FCC Test Report

Report No.:	RF160826C10
FCC ID:	WT8-OM2PV4
Test Model:	OM2Pv4
Received Date:	Aug. 26, 2016
Test Date:	Oct. 05 ~ Oct. 13, 2016
Issued Date:	Oct. 18, 2016
Applicant:	Open Mesh, Inc.
Address:	5 Centerpointe Drive, Suite 400, Lake Oswego, OR 97035
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location:	No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

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Release Control Record

Issue No.	Description	Date Issued
RF160826C10	Original release.	Oct. 18, 2016

1 Certificate of Conformity

Product:	Wireless 802.11b/g/n Mesh Router
Brand:	Open Mesh
Test Model:	OM2Pv4
Sample Status:	Engineering sample
Applicant:	Open Mesh, Inc.
Test Date:	Oct. 05 ~ Oct. 13, 2016
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 : Nadia Wang , **Date:** Oct. 18, 2016

Nadia Wang / Specialist

Approved by : Ken Liu , **Date:** Oct. 18, 2016

Ken Liu / Senior 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 -2.50dB at 23.12891MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	Pass	Meet the requirement of limit. Minimum passing margin is -1.0dB at 2390.00 & 2483.50 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 RSMA not a standard connector.

2.1 Measurement Uncertainty

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

Measurement	Frequency	Expanded Uncertainty (k=2) (±)
Conducted Emissions at mains ports	150kHz ~ 30MHz	2.44 dB
Radiated Emissions up to 1 GHz	30MHz ~ 200MHz	3.86 dB
	200MHz ~1000MHz	3.87 dB
Radiated Emissions above 1 GHz	1GHz ~ 18GHz	2.29 dB
	18GHz ~ 40GHz	2.29 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless 802.11b/g/n Mesh Router
Brand	Open Mesh
Test Model	OM2Pv4
Status of EUT	Engineering sample
Power Supply Rating	12Vdc from adapter 12~24Vdc from POE
Transfer Rate	802.11b: 11.0/ 5.5/ 2.0/ 1.0Mbps 802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps 802.11n: up to 150Mbps
Operating Frequency	2412 ~ 2462MHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20) 7 for 802.11n (HT40)
Output Power	141.906mW
Antenna Type	Dipole antenna with 2.0dBi gain
Antenna Connector	RSMA
Accessory Device	N/A
Data Cable Supplied	N/A

Note:

1. The EUT consumes power from the following adapter and POE. (Support unit only)

Adapter	
Brand	Powertron Electronics Corp.
Model	PA1015-120DUB150
Input Power	100-240Vac, 50-60Hz, 0.4A
Output Power	12Vdc, 1.5A, 18W Max
Power Line	1.5m cable without core attached on adapter

POE	
Brand	EnGenius
Model	EPE-1212
Power Rating	12-24Vdc, 0.6A

Adapter for POE	
Brand	EnGenius
Model	EPA-2406
Input Power	100-240Vac, 50-60Hz, 0.4A
Output Power	24Vdc, 0.6A, 14.4W Max

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

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

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

7 channels are provided for 802.11n (HT40):

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

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE≥1G	RE<1G	PLC	APCM	
A	√	√	√	√	Power from Adapter
B	-	√	√	-	Power from POE

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

NOTE:

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned as below:
   For Radiated Emission Test (above 1GHz): X-axis for 802.11b, Y-axis for 802.11g/802.11n(20MHz)/802.11n(40MHz)
   For Radiated Emission Test (below 1GHz): positioned on Y axis.
2. "-" means no effect.

Radiated Emission Test (Above 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

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

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

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

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	1	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.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
A, B	802.11b	1 to 11	1	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.

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

Test Condition:

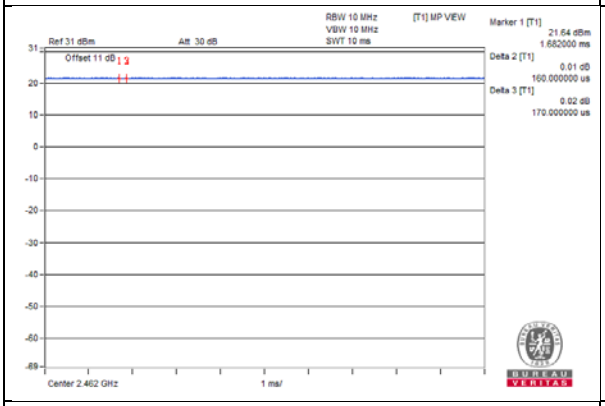
APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE≥1G	19deg. C, 70%RH	120Vac, 60Hz	James Yang
RE<1G	19deg. C, 70%RH	120Vac, 60Hz	Jones Chang
PLC	20deg. C, 70%RH	120Vac, 60Hz	Jones Chang
APCM	25deg. C, 60%RH	120Vac, 60Hz	Ted Chang

3.3 Duty Cycle of Test Signal

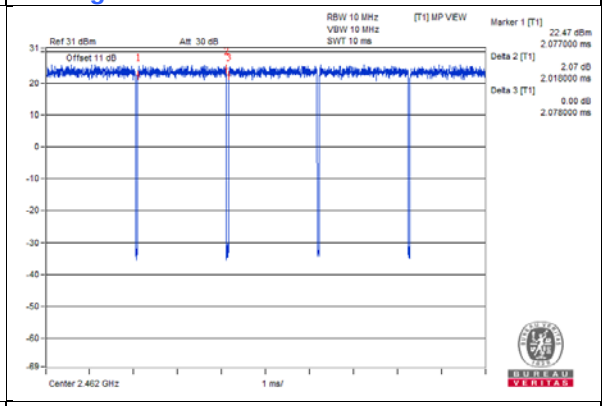
Duty cycle of test signal is > 98%, duty factor is not required.
Duty cycle of test signal is < 98%, duty factor is required.

802.11b: Duty cycle = 100%
802.11g: Duty cycle = 2.018/2.078 = 0.971, Duty factor = 10 * log(1/0.971) = 0.13
802.11n (HT20): Duty cycle = 1.878/1.943 = 0.966, Duty factor = 10 * log(1/0.966) = 0.15
802.11n (HT40): Duty cycle = 0.917/0.982 = 0.934, Duty factor = 10 * log(1/0.934) = 0.30

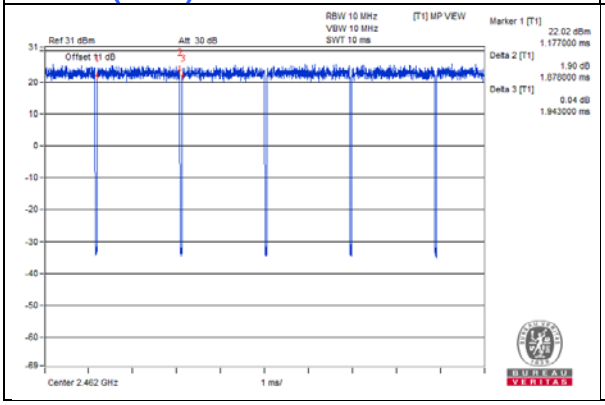
802.11b



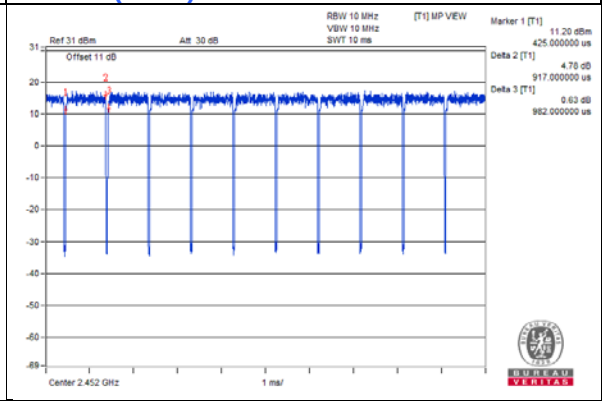
802.11g



802.11n (HT20)



802.11n (HT40)



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.	Adapter	Powertron Electronics Corp.	PA1015-120DUB150	N/A	N/A	Provided by client
B.	Notebook	DELL	E5410	1HC2XM1	FCC DoC Approved	-
C.	POE	EnGenius	EPE-1212	N/A	N/A	Provided by client
D.	Adapter	EnGenius	EPA-2406	N/A	N/A	Provided by client

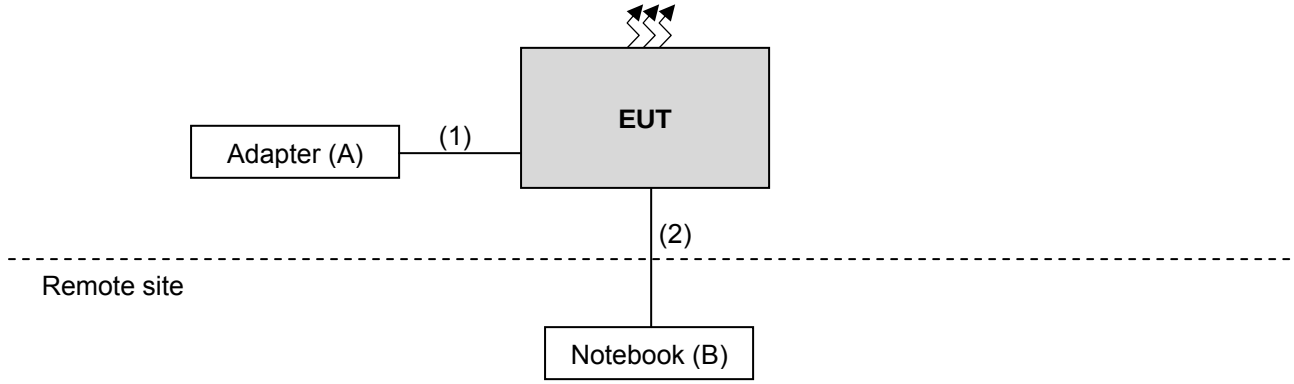
Note:

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

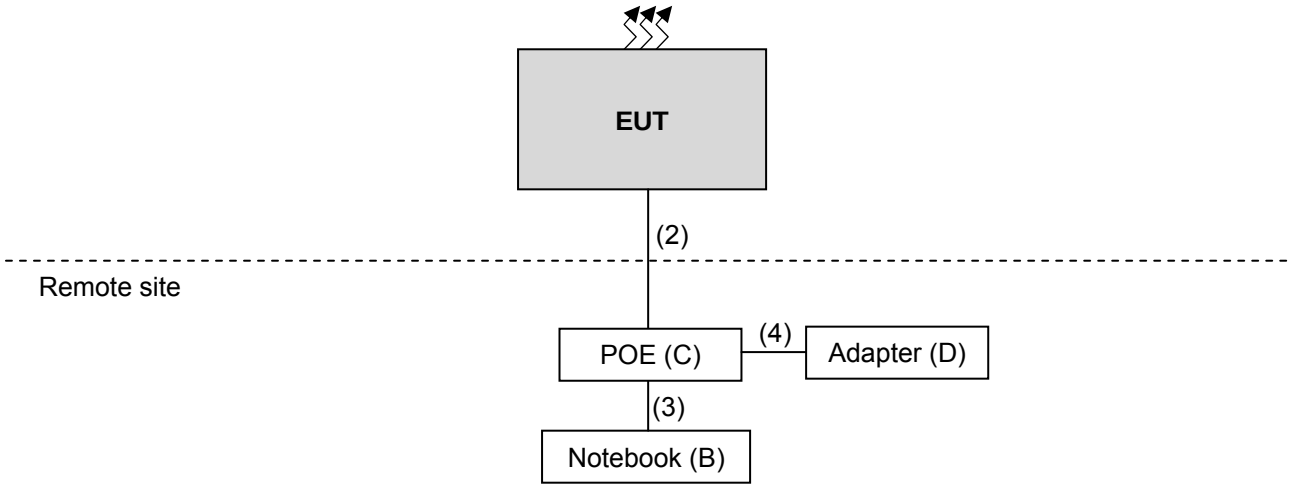
ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.5	N	0	Attached on adapter
2.	Cat5e Cable	1	3	N	0	-
3.	Cat5e Cable	1	1.8	N	0	-
4.	DC Cable	1	1.55	N	0	Provided by client

3.4.1 Configuration of System under Test

Mode A



Mode B



3.5 General Description of Applied Standards

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

FCC Part 15, Subpart C (15.247)
KDB 558074 D01 DTS Meas Guidance v03r05
KDB 662911 D01 Multiple Transmitter Output v02r01
ANSI C63.10-2013

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

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 30dB below the highest level of the desired power:

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

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 30dB under any condition of modulation.

