

Partial FCC Test Report

Report No.: RFBEAD-WTW-P21116029

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. 13, 2021 & Mar. 10 ~ Mar. 15, 2022

Issued Date: May 17, 2022

Applicant: ADVANTECH CO., LTD

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

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

Test Location (2): No. 70, Wenming Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)

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



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Release Control Record

Issue No.	Description	Date Issued
RFBEAD-WTW-P21116029	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. 13, 2021 & Mar. 10 ~ Mar. 15, 2022

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
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 C (Section 15.247)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Pass	Meet the requirement of limit. Minimum passing margin is -21.86dB at 0.16600MHz
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -0.35dB at 2483.50MHz.
15.247(d)	Antenna Port Emission	N/A	Refer to note 1
15.247(a)(2)	6dB bandwidth	N/A	Refer to note 1
15.247(b)	Conducted power	N/A	Refer to note 1
15.247(e)	Power Spectral Density	N/A	Refer to note 1
15.203	Antenna Requirement	Pass	Antenna connector is SMA Male Reverse not a standard connector.

Note:

1. This report is a partial report. Therefore, only AC Power Conducted Emission and Radiated Emissions were verified and recorded in this report. Other testing data please refer to the original BV CPS report no.: RF200205C12.
2. For 2.4G band compliance with rule 15.247(d) of the band-edge items, the test plots were recorded in Annex A. Test Procedures refer to report 4.1.3.
3. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.79 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.00 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, EK16333AC2GDXXXXXX (where "X" maybe any alphanumeric character, blank or "-")
Sample Status	Engineering sample
Power Supply Rating	24Vdc (Adapter)
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 300Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	380.745mW
Antenna Type	Refer to note
Antenna Connector	Refer to note
Accessory Device	NA
Data Cable Supplied	NA

Note:

- This report is prepared for FCC class II permissive change. The differences compared with the original report (BV CPS report no.: RF200205C12) are as below: Therefore, only AC Power Conducted Emission and Radiated Emissions were verified and recorded in this report.

Difference:

- Model name was changed to EKI-6333AC-2GD
 - The housing changed from plastic housing to metal housing
 - Antenna was reduced to 2 pcs per device
 - Antenna and Antenna position was changed
 - Add one more DC power board on EKI-6333AC-2GD
- 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	
	EK16333AC2GDXXXXXX	character, blank or "-"	

- The identification of the samples tested since ISO 17025 requires.

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

Modulation Mode	TX Function
802.11b	2TX
802.11g	2TX
802.11n (HT20)	2TX
802.11n (HT40)	2TX

6. 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	

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

7 channels are provided for 802.11n (HT40):

Channel	Frequency	Channel	Frequency
3	2422MHz	7	2442MHz
4	2427MHz	8	2447MHz
5	2432MHz	9	2452MHz
6	2437MHz		

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE \geq 1G	RE<1G	PLC	
-	√	√	√	-

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

Note:

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

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1.0
-	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6.0
-	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5
-	802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

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	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0

Power Line Conducted Emission Test:

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11b	1 to 11	6	DSSS	DBPSK	1.0

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	23 deg. C, 60% RH	120Vac, 60Hz	Hans Wu
RE $<$ 1G	23 deg. C, 65% RH	120Vac, 60Hz	Tim Chen
PLC	25 deg. C, 75% RH	120Vac, 60Hz	Greg Lin

*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 is not required.

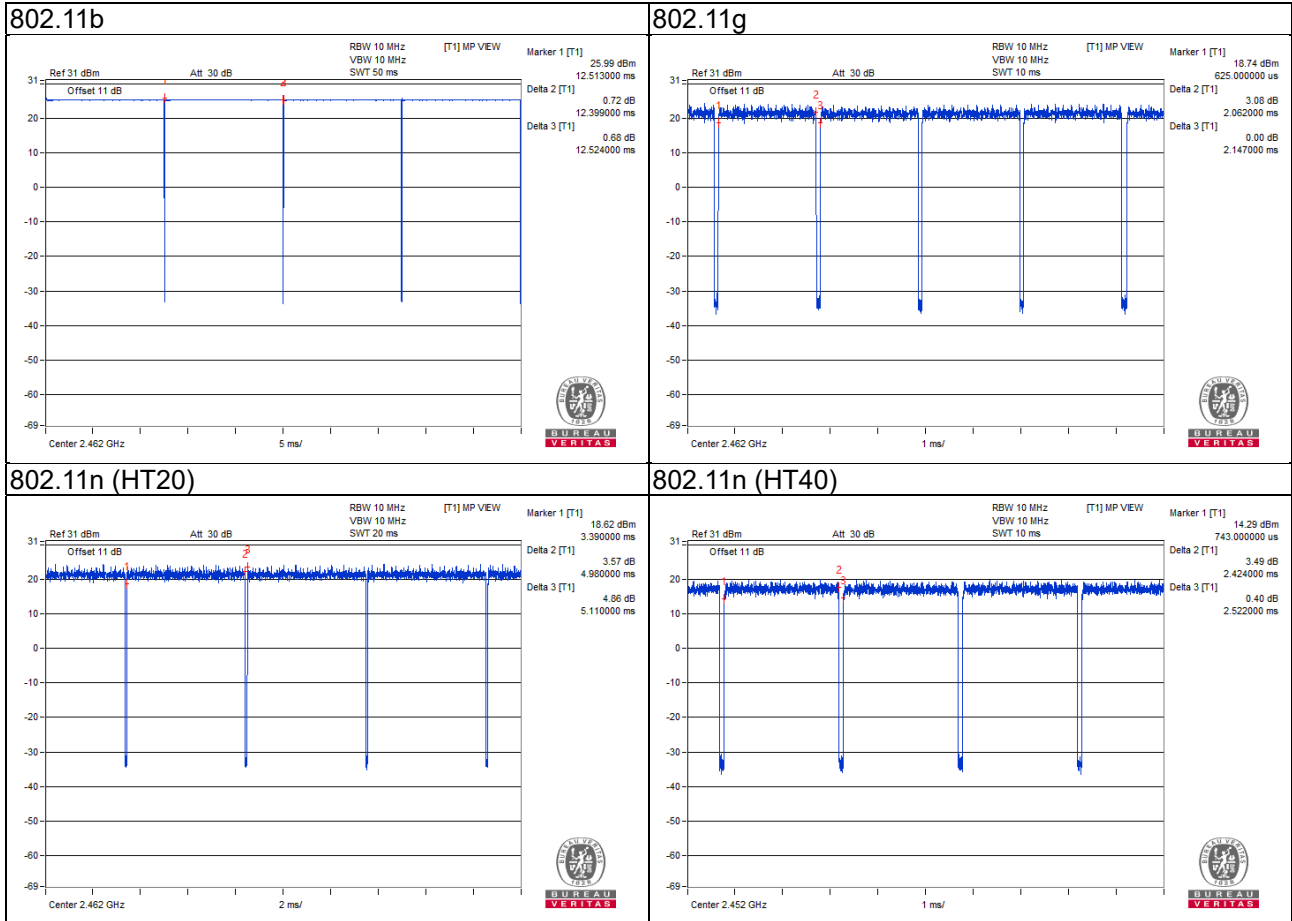
Duty cycle of test signal is < 98%, duty factor shall be considered.

