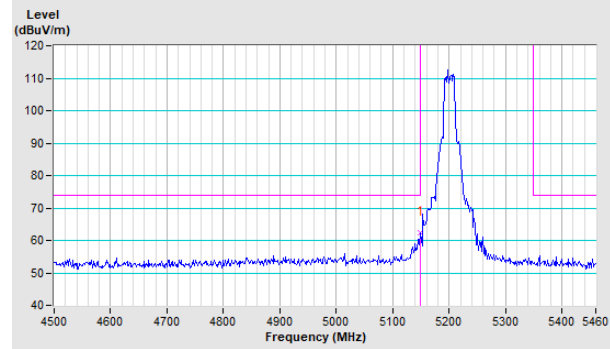
5G traffic radio: CDD Mode

802.11a

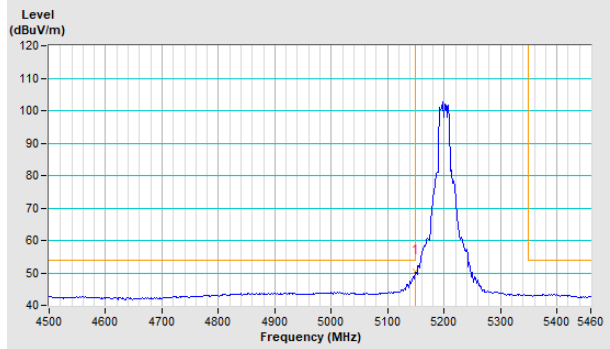


Channel 40

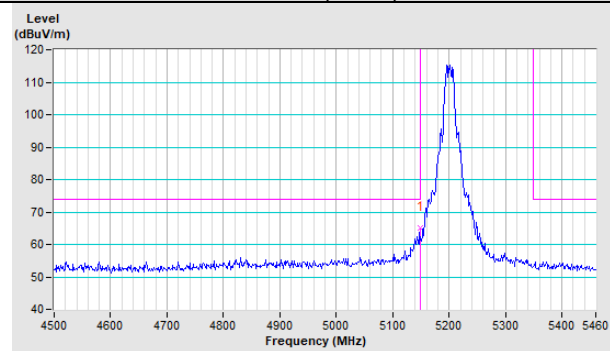
Horizontal (Peak)



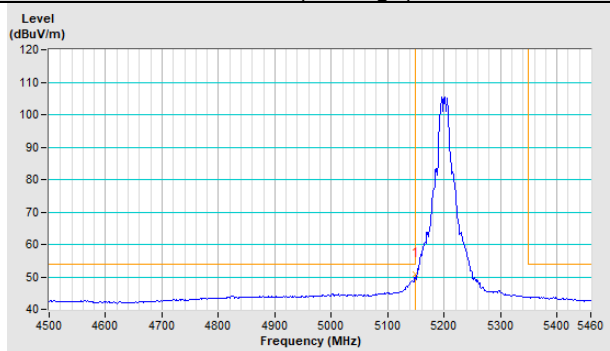
Horizontal (Average)



Vertical (Peak)

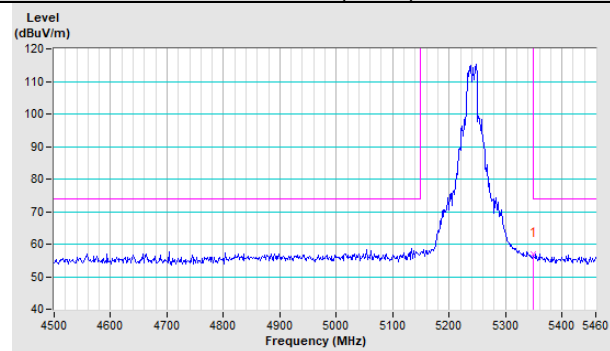


Vertical (Average)

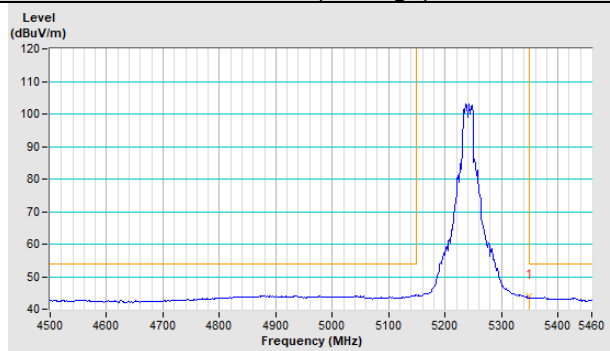


Channel 48

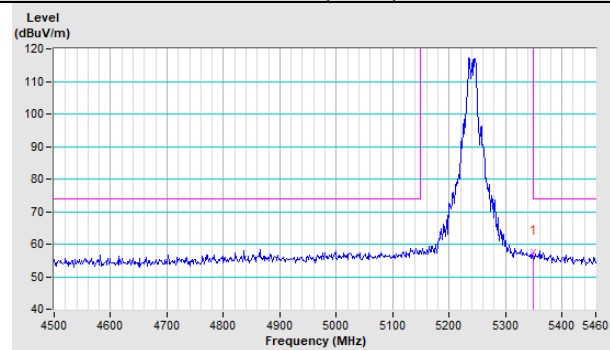
Horizontal (Peak)



