

FCC Test Report (WLAN)

Report No.: RF200103E02

FCC ID: TLZ-CU427

Test Model: AW-CU427-P, AW-CU427-E

Received Date: Jan. 03, 2020

Test Date: Apr. 13 to 16, 2020

Issued Date: Apr. 22, 2020

Applicant: AzureWave Technologies, Inc.

Address: 8F., No.94, Baozhong Rd. , Xindian Dist., New Taipei City , Taiwan 231

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan

**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
RF200103E02	Original release.	Apr. 22, 2020

1 Certificate of Conformity

Product: IEEE 802.11 b/g/n MAC/baseband/radio and Bluetooth 4.2 IoT Module Internal Antenna

Brand: AzureWave

Test Model: AW-CU427-P, AW-CU427-E

Sample Status: ENGINEERING SAMPLE

Applicant: AzureWave Technologies, Inc.

Test Date: Apr. 13 to 16, 2020

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 EMC characteristics under the conditions specified in this report.

Prepared by : Joyce Kuo , **Date:** Apr. 22, 2020
Joyce Kuo / Specialist

Approved by : Clark Lin , **Date:** Apr. 22, 2020
Clark Lin / Technical Manager

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 -13.62dB at 2.00391MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at 2390.00MHz, 7311.00MHz, 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connector is i-pex(MHF) not a standard connector.

Note:

- For 2.4GHz 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.
- 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	1.9 dB
Conducted emissions	-	2.5 dB
Radiated Emissions up to 1 GHz	9kHz ~ 30MHz	3.1 dB
	30MHz ~ 1GHz	5.5 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	5.1 dB
	18GHz ~ 40GHz	5.3 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT (WLAN)

Product	IEEE 802.11 b/g/n MAC/baseband/radio and Bluetooth 4.2 IoT Module Internal Antenna
Brand	AzureWave
Test Model	AW-CU427-P, AW-CU427-E
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 3.6V from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 72.2Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	802.11b, 802.11g, 802.11n (HT20): 11
Output Power	555.904 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. WLAN & Bluetooth technology cannot transmit at same time.
2. The EUT has below model names which are identical to each other in all aspects except for the followings:

Brand	Model	Difference
AzureWave	AW-CU427-E	External Antenna
	AW-CU427-P	Internal PCB Antenna

3. The antenna provided to the EUT, please refer to the following table:

Antenna NO.	RF Chain NO.	Brand	Model	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type	Cable Length (mm)
1	0	mag layers	MSA-4008-25GC1-A1	2.98	2.4~2.4835GHz	PIFA	i-pex(MHF)	150
2	0	AzureWave	AW-CU427	3.12	2.4~2.4835GHz	PIFA	None	-

4. The EUT incorporates a SISO function.

2.4GHz Band		
MODULATION MODE	TX & RX CONFIGURATION	
802.11b	1TX	1RX
802.11g	1TX	1RX
802.11n (HT20)	1TX	1RX

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

3.2 Description of Test Modes

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

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
1	√	√	-	√	Model: AW-CU427-P, Internal Antenna (Ant. 2)
2	√	√	√	-	Model: AW-CU427-E, External Antenna (Ant. 1)

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: 1. The EUT's Internal Antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane (Below 1GHz) & Z-plane (Above 1GHz)**.

2. The EUT's External Antenna had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane (Below 1GHz) & Z-plane (Above 1GHz)**.

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, configurations (Header pin and FFC), antenna types (integrated and external antennas of different vendor and different length), antenna ports (if EUT with antenna diversity architecture).

- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

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, configurations (Header pin and FFC), antenna types (integrated and external antennas of different vendor and different length), antenna ports (if EUT with antenna diversity architecture).

- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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, configurations (Header pin and FFC), antenna types (integrated and external antennas of different vendor and different length), antenna ports (if EUT with antenna diversity architecture).

- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11g	1 to 11	6	OFDM	BPSK	6

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, configurations (Header pin and FFC), antenna types (integrated and external antennas of different vendor and different length), antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (System)	TESTED BY
RE \geq 1G	25deg. C, 65%RH	120Vac, 60Hz	Ryan Du
RE $<$ 1G	23deg. C, 67%RH	120Vac, 60Hz	Ryan Du
PLC	25deg. C, 75%RH	120Vac, 60Hz	Ryan Du
APCM	25deg. C, 60%RH	120Vac, 60Hz	Anderson Chen

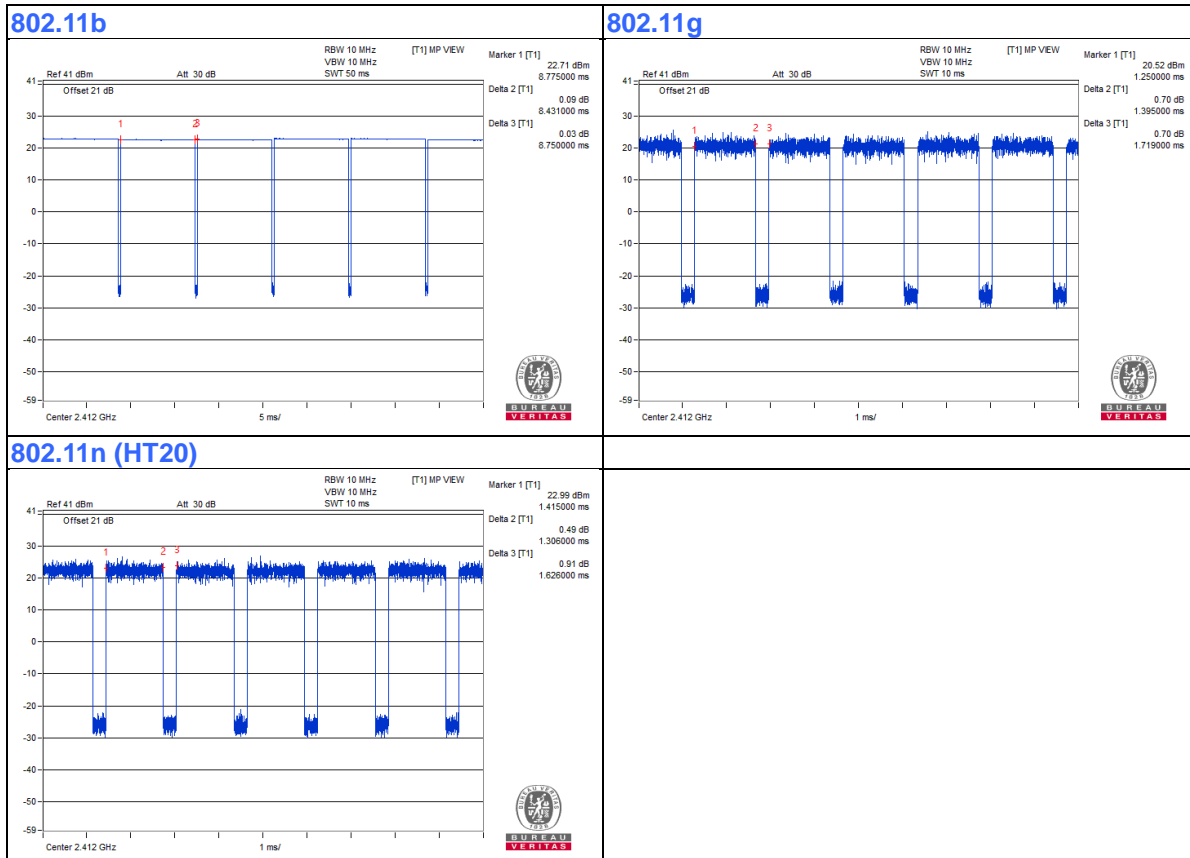
3.3 Duty Cycle of Test Signal

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

802.11b: Duty cycle = 8.431 ms/8.75 ms = 0.964, Duty factor = $10 * \log (1/\text{Duty cycle}) = 0.16$

802.11g: Duty cycle = 1.395 ms/1.719 ms = 0.812, Duty factor = $10 * \log (1/\text{Duty cycle}) = 0.91$

802.11n (HT20): Duty cycle = 1.306 ms/1.626 ms = 0.803, Duty factor = $10 * \log (1/\text{Duty cycle}) = 0.95$



3.4 Description of Support Units

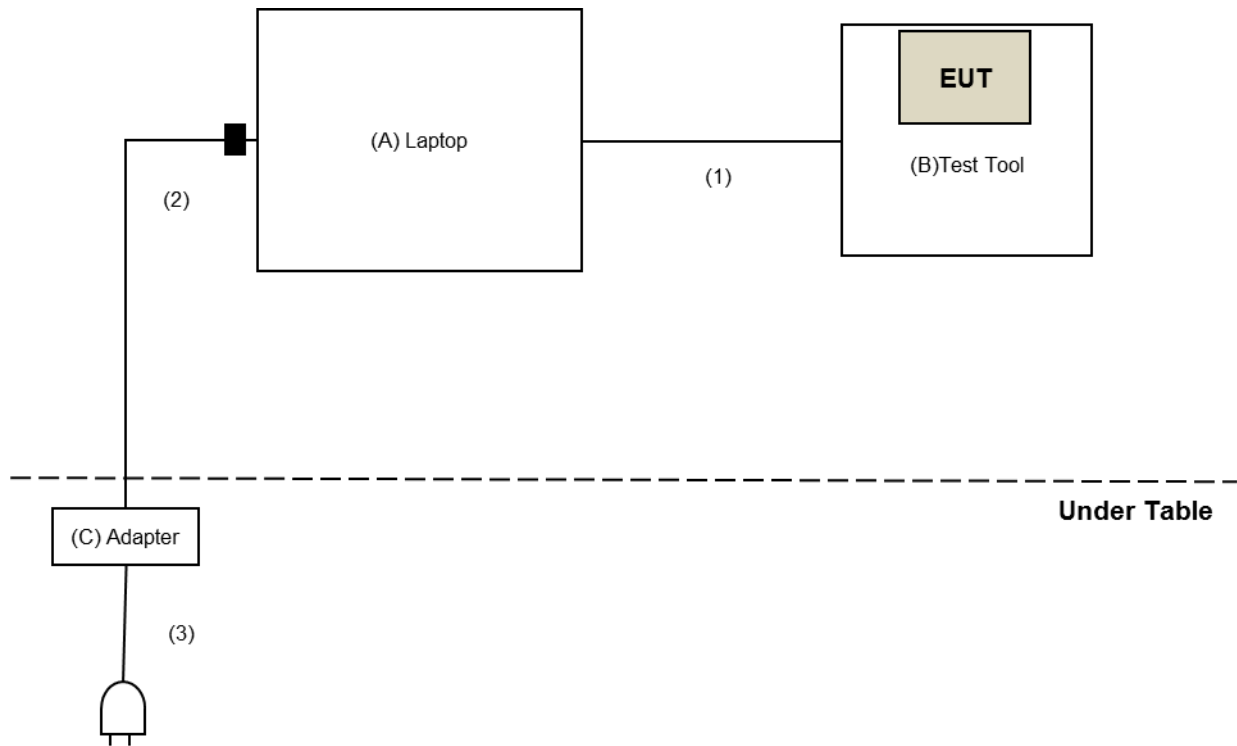
The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	DELL	E5430	HYV4VY1	FCC DoC	Provided by Lab
B.	Test Tool	AzureWave	NA	NA	NA	Supplied by client
C.	Adapter	DELL	LA90PM111	NA	NA	Provided by Lab

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB Cable	1	1.8	No	0	Provided by Lab
2.	DC Cable	1	1.7	No	1	Provided by Lab
3.	AC Cable	1	0.8	No	0	Provided by Lab

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

3.4.1 Configuration of System under Test



3.5 General Description of Applied 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

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 20dB 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 20dB under any condition of modulation.

4.1.2 Test Instruments

For Radiated Emission test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 2020
Pre-Amplifier EMCI	EMC001340	980142	May 30, 2019	May 29, 2020
Loop Antenna Electro-Metrics	EM-6879	264	Feb. 18, 2020	Feb. 17, 2021
RF Cable	NA	LOOPCAB-001	Jan. 08, 2020	Jan. 07, 2021
RF Cable	NA	LOOPCAB-002	Jan. 08, 2020	Jan. 07, 2021
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Oct. 23, 2019	Oct. 22, 2020
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Nov. 11, 2019	Nov. 10, 2020
RF Cable	8D	966-4-1	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-2	Mar. 18, 2020	Mar. 17, 2021
RF Cable	8D	966-4-3	Mar. 18, 2020	Mar. 17, 2021
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Sep. 26, 2019	Sep. 25, 2020
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Nov. 24, 2019	Nov. 23, 2020
Pre-Amplifier EMCI	EMC12630SE	980385	Aug. 15, 2019	Aug. 14, 2020
RF Cable	EMC104-SM-SM-1200	160923	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC104-SM-SM-2000	180502	May 03, 2019	May 02, 2020
RF Cable	EMC104-SM-SM-6000	180418	May 03, 2019	May 02, 2020
Pre-Amplifier EMCI	EMC184045SE	980387	Jan. 15, 2020	Jan. 14, 2021
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170519	Nov. 24, 2019	Nov. 23, 2020
RF Cable	EMC102-KM-KM-1200	160924	Jan. 15, 2020	Jan. 14, 2021
RF Cable	EMC-KM-KM-4000	200214	Mar. 11, 2020	Mar. 10, 2021
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Boresight Antenna Tower & Turn Table Max-Full	MF-7802BS	MF780208530	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 966 Chamber No. 4.
3. Loop antenna was used for all emissions below 30 MHz.
4. Tested Date: Apr. 14 to 16, 2020

For other test:

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Spectrum Analyzer R&S	FSV40	100964	June 04, 2019	June 03, 2020
Power meter Anritsu	ML2495A	1014008	May 13, 2019	May 12, 2020
Power sensor Anritsu	MA2411B	0917122	May 13, 2019	May 12, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 15, 2019	Apr. 14, 2020
Software	ADT_RF Test Software V6.6.5.4	NA	NA	NA

- NOTE:**
1. The test was performed in Oven room 2.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
 3. Tested Date: Apr. 13, 2020

