

# FCC Test Report

Product Name	Dash Cam
Model No	S1
FCC ID.	2AA22DR38AS

Applicant	Sanjet Technology Corp.
Address	4F, No.2, Li-Hsin Rd., 6, Hsinchu Science Park, Hsinchu, Taiwan.

Date of Receipt	May 13, 2015
Issue Date	Feb. 23, 2016
Report No.	1620327R-RFUSP02V00
Report Version	V1.0



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standard through the calibration report of the equipment and evaluated measurement uncertainty herein.

This report must not be used to claim product endorsement by TAF or any agency of the government.

The test report shall not be reproduced without the written approval of QuieTek Corporation.

# Test Report

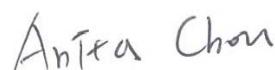
Issue Date: Feb. 23, 2016

Report No.: 1620327R-RFUSP02V00



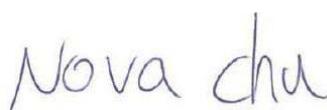
Product Name	Dash Cam
Applicant	Sanjet Technology Corp.
Address	4F, No.2, Li-Hsin Rd., 6, Hsinchu Science Park, Hsinchu, Taiwan.
Manufacturer	Sanjet Technology Corp.
Model No.	S1
FCC ID.	2AA22DR38AS
EUT Rated Voltage	DC 12V (by Car Charger) DC 3.7V(by removable Li-Battery or Li-polymer Battery)
EUT Test Voltage	DC12V (by Car Charger)
Trade Name	UniMax
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2014 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v03r04
Test Result	Complied

Documented By :



(Senior Engineering Adm. Specialist / Anita Chou)

Tested By :



( Engineer / Nova Chu )

Approved By :



( Director / Vincent Lin )

## TABLE OF CONTENTS

Description	Page
<b>1. GENERAL INFORMATION .....</b>	<b>5</b>
1.1. EUT Description.....	5
1.2. Operational Description .....	7
1.3. Tested System Details.....	8
1.4. Configuration of Tested System .....	8
1.5. EUT Exercise Software .....	8
1.6. Test Facility .....	9
<b>2. Conducted Emission.....</b>	<b>10</b>
2.1. Test Equipment.....	10
2.2. Test Setup .....	10
2.3. Limits .....	11
2.4. Test Procedure .....	11
2.5. Uncertainty .....	11
2.6. Test Result of Conducted Emission.....	12
<b>3. Peak Power Output .....</b>	<b>14</b>
3.1. Test Equipment.....	14
3.2. Test Setup .....	14
3.3. Limits .....	14
3.4. Test Procedure .....	14
3.5. Uncertainty .....	14
3.6. Test Result of Peak Power Output.....	15
<b>4. Radiated Emission.....</b>	<b>19</b>
4.1. Test Equipment.....	19
4.2. Test Setup .....	19
4.3. Limits .....	20
4.4. Test Procedure .....	22
4.5. Uncertainty .....	22
4.6. Test Result of Radiated Emission.....	23
<b>5. RF antenna conducted test.....</b>	<b>39</b>
5.1. Test Equipment.....	39
5.2. Test Setup .....	39
5.3. Limits .....	39
5.4. Test Procedure .....	39
5.5. Uncertainty .....	39
5.6. Test Result of RF antenna conducted test.....	40
<b>6. Band Edge .....</b>	<b>44</b>
6.1. Test Equipment.....	44
6.2. Test Setup .....	44
6.3. Limits .....	45
6.4. Test Procedure .....	45
6.5. Uncertainty .....	45
6.6. Test Result of Band Edge .....	46

---

<b>7.</b>	<b>Occupied Bandwidth .....</b>	<b>62</b>
7.1.	Test Equipment.....	62
7.2.	Test Setup .....	62
7.3.	Limits .....	62
7.4.	Test Procedure .....	62
7.5.	Uncertainty .....	62
7.6.	Test Result of Occupied Bandwidth .....	63
<b>8.</b>	<b>Power Density .....</b>	<b>71</b>
8.1.	Test Equipment.....	71
8.2.	Test Setup .....	71
8.3.	Limits .....	71
8.4.	Test Procedure .....	71
8.5.	Uncertainty .....	71
8.6.	Test Result of Power Density .....	72
<b>9.</b>	<b>EMI Reduction Method During Compliance Testing .....</b>	<b>80</b>

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

Product Name	Dash Cam
Trade Name	UniMax
Model No.	S1
FCC ID.	2AA22DR38AS
Frequency Range	2412-2462MHz for 802.11b/g/n-20BW, 2422-2452MHz for 802.11n-40BW
Number of Channels	802.11b/g/n-20MHz: 11, n-40MHz: 7
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: up to 150Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n:OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Monopole Type
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
Micro USB Cable	Non-shielded, 4m
Car Charger	1 set
Suction cup stand	1 set
External GPS module (optional)	1 set
Contain Module	Realtek / RTL8723BS (WS-N101BF)

#### Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	Wgt	JTASUWIPB01+B	Monopole Type	4.01 dBi for 2.4GHz

Note: The antenna of EUT conforms to FCC 15.203.

802.11b/g/n-20MHz Center Frequency of Each Channel:

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

802.11n-40MHz Center Frequency of Each Channel:

Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 03:	2422 MHz	Channel 04:	2427 MHz	Channel 05:	2432 MHz	Channel 06:	2437 MHz
Channel 07:	2442 MHz	Channel 08:	2447 MHz	Channel 09:	2452 MHz		

Note:

1. The EUT is a Dash Cam with a built-in WLAN transceiver and NFC Tag function.
2. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
3. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report.  
(802.11b is 1Mbps 、 802.11g is 6Mbps 、 802.11n(20M-BW) is 7.2Mbps and 802.11n(40M-BW) is 15Mbps)
4. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.
5. These tests are conducted on a sample for the purpose of demonstrating compliance of 802.11b/g/n transmitter with Part 15 Subpart C Paragraph 15.247 of spread spectrum devices.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)
	Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

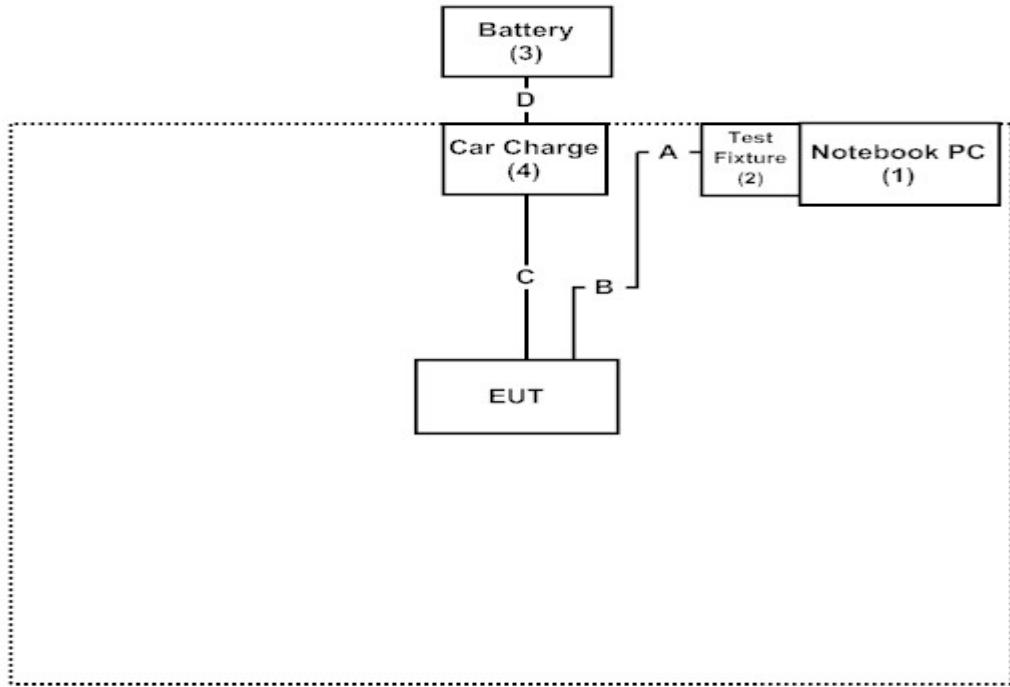
### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

Product	Manufacturer	Model No.	Serial No.	FCC ID	Power Cord
1 Notebook PC	DELL	Latitude E5440	B6TYTZ1	DoC	Non-Shielded, 0.8m
2 Test Fixture	ASUS	N/A	N/A	N/A	N/A
3 DC 12V Battery	TRANE	12B50PE	N/A	N/A	N/A
4 Car Charge	ASUS	N/A	N/A	N/A	N/A

Signal Cable Type	Signal cable Description
A Single Cable	Non-shielded, 0.3m
B Mini USB Cable	Non-shielded, 0.8m with one core
C Micro USB Cable	Non-shielded, 4m
D Power Cable	Non-shielded, 1.3m

### 1.4. Configuration of Tested System



### 1.5. EUT Exercise Software

1. Setup the EUT as shown in Section 1.4.
2. Execute software “Tera Term (Ver 4.72)” on the EUT.
3. Configure the test mode, the test channel, and the data rate.
4. Press “OK” to start the continuous Transmit.
5. Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

Items	Required (IEC 68-1)	Actual
Temperature (°C)	15-35	20-35
Humidity (%RH)	25-75	50-65
Barometric pressure (mbar)	860-1060	950-1000

The related certificate for our laboratories about the test site and management system can be downloaded from QuieTek Corporation's Web Site: <http://www.quietek.com/chinese/about/certificates.aspx?bval=5>  
The address and introduction of QuieTek Corporation's laboratories can be founded in our Web site:  
<http://www.quietek.com/>

Site Description: File on

Federal Communications Commission  
FCC Engineering Laboratory  
7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 92195

Site Name: Quietek Corporation

Site Address: No.5-22, Ruishukeng,  
Linkou Dist. New Taipei City 24451,  
Taiwan, R.O.C.  
TEL: 886-2-8601-3788 / FAX : 886-2-8601-3789  
E-Mail : [service@quietek.com](mailto:service@quietek.com)

FCC Accreditation Number: TW1014

## 2. Conducted Emission

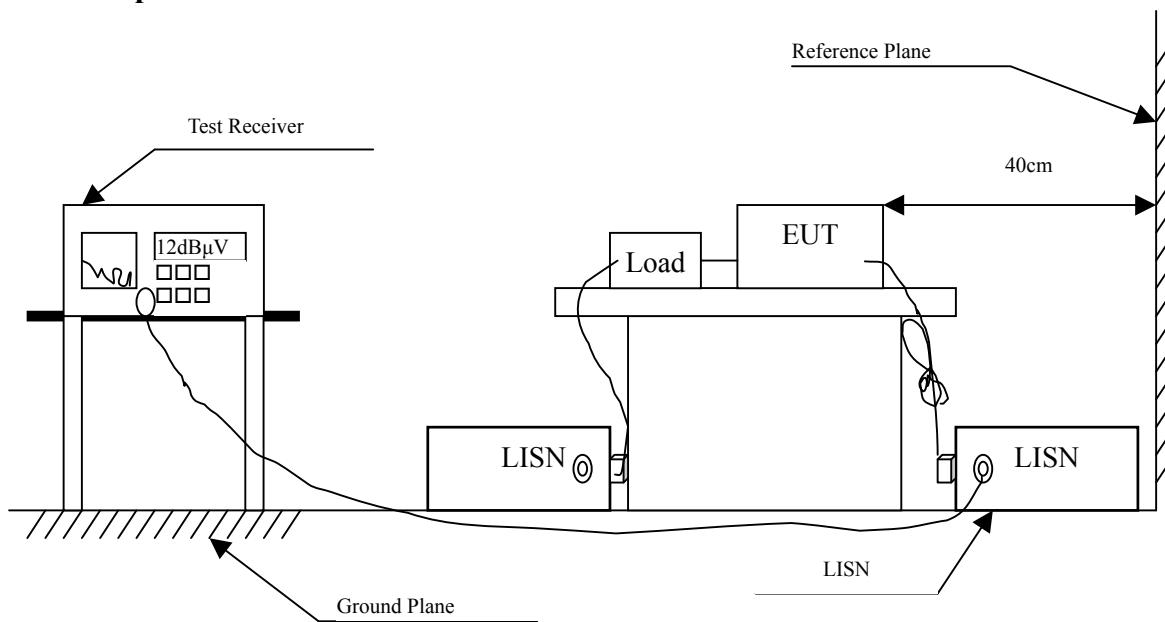
### 2.1. Test Equipment

	Equipment	Manufacturer	Model No. / Serial No.	Last Cal.	Remark
X	Test Receiver	R & S	ESCS 30 / 825442/018	Sep., 2015	
X	Artificial Mains Network	R & S	ENV4200 / 848411/10	Feb., 2016	Peripherals
X	LISN	R & S	ESH3-Z5 / 825562/002	Feb., 2016	EUT
	DC LISN	Schwarzbeck	8226 / 176	Mar., 2015	EUT
X	Pulse Limiter	R & S	ESH3-Z2 / 357.8810.52	Feb., 2016	
	No.1 Shielded Room				

Note:

1. All equipments are calibrated every one year.
2. The test instruments marked by “X” are used to measure the final test results.

### 2.2. Test Setup



### 2.3. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dB $\mu$ V) Limit		
Frequency MHz	Limits	
	QP	AVG
0.15 - 0.50	66-56	56-46
0.50-5.0	56	46
5.0 - 30	60	50

### 2.4. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm /50uH coupling impedance with 50ohm termination. (Please refers to the block diagram of the test setup and photographs.)

Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.4: 2014 on conducted measurement.

Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

### 2.5. Uncertainty

± 2.26 dB

## 2.6. Test Result of Conducted Emission

Product : Dash Cam  
 Test Item : Conducted Emission Test  
 Power Line : Line 1  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V	dB	dB $\mu$ V
<b>Line 1</b>					
<b>Quasi-Peak</b>					
0.158	9.761	39.760	49.522	-16.249	65.771
0.205	9.755	30.770	40.525	-23.904	64.429
0.267	9.760	23.840	33.600	-29.057	62.657
0.365	9.767	32.840	42.607	-17.250	59.857
6.271	10.015	25.870	35.885	-24.115	60.000
21.099	10.186	19.710	29.896	-30.104	60.000
<b>Average</b>					
0.158	9.761	24.730	34.492	-21.279	55.771
0.205	9.755	18.140	27.895	-26.534	54.429
0.267	9.760	12.270	22.030	-30.627	52.657
0.365	9.767	24.720	34.487	-15.370	49.857
6.271	10.015	13.870	23.885	-26.115	50.000
21.099	10.186	13.750	23.936	-26.064	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

Product : Dash Cam  
 Test Item : Conducted Emission Test  
 Power Line : Line 2  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V	dB	dB $\mu$ V
<b>Line 2</b>					
<b>Quasi-Peak</b>					
0.158	9.761	38.950	48.712	-17.059	65.771
0.205	9.755	29.970	39.725	-24.704	64.429
0.259	9.759	25.710	35.469	-27.417	62.886
0.365	9.767	31.750	41.517	-18.340	59.857
6.298	10.026	26.890	36.916	-23.084	60.000
19.998	10.331	20.320	30.651	-29.349	60.000
<b>Average</b>					
0.158	9.761	28.360	38.122	-17.649	55.771
0.205	9.755	16.630	26.385	-28.044	54.429
0.259	9.759	17.930	27.689	-25.197	52.886
0.365	9.767	24.110	33.877	-15.980	49.857
6.298	10.026	15.480	25.506	-24.494	50.000
19.998	10.331	13.940	24.271	-25.729	50.000

Note:

1. All Reading Levels are Quasi-Peak and average value.
2. “ ” means the worst emission level.
3. Measurement Level = Reading Level + Correct Factor

### 3. Peak Power Output

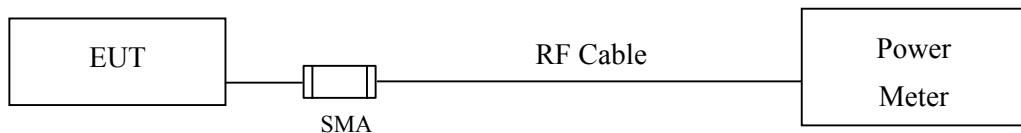
#### 3.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
X Power Meter	Anritsu	ML2495A/6K00003357	May, 2015
X Power Sensor	Anritsu	MA2411B/0738448	Jun., 2015

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

#### 3.2. Test Setup



#### 3.3. Limits

The maximum peak power shall be less 1 Watt.

#### 3.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements. The maximum peak conducted output power using KDB 558074 D01 DTS Meas Guidance v03r04 section 9.1.2 PKPM1 Peak power meter method.

#### 3.5. Uncertainty

± 1.27 dB

### 3.6. Test Result of Peak Power Output

Product : Dash Cam  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)				Peak Power	Required Limit	Result
		1	2	5.5	11			
		Measurement Level (dBm)						
01	2412	14.24	--	--	--	16.42	<30dBm	Pass
06	2437	14.20	14.13	14.06	13.99	16.38	<30dBm	Pass
11	2462	13.92	--	--	--	16.10	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Dash Cam  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6	9	12	18	24	36	48	54			
		Measurement Level (dBm)										
01	2412	14.07	--	--	--	--	--	--	--	22.68	<30dBm	Pass
06	2437	13.94	13.87	13.79	13.71	13.63	16.57	13.49	13.4	22.42	<30dBm	Pass
11	2462	13.87	--	--	--	--	--	--	--	22.31	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Dash Cam  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		7.2	14.4	21.7	28.9	43.3	57.8	65	72.2			
		Measurement Level (dBm)										
01	2412	12.87	--	--	--	--	--	--	--	21.67	<30dBm	Pass
06	2437	13.08	12.99	12.92	12.83	12.75	12.68	12.61	12.54	21.61	<30dBm	Pass
11	2462	13.1	--	--	--	--	--	--	--	21.80	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

Product : Dash Cam  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		15	30	45	60	90	120	135	150			
		Measurement Level (dBm)										
03	2422	13.01	--	--	--	--	--	--	--	21.68	<30dBm	Pass
06	2437	13.27	13.2	13.11	13.04	12.95	12.89	12.83	12.75	21.16	<30dBm	Pass
09	2452	12.01	--	--	--	--	--	--	--	20.78	<30dBm	Pass

Note: Peak Power Output Value =Reading value on power meter + cable loss

## 4. Radiated Emission

### 4.1. Test Equipment

The following test equipments are used during the radiated emission test:

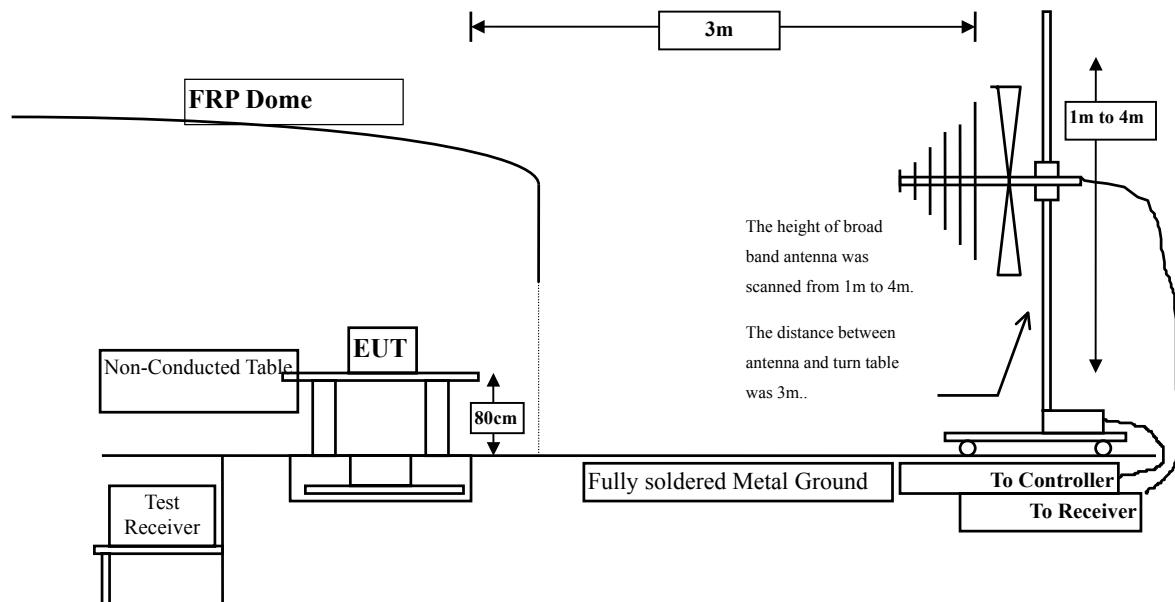
Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> Site # 3	X	Magnetic Loop Antenna	Teseq	HLA6121/ 37133	Sep., 2015
	X	Bilog Antenna	Schaffner Chase	CBL6112B/ 2707	Jun., 2015
	X	EMI Test Receiver	R&S	ESCS 30/838251/ 001	Jun., 2015
	X	Coaxial Cable	QTK(Arnist)	RG 214/ LC003-RG	Jun., 2015
	X	Coaxial signal switch	Arnist	MP59B/ 6200798682	Jun., 2015

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct., 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2015
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2015
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2015

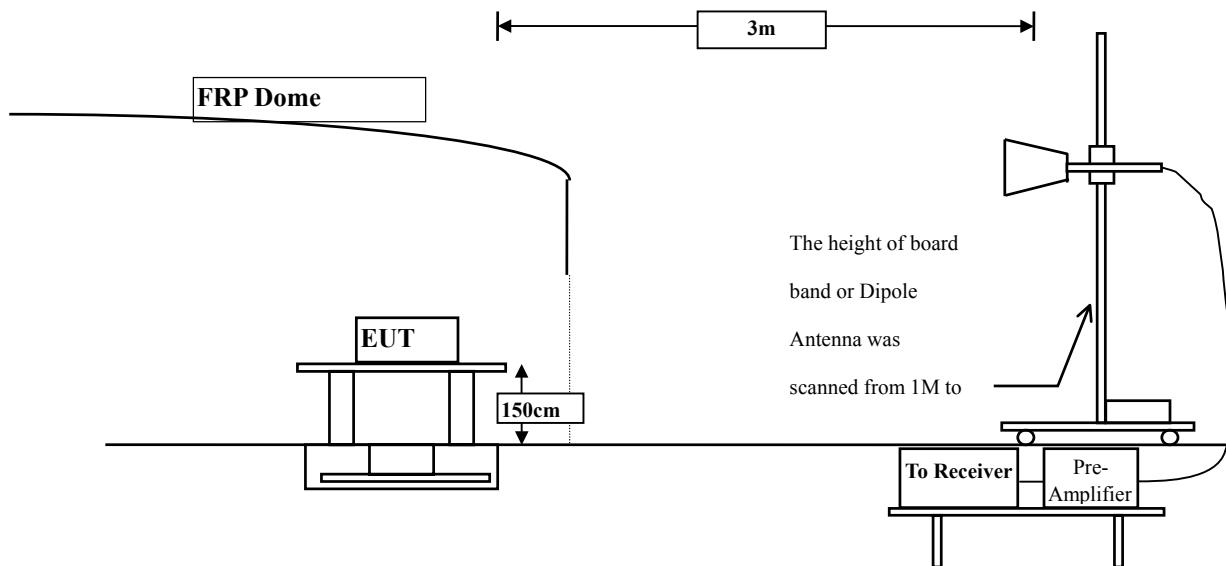
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
 2. The test instruments marked with "X" are used to measure the final test results.

### 4.2. Test Setup

#### Radiated Emission Below 1GHz



### Radiated Emission Above 1GHz



### 4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

FCC Part 15 Subpart C Paragraph 15.209(a) Limits		
Frequency MHz	Field strength (microvolts/meter)	Measurement distance (meter)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remarks: E field strength (dB $\mu$ V/m) = 20 log E field strength (uV/m)

#### **4.4. Test Procedure**

The EUT was setup according to ANSI C63.10: 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Measuring the frequency range below 1GHz, the EUT is placed on a turn table which is 0.8 meter above ground, when measuring the frequency range above 1GHz, the EUT is placed on a turn table which is 1.5 meter above ground.

The turn table is rotated 360 degrees to determine the position of the maximum emission level.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10: 2013 on radiated measurement.

The resolution bandwidth below 30MHz setting on the field strength meter is 9kHz and 30MHz~1GHz is 120kHz and above 1GHz is 1MHz.

