

FCC PART 15.247

TEST REPORT

For

Huawei Technologies Co., Ltd.

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FCC ID: QISE5776S-420

Report Type: Original Report	Product Type: Mobile WIFI
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F I N A L

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Huawei Technologies Co., Ltd.*'s product, model number: *E5776s-420* (FCC ID: *QISE5776S-420*) (the "EUT") in this report was a *Mobile WIFI*, which was measured approximately: 10.48 cm (L) x 6.60 cm (W) x 1.55 cm (H), rated input voltage: DC 3.7V from Li-Polymer battery or DC 5.0V from adapter.

Adapter information:
Model: HW-050200U3W
Input: AC 100-240V, 50/60Hz, 0.5A Max
Output: DC 5.0V, 2A

* All measurement and test data in this report was gathered from production sample serial number: 140620002 (Assigned by BACL, Dongguan). The EUT was received on 2014-06-20

Objective

This report is prepared on behalf of *Huawei Technologies Co., Ltd.* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and C of the Federal Communications Commission's 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)

FCC Part 15B JBP submissions with FCC ID: QISE5776S-420.
FCC Part 90 PCB submissions with FCC ID: QISE5776S-420.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, 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).

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 Communications 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 C63.4-2003.

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

The system was configured for testing in an engineering mode, which was provided by manufacturer. For 2.4GHz band, 9 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	/	/
5	2432	/	/
6	2437	/	/

For 802.11b and 802.11g modes were tested with Channel 1, 6 and 9.
 For 802.11n40 mode were tested with Channel 3, 6 and 9.

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 data rates bandwidths, and modulations.

EUT Exercise Software

The test software: 'IPOP V4.1' was used in testing, which was provided by manufacturer, and configured as following table:

Test Mode	Test Software Version	IPOP V4.1		
802.11b	Test Frequency	2412MHz	2437MHz	2452MHz
	Data Rate	1Mbps	1Mbps	1Mbps
	Power Level Setting (Chain 0)	14	15	13
	Power Level Setting (Chain 1)	11	11	10
802.11g	Test Frequency	2412MHz	2437MHz	2452MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting (Chain 0)	11	11	10
	Power Level Setting (Chain 1)	8	8	7
802.11n20	Test Frequency	2412MHz	2437MHz	2452MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	6	6	6
802.11n40	Test Frequency	2422MHz	2437MHz	2452MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	6	6	6

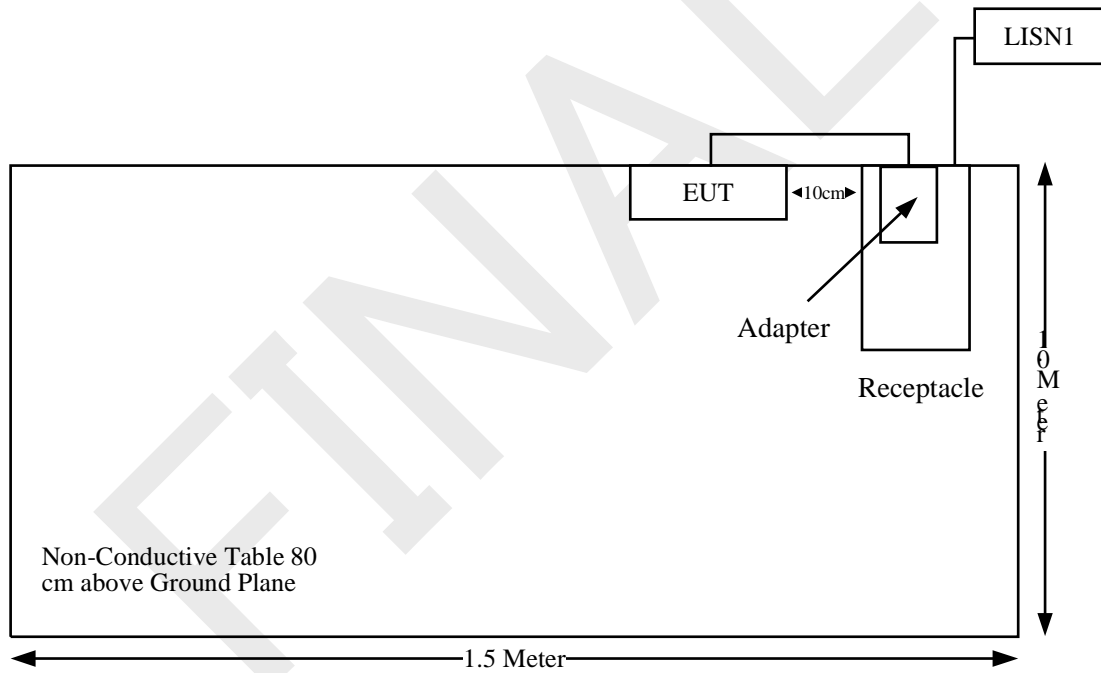
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
/	/	/	/

External I/O Cable

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
/	/	/	/	/	/

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.247 (i) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a)	AC Line Conducted Emissions	Compliance
§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

FCC §1.1310 & §2.1093 - RF EXPOSURE

Applicable Standard

FCC§1.1310 and §2.1093.

Test Result

Compliance, please refer to the SAR report: R1DG140620002-20

FINAL

FCC §15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 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 three integral and metal sheet antenna, one is mobile LTE antenna, and antenna gain is 0 dBi, the other two antenan are WIFI antenna, antenna gain is 1.0 dBi. All antenna fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner :

If U_{lab} is less than or equal to U_{cispr} of Table 1, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 1, then:

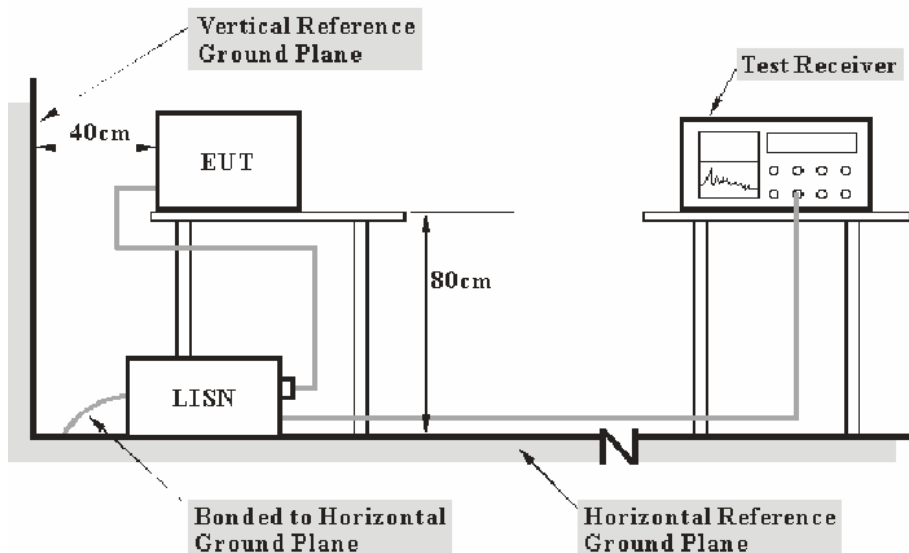
- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} \pm U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} \pm U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2:2011, measurement uncertainty of conducted disturbance at mains port using AMN at Bay Area Compliance Laboratories Corp. (Dongguan) is 3.46 dB (150 kHz to 30 MHz).

Table 1 – Values of U_{cispr}

Measurement	U_{cispr}
Conducted disturbance at mains port using AMN (150 kHz to 30 MHz)	3.4 dB

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

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

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the outlet of the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

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

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2013-11-20	2014-11-20
R&S	L.I.S.N	ESH3-Z5	843331/015	2013-09-25	2014-09-25
R&S	Two-line V-network	ENV 216	3560.6550.12	2014-01-22	2015-01-22
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, with the worst margin reading of:

9.10 dB at 0.515791 MHz in the **Neutral** conducted mode

Test Data

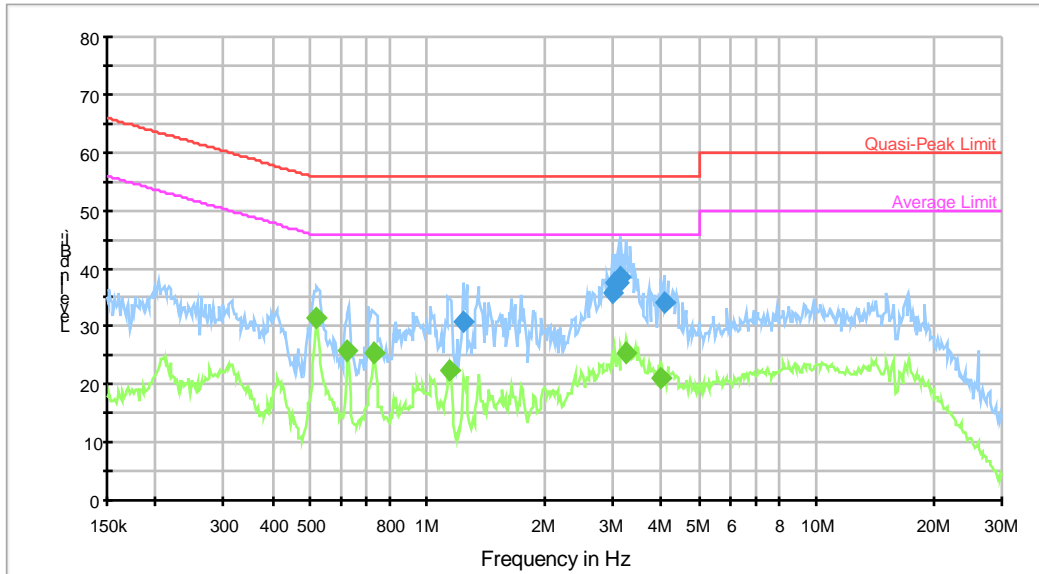
Environmental Conditions

Temperature:	28.9 °C
Relative Humidity:	50 %
ATM Pressure:	100.1 kPa

The testing was performed by Allen Qiao on 2014-07-17.

Test Mode: Charging & Transmitting

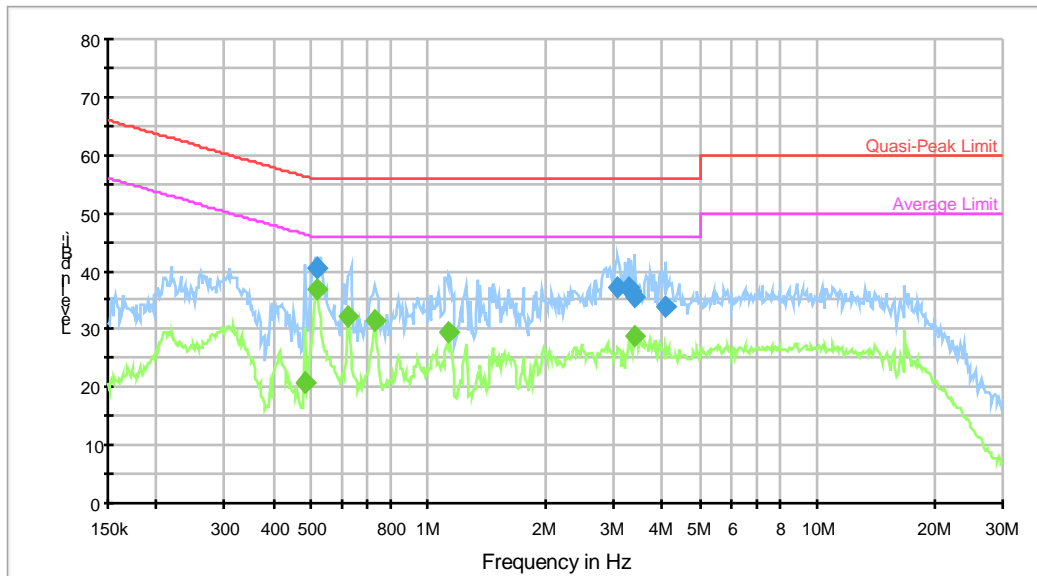
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
1.239175	30.9	9.000	L1	10.4	25.1	56.0	Compliance
2.977084	35.7	9.000	L1	10.6	20.3	56.0	Compliance
3.024908	37.4	9.000	L1	10.6	18.6	56.0	Compliance
3.098088	37.6	9.000	L1	10.6	18.4	56.0	Compliance
3.147856	38.3	9.000	L1	10.6	17.7	56.0	Compliance
4.062112	34.0	9.000	L1	10.7	22.0	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.519918	31.5	9.000	L1	10.4	14.5	46.0	Compliance
0.624492	25.6	9.000	L1	10.5	20.4	46.0	Compliance
0.732382	25.4	9.000	L1	10.6	20.6	46.0	Compliance
1.144267	22.4	9.000	L1	10.4	23.6	46.0	Compliance
3.249802	25.4	9.000	L1	10.7	20.6	46.0	Compliance
3.997889	21.0	9.000	L1	10.7	25.0	46.0	Compliance

AC120 V, 60 Hz, Neutral:



Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.519918	40.5	9.000	N	10.4	15.5	56.0	Compliance
3.073500	37.1	9.000	N	10.7	18.9	56.0	Compliance
3.275801	37.0	9.000	N	10.7	19.0	56.0	Compliance
3.328423	36.4	9.000	N	10.7	19.6	56.0	Compliance
3.381891	35.4	9.000	N	10.7	20.6	56.0	Compliance
4.094608	33.7	9.000	N	10.8	22.3	56.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.483938	20.8	9.000	N	10.5	25.4	46.3	Compliance
0.515791	36.9	9.000	N	10.4	9.1	46.0	Compliance
0.624492	32.2	9.000	N	10.5	13.8	46.0	Compliance
0.732382	31.4	9.000	N	10.6	14.6	46.0	Compliance
1.135185	29.6	9.000	N	10.5	16.4	46.0	Compliance
3.381891	28.7	9.000	N	10.7	17.3	46.0	Compliance

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

Measurement Uncertainty

Compliance or non-compliance with a disturbance limit shall be determined in the following manner :

If U_{lab} is less than or equal to U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

If U_{lab} is greater than U_{cispr} of Table 2, then:

- compliance is deemed to occur if no measured disturbance level, increased by $(U_{lab} \pm U_{cispr})$, exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level, increased by $(U_{lab} \pm U_{cispr})$, exceeds the disturbance limit.

Based on CISPR 16-4-2-2011, measurement uncertainty of radiated emission at a distance of 3m at Bay Area Compliance Laboratories Corp. (Dongguan) is:

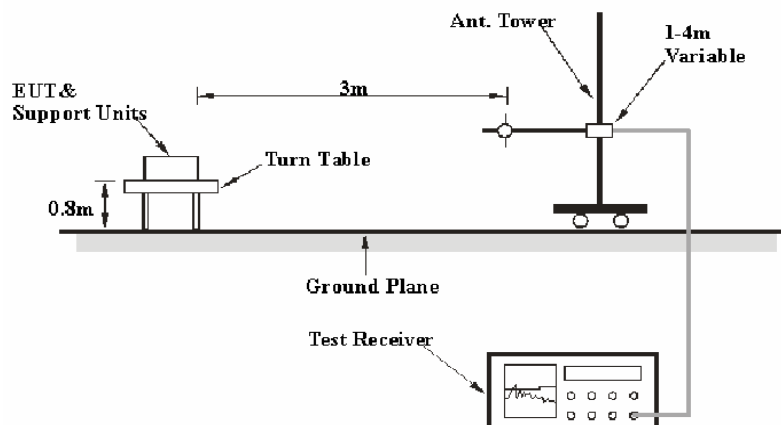
- 30M~200MHz: 5.0 dB
- 200M~1GHz: 6.2 dB
- 1G~6GHz: 4.45 dB
- 6G~18GHz: 5.23 dB

Table 2 – Values of U_{cispr}

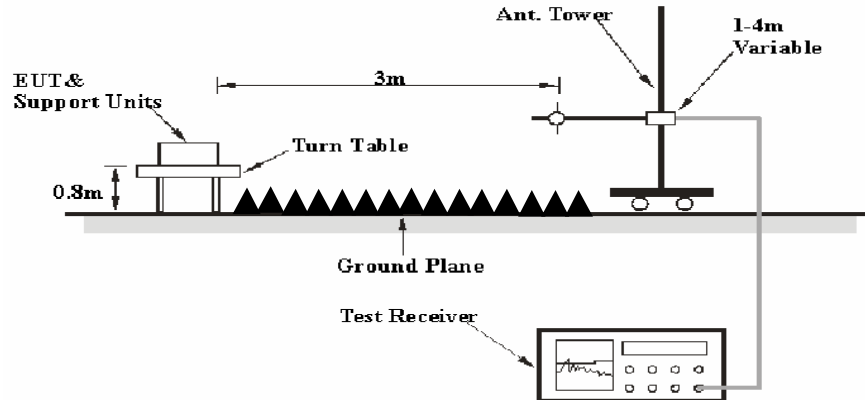
Measurement	U_{cispr}
Radiated disturbance (electric field strength at an OATS or in a SAC) (30 MHz to 1000 MHz)	6.3 dB
Radiated disturbance (electric field strength in a FAR) (1 GHz to 6 GHz)	5.2 dB
Radiated disturbance (electric field strength in a FAR) (6 GHz to 18 GHz)	5.5 dB

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 C63.4-2003. 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 adapter 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	IF B/W	Detector
30MHz – 1000 MHz	120 kHz	300 kHz	120kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

Test Procedure

During the radiated emission test, the adapter 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 Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Loss} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2014-05-09	2015-05-09
Sunol Sciences	Antenna	JB3	A060611-1	2011-09-06	2014-09-05
HP	Amplifier	8447E	2434A02181	2013-09-06	2014-09-06
R&S	Spectrum Analyzer	FSEM	DE31388	2014-05-09	2015-05-09
ETS LINDGREN	Horn Antenna	3115	000 527 35	2012-09-06	2015-09-06
Mini-Circuit	Amplifier	ZVA-213-S+	054201245	2014-02-19	2015-02-19
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-01 1304	2014-06-16	2017-06-15
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2013-09-06	2014-09-06

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

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:

3.12 dB at 2483.5 MHz in the **Vertical** polarization for 802.11b Mode

Test Data

Environmental Conditions

Temperature:	24.5 °C-25.6°C
Relative Humidity:	64 %-66%
ATM Pressure:	100.1 kPa-100.3 kPa

The testing was performed by Allen Qiao on 2014-06-29 & 2014-07-01.

Mode: Transmitting
802.11b Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB μ V/m)	FCC 15.247	
	Reading (dB μ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	70.38	PK	H	25.67	4.42	0.00	100.47	N/A	N/A
2412	66.89	AV	H	25.67	4.42	0.00	96.98	N/A	N/A
2412	69.09	PK	V	25.67	4.42	0.00	99.18	N/A	N/A
2412	65.54	AV	V	25.67	4.42	0.00	95.63	N/A	N/A
2390	36.29	PK	H	25.61	4.39	0.00	66.29	74.00	7.71
2390	20.83	AV	H	25.61	4.39	0.00	50.83	54.00	3.17 *
4824	34.86	PK	H	30.64	6.03	27.41	44.12	74.00	29.88
4824	21.93	AV	H	30.64	6.03	27.41	31.19	54.00	22.81
7236	30.46	PK	H	34.17	7.47	25.90	46.20	74.00	27.80
7236	18.27	AV	H	34.17	7.47	25.90	34.01	54.00	19.99
9648	28.87	PK	H	36.06	8.81	27.46	46.28	74.00	27.72
9648	16.78	AV	H	36.06	8.81	27.46	34.19	54.00	19.81
1675	36.03	PK	H	23.95	3.40	27.71	35.67	74.00	38.33
1675	24.11	AV	H	23.95	3.40	27.71	23.75	54.00	30.25
46.49	36.20	QP	V	10.20	0.89	21.42	25.87	40.00	14.13
Middle Channel: 2437 MHz									
2437	69.87	PK	H	25.74	4.41	0.00	100.02	N/A	N/A
2437	65.82	AV	H	25.74	4.41	0.00	95.97	N/A	N/A
2437	69.03	PK	V	25.74	4.41	0.00	99.18	N/A	N/A
2437	65.27	AV	V	25.74	4.41	0.00	95.42	N/A	N/A
4874	31.26	PK	H	30.77	6.09	27.42	40.70	74.00	33.30
4874	18.97	AV	H	30.77	6.09	27.42	28.41	54.00	25.59
7311	31.51	PK	H	34.35	7.51	25.88	47.49	74.00	26.51
7311	19.59	AV	H	34.35	7.51	25.88	35.57	54.00	18.43
9748	31.56	PK	H	36.30	8.83	27.24	49.45	74.00	24.55
9748	19.41	AV	H	36.30	8.83	27.24	37.30	54.00	16.70
1675	36.72	PK	H	23.95	3.40	27.71	36.36	74.00	37.64
1675	24.30	AV	H	23.95	3.40	27.71	23.94	54.00	30.06
2878	34.85	PK	H	26.88	6.26	27.55	40.44	74.00	33.56
2878	22.63	AV	H	26.88	6.26	27.55	28.22	54.00	25.78
46.49	37.50	QP	V	10.20	0.89	21.42	27.17	40.00	12.83
High Channel: 2452 MHz									
2452	68.47	PK	H	25.78	4.41	0.00	98.66	N/A	N/A
2452	64.79	AV	H	25.78	4.41	0.00	94.98	N/A	N/A
2452	68.05	PK	V	25.78	4.41	0.00	98.24	N/A	N/A
2452	64.69	AV	V	25.78	4.41	0.00	94.88	N/A	N/A
2483.5	35.89	PK	H	25.86	4.49	0.00	66.24	74.00	7.76
2483.5	20.53	AV	V	25.86	4.49	0.00	50.88	54.00	3.12 *
4904	31.96	PK	V	30.85	6.06	27.43	41.44	74.00	32.56
4904	18.95	AV	V	30.85	6.06	27.43	28.43	54.00	25.57
7356	31.25	PK	V	34.45	7.53	25.87	47.36	74.00	26.64
7356	18.56	AV	V	34.45	7.53	25.87	34.67	54.00	19.33
9808	28.87	PK	V	36.44	8.84	27.09	47.06	74.00	26.94
9808	16.78	AV	V	36.44	8.84	27.09	34.97	54.00	19.03
1675	36.37	PK	V	23.95	3.40	27.71	36.01	74.00	37.99
1675	24.17	AV	V	23.95	3.40	27.71	23.81	54.00	30.19
46.49	36.50	QP	V	10.20	0.89	21.42	26.17	40.00	13.83

*Within measurement uncertainty!

802.11g Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB μ V/m)	FCC 15.247	
	Reading (dB μ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)				Limit (dB μ V/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	71.77	PK	H	25.67	4.42	0.00	101.86	N/A	N/A
2412	61.10	AV	H	25.67	4.42	0.00	91.19	N/A	N/A
2412	70.36	PK	V	25.67	4.42	0.00	100.45	N/A	N/A
2412	60.23	AV	V	25.67	4.42	0.00	90.32	N/A	N/A
2390	33.86	PK	H	25.61	4.39	0.00	63.86	74.00	10.14
2390	18.90	AV	H	25.61	4.39	0.00	48.90	54.00	5.10
4824	31.23	PK	H	30.64	6.03	27.41	40.49	74.00	33.51
4824	18.94	AV	H	30.64	6.03	27.41	28.20	54.00	25.80
7236	31.80	PK	H	34.17	7.47	25.90	47.54	74.00	26.46
7236	19.32	AV	H	34.17	7.47	25.90	35.06	54.00	18.94
9648	28.97	PK	H	36.06	8.81	27.46	46.38	74.00	27.62
9648	17.31	AV	H	36.06	8.81	27.46	34.72	54.00	19.28
1675	35.97	PK	H	23.95	3.40	27.71	35.61	74.00	38.39
1675	24.03	AV	H	23.95	3.40	27.71	23.67	54.00	30.33
46.49	37.20	QP	V	10.20	0.89	21.42	26.87	40.00	13.13
Middle Channel: 2437 MHz									
2437	71.23	PK	H	25.74	4.41	0.00	101.38	N/A	N/A
2437	60.89	AV	H	25.74	4.41	0.00	91.04	N/A	N/A
2437	70.34	PK	V	25.74	4.41	0.00	100.49	N/A	N/A
2437	60.13	AV	V	25.74	4.41	0.00	90.28	N/A	N/A
4874	31.34	PK	H	30.77	6.09	27.42	40.78	74.00	33.22
4874	18.63	AV	H	30.77	6.09	27.42	28.07	54.00	25.93
7311	31.26	PK	H	34.35	7.51	25.88	47.24	74.00	26.76
7311	18.89	AV	H	34.35	7.51	25.88	34.87	54.00	19.13
9748	29.42	PK	H	36.30	8.83	27.24	47.31	74.00	26.69
9748	18.60	AV	H	36.30	8.83	27.24	36.49	54.00	17.51
1675	35.61	PK	H	23.95	3.40	27.71	35.25	74.00	38.75
1675	23.82	AV	H	23.95	3.40	27.71	23.46	54.00	30.54
2878	34.61	PK	H	26.88	6.26	27.55	40.20	74.00	33.80
2878	23.19	AV	H	26.88	6.26	27.55	28.78	54.00	25.22
46.49	36.40	QP	V	10.20	0.89	21.42	26.07	40.00	13.93
High Channel: 2452 MHz									
2452	71.03	PK	H	25.78	4.41	0.00	101.22	N/A	N/A
2452	60.48	AV	H	25.78	4.41	0.00	90.67	N/A	N/A
2452	70.78	PK	V	25.78	4.41	0.00	100.97	N/A	N/A
2452	60.11	AV	V	25.78	4.41	0.00	90.30	N/A	N/A
2483.5	33.28	PK	H	25.86	4.49	0.00	63.63	74.00	10.37
2483.5	18.19	AV	H	25.86	4.49	0.00	48.54	54.00	5.46
4904	31.50	PK	H	30.85	6.06	27.43	40.98	74.00	33.02
4904	19.25	AV	H	30.85	6.06	27.43	28.73	54.00	25.27
7356	31.26	PK	H	34.45	7.53	25.87	47.37	74.00	26.63
7356	19.31	AV	H	34.45	7.53	25.87	35.42	54.00	18.58
9808	30.11	PK	H	36.44	8.84	27.09	48.30	74.00	25.70
9808	19.02	AV	H	36.44	8.84	27.09	37.21	54.00	16.79
1675	35.77	PK	H	23.95	3.40	27.71	35.41	74.00	38.59
1675	24.15	AV	H	23.95	3.40	27.71	23.79	54.00	30.21
46.49	36.70	QP	V	10.20	0.89	21.42	26.37	40.00	13.63

802.11 n20 Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB μ V/m)	FCC 15.247	
	Reading (dB μ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)
Low Channel: 2412 MHz									
2412	73.62	PK	H	25.67	4.42	0.00	103.71	N/A	N/A
2412	65.31	AV	H	25.67	4.42	0.00	95.40	N/A	N/A
2412	69.80	PK	V	25.67	4.42	0.00	99.89	N/A	N/A
2412	59.40	AV	V	25.67	4.42	0.00	89.49	N/A	N/A
2390	33.84	PK	H	25.61	4.39	0.00	63.84	74.00	10.16
2390	20.09	AV	H	25.61	4.39	0.00	50.09	54.00	3.91 *
4824	30.26	PK	H	30.64	6.03	27.41	39.52	74.00	34.48
4824	18.47	AV	H	30.64	6.03	27.41	27.73	54.00	26.27
7236	31.69	PK	H	34.17	7.47	25.90	47.43	74.00	26.57
7236	19.36	AV	H	34.17	7.47	25.90	35.10	54.00	18.90
9648	28.30	PK	H	36.06	8.81	27.46	45.71	74.00	28.29
9648	16.71	AV	H	36.06	8.81	27.46	34.12	54.00	19.88
1675	35.78	PK	H	23.95	3.40	27.71	35.42	74.00	38.58
1675	24.20	AV	H	23.95	3.40	27.71	23.84	54.00	30.16
46.49	36.90	QP	V	10.20	0.89	21.42	26.57	40.00	13.43
Middle Channel: 2437 MHz									
2437	73.94	PK	H	25.74	4.41	0.00	104.09	N/A	N/A
2437	66.75	AV	H	25.74	4.41	0.00	96.90	N/A	N/A
2437	71.04	PK	V	25.74	4.41	0.00	101.19	N/A	N/A
2437	61.33	AV	V	25.74	4.41	0.00	91.48	N/A	N/A
4874	30.36	PK	H	30.77	6.09	27.42	39.80	74.00	34.20
4874	18.83	AV	H	30.77	6.09	27.42	28.27	54.00	25.73
7311	31.94	PK	H	34.35	7.51	25.88	47.92	74.00	26.08
7311	19.43	AV	H	34.35	7.51	25.88	35.41	54.00	18.59
9748	27.63	PK	H	36.30	8.83	27.24	45.52	74.00	28.48
9748	16.62	AV	H	36.30	8.83	27.24	34.51	54.00	19.49
1675	35.33	PK	H	23.95	3.40	27.71	34.97	74.00	39.03
1675	24.13	AV	H	23.95	3.40	27.71	23.77	54.00	30.23
2878	34.58	PK	H	26.88	6.26	27.55	40.17	74.00	33.83
2878	21.96	AV	H	26.88	6.26	27.55	27.55	54.00	26.45
46.49	36.60	QP	V	10.20	0.89	21.42	26.27	40.00	13.73
High Channel: 2452 MHz									
2452	73.95	PK	H	25.78	4.41	0.00	104.14	N/A	N/A
2452	66.29	AV	H	25.78	4.41	0.00	96.48	N/A	N/A
2452	69.94	PK	V	25.78	4.41	0.00	100.13	N/A	N/A
2452	60.87	AV	V	25.78	4.41	0.00	91.06	N/A	N/A
2483.5	32.54	PK	H	25.86	4.49	0.00	62.89	74.00	11.11
2483.5	20.05	AV	H	25.86	4.49	0.00	50.40	54.00	3.60 *
4904	30.36	PK	H	30.85	6.06	27.43	39.84	74.00	34.16
4904	18.83	AV	H	30.85	6.06	27.43	28.31	54.00	25.69
7356	31.94	PK	H	34.45	7.53	25.87	48.05	74.00	25.95
7356	19.43	AV	H	34.45	7.53	25.87	35.54	54.00	18.46
9808	27.63	PK	H	36.44	8.84	27.09	45.82	74.00	28.18
9808	16.62	AV	H	36.44	8.84	27.09	34.81	54.00	19.19
1675	35.33	PK	H	23.95	3.40	27.71	34.97	74.00	39.03
1675	24.13	AV	H	23.95	3.40	27.71	23.77	54.00	30.23
46.49	36.30	QP	V	10.20	0.89	21.42	25.97	40.00	14.03

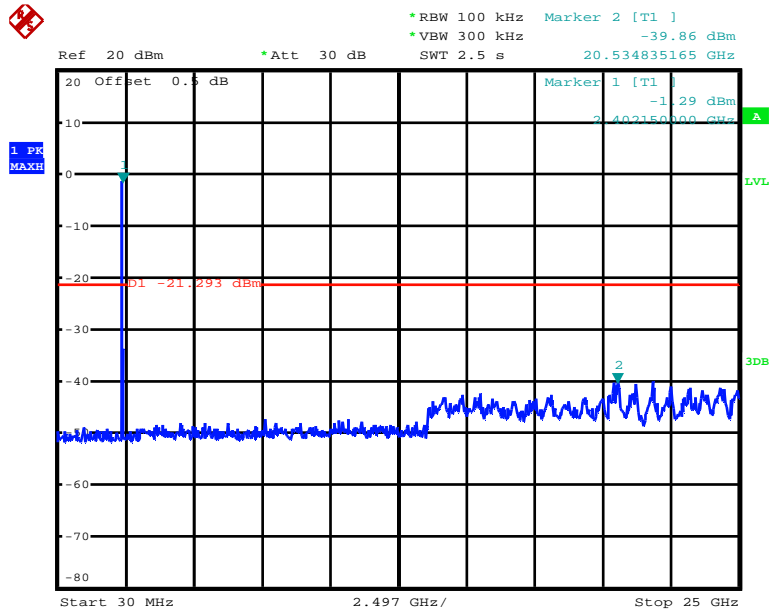
*Within measurement uncertainty!

