

## FCC Test Report (WLAN)

**Report No.:** RF200710D07-6

**FCC ID:** 2AK5B-I1

**Test Model:** INT1LFCNA1

**Received Date:** Jul. 10, 2020

**Test Date:** Jul. 22 to Aug. 9, 2020

**Issued Date:** Aug. 19, 2020

**Applicant:** Latchable, Inc.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Lin Kou Laboratories

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**FCC Registration /  
Designation Number:** 198487 / TW2021



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### Release Control Record

Issue No.	Description	Date Issued
RF200710D07-6	Original release.	Aug. 19, 2020

## 1 Certificate of Conformity

**Product:** Apartment entry intercom device

**Brand:** Latch

**Test Model:** INT1LFCNA1

**Sample Status:** Engineering sample

**Applicant:** Latchable, Inc.

**Test Date:** Jul. 22 to Aug. 9, 2020

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

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

**Prepared by :** Annie Chang, **Date:** Aug. 19, 2020  
Annie Chang / Senior Specialist

**Approved by :** Rex Lai, **Date:** Aug. 19, 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 -6.69dB at 0.39219MHz.
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 -2.30dB at 5470.00MHz.
15.407(a) (1/2/3)	Max Average Transmit Power	Pass	Meet the requirement of limit.
---	Occupied Bandwidth Measurement	-	Reference only.
15.407(a) (1/2/3)	Peak Power Spectral Density	Pass	Meet the requirement of limit.
15.407(e)	6dB bandwidth	Pass	Meet the requirement of limit. (U-NII-3 Band only)
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	No antenna connector is used.

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) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.00 dB
Conducted Emissions	9kHz ~ 40GHz	2.63 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	2.61 dB
	30MHz ~ 1GHz	5.43 dB
Radiated Emissions above 1 GHz	Above 1GHz	5.42 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	Apartment entry intercom device
Brand	Latch
Test Model	INT1LFCNA1
Test software Version	QRCT3
Status of EUT	Engineering sample
Power Supply Rating	12Vdc-24Vdc from Adapter
Modulation Type	64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only.
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 150Mbps 802.11ac: up to 433Mbps
Operating Frequency	5180~5240MHz, 5260~5320MHz, 5500~5700MHz, 5745~5825MHz
Number of Channel	5180~5240MHz: 802.11a, 802.11n (20MHz), 802.11ac (20MHz): 4 802.11n (40MHz), 802.11ac (40MHz): 2 802.11ac (80MHz): 1 5260~5320MHz: 802.11a, 802.11n (20MHz), 802.11ac (20MHz): 4 802.11n (40MHz), 802.11ac (40MHz): 2 802.11ac (80MHz): 1 5500~5700MHz: 802.11a, 802.11n (20MHz), 802.11ac (20MHz): 11 802.11n (40MHz), 802.11ac (40MHz): 5 802.11ac (80MHz): 3 5745~5825MHz: 802.11a, 802.11n (20MHz), 802.11ac (20MHz): 5 802.11n (40MHz), 802.11ac (40MHz): 2 802.11ac (80MHz): 2
Output Power	5180~5240MHz: 14.256mW 5260~5320MHz: 14.791mW 5500~5700MHz: 8.472mW 5745~5825MHz: 10.765mW
Antenna Type	<b>Chain 0:</b> 5180~5240MHz: PIFA antenna with 1.699dBi gain 5260~5320MHz: PIFA antenna with 1.699dBi gain 5500~5700MHz: PIFA antenna with -0.451dBi gain 5745~5825MHz: PIFA antenna with -0.182dBi gain <b>Chain 1:</b> 5180~5240MHz: PIFA antenna with 2.25dBi gain 5260~5320MHz: PIFA antenna with 2.25dBi gain 5500~5700MHz: PIFA antenna with 2.32dBi gain 5745~5825MHz: PIFA antenna with 3.61dBi gain
Antenna Connector	N/A
Accessory Device	N/A
Data Cable Supplied	DC & LAN 2-in-1 cable (0.15m) attached on EUT

Note:

1. WLAN 2.4GHz & WLAN 5GHz technologies cannot transmit at same time.  
WLAN & BT technologies cannot transmit at same time.  
WLAN & WWAN technologies can transmit at same time.
2. The emission of the simultaneous operation (WWAN and WLAN) has been evaluated and no non-compliance was found.
3. The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.
4. The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX FUNCTION	RX FUNCTION
802.11a	1TX	1RX
802.11n (20MHz)	1TX	1RX
802.11n (40MHz)	1TX	1RX
802.11ac (20MHz)	1TX	1RX
802.11ac (40MHz)	1TX	1RX
802.11ac (80MHz)	1TX	1RX

\* The modulation and bandwidth are similar for 802.11n mode for 20MHz (40MHz) and 802.11ac mode for 20MHz (40MHz), therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

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



### 3.2 Description of Test Modes

#### 5180~5240MHz:

4 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

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

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency
42	5210MHz

#### 5260~5320MHz:

4 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

Channel	Frequency	Channel	Frequency
52	5260 MHz	60	5300 MHz
56	5280 MHz	64	5320 MHz

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency
58	5290MHz

**5500~5700MHz:**

11 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

Channel	Frequency	Channel	Frequency
100	5500 MHz	124	5620 MHz
104	5520 MHz	128	5640 MHz
108	5540 MHz	132	5660 MHz
112	5560 MHz	136	5680 MHz
116	5580 MHz	140	5700 MHz
120	5600 MHz		

5 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
102	5510 MHz	126	5630 MHz
110	5550 MHz	134	5670 MHz
118	5590 MHz		

3 channels are provided for 802.11ac (80MHz):

Channel	Frequency	Channel	Frequency
106	5530 MHz	138	5690 MHz
122	5610MHz		

**5745~5825MHz:**

5 channels are provided for 802.11a, 802.11n (20MHz), 802.11ac (20MHz):

Channel	Frequency	Channel	Frequency
149	5745MHz	161	5805MHz
153	5765MHz	165	5825MHz
157	5785MHz		

2 channels are provided for 802.11n (40MHz), 802.11ac (40MHz):

Channel	Frequency	Channel	Frequency
151	5755MHz	159	5795MHz

1 channel is provided for 802.11ac (80MHz):

Channel	Frequency
155	5775MHz

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT Configure Mode	Applicable To				Description
	RE $\geq$ 1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

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

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

#### **Radiated Emission Test (Above 1GHz):**

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11ac (20MHz)		36 to 48	36, 40, 48	OFDM	6.5
	802.11ac (40MHz)		38 to 46	38, 46	OFDM	13.5
	802.11ac (80MHz)		42	42	OFDM	29.3
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (20MHz)		52 to 64	52, 60, 64	OFDM	6.5
	802.11ac (40MHz)		54 to 62	54, 62	OFDM	13.5
	802.11ac (80MHz)		58	58	OFDM	29.3
-	802.11a	5500-5700	100 to 140	100, 116, 132, 140	OFDM	6.0
	802.11ac (20MHz)		100 to 140	100, 116, 132, 140	OFDM	6.5
	802.11ac (40MHz)		102 to 134	102, 110, 134	OFDM	13.5
	802.11ac (80MHz)		106 to 122	106, 122	OFDM	29.3
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11ac (20MHz)		149 to 165	149, 157, 165	OFDM	6.5
	802.11ac (40MHz)		151 to 159	151, 159	OFDM	13.5
	802.11ac (80MHz)		155	155	OFDM	29.3

#### **Radiated Emission Test (Below 1GHz):**

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	52	OFDM	6.0
-	802.11a	5260-5320	52 to 64		OFDM	6.0
-	802.11a	5500-5700	100 to 140		OFDM	6.0
-	802.11a	5745-5825	149 to 165		OFDM	6.0

**Power Line Conducted Emission Test:**

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	52	OFDM	6.0
-	802.11a	5260-5320	52 to 64		OFDM	6.0
-	802.11a	5500-5700	100 to 140		OFDM	6.0
-	802.11a	5745-5825	149 to 165		OFDM	6.0

**Antenna Port Conducted Measurement:**

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11ac (20MHz)		36 to 48	36, 40, 48	OFDM	6.5
	802.11ac (40MHz)		38 to 46	38, 46	OFDM	13.5
	802.11ac (80MHz)		42	42	OFDM	29.3
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11ac (20MHz)		52 to 64	52, 60, 64	OFDM	6.5
	802.11ac (40MHz)		54 to 62	54, 62	OFDM	13.5
	802.11ac (80MHz)		58	58	OFDM	29.3
-	802.11a	5500-5700	100 to 140	100, 116, 132, 140	OFDM	6.0
	802.11ac (20MHz)		100 to 140	100, 116, 132, 140	OFDM	6.5
	802.11ac (40MHz)		102 to 134	102, 110, 134	OFDM	13.5
	802.11ac (80MHz)		106 to 122	106, 122	OFDM	29.3
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
	802.11ac (20MHz)		149 to 165	149, 157, 165	OFDM	6.5
	802.11ac (40MHz)		151 to 159	151, 159	OFDM	13.5
	802.11ac (80MHz)		155	155	OFDM	29.3

**Test Condition:**

Applicable To	Environmental Conditions	Input Power	Tested By
RE≥1G	21deg. C, 74%RH	120Vac, 60Hz (Adapter)	Ian Chang
RE<1G	22deg. C, 70%RH	120Vac, 60Hz (Adapter)	Dalen Dai
PLC	25deg. C, 75%RH	120Vac, 60Hz (Adapter)	Ian Chang
APCM	25deg. C, 76%RH	120Vac, 60Hz (Adapter)	Pirar Hsieh

### 3.3 Duty Cycle of Test Signal

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

**802.11a:** Duty cycle = 2.072/2.147 = 0.965, Duty factor =  $10 * \log(1/0.965) = 0.15$

**802.11ac (20MHz):** Duty cycle = 1.929/2.057 = 0.938, Duty factor =  $10 * \log(1/0.938) = 0.28$

**802.11ac (40MHz):** Duty cycle = 0.942/1.065 = 0.885, Duty factor =  $10 * \log(1/0.885) = 0.53$

**802.11ac (80MHz):** Duty cycle = 0.468/0.552 = 0.848, Duty factor =  $10 * \log(1/0.848) = 0.72$



### 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.	AC Adapter	ENG	6A-401WP12	N/A	N/A	Supplied by client
B.	Notebook PC	ASUS	PU401L	E9NXBC002007372	N/A	Provided by Lab
C.	Stand	N/A	N/A	N/A	N/A	Supplied by client

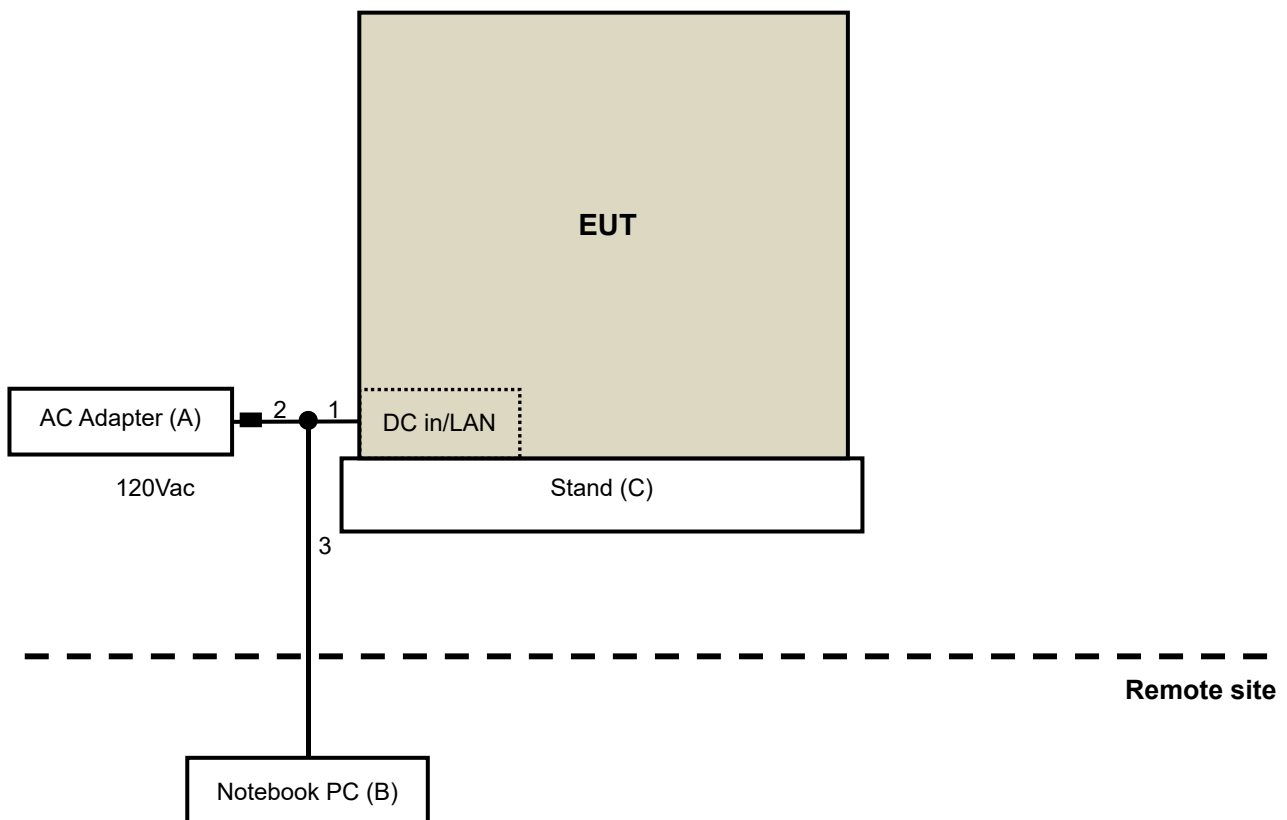
Note:

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

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC & LAN 2-in-1 cable	1	0.15	N	0	Supplied by client
2.	DC cable	1	1.28	N	1	Supplied by client
3.	LAN cable	1	10	N	0	Provided by Lab (RJ45, Cat.5e)

Note: The core(s) is(are) originally attached to the cable(s).

#### 3.4.1 Configuration of System under Test



### 3.5 General Description of Applied Standard 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**

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:

- The lower limit shall apply at the transition frequencies.
- Emission level (dBuV/m) = 20 log Emission level (uV/m).
- 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 (dBuV/m)	AV:54 (dBuV/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) <sup>*1</sup> PK:10 (dBm/MHz) <sup>*2</sup> PK:15.6 (dBm/MHz) <sup>*3</sup> PK:27 (dBm/MHz) <sup>*4</sup>	PK: 68.2(dBμV/m) <sup>*1</sup> PK:105.2 (dBμV/m) <sup>*2</sup> PK: 110.8(dBμV/m) <sup>*3</sup> PK:122.2 (dBμV/m) <sup>*4</sup>
	<input type="checkbox"/> 15.407(b)(4)(ii)	Emission limits in section 15.247(d)	
<sup>*1</sup> beyond 75 MHz or more above of the band edge. <sup>*3</sup> below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.		<sup>*2</sup> below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above. <sup>*4</sup> 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.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 19, 2020	Feb. 18, 2021
HP Preamplifier	8449B	3008A01201	Feb. 20, 2020	Feb. 19, 2021
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Feb. 19, 2020	Feb. 18, 2021
Agilent TEST RECEIVER	N9038A	MY51210129	Mar. 18, 2020	Mar. 17, 2021
Schwarzbeck Antenna	VULB 9168	139	Nov. 7, 2019	Nov. 6, 2020
Schwarzbeck Antenna	VHBA 9123	480	Jun. 3, 2019	Jun. 2, 2021
Schwarzbeck Horn Antenna	BBHA-9170	212	Nov. 24, 2019	Nov. 23, 2020
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Nov. 24, 2019	Nov. 23, 2020
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.5	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF102	Cable-CH6-01	Jul. 9, 2020	Jul. 8, 2021
SUHNER RF cable With 3/4dB PAD	SF102	Cable-CH8-3.6m	Jul. 9, 2020	Jul. 8, 2021
KEYSIGHT MIMO Powermeasurement Test set	U2021XA	U2021XA-001	Jun. 16, 2020	Jun. 15, 2021
KEYSIGHT Spectrum Analyzer	N9030A	MY54490260	Jul. 22, 2020	Jul. 21, 2021
Loop Antenna EMCI	LPA600	270	Aug. 23, 2019	Aug. 22, 2021
EMCO Horn Antenna	3115	00028257	Nov. 24, 2019	Nov. 23, 2020
Highpass filter Wainwright Instruments	WHK 3.1/18G-10SS	SN 8	NA	NA
ROHDE & SCHWARZ Spectrum Analyzer	FSV40	101042	Sep. 23, 2019	Sep. 22, 2020
Anritsu Power Sensor	MA2411B	0738404	Apr. 13, 2020	Apr. 12, 2021
Anritsu Power Meter	ML2495A	0842014	Apr. 13, 2020	Apr. 12, 2021

- NOTE:**
1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
  2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  3. The test was performed in Chamber No. 6.

#### 4.1.3 Test Procedure

##### **For Radiated emission below 30MHz**

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

##### **NOTE:**

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

##### **For Radiated emission above 30MHz**

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

##### **Note:**

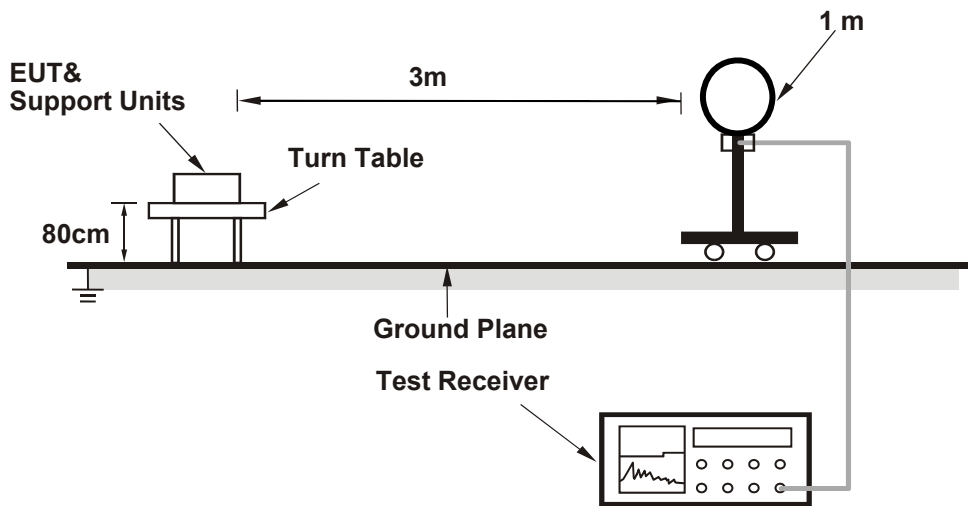
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.  
  
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.  
(802.11a: RBW = 1MHz, VBW = 510Hz; 802.11ac (20MHz): RBW = 1MHz, VBW = 560Hz;  
802.11ac (40MHz): RBW = 1MHz, VBW = 1.1kHz; 802.11ac (80MHz): RBW = 1MHz, VBW = 2.2kHz)
3. All modes of operation were investigated and the worst-case emissions are reported.

#### 4.1.4 Deviation from Test Standard

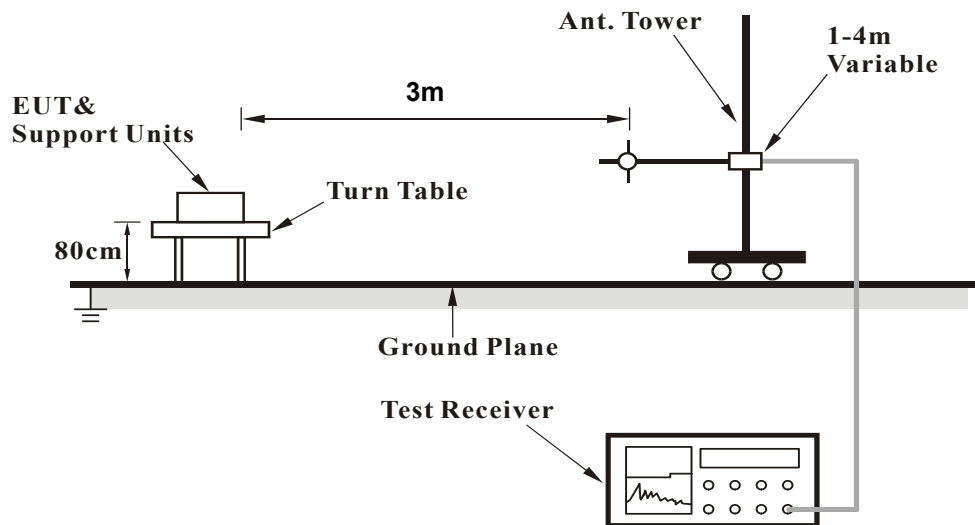
No deviation.