Radiated emission measurements below 30MHz are made using Loop Antenna and 30MHz~1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB bandwidth of the antenna.

The worst radiated emission is measured in the Open Area Test Site on the Final Measurement.

The measurement frequency range from 9kHz - 10th Harmonic of fundamental was investigated.

#### **4.5. Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

#### 4.6. Test Result of Radiated Emission

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4824.000	3.261	45.230	48.491	-25.509	74.000
7236.000	10.561	35.370	45.931	-28.069	74.000
9648.000	13.066	40.070	53.136	-20.864	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4824.000	6.421	43.510	49.931	-24.069	74.000
7236.000	11.495	35.210	46.705	-27.295	74.000
9648.000	13.807	41.490	55.296	-18.704	74.000
<b>Average Detector:</b>					
9648.000	13.807	35.980	49.786	-4.214	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
------------------	-------------------------	--------------------------------	--------------------------------------	--------------	-----------------------

### Horizontal

#### Peak Detector:

4874.000	33.306	44.570	47.607	-26.393	74.000
7311.000	39.698	35.290	47.084	-26.916	74.000
9748.000	41.160	39.930	52.565	-21.435	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4874.000	5.812	42.170	47.981	-26.019	74.000
7311.000	12.630	35.380	48.009	-25.991	74.000
9748.000	13.126	41.350	54.476	-19.524	74.000

#### Average Detector:

9748.000	13.126	36.410	49.536	-4.464	54.000
----------	--------	--------	--------	--------	--------

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4924.000	2.858	43.310	46.167	-27.833	74.000
7386.000	12.127	35.580	47.708	-26.292	74.000
9848.000	12.852	40.380	53.233	-20.767	74.000
<b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4924.000	5.521	41.720	47.240	-26.760	74.000
7386.000	13.254	35.810	49.064	-24.936	74.000
9848.000	13.367	42.270	55.637	-18.363	74.000
<b>Average Detector:</b>					
9848.000	13.367	36.810	50.177	-3.823	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
------------------	-------------------------	--------------------------------	--------------------------------------	--------------	-----------------------

### Horizontal

#### Peak Detector:

4824.000	3.261	42.470	45.731	-28.269	74.000
7236.000	10.650	35.420	46.070	-27.930	74.000
9648.000	13.337	39.270	52.606	-21.394	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4824.000	6.421	40.870	47.291	-26.709	74.000
7236.000	11.495	35.290	46.785	-27.215	74.000
9648.000	13.807	41.310	55.116	-18.884	74.000

#### Average Detector:

9648.000	13.807	35.620	49.426	-4.574	54.000
----------	--------	--------	--------	--------	--------

### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
------------------	-------------------------	--------------------------------	--------------------------------------	--------------	-----------------------

### Horizontal

#### Peak Detector:

4874.000	3.038	41.300	44.337	-29.663	74.000
7311.000	11.795	35.630	47.424	-26.576	74.000
9748.000	12.635	39.380	52.015	-21.985	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4874.000	36.080	39.170	44.981	-29.019	74.000
7311.000	40.533	34.080	46.709	-27.291	74.000
9748.000	41.651	37.340	50.466	-23.534	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency MHz	Correct Factor	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
------------------	-------------------	--------------------------------	--------------------------------------	--------------	-----------------------

### Horizontal

#### Peak Detector:

4924.000	2.858	36.370	39.227	-34.773	74.000
7386.000	12.127	33.610	45.738	-28.262	74.000
9848.000	12.852	36.910	49.763	-24.237	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4924.000	5.521	36.420	41.940	-32.060	74.000
7386.000	13.254	34.380	47.634	-26.366	74.000
9848.000	13.367	37.730	51.097	-22.903	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m

### Horizontal

#### Peak Detector:

4824.000	3.261	37.990	41.251	-32.749	74.000
7236.000	10.650	34.270	44.920	-29.080	74.000
9648.000	13.337	37.560	50.896	-23.104	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4824.000	6.421	38.710	45.131	-28.869	74.000
7236.000	11.495	33.140	44.635	-29.365	74.000
9648.000	13.807	37.370	51.176	-22.824	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
<b>Peak Detector:</b>					
4874.000	3.038	39.710	42.747	-31.253	74.000
7311.000	11.795	35.210	47.004	-26.996	74.000
9748.000	12.635	38.540	51.175	-22.825	74.000
 <b>Average Detector:</b>					
--					
<b>Vertical</b>					
<b>Peak Detector:</b>					
4874.000	5.812	37.610	43.421	-30.579	74.000
7311.000	12.630	34.720	47.349	-26.651	74.000
9748.000	13.126	38.430	51.556	-22.444	74.000

**Average Detector:**

--

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
------------------	-------------------------	--------------------------------	--------------------------------------	--------------	-----------------------

### Horizontal

#### Peak Detector:

4924.000	2.858	38.240	41.097	-32.903	74.000
7386.000	12.127	35.240	47.368	-26.632	74.000
9848.000	12.852	39.420	52.273	-21.727	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4924.000	5.521	36.580	42.100	-31.900	74.000
7386.000	13.254	35.170	48.424	-25.576	74.000
9848.000	13.367	39.410	52.777	-21.223	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2422MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
------------------	-------------------------	--------------------------------	--------------------------------------	--------------	-----------------------

### Horizontal

#### Peak Detector:

4844.000	3.171	37.720	40.891	-33.109	74.000
7266.000	11.162	34.370	45.532	-28.468	74.000
9688.000	12.964	38.100	51.065	-22.935	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4844.000	6.178	37.420	43.598	-30.402	74.000
7266.000	11.982	34.680	46.662	-27.338	74.000
9688.000	13.507	38.510	52.018	-21.982	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m

### Horizontal

#### Peak Detector:

4874.000	3.038	37.970	41.007	-32.993	74.000
7311.000	11.795	35.120	46.914	-27.086	74.000
9748.000	12.635	38.710	51.345	-22.655	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4874.000	5.812	37.350	43.161	-30.839	74.000
7311.000	12.630	34.570	47.199	-26.801	74.000
9748.000	13.126	37.930	51.056	-22.944	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2452 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m

### Horizontal

#### Peak Detector:

4904.000	2.914	37.380	40.295	-33.705	74.000
7356.000	11.995	34.630	46.624	-27.376	74.000
9808.000	12.475	37.290	49.765	-24.235	74.000

#### Average Detector:

--

### Vertical

#### Peak Detector:

4904.000	5.530	36.930	42.461	-31.539	74.000
7356.000	13.005	34.760	47.764	-26.236	74.000
9808.000	12.901	38.430	51.331	-22.669	74.000

#### Average Detector:

--

#### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.

Product : Dash Cam  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
89.043	-9.591	45.411	35.820	-7.680	43.500
222.594	-10.409	48.412	38.003	-7.997	46.000
333.652	-4.023	44.800	40.777	-5.223	46.000
519.217	1.723	31.610	33.333	-12.667	46.000
704.783	2.638	37.975	40.613	-5.387	46.000
964.855	6.831	31.181	38.013	-15.987	54.000
<b>Vertical</b>					
97.478	-1.707	38.352	36.645	-6.855	43.500
333.652	-4.917	41.570	36.653	-9.347	46.000
519.217	-0.492	30.947	30.455	-15.545	46.000
704.783	0.122	36.480	36.602	-9.398	46.000
815.841	3.224	31.905	35.129	-10.871	46.000
964.855	7.897	33.504	41.402	-12.598	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Dash Cam  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency MHz	Correct Factor dB	Reading Level dB $\mu$ V	Measurement Level dB $\mu$ V/m	Margin dB	Limit dB $\mu$ V/m
<b>Horizontal</b>					
94.667	-8.006	41.895	33.889	-9.611	43.500
259.145	-5.049	45.515	40.466	-5.534	46.000
370.203	-1.080	39.711	38.632	-7.368	46.000
552.957	2.593	32.207	34.800	-11.200	46.000
704.783	2.638	37.623	40.261	-5.739	46.000
853.797	6.548	30.045	36.593	-9.407	46.000
<b>Vertical</b>					
98.884	-0.706	40.738	40.032	-3.468	43.500
295.696	-7.468	38.079	30.611	-15.389	46.000
519.217	-0.492	31.703	31.211	-14.789	46.000
686.507	2.371	32.847	35.218	-10.782	46.000
815.841	3.224	32.081	35.305	-10.695	46.000
964.855	7.897	33.636	41.534	-12.466	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Dash Cam  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
97.478	-7.687	41.996	34.309	-9.191	43.500
259.145	-5.049	45.289	40.240	-5.760	46.000
370.203	-1.080	39.980	38.901	-7.099	46.000
552.957	2.593	32.441	35.034	-10.966	46.000
704.783	2.638	35.624	38.262	-7.738	46.000
964.855	6.831	31.238	38.070	-15.930	54.000
<b>Vertical</b>					
98.884	-0.706	40.957	40.251	-3.249	43.500
333.652	-4.917	42.314	37.397	-8.603	46.000
519.217	-0.492	30.263	29.771	-16.229	46.000
704.783	0.122	36.576	36.698	-9.302	46.000
815.841	3.224	32.993	36.217	-9.783	46.000
964.855	7.897	32.846	40.744	-13.256	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

Product : Dash Cam  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dB $\mu$ V	dB $\mu$ V/m	dB	dB $\mu$ V/m
<b>Horizontal</b>					
222.594	-10.409	49.353	38.944	-7.056	46.000
333.652	-4.023	44.185	40.162	-5.838	46.000
482.667	-0.563	34.837	34.274	-11.726	46.000
600.754	4.009	29.713	33.722	-12.278	46.000
704.783	2.638	40.032	42.670	-3.330	46.000
964.855	6.831	31.634	38.466	-15.534	54.000
<b>Vertical</b>					
103.101	-0.110	35.500	35.390	-8.110	43.500
243.576	-8.450	37.124	28.674	-17.326	46.000
384.261	-2.571	31.506	28.935	-17.065	46.000
529.058	-0.475	31.349	30.874	-15.126	46.000
697.754	1.186	32.193	33.379	-12.621	46.000
969.072	8.191	23.455	31.646	-22.354	54.000

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. Measurement Level = Reading Level + Correct Factor.
5. Correct Factor = Antenna factor + Cable loss -Amplifier gain.
6. The average measurement was not performed when the peak measured data under the limit of average detection.
7. The emission levels of other frequencies are very lower than the limit and not show in test report.
8. No emission found between lowest internal used/generated frequency to 30MHz.

## 5. RF antenna conducted test

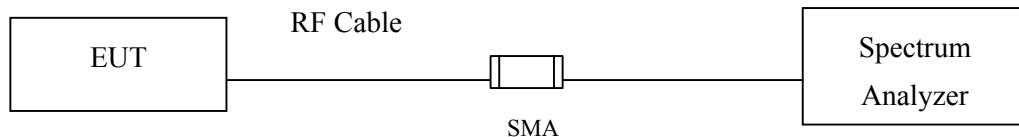
### 5.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
 2. The test instruments marked with "X" are used to measure the final test results.

### 5.2. Test Setup

#### RF antenna Conducted Measurement:



### 5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, 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(a) (see Section 15.205(c)).

### 5.4. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

### 5.5. Uncertainty

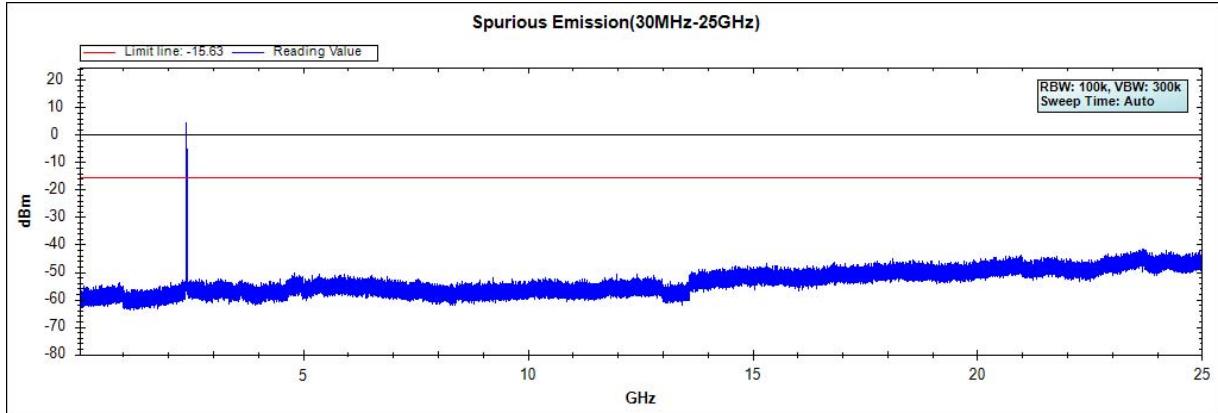
The measurement uncertainty

Conducted is defined as  $\pm 1.27\text{dB}$

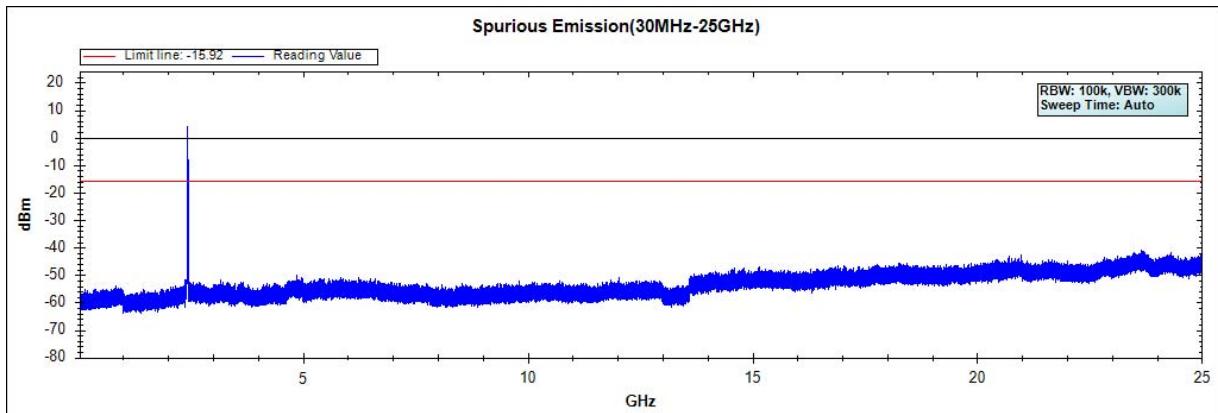
## 5.6. Test Result of RF antenna conducted test

Product : Dash Cam  
 Test Item : RF antenna conducted test  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

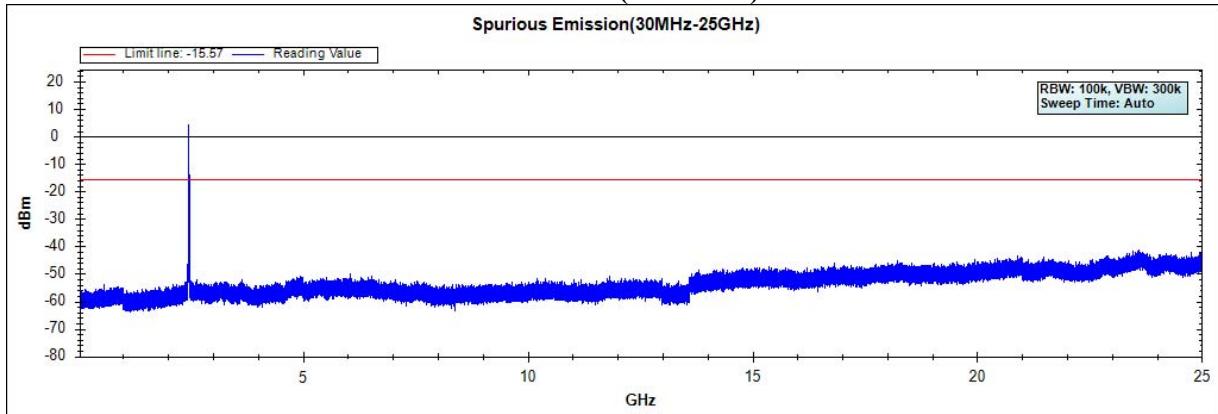
**Channel 01 (2412MHz)**



**Channel 06 (2437MHz)**



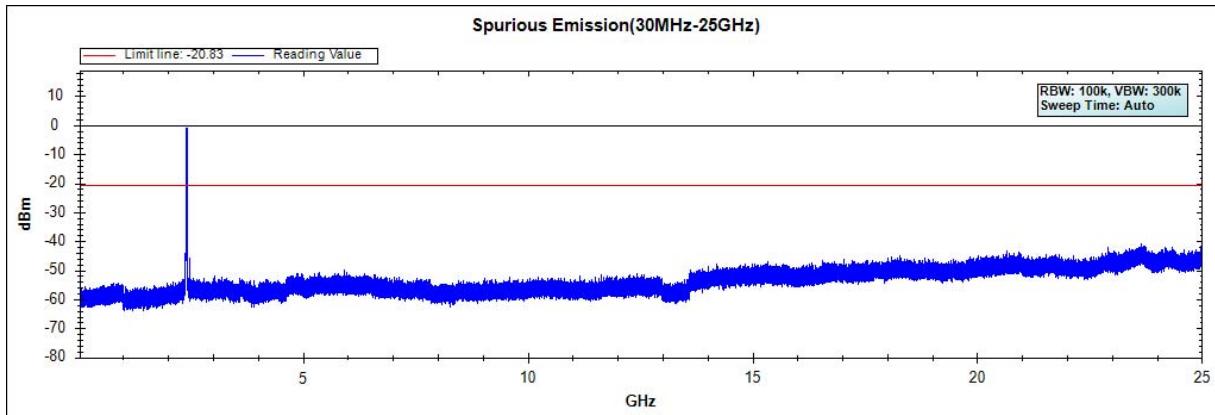
**Channel 11 (2462MHz)**



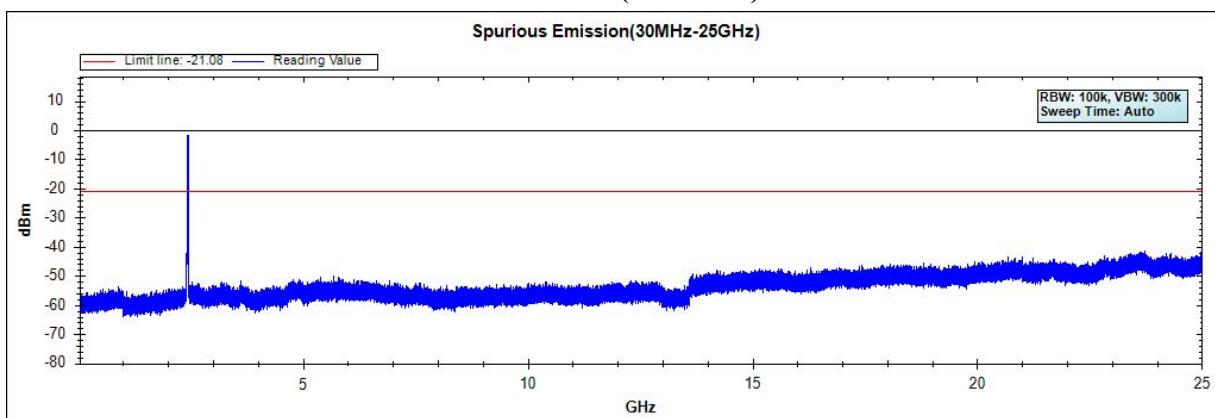
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Dash Cam  
 Test Item : RF Antenna Conducted Spurious  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

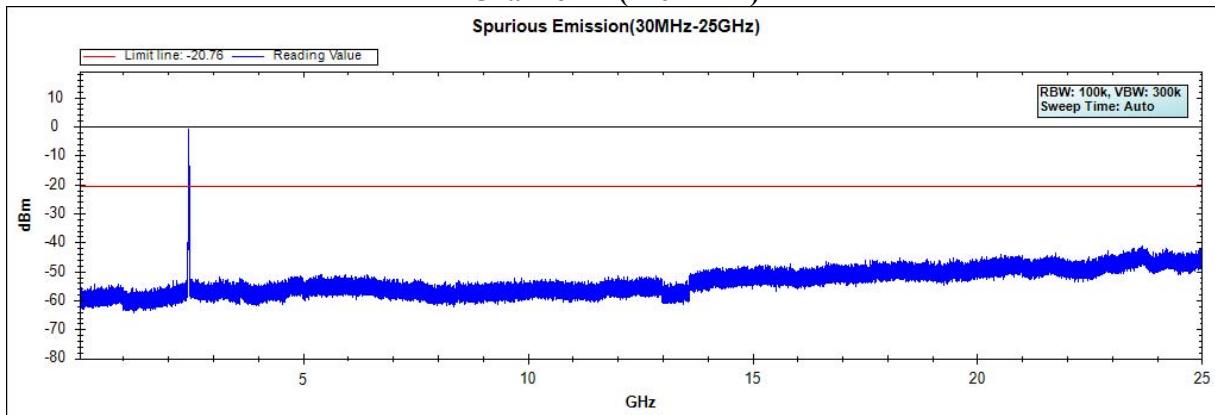
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)



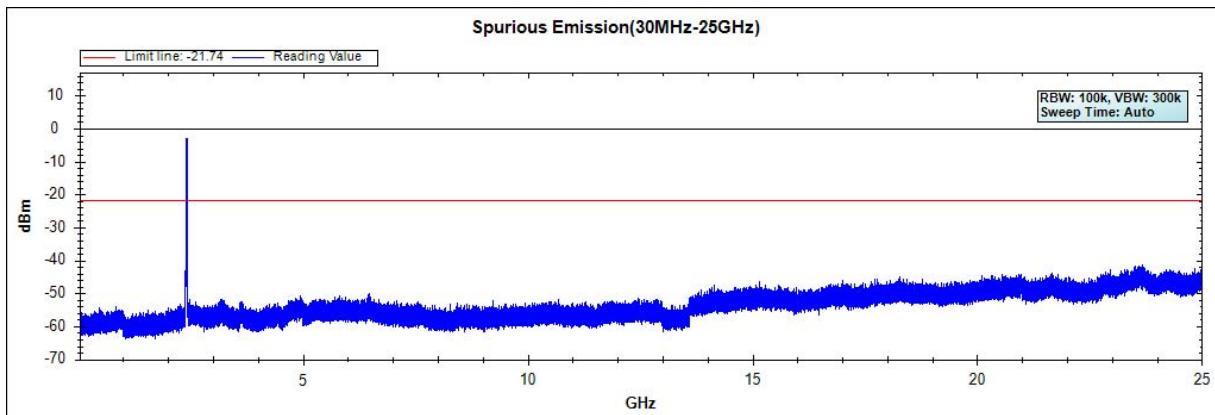
### Channel 11 (2462MHz)



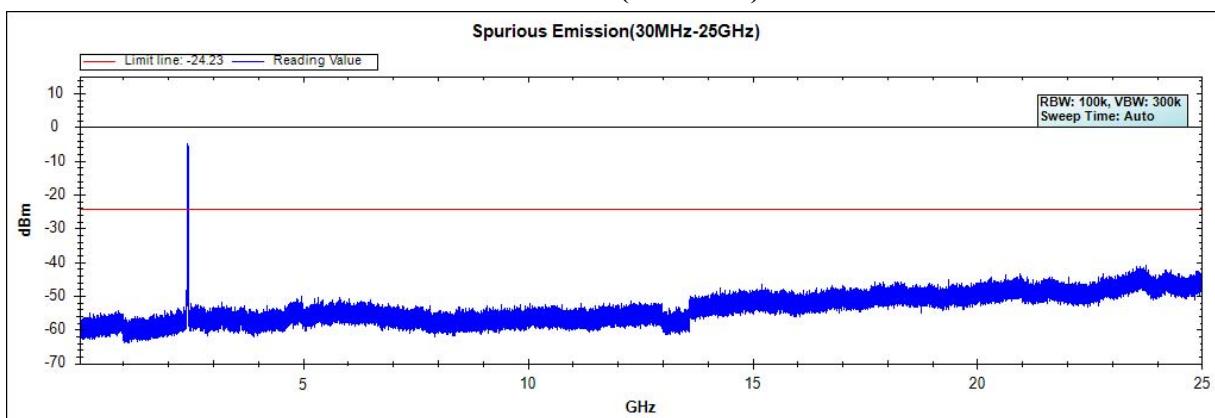
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Dash Cam  
 Test Item : RF Antenna Conducted Spurious  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