802.11 n40 Mode

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB μ V/m)	FCC 15.247	
	Reading (dB μ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB/m)				Limit (dB μ V/m)	Margin (dB)
Low Channel: 2422 MHz									
2422	69.05	PK	H	25.70	4.41	0.00	99.16	N/A	N/A
2422	56.79	AV	H	25.70	4.41	0.00	86.90	N/A	N/A
2422	66.39	PK	V	25.70	4.41	0.00	96.50	N/A	N/A
2422	54.08	AV	V	25.70	4.41	0.00	84.19	N/A	N/A
2390	31.62	PK	H	25.61	4.39	0.00	61.62	74.00	12.38
2390	19.27	AV	H	25.61	4.39	0.00	49.27	54.00	4.73
4844	30.59	PK	H	30.69	6.08	27.42	39.94	74.00	34.06
4844	19.26	AV	H	30.69	6.08	27.42	28.61	54.00	25.39
7266	31.42	PK	H	34.24	7.48	25.89	47.25	74.00	26.75
7266	19.85	AV	H	34.24	7.48	25.89	35.68	54.00	18.32
9688	28.99	PK	H	36.15	8.82	27.37	46.59	74.00	27.41
9688	17.13	AV	H	36.15	8.82	27.37	34.73	54.00	19.27
1675	36.12	PK	H	23.95	3.40	27.71	35.76	74.00	38.24
1675	24.06	AV	H	23.95	3.40	27.71	23.70	54.00	30.30
46.49	36.90	QP	V	10.20	0.89	21.42	26.57	40.00	13.43
Middle Channel: 2437 MHz									
2437	68.56	PK	H	25.74	4.41	0.00	98.71	N/A	N/A
2437	59.34	AV	H	25.74	4.41	0.00	89.49	N/A	N/A
2437	66.31	PK	V	25.74	4.41	0.00	96.46	N/A	N/A
2437	53.06	AV	V	25.74	4.41	0.00	83.21	N/A	N/A
4874	31.48	PK	H	30.77	6.09	27.42	40.92	74.00	33.08
4874	19.96	AV	H	30.77	6.09	27.42	29.40	54.00	24.60
7311	30.87	PK	H	34.35	7.51	25.88	46.85	74.00	27.15
7311	19.47	AV	H	34.35	7.51	25.88	35.45	54.00	18.55
9748	28.97	PK	H	36.30	8.83	27.24	46.86	74.00	27.14
9748	17.03	AV	H	36.30	8.83	27.24	34.92	54.00	19.08
1675	36.25	PK	H	23.95	3.40	27.71	35.89	74.00	38.11
1675	24.18	AV	H	23.95	3.40	27.71	23.82	54.00	30.18
2878	35.12	PK	H	26.88	6.26	27.55	40.71	74.00	33.29
2878	23.85	AV	H	26.88	6.26	27.55	29.44	54.00	24.56
46.49	36.50	QP	V	10.20	0.89	21.42	26.17	40.00	13.83
High Channel: 2452 MHz									
2452	66.42	PK	H	25.78	4.41	0.00	96.61	N/A	N/A
2452	54.82	AV	H	25.78	4.41	0.00	85.01	N/A	N/A
2452	64.36	PK	V	25.78	4.41	0.00	94.55	N/A	N/A
2452	52.90	AV	V	25.78	4.41	0.00	83.09	N/A	N/A
2483.5	29.96	PK	H	25.86	4.49	0.00	60.31	74.00	13.69
2483.5	18.20	AV	H	25.86	4.49	0.00	48.55	54.00	5.45
4904	29.98	PK	H	30.85	6.06	27.43	39.46	74.00	34.54
4904	19.18	AV	H	30.85	6.06	27.43	28.66	54.00	25.34
7356	30.98	PK	H	34.45	7.53	25.87	47.09	74.00	26.91
7356	19.61	AV	H	34.45	7.53	25.87	35.72	54.00	18.28
9808	28.96	PK	H	36.44	8.84	27.09	47.15	74.00	26.85
9808	17.63	AV	H	36.44	8.84	27.09	35.82	54.00	18.18
1675	35.82	PK	H	23.95	3.40	27.71	35.46	74.00	38.54
1675	24.21	AV	H	23.95	3.40	27.71	23.85	54.00	30.15
46.49	37.20	QP	V	10.20	0.89	21.42	26.87	40.00	13.13

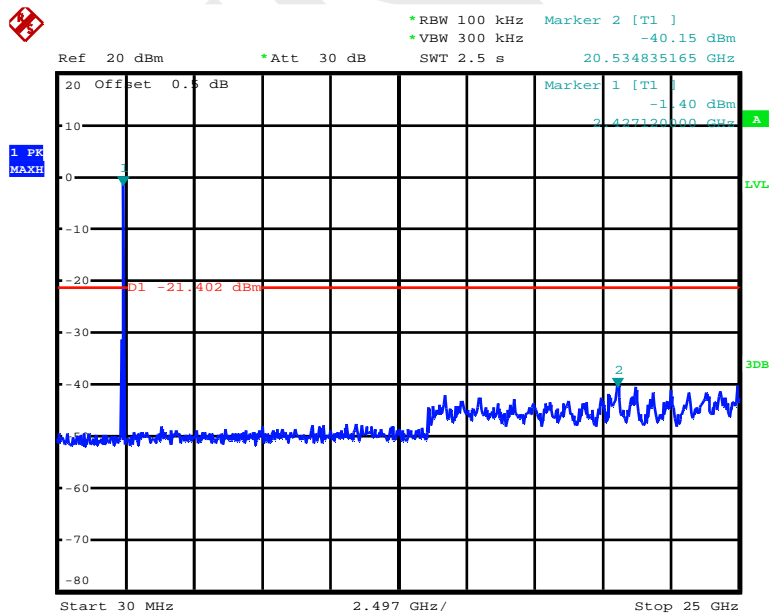
Conducted Spurious Emissions at Antenna Port

Chain0: 802.11b Low Channel



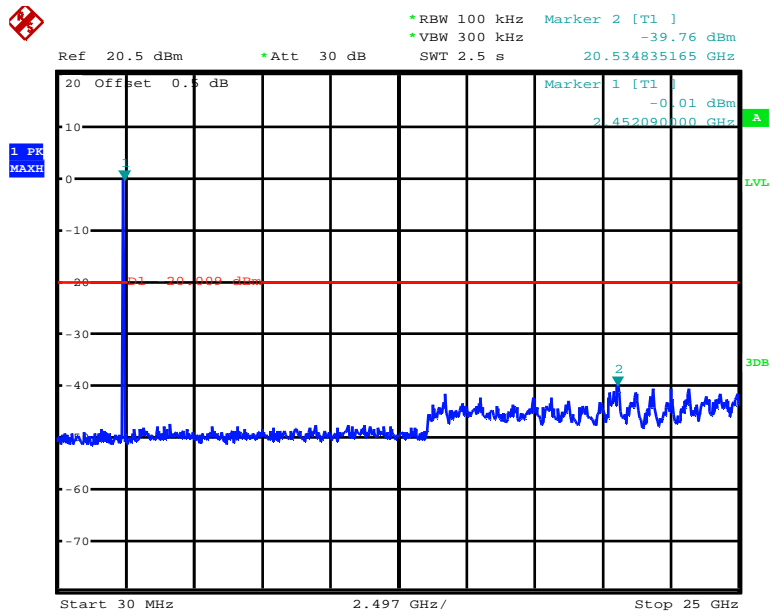
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Chain0: 802.11b Middle Channel



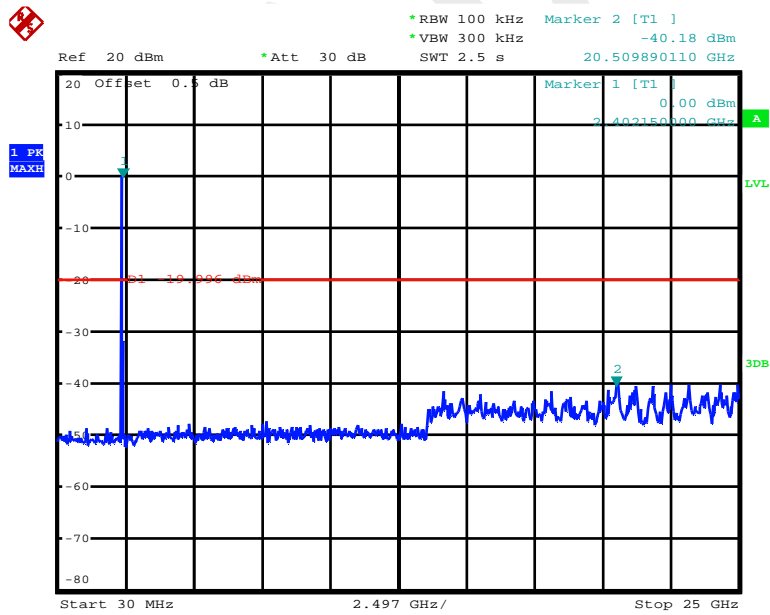
Date: 29.JUN.2014 01:35:24

Chain0: 802.11b High Channel



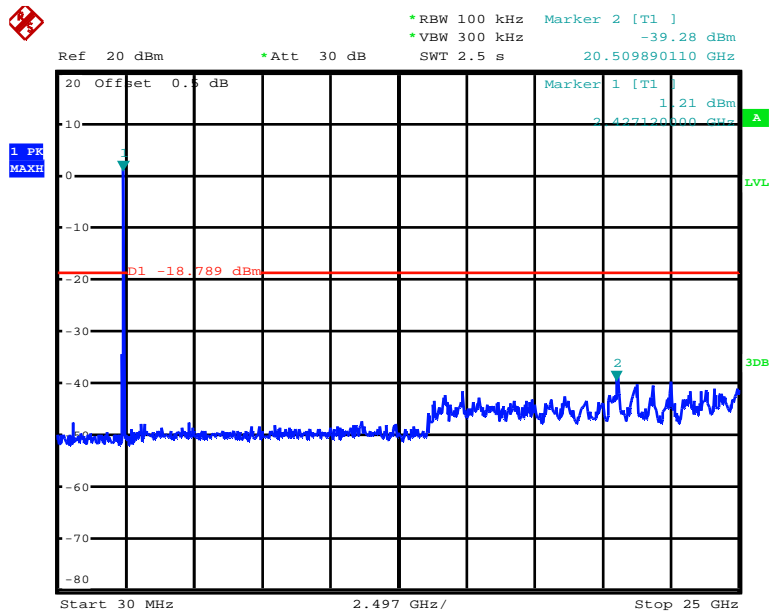
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Chain1: 802.11b Low Channel



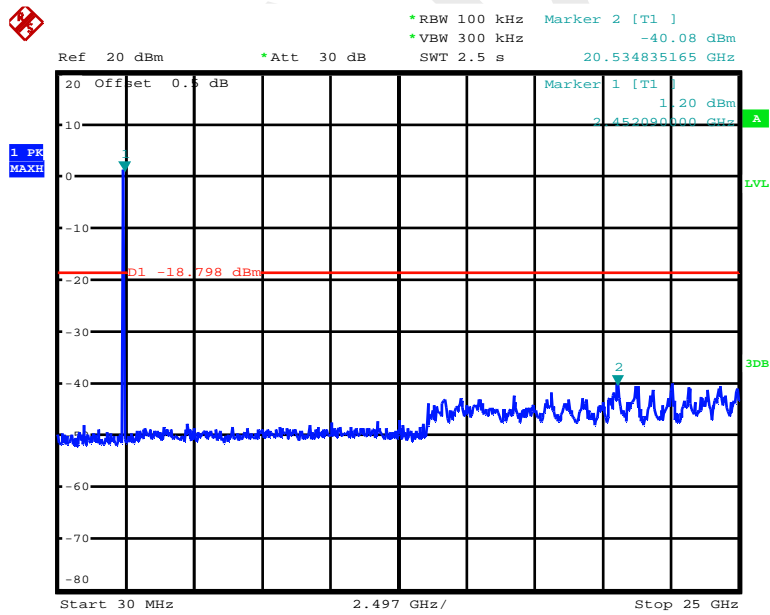
Date: 29.JUN.2014 02:47:03

Chain1: 802.11b Middle Channel



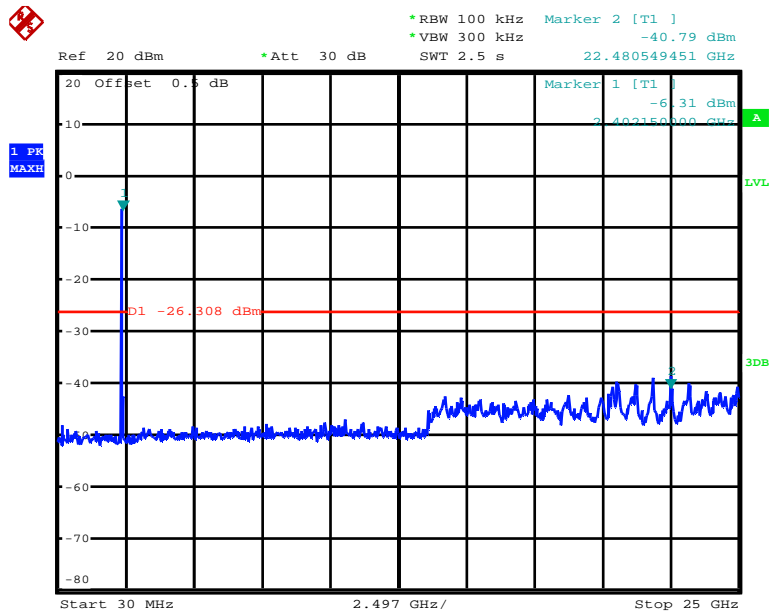
Date: 29.JUN.2014 02:48:44

Chain1: 802.11b High Channel



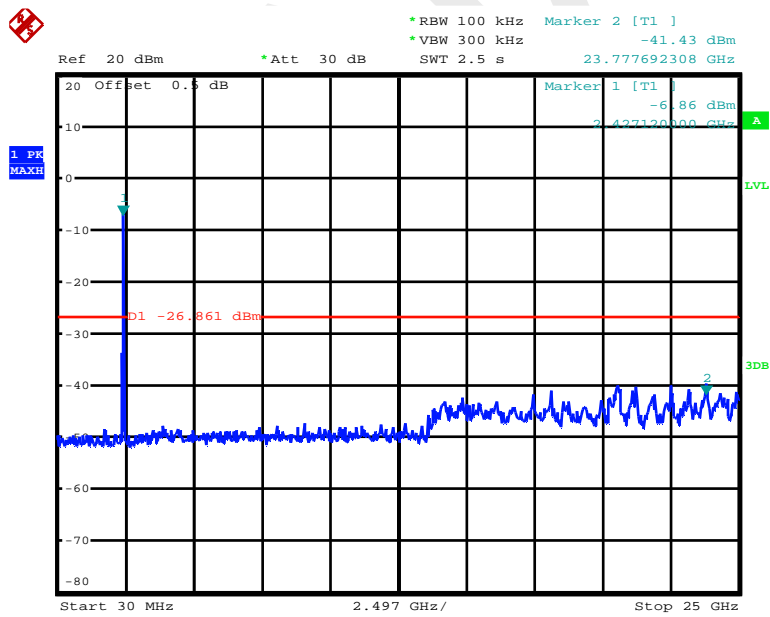
Date: 29.JUN.2014 02:52:12

Chain0: 802.11g Low Channel



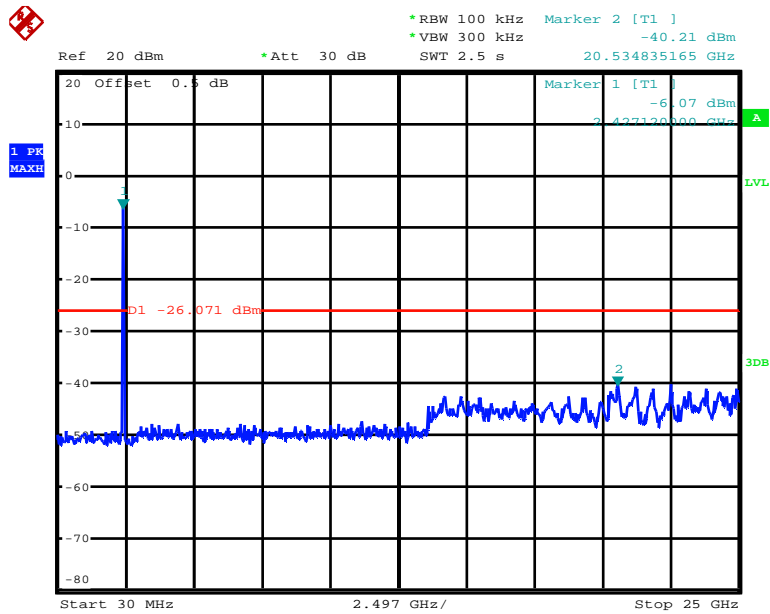
Date: 29.JUN.2014 01:43:05

Chain0: 802.11g Middle Channel



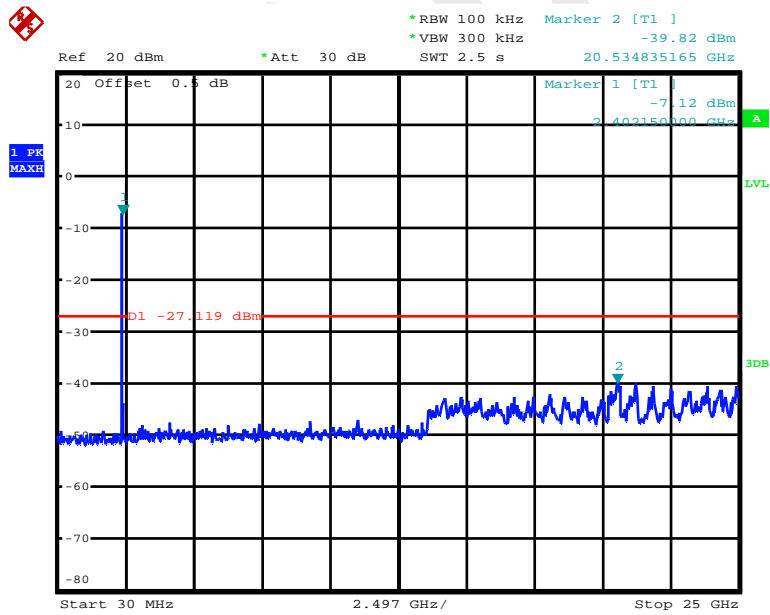
Date: 29.JUN.2014 01:45:09

Chain0: 802.11g High Channel



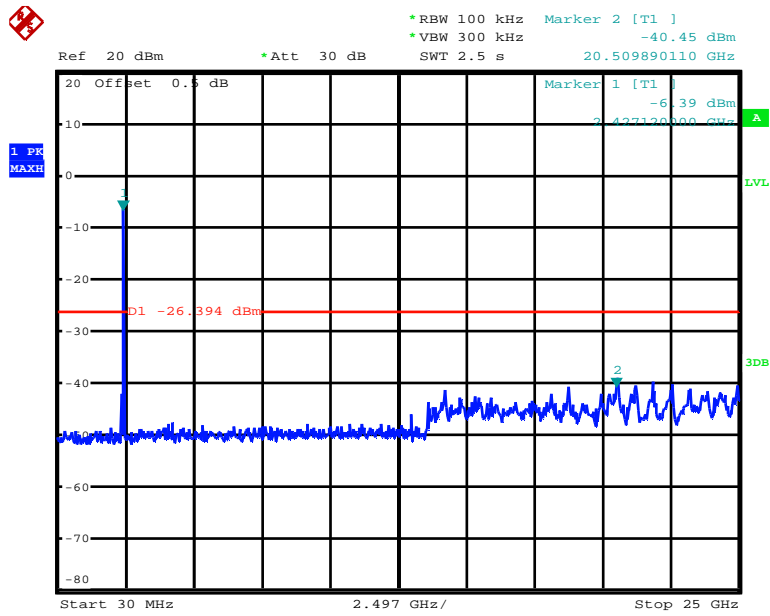
Date: 29.JUN.2014 01:47:30

Chain1: 802.11g Low Channel



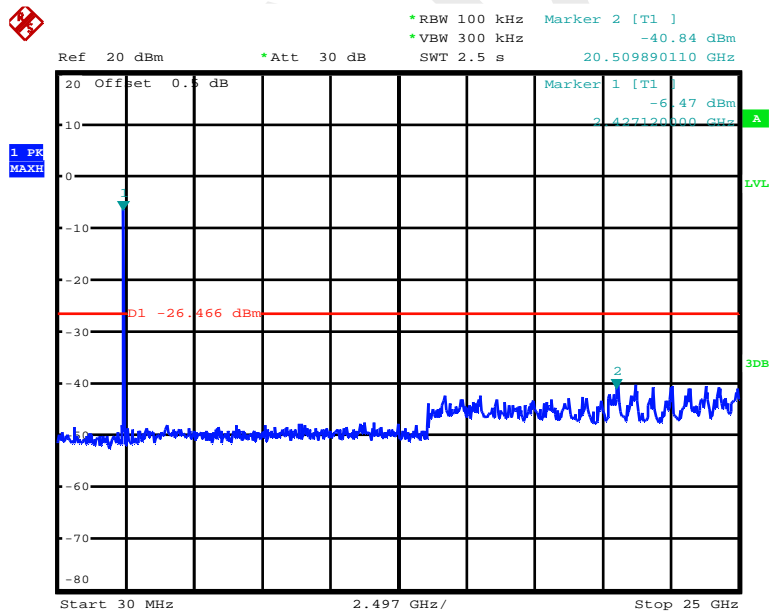
Date: 29.JUN.2014 03:03:14

Chain1: 802.11g Middle Channel



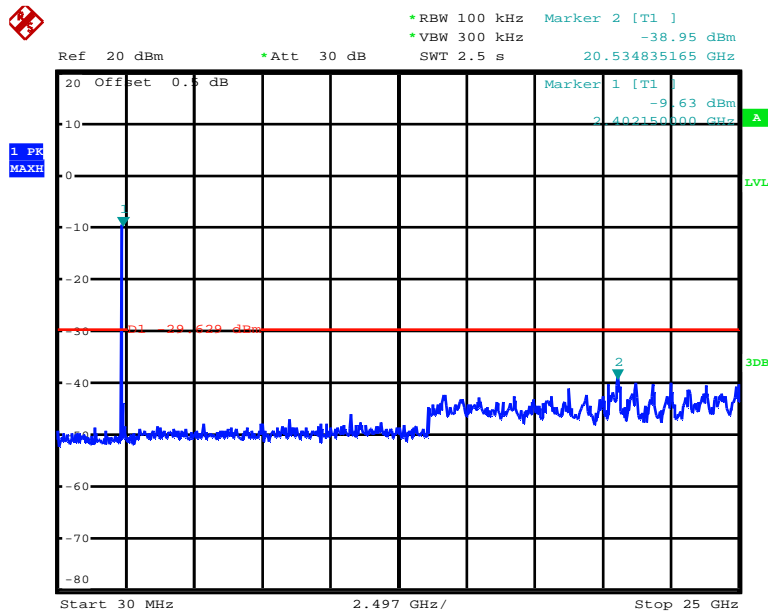
Date: 29.JUN.2014 03:01:16

Chain1: 802.11g High Channel



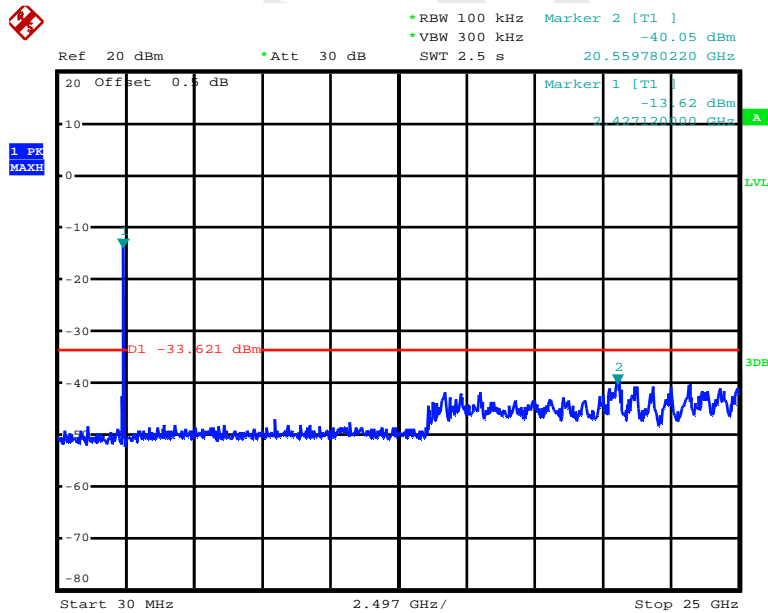
Date: 29.JUN.2014 02:58:42

Chain0: 802.11n20 Low Channel



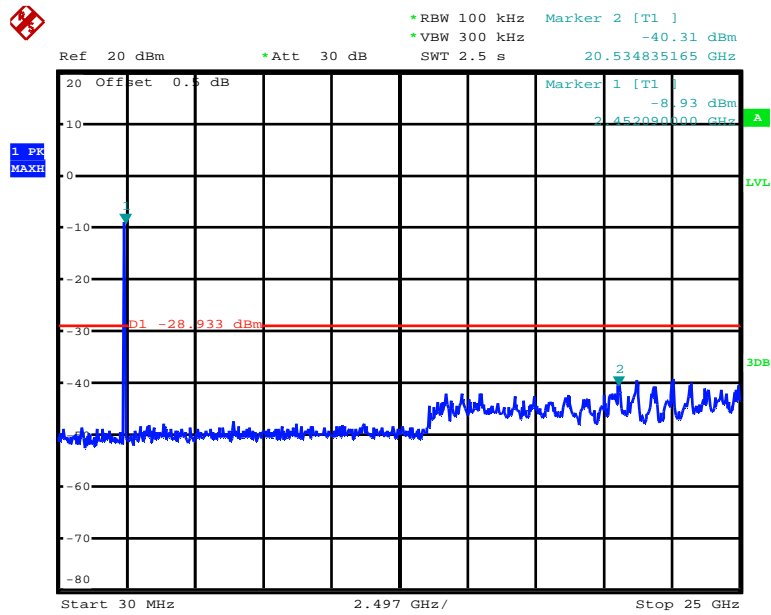
Date: 1.JUL.2014 21:50:23

Chain0: 802.11n20 Middle Channel



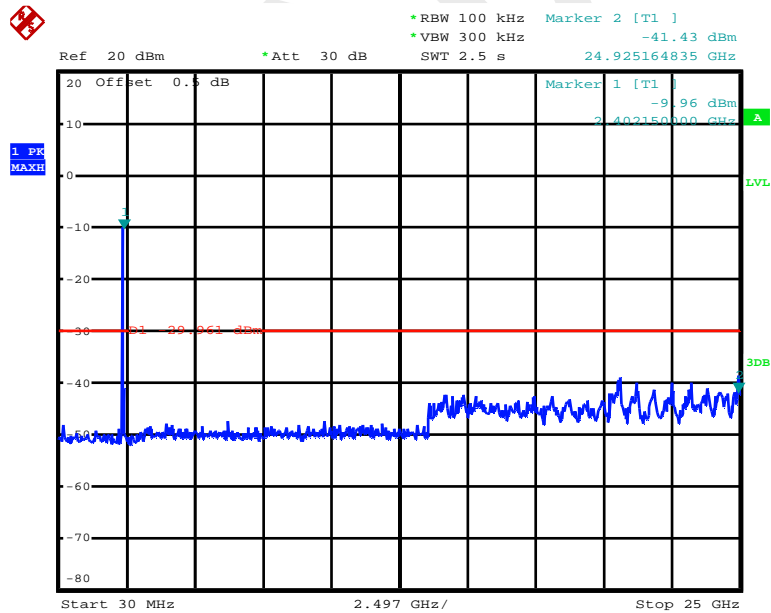
Date: 1.JUL.2014 21:52:47

Chain0: 802.11n20 High Channel



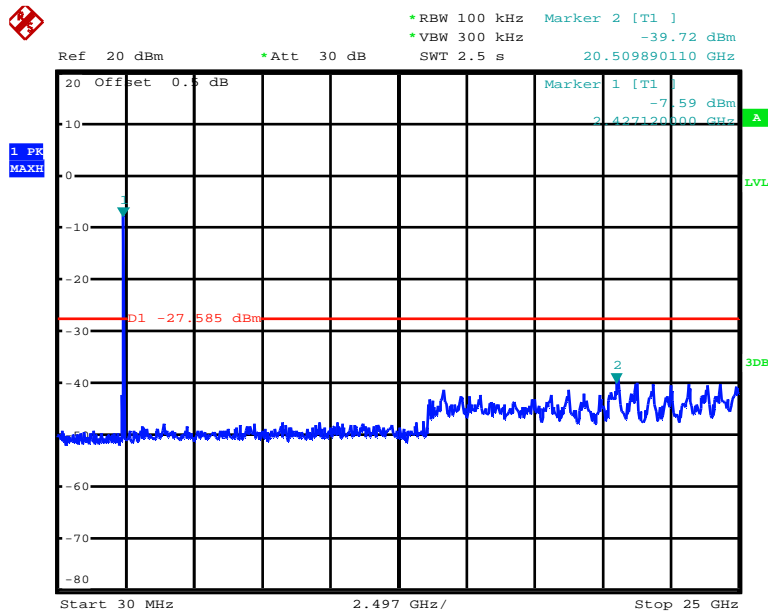
Date: 1.JUL.2014 21:57:59

Chain1: 802.11n20 Low Channel



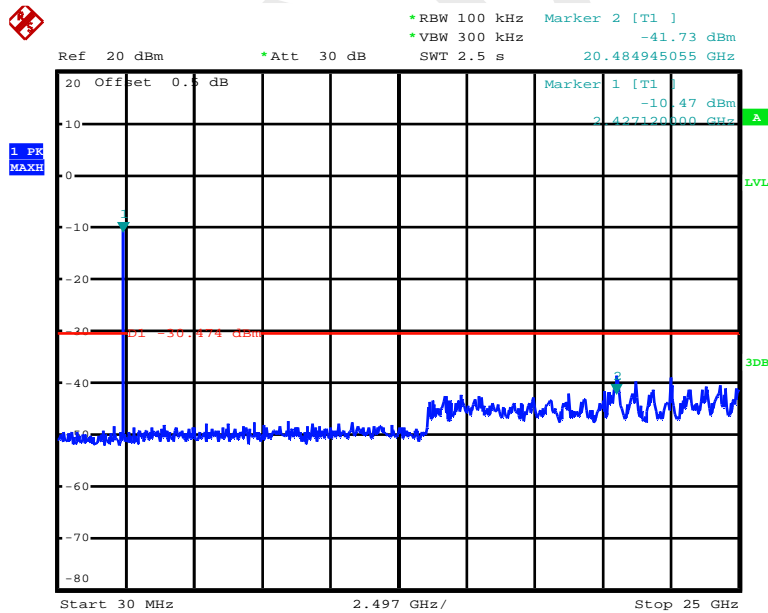
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Chain1: 802.11n20 Middle Channel