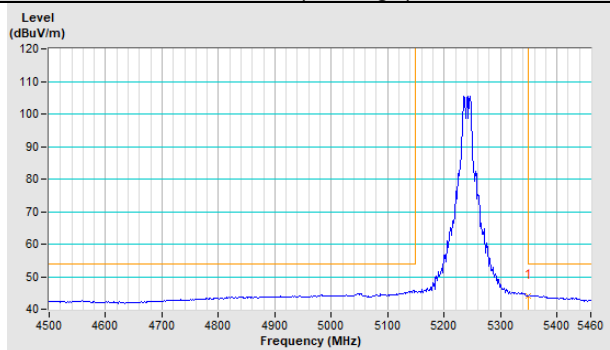
Horizontal (Average)



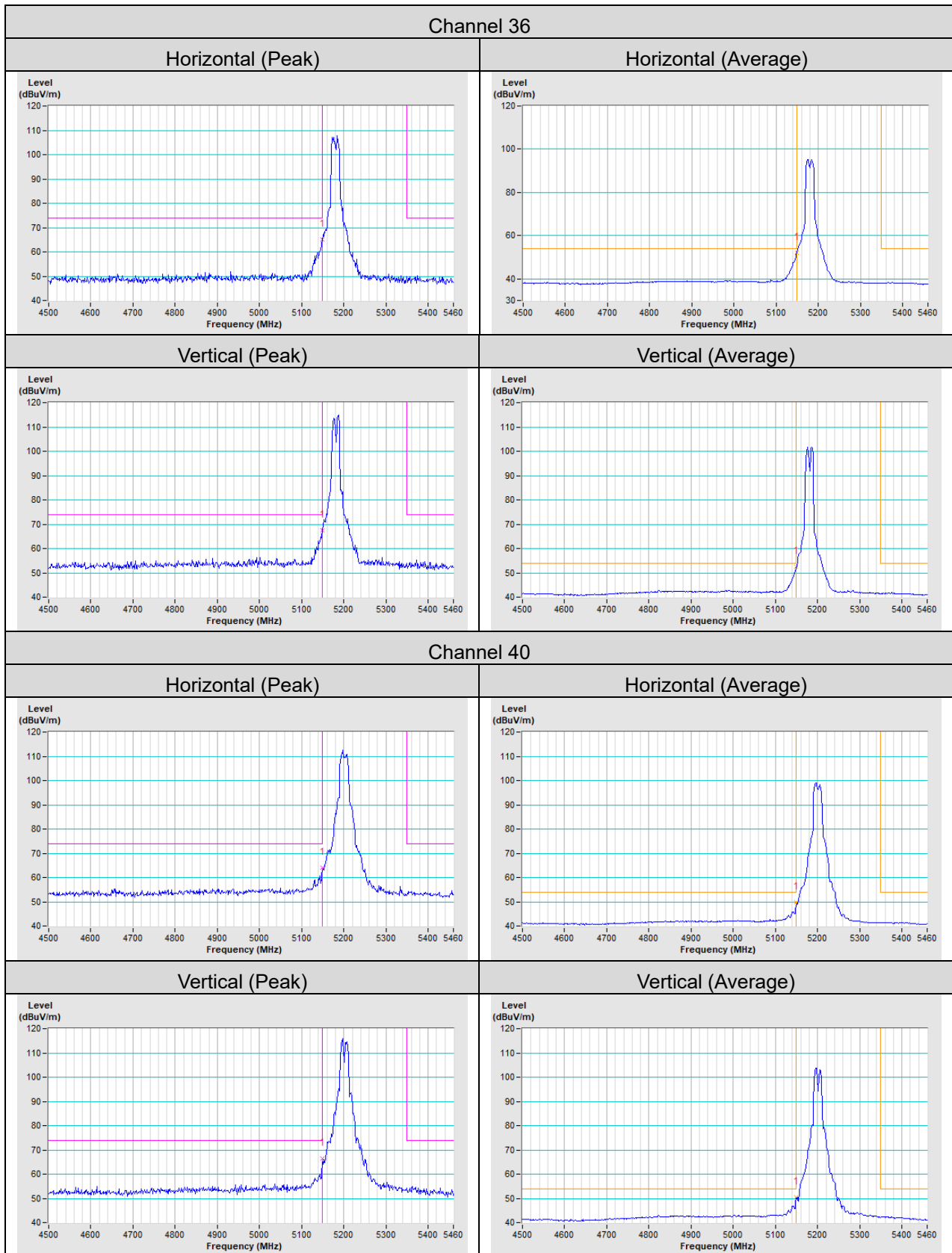
Vertical (Peak)



