FCC PART 15.247

TEST REPORT

For

SDATAWAY SA

Rte. de Pra de Plan 5, Post Office Box 68, 1618 Chatel-St-Denis, Switzerland

FCC ID: QFHC-IV3

Report Type:	Product Type:
Original Report	SDW-WIFI_1

Test Engineer:	Leon Chen
Report Number:	R1XM120928050-00
Report Date:	2012-10-10
Reviewed By:	Ivan Cao EMC Engineer
Test Laboratory:	Bay Area Compliance Laboratories Corp. (Dongguan) No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China Tel: +86-769-86858888 Fax: +86-769-86858891 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *SDATAWAY SA*'s product, model number: C_IV3 *(FCC ID: QFHC-IV3), or* ("EUT") in this report is a SDW-WIFI_1, which was measured approximately: 8.0 cm (L) x6.7 cm (W) x1.2 cm (H), the operating frequency is 2412-2462 MHz, rated input voltage: DC 5V.

** All measurement and test data in this report was gathered from production sample serial number: 120928050 (Assigned by BACL, Dongguan). The EUT was received on 2012-09-28.*

Objective

This report is prepared on behalf of *SDATAWAY SA* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communication Commissions rules.

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart C, section 15.203, 15.205, 15.207, 15.209 and 15.247 rules.

Related Submittal(s)/Grant(s)

No related submittals.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2009, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

The uncertainty of any RF tests which use conducted method measurement is ±0.96 dB, the uncertainty of any radiation on emissions measurement is ±4.0 dB

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industrial Zone, Tangxia, Dongguan, Guangdong, China

Test site at Bay Area Compliance Laboratories Corp. (Dongguan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on February 02, 2012. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2009.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 802.11b and 802.11g, 802.11n20 mode, 11 channels are provided to testing:

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

EUT for 802.11b, 802.11g and 802.11 n20 modes were tested with Channel 1, 6 and 11.

The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all date rates bandwidths, and modulations.

EUT Exercise Software

The test was performed under "*RT5350 AP V1.0.0.8"* which was provided by the manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

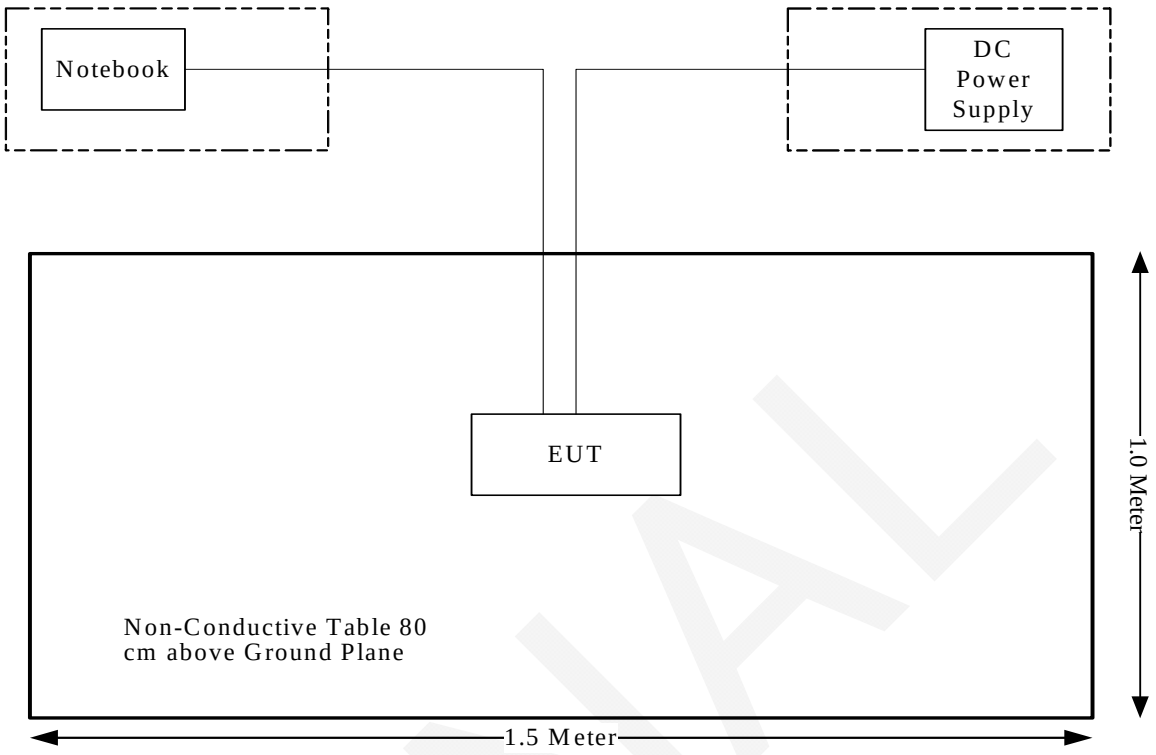
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Pro instrument	DC Power Supply	pps3300	N/A
Dell	Notebook	PP11L	N/A

External I/O Cable

Cable Description	Length (m)	From	To
Unshielded Detachable RJ45 Cable	10	RJ 45 Port of Notebook	EUT
DC Power Cable	1.5	DC Power Supply	EUT

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §2.1091	Maximum Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	N/A
§15.247(d)	Spurious Emissions at Antenna Port	Compliance
§15.205, §15.209, §15.247(d)	Spurious Emissions	Compliance
§15.247 (a)(2)	6 dB Emission Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

N/A: the EUT power by DC power Supply.

FCC §15.247 (i) & §2.1091- MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart 15.247(i)and subpart §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*($180/f^2$)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

MPE Calculation

Predication of MPE limit at a given distance

$$S = PG/4\pi R^2$$

Where: S= power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = antenna gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

MPE Calculation Results

Mode	Frequency (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
802.11b	2412	0.5	1.12	15.82	38.19	20	0.0085	1.0
802.11g	2412	0.5	1.12	12.98	19.86	20	0.0044	1.0
802.11n HT20	2412	0.5	1.12	12.81	19.10	20	0.0043	1.0

Result: The device meets FCC MPE at 20 cm distance

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to FCC §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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Antenna Connector Construction

The EUT has a PCB antenna, which was permanently attached on the PCB, which complied with 15.203 and the maximum gain was 0.5 dBi, please refer to the internal photos.

Result: Compliance.

FCC §15.209, §15.205 & §15.247(d) - SPURIOUS EMISSIONS

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

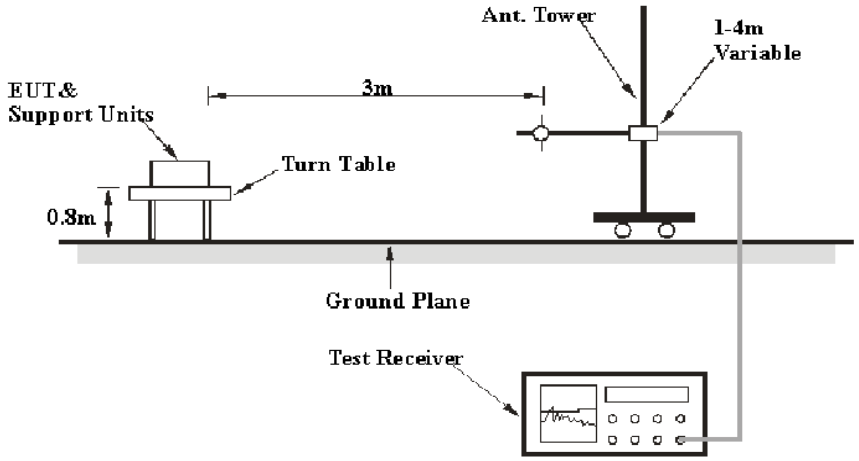
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

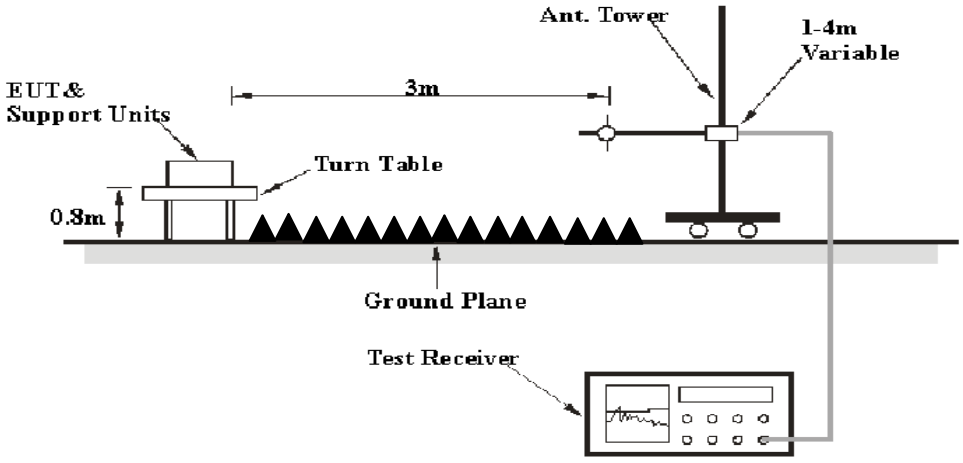
Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Dongguan) is 4.0 dB(k=2, 95% level of confidence), and the uncertainty will not be taken into consideration for all the test data recorded in the report.

EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2009. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

The notebook was connected to a 120 VAC/60 Hz power source

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	***RBW***	***Video B/W***	***Detector***
30 MHz – 1000 MHz	100 kHz	300 kHz	QP
1000 MHz – 25 GHz	1 MHz	3 MHz	PK
1000 MHz – 25 GHz	1 MHz	10 Hz	Ave.

Test Procedure

During the radiated emission test, the notebook was connected to the first AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1 GHz, peak and Average detection modes for frequencies above 1 GHz.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	101121	2012-10-7	2013-10-6
Sunol Sciences	Hybrid Antennas	JB3	A060611-1	2011-9-6	2013-9-5
HP	Pre-amplifier	8447E	2434A02181	2012-10-7	2013-10-6
Rohde & Schwarz	Spectrum Analyzer	FSEM 30	1079 8500	2011-10-10	2012-10-9
Dayang	Horn Antenna	OMCDH10180	10279001B	2010-7-30	2015-7-29
Mini-Circuits	Wideband Amplifier	ZVA-183-S+	96901149	2012-4-24	2013-4-23
Electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2010-10-14	2013-10-13

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Section 15.205, 15.209 and 15.247, with the worst margin reading of:

1.90 dB at **125.06 MHz** in the **Horizontal** polarization for 802.11b Mode of transmitting

Test Data

Environmental Conditions

Temperature:	25.8 ° C
Relative Humidity:	60 %
ATM Pressure:	100.9 kPa

The testing was performed by Leon Chen on 2012-10-08.