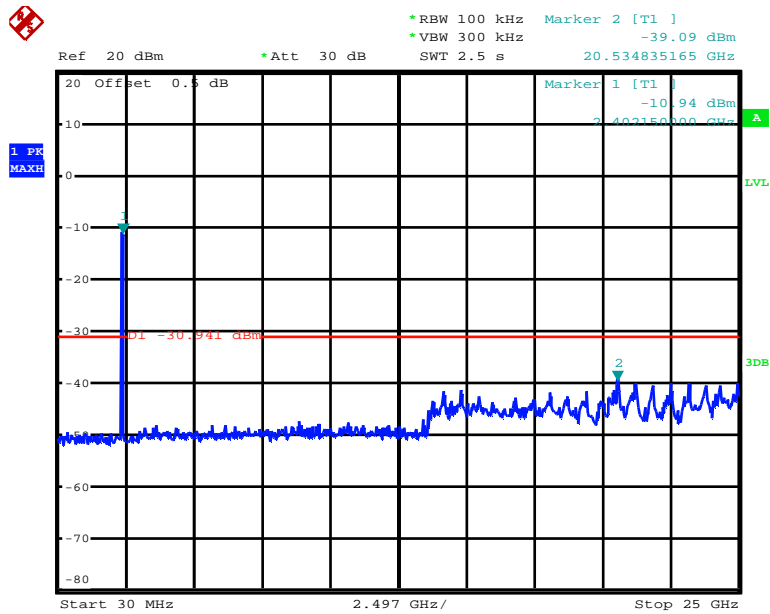
Date: 1.JUL.2014 21:46:11

Chain1: 802.11n20 High Channel



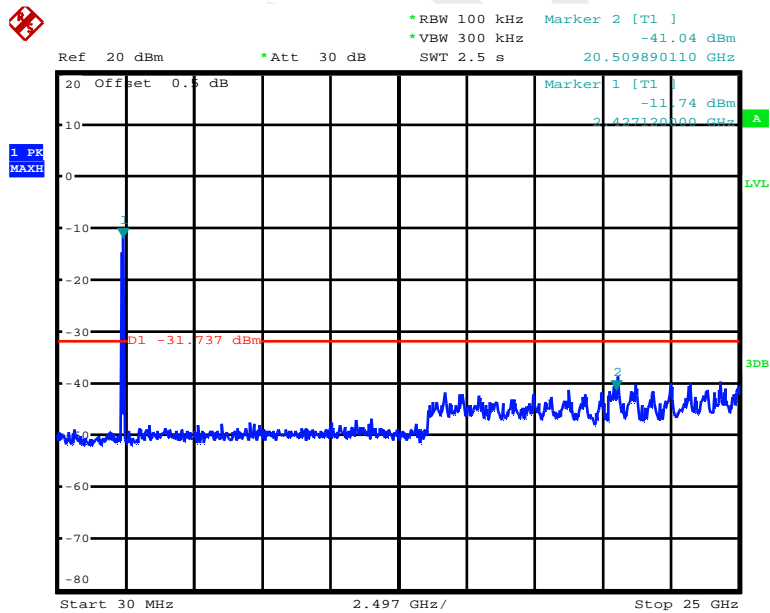
Date: 1.JUL.2014 21:42:27

Chain0: 802.11n40 Low Channel



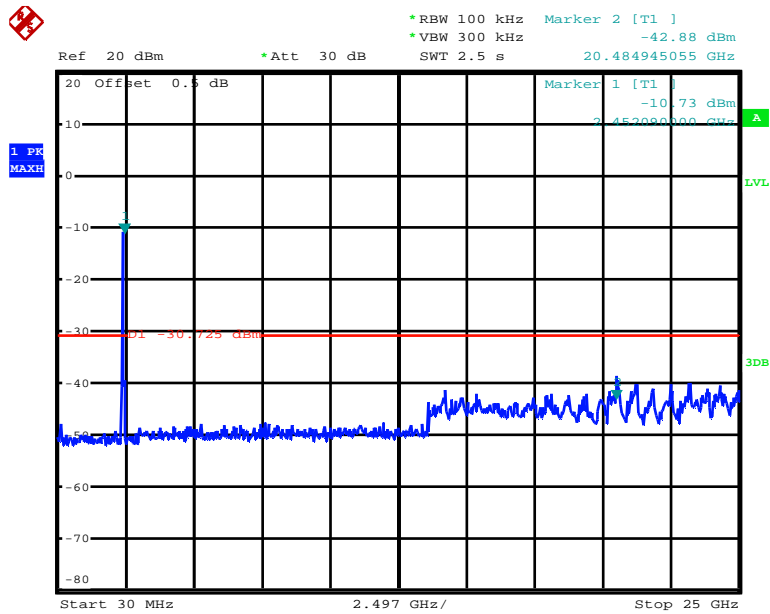
Date: 1.JUL.2014 05:22:26

Chain0: 802.11n40 Middle Channel



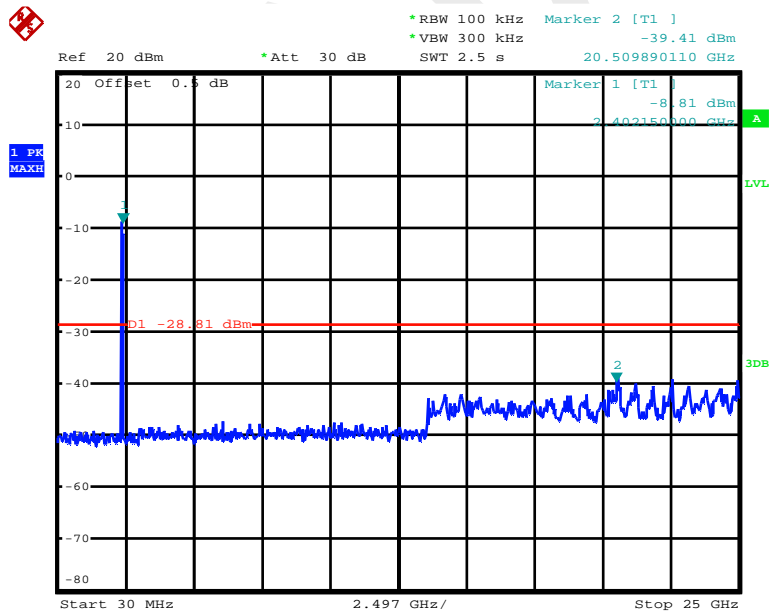
Date: 1.JUL.2014 04:53:57

Chain0: 802.11n40 High Channel



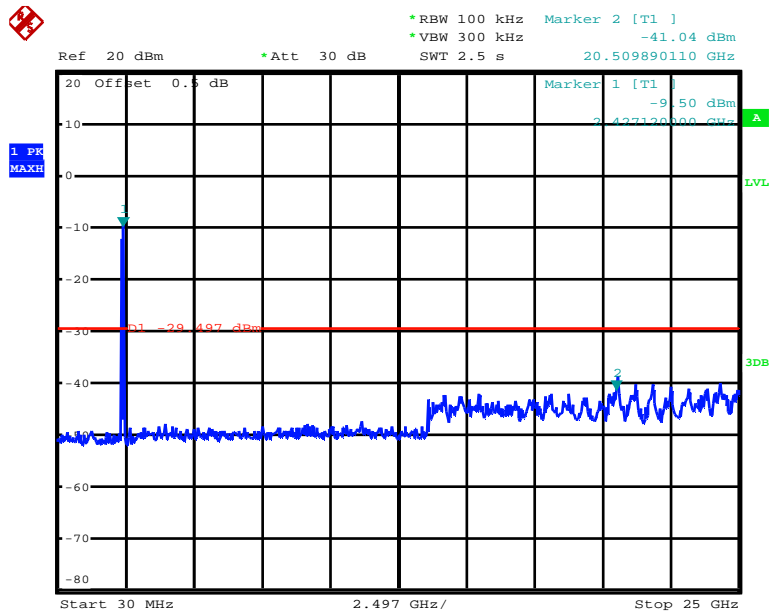
Date: 1.JUL.2014 05:40:55

Chain1: 802.11n40 Low Channel



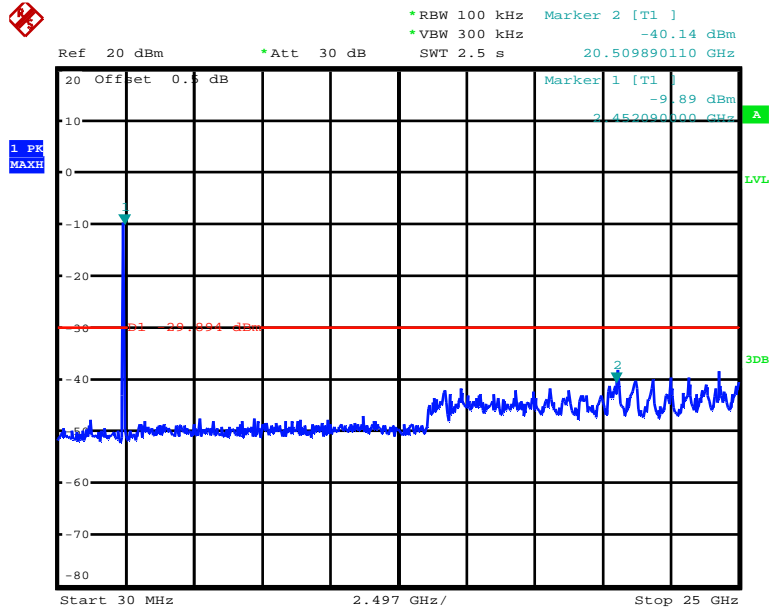
Date: 1.JUL.2014 05:19:23

Chain1: 802.11n40 Middle Channel



Date: 1.JUL.2014 04:46:36

Chain1: 802.11n40 High Channel



Date: 1.JUL.2014 05:50:01

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
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	29.3 °C-29.7 °C
Relative Humidity:	62 %-66 %
ATM Pressure:	100.1 kPa-100.3 kPa

* The testing was performed by Allen Qiao on 2014-06-29 & 2014-07-01.

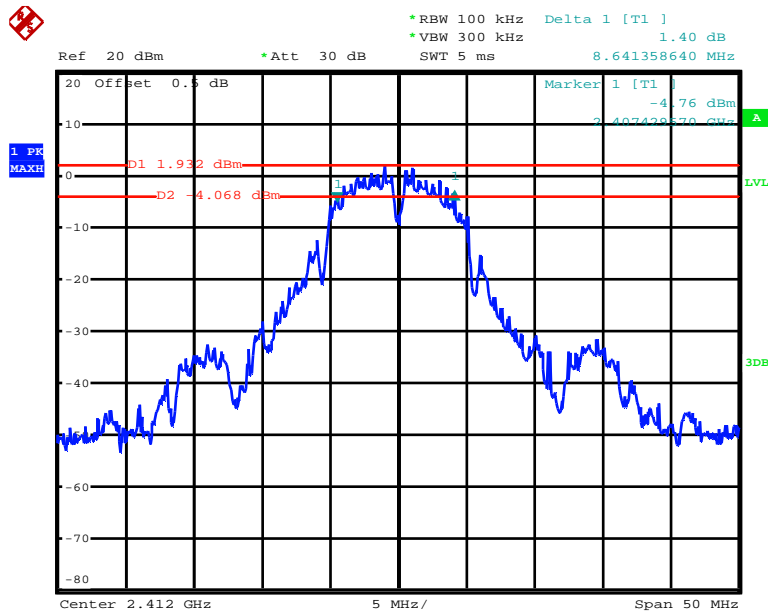
Test Result: Pass.

Please refer to the following tables and plots.

Test Mode: Transmitting

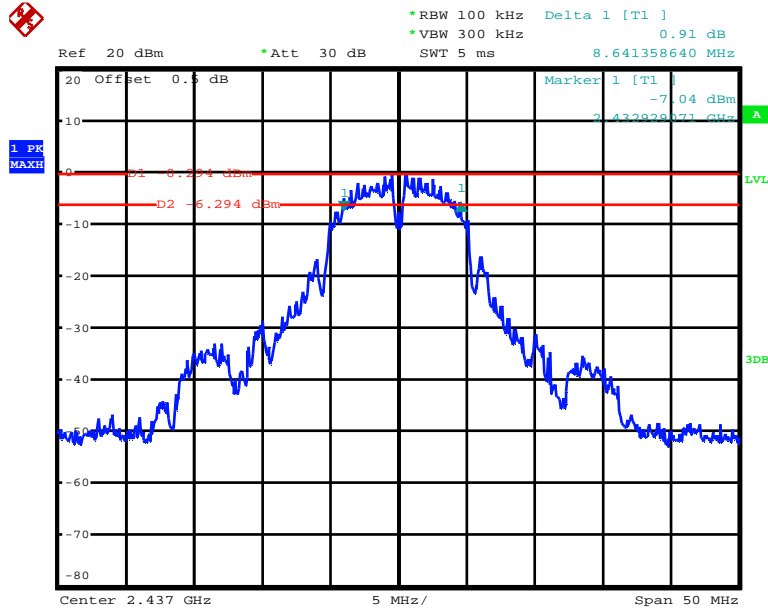
Test Mode	Channel	Frequency	6 dB Bandwidth (MHz)		Limit
		(MHz)	Chain 0	Chain 1	(kHz)
802.11b	Low	2412	8.64	9.14	>500
	Middle	2437	8.64	8.19	>500
	High	2452	7.19	7.69	>500
802.11g	Low	2412	15.43	16.38	>500
	Middle	2437	16.48	15.13	>500
	High	2452	13.84	15.73	>500
802.11n20	Low	2412	15.13	17.73	>500
	Middle	2437	17.63	14.89	>500
	High	2452	13.94	15.18	>500
802.11n40	Low	2422	35.16	36.56	>500
	Middle	2437	34.07	35.26	>500
	High	2452	35.16	35.16	>500