Vertical (Average)

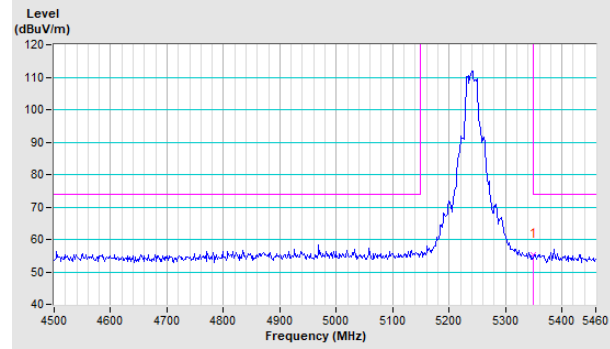


802.11ax (HE20)

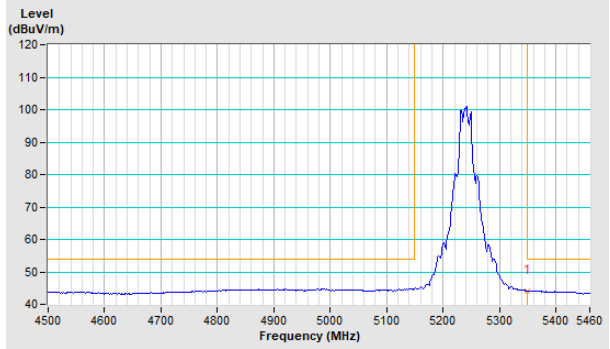


Channel 48

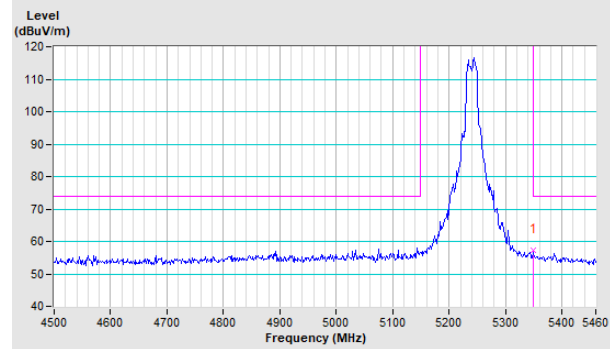
Horizontal (Peak)



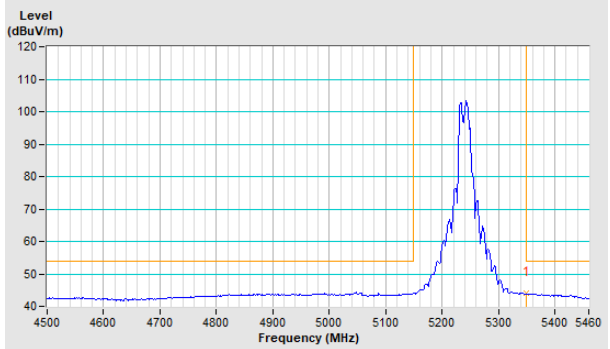
Horizontal (Average)