Mode: Transmitting

1) 30 MHz – 25 GHz

802.11b Mode:

Frequency (MHz)	Receiver		Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dBμV/m)	Part 15.247/209	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 (MHz)									
125.06	47.36	QP	H	14.30	1.35	21.42	41.60	43.50	1.90*
2390	14.71	AV	H	30.98	3.84	0.00	49.54	54.00	4.46
4824	38.26	AV	V	33.21	4.73	27.19	49.01	54.00	4.99
2390	28.76	PK	H	30.98	3.84	0.00	63.59	74.00	10.41
9648	17.16	AV	H	38.60	8.70	26.43	38.03	54.00	15.97
4824	47.21	PK	V	33.21	4.73	27.19	57.96	74.00	16.04
7236	17.83	AV	H	38.72	6.56	26.58	36.54	54.00	17.46
9648	31.19	PK	H	38.60	8.70	26.43	52.06	74.00	21.94
7236	33.26	PK	H	38.72	6.56	26.58	51.97	74.00	22.03
1332	46.87	PK	V	25.33	2.79	27.37	47.62	74.00	26.38
1332	25.66	AV	V	25.33	2.79	27.37	26.41	54.00	27.59
2412	66.21	AV	H	31.11	3.93	0.00	101.24	N/A	N/A
2412	70.72	PK	H	31.11	3.93	0.00	105.75	N/A	N/A
2412	63.26	AV	V	31.11	3.93	0.00	98.29	N/A	N/A
2412	69.24	PK	V	31.11	3.93	0.00	104.27	N/A	N/A
Middle Channel: 2437 (MHz)									
125.06	47.02	QP	V	14.30	1.35	21.42	41.26	43.50	2.24*
4874	37.91	AV	V	33.32	4.76	27.03	48.97	54.00	5.03
9748	17.36	AV	H	38.80	8.60	26.53	38.23	54.00	15.77
4874	46.38	PK	V	33.32	4.76	27.03	57.44	74.00	16.56
7311	18.13	AV	H	38.86	6.70	26.65	37.04	54.00	16.96
9748	31.87	PK	H	38.80	8.60	26.53	52.74	74.00	21.26
7311	33.54	PK	H	38.86	6.70	26.65	52.45	74.00	21.55
1330	49.4	PK	V	25.33	2.77	27.36	50.14	74.00	23.86
1330	26.81	AV	V	25.33	2.77	27.36	27.55	54.00	26.45
2776.6	19.69	AV	V	31.21	4.14	27.77	27.28	54.00	26.72
2776.6	35.16	PK	V	31.21	4.14	27.77	42.75	74.00	31.25
2437	65.17	AV	H	31.25	3.98	0.00	100.40	N/A	N/A
2437	68.84	PK	H	31.25	3.98	0.00	104.07	N/A	N/A
2437	62.03	AV	V	31.25	3.98	0.00	97.26	N/A	N/A
2437	67.35	PK	V	31.25	3.98	0.00	102.58	N/A	N/A

Frequency (MHz)	Receiver		Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dBµV/m)	Part 15.247/209	
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBµV/m)	Margin (dB)
High Channel: 2462 (MHz)									
125.06	46.89	QP	V	14.30	1.35	21.42	41.13	43.50	2.37*
4924	39.03	AV	V	33.43	4.70	27.17	50.00	54.00	4.00*
2483.5	13.53	AV	H	31.51	3.80	0.00	48.83	54.00	5.17
2483.5	28.04	PK	H	31.51	3.80	0.00	63.34	74.00	10.66
9848	18.2	AV	H	39.00	8.49	26.63	39.06	54.00	14.94
4924	47.92	PK	V	33.43	4.70	27.17	58.89	74.00	15.11
7386	18.25	AV	H	38.99	6.84	26.73	37.36	54.00	16.64
7386	33.92	PK	H	38.99	6.84	26.73	53.03	74.00	20.97
9848	31.99	PK	H	39.00	8.49	26.63	52.85	74.00	21.15
2332.6	20.13	AV	V	30.66	3.79	27.87	26.72	54.00	27.28
2332.6	38.27	PK	V	30.66	3.79	27.87	44.86	74.00	29.14
2462	64.55	AV	H	31.39	3.93	0.00	99.87	N/A	N/A
2462	69.38	PK	H	31.39	3.93	0.00	104.70	N/A	N/A
2462	61.18	AV	V	31.39	3.93	0.00	96.50	N/A	N/A
2462	66.52	PK	V	31.39	3.93	0.00	101.84	N/A	N/A

* Within measurement uncertainty.

802.11g Mode:

Frequency (MHz)	Receiver		Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dBμV/m)	Part 15.247/209	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 (MHz)									
125.06	47.26	QP	H	14.30	1.35	21.42	41.50	43.50	2.00*
2390	15.66	AV	V	30.98	3.84	0.00	50.49	54.00	3.51*
2390	29.56	PK	V	30.98	3.84	0.00	64.39	74.00	9.61
4824	30.64	AV	V	33.21	4.73	27.19	41.39	54.00	12.61
9648	17.72	AV	H	38.60	8.70	26.43	38.59	54.00	15.41
4824	46.53	PK	V	33.21	4.73	27.19	57.28	74.00	16.72
7236	17.96	AV	H	38.72	6.56	26.58	36.67	54.00	17.33
9648	31.74	PK	H	38.60	8.70	26.43	52.61	74.00	21.39
7236	33.35	PK	H	38.72	6.56	26.58	52.06	74.00	21.94
1332	46.32	PK	V	25.33	2.79	27.37	47.07	74.00	26.93
1332	25.43	AV	V	25.33	2.79	27.37	26.18	54.00	27.82
2412	57.86	AV	H	31.11	3.93	0.00	92.89	N/A	N/A
2412	68.52	PK	H	31.11	3.93	0.00	103.55	N/A	N/A
2412	58.62	AV	V	31.11	3.93	0.00	93.65	N/A	N/A
2412	69.32	PK	V	31.11	3.93	0.00	104.35	N/A	N/A
Middle Channel: 2437 (MHz)									
125.06	46.95	QP	V	14.30	1.35	21.42	41.19	43.50	2.31*
4874	30.15	AV	V	33.32	4.76	27.03	41.21	54.00	12.79
9748	17.64	AV	H	38.80	8.60	26.53	38.51	54.00	15.49
4874	46.38	PK	V	33.32	4.76	27.03	57.44	74.00	16.56
7311	18.02	AV	H	38.86	6.70	26.65	36.93	54.00	17.07
7311	33.67	PK	H	38.86	6.70	26.65	52.58	74.00	21.42
9748	31.69	PK	H	38.80	8.60	26.53	52.56	74.00	21.44
1330	48.67	PK	V	25.33	2.77	27.36	49.41	74.00	24.59
1330	26.94	AV	V	25.33	2.77	27.36	27.68	54.00	26.32
2776.6	19.86	AV	V	31.21	4.14	27.77	27.45	54.00	26.55
2776.6	35.43	PK	V	31.21	4.14	27.77	43.02	74.00	30.98
2437	56.83	AV	H	31.25	3.98	0.00	92.06	N/A	N/A
2437	67.37	PK	H	31.25	3.98	0.00	102.60	N/A	N/A
2437	54.91	AV	V	31.25	3.98	0.00	90.14	N/A	N/A
2437	65.32	PK	V	31.25	3.98	0.00	100.55	N/A	N/A

Frequency (MHz)	Receiver		Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dBµV/m)	Part 15.247/209	
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBµV/m)	Margin (dB)
High Channel: 2462 (MHz)									
125.06	47.19	QP	V	14.30	1.35	21.42	41.43	43.50	2.07 *
2483.5	13.23	AV	H	31.51	3.80	0.00	48.53	54.00	5.47
2483.5	27.67	PK	H	31.51	3.80	0.00	62.97	74.00	11.03
4924	29.91	AV	V	33.43	4.70	27.17	40.88	54.00	13.12
9848	17.64	AV	H	39.00	8.49	26.63	38.50	54.00	15.50
4924	45.98	PK	V	33.43	4.70	27.17	56.95	74.00	17.05
7386	17.84	AV	H	38.99	6.84	26.73	36.95	54.00	17.05
9848	31.65	PK	H	39.00	8.49	26.63	52.51	74.00	21.49
7386	33.13	PK	H	38.99	6.84	26.73	52.24	74.00	21.76
2332.6	21.05	AV	V	30.66	3.79	27.87	27.64	54.00	26.36
2332.6	37.68	PK	V	30.66	3.79	27.87	44.27	74.00	29.73
2462	55.16	AV	H	31.39	3.93	0.00	90.48	N/A	N/A
2462	65.55	PK	H	31.39	3.93	0.00	100.87	N/A	N/A
2462	52.62	AV	V	31.39	3.93	0.00	87.94	N/A	N/A
2462	63.33	PK	V	31.39	3.93	0.00	98.65	N/A	N/A

* Within measurement uncertainty.

802.11n20 Mode:

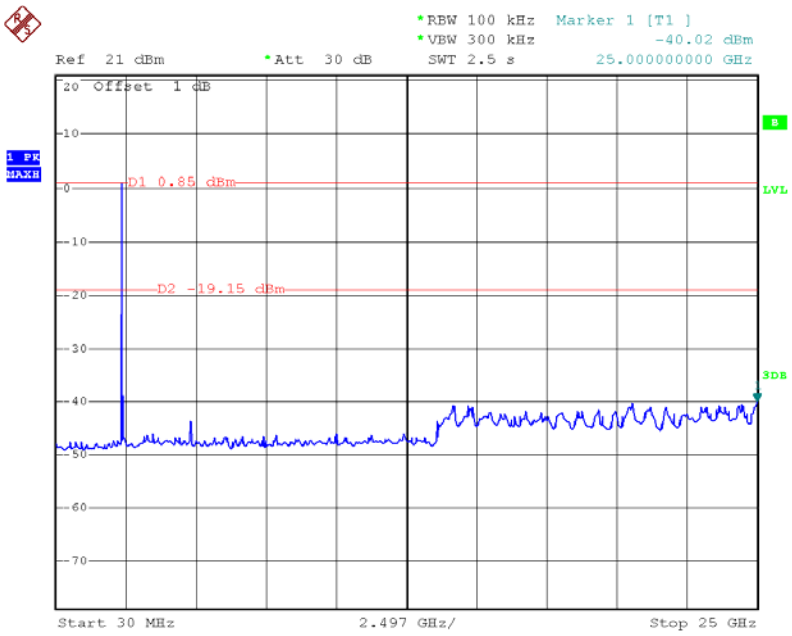
Frequency (MHz)	Receiver		Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dBμV/m)	Part 15.247/209	
	Reading (dBμV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBμV/m)	Margin (dB)
Low Channel: 2412 (MHz)									
125.06	47.32	QP	H	14.30	1.35	21.42	41.56	43.50	1.94*
2390	15.21	AV	V	30.98	3.84	0.00	50.04	54.00	3.96*
2390	28.77	PK	V	30.98	3.84	0.00	63.60	74.00	10.40
4824	29.91	AV	V	33.21	4.73	27.19	40.66	54.00	13.34
9648	17.15	AV	H	38.60	8.70	26.43	38.02	54.00	15.98
4824	46.14	PK	V	33.21	4.73	27.19	56.89	74.00	17.11
7236	17.72	AV	H	38.72	6.56	26.58	36.43	54.00	17.57
9648	31.42	PK	H	38.60	8.70	26.43	52.29	74.00	21.71
7236	33.41	PK	H	38.72	6.56	26.58	52.12	74.00	21.88
1332	46.38	PK	V	25.33	2.79	27.37	47.13	74.00	26.87
1332	25.34	AV	V	25.33	2.79	27.37	26.09	54.00	27.91
2412	55.23	AV	H	31.11	3.93	0.00	90.26	N/A	N/A
2412	67.16	PK	H	31.11	3.93	0.00	102.19	N/A	N/A
2412	57.48	AV	V	31.11	3.93	0.00	92.51	N/A	N/A
2412	59.16	PK	V	31.11	3.93	0.00	94.19	N/A	N/A
Middle Channel: 2437 (MHz)									
125.06	47.21	QP	V	14.30	1.35	21.42	41.45	43.50	2.05*
4874	28.39	AV	V	33.32	4.76	27.03	39.45	54.00	14.55
9748	16.93	AV	H	38.80	8.60	26.53	37.80	54.00	16.20
7311	17.74	AV	H	38.86	6.70	26.65	36.65	54.00	17.35
4874	45.18	PK	V	33.32	4.76	27.03	56.24	74.00	17.76
9748	31.26	PK	H	38.80	8.60	26.53	52.13	74.00	21.87
7311	33.19	PK	H	38.86	6.70	26.65	52.10	74.00	21.90
1330	48.76	PK	V	25.33	2.77	27.36	49.50	74.00	24.50
1330	26.94	AV	V	25.33	2.77	27.36	27.68	54.00	26.32
2776.6	18.97	AV	V	31.21	4.14	27.77	26.56	54.00	27.44
2776.6	36.02	PK	V	31.21	4.14	27.77	43.61	74.00	30.39
2437	54.82	AV	H	31.25	3.98	0.00	90.05	N/A	N/A
2437	66.36	PK	H	31.25	3.98	0.00	101.59	N/A	N/A
2437	56.76	AV	V	31.25	3.98	0.00	91.99	N/A	N/A
2437	68.49	PK	V	31.25	3.98	0.00	103.72	N/A	N/A

