



FCC PART 15 SUBPART C TEST REPORT

FCC PART 15.247

Report Reference No.....: TRE1208003601 R/C:35339

FCC ID.....: Q9ICT9

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Date of issue.....: Sep 26, 2012

Testing Laboratory Name: Shenzhen Huatongwei International Inspection Co., Ltd

Address: Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China

Applicant's name.....: Guangdong Cirrus Sci-tech Dev.Co.,Ltd.

Address: 2/F, Block B, Wealth Mansion, No.37 Fenjiang Nan Rd.,
Chancheng Dist., 528000 Foshan, Guangdong, China

Test specification:

Standard: FCC Part 15.247: Operation within the bands 902-928 MHz,
2400-2483.5 MHz and 5725-5850 MHz

TRF Originator.....: Shenzhen Huatongwei International Inspection CO., Ltd

Master TRF: Dated 2006-06

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Test item description: MID

Trade Mark:



Model/Type reference.....: CT9

Listed Models: /

Operation Frequency.....: From 2400MHz to 2483.5MHz

Result.....: Positive

TEST REPORT

Test Report No. : TRE1208003601	Sep 26, 2012 Date of issue
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Equipment under Test : MID

Model /Type : CT9

Listed Models : /

Applicant : Guangdong Cirrus Sci-tech Dev.Co.,Ltd.

Address : 2/F, Block B, Wealth Mansion, No.37 Fenjiang Nan Rd.,
Chancheng Dist., 528000 Foshan, Guangdong, China

Manufacturer : Guangdong Cirrus Sci-tech Dev.Co.,Ltd.

Address : 2/F, Block B, Wealth Mansion, No.37 Fenjiang Nan Rd.,
Chancheng Dist., 528000 Foshan, Guangdong, China

Test Result according to the standards on page 4:	Positive
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

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1. TEST STANDARDS

The tests were performed according to following standards:

FCC Rules Part 15.247: Frequency Hopping, Direct Spread Spectrum and Hybrid Systems that are in operation within the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz.

ANSI C63.10: American National Standard for Testing Unlicensed Wireless Devices

KDB558074: DTS Meas Guidance v01 of Measurement Procedure

2. SUMMARY

2.1. General Remarks

Date of receipt of test sample	:	Aug 20, 2012
Testing commenced on	:	Aug 20, 2012
Testing concluded on	:	Sep 26, 2012

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage	:	☐ 120V / 60 Hz	☐ 115V / 60Hz
		☐ 12 V DC	☐ 24 V DC
		☒ Other (specified in blank below)	

DC 3.7V

2.3. Description of the test mode

IEEE 802.11b/g/n: Eleven channels are provided to the EUT.

Channel	Frequency(MHz)	Channel	Frequency(MHz)
1	2412	8	2447
2	2417	9	2452
3	2422	10	2457
4	2427	11	2462
5	2432		
6	2437		
7	2442		

2.4. Short description of the Equipment under Test (EUT)

2.4GHz (MID (M/N:CT9))

For more details, refer to the user's manual of

the EUT. Serial number: Prototype

2.5. EUT operation mode

The EUT has been tested under typical operating condition. The Applicant provides command to control the EUT for staying in continuous transmitting and receiving mode for testing.

2.6. EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

● - supplied by the manufacturer

○ - supplied by the lab

☐	Power Cable	Length (m) :	/
		Shield :	/
		Detachable :	/
☐	Multimeter	Manufacturer :	/
		Model No. :	/

● AC Adapter

MODEL:AW018WR-0500200V V

INPUT:100-240V~50/60Hz 0.5A

OUTPUT: 5.0V DC 2.0A

Power Cable: 150cm

◇ Shielded ◆ Unshielded

2.7. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for **FCC ID: Q9ICT9** filing to comply with Section 15.247 of the FCC Part 15, Subpart C Rules.

2.8. Modifications

No modifications were implemented to meet testing criteria.

2.9. NOTE

1. The EUT is a 802.11b/g/n MID, The functions of the EUT listed as below:

	Test Standards	Reference Report
WLAN 802.11b/g/n	FCC Part 15 Subpart C (Section15.247)	TRE1208003601
MPE REPORT	FCC Per 47 CFR 2.1093(d)	TRE1208003602

2. The frequency bands used in this EUT are listed as follows:

Frequency Band(MHz)	2400-2483.5	5150-5350	5470-5725	5725-5850
802.11b	√	—	—	—
802.11g	√	—	—	—
802.11n(20MHz)	√	—	—	—
802.11n(40MHz)	√	—	—	—

3. The EUT incorporates a SISO function,Physically,the EUT provides one completed transmitter and one completed receiver.

Modulation Mode	TX Function
802.11b	1TX
802.11g	1TX
802.11n (20MHz)	1TX
802.11n (40MHz)	1TX

3. TEST ENVIRONMENT

3.1. Address of the test laboratory

Shenzhen Huatongwei International Inspection Co., Ltd
Keji Nan No.12 Road, Hi-tech Park, Shenzhen, China
Phone: 86-755-26715686 Fax: 86-755-26748089

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 (2009) and CISPR Publication 22.

3.2. Test Facility

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

CNAS-Lab Code: L1225

Shenzhen Huatongwei International Inspection Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories, Date of Registration: Mar. 29, 2012. Valid time is until Feb. 28, 2015.

A2LA-Lab Cert. No. 2243.01

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing. Valid time is until Sept. 30, 2013.

FCC-Registration No.: 662850

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory has been registered 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 662850, Renewal date Jun. 01, 2012, valid time is until Jun. 01, 2015.

IC-Registration No.: 5377A

The 3m Alternate Test Site of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 5377A on Jan. 25, 2011, valid time is until Jan. 24, 2014.

ACA

Shenzhen Huatongwei International Inspection Co., Ltd. EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our A2LA accreditation.

NEMKO-Aut. No.: ELA125

Shenzhen Huatongwei International Inspection Co., Ltd has been assessed the quality assurance system, the testing facilities, qualifications and testing practices of the relevant parts of the organization. The quality assurance system of the Laboratory has been validated against ISO/IEC 17025 or equivalent. The laboratory also fulfils the conditions described in Nemko Document NLA-10, the authorization is valid through July 07, 2013

VCCI

The 3m Semi-anechoic chamber (12.2m×7.95m×6.7m) and Shielded Room (8m×4m×3m) of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-292. Date of Registration: Dec. 24, 2010. Valid time is until Dec. 23, 2013.

Main Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: C-2726. Date of Registration: Dec. 20, 2009. Valid time is until Dec. 19, 2012.

Telecommunication Ports Conducted Interference Measurement of Shenzhen Huatongwei International Inspection Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: T-1837. Date of Registration: May 07, 2010. Valid time is until May 06, 2013.

DNV

Shenzhen Huatongwei International Inspection Co., Ltd. has been found to comply with the requirements of DNV towards subcontractor of EMC and safety testing services in conjunction with the EMC and Low voltage Directives and in the voluntary field. The acceptance is based on a formal quality Audit and follow-ups according to relevant parts of ISO/IEC Guide 17025 (2005), in accordance with the requirements of the DNV Laboratory Quality Manual towards subcontractors. Valid time is until Aug. 24, 2013.

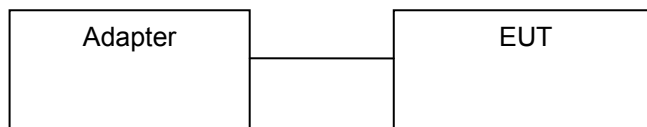
3.3. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>15-35 ° C</u>
Humidity:	<u>30-60 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.4. Configuration of Tested System

Fig. 2-1 Configuration of Tested System



3.5. Test Description

FCC PART 15		
FCC Part 15.207	AC Power Conducted Emission	PASS
FCC Part 15.247(a)(2)	6dB Bandwidth	PASS
FCC Part 15.247(d)	Spurious RF Conducted Emission	PASS
FCC Part 15.247(b)	Maximum Peak Output Power	PASS
FCC Part 15.247(e)	Power Spectral Density	PASS
FCC Part 15.109/ 15.205/ 15.209	Radiated Emissions	PASS
FCC Part 15.247(d)	Band Edge	PASS
FCC Part 15.203/15.247 (b)	Antenna Requirement	PASS

Remark: The measurement uncertainty is not included in the test result.

Preliminary tests were performed in different data rate to find the worst radiated emission. The data rate shown in the table below is the worst-case rate with respect to the specific test item. Investigation has been done on all the possible configurations for searching the worst cases. The following table is a list of the test modes shown in this test report.

Test Items	Mode	Data Rate	Channel
Maximum Peak Conducted Output Power Power Spectral Density 6dB Bandwidth Spurious RF conducted emission Radiated Emission 9kHz~1GHz& Radiated Emission 1GHz~10th Harmonic	11b/DSSS	11 Mbps	1/6/11
	11g/OFDM	54 Mbps	1/6/11
	11n(20MHz)/OFDM	65Mbps	1/6/11
	11n(40MHz)/OFDM	135 Mbps	3/6/9
Band Edge	11b/DSSS	11 Mbps	1/11
	11g/OFDM	54 Mbps	1/11
	11n(20MHz)/OFDM	65Mbps	1/11
	11n(40MHz)/OFDM	135 Mbps	3/9

3.6. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements“ and is documented in the Shenzhen Huatongwei International Inspection Co., Ltd quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for Shenzhen Huatongwei laboratory is reported:

Test Items	Measurement Uncertainty	Notes
Frequency stability	150 Hz	(1)
Transmitter power conducted	0.57 dB	(1)
Transmitter power Radiated	2.20 dB	(1)
Conducted spurious emission 9KHz-12.75 GHz	1.60 dB	(1)
Radiated spurious emission 9KHz-12.75 GHz	2.20 dB	(1)
Conducted Emission 9KHz-30MHz	3.39 dB	(1)
Radiated Emission 30~1000MHz	4.24 dB	(1)
Radiated Emission 1~18GHz	5.16 dB	(1)
Radiated Emission 18-40GHz	5.54 dB	(1)
Occupied Bandwidth	-----	(1)
Emission Mask	-----	(1)
Modulation Characteristic	-----	(1)
Transmitter Frequency Behavior	-----	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=1.96.

3.7. Equipments Used during the Test

AC Power Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Artificial Mains	Rohde&Schwarz	ESH2-Z5	100028	2011/10/23
2	EMI Test Receiver	Rohde&Schwarz	ESCS 30	100038	2011/10/23
3	Pulse Limiter	Rohde&Schwarz	ESHSZ2	100044	2011/10/23
4	EMI Test Software	Rohde&Schwarz	ES-K1 V1.71	N/A	2011/10/23

Radiated Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ULTRA-BROADBAND ANTENNA	Rohde&Schwarz	HL562	100015	2011/10/23
2	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2011/10/23
3	RF TEST PANEL	Rohde&Schwarz	TS / RSP	335015/ 0017	2011/10/23
4	TURNTABLE	ETS	2088	2149	2011/10/23
5	ANTENNA MAST	ETS	2075	2346	2011/10/23
6	EMI TEST SOFTWARE	Rohde&Schwarz	ESK1	N/A	2011/10/23
7	HORN ANTENNA	Rohde&Schwarz	HF906	100039	2011/10/23
8	Amplifer	Sonoma	310N	E009-13	2011/10/23
9	JS amplifier	Rohde&Schwarz	JS4-00101800-28-5A	F201504	2011/10/23
10	High pass filter	Compliance Direction systems	BSU-6	34202	2011/10/23
11	HORN ANTENNA	ShwarzBeck	9120D	1012	2011/10/23
12	Amplifer	Compliance Direction systems	PAP1-4060	120	2011/10/23
13	Loop Antenna	Rohde&Schwarz	HFH2-Z2	100020	2011/10/23

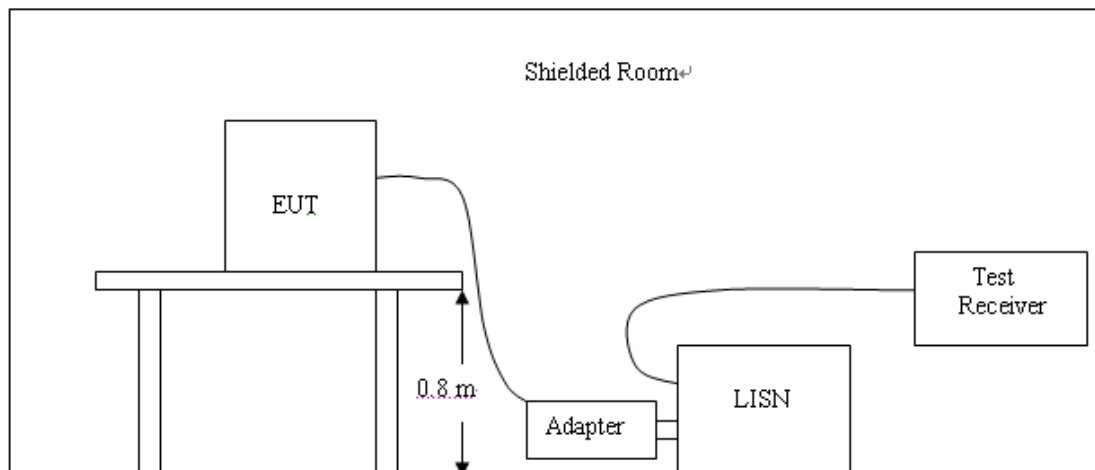
Maximum Peak Output Power / Power Spectral Density / 6dB Bandwidth / Band Edge Compliance of RF Emission / Spurious RF Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI TEST RECEIVER	Rohde&Schwarz	ESI 26	100009	2011/10/23
2	Power Meter	Anritsu	ML2487A	6K00001568	2011/10/23
3	Power Meter Sensor	Anritsu	ML2491A	0630989	2011/10/23
4	Spectrum Analyzer	Rohde&Schwarz	FSP	1164.4391.40	2011/10/23

The Cal.Interval was one year

4. TEST CONDITIONS AND RESULTS

4.1. AC Power Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

- 1 The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. The EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.4-2009.
- 2 Support equipment, if needed, was placed as per ANSI C63.4-2009
- 3 All I/O cables were positioned to simulate typical actual usage as per ANSI C63.4-2009
- 4 The EUT received DC12V power from the adapter, the adapter received AC120V/60Hz power through a Line Impedance Stabilization Network (LISN) which supplied power source and was grounded to the ground plane.
- 5 All support equipments received AC power from a second LISN, if any.
- 6 The EUT test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7 Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.
- 8 During the above scans, the emissions were maximized by cable manipulation.

AC Power Conducted Emission Limit

For intentional device, according to § 15.207(a) AC Power Conducted Emission Limits is as following :

Frequency (MHz)	Maximum RF Line Voltage (dBμV)			
	CLASS A		CLASS B	
	Q.P.	Ave.	Q.P.	Ave.
0.15 - 0.50	79	66	66-56*	56-46*
0.50 - 5.00	73	60	56	46
5.00 - 30.0	73	60	60	50

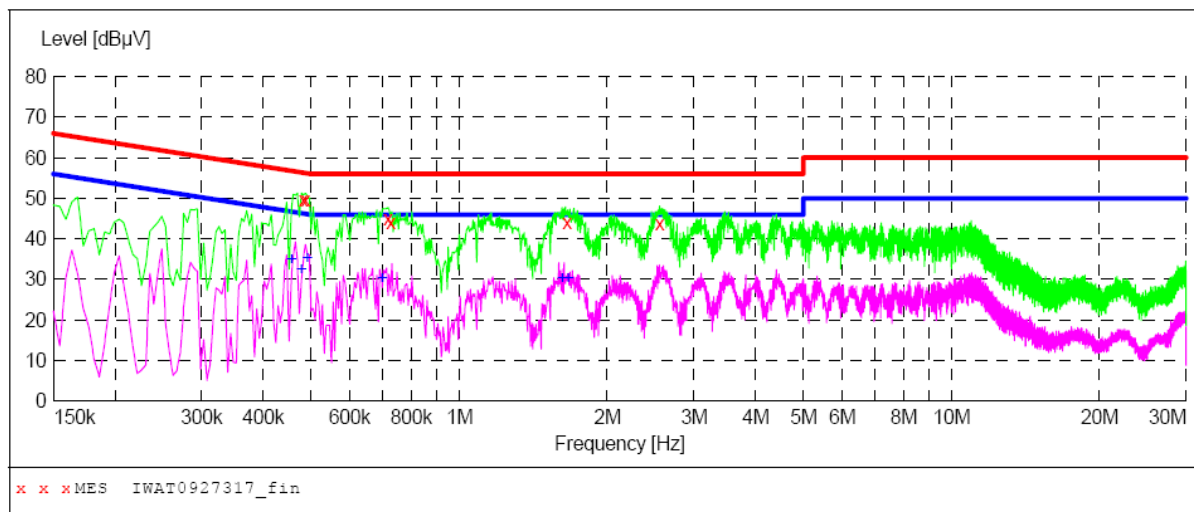
* Decreasing linearly with the logarithm of the frequency

TEST RESULTS

The AC Power Conducted Emission measurement are performed the each test mode (b/g/n) and channel (low/mid/high), the datum recorded below (802.11b mode,the middle channel) is the worst case for all the test modes and channels.

SCAN TABLE: "Voltage (9K-30M)FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "IWAT0927317_fin"**

9/27/2012 5:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.483000	49.60	10.1	56	6.7	QP	L1	GND
0.487500	49.50	10.1	56	6.7	QP	L1	GND
0.717000	45.00	10.1	56	11.0	QP	L1	GND
0.726000	44.10	10.1	56	11.9	QP	L1	GND
1.657500	44.20	10.2	56	11.8	QP	L1	GND
2.553000	43.80	10.2	56	12.2	QP	L1	GND

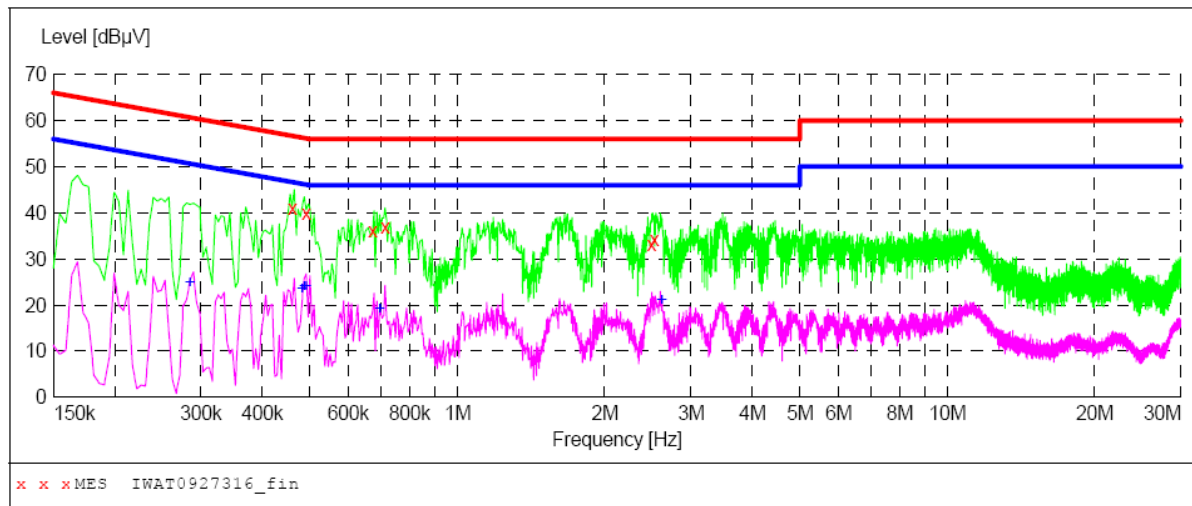
MEASUREMENT RESULT: "IWAT0927317_fin2"

9/27/2012 5:00PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.456000	35.20	10.1	47	11.6	AV	L1	GND
0.478500	32.70	10.1	46	13.7	AV	L1	GND
0.492000	35.40	10.1	46	10.7	AV	L1	GND
0.699000	30.50	10.1	46	15.5	AV	L1	GND
1.621500	30.50	10.2	46	15.5	AV	L1	GND
1.666500	30.40	10.2	46	15.6	AV	L1	GND

SCAN TABLE: "Voltage (9K-30M) FIN"

Short Description: 150K-30M Voltage

**MEASUREMENT RESULT: "IWAT0927316_fin"**

9/27/2012 4:57PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.460500	40.90	10.1	57	15.8	QP	N	GND
0.492000	40.00	10.1	56	16.1	QP	N	GND
0.672000	36.10	10.1	56	19.9	QP	N	GND
0.712500	37.00	10.1	56	19.0	QP	N	GND
2.490000	33.20	10.2	56	22.8	QP	N	GND
2.521500	34.30	10.2	56	21.7	QP	N	GND

MEASUREMENT RESULT: "IWAT0927316_fin2"

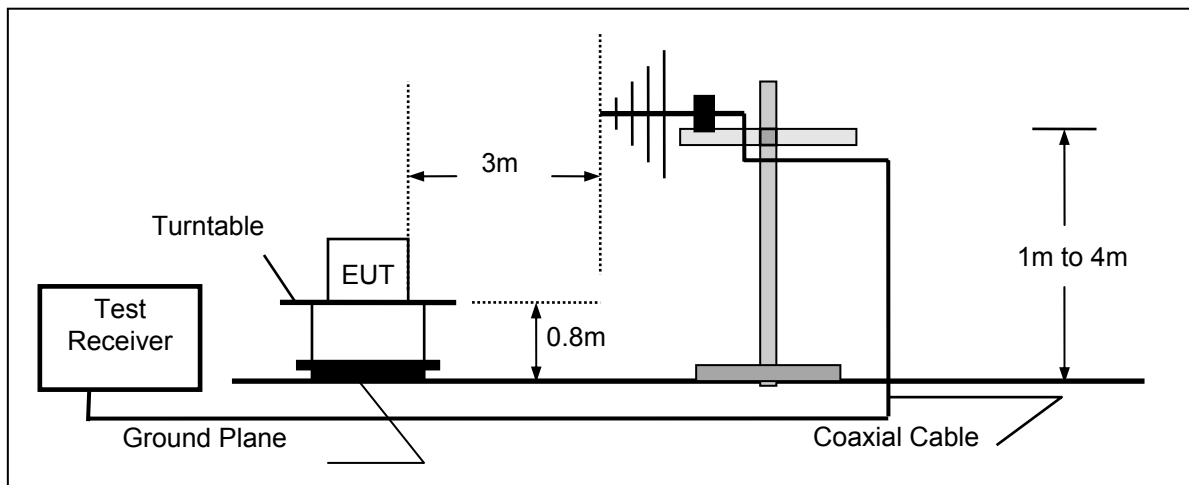
9/27/2012 4:57PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.285000	25.00	10.1	51	25.7	AV	N	GND
0.483000	23.60	10.1	46	22.7	AV	N	GND
0.487500	24.30	10.1	46	21.9	AV	N	GND
0.492000	24.30	10.1	46	21.8	AV	N	GND
0.694500	19.40	10.1	46	26.6	AV	N	GND
2.611500	21.20	10.2	46	24.8	AV	N	GND

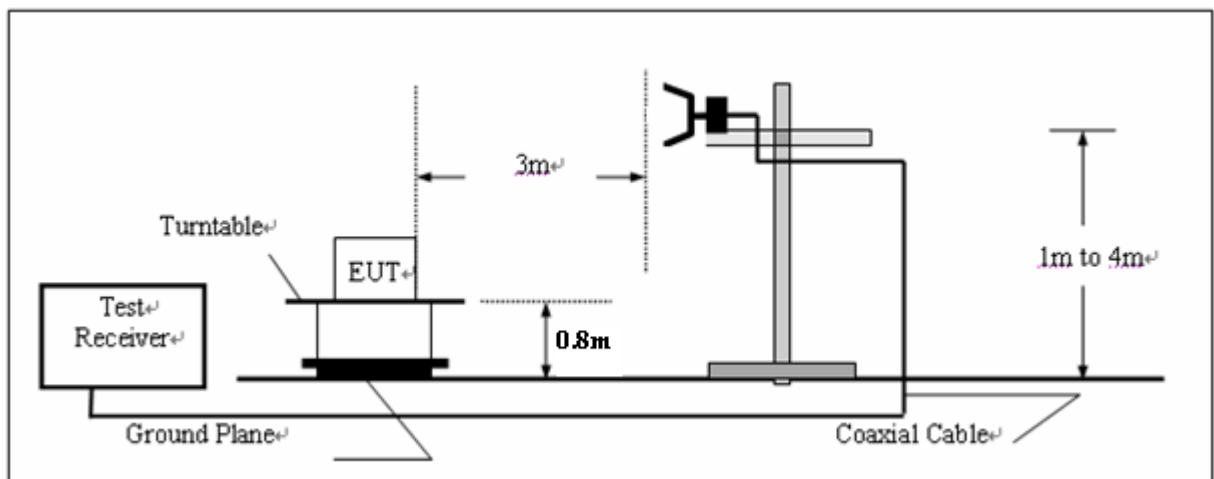
4.2. Radiated Emission

TEST CONFIGURATION

(a) Radiated Emission Test Set-Up, Frequency below 1000MHz



(b) Radiated Emission Test Set-Up, Frequency above 1000MHz



TEST PROCEDURE

- 1 The EUT was placed on a turn table which is 0.8m above ground plane.
- 2 Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measurements have been completed.