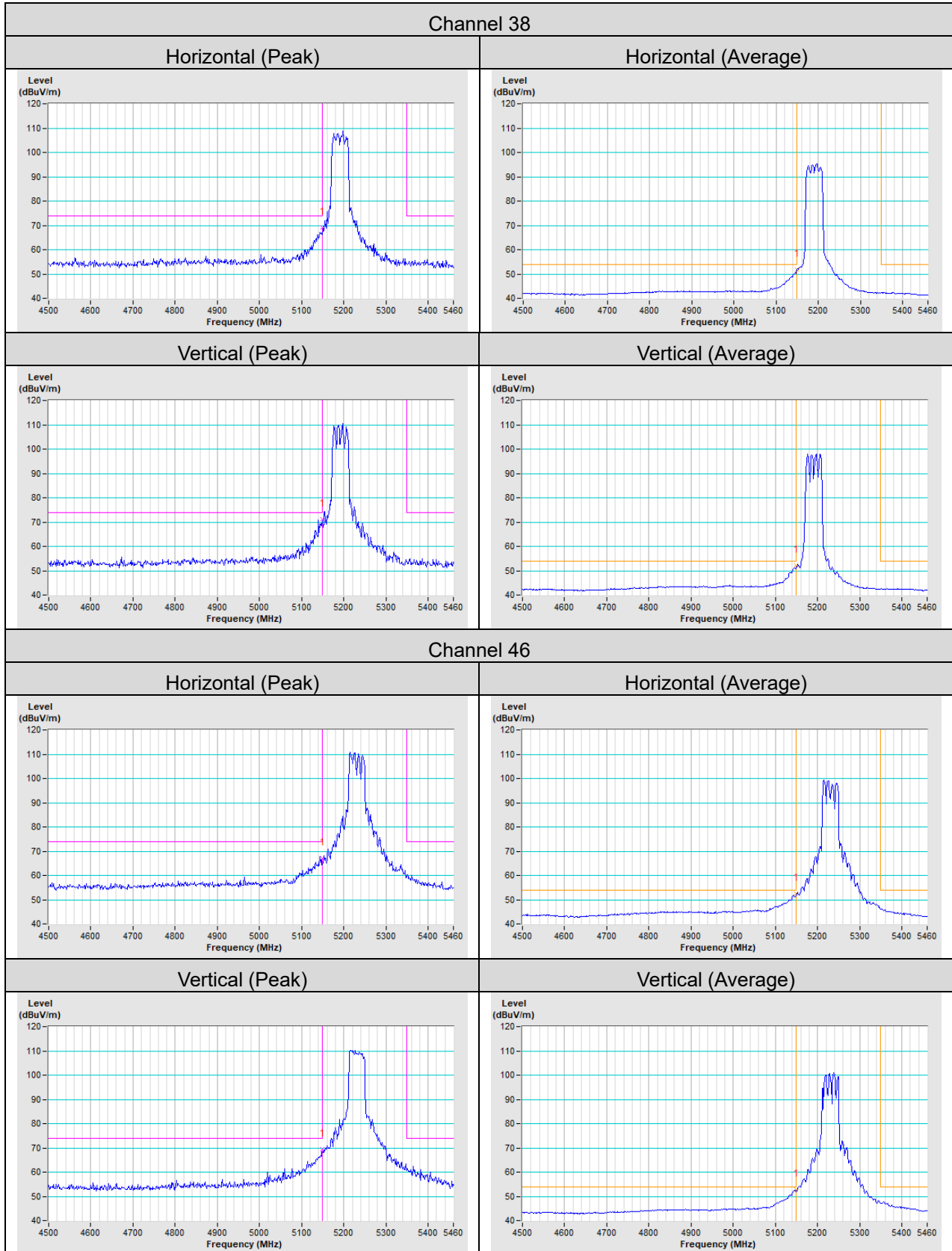
Vertical (Peak)



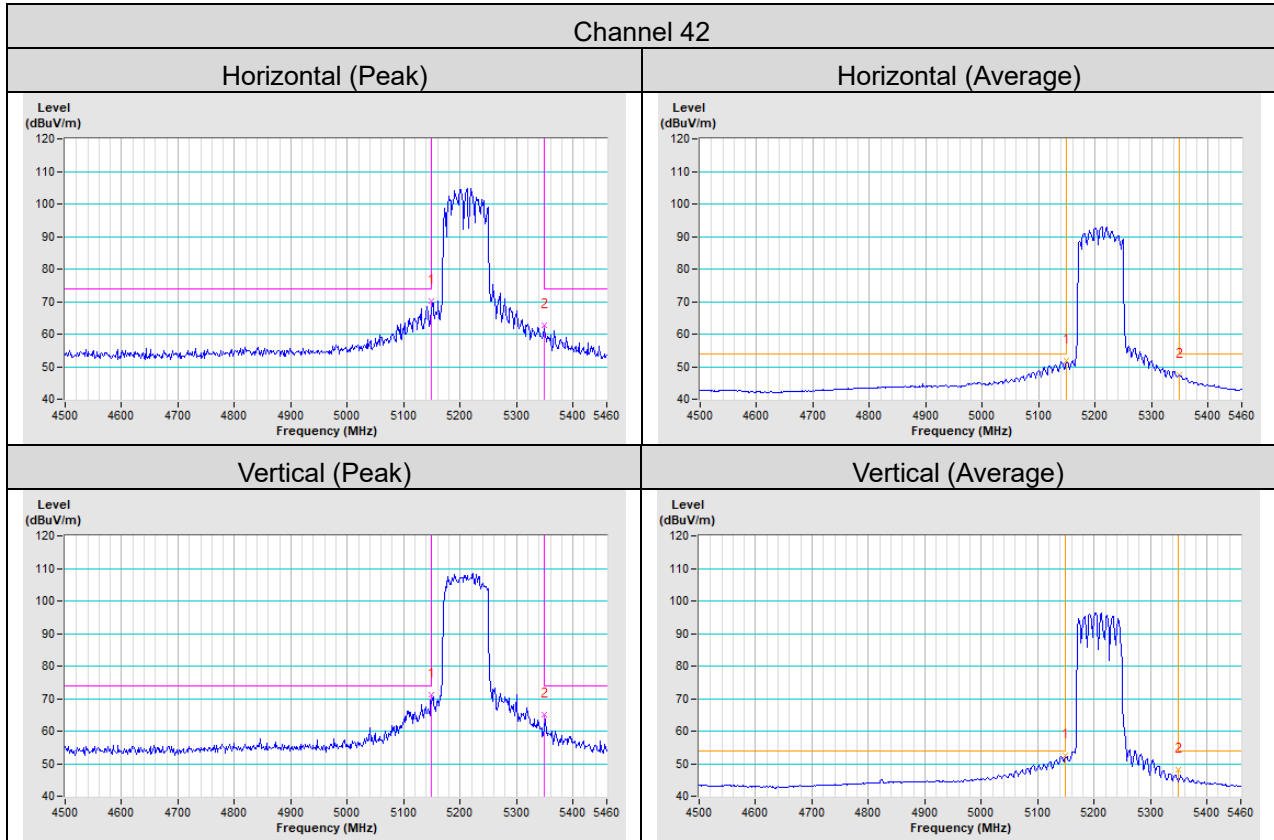
Vertical (Average)



