FCC Test Report

Product Name	4K Smart Action Camera
Model No	ARC10
FCC ID.	2AL7H-ARC10

Applicant	Revl Inc.
Address	325 9th Street San Francisco, CA 94103

Date of Receipt	July 26, 2017
Issue Date	Oct. 03, 2017
Report No.	1770399R-RFUSP73V00-A
Report Version	V1.0

Testing Laboratory
3023

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.

Test Report

Issue Date: Oct. 03, 2017
Report No.: 1770399R-RFUSP73V00-A

Product Name	4K Smart Action Camera
Applicant	Revl Inc.
Address	325 9th Street San Francisco, CA 94103
Manufacturer	ABILITY ENTERPRISE CO., LTD.
Model No.	ARC10
FCC ID.	2AL7H-ARC10
EUT Rated Voltage	DC 3.7V By Battery
EUT Test Voltage	AC 120V/60Hz
Trade Name	REVL
Applicable Standard	FCC CFR Title 47 Part 15 Subpart C: 2016 ANSI C63.4: 2014, ANSI C63.10: 2013 KDB 558074 D01 DTS Meas Guidance v04
Test Result	Complied

Documented By : Rita Huang

(Senior Adm. Specialist / Rita Huang)

Tested By : Sam Hsu

(Engineer / Sam Hsu)

Approved By :

(Director / Vincent Lin)

TABLE OF CONTENTS

1. GENERAL INFORMATION

1.1. EUT Description

Product Name	4K Smart Action Camera
Trade Name	
Model No.	ARC10
FCC ID.	2AL7H-ARC10
Frequency Range	802.11b/g/n-20BW: 2412-2462MHz
Number of Channels	802.11b/g/n-20MHz: 11
Data Speed	802.11b: 1-11Mbps, 802.11g: 6-54Mbps, 802.11n: 6.5-65Mbps
Type of Modulation	802.11b:DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM)
Antenna Type	Chip Antenna
Antenna Gain	Refer to the table “Antenna List”
Channel Control	Auto
USB Cable	Shielded, 0.3m

Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	SINBON	N/A	Chip Antenna	-5.09 dBi for 2.4 GHz

Note: The antenna of EUT conforms to FCC 15.203.

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

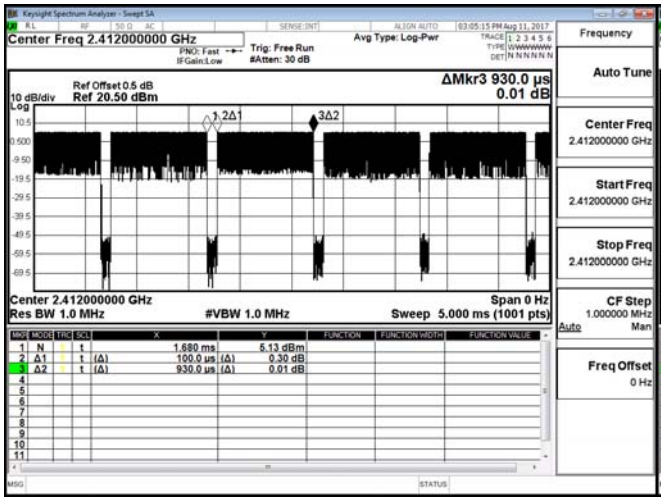
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
Channel 01:	2412 MHz	Channel 02:	2417 MHz	Channel 03:	2422 MHz	Channel 04:	2427 MHz
Channel 05:	2432 MHz	Channel 06:	2437 MHz	Channel 07:	2442 MHz	Channel 08:	2447 MHz
Channel 09:	2452 MHz	Channel 10:	2457 MHz	Channel 11:	2462 MHz		

Duty Cycle:

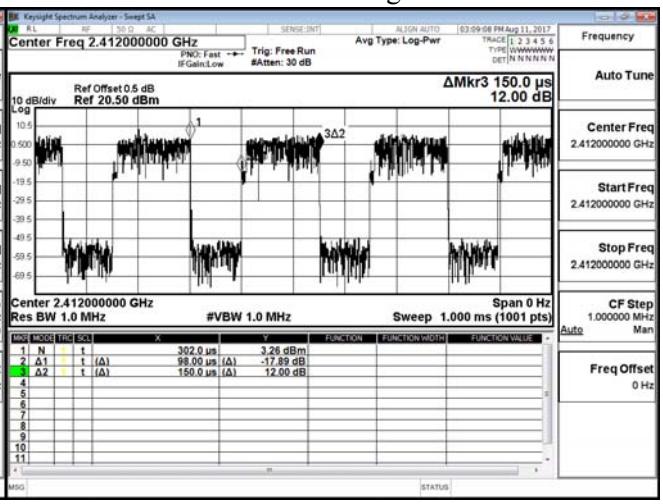
802.11b	0.903
802.11g	0.605
802.11n-20	0.609

*Duty cycle = Ton / (Ton + Toff)

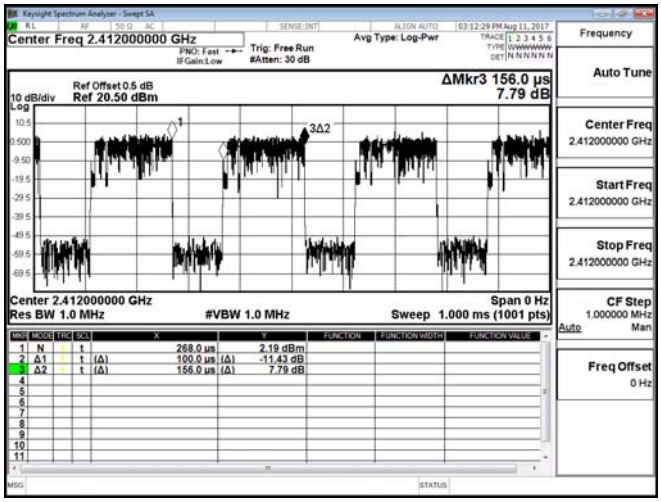
802.11b:



802.11g:



802.11n-20:



Note:

1. The EUT is a 4K Smart Action Camera with a built-in 2.4GHz WLAN、Bluetooth V4.0 transceiver, this report for 2.4GHz WLAN .
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 6.5Mbps.)
4. 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.
5. The radiation measurements are performed in X, Y, Z axis positioning. Only the worst case is shown in the report.

Test Mode:	Mode 1: Transmit (802.11b 1Mbps)
	Mode 2: Transmit (802.11g 6Mbps)
	Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)

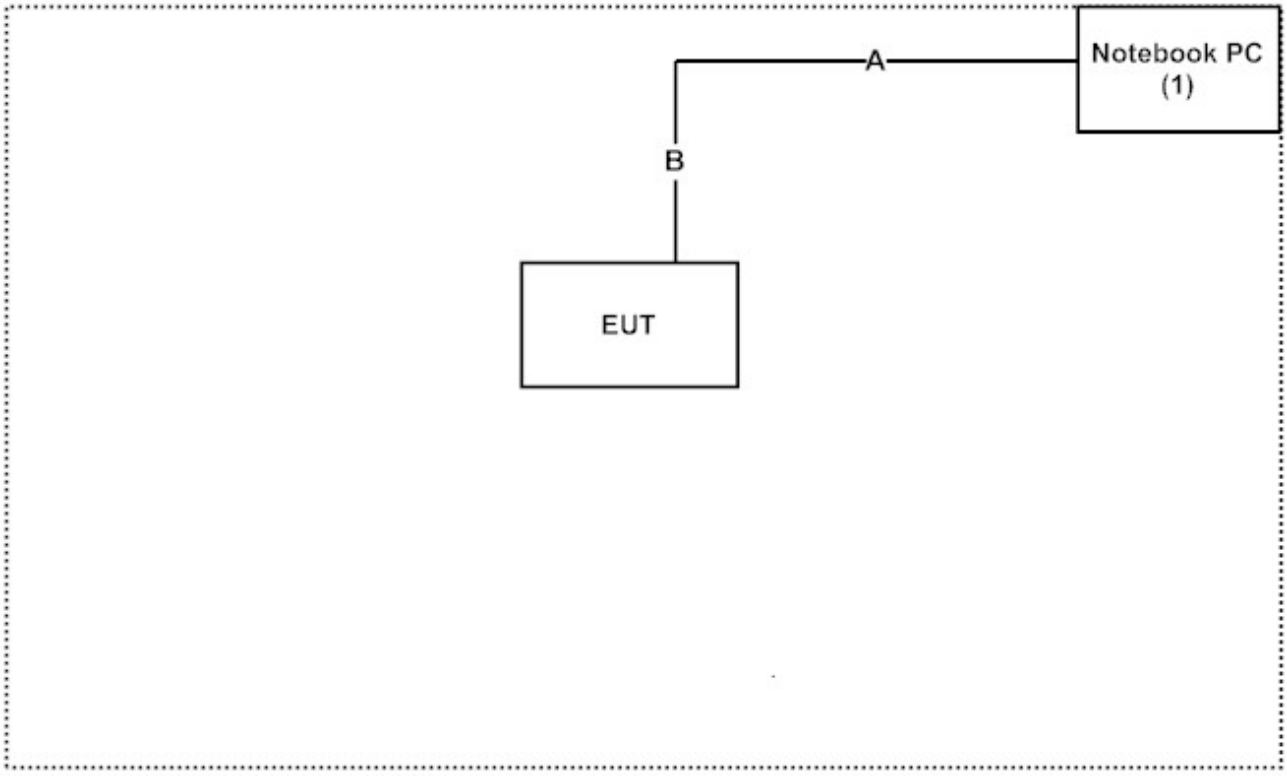
1.3. Tested System Details

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.	Power Cord
1	Notebook PC	DELL	Latitude E5440	FS9TK32	Non-Shielded, 0.8m

Signal Cable Type		Signal cable Description
A	USB Cable	Shielded, 1.5m
B	USB Cable	Shielded, 0.3m

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 V4.6.4” on the Notebook.
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 DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
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 : info.tw@dekra.com

FCC Accreditation Number: TW3023

1.7. List of Test Equipment

For Conducted measurements / CB3 / SR8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
	Temperature Chamber	WIT GROUP	TH-1S-B	EQ-201-00146	2016/11/28	2017/11/27
X	Spectrum Analyzer	Agilent	N9010A	MY48030495	2017/7/22	2018/7/21
X	Power Meter	Anritsu	ML2495A	6K00003357	2017/6/23	2018/6/22
X	Pulse power sensor	Anritsu	MA2411B	0846193	2017/6/23	2018/6/22
X	EMI Test Receiver	R&S	ESCS 30	100369	2016/10/13	2017/10/12
X	LISN	R&S	ESH3-Z5	836679/017	2017/1/7	2018/1/6
X	LISN	R&S	ENV216	100097	2017/1/7	2018/1/6
X	Coaxial Cable	QTK(Arnist)	RG 400	LC018-RG	2017/6/25	2018/6/24

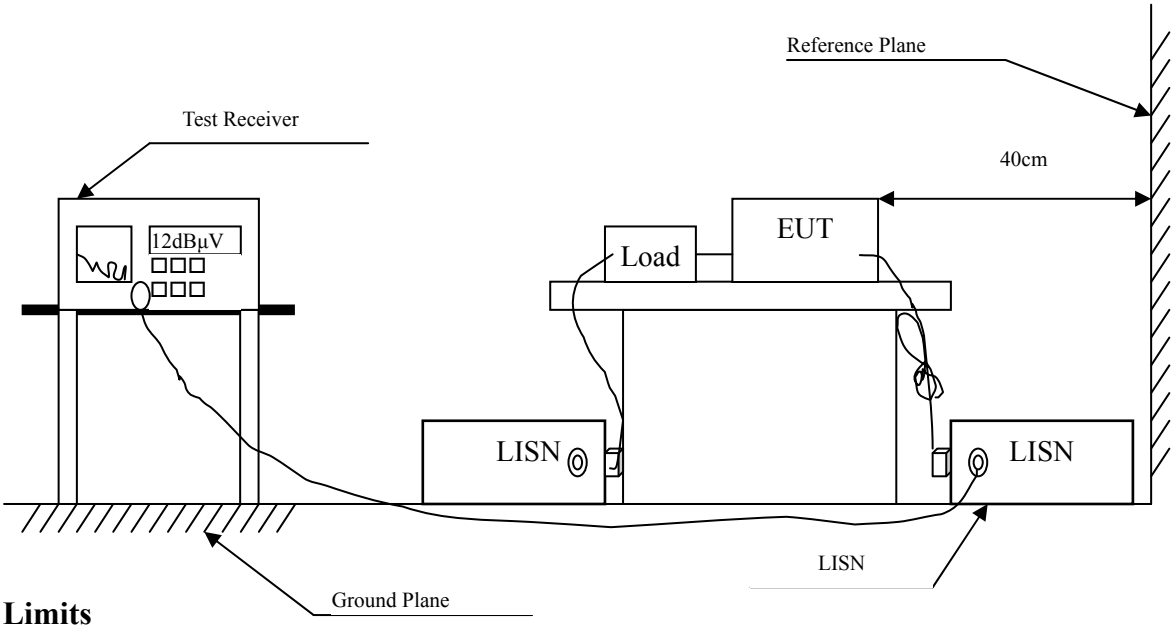
For Radiated measurements / Site3 / CB8

	Equipment	Manufacturer	Model No.	Serial No.	Cali. Data	Due. Data
X	Spectrum Analyzer	R&S	FSP40	100170	2017/1/5	2018/1/4
X	Loop Antenna	Teseq	HLA6121	37133	2017/3/18	2018/3/17
X	Bi-Log Antenna	Schaffner Chase	CBL6112B	2707	2017/6/11	2018/6/10
X	Horn Antenna	ETS-Lindgren	3117	00135205	2017/4/6	2018/4/5
X	Horn Antenna	Schwarzbeck	BBHA9170	9170430	2017/1/11	2018/1/10
X	Pre-Amplifier	QTK	AP/0100A	CHM/0901069	2017/6/23	2018/6/22
X	Pre-Amplifier	EMCI	EMC012630SE	980210	2017/1/26	2018/1/24
X	Pre-Amplifier	NARDA WE	DBL-1840N506	013	2017/9/30	2018/9/29
X	Filter	MicroTRON	BRM50701	019	2016/11/2	2017/11/1
	Filter	Microwave Circuits	N0257881	36681	2016/12/7	2017/12/6
X	EMI Test Receiver	R&S	ESR26	101385	2017/9/29	2018/9/28
X	Coaxial Cable	QTK(Arnist)	SUCOFLEX 106	L1606-015C	2017/6/23	2018/6/22
X	EMI Test Receiver	R&S	ESCS 30	838251/001	2017/7/21	2018/7/20
X	Coaxial Cable	QTK(Arnist)	RG 214	LC003-RG	2017/6/16	2018/6/15
X	Coaxial signal switch	Anritsu	MP59B	6201415889	2017/6/16	2018/6/15

Note:
1. All equipments are calibrated every one year.
2. The test instruments marked with “X” are used to measure the final test results.
3. Test Software version : QuieTek EMI 2.0 V2.1.113.

2. Conducted Emission

2.1. Test Setup



2.2. Limits

FCC Part 15 Subpart C Paragraph 15.207 (dBµV) 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

2.3. 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.

2.4. Uncertainty

± 2.26 dB

2.5. Test Result of Conducted Emission

Product : 4K Smart Action Camera
Test Item : Conducted Emission Test
Power Line : Line 1
Test Date : 2017/08/31
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV	dB	dBµV
Line 1					
Quasi-Peak					
0.166	9.754	40.540	50.294	-15.249	65.543
0.232	9.770	35.710	45.480	-18.177	63.657
0.466	9.739	34.150	43.889	-13.082	56.971
0.541	9.744	30.800	40.544	-15.456	56.000
3.474	9.859	22.960	32.819	-23.181	56.000
9.451	9.956	23.960	33.916	-26.084	60.000
Average					
0.166	9.754	28.120	37.874	-17.669	55.543
0.232	9.770	23.770	33.540	-20.117	53.657
0.466	9.739	19.390	29.129	-17.842	46.971
0.541	9.744	15.100	24.844	-21.156	46.000
3.474	9.859	13.380	23.239	-22.761	46.000
9.451	9.956	18.330	28.286	-21.714	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 : 4K Smart Action Camera
Test Item : Conducted Emission Test
Power Line : Line 2
Test Date : 2017/08/31
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2437MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBµV	dBµV	dB	dBµV
Line 2					
Quasi-Peak					
0.173	9.719	38.800	48.520	-16.823	65.343
0.232	9.754	33.300	43.054	-20.603	63.657
0.341	9.761	30.150	39.911	-20.632	60.543
0.502	9.785	30.920	40.706	-15.294	56.000
3.701	9.954	25.500	35.454	-20.546	56.000
4.681	9.994	21.160	31.154	-24.846	56.000
Average					
0.173	9.719	25.500	35.220	-20.123	55.343
0.232	9.754	19.890	29.644	-24.013	53.657
0.341	9.761	17.110	26.871	-23.672	50.543
0.502	9.785	14.970	24.756	-21.244	46.000
3.701	9.954	14.070	24.024	-21.976	46.000
4.681	9.994	10.260	20.254	-25.746	46.000

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 Setup

3.2. Limits

The maximum peak power shall be less 1 Watt.

3.3. Test Procedure

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 section 9.1.3 PKPM1 Peak power meter method.

