TEST REPORT

Date: 2014-06-30
Report No.: 60.870.14.014.01F

Applicant:	Binatone Electronics International Limited Floor 23, 9 Des Voeux Road West, Sheung Wan, Hong Kong	
Description of Samples:	Model name:	Digital Video Baby Monitor (Baby Unit)
	Brand name:	motorola
	Model no.:	MBP854HDBU, FCOUS85-W, FOCUS85-S, FOCUS85-B, SCOUT85, BLINK85-W, BLINK85-S, BLINK85-B
	FCCID:	VLJ-FOCUS85
Date Samples Received:	2014-06-11	
Date Tested:	2014-06-12 to 2014-06-30	
Investigation Requested:	FCC Part 15 Subpart C, Section 15.247	
Conclusions:	The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.	
Remarks:	---	

Checked by:

Ray Cheung
Project Engineer
Wireless & Telecom department

Approved by:-

Jeff Pong
Manager
Wireless & Telecom department

CONTENT:

5.0 List of Measurement Equipments

Appendix A

Photos of Test Setup

Appendix B

External EUT Photos

Appendix C

Internal EUT Photos

1.0 General Details

1.1 Test Laboratory

Attestation of Global Compliance SZ Co Ltd.
2/F, Building 2,No.1-No.4,Chaxi Sanwei, Technical Industrial Park,
Gushu, Xixiang, Shenzhen, China.
Registration Number: 259865

Tested By:

John Zhi

1.2 Applicant Details

Applicant

Binatone Electronics International Limited
Floor 23A, 9 Des Voeux Road West, Sheung Wan, Hong Kong

Manufacturers

VTech (Dongguan) Telecommunications Limited
VTech Science Park, Xia Ling Bei Management Zone, Liaobu, Dongguan, Guangdong, China

1.3 Equipment Under Test [EUT]

Description of EUT

Product Description:	Digital Video Baby Monitor (Baby Unit)
Model No.:	MBP854HDBU
Multi-listing Model:	FOCUS85-W, FOCUS85-S, FOCUS85-B, SCOUT85, BLINK85-W, BLINK85-S, BLINK85-B
Brand Name:	motorola
FCCID:	VLJ-FOCUS85
Rating:	DC5.0V, 1500mA powered by AC/DC power adaptor
Operated Frequency:	2412 – 2462 MHz 2422 – 2452 MHz
No. of Operated Channel:	11 CH / (802.11b/g/n – HT20) ; 9CH / (802.11n – HT40)
Data Rate:	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0-7, up to 150Mbps
Modulation:	DSSS (BPSK, QPSK, CCK) and OFDM (BPSK/QPSK/16-QAM/ 64-QAM)
Accessories and Auxiliary Equipments:	AC/DC power adaptor, ThinkPad Notebook
Antenna Type:	Integral
Manufacture of Antenna:	CVSION HK LTD
Antenna Gain:	0 dBi
Antenna Model:	---

General Operation of EUT

The Equipment Under Test (EUT) is a Camera of Wireless Monitoring System, which include of a FHSS Module and an 802.11b/g/n module.

As per Client Declaration, MBP854HDBU & all multi-list models (multi-list model listed on above) have the same technical construction including Software design, RF module, PCB layout, Circuit design, all electrical construction and basic mechanical construction. Only the outlook color and system grouping are different between the models, so we use MBP854HDBU as a representative model to perform all testing.

Description of Test Modes

The EUT has been tested under operating condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1Mbps data rate (worst case) are chosen for the final testing.
IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.
IEEE802.11n – HT20: Channel 1(2412MHz), Channel 6 (2437MHz) and Channel 11 (2462MHz) with MSC0 (worst case) are chosen for the final testing.
IEEE802.11n – HT40: Channel 3(2422MHz), Channel 6 (2437MHz) and Channel 9 (2452MHz) with MSC0 (worst case) are chosen for the final testing.

1.4 Related Submittal(s) Grants

This is a signal application subject to Certificate Authorization.

2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4: 2009

2.2 Test Standards and Results Summary Tables

Test Condition	Test Requirement	Test Result	
		Pass	N/A
Number of Frequency Hopping	Section 15.247 (a1)	☐	☒
6dB Bandwidth Measurement	Section 15.247 (a2)	☒	☐
Power Spectral Density	Section 15.247 (e)	☒	☐
Pseudorandom Hopping Algorithm	Section 15.247 (a1)	☐	☒
Band Edge Measurement	Section 15.247	☒	☐
Maximum Output Power	Section 15.247 (b3)	☒	☐
Out of Band Emission	Section 15.247 (d)	☒	☐
Radiated Emission in Restricted Band	Section 15.247 (d)	☒	☐
Conducted Emission on AC Mains	Section 15.207	☒	☐
RF Exposure	Section 15.247 (i)	☒	☐
Antenna Requirement	Section 15.203	☒ See note 1	☐

Note 1 : The EUT uses a permanently attached antenna, which in accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

Remark: N/A - Not Applicable

3.0 Test Methodology

3.1 Radiated Emission

The sample was placed 0.8m above the ground plane on a standard emission test site *. Measurements in both horizontal and vertical polarities were performed. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, rotating turntable, varying antenna height from 1m to 4m in both horizontal and vertical polarizations. The emissions worst-case are shown in Test Results of the following pages.

3.2 Field Strength Calculation

The field strength at 3 m was established by adding the meter reading of the spectrum analyzer to the factors associated with antenna correction factor, cable loss, preamplifiers and filter attenuation.

The equation is expressed as follow:

FS = R + System Factor
System Factor = AF + CF + FA – PA

Where FS = Net Field Strength in dBuV/m at 3 meters.
R = Reading of Spectrum Analyzer / Test Receiver in dBuV.
AF = Antenna Factor in dB.
CF = Cable Attenuation Factor in dB.
FA = Filter Attenuation Factor in dB.
PA = Preamplifier Factor in dB.

FA and PA are only be used for the measuring frequency above 1 GHz.

3.3 Conducted Emissions

The test was performed in accordance with ANSI C63.4: 2003, with the following: initial measurements were performed in peak and average detection modes on the live line of personal computer, any emissions recorded within 30dB of the relevant limit lines were re-measured using quasi-peak and average detection on the live and neutral lines with the worst case recorded in the table of results.

4.0 Test Results

4.1 6 dB Bandwidth Measurement

Test Requirement:	FCC part 15 section 15.247 (a2)
Test Date:	2014-06-15
Mode of Operation:	Transmitting continuously mode
Detector Function:	Max Hold

Result: PASS

Test Setup:

The bandwidth is measured at an amplitude level reduced from the reference level by a specified ratio. The reference level is the level of the highest amplitude signal observed from the transmitter at the fundamental frequency. Once the reference level is established, the equipment is conditioned with typical modulating signal to produce the worst-case (i.e. the widest) bandwidth.

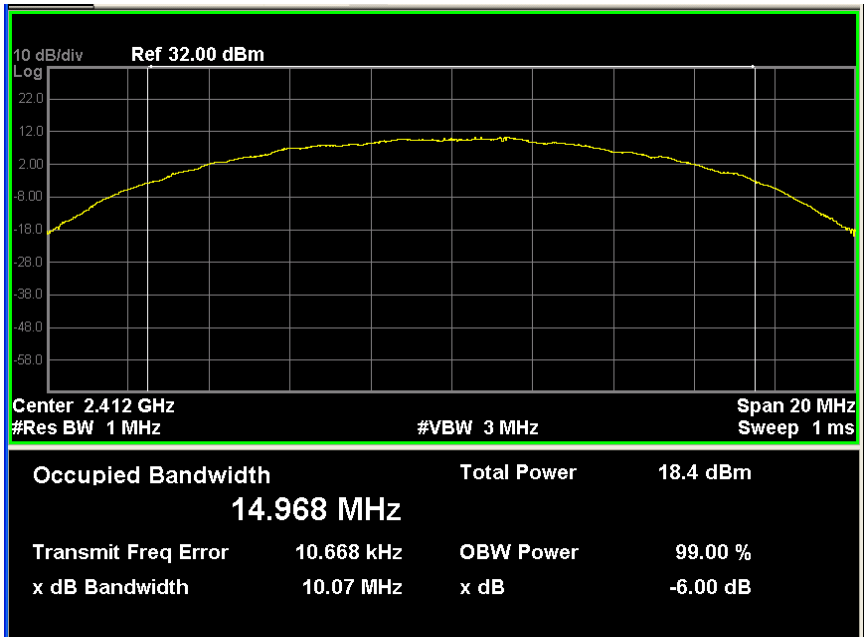
For 802.11b Mode

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	10.07
Middle	2437	9.94
Highest	2462	10.40

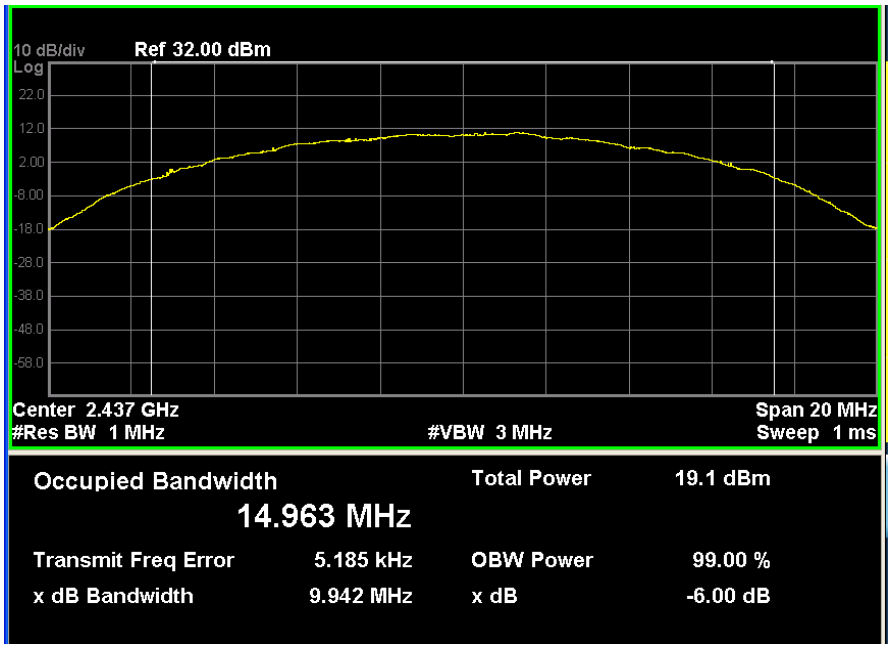
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

Limits for 6 dB bandwidth [Section 15.247 (a2)]:
The minimum 6 dB bandwidth shall be at least 500 kHz.

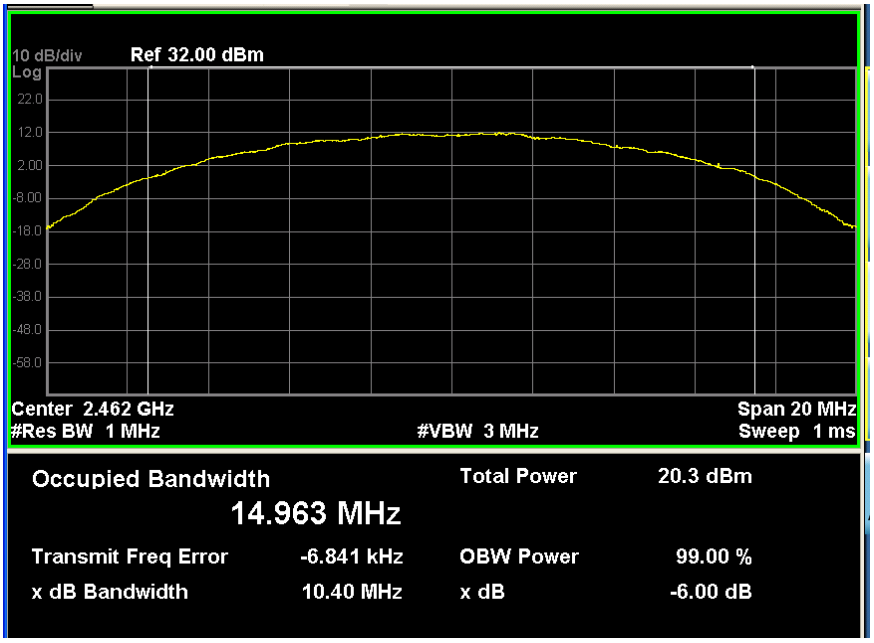
For 802.11B Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 10.07 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 9.94MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 10.40MHz



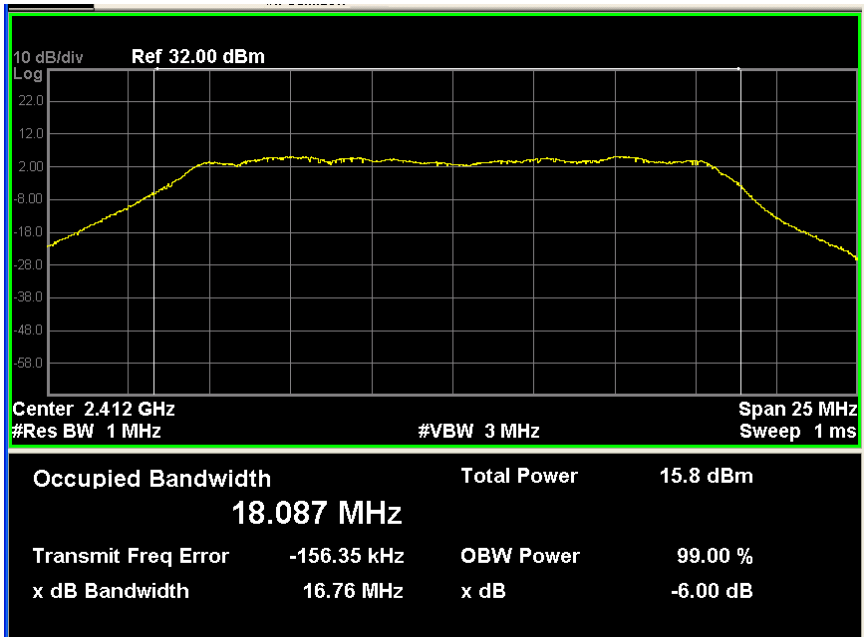
For 802.11g Mode

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.76
Middle	2437	16.77
Highest	2462	16.81

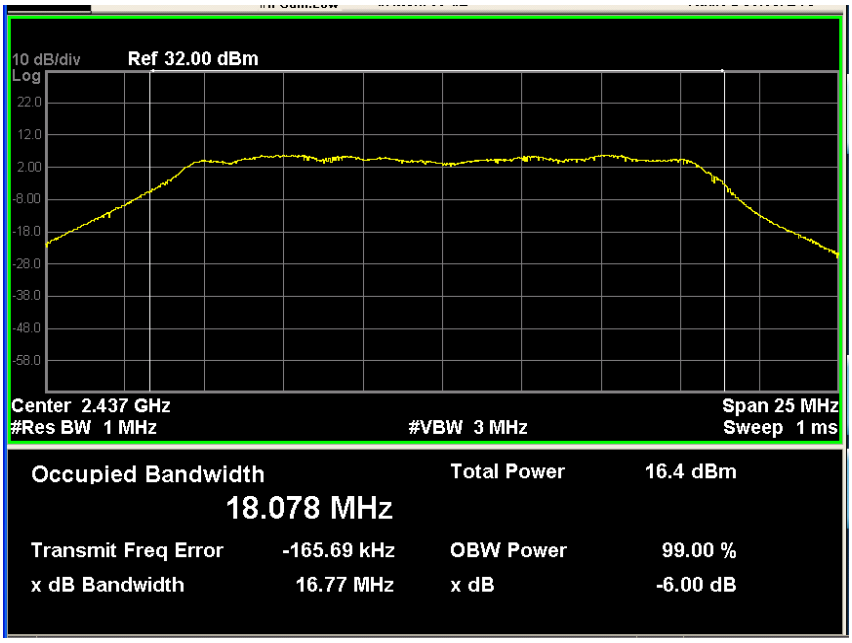
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

Limits for 6 dB bandwidth [Section 15.247 (a2)]:
The minimum 6 dB bandwidth shall be at least 500 kHz.