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL + AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

RADIATION LIMIT

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is 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 desired power.

The frequency spectrum above 1 GHz for Transmitter was investigated. All emission not reported are much lower than the prescribed limits. Set the RBW=1MHz, VBW=3MHz for Peak Detector while the RBW=1MHz, VBW=10Hz for Average Detector, Readings are both peak and average values.

Frequency (MHz)	Distance (Meters)	Radiated (dBμV/m)	Radiated (μV/m)
0.009-0.49	300	$20\log(2400/F(\text{KHz}))+80$	$2400/F(\text{KHz})$
0.49-1.705	30	$20\log(24000/F(\text{KHz}))+40$	$24000/F(\text{KHz})$
1.705-30	30	$20\log(30)+40$	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

TEST RESULTS

Note: 1. The radiated measurement are performed the each test mode (b/g/n) and channel (low/mid/high), the datum recorded below (802.11b mode, the middle channel) is the worst case for all the test mode and channel.

2. ULTRA-BROADBAND ANTENNA for the radiation emission test below 1G.

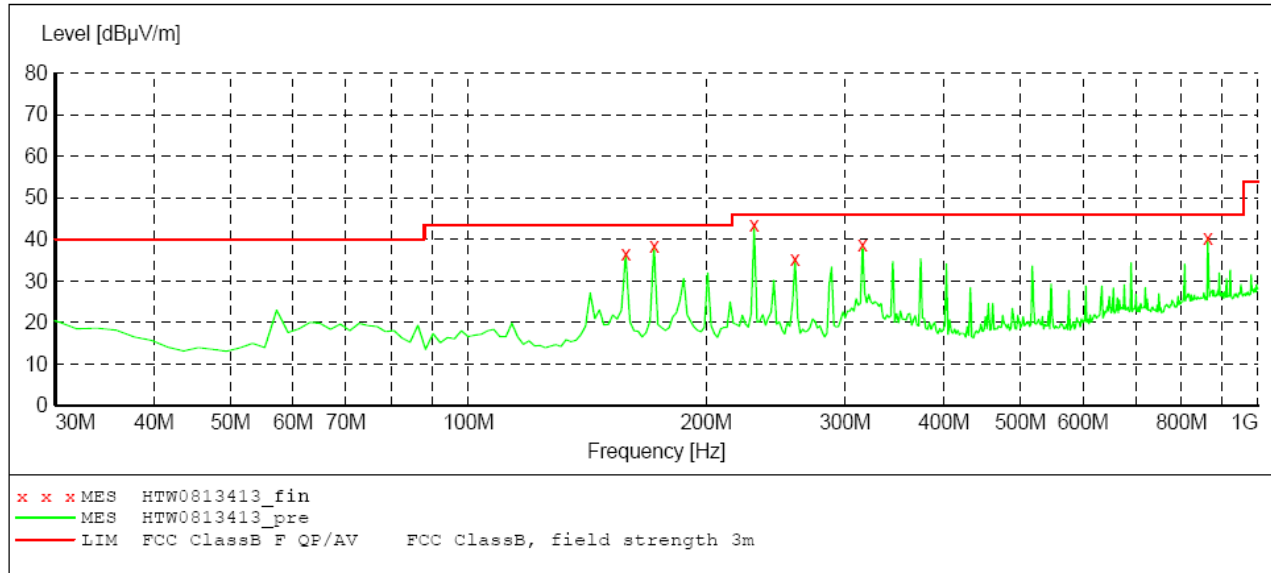
3. HORN ANTENNA for the radiation emission test above 1G.

For 9KHz to 30MHz

Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Result
0.63	47.52	71.21	23.69	QP	Pass
1.62	43.62	63.05	19.43	QP	Pass
16.52	40.11	69.54	29.43	QP	Pass
27.09	42.66	69.54	26.88	QP	Pass

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency	Time	Bandw.		
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 201106

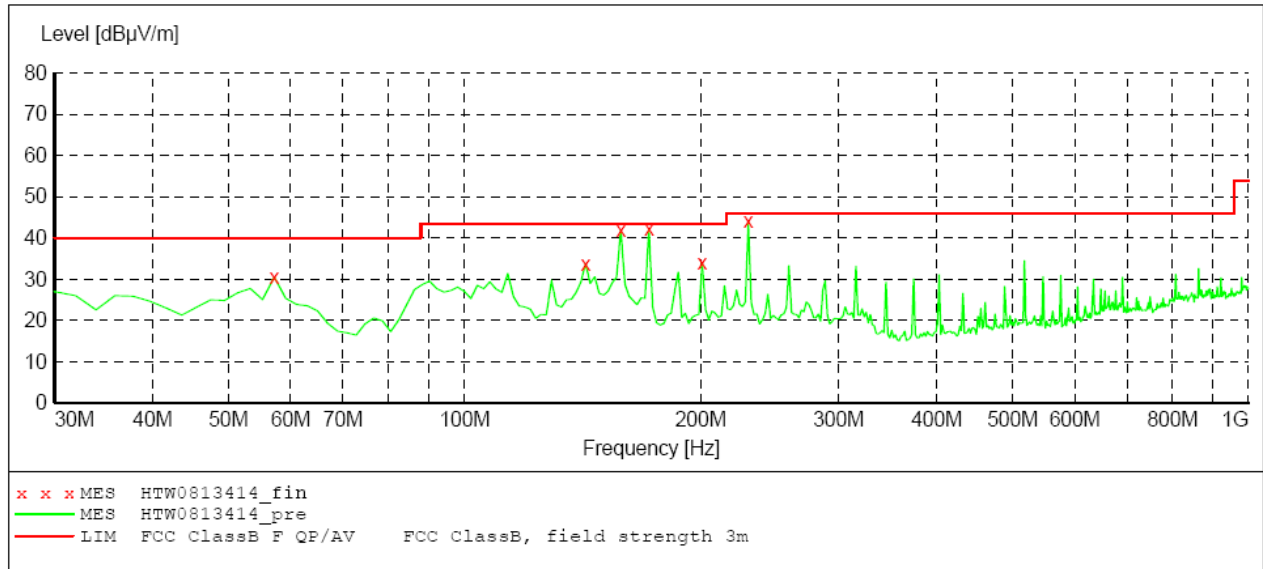
***MEASUREMENT RESULT: "HTW0813413_fin"***

8/13/2012 2:00PM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
158.296593	36.50	-22.9	43.5	7.0	QP	300.0	274.00	HORIZONTAL
171.903808	38.40	-23.2	43.5	5.1	QP	100.0	0.00	HORIZONTAL
230.220441	43.40	-19.7	46.0	2.6	QP	100.0	207.00	HORIZONTAL
259.378758	35.40	-18.4	46.0	10.6	QP	100.0	242.00	HORIZONTAL
315.751503	38.70	-16.4	46.0	7.3	QP	100.0	219.00	HORIZONTAL
863.927856	40.40	-7.3	46.0	5.6	QP	100.0	227.00	HORIZONTAL

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas.	IF	Transducer
Frequency	Frequency		Time	Bandw.	
30.0 MHz	1.0 GHz	MaxPeak	Coupled	120 kHz	HL562 201106

**MEASUREMENT RESULT: "HTW0813414_fin"**

8/13/2012 2:02PM

Frequency MHz	Level dBμV/m	Transd dB	Limit dBμV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
57.214429	30.50	-24.6	40.0	9.5	QP	100.0	331.00	VERTICAL
142.745491	33.80	-22.0	43.5	9.7	QP	100.0	323.00	VERTICAL
158.296593	42.00	-22.9	43.5	1.5	QP	100.0	189.00	VERTICAL
171.903808	42.10	-23.2	43.5	1.4	QP	100.0	142.00	VERTICAL
201.062124	34.00	-21.4	43.5	9.5	QP	100.0	216.00	VERTICAL
230.220441	44.20	-19.7	46.0	1.8	QP	100.0	352.00	VERTICAL

802.11b Mode(above 1GHz)**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b--2412MHz)**

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	55.40	PK	74.00	18.60	1.00 H	216	58.80	28.3	4.90	-36.6	-3.40
1	2390.00	47.38	AV	54.00	6.62	1.00 H	216	50.78	28.3	4.90	-36.6	-3.40
2	*2412.00	99.32	PK			1.00 H	360	102.72	28.3	4.90	-36.6	-3.40
2	*2412.00	92.84	AV			1.00 H	360	96.24	28.3	4.90	-36.6	-3.40
3	4824.00	50.11	PK	74.00	23.89	1.00 H	359	46.91	32.7	7.00	-36.5	3.20
3	4824.00	40.96	AV	54.00	13.04	1.00 H	359	37.76	32.7	7.00	-36.5	3.20
4	7236.00	52.94	PK	74.00	21.06	1.00 H	152	43.54	35.8	8.90	-35.3	9.40
4	7236.00	44.99	AV	54.00	9.01	1.00 H	152	35.59	35.8	8.90	-35.3	9.40
5	9648.00	52.62	PK	74.00	21.38	1.00 H	140	40.02	37.2	10.20	-34.8	12.60
5	9648.00	44.92	AV	54.00	9.08	1.00 H	140	32.32	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2412MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	55.20	PK	74.00	18.80	1.00 V	192	58.60	28.3	4.90	-36.6	-3.40
1	2390.00	46.82	AV	54.00	7.18	1.00 V	192	50.22	28.3	4.90	-36.6	-3.40
2	*2412.00	101.55	PK			1.00 V	124	104.95	28.3	4.90	-36.6	-3.40
2	*2412.00	92.45	AV			1.00 V	124	95.85	28.3	4.90	-36.6	-3.40
3	4824.00	53.82	PK	74.00	20.18	1.00 V	339	50.62	32.7	7.00	-36.5	3.20
3	4824.00	44.07	AV	54.00	9.93	1.00 V	339	40.87	32.7	7.00	-36.5	3.20
4	7236.00	53.96	PK	74.00	20.04	1.00 V	340	44.56	35.8	8.90	-35.3	9.40
4	7236.00	42.89	AV	54.00	11.11	1.00 V	340	33.49	35.8	8.90	-35.3	9.40
5	9648.00	55.24	PK	74.00	18.76	1.00 V	20	42.64	37.2	10.20	-34.8	12.60
5	9648.00	45.24	AV	54.00	8.76	1.00 V	20	32.64	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	99.49	PK			1.00 H	153	102.69	28.3	5.10	-36.6	-3.20
1	*2437.00	91.26	AV			1.00 H	153	94.46	28.3	5.10	-36.6	-3.20
2	4874.00	47.43	PK	74.00	26.57	1.00 H	202	44.03	32.3	7.60	-36.5	3.40
2	4874.00	36.17	AV	54.00	17.83	1.00 H	202	32.77	32.3	7.60	-36.5	3.40
3	7311.00	52.68	PK	74.00	21.32	1.00 H	355	43.28	36.1	8.60	-35.3	9.40
3	7311.00	40.49	AV	54.00	13.51	1.00 H	355	31.09	36.1	8.60	-35.3	9.40
4	9748.00	54.96	PK	74.00	19.04	1.00 H	28	42.36	37.2	10.20	-34.8	12.60
4	9748.00	42.36	AV	54.00	11.64	1.00 H	28	29.76	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	100.88	PK			1.00 V	121	104.08	28.3	5.10	-36.6	-3.20
1	*2437.00	91.28	AV			1.00 V	121	94.48	28.3	5.10	-36.6	-3.20
2	4874.00	48.54	PK	74.00	25.46	1.00 V	97	45.14	32.3	7.60	-36.5	3.40
2	4874.00	36.24	AV	54.00	17.76	1.00 V	97	32.84	32.3	7.60	-36.5	3.40
3	7311.00	60.84	PK	74.00	13.16	1.00 V	288	51.44	36.1	8.60	-35.3	9.40
3	7311.00	40.79	AV	54.00	13.21	1.00 V	288	31.39	36.1	8.60	-35.3	9.40
4	9748.00	51.18	PK	74.00	22.82	1.00 V	89	38.58	37.2	10.20	-34.8	12.60
4	9748.00	39.71	AV	54.00	14.29	1.00 V	89	27.11	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11b--2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2462.00	95.10	PK			1.00 H	154	98.40	28.6	4.70	-36.6	-3.30
1	*2462.00	87.88	AV			1.00 H	154	91.18	28.6	4.70	-36.6	-3.30
2	2483.50	47.32	PK	74.00	26.68	1.00 H	146	50.62	28.6	4.70	-36.6	-3.30
2	2483.50	40.10	AV	54.00	13.90	1.00 H	146	43.40	28.6	4.70	-36.6	-3.30
3	4924.00	51.00	PK	74.00	23.00	1.00 H	100	47.20	33.0	7.00	-36.2	3.80
3	4924.00	35.20	AV	54.00	18.80	1.00 H	100	31.40	33.0	7.00	-36.2	3.80
4	7386.00	58.38	PK	74.00	15.62	1.00 H	190	48.98	36.2	8.50	-35.3	9.40
4	7386.00	44.67	AV	54.00	9.33	1.00 H	190	35.27	36.2	8.50	-35.3	9.40
5	9848.00	52.54	PK	74.00	21.46	1.00 H	113	39.94	37.2	10.20	-34.8	12.60
5	9848.00	39.66	AV	54.00	14.34	1.00 H	113	27.06	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11b--2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2462.00	99.11	PK			1.00 V	247	102.41	28.6	4.70	-36.6	-3.30
1	*2462.00	92.37	AV			1.00 V	247	95.67	28.6	4.70	-36.6	-3.30
2	2483.50	51.33	PK	74.00	22.67	1.00 V	150	54.63	28.6	4.70	-36.6	-3.30
2	2483.50	44.59	AV	54.00	9.41	1.00 V	150	47.89	28.6	4.70	-36.6	-3.30
3	4924.00	56.69	PK	74.00	17.31	1.00 V	90	52.89	33.0	7.00	-36.2	3.80
3	4924.00	49.12	AV	54.00	4.88	1.00 V	90	45.32	33.0	7.00	-36.2	3.80
4	7386.00	66.19	PK	74.00	7.81	1.00 V	29	56.79	36.2	8.50	-35.3	9.40
4	7386.00	44.62	AV	54.00	9.38	1.00 V	29	35.22	36.2	8.50	-35.3	9.40
5	9848.00	58.20	PK	74.00	15.80	1.00 V	222	45.60	37.2	10.20	-34.8	12.60
5	9848.00	42.71	AV	54.00	11.29	1.00 V	222	30.11	37.2	10.20	-34.8	12.60

- REMARKS:**
1. Emission level (dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) +Pre-amplifier Factor
 3. The other emission levels were very low against the limit.
 4. Margin value = Limit value- Emission level.
 5. The limit value is defined as per 15.247
 6. "*" : Fundamental frequency
 7. For Wireless 802.11b mode at 11Mbps.

802.11g Mode

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g--2412MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	64.89	PK	74.00	9.11	1.00 H	142	68.19	28.3	5.00	-36.6	-3.30
1	2390.00	50.94	AV	54.00	3.06	1.00 H	142	54.24	28.3	5.00	-36.6	-3.30
2	*2412.00	97.46	PK			1.00 H	123	100.76	28.3	5.00	-36.6	-3.30
2	*2412.00	91.10	AV			1.00 H	123	94.40	28.3	5.00	-36.6	-3.30
3	4824.00	50.42	PK	74.00	23.58	1.00 H	216	46.62	32.7	7.30	-36.2	3.80
3	4824.00	42.43	AV	54.00	11.57	1.00 H	216	38.63	32.7	7.30	-36.2	3.80
4	7236.00	57.25	PK	74.00	16.75	1.00 H	176	47.85	35.8	8.90	-35.3	9.40
4	7236.00	42.72	AV	54.00	11.28	1.00 H	176	33.32	35.8	8.90	-35.3	9.40
5	9648.00	52.4	PK	74.00	21.60	1.00 H	72	39.80	37.2	10.20	-34.8	12.60
5	9648.00	43.61	AV	54.00	10.39	1.00 H	72	31.01	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g--2412MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	64.83	PK	74.00	9.17	1.00 V	199	68.13	28.3	5.00	-36.6	-3.30
1	2390.00	53.87	AV	54.00	0.13	1.00 V	199	57.17	28.3	5.00	-36.6	-3.30
2	*2412.00	102.44	PK			1.00 V	127	105.74	28.3	5.00	-36.6	-3.30
2	*2412.00	92.32	AV			1.00 V	127	95.62	28.3	5.00	-36.6	-3.30
3	4824.00	57.85	PK	74.00	16.15	1.00 V	95	54.05	32.7	7.30	-36.2	3.80
3	4824.00	45.87	AV	54.00	8.13	1.00 V	95	42.07	32.7	7.30	-36.2	3.80
4	7236.00	63.88	PK	74.00	10.12	1.00 V	0	54.48	35.8	8.90	-35.3	9.40
4	7236.00	49.52	AV	54.00	4.48	1.00 V	0	40.12	35.8	8.90	-35.3	9.40
5	9648.00	62.52	PK	74.00	11.48	1.00 V	264	49.92	37.2	10.20	-34.8	12.60
5	9648.00	53.71	AV	54.00	0.29	1.00 V	264	41.11	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	98.77	PK			1.00 H	100	102.07	28.3	5.10	-36.6	-3.20
1	*2437.00	85.48	AV			1.00 H	100	88.78	28.3	5.10	-36.6	-3.20
2	4874.00	65.80	PK	74.00	8.20	1.00 H	214	62.40	32.8	7.10	-36.5	3.40
2	4874.00	48.16	AV	54.00	5.84	1.00 H	214	44.76	32.8	7.10	-36.5	3.40
3	7311.00	60.55	PK	74.00	13.45	1.00 H	0	51.15	36.1	8.60	-35.3	9.40
3	7311.00	47.60	AV	54.00	6.40	1.00 H	0	38.20	36.1	8.60	-35.3	9.40
4	9748.00	52.11	PK	74.00	21.89	1.00 H	163	39.51	37.2	10.20	-34.8	12.60
4	9748.00	41.41	AV	54.00	12.59	1.00 H	163	28.81	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	100.44	PK			1.00 V	122	103.74	28.3	5.10	-36.6	-3.20
1	*2437.00	90.81	AV			1.00 V	122	94.11	28.3	5.10	-36.6	-3.20
2	4874.00	60.66	PK	74.00	13.34	1.00 V	100	57.26	32.8	7.10	-36.5	3.40
2	4874.00	43.74	AV	54.00	10.26	1.00 V	100	40.34	32.8	7.10	-36.5	3.40
3	7311.00	55.35	PK	74.00	18.65	1.00 V	356	45.95	36.1	8.60	-35.3	9.40
3	7311.00	44.69	AV	54.00	9.31	1.00 V	356	35.29	36.1	8.60	-35.3	9.40
4	9748.00	51.58	PK	74.00	22.42	1.00 V	26	38.98	37.2	10.20	-34.8	12.60
4	9748.00	43.55	AV	54.00	10.45	1.00 V	26	30.95	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11g--2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2462.00	94.79	PK			1.00 H	156	93.09	28.2	5.10	-36.6	-3.30
1	*2462.00	88.71	AV			1.00 H	156	87.01	28.2	5.10	-36.6	-3.30
2	2483.50	53.85	PK	74.00	20.15	1.00 H	191	57.15	28.2	5.10	-36.6	-3.30
2	2483.50	47.77	AV	54.00	6.23	1.00 H	191	51.07	28.2	5.10	-36.6	-3.30
3	4924.00	52.74	PK	74.00	21.26	1.00 H	198	48.94	33.0	7.00	-36.2	3.80
3	4924.00	39.76	AV	54.00	14.24	1.00 H	198	35.96	33.0	7.00	-36.2	3.80
4	7386.00	57.72	PK	74.00	16.28	1.00 H	90	48.32	36.2	8.50	-35.3	9.40
4	7386.00	44.62	AV	54.00	9.38	1.00 H	90	35.22	36.2	8.50	-35.3	9.40
5	9848.00	55.45	PK	74.00	18.55	1.00 H	124	42.85	37.3	10.10	-34.8	12.60
5	9848.00	48.25	AV	54.00	5.75	1.00 H	124	35.65	37.3	10.10	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11g--2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2462.00	93.99	PK			1.00 V	125	97.29	28.2	5.10	-36.6	-3.30
1	*2462.00	86.62	AV			1.00 V	125	89.92	28.2	5.10	-36.6	-3.30
2	2483.50	53.05	PK	74.00	20.95	1.00 V	348	56.35	28.2	5.10	-36.6	-3.30
2	2483.50	45.68	AV	54.00	8.32	1.00 V	348	48.98	28.2	5.10	-36.6	-3.30
3	4924.00	48.47	PK	74.00	25.53	1.00 V	96	44.67	33.0	7.00	-36.2	3.80
3	4924.00	36.87	AV	54.00	17.13	1.00 V	96	33.07	33.0	7.00	-36.2	3.80
4	7386.00	56.94	PK	74.00	17.06	1.00 V	35	47.54	36.2	8.50	-35.3	9.40
4	7386.00	44.92	AV	54.00	9.08	1.00 V	35	35.52	36.2	8.50	-35.3	9.40
5	9848.00	48.50	PK	74.00	25.50	1.00 V	37	35.90	37.3	10.10	-34.8	12.60
5	9848.00	42.00	AV	54.00	12.00	1.00 V	37	29.40	37.3	10.10	-34.8	12.60

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) + Pre-amplifier Factor
 3. The other emission levels were very low against the limit.
 4. Margin value = Limit value - Emission level.
 5. The limit value is defined as per 15.247
 6. " * " : Fundamental frequency
 7. For Wireless 802.11g mode at 54Mbps.

802.11n(20MHz) Mode**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20--2412MHz)**

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	51.41	PK	74.00	22.59	1.00 H	248	54.71	28.3	5.00	-36.6	-3.30
1	2390.00	40.50	AV	54.00	13.50	1.00 H	248	43.80	28.3	5.00	-36.6	-3.30
2	*2412.00	95.88	PK			1.00 H	100	99.18	28.3	5.00	-36.6	-3.30
2	*2412.00	85.88	AV			1.00 H	100	89.18	28.3	5.00	-36.6	-3.30
3	4824.00	57.69	PK	74.00	16.31	1.00 H	204	53.89	32.7	7.30	-36.2	3.80
3	4824.00	43.7	AV	54.00	10.30	1.00 H	204	39.90	32.7	7.30	-36.2	3.80
4	7236.00	59.29	PK	74.00	14.71	1.00 H	114	49.89	35.8	8.90	-35.3	9.40
4	7236.00	43.5	AV	54.00	10.50	1.00 H	114	34.10	35.8	8.90	-35.3	9.40
5	9648.00	51.81	PK	74.00	22.19	1.00 H	93	39.21	37.2	10.20	-34.8	12.60
5	9648.00	43.36	AV	54.00	10.64	1.00 H	93	30.76	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20--2412MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	52.93	PK	74.00	21.07	1.00 V	123	56.23	28.3	5.00	-36.6	-3.30
1	2390.00	41.46	AV	54.00	12.54	1.00 V	123	44.76	28.3	5.00	-36.6	-3.30
2	*2412.00	96.84	PK			1.00 V	123	100.14	28.3	5.00	-36.6	-3.30
2	*2412.00	88.73	AV			1.00 V	123	92.03	28.3	5.00	-36.6	-3.30
3	4824.00	59.55	PK	74.00	14.45	1.00 V	100	55.75	32.7	7.30	-36.2	3.80
3	4824.00	45.38	AV	54.00	8.62	1.00 V	100	41.58	32.7	7.30	-36.2	3.80
4	7236.00	61.91	PK	74.00	12.09	1.00 V	236	52.51	35.8	8.90	-35.3	9.40
4	7236.00	47.24	AV	54.00	6.76	1.00 V	236	37.84	35.8	8.90	-35.3	9.40
5	9648.00	58.47	PK	74.00	15.53	1.00 V	1163	45.87	37.2	10.20	-34.8	12.60
5	9648.00	48.24	AV	54.00	5.76	1.00 V	116	35.64	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	91.81	PK			1.00 H	120	95.01	28.3	5.10	-36.6	-3.20
1	*2437.00	85.55	AV			1.00 H	120	88.75	28.3	5.10	-36.6	-3.20
2	4874.00	51.93	PK	74.00	22.07	1.00 H	194	48.53	32.3	7.60	-36.5	3.40
2	4874.00	41.73	AV	54.00	12.27	1.00 H	194	38.33	32.3	7.60	-36.5	3.40
3	7311.00	54.44	PK	74.00	19.56	1.00 H	248	45.04	36.1	8.60	-35.3	9.40
3	7311.00	45.7	AV	54.00	8.30	1.00 H	248	36.30	36.1	8.60	-35.3	9.40
4	9748.00	51.38	PK	74.00	22.62	1.00 H	36	38.78	37.2	10.20	-34.8	12.60
4	9748.00	43.7	AV	54.00	10.30	1.00 H	36	31.10	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	94.75	PK			1.00 V	122	97.95	28.3	5.10	-36.6	-3.20
1	*2437.00	87.69	AV			1.00 V	122	90.89	28.3	5.10	-36.6	-3.20
2	4874.00	53.95	PK	74.00	20.05	1.00 V	181	50.55	32.3	7.60	-36.5	3.40
2	4874.00	42.63	AV	54.00	11.37	1.00 V	181	39.23	32.3	7.60	-36.5	3.40
3	7311.00	60.88	PK	74.00	13.12	1.00 V	346	51.48	36.1	8.60	-35.3	9.40
3	7311.00	43.57	AV	54.00	10.43	1.00 V	346	34.17	36.1	8.60	-35.3	9.40
4	9748.00	54.58	PK	74.00	19.42	1.00 V	335	41.98	37.2	10.20	-34.8	12.60
4	9748.00	47.72	AV	54.00	6.28	1.00 V	335	35.12	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n20--2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2462.00	92.53	PK			1.00 H	122	95.83	28.2	5.10	-36.6	-3.30
1	*2462.00	84.57	AV			1.00 H	122	87.87	28.2	5.10	-36.6	-3.30
2	2483.50	52.65	PK	74.00	21.35	1.00 H	354	55.95	28.2	5.10	-36.6	-3.30
2	2483.50	44.69	AV	54.00	9.31	1.00 H	354	47.99	28.2	5.10	-36.6	-3.30
3	4924.00	52.02	PK	74.00	21.98	1.00 H	217	48.22	33.0	7.00	-36.2	3.80
3	4924.00	39.33	AV	54.00	14.67	1.00 H	217	35.53	33.0	7.00	-36.2	3.80
4	7386.00	56.99	PK	74.00	17.01	1.00 H	0	47.59	36.2	8.50	-35.3	9.40
4	7386.00	45.58	AV	54.00	8.42	1.00 H	0	36.18	36.2	8.50	-35.3	9.40
5	9848.00	52.81	PK	74.00	21.19	1.00 H	118	40.21	37.3	10.10	-34.8	12.60
5	9848.00	45.52	AV	54.00	8.48	1.00 H	118	32.92	37.3	10.10	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n20--2462MHz)

No.	Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2462.00	94.75	PK			1.00 V	125	98.05	28.2	5.10	-36.6	-3.30
1	*2462.00	85.59	AV			1.00 V	125	88.89	28.2	5.10	-36.6	-3.30
2	2483.50	54.87	PK	74.00	19.13	1.00 V	153	58.17	28.2	5.10	-36.6	-3.30
2	2483.50	45.71	AV	54.00	8.29	1.00 V	153	49.01	28.2	5.10	-36.6	-3.30
3	4924.00	47.64	PK	74.00	26.36	1.00 V	100	43.84	33.0	7.00	-36.2	3.80
3	4924.00	35.37	AV	54.00	18.63	1.00 V	100	31.57	33.0	7.00	-36.2	3.80
4	7386.00	56.12	PK	74.00	17.88	1.00 V	0	46.72	36.2	8.50	-35.3	9.40
4	7386.00	43.93	AV	54.00	10.07	1.00 V	0	34.53	36.2	8.50	-35.3	9.40
5	9848.00	51.40	PK	74.00	22.60	1.00 V	187	38.80	37.3	10.10	-34.8	12.60
5	9848.00	40.62	AV	54.00	13.38	1.00 V	187	28.02	37.3	10.10	-34.8	12.60

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) + Pre-amplifier Factor
 3. The other emission levels were very low against the limit.
 4. Margin value = Limit value- Emission level.
 5. The limit value is defined as per 15.247
 6. " * " : Fundamental frequency
 7. For Wireless 802.11n (20MHz) mode at 65Mbps.