3.4. Uncertainty

± 1.19 dB

3.5. Test Result of Peak Power Output

Product : 4K Smart Action Camera
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2017/08/28
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	1		
		Measurement Level (dBm)						
01	2412	11.22	--	--	--	15.25	<30dBm	Pass
06	2437	11.04	10.92	10.81	10.69	14.72	<30dBm	Pass
11	2462	10.96	--	--	--	14.68	<30dBm	Pass

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

Product : 4K Smart Action Camera
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2017/08/28
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	6		
		Measurement Level (dBm)										
01	2412	9.92	--	--	--	--	--	--	--	22.31	<30dBm	Pass
06	2437	9.85	9.72	9.6	9.48	9.32	9.19	9.02	8.91	22.36	<30dBm	Pass
11	2462	9.81	--	--	--	--	--	--	--	22.29	<30dBm	Pass

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

Product : 4K Smart Action Camera
Test Item : Peak Power Output Data
Test Site : No.3 OATS
Test Date : 2017/08/28
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)

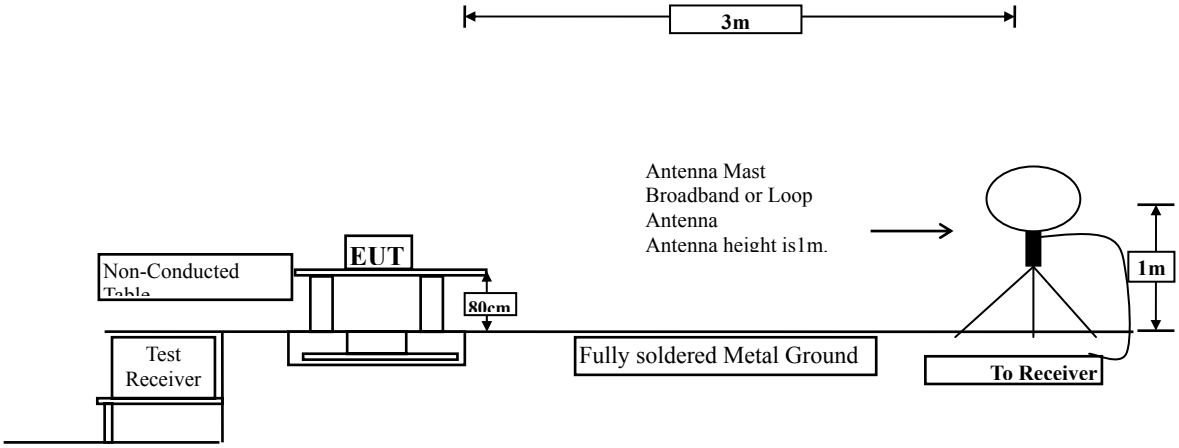
Channel No	Frequency (MHz)	Average Power For different Data Rate (Mbps)								Peak Power	Required Limit	Result
		6.5	13	19.5	26	39	52	58	65	6.5		
		Measurement Level (dBm)										
01	2412	8.75	--	--	--	--	--	--	--	21.23	<30dBm	Pass
06	2437	8.7	8.62	8.49	8.35	8.21	8.07	7.96	7.84	21.24	<30dBm	Pass
11	2462	8.61	--	--	--	--	--	--	--	21.07	<30dBm	Pass

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

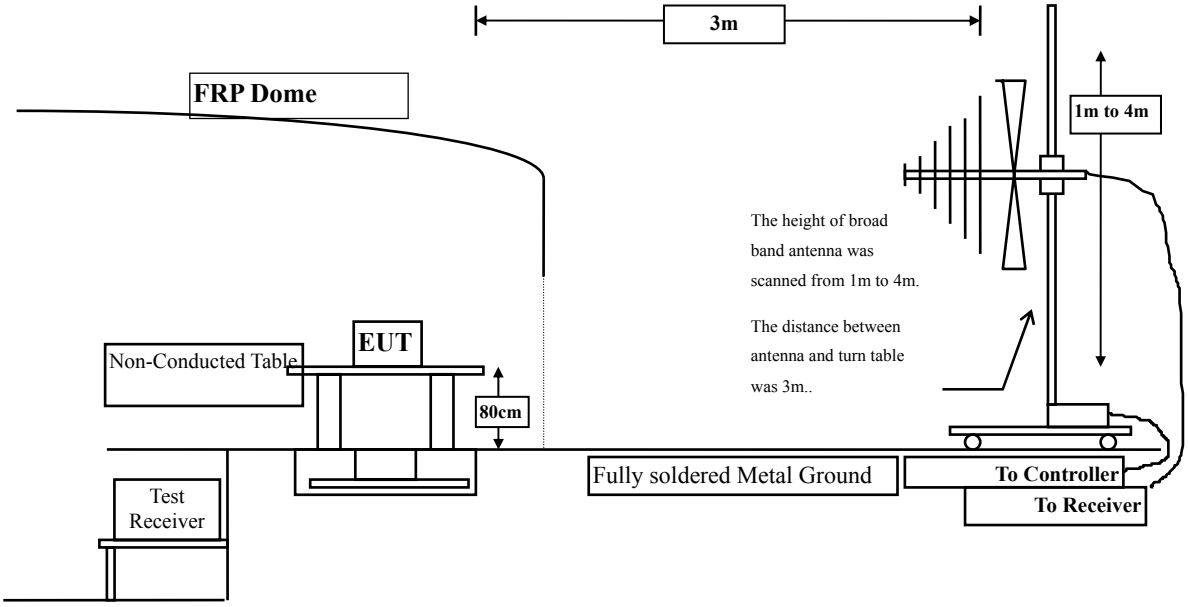
4. Radiated Emission

4.1. Test Setup

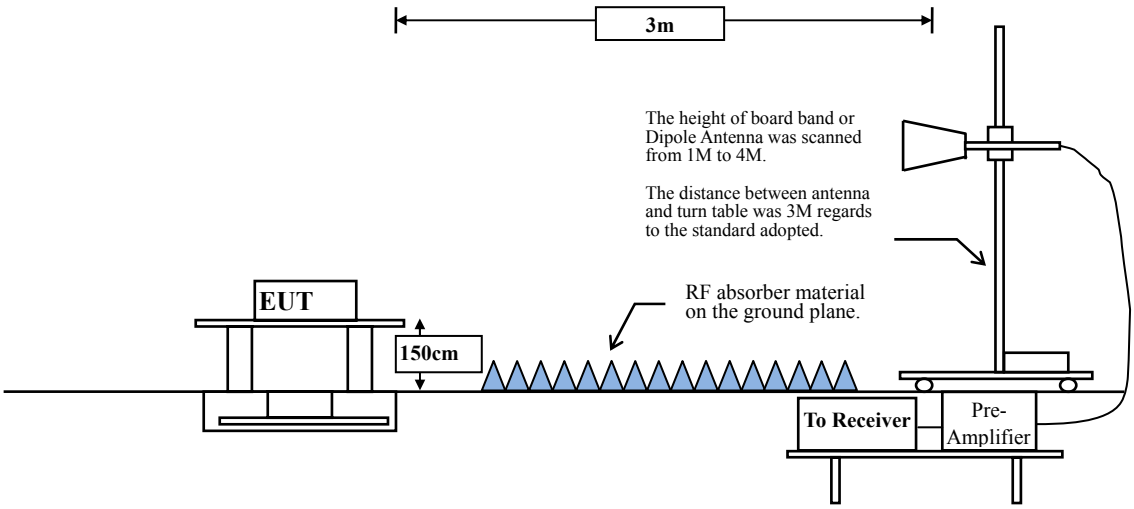
Radiated Emission Under 30MHz



Radiated Emission Below 1GHz



Radiated Emission Above 1GHz



4.2. 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 (dBμV/m) = 20 log E field strength (uV/m)

4.3. 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 form 9kHz - 10th Harmonic of fundamental was investigated.

The average measurement tested according to KDB 558074 section 12.2.5.3. Reduced VBW averaging across on- and off-times of the EUT transmissions with max hold.

VBW ≥ 1/T:

Mode	Duty Cycle	T	1/T	VBW Setting
802.11b	0.903	0.93 ms	1075 Hz	1 KHz
802.11g	0.605	0.15 ms	6666 Hz	7 KHz
802.11n20	0.609	0.156 ms	6410 Hz	7 KHz

4.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

4.5. Test Result of Radiated Emission

Product : 4K Smart Action Camera
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/19
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	2.428	40.068	42.497	-31.503	74.000
7236.000	9.177	37.266	46.443	-27.557	74.000
9648.000	10.019	37.069	47.089	-26.911	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	2.836	39.509	42.346	-31.654	74.000
7236.000	9.676	37.542	47.218	-26.782	74.000
9648.000	10.556	37.861	48.418	-25.582	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 = 1 KHz, 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	:	4K Smart Action Camera
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/08/19
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	2.076	40.515	42.592	-31.408	74.000
7311.000	9.512	37.492	47.004	-26.996	74.000
9748.000	9.630	37.770	47.400	-26.600	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	2.532	39.915	42.447	-31.553	74.000
7311.000	10.089	37.365	47.454	-26.546	74.000
9748.000	10.266	37.323	47.590	-26.410	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 = 1 KHz, 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 : 4K Smart Action Camera
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/19
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	2.191	40.411	42.602	-31.398	74.000
7386.000	10.373	37.729	48.103	-25.897	74.000
9848.000	9.964	37.428	47.392	-26.608	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	2.805	40.125	42.930	-31.070	74.000
7386.000	11.180	37.053	48.233	-25.767	74.000
9848.000	10.801	38.076	48.877	-25.123	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 = 1 KHz, 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 : 4K Smart Action Camera
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/19
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	2.428	39.899	42.328	-31.672	74.000
7236.000	9.177	37.676	46.853	-27.147	74.000
9648.000	10.019	37.051	47.071	-26.929	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	2.836	39.615	42.452	-31.548	74.000
7236.000	9.676	37.177	46.853	-27.147	74.000
9648.000	10.556	37.452	48.009	-25.991	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 = 7 KHz, 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	:	4K Smart Action Camera
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/08/19
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	2.076	40.633	42.710	-31.290	74.000
7311.000	9.512	37.504	47.016	-26.984	74.000
9748.000	9.630	37.217	46.847	-27.153	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	2.532	40.058	42.590	-31.410	74.000
7311.000	10.089	37.100	47.189	-26.811	74.000
9748.000	10.266	36.710	46.977	-27.023	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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/19
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	2.191	40.056	42.247	-31.753	74.000
7386.000	10.373	36.524	46.898	-27.102	74.000
9848.000	9.964	37.924	47.888	-26.112	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	2.805	39.725	42.530	-31.470	74.000
7386.000	11.180	36.608	47.788	-26.212	74.000
9848.000	10.801	36.615	47.416	-26.584	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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/19
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)(2412MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4824.000	2.428	40.360	42.789	-31.211	74.000
7236.000	9.177	37.420	46.597	-27.403	74.000
9648.000	10.019	37.552	47.572	-26.428	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4824.000	2.836	39.654	42.491	-31.509	74.000
7236.000	9.676	37.149	46.825	-27.175	74.000
9648.000	10.556	37.735	48.292	-25.708	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 = 7 KHz, 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	:	4K Smart Action Camera
Test Item	:	Harmonic Radiated Emission Data
Test Site	:	No.3 OATS
Test Date	:	2017/08/19
Test Mode	:	Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4874.000	2.076	39.676	41.753	-32.247	74.000
7311.000	9.512	37.406	46.918	-27.082	74.000
9748.000	9.630	39.930	49.560	-24.440	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4874.000	2.532	39.784	42.316	-31.684	74.000
7311.000	10.089	36.868	46.957	-27.043	74.000
9748.000	10.266	40.753	51.020	-22.980	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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Harmonic Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/19
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2462 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
Peak Detector:					
4924.000	2.191	40.509	42.700	-31.300	74.000
7386.000	10.373	37.572	47.946	-26.054	74.000
9848.000	9.964	37.096	47.060	-26.940	74.000
Average Detector:					
--					
Vertical					
Peak Detector:					
4924.000	2.805	39.388	42.193	-31.807	74.000
7386.000	11.180	36.846	48.026	-25.974	74.000
9848.000	10.801	36.696	47.497	-26.503	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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/05
Test Mode : Mode 1: Transmit (802.11b 1Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
61.040	-11.587	39.849	28.262	-11.738	40.000
180.350	-1.132	29.678	28.546	-14.954	43.500
299.660	-4.061	32.573	28.512	-17.488	46.000
514.030	0.257	25.872	26.129	-19.871	46.000
771.080	2.766	33.517	36.284	-9.716	46.000
942.770	3.417	28.078	31.495	-14.505	46.000
Vertical					
90.140	-4.175	33.487	29.312	-14.188	43.500
299.660	-4.061	32.922	28.861	-17.139	46.000
385.990	-0.690	29.913	29.223	-16.777	46.000
600.360	1.302	26.448	27.750	-18.250	46.000
771.080	2.766	33.861	36.628	-9.372	46.000
942.770	3.417	30.697	34.114	-11.886	46.000

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 = 1 KHz, 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. Emission found between 9kHz to 30MHz is less than 20dB from the limit, and therefore, reporting can be omitted.

Product : 4K Smart Action Camera
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/05
Test Mode : Mode 2: Transmit (802.11g 6Mbps)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
63.950	-12.454	39.907	27.454	-12.546	40.000
214.300	-10.329	30.153	19.824	-23.676	43.500
385.990	1.160	30.672	31.832	-14.168	46.000
556.710	2.695	26.477	29.172	-16.828	46.000
814.730	6.348	27.689	34.037	-11.963	46.000
942.770	6.817	30.697	37.514	-8.486	46.000
Vertical					
100.810	-5.817	32.159	26.342	-17.158	43.500
214.300	-5.859	30.153	24.294	-19.206	43.500
385.990	-0.690	30.672	29.982	-16.018	46.000
600.360	1.302	26.543	27.845	-18.155	46.000
771.080	2.766	33.861	36.628	-9.372	46.000
942.770	3.417	30.697	34.114	-11.886	46.000

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 = 7 KHz, 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. Emission found between 9kHz to 30MHz is less than 20dB from the limit, and therefore, reporting can be omitted.

Product : 4K Smart Action Camera
Test Item : General Radiated Emission Data
Test Site : No.3 OATS
Test Date : 2017/08/05
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)(2437 MHz)

Frequency	Correct Factor	Reading Level	Measurement Level	Margin	Limit
MHz	dB	dBμV	dBμV/m	dB	dBμV/m
Horizontal					
63.950	10.132	41.529	29.076	-10.924	40.000
214.300	12.160	30.153	19.824	-23.676	43.500
385.990	23.370	30.672	31.832	-14.168	46.000
556.710	24.652	27.143	29.838	-16.162	46.000
728.400	25.479	25.932	29.772	-16.228	46.000
900.090	27.248	28.650	34.468	-11.532	46.000
Vertical					
90.140	-4.175	34.853	30.678	-12.822	43.500
299.660	-4.061	33.018	28.957	-17.043	46.000
509.180	0.804	25.121	25.925	-20.075	46.000
685.720	2.254	25.482	27.736	-18.264	46.000
814.730	2.908	27.689	30.597	-15.403	46.000
942.770	3.417	30.697	34.114	-11.886	46.000

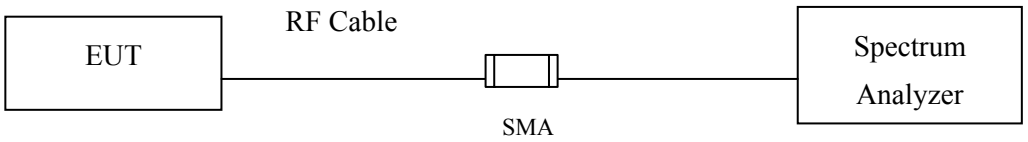
Note:

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 = 7 KHz, 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. Emission found between 9kHz to 30MHz is less than 20dB from the limit, and therefore, reporting can be omitted.

5. RF antenna conducted test

5.1. Test Setup

RF antenna Conducted Measurement:



5.2. 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)).

5.3. 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.

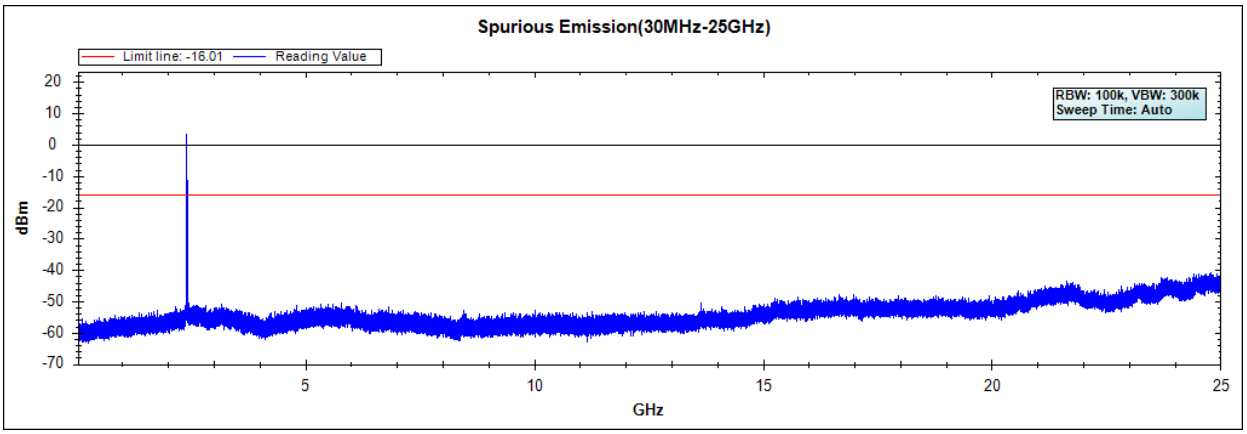
5.4. Uncertainty

The measurement uncertainty
Conducted is defined as ± 1.20dB

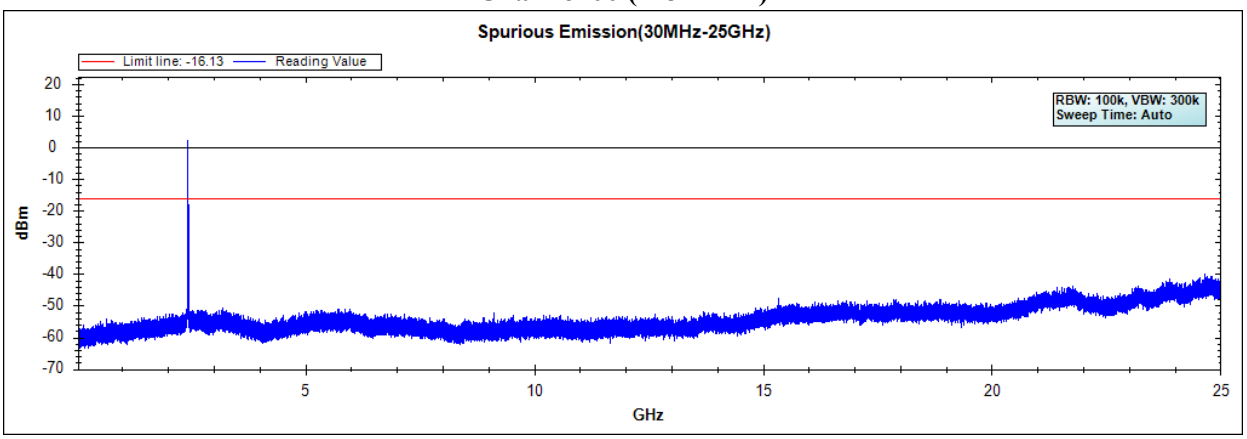
6. Test Result of RF antenna conducted test

Product : 4K Smart Action Camera
Test Item : RF antenna conducted test
Test Site : No.3 OATS
Test Date : 2017/08/05
Test Mode : Mode 1: Transmit (802.11b 1Mbps)