802.11ax (HE40)



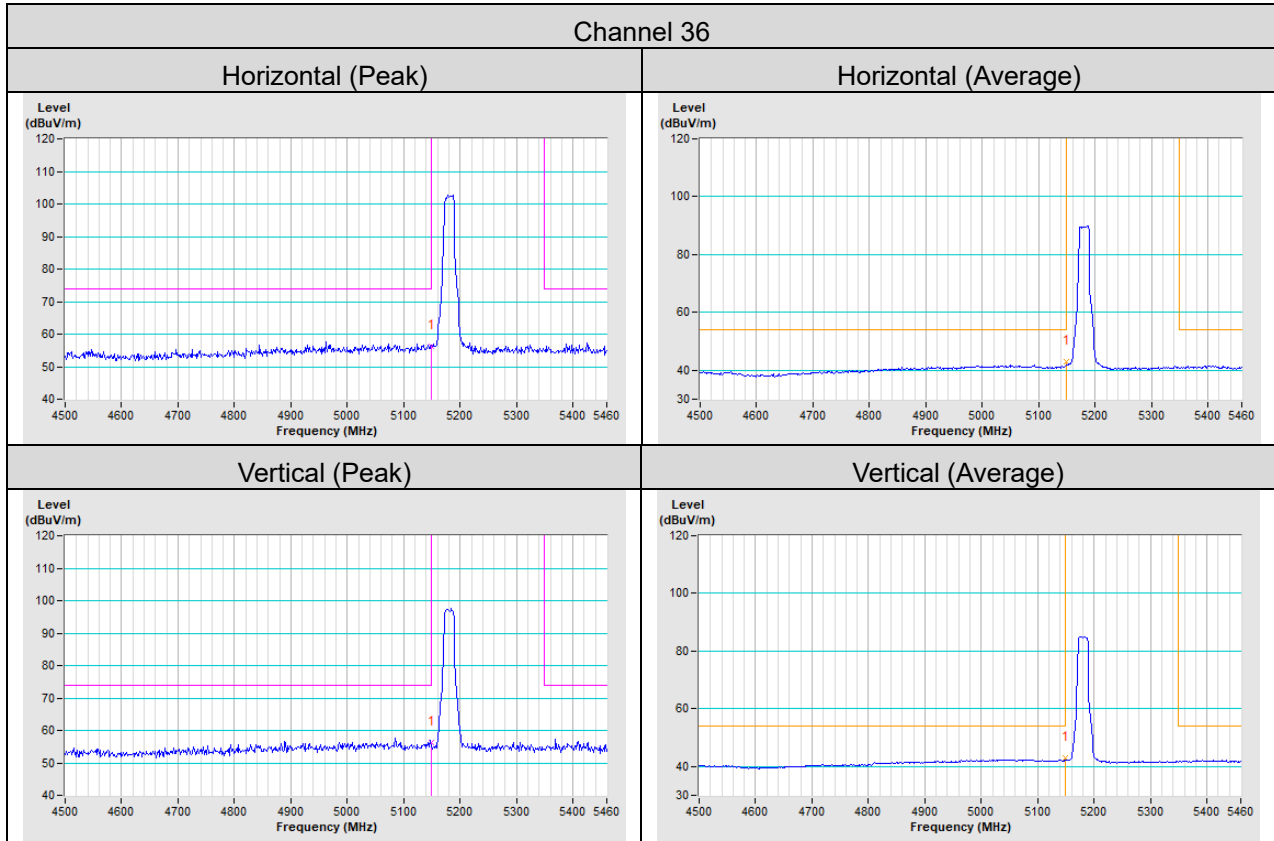
802.11ax (HE80)