802.11n(40MHz) Mode**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40--2422MHz)**

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	52.42	PK	74.00	21.58	1.00 H	222	55.72	28.3	5.00	-36.6	-3.30
1	2390.00	41.93	AV	54.00	12.07	1.00 H	222	45.23	28.3	5.00	-36.6	-3.30
2	*2422.00	95.78	PK			1.00 H	123	99.08	28.3	5.00	-36.6	-3.30
2	*2422.00	85.60	AV			1.00 H	123	88.90	28.3	5.00	-36.6	-3.30
3	4844.00	53.77	PK	74.00	20.23	1.00 H	91	49.97	32.7	7.30	-36.2	3.80
3	4844.00	38.66	AV	54.00	15.34	1.00 H	91	34.86	32.7	7.30	-36.2	3.80
4	7266.00	47.72	PK	74.00	26.28	1.00 H	266	38.32	35.8	8.90	-35.3	9.40
4	7266.00	39.06	AV	54.00	14.94	1.00 H	266	29.66	35.8	8.90	-35.3	9.40
5	9688.00	54.19	PK	74.00	19.81	1.00 H	337	41.59	37.2	10.20	-34.8	12.60
5	9688.00	44.52	AV	54.00	9.48	1.00 H	337	31.92	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40--2422MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	2390.00	56.88	PK	74.00	17.12	1.00 V	80	60.18	28.3	5.00	-36.6	-3.30
1	2390.00	43.80	AV	54.00	10.20	1.00 V	80	47.10	28.3	5.00	-36.6	-3.30
2	*2422.00	95.76	PK			1.00 V	127	99.06	28.3	5.00	-36.6	-3.30
2	*2422.00	87.27	AV			1.00 V	127	90.57	28.3	5.00	-36.6	-3.30
3	4844.00	52.62	PK	74.00	21.38	1.00 V	211	48.82	32.7	7.30	-36.2	3.80
3	4844.00	40.00	AV	54.00	14.00	1.00 V	211	36.20	32.7	7.30	-36.2	3.80
4	7266.00	62.29	PK	74.00	11.71	1.00 V	57	52.89	35.8	8.90	-35.3	9.40
4	7266.00	47.26	AV	54.00	6.74	1.00 V	57	37.86	35.8	8.90	-35.3	9.40
5	9688.00	52.29	PK	74.00	21.71	1.00 V	249	39.69	37.2	10.20	-34.8	12.60
5	9688.00	43.55	AV	54.00	10.45	1.00 V	249	30.95	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	94.38	PK			1.00 H	100	97.58	28.3	5.10	-36.6	-3.20
1	*2437.00	87.19	AV			1.00 H	100	90.39	28.3	5.10	-36.6	-3.20
2	4874.00	53.92	PK	74.00	20.08	1.00 H	198	50.52	32.3	7.60	-36.5	3.40
2	4874.00	41.63	AV	54.00	12.37	1.00 H	198	38.23	32.3	7.60	-36.5	3.40
3	7311.00	57.54	PK	74.00	16.46	1.00 H	203	48.14	36.1	8.60	-35.3	9.40
3	7311.00	42.57	AV	54.00	11.43	1.00 H	203	33.17	36.1	8.60	-35.3	9.40
4	9748.00	51.43	PK	74.00	22.57	1.00 H	56	38.83	37.2	10.20	-34.8	12.60
4	9748.00	43.15	AV	54.00	10.85	1.00 H	56	30.55	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40--2437MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2437.00	96.08	PK			1.00 V	122	99.28	28.3	5.10	-36.6	-3.20
1	*2437.00	88.54	AV			1.00 V	122	91.74	28.3	5.10	-36.6	-3.20
2	4874.00	51.93	PK	74.00	22.07	1.00 V	96	48.53	32.3	7.60	-36.5	3.40
2	4874.00	44.77	AV	54.00	9.23	1.00 V	96	41.37	32.3	7.60	-36.5	3.40
3	7311.00	56.9	PK	74.00	17.10	1.00 V	26	47.50	36.1	8.60	-35.3	9.40
3	7311.00	43.26	AV	54.00	10.74	1.00 V	26	33.86	36.1	8.60	-35.3	9.40
4	9748.00	49.85	PK	74.00	24.15	1.00 V	299	37.25	37.2	10.20	-34.8	12.60
4	9748.00	39.36	AV	54.00	14.64	1.00 V	299	26.76	37.2	10.20	-34.8	12.60

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M (802.11n40--2452MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2452.00	94.84	PK			1.00 H	153	98.04	28.2	5.20	-36.6	-3.20
1	*2452.00	85.17	AV			1.00 H	153	88.37	28.2	5.20	-36.6	-3.20
2	2483.50	58.40	PK	74.00	15.60	1.00 H	127	61.70	28.2	5.10	-36.6	-3.30
2	2483.50	48.73	AV	54.00	5.27	1.00 H	127	52.03	28.2	5.10	-36.6	-3.30
3	4904.00	51.71	PK	74.00	22.29	1.00 H	204	47.91	33.0	7.00	-36.2	3.80
3	4904.00	38.96	AV	54.00	15.04	1.00 H	204	35.16	33.0	7.00	-36.2	3.80
4	7356.00	58.51	PK	74.00	15.49	1.00 H	301	49.11	36.2	8.50	-35.3	9.40
4	7356.00	44.62	AV	54.00	9.38	1.00 H	301	35.22	36.2	8.50	-35.3	9.40
5	9808.00	51.86	PK	74.00	22.14	1.00 H	118	39.26	37.3	10.10	-34.8	12.60
5	9808.00	42.25	AV	54.00	11.75	1.00 H	118	29.65	37.3	10.10	-34.8	12.60

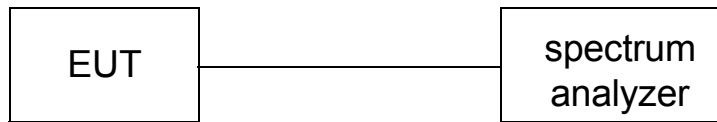
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M (802.11n40--2452MHz)

No.	Frequency (MHz)	Emssion Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier	Correction Factor (dB/m)
1	*2452.00	95.89	PK			1.00 V	125	99.09	28.2	5.20	-36.6	-3.20
1	*2452.00	86.59	AV			1.00 V	125	89.79	28.2	5.20	-36.6	-3.20
2	2483.50	59.45	PK	74.00	14.55	1.00 V	143	62.75	28.2	5.10	-36.6	-3.30
2	2483.50	50.15	AV	54.00	3.85	1.00 V	143	53.45	28.2	5.10	-36.6	-3.30
3	4904.00	56.27	PK	74.00	17.73	1.00 V	177	52.47	33.0	7.00	-36.2	3.80
3	4904.00	41.28	AV	54.00	12.72	1.00 V	177	37.48	33.0	7.00	-36.2	3.80
4	7356.00	61.86	PK	74.00	12.14	1.00 V	0	52.46	36.2	8.50	-35.3	9.40
4	7356.00	45.68	AV	54.00	8.32	1.00 V	0	36.28	36.2	8.50	-35.3	9.40
5	9808.00	54.28	PK	74.00	19.72	1.00 V	315	41.68	37.3	10.10	-34.8	12.60
5	9808.00	39.22	AV	54.00	14.78	1.00 V	315	26.62	37.3	10.10	-34.8	12.60

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m)
 2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) + Pre-amplifier Factor
 3. The other emission levels were very low against the limit.
 4. Margin value = Limit value- Emission level.
 5. The limit value is defined as per 15.247
 6. " * " : Fundamental frequency
 7. For Wireless 802.11n (40MHz) mode at 135Mbps.

4.3. Maximum Peak Output Power

TEST CONFIGURATION



TEST PROCEDURE

The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram as TEST CONFIGURATION shows.

LIMIT

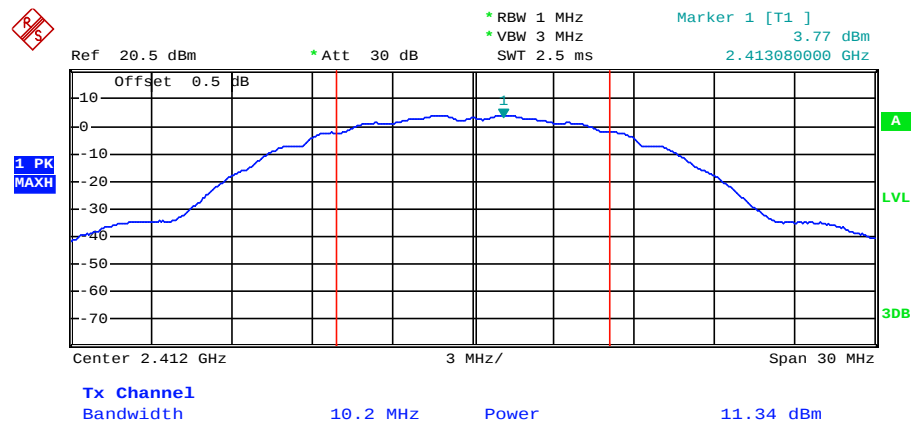
The Maximum Peak Output Power Measurement is 30dBm.

TEST RESULTS

Channel	Frequency (MHz)	Reading Power Output(dBm)	Limit (dBm)	Pass / Fail
802.11b				
Low	2412	11.34	30	PASS
Middle	2437	10.91	30	PASS
High	2462	11.36	30	PASS
802.11g				
Low	2412	11.23	30	PASS
Middle	2437	11.25	30	PASS
High	2462	11.87	30	PASS
802.11n20				
Low	2412	11.72	30	PASS
Middle	2437	11.88	30	PASS
High	2462	11.63	30	PASS
802.11n40				
Low	2422	11.85	30	PASS
Middle	2437	11.67	30	PASS
High	2452	11.62	30	PASS

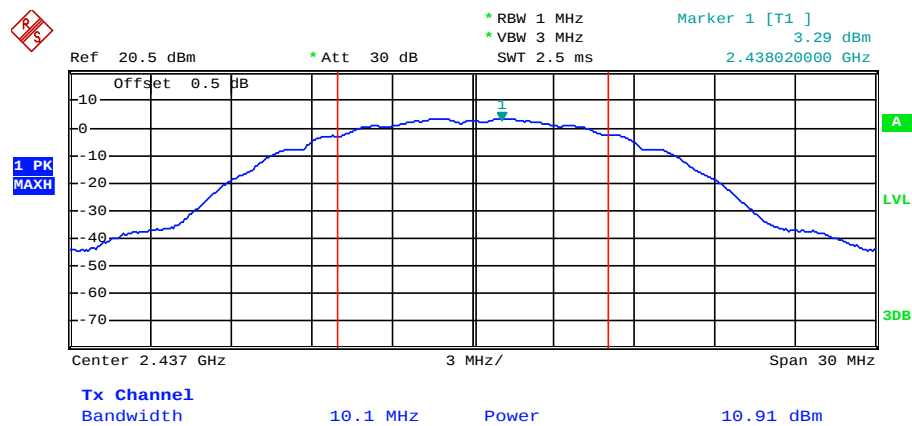
Photos of Maximum Peak Output Power

802.11b Mode channel 1



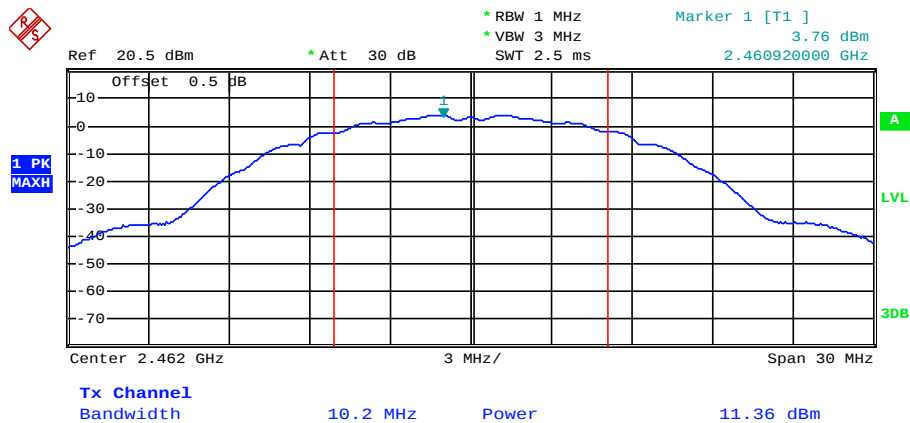
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802.11b Mode channel 6



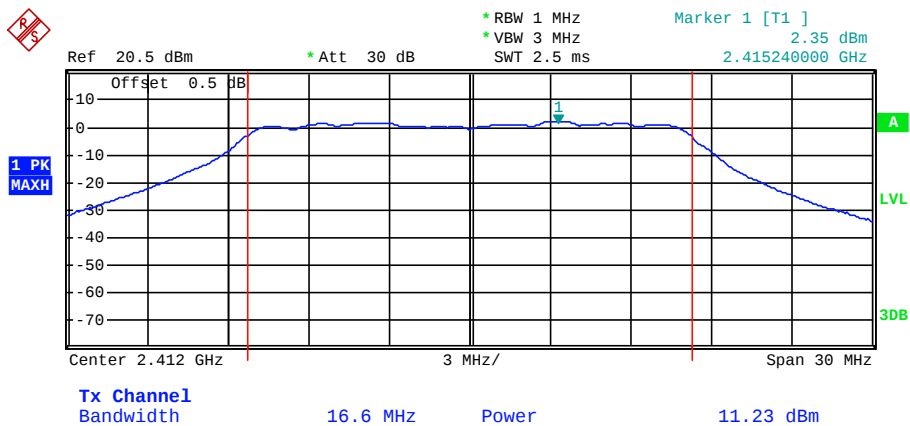
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802.11b Mode channel 11

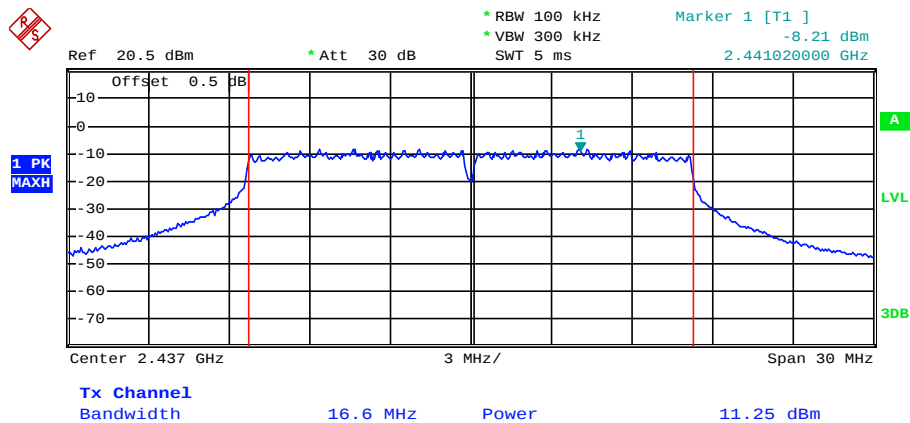


Date: 24.SEP.2012 11:32:37

802.11g Mode channel 1

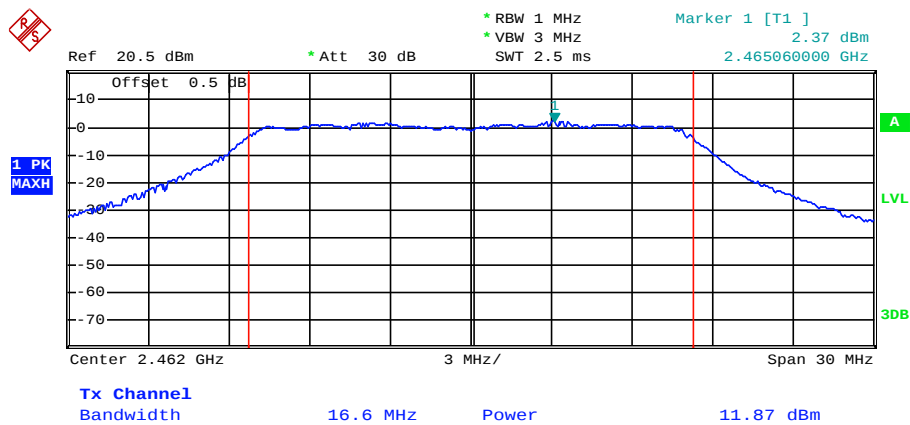


802.11g Mode channel 6



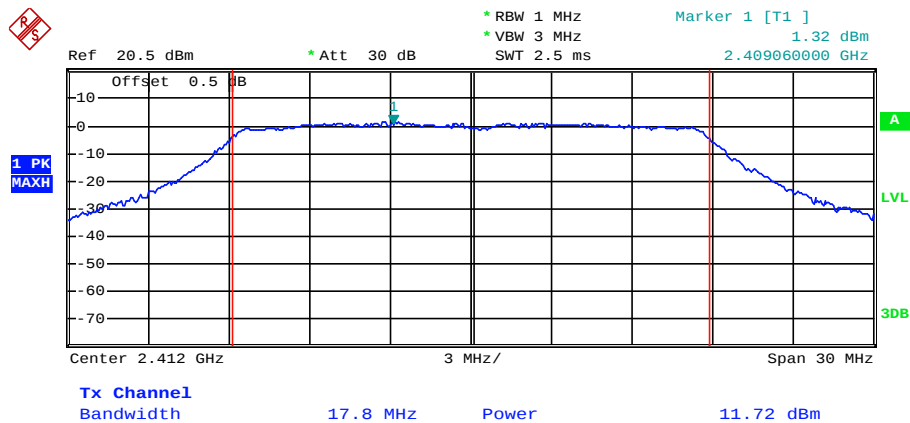
Date: 24.SEP.2012 11:38:07

802.11g Mode channel 11



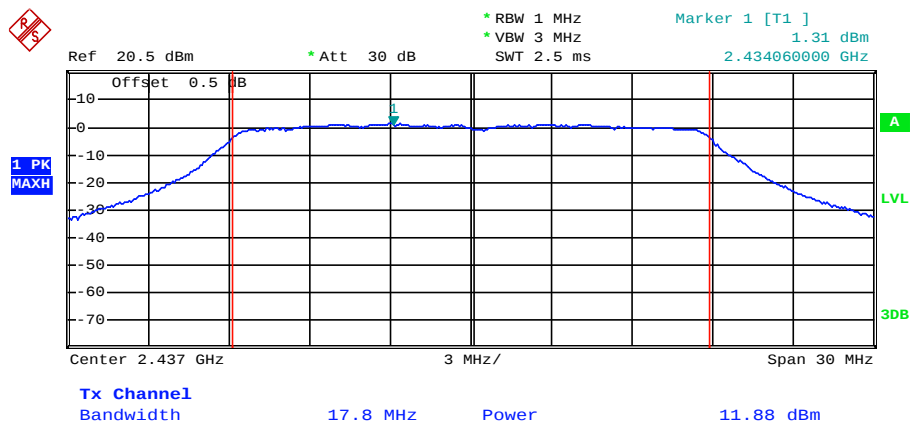
Date: 24.SEP.2012 11:45:06

802.11n20 Mode channel 1



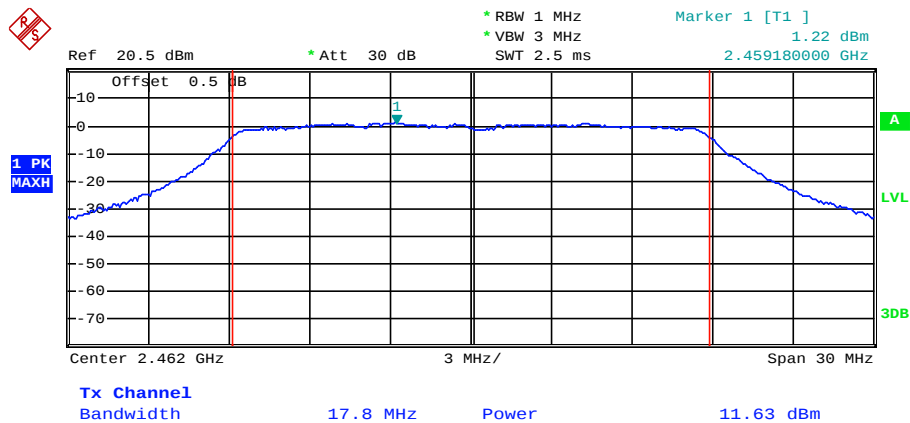
Date: 24.SEP.2012 11:51:42

802.11n20 Mode channel 6



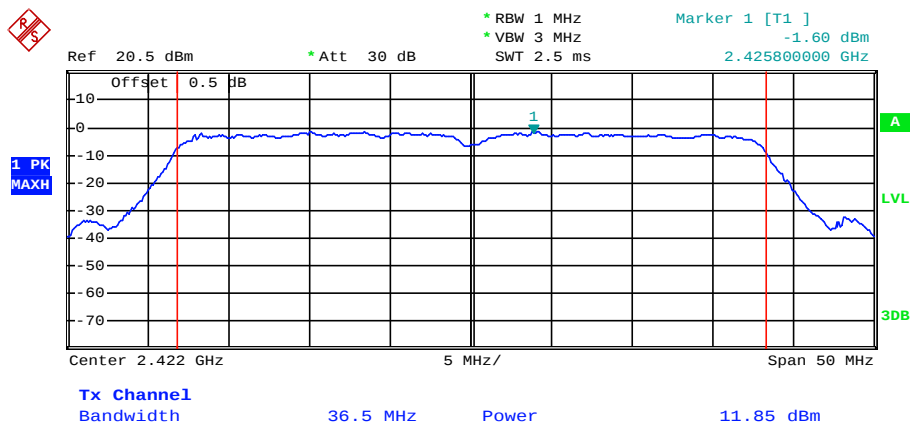
Date: 24.SEP.2012 11:49:29

802.11n20 Mode channel 11



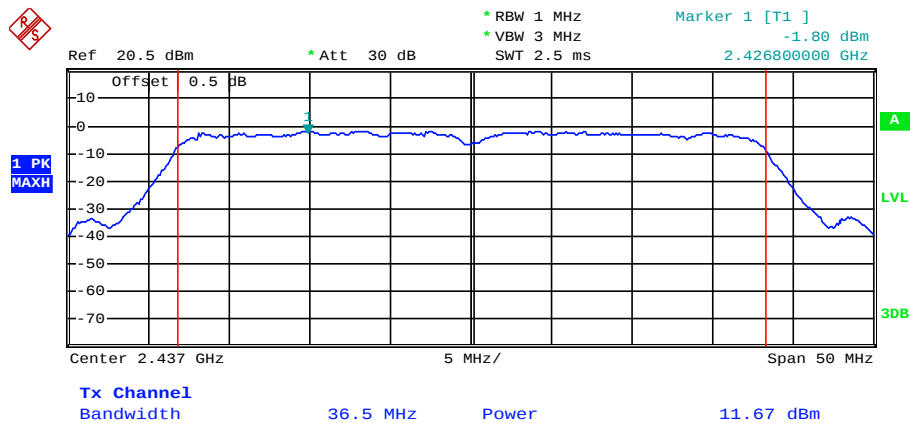
Date: 24.SEP.2012 11:47:34

802.11n40 Mode channel 3



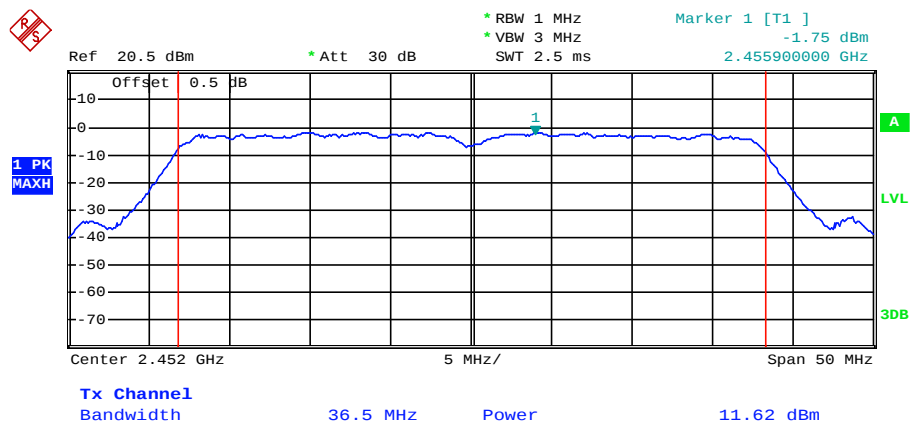
Date: 24.SEP.2012 11:56:44

802.11n40 Mode channel 6



Date: 24.SEP.2012 11:58:35

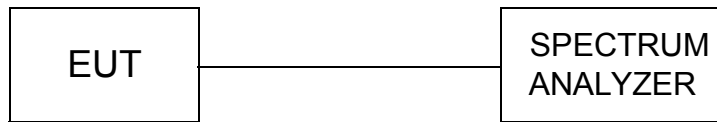
802.11n40 Mode channel 9



Date: 24.SEP.2012 12:00:00

4.4. Power Spectral Density

TEST CONFIGURATION



TEST PROCEDURE

1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
2. Set the RBW = 100 kHz.
3. Set the VBW 300 kHz.
4. Set the span to 5-30 % greater than the EBW
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
10. Scale the observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where $BWCF = 10\log(3 \text{ kHz}/100 \text{ kHz}) = -15.2 \text{ dB}$.
11. The resulting peak PSD level must be 8 dBm.