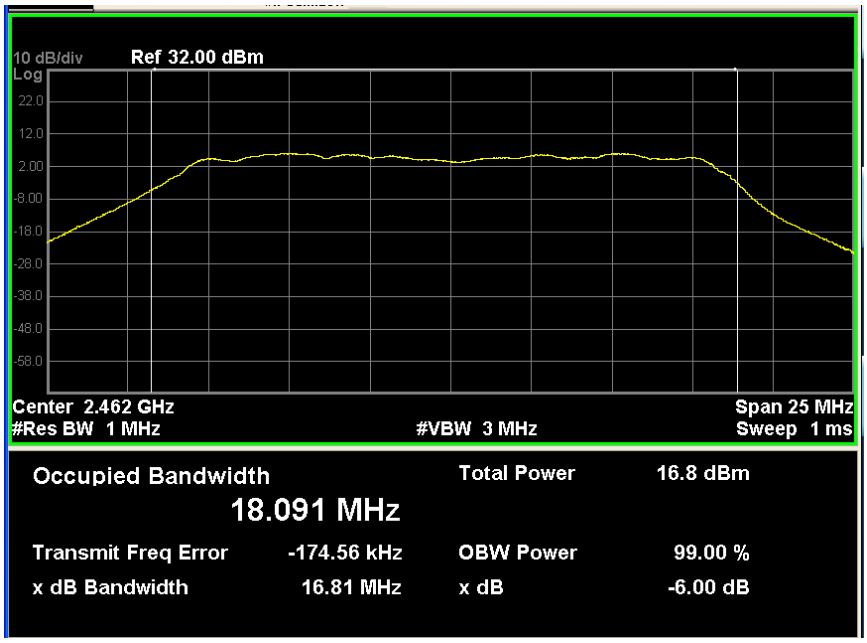
For 802.11g Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.76 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.77MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.81MHz



For 802.11n – HT20 Mode

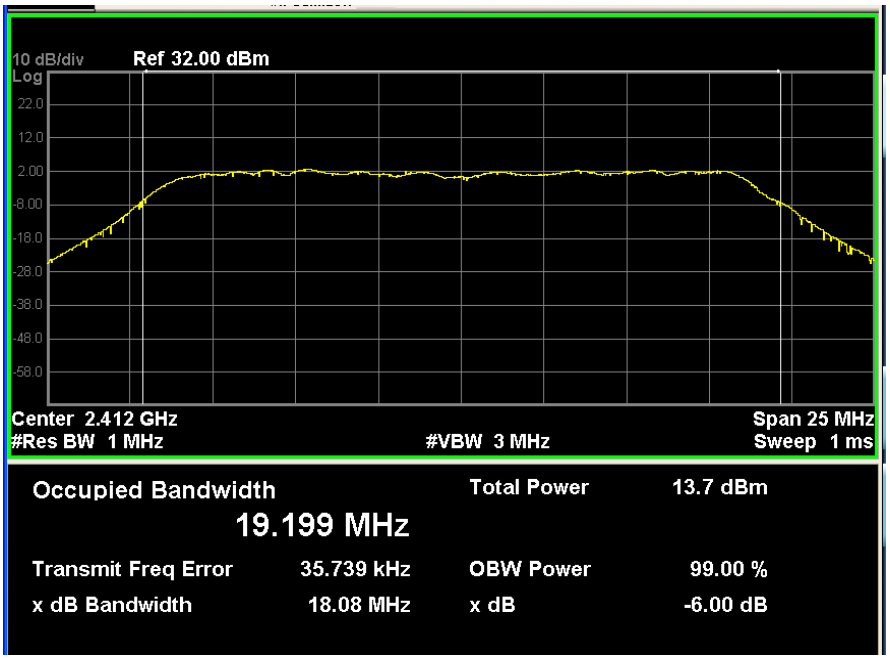
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	18.08
Middle	2437	18.06
Highest	2462	18.08

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

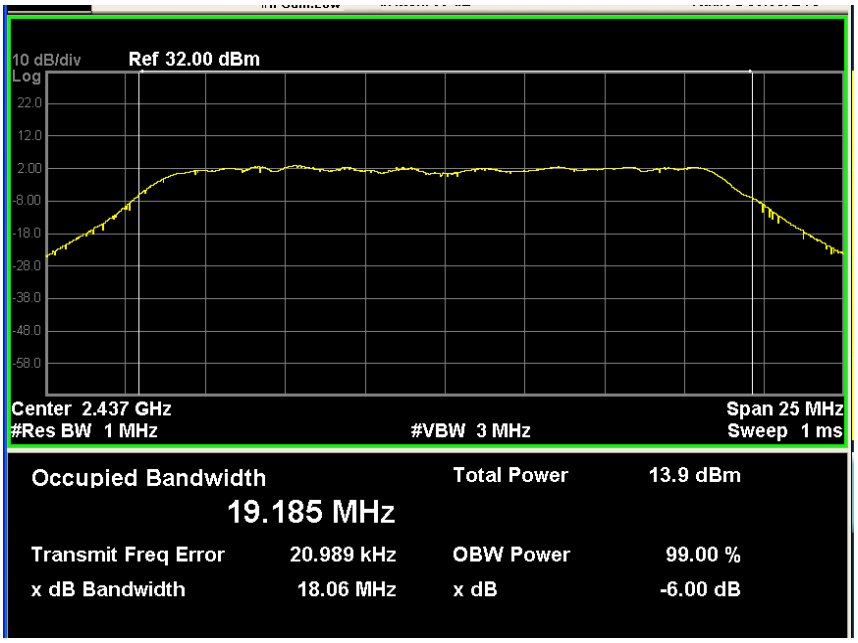
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

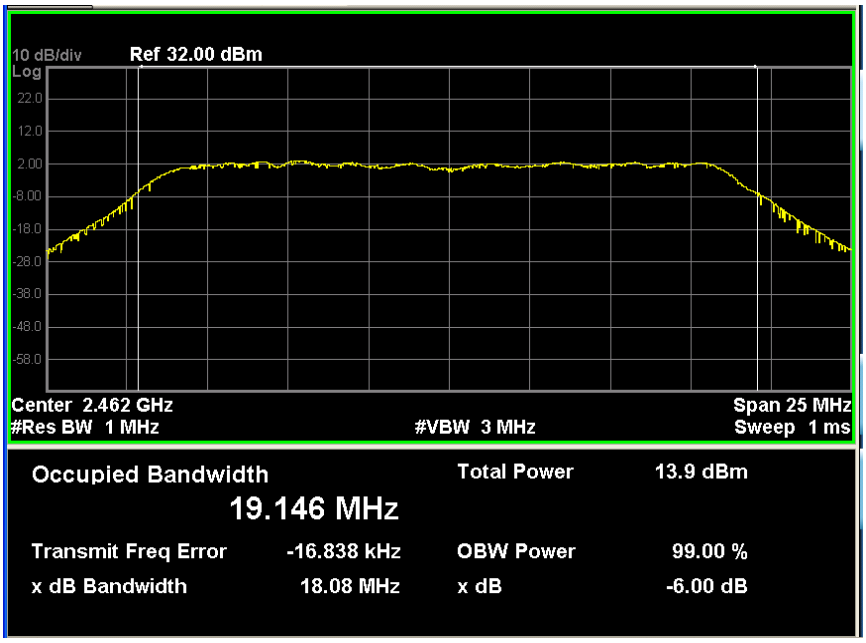
For 802.11n – HT20 Mode
Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 18.08 MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 18.06MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 18.08MHz



For 802.11n – HT40 Mode

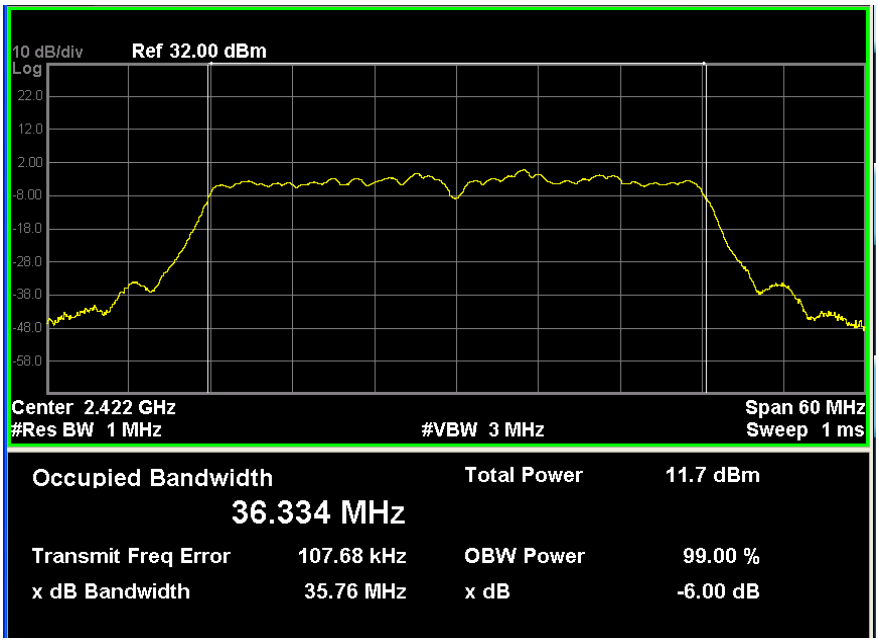
Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2422	35.76
Middle	2437	35.74
Highest	2452	35.76

This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

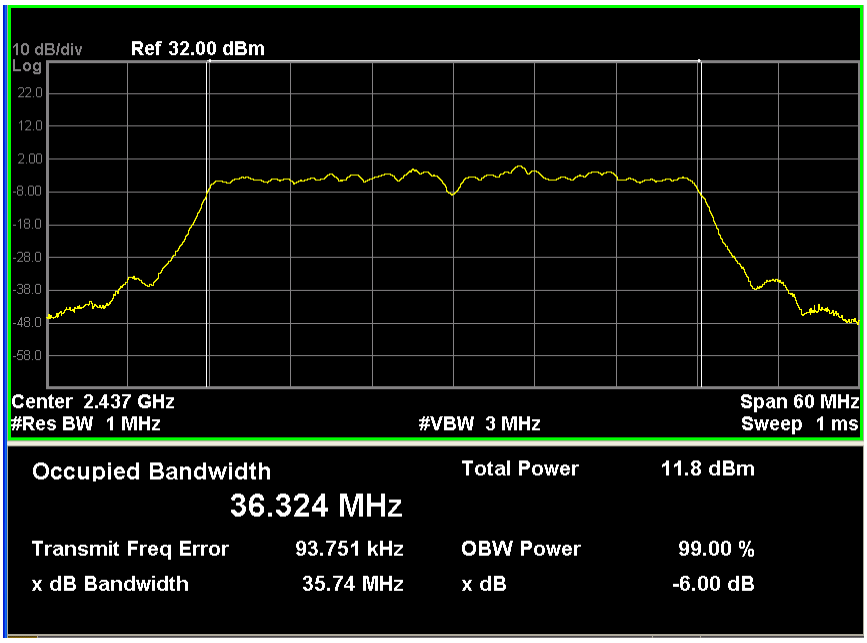
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

The minimum 6 dB bandwidth shall be at least 500 kHz.

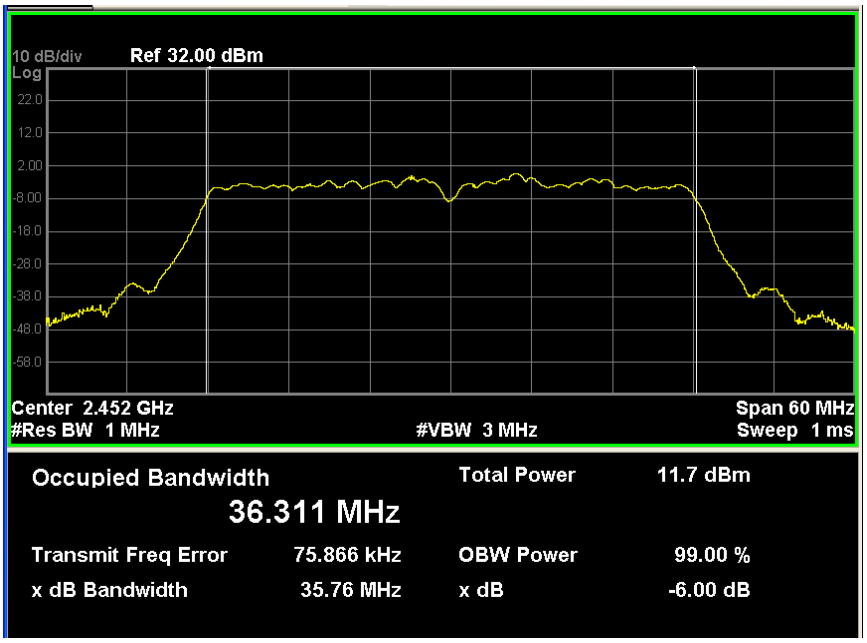
For 802.11n – HT40 Mode
Result data graph shows 6 dB bandwidth, CF = 2.422GHz, BW = 35.76MHz



Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 35.74MHz



Result data graph shows 6 dB bandwidth, CF = 2.452GHz, BW = 35.76MHz



4.2 Power Spectral Density

Test Requirement: FCC part 15 section 15.247 (e)
Test Date: 2014-06-15
Mode of Operation: Transmitting continuously mode
Detector Function: Peak

Result : PASS

Measured Result :

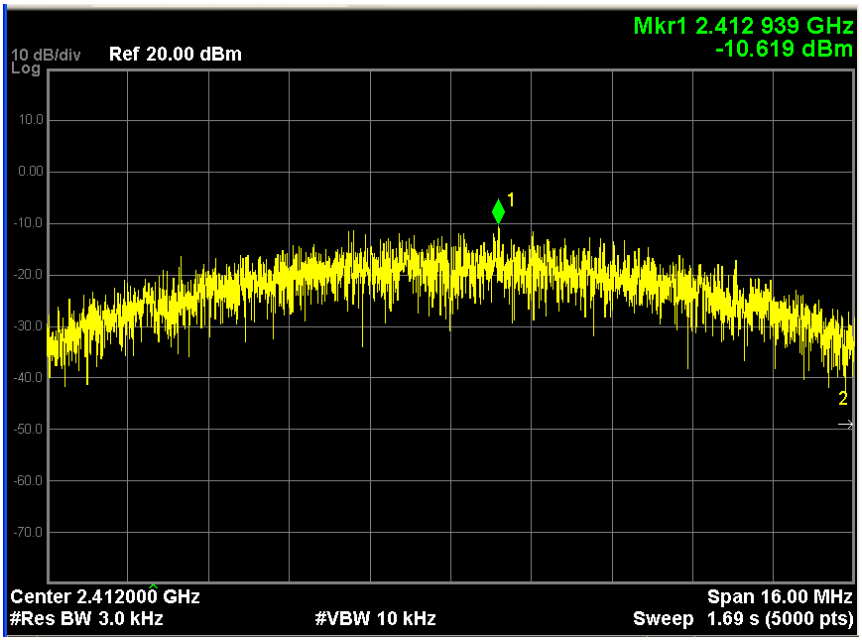
Test mode	Test channel	Reading (dBm)	Limit (dBm)
802.11b	Low channel (2412MHz)	-10.62	8
	Middle channel (2437MHz)	-9.82	8
	High channel (2462MHz)	-10.09	8
802.11g	Low channel (2412MHz)	-18.97	8
	Middle channel (2437MHz)	-18.09	8
	High channel (2462MHz)	-17.65	8
802.11n-HT20	Low channel (2412MHz)	-19.87	8
	Middle channel (2437MHz)	-19.15	8
	High channel (2462MHz)	-20.30	8
802.11n-HT40	Low channel (2422MHz)	-22.37	8
	Middle channel (2437MHz)	-22.98	8
	High channel (2452MHz)	-21.49	8

Note: 1. Above testing data has been considered with 0.2dB cable loss which between antenna port and spectrum.

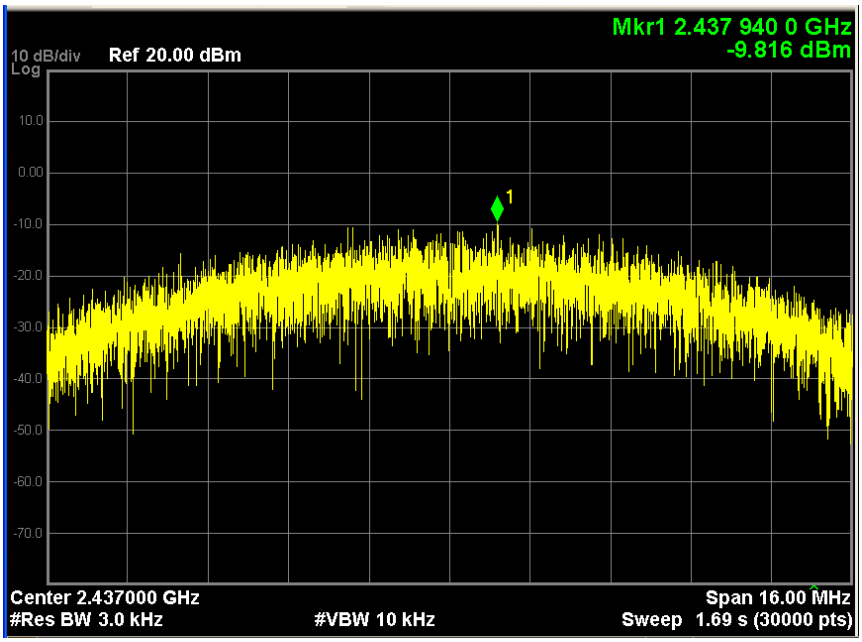
Limits for power spectral density [Section 15.247 (e)]:

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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

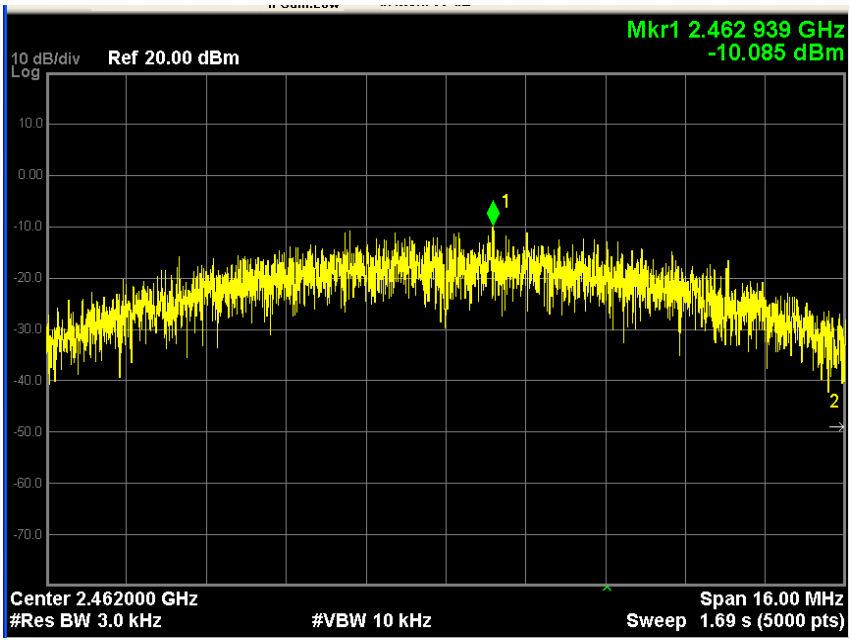
For 802.11b Mode
Result data graph shows Low channel power spectrum density is -10.62dBm



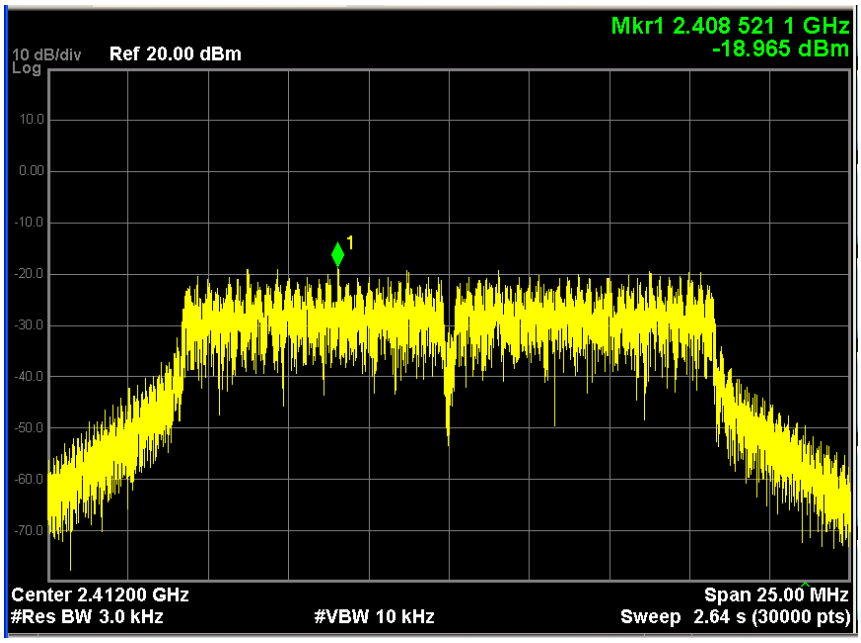
Result data graph shows middle channel power spectrum density is -9.82dBm