#### 4.1.5 Test Setup

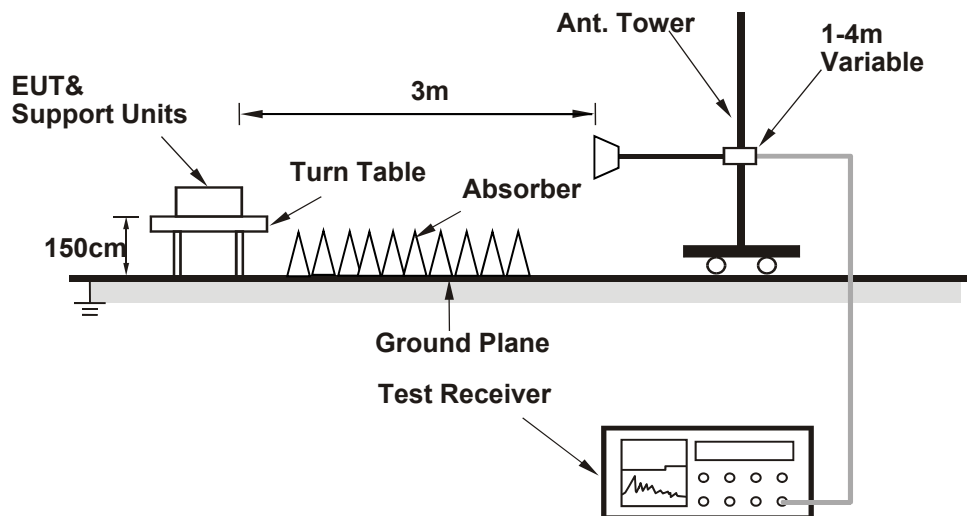
##### For Radiated emission below 30MHz



##### For Radiated emission 30MHz to 1GHz



### For Radiated emission above 1GHz



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

#### 4.1.6 EUT Operating Condition

- a. Placed the EUT on the testing table.
- b. Prepared notebook to act as 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 necessary accessories enable the system in full functions.

#### 4.1.7 Test Results

#### Above 1GHz Data:

#### 802.11a

<b>Channel</b>	TX Channel 36	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.02 PK	74.00	-12.98	1.60 H	350	52.68	8.34
2	5150.00	47.46 AV	54.00	-6.54	1.60 H	350	39.12	8.34
3	*5180.00	99.99 PK			1.60 H	350	91.58	8.41
4	*5180.00	89.14 AV			1.60 H	350	80.73	8.41
5	#10360.00	55.49 PK	68.20	-12.71	1.54 H	236	41.25	14.24

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.29 PK	74.00	-12.71	2.85 V	0	52.95	8.34
2	5150.00	47.58 AV	54.00	-6.42	2.85 V	0	39.24	8.34
3	*5180.00	92.80 PK			2.85 V	0	84.39	8.41
4	*5180.00	82.06 AV			2.85 V	0	73.65	8.41
5	#10360.00	56.20 PK	68.20	-12.00	2.14 V	51	41.96	14.24

#### 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.

<b>Channel</b>	TX Channel 40	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	103.03 PK			1.57 H	346	94.59	8.44
2	*5200.00	91.95 AV			1.57 H	346	83.51	8.44
3	#10400.00	54.95 PK	68.20	-13.25	2.21 H	25	40.65	14.30

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	96.66 PK			2.95 V	1	88.22	8.44
2	*5200.00	85.73 AV			2.95 V	1	77.29	8.44
3	#10400.00	55.86 PK	68.20	-12.34	1.64 V	251	41.56	14.30

**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.

<b>Channel</b>	TX Channel 48	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	101.52 PK			1.59 H	348	92.88	8.64
2	*5240.00	91.33 AV			1.59 H	348	82.69	8.64
3	5350.00	60.45 PK	74.00	-13.55	1.59 H	348	51.26	9.19
4	5350.00	47.26 AV	54.00	-6.74	1.59 H	348	38.07	9.19
5	#10480.00	54.35 PK	68.20	-13.85	1.52 H	N/A	40.19	14.16

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	98.57 PK			2.93 V	1	89.93	8.64
2	*5240.00	87.53 AV			2.93 V	1	78.89	8.64
3	5350.00	60.96 PK	74.00	-13.04	2.93 V	1	51.77	9.19
4	5350.00	47.65 AV	54.00	-6.35	2.93 V	1	38.46	9.19
5	#10480.00	55.70 PK	68.20	-12.50	1.52 V	241	41.54	14.16

**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.

<b>Channel</b>	TX Channel 52	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.46 PK	74.00	-11.54	3.24 H	85	52.92	9.54
2	5150.00	48.42 AV	54.00	-5.58	3.24 H	85	38.88	9.54
3	*5260.00	103.43 PK			3.24 H	85	93.50	9.93
4	*5260.00	92.44 AV			3.24 H	85	82.51	9.93
5	#10520.00	57.31 PK	68.20	-10.89	1.64 H	235	41.03	16.28

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.77 PK	74.00	-12.23	3.29 V	10	52.23	9.54
2	5150.00	47.95 AV	54.00	-6.05	3.29 V	10	38.41	9.54
3	*5260.00	99.87 PK			3.29 V	10	89.94	9.93
4	*5260.00	88.93 AV			3.29 V	10	79.00	9.93
5	#10520.00	56.50 PK	68.20	-11.70	2.31 V	264	40.22	16.28

**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.



<b>Channel</b>	TX Channel 60	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	102.66 PK			3.20 H	80	92.49	10.17
2	*5300.00	91.58 AV			3.20 H	80	81.41	10.17
3	10600.00	57.63 PK	74.00	-16.37	1.62 H	134	41.26	16.37
4	10600.00	44.80 AV	54.00	-9.20	1.62 H	134	28.43	16.37

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	98.76 PK			3.32 V	12	88.59	10.17
2	*5300.00	87.76 AV			3.32 V	12	77.59	10.17
3	10600.00	56.88 PK	74.00	-17.12	2.23 V	225	40.51	16.37
4	10600.00	44.01 AV	54.00	-9.99	2.23 V	225	27.64	16.37

**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.

<b>Channel</b>	TX Channel 64	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	98.53 PK			3.18 H	81	88.33	10.20
2	*5320.00	87.63 AV			3.18 H	81	77.43	10.20
3	5350.00	62.77 PK	74.00	-11.23	3.18 H	81	52.52	10.25
4	5350.00	48.84 AV	54.00	-5.16	3.18 H	81	38.59	10.25
5	10640.00	57.86 PK	74.00	-16.14	1.62 H	225	41.27	16.59
6	10640.00	44.98 AV	54.00	-9.02	1.62 H	225	28.39	16.59

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	93.74 PK			3.26 V	11	83.54	10.20
2	*5320.00	82.82 AV			3.26 V	11	72.62	10.20
3	5350.00	62.29 PK	74.00	-11.71	3.26 V	11	52.04	10.25
4	5350.00	48.38 AV	54.00	-5.62	3.26 V	11	38.13	10.25
5	10640.00	57.20 PK	74.00	-16.80	2.41 V	159	40.61	16.59
6	10640.00	44.07 AV	54.00	-9.93	2.41 V	159	27.48	16.59

**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.

<b>Channel</b>	TX Channel 100	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.30 PK	74.00	-11.70	1.72 H	70	51.50	10.80
2	5460.00	49.37 AV	54.00	-4.63	1.72 H	70	38.57	10.80
3	#5470.00	65.84 PK	68.20	-2.36	1.72 H	70	54.95	10.89
4	*5500.00	102.19 PK			1.72 H	70	91.04	11.15
5	*5500.00	91.38 AV			1.72 H	70	80.23	11.15
6	11000.00	58.80 PK	74.00	-15.20	1.58 H	254	41.26	17.54
7	11000.00	45.70 AV	54.00	-8.30	1.58 H	254	28.16	17.54

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	61.82 PK	74.00	-12.18	3.63 V	3	51.02	10.80
2	5460.00	48.76 AV	54.00	-5.24	3.63 V	3	37.96	10.80
3	#5470.00	62.29 PK	68.20	-5.91	3.63 V	3	51.40	10.89
4	*5500.00	96.29 PK			3.63 V	3	85.14	11.15
5	*5500.00	85.23 AV			3.63 V	3	74.08	11.15
6	11000.00	58.06 PK	74.00	-15.94	1.69 V	36	40.52	17.54
7	11000.00	44.88 AV	54.00	-9.12	1.69 V	36	27.34	17.54

**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.

<b>Channel</b>	TX Channel 116	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	102.28 PK			1.60 H	65	91.49	10.79
2	*5580.00	91.67 AV			1.60 H	65	80.88	10.79
3	11160.00	58.98 PK	74.00	-15.02	1.58 H	241	41.62	17.36
4	11160.00	46.02 AV	54.00	-7.98	1.58 H	241	28.66	17.36

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	96.43 PK			3.58 V	6	85.64	10.79
2	*5580.00	85.05 AV			3.58 V	6	74.26	10.79
3	11160.00	57.62 PK	74.00	-16.38	2.25 V	214	40.26	17.36
4	11160.00	44.65 AV	54.00	-9.35	2.25 V	214	27.29	17.36

**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.

<b>Channel</b>	TX Channel 132	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5660.00	100.03 PK			1.00 H	N/A	89.54	10.49
2	*5660.00	89.11 AV			1.00 H	N/A	78.62	10.49
3	11320.00	58.70 PK	74.00	-15.30	1.63 H	269	41.32	17.38
4	11320.00	45.93 AV	54.00	-8.07	1.63 H	269	28.55	17.38

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5660.00	95.28 PK			3.66 V	8	84.79	10.49
2	*5660.00	84.11 AV			3.66 V	8	73.62	10.49
3	11320.00	57.93 PK	74.00	-16.07	2.58 V	145	40.55	17.38
4	11320.00	44.92 AV	54.00	-9.08	2.58 V	145	27.54	17.38

**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.

<b>Channel</b>	TX Channel 140	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	99.87 PK			1.59 H	56	89.56	10.31
2	*5700.00	88.81 AV			1.59 H	56	78.50	10.31
3	#5725.00	62.22 PK	68.20	-5.98	1.59 H	56	52.02	10.20
4	11400.00	59.65 PK	74.00	-14.35	1.42 H	138	41.35	18.30
5	11400.00	46.74 AV	54.00	-7.26	1.42 H	138	28.44	18.30

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	94.60 PK			3.58 V	6	84.29	10.31
2	*5700.00	83.86 AV			3.58 V	6	73.55	10.31
3	#5725.00	61.66 PK	68.20	-6.54	3.58 V	6	51.46	10.20
4	11400.00	58.61 PK	74.00	-15.39	2.21 V	205	40.31	18.30
5	11400.00	45.49 AV	54.00	-8.51	2.21 V	205	27.19	18.30

**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.

<b>Channel</b>	TX Channel 149	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5641.57	60.32 PK	68.20	-7.88	1.40 H	58	51.01	9.31
2	*5745.00	100.39 PK			1.40 H	58	91.32	9.07
3	*5745.00	69.71 AV			1.40 H	58	60.64	9.07
4	#6022.96	61.81 PK	68.20	-6.39	1.40 H	58	52.43	9.38
5	11490.00	57.51 PK	74.00	-16.49	1.62 H	234	41.25	16.26
6	11490.00	44.57 AV	54.00	-9.43	1.62 H	234	28.31	16.26

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5626.32	60.12 PK	68.20	-8.08	3.29 V	11	50.82	9.30
2	*5745.00	96.53 PK			3.29 V	11	87.46	9.07
3	*5745.00	85.59 AV			3.29 V	11	76.52	9.07
4	#6002.84	62.11 PK	68.20	-6.09	3.29 V	11	52.70	9.41
5	11490.00	56.52 PK	74.00	-17.48	2.20 V	251	40.26	16.26
6	11490.00	43.72 AV	54.00	-10.28	2.20 V	251	27.46	16.26

**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.

<b>Channel</b>	TX Channel 157	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5637.32	60.36 PK	68.20	-7.84	1.52 H	61	51.05	9.31
2	*5785.00	101.14 PK			1.52 H	61	92.15	8.99
3	*5785.00	90.54 AV			1.52 H	61	81.55	8.99
4	#5945.15	60.89 PK	68.20	-7.31	1.52 H	61	51.79	9.10
5	11570.00	58.00 PK	74.00	-16.00	1.95 H	127	41.48	16.52
6	11570.00	44.83 AV	54.00	-9.17	1.95 H	127	28.31	16.52

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5609.19	60.25 PK	68.20	-7.95	3.26 V	13	50.94	9.31
2	*5785.00	95.42 PK			3.26 V	13	86.43	8.99
3	*5785.00	84.48 AV			3.26 V	13	75.49	8.99
4	#5973.75	61.65 PK	68.20	-6.55	3.26 V	13	52.38	9.27
5	11570.00	56.67 PK	74.00	-17.33	2.15 V	261	40.15	16.52
6	11570.00	43.85 AV	54.00	-10.15	2.15 V	261	27.33	16.52

**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.



<b>Channel</b>	TX Channel 165	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5593.84	60.53 PK	68.20	-7.67	1.48 H	59	51.16	9.37
2	*5825.00	100.48 PK			1.48 H	59	91.54	8.94
3	*5825.00	89.49 AV			1.48 H	59	80.55	8.94
4	#5939.39	60.93 PK	68.20	-7.27	1.48 H	59	51.86	9.07
5	11650.00	57.54 PK	74.00	-16.46	1.62 H	134	41.25	16.29
6	11650.00	44.84 AV	54.00	-9.16	1.62 H	134	28.55	16.29

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5575.10	61.11 PK	68.20	-7.09	3.31 V	5	51.59	9.52
2	*5825.00	96.46 PK			3.31 V	5	87.52	8.94
3	*5825.00	85.43 AV			3.31 V	5	76.49	8.94
4	#5948.06	60.72 PK	68.20	-7.48	3.31 V	5	51.60	9.12
5	11650.00	56.55 PK	74.00	-17.45	2.58 V	241	40.26	16.29
6	11650.00	43.68 AV	54.00	-10.32	2.58 V	241	27.39	16.29

**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.

802.11ac (20MHz)

<b>Channel</b>	TX Channel 36	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.18 PK	74.00	-13.82	1.56 H	352	51.84	8.34
2	5150.00	47.02 AV	54.00	-6.98	1.56 H	352	38.68	8.34
3	*5180.00	99.14 PK			1.56 H	352	90.73	8.41
4	*5180.00	88.12 AV			1.56 H	352	79.71	8.41
5	#10360.00	54.49 PK	68.20	-13.71	4.00 H	N/A	40.25	14.24

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.75 PK	74.00	-13.25	3.00 V	359	52.41	8.34
2	5150.00	47.47 AV	54.00	-6.53	3.00 V	359	39.13	8.34
3	*5180.00	91.80 PK			3.00 V	359	83.39	8.41
4	*5180.00	80.92 AV			3.00 V	359	72.51	8.41
5	#10360.00	55.87 PK	68.20	-12.33	1.17 V	234	41.63	14.24

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.

<b>Channel</b>	TX Channel 40	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	102.28 PK			1.58 H	347	93.84	8.44
2	*5200.00	91.03 AV			1.58 H	347	82.59	8.44
3	#10400.00	54.55 PK	68.20	-13.65	2.26 H	321	40.25	14.30

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5200.00	96.36 PK			2.94 V	357	87.92	8.44
2	*5200.00	85.36 AV			2.94 V	357	76.92	8.44
3	#10400.00	55.56 PK	68.20	-12.64	1.52 V	215	41.26	14.30

**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.

<b>Channel</b>	TX Channel 48	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	100.88 PK			1.62 H	352	92.24	8.64
2	*5240.00	88.98 AV			1.62 H	352	80.34	8.64
3	5350.00	60.25 PK	74.00	-13.75	1.62 H	352	51.06	9.19
4	5350.00	47.42 AV	54.00	-6.58	1.62 H	352	38.23	9.19
5	#10480.00	54.78 PK	68.20	-13.42	1.55 H	288	40.62	14.16

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5240.00	98.06 PK			2.91 V	3	89.42	8.64
2	*5240.00	87.19 AV			2.91 V	3	78.55	8.64
3	5350.00	60.81 PK	74.00	-13.19	3.91 V	3	51.62	9.19
4	5350.00	47.90 AV	54.00	-6.10	3.91 V	3	38.71	9.19
5	#10480.00	55.39 PK	68.20	-12.81	1.62 V	315	41.23	14.16

**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.

<b>Channel</b>	TX Channel 52	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	62.36 PK	74.00	-11.64	3.21 H	93	52.82	9.54
2	5150.00	48.23 AV	54.00	-5.77	3.21 H	93	38.69	9.54
3	*5260.00	102.36 PK			3.21 H	93	92.43	9.93
4	*5260.00	91.11 AV			3.21 H	93	81.18	9.93
5	#10520.00	57.47 PK	68.20	-10.73	1.66 H	228	41.19	16.28

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.77 PK	74.00	-12.23	3.29 V	11	52.23	9.54
2	5150.00	47.73 AV	54.00	-6.27	3.29 V	11	38.19	9.54
3	*5260.00	98.82 PK			3.29 V	11	88.89	9.93
4	*5260.00	87.72 AV			3.29 V	11	77.79	9.93
5	#10520.00	56.83 PK	68.20	-11.37	2.41 V	157	40.55	16.28

**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.

<b>Channel</b>	TX Channel 60	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	102.82 PK			3.18 H	84	92.65	10.17
2	*5300.00	81.86 AV			3.18 H	84	71.69	10.17
3	10600.00	57.83 PK	74.00	-16.17	1.42 H	215	41.46	16.37
4	10600.00	44.76 AV	54.00	-9.24	1.42 H	215	28.39	16.37

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5300.00	98.43 PK			3.31 V	16	88.26	10.17
2	*5300.00	87.25 AV			3.31 V	16	77.08	10.17
3	10600.00	56.66 PK	74.00	-17.34	2.18 V	271	40.29	16.37
4	10600.00	43.76 AV	54.00	-10.24	2.18 V	271	27.39	16.37

**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.

<b>Channel</b>	TX Channel 64	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	97.89 PK			3.19 H	98	87.69	10.20
2	*5320.00	86.72 AV			3.19 H	98	76.52	10.20
3	5350.00	62.94 PK	74.00	-11.06	3.19 H	98	52.69	10.25
4	5350.00	48.99 AV	54.00	-5.01	3.19 H	98	38.74	10.25
5	10640.00	58.18 PK	74.00	-15.82	1.66 H	230	41.59	16.59
6	10640.00	45.23 AV	54.00	-8.77	1.66 H	230	28.64	16.59

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5320.00	93.77 PK			3.33 V	8	83.57	10.20
2	*5320.00	82.39 AV			3.33 V	8	72.19	10.20
3	5350.00	62.35 PK	74.00	-11.65	3.33 V	8	52.10	10.25
4	5350.00	48.36 AV	54.00	-5.64	3.33 V	8	38.11	10.25
5	10640.00	57.14 PK	74.00	-16.86	2.81 V	178	40.55	16.59
6	10640.00	43.99 AV	54.00	-10.01	2.81 V	178	27.40	16.59

**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.

<b>Channel</b>	TX Channel 100	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.96 PK	74.00	-11.04	1.78 H	66	52.16	10.80
2	5460.00	49.43 AV	54.00	-4.57	1.78 H	66	38.63	10.80
3	#5470.00	65.20 PK	68.20	-3.00	1.78 H	66	54.31	10.89
4	*5500.00	101.10 PK			1.78 H	66	89.95	11.15
5	*5500.00	90.43 AV			1.78 H	66	79.28	11.15
6	11000.00	59.19 PK	74.00	-14.81	1.58 H	129	41.65	17.54
7	11000.00	45.97 AV	54.00	-8.03	1.58 H	129	28.43	17.54

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.68 PK	74.00	-11.32	3.59 V	4	51.88	10.80
2	5460.00	48.96 AV	54.00	-5.04	3.59 V	4	38.16	10.80
3	#5470.00	61.35 PK	68.20	-6.85	3.59 V	4	50.46	10.89
4	*5500.00	96.56 PK			3.59 V	4	85.41	11.15
5	*5500.00	86.00 AV			3.59 V	4	74.85	11.15
6	11000.00	57.79 PK	74.00	-16.21	2.24 V	115	40.25	17.54
7	11000.00	45.03 AV	54.00	-8.97	2.24 V	115	27.49	17.54