Follow KDB 558074 D01 DTS Meas Guidance v01 of measurement procedure PKPSD

LIMIT

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.

TEST RESULTS

CHANNEL NUMBER	FREQUENCY (MHz)	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
1	2412	-1.52	-16.72	8	PASS
6	2437	-1.46	-16.66	8	PASS
11	2462	-1.82	-17.02	8	PASS

Note: 1. For 802.11b mode at final test to get the worst-case emission at 11Mbps.
2. The test results including the cable loss.

CHANNEL NUMBER	FREQUENCY (MHz)	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
1	2412	-8.61	-23.81	8	PASS
6	2437	-8.92	-24.12	8	PASS
11	2462	-9.12	-24.32	8	PASS

Note: 1. For 802.11g mode at final test to get the worst-case emission at 54Mbps.
2. The test results including the cable loss.

CHANNEL NUMBER	FREQUENCY (MHz)	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
1	2412	-9.46	-24.66	8	PASS
6	2437	-9.70	-24.90	8	PASS
11	2462	-9.78	-24.98	8	PASS

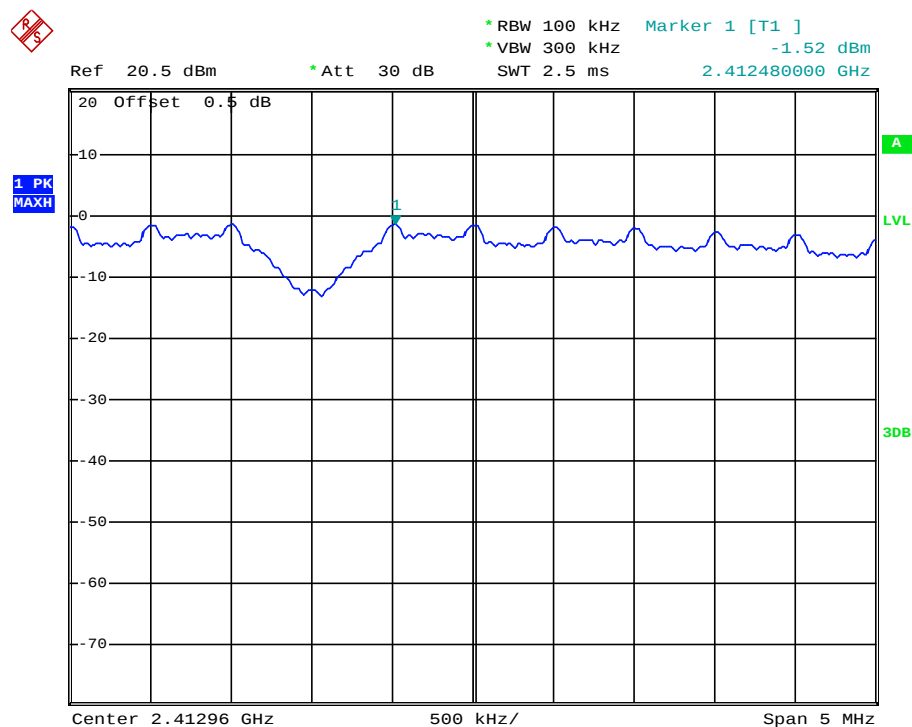
Note: 1. For 802.11n(20MHz) mode at final test to get the worst-case emission at 65 Mbps.
2. The test results including the cable lose.

CHANNEL NUMBER	FREQUENCY (MHz)	PSD (dBm/100KHz)	PSD (dBm/3KHz)	LIMIT (dBm/3KHz)	PASS/FAIL
3	2422	-12.73	-27.93	8	PASS
6	2437	-13.01	-28.21	8	PASS
9	2452	-12.93	-28.13	8	PASS

Note: 1. For 802.11n(40MHz) mode at final test to get the worst-case emission at 135Mbps.
2. The test results including the cable lose.

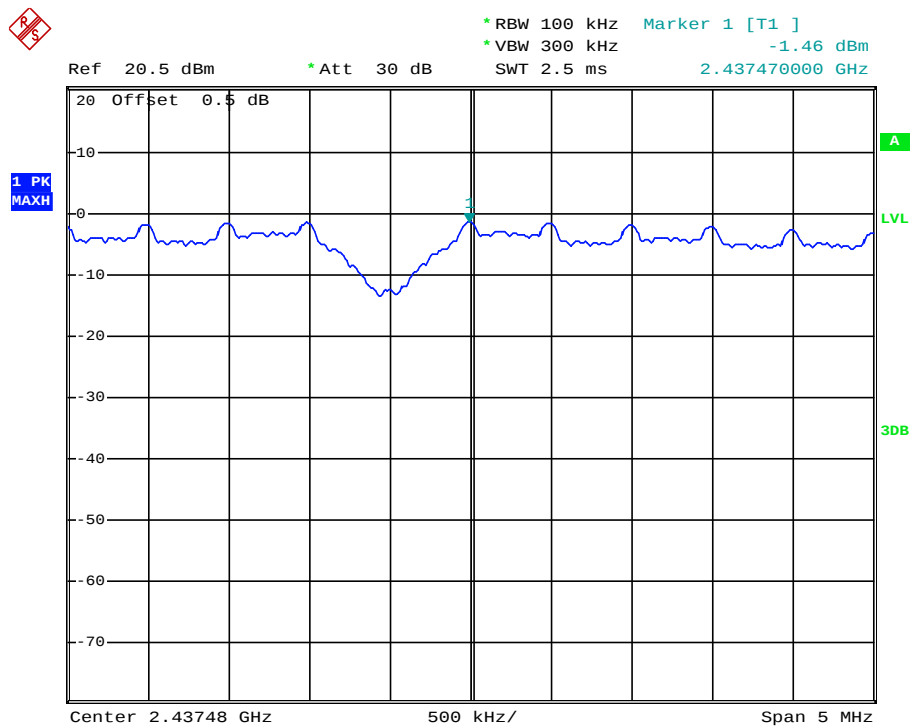
Photos of Power Spectral Density Measurement