Frequency (MHz)	Receiver		Antenna		Cable Loss (dB)	Amplifier Gain (dB)	Cord. Amp. (dBµV/m)	Part 15.247/209	
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dBµV/m)	Margin (dB)
High Channel: 2462 (MHz)									
125.06	46.97	QP	V	14.30	1.35	21.42	41.21	43.50	2.29*
2483.5	14.04	AV	V	31.51	3.80	0.00	49.34	54.00	4.66
2483.5	27.74	PK	V	31.51	3.80	0.00	63.04	74.00	10.96
4924	30.08	AV	V	33.43	4.70	27.17	41.05	54.00	12.95
9848	17.19	AV	H	39.00	8.49	26.63	38.05	54.00	15.95
4924	46.13	PK	V	33.43	4.70	27.17	57.10	74.00	16.90
7386	17.85	AV	H	38.99	6.84	26.73	36.96	54.00	17.04
9848	31.67	PK	H	39.00	8.49	26.63	52.53	74.00	21.47
7386	33.36	PK	H	38.99	6.84	26.73	52.47	74.00	21.53
2332.6	21.09	AV	V	30.66	3.79	27.87	27.68	54.00	26.32
2332.6	39.13	PK	V	30.66	3.79	27.87	45.72	74.00	28.28
2462	54.33	AV	H	31.39	3.93	0.00	89.65	N/A	N/A
2462	66.21	PK	H	31.39	3.93	0.00	101.53	N/A	N/A
2462	56.51	AV	V	31.39	3.93	0.00	91.83	N/A	N/A
2462	68.55	PK	V	31.39	3.93	0.00	103.87	N/A	N/A

* Within measurement uncertainty.

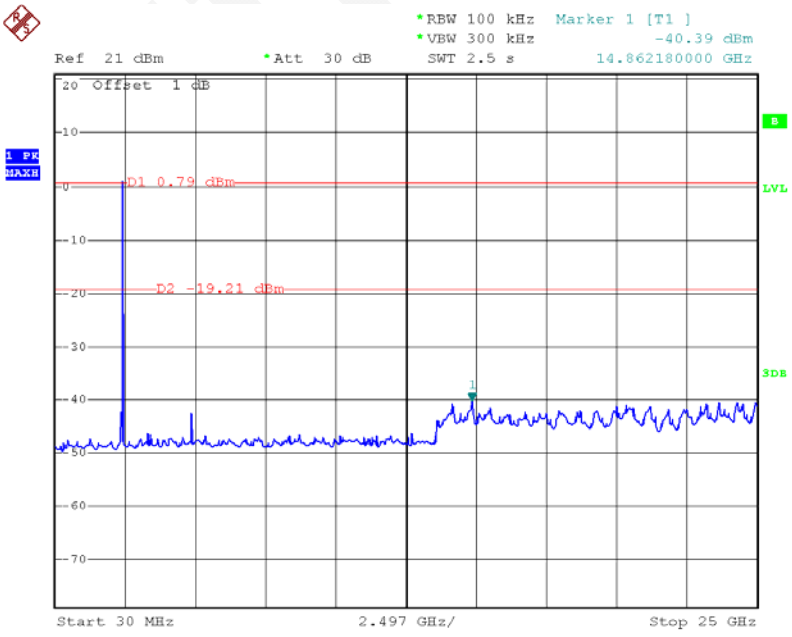
2) Conducted Spurious Emissions at Antenna Port