**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.



<b>Channel</b>	TX Channel 116	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	100.57 PK			1.69 H	74	89.78	10.79
2	*5580.00	89.62 AV			1.69 H	74	78.83	10.79
3	11160.00	58.95 PK	74.00	-15.05	1.62 H	34	41.59	17.36
4	11160.00	45.58 AV	54.00	-8.42	1.62 H	34	28.22	17.36

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5580.00	96.37 PK			3.66 V	6	85.58	10.79
2	*5580.00	85.08 AV			3.66 V	6	74.29	10.79
3	11160.00	57.93 PK	74.00	-16.07	2.24 V	159	40.57	17.36
4	11160.00	45.05 AV	54.00	-8.95	2.24 V	159	27.69	17.36

**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.

<b>Channel</b>	TX Channel 132	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5660.00	100.05 PK			1.69 H	76	89.56	10.49
2	*5660.00	88.77 AV			1.69 H	76	78.28	10.49
3	11320.00	59.16 PK	74.00	-14.84	1.49 H	269	41.78	17.38
4	11320.00	46.02 AV	54.00	-7.98	1.49 H	269	28.64	17.38

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5660.00	94.75 PK			3.57 V	2	84.26	10.49
2	*5660.00	83.68 AV			3.57 V	2	73.19	10.49
3	11320.00	58.07 PK	74.00	-15.93	2.21 V	281	40.69	17.38
4	11320.00	44.81 AV	54.00	-9.19	2.21 V	281	27.43	17.38

**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.

<b>Channel</b>	TX Channel 140	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	99.79 PK			1.79 H	65	89.48	10.31
2	*5700.00	88.33 AV			1.79 H	65	78.02	10.31
3	#5725.00	62.47 PK	68.20	-5.73	1.79 H	65	52.27	10.20
4	11400.00	59.81 PK	74.00	-14.19	1.47 H	174	41.51	18.30
5	11400.00	46.48 AV	54.00	-7.52	1.47 H	174	28.18	18.30

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5700.00	95.60 PK			3.54 V	8	85.29	10.31
2	*5700.00	84.50 AV			3.54 V	8	74.19	10.31
3	#5725.00	62.19 PK	68.20	-6.01	3.54 V	8	51.99	10.20
4	11400.00	58.49 PK	74.00	-15.51	2.08 V	210	40.19	18.30
5	11400.00	45.69 AV	54.00	-8.31	2.08 V	210	27.39	18.30

**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.

<b>Channel</b>	TX Channel 149	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5624.02	60.43 PK	68.20	-7.77	1.44 H	63	51.12	9.31
2	*5745.00	101.43 PK			1.44 H	63	92.36	9.07
3	*5745.00	90.36 AV			1.44 H	63	81.29	9.07
4	#5976.31	61.55 PK	68.20	-6.65	1.44 H	63	52.28	9.27
5	11490.00	57.55 PK	74.00	-16.45	1.57 H	77	41.29	16.26
6	11490.00	44.92 AV	54.00	-9.08	1.57 H	77	28.66	16.26

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5618.74	60.26 PK	68.20	-7.94	3.33 V	10	50.95	9.31
2	*5745.00	97.59 PK			3.33 V	10	88.52	9.07
3	*5745.00	86.71 AV			3.33 V	10	77.64	9.07
4	#5968.97	61.14 PK	68.20	-7.06	3.33 V	10	51.90	9.24
5	11490.00	56.48 PK	74.00	-17.52	1.23 V	265	40.22	16.26
6	11490.00	43.57 AV	54.00	-10.43	1.23 V	265	27.31	16.26

**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.

<b>Channel</b>	TX Channel 157	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5636.45	60.18 PK	68.20	-8.02	1.45 H	59	50.88	9.30
2	*5785.00	101.67 PK			1.45 H	59	92.68	8.99
3	*5785.00	90.48 AV			1.45 H	59	81.49	8.99
4	#5959.78	61.26 PK	68.20	-6.94	1.45 H	59	52.07	9.19
5	11570.00	58.36 PK	74.00	-15.64	1.62 H	127	41.84	16.52
6	11570.00	45.40 AV	54.00	-8.60	1.62 H	127	28.88	16.52

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5623.16	59.47 PK	68.20	-8.73	3.27 V	7	50.16	9.31
2	*5785.00	97.58 PK			3.27 V	7	88.59	8.99
3	*5785.00	86.60 AV			3.27 V	7	77.61	8.99
4	#5998.40	61.74 PK	68.20	-6.46	3.27 V	7	52.34	9.40
5	11570.00	56.72 PK	74.00	-17.28	2.08 V	245	40.20	16.52
6	11570.00	43.96 AV	54.00	-10.04	2.08 V	245	27.44	16.52

**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.

<b>Channel</b>	TX Channel 165	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5643.42	60.09 PK	68.20	-8.11	1.42 H	64	50.80	9.29
2	*5825.00	100.83 PK			1.42 H	64	91.89	8.94
3	*5825.00	89.50 AV			1.42 H	64	80.56	8.94
4	#5959.70	60.74 PK	68.20	-7.46	1.42 H	64	51.56	9.18
5	11650.00	57.57 PK	74.00	-16.43	1.62 H	121	41.28	16.29
6	11650.00	44.80 AV	54.00	-9.20	1.62 H	121	28.51	16.29

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5600.22	60.31 PK	68.20	-7.89	3.35 V	14	50.99	9.32
2	*5825.00	97.10 PK			3.35 V	14	88.16	8.94
3	*5825.00	86.03 AV			3.35 V	14	77.09	8.94
4	#5935.43	60.65 PK	68.20	-7.55	3.35 V	14	51.60	9.05
5	11650.00	56.54 PK	74.00	-17.46	2.33 V	220	40.25	16.29
6	11650.00	43.71 AV	54.00	-10.29	2.33 V	220	27.42	16.29

**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.

802.11ac (40MHz)

<b>Channel</b>	TX Channel 38	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.26 PK	74.00	-13.74	1.69 H	354	51.92	8.34
2	5150.00	47.03 AV	54.00	-6.97	1.69 H	354	38.69	8.34
3	*5190.00	95.20 PK			1.69 H	354	86.78	8.42
4	*5190.00	84.11 AV			1.69 H	354	75.69	8.42
5	#10380.00	54.88 PK	68.20	-13.32	2.08 H	241	40.61	14.27

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.47 PK	74.00	-13.53	3.08 V	359	52.13	8.34
2	5150.00	47.57 AV	54.00	-6.43	3.08 V	359	39.23	8.34
3	*5190.00	87.07 PK			3.08 V	359	78.65	8.42
4	*5190.00	76.58 AV			3.08 V	359	68.16	8.42
5	#10380.00	55.53 PK	68.20	-12.67	1.56 V	219	41.26	14.27

**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.

<b>Channel</b>	TX Channel 46	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	95.98 PK			1.64 H	358	87.39	8.59
2	*5230.00	85.51 AV			1.64 H	358	76.92	8.59
3	5350.00	60.28 PK	74.00	-13.72	1.64 H	358	51.09	9.19
4	5350.00	46.42 AV	54.00	-7.58	1.64 H	358	37.23	9.19
5	#10460.00	54.47 PK	68.20	-13.73	1.22 H	230	40.28	14.19

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5230.00	93.01 PK			2.68 V	358	84.42	8.59
2	*5230.00	82.47 AV			2.68 V	358	73.88	8.59
3	5350.00	60.76 PK	74.00	-13.24	2.68 V	358	51.57	9.19
4	5350.00	47.94 AV	54.00	-6.06	2.68 V	358	38.75	9.19
5	#10460.00	55.55 PK	68.20	-12.65	1.85 V	248	41.36	14.19

**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.



<b>Channel</b>	TX Channel 54	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.86 PK	74.00	-12.14	3.23 H	93	52.32	9.54
2	5150.00	48.90 AV	54.00	-5.10	3.23 H	93	39.36	9.54
3	*5270.00	98.58 PK			3.23 H	93	88.59	9.99
4	*5270.00	87.78 AV			3.23 H	93	77.79	9.99
5	#10540.00	57.56 PK	68.20	-10.64	1.42 H	215	41.26	16.30

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.38 PK	74.00	-12.62	3.31 V	12	51.84	9.54
2	5150.00	48.43 AV	54.00	-5.57	3.31 V	12	38.89	9.54
3	*5270.00	94.53 PK			3.31 V	12	84.54	9.99
4	*5270.00	83.60 AV			3.31 V	12	73.61	9.99
5	#10540.00	56.86 PK	68.20	-11.34	2.52 V	169	40.56	16.30

**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.

<b>Channel</b>	TX Channel 62	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	94.97 PK			3.21 H	102	84.78	10.19
2	*5310.00	83.64 AV			3.21 H	102	73.45	10.19
3	5350.00	61.80 PK	74.00	-12.20	3.21 H	102	51.55	10.25
4	5350.00	49.00 AV	54.00	-5.00	3.21 H	102	38.75	10.25
5	10620.00	58.01 PK	74.00	-15.99	1.55 H	214	41.53	16.48
6	10620.00	44.67 AV	54.00	-9.33	1.55 H	214	28.19	16.48

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5310.00	90.78 PK			3.28 V	10	80.59	10.19
2	*5310.00	80.00 AV			3.28 V	10	69.81	10.19
3	5350.00	61.48 PK	74.00	-12.52	3.28 V	10	51.23	10.25
4	5350.00	48.18 AV	54.00	-5.82	3.28 V	10	37.93	10.25
5	10620.00	56.84 PK	74.00	-17.16	2.22 V	201	40.36	16.48
6	10620.00	44.03 AV	54.00	-9.97	2.22 V	201	27.55	16.48

**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.

<b>Channel</b>	TX Channel 102	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	63.99 PK	74.00	-10.01	1.58 H	70	53.19	10.80
2	5460.00	49.53 AV	54.00	-4.47	1.58 H	70	38.73	10.80
<b>3</b>	<b>#5470.00</b>	<b>65.90 PK</b>	<b>68.20</b>	<b>-2.30</b>	<b>1.58 H</b>	<b>70</b>	<b>55.01</b>	<b>10.89</b>
4	*5510.00	97.56 PK			1.58 H	70	86.46	11.10
5	*5510.00	86.47 AV			1.58 H	70	75.37	11.10
6	11020.00	59.01 PK	74.00	-14.99	1.85 H	297	41.52	17.49
7	11020.00	45.74 AV	54.00	-8.26	1.85 H	297	28.25	17.49

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.24 PK	74.00	-11.76	3.54 V	10	51.44	10.80
2	5460.00	48.95 AV	54.00	-5.05	3.54 V	10	38.15	10.80
3	#5470.00	62.52 PK	68.20	-5.68	3.54 V	10	51.63	10.89
4	*5510.00	93.35 PK			3.54 V	10	82.25	11.10
5	*5510.00	82.74 AV			3.54 V	10	71.64	11.10
6	11020.00	58.13 PK	74.00	-15.87	2.25 V	250	40.64	17.49
7	11020.00	44.78 AV	54.00	-9.22	2.25 V	250	27.29	17.49

**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.

<b>Channel</b>	TX Channel 110	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	97.77 PK			1.62 H	64	86.86	10.91
2	*5550.00	86.52 AV			1.62 H	64	75.61	10.91
3	11100.00	58.92 PK	74.00	-15.08	1.36 H	261	41.62	17.30
4	11100.00	45.52 AV	54.00	-8.48	1.36 H	261	28.22	17.30

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5550.00	93.48 PK			3.66 V	6	82.57	10.91
2	*5550.00	82.60 AV			3.66 V	6	71.69	10.91
3	11100.00	57.96 PK	74.00	-16.04	2.71 V	145	40.66	17.30
4	11100.00	44.64 AV	54.00	-9.36	2.71 V	145	27.34	17.30

**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.

<b>Channel</b>	TX Channel 134	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	96.49 PK			1.40 H	64	86.05	10.44
2	*5670.00	85.78 AV			1.40 H	64	75.34	10.44
3	#5725.00	62.07 PK	68.20	-6.13	1.40 H	64	51.87	10.20
4	11340.00	58.67 PK	74.00	-15.33	1.58 H	254	41.05	17.62
5	11340.00	46.01 AV	54.00	-7.99	1.58 H	254	28.39	17.62

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5670.00	92.96 PK			3.59 V	6	82.52	10.44
2	*5670.00	81.76 AV			3.59 V	6	71.32	10.44
3	#5725.00	61.41 PK	68.20	-6.79	3.59 V	6	51.21	10.20
4	11340.00	57.81 PK	74.00	-16.19	2.28 V	215	40.19	17.62
5	11340.00	44.95 AV	54.00	-9.05	2.28 V	215	27.33	17.62

**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.

<b>Channel</b>	TX Channel 151	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5595.91	61.03 PK	68.20	-7.17	1.33 H	60	51.67	9.36
2	*5755.00	95.50 PK			1.33 H	60	86.46	9.04
3	*5755.00	84.43 AV			1.33 H	60	75.39	9.04
4	#5983.54	61.53 PK	68.20	-6.67	1.33 H	60	52.22	9.31
5	11510.00	57.61 PK	74.00	-16.39	1.67 H	145	41.27	16.34
6	11510.00	44.98 AV	54.00	-9.02	1.67 H	145	28.64	16.34

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5628.02	59.72 PK	68.20	-8.48	3.26 V	15	50.42	9.30
2	*5755.00	91.53 PK			3.26 V	15	82.49	9.04
3	*5755.00	80.29 AV			3.26 V	15	71.25	9.04
4	#5966.98	61.25 PK	68.20	-6.95	3.26 V	15	52.02	9.23
5	11510.00	56.91 PK	74.00	-17.09	2.64 V	231	40.57	16.34
6	11510.00	43.53 AV	54.00	-10.47	2.64 V	231	27.19	16.34

**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.

<b>Channel</b>	TX Channel 159	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5645.30	61.30 PK	68.20	-6.90	1.38 H	57	52.00	9.30
2	*5795.00	95.76 PK			1.38 H	57	86.79	8.97
3	*5795.00	84.65 AV			1.38 H	57	75.68	8.97
4	#6008.72	62.22 PK	68.20	-5.98	1.38 H	57	52.82	9.40
5	11590.00	57.80 PK	74.00	-16.20	1.24 H	174	41.23	16.57
6	11590.00	44.90 AV	54.00	-9.10	1.24 H	174	28.33	16.57

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5614.56	60.01 PK	68.20	-8.19	3.28 V	12	50.70	9.31
2	*5795.00	91.86 PK			3.28 V	12	82.89	8.97
3	*5795.00	80.71 AV			3.28 V	12	71.74	8.97
4	#5959.44	60.73 PK	68.20	-7.47	3.28 V	12	51.55	9.18
5	11590.00	57.11 PK	74.00	-16.89	2.21 V	251	40.54	16.57
6	11590.00	44.13 AV	54.00	-9.87	2.21 V	251	27.56	16.57

**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.

802.11ac (80MHz)

<b>Channel</b>	TX Channel 42	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	59.68 PK	74.00	-14.32	1.63 H	352	51.34	8.34
2	5150.00	47.60 AV	54.00	-6.40	1.63 H	352	39.26	8.34
3	*5210.00	91.97 PK			1.63 H	352	83.49	8.48
4	*5210.00	80.34 AV			1.63 H	352	71.86	8.48
5	5350.00	60.93 PK	74.00	-13.07	1.63 H	352	51.74	9.19
6	5350.00	47.42 AV	54.00	-6.58	1.63 H	352	38.23	9.19
7	#10420.00	54.87 PK	68.20	-13.33	1.99 H	266	40.61	14.26

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	60.18 PK	74.00	-13.82	2.93 V	359	51.84	8.34
2	5150.00	48.15 AV	54.00	-5.85	2.93 V	359	39.81	8.34
3	*5210.00	87.06 PK			2.93 V	359	78.58	8.48
4	*5210.00	74.48 AV			2.93 V	359	66.00	8.48
5	5350.00	61.26 PK	74.00	-12.74	2.93 V	359	52.07	9.19
6	5350.00	48.08 AV	54.00	-5.92	2.93 V	359	38.89	9.19
7	#10420.00	55.78 PK	68.20	-12.42	1.62 V	134	41.52	14.26

**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.



<b>Channel</b>	TX Channel 58	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.61 PK	74.00	-12.39	3.22 H	96	52.07	9.54
2	5150.00	49.11 AV	54.00	-4.89	3.22 H	96	39.57	9.54
3	*5290.00	95.29 PK			3.22 H	96	85.17	10.12
4	*5290.00	81.62 AV			3.22 H	96	71.50	10.12
5	5350.00	61.61 PK	74.00	-12.39	3.22 H	96	51.36	10.25
6	5350.00	49.53 AV	54.00	-4.47	3.22 H	96	39.28	10.25
7	#10580.00	57.70 PK	68.20	-10.50	1.45 H	27	41.36	16.34

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5150.00	61.00 PK	74.00	-13.00	3.33 V	15	51.46	9.54
2	5150.00	48.53 AV	54.00	-5.47	3.33 V	15	38.99	9.54
3	*5290.00	91.68 PK			3.33 V	15	81.56	10.12
4	*5290.00	78.01 AV			3.33 V	15	67.89	10.12
5	5350.00	61.27 PK	74.00	-12.73	3.33 V	15	51.02	10.25
6	5350.00	49.14 AV	54.00	-4.86	3.33 V	15	38.89	10.25
7	#10580.00	56.69 PK	68.20	-11.51	2.26 V	284	40.35	16.34

**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.

<b>Channel</b>	TX Channel 106	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	63.31 PK	74.00	-10.69	1.71 H	62	52.51	10.80
2	5460.00	50.85 AV	54.00	-3.15	1.71 H	62	40.05	10.80
3	#5470.00	65.27 PK	68.20	-2.93	1.71 H	62	54.38	10.89
4	*5530.00	96.65 PK			1.71 H	62	85.64	11.01
5	*5530.00	85.09 AV			1.71 H	62	74.08	11.01
6	11060.00	58.56 PK	74.00	-15.44	1.62 H	326	41.16	17.40
7	11060.00	45.89 AV	54.00	-8.11	1.62 H	326	28.49	17.40

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	5460.00	62.26 PK	74.00	-11.74	3.55 V	12	51.46	10.80
2	5460.00	49.79 AV	54.00	-4.21	3.55 V	12	38.99	10.80
3	#5470.00	62.53 PK	68.20	-5.67	3.55 V	12	51.64	10.89
4	*5530.00	92.64 PK			3.55 V	12	81.63	11.01
5	*5530.00	81.57 AV			3.55 V	12	70.56	11.01
6	11060.00	57.76 PK	74.00	-16.24	2.02 V	100	40.36	17.40
7	11060.00	44.71 AV	54.00	-9.29	2.02 V	100	27.31	17.40

**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.

<b>Channel</b>	TX Channel 122	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5610.00	96.78 PK			1.75 H	62	86.11	10.67
2	*5610.00	84.70 AV			1.75 H	62	74.03	10.67
3	#5725.00	62.26 PK	68.20	-5.94	1.75 H	62	52.06	10.20
4	11220.00	58.39 PK	74.00	-15.61	1.58 H	200	41.03	17.36
5	11220.00	45.52 AV	54.00	-8.48	1.58 H	200	28.16	17.36

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*5610.00	93.19 PK			3.61 V	11	82.52	10.67
2	*5610.00	82.03 AV			3.61 V	11	71.36	10.67
3	#5725.00	61.26 PK	68.20	-6.94	3.61 V	11	51.06	10.20
4	11220.00	57.51 PK	74.00	-16.49	2.23 V	231	40.15	17.36
5	11220.00	44.82 AV	54.00	-9.18	2.23 V	231	27.46	17.36

**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.

<b>Channel</b>	TX Channel 155	<b>Detector Function</b>	Peak (PK)
<b>Frequency Range</b>	1GHz ~ 40GHz		Average (AV)

**Antenna Polarity & Test Distance : Horizontal at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5642.19	60.25 PK	68.20	-7.95	1.44 H	60	50.96	9.29
2	*5775.00	97.70 PK			1.44 H	60	88.69	9.01
3	*5775.00	86.60 AV			1.44 H	60	77.59	9.01
4	#5966.57	60.93 PK	68.20	-7.27	1.44 H	60	51.70	9.23
5	11550.00	58.00 PK	74.00	-16.00	1.64 H	214	41.55	16.45
6	11550.00	44.79 AV	54.00	-9.21	1.64 H	214	28.34	16.45

**Antenna Polarity & Test Distance : Vertical at 3 m**

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	#5634.44	59.70 PK	68.20	-8.50	3.30 V	10	50.40	9.30
2	*5775.00	93.58 PK			3.30 V	10	84.57	9.01
3	*5775.00	82.63 AV			3.30 V	10	73.62	9.01
4	#5983.95	60.68 PK	68.20	-7.52	3.30 V	10	51.37	9.31
5	11550.00	56.77 PK	74.00	-17.23	2.20 V	225	40.32	16.45
6	11550.00	43.71 AV	54.00	-10.29	2.20 V	225	27.26	16.45

**Remarks:**

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

**Below 1GHz Data:**

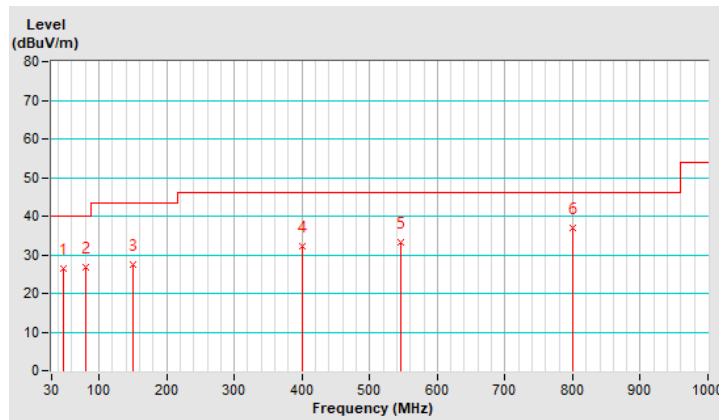
**802.11a**

<b>Channel</b>	TX Channel 52	<b>Detector Function</b>	Quasi-Peak (QP)
<b>Frequency Range</b>	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	46.93	26.38 QP	40.00	-13.62	1.41 H	157	33.46	-7.08
2	81.22	26.87 QP	40.00	-13.13	1.58 H	157	38.60	-11.73
3	150.62	27.42 QP	43.50	-16.08	1.09 H	192	33.92	-6.50
4	400.01	32.18 QP	46.00	-13.82	1.76 H	218	34.41	-2.23
5	546.72	33.29 QP	46.00	-12.71	2.03 H	347	32.55	0.74
6	799.99	37.08 QP	46.00	-8.92	1.99 H	162	31.09	5.99

**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.

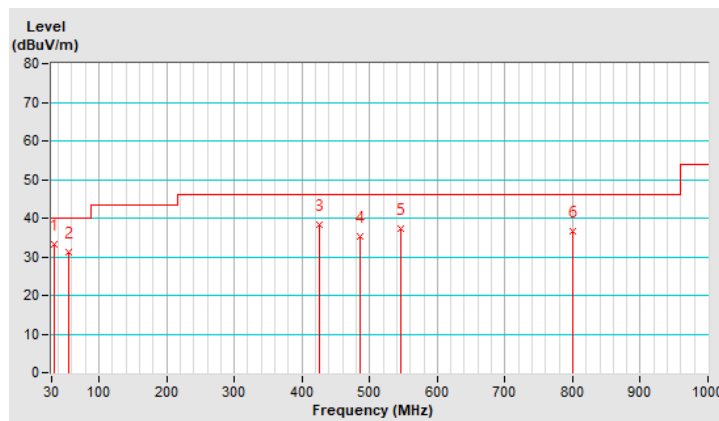


<b>Channel</b>	TX Channel 52	<b>Detector Function</b>	Quasi-Peak (QP)
<b>Frequency Range</b>	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	33.98	33.20 QP	40.00	-6.80	1.84 V	80	41.84	-8.64
2	55.12	31.24 QP	40.00	-8.76	1.29 V	314	38.32	-7.08
3	425.27	38.28 QP	46.00	-7.72	1.72 V	329	39.65	-1.37
4	486.00	35.42 QP	46.00	-10.58	1.50 V	360	35.61	-0.19
5	546.77	37.30 QP	46.00	-8.70	2.02 V	348	36.56	0.74
6	800.03	36.55 QP	46.00	-9.45	1.95 V	61	30.56	5.99

**Remarks:**

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



## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

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

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

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

### 4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	838251/021	Oct. 30, 2019	Oct. 29, 2020
ROHDE & SCHWARZ Artificial Mains Network (For EUT)	ENV216	101195	May 15, 2020	May 14, 2021
LISN With Adapter(for EUT)	101195	N/A	May 15, 2020	May 14, 2021
EMCO L.I.S.N. (For peripherals)	3825/2	9504-2359	Jul. 28, 2020	Jul. 27, 2021
SCHWARZBECK Artificial Mains Network (For EUT)	NNLK8129	8129229	May 14, 2020	May 13, 2021
SCHWARZBECK Artificial Mains Network (for EUT)	NNLK 8121	8121-808	Apr. 10, 2020	Apr. 9, 2021
Software	Cond_V7.3.7.4	NA	NA	NA
RF cable (JYEBAO) With10dB PAD	5D-FB	Cable-C03-01	Sep. 17, 2019	Sep. 16, 2020
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-300	Jan. 20, 2020	Jan. 19, 2021
LYNICS Terminator (For EMCO LISN)	0900510	E1-01-301	Jan. 20, 2020	Jan. 19, 2021

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

2. The test was performed in Shielded Room No. 3. (Conduction 3)

3. The VCCI Site Registration No. C-10274.

4. Tested Date: Aug. 3, 2020

#### 4.2.3 Test Procedure

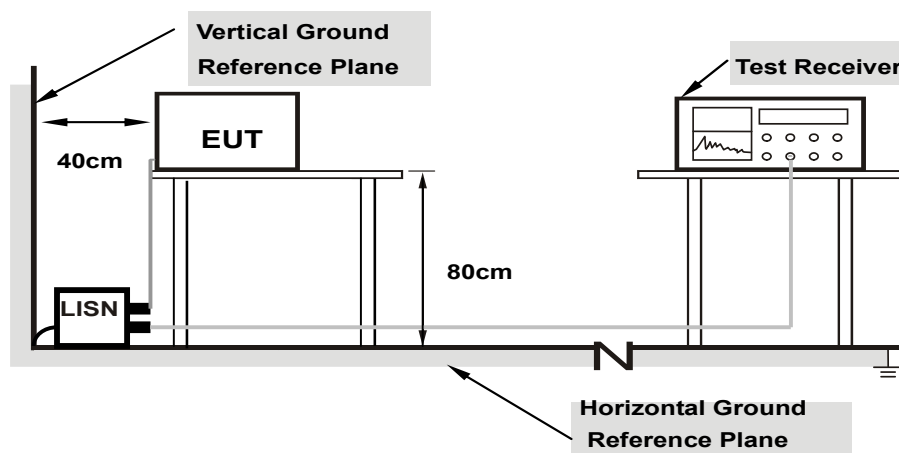
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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:** All modes of operation were investigated and the worst-case emissions are reported.

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



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

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

#### 4.2.6 EUT Operating Condition

Same as item 4.1.6.



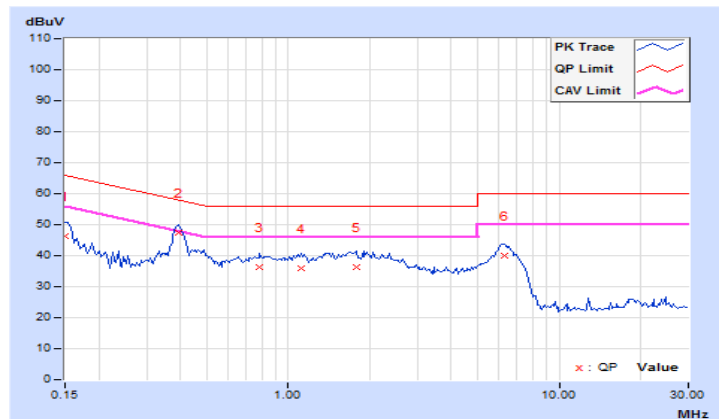
#### 4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.15000	9.72	36.76	26.57	46.48	36.29	66.00	56.00	-19.52
<b>2</b>	<b>0.39219</b>	<b>9.72</b>	<b>37.65</b>	<b>31.61</b>	<b>47.37</b>	<b>41.33</b>	<b>58.02</b>	<b>48.02</b>	<b>-10.65</b>	<b>-6.69</b>
3	0.78672	9.73	26.47	20.50	36.20	30.23	56.00	46.00	-19.80	-15.77
4	1.11719	9.75	26.29	20.58	36.04	30.33	56.00	46.00	-19.96	-15.67
5	1.78516	9.79	26.55	21.14	36.34	30.93	56.00	46.00	-19.66	-15.07
6	6.29297	9.87	29.96	24.08	39.83	33.95	60.00	50.00	-20.17	-16.05

#### 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.

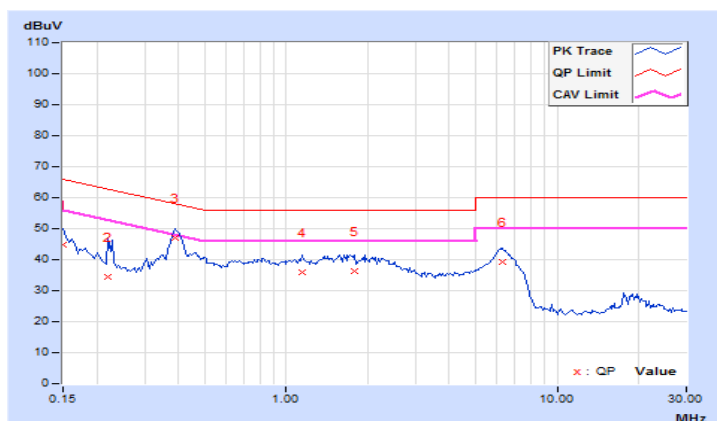


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

No	Freq. [MHz]	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
	1	0.15000	9.71	35.08	25.74	44.79	35.45	66.00	56.00	-21.21
2	0.22031	9.71	24.83	15.53	34.54	25.24	62.81	52.81	-28.27	-27.57
3	0.38828	9.72	37.39	30.93	47.11	40.65	58.10	48.10	-10.99	-7.45
4	1.14453	9.75	26.17	20.82	35.92	30.57	56.00	46.00	-20.08	-15.43
5	1.78125	9.79	26.47	21.06	36.26	30.85	56.00	46.00	-19.74	-15.15
6	6.28906	9.87	29.53	23.77	39.40	33.64	60.00	50.00	-20.60	-16.36

**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)
	√	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  $N_{ANT} \leq 4$ ;

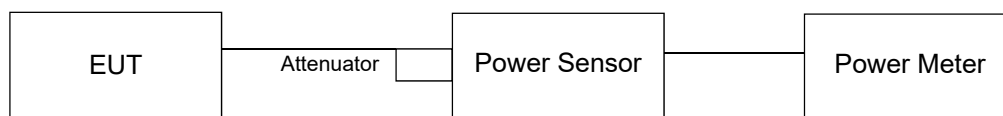
Array Gain = 0 dB (i.e., no array gain) for channel widths  $\geq 40$  MHz for any  $N_{ANT}$ ;

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

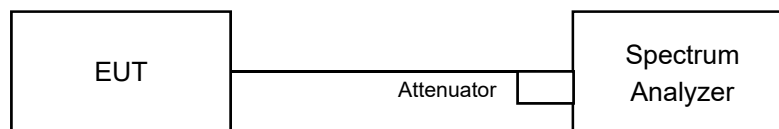
For power measurements on all other devices: Array Gain = 10 log( $N_{ANT}/N_{SS}$ ) dB.

#### 4.3.2 Test Setup

##### For Power Output Measurement



##### For 26dB Occupied Bandwidth



#### 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.

##### **For 26dB Occupied Bandwidth**

1. Set RBW = approximately 1% of the emission bandwidth.
2. Set the VBW > RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Condition

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

#### 4.3.7 Test Result

#### Power Output: 802.11a

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	7.464	8.73	24.00	Pass
40	5200	14.060	11.48	24.00	Pass
48	5240	14.158	11.51	24.00	Pass
52	5260	13.964	11.45	24.00	Pass
60	5300	<b>14.791</b>	11.70	24.00	Pass
64	5320	5.420	7.34	23.88	Pass
100	5500	6.209	7.93	23.90	Pass
116	5580	7.295	8.63	23.86	Pass
132	5660	6.516	8.14	23.83	Pass
140	5700	7.691	8.86	23.87	Pass
149	5745	8.260	9.17	30.00	Pass
157	5785	8.690	9.39	30.00	Pass
165	5825	8.670	9.38	30.00	Pass

#### NOTE:

#### For U-NII-2A, U-NII-2C Band:

1.  $11\text{dBm} + 10\log(21.78) = 24.38\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(21.65) = 24.35\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(19.43) = 23.88\text{ dBm} < 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(19.52) = 23.90\text{ dBm} < 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(19.34) = 23.86\text{ dBm} < 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(19.19) = 23.83\text{ dBm} < 24\text{dBm}$ .
7.  $11\text{dBm} + 10\log(19.37) = 23.87\text{ dBm} > 24\text{dBm}$ .

### 802.11ac (20MHz)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	7.178	8.56	24	Pass
40	5200	13.459	11.29	24	Pass
48	5240	<b>14.256</b>	11.54	24	Pass
52	5260	13.521	11.31	24	Pass
60	5300	14.555	11.63	24	Pass
64	5320	5.035	7.02	24	Pass
100	5500	6.095	7.85	24	Pass
116	5580	6.934	8.41	24	Pass
132	5660	6.966	8.43	24	Pass
140	5700	7.447	8.72	24	Pass
149	5745	7.798	8.92	30	Pass
157	5785	8.204	9.14	30	Pass
165	5825	8.241	9.16	30	Pass

**NOTE:**

**For U-NII-2A, U-NII-2C Band:**

1.  $11\text{dBm} + 10\log(22.51) = 24.52\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(22.80) = 24.58\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(20.82) = 24.18\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(20.92) = 24.21\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(20.74) = 24.17\text{ dBm} > 24\text{dBm}$ .
6.  $11\text{dBm} + 10\log(20.59) = 24.14\text{ dBm} > 24\text{dBm}$ .
7.  $11\text{dBm} + 10\log(20.56) = 24.13\text{ dBm} > 24\text{dBm}$ .

### 802.11ac (40MHz)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	4.875	6.88	24	Pass
46	5230	11.455	10.59	24	Pass
54	5270	11.117	10.46	24	Pass
62	5310	5.333	7.27	24	Pass
102	5510	5.808	7.64	24	Pass
110	5550	7.709	8.87	24	Pass
134	5670	7.780	8.91	24	Pass
151	5755	6.383	8.05	30	Pass
159	5795	6.516	8.14	30	Pass

**NOTE:**

**For U-NII-2A, U-NII-2C Band:**

1.  $11\text{dBm} + 10\log(46.26) = 27.65\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(45.79) = 27.61\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(44.47) = 27.48\text{ dBm} > 24\text{dBm}$ .
4.  $11\text{dBm} + 10\log(46.66) = 27.69\text{ dBm} > 24\text{dBm}$ .
5.  $11\text{dBm} + 10\log(43.88) = 27.42\text{ dBm} > 24\text{dBm}$ .

### 802.11ac (80MHz)

Channel	Channel Frequency (MHz)	Maximum Conducted Power (mW)	Maximum Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	4.932	6.93	24	Pass
58	5290	5.129	7.10	24	Pass
106	5530	7.816	8.93	24	Pass
122	5610	<b>8.472</b>	9.28	24	Pass
155	5775	<b>10.765</b>	10.32	30	Pass

**NOTE:**

**For U-NII-2A, U-NII-2C Band:**

1.  $11\text{dBm} + 10\log(81.97) = 30.14\text{ dBm} > 24\text{dBm}$ .
2.  $11\text{dBm} + 10\log(81.79) = 30.13\text{ dBm} > 24\text{dBm}$ .
3.  $11\text{dBm} + 10\log(81.64) = 30.12\text{ dBm} > 24\text{dBm}$ .

**26dB Bandwidth:**

**802.11a**

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
52	5260	21.78
60	5300	21.65
64	5320	19.43
100	5500	19.52
116	5580	19.34
132	5660	19.19
140	5700	19.37

**802.11ac (20MHz)**

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
52	5260	22.51
60	5300	22.80
64	5320	20.82
100	5500	20.92
116	5580	20.74
132	5660	20.59
140	5700	20.56

**802.11ac (40MHz)**

Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
54	5270	46.26
62	5310	45.79
102	5510	44.47
110	5550	46.66
134	5670	43.88

**802.11ac (80MHz)**

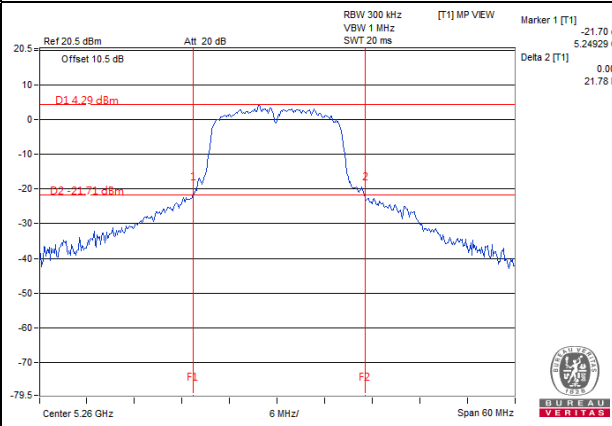
Channel	Channel Frequency (MHz)	26dBc Bandwidth (MHz)
58	5290	81.97
106	5530	81.79
122	5610	81.64



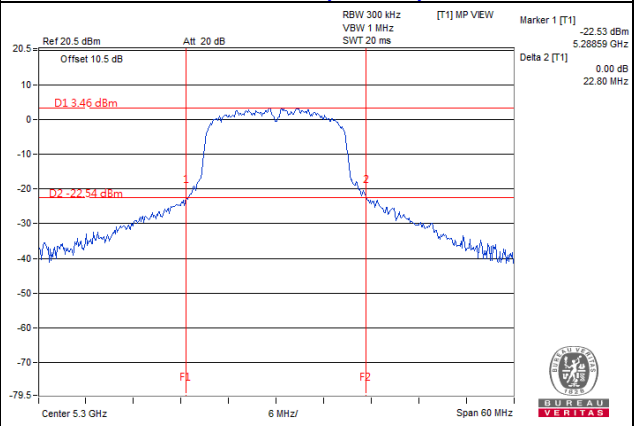


### Spectrum Plot of Worst Value

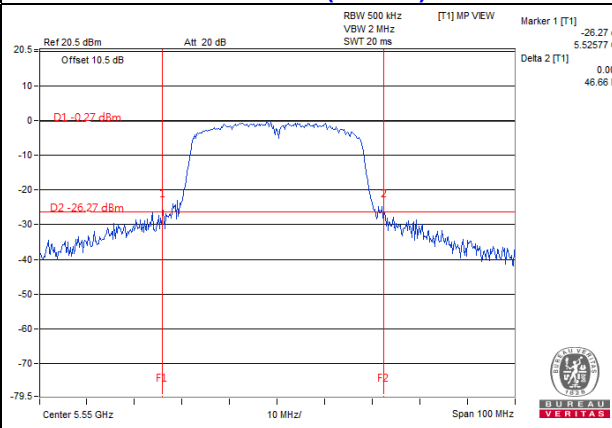
#### 802.11a



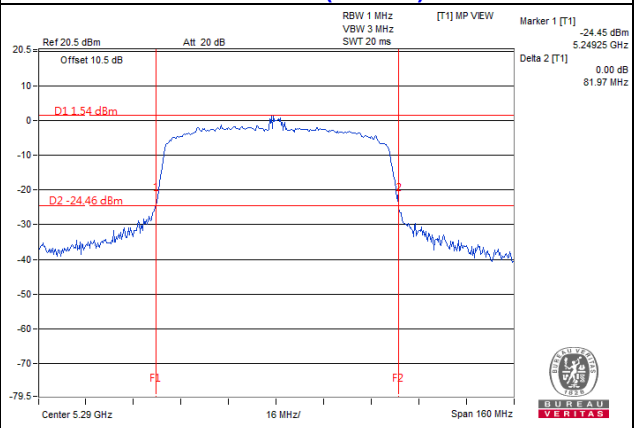
#### 802.11ac (20MHz)



#### 802.11ac (40MHz)

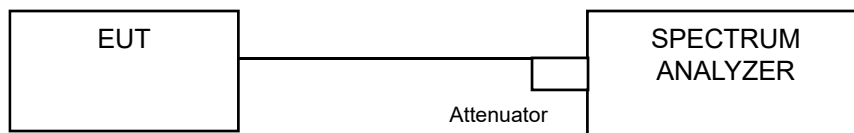


#### 802.11ac (80MHz)



## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Setup



### 4.4.2 Test Instruments

Refer to section 4.3.3 to get information of above instrument.

### 4.4.3 Test Procedure

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

#### 4.4.4 Test Results

##### 802.11a

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	16.68
40	5200	16.32
48	5240	16.44
52	5260	16.44
60	5300	16.44
64	5320	16.32
100	5500	16.32
116	5580	16.32
132	5660	16.32
140	5700	16.32
149	5745	16.26
157	5785	16.30
165	5825	16.30

##### 802.11ac (20MHz)

Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.52
40	5200	17.52
48	5240	17.76
52	5260	17.52
60	5300	17.52
64	5320	17.40
100	5500	17.52
116	5580	17.40
132	5660	17.88
140	5700	17.40
149	5745	17.48
157	5785	17.40
165	5825	17.40

### 802.11ac (40MHz)

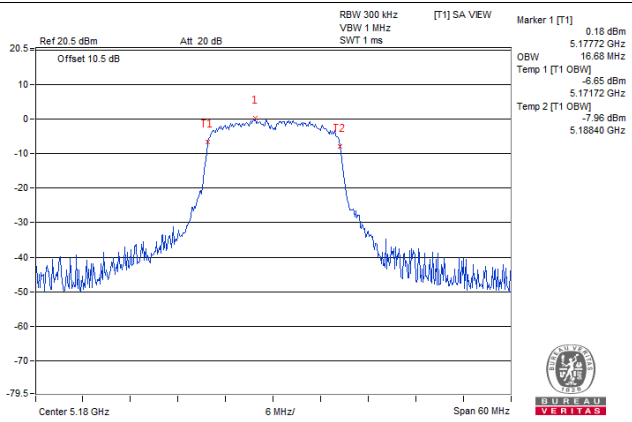
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.00
46	5230	36.20
54	5270	36.20
62	5310	35.80
102	5510	36.00
110	5550	36.00
134	5670	36.00
151	5755	35.95
159	5795	36.00

### 802.11ac (80MHz)

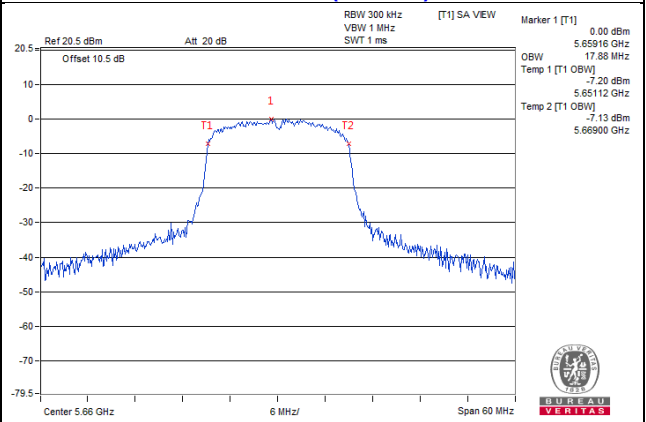
Channel	Channel Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	74.88
58	5290	75.12
106	5530	74.88
122	5610	75.36
155	5775	74.87

### Spectrum Plot of Worst Value

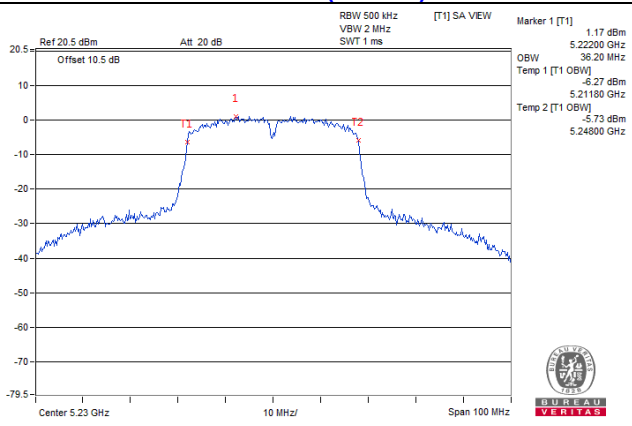
#### 802.11a



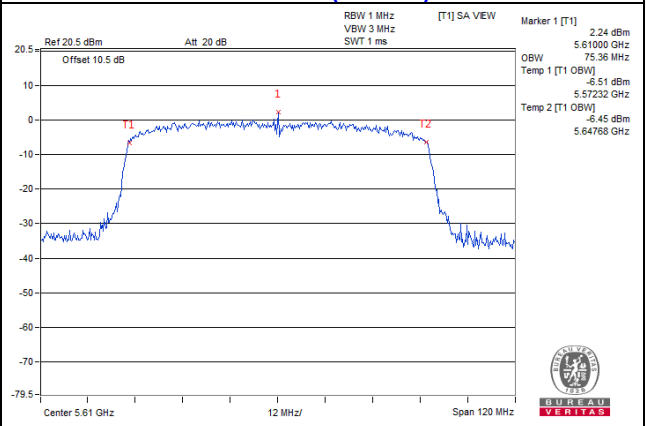
#### 802.11ac (20MHz)



#### 802.11ac (40MHz)



#### 802.11ac (80MHz)

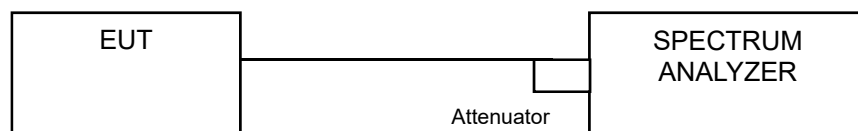


## 4.5 Peak Power Spectral Density Measurement

### 4.5.1 Limits of Peak Power Spectral Density Measurement

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

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 Test Procedure

#### For U-NII-1, U-NII-2A, U-NII-2C band:

Using method SA-2

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

#### For U-NII-3 band:

- 1) Set span to encompass the entire emission bandwidth (EBW) of the signal.
- 2) Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
- 3) Sweep time = auto, trigger set to “free run”.
- 4) Trace average at least 100 traces in power averaging mode.
- 5) Record the max value and add 10 log (1/duty cycle)

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Condition

Same as Item 4.3.6.

#### 4.5.7 Test Results

For U-NII-1, U-NII-2A, U-NII-2C:

##### 802.11a

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	-4.40	0.15	-4.25	11	Pass
40	5200	-1.14	0.15	-0.99	11	Pass
48	5240	-1.07	0.15	-0.92	11	Pass
52	5260	-1.17	0.15	-1.02	11	Pass
60	5300	-1.10	0.15	-0.95	11	Pass
64	5320	-5.95	0.15	-5.80	11	Pass
100	5500	-4.60	0.15	-4.45	11	Pass
116	5580	-4.29	0.15	-4.14	11	Pass
132	5660	-4.91	0.15	-4.76	11	Pass
140	5700	-4.13	0.15	-3.98	11	Pass

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

##### 802.11ac (20MHz)

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
36	5180	-4.71	0.28	-4.43	11	Pass
40	5200	-1.66	0.28	-1.38	11	Pass
48	5240	-1.39	0.28	-1.11	11	Pass
52	5260	-1.63	0.28	-1.35	11	Pass
60	5300	-1.55	0.28	-1.27	11	Pass
64	5320	-6.50	0.28	-6.22	11	Pass
100	5500	-5.16	0.28	-4.88	11	Pass
116	5580	-4.62	0.28	-4.34	11	Pass
132	5660	-5.58	0.28	-5.30	11	Pass
140	5700	-5.20	0.28	-4.92	11	Pass

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

### 802.11ac (40MHz)

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
38	5190	-10.05	0.53	-9.52	11	Pass
46	5230	-5.67	0.53	-5.14	11	Pass
54	5270	-5.94	0.53	-5.41	11	Pass
62	5310	-9.54	0.53	-9.01	11	Pass
102	5510	-8.38	0.53	-7.85	11	Pass
118	5590	-7.11	0.53	-6.58	11	Pass
134	5670	-7.68	0.53	-7.15	11	Pass

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

### 802.11ac (80MHz)

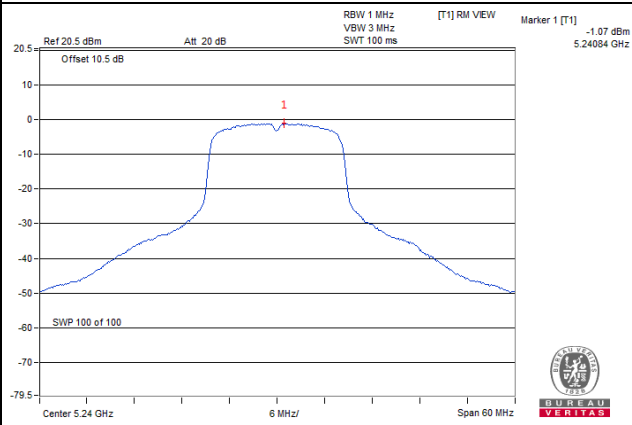
Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	MAX. Limit (dBm/MHz)	Pass / Fail
42	5210	-13.24	0.72	-12.52	11	Pass
58	5290	-13.30	0.72	-12.58	11	Pass
106	5530	-10.82	0.72	-10.10	11	Pass
122	5610	-11.10	0.72	-10.38	11	Pass

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

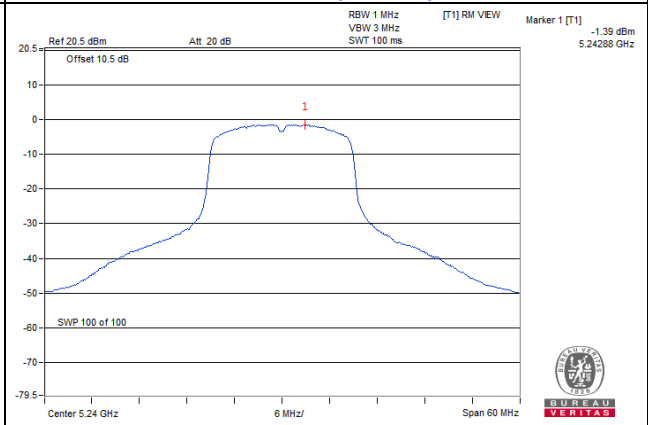


### Spectrum Plot of Worst Value

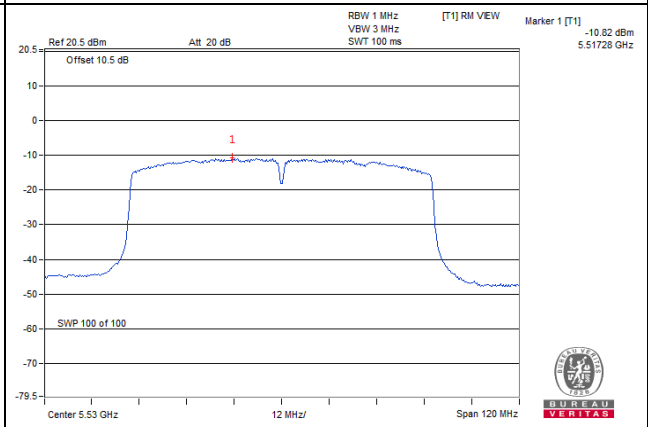
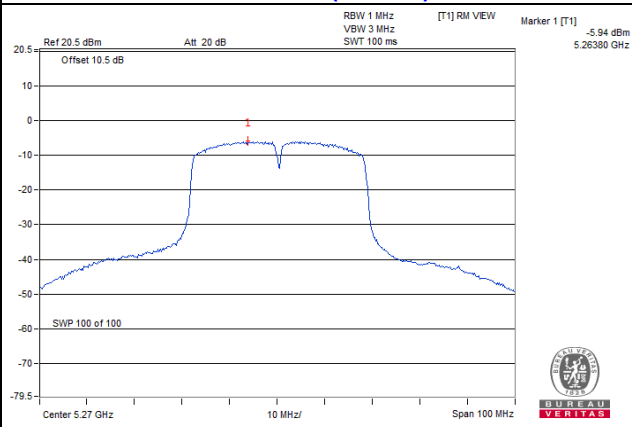
#### 802.11a



#### 802.11ac (20MHz)



#### 802.11ac (40MHz)



**For U-NII-3:**

**802.11a**

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/500kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-12.08	0.15	-11.93	30	Pass
157	5785	-12.53	0.15	-12.38	30	Pass
165	5825	-13.98	0.15	-13.83	30	Pass

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

**802.11ac (20MHz)**

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/500kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
149	5745	-12.63	0.28	-12.35	30	Pass
157	5785	-12.98	0.28	-12.70	30	Pass
165	5825	-14.78	0.28	-14.50	30	Pass

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

**802.11ac (40MHz)**

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/500kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
151	5755	-16.96	0.53	-16.43	30	Pass
159	5795	-18.34	0.53	-17.81	30	Pass

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

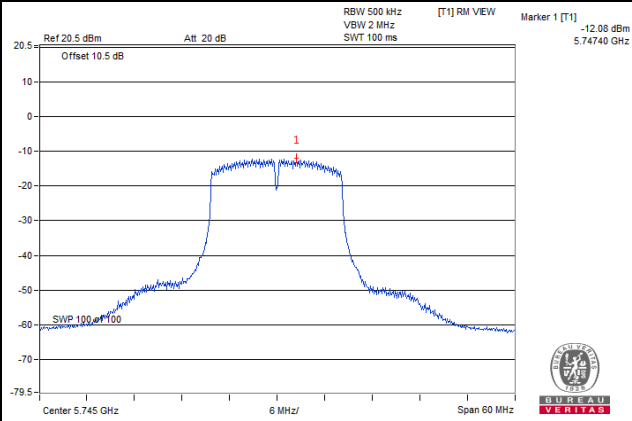
**802.11ac (80MHz)**

Channel	Channel Frequency (MHz)	PSD W/O Duty Factor (dBm/500kHz)	Duty Factor (dB)	Total PSD With Duty Factor (dBm/500kHz)	Limit (dBm/500kHz)	Pass /Fail
155	5775	-18.73	0.72	-18.01	30	Pass

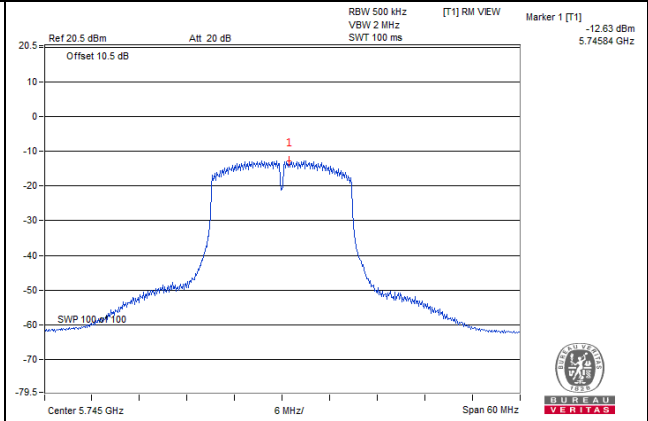
**Note:** Refer to section 3.3 for duty cycle spectrum plot.

### Spectrum Plot of Worst Value

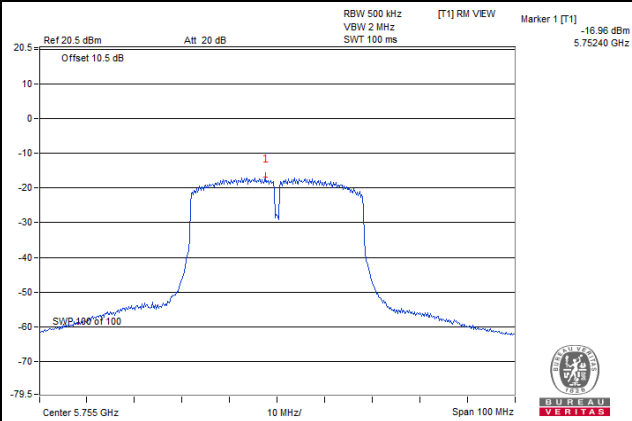
**802.11a**



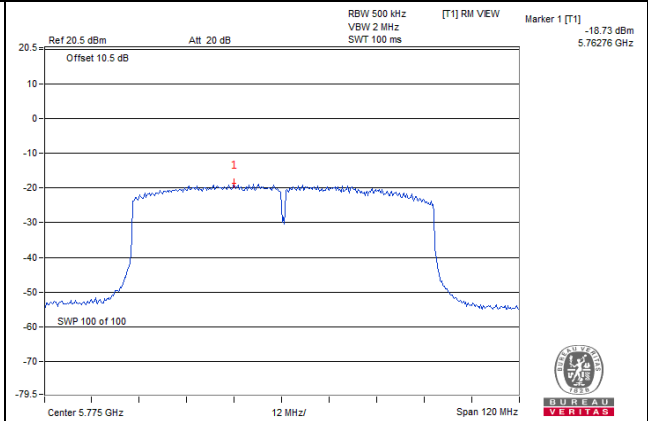
**802.11ac (20MHz)**



**802.11ac (40MHz)**



**802.11ac (80MHz)**

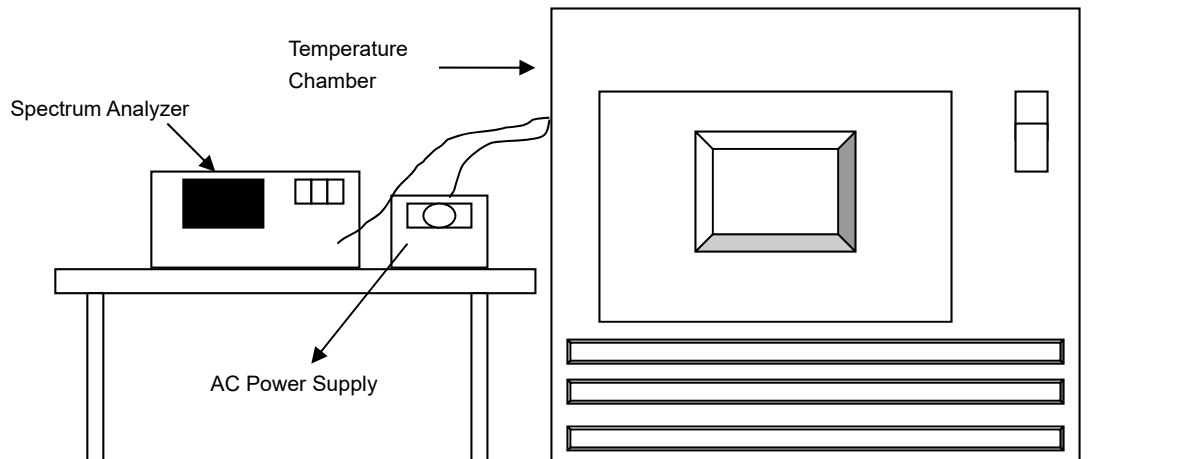


## 4.6 Frequency Stability Measurement

### 4.6.1 Limits of Frequency Stability Measurement

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

### 4.6.2 Test Setup



### 4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.6.4 Test Procedure

- 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 until measurements down to the lowest specified temperature have been completed..
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 Minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

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

#### 4.6.7 Test Results

Frequency Stability Versus Temp.									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
50	120	5179.9885	Pass	5179.9881	Pass	5179.987	Pass	5179.9879	Pass
40	120	5179.9895	Pass	5179.9867	Pass	5179.9857	Pass	5179.9876	Pass
30	120	5180.0083	Pass	5180.0071	Pass	5180.0067	Pass	5180.0075	Pass
20	120	5179.9781	Pass	5179.9746	Pass	5179.9735	Pass	5179.9748	Pass
10	120	5180.0117	Pass	5180.0141	Pass	5180.0151	Pass	5180.014	Pass
0	120	5179.9995	Pass	5180.0005	Pass	5180.0027	Pass	5179.9985	Pass
-10	120	5180.0227	Pass	5180.0214	Pass	5180.0245	Pass	5180.0212	Pass
-20	120	5179.9998	Pass	5180.0002	Pass	5179.998	Pass	5179.9973	Pass
-30	120	5179.9789	Pass	5179.9768	Pass	5179.9775	Pass	5179.9774	Pass

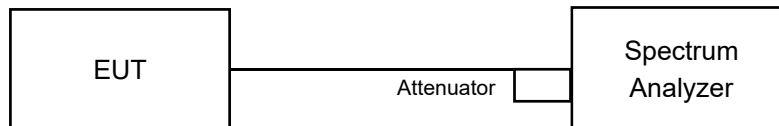
Frequency Stability Versus Voltage									
Operating Frequency: 5180 MHz									
TEMP. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail	Measured Frequency (MHz)	Pass/Fail
20	138	5179.9784	Pass	5179.9755	Pass	5179.9743	Pass	5179.9755	Pass
	120	5179.9781	Pass	5179.9746	Pass	5179.9735	Pass	5179.9748	Pass
	102	5179.9773	Pass	5179.9739	Pass	5179.9745	Pass	5179.9742	Pass

## 4.7 6dB Bandwidth Measurement

### 4.7.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

### 4.7.2 Test Setup



### 4.7.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.7.4 Test Procedure

#### MEASUREMENT PROCEDURE REF

- 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

##### 802.11a

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.15	0.5	Pass
157	5785	15.16	0.5	Pass
165	5825	15.17	0.5	Pass

##### 802.11ac (20MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
149	5745	15.18	0.5	Pass
157	5785	15.18	0.5	Pass
165	5825	15.17	0.5	Pass

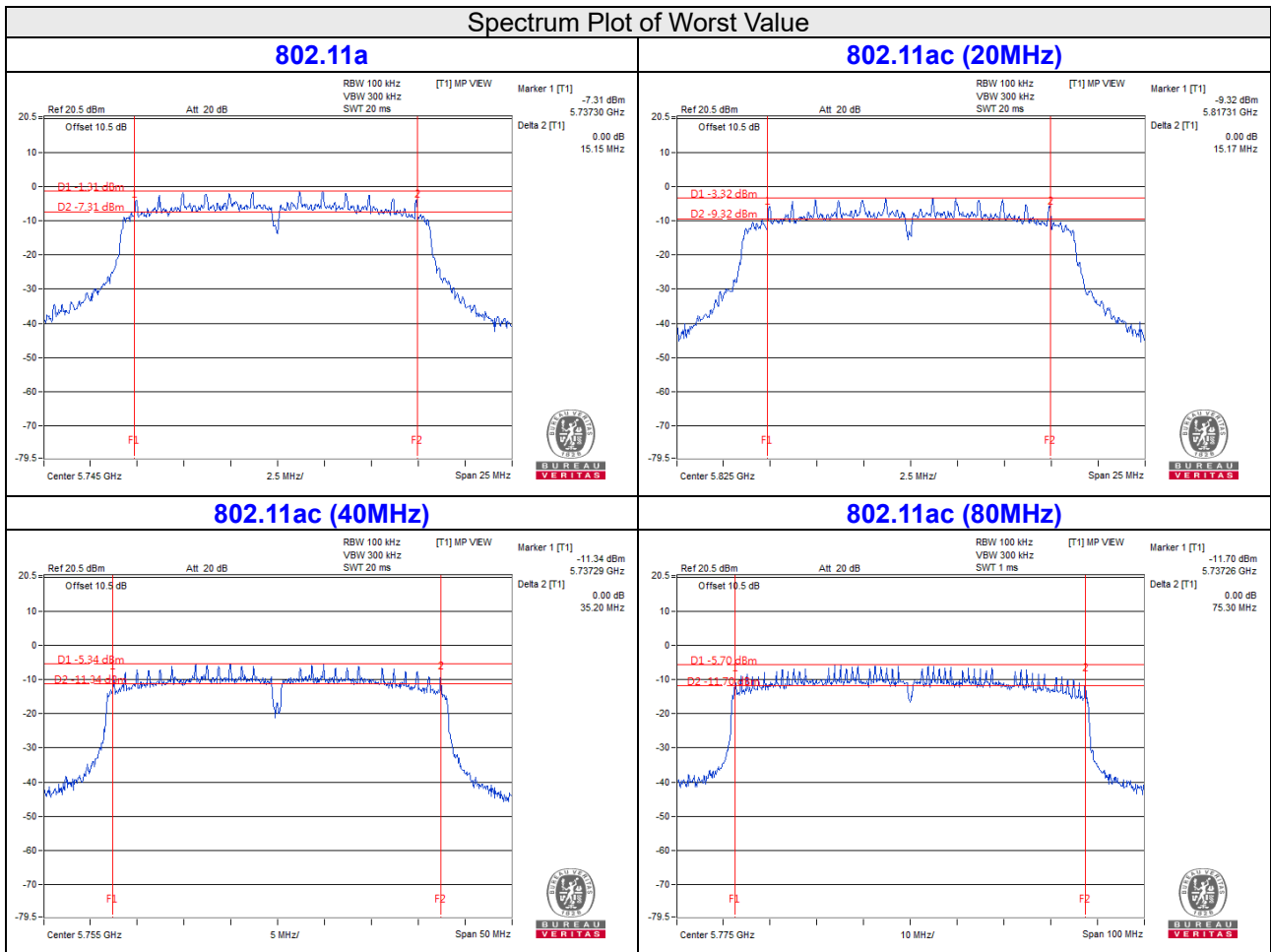
##### 802.11ac (40MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
151	5755	35.20	0.5	Pass
159	5795	35.22	0.5	Pass

##### 802.11ac (80MHz)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
155	5775	75.30	0.5	Pass

### Spectrum Plot of Worst Value



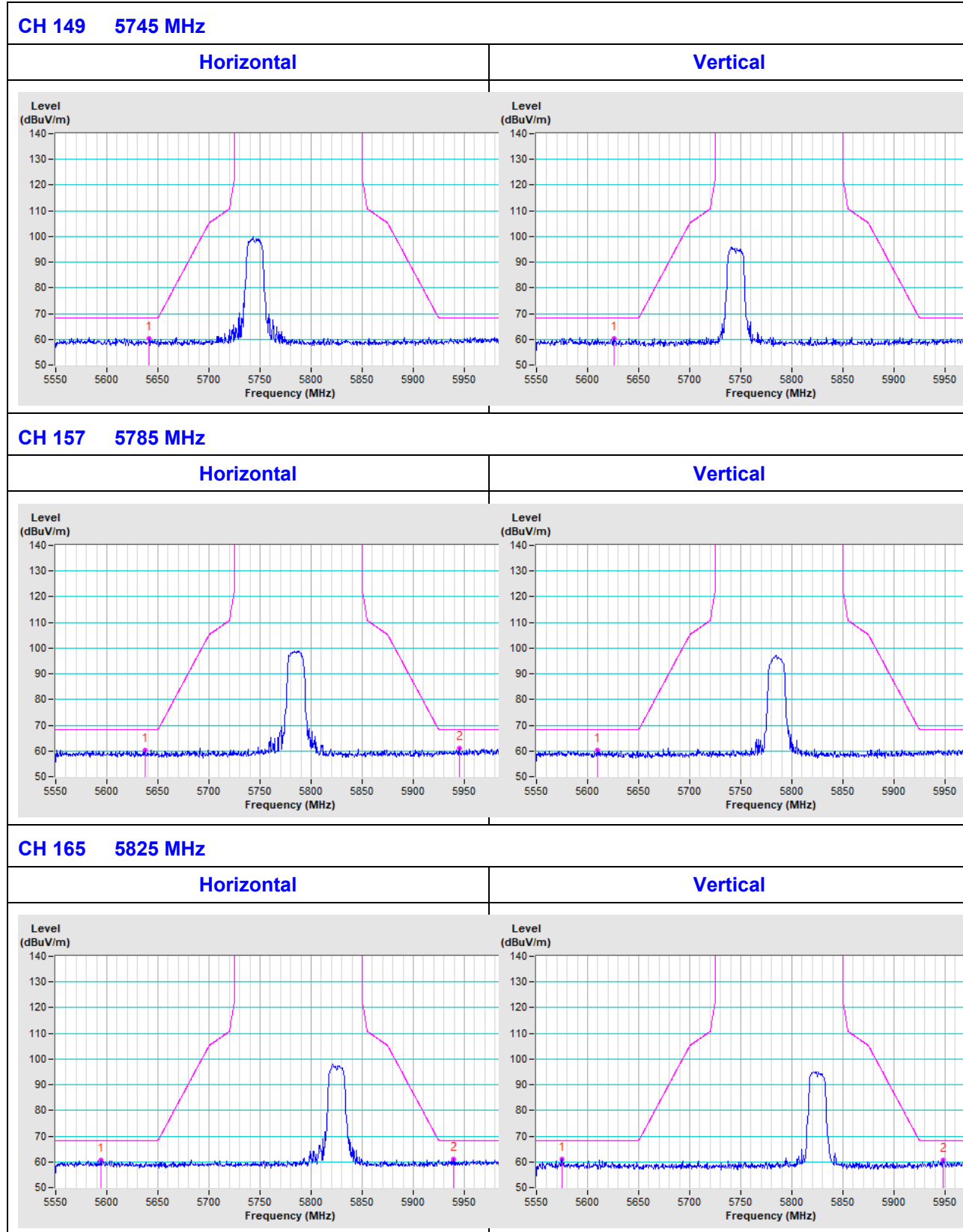


## 5 Pictures of Test Arrangements

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

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

802.11a

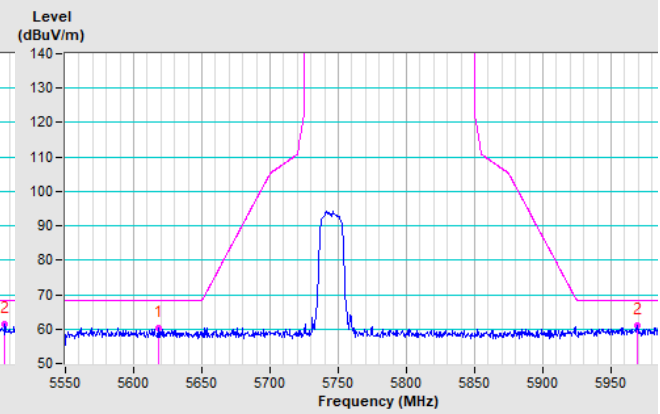
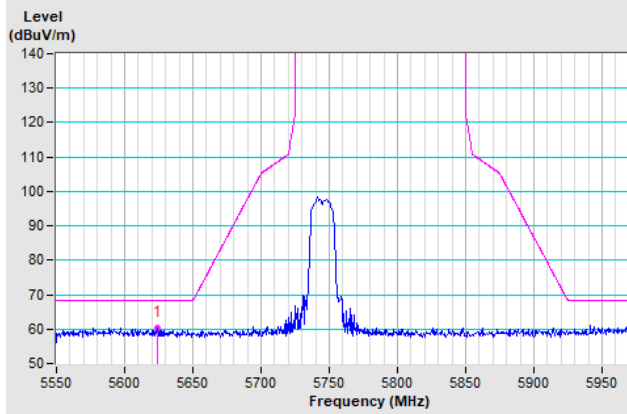


### 802.11ac (20MHz)

**CH 149 5745 MHz**

**Horizontal**

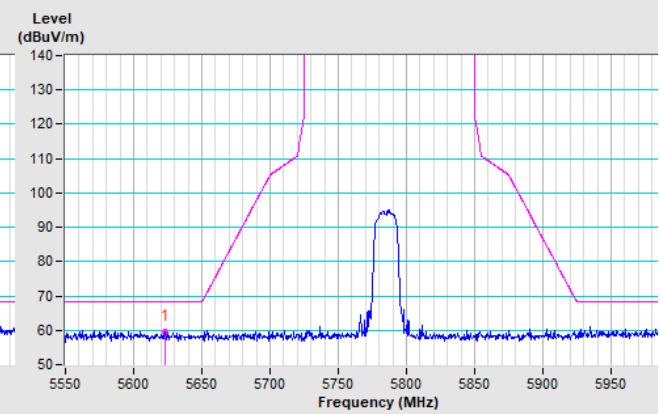
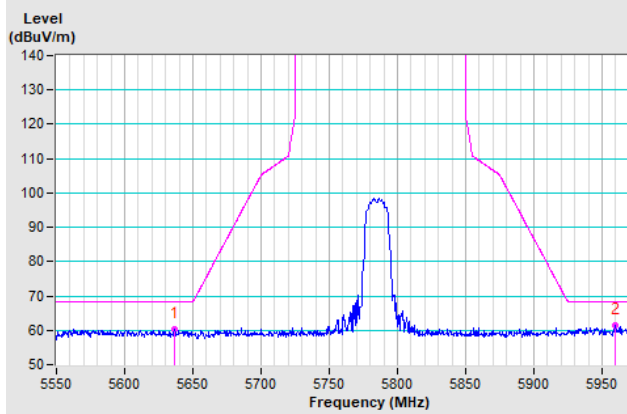
**Vertical**



**CH 157 5785 MHz**

**Horizontal**

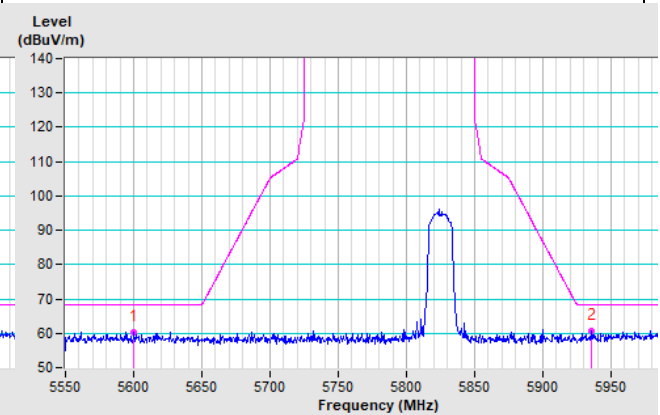
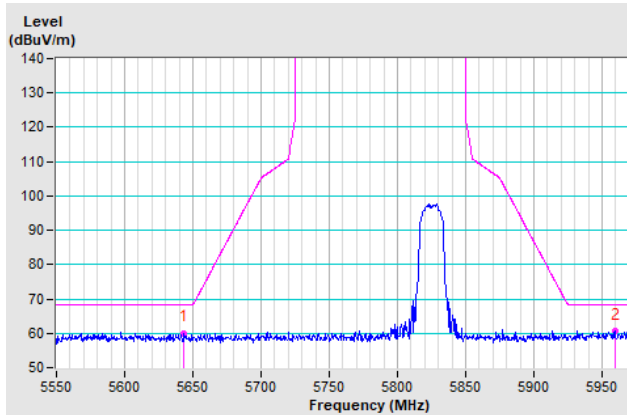
**Vertical**



**CH 165 5825 MHz**

**Horizontal**

**Vertical**

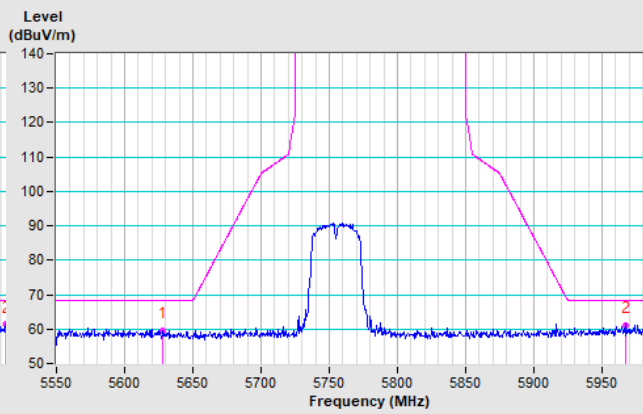
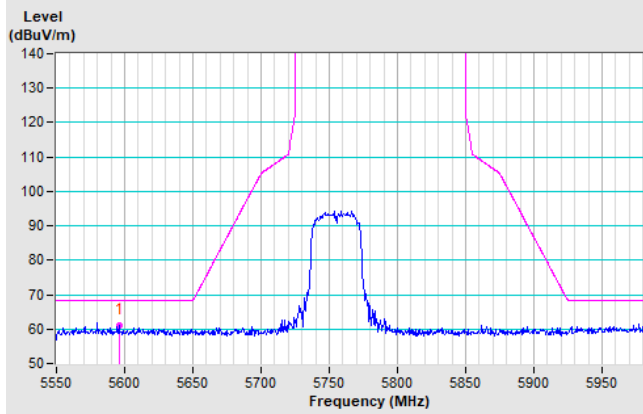


### 802.11ac (40MHz)

**CH 151 5755 MHz**

**Horizontal**

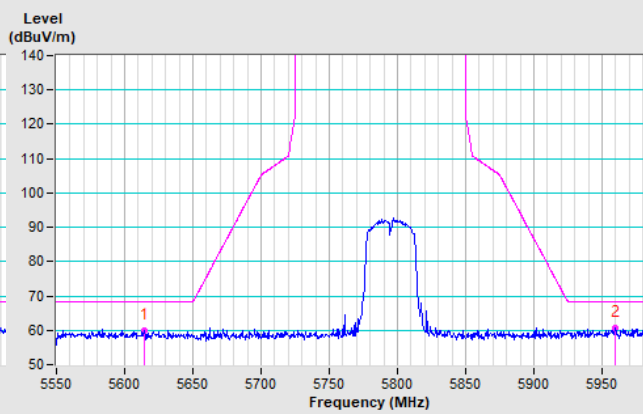
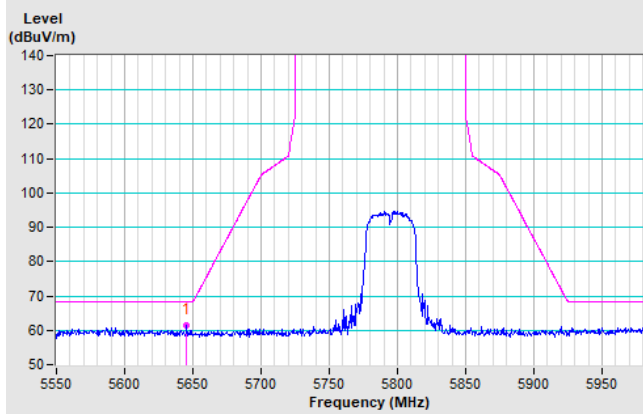
**Vertical**



**CH 159 5795 MHz**

**Horizontal**

**Vertical**

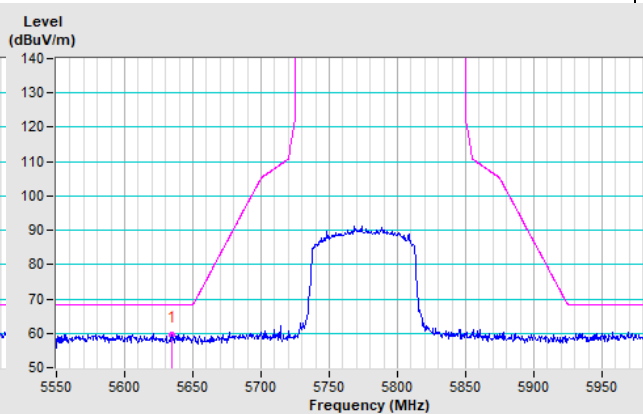
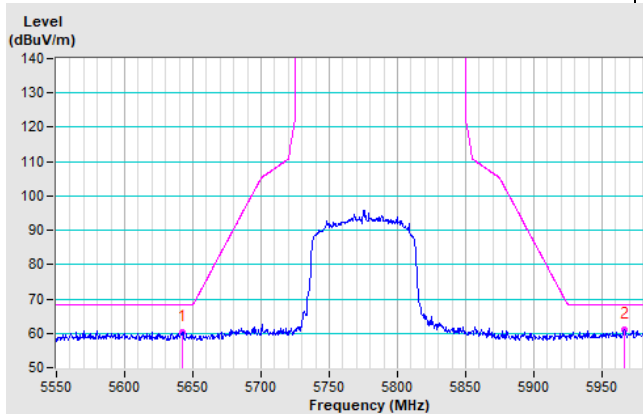


### 802.11ac (80MHz)

**CH 155 5775 MHz**

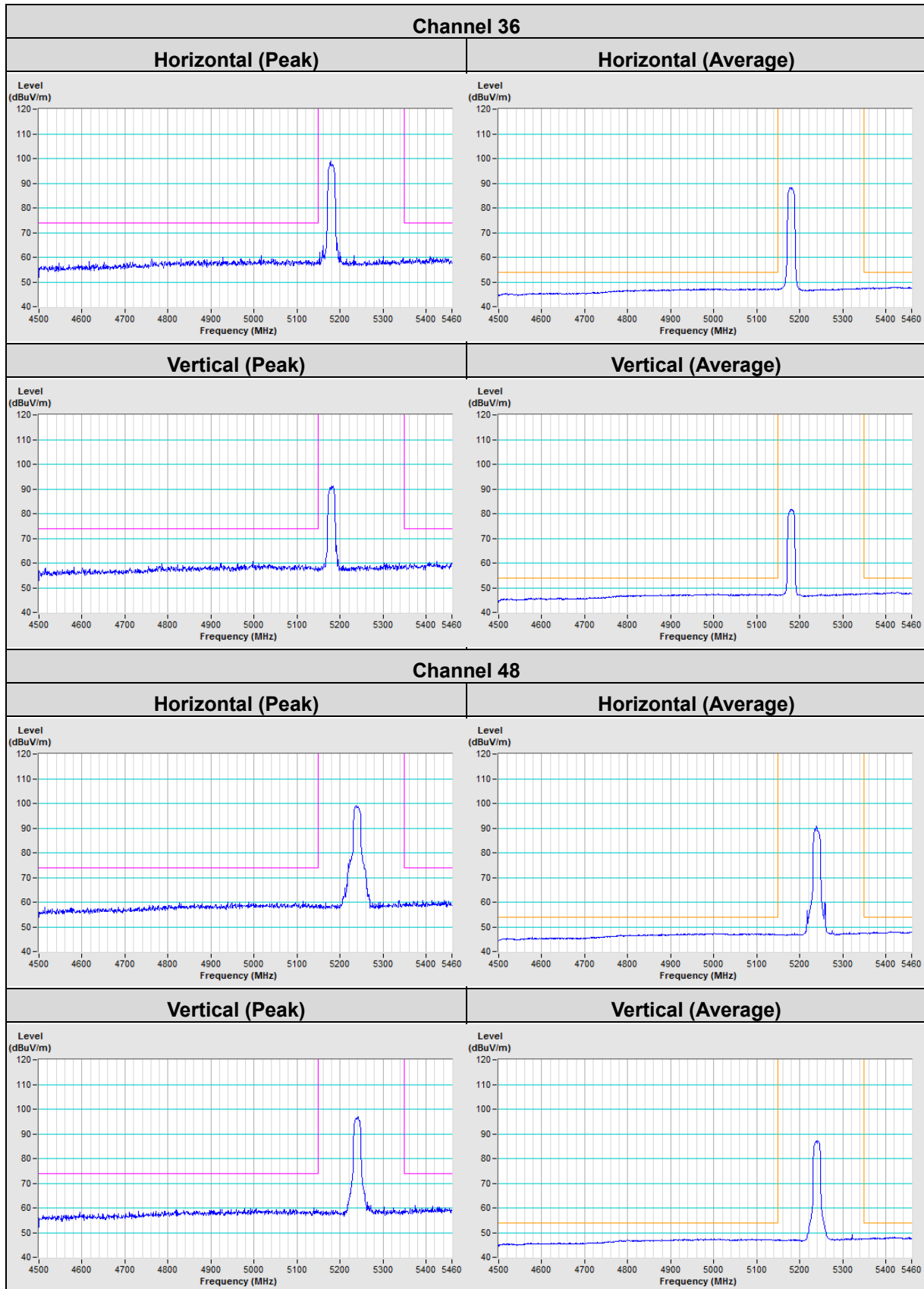
**Horizontal**

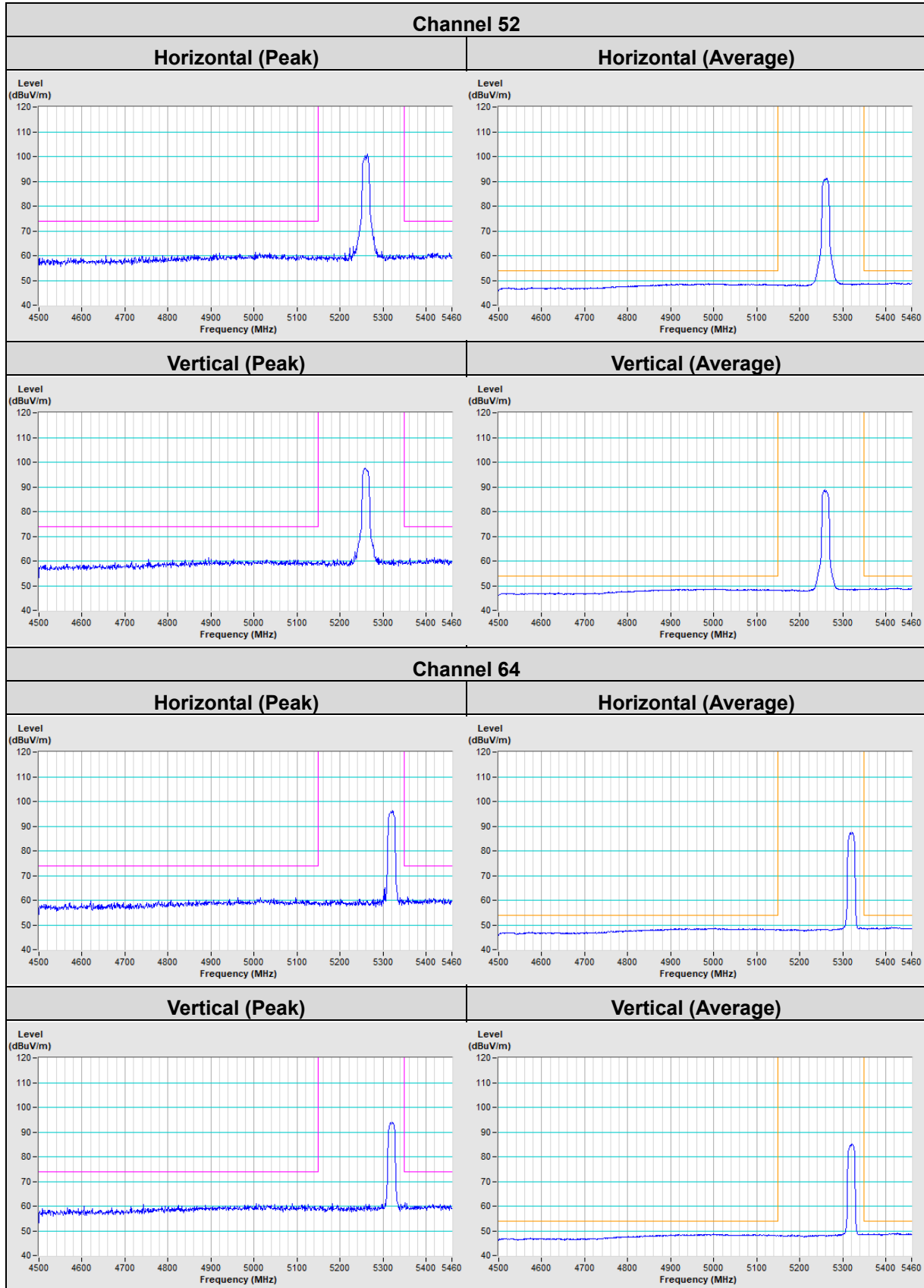
**Vertical**

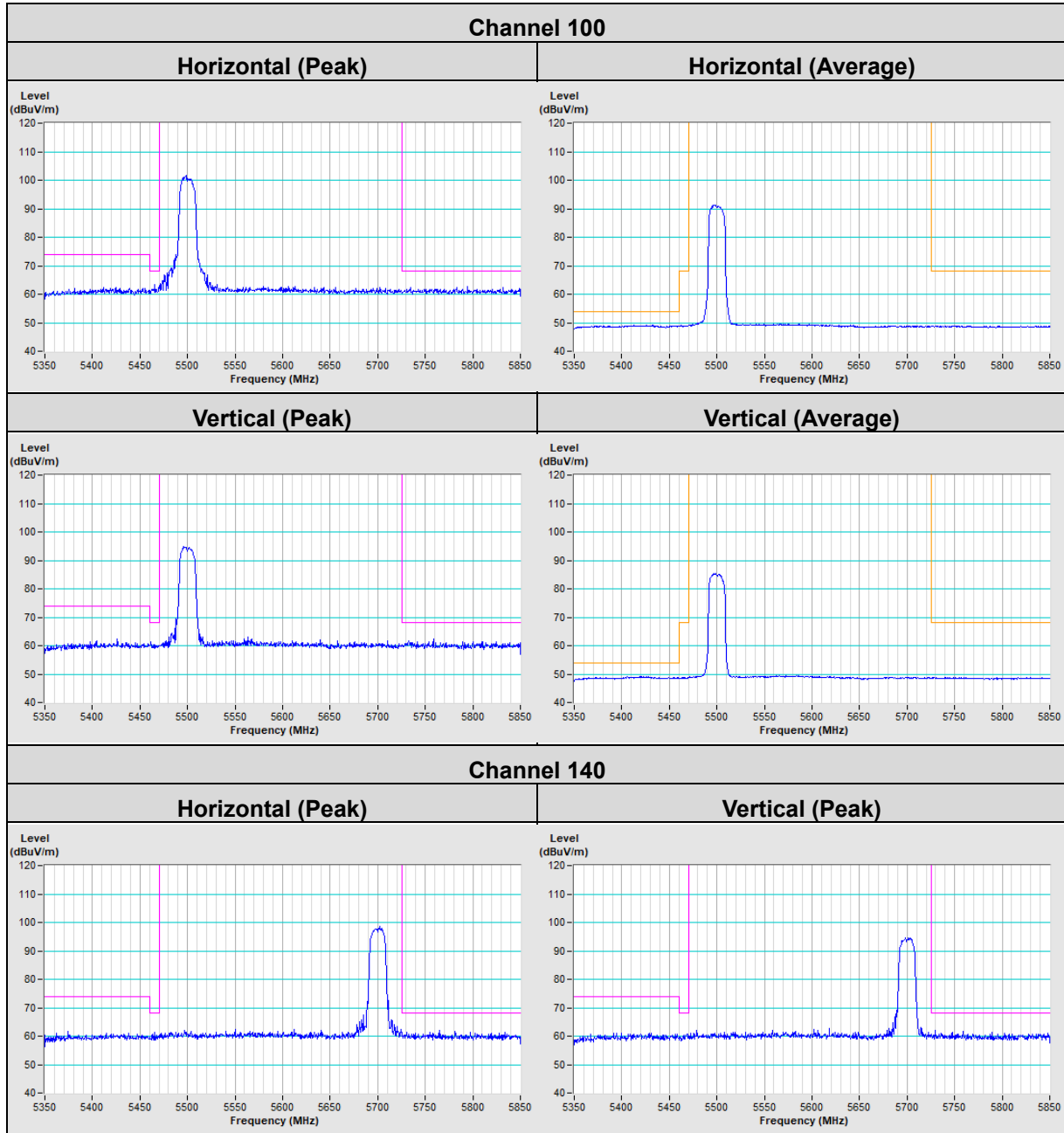


# Annex B- Band Edge Measurement

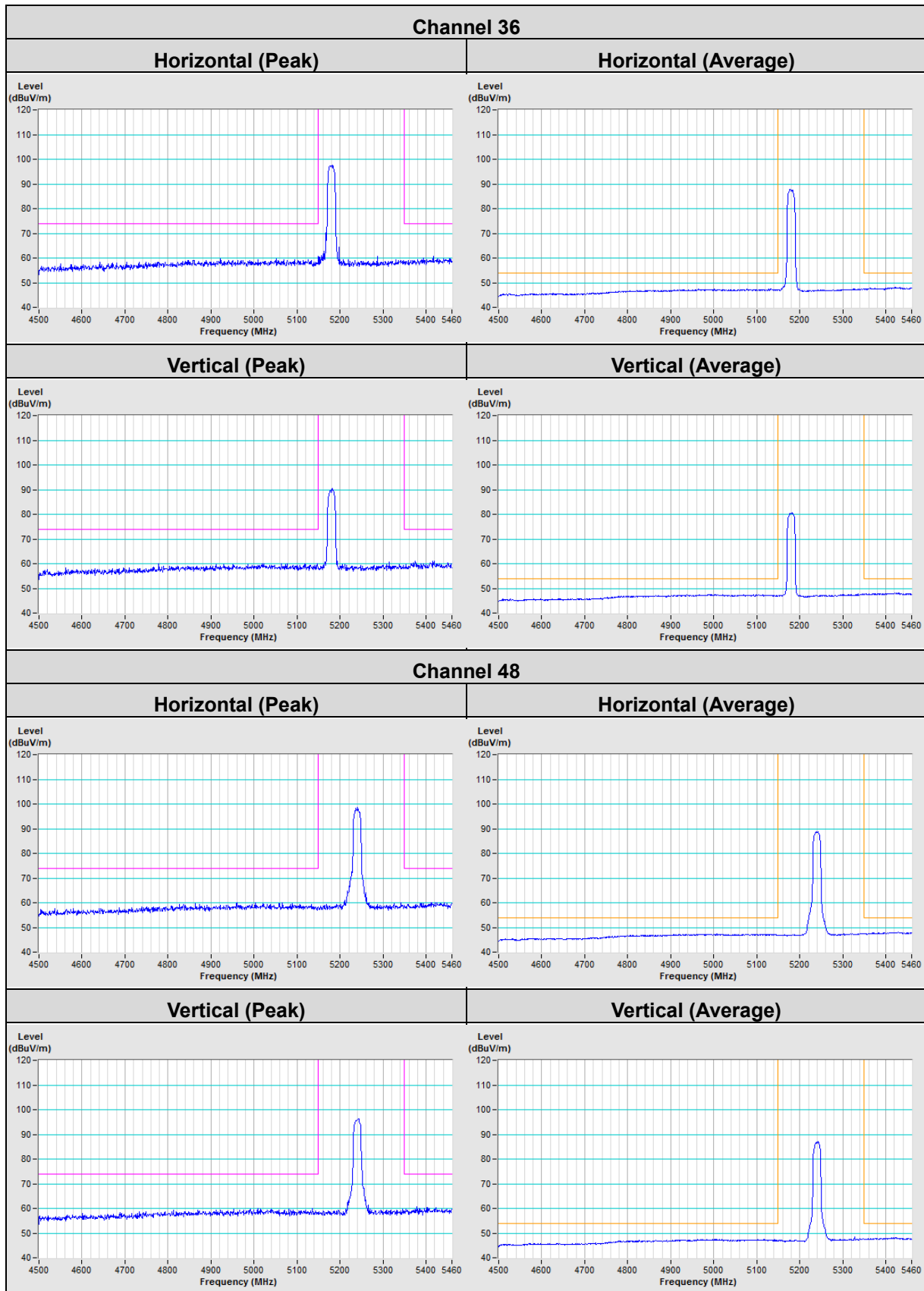
802.11a



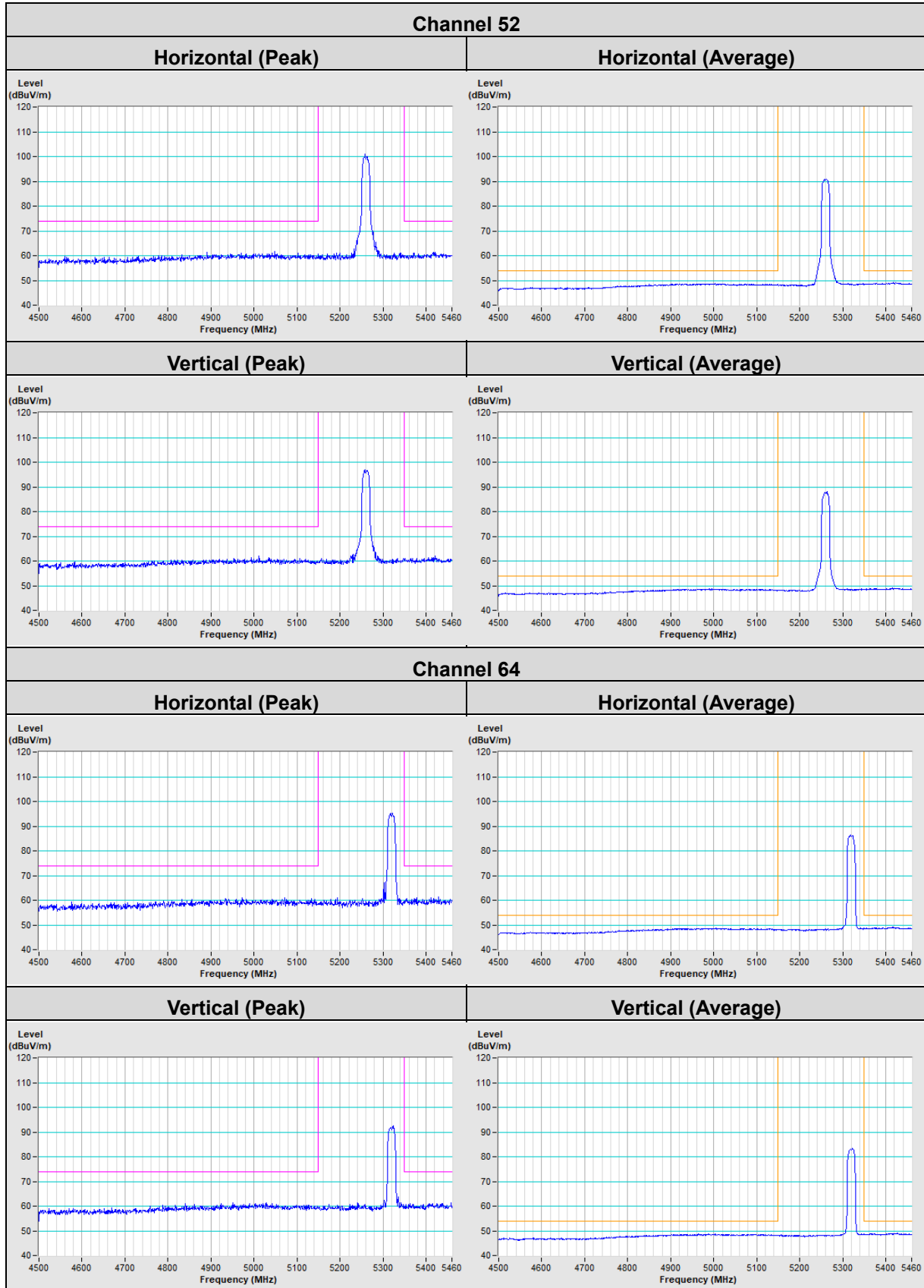


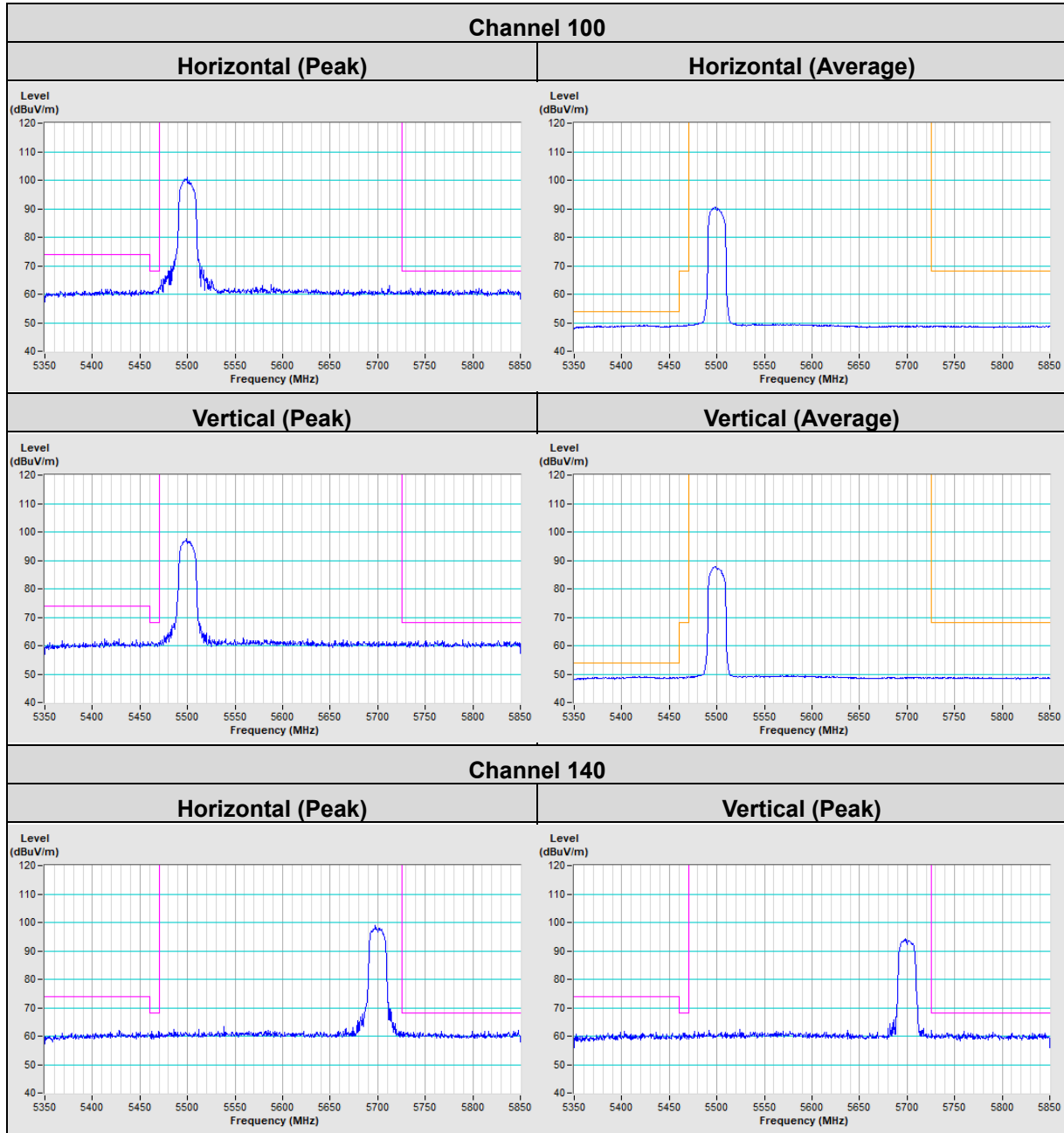


802.11ac (20MHz)