802.11b Mode channel 1



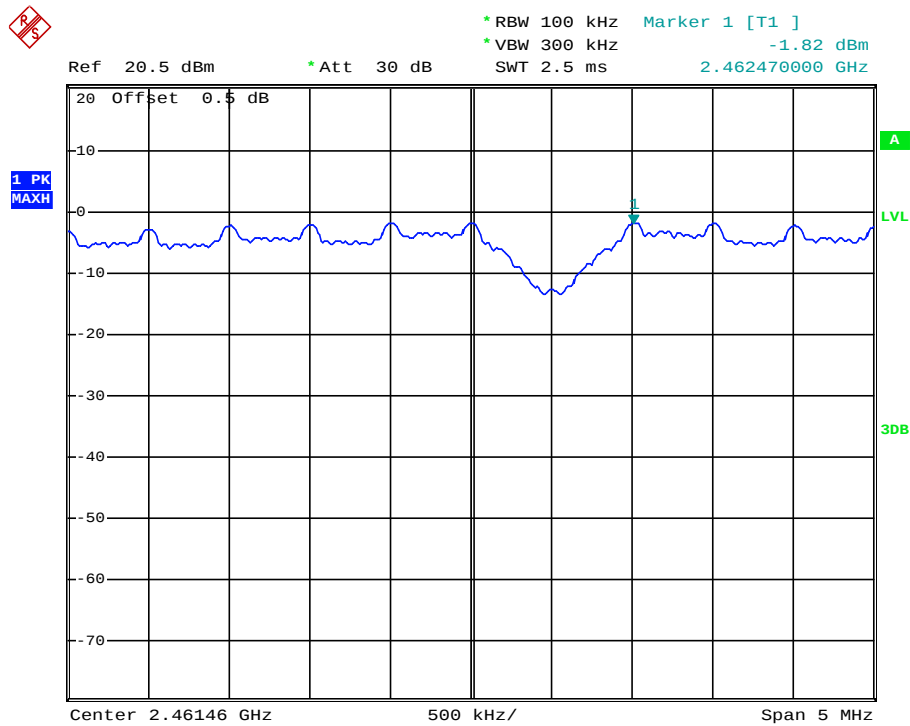
Date: 24.SEP.2012 12:12:18

802.11b Mode channel 6



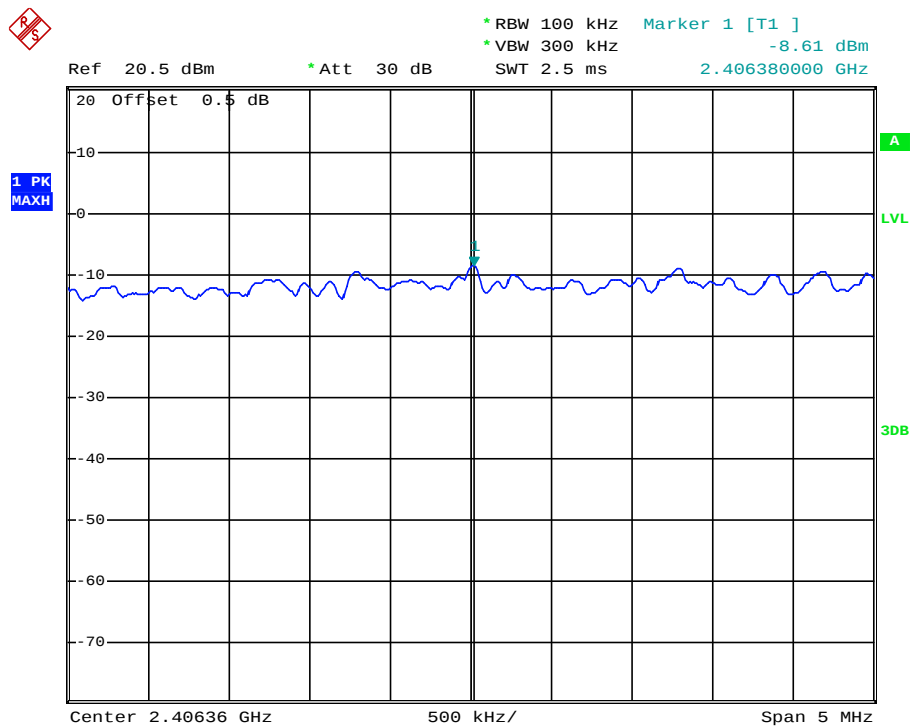
Date: 24.SEP.2012 12:14:07

802.11b Mode channel 11



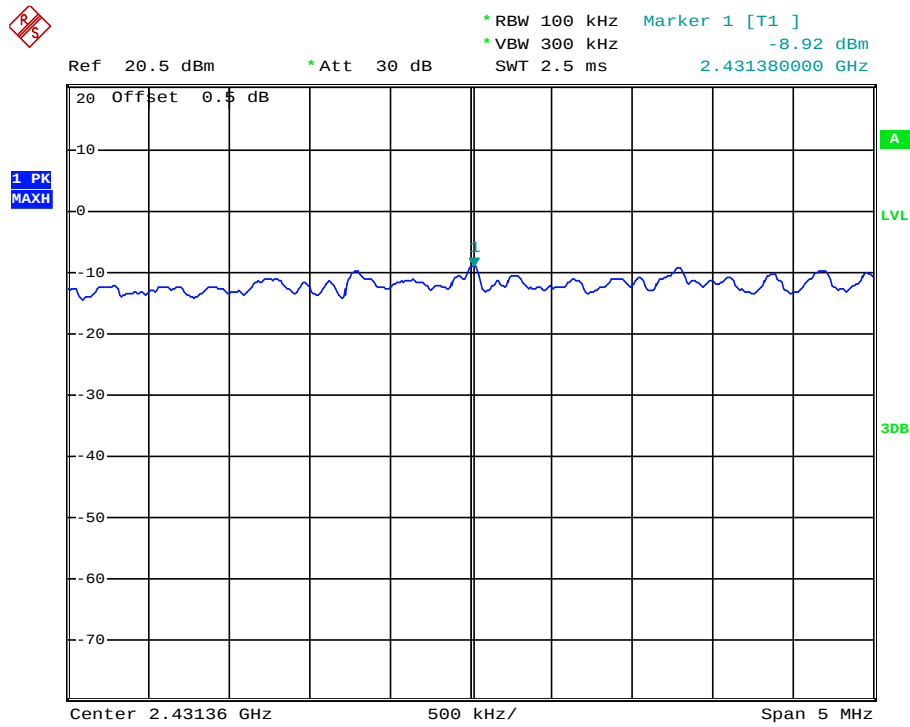
Date: 24.SEP.2012 12:14:49

802.11g Mode channel 1



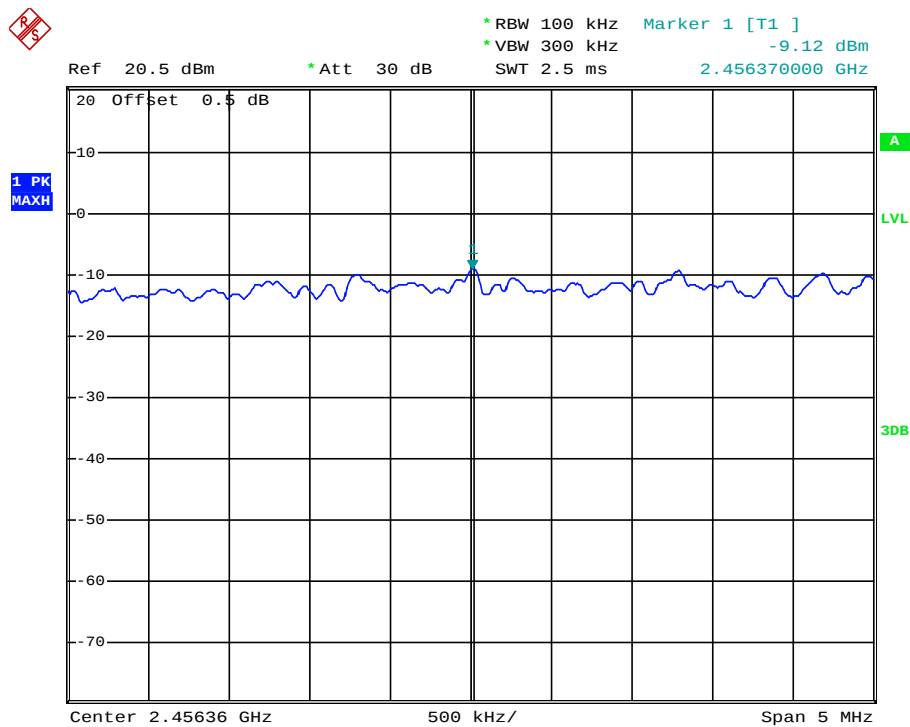
Date: 24.SEP.2012 12:11:35

802.11g Mode channel 6



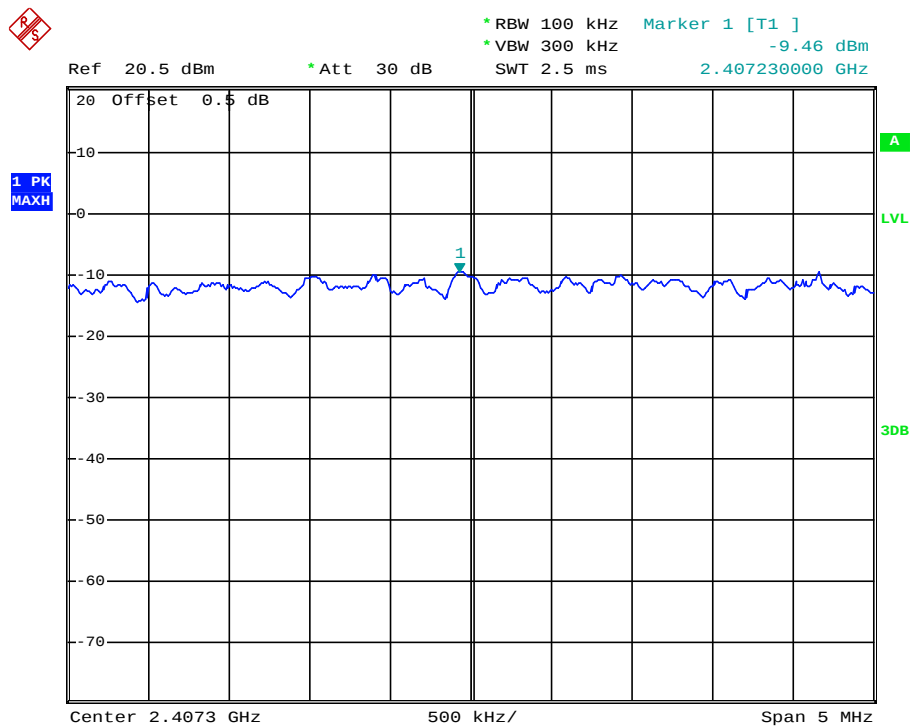
Date: 24.SEP.2012 12:10:56

802.11g Mode channel 11



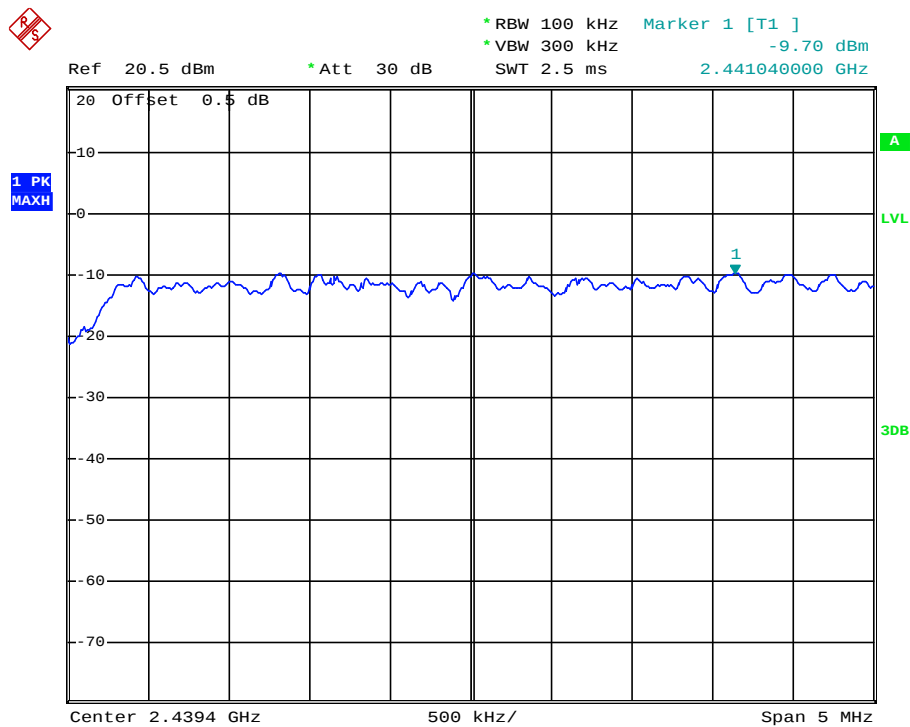
Date: 24.SEP.2012 12:10:12

802.11n20 Mode channel 1



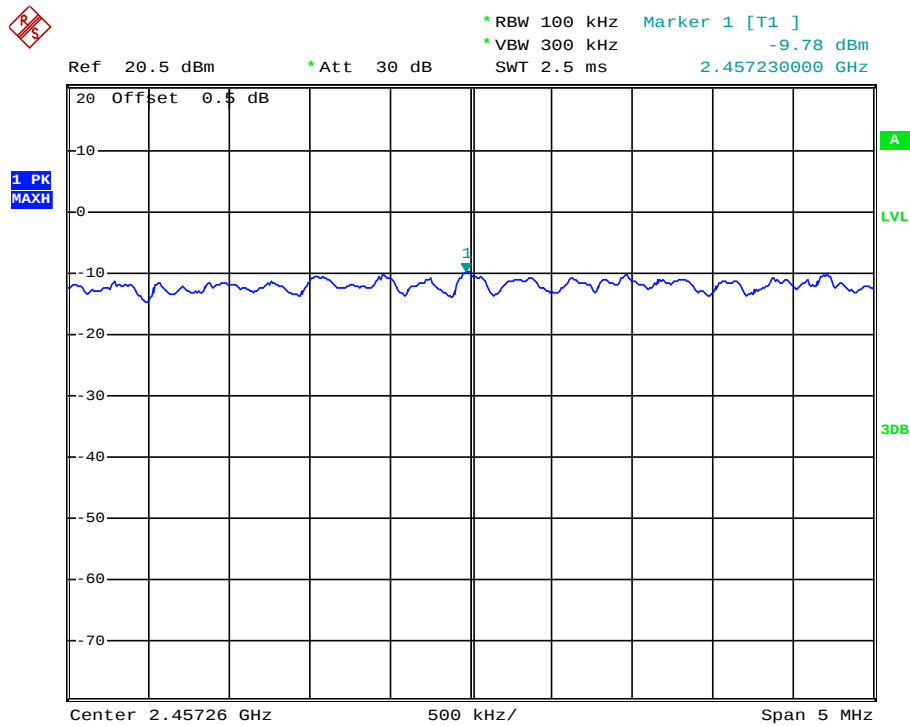
Date: 24.SEP.2012 12:06:46

802.11n20 Mode channel 6



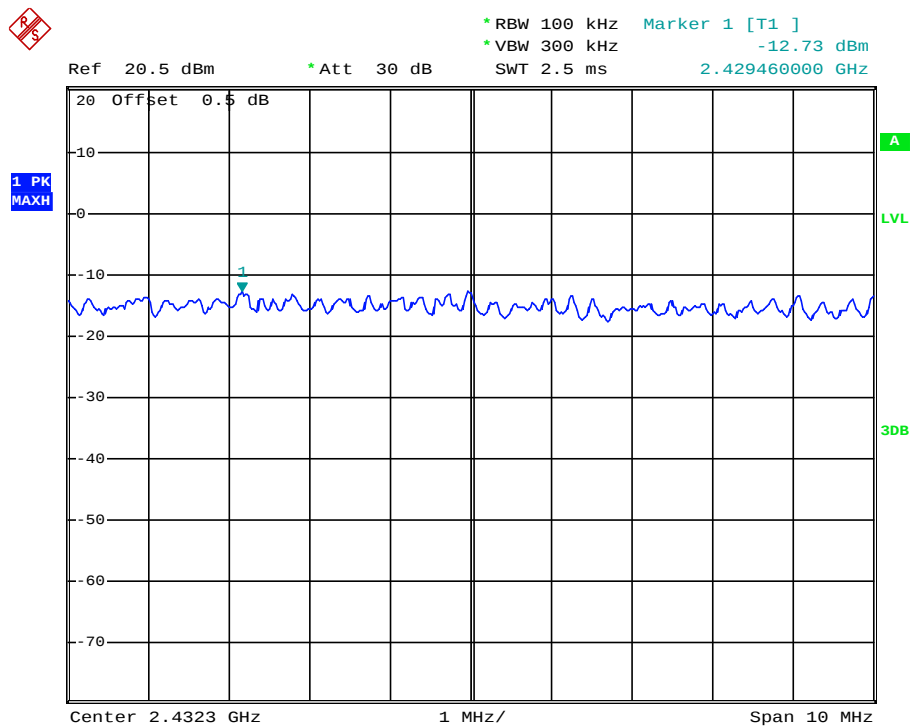
Date: 24.SEP.2012 12:07:49

802.11n20 Mode channel 11



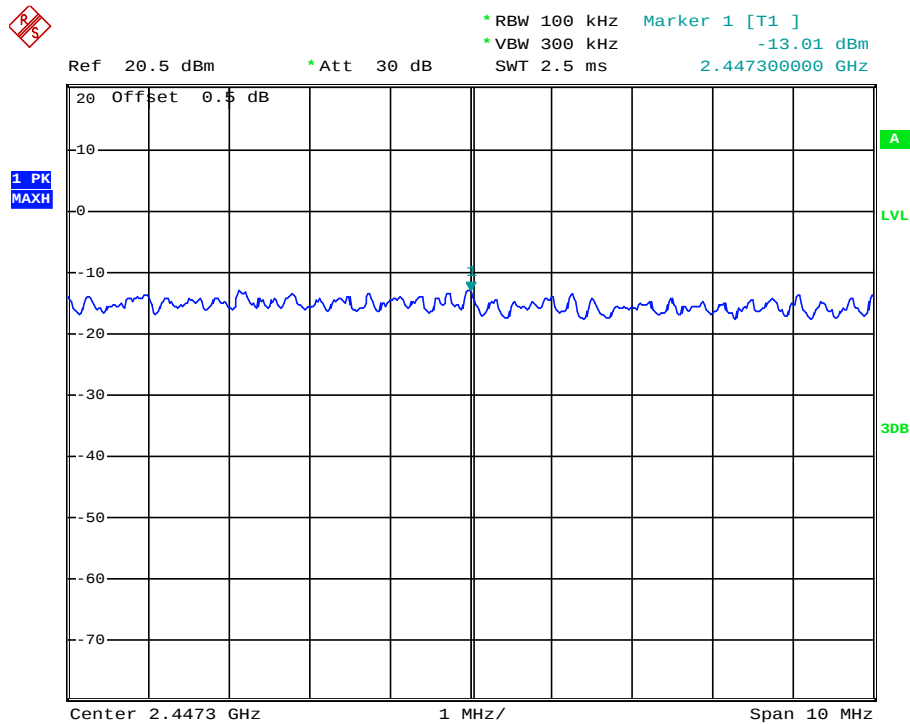
Date: 24.SEP.2012 12:09:19

802.11n40 Mode channel 3



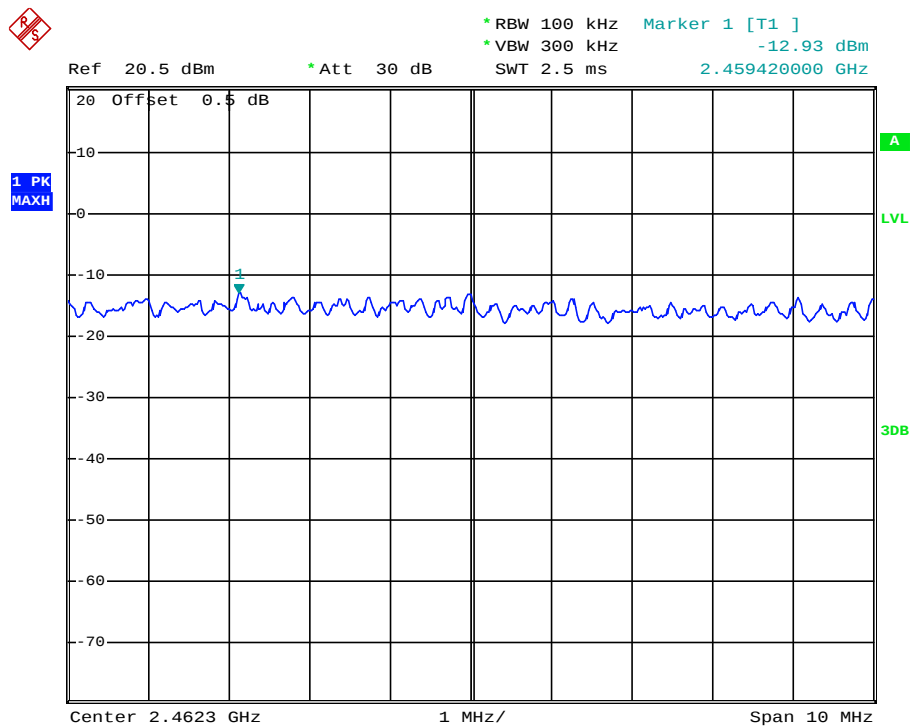
Date: 24.SEP.2012 12:05:27

802.11n40 Mode channel 6



Date: 24.SEP.2012 12:02:54

802.11n40 Mode channel 9



Date: 24.SEP.2012 12:02:10

4.5. Band Edge Compliance of RF Emission

Applicable Standard

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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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 in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Remove the antenna from the EUT and then connect to a low loss RF cable from the antenna port to a EMI test receiver, then turn on the EUT and make it operate in transmitting mode. Then set it to Low Channel and High Channel within its operating range, and make sure the instrument is operated in its linear range.
3. Set both RBW and VBW of spectrum analyzer to 100 kHz with a convenient frequency span including 100kHz bandwidth from band edge, for Radiated emissions restricted band RBW=1MHz, VBW=3MHz for peak detector and RBW=1MHz, VBW=10Hz for average detector.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

LIMIT

Below -20dB of the highest emission level in operating band.

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

TEST RESULTS

Both radiated and conducted band edge were measurement for 802.11b,802.11g,802.11n(20MHz) and 802.11n(40MHz) mode,recording worst case in test report.

802.11b

Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Polarization
Out of left side band					
2390.00	55.40	74	18.60	PK	Horizontal
2390.00	47.38	54	6.62	AV	Horizontal
2390.00	55.20	74	18.80	PK	Vertical
2390.00	46.82	54	7.18	AV	Vertical
Out of right side band					
2483.50	47.32	74	26.68	PK	Horizontal
2483.50	40.10	54	13.90	AV	Horizontal
2483.50	51.33	74	22.67	PK	Vertical
2483.50	44.59	54	9.41	AV	Vertical

802.11g

Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Polarization
Out of left side band					
2390.00	64.89	74	9.11	PK	Horizontal
2390.00	50.94	54	3.06	AV	Horizontal
2390.00	64.83	74	9.17	PK	Vertical
2390.00	53.87	54	0.13	AV	Vertical
Out of right side band					
2483.50	53.85	74	20.15	PK	Horizontal
2483.50	47.77	54	6.23	AV	Horizontal
2483.50	53.05	74	20.95	PK	Vertical
2483.50	45.68	54	8.32	AV	Vertical

802.11n(20MHz)

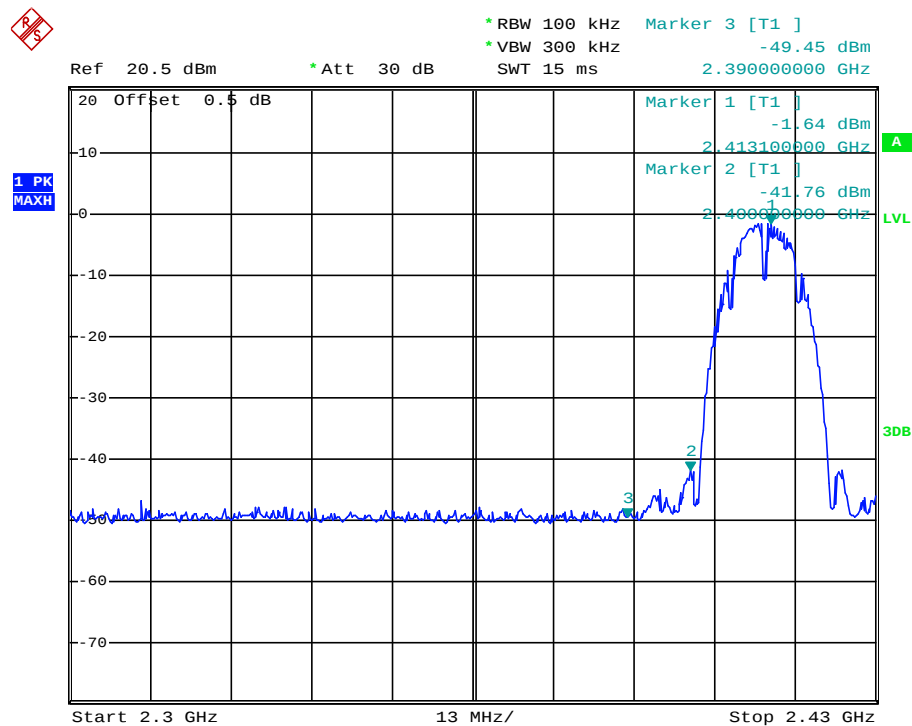
Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Polarization
Out of left side band					
2390.00	51.41	74	22.59	PK	Horizontal
2390.00	40.50	54	13.50	AV	Horizontal
2390.00	52.93	74	21.07	PK	Vertical
2390.00	41.46	54	12.54	AV	Vertical
Out of right side band					
2483.50	52.65	74	21.35	PK	Horizontal
2483.50	44.69	54	9.31	AV	Horizontal
2483.50	54.87	74	19.13	PK	Vertical
2483.50	45.71	54	8.29	AV	Vertical

802.11n(40MHz)

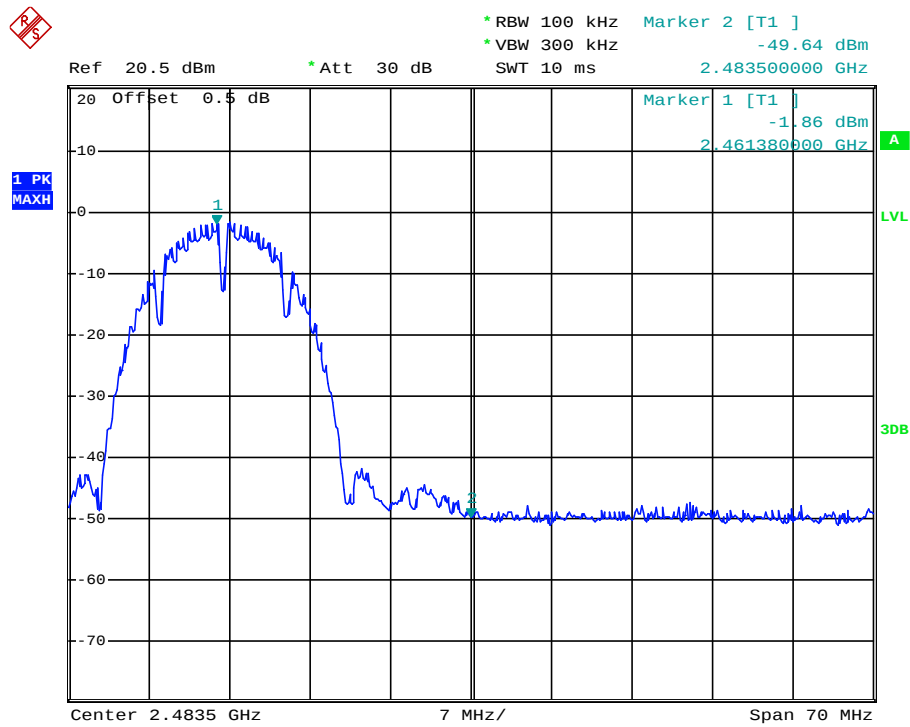
Frequency (MHz)	Corrected Reading (dBμV/m)@3m	FCC Limit (dBμV/m) @3m	Margin (dB)	Detector	Polarization
Out of left side band					
2390.00	52.42	74	21.58	PK	Horizontal
2390.00	41.93	54	12.07	AV	Horizontal
2390.00	56.88	74	17.12	PK	Vertical
2390.00	43.80	54	10.20	AV	Vertical
Out of right side band					
2483.50	58.40	74	15.60	PK	Horizontal
2483.50	48.73	54	5.27	AV	Horizontal
2483.50	59.45	74	14.55	PK	Vertical
2483.50	50.15	54	3.85	AV	Vertical

Photos of Conducted Band Edge Measurement

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	Delta Peak to Band emission (dBc)	LIMIT (dBc)	PASS/FAIL
802.11b				
Low	2400.00	40.12	20	PASS
High	2483.50	47.78	20	PASS
802.11g				
Low	2400.00	31.99	20	PASS
High	2483.50	40.94	20	PASS
802.11n20				
Low	2400.00	32.81	20	PASS
High	2483.50	39.88	20	PASS
802.11n40				
Low	2400.00	30.34	20	PASS
High	2483.50	36.44	20	PASS