Chain0: 802.11b Low Channel



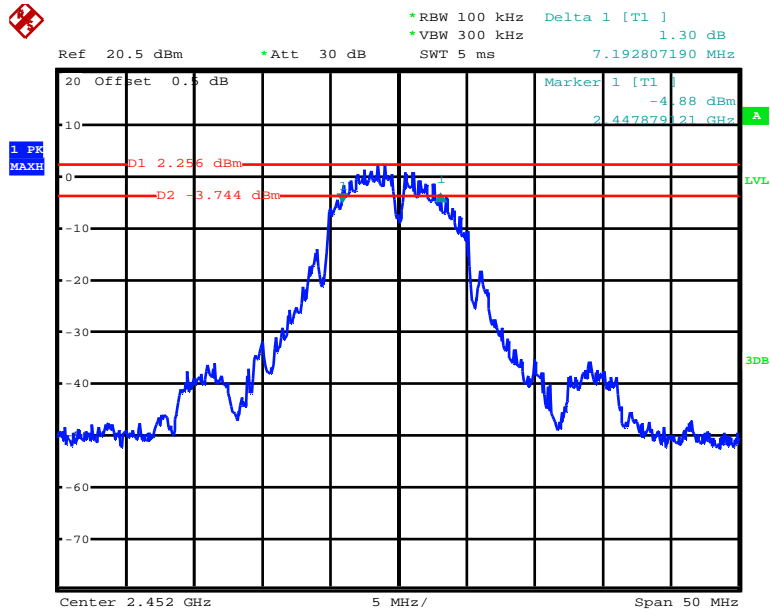
Date: 29.JUN.2014 01:38:06

Chain0: 802.11b Middle Channel



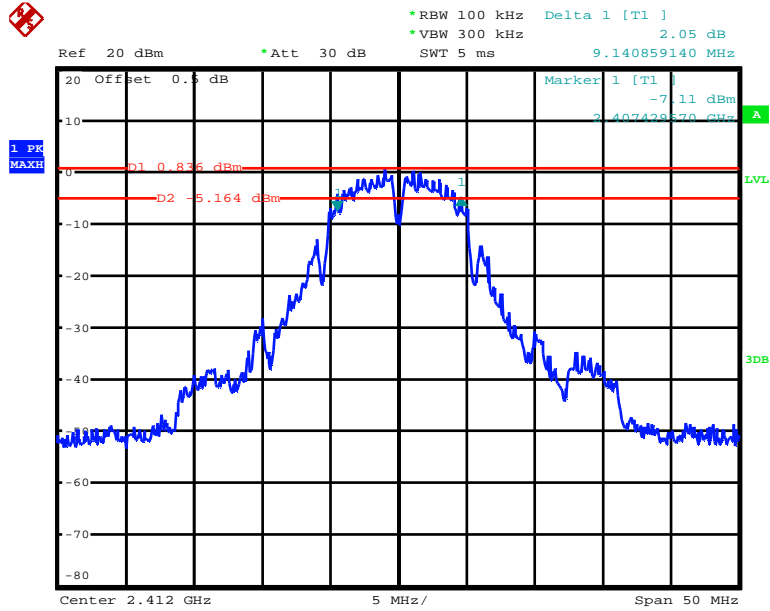
Date: 29.JUN.2014 01:33:58

Chain0: 802.11b High Channel



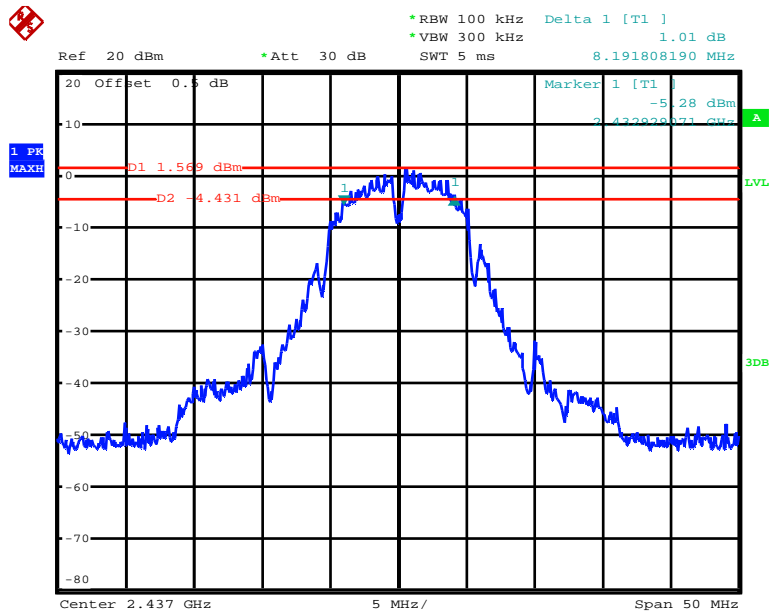
Date: 29.JUN.2014 01:27:58

Chain1: 802.11b Low Channel



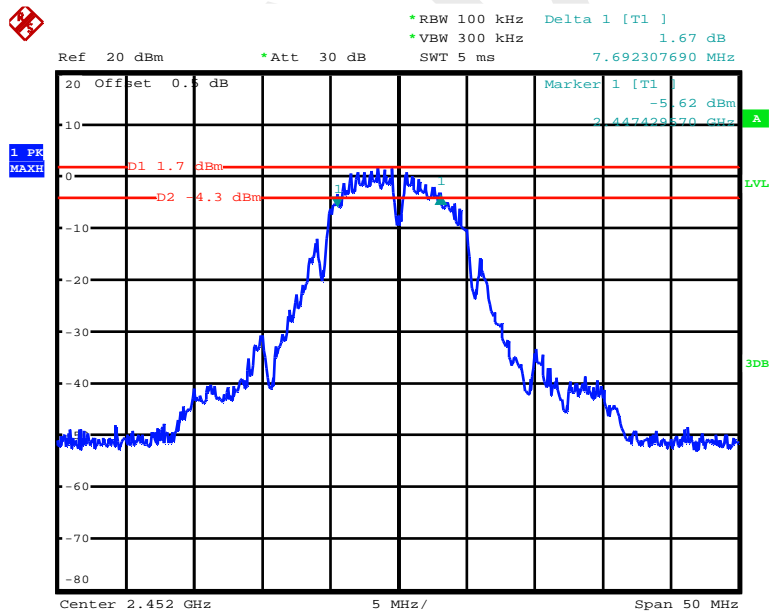
Date: 29.JUN.2014 04:20:43

Chain1: 802.11b Middle Channel



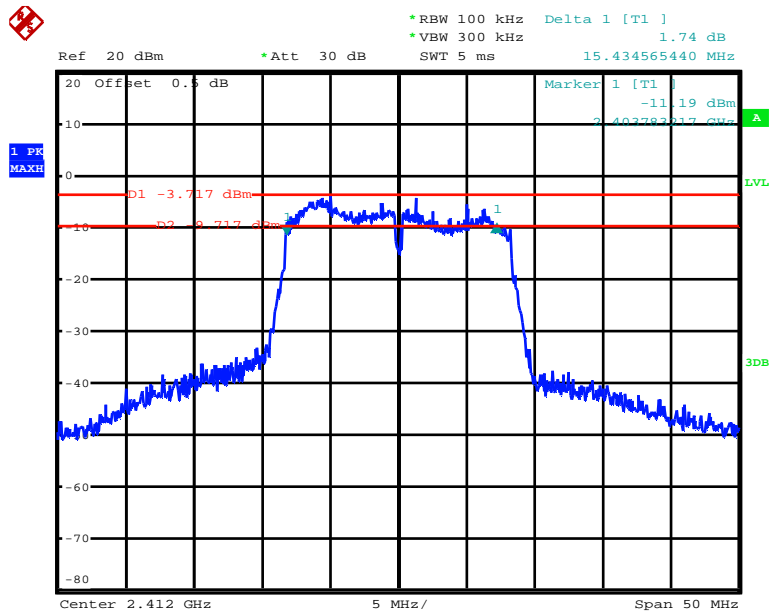
Date: 29.JUN.2014 04:21:50

Chain1: 802.11b High Channel



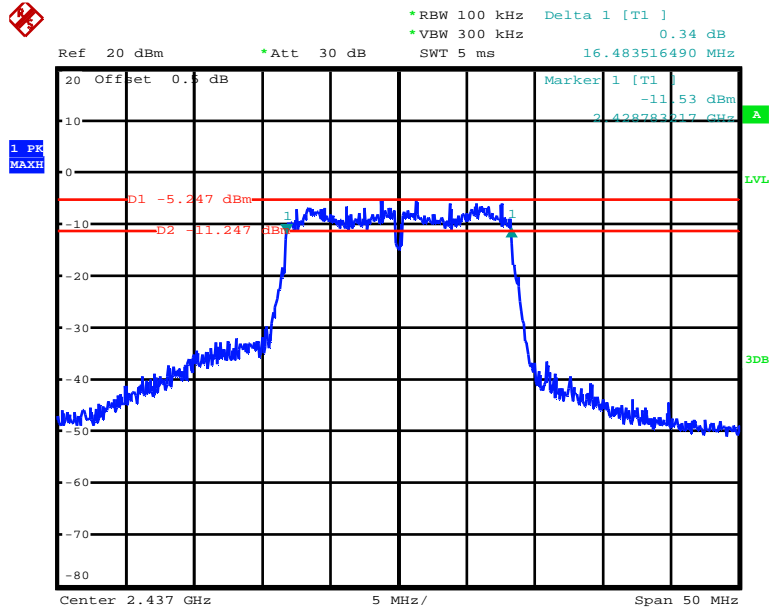
Date: 29.JUN.2014 04:22:58

Chain0: 802.11g Low Channel



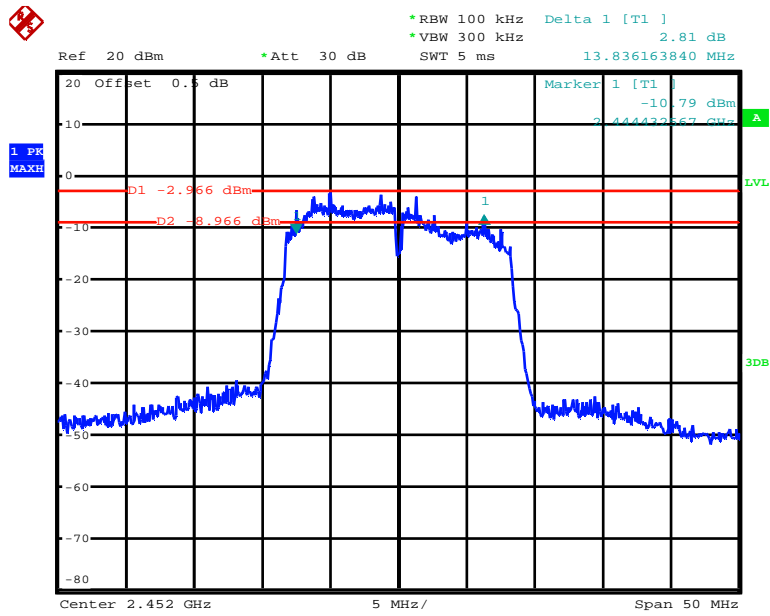
Date: 29.JUN.2014 01:42:07

Chain0: 802.11g Middle Channel



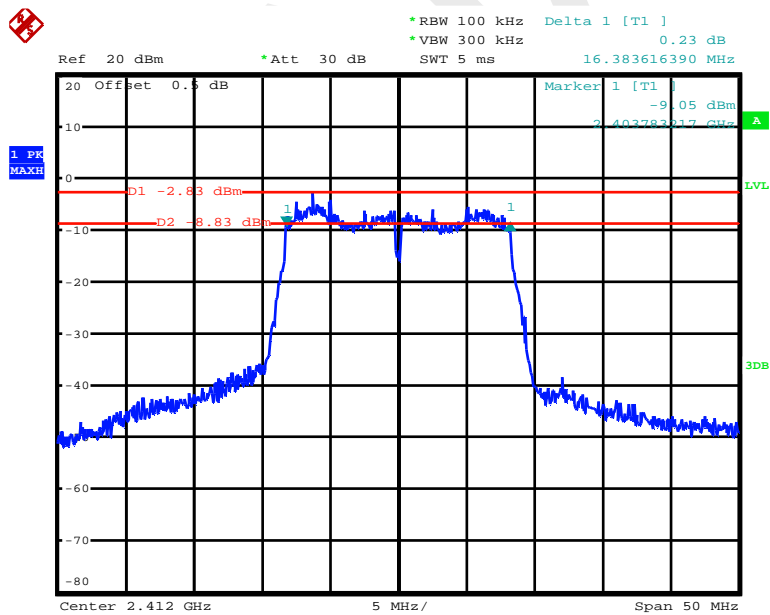
Date: 29.JUN.2014 01:44:10

Chain0: 802.11g High Channel



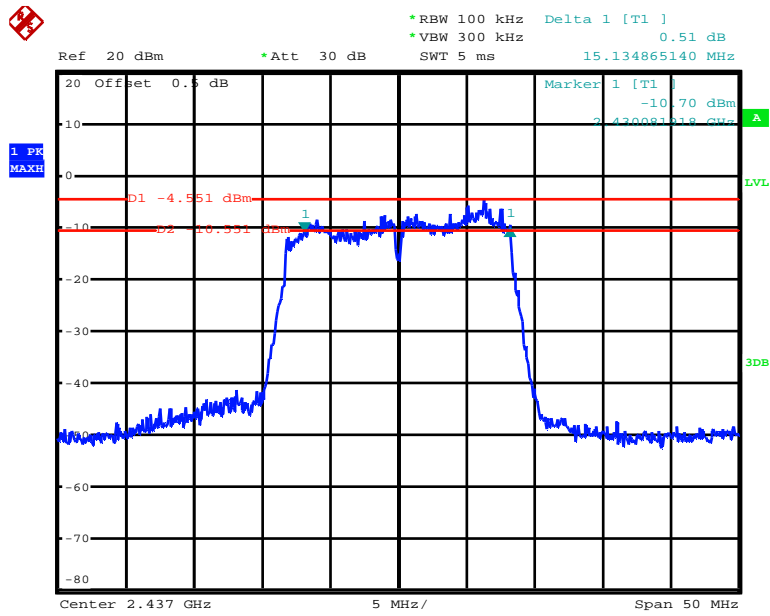
Date: 29.JUN.2014 01:46:30

Chain1: 802.11g Low Channel



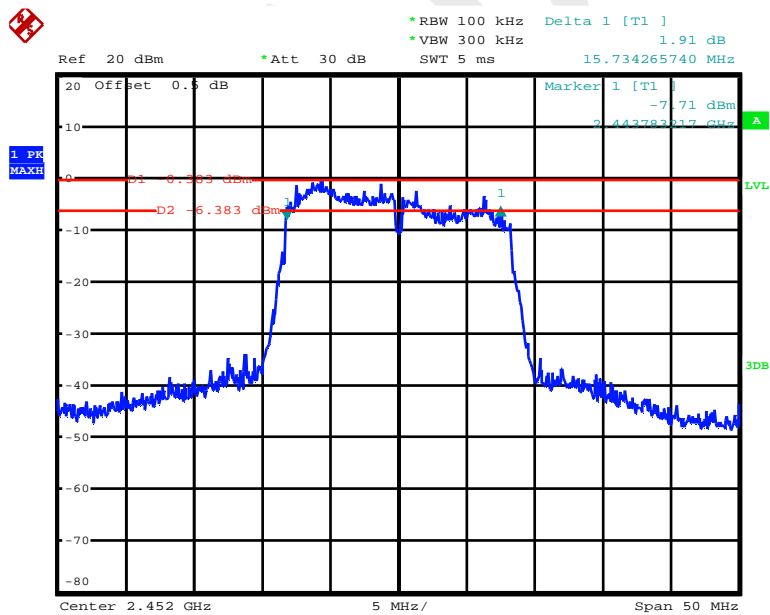
Date: 29.JUN.2014 03:02:24

Chain1: 802.11g Middle Channel



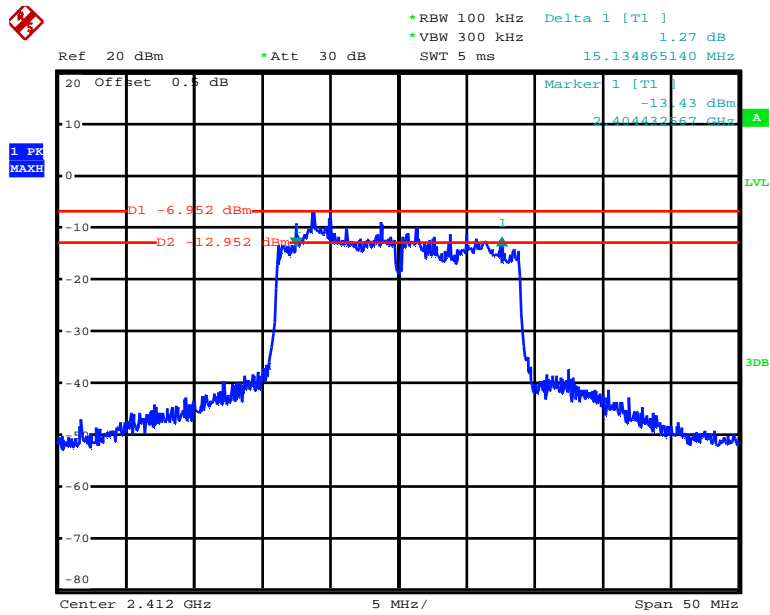
Date: 29.JUN.2014 03:00:03

Chain1: 802.11g High Channel



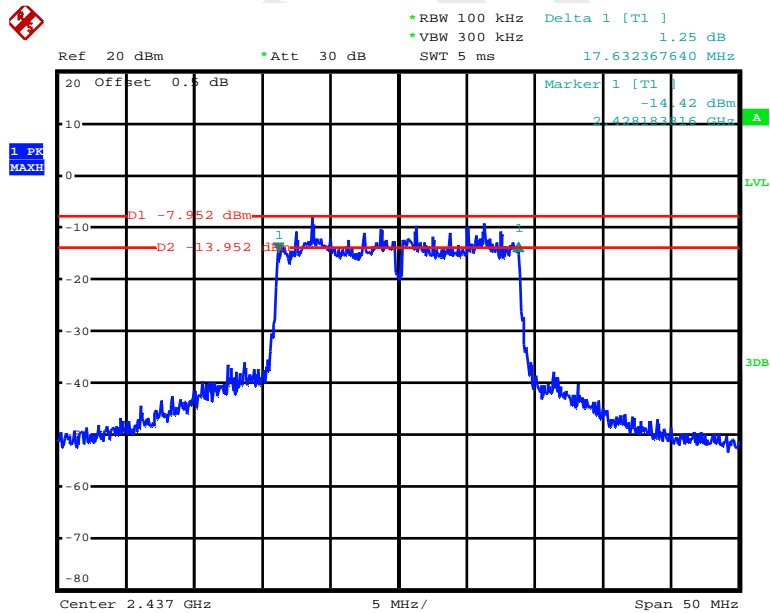
Date: 29.JUN.2014 02:57:07

Chain0: 802.11n20 Low Channel



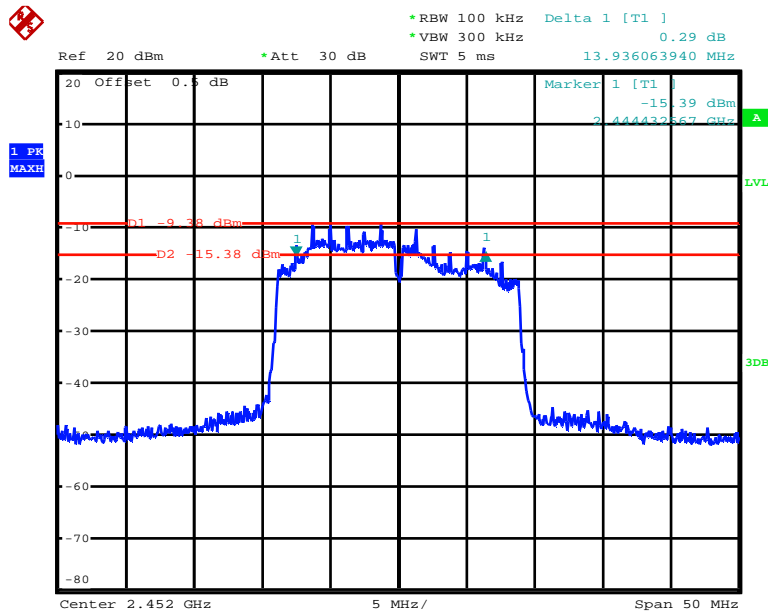
Date: 1.JUL.2014 21:49:34

Chain0: 802.11n20 Middle Channel



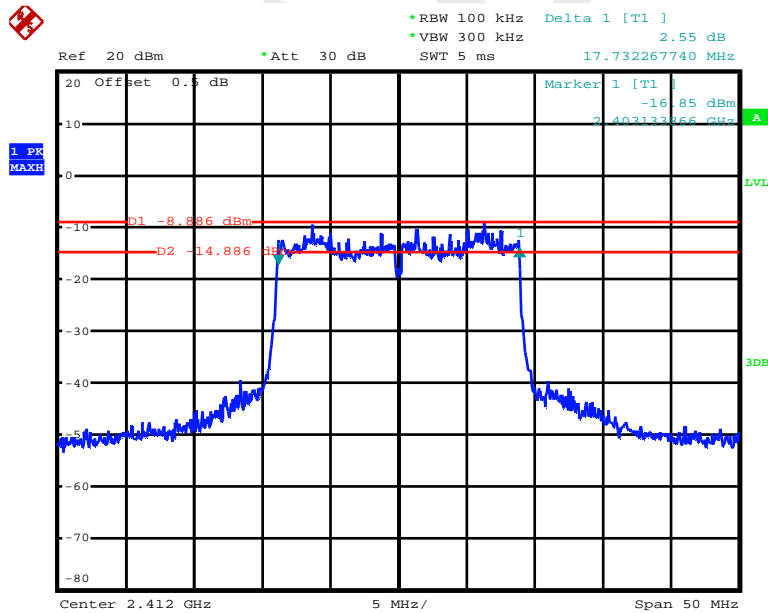
Date: 1.JUL.2014 21:51:26

Chain0: 802.11n20 High Channel



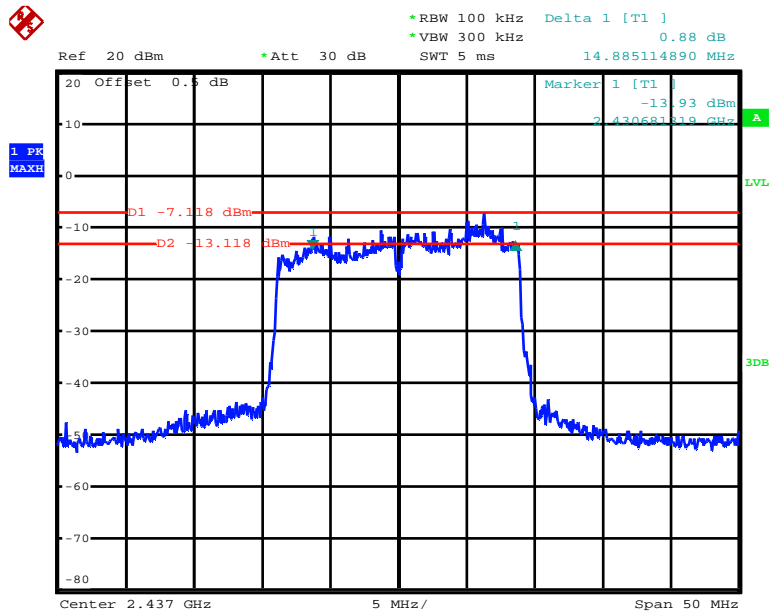
Date: 1.JUL.2014 21:54:31

Chain1: 802.11n20 Low Channel



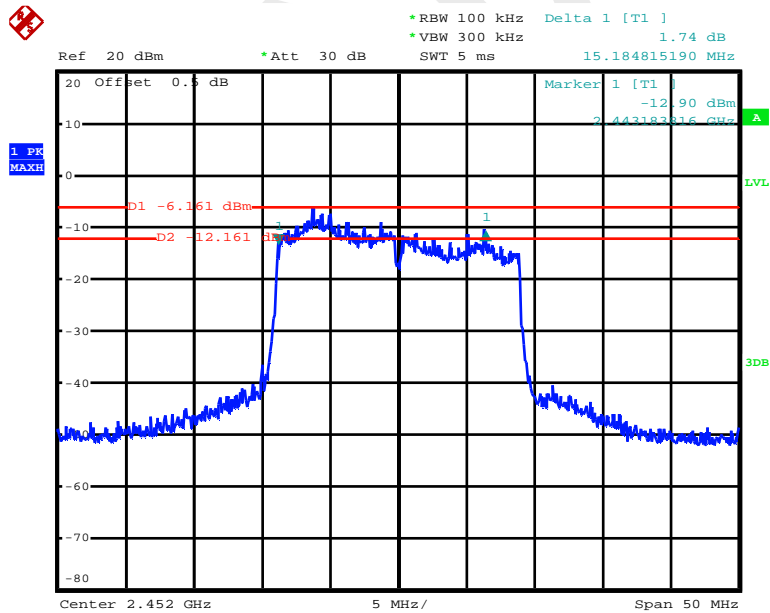
Date: 1.JUL.2014 21:47:11

Chain1: 802.11n20 Middle Channel



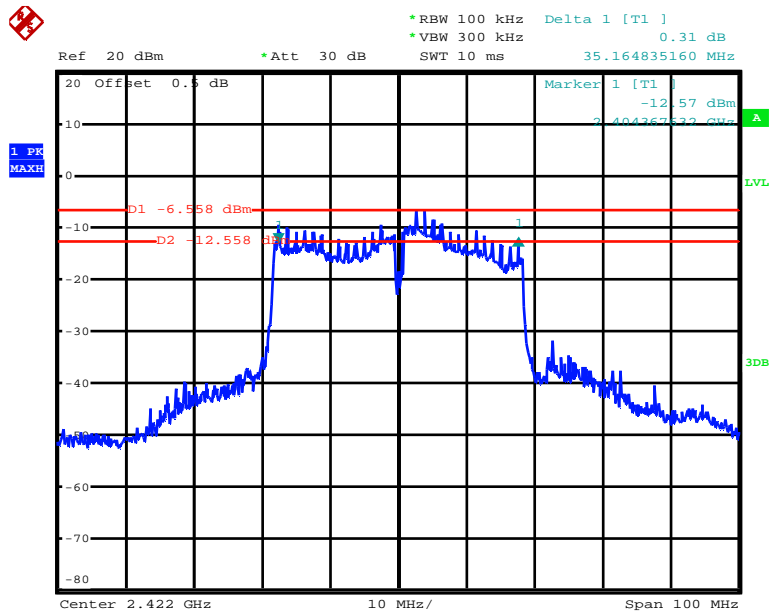
Date: 1.JUL.2014 21:44:49

Chain1: 802.11n20 High Channel



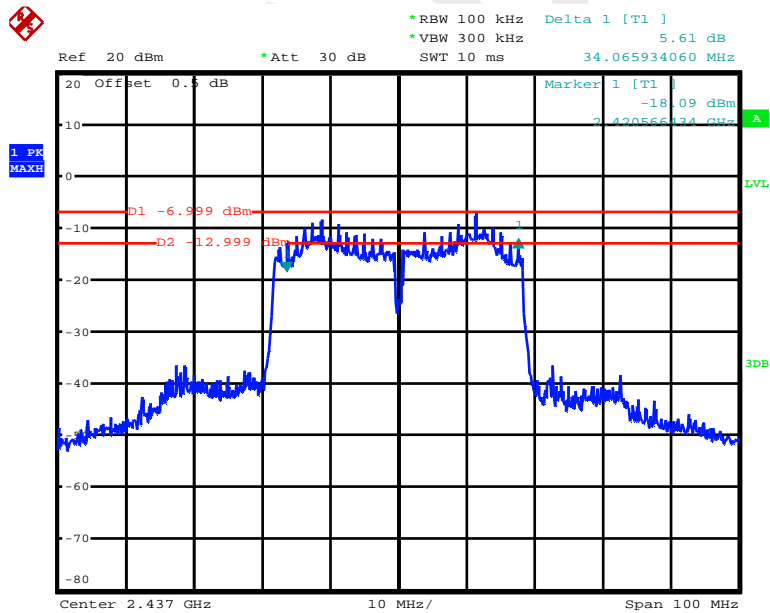
Date: 1.JUL.2014 21:41:02

Chain0: 802.11n40 Low Channel



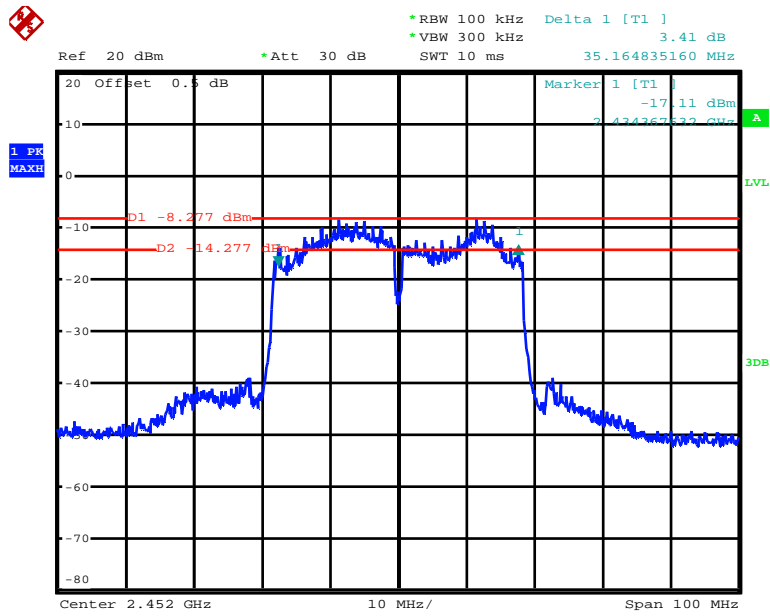
Date: 1.JUL.2014 05:21:25

Chain0: 802.11n40 Middle Channel



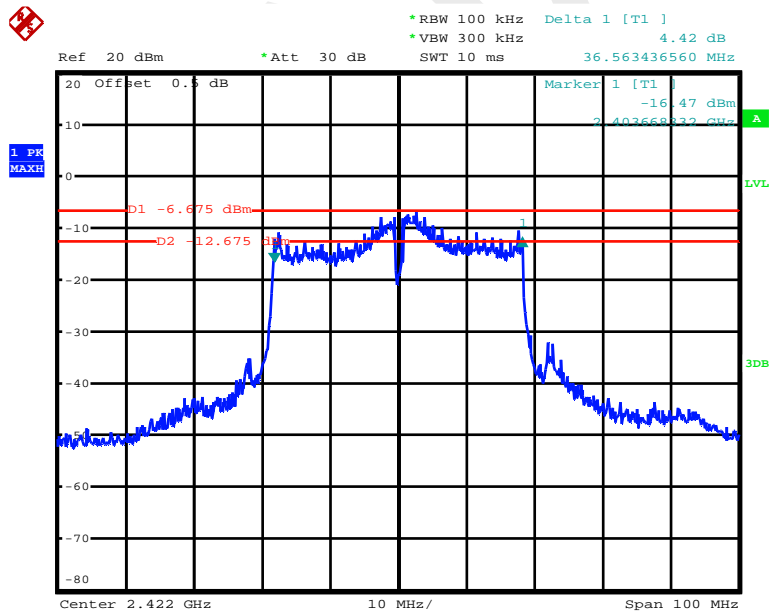
Date: 1.JUL.2014 04:52:54

Chain0: 802.11n40 High Channel



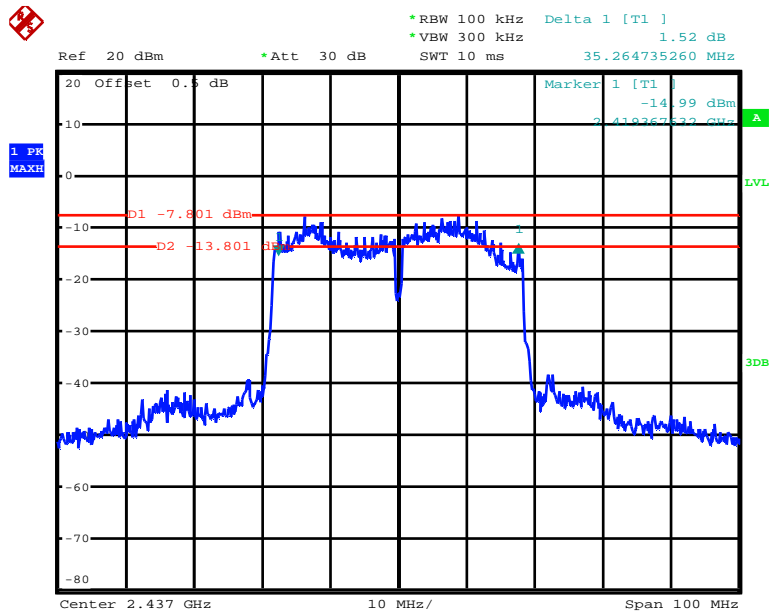
Date: 1.JUL.2014 05:47:24

Chain1: 802.11n40 Low Channel



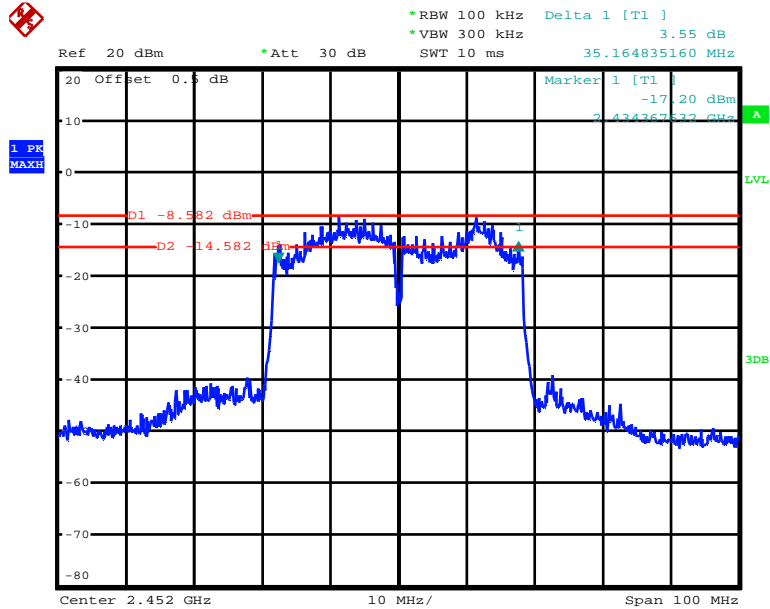
Date: 1.JUL.2014 05:18:14

Chain1: 802.11n40 Middle Channel



Date: 1.JUL.2014 04:45:26

Chain1: 802.11n40 High Channel



Date: 1.JUL.2014 05:50:36

FCC §15.247(b) (3) - MAXIMUM CONDUCTED 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. According to KDB 558074 D01 DTS Meas Guidance v03r02, 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 a spectrum analyzer or power meter sensor and power meter.
3. Add a correction factor to the display.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09
Agilent	P-Series Power Meter	N1912A	MY5000448	2013-12-12	2014-12-12
Agilent	Wideband Power Sensor	N1921A	MY54210016	2013-12-12	2014-12-12
Agilent	Wideband Power Sensor	N1921A	MY54170013	2013-12-12	2014-12-12

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	29.3 °C-29.7 °C
Relative Humidity:	62 %-66 %
ATM Pressure:	100.1 kPa-100.3 kPa

* The testing was performed by Allen Qiao on 2014-06-29 & 2014-07-01.

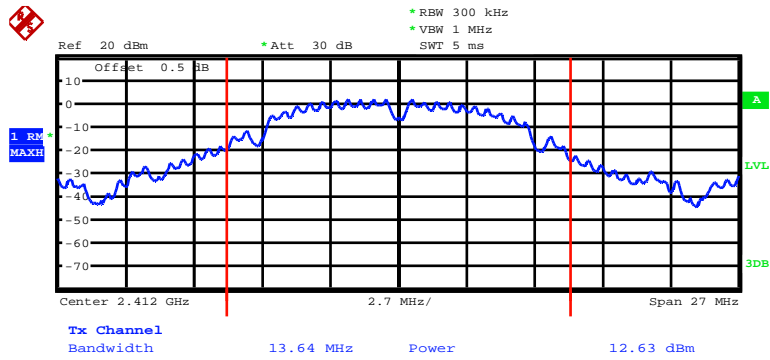
Test Mode: Transmitting

Test Mode	Channel	Frequency (MHz)	Conducted Peak Output Power (dBm)			Limit (dBm)	Result
			Chain 0	Chain 1	Total		
802.11b	Low	2412	14.52	14.43	/	30	PASS
	Middle	2437	14.08	14.11	/	30	PASS
	High	2452	14.32	14.11	/	30	PASS
802.11g	Low	2412	12.85	12.76	/	30	PASS
	Middle	2437	12.25	12.43	/	30	PASS
	High	2452	12.66	12.08	/	30	PASS
802.11n20	Low	2412	8.51	9.65	12.13	30	PASS
	Middle	2437	8.03	9.89	12.07	30	PASS
	High	2452	8.39	9.52	12.00	30	PASS
802.11n40	Low	2422	8.62	9.49	12.09	30	PASS
	Middle	2437	8.41	9.59	12.05	30	PASS
	High	2452	8.39	9.57	12.03	30	PASS

Test Mode	Channel	Frequency (MHz)	Conducted Average Output Power (dBm)			Limit (dBm)	Result
			Chain 0	Chain 1	Total		
802.11b	Low	2412	12.63	12.20	/	30	PASS
	Middle	2437	12.42	12.44	/	30	PASS
	High	2452	12.52	12.58	/	30	PASS
802.11g	Low	2412	10.94	10.82	/	30	PASS
	Middle	2437	10.38	10.59	/	30	PASS
	High	2452	10.67	10.17	/	30	PASS
802.11n20	Low	2412	6.61	7.91	10.32	30	PASS
	Middle	2437	6.07	8.08	10.20	30	PASS
	High	2452	6.49	7.54	10.06	30	PASS
802.11n40	Low	2422	6.56	7.59	10.12	30	PASS
	Middle	2437	6.51	7.87	10.25	30	PASS
	High	2452	6.49	7.62	10.10	30	PASS

