



TEST REPORT

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Applicant:

JSW Pacific Corporation
3F-3, No.700, Chung-Zweng Road, Chung Ho City Taipe,
Hsien Tai Wan

Description of Samples:

Model name: Network Camera
Brand name: ---
Model no.: APPCAM23
FCCID: LE2APC23

Date Samples Received: 2013-07-20

Date Tested: 2013-07-20 to 2013-08-05

Investigation Requested: FCC Part 15 Subpart C, Section 15.247

Conclusions:

The submitted product COMPLIED with the requirements of Federal Communications Commission [FCC] Rules and Regulations Part 15. The tests were performed in accordance with the standards described above and on Section 2.2 in this Test Report.

Remarks:

Checked by:

Approved by:-

Ray Cheung
Project Engineer
Wireless & Telecom department

Jeff Pong
Operation Manager
Wireless & Telecom department



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Photos of Test Setup

Appendix B

External EUT Photos

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Internal EUT Photos



1.0 General Details

1.1 Test Laboratory

Global United Technology Services Co. Ltd.
2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan
District
Registration Number: 600491

Tested By:

A handwritten signature in blue ink that appears to read "John Zhi".

John Zhi

1.2 Applicant Details

Applicant

JSW Pacific Corporation

3F-3, No.700, Chung-Zweng Road, Chung Ho City Taipe,
Hsien Tai Wan

Manufacturers

JSW Pacific (China) Co. Ltd.

No 138, Sanjiang Industry District, Hengli Town, Dongguan
City, Guangdong Province, China



1.3 Equipment Under Test [EUT]

Description of EUT

Product Description:	Network Camera
Model No.:	APPCAM23
Brand Name:	---
FCCID:	LE2APC23
Rating:	5VDC, 1000mA Powered by AC/DC Switching Adaptor
Operated Frequency:	2412 – 2462 MHz
No. of Operated Channel:	11 CH / (802.11b/g)
Data Rate:	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps
Modulation:	BPSK, QPSK, CCK and OFDM (BPSK/QPSK/16-QAM/64-QAM)
Accessories and Auxiliary Equipments:	Computer and Router
Antenna Type:	Integral Antenna
Manufacture of Antenna:	JSW Pacific (China) Co., Ltd.
Antenna Gain:	3.0 dBi
Antenna Model:	RF-178B/U

General Operation of EUT

The Equipment Under Test (EUT) is a Network Camera operated at 2.4GHz. This includes of an 802.11b/g module.

Description of Test Modes

The EUT has been tested under operating condition. Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 1Mbps data rate (worst case) are chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6Mbps data rate (the worst case) are chosen for the final testing.

Channel List for 802.11 b/g					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	05	2432	09	2452
02	2417	06	2437	10	2457
03	2422	07	2442	11	2462
04	2427	08	2447	---	---

1.4 Related Submittal(s) Grants

This is a signal application subject to Certificate Authorization.



2.0 Technical Details

2.1 Investigations Requested

Perform ElectroMagnetic Interference measurement in accordance with FCC 47CFR [Codes of Federal Regulations] Part 15 and ANSI C63.4: 2003

2.2 Test Standards and Results Summary Tables

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

Note 1 : The EUT used the attached antenna, which is furnished by the responsible party shall be used with the device. Accordance to Section 15.203, is considered sufficient to comply with the provisions of this section.

Remark: N/A - Not Applicable



3.0 Test Methodology

3.1 Radiated Emission

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

3.2 Field Strength Calculation

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

The equation is expressed as follow:

$$FS = R + \text{System Factor}$$

$$\text{System Factor} = AF + CF + FA - PA$$

Where FS = Net Field Strength in dBuV/m at 3 meters.

R = Reading of Spectrum Analyzer / Test Receiver in dBuV.

AF = Antenna Factor in dB.

CF = Cable Attenuation Factor in dB.

FA = Filter Attenuation Factor in dB.

PA = Preamplifier Factor in dB.

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

3.3 Conducted Emissions

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



4.0 Test Results

4.1 6 dB Bandwidth Measurement

Test Requirement: FCC part 15 section 15.247 (a2)
 Test Date: 2013-08-02
 Mode of Operation: Transmitting continuously mode
 Detector Function: Max Hold

Result: PASS

Test Setup:

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

For 802.11B Mode

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	10.088
Middle	2437	9.594
Highest	2462	9.950

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

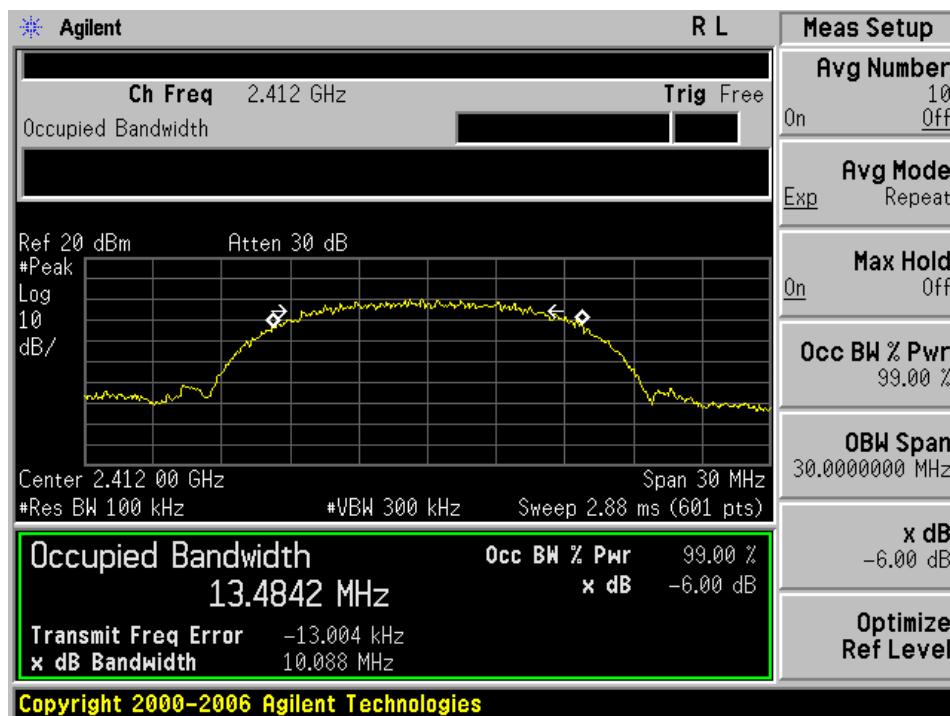
Limits for 6 dB bandwidth [Section 15.247 (a2)]:

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

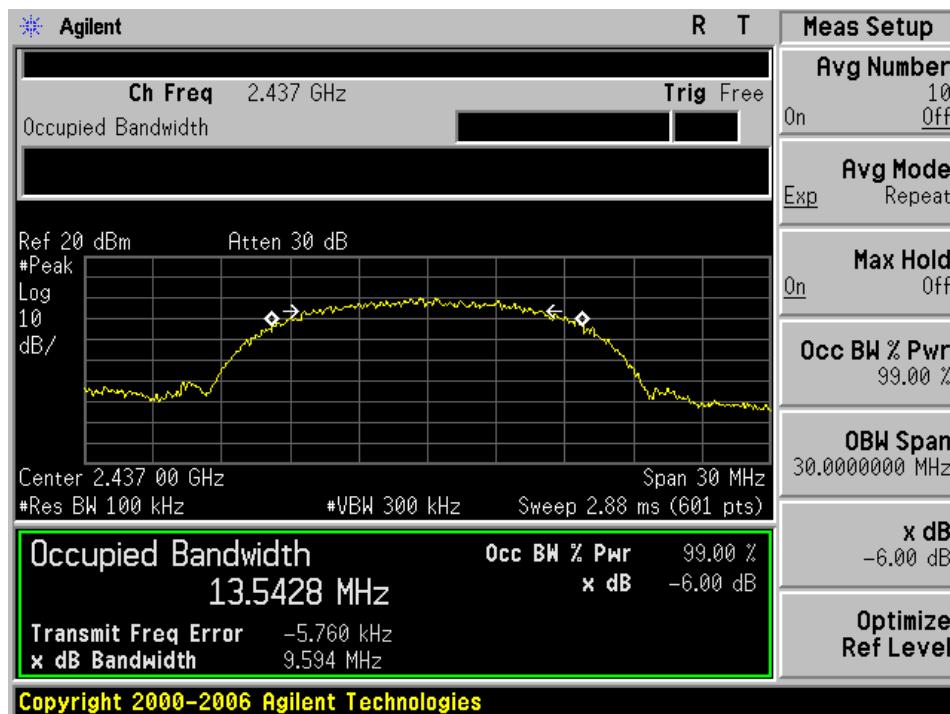


For 802.11b Mode

Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 10.088 MHz

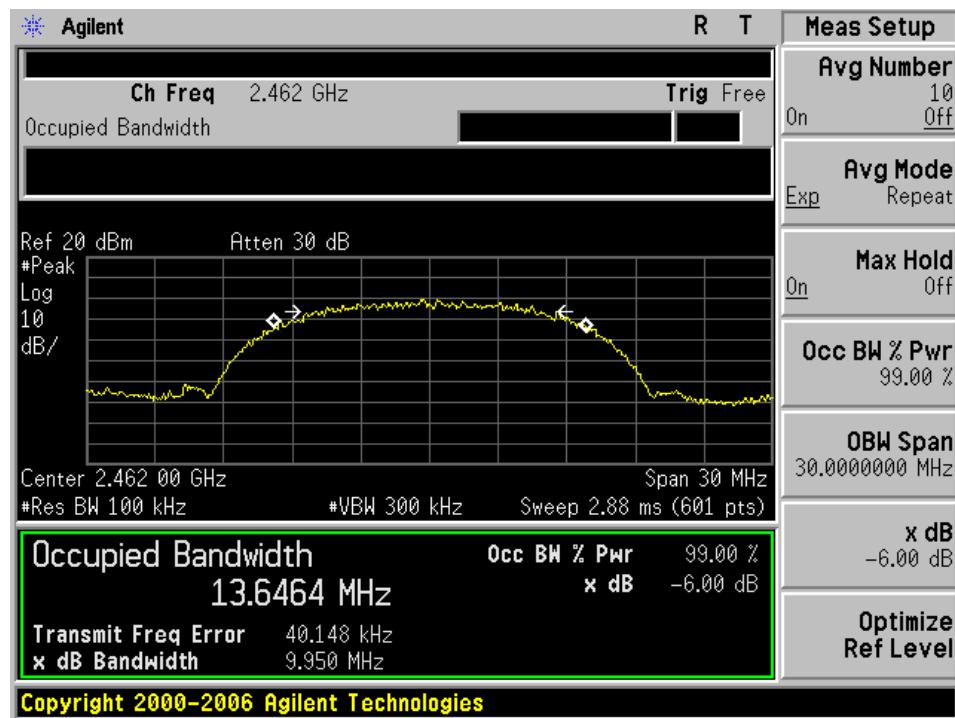


Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 9.594MHz





Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 9.950MHz



**For 802.11g Mode**

Channel	Measured frequency (MHz)	6dB Bandwidth (MHz)
Lowest	2412	16.522
Middle	2437	16.503
Highest	2462	16.416

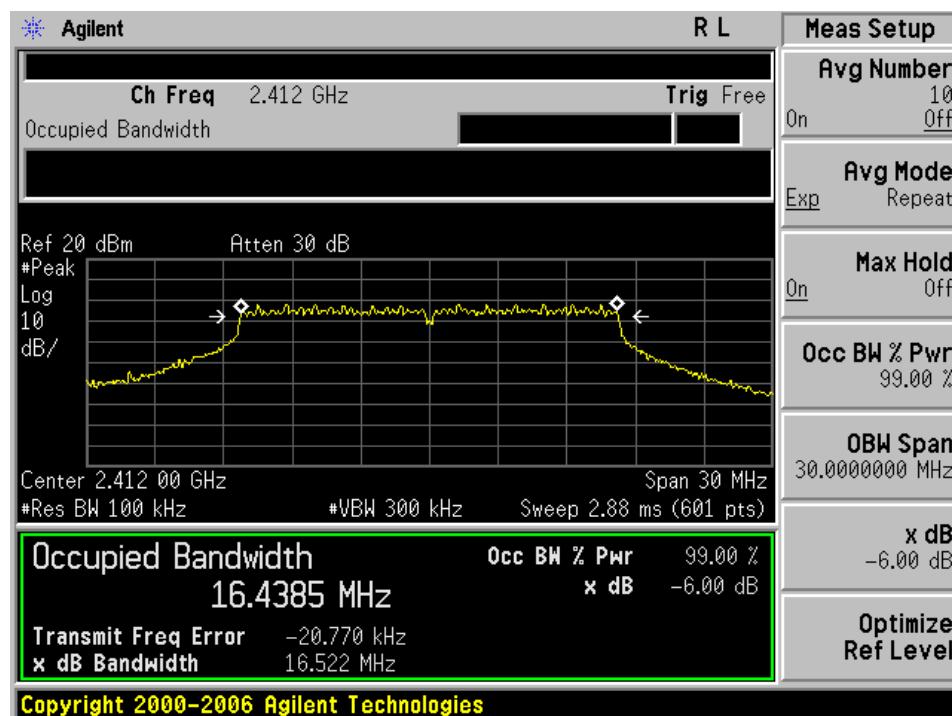
This result is used for checking the systems using digital modulation techniques may operate in the 2400–2483.5 MHz.

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

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

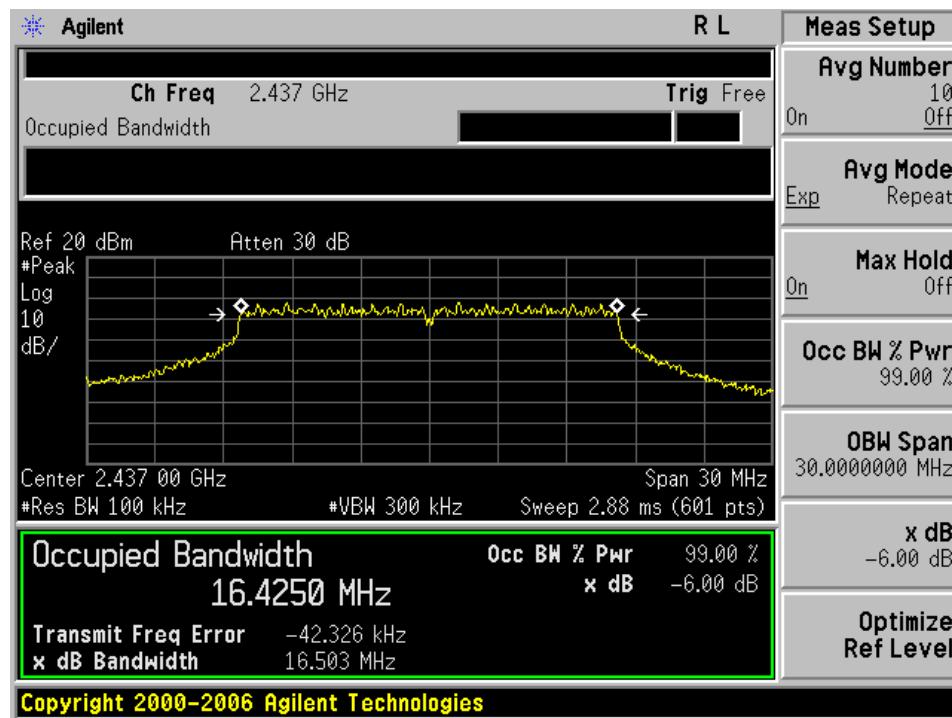
For 802.11g Mode

Result data graph shows 6 dB bandwidth, CF = 2.412GHz, BW = 16.522 MHz

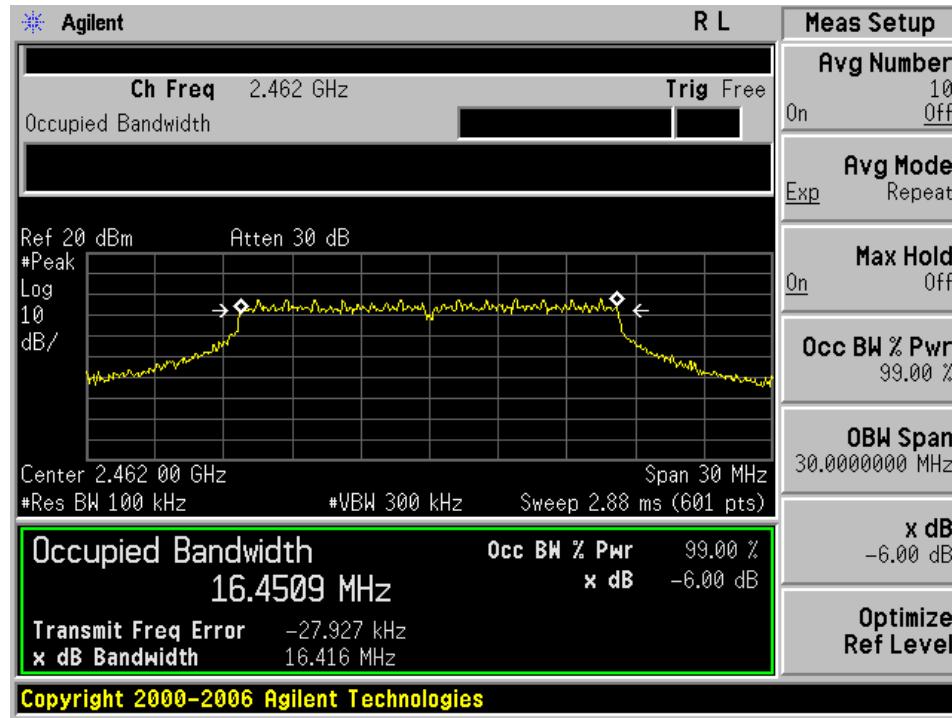




Result data graph shows 6 dB bandwidth, CF = 2.437GHz, BW = 16.503MHz



Result data graph shows 6 dB bandwidth, CF = 2.462GHz, BW = 16.416MHz





4.2 Power Spectral Density

Test Requirement: FCC part 15 section 15.247 (e)
 Test Date: 2013-08-02
 Mode of Operation: Transmitting continuously mode
 Detector Function: Peak

Result : PASS

Measured Result :

Test mode	Test channel	Reading dBm/100kHz	Limit dBm/3kHz
802.11b	Low channel (2412MHz)	-0.14	8
	Middle channel (2437MHz)	-0.25	8
	High channel (2462MHz)	-0.98	8
802.11g	Low channel (2412MHz)	-1.98	8
	Middle channel (2437MHz)	-2.14	8
	High channel (2462MHz)	-1.99	8

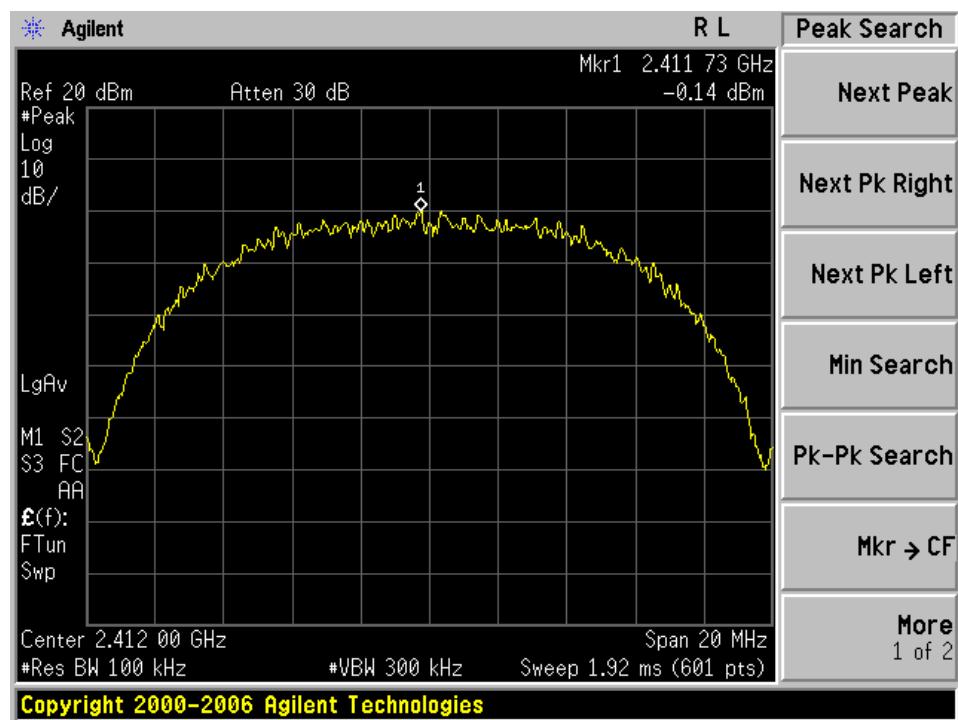
Note: 1. Above testing data has been considered with 0.2dB cable loss which between antenna port and spectrum.

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

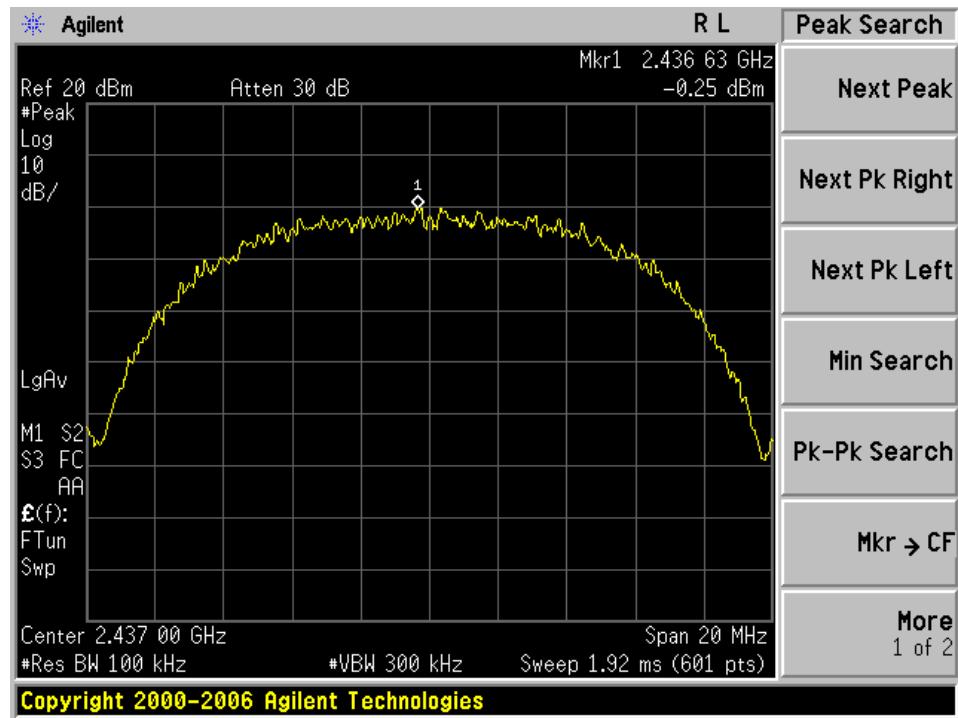
For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

**For 802.11b Mode**

Result data graph shows Low channel power spectrum density is -0.14dBm at 100 kHz RBW

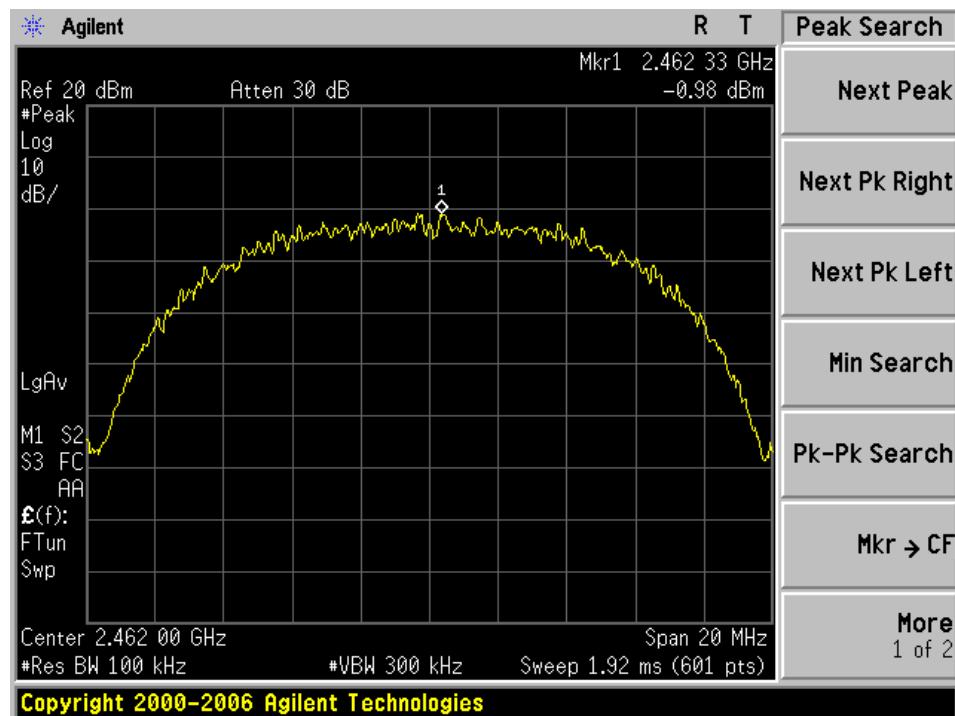


Result data graph shows middle channel power spectrum density is -0.25dBm at 100 kHz RBW



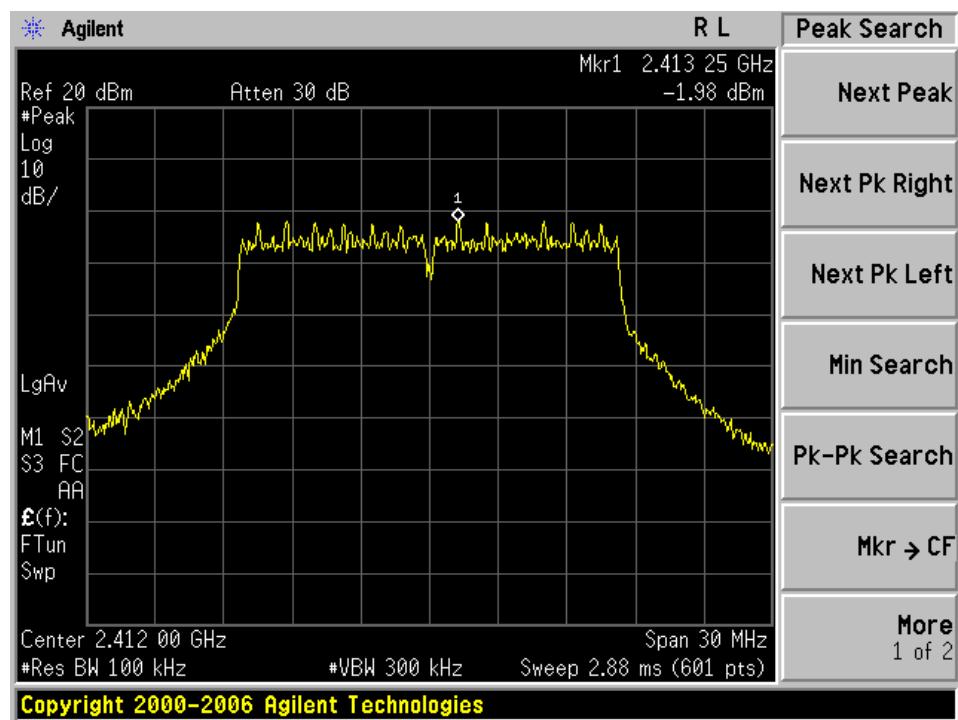


Result data graph shows high channel power spectrum density is -0.98dBm at 100 kHz RBW

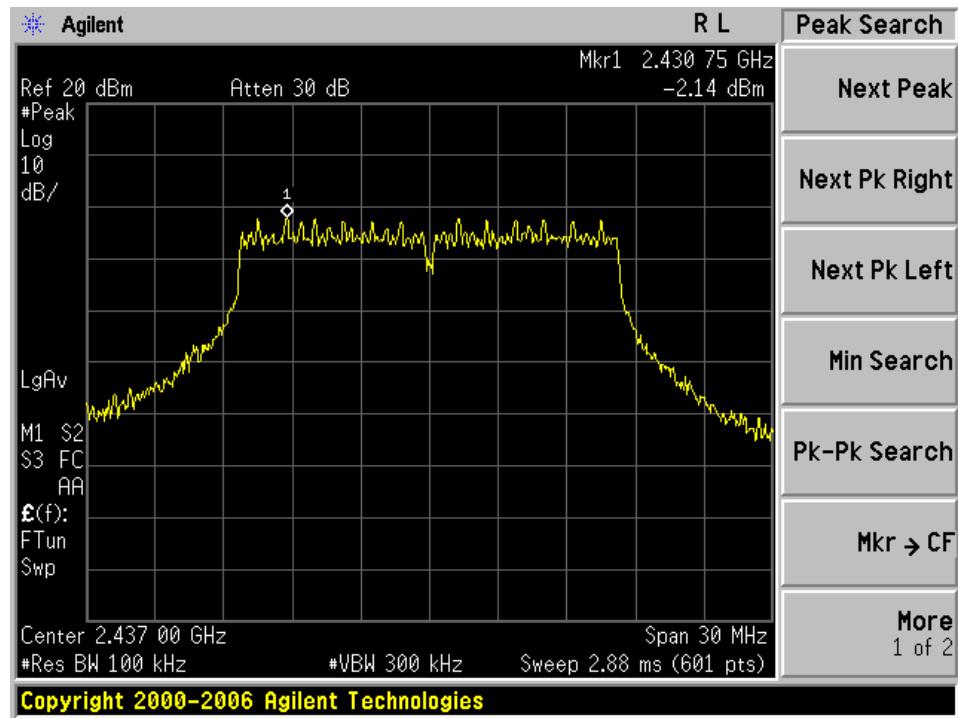


**For 802.11g Mode**

Result data graph shows Low channel power spectrum density is -1.98dBm at 100 KHz RBW

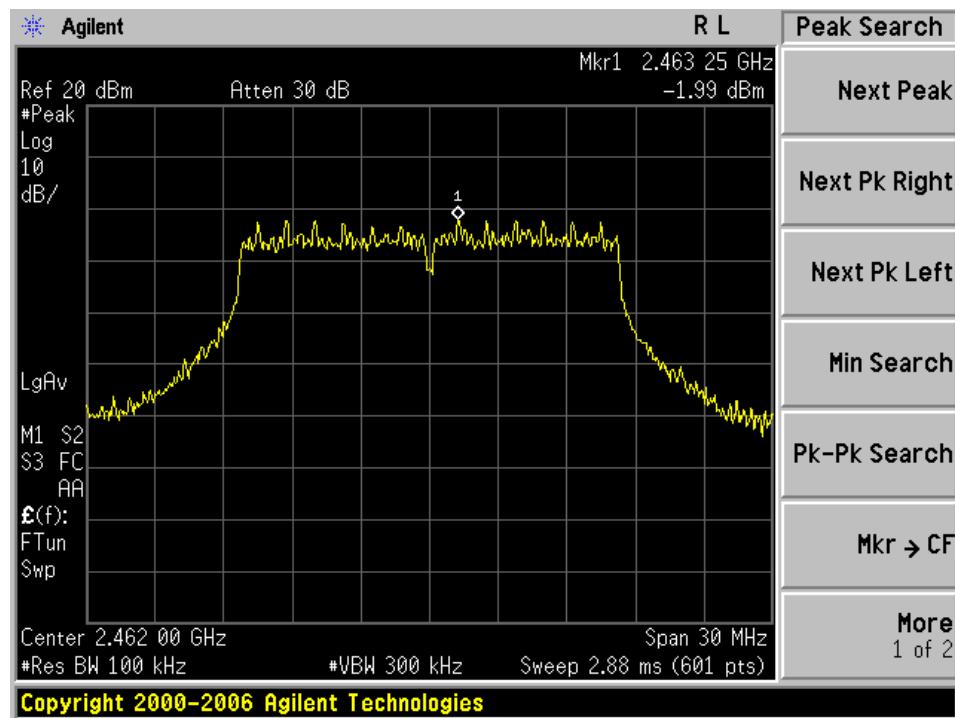


Result data graph shows middle channel power spectrum density is -2.14dBm at 100 KHz RBW





Result data graph shows high channel power spectrum density is -1.99dBm at 100 KHz RBW





4.3 Band Edge Measurement

Test Requirement: FCC part 15 section 15.247
 Test Date: 2013-08-02
 Mode of Operation: Transmitting continuously mode.
 Detector Function: Max Hold

Result: PASS

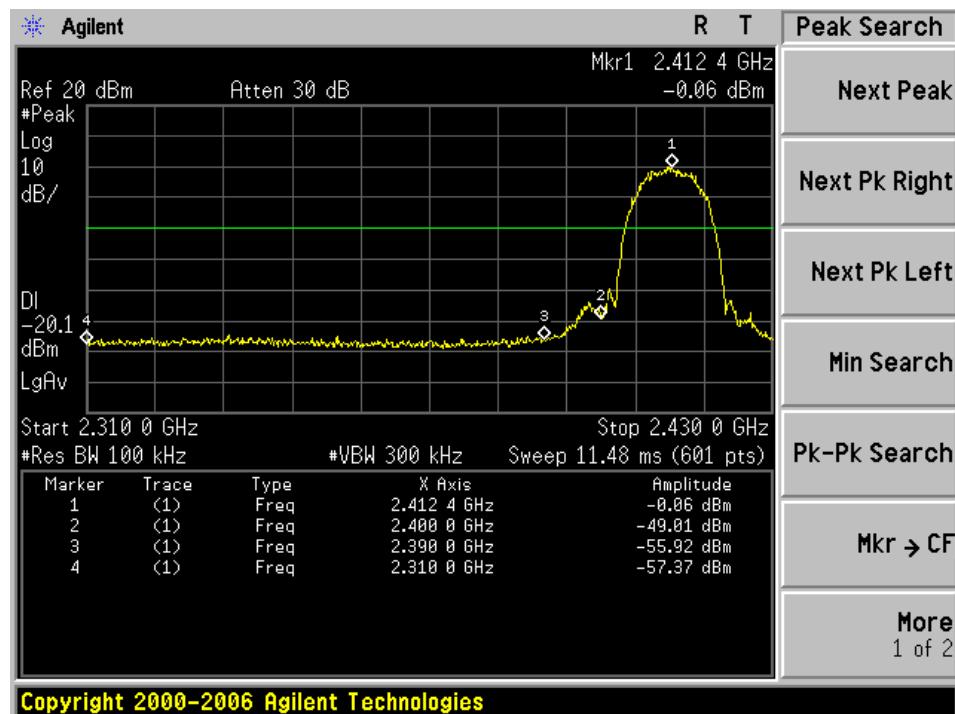
Measured Result :

Refer to the diagram and table, it shows the frequency of lower band edge and upper band edge is 2.412GHz and 2.462GHz separately.

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

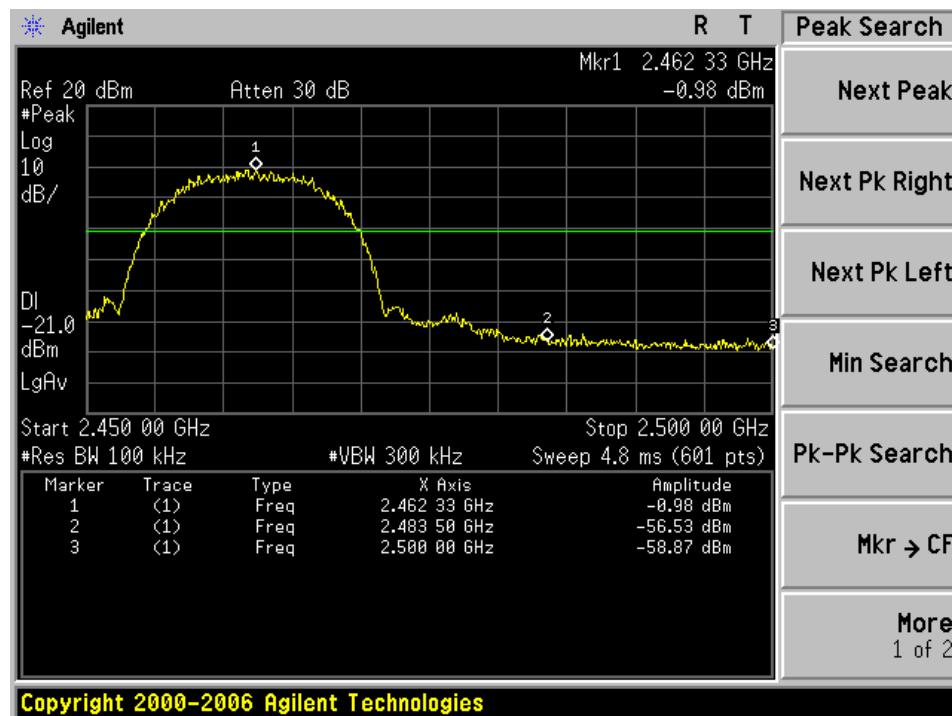
The carrier frequencies should operate within 2400-2483.5MHz.

**Result data graph shows the frequency of lowest channel.
For 802.11b Low Channel Mode**

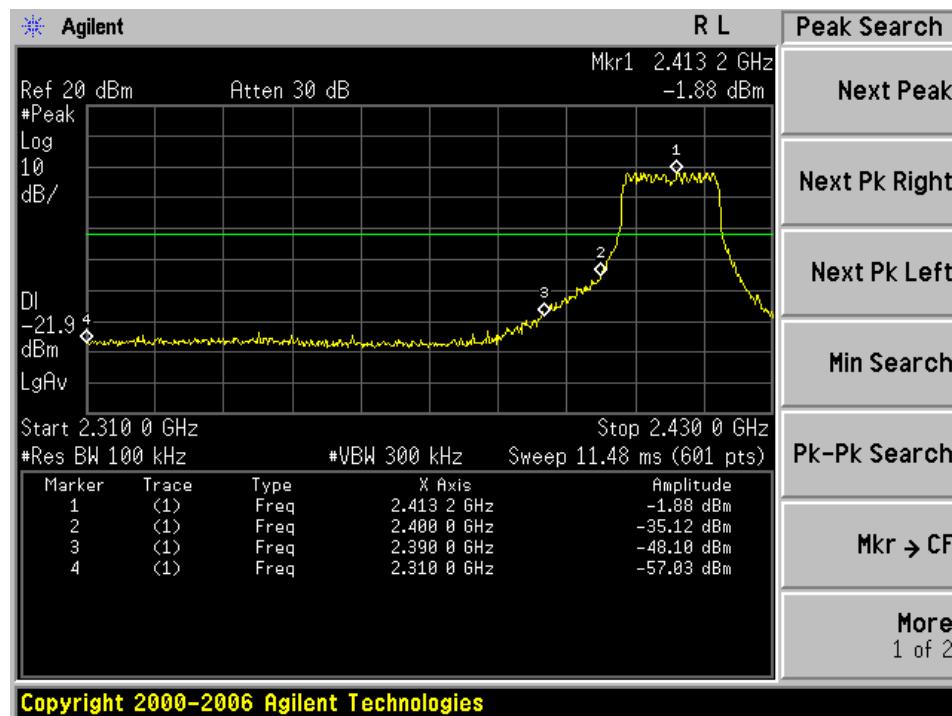


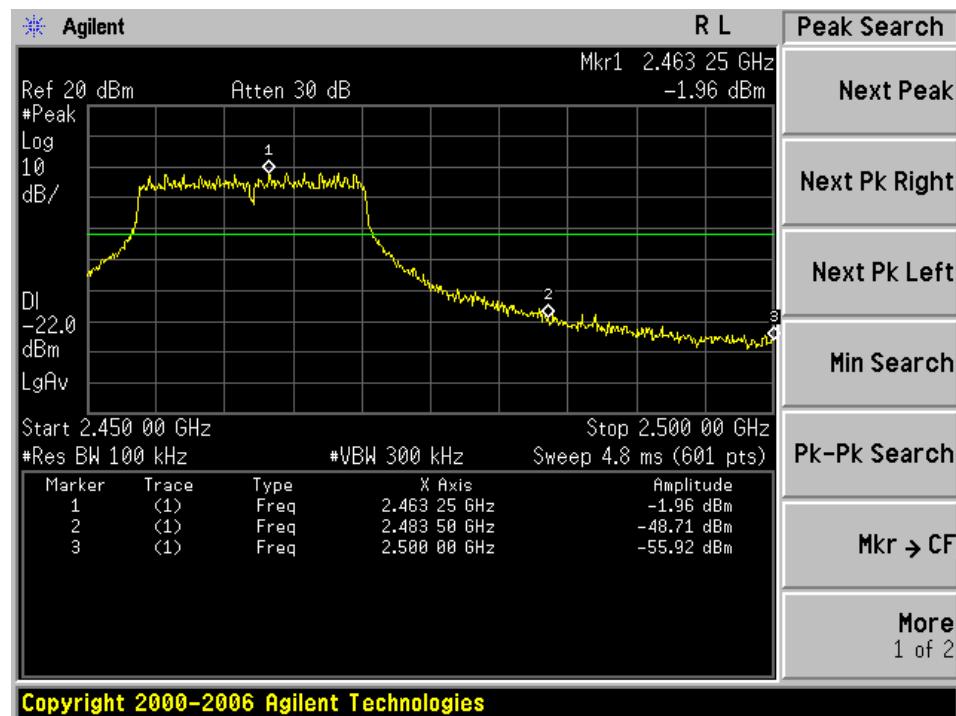


For 802.11b High Channel Mode



For 802.11g Low Channel Mode




For 802.11g High Channel Mode




4.4 Maximum Output Power

Test Requirement:	FCC part 15 section 15.247 (b3)
Test Method:	ANSI C63.4:2003
Test Date:	2013-08-02
Mode of Operation:	Transmitting continuously mode
Detector Function:	Peak
Measurement BW:	RBW 1MHz ; VBW 3MHz

Test Procedure :

According to section 15.247(b)-power output of the KDB-558074 (2013), the measurement procedure PK2 was used, the following is the measurement procedure.

1. Set the span $\geq 1.5 \times$ DTS bandwidth (6dB bandwidth).
2. Set RBW = 1 MHz, Set VBW =3 MHz.
3. Detector = peak; sweep time =auto couple.
4. Trace mode = max hold; allow the trace to fully stabilize.
5. Use the instrument's band/channel power measurement function with the band limits set equal to the DTS bandwidth edges (for some instruments, this may require a manual override to select peak detector). If the instrument does not have a band power function, sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the DTS bandwidth.


Result : PASS

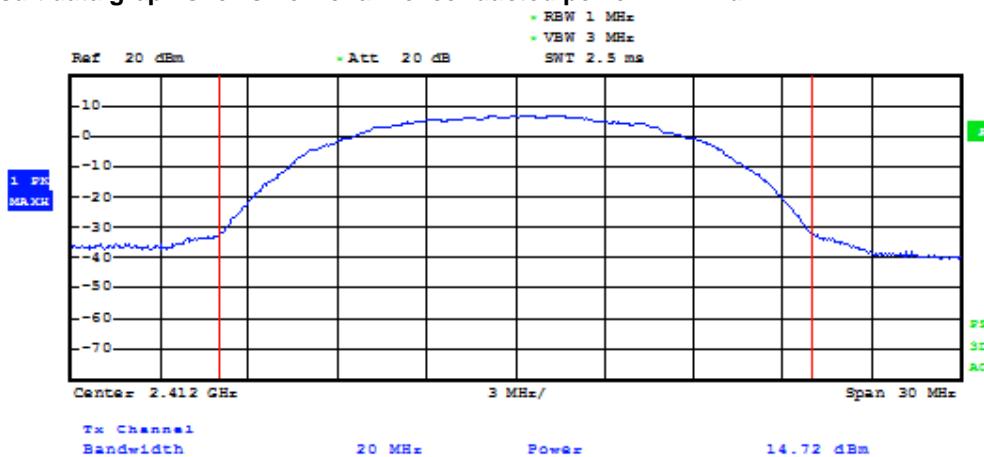
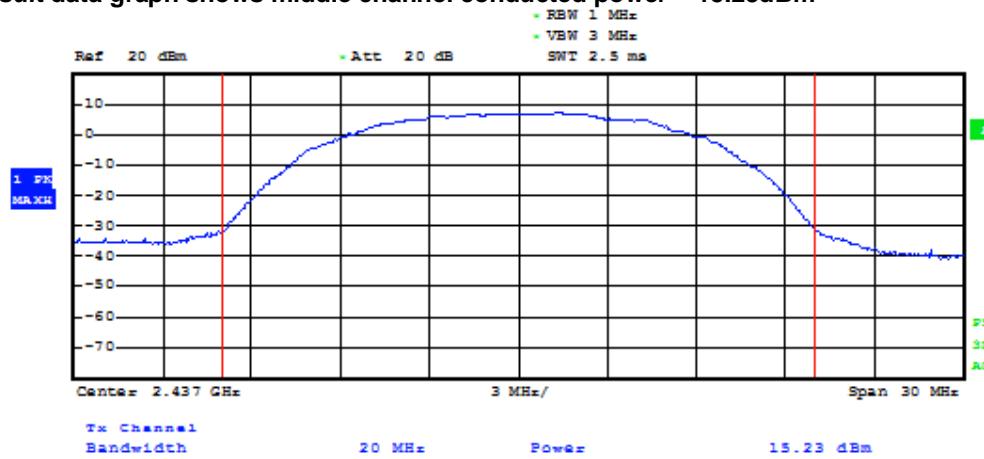
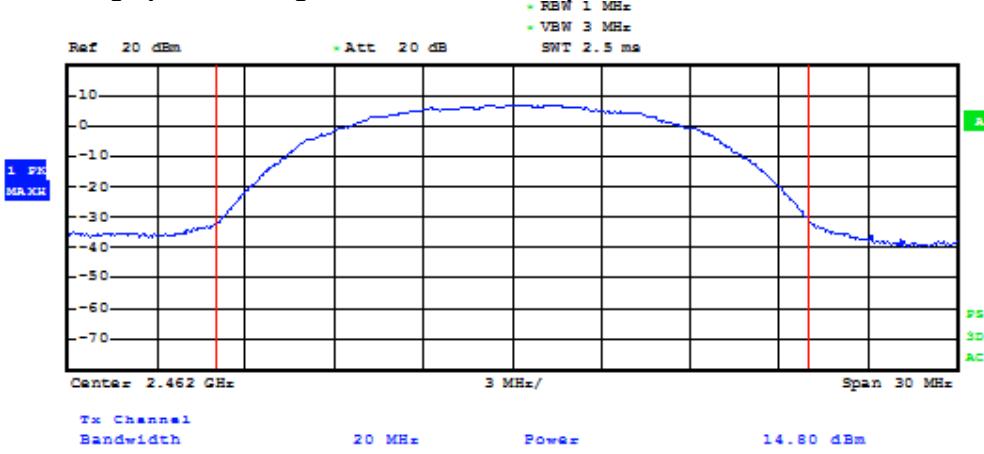
Transmitting Mode: Transmits continuously

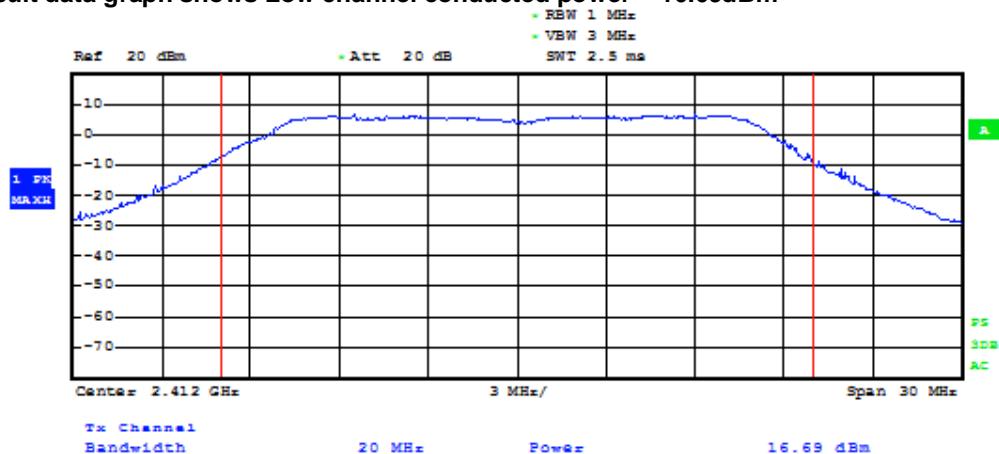
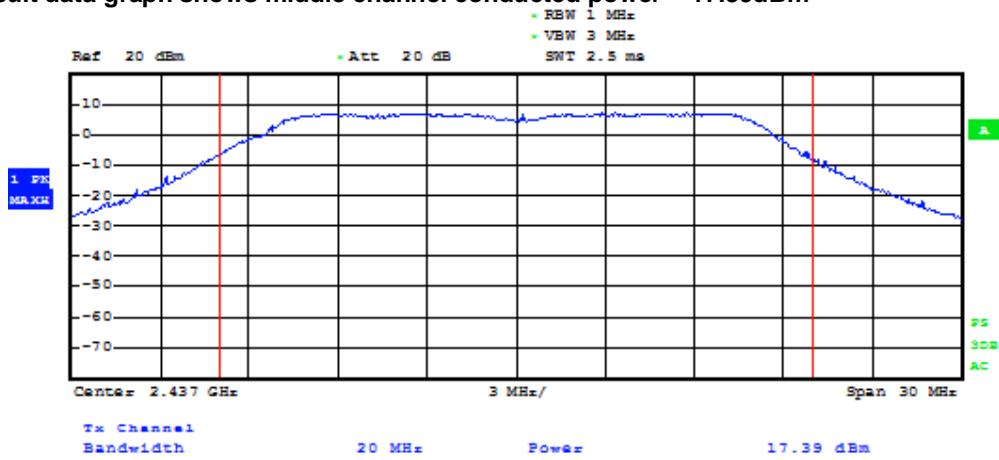
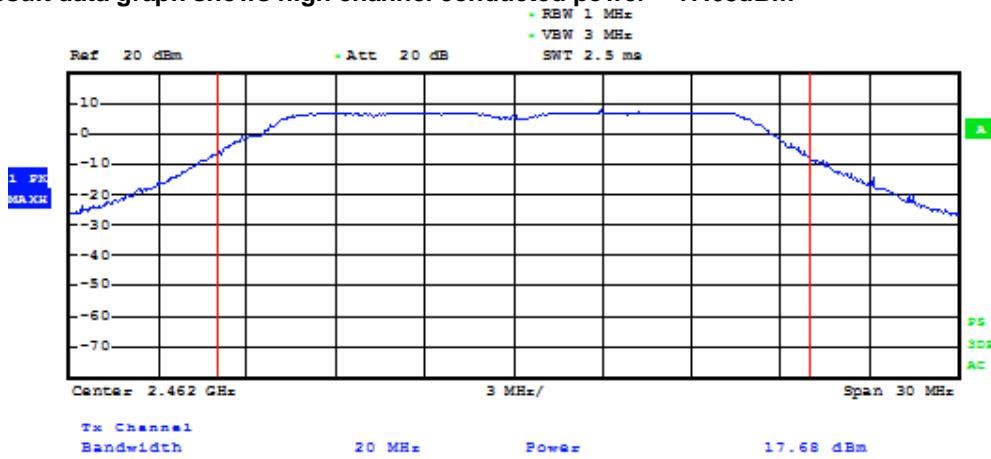
Test mode	Frequency MHz	Output Power dBm	Output Power mW	Limit mW
802.11b 1Mbps	2412	14.72	29.60	1000
	2437	15.23	33.34	1000
	2462	14.80	30.20	1000
802.11g 6Mbps	2412	16.69	46.67	1000
	2437	17.39	54.83	1000
	2462	17.68	58.61	1000

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

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

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

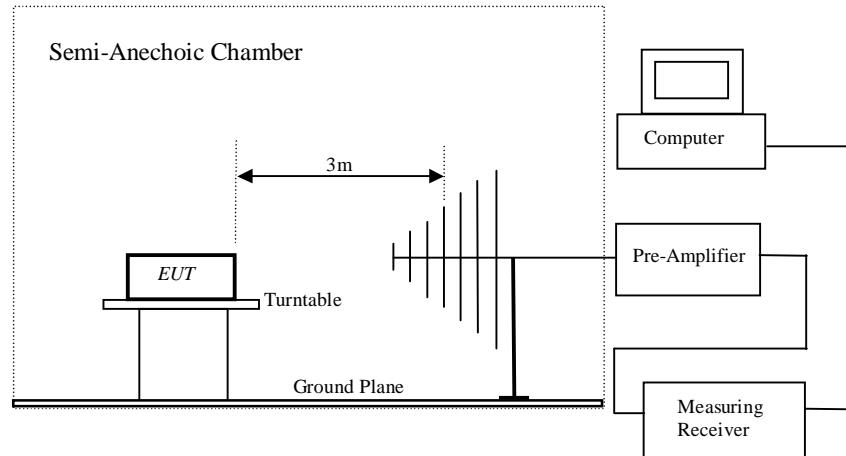

For 802.11b Mode
Result data graph shows Low channel conducted power = 14.72dBm

Result data graph shows middle channel conducted power = 15.23dBm

Result data graph shows high channel conducted power = 14.80dBm


**For 802.11g Mode****Result data graph shows Low channel conducted power = 16.69dBm****Result data graph shows middle channel conducted power = 17.39dBm****Result data graph shows high channel conducted power = 17.68dBm**

4.5 Out of Band Emissions and Emissions in Restricted Bands

Test Requirement: FCC part 15 section 15.247 (d)
Test Method: ANSI C63.4:2003
Test Date: 2013-08-02
Mode of Operation: Transmitting continuously mode
Detector Function: Peak
Measurement BW: RBW 100KHz ; VBW 300KHz

Test Setup:





Result : PASS

Out of Frequency Band Emissions:

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

Result Summary:

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

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

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. Attenuation below the general limits specified in Section 15.209(a) is not required.

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

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

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

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

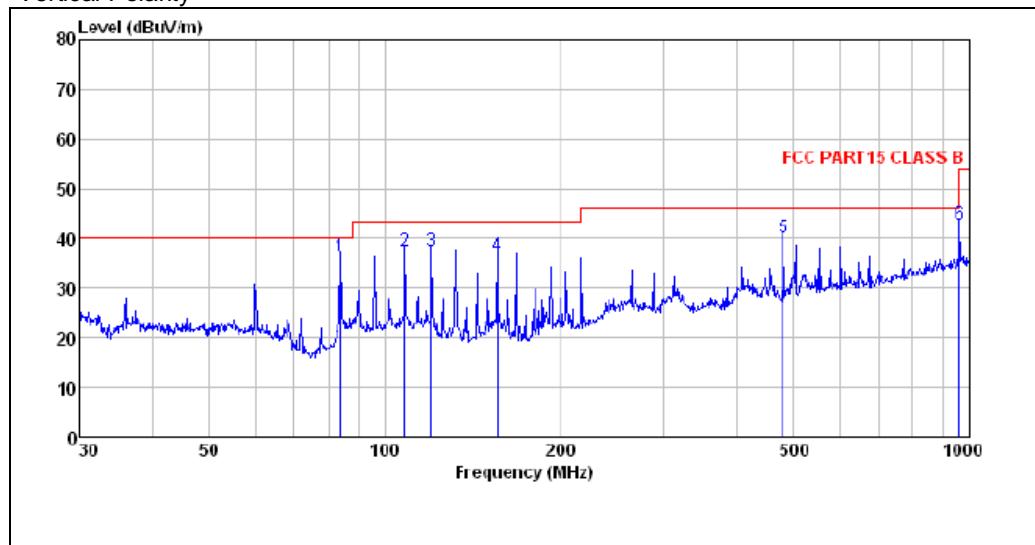


Result : PASS

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

Below 1GHz emissions

Vertical Polarity



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	83.816	55.14	-18.81	36.33	40.00	-3.67	QP
2	107.888	53.48	-16.10	37.38	43.50	-6.12	QP
3	119.856	55.53	-18.02	37.51	43.50	-5.99	QP
4	155.910	56.47	-19.89	36.58	43.50	-6.92	QP
5	480.528	50.37	-10.33	40.04	46.00	-5.96	QP
6	962.162	45.31	-2.64	42.67	54.00	-11.33	QP

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

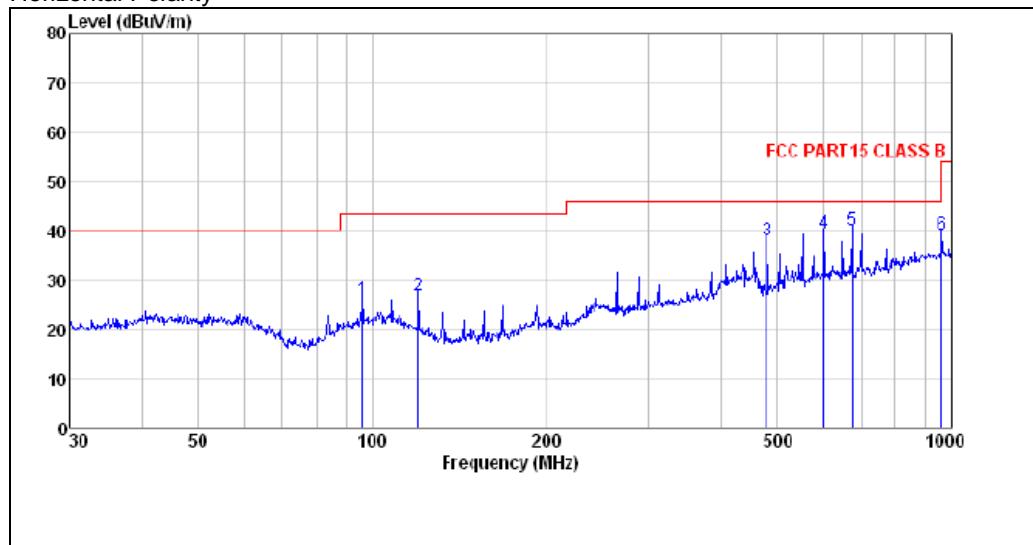


Result : PASS

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

Below 1GHz emissions

Horizontal Polarity



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	96.099	41.78	-15.69	26.09	43.50	-17.41	QP
2	119.856	44.82	-18.02	26.80	43.50	-16.70	QP
3	480.528	48.47	-10.33	38.14	46.00	-7.86	QP
4	601.427	46.35	-6.85	39.50	46.00	-6.50	QP
5	672.845	46.46	-6.44	40.02	46.00	-5.98	QP
6	962.162	41.96	-2.64	39.32	54.00	-14.68	QP

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

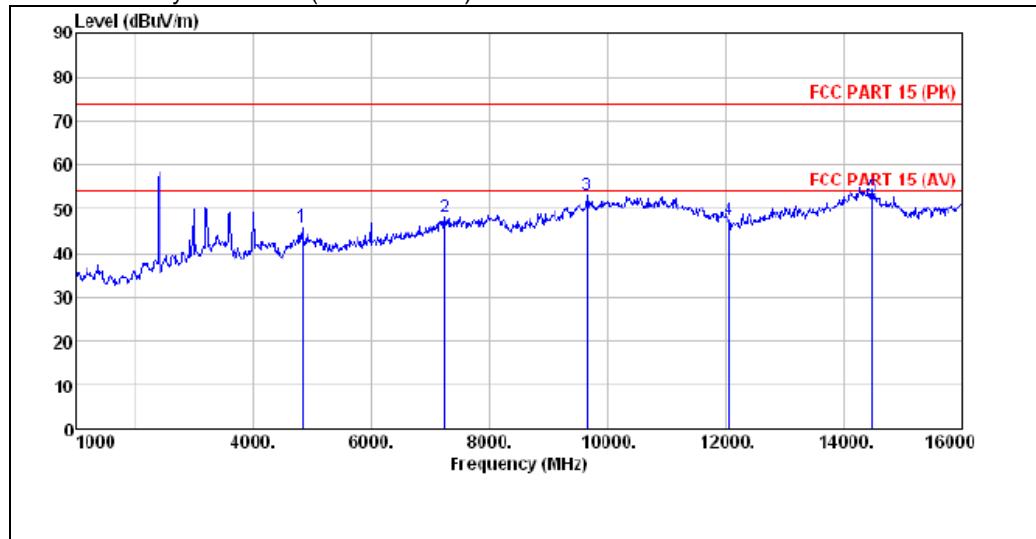


Result : PASS

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

Above 1GHz Emission test data

Vertical Polarity – 802.11b (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4825.000	37.52	8.31	45.83	74.00	-28.17	peak
2	7240.000	32.31	15.90	48.21	74.00	-25.79	peak

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

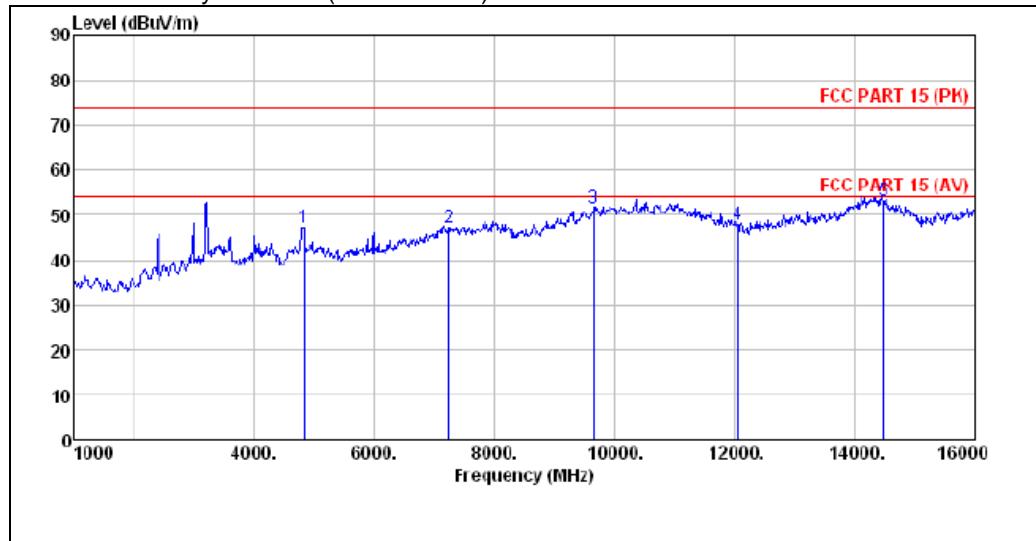


Result : PASS

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

Above 1GHz Emission test data

Horizontal Polarity -802.11b (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4825.000	38.83	8.31	47.14	74.00	-26.86	peak
2	7240.000	31.38	15.90	47.28	74.00	-26.72	peak

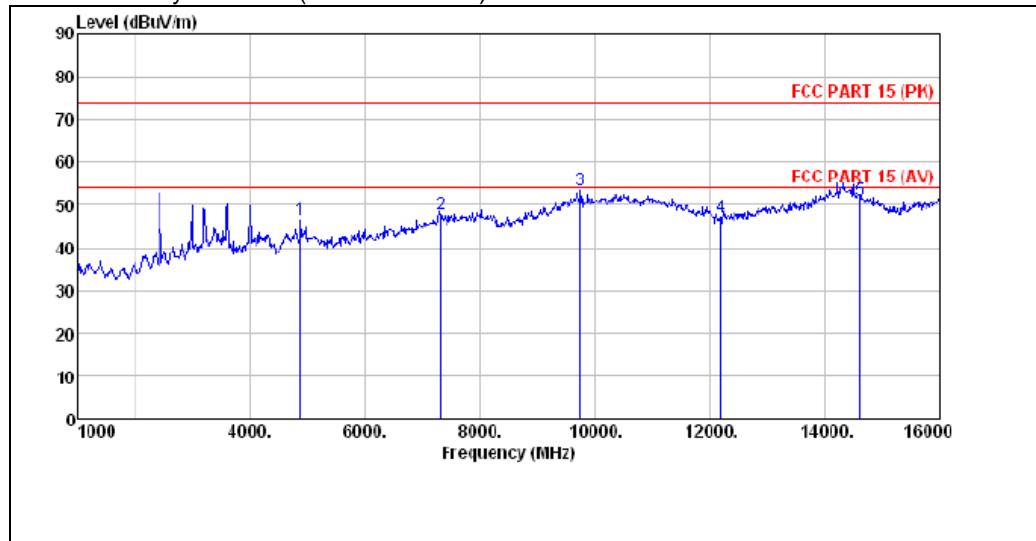
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4870.000	37.96	8.39	46.35	74.00	-27.65	peak
2	7315.000	31.65	16.17	47.82	74.00	-26.18	peak

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

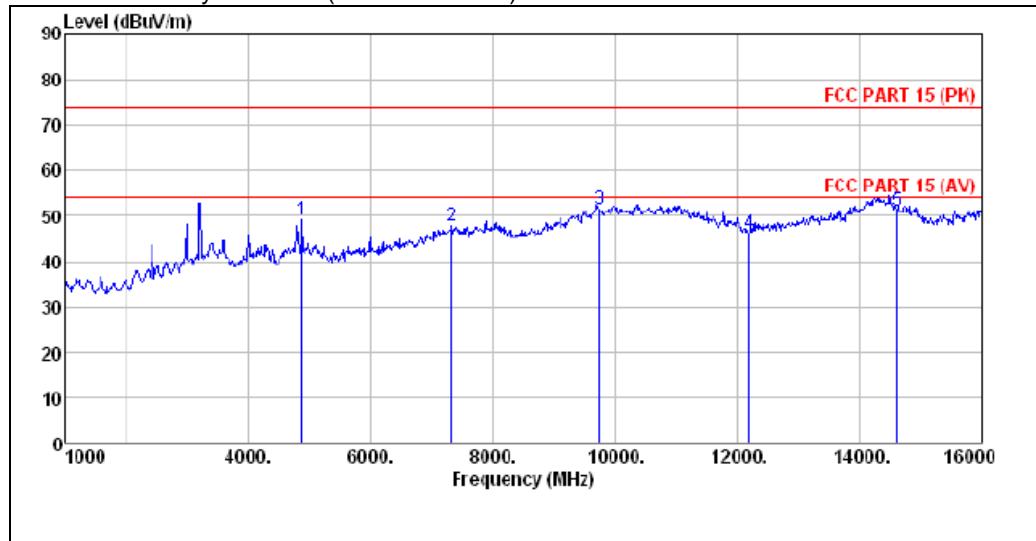


Result : PASS

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

Above 1GHz Emission test data

Horizontal Polarity -802.11b (Middle Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4870.000	40.66	8.39	49.05	74.00	-24.95	peak
2	7315.000	31.73	16.17	47.90	74.00	-26.10	peak

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

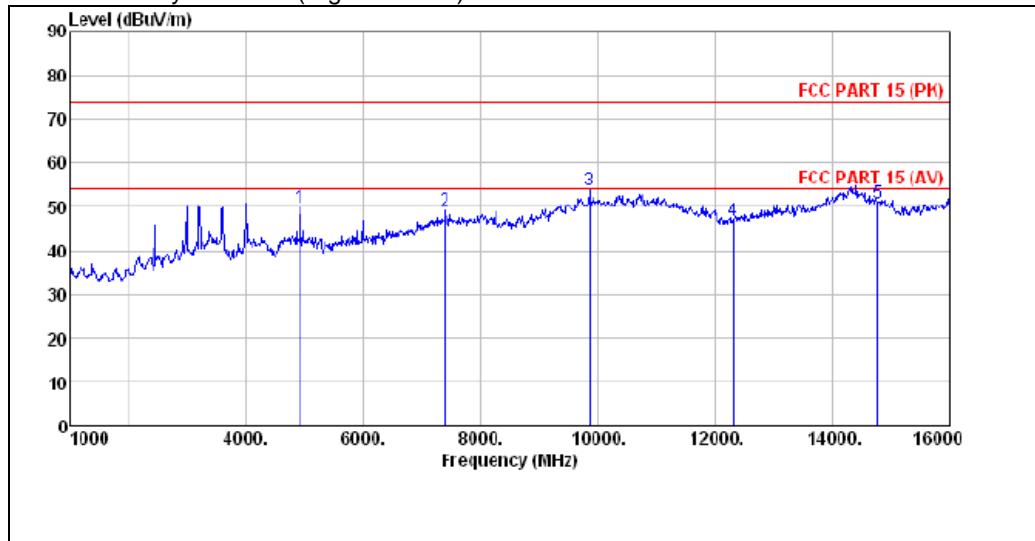


Result : PASS

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

Above 1GHz Emission test data

Vertical Polarity -802.11b (High Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4930.000	41.50	8.45	49.95	74.00	-24.05	peak
2	7390.000	32.78	16.42	49.20	74.00	-24.80	peak

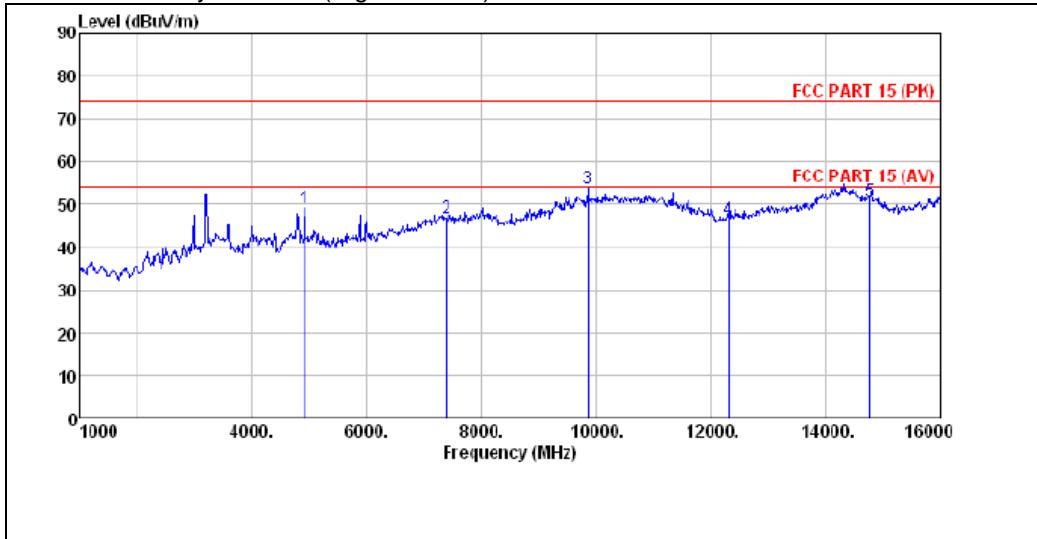
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4930.000	40.85	17.36	49.30	74.00	-24.70	peak
2	7390.000	30.55	16.42	46.97	74.00	-27.03	peak

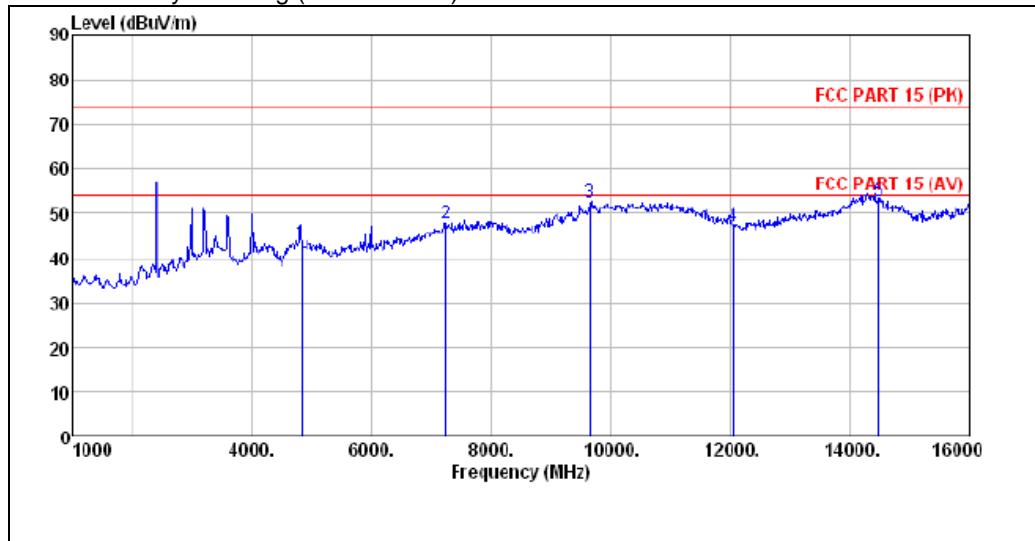
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4825.000	35.15	8.31	43.46	74.00	-30.54	peak
2	7240.000	32.03	16.42	47.93	74.00	-26.07	peak

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

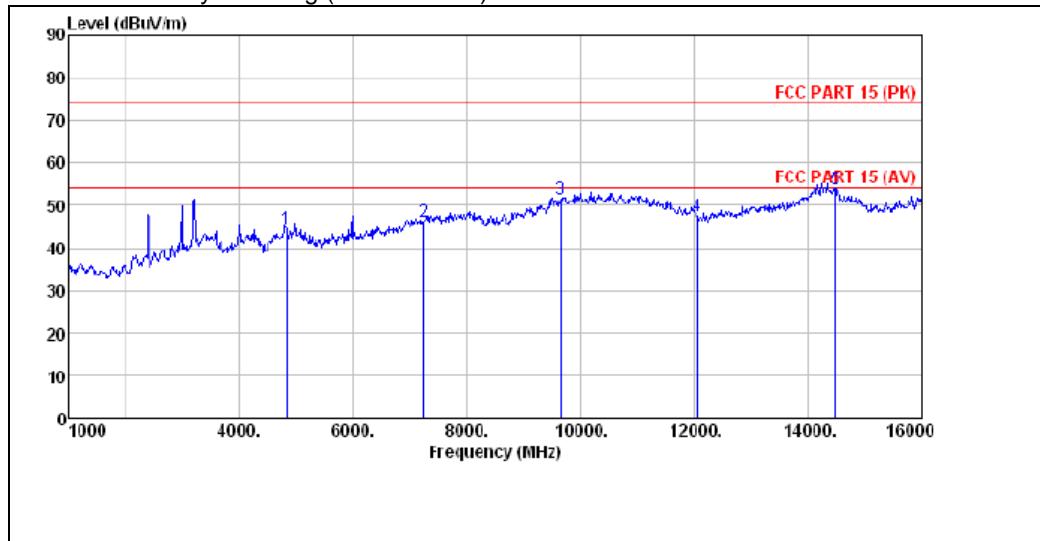


Result : PASS

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

Above 1GHz Emission test data

Horizontal Polarity -802.11g (Low Channel)



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4825.000	36.21	8.31	44.52	74.00	-29.48	Peak
2	7240.000	30.29	15.90	46.19	74.00	-27.81	Peak

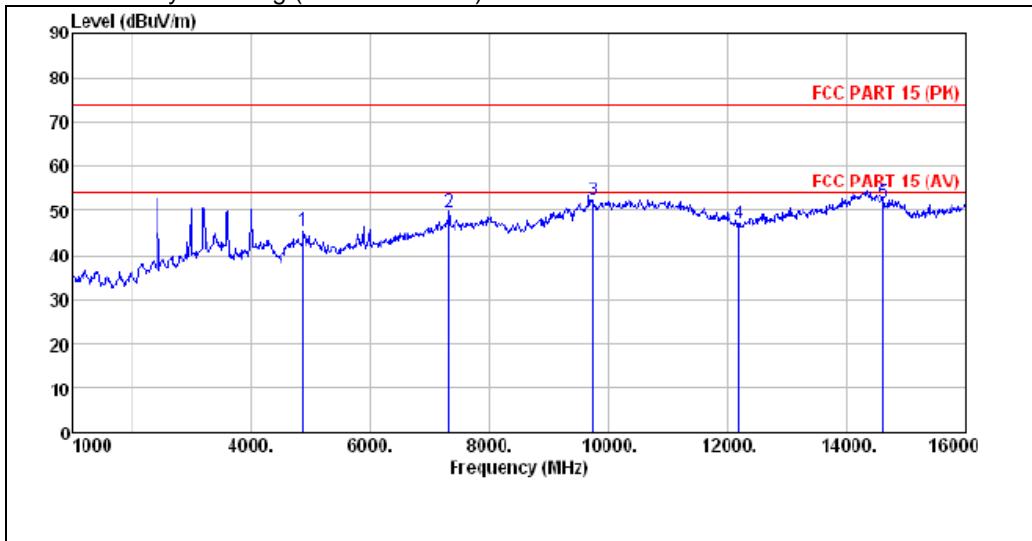
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4870.000	37.15	8.31	45.54	74.00	-28.46	peak
2	7315.000	33.80	16.17	49.97	74.00	-24.03	peak

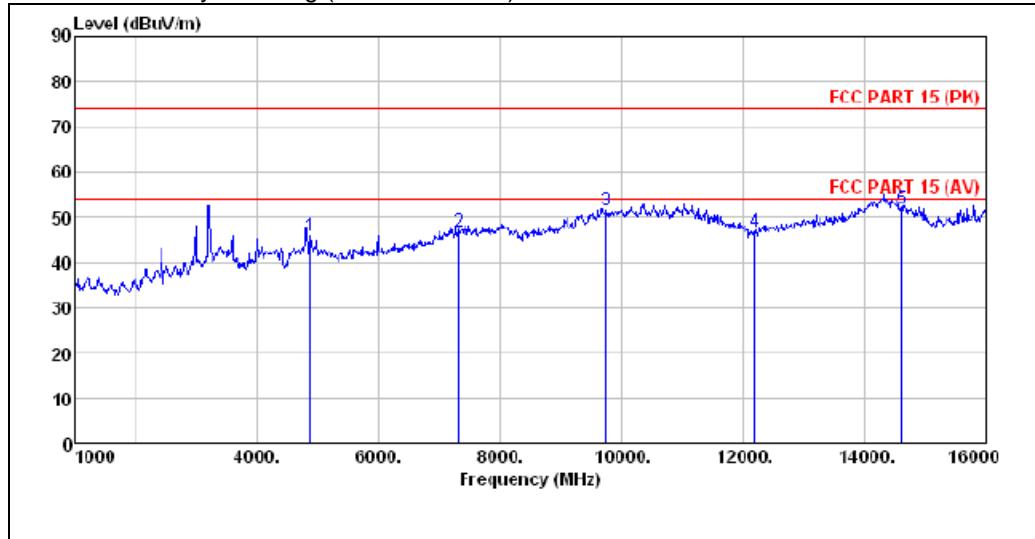
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4870.000	37.54	8.39	45.93	74.00	-28.07	peak
2	7315.000	30.71	16.17	46.88	74.00	-27.12	peak

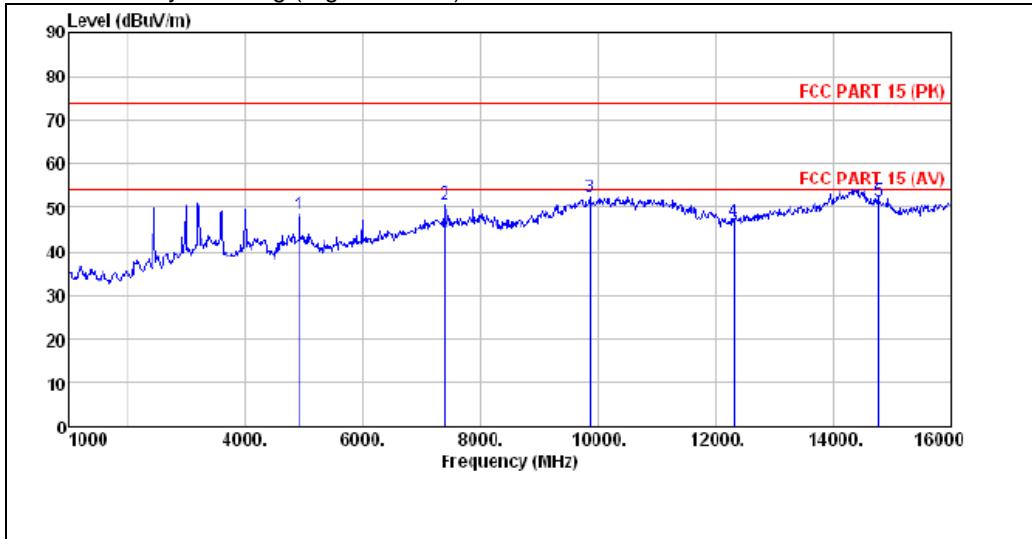
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4930.000	40.06	8.45	48.51	74.00	-25.49	peak
2	7390.000	34.44	16.42	50.86	74.00	-23.14	peak

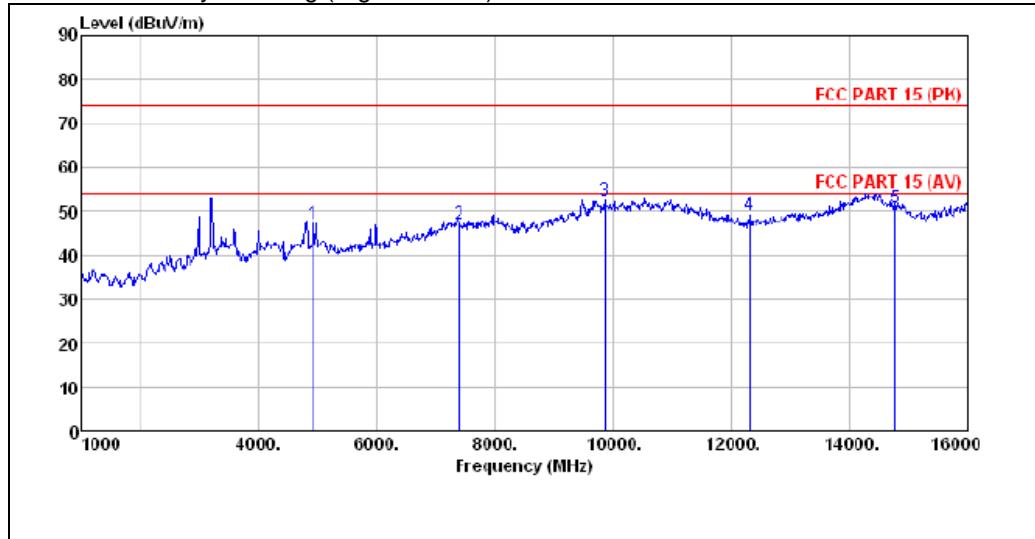
Remark: Only background noise was measured from 16GHz-26GHz.



Result : PASS

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

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



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	4930.000	40.06	8.45	38.51	74.00	-25.80	peak
2	7390.000	34.44	16.42	50.86	74.00	-23.14	peak

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

Result Summary:

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

Remarks:

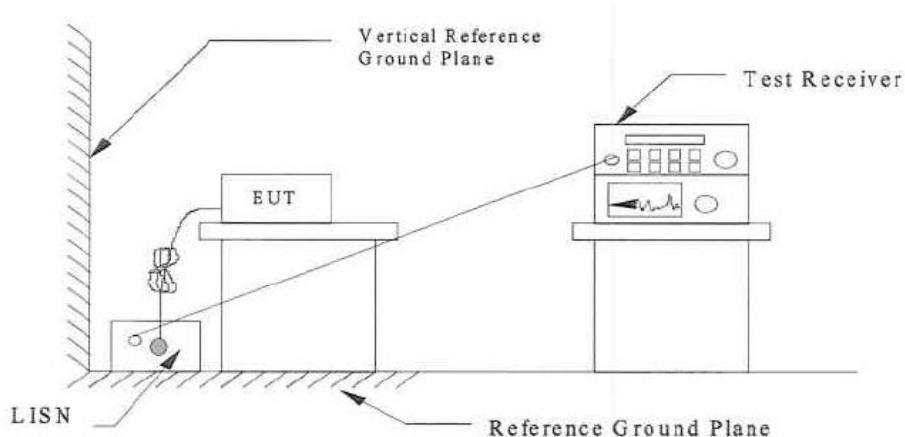
1. “ * ” Radiated emissions which fall in the restricted bands as defined in Section 15.205(a).
2. Emission level with more than 20dB below the FCC required limit is not mentioned in table.
3. Delta to Limit = Field strength (dB μ V/m) – Limit (dB μ V/m).
4. Calculated measurement uncertainty: 9kHz -30MHz: 2.58dB.
30MHz -1GHz: 2.58dB.
1GHz -18GHz: 2.58dB.

4.6 Conducted Emissions (0.15MHz to 30MHz)

Test Requirement: FCC part 15 Section 15.207 Class B
 Test Method: ANSI C63.4:2003
 Test Date: 2013-08-02
 Mode of Operation: Transmitting continuously mode
 Detector Function: CISPR Quasi Peak
 Measurement BW: 100 kHz
 Worst Case Channel: Highest Channel

Results : PASS

Test Setup:



Limits for Conducted Emission [Section 15.207]:

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

* Decreases with the logarithm of the frequency.

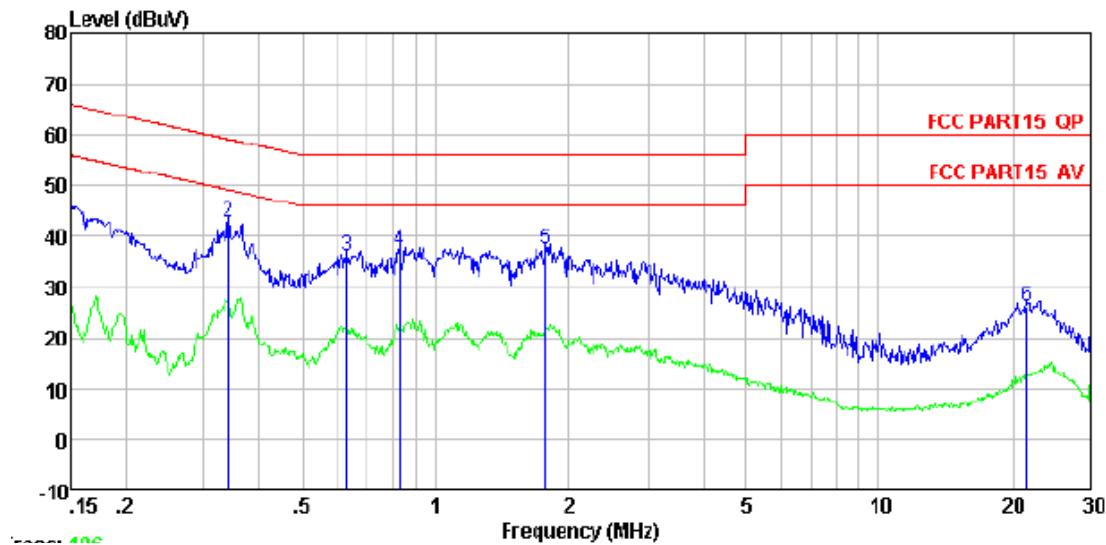
Remarks:

Calculated measurement uncertainty: ± 1.54 dB

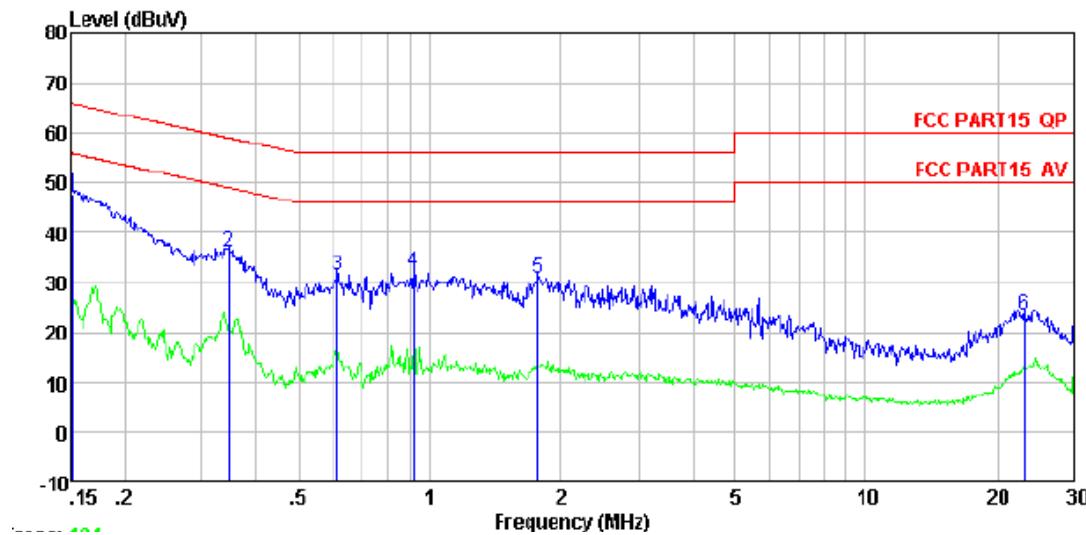


Result data graph shows the conducted emission (Line and Neutral).

Phase L



Phase N





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

Frequency (MHz)	Detector (QP/AV)	Phase	Result (dB μ V)	Limit (dB μ V)	Margin
0.150	QP	L	44.83	66.00	-21.17
0.341	QP	L	42.74	59.18	-16.44
0.630	QP	L	36.13	56.00	-19.87
0.830	QP	L	37.17	56.00	-18.83
1.772	QP	L	37.45	56.00	-18.55
21.600	QP	L	26.16	60.00	-33.84
0.152	QP	N	47.89	65.91	-18.02
0.346	QP	N	36.02	59.05	-23.03
0.614	QP	N	31.58	56.00	-24.42
0.914	QP	N	32.03	56.00	-23.97
1.772	QP	N	30.70	56.00	-25.30
23.018	QP	N	23.61	60.00	-36.39



5.0 RF Exposure Compliance Requirement

Test Requirement: FCC part 15 section 15.247 (i)
 Test Method: FCC part 15 section 1.1307 (b1)
 OET Bulletin 65, Edition 01-01

Results: PASS

Systems operation under the provision of this section shall be operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the Commission's guideline,

The EUT is considered as a mobile device according to OET Bulletin 65, Edition 01-01, therefore distance to human body of min. 20cm is determined.

Frequency Band:	2.412GHz ~2.462GHz
Device Category:	<input type="checkbox"/> Portable (< 20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others :
Exposure Classification:	<input type="checkbox"/> Occupational/ Controlled exposure <input checked="" type="checkbox"/> General Population / Uncontrolled exposure
Max Transmit Power	58.61mW
Antenna Gain	3.0dBi (Numeric gain:1.58)
Evaluation Applied:	<input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation

MPE calculation:

$$\begin{aligned}
 \text{The maximum radiated power (EIRP)} &= \text{the maximum output power} + \text{antenna gain} \\
 &= 17.68\text{dBm} + 3.0\text{dBi} \\
 &= 20.68\text{dBm} \\
 &= 116.95\text{mW}
 \end{aligned}$$

$$\begin{aligned}
 \text{The power density at 20cm from the antenna:} &= \text{EIRP} / 4\pi R^2 \\
 &= 0.023\text{mW} / \text{cm}^2
 \end{aligned}$$

Limits for General Population/Uncontrolled Exposure [OET Bulletin 65, Edition 01-01]:

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30



6.0 List of Measurement Equipment

Radiated Emission

Manufacturer	Equipment	Model No.	Serial No.	Due Date
ZhongYu Electron	3m Semi- Anechoic Chamber	9.0(L)*6.0(W)* 6.0(H)	GTS250	Mar. 29 2015
ZhongYu Electron	Control Room	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A
R&S	EMI Test Receiver	ESU26	GTS203	Jul. 06 2014
SCHWARZBECK	BiConiLog Antenna	VULB9163	GTS214	Mar. 09 2014
SCHWARZBECK	Double -ridged waveguide horn	9120D	GTS208	Mar. 09 2014
HP	RF Amplifier	8347A	GTS204	Jul. 06 2014
HP	Preamplifier	8349B	GTS206	Jul. 06 2014
AUDIX	EMI Test Software	E3	N/A	N/A

Line Conducted

Manufacturer	Equipment	Model No.	Serial No.	Due Date
ZhongYu Electron	Shielding Room	7.3(L)x3.1(W)x 2.9(H)	GTS252	Sep. 07 2013
R&S	EMI Test Receiver	ESCS30	GTS223	Jul. 06 2014
R&S	Pulse Limiter	ESH3-Z2	GTS224	Jul. 06 2014
ANRITSU CORP	Coaxial Switch	MP59B	GTS225	Jul. 06 2014
SCHWARZBECK MESS	Artificial Mains Network	NSLK8127	GTS226	Jul. 06 2014
AUDIX	EMI Test Software	E3	N/A	N/A
KTJ	Thermo meter	TA328	GTS233	Jul. 26 2014

N/A Not Applicable or Not Available



Appendix A

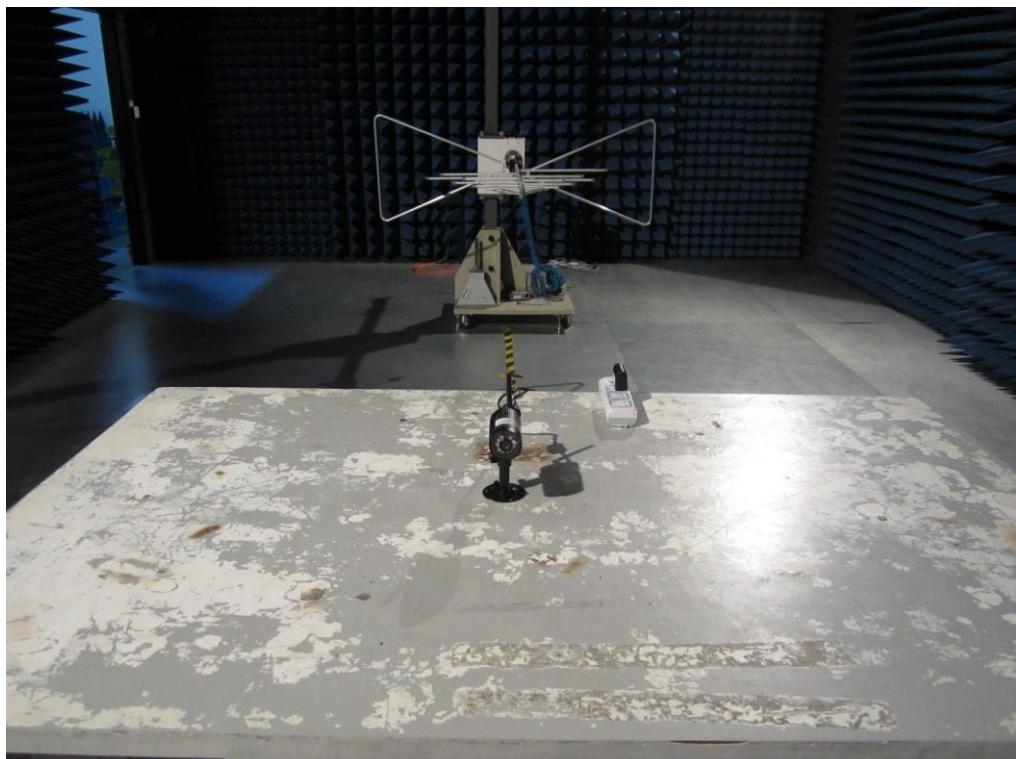
Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of Test Setup:

Radiated Emissions





Appendix A

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of Test Setup:

Conducted Emissions





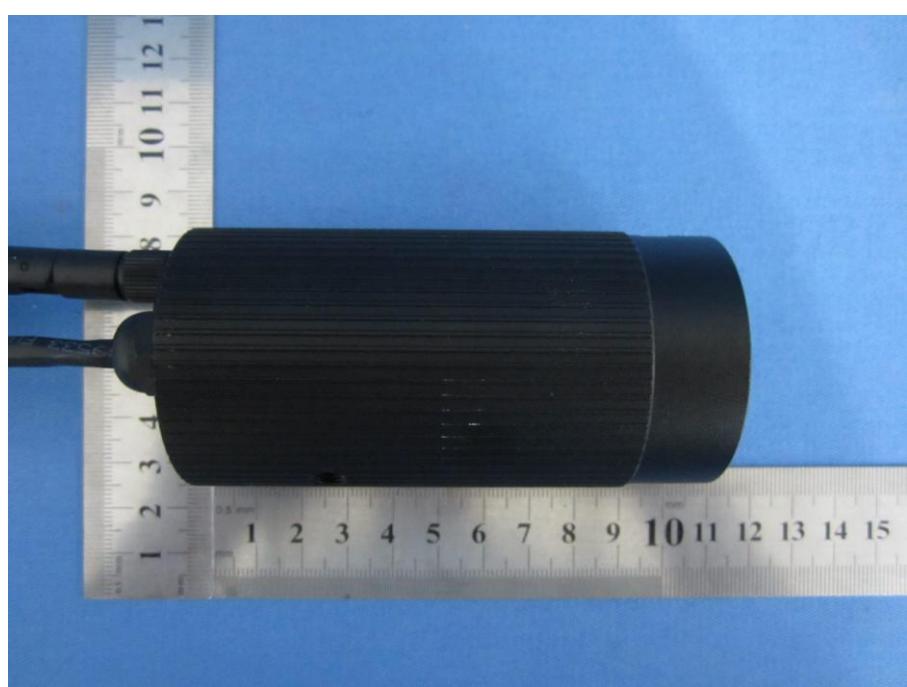
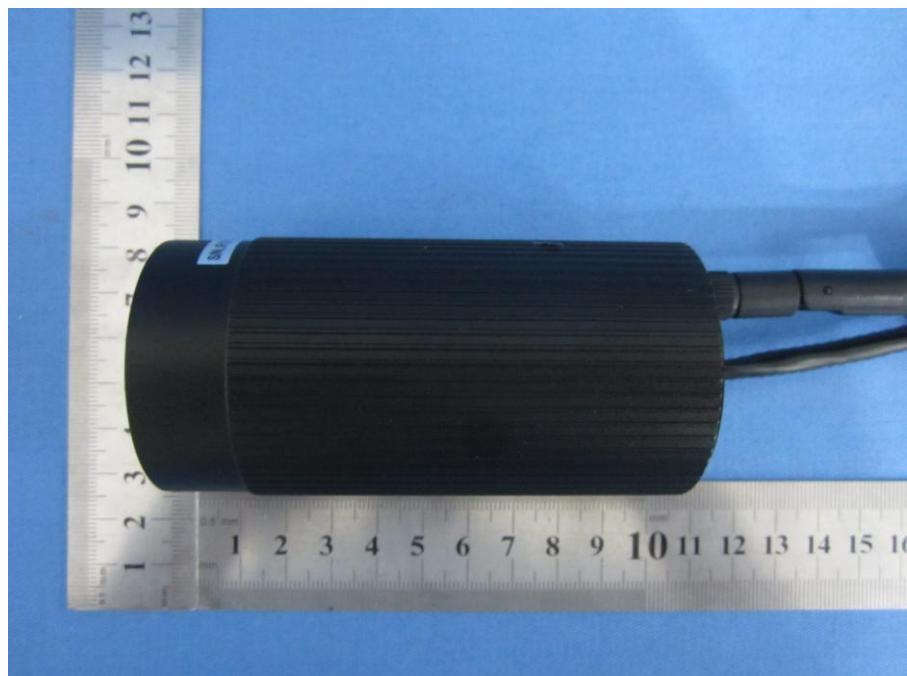
Appendix B

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – External EUT Photos





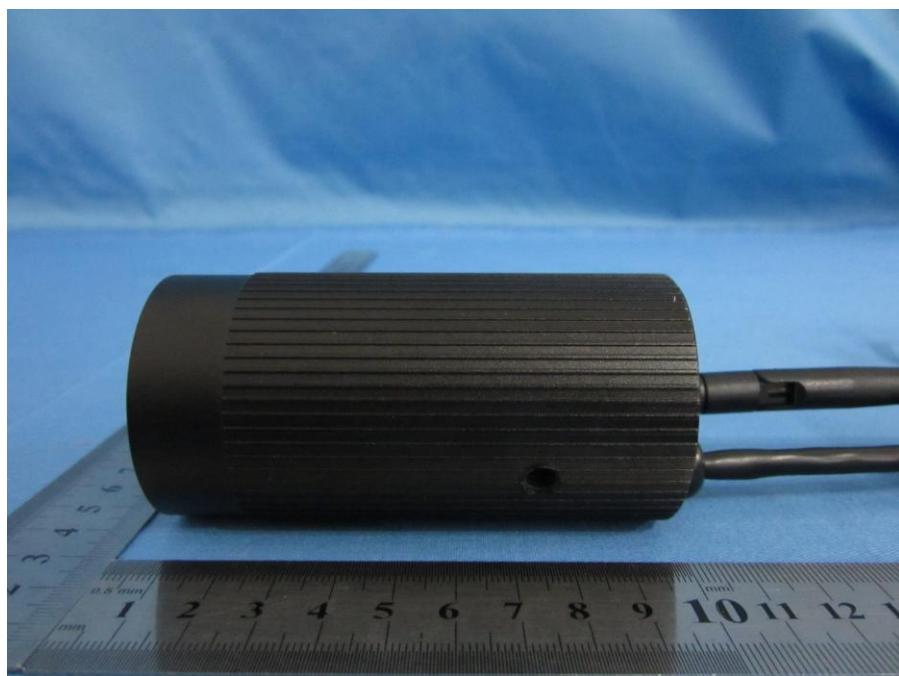
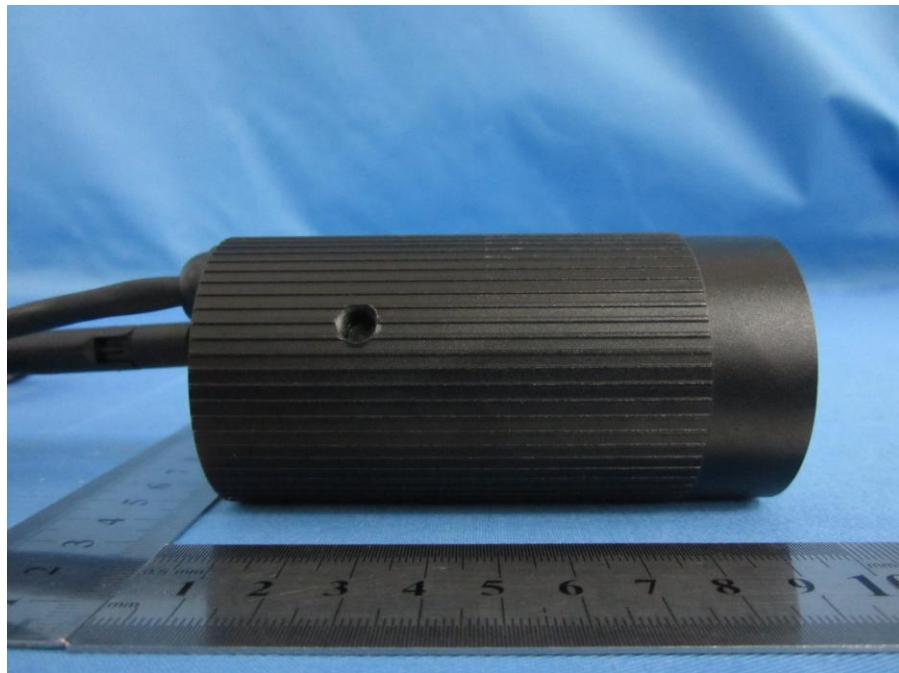
Appendix B

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – External EUT Photos





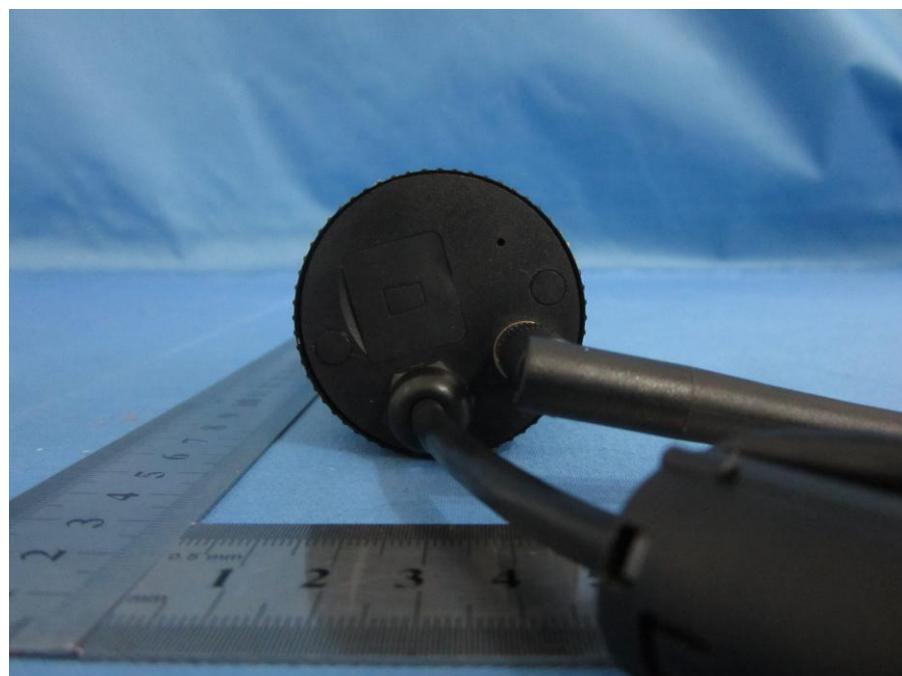
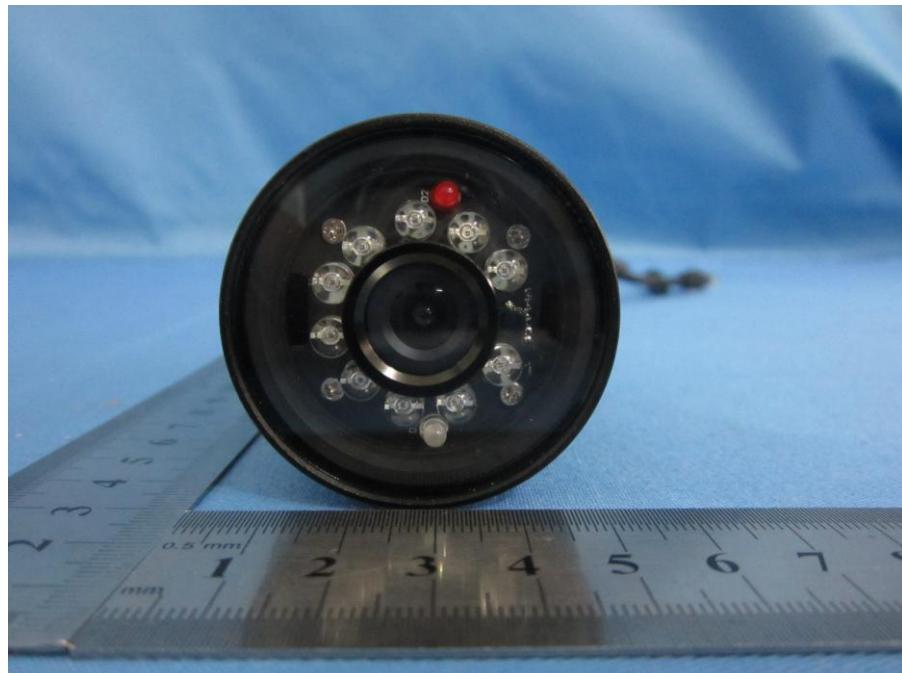
Appendix B

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – External EUT Photos





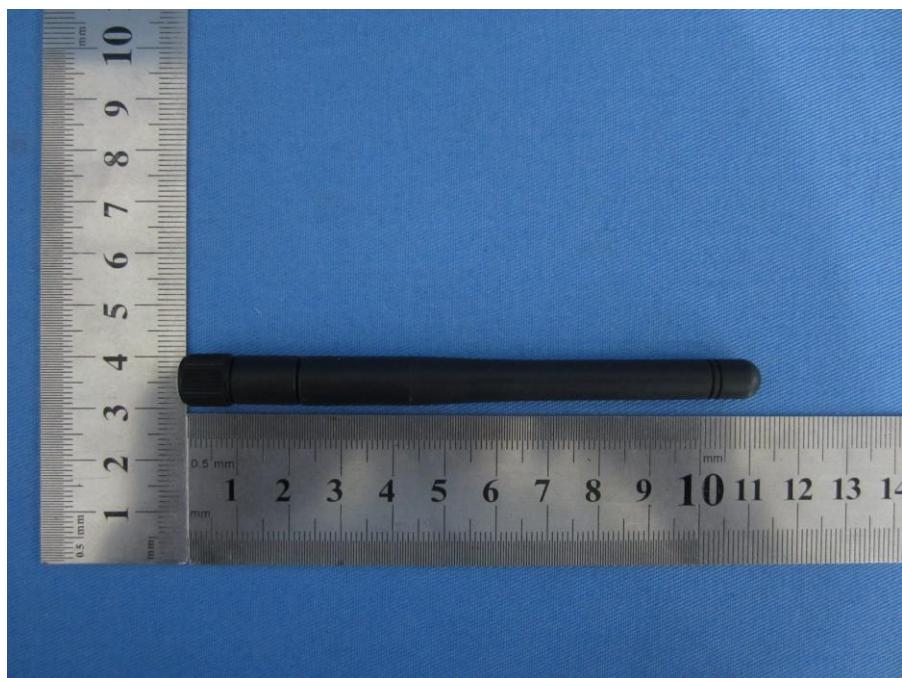
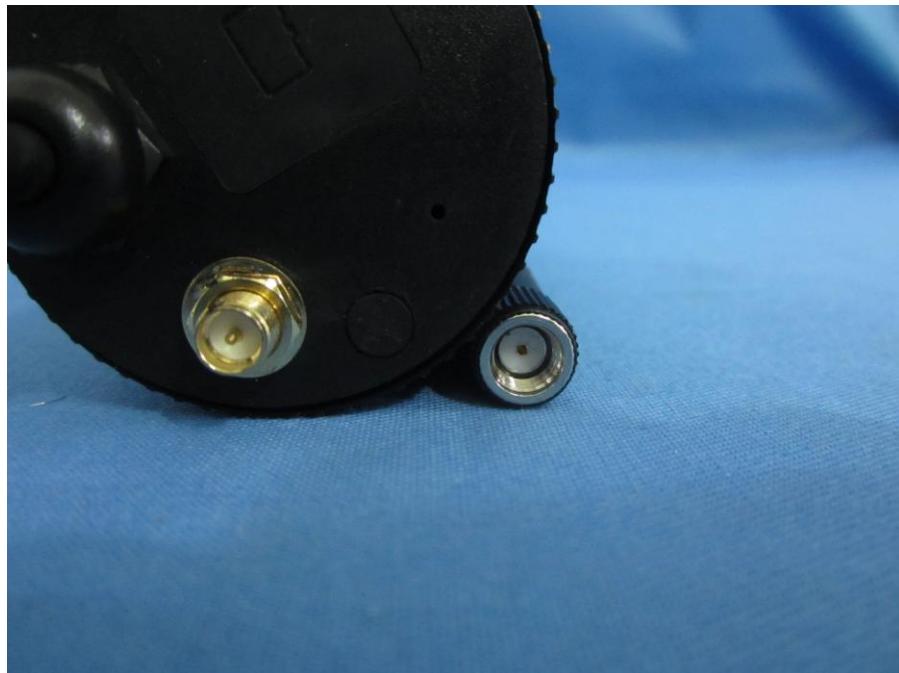
Appendix B

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – External EUT Photos





Appendix B

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – External EUT Photos





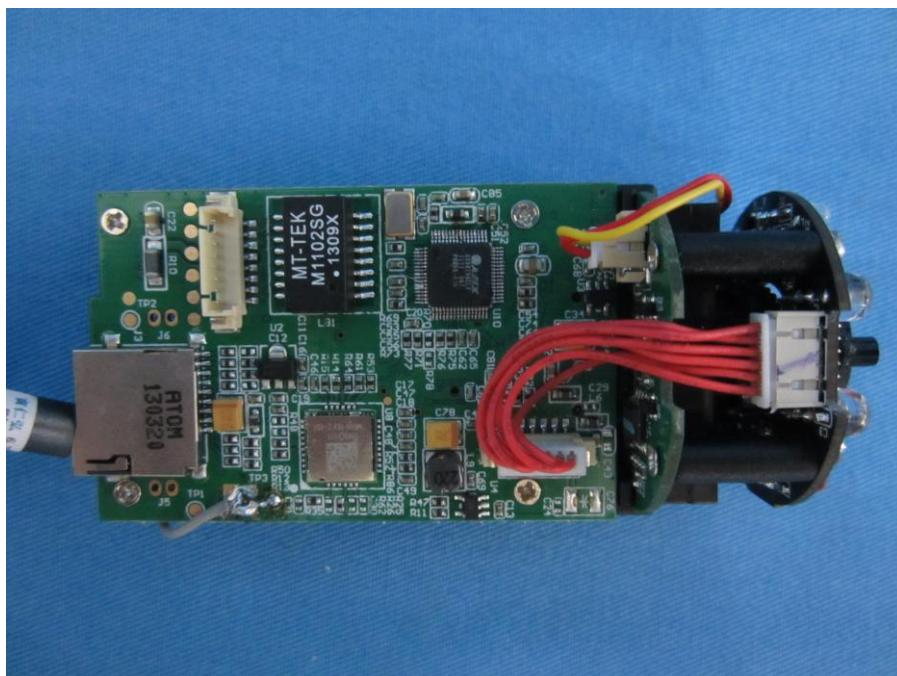
Appendix C

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – Internal EUT Photos





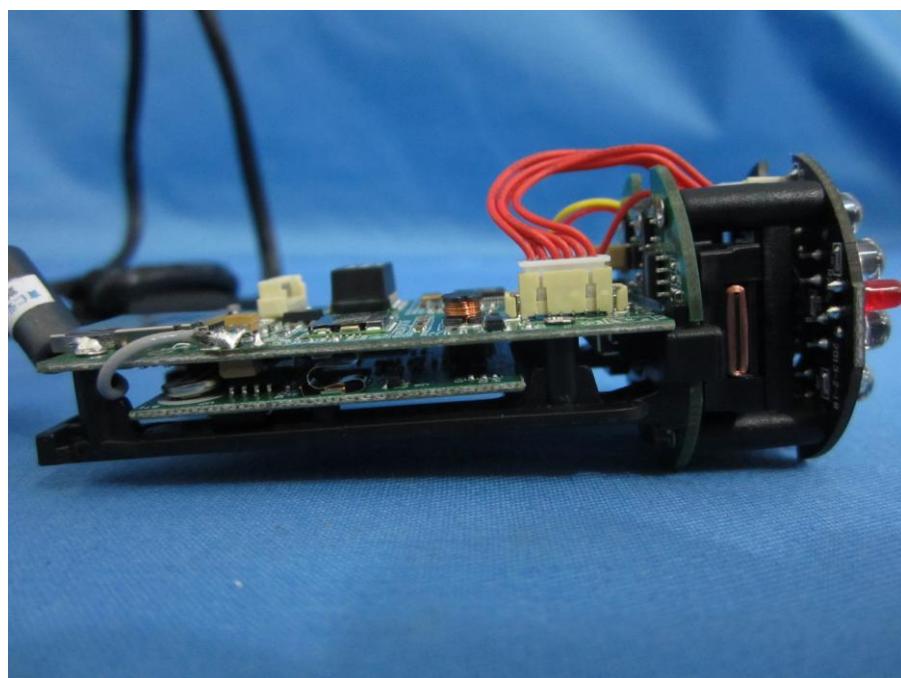
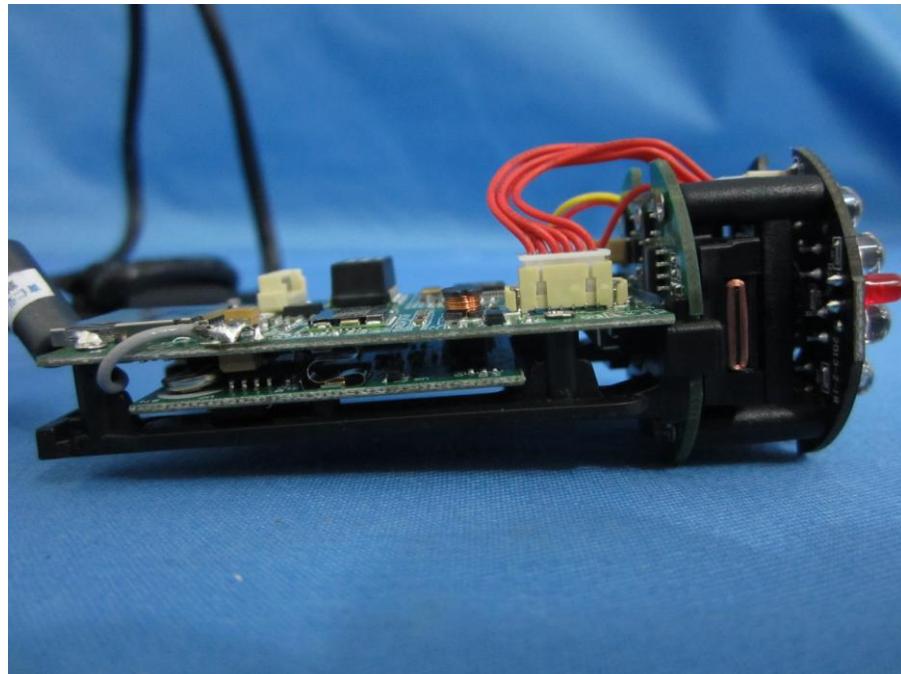
Appendix C