Test Mode A

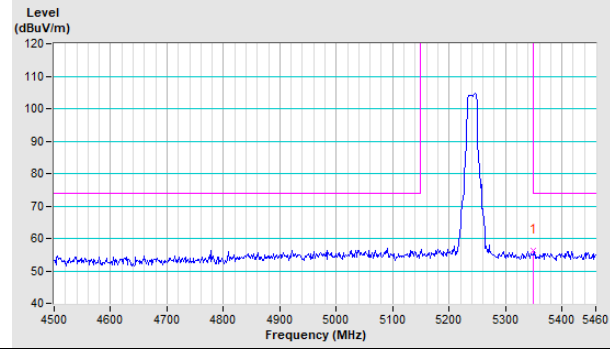
Scanning radio: CDD Mode

802.11a

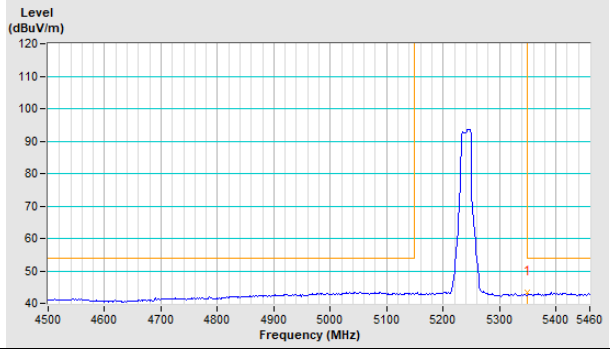


Channel 48

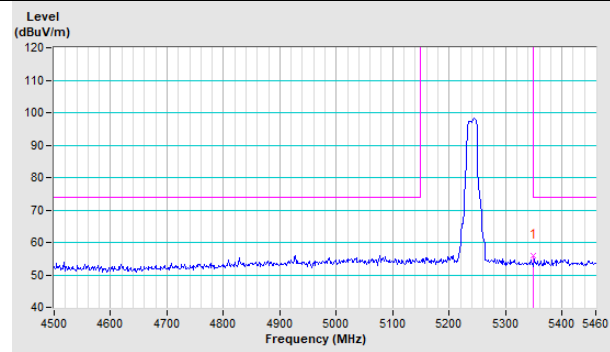
Horizontal (Peak)



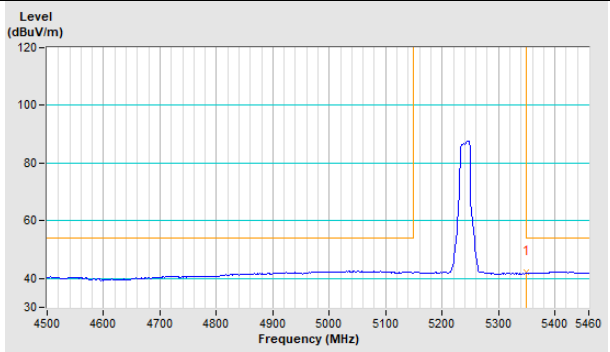
Horizontal (Average)



