

# TEST REPORT

**Product Name** : Dash Cam  
**Model Number** : M310  
**FCC ID** : 2AOK9-M310

**Prepared for** : 70mai Co., Ltd.  
**Address** : Room2220, building2, No.588, Zixingroad, MinHangDistrict, Shanghai. CHINA

**Prepared by** : EMTEK (SHENZHEN) CO., LTD.  
**Address** : Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

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**Report Number** : ENS2404250220W01201R  
**Date(s) of Tests** : April 26, 2024 to May 27, 2024  
**Date of issue** : May 29, 2024

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## TABLE OF CONTENTS

<b>1</b>	<b>TEST RESULT CERTIFICATION .....</b>	<b>3</b>
<b>2</b>	<b>EUT TECHNICAL DESCRIPTION .....</b>	<b>4</b>
<b>3</b>	<b>SUMMARY OF TEST RESULT .....</b>	<b>5</b>
<b>4</b>	<b>TEST METHODOLOGY .....</b>	<b>6</b>
4.1	GENERAL DESCRIPTION OF APPLIED STANDARDS .....	6
4.2	MEASUREMENT EQUIPMENT USED .....	6
4.3	DESCRIPTION OF TEST MODES .....	9
<b>5</b>	<b>FACILITIES AND ACCREDITATIONS .....</b>	<b>10</b>
5.1	FACILITIES.....	10
5.2	LABORATORY ACCREDITATIONS AND LISTINGS .....	10
<b>6</b>	<b>TEST SYSTEM UNCERTAINTY .....</b>	<b>11</b>
<b>7</b>	<b>SETUP OF EQUIPMENT UNDER TEST .....</b>	<b>12</b>
7.1	RADIO FREQUENCY TEST SETUP 1.....	12
7.2	RADIO FREQUENCY TEST SETUP 2.....	12
7.3	CONDUCTED EMISSION TEST SETUP .....	13
7.4	BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM.....	14
7.5	SUPPORT EQUIPMENT.....	14
<b>8</b>	<b>TEST REQUIREMENTS .....</b>	<b>15</b>
8.1	DTS (6DB) BANDWIDTH.....	15
8.2	MAXIMUM PEAK CONDUCTED OUTPUT POWER .....	20
8.3	MAXIMUM POWER SPECTRAL DENSITY .....	26
8.4	UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS.....	31
8.5	RADIATED SPURIOUS EMISSION .....	38
8.6	CONDUCTED EMISSIONS TEST .....	50
8.7	ANTENNA APPLICATION .....	51

# 1 TEST RESULT CERTIFICATION

Applicant : 70mai Co., Ltd.  
 Address : Room2220, building2, No.588, Zixingroad, MinHangDistrict, Shanghai. CHINA  
 Manufacturer : 70mai Co., Ltd.  
 Address : Room2220, building2, No.588, Zixingroad, MinHangDistrict, Shanghai. CHINA  
 EUT : Dash Cam  
 Model Name : M310  
 Trademark : N/A

Measurement Procedure Used:

APPLICABLE STANDARDS	
STANDARD	TEST RESULT
FCC 47 CFR Part 2, Subpart J FCC 47 CFR Part 15, Subpart C	PASS

The above equipment was tested by EMTEK (SHENZHEN) CO., LTD. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10 (2013) and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 2 and Part 15.247

The test results of this report relate only to the tested sample identified in this report.

Date of Test : April 26, 2024 to May 27, 2024

Prepared by : Una Yu  
 Una Yu /Editor

Reviewer : Joe Xia  
 Joe Xia /Supervisor

Approved & Authorized Signer : Lisa Wang  
 Lisa Wang/Manager



## 2 EUT TECHNICAL DESCRIPTION

Characteristics	Description
Product	Dash Cam
Model Number	M310
Sample	1#
IEEE 802.11 WLAN Mode Supported	<input checked="" type="checkbox"/> 802.11b <input checked="" type="checkbox"/> 802.11g <input checked="" type="checkbox"/> 802.11n(20MHz channel bandwidth) <input checked="" type="checkbox"/> 802.11n(40MHz channel bandwidth)
Data Rate	802.11 b:1,2,5.5,11Mbps; 802.11 g:6,9,12,18,24,36,48,54Mbps; 802.11n(HT20): up to 72.2Mbps;
Modulation	DSSS with DBPSK/DQPSK/CCK for 802.11b; OFDM with BPSK/QPSK/16QAM/64QAM for 802.11g/n;
Operating Frequency Range	<input checked="" type="checkbox"/> 2412-2462MHz for 802.11b/g/n(HT20); <input checked="" type="checkbox"/> 2422-2452MHz for 802.11n(HT40);
Number of Channels	<input checked="" type="checkbox"/> 11 channels for 802.11b/g/n(HT20); <input checked="" type="checkbox"/> 7 channels for 802.11 n(HT40);
Transmit Power Max	17.74 dBm
Antenna Type	PCB Antenna
Antenna Gain	1.34 dBi
Date of Received	April 25, 2024
Temperature Range	-10°C ~ +60°C

**Note:** for more details, please refer to the User's manual of the EUT.

### 3 SUMMARY OF TEST RESULT

FCC PartClause	Test Parameter	Verdict	Remark
15.247(a)(2)	DTS (6dB) Bandwidth	PASS	
15.247(b)(3)	Maximum Peak Conducted Output Power	PASS	
15.247(e)	Maximum Power Spectral Density Level	PASS	
15.247(d)	Unwanted Emission Into Non-Restricted Frequency Bands	PASS	
15.247(d) 15.209	Unwanted Emission Into Restricted Frequency Bands (conducted)	PASS	
15.247(d) 15.209	Radiated Spurious Emission	PASS	
15.207	Conducted EmissionTest	N/A	
15.247(b)	Antenna Application	PASS	
	NOTE1:N/A (Not Applicable) NOTE2: According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.		

#### RELATED SUBMITTAL(S) / GRANT(S):

This submittal(s) (test report) is intended for FCC ID: 2AOK9-M310 filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

## 4 TEST METHODOLOGY

### 4.1 GENERAL DESCRIPTION OF APPLIED STANDARDS

According to its specifications, the EUT must comply with the requirements of the following standards:

FCC 47 CFR Part 2, Subpart J

FCC 47 CFR Part 15, Subpart C

FCC KDB 558074 D01 15.247 Meas Guidance v05r02

### 4.2 MEASUREMENT EQUIPMENT USED

#### 4.2.1 Conducted Emission Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LASTCAL.	DUE CAL.
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2023/5/13	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	2023/5/13	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2023/5/13	1Year
50Ω Coaxial Switch	Anritsu	MP59B	M20531	2023/5/11	1Year

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LASTCAL.	DUE CAL.
EMI Test Receiver	Rohde & Schwarz	ESCI	101045	2024/5/10	1Year
PULSE LIMTER	Rohde & Schwarz	ESH3-Z2	100107	2024/5/10	1Year
AMN	Schwarzbeck	NNLK 8129	8129203	2024/5/11	1Year
50Ω Coaxial Switch	Anritsu	MP59B	M20531	2024/5/11	1Year

#### 4.2.2 Radiated Emission Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	DUE CAL.
Pre-Amplifier	HP	8447F	2944A07999	2023/5/13	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2023/5/13	1Year
Bilog Antenna	Schwarzbeck	VULB9163	712	2023/7/2	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1178	2023/8/28	2 Year
Pre-Amplifie	Lunar EM	LNA1G18-48	J101113101000 1	2023/5/10	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2023/5/10	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2023/5/12	2 Year
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2023/5/12	2 Year
Cable	H+B	NmSm-05-C1 5052	N/A	2023/5/13	1 Year
Cable	H+B	NmSm-2-C15 201	N/A	2023/5/13	1 Year
Cable	H+B	NmNm-7-C15 702	N/A	2023/5/13	1 Year
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	2023/5/13	1Year
Pre-Amplifie	Lunar EM	LNA30M3G-2 5	J10100000070	2023/5/13	1Year
Bilog Antenna	Schwarzbeck	VULB9163	659	2021/8/22	2 Year
Horn antenna	Schwarzbeck	BBHA9120D	9120D-1177	2023/5/12	2 Year
Pre-Amplifie	SKET	LNPA_0118G-	SK2019051801	2023/5/10	1Year

		45			
Loop Antenna	Schwarzbeck	FMZB1519	1519-012	2023/5/12	2 Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2023/5/10	1Year
Horn antenna	Schwarzbeck	BBHA9170	9170-399	2023/5/10	2 Year
Cable	H+B	SAC-40G-1	414	2023/5/10	1 Year
Cable	H+B	SUCOFLEX10 4	MY14871/4	2023/5/12	1 Year
Cable	H+B	BLU18A-NmS m-6500	D8501	2023/5/13	1 Year
Band reject Filter(50dB)	WI/DE	WRCGV-2400 (2400-2485M	2	2023/5/13	1 Year

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	DUE CAL.
Pre-Amplifier	HP	8447F	2944A07999	2024/5/11	1Year
EMI Test Receiver	Rohde & Schwarz	ESCI	101414	2024/5/11	1Year
Pre-Amplifie	Bonn	BLMA0118-5G	2213967B-02	2023/10/23	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2024/5/10	1Year
Cable	H+B	NmSm-05-C1 5052	N/A	2024/5/11	1 Year
Cable	H+B	NmSm-2-C15 201	N/A	2024/5/11	1 Year
Cable	H+B	NmNm-7-C15 702	N/A	2024/5/11	1 Year
EMI Test Receiver	Rohde & Schwarz	ESU 26	100154	2024/5/10	1Year
Pre-Amplifie	Lunar EM	LNA30M3G-2 5	J10100000070	2024/5/10	1Year
Pre-Amplifie	SKET	LNPA_0118G- 45	SK2019051801	2024/5/10	1Year
Spectrum Analyzer	Rohde & Schwarz	FSV40	100967	2024/5/10	1Year
Cable	H+B	SAC-40G-1	414	2024/5/11	1 Year
Cable	H+B	SUCOFLEX10 4	MY14871/4	2024/5/11	1 Year
Cable	H+B	BLU18A-NmS m-6500	D8501	2024/5/11	1 Year
Band reject Filter(50dB)	WI/DE	WRCGV-2400 (2400-2485M	2	2024/5/11	1 Year

#### 4.2.3 Radio Frequency Test Equipment

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LASTCAL.	DUE CAL.
Signal Analyzer	Agilent	N9010A	MY53470879	2023/5/10	1Year
Vector Signal Generater	Agilent	N5182B	MY53050878	2023/5/10	1Year
Analog Signal Generator	Agilent	N5171B	MY53050553	2023/5/10	1Year
RF Control Unit(Power Meter)	Tonscend	JS0806-2	\	2023/5/13	1Year
Temperature&Humidi ty Chamber	ESPEC	EL-02KA	12107166	2023/5/10	1 Year

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LASTCAL.	DUE CAL.
Signal Analyzer	Agilent	N9010A	MY53470879	2024/5/10	1Year
Vector Signal Generater	Agilent	N5182B	MY53050878	2024/5/10	1Year
Analog Signal Generator	Agilent	N5171B	MY53050553	2024/5/10	1Year
RF Control Unit(Power Meter)	Tonscend	JS0806-2	\	2024/5/10	1Year
Temperature&Humidity Chamber	ESPEC	EL-02KA	12107166	2024/5/10	1 Year





### 4.3 DESCRIPTION OF TEST MODES

The EUT has been tested under its typical operating condition.