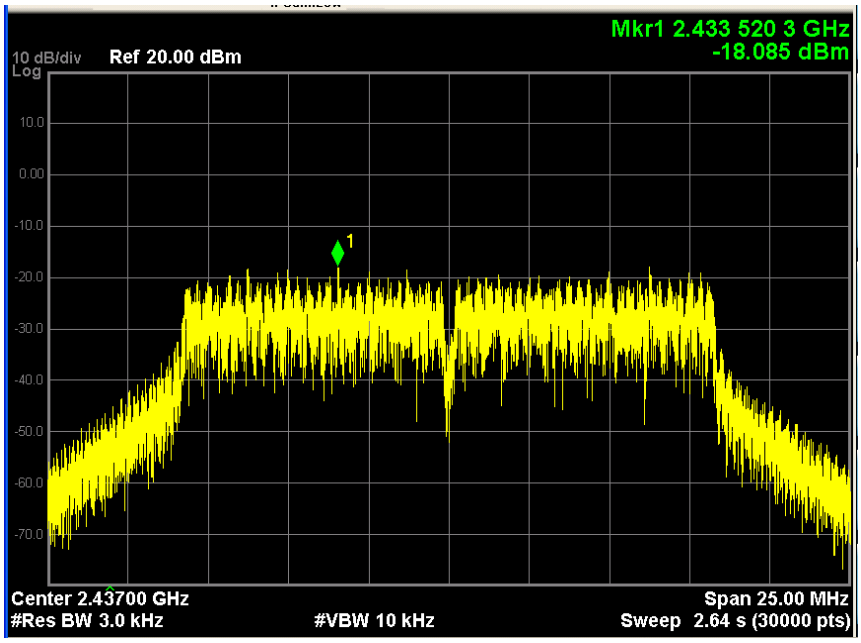
Result data graph shows high channel power spectrum density is -10.09dBm



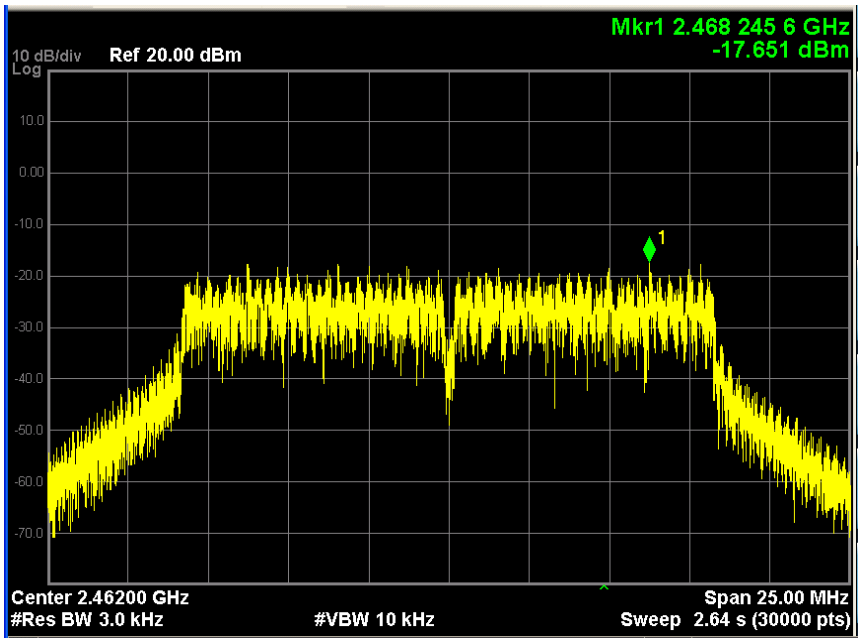
For 802.11g Mode
Result data graph shows Low channel power spectrum density is -18.97Bm



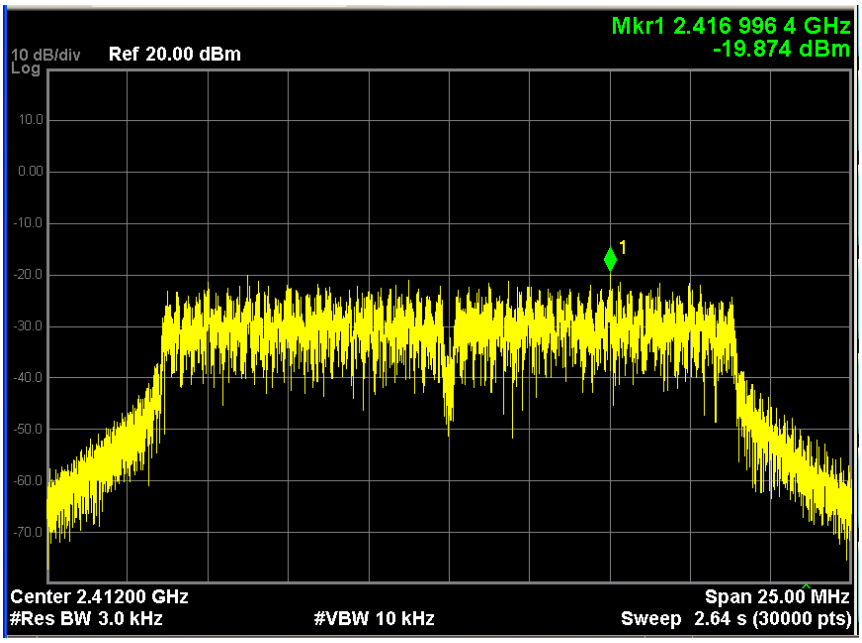
Result data graph shows middle channel power spectrum density is -18.09dBm



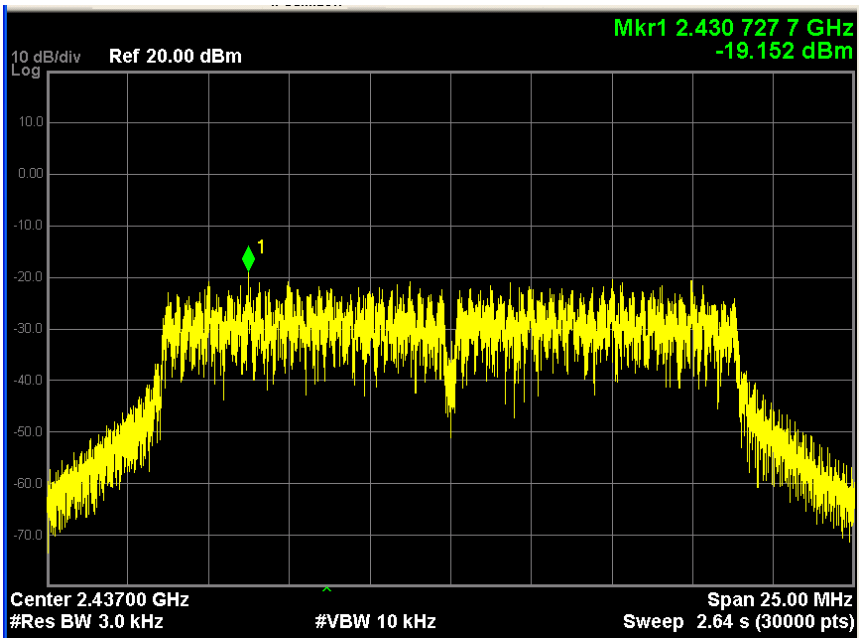
Result data graph shows high channel power spectrum density is -17.65dBm



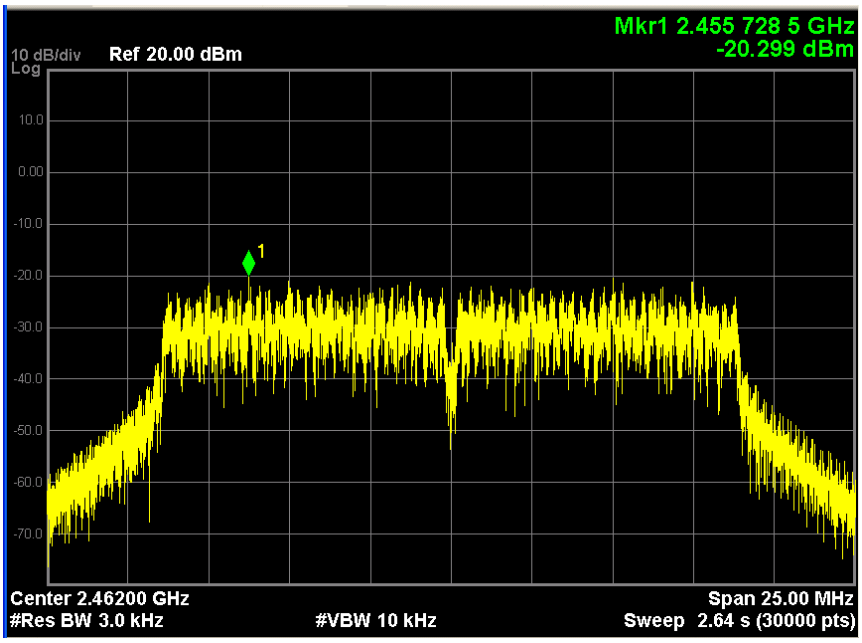
For 802.11n-HT20 Mode
Result data graph shows Low channel power spectrum density is -19.87Bm



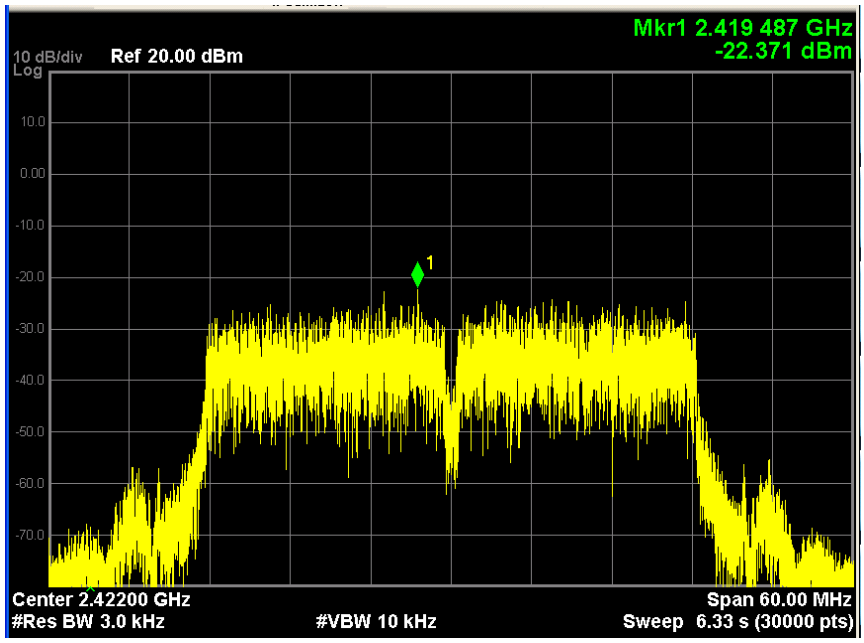
Result data graph shows middle channel power spectrum density is -19.15dBm



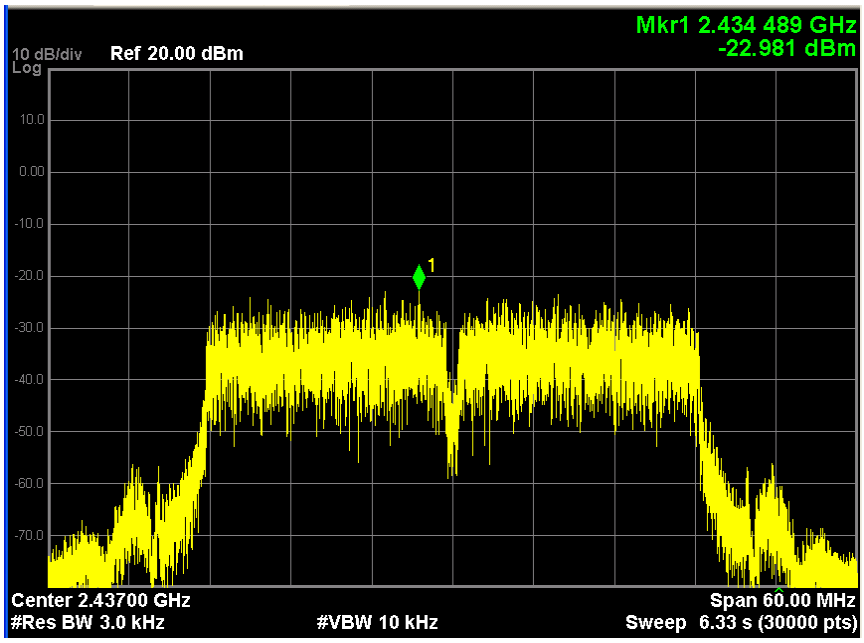
Result data graph shows high channel power spectrum density is -20.30dBm



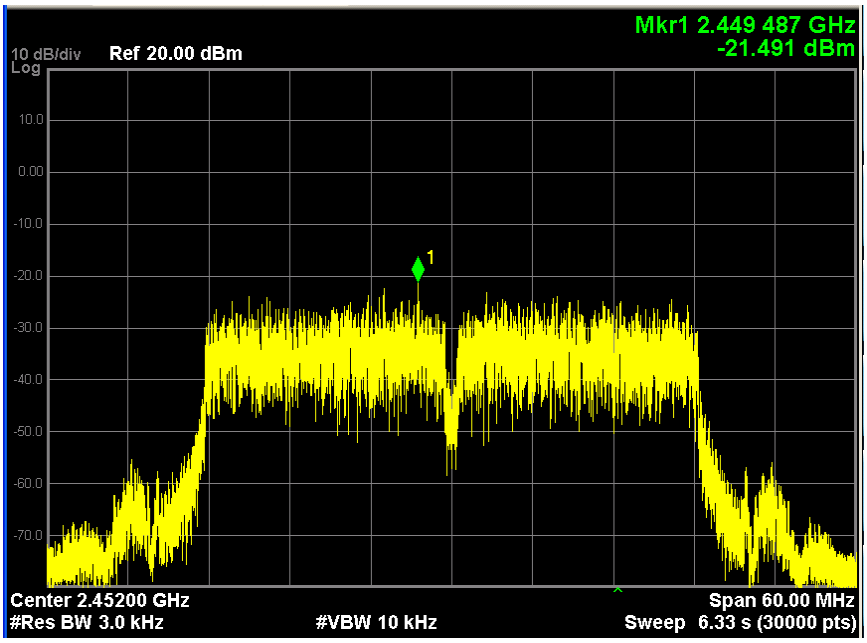
For 802.11n-HT40 Mode
Result data graph shows Low channel power spectrum density is -23.37 dBm



Result data graph shows middle channel power spectrum density is -22.98dBm



Result data graph shows high channel power spectrum density is -21.49dBm



4.3 Band Edge Measurement

Test Requirement:	FCC part 15 section 15.247
Test Date:	2014-06-15
Mode of Operation:	Transmitting continuously mode.
Detector Function:	Max Hold

Result: PASS

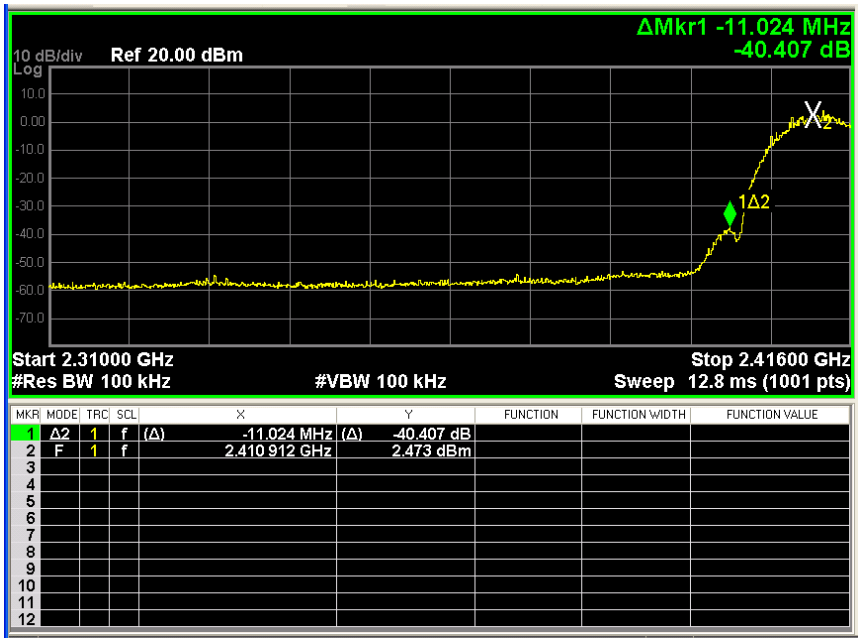
Measured Result :

Refer to the figure, it shows the frequency of lower band edge and upper band edge separately.

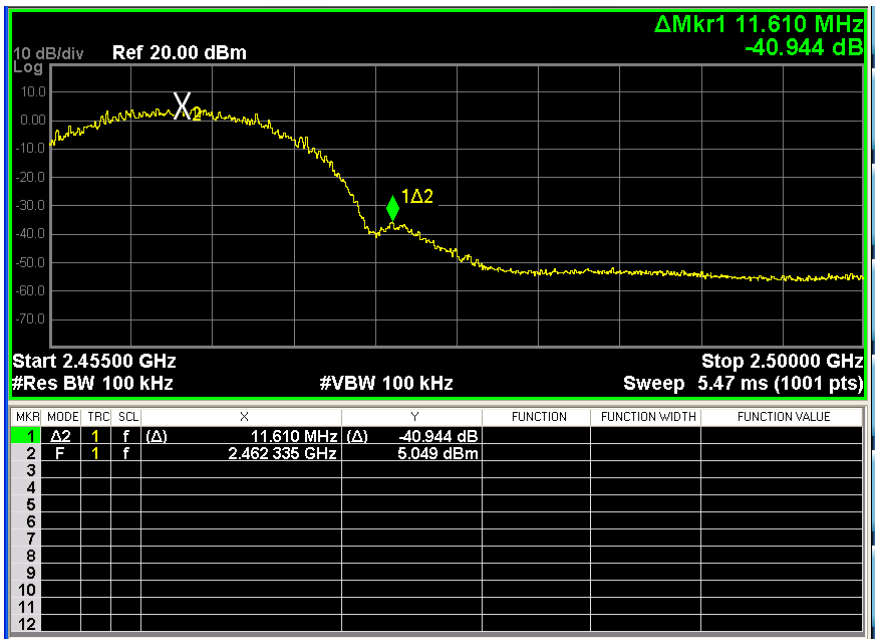
Limits of Band Edge for Carrier Frequencies Operated within the Bands [Section 15.247]:

The carrier frequencies should operate within 2400-2483.5MHz.

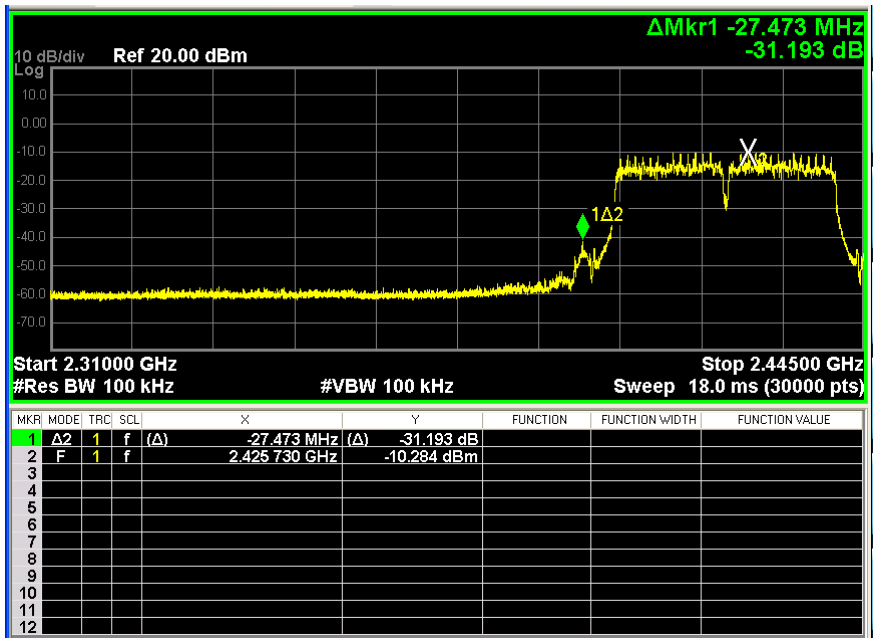
Result data graph shows the frequency of lowest channel.
For 802.11b Low Channel Mode (Worst Case)



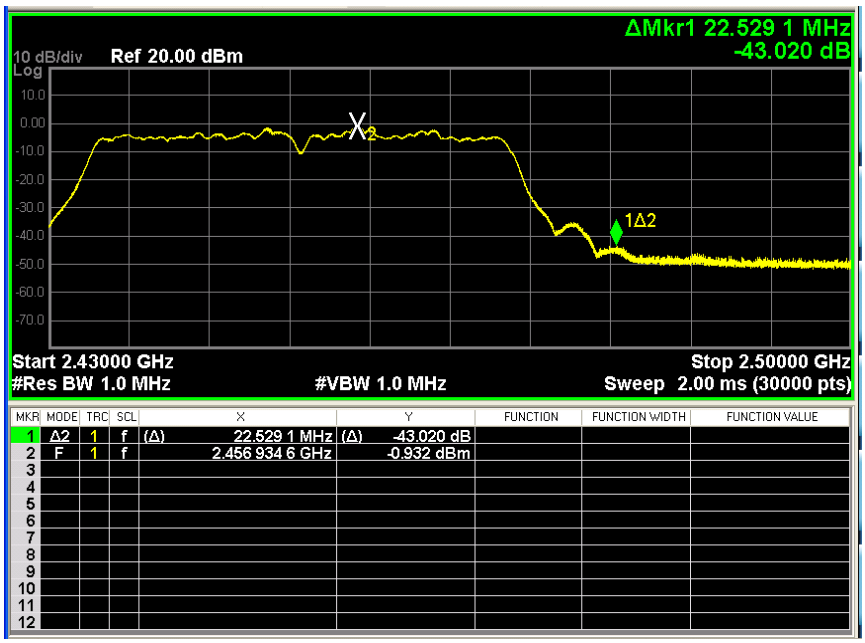
For 802.11b High Channel Mode (Worst Case)



For 802.11n – HT40 Low Channel Mode (Worst Case)



For 802.11n – HT40 High Channel Mode (Worst Case)



4.4 Maximum Output Power

Test Requirement:	FCC part 15 section 15.247 (b3)
Test Method:	ANSI C63.4:2009
Test Date:	2014-06-15
Mode of Operation:	Transmitting continuously mode
Detector Function:	Peak
Measurement BW:	RBW 1MHz ; VBW 3MHz

Test Procedure :

According to section 15.247(b)-power output of the MBP36HDBU, the measurement procedure PK2 was used, the following is the measurement procedure.

1. Set the span ≥ 1.5 x DTS bandwidth (6dB bandwidth).

2. Set RBW = 1 MHz, Set VBW =3 MHz.

3. Detector = peak; sweep time =auto couple.

4. Trace mode = max hold; allow the trace to fully stabilize.

5. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.

Result : PASS

Transmitting Mode: Transmits continuously

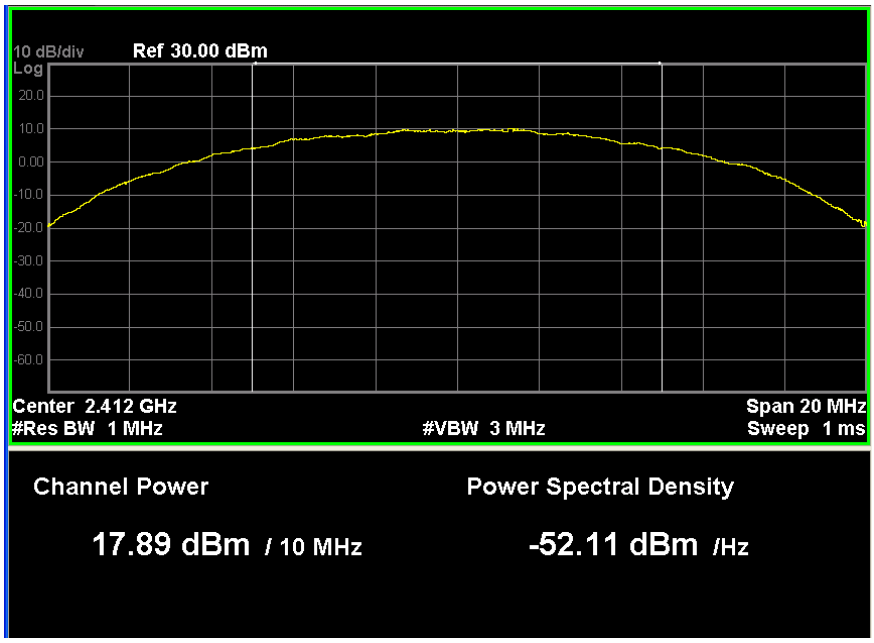
Test mode	Frequency MHz	Output Power dBm	Output Power mW	Limit mW
802.11b 1Mbps	2412	17.89	54.08	1000
	2437	18.41	69.34	1000
	2462	18.67	73.60	1000
802.11g 1Mbps	2412	15.67	36.90	1000
	2437	16.34	43.05	1000
	2462	16.73	47.10	1000
802.11n – HT20	2412	13.54	22.59	1000
	2437	13.65	23.17	1000
	2462	13.65	23.17	1000
802.11n – HT40	2422	11.64	14.59	1000
	2437	11.68	14.72	1000
	2452	11.70	14.79	1000

Note: Above testing data is base on the cable loss which between antenna port and spectrum is 0.2dB

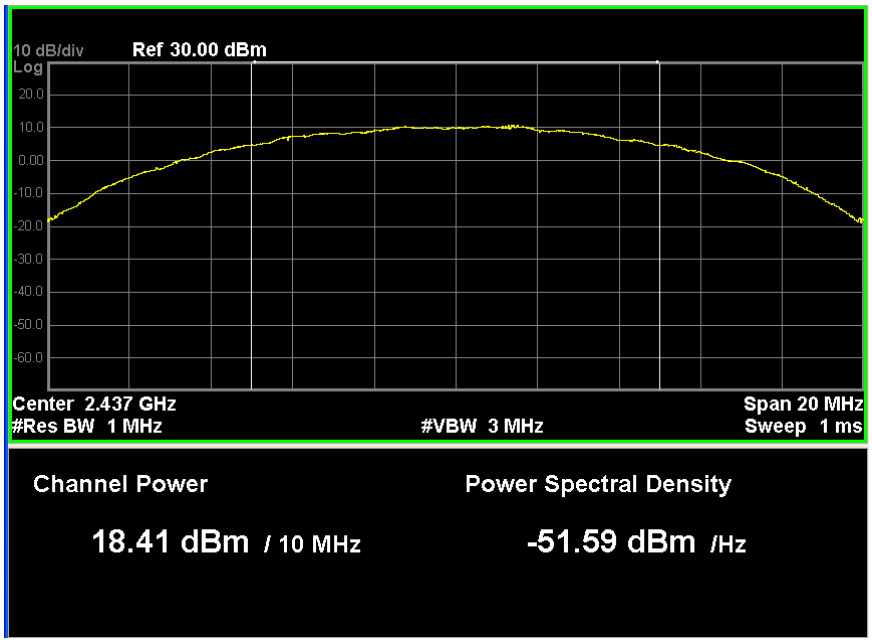
Limits for Maximum Output Power [Section 15.247 (b3)]:

For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

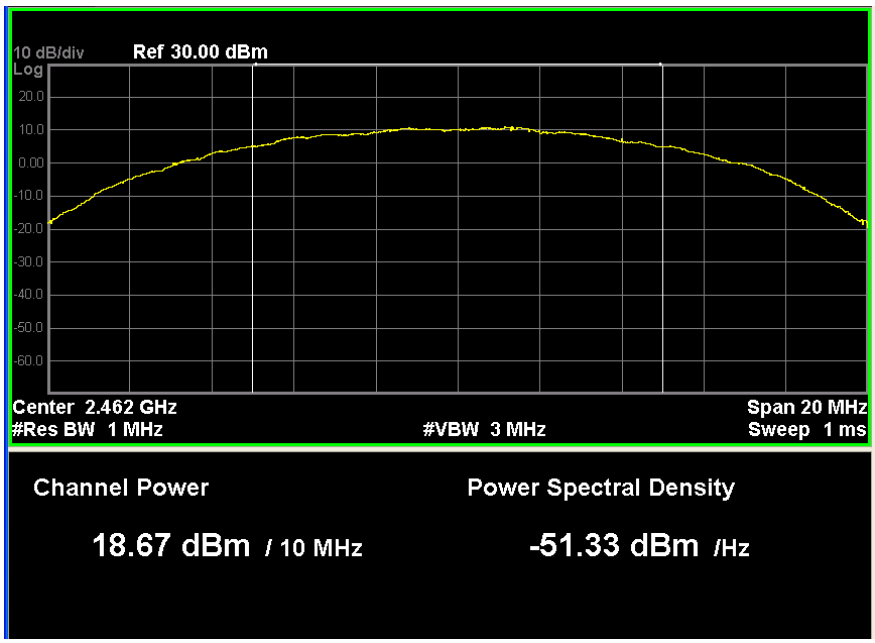
For 802.11b Mode
Result data graph shows Low channel conducted power = 17.89dBm



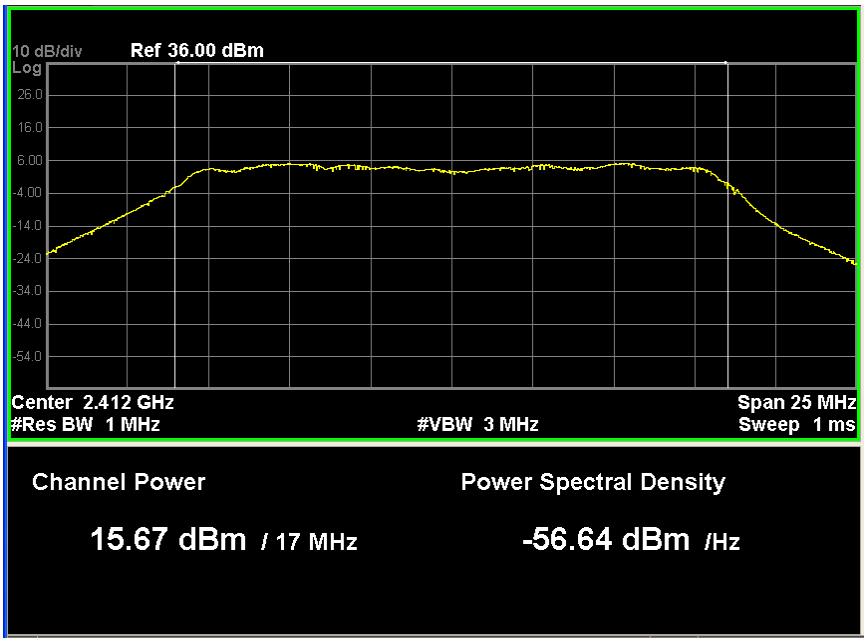
Result data graph shows middle channel conducted power = 18.41dBm



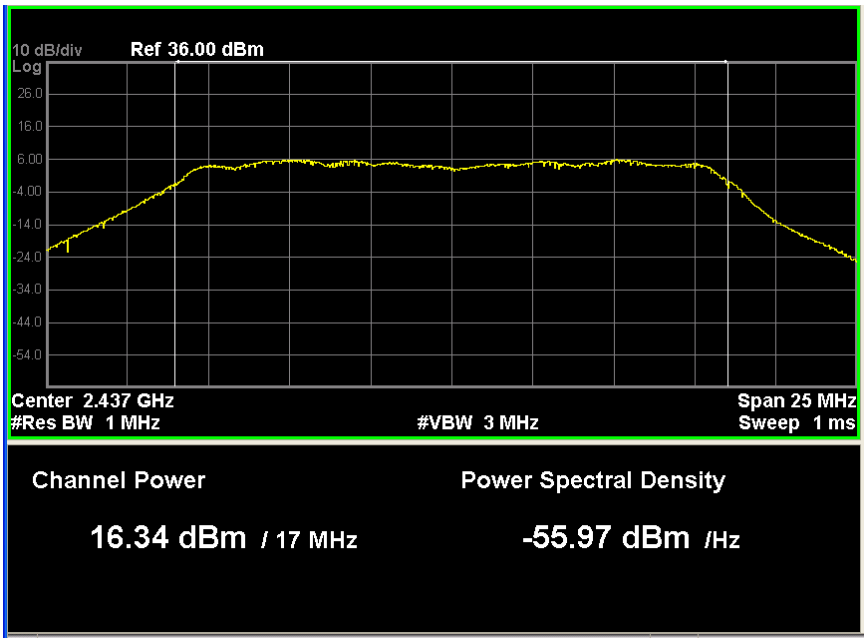
Result data graph shows high channel conducted power = 18.67dBm



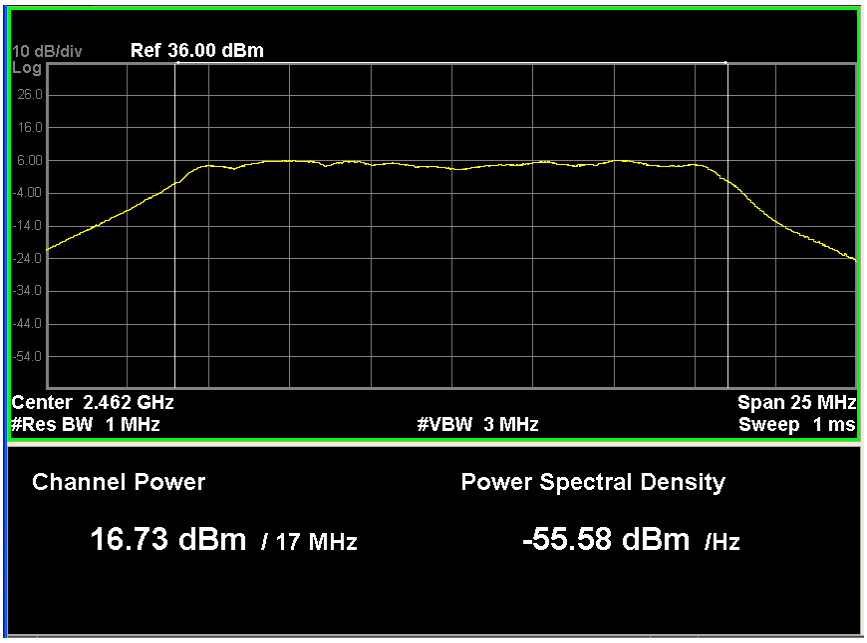
For 802.11g Mode
Result data graph shows Low channel conducted power = 15.67dBm



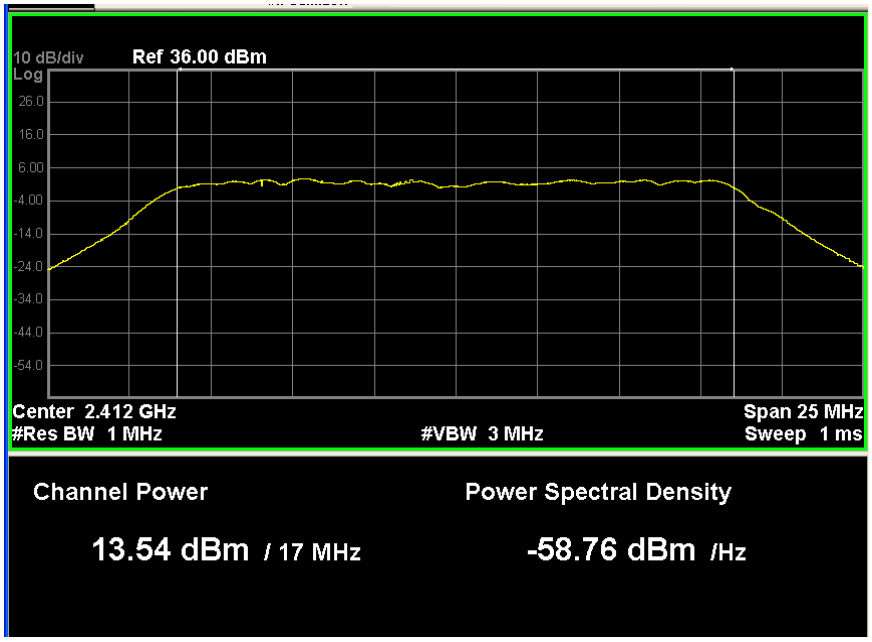
Result data graph shows middle channel conducted power = 16.34dBm



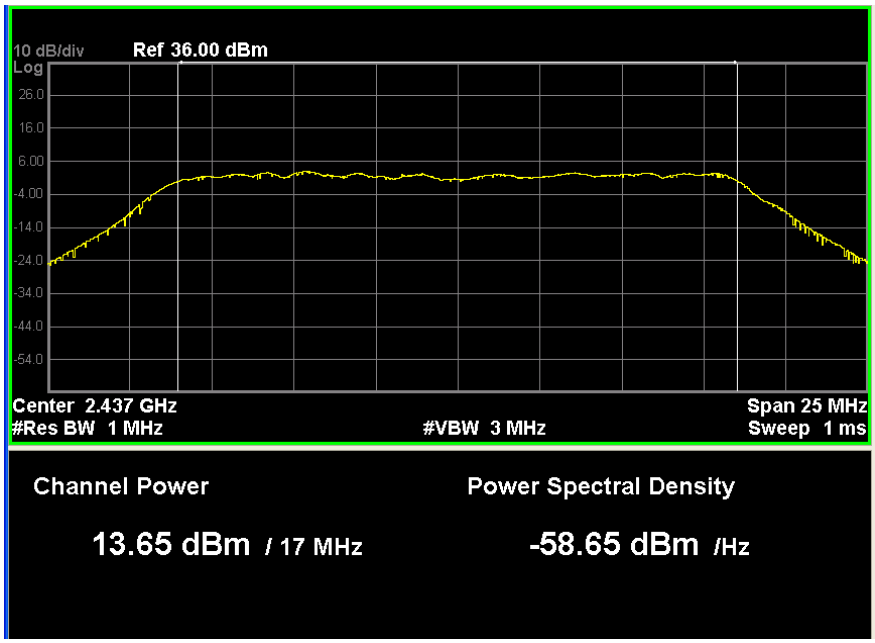
Result data graph shows high channel conducted power = 16.73dBm



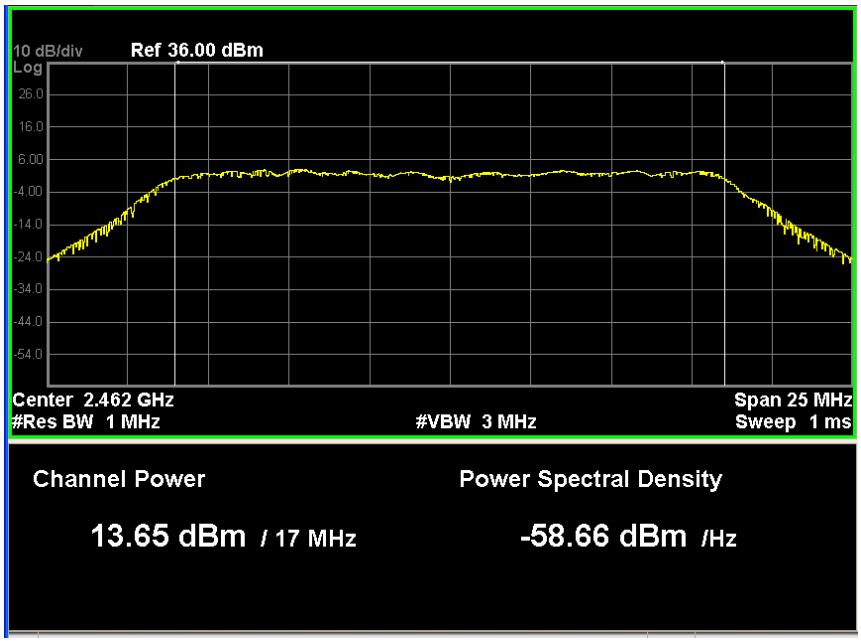
For 802.11n – HT20 Mode
Result data graph shows Low channel conducted power = 13.54dBm



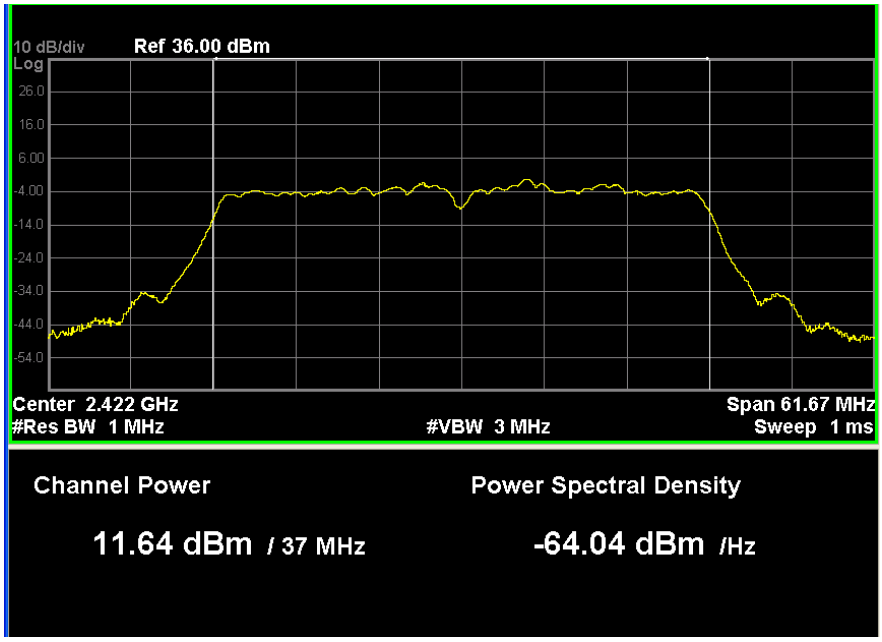
Result data graph shows middle channel conducted power = 13.65dBm



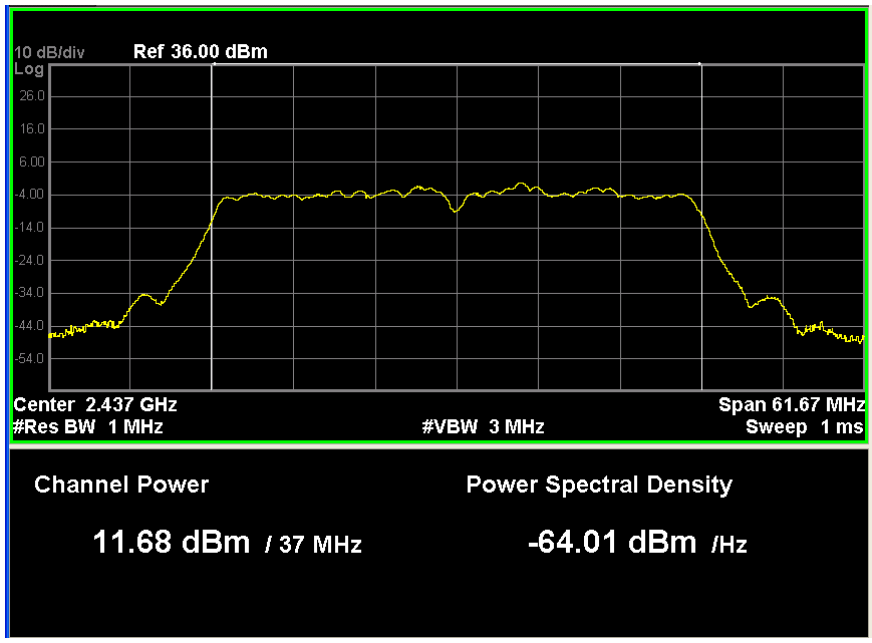
Result data graph shows high channel conducted power = 13.65dBm



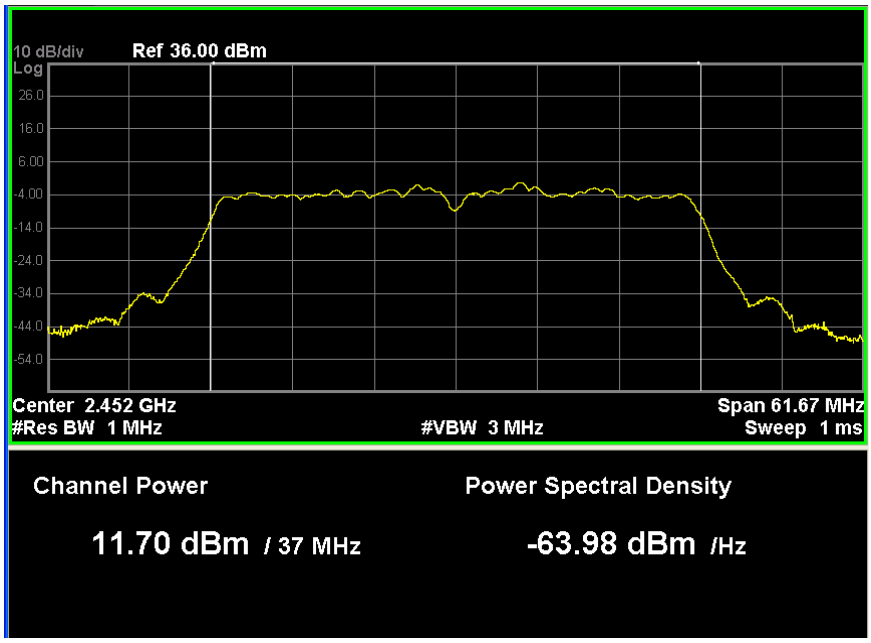
For 802.11n – HT40 Mode
Result data graph shows Low channel conducted power = 11.64dBm



Result data graph shows middle channel conducted power = 11.68Bm



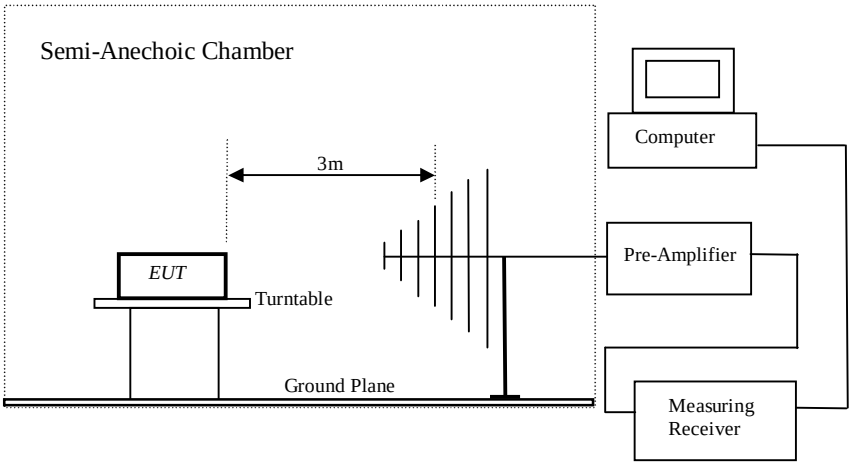
Result data graph shows high channel conducted power = 11.70dBm



4.5 Out of Band Emissions and Emissions in Restricted Bands

Test Requirement:	FCC part 15 section 15.247 (d)
Test Method:	ANSI C63.4:2009
Test Date:	2014-06-15
Mode of Operation:	Transmitting continuously mode
Detector Function:	Peak
Measurement BW:	RBW 100KHz ; VBW 300KHz

Test Setup:



Result : PASS

Out of Frequency Band Emissions:

For out of band emissions that are close to or exceed 20dB attenuation requirement, and emission falls into restricted band, radiated emission was performed in order to show compliance with the general radiated emission requirement.

Result Summary:

Refer to the emission data graph, result shows that the significant emissions detected are with more than 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power.

Limits for Out of Frequency Band Emission [Section 15.247 (d)]:

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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 100kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in Section 15.209(a) is not required.

Limit for Radiated Emission Falling in Restricted Bands [Section 15.209]:

Frequency (MHz)	Field Strength [μV/m]	Field Strength [dBμV/m]
30-88	100	40.0
88-216	150	43.5
216-960	200	46.0
Above 960	500	54.0

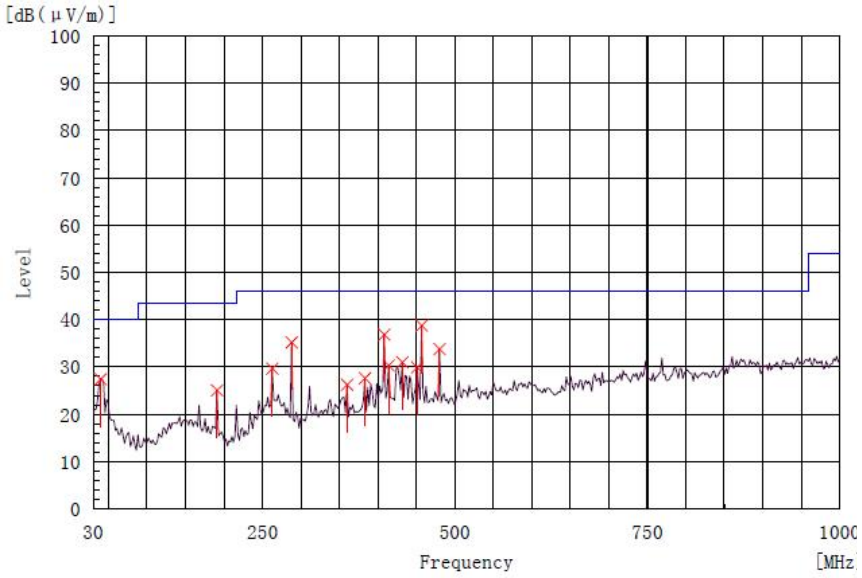
Radiated emissions, which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209.

The emission limits shown in the above table are based on measurement employing a CISPR quasi-peak detector and above 1000MHz are based on measurements employing an average detector.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Below 1GHz emissions
Vertical Polarity

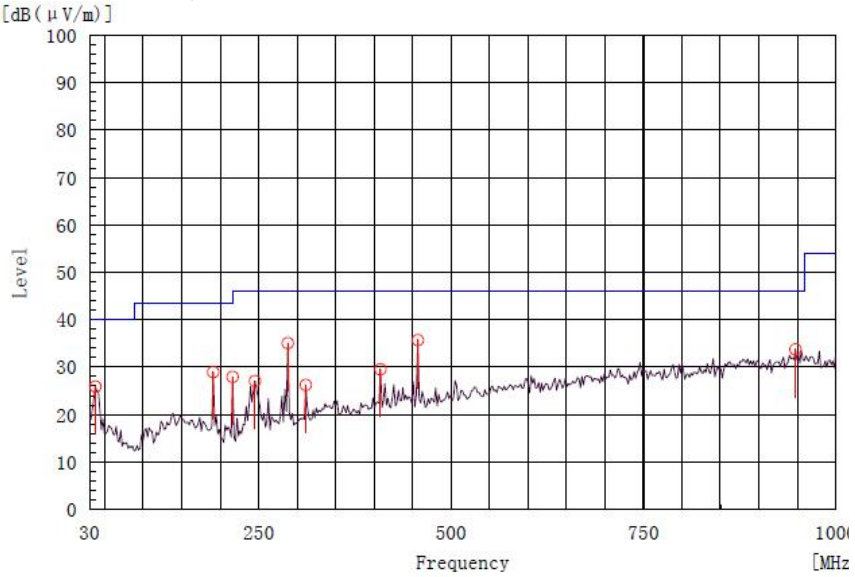


Radiated Emissions							
	Emissions Frequency	**E-Field Polarity**	**Reading**	**System Factor**	**Field strength at 3m**	**Limit**	**Delta to Limit**
	MHz		**dBuV/m**	**dB**	**dBuV/m**	**dBuV/m**	**dBuV/m**
QP	39.70	V	8.00	20.20	27.40	40.00	-12.60
QP	262.80	V	21.50	13.90	29.70	46.00	-16.30
QP	359.80	V	15.80	17.40	26.30	46.00	-19.70
QP	408.12	V	15.40	18.70	36.90	46.00	-9.10
QP	431.58	V	11.00	19.30	31.00	46.00	-15.00
QP	450.98	V	9.50	20.10	29.90	46.00	-16.10

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Below 1GHz emissions
Horizontal Polarity

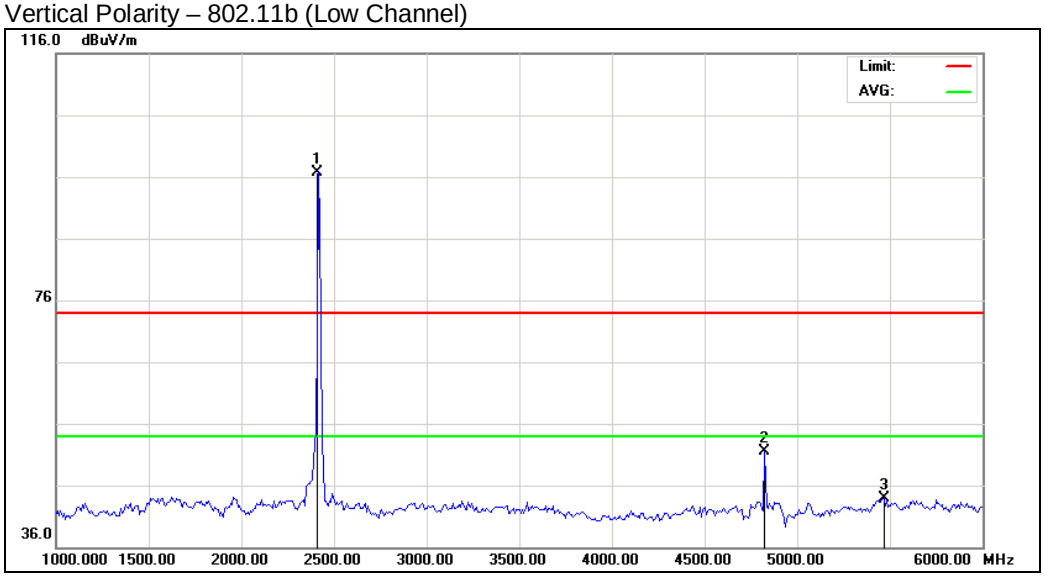


Radiated Emissions							
	Emissions Frequency **MHz**	**E-Field Polarity**	**Reading** **dBuV/m**	**System Factor** **dB**	**Field strength at 3m** **dBuV/m**	**Limit** **dBuV/m**	**Delta to Limit** **dBuV/m**
QP	37.76	H	6.40	21.20	25.90	40.00	-14.10
QP	191.02	H	18.10	12.80	29.00	43.50	-14.50
QP	245.34	H	17.40	13.40	27.00	46.00	-19.00
QP	288.02	H	21.20	15.60	36.80	46.00	-9.20
QP	456.80	H	13.30	20.00	35.70	46.00	-10.30
QP	947.62	H	10.70	28.70	33.70	46.00	-12.30

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity – 802.11b (Low Channel)



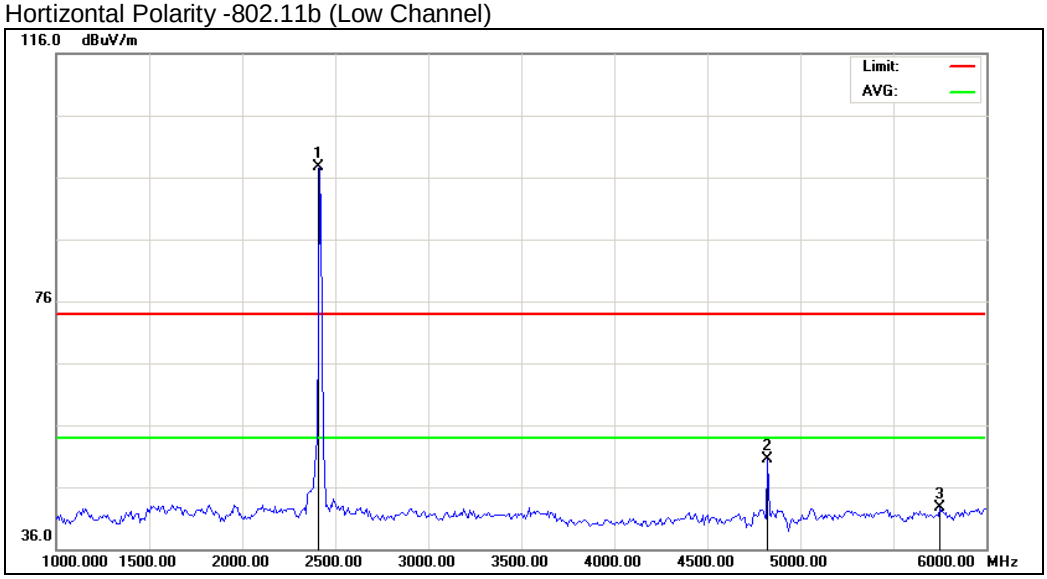
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4824.000	53.74	-2.26	51.48	74.00	-22.52	peak
3	5466.667	45.65	-1.81	43.84	74.00	-30.16	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Hortizontal Polarity -802.11b (Low Channel)



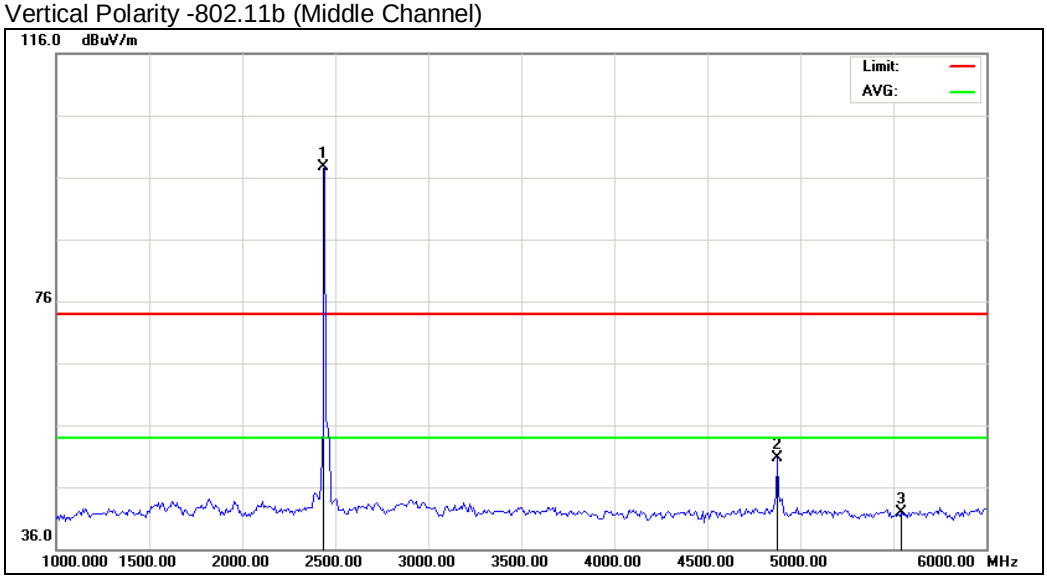
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4824.000	52.74	-2.26	50.48	74.00	-23.52	peak
3	5750.000	44.34	-1.70	42.64	74.00	-31.36	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11b (Middle Channel)



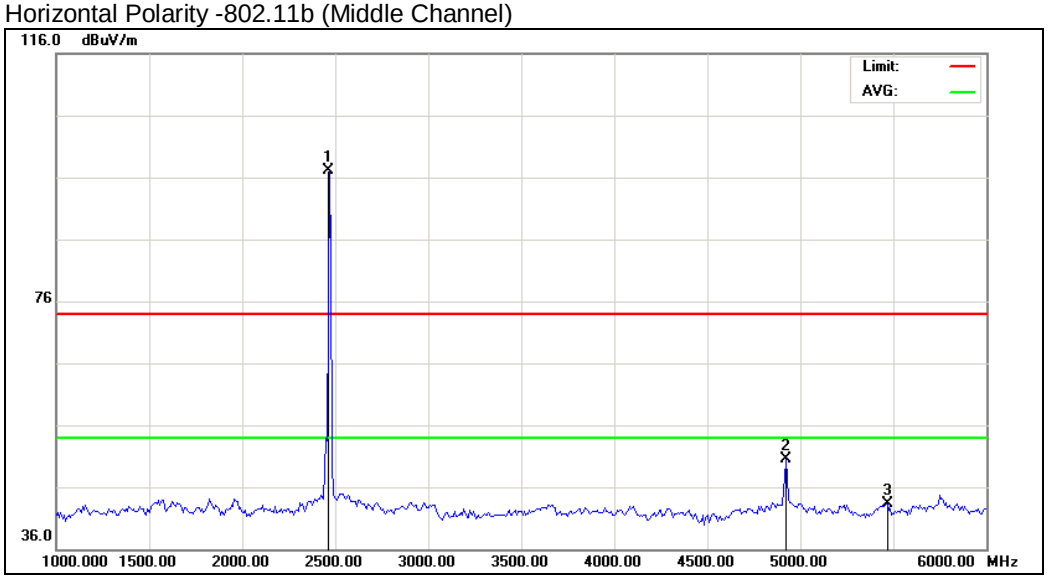
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4874.000	52.83	-2.13	50.70	74.00	-23.30	peak
3	5541.667	43.75	-1.79	41.96	74.00	-32.04	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11b (Middle Channel)



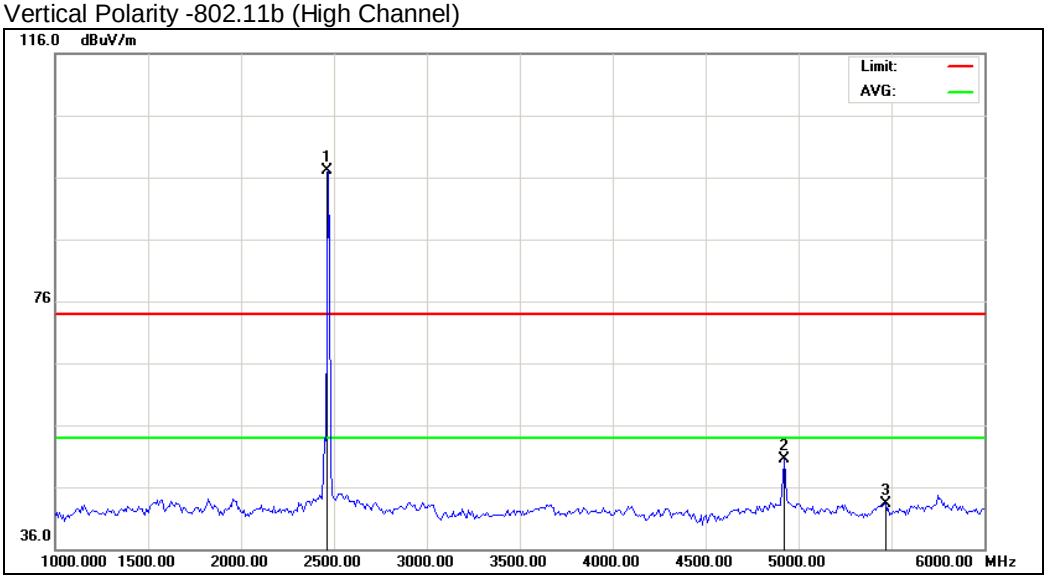
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4924.000	52.50	-2.00	50.50	74.00	-23.50	peak
3	5466.667	45.15	-1.81	43.34	74.00	-30.66	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11b (High Channel)



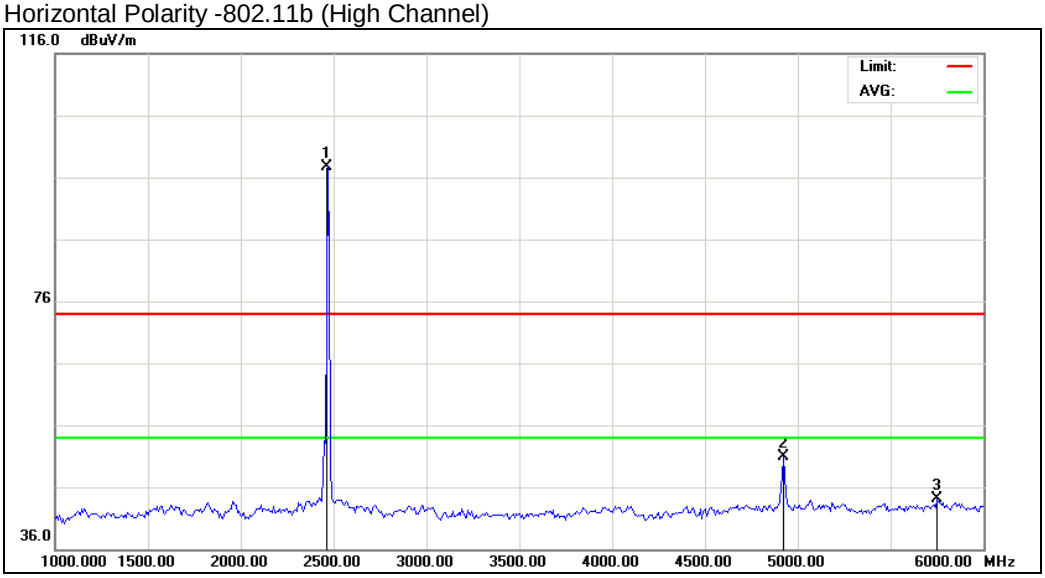
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4924.000	52.50	-2.00	50.50	74.00	-23.50	peak
3	5466.667	45.15	-1.81	43.34	74.00	-30.66	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11b (High Channel)



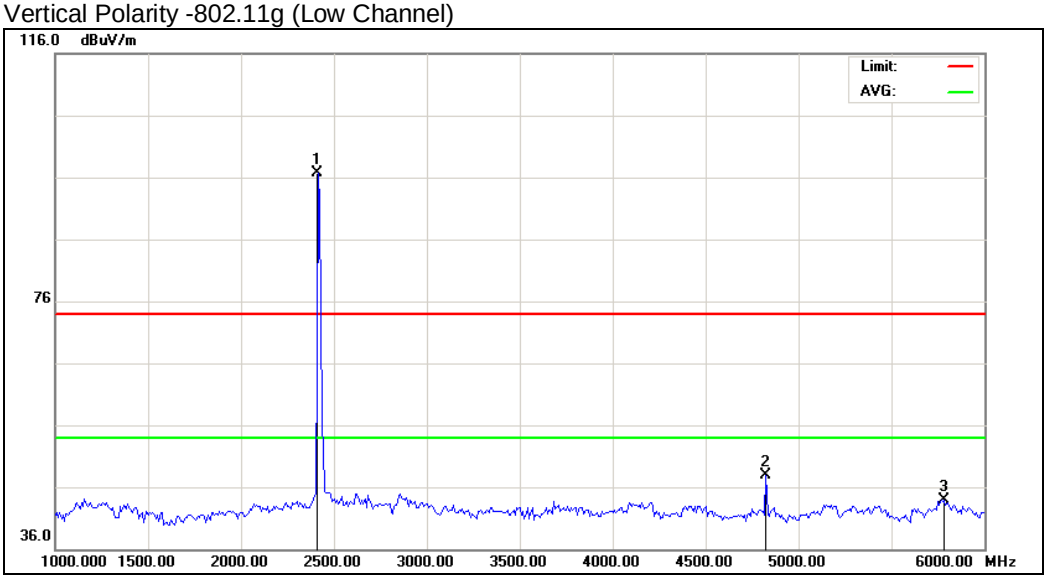
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4924.000	53.00	-2.00	51.00	74.00	-23.00	peak
3	5750.000	45.84	-1.70	44.14	74.00	-29.86	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11g (Low Channel)



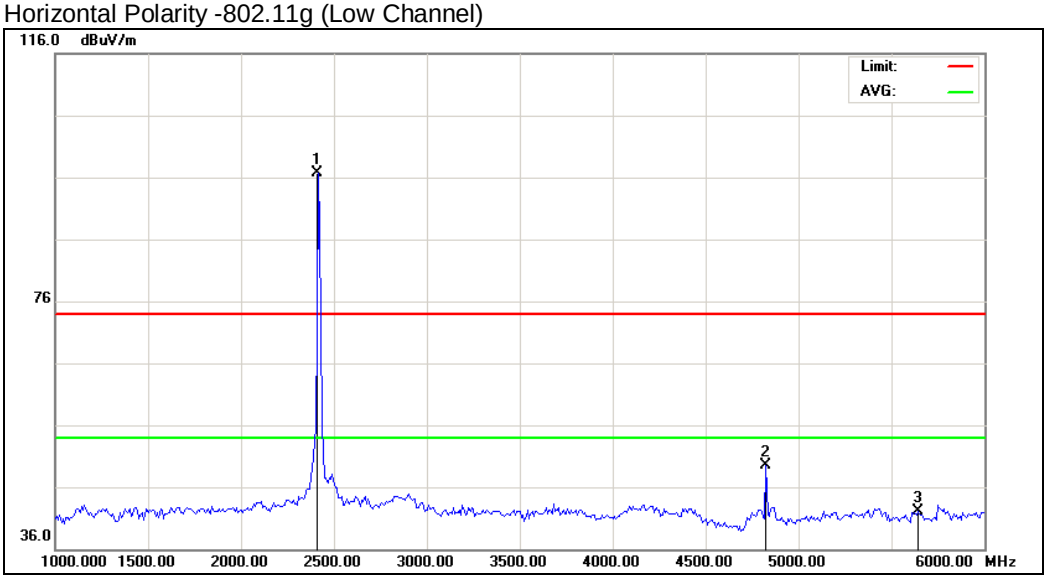
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4824.000	50.24	-2.26	47.98	74.00	-26.02	peak
3	5783.333	45.60	-1.68	43.92	74.00	-30.08	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11g (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4824.000	51.74	-2.26	49.48	74.00	-24.52	Peak
3	5641.667	43.81	-1.74	42.07	74.00	-31.93	Peak

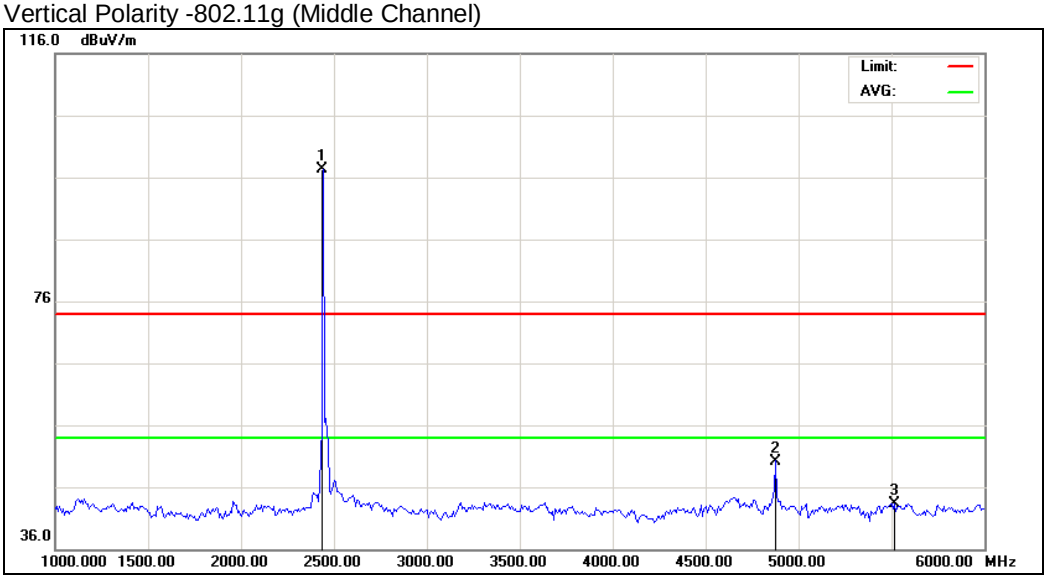
Remark: Only background noise was measured from 16GHz-26GHz.

.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11g (Middle Channel)



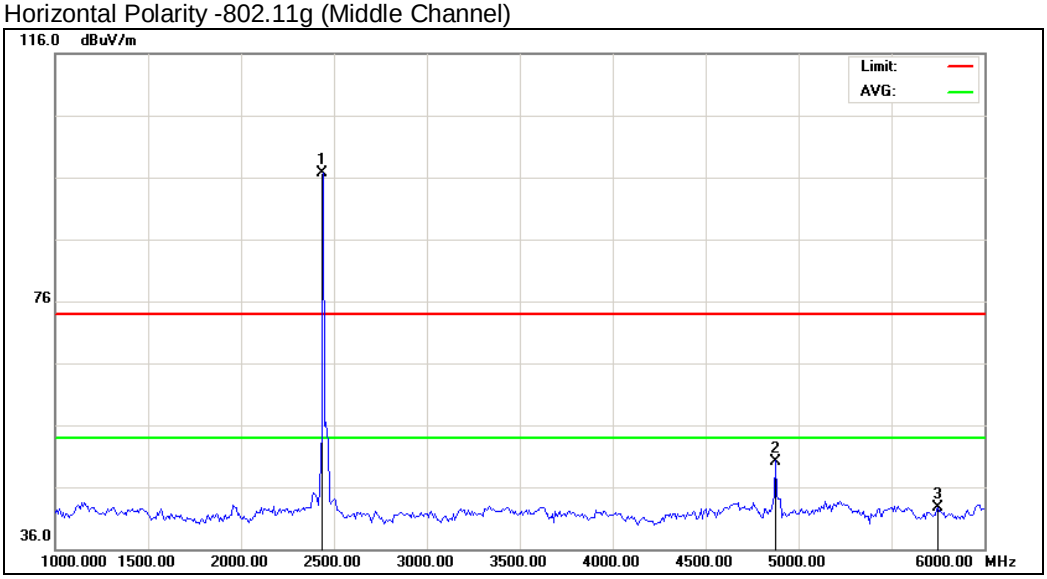
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4874.000	52.33	-2.13	50.20	74.00	-23.80	peak
3	5516.667	45.14	-1.80	43.34	74.00	-30.66	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11g (Middle Channel)



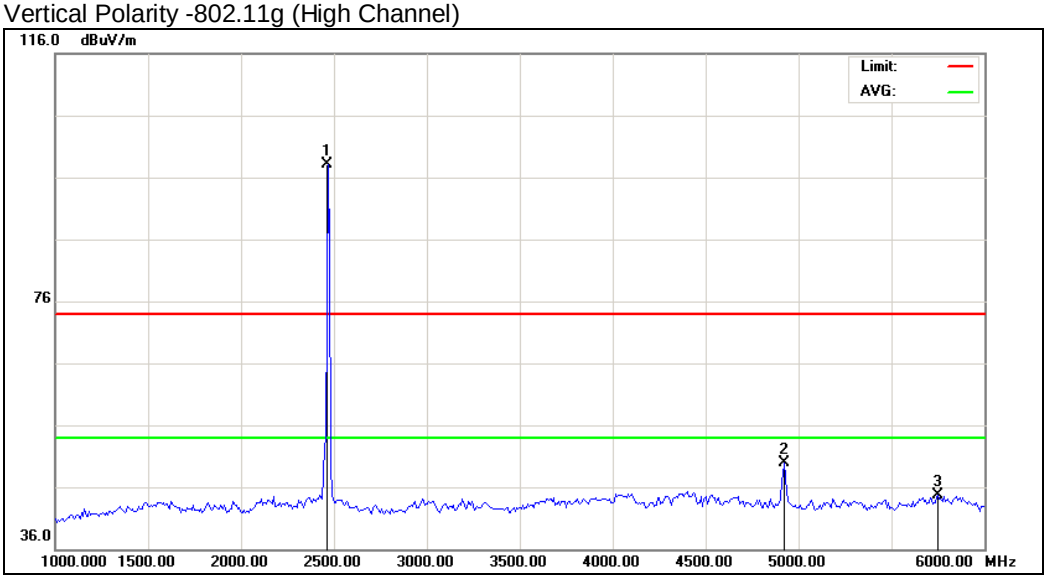
No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
2	4874.000	52.33	-2.13	50.20	74.00	-23.80	peak
3	5750.000	44.34	-1.70	42.64	74.00	-31.36	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11g (High Channel)



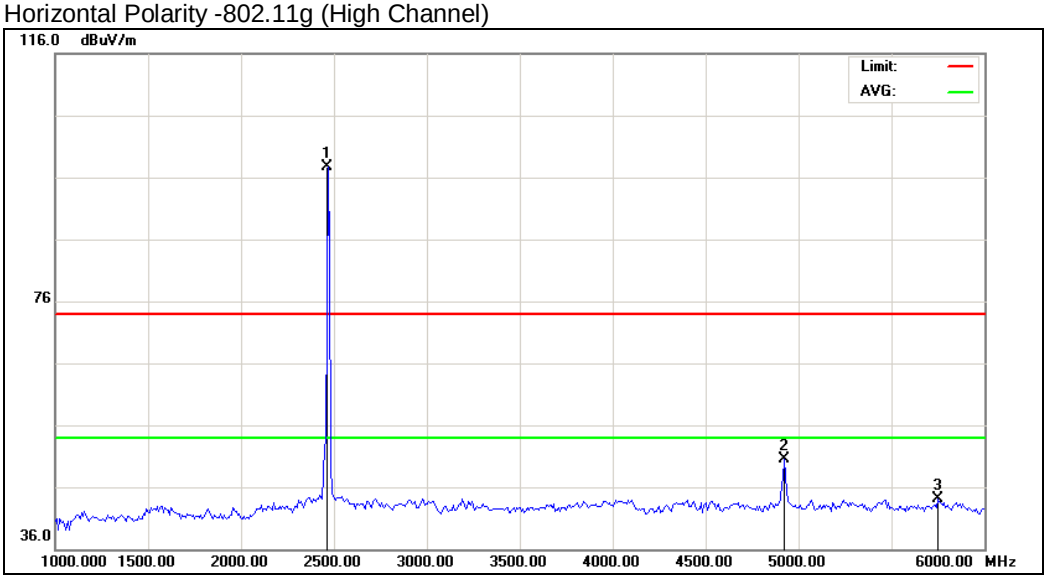
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4924.000	52.50	-2.00	50.50	74.00	-23.50	peak
3	5750.000	46.34	-1.70	44.64	74.00	-29.36	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11g (High Channel)



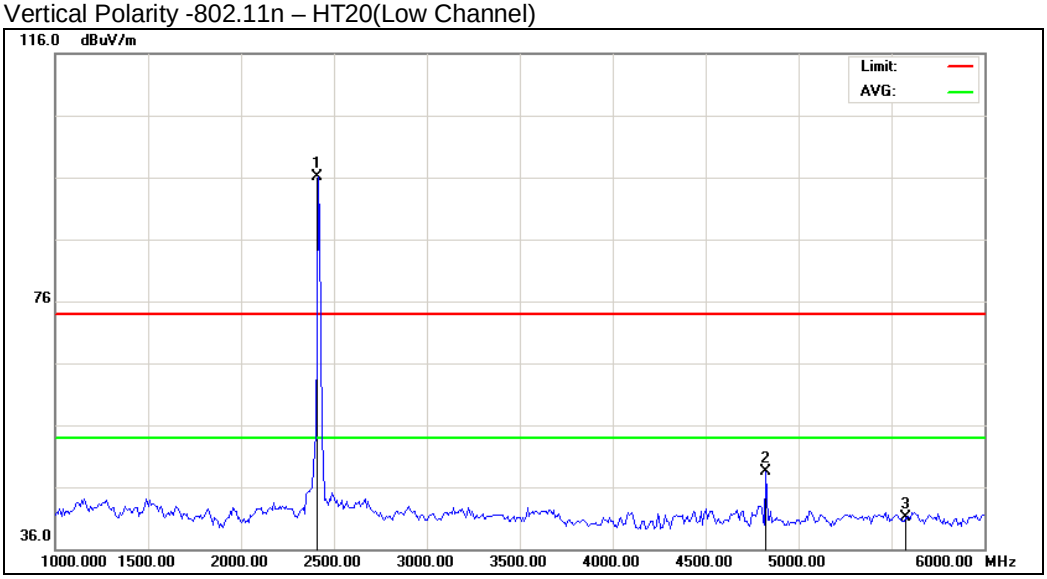
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4924.000	52.50	-2.00	50.50	74.00	-23.50	peak
3	5750.000	45.84	-1.70	44.14	74.00	-29.86	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11n – HT20(Low Channel)



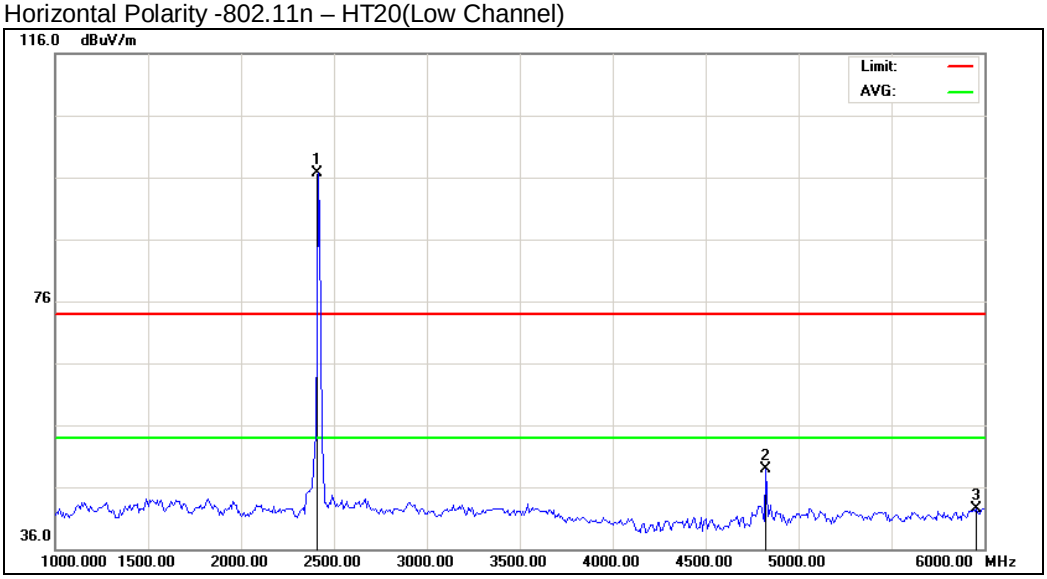
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4824.000	50.74	-2.26	48.48	74.00	-25.52	peak
3	5575.000	42.84	-1.78	41.06	74.00	-32.94	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11n – HT20(Low Channel)



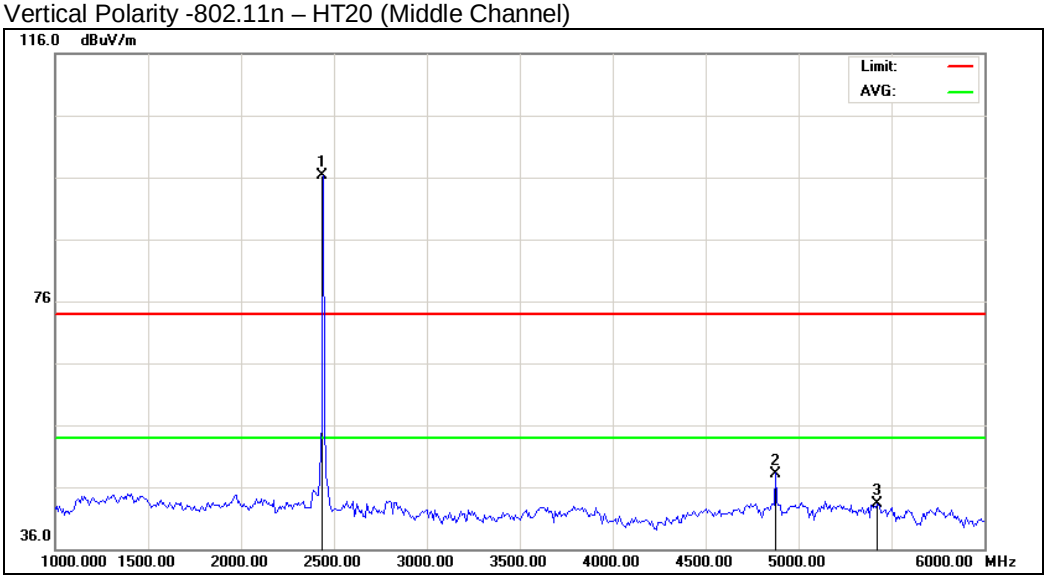
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4824.000	51.24	-2.26	48.98	74.00	-25.02	peak
3	5958.333	44.02	-1.60	42.42	74.00	-31.58	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11n – HT20 (Middle Channel)



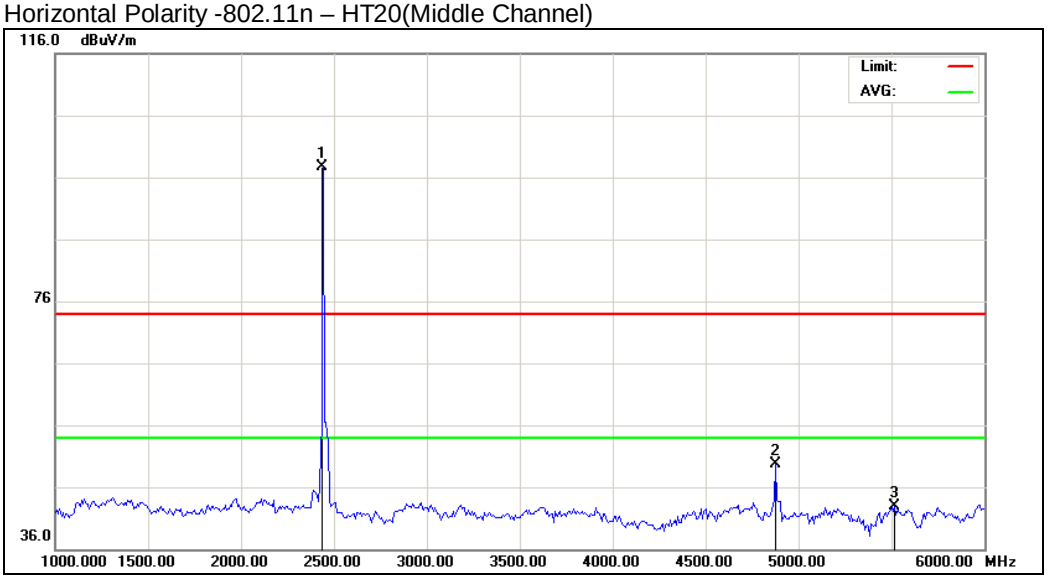
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4874.000	50.33	-2.13	48.20	74.00	-25.80	peak
3	5425.000	45.07	-1.81	43.26	74.00	-30.74	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11n – HT20(Middle Channel)



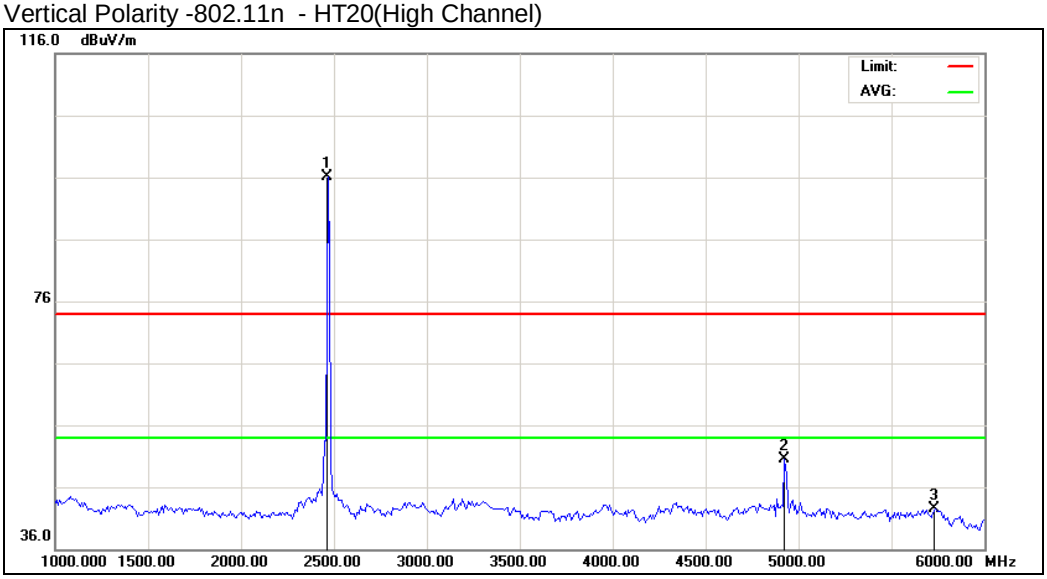
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4874.000	51.83	-2.13	49.70	74.00	-24.30	peak
3	5516.667	44.64	-1.80	42.84	74.00	-31.16	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11n - HT20(High Channel)



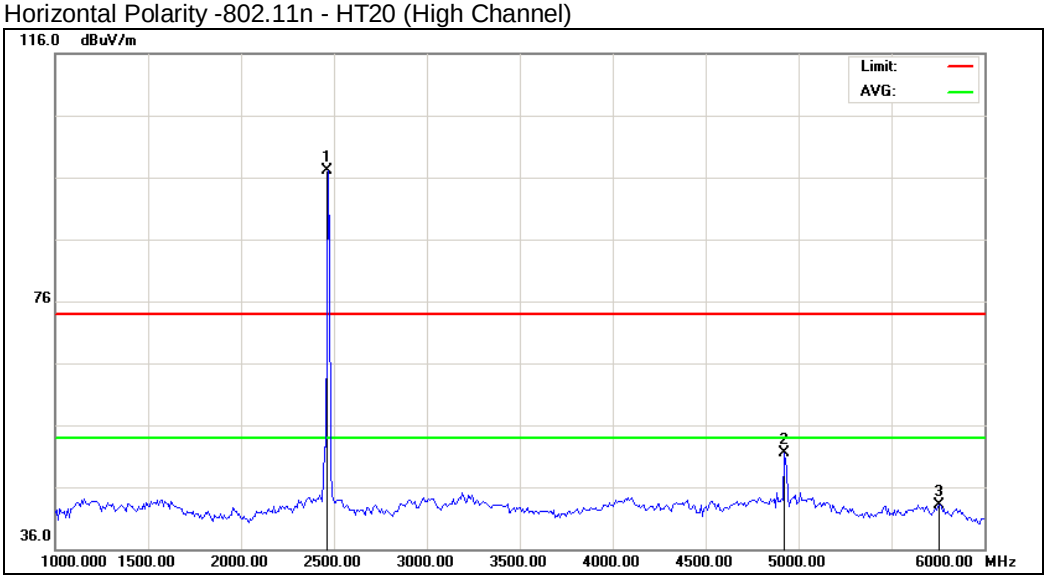
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4924.000	52.50	-2.00	50.50	74.00	-23.50	peak
3	5733.333	44.22	-1.70	42.52	74.00	-31.48	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11n - HT20 (High Channel)



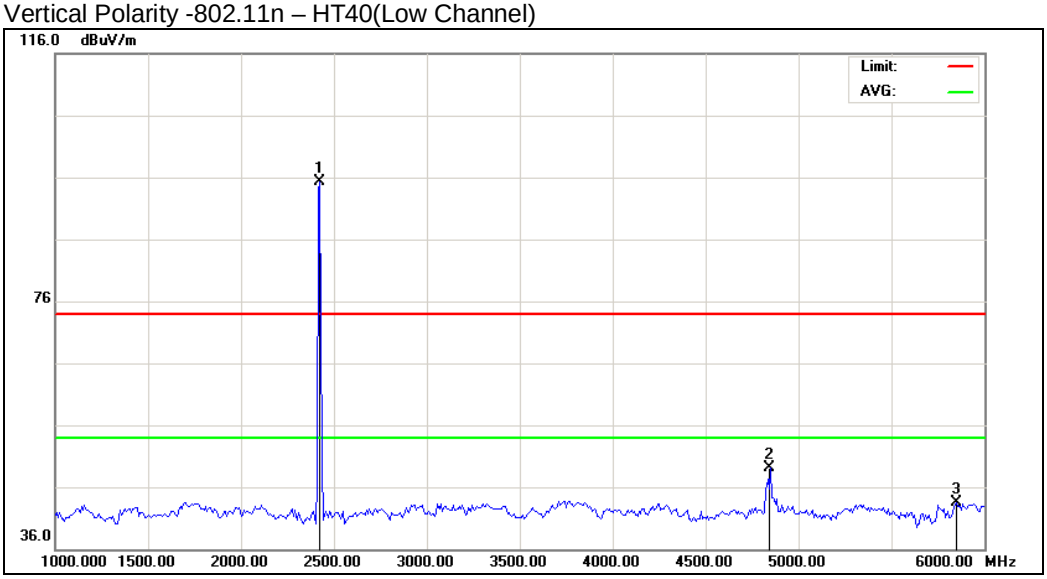
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4924.000	53.50	-2.00	51.50	74.00	-22.50	peak
3	5758.333	44.84	-1.69	43.15	74.00	-30.85	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11n – HT40(Low Channel)



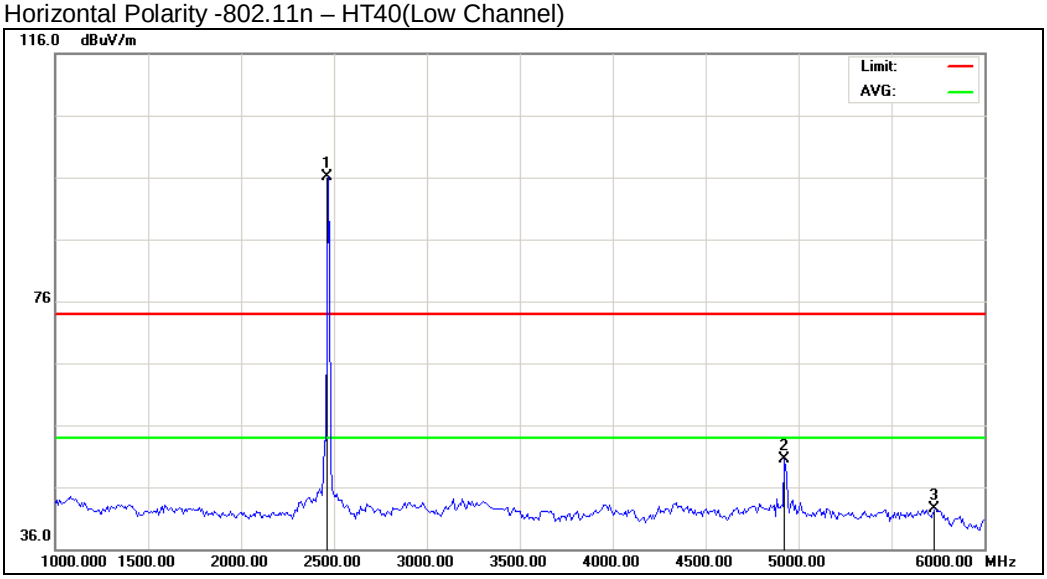
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4844.000	51.31	-2.21	49.10	74.00	-24.90	peak
3	5850.000	45.09	-1.65	43.44	74.00	-30.56	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11n – HT40(Low Channel)



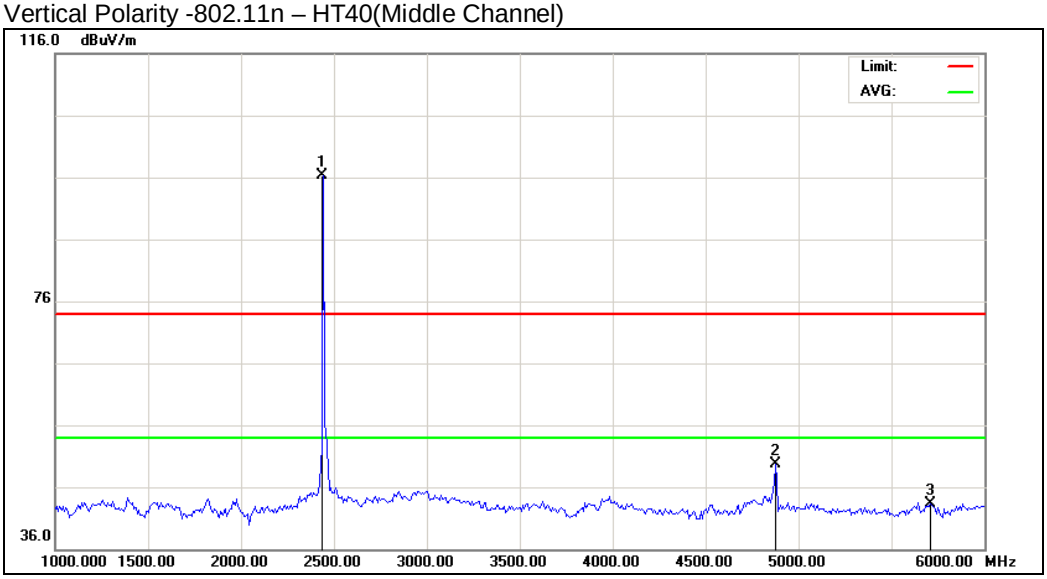
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4924.000	52.50	-2.00	50.50	74.00	-23.50	peak
3	5733.333	44.22	-1.70	42.52	74.00	-31.48	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11n – HT40(Middle Channel)



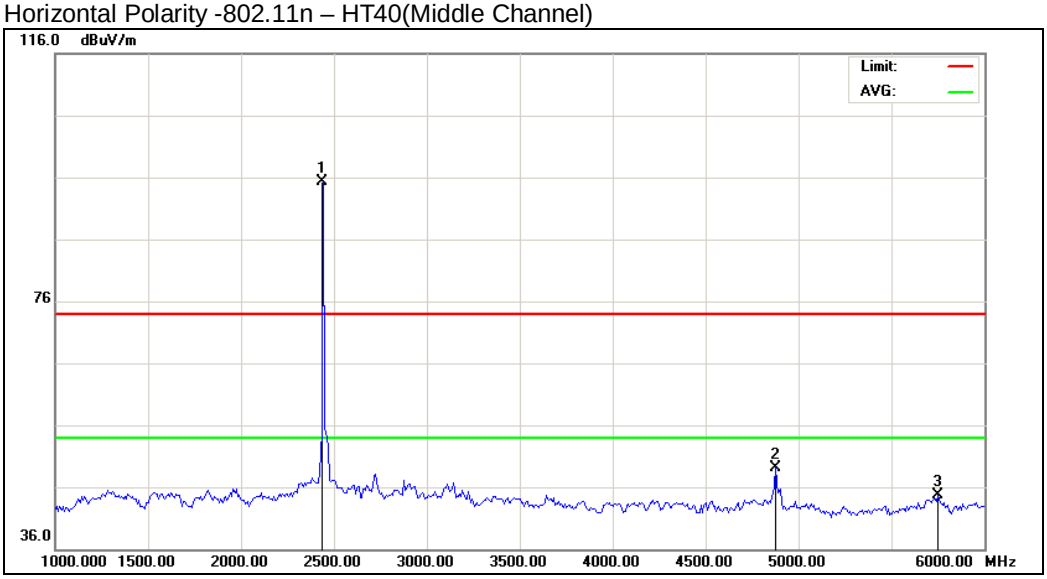
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4874.000	51.83	-2.13	49.70	74.00	-24.30	peak
3	5708.333	44.96	-1.71	43.25	74.00	-30.75	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11n – HT40(Middle Channel)



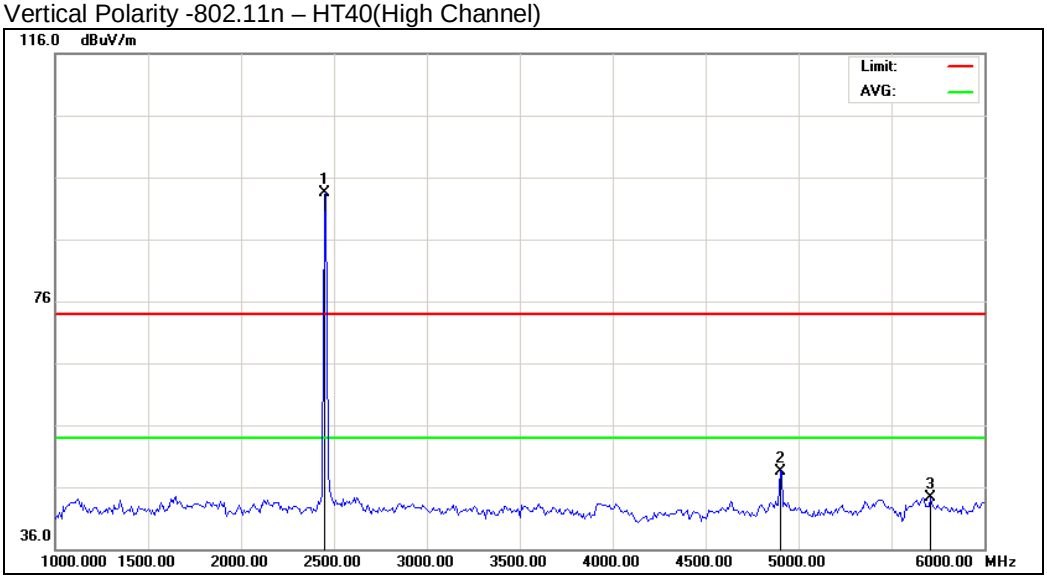
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4874.000	51.33	-2.13	49.20	74.00	-24.80	peak
3	5750.000	46.34	-1.70	44.63	74.00	-29.36	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Vertical Polarity -802.11n – HT40(High Channel)



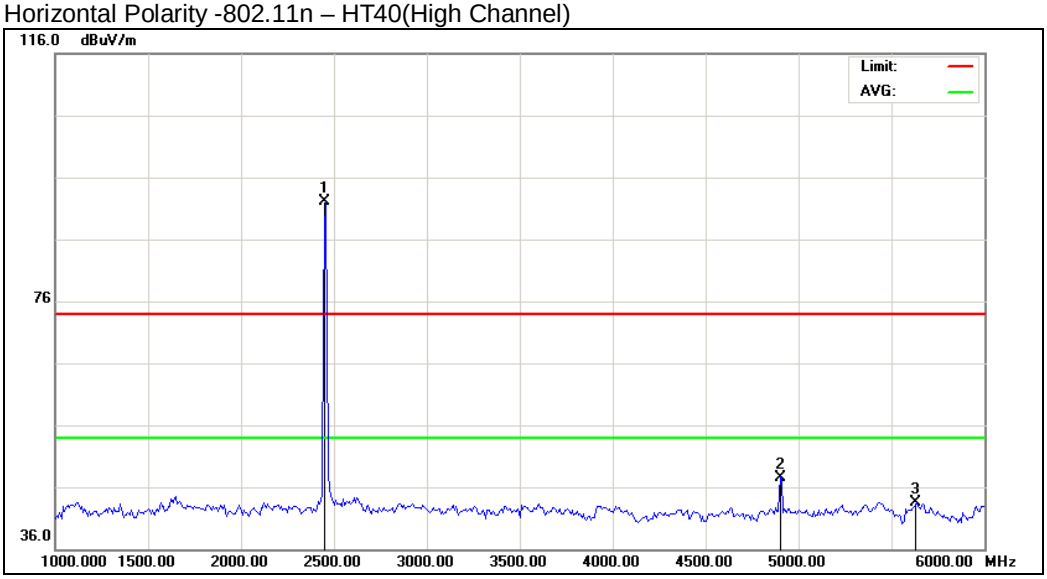
No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4904.000	50.59	-2.05	48.54	74.00	-25.46	peak
3	5708.333	45.96	-1.71	44.25	74.00	-29.75	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result : PASS

All Emission and Emissions Fall into Restricted Band were recorded as below:

Above 1GHz Emission test data
Horizontal Polarity -802.11n – HT40(High Channel)



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	
2	4904.000	49.59	-2.05	47.54	74.00	-26.46	peak
3	5633.333	45.16	-1.75	43.41	74.00	-30.59	peak

Remark: Only background noise was measured from 16GHz-26GHz.

Result Summary:

1) Communication mode: All other emissions are more than 20dB below FCC part 15.209 limits.
2) No further spurious emissions found between 30 MHz and lowest internal used/generated frequency and from 30MHz to 1GHz.
3) Test data is base on the worst case highest channel's emission data graph from 30MHz-26GHz.

Remarks:

1. " * " Radiated emissions which fall in the restricted bands as defined in Section 15.205(a).

2. Emission level with more than 20dB below the FCC required limit is not mentioned in table.

3. Delta to Limit = Field strength (dBμV/m) – Limit (dBμV/m).

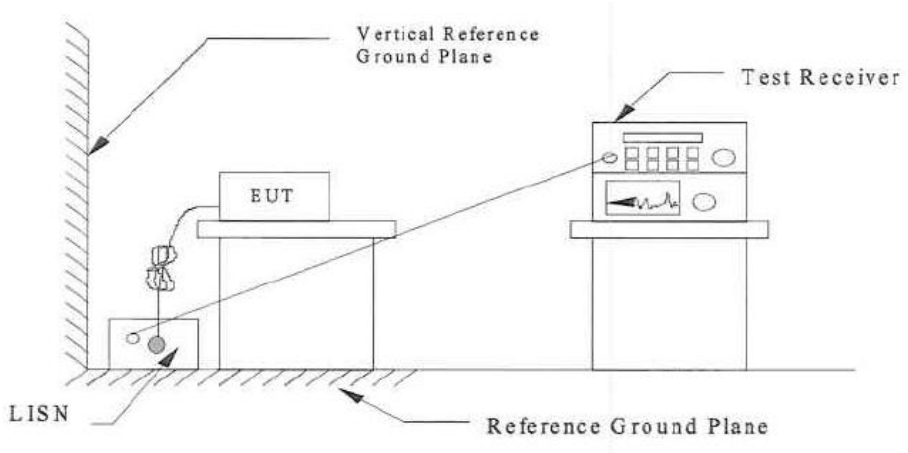
4. Calculated measurement uncertainty: 9kHz -30MHz: 2.58dB.hehe
30MHz -1GHz: 2.58dB.
1GHz -18GHz: 2.58dB.

4.6 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement:	FCC part 15 Section 15.207 Class B
Test Method:	ANSI C63.4:2009
Test Date:	2014-06-15
Mode of Operation:	Transmitting continuously mode
Detector Function:	CISPR Quasi Peak
Measurement BW:	100 kHz
Worst Case Channel:	Highest Channel

Results : PASS

Test Setup:



Limits for Conducted Emission [Section 15.207]:

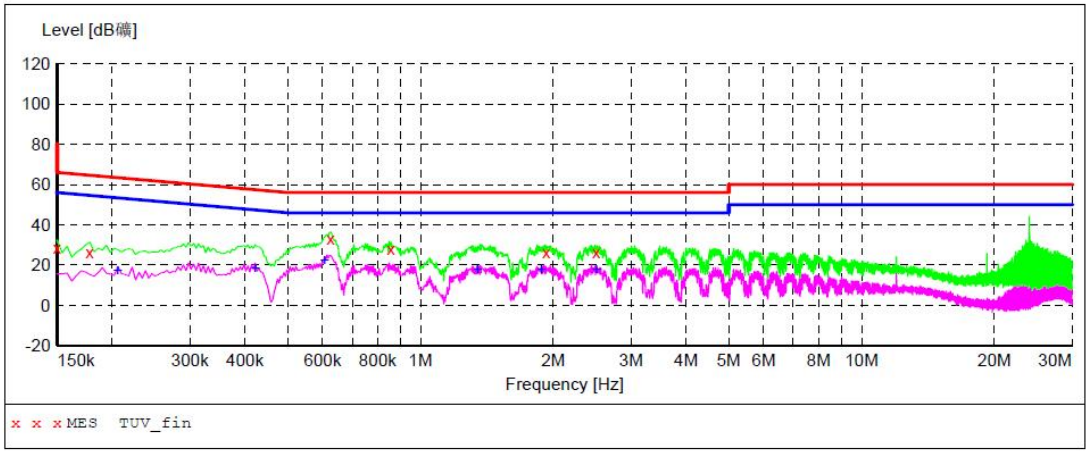
Frequency Range [MHz]	Quasi-Peak Limit [dBμV]	Average Limit [dBμV]
0.15-0.5	66 to 56*	56 to 46*
0.5-5.0	56	46
5.0-30.0	60	50

* Decreases with the logarithm of the frequency.

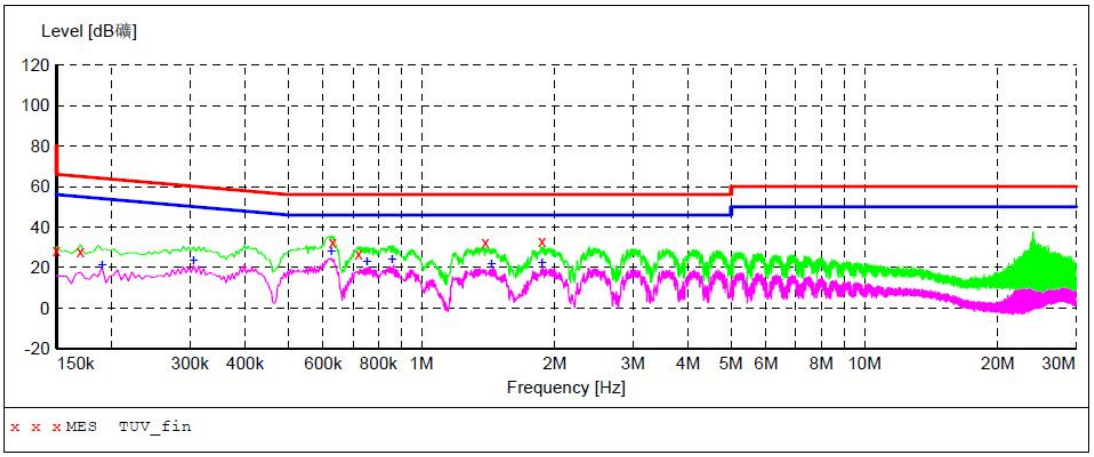
Remarks:
Calculated measurement uncertainty: ±1.54dB
The result shown the worst case of the connection.

Result data graph shows the conducted emission (Line and Neutral).

Phase L



Phase N



Result data table shows the conducted emission (Line and Neutral).

Frequency (MHz)	Detector (QP/AV)	Phase	Result (dBµV)	Limit (dBµV)	Margin
0.178	QP	L	26.20	64.60	-38.40
0.626	QP	L	33.00	56.00	-23.00
0.858	QP	L	28.10	56.00	-27.90
1.930	QP	L	26.20	56.00	-29.80
2.506	QP	L	26.10	56.00	-29.90
0.170	QP	N	28.20	65.00	-36.80
0.630	QP	N	32.40	56.00	-23.60
0.722	QP	N	26.60	56.00	-29.40
1.394	QP	N	32.50	56.00	-23.50
1.874	QP	N	33.10	56.00	-22.90

5.0 List of Measurement Equipment

Radiated Emission

Manufacturer	Description	Model no.	Serial no.	CAL due
N/A	3m Semi- Anechoic Chamber	9.0(L)*6.0(W)* 6.0(H)	N/A	Jul. 16 2014
Agilent	Spectrum Analyzer	E4440A	US41421290	Jul. 16 2014
R&S	EMI Test Receiver	ESCI	100694	Jul. 16 2014
A.H.	Wideband Antenna	SAS-521-4	26	Jul. 16 2014
EMCO	Antenna	3142C	60447	Jul. 16 2014
EM	Horn Antenna	EM-AH-10180	67	Jul. 16 2014
EM	Power Amplifier	EM30180	0607030	Jul. 16 2014
MF	Position Controller	MF-7802	MF780208138	N/A

Line Conducted

Manufacturer	Description	Model no.	Serial no.	CAL due
N/A	Shielding Room	7.(L)x4(W)x3(H)	N/A	Jul. 16 2014
R&S	EMI Test Receiver	ESCI	100694	Jul. 16 2014
R&S	LISN	ESH3-Z5	8389791009	Jul. 16 2014

N/A Not Applicable or Not Available