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:

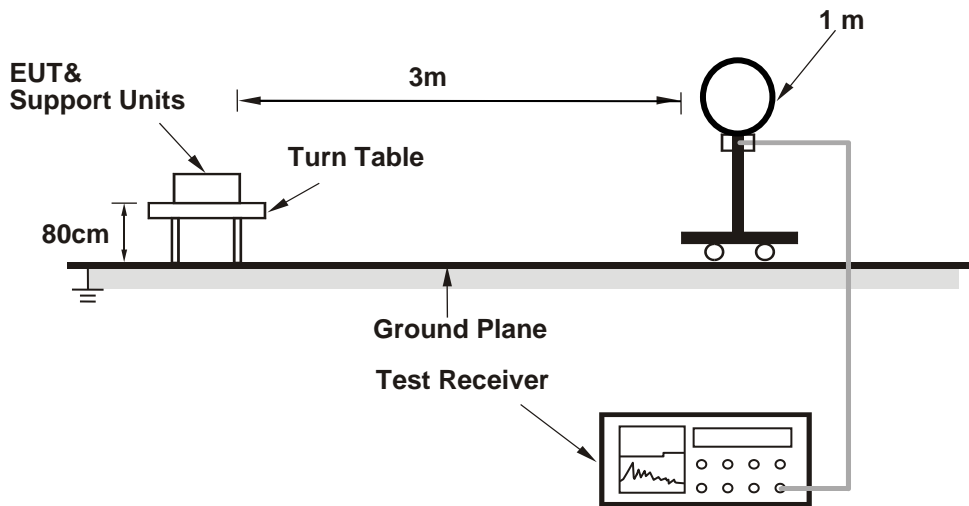
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
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.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

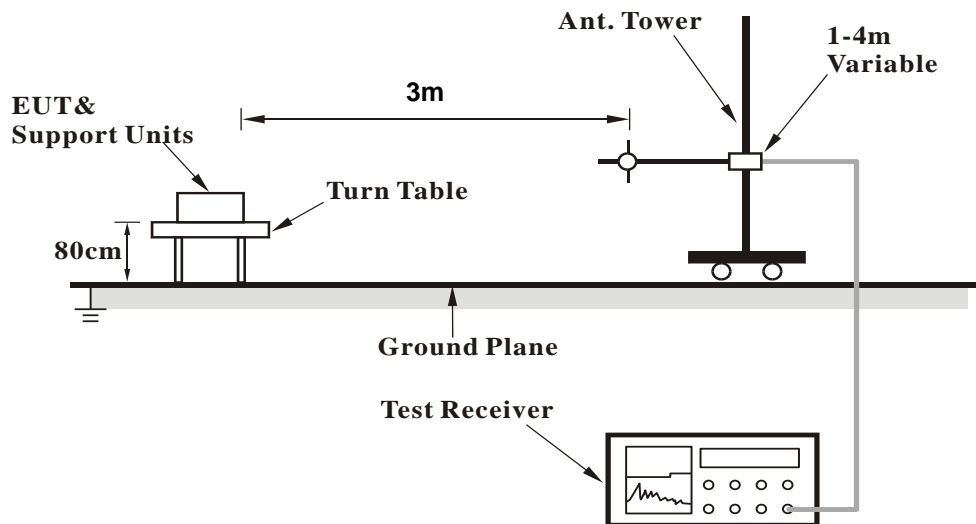
No deviation.

4.1.5 Test Setup

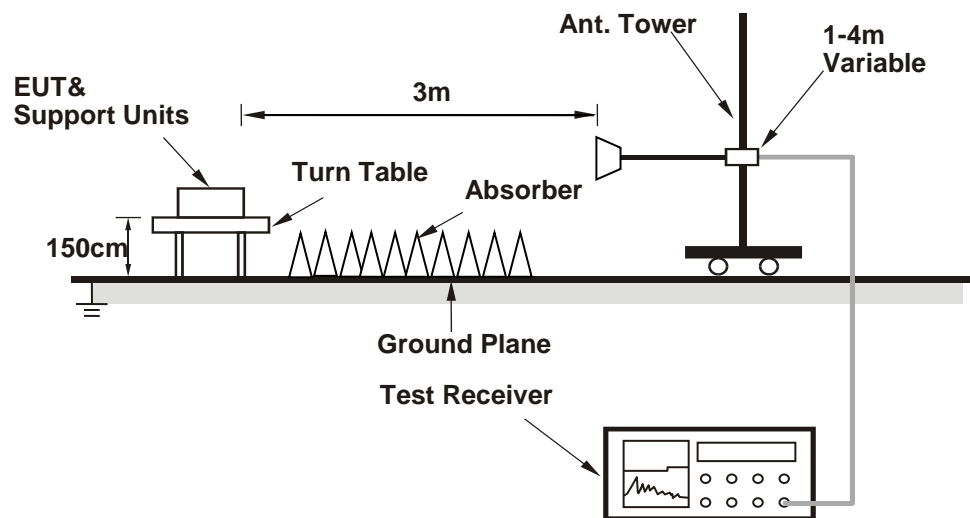
For Radiated emission below 30MHz



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

- Connected the EUT with the Laptop which is placed on testing table.
- Controlling software (w1.exe use Test scripts.bat) has been activated to set the EUT under transmission condition continuously.

4.1.7 Test Results (Mode 1)

ABOVE 1GHz 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	2387.10	61.6 PK	74.0	-12.4	1.10 H	144	63.1	-1.5
2	2387.10	53.7 AV	54.0	-0.3	1.10 H	144	55.2	-1.5
3	*2412.00	111.5 PK			1.10 H	144	113.0	-1.5
4	*2412.00	109.3 AV			1.10 H	144	110.8	-1.5
5	4824.00	46.8 PK	74.0	-27.2	1.14 H	55	44.1	2.7
6	4824.00	43.5 AV	54.0	-10.5	1.14 H	55	40.8	2.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2387.10	58.9 PK	74.0	-15.1	1.19 V	58	60.4	-1.5
2	2387.10	52.0 AV	54.0	-2.0	1.19 V	58	53.5	-1.5
3	*2412.00	107.3 PK			1.19 V	58	108.8	-1.5
4	*2412.00	104.7 AV			1.19 V	58	106.2	-1.5
5	4824.00	49.6 PK	74.0	-24.4	1.31 V	137	46.9	2.7
6	4824.00	44.1 AV	54.0	-9.9	1.31 V	137	41.4	2.7

REMARKS:

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

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	2390.00	55.0 PK	74.0	-19.0	1.24 H	148	56.5	-1.5
2	2390.00	45.1 AV	54.0	-8.9	1.24 H	148	46.6	-1.5
3	*2437.00	109.5 PK			1.24 H	148	110.9	-1.4
4	*2437.00	107.4 AV			1.24 H	148	108.8	-1.4
5	2483.50	54.8 PK	74.0	-19.2	1.24 H	148	56.3	-1.5
6	2483.50	44.9 AV	54.0	-9.1	1.24 H	148	46.4	-1.5
7	4874.00	44.4 PK	74.0	-29.6	1.19 H	59	41.9	2.5
8	4874.00	41.4 AV	54.0	-12.6	1.19 H	59	38.9	2.5
9	7311.00	51.6 PK	74.0	-22.4	1.39 H	116	42.1	9.5
10	7311.00	49.0 AV	54.0	-5.0	1.39 H	116	39.5	9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	54.9 PK	74.0	-19.1	1.04 V	64	56.4	-1.5
2	2390.00	44.8 AV	54.0	-9.2	1.04 V	64	46.3	-1.5
3	*2437.00	105.6 PK			1.04 V	64	107.0	-1.4
4	*2437.00	103.1 AV			1.04 V	64	104.5	-1.4
5	2483.50	54.6 PK	74.0	-19.4	1.04 V	64	56.1	-1.5
6	2483.50	44.7 AV	54.0	-9.3	1.04 V	64	46.2	-1.5
7	4874.00	46.0 PK	74.0	-28.0	1.36 V	156	43.5	2.5
8	4874.00	40.6 AV	54.0	-13.4	1.36 V	156	38.1	2.5
9	7311.00	56.9 PK	74.0	-17.1	1.45 V	273	47.4	9.5
10	7311.00	53.7 AV	54.0	-0.3	1.45 V	273	44.2	9.5

REMARKS:

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

CHANNEL	TX Channel 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	108.4 PK			1.17 H	143	109.8	-1.4
2	*2462.00	106.3 AV			1.17 H	143	107.7	-1.4
3	2487.82	55.3 PK	74.0	-18.7	1.17 H	143	56.8	-1.5
4	2487.82	45.4 AV	54.0	-8.6	1.17 H	143	46.9	-1.5
5	4924.00	43.8 PK	74.0	-30.2	1.21 H	44	41.0	2.8
6	4924.00	40.8 AV	54.0	-13.2	1.21 H	44	38.0	2.8
7	7386.00	51.2 PK	74.0	-22.8	1.44 H	130	41.2	10.0
8	7386.00	48.5 AV	54.0	-5.5	1.44 H	130	38.5	10.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	104.4 PK			1.23 V	84	105.8	-1.4
2	*2462.00	102.2 AV			1.23 V	84	103.6	-1.4
3	2487.82	55.0 PK	74.0	-19.0	1.23 V	84	56.5	-1.5
4	2487.82	44.3 AV	54.0	-9.7	1.23 V	84	45.8	-1.5
5	4924.00	45.7 PK	74.0	-28.3	1.34 V	145	42.9	2.8
6	4924.00	40.2 AV	54.0	-13.8	1.34 V	145	37.4	2.8
7	7386.00	56.9 PK	74.0	-17.1	1.36 V	220	46.9	10.0
8	7386.00	53.8 AV	54.0	-0.2	1.36 V	220	43.8	10.0

REMARKS:

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

802.11g

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	66.2 PK	74.0	-7.8	1.10 H	144	67.7	-1.5
2	2390.00	53.9 AV	54.0	-0.1	1.10 H	144	55.4	-1.5
3	*2412.00	110.8 PK			1.10 H	144	112.3	-1.5
4	*2412.00	102.3 AV			1.10 H	144	103.8	-1.5
5	4824.00	48.5 PK	74.0	-25.5	1.23 H	26	45.8	2.7
6	4824.00	38.1 AV	54.0	-15.9	1.23 H	26	35.4	2.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.2 PK	74.0	-13.8	1.30 V	73	61.7	-1.5
2	2390.00	48.5 AV	54.0	-5.5	1.30 V	73	50.0	-1.5
3	*2412.00	105.9 PK			1.30 V	73	107.4	-1.5
4	*2412.00	96.7 AV			1.30 V	73	98.2	-1.5
5	4824.00	50.8 PK	74.0	-23.2	1.33 V	151	48.1	2.7
6	4824.00	40.5 AV	54.0	-13.5	1.33 V	151	37.8	2.7

REMARKS:

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

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	2390.00	61.3 PK	74.0	-12.7	1.09 H	135	62.8	-1.5
2	2390.00	48.4 AV	54.0	-5.6	1.09 H	135	49.9	-1.5
3	*2437.00	114.4 PK			1.09 H	135	115.8	-1.4
4	*2437.00	105.0 AV			1.09 H	135	106.4	-1.4
5	2483.50	59.5 PK	74.0	-14.5	1.09 H	135	61.0	-1.5
6	2483.50	45.8 AV	54.0	-8.2	1.09 H	135	47.3	-1.5
7	4874.00	50.8 PK	74.0	-23.2	1.20 H	36	48.3	2.5
8	4874.00	40.5 AV	54.0	-13.5	1.20 H	36	38.0	2.5
9	7311.00	60.3 PK	74.0	-13.7	1.44 H	139	50.8	9.5
10	7311.00	48.7 AV	54.0	-5.3	1.44 H	139	39.2	9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	55.2 PK	74.0	-18.8	1.12 V	58	56.7	-1.5
2	2390.00	45.2 AV	54.0	-8.8	1.12 V	58	46.7	-1.5
3	*2437.00	108.9 PK			1.12 V	58	110.3	-1.4
4	*2437.00	99.6 AV			1.12 V	58	101.0	-1.4
5	2483.50	54.9 PK	74.0	-19.1	1.12 V	58	56.4	-1.5
6	2483.50	44.8 AV	54.0	-9.2	1.12 V	58	46.3	-1.5
7	4874.00	54.6 PK	74.0	-19.4	1.35 V	130	52.1	2.5
8	4874.00	44.2 AV	54.0	-9.8	1.35 V	130	41.7	2.5
9	7311.00	66.7 PK	74.0	-7.3	1.24 V	273	57.2	9.5
10	7311.00	53.9 AV	54.0	-0.1	1.24 V	273	44.4	9.5

REMARKS:

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

CHANNEL	TX Channel 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	110.6 PK			1.13 H	147	112.0	-1.4
2	*2462.00	101.9 AV			1.13 H	147	103.3	-1.4
3	2483.50	69.6 PK	74.0	-4.4	1.13 H	147	71.1	-1.5
4	2483.50	53.8 AV	54.0	-0.2	1.13 H	147	55.3	-1.5
5	4924.00	48.7 PK	74.0	-25.3	1.21 H	20	45.9	2.8
6	4924.00	38.2 AV	54.0	-15.8	1.21 H	20	35.4	2.8
7	7386.00	58.2 PK	74.0	-15.8	1.41 H	106	48.2	10.0
8	7386.00	45.9 AV	54.0	-8.1	1.41 H	106	35.9	10.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.2 PK			1.18 V	63	106.6	-1.4
2	*2462.00	96.2 AV			1.18 V	63	97.6	-1.4
3	2483.50	63.2 PK	74.0	-10.8	1.18 V	63	64.7	-1.5
4	2483.50	49.6 AV	54.0	-4.4	1.18 V	63	51.1	-1.5
5	4924.00	50.4 PK	74.0	-23.6	1.33 V	152	47.6	2.8
6	4924.00	40.1 AV	54.0	-13.9	1.33 V	152	37.3	2.8
7	7386.00	62.2 PK	74.0	-11.8	2.17 V	310	52.2	10.0
8	7386.00	49.7 AV	54.0	-4.3	2.17 V	310	39.7	10.0