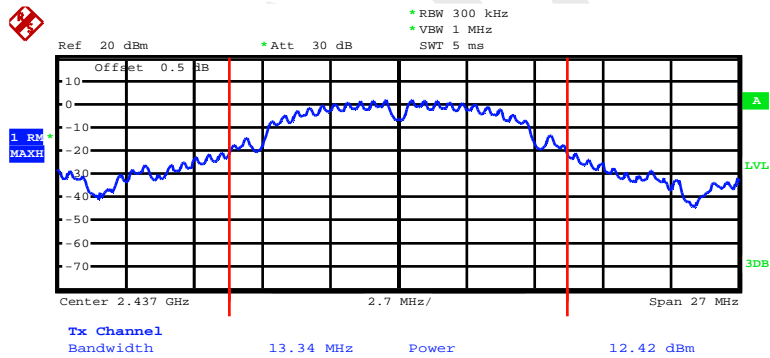
Please refer to the following plots

Chain0: 802.11b Output Power, Low Channel



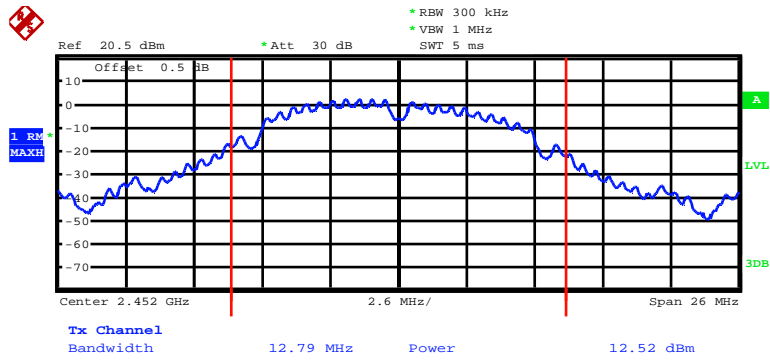
Date: 29.JUN.2014 01:38:28

Chain0: 802.11b Output Power, Middle Channel



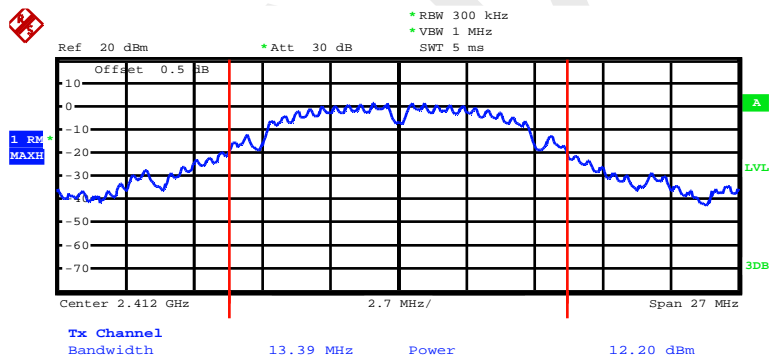
Date: 29.JUN.2014 01:35:02

Chain0: 802.11b Output Power, High Channel



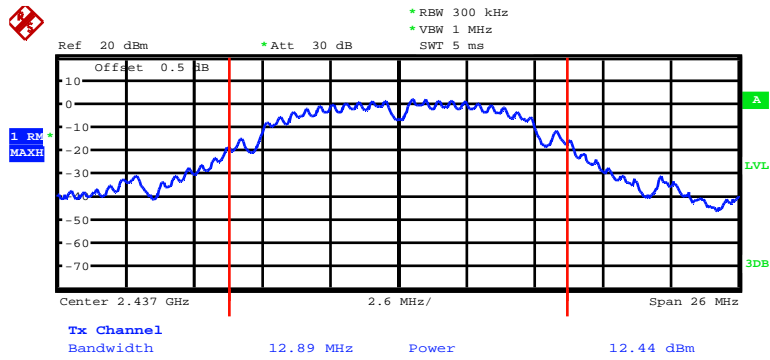
Date: 29.JUN.2014 01:28:24

Chain1: 802.11b Output Power, Low Channel



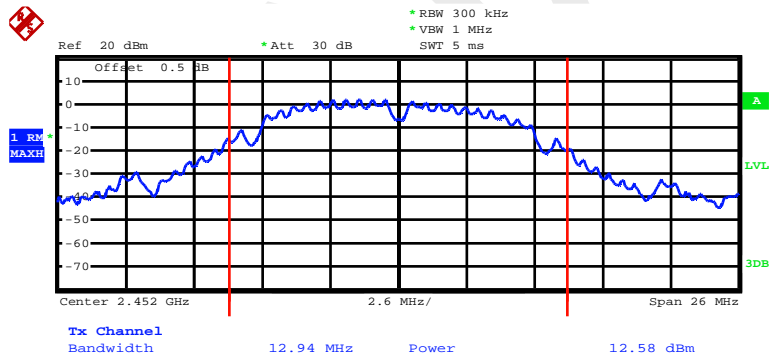
Date: 29.JUN.2014 04:21:06

Chain1: 802.11b Output Power, Middle Channel



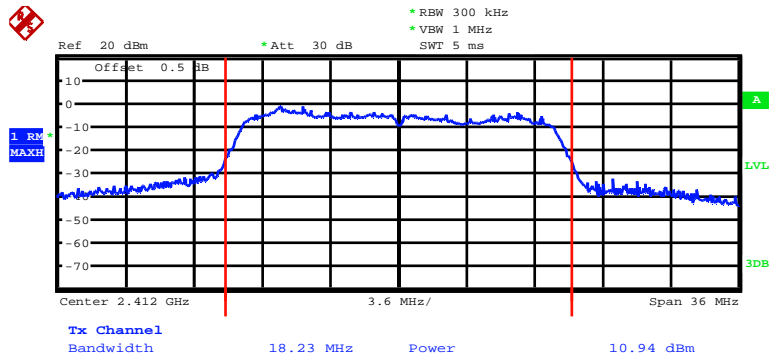
Date: 29.JUN.2014 04:22:12

Chain1: 802.11b Output Power, High Channel



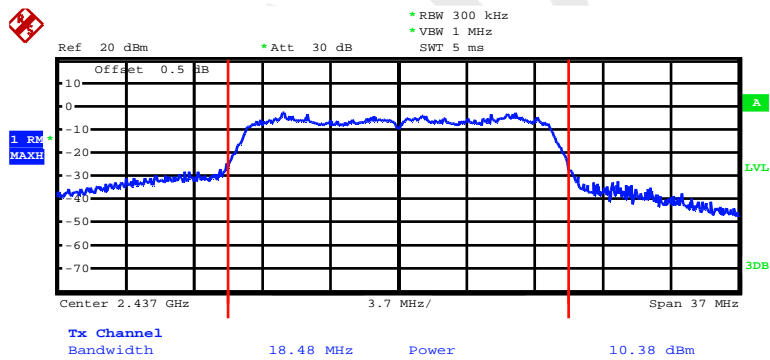
Date: 29.JUN.2014 04:23:20

Chain0: 802.11g Output Power, Low Channel



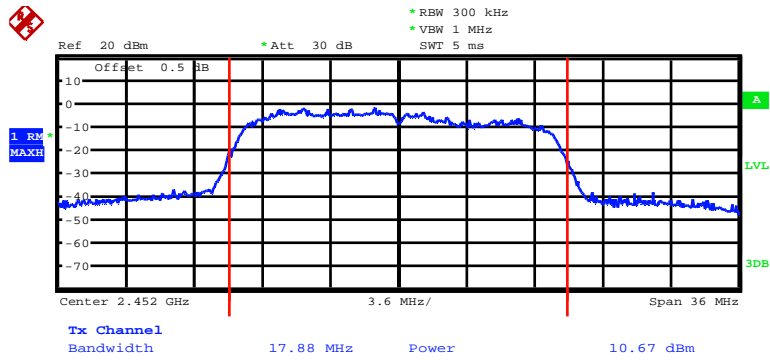
Date: 29.JUN.2014 01:42:39

Chain0: 802.11g Output Power, Middle Channel



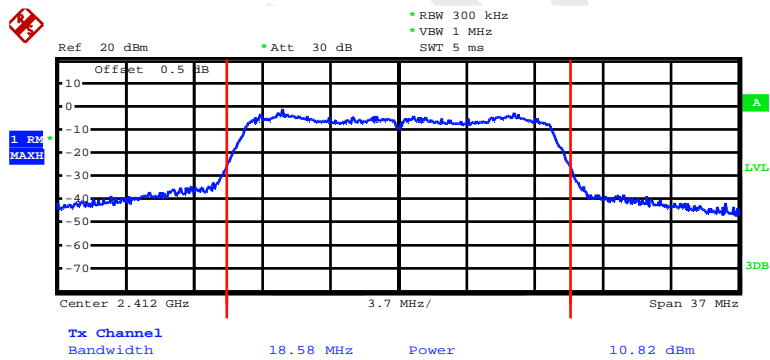
Date: 29.JUN.2014 01:44:42

Chain0: 802.11g Output Power, High Channel



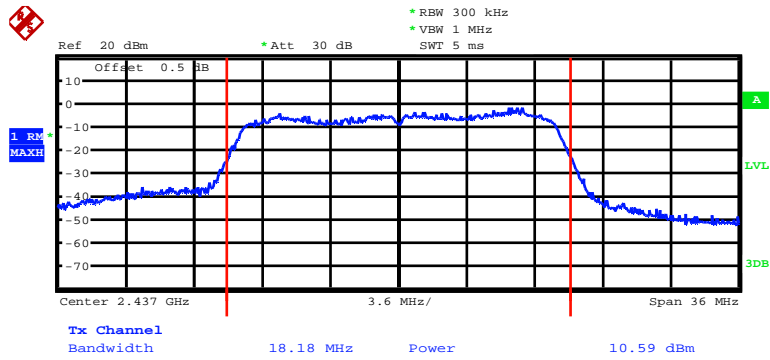
Date: 29.JUN.2014 01:47:05

Chain1: 802.11g Output Power, Low Channel



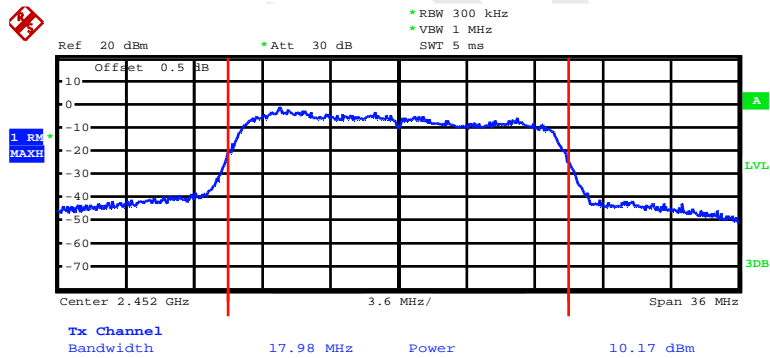
Date: 29.JUN.2014 03:02:48

Chain1: 802.11g Output Power, Middle Channel



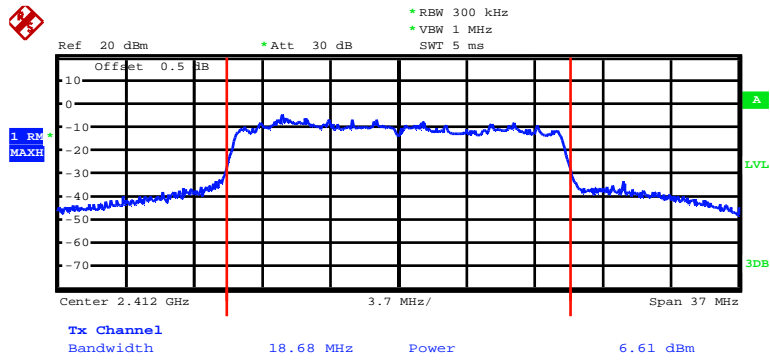
Date: 29.JUN.2014 03:00:51

Chain1: 802.11g Output Power, High Channel



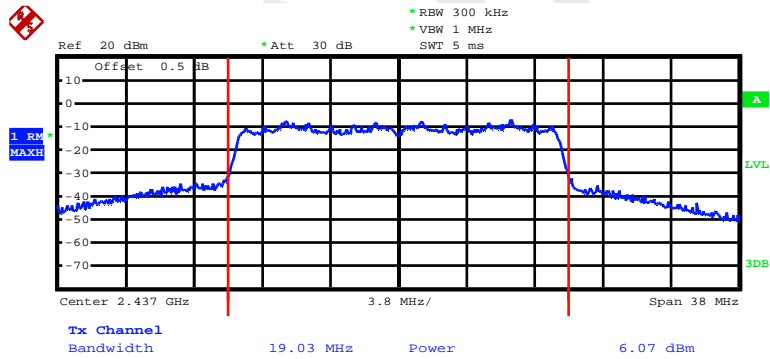
Date: 29.JUN.2014 02:58:16

Chain0: 802.11n20 Output Power, Low Channel



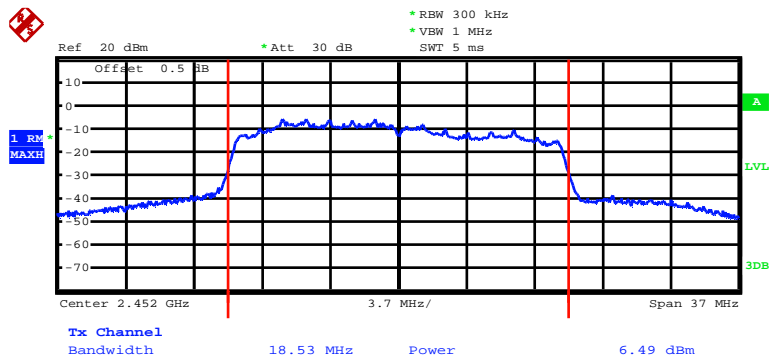
Date: 1.JUL.2014 21:49:57

Chain0: 802.11n20 Output Power, Middle Channel



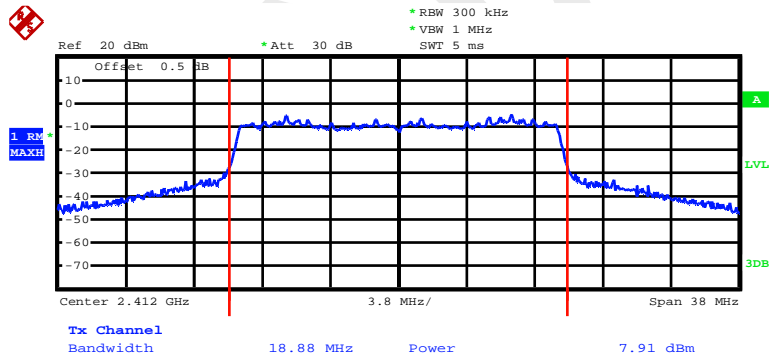
Date: 1.JUL.2014 21:51:56

Chain0: 802.11n20 Output Power, High Channel



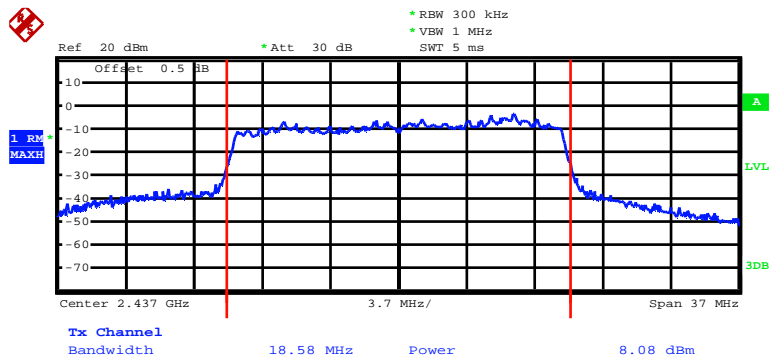
Date: 1.JUL.2014 21:57:34

Chain1: 802.11n20 Output Power, Low Channel



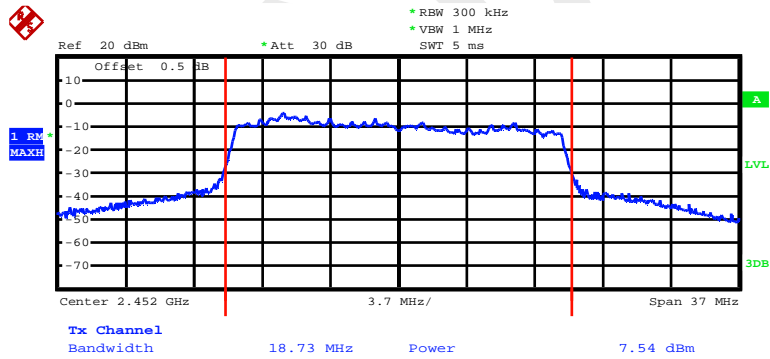
Date: 1.JUL.2014 21:48:01

Chain1: 802.11n20 Output Power, Middle Channel



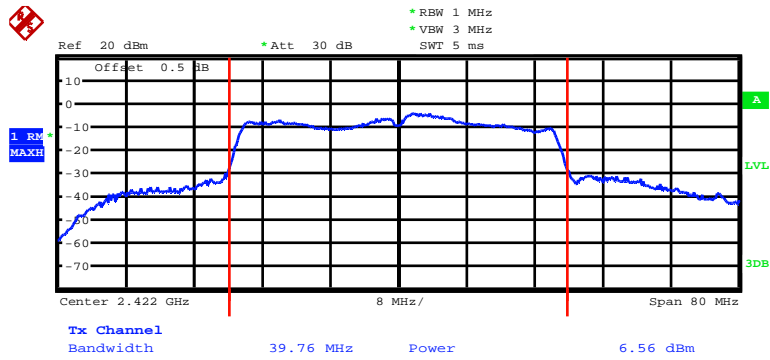
Date: 1.JUL.2014 21:45:43

Chain1: 802.11n20 Output Power, High Channel



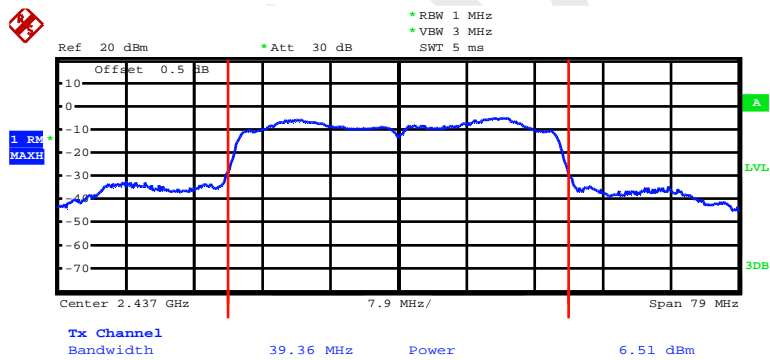
Date: 1.JUL.2014 21:42:01

Chain0: 802.11n40 Output Power, Low Channel



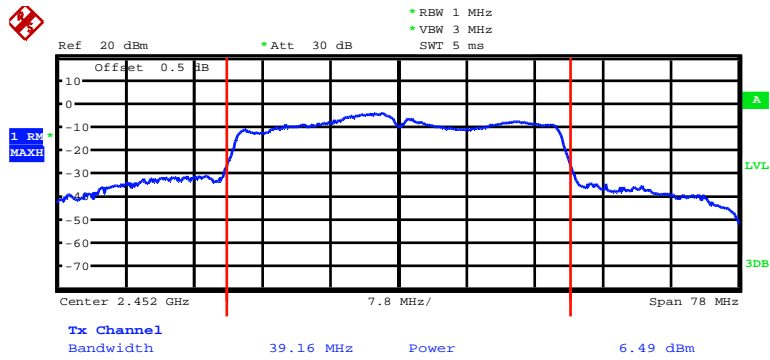
Date: 1.JUL.2014 05:21:47

Chain0: 802.11n40 Output Power, Middle Channel



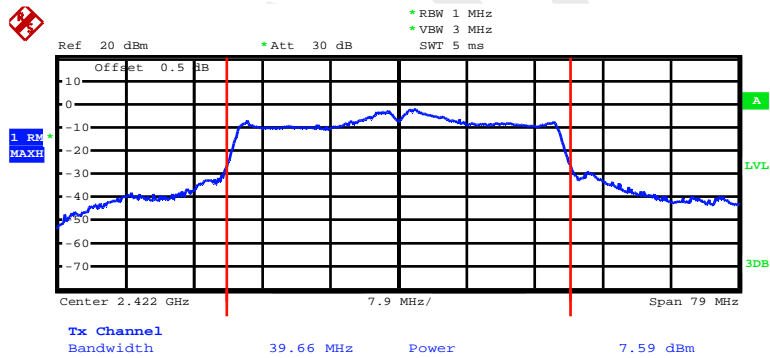
Date: 1.JUL.2014 04:53:19

Chain0: 802.11n40 Output Power, High Channel



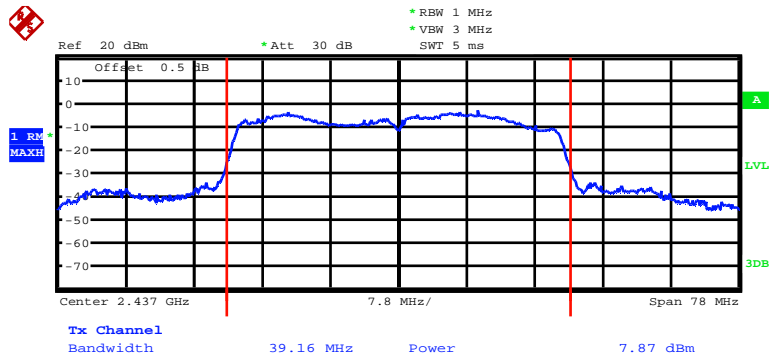
Date: 1.JUL.2014 05:42:21

Chain1: 802.11n40 Output Power, Low Channel



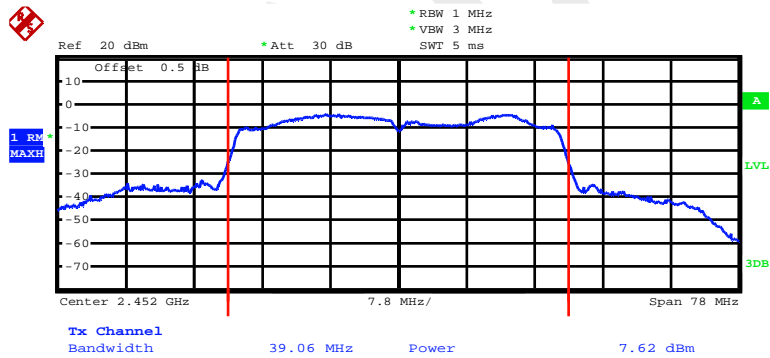
Date: 1.JUL.2014 05:18:43

Chain1: 802.11n40 Output Power, Middle Channel



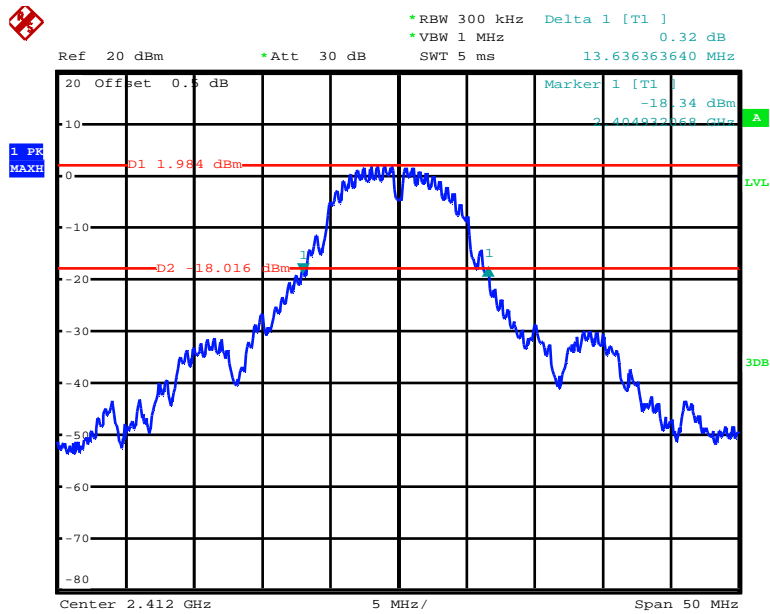
Date: 1.JUL.2014 04:45:52

Chain1: 802.11n40 Output Power, High Channel



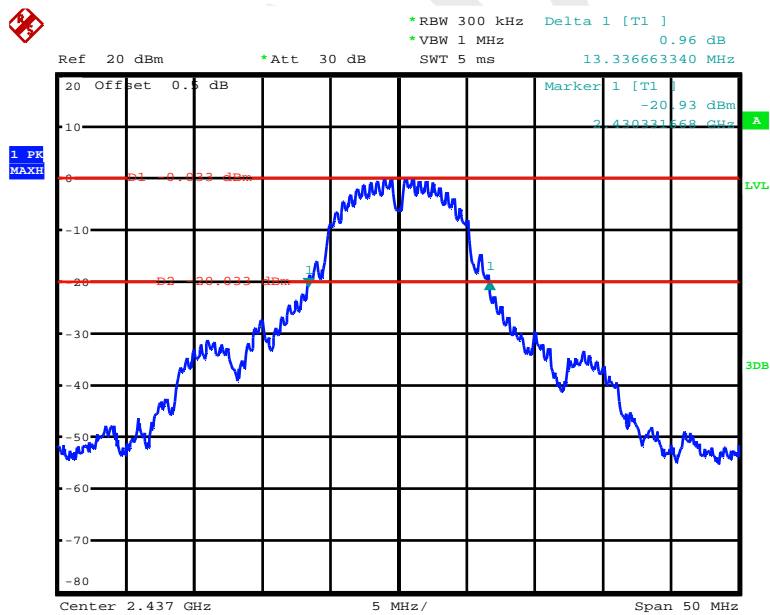
Date: 1.JUL.2014 05:52:26

Chain0: 802.11b 20dB Bandwidth, Low Channel



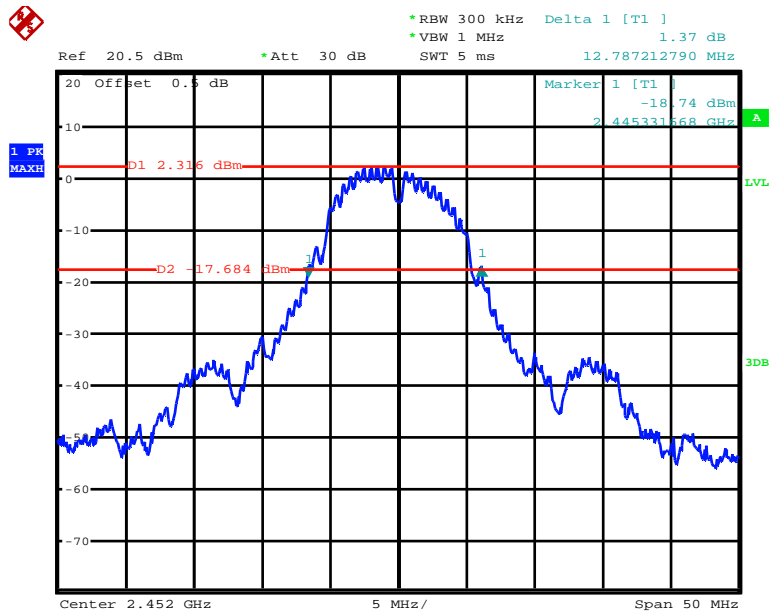