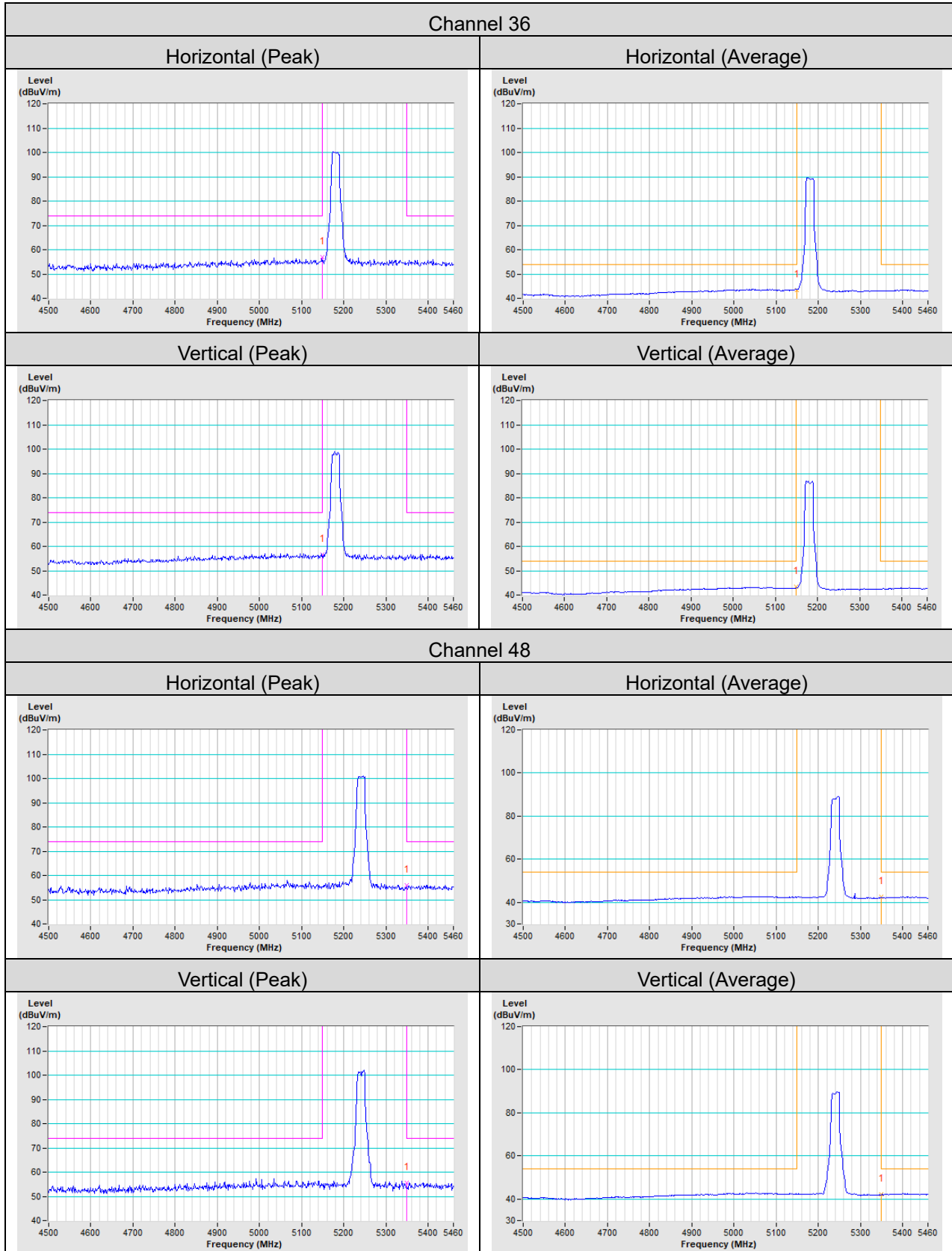
Vertical (Peak)



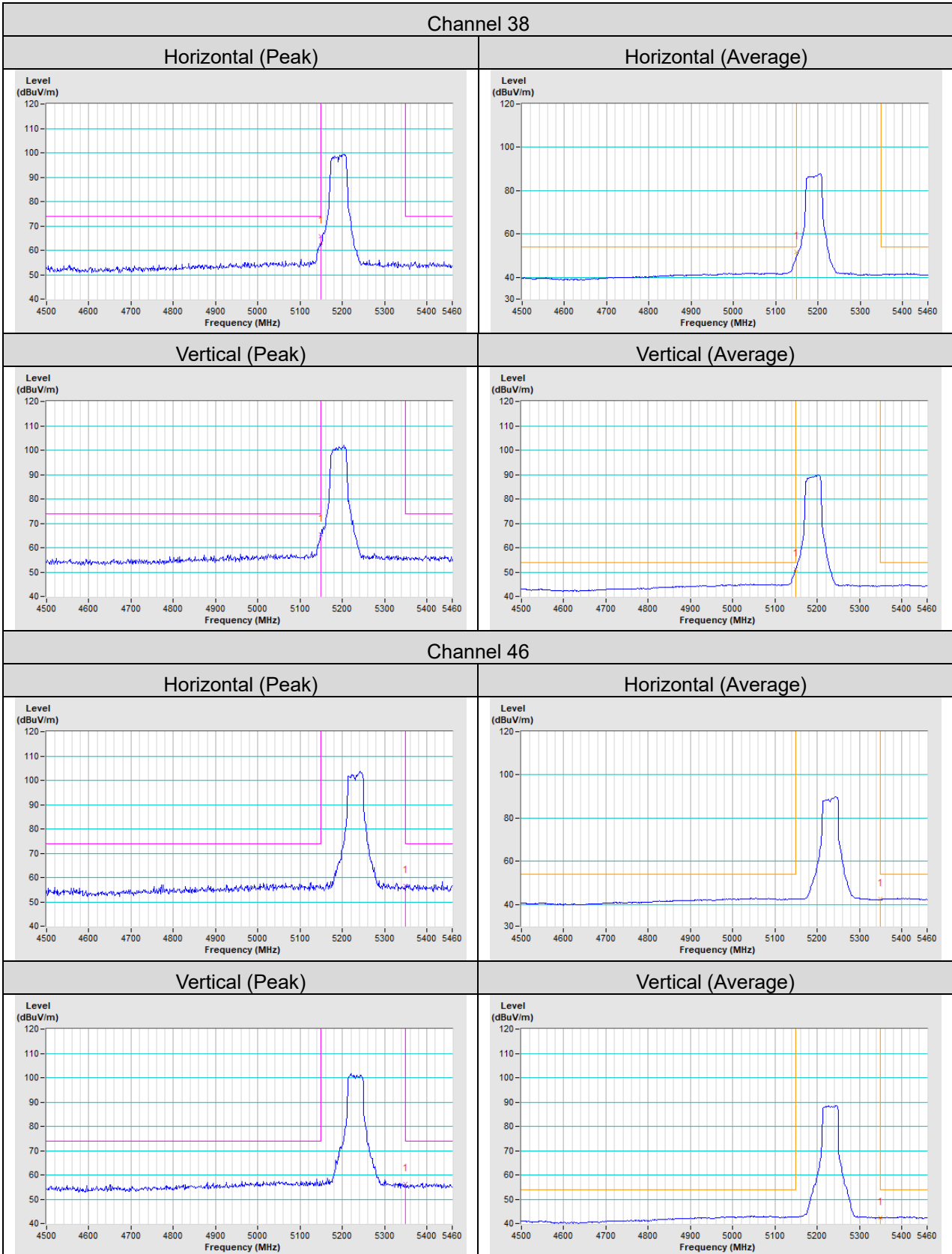
Vertical (Average)