REMARKS:

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

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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	2390.00	66.2 PK	74.0	-7.8	1.13 H	142	67.7	-1.5
2	2390.00	53.6 AV	54.0	-0.4	1.13 H	142	55.1	-1.5
3	*2412.00	110.4 PK			1.13 H	142	111.9	-1.5
4	*2412.00	101.9 AV			1.13 H	142	103.4	-1.5
5	4824.00	48.8 PK	74.0	-25.2	1.27 H	40	46.1	2.7
6	4824.00	38.2 AV	54.0	-15.8	1.27 H	40	35.5	2.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.5 PK	74.0	-13.5	1.24 V	69	62.0	-1.5
2	2390.00	48.1 AV	54.0	-5.9	1.24 V	69	49.6	-1.5
3	*2412.00	105.1 PK			1.24 V	69	106.6	-1.5
4	*2412.00	95.9 AV			1.24 V	69	97.4	-1.5
5	4824.00	50.8 PK	74.0	-23.2	1.38 V	146	48.1	2.7
6	4824.00	40.5 AV	54.0	-13.5	1.38 V	146	37.8	2.7

REMARKS:

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

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	2390.00	61.5 PK	74.0	-12.5	1.14 H	137	63.0	-1.5
2	2390.00	48.9 AV	54.0	-5.1	1.14 H	137	50.4	-1.5
3	*2437.00	114.8 PK			1.14 H	137	116.2	-1.4
4	*2437.00	105.3 AV			1.14 H	137	106.7	-1.4
5	2483.50	58.6 PK	74.0	-15.4	1.14 H	137	60.1	-1.5
6	2483.50	46.3 AV	54.0	-7.7	1.14 H	137	47.8	-1.5
7	4874.00	50.4 PK	74.0	-23.6	1.26 H	31	47.9	2.5
8	4874.00	40.4 AV	54.0	-13.6	1.26 H	31	37.9	2.5
9	7311.00	60.0 PK	74.0	-14.0	1.43 H	151	50.5	9.5
10	7311.00	48.5 AV	54.0	-5.5	1.43 H	151	39.0	9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.3 PK	74.0	-16.7	1.12 V	57	58.8	-1.5
2	2390.00	46.7 AV	54.0	-7.3	1.12 V	57	48.2	-1.5
3	*2437.00	110.3 PK			1.12 V	57	111.7	-1.4
4	*2437.00	101.0 AV			1.12 V	57	102.4	-1.4
5	2483.50	55.8 PK	74.0	-18.2	1.12 V	57	57.3	-1.5
6	2483.50	45.4 AV	54.0	-8.6	1.12 V	57	46.9	-1.5
7	4874.00	54.5 PK	74.0	-19.5	1.32 V	117	52.0	2.5
8	4874.00	43.8 AV	54.0	-10.2	1.32 V	117	41.3	2.5
9	7311.00	66.7 PK	74.0	-7.3	1.29 V	273	57.2	9.5
10	7311.00	53.9 AV	54.0	-0.1	1.29 V	273	44.4	9.5

REMARKS:

- Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
- Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
- Margin value = Emission Level – Limit value
- The other emission levels were very low against the limit.
- " * ": 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	111.5 PK			1.13 H	145	112.9	-1.4
2	*2462.00	101.7 AV			1.13 H	145	103.1	-1.4
3	2483.50	69.9 PK	74.0	-4.1	1.13 H	145	71.4	-1.5
4	2483.50	53.7 AV	54.0	-0.3	1.13 H	145	55.2	-1.5
5	4924.00	48.6 PK	74.0	-25.4	1.26 H	10	45.8	2.8
6	4924.00	38.0 AV	54.0	-16.0	1.26 H	10	35.2	2.8
7	7386.00	57.6 PK	74.0	-16.4	1.38 H	104	47.6	10.0
8	7386.00	45.5 AV	54.0	-8.5	1.38 H	104	35.5	10.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.4 PK			1.08 V	68	106.8	-1.4
2	*2462.00	96.3 AV			1.08 V	68	97.7	-1.4
3	2483.50	62.8 PK	74.0	-11.2	1.08 V	68	64.3	-1.5
4	2483.50	49.6 AV	54.0	-4.4	1.08 V	68	51.1	-1.5
5	4924.00	50.8 PK	74.0	-23.2	1.39 V	165	48.0	2.8
6	4924.00	40.6 AV	54.0	-13.4	1.39 V	165	37.8	2.8
7	7386.00	61.8 PK	74.0	-12.2	2.22 V	305	51.8	10.0
8	7386.00	49.4 AV	54.0	-4.6	2.22 V	305	39.4	10.0

REMARKS:

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

Below 1GHz Data:

802.11g

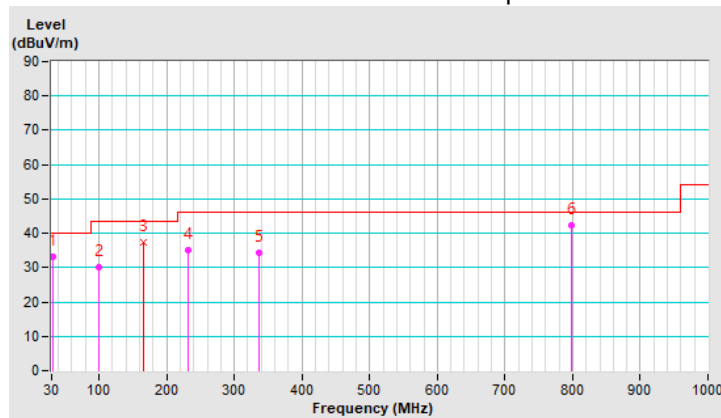
CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	32.26	33.3 QP	40.0	-6.7	1.00 H	323	42.7	-9.4
2	100.53	30.0 QP	43.5	-13.5	2.00 H	275	42.0	-12.0
3	165.78	37.4 QP	43.5	-6.1	1.67 H	165	45.3	-7.9
4	232.13	35.1 QP	46.0	-10.9	1.50 H	87	45.0	-9.9
5	335.99	34.3 QP	46.0	-11.7	1.00 H	188	40.2	-5.9
6	798.11	42.2 QP	46.0	-3.8	1.50 H	271	37.6	4.6

REMARKS:

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



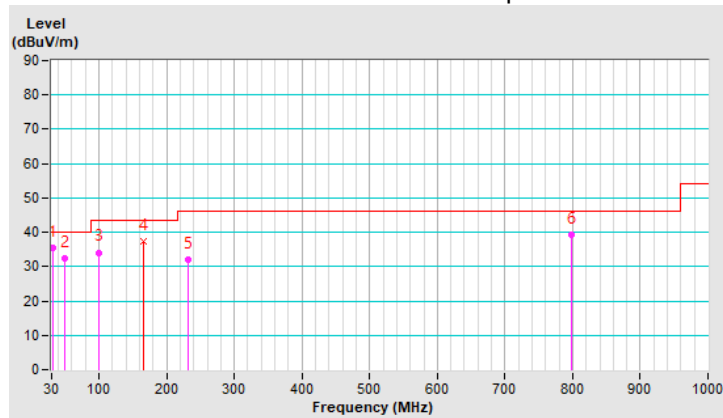
CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	31.46	35.5 QP	40.0	-4.5	1.00 V	246	44.9	-9.4
2	49.30	32.5 QP	40.0	-7.5	2.00 V	93	40.3	-7.8
3	100.14	34.1 QP	43.5	-9.4	1.50 V	167	46.2	-12.1
4	165.89	37.4 QP	43.5	-6.1	1.05 V	247	45.3	-7.9
5	232.04	32.1 QP	46.0	-13.9	1.00 V	287	42.0	-9.9
6	797.81	39.4 QP	46.0	-6.6	1.00 V	335	34.8	4.6

REMARKS:

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



4.1.8 Test Results (Mode 2)

ABOVE 1GHz 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	2385.30	52.7 PK	74.0	-21.3	1.37 H	251	54.2	-1.5
2	2385.30	45.3 AV	54.0	-8.7	1.37 H	251	46.8	-1.5
3	*2412.00	109.8 PK			1.37 H	251	111.3	-1.5
4	*2412.00	105.6 AV			1.37 H	251	107.1	-1.5
5	4824.00	46.5 PK	74.0	-27.5	2.69 H	210	43.8	2.7
6	4824.00	43.8 AV	54.0	-10.2	2.69 H	210	41.1	2.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2385.30	59.1 PK	74.0	-14.9	3.12 V	276	60.6	-1.5
2	2385.30	52.0 AV	54.0	-2.0	3.12 V	276	53.5	-1.5
3	*2412.00	112.5 PK			3.12 V	276	114.0	-1.5
4	*2412.00	109.0 AV			3.12 V	276	110.5	-1.5
5	4824.00	45.9 PK	74.0	-28.1	2.69 V	223	43.2	2.7
6	4824.00	43.2 AV	54.0	-10.8	2.69 V	223	40.5	2.7

REMARKS:

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

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	2390.00	56.9 PK	74.0	-17.1	1.40 H	247	58.4	-1.5
2	2390.00	45.1 AV	54.0	-8.9	1.40 H	247	46.6	-1.5
3	*2437.00	111.2 PK			1.40 H	247	112.6	-1.4
4	*2437.00	107.6 AV			1.40 H	247	109.0	-1.4
5	2483.50	58.6 PK	74.0	-15.4	1.40 H	247	60.1	-1.5
6	2483.50	45.9 AV	54.0	-8.1	1.40 H	247	47.4	-1.5
7	4874.00	46.5 PK	74.0	-27.5	2.70 H	217	44.0	2.5
8	4874.00	43.7 AV	54.0	-10.3	2.70 H	217	41.2	2.5
9	7311.00	58.3 PK	74.0	-15.7	1.34 H	14	48.8	9.5
10	7311.00	53.9 AV	54.0	-0.1	1.34 H	14	44.4	9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.9 PK	74.0	-16.1	3.35 V	282	59.4	-1.5
2	2390.00	45.8 AV	54.0	-8.2	3.35 V	282	47.3	-1.5
3	*2437.00	113.5 PK			3.35 V	282	114.9	-1.4
4	*2437.00	110.1 AV			3.35 V	282	111.5	-1.4
5	2483.50	58.9 PK	74.0	-15.1	3.35 V	282	60.4	-1.5
6	2483.50	47.3 AV	54.0	-6.7	3.35 V	282	48.8	-1.5
7	4874.00	52.5 PK	74.0	-21.5	2.69 V	273	50.0	2.5
8	4874.00	50.9 AV	54.0	-3.1	2.69 V	273	48.4	2.5
9	7311.00	53.6 PK	74.0	-20.4	1.29 V	172	44.1	9.5
10	7311.00	48.3 AV	54.0	-5.7	1.29 V	172	38.8	9.5

REMARKS:

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

CHANNEL	TX Channel 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	109.8 PK			1.44 H	233	111.2	-1.4
2	*2462.00	106.1 AV			1.44 H	233	107.5	-1.4
3	2483.50	55.9 PK	74.0	-18.1	1.44 H	233	57.4	-1.5
4	2483.50	45.6 AV	54.0	-8.4	1.44 H	233	47.1	-1.5
5	4924.00	46.1 PK	74.0	-27.9	2.71 H	212	43.3	2.8
6	4924.00	43.4 AV	54.0	-10.6	2.71 H	212	40.6	2.8
7	7386.00	58.4 PK	74.0	-15.6	1.39 H	354	48.4	10.0
8	7386.00	53.6 AV	54.0	-0.4	1.39 H	354	43.6	10.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.7 PK			2.91 V	298	114.1	-1.4
2	*2462.00	109.2 AV			2.91 V	298	110.6	-1.4
3	2483.50	60.5 PK	74.0	-13.5	2.91 V	298	62.0	-1.5
4	2483.50	50.9 AV	54.0	-3.1	2.91 V	298	52.4	-1.5
5	4924.00	46.2 PK	74.0	-27.8	2.69 V	233	43.4	2.8
6	4924.00	43.5 AV	54.0	-10.5	2.69 V	233	40.7	2.8
7	7386.00	53.4 PK	74.0	-20.6	1.24 V	183	43.4	10.0
8	7386.00	48.2 AV	54.0	-5.8	1.24 V	183	38.2	10.0

REMARKS:

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

802.11g

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	66.4 PK	74.0	-7.6	1.39 H	242	67.9	-1.5
2	2390.00	50.8 AV	54.0	-3.2	1.39 H	242	52.3	-1.5
3	*2412.00	110.8 PK			1.39 H	242	112.3	-1.5
4	*2412.00	99.1 AV			1.39 H	242	100.6	-1.5
5	4824.00	46.7 PK	74.0	-27.3	2.65 H	218	44.0	2.7
6	4824.00	43.9 AV	54.0	-10.1	2.65 H	218	41.2	2.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	69.1 PK	74.0	-4.9	3.46 V	281	70.6	-1.5
2	2390.00	53.7 AV	54.0	-0.3	3.46 V	281	55.2	-1.5
3	*2412.00	113.3 PK			3.46 V	281	114.8	-1.5
4	*2412.00	102.7 AV			3.46 V	281	104.2	-1.5
5	4824.00	46.4 PK	74.0	-27.6	2.70 V	205	43.7	2.7
6	4824.00	43.5 AV	54.0	-10.5	2.70 V	205	40.8	2.7

REMARKS:

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

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	2390.00	63.0 PK	74.0	-11.0	1.43 H	235	64.5	-1.5
2	2390.00	48.1 AV	54.0	-5.9	1.43 H	235	49.6	-1.5
3	*2437.00	113.4 PK			1.43 H	235	114.8	-1.4
4	*2437.00	103.4 AV			1.43 H	235	104.8	-1.4
5	2483.50	68.4 PK	74.0	-5.6	1.43 H	235	69.9	-1.5
6	2483.50	50.0 AV	54.0	-4.0	1.43 H	235	51.5	-1.5
7	4874.00	47.4 PK	74.0	-26.6	1.30 H	210	44.9	2.5
8	4874.00	35.0 AV	54.0	-19.0	1.30 H	210	32.5	2.5
9	7311.00	64.5 PK	74.0	-9.5	1.26 H	356	55.0	9.5
10	7311.00	52.7 AV	54.0	-1.3	1.26 H	356	43.2	9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.7 PK	74.0	-7.3	2.99 V	295	68.2	-1.5
2	2390.00	51.8 AV	54.0	-2.2	2.99 V	295	53.3	-1.5
3	*2437.00	117.4 PK			2.99 V	295	118.8	-1.4
4	*2437.00	107.0 AV			2.99 V	295	108.4	-1.4
5	2483.50	71.5 PK	74.0	-2.5	2.99 V	295	73.0	-1.5
6	2483.50	53.9 AV	54.0	-0.1	2.99 V	295	55.4	-1.5
7	4874.00	46.5 PK	74.0	-27.5	2.67 V	203	44.0	2.5
8	4874.00	43.7 AV	54.0	-10.3	2.67 V	203	41.2	2.5
9	7311.00	53.7 PK	74.0	-20.3	1.26 V	173	44.2	9.5
10	7311.00	48.5 AV	54.0	-5.5	1.26 V	173	39.0	9.5

REMARKS:

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

CHANNEL	TX Channel 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	109.3 PK			1.43 H	255	110.7	-1.4
2	*2462.00	99.0 AV			1.43 H	255	100.4	-1.4
3	2483.50	70.1 PK	74.0	-3.9	1.43 H	255	71.6	-1.5
4	2483.50	50.1 AV	54.0	-3.9	1.43 H	255	51.6	-1.5
5	4924.00	46.6 PK	74.0	-27.4	2.67 H	227	43.8	2.8
6	4924.00	43.8 AV	54.0	-10.2	2.67 H	227	41.0	2.8
7	7386.00	53.9 PK	74.0	-20.1	1.29 H	184	43.9	10.0
8	7386.00	48.7 AV	54.0	-5.3	1.29 H	184	38.7	10.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.5 PK			2.83 V	299	113.9	-1.4
2	*2462.00	102.3 AV			2.83 V	299	103.7	-1.4
3	2483.50	73.6 PK	74.0	-0.4	2.83 V	299	75.1	-1.5
4	2483.50	53.5 AV	54.0	-0.5	2.83 V	299	55.0	-1.5
5	4924.00	46.3 PK	74.0	-27.7	2.69 V	205	43.5	2.8
6	4924.00	43.5 AV	54.0	-10.5	2.69 V	205	40.7	2.8
7	7386.00	53.5 PK	74.0	-20.5	1.29 V	181	43.5	10.0
8	7386.00	48.2 AV	54.0	-5.8	1.29 V	181	38.2	10.0

REMARKS:

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

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	63.8 PK	74.0	-10.2	1.44 H	242	65.3	-1.5
2	2390.00	50.1 AV	54.0	-3.9	1.44 H	242	51.6	-1.5
3	*2412.00	108.0 PK			1.44 H	242	109.5	-1.5
4	*2412.00	98.5 AV			1.44 H	242	100.0	-1.5
5	4824.00	46.3 PK	74.0	-27.7	2.74 H	204	43.6	2.7
6	4824.00	43.3 AV	54.0	-10.7	2.74 H	204	40.6	2.7

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.6 PK	74.0	-6.4	3.11 V	276	69.1	-1.5
2	2390.00	53.6 AV	54.0	-0.4	3.11 V	276	55.1	-1.5
3	*2412.00	111.8 PK			3.11 V	276	113.3	-1.5
4	*2412.00	101.5 AV			3.11 V	276	103.0	-1.5
5	4824.00	47.0 PK	74.0	-27.0	2.69 V	205	44.3	2.7
6	4824.00	44.1 AV	54.0	-9.9	2.69 V	205	41.4	2.7

REMARKS:

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

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	2390.00	62.6 PK	74.0	-11.4	1.46 H	223	64.1	-1.5
2	2390.00	47.2 AV	54.0	-6.8	1.46 H	223	48.7	-1.5
3	*2437.00	113.7 PK			1.46 H	223	115.1	-1.4
4	*2437.00	103.3 AV			1.46 H	223	104.7	-1.4
5	2483.50	68.3 PK	74.0	-5.7	1.46 H	223	69.8	-1.5
6	2483.50	50.4 AV	54.0	-3.6	1.46 H	223	51.9	-1.5
7	4874.00	47.2 PK	74.0	-26.8	2.74 H	217	44.7	2.5
8	4874.00	44.1 AV	54.0	-9.9	2.74 H	217	41.6	2.5
9	7311.00	53.2 PK	74.0	-20.8	1.27 H	157	43.7	9.5
10	7311.00	47.9 AV	54.0	-6.1	1.27 H	157	38.4	9.5

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.8 PK	74.0	-8.2	2.63 V	296	67.3	-1.5
2	2390.00	51.2 AV	54.0	-2.8	2.63 V	296	52.7	-1.5
3	*2437.00	117.3 PK			2.63 V	296	118.7	-1.4
4	*2437.00	106.5 AV			2.63 V	296	107.9	-1.4
5	2483.50	71.9 PK	74.0	-2.1	2.63 V	296	73.4	-1.5
6	2483.50	53.7 AV	54.0	-0.3	2.63 V	296	55.2	-1.5
7	4874.00	46.9 PK	74.0	-27.1	2.74 V	228	44.4	2.5
8	4874.00	43.8 AV	54.0	-10.2	2.74 V	228	41.3	2.5
9	7311.00	53.3 PK	74.0	-20.7	1.32 V	181	43.8	9.5
10	7311.00	48.0 AV	54.0	-6.0	1.32 V	181	38.5	9.5

REMARKS:

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

CHANNEL	TX Channel 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	108.9 PK			1.40 H	243	110.3	-1.4
2	*2462.00	98.3 AV			1.40 H	243	99.7	-1.4
3	2483.50	70.5 PK	74.0	-3.5	1.40 H	243	72.0	-1.5
4	2483.50	50.4 AV	54.0	-3.6	1.40 H	243	51.9	-1.5
5	4924.00	46.8 PK	74.0	-27.2	2.72 H	230	44.0	2.8
6	4924.00	43.8 AV	54.0	-10.2	2.72 H	230	41.0	2.8
7	7386.00	53.6 PK	74.0	-20.4	1.31 H	157	43.6	10.0
8	7386.00	48.3 AV	54.0	-5.7	1.31 H	157	38.3	10.0

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	112.5 PK			2.90 V	296	113.9	-1.4
2	*2462.00	102.2 AV			2.90 V	296	103.6	-1.4
3	2483.50	73.6 PK	74.0	-0.4	2.90 V	296	75.1	-1.5
4	2483.50	53.6 AV	54.0	-0.4	2.90 V	296	55.1	-1.5
5	4924.00	46.5 PK	74.0	-27.5	2.73 V	209	43.7	2.8
6	4924.00	43.8 AV	54.0	-10.2	2.73 V	209	41.0	2.8
7	7386.00	53.3 PK	74.0	-20.7	1.23 V	173	43.3	10.0
8	7386.00	48.2 AV	54.0	-5.8	1.23 V	173	38.2	10.0

REMARKS:

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

Below 1GHz Data:

802.11g

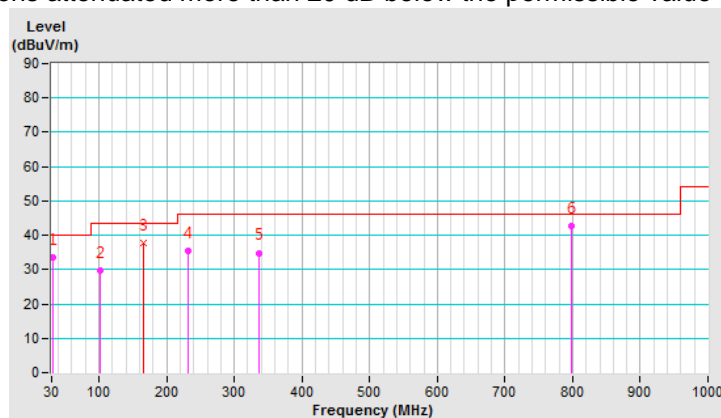
CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	31.94	33.5 QP	40.0	-6.5	1.00 H	360	43.0	-9.5
2	100.81	29.8 QP	43.5	-13.7	2.00 H	245	41.7	-11.9
3	165.99	37.6 QP	43.5	-5.9	1.76 H	82	45.5	-7.9
4	232.34	35.3 QP	46.0	-10.7	1.50 H	94	45.2	-9.9
5	336.01	34.9 QP	46.0	-11.1	1.00 H	207	40.8	-5.9
6	798.24	42.6 QP	46.0	-3.4	1.50 H	262	38.0	4.6

REMARKS:

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



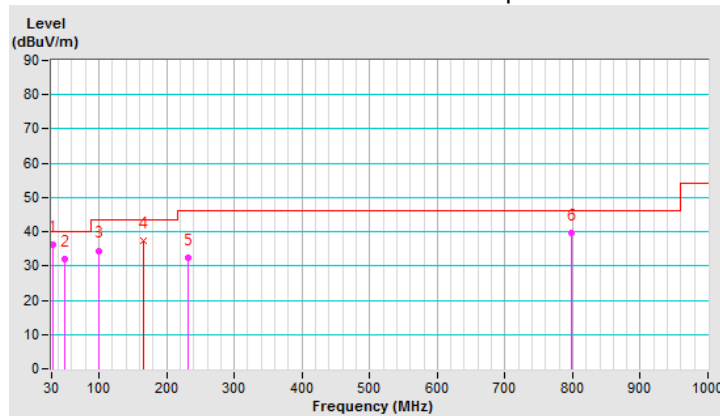
CHANNEL	TX Channel 6	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9kHz ~ 1GHz		

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	31.53	36.1 QP	40.0	-3.9	1.00 V	190	45.5	-9.4
2	49.35	31.9 QP	40.0	-8.1	2.00 V	57	39.7	-7.8
3	100.01	34.5 QP	43.5	-9.0	1.50 V	86	46.6	-12.1
4	165.95	37.4 QP	43.5	-6.1	1.00 V	258	45.3	-7.9
5	232.39	32.3 QP	46.0	-13.7	1.00 V	221	42.2	-9.9
6	798.22	39.7 QP	46.0	-6.3	1.00 V	286	35.1	4.6

REMARKS:

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



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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 19, 2020	Mar. 18, 2021
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 30, 2019	Aug. 29, 2020
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. Tested Date: Apr. 15, 2020

4.2.3 Test Procedures

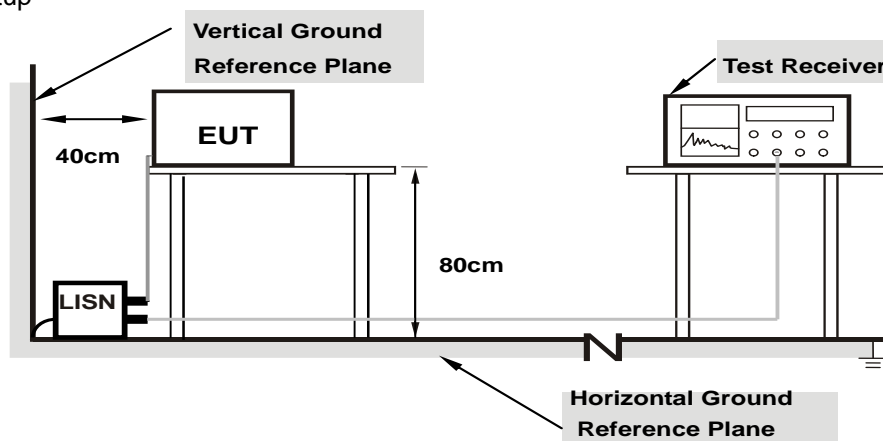
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

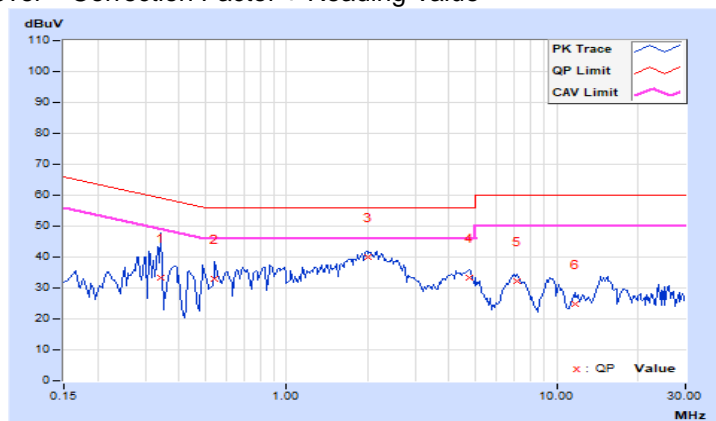
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.34141	9.98	23.44	9.39	33.42	19.37	59.17	49.17	-25.75	-29.80
2	0.54453	9.99	22.81	17.60	32.80	27.59	56.00	46.00	-23.20	-18.41
3	2.00391	10.07	29.76	22.31	39.83	32.38	56.00	46.00	-16.17	-13.62
4	4.73047	10.20	23.23	13.51	33.43	23.71	56.00	46.00	-22.57	-22.29
5	7.11328	10.33	21.73	12.85	32.06	23.18	60.00	50.00	-27.94	-26.82
6	11.76953	10.58	14.11	6.83	24.69	17.41	60.00	50.00	-35.31	-32.59