802.11b Low Channel



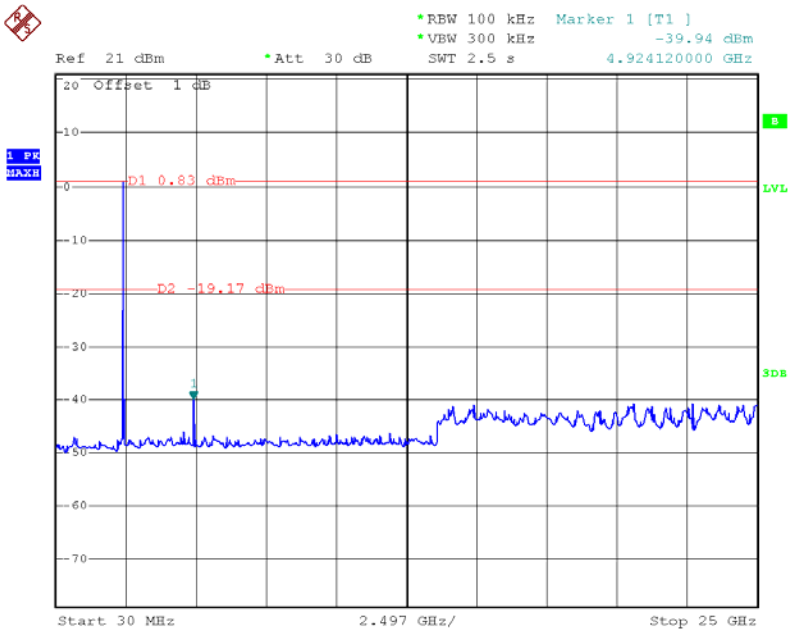
Date: 8.OCT.2012 09:56:11

802.11b Middle Channel



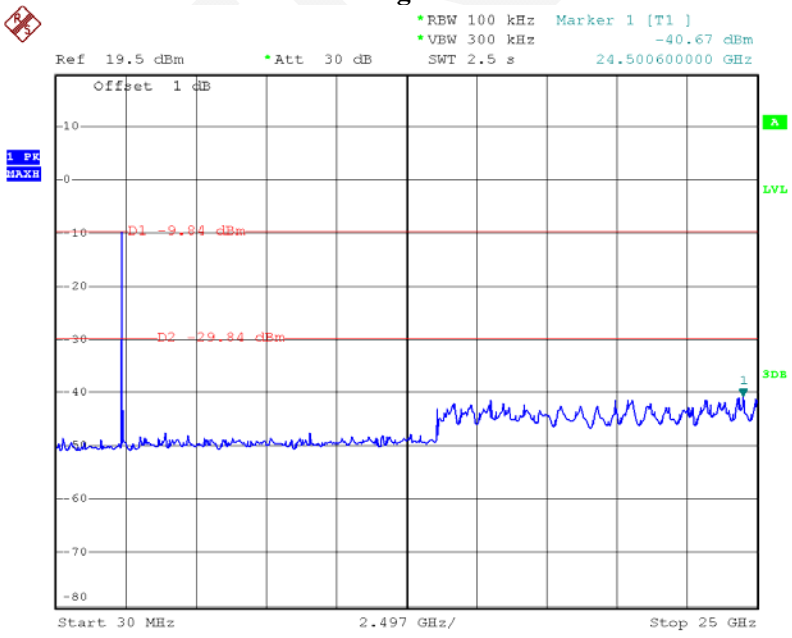
Date: 8.OCT.2012 10:00:07

802.11b High Channel



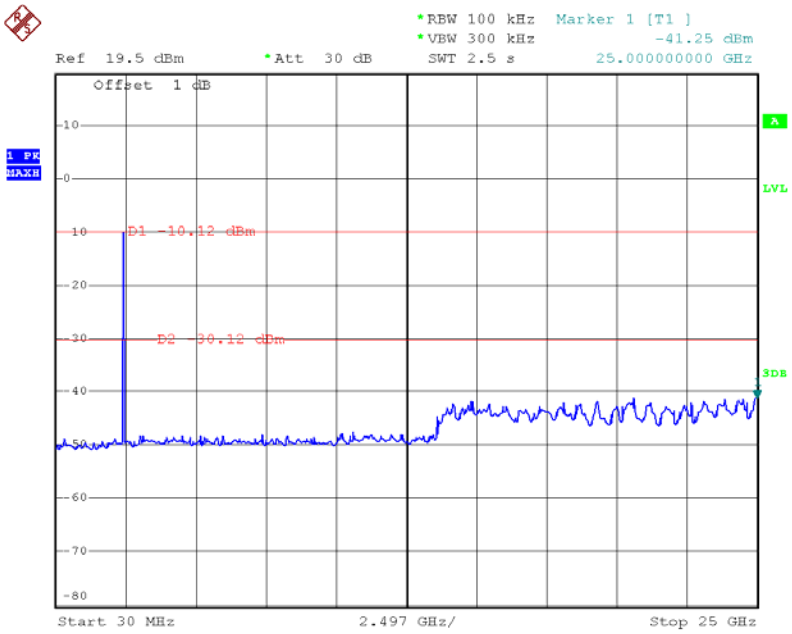
Date: 8.OCT.2012 10:05:44

802.11g Low Channel



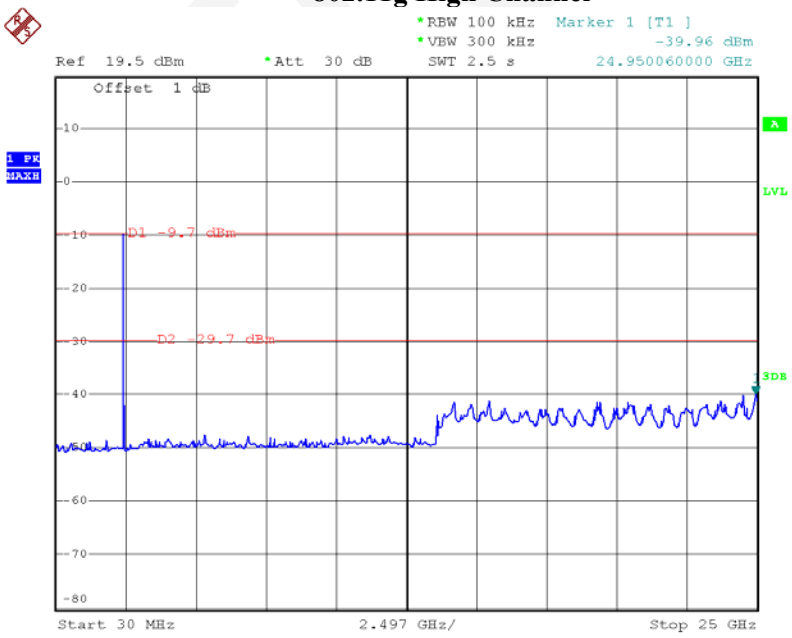
Date: 8.OCT.2012 11:19:15

802.11g Middle Channel



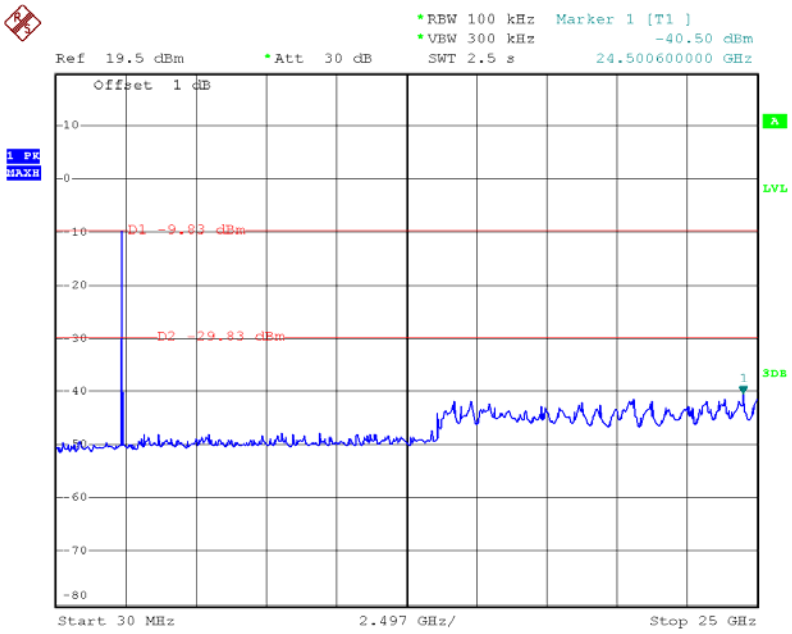
Date: 8.OCT.2012 11:23:44

802.11g High Channel



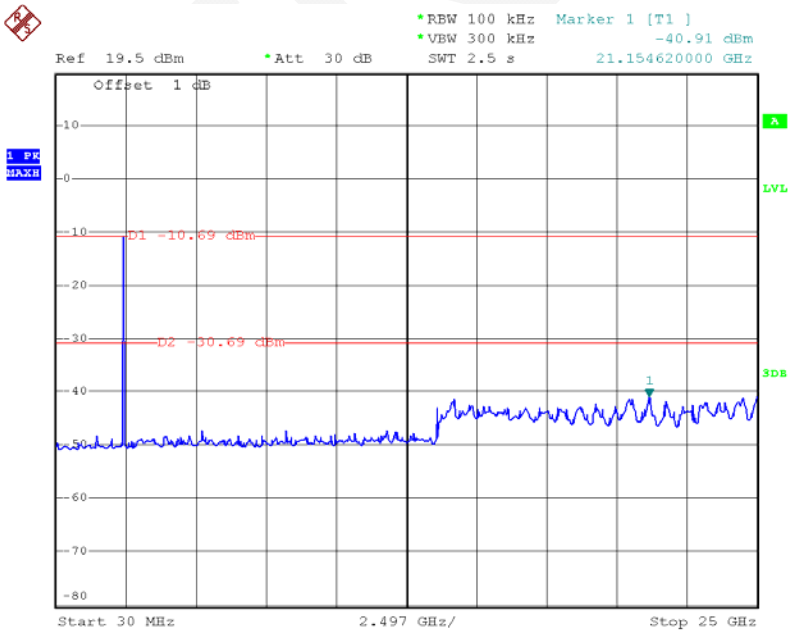
Date: 8.OCT.2012 11:32:49

802.11n20 Low Channel



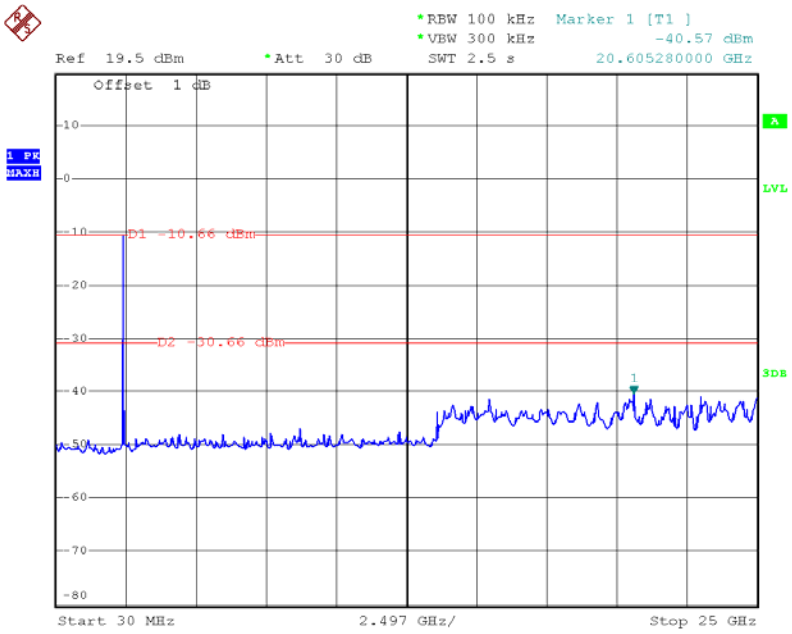
Date: 8.OCT.2012 13:10:51

802.11n20 Middle Channel



Date: 8.OCT.2012 13:15:07

802.11n20 High Channel



Date: 8.OCT.2012 13:23:09

FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 6 dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Data

Environmental Conditions

Temperature:	25.5 ° C
Relative Humidity:	58 %
ATM Pressure:	100.9kPa

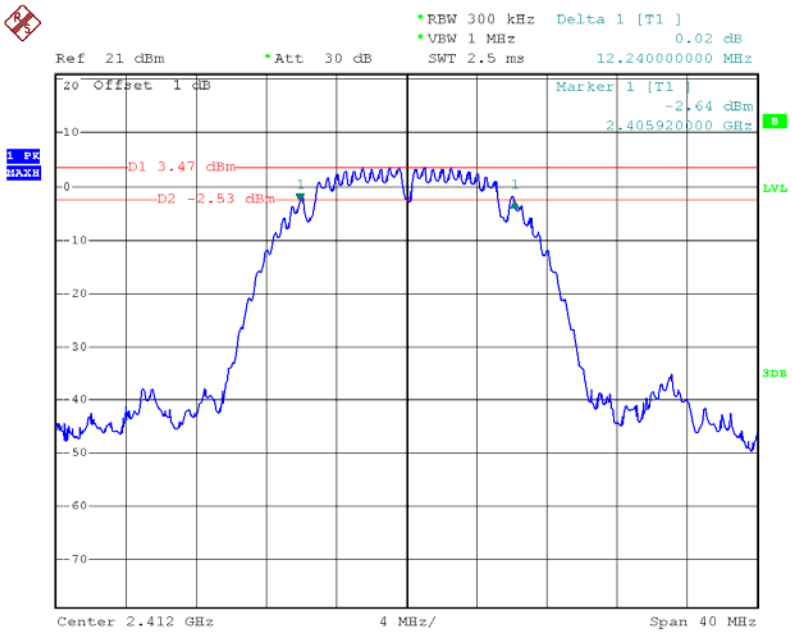
The testing was performed by Leon Chen from 2012-10-08.

Test Result: Pass.

Please refer to the following tables and plots.

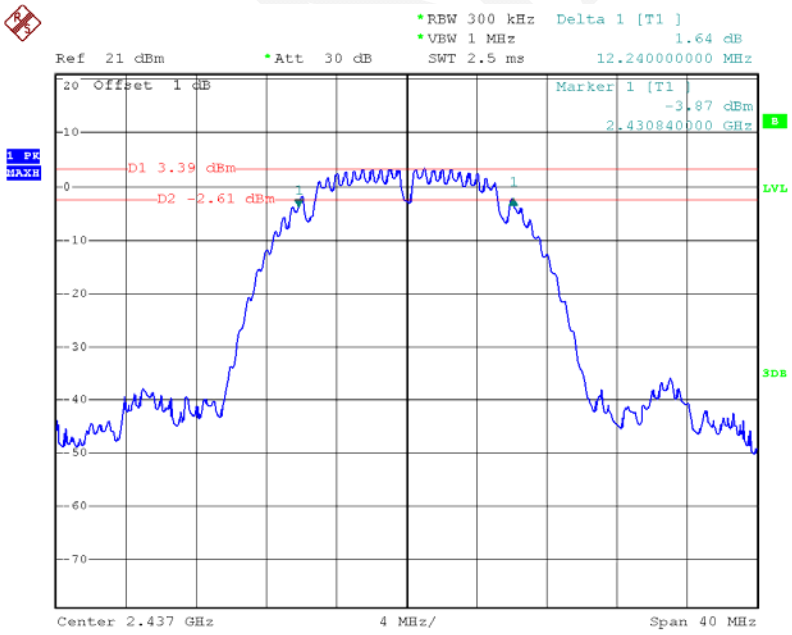
Channel	Frequency (MHz)	6 dB Bandwidth (MHz)	Limit (kHz)
802.11b mode			
Low	2412	12.24	>500
Middle	2437	12.24	>500
High	2462	12.24	>500
802.11g mode			
Low	2412	16.56	>500
Middle	2437	16.56	>500
High	2462	16.56	>500
802.11n20 mode			
Low	2412	17.68	>500
Middle	2437	17.68	>500
High	2462	17.68	>500

