FCC Test Report

Report No.:	RF190430E06B
FCC ID:	PY320200500
Test Model:	MC315
Received Date:	Apr. 22, 2020
Test Date:	May 04 to June 01, 2020
Issued Date:	June 05, 2020
Applicant:	NETGEAR, Inc.
Address:	350 East Plumeria Drive San Jose, CA 95134
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
RF190430E06B	Original release.	June 05, 2020

1 Certificate of Conformity

Product:	Meural Canvas
Brand:	NETGEAR
Test Model:	MC315
Sample Status:	ENGINEERING SAMPLE
Applicant:	NETGEAR, Inc.
Test Date:	May 04 to June 01, 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 : _____ , **Date:** June 05, 2020

Joyce Kuo / Specialist

Approved by : _____ , **Date:** June 05, 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 -15.28 dB at 0.15000 MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -1.5 dB at 2387.23 MHz.
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 not a standard connector.

Note:
1. 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.
2. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	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 InformationGeneral Description of EUT

Product	Meural Canvas
Brand	NETGEAR
Test Model	MC315
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	DC 12V from power adapter
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM 256QAM for OFDM in 11ac mode only
Modulation Technology	DSSS,OFDM
Transfer Rate	802.11b: up to 11 Mbps 802.11a/g: up to 54 Mbps 802.11n: up to 150 Mbps 802.11ac: up to 433.3 Mbps
Operating Frequency	**2.4GHz:** 2.412GHz ~ 2.462GHz **5GHz:** 5.18 ~ 5.24GHz, 5.745 ~ 5.825GHz
Number of Channel	**2.4GHz:** 802.11b, 802.11g, 802.11n (HT20): 11 802.11n (HT40): 7 **5GHz:** 802.11a, 802.11n (HT20), 802.11ac (VHT20): 9 802.11n (HT40), 802.11ac (VHT40): 4 802.11ac (VHT80): 2
Output Power	**2.412 ~ 2.462GHz:** 243.781 mW **5.18 ~ 5.24GHz:** 229.615mW **5.745 ~ 5.825GHz:** 224.388 mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	Adapter x 1
Data Cable Supplied	NA

Note:

1. The device of WLAN 2.4GHz and 5GHz technology cannot transmit simultaneously.
2. The ETU must be supplied power adapter as followimg table:

Brand	Model No.	P/N	Spec.
NETGEAR	AD2076F10	332-11554-01	Input: 100-120Vac, 0.56A, 50/60Hz Output: 12Vdc, 1.5A DC output cable: 1.8 m, unshielded

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

Ant. No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	2.7	2.4~2.4835	Dipole	I-PEX
	3.77	5.15~5.25		
	3.81	5.725~5.85		

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
802.11n (HT40)	1TX	1RX
5GHz Band		
MODULATION MODE	**TX & RX CONFIGURATION**	
802.11a	1TX	1RX
802.11n (HT20)	1TX	1RX
802.11n (HT40)	1TX	1RX
802.11ac (VHT20)	1TX	1RX
802.11ac (VHT40)	1TX	1RX
802.11ac (VHT80)	1TX	1RX

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

3.1 Description of Test Modes

11 channels are provided for 802.11b, 802.11g, 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		

3.1.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
-	√	√	√	√	-

Where **RE≥1G:** Radiated Emission above 1GHz & Bandedge Measurement **RE<1G:** Radiated Emission below 1GHz

PLC: Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

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.

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
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.

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

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.

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

Antenna Port Conducted Measurement:

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

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
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	BPSK	13.5

Test Condition:

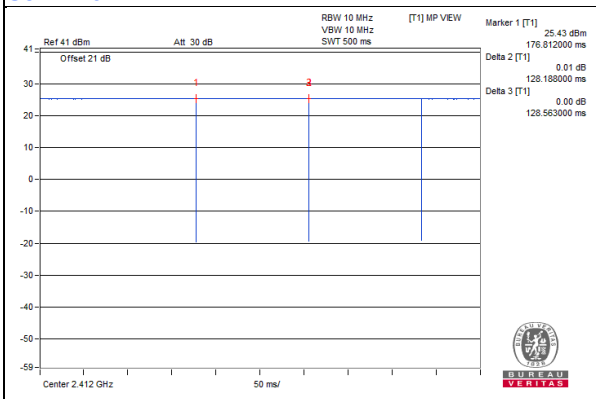
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	25deg. C, 75%RH	120Vac, 60Hz	Ryan Du
RE<1G	22deg. C, 68%RH	120Vac, 60Hz	Ryan Du
PLC	25deg. C, 70%RH	120Vac, 60Hz	Duncan Wang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Jyunchun Lin

3.2 Duty Cycle of Test Signal

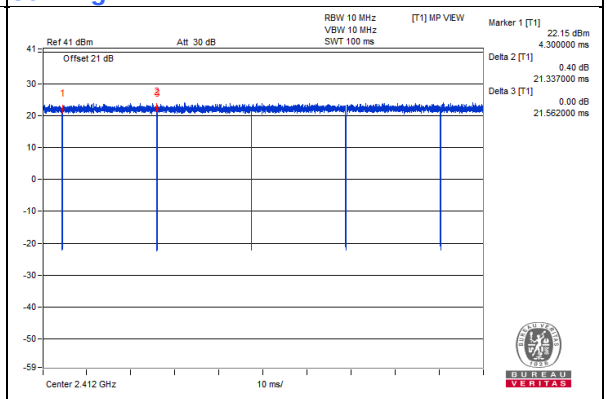
The duty cycle of test signal is ≥ 98 %, duty factor is not required.

802.11b: Duty cycle = 128.188 ms/128.563 ms = 0.997
802.11g: Duty cycle = 21.337 ms/21.562 ms = 0.99
802.11n (HT20): Duty cycle = 19.744 ms/19.925 ms = 0.991
802.11n (HT40): Duty cycle = 9.531 ms/9.726 ms = 0.98

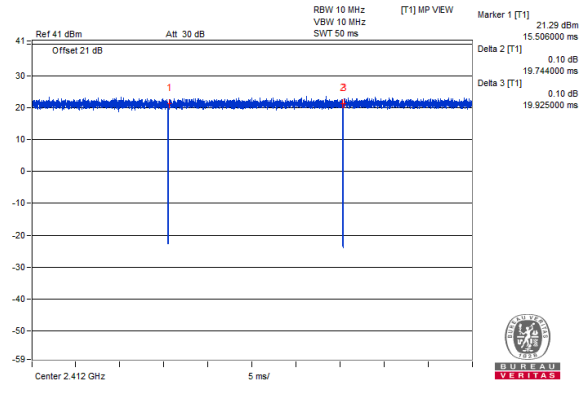
802.11b



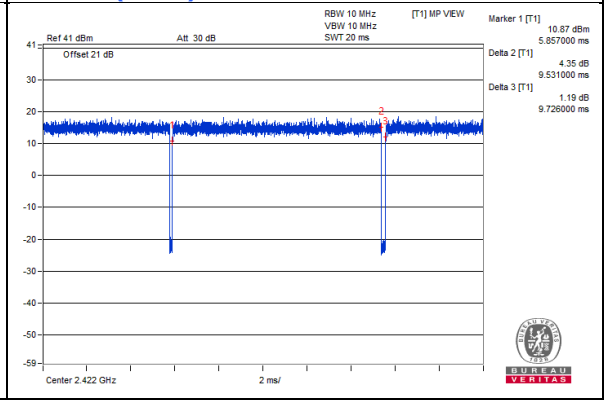
802.11g



802.11n (HT20)



802.11n (HT40)

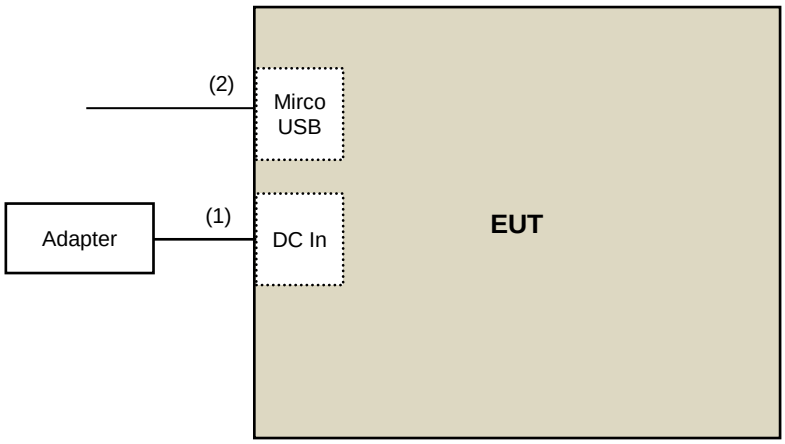


3.3 Description of Support Units

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	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client
2.	Micro USB Cable	1	1	No	0	Provided by Lab (For console use)

3.3.1 Configuration of System under Test



3.4 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 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 20dB under any condition of modulation.

4.1.2 Test Instruments

For Radiated Emission test: (802.11b)

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	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 2021
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. Tested Date: May 04 to 07, 2020

For Radiated Emission test: (other modulation mode)

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Agilent	N9038A	MY51210202	Dec. 13, 2019	Dec. 12, 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	Apr. 29, 2020	Apr. 28, 2021
RF Cable	EMC104-SM-SM-6000	180418	Apr. 29, 2020	Apr. 28, 2021
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. Tested Date: May 30 to June 01, 2020

For other test items:

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	1529002	July 26, 2019	July 25, 2020
Power sensor Anritsu	MA2411B	1339443	July 26, 2019	July 25, 2020
Fixed Attenuator Mini-Circuits	MDCS18N-10	MDCS18N-10-01	Apr. 14, 2020	Apr. 13, 2021
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: May 29, 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:

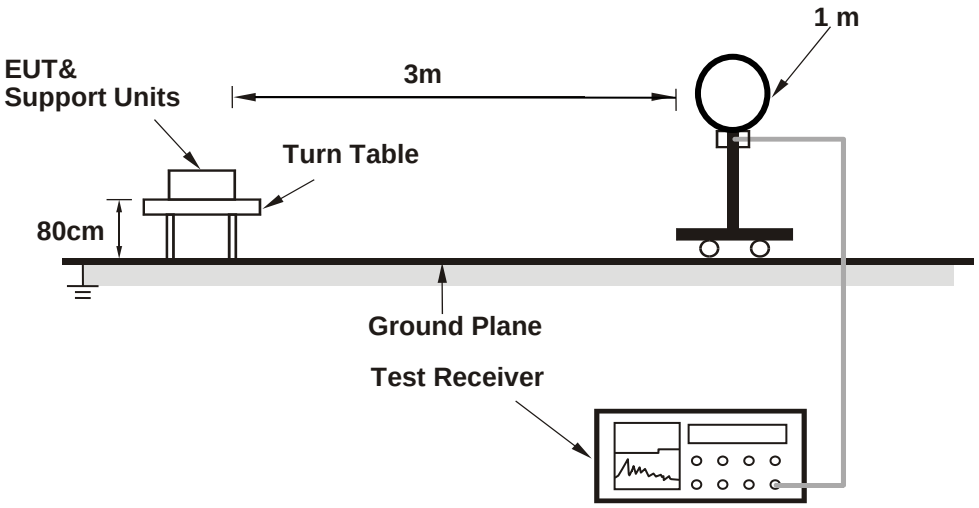
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98%) or 10Hz (Duty cycle ≥ 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

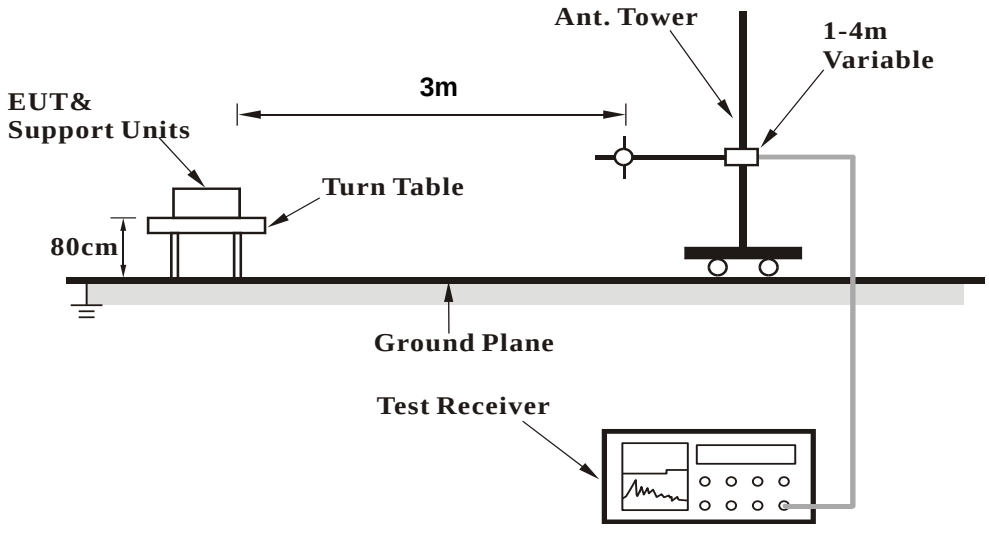
No deviation.