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

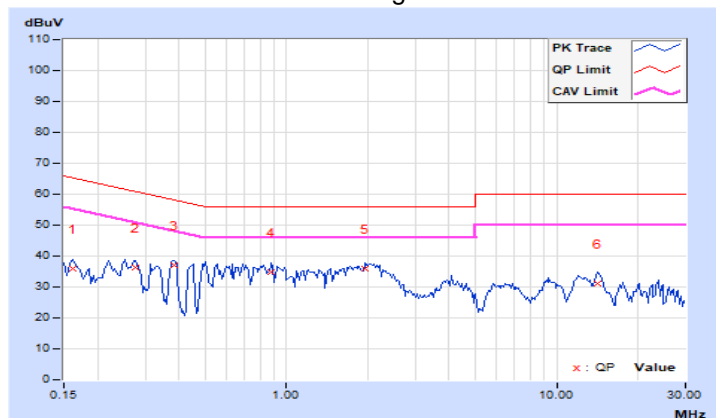


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.16172	9.97	25.81	23.97	35.78	33.94	65.38	55.38	-29.60	-21.44
2	0.27500	9.97	26.18	21.75	36.15	31.72	60.97	50.97	-24.82	-19.25
3	0.38438	9.98	26.92	23.23	36.90	33.21	58.18	48.18	-21.28	-14.97
4	0.88047	10.01	24.78	17.09	34.79	27.10	56.00	46.00	-21.21	-18.90
5	1.96484	10.06	26.00	17.49	36.06	27.55	56.00	46.00	-19.94	-18.45
6	14.26172	10.57	20.64	13.87	31.21	24.44	60.00	50.00	-28.79	-25.56

Remarks:

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

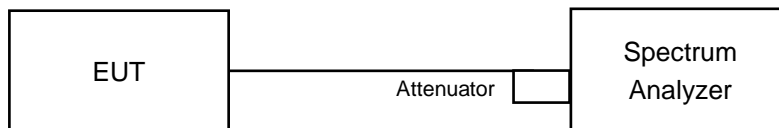


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

- a. Set resolution bandwidth (RBW) = 100kHz
- b. Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- c. Trace mode = max hold.
- d. Sweep = auto couple.
- e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

4.3.5 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

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	8.59	0.5	Pass
6	2437	9.57	0.5	Pass
11	2462	8.58	0.5	Pass

802.11g

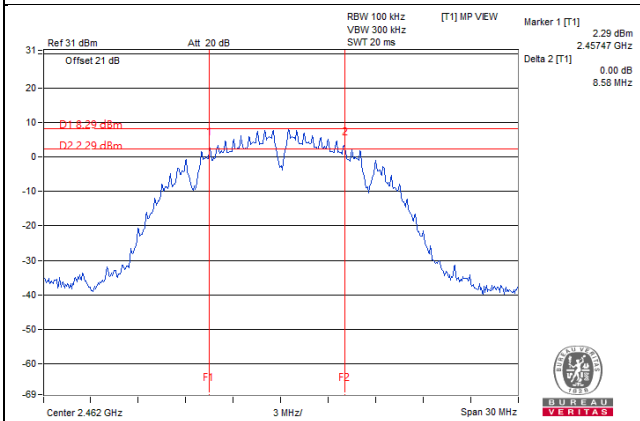
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.18	0.5	Pass
6	2437	15.17	0.5	Pass
11	2462	15.18	0.5	Pass

802.11n (HT20)

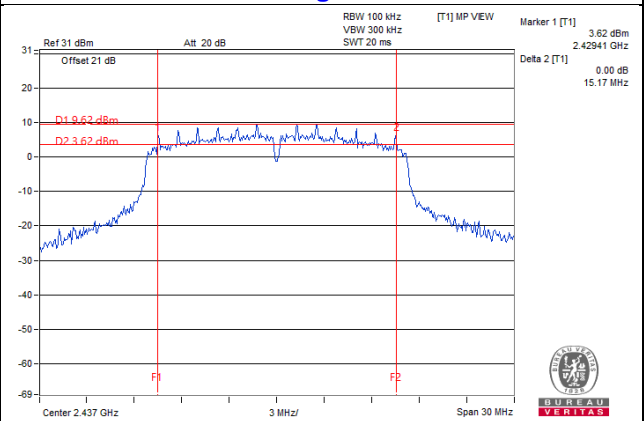
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.18	0.5	Pass
6	2437	15.17	0.5	Pass
11	2462	15.18	0.5	Pass

Spectrum Plot of Worst Value

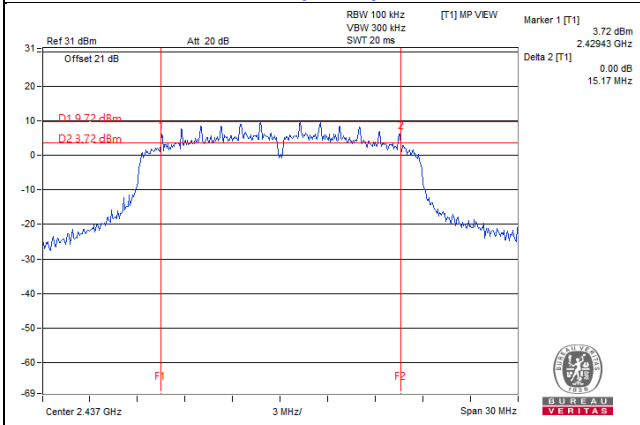
802.11b / CH11



802.11g / CH6



802.11n (HT20) / CH6

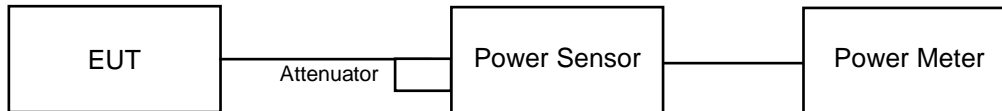


4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was 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.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	232.809	23.67	30	Pass
6	2437	105.196	20.22	30	Pass
11	2462	89.536	19.52	30	Pass

802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	447.713	26.51	30	Pass
6	2437	555.904	27.45	30	Pass
11	2462	435.512	26.39	30	Pass

802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	401.791	26.04	30	Pass
6	2437	554.626	27.44	30	Pass
11	2462	418.794	26.22	30	Pass

FOR AVERAGE POWER

802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	138.995	21.43
6	2437	63.387	18.02
11	2462	55.335	17.43

802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	58.21	17.65
6	2437	108.643	20.36
11	2462	66.988	18.26

802.11n (HT20)

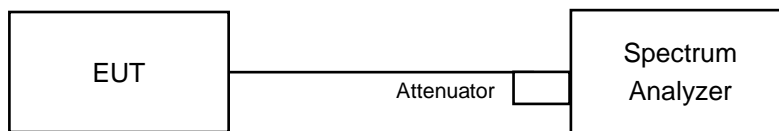
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	51.404	17.11
6	2437	114.551	20.59
11	2462	64.863	18.12

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- a. Set analyzer center frequency to DTS channel center frequency.
- b. Set the span to 1.5 times the DTS bandwidth.
- c. Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- d. Set the VBW $\geq 3 \times \text{RBW}$.
- e. Detector = peak.
- f. Sweep time = auto couple.
- g. Trace mode = max hold.
- h. Allow trace to fully stabilize.
- i. Use the peak marker function to determine the maximum amplitude level within the RBW.

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
1	2412	-2.31	0.5875	-2.31	8.00	PASS
6	2437	-5.78	0.2642	-5.78	8.00	PASS
11	2462	-5.83	0.2612	-5.83	8.00	PASS

802.11g

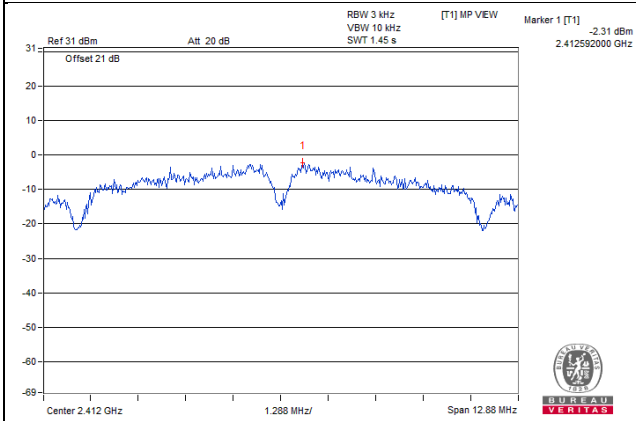
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
1	2412	-8.64	0.1368	-8.64	8.00	PASS
6	2437	-5.00	0.3162	-5.00	8.00	PASS
11	2462	-7.59	0.1742	-7.59	8.00	PASS

802.11n (HT20)

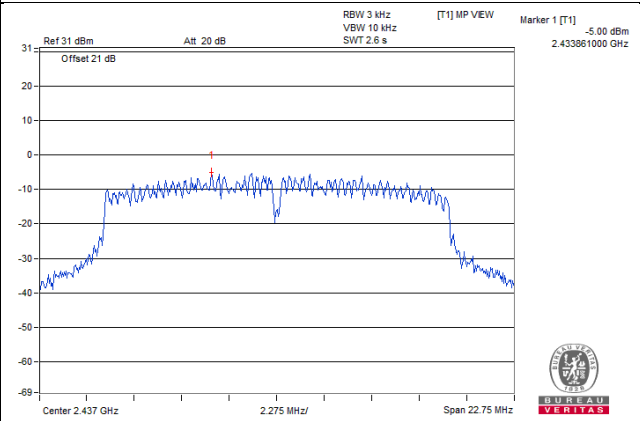
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	Total PSD (mW/3kHz)	Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
1	2412	-7.73	0.1687	-7.73	8.00	PASS
6	2437	-5.33	0.2931	-5.33	8.00	PASS
11	2462	-7.75	0.1679	-7.75	8.00	PASS

Spectrum Plot of Worst Value

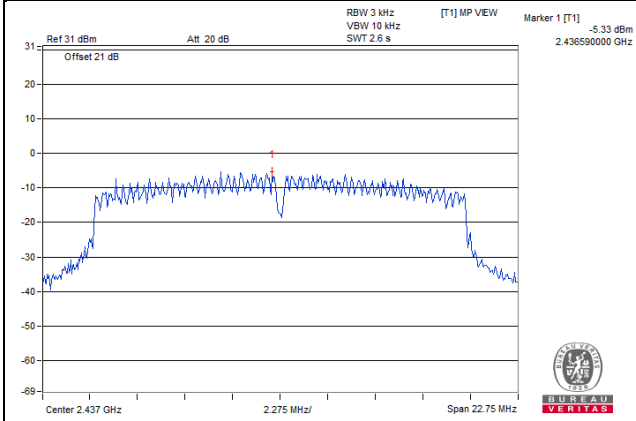
802.11b / CH1



802.11g / CH6



802.11n (HT20) / CH6

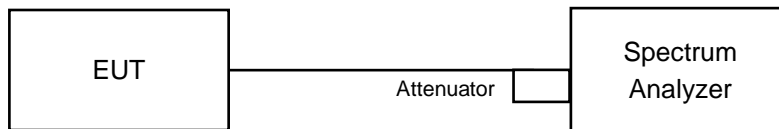


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW \geq 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

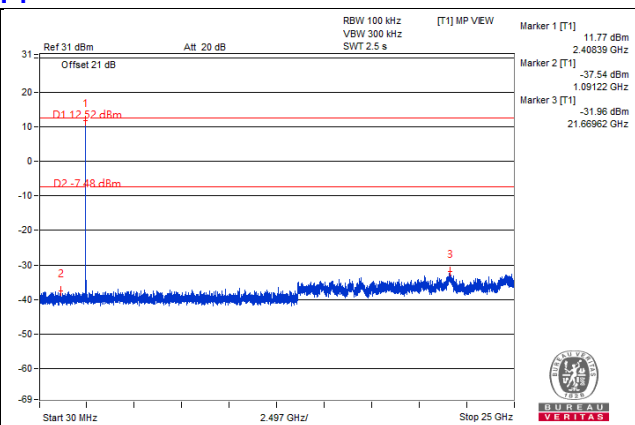
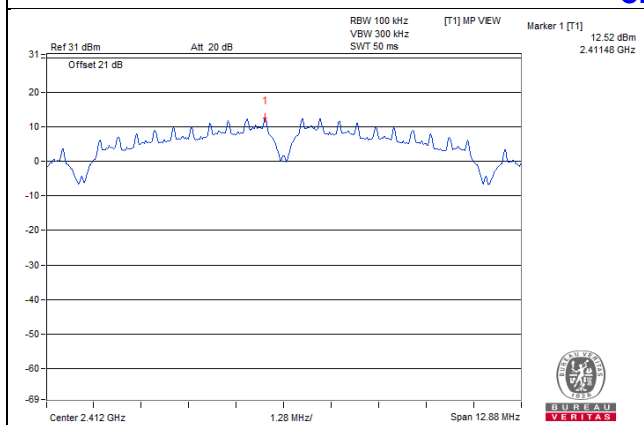
Same as Item 4.3.6

4.6.7 Test Results

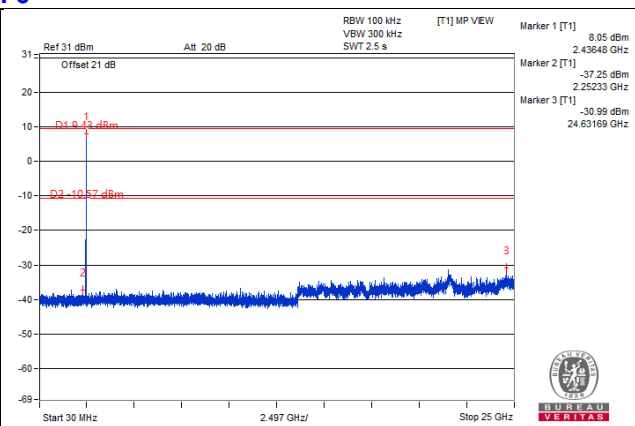
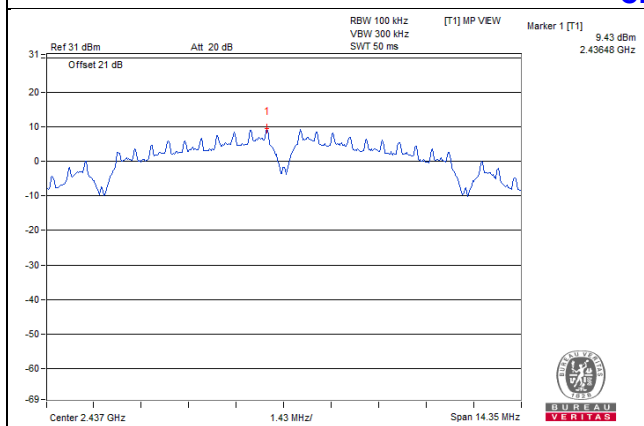
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b

