

FCC Test Report

Report No.: RF200214C14-1

FCC ID: Q3N-QBIT2

Test Model: QBIT2

Received Date: Feb. 14, 2020

Test Date: Feb. 21 ~ Mar. 23, 2020

Issued Date: Mar. 30, 2020

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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FCC Registration / 788550 / TW0003
Designation Number:



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Release Control Record

Issue No.	Description	Date Issued
RF200214C14-1	Original release	Mar. 30, 2020

1 Certificate of Conformity

Product: POS

Brand: CIPHERLAB, MPLUS

Test Model: QBIT2

Sample Status: Engineering sample

Applicant: CIPHERLAB CO., LTD

Test Date: Feb. 21 ~ Mar. 23, 2020

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

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

Prepared by :


Polly Chien / Specialist

Date:

Mar. 30, 2020

Approved by :



Bruce Chen / Senior Project Engineer

Date:

Mar. 30, 2020

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 -1.01dB at 21.75173MHz.
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 -1.9dB at 49.68MHz.
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	NA	Refer to note 3 (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.

N/A: Not Applicable

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- For U-NII-1, U-NII-2A and U-NII-2C band compliance with rule 15.407(b) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
- There are only U-NII-1, U-NII-2A and U-NII-2C band on this report.

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

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	POS
Brand	CIPHERLAB, MPLUS
Test Model	QBIT2
Sample Status	Engineering sample
Power Supply Rating	100-240Vac
Modulation Type	256QAM, 64QAM, 16QAM, QPSK, BPSK
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 150Mbps 802.11ac: up to 433.3Mbps
Operating Frequency	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz
Number of Channel	5180 ~ 5240MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5260 ~ 5320MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 4 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1 5500 ~ 5700MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 8 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	5180 ~ 5240MHz: 31.333mW 5260 ~ 5320MHz: 26.977mW 5500 ~ 5700MHz: 26.792mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	Refer to note
Cable Supplied	1.5m non-shielded power cable without core

Note:

1. The EUT provides 1 completed transmitter and 1 receiver.

Modulation Mode	TX Function
802.11a	1TX
802.11n (HT20)	1TX
802.11n (HT40)	1TX
802.11ac (VHT20)	1TX
802.11ac (VHT40)	1TX
802.11ac (VHT80)	1TX

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

2. The following antenna was provided to the EUT.

Ant. Type		Monopole	
Connector Type		NA	
Antenna Gain(dBi)			
2400~2500MHz	5150~5250MHz	5250~5350MHz	5470~5725MHz
7.00	6.10	5.69	5.17

3. 2.4GHz and BT EDR / 2.4GHz and BT LE / 5GHz and BT EDR / 5GHz and BT LE technologies can not transmit at same time.

4. EUT do not support straddle channel.

3.2 Description of Test Modes

For 5180 ~ 5240MHz:

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

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

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

Channel	Frequency	Channel	Frequency
38	5190 MHz	46	5230 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
42	5210MHz

For 5260 ~ 5320MHz:

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

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

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

Channel	Frequency	Channel	Frequency
54	5270 MHz	62	5310 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
58	5290MHz

For 5500 ~ 5700MHz:

8 channels are provided for 802.11a, 802.11n (HT20), 802.11ac (VHT20):

Channel	Frequency	Channel	Frequency
100	5500 MHz	116	5580 MHz
104	5520 MHz	120	5600 MHz
108	5540 MHz	136	5680 MHz
112	5560 MHz	140	5700 MHz

4 channels are provided for 802.11n (HT40), 802.11ac (VHT40):

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency
106	5530 MHz
122	5610 MHz

3.2.1 Test Mode Applicability and Tested Channel Detail

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

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

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
- Radiated emission test (below 1GHz) and power line conducted emission test items chosen the worst maximum power.

Radiated Emission Test (Above 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11a	5180-5240	36 to 48	36, 40, 48	OFDM	6.0
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	29.3
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	13.5
	802.11ac (VHT80)		106 to 122	106, 122	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	36	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	36	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
	802.11n (HT20)		36 to 48	36, 40, 48	OFDM	6.5
	802.11n (HT40)		38 to 46	38, 46	OFDM	13.5
	802.11ac (VHT80)		42	42	OFDM	29.3
-	802.11a	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	6.5
	802.11n (HT40)		54 to 62	54, 62	OFDM	13.5
	802.11ac (VHT80)		58	58	OFDM	29.3
-	802.11a	5500-5700	100 to 140	100, 116, 140	OFDM	6.0
	802.11n (HT20)		100 to 140	100, 116, 140	OFDM	6.5
	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	13.5
	802.11ac (VHT80)		106 to 122	106, 122	OFDM	29.3

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	23 deg. C, 66% RH 23 deg. C, 67% RH	120Vac, 60Hz	Titan Hsu, Adair Peng
RE<1G	23 deg. C, 66% RH	120Vac, 60Hz	Adair Peng
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Jones Chang
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Jisyong Wang

3.3 Duty Cycle of Test Signal

Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

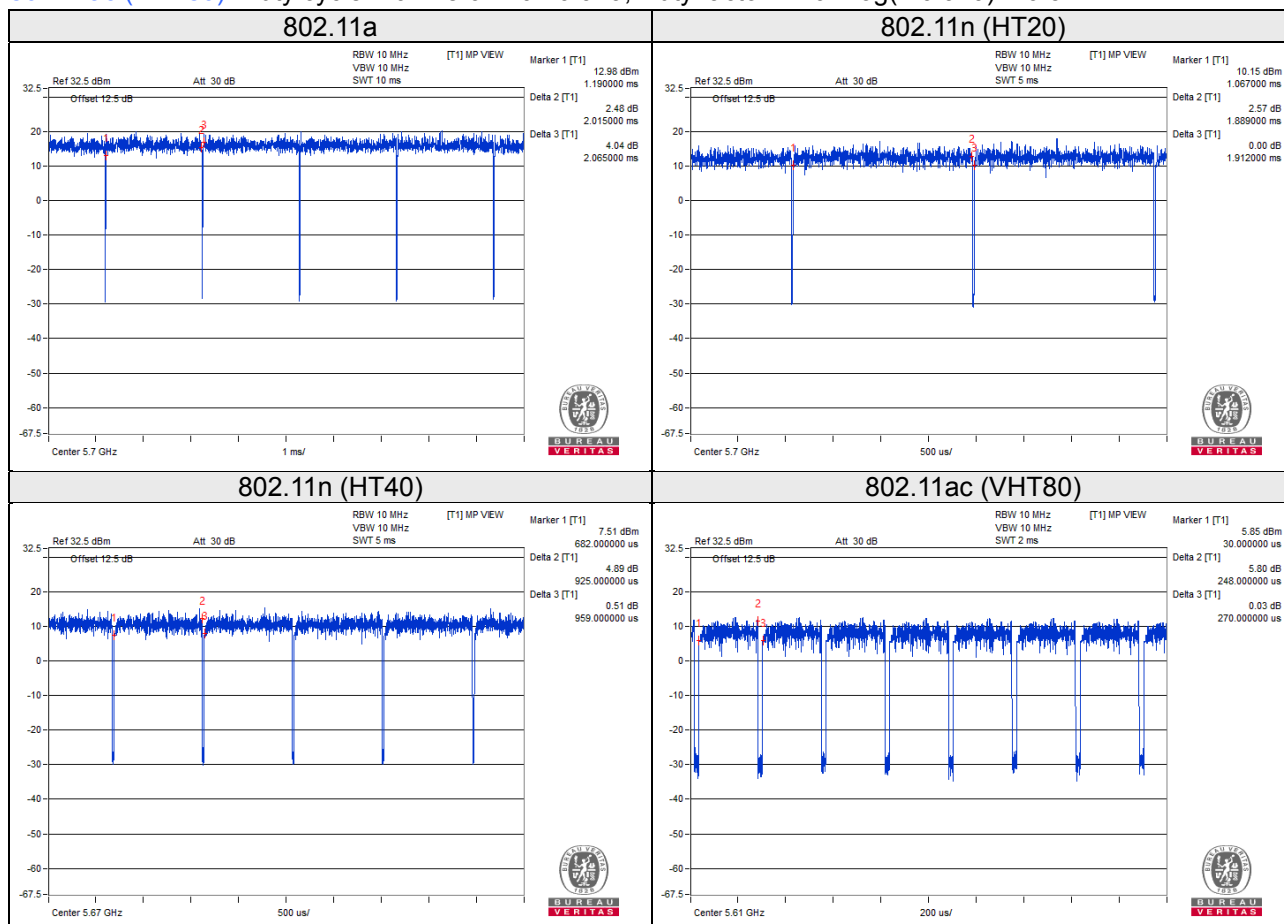
Duty cycle of test signal is $< 98\%$, duty factor is required.

802.11a: Duty cycle = $2.015/2.065 = 0.976$, Duty factor = $10 * \log(1/0.976) = 0.11$

802.11n (HT20): Duty cycle = $1.889/1.912 = 0.988$

802.11n (HT40): Duty cycle = $0.925/0.959 = 0.965$, Duty factor = $10 * \log(1/0.965) = 0.16$

802.11ac (VHT80): Duty cycle = $0.248/0.270 = 0.919$, Duty factor = $10 * \log(1/0.919) = 0.37$



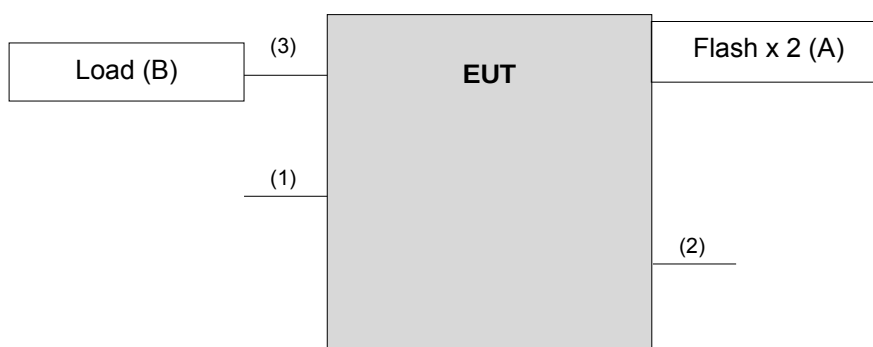
3.4 Description of Support Units

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.	Flash	HP	v250W	03	FCC DoC Approved	Provided by Lab
	Flash	HP	v250W	05	FCC DoC Approved	Provided by Lab
B.	Load	NA	NA	NA	NA	Provided by Lab

ID	Cable Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Power cable	1	1.5	N	0	Accessory of EUT
2.	USB cable	1	1	Y	0	Supplied by client
3.	LAN cable	1	1.5	N	0	Provided by Lab RJ45, Cat5e

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart E (15.407)

ANSI C63.10:2013

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

References Test Guidance:

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

Limits of unwanted emission out of the restricted bands

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

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

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	May 30, 2019	May 29, 2020
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Nov. 11, 2019	Nov. 10, 2020
HORN Antenna SCHWARZBECK	9120D	209	Nov. 24, 2019	Nov. 23, 2020
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Nov. 24, 2019	Nov. 23, 2020
Loop Antenna TESEQ	HLA 6121	45745	Jul. 01, 2019	Jun. 30, 2020
Antenna Tower EMCO	2070/2080	512.835.4684	NA	NA
Turn Table EMCO	2087-2.03	NA	NA	NA
Antenna Tower & Turn BV ADT	AT100	AT93021705	NA	NA
Turn Table BV ADT	TT100	TT93021705	NA	NA
Preamplifier Agilent (Below 1GHz)	8447D	2944A10738	Aug. 20, 2019	Aug. 19, 2020
Preamplifier Agilent (Above 1GHz)	8449B	3008A02465	Mar. 27, 2019	Mar. 26, 2020
RF Coaxial Cable WOKEN With 5dB PAD	8D-FB	Cable-CH3-01	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (223653/4)	Aug. 20, 2019	Aug. 19, 2020
RF signal cable HUBER+SUHNER& EMCI	SUCOFLEX 104&EMC104-SM-SM- 8000	Cable-CH3-03 (309224+170907)	Aug. 20, 2019	Aug. 19, 2020
Software BV ADT	ADT_Radiated_ V7.6.15.9.5	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP01	NA	NA
Pre-amplifier (18GHz-40GHz) EMC	EMC184045B	980175	Sep. 05, 2019	Sep. 04, 2020
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY55190 004/MY55190007/MY55 210005	Jul. 15, 2019	Jul. 14, 2020

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

4.1.3 Test Procedures

For Radiated emission below 30MHz

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

Note:

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

For Radiated emission above 30MHz

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

Note:

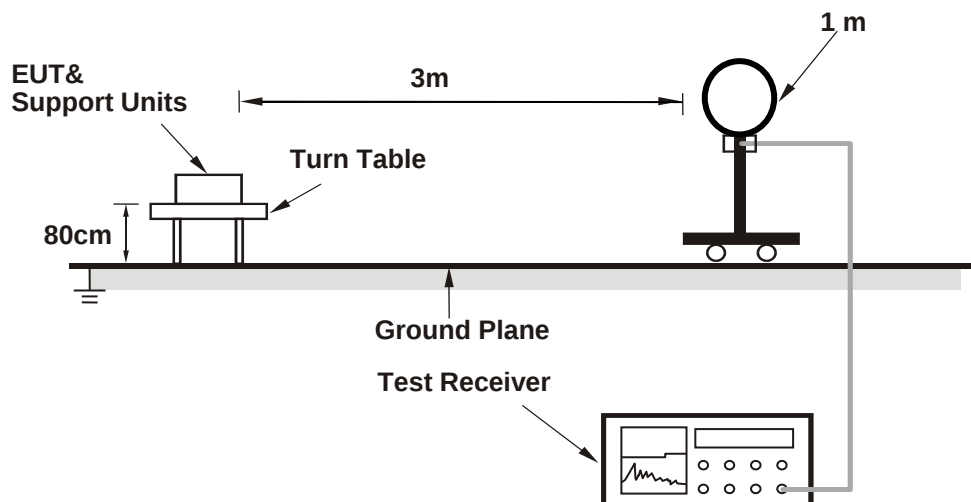
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

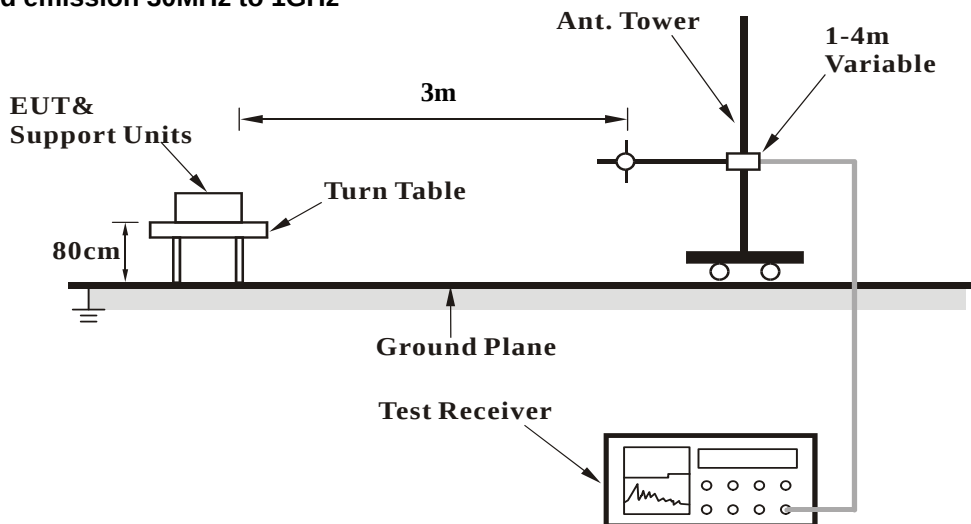
No deviation.

4.1.5 Test Setup

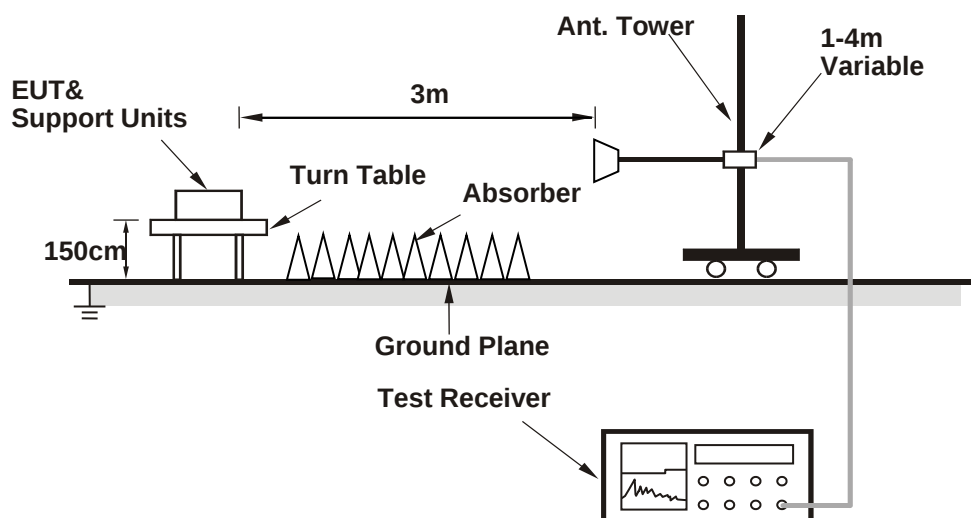
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Set the EUT under transmission condition continuously at specific channel frequency.

4.1.7 Test Results

Above 1GHz data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	67.1 PK	74.0	-6.9	2.02 H	178	63.0	4.1
2	5150.00	44.3 AV	54.0	-9.7	2.02 H	178	40.2	4.1
3	*5180.00	106.4 PK			1.92 H	184	67.1	39.3
4	*5180.00	94.7 AV			1.92 H	184	55.4	39.3
5	#10360.00	61.9 PK	68.2	-6.3	2.69 H	15	44.7	17.2
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.1 PK	74.0	-10.9	3.67 V	43	59.0	4.1
2	5150.00	44.4 AV	54.0	-9.6	3.67 V	43	40.3	4.1
3	*5180.00	101.9 PK			3.80 V	51	62.6	39.3
4	*5180.00	90.1 AV			3.80 V	51	50.8	39.3
5	#10360.00	62.9 PK	68.2	-5.3	2.21 V	19	45.7	17.2

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	105.7 PK			1.59 H	178	66.4	39.3
2	*5200.00	94.8 AV			1.59 H	178	55.5	39.3
3	#10400.00	62.7 PK	68.2	-5.5	2.57 H	23	45.3	17.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	101.3 PK			3.69 V	57	62.0	39.3
2	*5200.00	80.4 AV			3.69 V	57	41.1	39.3
3	#10400.00	63.4 PK	68.2	-4.8	2.39 V	23	46.0	17.4

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	106.2 PK			1.62 H	181	67.1	39.1
2	*5240.00	94.2 AV			1.62 H	181	55.1	39.1
3	5350.00	56.9 PK	74.0	-17.1	1.71 H	177	52.8	4.1
4	5350.00	43.6 AV	54.0	-10.4	1.71 H	177	39.5	4.1
5	#10480.00	62.9 PK	68.2	-5.3	2.61 H	13	44.9	18.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	101.8 PK			3.82 V	51	62.7	39.1
2	*5240.00	89.6 AV			3.82 V	51	50.5	39.1
3	5350.00	56.6 PK	74.0	-17.4	3.74 V	59	52.5	4.1
4	5350.00	43.6 AV	54.0	-10.4	3.74 V	59	39.5	4.1
5	#10480.00	63.9 PK	68.2	-4.3	2.20 V	17	45.9	18.0

Remarks:

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

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.4 PK	74.0	-15.6	1.58 H	177	54.3	4.1
2	5150.00	44.4 AV	54.0	-9.6	1.58 H	177	40.3	4.1
3	*5260.00	105.5 PK			1.53 H	182	66.5	39.0
4	*5260.00	94.4 AV			1.53 H	182	55.4	39.0
5	#10520.00	63.5 PK	68.2	-4.7	2.57 H	22	45.2	18.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.8 PK	74.0	-16.2	2.11 V	69	53.7	4.1
2	5150.00	44.1 AV	54.0	-9.9	2.11 V	69	40.0	4.1
3	*5260.00	101.2 PK			2.20 V	61	62.2	39.0
4	*5260.00	90.2 AV			2.20 V	61	51.2	39.0
5	#10520.00	63.8 PK	68.2	-4.4	2.41 V	29	45.5	18.3

Remarks:

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

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	104.8 PK			1.51 H	183	65.7	39.1
2	*5300.00	93.7 AV			1.51 H	183	54.6	39.1
3	10600.00	63.6 PK	74.0	-10.4	2.63 H	20	44.7	18.9
4	10600.00	49.7 AV	54.0	-4.3	2.63 H	20	30.8	18.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	100.4 PK			2.31 V	64	61.3	39.1
2	*5300.00	89.4 AV			2.31 V	64	50.3	39.1
3	10600.00	64.0 PK	74.0	-10.0	2.30 V	30	45.1	18.9
4	10600.00	50.1 AV	54.0	-3.9	2.30 V	30	31.2	18.9

Remarks:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	105.8 PK			2.47 H	183	66.6	39.2
2	*5320.00	93.9 AV			2.47 H	183	54.7	39.2
3	5350.00	60.4 PK	74.0	-13.6	2.31 H	180	56.3	4.1
4	5350.00	44.5 AV	54.0	-9.5	2.31 H	180	40.4	4.1
5	10640.00	62.9 PK	74.0	-11.1	2.63 H	25	44.3	18.6
6	10640.00	49.5 AV	54.0	-4.5	2.63 H	25	30.9	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	101.4 PK			2.13 V	57	62.2	39.2
2	*5320.00	89.5 AV			2.13 V	57	50.3	39.2
3	5350.00	55.9 PK	74.0	-18.1	2.09 V	59	51.8	4.1
4	5350.00	44.1 AV	54.0	-9.9	2.09 V	59	40.0	4.1
5	10640.00	63.1 PK	74.0	-10.9	2.50 V	37	44.5	18.6
6	10640.00	49.8 AV	54.0	-4.2	2.50 V	37	31.2	18.6

Remarks:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	63.1 PK	74.0	-10.9	3.25 H	209	58.6	4.5
2	5460.00	43.8 AV	54.0	-10.2	3.25 H	209	39.3	4.5
3	#5470.00	63.8 PK	68.2	-4.4	3.30 H	203	59.3	4.5
4	*5500.00	106.6 PK			3.23 H	210	66.9	39.7
5	*5500.00	94.8 AV			3.23 H	210	55.1	39.7
6	11000.00	63.3 PK	74.0	-10.7	2.42 H	11	44.0	19.3
7	11000.00	50.2 AV	54.0	-3.8	2.42 H	11	30.9	19.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.0 PK	74.0	-13.0	3.11 V	108	56.5	4.5
2	5460.00	43.5 AV	54.0	-10.5	3.11 V	108	39.0	4.5
3	#5470.00	61.8 PK	68.2	-6.4	3.03 V	111	57.3	4.5
4	*5500.00	104.1 PK			3.12 V	106	64.4	39.7
5	*5500.00	92.8 AV			3.12 V	106	53.1	39.7
6	11000.00	63.6 PK	74.0	-10.4	3.17 V	355	44.3	19.3
7	11000.00	50.0 AV	54.0	-4.0	3.17 V	355	30.7	19.3

Remarks:

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

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	106.6 PK			2.83 H	210	66.9	39.7
2	*5580.00	96.1 AV			2.83 H	210	56.4	39.7
3	11160.00	62.6 PK	74.0	-11.4	2.55 H	17	44.0	18.6
4	11160.00	49.4 AV	54.0	-4.6	2.55 H	17	30.8	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	104.2 PK			3.00 V	106	64.5	39.7
2	*5580.00	94.1 AV			3.00 V	106	54.4	39.7
3	11160.00	62.8 PK	74.0	-11.2	3.12 V	357	44.2	18.6
4	11160.00	49.6 AV	54.0	-4.4	3.12 V	357	31.0	18.6

Remarks:

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

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	106.3 PK			2.80 H	203	66.5	39.8
2	*5700.00	95.0 AV			2.80 H	203	55.2	39.8
3	#5725.00	61.3 PK	68.2	-6.9	2.88 H	211	56.6	4.7
4	11400.00	63.5 PK	74.0	-10.5	2.85 H	62	45.0	18.5
5	11400.00	51.6 AV	54.0	-2.4	2.85 H	62	33.1	18.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	106.1 PK			2.39 V	59	66.3	39.8
2	*5700.00	95.2 AV			2.39 V	59	55.4	39.8
3	#5725.00	58.5 PK	68.2	-9.7	2.41 V	63	53.8	4.7
4	11400.00	63.2 PK	74.0	-10.8	3.03 V	355	44.7	18.5
5	11400.00	51.2 AV	54.0	-2.8	3.03 V	355	32.7	18.5

Remarks:

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

802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	59.6 PK	74.0	-14.4	1.61 H	190	55.5	4.1
2	5150.00	44.8 AV	54.0	-9.2	1.61 H	190	40.7	4.1
3	*5180.00	103.8 PK			1.55 H	181	64.5	39.3
4	*5180.00	92.3 AV			1.55 H	181	53.0	39.3
5	#10360.00	62.6 PK	68.2	-5.6	2.71 H	20	45.4	17.2

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.2 PK	74.0	-9.8	3.78 V	57	60.1	4.1
2	5150.00	43.9 AV	54.0	-10.1	3.78 V	57	39.8	4.1
3	*5180.00	99.4 PK			3.63 V	60	60.1	39.3
4	*5180.00	88.1 AV			3.63 V	60	48.8	39.3
5	#10360.00	63.2 PK	68.2	-5.0	2.41 V	28	46.0	17.2

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	104.0 PK			1.56 H	184	64.7	39.3
2	*5200.00	92.4 AV			1.56 H	184	53.1	39.3
3	#10400.00	63.0 PK	68.2	-5.2	2.65 H	19	45.6	17.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5200.00	99.6 PK			3.79 V	61	60.3	39.3
2	*5200.00	88.1 AV			3.79 V	61	48.8	39.3
3	#10400.00	63.7 PK	68.2	-4.5	2.39 V	26	46.3	17.4

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	103.7 PK			1.65 H	180	64.6	39.1
2	*5240.00	92.7 AV			1.65 H	180	53.6	39.1
3	5350.00	57.9 PK	74.0	-16.1	1.71 H	188	53.8	4.1
4	5350.00	44.1 AV	54.0	-9.9	1.71 H	188	40.0	4.1
5	#10480.00	63.4 PK	68.2	-4.8	2.53 H	23	45.4	18.0
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5240.00	99.3 PK			3.65 V	56	60.2	39.1
2	*5240.00	88.4 AV			3.65 V	56	49.3	39.1
3	5350.00	56.1 PK	74.0	-17.9	2.71 V	64	52.0	4.1
4	5350.00	43.7 AV	54.0	-10.3	2.71 V	64	39.6	4.1
5	#10480.00	64.0 PK	68.2	-4.2	2.27 V	21	46.0	18.0

Remarks:

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

CHANNEL	TX Channel 52	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.1 PK	74.0	-15.9	2.29 H	187	54.0	4.1
2	5150.00	44.4 AV	54.0	-9.6	2.29 H	187	40.3	4.1
3	*5260.00	103.3 PK			2.51 H	182	64.3	39.0
4	*5260.00	92.1 AV			2.51 H	182	53.1	39.0
5	#10520.00	63.5 PK	68.2	-4.7	2.39 H	19	45.2	18.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.2 PK	74.0	-16.8	2.20 V	61	53.1	4.1
2	5150.00	44.1 AV	54.0	-9.9	2.20 V	61	40.0	4.1
3	*5260.00	99.1 PK			2.29 V	66	60.1	39.0
4	*5260.00	88.0 AV			2.29 V	66	49.0	39.0
5	#10520.00	64.1 PK	68.2	-4.1	2.39 V	25	45.8	18.3

Remarks:

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

CHANNEL	TX Channel 60	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	103.6 PK			2.60 H	184	64.5	39.1
2	*5300.00	92.1 AV			2.60 H	184	53.0	39.1
3	10600.00	63.4 PK	74.0	-10.6	2.55 H	25	44.5	18.9
4	10600.00	49.4 AV	54.0	-4.6	2.55 H	25	30.5	18.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5300.00	99.3 PK			2.11 V	57	60.2	39.1
2	*5300.00	87.9 AV			2.11 V	57	48.8	39.1
3	10600.00	63.7 PK	74.0	-10.3	2.37 V	37	44.8	18.9
4	10600.00	49.8 AV	54.0	-4.2	2.37 V	37	30.9	18.9

Remarks:

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

CHANNEL	TX Channel 64	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	104.2 PK			2.65 H	215	65.0	39.2
2	*5320.00	92.7 AV			2.65 H	215	53.5	39.2
3	5350.00	59.8 PK	74.0	-14.2	2.50 H	203	55.7	4.1
4	5350.00	44.5 AV	54.0	-9.5	2.50 H	203	40.4	4.1
5	10640.00	62.9 PK	74.0	-11.1	2.58 H	23	44.3	18.6
6	10640.00	49.5 AV	54.0	-4.5	2.58 H	23	30.9	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5320.00	99.9 PK			2.31 V	60	60.7	39.2
2	*5320.00	88.4 AV			2.31 V	60	49.2	39.2
3	5350.00	58.8 PK	74.0	-15.2	2.28 V	53	54.7	4.1
4	5350.00	44.2 AV	54.0	-9.8	2.28 V	53	40.1	4.1
5	10640.00	63.5 PK	74.0	-10.5	2.44 V	23	44.9	18.6
6	10640.00	50.1 AV	54.0	-3.9	2.44 V	23	31.5	18.6

Remarks:

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

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.0 PK	74.0	-13.0	2.85 H	202	56.5	4.5
2	5460.00	43.7 AV	54.0	-10.3	2.85 H	202	39.2	4.5
3	#5470.00	64.0 PK	68.2	-4.2	2.90 H	211	59.5	4.5
4	*5500.00	104.0 PK			2.87 H	209	64.3	39.7
5	*5500.00	92.9 AV			2.87 H	209	53.2	39.7
6	11000.00	64.1 PK	74.0	-9.9	2.88 H	61	44.8	19.3
7	11000.00	50.1 AV	54.0	-3.9	2.88 H	61	30.8	19.3
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	58.8 PK	74.0	-15.2	1.48 V	319	54.3	4.5
2	5460.00	44.0 AV	54.0	-10.0	1.48 V	319	39.5	4.5
3	#5470.00	60.1 PK	68.2	-8.1	1.52 V	323	55.6	4.5
4	*5500.00	99.0 PK			1.50 V	321	59.3	39.7
5	*5500.00	88.3 AV			1.50 V	321	48.6	39.7
6	11000.00	62.2 PK	74.0	-11.8	1.61 V	38	42.9	19.3
7	11000.00	48.9 AV	54.0	-5.1	1.61 V	38	29.6	19.3

Remarks:

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

CHANNEL	TX Channel 116	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	104.1 PK			2.82 H	207	64.4	39.7
2	*5580.00	93.0 AV			2.82 H	207	53.3	39.7
3	11160.00	63.8 PK	74.0	-10.2	2.63 H	20	45.2	18.6
4	11160.00	49.2 AV	54.0	-4.8	2.63 H	20	30.6	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5580.00	100.4 PK			1.59 V	321	60.7	39.7
2	*5580.00	89.3 AV			1.59 V	321	49.6	39.7
3	11160.00	60.9 PK	74.0	-13.1	1.57 V	37	42.3	18.6
4	11160.00	47.8 AV	54.0	-6.2	1.57 V	37	29.2	18.6

Remarks:

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

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	103.3 PK			2.83 H	203	63.5	39.8
2	*5700.00	92.1 AV			2.83 H	203	52.3	39.8
3	#5725.00	60.2 PK	68.2	-8.0	2.91 H	210	55.5	4.7
4	11400.00	63.4 PK	74.0	-10.6	2.88 H	62	44.9	18.5
5	11400.00	51.6 AV	54.0	-2.4	2.88 H	62	33.1	18.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5700.00	99.8 PK			1.54 V	319	60.0	39.8
2	*5700.00	88.9 AV			1.54 V	319	49.1	39.8
3	#5725.00	56.7 PK	68.2	-11.5	1.58 V	321	52.0	4.7
4	11400.00	61.1 PK	74.0	-12.9	1.25 V	32	42.6	18.5
5	11400.00	49.8 AV	54.0	-4.2	1.25 V	32	31.3	18.5

Remarks:

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

802.11n (HT40)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	66.7 PK	74.0	-7.3	1.66 H	177	62.6	4.1
2	5150.00	48.1 AV	54.0	-5.9	1.66 H	177	44.0	4.1
3	*5190.00	101.2 PK			1.60 H	181	61.9	39.3
4	*5190.00	90.0 AV			1.60 H	181	50.7	39.3
5	#10380.00	62.7 PK	68.2	-5.5	2.53 H	27	45.3	17.4
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	63.6 PK	74.0	-10.4	3.66 V	66	59.5	4.1
2	5150.00	44.1 AV	54.0	-9.9	3.66 V	66	40.0	4.1
3	*5190.00	96.8 PK			3.57 V	59	57.5	39.3
4	*5190.00	85.7 AV			3.57 V	59	46.4	39.3
5	#10380.00	63.3 PK	68.2	-4.9	2.39 V	11	45.9	17.4

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	101.7 PK			1.55 H	180	62.6	39.1
2	*5230.00	90.0 AV			1.55 H	180	50.9	39.1
3	5350.00	57.7 PK	74.0	-16.3	1.60 H	185	53.6	4.1
4	5350.00	44.0 AV	54.0	-10.0	1.60 H	185	39.9	4.1
5	#10460.00	63.0 PK	68.2	-5.2	2.49 H	23	45.2	17.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5230.00	97.4 PK			3.74 V	54	58.3	39.1
2	*5230.00	85.8 AV			3.74 V	54	46.7	39.1
3	5350.00	56.0 PK	74.0	-18.0	3.60 V	60	51.9	4.1
4	5350.00	43.9 AV	54.0	-10.1	3.60 V	60	39.8	4.1
5	#10460.00	63.8 PK	68.2	-4.4	2.50 V	25	46.0	17.8

Remarks:

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

CHANNEL	TX Channel 54	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	58.2 PK	74.0	-15.8	2.66 H	209	54.1	4.1
2	5150.00	44.5 AV	54.0	-9.5	2.66 H	209	40.4	4.1
3	*5270.00	103.1 PK			2.86 H	215	64.0	39.1
4	*5270.00	91.4 AV			2.86 H	215	52.3	39.1
5	#10540.00	63.3 PK	68.2	-4.9	2.69 H	29	44.8	18.5
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.0 PK	74.0	-17.0	2.23 V	60	52.9	4.1
2	5150.00	44.2 AV	54.0	-9.8	2.23 V	60	40.1	4.1
3	*5270.00	98.8 PK			2.30 V	67	59.7	39.1
4	*5270.00	87.2 AV			2.30 V	67	48.1	39.1
5	#10540.00	63.8 PK	68.2	-4.4	2.18 V	30	45.3	18.5

Remarks:

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

CHANNEL	TX Channel 62	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	102.0 PK			2.74 H	216	62.8	39.2
2	*5310.00	90.9 AV			2.74 H	216	51.7	39.2
3	5350.00	62.1 PK	74.0	-11.9	2.60 H	203	58.0	4.1
4	5350.00	44.6 AV	54.0	-9.4	2.60 H	203	40.5	4.1
5	10620.00	63.1 PK	74.0	-10.9	2.71 H	13	44.3	18.8
6	10620.00	49.7 AV	54.0	-4.3	2.71 H	13	30.9	18.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5310.00	97.7 PK			2.18 V	56	58.5	39.2
2	*5310.00	86.6 AV			2.18 V	56	47.4	39.2
3	5350.00	58.6 PK	74.0	-15.4	2.11 V	51	54.5	4.1
4	5350.00	44.3 AV	54.0	-9.7	2.11 V	51	40.2	4.1
5	10620.00	63.6 PK	74.0	-10.4	2.41 V	36	44.8	18.8
6	10620.00	50.3 AV	54.0	-3.7	2.41 V	36	31.5	18.8

Remarks:

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

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	63.8 PK	74.0	-10.2	2.73 H	201	59.3	4.5
2	5460.00	43.8 AV	54.0	-10.2	2.73 H	201	39.3	4.5
3	#5470.00	65.8 PK	68.2	-2.4	2.77 H	210	61.3	4.5
4	*5510.00	101.2 PK			2.88 H	208	61.5	39.7
5	*5510.00	90.4 AV			2.88 H	208	50.7	39.7
6	11020.00	63.4 PK	74.0	-10.6	2.75 H	55	44.3	19.1
7	11020.00	50.1 AV	54.0	-3.9	2.75 H	55	31.0	19.1
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.2 PK	74.0	-17.8	1.60 V	317	51.7	4.5
2	5460.00	43.9 AV	54.0	-10.1	1.60 V	317	39.4	4.5
3	#5470.00	58.0 PK	68.2	-10.2	1.62 V	322	53.5	4.5
4	*5510.00	96.2 PK			1.66 V	320	56.5	39.7
5	*5510.00	86.0 AV			1.66 V	320	46.3	39.7
6	11020.00	61.4 PK	74.0	-12.6	1.63 V	47	42.3	19.1
7	11020.00	48.4 AV	54.0	-5.6	1.63 V	47	29.3	19.1

Remarks:

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

CHANNEL	TX Channel 110	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	102.3 PK			3.23 H	209	62.6	39.7
2	*5550.00	91.5 AV			3.23 H	209	51.8	39.7
3	11100.00	60.8 PK	74.0	-13.2	2.77 H	58	42.2	18.6
4	11100.00	47.9 AV	54.0	-6.1	2.77 H	58	29.3	18.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5550.00	98.6 PK			1.76 V	316	58.9	39.7
2	*5550.00	87.9 AV			1.76 V	316	48.2	39.7
3	11100.00	60.9 PK	74.0	-13.1	1.79 V	49	42.3	18.6
4	11100.00	48.4 AV	54.0	-5.6	1.79 V	49	29.8	18.6

Remarks:

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

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	101.5 PK			2.52 H	210	61.7	39.8
2	*5670.00	90.9 AV			2.52 H	210	51.1	39.8
3	#5725.00	56.9 PK	68.2	-11.3	2.55 H	211	52.2	4.7
4	11340.00	60.9 PK	74.0	-13.1	2.96 H	62	42.2	18.7
5	11340.00	49.7 AV	54.0	-4.3	2.96 H	62	31.0	18.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*5670.00	99.0 PK			1.59 V	321	59.2	39.8
2	*5670.00	87.5 AV			1.59 V	321	47.7	39.8
3	#5725.00	56.2 PK	68.2	-12.0	1.62 V	322	51.5	4.7
4	11340.00	60.9 PK	74.0	-13.1	1.50 V	58	42.2	18.7
5	11340.00	48.5 AV	54.0	-5.5	1.50 V	58	29.8	18.7

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.8 PK	74.0	-9.2	1.62 H	185	60.7	4.1
2	5150.00	49.8 AV	54.0	-4.2	1.62 H	185	45.7	4.1
3	*5210.00	97.6 PK			1.54 H	183	58.4	39.2
4	*5210.00	87.2 AV			1.54 H	183	48.0	39.2
5	5350.00	57.4 PK	74.0	-16.6	1.68 H	185	53.3	4.1
6	5350.00	45.1 AV	54.0	-8.9	1.68 H	185	41.0	4.1
7	#10420.00	62.6 PK	68.2	-5.6	2.73 H	28	45.0	17.6
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	64.4 PK	74.0	-9.6	3.57 V	60	60.3	4.1
2	5150.00	49.4 AV	54.0	-4.6	3.57 V	60	45.3	4.1
3	*5210.00	93.2 PK			3.69 V	55	54.0	39.2
4	*5210.00	82.7 AV			3.69 V	55	43.5	39.2
5	5350.00	58.2 PK	74.0	-15.8	3.71 V	57	54.1	4.1
6	5350.00	45.1 AV	54.0	-8.9	3.71 V	57	41.0	4.1
7	#10420.00	63.1 PK	68.2	-5.1	2.03 V	22	45.5	17.6

Remarks:

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

CHANNEL	TX Channel 58	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	54.3 PK	74.0	-19.7	2.69 H	209	50.2	4.1
2	5150.00	43.6 AV	54.0	-10.4	2.69 H	209	39.5	4.1
3	*5290.00	98.7 PK			2.82 H	214	59.6	39.1
4	*5290.00	88.3 AV			2.82 H	214	49.2	39.1
5	5350.00	58.5 PK	74.0	-15.5	2.77 H	211	54.4	4.1
6	5350.00	45.4 AV	54.0	-8.6	2.77 H	211	41.3	4.1
7	#10580.00	64.0 PK	68.2	-4.2	2.74 H	26	45.2	18.8
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	56.1 PK	74.0	-17.9	2.23 V	59	52.0	4.1
2	5150.00	45.3 AV	54.0	-8.7	2.23 V	59	41.2	4.1
3	*5290.00	94.1 PK			2.14 V	65	55.0	39.1
4	*5290.00	84.3 AV			2.14 V	65	45.2	39.1
5	5350.00	58.2 PK	74.0	-15.8	2.11 V	60	54.1	4.1
6	5350.00	45.3 AV	54.0	-8.7	2.11 V	60	41.2	4.1
7	#10580.00	64.2 PK	68.2	-4.0	2.33 V	33	45.4	18.8

Remarks:

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

CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	61.4 PK	74.0	-12.6	2.80 H	208	56.9	4.5
2	5460.00	44.5 AV	54.0	-9.5	2.80 H	208	40.0	4.5
3	#5470.00	63.1 PK	68.2	-5.1	2.82 H	210	58.6	4.5
4	*5530.00	97.7 PK			2.83 H	211	58.0	39.7
5	*5530.00	88.3 AV			2.83 H	211	48.6	39.7
6	#5725.00	57.7 PK	68.2	-10.5	2.89 H	216	53.0	4.7
7	11060.00	61.0 PK	74.0	-13.0	2.79 H	60	42.1	18.9
8	11060.00	49.4 AV	54.0	-4.6	2.79 H	60	30.5	18.9
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	56.3 PK	74.0	-17.7	1.70 V	320	51.8	4.5
2	5460.00	44.0 AV	54.0	-10.0	1.70 V	320	39.5	4.5
3	#5470.00	57.8 PK	68.2	-10.4	1.72 V	317	53.3	4.5
4	*5530.00	93.6 PK			1.75 V	317	53.9	39.7
5	*5530.00	84.6 AV			1.75 V	317	44.9	39.7
6	#5725.00	56.2 PK	68.2	-12.0	1.79 V	322	51.5	4.7
7	11060.00	61.5 PK	74.0	-12.5	1.65 V	124	42.6	18.9
8	11060.00	49.2 AV	54.0	-4.8	1.65 V	124	30.3	18.9

Remarks:

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

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 40GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	57.0 PK	74.0	-17.0	2.41 H	191	52.5	4.5
2	5460.00	44.3 AV	54.0	-9.7	2.41 H	191	39.8	4.5
3	#5470.00	57.1 PK	68.2	-11.1	2.43 H	192	52.6	4.5
4	*5610.00	98.5 PK			2.47 H	189	58.7	39.8
5	*5610.00	89.2 AV			2.47 H	189	49.4	39.8
6	#5725.00	56.2 PK	68.2	-12.0	2.50 H	193	51.5	4.7
7	11220.00	60.9 PK	74.0	-13.1	2.46 H	44	42.2	18.7
8	11220.00	50.3 AV	54.0	-3.7	2.46 H	44	31.6	18.7
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5460.00	55.8 PK	74.0	-18.2	1.60 V	321	51.3	4.5
2	5460.00	44.0 AV	54.0	-10.0	1.60 V	321	39.5	4.5
3	#5470.00	56.0 PK	68.2	-12.2	1.62 V	322	51.5	4.5
4	*5610.00	95.9 PK			1.59 V	320	56.1	39.8
5	*5610.00	86.2 AV			1.59 V	320	46.4	39.8
6	#5725.00	56.2 PK	68.2	-12.0	1.65 V	325	51.5	4.7
7	11220.00	60.8 PK	74.0	-13.2	1.66 V	144	42.1	18.7
8	11220.00	48.9 AV	54.0	-5.1	1.66 V	144	30.2	18.7

Remarks:

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

Below 1GHz Worst-Case Data:

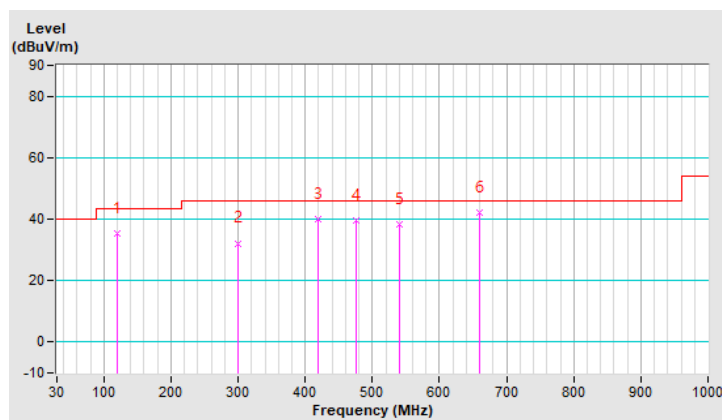
802.11a

CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	119.97	35.2 QP	43.5	-8.3	1.00 H	46	46.1	-10.9
2	299.91	32.2 QP	46.0	-13.8	1.50 H	6	39.5	-7.3
3	419.41	40.0 QP	46.0	-6.0	1.50 H	150	43.6	-3.6
4	475.64	39.4 QP	46.0	-6.6	2.00 H	337	41.4	-2.0
5	540.30	38.5 QP	46.0	-7.5	1.00 H	290	39.2	-0.7
6	659.80	42.0 QP	46.0	-4.0	1.50 H	132	40.5	1.5

Remarks:

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

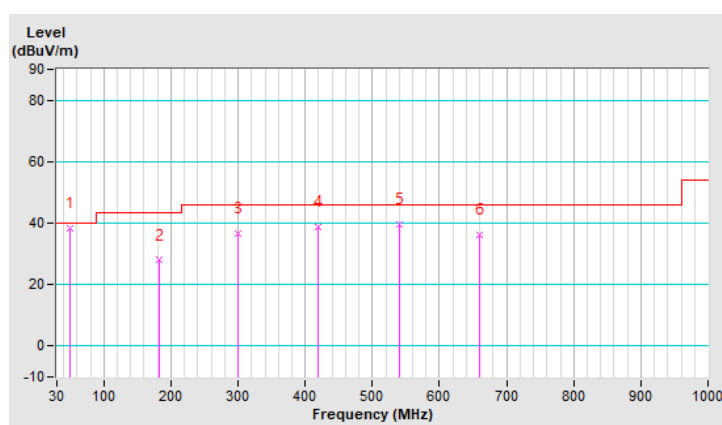


CHANNEL	TX Channel 36	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	49.68	38.1 QP	40.0	-1.9	1.00 V	32	46.9	-8.8
2	181.83	27.9 QP	43.5	-15.6	1.50 V	18	38.0	-10.1
3	299.91	36.8 QP	46.0	-9.2	1.50 V	209	44.1	-7.3
4	419.41	38.8 QP	46.0	-7.2	1.00 V	87	42.4	-3.6
5	540.30	39.5 QP	46.0	-6.5	2.00 V	60	40.2	-0.7
6	659.80	36.2 QP	46.0	-9.8	1.50 V	260	34.7	1.5

Remarks:

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

Tested date: Mar. 23, 2020

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 11, 2019	Dec. 10, 2020
RF signal cable Woken	5D-FB	Cable-cond1-01	Sep. 05, 2019	Sep. 04, 2020
LISN ROHDE & SCHWARZ (EUT)	ENV216	101826	Feb. 20, 2020	Feb. 19, 2021
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100311	Aug. 22, 2019	Aug. 21, 2020
Software ADT	BV ADT_Conc_ V7.3.7.4	NA	NA	NA

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

2. The test was performed in HwaYa Shielded Room 1.

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

4.2.3 Test Procedures

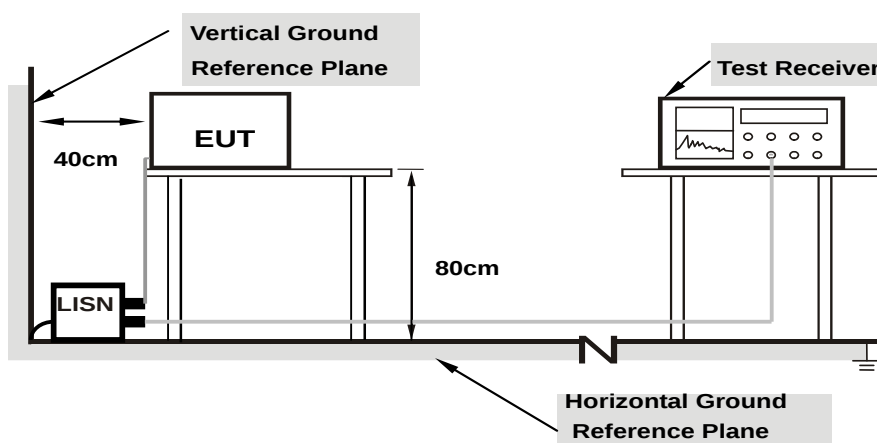
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

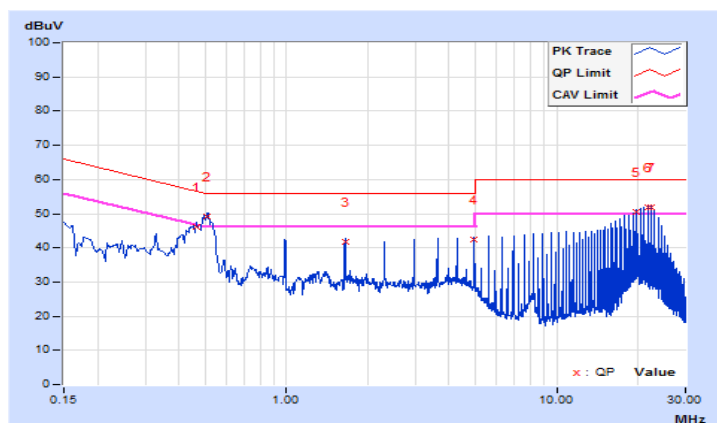
802.11a

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	0.46669	9.65	36.39	26.77	46.04	36.42	56.57	46.57	-10.53	-10.15
2	0.50908	9.66	39.48	30.13	49.14	39.79	56.00	46.00	-6.86	-6.21
3	1.64753	9.71	31.88	31.58	41.59	41.29	56.00	46.00	-14.41	-4.71
4	4.94366	9.80	32.63	32.50	42.43	42.30	56.00	46.00	-13.57	-3.70
5	19.77358	9.91	40.46	38.10	50.37	48.01	60.00	50.00	-9.63	-1.99
6	21.75173	9.91	42.02	39.08	51.93	48.99	60.00	50.00	-8.07	-1.01
7	22.41241	9.91	41.92	38.24	51.83	48.15	60.00	50.00	-8.17	-1.85

Remarks:

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

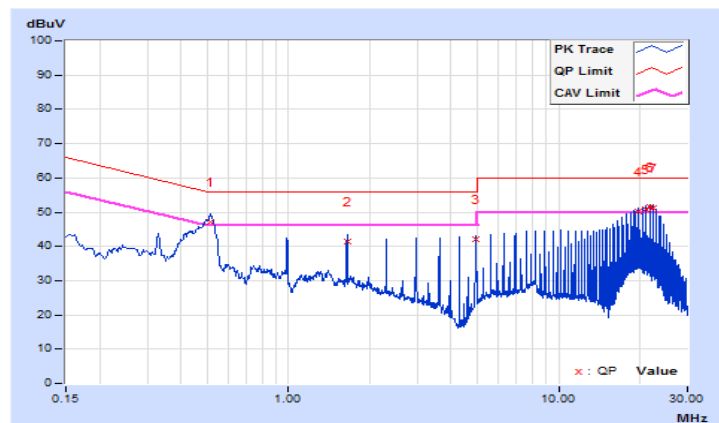


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.51363	9.68	37.58	28.58	47.26	38.26	56.00	46.00	-8.74	-7.74
2	1.64753	9.74	31.76	31.58	41.50	41.32	56.00	46.00	-14.50	-4.68
3	4.93975	9.83	32.22	31.44	42.05	41.27	56.00	46.00	-13.95	-4.73
4	19.77227	10.03	40.06	37.67	50.09	47.70	60.00	50.00	-9.91	-2.30
5	21.08672	10.03	40.96	38.29	50.99	48.32	60.00	50.00	-9.01	-1.68
6	21.74640	10.04	41.54	38.71	51.58	48.75	60.00	50.00	-8.42	-1.25
7	22.40450	10.04	41.16	36.75	51.20	46.79	60.00	50.00	-8.80	-3.21

Remarks:

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



4.3 Transmit Power Measurement

4.3.1 Limits of Transmit Power Measurement

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

*B is the 26 dB emission bandwidth in megahertz

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

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

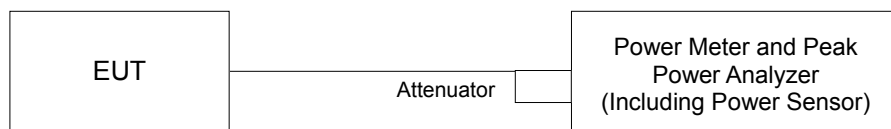
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

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

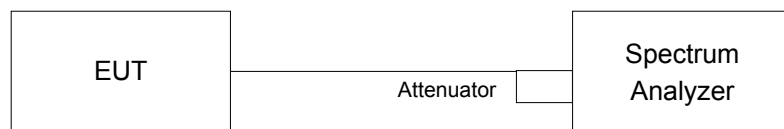
For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.3.2 Test Setup

For Power Output



For 26dB 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 Bandwidth

- a. Set RBW = approximately 1% of the emission bandwidth.
- b. Set the VBW > RBW.
- c. Detector = Peak.
- d. Trace mode = max hold.
- e. 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 Conditions

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

4.3.7 Test Result

Power Output:

802.11a

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	31.333	14.96	23.90	Pass
40	5200	29.992	14.77	23.90	Pass
48	5240	28.314	14.52	23.90	Pass
52	5260	26.424	14.22	24.00	Pass
60	5300	26.977	14.31	24.00	Pass
64	5320	26.669	14.26	24.00	Pass
100	5500	25.293	14.03	24.00	Pass
116	5580	26.792	14.28	24.00	Pass
140	5700	20.701	13.16	24.00	Pass

Note:

5180~5240MHz antenna gain =6.10dBi > 6dBi, so the conducted power limit shall be reduced to
 $24 - (6.10 - 6) = 23.90\text{dBm}$

5260~5320MHz antenna gain =5.69dBi < 6dBi, so the conducted power limit no need to reduced.

5500~5700MHz antenna gain =5.17dBi < 6dBi, so the conducted power limit no need to reduced.

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

1. $11\text{dBm} + 10\log(22.21) = 24.46 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(22.44) = 24.51 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(22.74) = 24.56 > 24\text{dBm}$
4. $11\text{dBm} + 10\log(22.56) = 24.53 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(22.46) = 24.51 > 24\text{dBm}$
6. $11\text{dBm} + 10\log(22.40) = 24.50 > 24\text{dBm}$

802.11n (HT20)

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
36	5180	19.187	12.83	23.90	Pass
40	5200	18.880	12.76	23.90	Pass
48	5240	19.454	12.89	23.90	Pass
52	5260	17.947	12.54	24.00	Pass
60	5300	17.100	12.33	24.00	Pass
64	5320	17.458	12.42	24.00	Pass
100	5500	18.750	12.73	24.00	Pass
116	5580	16.144	12.08	24.00	Pass
140	5700	11.858	10.74	24.00	Pass

Note:

5180~5240MHz antenna gain =6.10dBi > 6dBi, so the conducted power limit shall be reduced to
 $24-(6.10-6)=23.90\text{dBm}$

5260~5320MHz antenna gain =5.69dBi < 6dBi, so the conducted power limit no need to reduced.

5500~5700MHz antenna gain =5.17dBi < 6dBi, so the conducted power limit no need to reduced.

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

1. $11\text{dBm} + 10\log(22.54) = 24.52 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(22.71) = 24.56 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(22.89) = 24.59 > 24\text{dBm}$
4. $11\text{dBm} + 10\log(22.89) = 24.59 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(22.50) = 24.52 > 24\text{dBm}$
6. $11\text{dBm} + 10\log(22.62) = 24.54 > 24\text{dBm}$

802.11n (HT40)

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
38	5190	20.941	13.21	23.90	Pass
46	5230	20.797	13.18	23.90	Pass
54	5270	19.320	12.86	24.00	Pass
62	5310	19.143	12.82	24.00	Pass
102	5510	19.815	12.97	24.00	Pass
110	5550	20.184	13.05	24.00	Pass
134	5670	14.757	11.69	24.00	Pass

Note:

5180~5240MHz antenna gain =6.10dBi > 6dBi, so the conducted power limit shall be reduced to
 $24-(6.10-6)=23.90\text{dBm}$

5260~5320MHz antenna gain =5.69dBi < 6dBi, so the conducted power limit no need to reduced.

5500~5700MHz antenna gain =5.17dBi < 6dBi, so the conducted power limit no need to reduced.

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

1. $11\text{dBm} + 10\log(45.24) = 27.55 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(46.39) = 27.66 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(45.96) = 27.62 > 24\text{dBm}$
4. $11\text{dBm} + 10\log(45.10) = 27.54 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(46.21) = 27.64 > 24\text{dBm}$

802.11ac (VHT80)

Chan.	Freq. (MHz)	Conducted Power (mW)	Conducted Power (dBm)	Power Limit (dBm)	Pass / Fail
42	5210	20.797	13.18	23.90	Pass
58	5290	18.967	12.78	24.00	Pass
106	5530	20.749	13.17	24.00	Pass
122	5610	24.155	13.83	24.00	Pass

Note:

5180~5240MHz antenna gain =6.10dBi > 6dBi, so the conducted power limit shall be reduced to
 $24-(6.10-6)=23.90\text{dBm}$

5260~5320MHz antenna gain =5.69dBi < 6dBi, so the conducted power limit no need to reduced.

5500~5700MHz antenna gain =5.17dBi < 6dBi, so the conducted power limit no need to reduced.

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

1. $11\text{dBm} + 10\log(85.55) = 30.32 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(85.57) = 30.32 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(85.55) = 30.32 > 24\text{dBm}$

26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
36	5180	22.49
40	5200	22.50
48	5240	22.58
52	5260	22.21
60	5300	22.44
64	5320	22.74
100	5500	22.56
116	5580	22.46
140	5700	22.40

802.11n (HT20)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
36	5180	22.80
40	5200	22.60
48	5240	22.82
52	5260	22.54
60	5300	22.71
64	5320	22.89
100	5500	22.89
116	5580	22.50
140	5700	22.62

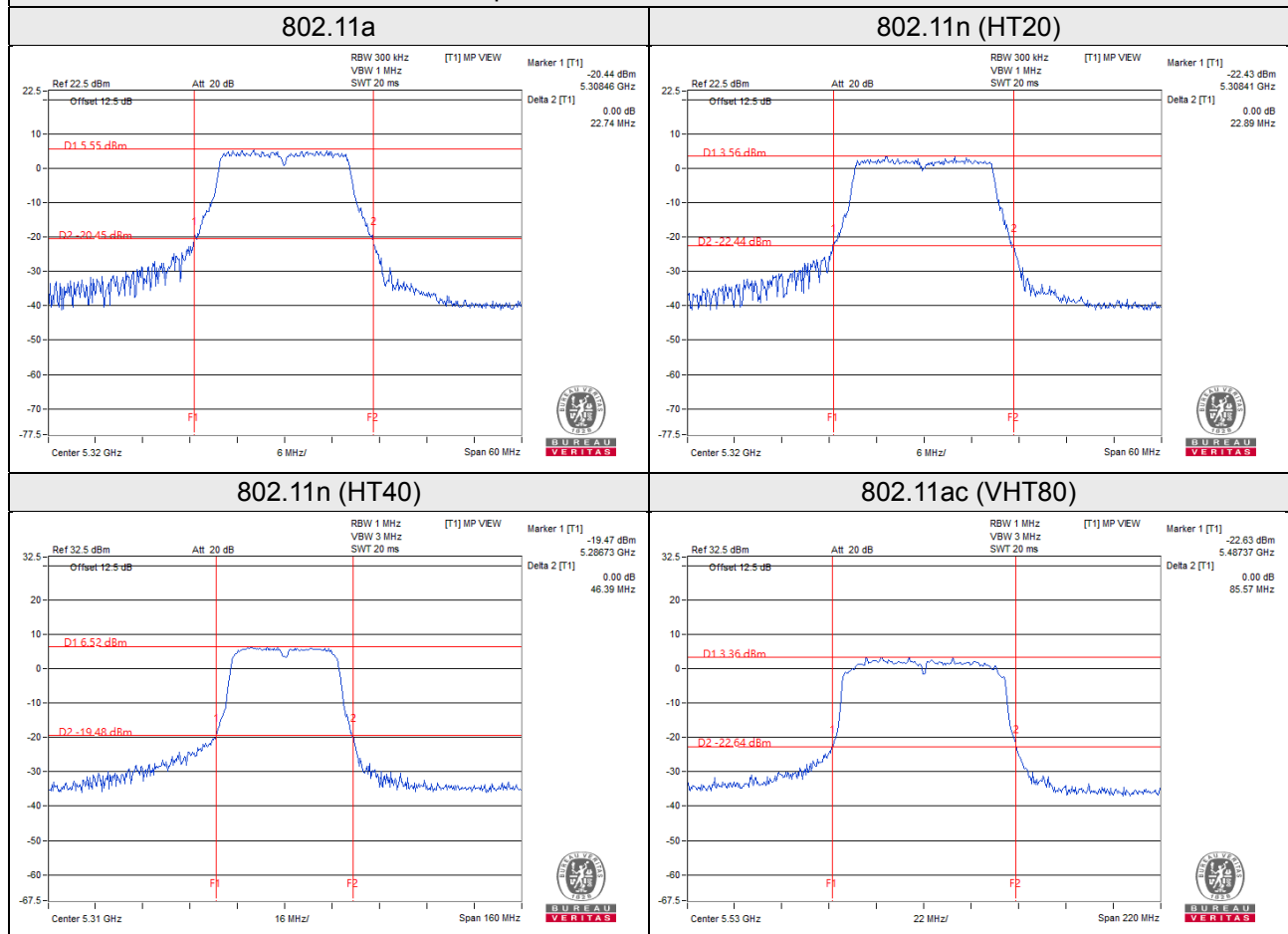
802.11n (HT40)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
38	5190	45.77
46	5230	45.50
54	5270	45.24
62	5310	46.39
102	5510	45.96
110	5550	45.10
134	5670	46.21

802.11ac (VHT80)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)
42	5210	85.43
58	5290	85.55
106	5530	85.57
122	5610	85.55

Spectrum Plot of Worst Value



EUT Maximum Conducted Power

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	14.31	26.977
5470~5725	14.28	26.792

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	12.54	17.947
5470~5725	12.73	18.750

802.11n (HT40)

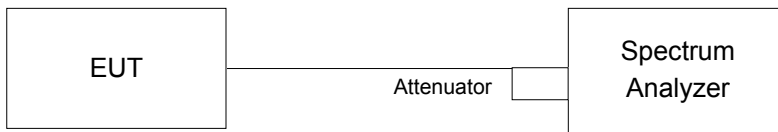
Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	12.86	19.320
5470~5725	13.05	20.184

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (dBm)	Output Power (mW)
5250~5350	12.78	18.967
5470~5725	13.83	24.155

4.4 Occupied Bandwidth Measurement

4.4.1 Test Setup



4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.3 Test Procedure

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

4.4.4 Test Result

802.11a

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	17.04
40	5200	17.04
48	5240	17.04
52	5260	17.16
60	5300	17.04
64	5320	17.16
100	5500	17.04
116	5580	17.16
140	5700	17.16

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
36	5180	18.00
40	5200	18.00
48	5240	18.00
52	5260	18.12
60	5300	18.12
64	5320	18.24
100	5500	18.12
116	5580	18.00
140	5700	18.12

802.11n (HT40)

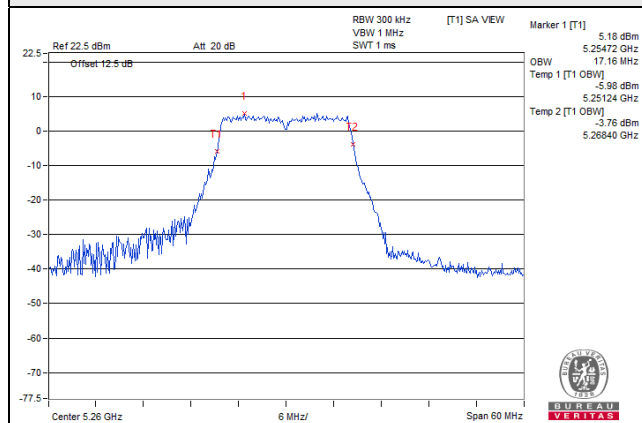
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
38	5190	36.48
46	5230	36.60
54	5270	36.60
62	5310	36.72
102	5510	36.72
110	5550	36.72
134	5670	36.72

802.11ac (VHT80)

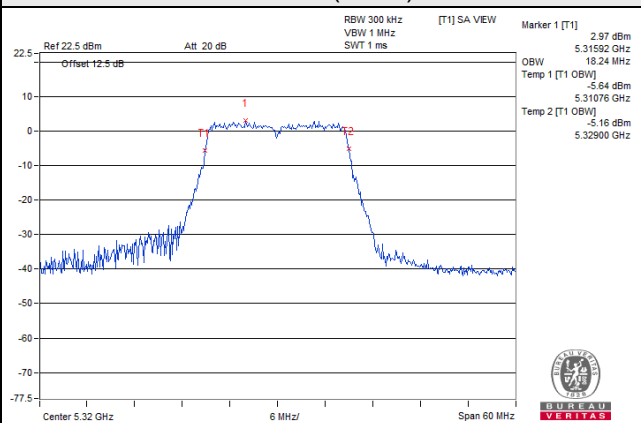
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)
42	5210	75.36
58	5290	74.64
106	5530	74.88
122	5610	74.64

Spectrum Plot of Worst Value

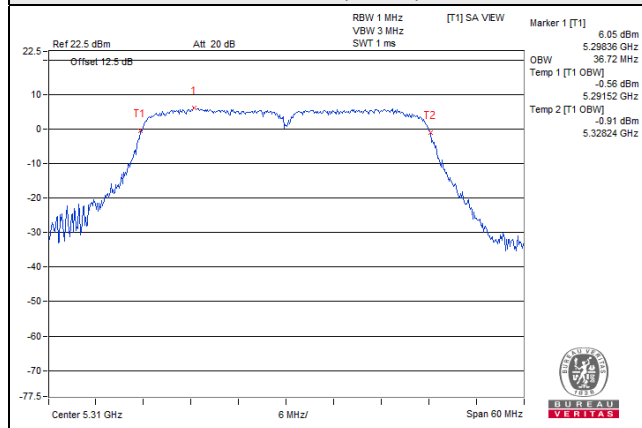
802.11a



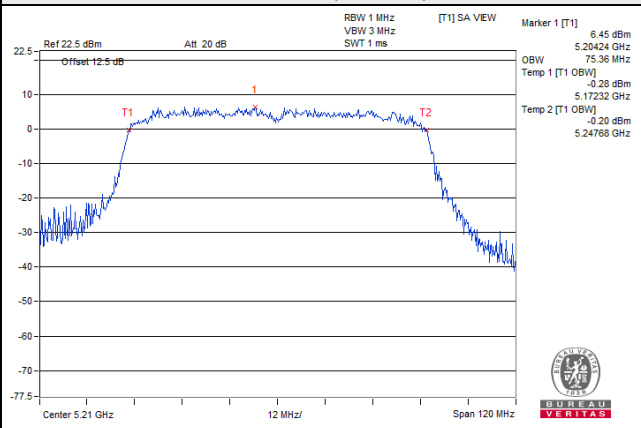
802.11n (HT20)



802.11n (HT40)

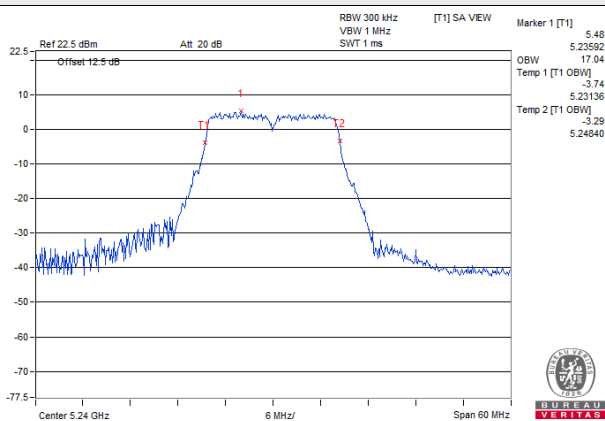


802.11ac (VHT80)

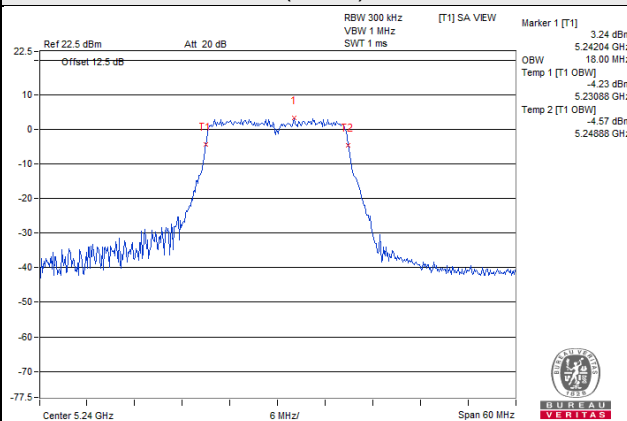


Spectrum Plot for near By DFS Band

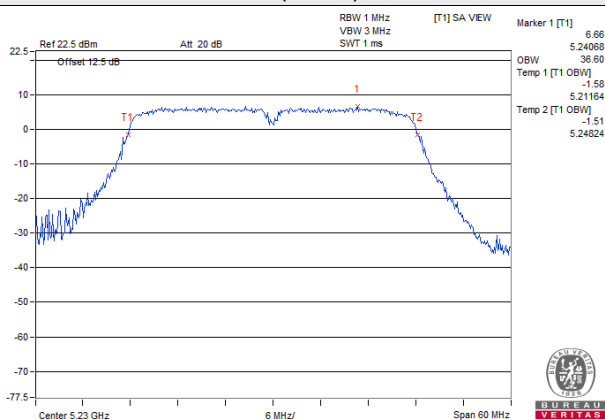
802.11a / CH 48



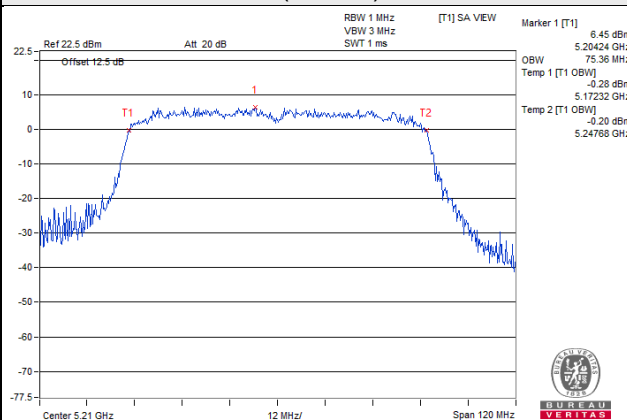
802.11n (HT20) / CH 48



802.11n (HT40) / CH 46



802.11ac (VHT80) / CH 42

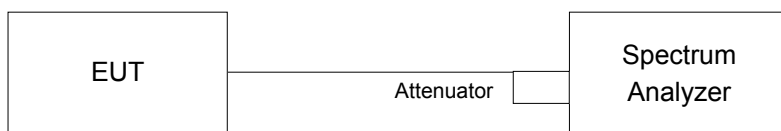


4.5 Peak Power Spectral Density Measurement

4.5.1 Limits of Peak Power Spectral Density Measurement

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

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedures

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

Duty cycle of test signal is > 98%

Using method SA-1

- Set span to encompass the entire emission bandwidth (EBW) of the signal.
- Set RBW = 1 MHz, Set VBW ≥ 3 MHz, Detector = RMS
- Sweep time = auto, trigger set to “free run”.
- Trace average at least 100 traces in power averaging mode.
- Record the max value

Duty cycle of test signal is < 98%

Using method SA-2

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

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Conditions

Same as 4.3.6.

4.5.7 Test Results

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

802.11a

Chan.	Freq. (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	1.09	0.11	1.20	10.90	Pass
40	5200	1.32	0.11	1.43	10.90	Pass
48	5240	0.72	0.11	0.83	10.90	Pass
52	5260	0.72	0.11	0.83	11.00	Pass
60	5300	0.65	0.11	0.76	11.00	Pass
64	5320	0.73	0.11	0.84	11.00	Pass
100	5500	-0.13	0.11	-0.02	11.00	Pass
116	5580	0.05	0.11	0.16	11.00	Pass
140	5700	-0.85	0.11	-0.74	11.00	Pass

Note:

1. 5180~5240MHz antenna gain =6.10dBi > 6dBi, so the power spectral density limit shall be reduced to $11-(6.10-6)=10.90\text{dBm}$
5260~5320MHz antenna gain =5.69dBi < 6dBi, so the power spectral density limit no need to reduced.
5500~5700MHz antenna gain =5.17dBi < 6dBi, so the power spectral density limit no need to reduced.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
36	5180	-1.23	10.90	Pass
40	5200	-1.06	10.90	Pass
48	5240	-1.09	10.90	Pass
52	5260	-1.43	11.00	Pass
60	5300	-1.56	11.00	Pass
64	5320	-1.50	11.00	Pass
100	5500	-1.64	11.00	Pass
116	5580	-2.48	11.00	Pass
140	5700	-3.68	11.00	Pass

Note:

1. 5180~5240MHz antenna gain =6.10dBi > 6dBi, so the power spectral density limit shall be reduced to $11-(6.10-6)=10.90\text{dBm}$
5260~5320MHz antenna gain =5.69dBi < 6dBi, so the power spectral density limit no need to reduced.
5500~5700MHz antenna gain =5.17dBi < 6dBi, so the power spectral density limit no need to reduced.

802.11n (HT40)

Chan.	Freq. (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	-3.31	0.16	-3.15	10.90	Pass
46	5230	-3.36	0.16	-3.20	10.90	Pass
54	5270	-3.70	0.16	-3.54	11.00	Pass
62	5310	-3.86	0.16	-3.70	11.00	Pass
102	5510	-4.37	0.16	-4.21	11.00	Pass
110	5550	-4.14	0.16	-3.98	11.00	Pass
134	5670	-5.35	0.16	-5.19	11.00	Pass

Note:

1. 5180~5240MHz antenna gain = 6.10dBi > 6dBi, so the power spectral density limit shall be reduced to $11-(6.10-6)=10.90\text{dBm}$
5260~5320MHz antenna gain = 5.69dBi < 6dBi, so the power spectral density limit no need to reduced.
5500~5700MHz antenna gain = 5.17dBi < 6dBi, so the power spectral density limit no need to reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

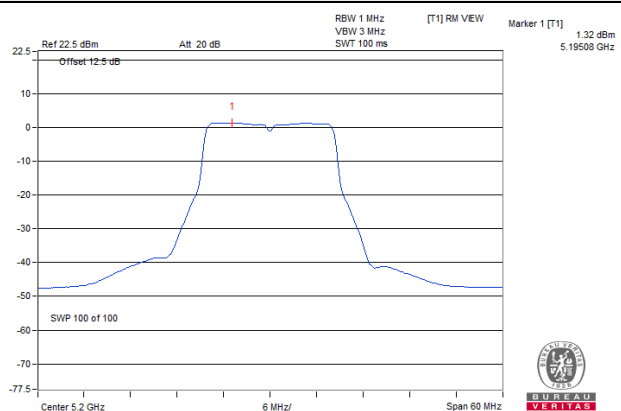
Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)	Duty Factor (dB)	PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
42	5210	-6.73	0.37	-6.36	10.90	Pass
58	5290	-7.18	0.37	-6.81	11.00	Pass
106	5530	-7.38	0.37	-7.01	11.00	Pass
122	5610	-6.81	0.37	-6.44	11.00	Pass

Note:

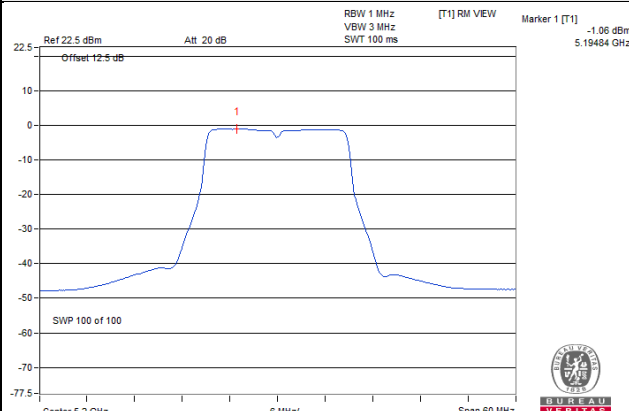
1. 5180~5240MHz antenna gain = 6.10dBi > 6dBi, so the power spectral density limit shall be reduced to $11-(6.10-6)=10.90\text{dBm}$
5260~5320MHz antenna gain = 5.69dBi < 6dBi, so the power spectral density limit no need to reduced.
5500~5700MHz antenna gain = 5.17dBi < 6dBi, so the power spectral density limit no need to reduced.
2. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

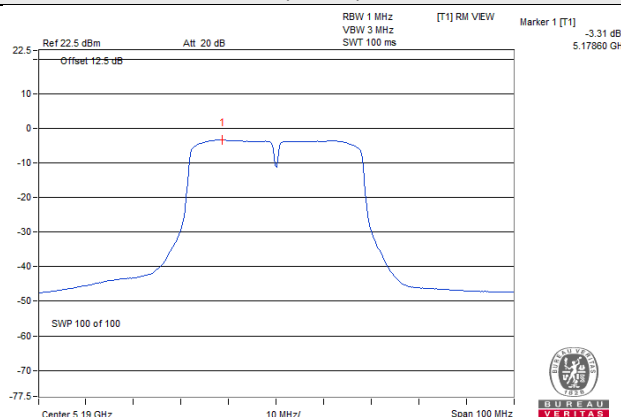
802.11a / CH 40



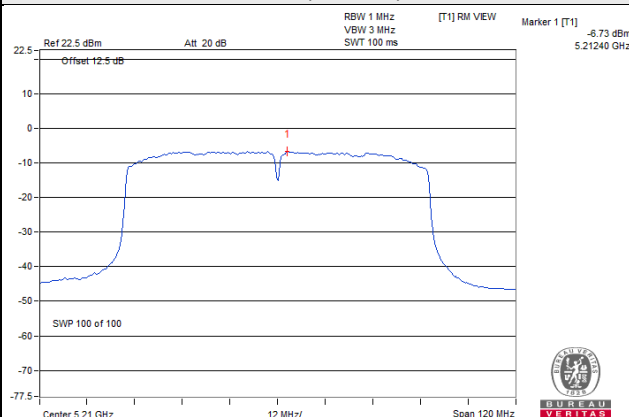
802.11n (HT20) / CH 40



802.11n (HT40) / CH 38



802.11ac (VHT80) / 42

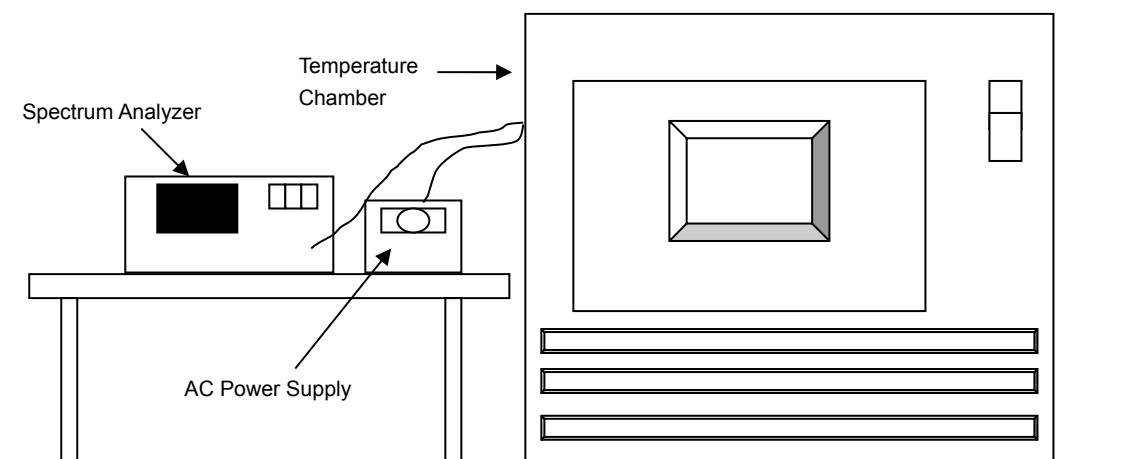


4.6 Frequency Stability

4.6.1 Limits of Frequency Stability Measurement

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

4.6.2 Test Setup



4.6.3 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Sep. 23, 2019	Sep. 22, 2020
WIT Standard Temperature And Humidity Chamber	TH-4S-C	W981030	Jun. 03, 2019	Jun. 02, 2020
Digital Multimeter Fluke	87-III	70360742	Jun. 28, 2019	Jun. 27, 2020
AC Power Supply Extech	CFW-105	E000603	NA	NA

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

4.6.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step (d) with the temperature chamber set to the next desired temperature 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: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
40	120	5180.0079	Pass	5180.0092	Pass	5180.0096	Pass	5180.009	Pass
30	120	5180.0005	Pass	5180.0015	Pass	5179.9999	Pass	5179.9998	Pass
20	120	5180.0029	Pass	5180.0034	Pass	5180.0032	Pass	5180.0005	Pass
10	120	5179.9855	Pass	5179.9825	Pass	5179.9834	Pass	5179.9813	Pass
0	120	5180.0161	Pass	5180.0171	Pass	5180.0161	Pass	5180.0165	Pass

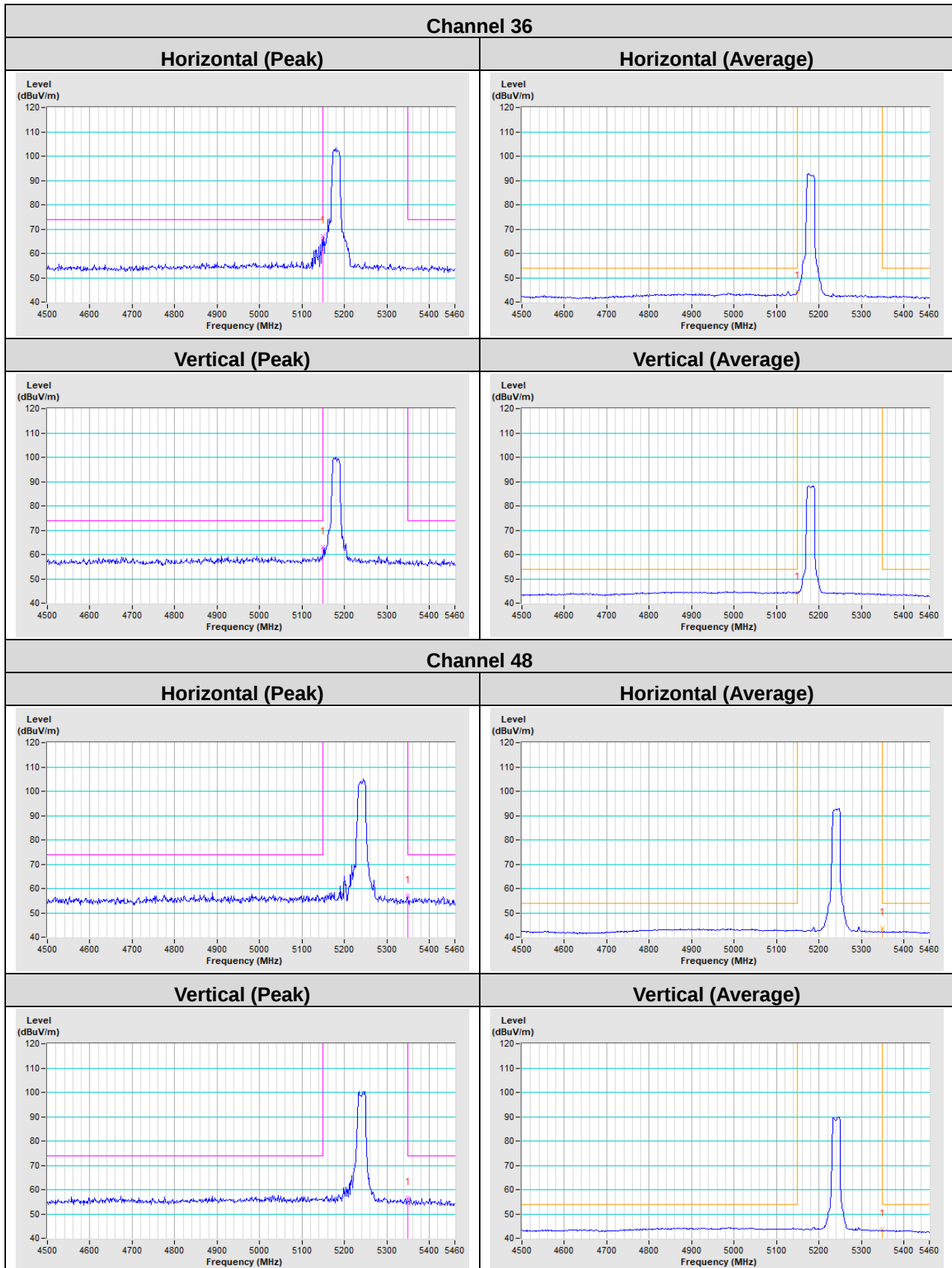
Frequency Stability Versus Voltage									
Operating Frequency: 5180MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5180.0019	Pass	5180.004	Pass	5180.0042	Pass	5180.0008	Pass
	120	5180.0029	Pass	5180.0034	Pass	5180.0032	Pass	5180.0005	Pass
	102	5180.0022	Pass	5180.0036	Pass	5180.0031	Pass	5180.0013	Pass

5 Pictures of Test Arrangements

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

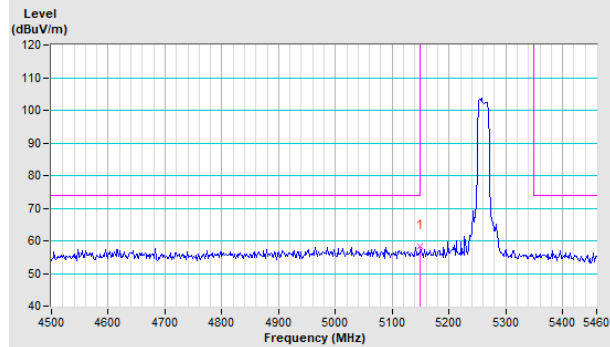
Annex A- Band Edge Measurement

802.11a

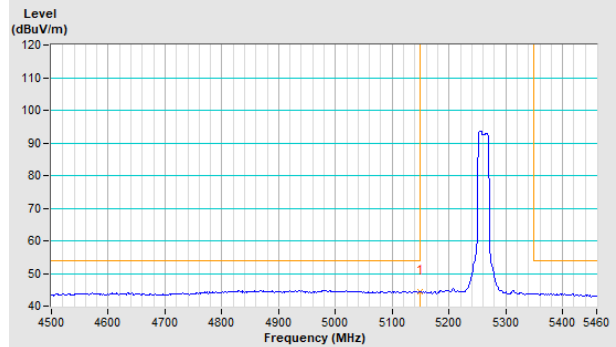


Channel 52

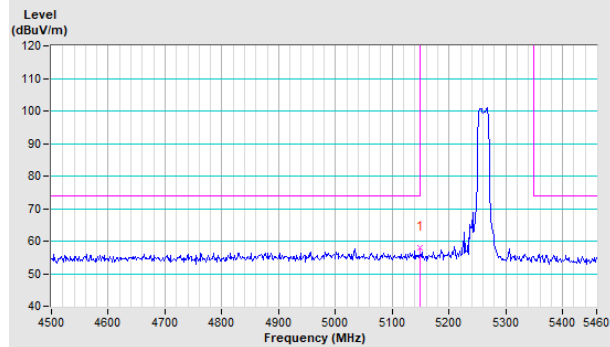
Horizontal (Peak)



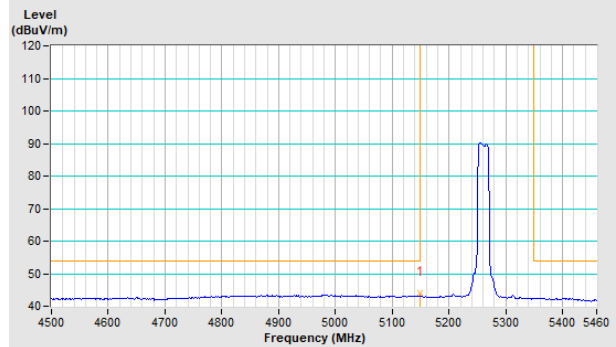
Horizontal (Average)



Vertical (Peak)

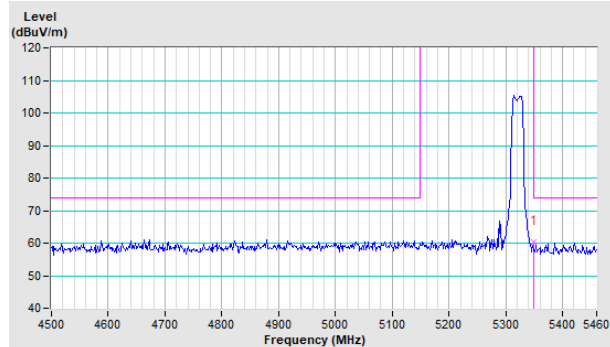


Vertical (Average)

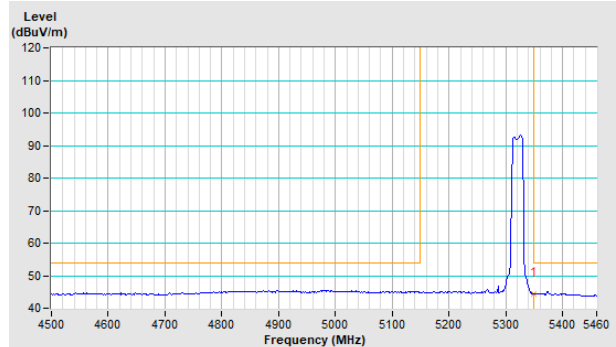


Channel 64

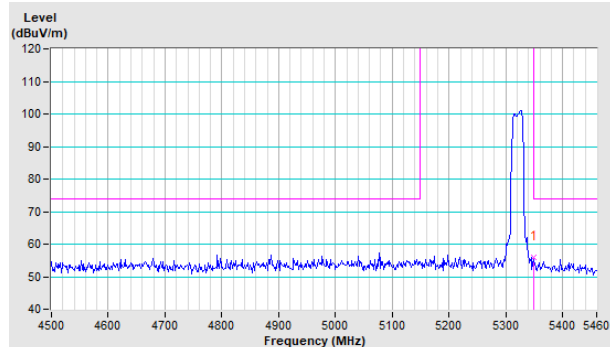
Horizontal (Peak)



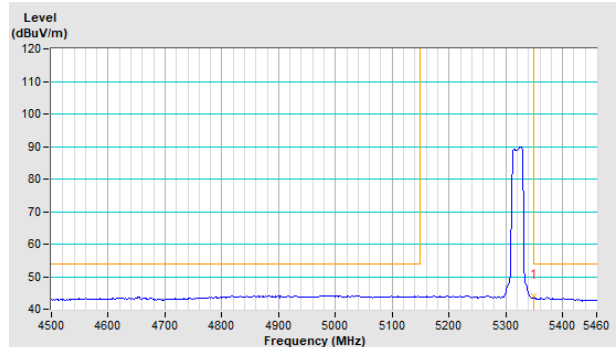
Horizontal (Average)

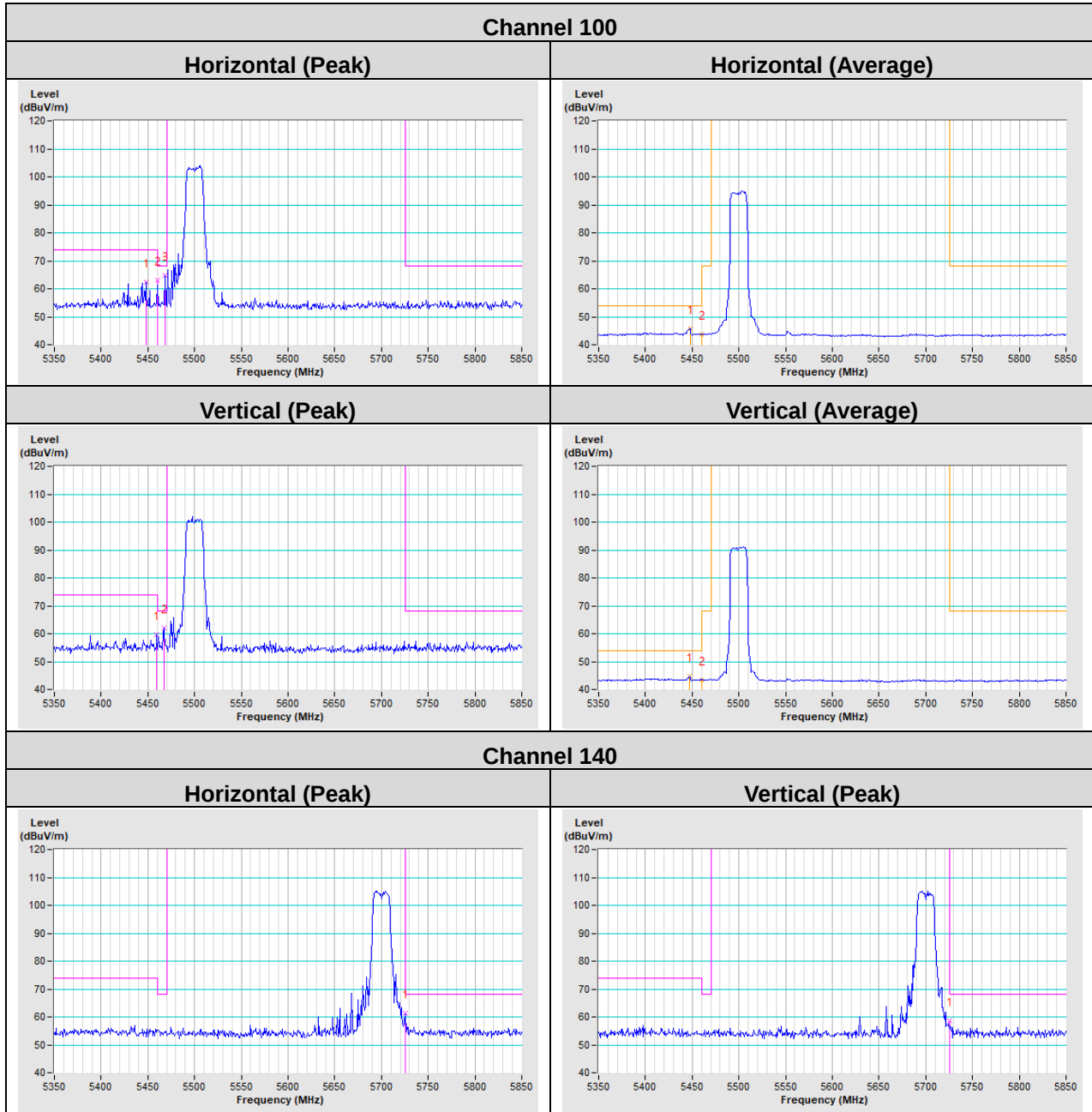


Vertical (Peak)

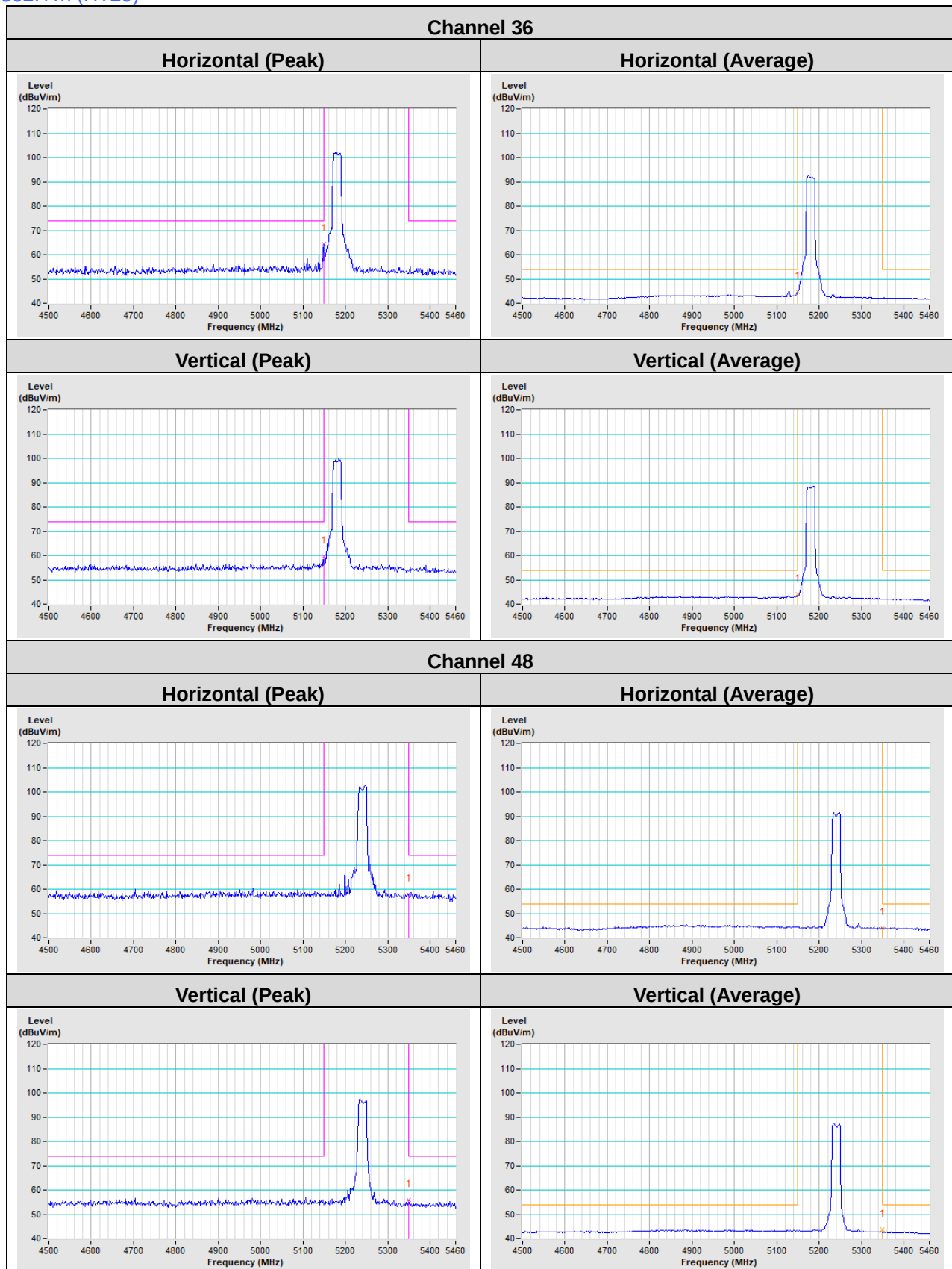


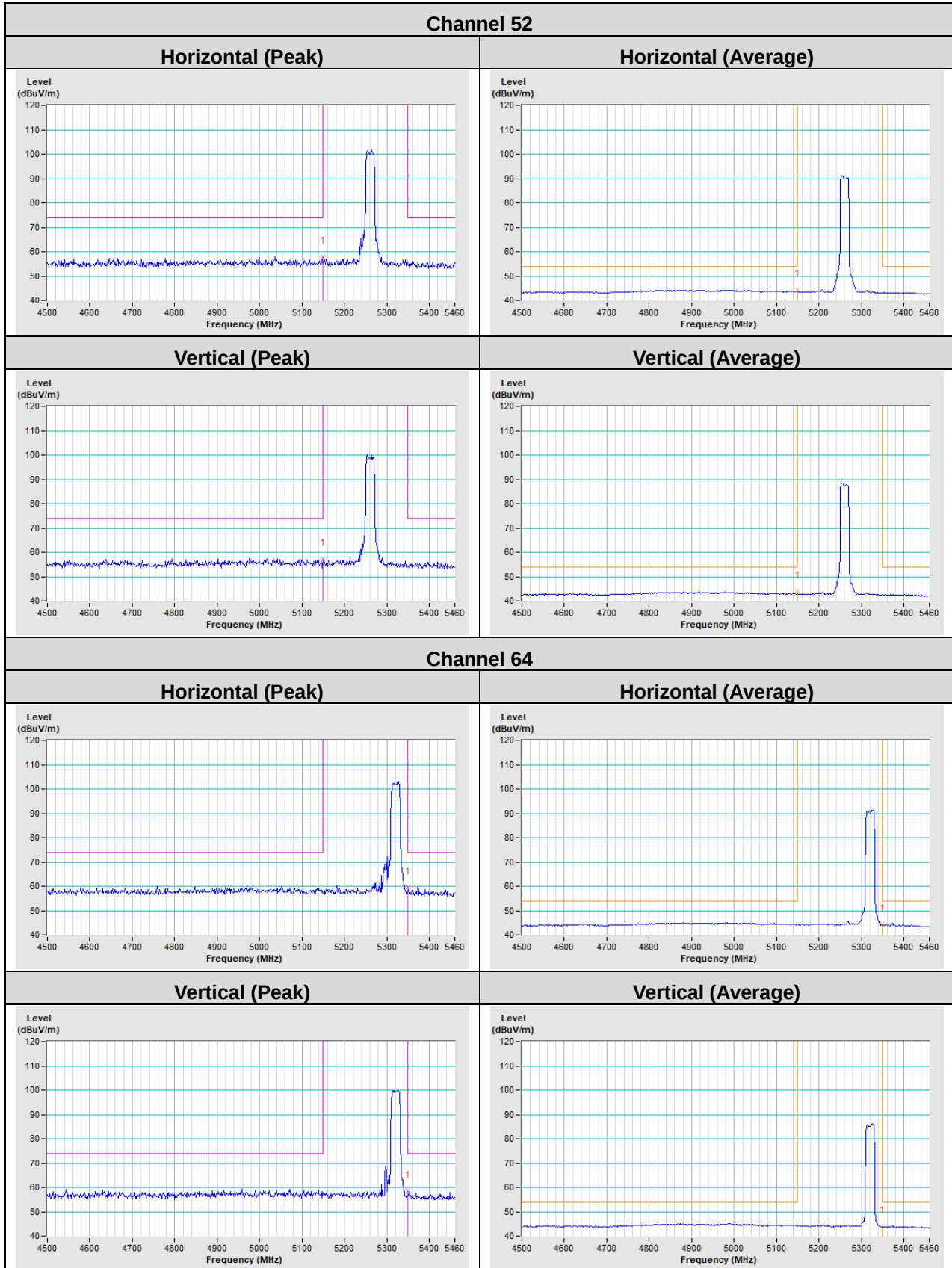
Vertical (Average)

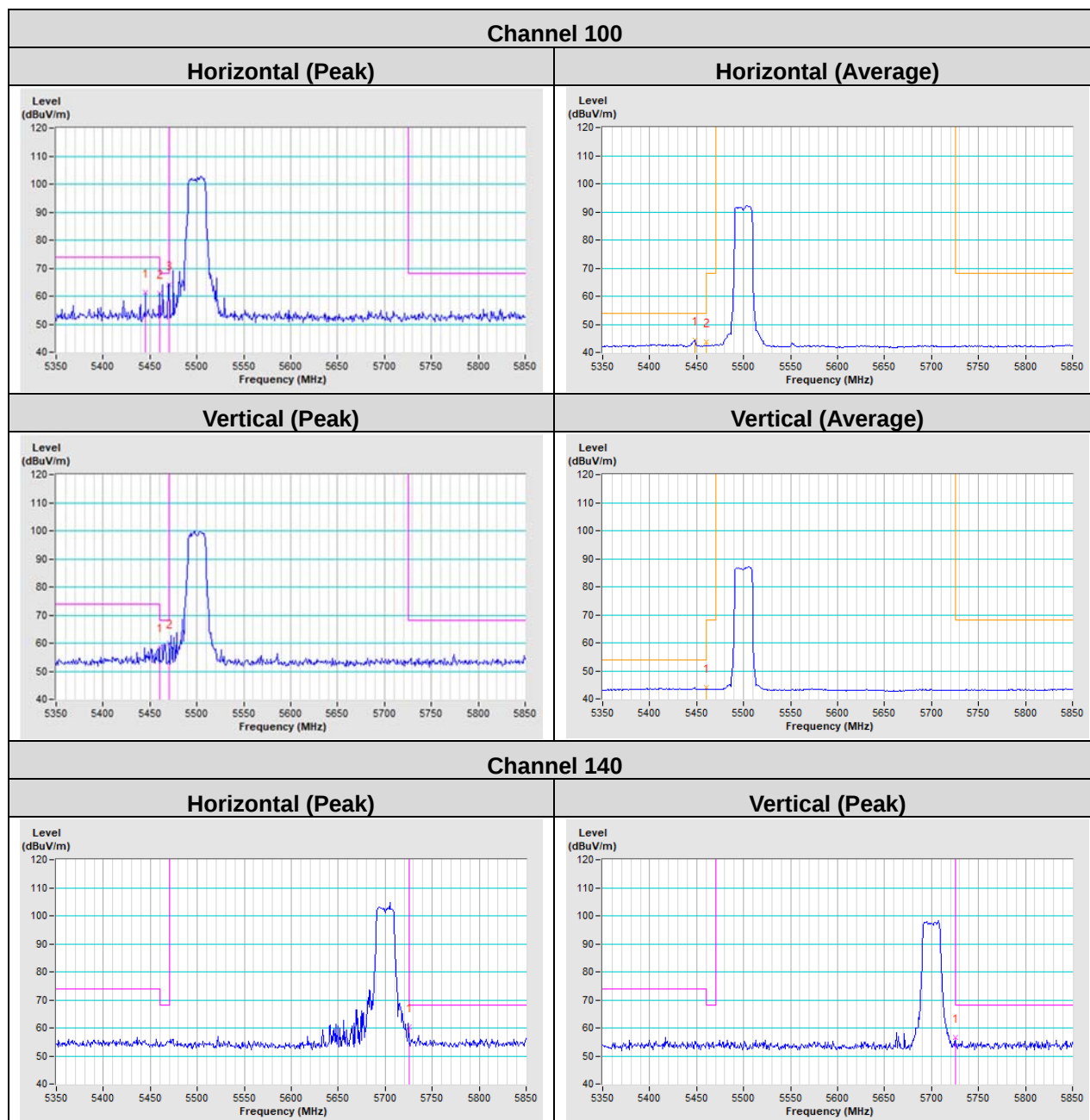




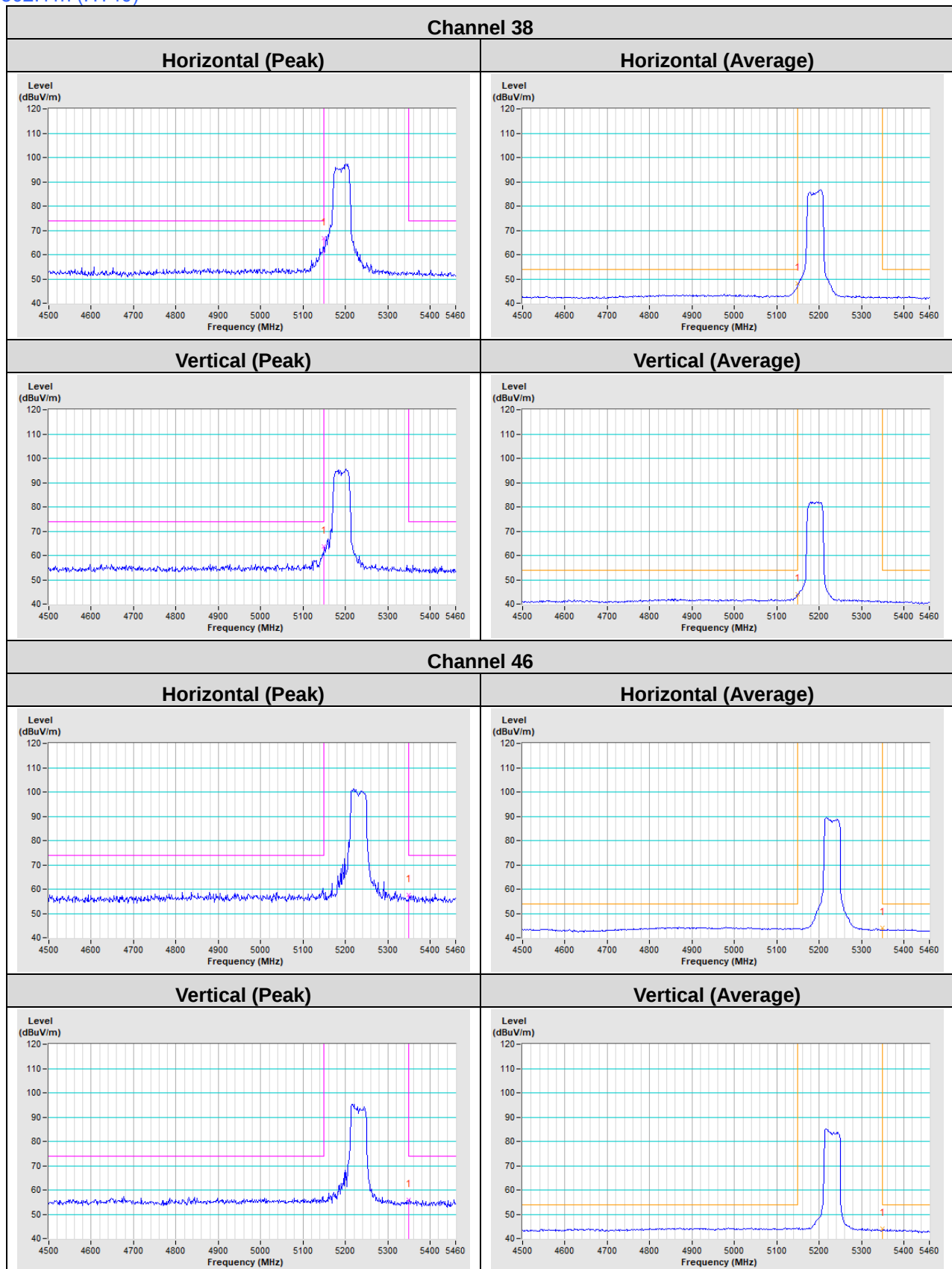
802.11n (HT20)

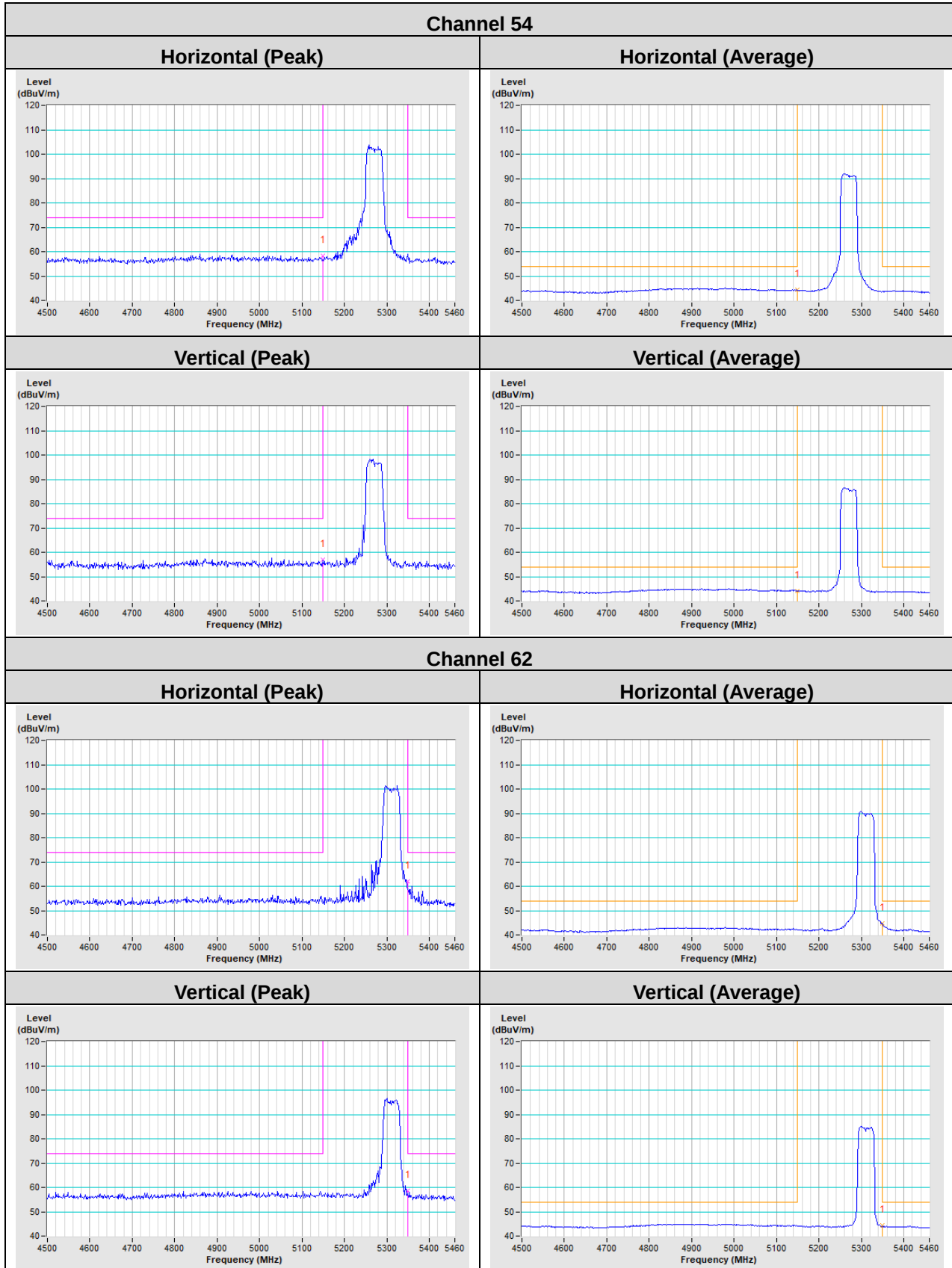


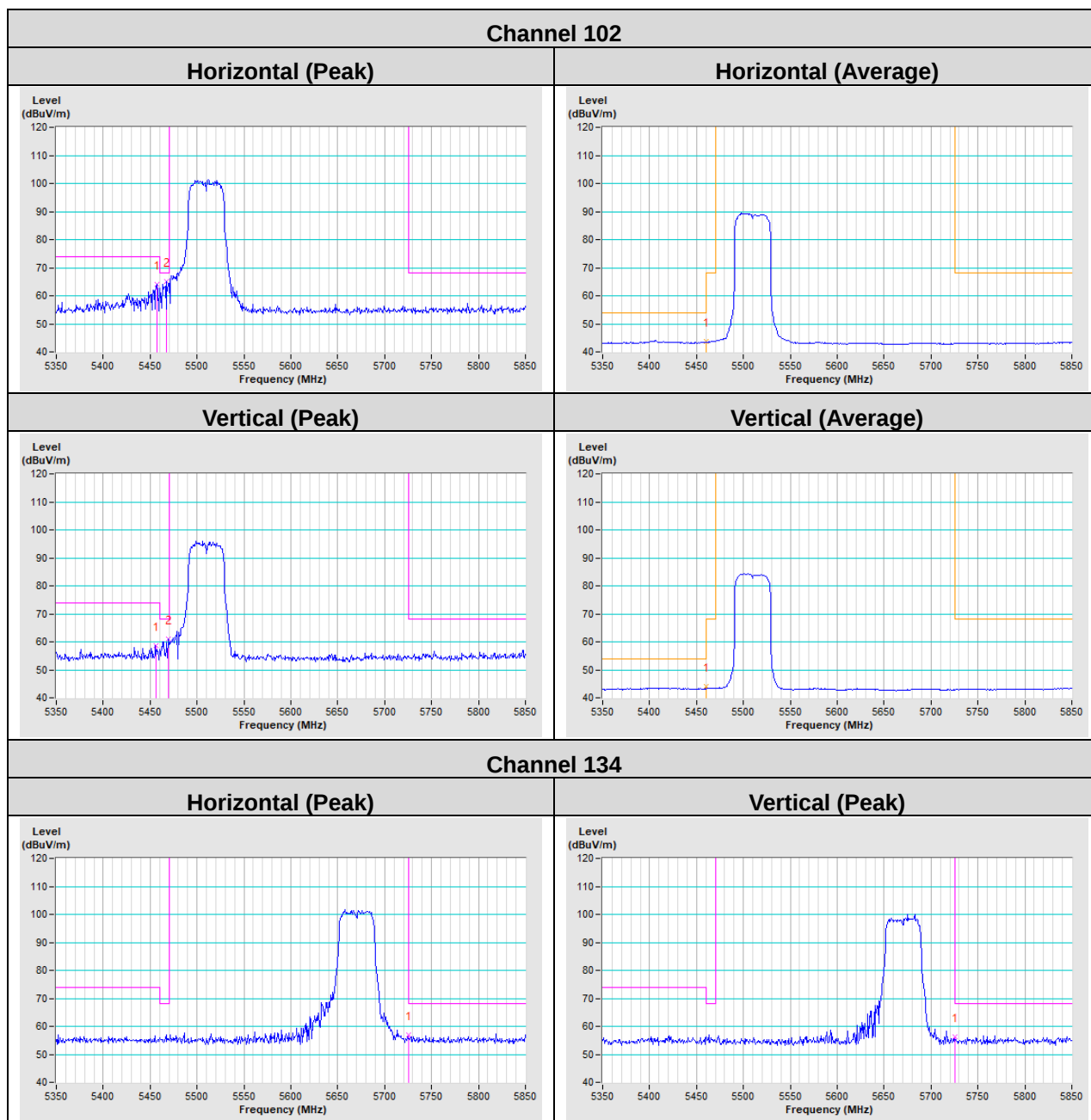




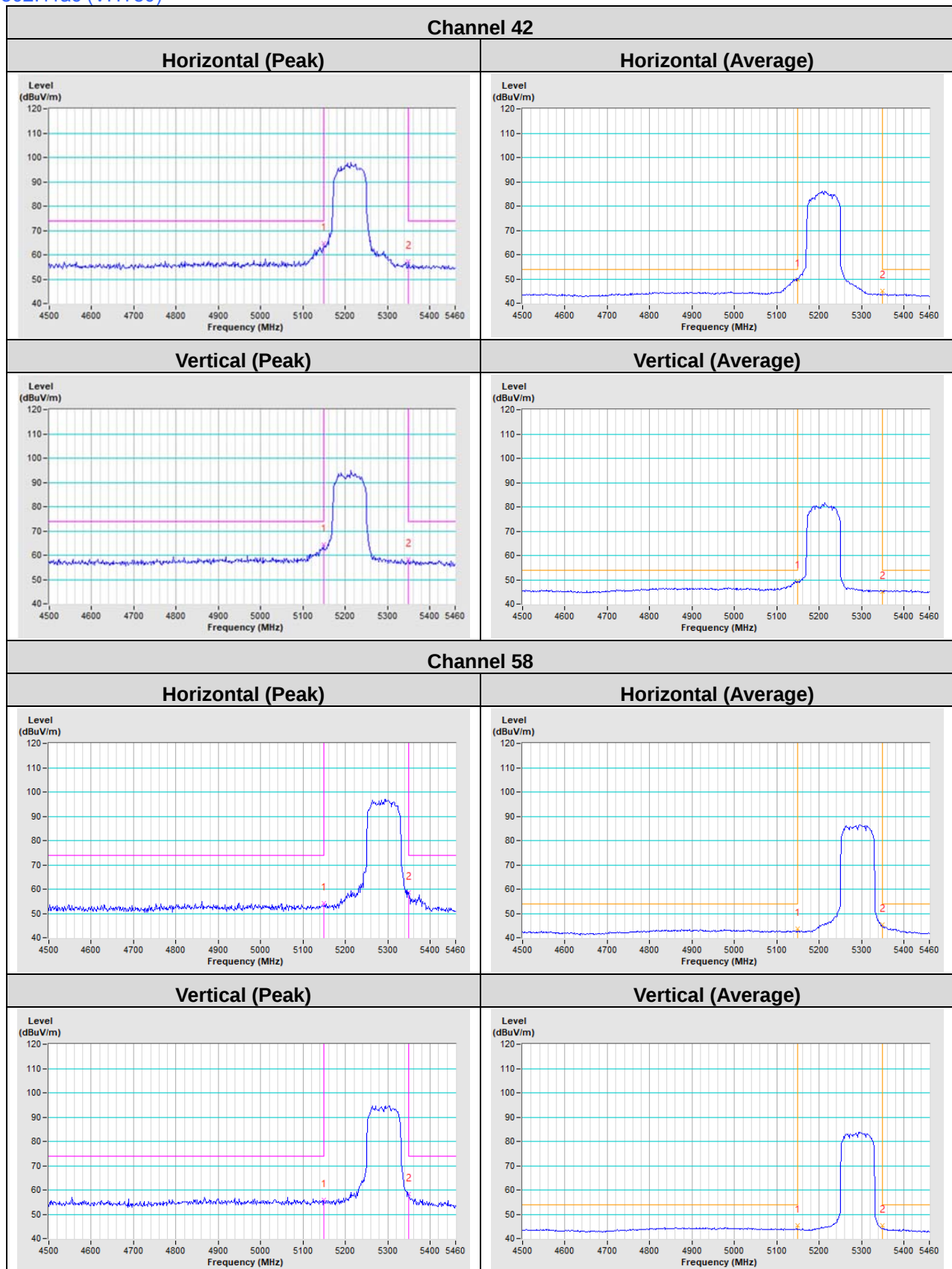
802.11n (HT40)

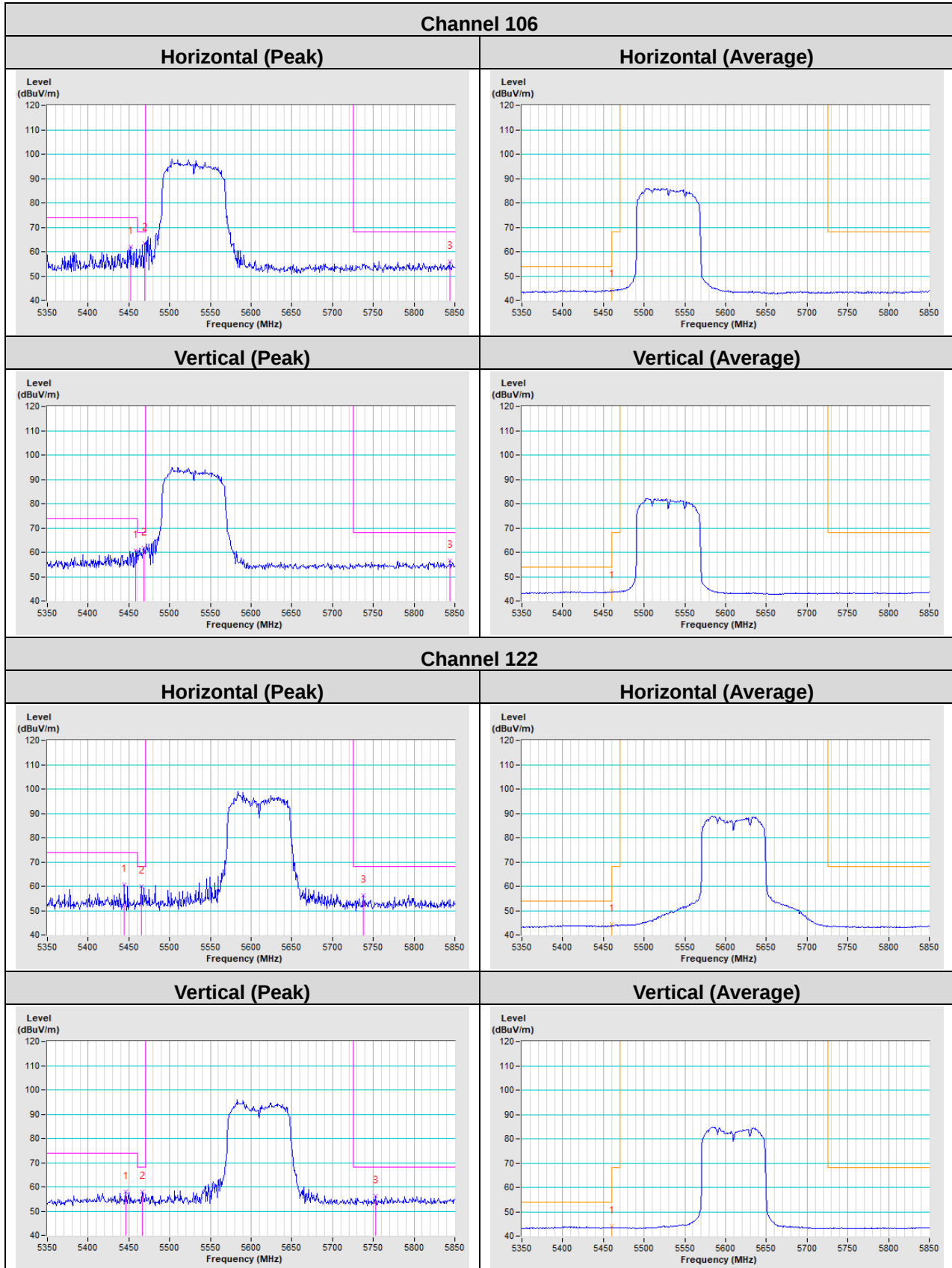






802.11ac (VHT80)





Appendix – Information of the Testing Laboratories

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

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Web Site: www.bureauveritas-adt.com

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

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