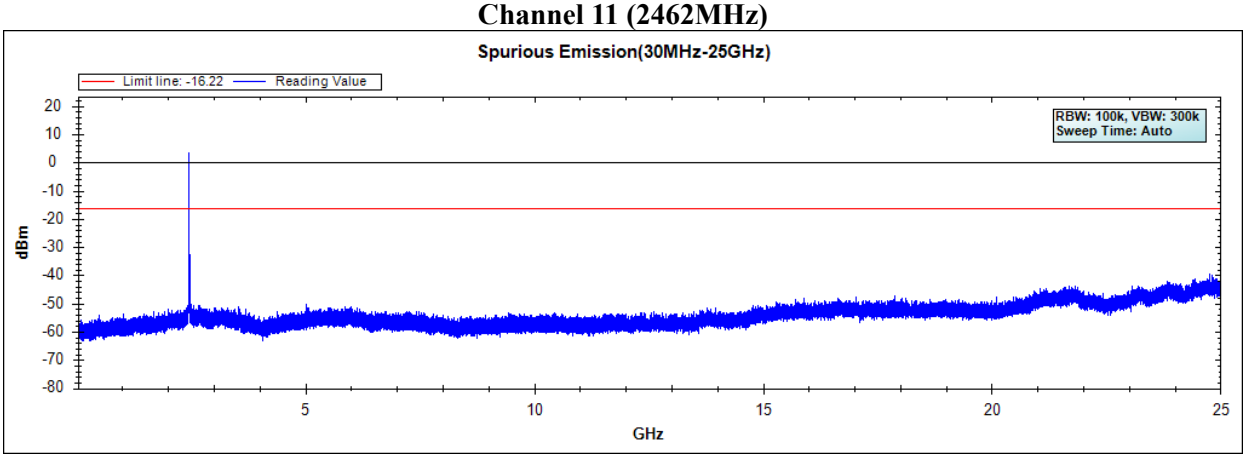
Channel 01 (2412MHz)



Channel 06 (2437MHz)



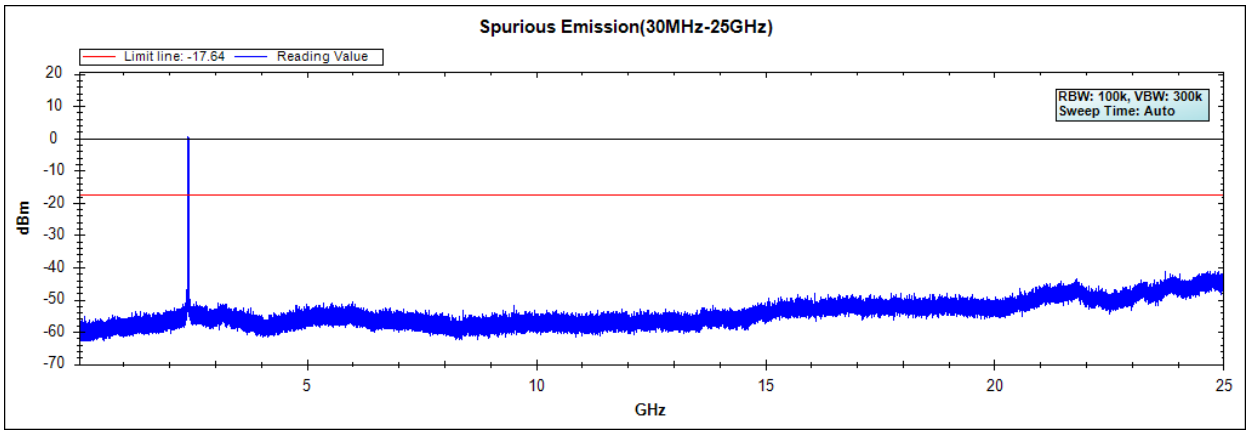
Channel 11 (2462MHz)



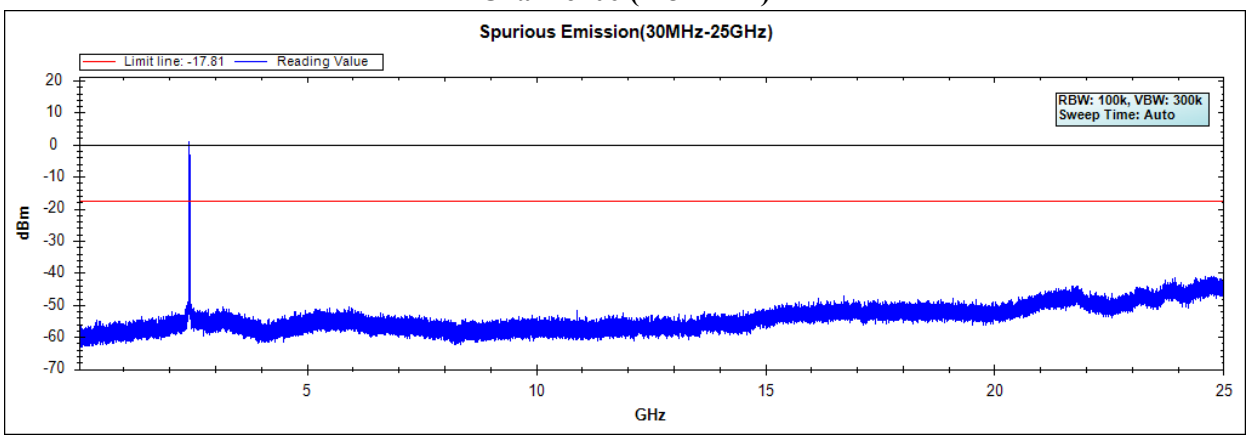
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	4K Smart Action Camera
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2017/08/05
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps)

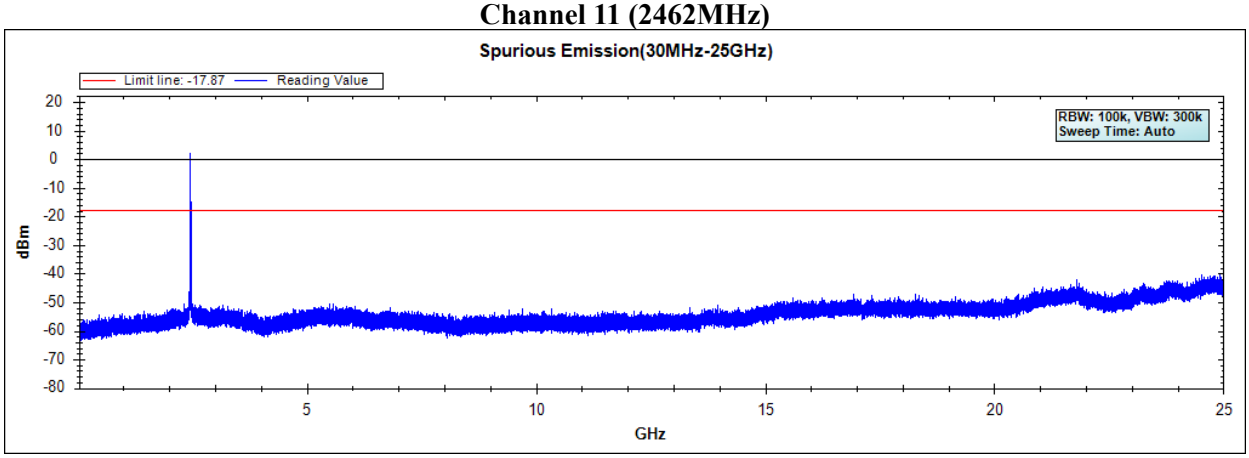
Channel 01 (2412MHz)



Channel 06 (2437MHz)



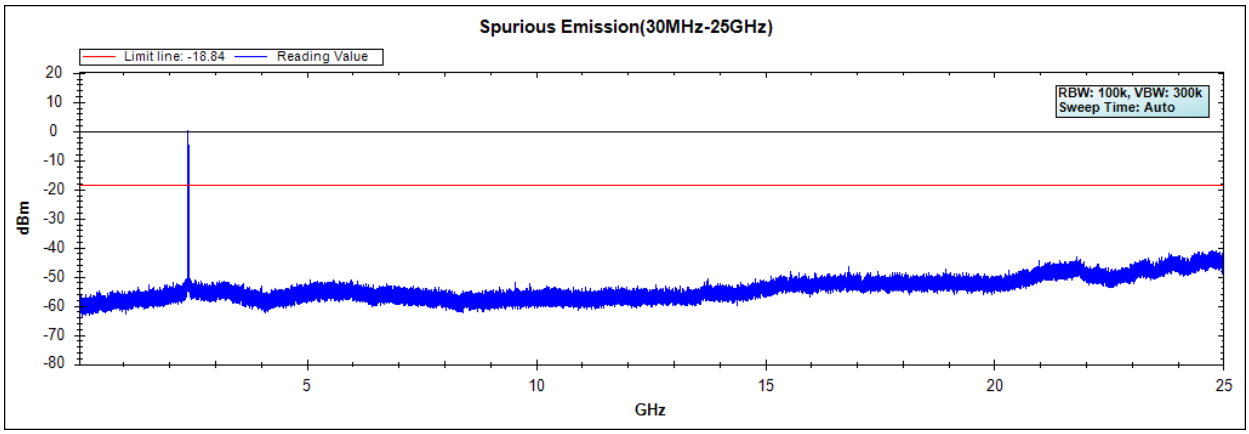
Channel 11 (2462MHz)



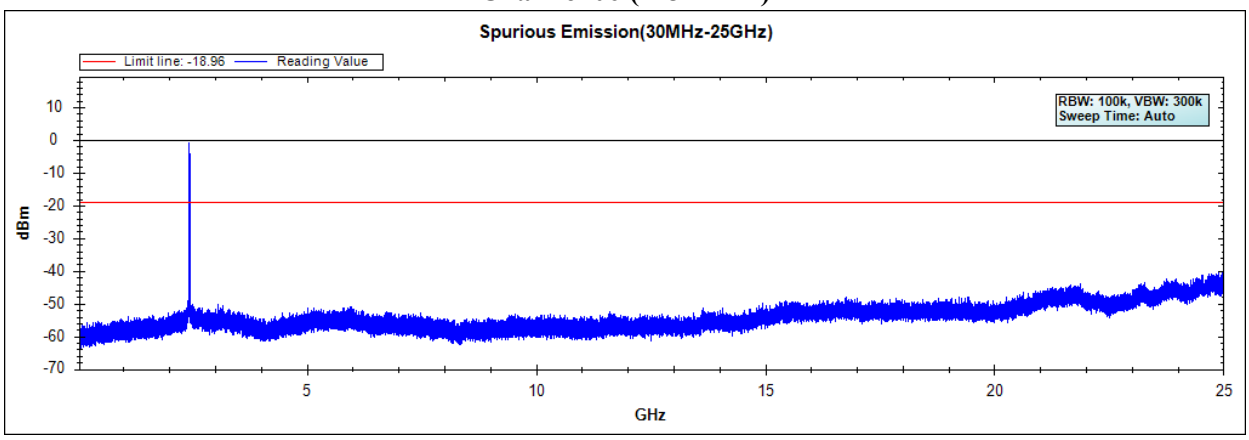
Note: The above test pattern is synthesized by multiple of the frequency range.

Product	:	4K Smart Action Camera
Test Item	:	RF Antenna Conducted Spurious
Test Site	:	No.3 OATS
Test Date	:	2017/08/05
Test Mode	:	Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)

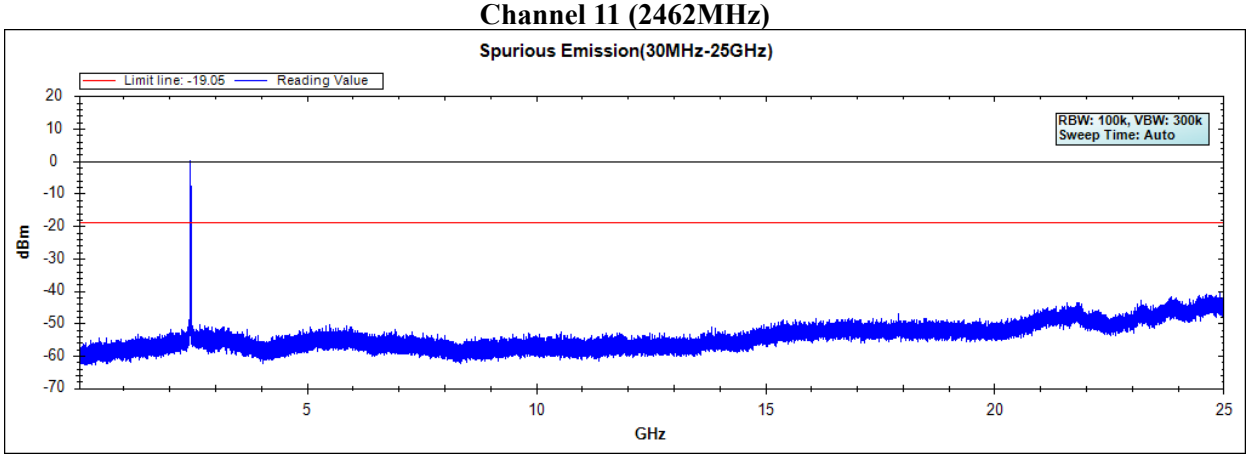
Channel 01 (2412MHz)



Channel 06 (2437MHz)



Channel 11 (2462MHz)

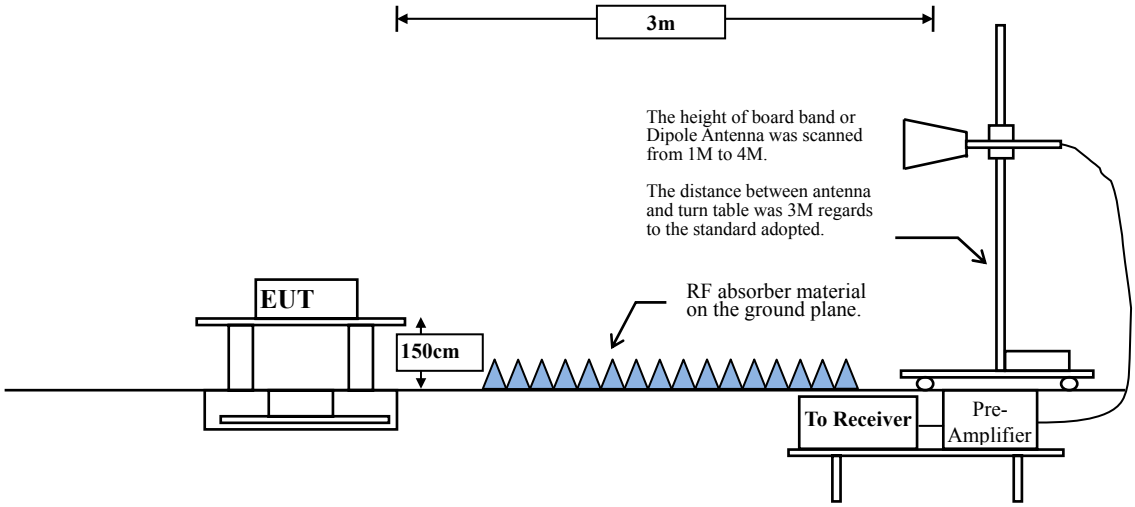


Note: The above test pattern is synthesized by multiple of the frequency range.

7. Band Edge

7.1. Test Setup

RF Radiated Measurement:



7.2. 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.

7.3. 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.

The average measurement tested according to KDB 558074 section 12.2.5.3. Reduced VBW averaging across on- and off-times of the EUT transmissions with max hold.

VBW ≥ 1/T:

Mode	Duty Cycle	T	1/T	VBW Setting
802.11b	0.903	0.93 ms	1075Hz	1 KHz
802.11g	0.605	0.15 ms	6666 Hz	7 KHz
802.11n20	0.609	0.156 ms	6410 Hz	7 KHz

7.4. Uncertainty

± 4.08 dB above 1GHz

± 4.22 dB below 1GHz

7.5. Test Result of Band Edge

Product	:	4K Smart Action Camera
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/09/27
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2381.600	-2.724	45.008	42.284	74.00	54.00	Pass
01 (Peak)	2390.000	-2.687	43.243	40.556	74.00	54.00	Pass
01 (Peak)	2399.900	-2.660	54.178	51.517	--	--	--
01 (Peak)	2400.000	-2.660	54.003	51.343	--	--	--
01 (Peak)	2411.900	-2.644	87.214	84.571	--	--	--
01 (Average)	2390.000	-2.687	31.738	29.051	74.00	54.00	Pass
01 (Average)	2400.000	-2.660	48.880	46.220	--	--	--
01 (Average)	2411.200	-2.643	84.564	81.921	--	--	--

Figure Channel 01: Horizontal (Peak)

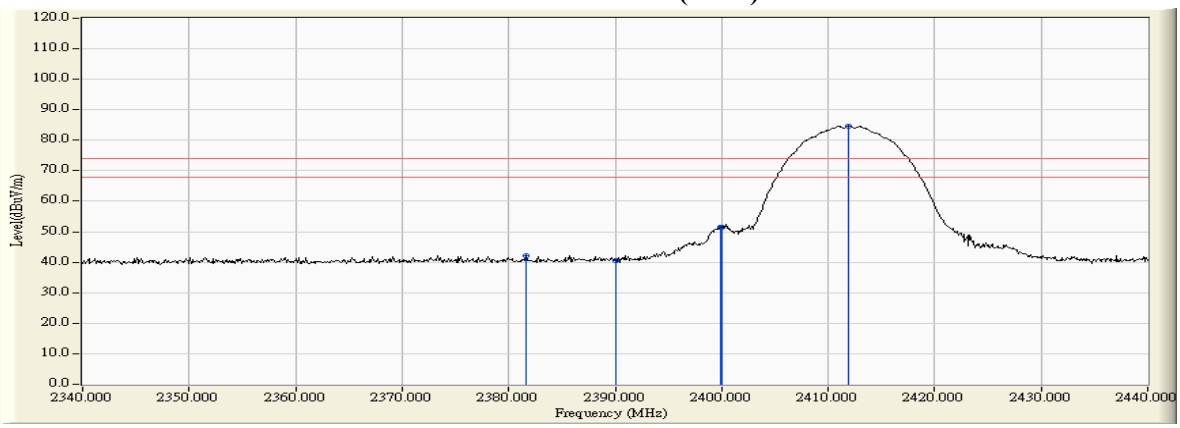
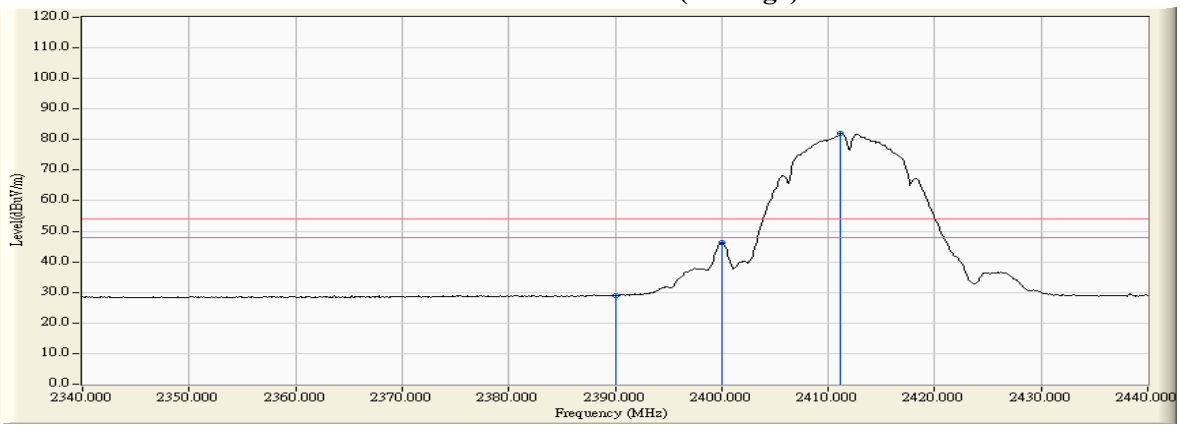


Figure Channel 01: Horizontal (Average)



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 = 1 KHz, 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	:	4K Smart Action Camera
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/09/27
Test Mode	:	Mode 1: Transmit (802.11b 1Mbps) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2390.000	-4.159	45.269	41.110	74.00	54.00	Pass
01 (Peak)	2399.800	-4.171	56.410	52.239	74.00	54.00	Pass
01 (Peak)	2400.000	-4.171	56.269	52.098	--	--	--
01 (Peak)	2411.000	-4.169	83.250	79.081	--	--	--
01 (Average)	2377.600	-4.117	30.573	26.455	74.00	54.00	Pass
01 (Average)	2390.000	-4.159	29.577	25.418	74.00	54.00	Pass
01 (Average)	2400.000	-4.171	54.149	49.978	--	--	--
01 (Average)	2411.300	-4.167	80.811	76.643	--	--	--

Figure Channel 01: VERTICAL (Peak)

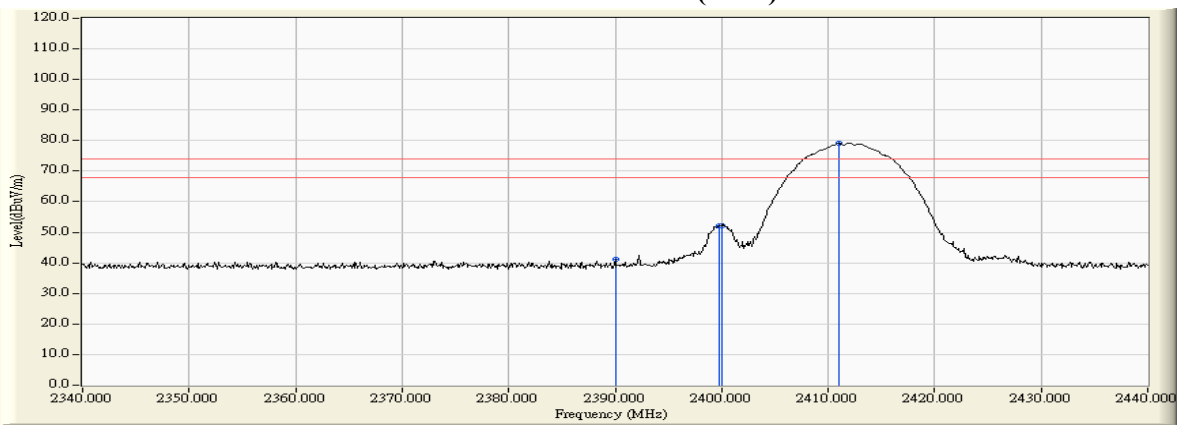
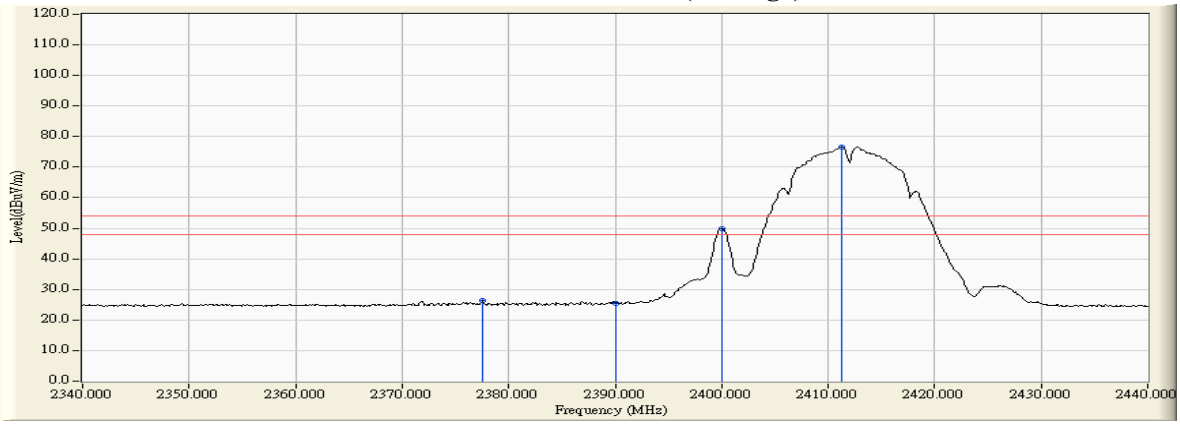


Figure Channel 01: VERTICAL (Average)



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 = 1 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.000	-2.623	82.074	79.451	--	--	--
11 (Peak)	2483.500	-2.601	42.358	39.756	74.00	54.00	Pass
11 (Peak)	2533.500	-2.825	46.169	43.344	74.00	54.00	Pass
11 (Average)	2461.300	-2.624	79.296	76.673	--	--	--
11 (Average)	2483.500	-2.601	31.155	28.553	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

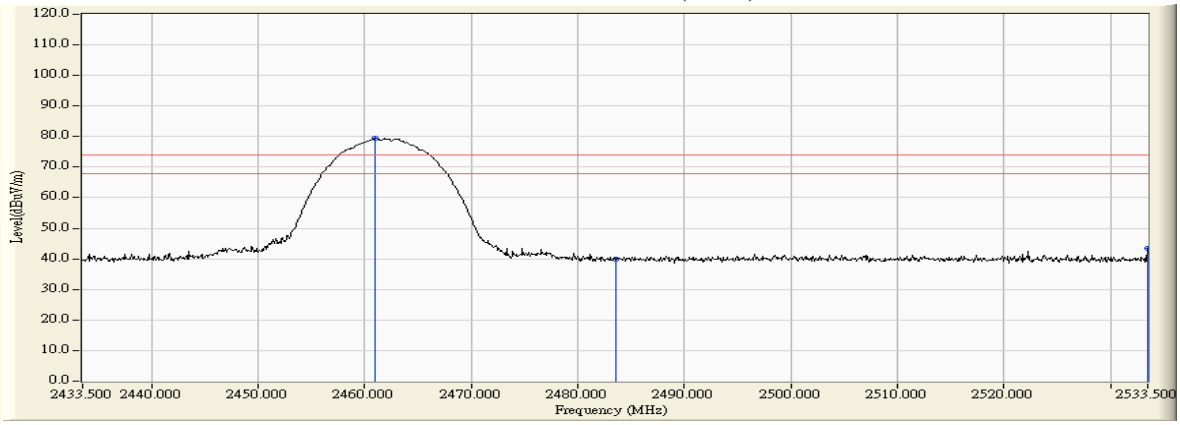
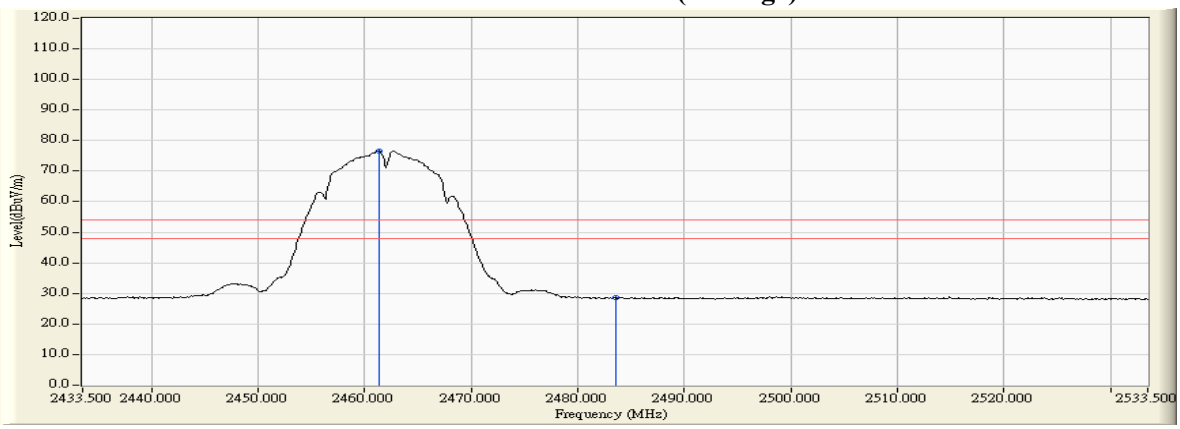


Figure Channel 11: Horizontal (Average)



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 = 1 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 1: Transmit (802.11b 1Mbps) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.000	-4.037	81.375	77.337	--	--	--
11 (Peak)	2483.500	-3.966	42.592	38.625	74.00	54.00	Pass
11 (Peak)	2516.900	-3.829	46.340	42.511	74.00	54.00	Pass
11 (Average)	2461.300	-4.037	78.651	74.614	--	--	--
11 (Average)	2483.500	-3.966	31.402	27.435	74.00	54.00	Pass
11 (Average)	2510.700	-3.859	31.621	27.761	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

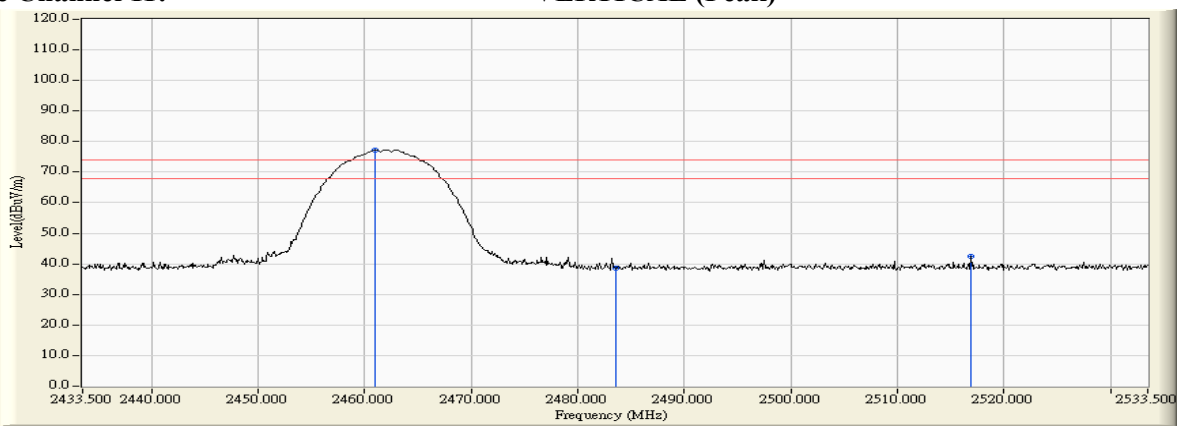
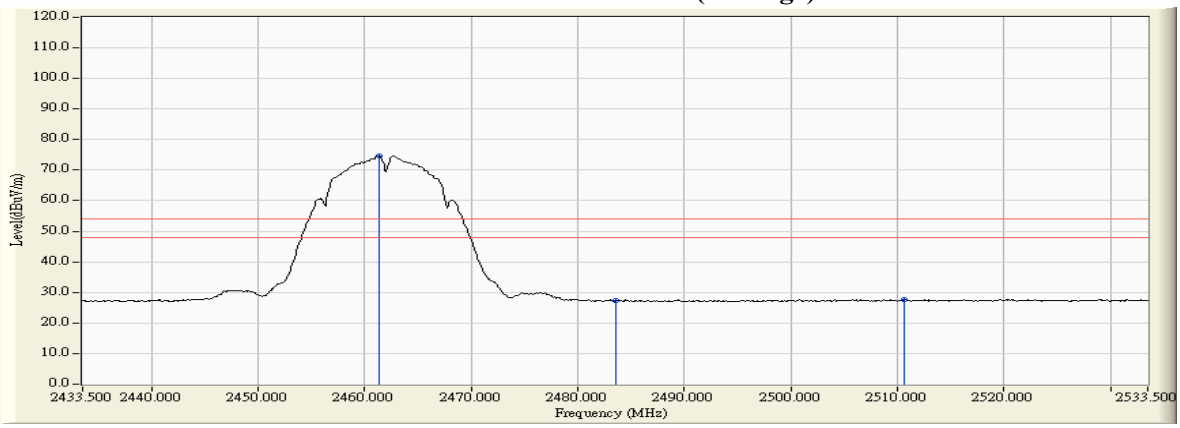


Figure Channel 11: VERTICAL (Average)



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 = 1 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2389.700	-2.688	58.554	55.866	74.00	54.00	Pass
01 (Peak)	2390.000	-2.687	56.276	53.589	74.00	54.00	Pass
01 (Peak)	2398.100	-2.663	67.371	64.708	--	--	--
01 (Peak)	2400.000	-2.660	63.591	60.931	--	--	--
01 (Peak)	2411.100	-2.643	90.702	88.059	--	--	--
01 (Average)	2384.800	-2.710	35.148	32.438	74.00	54.00	Pass
01 (Average)	2390.000	-2.687	34.545	31.858	74.00	54.00	Pass
01 (Average)	2399.900	-2.660	42.975	40.314	--	--	--
01 (Average)	2400.000	-2.660	42.916	40.256	--	--	--
01 (Average)	2412.700	-2.642	81.013	78.370	--	--	--

Figure Channel 01: Horizontal (Peak)

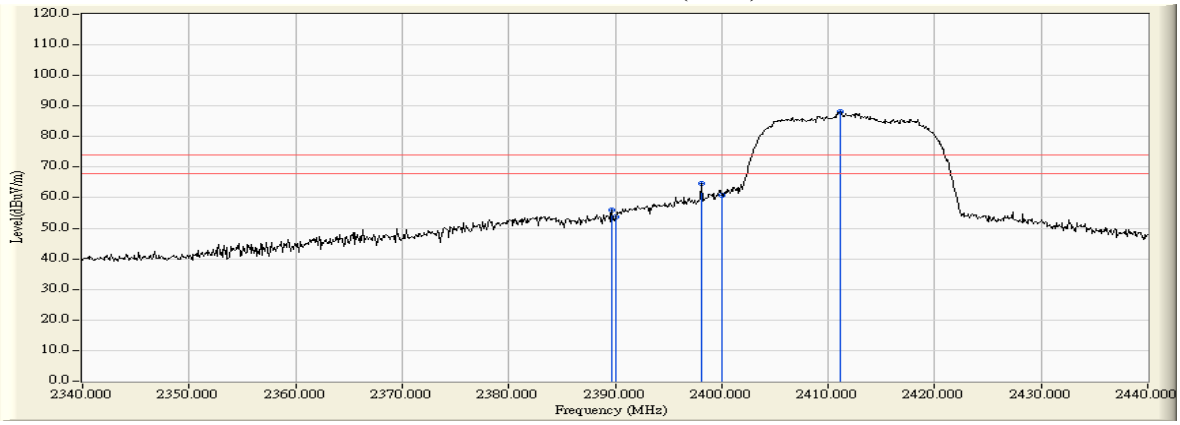
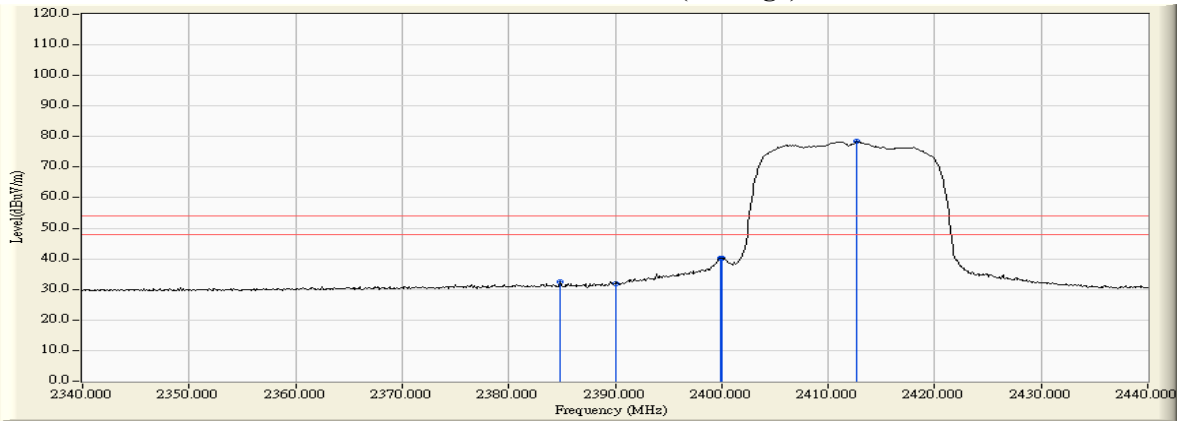


Figure Channel 01: Horizontal (Average)



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 = 7 KHz, 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	:	4K Smart Action Camera
Test Item	:	Band Edge Data
Test Site	:	No.3 OATS
Test Date	:	2017/09/27
Test Mode	:	Mode 2: Transmit (802.11g 6Mbps) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2387.500	-4.150	55.299	51.149	74.00	54.00	Pass
01 (Peak)	2390.000	-4.159	55.011	50.852	74.00	54.00	Pass
01 (Peak)	2400.000	-4.171	64.389	60.218	--	--	--
01 (Peak)	2411.300	-4.167	87.725	83.557	--	--	--
01 (Average)	2376.000	-4.112	34.750	30.638	74.00	54.00	Pass
01 (Average)	2390.000	-4.159	34.218	30.059	74.00	54.00	Pass
01 (Average)	2400.000	-4.171	53.191	49.020	--	--	--
01 (Average)	2411.000	-4.169	78.190	74.021	--	--	--

Figure Channel 01: VERTICAL (Peak)

