FCC TEST REPORT
for
Kivic Inc., HQ in Korea

Wireless Smartphone Mirroring Device
Model No.: Kivic ONE

Prepared for	:	Kivic Inc., HQ in Korea
Address	:	Uspace1 B block, #320, 660, Daewangpangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, South Korea

Prepared By	:	Shenzhen Anbotek Compliance Laboratory Limited
Address	:	1/F., Building 1, SEC Industrial Park, No.0409 Qianhai Road, Nanshan District, Shenzhen, Guangdong, China Tel: (86) 755-26066544 Fax: (86) 755-26014772

Report Number	:	201310696F
Date of Test	:	Oct. 11~ 30, 2013
Date of Report	:	Oct. 30, 2013

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TEST REPORT

Applicant	:	Kivic Inc., HQ in Korea
Manufacturer	:	Jintek
EUT	:	Wireless Smartphone Mirroring Device
Model No.	:	Kivic ONE
Serial No.	:	N/A
Rating	:	DC 5V, 1.2A Via USB Port
Trade Mark	:	N/A

Measurement Procedure Used:
FCC Part15 Subpart C, Paragraph 15.247: 2012

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 : Oct. 11~ 30, 2013

Prepared by : Rock zeng
(Engineer / Rock Zeng)

Reviewer : Sally. zhang
(Project Manager / Sally Zhang)

Approved & Authorized Signer : Tom Chen
(Manager /Tom Chen)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	Wireless Smartphone Mirroring Device
Model Number	:	Kivic ONE
Test Power Supply	:	DC 5V Via USB Port
RF Transmission Frequency	:	2412MHz~2462MHz (802.11b/802.11g/802.11n(HT20)) 2422MHz~2452MHz (802.11n(HT40))
Channels	:	11 For (802.11b/802.11g/802.11n(HT20)) 7 For (802.11n(HT40))
Modulation		802.11b CCK 802.11g OFDM 802.11n MCS
Antenna Type	:	Integral
Antenna Gain	:	0 dBi
Applicant	:	Kivic Inc., HQ in Korea
Address	:	Uspace1 B block, #320, 660, Daewangpangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, South Korea
Manufacturer	:	Jintek
Address	:	8-13, Gung2-gil, Godeok-myeon, Pyeongtaek-si, Gyeonggi-do, KOREA
Date of receiver	:	Oct. 11, 2013
Date of Test	:	Oct. 11~ 30, 2013

1.2. Auxiliary Equipment Used during Test

Car Charger	:	Power Supply Model: ASCC9-050120 Input: DC 12-24V Output: DC 5V, 1.2A
TV	:	Manufacturer: SONY M/N: KDL-26EX550 S/N: 1012240 CE , FCC: DOC

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-1, February 22, 2013.

Test Location
All Emissions tests were performed
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 MCS0 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 MCS0 Mbps lowest data rate (the worst case) are chosen for the final testing.

2.3. List of channels:

√ - available

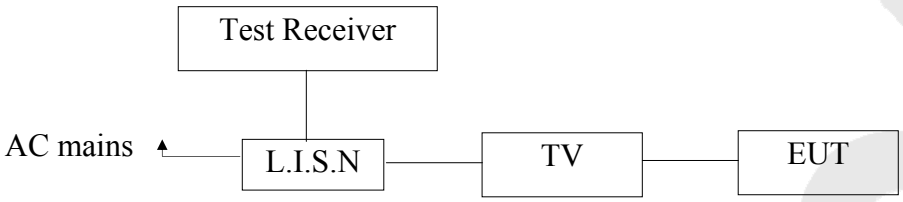
X - tested

Number	Frequency(MHz)		802.11 b/g/n (HT20)	802.11 b/g/n (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



(EUT: Wireless Smartphone Mirroring Device)

3.2. Power Line Conducted Emission Measurement Limits (15.207)

Frequency MHz	Limits dB(μV)	
	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.

EUT : Wireless Smartphone Mirroring Device
Model Number : Kivic ONE
Applicant : Kivic Inc., HQ in Korea

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) 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

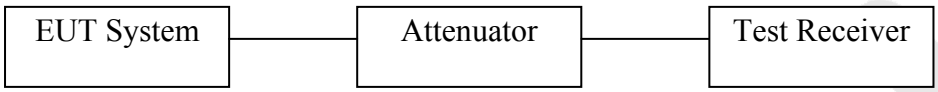
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Two-Line V-network	Rohde & Schwarz	ENV216	100055	Apr. 23, 2013	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	100627	Apr. 23, 2013	1 Year
3.	RF Switching Unit	Compliance Direction	RSU-M2	38303	Apr. 23, 2013	1 Year

3.7. Power Line Conducted Emission Measurement Results

Not applicable. The EUT is powered by DC.

4. FCC Part 15.247 Requirements for DSSS & OFDM Modulation

4.1. Test Setup



4.2. 6dB Bandwidth

a. Limt

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≥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	EMC011830	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.	Bilog Broadband Antenna	Schwarzbeck	VULB9163	VULB 9163-289	Apr. 23, 2013	3 Year
6.	Pre-amplifier	SONOMA	310N	186860	Apr. 23, 2013	1 Year
7.	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

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	10.10		Pass
Mid	2437	10.10	>500	Pass
High	2462	10.10		Pass

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	16.60		Pass
Mid	2437	16.60	>500	Pass
High	2462	16.60		Pass

Test mode: IEEE 802.11n (HT20)

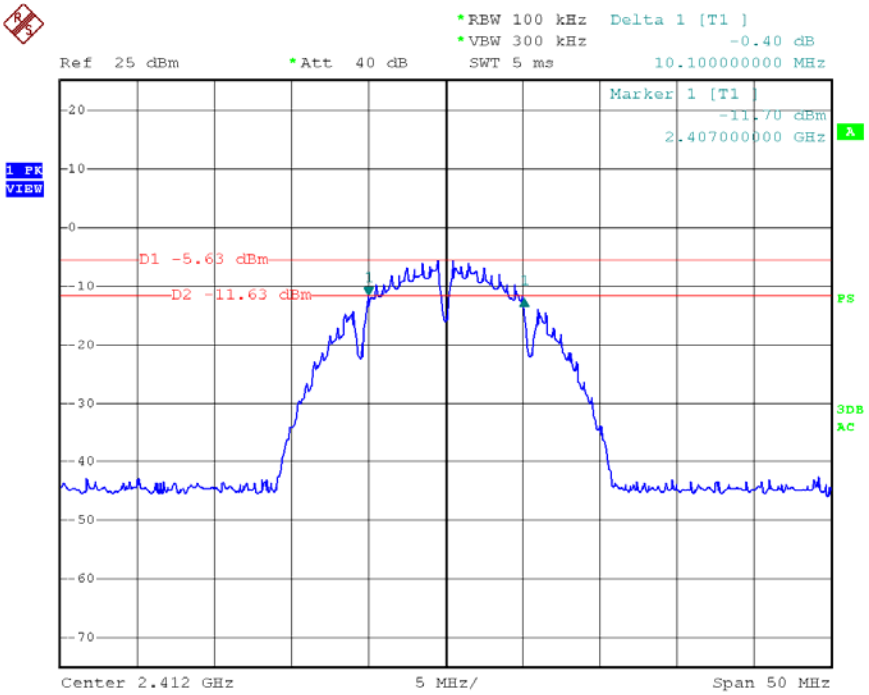
Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2412	17.80		Pass
Mid	2437	17.80	>500	Pass
High	2462	17.80		Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	Bandwidth (MHz)	Limit (kHz)	Results
Low	2422	35.80		Pass
Mid	2437	35.80	>500	Pass
High	2452	35.80		Pass

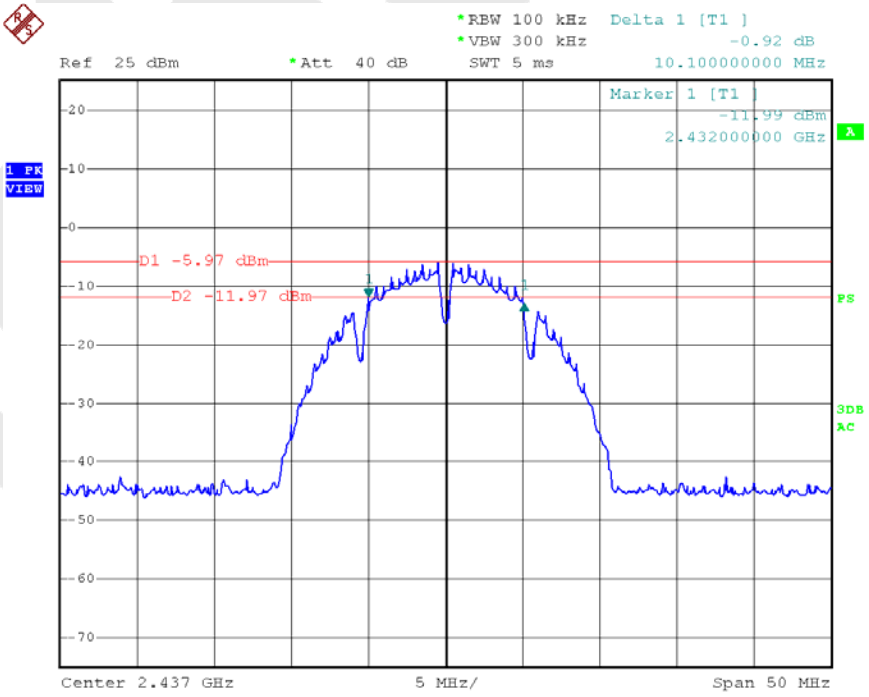
Test Plots See the following page.

Test Mode: 802.11b---Low



Date: 23.OCT.2013 21:37:56

Test Mode: 802.11b---Mid



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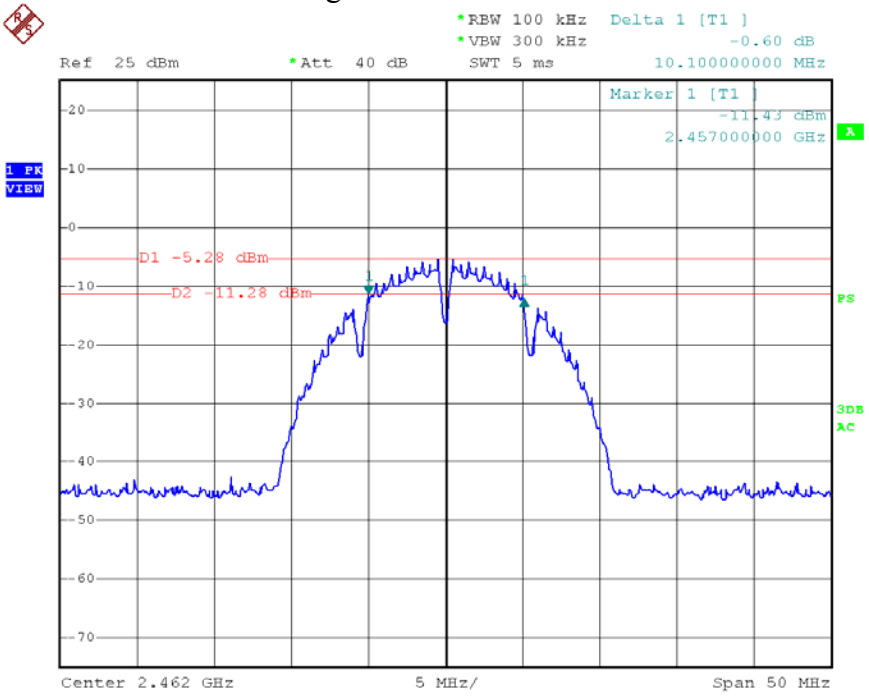
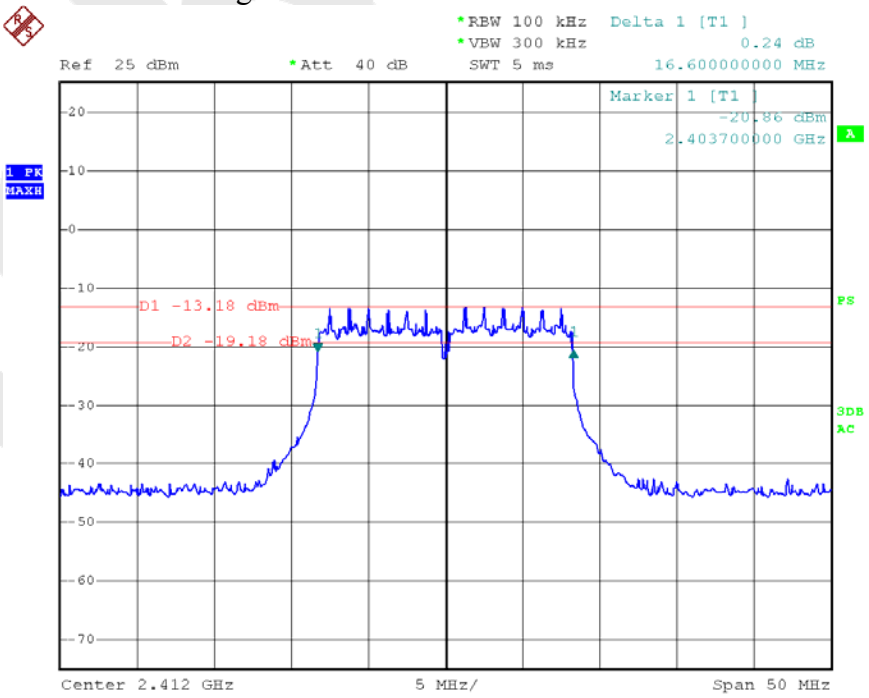
Test Mode: 802.11b---High



Date: 23.OCT.2013 21:41:00

Test Mode: 802.11g---Low



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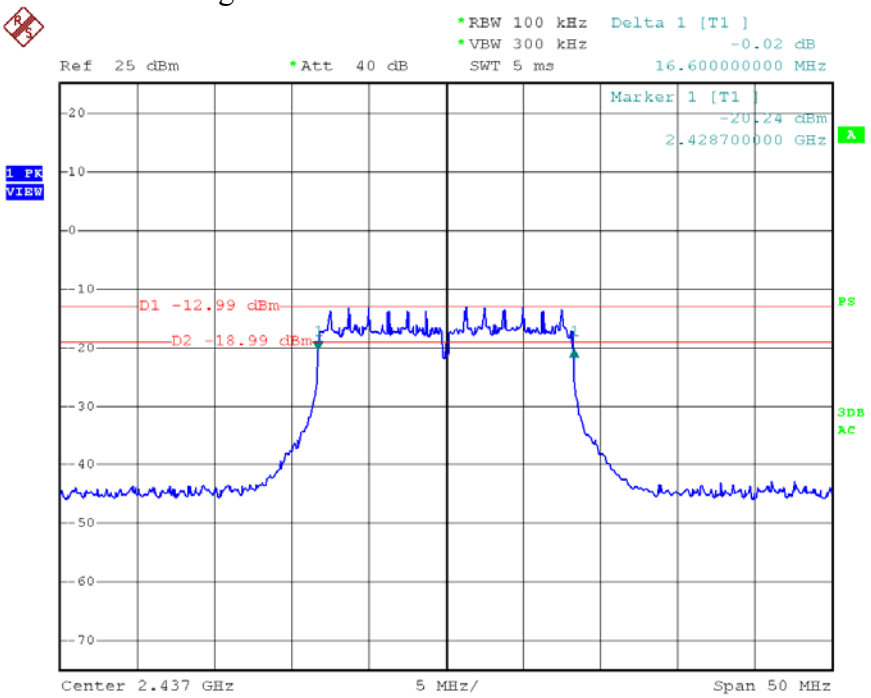
Test Mode: 802.11g---Mid



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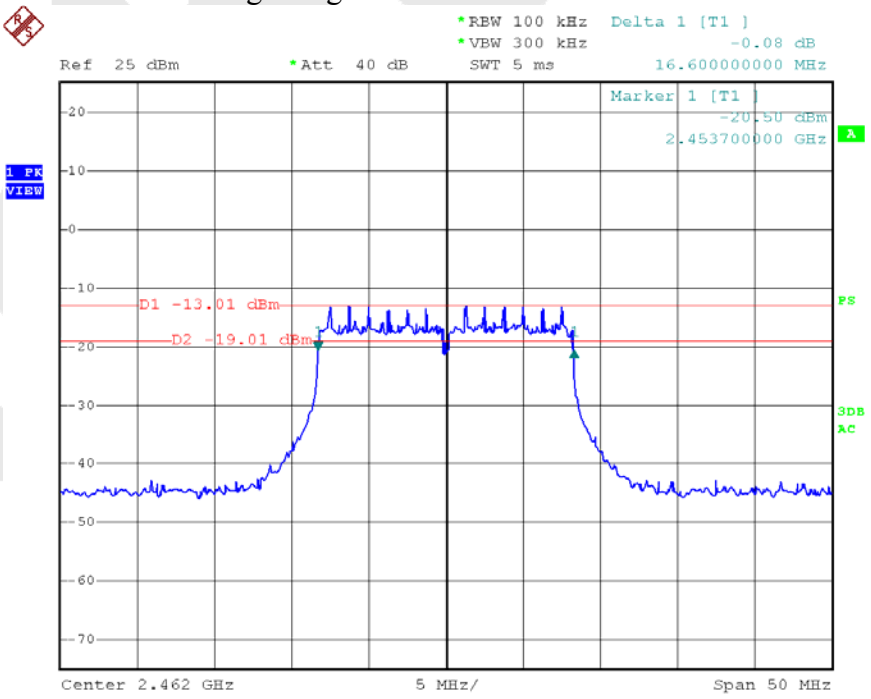
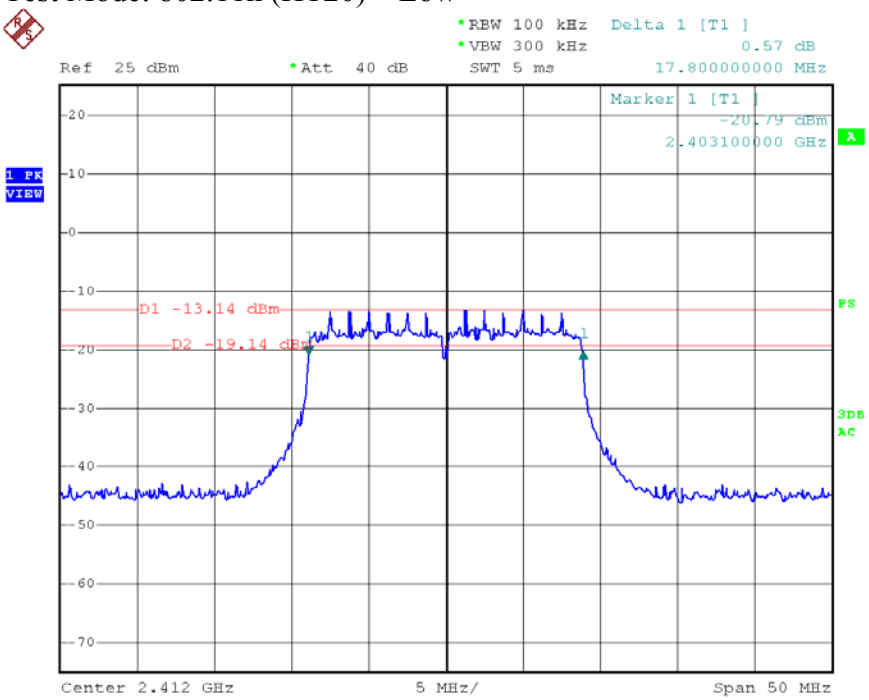
Test Mode: 802.11g---High



Date: 23.OCT.2013 21:48:11

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



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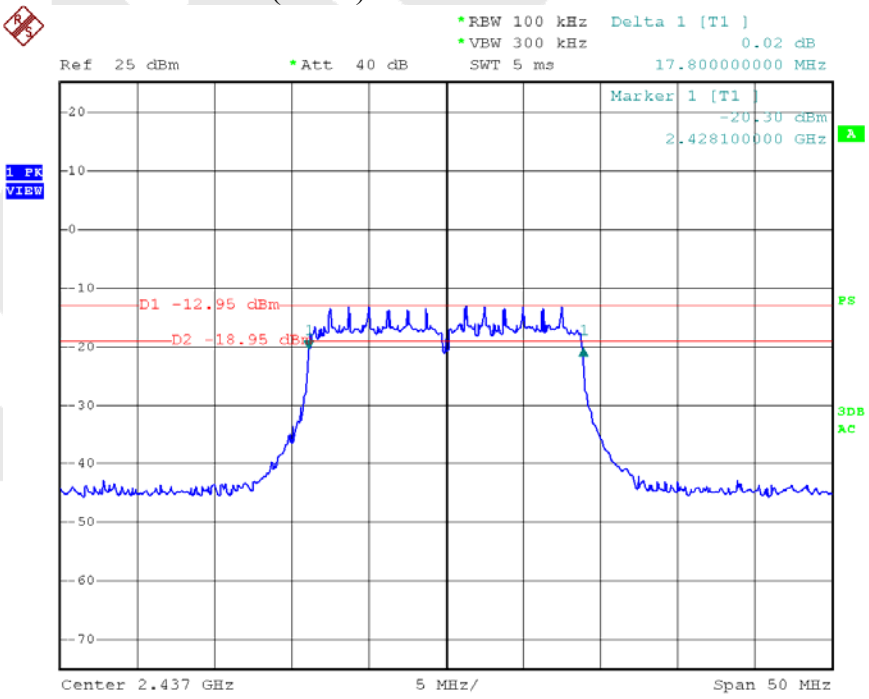
Test Mode: 802.11n (HT20)---Mid



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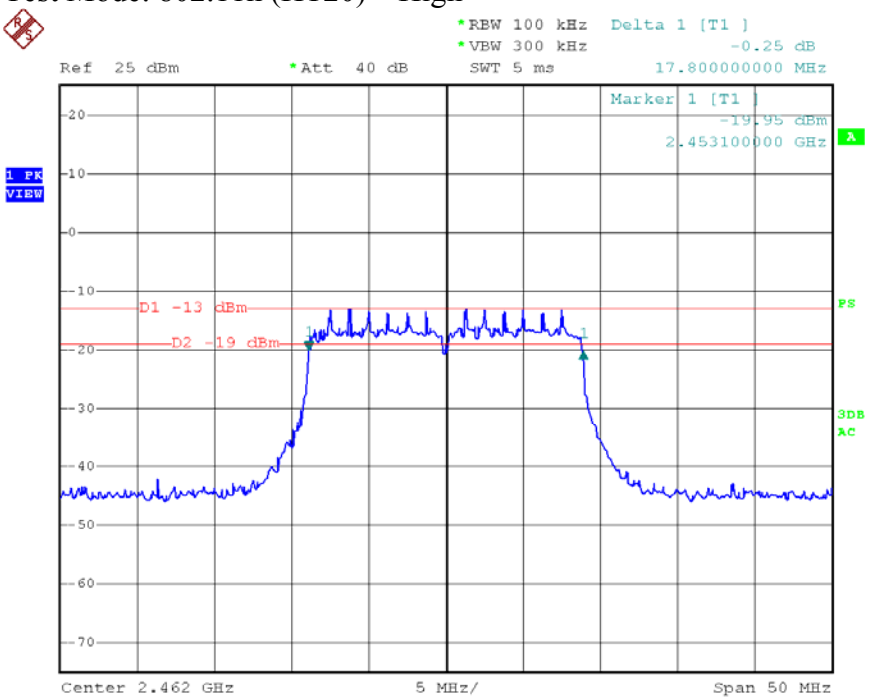
Test Mode: 802.11n (HT20)---High



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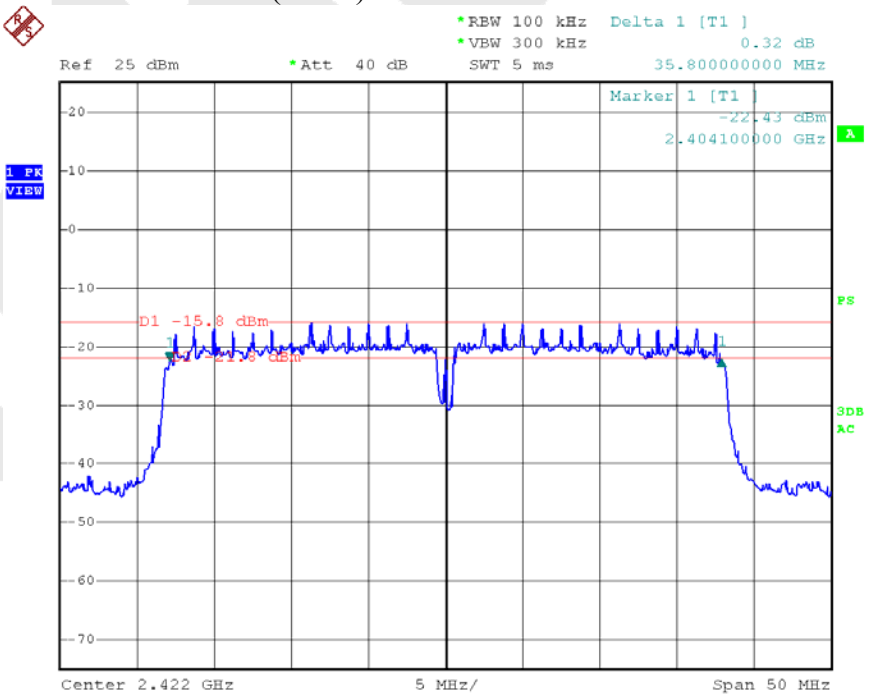
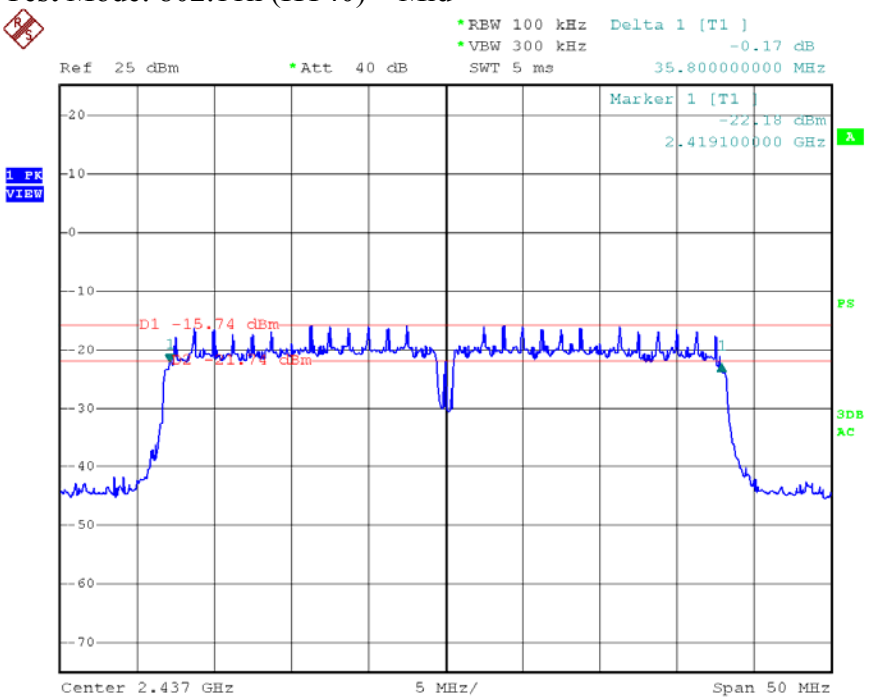
Test Mode: 802.11n (HT40)---Low



Date: 23.OCT.2013 21:55:33

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



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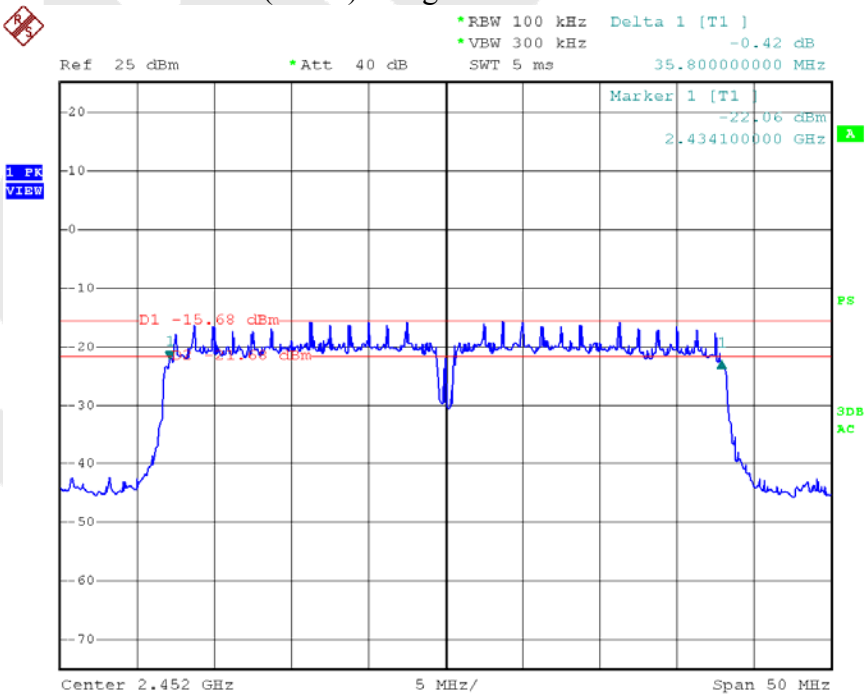
Test Mode: 802.11n (HT40)---High



Date: 23.OCT.2013 21:58:54

4.3. Maximum Peak output power test

a. Limt

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

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≥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

Channel	Frequency (MHz)	Maximum transmit power (dBm)	Limit (dBm)	Limit (watts)	Result
Low	2412	7.05	30	1	Pass
Mid	2437	7.27			Pass
High	2462	7.20			Pass

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	Maximum transmit power (dBm)	Limit (dBm)	Limit (watts)	Result
Low	2412	5.90	30	1	Pass
Mid	2437	6.08			Pass
High	2462	6.09			Pass

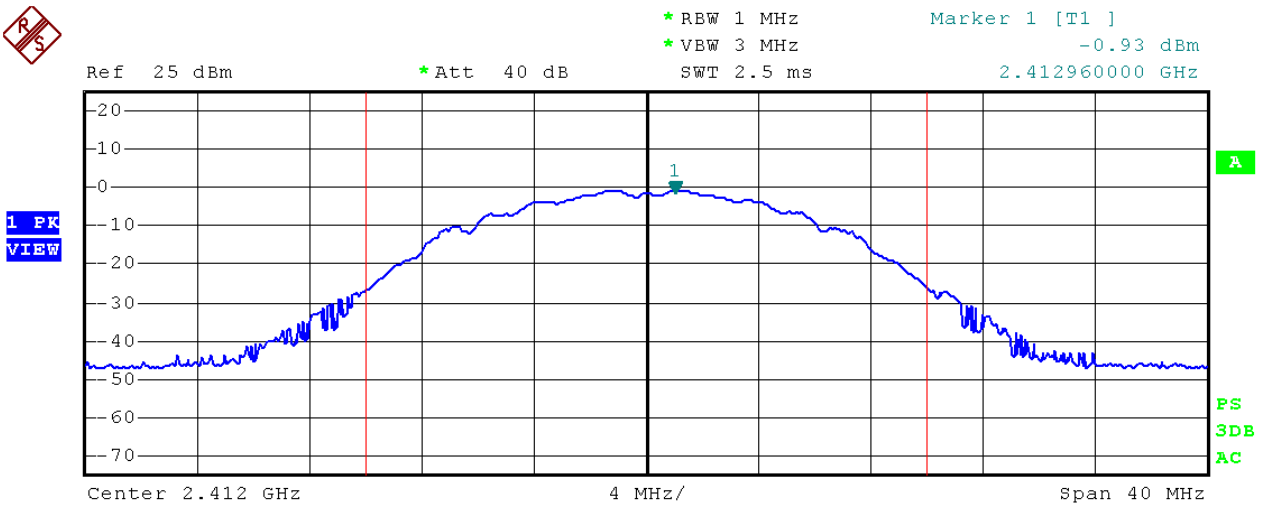
Test mode: IEEE 802.11n (HT20)

Channel	Frequency (MHz)	Maximum transmit power (dBm)	Limit (dBm)	Limit (watts)	Result
Low	2412	6.13	30	1	Pass
Mid	2437	6.26			Pass
High	2462	6.29			Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	Maximum transmit power (dBm)	Limit (dBm)	Limit (watts)	Result
Low	2422	6.03	30	1	Pass
Mid	2437	5.41			Pass
High	2452	5.50			Pass

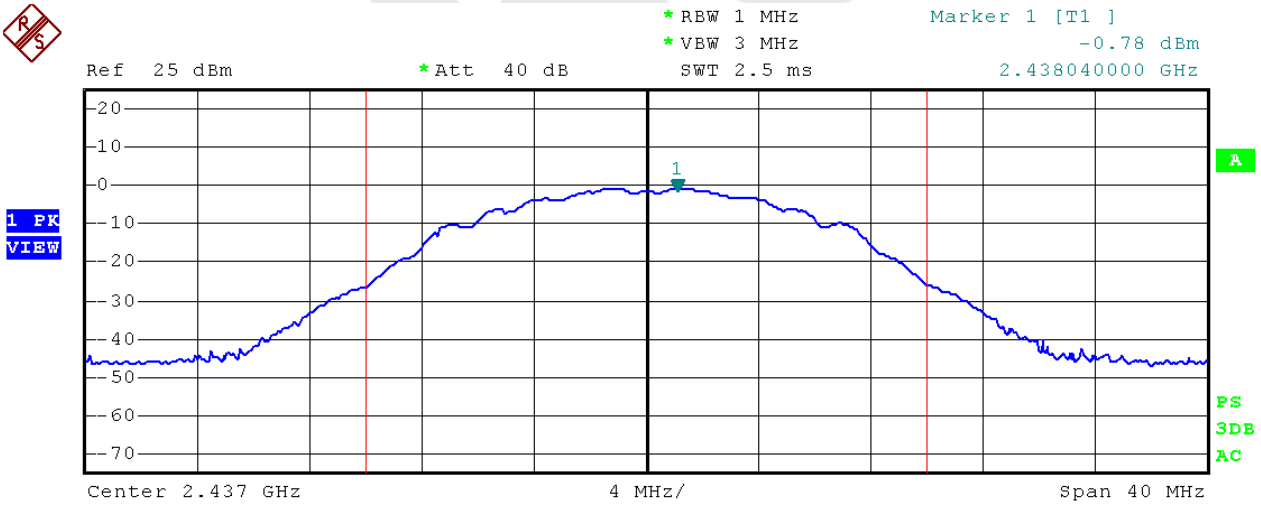
Test Mode: 802.11b ---Low



Tx Channel

Bandwidth	20 MHz	Power	7.05 dBm

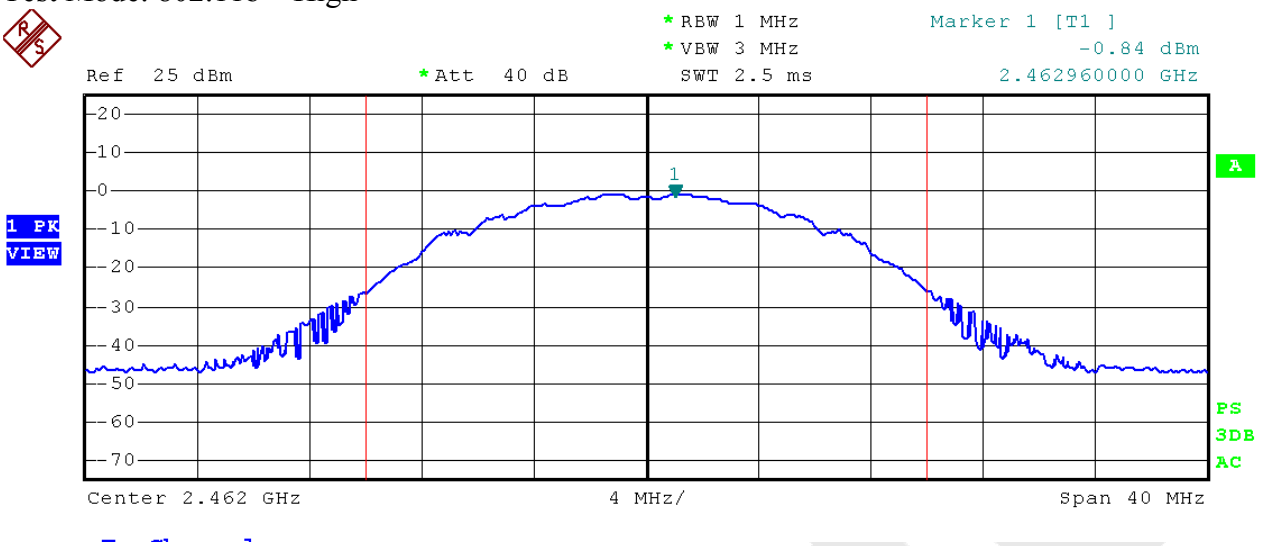
Test Mode: 802.11b---Mid



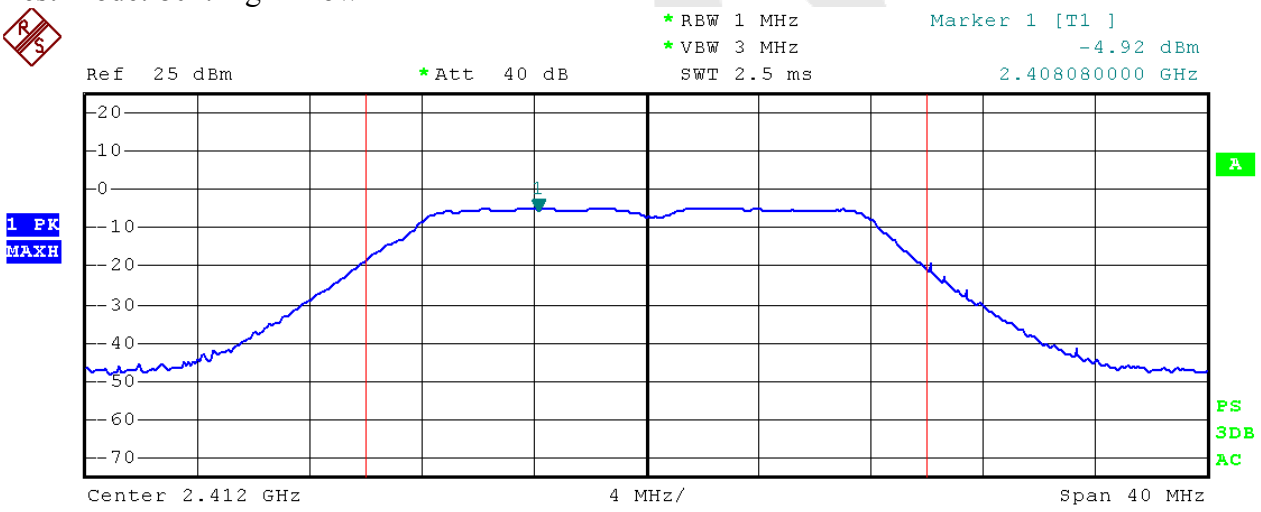
Tx Channel

Bandwidth	20 MHz	Power	7.27 dBm

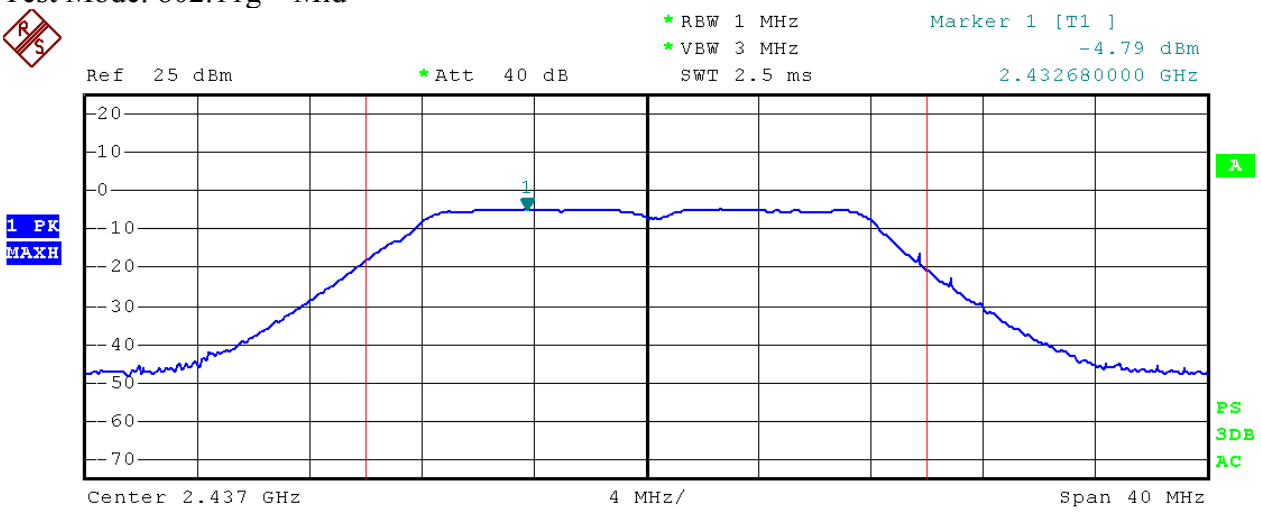
Test Mode: 802.11b---High



Test Mode: 802.11g ---Low

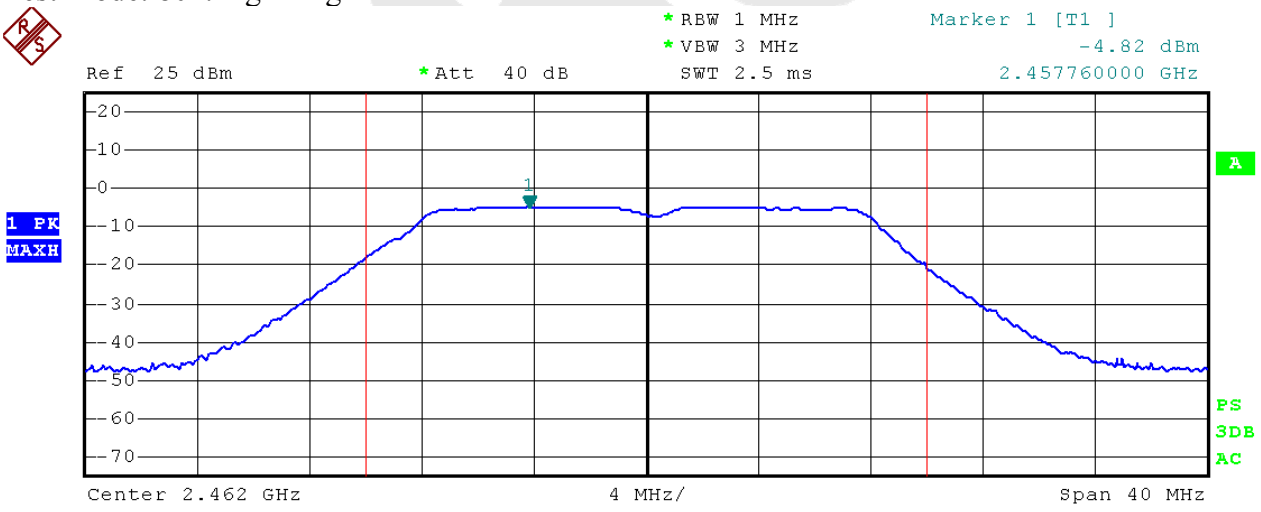


Test Mode: 802.11g---Mid



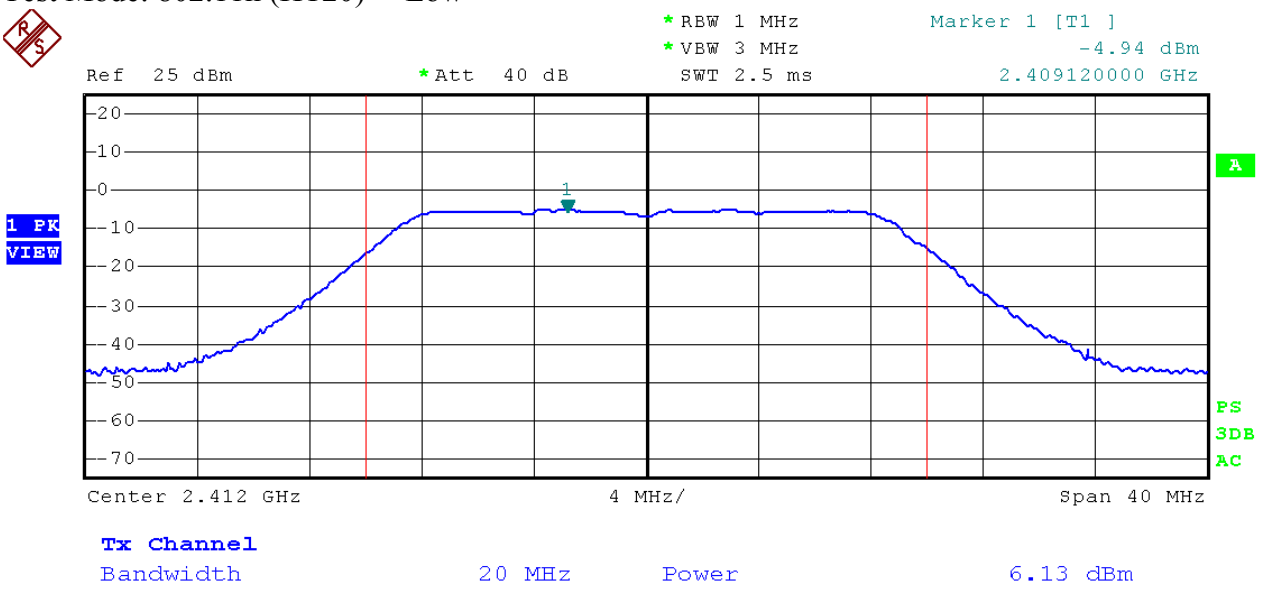
Tx Channel
Bandwidth 20 MHz Power 6.08 dBm

Test Mode: 802.11g---High

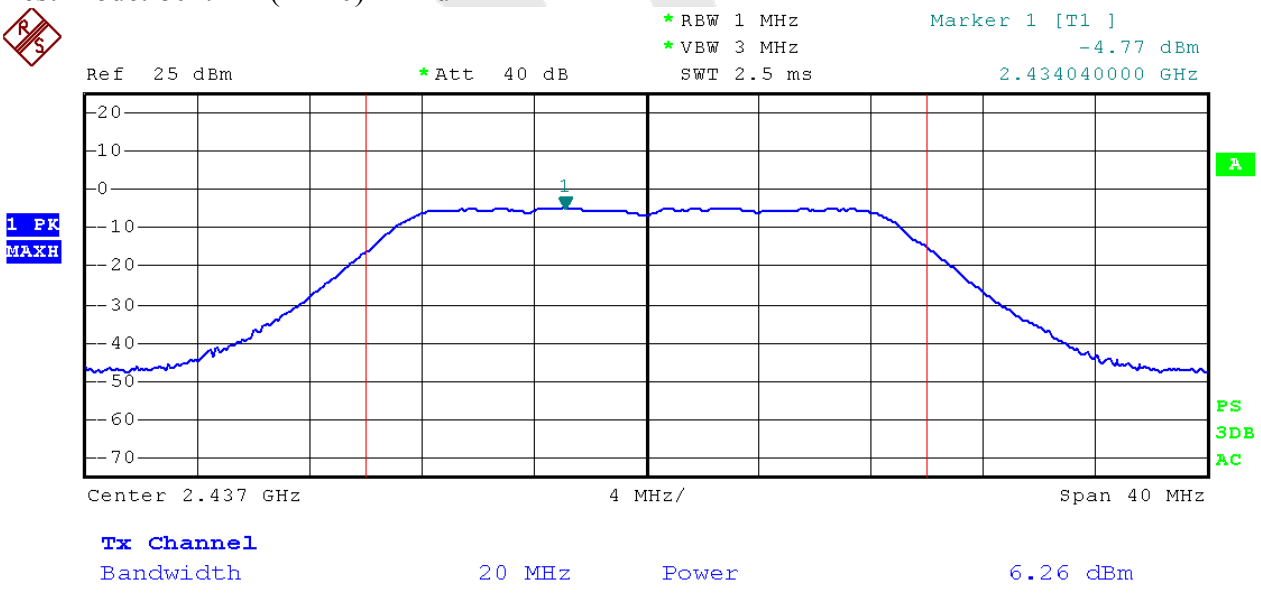


Tx Channel
Bandwidth 20 MHz Power 6.09 dBm

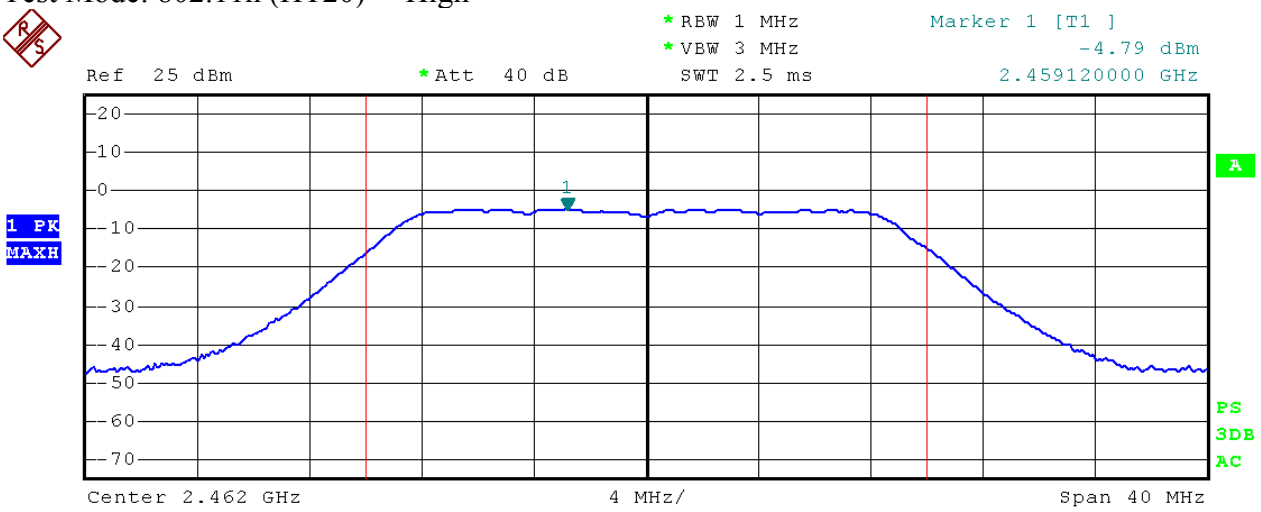
Test Mode: 802.11n (HT20) ---Low



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

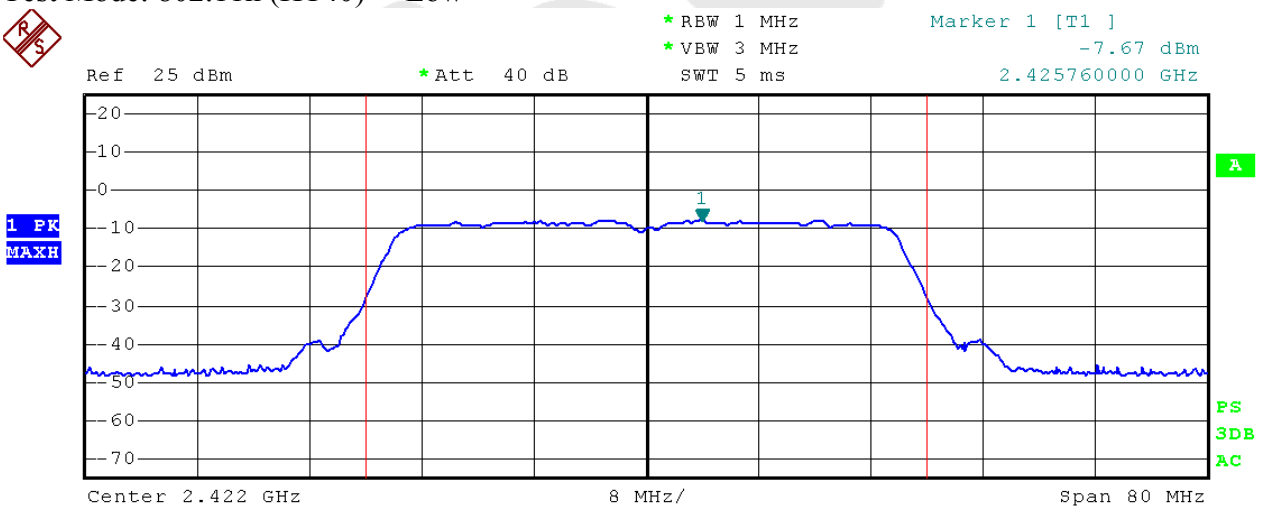


Test Mode: 802.11n (HT20) ---High



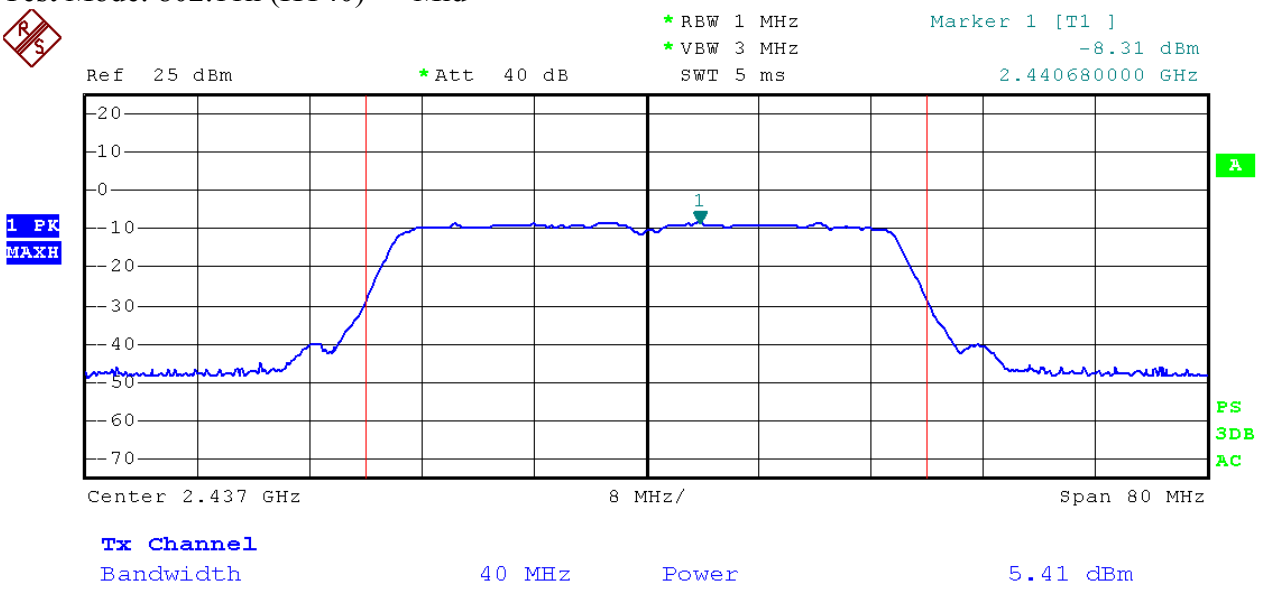
Tx Channel
Bandwidth 20 MHz Power 6.29 dBm

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

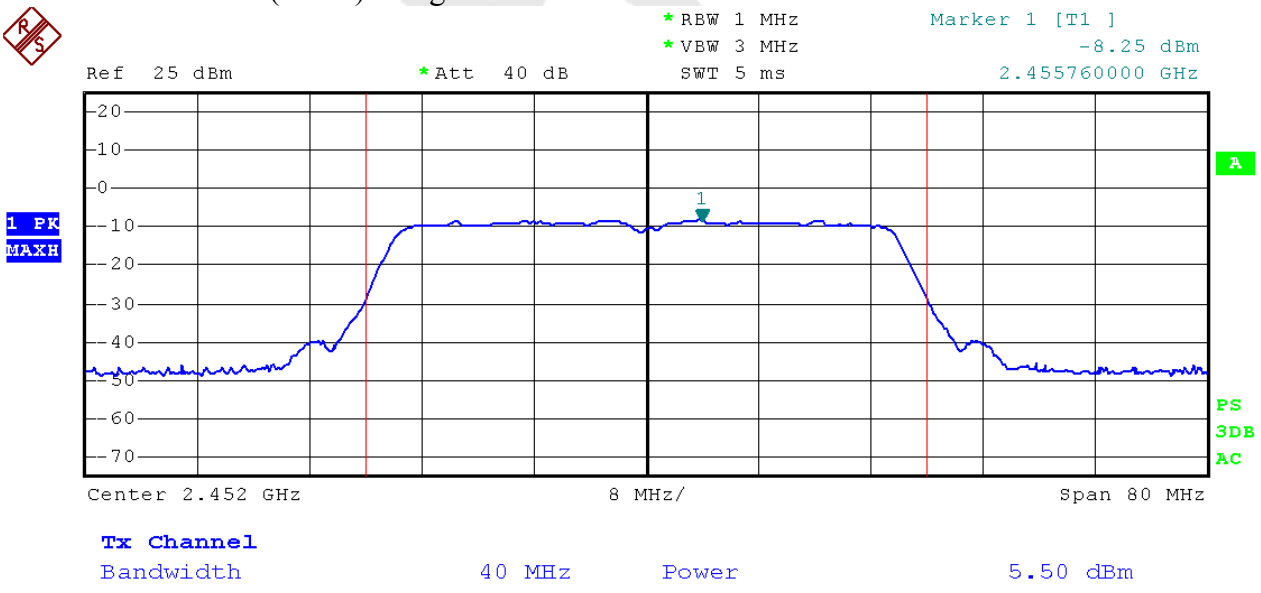


Tx Channel
Bandwidth 40 MHz Power 6.03 dBm

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



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



4.4. Band Edges Measurement

a. Limt

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. Set RBW=100KHz, VBW=300KHz
2. Detector=peak
3. Sweep time= auto
4. Trace mode=max hold.

c. Test Equipment

Same as the equipment listed in 4.2.

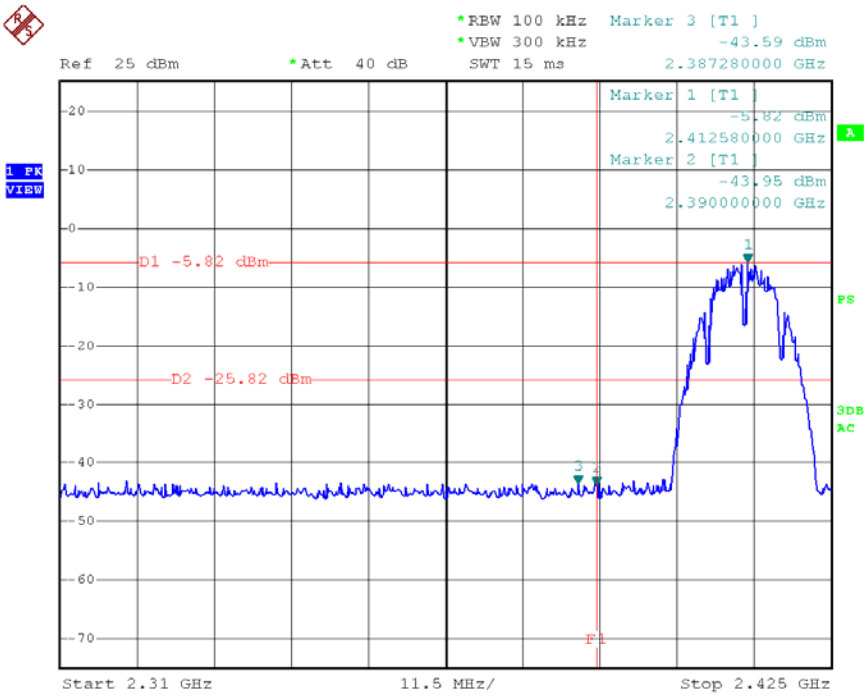
d. Test Results

Pass.

e. Test Plots

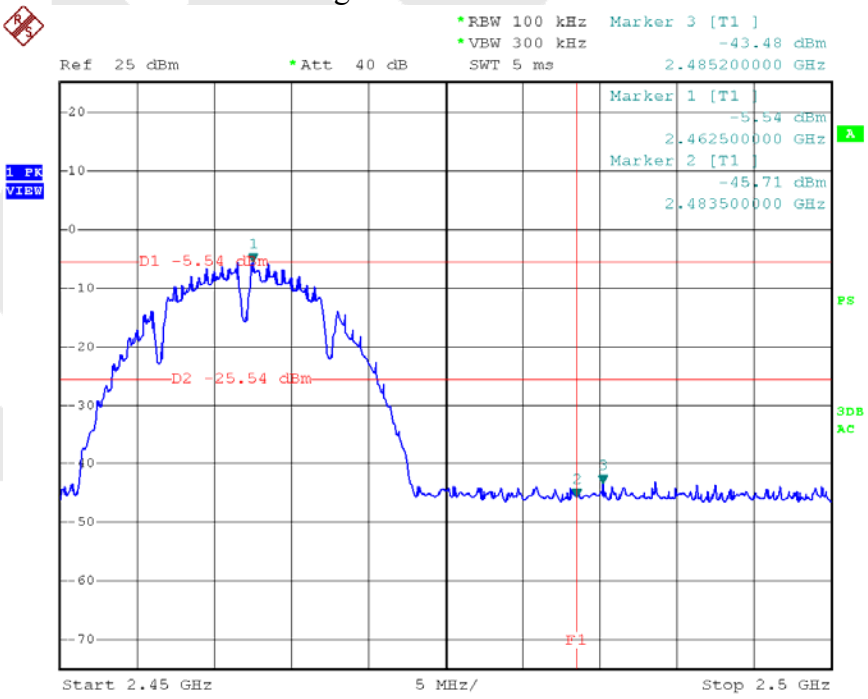
See the following page.

Test Mode: 802.11b ---Low



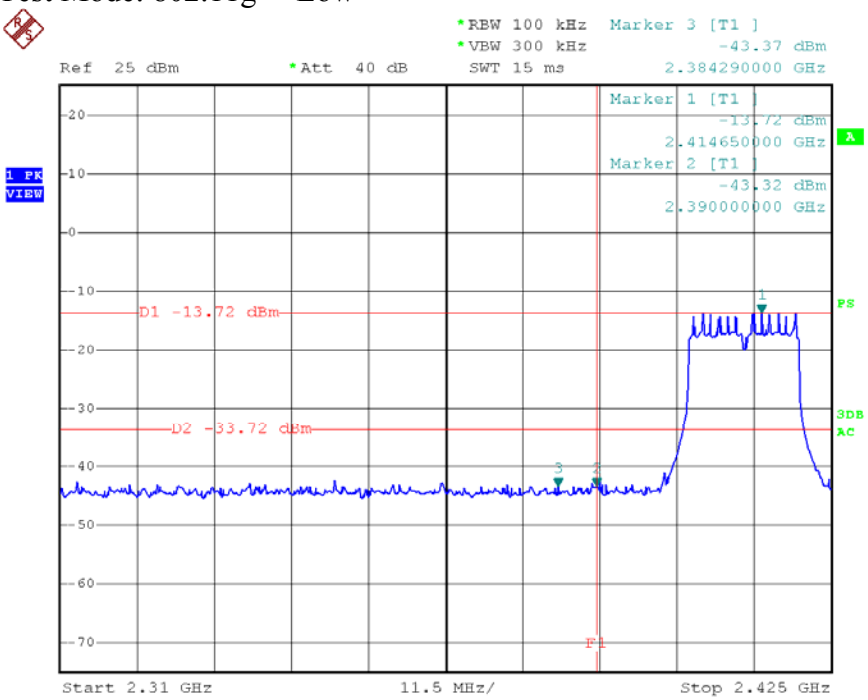
Date: 23.OCT.2013 21:17:37

Test Mode: 802.11b ---High



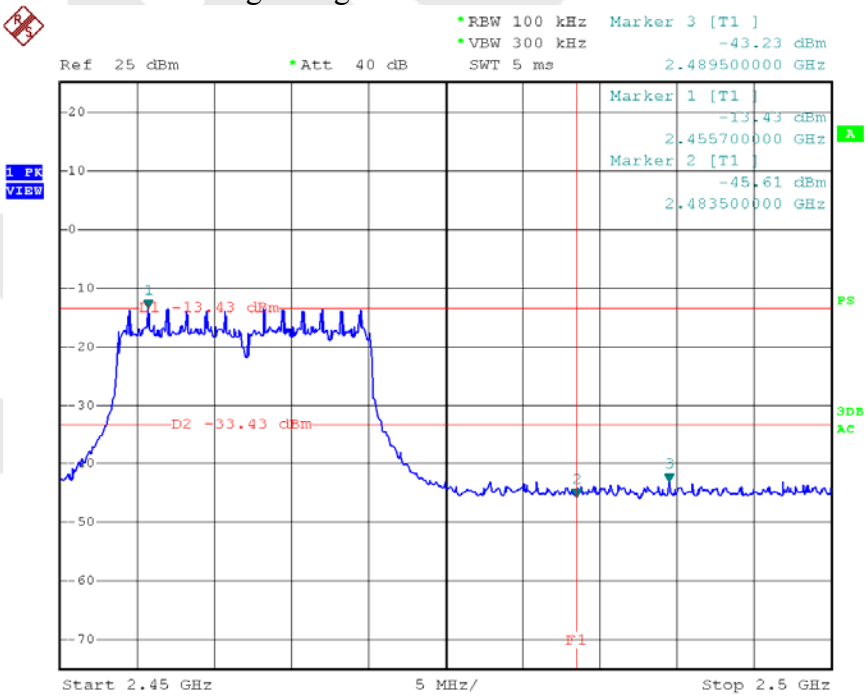
Date: 23.OCT.2013 21:19:30

Test Mode: 802.11g ---Low



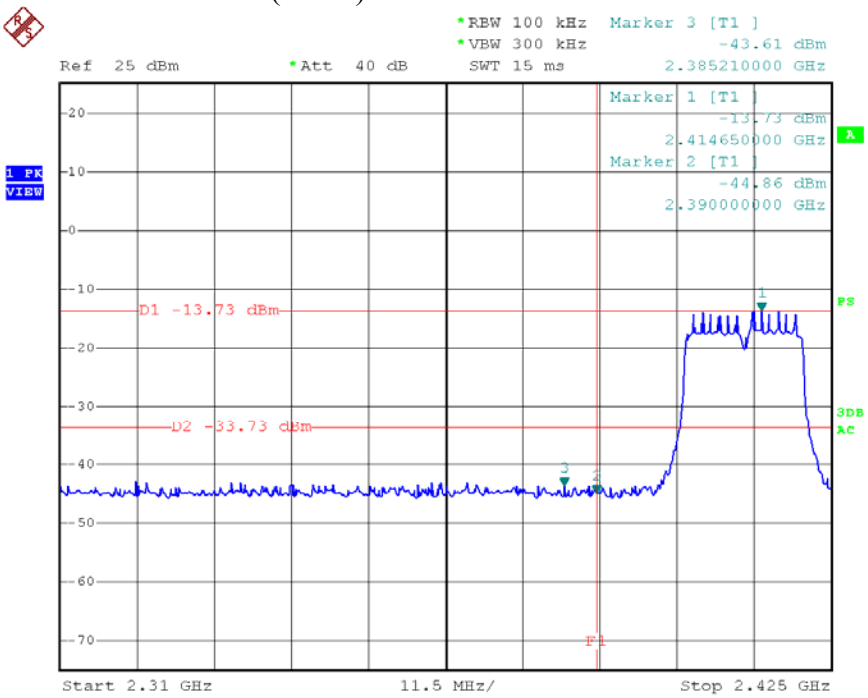
Date: 23.OCT.2013 21:22:20

Test Mode: 802.11g ---High



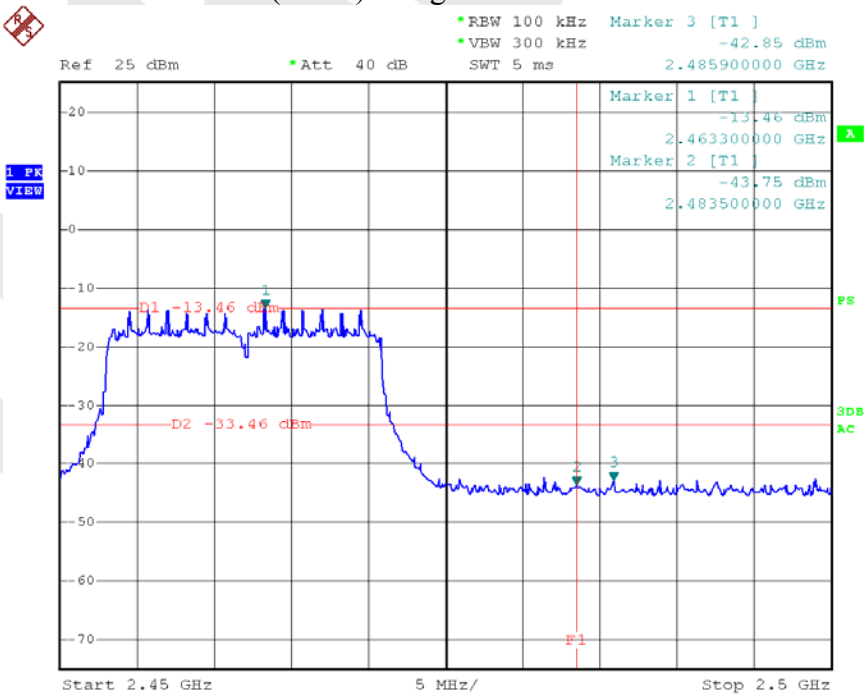
Date: 23.OCT.2013 21:24:39

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



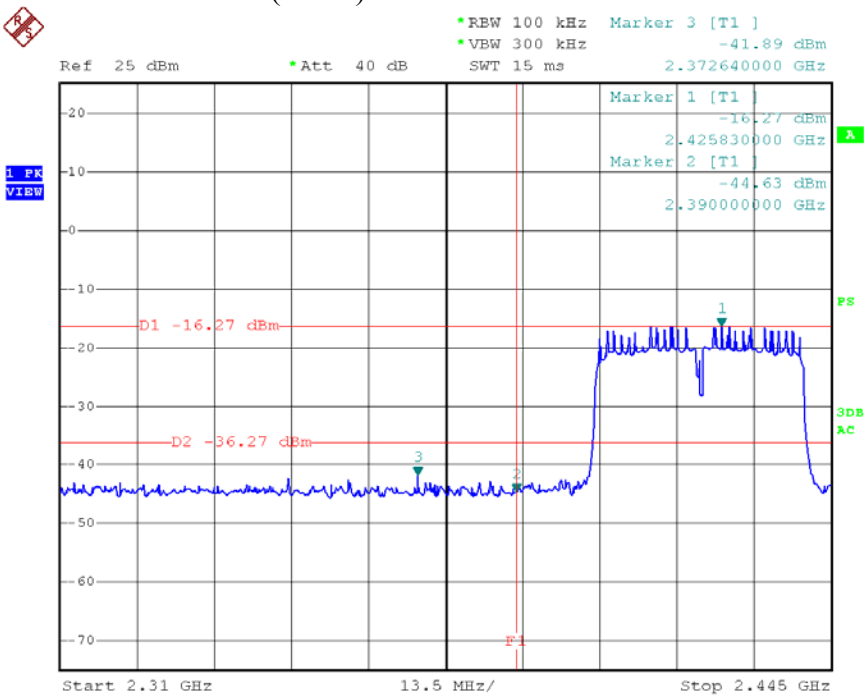
Date: 23.OCT.2013 21:26:50

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



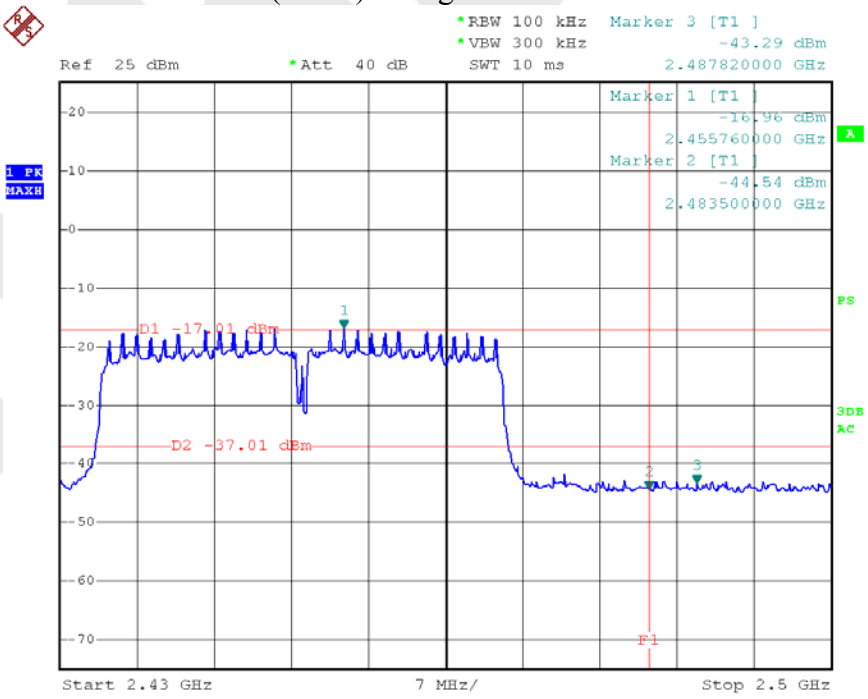
Date: 23.OCT.2013 21:28:31

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



Date: 23.OCT.2013 21:30:54

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



Date: 23.OCT.2013 21:34:12

4.5. Peak Power Spectral Density

a. Limt

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.

Test mode: IEEE 802.11b

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	∑PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2412	-13.66	-		Pass
Mid	2437	-12.16	-	8.00	Pass
High	2462	-12.07	-		Pass

Test mode: IEEE 802.11g

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	∑PPSD (dBm)	Limit (dBm)	Result
Low	2412	-24.25	-		Pass
Mid	2437	-24.17	-	8.00	Pass
High	2462	-24.34	-		Pass

Test mode: IEEE 802.11n (HT20)

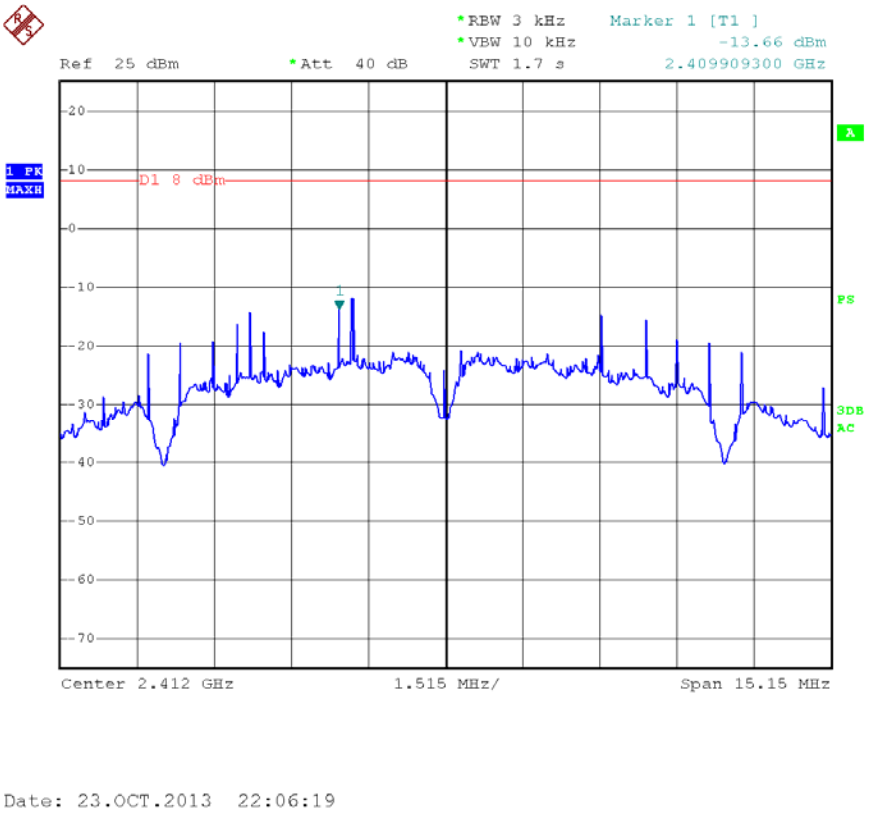
Channel	Frequency (MHz)	PPSD (dBm/3KHz)	∑PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2412	-24.37	-		Pass
Mid	2437	-24.35	-	8.00	Pass
High	2462	-24.34	-		Pass

Test mode: IEEE 802.11n (HT40)

Channel	Frequency (MHz)	PPSD (dBm/3KHz)	∑PPSD (dBm/3KHz)	Limit (dBm)	Result
Low	2422	-24.34	-		Pass
Mid	2437	-24.48	-	8.00	Pass
High	2452	-24.40	-		Pass

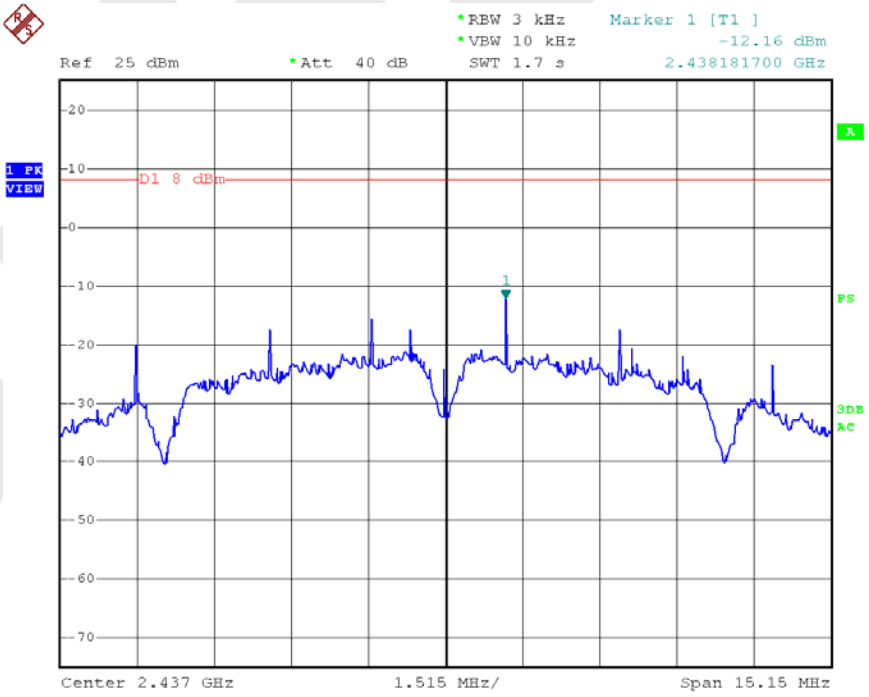
g. Test Plot See the following pages

802.11 b CH--Low



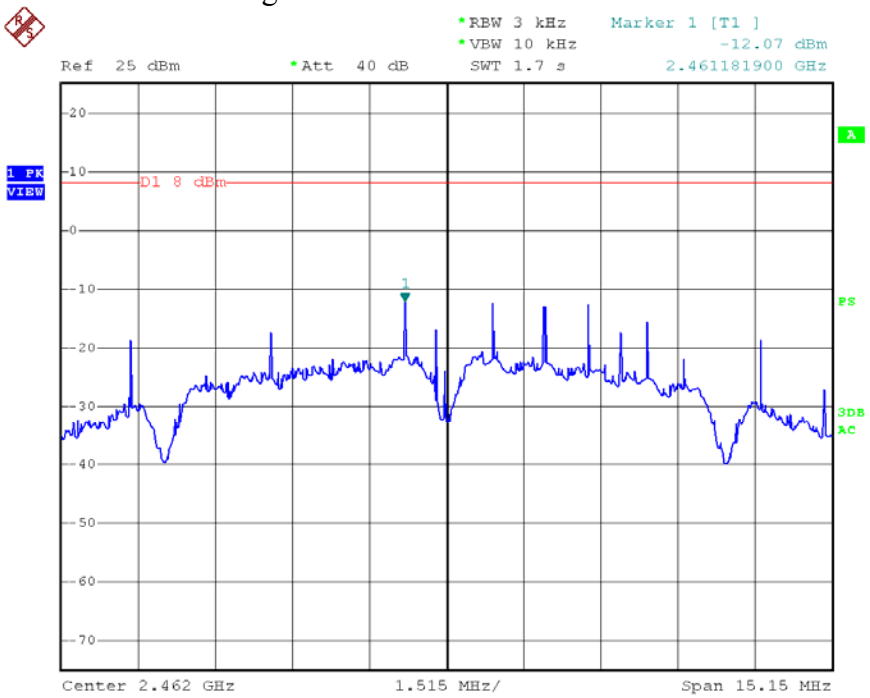
Date: 23.OCT.2013 22:06:19

802.11 b CH--Mid



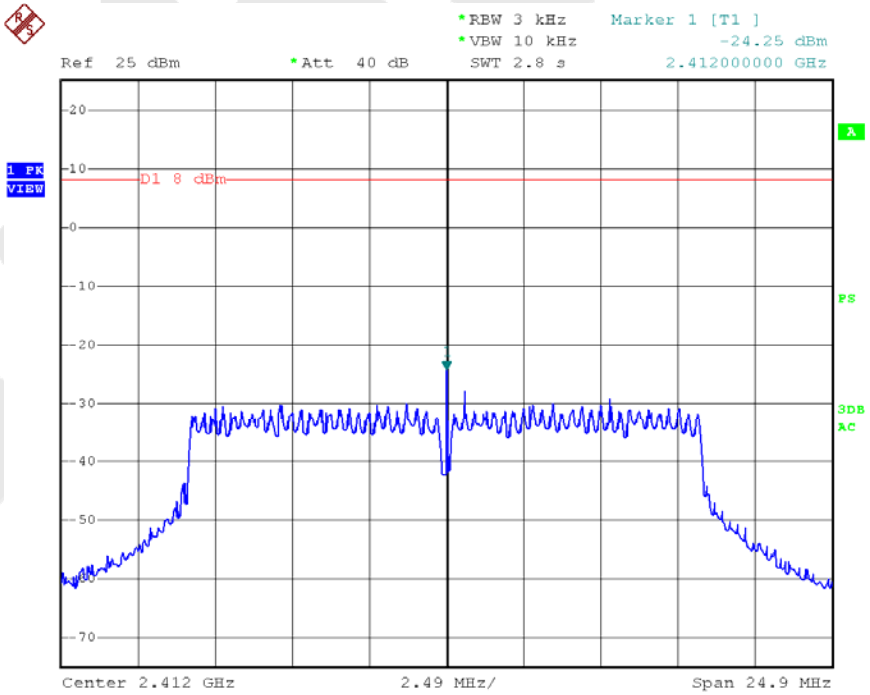
Date: 23.OCT.2013 22:07:08

802.11 b CH--High



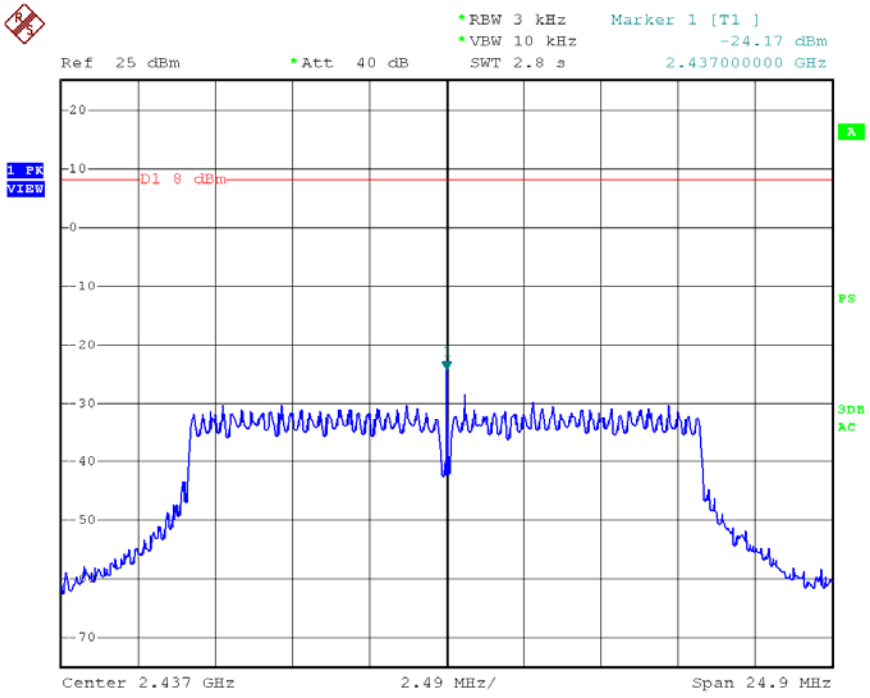
Date: 23.OCT.2013 22:08:03

802.11g CH--Low



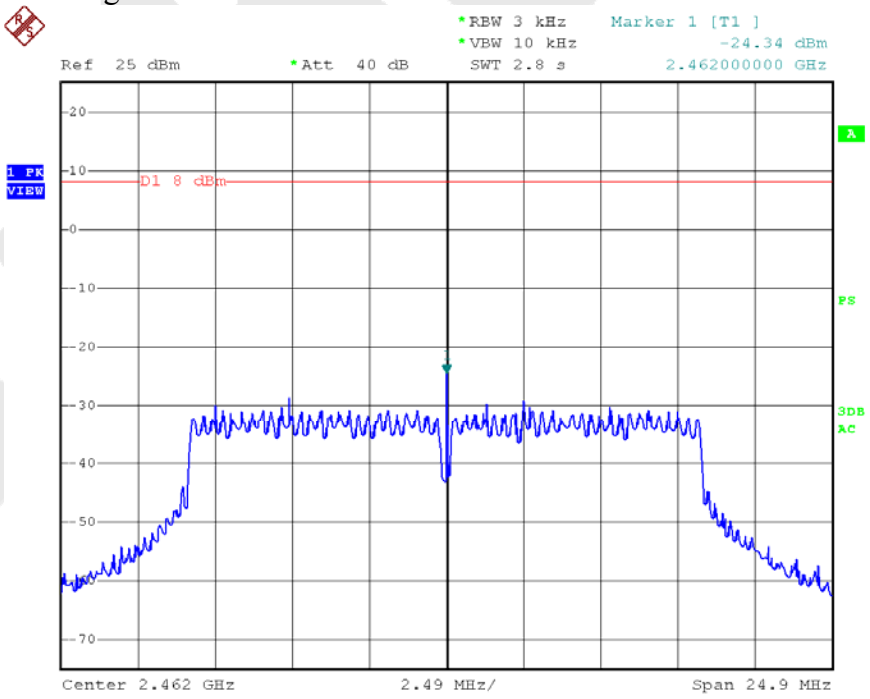
Date: 23.OCT.2013 22:09:16

802.11g CH--Mid



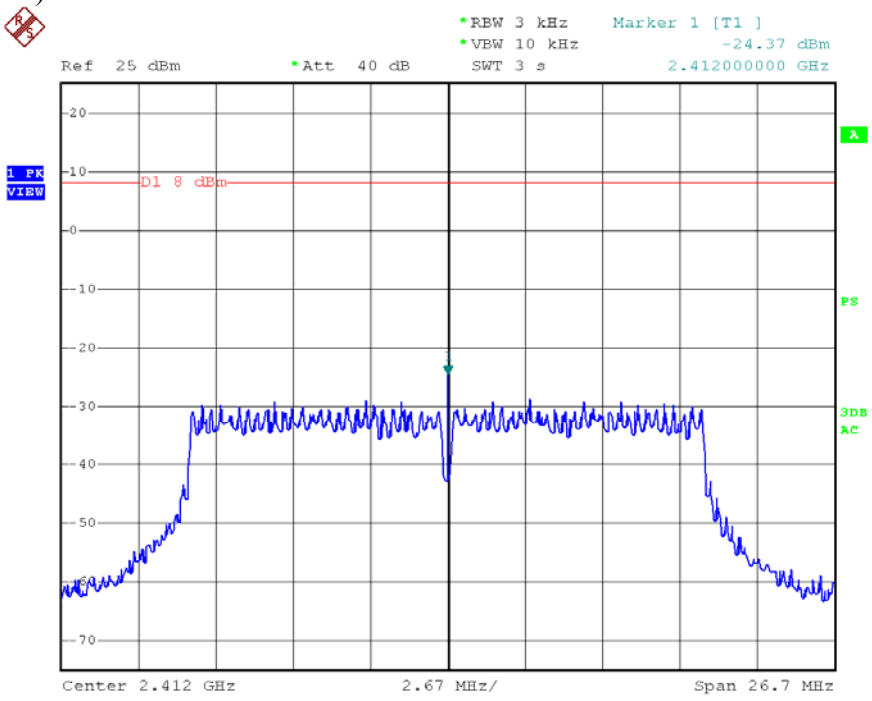
Date: 23.OCT.2013 22:12:06

802.11g CH--High



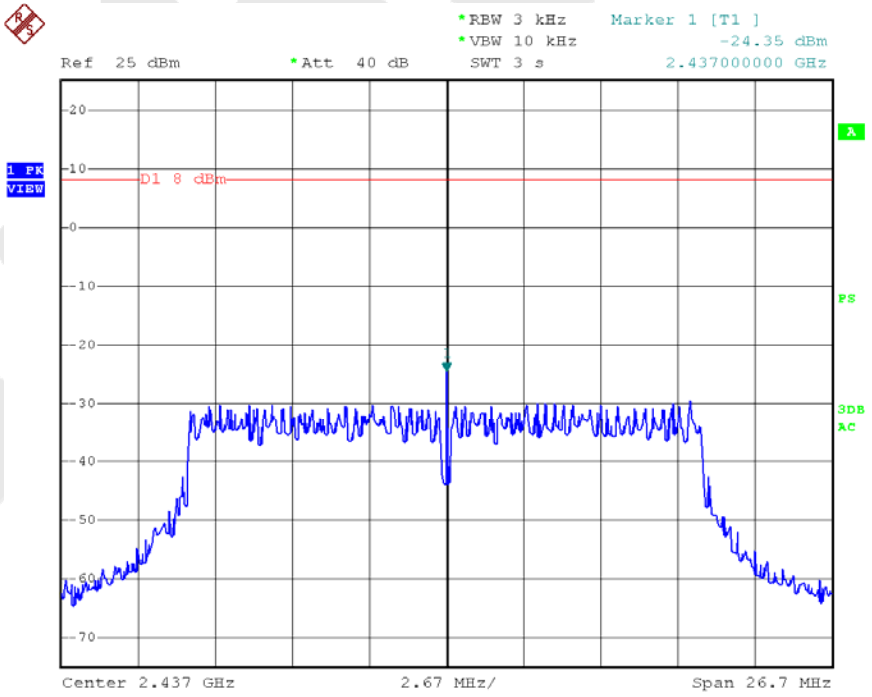
Date: 23.OCT.2013 22:12:47

802.11n (HT20) CH—Low



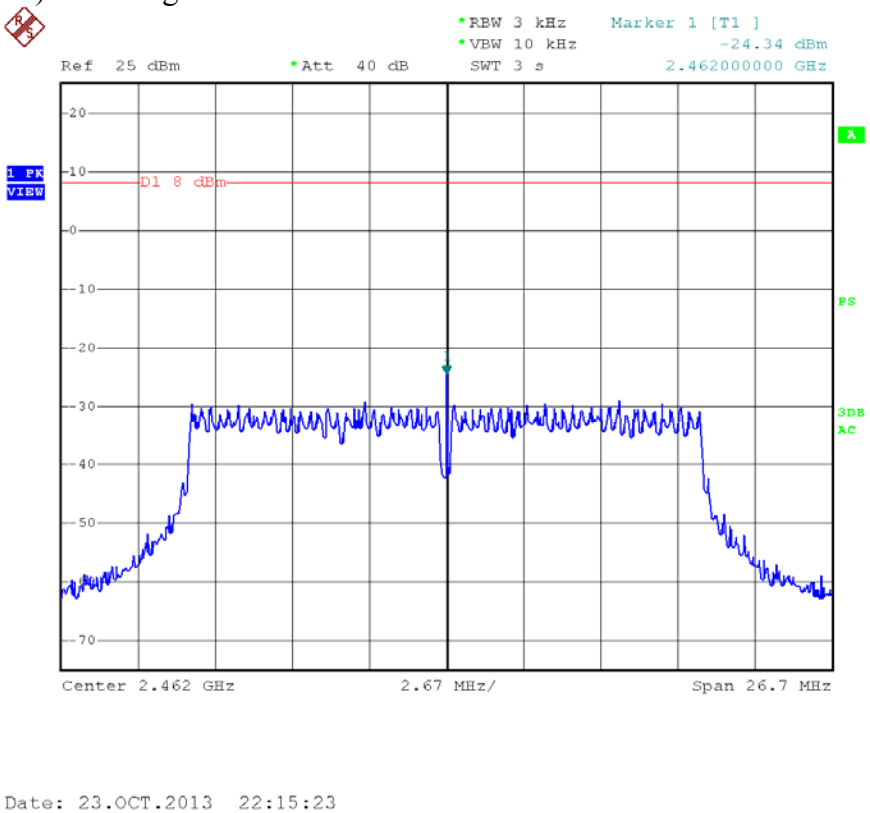
Date: 23.OCT.2013 22:13:57

802.11n (HT20) CH—Mid

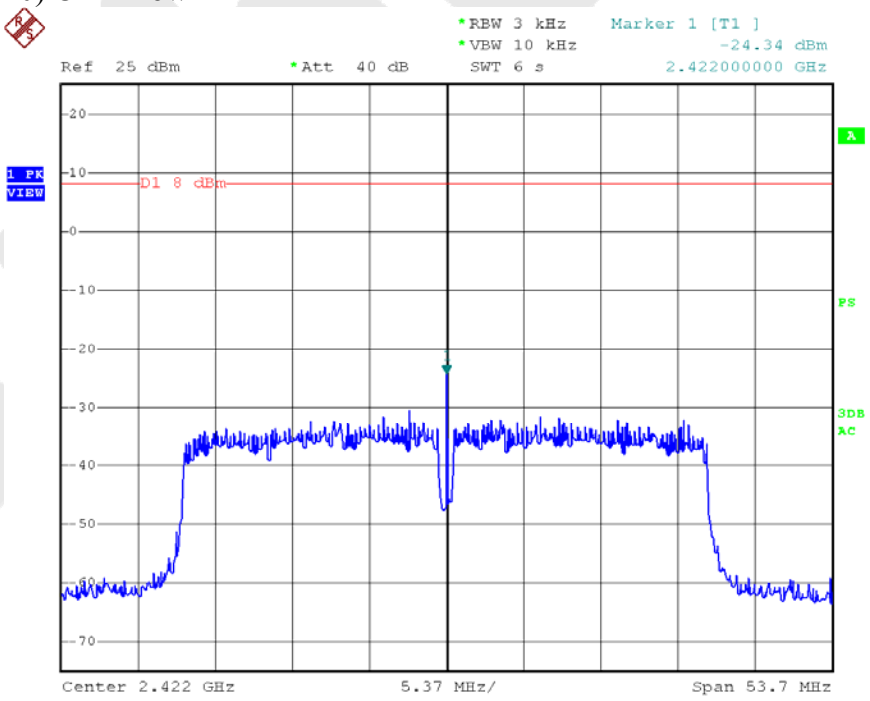


Date: 23.OCT.2013 22:14:44

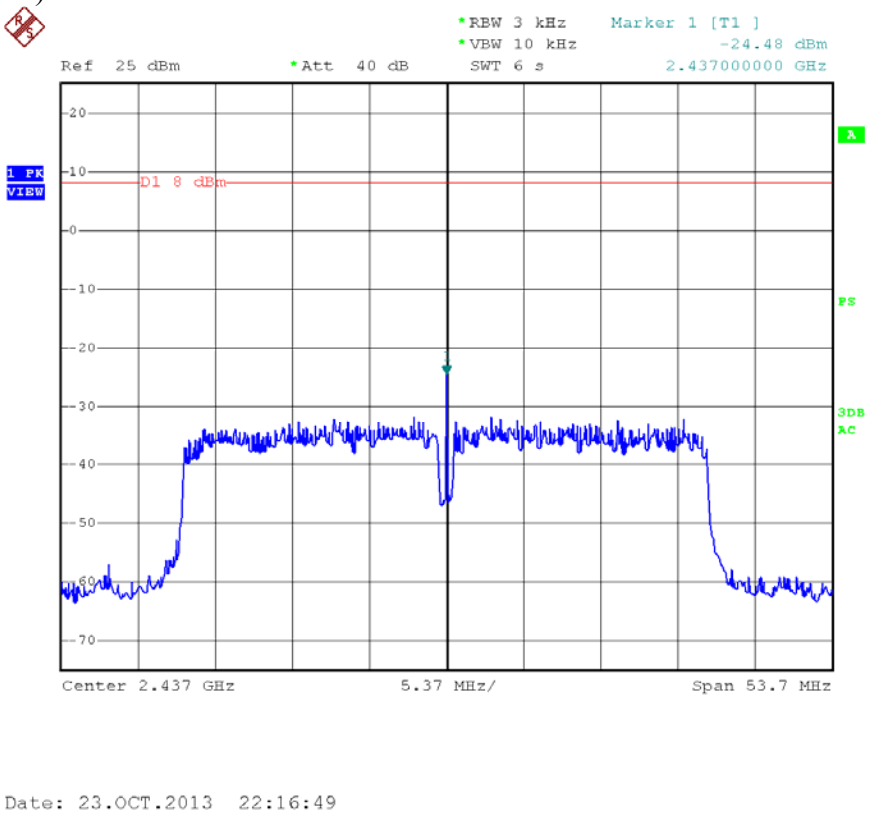
802.11n (HT20) CH—High



802.11n (HT40) CH—Low

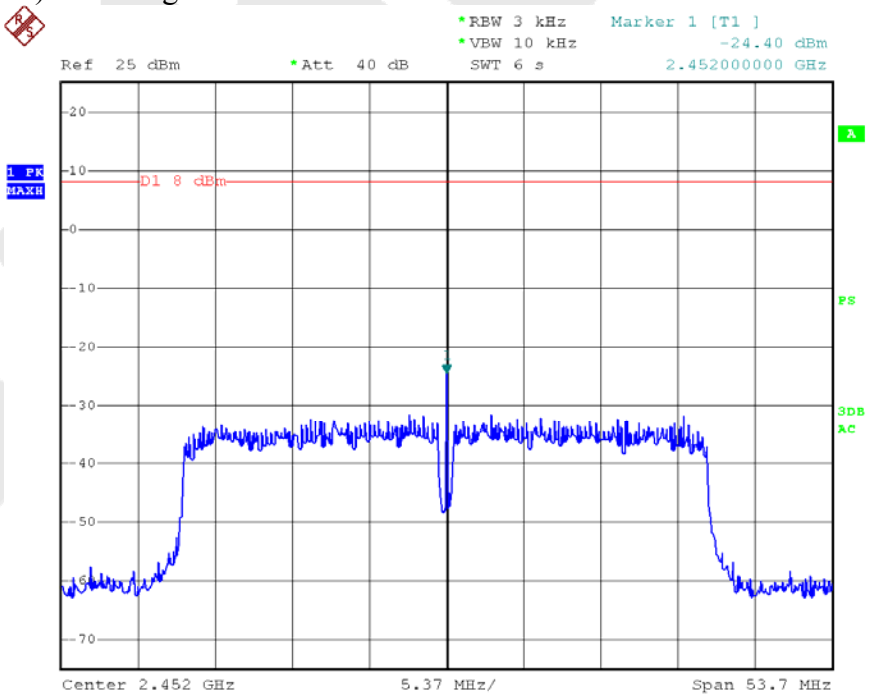


802.11n (HT40) CH—Mid



Date: 23.OCT.2013 22:16:49

802.11n (HT40) CH—High



Date: 23.OCT.2013 22:17:37

4.6. Radiated Emissions

4.6.1.1. Test Limits (< 30 MHZ)

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
1.705-30.0	30	30

4.6.1.2. Test Limits (≥ 30 MHZ)

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

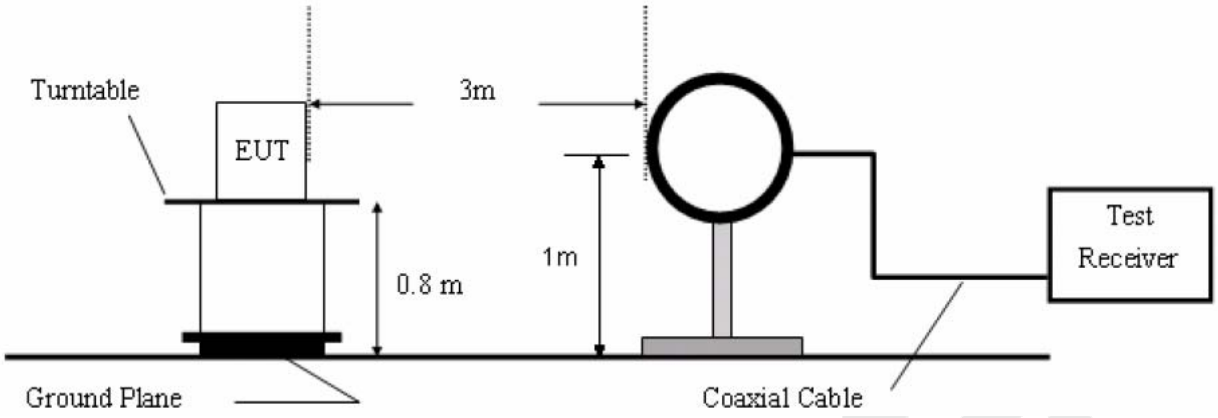
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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

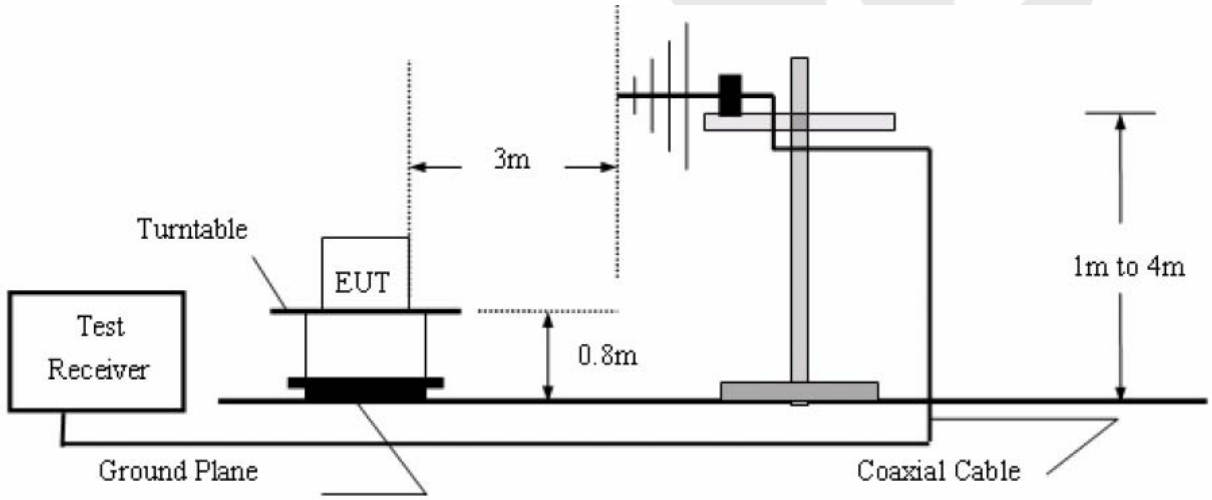
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Preamplifier	Instruments corporation	EMC011830	980100	Aug. 09, 2013	1 Year
2.	EMI Test Receiver	Rohde & Schwarz	ESPI	101604	Apr. 23, 2013	1 Year
3.	Double Ridged Horn Antenna	Instruments corporation	GTH-0118	351600	Aug. 09, 2013	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:

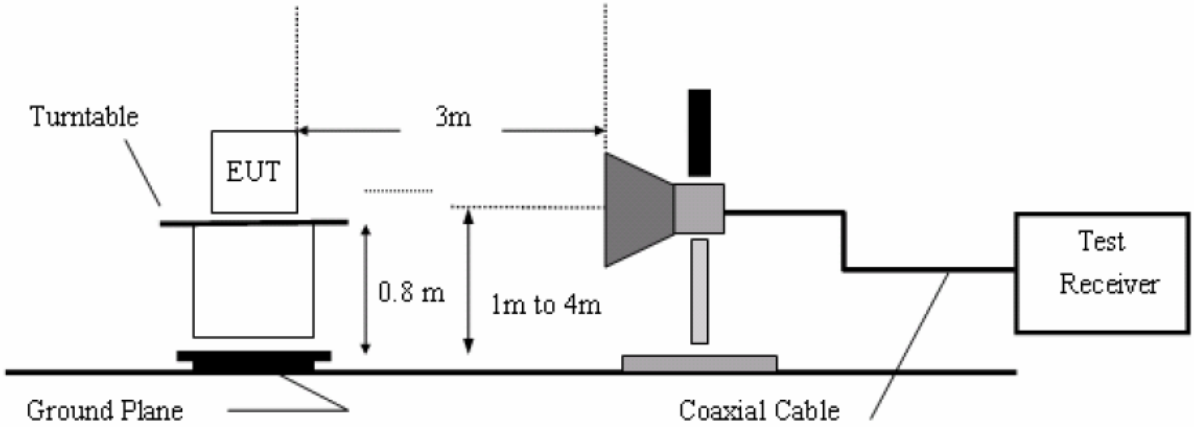
4.6.2.1. 9k to 30MHz emissions:



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

Below 30MHz

There is no emissions were detected below 30MHz

From 30MHz to 1 GHz

Operation Mode: Normal link
Temperature: 25°C
Humidity: 70 % RH

Test Date: Oct. 23, 2013
Tested by: Rock Zeng
Polarity: Ver. / Hor.

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV/m)	Factor (dB)	Actual FS (dBuV/m)	Limit 3m (dBuV/m)	Safe Margin (dB)
60.0690	V	Peak	61.00	-25.23	35.77	40.00	-4.23
125.0066	V	Peak	64.63	-25.20	39.43	43.50	-4.07
159.7844	V	Peak	64.33	-26.49	37.84	43.50	-5.66
250.3011	V	Peak	63.83	-22.54	41.29	46.00	-4.71
480.5276	V	Peak	58.56	-19.63	38.89	46.00	-7.11
801.7862	V	Peak	53.24	-12.59	40.65	46.00	-5.35
125.0066	H	Peak	64.81	-30.00	34.81	43.50	-8.69
159.7844	H	Peak	71.35	-31.49	39.86	43.50	-3.64
250.3011	H	Peak	69.22	-26.27	42.95	46.00	-3.05
375.9384	H	Peak	60.96	-21.90	39.06	46.00	-6.94
480.5276	H	Peak	62.34	-19.90	42.44	46.00	-3.56
801.7862	H	Peak	55.41	-13.58	41.83	46.00	-4.17

Notes:
1. Measuring frequencies from 30 MHz to the 1GHz and the IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak/Quasi-peak detector mode.
3. Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

Above 1 GHz (The worst Mode)

Operation Mode: TX / IEEE 802.11b / CH Low
Temperature: 25oC
Humidity: 50 % RH

Test Date: Oct. 23, 2013
Tested by: Rock Zeng
Polarity: Ver. / Hor.

Item	Freq. (MHz)	Ant.Pol H/V	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level		Peak Limit (dBuV/)	AV Limit (dBuV/)	Margin (dB)	Remark
							Peak (dBuV/)	AV (dBuV/)				
1.	4824	H	57.22	35.76	4.58	34.94	62.62	---	74.00	54.00	-11.38	Peak
2.	4824	H	37.12	35.76	4.58	34.94	---	42.52	74.00	54.00	-11.48	AVG
3.	7240	H	42.95	37.85	5.63	35.25	51.18	---	74.00	---	-22.82	Peak
4.	9648	H	43.19	39.39	6.34	35.70	53.22	---	74.00	---	-20.78	Peak
5.	12060	H	---	---	---	---	---	---	---	---	---	---
6.	14472	H	---	---	---	---	---	---	---	---	---	---
7.	16884	H	---	---	---	---	---	---	---	---	---	---
8.	19296	H	---	---	---	---	---	---	---	---	---	---
9.	21708	H	---	---	---	---	---	---	---	---	---	---
10.	24120	H	---	---	---	---	---	---	---	---	---	---
Note: An item 3 and 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission												
1.	4824	V	53.19	35.13	4.58	34.94	57.96	---	74.00	54.00	-16.04	Peak
2.	4824	V	39.79	35.13	4.58	34.94	---	44.56	74.00	54.00	-9.44	AVG
3.	7240	V	41.31	36.90	5.63	35.25	48.59	---	74.00	---	-25.41	Peak
4.	9648	V	42.14	38.57	6.34	35.70	51.35	---	74.00	---	-22.65	Peak
5.	12060	V	---	---	---	---	---	---	---	---	---	---
6.	14472	V	---	---	---	---	---	---	---	---	---	---
7.	16884	V	---	---	---	---	---	---	---	---	---	---
8.	19296	V	---	---	---	---	---	---	---	---	---	---
9.	21708	V	---	---	---	---	---	---	---	---	---	---
10.	24120	V	---	---	---	---	---	---	---	---	---	---
Note: An item 3 and 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission												

Operation Mode: TX / IEEE 802.11b / CH Mid
Temperature: 25°C
Humidity: 50 % RH

Test Date: Oct. 23, 2013
Tested by: Rock Zeng
Polarity: Ver. / Hor.

Item	Freq. (MHz)	Ant.Pol H/V	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level		Peak Limit (dBuV/)	AV Limit (dBuV/)	Margin (dB)	Remark
							Peak (dBuV/)	AV (dBuV/)				
1.	4874	H	53.19	35.13	4.58	34.94	57.96	---	74.00	54.00	-16.04	Peak
2.	4874	H	39.79	35.13	4.58	34.94	---	44.56	74.00	54.00	-9.44	AVG
3.	7311	H	41.31	36.90	5.63	35.25	48.59	---	74.00	---	-25.41	Peak
4.	9748	H	42.14	38.57	6.34	35.70	51.35	---	74.00	---	-22.65	Peak
5.	12185	H	---	---	---	---	---	---	---	---	---	---
6.	14622	H	---	---	---	---	---	---	---	---	---	---
7.	17059	H	---	---	---	---	---	---	---	---	---	---
8.	19496	H	---	---	---	---	---	---	---	---	---	---
9.	21933	H	---	---	---	---	---	---	---	---	---	---
10.	24370	H	---	---	---	---	---	---	---	---	---	---
Note: An item 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission												
1.	4874	V	57.22	35.76	4.58	34.94	62.62	---	74.00	54.00	-11.38	Peak
2.	4874	V	37.12	35.76	4.58	34.94	---	42.52	74.00	54.00	-11.48	AVG
3.	7311	V	42.95	37.85	5.63	35.25	51.18	---	74.00	---	-22.82	Peak
4.	9748	V	43.19	39.39	6.34	35.70	53.22	---	74.00	---	-20.78	Peak
5.	12185	V	---	---	---	---	---	---	---	---	---	---
6.	14622	V	---	---	---	---	---	---	---	---	---	---
7.	17059	V	---	---	---	---	---	---	---	---	---	---
8.	19496	V	---	---	---	---	---	---	---	---	---	---
9.	21933	V	---	---	---	---	---	---	---	---	---	---
10.	24370	V	---	---	---	---	---	---	---	---	---	---
Note: An item 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission												

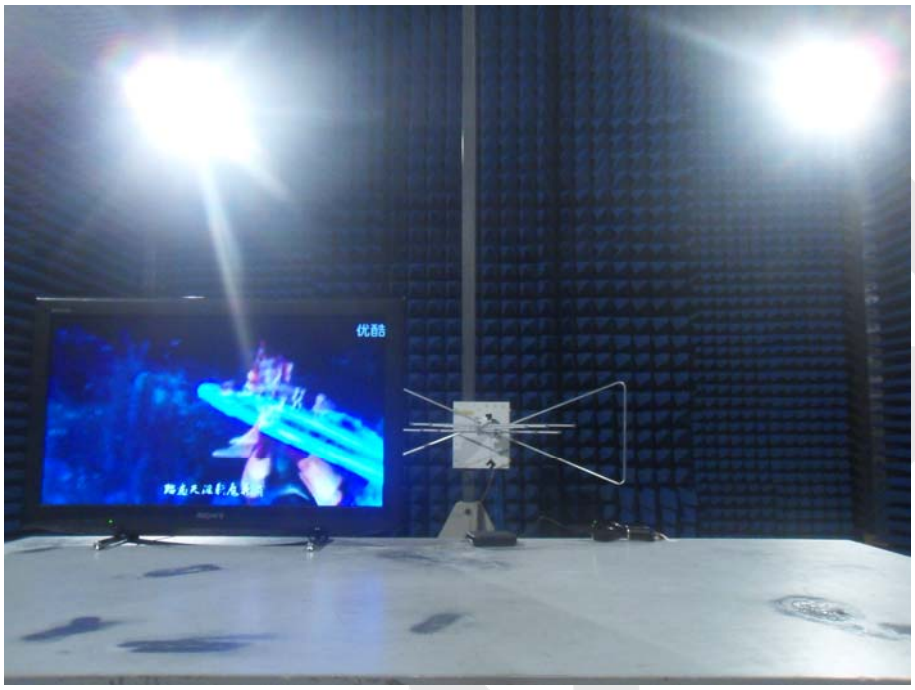
Operation Mode: TX / IEEE 802.11b / CH High
Temperature: 25°C
Humidity: 50 % RH

Test Date: Oct. 23, 2013
Tested by: Rock Zeng
Polarity: Ver. / Hor.

Item	Freq. (MHz)	Ant.Pol H/V	Read Level (dBuV)	Antenna Factor (dB)	Cable Loss (dB)	Preamp Factor (dB)	Level		Peak Limit (dBuV/)	AV Limit (dBuV/)	Margin (dB)	Remark
							Peak (dBuV/)	AV (dBuV/)				
1.	4924	H	49.71	35.83	4.61	34.93	55.22	---	74.00	54.00	-18.78	Peak
2.	4924	H	41.19	35.83	4.61	34.93	---	46.70	74.00	54.00	-7.30	AVG
3.	7386	H	42.58	37.86	5.64	35.26	50.82	---	74.00	54.00	-23.18	Peak
4.	9848	H	41.77	39.51	6.36	35.70	51.94	---	74.00	---	-22.06	Peak
5.	12310	H	---	---	---	---	---	---	---	---	---	---
6.	14772	H	---	---	---	---	---	---	---	---	---	---
7.	17234	H	---	---	---	---	---	---	---	---	---	---
8.	19696	H	---	---	---	---	---	---	---	---	---	---
9.	22158	H	---	---	---	---	---	---	---	---	---	---
10.	24620	H	---	---	---	---	---	---	---	---	---	---
Note: An item 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission												
1.	4924	V	52.20	35.18	4.61	34.93	57.06	---	74.00	54.00	-16.94	Peak
2.	4924	V	41.22	35.18	4.61	34.93	---	46.08	74.00	54.00	-7.92	AVG
3.	7386	V	42.79	36.92	5.64	35.26	50.09	---	74.00	54.00	-23.91	Peak
4.	9848	V	41.38	38.71	6.36	35.70	50.75	---	74.00	---	-23.25	Peak
5.	12310	V	---	---	---	---	---	---	---	---	---	---
6.	14772	V	---	---	---	---	---	---	---	---	---	---
7.	17234	V	---	---	---	---	---	---	---	---	---	---
8.	19696	V	---	---	---	---	---	---	---	---	---	---
9.	22158	V	---	---	---	---	---	---	---	---	---	---
10.	24620	V	---	---	---	---	---	---	---	---	---	---
Note: An item 4 are on un-restricted band, so the limit is -20dB for the field strength of the fundamental emission												

5. PHOTOGRAPH

5.1. Photo of Radiation Emission Test



Appendix Ⅰ (External Photos)

Figure 1
The EUT-Overall View

Figure 2
The EUT-Front View

Figure 3
The EUT-Back View

Figure 4
The EUT-Port View

Appendix Ⅱ (Internal Photos)

Figure 5
The EUT-Inside View

Figure 6
PCB of the EUT-Front View

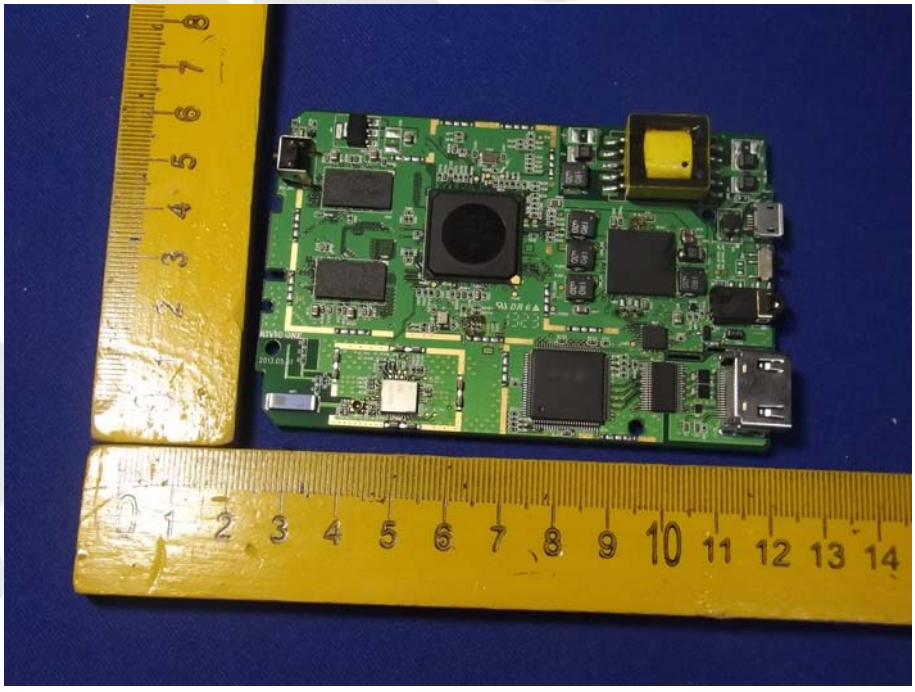


Figure 7
PCB of the EUT-Back View

Figure 8
PCB of the Module View