Date: 29.JUN.2014 01:38:20

Chain0: 802.11b 20dB Bandwidth, Middle Channel



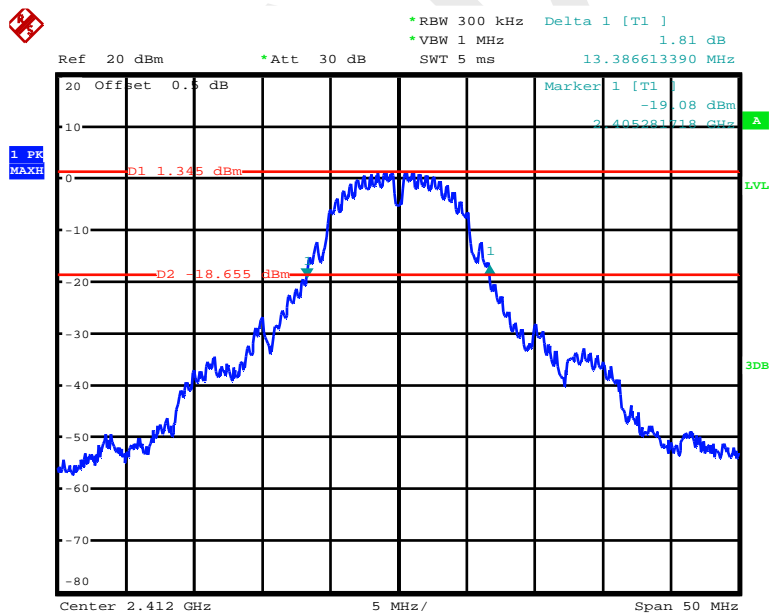
Date: 29.JUN.2014 01:34:12

Chain0: 802.11b 20dB Bandwidth, High Channel



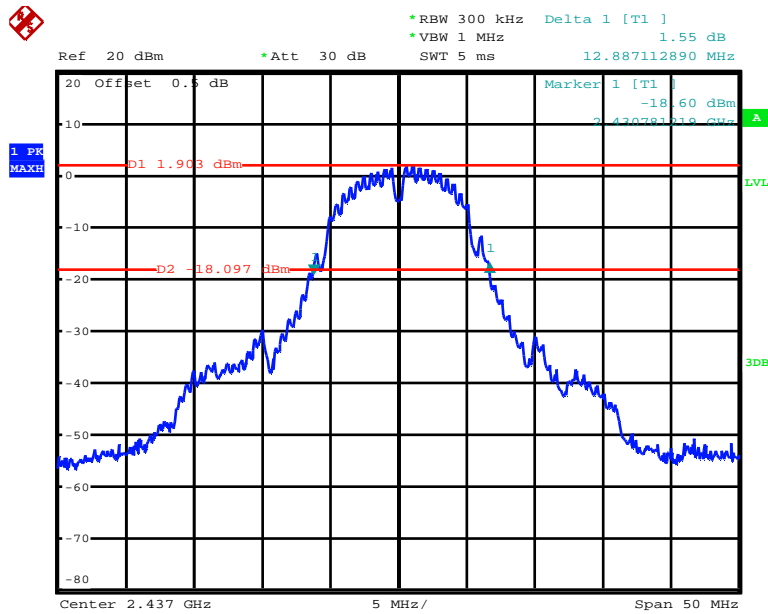
Date: 29.JUN.2014 01:28:12

Chain1: 802.11b 20dB Bandwidth, Low Channel



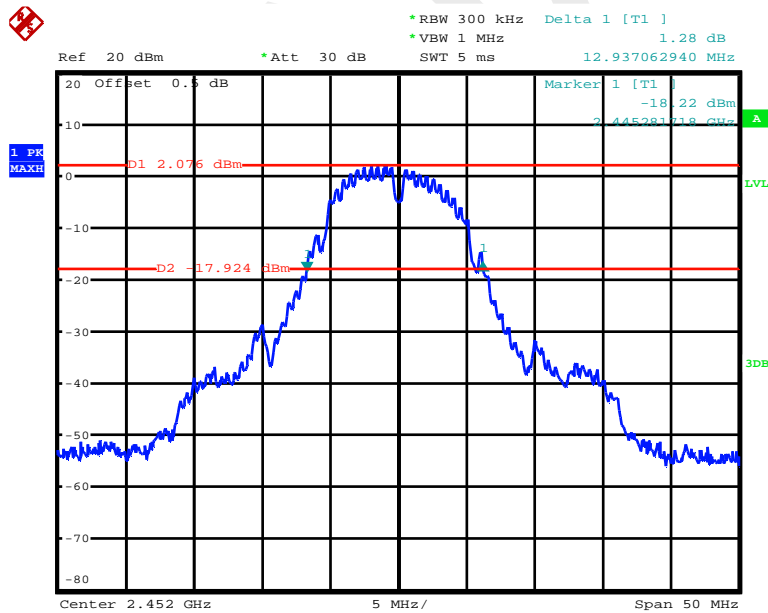
Date: 29.JUN.2014 04:20:57

Chain1: 802.11b 20dB Bandwidth, Middle Channel



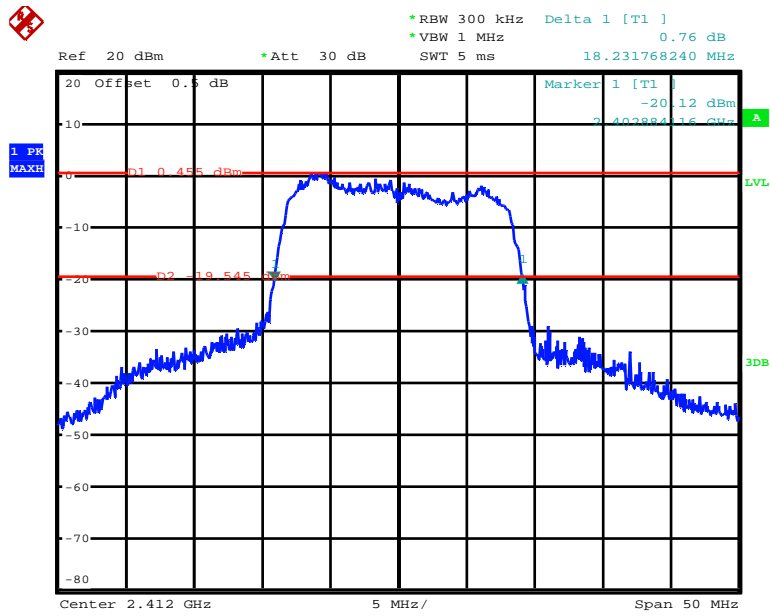
Date: 29.JUN.2014 04:22:04

Chain1: 802.11b 20dB Bandwidth, High Channel



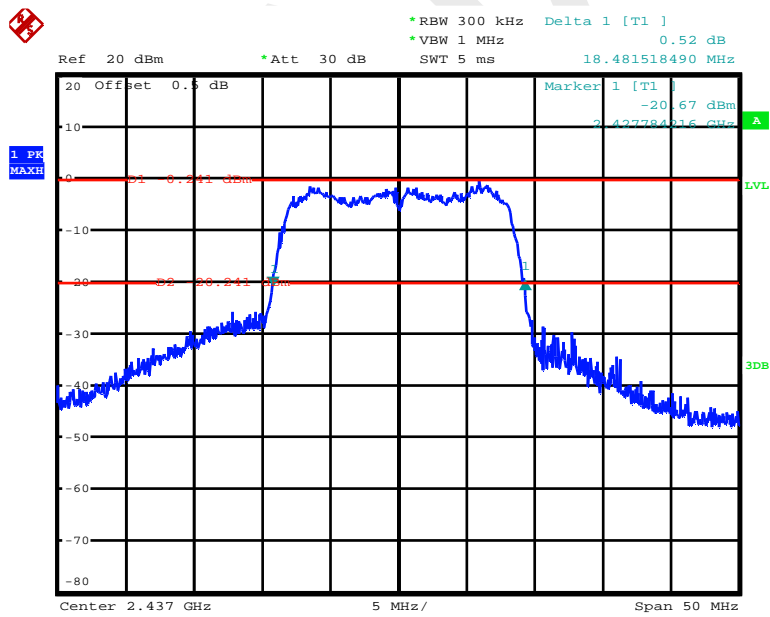
Date: 29.JUN.2014 04:23:12

Chain0: 802.11g 20dB Bandwidth, Low Channel



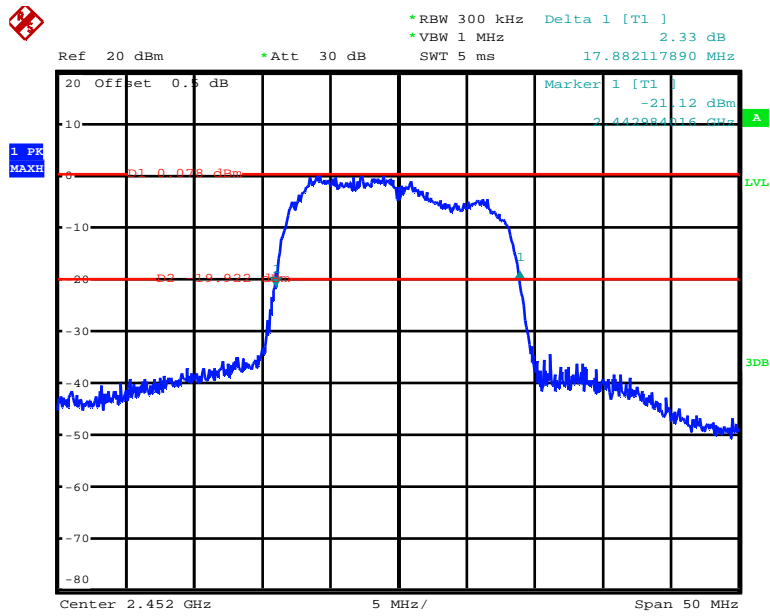
Date: 29.JUN.2014 01:42:21

Chain0: 802.11g 20dB Bandwidth, Middle Channel



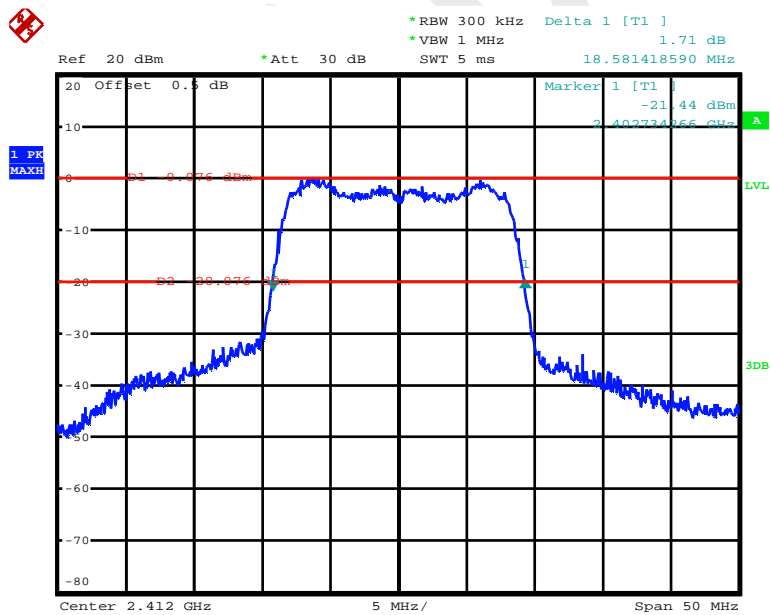
Date: 29.JUN.2014 01:44:24

Chain0: 802.11g 20dB Bandwidth, High Channel



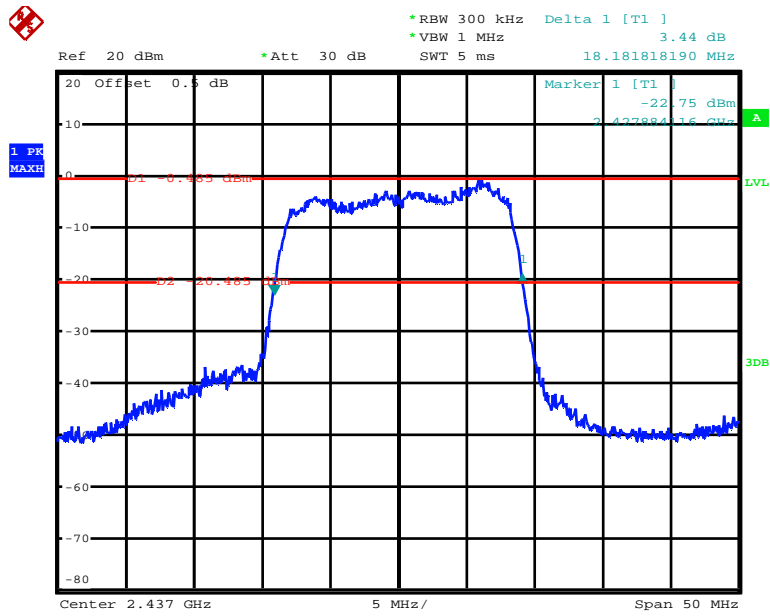
Date: 29.JUN.2014 01:46:44

Chain1: 802.11g 20dB Bandwidth, Low Channel



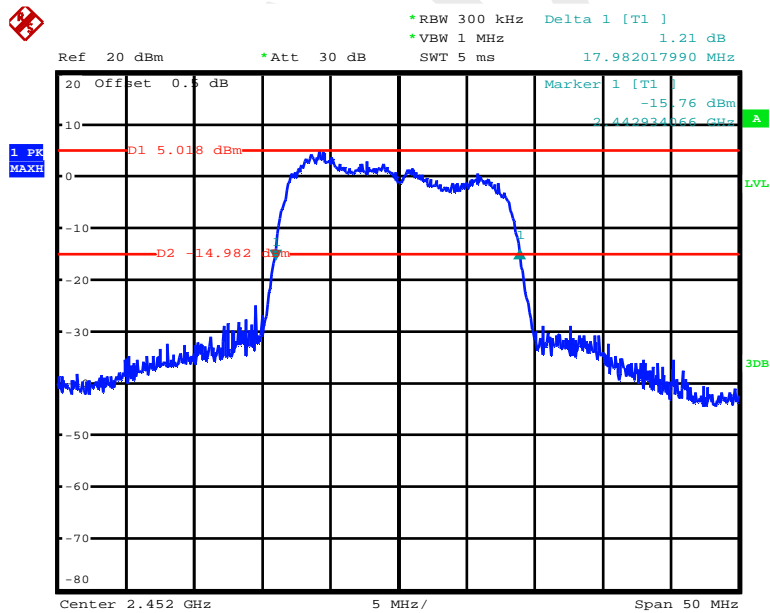
Date: 29.JUN.2014 03:02:38

Chain1: 802.11g 20dB Bandwidth, Middle Channel



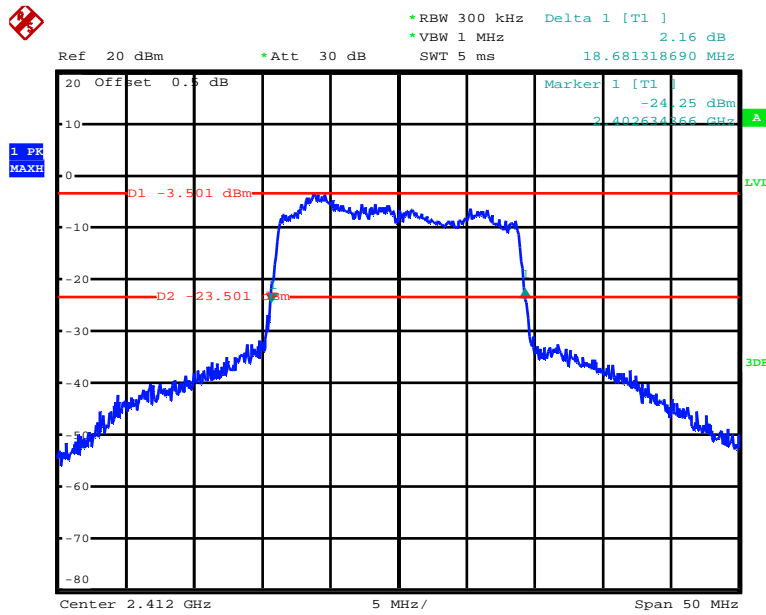
Date: 29.JUN.2014 03:00:17

Chain1: 802.11g 20dB Bandwidth, High Channel



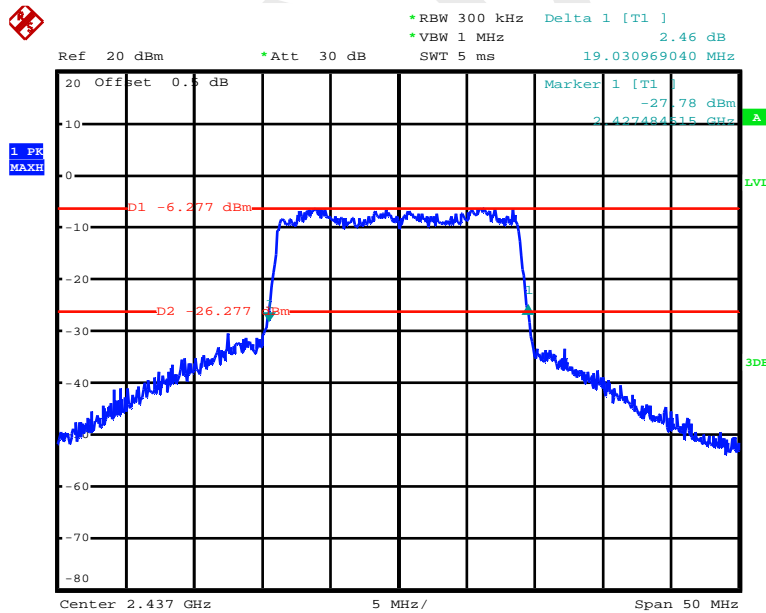
Date: 29.JUN.2014 02:57:23

Chain0: 802.11n20 20dB Bandwidth, Low Channel



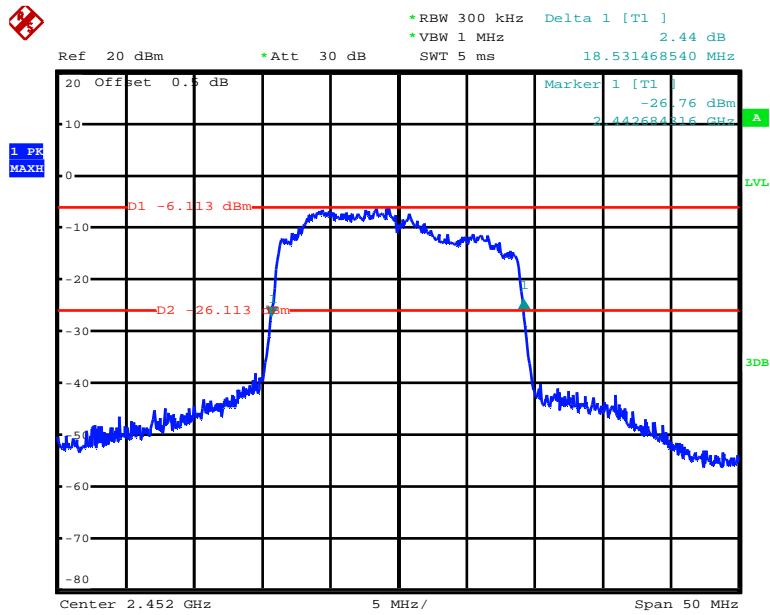
Date: 1.JUL.2014 21:49:48

Chain0: 802.11n20 20dB Bandwidth, Middle Channel



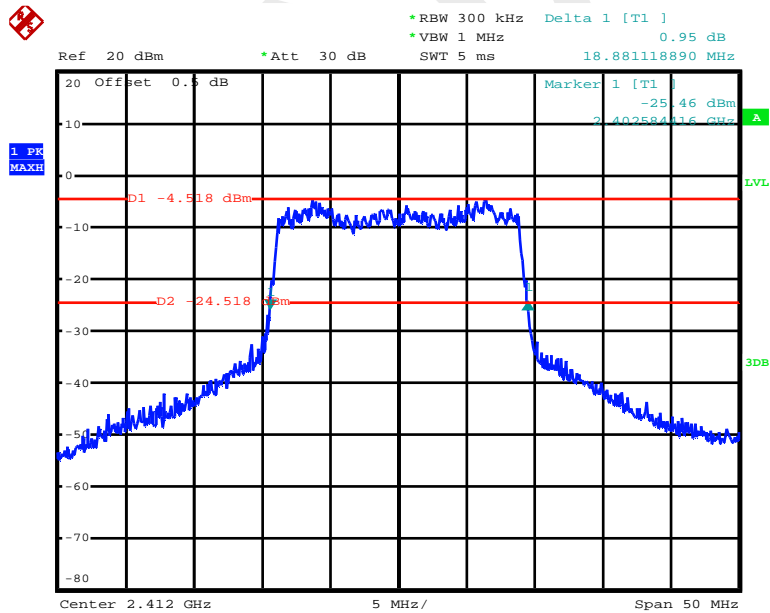
Date: 1.JUL.2014 21:51:40

Chain0: 802.11n20 20dB Bandwidth, High Channel



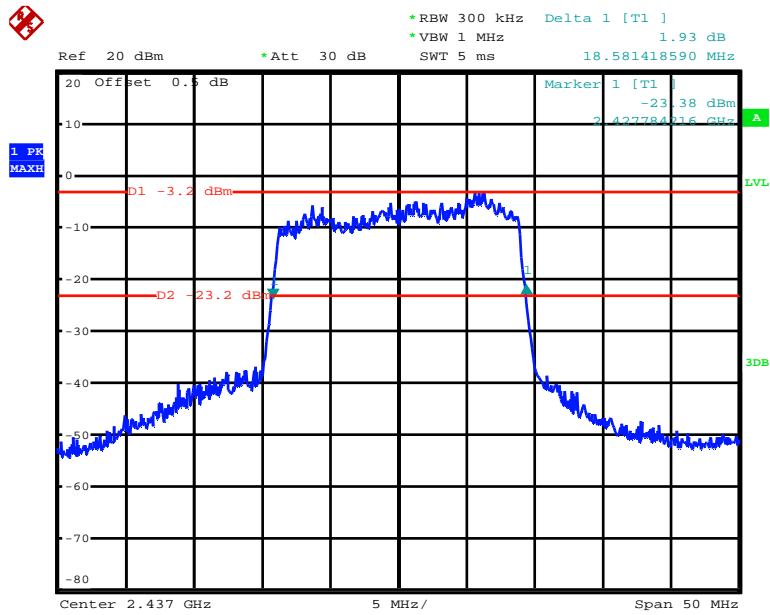
Date: 1.JUL.2014 21:54:46

Chain1: 802.11n20 20dB Bandwidth, Low Channel



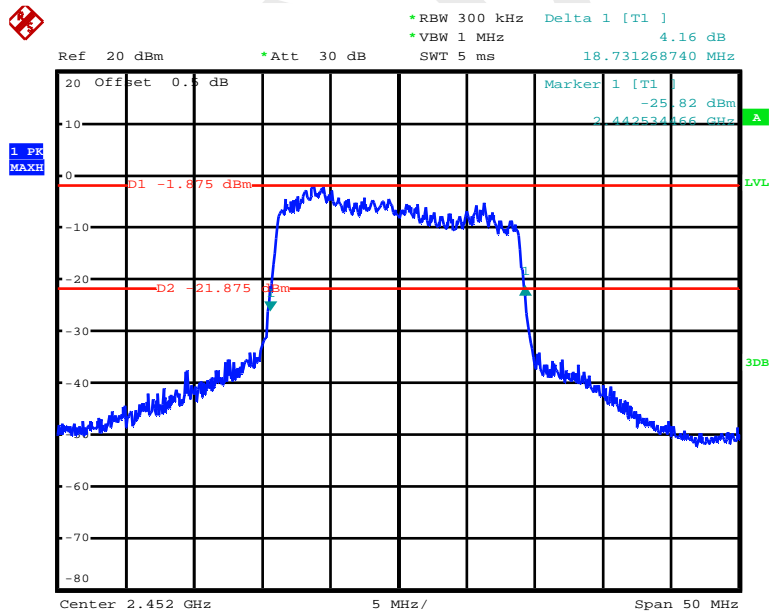
Date: 1.JUL.2014 21:47:25

Chain1: 802.11n20 20dB Bandwidth, Middle Channel



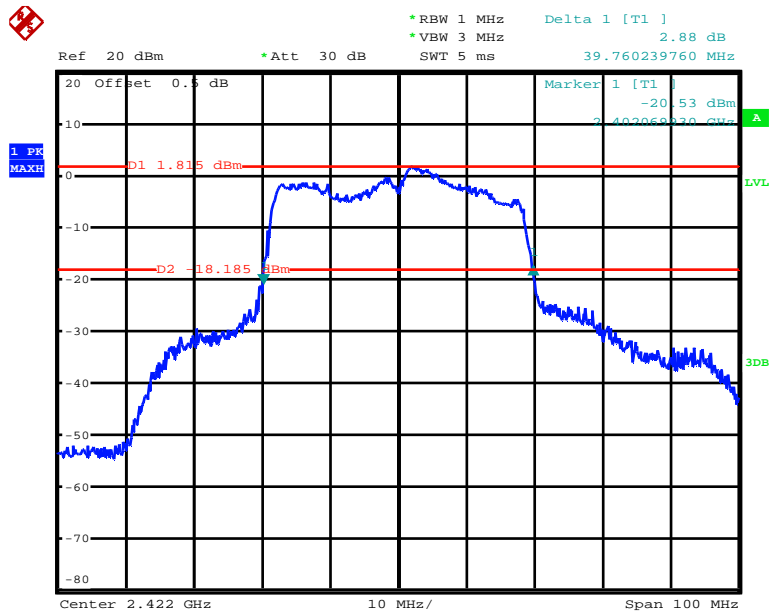
Date: 1.JUL.2014 21:45:03

Chain1: 802.11n20 20dB Bandwidth, High Channel



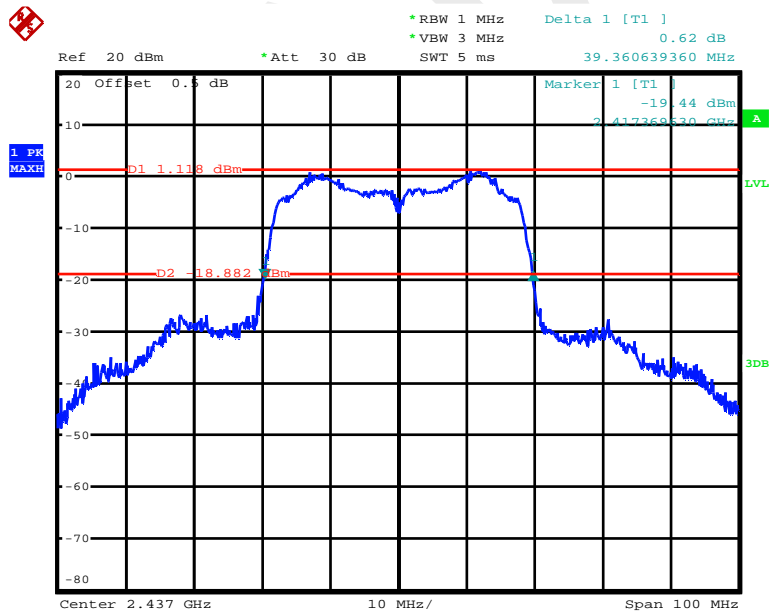
Date: 1.JUL.2014 21:41:16

Chain0: 802.11n40 20dB Bandwidth, Low Channel



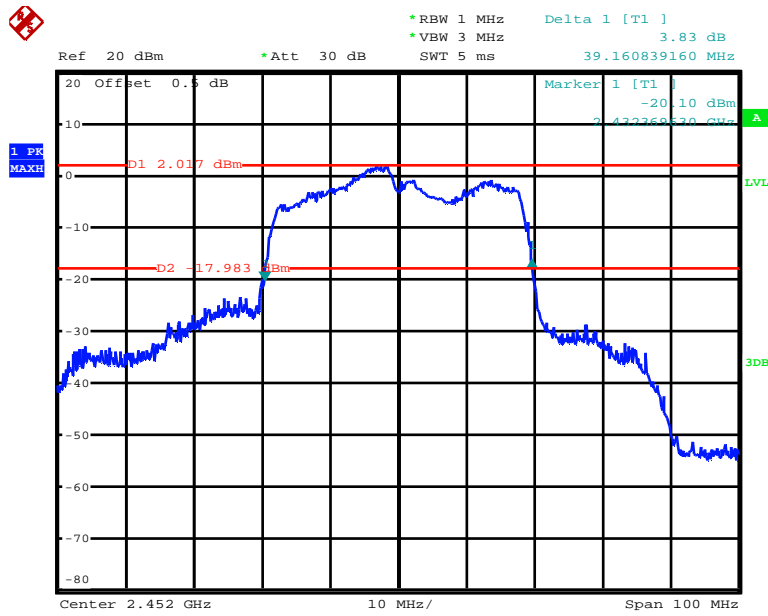
Date: 1.JUL.2014 05:21:39

Chain0: 802.11n40 20dB Bandwidth, Middle Channel



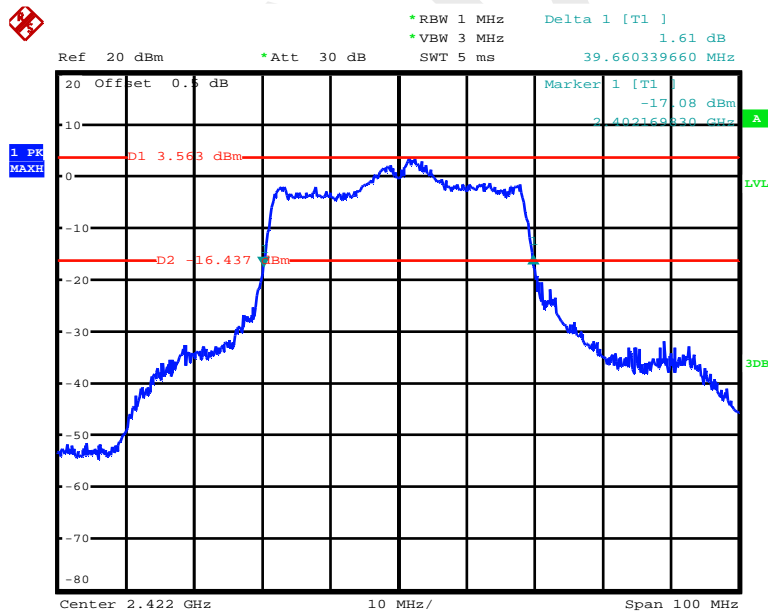
Date: 1.JUL.2014 04:53:08

Chain0: 802.11n40 20dB Bandwidth, High Channel



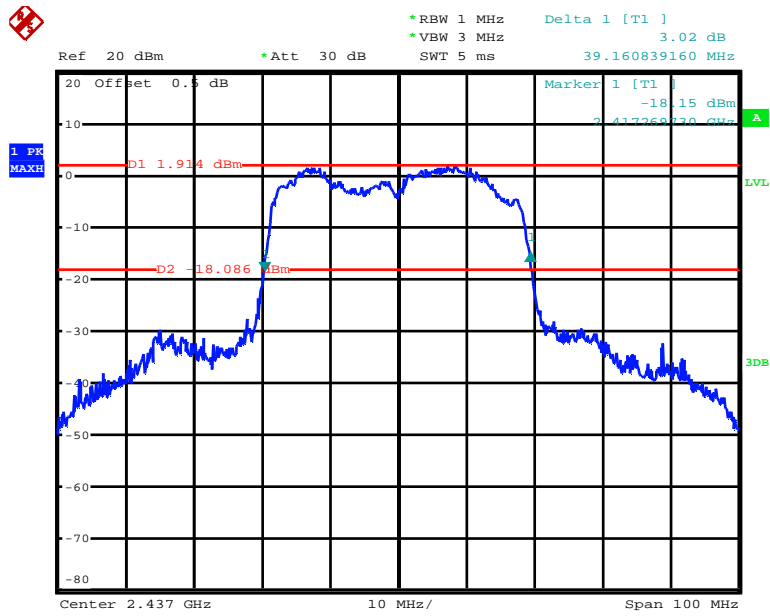
Date: 1.JUL.2014 05:42:07

Chain1: 802.11n40 20dB Bandwidth, Low Channel



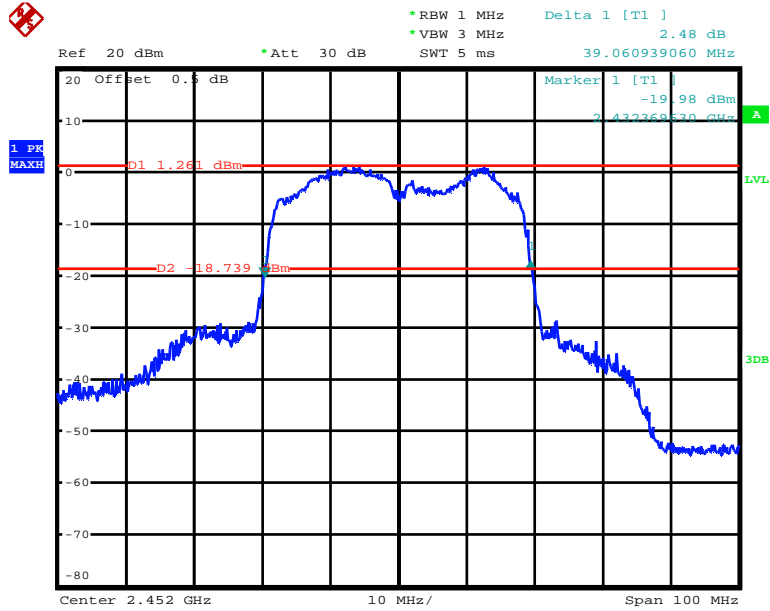
Date: 1.JUL.2014 05:18:28

Chain1: 802.11n40 20dB Bandwidth, Middle Channel



Date: 1.JUL.2014 04:45:43

Chain1: 802.11n40 20dB Bandwidth, High Channel



Date: 1.JUL.2014 05:50:50

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
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

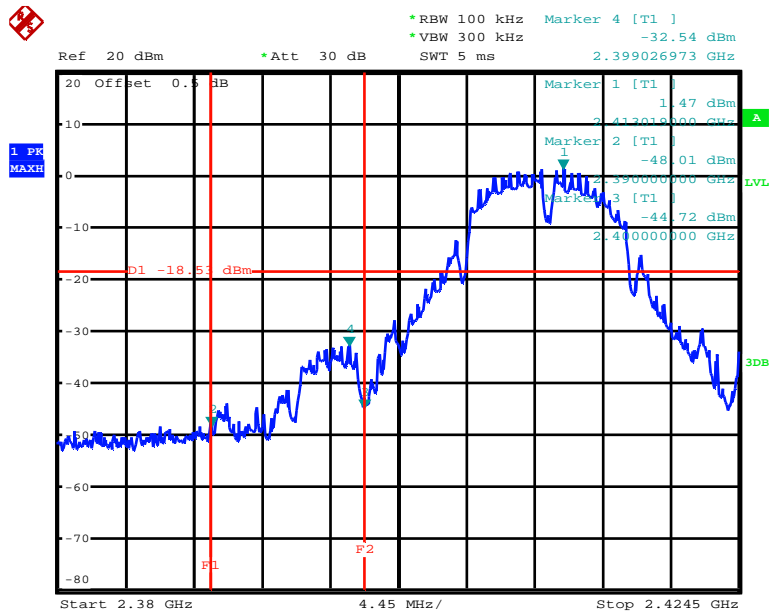
Temperature:	29.3 °C-29.7 °C
Relative Humidity:	62 %-66 %
ATM Pressure:	100.1 kPa-100.3 kPa

* The testing was performed by Allen Qiao on 2014-06-29 & 2014-07-01.

Test Result: Compliance

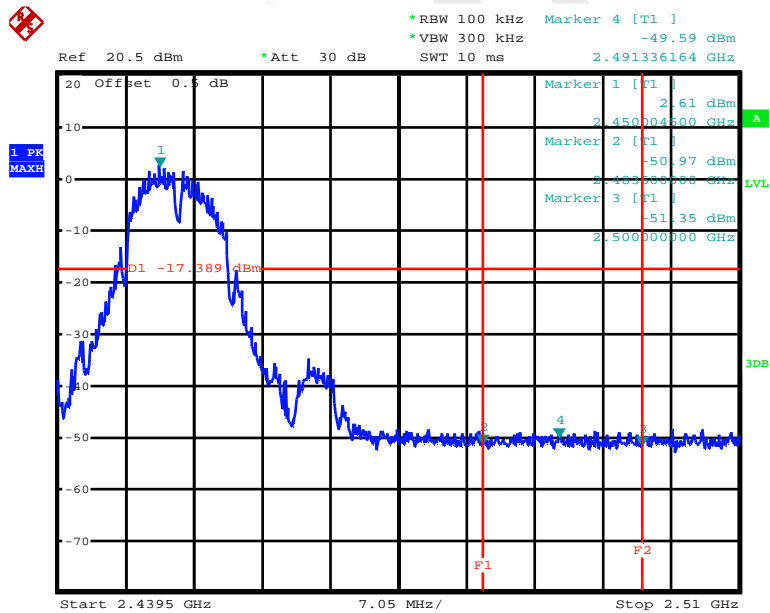
Please refer to following table and plots.

Chain0: 802.11b Band Edge, Left Side



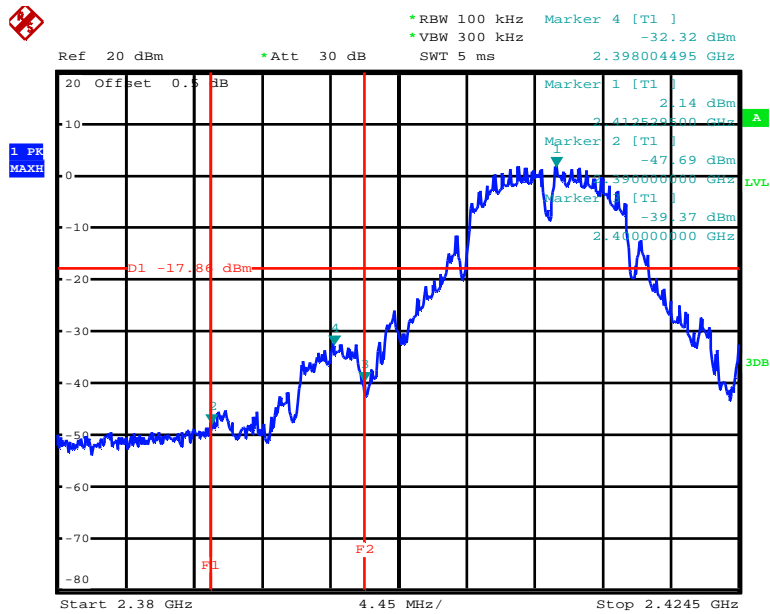
Date: 29.JUN.2014 01:39:03

Chain0: 802.11b Band Edge, Right Side



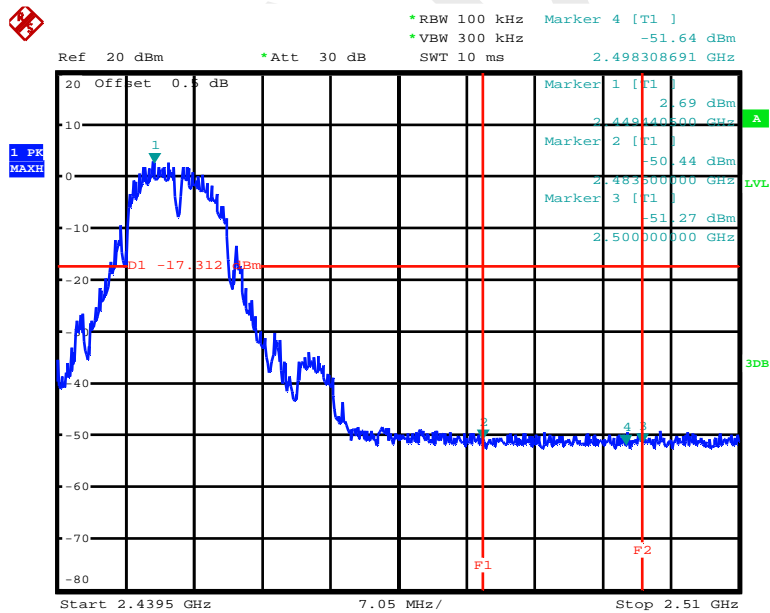
Date: 29.JUN.2014 01:28:58

Chain1: 802.11b Band Edge, Left Side



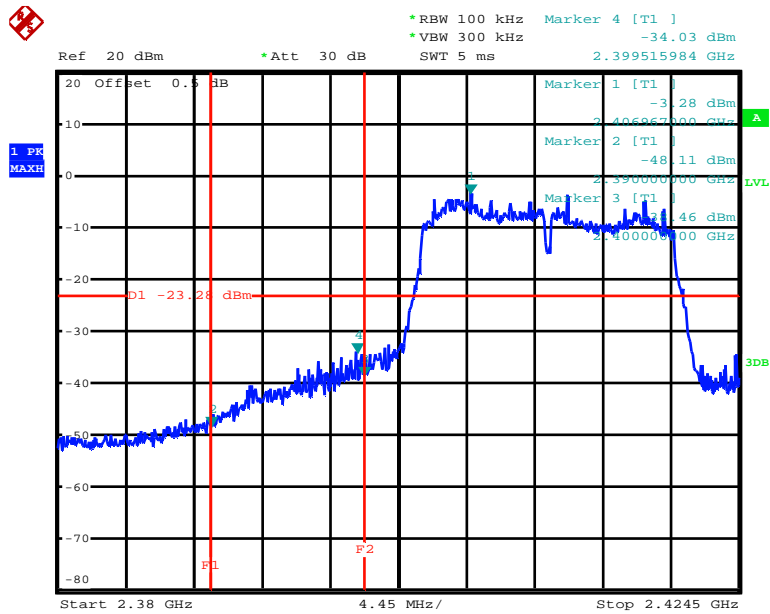
Date: 29.JUN.2014 02:47:15

Chain1: 802.11b Band Edge, Right Side



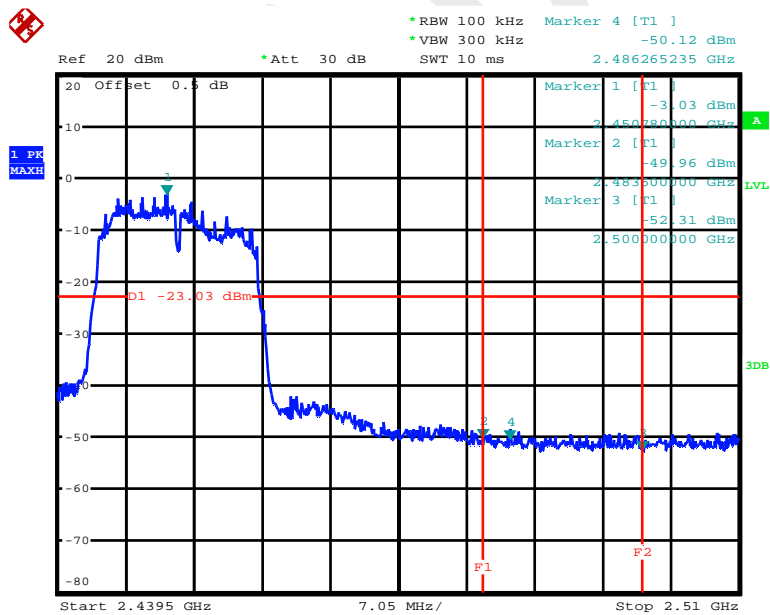
Date: 29.JUN.2014 02:52:24

Chain0: 802.11g Band Edge, Left Side



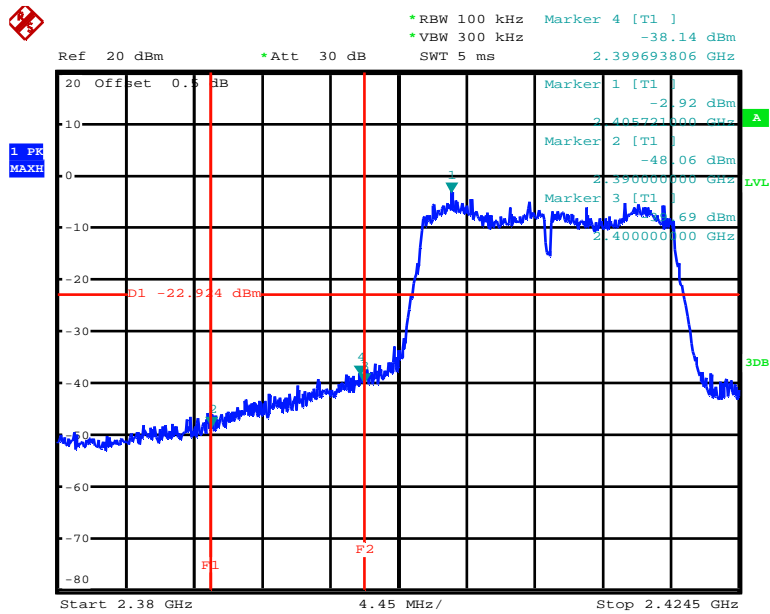
Date: 29.JUN.2014 01:43:17

Chain0: 802.11g Band Edge, Right Side



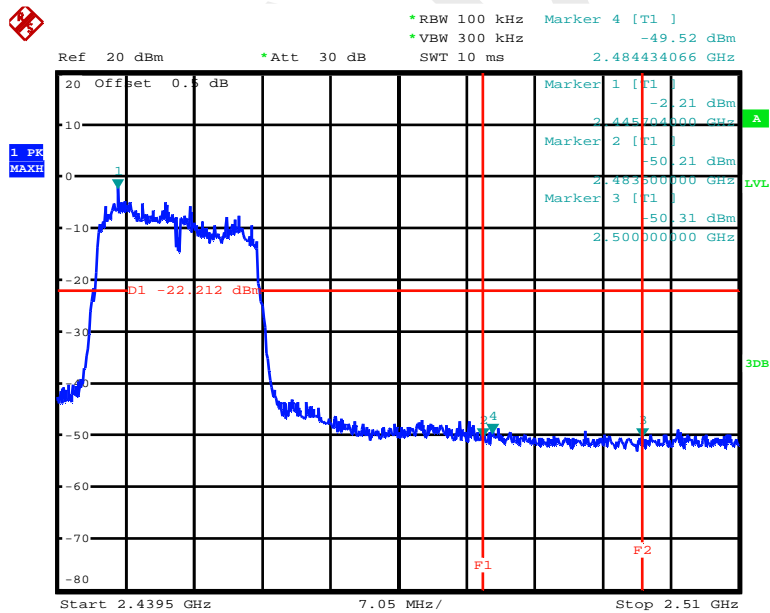
Date: 29.JUN.2014 01:47:42

Chain1: 802.11g Band Edge, Left Side



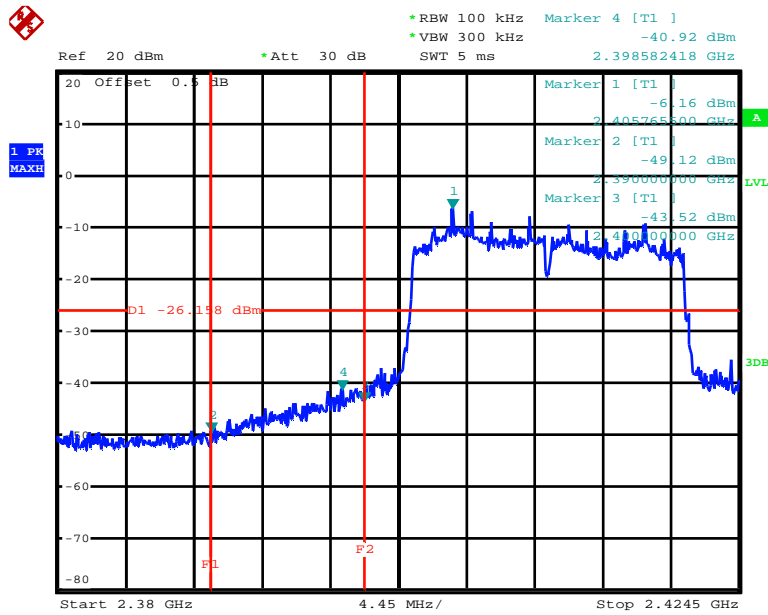
Date: 29.JUN.2014 03:03:27

Chain1: 802.11g Band Edge, Right Side



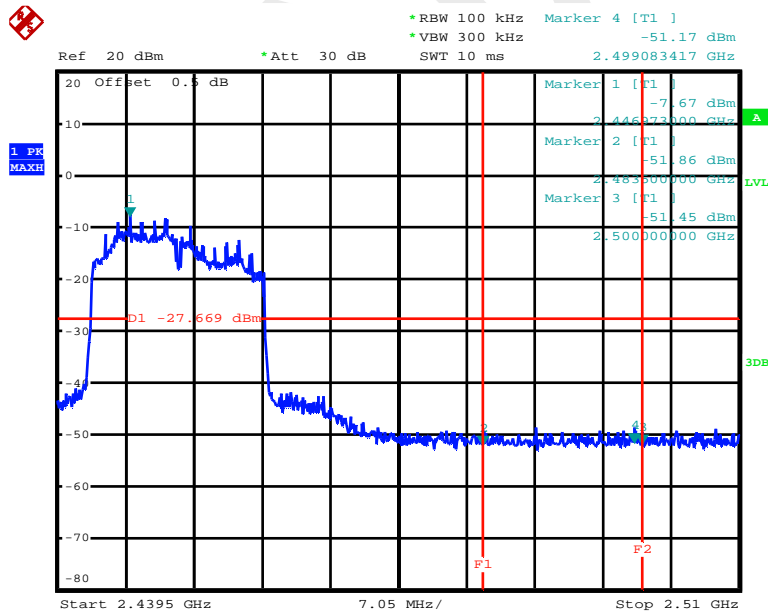
Date: 29.JUN.2014 02:58:54

Chain0: 802.11n20 Band Edge, Left Side



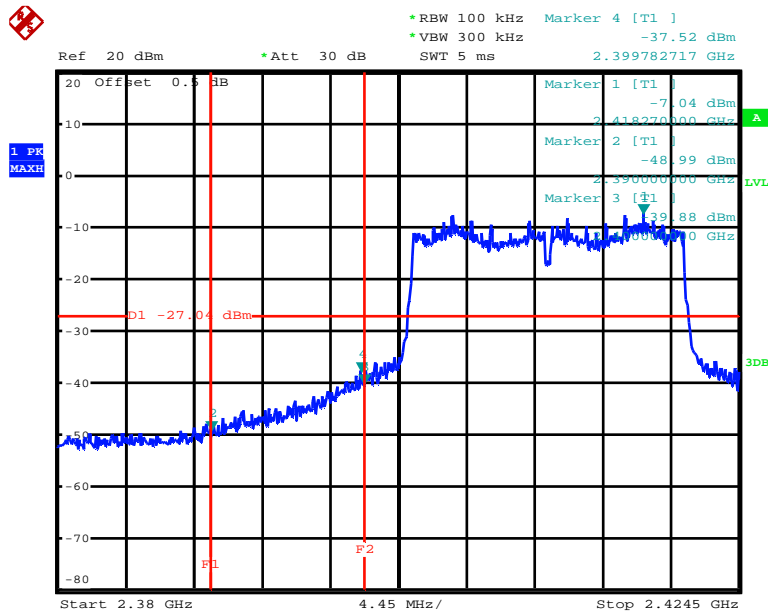
Date: 1.JUL.2014 21:50:35

Chain0: 802.11n20 Band Edge, Right Side



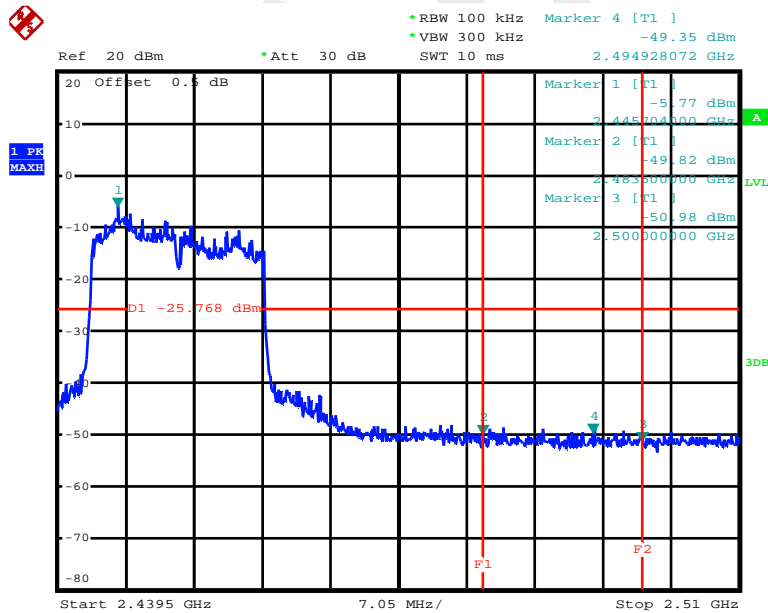
Date: 1.JUL.2014 21:58:11

Chain1: 802.11n20 Band Edge, Left Side



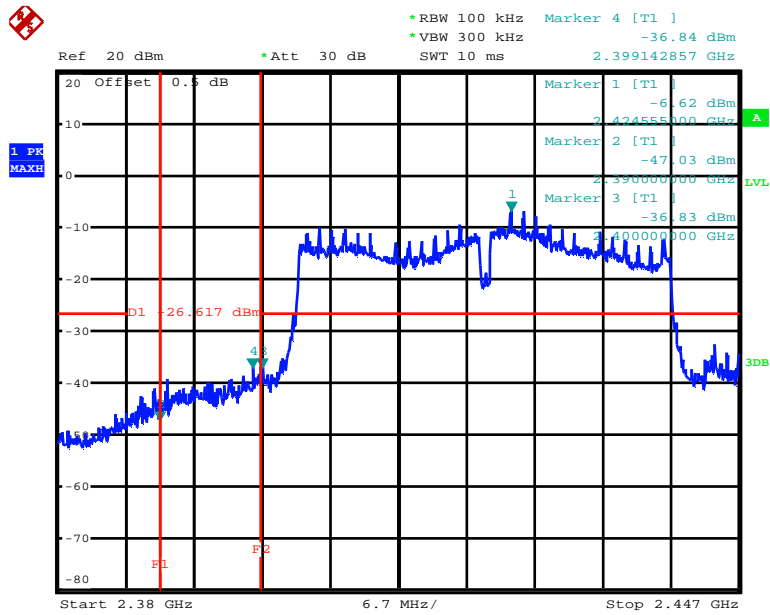
Date: 1.JUL.2014 21:48:40

Chain1: 802.11n20 Band Edge, Right Side



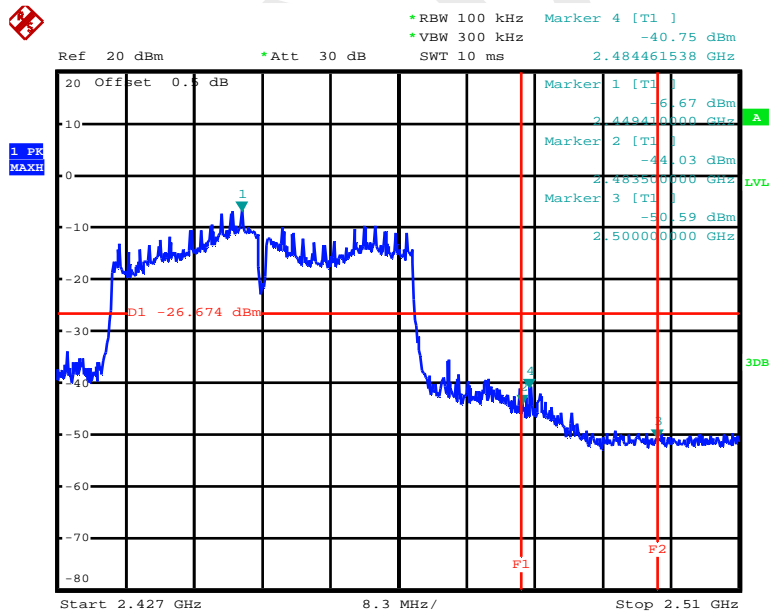
Date: 1.JUL.2014 21:42:39

Chain0: 802.11n40 Band Edge, Left Side



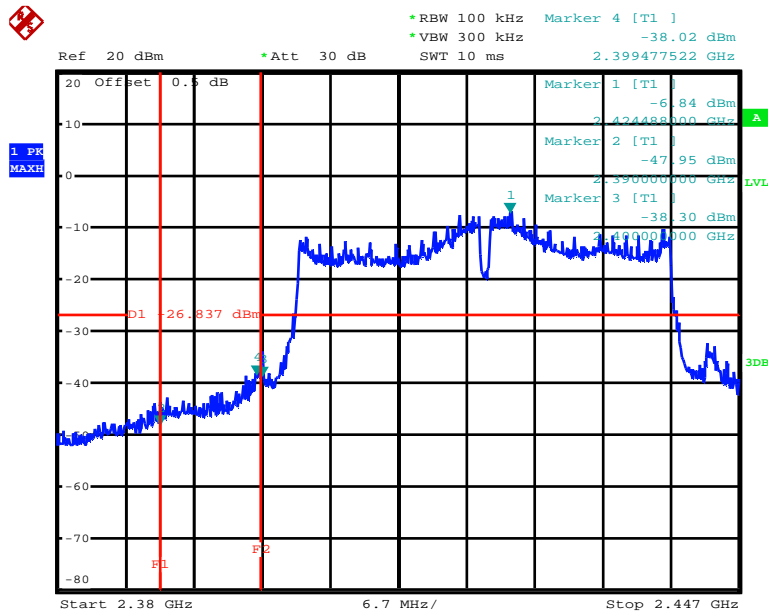
Date: 1.JUL.2014 05:22:38

Chain0: 802.11n40 Band Edge, Right Side



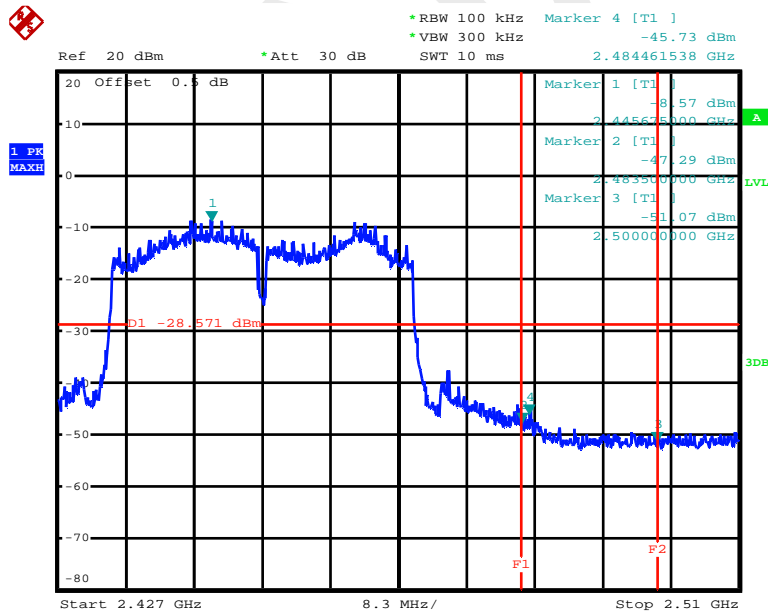
Date: 1.JUL.2014 05:41:08

Chain1: 802.11n40 Band Edge, Left Side



Date: 1.JUL.2014 05:19:35

Chain1: 802.11n40 Band Edge, Right Side



Date: 1.JUL.2014 05:50:14

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. Set the RBW = 3 kHz, VBW = 10 kHz, Set the span to 1.5 times the DTS bandwidth.
4. Use the peak marker function to determine the maximum amplitude level.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSP 38	100478	2014-05-09	2015-05-09

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	29.3 °C-29.7 °C
Relative Humidity:	62 %-66 %
ATM Pressure:	100.1 kPa-100.3 kPa

* The testing was performed by Allen Qiao on 2014-06-29 & 2014-07-01.

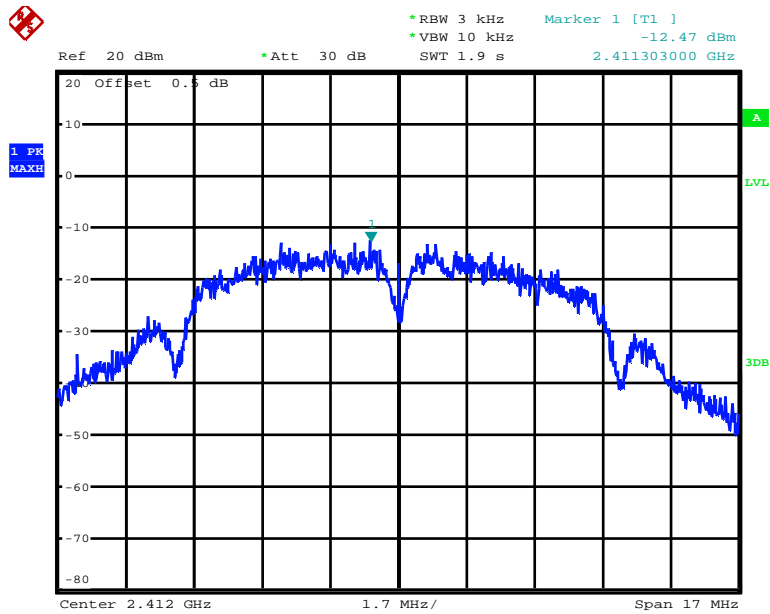
Test Mode: Transmitting

Test Result: Pass

Test Mode	Channel	PSD (dBm/3kHz)			Limit (dBm/3kHz)	Result
		Chain 0	Chain 1	Total		
802.11b	Low	-12.47	-12.25	/	8	Pass
	Middle	-12.43	-12.37	/	8	Pass
	High	-11.23	-12.42	/	8	Pass
802.11g	Low	-16.16	-17.14	/	8	Pass
	Middle	-17.91	-16.68	/	8	Pass
	High	-17.46	-16.85	/	8	Pass
802.11n20	Low	-22.71	-22.08	-19.37	8	Pass
	Middle	-24.11	-19.45	-18.17	8	Pass
	High	-21.61	-21.67	-18.63	8	Pass
802.11n40	Low	-22.93	-21.13	-18.93	8	Pass
	Middle	-22.82	-22.27	-19.53	8	Pass
	High	-20.78	-22.73	-18.64	8	Pass