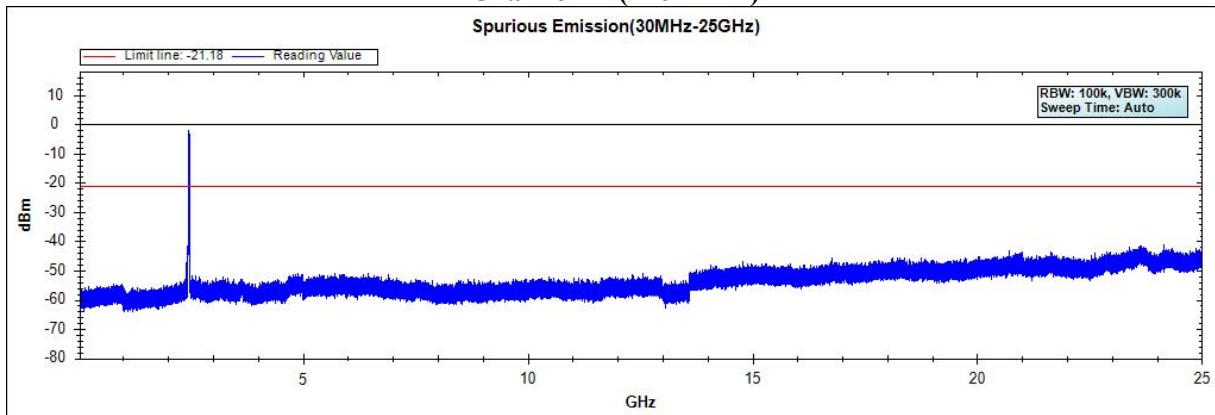
### Channel 01 (2412MHz)



### Channel 06 (2437MHz)



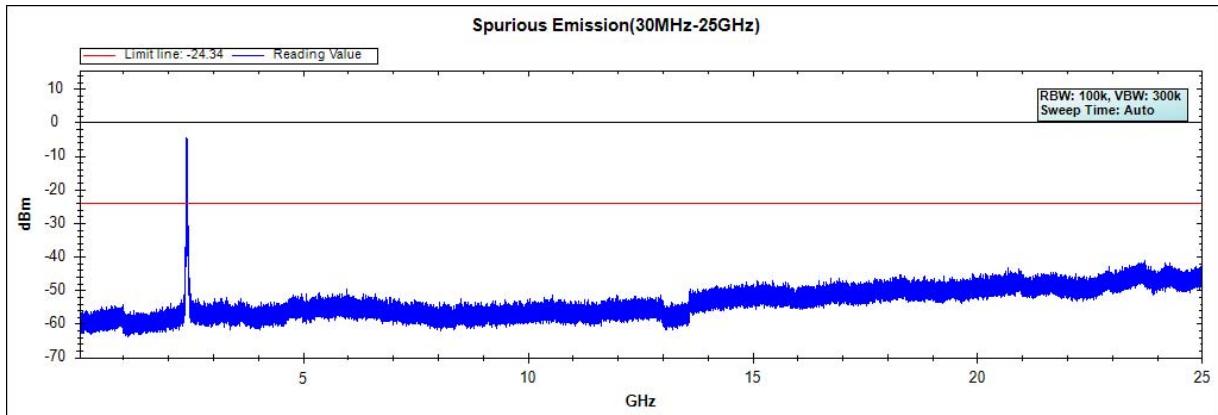
### Channel 11 (2462MHz)



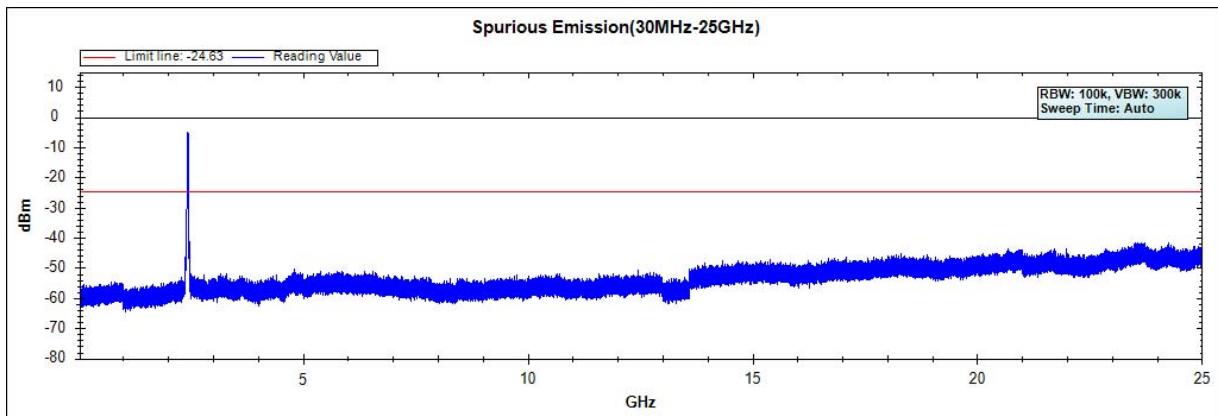
Note: The above test pattern is synthesized by multiple of the frequency range.

Product : Dash Cam  
Test Item : RF Antenna Conducted Spurious  
Test Site : No.3 OATS  
Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

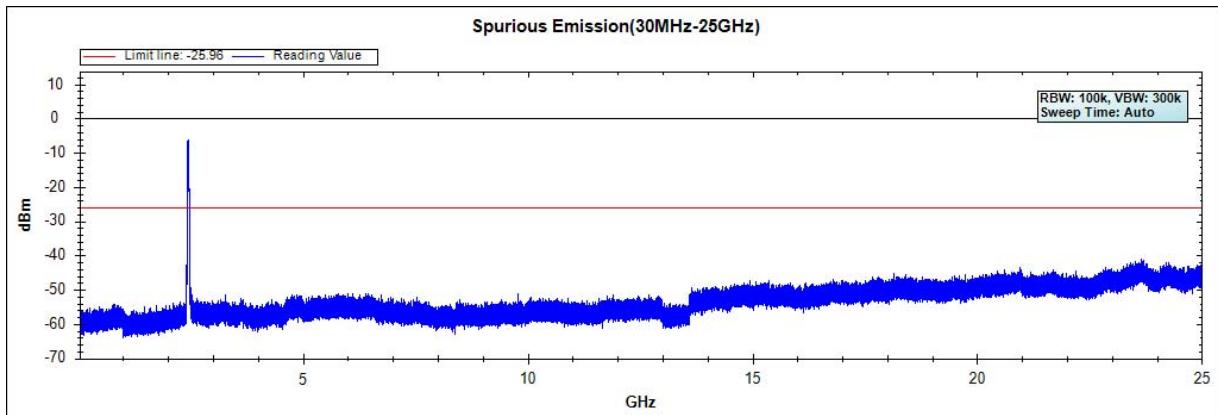
### Channel 01 (2422MHz)



### Channel 04 (2437MHz)



### Channel 07 (2452MHz)



Note: The above test pattern is synthesized by multiple of the frequency range.

## 6. Band Edge

### 6.1. Test Equipment

#### RF Radiated Measurement:

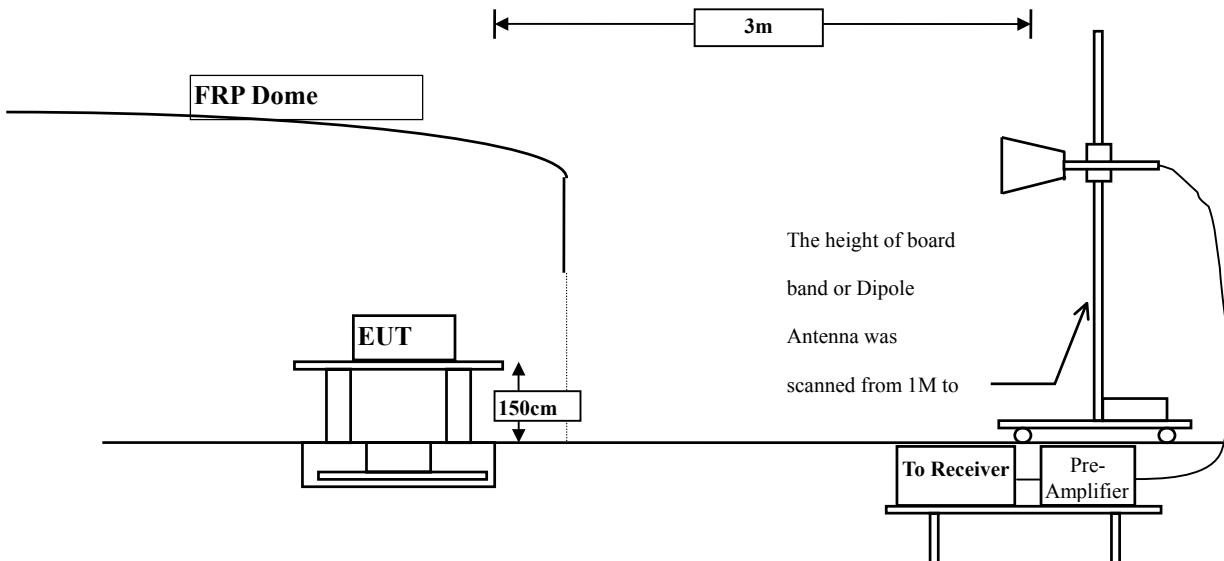
The following test equipments are used during the band edge tests:

Test Site	Equipment		Manufacturer	Model No./Serial No.	Last Cal.
<input checked="" type="checkbox"/> CB # 8	X	Spectrum Analyzer	R&S	FSP40/ 100339	Oct., 2015
	X	Horn Antenna	ETS-Lindgren	3117/ 35205	Mar., 2015
	X	Horn Antenna	Schwarzbeck	BBHA9170/209	Jan., 2016
	X	Horn Antenna	TRC	AH-0801/95051	Aug., 2015
	X	Pre-Amplifier	EMCI	EMC012630SE/980210	Jan., 2016
	X	Pre-Amplifier	MITEQ	JS41-001040000-58-5P/153945	Jul., 2015
	X	Pre-Amplifier	NARDA	DBL-1840N506/013	Jul., 2015

Note: 1. All instruments are calibrated every one year.  
 2. The test instruments marked by “X” are used to measure the final test results.

### 6.2. Test Setup

#### RF Radiated Measurement:



### **6.3. Limits**

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

### **6.4. Test Procedure**

The EUT was setup according to ANSI C63.10, 2013 and tested according to DTS test procedure of KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.10:2013 on radiated measurement.

### **6.5. Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

## 6.6. Test Result of Band Edge

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2386.232	-1.146	46.614	45.468	74.00	54.00	Pass
01 (Peak)	2390.000	-1.131	45.627	44.496	74.00	54.00	Pass
01 (Peak)	2413.043	-1.009	103.334	102.325	--	--	Pass
01 (Average)	2386.232	-1.146	34.981	33.835	74.00	54.00	Pass
01 (Average)	2390.000	-1.131	33.734	32.603	74.00	54.00	Pass
01 (Average)	2412.754	-1.011	100.130	99.119	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

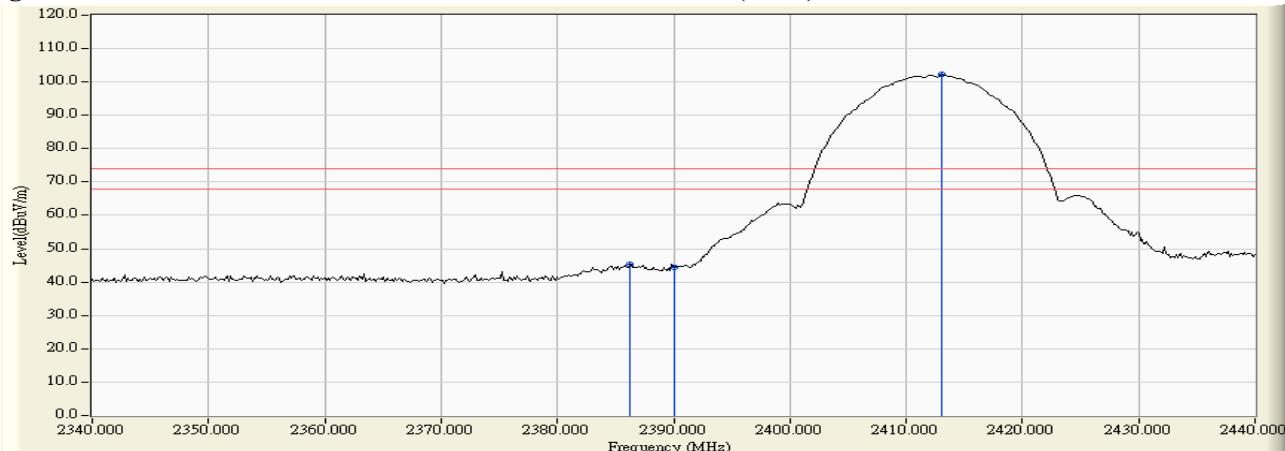
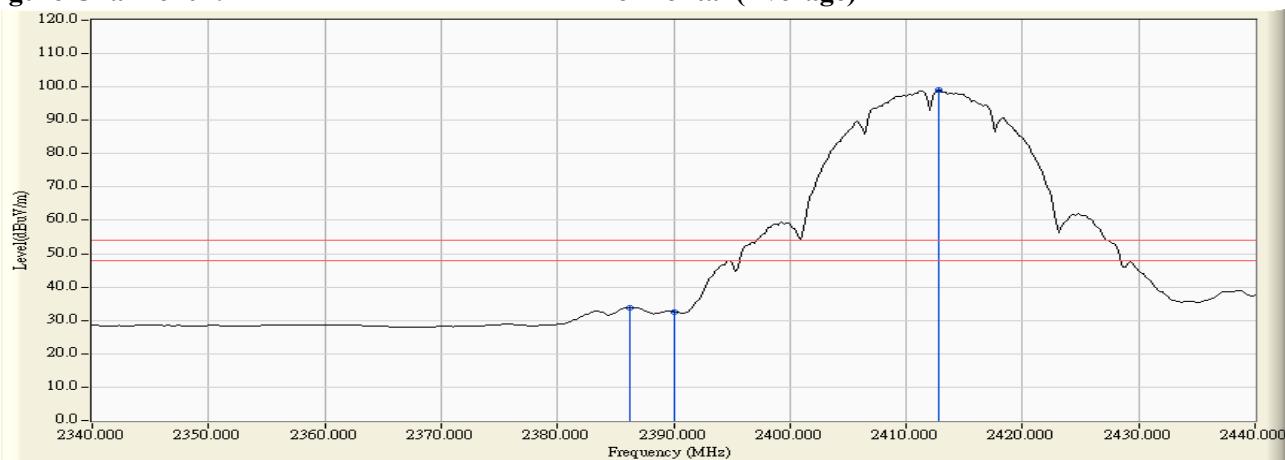


Figure Channel 01:

Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2387.101	-1.711	46.263	44.552	74.00	54.00	Pass
01 (Peak)	2390.000	-1.725	45.885	44.160	74.00	54.00	Pass
01 (Peak)	2413.188	-1.699	101.567	99.869	--	--	Pass
01 (Average)	2386.232	-1.707	36.010	34.303	74.00	54.00	Pass
01 (Average)	2390.000	-1.725	33.734	32.009	74.00	54.00	Pass
01 (Average)	2412.754	-1.700	98.982	97.281	--	--	Pass

Figure Channel 01:

VERTICAL (Peak)

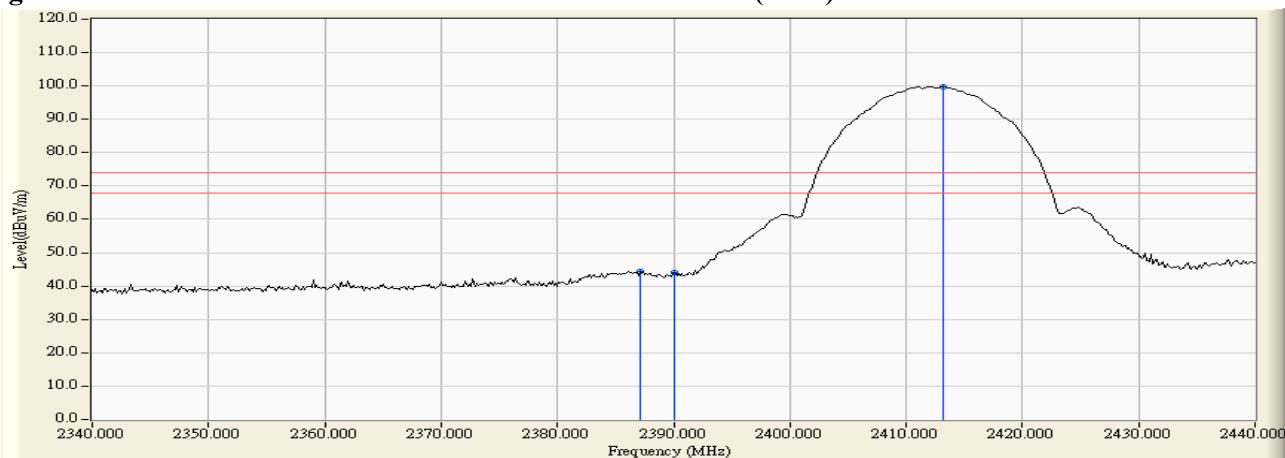
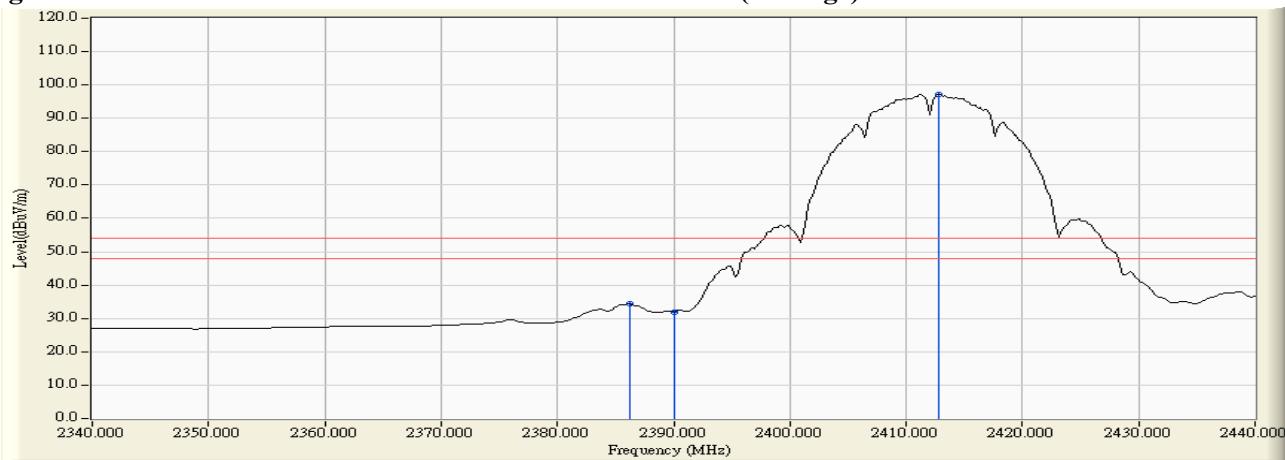


Figure Channel 01:

VERTICAL (Average)



- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
  2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
  3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
  4. “ \* ”, means this data is the worst emission level.
  5. Measurement Level = Reading Level + Correct Factor.
  6. The average measurement was not performed when the peak measured data under the limit of average detection.

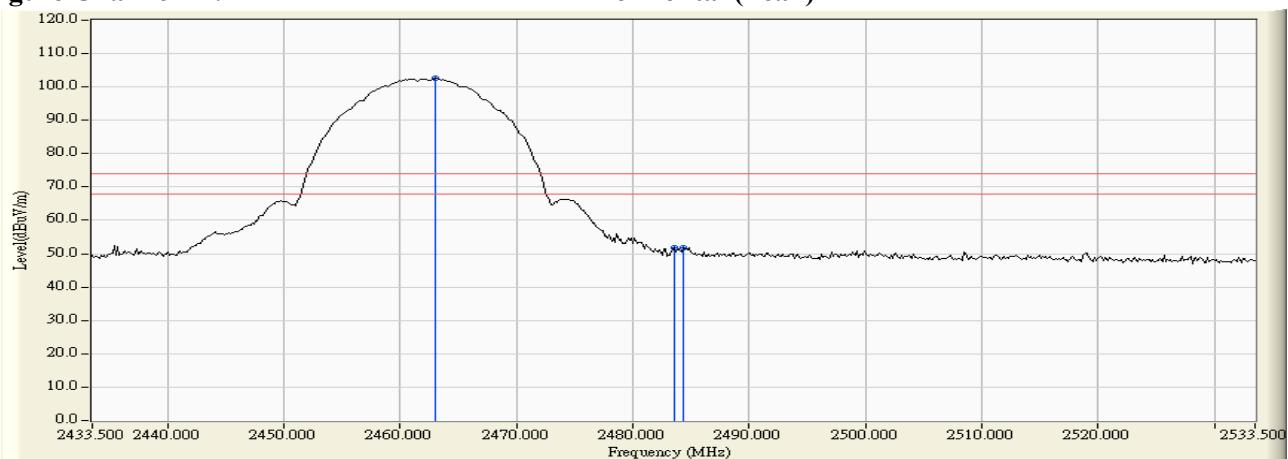
Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2463.065	-0.688	103.275	102.587	--	--	Pass
11 (Peak)	2483.500	-0.558	52.267	51.709	74.00	54.00	Pass
11 (Peak)	2484.370	-0.553	52.388	51.835	74.00	54.00	Pass
11 (Average)	2462.775	-0.690	100.015	99.325	--	--	Pass
11 (Average)	2483.500	-0.558	37.768	37.210	74.00	54.00	Pass
11 (Average)	2484.659	-0.550	38.468	37.917	74.00	54.00	Pass

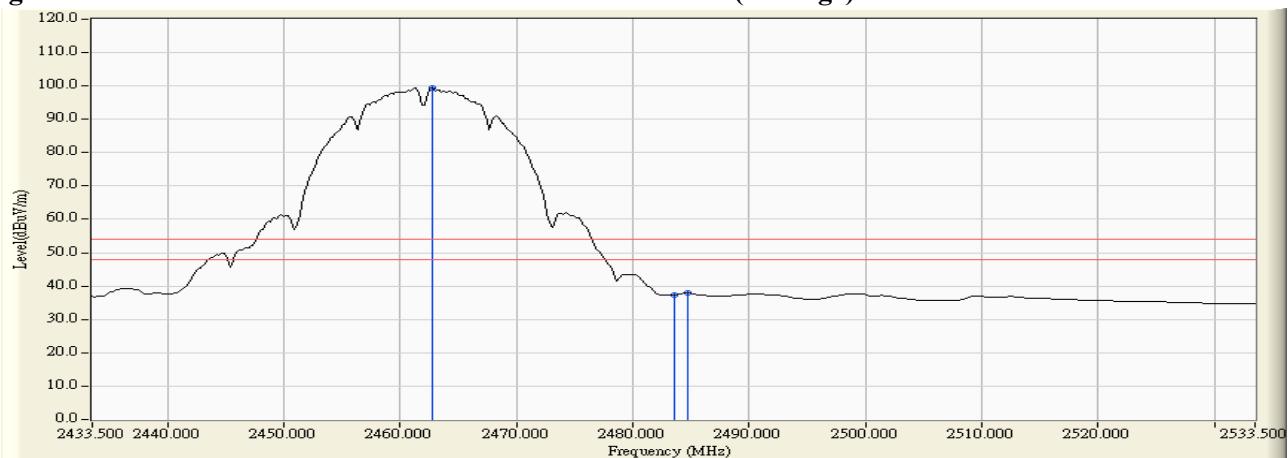
**Figure Channel 11:**

**Horizontal (Peak)**



**Figure Channel 11:**

**Horizontal (Average)**



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2463.355	-1.416	104.212	102.796	--	--	Pass
11 (Peak)	2483.500	-1.305	53.683	52.378	74.00	54.00	Pass
11 (Average)	2462.775	-1.420	100.933	99.514	--	--	Pass
11 (Average)	2483.500	-1.305	38.728	37.423	74.00	54.00	Pass
11 (Average)	2484.659	-1.298	39.702	38.404	74.00	54.00	Pass