802.11b Low Channel



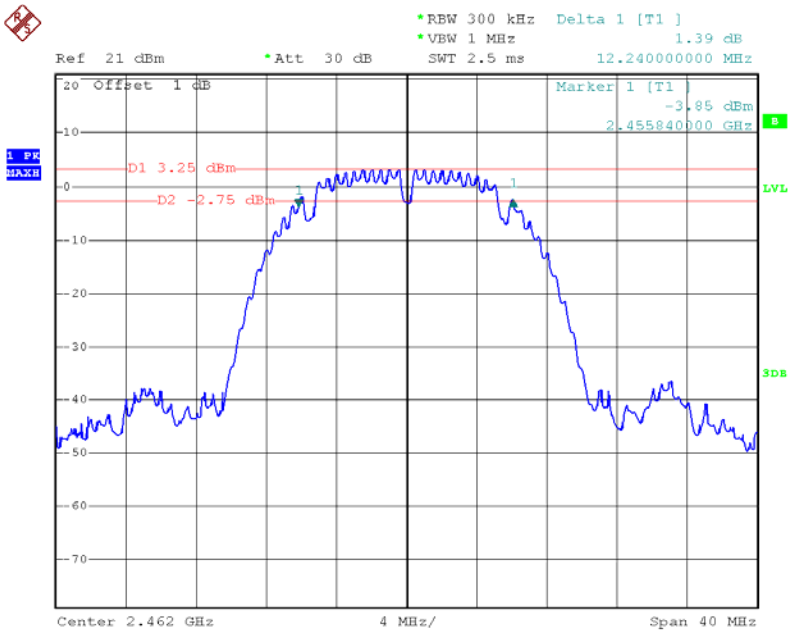
Date: 8.OCT.2012 09:47:32

802.11b Middle Channel



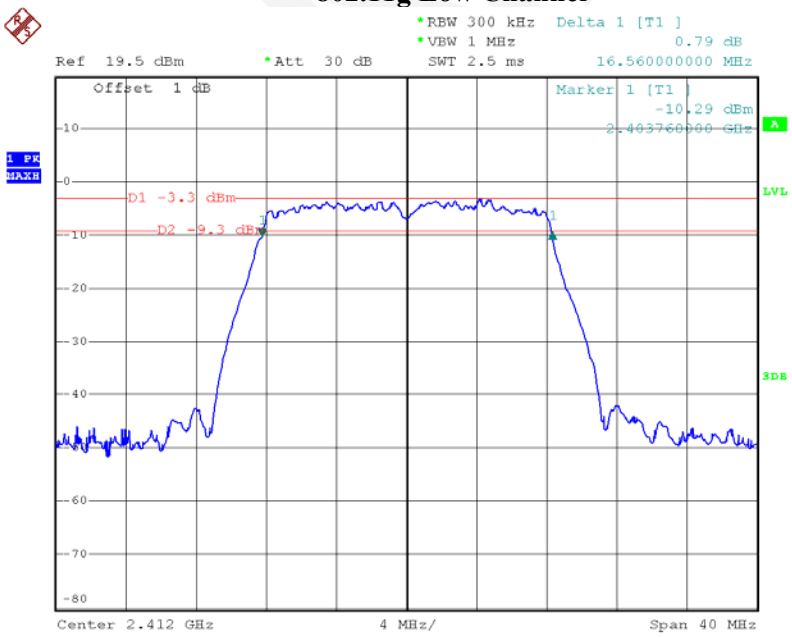
Date: 8.OCT.2012 09:58:21

802.11b High Channel



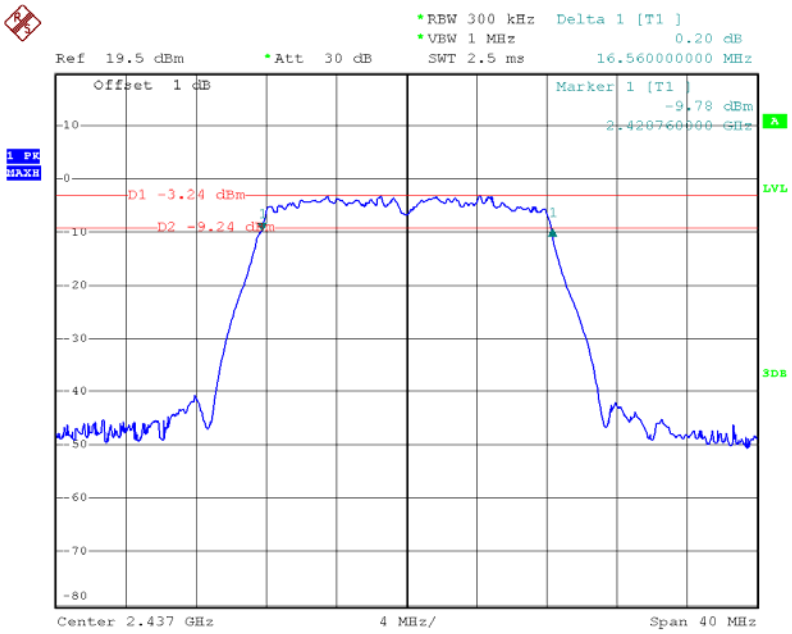
Date: 8.OCT.2012 10:01:48

802.11g Low Channel



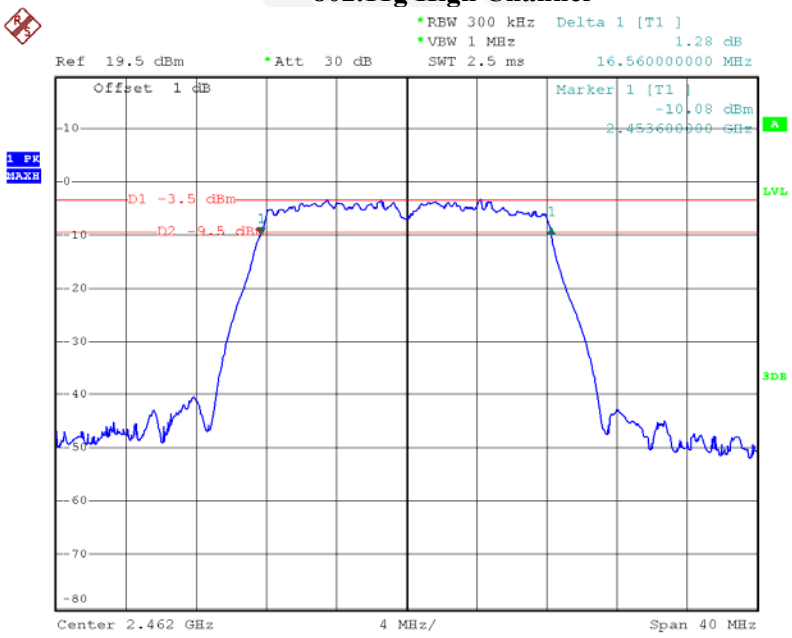
Date: 8.OCT.2012 11:25:36

802.11g Middle Channel



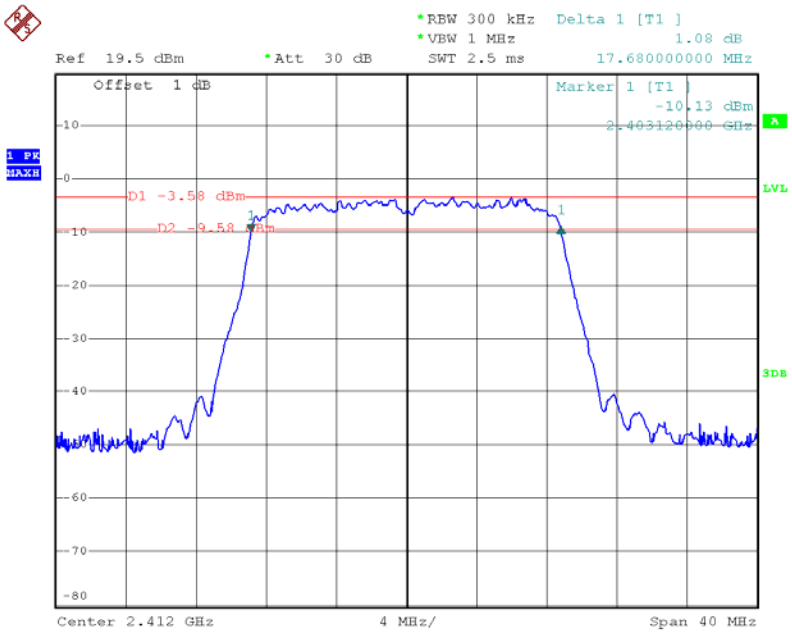
Date: 8.OCT.2012 11:21:46

802.11g High Channel



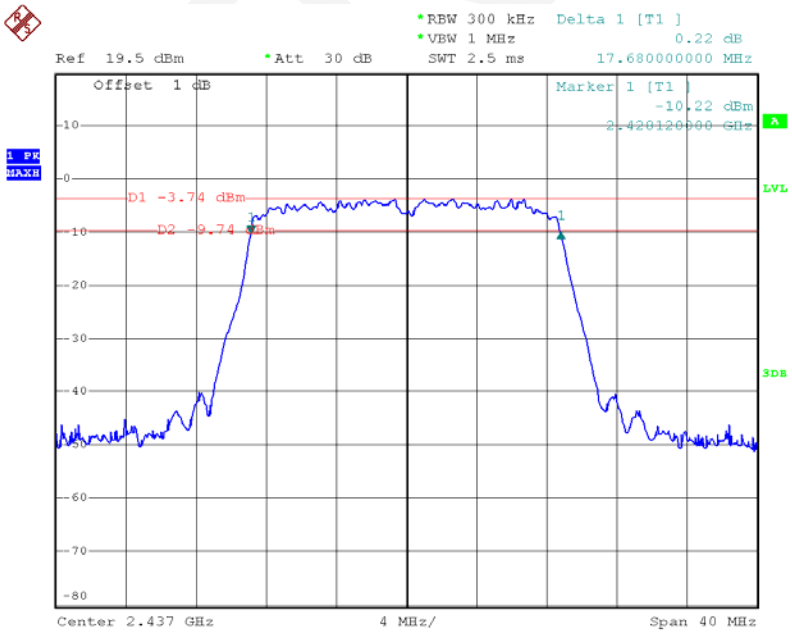
Date: 8.OCT.2012 11:30:00

802.11n20 Low Channel



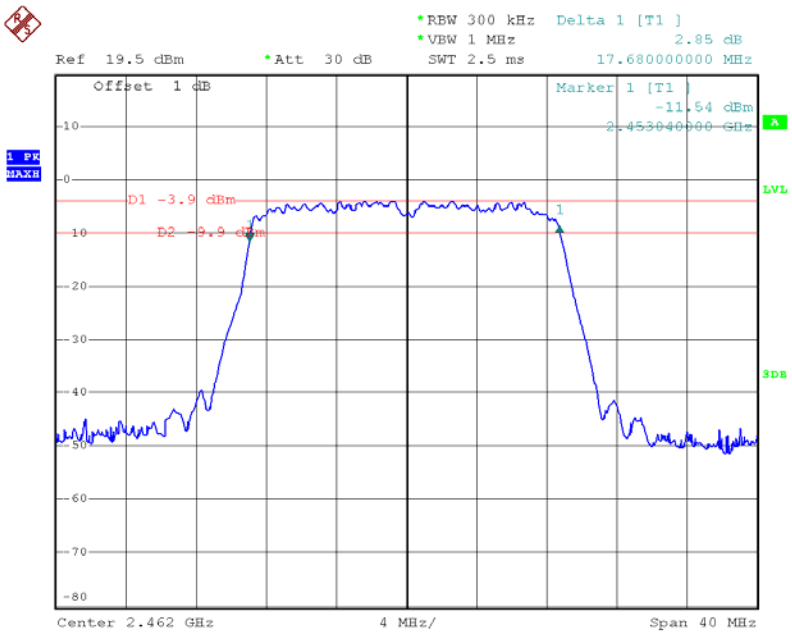
Date: 8.OCT.2012 13:07:49

802.11n20 Middle Channel



Date: 8.OCT.2012 13:13:00

802.11n20 High Channel



Date: 8.OCT.2012 13:17:13

FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

According to FCC §15.247(b) (3), for systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

Test Procedure

1. Place the EUT on a bench and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to an EMI Test Receiver.
3. Add a correction factor to the display.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Data

Environmental Conditions

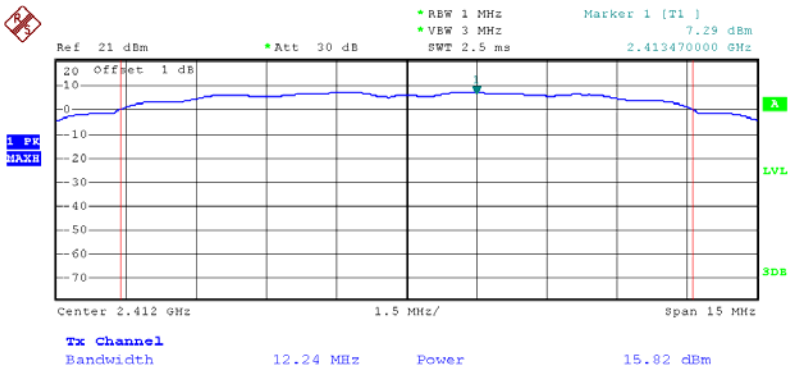
Temperature:	25.5 ° C
Relative Humidity:	58 %
ATM Pressure:	100.9 kPa

The testing was performed by Leon Chen on 2012-10-08.