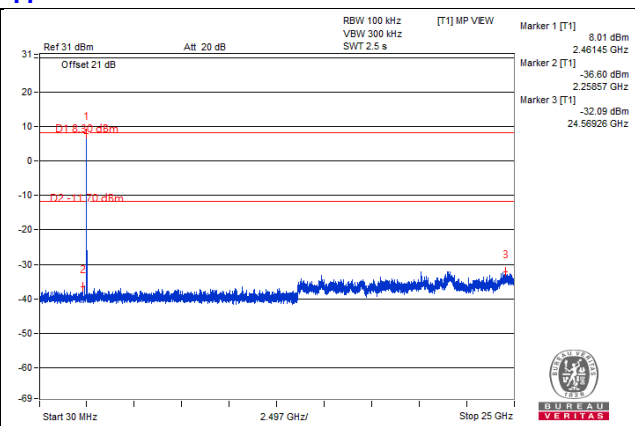
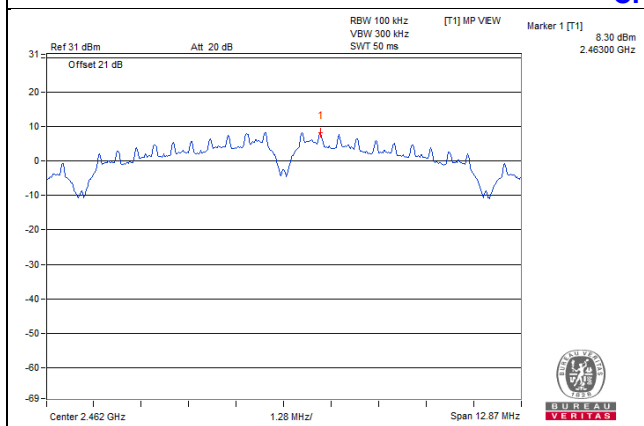
CH 1



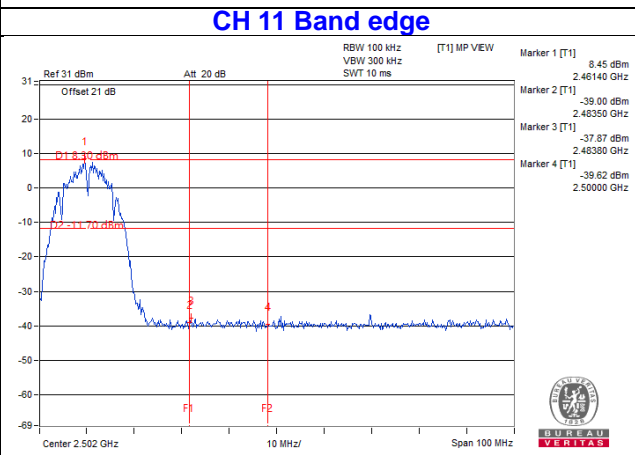
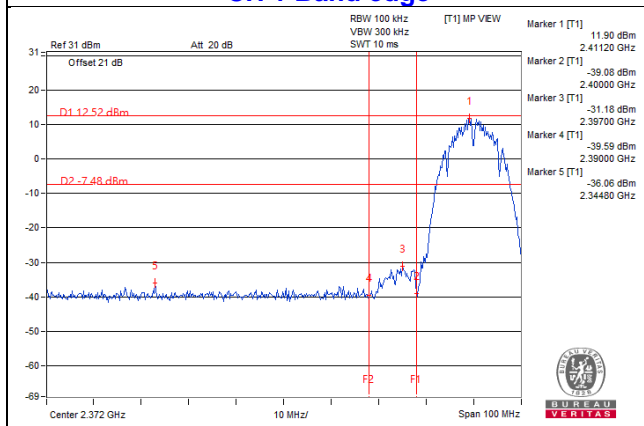
CH 6



CH 11

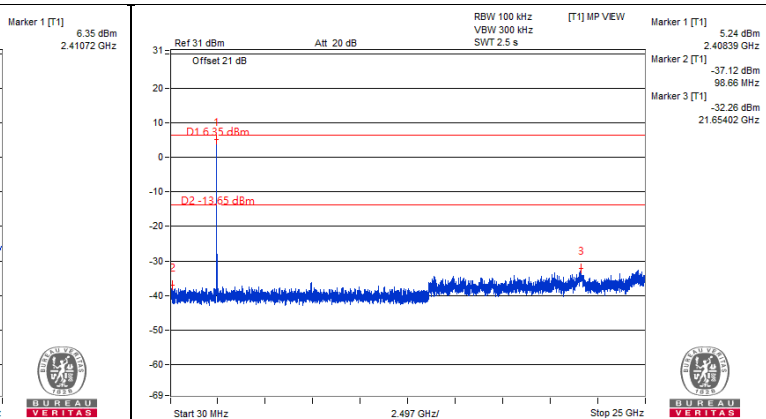
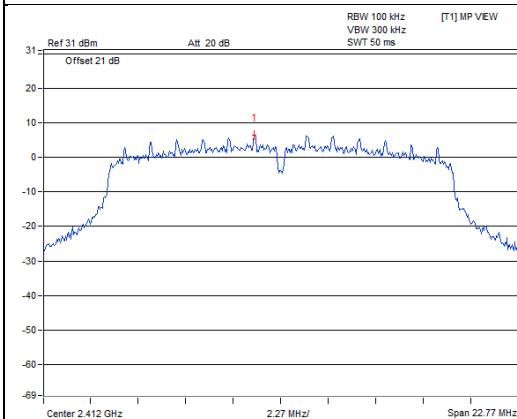


CH 1 Band edge

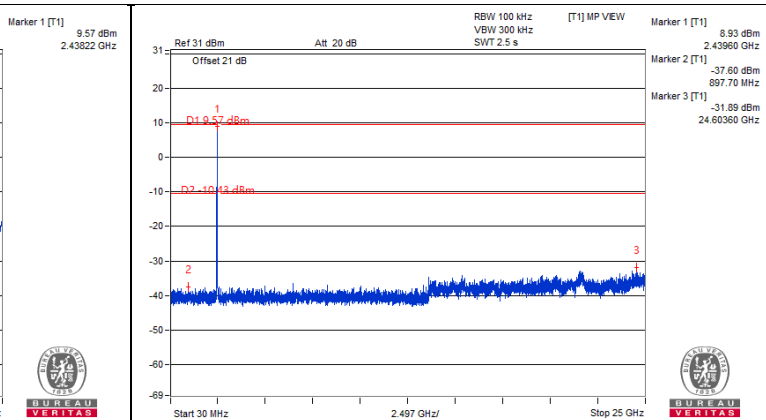
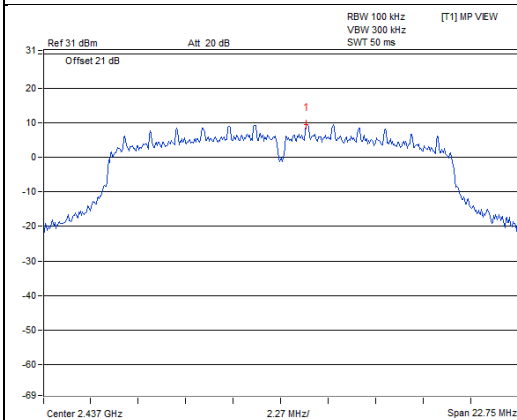


802.11g

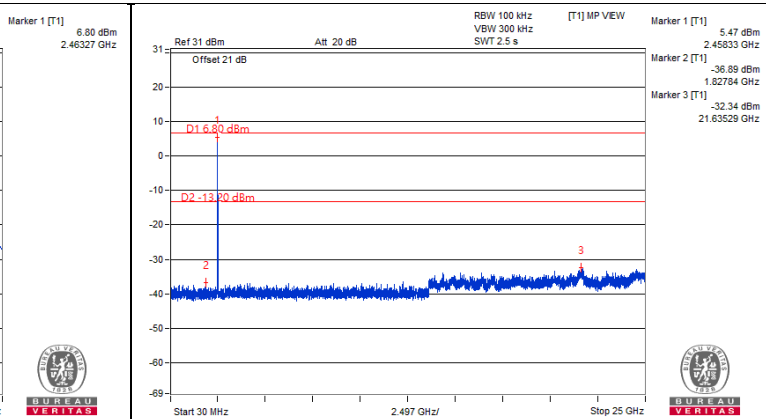
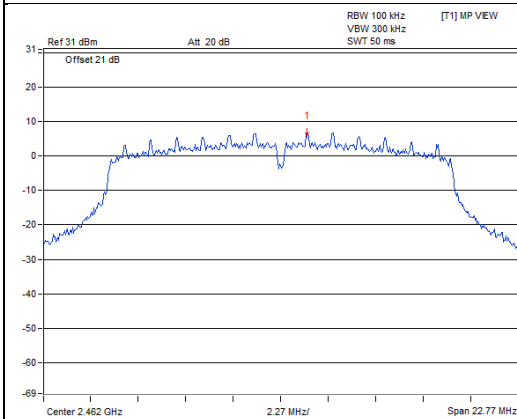
CH 1



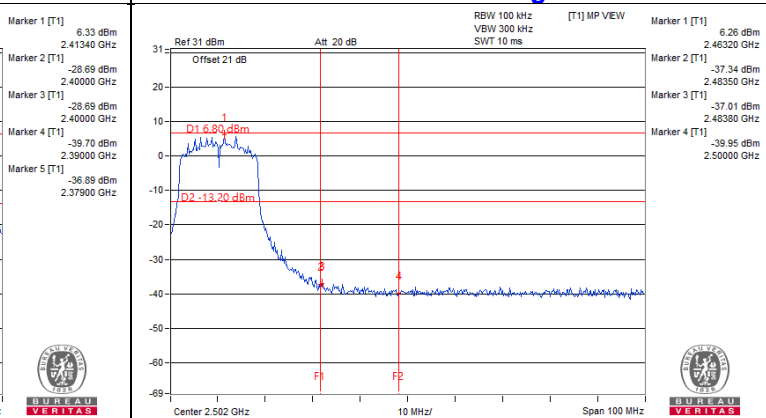
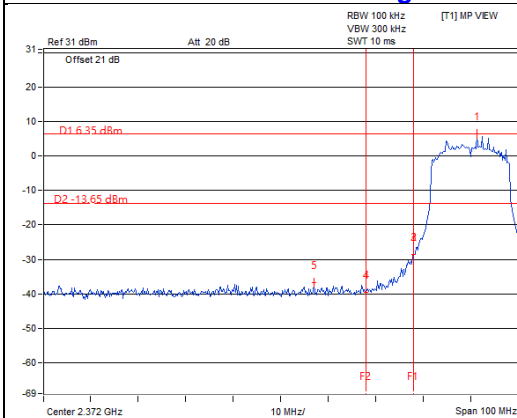
CH 6



CH 11

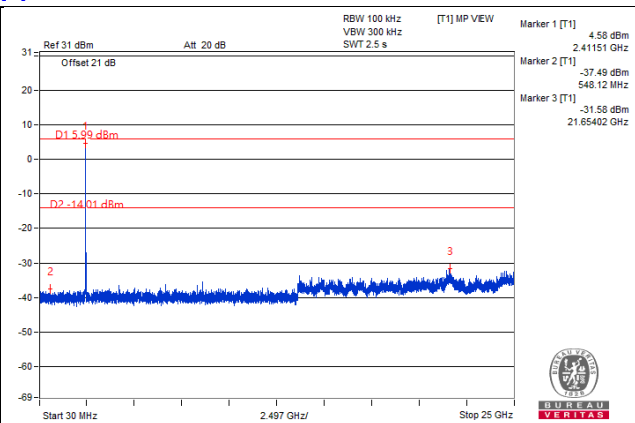
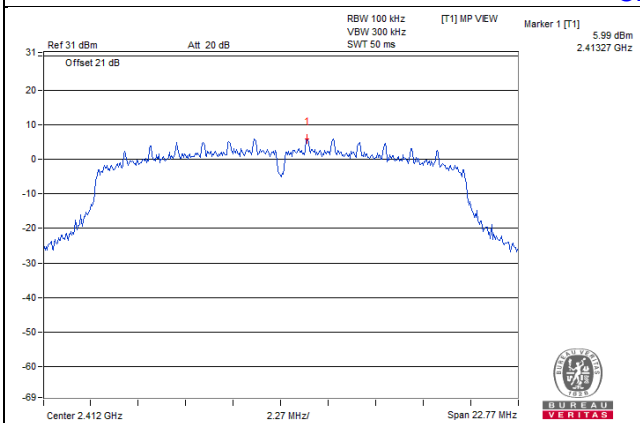


CH 1 Band edge

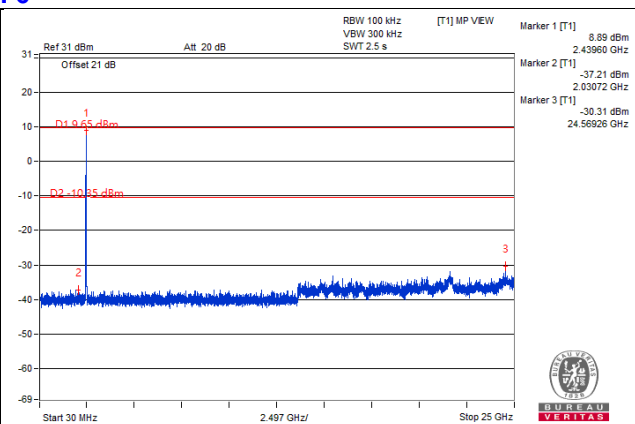
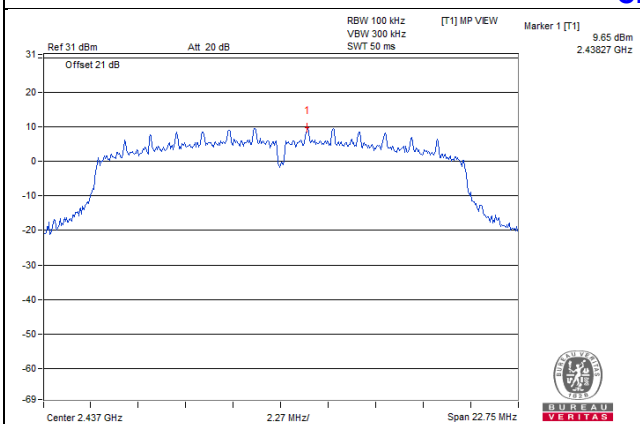