4.1.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESIB7	100187	Apr. 18, 2016	Apr. 17, 2017
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100040	Aug. 16, 2016	Aug. 15, 2017
BILOG Antenna SCHWARZBECK	VULB9168	9168-171	Jan. 07, 2016	Jan. 06, 2017
HORN Antenna SCHWARZBECK	9120D	209	Jan. 20, 2016	Jan. 19, 2017
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA9170241	Jan. 18, 2016	Jan. 17, 2017
Loop Antenna	EM-6879	269	Aug. 11, 2016	Aug. 10, 2017
Preamplifier Agilent	8447D	2944A10738	Aug. 22, 2016	Aug. 21, 2017
Preamplifier Agilent	8449B	3008A01964	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 104	Cable-CH3-03 (214378)	Aug. 22, 2016	Aug. 21, 2017
RF signal cable HUBER+SUHNER	SUCOFLEX 106	Cable-CH3-03 (309224+12738)	Aug. 22, 2016	Aug. 21, 2017
Software BV ADT	ADT_Radiated_ V7.6.15.9.4	NA	NA	NA
Antenna Tower inn-co GmbH	MA 4000	013303	NA	NA
Antenna Tower Controller BV ADT	AT100	AT93021702	NA	NA
Turn Table BV ADT	TT100	TT93021702	NA	NA
Turn Table Controller BV ADT	SC100	SC93021702	NA	NA
High Speed Peak Power Meter	ML2495A	0824012	Aug. 11, 2016	Aug. 10, 2017
Power Sensor	MA2411B	0738171	Aug. 11, 2016	Aug. 10, 2017

Note:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Chamber 3.
3. The horn antenna and preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 988962.
5. The IC Site Registration No. is IC 7450F-3.

4.1.3 Test Procedures

For Radiated emission below 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. Both X and Y axes of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

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

For Radiated emission above 30MHz

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

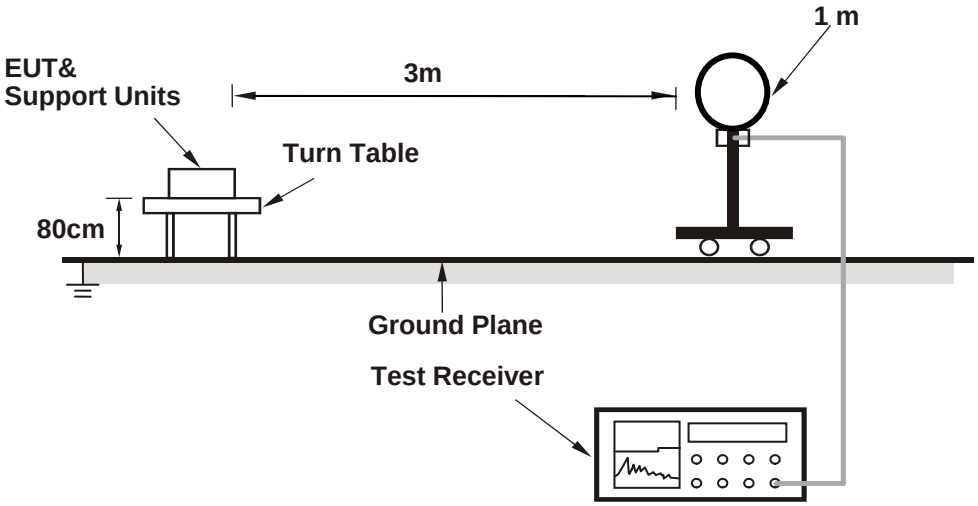
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.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

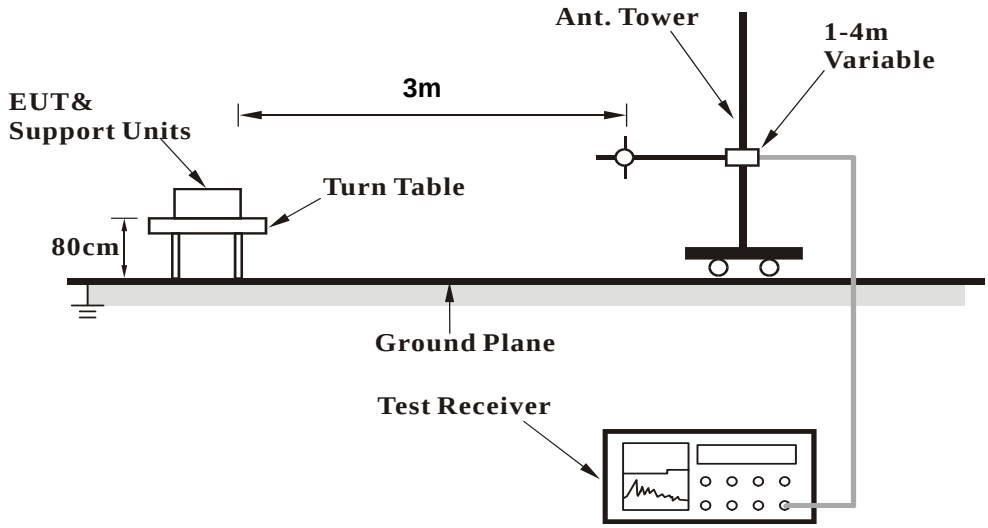
No deviation.

4.1.5 Test Setup

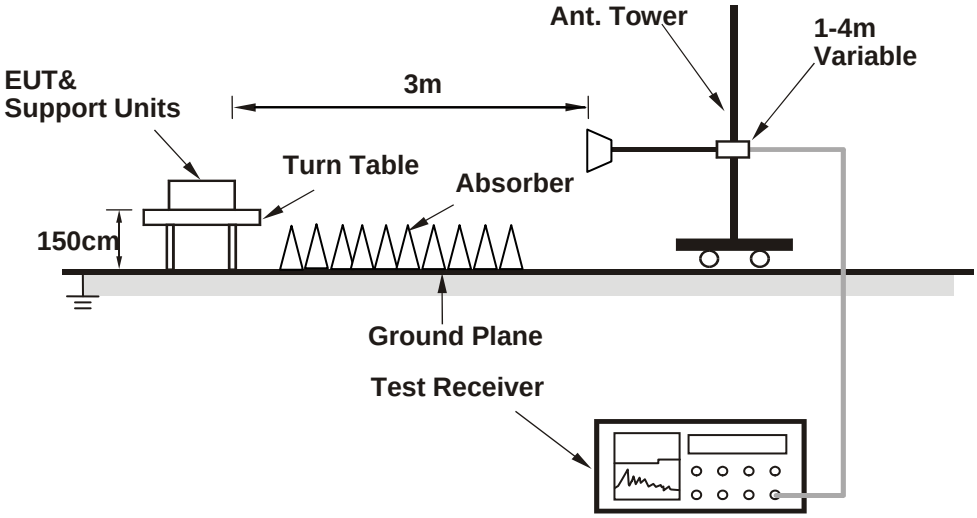
For Radiated emission below 30MHz



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

4.1.7 Test Results

Above 1GHz Data：

802.11b

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, X-AXIS

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	54.3 PK	74.0	-19.7	2.47 H	318	23.40	30.90
2	2390.00	43.0 AV	54.0	-11.0	2.47 H	318	12.10	30.90
3	*2412.00	102.9 PK			2.56 H	325	71.80	31.10
4	*2412.00	99.6 AV			2.56 H	325	68.50	31.10
5	4824.00	48.9 PK	74.0	-25.1	2.68 H	306	44.40	4.50
6	4824.00	42.2 AV	54.0	-11.8	2.68 H	306	37.70	4.50
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	60.3 PK	74.0	-13.7	1.99 V	181	29.40	30.90
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.99 V**	**181**	**22.10**	**30.90**
3	*2412.00	110.8 PK			1.66 V	177	79.70	31.10
4	*2412.00	106.8 AV			1.66 V	177	75.70	31.10
5	4824.00	51.1 PK	74.0	-22.9	2.57 V	84	46.60	4.50
6	4824.00	46.3 AV	54.0	-7.7	2.57 V	84	41.80	4.50

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, X-AXIS

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	54.9 PK	74.0	-19.1	1.55 H	305	24.00	30.90
2	2390.00	43.3 AV	54.0	-10.7	1.55 H	305	12.40	30.90
3	*2437.00	99.8 PK			1.58 H	301	68.70	31.10
4	*2437.00	96.1 AV			1.58 H	301	65.00	31.10
5	2483.50	58.1 PK	74.0	-15.9	1.66 H	298	26.80	31.30
6	2483.50	45.9 AV	54.0	-8.1	1.66 H	298	14.60	31.30
7	4874.00	48.3 PK	74.0	-25.7	2.58 H	294	43.70	4.60
8	4874.00	40.2 AV	54.0	-13.8	2.58 H	294	35.60	4.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	65.1 PK	74.0	-8.9	2.65 V	231	34.20	30.90
2	2390.00	50.9 AV	54.0	-3.1	2.65 V	231	20.00	30.90
3	*2437.00	108.2 PK			2.62 V	228	77.10	31.10
4	*2437.00	104.2 AV			2.62 V	228	73.10	31.10
5	2483.50	67.6 PK	74.0	-6.4	1.52 V	175	36.30	31.30
6	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**1.52 V**	**175**	**21.70**	**31.30**
7	4874.00	49.6 PK	74.0	-24.4	1.17 V	56	45.00	4.60
8	4874.00	42.3 AV	54.0	-11.7	1.17 V	56	37.70	4.60

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, X-AXIS

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	98.6 PK			1.56 H	300	67.40	31.20
2	*2462.00	95.9 AV			1.56 H	300	64.70	31.20
3	2483.50	56.7 PK	74.0	-17.3	1.52 H	301	25.40	31.30
4	2483.50	46.1 AV	54.0	-7.9	1.52 H	301	14.80	31.30
5	4924.00	48.0 PK	74.0	-26.0	2.71 H	301	43.50	4.50
6	4924.00	39.5 AV	54.0	-14.5	2.71 H	301	35.00	4.50
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	109.6 PK			2.03 V	182	78.40	31.20
2	*2462.00	105.7 AV			2.03 V	182	74.50	31.20
3	2483.50	60.7 PK	74.0	-13.3	1.66 V	173	29.40	31.30
4	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**1.66 V**	**173**	**21.70**	**31.30**
5	4924.00	48.2 PK	74.0	-25.8	2.55 V	295	43.70	4.50
6	4924.00	40.6 AV	54.0	-13.4	2.55 V	295	36.10	4.50

REMARKS:

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

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	58.0 PK	74.0	-16.0	1.98 H	320	27.10	30.90
2	2390.00	45.0 AV	54.0	-9.0	1.98 H	320	14.10	30.90
3	*2412.00	103.4 PK			1.99 H	317	72.30	31.10
4	*2412.00	92.9 AV			1.99 H	317	61.80	31.10
5	4824.00	46.6 PK	74.0	-27.4	1.75 H	330	42.10	4.50
6	4824.00	33.6 AV	54.0	-20.4	1.75 H	330	29.10	4.50
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	66.4 PK	74.0	-7.6	1.55 V	71	35.50	30.90
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.55 V**	**71**	**22.10**	**30.90**
3	*2412.00	109.9 PK			1.94 V	202	78.80	31.10
4	*2412.00	99.8 AV			1.94 V	202	68.70	31.10
5	4824.00	48.1 PK	74.0	-25.9	1.91 V	135	43.60	4.50
6	4824.00	35.2 AV	54.0	-18.8	1.91 V	135	30.70	4.50

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	56.2 PK	74.0	-17.8	1.78 H	312	25.30	30.90
2	2390.00	43.6 AV	54.0	-10.4	1.78 H	312	12.70	30.90
3	*2437.00	102.7 PK			1.75 H	306	71.60	31.10
4	*2437.00	92.7 AV			1.75 H	306	61.60	31.10
5	2483.50	56.0 PK	74.0	-18.0	1.77 H	301	24.70	31.30
6	2483.50	44.5 AV	54.0	-9.5	1.77 H	301	13.20	31.30
7	4874.00	45.1 PK	74.0	-28.9	2.22 H	287	40.50	4.60
8	4874.00	33.0 AV	54.0	-21.0	2.22 H	287	28.40	4.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.3 PK	74.0	-12.7	1.91 V	96	30.40	30.90
2	2390.00	48.5 AV	54.0	-5.5	1.91 V	96	17.60	30.90
3	*2437.00	113.2 PK			1.97 V	69	82.10	31.10
4	*2437.00	102.7 AV			1.97 V	69	71.60	31.10
5	2483.50	64.2 PK	74.0	-9.8	1.39 V	47	32.90	31.30
6	2483.50	52.5 AV	54.0	-1.5	1.39 V	47	21.20	31.30
7	4874.00	47.1 PK	74.0	-26.9	2.44 V	115	42.50	4.60
8	4874.00	33.4 AV	54.0	-20.6	2.44 V	115	28.80	4.60

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	101.8 PK			2.05 H	331	70.60	31.20
2	*2462.00	91.5 AV			2.05 H	331	60.30	31.20
3	2483.50	56.6 PK	74.0	-17.4	2.08 H	328	25.30	31.30
4	2483.50	44.7 AV	54.0	-9.3	2.08 H	328	13.40	31.30
5	4924.00	46.1 PK	74.0	-27.9	1.98 H	299	41.60	4.50
6	4924.00	33.2 AV	54.0	-20.8	1.98 H	299	28.70	4.50
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	109.8 PK			2.10 V	45	78.60	31.20
2	*2462.00	99.5 AV			2.10 V	45	68.30	31.20
3	2483.50	67.5 PK	74.0	-6.5	2.13 V	111	36.20	31.30
4	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**2.13 V**	**111**	**21.70**	**31.30**
5	4924.00	46.6 PK	74.0	-27.4	2.00 V	140	42.10	4.50
6	4924.00	33.5 AV	54.0	-20.5	2.00 V	140	29.00	4.50

REMARKS:

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

802.11n (HT20)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	60.9 PK	74.0	-13.1	1.33 H	169	30.00	30.90
2	2390.00	48.2 AV	54.0	-5.8	1.33 H	169	17.30	30.90
3	*2412.00	104.5 PK			1.48 H	168	73.40	31.10
4	*2412.00	93.3 AV			1.48 H	168	62.20	31.10
5	4824.00	45.8 PK	74.0	-28.2	1.88 H	198	41.30	4.50
6	4824.00	32.3 AV	54.0	-21.7	1.88 H	198	27.80	4.50
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	67.4 PK	74.0	-6.6	1.96 V	97	36.50	30.90
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.96 V**	**97**	**22.10**	**30.90**
3	*2412.00	110.4 PK			1.87 V	100	79.30	31.10
4	*2412.00	99.8 AV			1.87 V	100	68.70	31.10
5	4824.00	50.0 PK	74.0	-24.0	1.97 V	167	45.50	4.50
6	4824.00	35.7 AV	54.0	-18.3	1.97 V	167	31.20	4.50

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	1.56 H	167	26.00	30.90
2	2390.00	44.9 AV	54.0	-9.1	1.56 H	167	14.00	30.90
3	*2437.00	103.8 PK			1.54 H	167	72.70	31.10
4	*2437.00	93.3 AV			1.54 H	167	62.20	31.10
5	2483.50	59.4 PK	74.0	-14.6	1.45 H	166	28.10	31.30
6	2483.50	46.8 AV	54.0	-7.2	1.45 H	166	15.50	31.30
7	4874.00	45.9 PK	74.0	-28.1	1.74 H	179	41.30	4.60
8	4874.00	32.8 AV	54.0	-21.2	1.74 H	179	28.20	4.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	61.2 PK	74.0	-12.8	1.97 V	99	30.30	30.90
2	2390.00	49.0 AV	54.0	-5.0	1.97 V	99	18.10	30.90
3	*2437.00	113.6 PK			2.05 V	108	82.50	31.10
4	*2437.00	102.5 AV			2.05 V	108	71.40	31.10
5	2483.50	65.8 PK	74.0	-8.2	1.98 V	108	34.50	31.30
6	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**1.98 V**	**108**	**21.70**	**31.30**
7	4874.00	48.3 PK	74.0	-25.7	2.05 V	145	43.70	4.60
8	4874.00	35.2 AV	54.0	-18.8	2.05 V	145	30.60	4.60

REMARKS:

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

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	104.2 PK			1.47 H	170	73.00	31.20
2	*2462.00	93.4 AV			1.47 H	170	62.20	31.20
3	2483.50	59.5 PK	74.0	-14.5	1.45 H	166	28.20	31.30
4	2483.50	47.6 AV	54.0	-6.4	1.45 H	166	16.30	31.30
5	4924.00	45.9 PK	74.0	-28.1	1.53 H	176	41.40	4.50
6	4924.00	33.2 AV	54.0	-20.8	1.53 H	176	28.70	4.50
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	110.8 PK			2.02 V	139	79.60	31.20
2	*2462.00	99.8 AV			2.02 V	139	68.60	31.20
3	2483.50	66.1 PK	74.0	-7.9	2.07 V	109	34.80	31.30
4	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**2.07 V**	**109**	**21.70**	**31.30**
5	4924.00	47.3 PK	74.0	-26.7	1.94 V	167	42.80	4.50
6	4924.00	34.7 AV	54.0	-19.3	1.94 V	167	30.20	4.50

REMARKS:

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

802.11n (HT40)

CHANNEL	TX Channel 3	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	59.3 PK	74.0	-14.7	1.39 H	169	28.40	30.90
2	2390.00	47.7 AV	54.0	-6.3	1.39 H	169	16.80	30.90
3	*2422.00	95.9 PK			1.37 H	169	64.80	31.10
4	*2422.00	86.1 AV			1.37 H	169	55.00	31.10
5	4844.00	46.3 PK	74.0	-27.7	1.88 H	25	41.90	4.40
6	4844.00	31.9 AV	54.0	-22.1	1.88 H	25	27.50	4.40
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	64.3 PK	74.0	-9.7	1.93 V	97	33.40	30.90
2	2390.00	52.9 AV	54.0	-1.1	1.93 V	97	22.00	30.90
3	*2422.00	100.7 PK			1.89 V	102	69.60	31.10
4	*2422.00	89.6 AV			1.89 V	102	58.50	31.10
5	4844.00	45.4 PK	74.0	-28.6	2.05 V	142	41.00	4.40
6	4844.00	32.6 AV	54.0	-21.4	2.05 V	142	28.20	4.40

REMARKS:

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

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

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	58.9 PK	74.0	-15.1	1.35 H	169	28.00	30.90
2	2390.00	47.5 AV	54.0	-6.5	1.35 H	169	16.60	30.90
3	*2437.00	101.3 PK			1.34 H	170	70.20	31.10
4	*2437.00	90.8 AV			1.34 H	170	59.70	31.10
5	2483.50	57.3 PK	74.0	-16.7	1.36 H	168	26.00	31.30
6	2483.50	45.4 AV	54.0	-8.6	1.36 H	168	14.10	31.30
7	4874.00	45.4 PK	74.0	-28.6	1.77 H	222	40.80	4.60
8	4874.00	32.5 AV	54.0	-21.5	1.77 H	222	27.90	4.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	66.4 PK	74.0	-7.6	1.95 V	96	35.50	30.90
2	**2390.00**	**53.0 AV**	**54.0**	**-1.0**	**1.95 V**	**96**	**22.10**	**30.90**
3	*2437.00	109.1 PK			2.02 V	108	78.00	31.10
4	*2437.00	98.7 AV			2.02 V	108	67.60	31.10
5	2483.50	63.8 PK	74.0	-10.2	2.00 V	109	32.50	31.30
6	2483.50	51.7 AV	54.0	-2.3	2.00 V	109	20.40	31.30
7	4874.00	46.5 PK	74.0	-27.5	1.87 V	145	41.90	4.60
8	4874.00	34.0 AV	54.0	-20.0	1.87 V	145	29.40	4.60

REMARKS:

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

CHANNEL	TX Channel 9	DETECTOR FUNCTION	Peak (PK) Average (AV)
FREQUENCY RANGE	1GHz ~ 25GHz	TEST MODE	A, Y-AXIS