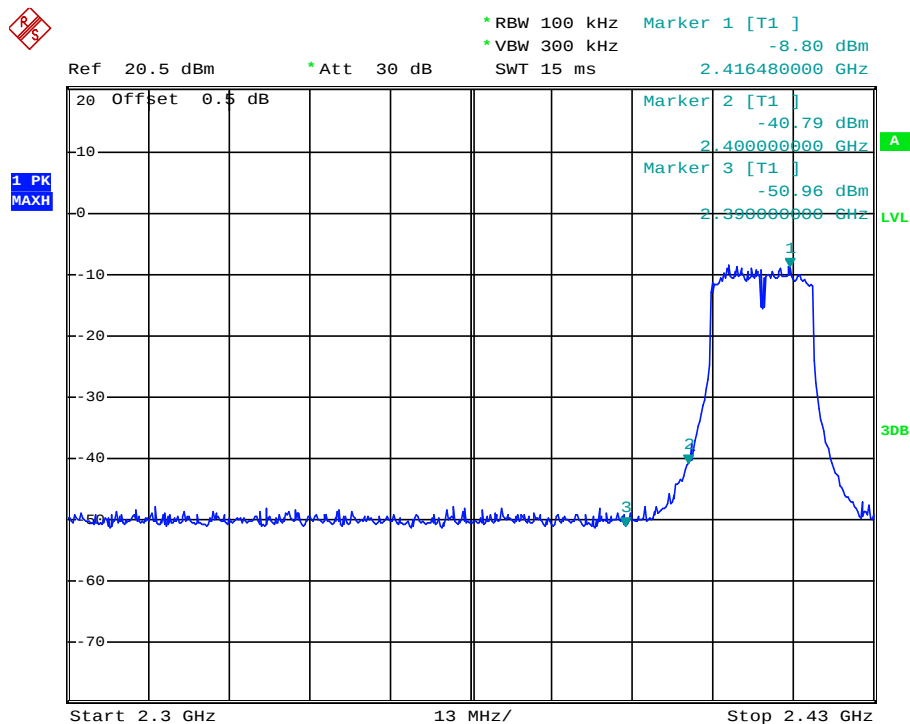
For 802.11b Mode

Date: 24.SEP.2012 12:17:04

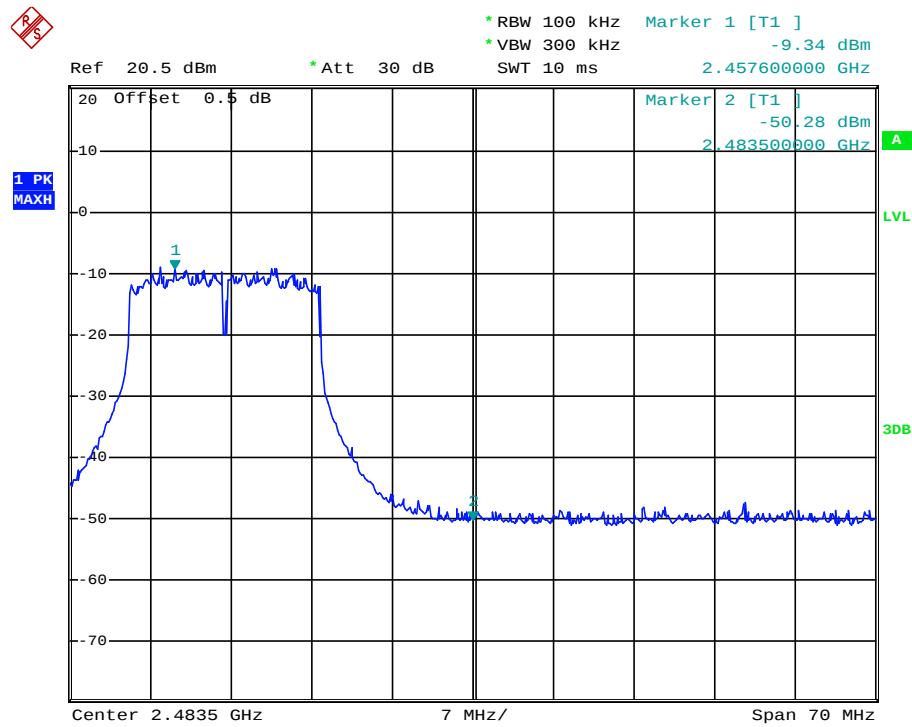


Date: 24.SEP.2012 12:24:08

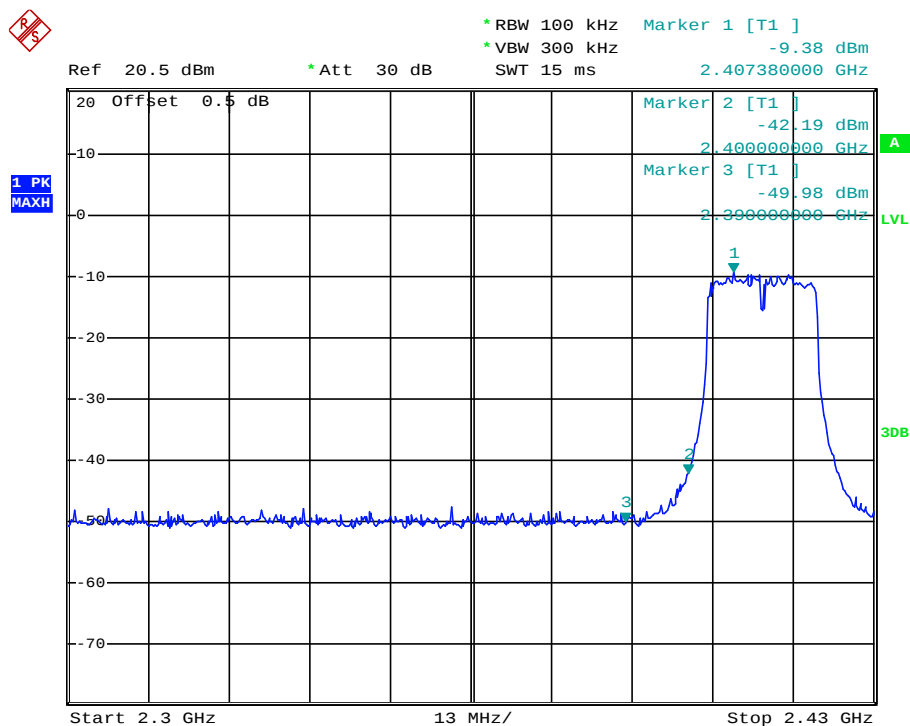
For 802.11g Mode



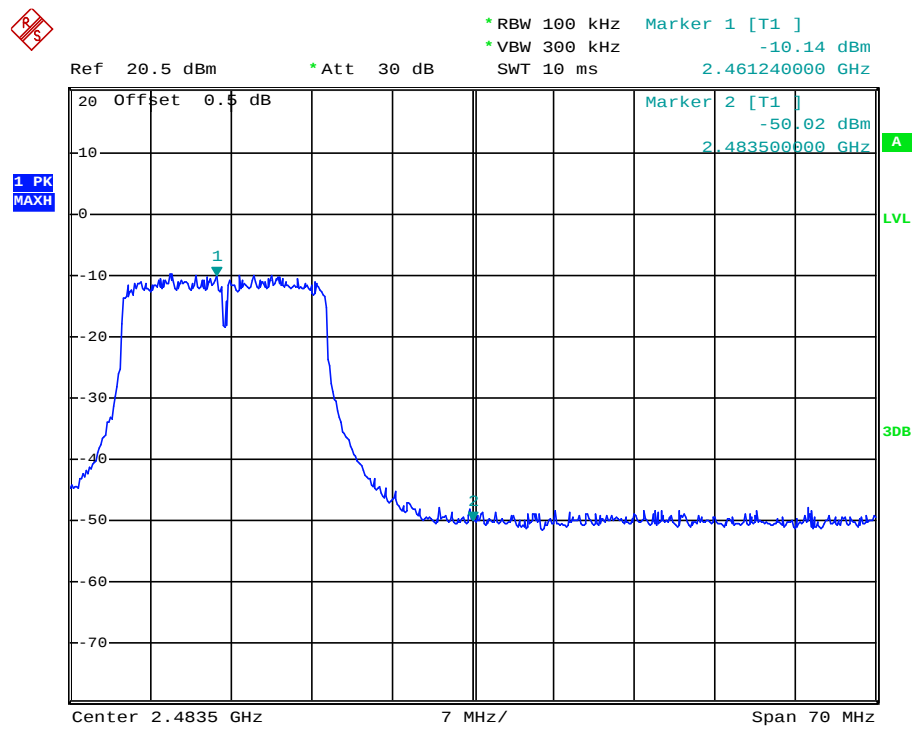
Date: 24.SEP.2012 12:17:41



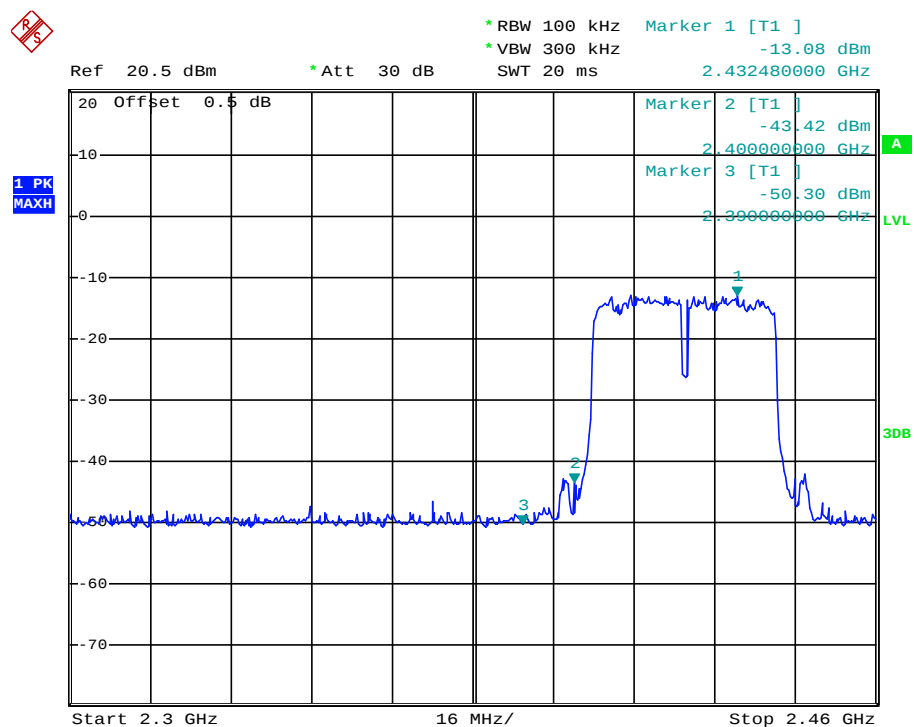
Date: 24.SEP.2012 12:24:53

802.11n (20MHz) Mode

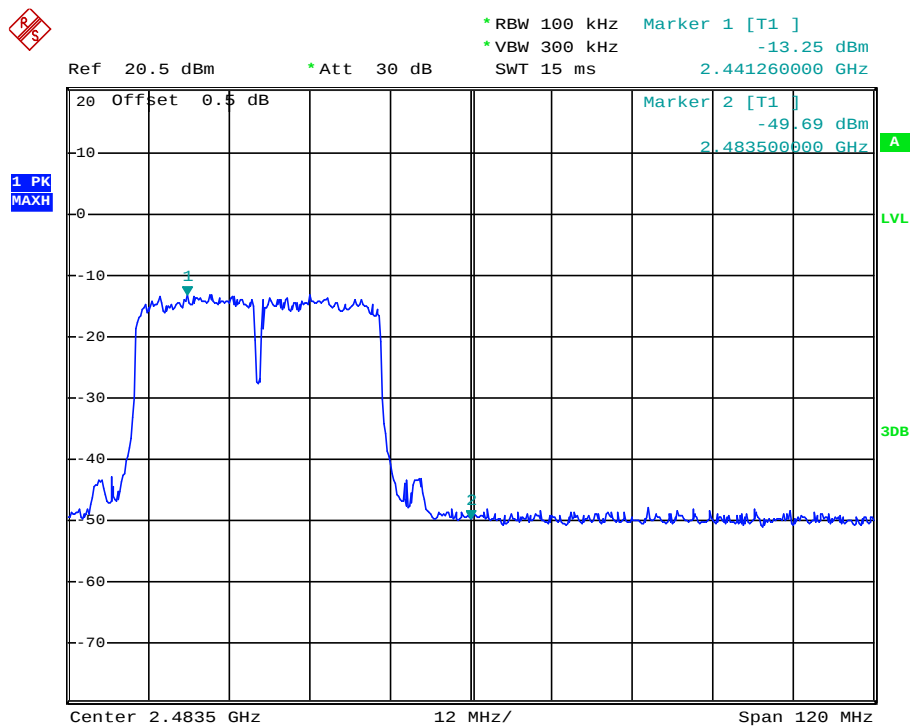
Date: 24.SEP.2012 12:18:14



Date: 24.SEP.2012 12:25:30

802.11n (40MHz) Mode

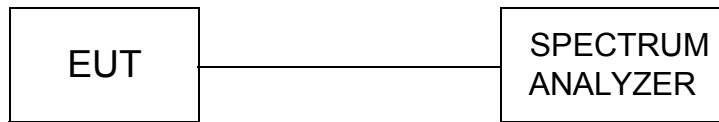
Date: 24.SEP.2012 12:19:59



Date: 24.SEP.2012 12:21:33

4.6. Spurious RF Conducted Emission

TEST CONFIGURATION



TEST PROCEDURE

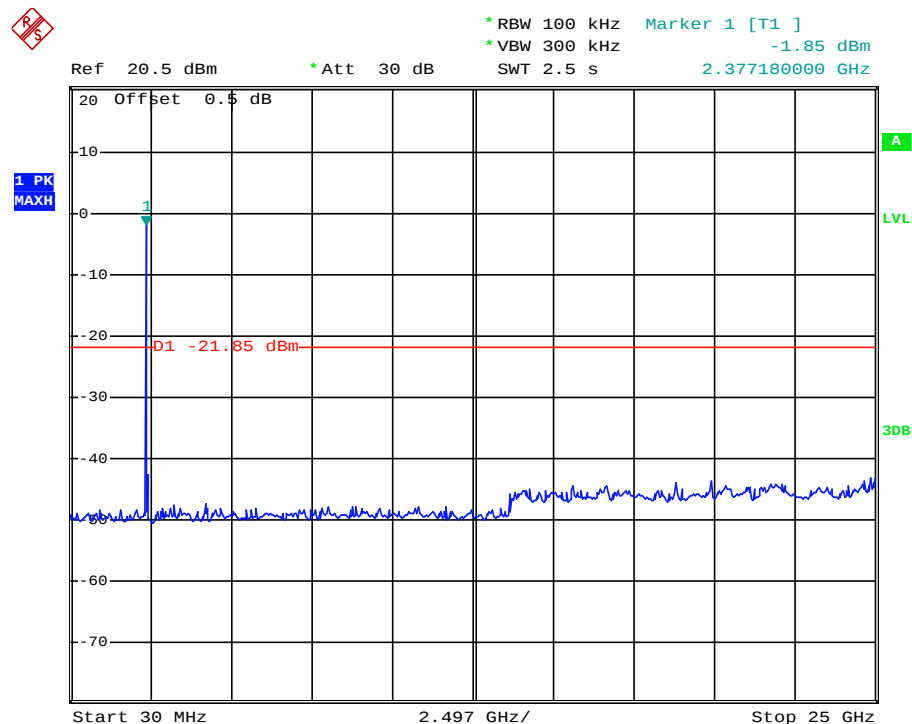
The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2009 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=100kHz and VBM= 300KHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

LIMIT

1. Below -20dB of the highest emission level in operating band.
2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

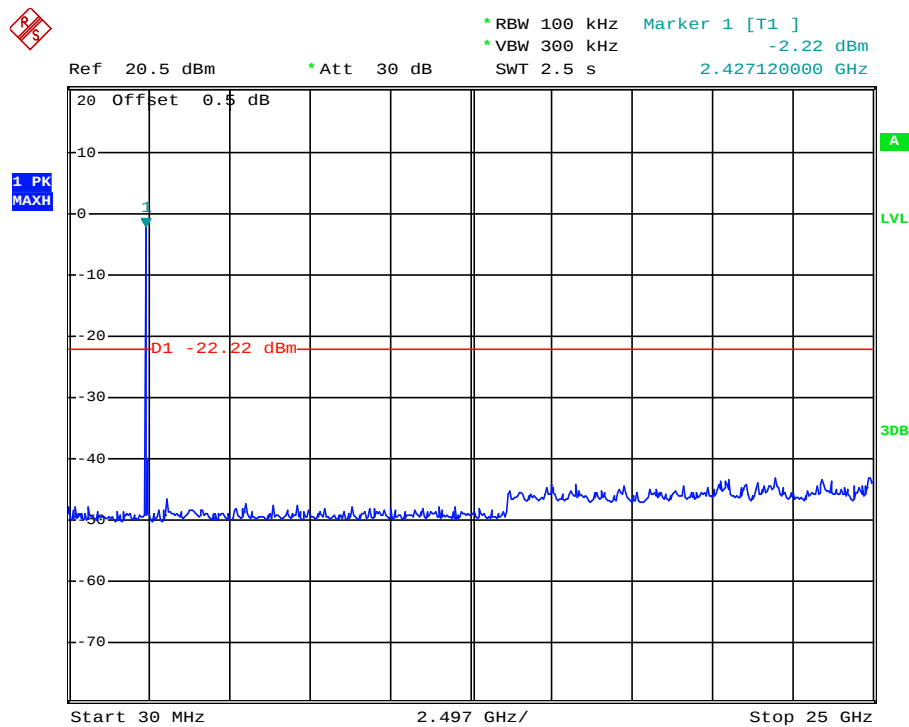
TEST RESULTS

802.11b Mode channel 1



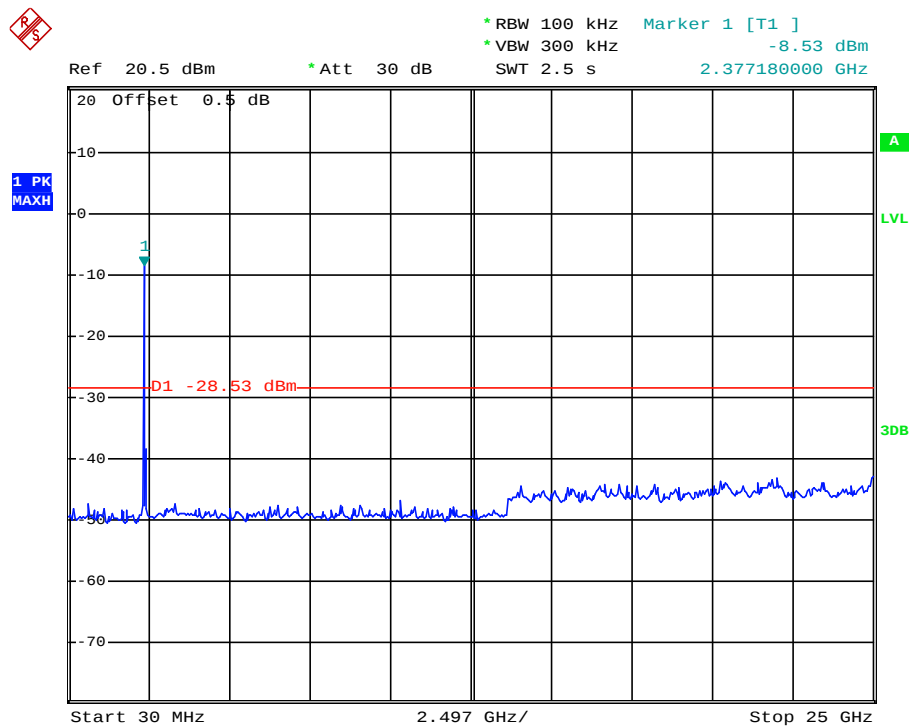
Date: 24.SEP.2012 12:27:18

802.11b Mode channel 6



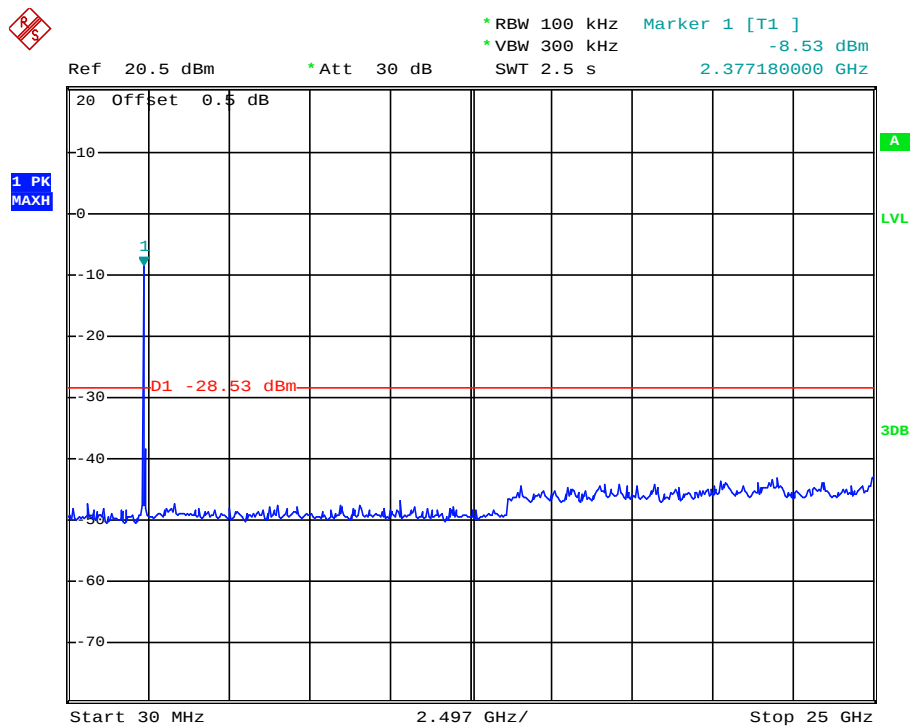
Date: 24.SEP.2012 12:29:00

802.11b Mode channel 11



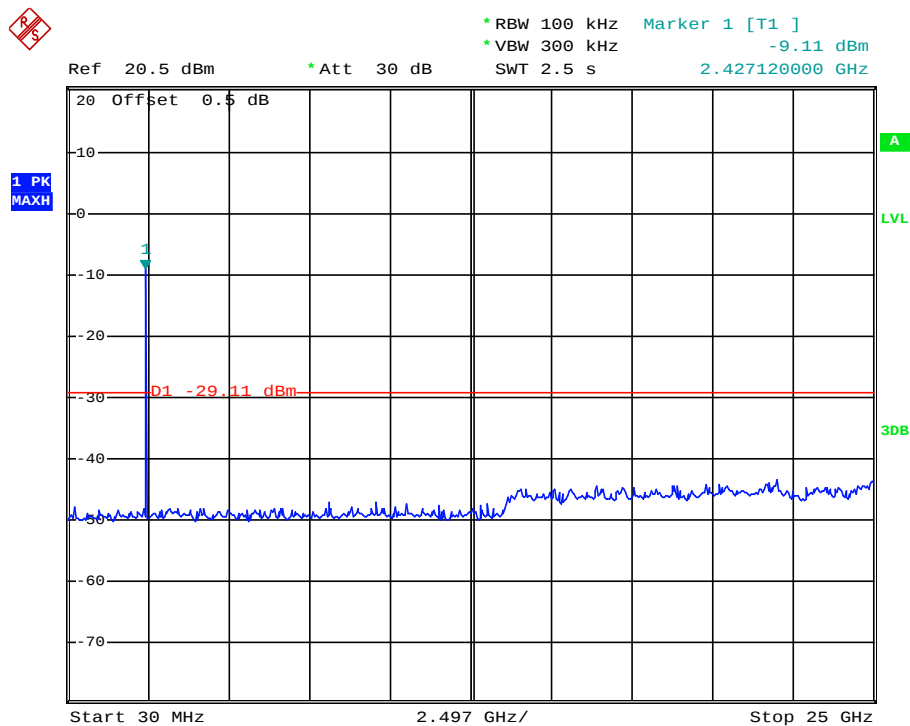
Date: 24.SEP.2012 12:33:14

802.11g Mode channel 1



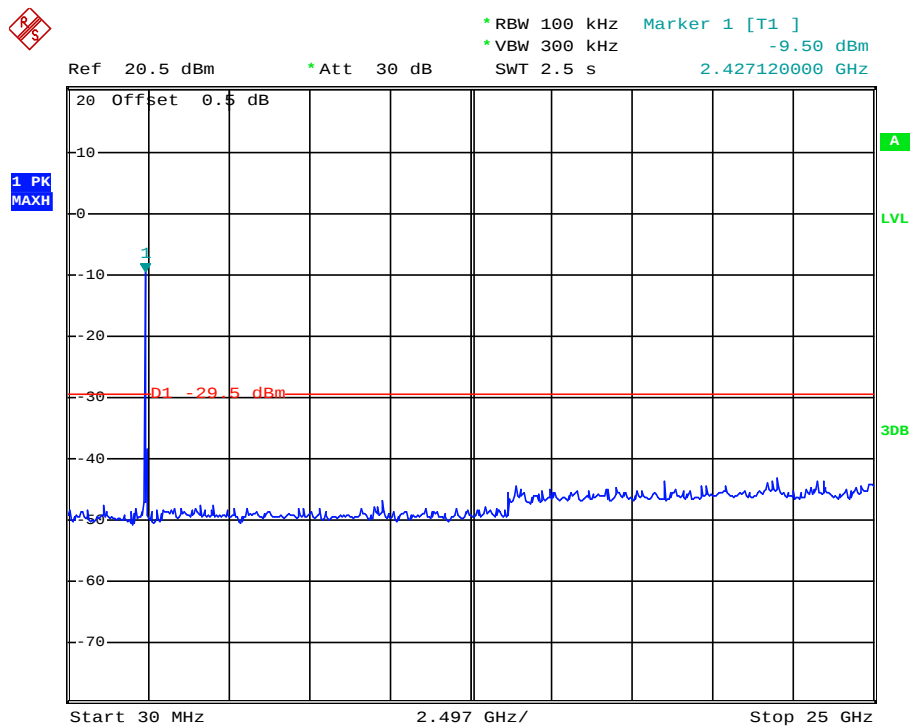
Date: 24.SEP.2012 12:33:14

802.11g Mode channel 6



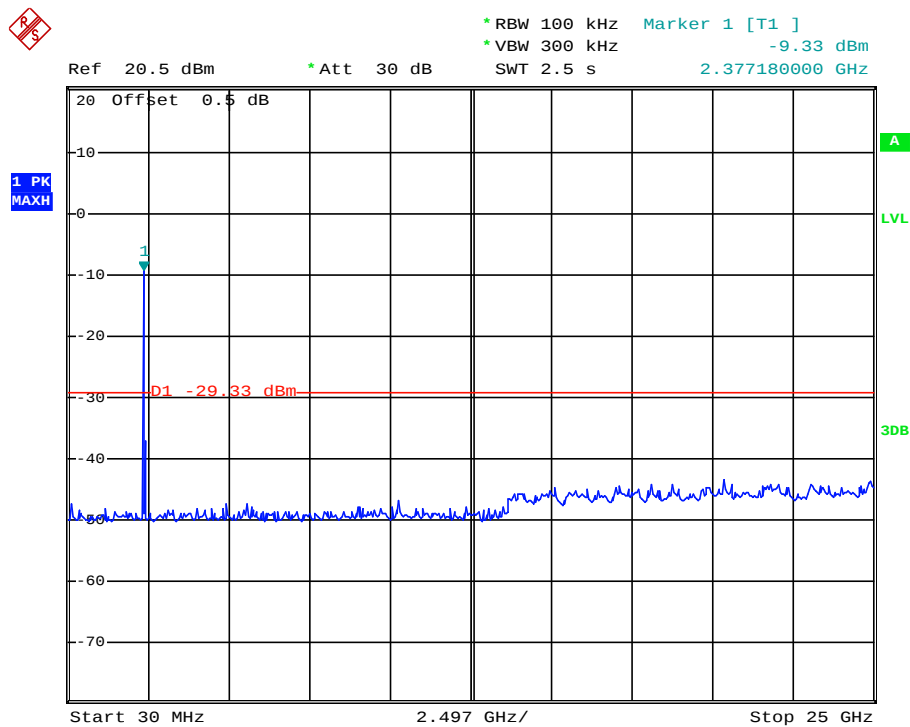
Date: 24.SEP.2012 12:31:01

802.11g Mode channel 11



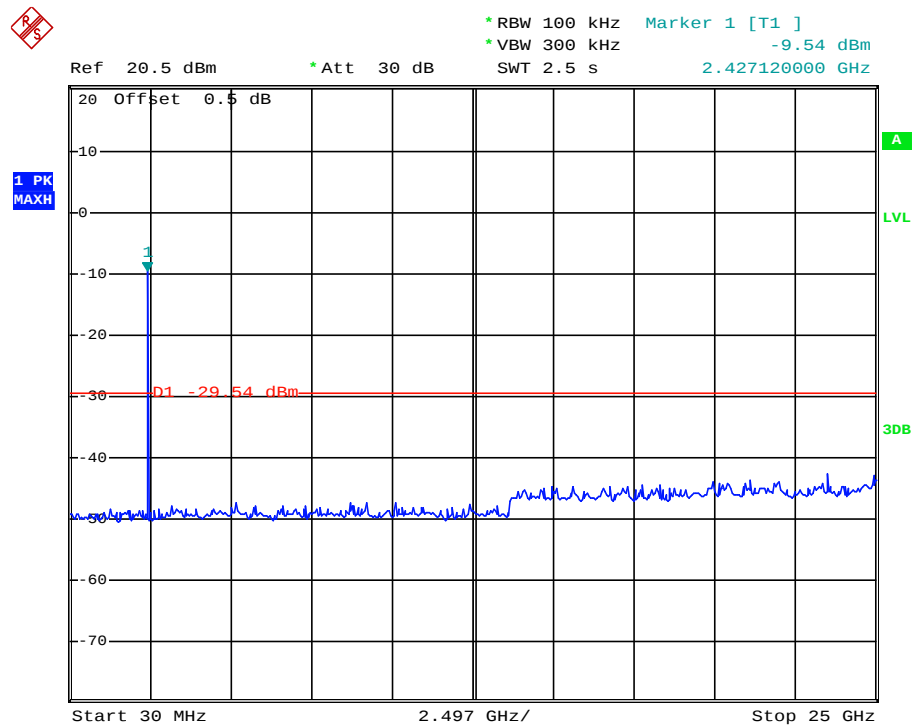
Date: 24.SEP.2012 12:30:11

802.11n20 Mode channel 1



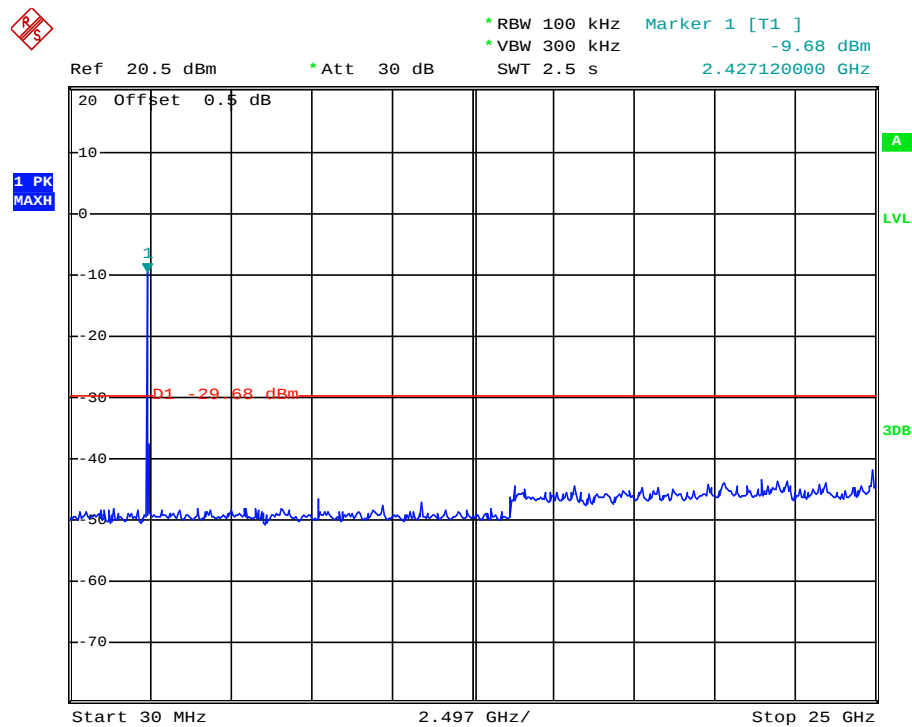
Date: 24.SEP.2012 12:34:10

802.11n20 Mode channel 6



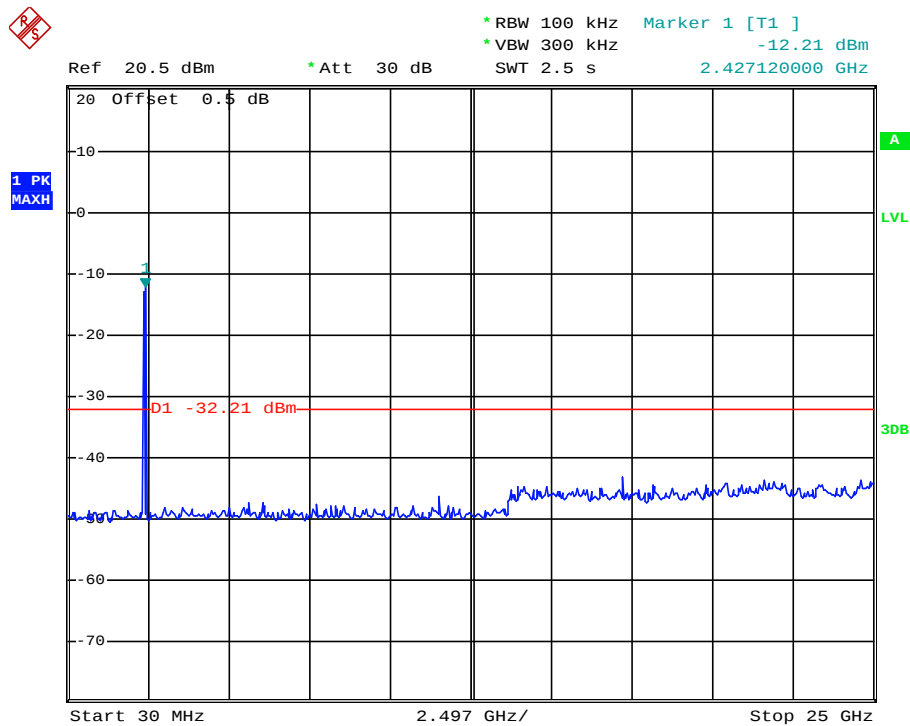
Date: 24.SEP.2012 12:35:05

802.11n20 Mode channel 11



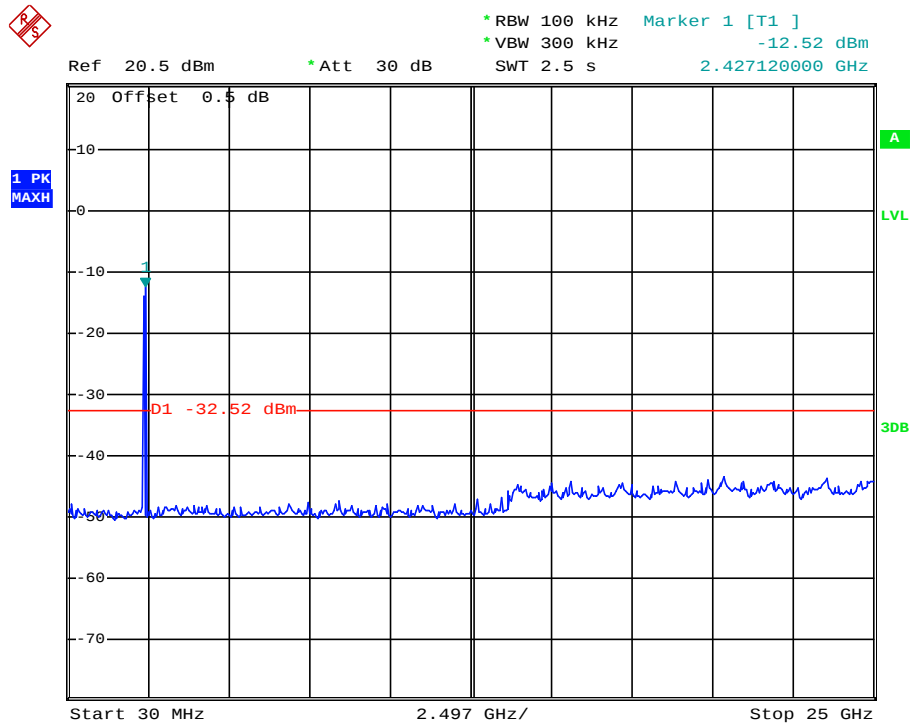
Date: 24.SEP.2012 12:35:38

802.11n40 Mode channel 3



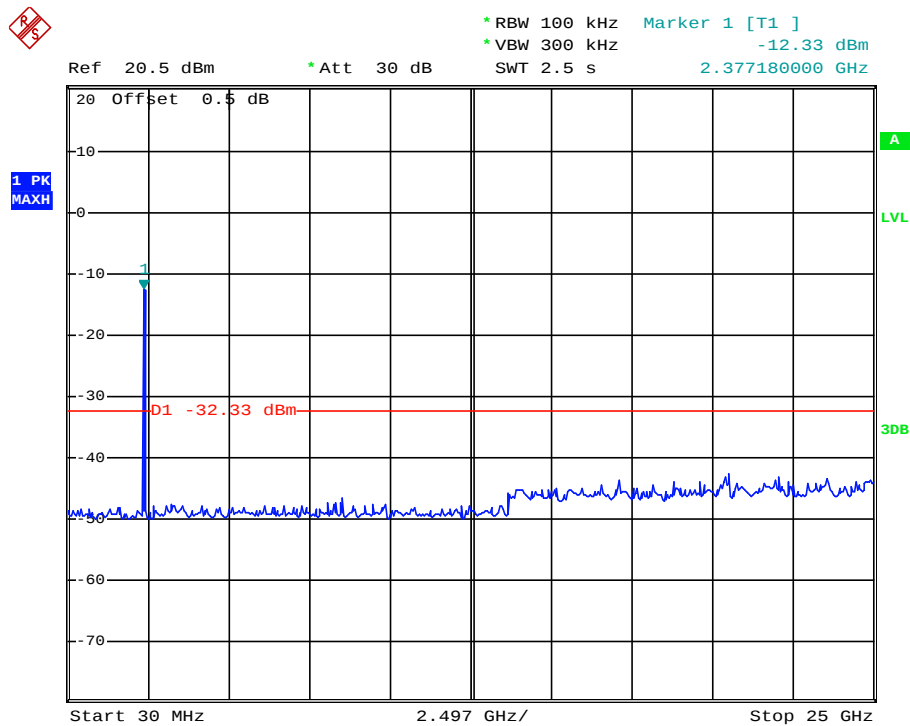
Date: 24.SEP.2012 12:38:43

802.11n40 Mode channel 6



Date: 24.SEP.2012 12:37:57

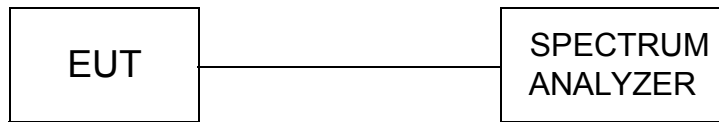
802.11n40 Mode channel 9



Date: 24.SEP.2012 12:36:51

4.7. 6dB Bandwidth

TEST CONFIGURATION



TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 KHz RBW and 300KHz VBW.

The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

LIMIT

For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

TEST RESULTS

For 802.11b Mode

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	10.20	0.5	PASS
6	2437	10.10	0.5	PASS
11	2462	10.20	0.5	PASS

For 802.11g Mode

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.60	0.5	PASS
6	2437	16.60	0.5	PASS
11	2462	16.60	0.5	PASS

For 802.11n (20MHz) Mode

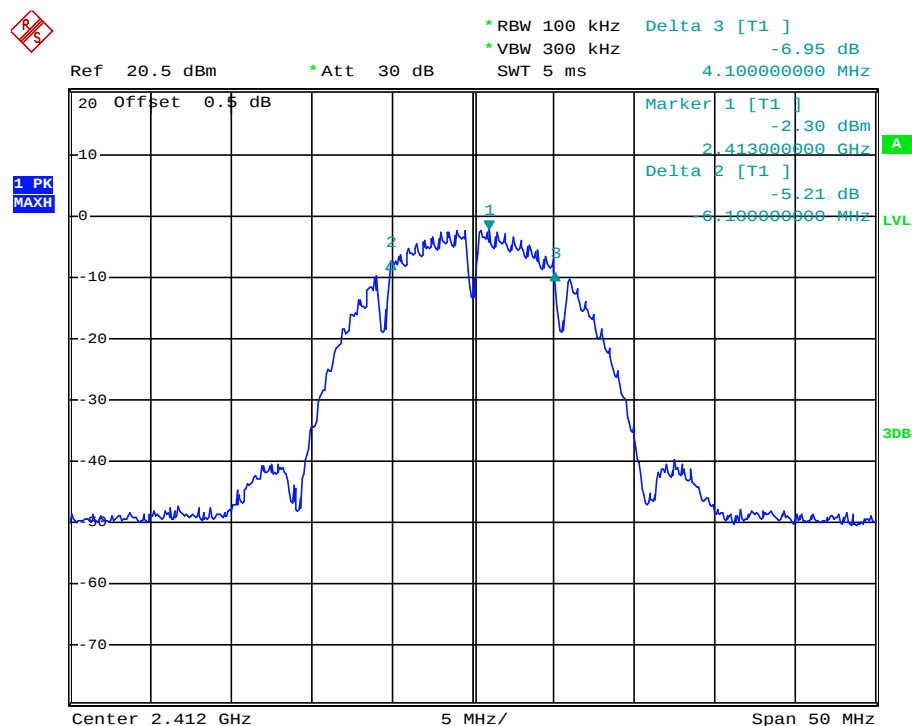
CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	17.80	0.5	PASS
6	2437	17.80	0.5	PASS
11	2462	17.80	0.5	PASS

For 802.11n (40MHz) Mode

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
3	2422	36.50	0.5	PASS
6	2437	36.50	0.5	PASS
9	2452	36.50	0.5	PASS

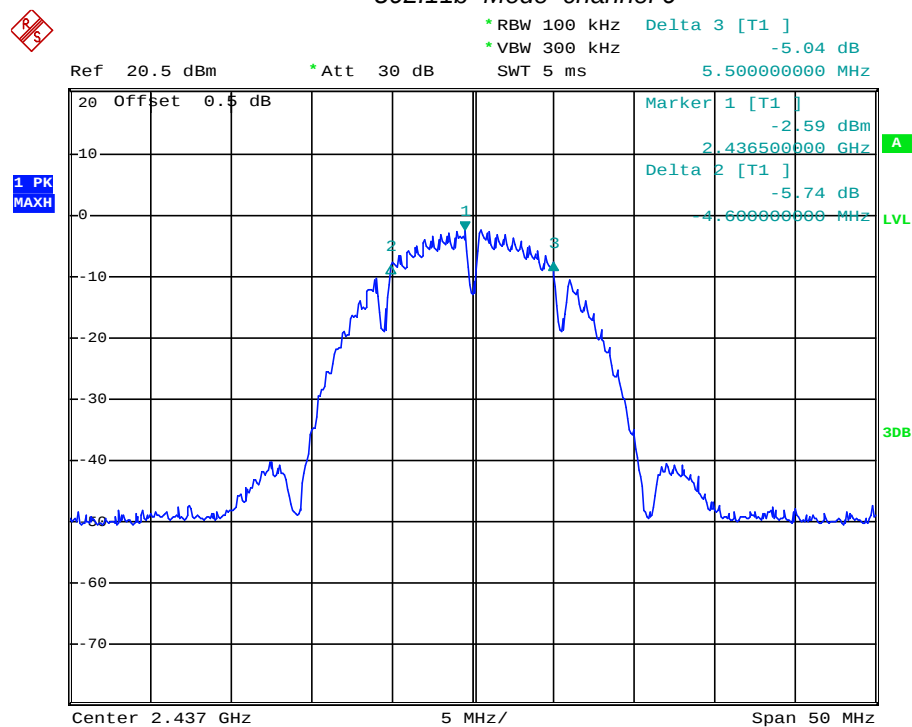
Photos of 6dB Bandwidth Measurement

802.11b Mode channel 1



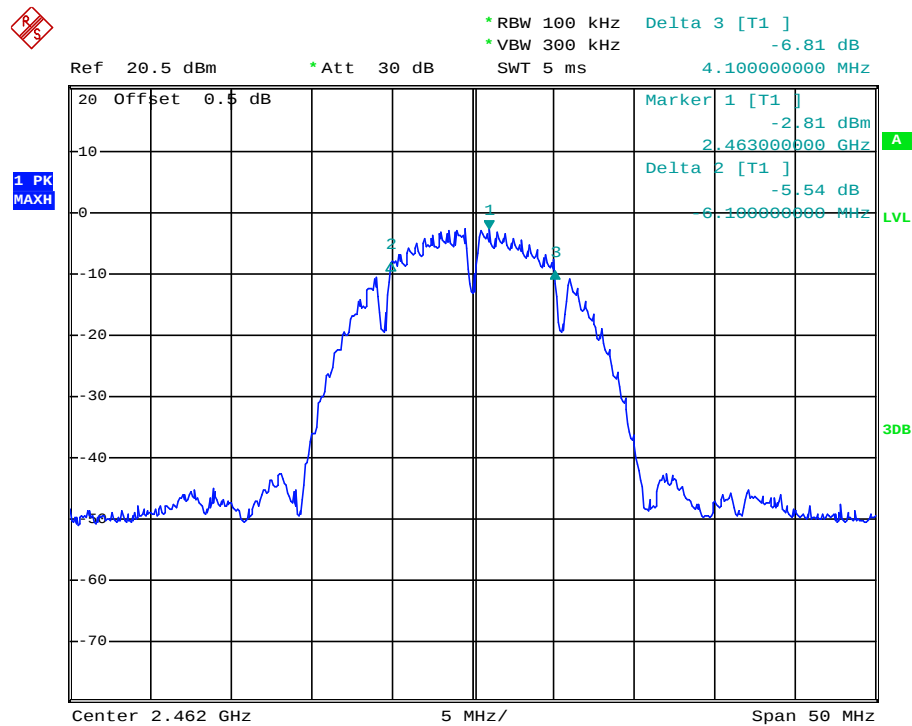
Date: 24.SEP.2012 11:18:10

802.11b Mode channel 6



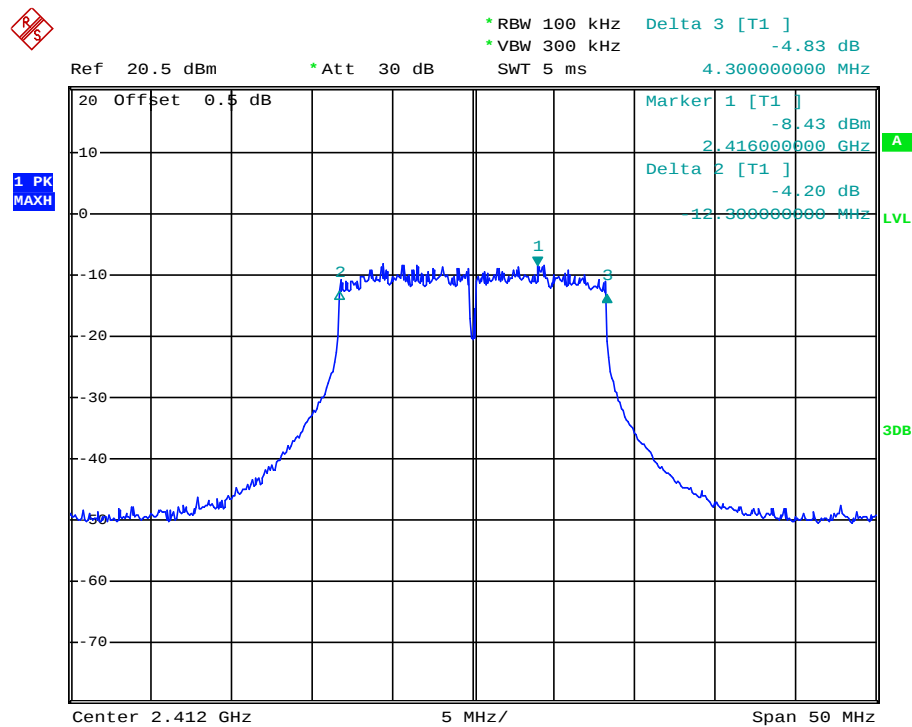
Date: 24.SEP.2012 11:29:17

802.11b Mode channel 11



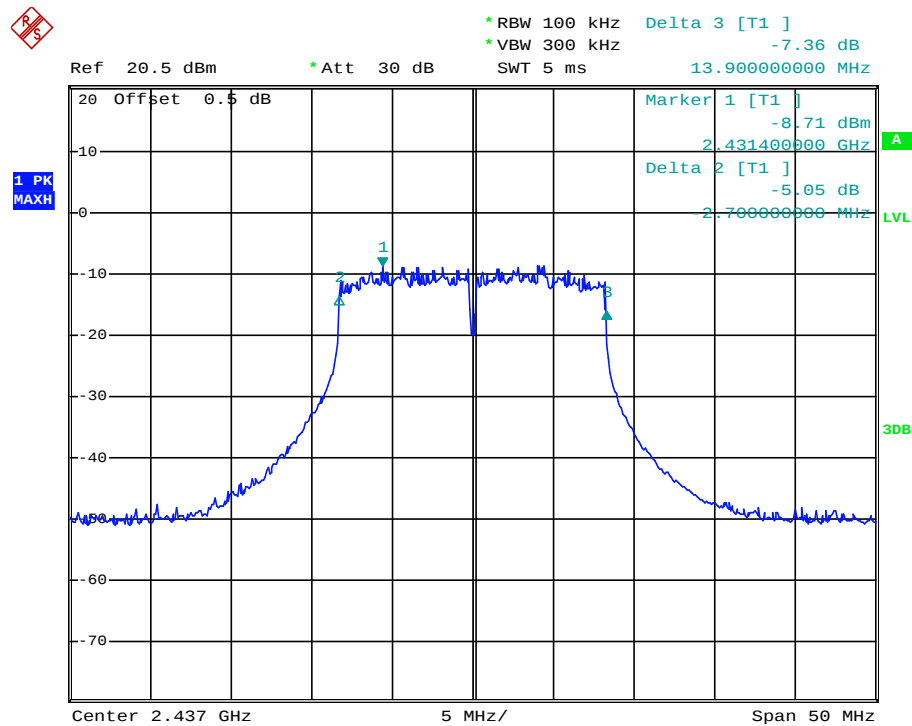
Date: 24.SEP.2012 11:31:51

802.11g Mode channel 1



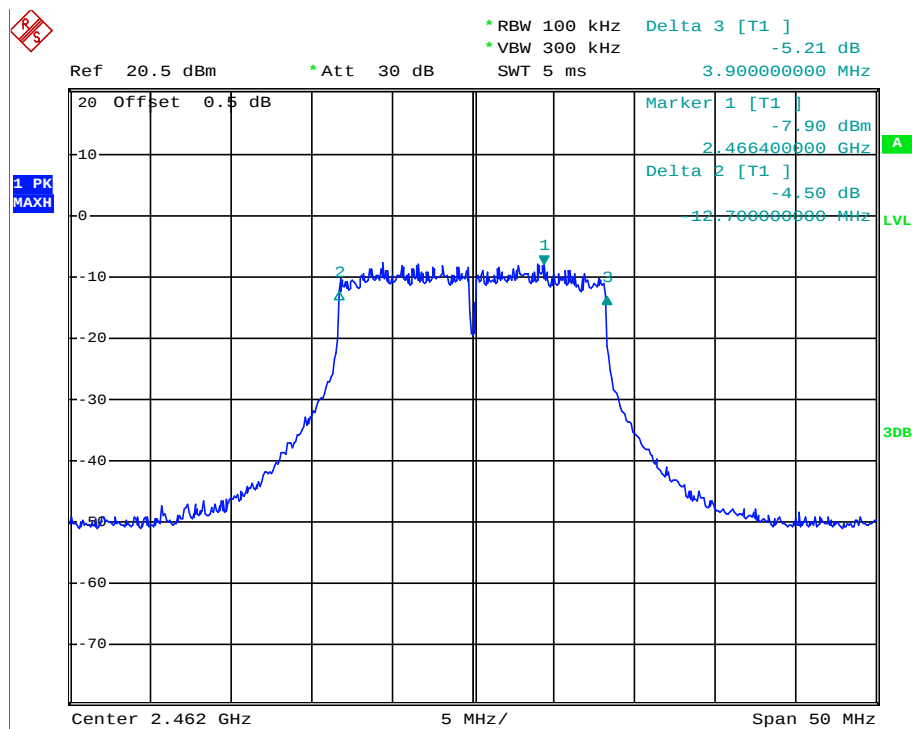
Date: 24.SEP.2012 11:35:07

802.11g Mode channel 6



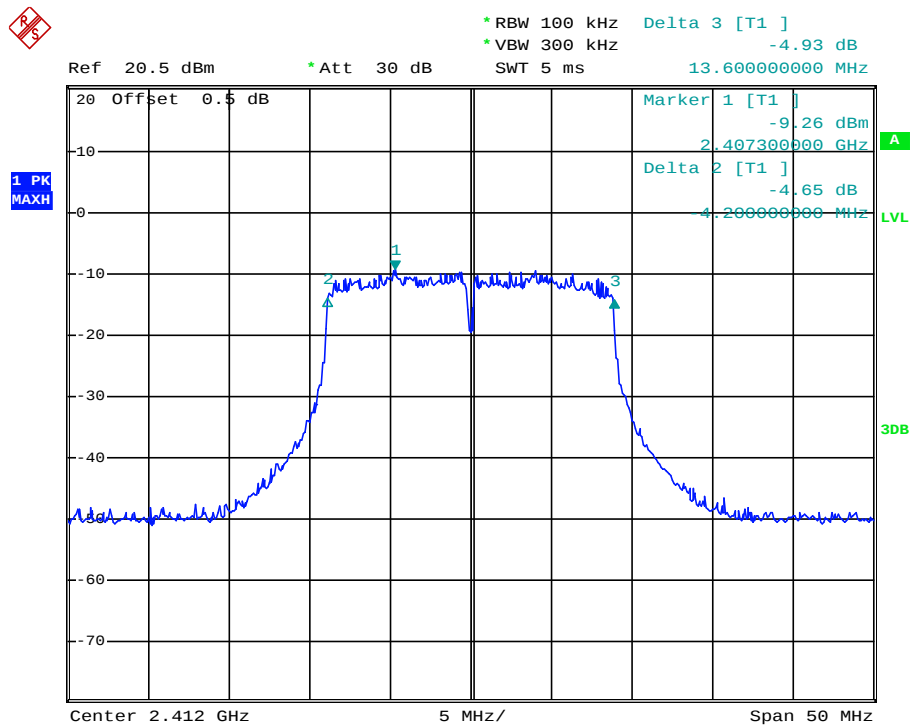
Date: 24.SEP.2012 11:36:54

802.11g Mode channel 11



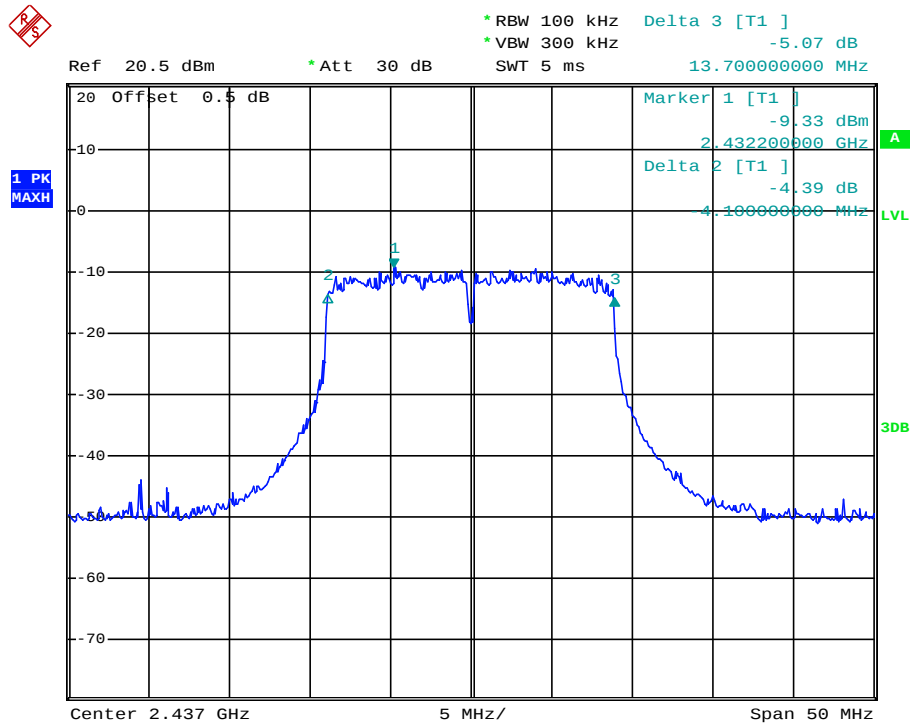
Date: 24.SEP.2012 11:44:08

802.11n20 Mode channel 1



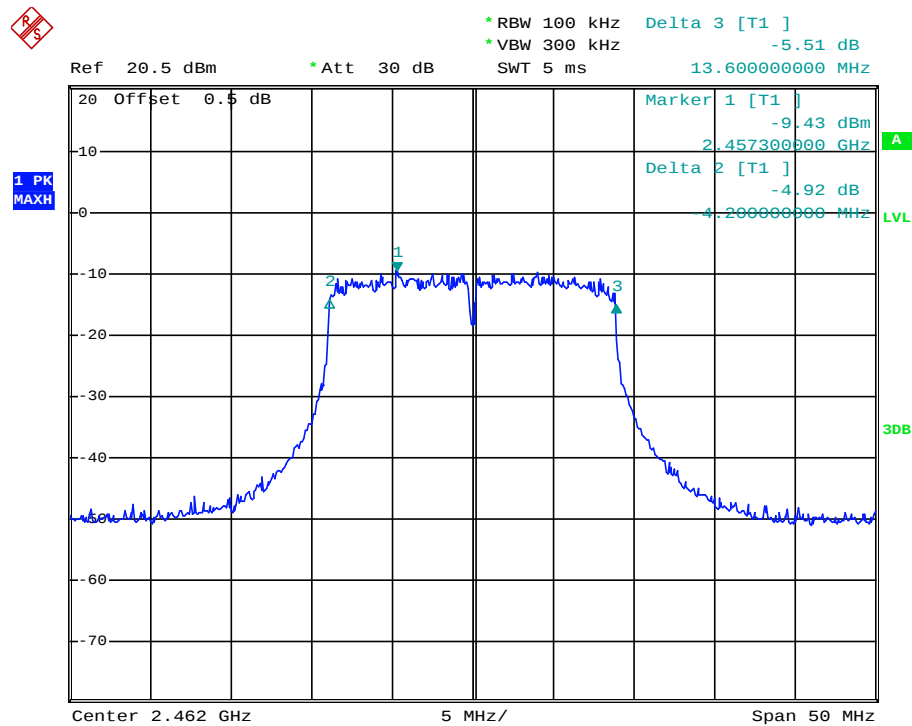
Date: 24.SEP.2012 11:50:59

802.11n20 Mode channel 6



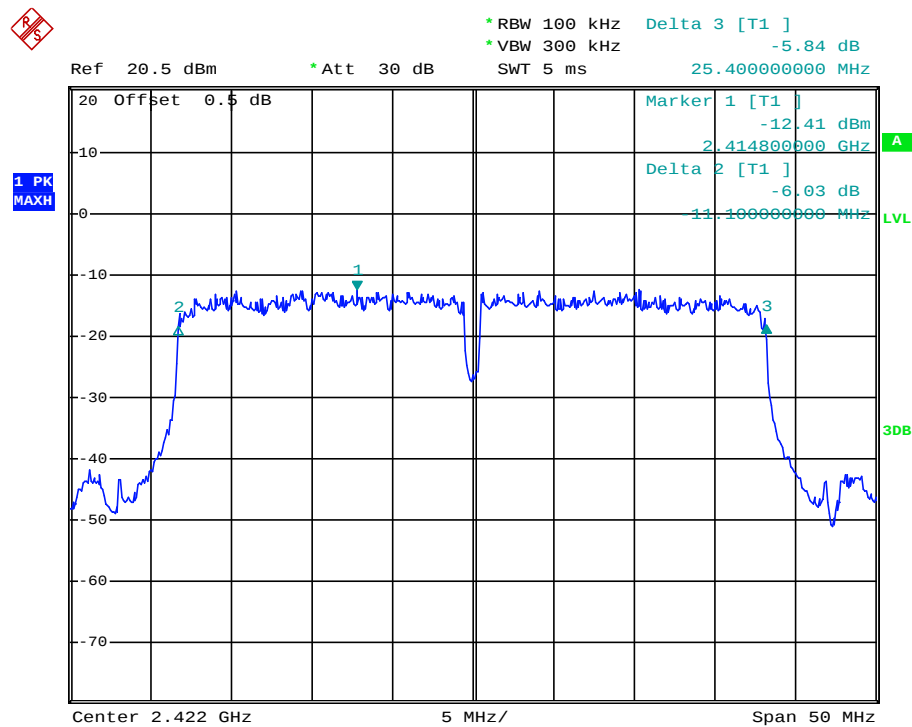
Date: 24.SEP.2012 11:48:48

802.11n20 Mode channel 11



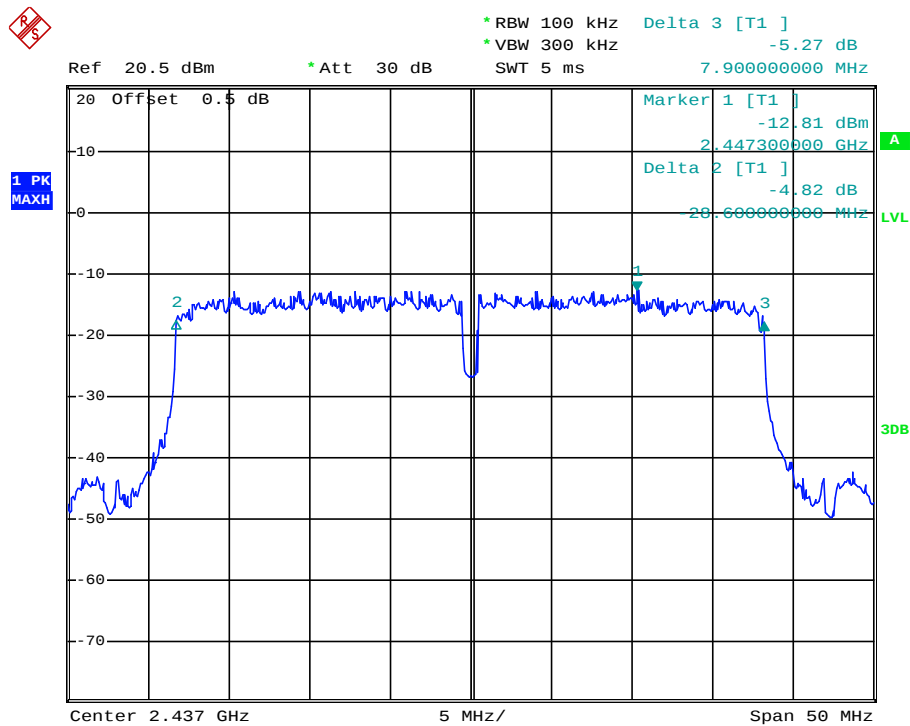
Date: 24.SEP.2012 11:46:55

802.11n40 Mode channel 3



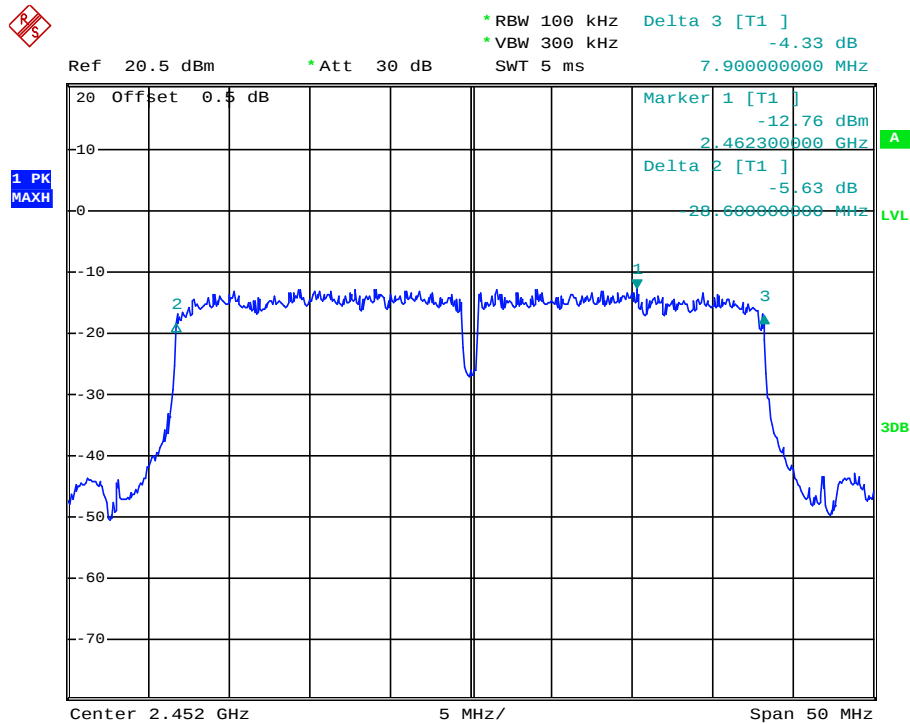
Date: 24.SEP.2012 11:55:54

802.11n40 Mode channel 6



Date: 24.SEP.2012 11:57:48

802.11n40 Mode channel 9



Date: 24.SEP.2012 11:59:31

4.8. Antenna Requirement

Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

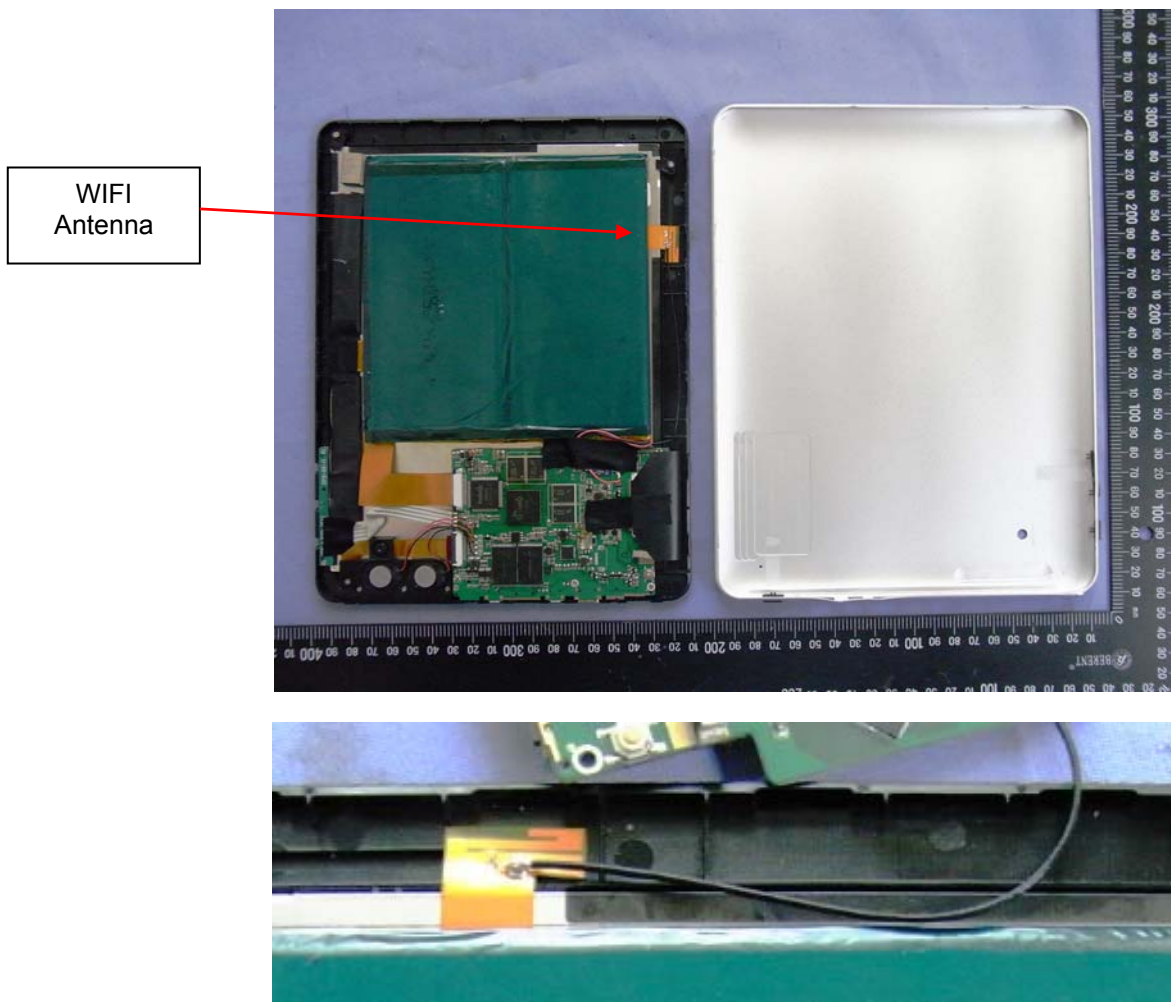
And according to FCC 47 CFR Section 15.247 (c), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Refer to statement below for compliance

The manufacturer may design the unit so that the user can replace a broken antenna, but the use of a standard antenna jack or electrical connector is prohibited. Further, this requirement does not apply to intentional radiators that must be professionally installed.

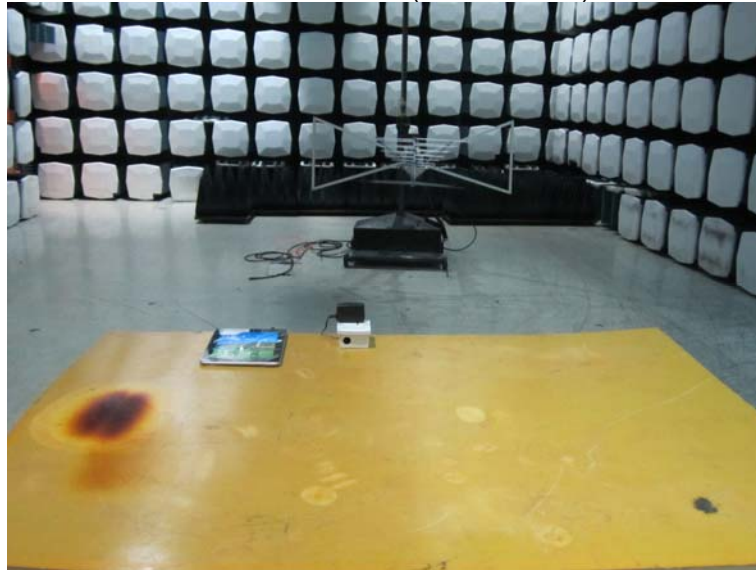
Antenna Connected Construction

The Gain of the antenna is 1.8dBi.

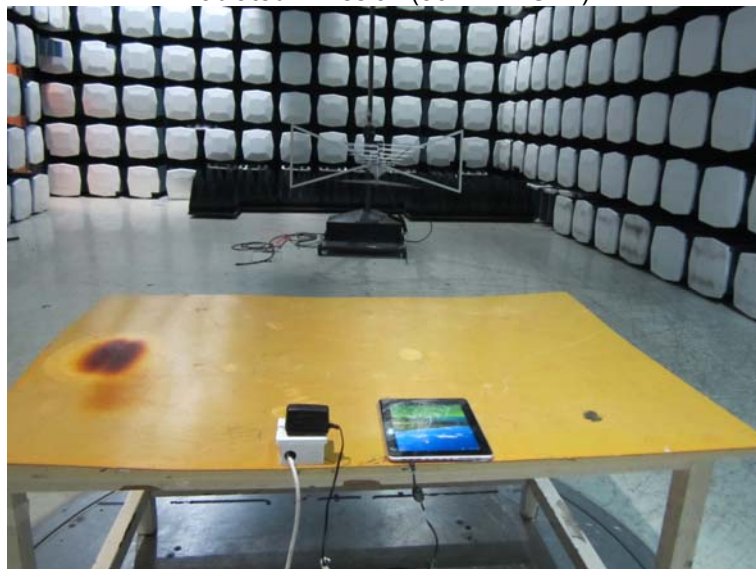


5. Test Setup Photos of the EUT

Radiated Emission (30MHz-1GHz)



Radiated Emission (30MHz-1GHz)



Radiated Emission (above 1GHz)



Radiated Emission (Below 30MHz)



Conducted Emission (AC Mains)



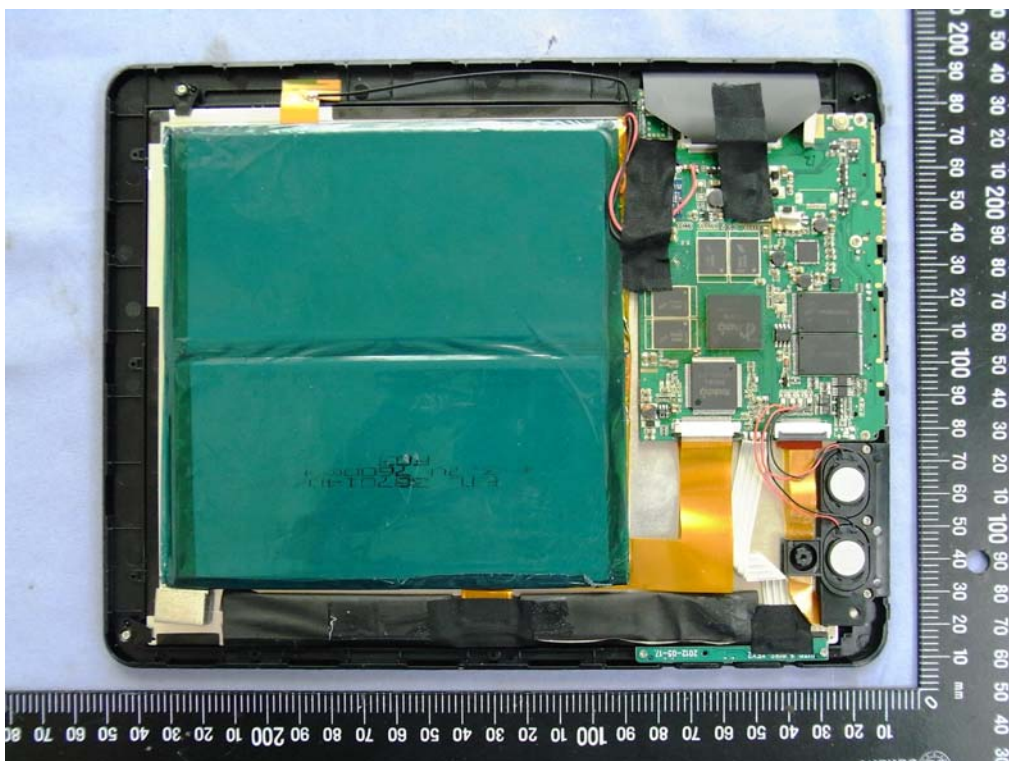
6. External and Internal Photos of the EUT

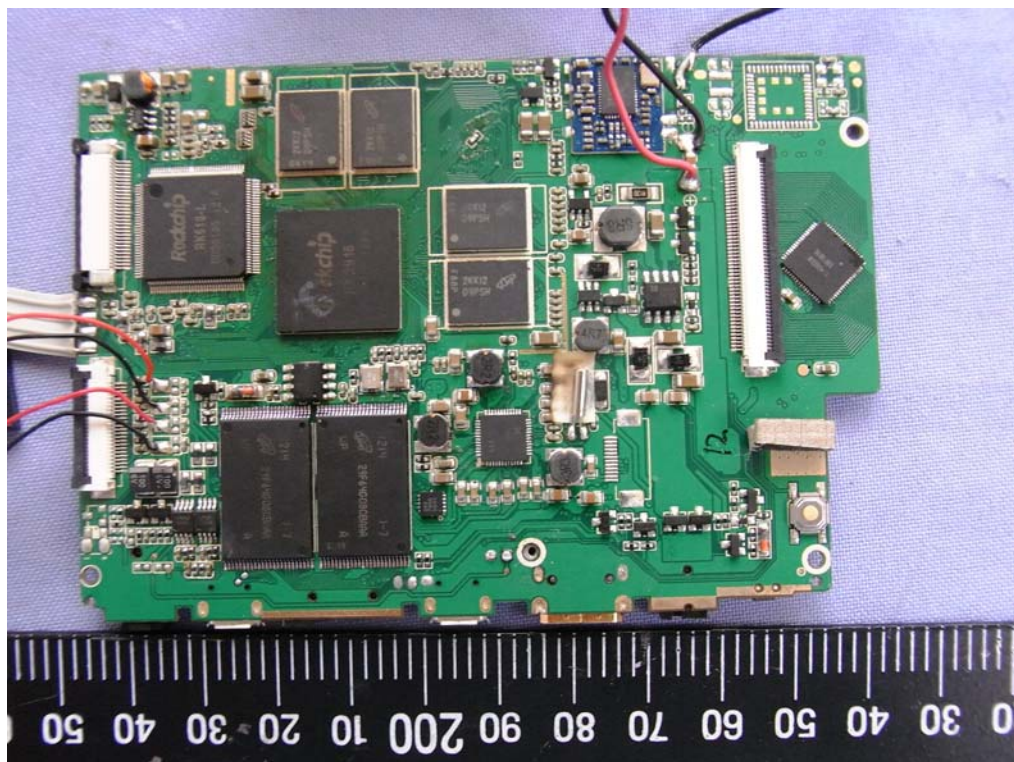
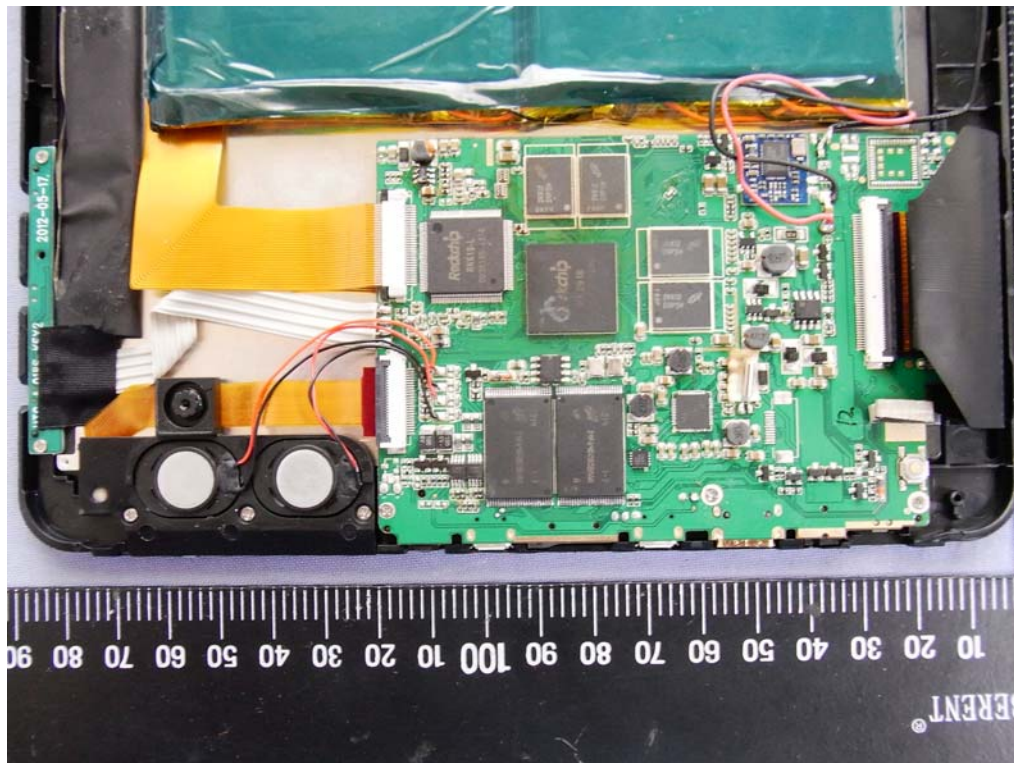
External Photos

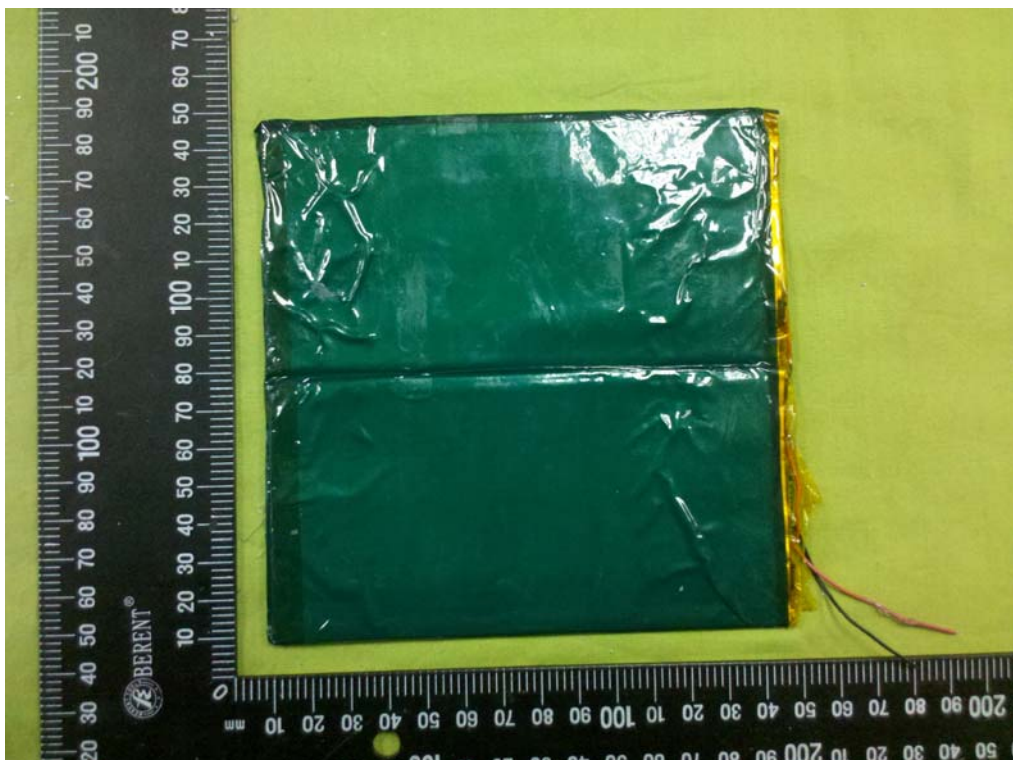
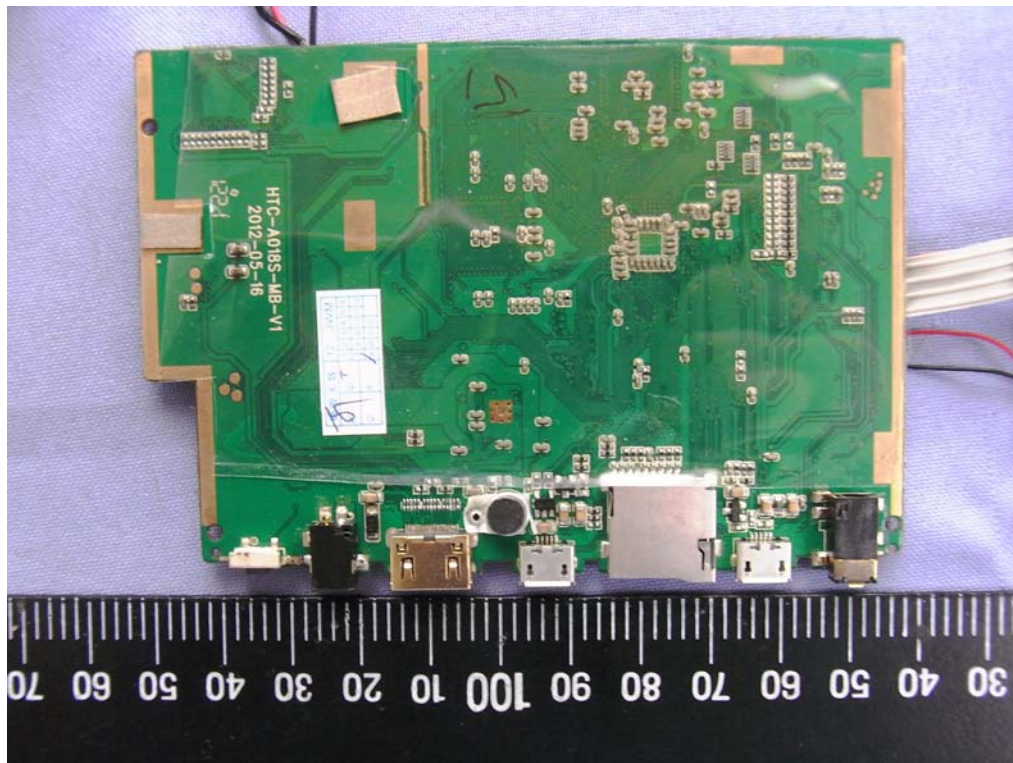




Internal Photos







.....End of Report.....