802.11b: Duty cycle = 12.399/12.524 = 0.99

802.11g: Duty cycle = 2.062/2.147 = 0.96, Duty factor = 10 * log(1/0.96) = 0.18

802.11n (HT20): Duty cycle = 4.98/5.11 = 0.975, Duty factor = 10 * log(1/0.975) = 0.11

802.11n (HT40): Duty cycle = 2.424/2.522 = 0.961, Duty factor = 10 * log(1/0.961) = 0.17



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.

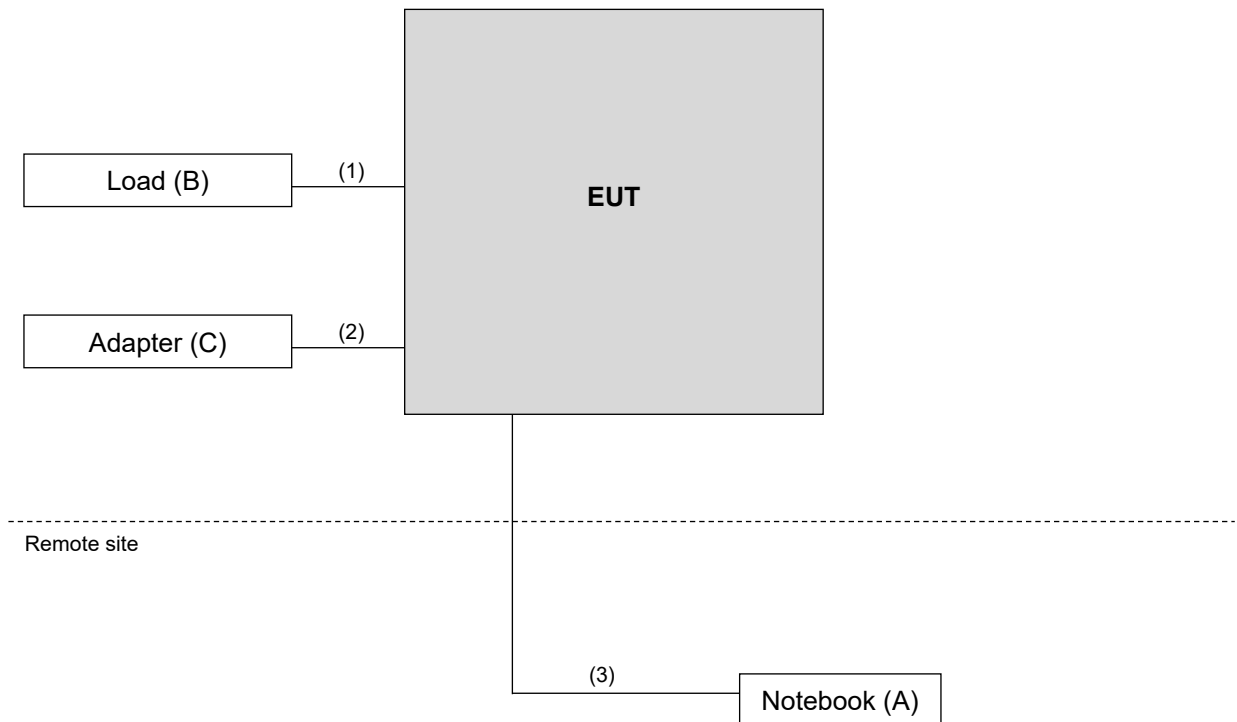
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Notebook	Lenovo	T480	PF1EZSA2	FCC DoC Approved	-
B.	Load	NA	NA	NA	NA	-
C.	Adapter	DVE	DSA-42PFC-24 2 240100	NA	NA	Provided by client

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	1.45	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 C (15.247)

ANSI C63.10-2013

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

References Test Guidance:

KDB 558074 D01 15.247 Meas Guidance v05r02

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. Other emissions shall be at least 30dB below the highest level of the desired power:

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 30dB under any condition of modulation.

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
Loop Antenna TESEQ	HLA 6121	45745	Jul. 21, 2021	Jul. 20, 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. 13, 2021 & Mar. 10 ~ 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 detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

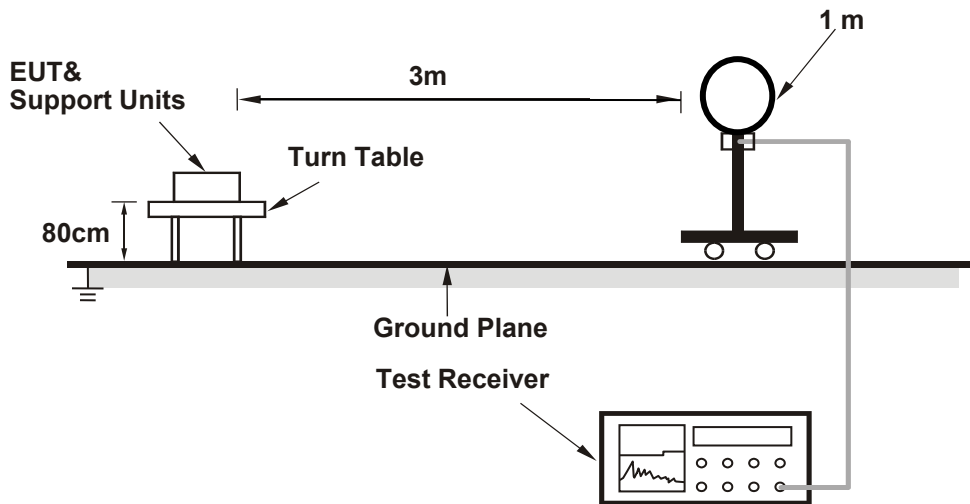
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.
(802.11b: RBW = 1MHz, VBW = 10Hz; 802.11g: RBW = 1MHz, VBW = 1kHz;
802.11n (HT20): RBW = 1MHz, VBW = 1kHz; 802.11n (HT40): 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

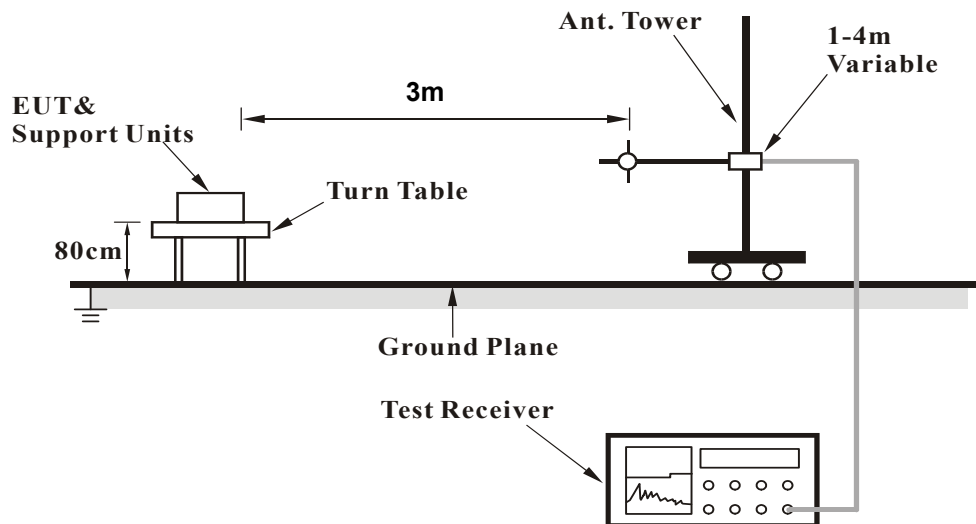
No deviation.