Figure Channel 11:

VERTICAL (Peak)

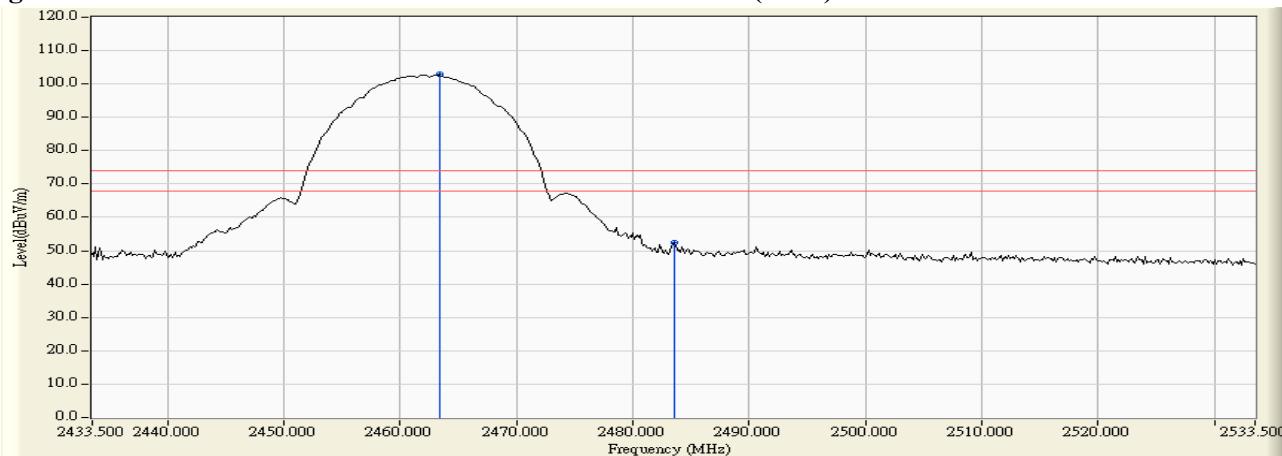


Figure Channel 11:

VERTICAL (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “\*”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

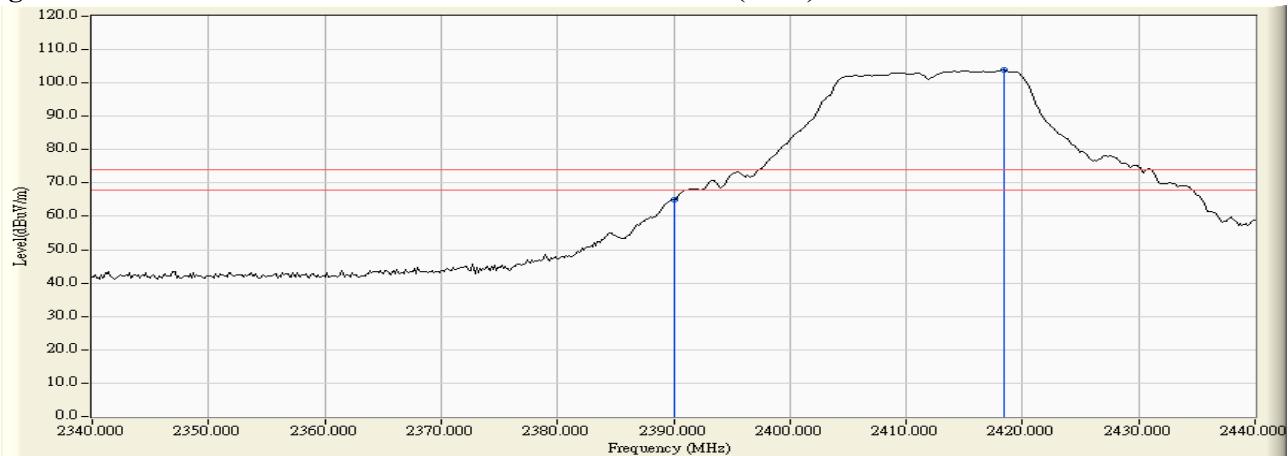
Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	-1.131	66.077	64.946	74.00	54.00	Pass
01 (Peak)	2418.406	-0.975	104.798	103.823	--	--	Pass
01 (Average)	2390.000	-1.131	47.344	46.213	74.00	54.00	Pass
01 (Average)	2414.203	-1.002	95.032	94.030	--	--	Pass

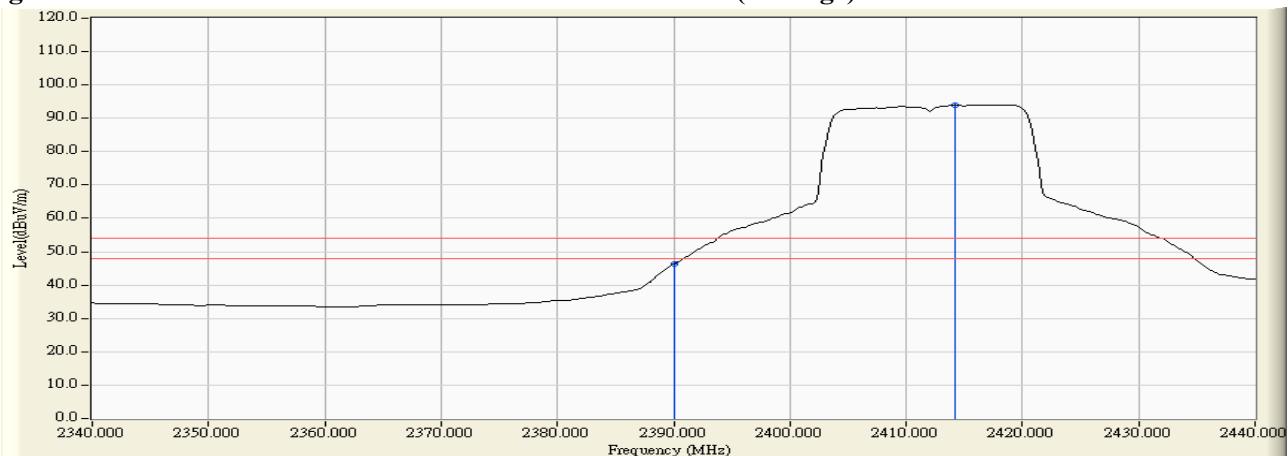
**Figure Channel 01:**

**Horizontal (Peak)**



**Figure Channel 01:**

**Horizontal (Average)**



- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
  2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
  3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
  4. “\*”, means this data is the worst emission level.
  5. Measurement Level = Reading Level + Correct Factor.
  6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	-1.725	65.806	64.081	74.00	54.00	Pass
01 (Peak)	2415.217	-1.687	103.793	102.106	--	--	Pass
01 (Average)	2390.000	-1.725	46.676	44.951	74.00	54.00	Pass
01 (Average)	2414.203	-1.693	94.414	92.721	--	--	Pass

Figure Channel 01:

VERTICAL (Peak)

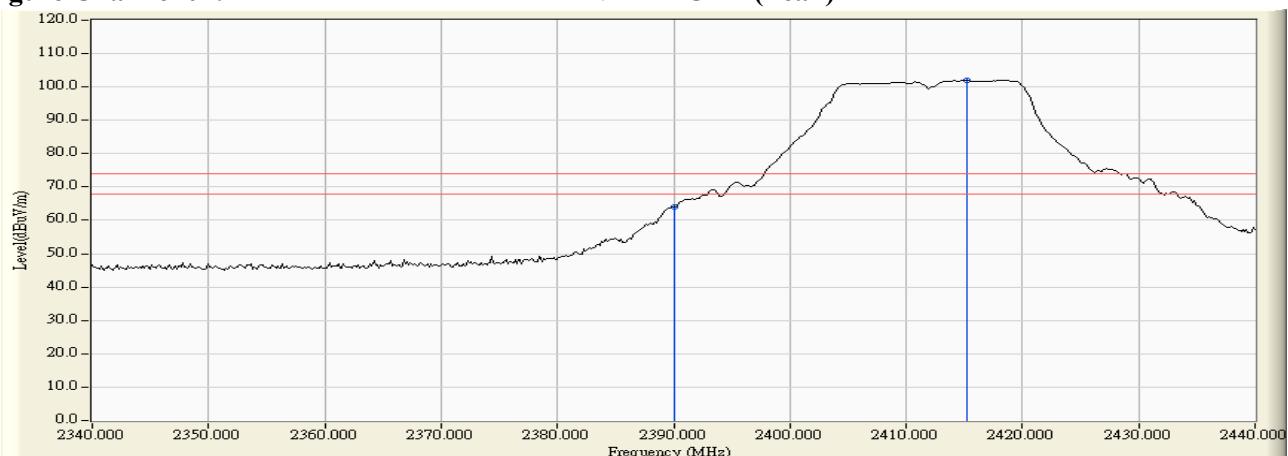
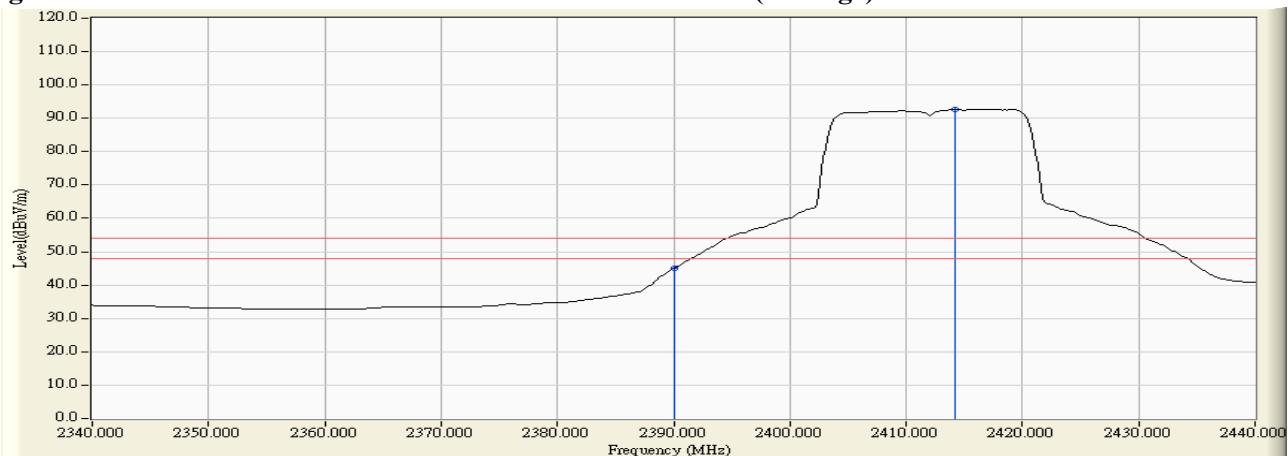


Figure Channel 01:

VERTICAL (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

**RF Radiated Measurement (Horizontal):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2468.283	-0.654	104.415	103.760	--	--	Pass
11 (Peak)	2483.500	-0.558	71.258	70.700	74.00	54.00	Pass
11 (Peak)	2484.080	-0.555	71.992	71.438	74.00	54.00	Pass
11 (Average)	2464.080	-0.681	95.078	94.397	--	--	Pass
11 (Average)	2483.500	-0.558	53.894	53.336	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)

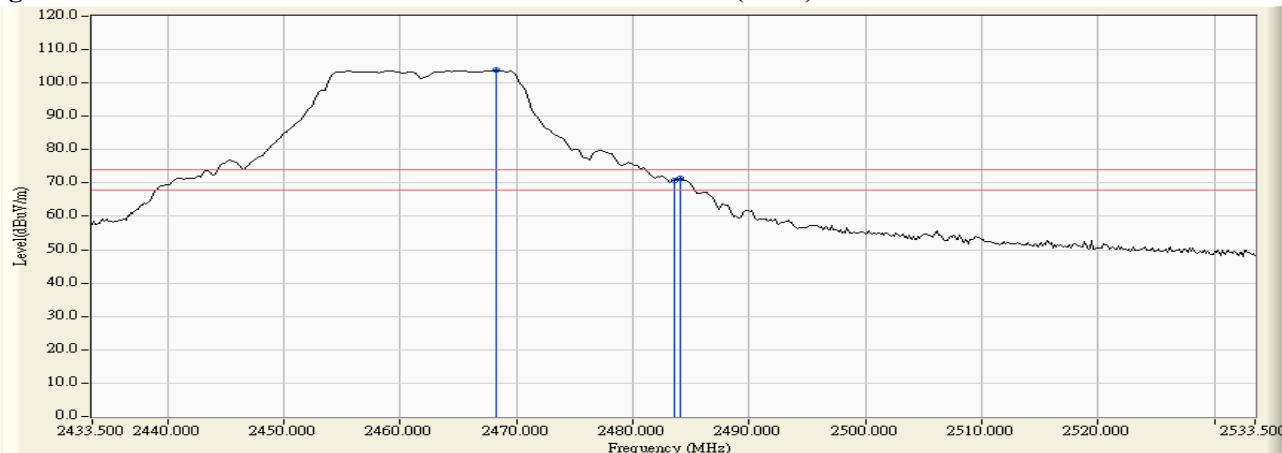
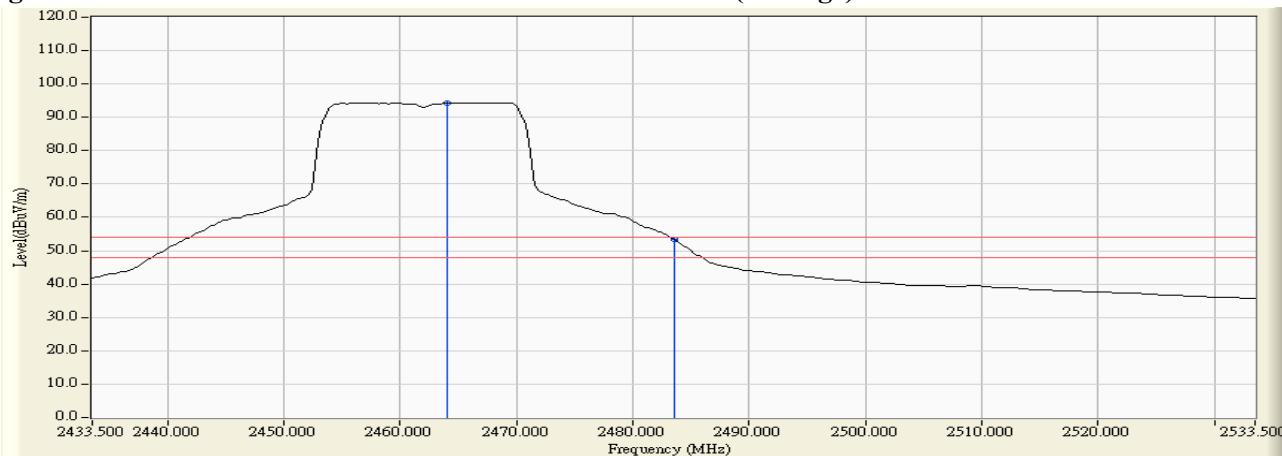


Figure Channel 11:

Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2468.283	-1.389	104.911	103.522	--	--	Pass
11 (Peak)	2483.500	-1.305	72.195	70.890	74.00	54.00	Pass
11 (Peak)	2484.080	-1.302	72.623	71.321	74.00	54.00	Pass
11 (Average)	2469.007	-1.385	95.592	94.207	--	--	Pass
11 (Average)	2483.500	-1.305	54.948	53.643	74.00	54.00	Pass

Figure Channel 11:

VERTICAL (Peak)

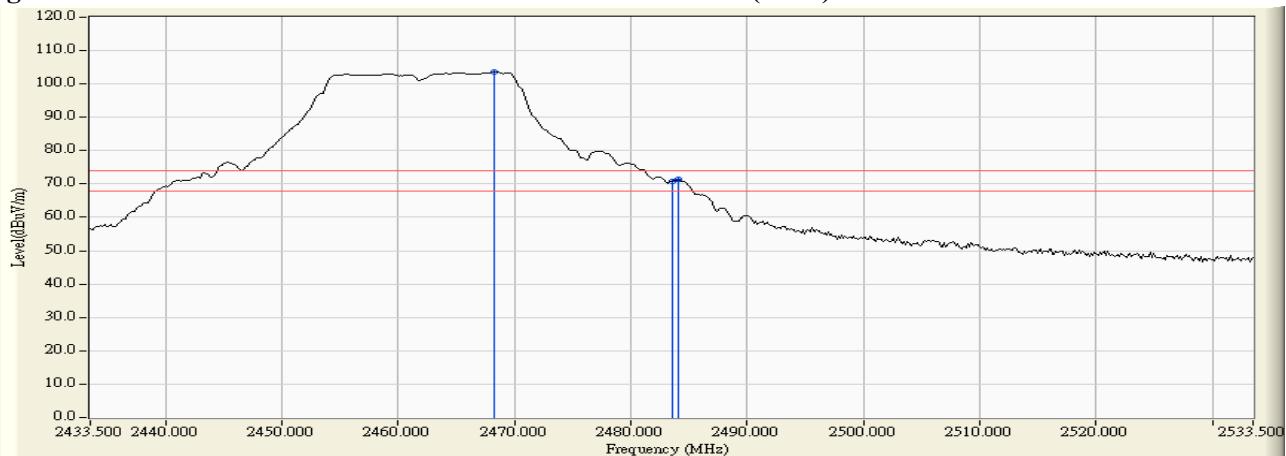
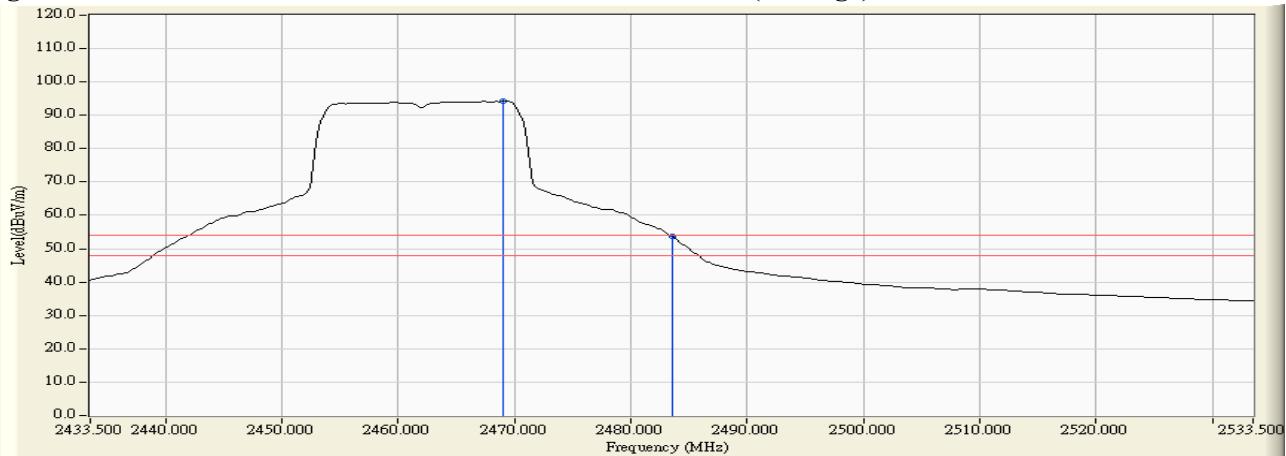


Figure Channel 11:

VERTICAL (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “\*”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	-1.131	66.888	65.757	74.00	54.00	Pass
01 (Peak)	2408.841	-1.035	101.934	100.899	--	--	Pass
01 (Average)	2390.000	-1.131	45.254	44.123	74.00	54.00	Pass
01 (Average)	2420.000	-0.964	92.192	91.227	--	--	Pass

Figure Channel 01:

Horizontal (Peak)

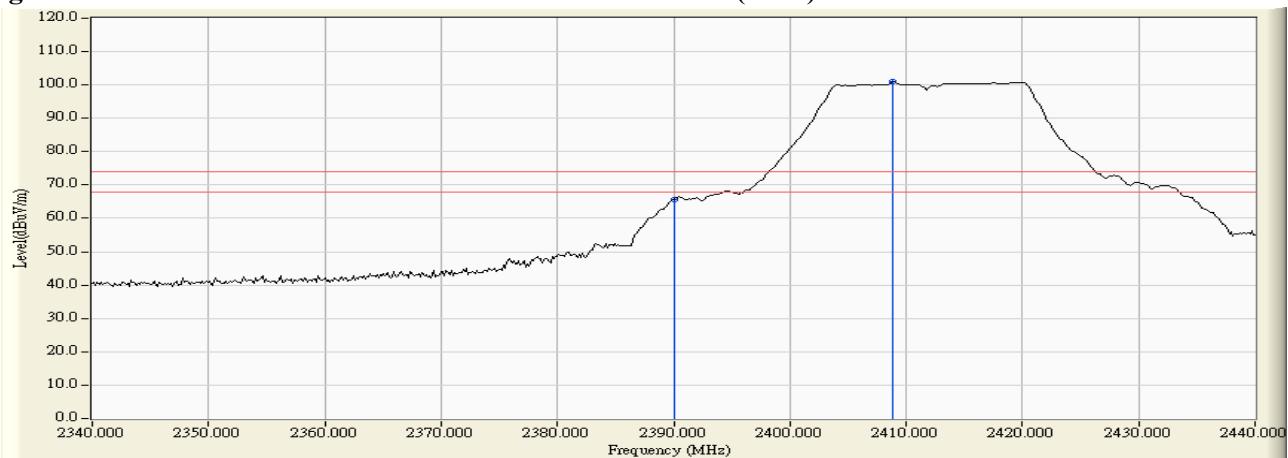
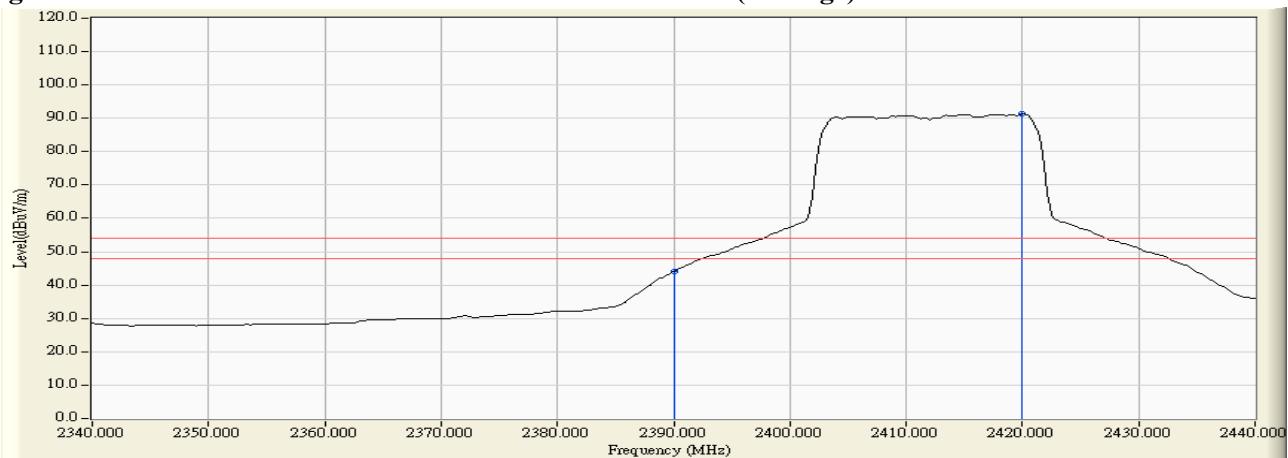


Figure Channel 01:

Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2412MHz)

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
01 (Peak)	2390.000	-1.725	66.630	64.905	74.00	54.00	Pass
01 (Peak)	2408.986	-1.715	101.882	100.167	--	--	Pass
01 (Average)	2390.000	-1.725	44.946	43.221	74.00	54.00	Pass
01 (Average)	2417.246	-1.676	92.409	90.733	--	--	Pass

Figure Channel 01:

VERTICAL (Peak)