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

Test of channel included the lowest and middle and highest frequency to perform the test, then record on this report.

Those data rates (802.11b:1 Mbps;802.11g: 6 Mbps;802.11n(HT20): MCS0;802.11n(HT40): MCS0) were used for all test.

Pre-defined engineering program for regulatory testing used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

Frequency and Channel list for 802.11b/g/n (HT20):

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

Test Frequency and Channel for 802.11b/g/n (HT20):

Lowest Frequency		Middle Frequency		Highest Frequency	
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	6	2437	11	2462

## 5 FACILITIES AND ACCREDITATIONS

### 5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

Bldg 69, Majialong Industry Zone District, Nanshan District, Shenzhen, China

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.10 and CISPR Publication 22.

### 5.2 LABORATORY ACCREDITATIONS AND LISTINGS

Site Description

EMC Lab.

: **Accredited by CNAS**

The Certificate Registration Number is L2291.

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01 (identical to ISO/IEC 17025:2017)

**Accredited by FCC**

Designation Number: CN1204

Test Firm Registration Number: 882943

**Accredited by A2LA**

The Certificate Number is 4321.01.

**Accredited by Industry Canada**

The Conformity Assessment Body Identifier is CN0008

Name of Firm

: EMTEK (SHENZHEN) CO., LTD.

Site Location

: Building 69, Majialong Industry Zone, Nanshan District, Shenzhen, Guangdong, China

## 6 TEST SYSTEM UNCERTAINTY

The following measurement uncertainty levels have been estimated for tests performed on the apparatus:

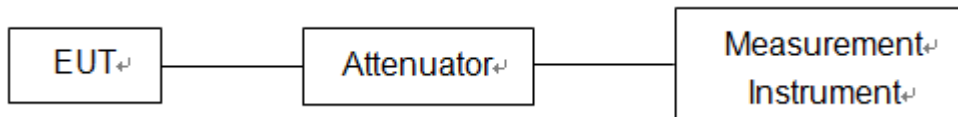
Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-5}$
Maximum Peak Output Power Test	$\pm 1.0\text{dB}$
Conducted Emissions Test	$\pm 2.0\text{dB}$
Radiated Emission Test	$\pm 2.0\text{dB}$
Power Density	$\pm 2.0\text{dB}$
Occupied Bandwidth Test	$\pm 1.0\text{dB}$
Band Edge Test	$\pm 3\text{dB}$
All emission, radiated	$\pm 3\text{dB}$
Antenna Port Emission	$\pm 3\text{dB}$
Temperature	$\pm 0.5^\circ\text{C}$
Humidity	$\pm 3\%$

Measurement Uncertainty for a level of Confidence of 95%

## 7 SETUP OF EQUIPMENT UNDER TEST

### 7.1 RADIO FREQUENCY TEST SETUP 1

The WLAN component's antenna ports(s) of the EUT are connected to the measurement instrument per an appropriate attenuator. The EUT is controlled by PC/software to emit the specified signals for the purpose of measurements.



### 7.2 RADIO FREQUENCY TEST SETUP 2

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

Below 30MHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna (loop antenna). The Antenna should be positioned with its plane vertical at the specified distance from the EUT and rotated about its vertical axis for maximum response at each azimuth about the EUT. The center of the loop shall be 1 m above the ground. For certain applications, the loop antenna plane may also need to be positioned horizontally at the specified distance from the EUT.

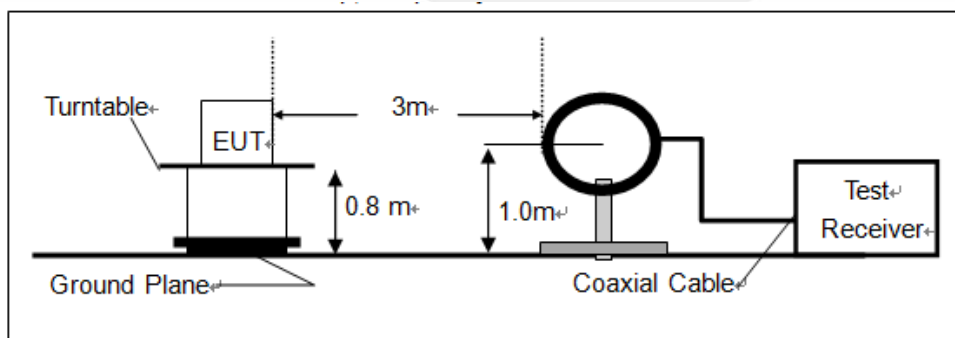
30MHz-1GHz:

The EUT is placed on a turntable 0.8 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

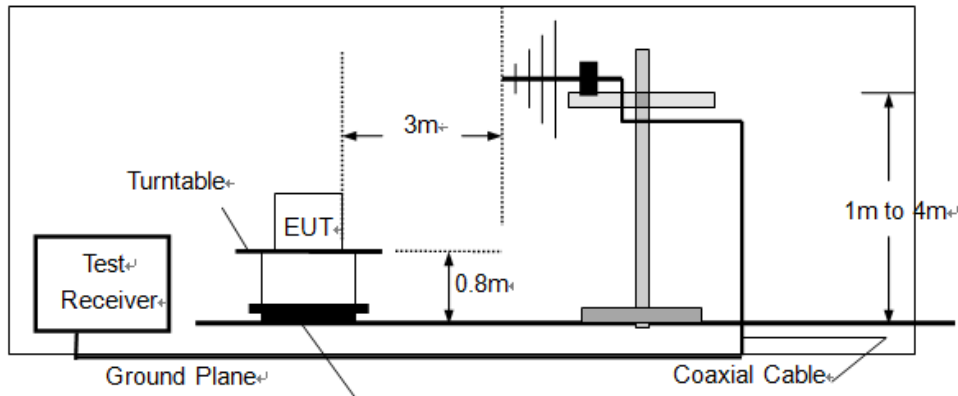
Above 1GHz:

The EUT is placed on a turntable 1.5 meters above the ground in the chamber, 3 meter away from the antenna. The maximal emission value is acquired by adjusting the antenna height, polarisation and turntable azimuth. Normally, the height range of antenna is 1 m to 4 m, the azimuth range of turntable is 0° to 360°, and the receive antenna has two polarizations Vertical (V) and Horizontal (H).

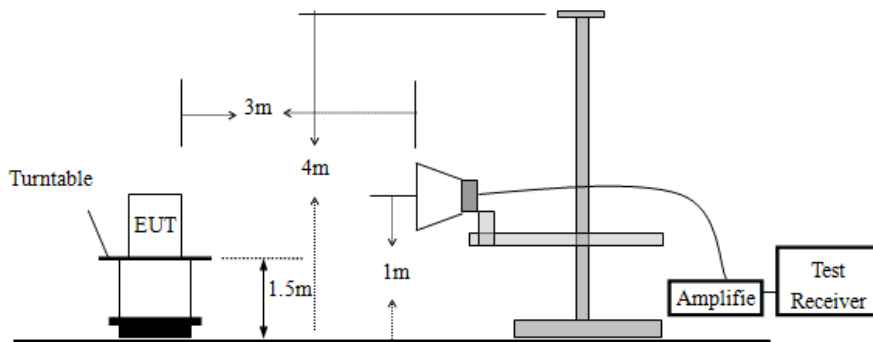
(a) Radiated Emission Test Set-Up, Frequency Below 30MHz



(b) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(c) Radiated Emission Test Set-Up, Frequency above 1000MHz

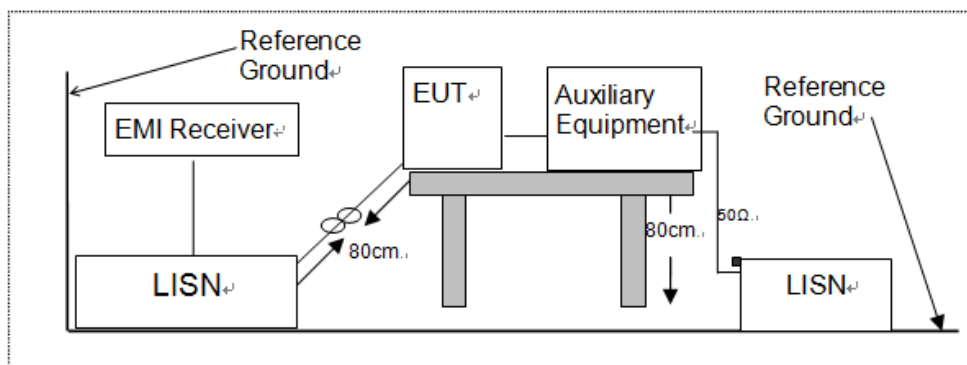


### 7.3 CONDUCTED EMISSION TEST SETUP

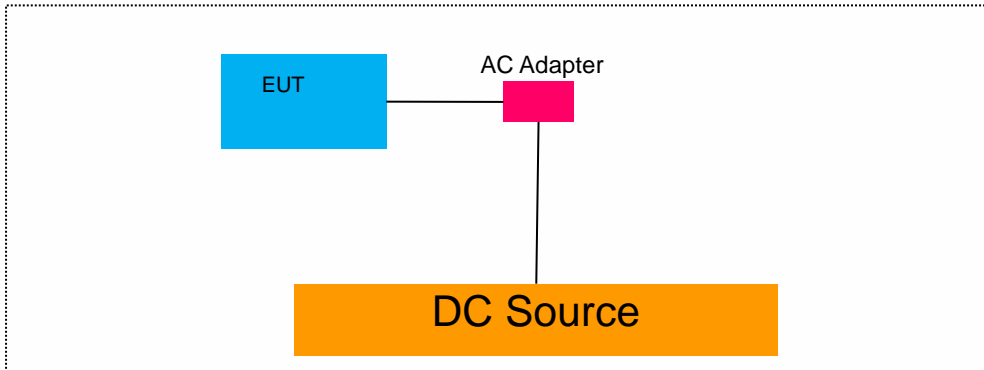
The mains cable of the EUT (maybe per AC/DC Adapter) must be connected to LISN. The LISN shall be placed 0.8 m from the boundary of EUT and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance is between the closest points of the LISN and the EUT. All other units of the EUT and associated equipment shall be at least 0.8m from the LISN.

Ground connections, where required for safety purposes, shall be connected to the reference ground point of the LISN and, where not otherwise provided or specified by the manufacturer, shall be of same length as the mains cable and run parallel to the mains connection at a separation distance of not more than 0.1 m.

According to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-Peak and average detector mode.



**7.4 BLOCK DIAGRAM CONFIGURATION OF TEST SYSTEM**



**7.5 SUPPORT EQUIPMENT**

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/
/	/	/	/

Auxiliary Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
/	/	/	/

Auxiliary Equipment List and Details			
Description	Manufacturer	Model	Serial Number
/	/	/	/

**Notes:**

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.
3. Unless otherwise denoted as EUT in [Remark] column, device(s) used in tested system is a support equipment

## 8 TEST REQUIREMENTS

### 8.1 DTS (6DB) BANDWIDTH

#### 8.1.1 Applicable Standard

According to FCC Part15.247 (a)(2) and KDB 558074 D01 15.247 Meas Guidance v05r02

#### 8.1.2 Conformance Limit

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

#### 8.1.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

#### 8.1.4 Test Procedure

The EUT was operating in IEEE 802.11b/g/n mode and controlled its channel. Printed out the test result from the spectrum by hard copy function.

The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.

Set to the maximum power setting and enable the EUT transmit continuously

Set RBW = 100 kHz.

Set the video bandwidth (VBW) =300kHz.

Set Span=2 times OBW

Set Detector = Peak.

Set Trace mode = max hold.

Set Sweep = auto couple.

Allow the trace to stabilize.

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.

Measure and record the results in the test report.

#### 8.1.5 Test Results

Temperature:	24° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	9.560	2407.000	2416.560	0.5	PASS
		2437	9.600	2432.480	2442.080	0.5	PASS
		2462	10.040	2457.000	2467.040	0.5	PASS
11G	Ant1	2412	16.360	2403.840	2420.200	0.5	PASS
		2437	16.360	2428.840	2445.200	0.5	PASS
		2462	16.360	2453.840	2470.200	0.5	PASS
11N20SISO	Ant1	2412	17.000	2403.560	2420.560	0.5	PASS
		2437	17.040	2428.520	2445.560	0.5	PASS
		2462	17.080	2453.480	2470.560	0.5	PASS
11N40SISO	Ant1	2422	35.520	2404.240	2439.760	0.5	PASS
		2437	35.280	2419.480	2454.760	0.5	PASS
		2452	35.600	2434.160	2469.760	0.5	PASS

11B\_Ant1\_2412



11B\_Ant1\_2437

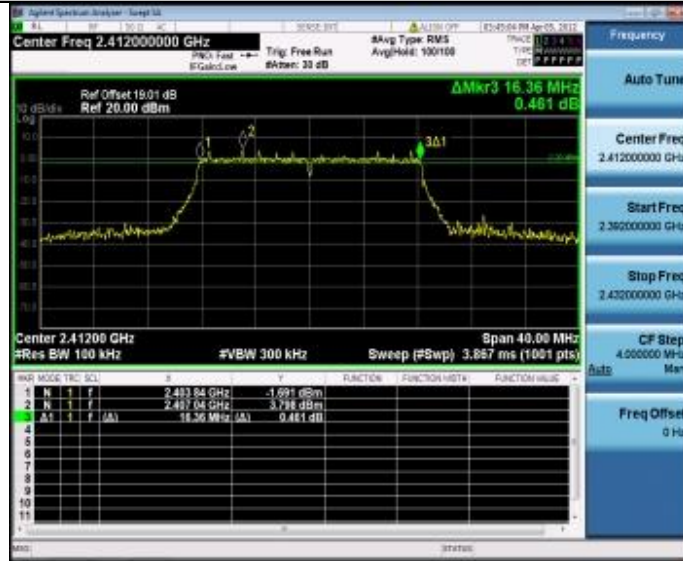


11B\_Ant1\_2462





11G\_Ant1\_2412



11G\_Ant1\_2437



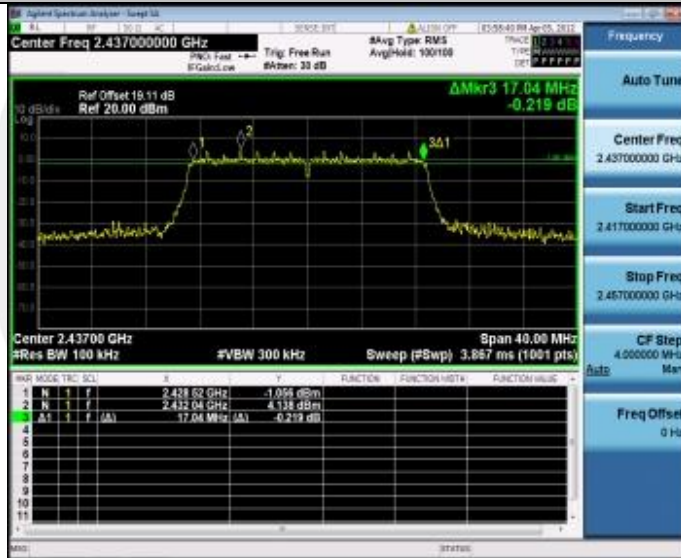
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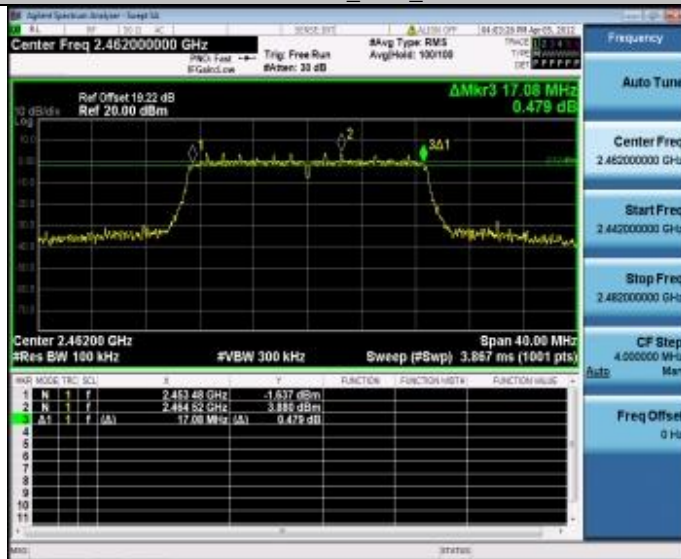
11N20SISO\_Ant1\_2412



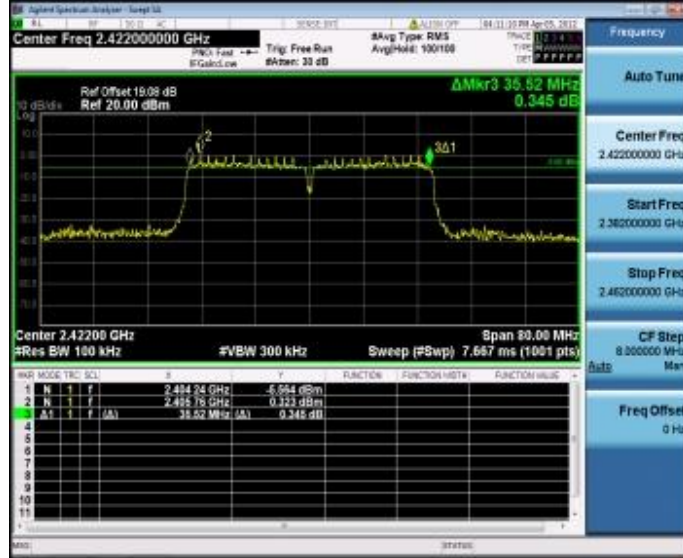
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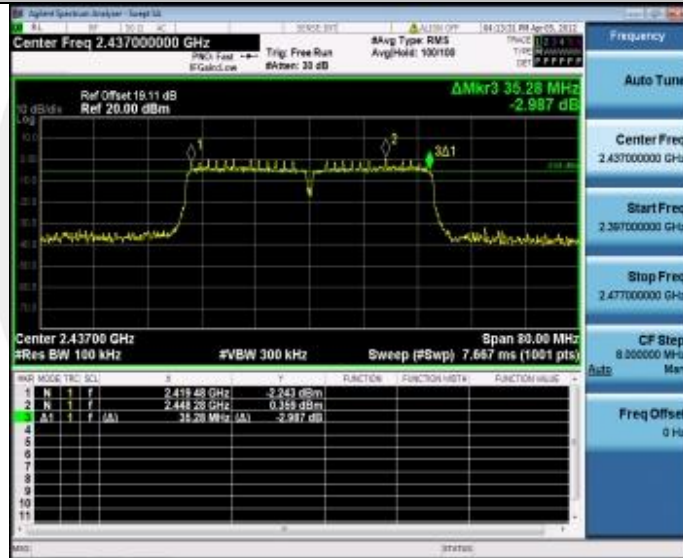
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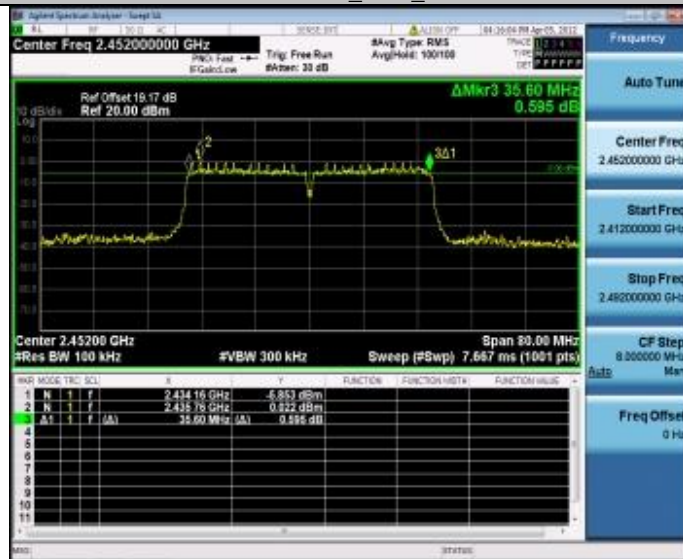
11N40SISO\_Ant1\_2422



11N40SISO\_Ant1\_2437



11N40SISO\_Ant1\_2452



## 8.2 MAXIMUM PEAK CONDUCTED OUTPUT POWER

### 8.2.1 Applicable Standard

According to FCC Part 15.247 (b)(3) and KDB 558074 D01 15.247 Meas Guidance v05r02

### 8.2.2 Conformance Limit

The maximum peak conducted output power of the intentional radiator for systems using digital modulation in the 2400 - 2483.5 MHz bands shall not exceed: 1 Watt (30dBm).

### 8.2.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

### 8.2.4 Test Procedure

- a) Set span to at least 1.5 times the OBW.
- b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz.
- c) Set VBW  $\geq 3 \times$  RBW.
- d) Number of points in sweep  $\geq 2 \times$  span / RBW. (This gives bin-to-bin spacing  $\leq$  RBW/2, so that narrowband signals are not lost between frequency bins.)
- e) Sweep time = auto.
- f) Detector = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
- g) If transmit duty cycle < 98 %, use a sweep trigger with the level set to enable triggering only on full power pulses. The transmitter shall operate at maximum power control level for the entire duration of every sweep. If the EUT transmits continuously (i.e., with no off intervals) or at duty cycle  $\geq 98$  %, and if each transmission is entirely at the maximum power control level, then the trigger shall be set to “free run” .
- h) Trace average at least 100 traces in power averaging (i.e., RMS) mode.
- i) Compute power by integrating the spectrum across the OBW of the signal using the instrument’s band power measurement function, with band limits set equal to the OBW band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

■ According to FCC Part 15.247(b)(4):

Conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. If transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Note: If antenna Gain exceeds 6 dBi, then Output power Limit=30-(Gain- 6)

### 8.2.5 Test Results

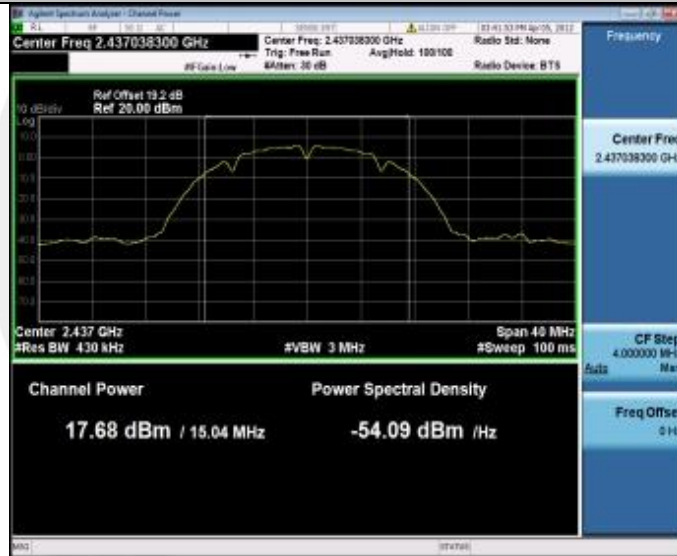
Temperature:	25 °C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

TestMode	Antenna	Frequency[MHz]	Peak Power[dBm]	Conducted Limit[dBm]	EIRP [dBm]	EIRP Limit[dBm]	Verdict
11B	Ant1	2412	17.45	≤30.00	18.79	≤36.00	PASS
		2437	17.68	≤30.00	19.02	≤36.00	PASS
		2462	17.74	≤30.00	19.08	≤36.00	PASS
11G	Ant1	2412	14.94	≤30.00	16.28	≤36.00	PASS
		2437	15.05	≤30.00	16.39	≤36.00	PASS
		2462	15.25	≤30.00	16.59	≤36.00	PASS
11N20SISO	Ant1	2412	15.01	≤30.00	16.35	≤36.00	PASS
		2437	15.32	≤30.00	16.66	≤36.00	PASS
		2462	15.08	≤30.00	16.42	≤36.00	PASS
11N40SISO	Ant1	2422	13.73	≤30.00	15.07	≤36.00	PASS
		2437	13.75	≤30.00	15.09	≤36.00	PASS
		2452	13.87	≤30.00	15.21	≤36.00	PASS

11B\_Ant1\_2412



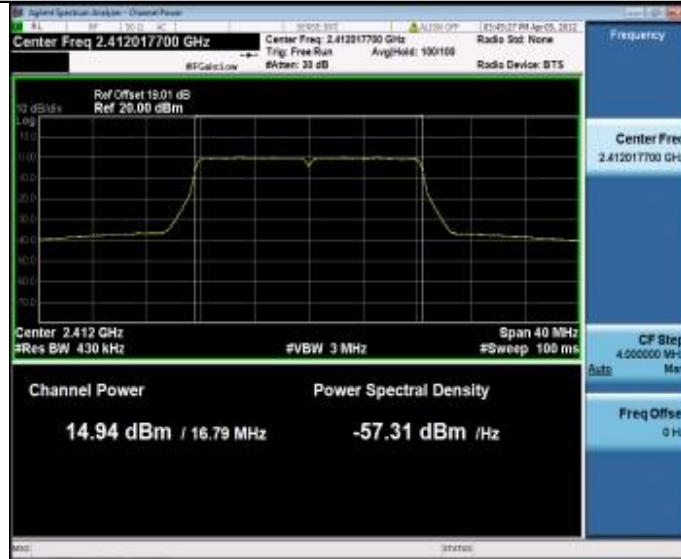
11B\_Ant1\_2437



11B\_Ant1\_2462



11G\_Ant1\_2412



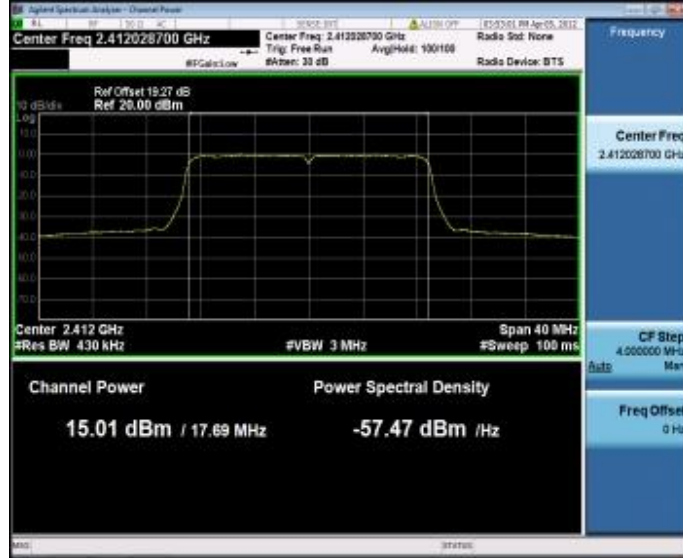
11G\_Ant1\_2437



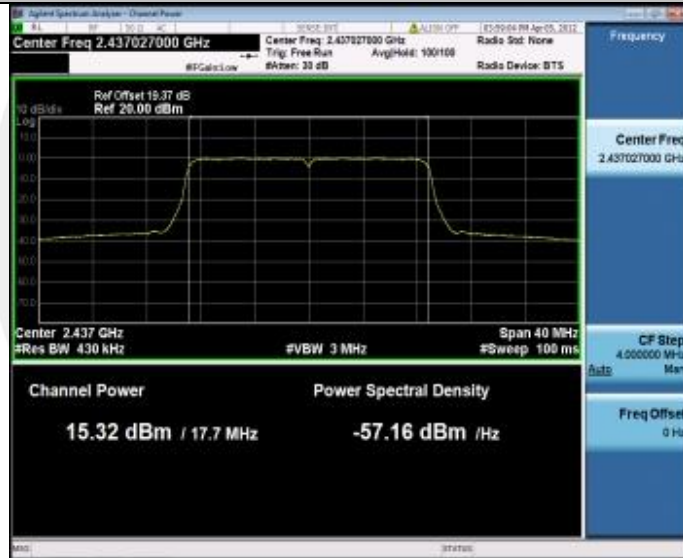
11G\_Ant1\_2462



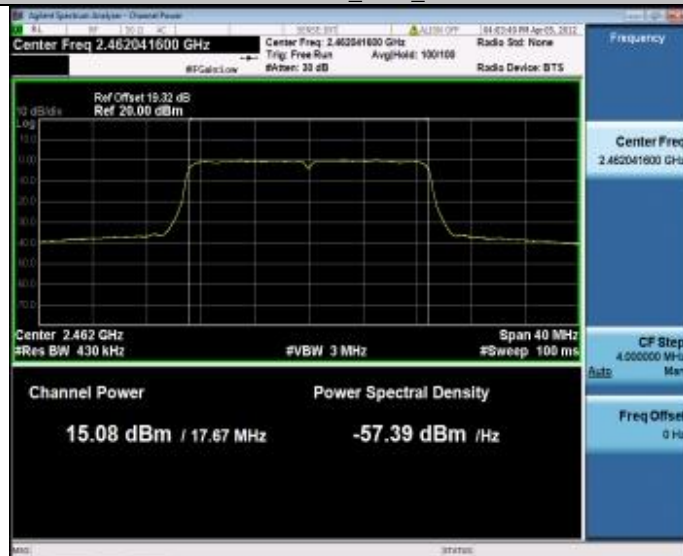
11N20SISO\_Ant1\_2412



11N20SISO\_Ant1\_2437

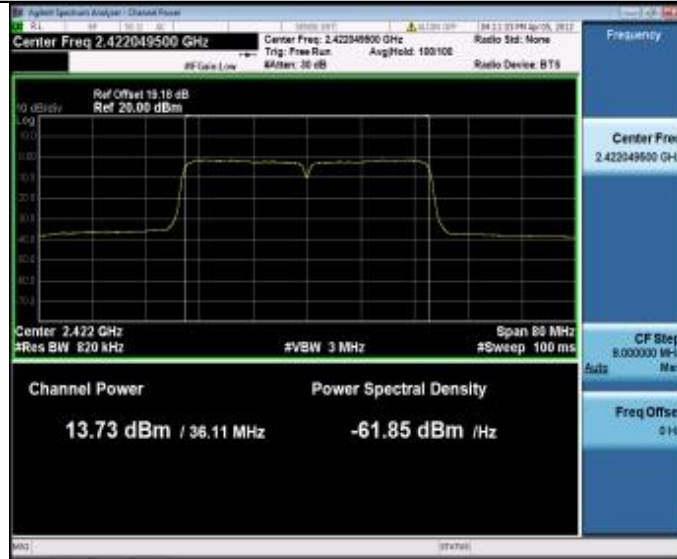


11N20SISO\_Ant1\_2462

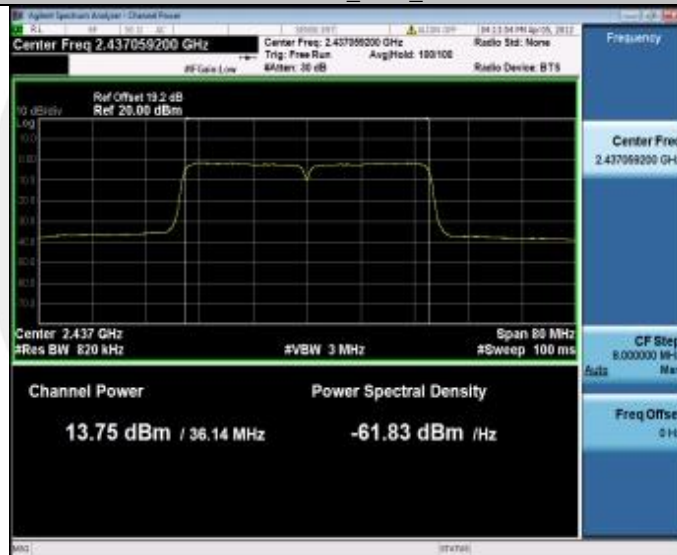




11N40SISO\_Ant1\_2422



11N40SISO\_Ant1\_2437



11N40SISO\_Ant1\_2452



### 8.3 MAXIMUM POWER SPECTRAL DENSITY

#### 8.3.1 Applicable Standard

According to FCC Part15.247(e) and KDB 558074 D01 15.247 Meas Guidance v05r02

#### 8.3.2 Conformance Limit

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

#### 8.3.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

#### 8.3.4 Test Procedure

This procedure shall be used if maximum peak conducted output power was used to demonstrate compliance

The transmitter output (antenna port) was connected to the spectrum analyzer

Set analyzer center frequency to DTS channel center frequency.

Set the span to 1.5 times the DTS bandwidth.

Set the RBW to: 3 kHz

Set the VBW to:10 kHz.

Set Detector = peak.

Set Sweep time = auto couple.

Set Trace mode = max hold.

Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level within the RBW.

Note: If antenna Gain exceeds 6 dBi, then PSD Limit=8-(Gain- 6)

#### 8.3.5 Test Results

Temperature:	25° C
Relative Humidity:	45%
ATM Pressure:	1011 mbar

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	-15.18	≤8.00	PASS
		2437	-14.63	≤8.00	PASS
		2462	-15.05	≤8.00	PASS
11G	Ant1	2412	-19.67	≤8.00	PASS
		2437	-19.83	≤8.00	PASS
		2462	-19.02	≤8.00	PASS
11N20SISO	Ant1	2412	-19.78	≤8.00	PASS
		2437	-19.54	≤8.00	PASS
		2462	-19.51	≤8.00	PASS
11N40SISO	Ant1	2422	-23.82	≤8.00	PASS
		2437	-24.00	≤8.00	PASS
		2452	-23.38	≤8.00	PASS

11B\_Ant1\_2412



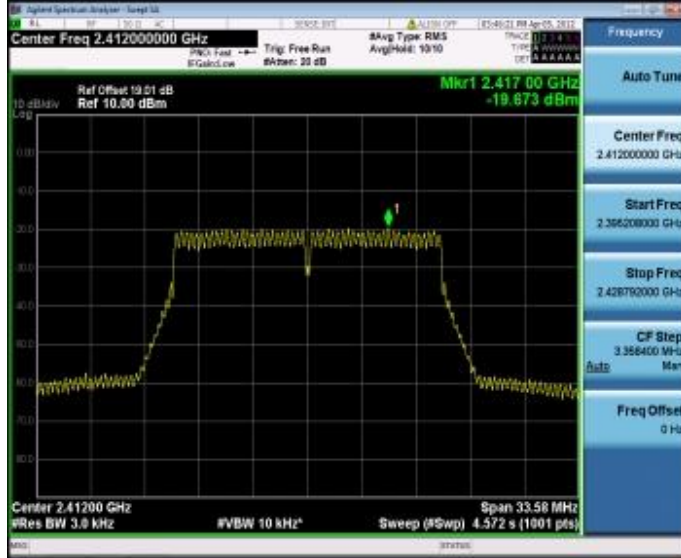
11B\_Ant1\_2437



11B\_Ant1\_2462



11G\_Ant1\_2412



11G\_Ant1\_2437



11G\_Ant1\_2462



11N20SISO\_Ant1\_2412



11N20SISO\_Ant1\_2437



11N20SISO\_Ant1\_2462



11N40SISO\_Ant1\_2422



11N40SISO\_Ant1\_2437



11N40SISO\_Ant1\_2452



## 8.4 UNWANTED EMISSIONS IN NON-RESTRICTED FREQUENCY BANDS

### 8.4.1 Applicable Standard

According to FCC Part15.247(d) and KDB 558074 D01 15.247 Meas Guidance v05r02

### 8.4.2 Conformance Limit

According to FCC Part 15.247(d):

In any 100 kHz 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 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

### 8.4.3 Test Configuration

Test according to clause 7.1 radio frequency test setup 1

### 8.4.4 Test Procedure

The transmitter output (antenna port) was connected to the spectrum analyzer

#### ■ Reference level measurement

Establish a reference level by using the following procedure:

Set instrument center frequency to DTS channel center frequency.

Set the span to  $\geq 1.5$  times the DTS bandwidth.

Set the RBW = 100 kHz.

Set the VBW  $\geq 3 \times$  RBW.

Set Detector = peak.

Set Sweep time = auto couple.

Set 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.

#### ■ Emission level measurement

Set the center frequency and span to encompass frequency range to be measured.

Set the RBW = 100 kHz.

Set the VBW = 300 kHz.

Set 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.

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. Report the three highest emissions relative to the limit.

### 8.4.5 Test Results

**Reference level measurement**

TestMode	Antenna	Freq(MHz)	Max.Point[MHz]	Result[dBm]
11B	Ant1	2412	2410.04	7.00
		2437	2437.55	7.10
		2462	2460.52	7.98





11B\_Ant1\_2412



11B\_Ant1\_2437

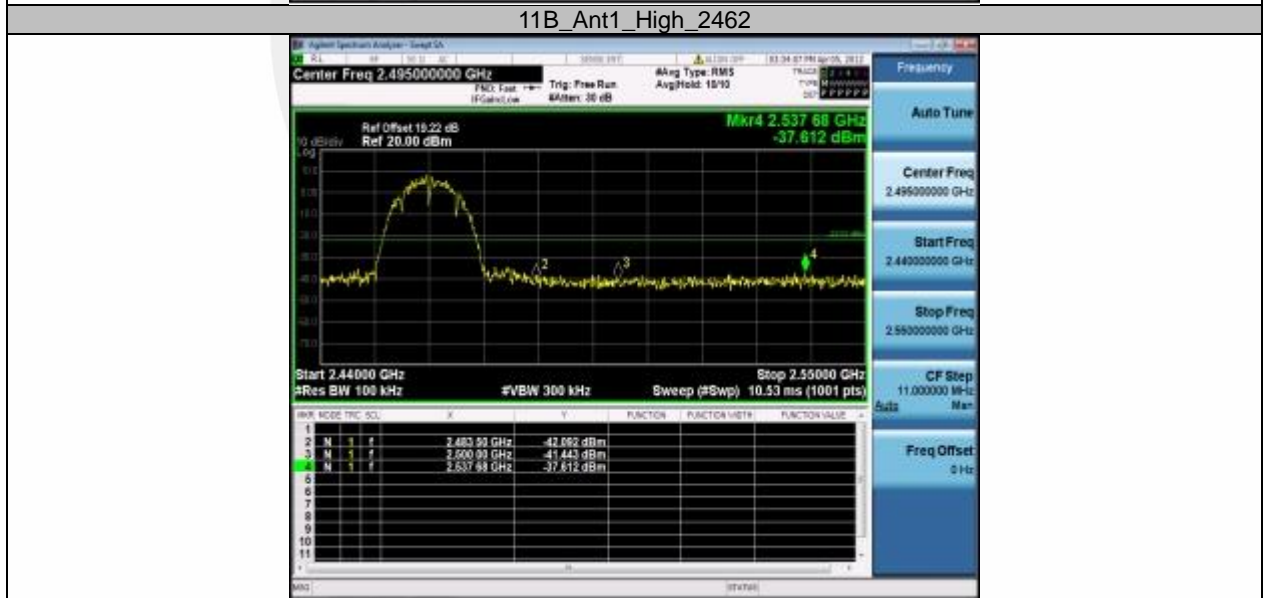
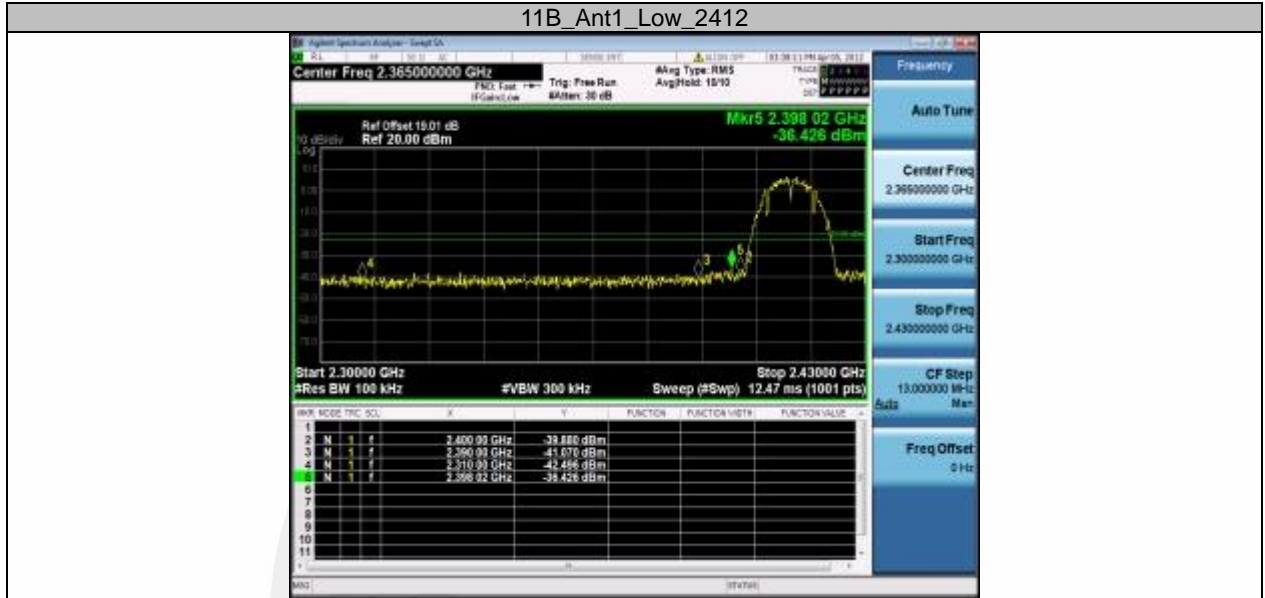


11B\_Ant1\_2462



## Band edge measurements

TestMode	Antenna	ChName	Frequency [MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	7.00	-36.43	≤-23	PASS
		High	2462	7.98	-37.61	≤-22.02	PASS

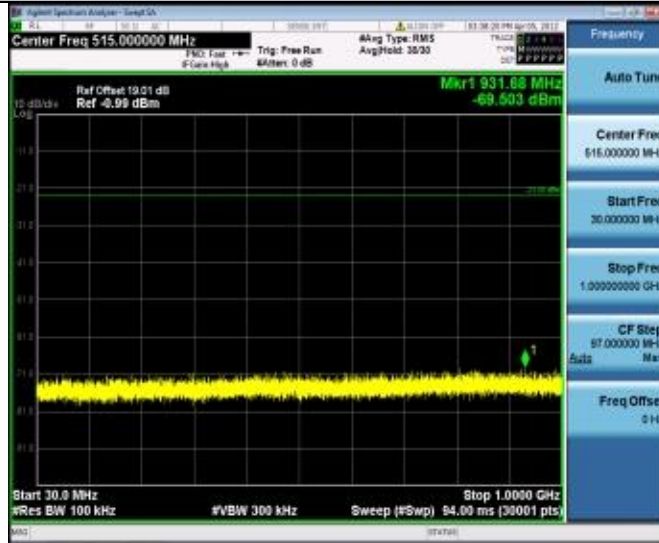


**Conducted Spurious Emission**

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	30~1000	7.00	-69.5	≤-23	PASS
			1000~26500	7.00	-39.1	≤-23	PASS
		2437	30~1000	7.10	-68.87	≤-22.9	PASS
			1000~26500	7.10	-38.74	≤-22.9	PASS
		2462	30~1000	7.98	-69.01	≤-22.02	PASS
			1000~26500	7.98	-38.82	≤-22.02	PASS



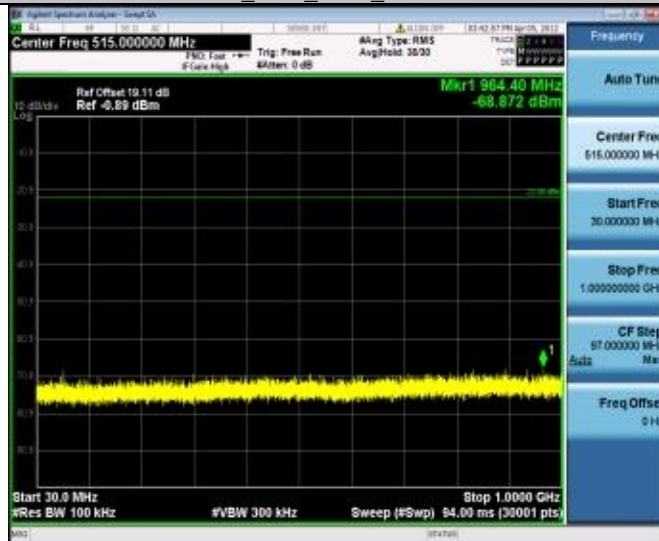
11B\_Ant1\_2412\_30~1000



11B\_Ant1\_2412\_1000~26500



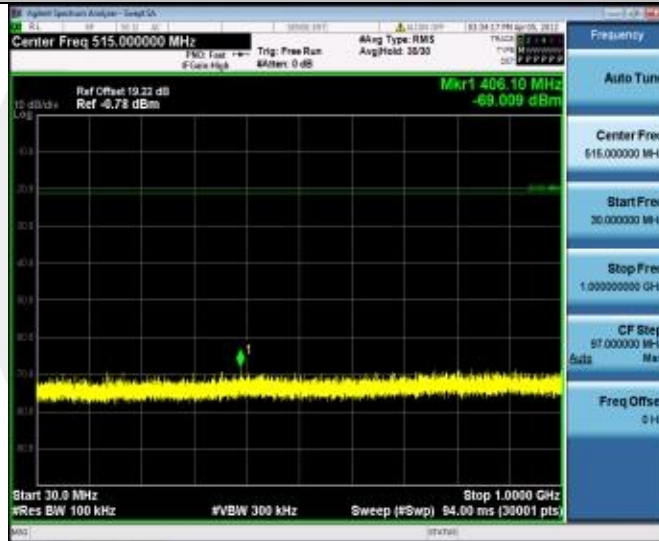
11B\_Ant1\_2437\_30~1000



11B\_Ant1\_2437\_1000~26500



11B\_Ant1\_2462\_30~1000



11B\_Ant1\_2462\_1000~26500



## 8.5 RADIATED SPURIOUS EMISSION

### 8.5.1 Applicable Standard

According to FCC Part 15.247(d) and 15.209 and KDB 558074 D01 15.247 Meas Guidance v05r02

### 8.5.2 Conformance Limit

According to FCC Part 15.247(d): 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)).  
According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

According to FCC Part 15.205, the level of any transmitter spurious emission in Restricted bands shall not exceed the level of the emission specified in the following table

Restricted Frequency (MHz)	Field Strength ( $\mu\text{V}/\text{m}$ )	Field Strength ( $\text{dB}\mu\text{V}/\text{m}$ )	Measurement Distance
0.009-0.490	2400/F(KHz)	20 log ( $\mu\text{V}/\text{m}$ )	300
0.490-1.705	24000/F(KHz)	20 log ( $\mu\text{V}/\text{m}$ )	30
1.705-30	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

### 8.5.3 Test Configuration

Test according to clause 7.2 radio frequency test setup 2

### 8.5.4 Test Procedure

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT. Use the following spectrum analyzer settings:

The EUT was placed on a turn table which is 0.8m above ground plane.

Maximum procedure was performed on the highest emissions to ensure EUT compliance.

Span = wide enough to fully capture the emission being measured

RBW = 1 MHz for  $f \geq 1$  GHz (1GHz to 25GHz), 100 kHz for  $f < 1$  GHz (30MHz to 1GHz), 200Hz for  $f < 150$  KHz (9KHz to 150KHz), 9KHz for  $f < 30$  MHz (150KHz to 30KHz)

VBW  $\geq$  RBW

Sweep = auto

Detector function = peak

Trace = max hold

Follow the guidelines in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization, etc. A pre-amp and a high pass filter are required for this test, in order to provide the measuring system with sufficient sensitivity. Allow the trace to stabilize. The peak reading of the emission, after being corrected by the antenna factor, cable loss, pre-amp gain, etc., is the peak field strength, which must comply with the limit specified in Section 15.35(b). Submit this data.

Now set the VBW to 10 Hz, while maintaining all of the other instrument settings. This peak level, once corrected, must comply with the limit specified in Section 15.209. If the dwell time per channel of the hopping signal is less than 100 ms, then the reading obtained with the 10 Hz VBW may be further adjusted by a “duty cycle correction factor”, derived from  $20\log(\text{dwell time}/100 \text{ ms})$ , in an effort to demonstrate compliance with the 15.209 limit. Submit this data.

Repeat above procedures until all frequency measured was complete.

### 8.5.5 Test Results

Temperature:	26° C
Relative Humidity:	54%
ATM Pressure:	1011 mbar

#### ■ Spurious Emission below 30MHz(9KHz to 30MHz)

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)	
		PK	AV	PK	AV	PK	AV
--	--	--	--	--	--	--	--

Note: the amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

Distance extrapolation factor =  $40\log(\text{Specific distance}/ \text{test distance})$ ( dB);

Limit line=Specific limits(dBuV) + distance extrapolation factor

- Spurious Emission Above 1GHz(1GHz to 25GHz)
- All modes 2.4G 802.11b/g/n have been tested, and the worst result of 802.11b recorded was report as below:

Test mode: 802.11b Frequency: Channel 1: 2412MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)		results
		PK	AV	PK	AV	PK	AV	
17025	V	65.99	44.33	74.00	54.00	8.01	9.67	PASS
17000.6	H	65.43	45.05	74.00	54.00	8.57	8.95	PASS

Test mode: 802.11b Frequency: Channel 6: 2437MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)		results
		PK	AV	PK	AV	PK	AV	
17034.3	V	66.28	43.53	74.00	54.00	7.72	10.47	PASS
16938.7	H	63.88	41.45	74.00	54.00	10.12	12.55	PASS

Test mode: 802.11b Frequency: Channel 11: 2462MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level(dBuV/m)		Limit 3m(dBuV/m)		Over(dB)		results
		PK	AV	PK	AV	PK	AV	
17013.7	V	65.69	44.77	74.00	54.00	8.31	9.23	PASS
17904.3	H	65.51	42.05	74.00	54.00	8.49	11.95	PASS

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
  - (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
  - (3) Correct Factor= Ant\_F + Cab\_L - Preamp
  - (4)The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.



■ Spurious Emission in Restricted Band 2310-2390MHz and 2483.5-2500MHz

All modes 2.4G 802.11b/g/n have been tested, and the worst result of 802.11b recorded was report as below:

Test mode: 802.11b Frequency: Channel 1: 2412MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2385.89	H	48.31	74	37.12	54
2386.23	V	45.78	74	37.01	54

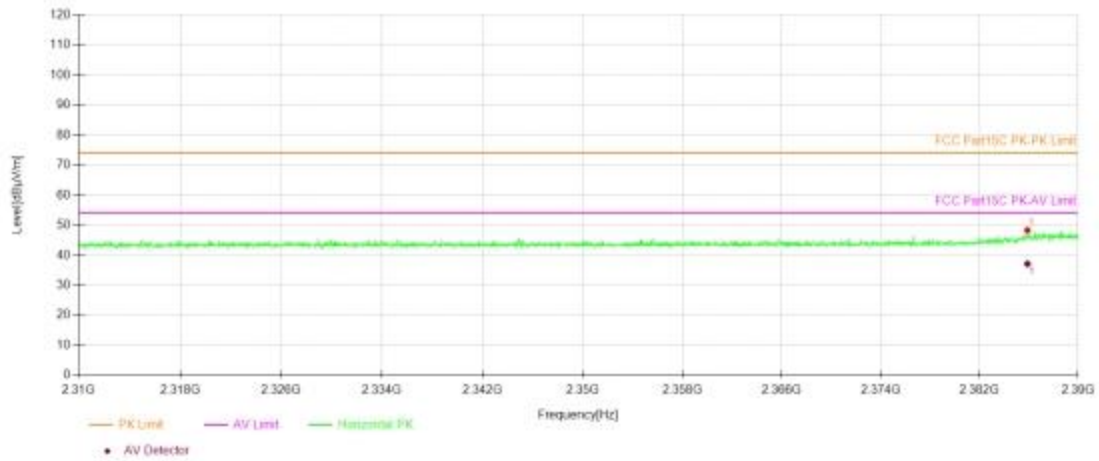
Test mode: 802.11b Frequency: Channel 11: 2462MHz

Frequency (MHz)	Polarity	PK(dBuV/m) (VBW=3MHz)	Limit 3m (dBuV/m)	AV(dBuV/m) (VBW=10Hz)	Limit 3m (dBuV/m)
2484.40	H	46.46	74	37.59	54
2484.19	V	46.53	74	37.87	54

- Note:**
- (1) All Readings are Peak Value (VBW=3MHz) and Peak Value (VBW=10Hz).
  - (2) Emission Level= Reading Level+Correct Factor +Cable Loss.
  - (3) Correct Factor= Ant\_F + Cab\_L - Preamp
  - (4) The reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

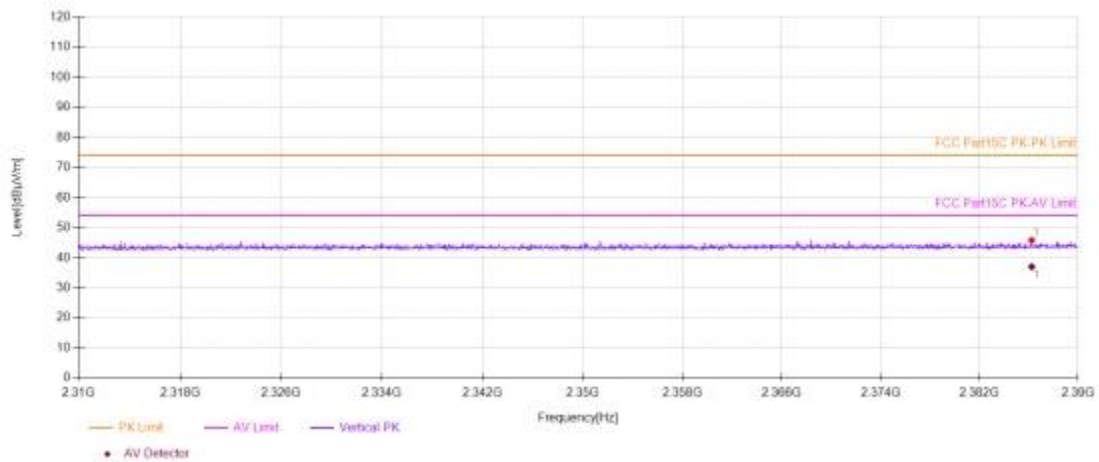
**Spurious Emission in Restricted Band 2310-2390MHz**

802.11b       802.11g       802.11n(HT20)       802.11n(HT40)  
 Test Model       Channel 1: 2412MHz       Channel 3: 2422MHz      Polarity: H  
 VBW=3MHz



**Spurious Emission in Restricted Band 2310-2390MHz**

802.11b       802.11g       802.11n(HT20)       802.11n(HT40)  
 Test Model       Channel 1: 2412MHz       Channel 3: 2422MHz      Polarity: V  
 VBW=3MHz

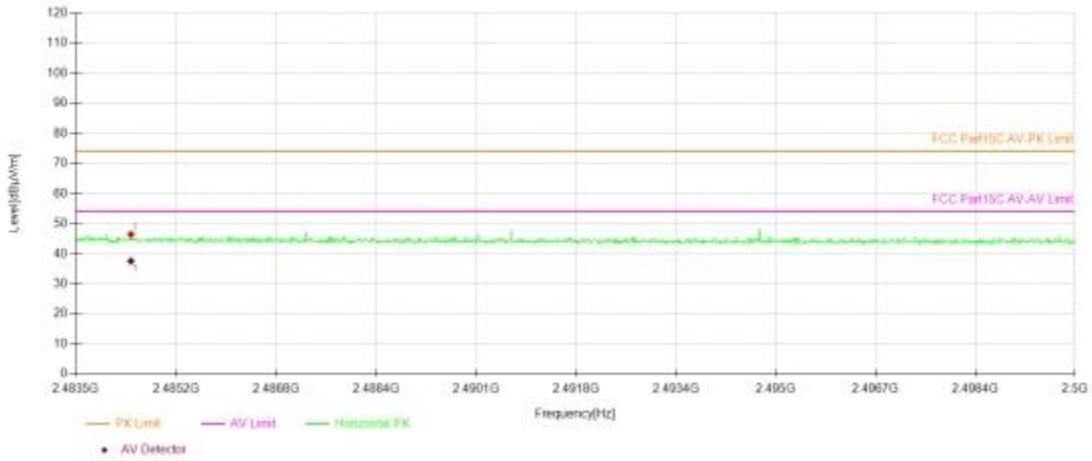


**Spurious Emission in Restricted Band 2483.5-2500MHz**

Test Model       802.11b       802.11g       802.11n(HT20)       802.11n(HT40)

Channel 11: 2462MHz       Channel 9: 2452MHz      Polarity: H

                    VBW=3MHz

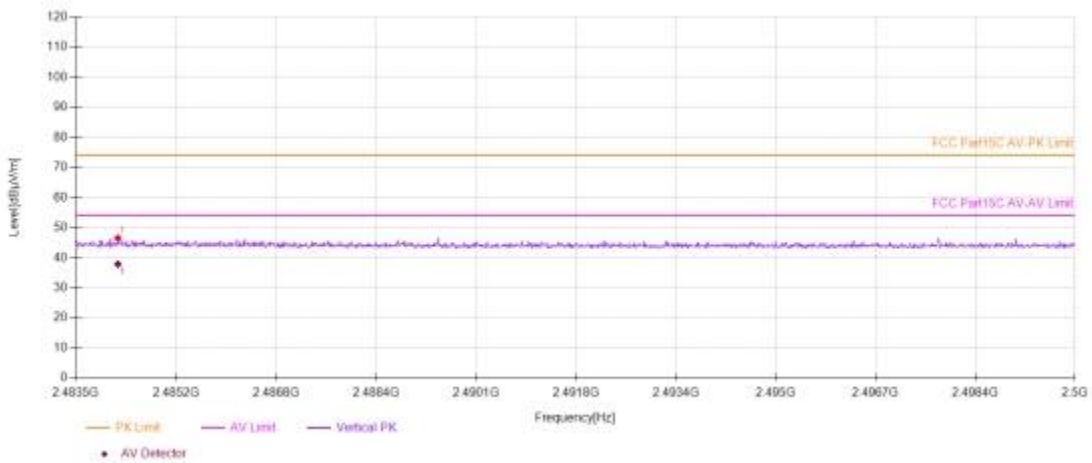


**Spurious Emission in Restricted Band 2483.5-2500MHz**

Test Model       802.11b       802.11g       802.11n(HT20)       802.11n(HT40)

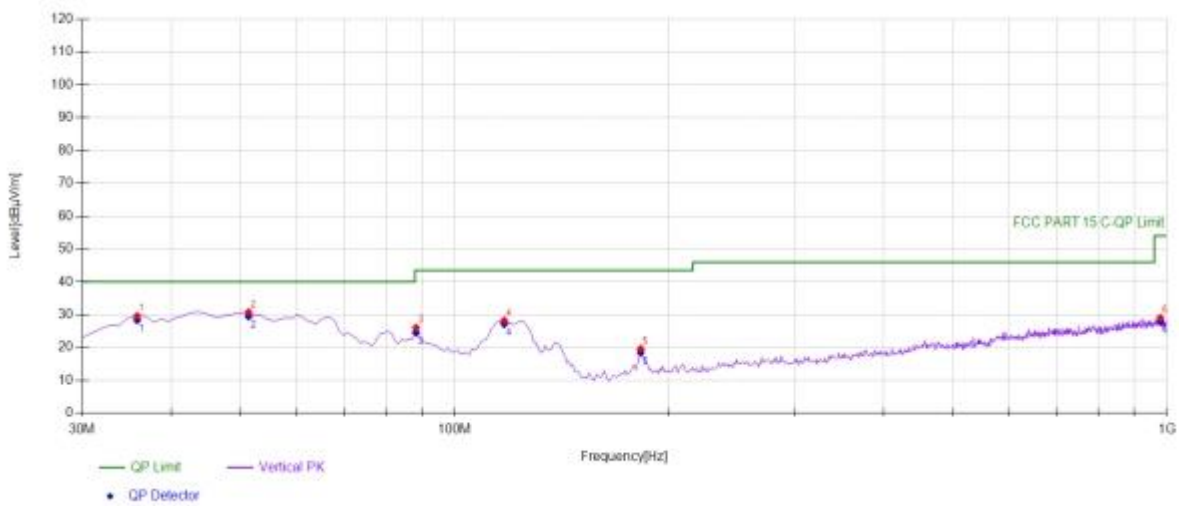
Channel 11: 2462MHz       Channel 9: 2452MHz      Polarity: V

                    VBW=3MHz



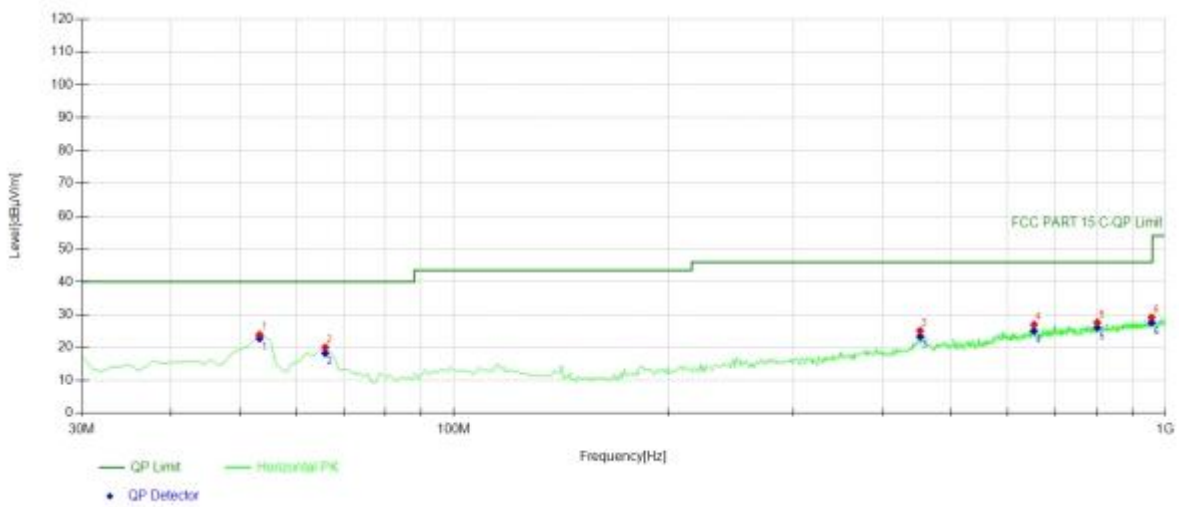
- Spurious Emission below 1GHz (30MHz to 1GHz)
- All modes 2.4G 802.11b/g/n have been tested, and the worst result of 802.11b recorded was report as below:

Test mode: GFSK      Frequency:      Channel 0: 2412MHz



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	35.8258	47.78	-18.17	29.61	PK	40.00	10.39	Vertical
2	51.3614	48.12	-17.39	30.73	PK	40.00	9.27	Vertical
3	88.2583	45.58	-19.56	26.02	PK	43.50	17.48	Vertical
4	117.387	45.97	-17.77	28.20	PK	43.50	15.30	Vertical
5	182.442	37.82	-18.24	19.58	PK	43.50	23.92	Vertical
6	978.638	30.82	-1.82	29.00	PK	54.00	25.00	Vertical

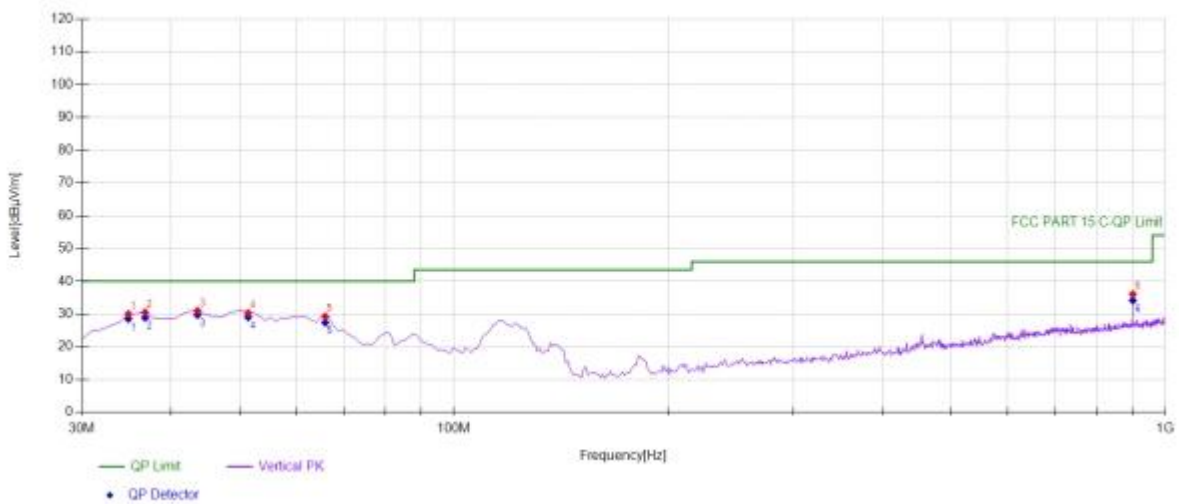
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	35.8258	-18.17	28.36	40.00	11.64
2	51.3614	-17.39	29.48	40.00	10.52
3	88.2583	-19.56	24.60	43.50	18.90
4	117.3874	-17.77	27.14	43.50	16.36
5	182.4424	-18.24	18.52	43.50	24.98
6	978.6386	-1.82	27.94	54.00	26.06



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	53.3033	41.56	-17.65	23.91	PK	40.00	16.09	Horizontal
2	65.9259	39.45	-19.39	20.06	PK	40.00	19.94	Horizontal
3	452.372	36.24	-11.11	25.13	PK	46.00	20.87	Horizontal
4	654.334	33.16	-6.18	26.98	PK	46.00	19.02	Horizontal
5	802.892	32.03	-4.40	27.63	PK	46.00	18.37	Horizontal
6	957.277	31.46	-2.29	29.17	PK	46.00	16.83	Horizontal

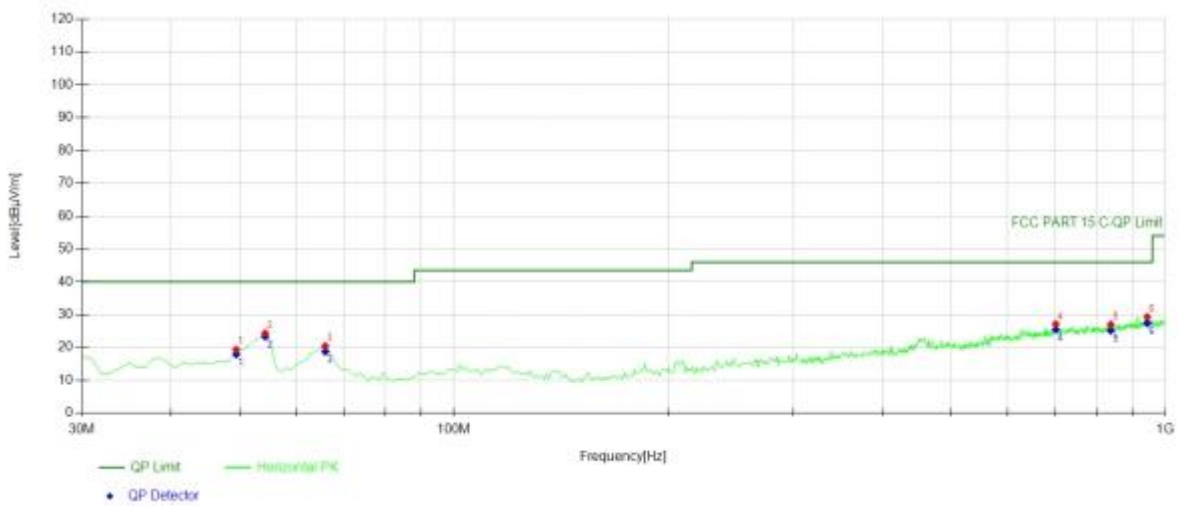
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	53.3033	-17.65	22.79	40.00	17.21
2	65.9259	-19.39	18.29	40.00	21.71
3	452.3724	-11.11	23.36	46.00	22.64
4	654.3343	-6.18	25.05	46.00	20.95
5	802.8929	-4.40	26.06	46.00	19.94
6	957.2773	-2.29	27.60	46.00	18.40

Test mode: GFSK      Frequency:      Channel 0: 2437MHz



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	34.8549	48.22	-18.23	29.99	PK	40.00	10.01	Vertical
2	36.7968	48.65	-18.11	30.54	PK	40.00	9.46	Vertical
3	43.5936	48.66	-17.66	31.00	PK	40.00	9.00	Vertical
4	51.3614	47.68	-17.39	30.29	PK	40.00	9.71	Vertical
5	65.9259	48.67	-19.39	29.28	PK	40.00	10.72	Vertical
6	900.961	38.89	-2.81	36.08	PK	46.00	9.92	Vertical

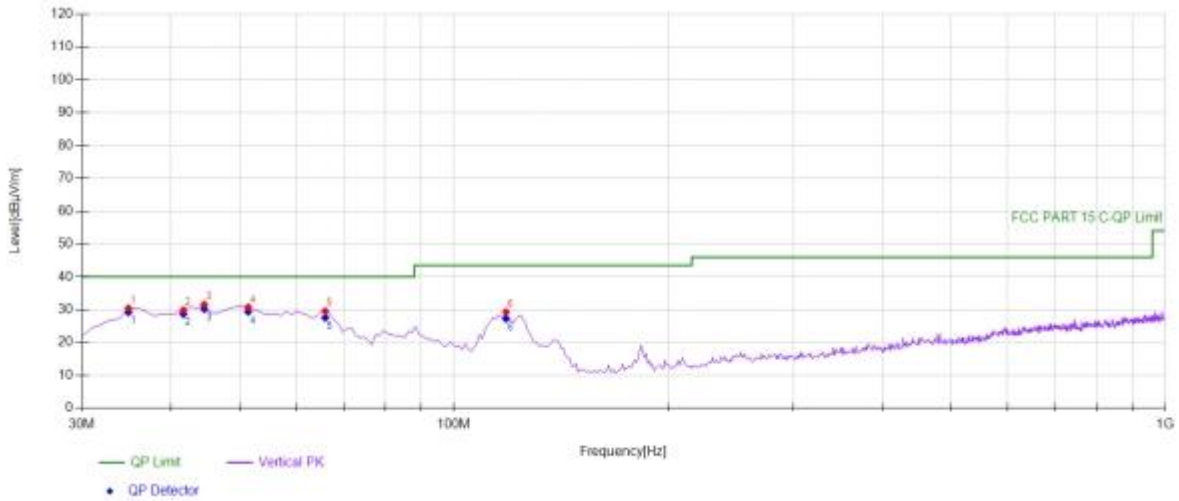
Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	34.8549	-18.23	28.55	40.00	11.45
2	36.7968	-18.11	28.93	40.00	11.07
3	43.5936	-17.66	29.75	40.00	10.25
4	51.3614	-17.39	29.04	40.00	10.96
5	65.9259	-19.39	27.39	40.00	12.61
6	900.961	-2.81	34.19	46.00	11.81



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	49.4194	36.60	-17.25	19.35	PK	40.00	20.65	Horizontal
2	54.2743	42.15	-17.78	24.37	PK	40.00	15.63	Horizontal
3	65.9259	39.84	-19.39	20.45	PK	40.00	19.55	Horizontal
4	701.911	33.06	-5.92	27.14	PK	46.00	18.86	Horizontal
5	838.818	30.91	-3.89	27.02	PK	46.00	18.98	Horizontal
6	943.683	31.71	-2.40	29.31	PK	46.00	16.69	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	49.4194	-17.25	17.96	40.00	22.04
2	54.2743	-17.78	23.34	40.00	16.66
3	65.9259	-19.39	18.78	40.00	21.22
4	701.9119	-5.92	25.47	46.00	20.53
5	838.8188	-3.89	25.18	46.00	20.82
6	943.6837	-2.40	27.47	46.00	18.53

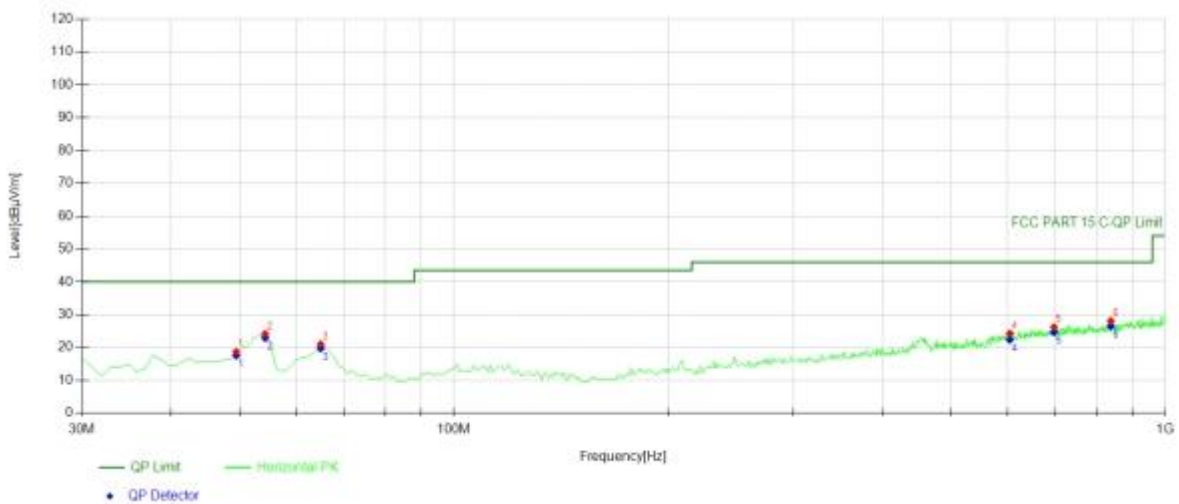
Test mode: GFSK      Frequency:      Channel 0: 2462MHz



Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	34.8549	48.64	-18.23	30.41	PK	40.00	9.59	Vertical
2	41.6517	47.65	-17.80	29.85	PK	40.00	10.15	Vertical
3	44.5646	49.15	-17.59	31.56	PK	40.00	8.44	Vertical
4	51.3614	48.11	-17.39	30.72	PK	40.00	9.28	Vertical
5	65.9259	48.93	-19.39	29.54	PK	40.00	10.46	Vertical
6	118.358	47.09	-17.83	29.26	PK	43.50	14.24	Vertical

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	34.8549	-18.23	29.24	40.00	10.76
2	41.6517	-17.80	28.68	40.00	11.32
3	44.5646	-17.59	30.23	40.00	9.77
4	51.3614	-17.39	29.39	40.00	10.61
5	65.9259	-19.39	27.57	40.00	12.43
6	118.3584	-17.83	27.29	43.50	16.21





Suspected Data List								
NO.	Freq. [MHz]	Reading [dBµV]	Factor [dB/m]	Level [dBµV/m]	Detector	Limit [dBµV/m]	Margin [dB]	Polarity
1	49.4194	35.93	-17.25	18.68	PK	40.00	21.32	Horizontal
2	54.2743	41.94	-17.78	24.16	PK	40.00	15.84	Horizontal
3	64.955	40.26	-19.25	21.01	PK	40.00	18.99	Horizontal
4	604.814	31.39	-7.11	24.28	PK	46.00	21.72	Horizontal
5	698.028	32.18	-5.96	26.22	PK	46.00	19.78	Horizontal
6	838.818	31.98	-3.89	28.09	PK	46.00	17.91	Horizontal

Final Data List					
NO.	Freq. [MHz]	Factor [dB/m]	QP Value [dBµV/m]	QP Limit [dBµV/m]	QP Margin [dB]
1	49.4194	-17.25	17.59	40.00	22.41
2	54.2743	-17.78	22.91	40.00	17.09
3	64.955	-19.25	19.76	40.00	20.24
4	604.8148	-7.11	22.39	46.00	23.61
5	698.028	-5.96	24.69	46.00	21.31
6	838.8188	-3.89	26.56	46.00	19.44

## 8.6 CONDUCTED EMISSIONS TEST

### 8.6.1 Applicable Standard

According to FCC Part 15.207(a)

### 8.6.2 Conformance Limit

Frequency(MHz)	Conducted Emission Limit	
	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies  
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

### 8.6.3 Test Configuration

Test according to clause 7.3conducted emission test setup

### 8.6.4 Test Procedure

The EUT was placed on a table which is 0.8m above ground plane.  
Maximum procedure was performed on the highest emissions to ensure EUT compliance.  
Repeat above procedures until all frequency measured were complete.

### 8.6.5 Test Results

N/A

## 8.7 ANTENNA APPLICATION

### 8.7.1 Antenna Requirement

Standard	Requirement
FCC CRF Part15.203	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 shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

For intentional device, according to FCC 47 CFR 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 8.7.2 Result

PASS.

- The EUT has a Internal Antenna for WIFI 2.4G, the antenna gain is 1.34 dBi.
- Note:
- Antenna uses a permanently attached antenna which is not replaceable.
  - Not using a standard antenna jack or electrical connector for antenna replacement
  - The antenna has to be professionally installed (please provide method of installation)

Which in accordance to section 15.203, please refer to the internal photos.

Detail of factor for radiated emission

Frequency(MHz)	Ant_F(dB)	Cab_L(dB)	Preamp(dB)	Correct Factor(dB)
0.009	20.6	0.03	\	20.63
0.15	20.7	0.1	\	20.8
1	20.9	0.15	\	21.05
10	20.1	0.28	\	20.38
30	18.8	0.45	\	19.25
30	11.7	0.62	27.9	-15.58
100	12.5	1.02	27.8	-14.28
300	12.9	1.91	27.5	-12.69
600	19.2	2.92	27	-4.88
800	21.1	3.54	26.6	-1.96
1000	22.3	4.17	26.2	0.27
1000	25.6	1.76	41.4	-14.04
3000	28.9	3.27	43.2	-11.03
5000	31.1	4.2	44.6	-9.3
8000	36.2	5.95	44.7	-2.55
10000	38.4	6.3	43.9	0.8
12000	38.5	7.14	42.3	3.34
15000	40.2	8.15	41.4	6.95
18000	45.4	9.02	41.3	13.12
18000	37.9	1.81	47.9	-8.19
21000	37.9	1.95	48.7	-8.85
25000	39.3	2.01	42.8	-1.49
28000	39.6	2.16	46.0	-4.24
31000	41.2	2.24	44.5	-1.06
34000	41.5	2.29	46.6	-2.81
37000	43.8	2.30	46.4	-0.3
40000	43.2	2.50	42.2	3.5

\*\*\* End of Report \*\*\*