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	96.0 PK			1.48 H	167	64.80	31.20
2	*2452.00	86.2 AV			1.48 H	167	55.00	31.20
3	2483.50	58.7 PK	74.0	-15.3	1.44 H	165	27.40	31.30
4	2483.50	46.9 AV	54.0	-7.1	1.44 H	165	15.60	31.30
5	4904.00	46.7 PK	74.0	-27.3	1.85 H	202	42.20	4.50
6	4904.00	33.0 AV	54.0	-21.0	1.85 H	202	28.50	4.50
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2452.00	102.5 PK			1.98 V	108	71.30	31.20
2	*2452.00	91.8 AV			1.98 V	108	60.60	31.20
3	2483.50	65.2 PK	74.0	-8.8	2.03 V	110	33.90	31.30
4	**2483.50**	**53.0 AV**	**54.0**	**-1.0**	**2.03 V**	**110**	**21.70**	**31.30**
5	4904.00	45.5 PK	74.0	-28.5	1.77 V	156	41.00	4.50
6	4904.00	33.2 AV	54.0	-20.8	1.77 V	156	28.70	4.50

REMARKS:

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

Below 1GHz Data:

802.11b

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

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	57.12	28.9 QP	40.0	-11.1	2.00 H	183	43.50	-14.60
2	119.34	37.2 QP	43.5	-6.3	1.50 H	63	53.60	-16.40
3	158.22	38.6 QP	43.5	-4.9	1.50 H	74	52.30	-13.70
4	272.94	32.3 QP	46.0	-13.7	1.00 H	174	45.20	-12.90
5	751.23	32.5 QP	46.0	-13.5	1.00 H	177	34.70	-2.20
6	875.67	36.9 QP	46.0	-9.1	1.00 H	182	37.00	-0.10
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	31.84	36.5 QP	40.0	-3.5	1.50 V	109	52.90	-16.40
2	62.95	34.5 QP	40.0	-5.5	1.00 V	329	49.60	-15.10
3	129.06	37.2 QP	43.5	-6.3	1.00 V	13	52.80	-15.60
4	156.28	32.6 QP	43.5	-10.9	1.99 V	198	46.40	-13.80
5	751.23	32.3 QP	46.0	-13.7	1.00 V	217	34.50	-2.20
6	875.67	34.5 QP	46.0	-11.5	1.00 V	186	34.60	-0.10

REMARKS:

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

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

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	57.12	28.3 QP	40.0	-11.7	1.99 H	263	42.90	-14.60
2	129.06	35.1 QP	43.5	-8.4	1.49 H	224	50.70	-15.60
3	156.28	40.3 QP	43.5	-3.2	1.00 H	261	54.10	-13.80
4	166.00	38.1 QP	43.5	-5.4	1.49 H	261	52.00	-13.90
5	220.44	30.4 QP	46.0	-15.6	1.49 H	99	46.30	-15.90
6	315.71	30.4 QP	46.0	-15.6	1.00 H	93	42.00	-11.60
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.73	37.8 QP	40.0	-2.2	1.01 V	16	53.40	-15.60
2	43.51	37.2 QP	40.0	-2.8	1.01 V	190	52.00	-14.80
3	57.12	34.4 QP	40.0	-5.6	1.01 V	301	49.00	-14.60
4	107.67	35.3 QP	43.5	-8.2	1.01 V	16	52.90	-17.60
5	144.61	34.8 QP	43.5	-8.7	1.50 V	6	49.00	-14.20
6	311.82	27.9 QP	46.0	-18.1	1.01 V	16	39.60	-11.70

REMARKS:

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

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.	Cal. Date	Cal. Due
Test Receiver ROHDE & SCHWARZ	ESCS30	100289	Dec. 23, 2015	Dec. 22, 2016
RF signal cable (with 10dB PAD) Woken	5D-FB	Cable-cond2-01	Dec. 26, 2015	Dec. 25, 2016
LISN ROHDE & SCHWARZ (EUT)	ESH2-Z5	100100	Jan. 11, 2016	Jan. 10, 2017
LISN ROHDE & SCHWARZ (Peripheral)	ESH3-Z5	100312	Jul. 26, 2016	Jul. 25, 2017
Software ADT	BV ADT_Cond_ V7.3.7.3	NA	NA	NA

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 2.
3. The VCCI Site Registration No. is C-2047.

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.

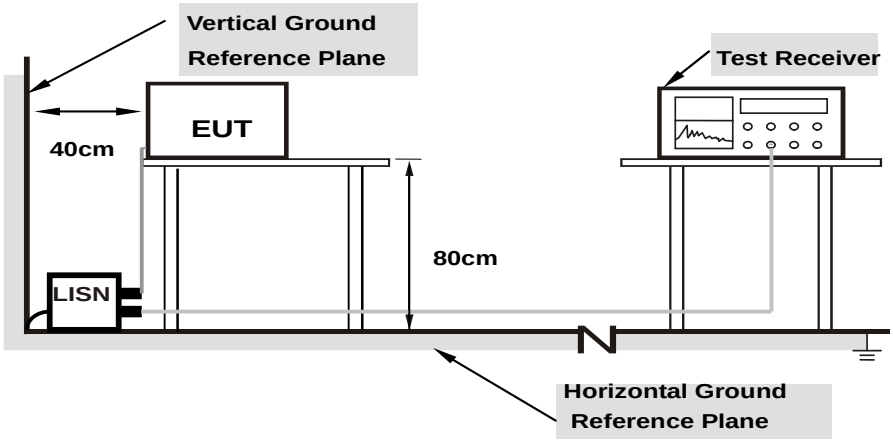
c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

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.

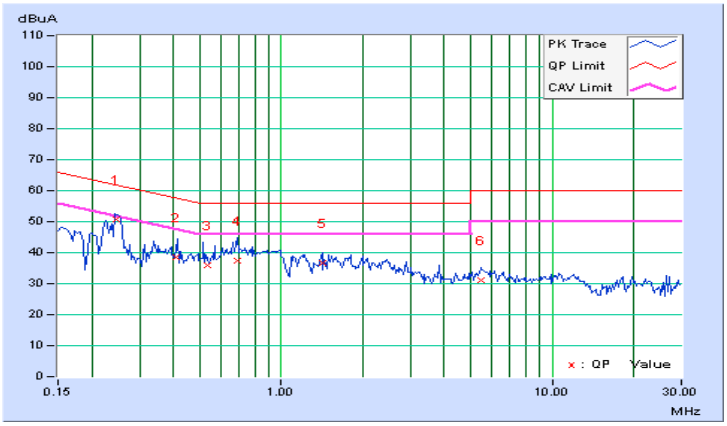
4.2.7 Test Results

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

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	0.24631	10.22	40.44	35.61	50.66	45.83	61.88	51.88	-11.22	-6.05
2	0.41080	10.24	28.10	21.07	38.34	31.31	57.63	47.63	-19.29	-16.32
3	0.53319	10.26	25.63	17.41	35.89	27.67	56.00	46.00	-20.11	-18.33
4	0.68516	10.27	27.18	20.76	37.45	31.03	56.00	46.00	-18.55	-14.97
5	1.41797	10.34	26.23	18.73	36.57	29.07	56.00	46.00	-19.43	-16.93
6	5.46094	10.44	20.65	12.58	31.09	23.02	60.00	50.00	-28.91	-26.98

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.

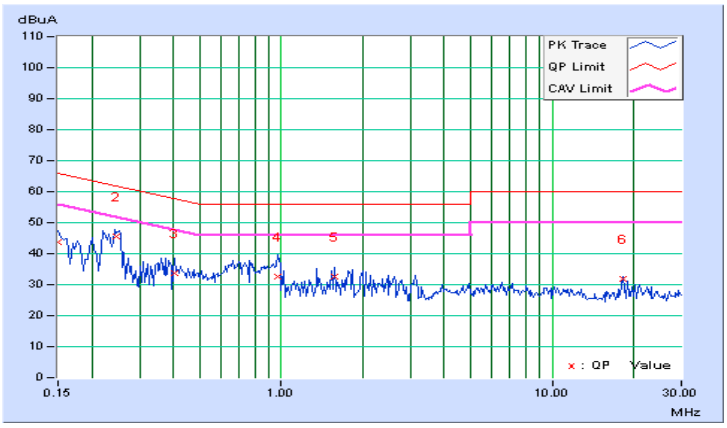


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	A		

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	10.19	33.36	17.21	43.55	27.40	66.00	56.00	-22.45	-28.60
2	0.24503	10.22	35.45	29.10	45.67	39.32	61.92	51.92	-16.25	-12.60
3	0.40391	10.30	23.46	23.22	33.76	33.52	57.77	47.77	-24.01	-14.25
4	0.97422	10.29	22.27	11.17	32.56	21.46	56.00	46.00	-23.44	-24.54
5	1.57031	10.36	22.33	11.19	32.69	21.55	56.00	46.00	-23.31	-24.45
6	18.24481	10.83	21.13	14.55	31.96	25.38	60.00	50.00	-28.04	-24.62

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.

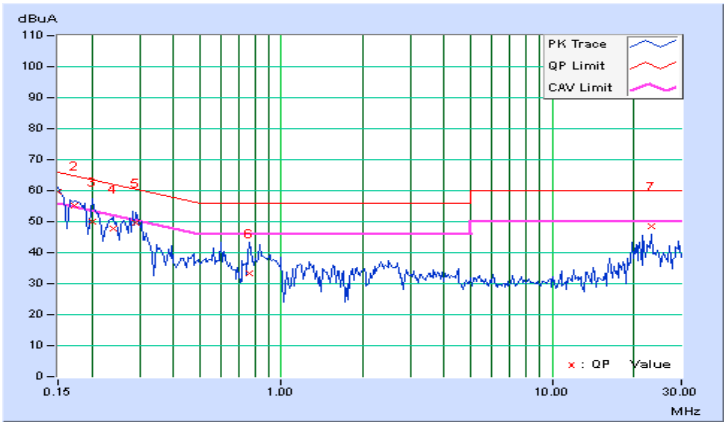


Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	10.18	49.27	34.36	59.45	44.54	66.00	56.00	-6.55	-11.46
2	0.17344	10.19	45.12	30.23	55.31	40.42	64.79	54.79	-9.48	-14.37
3	0.20078	10.21	39.80	23.79	50.01	34.00	63.58	53.58	-13.57	-19.58
4	0.23984	10.22	37.64	23.64	47.86	33.86	62.10	52.10	-14.24	-18.24
5	0.28917	10.22	39.33	31.95	49.55	42.17	60.55	50.55	-11.00	-8.38
6	0.76719	10.28	22.87	21.61	33.15	31.89	56.00	46.00	-22.85	-14.11
7	23.12891	10.61	37.84	35.86	48.45	46.47	60.00	50.00	-11.55	-3.53

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.

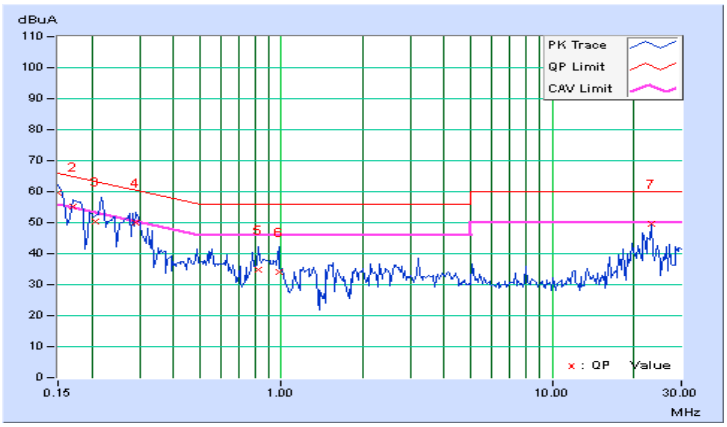


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
Test Mode	B		

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	10.19	49.52	34.34	59.71	44.53	66.00	56.00	-6.29	-11.47
2	0.16953	10.19	45.18	26.52	55.37	36.71	64.98	54.98	-9.61	-18.27
3	0.20701	10.20	40.24	25.56	50.44	35.76	63.32	53.32	-12.88	-17.56
4	0.29063	10.25	39.63	32.33	49.88	42.58	60.51	50.51	-10.63	-7.93
5	0.82188	10.29	24.70	17.60	34.99	27.89	56.00	46.00	-21.01	-18.11
6	0.97813	10.29	23.80	14.49	34.09	24.78	56.00	46.00	-21.91	-21.22
7	**23.12891**	**10.81**	**38.65**	**36.69**	**49.46**	**47.50**	**60.00**	**50.00**	**-10.54**	**-2.50**

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.

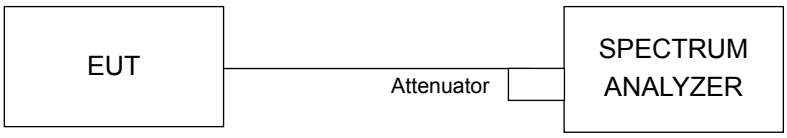


4.3 6dB Bandwidth Measurement

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 fromTest 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	9.59	0.5	Pass
6	2437	10.06	0.5	Pass
11	2462	10.09	0.5	Pass

802.11g

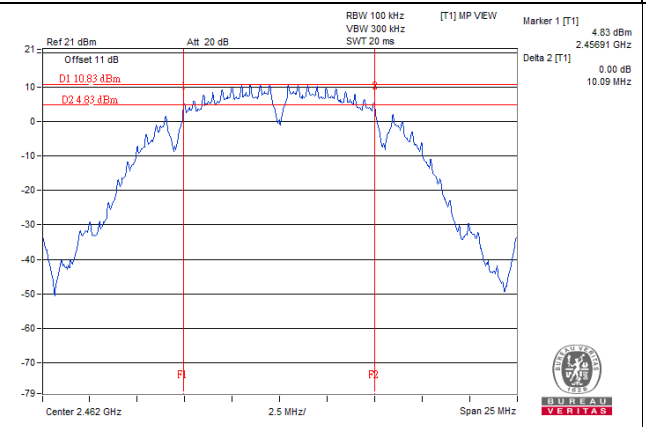
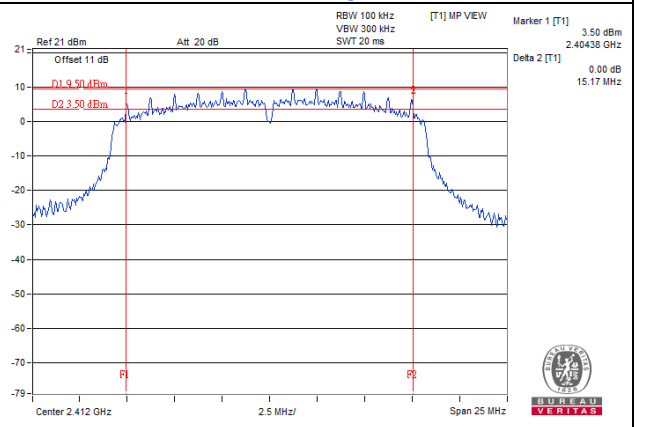
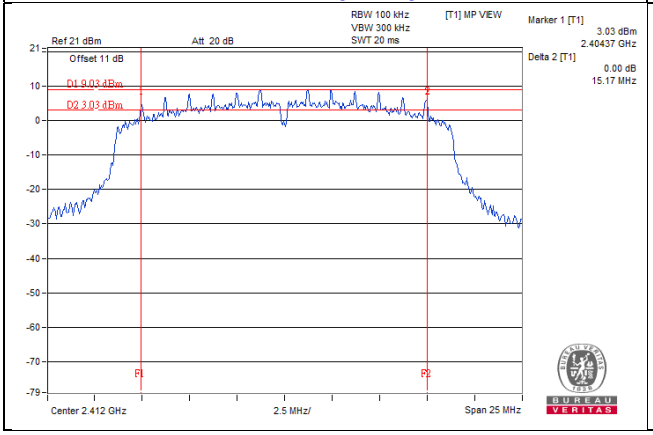
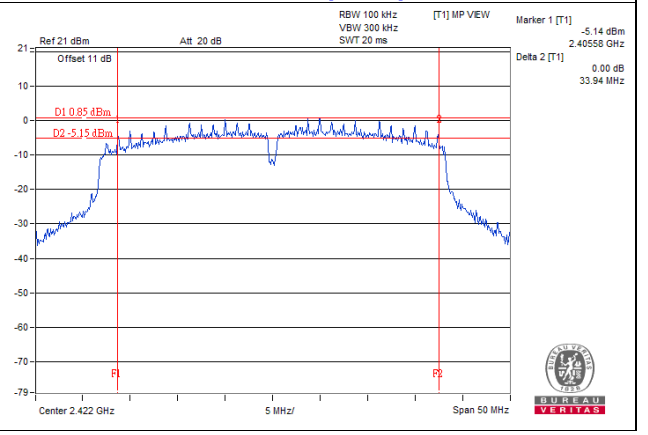
Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.17	0.5	Pass
6	2437	15.15	0.5	Pass
11	2462	15.14	0.5	Pass

802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	15.17	0.5	Pass
6	2437	15.14	0.5	Pass
11	2462	15.15	0.5	Pass

802.11n (HT40)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
3	2422	33.94	0.5	Pass
6	2437	33.89	0.5	Pass
9	2452	33.92	0.5	Pass

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

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)

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT};
Array Gain = 5 log(N_{ANT}/N_{SS}) dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

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

4.4.2 Test Setup

4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

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

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.	Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	112.98	20.53	30	Pass
6	2437	93.111	19.69	30	Pass
11	2462	88.716	19.48	30	Pass

802.11g

Chan.	Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	83.946	19.24	30	Pass
6	2437	**141.906**	21.52	30	Pass
11	2462	94.842	19.77	30	Pass

802.11n (HT20)

Chan.	Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
1	2412	74.645	18.73	30	Pass
6	2437	98.628	19.94	30	Pass
11	2462	86.696	19.38	30	Pass

802.11n (HT40)

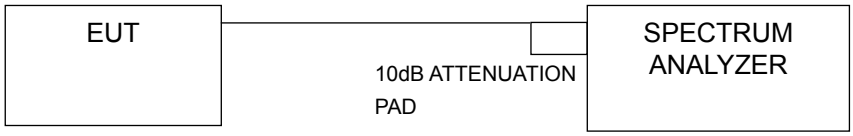
Chan.	Freq. (MHz)	Average Power (mW)	Average Power (dBm)	Limit (dBm)	Pass / Fail
3	2422	20.512	13.12	30	Pass
6	2437	84.333	19.26	30	Pass
9	2452	24.889	13.96	30	Pass

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm.

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

For duty cycle ≥ 98%

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.

For duty cycle < 98%

a. Measure the duty cycle (x).
b. Set instrument center frequency to DTS channel center frequency.
c. Set span to at least 1.5 times the OBW.
d. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e. Set VBW ≥3 x RBW.
f. Detector = power averaging (RMS) or sample detector (when RMS not available).
g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h. Sweep time = auto couple.
i. Don't use sweep triggering. Allow sweep to "free run".
j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
k. Use the peak marker function to determine the maximum amplitude level.
l. Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

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

TX chain	Chan.	Freq. (MHz)	PSD (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-7.74	8.00	Pass
	6	2437	-8.69	8.00	Pass
	11	2462	-8.57	8.00	Pass

802.11g

TX chain	Chan.	Freq. (MHz)	PSD (dBm/10kHz)	Duty Factor	PSD with Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-10.54	0.13	-10.41	8.00	Pass
	6	2437	-7.76	0.13	-7.63	8.00	Pass
	11	2462	-9.41	0.13	-9.28	8.00	Pass

NOTE:

1. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT20)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/10kHz)	Duty Factor	PSD with Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	1	2412	-11.34	0.15	-11.19	8.00	Pass
	6	2437	-9.91	0.15	-9.76	8.00	Pass
	11	2462	-10.98	0.15	-10.83	8.00	Pass

NOTE:

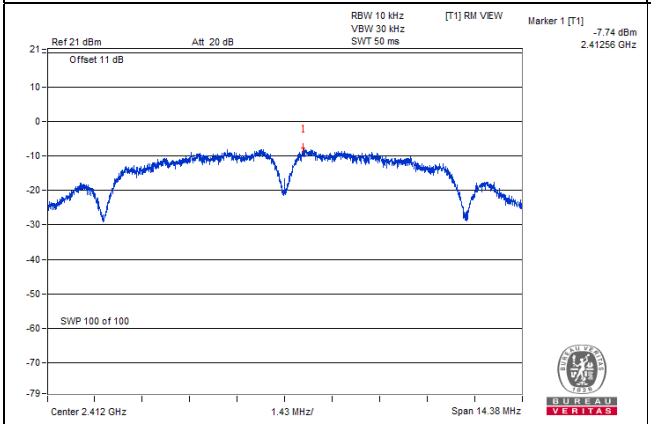
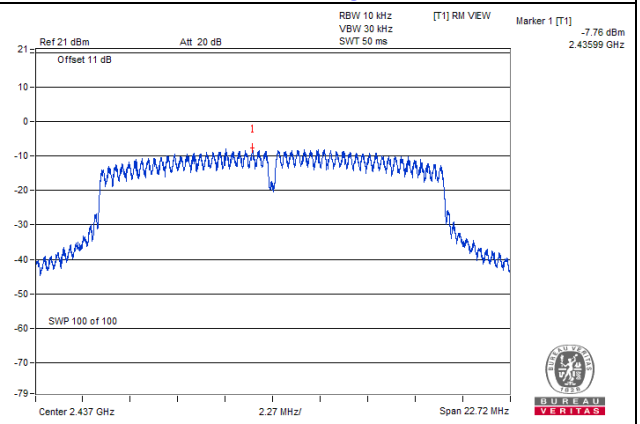
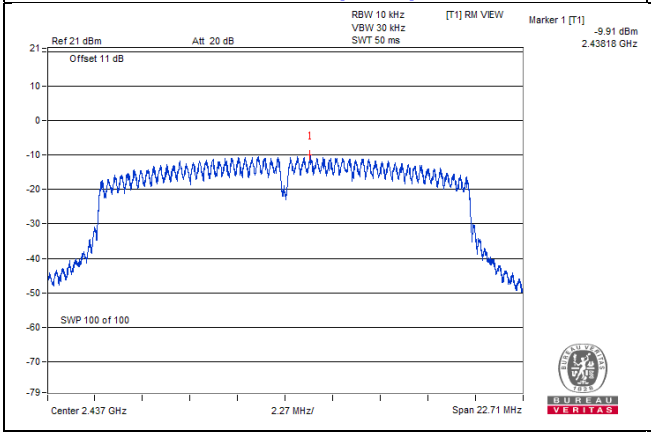
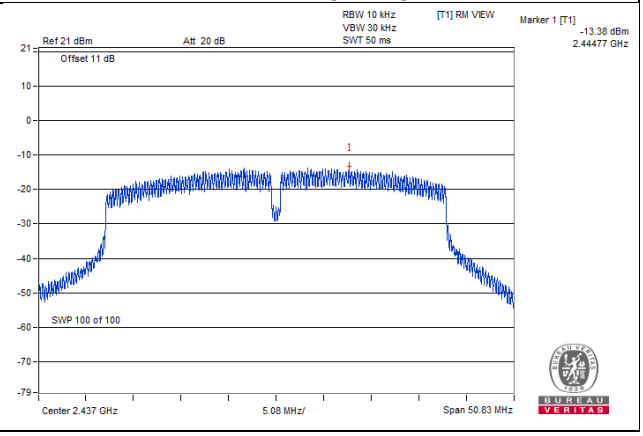
1. Refer to section 3.3 for duty cycle spectrum plot.