4.1.5 Test Setup

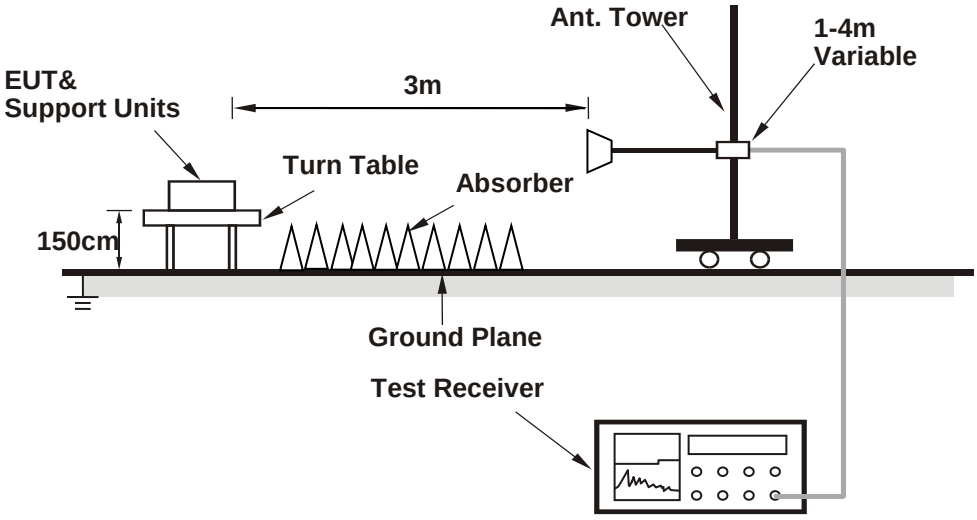
For Radiated emission below 30MHz



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

a. Connected the EUT with the Laptop which is placed on remote site.
b. Controlling software (qdart_conn.win.1.0_installer_00056.1) has been activated to set the EUT under transmission condition continuously at specific channel frenquency.

4.1.7 Test Results

Above 1GHz Data：

802.11b

Channel	TX Channel 1	**Detector Function**	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2387.23	60.4 PK	74.0	-13.6	3.47 H	4	62.2	-1.8
2	**2387.23**	**52.5 AV**	**54.0**	**-1.5**	**3.47 H**	**4**	**54.3**	**-1.8**
3	*2412.00	114.4 PK			3.47 H	4	116.2	-1.8
4	*2412.00	112.1 AV			3.47 H	4	113.9	-1.8
5	4824.00	48.8 PK	74.0	-25.2	1.05 H	259	46.6	2.2
6	4824.00	46.7 AV	54.0	-7.3	1.05 H	259	44.5	2.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	**Frequency (MHz)**	**Emission Level (dBuV/m)**	**Limit (dBuV/m)**	**Margin (dB)**	**Antenna Height (m)**	**Table Angle (Degree)**	**Raw Value (dBuV)**	**Correction Factor (dB/m)**
1	2385.36	55.8 PK	74.0	-18.2	3.82 V	234	57.6	-1.8
2	2385.36	45.3 AV	54.0	-8.7	3.82 V	234	47.1	-1.8
3	*2412.00	104.7 PK			3.82 V	234	106.5	-1.8
4	*2412.00	102.4 AV			3.82 V	234	104.2	-1.8
5	4824.00	48.8 PK	74.0	-25.2	1.62 V	168	46.6	2.2
6	4824.00	47.3 AV	54.0	-6.7	1.62 V	168	45.1	2.2

Remarks:

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

Channel	TX Channel 6	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	58.9 PK	74.0	-15.1	3.25 H	12	60.7	-1.8
2	2390.00	47.8 AV	54.0	-6.2	3.25 H	12	49.6	-1.8
3	*2437.00	115.5 PK			3.25 H	12	117.3	-1.8
4	*2437.00	113.0 AV			3.25 H	12	114.8	-1.8
5	2483.50	56.8 PK	74.0	-17.2	3.25 H	12	58.7	-1.9
6	2483.50	45.5 AV	54.0	-8.5	3.25 H	12	47.4	-1.9
7	4874.00	49.2 PK	74.0	-24.8	1.00 H	245	47.1	2.1
8	4874.00	47.3 AV	54.0	-6.7	1.00 H	245	45.2	2.1
9	7311.00	49.6 PK	74.0	-24.4	1.72 H	327	40.5	9.1
10	7311.00	43.8 AV	54.0	-10.2	1.72 H	327	34.7	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	54.6 PK	74.0	-19.4	3.34 V	66	56.4	-1.8
2	2390.00	42.2 AV	54.0	-11.8	3.34 V	66	44.0	-1.8
3	*2437.00	105.9 PK			3.34 V	66	107.7	-1.8
4	*2437.00	103.2 AV			3.34 V	66	105.0	-1.8
5	2483.50	54.2 PK	74.0	-19.8	3.34 V	66	56.1	-1.9
6	2483.50	42.1 AV	54.0	-11.9	3.34 V	66	44.0	-1.9
7	4874.00	49.3 PK	74.0	-24.7	1.66 V	178	47.2	2.1
8	4874.00	48.0 AV	54.0	-6.0	1.66 V	178	45.9	2.1
9	7311.00	45.8 PK	74.0	-28.2	3.72 V	70	36.7	9.1
10	7311.00	38.1 AV	54.0	-15.9	3.72 V	70	29.0	9.1

Remarks:

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

Channel	TX Channel 11	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	113.6 PK			3.38 H	5	115.4	-1.8
2	*2462.00	111.4 AV			3.38 H	5	113.2	-1.8
3	2488.80	59.5 PK	74.0	-14.5	3.38 H	5	61.4	-1.9
4	2488.80	49.0 AV	54.0	-5.0	3.38 H	5	50.9	-1.9
5	4924.00	48.2 PK	74.0	-25.8	1.02 H	249	45.9	2.3
6	4924.00	46.1 AV	54.0	-7.9	1.02 H	249	43.8	2.3
7	7386.00	48.4 PK	74.0	-25.6	1.78 H	314	39.0	9.4
8	7386.00	42.5 AV	54.0	-11.5	1.78 H	314	33.1	9.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	104.3 PK			3.14 V	88	106.1	-1.8
2	*2462.00	101.9 AV			3.14 V	88	103.7	-1.8
3	2488.80	55.1 PK	74.0	-18.9	3.14 V	88	57.0	-1.9
4	2488.80	43.6 AV	54.0	-10.4	3.14 V	88	45.5	-1.9
5	4924.00	48.6 PK	74.0	-25.4	1.68 V	165	46.3	2.3
6	4924.00	47.0 AV	54.0	-7.0	1.68 V	165	44.7	2.3
7	7386.00	44.2 PK	74.0	-29.8	3.69 V	60	34.8	9.4
8	7386.00	36.7 AV	54.0	-17.3	3.69 V	60	27.3	9.4

Remarks:

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

802.11g

Channel	TX Channel 1	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.9 PK	74.0	-14.1	3.44 H	3	61.7	-1.8
2	2390.00	48.9 AV	54.0	-5.1	3.44 H	3	50.7	-1.8
3	*2412.00	110.6 PK			3.44 H	3	112.4	-1.8
4	*2412.00	100.1 AV			3.44 H	3	101.9	-1.8
5	4824.00	46.0 PK	74.0	-28.0	1.00 H	235	43.8	2.2
6	4824.00	43.5 AV	54.0	-10.5	1.00 H	235	41.3	2.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.7 PK	74.0	-18.3	3.86 V	64	57.5	-1.8
2	2390.00	44.7 AV	54.0	-9.3	3.86 V	64	46.5	-1.8
3	*2412.00	102.5 PK			3.86 V	64	104.3	-1.8
4	*2412.00	93.3 AV			3.86 V	64	95.1	-1.8
5	4824.00	44.7 PK	74.0	-29.3	1.62 V	162	42.5	2.2
6	4824.00	42.6 AV	54.0	-11.4	1.62 V	162	40.4	2.2

Remarks:

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

Channel	TX Channel 6	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	3.13 H	7	57.4	-1.8
2	2390.00	44.2 AV	54.0	-9.8	3.13 H	7	46.0	-1.8
3	*2437.00	115.1 PK			3.13 H	7	116.9	-1.8
4	*2437.00	105.6 AV			3.13 H	7	107.4	-1.8
5	2483.50	55.3 PK	74.0	-18.7	3.13 H	7	57.2	-1.9
6	2483.50	43.9 AV	54.0	-10.1	3.13 H	7	45.8	-1.9
7	4874.00	47.5 PK	74.0	-26.5	1.00 H	240	45.4	2.1
8	4874.00	45.4 AV	54.0	-8.6	1.00 H	240	43.3	2.1
9	7311.00	47.1 PK	74.0	-26.9	1.76 H	319	38.0	9.1
10	7311.00	41.8 AV	54.0	-12.2	1.76 H	319	32.7	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.1 PK	74.0	-18.9	3.93 V	86	56.9	-1.8
2	2390.00	44.0 AV	54.0	-10.0	3.93 V	86	45.8	-1.8
3	*2437.00	109.2 PK			3.93 V	86	111.0	-1.8
4	*2437.00	98.9 AV			3.93 V	86	100.7	-1.8
5	2483.50	55.2 PK	74.0	-18.8	3.93 V	86	57.1	-1.9
6	2483.50	44.1 AV	54.0	-9.9	3.93 V	86	46.0	-1.9
7	4874.00	47.4 PK	74.0	-26.6	1.70 V	164	45.3	2.1
8	4874.00	45.2 AV	54.0	-8.8	1.70 V	164	43.1	2.1
9	7311.00	45.1 PK	74.0	-28.9	3.78 V	79	36.0	9.1
10	7311.00	36.5 AV	54.0	-17.5	3.78 V	79	27.4	9.1

Remarks:

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

Channel	TX Channel 11	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	111.0 PK			2.76 H	11	112.8	-1.8
2	*2462.00	100.9 AV			2.76 H	11	102.7	-1.8
3	2483.50	57.8 PK	74.0	-16.2	2.76 H	11	59.7	-1.9
4	2483.50	47.2 AV	54.0	-6.8	2.76 H	11	49.1	-1.9
5	4924.00	45.3 PK	74.0	-28.7	1.00 H	235	43.0	2.3
6	4924.00	43.0 AV	54.0	-11.0	1.00 H	235	40.7	2.3
7	7386.00	44.3 PK	74.0	-29.7	1.79 H	312	34.9	9.4
8	7386.00	39.6 AV	54.0	-14.4	1.79 H	312	30.2	9.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	103.3 PK			4.00 V	91	105.1	-1.8
2	*2462.00	93.9 AV			4.00 V	91	95.7	-1.8
3	2483.50	55.2 PK	74.0	-18.8	4.00 V	91	57.1	-1.9
4	2483.50	44.2 AV	54.0	-9.8	4.00 V	91	46.1	-1.9
5	4924.00	44.8 PK	74.0	-29.2	1.68 V	166	42.5	2.3
6	4924.00	42.5 AV	54.0	-11.5	1.68 V	166	40.2	2.3
7	7386.00	42.3 PK	74.0	-31.7	3.77 V	74	32.9	9.4
8	7386.00	36.3 AV	54.0	-17.7	3.77 V	74	26.9	9.4

Remarks:

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

802.11n (HT20)

Channel	TX Channel 1	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.0 PK	74.0	-11.0	2.70 H	9	64.8	-1.8
2	2390.00	50.6 AV	54.0	-3.4	2.70 H	9	52.4	-1.8
3	*2412.00	111.3 PK			2.70 H	9	113.1	-1.8
4	*2412.00	100.9 AV			2.70 H	9	102.7	-1.8
5	4824.00	45.0 PK	74.0	-29.0	1.00 H	223	42.8	2.2
6	4824.00	42.6 AV	54.0	-11.4	1.00 H	223	40.4	2.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	3.88 V	63	57.4	-1.8
2	2390.00	45.1 AV	54.0	-8.9	3.88 V	63	46.9	-1.8
3	*2412.00	102.7 PK			3.88 V	63	104.5	-1.8
4	*2412.00	93.2 AV			3.88 V	63	95.0	-1.8
5	4824.00	44.4 PK	74.0	-29.6	1.67 V	159	42.2	2.2
6	4824.00	42.1 AV	54.0	-11.9	1.67 V	159	39.9	2.2

Remarks:

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

Channel	TX Channel 6	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.8 PK	74.0	-18.2	2.83 H	9	57.6	-1.8
2	2390.00	44.3 AV	54.0	-9.7	2.83 H	9	46.1	-1.8
3	*2437.00	115.8 PK			2.83 H	9	117.6	-1.8
4	*2437.00	106.2 AV			2.83 H	9	108.0	-1.8
5	2483.50	55.4 PK	74.0	-18.6	2.83 H	9	57.3	-1.9
6	2483.50	44.0 AV	54.0	-10.0	2.83 H	9	45.9	-1.9
7	4874.00	48.2 PK	74.0	-25.8	1.00 H	248	46.1	2.1
8	4874.00	45.9 AV	54.0	-8.1	1.00 H	248	43.8	2.1
9	7311.00	46.4 PK	74.0	-27.6	1.81 H	312	37.3	9.1
10	7311.00	41.3 AV	54.0	-12.7	1.81 H	312	32.2	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	54.9 PK	74.0	-19.1	3.91 V	93	56.7	-1.8
2	2390.00	43.0 AV	54.0	-11.0	3.91 V	93	44.8	-1.8
3	*2437.00	109.3 PK			3.91 V	93	111.1	-1.8
4	*2437.00	99.3 AV			3.91 V	93	101.1	-1.8
5	2483.50	55.2 PK	74.0	-18.8	3.91 V	93	57.1	-1.9
6	2483.50	43.6 AV	54.0	-10.4	3.91 V	93	45.5	-1.9
7	4874.00	47.4 PK	74.0	-26.6	1.67 V	155	45.3	2.1
8	4874.00	45.3 AV	54.0	-8.7	1.67 V	155	43.2	2.1
9	7311.00	45.1 PK	74.0	-28.9	3.77 V	94	36.0	9.1
10	7311.00	36.5 AV	54.0	-17.5	3.77 V	94	27.4	9.1

Remarks:

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

Channel	TX Channel 11	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	110.3 PK			2.78 H	9	112.1	-1.8
2	*2462.00	100.8 AV			2.78 H	9	102.6	-1.8
3	2483.50	57.6 PK	74.0	-16.4	2.78 H	9	59.5	-1.9
4	2483.50	47.2 AV	54.0	-6.8	2.78 H	9	49.1	-1.9
5	4924.00	45.5 PK	74.0	-28.5	1.00 H	245	43.2	2.3
6	4924.00	43.4 AV	54.0	-10.6	1.00 H	245	41.1	2.3
7	7386.00	44.5 PK	74.0	-29.5	1.84 H	314	35.1	9.4
8	7386.00	40.1 AV	54.0	-13.9	1.84 H	314	30.7	9.4
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	103.5 PK			4.00 V	88	105.3	-1.8
2	*2462.00	93.9 AV			4.00 V	88	95.7	-1.8
3	2483.50	55.1 PK	74.0	-18.9	4.00 V	88	57.0	-1.9
4	2483.50	44.7 AV	54.0	-9.3	4.00 V	88	46.6	-1.9
5	4924.00	44.7 PK	74.0	-29.3	1.63 V	178	42.4	2.3
6	4924.00	42.5 AV	54.0	-11.5	1.63 V	178	40.2	2.3
7	7386.00	42.5 PK	74.0	-31.5	3.79 V	59	33.1	9.4
8	7386.00	36.3 AV	54.0	-17.7	3.79 V	59	26.9	9.4

Remarks:

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

802.11n (HT40)

Channel	TX Channel 3	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	66.2 PK	74.0	-7.8	2.88 H	5	68.0	-1.8
2	2390.00	49.1 AV	54.0	-4.9	2.88 H	5	50.9	-1.8
3	*2422.00	102.1 PK			2.88 H	5	103.9	-1.8
4	*2422.00	93.8 AV			2.88 H	5	95.6	-1.8
5	4844.00	44.8 PK	74.0	-29.2	1.00 H	237	42.6	2.2
6	4844.00	42.8 AV	54.0	-11.2	1.00 H	237	40.6	2.2
7	7266.00	44.5 PK	74.0	-29.5	1.76 H	304	35.5	9.0
8	7266.00	39.8 AV	54.0	-14.2	1.76 H	304	30.8	9.0
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	3.88 V	79	57.4	-1.8
2	2390.00	44.7 AV	54.0	-9.3	3.88 V	79	46.5	-1.8
3	*2422.00	95.2 PK			3.88 V	79	97.0	-1.8
4	*2422.00	86.3 AV			3.88 V	79	88.1	-1.8
5	4844.00	45.3 PK	74.0	-28.7	1.74 V	160	43.1	2.2
6	4844.00	43.0 AV	54.0	-11.0	1.74 V	160	40.8	2.2
7	7266.00	42.6 PK	74.0	-31.4	3.72 V	77	33.6	9.0
8	7266.00	36.6 AV	54.0	-17.4	3.72 V	77	27.6	9.0

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.

Channel	TX Channel 6	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.3 PK	74.0	-17.7	2.67 H	12	58.1	-1.8
2	2390.00	45.3 AV	54.0	-8.7	2.67 H	12	47.1	-1.8
3	*2437.00	108.6 PK			2.67 H	12	110.4	-1.8
4	*2437.00	99.1 AV			2.67 H	12	100.9	-1.8
5	2483.50	55.9 PK	74.0	-18.1	2.67 H	12	57.8	-1.9
6	2483.50	45.0 AV	54.0	-9.0	2.67 H	12	46.9	-1.9
7	4874.00	45.4 PK	74.0	-28.6	1.00 H	219	43.3	2.1
8	4874.00	42.9 AV	54.0	-11.1	1.00 H	219	40.8	2.1
9	7311.00	44.8 PK	74.0	-29.2	1.78 H	322	35.7	9.1
10	7311.00	39.9 AV	54.0	-14.1	1.78 H	322	30.8	9.1
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	55.6 PK	74.0	-18.4	3.76 V	76	57.4	-1.8
2	2390.00	44.4 AV	54.0	-9.6	3.76 V	76	46.2	-1.8
3	*2437.00	101.4 PK			3.76 V	76	103.2	-1.8
4	*2437.00	92.3 AV			3.76 V	76	94.1	-1.8
5	2483.50	55.8 PK	74.0	-18.2	3.76 V	76	57.7	-1.9
6	2483.50	44.5 AV	54.0	-9.5	3.76 V	76	46.4	-1.9
7	4874.00	44.9 PK	74.0	-29.1	1.67 V	178	42.8	2.1
8	4874.00	42.4 AV	54.0	-11.6	1.67 V	178	40.3	2.1
9	7311.00	42.7 PK	74.0	-31.3	3.79 V	71	33.6	9.1
10	7311.00	36.7 AV	54.0	-17.3	3.79 V	71	27.6	9.1

Remarks:

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

Channel	TX Channel 9	Detector Function	Peak (PK) Average (AV)
Frequency Range	1GHz ~ 25GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	105.9 PK			2.57 H	8	107.7	-1.8
2	*2452.00	96.7 AV			2.57 H	8	98.5	-1.8
3	2483.50	65.5 PK	74.0	-8.5	2.57 H	8	67.4	-1.9
4	2483.50	47.2 AV	54.0	-6.8	2.57 H	8	49.1	-1.9
5	4904.00	45.2 PK	74.0	-28.8	1.00 H	242	43.1	2.1
6	4904.00	42.9 AV	54.0	-11.1	1.00 H	242	40.8	2.1
7	7356.00	44.0 PK	74.0	-30.0	1.84 H	313	34.8	9.2
8	7356.00	39.5 AV	54.0	-14.5	1.84 H	313	30.3	9.2
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	98.8 PK			3.98 V	87	100.6	-1.8
2	*2452.00	89.7 AV			3.98 V	87	91.5	-1.8
3	2483.50	57.2 PK	74.0	-16.8	3.98 V	87	59.1	-1.9
4	2483.50	44.7 AV	54.0	-9.3	3.98 V	87	46.6	-1.9
5	4904.00	45.0 PK	74.0	-29.0	1.66 V	168	42.9	2.1
6	4904.00	42.7 AV	54.0	-11.3	1.66 V	168	40.6	2.1
7	7356.00	42.5 PK	74.0	-31.5	3.76 V	76	33.3	9.2
8	7356.00	36.3 AV	54.0	-17.7	3.76 V	76	27.1	9.2

Remarks:

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

Below 1GHz Data:

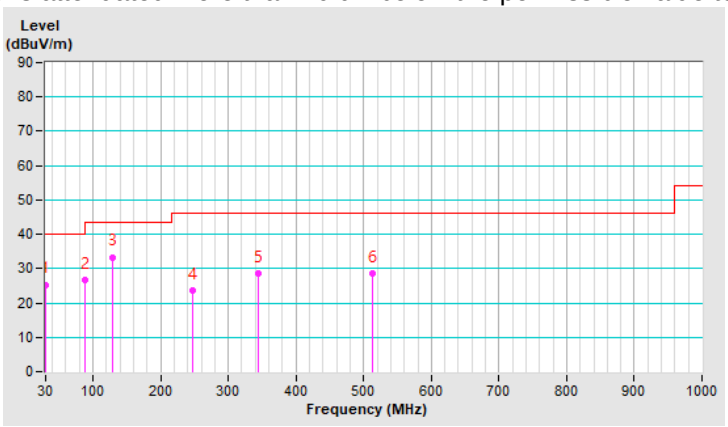
802.11b

Channel	TX Channel 6	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.53	25.4 QP	40.0	-14.6	1.00 H	114	34.6	-9.2
2	88.93	26.8 QP	43.5	-16.7	2.00 H	266	40.5	-13.7
3	128.58	33.4 QP	43.5	-10.1	2.00 H	226	42.3	-8.9
4	246.77	23.7 QP	46.0	-22.3	1.50 H	231	32.3	-8.6
5	343.67	28.7 QP	46.0	-17.3	1.00 H	210	34.2	-5.5
6	512.87	28.5 QP	46.0	-17.5	1.50 H	318	29.5	-1.0

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 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.

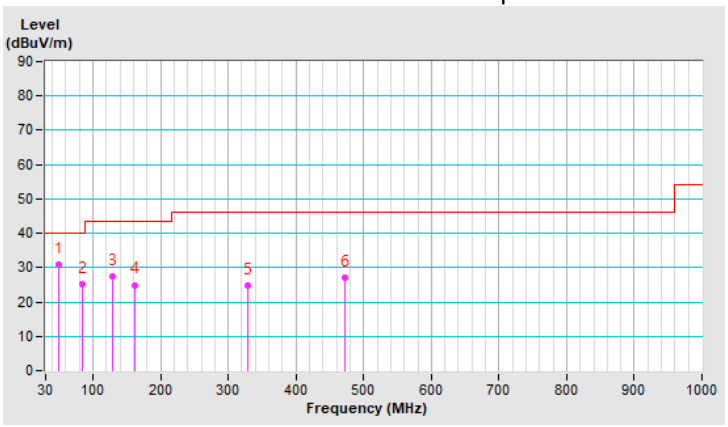


Channel	TX Channel 6	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	48.87	30.7 QP	40.0	-9.3	1.00 V	315	38.6	-7.9
2	84.03	25.3 QP	40.0	-14.7	1.50 V	247	38.7	-13.4
3	128.16	27.5 QP	43.5	-16.0	1.50 V	53	36.4	-8.9
4	162.87	25.0 QP	43.5	-18.5	1.00 V	286	32.5	-7.5
5	329.41	24.6 QP	46.0	-21.4	1.00 V	34	30.2	-5.6
6	472.05	26.9 QP	46.0	-19.1	1.50 V	144	28.6	-1.7

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 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: May 12, 2020

4.2.3 Test Procedures

a. 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.

b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

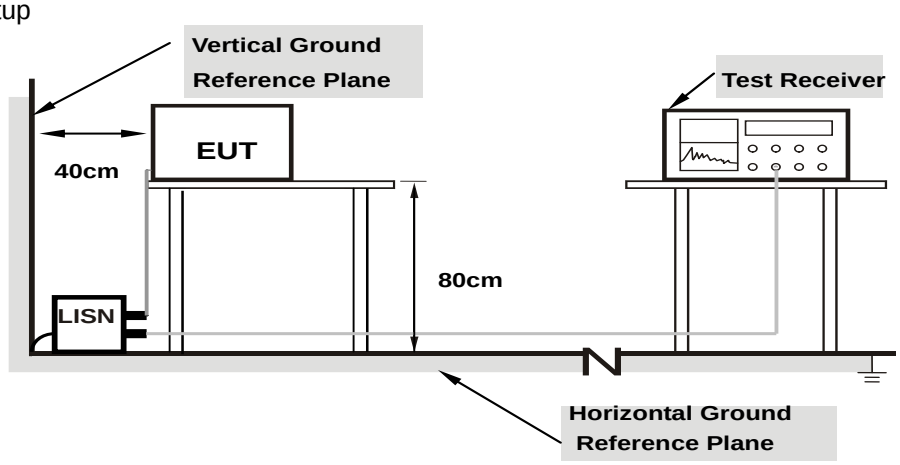
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

