

FCC TEST REPORT for HONGKONG IBCAM ELECTRONIC LIMITED

Baby Monitor Model No.: IB-810, IB-812, IB-816, IB-818, IB-819, IB-820, IB-821, IB-822, IB-823, IB-825, IB-826, IB-827, IB-828, IB-829

Prepared for : HONGKONG IBCAM ELECTRONIC LIMITED

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Report Number : 201403812F

Date of Test : Apr. 01~ 20, 2014 Date of Report : Apr. 22, 2014



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TEST REPORT

Applicant	: HONGKONG IBCAM ELECTRONIC LIMITE
Manufacturer	: HONGKONG IBCAM ELECTRONIC LIMITE

EUT : Baby Monitor

Model No · IB-810, IB-812, IB-816, IB-818, IB-819, IB-820, IB-821, IB-822,

IB-823, IB-825, IB-826, IB-827, IB-828, IB-829

Serial No. : N.A.

Trade Mark : ilocom

Rating : DC 5V, 2A

Measurement Procedure Used:

FCC Part15 Subpart C, Paragraph 15.247

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the FCC Part 15 Subpart C requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Test:	Apr. 01~ 20, 2014				
Prepared by :	Zock reng				
	(Tested Engineer / Rock Zeng)				
Reviewer:	Amy Ding				
	(Project Manager / Amy Ding)				
Approved & Authorized Signer :	Ton Chen				
	(Manager / Tom Chen)				



1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Baby Monitor

Model Number : IB-810, IB-812, IB-816, IB-818, IB-819, IB-820, IB-821, IB-822,

IB-823, IB-825, IB-826, IB-827, IB-828, IB-829

(Note: All samples are the same except the model number and

appearance, so we prepare "IB-810" for EMC test only.)

Test Power Supply: AC 120V/60Hz for adapter/DC 5V(With DC 3.7V battery inside)

RF Transmission : 2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20))

Frequency 2422MHz~2452MHz (802.11n(HT40))

Channels : 11 For (802.11b/802.11g/802.11n(HT20))

7 For (802.11n(HT40))

802.11b CCK Modulation

> 802.11g OFDM 802.11n MCS

Antenna Gain: : 0dBi

Applicant : HONGKONG IBCAM ELECTRONIC LIMITED

Address : 1211 West Keji Building, ShenZhen High-Tech Ind-Park, Nanshan

District. ShenZhen. China

: HONGKONG IBCAM ELECTRONIC LIMITED Manufacturer

: 1211 West Keji Building, ShenZhen High-Tech Ind-Park, Nanshan Address

District. ShenZhen, China

Date of receipt : Apr. 01, 2014

Date of Test : Apr. $01 \sim 20, 2014$



1.2. Auxiliary Equipment Used during Test

N/A

1.3. Description of Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS - LAB Code: L3503

Shenzhen Anbotek Compliance Laboratory Limited., Laboratory has been assessed and in compliance with CNAS/CL01: 2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

FCC-Registration No.: 752021

Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registed and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 752021, July 10, 2013.

IC-Registration No.: 8058A-1

Shenzhen Anbotek Compliance Laboratory Limited., EMC Laboratory has been registered and fully described in a report filed with the (IC) Industry Canada. The acceptance letter from the IC is maintained in our files. Registration 8058A, February 22, 2013.

Test Location

All Emissions tests were performed at

Shenzhen Anbotek Compliance Laboratory Limited. at 1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China

1.4. Measurement Uncertainty

Radiation Uncertainty : Ur = 4.3dB

Conduction Uncertainty : Uc = 3.4dB



2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2009 and FCC Part 15, Paragraph 15.247.

2.1. Summary of Test Results

The EUT has been tested according to the following specifications:

Standard	Test Type	Result	Notes
FCC Part 15, Paragraph 15.107, 15.207	Conducted Emission Test	PASS	Complies
FCC Part 15, Paragraph 15.247(b)(1)	Peak Output Power	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(2)	6dB Bandwidth	PASS	Complies
FCC Part 15, Paragraph 15.247(c)	100kHz Bandwidth of Frequency Band Edges	PASS	Complies
FCC Part 15, Paragraph 15.209(a)(f)	Spurious Emission	PASS	Complies
FCC Part 15, Paragraph 15.247(a)(1)	Frequency Separation		N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Number of Hopping Frequency	-	N/A
FCC Part 15, Paragraph 15.247(a)(1)(iii)	Time of Occupancy	-	N/A
FCC Part 15, Paragraph 15.247(c)	Peak Power Density	PASS	Complies

2.2. 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 isprogrammed.

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

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

IEEE802.11n (HT20): Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with MCS 0 Mbps lowest data rate (the worst case) are chosen for the final testing.

IEEE802.11n (HT40): Channel 3(2422MHz), Channel 6(2437MHz) and Channel 9(2452MHz) with MCS 0 Mbps lowest data rate (the worst case) are chosen for the final testing.



2.3. List of channels:

√ - available

X - tested

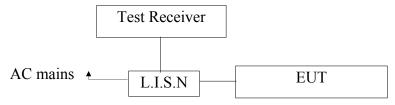
Number	Frequency(MHz)		802.11	802.11
			b/g/n	b/g/n
			(HT20)	(HT40)
1	2412	√	X	
2	2417	√		
3	2422	√		X
4	2427	√		
5	2432	√		
6	2437	√	X	X
7	2442	√		
8	2447	√		
9	2452	√		X
10	2457	√		
11	2462	√	X	



3. Conducted Emission Test

3.1. Block Diagram of Test Setup

3.1.1. Block diagram of connection between the EUT and simulators



3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency	Limits dB(μV)					
MHz	Quasi-peak Level	Average Level				
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*				
0.50 ~ 5.00	56	46				
5.00 ~ 30.00	60	50				

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

3.3. Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

3.4. Operating Condition of EUT

- 3.4.1. Setup the EUT and simulator as shown as Section 3.1.
- 3.4.2. Turn on the power of all equipment.
- 3.4.3. Let the EUT work in test mode (Charging to adapter) and measure it.



3.5. Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (ESCI) set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test results are reported on Section 3.6.

3.6. Test equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval	
1.	Two-Line	Rohde & Schwarz	ENV216	100055	Apr. 23, 2013 1 Year		
	V-network	Ronde & Schwarz	E11 V 210	100033	Apr. 23, 2013	1 1 Cai	
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 23, 2013	1 Year	
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 23, 2013	1 Year	

3.7. Power Line Conducted Emission Measurement Results **PASS.**

The frequency range from 150KHz to 30 MHz is investigated.



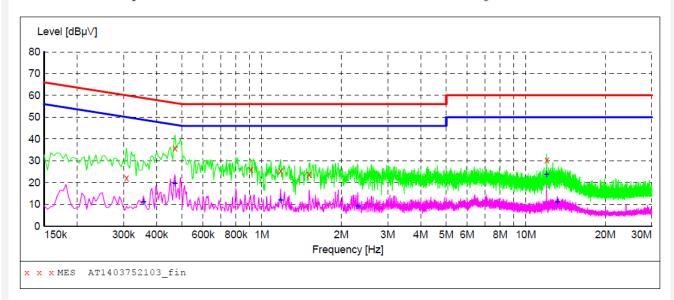
CONDUCTED EMISSION TEST DATA

Test Site: 1# Shielded Room **Operating Condition:** Communication

Test Specification: DC 5V Comment: Live Line

Tem:25℃ Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"
Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "AT1403752103 fin"

3/19/2014 9:1	6AM						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.307500	22.10	20.1	60	37.9	QP	L1	GND
0.469500	35.70	20.1	57	20.8	QP	L1	GND
0.910500	26.00	20.1	56	30.0	QP	L1	GND
1.180000	25.40	20.2	56	30.6	QP	L1	GND
1.513000	23.60	20.3	56	32.4	QP	L1	GND
12.002500	30.40	20.6	60	29.6	OP	L1	GND

MEASUREMENT RESULT: "AT1403752103 fin2"

3/19/2014 9:	16AM						
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
0.357000	11.10	20.1	49	37.7	AV	L1	GND
0.469500	19.50	20.1	47	27.0	AV	L1	GND
1.180000	12.00	20.2	46	34.0	AV	L1	GND
2.314000	9.20	20.3	46	36.8	AV	L1	GND
12.002500	23.80	20.6	50	26.2	AV	L1	GND
13.163500	11.10	20.7	50	38.9	AV	L1	GND



CONDUCTED EMISSION TEST DATA

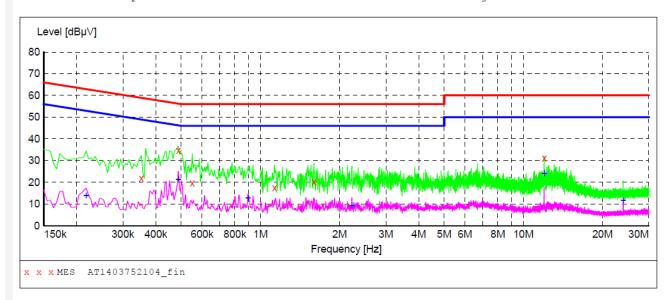
Test Site: 1# Shielded Room Operating Condition: Communication

Test Specification: DC 5V
Comment: Neutral Line

Tem:25°C Hum:50%

SCAN TABLE: "Voltage (150K~30M) FIN"

Short Description: 150K-30M Disturbance Voltages



MEASUREMENT RESULT: "AT1403752104 fin"

3	/19/2014 9:1 Frequency MHz		Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.352500	21.90	20.1	59	37.0	QP	N	GND
	0.487500	34.70	20.1	56	21.5	QP	N	GND
	0.550500	19.50	20.1	56	36.5	QP	N	GND
	1.130500	17.50	20.2	56	38.5	QP	N	GND
	1.598500	20.10	20.3	56	35.9	QP	N	GND
	11.998000	31.10	20.6	60	28.9	OP	N	GND

MEASUREMENT RESULT: "AT1403752104 fin2"

3	/19/2014 9:1 Frequency MHz	19AM Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line	PE
	0.217500	13.80	20.1	53	39.1	AV	N	GND
	0.487500	21.30	20.1	46	24.9	AV	N	GND
	0.897000	12.80	20.1	46	33.2	AV	N	GND
	2.228500	9.20	20.3	46	36.8	AV	N	GND
	11.998000	24.00	20.6	50	26.0	AV	N	GND
	23.999500	11.70	20.8	50	38.3	AV	N	GND



4. FCC Part 15.247 Requirements for DSSS & OFDM Modulation

4.1 Test Setup

EUT System	Attenuator	Test Receiver
2012950	1 100011000001	1000110001101

4.2 6dB Bandwidth

a. Limit

For the direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

b.Test Procedure

- 1. Place the EUT on the table and set it in the transmitting mode.
- 2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 3. Set the spectrum analyzer as:

RBW = 100kHz, $VBW \ge 3*RBW = 300kHz$,

Detector= Peak

Trace mode= Max hold.

Sweep- auto couple.

- 4. Mark the peak frequency and –6dB (upper and lower) frequency.
- 5. Repeat until all the rest channels are investigated.

c. Test Setup See 4.1

d. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analysis	Agilent	E4407B	US39390582	Aug. 09, 2013	1 Year
2.	Preamplifier	Instruments corporation	EMC01183 0	980100	Aug. 09, 2013	1 Year
3.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
4.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
5.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

e. Test Results

Pass.



f. Test Data

	Test mode:	IEEE	802.11b
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Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	10.56	()	Pass
Mid	2437	10.56	>500	Pass
High	2462	10.56		Pass

Test mode: IEEE 802.11g

Channel	Frequency	Bandwidth	Limit	Results
Chamici	(MHz)	(MHz)	(kHz)	Results
Low	2412	16.48		Pass
Mid	2437	16.48	>500	Pass
High	2462	16 48		Pass

Test mode: IEEE 802.11n (HT20)

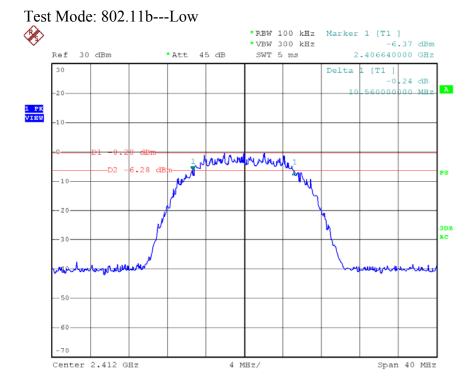
Channal	Frequency	Bandwidth	Limit	Dogulta
Channel	(MHz)	(MHz)	(kHz)	Results
Low	2412	17.20		Pass
Mid	2437	17.20	>500	Pass
High	2462	17.20		Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2422	35.36	,	Pass
Mid	2437	35.36	>500	Pass
High	2452	35.36		Pass

Test Plots See the following page.



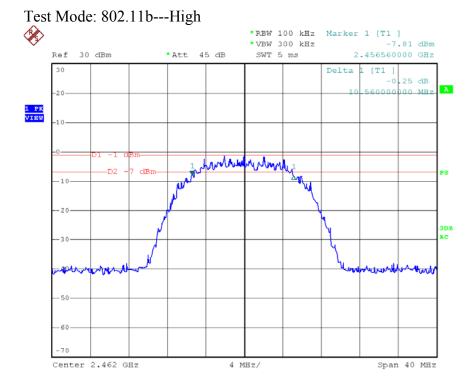


Date: 4.APR.2014 17:06:42

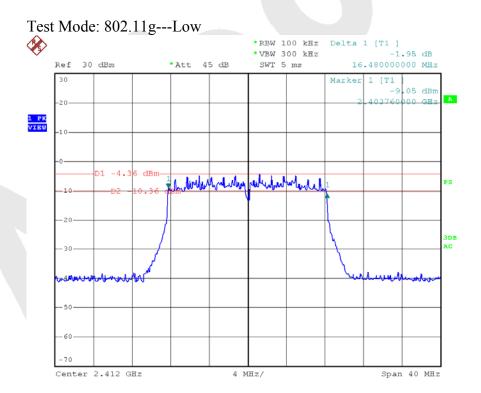
Test Mode: 802.11b---Mid *RBW 100 kHz Marker 1 [T1] *VBW 300 kHz 2 -6.97 dBm 2.431560000 GHz *Ref 30 dBm *Att 45 dB SWT 5 ms 2.431560000 GHz Delta 1 [T1] -0.30 dB 10.560000000 MHz D2 -6.53 dBm 10.560000000 MHz *RBW 100 kHz Marker 1 [T1] -0.97 dBm 2.431560000 GHz Delta 1 [T1] -0.30 dB 10.560000000 MHz Span 40 MHz Center 2.437 GHz 4 MHz/ Span 40 MHz

Date: 4.APR.2014 17:07:51



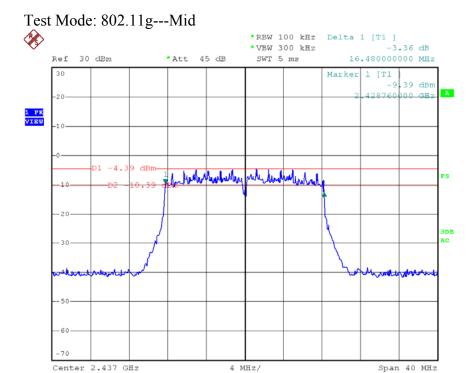


Date: 4.APR.2014 17:09:51

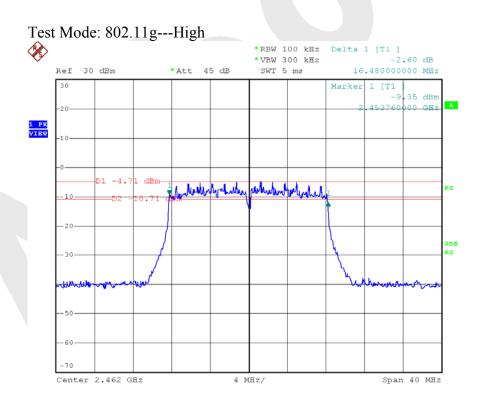


Date: 4.APR.2014 17:10:48





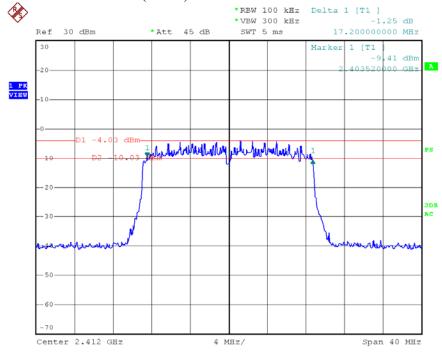
Date: 4.APR.2014 17:12:14



Date: 4.APR.2014 17:13:04

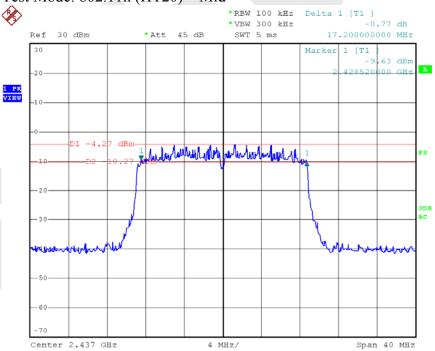






Date: 4.APR.2014 17:21:03

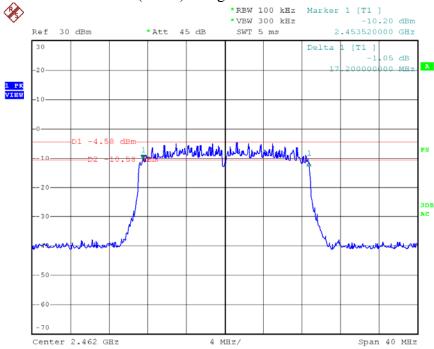
Test Mode: 802.11n (HT20)---Mid



Date: 4.APR.2014 17:21:56

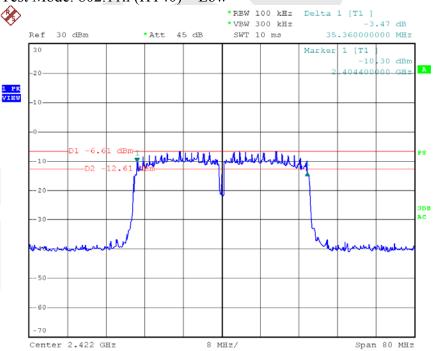






Date: 4.APR.2014 17:22:52

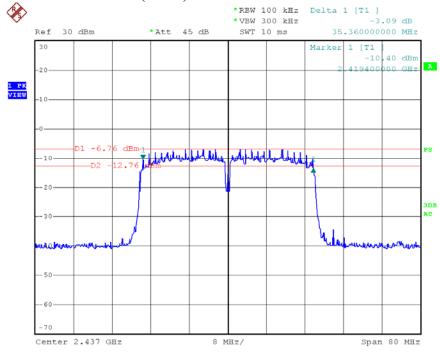
Test Mode: 802.11n (HT40)---Low



Date: 4.APR.2014 17:24:08

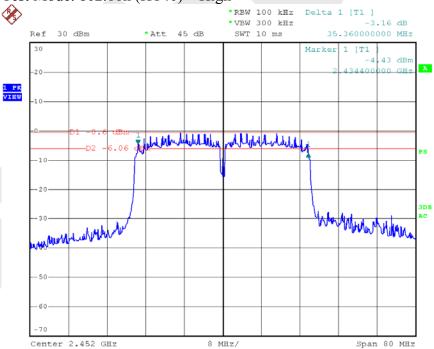






Date: 4.APR.2014 17:25:09

Test Mode: 802.11n (HT40)---High



Date: 8.APR.2014 11:37:51



4.3. Maximum Peak output power test

a. Limit

The maximum peak output power of the intentional radiator shall not exceed the following:

- 1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt (30dBm).
- 2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antenna of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

b. Configuration of Measurement

EUT	DC block	ATT.		Test receiver
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c. Data Rates

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

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

IEEE802.11n (HT20: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 6.5Mbps data rate (the worst case) are chosen for the final testing.

IEEE802.11n (HT40: Channel 3(2422MHz), Channel 6(2437MHz) and Channel 9(2452MHz) with 13.5Mbps data rate (the worst case) are chosen for the final testing.

d. Test Procedure

This test was according the kDB 558074 9.1.2:

- 1. This procedure may be used when the maximum available RBW of the measurement instrument is less than the DTS bandwidth.
- 2. Set the RBW = 1 MHz.
- 3. Set the VBW \geq 3*RBW = 3 MHz.
- 4. Set the span ≥ 1.5*DTS bandwidth.
- 5. Detector = peak.
- 6. Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.
- 9. 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.

e. Test Equipment

Same as the equipment listed in 4.2.

f. Test Results

Pass.



g. Test Data

Test mode: IEEE 802.11b

Channal	Frequency	Maximum transmit power	Liı	mit	Dogult
Channel	(MHz)	(dBm)	(dBm)	(watts)	Result
Low	2412	15.59			Pass
Mid	2437	15.20	30	1	Pass
High	2462	14.74			Pass

Test mode: IEEE 802.11g

Channel	Frequency	Maximum transmit power	Li	mit	Result
Chamilei	(MHz)	(dBm)	(dBm)	(watts)	Result
Low	2412	15.53			Pass
Mid	2437	15.52	30	1	Pass
High	2462	15.18			Pass

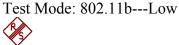
Test mode: IEEE 802.11n (HT20)

Channel	Frequency	Maximum transmit power	Liı	mit	Result
Chamilei	(MHz)	(dBm)	(dBm)	(watts)	Result
Low	2412	15.28			Pass
Mid	2437	15.14	30	1	Pass
High	2462	14.84			Pass

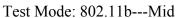
Test mode: IEEE 802.11n (HT40)

Channel	Frequency	Maximum transmit power	Liı	mit	Result
Channel	(MHz)	(dBm)	(dBm)	(watts)	Result
Low	2422	15.41			Pass
Mid	2437	15.43	30	1	Pass
High	2452	15.36			Pass





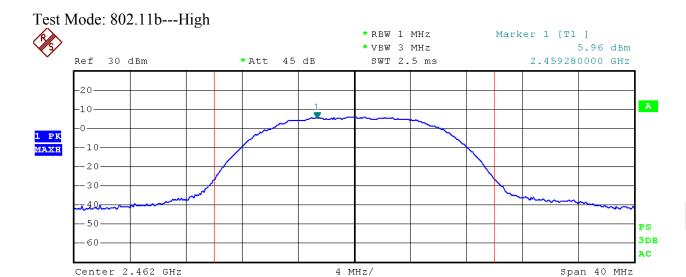




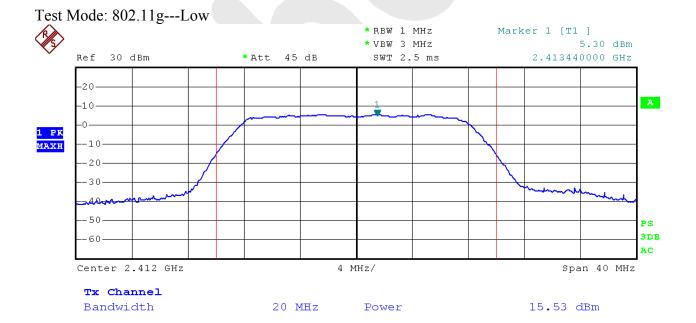




Tx Channel





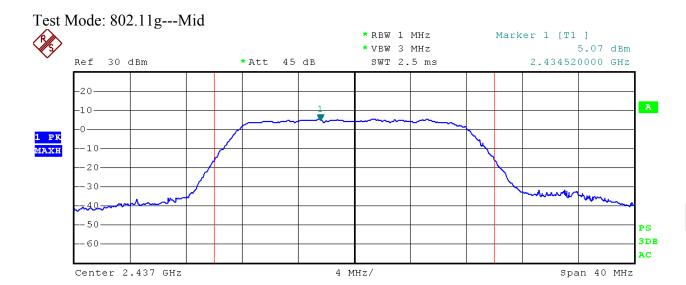


15.52 dBm



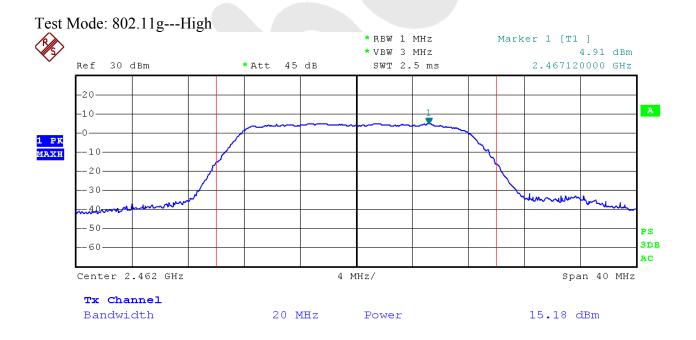
Tx Channel

Bandwidth



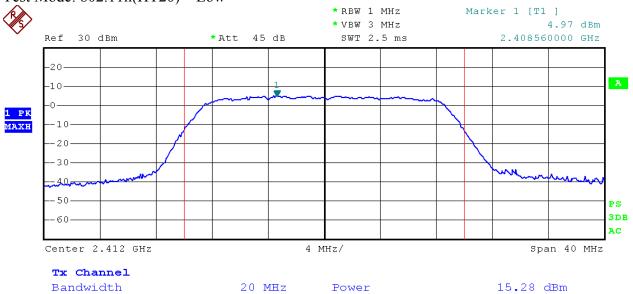
Power

20 MHz







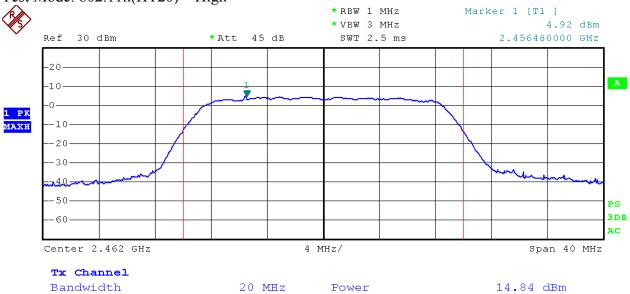




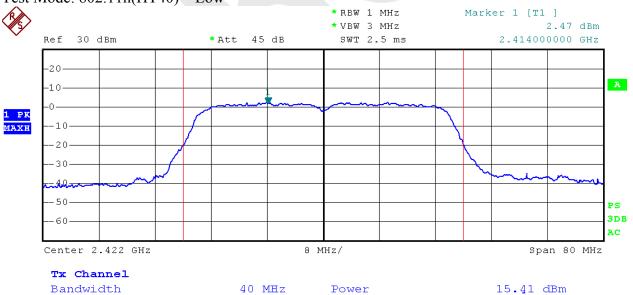






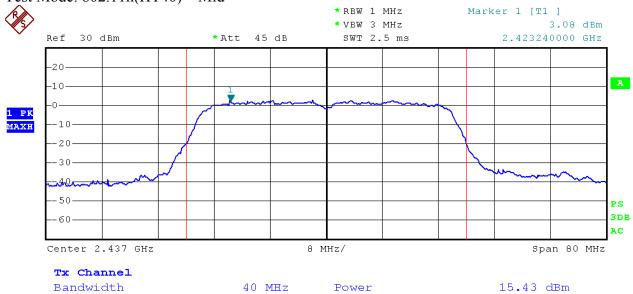




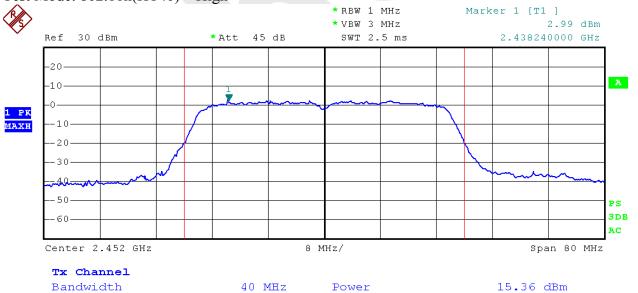














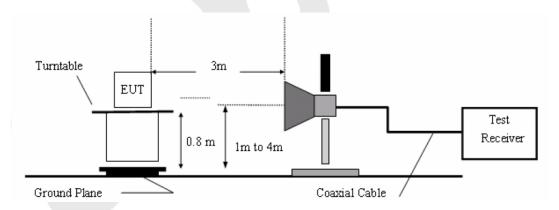
4.4. Band Edges Measurement

a. Limit

According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in15.209(a).

b. Test Procedure

- 1. Conducted Method:
- 1) Set RBW=100KHz, VBW=300KHz
- 2) Detector=peak
- 3) Sweep time= auto
- 4) Trace mode=max hold.
- 2. Radiated Method:
- 1) The EUT is placed on a turntable, which is 0.8m above the ground plane.
- 2) The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3) EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4) Peak detector: RBW=1MHz, VBW=3MHz, SWT=AUTO Average detector: RBW=1MHz, VBW=10Hz, SWT=AUTO The EUT is tested in 9*6*6 Chamber.
- 5) Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.



c. Test Equipment

Same as the equipment listed in 4.2.

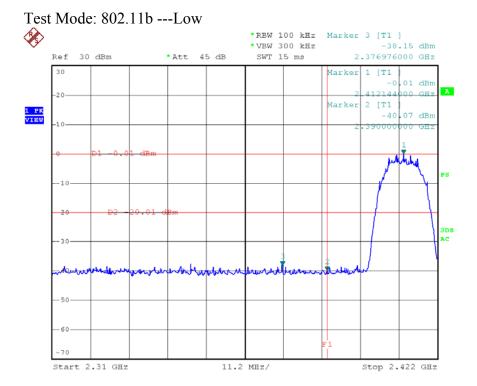
d. Test Results

Pass.

e. Test Plots

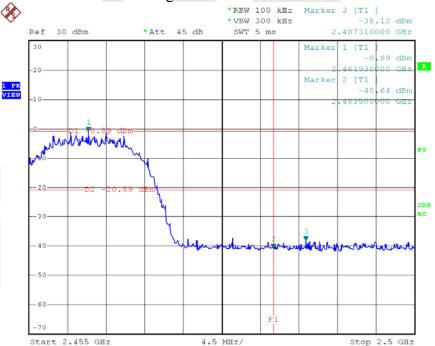
See the following page.





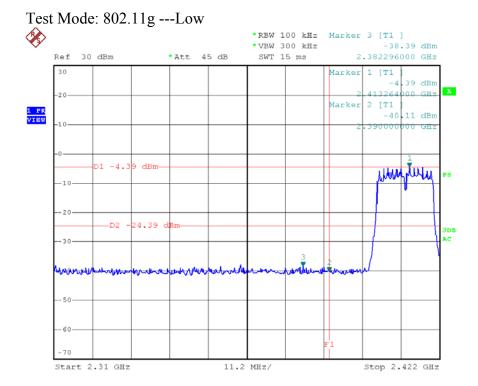
Date: 4.APR.2014 16:56:35

Test Mode: 802.11b --- High



Date: 4.APR.2014 16:57:42





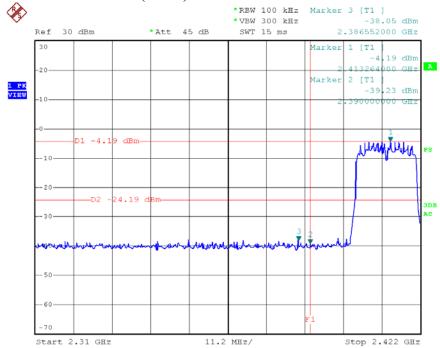
Date: 4.APR.2014 16:58:42

Test Mode: 802.11g ---High **%** *RBW 100 kHz Marker 3 [T1] -38.50 dBm * VBW 300 kHz 2.491566000 GHz Ref 30 dBm *Att 45 dB SWT 5 ms 1 [T1 30 84 dBm Marker 2 [T1 -39.73 dBn 24.84 3DB F1 Start 2.453 GHz Stop 2.5 GHz

Date: 4.APR.2014 17:00:08

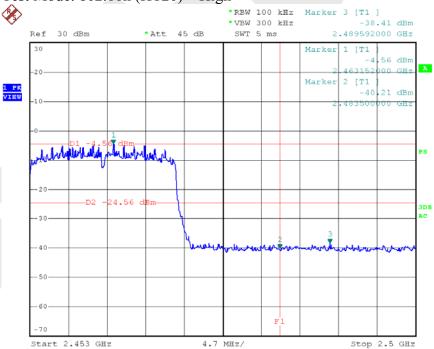






Date: 4.APR.2014 17:01:19

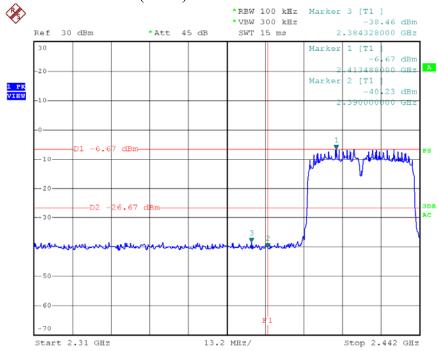
Test Mode: 802.11n (HT20)---High



Date: 4.APR.2014 17:02:21

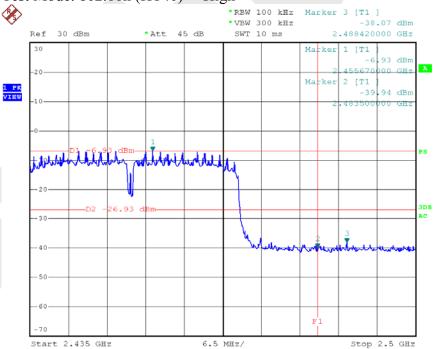






Date: 4.APR.2014 17:03:54

Test Mode: 802.11n (HT40) --- High



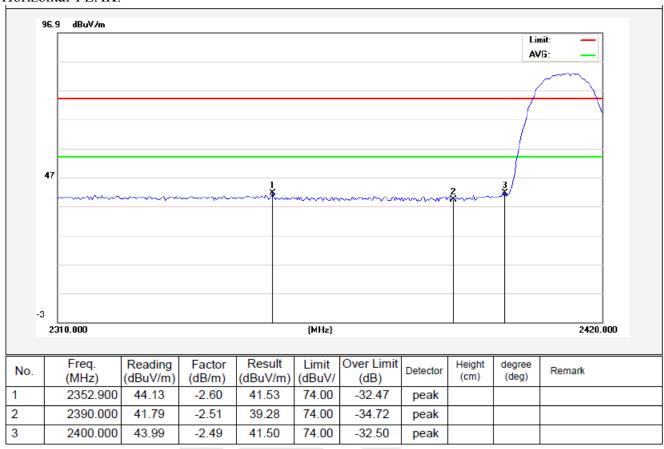
Date: 4.APR.2014 17:05:02



Test Mode: 802.11b

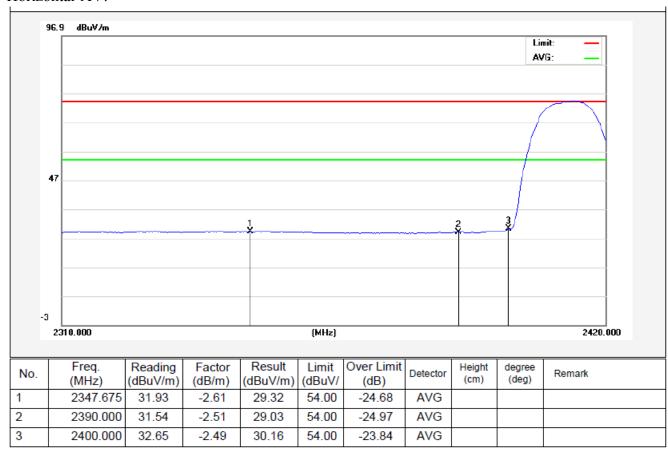
2412MHz

Horizontal-PEAK:





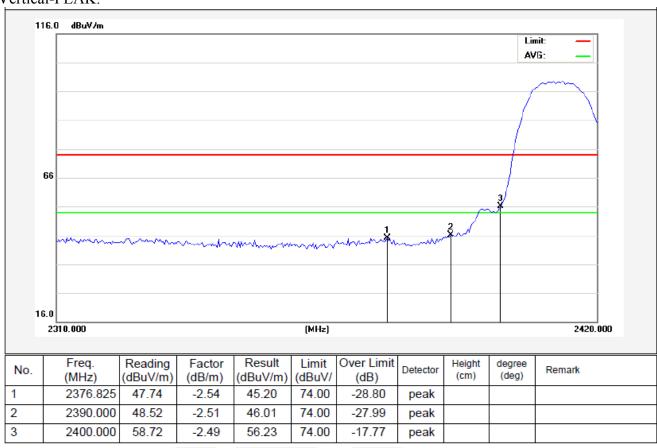
Horizontal-AV:





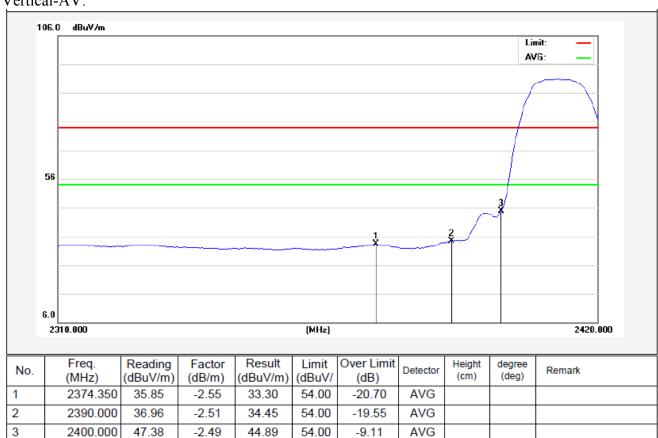
Test Mode: 802.11b

2412MHz Vertical-PEAK:





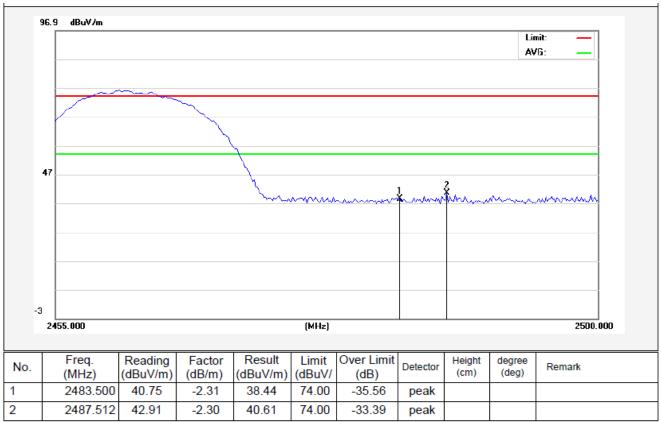
Vertical-AV:



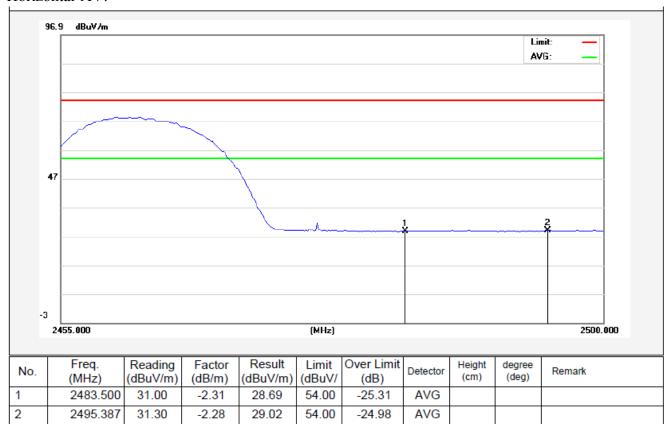


Test Mode: 802.11b

2462MHz

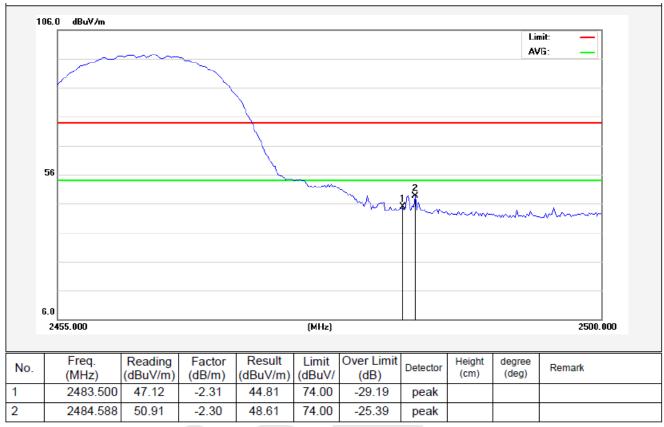




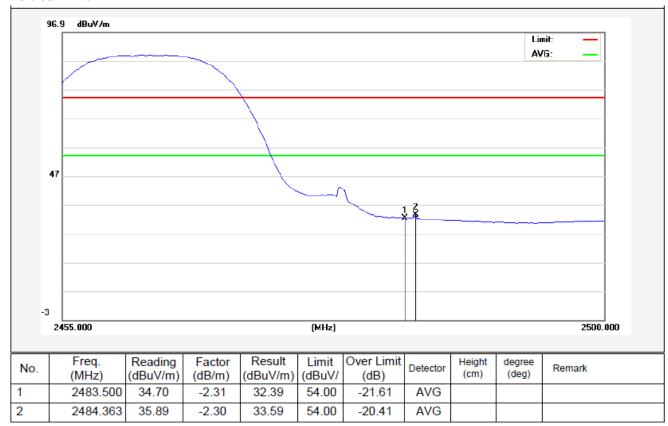




Test Mode: 802.11b



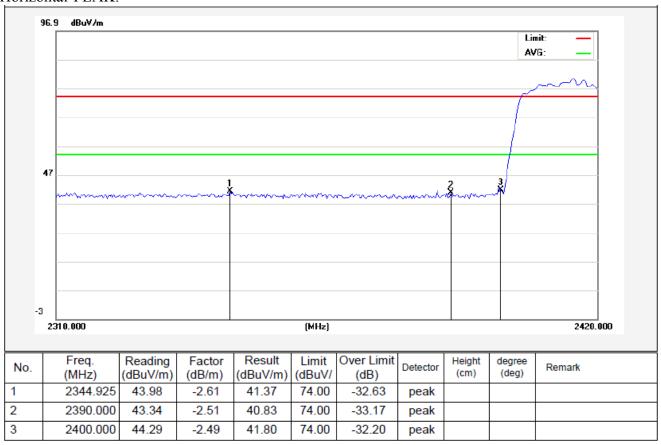




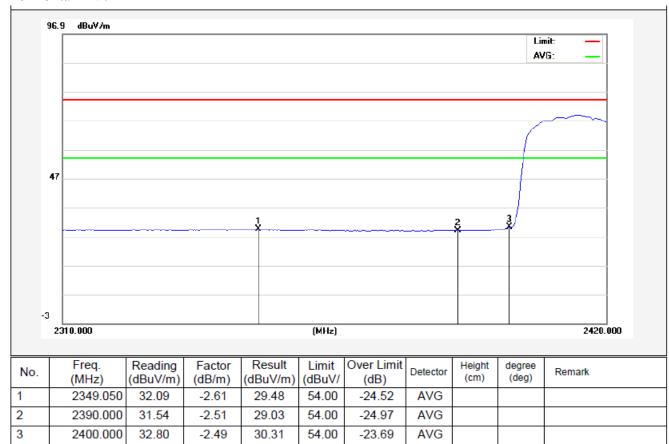


Test Mode: 802.11g

2412MHz

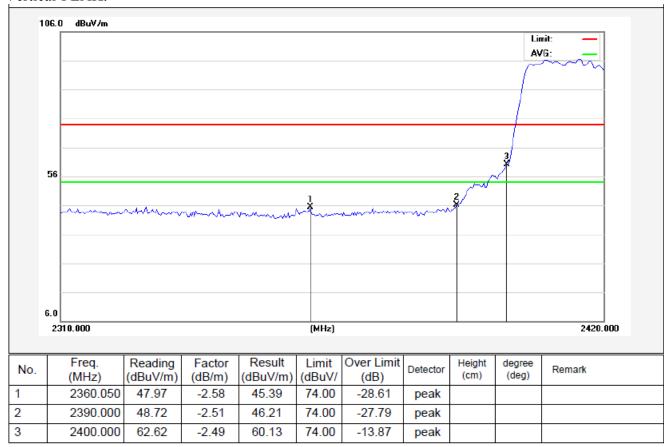




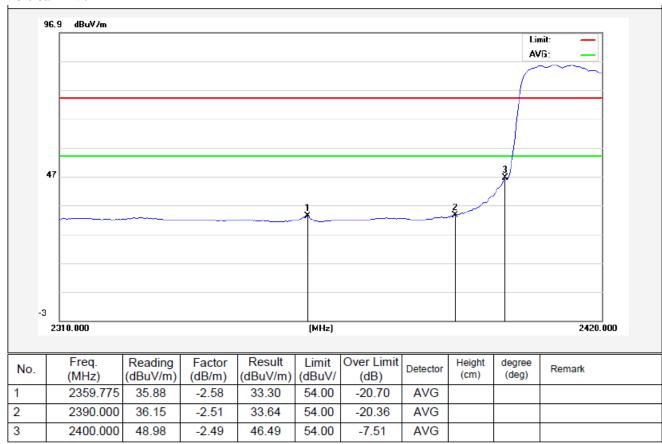




Test Mode: 802.11g



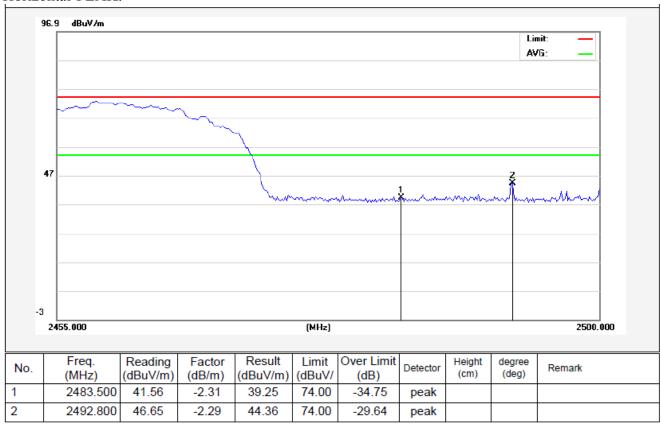




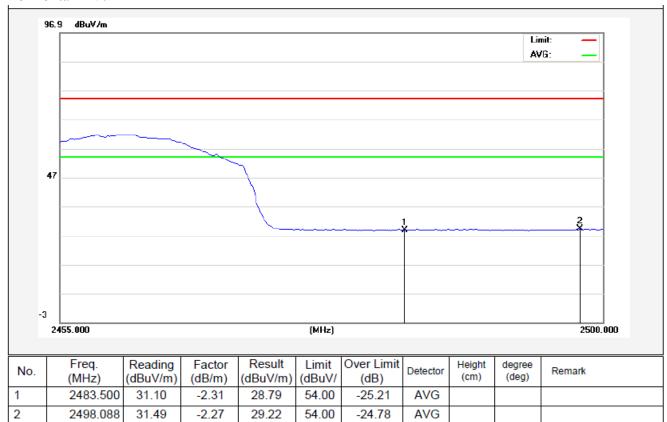


Test Mode: 802.11g

2462MHz

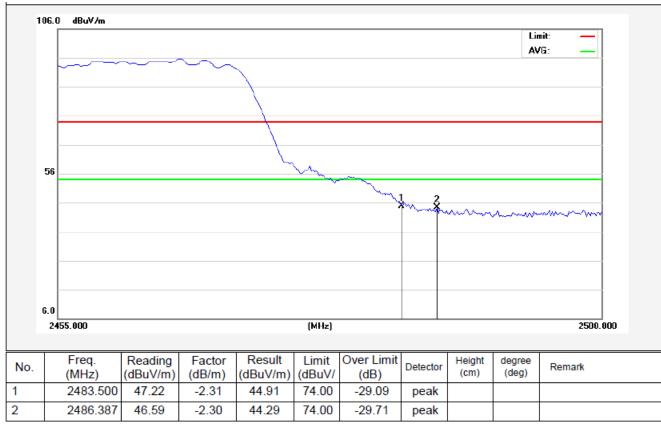




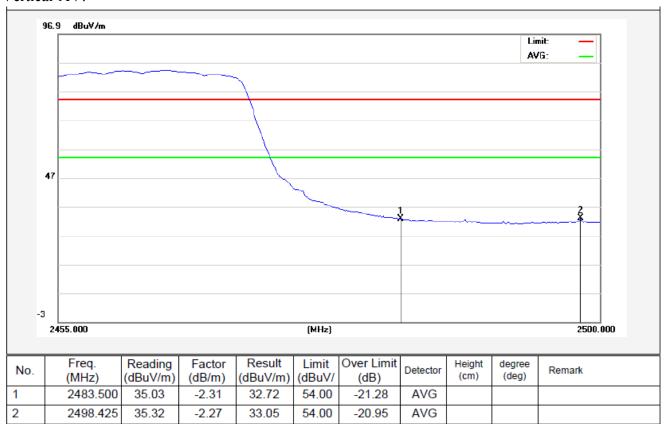




Test Mode: 802.11g



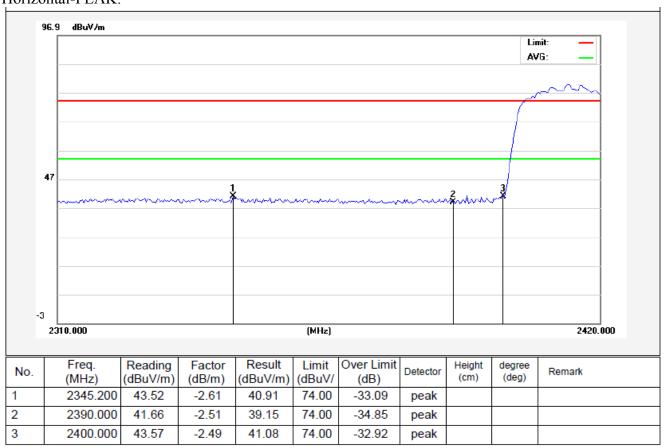




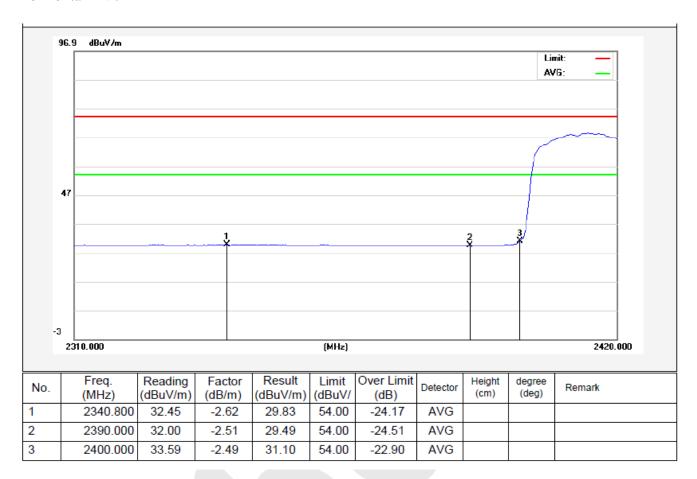


Test Mode: 802.11n (HT20)

2412MHz

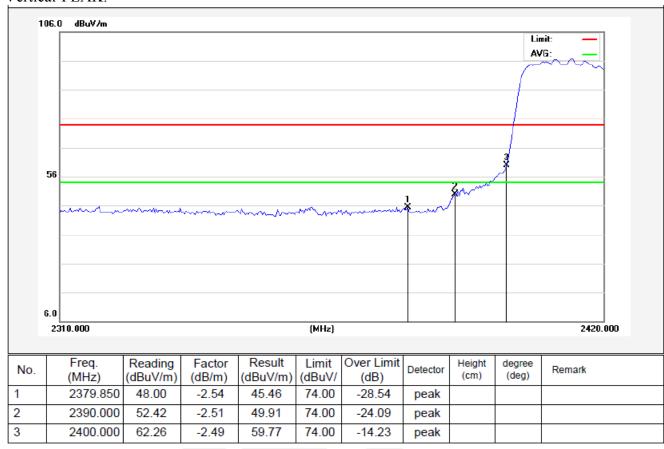




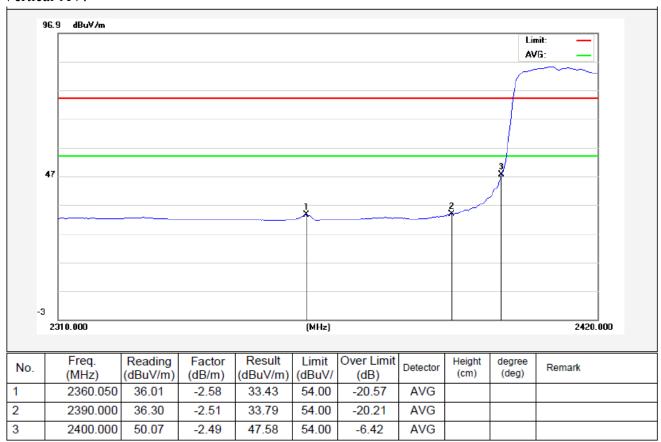




Test Mode: 802.11n (HT20)



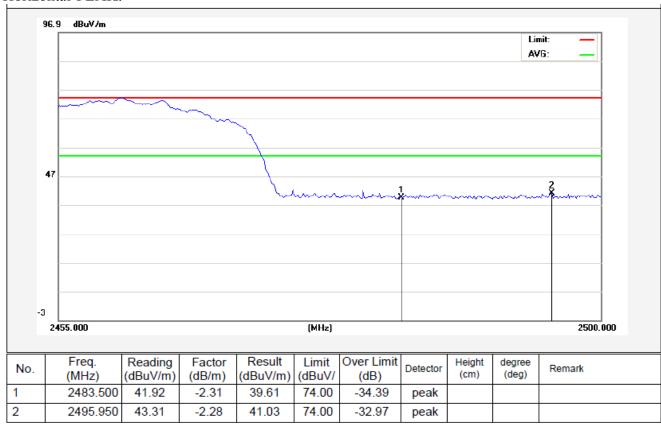




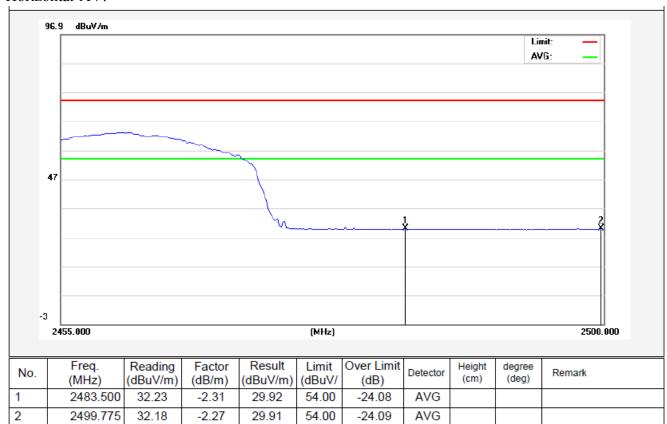


Test Mode: 802.11n (HT20)

2462MHz

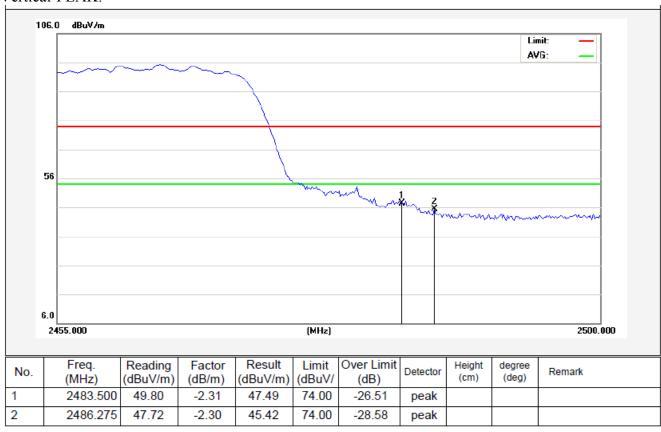




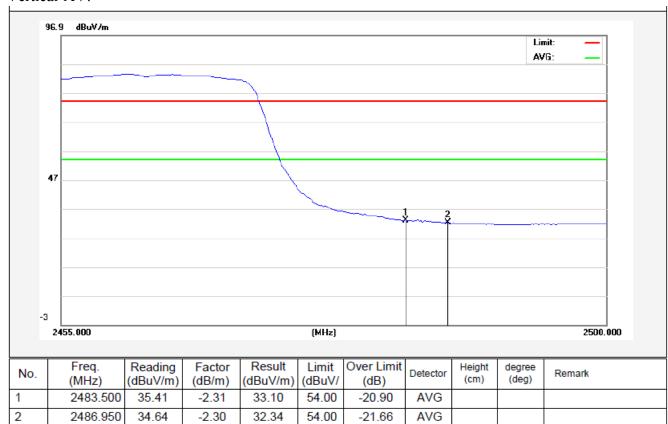




Test Mode: 802.11n (HT20)



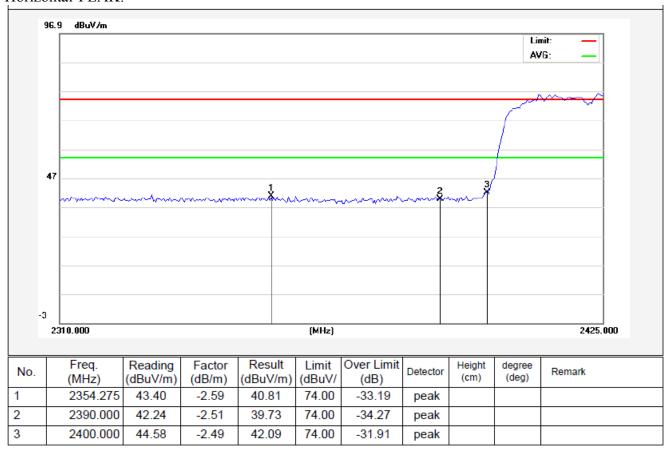




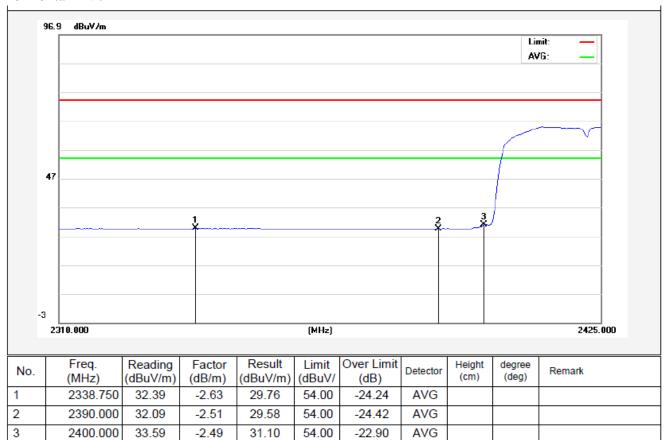


Test Mode: 802.11n (HT40)

2412MHz

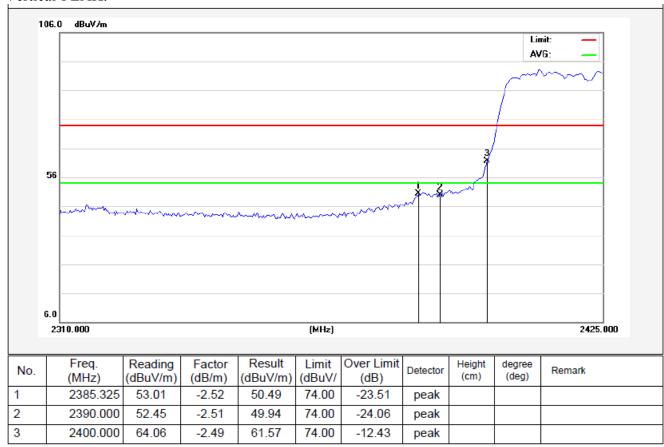




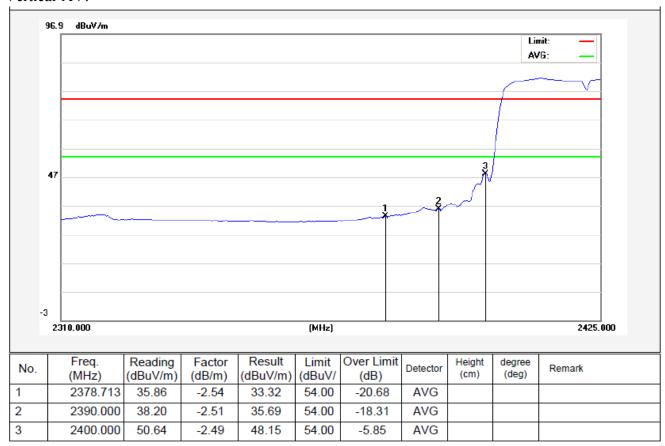




Test Mode: 802.11n (HT40)



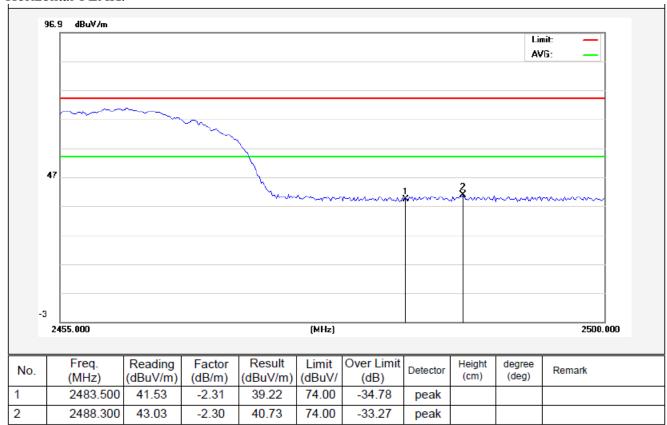




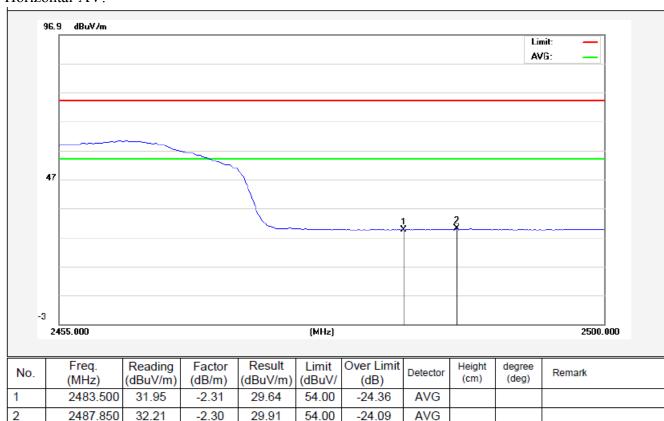


Test Mode: 802.11n (HT40)

2462MHz

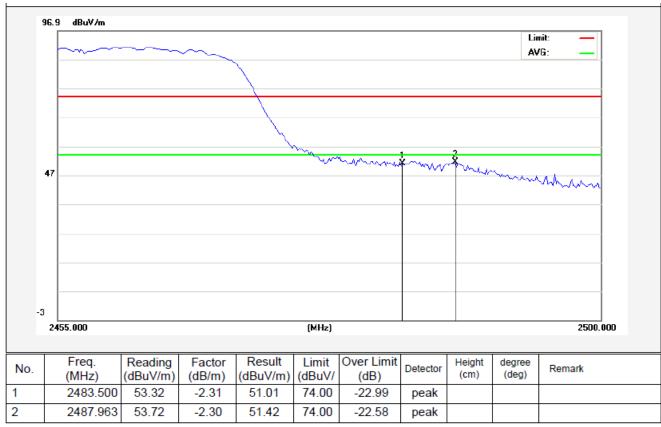




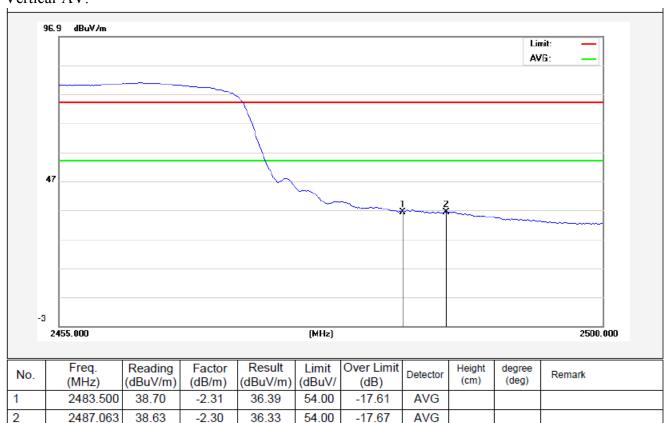




Test Mode: 802.11n (HT40)









4.5. Peak Power Spectral Density

a. Limit

- 1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
- 2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

b. Test Procedure

- 1. Place the EUT on the table and set it in transmitting mode. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 1.5MHz, Sweep=500s
- 3. Record the max. reading.
- 4. Repeat the above procedure until the measurements for all frequencies are completed.

c. Test Equipment

Same as the equipment listed in 4.2.

d. Test Setup

See 4.1

e. Test Results

Pass

f. Test Data

Please refer to the following data.

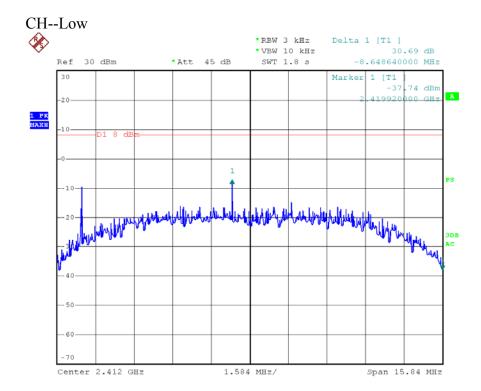
g. Test Plot See the following pages



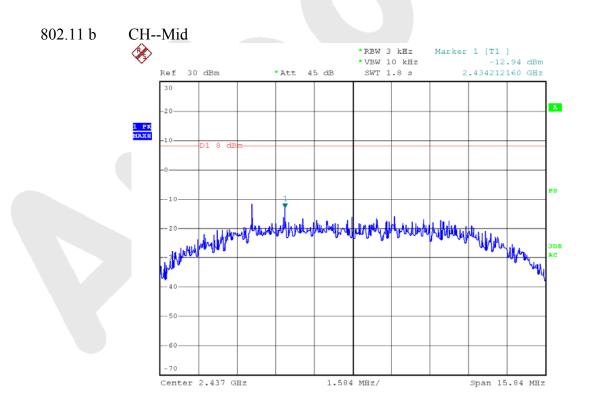
Test mode: IEE	E 802.11b				
Channel	Frequency (MHz)	PPSD (dBm/3KHz)	Σ PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2412	-37.74	-		Pass
Mid	2437	-12.94	-	8.00	Pass
High	2462	-15.49	-		Pass
Test mode: IEEE 802.11g					
Channel	Frequency	PPSD	Σ PPSD	Limit	Result
	(MHz)	(dBm)	(dBm)	(dBm)	Result
Low	2412	-21.18	-		Pass
Mid	2437	-20.74	-	8.00	Pass
High	2462	-21.23	-		Pass
Test mode: IEEE 802.11n (HT20)					
Channel	Frequency	PPSD	Σ PPSD	Limit	D 1
	(MHz)	(dBm/3KHz)	(dBm/3KHz)	(dBm)	Result
Low	2412	-19.85	_		Pass
Mid	2437	-20.76	-	8.00	Pass
High	2462	-21.61	-		Pass
Test mode: IEE	E 802.11n (HT	40)			
Channel	Frequency	PPSD	Σ PPSD	Limit	Result
Chamie	(MHz)	(dBm/3KHz)	(dBm/3KHz)	(dBm)	Resuit
Low	2422	-23.15	-		Pass
Mid	2437	-23.23	-	8.00	Pass
High	2452	-23.72	-		Pass



802.11 b

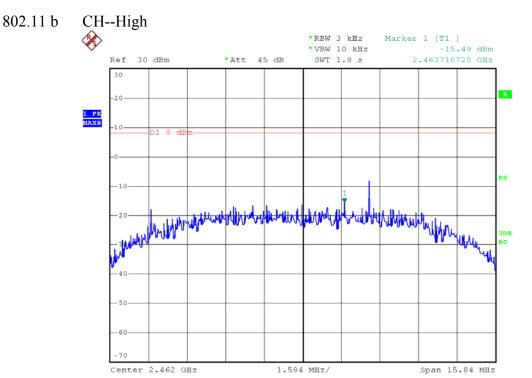


Date: 4.APR.2014 17:27:29

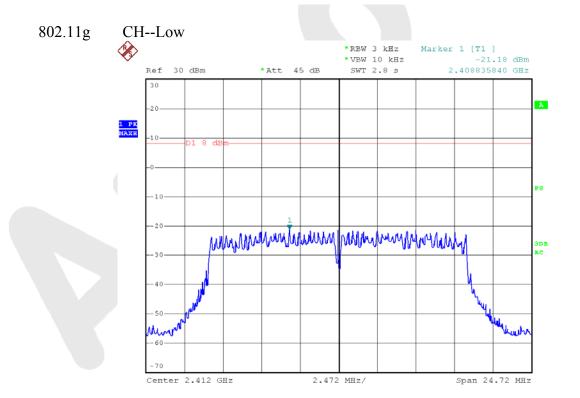


Date: 4.APR.2014 17:28:52



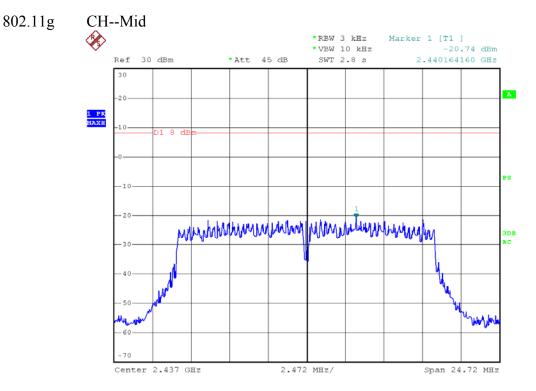


Date: 4.APR.2014 17:29:18

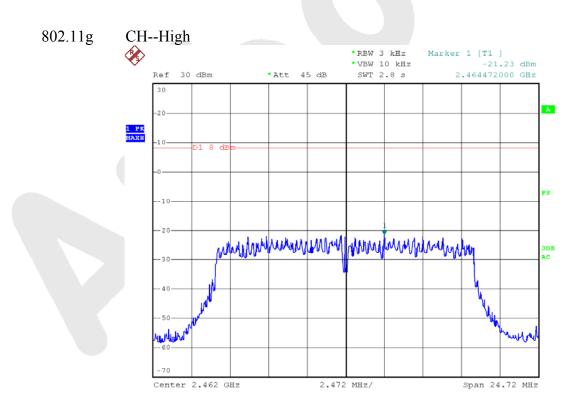


Date: 4.APR.2014 17:29:58



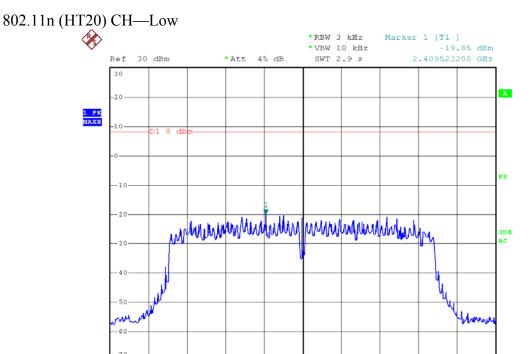


Date: 4.APR.2014 17:30:29



Date: 4.APR.2014 17:30:52





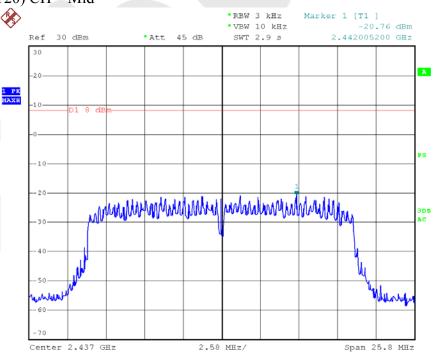
2.58 MHz/

Span 25.8 MHz

Date: 4.APR.2014 17:31:43

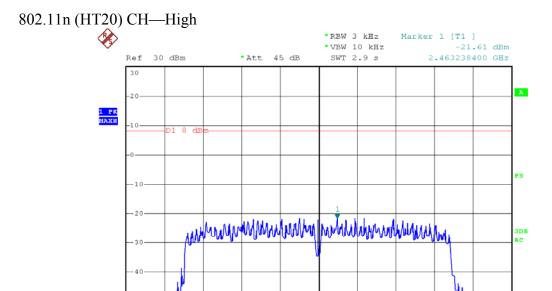
Center 2.412 GHz

802.11n (HT20) CH-Mid



Date: 4.APR.2014 17:32:14





2.58 MHz/

Span 25.8 MHz

Span 53.04 MHz

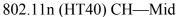
Date: 4.APR.2014 17:33:00

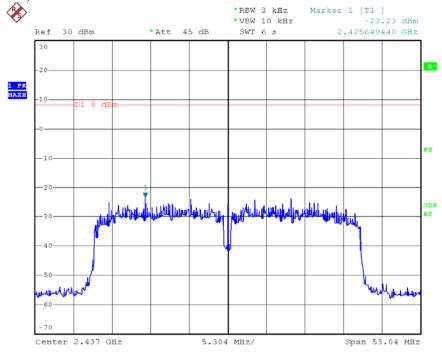
Center 2.462 GHz

Date: 4.APR.2014 17:34:14

Center 2.422 GHz

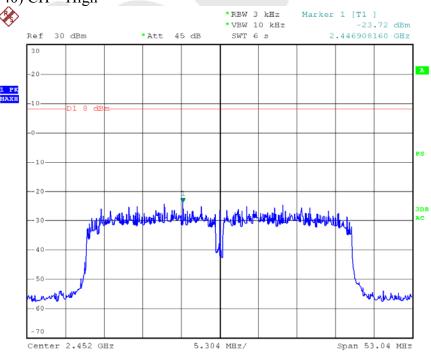






Date: 4.APR.2014 17:34:58

802.11n (HT40) CH—High



Date: 4.APR.2014 17:35:39



4.6. Radiated Emissions

4.6.1.1. Test Limits (< 30 MHZ)

Frequency	Field Strength	Measurement Distance	
(MHz)	(microvolts/meter)	(meter)	
0.009-0.490	2400/F(kHz)	300	
0.490-1.705	24000/F(kHz)	30	
1.705-30.0	30	30	

4.6.1.2. Test Limits (≥ 30 MHZ)

FIELD STRENGTH	FIELD STRENGTH	S15.209	
of Fundamental:	of Harmonics	30 - 88 MHz	40 dBuV/m
@3M			
902-928 MHZ		88 - 216 MHz	43.5
2.4-2.4835 GHz		216 - 960 MHz	46
94 dBμV/m @3m	54 dBμV/m @3m	ABOVE 960 MHz	54dBuV/m

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. 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)).

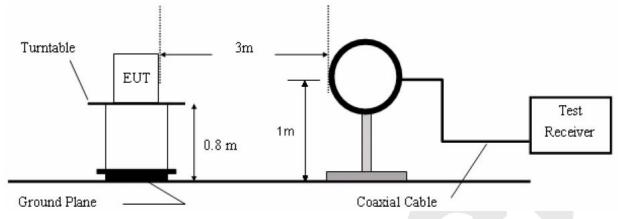
Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Preamplifier	Instruments corporation	EMC01183 0	980100	Aug. 09, 2013	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
3.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	3 Year
4.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
5.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
6.	EMI Test Software EZ-EMC	SHURPLE	N/A	N/A	N/A	N/A

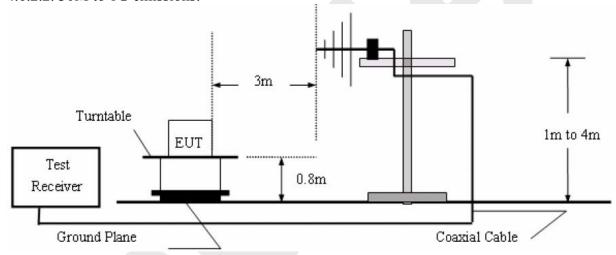


4.6.2. Test Configuration:

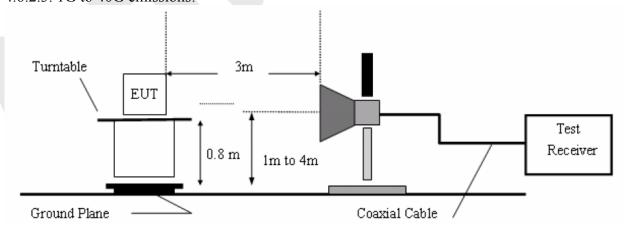
4.6.2.1. 9k to 30MHz emissions:



4.6.2.2. 30M to 1G emissions:



4.6.2.3. 1G to 40G emissions:





4.6.3. Test Procedure

The EUT is placed on a turn table which is 0.8 meter high above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna which is mounted on a antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

Measurements are made on 9KHz to 30MHz and 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

All readings from 30MHz to 1GHz are quasi-peak values with a resolution bandwidth of 120kHz. All reading are above 1GHz, peak & average values with a resolution bandwidth of 1MHz

The EUT is tested in 9*6*6 Chamber.

The test results are listed in Section 4.6.4.

4.6.4. Test Results

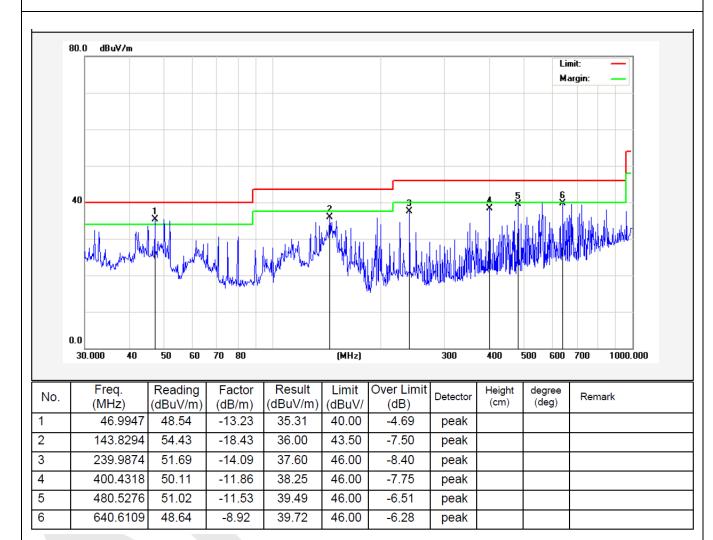
The EUT was tested on (Charging to adapter, Communication, Camera Mode, WIFI Mode) modes, only the worst data of (WIFI Mode) are attached in the following pages.



Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Test Mode: WIFI Mode Distance: 3m

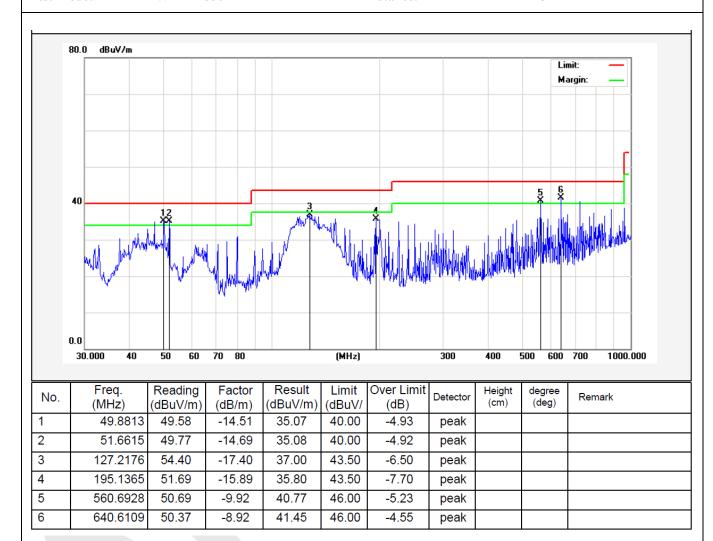




Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Test Mode: WIFI Mode Distance: 3m

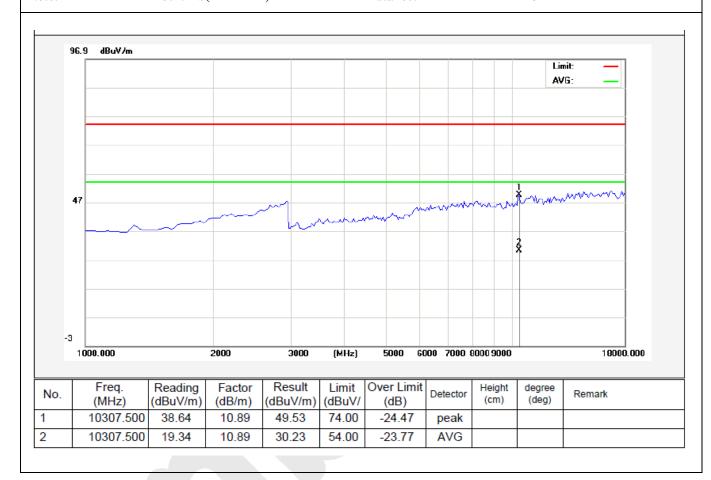




Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Note: 802.11b(2412MHz) Distance: 3m

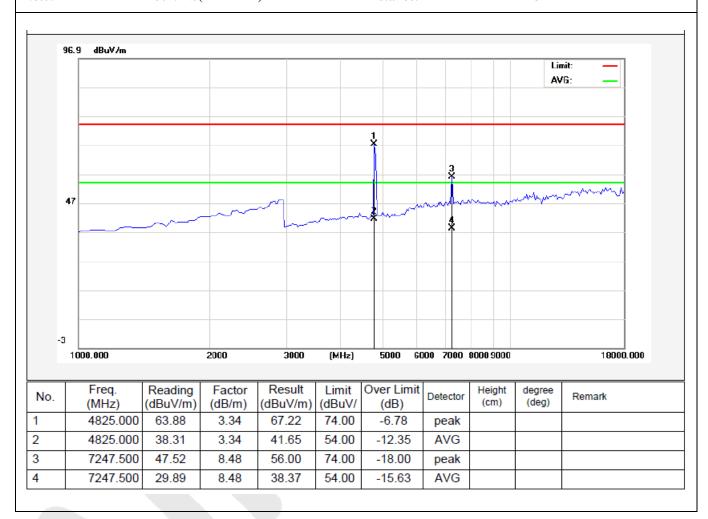




Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Note: 802.11b(2412MHz) Distance: 3m

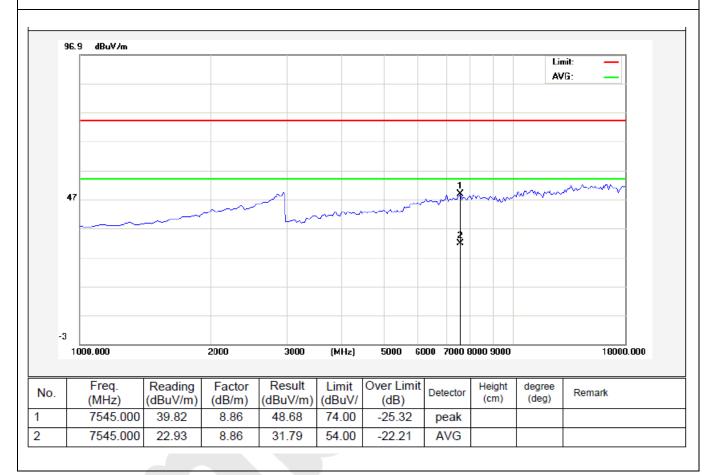




Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Note: 802.11b(2437MHz) Distance: 3m



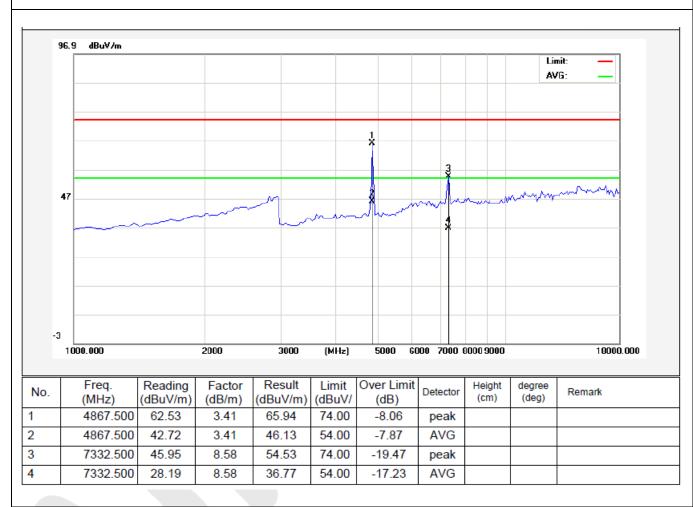


Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(24.3(C)/55%RH

%RH):

Note: 802.11b(2437MHz) Distance: 3m

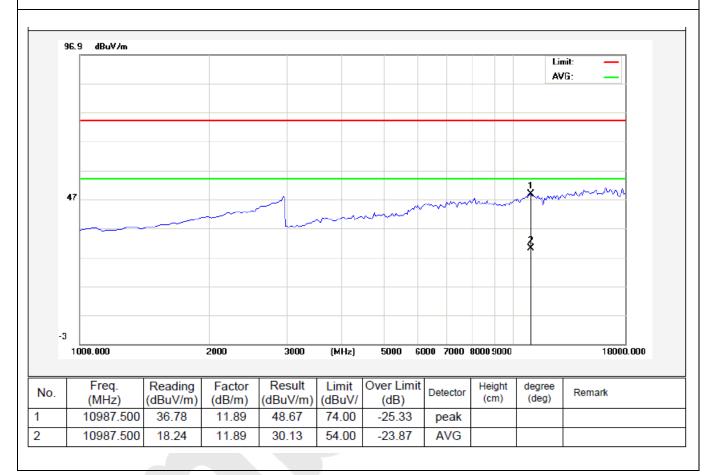




Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Note: 802.11b(2462MHz) Distance: 3m

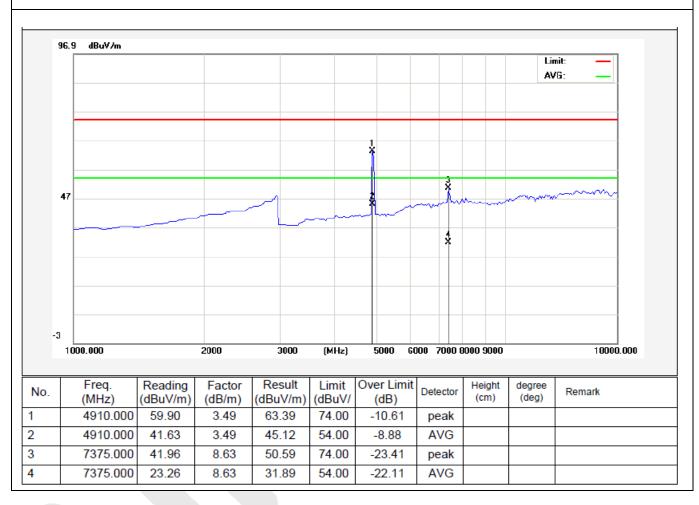




Standard: (RE)FCC PART15 C _3m Power Source: DC 5V

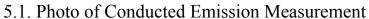
Test item: Radiation Test Temp.(C)/Hum.(%RH): 24.3(C)/55%RH

Note: 802.11b(2462MHz) Distance: 3m





5. PHOTOGRAPH





5.2. Photo of Radiation Emission Test









APPENDIX I (EXTERNAL PHOTOS)

Figure 1 The EUT-Overall View



Figure 2
The EUT-Front View





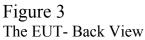




Figure 4
The EUT-Left View









Figure 6
The EUT-Top View

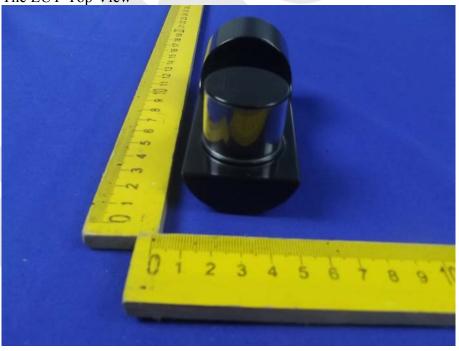








Figure 8
The EUT- Port View



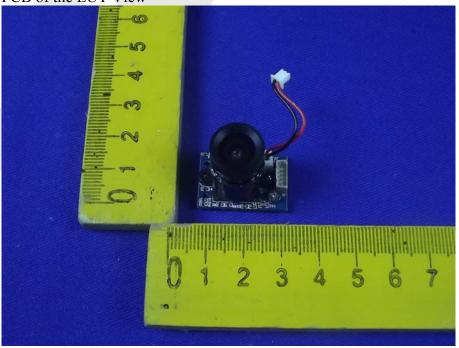


$\textbf{APPENDIX} \quad \text{$ \coprod$ (INTERNAL PHOTOS)$ }$

Figure 9
The EUT-Inside View



Figure 10 PCB of the EUT View







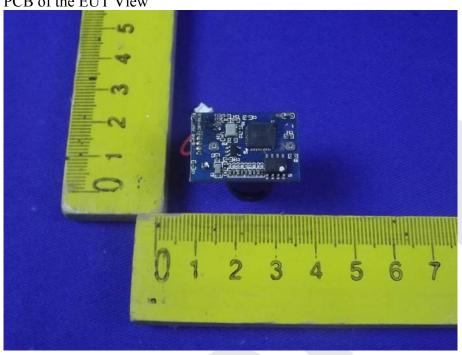


Figure 12 PCB of the EUT View







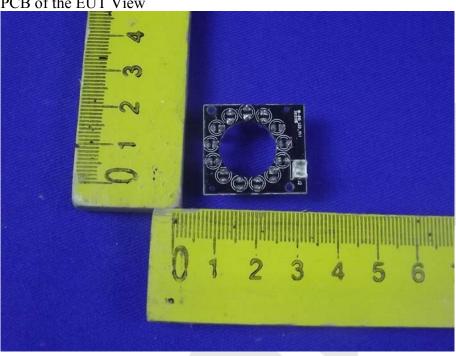


Figure 14
PCB of the EUT View







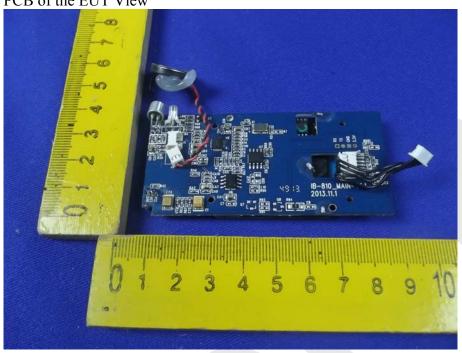


Figure 16
PCB of the EUT View