802.11n (HT40)

TX chain	Chan.	Freq. (MHz)	PSD (dBm/10kHz)	Duty Factor	PSD with Duty Factor (dBm/10kHz)	Limit (dBm/3kHz)	Pass / Fail
0	3	2422	-18.95	0.30	-18.65	8.00	Pass
	6	2437	-13.38	0.30	-13.08	8.00	Pass
	9	2452	-18.79	0.30	-18.49	8.00	Pass

NOTE:

1. Refer to section 3.3 for duty cycle spectrum plot.

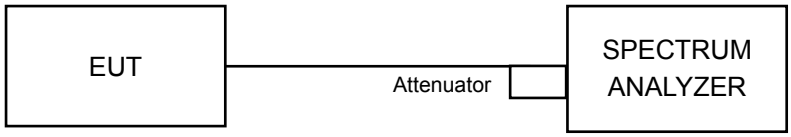
Spectrum Plot of Worst Value	
802.11b	**802.11g**
	
802.11n (HT20)	**802.11n (HT40)**
	

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

a. Set the RBW = 100 kHz.
b. Set the VBW ≥ 300 kHz.
c. Detector = average.
d. Sweep time = auto couple.
e. Trace mode = max hold.
f. Allow trace to fully stabilize.
g. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.

MEASUREMENT PROCEDURE OOBE

a. Set RBW = 100 kHz.
b. Set VBW ≥ 300 kHz.
c. Ensure that the number of measurement points ≥ span/RBW
d. According to measurement points to set differ measurement span.
e. Detector = average.
f. Trace Mode = max hold.
g. Sweep = auto couple.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

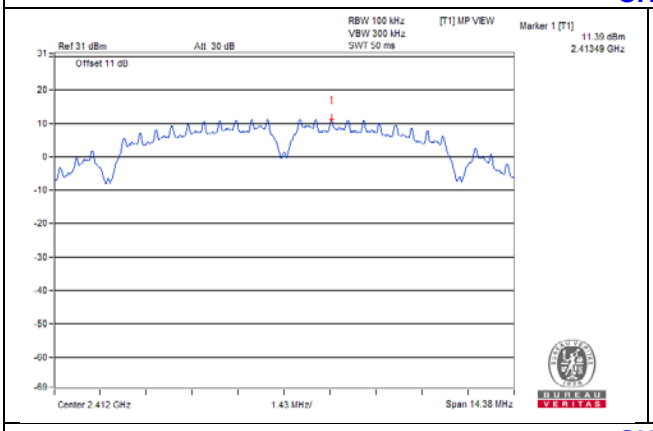
Same as Item 4.3.6

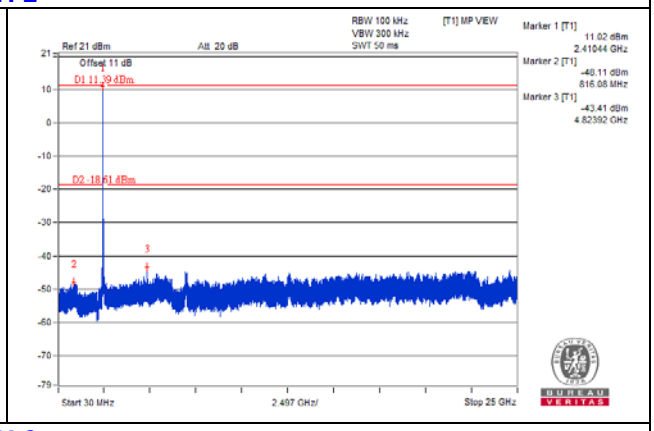
4.6.7 Test Results

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.

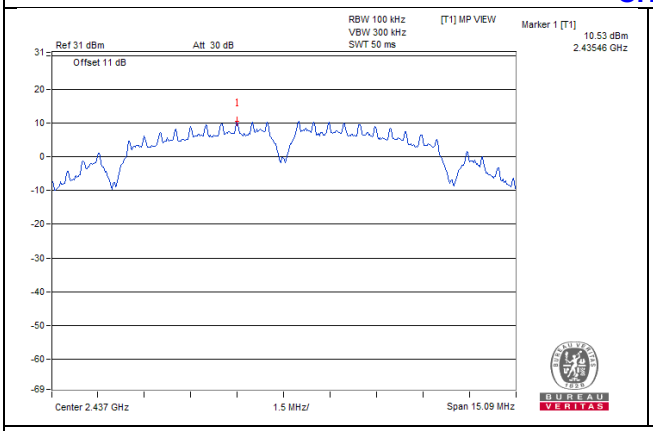
802.11b

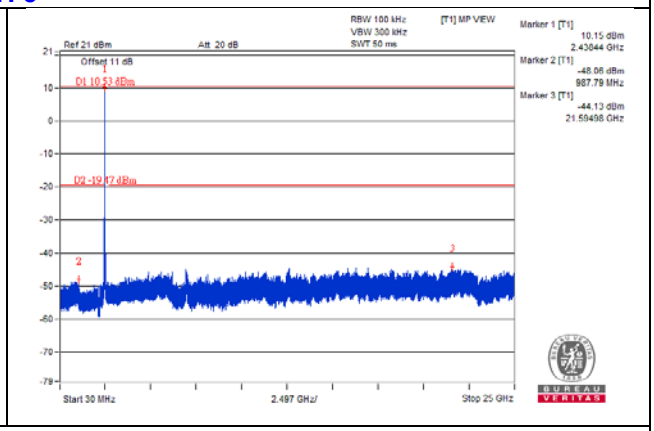
CH 1



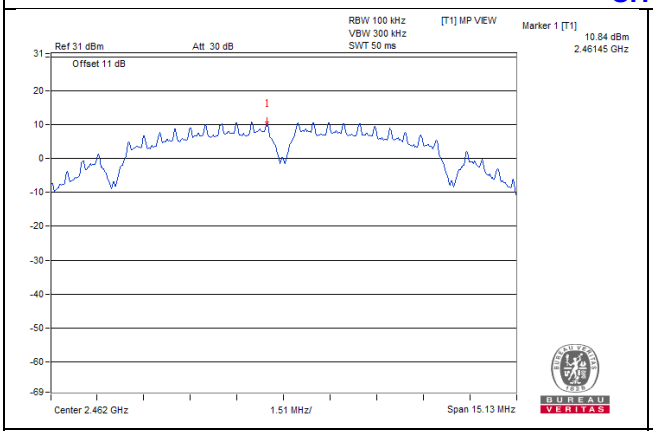


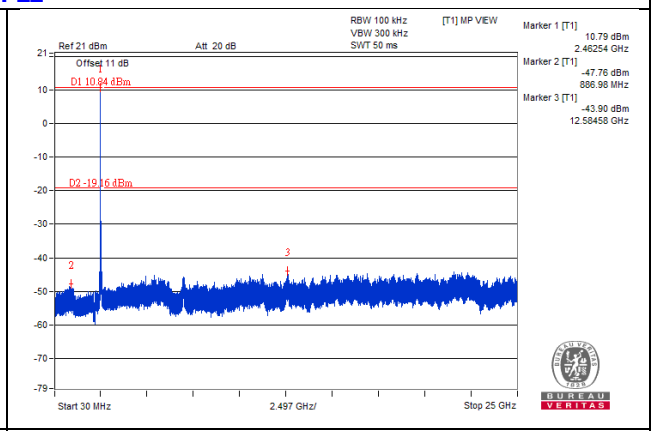
CH 6



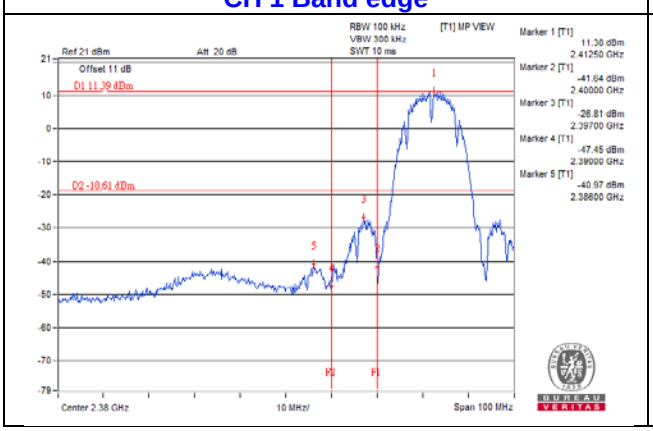


CH 11

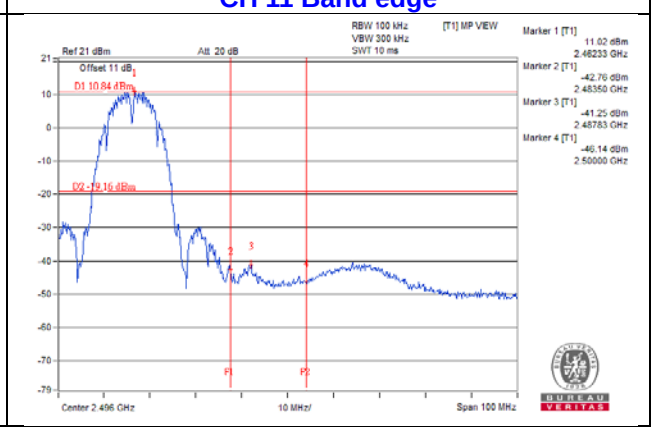




CH 1 Band edge

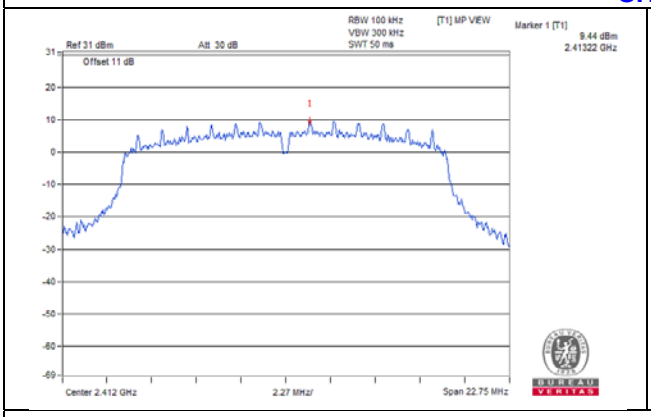


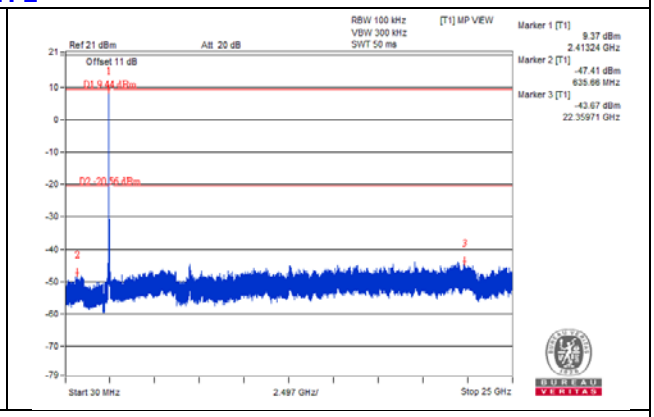
CH 11 Band edge



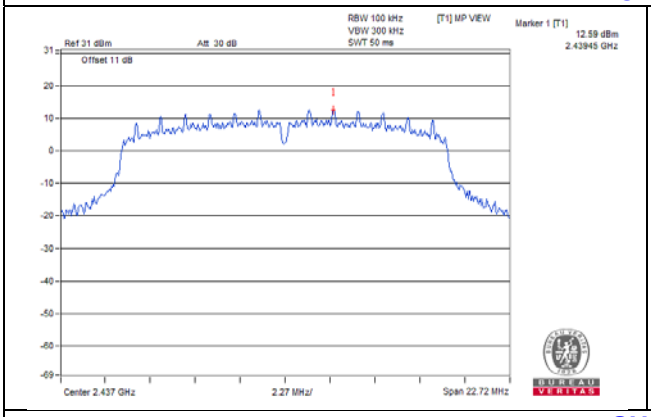
802.11g

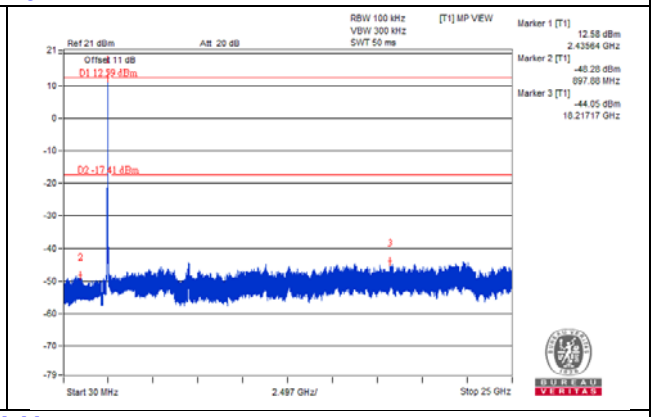
CH 1



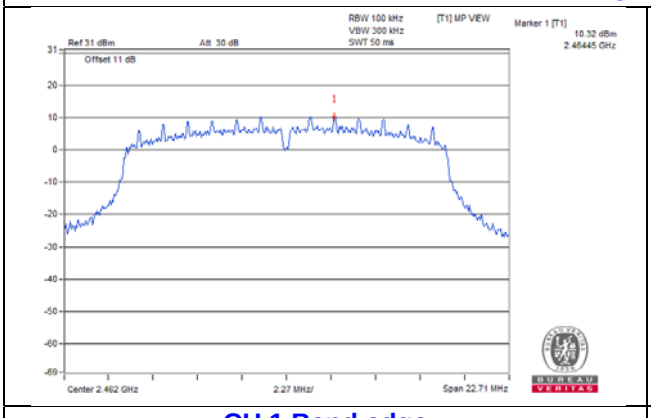


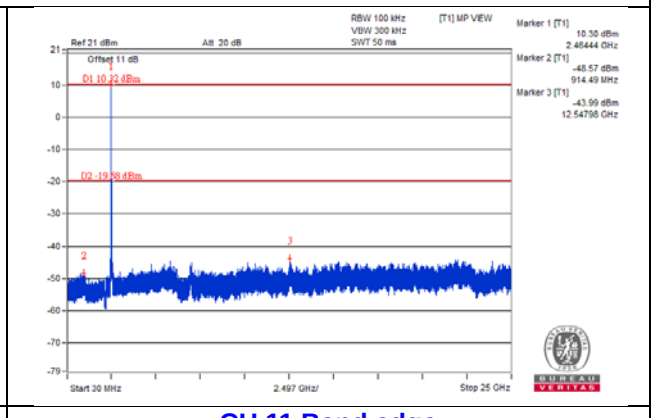
CH 6



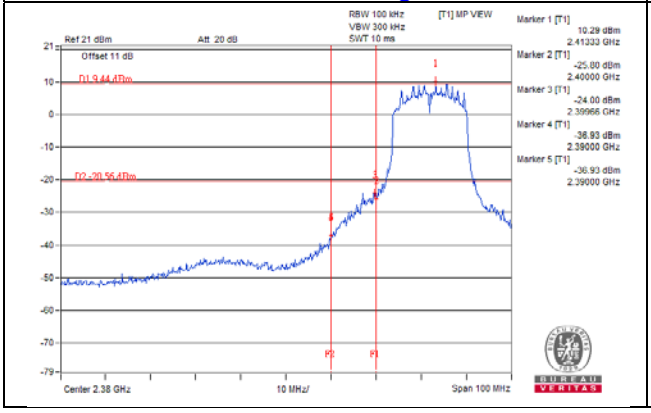


CH 11

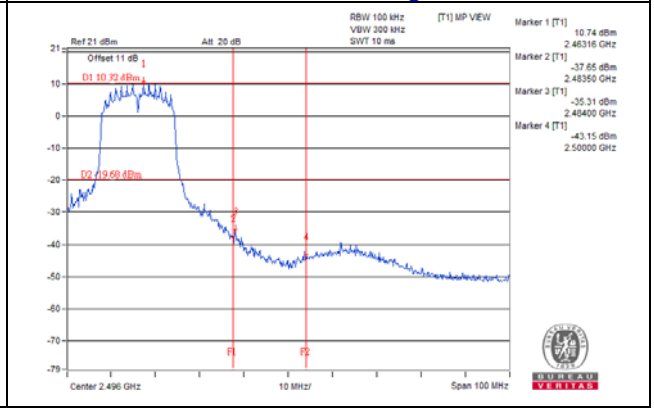




CH 1 Band edge

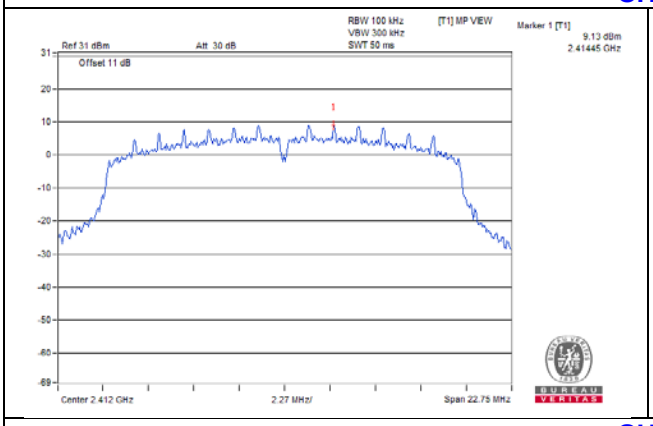


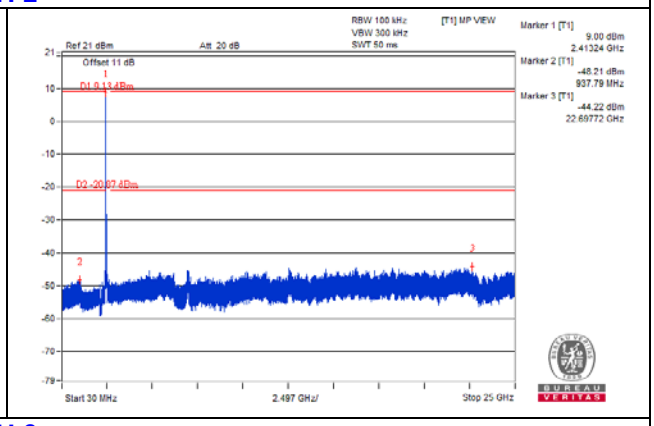
CH 11 Band edge



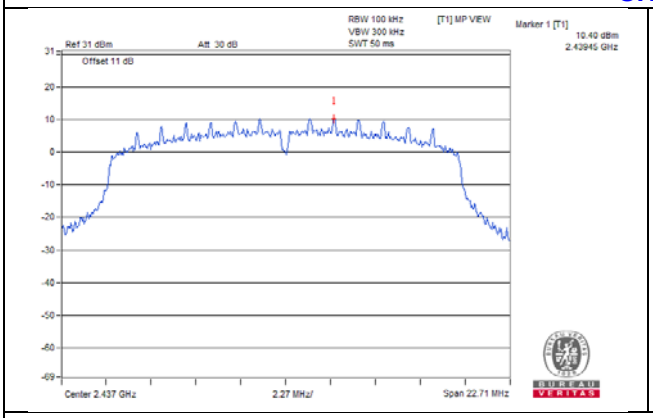
802.11n (HT20)

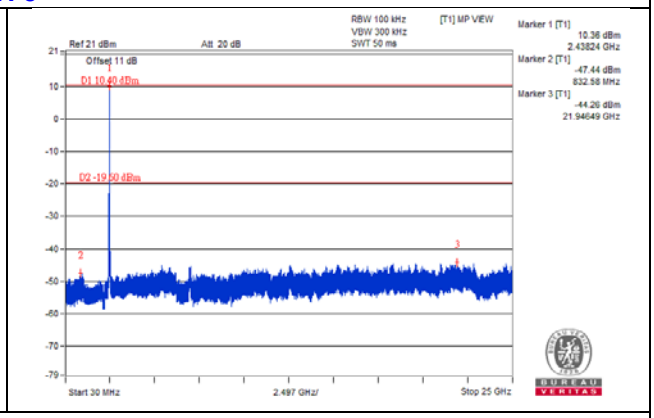
CH 1



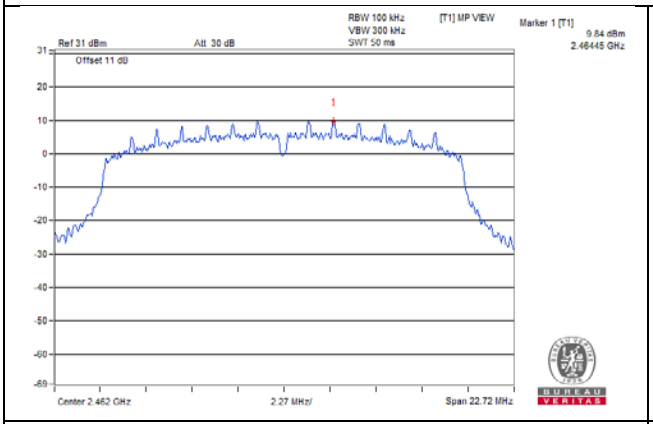


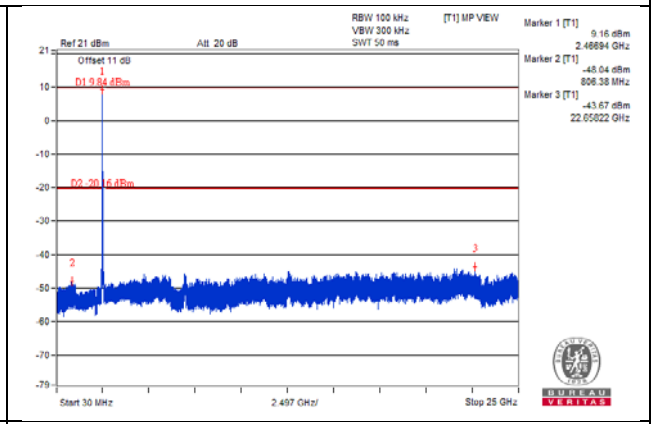
CH 6



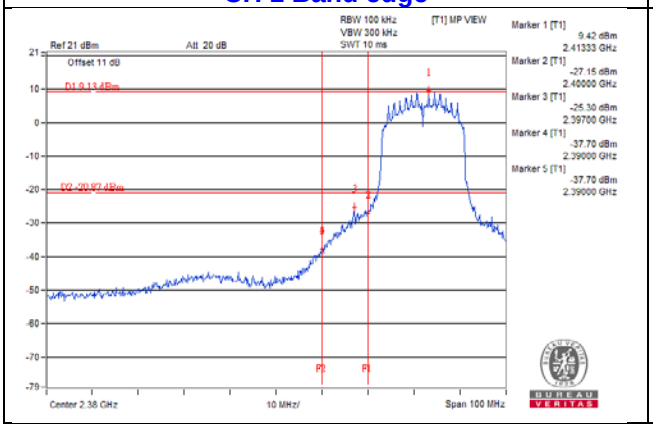


CH 11

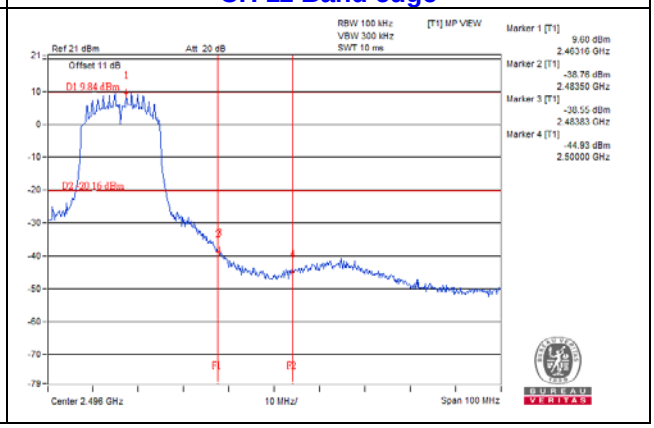




CH 1 Band edge

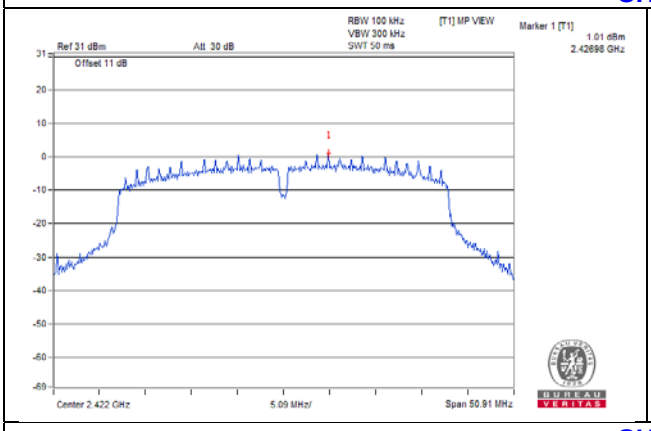


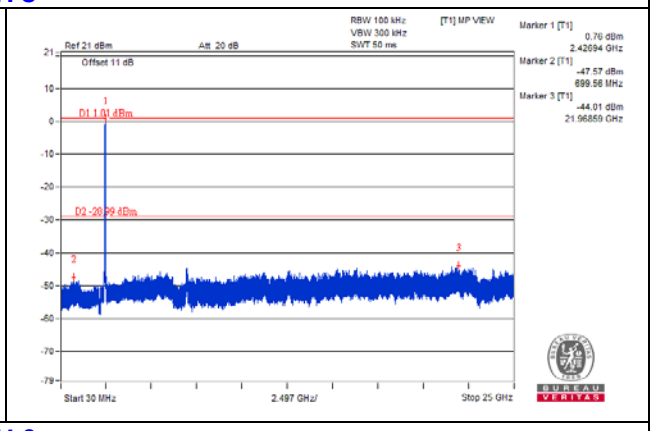
CH 11 Band edge



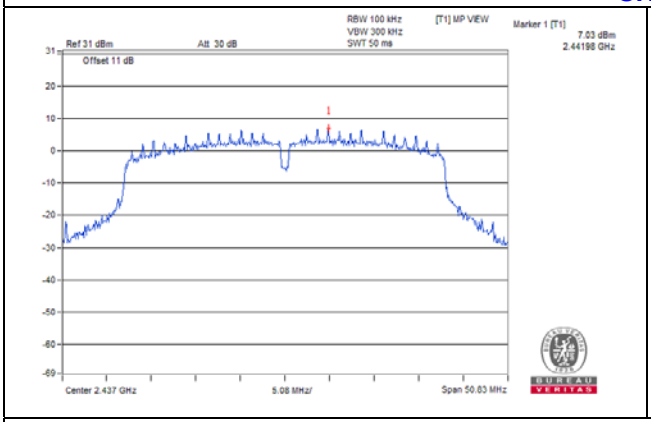
802.11n (HT40)

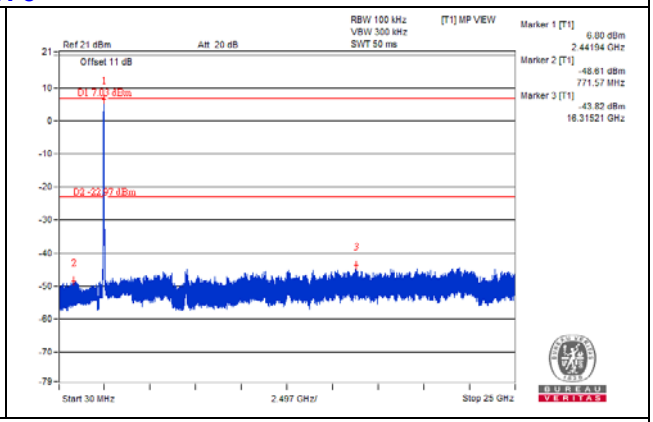
CH 3



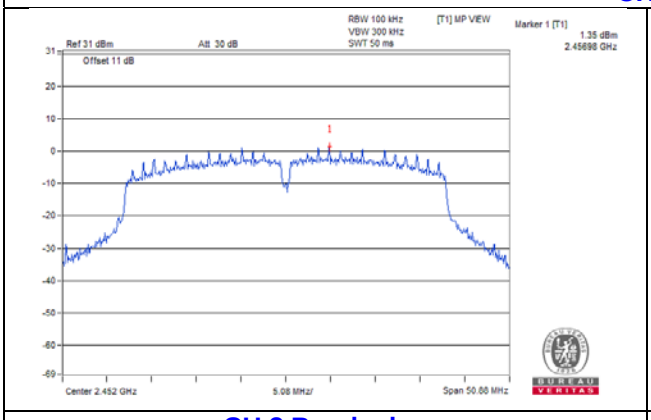


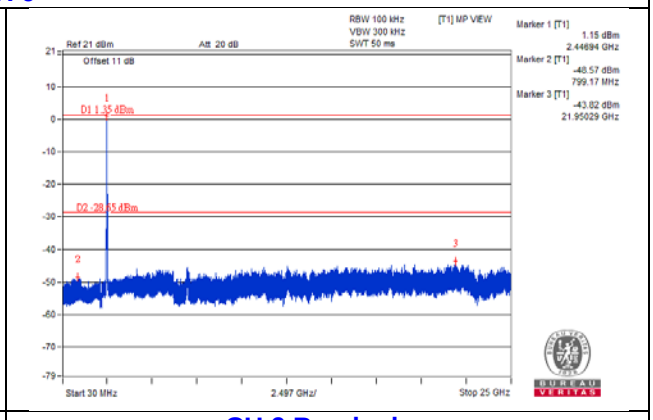
CH 6



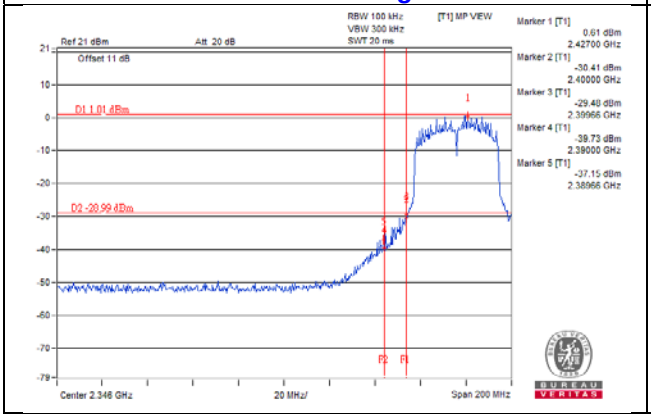


CH 9

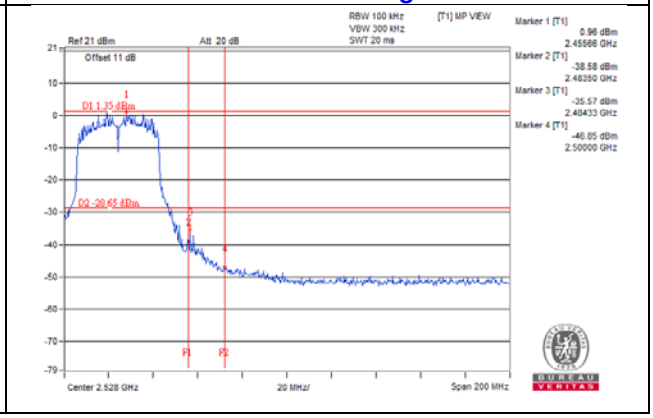




CH 3 Band edge



CH 9 Band edge



5 Pictures of Test Arrangements

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

Appendix – Information on 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:

Linko 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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