4.1.5 Test Set Up

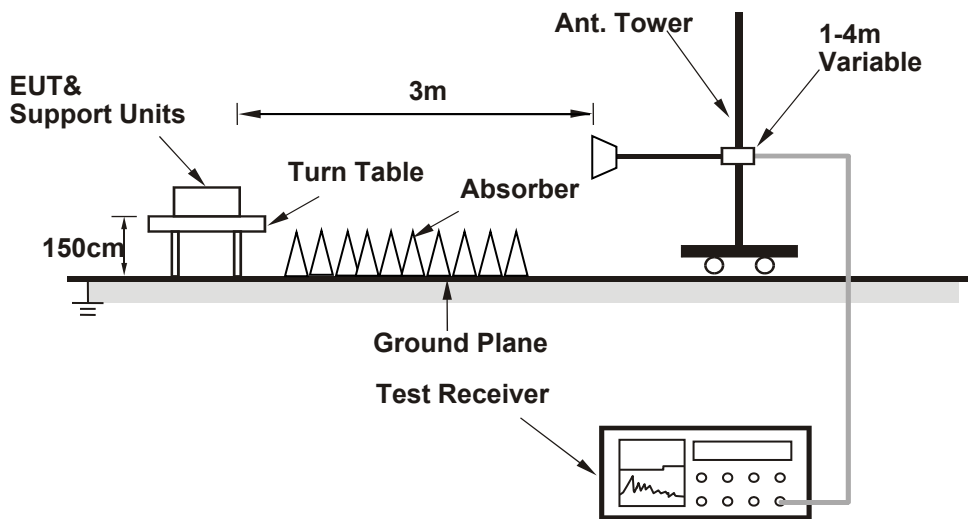
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



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

4.1.6 EUT Operating Conditions

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

4.1.7 Test Results

Above 1GHz worst-Case data:

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2388.00	58.99 PK	74.00	-15.01	1.60 H	180	26.96	32.03
2	2388.00	47.19 AV	54.00	-6.81	1.60 H	180	15.16	32.03
3	*2412.00	111.34 PK			1.60 H	180	79.33	32.01
4	*2412.00	108.89 AV			1.60 H	180	76.88	32.01
5	4824.00	47.69 PK	74.00	-26.31	2.66 H	54	44.53	3.16
6	4824.00	39.97 AV	54.00	-14.03	2.66 H	54	36.81	3.16
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	2390.00	58.15 PK	74.00	-15.85	1.94 V	68	26.11	32.04
2	2390.00	46.60 AV	54.00	-7.40	1.94 V	68	14.56	32.04
3	*2412.00	116.02 PK			1.94 V	68	84.01	32.01
4	*2412.00	113.48 AV			1.94 V	68	81.47	32.01
5	4824.00	48.26 PK	74.00	-25.74	1.54 V	60	45.10	3.16
6	4824.00	40.32 AV	54.00	-13.68	1.54 V	60	37.16	3.16

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.18 PK			1.37 H	162	71.51	31.67
2	*2437.00	100.54 AV			1.37 H	162	68.87	31.67
3	4874.00	53.42 PK	74.00	-20.58	1.78 H	36	50.82	2.60
4	4874.00	44.63 AV	54.00	-9.37	1.78 H	36	42.03	2.60

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	*2437.00	117.35 PK			1.53 V	87	85.68	31.67
2	*2437.00	114.72 AV			1.53 V	87	83.05	31.67
3	4874.00	51.71 PK	74.00	-22.29	1.47 V	20	49.11	2.60
4	4874.00	42.14 AV	54.00	-11.86	1.47 V	20	39.54	2.60

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * " : Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.63 PK			1.52 H	180	78.67	31.96
2	*2462.00	108.17 AV			1.52 H	180	76.21	31.96
3	2483.50	57.97 PK	74.00	-16.03	1.52 H	180	25.96	32.01
4	2483.50	45.78 AV	54.00	-8.22	1.52 H	180	13.77	32.01
5	4924.00	47.44 PK	74.00	-26.56	2.71 H	59	44.20	3.24
6	4924.00	39.88 AV	54.00	-14.12	2.71 H	59	36.64	3.24

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	*2462.00	117.00 PK			1.93 V	67	85.04	31.96
2	*2462.00	114.40 AV			1.93 V	67	82.44	31.96
3	2483.50	61.78 PK	74.00	-12.22	1.93 V	67	29.77	32.01
4	2483.50	52.23 AV	54.00	-1.77	1.93 V	67	20.22	32.01
5	4924.00	48.17 PK	74.00	-25.83	1.53 V	62	44.93	3.24
6	4924.00	40.12 AV	54.00	-13.88	1.53 V	62	36.88	3.24

REMARKS:

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

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CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2388.00	63.33 PK	74.00	-10.67	1.56 H	181	31.30	32.03
2	2388.00	47.78 AV	54.00	-6.22	1.56 H	181	15.75	32.03
3	*2412.00	109.88 PK			1.56 H	181	77.87	32.01
4	*2412.00	99.40 AV			1.56 H	181	67.39	32.01
5	4824.00	47.35 PK	74.00	-26.65	2.45 H	50	44.19	3.16
6	4824.00	35.84 AV	54.00	-18.16	2.45 H	50	32.68	3.16

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	2389.00	69.18 PK	74.00	-4.82	2.16 V	67	37.14	32.04
2	2389.00	53.28 AV	54.00	-0.72	2.16 V	67	21.24	32.04
3	*2412.00	116.96 PK			2.16 V	67	84.95	32.01
4	*2412.00	106.24 AV			2.16 V	67	74.23	32.01
5	4824.00	46.50 PK	74.00	-27.50	1.50 V	68	43.34	3.16
6	4824.00	35.83 AV	54.00	-18.17	1.50 V	68	32.67	3.16

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	114.49 PK			1.52 H	179	82.53	31.96
2	*2437.00	103.94 AV			1.52 H	179	71.98	31.96
3	2486.00	61.82 PK	74.00	-12.18	1.52 H	179	29.80	32.02
4	2486.00	46.58 AV	54.00	-7.42	1.52 H	179	14.56	32.02
5	4874.00	48.51 PK	74.00	-25.49	2.43 H	66	45.30	3.21
6	4874.00	37.00 AV	54.00	-17.00	2.43 H	66	33.79	3.21

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	*2437.00	121.33 PK			2.18 V	69	89.37	31.96
2	*2437.00	110.89 AV			2.18 V	69	78.93	31.96
3	2483.50	70.98 PK	74.00	-3.02	2.18 V	69	38.97	32.01
4	2483.50	53.38 AV	54.00	-0.62	2.18 V	69	21.37	32.01
5	4874.00	47.89 PK	74.00	-26.11	1.53 V	60	44.68	3.21
6	4874.00	37.01 AV	54.00	-16.99	1.53 V	60	33.80	3.21

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * " : Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.41 PK			1.48 H	179	76.45	31.96
2	*2462.00	98.07 AV			1.48 H	179	66.11	31.96
3	2483.50	59.89 PK	74.00	-14.11	1.48 H	179	27.88	32.01
4	2483.50	46.39 AV	54.00	-7.61	1.48 H	179	14.38	32.01
5	4924.00	47.62 PK	74.00	-26.38	2.46 H	51	44.38	3.24
6	4924.00	36.46 AV	54.00	-17.54	2.46 H	51	33.22	3.24

