

## FCC Test Report (WLAN)

**Report No.:** RF170513E01

**FCC ID:** R68XPICO200

**Test Model:** xPico 250, xPico 240

**Received Date:** May 13, 2017

**Test Date:** Sep. 11 to 16, 2017

**Issued Date:** Oct. 02, 2017

**Applicant:** Lantronix, Inc.

**Address:** 7535 Irvine Center Drive, Suite 100 Irvine, California 92618

**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 R.O.C.

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



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### Release Control Record

Issue No.	Description	Date Issued
RF170513E01	Original release.	Oct. 02, 2017

## 1 Certificate of Conformity

**Product:** xPico® 200 Series Wi-Fi® IoT Gateway module

**Brand:** Lantronix

**Test Model:** xPico 250, xPico 240

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Lantronix, Inc.

**Test Date:** Sep. 11 to 16, 2017

**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 :** Wendy Wu , **Date:** Oct. 02, 2017  
Wendy Wu / Specialist

**Approved by :** May Chen , **Date:** Oct. 02, 2017  
May Chen / 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 -8.16dB at 0.37656MHz.
15.205 / 15.209 / 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit. Minimum passing margin is -0.1dB at , 2390.00MHz, 2483.50MHz.
15.247(d)	Antenna Port Emission	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth	PASS	Meet the requirement of limit.
15.247(b)	Conducted power	PASS	Meet the requirement of limit.
15.247(e)	Power Spectral Density	PASS	Meet the requirement of limit.
15.203	Antenna Requirement	PASS	Antenna connectors are RSMA and i-pex (MHF) 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) ( $\pm$ )
Conducted Emissions at mains ports	150kHz ~ 30MHz	1.84 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	5.30 dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	5.16 dB
	6GHz ~ 18GHz	4.91 dB
	18GHz ~ 40GHz	5.30 dB

### 2.2 Modification Record

There were no modifications required for compliance.

### 3 General Information

#### 3.1 General Description of EUT

Product	xPico® 200 Series Wi-Fi® IoT Gateway module
Brand	Lantronix
Test Model	xPico 250, xPico 240
Status of EUT	ENGINEERING SAMPLE
Power Supply Rating	3.3Vdc from host equipment
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11a/g: up to 54Mbps 802.11n: up to 150Mbps
Operating Frequency	<b>2.4GHz:</b> 2.412 ~ 2.462GHz <b>5GHz:</b> 5.18 ~ 5.24GHz, 5.26 ~ 5.32GHz, 5.50 ~ 5.70GHz, 5.745 ~ 5.825GHz
Number of Channel	<b>2.4GHz:</b> 802.11b, 802.11g, 802.11n (HT20): 11 <b>5GHz:</b> 802.11a, 802.11n (HT20): 24 802.11n (HT40): 11
Output Power	<b>2.4GHz:</b> 296.483mW <b>5GHz:</b> <b>5.18 ~ 5.24GHz:</b> 69.343mW <b>5.26 ~ 5.32GHz:</b> 69.343mW <b>5.50 ~ 5.70GHz:</b> 64.121mW <b>5.745 ~ 5.825GHz:</b> 66.988mW
Antenna Type	Refer to Note
Antenna Connector	Refer to Note
Accessory Device	NA
Data Cable Supplied	NA

Note:

1. There are WLAN, BT technology used for the EUT.
2. Simultaneously transmission condition.

Condition	Technology	
1	WLAN (2.4GHz)	Bluetooth
2	WLAN (5GHz)	Bluetooth

**Note:** The emission of the simultaneous operation has been evaluated and no non-compliance was found.

3. All models are listed as below.

Product	Brand	Model	Difference	Antenna
xPico® 200 Series Wi-Fi® IoT Gateway	Lantronix	xPico 250	SKU A: SIP with two UFL connectors Wi-Fi Chip and Bluetooth chip	Dipole Antenna (long) Dipole Antenna (short) PCB Antenna
		xPico 240	SKU B: same as SKU A, no BT function.	Dipole Antenna (long) Dipole Antenna (short) PCB Antenna
			SKU C: same SKU B except the two UFLs are replaced by a single on-module stamped metal antenna. Circuit board is the same. BOM population option for UFL or on-module antenna circuit is the difference.	On-board Antenna

4. The antennas provided to the EUT, please refer to the following table:

Ant Set.	Brand	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type	*Cable Length	*Cable Loss(dB)	excluding cable loss Antenna Gain(dBi)
1	Taoglas	GW.71.5153	2.8	2.4~2.4835	Dipole	R-SMA	45mm	1	3.8
			3.8	5.15~5.85				1.7	5.5
	Taoglas	GW.71.5153	2.8	2.4~2.4835			45mm	1	3.8
			3.8	5.15~5.85				1.7	5.5
2	NA	WSS002	1	2.4~2.4835	Dipole	R-SMA	45mm	1	2
			0.3	5.15~5.85				1.7	2
	NA	WSS002	1	2.4~2.5			45mm	1	2
			0.3	5.15~5.25				1.7	2
3	ethertronics	1000668	2.5	2.4~2.4835	PCB	i-pex(MHF)	50mm	NA	NA
			5	5.15~5.85					
	ethertronics	1000668	2.5	2.4~2.4835					
			5	5.15~5.85					
4	ProAnt	PRO-OB-536	0.02	2.4~2.4835	Metal	NA	NA	NA	NA
			3.31	5.15~5.85					

Note: From the above antennas, Ant Set 1, 3, 4 were selected as representative antenna for the test.



5. The EUT incorporates a SISO function.

<b>2.4GHz Band</b>			
<b>MODULATION MODE</b>	<b>DATA RATE (MCS)</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11b</b>	1 ~ 11Mbps	1TX	1RX
<b>802.11g</b>	6 ~ 54Mbps	1TX	1RX
<b>802.11n (HT20)</b>	MCS 0~7	1TX	1RX
<b>5GHz Band</b>			
<b>MODULATION MODE</b>	<b>DATA RATE (MCS)</b>	<b>TX &amp; RX CONFIGURATION</b>	
<b>802.11a</b>	6 ~ 54Mbps	1TX	1RX
<b>802.11n (HT20)</b>	MCS 0~7	1TX	1RX
<b>802.11n (HT40)</b>	MCS 0~7	1TX	1RX

6. 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		

### 3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE $\geq$ 1G	RE<1G	PLC	APCM	
1	√	√	-	√	Ant Set 1
2	√	√	√	-	Ant Set 3
3	√	√	-	-	Ant Set 4

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

#### NOTE:

- The EUT's antenna (PCB) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **X-plane**.
- The EUT's antenna (Metal) had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.

#### Radiated Emission Test (Above 1GHz):

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

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

#### Radiated Emission Test (Below 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates 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)
802.11g	1 to 11	1	OFDM	BPSK	6

#### Power Line Conducted Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates 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)
802.11g	1 to 11	1	OFDM	BPSK	6

**Antenna Port Conducted Measurement:**

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates 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

**Test Condition:**

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER (SYSTEM)	TESTED BY
RE $\geq$ 1G	25deg. C, 70%RH	120Vac, 60Hz	Jyunchun Lin
RE<1G	26deg. C, 71%RH	120Vac, 60Hz	Andy Ho
PLC	25deg. C, 75%RH	120Vac, 60Hz	Andy Ho
APCM	27deg. C, 64%RH	120Vac, 60Hz	Anderson Chen

### 3.3 Duty Cycle of Test Signal

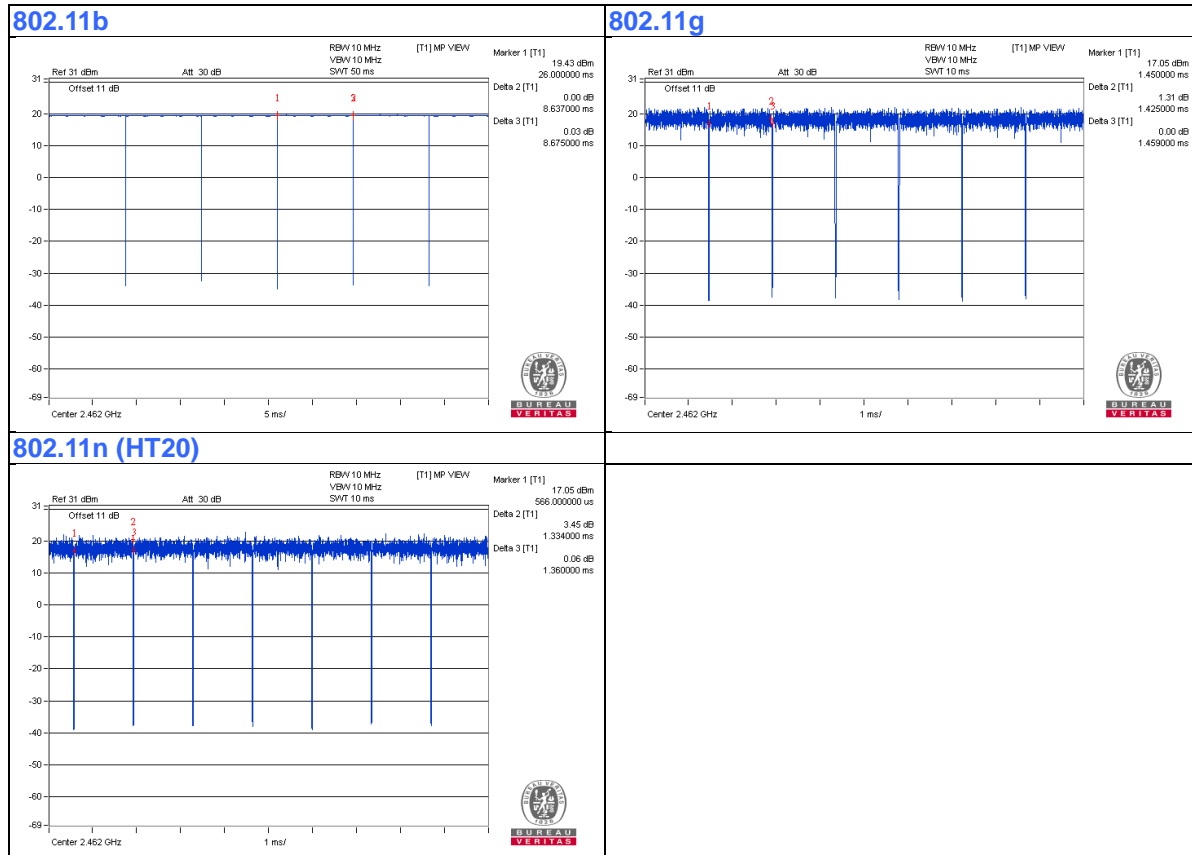
If duty cycle of test signal is  $\geq 98\%$ , duty factor is not required.

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

**802.11b:** Duty cycle =  $8.637/8.675 = 0.996$

**802.11g:** Duty cycle =  $1.425/1.459 = 0.977$ , Duty factor =  $10 * \log(1/0.977) = 0.1$

**802.11n (HT20):** Duty cycle =  $1.334/1.36 = 0.981$



### 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.	Test Tool	Lantronix	NA	NA	NA	Supplied by client
B.	Adapter	TOP	W050010GPX1 L1	NA	NA	Supplied by client

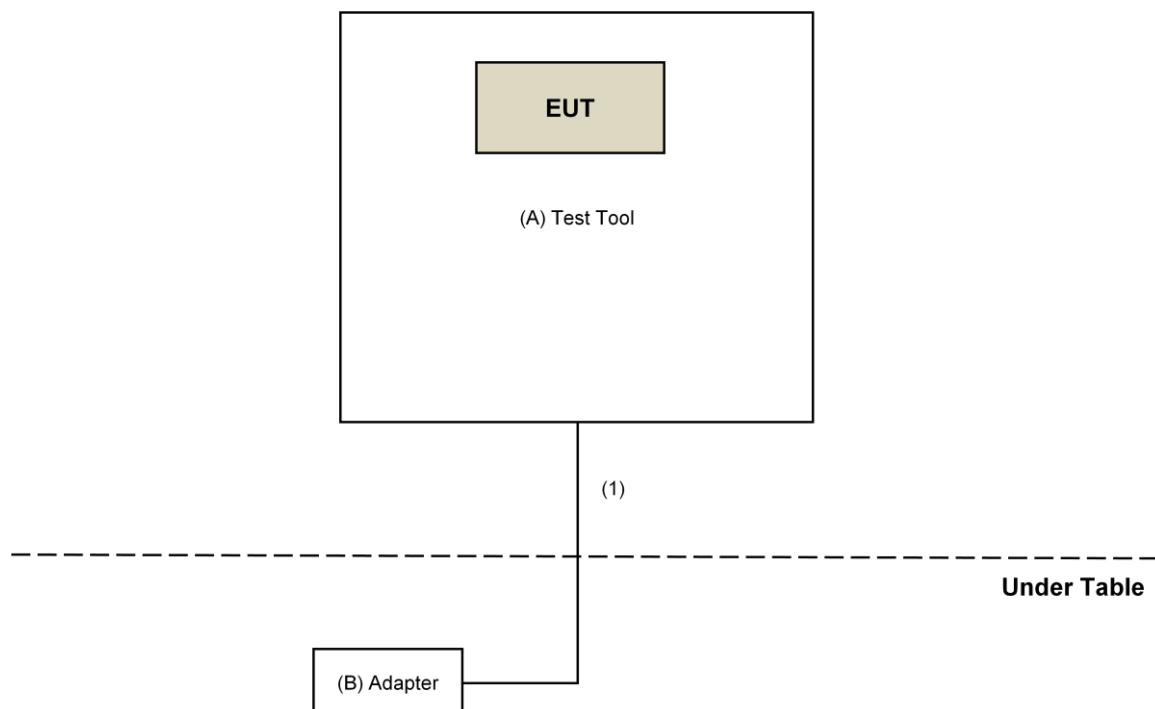
Note:

1. All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	DC Cable	1	1.8	No	0	Supplied by client

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

#### 3.4.1 Configuration of System under Test



### 3.5 General Description of Applied Standards

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 v04**  
**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 20dB below the highest level of the desired power:

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

**NOTE:**

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



## 4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver Keysight	N9038A	MY54450088	July 08, 2017	July 07, 2018
Pre-Amplifier <sup>(*)</sup> EMCI	EMC001340	980142	Jan. 20, 2016	Jan. 19, 2018
Loop Antenna <sup>(*)</sup> Electro-Metrics	EM-6879	264	Dec. 16, 2016	Dec. 15, 2018
RF Cable	NA	LOOPCAB-001 LOOPCAB-002	Jan. 17, 2017	Jan. 16, 2018
Pre-Amplifier Mini-Circuits	ZFL-1000VH2B	AMP-ZFL-01	Nov. 10, 2016	Nov. 09, 2017
Trilog Broadband Antenna SCHWARZBECK	VULB 9168	9168-406	Dec. 13, 2016	Dec. 12, 2017
RF Cable	8D	966-4-1 966-4-2 966-4-3	Apr. 01, 2017	Mar. 31, 2018
Fixed attenuator Mini-Circuits	UNAT-5+	PAD-3m-4-01	Oct. 05, 2016	Oct. 04, 2017
Horn_Antenna SCHWARZBECK	BBHA 9120D	9120D-783	Dec. 27, 2016	Dec. 26, 2017
Pre-Amplifier EMCI	EMC12630SE	980385	Feb. 02, 2017	Feb. 01, 2018
RF Cable	EMC104-SM-SM-1200 EMC104-SM-SM-2000 EMC104-SM-SM-5000	160923 150318 150321	Feb. 02, 2017 Mar. 29, 2017 Mar. 29, 2017	Feb. 01, 2018 Mar. 28, 2018 Mar. 28, 2018
Pre-Amplifier EMCI	EMC184045SE	980387	Feb. 02, 2017	Feb. 01, 2018
Horn_Antenna SCHWARZBECK	BBHA 9170	BBHA9170608	Dec. 15, 2016	Dec. 14, 2017
RF Cable	SUCOFLEX 102	36432/2 36433/2	Jan. 15, 2017	Jan. 14, 2018
Software	ADT_Radiated_V8.7.08	NA	NA	NA
Antenna Tower & Turn Table Max-Full	MF-7802	MF780208410	NA	NA
Boresight Antenna Fixture	FBA-01	FBA-SIP02	NA	NA
Spectrum Analyzer R&S	FSv40	100964	July 1, 2017	June 30, 2018
Power meter Anritsu	ML2495A	1014008	May 11, 2017	May 10, 2018
Power sensor Anritsu	MA2411B	0917122	May 11, 2017	May 10, 2018

**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 calibration interval of the above test instruments is 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
3. The test was performed in 966 Chamber No. 4.
4. Loop antenna was used for all emissions below 30 MHz.
5. The FCC Designation Number is TW2022.
6. The CANADA Site Registration No. is 20331-2
7. Tested Date: Sep. 11 to 14, 2017

#### 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:**

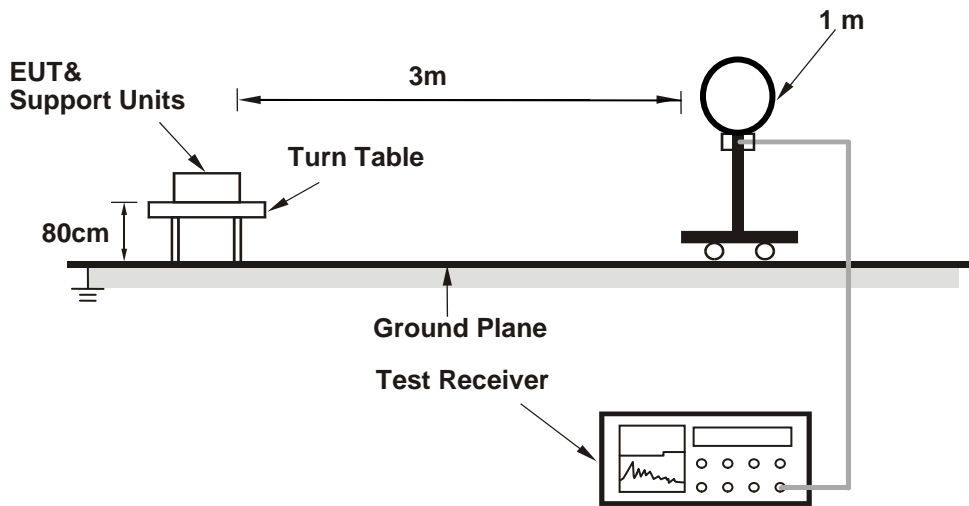
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is  $\geq 1/T$  (Duty cycle < 98%) or 10Hz (Duty cycle  $\geq 98\%$ ) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

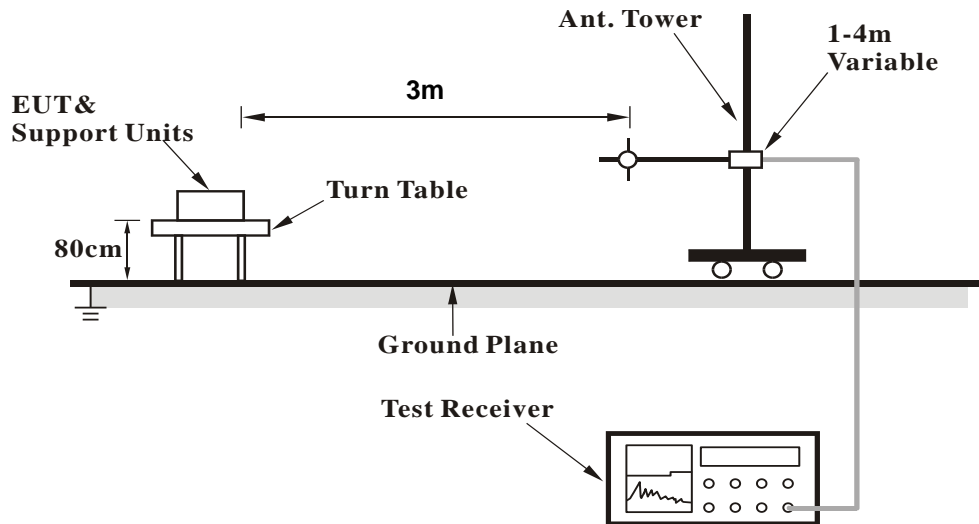
No deviation.

4.1.5 Test Setup

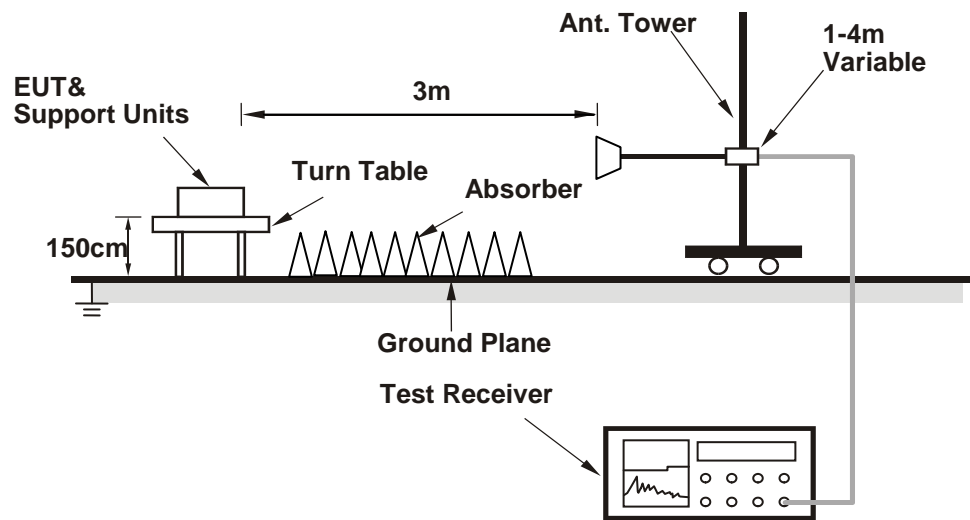
**For Radiated emission below 30MHz**



**For Radiated emission 30MHz to 1GHz**



### For Radiated emission above 1GHz



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

#### 4.1.6 EUT Operating Conditions

- Placed the EUT on the testing table.
- Contorlling software (wl43909B0.exe) has been activated to set the EUT on specific status.

## 4.1.7 Test Results (Mode 1)

## Above 1GHz Data:

## 802.11b

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	52.0 PK	74.0	-22.0	1.51 H	171	53.3	-1.3
2	2390.00	40.4 AV	54.0	-13.6	1.51 H	171	41.7	-1.3
3	*2412.00	95.0 PK			1.51 H	171	96.1	-1.1
4	*2412.00	92.5 AV			1.51 H	171	93.6	-1.1
5	4824.00	39.2 PK	74.0	-34.8	1.38 H	351	36.0	3.2
6	4824.00	27.7 AV	54.0	-26.3	1.38 H	351	24.5	3.2

**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	56.1 PK	74.0	-17.9	1.87 V	3	57.4	-1.3
2	2390.00	44.5 AV	54.0	-9.5	1.87 V	3	45.8	-1.3
3	*2412.00	107.2 PK			1.87 V	3	108.3	-1.1
4	*2412.00	104.8 AV			1.87 V	3	105.9	-1.1
5	4824.00	41.2 PK	74.0	-32.8	1.06 V	310	38.0	3.2
6	4824.00	30.7 AV	54.0	-23.3	1.06 V	310	27.5	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	95.4 PK			1.51 H	164	96.6	-1.2
2	*2437.00	92.9 AV			1.51 H	164	94.1	-1.2
3	4874.00	39.5 PK	74.0	-34.5	1.36 H	358	36.2	3.3
4	4874.00	27.9 AV	54.0	-26.1	1.36 H	358	24.6	3.3
5	7311.00	48.7 PK	74.0	-25.3	1.09 H	195	38.9	9.8
6	7311.00	41.9 AV	54.0	-12.1	1.09 H	195	32.1	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	107.6 PK			1.68 V	5	108.8	-1.2
2	*2437.00	105.2 AV			1.68 V	5	106.4	-1.2
3	4874.00	41.7 PK	74.0	-32.3	1.02 V	312	38.4	3.3
4	4874.00	31.2 AV	54.0	-22.8	1.02 V	312	27.9	3.3
5	7311.00	56.0 PK	74.0	-18.0	3.50 V	174	46.2	9.8
6	7311.00	52.7 AV	54.0	-1.3	3.50 V	174	42.9	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	95.3 PK			1.50 H	161	96.4	-1.1
2	*2462.00	92.8 AV			1.50 H	161	93.9	-1.1
3	2483.50	55.2 PK	74.0	-18.8	1.50 H	161	56.2	-1.0
4	2483.50	42.4 AV	54.0	-11.6	1.50 H	161	43.4	-1.0
5	4924.00	39.9 PK	74.0	-34.1	1.41 H	350	36.4	3.5
6	4924.00	28.4 AV	54.0	-25.6	1.41 H	350	24.9	3.5
7	7386.00	49.1 PK	74.0	-24.9	1.01 H	210	39.2	9.9
8	7386.00	42.1 AV	54.0	-11.9	1.01 H	210	32.2	9.9

**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	107.5 PK			1.83 V	2	108.6	-1.1
2	*2462.00	105.1 AV			1.83 V	2	106.2	-1.1
3	2483.50	57.4 PK	74.0	-16.6	1.83 V	2	58.4	-1.0
4	2483.50	46.3 AV	54.0	-7.7	1.83 V	2	47.3	-1.0
5	4924.00	41.5 PK	74.0	-32.5	1.00 V	310	38.0	3.5
6	4924.00	31.1 AV	54.0	-22.9	1.00 V	310	27.6	3.5
7	7386.00	56.2 PK	74.0	-17.8	3.50 V	188	46.3	9.9
8	7386.00	52.7 AV	54.0	-1.3	3.50 V	188	42.8	9.9

**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**

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	56.6 PK	74.0	-17.4	1.52 H	173	57.9	-1.3
2	2390.00	43.3 AV	54.0	-10.7	1.52 H	173	44.6	-1.3
3	*2412.00	97.5 PK			1.52 H	173	98.6	-1.1
4	*2412.00	87.2 AV			1.52 H	173	88.3	-1.1
5	4824.00	36.3 PK	74.0	-37.7	1.00 H	179	33.1	3.2
6	4824.00	26.6 AV	54.0	-27.4	1.00 H	179	23.4	3.2

**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	67.0 PK	74.0	-7.0	1.80 V	3	68.3	-1.3
2	2390.00	50.9 AV	54.0	-3.1	1.80 V	3	52.2	-1.3
3	*2412.00	109.1 PK			1.80 V	3	110.2	-1.1
4	*2412.00	99.2 AV			1.80 V	3	100.3	-1.1
5	4824.00	37.2 PK	74.0	-36.8	1.40 V	239	34.0	3.2
6	4824.00	27.1 AV	54.0	-26.9	1.40 V	239	23.9	3.2

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



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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.4 PK			1.51 H	154	99.6	-1.2
2	*2437.00	87.8 AV			1.51 H	154	89.0	-1.2
3	4874.00	36.2 PK	74.0	-37.8	1.02 H	198	32.9	3.3
4	4874.00	26.2 AV	54.0	-27.8	1.02 H	198	22.9	3.3
5	7311.00	45.6 PK	74.0	-28.4	2.99 H	173	35.8	9.8
6	7311.00	36.0 AV	54.0	-18.0	2.99 H	173	26.2	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.0 PK			2.05 V	5	111.2	-1.2
2	*2437.00	99.8 AV			2.05 V	5	101.0	-1.2
3	4874.00	36.9 PK	74.0	-37.1	1.41 V	225	33.6	3.3
4	4874.00	27.0 AV	54.0	-27.0	1.41 V	225	23.7	3.3
5	7311.00	60.3 PK	74.0	-13.7	3.25 V	179	50.5	9.8
6	7311.00	44.4 AV	54.0	-9.6	3.25 V	179	34.6	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	98.2 PK			1.51 H	161	99.3	-1.1
2	*2462.00	87.6 AV			1.51 H	161	88.7	-1.1
3	2483.50	61.7 PK	74.0	-12.3	1.51 H	161	62.7	-1.0
4	2483.50	44.2 AV	54.0	-9.8	1.51 H	161	45.2	-1.0
5	4924.00	35.9 PK	74.0	-38.1	1.02 H	188	32.4	3.5
6	4924.00	26.1 AV	54.0	-27.9	1.02 H	188	22.6	3.5
7	7386.00	44.9 PK	74.0	-29.1	3.01 H	166	35.0	9.9
8	7386.00	35.5 AV	54.0	-18.5	3.01 H	166	25.6	9.9

**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			1.82 V	3	110.9	-1.1
2	*2462.00	99.6 AV			1.82 V	3	100.7	-1.1
3	2483.50	72.1 PK	74.0	-1.9	1.82 V	3	73.1	-1.0
4	2483.50	51.8 AV	54.0	-2.2	1.82 V	3	52.8	-1.0
5	4924.00	36.3 PK	74.0	-37.7	1.38 V	223	32.8	3.5
6	4924.00	26.5 AV	54.0	-27.5	1.38 V	223	23.0	3.5
7	7386.00	59.8 PK	74.0	-14.2	3.24 V	186	49.9	9.9
8	7386.00	44.1 AV	54.0	-9.9	3.24 V	186	34.2	9.9

**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)**

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	62.6 PK	74.0	-11.4	1.48 H	163	63.9	-1.3
2	2390.00	45.3 AV	54.0	-8.7	1.48 H	163	46.6	-1.3
3	*2412.00	96.7 PK			1.48 H	163	97.8	-1.1
4	*2412.00	86.1 AV			1.48 H	163	87.2	-1.1
5	4824.00	36.5 PK	74.0	-37.5	1.05 H	187	33.3	3.2
6	4824.00	26.8 AV	54.0	-27.2	1.05 H	187	23.6	3.2

**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	73.0 PK	74.0	-1.0	1.92 V	15	74.3	-1.3
2	2390.00	52.9 AV	54.0	-1.1	1.92 V	15	54.2	-1.3
3	*2412.00	108.3 PK			1.92 V	15	109.4	-1.1
4	*2412.00	98.1 AV			1.92 V	15	99.2	-1.1
5	4824.00	35.9 PK	74.0	-38.1	1.29 V	215	32.7	3.2
6	4824.00	26.0 AV	54.0	-28.0	1.29 V	215	22.8	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	99.1 PK			1.49 H	168	100.3	-1.2
2	*2437.00	87.5 AV			1.49 H	168	88.7	-1.2
3	4874.00	36.4 PK	74.0	-37.6	1.08 H	198	33.1	3.3
4	4874.00	26.7 AV	54.0	-27.3	1.08 H	198	23.4	3.3
5	7311.00	45.0 PK	74.0	-29.0	3.07 H	160	35.2	9.8
6	7311.00	35.8 AV	54.0	-18.2	3.07 H	160	26.0	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	110.7 PK			2.08 V	3	111.9	-1.2
2	*2437.00	99.5 AV			2.08 V	3	100.7	-1.2
3	4874.00	36.3 PK	74.0	-37.7	1.34 V	222	33.0	3.3
4	4874.00	26.5 AV	54.0	-27.5	1.34 V	222	23.2	3.3
5	7311.00	59.2 PK	74.0	-14.8	3.24 V	176	49.4	9.8
6	7311.00	43.7 AV	54.0	-10.3	3.24 V	176	33.9	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	96.0 PK			1.51 H	175	97.1	-1.1
2	*2462.00	84.0 AV			1.51 H	175	85.1	-1.1
3	2483.50	61.8 PK	74.0	-12.2	1.51 H	175	62.8	-1.0
4	2483.50	42.1 AV	54.0	-11.9	1.51 H	175	43.1	-1.0
5	4924.00	36.3 PK	74.0	-37.7	1.03 H	183	32.8	3.5
6	4924.00	26.5 AV	54.0	-27.5	1.03 H	183	23.0	3.5
7	7386.00	45.1 PK	74.0	-28.9	3.03 H	167	35.2	9.9
8	7386.00	35.8 AV	54.0	-18.2	3.03 H	167	25.9	9.9

**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	107.6 PK			2.33 V	8	108.7	-1.1
2	*2462.00	96.4 AV			2.33 V	8	97.5	-1.1
3	2483.50	72.2 PK	74.0	-1.8	2.33 V	8	73.2	-1.0
4	2483.50	49.7 AV	54.0	-4.3	2.33 V	8	50.7	-1.0
5	4924.00	36.7 PK	74.0	-37.3	1.29 V	232	33.2	3.5
6	4924.00	26.9 AV	54.0	-27.1	1.29 V	232	23.4	3.5
7	7386.00	59.3 PK	74.0	-14.7	3.28 V	178	49.4	9.9
8	7386.00	43.9 AV	54.0	-10.1	3.28 V	178	34.0	9.9

**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:**

**802.11g**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 1GHz		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	35.99	25.6 QP	40.0	-14.4	2.00 H	60	35.0	-9.4
2	250.02	33.5 QP	46.0	-12.5	1.00 H	319	42.9	-9.4
3	350.00	38.9 QP	46.0	-7.1	1.00 H	116	45.4	-6.5
4	400.01	35.6 QP	46.0	-10.4	1.00 H	66	40.8	-5.2
5	450.01	36.0 QP	46.0	-10.0	2.00 H	263	39.6	-3.6
6	500.01	37.3 QP	46.0	-8.7	2.00 H	104	40.1	-2.8

**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	50.01	29.3 QP	40.0	-10.7	1.00 V	143	37.4	-8.1
2	250.00	31.9 QP	46.0	-14.1	2.00 V	22	41.4	-9.5
3	350.00	37.6 QP	46.0	-8.4	1.50 V	268	44.1	-6.5
4	400.01	33.4 QP	46.0	-12.6	1.00 V	14	38.6	-5.2
5	500.01	34.8 QP	46.0	-11.2	2.00 V	197	37.6	-2.8
6	901.62	34.6 QP	46.0	-11.4	1.00 V	332	30.6	4.0

**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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

## 4.1.8 Test Results (Mode 2)

## Above 1GHz Data:

## 802.11b

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.5 PK	74.0	-16.5	1.73 H	0	58.8	-1.3
2	2390.00	44.5 AV	54.0	-9.5	1.73 H	0	45.8	-1.3
3	*2412.00	108.1 PK			1.73 H	0	109.2	-1.1
4	*2412.00	105.8 AV			1.73 H	0	106.9	-1.1
5	4824.00	39.7 PK	74.0	-34.3	1.04 H	330	36.5	3.2
6	4824.00	30.1 AV	54.0	-23.9	1.04 H	330	26.9	3.2

**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	56.1 PK	74.0	-17.9	3.23 V	61	57.4	-1.3
2	2390.00	43.1 AV	54.0	-10.9	3.23 V	61	44.4	-1.3
3	*2412.00	102.6 PK			3.23 V	61	103.7	-1.1
4	*2412.00	100.4 AV			3.23 V	61	101.5	-1.1
5	4824.00	39.1 PK	74.0	-34.9	2.58 V	32	35.9	3.2
6	4824.00	27.5 AV	54.0	-26.5	2.58 V	32	24.3	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	108.4 PK			1.47 H	0	109.6	-1.2
2	*2437.00	106.1 AV			1.47 H	0	107.3	-1.2
3	4874.00	39.8 PK	74.0	-34.2	1.05 H	329	36.5	3.3
4	4874.00	30.2 AV	54.0	-23.8	1.05 H	329	26.9	3.3
5	7311.00	44.5 PK	74.0	-29.5	1.09 H	325	34.7	9.8
6	7311.00	32.5 AV	54.0	-21.5	1.09 H	325	22.7	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	102.9 PK			3.17 V	46	104.1	-1.2
2	*2437.00	100.7 AV			3.17 V	46	101.9	-1.2
3	4874.00	39.4 PK	74.0	-34.6	2.63 V	29	36.1	3.3
4	4874.00	28.0 AV	54.0	-26.0	2.63 V	29	24.7	3.3
5	7311.00	44.9 PK	74.0	-29.1	2.72 V	326	35.1	9.8
6	7311.00	32.9 AV	54.0	-21.1	2.72 V	326	23.1	9.8

**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.



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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	108.5 PK			1.47 H	338	109.6	-1.1
2	*2462.00	106.1 AV			1.47 H	338	107.2	-1.1
3	2483.50	58.5 PK	74.0	-15.5	1.47 H	338	59.5	-1.0
4	2483.50	45.2 AV	54.0	-8.8	1.47 H	338	46.2	-1.0
5	4924.00	40.1 PK	74.0	-33.9	1.05 H	335	36.6	3.5
6	4924.00	30.5 AV	54.0	-23.5	1.05 H	335	27.0	3.5
7	7386.00	44.8 PK	74.0	-29.2	1.05 H	322	34.9	9.9
8	7386.00	32.7 AV	54.0	-21.3	1.05 H	322	22.8	9.9

**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	103.1 PK			3.16 V	50	104.2	-1.1
2	*2462.00	100.6 AV			3.16 V	50	101.7	-1.1
3	2483.50	57.2 PK	74.0	-16.8	3.16 V	50	58.2	-1.0
4	2483.50	44.1 AV	54.0	-9.9	3.16 V	50	45.1	-1.0
5	4924.00	39.6 PK	74.0	-34.4	2.69 V	45	36.1	3.5
6	4924.00	27.9 AV	54.0	-26.1	2.69 V	45	24.4	3.5
7	7386.00	44.5 PK	74.0	-29.5	2.69 V	311	34.6	9.9
8	7386.00	32.5 AV	54.0	-21.5	2.69 V	311	22.6	9.9

**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**

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.8 PK	74.0	-0.2	1.73 H	0	75.1	-1.3
2	2390.00	51.4 AV	54.0	-2.6	1.73 H	0	52.7	-1.3
3	*2412.00	100.7 PK			1.73 H	0	101.8	-1.1
4	*2412.00	100.1 AV			1.73 H	0	101.2	-1.1
5	4824.00	39.6 PK	74.0	-34.4	1.14 H	358	36.4	3.2
6	4824.00	27.6 AV	54.0	-26.4	1.14 H	358	24.4	3.2

**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	71.4 PK	74.0	-2.6	3.22 V	56	72.7	-1.3
2	2390.00	49.1 AV	54.0	-4.9	3.22 V	56	50.4	-1.3
3	*2412.00	95.3 PK			3.22 V	56	96.4	-1.1
4	*2412.00	94.6 AV			3.22 V	56	95.7	-1.1
5	4824.00	38.3 PK	74.0	-35.7	3.27 V	45	35.1	3.2
6	4824.00	26.1 AV	54.0	-27.9	3.27 V	45	22.9	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.5 PK			1.47 H	359	112.7	-1.2
2	*2437.00	101.0 AV			1.47 H	359	102.2	-1.2
3	4874.00	39.5 PK	74.0	-34.5	1.09 H	353	36.2	3.3
4	4874.00	27.2 AV	54.0	-26.8	1.09 H	353	23.9	3.3
5	7311.00	45.4 PK	74.0	-28.6	1.06 H	319	35.6	9.8
6	7311.00	33.1 AV	54.0	-20.9	1.06 H	319	23.3	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.1 PK			3.28 V	59	107.3	-1.2
2	*2437.00	95.5 AV			3.28 V	59	96.7	-1.2
3	4874.00	37.9 PK	74.0	-36.1	3.31 V	40	34.6	3.3
4	4874.00	25.7 AV	54.0	-28.3	3.31 V	40	22.4	3.3
5	7311.00	51.9 PK	74.0	-22.1	3.22 V	296	42.1	9.8
6	7311.00	36.9 AV	54.0	-17.1	3.22 V	296	27.1	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	111.1 PK			1.23 H	337	112.2	-1.1
2	*2462.00	101.2 AV			1.23 H	337	102.3	-1.1
3	2483.50	73.9 PK	74.0	-0.1	1.23 H	337	74.9	-1.0
4	2483.50	53.9 AV	54.0	-0.1	1.23 H	337	54.9	-1.0
5	4924.00	40.1 PK	74.0	-33.9	1.05 H	338	36.6	3.5
6	4924.00	27.6 AV	54.0	-26.4	1.05 H	338	24.1	3.5
7	7386.00	45.8 PK	74.0	-28.2	1.05 H	323	35.9	9.9
8	7386.00	33.3 AV	54.0	-20.7	1.05 H	323	23.4	9.9

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.7 PK			3.21 V	54	106.8	-1.1
2	*2462.00	95.7 AV			3.21 V	54	96.8	-1.1
3	2483.50	71.3 PK	74.0	-2.7	3.21 V	54	72.3	-1.0
4	2483.50	51.6 AV	54.0	-2.4	3.21 V	54	52.6	-1.0
5	4924.00	38.1 PK	74.0	-35.9	3.26 V	54	34.6	3.5
6	4924.00	26.0 AV	54.0	-28.0	3.26 V	54	22.5	3.5
7	7386.00	51.9 PK	74.0	-22.1	3.26 V	311	42.0	9.9
8	7386.00	36.9 AV	54.0	-17.1	3.26 V	311	27.0	9.9

**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)**

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	73.9 PK	74.0	-0.1	1.75 H	340	75.2	-1.3
2	2390.00	53.5 AV	54.0	-0.5	1.75 H	340	54.8	-1.3
3	*2412.00	110.5 PK			1.75 H	340	111.6	-1.1
4	*2412.00	99.8 AV			1.75 H	340	100.9	-1.1
5	4824.00	40.4 PK	74.0	-33.6	1.04 H	345	37.2	3.2
6	4824.00	28.1 AV	54.0	-25.9	1.04 H	345	24.9	3.2

**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	70.8 PK	74.0	-3.2	3.23 V	57	72.1	-1.3
2	2390.00	50.4 AV	54.0	-3.6	3.23 V	57	51.7	-1.3
3	*2412.00	105.1 PK			3.23 V	57	106.2	-1.1
4	*2412.00	94.3 AV			3.23 V	57	95.4	-1.1
5	4824.00	37.7 PK	74.0	-36.3	3.28 V	49	34.5	3.2
6	4824.00	25.3 AV	54.0	-28.7	3.28 V	49	22.1	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	111.6 PK			1.47 H	359	112.8	-1.2
2	*2437.00	100.5 AV			1.47 H	359	101.7	-1.2
3	4874.00	39.9 PK	74.0	-34.1	1.04 H	333	36.6	3.3
4	4874.00	27.7 AV	54.0	-26.3	1.04 H	333	24.4	3.3
5	7311.00	46.2 PK	74.0	-27.8	1.04 H	328	36.4	9.8
6	7311.00	33.6 AV	54.0	-20.4	1.04 H	328	23.8	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	106.2 PK			3.24 V	73	107.4	-1.2
2	*2437.00	95.0 AV			3.24 V	73	96.2	-1.2
3	4874.00	38.1 PK	74.0	-35.9	3.23 V	62	34.8	3.3
4	4874.00	25.8 AV	54.0	-28.2	3.23 V	62	22.5	3.3
5	7311.00	51.5 PK	74.0	-22.5	3.22 V	323	41.7	9.8
6	7311.00	36.7 AV	54.0	-17.3	3.22 V	323	26.9	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	110.4 PK			1.22 H	338	111.5	-1.1
2	*2462.00	99.2 AV			1.22 H	338	100.3	-1.1
3	2483.50	73.7 PK	74.0	-0.3	1.22 H	338	74.7	-1.0
4	2483.50	51.3 AV	54.0	-2.7	1.22 H	338	52.3	-1.0
5	4924.00	39.8 PK	74.0	-34.2	1.06 H	330	36.3	3.5
6	4924.00	27.4 AV	54.0	-26.6	1.06 H	330	23.9	3.5
7	7386.00	46.4 PK	74.0	-27.6	1.06 H	337	36.5	9.9
8	7386.00	34.1 AV	54.0	-19.9	1.06 H	337	24.2	9.9

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	105.0 PK			3.23 V	41	106.1	-1.1
2	*2462.00	93.7 AV			3.23 V	41	94.8	-1.1
3	2483.50	70.6 PK	74.0	-3.4	3.23 V	41	71.6	-1.0
4	2483.50	48.2 AV	54.0	-5.8	3.23 V	41	49.2	-1.0
5	4924.00	38.2 PK	74.0	-35.8	3.23 V	57	34.7	3.5
6	4924.00	25.6 AV	54.0	-28.4	3.23 V	57	22.1	3.5
7	7386.00	52.0 PK	74.0	-22.0	3.24 V	316	42.1	9.9
8	7386.00	37.2 AV	54.0	-16.8	3.24 V	316	27.3	9.9

**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:**

**802.11g**

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 1GHz		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	150.01	26.9 QP	43.5	-16.6	2.50 H	95	35.1	-8.2
2	350.00	39.0 QP	46.0	-7.0	1.00 H	126	45.5	-6.5
3	400.01	35.6 QP	46.0	-10.4	1.00 H	62	40.8	-5.2
4	450.01	36.3 QP	46.0	-9.7	2.00 H	258	39.9	-3.6
5	500.01	37.4 QP	46.0	-8.6	2.00 H	103	40.2	-2.8
6	897.59	32.9 QP	46.0	-13.1	1.50 H	214	29.1	3.8

**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	50.03	29.2 QP	40.0	-10.8	1.00 V	133	37.3	-8.1
2	150.01	27.1 QP	43.5	-16.4	1.00 V	144	35.3	-8.2
3	250.02	32.2 QP	46.0	-13.8	2.50 V	360	41.6	-9.4
4	350.00	37.9 QP	46.0	-8.1	1.50 V	260	44.4	-6.5
5	500.01	34.1 QP	46.0	-11.9	2.00 V	188	36.9	-2.8
6	901.06	33.8 QP	46.0	-12.2	1.50 V	360	29.8	4.0

**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. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value



## 4.1.9 Test Results (Mode 3)

## Above 1GHz Data:

## 802.11b

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	57.5 PK	74.0	-16.5	2.18 H	18	58.8	-1.3
2	2390.00	43.7 AV	54.0	-10.3	2.18 H	18	45.0	-1.3
3	*2412.00	101.4 PK			2.18 H	18	102.5	-1.1
4	*2412.00	99.0 AV			2.18 H	18	100.1	-1.1
5	4824.00	43.9 PK	74.0	-30.1	2.03 H	58	40.7	3.2
6	4824.00	39.3 AV	54.0	-14.7	2.03 H	58	36.1	3.2

**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	56.5 PK	74.0	-17.5	1.58 V	327	57.8	-1.3
2	2390.00	42.9 AV	54.0	-11.1	1.58 V	327	44.2	-1.3
3	*2412.00	95.3 PK			1.58 V	327	96.4	-1.1
4	*2412.00	92.8 AV			1.58 V	327	93.9	-1.1
5	4824.00	42.9 PK	74.0	-31.1	1.75 V	360	39.7	3.2
6	4824.00	37.0 AV	54.0	-17.0	1.75 V	360	33.8	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	101.5 PK			1.94 H	17	102.7	-1.2
2	*2437.00	99.1 AV			1.94 H	17	100.3	-1.2
3	4874.00	44.3 PK	74.0	-29.7	2.07 H	65	41.0	3.3
4	4874.00	39.6 AV	54.0	-14.4	2.07 H	65	36.3	3.3
5	7311.00	46.2 PK	74.0	-27.8	2.07 H	64	36.4	9.8
6	7311.00	37.1 AV	54.0	-16.9	2.07 H	64	27.3	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	95.4 PK			1.52 V	318	96.6	-1.2
2	*2437.00	92.9 AV			1.52 V	318	94.1	-1.2
3	4874.00	43.1 PK	74.0	-30.9	1.73 V	352	39.8	3.3
4	4874.00	37.3 AV	54.0	-16.7	1.73 V	352	34.0	3.3
5	7311.00	48.5 PK	74.0	-25.5	1.64 V	331	38.7	9.8
6	7311.00	40.6 AV	54.0	-13.4	1.64 V	331	30.8	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	100.8 PK			2.28 H	35	101.9	-1.1
2	*2462.00	98.6 AV			2.28 H	35	99.7	-1.1
3	2483.50	58.2 PK	74.0	-15.8	2.28 H	35	59.2	-1.0
4	2483.50	44.0 AV	54.0	-10.0	2.28 H	35	45.0	-1.0
5	4924.00	44.0 PK	74.0	-30.0	2.02 H	55	40.5	3.5
6	4924.00	39.3 AV	54.0	-14.7	2.02 H	55	35.8	3.5
7	7386.00	46.3 PK	74.0	-27.7	2.07 H	59	36.4	9.9
8	7386.00	37.4 AV	54.0	-16.6	2.07 H	59	27.5	9.9

**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	94.7 PK			1.61 V	322	95.8	-1.1
2	*2462.00	92.4 AV			1.61 V	322	93.5	-1.1
3	2483.50	57.2 PK	74.0	-16.8	1.61 V	322	58.2	-1.0
4	2483.50	42.8 AV	54.0	-11.2	1.61 V	322	43.8	-1.0
5	4924.00	43.3 PK	74.0	-30.7	1.76 V	349	39.8	3.5
6	4924.00	37.6 AV	54.0	-16.4	1.76 V	349	34.1	3.5
7	7386.00	48.4 PK	74.0	-25.6	1.64 V	345	38.5	9.9
8	7386.00	40.7 AV	54.0	-13.3	1.64 V	345	30.8	9.9

**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**

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	67.6 PK	74.0	-6.4	2.17 H	17	68.9	-1.3
2	2390.00	48.5 AV	54.0	-5.5	2.17 H	17	49.8	-1.3
3	*2412.00	103.7 PK			2.17 H	17	104.8	-1.1
4	*2412.00	93.7 AV			2.17 H	17	94.8	-1.1
5	4824.00	42.0 PK	74.0	-32.0	2.08 H	71	38.8	3.2
6	4824.00	28.1 AV	54.0	-25.9	2.08 H	71	24.9	3.2

**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	66.6 PK	74.0	-7.4	1.61 V	314	67.9	-1.3
2	2390.00	47.3 AV	54.0	-6.7	1.61 V	314	48.6	-1.3
3	*2412.00	97.6 PK			1.61 V	314	98.7	-1.1
4	*2412.00	87.5 AV			1.61 V	314	88.6	-1.1
5	4824.00	39.8 PK	74.0	-34.2	1.79 V	336	36.6	3.2
6	4824.00	27.2 AV	54.0	-26.8	1.79 V	336	24.0	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	103.5 PK			2.28 H	35	104.7	-1.2
2	*2437.00	93.8 AV			2.28 H	35	95.0	-1.2
3	4874.00	42.3 PK	74.0	-31.7	2.06 H	55	39.0	3.3
4	4874.00	28.5 AV	54.0	-25.5	2.06 H	55	25.2	3.3
5	7311.00	47.2 PK	74.0	-26.8	2.08 H	53	37.4	9.8
6	7311.00	33.8 AV	54.0	-20.2	2.08 H	53	24.0	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	97.4 PK			1.61 V	301	98.6	-1.2
2	*2437.00	87.6 AV			1.61 V	301	88.8	-1.2
3	4874.00	40.1 PK	74.0	-33.9	1.75 V	339	36.8	3.3
4	4874.00	27.5 AV	54.0	-26.5	1.75 V	339	24.2	3.3
5	7311.00	49.1 PK	74.0	-24.9	1.66 V	325	39.3	9.8
6	7311.00	35.8 AV	54.0	-18.2	1.66 V	325	26.0	9.8

**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.

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.0 PK			2.28 H	35	104.1	-1.1
2	*2462.00	93.3 AV			2.28 H	35	94.4	-1.1
3	2483.50	65.3 PK	74.0	-8.7	2.28 H	35	66.3	-1.0
4	2483.50	48.0 AV	54.0	-6.0	2.28 H	35	49.0	-1.0
5	4924.00	42.5 PK	74.0	-31.5	2.07 H	43	39.0	3.5
6	4924.00	28.9 AV	54.0	-25.1	2.07 H	43	25.4	3.5
7	7386.00	47.1 PK	74.0	-26.9	2.04 H	68	37.2	9.9
8	7386.00	33.7 AV	54.0	-20.3	2.04 H	68	23.8	9.9

**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	96.9 PK			1.61 V	305	98.0	-1.1
2	*2462.00	87.1 AV			1.61 V	305	88.2	-1.1
3	2483.50	64.6 PK	74.0	-9.4	1.00 V	0	65.6	-1.0
4	2483.50	47.4 AV	54.0	-6.6	1.00 V	0	48.4	-1.0
5	4924.00	39.8 PK	74.0	-34.2	1.73 V	351	36.3	3.5
6	4924.00	27.1 AV	54.0	-26.9	1.73 V	351	23.6	3.5
7	7386.00	48.9 PK	74.0	-25.1	1.68 V	332	39.0	9.9
8	7386.00	35.6 AV	54.0	-18.4	1.68 V	332	25.7	9.9

**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)

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

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	2390.00	68.8 PK	74.0	-5.2	2.30 H	21	70.1	-1.3
2	2390.00	48.8 AV	54.0	-5.2	2.30 H	21	50.1	-1.3
3	*2412.00	104.7 PK			2.30 H	21	105.8	-1.1
4	*2412.00	93.1 AV			2.30 H	21	94.2	-1.1
5	4824.00	41.7 PK	74.0	-32.3	2.02 H	64	38.5	3.2
6	4824.00	28.2 AV	54.0	-25.8	2.02 H	64	25.0	3.2

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	67.7 PK	74.0	-6.3	1.57 V	300	69.0	-1.3
2	2390.00	47.6 AV	54.0	-6.4	1.57 V	300	48.9	-1.3
3	*2412.00	98.6 PK			1.57 V	300	99.7	-1.1
4	*2412.00	86.9 AV			1.57 V	300	88.0	-1.1
5	4824.00	39.8 PK	74.0	-34.2	1.72 V	352	36.6	3.2
6	4824.00	27.4 AV	54.0	-26.6	1.72 V	352	24.2	3.2

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

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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	104.5 PK			2.30 H	49	105.7	-1.2
2	*2437.00	93.0 AV			2.30 H	49	94.2	-1.2
3	4874.00	42.3 PK	74.0	-31.7	2.10 H	68	39.0	3.3
4	4874.00	28.4 AV	54.0	-25.6	2.10 H	68	25.1	3.3
5	7311.00	47.4 PK	74.0	-26.6	2.05 H	55	37.6	9.8
6	7311.00	34.3 AV	54.0	-19.7	2.05 H	55	24.5	9.8

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2437.00	98.4 PK			1.60 V	309	99.6	-1.2
2	*2437.00	86.8 AV			1.60 V	309	88.0	-1.2
3	4874.00	39.9 PK	74.0	-34.1	1.72 V	351	36.6	3.3
4	4874.00	27.1 AV	54.0	-26.9	1.72 V	351	23.8	3.3
5	7311.00	48.6 PK	74.0	-25.4	1.73 V	335	38.8	9.8
6	7311.00	35.6 AV	54.0	-18.4	1.73 V	335	25.8	9.8

**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.



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

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*2462.00	103.8 PK			2.28 H	36	104.9	-1.1
2	*2462.00	92.4 AV			2.28 H	36	93.5	-1.1
<b>3</b>	<b>2483.50</b>	<b>68.9 PK</b>	<b>74.0</b>	<b>-5.1</b>	<b>2.28 H</b>	<b>36</b>	<b>69.9</b>	<b>-1.0</b>
4	2483.50	48.7 AV	54.0	-5.3	2.28 H	36	49.7	-1.0
5	4924.00	41.9 PK	74.0	-32.1	2.11 H	67	38.4	3.5
6	4924.00	28.2 AV	54.0	-25.8	2.11 H	67	24.7	3.5
7	7386.00	46.9 PK	74.0	-27.1	2.09 H	42	37.0	9.9
8	7386.00	33.5 AV	54.0	-20.5	2.09 H	42	23.6	9.9

**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	97.7 PK			1.52 V	295	98.8	-1.1
2	*2462.00	86.2 AV			1.52 V	295	87.3	-1.1
3	2483.50	67.8 PK	74.0	-6.2	1.52 V	295	68.8	-1.0
4	2483.50	47.5 AV	54.0	-6.5	1.52 V	295	48.5	-1.0
5	4924.00	39.8 PK	74.0	-34.2	1.72 V	360	36.3	3.5
6	4924.00	26.9 AV	54.0	-27.1	1.72 V	360	23.4	3.5
7	7386.00	48.8 PK	74.0	-25.2	1.66 V	340	38.9	9.9
8	7386.00	35.4 AV	54.0	-18.6	1.66 V	340	25.5	9.9

**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:

802.11g

<b>CHANNEL</b>	TX Channel 1	<b>DETECTOR FUNCTION</b>	Quasi-Peak (QP)
<b>FREQUENCY RANGE</b>	9kHz ~ 1GHz		

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	58.74	25.5 QP	40.0	-14.5	1.00 H	224	33.8	-8.3
2	300.00	36.5 QP	46.0	-9.5	1.00 H	27	44.1	-7.6
3	350.00	31.8 QP	46.0	-14.2	1.50 H	360	38.3	-6.5
4	450.01	30.7 QP	46.0	-15.3	2.00 H	13	34.3	-3.6
5	750.01	33.6 QP	46.0	-12.4	1.00 H	360	31.4	2.2
6	897.42	30.5 QP	46.0	-15.5	1.00 H	150	26.7	3.8

**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	50.01	33.1 QP	40.0	-6.9	1.00 V	196	41.2	-8.1
2	300.00	30.5 QP	46.0	-15.5	1.00 V	290	38.1	-7.6
3	350.00	29.1 QP	46.0	-16.9	1.50 V	294	35.6	-6.5
4	600.02	29.6 QP	46.0	-16.4	1.00 V	206	30.0	-0.4
5	750.03	31.2 QP	46.0	-14.8	1.50 V	163	29.0	2.2
6	900.87	30.2 QP	46.0	-15.8	1.00 V	2	26.3	3.9

**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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 24, 2016	Oct. 23, 2017
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 26, 2016	Oct. 25, 2017
Line-Impedance Stabilization Network (for Peripheral) R&S	ENV216	100072	June 03, 2017	June 02, 2018
50 ohms Terminator	N/A	EMC-02	Sep. 29, 2016	Sep. 28, 2017
RF Cable	5D-FB	COCCAB-001	Sep. 30, 2016	Sep. 29, 2017
10 dB PAD Mini-Circuits	HAT-10+	CONATT-004	June 18, 2017	June 17, 2018
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 Shielded Room No. 1.
3. Tested Date: Sep. 16, 2017

#### 4.2.3 Test Procedures

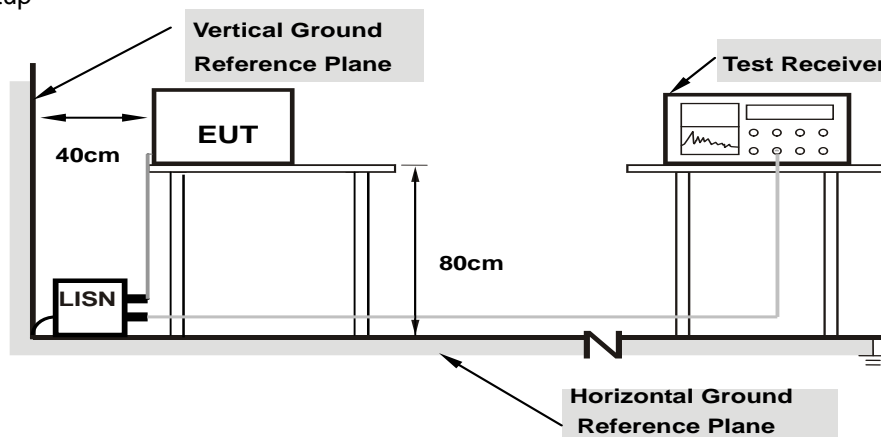
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

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

#### 4.2.4 Deviation from Test Standard

No deviation.

#### 4.2.5 Test Setup



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

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

#### 4.2.6 EUT Operating Conditions

Same as 4.1.6.

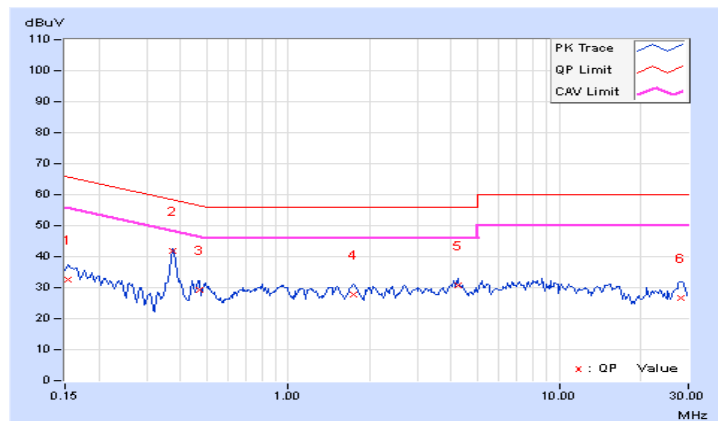
#### 4.2.7 Test Results

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.08	22.50	13.30	32.58	23.38	65.79	55.79	-33.21	-32.41
<b>2</b>	<b>0.37656</b>	<b>10.11</b>	<b>31.61</b>	<b>30.08</b>	<b>41.72</b>	<b>40.19</b>	<b>58.35</b>	<b>48.35</b>	<b>-16.63</b>	<b>-8.16</b>
3	0.47031	10.12	19.05	10.91	29.17	21.03	56.51	46.51	-27.34	-25.48
4	1.74609	10.17	17.74	11.94	27.91	22.11	56.00	46.00	-28.09	-23.89
5	4.21875	10.38	20.29	12.85	30.67	23.23	56.00	46.00	-25.33	-22.77
6	28.09766	11.71	14.95	5.01	26.66	16.72	60.00	50.00	-33.34	-33.28

#### REMARKS:

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

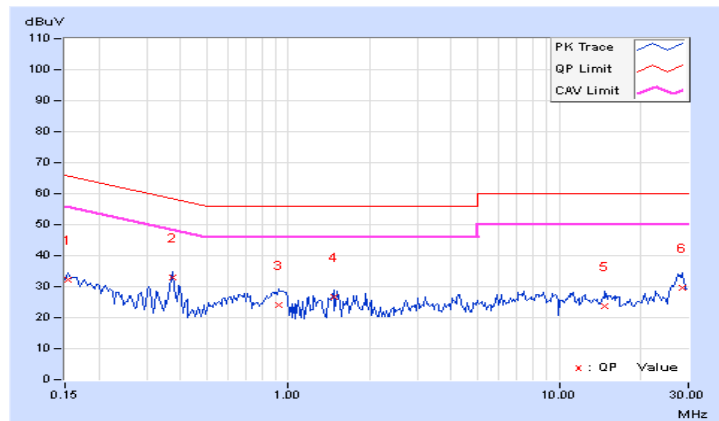


Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
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No	Freq. [MHz]	Corr.	Reading Value		Emission Level		Limit		Margin	
		Factor (dB)	[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.15391	10.07	22.09	8.33	32.16	18.40	65.79	55.79	-33.63	-37.39
2	0.37266	10.11	22.79	15.75	32.90	25.86	58.44	48.44	-25.54	-22.58
3	0.92344	10.12	13.86	3.68	23.98	13.80	56.00	46.00	-32.02	-32.20
4	1.48047	10.16	16.56	5.68	26.72	15.84	56.00	46.00	-29.28	-30.16
5	14.75000	10.98	12.85	4.78	23.83	15.76	60.00	50.00	-36.17	-34.24
6	28.39063	11.29	18.25	7.04	29.54	18.33	60.00	50.00	-30.46	-31.67

#### REMARKS:

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

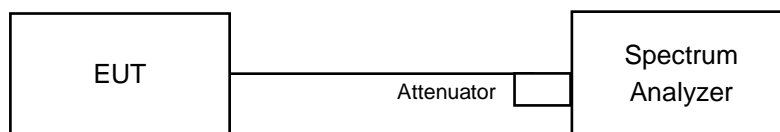


### 4.3 6dB Bandwidth Measurement

#### 4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 Test Setup



#### 4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

#### 4.3.4 Test Procedure

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

#### 4.3.5 Deviation from Test Standard

No deviation.

#### 4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

#### 4.3.7 Test Result

##### 802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	9.07	0.5	PASS
6	2437	8.61	0.5	PASS
11	2462	9.09	0.5	PASS

##### 802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	16.38	0.5	PASS
6	2437	16.39	0.5	PASS
11	2462	16.35	0.5	PASS

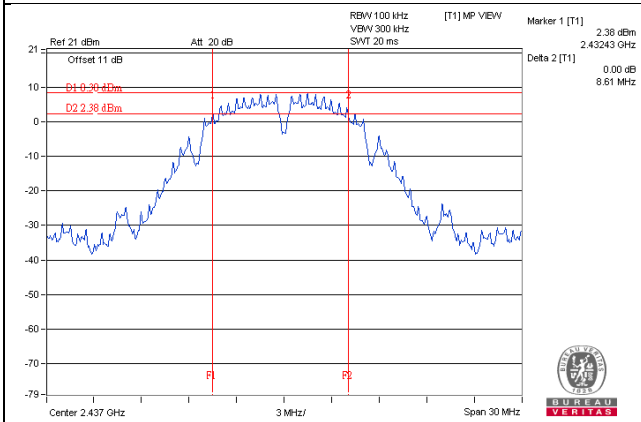
##### 802.11n (HT20)

Channel	Frequency (MHz)	6dB Bandwidth (MHz)	Minimum Limit (MHz)	Pass / Fail
1	2412	17.14	0.5	Pass
6	2437	17.10	0.5	Pass
11	2462	17.36	0.5	Pass

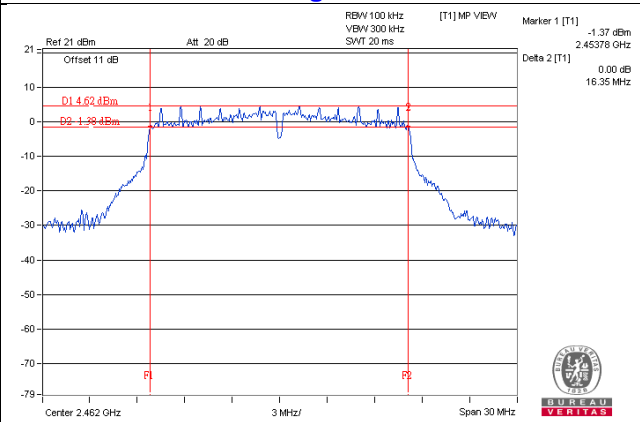


### Spectrum Plot of Worst Value

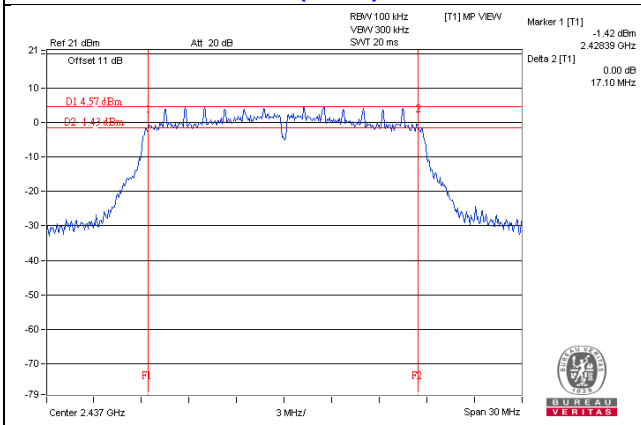
#### 802.11b / CH6



#### 802.11g / CH11



#### 802.11n (HT20) / CH6

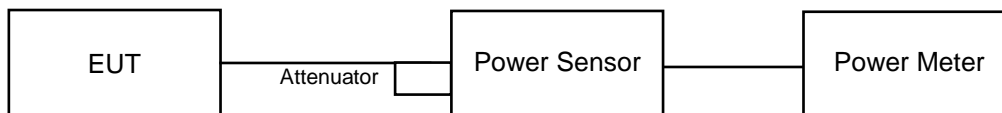


## 4.4 Conducted Output Power Measurement

### 4.4.1 Limits of Conducted Output Power Measurement

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

### 4.4.2 Test Setup



### 4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.4 Test Procedures

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

#### FOR PEAK POWER

##### 802.11b

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	109.901	20.41	30	Pass
6	2437	112.72	20.52	30	Pass
11	2462	111.429	20.47	30	Pass

##### 802.11g

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	296.483	24.72	30	Pass
6	2437	295.121	24.70	30	Pass
11	2462	293.765	24.68	30	Pass

##### 802.11n (HT20)

Channel	Frequency (MHz)	Peak Power (mW)	Peak Power (dBm)	Limit (dBm)	Pass/Fail
1	2412	262.422	24.19	30	Pass
6	2437	258.821	24.13	30	Pass
11	2462	128.529	21.09	30	Pass

## FOR AVERAGE POWER

### 802.11b

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	57.28	17.58
6	2437	56.624	17.53
11	2462	56.494	17.52

### 802.11g

Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	46.989	16.72
6	2437	46.881	16.71
11	2462	46.774	16.70

### 802.11n (HT20)

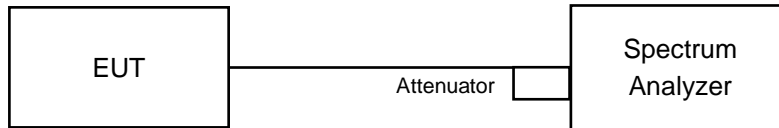
Channel	Frequency (MHz)	Average Power (mW)	Average Power (dBm)
1	2412	42.462	16.28
6	2437	42.17	16.25
11	2462	41.687	16.20

## 4.5 Power Spectral Density Measurement

### 4.5.1 Limits of Power Spectral Density Measurement

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

### 4.5.2 Test Setup



### 4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.5.4 Test Procedure

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

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Condition

Same as Item 4.3.6

#### 4.5.7 Test Results

##### 802.11b

Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-6.07	8	Pass
6	2437	-6.33	8	Pass
11	2462	-6.39	8	Pass

##### 802.11g

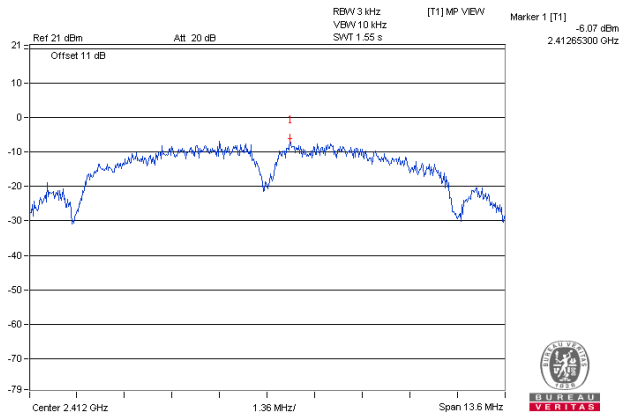
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-9.74	8	Pass
6	2437	-8.24	8	Pass
11	2462	-8.23	8	Pass

##### 802.11n (HT20)

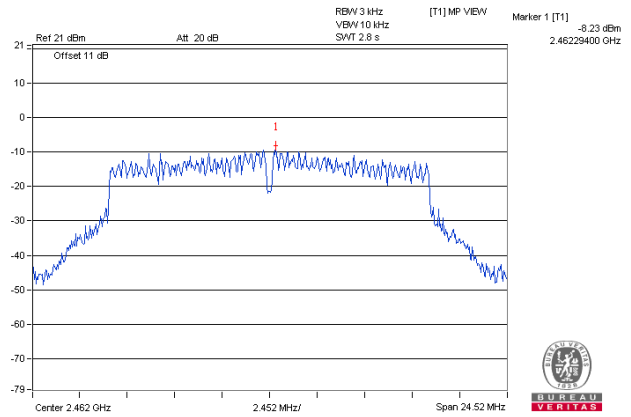
Channel	Freq. (MHz)	PSD (dBm/3kHz)	Limit (dBm/3kHz)	Pass /Fail
1	2412	-9.65	8	Pass
6	2437	-8.97	8	Pass
11	2462	-9.09	8	Pass

### Spectrum Plot of Worst Value

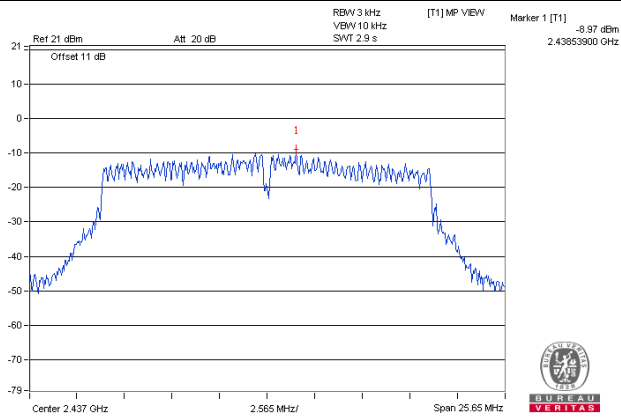
#### 802.11b / CH1



#### 802.11g / CH11



#### 802.11n (HT20) / CH6

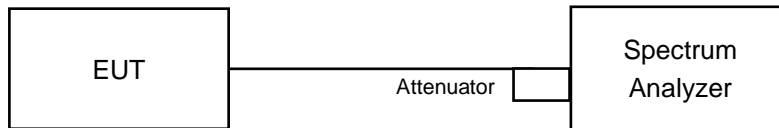


## 4.6 Conducted Out of Band Emission Measurement

### 4.6.1 Limits of Conducted Out of Band Emission Measurement

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

### 4.6.2 Test Setup



### 4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.6.4 Test Procedure

#### MEASUREMENT PROCEDURE REF

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

#### MEASUREMENT PROCEDURE OOB

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

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

Same as Item 4.3.6

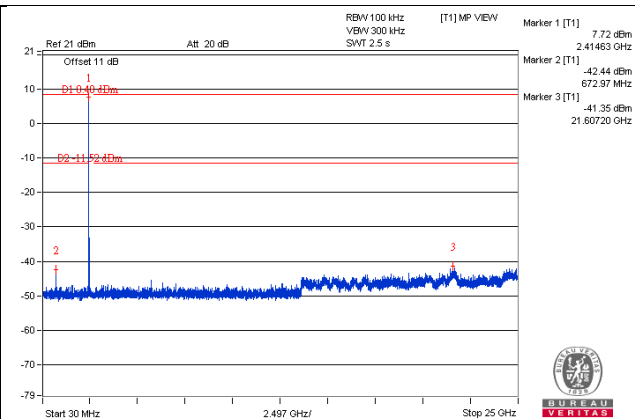
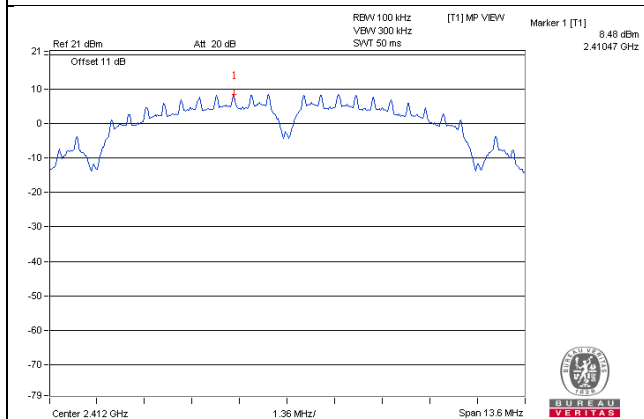
### 4.6.7 Test Results

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

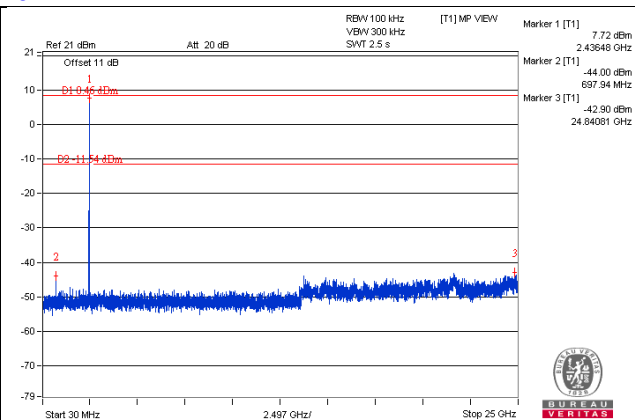
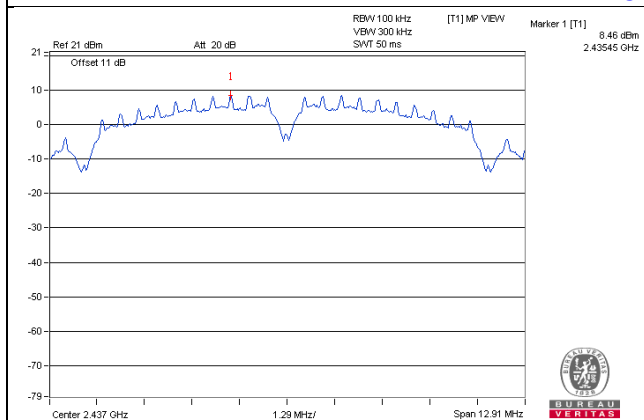


802.11b

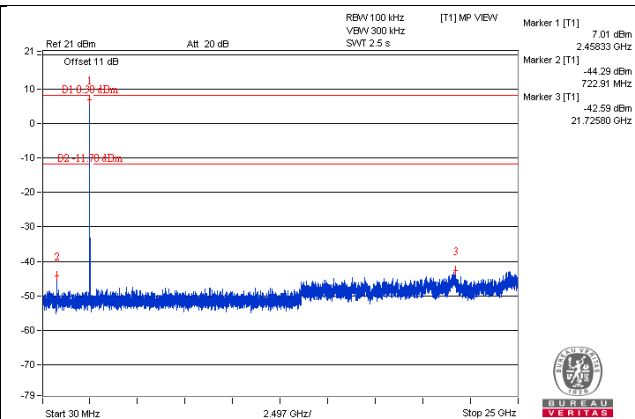
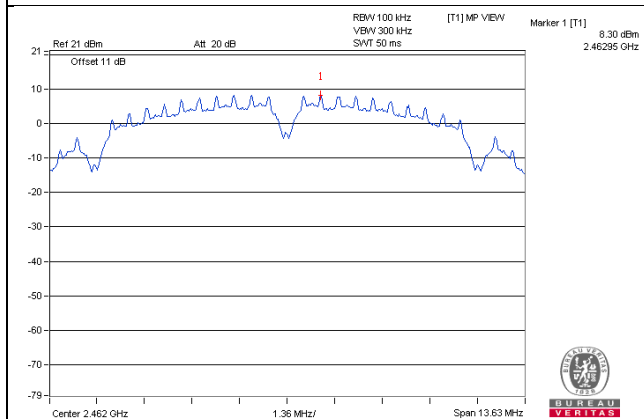
CH 1



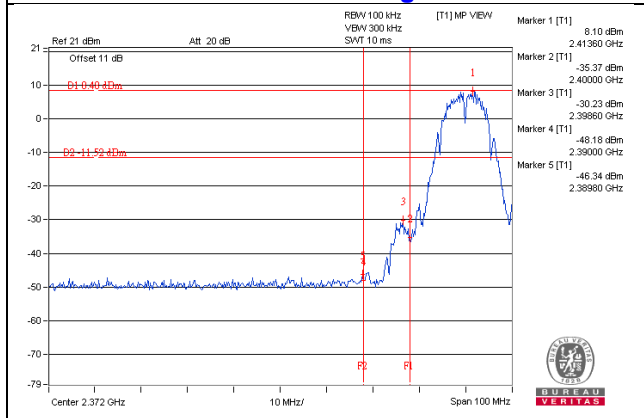
CH 6



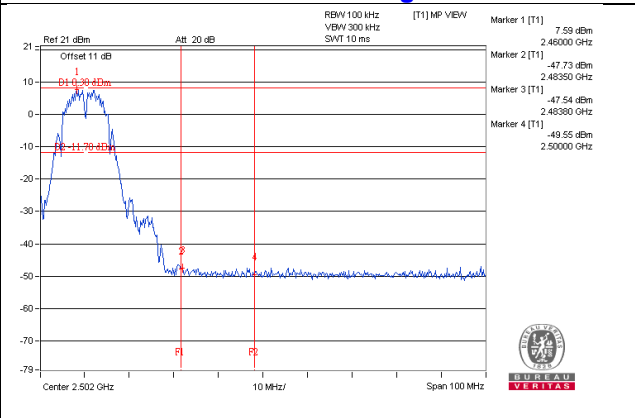
CH 11



CH 1 Band edge

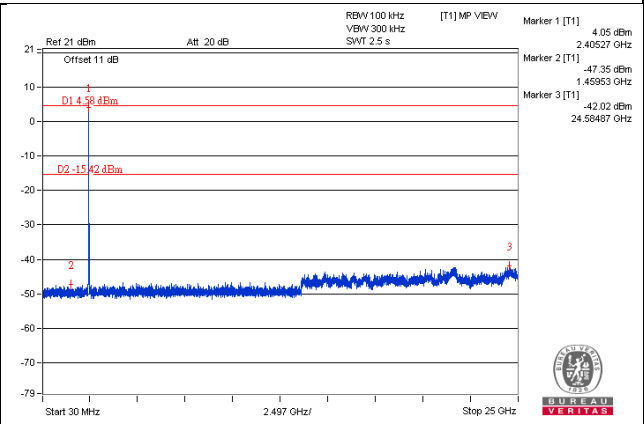
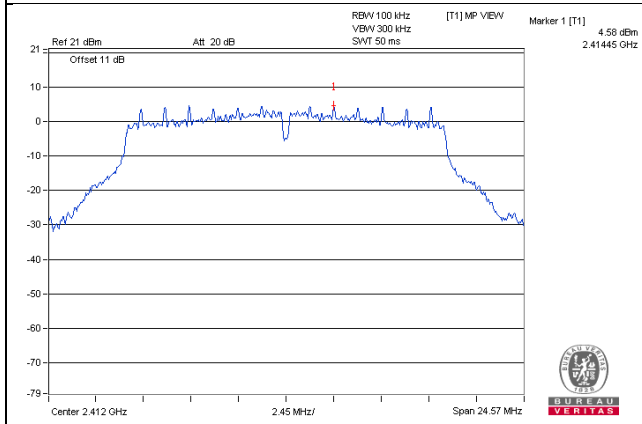


CH 11 Band edge

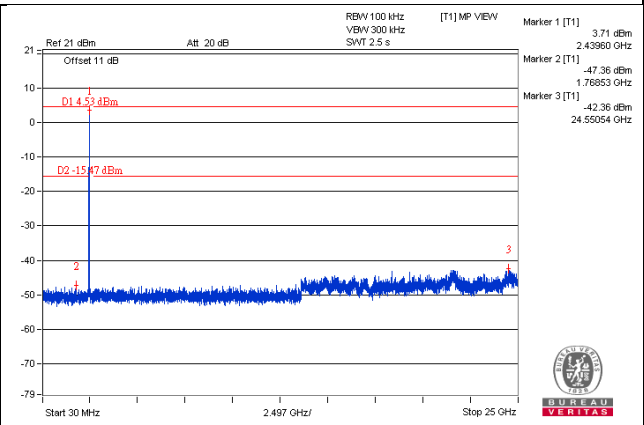
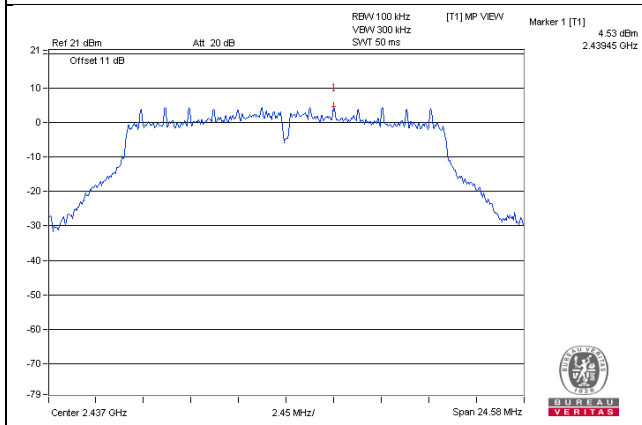


# 802.11g

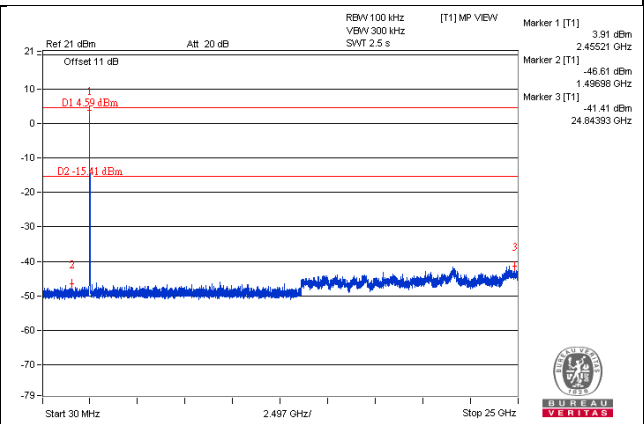
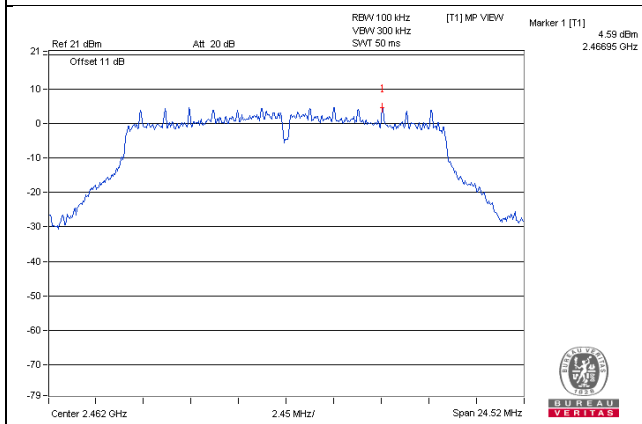
## CH 1



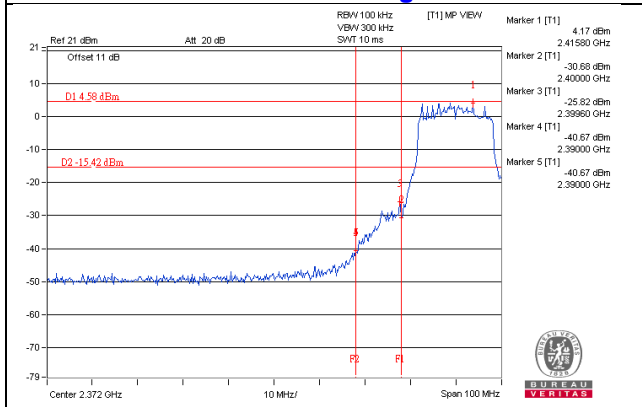
## CH 6



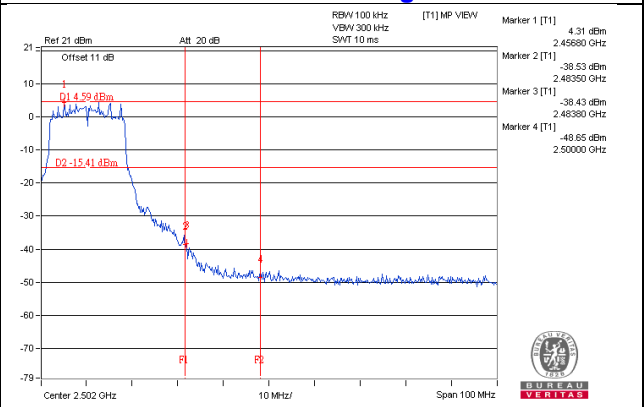
## CH 11



### CH 1 Band edge

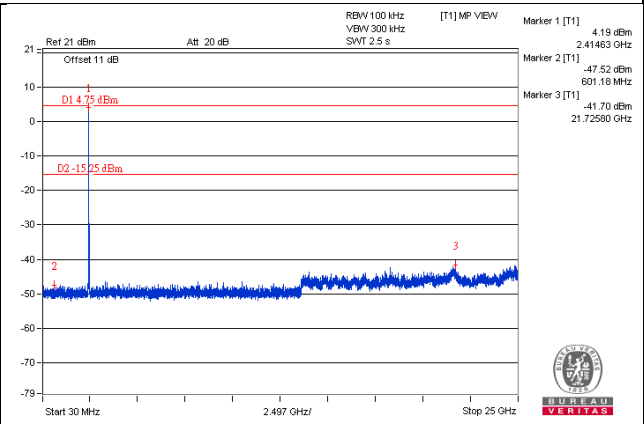
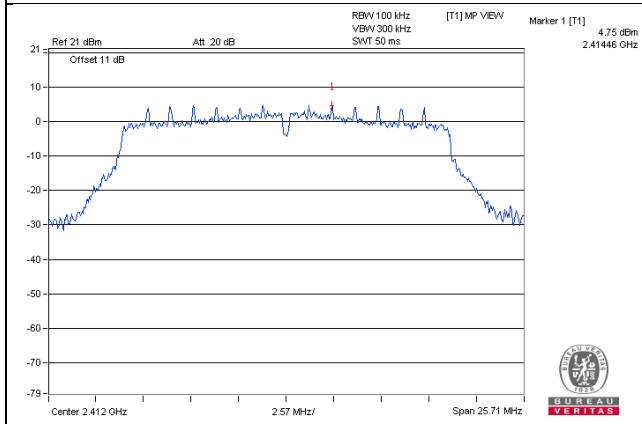


### CH 11 Band edge

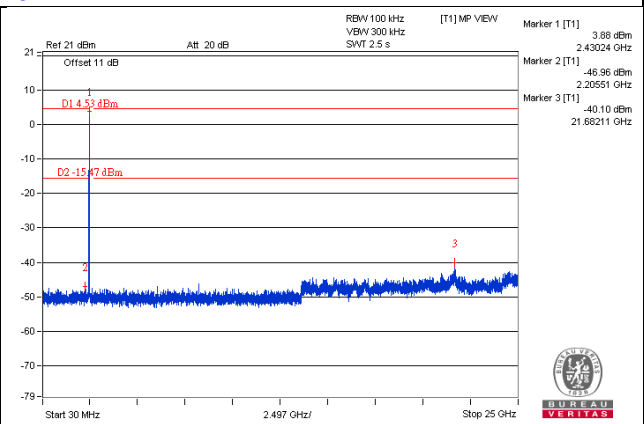
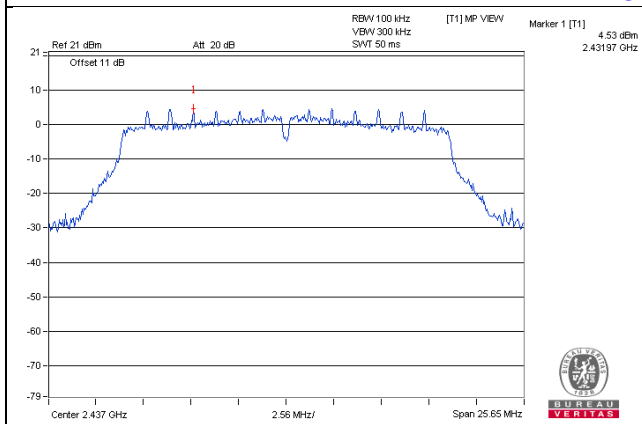


# 802.11n (HT20)

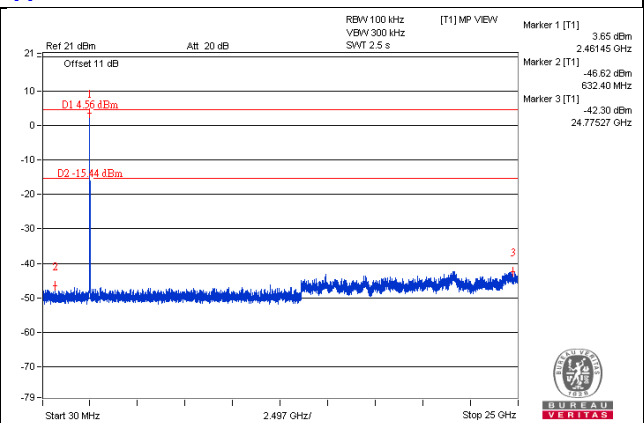
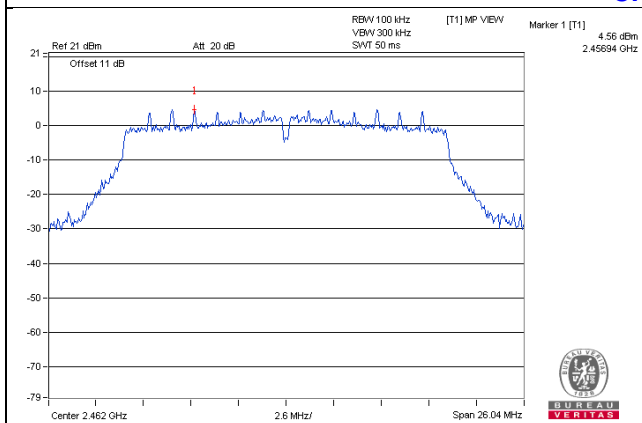
## CH 1



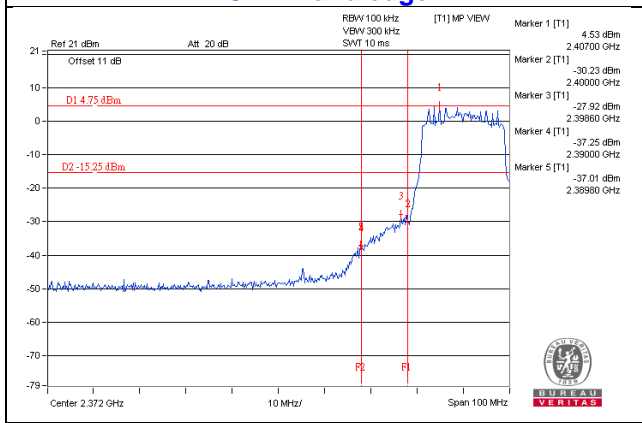
## CH 6



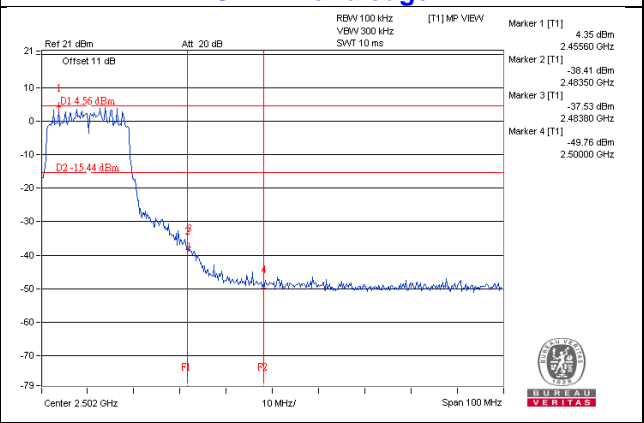
## CH 11



## CH 1 Band edge



## CH 11 Band edge



## 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 FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

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

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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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