Test Mode: Transmitting

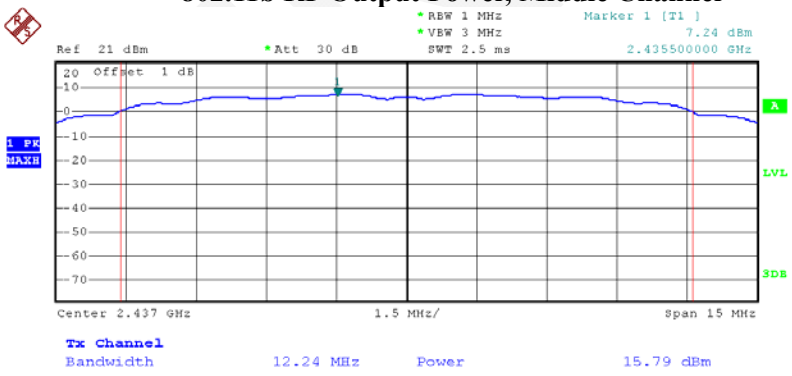
Channel	Frequency (MHz)	Conducted Output Power (dBm)	Limit (dBm)	Result
802.11b mode				
Low	2412	15.82	30	PASS
Middle	2437	15.79	30	PASS
High	2462	15.67	30	PASS
802.11g mode				
Low	2412	12.98	30	PASS
Middle	2437	12.74	30	PASS
High	2462	12.62	30	PASS
802.11n20 mode				
Low	2412	12.81	30	PASS
Middle	2437	12.77	30	PASS
High	2462	12.75	30	PASS

802.11b RF Output Power, Low Channel



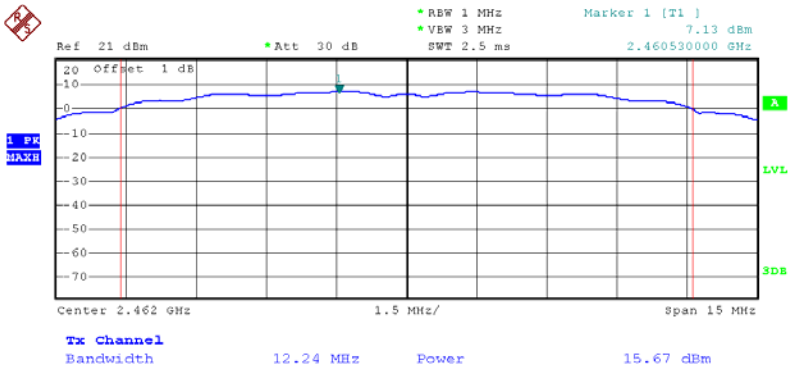
Date: 8.OCT.2012 09:52:33

802.11b RF Output Power, Middle Channel



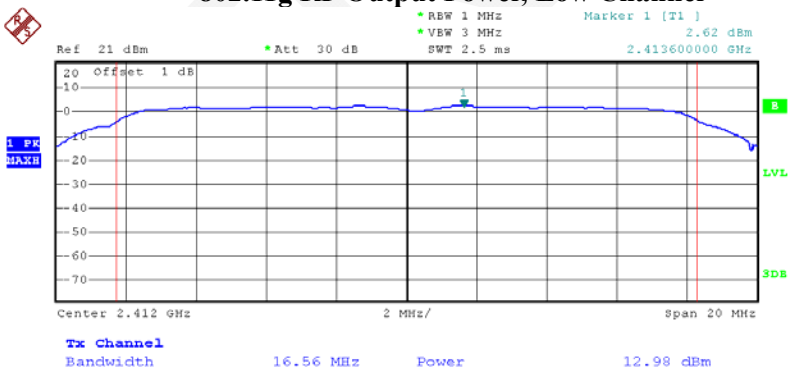
Date: 8.OCT.2012 09:58:40

802.11b RF Output Power, High Channel



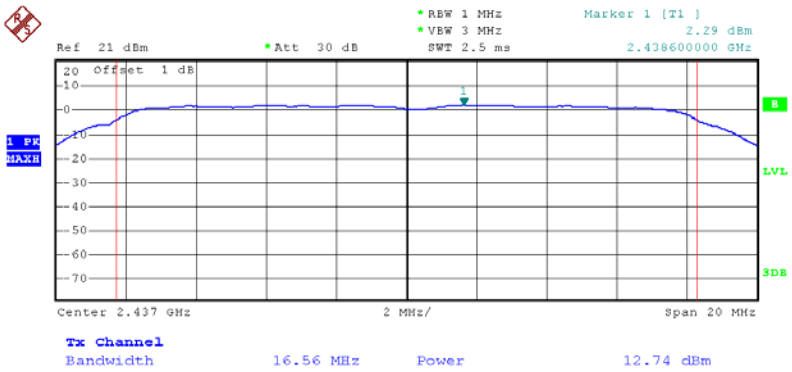
Date: 8.OCT.2012 10:02:01

802.11g RF Output Power, Low Channel



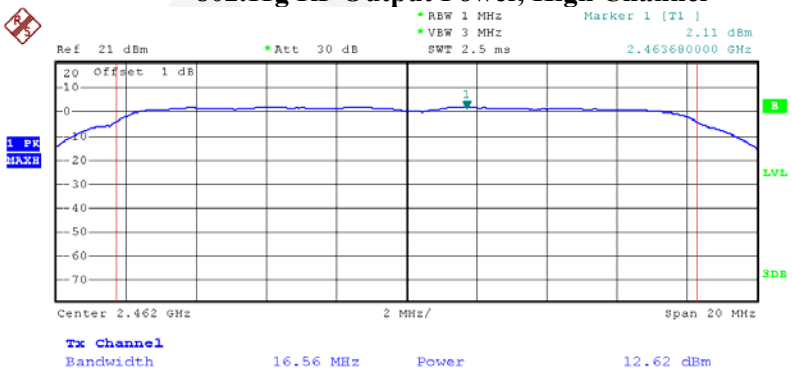
Date: 8.OCT.2012 11:26:12

802.11g RF Output Power, Middle Channel



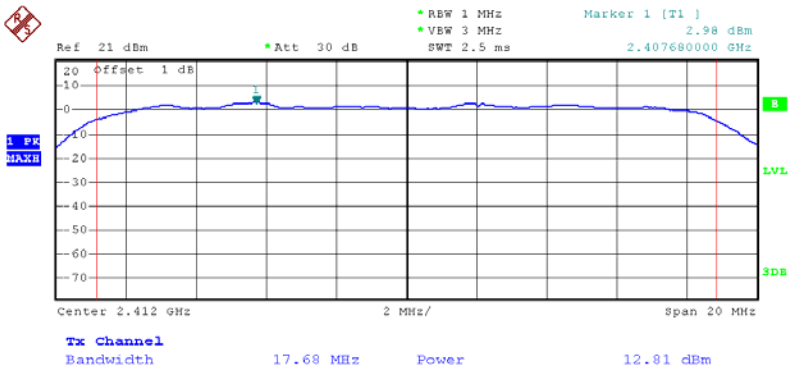
Date: 8.OCT.2012 11:22:06

802.11g RF Output Power, High Channel



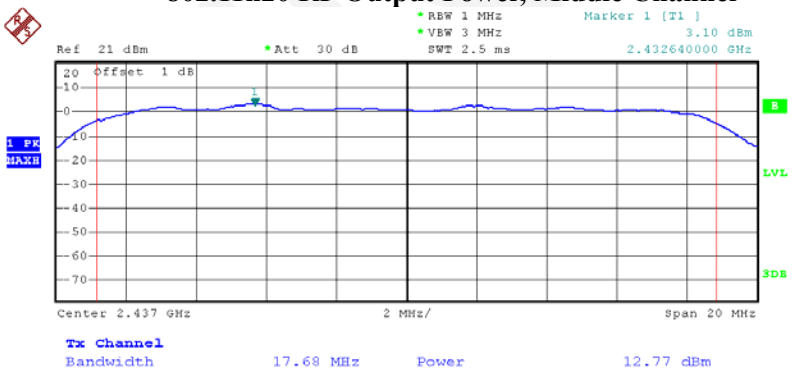
Date: 8.OCT.2012 11:30:24

802.11n20 RF Output Power, Low Channel



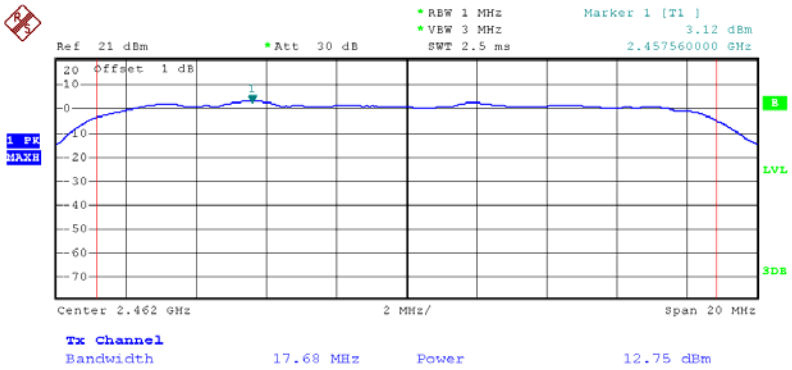
Date: 8.OCT.2012 13:08:26

802.11n20 RF Output Power, Middle Channel



Date: 8.OCT.2012 13:13:27

802.11n20 RF Output Power, High Channel



Date: 8.OCT.2012 13:19:24

FCC §15.247(d) – 100 kHz BANDWIDTH OF FREQUENCY BAND EDGE

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. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
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.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Data

Environmental Conditions

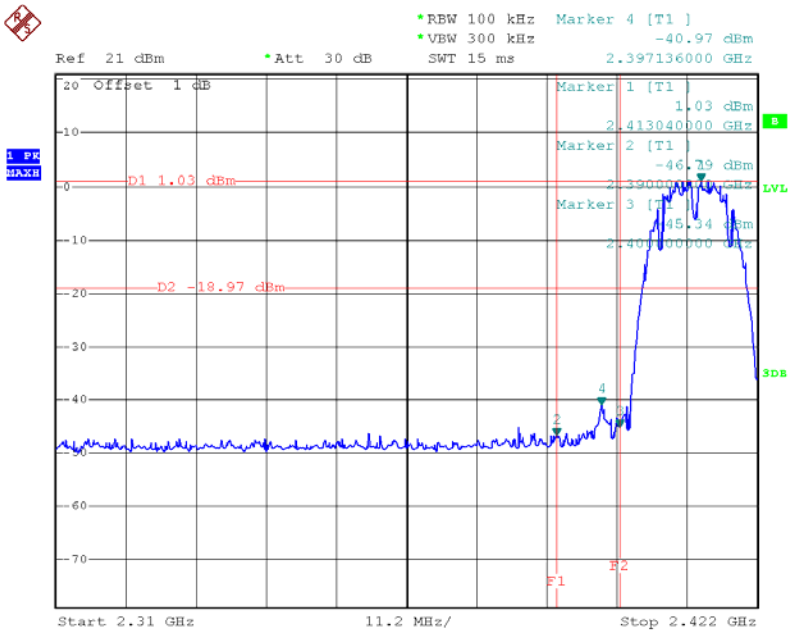
Temperature:	25.5 ° C
Relative Humidity:	58 %
ATM Pressure:	100.9 kPa

The testing was performed by Leon Chen on 2012-10-08.

Test Result: *Compliance*

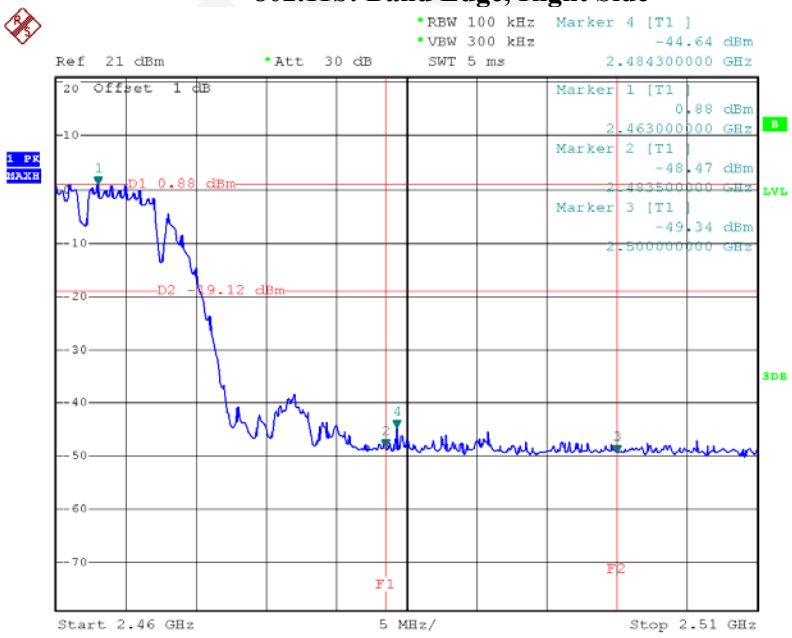
Please refer to following plots.

802.11b: Band Edge, Left Side



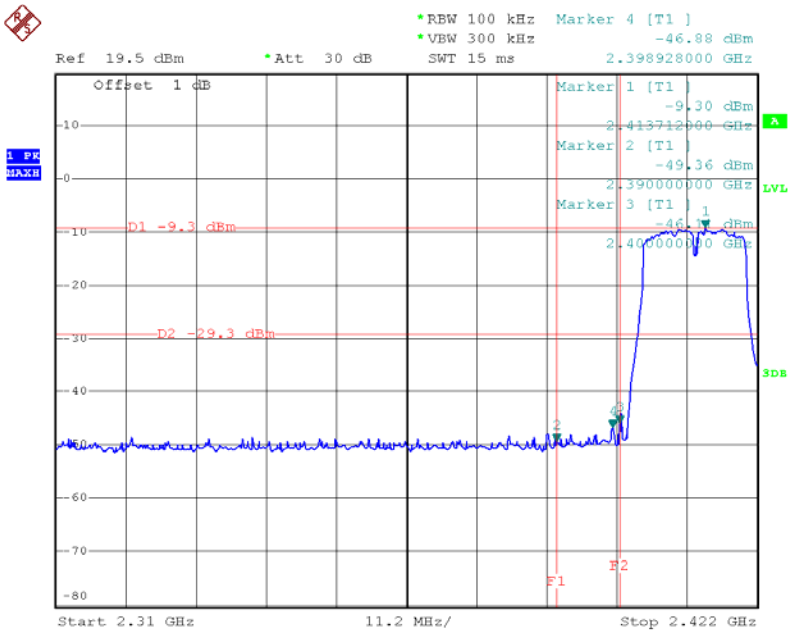
Date: 8.OCT.2012 09:53:55

802.11b: Band Edge, Right Side



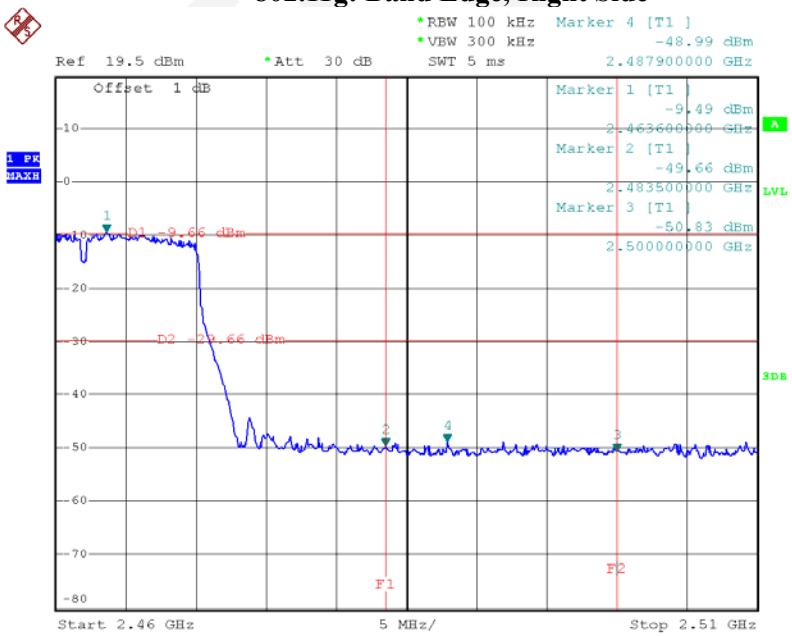
Date: 8.OCT.2012 10:04:29

802.11g: Band Edge, Left Side



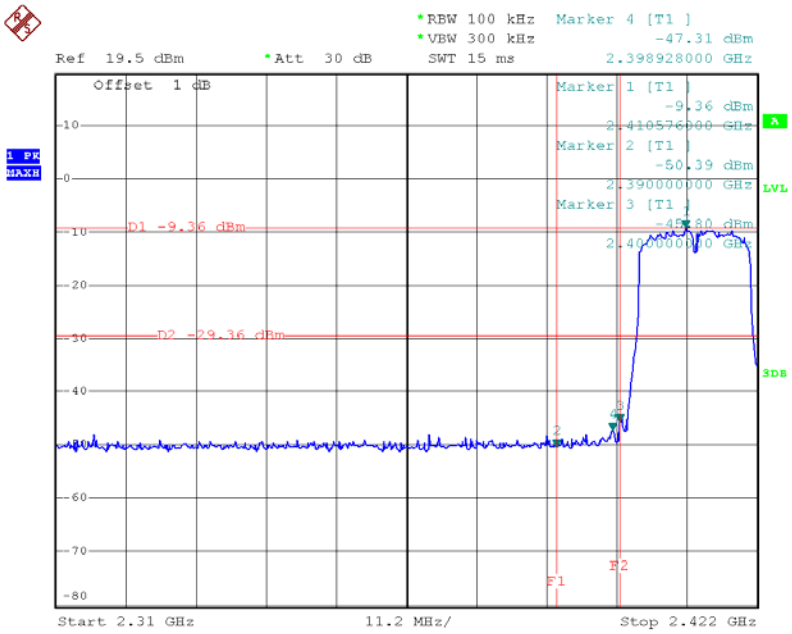
Date: 8.OCT.2012 11:18:23

802.11g: Band Edge, Right Side



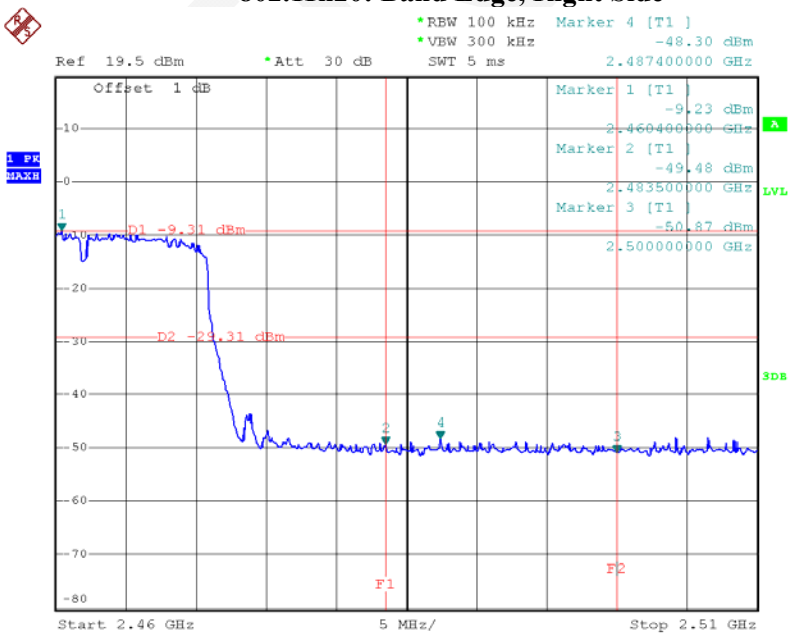
Date: 8.OCT.2012 11:31:35

802.11n20: Band Edge, Left Side



Date: 8.OCT.2012 13:10:13

802.11n20: Band Edge, Right Side



Date: 8.OCT.2012 13:22:34

FCC §15.247(e) - POWER SPECTRAL DENSITY

Applicable Standard

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

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT was set without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. According to KDB 558074 D01 DTS Meas Guidance v01, set the RBW = 100 kHz, VBW ⩾ 300 kHz, set the span to 5-30 % greater than the EBW.
4. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
5. 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 = 10log (3 kHz/100 kHz = -15.2 dB).

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSP38	100478	2012-5-14	2013-5-13

Test Data

Environmental Conditions

Temperature:	25.5 ° C
Relative Humidity:	58 %
ATM Pressure:	100.9 kPa

The testing was performed by Leon Chen from 2012-10-08.

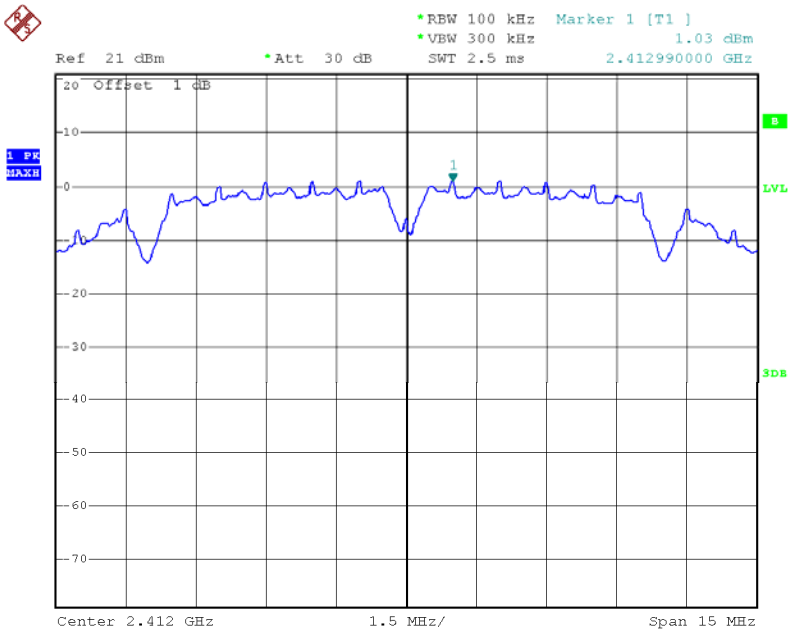
Test Mode: Transmitting

Test Result: Pass

Test mode: Transmitting

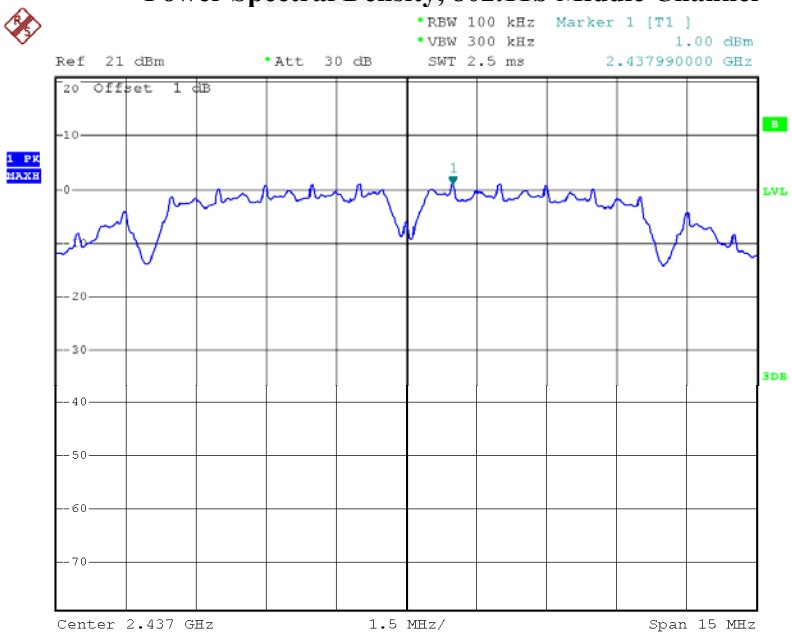
Channel	Measured PSD (dBm/100 kHz)	Cord. PSD (dBm/3 kHz)	Limit (dBm/ 3kHz)	Result
802.11b mode				
Low	1.03	-14.17	8	PASS
Middle	1.00	-14.20	8	PASS
High	0.91	-14.29	8	PASS
802.11g mode				
Low	-9.01	-24.21	8	PASS
Middle	-9.37	-24.57	8	PASS
High	-9.44	-24.64	8	PASS
802.11n20 mode				
Low	-9.37	-24.57	8	PASS
Middle	-9.34	-24.54	8	PASS
High	-9.36	-24.56	8	PASS

Power Spectral Density, 802.11b Low Channel



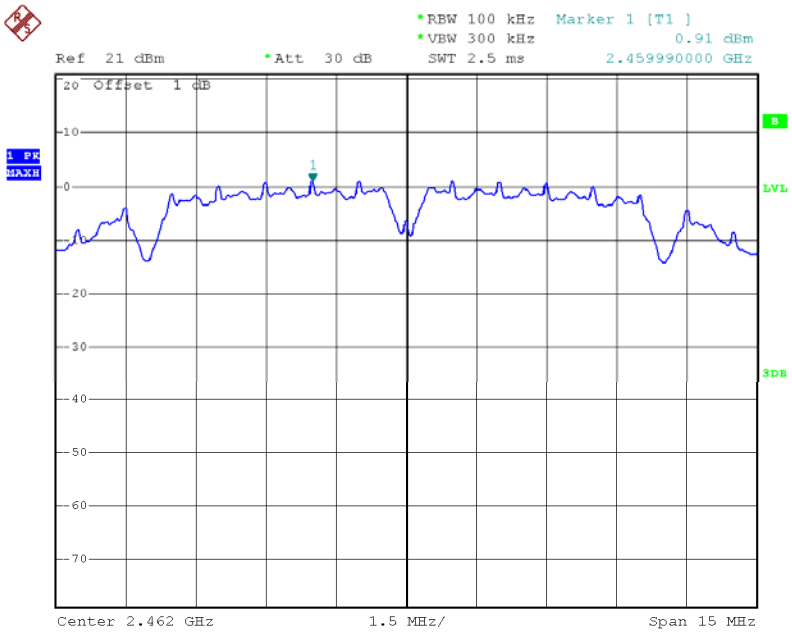
Date: 8.OCT.2012 09:53:02

Power Spectral Density, 802.11b Middle Channel



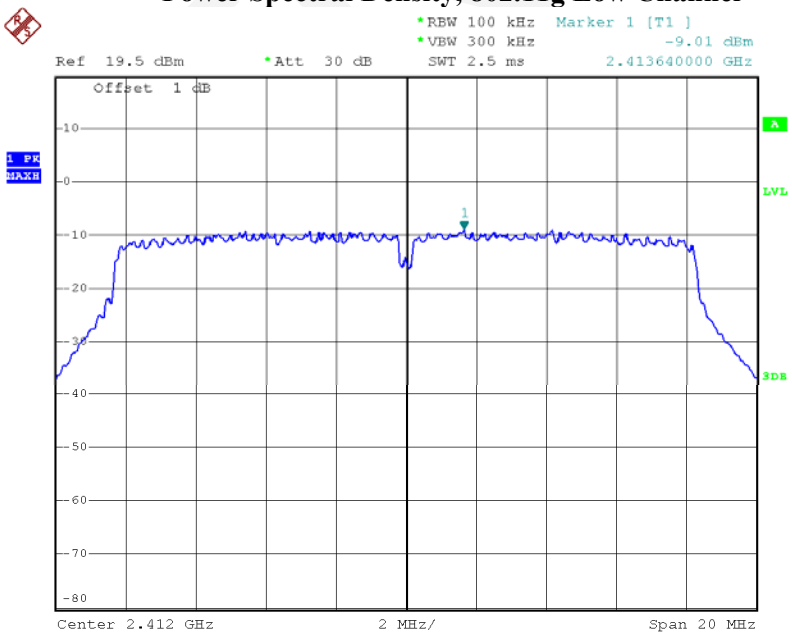
Date: 8.OCT.2012 09:58:56

Power Spectral Density, 802.11b High Channel



Date: 8.OCT.2012 10:02:41

Power Spectral Density, 802.11g Low Channel



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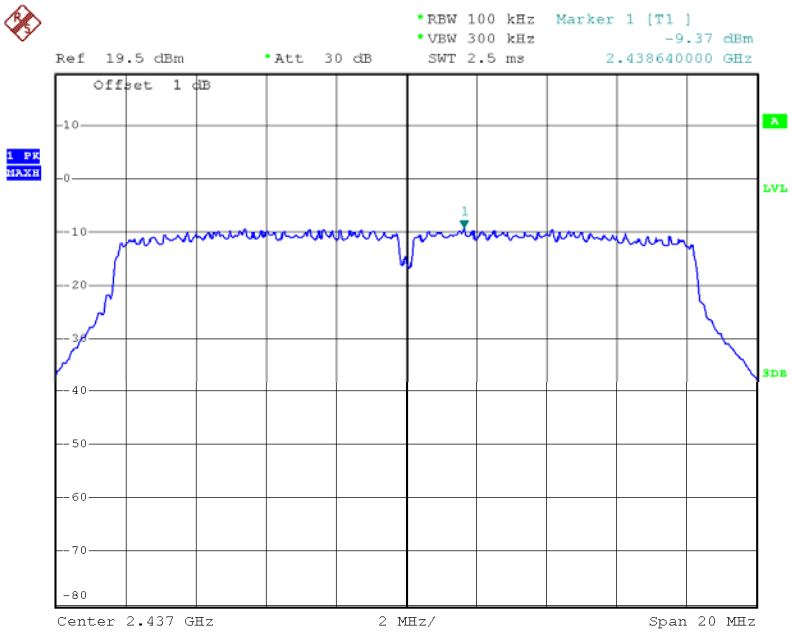
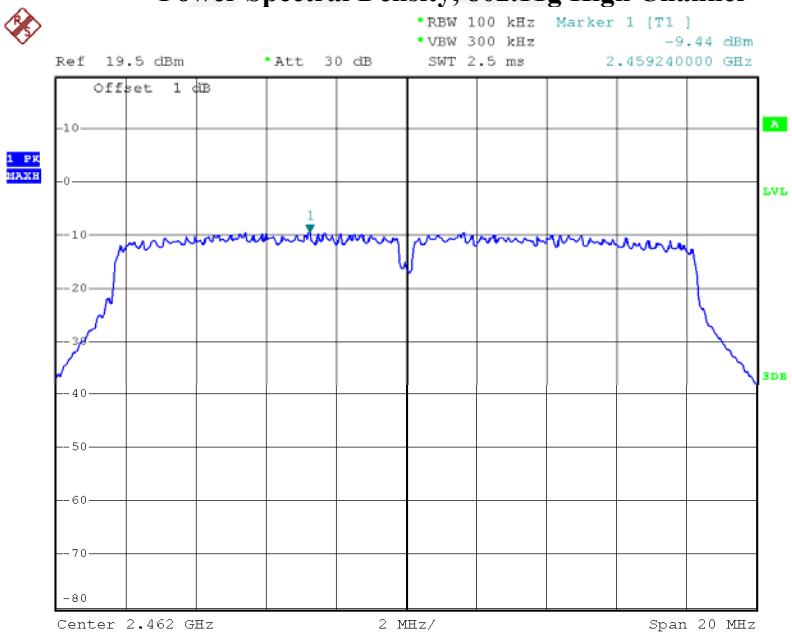
Power Spectral Density, 802.11g Middle Channel



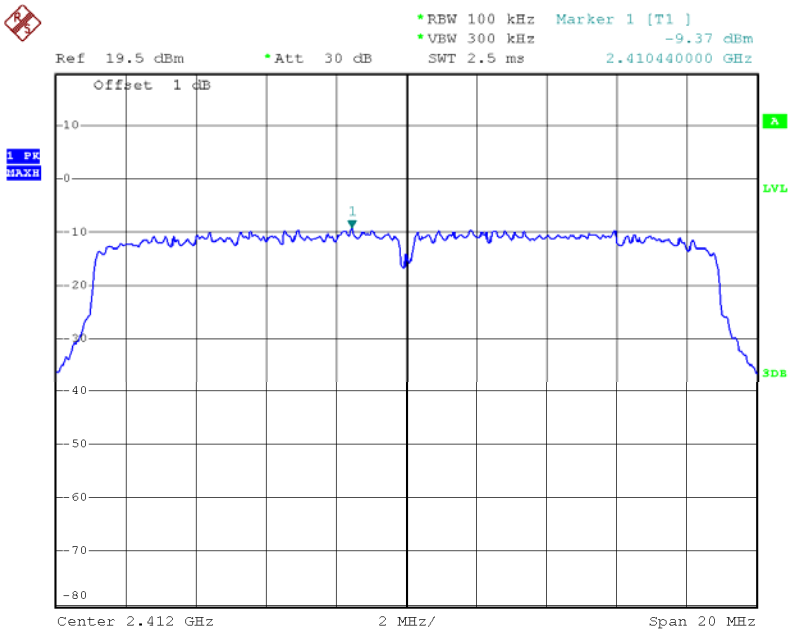
Date: 8.OCT.2012 11:22:41

Power Spectral Density, 802.11g High Channel



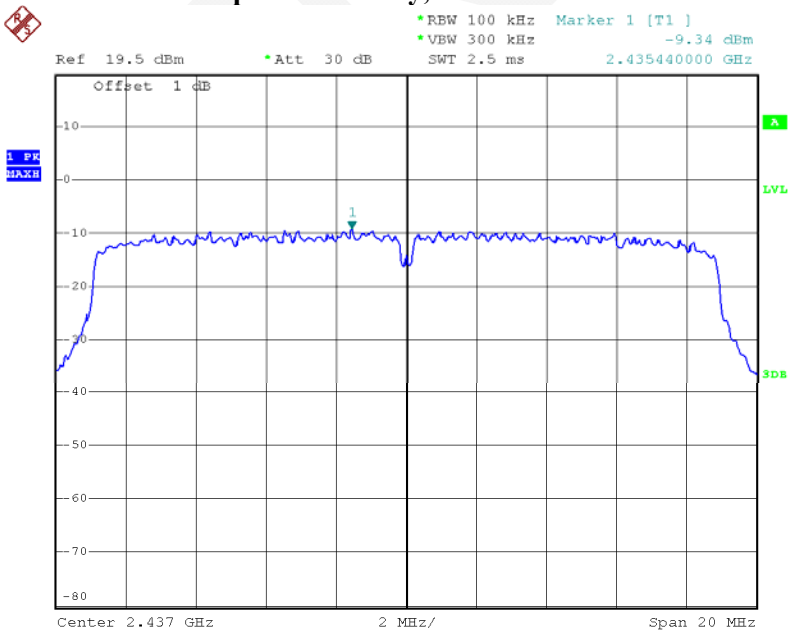
Date: 8.OCT.2012 11:30:45

Power Spectral Density, 802.11n20 Low Channel



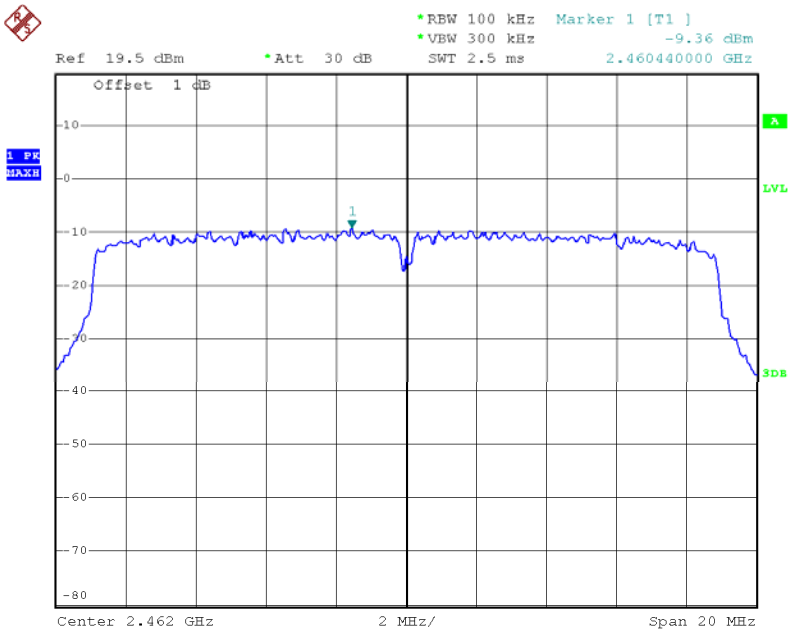
Date: 8.OCT.2012 13:08:55

Power Spectral Density, 802.11n20 Middle Channel



Date: 8.OCT.2012 13:14:10

Power Spectral Density, 802.11n20 High Channel



Date: 8.OCT.2012 13:20:34

******* END OF REPORT *******