



Shenzhen Huatongwei International Inspection Co., Ltd.

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## TEST REPORT

**Report Reference No.....**: TRE1607020501      **R/C.....**: 19566

**FCC ID.....**: 2AJE3TM101

**Applicant's name.....**: Tmax Digital, Inc.

**Address.....**: 4401 Eucalyptus Ave., #120, Chino, CA 91710, USA

**Manufacturer.....**: Shenzhen Alldocube technology and science Co., Ltd.

**Address.....**: Building No.1, Suwang Industrial Park, Xiahenglang Dalang, Longhua District, Shenzhen, China.

**Test item description .....**: Tablet PC

**Trade Mark .....**: NUVISION

**Model/Type reference.....**: TM101W625L

**Listed Model(s) .....**: VT4-HD

**Standard .....**: FCC CFR Title 47 Part 15 Subpart C Section 15.247

**Date of receipt of test sample.....**: Jul.29, 2016

**Date of testing.....**: Jul.30, 2016- Aug.15, 2016

**Date of issue.....**: Aug.16, 2016

**Result.....**: PASS

Compiled by  
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*Jeff Sun*

Approved by  
(position+printedname+signature)....: RF Manager Hans Hu

*Hans Hu*

**Testing Laboratory Name .....**: Shenzhen Huatongwei International Inspection Co., Ltd.

**Address.....**: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China

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*The test report merely corresponds to the test sample.*

*It is not permitted to copy extracts of these test result without the written permission of the test laboratory.*

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## **1. APPLICABLE STANDARDS AND TEST DESCRIPTION**

### **1.1. Applicable Standards**

The tests were performed according to following standards:

[FCC Rules Part 15.247](#): Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

[ANSI C63.10-2013](#): American National Standard for Testing Unlicensed Wireless Devices

[KDB 558074 D01 DTS Meas Guidance v03r05](#): Guidance for Performing Compliance Measurements on Digital Transmission Systems (DTS) Operating under § 15.247

### **1.2. Test Description**

Test Item	Section in CFR 47	Result
Antenna requirement	15.203/15.247 (c)	Pass
Line Conducted Emission (AC Main)	15.207	Pass
Conducted Peak Output Power	15.247 (b)(3)	Pass
Power Spectral Density	15.247 (e)	Pass
6dB Bandwidth	15.247 (a)(2)	Pass
Restricted band	15.247(d)/15.205	Pass
Spurious Emission	15.247(d)/15.209	Pass

Remark: The measurement uncertainty is not included in the test result.

## 2. SUMMARY

### 2.1. Client Information

Applicant:	Tmax Digital, Inc.
Address:	4401 Eucalyptus Ave., #120,Chino, CA 91710,USA
Manufacturer:	Shenzhen Alldocube technolgy and science Co.,Ltd.
Address:	Building No.1,Suwang Industrial Park,Xiahenglang Dalang,Longhua District,Shenzhen,China.

### 2.2. Product Description

Name of EUT	Tablet PC
Trade Mark:	NUVISION
Model No.:	TM101W625L
Listed Model(s):	VT4-HD
Power supply:	DC 3.7V From internal battery
Adapter information :	Model:FJ-SW1260502000UU Input: AC 100-240V 50/60Hz 0.4A Max Output: 5Vd.c., 2000mA
Hardware version:	-
Software version:	-
<b>WIFI</b>	
Supported type:	802.11b/802.11g/802.11n(H20)/802.11n(H40)
Modulation:	802.11b: DSSS 802.11g/802.11n(H20)/802.11n(H40):OFDM
Operation frequency:	802.11b/802.11g/802.11n(H20): 2412MHz~2462MHz 802.11n(H40): 2422MHz~2452MHz
Channel number:	802.11b/802.11g/802.11n(H20): 11 802.11n(H40): 7
Channel separation:	5MHz
Antenna type:	FPC
Antenna gain:	2.2 dBi

### 2.3. Operation state

#### ◆ Test frequency list

According to section 15.31(m), regards to the operating frequency range over 10 MHz, must select three channel which were tested. the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, please see the above gray bottom.

Channel	Frequency (MHz)
01	2412
02	2417
03	2422
04	2427
05	2432
06	2437
07	2442
08	2447
09	2452
10	2457
11	2462

#### ◆ Test mode

For RF test items:

the engineering test program was provided and enabled to make EUT continuous transmit/receive.

For AC power line conducted emissions:

the EUT was set to connect with the WLAN AP under large package sizes transmission.

### 2.4. EUT configuration

**The following peripheral devices and interface cables were connected during the measurement:**

- - supplied by the manufacturer
- - supplied by the lab

<input type="radio"/>	PowerCable	Length (m) :	/
		Shield :	/
		Detachable :	/
<input type="radio"/>	Multimeter	Manufacturer :	/
		Model No. :	/

### 2.5. Modifications

No modifications were implemented to meet testing criteria.

### **3. TEST ENVIRONMENT**

#### **3.1. Address of the test laboratory**

Laboratory: Shenzhen Huatongwei International Inspection Co., Ltd.  
Address: 1/F, Bldg 3, Hongfa Hi-tech Industrial Park, Genyu Road, Tianliao, Gongming, Shenzhen, China  
Phone: 86-755-26748019 Fax: 86-755-26748089

#### **3.2. Test Facility**

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L1225**

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: February 28, 2015. Valid time is until February 27, 2018.

##### **A2LA-Lab Cert. No. 3902.01**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until December 31, 2016.

##### **FCC-Registration No.: 317478**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration 317478, Renewal date Jul. 18, 2014, valid time is until Jul. 18, 2017.

##### **IC-Registration No.: 5377A&5377B**

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Dec. 31, 2013, valid time is until Dec. 31, 2016.

Two 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377B on Dec.03, 2014, valid time is until Dec.03, 2017.

##### **ACA**

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

##### **VCCI**

Radiated disturbance above 1GHz measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2013. Valid time is until Dec. 23, 2016.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2013. Valid time is until May 06, 2016.

##### **DNV**

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2016.

### 3.3. Equipments Used during the Test

Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Compliance of RF Emission / Spurious RF Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal
1	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2015/11/02
2	Climate Chamber	ESPEC	EL-10KA	05107008	2015/11/02
3	Test cable	Junkosha Inc.	J12J102248	JUL-06-14-016	2015/12/05
4	Temporary antenna connector	/	/	/	/

NOTE: The temporary antenna connector is soldered on the PCB board in order to perform conducted tests and this temporary antenna connector is listed in the equipment list.

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2015/11/02
2	RF TEST PANEL	Rohde&Schwarz	TS / RSP	335015/ 0017	N/A
3	EMI TEST SOFTWARE	Rohde&Schwarz	ESK1	N/A	N/A
4	Ultra-Broadband Antenna	ShwarzBeck	VULB9163	538	2015/11/08
5	HORN ANTENNA	ShwarzBeck	9120D	1011	2015/11/08
6	Loop Antenna	Rohde&Schwarz	HZ-9	838622\013	2015/11/08
7	Pre-amplifier	SCHWARZBECK	BBV 9743	9743-0022	2015/11/02
8	TURNTABLE	MATURO	TT2.0	----	N/A
9	ANTENNA MAST	MATURO	TAM-4.0-P	----	N/A
10	EMI TEST SOFTWARE	Audix	E3	N/A	N/A
11	Test cable	Siva Cables Italy	RG 58A/U	W14.02	2015/12/05

The Cal.Interval was one year

### 3.4. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35°C
Relative Humidity:	30~60 %
Air Pressure:	950~1050mba

### 3.5. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to TR-100028-01 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 1" and TR-100028-02 "Electromagnetic compatibility and Radio spectrum Matters (ERM); Uncertainties in the measurement of mobile radio equipment characteristics; Part 2" and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-40 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-40 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emissio 1~18GHz	5.16 dB	(1)
Radiated Emissio 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	-----	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

## 4. **TEST CONDITIONS AND RESULTS**

### 4.1. Antenna requirement

#### Requirement

##### **FCC CFR Title 47 Part 15 Subpart C Section 15.203:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

#### Test Result:

The antenna is FPC antenna, the best case gain of the antenna is 2.2dBi



## 4.2. Conducted Emission (AC Main)

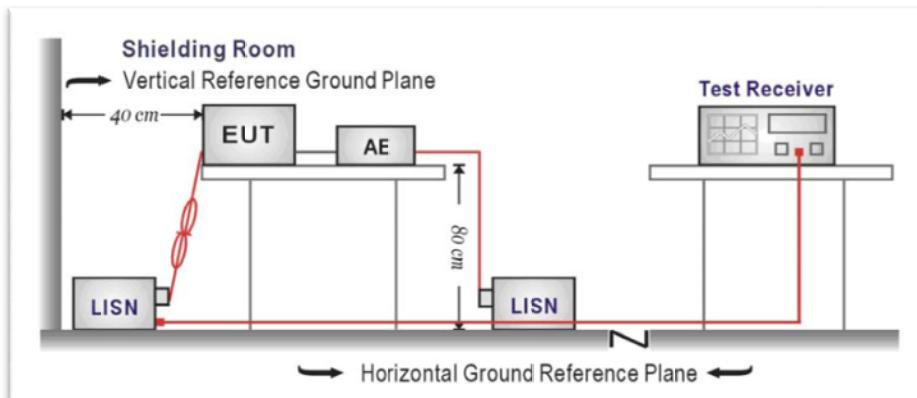
### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.207:

Frequency range (MHz)	Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

\* Decreases with the logarithm of the frequency.

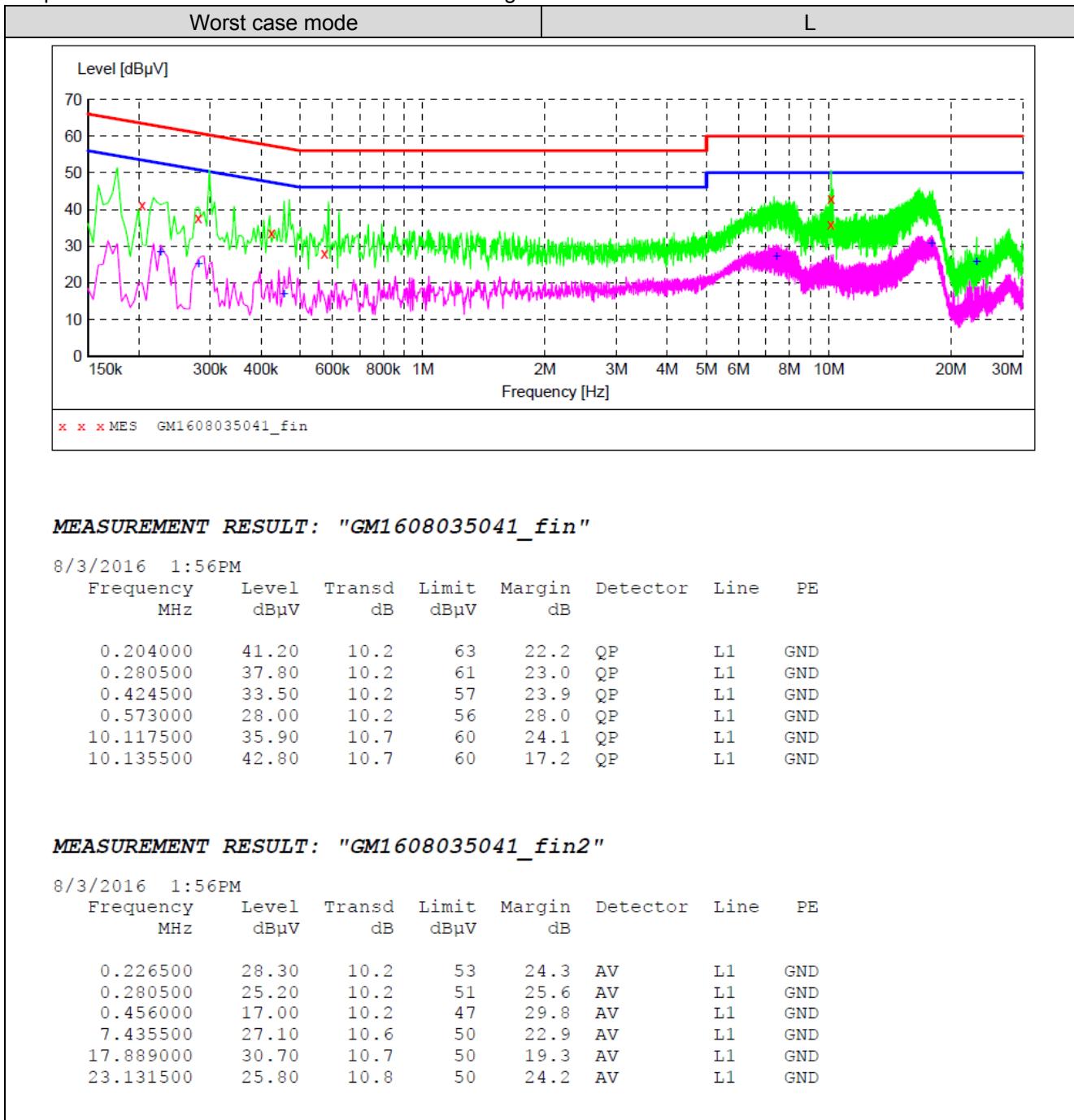
### TEST CONFIGURATION

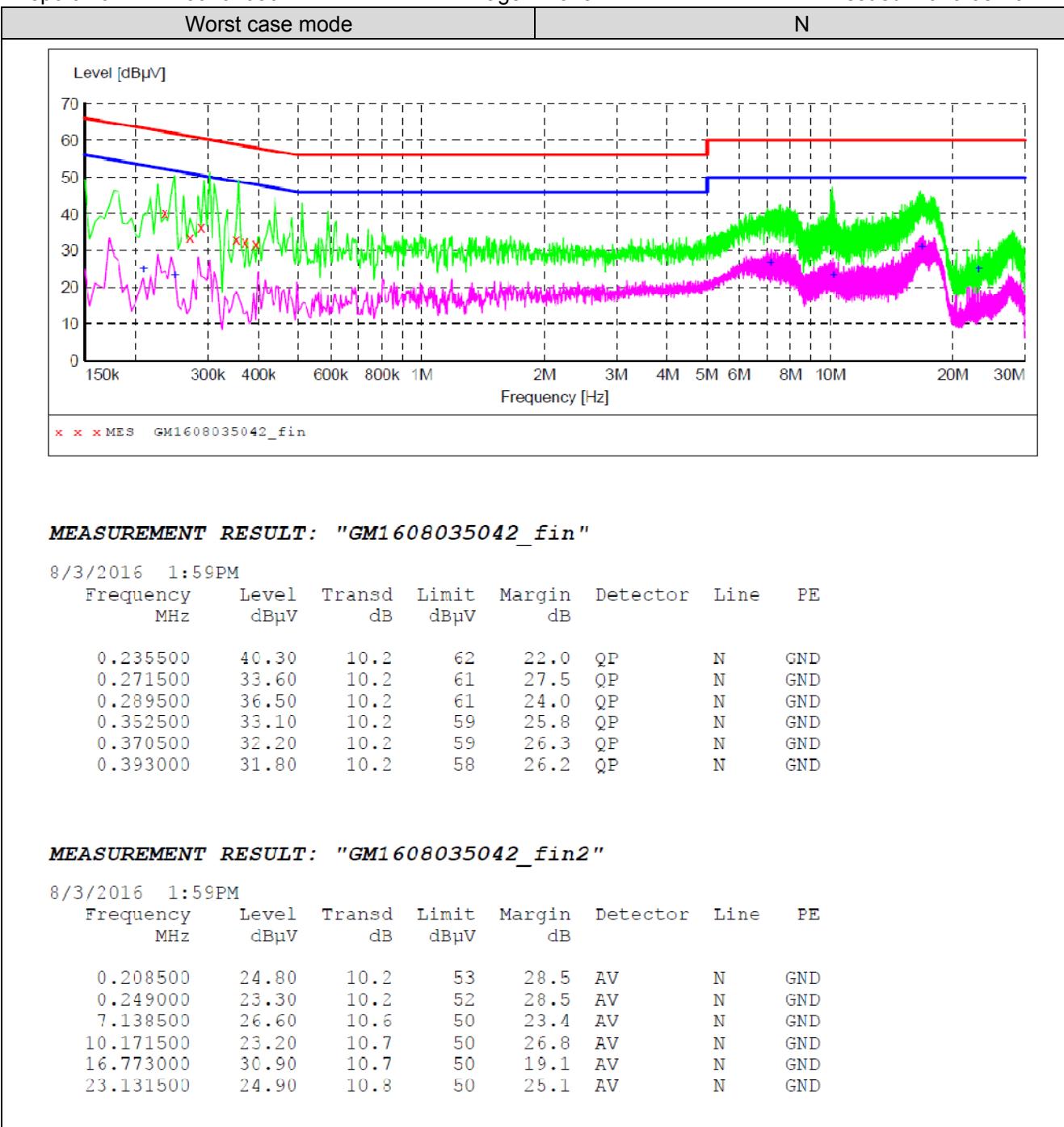


### TEST PROCEDURE

1. The EUT was setup according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conductive surface.
3. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN). The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment.
4. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs)
5. Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.
6. The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.
7. Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9 kHz.
8. During the above scans, the emissions were maximized by cable manipulation.

### TEST RESULTS



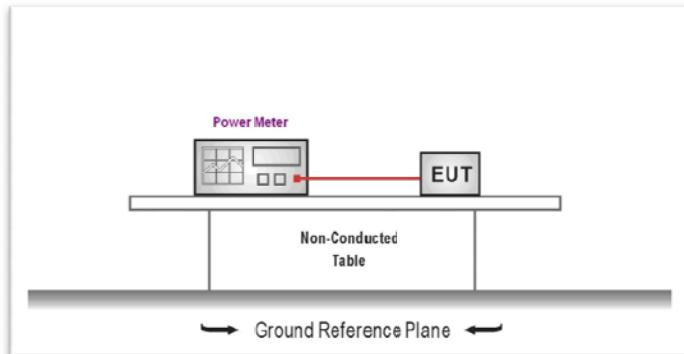


### 4.3. Conducted Peak Output Power

#### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (b)(3): **30dBm**:

#### TEST CONFIGURATION



#### TEST PROCEDURE

1. The EUT was tested according to ANSI C63.10: 2013 and KDB 558074 D01 for compliance to FCC 47CFR 15.247 requirements.
2. The maximum peak conducted output power may be measured using a broadband peak RF power meter.
3. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector
4. Record the measurement data.

#### TEST RESULTS

Type	Channel	Output power (dBm)	Limit (dBm)	Result
802.11b	01	9.12	30.00	Pass
	06	9.24		
	11	9.70		
802.11g	01	7.24	30.00	Pass
	06	7.48		
	11	7.37		
802.11n(H20)	01	6.38	30.00	Pass
	06	6.85		
	11	7.01		
802.11n(H40)	03	5.99	30.00	Pass
	06	5.50		
	09	5.86		

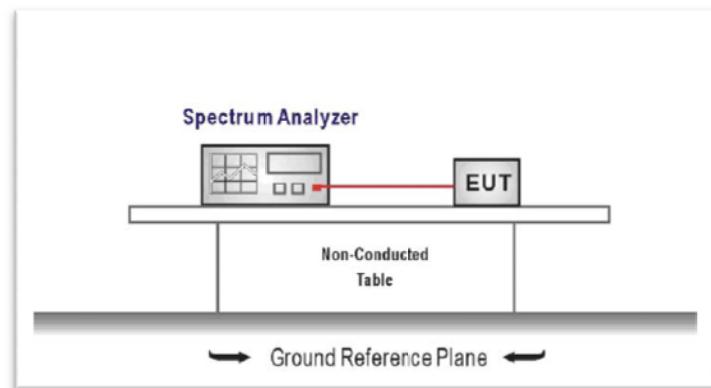
## 4.4. Power Spectral Density

### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (e):

*For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.*

### TEST CONFIGURATION



### TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input,
2. Configure the spectrum analyzer as shown below:  
*Center frequency=DTS channel center frequency  
Span =1.5 times the DTS bandwidth  
RBW = 3 kHz ≤ RBW ≤ 100 kHz, VBW ≥ 3 × RBW  
Sweep time = auto couple  
Detector = peak  
Trace mode = max hold*
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Use the peak marker function to determine the maximum amplitude level within the RBW.
5. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

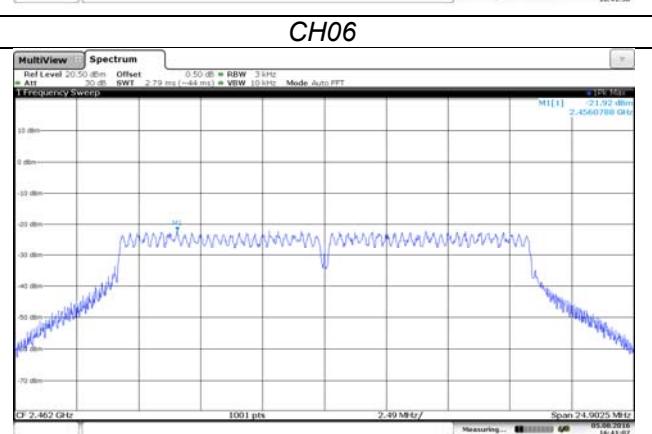
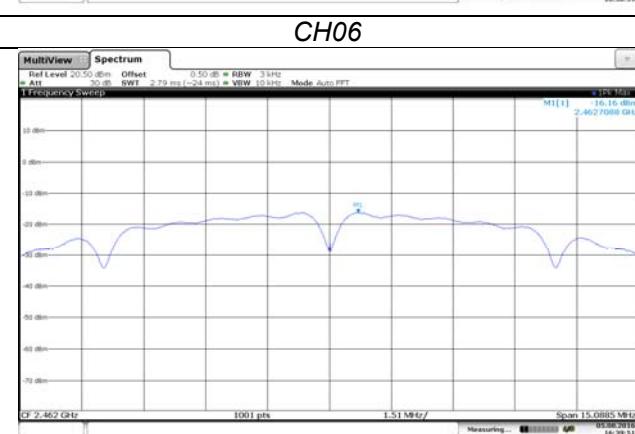
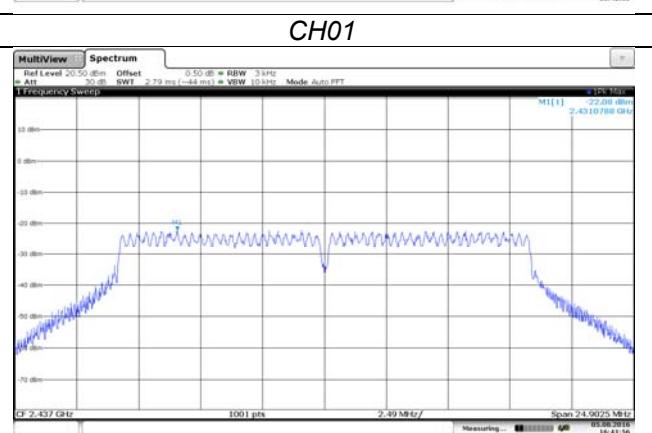
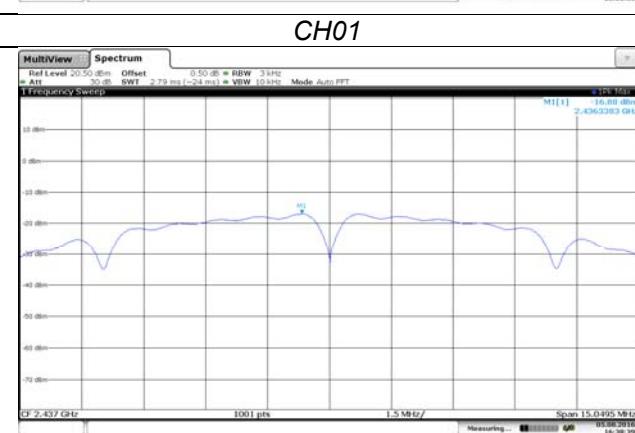
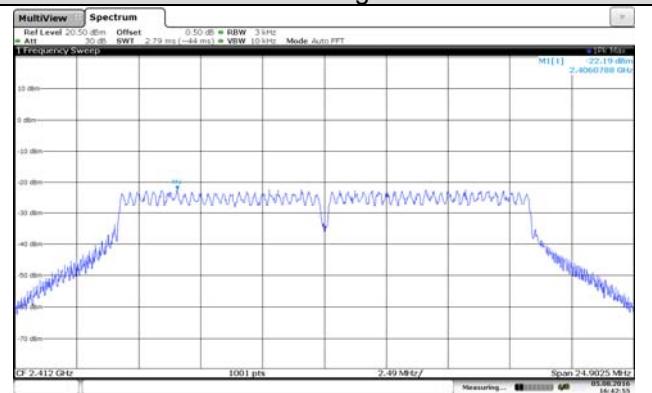
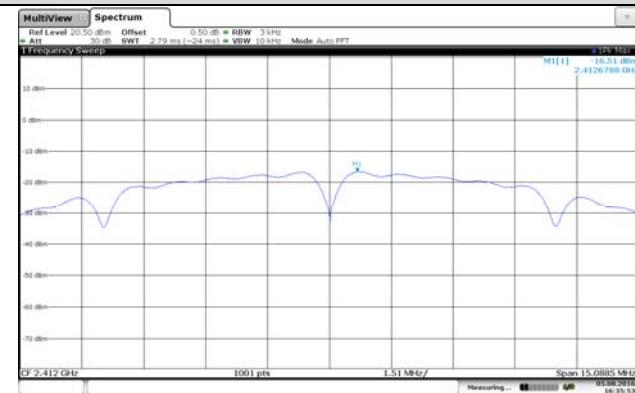
### TEST RESULTS

Type	Channel	Power Spectral Density(dBm/3KHz)	Limit (dBm/3KHz)	Result
802.11b	01	-16.51	8.00	Pass
	06	-16.88		
	11	-16.16		
802.11g	01	-22.19	8.00	Pass
	06	-22.08		
	11	-21.92		
802.11n(H20)	01	-22.90	8.00	Pass
	06	-22.73		
	11	-22.51		
802.11n(H40)	03	-25.31	8.00	Pass
	06	-24.92		
	09	-24.64		

Test plot as follows:

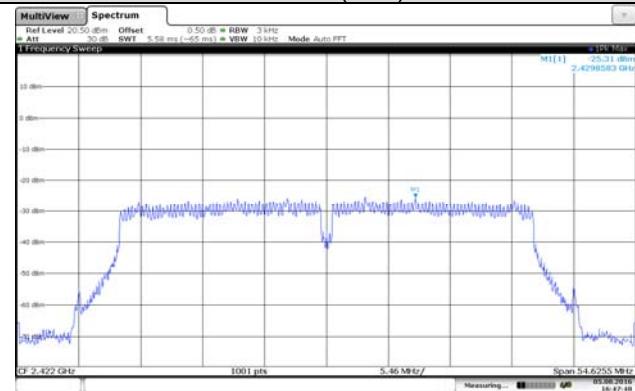
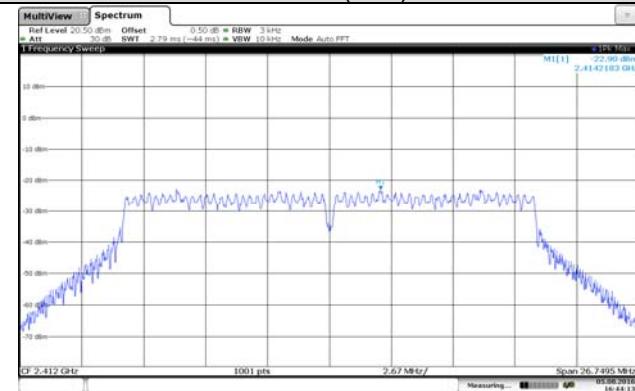
802.11b

802.11g

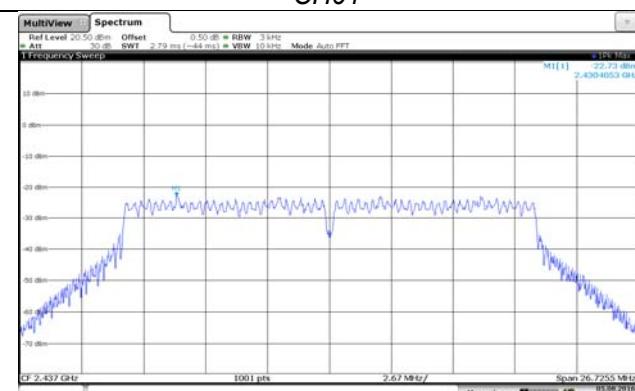


802.11n(H20)

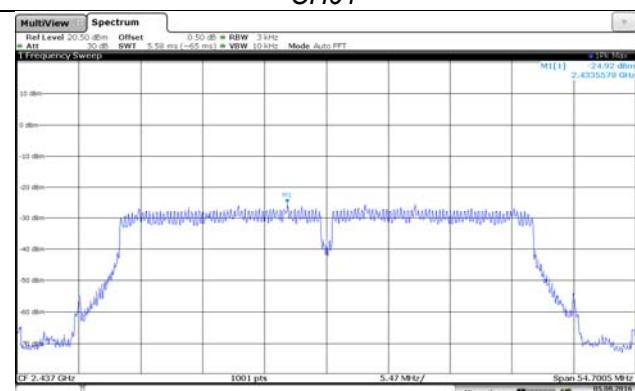
802.11n(H40)



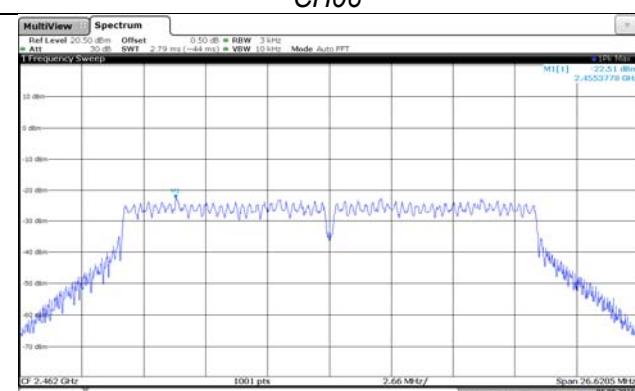
CH01



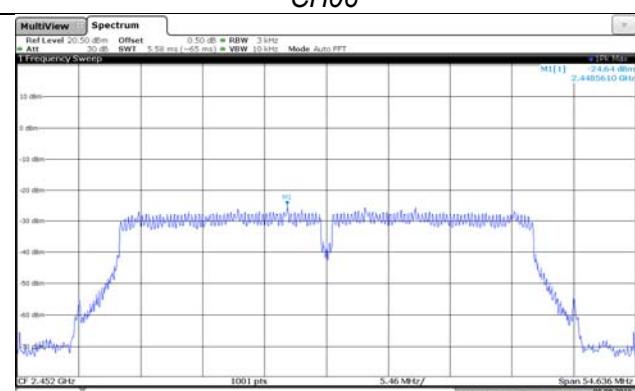
CH01



CH06



CH06



CH11

CH09

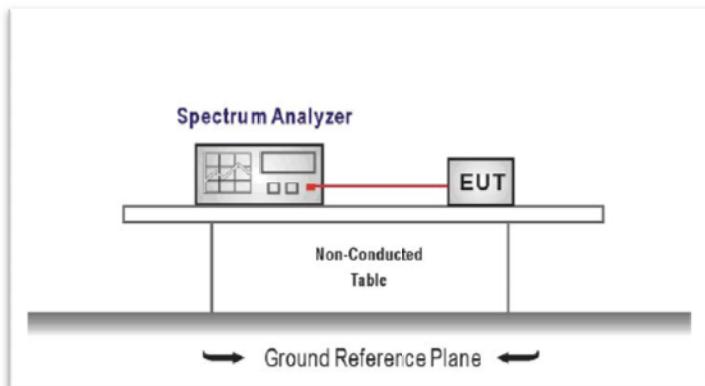
## 4.5. 6dB bandwidth

### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (a)(2):

*For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.*

### TEST CONFIGURATION



### TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. Configure the spectrum analyzer as shown below (enter all losses between the transmitter output and the spectrum analyzer).
 

*Center Frequency = DTS channel center frequency  
 Span=2 x DTS bandwidth  
 RBW = 100 kHz, VBW  $\geq 3 \times RBW$   
 Sweep time= auto couple  
 Detector = Peak  
 Trace mode = max hold*
3. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission, and record the pertinent measurements.

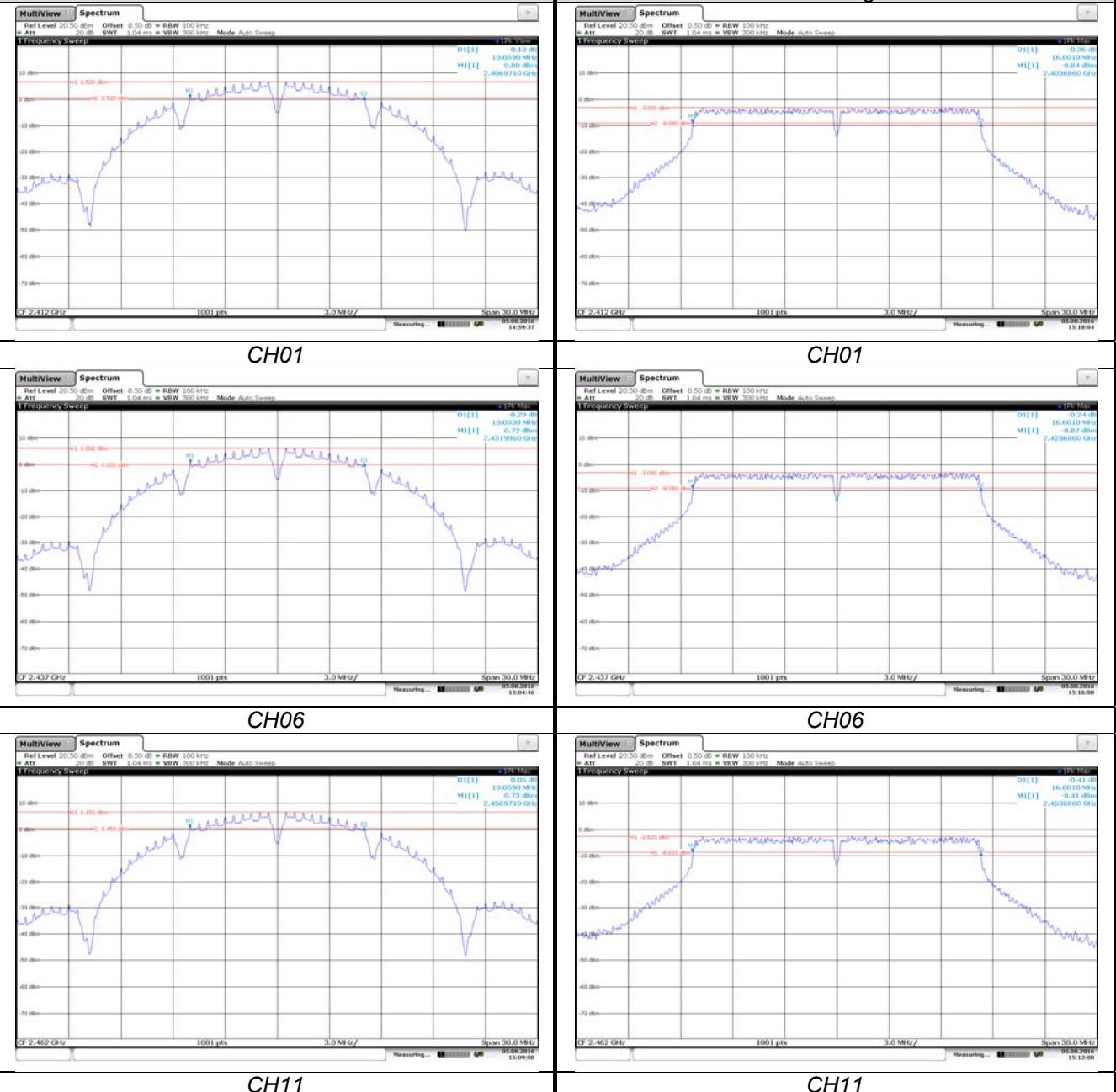
### TEST RESULTS

Type	Channel	6dB Bandwidth (MHz)	Limit (KHz)	Result
802.11b	01	10.06	≥500	Pass
	06	10.03		
	11	10.06		
802.11g	01	16.60	≥500	Pass
	06	16.60		
	11	16.60		
802.11n(H20)	01	17.83	≥500	Pass
	06	17.82		
	11	17.75		
802.11n(H40)	03	36.42	≥500	Pass
	06	36.47		
	09	36.42		

Test plot as follows:

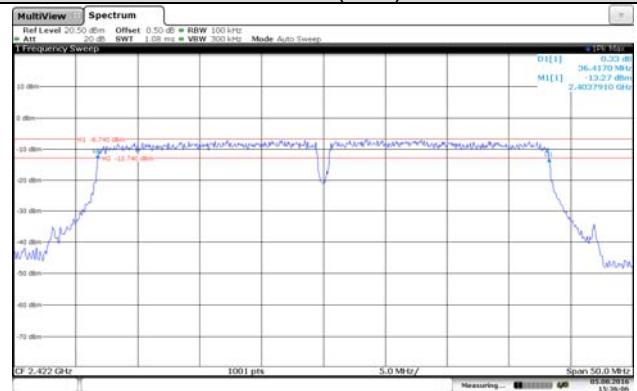
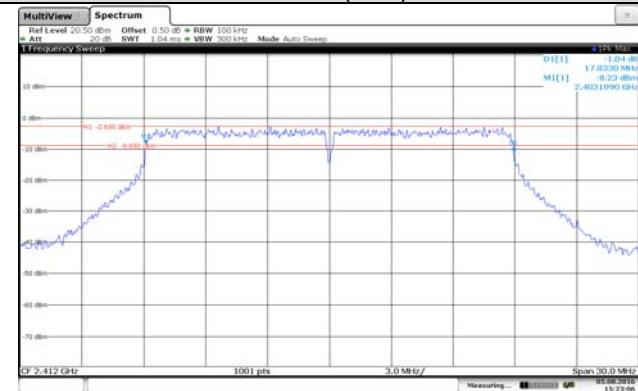
802.11b

802.11g

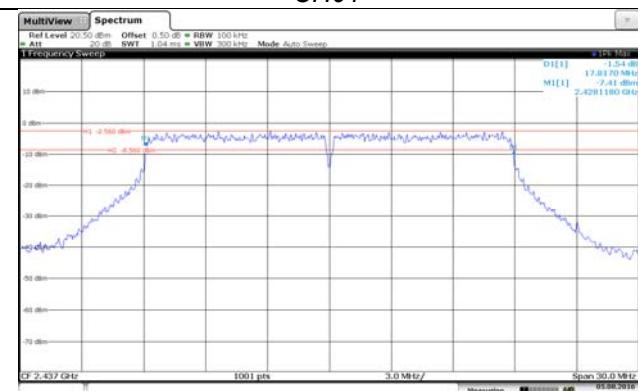


802.11n(H20)

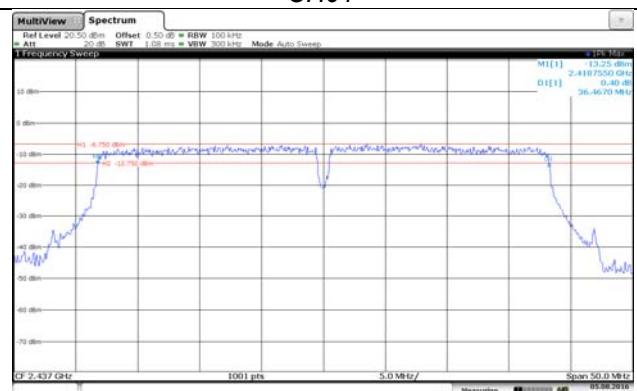
802.11n(H40)



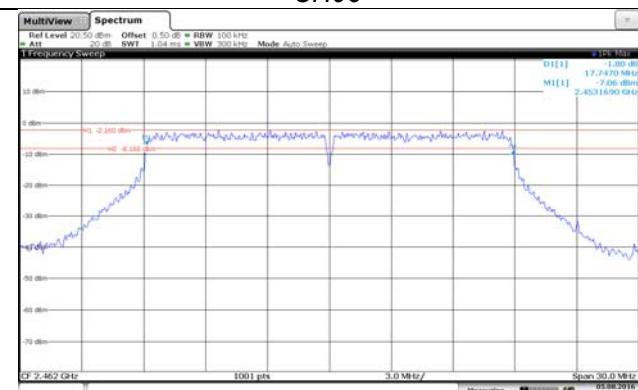
CH01



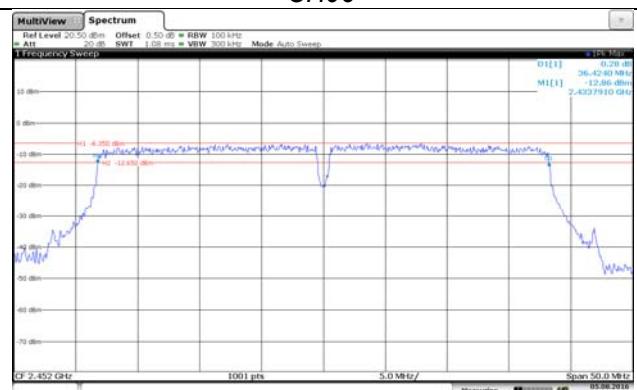
CH01



CH06



CH06



CH11

CH09

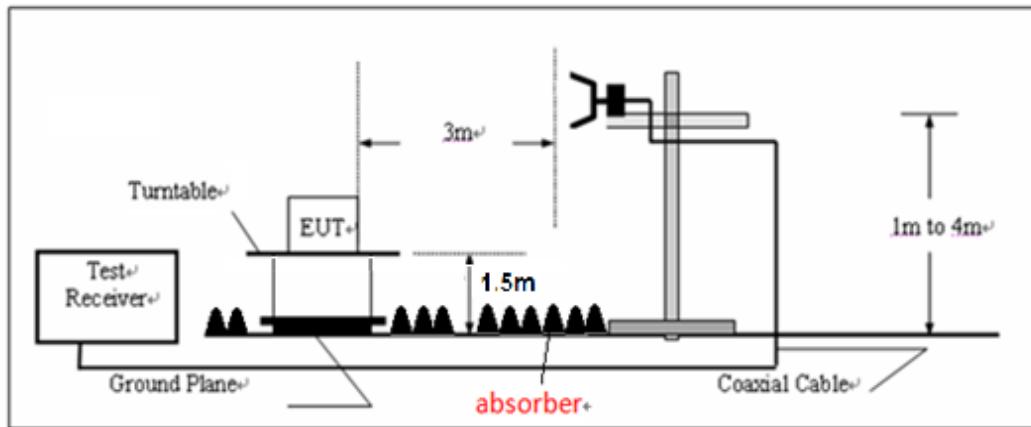
## 4.6. Restricted band

### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.247 (d)::

*In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).*

### TEST CONFIGURATION

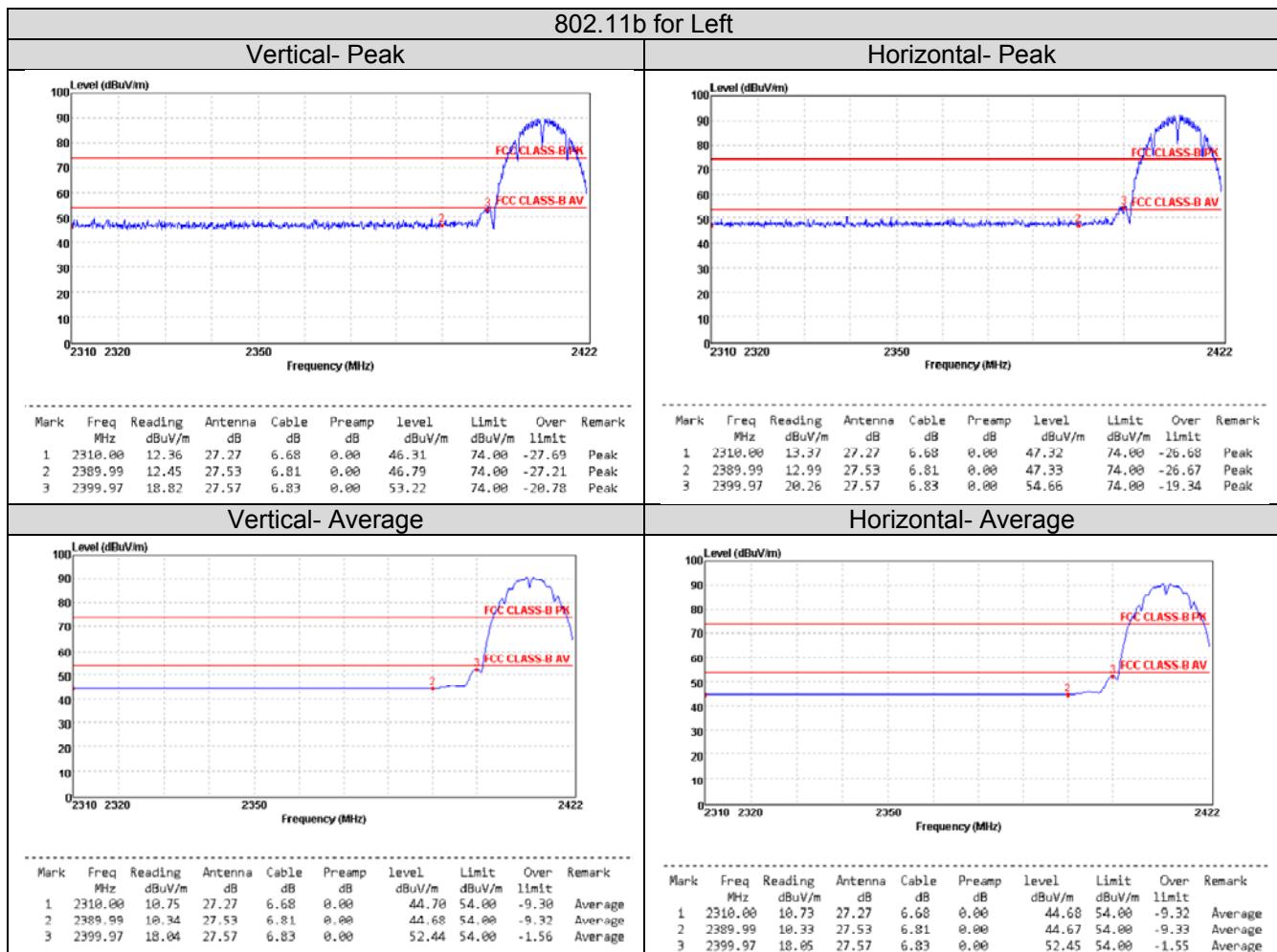


### TEST PROCEDURE

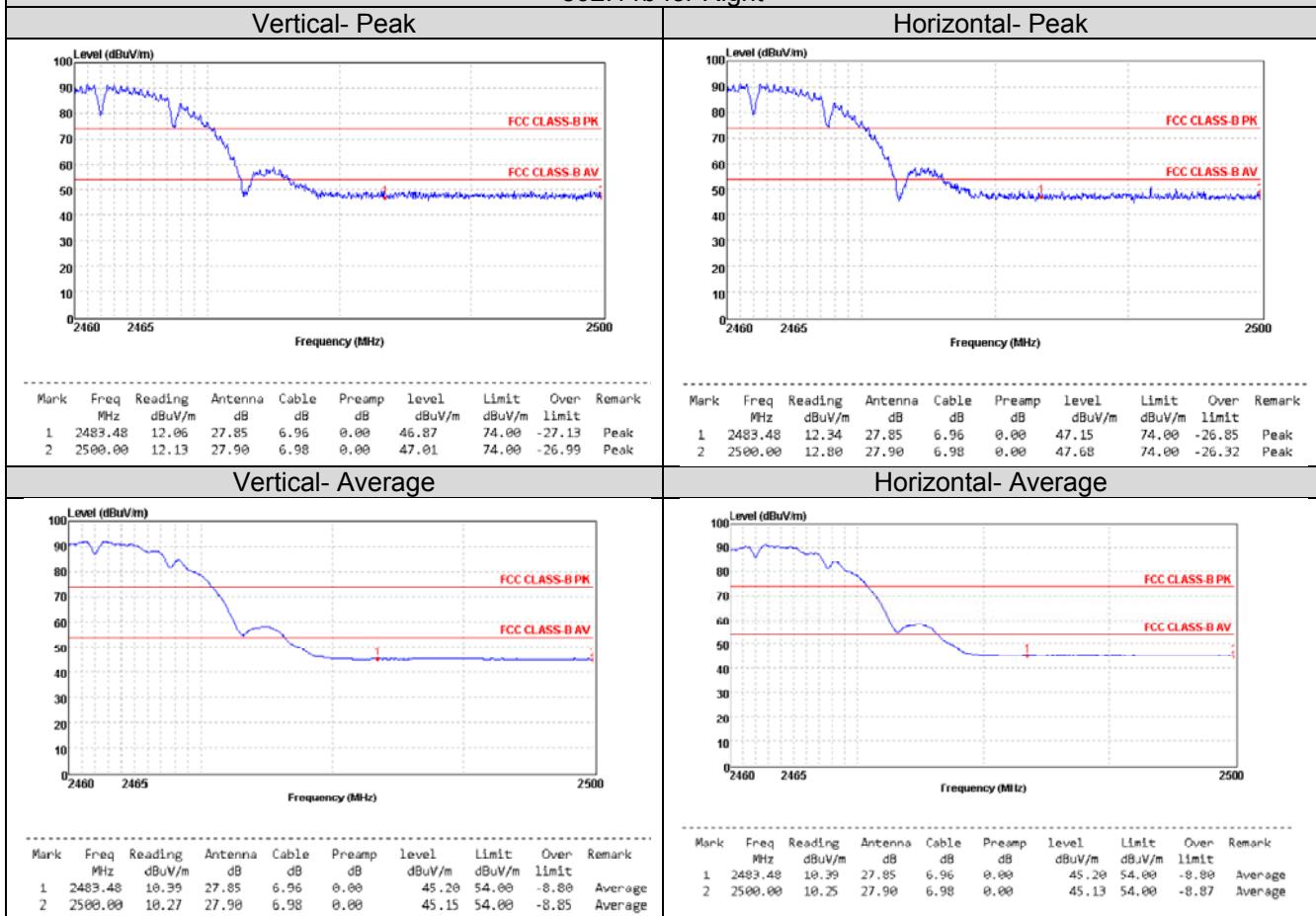
1. The EUT was setup and tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT waspositioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find themaximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.
5. The receiver set as follow:  
RBW=1MHz, VBW=3MHz for Peak value  
RBW=1MHz, VBW=10Hz for Average value.

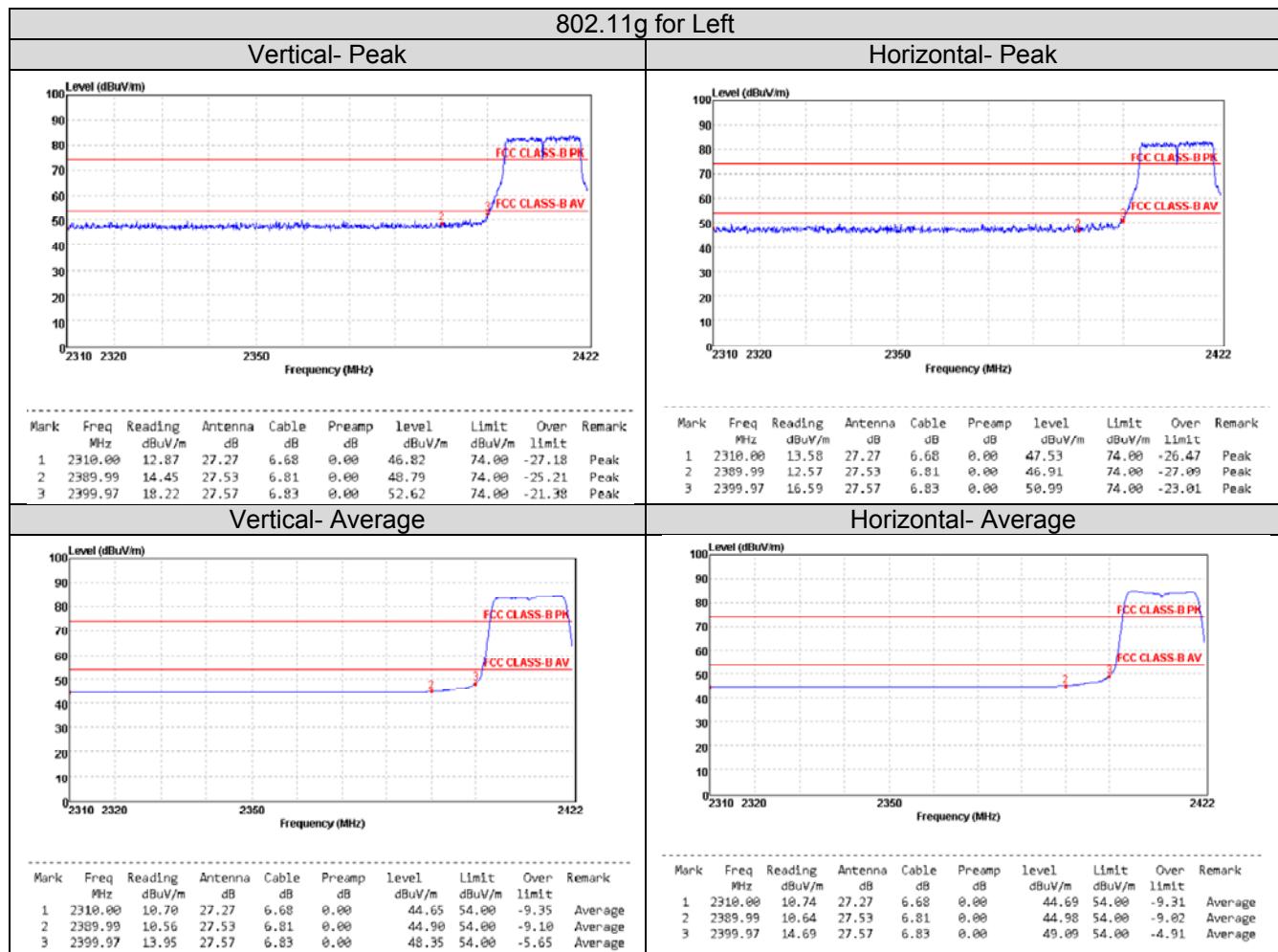
### TEST RESULTS

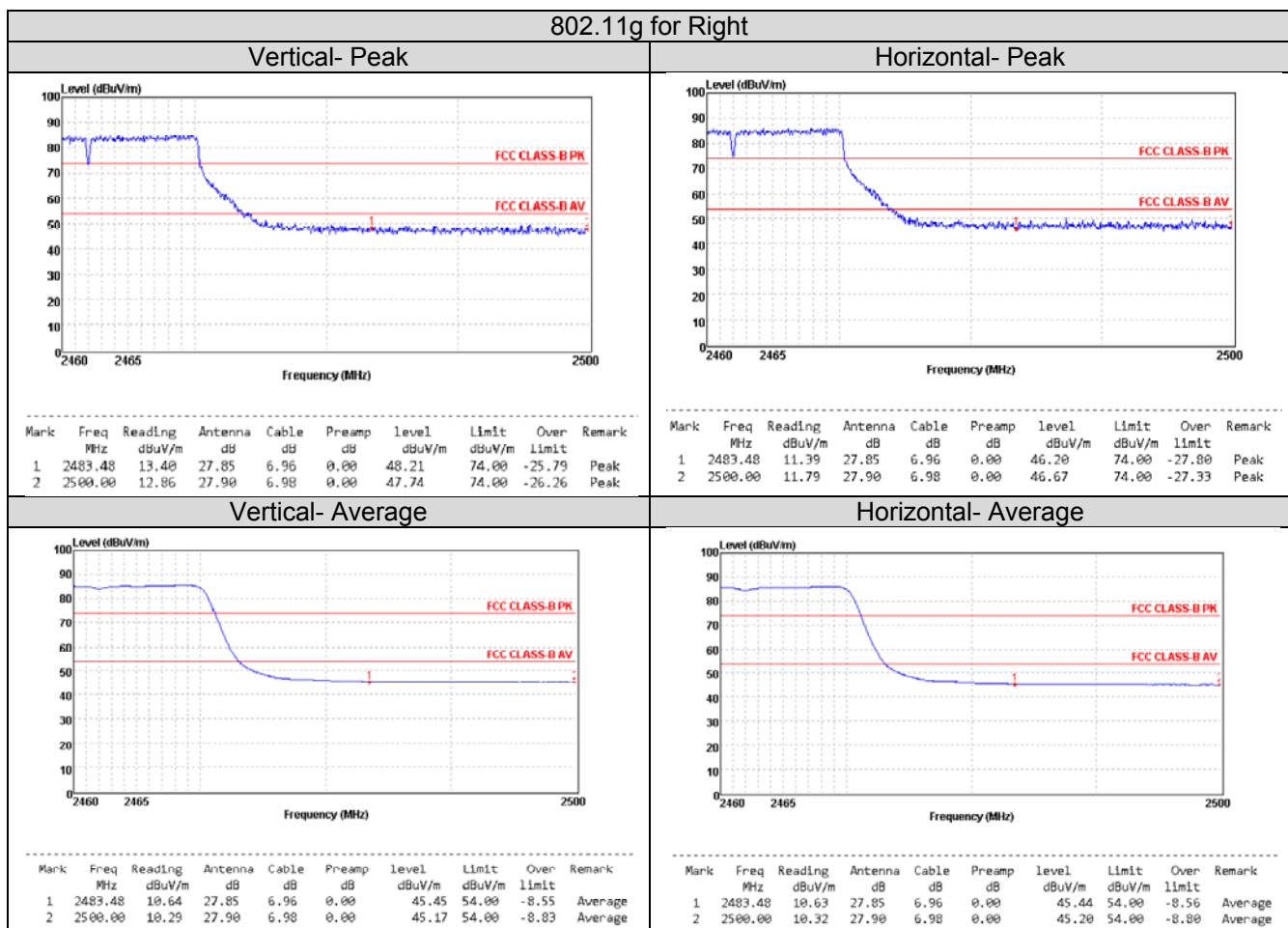
Note:Level= Read+ Antenna Factor+ Cable Loss- Preamp Factor

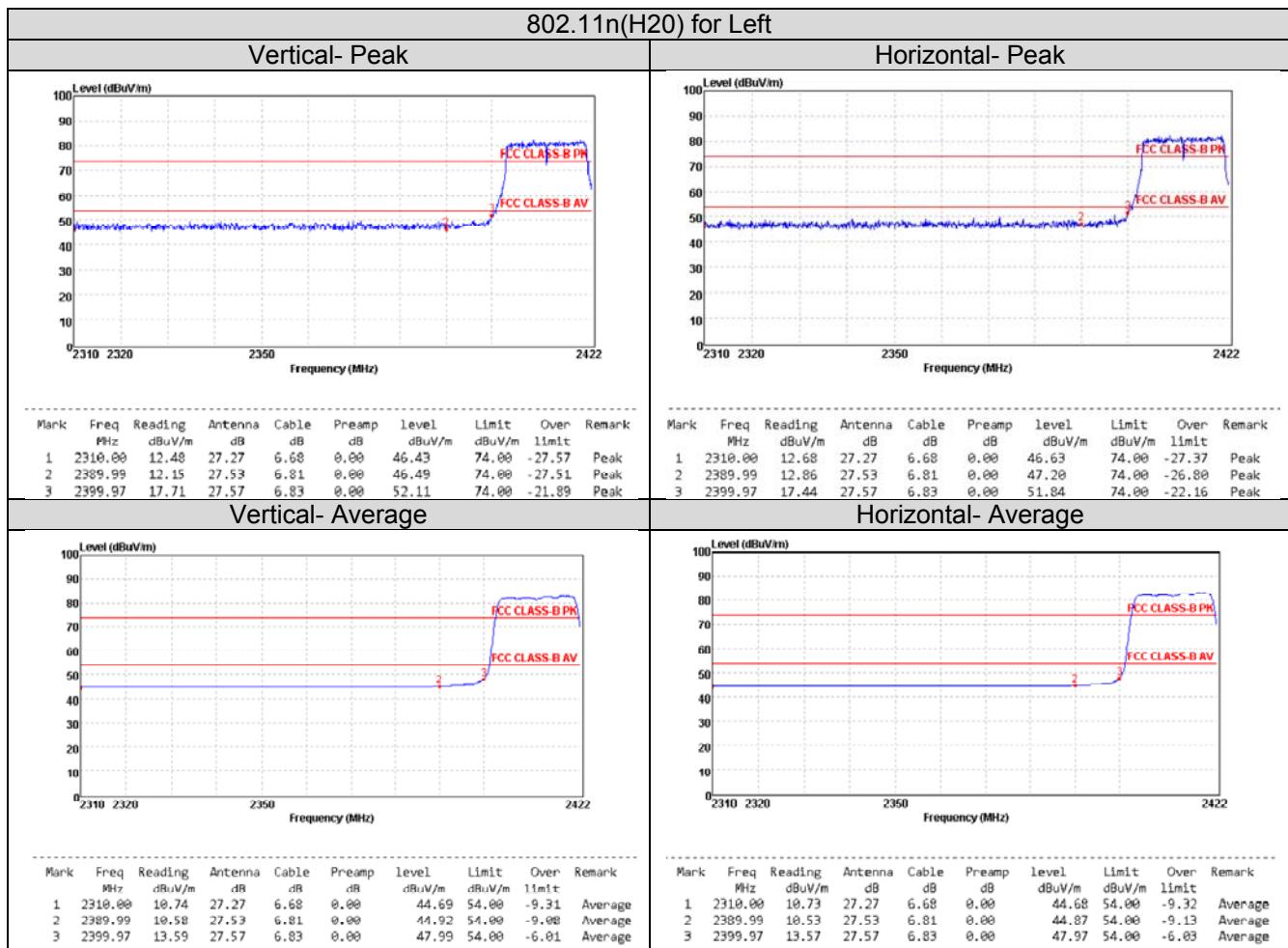


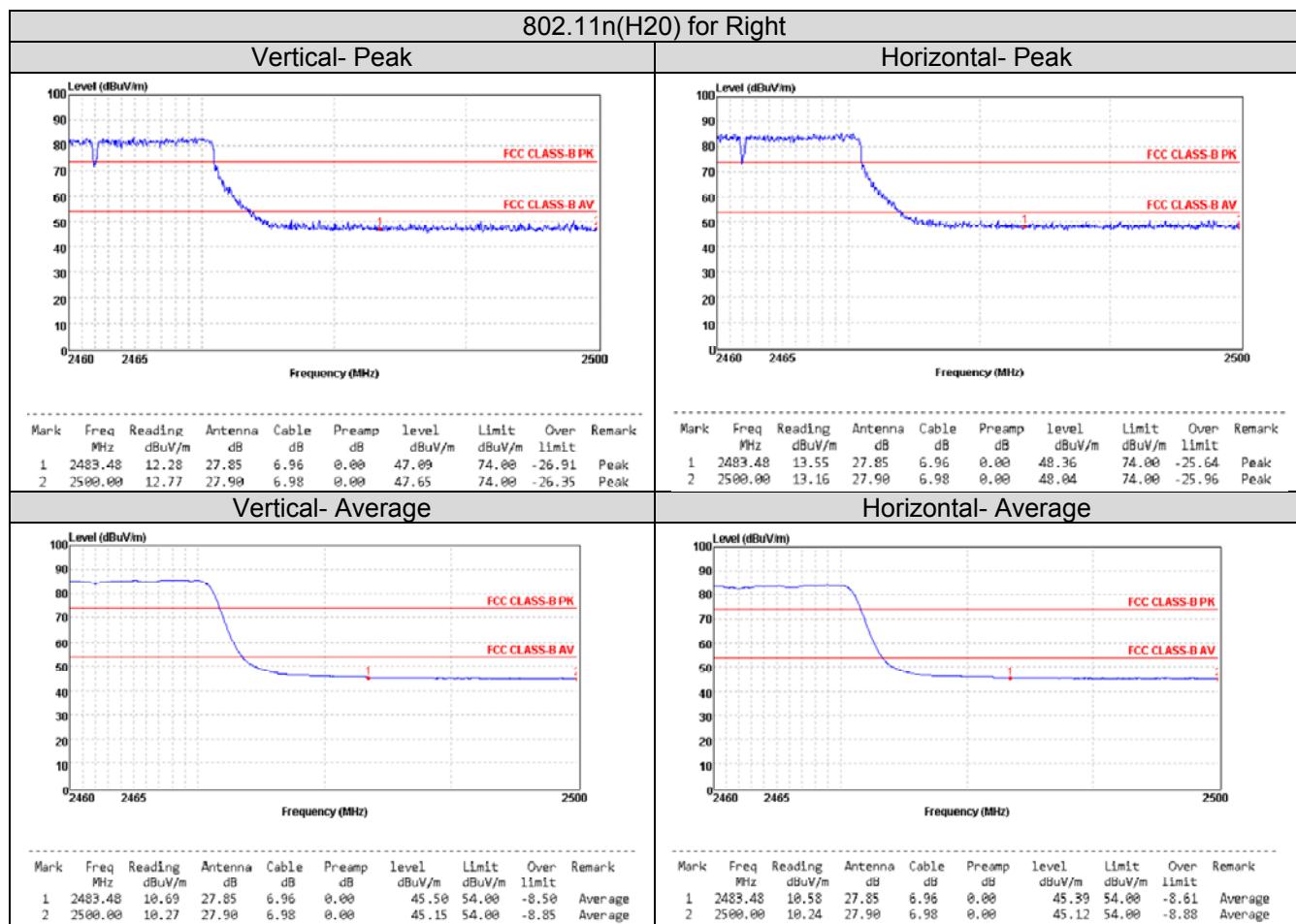
## 802.11b for Right

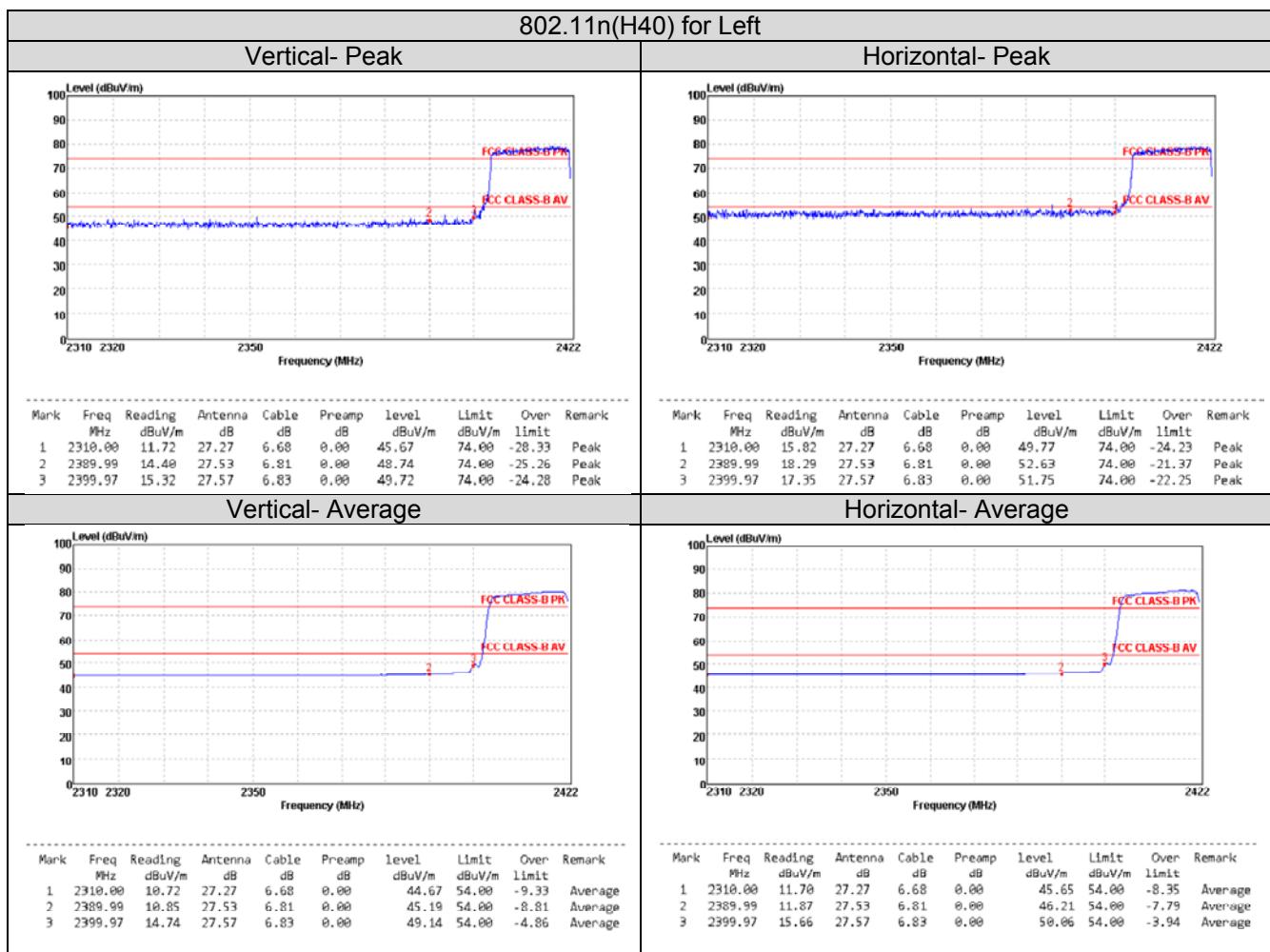


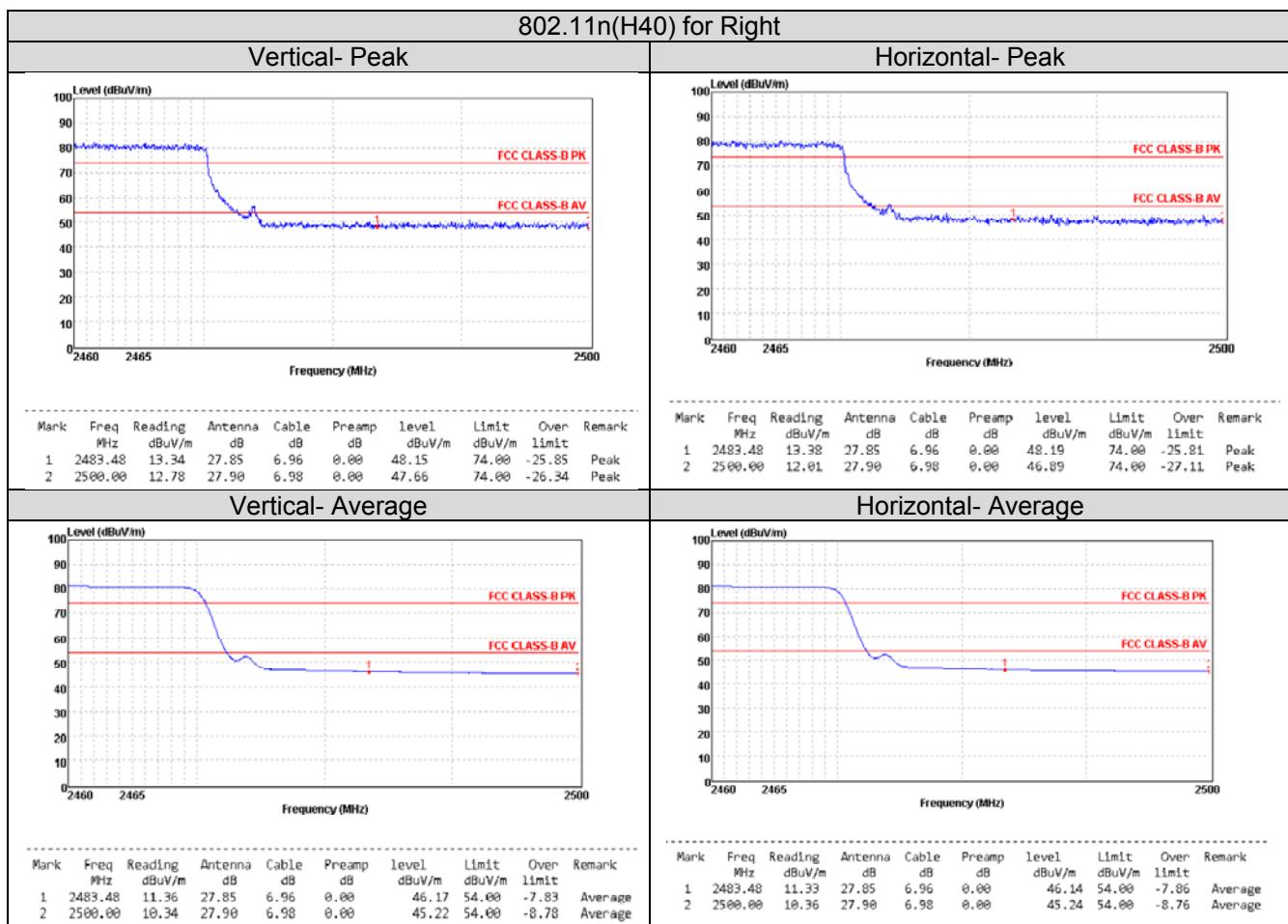












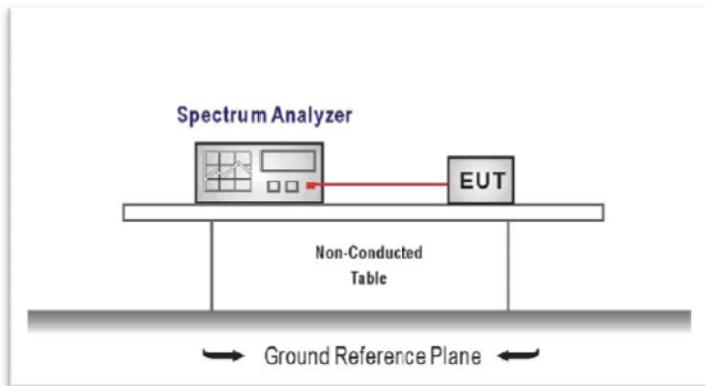
## 4.7. Band edge and Spurious Emission (conducted)

### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section15.247 (d):

*In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.*

### TEST CONFIGURATION



### TEST PROCEDURE

1. Connect the antenna port(s) to the spectrum analyzer input.
2. **Establish a reference level by using the following procedure**

*Center frequency=DTS channel center frequency  
The span = 1.5 times the DTS bandwidth.  
RBW = 100 kHz, VBW ≥ 3 x RBW  
Detector = peak, Sweep time = auto couple, Trace mode = max hold  
Allow trace to fully stabilize  
Use the peak marker function to determine the maximum PSD level*

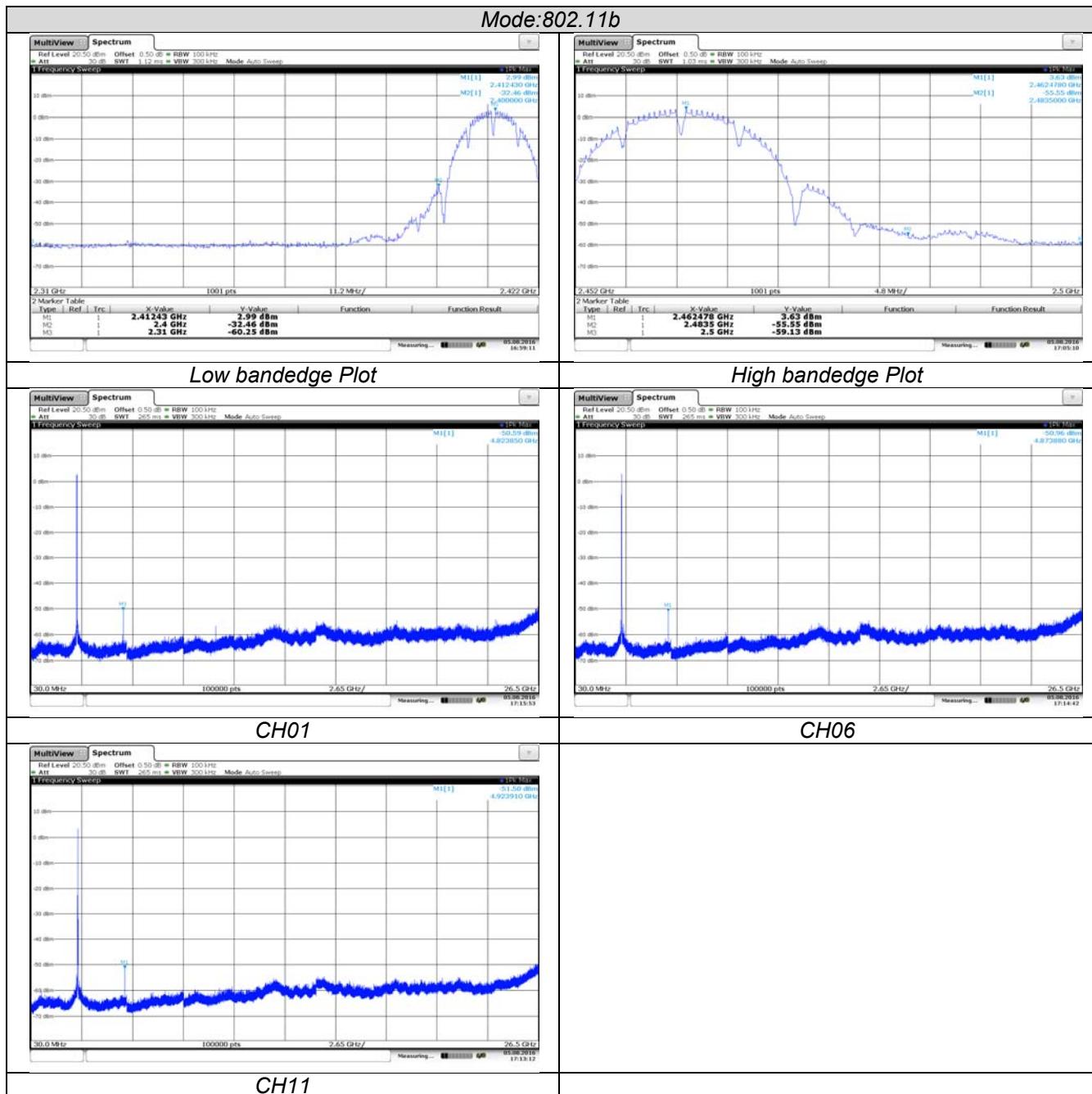
Note that the channel found to contain the maximum PSD level can be used to establish the reference level.

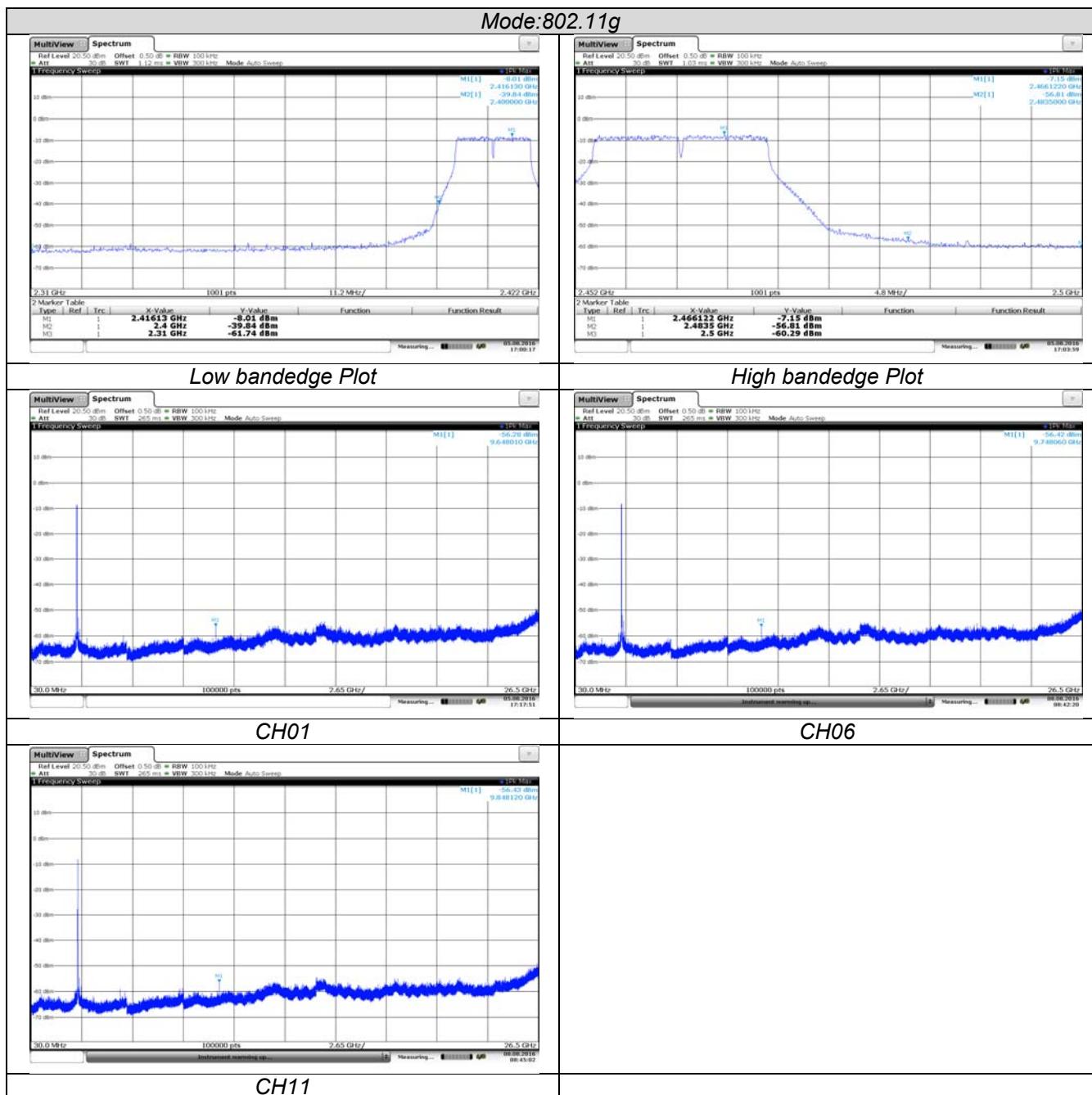
3. **Emission level measurement**

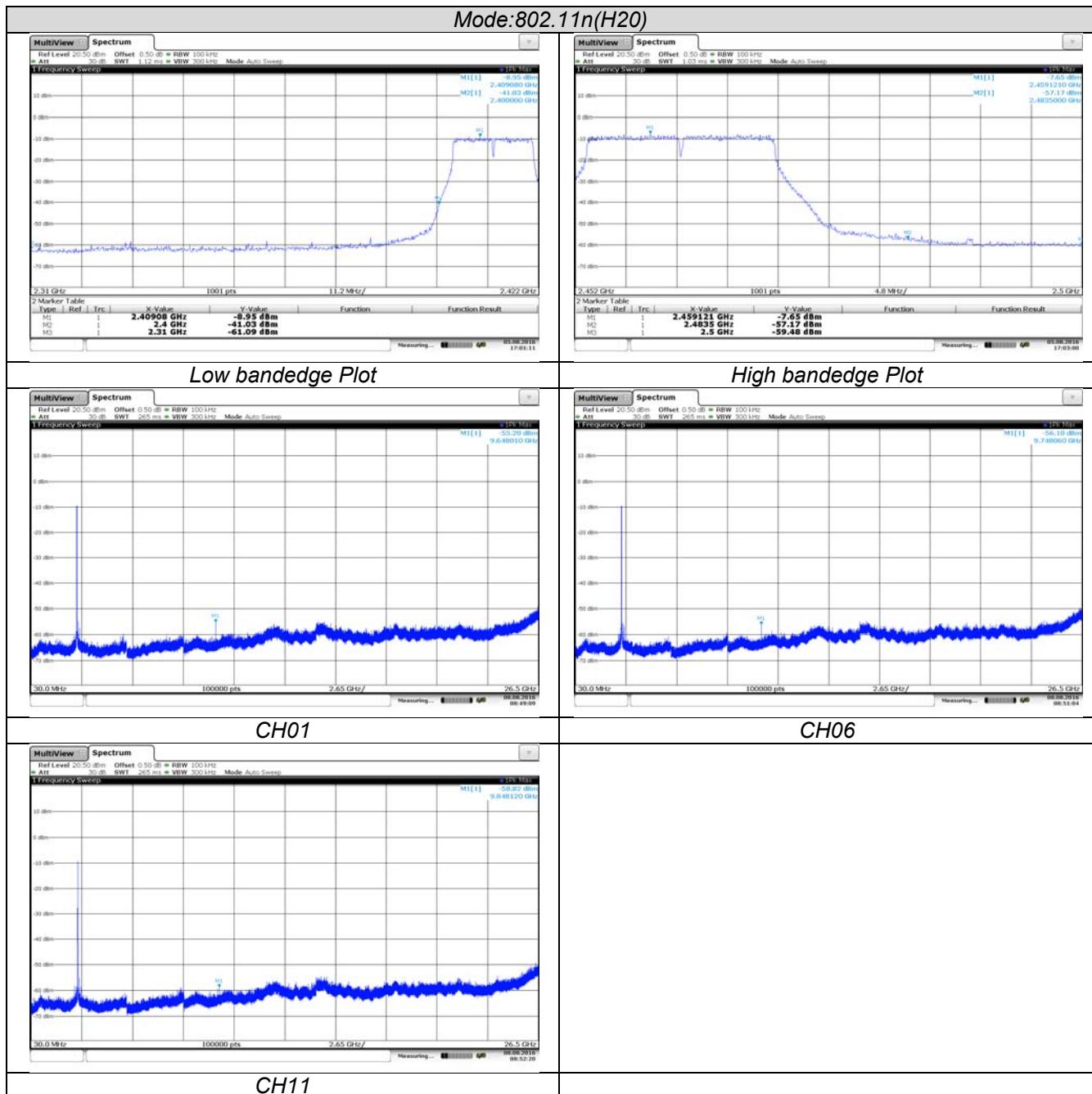
Set the center frequency and span to encompass frequency range to be measured  
RBW = 100 kHz, VBW ≥ 3 x RBW  
Detector = peak, Sweep time = auto couple, Trace mode = max hold  
Allow trace to fully stabilize  
Use the peak marker function to determine the maximum amplitude level.
4. Place the radio in continuous transmit mode, allow the trace to stabilize, view the transmitter waveform on the spectrum analyzer.
5. Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band excluding restricted frequency bands) are attenuated by at least the minimum requirements specified (at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz). Report the three highest emissions relative to the limit.

### TEST RESULTS

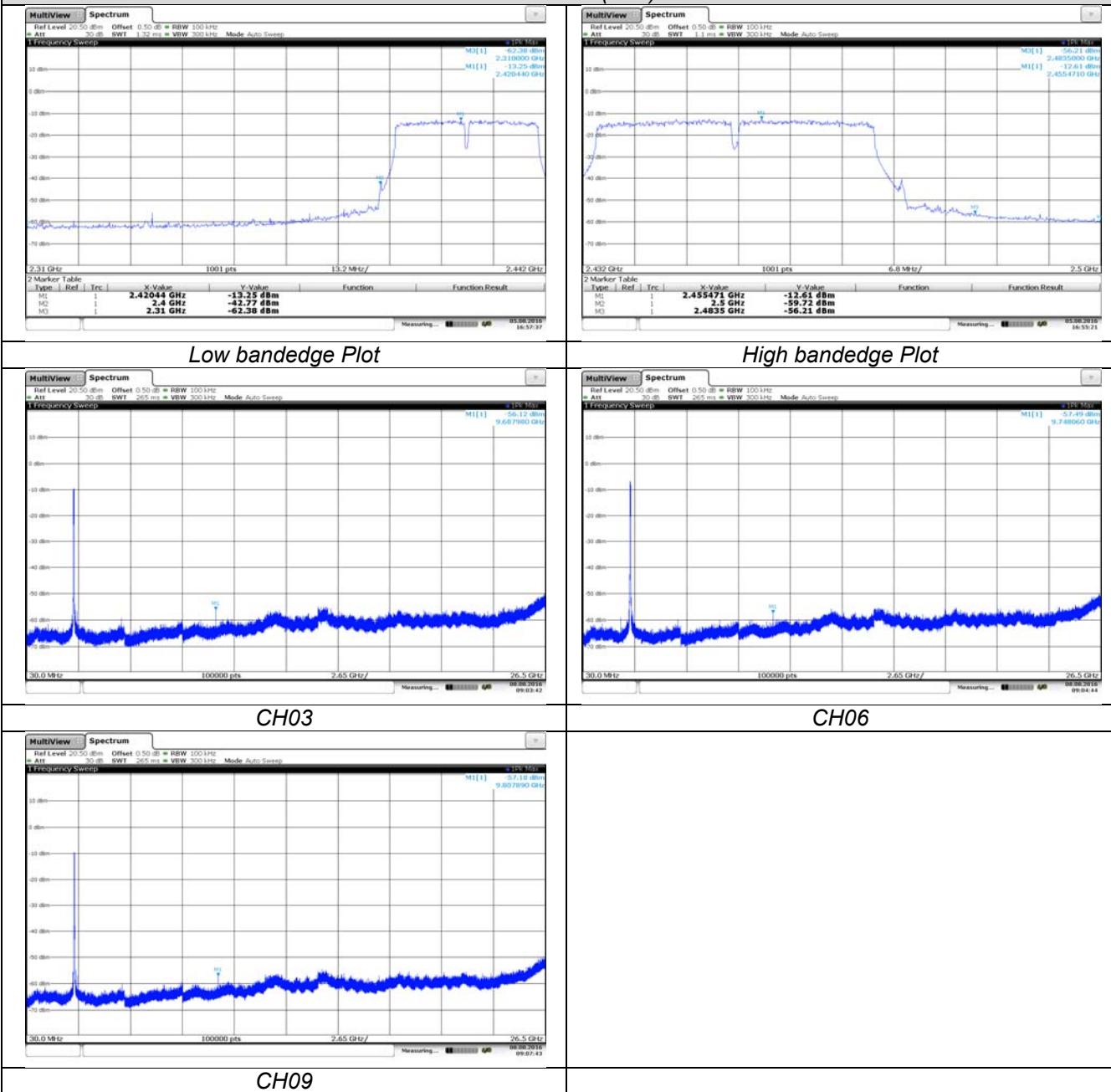
Test plot as follows:







## Mode: 802.11n(H40)



## 4.8. Spurious Emission (radiated)

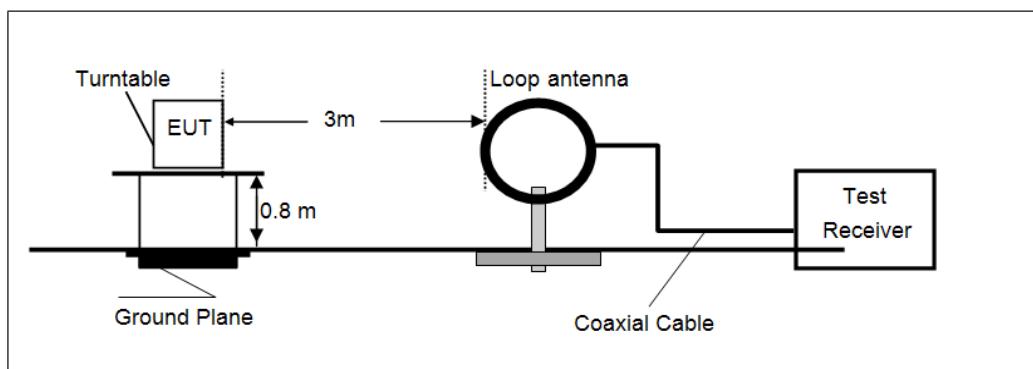
### LIMIT

FCC CFR Title 47 Part 15 Subpart C Section 15.209

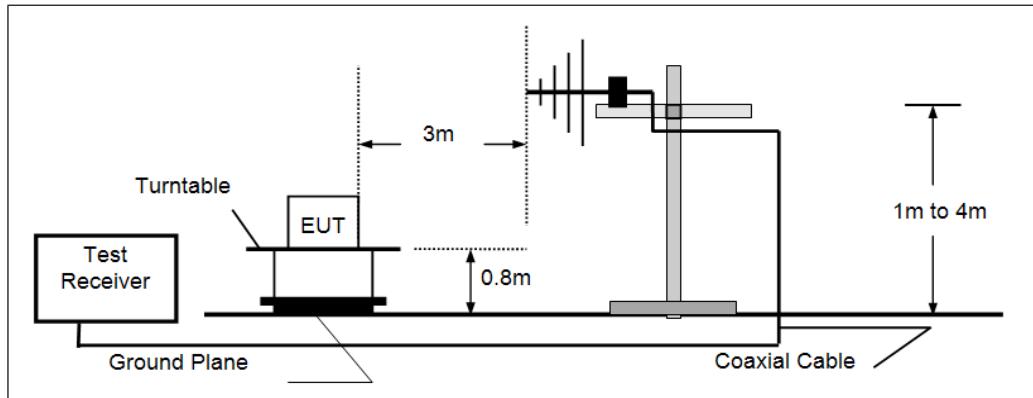
Frequency	Limit (dB <sub>UV</sub> /m @3m)	Value
30MHz-88MHz	40.00	Quasi-peak
88MHz-216MHz	43.50	Quasi-peak
216MHz-960MHz	46.00	Quasi-peak
960MHz-1GHz	54.00	Quasi-peak
Above 1GHz	54.00	Average
	74.00	Peak

### TEST CONFIGURATION

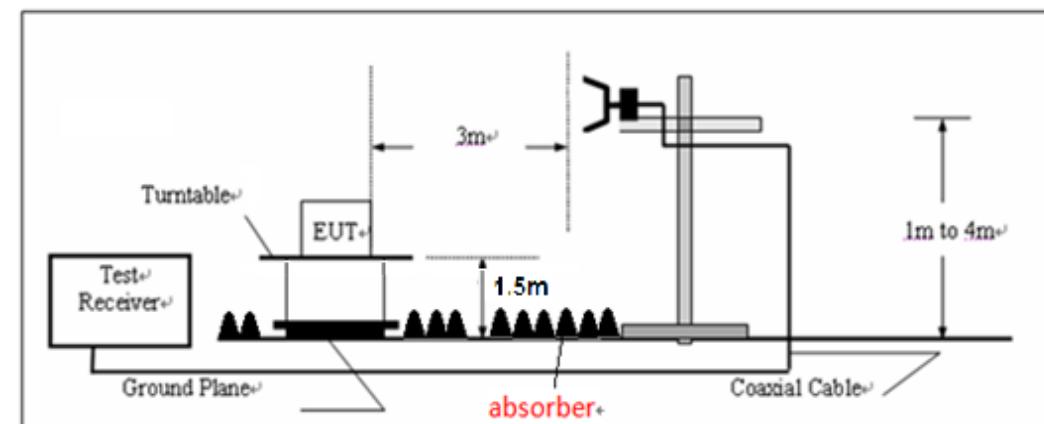
- 9KHz ~30MHz



- 30MHz ~ 1GHz



- Above 1GHz



## **TEST PROCEDURE**

1. The EUT was tested according to ANSI C63.10:2013 for compliance to FCC 47CFR 15.247 requirements.
2. The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level.
3. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.
4. The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna.
5. Use the following spectrum analyzer settings
  - (1) Span shall be wide enough to fully capture the emission being measured;
  - (2) Below 1GHz, RBW=120KHz, VBW=300KHz, Sweep=auto, Detector function=peak, Trace=max hold;  
*If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.*
  - (3) Above 1GHz, RBW=1MHz, VBW=3MHz for Peak value  
RBW=1MHz, VBW=10Hz for Average value.

## **TEST RESULTS**

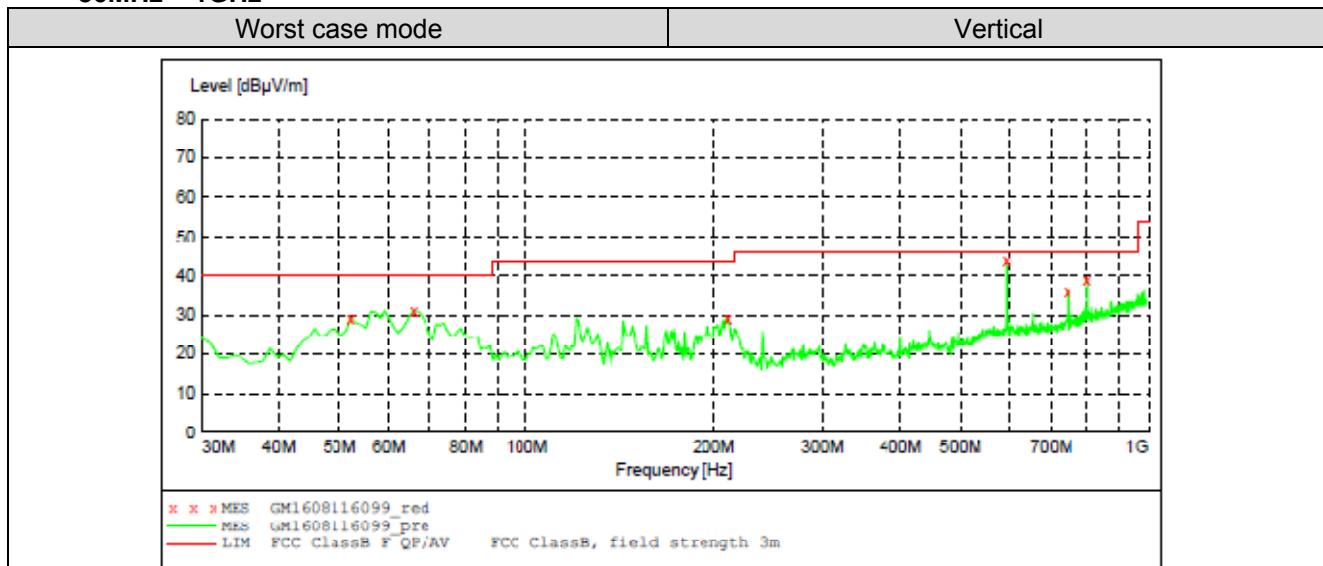
### **Measurement data:**

*Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*

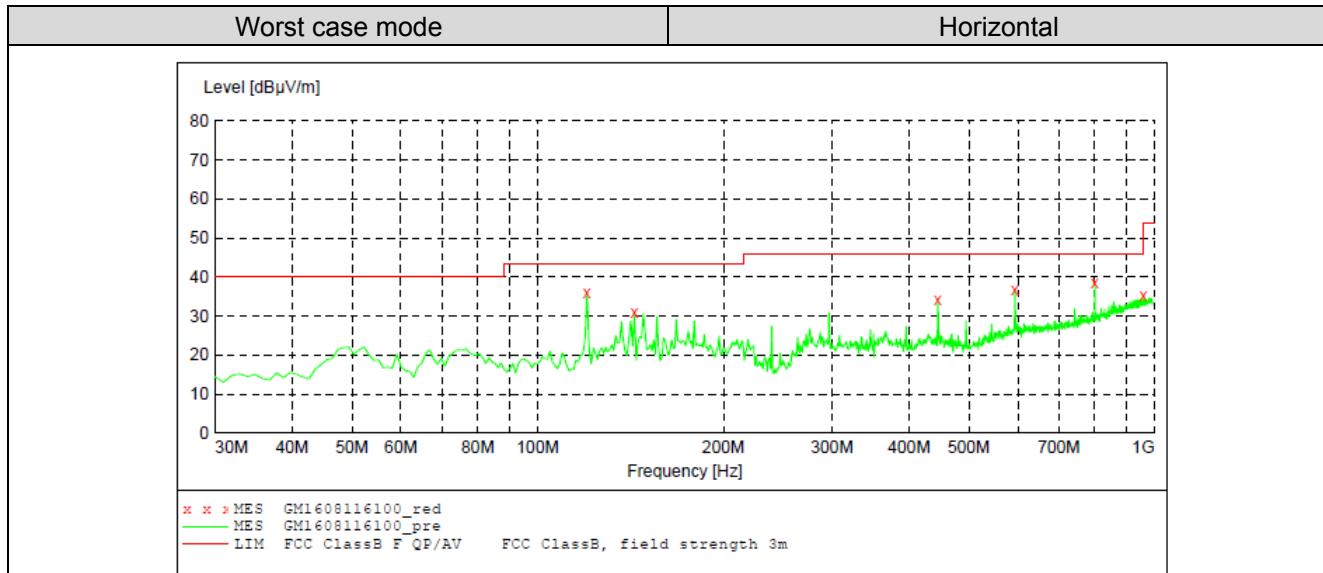
#### **■ 9kHz ~ 30MHz**

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not shown.

## ■ 30MHz ~ 1GHz

**MEASUREMENT RESULT: "GM1608116099\_red"**

8/11/2016 5:55PM								
Frequency MHz	Level dB $\mu$ V/m	Transd dB	Limit dB $\mu$ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
52.310000	29.50	-14.4	40.0	10.5	QP	100.0	320.00	VERTICAL
65.890000	31.30	-16.1	40.0	8.7	QP	100.0	0.00	VERTICAL
211.390000	29.40	-14.1	43.5	14.1	QP	100.0	356.00	VERTICAL
593.570000	43.50	-2.9	46.0	2.5	QP	100.0	229.00	VERTICAL
741.980000	36.20	-0.9	46.0	9.8	QP	100.0	349.00	VERTICAL
800.180000	39.10	0.4	46.0	6.9	QP	100.0	356.00	VERTICAL

**MEASUREMENT RESULT: "GM1608116100\_red"**

8/11/2016 5:59PM								
Frequency MHz	Level dB $\mu$ V/m	Transd dB	Limit dB $\mu$ V/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
120.210000	36.00	-15.9	43.5	7.5	QP	300.0	138.00	HORIZONTAL
143.490000	31.00	-18.1	43.5	12.5	QP	300.0	338.00	HORIZONTAL
445.160000	34.20	-9.1	46.0	11.8	QP	100.0	82.00	HORIZONTAL
593.570000	36.90	-2.9	46.0	9.1	QP	100.0	321.00	HORIZONTAL
800.180000	38.60	0.4	46.0	7.4	QP	300.0	206.00	HORIZONTAL
959.260000	35.20	3.9	46.0	10.8	QP	300.0	126.00	HORIZONTAL

## ■ Above 1 GHz

CH01 for 802.11b									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1428.142	36.93	24.64	5.04	36.76	29.85	74	-44.15	Vertical	Peak
2500.251	38.68	27.9	6.98	37.66	35.9	74	-38.1	Vertical	
3738.129	38.13	29.09	8.7	37.99	37.93	74	-36.07	Vertical	
6764.538	32.79	35.46	10.57	38.02	40.8	74	-33.2	Vertical	
8527.851	34.84	37.27	11.27	38.08	45.3	74	-28.7	Vertical	
9660.722	35.52	38.2	12.17	38.08	47.81	74	-26.19	Vertical	
1732.967	37.7	25.4	5.67	37.04	31.73	74	-42.27	Horizontal	
2577.803	37.35	28	7.17	37.72	34.8	74	-39.2	Horizontal	
3033.908	37.79	28.52	8.22	37.99	36.54	74	-37.46	Horizontal	
4617.55	36.14	30.97	9.07	38.41	37.77	74	-36.23	Horizontal	
7470.558	32.8	36.18	10.96	38.15	41.79	74	-32.21	Horizontal	
9660.722	35.17	38.2	12.17	38.08	47.46	74	-26.54	Horizontal	

CH06 for 802.11b									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1270.334	37.27	24.5	4.69	36.6	29.86	74	-44.14	Vertical	Peak
1814.218	37.4	25.62	5.82	37.11	31.73	74	-42.27	Vertical	
3072.77	39.45	28.53	8.27	37.99	38.26	74	-35.74	Vertical	
3700.26	38.02	29.04	8.72	37.99	37.79	74	-36.21	Vertical	
4871.103	40.01	31.13	9.25	38.57	41.82	74	-32.18	Vertical	
7338.621	34.18	36.08	10.9	38.13	43.03	74	-30.97	Vertical	
1333.284	37.37	24.56	4.83	36.67	30.09	74	-43.91	Horizontal	
1737.384	38.12	25.41	5.68	37.05	32.16	74	-41.84	Horizontal	
4871.103	39.21	31.13	9.25	38.57	41.02	74	-32.98	Horizontal	
6868.647	32.6	35.63	10.66	38.04	40.85	74	-33.15	Horizontal	
7981.717	32.65	36.7	11.23	38.25	42.33	74	-31.67	Horizontal	
10860.83	33.01	39.04	13.14	38.14	47.05	74	-26.95	Horizontal	

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

CH11 for 802.11b									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1228.984	37.92	24.45	4.6	36.55	30.42	74	-43.58	Vertical	Peak
1685.115	37.83	25.27	5.57	37	31.67	74	-42.33	Vertical	
3184.25	38.86	28.58	8.42	37.99	37.87	74	-36.13	Vertical	
4920.955	40.55	31.15	9.29	38.6	42.39	74	-31.61	Vertical	
7413.726	33.41	36.13	10.93	38.14	42.33	74	-31.67	Vertical	
9909.795	35.83	38.35	12.42	38.12	48.48	74	-25.52	Vertical	
1309.737	37.63	24.53	4.79	36.64	30.31	74	-43.69	Horizontal	
2462.355	43.92	27.78	6.92	37.63	40.99	74	-33.01	Horizontal	
3607.257	37.99	28.89	8.75	37.99	37.64	74	-36.36	Horizontal	
5379.504	34.86	32.11	9.56	38.35	38.18	74	-35.82	Horizontal	
8973.25	32.44	37.87	11.67	37.96	44.02	74	-29.98	Horizontal	
9909.795	33.13	38.35	12.42	38.12	45.78	74	-28.22	Horizontal	

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

## CH01 for 802.11g

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1286.606	38.55	24.51	4.73	36.61	31.18	74	-42.82	Vertical	Peak
1732.967	39.57	25.4	5.67	37.04	33.6	74	-40.4	Vertical	
3653.463	38.56	28.96	8.74	37.99	38.27	74	-35.73	Vertical	
4821.757	37.87	31.09	9.22	38.54	39.64	74	-34.36	Vertical	
6764.538	34.31	35.46	10.57	38.02	42.32	74	-31.68	Vertical	
9660.722	36.24	38.2	12.17	38.08	48.53	74	-25.47	Vertical	
1216.534	38.71	24.44	4.57	36.53	31.19	74	-42.81	Horizontal	
1577.198	36.6	24.95	5.35	36.91	29.99	74	-44.01	Horizontal	
4065.707	38.22	29.67	8.66	38.03	38.52	74	-35.48	Horizontal	
4821.757	37.48	31.09	9.22	38.54	39.25	74	-34.75	Horizontal	
7547.013	32.72	36.25	11	38.17	41.8	74	-32.2	Horizontal	
9660.722	34.86	38.2	12.17	38.08	47.15	74	-26.85	Horizontal	

## CH06 for 802.11g

Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1147.354	38.18	24.37	4.4	36.45	30.5	74	-43.5	Vertical	Peak
1630.264	37.05	25.11	5.46	36.95	30.67	74	-43.33	Vertical	
3570.714	38.27	28.82	8.77	37.99	37.87	74	-36.13	Vertical	
4871.103	37.89	31.13	9.25	38.57	39.7	74	-34.3	Vertical	
7319.964	35.81	36.07	10.89	38.13	44.64	74	-29.36	Vertical	
9759.591	35.29	38.25	12.27	38.09	47.72	74	-26.28	Vertical	
1052.229	38.33	24.26	4.15	36.33	30.41	74	-43.59	Horizontal	
1685.115	37.97	25.27	5.57	37	31.81	74	-42.19	Horizontal	
3192.366	39.39	28.58	8.43	37.99	38.41	74	-35.59	Horizontal	
4676.696	37.55	31.01	9.11	38.45	39.22	74	-34.78	Horizontal	
7319.964	34.02	36.07	10.89	38.13	42.85	74	-31.15	Horizontal	
9759.591	35.46	38.25	12.27	38.09	47.89	74	-26.11	Horizontal	

Remark:

- Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
- The emission levels of other frequencies are very lower than the limit and not show in test report.

CH11 for 802.11g									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1235.257	38.14	24.46	4.62	36.55	30.67	74	-43.33	Vertical	Peak
2124.374	36.92	26.59	6.38	37.36	32.53	74	-41.47	Vertical	
3616.451	38.84	28.9	8.75	37.99	38.5	74	-35.5	Vertical	
4181.159	38.26	30.02	8.74	38.12	38.9	74	-35.1	Vertical	
8419.999	35.32	37.13	11.25	38.12	45.58	74	-28.42	Vertical	
9859.472	38.41	38.32	12.36	38.11	50.98	74	-23.02	Vertical	
1280.072	37.99	24.5	4.72	36.6	30.61	74	-43.39	Horizontal	
1638.585	37.97	25.13	5.47	36.96	31.61	74	-42.39	Horizontal	
3534.541	38.92	28.77	8.79	37.99	38.49	74	-35.51	Horizontal	
4652.947	36.54	31	9.1	38.44	38.2	74	-35.8	Horizontal	
6561.03	33.25	35.18	10.39	37.99	40.83	74	-33.17	Horizontal	
9859.472	35.41	38.32	12.36	38.11	47.98	74	-26.02	Horizontal	

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

CH01 for 802.11n(H20)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1286.606	38.43	24.51	4.73	36.61	31.06	74	-42.94	Vertical	Peak
2207.058	38.13	26.89	6.52	37.43	34.11	74	-39.89	Vertical	
3049.394	39.04	28.52	8.24	37.99	37.81	74	-36.19	Vertical	
4444.562	38.64	30.76	8.94	38.3	40.04	74	-33.96	Vertical	
7338.621	37.11	36.08	10.9	38.13	45.96	74	-28.04	Vertical	
9660.722	36.03	38.2	12.17	38.08	48.32	74	-25.68	Vertical	
1759.638	38.05	25.48	5.72	37.07	32.18	74	-41.82	Horizontal	
2538.731	38.35	27.95	7.07	37.68	35.69	74	-38.31	Horizontal	
3104.217	38.59	28.55	8.31	37.99	37.46	74	-36.54	Horizontal	
3662.775	38.07	28.97	8.74	37.99	37.79	74	-36.21	Horizontal	
6611.326	33.94	35.24	10.44	38	41.62	74	-32.38	Horizontal	
9660.722	36.58	38.2	12.17	38.08	48.87	74	-25.13	Horizontal	

CH06 for 802.11n(H20)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1299.773	37.12	24.53	4.76	36.63	29.78	74	-44.22	Vertical	Peak
3160.026	39.63	28.57	8.38	37.99	38.59	74	-35.41	Vertical	
4343.896	37.22	30.48	8.87	38.23	38.34	74	-35.66	Vertical	
5352.186	35.32	32.04	9.54	38.38	38.52	74	-35.48	Vertical	
9759.591	36.25	38.25	12.27	38.09	48.68	74	-25.32	Vertical	
11994.38	33.35	39.1	13.73	37.61	48.57	74	-25.43	Vertical	
1098.763	37.84	24.32	4.27	36.39	30.04	74	-43.96	Horizontal	
1823.477	36.93	25.65	5.84	37.12	31.3	74	-42.7	Horizontal	
2532.277	37.39	27.94	7.07	37.68	34.72	74	-39.28	Horizontal	
3570.714	38.18	28.82	8.77	37.99	37.78	74	-36.22	Horizontal	
6645.07	31.99	35.3	10.46	38.01	39.74	74	-34.26	Horizontal	
9759.591	34.98	38.25	12.27	38.09	47.41	74	-26.59	Horizontal	

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

CH11 for 802.11n(H20)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1182.943	38.2	24.41	4.49	36.49	30.61	74	-43.39	Vertical	Peak
1533.648	37.39	24.81	5.26	36.87	30.59	74	-43.41	Vertical	
2545.202	38.42	27.96	7.09	37.69	35.78	74	-38.22	Vertical	
3112.129	39.28	28.55	8.33	37.99	38.17	74	-35.83	Vertical	
5646.079	34.4	32.64	9.67	38.15	38.56	74	-35.44	Vertical	
9859.472	37.01	38.32	12.36	38.11	49.58	74	-24.42	Vertical	
1251.079	37.62	24.48	4.66	36.58	30.18	74	-43.82	Horizontal	
1768.619	37.84	25.5	5.74	37.07	32.01	74	-41.99	Horizontal	
2590.961	37.28	28.01	7.21	37.72	34.78	74	-39.22	Horizontal	
3393.477	38.96	28.66	8.68	37.99	38.31	74	-35.69	Horizontal	
7527.826	32.05	36.22	10.98	38.16	41.09	74	-32.91	Horizontal	
9859.472	34.93	38.32	12.36	38.11	47.5	74	-26.5	Horizontal	

Remark:

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

CH03 for 802.11n(H40)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1280.072	37.13	24.5	4.72	36.6	29.75	74	-44.25	Vertical	Peak
1601.472	37.25	25.02	5.4	36.93	30.74	74	-43.26	Vertical	
3033.908	38.41	28.52	8.22	37.99	37.16	74	-36.84	Vertical	
4871.103	36.61	31.13	9.25	38.57	38.42	74	-35.58	Vertical	
7264.278	37.27	36.02	10.87	38.11	46.05	74	-27.95	Vertical	
12366.42	31.64	39.17	13.85	37.82	46.84	74	-27.16	Vertical	
1153.21	39.56	24.38	4.41	36.45	31.9	74	-42.1	Horizontal	
1746.251	38.62	25.44	5.69	37.05	32.7	74	-41.3	Horizontal	
3168.08	39.7	28.57	8.39	37.99	38.67	74	-35.33	Horizontal	
4871.103	37.27	31.13	9.25	38.57	39.08	74	-34.92	Horizontal	
7319.964	36.02	36.07	10.89	38.13	44.85	74	-29.15	Horizontal	
9275.16	33.88	38.02	11.86	38.01	45.75	74	-28.25	Horizontal	

CH06 for 802.11n(H40)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1147.354	38.18	24.37	4.4	36.45	30.5	74	-43.5	Vertical	Peak
1630.264	37.05	25.11	5.46	36.95	30.67	74	-43.33	Vertical	
3570.714	38.27	28.82	8.77	37.99	37.87	74	-36.13	Vertical	
4871.103	37.89	31.13	9.25	38.57	39.7	74	-34.3	Vertical	
7319.964	35.81	36.07	10.89	38.13	44.64	74	-29.36	Vertical	
9759.591	35.29	38.25	12.27	38.09	47.72	74	-26.28	Vertical	
1052.229	38.33	24.26	4.15	36.33	30.41	74	-43.59	Horizontal	
1685.115	37.97	25.27	5.57	37	31.81	74	-42.19	Horizontal	
3192.366	39.39	28.58	8.43	37.99	38.41	74	-35.59	Horizontal	
4676.696	37.55	31.01	9.11	38.45	39.22	74	-34.78	Horizontal	
7319.964	34.02	36.07	10.89	38.13	42.85	74	-31.15	Horizontal	
9759.591	35.46	38.25	12.27	38.09	47.89	74	-26.11	Horizontal	

**Remark:**

1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

CH09 for 802.11n(H40)									
Frequency (MHz)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin Limit (dB)	Polarization	Test value
1156.15	38.71	24.38	4.42	36.46	31.05	74	-42.95	Vertical	Peak
1706.7	38.06	25.33	5.62	37.02	31.99	74	-42.01	Vertical	
3525.555	38.68	28.75	8.79	37.99	38.23	74	-35.77	Vertical	
4034.777	38.72	29.6	8.63	38.02	38.93	74	-35.07	Vertical	
6267.19	33.31	34.22	10.07	37.95	39.65	74	-34.35	Vertical	
9809.404	36.81	38.28	12.3	38.1	49.29	74	-24.71	Vertical	
1228.984	38.46	24.45	4.6	36.55	30.96	74	-43.04	Horizontal	
1685.115	38.4	25.27	5.57	37	32.24	74	-41.76	Horizontal	
3112.129	38.76	28.55	8.33	37.99	37.65	74	-36.35	Horizontal	
3588.939	40.04	28.85	8.76	37.99	39.66	74	-34.34	Horizontal	
6816.394	33.94	35.55	10.61	38.03	42.07	74	-31.93	Horizontal	
9809.404	36.65	38.28	12.3	38.1	49.13	74	-24.87	Horizontal	

**Remark:**

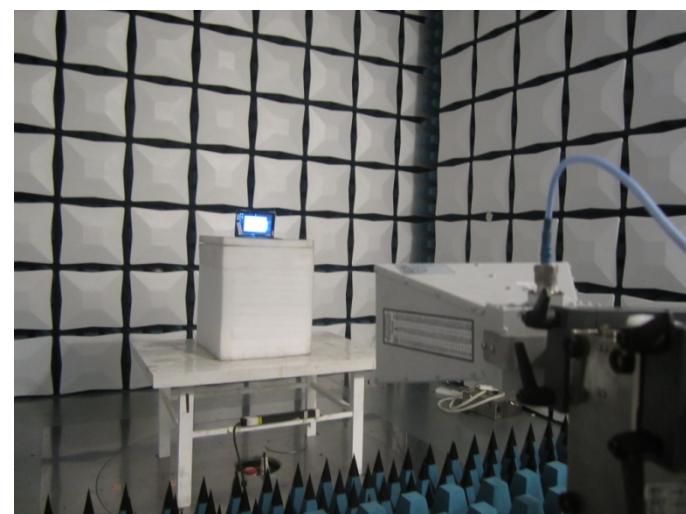
1. Final Level = Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2. The peak level is lower than average limit(54 dBuV/m), this data is the too weak instrument of signal is unable to test.
3. The emission levels of other frequencies are very lower than the limit and not show in test report.

## 5. Test Setup Photos of the EUT

Conducted Emission



Radiated Emission



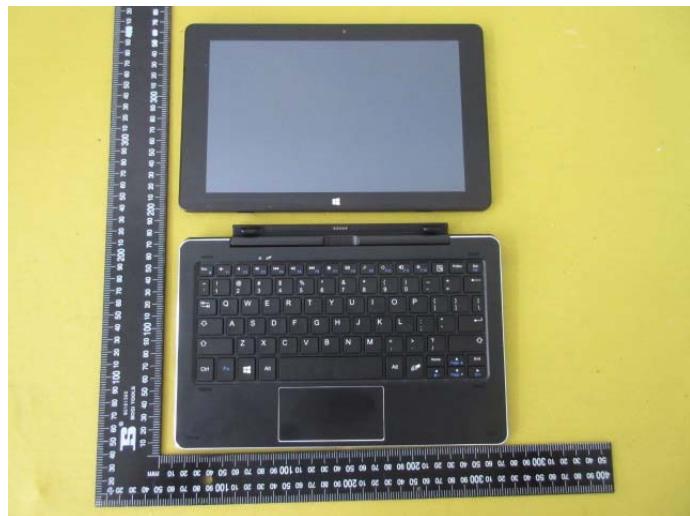
## 6. External and Internal Photos of the EUT

### External photos

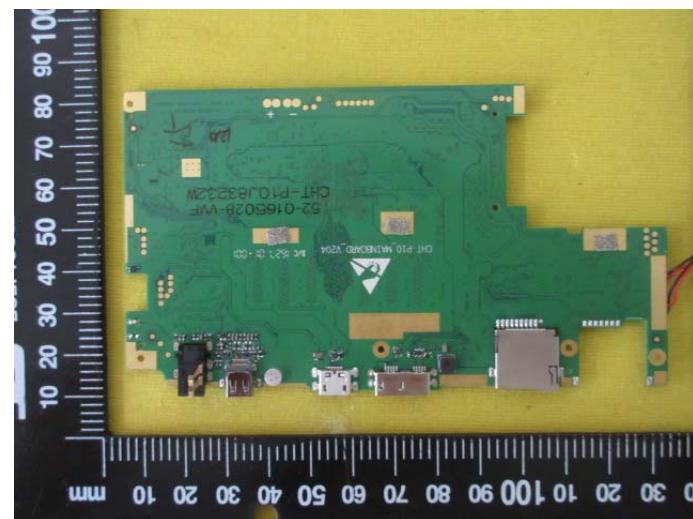
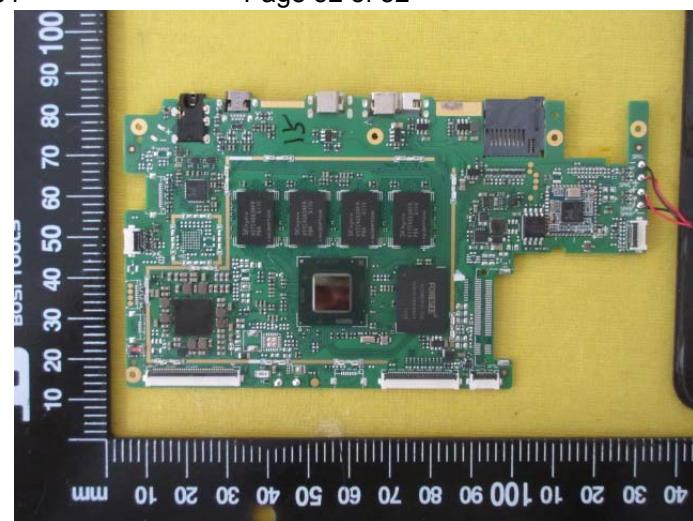






**Internal photos**





.....End of Report.....