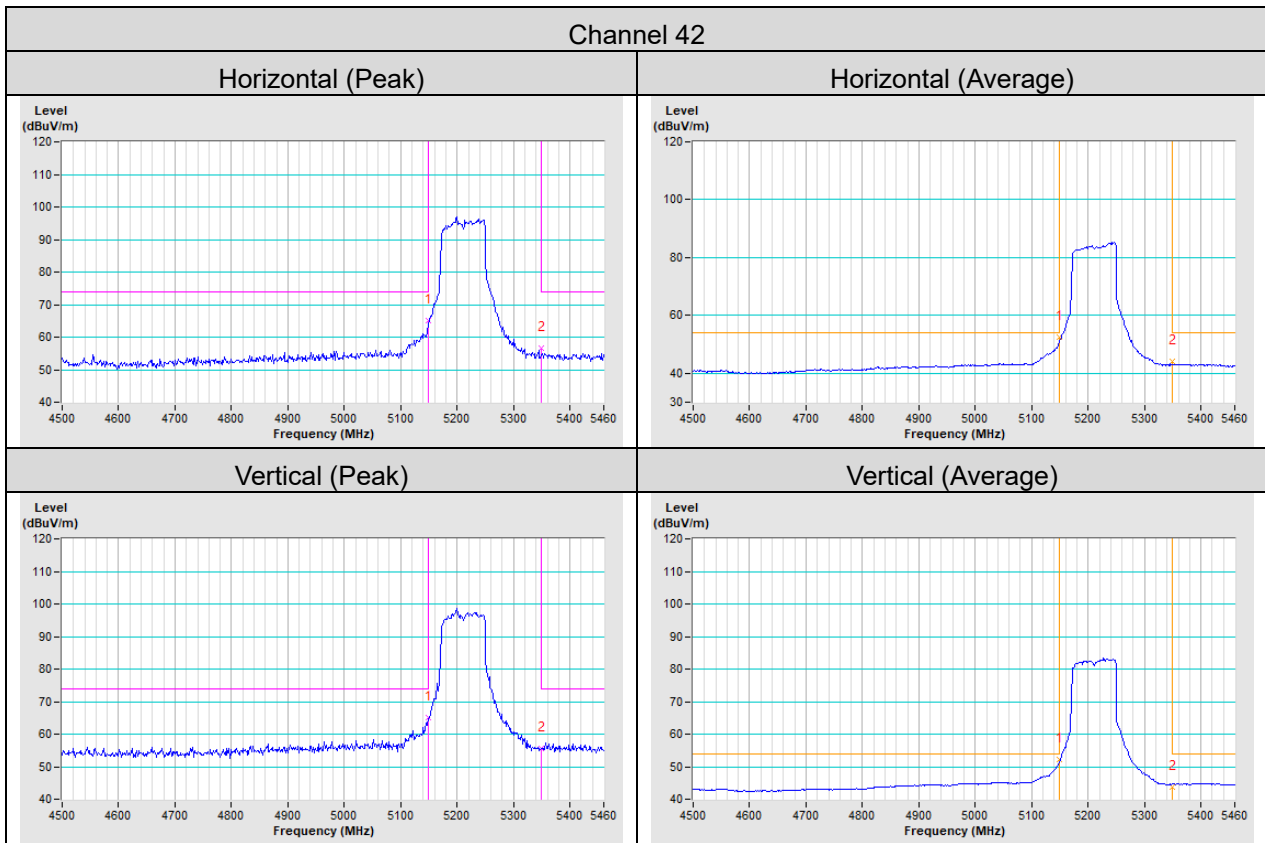
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



Appendix – Information of the Testing Laboratories

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

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

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