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – Internal EUT Photos





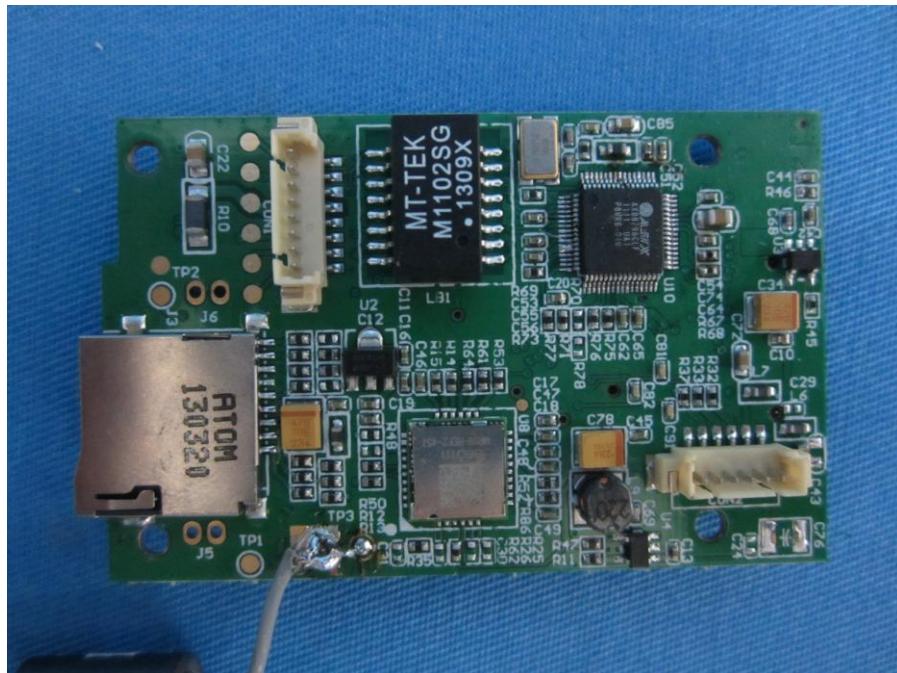
Appendix C

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – Internal EUT Photos





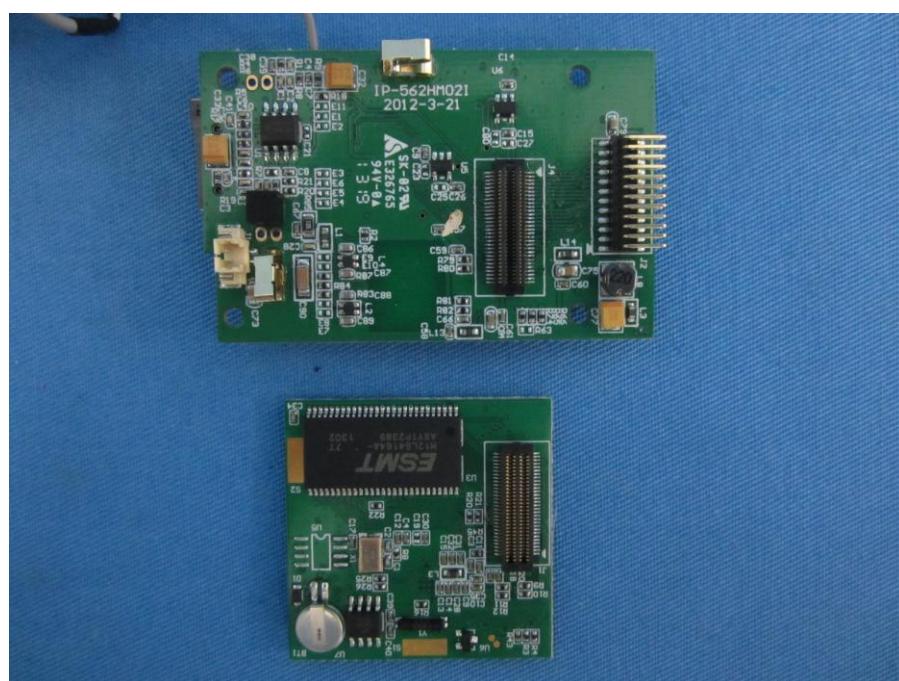
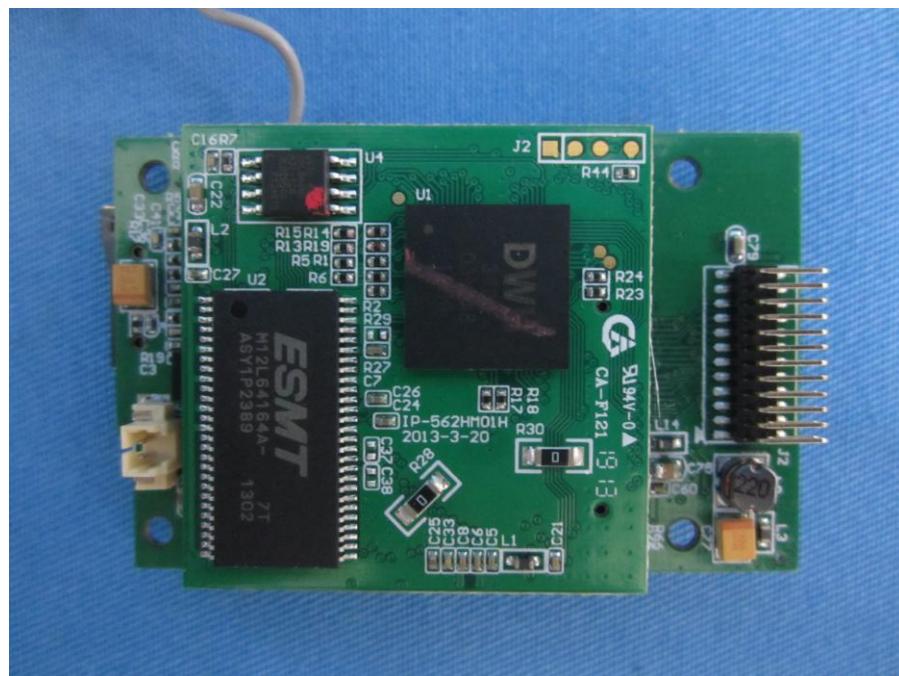
Appendix C

Date: 2013-08-06

Report No.: 60.870.13.026.01F

Model No.: AAPCAM23

Photo of EUT – Internal EUT Photos





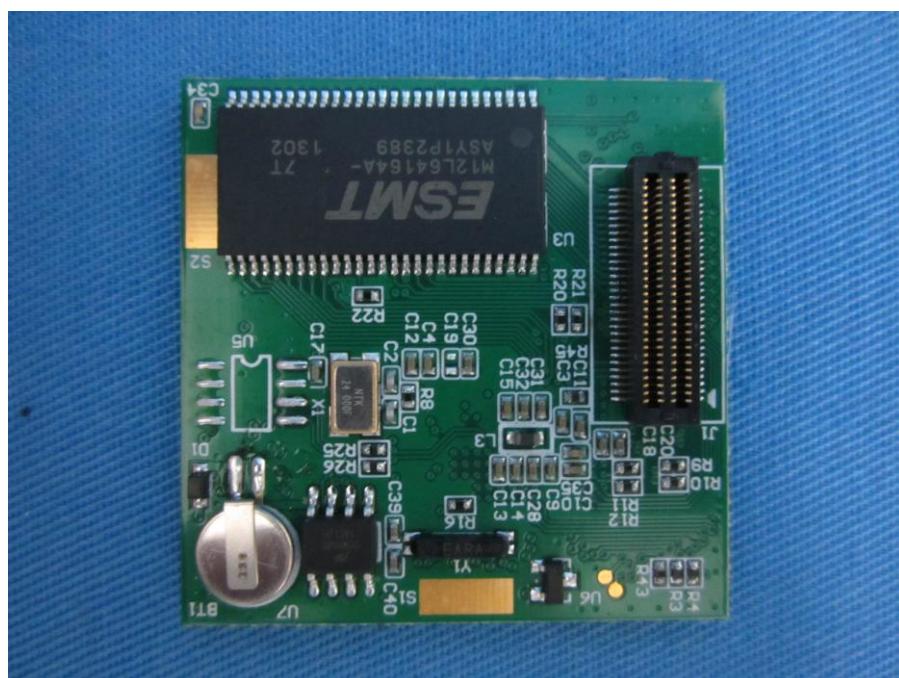
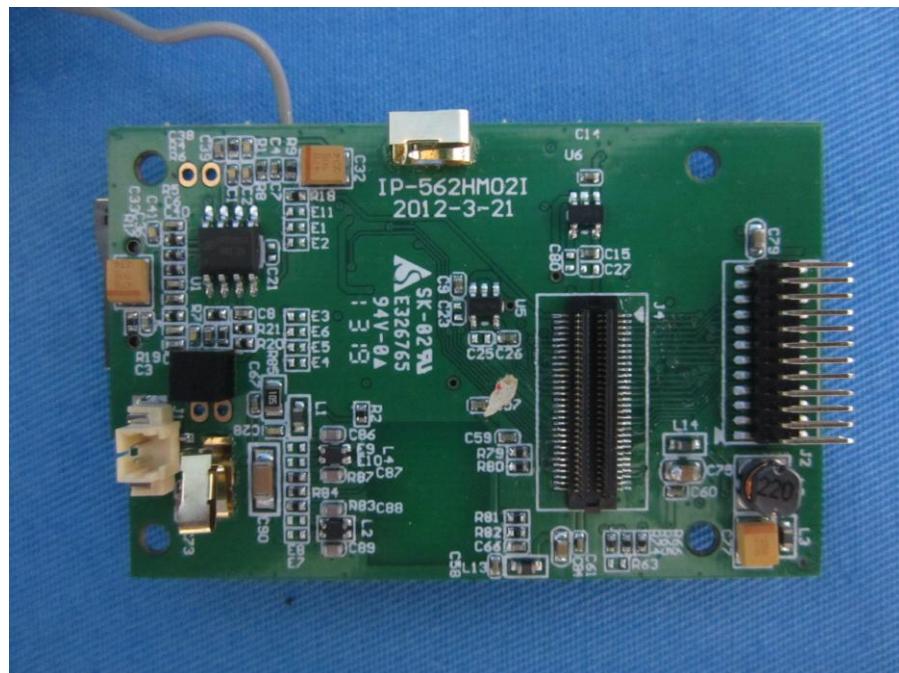
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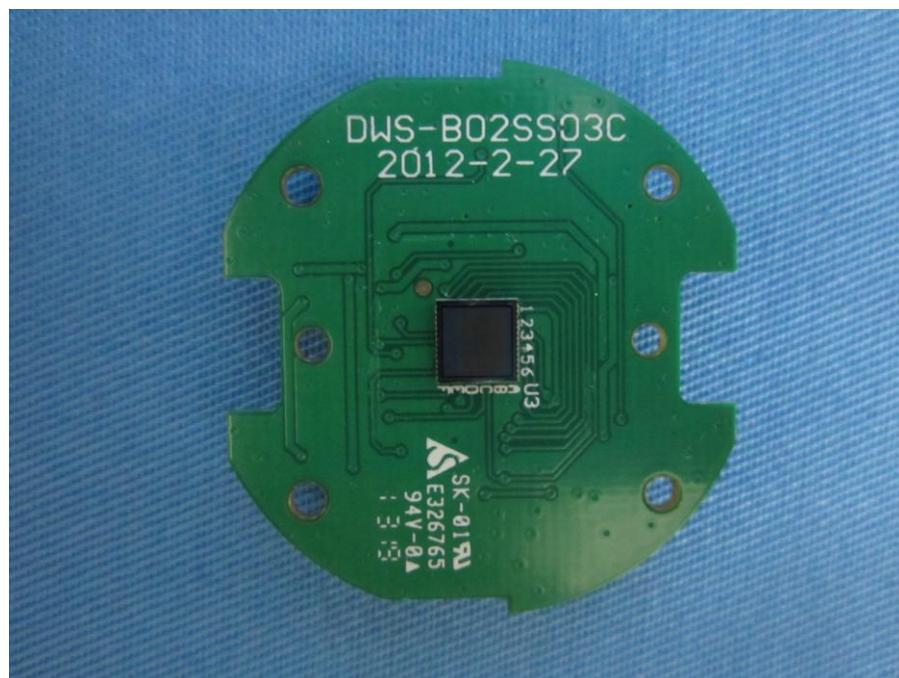
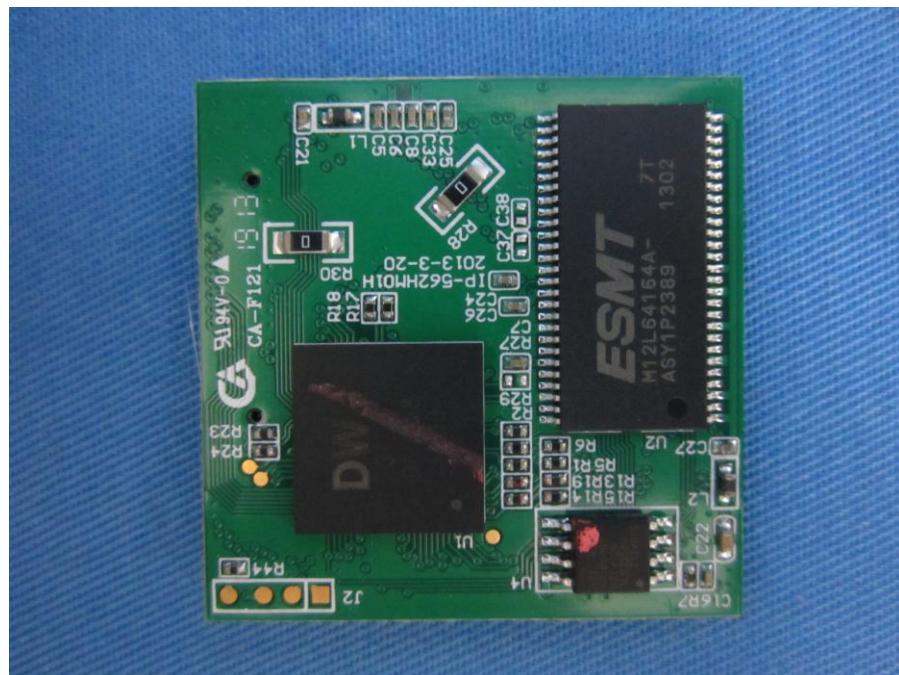
Appendix C

Date: 2013-08-06

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Model No.: AAPCAM23

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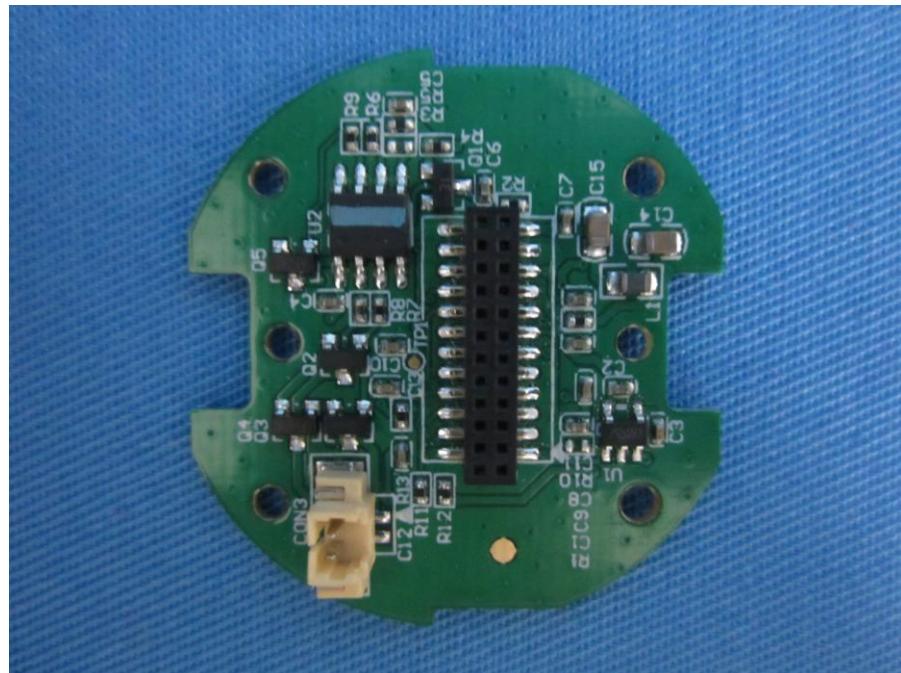
Appendix C

Date: 2013-08-06

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Model No.: AAPCAM23

Photo of EUT – Internal EUT Photos





Appendix C

Date: 2013-08-06

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