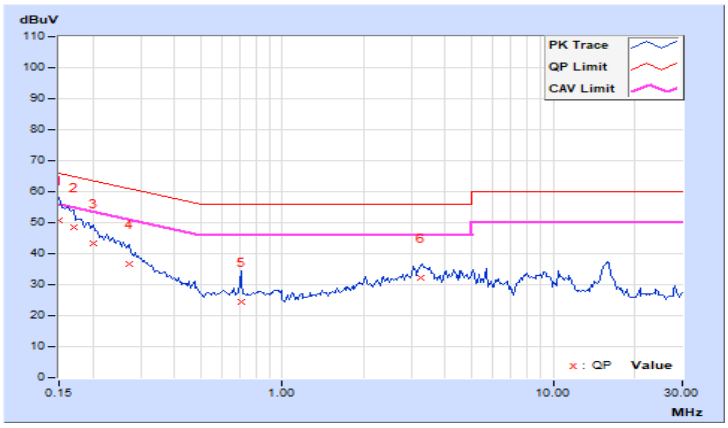
4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	**0.15000**	**10.02**	**40.70**	**24.87**	**50.72**	**34.89**	**66.00**	**56.00**	**-15.28**	**-21.11**
2	0.16953	10.02	38.33	25.63	48.35	35.65	64.98	54.98	-16.63	-19.33
3	0.20078	10.02	33.24	21.48	43.26	31.50	63.58	53.58	-20.32	-22.08
4	0.27109	10.03	26.61	14.87	36.64	24.90	61.08	51.08	-24.44	-26.18
5	0.70469	10.06	14.31	9.64	24.37	19.70	56.00	46.00	-31.63	-26.30
6	3.26172	10.27	21.78	15.46	32.05	25.73	56.00	46.00	-23.95	-20.27

Remarks:

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

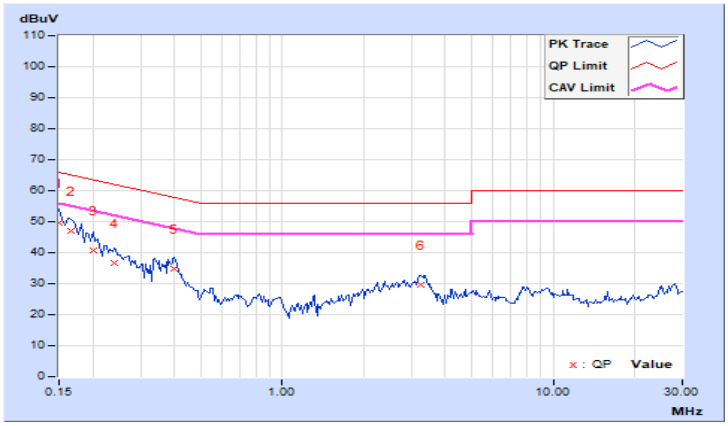


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15000	10.10	39.53	22.24	49.63	32.34	66.00	56.00	-16.37	-23.66
2	0.16562	10.09	37.09	23.24	47.18	33.33	65.18	55.18	-18.00	-21.85
3	0.20078	10.08	30.83	19.53	40.91	29.61	63.58	53.58	-22.67	-23.97
4	0.23984	10.09	26.62	14.66	36.71	24.75	62.10	52.10	-25.39	-27.35
5	0.40000	10.12	24.73	19.32	34.85	29.44	57.85	47.85	-23.00	-18.41
6	3.23438	10.29	19.52	14.62	29.81	24.91	56.00	46.00	-26.19	-21.09

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

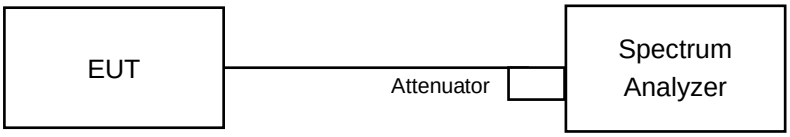


4.3 6dB Bandwidth Measurement

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) ≥ 3 x 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	8.05	0.5	Pass
6	2437	8.09	0.5	Pass
11	2462	8.1	0.5	Pass

802.11g

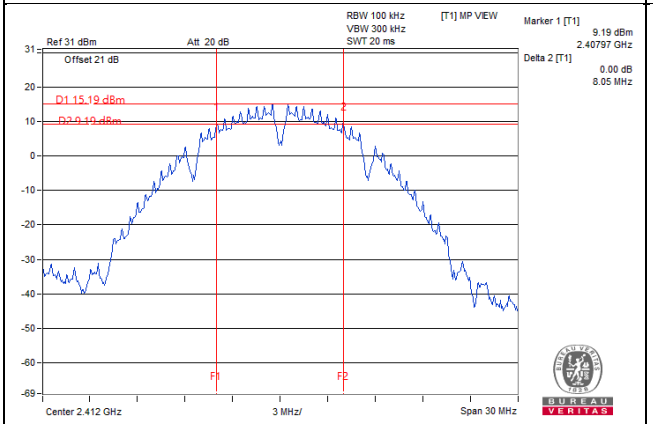
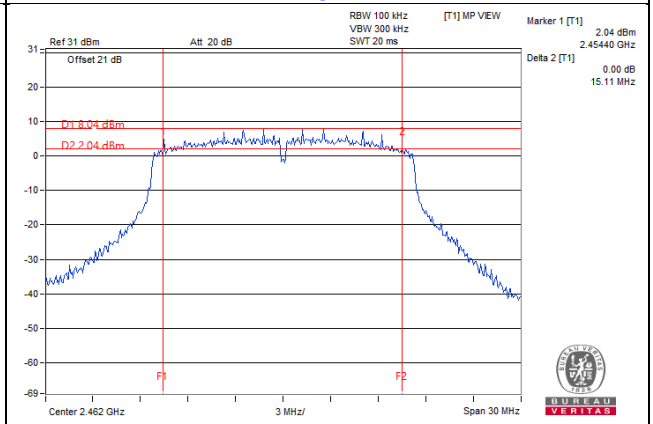
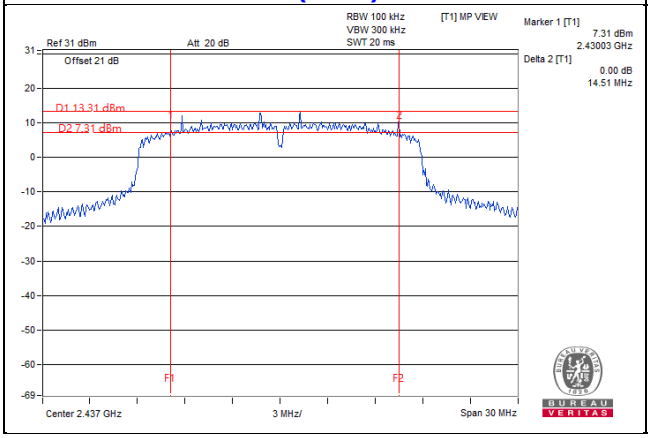
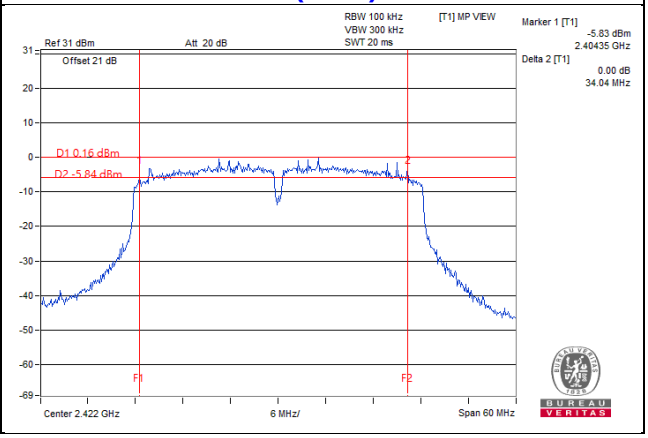
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.14	0.5	Pass
6	2437	15.16	0.5	Pass
11	2462	15.11	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.37	0.5	Pass
6	2437	14.51	0.5	Pass
11	2462	15.18	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	34.04	0.5	Pass
6	2437	34.27	0.5	Pass
9	2452	35.13	0.5	Pass

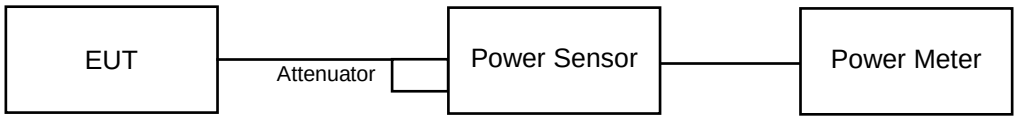
Spectrum Plot of Worst Value	
802.11b / CH1	**802.11g / CH11**
	
802.11n (HT20) / CH6	**802.11n (HT40) / CH3**
	

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

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

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	192.752	22.85	30.00	Pass
6	2437	243.781	23.87	30.00	Pass
11	2462	164.437	22.16	30.00	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	64.714	18.11	30.00	Pass
6	2437	208.449	23.19	30.00	Pass
11	2462	69.343	18.41	30.00	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	51.88	17.15	30.00	Pass
6	2437	204.644	23.11	30.00	Pass
11	2462	65.766	18.18	30.00	Pass

802.11n (HT40)

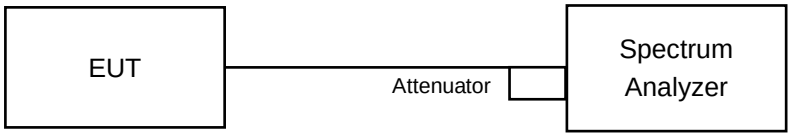
Chan.	Chan. Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	23.442	13.70	30.00	Pass
6	2437	81.47	19.11	30.00	Pass
9	2452	39.628	15.98	30.00	Pass

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 instrument center frequency to DTS channel center frequency.
b. Set span to at least 1.5 times the OBW.
c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz. .
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available).
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Employ trace averaging (RMS) mode over a minimum of 100 traces.
i. Use the peak marker function to determine the maximum amplitude level.

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)	PSD Limit (dBm/3kHz)	Pass / Fail
1	2412	-9.64	8.00	Pass
6	2437	-8.63	8.00	Pass
11	2462	-9.77	8.00	Pass

802.11g

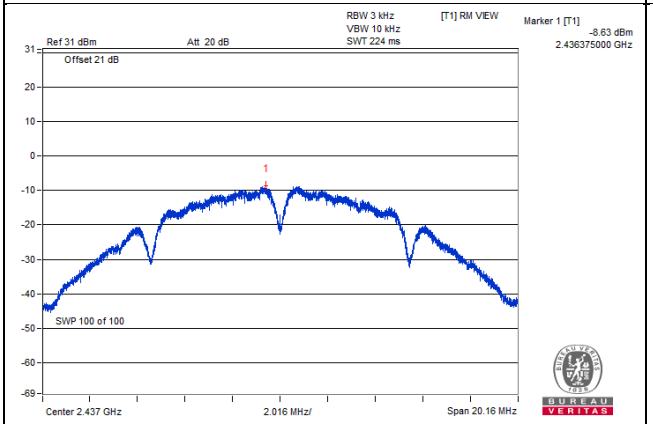
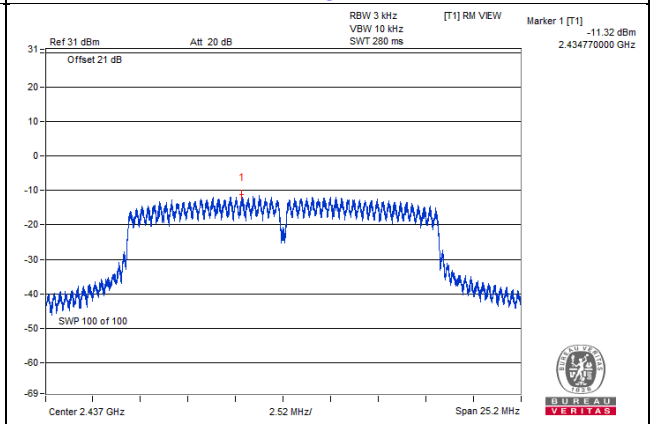
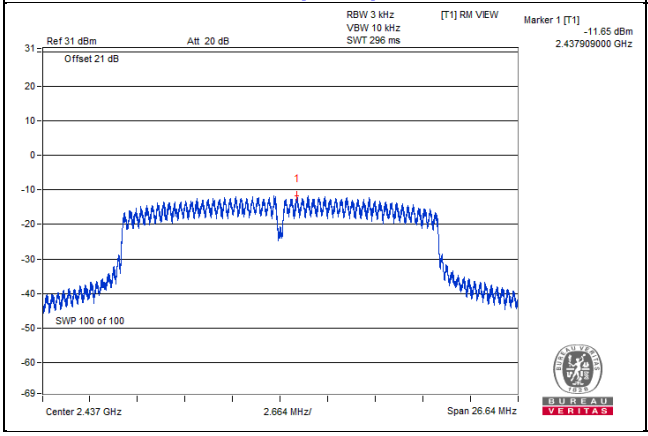
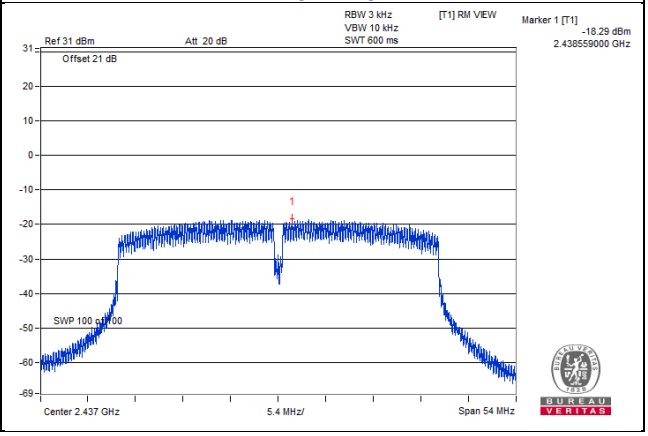
Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
1	2412	-16.73	8.00	Pass
6	2437	-11.32	8.00	Pass
11	2462	-16.03	8.00	Pass