802.11n (HT20)

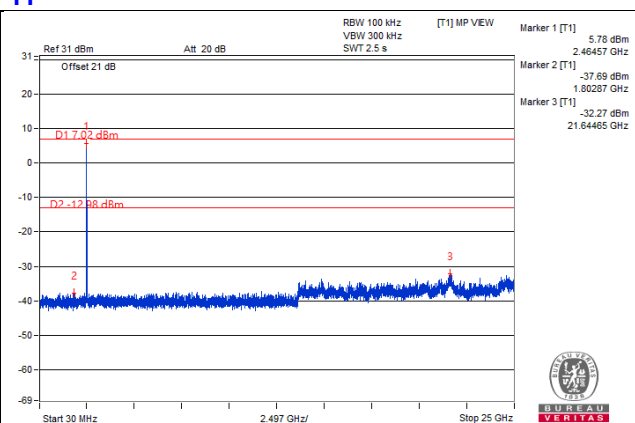
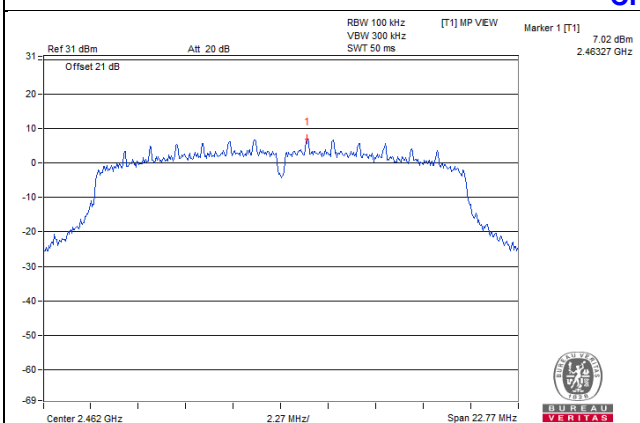
CH 1



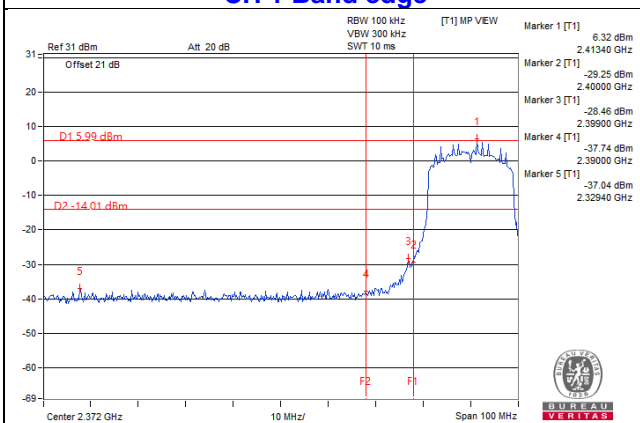
CH 6



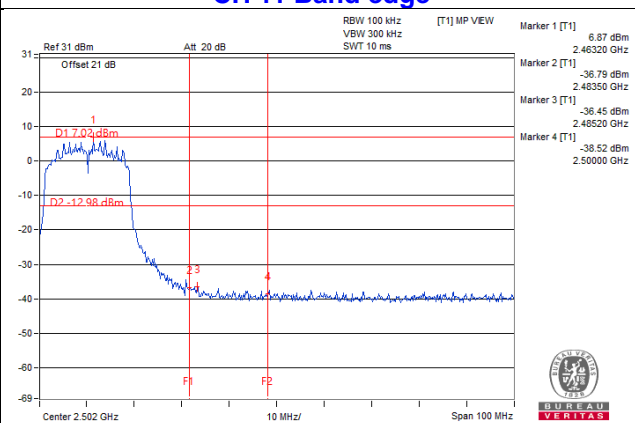
CH 11



CH 1 Band edge



CH 11 Band edge



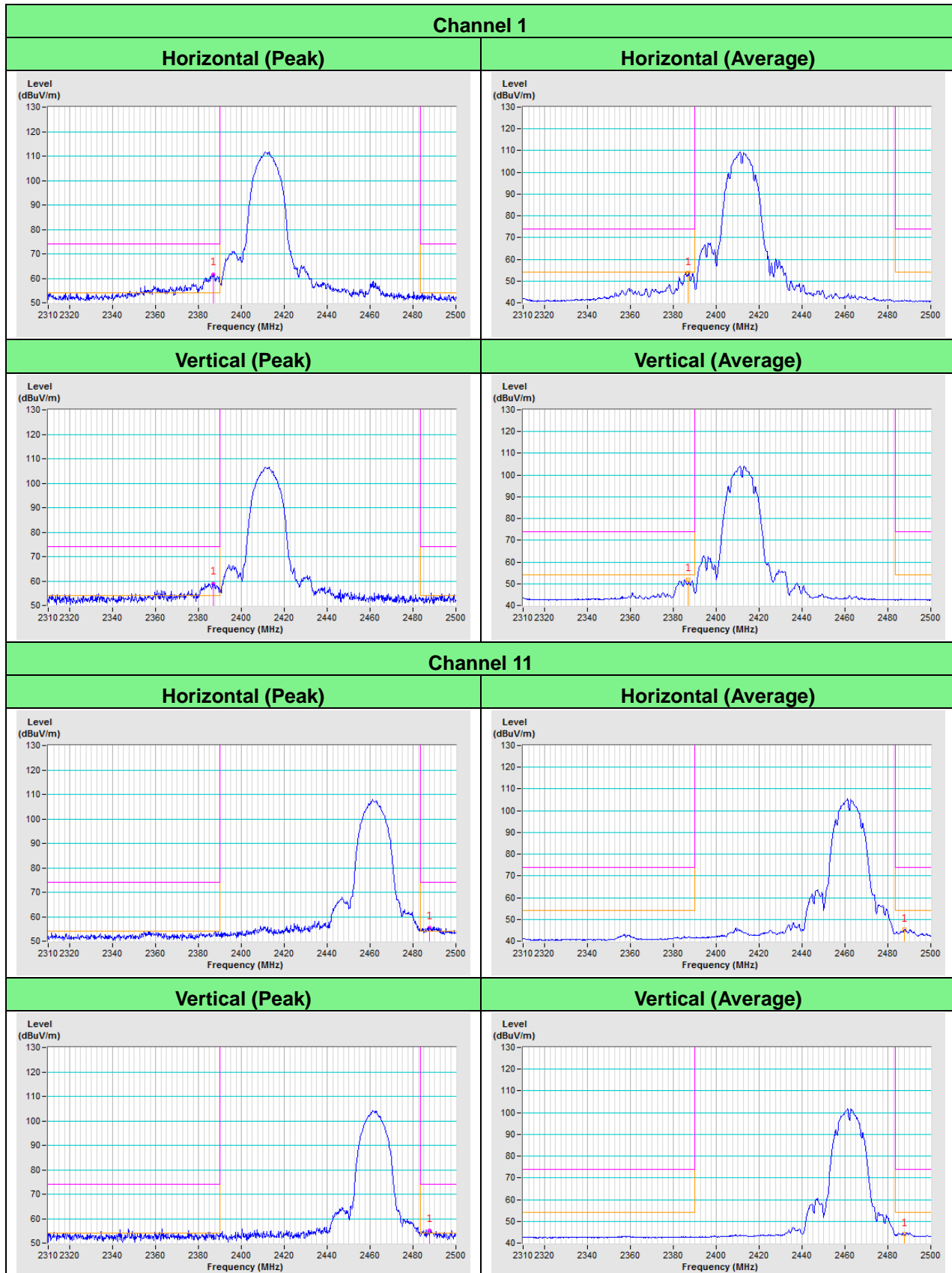
5 Pictures of Test Arrangements

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

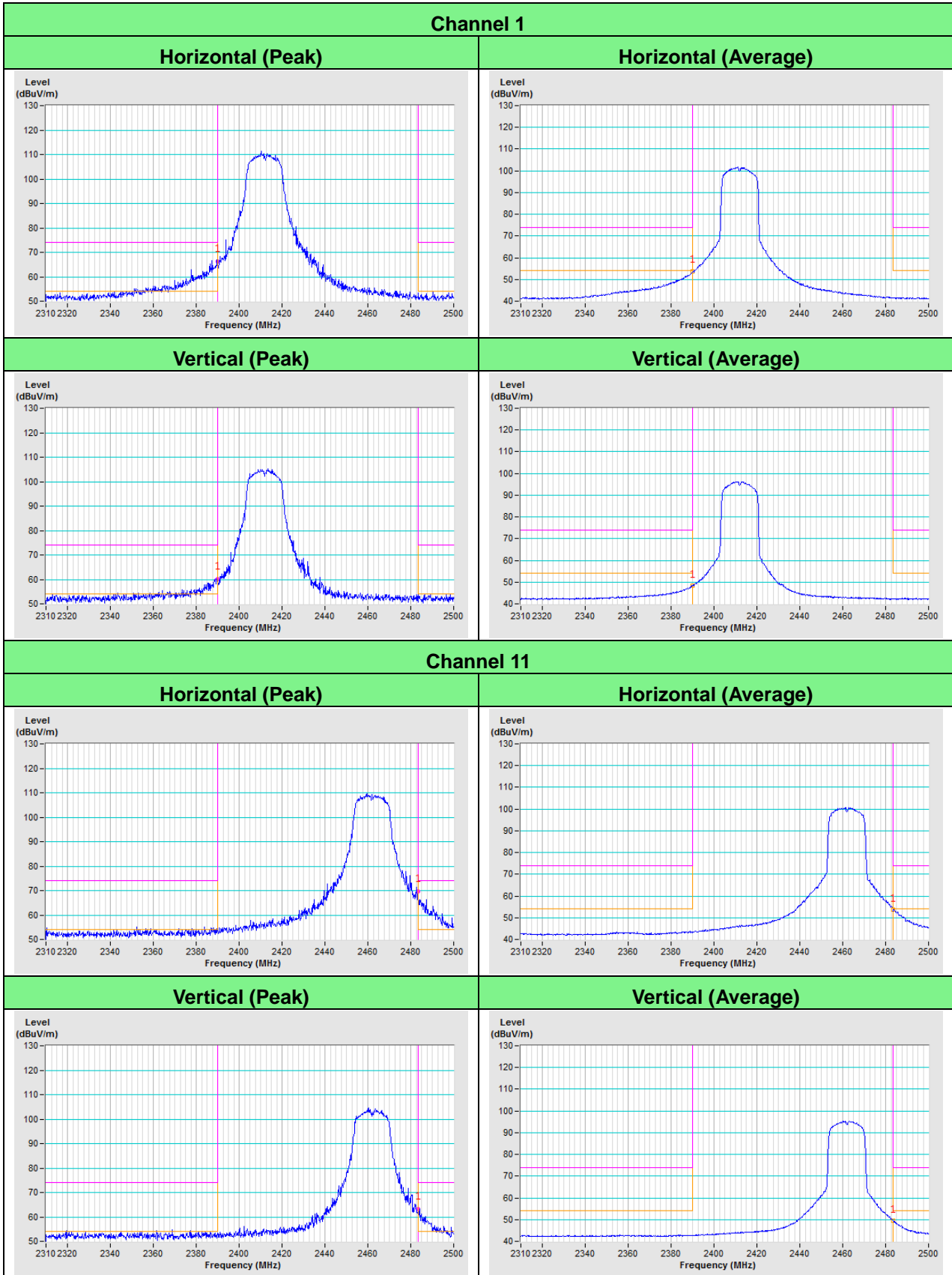
Annex A - Band-Edge Measurement

Annex A.1 - Test Results (Mode 1)