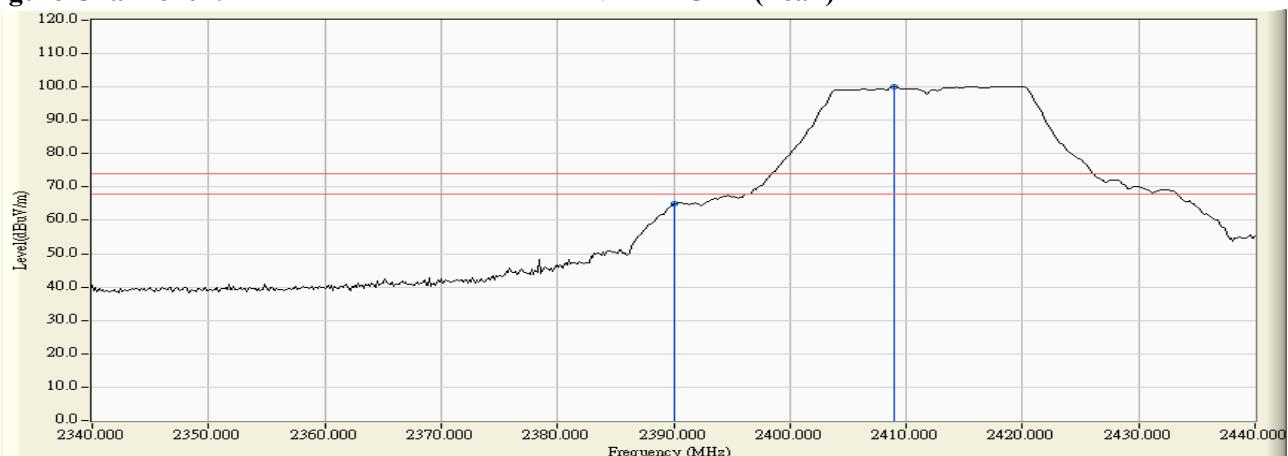
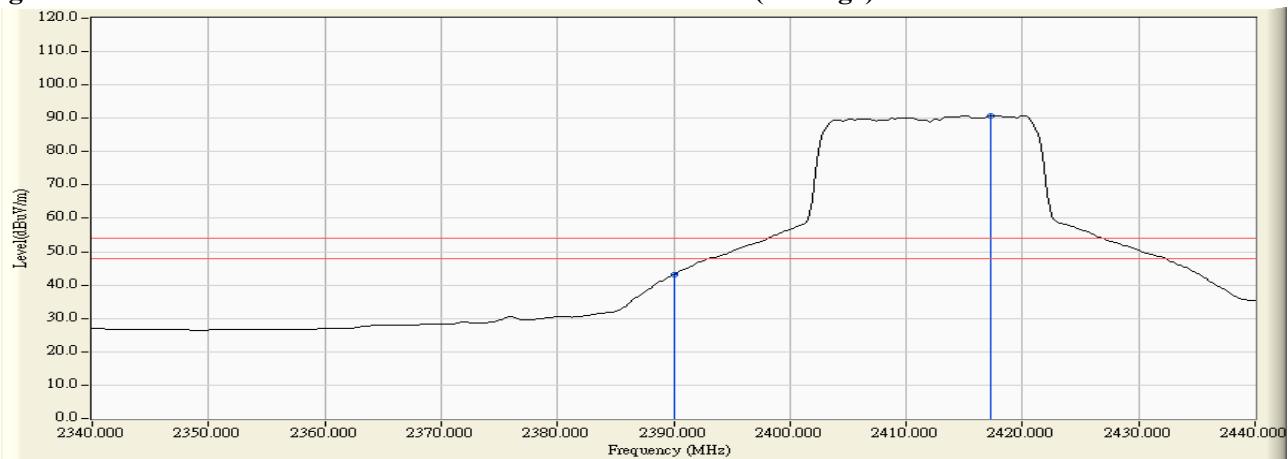


Figure Channel 01:

VERTICAL (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2458.862	-0.714	104.489	103.774	--	--	Pass
11 (Peak)	2483.500	-0.558	74.349	73.791	74.00	54.00	Pass
11 (Average)	2465.094	-0.675	94.446	93.771	--	--	Pass
11 (Average)	2483.500	-0.558	53.251	52.693	74.00	54.00	Pass

Figure Channel 11:

Horizontal (Peak)

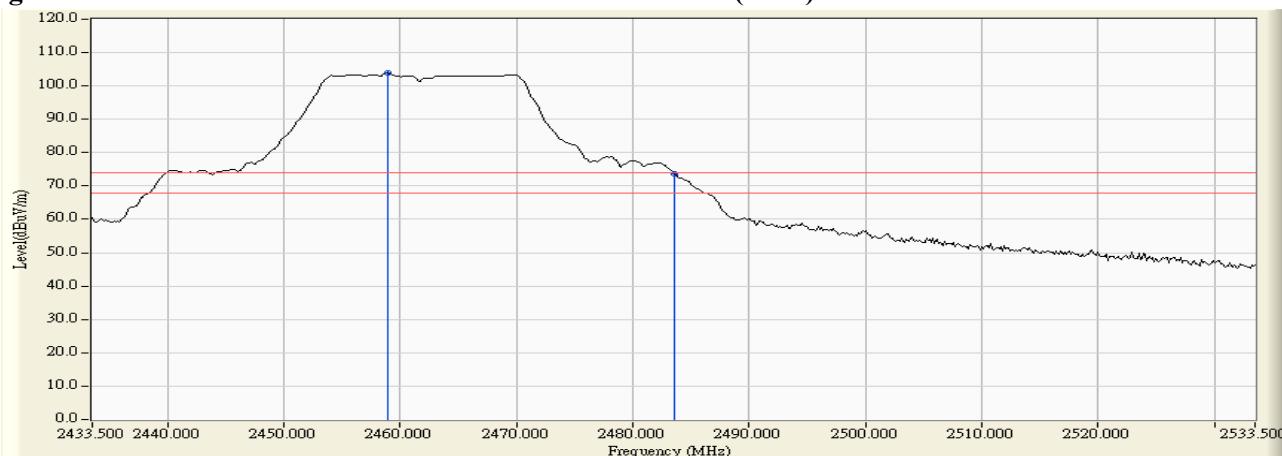
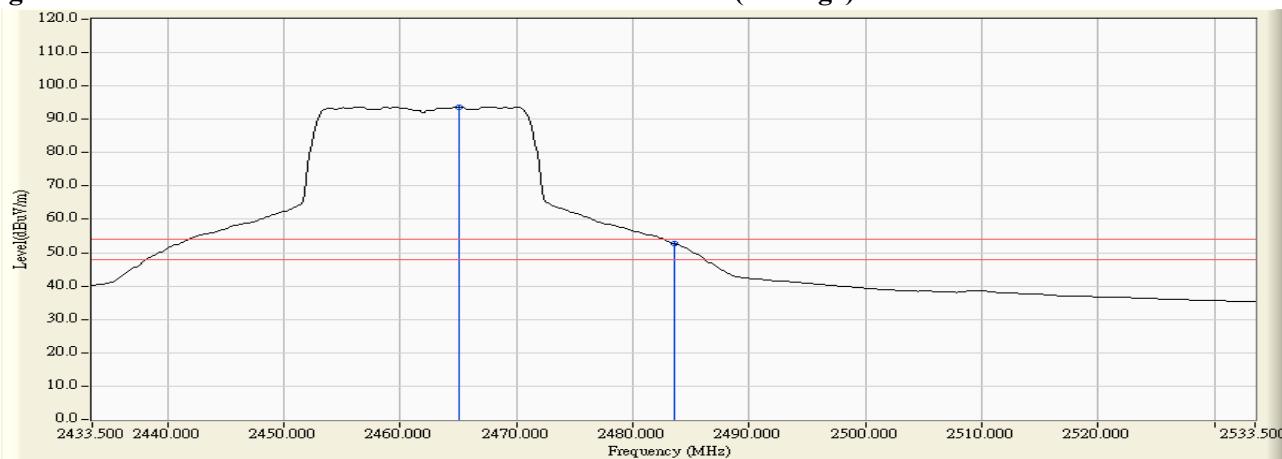


Figure Channel 11:

Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “\*”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW) (2462MHz)

#### RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
11 (Peak)	2458.862	-1.441	104.273	102.832	--	--	Pass
11 (Peak)	2483.500	-1.305	75.085	73.780	74.00	54.00	Pass
11 (Average)	2470.022	-1.380	94.719	93.339	--	--	Pass
11 (Average)	2483.500	-1.305	54.138	52.833	74.00	54.00	Pass

Figure Channel 11:

VERTICAL (Peak)

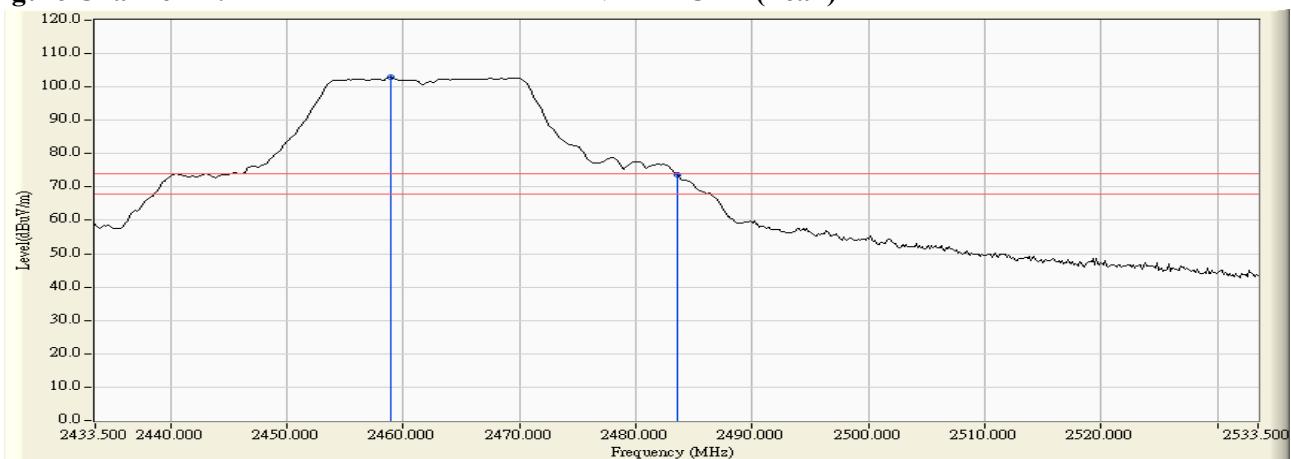
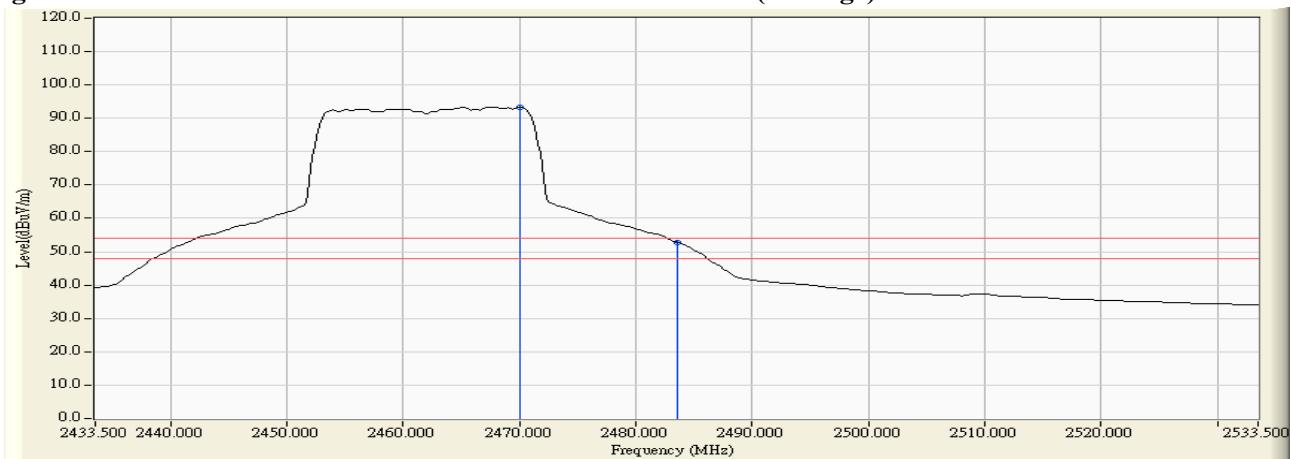


Figure Channel 11:

VERTICAL (Average)



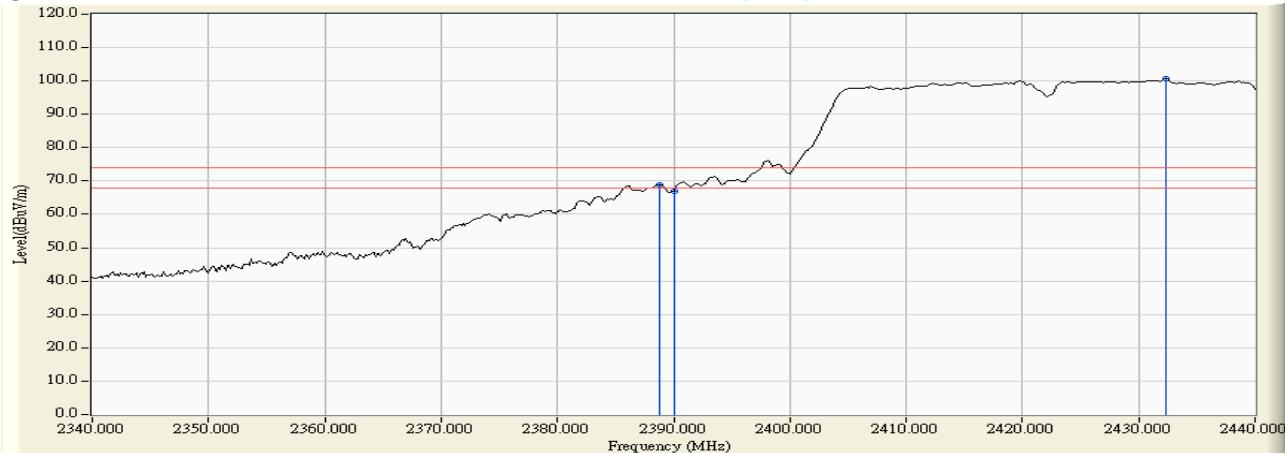
- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)

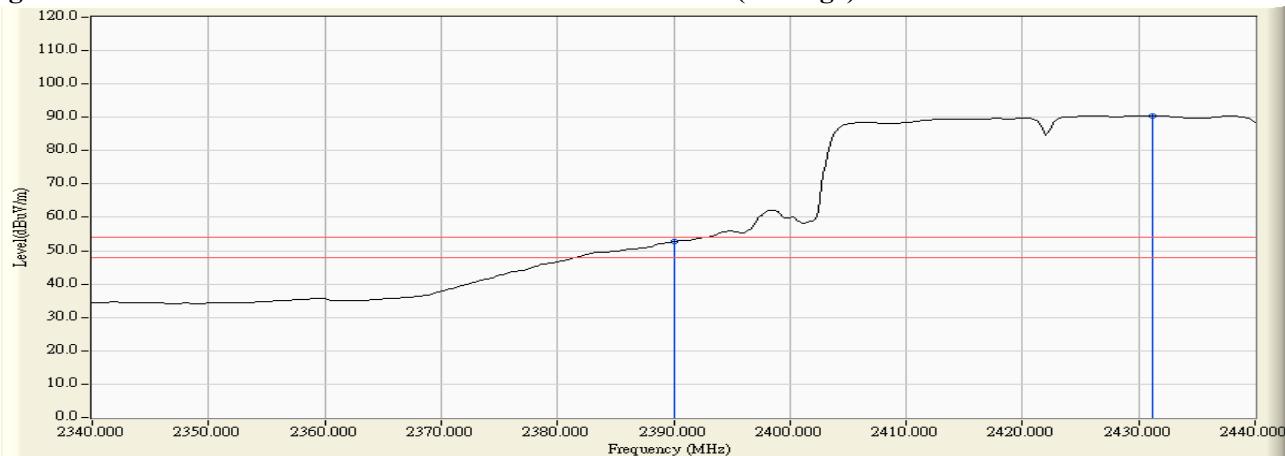
#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
03 (Peak)	2388.841	-1.135	70.132	68.997	74.00	54.00	Pass
03 (Peak)	2390.000	-1.131	68.093	66.962	74.00	54.00	Pass
03 (Peak)	2432.319	-0.885	101.548	100.663	--	--	Pass
03 (Average)	2390.000	-1.131	53.767	52.636	74.00	54.00	Pass
03 (Average)	2431.159	-0.893	91.417	90.524	--	--	Pass

**Figure Channel 03:** Horizontal (Peak)



**Figure Channel 03:** Horizontal (Average)



- Note:1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “\*”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

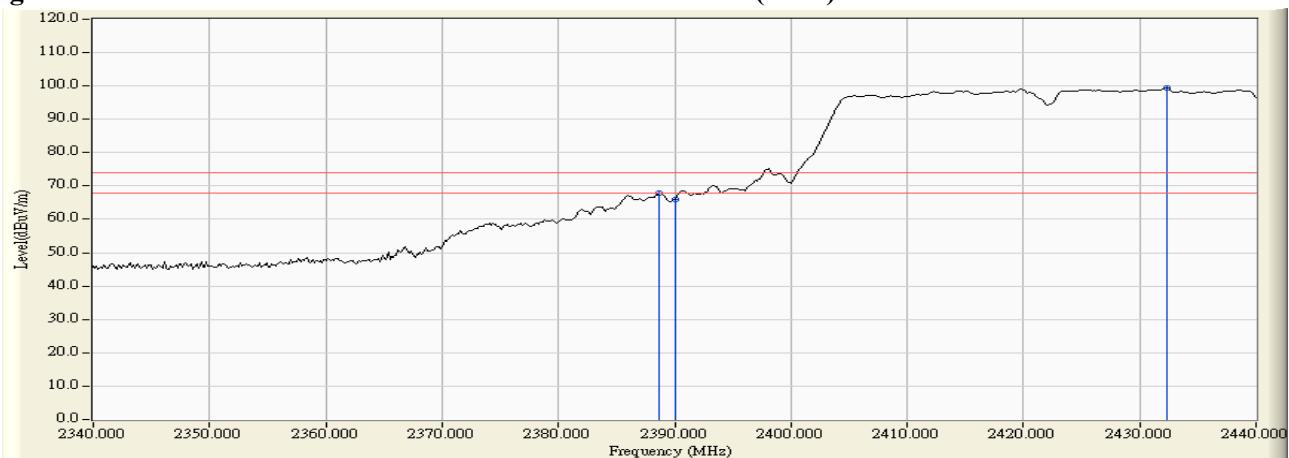
Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2422MHz)

**RF Radiated Measurement (VERTICAL):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
03 (Peak)	2388.696	-1.719	69.654	67.935	74.00	54.00	Pass
03 (Peak)	2390.000	-1.725	67.751	66.026	74.00	54.00	Pass
03 (Peak)	2432.319	-1.592	101.051	99.459	--	--	Pass
03 (Average)	2390.000	-1.725	53.400	51.675	74.00	54.00	Pass
03 (Average)	2431.159	-1.598	90.934	89.336	--	--	Pass

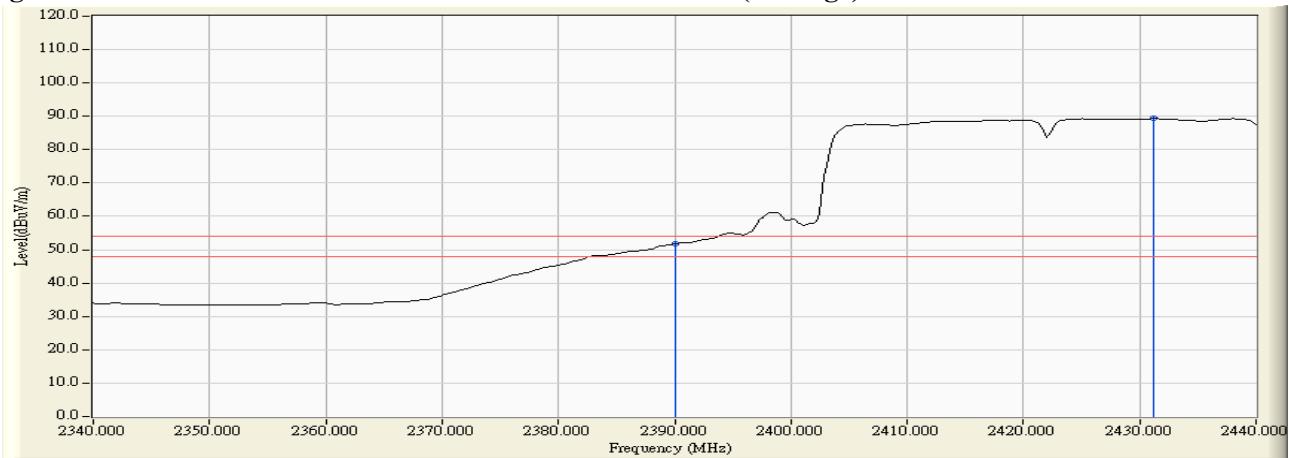
**Figure Channel 03:**

**VERTICAL (Peak)**



**Figure Channel 03:**

**VERTICAL (Average)**



- Note: 1. All readings above 1GHz are performed with peak and/or average measurements as necessary.  
 2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.  
 3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.  
 4. “ \* ”, means this data is the worst emission level.  
 5. Measurement Level = Reading Level + Correct Factor.  
 6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)

#### RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
09 (Peak)	2462.196	-0.694	100.703	100.010	--	--	Pass
09 (Peak)	2483.500	-0.558	68.761	68.203	74.00	54.00	Pass
09 (Peak)	2487.268	-0.535	69.841	69.307	74.00	54.00	Pass
09 (Average)	2461.181	-0.699	90.562	89.862	--	--	Pass
09 (Average)	2483.500	-0.558	53.337	52.779	74.00	54.00	Pass

Figure Channel 09:

Horizontal (Peak)

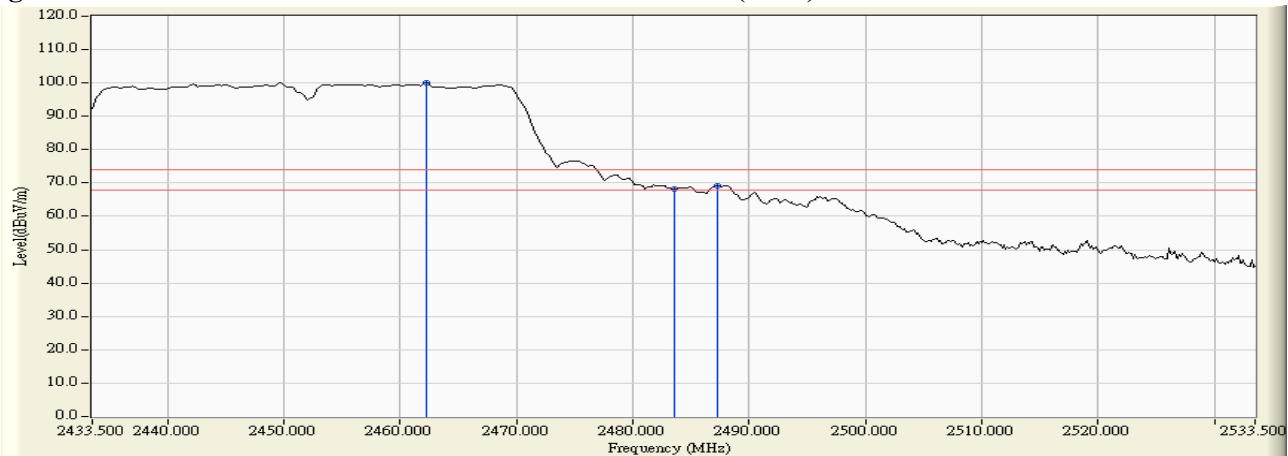


Figure Channel 09:

Horizontal (Average)



- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
  2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
  3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
  4. “ \* ”, means this data is the worst emission level.
  5. Measurement Level = Reading Level + Correct Factor.
  6. The average measurement was not performed when the peak measured data under the limit of average detection.

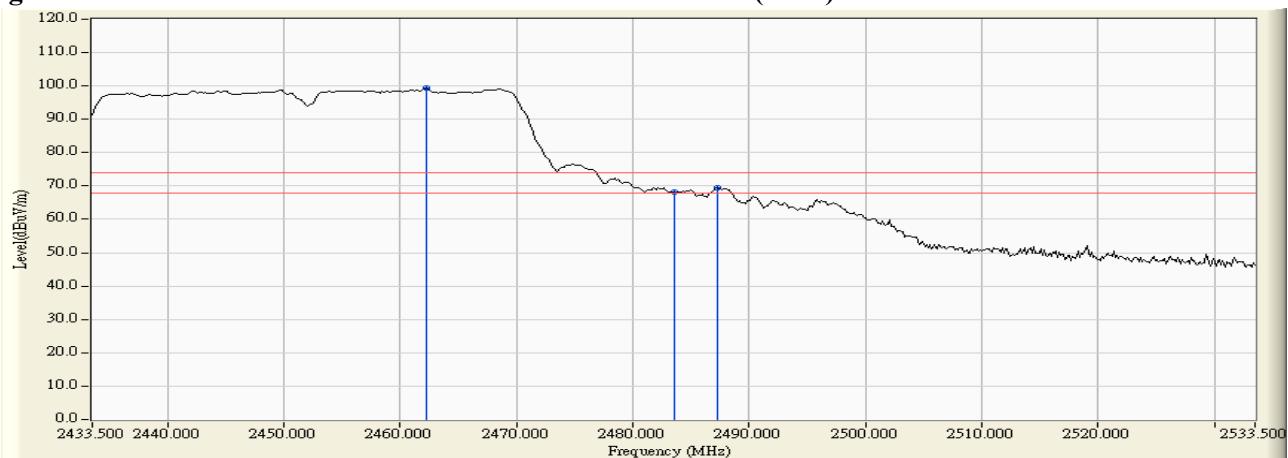
Product : Dash Cam  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW) (2452MHz)

**RF Radiated Measurement (VERTICAL):**

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBuV)	Emission Level (dBuV/m)	Peak Limit (dBuV/m)	Average Limit (dBuV/m)	Result
09 (Peak)	2462.196	-1.423	100.739	99.316	--	--	Pass
09 (Peak)	2483.500	-1.305	69.505	68.200	74.00	54.00	Pass
09 (Peak)	2487.268	-1.284	70.839	69.555	74.00	54.00	Pass
09 (Average)	2467.993	-1.390	90.893	89.502	--	--	Pass
09 (Average)	2483.500	-1.305	54.352	53.047	74.00	54.00	Pass

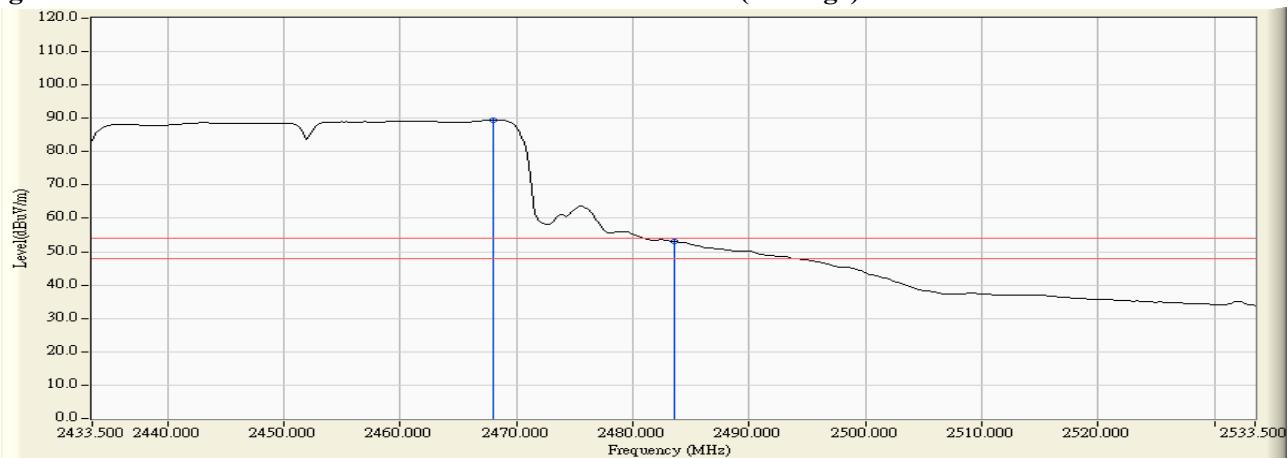
**Figure Channel 09:**

**VERTICAL (Peak)**



**Figure Channel 09:**

**VERTICAL (Average)**



- Note:
1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
  2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
  3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
  4. “ \* ”, means this data is the worst emission level.
  5. Measurement Level = Reading Level + Correct Factor.
  6. The average measurement was not performed when the peak measured data under the limit of average detection.

## 7. Occupied Bandwidth

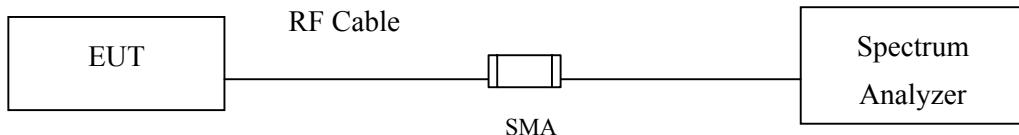
### 7.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

### 7.2. Test Setup



### 7.3. Limits

The minimum bandwidth shall be at least 500 kHz.

### 7.4. Test Procedure

The EUT was setup according to ANSI C63.4: 2014; tested according to DTS test procedure of Jan KDB558074 for compliance to FCC 47CFR 15.247 requirements.

### 7.5. Uncertainty

± 150Hz

## 7.6. Test Result of Occupied Bandwidth

Product : Dash Cam  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	10150	>500	Pass
06	2437	10150	>500	Pass
11	2462	10150	>500	Pass

Figure Channel 01:

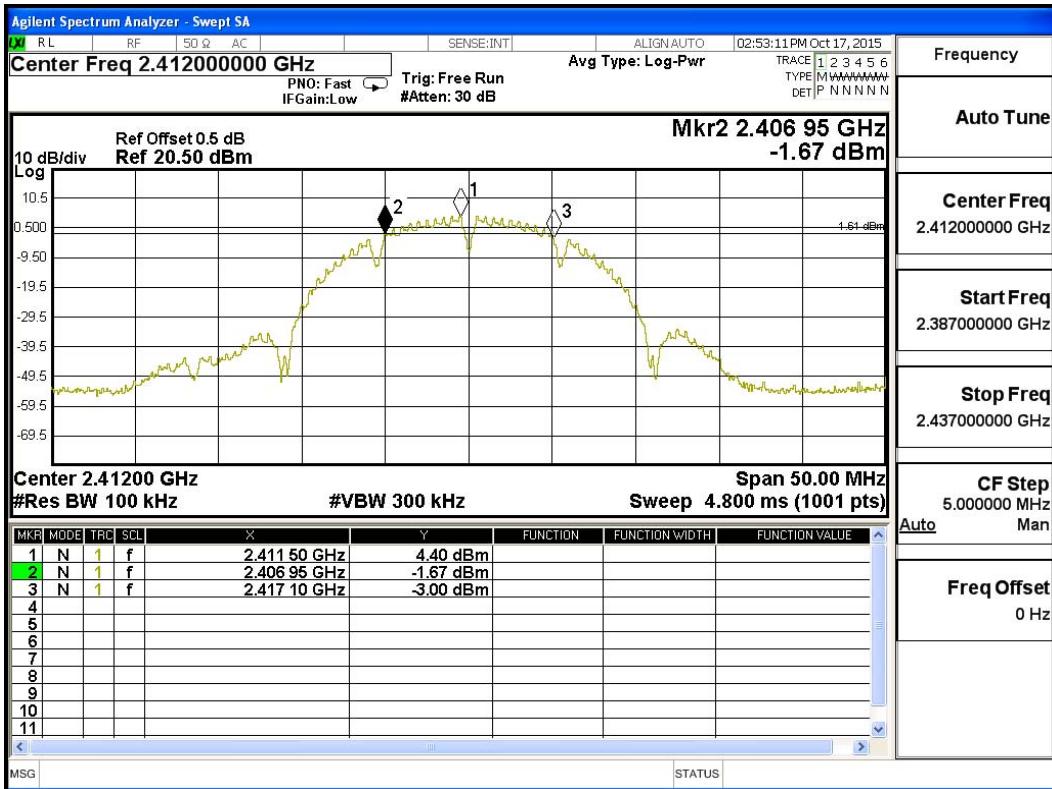


Figure Channel 06:

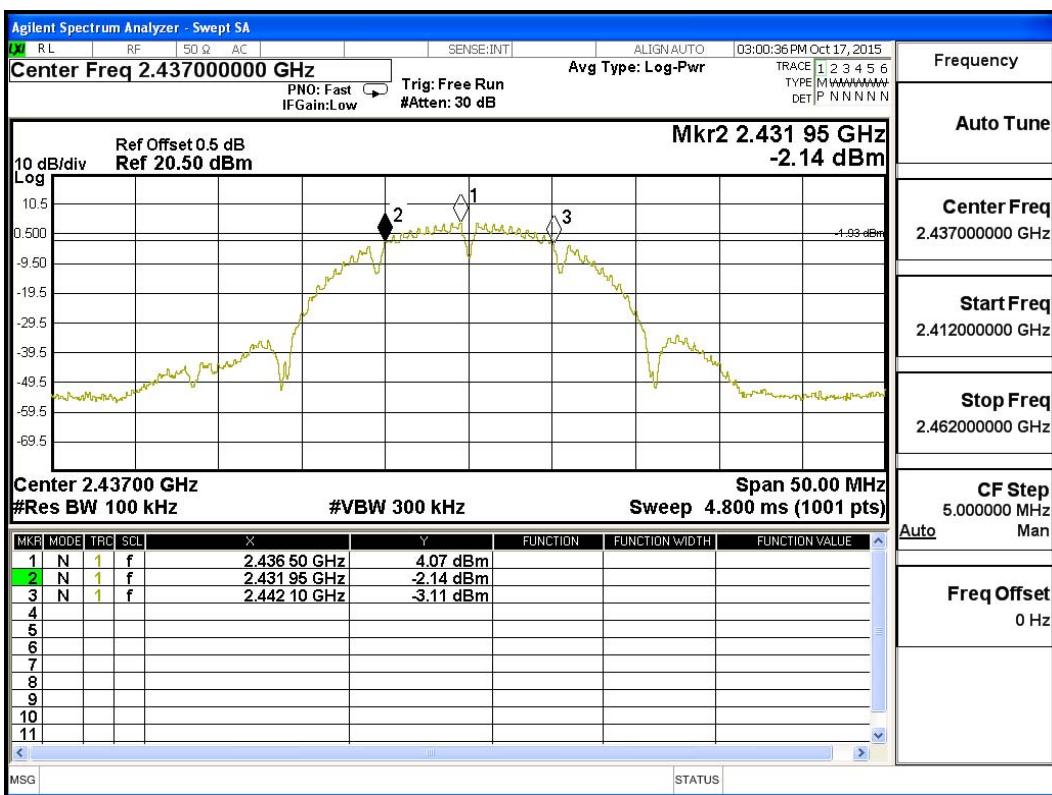
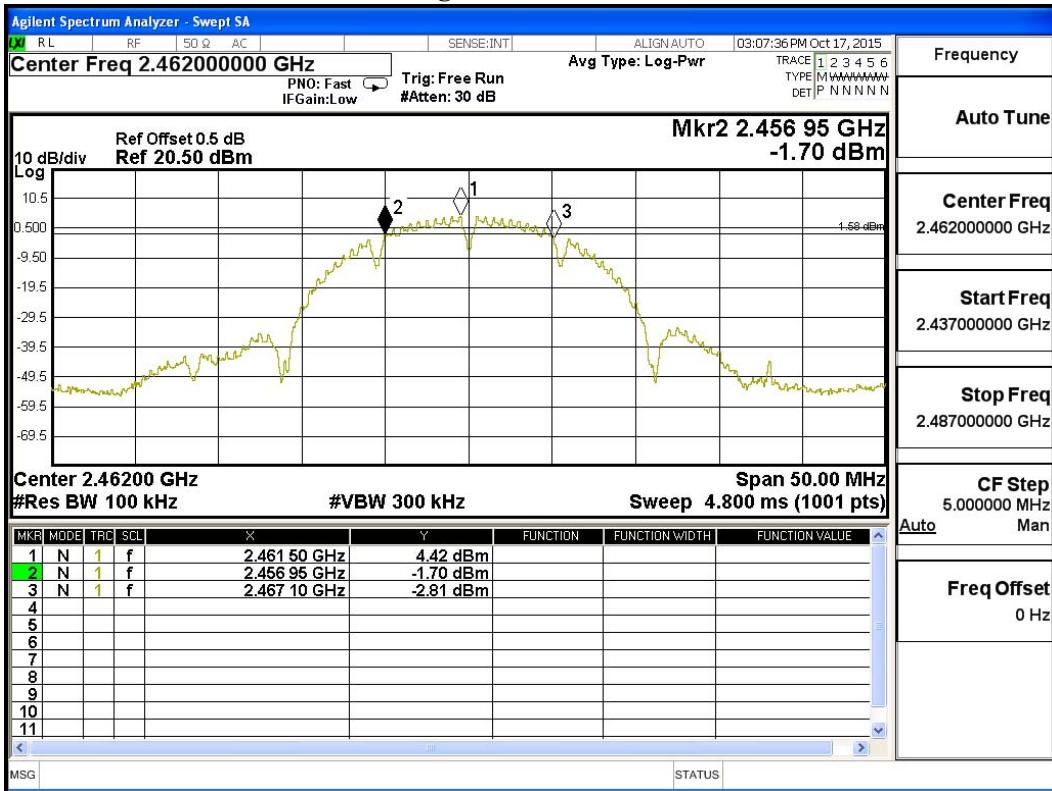


Figure Channel 11:



Product : Dash Cam  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	16700	>500	Pass
06	2437	16700	>500	Pass
11	2462	16700	>500	Pass

Figure Channel 01:

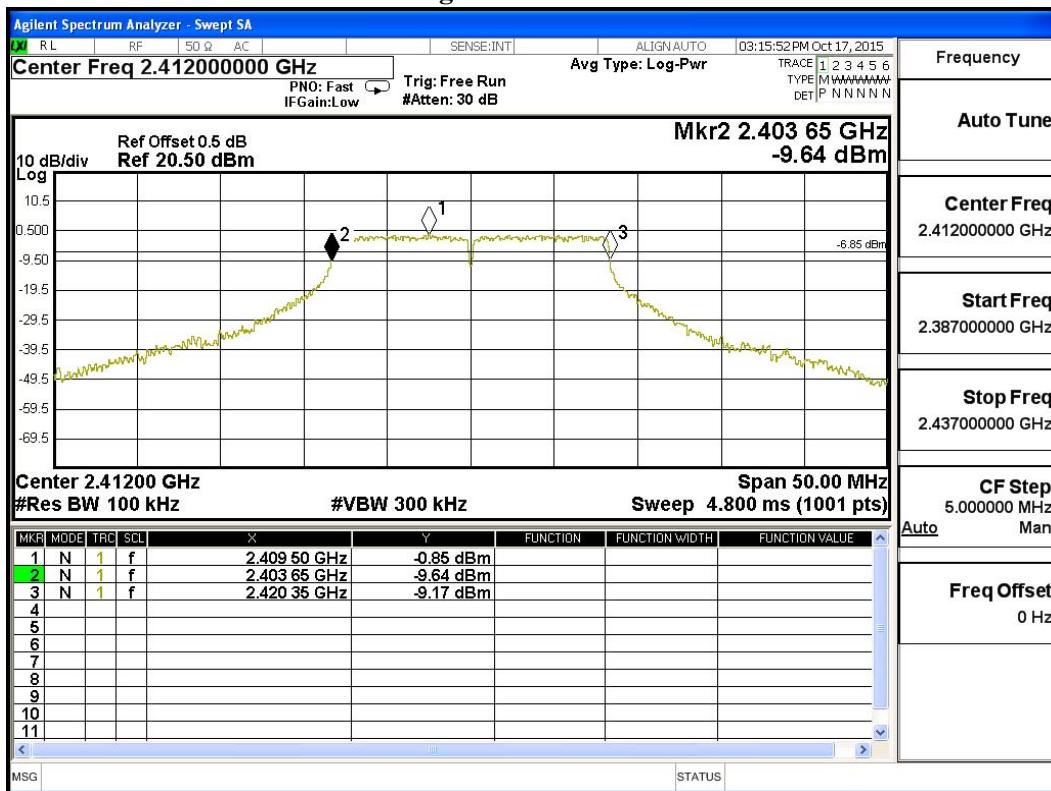


Figure Channel 06:

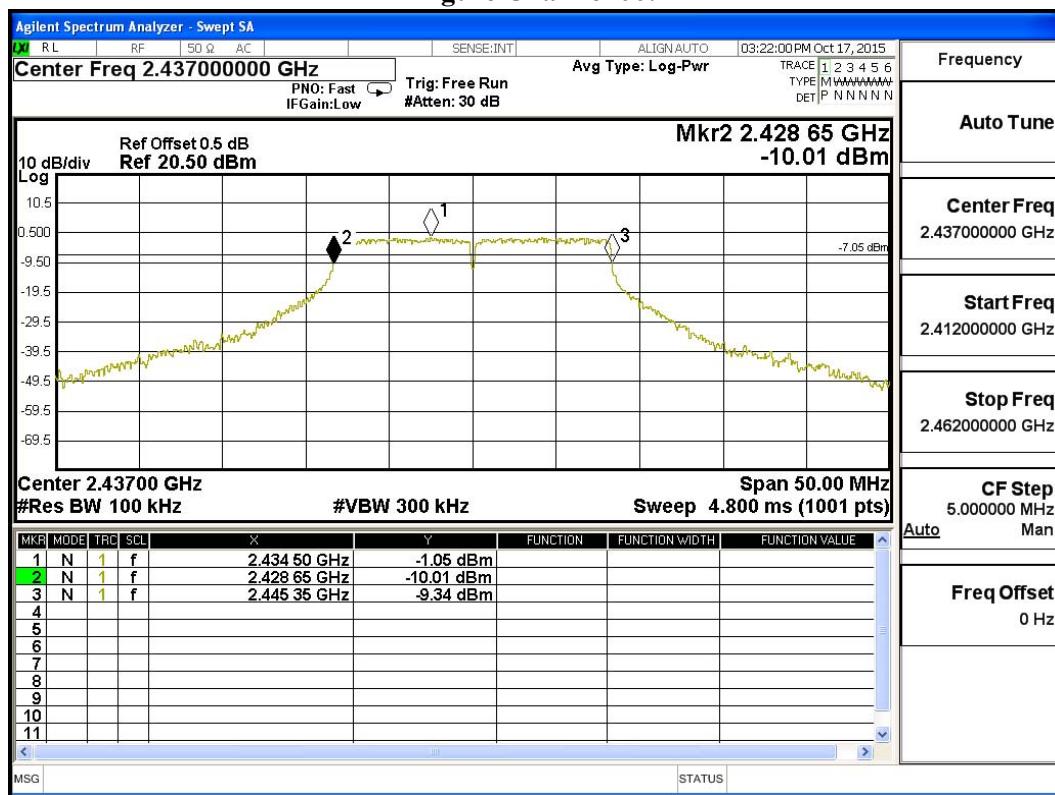
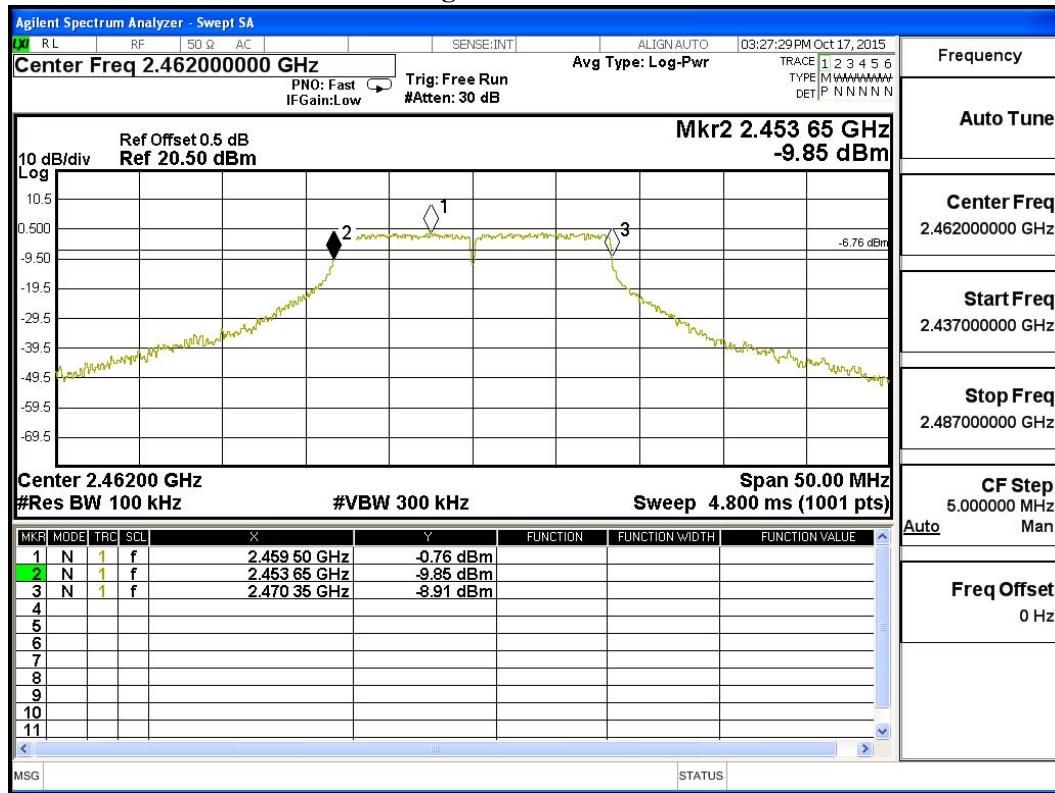


Figure Channel 11:



Product : Dash Cam  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	17950	>500	Pass
06	2437	17900	>500	Pass
11	2462	17900	>500	Pass

Figure Channel 01:

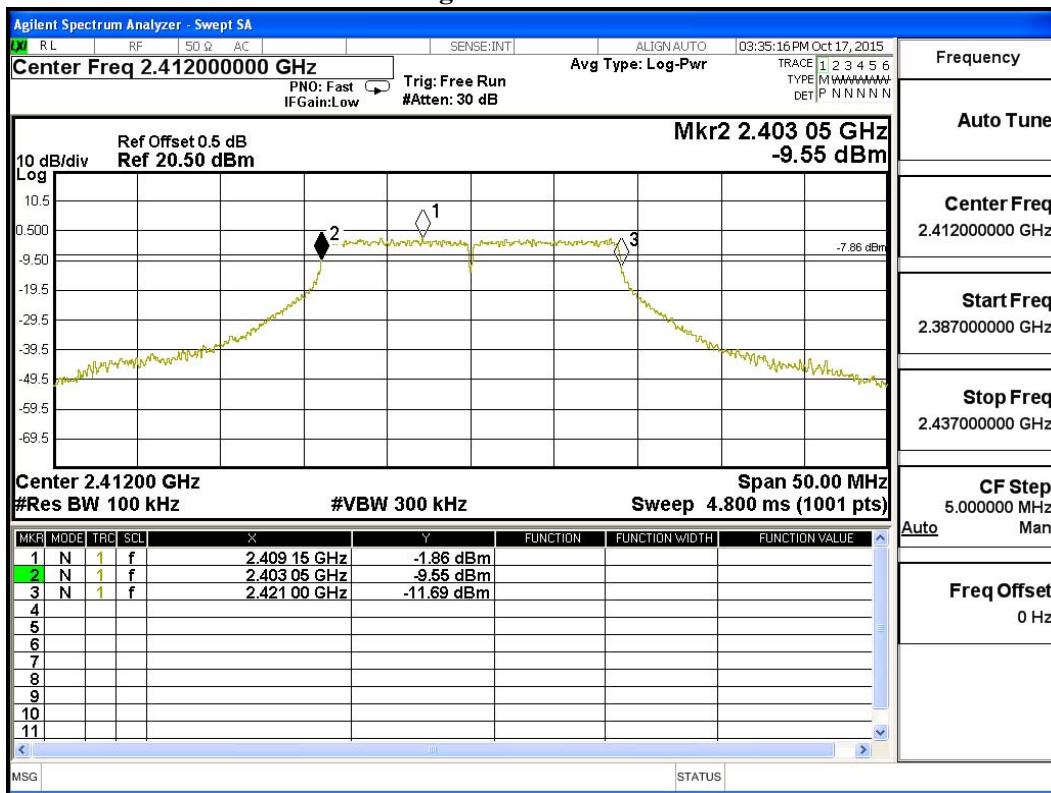


Figure Channel 06:

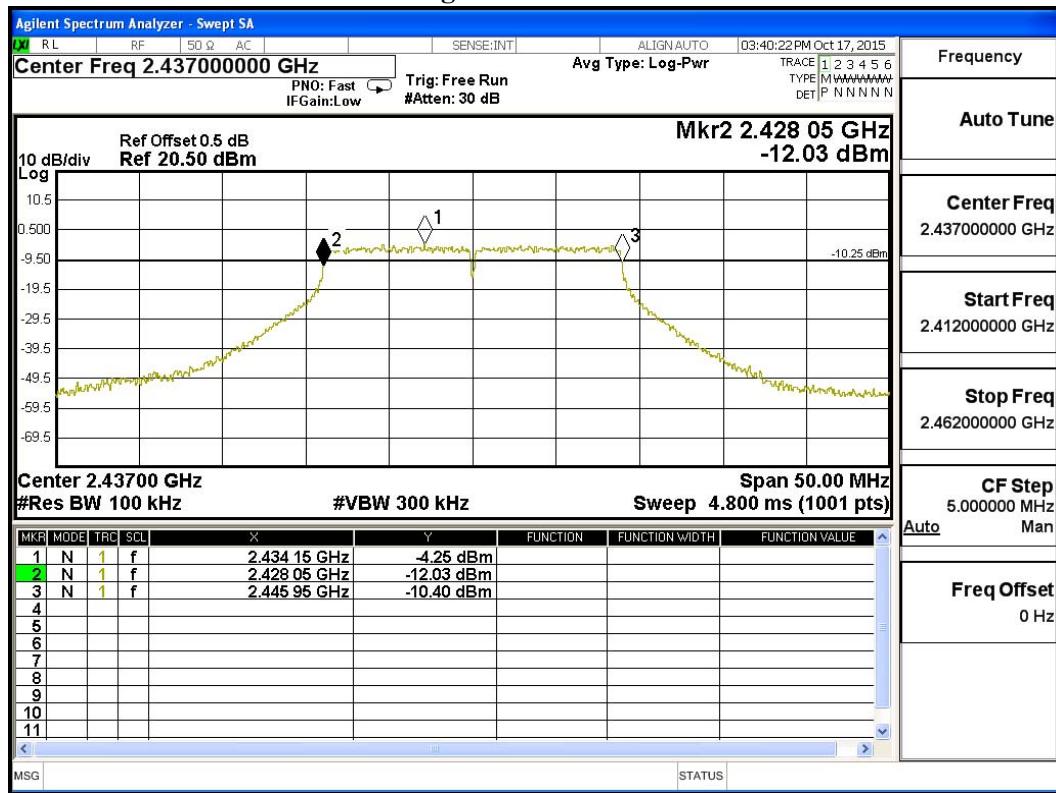
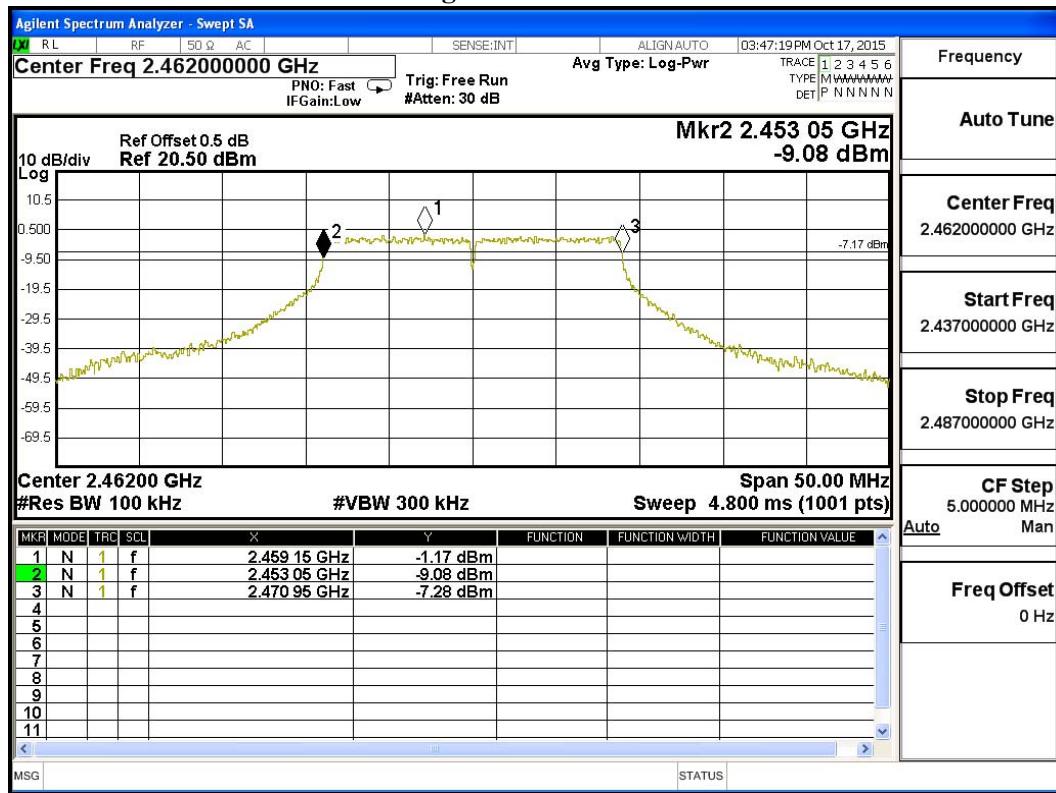


Figure Channel 11:



Product : Dash Cam  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
03	2422	36600	>500	Pass
06	2437	36600	>500	Pass
09	2452	36600	>500	Pass

Figure Channel 03:

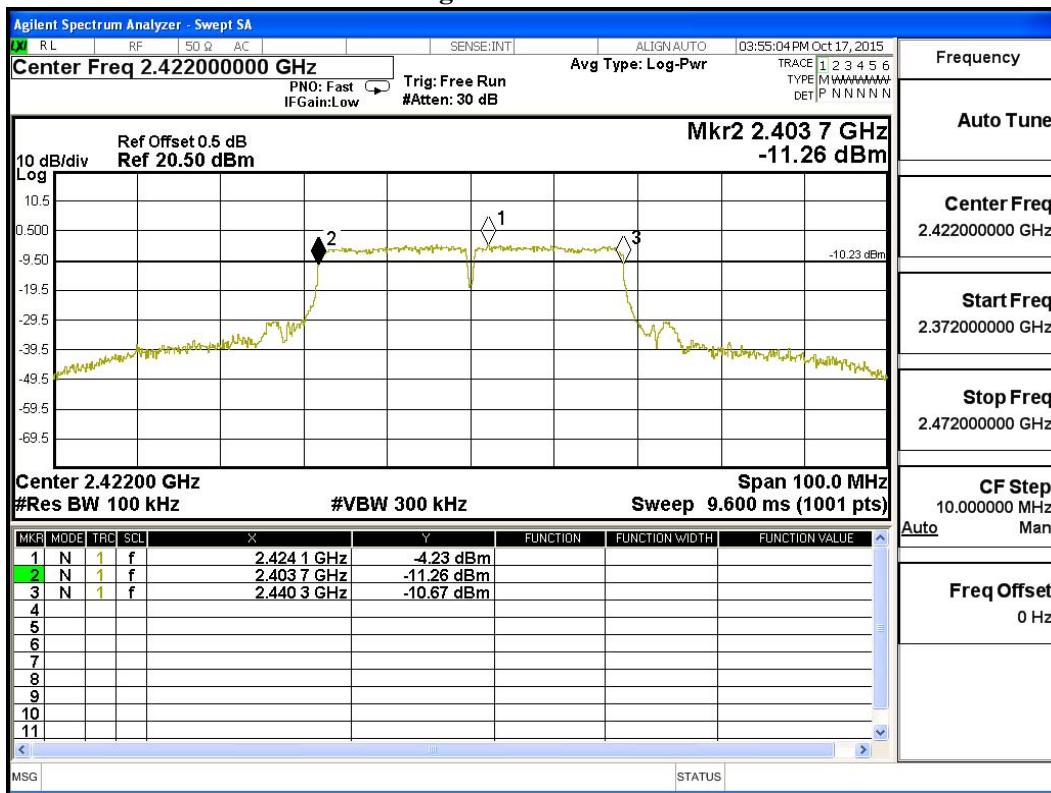


Figure Channel 06:

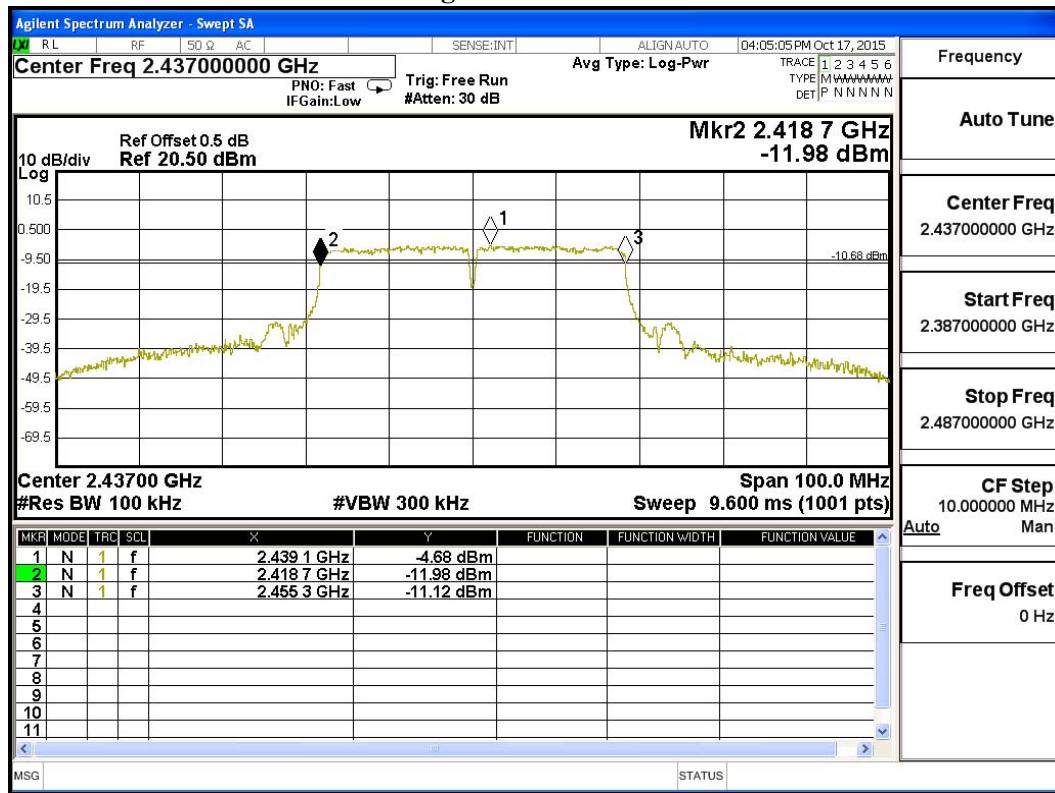
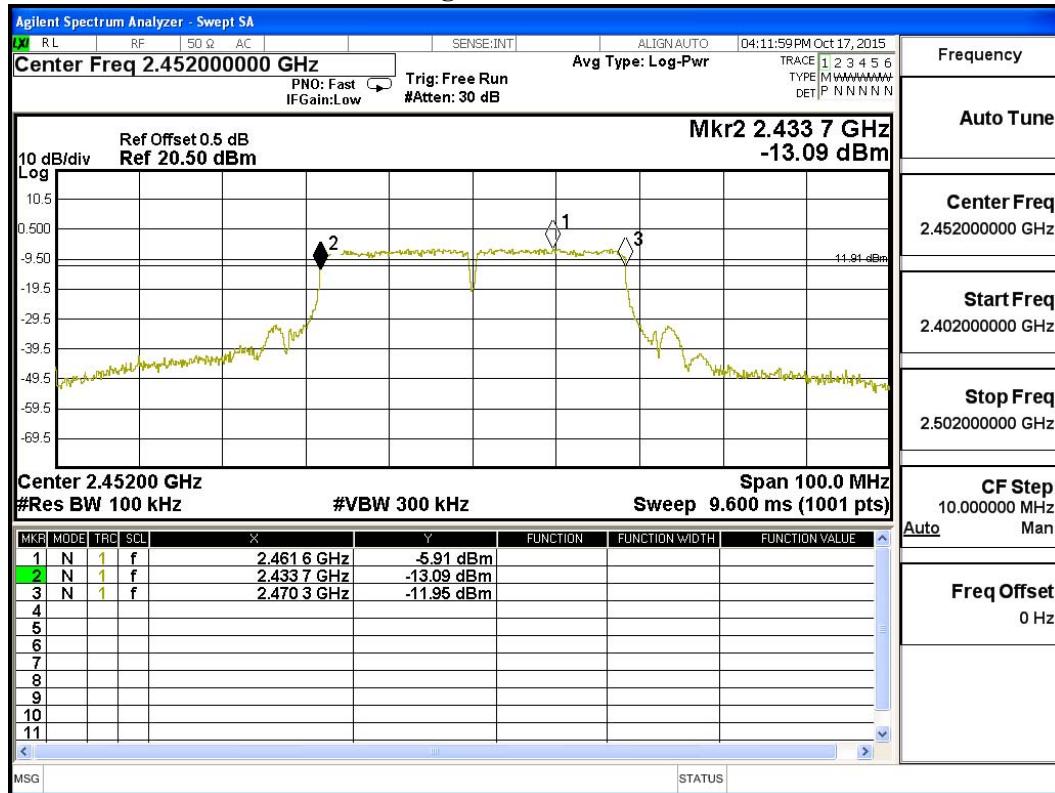


Figure Channel 09:



## 8. Power Density

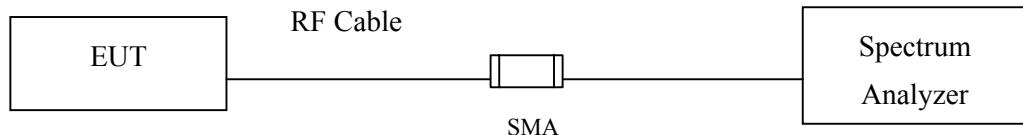
### 8.1. Test Equipment

Equipment	Manufacturer	Model No./Serial No.	Last Cal.
Spectrum Analyzer	R&S	FSP40 / 100170	Jun., 2015
Spectrum Analyzer	Agilent	E4407B / US39440758	Jun., 2015
X Spectrum Analyzer	Agilent	N9010A / MY48030495	Apr., 2015

Note:

1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.
2. The test instruments marked with “X” are used to measure the final test results.

### 8.2. Test Setup



### 8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

### 8.4. Test Procedure

The EUT was setup according to ANSI C63.10, 2013; tested according to DTS test procedure of KDB 558074 for compliance to FCC 47CFR 15.247 requirements.

The maximum power spectral density using KDB 558074 section 10.2 PKPSD (peak PSD) method.

### 8.5. Uncertainty

± 1.27 dB

## 8.6. Test Result of Power Density

Product : Dash Cam  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmit (802.11b 1Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	4.37	< 8dBm	Pass
06	2437	4.07	< 8dBm	Pass
11	2462	4.43	< 8dBm	Pass

Figure Channel 01:

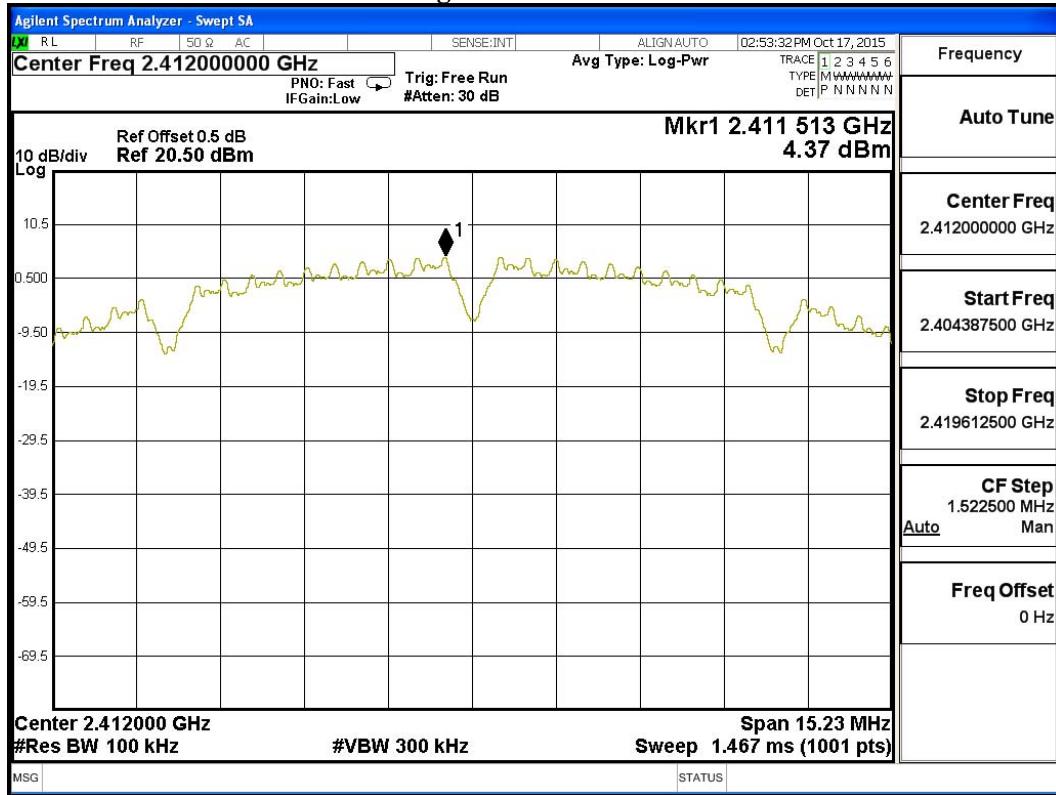


Figure Channel 06:

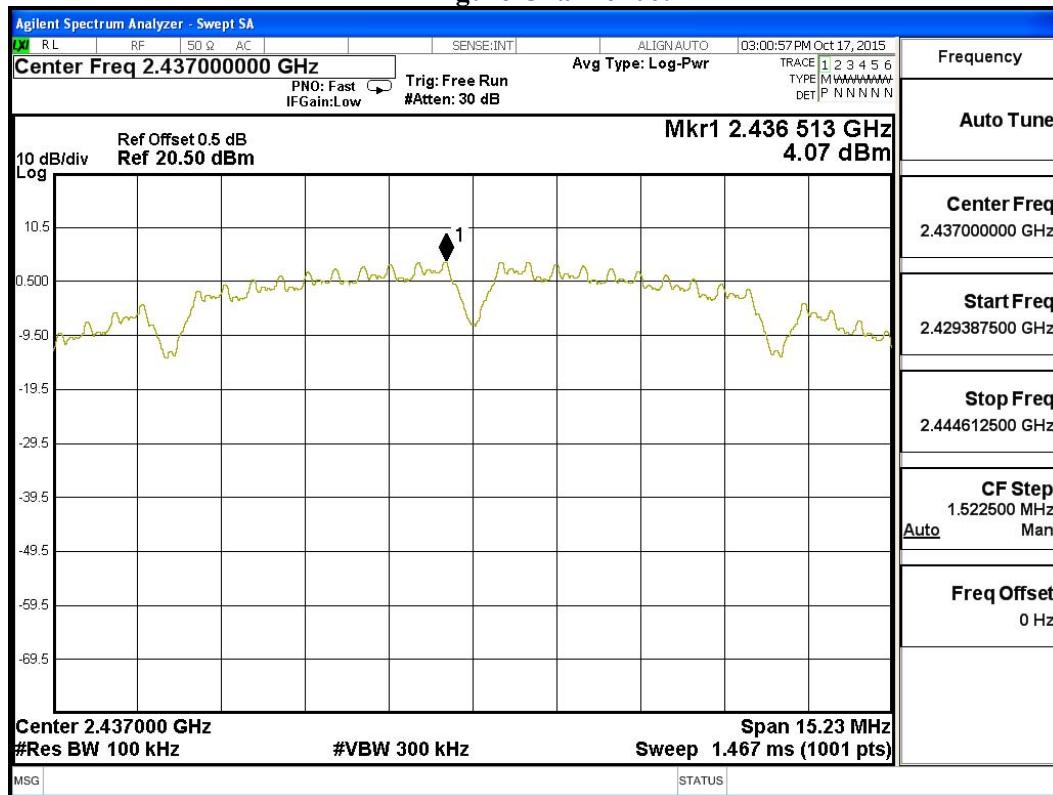
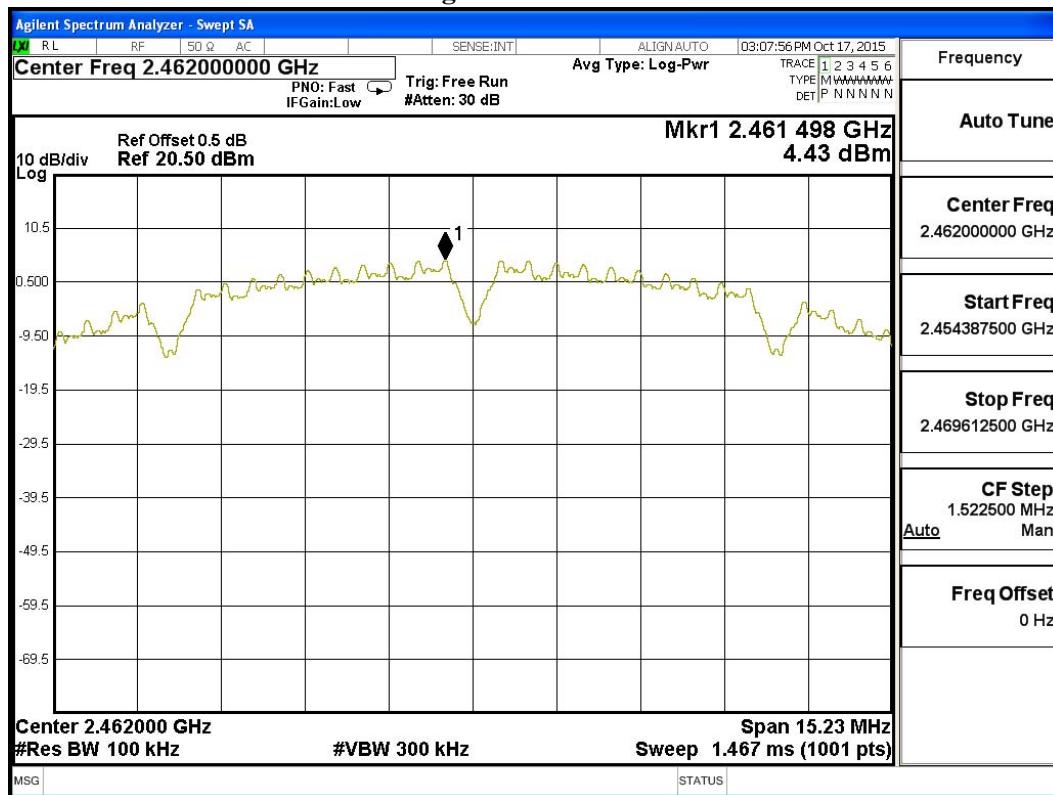


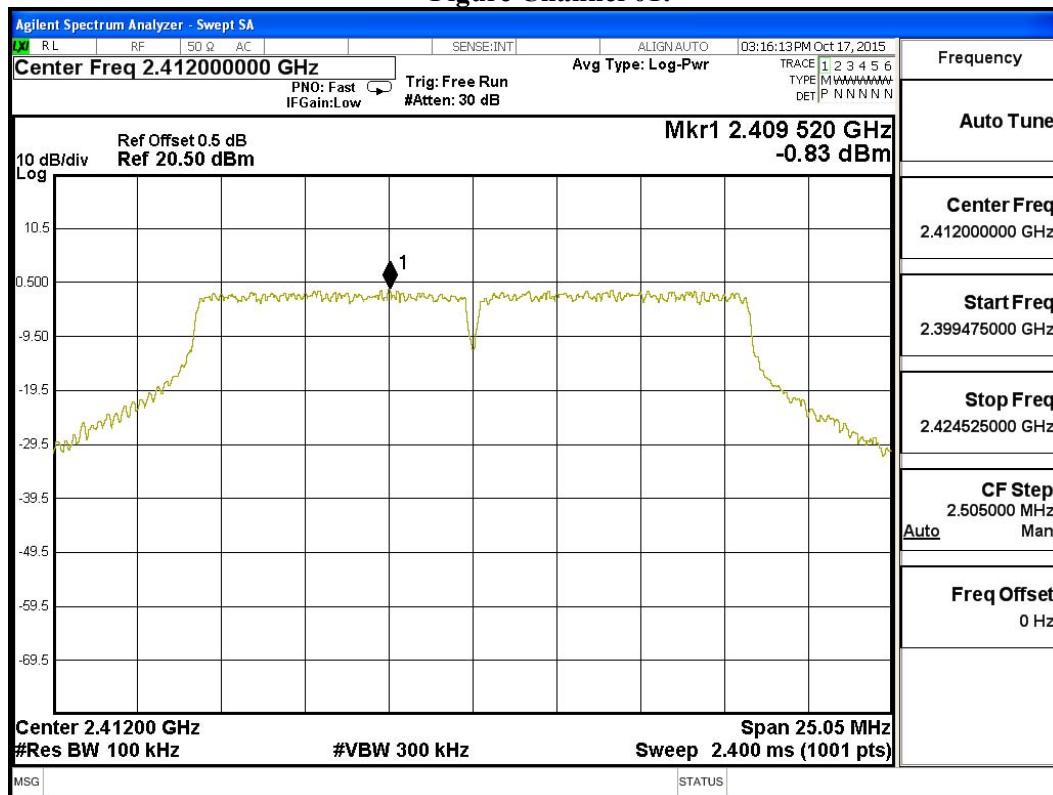
Figure Channel 11:



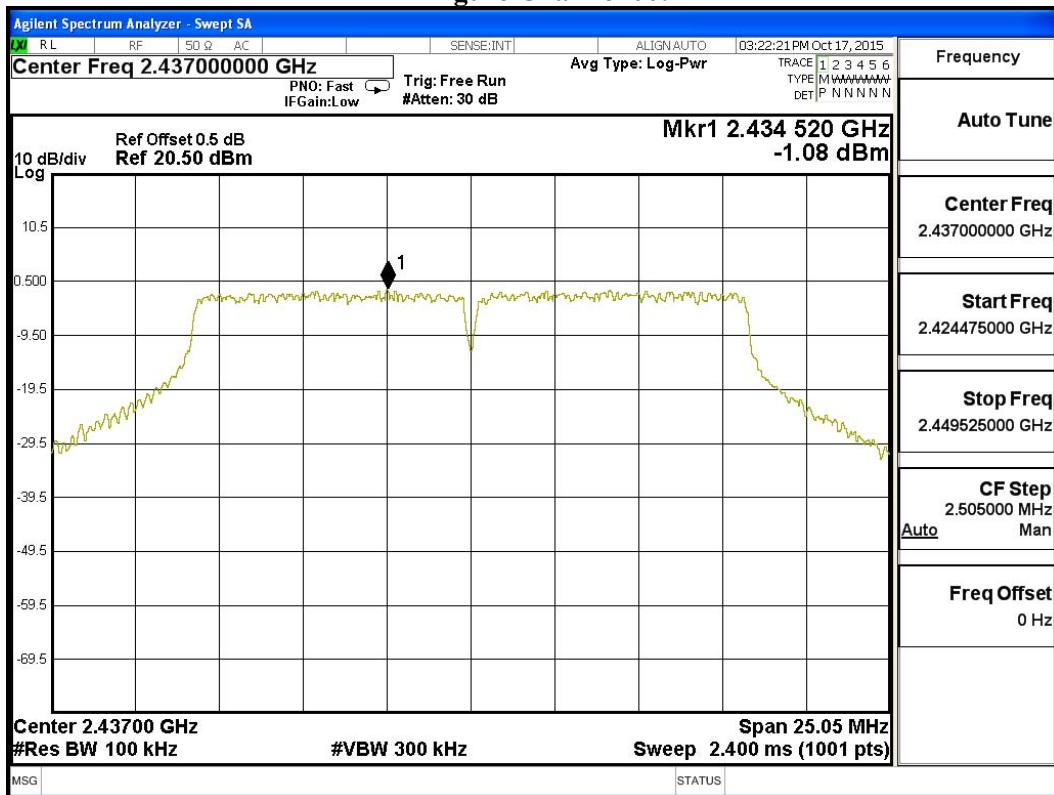
Product : Dash Cam  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmit (802.11g 6Mbps)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-0.83	< 8dBm	Pass
06	2437	-1.08	< 8dBm	Pass
11	2462	-0.76	< 8dBm	Pass

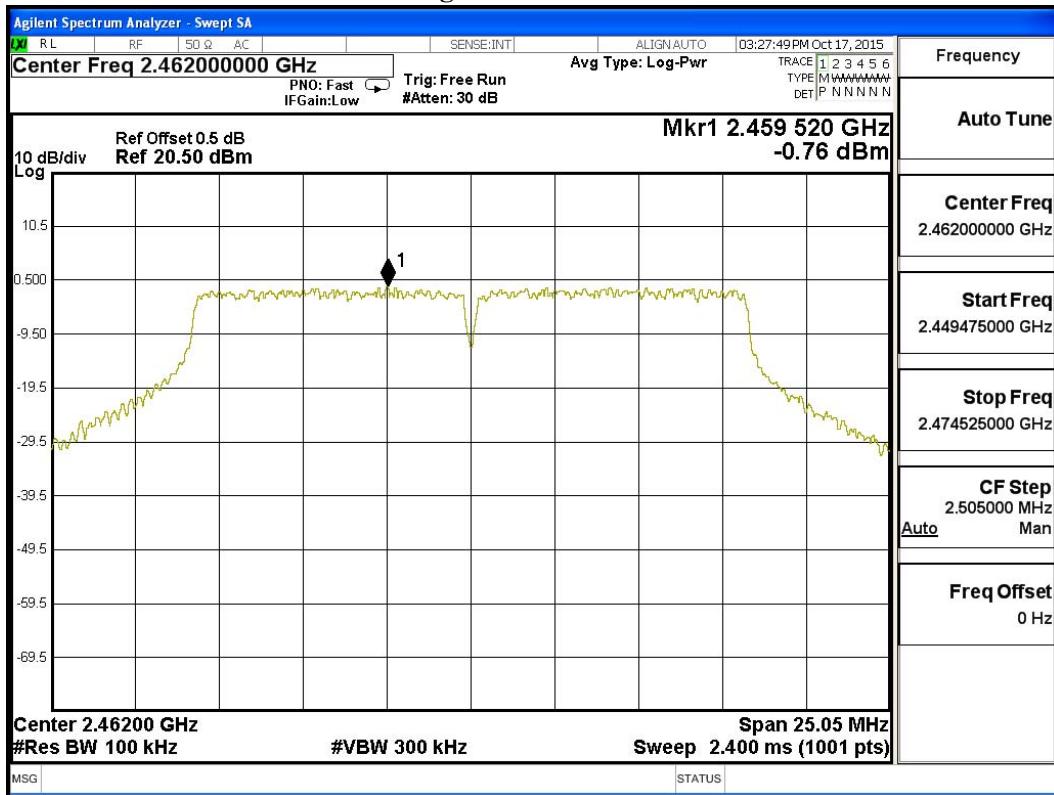
Figure Channel 01:



**Figure Channel 06:**



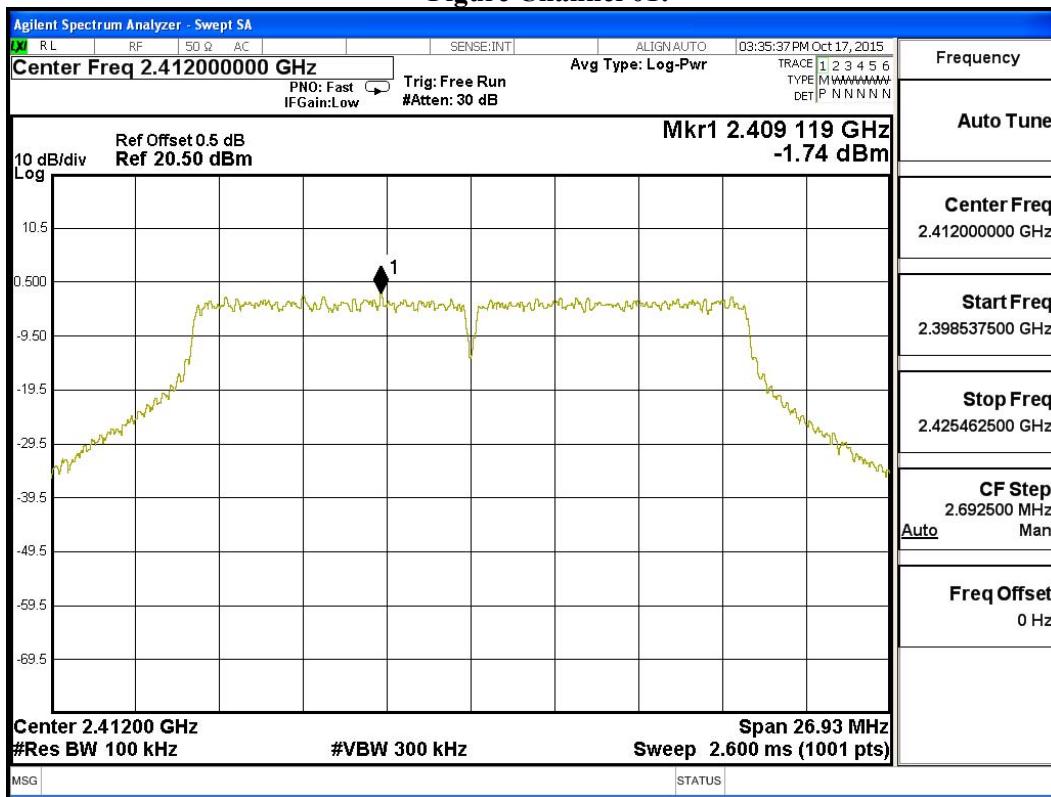
**Figure Channel 11:**



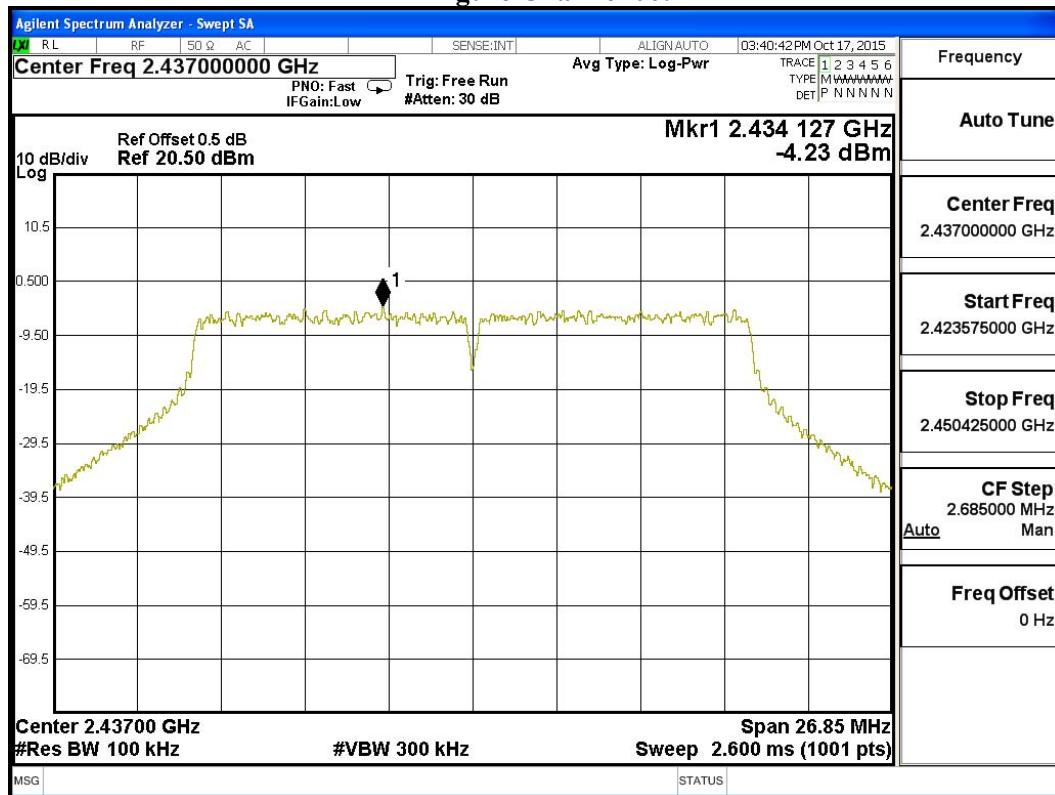
Product : Dash Cam  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 3: Transmit (802.11n MCS0 7.2Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	-1.74	< 8dBm	Pass
06	2437	-4.23	< 8dBm	Pass
11	2462	-1.17	< 8dBm	Pass

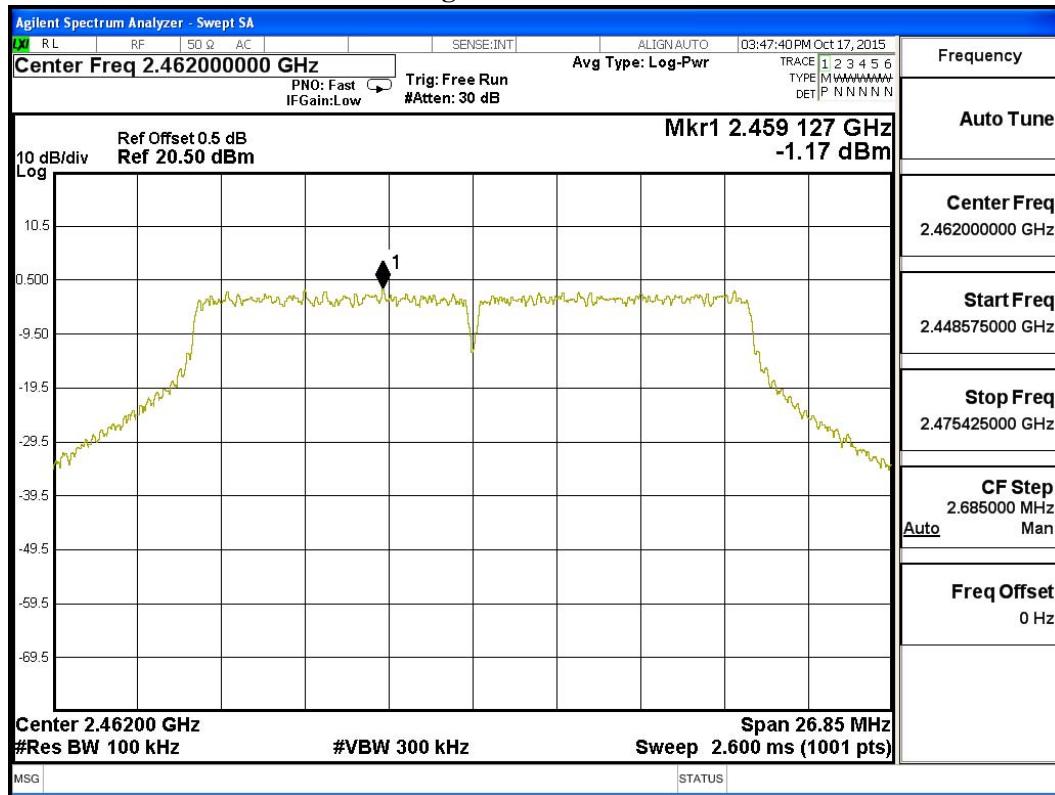
**Figure Channel 01:**



**Figure Channel 06:**



**Figure Channel 11:**



Product : Dash Cam  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 4: Transmit (802.11n MCS0 15Mbps 40M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
03	2422	-4.34	< 8dBm	Pass
06	2437	-4.63	< 8dBm	Pass
09	2452	-5.96	< 8dBm	Pass

Figure Channel 03:

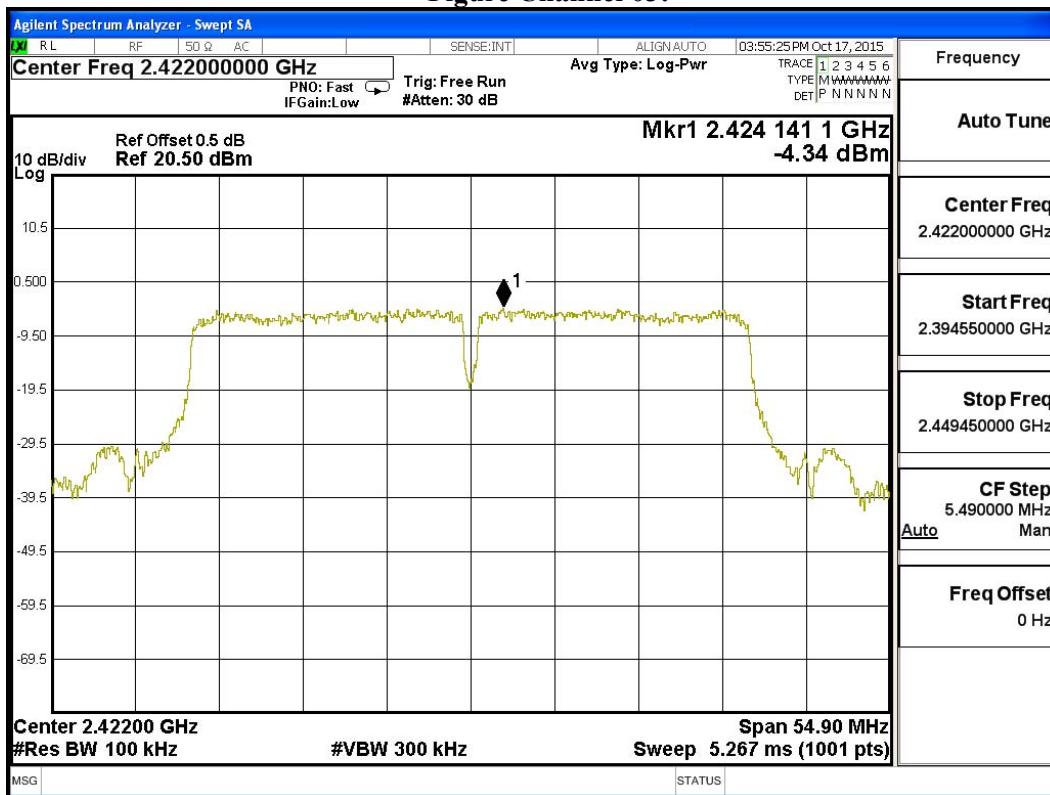


Figure Channel 06:

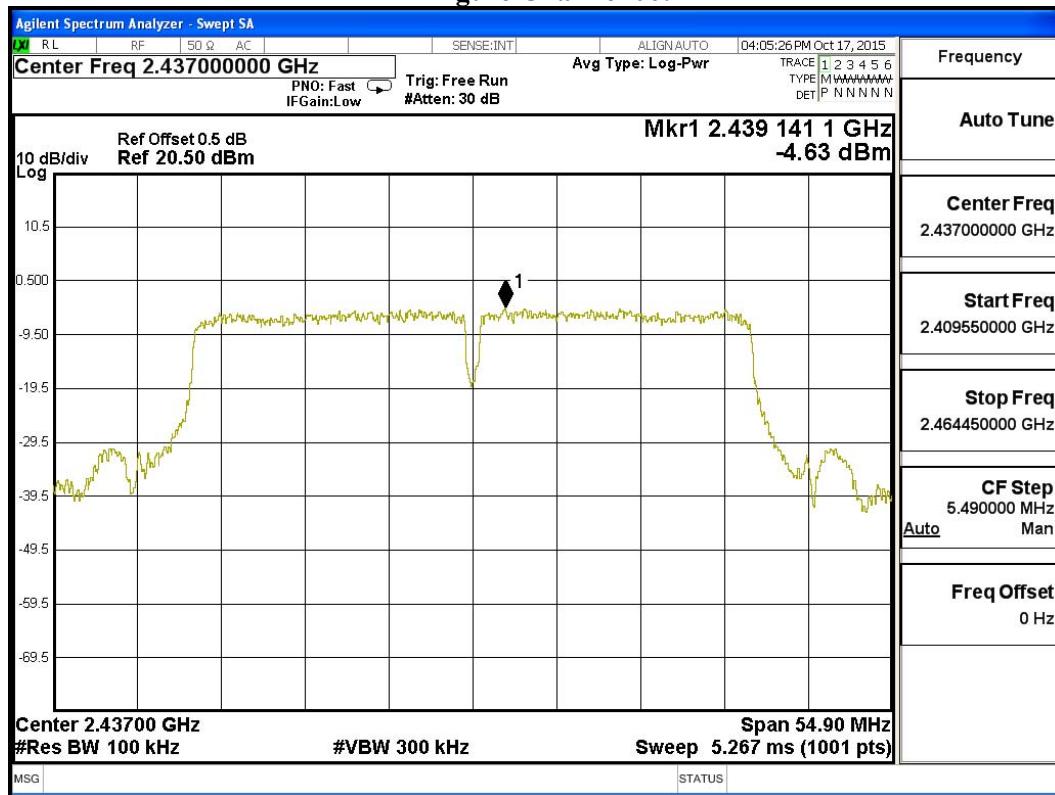
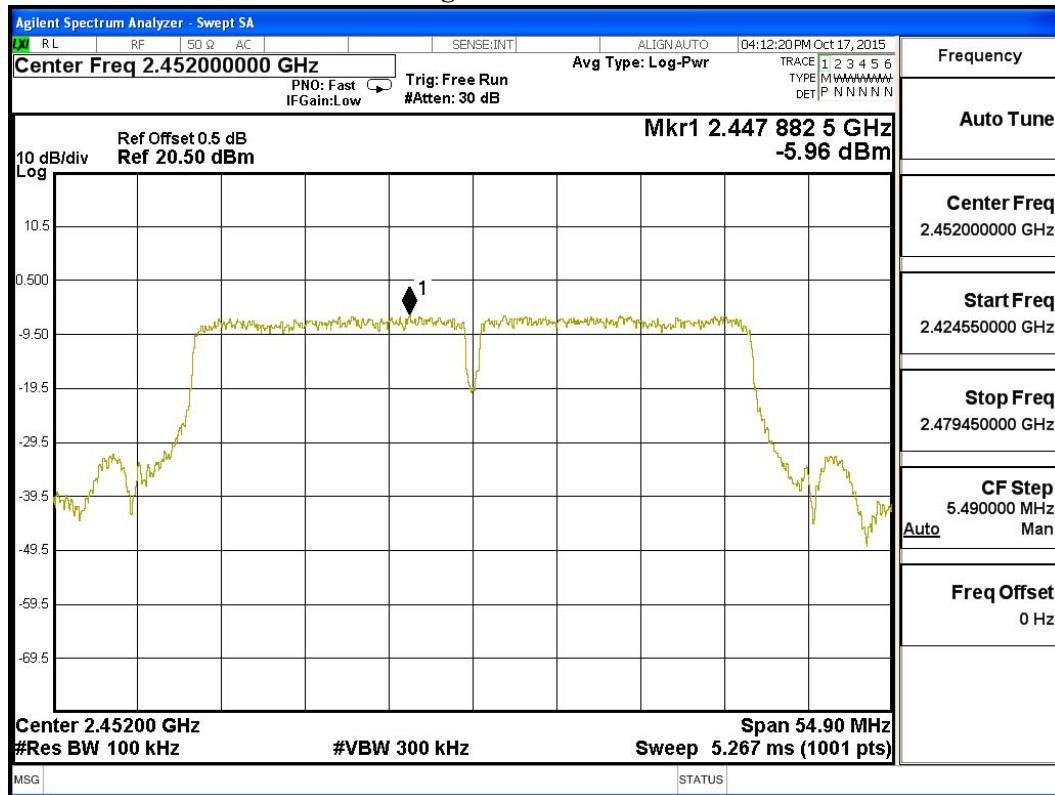


Figure Channel 09:



## **9. EMI Reduction Method During Compliance Testing**

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs