

FCC Test Report

Report No.: RFBEAD-WTW-P21116029-1

FCC ID: M82-EKI6333AC2GA

Test Model: EKI-6333AC-2GD

Series Model: EKI-6333AC-2GDXXXXXX, EKI6333AC2GDXXXXXX (where "X" maybe any alphanumeric character, blank or "-") (refer to item 3.1 for more details)

Received Date: Dec. 10, 2021

Test Date: Dec. 10, 2021 ~ Mar. 15, 2022

Issued Date: May 17, 2022

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**FCC Registration /
Designation Number (1):** 788550 / TW0003

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**FCC Registration /
Designation Number (2):** 281270 / TW0032



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Release Control Record

Issue No.	Description	Date Issued
RFBEAD-WTW-P21116029-1	Original release.	May 17, 2022

1 Certificate of Conformity

Product: Ethernet Device

Brand: Advantech

Test Model: EKI-6333AC-2GD

Series Model: EKI-6333AC-2GDXXXXXX, EKI6333AC2GDXXXXXX (where "X" maybe any alphanumeric character, blank or "-") (refer to item 3.1 for more details)

Sample Status: Engineering sample

Applicant: ADVANTECH CO., LTD

Test Date: Dec. 10, 2021 ~ Mar. 15, 2022

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

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

Prepared by : Pettie Chen , **Date:** May 17, 2022
Pettie Chen / Senior Specialist

Approved by : Jeremy Lin , **Date:** May 17, 2022
Jeremy Lin / Project Engineer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart E (Section 15.407)			
FCC Clause	Test Item	Result	Remarks
15.407(b)(6)	AC Power Conducted Emissions	Pass	Meet the requirement of limit. Minimum passing margin is -20.15dB at 0.15400MHz.
15.407(b)(1/2/3/4(i/ii)/6)	Radiated Emissions & Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.36dB at 5644.00MHz.
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	N/A	Not Applicable
15.407(g)	Frequency Stability	Pass	Meet the requirement of limit.
15.203	Antenna Requirement	Pass	Antenna connector is SMA Male Reverse not a standard connector.

Note:

- For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOB test plots were recorded in Annex A.
- For U-NII-1, U-NII-2A, U-NII-2C 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.
- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) ($\pm$)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 dB
	30MHz ~ 200MHz	2.91 dB
	200MHz ~ 1000MHz	2.93 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	1.76 dB
	18GHz ~ 40GHz	1.77 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Ethernet Device
Brand	Advantech
Test Model	EKI-6333AC-2GD
Series Model	EKI-6333AC-2GDXXXXXX, EKI6333AC2GDXXXXXX (where "X" maybe any alphanumeric character, blank or "-")
Sample Status	Engineering sample
Power Supply rating	24Vdc (Adapter)
Modulation Type	BPSK, QPSK, 16QAM, 64QAM, 256QAM
Modulation Technology	OFDM
Transfer Rate	802.11a: 54/48/36/24/18/12/9/6Mbps 802.11n: up to 300Mbps 802.11ac: up to 867Mbps
Operating Frequency	5180 ~ 5240MHz, 5260 ~ 5320MHz, 5500 ~ 5700MHz, 5745 ~ 5825MHz
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): 11 802.11n (HT40), 802.11ac (VHT40): 5 802.11ac (VHT80): 2 5745 ~ 5825MHz: 802.11a, 802.11n (HT20), 802.11ac (VHT20): 5 802.11n (HT40), 802.11ac (VHT40): 2 802.11ac (VHT80): 1
Output Power	5180 ~ 5240MHz: 38.657mW 5260 ~ 5320MHz: 229.921mW 5500 ~ 5700MHz: 248.864mW 5745 ~ 5825MHz: 361.663mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Cable Supplied	NA

Note:

1. This report is prepared for FCC class II permissive change. The differences compared with the original report (BV CPS report no.: RF200205C12-1) are as below:
 1. Model name was changed to EKI-6333AC-2GD
 2. The housing changed from plastic housing to metal housing
 3. Antenna was reduced to 2 pcs per device
 4. Antenna and Antenna position was changed
 5. Add one more DC power board on EKI-6333AC-2GD
 6. Add 5.26GHz to 5.32GHz and 5.50GHz to 5.70GHz by software.
 7. Change the EUT Category from "Outdoor Access Point" to "Mobile and Portable client device" by software. The Transmit Power and Peak Power Spectral Density of the original report 5180 ~ 5240MHz are in compliance with the Client device Limit. Please refer to the original report for test result.

Therefore, 5180 ~ 5240MHz, 5745 ~ 5825MHz: only Radiated Emissions were verified and recorded in this report. 5260 ~ 5320MHz and 5500 ~ 5700MHz: full test were verified and recorded in this report.

2. All models are listed as below. Model: EKI-6333AC-2GD is chosen for the final tests.

Brand	Model	Description	Difference
Advantech	EKI-6333AC-2GD	Main test	Marketing purpose
	EKI-6333AC-2GDXXXXXX	where "X" maybe any alphanumeric	
	EKI6333AC2GDXXXXXX	character, blank or "-"	

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

Modulation Mode	TX Function
802.11a	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX
802.11ac (VHT20)	2TX
802.11ac (VHT40)	2TX
802.11ac (VHT80)	2TX

* 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)

4. The following support unit for the EUT.

Adapter (support unit)	
Brand	DVE
Model	DSA-42PFC-24 2 240100
Input Power	100-240Vac~, 50/60Hz, 1.2A
Output Power	24Vdc, 1A
DC Power Cable	1.45m non-shielded power cable

5. The antenna information is listed as below.

Antenna Type				Dipole											
Connector				SMA Male Reverse											
Gain(dBi)															
2400MHz		2420MHz		2440MHz		2450MHz		2470MHz		2490MHz		2500MHz			
5.03		4.66		4.32		4.53		4.24		4.13		3.90			
5150 MHz	5200 MHz	5250 MHz	5300 MHz	5350 MHz	5400 MHz	5450 MHz	5500 MHz	5550 MHz	5600 MHz	5650 MHz	5700 MHz	5750 MHz	5800 MHz	5850 MHz	
3.07	3.25	3.30	3.10	3.19	3.49	3.80	3.81	4.27	4.22	4.35	4.52	5.01	4.44	3.74	

*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.

3.2 Description of Test Modes

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	5210 MHz

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

5500~5700MHz:

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

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 (HT40), 802.11ac (VHT40):

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

2 channels are provided for 802.11ac (VHT80):

Channel	Frequency	Channel	Frequency
106	5530 MHz	122	5610 MHz

5745 ~ 5825MHz:

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

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

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

Channel	Frequency	Channel	Frequency
151	5755 MHz	159	5795 MHz

1 channel is provided for 802.11ac (VHT80):

Channel	Frequency
155	5775 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 (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	7.2
-	802.11n (HT40)		54 to 62	54, 62	OFDM	15.0
-	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	7.2
-	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	15.0
-	802.11ac (VHT80)		106, 122	106, 122	OFDM	29.3
-	802.11a	5745-5825	149 to 165	149, 157, 165	OFDM	6.0
-	802.11n (HT20)		149 to 165	149, 157, 165	OFDM	6.5
-	802.11n (HT40)		151 to 159	151, 159	OFDM	13.5
-	802.11ac (VHT80)		155	155	OFDM	29.3

Radiated Emission Test (Below 1GHz):

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

EUT Configure Mode	Mode	Frequency Band (MHz)	Available Channel	Tested Channel	Modulation Technology	Data Rate (Mbps)
-	802.11n (HT20)	5745-5825	149 to 165	165	OFDM	6.5

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)
-	802.11n (HT20)	5745-5825	149 to 165	165	OFDM	6.5

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	5260-5320	52 to 64	52, 60, 64	OFDM	6.0
-	802.11n (HT20)		52 to 64	52, 60, 64	OFDM	7.2
-	802.11n (HT40)		54 to 62	54, 62	OFDM	15.0
-	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	7.2
-	802.11n (HT40)		102 to 134	102, 110, 134	OFDM	15.0
-	802.11ac (VHT80)		106, 122	106, 122	OFDM	29.3

Test Condition:

Applicable to	Environmental Conditions	Input Power	Tested by
RE $\geq$ 1G	23 deg. C, 60% RH 23 deg. C, 65% RH	120Vac, 60Hz	Hans Wu Greg Lin
RE<1G	23 deg. C, 65% RH	120Vac, 60Hz	Raymond Lee
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Greg Lin
APCM	25 deg. C, 60% RH	120Vac, 60Hz	Ivan Tseng

*After pre-test 120Vac and 240Vac, the voltage 120Vac was the worst for the final tests.

3.3 Duty Cycle of Test Signal

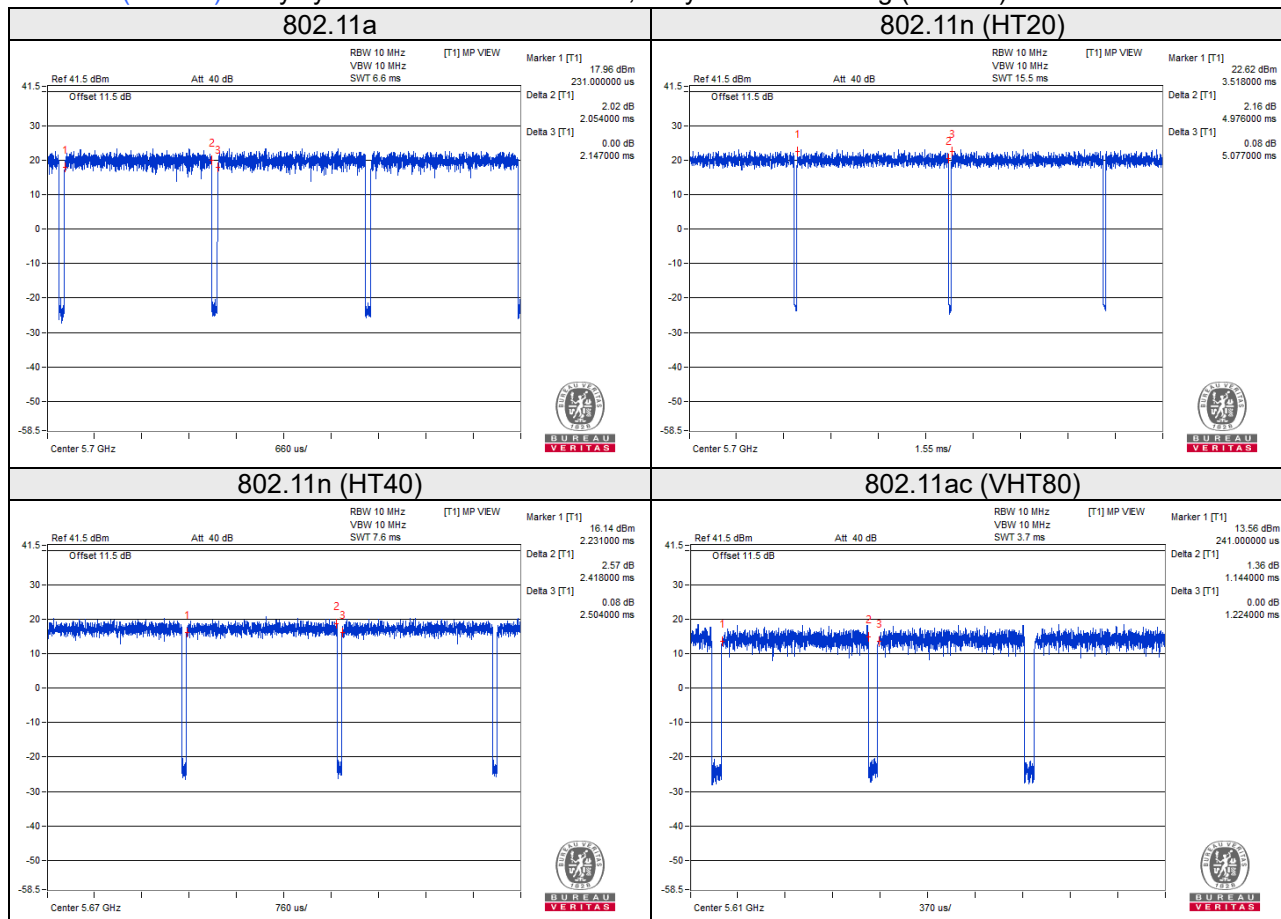
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11a: Duty cycle = $2.054/2.147 = 0.957$, Duty factor = $10 * \log(1/0.957) = 0.19$

802.11n (HT20): Duty cycle = $4.976/5.077 = 0.98$

802.11n (HT40): Duty cycle = $2.418/2.504 = 0.966$, Duty factor = $10 * \log(1/0.966) = 0.15$

802.11ac (VHT80): Duty cycle = $1.144/1.224 = 0.935$, Duty factor = $10 * \log(1/0.935) = 0.29$



3.4 Description of Support Units

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

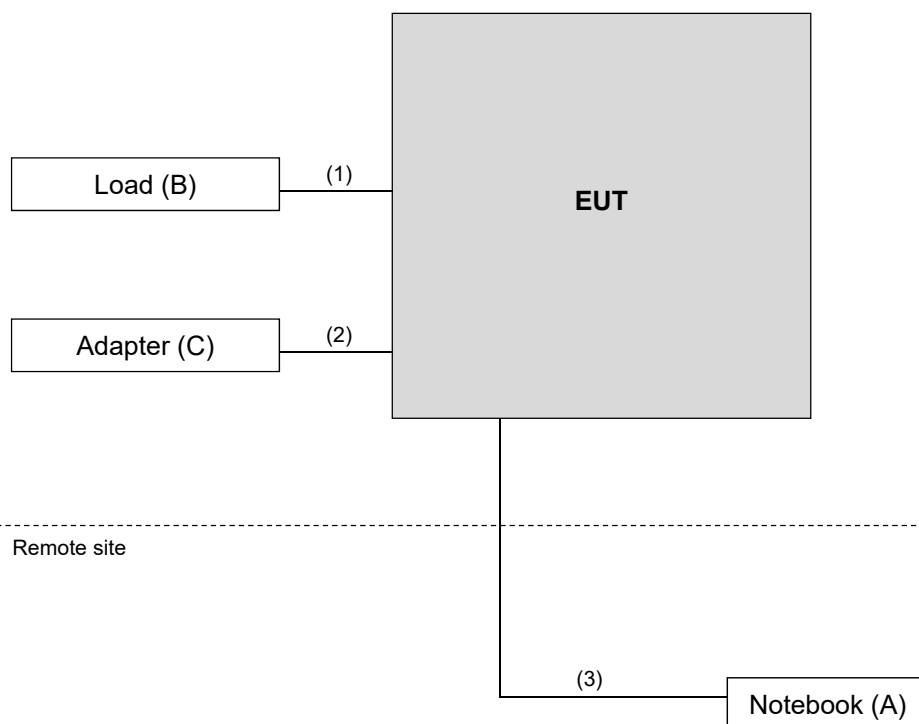
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	Lenovo	T480	PF1EZSA2	FCC DoC Approved	-
B.	Load	NA	NA	NA	NA	-
C.	Adapter	Sunny	SYS1561-1212	NA	NA	Provided by client

Note:

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

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	LAN cable	1	1.5	N	0	RJ45, Cat5e
2.	Power cable	1	1.47	N	0	Attached on adapter
3.	LAN cable	1	10	N	0	RJ45, Cat5e

3.4.1 Configuration of System under Test



3.5 General Description of Applied Standards and References

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

Test standard:

FCC Part 15, Subpart E (15.407)

ANSI C63.10:2013

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

KDB References Test Guidance:

KDB 789033 D02 General UNII Test Procedure New Rules v02r01

KDB 662911 D01 Multiple Transmitter Output v02r01

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

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

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

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

Note:

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

Limits of unwanted emission out of the restricted bands

Applicable To			Limit	
789033 D02 General UNII Test Procedure New Rules v02r01			Field Strength at 3m	
			PK: 74 (dBµV/m)	AV: 54 (dBµV/m)
Frequency Band	Applicable To		EIRP Limit	Equivalent Field Strength at 3m
5150~5250 MHz	15.407(b)(1)		PK: -27 (dBm/MHz)	PK: 68.2(dBµV/m)
5250~5350 MHz	15.407(b)(2)			
5470~5725 MHz	15.407(b)(3)			
5725~5850 MHz	☒	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:

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

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver Rohde & Schwarz	ESR3	102783	Dec. 21, 2020	Dec. 20, 2021
			Dec. 20, 2021	Dec. 19, 2022
Spectrum Analyzer KEYSIGHT	N9020B	MY60110440	Dec. 18, 2020	Dec. 17, 2021
			Dec. 09, 2021	Dec. 08, 2022
BILOG Antenna SCHWARZBECK	VULB9168	9168-1214	Oct. 27, 2021	Oct. 26, 2022
HORN Antenna SCHWARZBECK	BBHA 9120 D	9120D-1170	Nov. 14, 2021	Nov. 13, 2022
HORN Antenna SCHWARZBECK	BBHA 9170	9170-995	Nov. 14, 2021	Nov. 13, 2022
Loop Antenna EMCI	EM-6879	269	Sep. 16, 2021	Sep. 15, 2022
Preamplifier EMCI	EMC330N	980798	Jan. 12, 2021	Jan. 11, 2022
			Jan. 17, 2022	Jan. 16, 2023
Preamplifier EMCI	EMC118A45SE	980809	Jan. 12, 2021	Jan. 11, 2022
			Dec. 30, 2021	Dec. 29, 2022
Preamplifier EMCI	EMC184045SE	980786	Jan. 12, 2021	Jan. 11, 2022
			Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC104-SM-SM- (9000+2000+1000)	201244+ 201232+ 210103	Jan. 12, 2021	Jan. 11, 2022
			Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMCCFD400-NM- NM-(9000+300+500)	201251+ 201249+ 201248	Jan. 12, 2021	Jan. 11, 2022
			Jan. 17, 2022	Jan. 16, 2023
RF signal cable EMCI	EMC101G-KM-KM- (5000+3000+2000)	201261+201258+20 1249	Jan. 12, 2021	Jan. 11, 2022
			Jan. 17, 2022	Jan. 16, 2023
Software BV ADT	ADT_Radiated_V7.6 .15.9.5	NA	NA	NA
Antenna Tower Max-Full	MFA-515BSN	NA	NA	NA
Turn Table Max-Full	MFT-201SS	NA	NA	NA
Turn Table Controller Max-Full	MF-7802BS	MF780208676	NA	NA
USB Wideband Power Sensor KEYSIGHT	U2021XA	MY55050005/MY5519 0004/MY55190007/M Y55210005	Jul. 12, 2021	Jul. 11, 2022

- 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 WM Chamber 9.
3. Test Date: Dec. 10 ~ Dec. 13, 2021 & Mar. 11 ~ Mar. 15, 2022

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:

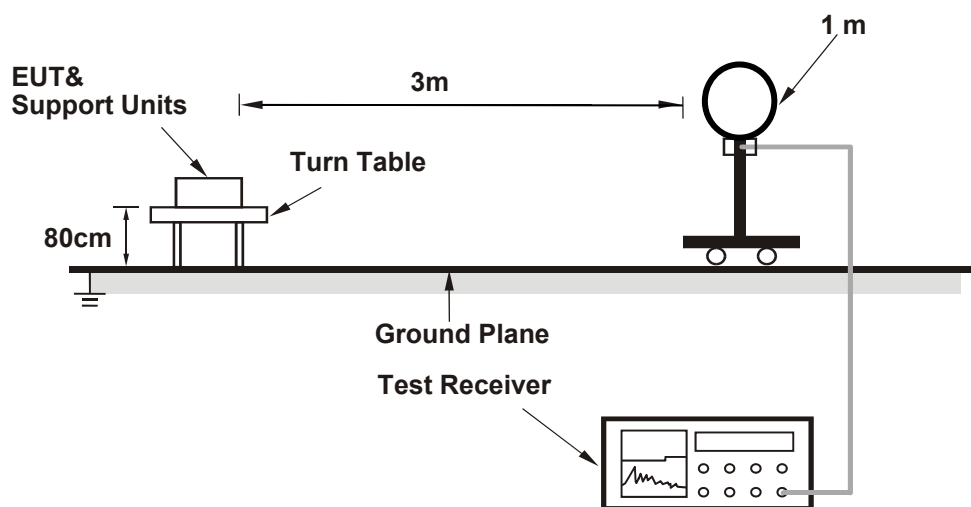
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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. (802.11a: RBW = 1MHz, VBW = 1kHz; 802.11n (HT20): RBW = 1MHz, VBW = 10Hz; 802.11n (HT40): RBW = 1MHz, VBW = 1kHz; 802.11ac (VHT80): RBW = 1MHz, VBW = 1kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

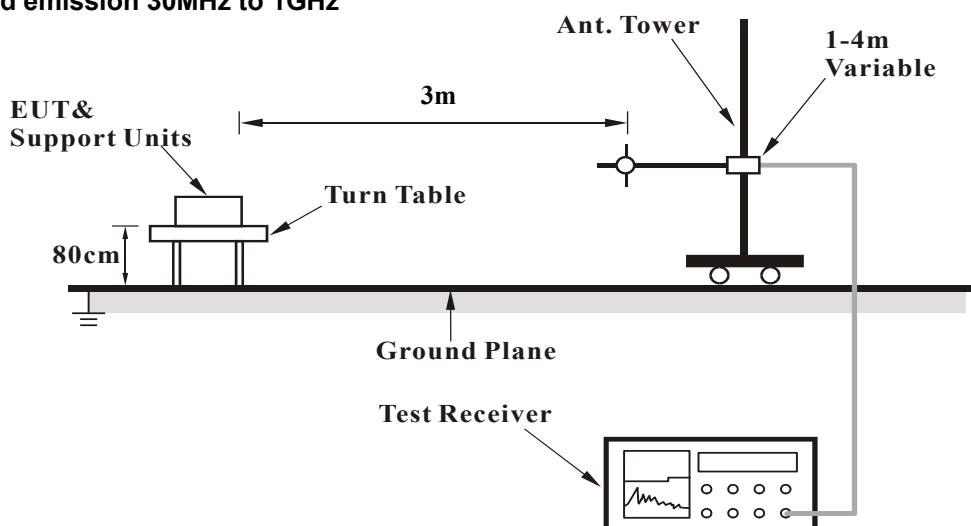
No deviation.

4.1.5 Test Setup

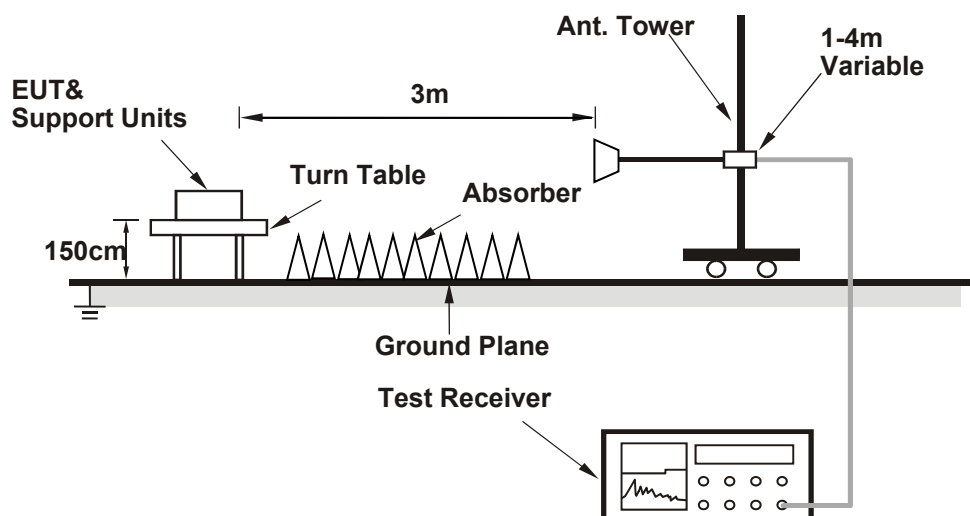
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz data:

802.11a

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	5150.00	57.17 PK	74.00	-16.83	1.61 H	68	54.31	2.86
2	5150.00	44.93 AV	54.00	-9.07	1.61 H	68	42.07	2.86
3	*5180.00	102.20 PK			1.61 H	68	61.86	40.34
4	*5180.00	92.92 AV			1.61 H	68	52.58	40.34
5	#10360.00	53.68 PK	68.20	-14.52	1.11 H	105	45.74	7.94
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	57.93 PK	74.00	-16.07	1.84 V	176	55.07	2.86
2	5150.00	45.97 AV	54.00	-8.03	1.84 V	176	43.11	2.86
3	*5180.00	112.58 PK			1.84 V	176	72.24	40.34
4	*5180.00	102.58 AV			1.84 V	176	62.24	40.34
5	#10360.00	55.77 PK	68.20	-12.43	2.25 V	286	47.83	7.94

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	101.27 PK			1.62 H	70	60.95	40.32
2	*5200.00	91.96 AV			1.62 H	70	51.64	40.32
3	#10420.00	54.09 PK	68.20	-14.11	1.19 H	128	46.20	7.89
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	111.59 PK			1.70 V	169	71.27	40.32
2	*5200.00	101.80 AV			1.70 V	169	61.48	40.32
3	#10400.00	55.47 PK	68.20	-12.73	2.30 V	297	47.54	7.93

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	101.40 PK			1.61 H	67	61.26	40.14
2	*5240.00	92.40 AV			1.61 H	67	52.26	40.14
3	5350.00	55.72 PK	74.00	-18.28	1.61 H	67	53.39	2.33
4	5350.00	44.89 AV	54.00	-9.11	1.61 H	67	42.56	2.33
5	#10480.00	53.62 PK	68.20	-14.58	1.14 H	110	45.83	7.79

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	111.36 PK			1.77 V	168	71.22	40.14
2	*5240.00	101.54 AV			1.77 V	168	61.40	40.14
3	5350.00	56.40 PK	74.00	-17.60	1.77 V	168	54.07	2.33
4	5350.00	45.73 AV	54.00	-8.27	1.77 V	168	43.40	2.33
5	#10480.00	55.15 PK	68.20	-13.05	2.16 V	274	47.36	7.79

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)
FREQUENCY RANGE	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	57.07 PK	74.00	-16.93	1.69 H	74	54.56	2.51
2	5150.00	45.38 AV	54.00	-8.62	1.69 H	74	42.87	2.51
3	*5260.00	109.42 PK			1.69 H	74	69.73	39.69
4	*5260.00	100.31 AV			1.69 H	74	60.62	39.69
5	#10520.00	54.79 PK	68.20	-13.41	2.34 H	115	47.36	7.43
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	57.95 PK	74.00	-16.05	2.43 V	121	55.44	2.51
2	5150.00	45.74 AV	54.00	-8.26	2.43 V	121	43.23	2.51
3	*5260.00	120.33 PK			2.43 V	121	80.64	39.69
4	*5260.00	111.28 AV			2.43 V	121	71.59	39.69
5	#10520.00	54.96 PK	68.20	-13.24	1.79 V	306	47.53	7.43

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 60	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	109.53 PK			1.64 H	69	69.93	39.60
2	*5300.00	100.43 AV			1.64 H	69	60.83	39.60
3	10600.00	54.81 PK	74.00	-19.19	2.29 H	114	47.16	7.65
4	10600.00	43.28 AV	54.00	-10.72	2.29 H	114	35.63	7.65
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	120.38 PK			2.12 V	77	80.78	39.60
2	*5300.00	111.34 AV			2.12 V	77	71.74	39.60
3	10600.00	55.10 PK	74.00	-18.90	1.73 V	308	47.45	7.65
4	10600.00	43.55 AV	54.00	-10.45	1.73 V	308	35.90	7.65

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 64	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	107.30 PK			1.60 H	75	67.64	39.66
2	*5320.00	98.39 AV			1.60 H	75	58.73	39.66
3	5350.00	58.09 PK	74.00	-15.91	1.60 H	75	56.25	1.84
4	5350.00	46.43 AV	54.00	-7.57	1.60 H	75	44.59	1.84
5	10640.00	54.69 PK	74.00	-19.31	2.38 H	104	46.94	7.75
6	10640.00	42.96 AV	54.00	-11.04	2.38 H	104	35.21	7.75
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	118.34 PK			2.47 V	122	78.68	39.66
2	*5320.00	109.13 AV			2.47 V	122	69.47	39.66
3	5350.00	65.16 PK	74.00	-8.84	2.47 V	122	63.32	1.84
4	5350.00	53.02 AV	54.00	-0.98	2.47 V	122	51.18	1.84
5	10640.00	55.11 PK	74.00	-18.89	1.82 V	317	47.36	7.75
6	10640.00	43.39 AV	54.00	-10.61	1.82 V	317	35.64	7.75

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	56.26 PK	74.00	-17.74	1.80 H	67	54.48	1.78
2	5460.00	44.53 AV	54.00	-9.47	1.80 H	67	42.75	1.78
3	#5470.00	57.08 PK	68.20	-11.12	1.80 H	67	55.29	1.79
4	*5500.00	106.76 PK			1.80 H	67	66.76	40.00
5	*5500.00	96.86 AV			1.80 H	67	56.86	40.00
6	11000.00	54.55 PK	74.00	-19.45	2.43 H	120	47.45	7.10
7	11000.00	42.89 AV	54.00	-11.11	2.43 H	120	35.79	7.10
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	60.48 PK	74.00	-13.52	2.37 V	100	58.70	1.78
2	5460.00	48.54 AV	54.00	-5.46	2.37 V	100	46.76	1.78
3	#5470.00	67.77 PK	68.20	-0.43	2.37 V	100	65.98	1.79
4	*5500.00	119.42 PK			2.37 V	100	79.42	40.00
5	*5500.00	109.85 AV			2.37 V	100	69.85	40.00
6	11000.00	54.44 PK	74.00	-19.56	1.78 V	312	47.34	7.10
7	11000.00	42.80 AV	54.00	-11.20	1.78 V	312	35.70	7.10

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 116	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	108.70 PK			1.95 H	68	68.23	40.47
2	*5580.00	98.58 AV			1.95 H	68	58.11	40.47
3	11160.00	55.51 PK	74.00	-18.49	2.31 H	121	47.15	8.36
4	11160.00	43.98 AV	54.00	-10.02	2.31 H	121	35.62	8.36
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	122.03 PK			2.05 V	36	81.56	40.47
2	*5580.00	111.82 AV			2.05 V	36	71.35	40.47
3	11160.00	55.40 PK	74.00	-18.60	1.84 V	308	47.04	8.36
4	11160.00	43.95 AV	54.00	-10.05	1.84 V	308	35.59	8.36

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	106.28 PK			1.84 H	118	65.31	40.97
2	*5700.00	96.14 AV			1.84 H	118	55.17	40.97
3	#5725.00	59.58 PK	68.20	-8.62	1.84 H	118	56.41	3.17
4	11400.00	55.64 PK	74.00	-18.36	2.30 H	117	47.56	8.08
5	11400.00	43.81 AV	54.00	-10.19	2.30 H	117	35.73	8.08
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	117.71 PK			2.08 V	44	76.74	40.97
2	*5700.00	107.86 AV			2.08 V	44	66.89	40.97
3	#5725.00	67.08 PK	68.20	-1.12	2.08 V	44	63.91	3.17
4	11400.00	55.26 PK	74.00	-18.74	1.87 V	301	47.18	8.08
5	11400.00	43.76 AV	54.00	-10.24	1.87 V	301	35.68	8.08

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5636.80	58.76 PK	68.20	-9.44	1.11 H	47	55.31	3.45
2	*5745.00	116.45 PK			1.11 H	47	74.91	41.54
3	*5745.00	106.98 AV			1.11 H	47	65.44	41.54
4	#5953.20	60.04 PK	68.20	-8.16	1.11 H	47	56.00	4.04
5	11490.00	58.45 PK	74.00	-15.55	1.23 H	224	49.36	9.09
6	11490.00	48.00 AV	54.00	-6.00	1.23 H	224	38.91	9.09
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	#5633.20	60.01 PK	68.20	-8.19	1.58 V	178	56.59	3.42
2	*5745.00	121.65 PK			1.58 V	178	80.11	41.54
3	*5745.00	113.81 AV			1.58 V	178	72.27	41.54
4	#5944.00	59.64 PK	68.20	-8.56	1.58 V	178	55.66	3.98
5	11490.00	59.32 PK	74.00	-14.68	1.34 V	241	50.23	9.09
6	11490.00	48.26 AV	54.00	-5.74	1.34 V	241	39.17	9.09

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5624.00	59.18 PK	68.20	-9.02	1.16 H	319	55.85	3.33
2	*5785.00	113.02 PK			1.16 H	319	71.46	41.56
3	*5785.00	104.57 AV			1.16 H	319	63.01	41.56
4	#5960.80	60.32 PK	68.20	-7.88	1.16 H	319	56.21	4.11
5	11570.00	58.17 PK	74.00	-15.83	1.10 H	25	49.03	9.14
6	11570.00	47.68 AV	54.00	-6.32	1.10 H	25	38.54	9.14
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5641.20	59.88 PK	68.20	-8.32	1.47 V	178	56.40	3.48
2	*5785.00	122.59 PK			1.47 V	178	81.03	41.56
3	*5785.00	113.64 AV			1.47 V	178	72.08	41.56
4	#5952.40	59.34 PK	68.20	-8.86	1.47 V	178	55.30	4.04
5	11570.00	59.01 PK	74.00	-14.99	1.02 V	307	49.87	9.14
6	11570.00	48.18 AV	54.00	-5.82	1.02 V	307	39.04	9.14

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5614.80	58.89 PK	68.20	-9.31	1.19 H	311	55.64	3.25
2	*5825.00	112.69 PK			1.19 H	311	71.12	41.57
3	*5825.00	104.89 AV			1.19 H	311	63.32	41.57
4	#5950.40	58.85 PK	68.20	-9.35	1.19 H	311	54.83	4.02
5	11650.00	58.15 PK	74.00	-15.85	1.21 H	331	49.15	9.00
6	11650.00	47.65 AV	54.00	-6.35	1.21 H	331	38.65	9.00
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	#5644.00	58.60 PK	68.20	-9.60	1.70 V	352	55.09	3.51
2	*5825.00	123.02 PK			1.70 V	352	81.45	41.57
3	*5825.00	114.69 AV			1.70 V	352	73.12	41.57
4	#5934.00	59.23 PK	68.20	-8.97	1.70 V	352	55.30	3.93
5	11650.00	59.01 PK	74.00	-14.99	1.10 V	298	50.01	9.00
6	11650.00	48.21 AV	54.00	-5.79	1.10 V	298	39.21	9.00

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	56.85 PK	74.00	-17.15	1.72 H	69	53.99	2.86
2	5150.00	44.81 AV	54.00	-9.19	1.72 H	69	41.95	2.86
3	*5180.00	103.61 PK			1.72 H	69	63.27	40.34
4	*5180.00	92.54 AV			1.72 H	69	52.20	40.34
5	#10360.00	54.39 PK	68.20	-13.81	1.28 H	124	46.45	7.94
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	57.66 PK	74.00	-16.34	1.86 V	81	54.80	2.86
2	5150.00	46.36 AV	54.00	-7.64	1.86 V	81	43.50	2.86
3	*5180.00	112.95 PK			1.86 V	81	72.61	40.34
4	*5180.00	102.80 AV			1.86 V	81	62.46	40.34
5	#10360.00	55.86 PK	68.20	-12.34	2.84 V	143	47.92	7.94

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	104.08 PK			1.73 H	67	63.76	40.32
2	*5200.00	93.86 AV			1.73 H	67	53.54	40.32
3	#10400.00	54.39 PK	68.20	-13.81	1.37 H	122	46.46	7.93
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	112.85 PK			1.96 V	78	72.53	40.32
2	*5200.00	103.40 AV			1.96 V	78	63.08	40.32
3	#10400.00	56.30 PK	68.20	-11.90	2.90 V	155	48.37	7.93

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	103.31 PK			1.55 H	67	63.17	40.14
2	*5240.00	92.41 AV			1.55 H	67	52.27	40.14
3	5350.00	56.72 PK	74.00	-17.28	1.55 H	67	54.39	2.33
4	5350.00	44.51 AV	54.00	-9.49	1.55 H	67	42.18	2.33
5	#10480.00	54.49 PK	68.20	-13.71	1.34 H	119	46.70	7.79
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	112.75 PK			1.79 V	78	72.61	40.14
2	*5240.00	102.98 AV			1.79 V	78	62.84	40.14
3	5350.00	57.72 PK	74.00	-16.28	1.79 V	78	55.39	2.33
4	5350.00	45.74 AV	54.00	-8.26	1.79 V	78	43.41	2.33
5	#10480.00	55.94 PK	68.20	-12.26	2.86 V	138	48.15	7.79

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)
FREQUENCY RANGE	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	57.23 PK	74.00	-16.77	1.64 H	73	54.72	2.51
2	5150.00	45.47 AV	54.00	-8.53	1.64 H	73	42.96	2.51
3	*5260.00	111.43 PK			1.64 H	73	71.74	39.69
4	*5260.00	101.32 AV			1.64 H	73	61.63	39.69
5	#10520.00	54.75 PK	68.20	-13.45	2.42 H	103	47.32	7.43
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	57.74 PK	74.00	-16.26	2.46 V	125	55.23	2.51
2	5150.00	46.03 AV	54.00	-7.97	2.46 V	125	43.52	2.51
3	*5260.00	122.67 PK			2.46 V	125	82.98	39.69
4	*5260.00	112.37 AV			2.46 V	125	72.68	39.69
5	#10520.00	55.16 PK	68.20	-13.04	1.86 V	312	47.73	7.43