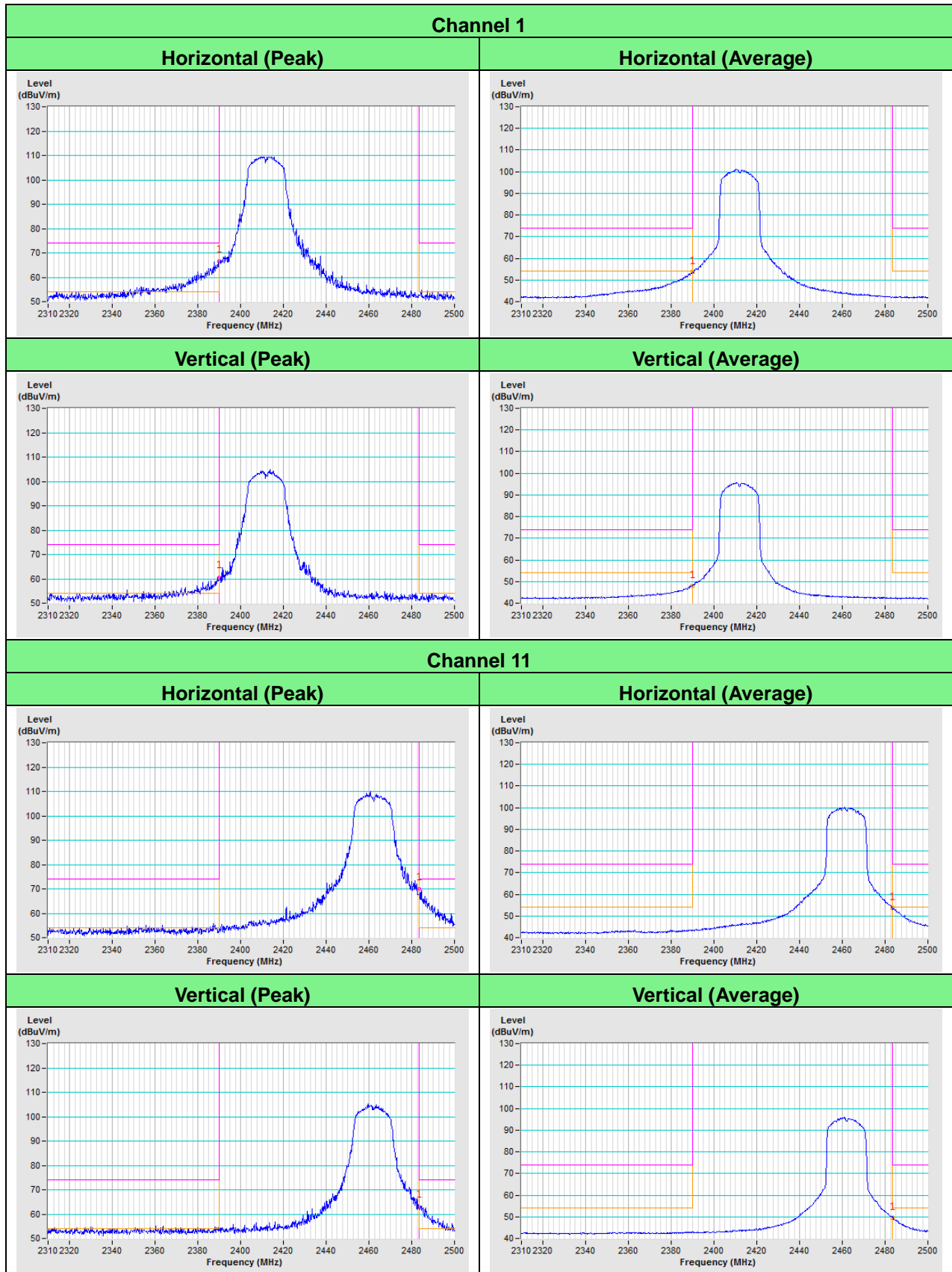
802.11b



802.11g

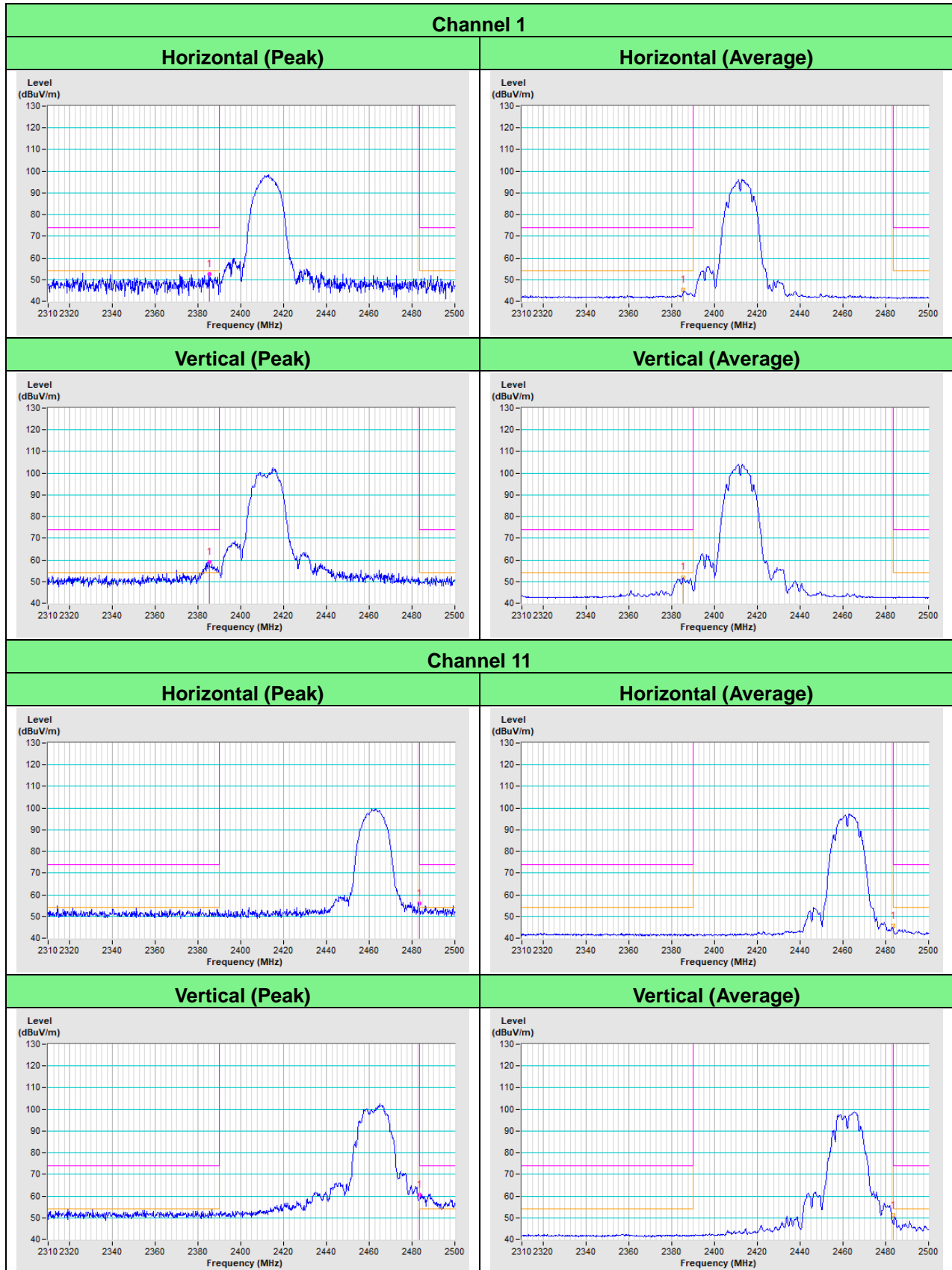


802.11n (HT20)

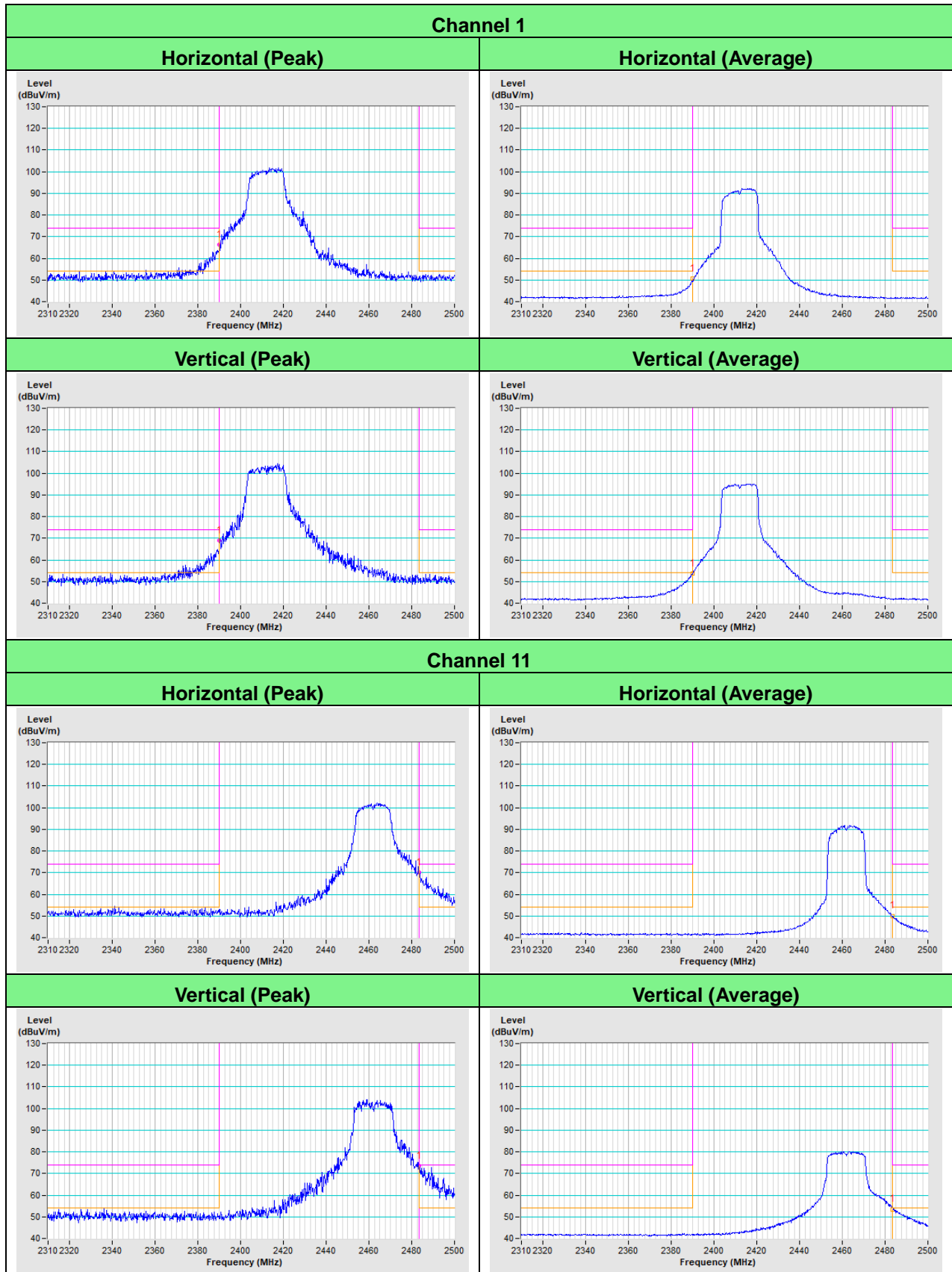


Annex A.2 - Test Results (Mode 2)

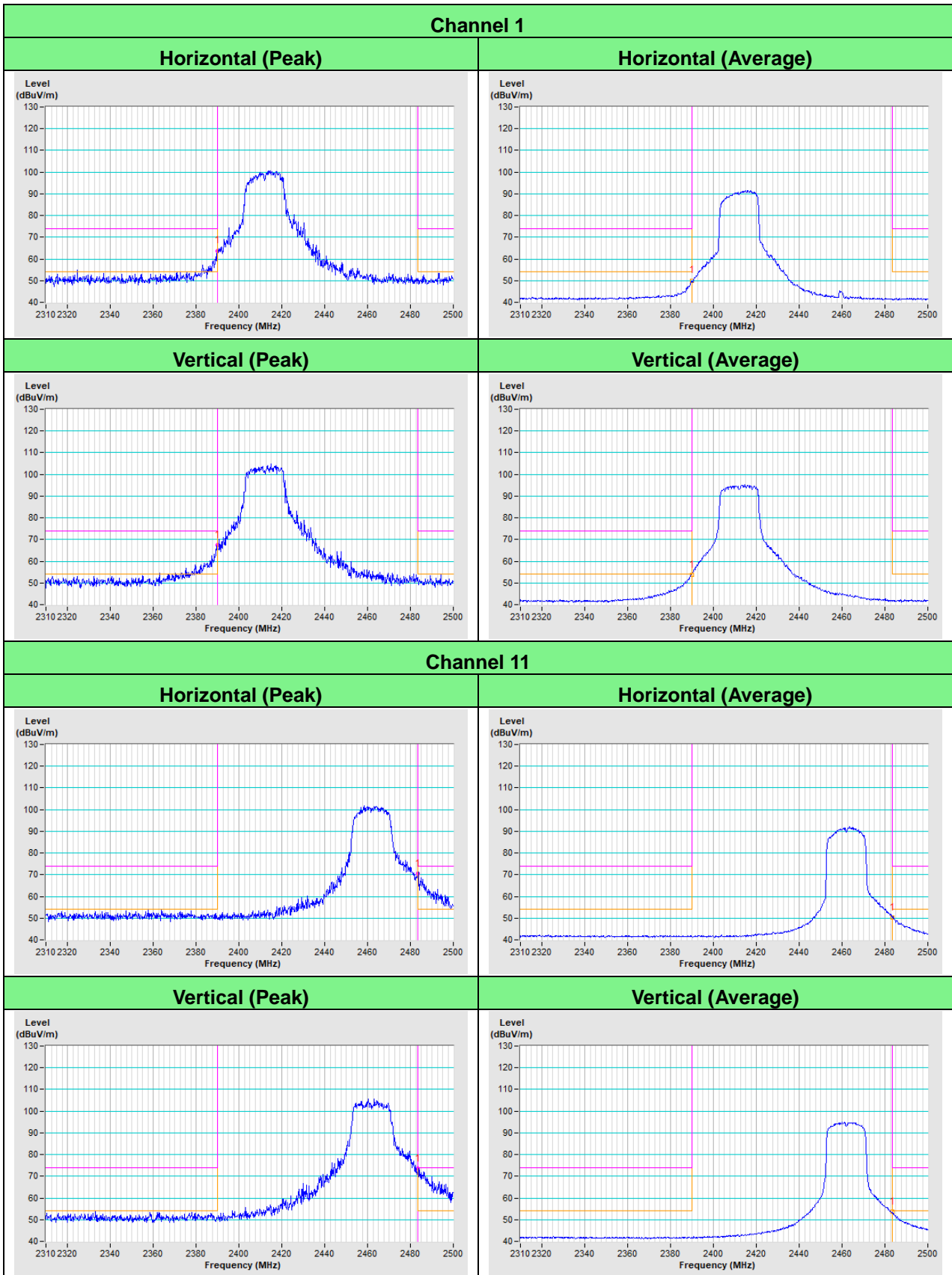
802.11b



802.11g



802.11n (HT20)



Appendix – Information of the Testing Laboratories

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

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC/RF Lab

Tel: 886-2-26052180

Fax: 886-2-26051924

Hsin Chu EMC/RF/Telecom Lab

Tel: 886-3-6668565

Fax: 886-3-6668323

Hwa Ya EMC/RF/Safety Lab

Tel: 886-3-3183232

Fax: 886-3-3270892

Email: service.adt@tw.bureauveritas.com

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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