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	*2462.00	116.17 PK			1.99 V	66	84.21	31.96
2	*2462.00	105.13 AV			1.99 V	66	73.17	31.96
3	2483.50	69.07 PK	74.00	-4.93	1.99 V	66	37.06	32.01
4	2483.50	53.08 AV	54.00	-0.92	1.99 V	66	21.07	32.01
5	4924.00	46.24 PK	74.00	-27.76	1.53 V	64	43.00	3.24
6	4924.00	35.85 AV	54.00	-18.15	1.53 V	64	32.61	3.24

REMARKS:

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

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.76 PK	74.00	-13.24	1.58 H	179	28.72	32.04
2	2390.00	48.20 AV	54.00	-5.80	1.58 H	179	16.16	32.04
3	*2412.00	110.18 PK			1.58 H	179	78.17	32.01
4	*2412.00	99.01 AV			1.58 H	179	67.00	32.01
5	4824.00	47.52 PK	74.00	-26.48	2.37 H	48	44.36	3.16
6	4824.00	36.44 AV	54.00	-17.56	2.37 H	48	33.28	3.16

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	2390.00	61.46 PK	74.00	-12.54	2.31 V	69	29.42	32.04
2	2390.00	48.14 AV	54.00	-5.86	2.31 V	69	16.10	32.04
3	*2412.00	115.74 PK			2.31 V	69	83.73	32.01
4	*2412.00	104.97 AV			2.31 V	69	72.96	32.01
5	4824.00	47.68 PK	74.00	-26.32	1.56 V	63	44.52	3.16
6	4824.00	36.20 AV	54.00	-17.80	1.56 V	63	33.04	3.16

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	113.31 PK			1.60 H	179	81.35	31.96
2	*2437.00	103.70 AV			1.60 H	179	71.74	31.96
3	2483.50	59.91 PK	74.00	-14.09	1.60 H	179	27.90	32.01
4	2483.50	46.60 AV	54.00	-7.40	1.60 H	179	14.59	32.01
5	4874.00	49.01 PK	74.00	-24.99	2.37 H	65	45.80	3.21
6	4874.00	37.66 AV	54.00	-16.34	2.37 H	65	34.45	3.21

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	*2437.00	121.24 PK			2.19 V	69	89.28	31.96
2	*2437.00	110.41 AV			2.19 V	69	78.45	31.96
3	2483.50	72.03 PK	74.00	-1.97	2.19 V	69	40.02	32.01
4	2483.50	53.00 AV	54.00	-1.00	2.19 V	69	20.99	32.01
5	4874.00	48.86 PK	74.00	-25.14	1.53 V	74	45.65	3.21
6	4874.00	38.01 AV	54.00	-15.99	1.53 V	74	34.80	3.21

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * " : Fundamental frequency.

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	109.91 PK			1.51 H	179	77.95	31.96
2	*2462.00	99.32 AV			1.51 H	179	67.36	31.96
3	2483.50	63.43 PK	74.00	-10.57	1.51 H	179	31.42	32.01
4	2483.50	48.58 AV	54.00	-5.42	1.51 H	179	16.57	32.01
5	4924.00	47.49 PK	74.00	-26.51	2.37 H	56	44.25	3.24
6	4924.00	35.94 AV	54.00	-18.06	2.37 H	56	32.70	3.24

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	*2462.00	116.32 PK			2.08 V	70	84.36	31.96
2	*2462.00	105.21 AV			2.08 V	70	73.25	31.96
3	2483.50	69.87 PK	74.00	-4.13	2.08 V	70	37.86	32.01
4	2483.50	53.65 AV	54.00	-0.35	2.08 V	70	21.64	32.01
5	4924.00	46.88 PK	74.00	-27.12	1.51 V	64	43.64	3.24
6	4924.00	36.26 AV	54.00	-17.74	1.51 V	64	33.02	3.24

REMARKS:

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

802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2387.00	61.73 PK	74.00	-12.27	1.60 H	180	29.70	32.03
2	2387.00	47.72 AV	54.00	-6.28	1.60 H	180	15.69	32.03
3	*2422.00	103.25 PK			1.60 H	180	71.26	31.99
4	*2422.00	93.01 AV			1.60 H	180	61.02	31.99
5	4844.00	46.93 PK	74.00	-27.07	2.52 H	74	43.76	3.17
6	4844.00	35.51 AV	54.00	-18.49	2.52 H	74	32.34	3.17

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	2390.00	66.57 PK	74.00	-7.43	2.01 V	69	34.53	32.04
2	2390.00	52.70 AV	54.00	-1.30	2.01 V	69	20.66	32.04
3	*2422.00	109.11 PK			2.01 V	69	77.12	31.99
4	*2422.00	99.64 AV			2.01 V	69	67.65	31.99
5	4844.00	46.55 PK	74.00	-27.45	1.46 V	63	43.38	3.17
6	4844.00	35.59 AV	54.00	-18.41	1.46 V	63	32.42	3.17

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * " : Fundamental frequency.

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.16 PK			1.54 H	182	75.20	31.96
2	*2437.00	98.09 AV			1.54 H	182	66.13	31.96
3	4874.00	48.35 PK	74.00	-25.65	2.33 H	64	45.14	3.21
4	4874.00	36.89 AV	54.00	-17.11	2.33 H	64	33.68	3.21

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	*2437.00	113.73 PK			2.16 V	68	81.77	31.96
2	*2437.00	104.46 AV			2.16 V	68	72.50	31.96
3	4874.00	46.41 PK	74.00	-27.59	1.54 V	61	43.20	3.21
4	4874.00	35.70 AV	54.00	-18.30	1.54 V	61	32.49	3.21

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	105.41 PK			1.60 H	180	73.48	31.93
2	*2452.00	94.93 AV			1.60 H	180	63.00	31.93
3	2483.50	61.56 PK	74.00	-12.44	1.60 H	180	29.55	32.01
4	2483.50	46.28 AV	54.00	-7.72	1.60 H	180	14.27	32.01
5	4904.00	46.31 PK	74.00	-27.69	1.42 H	78	43.08	3.23
6	4904.00	36.76 AV	54.00	-17.24	1.42 H	78	33.53	3.23

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	*2452.00	112.23 PK			2.04 V	67	80.30	31.93
2	*2452.00	102.21 AV			2.04 V	67	70.28	31.93
3	2483.50	69.77 PK	74.00	-4.23	2.04 V	67	37.76	32.01
4	2483.50	52.57 AV	54.00	-1.43	2.04 V	67	20.56	32.01
5	4904.00	46.51 PK	74.00	-27.49	1.45 V	62	43.28	3.23
6	4904.00	37.17 AV	54.00	-16.83	1.45 V	62	33.94	3.23

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)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * " : Fundamental frequency.

Below 1GHz worst-case data:

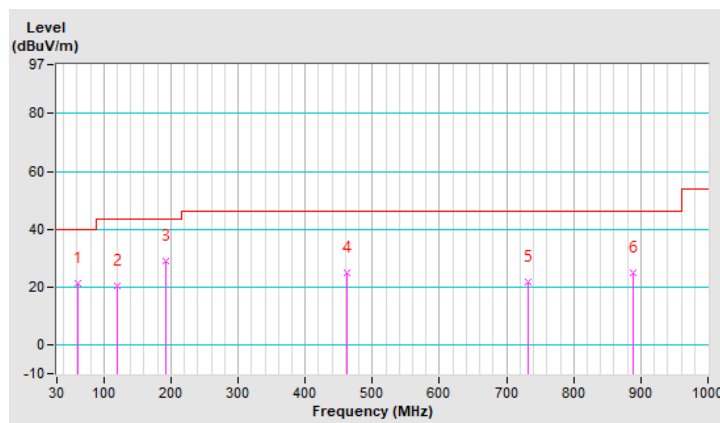
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CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	21.18 QP	40.00	-18.82	1.51 H	240	40.13	-18.95
2	120.21	20.33 QP	43.50	-23.17	1.51 H	66	40.68	-20.35
3	191.99	29.09 QP	43.50	-14.41	1.51 H	105	50.23	-21.14
4	462.62	24.87 QP	46.00	-21.13	2.00 H	55	38.36	-13.49
5	731.31	21.58 QP	46.00	-24.42	1.51 H	281	30.35	-8.77
6	888.45	25.03 QP	46.00	-20.97	2.00 H	79	31.90	-6.87

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)
3. The other emission levels were very low against the limit.
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 20dB below the permissible value to be report.

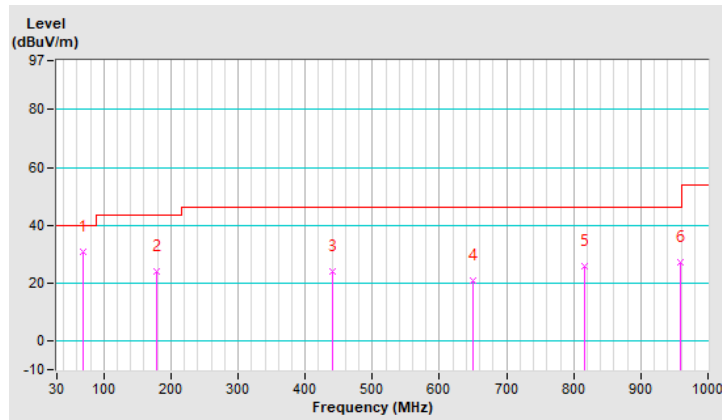


CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	68.80	30.64 QP	40.00	-9.36	1.00 V	160	50.87	-20.23
2	178.41	24.13 QP	43.50	-19.37	1.00 V	308	43.62	-19.49
3	440.31	23.81 QP	46.00	-22.19	1.49 V	265	37.77	-13.96
4	649.83	20.94 QP	46.00	-25.06	1.49 V	142	30.89	-9.95
5	816.67	25.82 QP	46.00	-20.18	1.00 V	293	33.49	-7.67
6	959.26	27.12 QP	46.00	-18.88	1.00 V	225	32.75	-5.63

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)
3. The other emission levels were very low against the limit.
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 20dB 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_Cond_ V7.3.7.4	NA	NA	NA

- Note:** 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2 (Conduction 2).
3. The VCCI Site Registration No. is C-12047.
4. Test Date: Mar. 15, 2022

4.2.3 Test Procedures

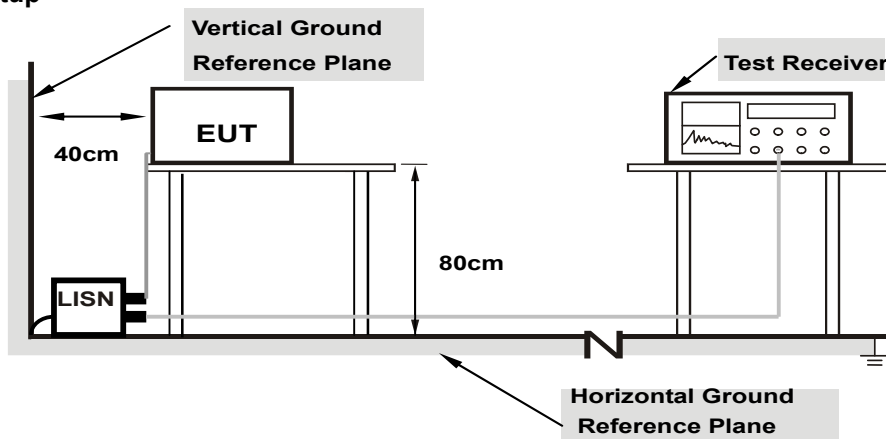
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance 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

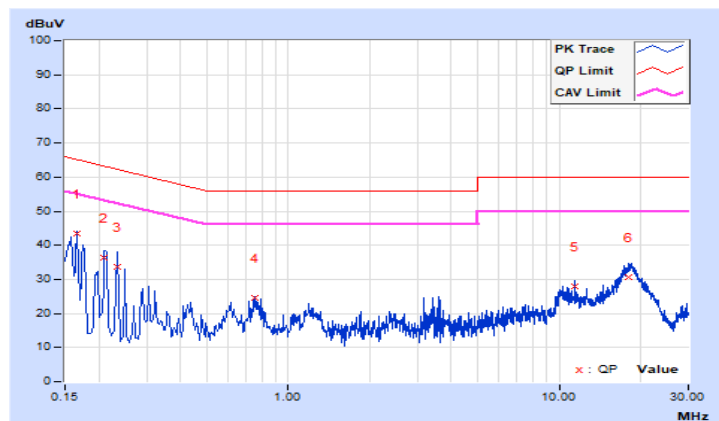
Worst-case data: 802.11b

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.16600	10.13	33.17	13.78	43.30	23.91	65.16
2	0.21000	10.14	26.36	8.89	36.50	19.03	63.21	53.21	-26.71	-34.18
3	0.23400	10.14	23.49	5.02	33.63	15.16	62.31	52.31	-28.68	-37.15
4	0.75000	10.18	14.33	8.63	24.51	18.81	56.00	46.00	-31.49	-27.19
5	11.41000	10.30	17.78	9.15	28.08	19.45	60.00	50.00	-31.92	-30.55
6	17.98600	10.37	20.37	14.47	30.74	24.84	60.00	50.00	-29.26	-25.16

Remarks:

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

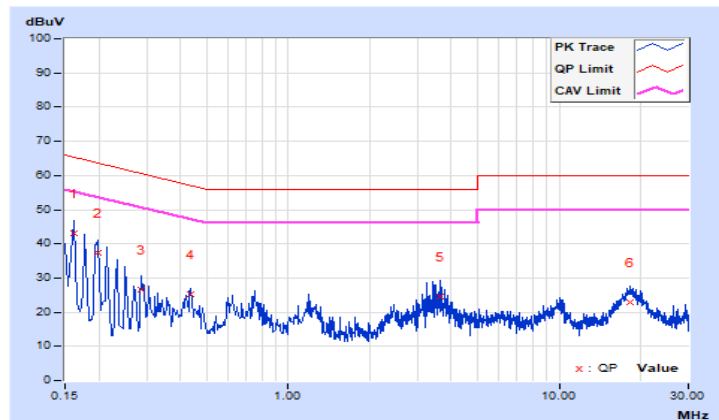


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr. Factor (dB)	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16200	10.14	32.98	14.07	43.12	24.21	65.36	55.36	-22.24	-31.15
2	0.19800	10.15	27.32	8.93	37.47	19.08	63.69	53.69	-26.22	-34.61
3	0.28600	10.16	16.28	2.92	26.44	13.08	60.64	50.64	-34.20	-37.56
4	0.43400	10.17	14.94	6.35	25.11	16.52	57.18	47.18	-32.07	-30.66
5	3.65400	10.26	14.28	1.97	24.54	12.23	56.00	46.00	-31.46	-33.77
6	18.21000	10.51	12.23	6.44	22.74	16.95	60.00	50.00	-37.26	-33.05

Remarks:

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

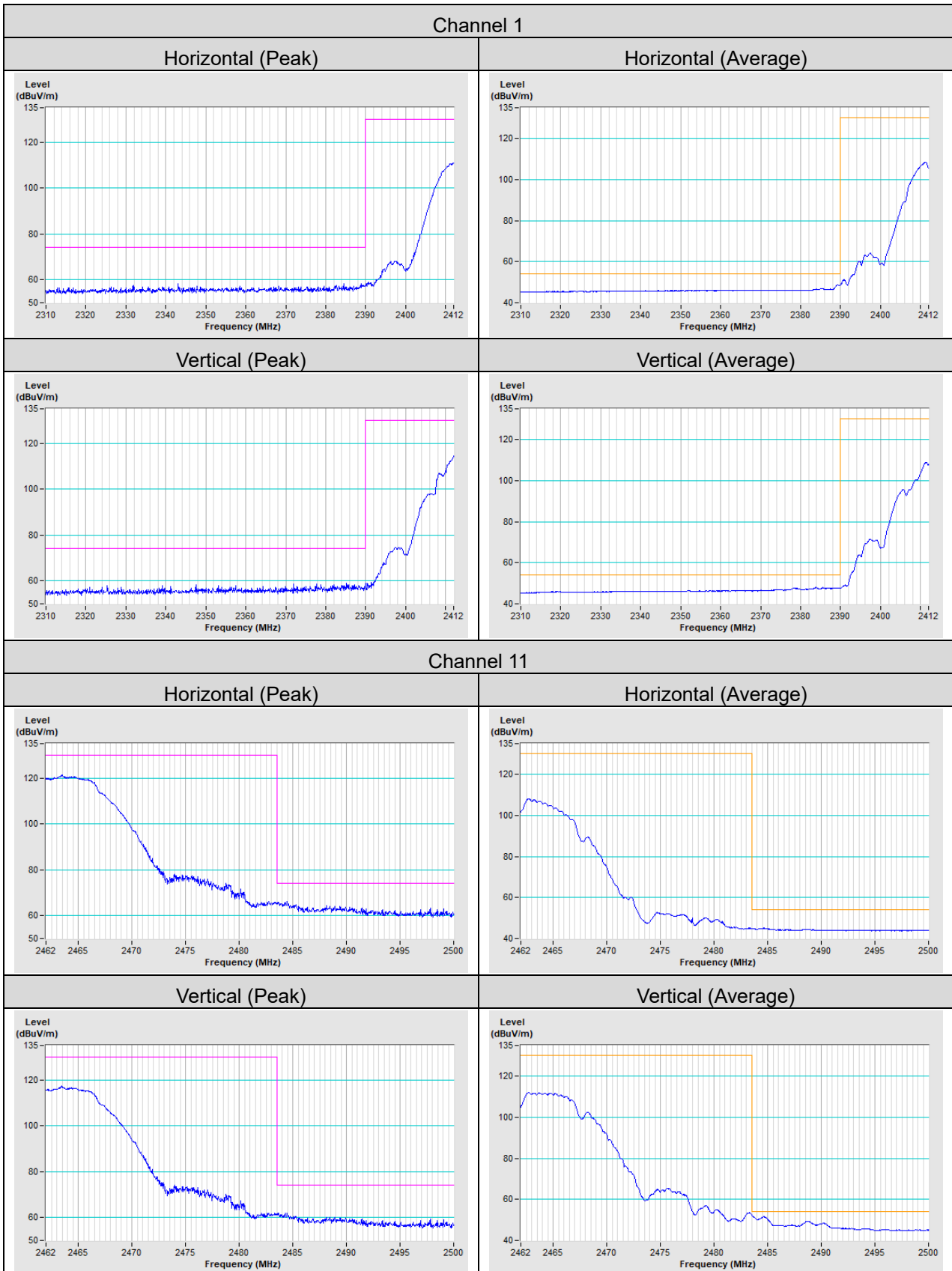


5 Pictures of Test Arrangements

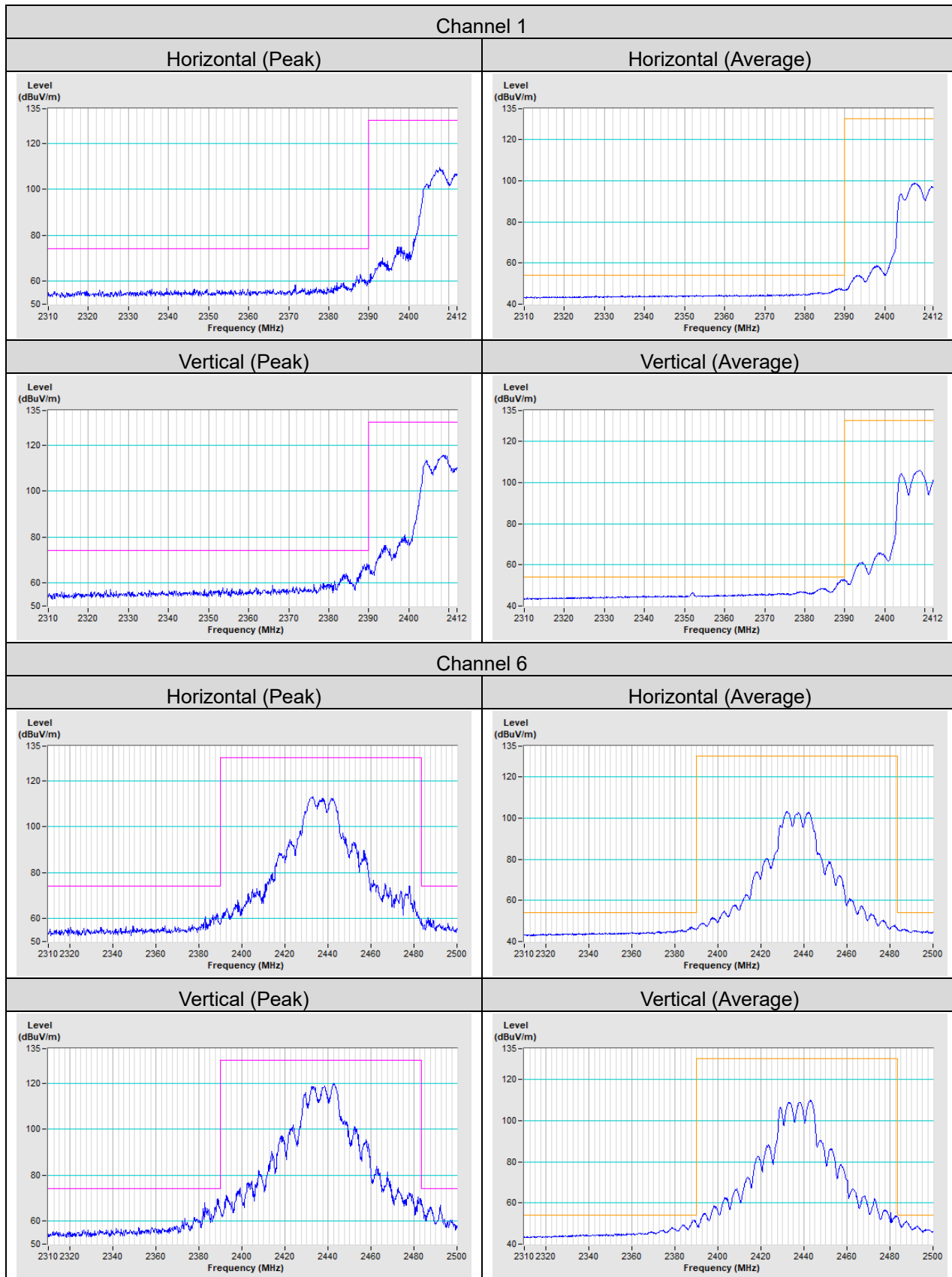
Please refer to the attached file (Test Setup Photo).

Annex A- Band Edge Measurement

802.11b

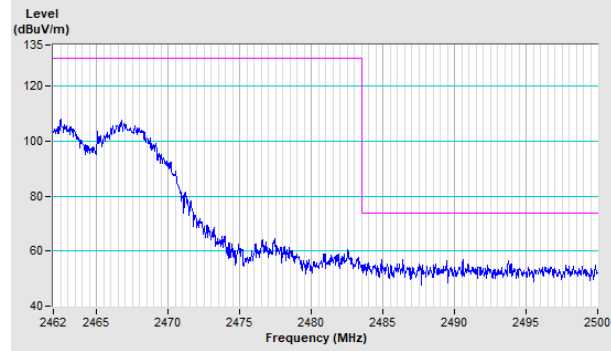


802.11g

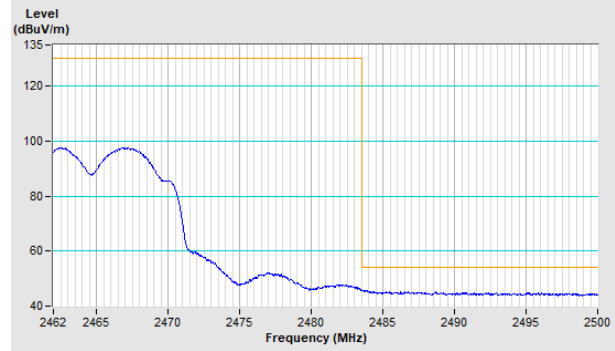


Channel 11

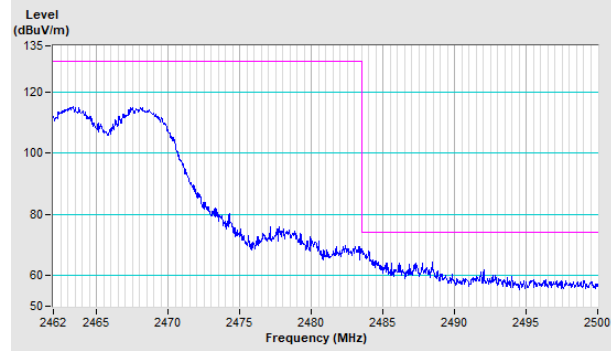
Horizontal (Peak)



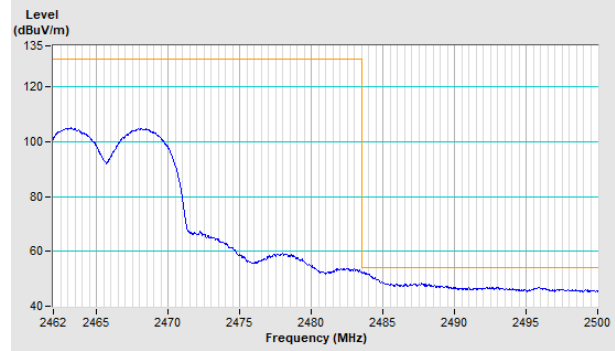
Horizontal (Average)



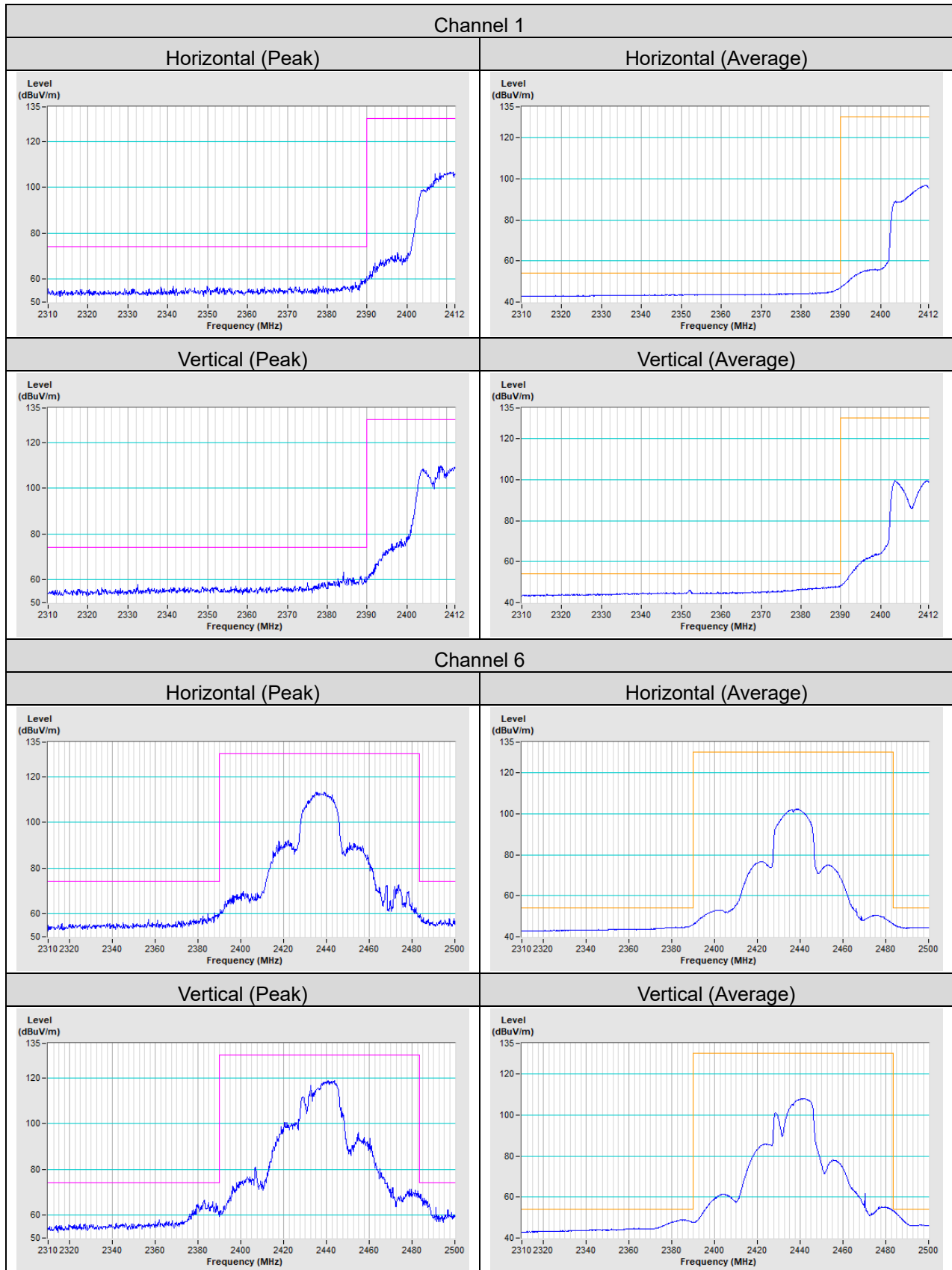
Vertical (Peak)



Vertical (Average)

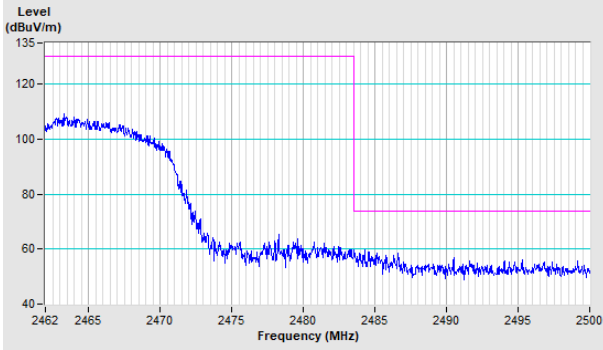


802.11n (HT20)

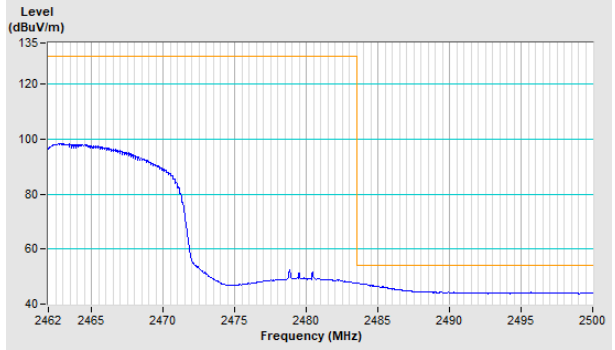


Channel 11

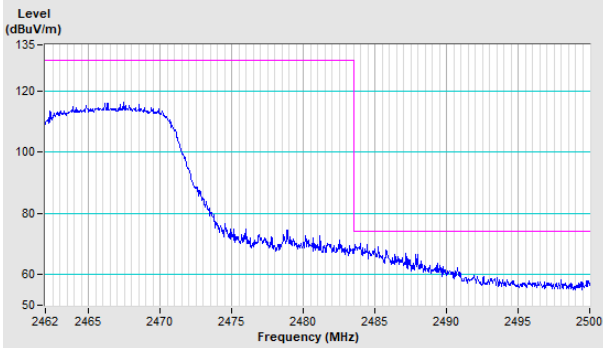
Horizontal (Peak)



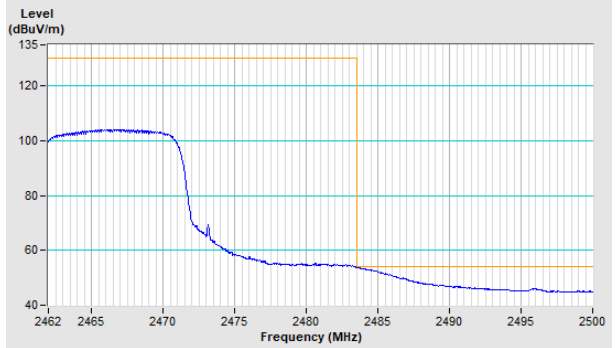
Horizontal (Average)



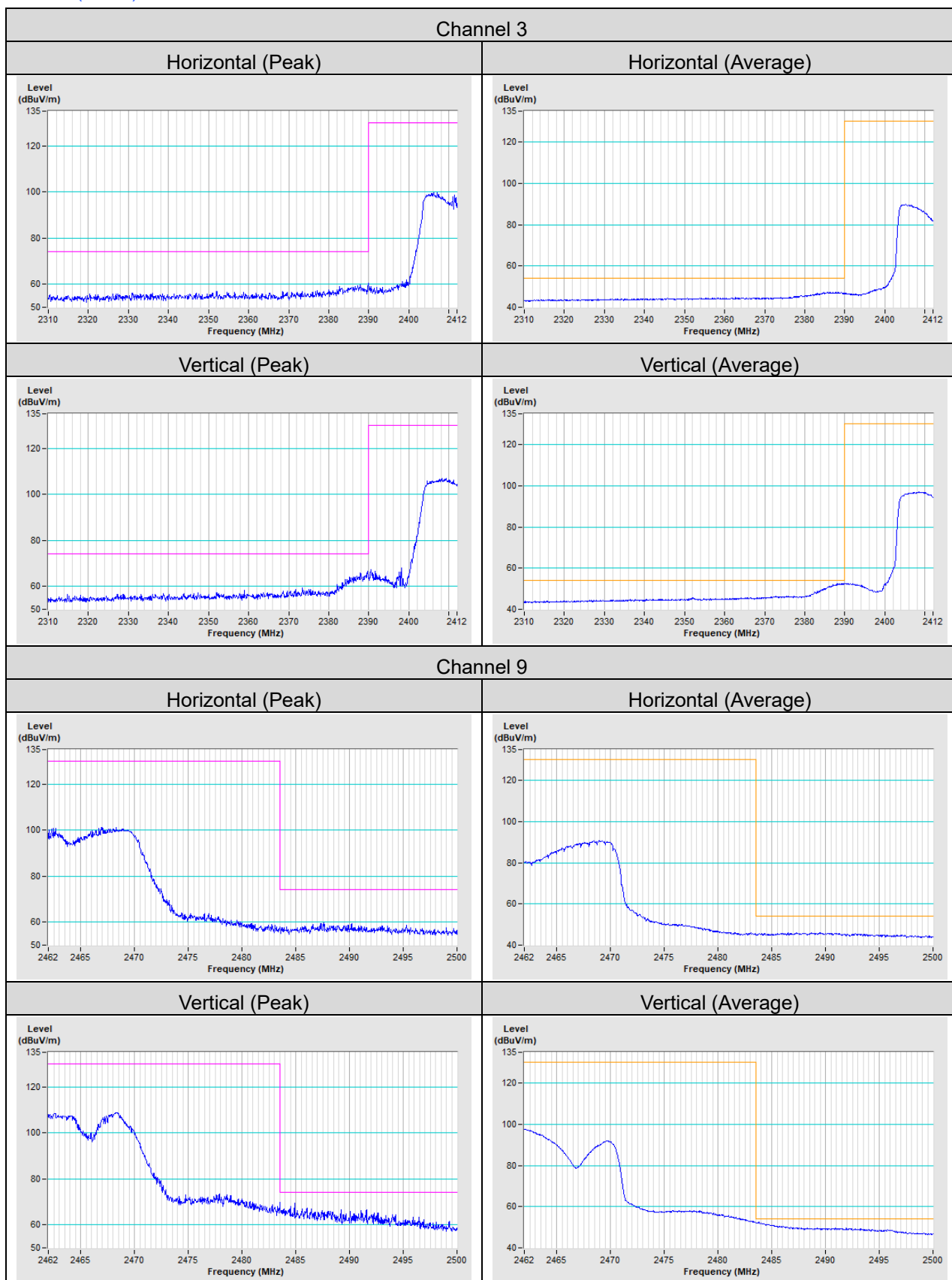
Vertical (Peak)



Vertical (Average)



802.11n (HT40)



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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