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 60	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	111.34 PK			1.63 H	85	71.74	39.60
2	*5300.00	101.32 AV			1.63 H	85	61.72	39.60
3	10600.00	55.18 PK	74.00	-18.82	2.36 H	105	47.53	7.65
4	10600.00	43.63 AV	54.00	-10.37	2.36 H	105	35.98	7.65
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	122.53 PK			2.45 V	124	82.93	39.60
2	*5300.00	112.44 AV			2.45 V	124	72.84	39.60
3	10600.00	55.91 PK	74.00	-18.09	1.87 V	326	48.26	7.65
4	10600.00	44.02 AV	54.00	-9.98	1.87 V	326	36.37	7.65

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 64	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	108.92 PK			1.68 H	74	69.26	39.66
2	*5320.00	98.69 AV			1.68 H	74	59.03	39.66
3	5350.00	56.71 PK	74.00	-17.29	1.68 H	74	54.87	1.84
4	5350.00	45.39 AV	54.00	-8.61	1.68 H	74	43.55	1.84
5	10640.00	54.48 PK	74.00	-19.52	2.27 H	121	46.73	7.75
6	10640.00	42.89 AV	54.00	-11.11	2.27 H	121	35.14	7.75
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	119.89 PK			2.44 V	122	80.23	39.66
2	*5320.00	109.83 AV			2.44 V	122	70.17	39.66
3	5350.00	64.41 PK	74.00	-9.59	2.44 V	122	62.57	1.84
4	5350.00	53.18 AV	54.00	-0.82	2.44 V	122	51.34	1.84
5	10640.00	54.88 PK	74.00	-19.12	1.85 V	312	47.13	7.75
6	10640.00	43.17 AV	54.00	-10.83	1.85 V	312	35.42	7.75

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 100	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	56.77 PK	74.00	-17.23	1.85 H	66	54.99	1.78
2	5460.00	45.07 AV	54.00	-8.93	1.85 H	66	43.29	1.78
3	#5470.00	59.86 PK	68.20	-8.34	1.85 H	66	58.07	1.79
4	*5500.00	107.60 PK			1.85 H	66	67.60	40.00
5	*5500.00	97.94 AV			1.85 H	66	57.94	40.00
6	11000.00	54.75 PK	74.00	-19.25	2.46 H	111	47.65	7.10
7	11000.00	42.88 AV	54.00	-11.12	2.46 H	111	35.78	7.10
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	61.93 PK	74.00	-12.07	2.07 V	89	60.15	1.78
2	5460.00	50.43 AV	54.00	-3.57	2.07 V	89	48.65	1.78
3	#5470.00	66.88 PK	68.20	-1.32	2.07 V	89	65.09	1.79
4	*5500.00	118.61 PK			2.07 V	89	78.61	40.00
5	*5500.00	108.82 AV			2.07 V	89	68.82	40.00
6	11000.00	54.30 PK	74.00	-19.70	1.77 V	315	47.20	7.10
7	11000.00	42.92 AV	54.00	-11.08	1.77 V	315	35.82	7.10

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 116	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	109.21 PK			2.01 H	69	68.74	40.47
2	*5580.00	99.62 AV			2.01 H	69	59.15	40.47
3	11160.00	55.94 PK	74.00	-18.06	2.28 H	122	47.58	8.36
4	11160.00	44.16 AV	54.00	-9.84	2.28 H	122	35.80	8.36
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	122.14 PK			2.33 V	37	81.67	40.47
2	*5580.00	112.19 AV			2.33 V	37	71.72	40.47
3	11160.00	56.00 PK	74.00	-18.00	1.75 V	311	47.64	8.36
4	11160.00	44.20 AV	54.00	-9.80	1.75 V	311	35.84	8.36

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 140	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	106.58 PK			1.83 H	118	65.61	40.97
2	*5700.00	96.66 AV			1.83 H	118	55.69	40.97
3	#5725.00	60.17 PK	68.20	-8.03	1.83 H	118	57.00	3.17
4	11400.00	55.77 PK	74.00	-18.23	2.38 H	127	47.69	8.08
5	11400.00	43.93 AV	54.00	-10.07	2.38 H	127	35.85	8.08
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	117.72 PK			2.37 V	122	76.75	40.97
2	*5700.00	107.87 AV			2.37 V	122	66.90	40.97
3	#5725.00	67.08 PK	68.20	-1.12	2.37 V	122	63.91	3.17
4	11400.00	55.74 PK	74.00	-18.26	1.81 V	308	47.66	8.08
5	11400.00	43.99 AV	54.00	-10.01	1.81 V	308	35.91	8.08

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5647.60	58.95 PK	68.20	-9.25	1.05 H	46	55.42	3.53
2	*5745.00	113.67 PK			1.05 H	46	72.13	41.54
3	*5745.00	105.28 AV			1.05 H	46	63.74	41.54
4	#5935.20	59.64 PK	68.20	-8.56	1.05 H	46	55.70	3.94
5	11490.00	58.35 PK	74.00	-15.65	1.35 H	260	49.26	9.09
6	11490.00	47.90 AV	54.00	-6.10	1.35 H	260	38.81	9.09
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	#5626.40	59.36 PK	68.20	-8.84	1.47 V	177	56.00	3.36
2	*5745.00	121.59 PK			1.47 V	177	80.05	41.54
3	*5745.00	113.16 AV			1.47 V	177	71.62	41.54
4	#5954.80	59.65 PK	68.20	-8.55	1.47 V	177	55.59	4.06
5	11490.00	59.24 PK	74.00	-14.76	1.55 V	325	50.15	9.09
6	11490.00	48.14 AV	54.00	-5.86	1.55 V	325	39.05	9.09

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5629.20	58.84 PK	68.20	-9.36	1.07 H	50	55.46	3.38
2	*5785.00	113.26 PK			1.07 H	50	71.70	41.56
3	*5785.00	104.32 AV			1.07 H	50	62.76	41.56
4	#5926.40	59.15 PK	68.20	-9.05	1.07 H	50	55.25	3.90
5	11570.00	58.39 PK	74.00	-15.61	1.12 H	225	49.25	9.14
6	11570.00	47.93 AV	54.00	-6.07	1.12 H	225	38.79	9.14
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	#5603.20	59.11 PK	68.20	-9.09	1.47 V	194	55.96	3.15
2	*5785.00	121.17 PK			1.47 V	194	79.61	41.56
3	*5785.00	112.57 AV			1.47 V	194	71.01	41.56
4	#5929.60	60.29 PK	68.20	-7.91	1.47 V	194	56.37	3.92
5	11570.00	58.71 PK	74.00	-15.29	1.10 V	330	49.57	9.14
6	11570.00	47.98 AV	54.00	-6.02	1.10 V	330	38.84	9.14

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5618.00	58.00 PK	68.20	-10.20	1.21 H	360	54.72	3.28
2	*5825.00	113.54 PK			1.21 H	360	71.97	41.57
3	*5825.00	104.62 AV			1.21 H	360	63.05	41.57
4	#5930.00	59.91 PK	68.20	-8.29	1.21 H	360	55.99	3.92
5	11650.00	58.26 PK	74.00	-15.74	1.12 H	299	49.26	9.00
6	11650.00	47.85 AV	54.00	-6.15	1.12 H	299	38.85	9.00
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	#5628.00	59.79 PK	68.20	-8.41	1.84 V	352	56.42	3.37
2	*5825.00	124.11 PK			1.84 V	352	82.54	41.57
3	*5825.00	115.12 AV			1.84 V	352	73.55	41.57
4	#5947.20	60.02 PK	68.20	-8.18	1.84 V	352	56.02	4.00
5	11650.00	59.12 PK	74.00	-14.88	1.59 V	258	50.12	9.00
6	11650.00	48.32 AV	54.00	-5.68	1.59 V	258	39.32	9.00

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	56.62 PK	74.00	-17.38	1.48 H	71	53.76	2.86
2	5150.00	44.69 AV	54.00	-9.31	1.48 H	71	41.83	2.86
3	*5190.00	98.79 PK			1.48 H	71	58.46	40.33
4	*5190.00	89.34 AV			1.48 H	71	49.01	40.33
5	#10380.00	53.47 PK	68.20	-14.73	1.12 H	100	45.53	7.94
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	58.46 PK	74.00	-15.54	1.79 V	169	55.60	2.86
2	5150.00	47.41 AV	54.00	-6.59	1.79 V	169	44.55	2.86
3	*5190.00	108.86 PK			1.79 V	169	68.53	40.33
4	*5190.00	99.24 AV			1.79 V	169	58.91	40.33
5	#10380.00	55.14 PK	68.20	-13.06	2.24 V	283	47.20	7.94

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	99.03 PK			1.62 H	69	58.85	40.18
2	*5230.00	89.46 AV			1.62 H	69	49.28	40.18
3	5350.00	57.40 PK	74.00	-16.60	1.62 H	69	55.07	2.33
4	5350.00	45.87 AV	54.00	-8.13	1.62 H	69	43.54	2.33
5	#10460.00	53.55 PK	68.20	-14.65	1.15 H	121	45.73	7.82

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	108.55 PK			1.78 V	194	68.37	40.18
2	*5230.00	98.95 AV			1.78 V	194	58.77	40.18
3	5350.00	57.76 PK	74.00	-16.24	1.78 V	194	55.43	2.33
4	5350.00	46.26 AV	54.00	-7.74	1.78 V	194	43.93	2.33
5	#10460.00	55.37 PK	68.20	-12.83	2.28 V	266	47.55	7.82

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)
FREQUENCY RANGE	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	56.44 PK	74.00	-17.56	1.70 H	78	53.93	2.51
2	5150.00	46.03 AV	54.00	-7.97	1.70 H	78	43.52	2.51
3	*5270.00	108.41 PK			1.70 H	78	68.74	39.67
4	*5270.00	98.16 AV			1.70 H	78	58.49	39.67
5	#10540.00	53.85 PK	68.20	-14.35	2.27 H	104	46.37	7.48
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	5150.00	57.78 PK	74.00	-16.22	2.47 V	122	55.27	2.51
2	5150.00	46.70 AV	54.00	-7.30	2.47 V	122	44.19	2.51
3	*5270.00	119.50 PK			2.47 V	122	79.83	39.67
4	*5270.00	109.20 AV			2.47 V	122	69.53	39.67
5	#10540.00	54.35 PK	68.20	-13.85	1.63 V	307	46.87	7.48

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 62	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	103.80 PK			1.71 H	72	64.17	39.63
2	*5310.00	93.56 AV			1.71 H	72	53.93	39.63
3	5350.00	58.48 PK	74.00	-15.52	1.71 H	72	56.64	1.84
4	5350.00	45.96 AV	54.00	-8.04	1.71 H	72	44.12	1.84
5	10620.00	54.46 PK	74.00	-19.54	2.35 H	112	46.76	7.70
6	10620.00	42.82 AV	54.00	-11.18	2.35 H	112	35.12	7.70
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	114.56 PK			2.46 V	114	74.93	39.63
2	*5310.00	104.51 AV			2.46 V	114	64.88	39.63
3	5350.00	65.23 PK	74.00	-8.77	2.46 V	114	63.39	1.84
4	5350.00	53.12 AV	54.00	-0.88	2.46 V	114	51.28	1.84
5	10620.00	55.02 PK	74.00	-18.98	1.82 V	319	47.32	7.70
6	10620.00	43.16 AV	54.00	-10.84	1.82 V	319	35.46	7.70

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 102	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	56.31 PK	74.00	-17.69	1.82 H	68	54.53	1.78
2	5460.00	44.48 AV	54.00	-9.52	1.82 H	68	42.70	1.78
3	#5470.00	57.69 PK	68.20	-10.51	1.82 H	68	55.90	1.79
4	*5510.00	102.09 PK			1.82 H	68	62.03	40.06
5	*5510.00	92.98 AV			1.82 H	68	52.92	40.06
6	11020.00	54.55 PK	74.00	-19.45	2.45 H	116	47.25	7.30
7	11020.00	43.18 AV	54.00	-10.82	2.45 H	116	35.88	7.30
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	5460.00	62.54 PK	74.00	-11.46	2.38 V	101	60.76	1.78
2	5460.00	50.32 AV	54.00	-3.68	2.38 V	101	48.54	1.78
3	#5470.00	67.38 PK	68.20	-0.82	2.38 V	101	65.59	1.79
4	*5510.00	115.00 PK			2.38 V	101	74.94	40.06
5	*5510.00	105.79 AV			2.38 V	101	65.73	40.06
6	11020.00	54.52 PK	74.00	-19.48	1.88 V	313	47.22	7.30
7	11020.00	43.23 AV	54.00	-10.77	1.88 V	313	35.93	7.30

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 110	DETECTOR	Peak (PK)
FREQUENCY RANGE	1GHz ~ 40GHz	FUNCTION	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	106.73 PK			2.04 H	69	66.40	40.33
2	*5550.00	97.57 AV			2.04 H	69	57.24	40.33
3	11100.00	55.85 PK	74.00	-18.15	2.29 H	110	47.76	8.09
4	11100.00	43.81 AV	54.00	-10.19	2.29 H	110	35.72	8.09
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	119.08 PK			2.11 V	37	78.75	40.33
2	*5550.00	109.79 AV			2.11 V	37	69.46	40.33
3	11100.00	55.80 PK	74.00	-18.20	1.92 V	318	47.71	8.09
4	11100.00	43.70 AV	54.00	-10.30	1.92 V	318	35.61	8.09

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 134	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	103.85 PK			1.75 H	124	62.89	40.96
2	*5670.00	94.48 AV			1.75 H	124	53.52	40.96
3	#5725.00	60.94 PK	68.20	-7.26	1.75 H	124	57.77	3.17
4	11340.00	55.73 PK	74.00	-18.27	2.40 H	123	47.31	8.42
5	11340.00	44.28 AV	54.00	-9.72	2.40 H	123	35.86	8.42

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	116.44 PK			2.12 V	138	75.48	40.96
2	*5670.00	107.13 AV			2.12 V	138	66.17	40.96
3	#5725.00	67.50 PK	68.20	-0.70	2.12 V	138	64.33	3.17
4	11340.00	55.67 PK	74.00	-18.33	1.89 V	309	47.25	8.42
5	11340.00	44.20 AV	54.00	-9.80	1.89 V	309	35.78	8.42

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5648.80	60.65 PK	68.20	-7.55	1.02 H	48	57.11	3.54
2	*5755.00	110.97 PK			1.02 H	48	69.41	41.56
3	*5755.00	102.58 AV			1.02 H	48	61.02	41.56
4	#5925.60	60.45 PK	68.20	-7.75	1.02 H	48	56.55	3.90
5	11510.00	58.46 PK	74.00	-15.54	1.19 H	226	49.35	9.11
6	11510.00	48.00 AV	54.00	-6.00	1.19 H	226	38.89	9.11
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	#5644.00	67.84 PK	68.20	-0.36	1.49 V	176	64.33	3.51
2	*5755.00	119.17 PK			1.49 V	176	77.61	41.56
3	*5755.00	110.73 AV			1.49 V	176	69.17	41.56
4	#5964.80	60.53 PK	68.20	-7.67	1.49 V	176	56.38	4.15
5	11510.00	58.28 PK	74.00	-15.72	1.59 V	315	49.17	9.11
6	11510.00	47.73 AV	54.00	-6.27	1.59 V	315	38.62	9.11

Remarks:

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

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5625.60	59.09 PK	68.20	-9.11	1.16 H	313	55.74	3.35
2	*5795.00	110.54 PK			1.16 H	313	68.98	41.56
3	*5795.00	102.36 AV			1.16 H	313	60.80	41.56
4	#5926.40	59.34 PK	68.20	-8.86	1.16 H	313	55.44	3.90
5	11590.00	58.18 PK	74.00	-15.82	1.33 H	225	49.03	9.15
6	11590.00	47.64 AV	54.00	-6.36	1.33 H	225	38.49	9.15
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	#5646.40	59.29 PK	68.20	-8.91	1.47 V	301	55.76	3.53
2	*5795.00	118.57 PK			1.47 V	301	77.01	41.56
3	*5795.00	110.72 AV			1.47 V	301	69.16	41.56
4	#5925.20	60.54 PK	68.20	-7.66	1.47 V	301	56.65	3.89
5	11590.00	58.47 PK	74.00	-15.53	1.32 V	358	49.32	9.15
6	11590.00	47.81 AV	54.00	-6.19	1.32 V	358	38.66	9.15

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 (VHT80)

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	57.54 PK	74.00	-16.46	1.69 H	75	55.03	2.51
2	5150.00	44.97 AV	54.00	-9.03	1.69 H	75	42.46	2.51
3	*5210.00	95.96 PK			1.69 H	75	56.12	39.84
4	*5210.00	85.66 AV			1.69 H	75	45.82	39.84
5	5350.00	56.22 PK	74.00	-17.78	1.69 H	75	54.38	1.84
6	5350.00	44.63 AV	54.00	-9.37	1.69 H	75	42.79	1.84
7	#10420.00	53.91 PK	68.20	-14.29	2.38 H	107	46.24	7.67
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	60.85 PK	74.00	-13.15	2.48 V	118	58.34	2.51
2	5150.00	49.12 AV	54.00	-4.88	2.48 V	118	46.61	2.51
3	*5210.00	106.60 PK			2.48 V	118	66.76	39.84
4	*5210.00	96.63 AV			2.48 V	118	56.79	39.84
5	5350.00	56.60 PK	74.00	-17.40	2.48 V	118	54.76	1.84
6	5350.00	45.50 AV	54.00	-8.50	2.48 V	118	43.66	1.84
7	#10420.00	54.39 PK	68.20	-13.81	1.85 V	304	46.72	7.67

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)
FREQUENCY RANGE	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	58.24 PK	74.00	-15.76	1.67 H	76	55.73	2.51
2	5150.00	45.15 AV	54.00	-8.85	1.67 H	76	42.64	2.51
3	*5290.00	99.45 PK			1.67 H	76	59.82	39.63
4	*5290.00	89.38 AV			1.67 H	76	49.75	39.63
5	5350.00	57.66 PK	74.00	-16.34	1.67 H	76	55.82	1.84
6	5350.00	45.78 AV	54.00	-8.22	1.67 H	76	43.94	1.84
7	#10580.00	54.16 PK	68.20	-14.04	2.36 H	117	46.57	7.59
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	5150.00	59.12 PK	74.00	-14.88	2.43 V	119	56.61	2.51
2	5150.00	47.44 AV	54.00	-6.56	2.43 V	119	44.93	2.51
3	*5290.00	110.35 PK			2.43 V	119	70.72	39.63
4	*5290.00	100.42 AV			2.43 V	119	60.79	39.63
5	5350.00	64.91 PK	74.00	-9.09	2.43 V	119	63.07	1.84
6	5350.00	53.02 AV	54.00	-0.98	2.43 V	119	51.18	1.84
7	#10580.00	54.42 PK	68.20	-13.78	1.86 V	329	46.83	7.59