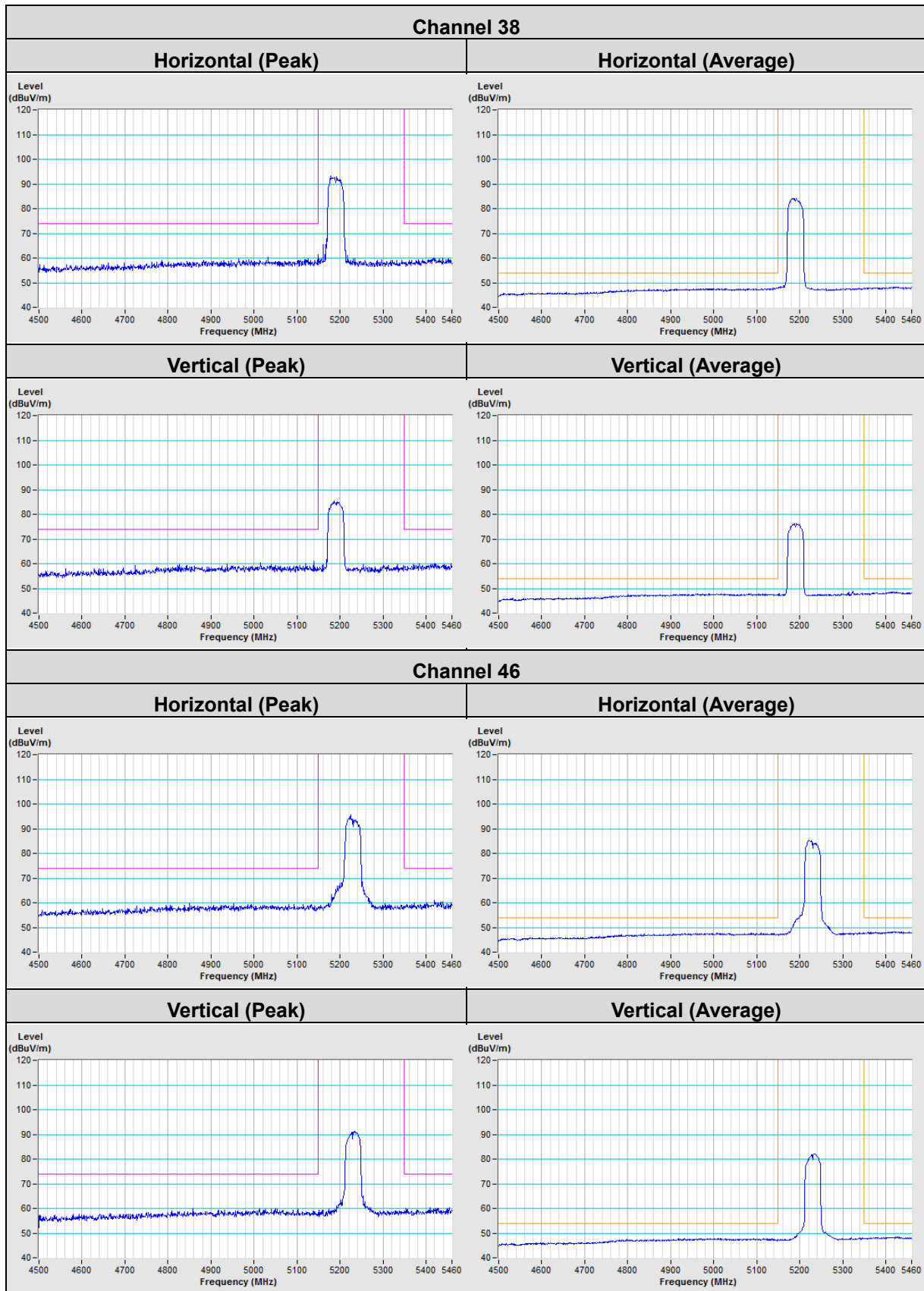


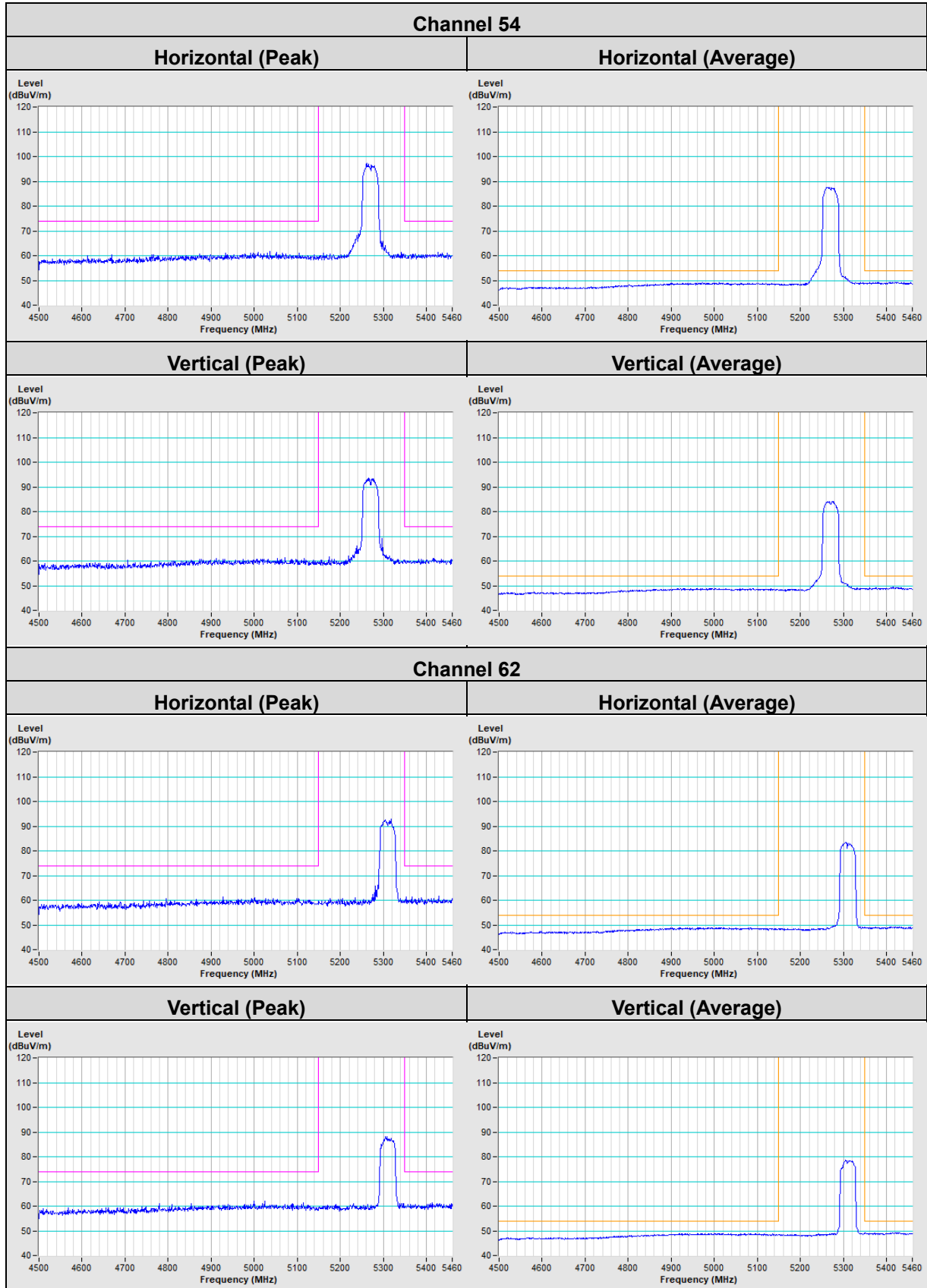


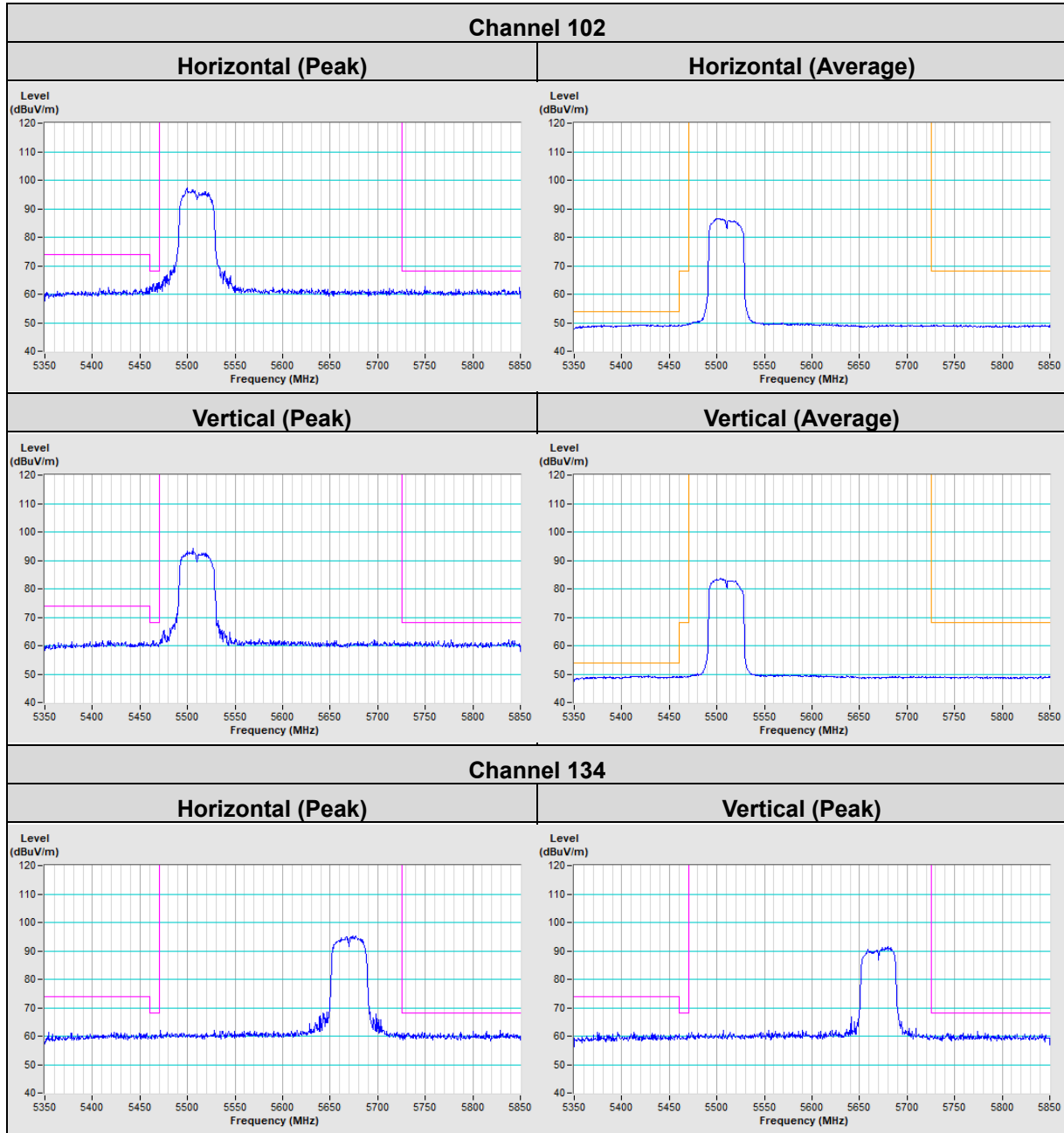




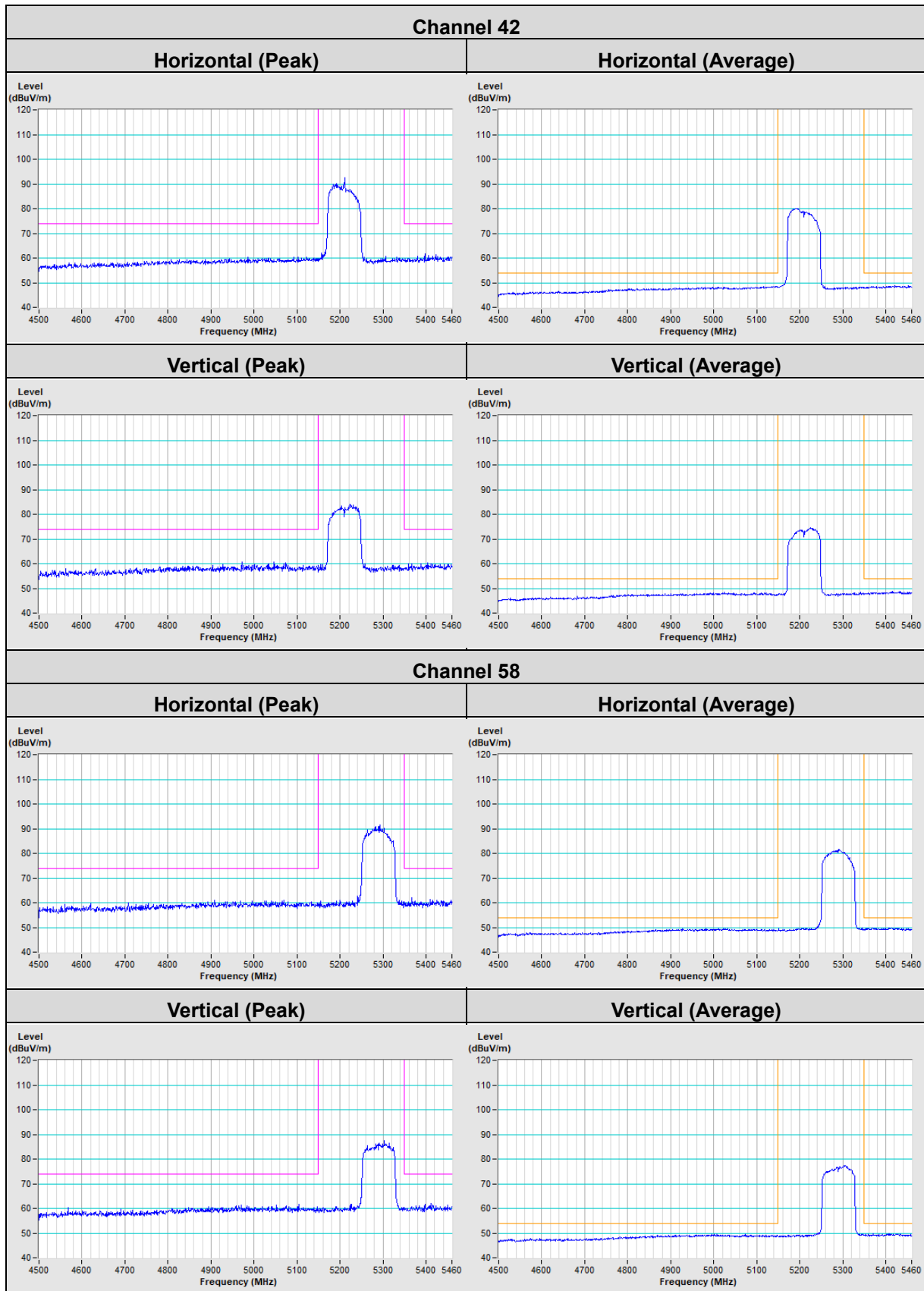
802.11ac (40MHz)

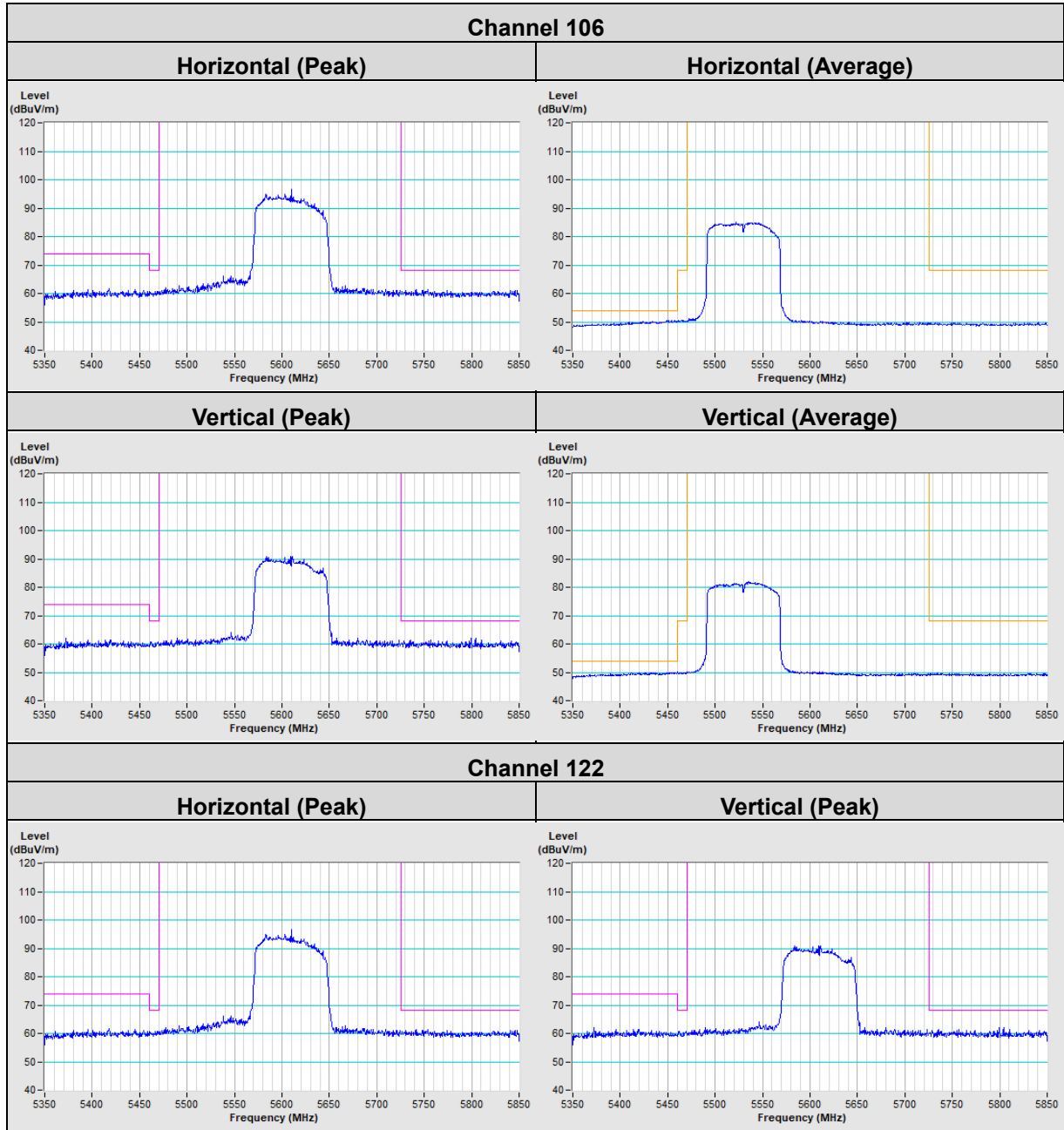






802.11ac (80MHz)





## Appendix – Information of the Testing Laboratories

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

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**Web Site:** [www.bureauveritas-adt.com](http://www.bureauveritas-adt.com)

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

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