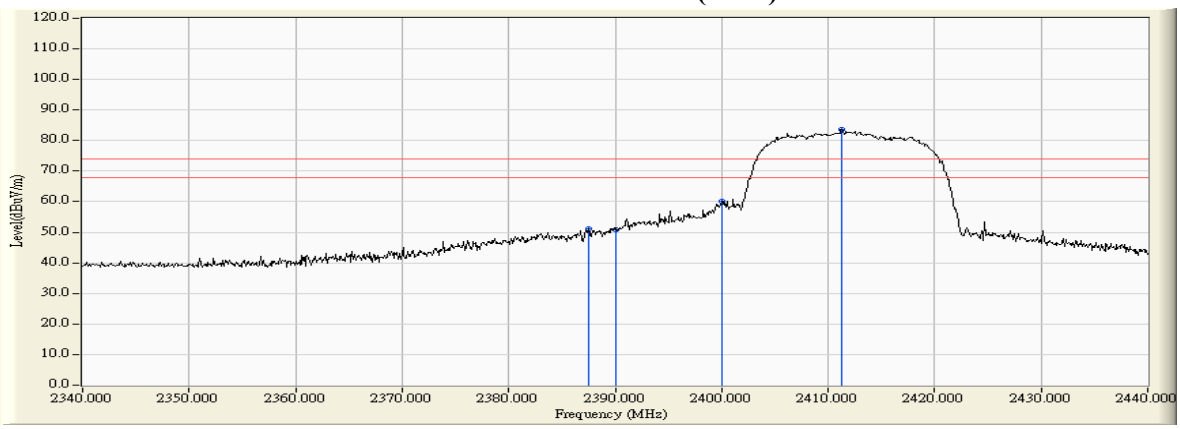
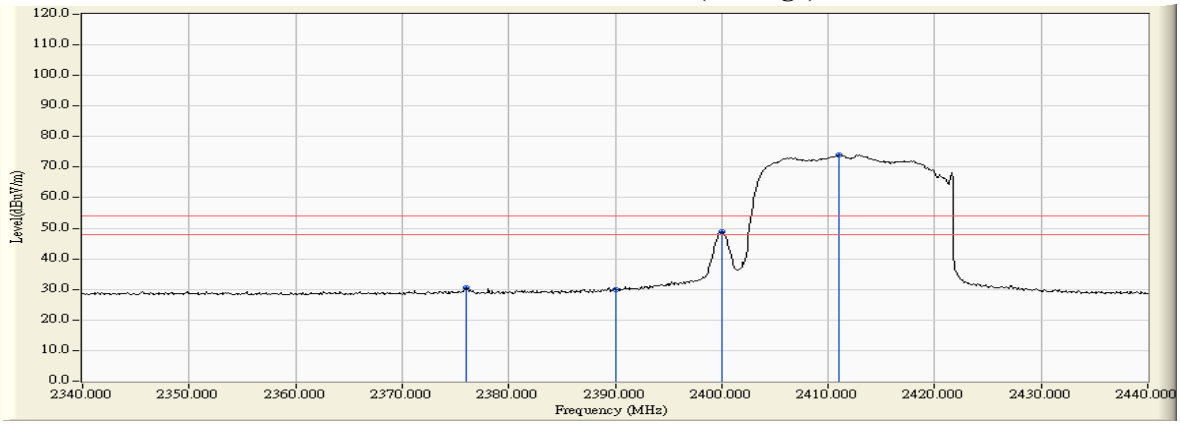


Figure Channel 01: VERTICAL (Average)



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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.200	-2.623	86.197	83.574	--	--	--
11 (Peak)	2483.500	-2.601	45.141	42.539	74.00	54.00	Pass
11 (Peak)	2484.100	-2.602	46.195	43.594	74.00	54.00	Pass
11 (Average)	2461.000	-2.623	76.475	73.852	--	--	--
11 (Average)	2483.500	-2.601	32.626	30.024	74.00	54.00	Pass
11 (Average)	2506.500	-2.645	33.138	30.493	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

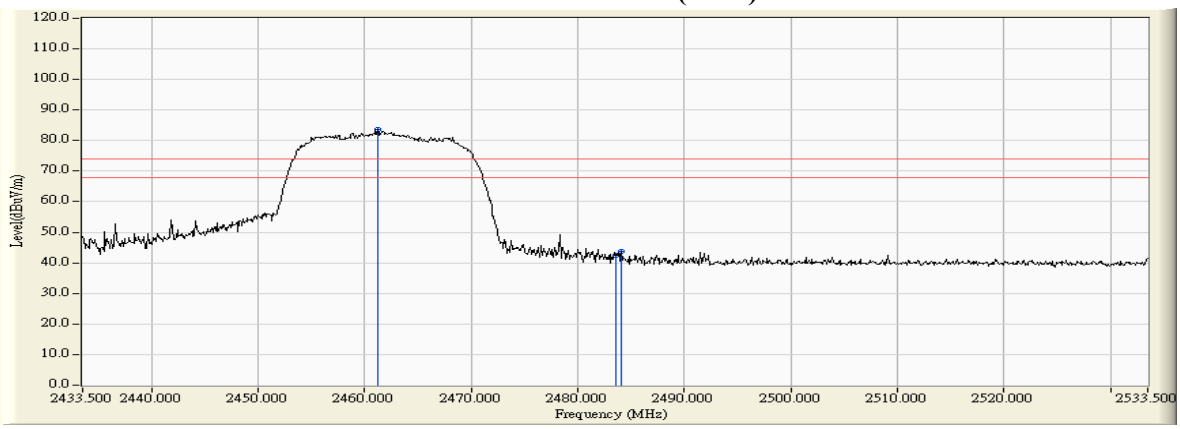
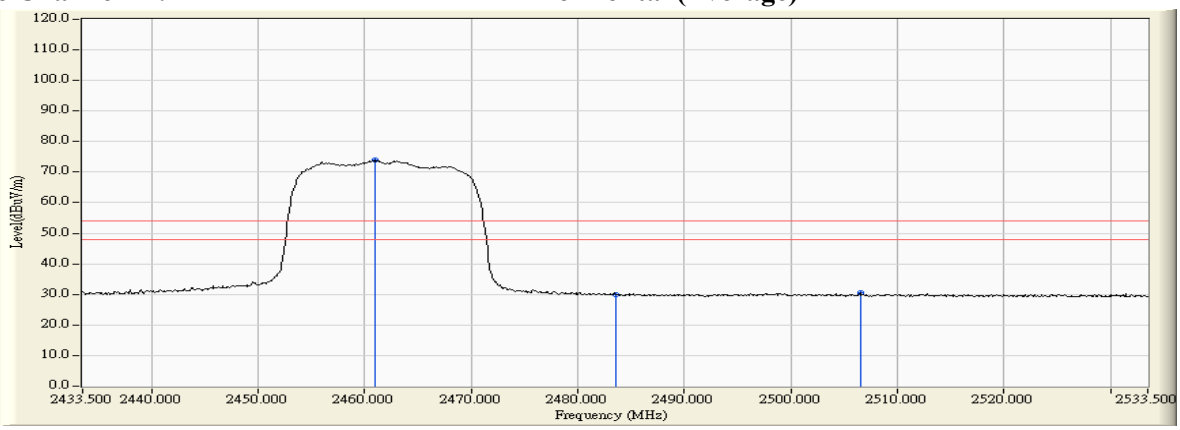


Figure Channel 11: Horizontal (Average)



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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 2: Transmit (802.11g 6Mbps) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.100	-4.037	85.548	81.511	--	--	--
11 (Peak)	2483.500	-3.966	43.961	39.994	74.00	54.00	Pass
11 (Peak)	2489.000	-3.950	47.457	43.508	74.00	54.00	Pass
11 (Average)	2462.700	-4.032	76.248	72.216	--	--	--
11 (Average)	2483.500	-3.966	32.520	28.553	74.00	54.00	Pass
11 (Average)	2531.800	-3.755	33.163	29.408	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

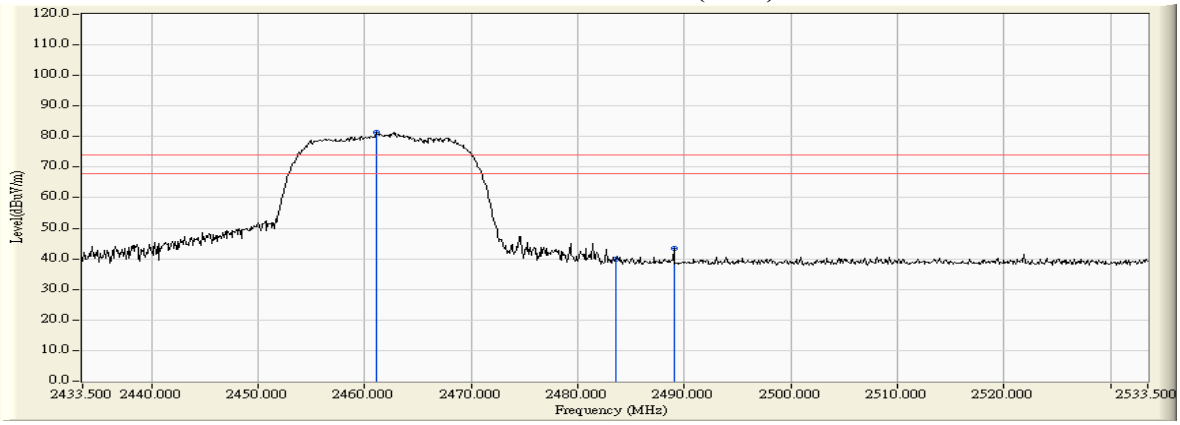
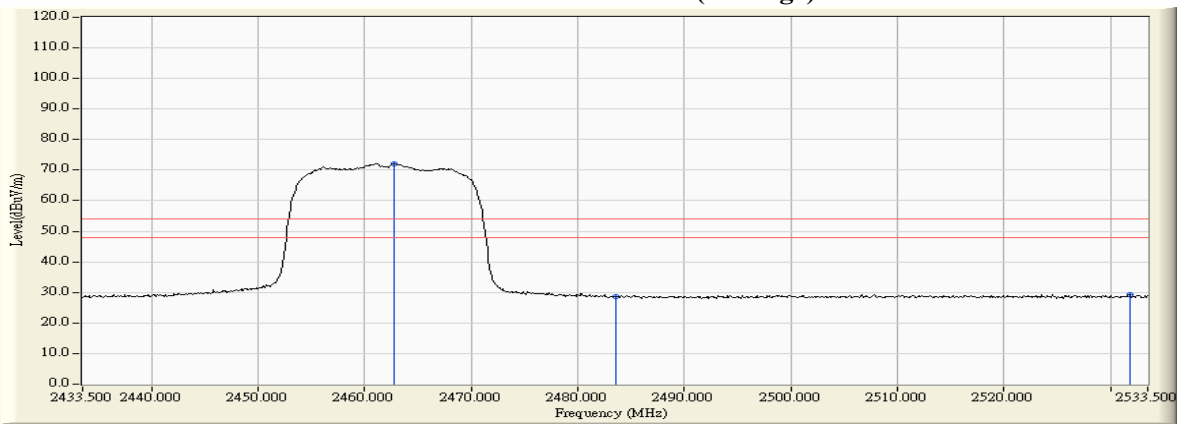


Figure Channel 11: VERTICAL (Average)



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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2412MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2386.200	-2.704	54.342	51.638	74.00	54.00	Pass
01 (Peak)	2390.000	-2.687	53.563	50.876	74.00	54.00	Pass
01 (Peak)	2396.100	-2.666	62.889	60.223	--	--	--
01 (Peak)	2400.000	-2.660	60.425	57.765	--	--	--
01 (Peak)	2409.400	-2.646	90.095	87.449	--	--	--
01 (Average)	2389.400	-2.689	34.185	31.496	74.00	54.00	Pass
01 (Average)	2390.000	-2.687	33.807	31.120	74.00	54.00	Pass
01 (Average)	2400.000	-2.660	42.539	39.879	--	--	--
01 (Average)	2410.900	-2.644	79.917	77.273	--	--	--

Figure Channel 01: Horizontal (Peak)

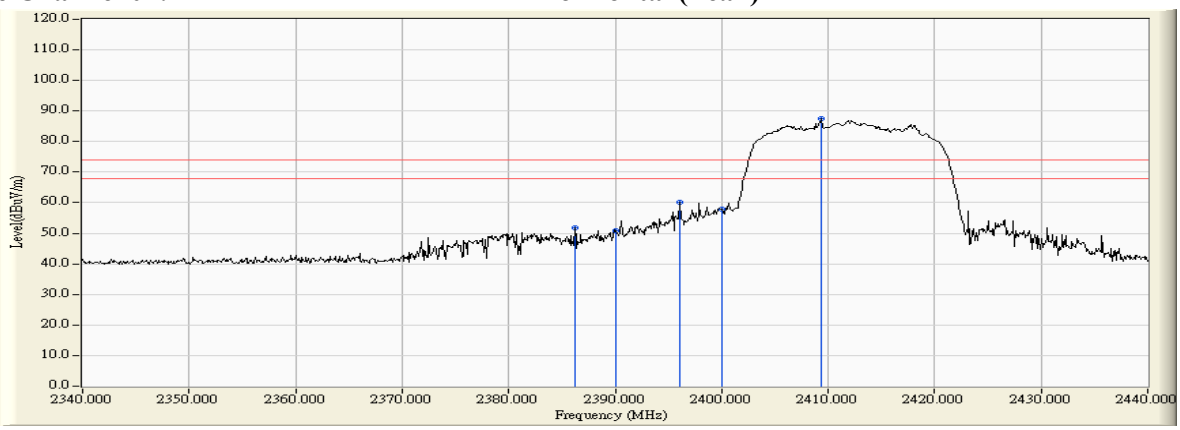
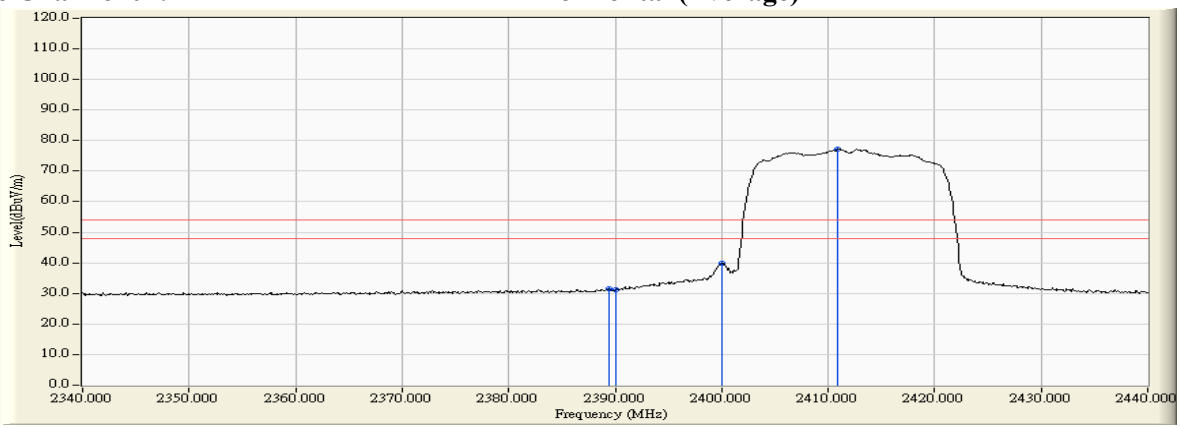


Figure Channel 01: Horizontal (Average)



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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2412MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
01 (Peak)	2386.600	-4.147	53.368	49.221	74.00	54.00	Pass
01 (Peak)	2390.000	-4.159	52.452	48.293	74.00	54.00	Pass
01 (Peak)	2400.000	-4.171	63.136	58.965	--	--	--
01 (Peak)	2411.900	-4.167	87.493	83.327	--	--	--
01 (Average)	2379.400	-4.124	37.557	33.433	74.00	54.00	Pass
01 (Average)	2390.000	-4.159	34.707	30.548	74.00	54.00	Pass
01 (Average)	2400.000	-4.171	56.250	52.079	--	--	--
01 (Average)	2410.900	-4.169	77.942	73.773	--	--	--

Figure Channel 01: VERTICAL (Peak)

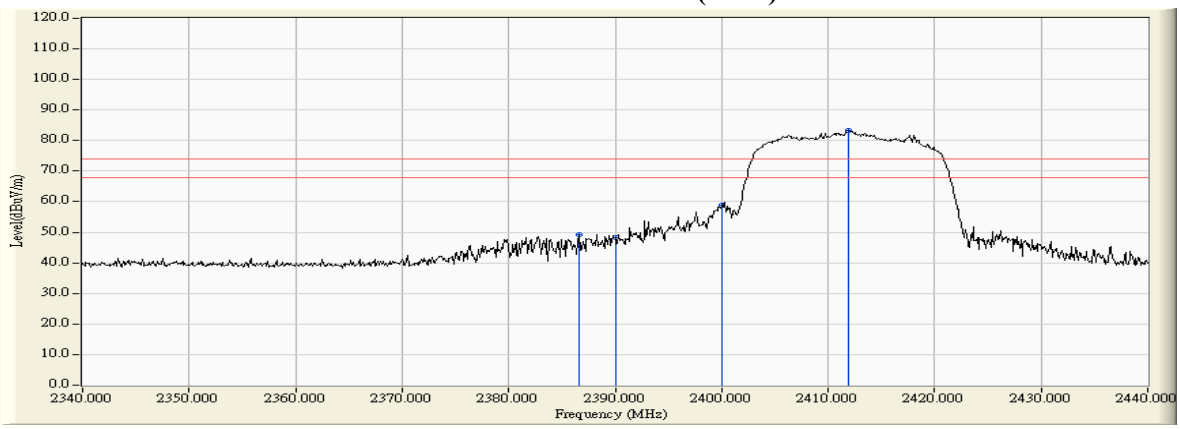
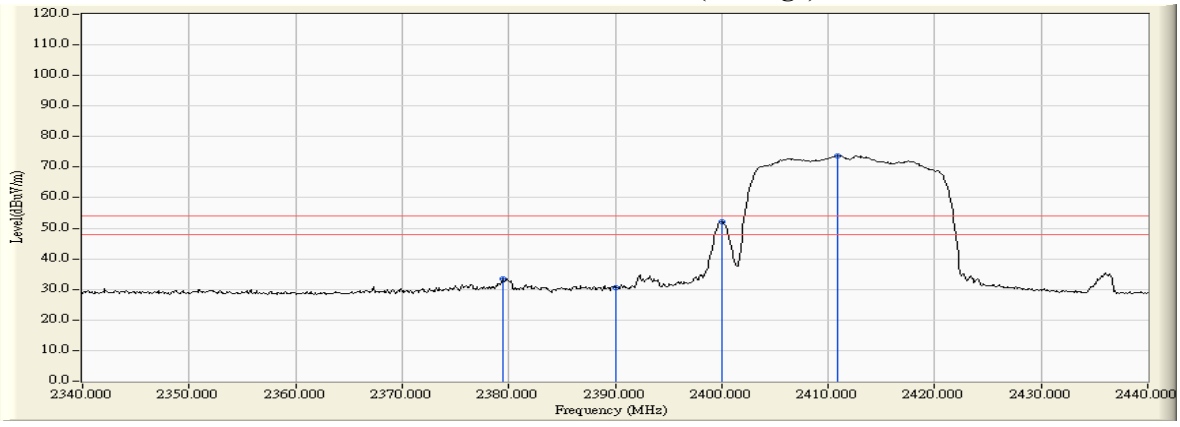


Figure Channel 01: VERTICAL (Average)



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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2462MHz)

RF Radiated Measurement (Horizontal):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2462.200	-2.623	84.794	82.172	--	--	--
11 (Peak)	2483.500	-2.601	43.740	41.138	74.00	54.00	Pass
11 (Peak)	2512.400	-2.675	44.741	42.065	74.00	54.00	Pass
11 (Average)	2461.300	-2.624	75.065	72.442	--	--	--
11 (Average)	2483.500	-2.601	32.278	29.676	74.00	54.00	Pass
11 (Average)	2488.600	-2.597	33.049	30.452	74.00	54.00	Pass

Figure Channel 11: Horizontal (Peak)