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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 106	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	57.01 PK	74.00	-16.99	1.90 H	104	55.23	1.78
2	5460.00	44.95 AV	54.00	-9.05	1.90 H	104	43.17	1.78
3	#5470.00	57.57 PK	68.20	-10.63	1.90 H	104	55.78	1.79
4	*5530.00	98.76 PK			1.90 H	104	58.56	40.20
5	*5530.00	88.86 AV			1.90 H	104	48.66	40.20
6	#5725.00	59.06 PK	68.20	-9.14	1.90 H	104	55.89	3.17
7	11060.00	55.07 PK	74.00	-18.93	2.42 H	120	47.38	7.69
8	11060.00	43.59 AV	54.00	-10.41	2.42 H	120	35.90	7.69
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	65.46 PK	74.00	-8.54	2.11 V	39	63.68	1.78
2	5460.00	51.72 AV	54.00	-2.28	2.11 V	39	49.94	1.78
3	#5470.00	67.48 PK	68.20	-0.72	2.11 V	38	65.69	1.79
4	*5530.00	112.72 PK			2.11 V	39	72.52	40.20
5	*5530.00	103.02 AV			2.11 V	39	62.82	40.20
6	#5725.00	58.56 PK	68.20	-9.64	2.11 V	38	55.39	3.17
7	11060.00	55.05 PK	74.00	-18.95	1.77 V	310	47.36	7.69
8	11060.00	43.41 AV	54.00	-10.59	1.77 V	310	35.72	7.69

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

CHANNEL	TX Channel 122	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	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	57.60 PK	74.00	-16.40	1.60 H	124	55.82	1.78
2	5460.00	44.34 AV	54.00	-9.66	1.60 H	124	42.56	1.78
3	#5470.00	58.11 PK	68.20	-10.09	1.60 H	124	56.32	1.79
4	*5610.00	100.31 PK			1.60 H	124	59.67	40.64
5	*5610.00	90.67 AV			1.60 H	124	50.03	40.64
6	#5725.00	60.87 PK	68.20	-7.33	1.60 H	124	57.70	3.17
7	11220.00	55.89 PK	74.00	-18.11	2.36 H	118	47.33	8.56
8	11220.00	44.45 AV	54.00	-9.55	2.36 H	118	35.89	8.56
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	58.93 PK	74.00	-15.07	2.10 V	38	57.15	1.78
2	5460.00	46.22 AV	54.00	-7.78	2.10 V	38	44.44	1.78
3	#5470.00	61.10 PK	68.20	-7.10	2.10 V	38	59.31	1.79
4	*5610.00	114.06 PK			2.10 V	38	73.42	40.64
5	*5610.00	104.09 AV			2.10 V	38	63.45	40.64
6	#5725.00	66.55 PK	68.20	-1.65	2.10 V	38	63.38	3.17
7	11220.00	56.13 PK	74.00	-17.87	1.72 V	304	47.57	8.56
8	11220.00	44.40 AV	54.00	-9.60	1.72 V	304	35.84	8.56

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.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	#5640.80	62.71 PK	68.20	-5.49	1.11 H	46	59.23	3.48
2	*5775.00	105.77 PK			1.11 H	46	64.21	41.56
3	*5775.00	96.99 AV			1.11 H	46	55.43	41.56
4	#5939.60	60.11 PK	68.20	-8.09	1.11 H	46	56.14	3.97
5	11550.00	58.13 PK	74.00	-15.87	1.20 H	258	48.99	9.14
6	11550.00	47.57 AV	54.00	-6.43	1.20 H	258	38.43	9.14
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	#5643.20	66.86 PK	68.20	-1.34	1.48 V	177	63.37	3.49
2	*5775.00	113.57 PK			1.48 V	177	72.01	41.56
3	*5775.00	104.65 AV			1.48 V	177	63.09	41.56
4	#5925.60	61.47 PK	68.20	-6.73	1.48 V	177	57.57	3.90
5	11550.00	58.76 PK	74.00	-15.24	1.17 V	339	49.62	9.14
6	11550.00	48.05 AV	54.00	-5.95	1.17 V	339	38.91	9.14

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

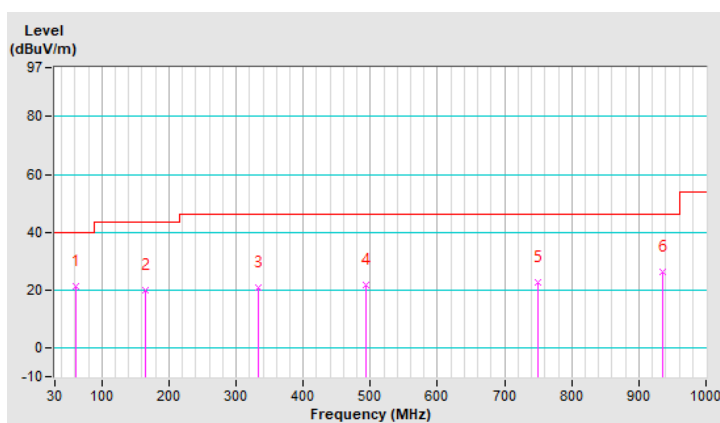
802.11n (HT20)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	61.04	21.20 QP	40.00	-18.80	1.99 H	257	40.15	-18.95
2	164.83	19.97 QP	43.50	-23.53	1.99 H	93	38.31	-18.34
3	332.64	20.86 QP	46.00	-25.14	1.00 H	113	37.55	-16.69
4	492.69	21.62 QP	46.00	-24.38	1.99 H	320	34.73	-13.11
5	749.74	22.48 QP	46.00	-23.52	1.50 H	332	30.72	-8.24
6	935.98	26.22 QP	46.00	-19.78	1.50 H	221	32.12	-5.90

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.

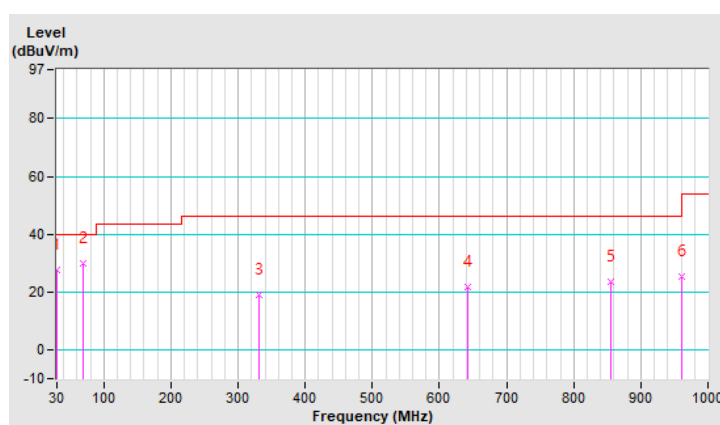


CHANNEL	TX Channel 165	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	30.97	27.61 QP	40.00	-12.39	1.01 V	72	47.28	-19.67
2	68.80	30.08 QP	40.00	-9.92	1.01 V	40	50.31	-20.23
3	331.67	19.12 QP	46.00	-26.88	1.01 V	202	35.83	-16.71
4	643.04	21.88 QP	46.00	-24.12	1.51 V	136	31.78	-9.90
5	855.47	23.36 QP	46.00	-22.64	2.00 V	2	30.62	-7.26
6	961.20	25.30 QP	54.00	-28.70	1.01 V	2	30.89	-5.59

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



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

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

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

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

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
Test Receiver ROHDE & SCHWARZ	ESCI	100613	Dec. 03, 2021	Dec. 02, 2022
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Sep. 04, 2021	Sep. 03, 2022
LISN/AMN ROHDE & SCHWARZ (EUT)	ENV216	101195	May 25, 2021	May 24, 2022
LISN/AMN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Sep. 17, 2021	Sep. 16, 2022
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 2 (Conduction 2).

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

4.2.3 Test Procedures

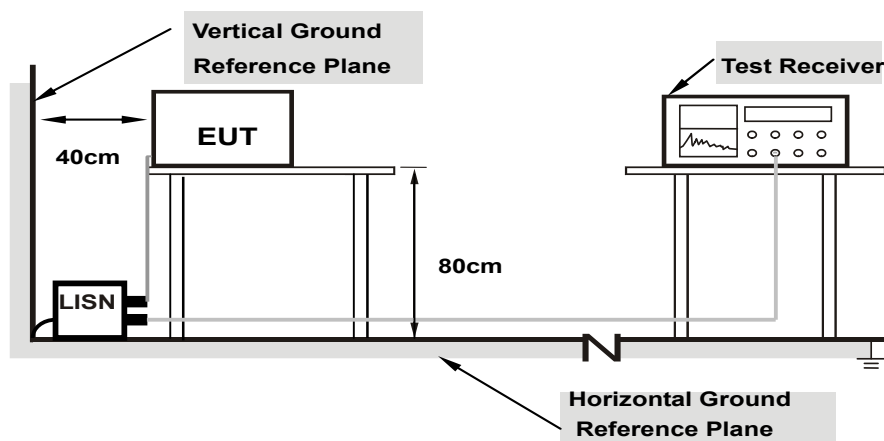
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

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

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

Worst-case data:

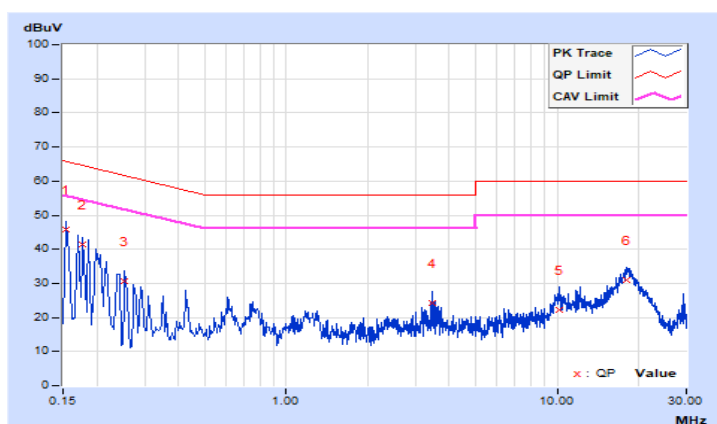
802.11n (HT20)

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15400	10.13	35.50	24.30	45.63	34.43	65.78	55.78	-20.15	-21.35
2	0.17800	10.14	31.38	21.99	41.52	32.13	64.58	54.58	-23.06	-22.45
3	0.25400	10.15	20.53	11.84	30.68	21.99	61.63	51.63	-30.95	-29.64
4	3.45800	10.24	14.09	3.22	24.33	13.46	56.00	46.00	-31.67	-32.54
5	10.19800	10.29	12.09	2.74	22.38	13.03	60.00	50.00	-37.62	-36.97
6	17.99000	10.37	20.46	14.48	30.83	24.85	60.00	50.00	-29.17	-25.15

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.

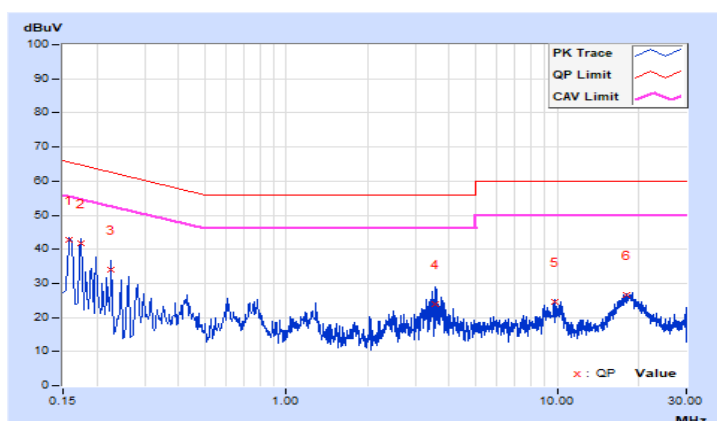


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15800	10.14	32.56	16.60	42.70	26.74	65.57	55.57	-22.87	-28.83
2	0.17384	10.14	31.54	13.79	41.68	23.93	64.77	54.77	-23.09	-30.84
3	0.22600	10.15	23.85	5.60	34.00	15.75	62.60	52.60	-28.60	-36.85
4	3.57000	10.26	13.81	2.33	24.07	12.59	56.00	46.00	-31.93	-33.41
5	9.74600	10.35	14.26	5.58	24.61	15.93	60.00	50.00	-35.39	-34.07
6	17.95400	10.50	15.95	7.95	26.45	18.45	60.00	50.00	-33.55	-31.55

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	$\sqrt{\quad}$		250mW (24 dBm) or 11 dBm+10 log B*
U-NII-2C	$\sqrt{\quad}$		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} ;

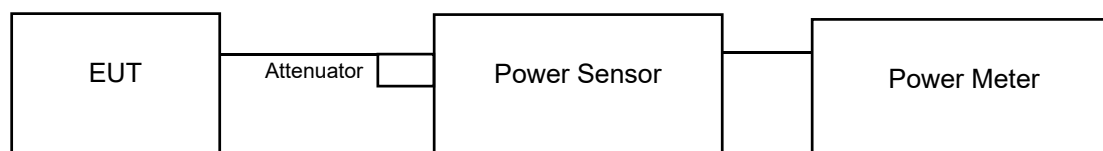
Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

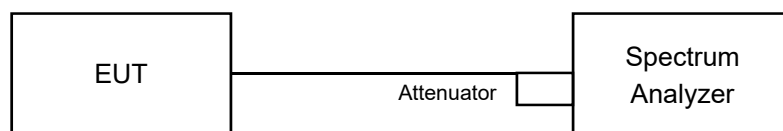
4.3.2 Test Setup

For Power Output

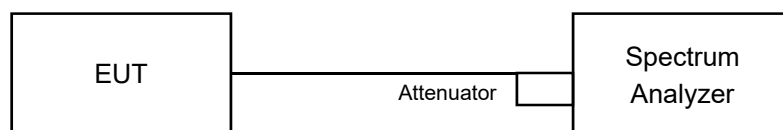
802.11a, 802.11n (HT20), 802.11n (HT40)



802.11ac (VHT80)



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

For 802.11a, 802.11n (HT20), 802.11n (HT40)

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. Duty factor is not added to measured value.

For 802.11ac (VHT80)

- Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.
- Set sweep trigger to "free run".
- Set RBW = 1 MHz
- Set VBW $\geq$ 3 MHz
- Number of points in sweep $\geq$ 2 Span / RBW
- Sweep time $\leq$ (number of points in sweep) * T
- Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
- Detector = RMS
- Trace mode = max hold
- Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.
- Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

For 26dB Bandwidth

- Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW.
- Detector = Peak.
- Trace mode = max hold.
- 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)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	18.62	18.84	149.338	21.74	23.79	Pass
60	5300	18.69	18.78	149.470	21.75	23.75	Pass
64	5320	18.23	18.34	134.761	21.30	23.73	Pass
100	5500	18.26	19.12	148.647	21.72	23.87	Pass
116	5580	18.37	19.25	152.846	21.84	23.88	Pass
140	5700	15.63	16.84	84.865	19.29	23.90	Pass

Note:

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

Chain 0

1. $11\text{dBm} + 10\log(20.02) = 24.01 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(19.57) = 23.91 < 24\text{dBm}$
3. $11\text{dBm} + 10\log(19.42) = 23.88 < 24\text{dBm}$
4. $11\text{dBm} + 10\log(19.60) = 23.92 < 24\text{dBm}$
5. $11\text{dBm} + 10\log(19.79) = 23.96 < 24\text{dBm}$
6. $11\text{dBm} + 10\log(19.65) = 23.93 < 24\text{dBm}$

Chain 1

1. $11\text{dBm} + 10\log(19.05) = 23.79 < 24\text{dBm}$
2. $11\text{dBm} + 10\log(18.86) = 23.75 < 24\text{dBm}$
3. $11\text{dBm} + 10\log(18.79) = 23.73 < 24\text{dBm}$
4. $11\text{dBm} + 10\log(19.37) = 23.87 < 24\text{dBm}$
5. $11\text{dBm} + 10\log(19.45) = 23.88 < 24\text{dBm}$
6. $11\text{dBm} + 10\log(19.53) = 23.90 < 24\text{dBm}$

802.11n (HT20)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
52	5260	18.72	19.11	155.944	21.93	24.00	Pass
60	5300	18.66	18.95	151.975	21.82	23.93	Pass
64	5320	18.62	18.97	151.664	21.81	23.94	Pass
100	5500	18.76	19.07	155.886	21.93	24.00	Pass
116	5580	19.18	19.51	172.125	22.36	24.00	Pass
140	5700	15.68	15.94	76.247	18.82	24.00	Pass

Note:

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

Chain 0

1. $11\text{dBm} + 10\log(20.43) = 24.10 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(20.37) = 24.08 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(20.27) = 24.06 > 24\text{dBm}$
4. $11\text{dBm} + 10\log(20.64) = 24.14 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(22.55) = 24.53 > 24\text{dBm}$
6. $11\text{dBm} + 10\log(20.51) = 24.11 > 24\text{dBm}$

Chain 1

1. $11\text{dBm} + 10\log(20.05) = 24.02 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(19.67) = 23.93 < 24\text{dBm}$
3. $11\text{dBm} + 10\log(19.72) = 23.94 < 24\text{dBm}$
4. $11\text{dBm} + 10\log(20.50) = 24.11 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(20.63) = 24.14 > 24\text{dBm}$
6. $11\text{dBm} + 10\log(20.60) = 24.13 > 24\text{dBm}$

802.11n (HT40)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
54	5270	20.54	20.67	229.921	23.62	24.00	Pass
62	5310	16.67	16.78	94.095	19.74	24.00	Pass
102	5510	16.73	17.22	99.821	19.99	24.00	Pass
110	5550	20.52	21.34	248.864	23.96	24.00	Pass
134	5670	17.25	17.67	111.567	20.48	24.00	Pass

Note:

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

Chain 0

1. $11\text{dBm} + 10\log(40.80) = 27.10 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(40.80) = 27.10 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(40.61) = 27.08 > 24\text{dBm}$
4. $11\text{dBm} + 10\log(40.89) = 27.11 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(40.76) = 27.10 > 24\text{dBm}$

Chain 1

1. $11\text{dBm} + 10\log(41.25) = 27.15 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(40.91) = 27.11 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(40.33) = 27.05 > 24\text{dBm}$
4. $11\text{dBm} + 10\log(39.93) = 27.01 > 24\text{dBm}$
5. $11\text{dBm} + 10\log(39.90) = 27.00 > 24\text{dBm}$

802.11ac (VHT80)

Chan.	Freq. (MHz)	Maximum Conducted Power (dBm)		Total Power (mW)	Total Power (dBm)	Power Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
58	5290	15.42	15.48	70.152	18.46	24.00	Pass
106	5530	16.89	17.82	109.399	20.39	24.00	Pass
122	5610	18.43	19.03	149.646	21.75	24.00	Pass

Note:

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

Chain 0

1. $11\text{dBm} + 10\log(84.28) = 30.25 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(84.16) = 30.25 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(84.96) = 30.29 > 24\text{dBm}$

Chain 1

1. $11\text{dBm} + 10\log(84.00) = 30.24 > 24\text{dBm}$
2. $11\text{dBm} + 10\log(82.55) = 30.16 > 24\text{dBm}$
3. $11\text{dBm} + 10\log(82.15) = 30.14 > 24\text{dBm}$

26dB Bandwidth:

802.11a

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.02	19.05
60	5300	19.57	18.86
64	5320	19.42	18.79
100	5500	19.60	19.37
116	5580	19.79	19.45
140	5700	19.65	19.53

802.11n (HT20)

Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	20.43	20.05
60	5300	20.37	19.67
64	5320	20.27	19.72
100	5500	20.64	20.50
116	5580	22.55	20.63
140	5700	20.51	20.60

802.11n (HT40)

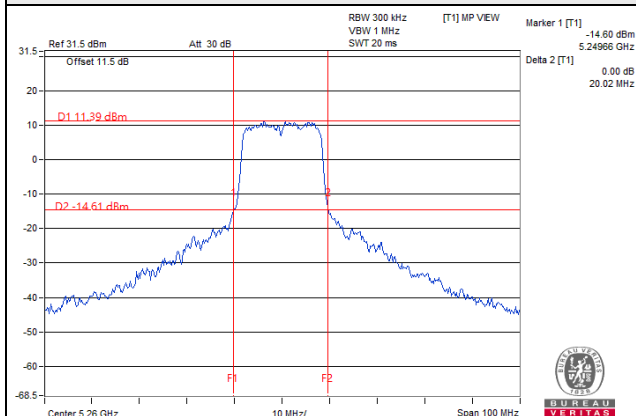
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	40.80	41.25
62	5310	40.80	40.91
102	5510	40.61	40.33
110	5550	40.89	39.93
134	5670	40.76	39.90

802.11ac (VHT80)

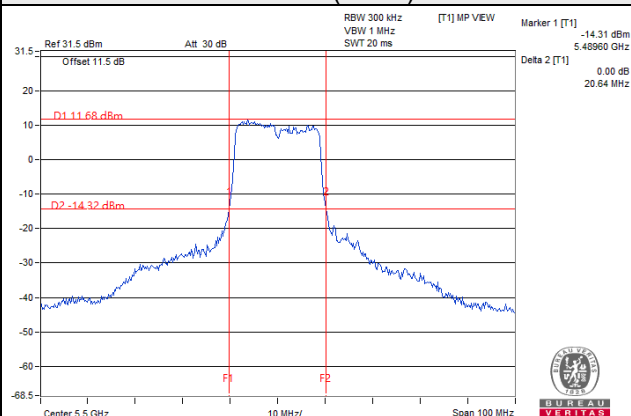
Channel	Frequency (MHz)	26dBc Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	84.28	84.00
106	5530	84.16	82.55
122	5610	84.96	82.15

Spectrum Plot of Worst Value

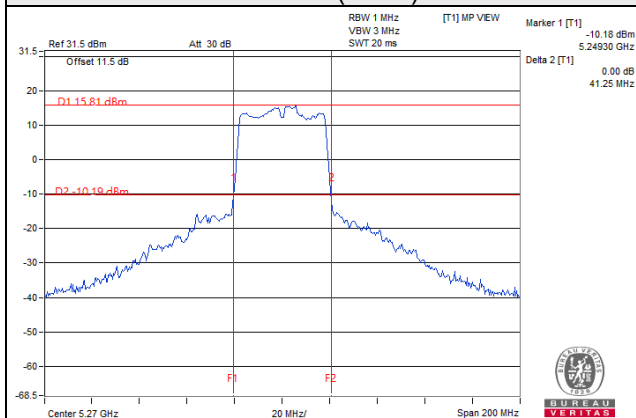
802.11a



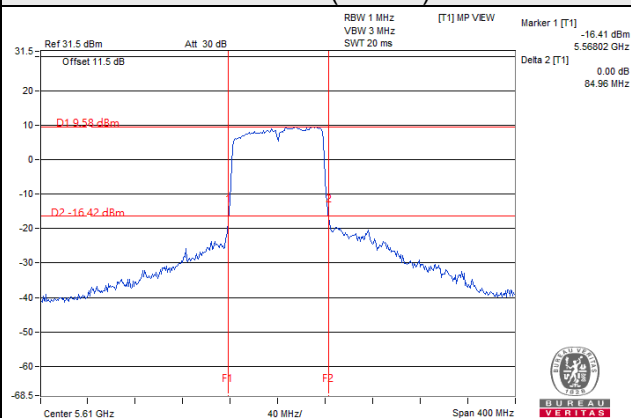
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)



EUT Maximum Conducted Power

802.11a

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	149.470	21.75
5470~5725	152.846	21.84

802.11n (HT20)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	155.944	21.93
5470~5725	172.125	22.36

802.11n (HT40)

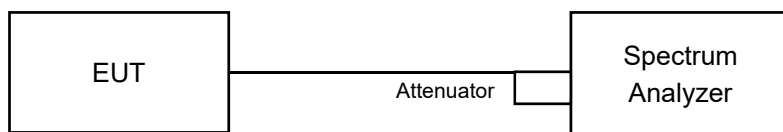
Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	229.921	23.62
5470~5725	248.864	23.96

802.11ac (VHT80)

Frequency Band (MHz)	Max. Power	
	Output Power (mW)	Output Power (dBm)
5250~5350	70.152	18.46
5470~5725	149.646	21.75

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)	
		Chain 0	Chain 1
52	5260	16.44	16.32
60	5300	16.44	16.32
64	5320	16.44	16.32
100	5500	16.56	16.56
116	5580	16.56	16.56
140	5700	16.56	16.56

802.11n (HT20)

Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
52	5260	17.64	17.52
60	5300	17.64	17.40
64	5320	17.52	17.40
100	5500	17.64	17.76
116	5580	17.76	17.76
140	5700	17.64	17.64

802.11n (HT40)

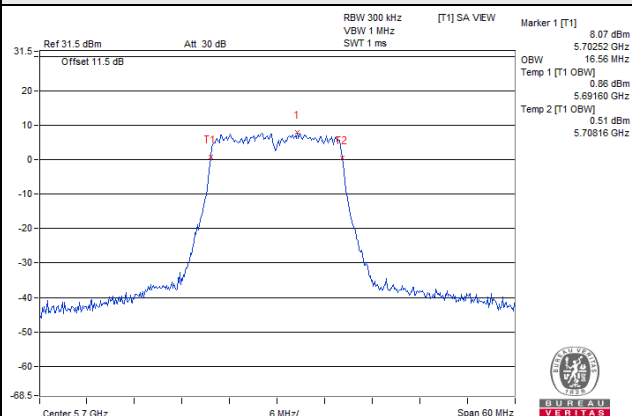
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
54	5270	36.24	36.36
62	5310	36.12	36.48
102	5510	36.12	35.76
110	5550	36.36	36.00
134	5670	36.00	35.88

802.11ac (VHT80)

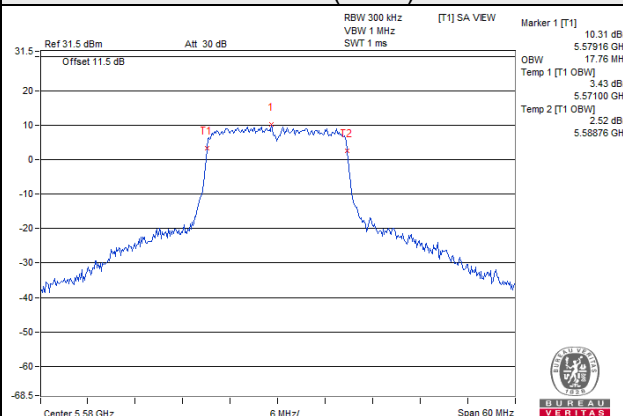
Channel	Frequency (MHz)	Occupied Bandwidth (MHz)	
		Chain 0	Chain 1
58	5290	75.84	76.32
106	5530	75.84	75.36
122	5610	75.84	75.60

Spectrum Plot of Worst Value

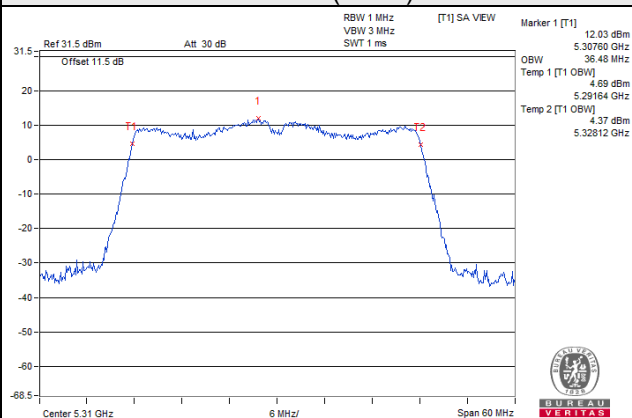
802.11a



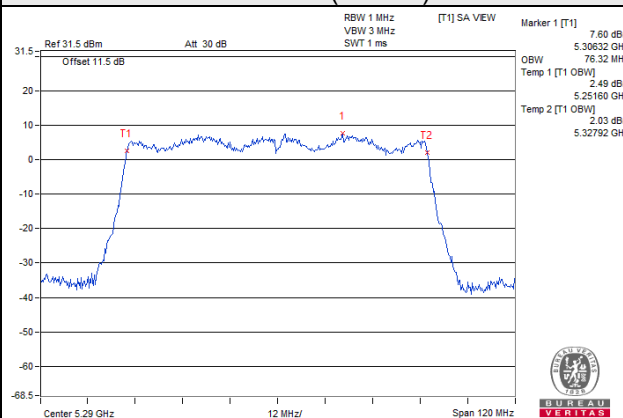
802.11n (HT20)



802.11n (HT40)



802.11ac (VHT80)

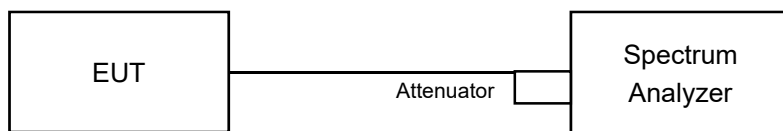


4.5 Peak Power Spectral Density Measurement

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-2A, U-NII-2C band:

Duty cycle of test signal is < 98%

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)

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-2A, U-NII-2C band:

802.11a

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
52	5260	5.53	5.74	0.19	8.84	8.98	Pass
60	5300	5.67	5.56	0.19	8.82	8.98	Pass
64	5320	5.05	5.22	0.19	8.34	8.98	Pass
100	5500	5.09	6.07	0.19	8.81	8.98	Pass
116	5580	5.18	6.15	0.19	8.89	8.98	Pass
140	5700	2.81	3.82	0.19	6.54	8.98	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = $5.01\text{dBi} + 10\log(2) = 8.02\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(8.02-6) = 8.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Total PSD (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1			
52	5260	5.75	5.93	8.85	8.98	Pass
60	5300	5.65	5.65	8.66	8.98	Pass
64	5320	5.19	5.89	8.56	8.98	Pass
100	5500	5.69	5.95	8.83	8.98	Pass
116	5580	5.35	6.41	8.92	8.98	Pass
140	5700	2.58	2.82	5.71	8.98	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = $5.01\text{dBi} + 10\log(2) = 8.02\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(8.02-6) = 8.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
54	5270	4.36	4.57	0.15	7.63	8.98	Pass
62	5310	0.24	0.75	0.15	3.66	8.98	Pass
102	5510	0.72	1.01	0.15	4.03	8.98	Pass
110	5550	4.36	5.20	0.15	7.96	8.98	Pass
134	5670	0.83	1.64	0.15	4.41	8.98	Pass

Note:

1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = $5.01\text{dBi} + 10\log(2) = 8.02\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(8.02-6) = 8.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

802.11ac (VHT80)

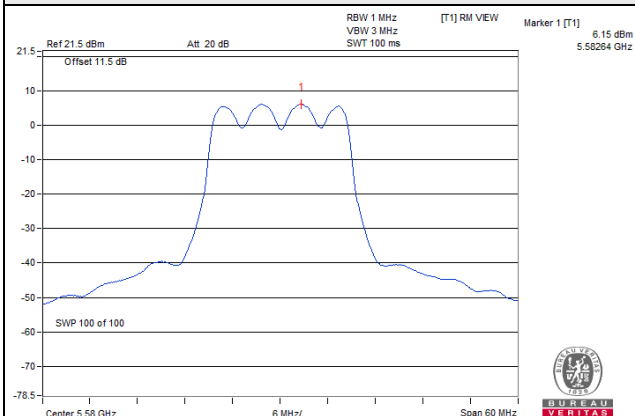
Chan.	Freq. (MHz)	PSD W/O Duty Factor (dBm/MHz)		Duty Factor (dB)	Total PSD With Duty Factor (dBm/MHz)	Max. Limit (dBm/MHz)	Pass / Fail
		Chain 0	Chain 1				
58	5290	-3.74	-3.75	0.29	-0.44	8.98	Pass
106	5530	-2.22	-1.68	0.29	1.36	8.98	Pass
122	5610	-0.58	-0.20	0.29	2.91	8.98	Pass

Note:

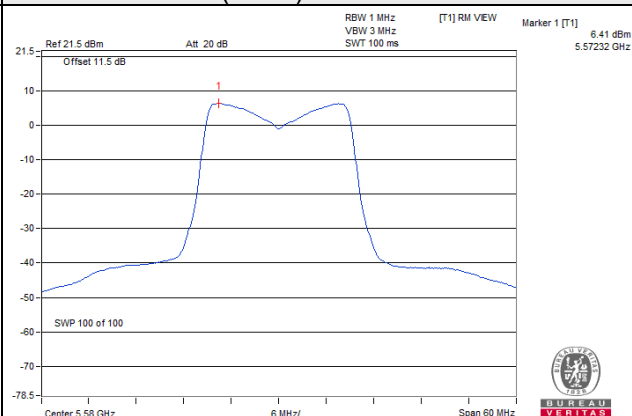
1. Method E) 2) a) of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional Gain = $5.01\text{dBi} + 10\log(2) = 8.02\text{dBi} > 6\text{dBi}$, so the limit shall be reduced to $11-(8.02-6) = 8.98\text{dBm}$.
3. Refer to section 3.3 for duty cycle spectrum plot.

Spectrum Plot of Worst Value

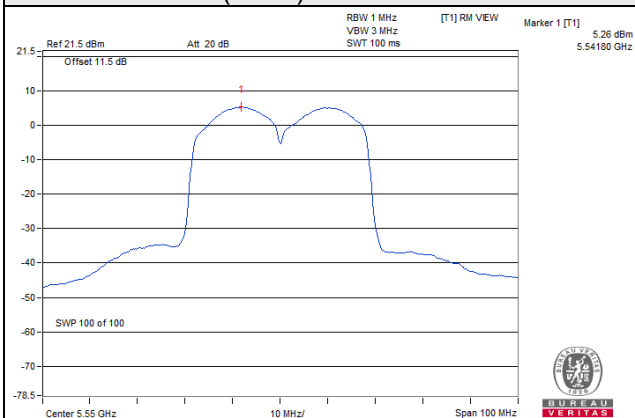
802.11a / Chain 1 / CH 116



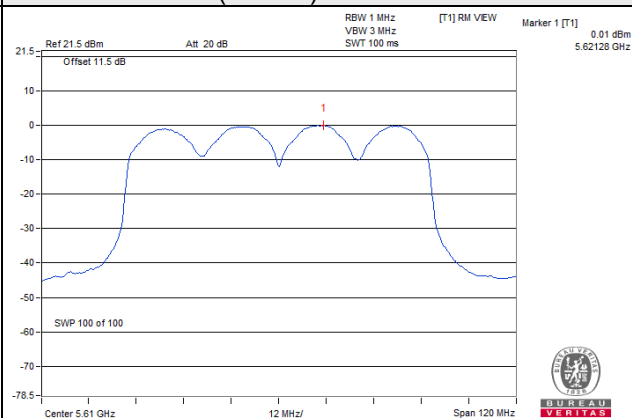
802.11n (HT20) / Chain 1 / CH 116



802.11n (HT40) / Chain 1 / CH 110



802.11ac (VHT80) / Chain 1 / CH 122

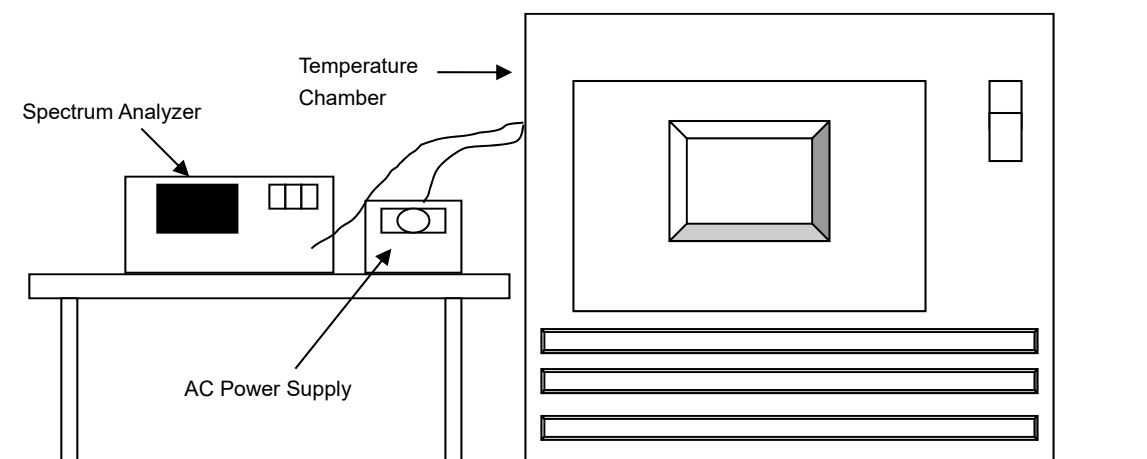


4.6 Frequency Stability

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

Tested date: Jan. 18, 2022

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100039	Jun. 10, 2021	Jun. 09, 2022
Standard Temperature And Humidity Chamber	MHU-225AU	920842	Jun. 15, 2021	Jun. 14, 2022
Digital Multimeter Fluke	87-III	70360742	Jun. 23, 2021	Jun. 23, 2022
AC Power Supply Exttech	CFW-105	E000603	NA	NA

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

4.6.4 Test Procedure

- The EUT was placed inside the environmental test chamber and powered by nominal AC voltage.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step (d) with 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: 5260MHz									
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
70	120	5260.0066	Pass	5260.0064	Pass	5260.0067	Pass	5260.0046	Pass
60	120	5259.9832	Pass	5259.9799	Pass	5259.9788	Pass	5259.9831	Pass
50	120	5259.979	Pass	5259.9756	Pass	5259.9772	Pass	5259.9776	Pass
40	120	5260.0256	Pass	5260.0279	Pass	5260.0268	Pass	5260.0259	Pass
30	120	5259.9787	Pass	5259.9781	Pass	5259.9773	Pass	5259.9801	Pass
20	120	5260.0053	Pass	5260.0101	Pass	5260.0079	Pass	5260.0093	Pass
10	120	5259.9858	Pass	5259.9835	Pass	5259.9842	Pass	5259.9858	Pass
0	120	5259.9785	Pass	5259.9807	Pass	5259.9779	Pass	5259.9822	Pass
-10	120	5260.0039	Pass	5260.0064	Pass	5260.0067	Pass	5260.0069	Pass
-20	120	5259.9845	Pass	5259.9832	Pass	5259.9829	Pass	5259.9804	Pass

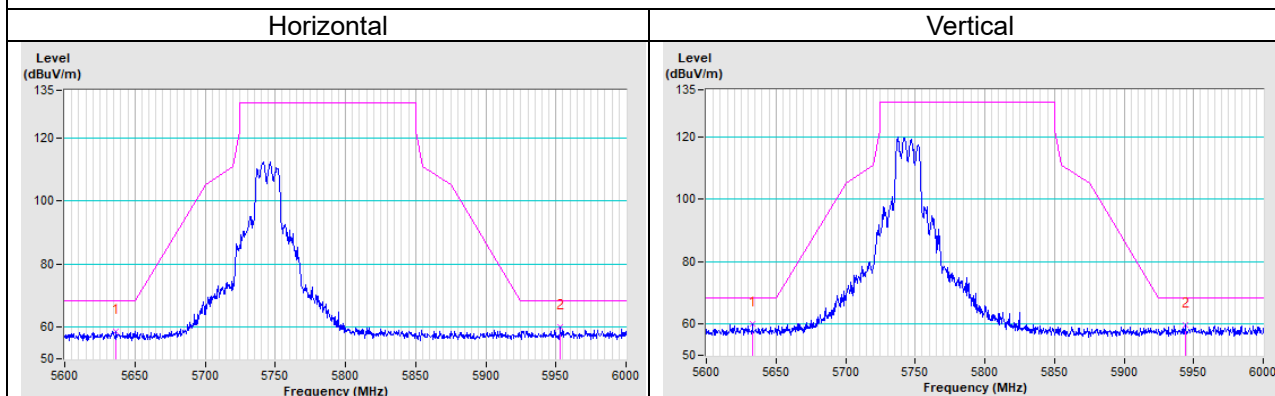
Frequency Stability Versus Voltage									
Operating Frequency: 5260MHz									
Temp. (°C)	Power Supply (Vac)	0 Minute		2 Minute		5 Minute		10 Minute	
		Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result	Measured Frequency (MHz)	Result
20	138	5260.0108	Pass	5260.0075	Pass	5260.0097	Pass	5260.0115	Pass
	120	5260.0053	Pass	5260.0101	Pass	5260.0079	Pass	5260.0093	Pass
	102	5260.0068	Pass	5260.0072	Pass	5260.0074	Pass	5260.0048	Pass

5 Pictures of Test Arrangements

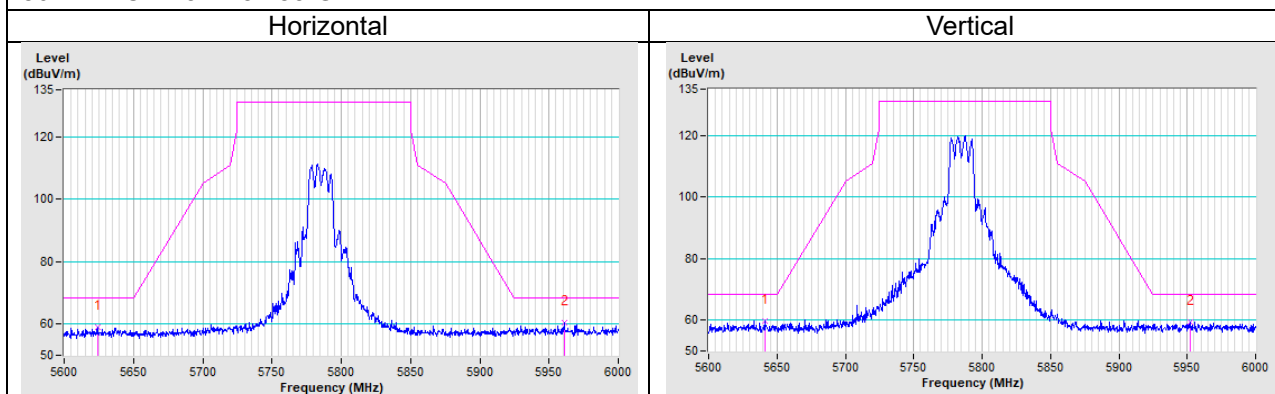
Please refer to the attached file (Test Setup Photo).

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

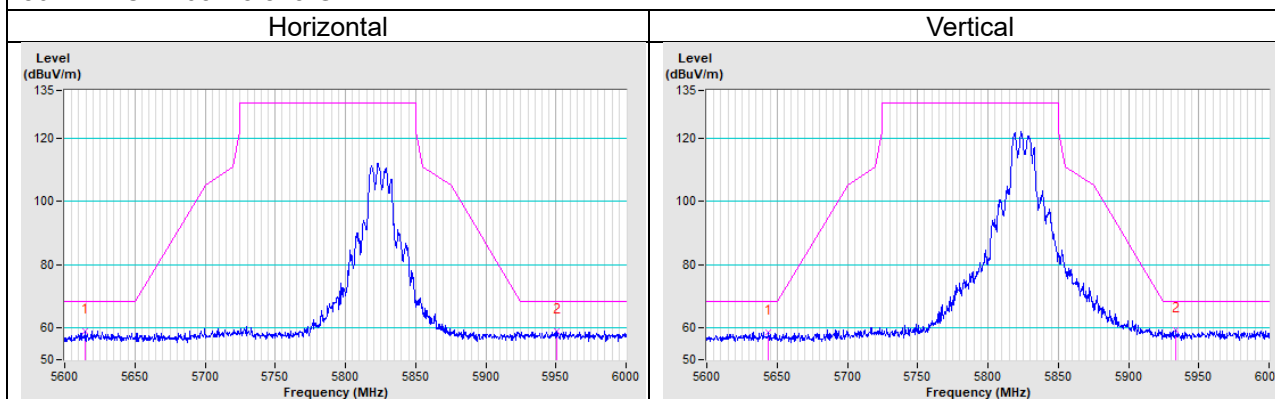
802.11a CH 149 : 5.745 GHz



802.11a CH 157 : 5.785 GHz

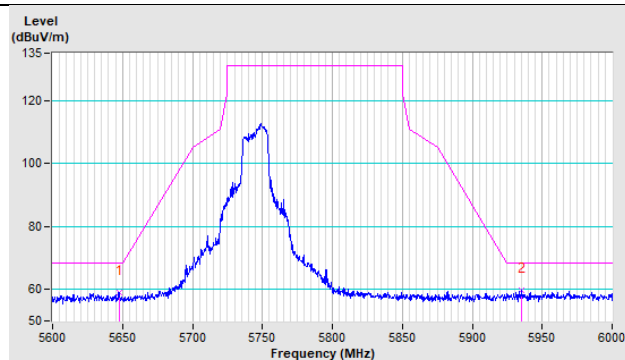


802.11a CH 165 : 5.825 GHz

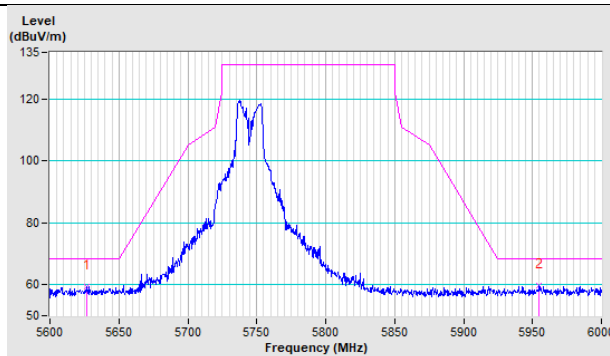


802.11n (HT20) CH 149 : 5.745 GHz

Horizontal

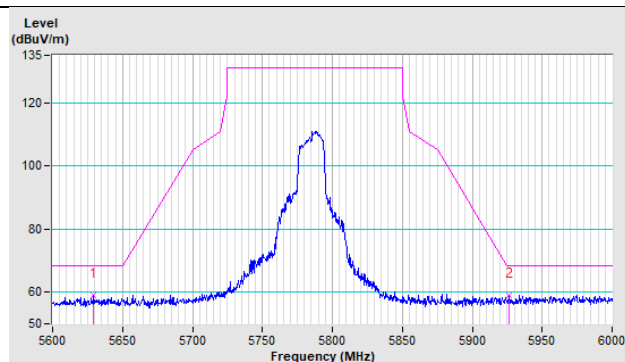


Vertical

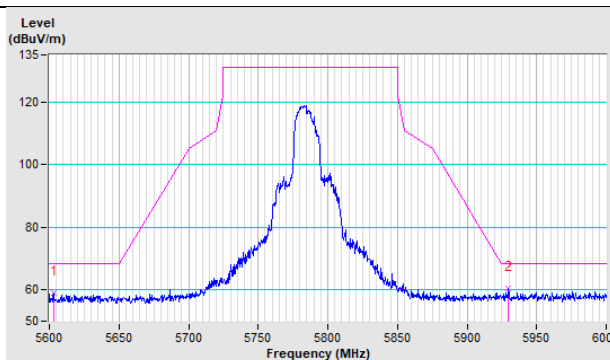


802.11n (HT20) CH 157 : 5.785 GHz

Horizontal

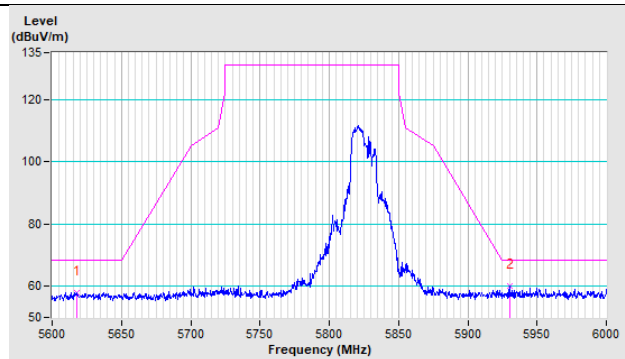


Vertical

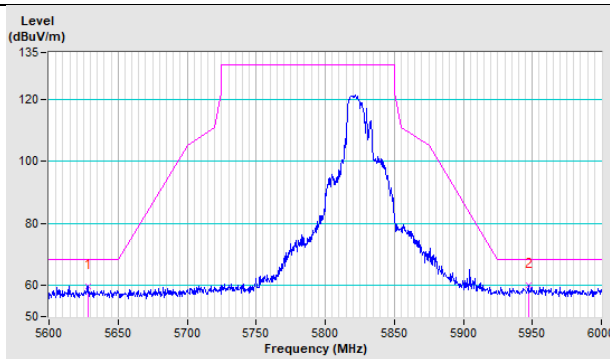


802.11n (HT20) CH 165 : 5.825 GHz

Horizontal

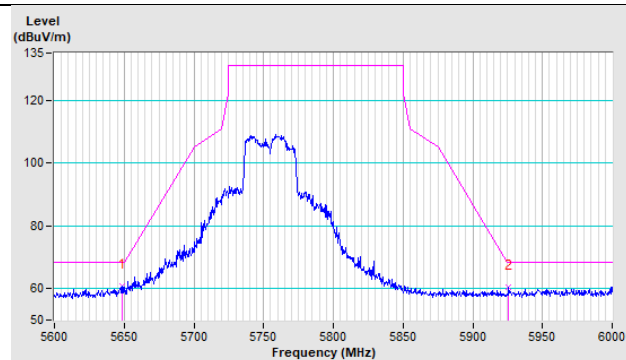


Vertical

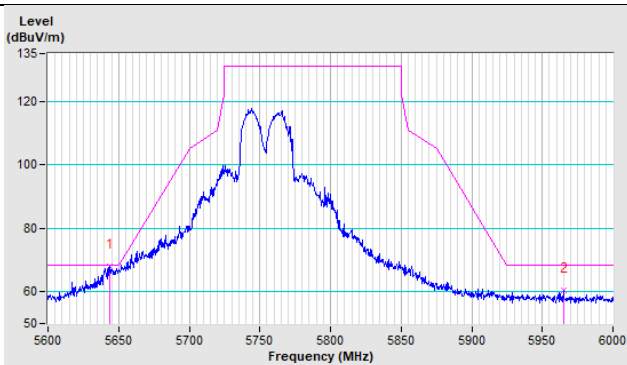


802.11n (HT40) CH 151 : 5.755 GHz

Horizontal

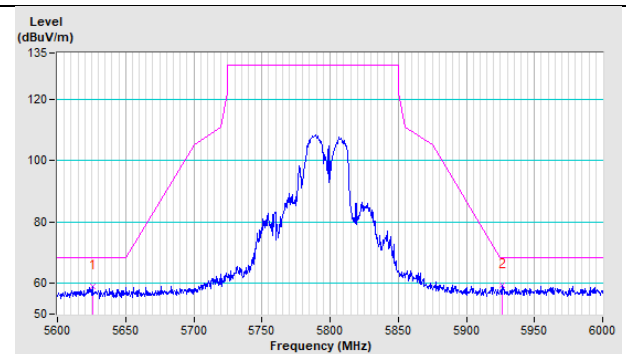


Vertical

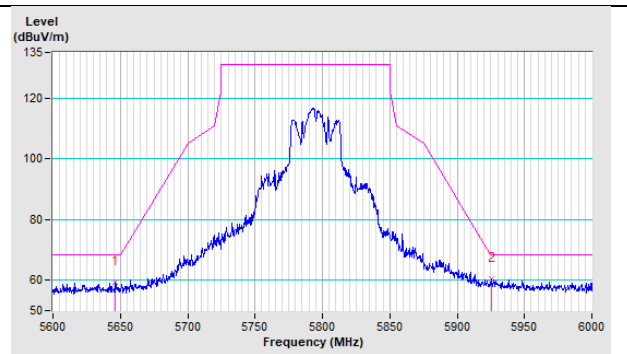


802.11n (HT40) CH 159 : 5.795 GHz

Horizontal

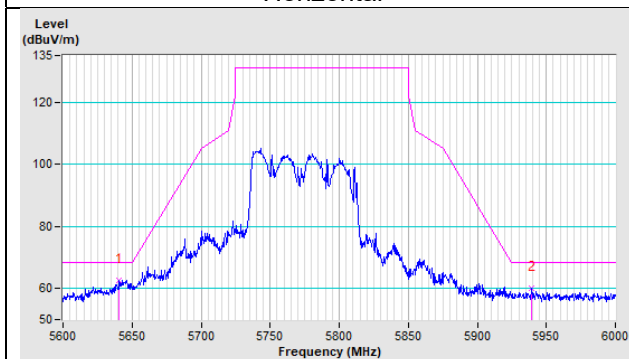


Vertical

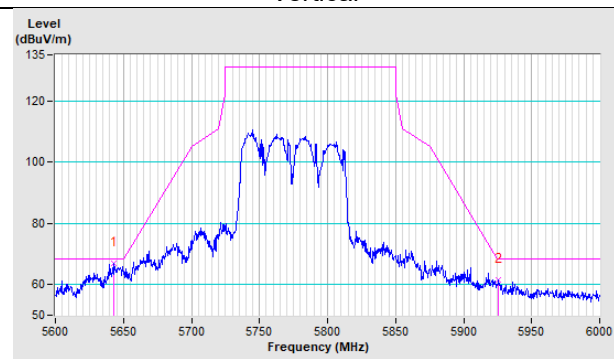


802.11ac (VHT80) CH 155 : 5.775 GHz

Horizontal

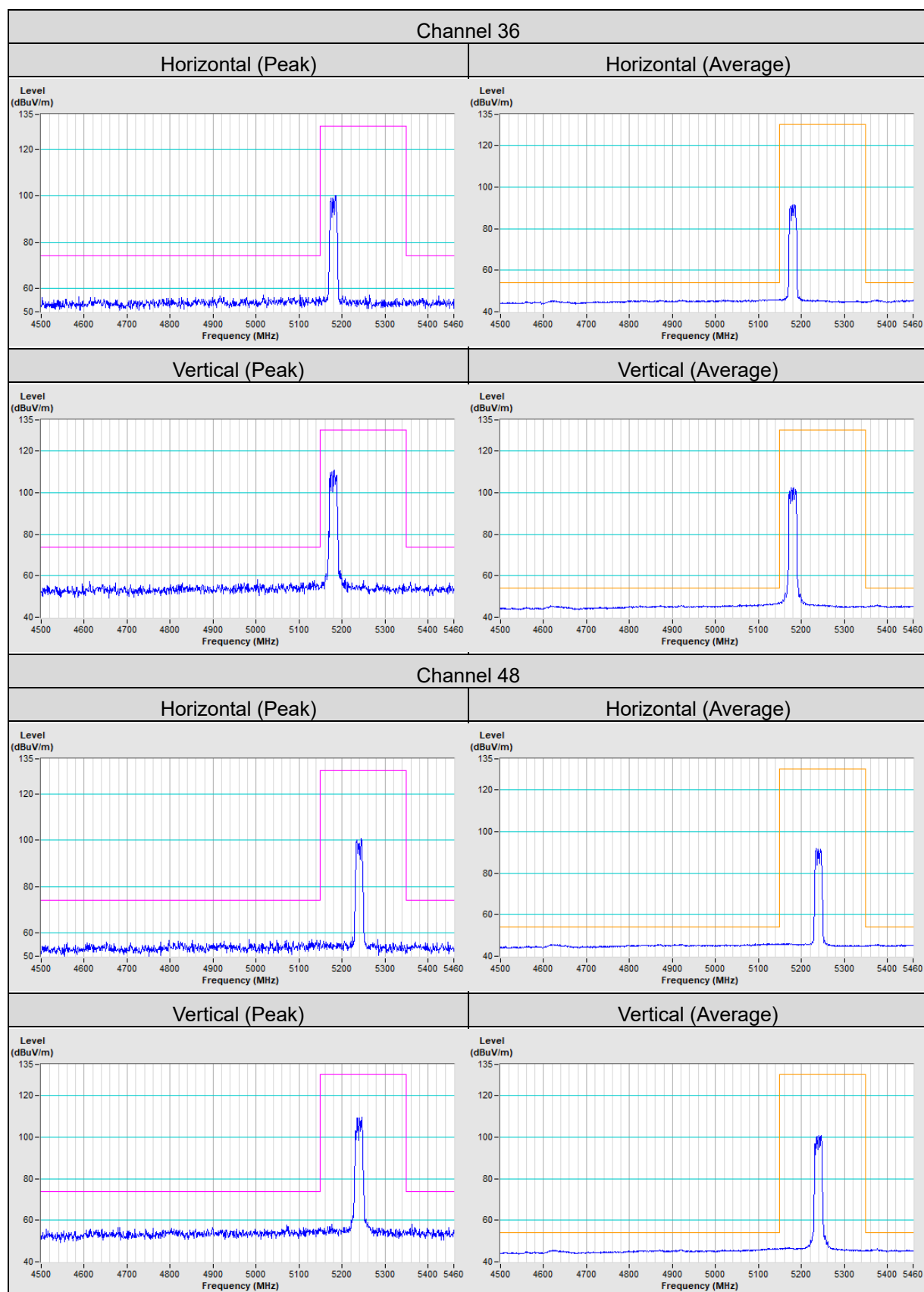


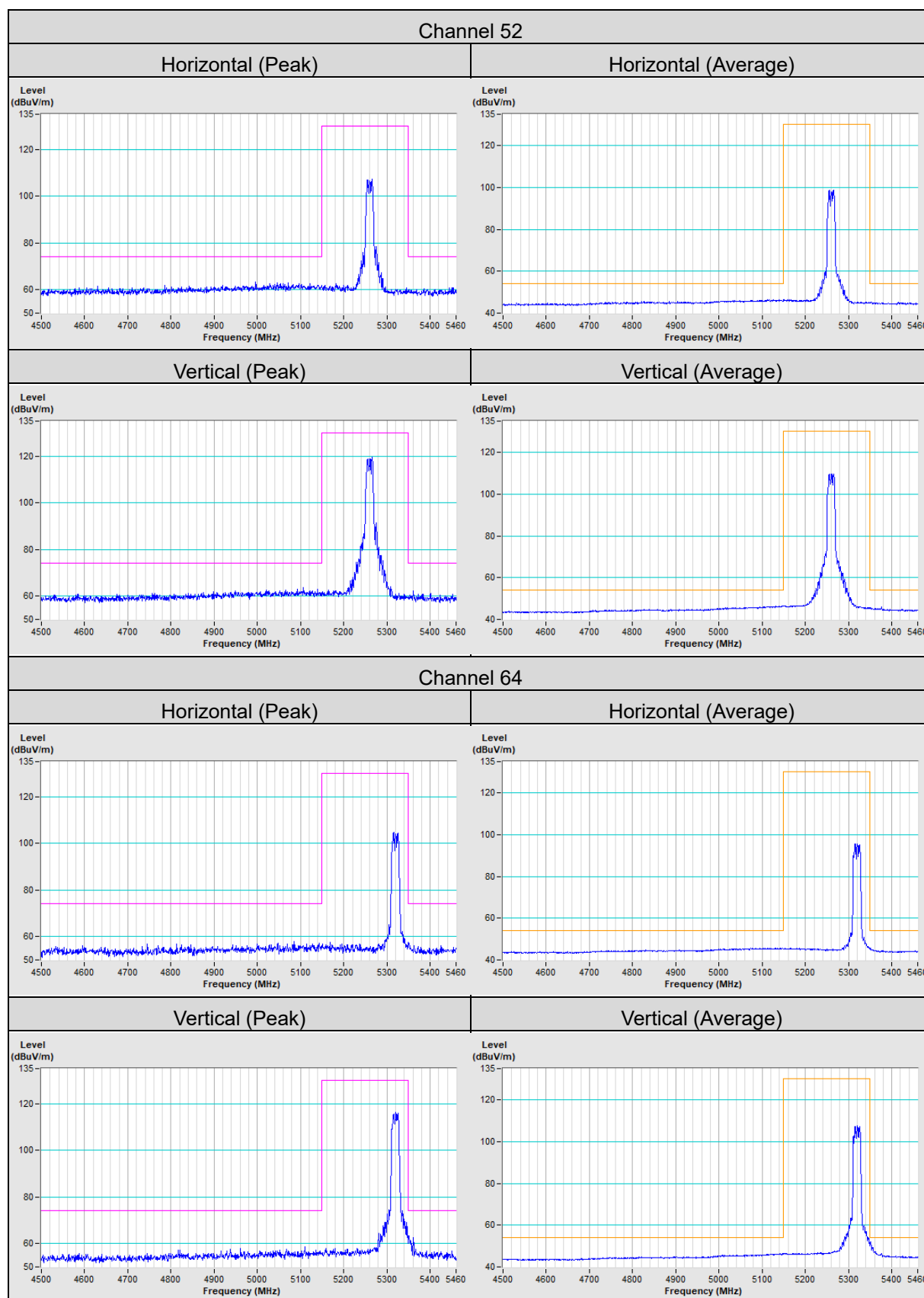
Vertical

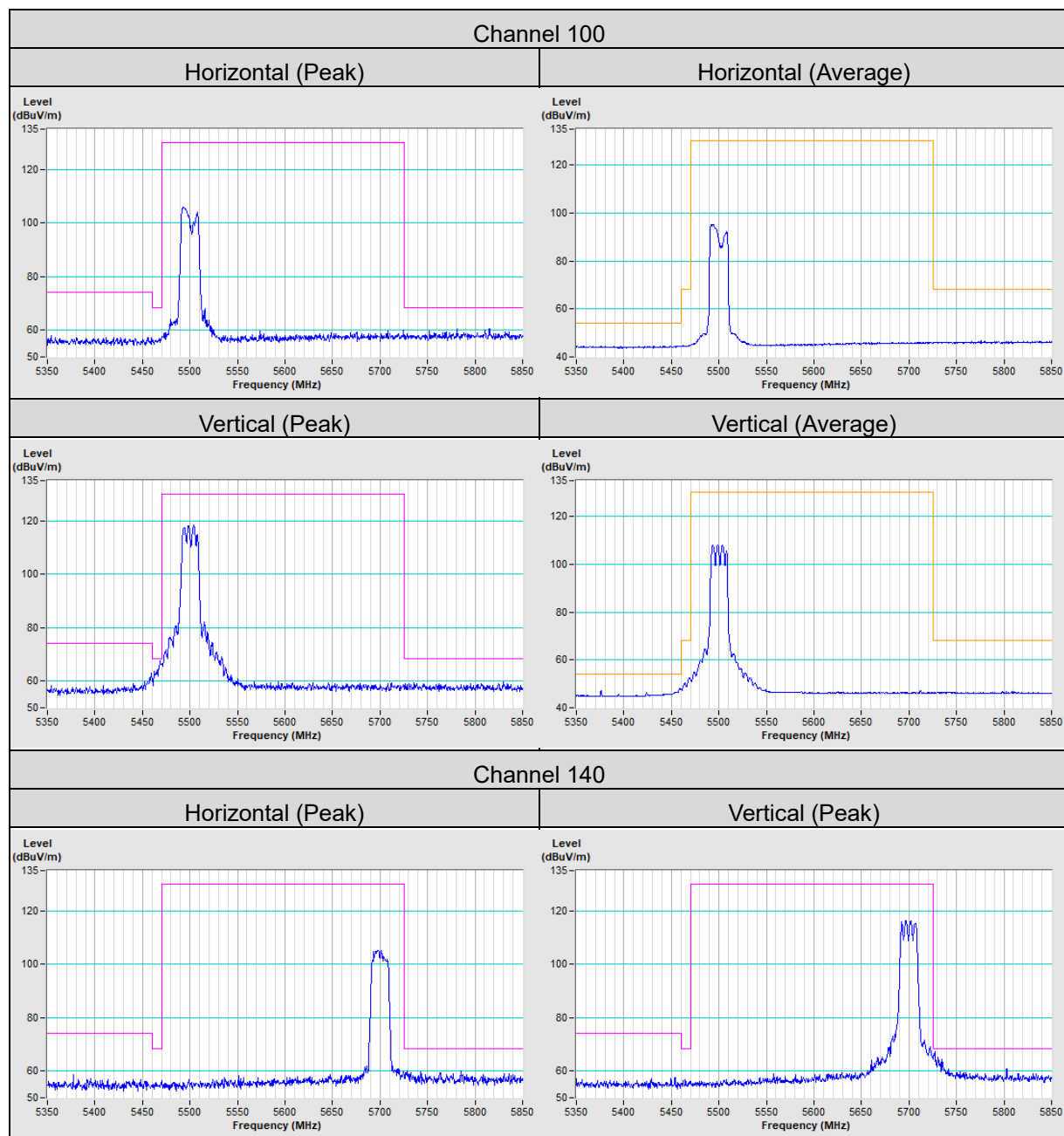


Annex B- Band Edge Measurement

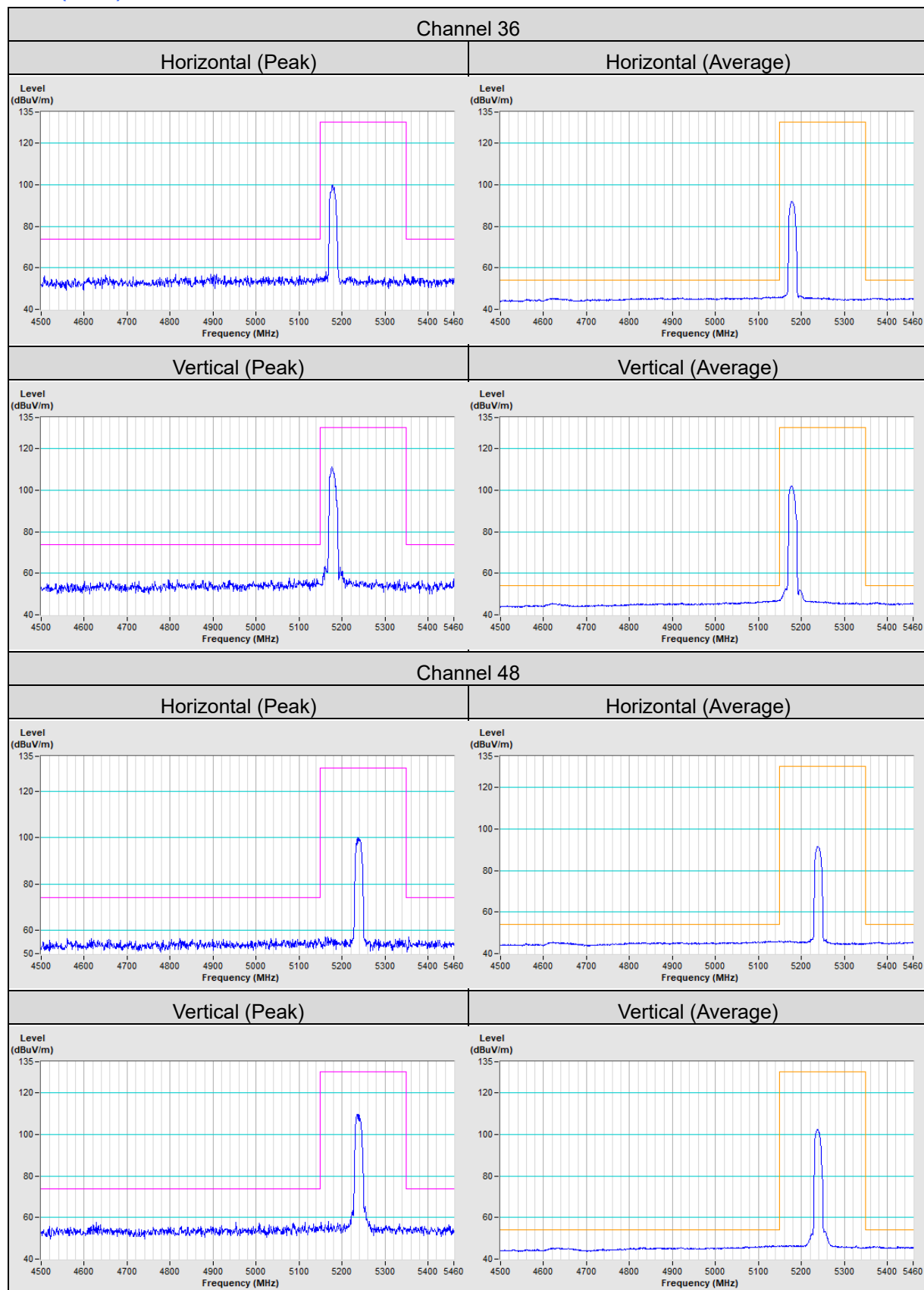
802.11a

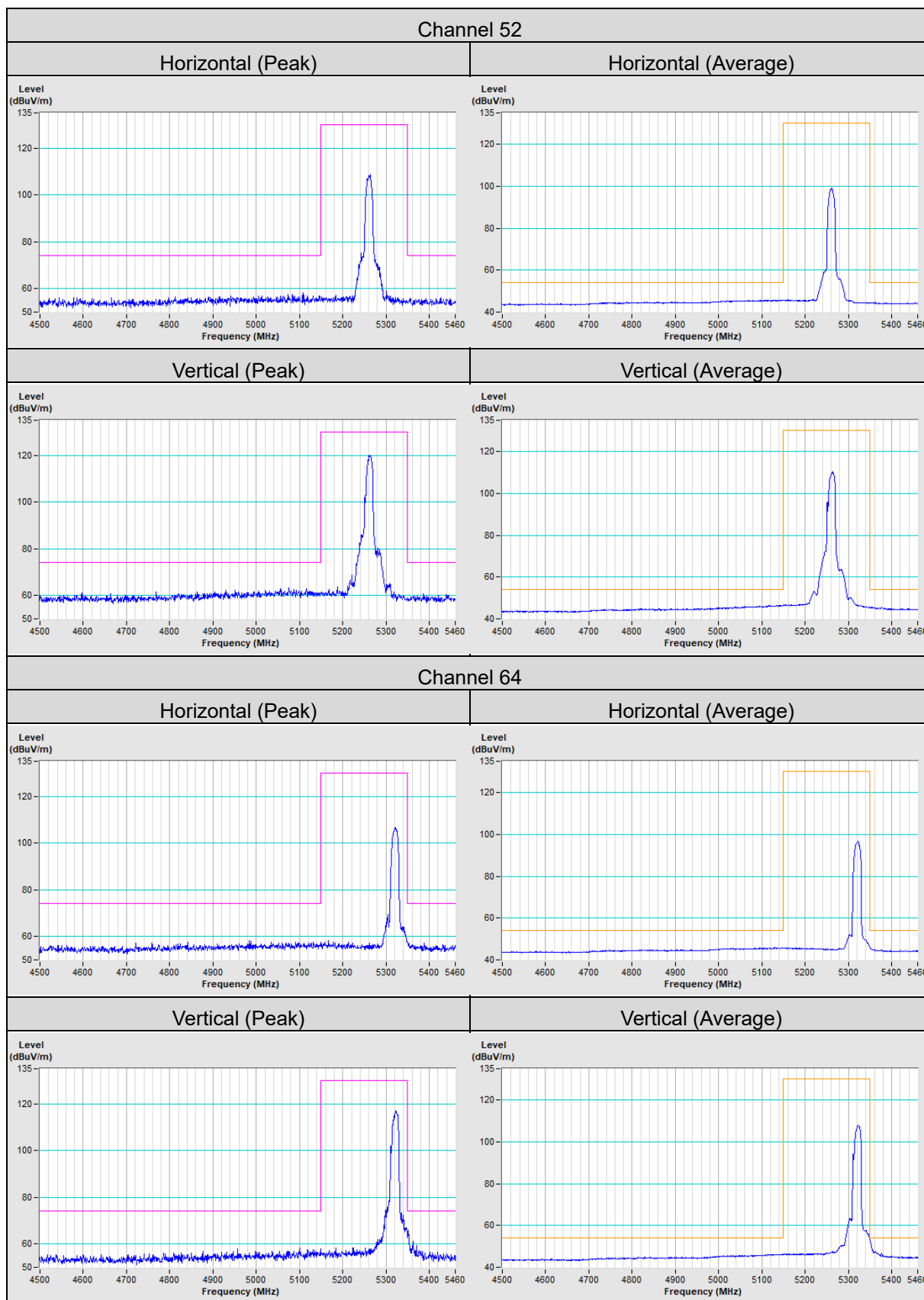


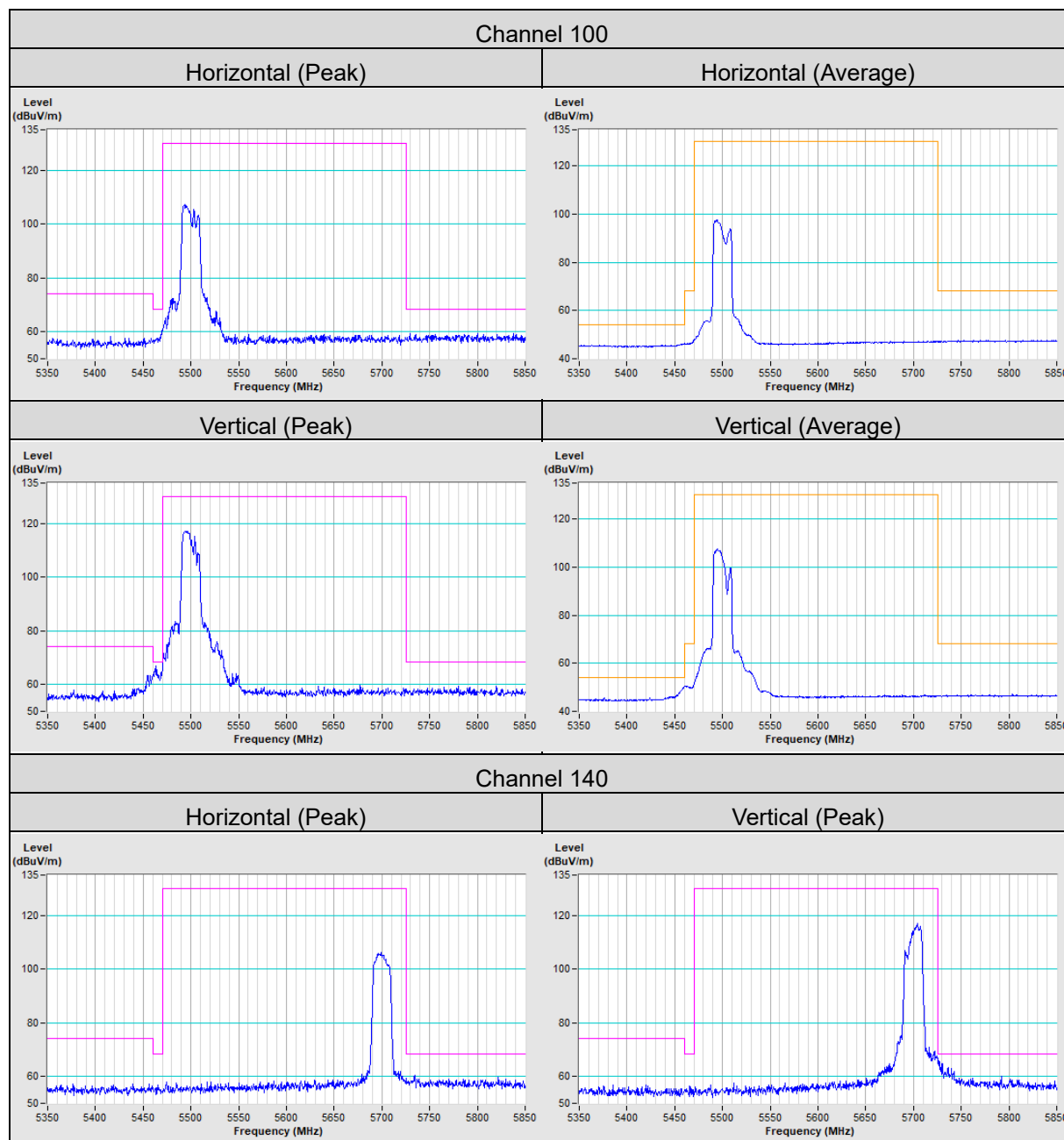




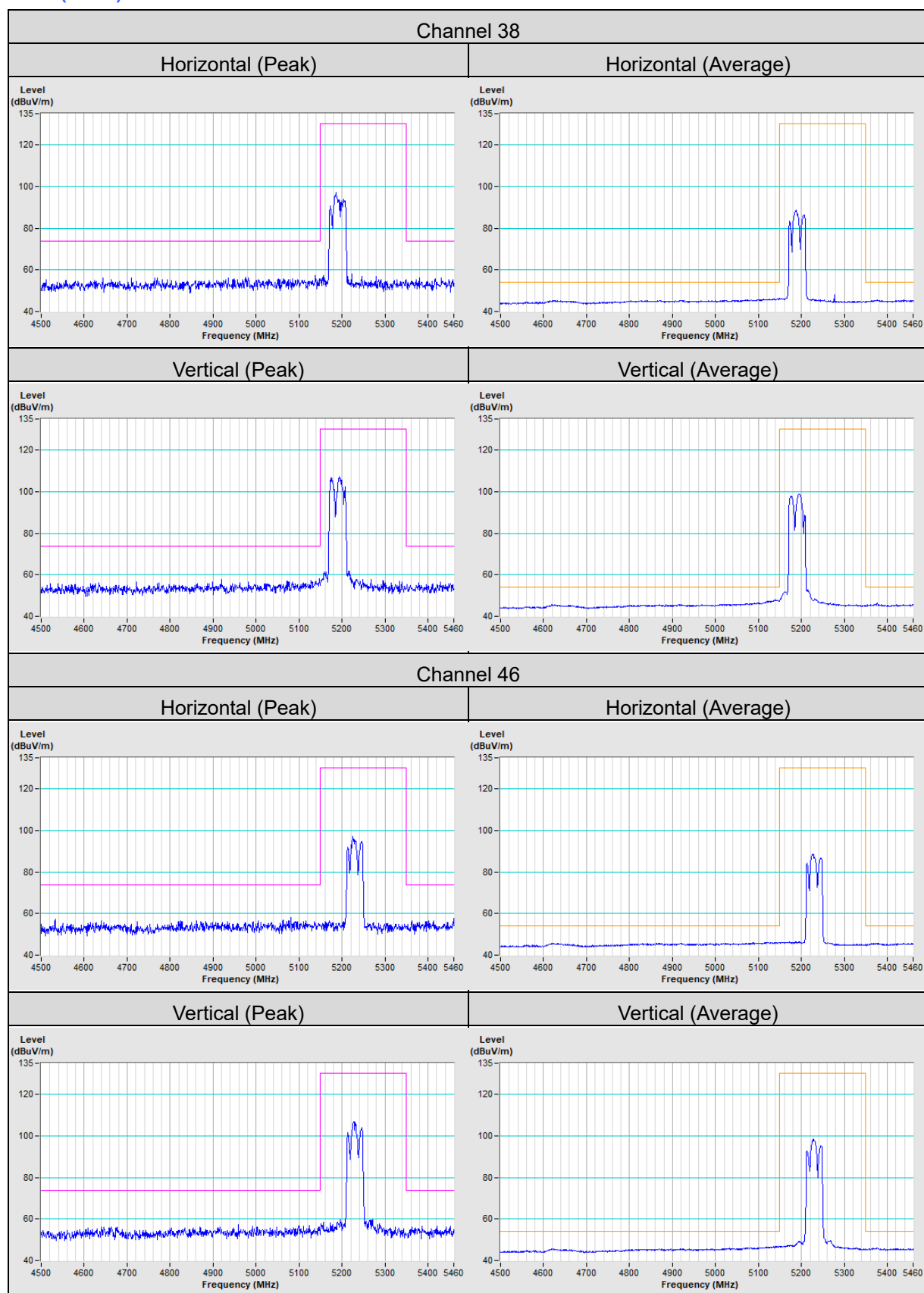
802.11n (HT20)

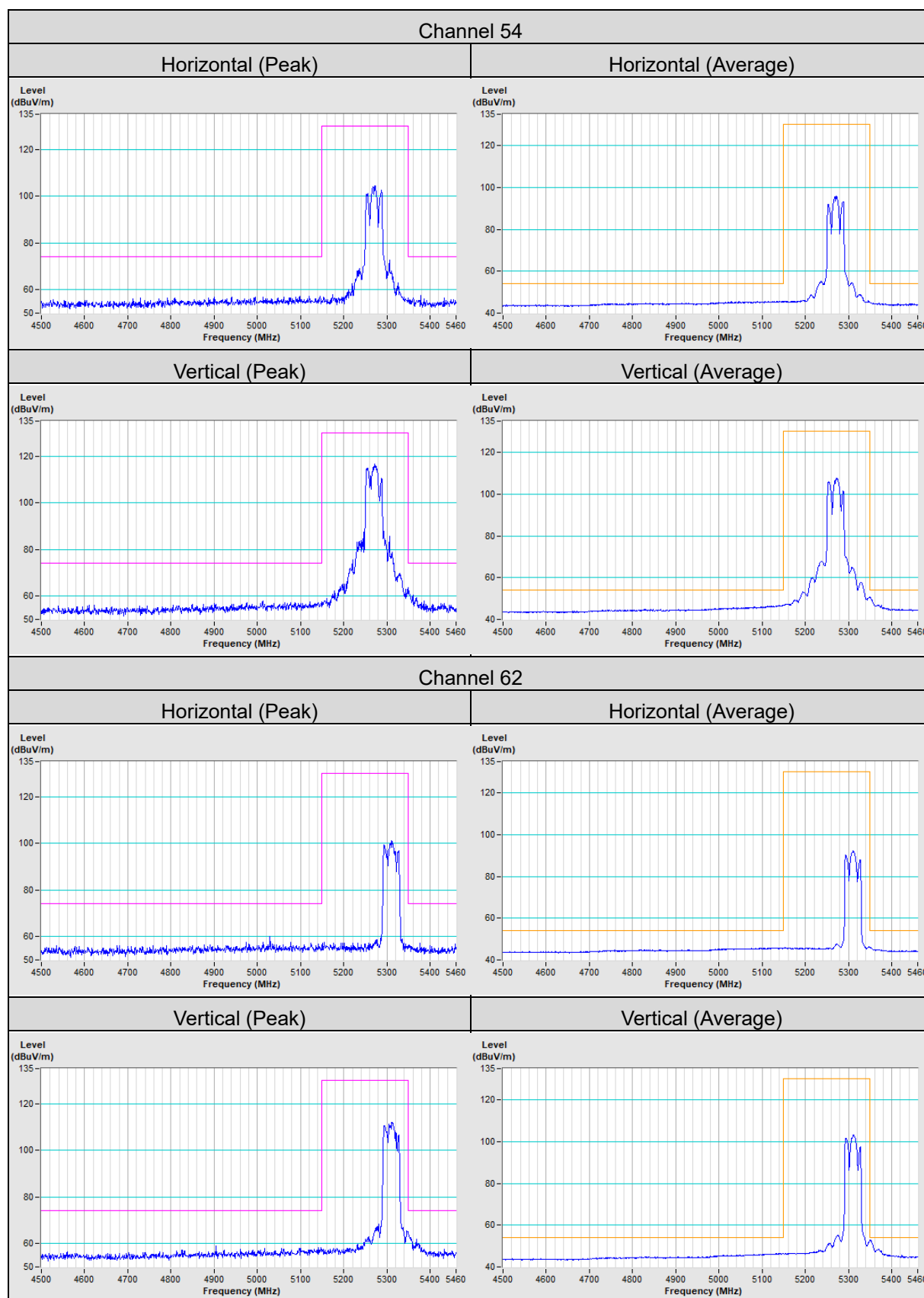


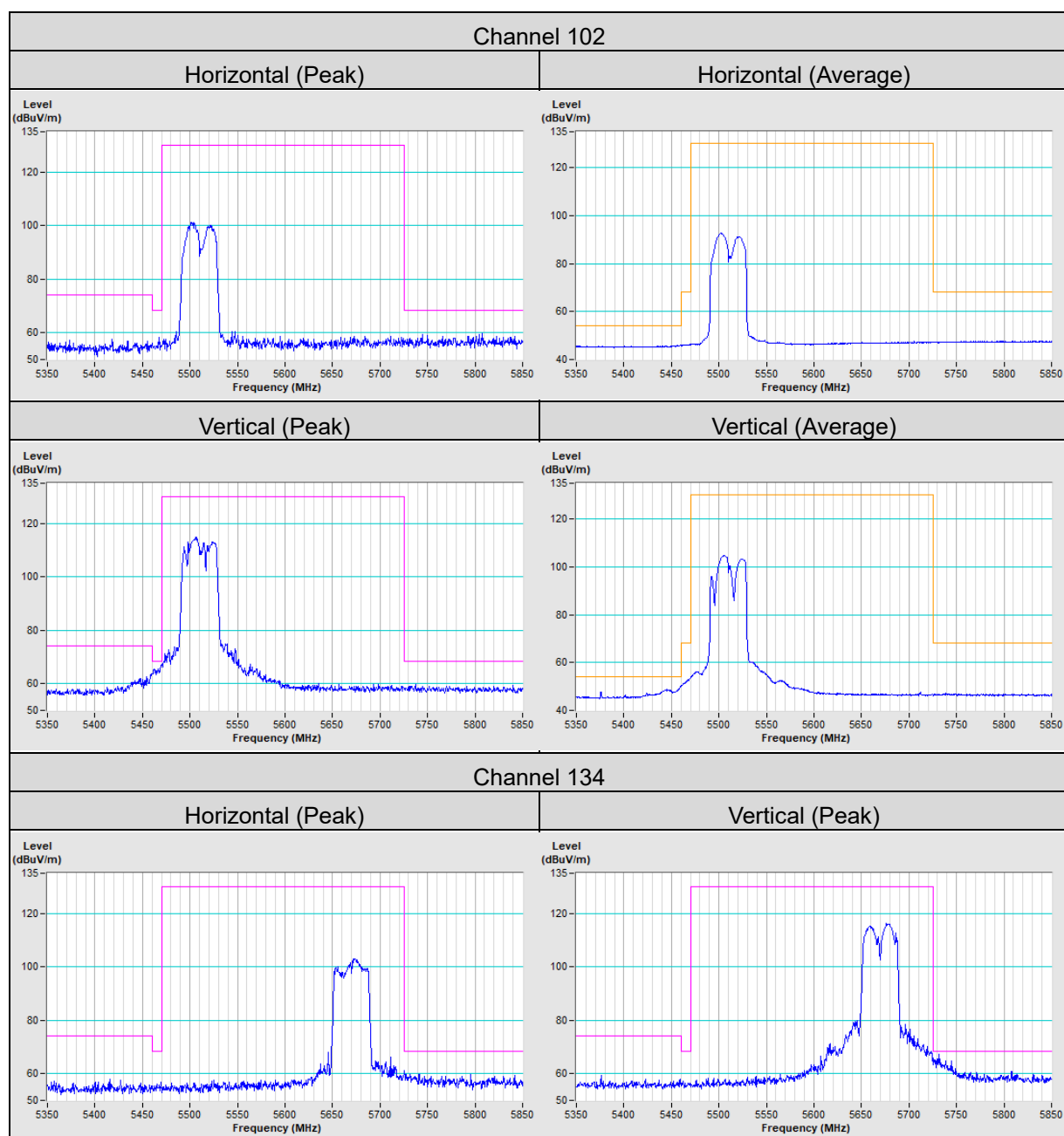




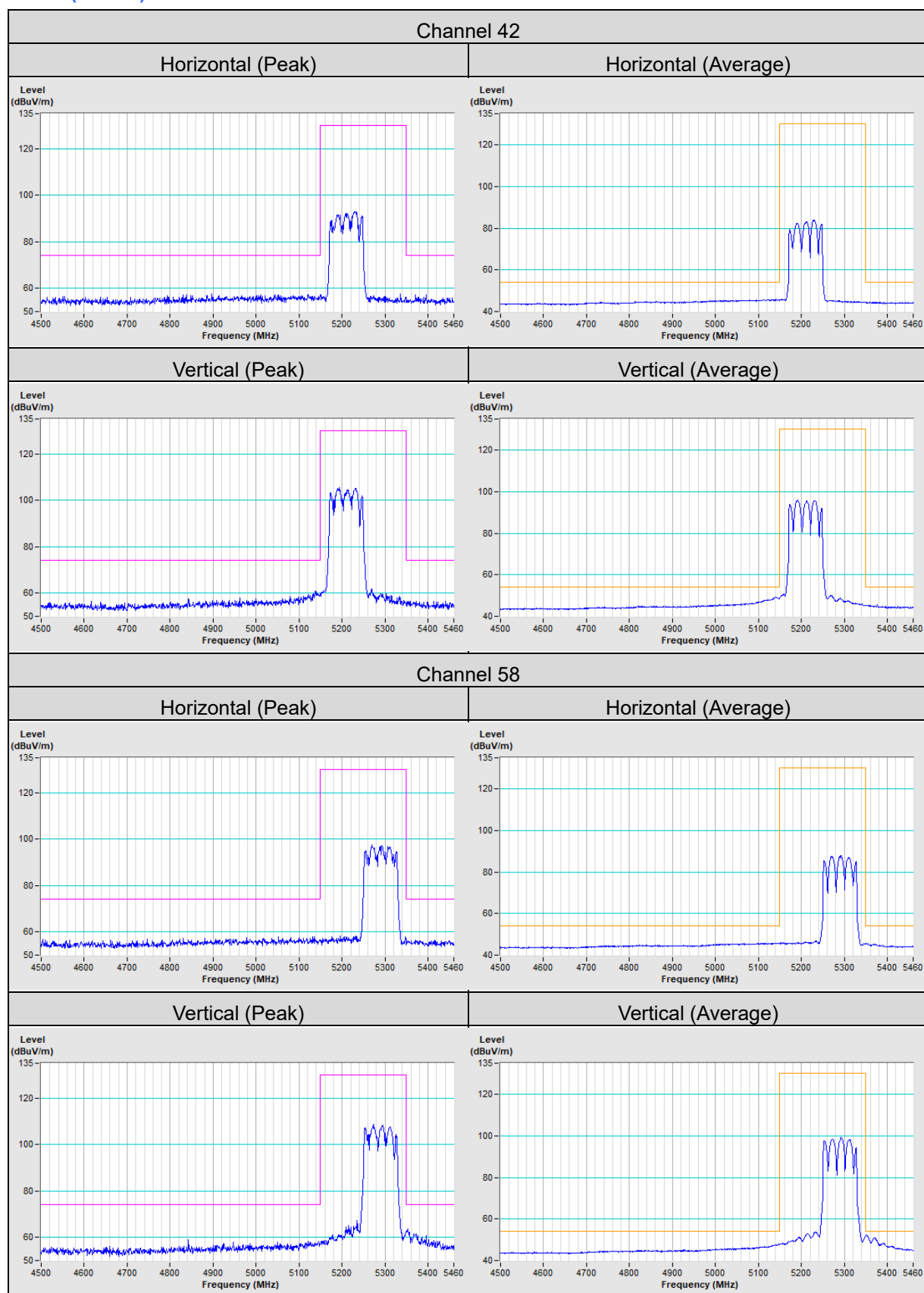
802.11n (HT40)

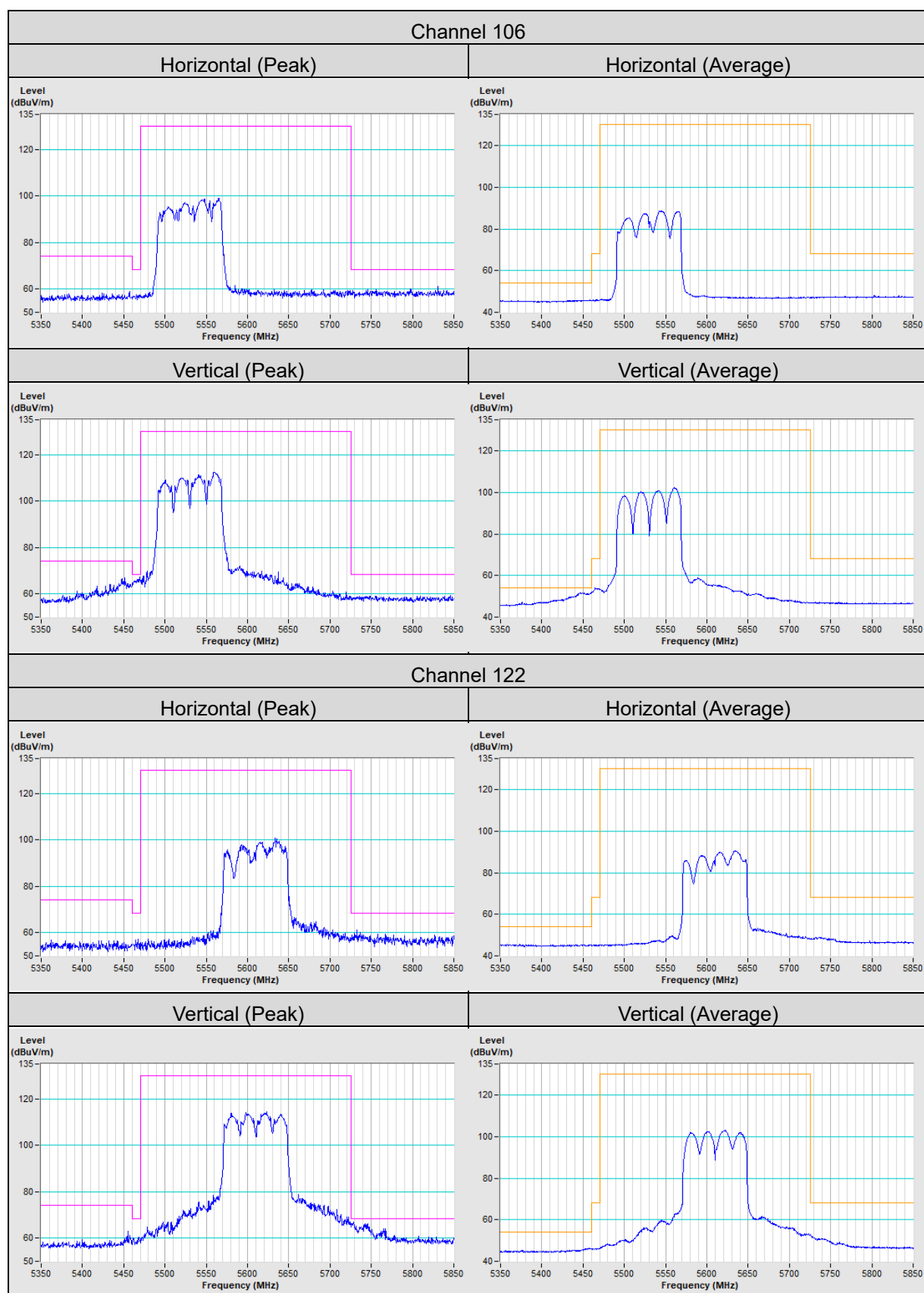






802.11ac (VHT80)





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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