802.11n (HT20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
1	2412	-17.69	8.00	Pass
6	2437	-11.65	8.00	Pass
11	2462	-16.75	8.00	Pass

802.11n (HT40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
3	2422	-23.70	8.00	Pass
6	2437	-18.29	8.00	Pass
9	2452	-21.16	8.00	Pass

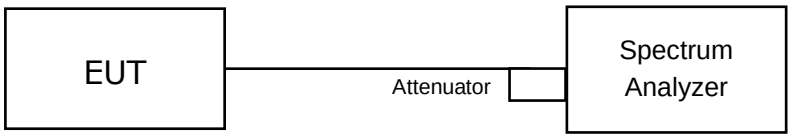
Spectrum Plot of Worst Value	
802.11b / CH6	**802.11g / CH6**
	
802.11n (HT20) / CH6	**802.11n (HT40) / CH6**
	

4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below -30dB 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 ≥ 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 OOBE

1. Set RBW = 100 kHz.
2. Set VBW ≥ 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

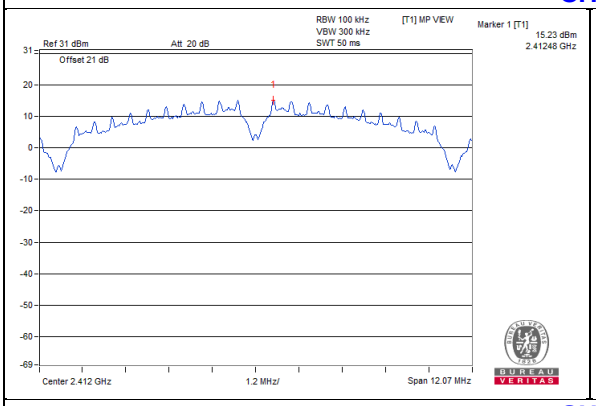
Same as Item 4.3.6

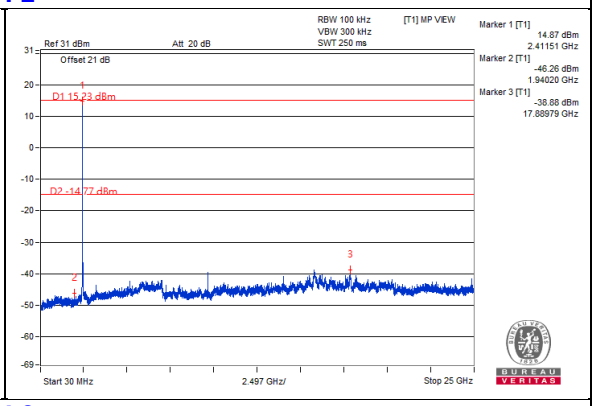
4.6.7 Test Results

The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 30dB offset below D1. It shows compliance with the requirement.

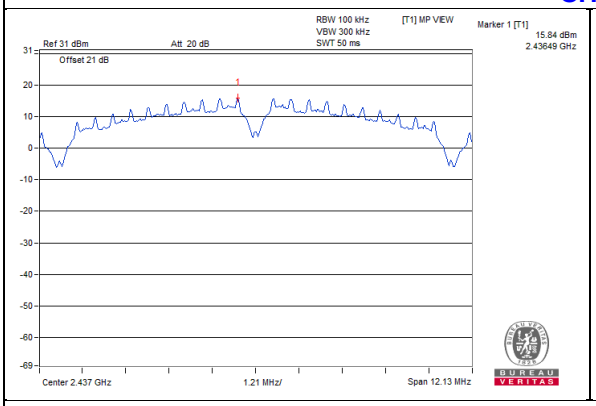
802.11b

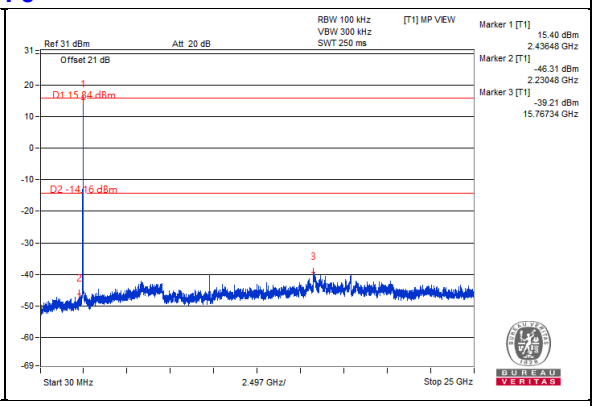
CH 1



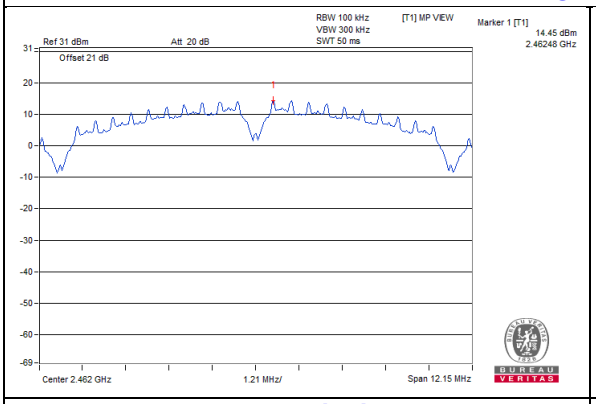


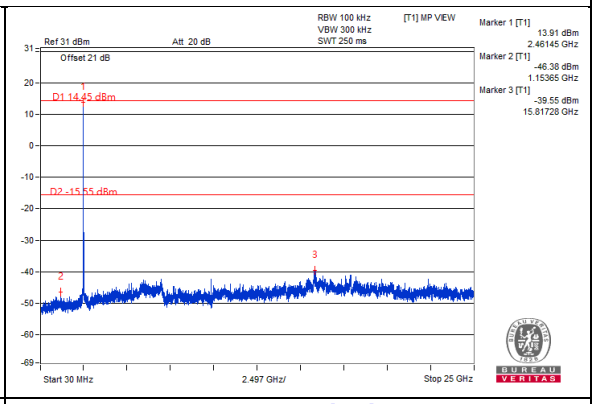
CH 6



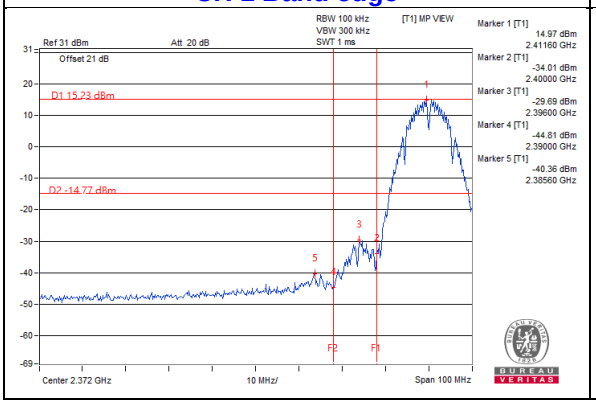


CH 11

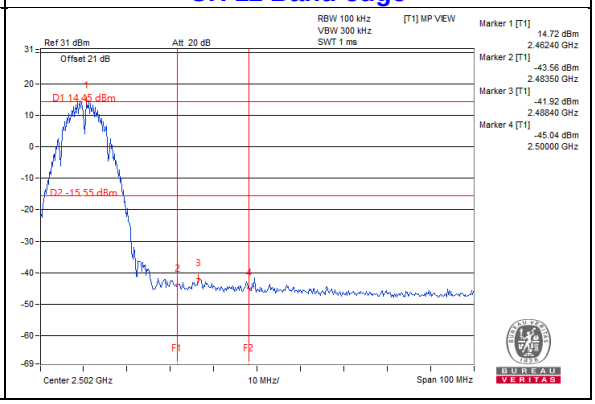




CH 1 Band edge

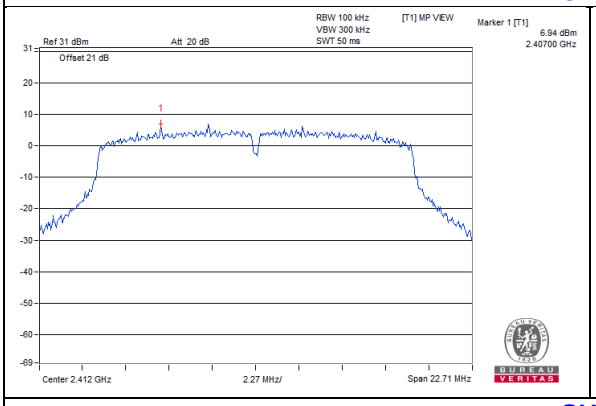


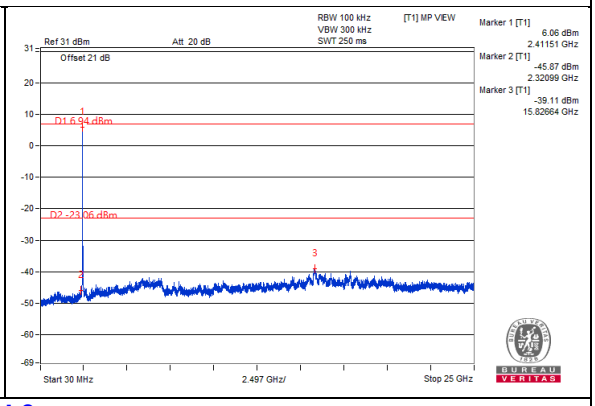
CH 11 Band edge



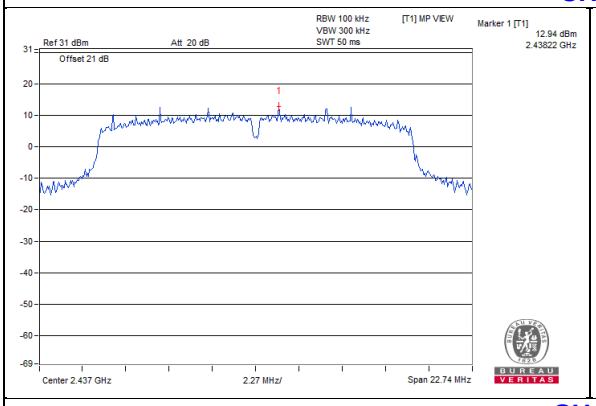
802.11g

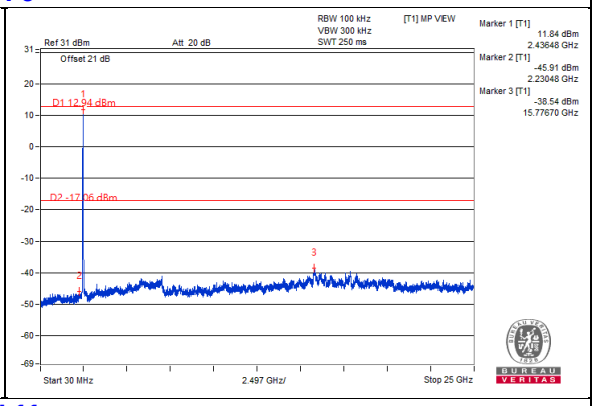
CH 1



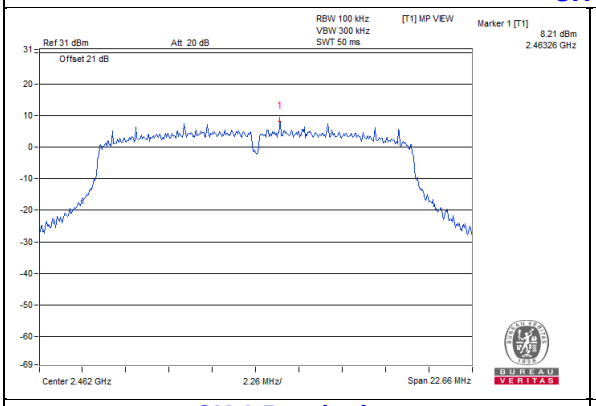


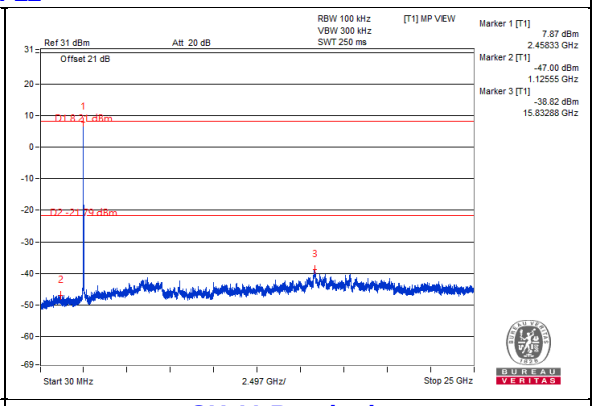
CH 6



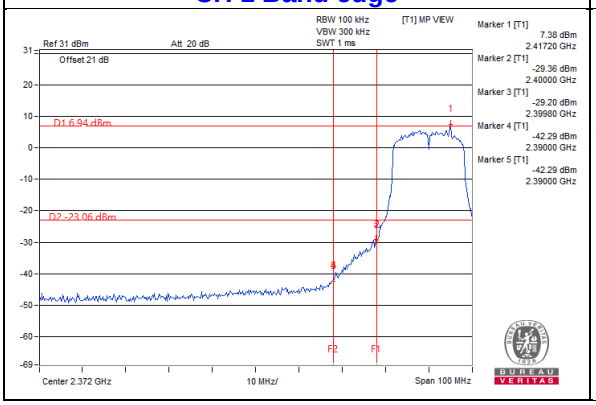


CH 11

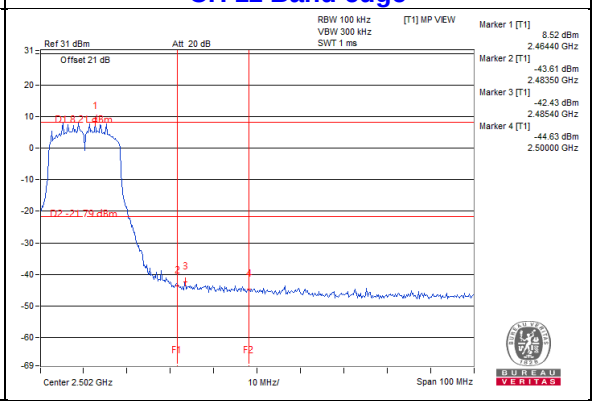




CH 1 Band edge

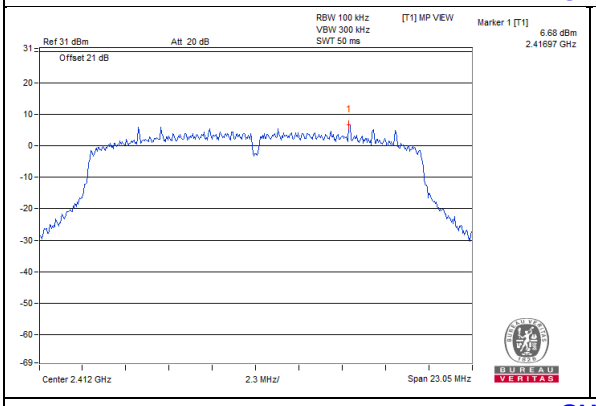


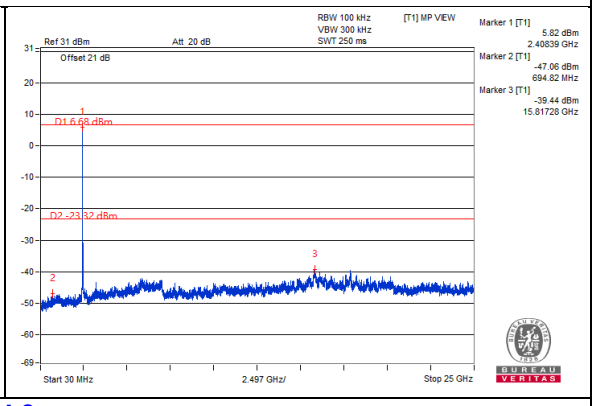
CH 11 Band edge



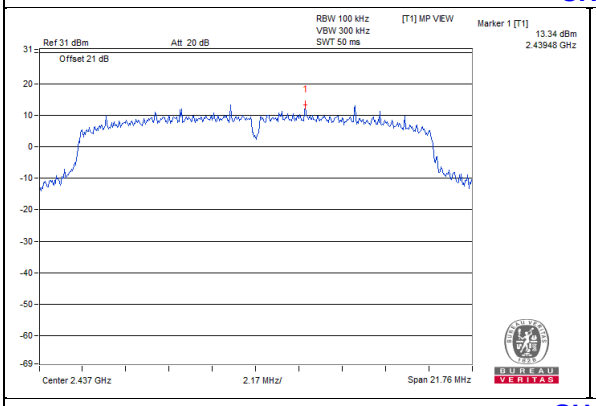
802.11n (HT20)

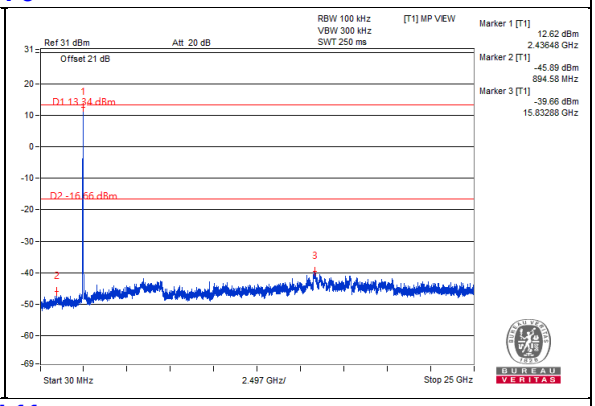
CH 1



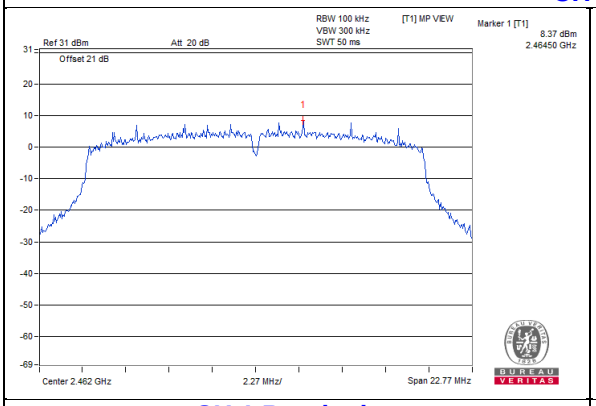


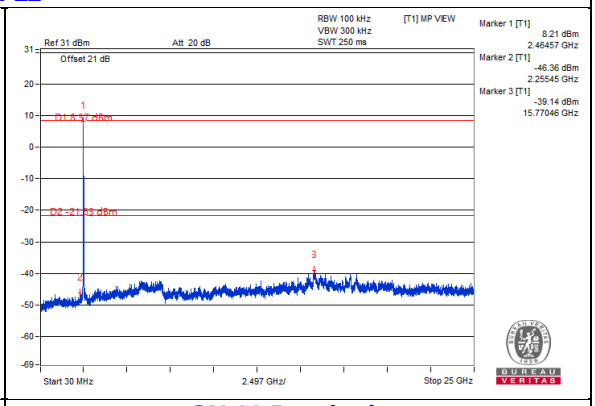
CH 6



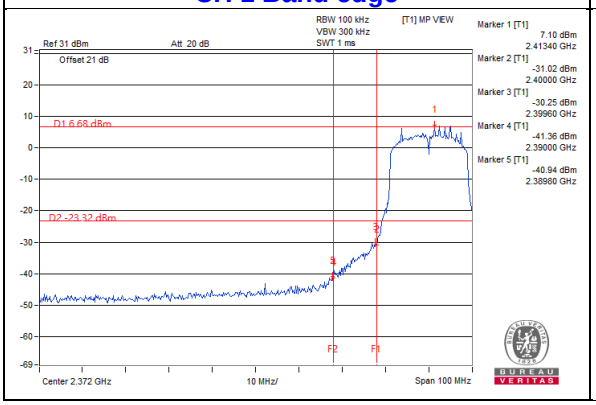


CH 11

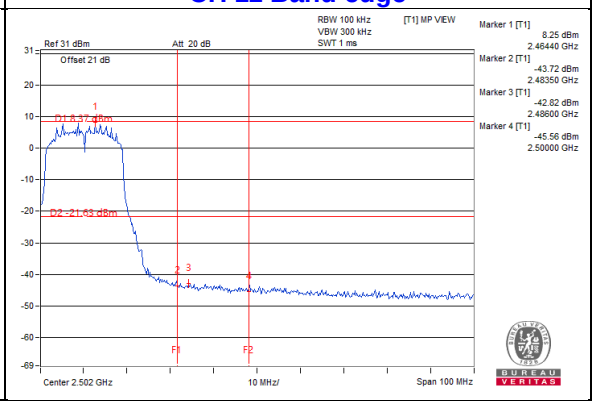




CH 1 Band edge

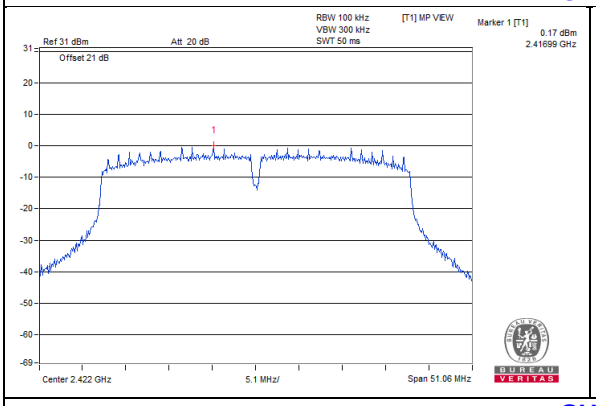


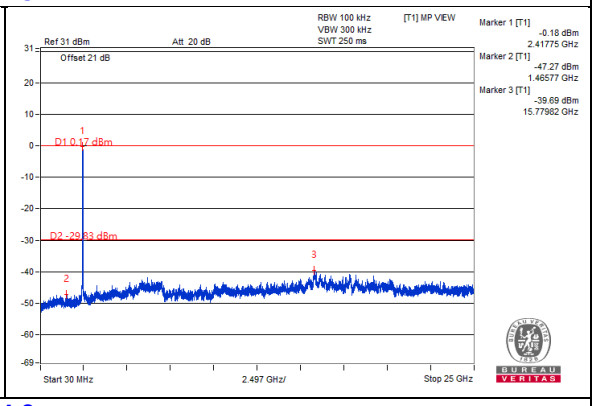
CH 11 Band edge



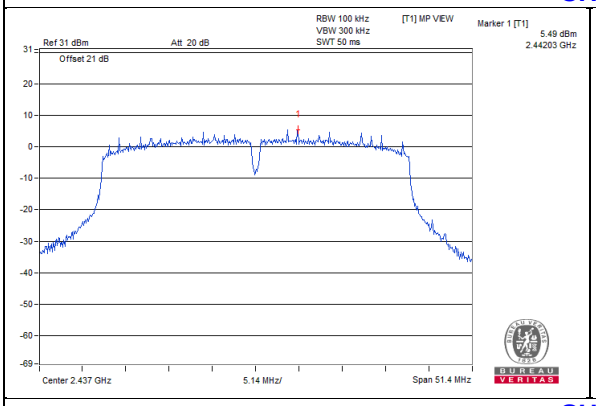
802.11n (HT40)

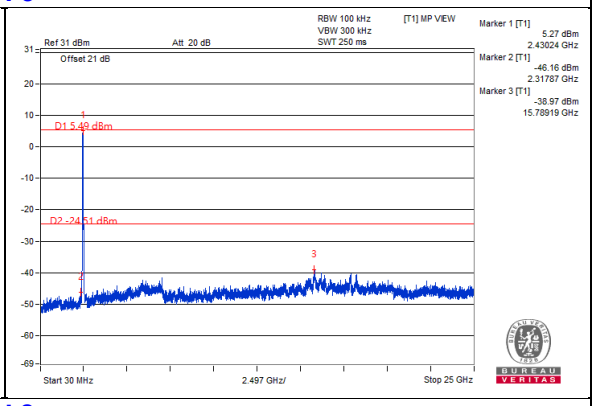
CH 3



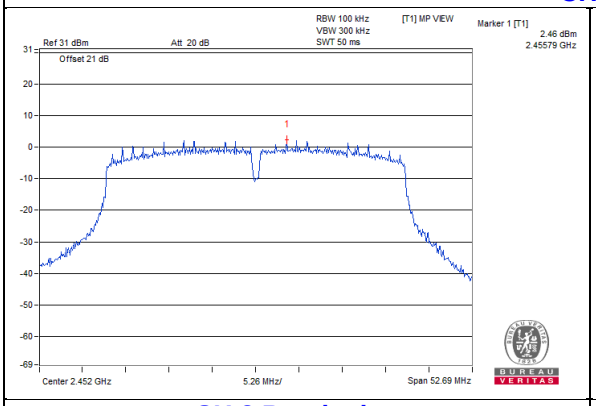


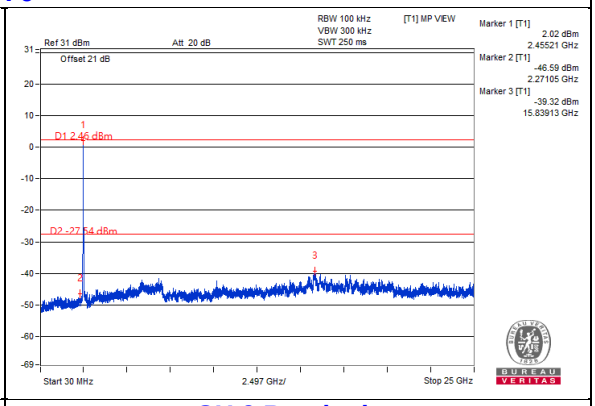
CH 6



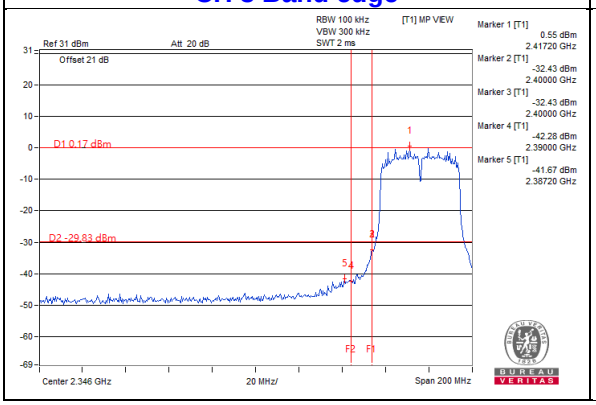


CH 9

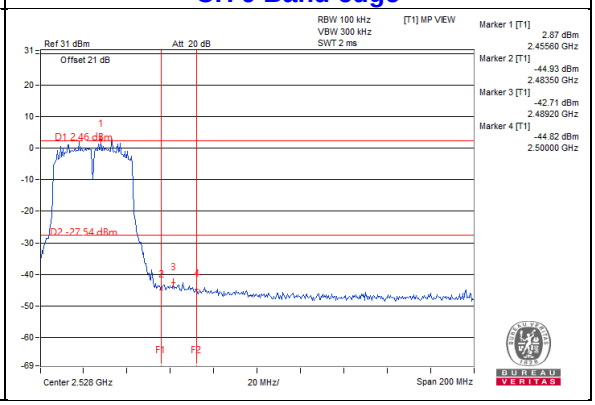




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

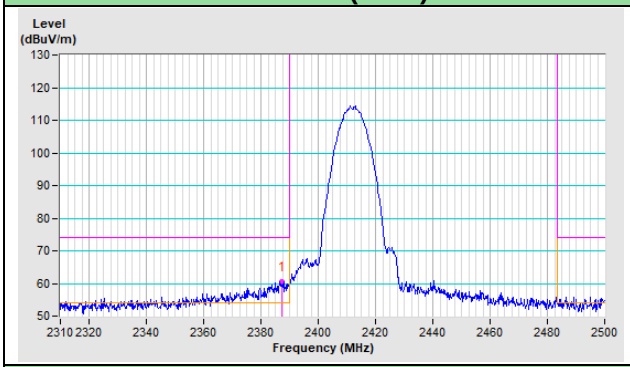
Please refer to the attached file (Test Setup Photo).

Annex A - Band-Edge Measurement

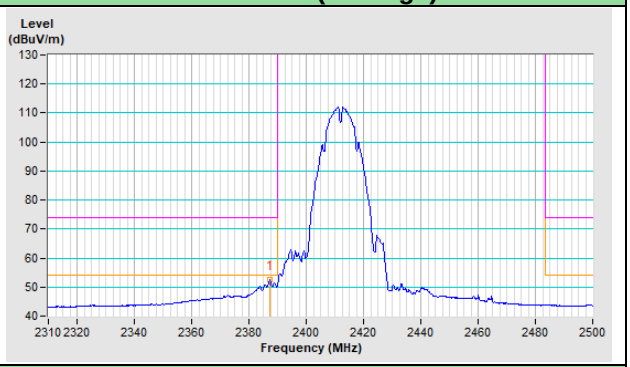
802.11b

Channel 1

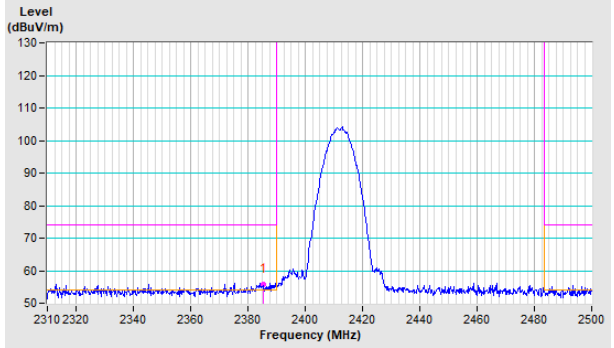
Horizontal (Peak)



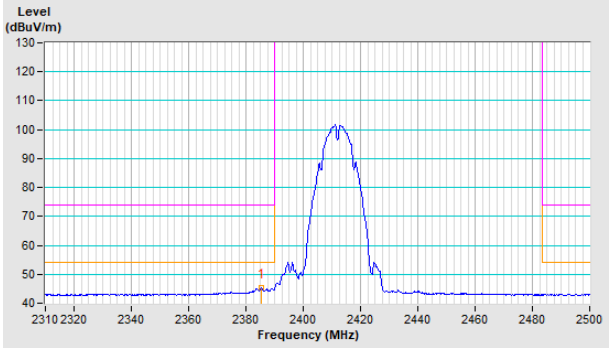
Horizontal (Average)



Vertical (Peak)

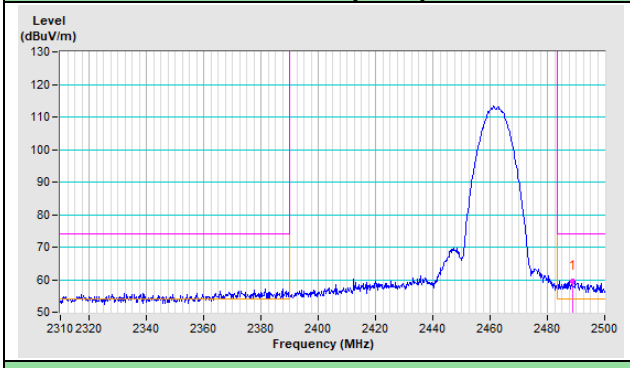


Vertical (Average)

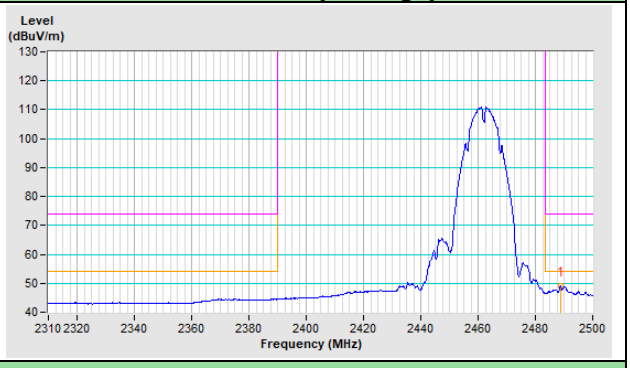


Channel 11

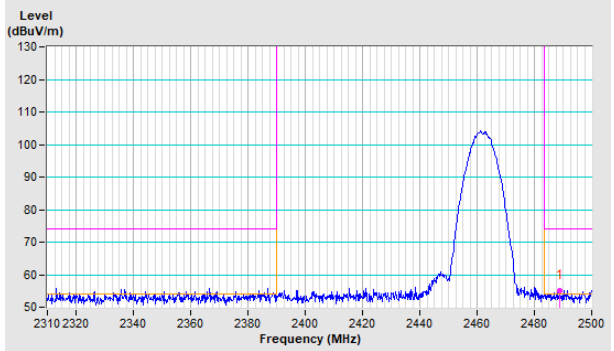
Horizontal (Peak)



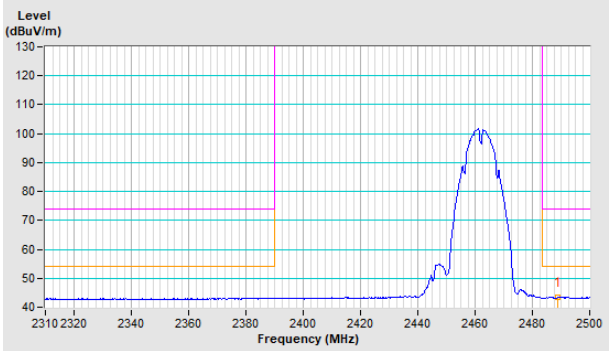
Horizontal (Average)



Vertical (Peak)



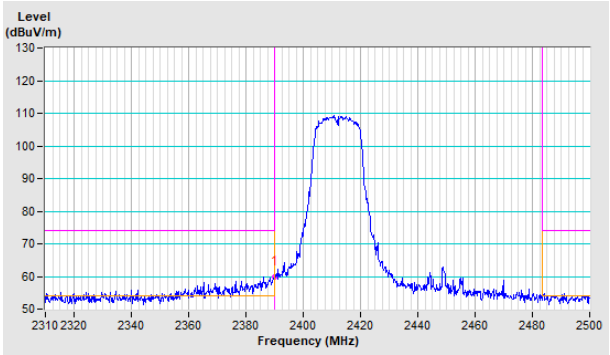
Vertical (Average)



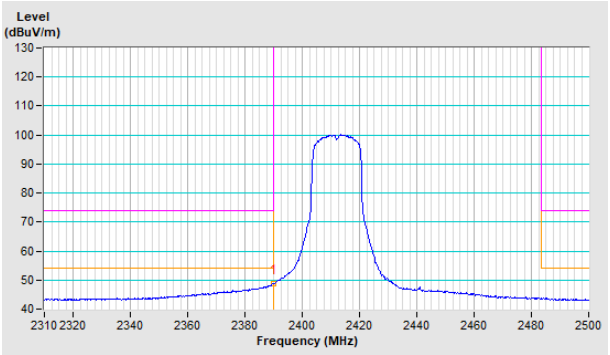
802.11g

Channel 1

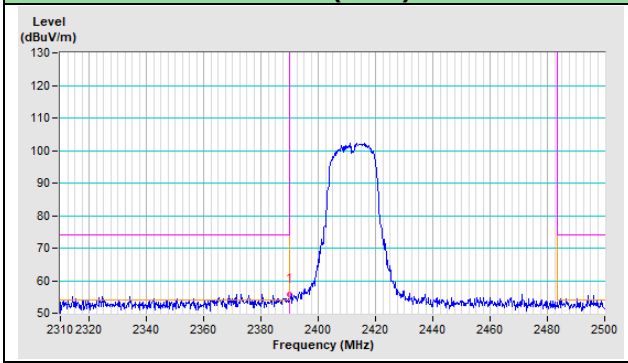
Horizontal (Peak)



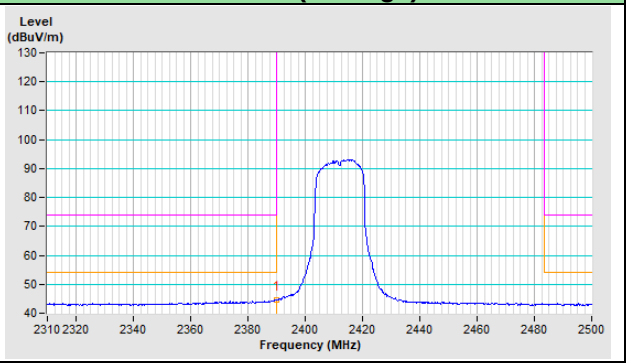
Horizontal (Average)



Vertical (Peak)

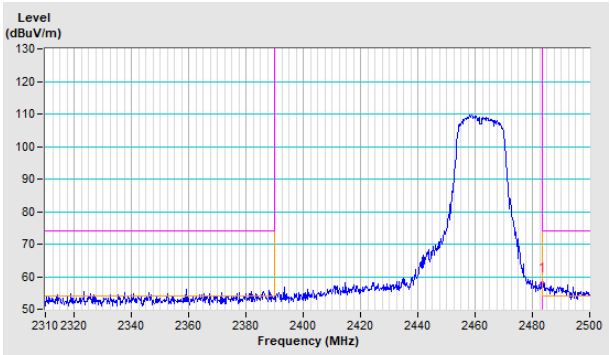


Vertical (Average)

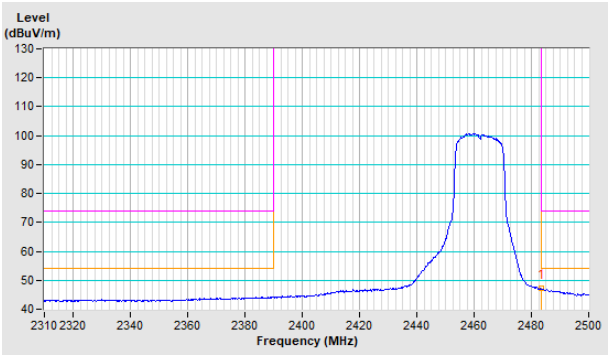


Channel 11

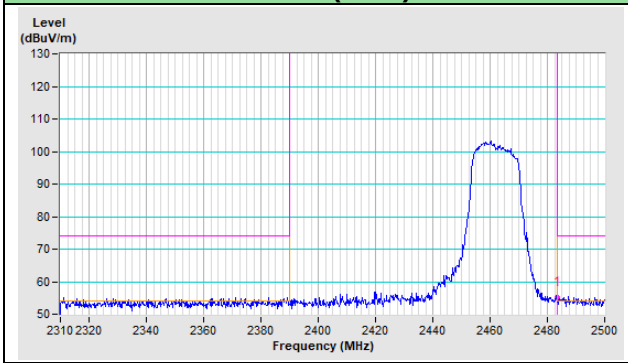
Horizontal (Peak)



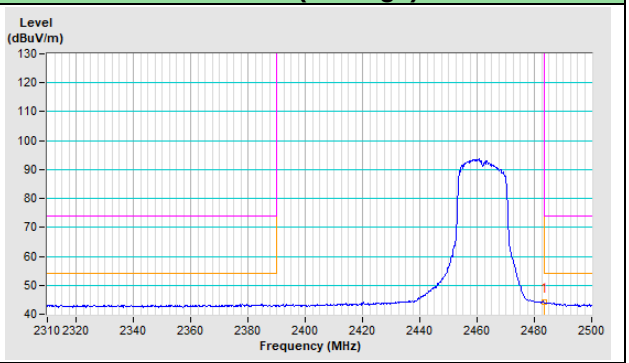
Horizontal (Average)



Vertical (Peak)



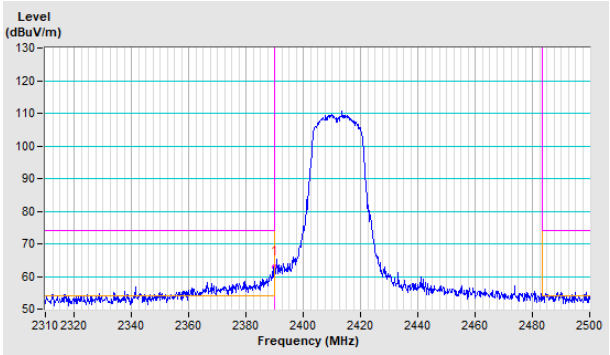
Vertical (Average)



802.11n (HT20)

Channel 1

Horizontal (Peak)



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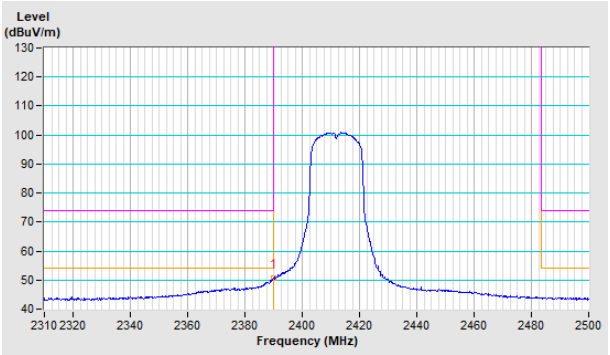
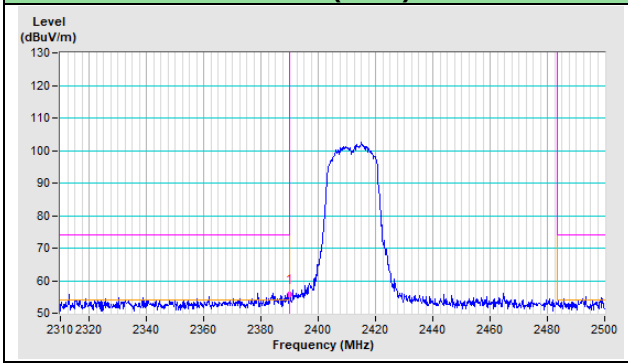
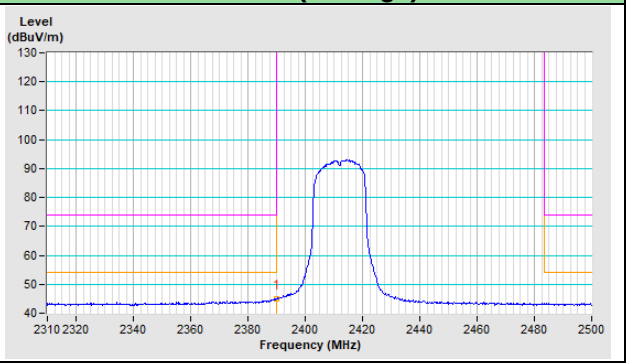


Vertical (Peak)

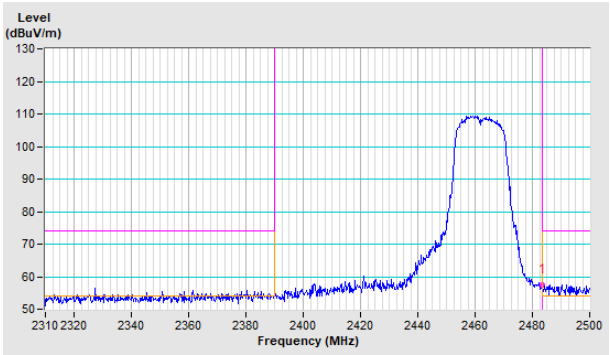


Vertical (Average)

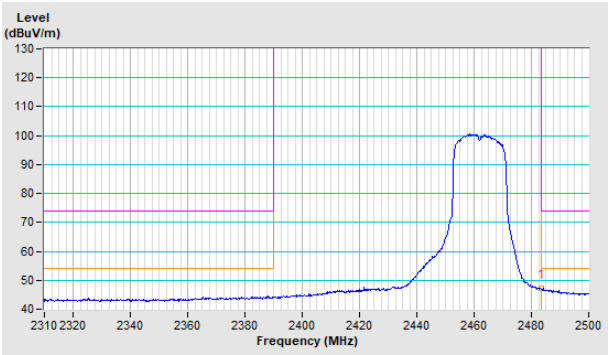


Channel 11

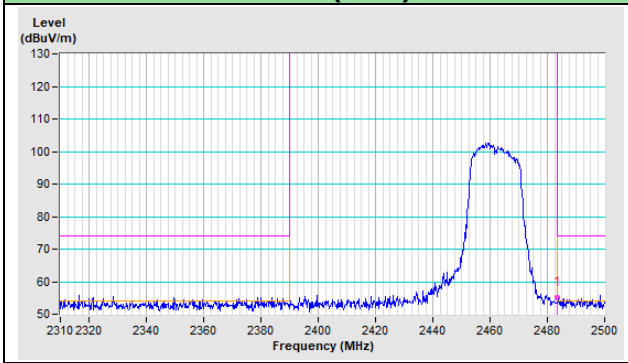
Horizontal (Peak)



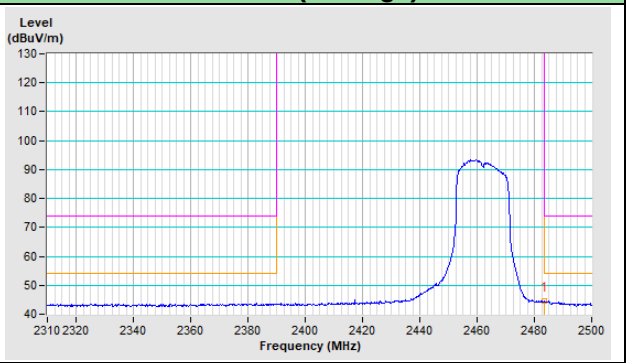
Horizontal (Average)



Vertical (Peak)



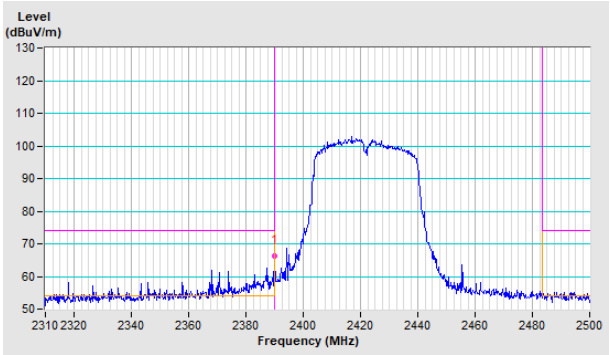
Vertical (Average)



802.11n (HT40)

Channel 3

Horizontal (Peak)



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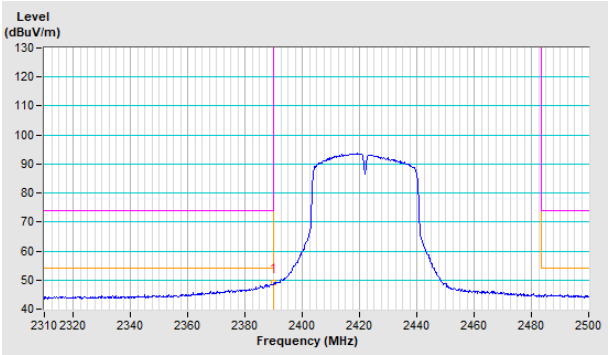
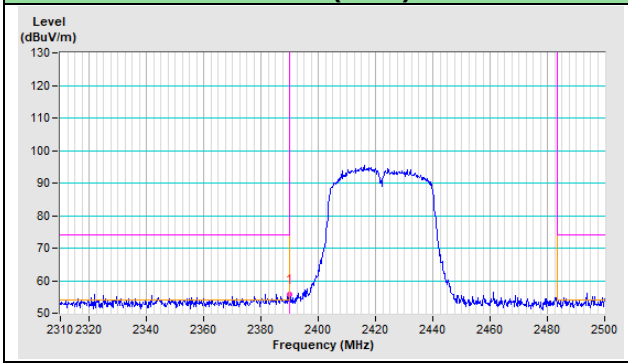
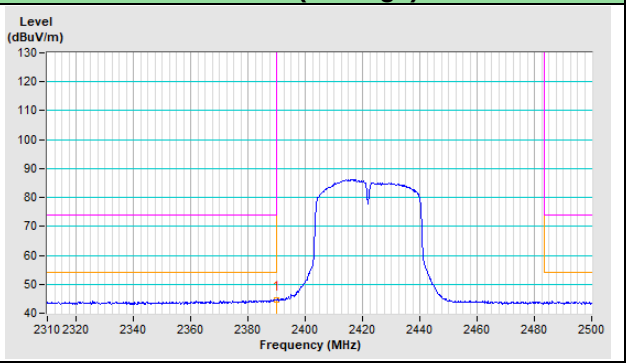


Vertical (Peak)

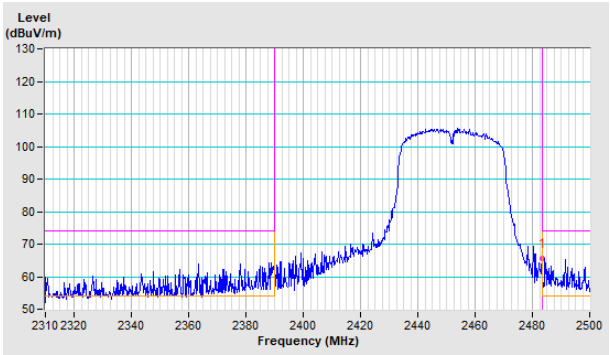


Vertical (Average)

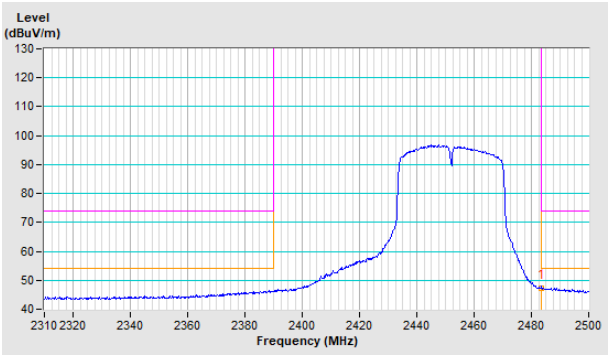


Channel 9

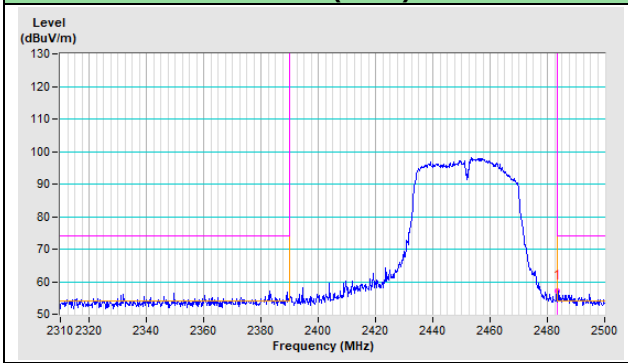
Horizontal (Peak)



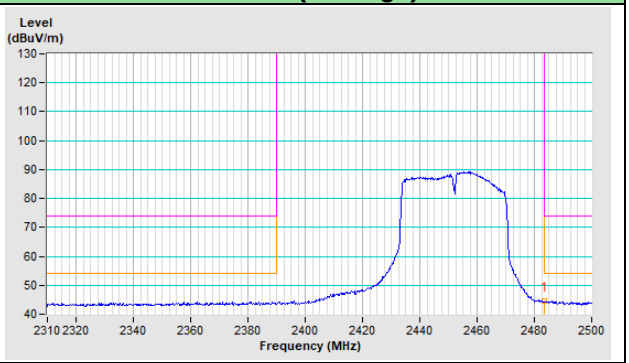
Horizontal (Average)



Vertical (Peak)



Vertical (Average)



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 accredited and approved according to ISO/IEC 17025.

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

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

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