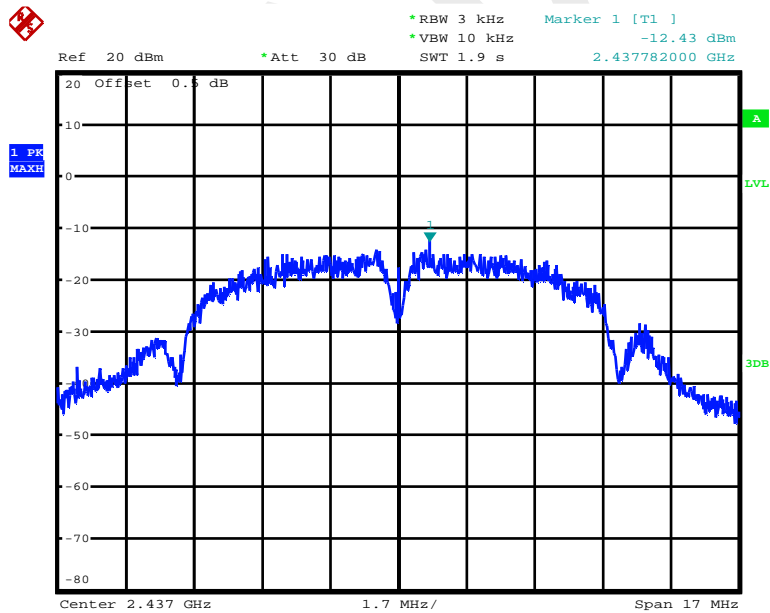
Please refer to the following plots

Chain0: 802.11b Low Channel



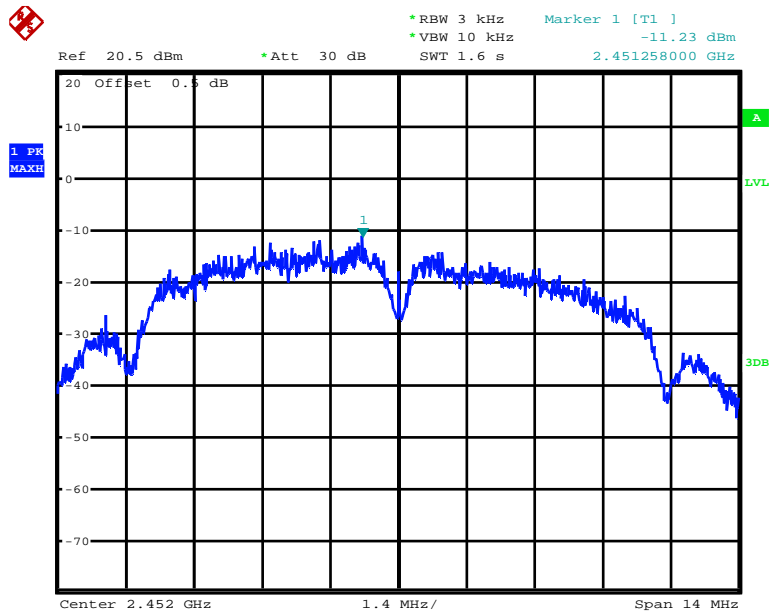
Date: 29.JUN.2014 01:38:38

Chain0: 802.11b Middle Channel



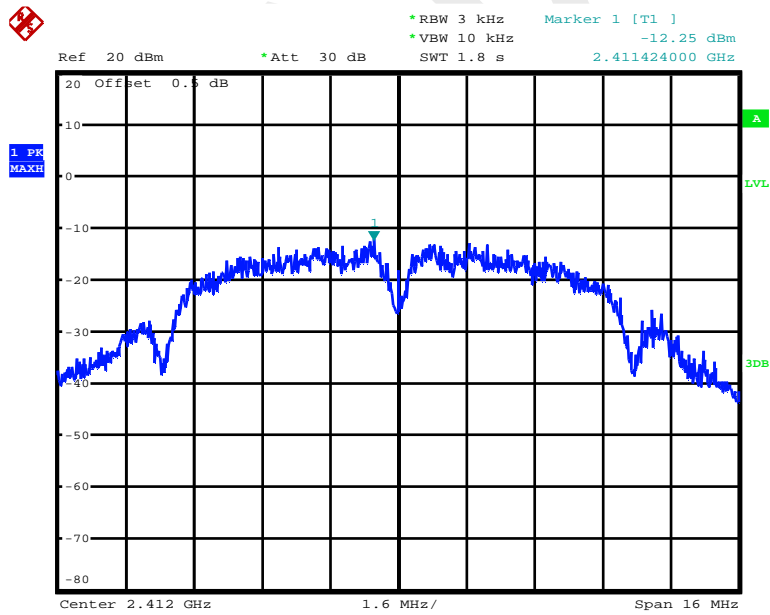
Date: 29.JUN.2014 01:35:11

Chain0: 802.11b High Channel



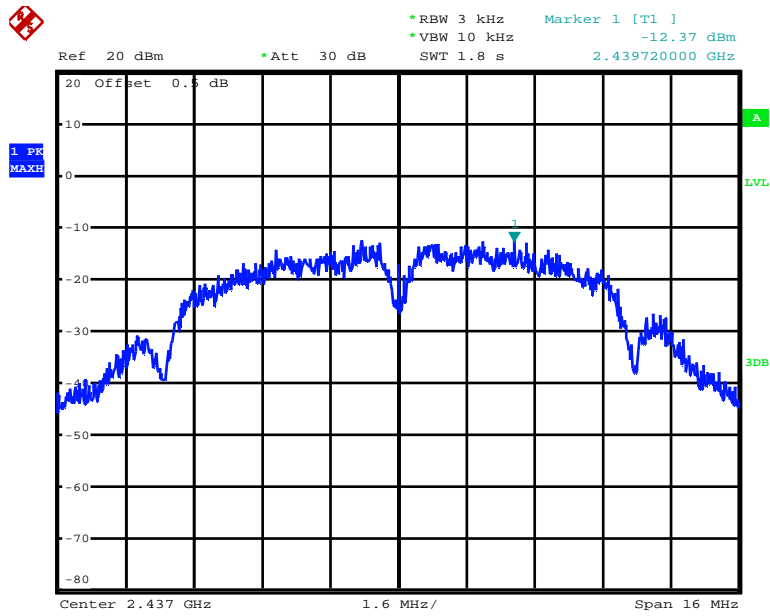
Date: 29.JUN.2014 01:28:33

Chain1: 802.11b Low Channel



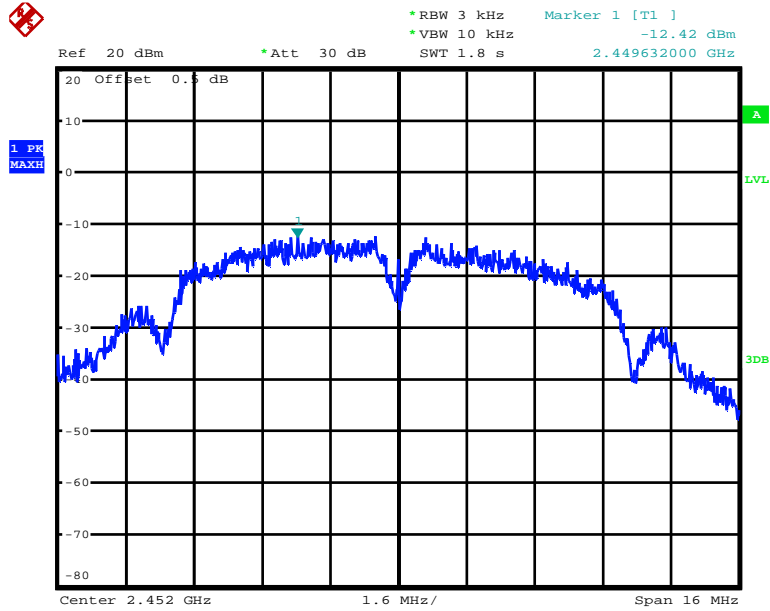
Date: 29.JUN.2014 02:46:50

Chain1: 802.11b Middle Channel



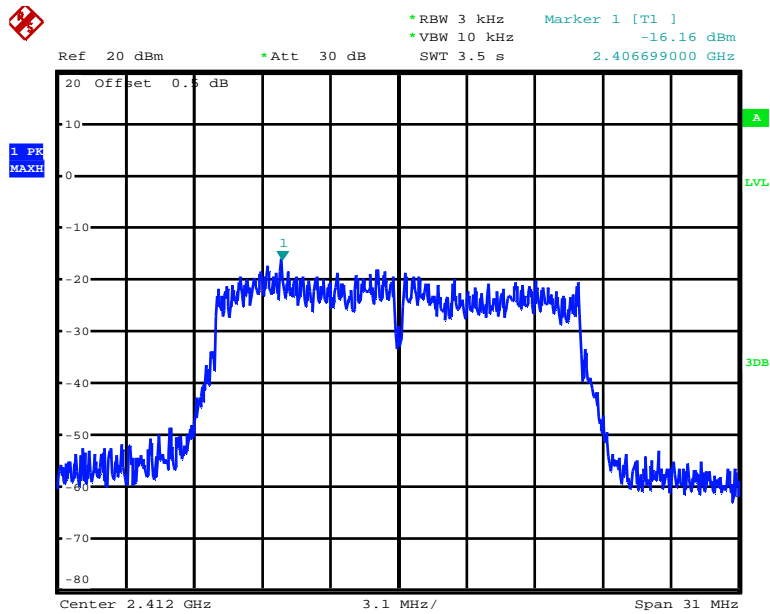
Date: 29.JUN.2014 02:50:13

Chain1: 802.11b High Channel



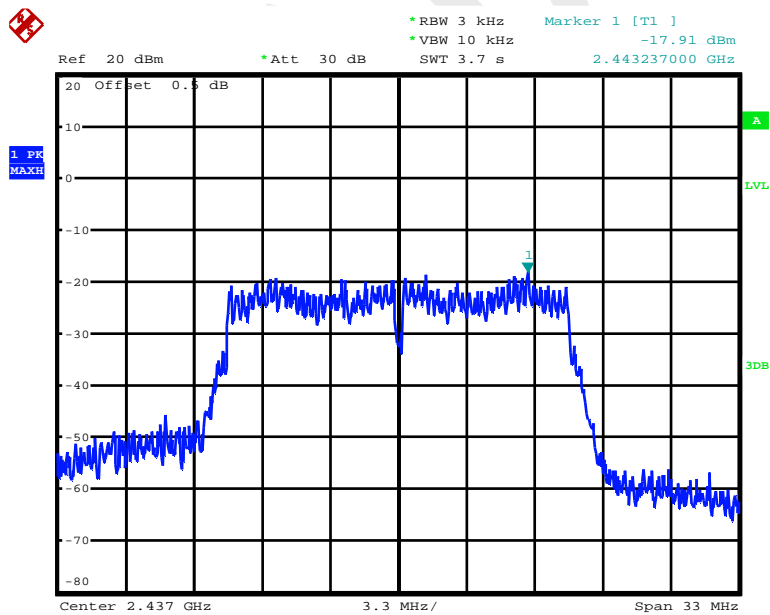
Date: 29.JUN.2014 02:51:59

Chain0: 802.11g Low Channel



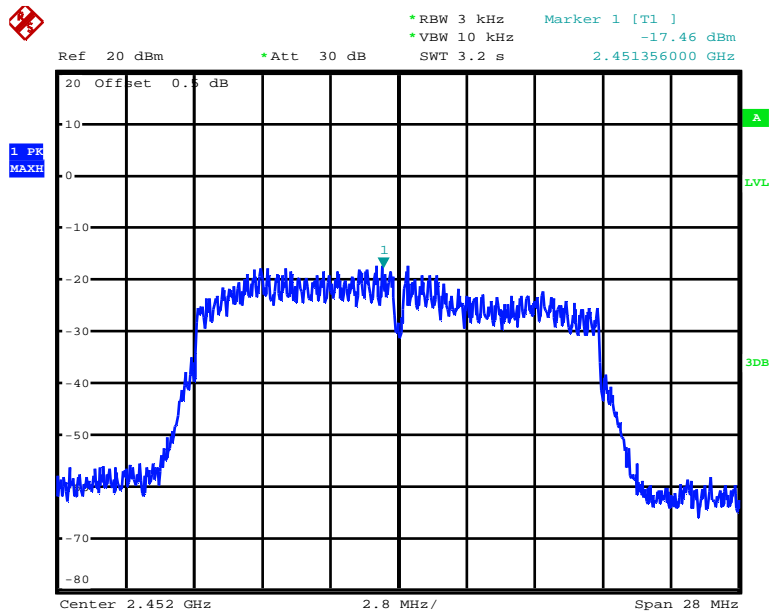
Date: 29.JUN.2014 01:42:51

Chain0: 802.11g Middle Channel



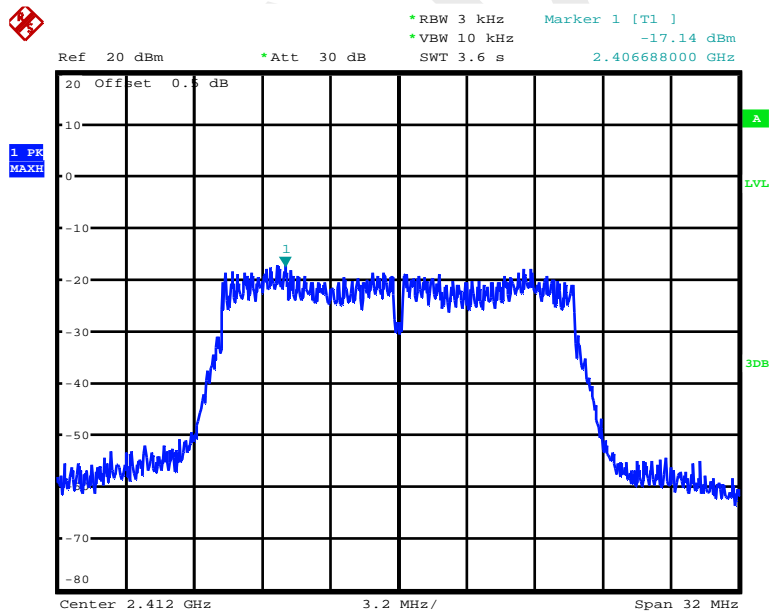
Date: 29.JUN.2014 01:44:56

Chain0: 802.11g High Channel



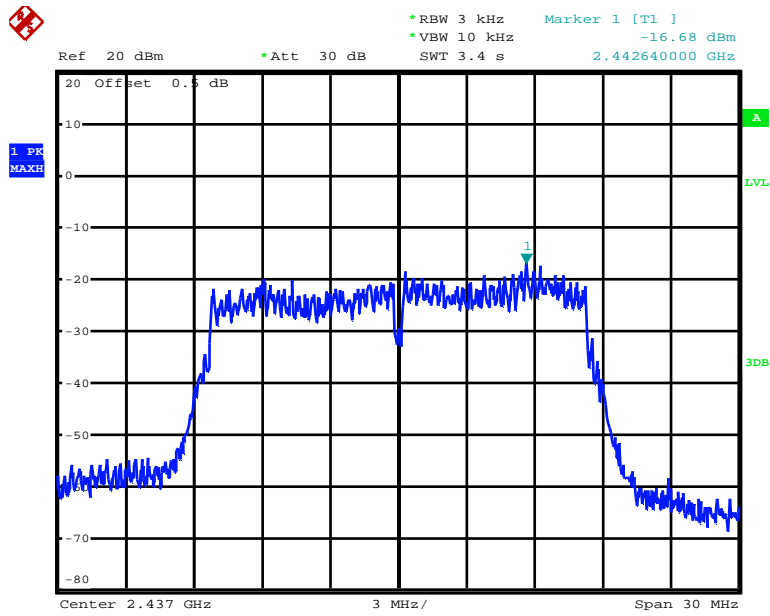
Date: 29.JUN.2014 01:47:17

Chain1: 802.11g Low Channel



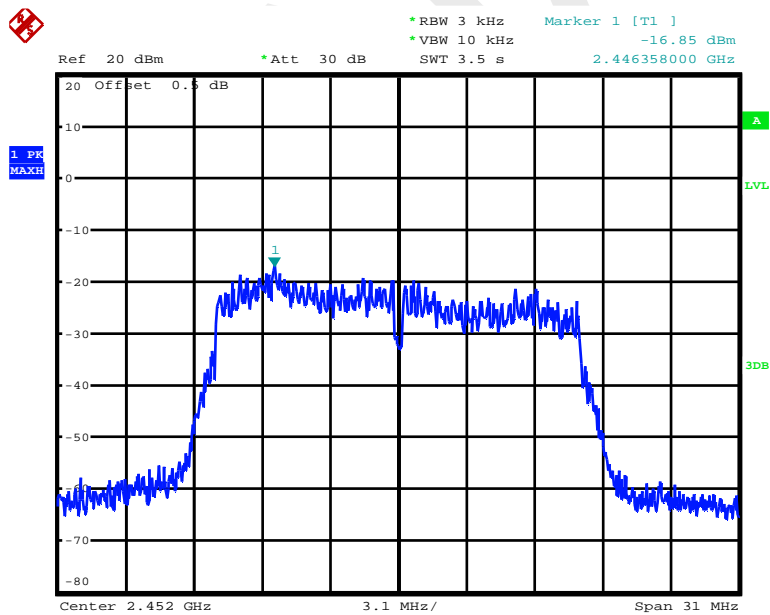
Date: 29.JUN.2014 04:25:23

Chain1: 802.11g Middle Channel



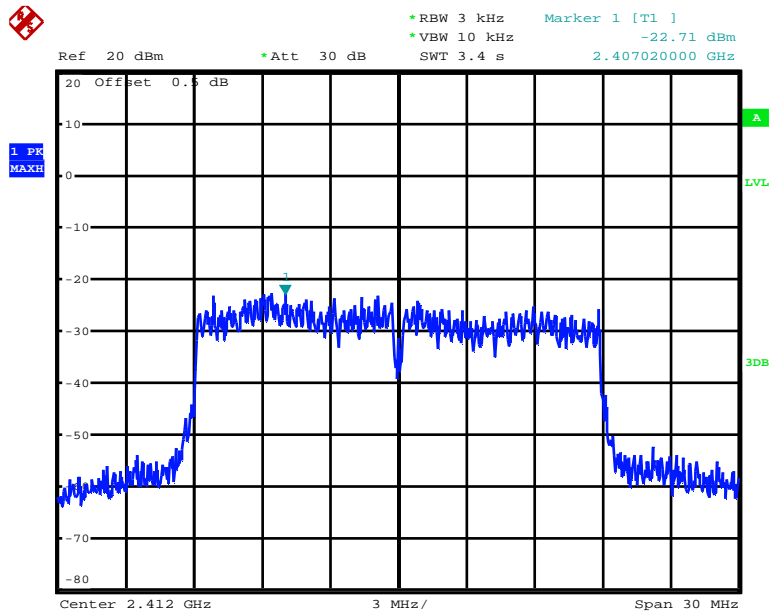
Date: 29.JUN.2014 03:01:03

Chain1: 802.11g High Channel



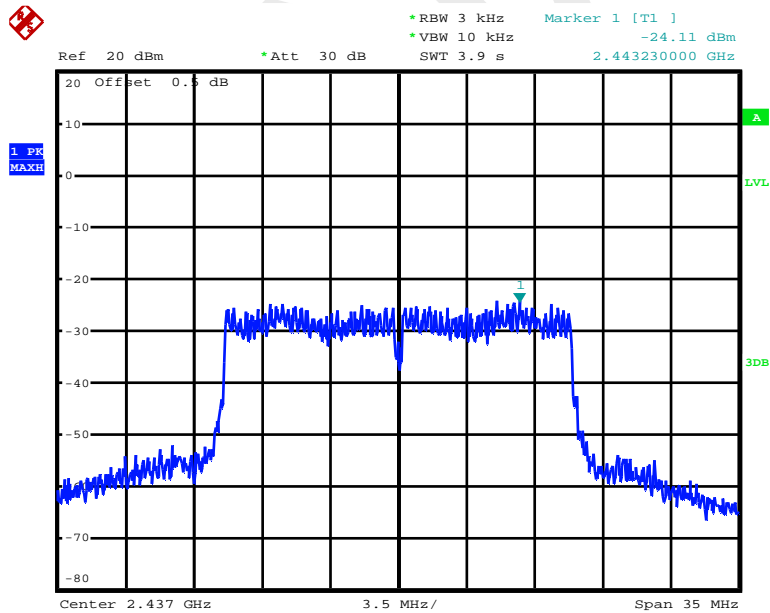
Date: 29.JUN.2014 02:58:29

Chain0: 802.11n20 Low Channel



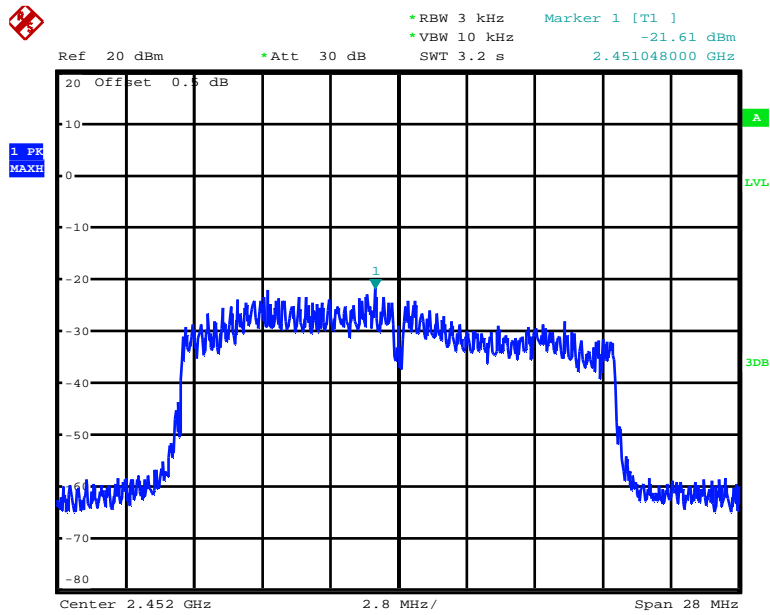
Date: 1.JUL.2014 21:50:10

Chain0: 802.11n20 Middle Channel



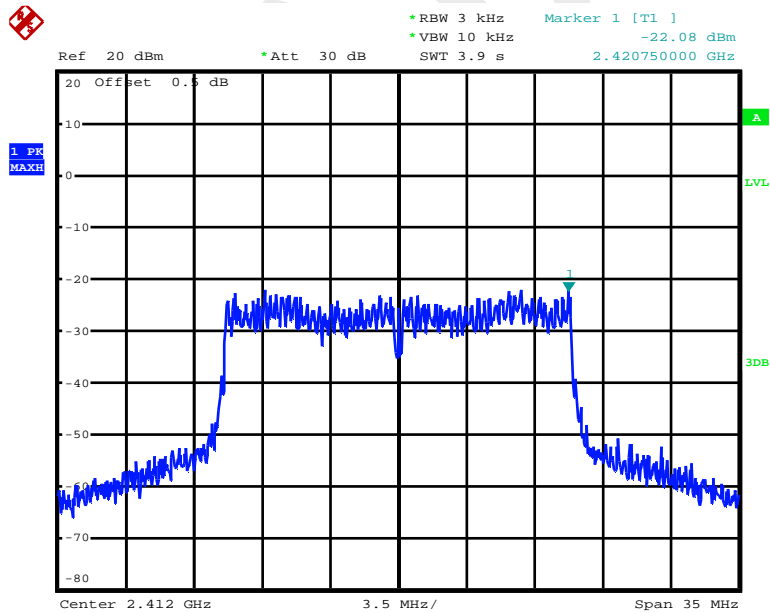
Date: 1.JUL.2014 21:52:34

Chain0: 802.11n20 High Channel



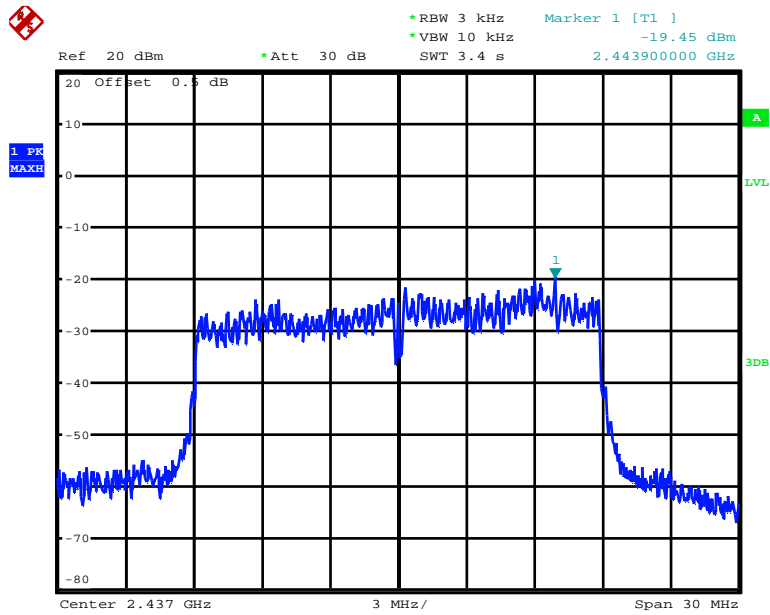
Date: 1.JUL.2014 21:57:46

Chain1: 802.11n20 Low Channel



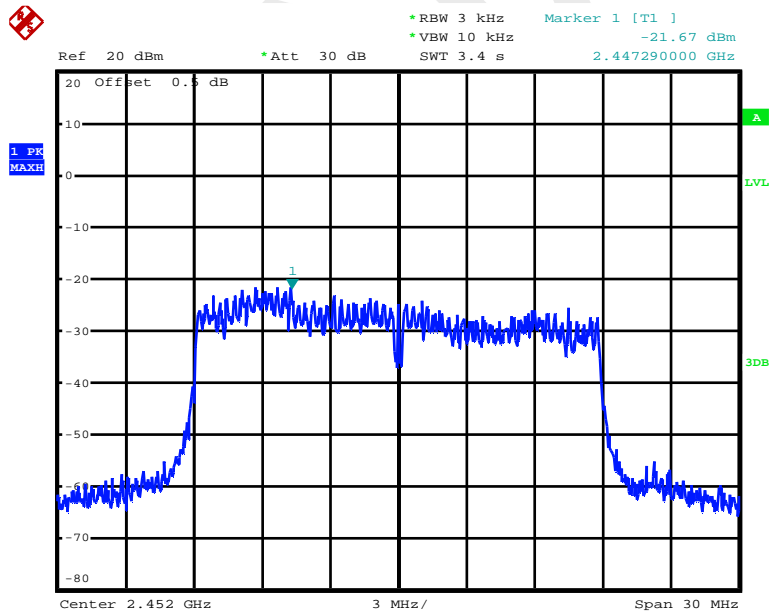
Date: 1.JUL.2014 21:48:15

Chain1: 802.11n20 Middle Channel



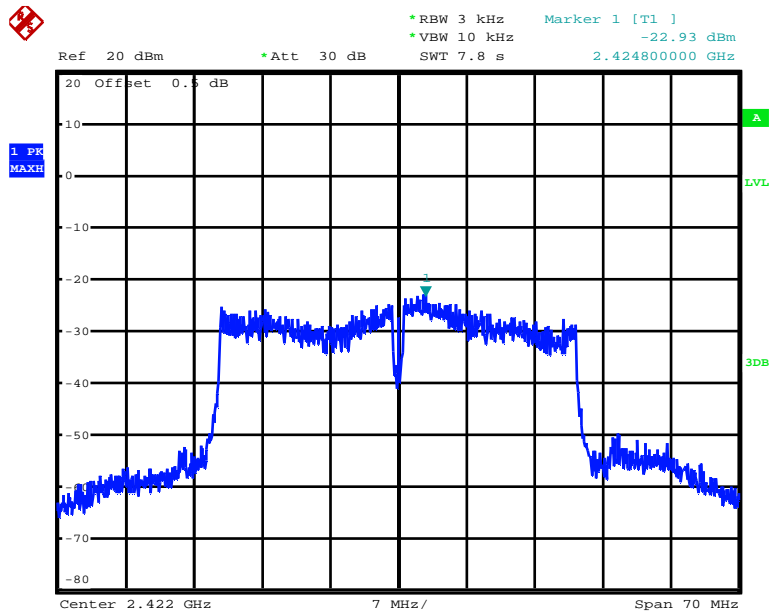
Date: 1.JUL.2014 21:45:58

Chain1: 802.11n20 High Channel



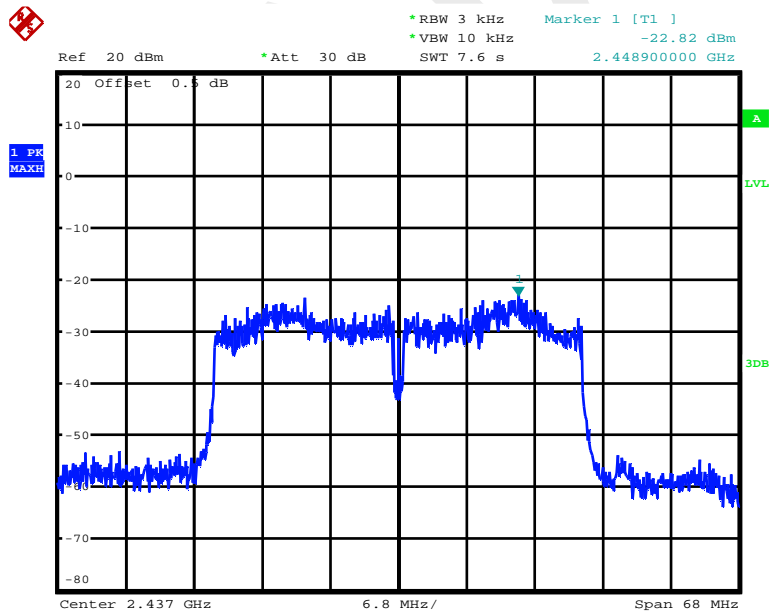
Date: 1.JUL.2014 21:42:14

Chain0: 802.11n40 Low Channel



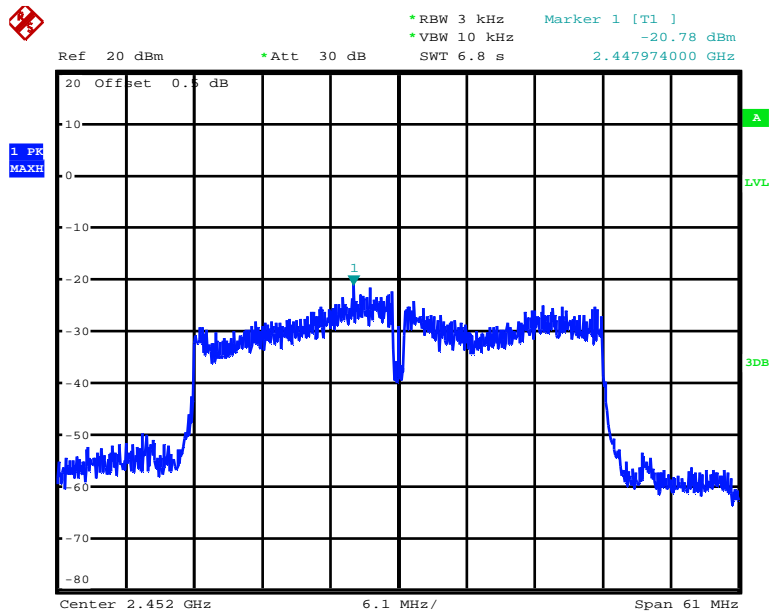
Date: 1.JUL.2014 05:22:13

Chain0: 802.11n40 Middle Channel



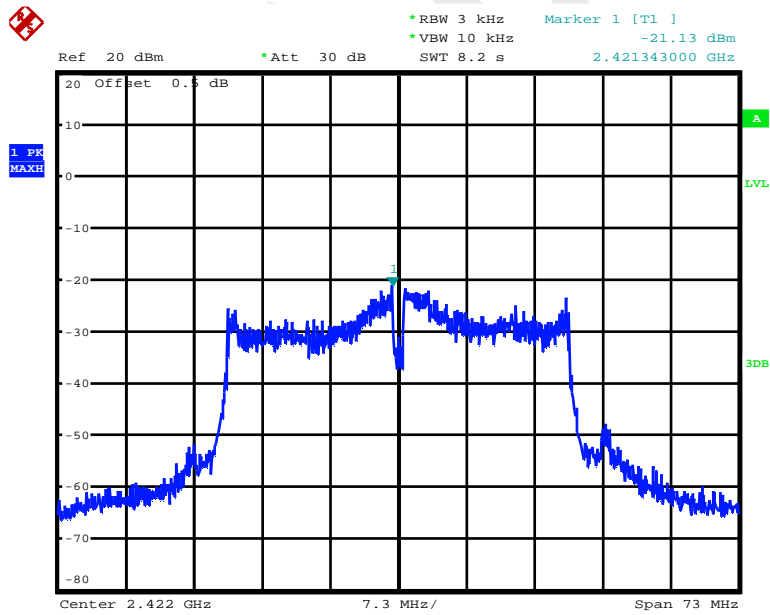
Date: 1.JUL.2014 04:53:44

Chain0: 802.11n40 High Channel



Date: 1.JUL.2014 05:40:42

Chain1: 802.11n40 Low Channel



Date: 1.JUL.2014 05:19:10