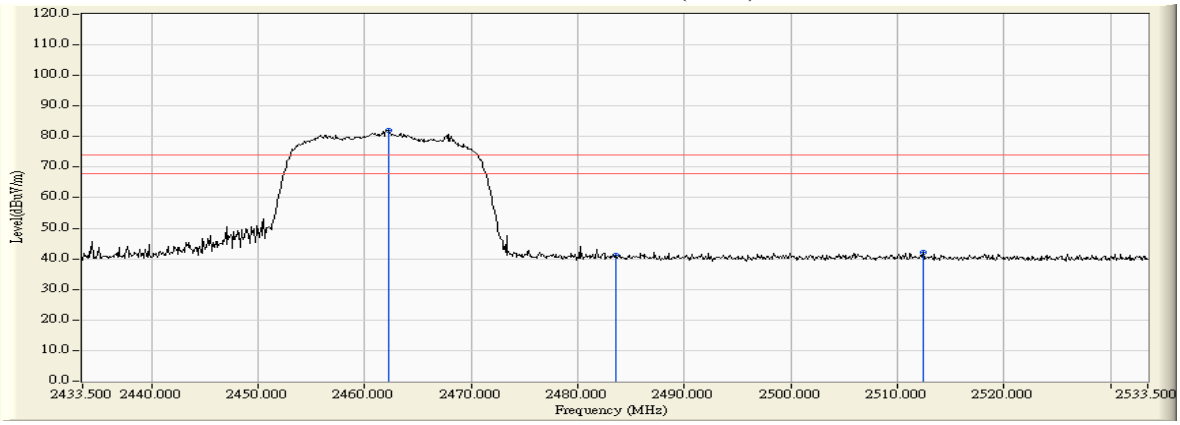
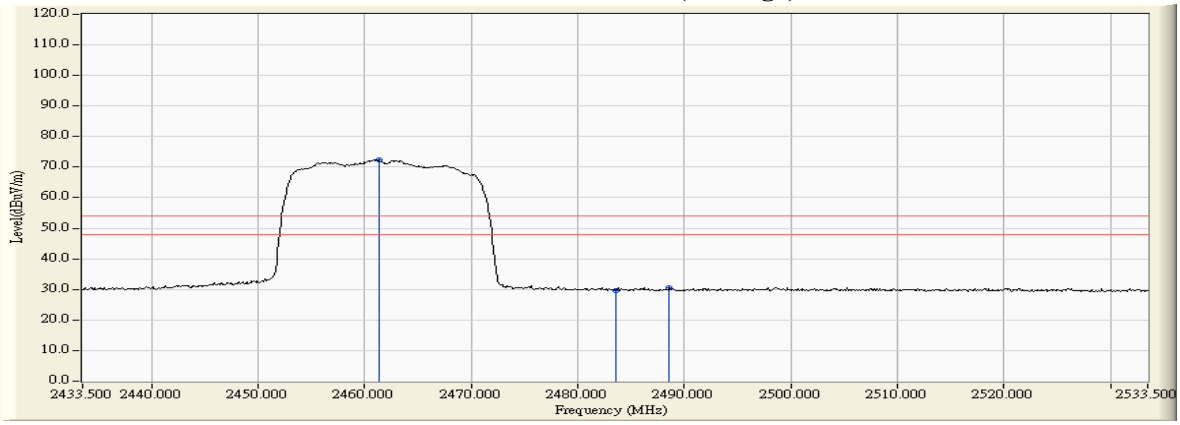


Figure Channel 11: Horizontal (Average)



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 = 7 KHz, 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 : 4K Smart Action Camera
Test Item : Band Edge Data
Test Site : No.3 OATS
Test Date : 2017/09/27
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW) (2462MHz)

RF Radiated Measurement (VERTICAL):

Channel No.	Frequency (MHz)	Correct Factor (dB)	Reading Level (dBμV)	Emission Level (dBμV/m)	Peak Limit (dBμV/m)	Average Limit (dBμV/m)	Result
11 (Peak)	2461.900	-4.035	84.441	80.406	--	--	--
11 (Peak)	2483.500	-3.966	43.096	39.129	74.00	54.00	Pass
11 (Peak)	2489.900	-3.947	45.636	41.689	74.00	54.00	Pass
11 (Average)	2461.200	-4.036	74.899	70.862	--	--	--
11 (Average)	2483.500	-3.966	32.999	29.032	74.00	54.00	Pass
11 (Average)	2531.100	-3.758	33.579	29.821	74.00	54.00	Pass

Figure Channel 11: VERTICAL (Peak)

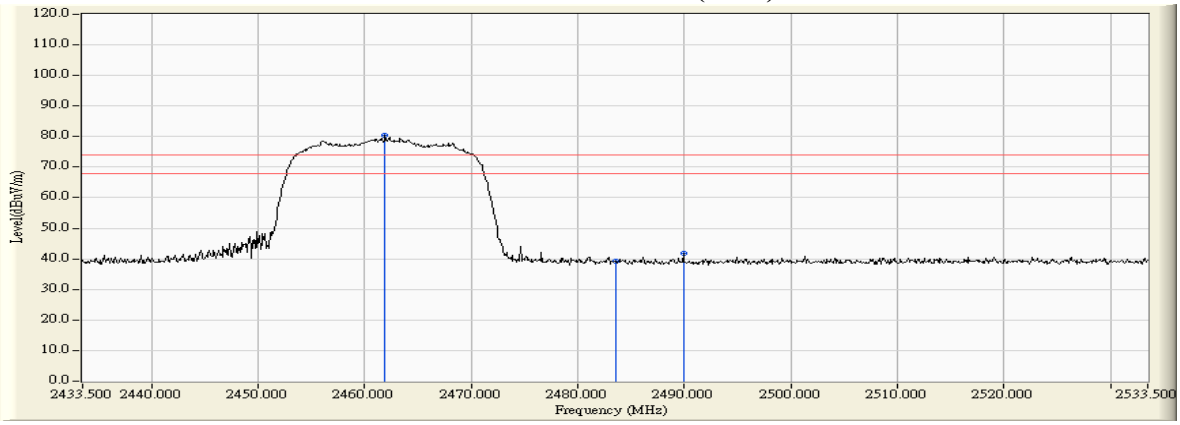
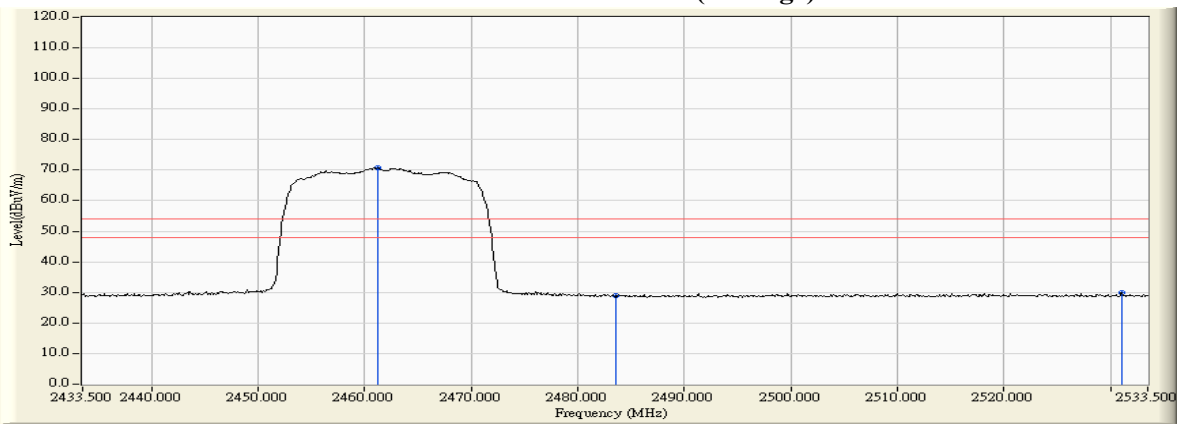


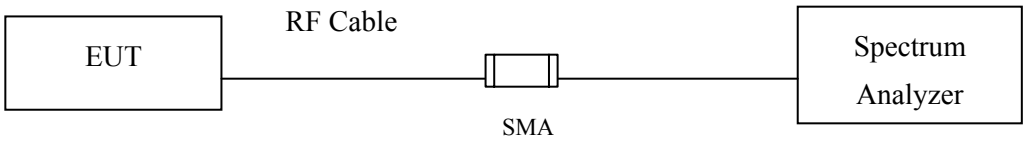
Figure Channel 11: VERTICAL (Average)



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 = 7 KHz, 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.

8. 6dB Bandwidth

8.1. Test Setup



8.2. Limits

The minimum bandwidth shall be at least 500 kHz.

8.3. 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.

8.4. Uncertainty

± 283Hz

8.5. Test Result of 6dB Bandwidth

Product : 4K Smart Action Camera
Test Item : 6dB 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	8150	>500	Pass
06	2437	8200	>500	Pass
11	2462	8200	>500	Pass

Figure Channel 01:

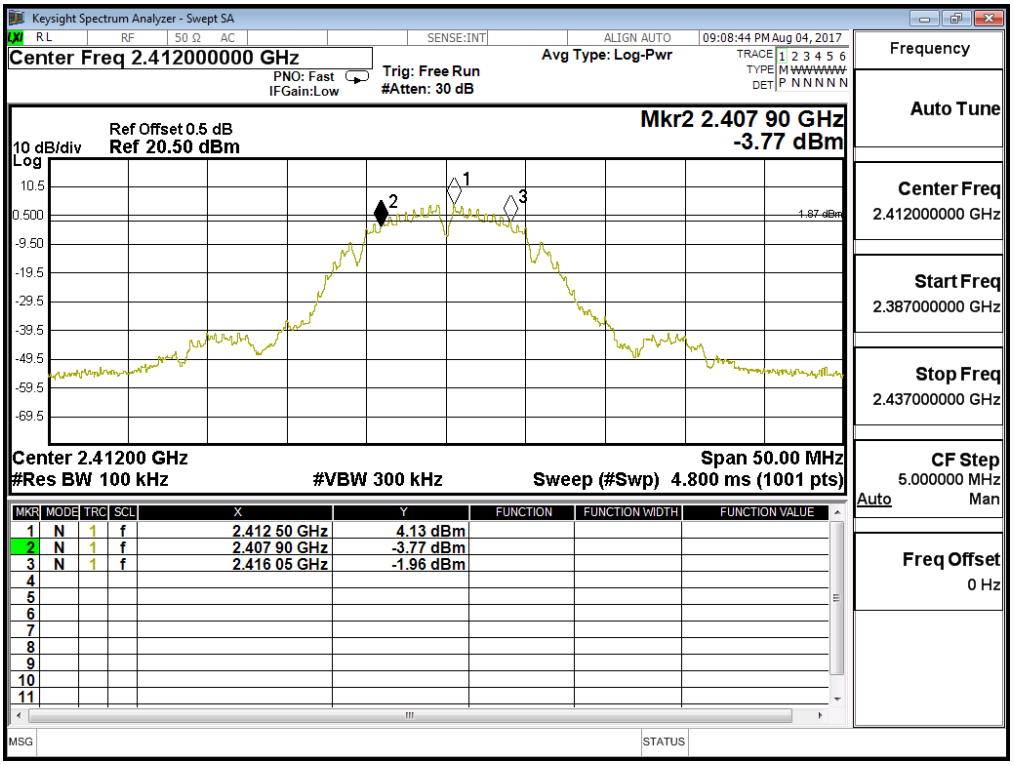


Figure Channel 06:

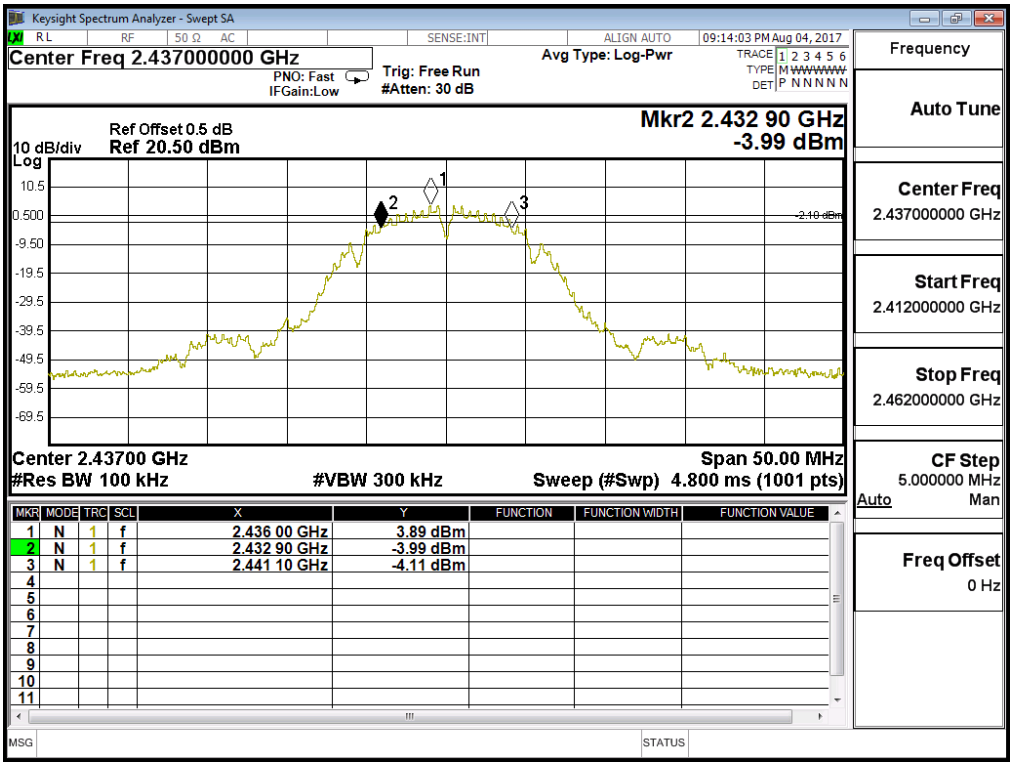
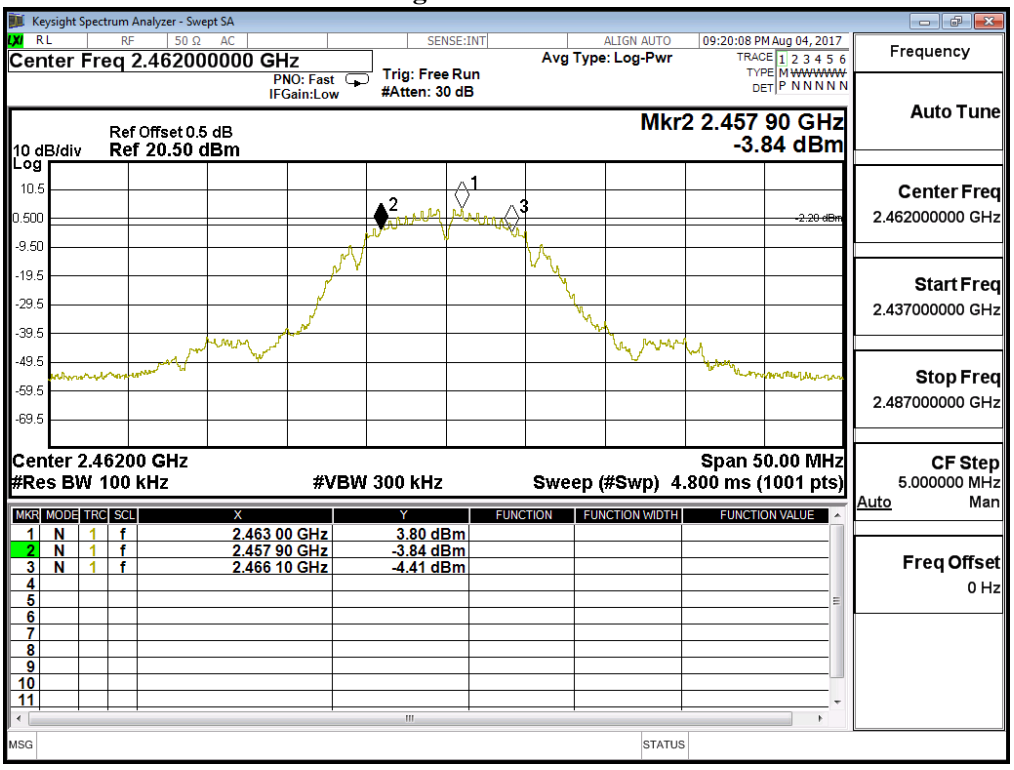


Figure Channel 11:



Product : 4K Smart Action Camera
Test Item : 6dB 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	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01:

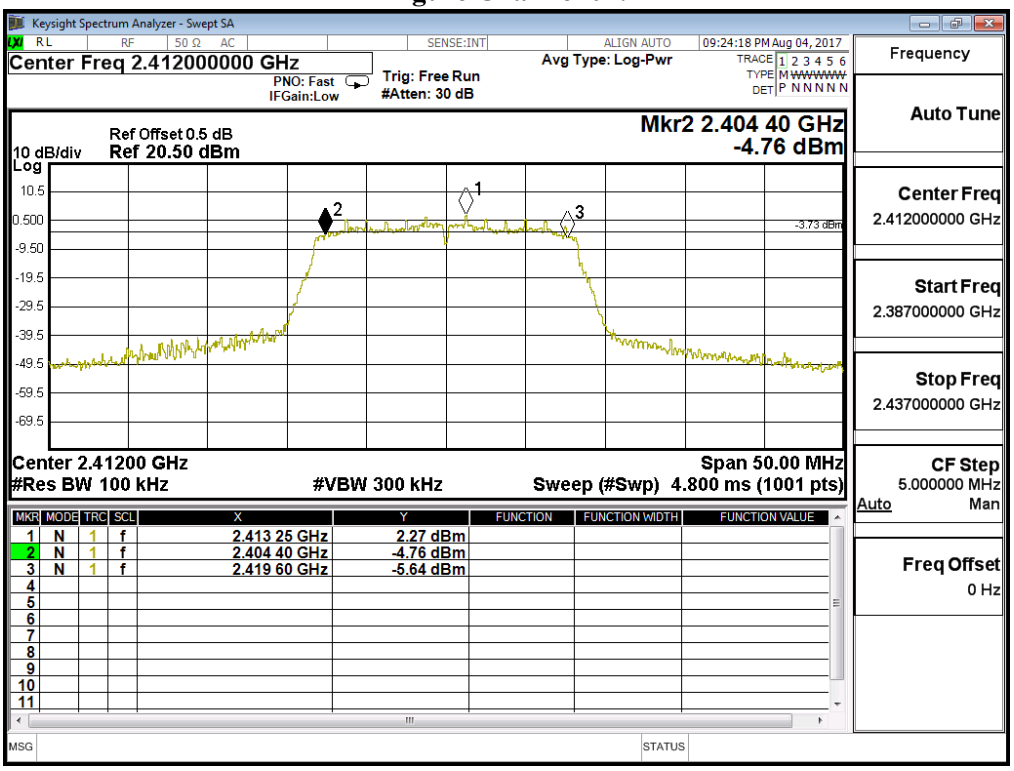


Figure Channel 06:

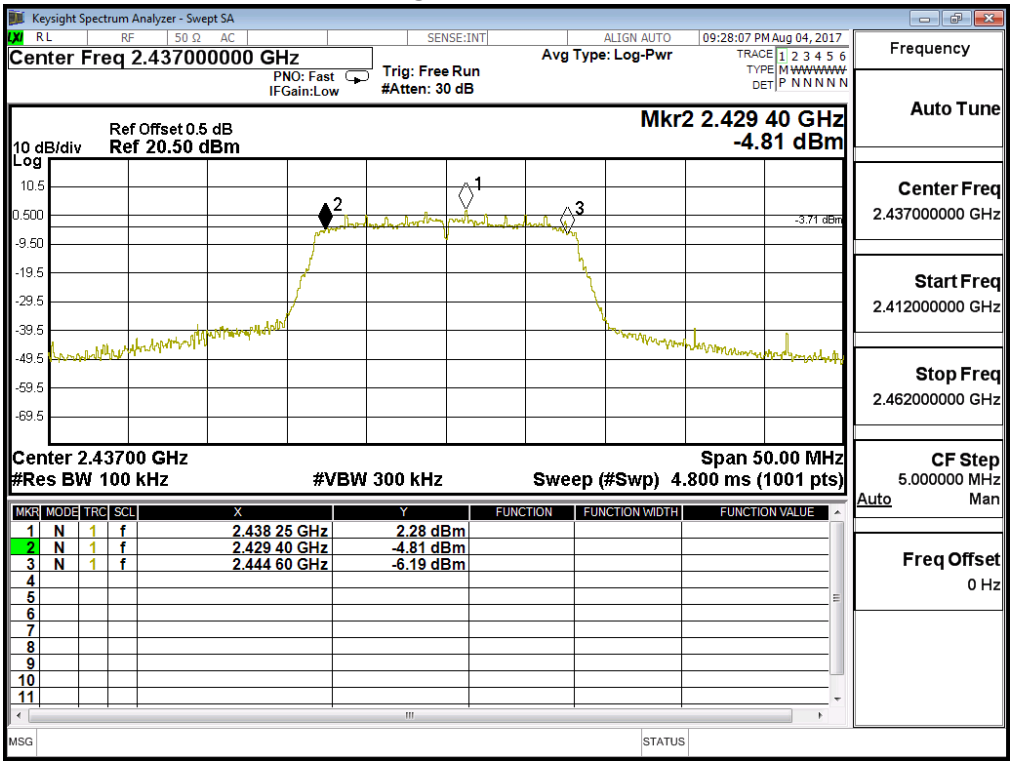
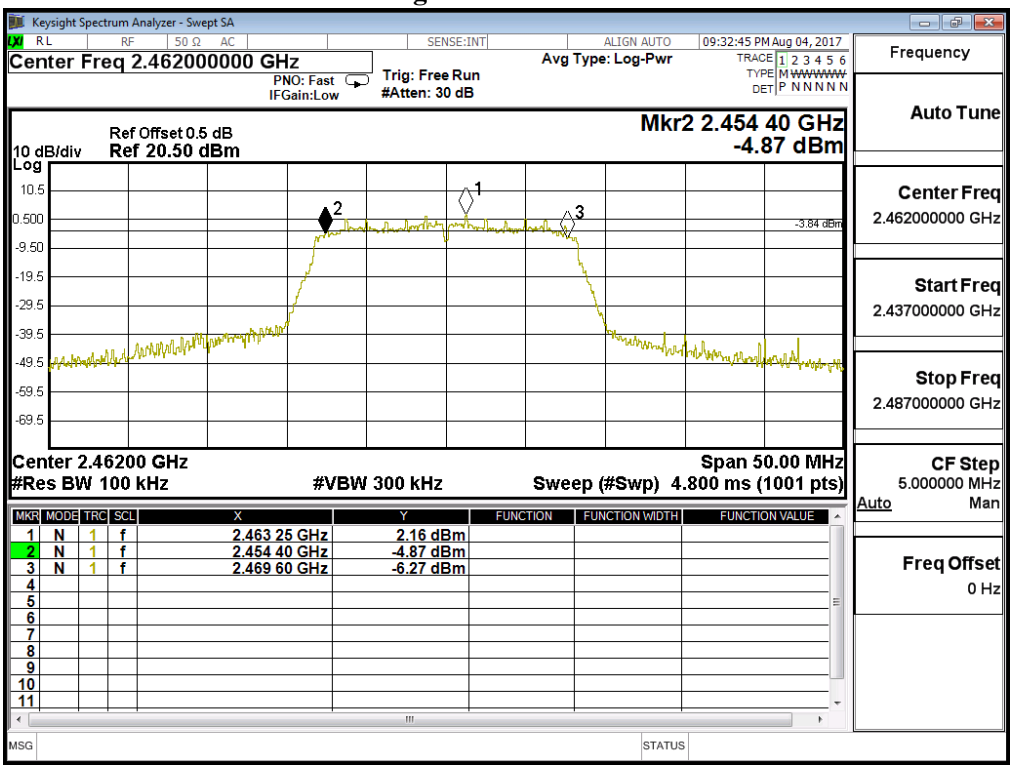


Figure Channel 11:



Product : 4K Smart Action Camera
Test Item : 6dB Bandwidth Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measurement Level (kHz)	Required Limit (kHz)	Result
01	2412	15200	>500	Pass
06	2437	15200	>500	Pass
11	2462	15200	>500	Pass

Figure Channel 01:

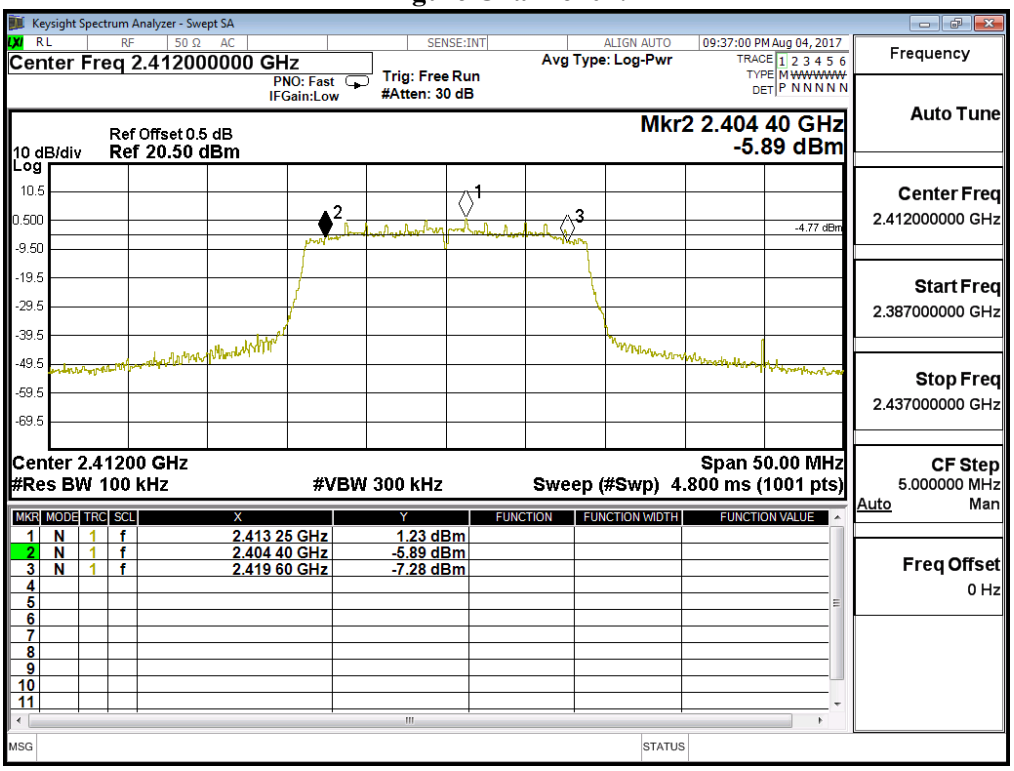


Figure Channel 06:

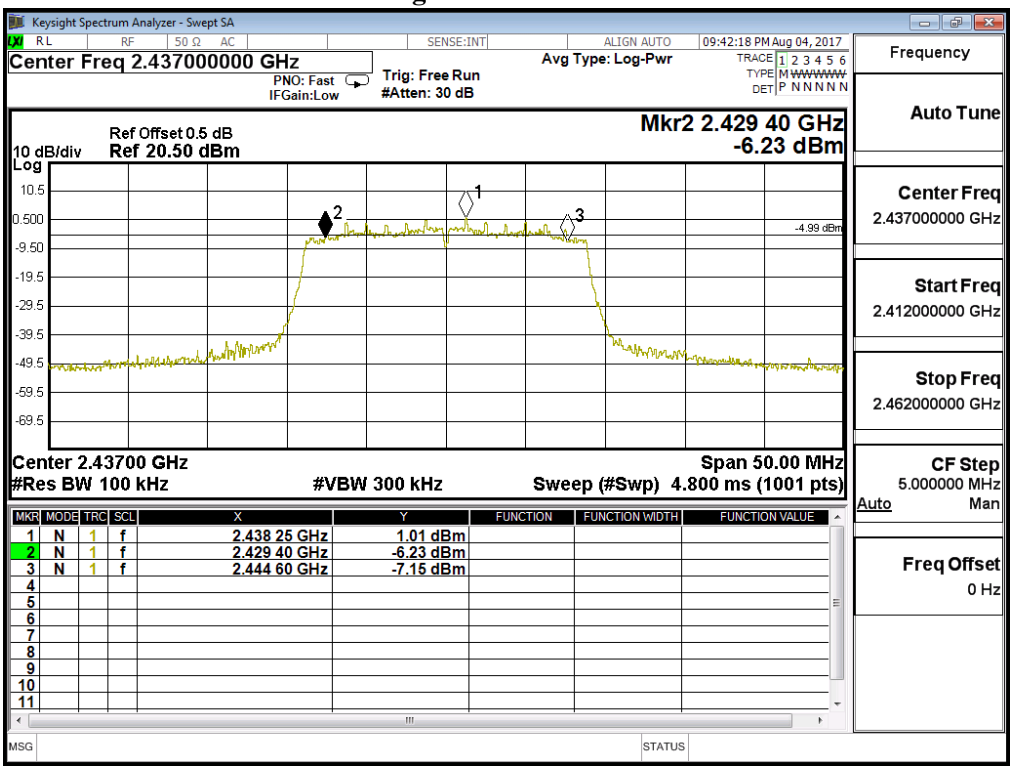
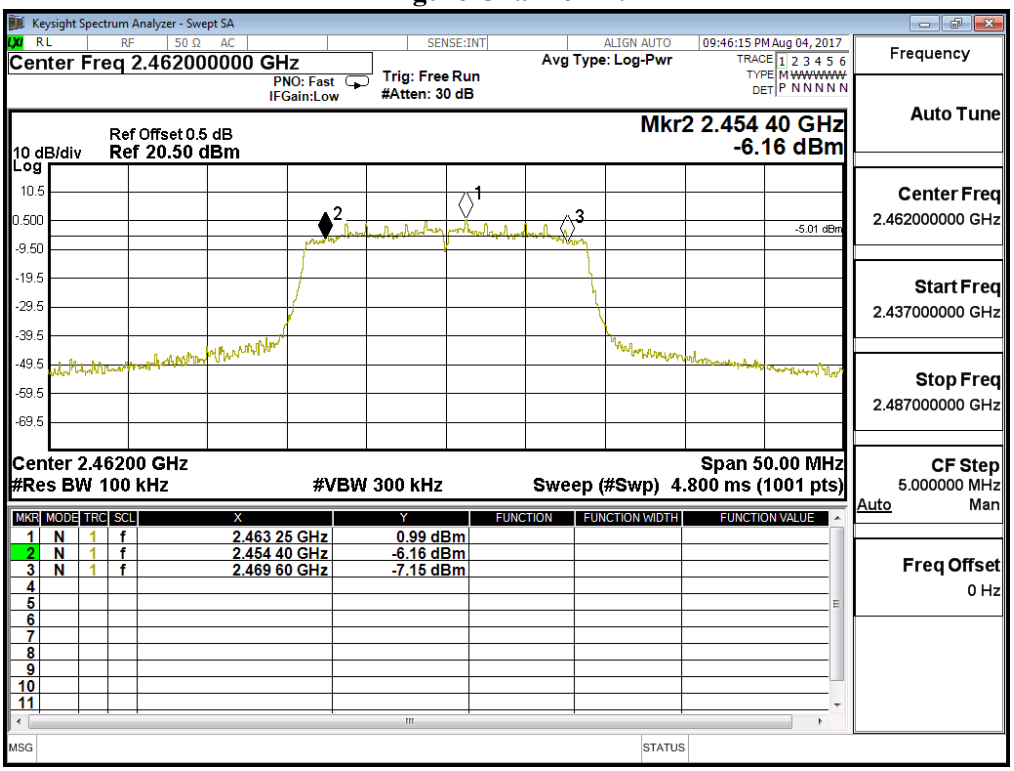
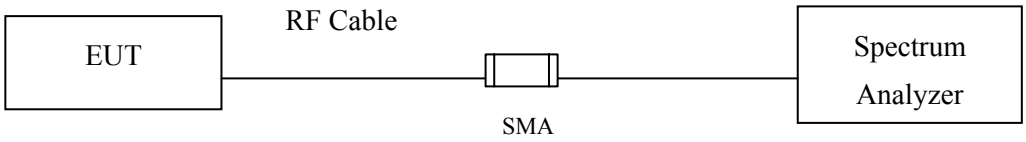


Figure Channel 11:



9. Power Density

9.1. Test Setup



9.2. Limits

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

9.3. 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.

9.4. Uncertainty

± 1.20 dB

9.5. Test Result of Power Density

Product : 4K Smart Action Camera
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	3.990	≦8dBm	Pass
06	2437	3.870	≦8dBm	Pass
11	2462	3.780	≦8dBm	Pass

Figure Channel 01:

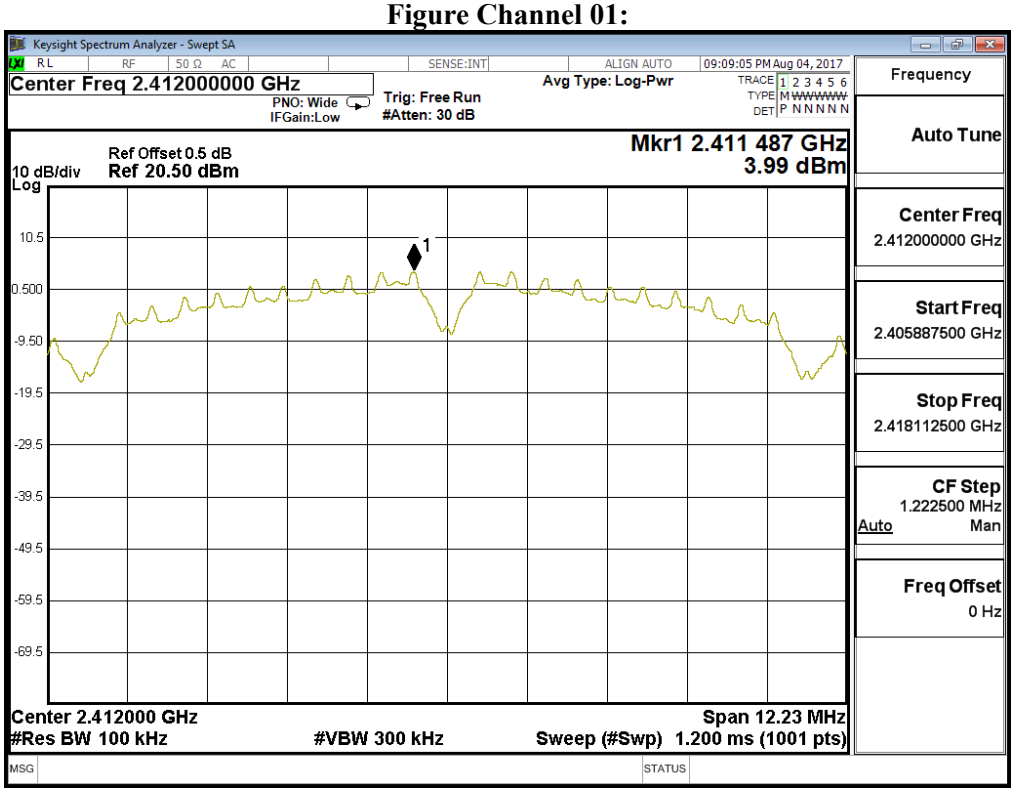


Figure Channel 06:

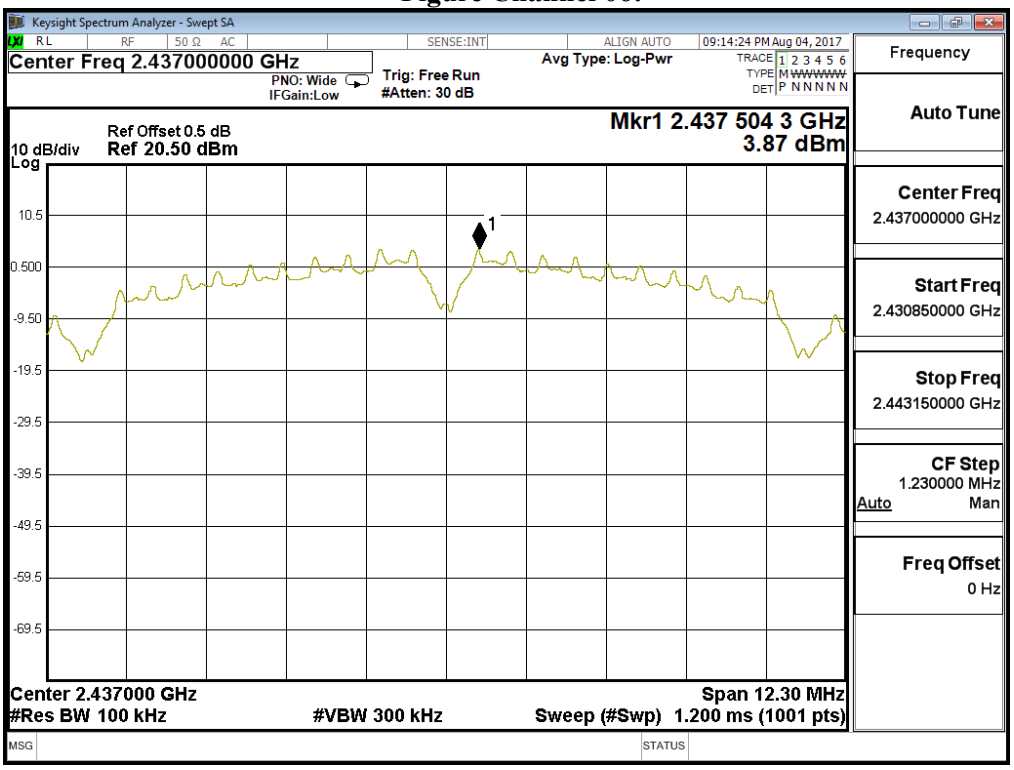
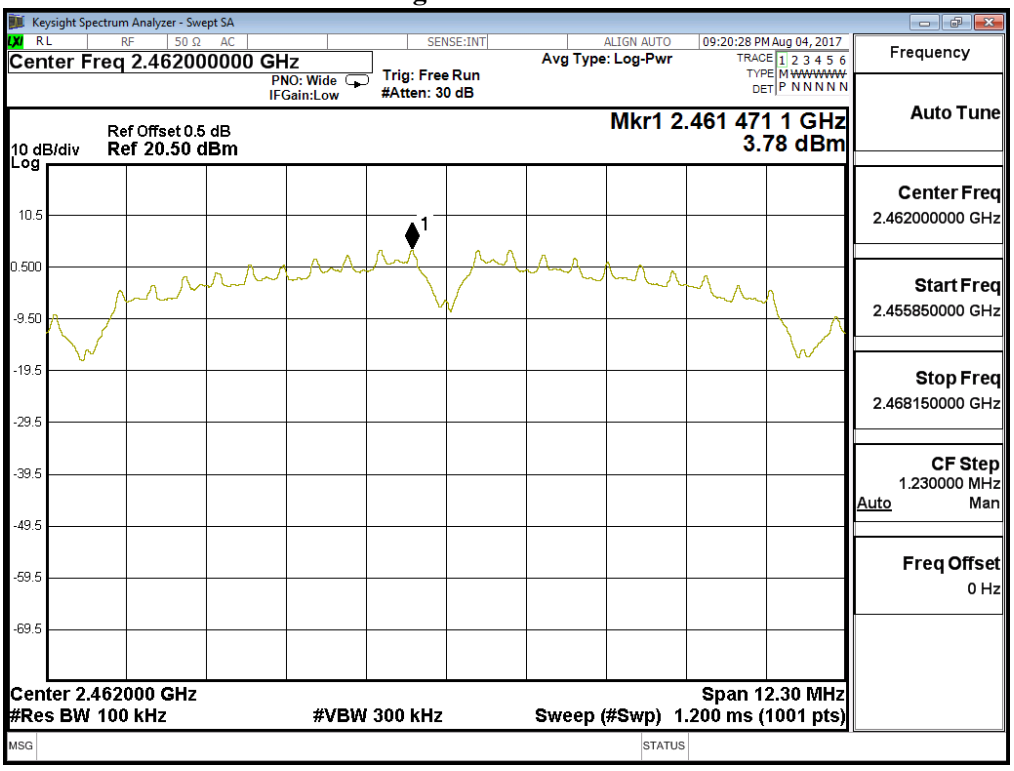


Figure Channel 11:



Product : 4K Smart Action Camera
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	2.360	≦8dBm	Pass
06	2437	2.190	≦8dBm	Pass
11	2462	2.130	≦8dBm	Pass

Figure Channel 01:

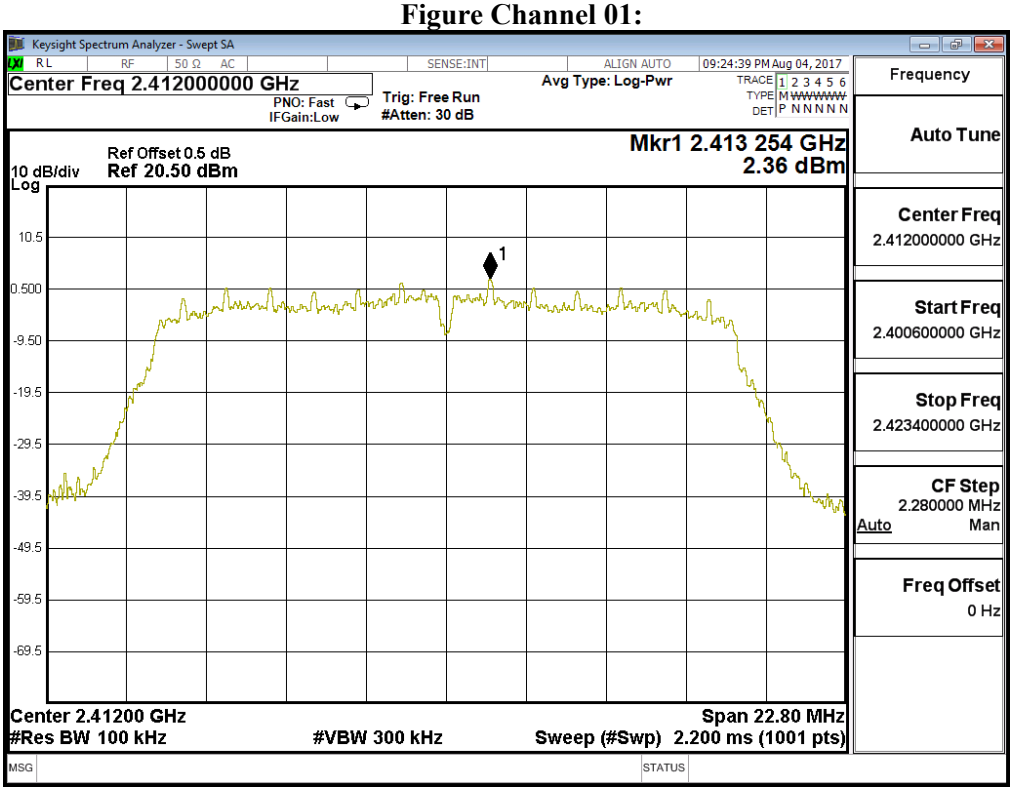


Figure Channel 06:

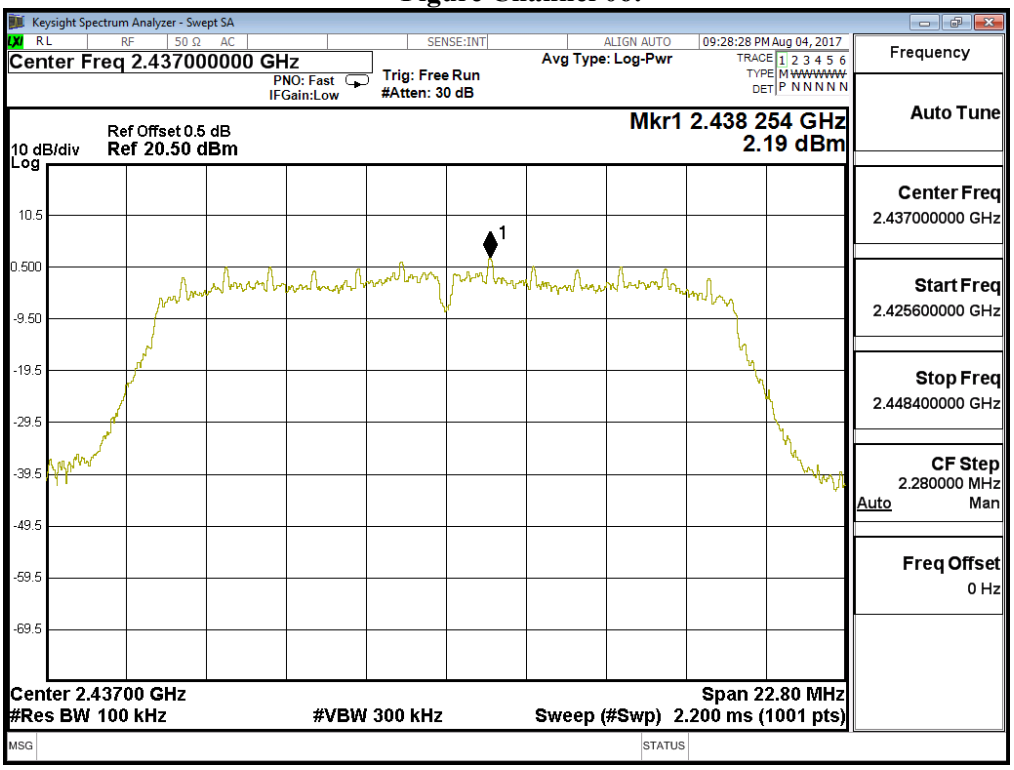
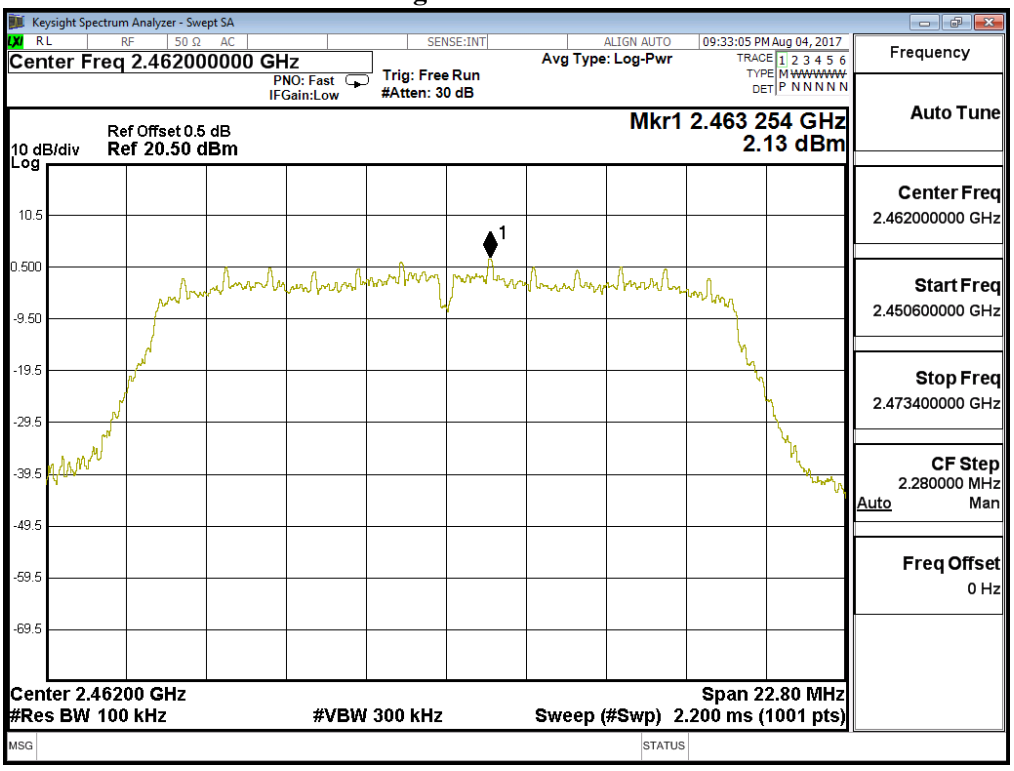


Figure Channel 11:



Product : 4K Smart Action Camera
Test Item : Power Density Data
Test Site : No.3 OATS
Test Mode : Mode 3: Transmit (802.11n MCS0 6.5Mbps 20M-BW)

Channel No.	Frequency (MHz)	Measure Level (dBm)	Limit (dBm)	Result
01	2412	1.160	≦8dBm	Pass
06	2437	1.040	≦8dBm	Pass
11	2462	0.950	≦8dBm	Pass

Figure Channel 01:

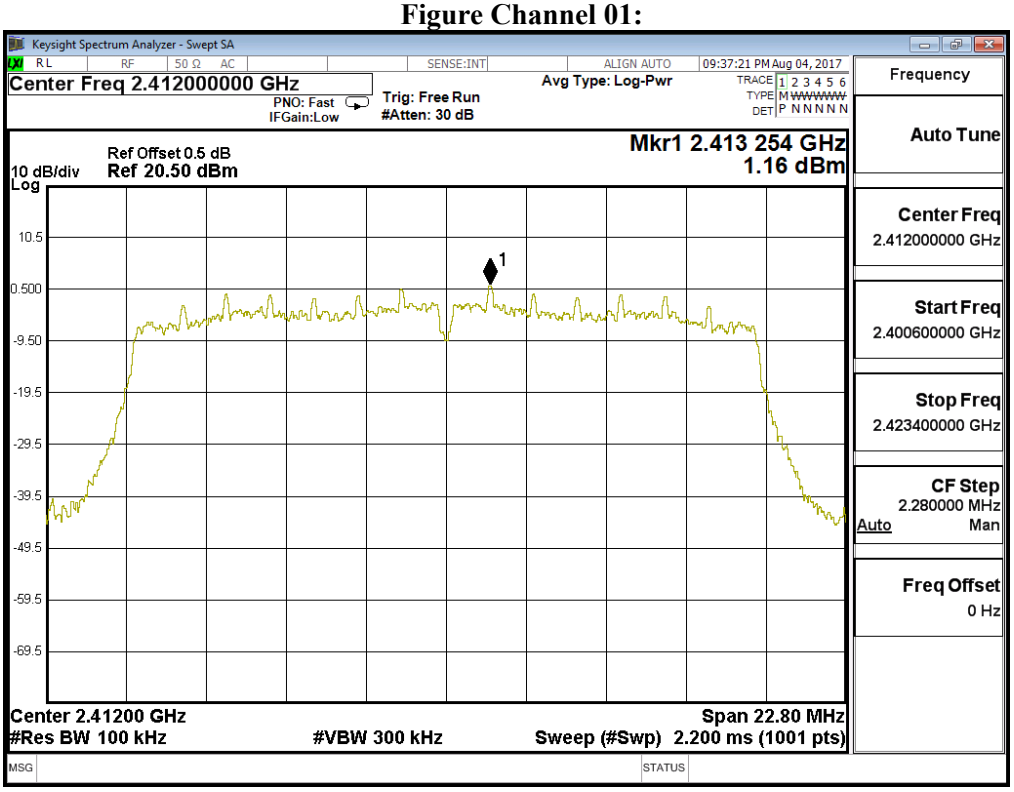


Figure Channel 06:

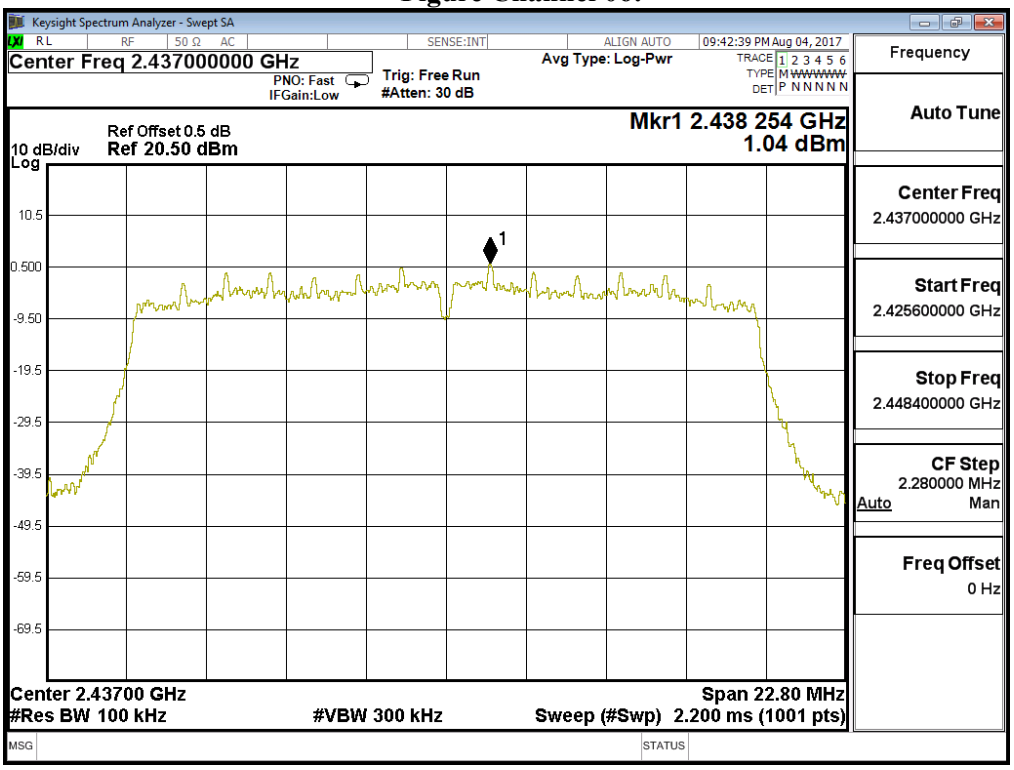
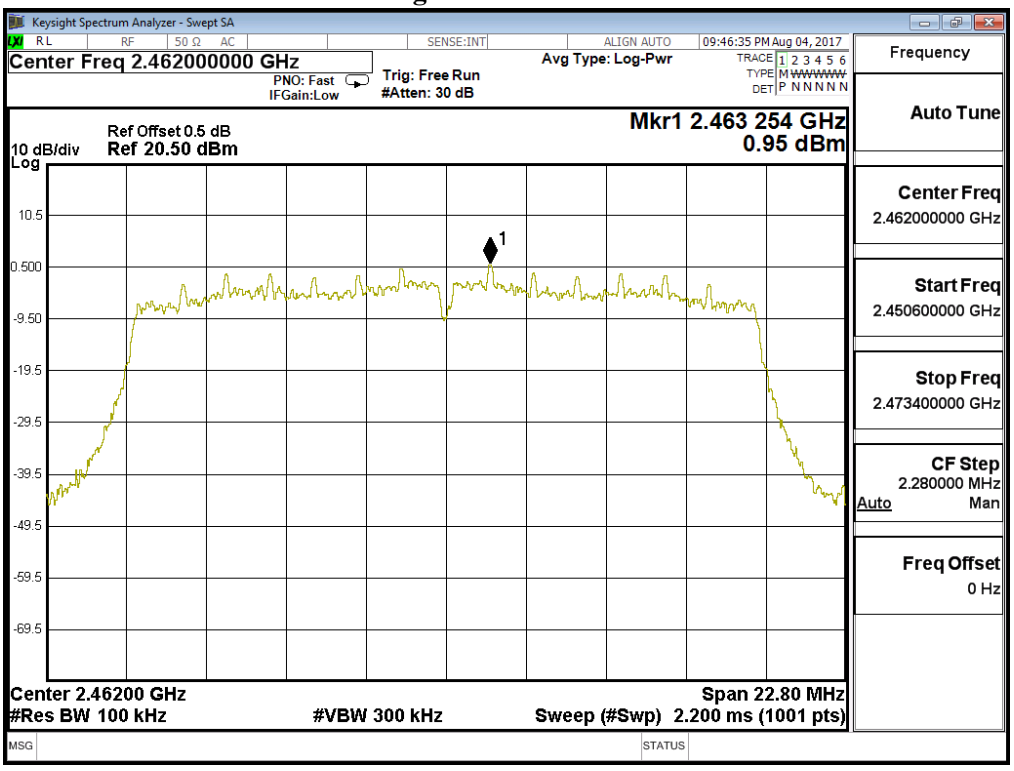


Figure Channel 11:



10. EMI Reduction Method During Compliance Testing

No modification was made during testing.

Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs