Lab Code: 200707-0

FCC PART 15.247

MEASUREMENT AND TEST REPORT

For

SAGEMCOM SAS

250 Route de l'Empereur- RUEIL MALMAISON CEDEX 92848 France

FCC ID: VW3FAST2704R

Report Type:	**Product Type:**
Original Report	Wireless ADSL Router

Test Engineer: Sula Huang

Report Number: RSZ120621005-00A

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Reviewed By: Alvin Huang
RF Leader

Test Laboratory: Bay Area Compliance Laboratories Corp. (Shenzhen)
6/F, the 3rd Phase of WanLi Industrial Building,
ShiHua Road, FuTian Free Trade Zone
Shenzhen, Guangdong, China
Tel: +86-755-33320018
Fax: +86-755-33320008
www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *SAGEMCOM SAS 's* product, model number: *F@ST 2704R (FCC ID: VW3FAST2704R)* or the "EUT" as referred to in this report is a *Wireless ADSL Router*, which measures approximately: 13.8 cm (L) x 4.2 cm (W) x 12.0 cm (H), rated input voltage: DC 12V adapter.

Adapter Information: Switching power supply
Model: S012NU1200100;
Input: 100-240V~50/60Hz 500mA;
Output: 12.0V 1000mA.

** All measurement and test data in this report was gathered from production sample serial number: 1206076 (Assigned by BACL, Shenzhen). The EUT was received on 2012-06-21.*

Objective

This Type approval report is prepared on behalf of *SAGEMCOM SAS 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 compliance with FCC Part 15, Subpart C, and 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: VW3FAST2704R.

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. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, Shihua Road, Futian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) 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 December 06, 2010. 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.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Laboratories Corp. (Shenzhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

The current scope of accreditations can be found at http://ts.nist.gov/Standards/scopes/2007070.htm

SYSTEM TEST CONFIGURATION

Description of Test Configuration

For 802.11b, 802.11g and 802.11n-HT20 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 802.11n-HT20 modes were tested with Channel 1, 6 and 11. 802.11n-HT40 modes were tested with Channel 3, 6 and 9.

EUT Exercise Software

Test software: run cmd.exe and input relative command (provided by the Applicant)
The test was performed under:
802.11b: Data rate: 1 Mbps.
802.11g: Data rate: 6 Mbps.
802.11n-HT20: Data rate: 6.5 Mbps.
802.11n-HT40: Data rate: 13.5 Mbps.

Equipment Modifications

No modification was made to the unit tested.

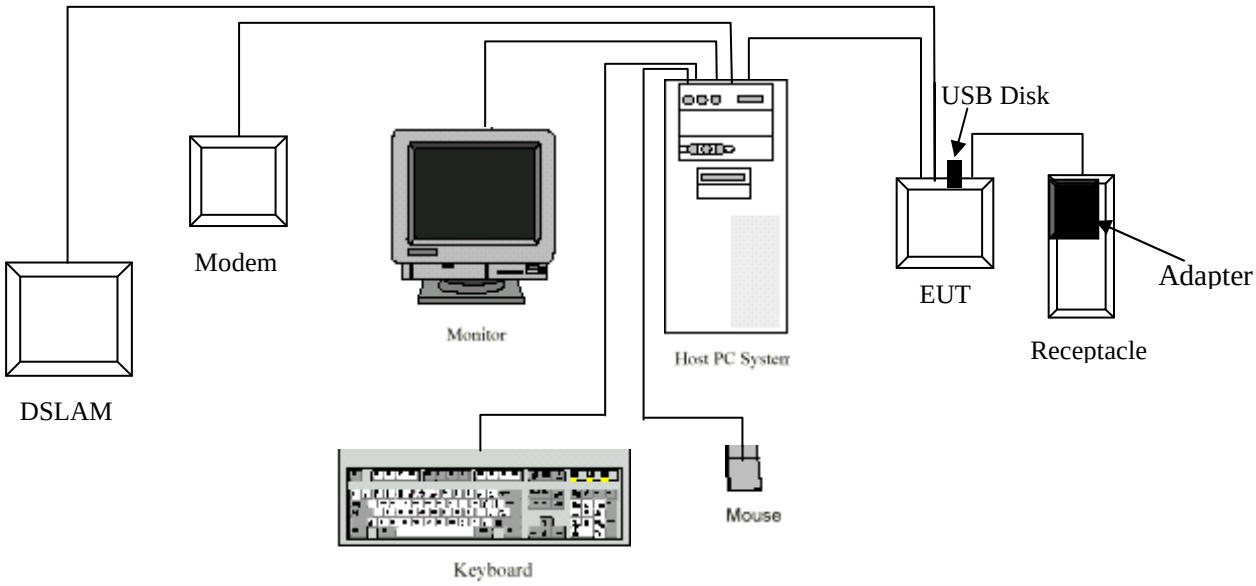
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	PC	VOSTRO 220S	127BP2X
DELL	Keyboard	L100	CNORH656658907BL05DC
DELL	Mouse	MOC5UO	G1900NKD
DELL	LCD Monitor	E178WFPC	CN-OWY564-64180-7C4-2SQH
SAST	Modem	AEM-2100	0293
Kingston	USB Disk	2 GB	N/A
Huawei	DSLAM	MA5105	N/A

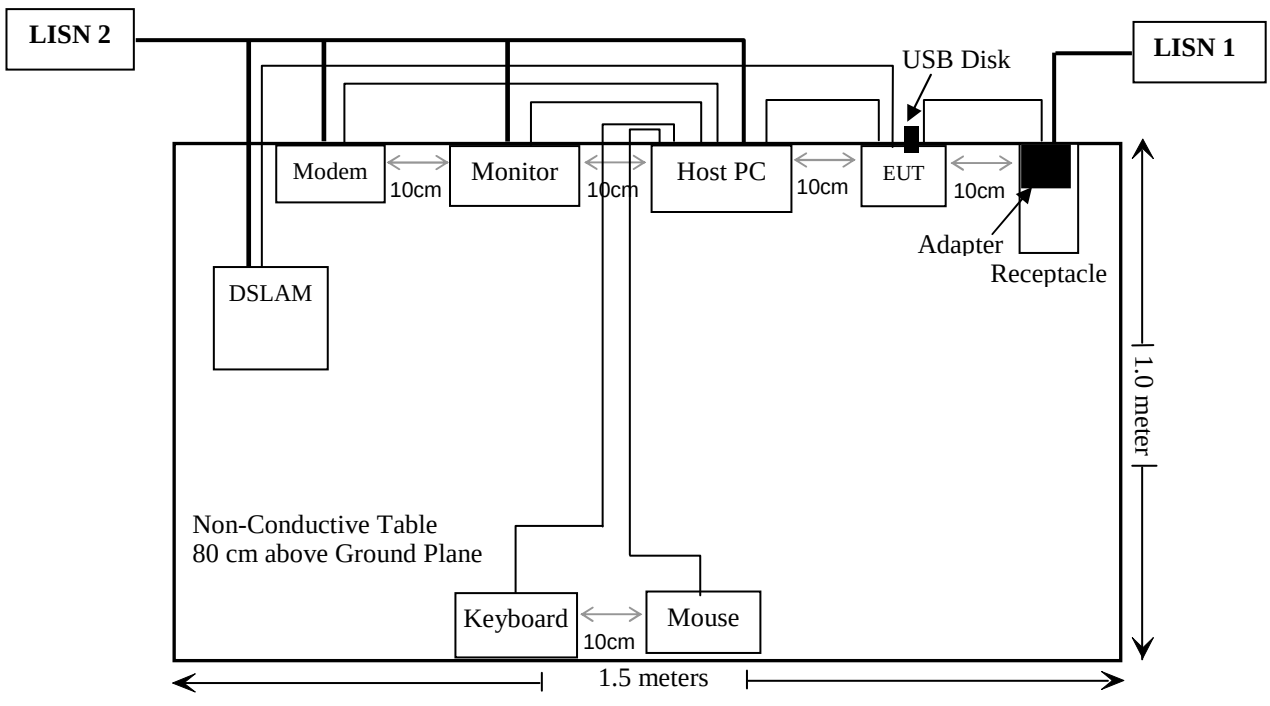
External I/O Cable

Cable Description	Length (m)	From/Port	To
Shielded Detachable Mouse Cable	1.5	Host PC	Mouse
Shielded Detachable Serial Cable	1.2	Host PC	Modem
Shielded Detachable K/B Cable	1.5	Host PC	Keyboard
Shielded Detachable VGA Cable	1.5	Host PC	Monitor
Unshielded Detachable RJ45 Cable	1.5	EUT	Host PC
Unshielded Detachable RJ11 Cable	2.0	EUT	DSLAM

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b)(1), §2.1091	Maximum Permissible exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.207 (a),	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 Bandwidth	Compliance
§15.247(b)(3)	Maximum Peak Output Power	Compliance
§15.247(d)	100kHz Bandwidth of Frequency Band Edge	Compliance
§15.247(e)	Power Spectral Density	Compliance

FCC §15.247 (i) & §1.1307 (b) (1) & §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.

Calculated Formulary:

Predication of MPE limit at a given distance
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

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	2462	2.39	1.734	23.40	218.78	20	0.0755	1
802.11g	2437	2.39	1.734	24.20	263.03	20	0.0907	1
802.11n-HT20	2462	2.39	1.734	26.40	436.52	20	0.1506	1
802.11n-HT40	2437	2.39	1.734	25.87	386.37	20	0.1333	1

Result: Compliance

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.

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

Antenna Connector Construction

This product has two integrated antenna with maximum gain 2.39 dBi which was soldered on PCB, fulfill the requirement of this section, and please refer to the internal photos.

Result: Compliant.

FCC §15.207 (a) - CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, and LISN.

Based on CISPR 16-4-4, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement at Bay Area Compliance Laboratory Corp. (Shenzhen) is 2.4 dB (k=2, 95% level of confidence).
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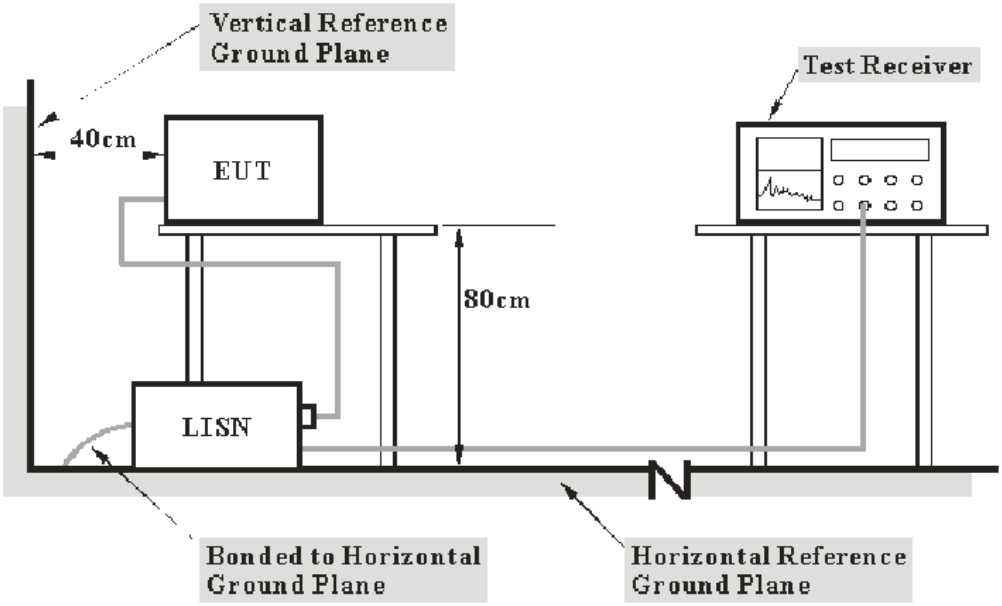
EUT Setup



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 C63.4-2009 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2011-11-24	2012-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2011-11-17	2012-11-16
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Com-Power	L.I.S.N.	LI-200	12208	N/A	N/A
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2011-07-08	2012-07-07
BACL	CE Test software	BACL-CE	V1.0	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratory Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

During the conducted emission test, the adapter was connected to the first LISN, and the other relevant equipments were connected to the second 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.

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:

11.40 dB at **0.365 MHz** in the **Line** conductor mode

Test Data

Environmental Conditions

Temperature:	24 ° C
Relative Humidity:	55 %
ATM Pressure:	101.0 kPa

The testing was performed by Sula Huang on 2012-06-29.

Test Mode: Transmitting

AC 120V / 60Hz, Line：

Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	**Corrected Result (dBμV)**	**Corrected Factor (dB)**	**Limit (dBμV)**	**Margin (dB)**	**Detector (PK /QP/Ave.)**
0.365	38.46	9.66	49.86	11.40	Ave.
0.385	36.65	9.67	49.29	12.64	Ave.
0.385	46.17	9.67	59.29	13.12	QP
0.365	46.55	9.66	59.86	13.31	QP
0.440	32.85	9.67	47.71	14.86	Ave.
0.440	41.39	9.67	57.71	16.32	QP
0.655	38.94	9.74	56.00	17.06	QP
9.890	32.87	10.28	50.00	17.13	Ave.
0.655	28.86	9.74	46.00	17.14	Ave.
0.275	32.15	9.66	52.43	20.28	Ave.
0.275	39.45	9.66	62.43	22.98	QP
9.890	35.78	10.28	60.00	24.22	QP

AC 120V / 60Hz, Neutral:

Conducted Emissions			FCC Part 15.207		
Frequency (MHz)	**Corrected Result (dBµV)**	**Corrected Factor (dB)**	**Limit (dBµV)**	**Margin (dB)**	**Detector (PK /QP/Ave)**
0.365	36.52	9.66	49.86	13.34	Ave.
0.365	42.81	9.66	59.86	17.05	QP
9.560	31.47	10.26	50.00	18.53	Ave.
1.205	25.71	9.88	46.00	20.29	Ave.
0.660	25.49	9.75	46.00	20.51	Ave.
0.660	35.25	9.75	56.00	20.75	QP
0.455	36.02	9.67	57.29	21.27	QP
1.215	34.24	9.88	56.00	21.76	QP
0.455	23.06	9.67	47.29	24.23	Ave.
9.565	33.53	10.26	60.00	26.47	QP
0.155	38.45	9.64	65.86	27.41	QP
0.155	23.77	9.64	55.86	32.09	Ave.

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

Applicable Standard

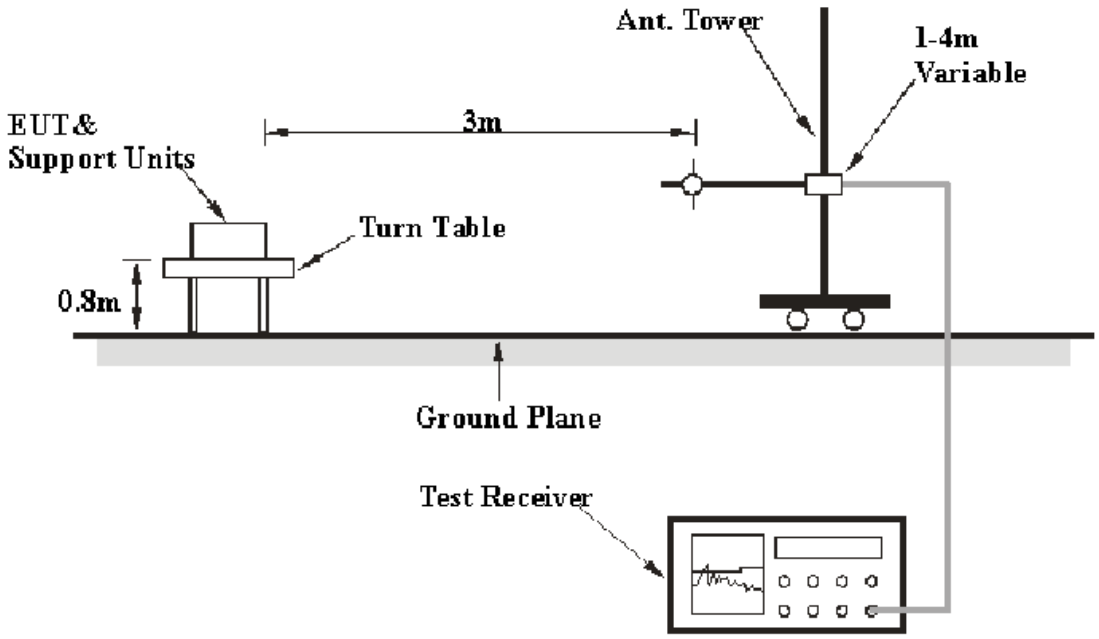
FCC §15.247 (d); §15.209; §15.205;

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. (Shenzhen) is 4.0 dB(k=2, 95% level of confidence) .

EUT Setup



The radiated emission tests were performed in the 3 meters 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 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***	***Detector***
30MHz – 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447D	2944A09795	2011-11-24	2012-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2011-11-17	2012-11-16
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2012-11-27
Mini-Circuits	Amplifier	ZVA-213+	T-E27H	2012-03-08	2013-03-08
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2012-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2011-10-14	2012-10-13
R&S	Auto test Software	EMC32	V6.30	-	-

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

For the radiated emissions test, the adapter and other relevant equipments were connected to the 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 and 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 Results Summary

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

3.80 dB at **988.64 MHz** in the **Horizontal** polarization for mode 802.11b

Test Data

Environmental Conditions

Temperature:	25~26℃
Relative Humidity:	54~56 %
ATM Pressure:	100.0 kPa

The testing was performed by Sula Huang on 2012-06-29 to 2012-07-01

Test Mode: Transmitting

30 MHz-25 GHz

802.11b mode:

Indicated		Detector (PK/QP/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.205/15.209			
Frequency (MHz)	S.A. Reading (dBµV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2412 MHz)												
2412	87.46	PK	67	1.2	V	29.60	3.03	N/A	120.09	N/A	N/A	Fund.
2412	81.21	Ave.	67	1.2	V	29.60	3.03	N/A	113.84	N/A	N/A	Fund.
988.64	50.30	QP	0	3.7	H	21.30	4.00	25.50	50.10	54.00	3.90*	Spurious
999.33	42.50	QP	0	3.3	H	21.40	4.00	25.40	42.50	54.00	11.50	Spurious
4824	24.98	Ave.	118	1.3	V	32.40	3.49	26.50	34.37	54.00	19.63	Harmonic
4824	42.65	PK	118	1.3	V	32.40	3.49	26.50	52.04	74.00	21.96	Harmonic
2351.4	23.94	Ave.	224	1.1	V	29.00	2.98	26.50	29.42	54.00	24.58	Spurious
2372.3	22.36	Ave.	74	1.2	V	30.20	3.11	26.50	29.17	54.00	24.83	Spurious
2351.4	42.58	PK	224	1.1	V	29.00	2.98	26.50	48.06	74.00	25.94	Spurious
2372.3	37.84	PK	74	1.2	V	30.20	3.11	26.50	44.65	74.00	29.35	Spurious
2489.4	17.27	Ave.	221	1.3	H	30.60	3.11	26.50	24.48	54.00	29.52	Spurious
2489.4	33.41	PK	221	1.3	H	30.60	3.11	26.50	40.62	74.00	33.38	Spurious
7236	45.73	PK	168	1.2	V	37.90	5.22	26.50	62.35	100.09	37.74	Harmonic
3216.2	40.03	PK	305	1.0	H	34.60	4.30	26.50	52.43	100.09	47.66	Spurious
7236	25.88	Ave.	168	1.2	V	37.90	5.22	26.50	42.50	98.84	56.34	Harmonic
3216.2	28.81	Ave.	305	1.0	H	34.60	4.30	26.50	41.21	98.84	57.63	Spurious
Middle Channel (2437 MHz)												
2437	87.23	PK	78	1.2	V	29.60	3.03	N/A	119.86	N/A	N/A	Fund.
2437	81.03	Ave.	78	1.2	V	29.60	3.03	N/A	113.66	N/A	N/A	Fund.
988.64	50.10	QP	0	3.7	H	21.30	4.00	25.50	49.90	54.00	4.10	Spurious
999.33	42.30	QP	0	3.3	H	21.40	4.00	25.40	42.30	54.00	11.70	Spurious
7311	24.71	Ave.	227	1.4	V	37.90	5.09	26.50	41.20	54.00	12.80	Harmonic
7311	43.81	PK	227	1.4	V	37.90	5.09	26.50	60.30	74.00	13.70	Harmonic
4874	22.63	Ave.	136	1.1	H	34.60	4.36	26.50	35.09	54.00	18.91	Harmonic
4874	40.57	PK	136	1.1	H	34.60	4.36	26.50	53.03	74.00	20.97	Harmonic
2357.1	23.79	Ave.	69	1.3	V	29.60	3.03	26.50	29.92	54.00	24.08	Spurious
2357.1	42.83	PK	69	1.3	V	29.60	3.03	26.50	48.96	74.00	25.04	Spurious
2496.8	19.56	Ave.	77	1.0	V	30.80	3.29	26.50	27.15	54.00	26.85	Spurious
2374.3	20.63	Ave.	31	1.2	V	29.00	2.98	26.50	26.11	54.00	27.89	Spurious
2496.8	36.33	PK	77	1.0	V	30.80	3.29	26.50	43.92	74.00	30.08	Spurious
2374.3	37.01	PK	31	1.2	V	29.00	2.98	26.50	42.49	74.00	31.51	Spurious
3249.4	41.86	PK	287	1.0	V	32.40	3.49	26.50	51.25	99.86	48.61	Spurious
3249.4	31.23	Ave.	287	1.0	V	32.40	3.49	26.50	40.62	97.66	57.04	Spurious
High Channel (2462 MHz)												
2462	86.46	PK	71	1.2	V	30.20	3.11	N/A	119.77	N/A	N/A	Fund.
2462	79.97	Ave.	71	1.2	V	30.20	3.11	N/A	113.28	N/A	N/A	Fund.
988.64	50.40	QP	0	3.7	H	21.30	4.00	25.50	50.20	54.00	3.80*	Spurious
999.33	42.20	QP	0	3.3	H	21.40	4.00	25.40	42.20	54.00	11.80	Spurious
7386	45.08	PK	28	1.2	V	37.20	5.21	26.50	60.99	74.00	13.01	Harmonic
7386	24.11	Ave.	28	1.2	V	37.20	5.21	26.50	40.02	54.00	13.98	Harmonic
4924	22.12	Ave.	342	1.1	H	34.60	4.40	26.50	34.62	54.00	19.38	Harmonic
4924	41.35	PK	342	1.1	H	34.60	4.40	26.50	53.85	74.00	20.15	Harmonic
2343.2	22.22	Ave.	116	1.3	V	29.60	3.03	26.50	28.35	54.00	25.65	Spurious
2496.1	21.03	Ave.	153	1.2	H	30.60	3.11	26.50	28.24	54.00	25.76	Spurious

2382.6	22.04	Ave.	304	1.3	V	29.00	2.98	26.50	27.52	54.00	26.48	Spurious
2343.2	33.83	PK	116	1.3	V	29.60	3.03	26.50	39.96	74.00	34.04	Spurious
2496.1	31.68	PK	153	1.2	H	30.60	3.11	26.50	38.89	74.00	35.11	Spurious
2382.6	32.53	PK	304	1.3	V	29.00	2.98	26.50	38.01	74.00	35.99	Spurious
3282.8	42.03	PK	54	1.1	V	32.40	3.62	26.50	51.55	99.77	48.22	Spurious
3282.8	28.96	Ave.	54	1.1	V	32.40	3.62	26.50	38.48	98.28	59.80	Spurious

*Within measurement uncertainty.

802.11g mode:

Indicated		Detector (PK/QP/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.205/15.209			
Frequency (MHz)	S.A. Reading (dBµV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Comment
Low Channel (2412 MHz)												
2412	86.51	PK	241	1.3	V	29.60	3.03	N/A	119.14	N/A	N/A	Fund.
2412	72.19	Ave.	241	1.3	V	29.60	3.03	N/A	104.82	N/A	N/A	Fund.
988.64	50.20	QP	0	3.7	H	21.30	4.00	25.50	50.00	54.00	4.00	Harmonic
999.33	42.00	QP	0	3.3	H	21.40	4.00	25.40	42.00	54.00	12.00	Spurious
4824	20.09	Ave.	32	1.3	H	34.60	4.30	26.50	32.49	54.00	21.51	Spurious
2388.6	25.96	Ave.	89	1.3	V	29.60	3.03	26.50	32.09	54.00	21.91	Spurious
4824	39.47	PK	32	1.3	H	34.60	4.30	26.50	51.87	74.00	22.13	Spurious
2351.7	24.12	Ave.	117	1.4	V	29.00	2.98	26.50	29.60	54.00	24.40	Spurious
2351.7	41.58	PK	117	1.4	V	29.00	2.98	26.50	47.06	74.00	26.94	Spurious
2495.8	19.72	Ave.	86	1.2	V	30.20	3.11	26.50	26.53	54.00	27.47	Spurious
2388.6	37.52	PK	89	1.3	V	29.60	3.03	26.50	43.65	74.00	30.35	Spurious
2495.8	33.43	PK	86	1.2	V	30.20	3.11	26.50	40.24	74.00	33.76	Spurious
7236	45.31	PK	93	1.4	V	37.90	5.22	26.50	61.93	99.14	37.21	Harmonic
3215.9	42.89	PK	115	1.3	V	32.40	3.49	26.50	52.28	99.14	46.86	Spurious
3215.9	32.98	Ave.	115	1.3	V	32.40	3.49	26.50	42.37	96.82	54.45	Spurious
7236	23.83	Ave.	93	1.4	V	37.90	5.22	26.50	40.45	96.82	56.37	Harmonic
Middle Channel (2437 MHz)												
2437	85.96	PK	58	1.2	V	29.60	3.03	N/A	118.59	N/A	N/A	Fund.
2437	71.61	Ave.	58	1.2	V	29.60	3.03	N/A	104.24	N/A	N/A	Fund.
988.64	49.80	QP	0	3.7	H	21.30	4.00	25.50	49.60	54.00	4.40	Spurious
999.33	41.70	QP	0	3.3	H	21.40	4.00	25.40	41.70	54.00	12.30	Spurious
7315.5	42.01	PK	226	1.0	V	37.90	5.09	26.50	58.50	74.00	15.50	Harmonic
7315.5	19.32	Ave.	226	1.0	V	37.90	5.09	26.50	35.81	54.00	18.19	Harmonic
2496.5	46.07	PK	116	1.1	H	28.90	3.11	26.50	51.58	74.00	22.42	Spurious
4824	18.74	Ave.	36	1.2	H	34.60	4.36	26.50	31.20	54.00	22.80	Harmonic
2378.6	45.34	PK	74	1.3	V	28.90	3.03	26.50	50.77	74.00	23.23	Spurious
2358.6	44.31	PK	125	1.2	V	28.80	2.98	26.50	49.59	74.00	24.41	Spurious
4824	36.31	PK	36	1.2	H	34.60	4.36	26.50	48.77	74.00	25.23	Harmonic
2378.6	21.53	Ave.	74	1.3	V	28.90	3.03	26.50	26.96	54.00	27.04	Spurious
2496.5	19.72	Ave.	116	1.1	H	28.90	3.11	26.50	25.23	54.00	28.77	Spurious
2358.6	18.38	Ave.	125	1.2	V	28.80	2.98	26.50	23.66	54.00	30.34	Spurious
3249.2	40.67	PK	37	1.1	V	32.40	3.49	26.50	50.06	98.59	48.53	Spurious
3249.2	28.54	Ave.	37	1.1	V	32.40	3.49	26.50	37.93	96.24	58.31	Spurious
High Channel (2462 MHz)												
2462	83.24	PK	74	1.1	V	30.20	3.11	N/A	116.55	N/A	N/A	Fund.
2462	70.59	Ave.	74	1.1	V	30.20	3.11	N/A	103.90	N/A	N/A	Fund.
988.64	49.90	QP	0	3.7	H	21.30	4.00	25.50	49.70	54.00	4.30	Spurious
2484.2	44.38	PK	81	1.2	H	28.90	3.11	26.50	49.89	74.00	4.30	Spurious
7386	19.63	Ave.	38	1.2	H	36.80	5.21	26.50	35.14	54.00	12.20	Harmonic
3282.7	41.36	PK	116	1.3	V	32.40	3.62	26.50	50.88	96.55	18.13	Spurious
7386	40.36	PK	38	1.2	H	36.80	5.21	26.50	55.87	74.00	18.86	Harmonic
999.33	41.80	QP	0	3.3	H	21.40	4.00	25.40	41.80	54.00	21.63	Spurious
2484.2	21.71	Ave.	81	1.2	H	28.90	3.11	26.50	27.22	54.00	24.11	Spurious
4924	19.47	Ave.	168	1.4	H	35.00	4.40	26.50	32.37	54.00	24.97	Harmonic

2341.6	20.53	Ave.	29	1.3	V	28.80	2.98	26.50	25.81	54.00	26.61	Spurious
2341.6	42.11	PK	29	1.3	V	28.80	2.98	26.50	47.39	74.00	26.78	Spurious
2348.6	40.53	PK	314	1.1	V	28.80	2.98	26.50	45.81	74.00	28.19	Spurious
2348.6	18.16	Ave.	314	1.1	V	28.80	2.98	26.50	23.44	54.00	28.19	Spurious
4924	36.13	PK	168	1.4	H	35.00	4.40	26.50	49.03	74.00	30.56	Harmonic
3282.7	28.32	Ave.	116	1.3	V	32.40	3.62	26.50	37.84	95.90	45.67	Spurious

*Within measurement uncertainty.

802.11n-HT20 mode:

Indicated		Detector (PK/QP/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.205/15.209			
Frequency (MHz)	S.A. Reading (dBμV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2412 MHz)												
2412	84.33	PK	71	1.2	V	29.60	3.03	N/A	116.96	N/A	N/A	Fund.
2412	70.07	Ave.	71	1.2	V	29.60	3.03	N/A	102.70	N/A	N/A	Fund.
988.64	50.10	QP	0	3.7	H	21.30	4.00	25.50	49.90	54.00	4.10	Spurious
999.33	41.90	QP	0	3.3	H	21.40	4.00	25.40	41.90	54.00	12.10	Spurious
7236	41.33	PK	112	1.1	V	37.90	5.22	26.50	57.95	74.00	16.05	Harmonic
7236	19.42	Ave.	112	1.1	V	37.90	5.22	26.50	36.04	54.00	17.96	Harmonic
4824	19.55	Ave.	36	1.1	H	34.60	4.30	26.50	31.95	54.00	22.05	Harmonic
2348.6	45.03	PK	161	1.3	V	28.80	2.98	26.50	50.31	74.00	23.69	Spurious
4824	36.77	PK	36	1.1	H	34.60	4.30	26.50	49.17	74.00	24.83	Harmonic
2389.6	38.93	PK	244	1.2	H	28.90	3.03	26.50	44.36	74.00	29.64	Spurious
2348.6	18.92	Ave.	161	1.3	V	28.80	2.98	26.50	24.20	54.00	29.80	Spurious
2389.6	18.02	Ave.	244	1.2	H	28.90	3.03	26.50	23.45	54.00	30.55	Spurious
2496.5	16.19	Ave.	30	1.3	H	28.90	3.11	26.50	21.70	54.00	32.30	Harmonic
2496.5	32.44	PK	30	1.3	H	28.90	3.11	26.50	37.95	74.00	36.05	Spurious
3216.1	41.33	PK	69	1.0	V	32.40	3.49	26.50	50.72	96.96	46.24	Spurious
3216.1	23.98	Ave.	69	1.0	V	32.40	3.49	26.50	33.37	93.70	60.33	Spurious
Middle Channel (2437 MHz)												
2437	84.61	PK	81	1.0	V	30.20	3.11	N/A	117.92	N/A	N/A	Fund.
2437	71.32	Ave.	81	1.0	V	30.20	3.11	N/A	104.63	N/A	N/A	Fund.
988.64	50.20	QP	0	3.7	H	21.30	4.00	25.50	50.00	54.00	4.00*	Spurious
4874	37.68	PK	112	1.1	H	34.60	4.36	26.50	50.14	54.00	4.00*	Harmonic
2488.7	33.69	PK	38	1.3	H	28.90	3.11	26.50	39.20	54.00	11.60	Spurious
7311	19.62	Ave.	174	1.3	V	37.90	5.09	26.50	36.11	74.00	14.98	Harmonic
3249.4	40.83	PK	126	1.2	H	32.40	3.49	26.50	50.22	54.00	17.89	Spurious
999.33	42.40	QP	0	3.3	H	21.40	4.00	25.40	42.40	54.00	22.98	Spurious
4874	18.56	Ave.	112	1.1	H	34.60	4.36	26.50	31.02	74.00	23.86	Harmonic
2348.3	34.26	PK	136	1.1	V	28.80	2.98	26.50	39.54	54.00	30.37	Spurious
2340.3	34.29	PK	268	1.2	V	28.80	2.98	26.50	39.57	54.00	30.96	Spurious
7311	42.53	PK	174	1.3	V	37.90	5.09	26.50	59.02	54.00	31.85	Harmonic
2340.3	18.35	Ave.	268	1.2	V	28.80	2.98	26.50	23.63	74.00	34.43	Spurious
2348.3	16.87	Ave.	136	1.1	V	28.80	2.98	26.50	22.15	74.00	34.46	Spurious
2488.7	17.53	Ave.	38	1.3	H	28.90	3.11	26.50	23.04	74.00	34.80	Spurious
3249.4	30.53	Ave.	126	1.2	H	32.40	3.49	26.50	39.92	97.92	47.70	Spurious
High Channel (2462 MHz)												
2462	83.28	PK	38	1.1	V	30.20	3.11	N/A	116.59	N/A	N/A	Fund.
2462	70.42	Ave.	38	1.1	V	30.20	3.11	N/A	103.73	N/A	N/A	Fund.
988.64	50.10	QP	0	3.7	H	21.30	4.00	25.50	49.90	54.00	4.10	Spurious
999.33	42.30	QP	0	3.3	H	21.40	4.00	25.40	42.30	54.00	11.70	Spurious
7386	42.03	PK	236	1.3	V	37.20	5.21	26.50	57.94	74.00	16.06	Harmonic
7386	18.35	Ave.	236	1.3	V	37.20	5.21	26.50	34.26	54.00	19.74	Harmonic
4924	40.31	PK	103	1.1	H	34.60	4.40	26.50	52.81	74.00	21.19	Harmonic
4924	20.02	Ave.	103	1.1	H	34.60	4.40	26.50	32.52	54.00	21.48	Harmonic
2376.2	38.55	PK	60	1.6	H	28.90	3.03	26.50	43.98	74.00	30.02	Spurious
2484.7	37.23	PK	87	1.0	H	28.90	3.11	26.50	42.74	74.00	31.26	Spurious

2341.6	37.23	PK	112	1.1	V	28.80	2.98	26.50	42.51	74.00	31.49	Spurious
2484.7	16.97	Ave.	87	1.0	H	28.90	3.11	26.50	22.48	54.00	31.52	Spurious
2376.2	16.92	Ave.	60	1.6	H	28.90	3.03	26.50	22.35	54.00	31.65	Spurious
2341.6	16.11	Ave.	112	1.1	V	28.80	2.98	26.50	21.39	54.00	32.61	Spurious
3282.6	41.32	PK	320	1.2	H	30.60	3.62	26.50	49.04	96.59	47.55	Spurious
3282.6	30.53	Ave.	320	1.2	H	30.60	3.62	26.50	38.25	93.73	55.48	Spurious

*Within measurement uncertainty.

802.11n-HT40 mode:

Indicated		Detector (PK/QP/Ave.)	Table Angle Degree	Antenna		Correction Factor			FCC Part 15.247/15.205/15.209			
Frequency (MHz)	S.A. Reading (dBμV)			Height (m)	Polar (H/V)	Ant. Factor (dB/m)	Cable Loss (dB)	Pre-Amp. Gain (dB)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Comment
Low Channel (2422 MHz)												
2422	82.33	PK	77	1.2	V	29.60	3.03	N/A	114.96	N/A	N/A	Fund.
2422	68.05	Ave.	77	1.2	V	29.60	3.03	N/A	100.68	N/A	N/A	Fund.
988.64	50.20	QP	0	3.7	H	21.30	4.00	25.50	50.00	54.00	4.00	Spurious
999.33	42.20	QP	0	3.3	H	21.40	4.00	25.40	42.20	54.00	11.80	Spurious
4844	18.13	Ave.	223	1.2	H	34.60	4.36	26.50	30.59	54.00	23.41	Harmonic
4844	35.22	PK	223	1.2	H	34.60	4.36	26.50	47.68	74.00	26.32	Harmonic
2487.3	18.66	Ave.	35	1.3	V	30.20	3.11	26.50	25.47	54.00	28.53	Spurious
2387.1	19.24	Ave.	311	1.0	V	29.60	3.03	26.50	25.37	54.00	28.63	Spurious
2377.2	18.09	Ave.	43	1.1	V	29.60	3.03	26.50	24.22	54.00	29.78	Spurious
2387.1	37.13	PK	311	1.0	V	29.60	3.03	26.50	43.26	74.00	30.74	Spurious
2487.3	34.13	PK	35	1.3	V	30.20	3.11	26.50	40.94	74.00	33.06	Spurious
2377.2	33.17	PK	43	1.1	V	29.60	3.03	26.50	39.30	74.00	34.70	Spurious
3229.3	44.13	PK	133	1.0	V	32.40	3.49	26.50	53.52	94.96	41.44	Spurious
7266	36.87	PK	116	1.1	V	37.90	5.22	26.50	53.49	94.96	41.47	Harmonic
7266	18.35	Ave.	116	1.1	V	37.90	5.22	26.50	34.97	90.68	55.71	Harmonic
3229.3	22.54	Ave.	133	1.0	V	32.40	3.49	26.50	31.93	90.68	58.75	Spurious
Middle Channel (2437 MHz)												
2437	81.53	PK	168	1.1	V	30.20	3.11	N/A	114.84	N/A	N/A	Fund.
2437	68.01	Ave.	168	1.1	V	30.20	3.11	N/A	101.32	N/A	N/A	Fund.
988.64	50.40	QP	0	3.7	H	21.30	4.00	25.50	50.20	54.00	3.80*	Spurious
999.33	42.30	QP	0	3.3	H	21.40	4.00	25.40	42.30	54.00	11.70	Spurious
7311	19.23	Ave.	56	1.3	V	37.90	5.09	26.50	35.72	54.00	18.28	Harmonic
7311	36.55	PK	56	1.3	V	37.90	5.09	26.50	53.04	74.00	20.96	Harmonic
4874	19.11	Ave.	96	1.2	H	34.60	4.36	26.50	31.57	54.00	22.43	Harmonic
4874	37.35	PK	96	1.2	H	34.60	4.36	26.50	49.81	74.00	24.19	Harmonic
2484.9	20.03	Ave.	113	1.3	V	30.20	3.11	26.50	26.84	54.00	27.16	Spurious
2484.9	38.32	PK	113	1.3	V	30.20	3.11	26.50	45.13	74.00	28.87	Spurious
2389.8	18.11	Ave.	39	1.1	H	29.60	3.03	26.50	24.24	54.00	29.76	Spurious
2374.3	17.91	Ave.	115	1.2	V	29.60	3.03	26.50	24.04	54.00	29.96	Spurious
2389.8	35.36	PK	39	1.1	H	29.60	3.03	26.50	41.49	74.00	32.51	Spurious
2374.3	34.23	PK	115	1.2	V	29.60	3.03	26.50	40.36	74.00	33.64	Spurious
3249.2	41.32	PK	134	1.3	V	32.40	3.49	26.50	50.71	94.84	44.13	Spurious
3249.2	26.57	Ave.	134	1.3	V	32.40	3.49	26.50	35.96	91.32	55.36	Spurious
High Channel (2452 MHz)												
2452	80.96	PK	82	1.3	V	30.20	3.11	N/A	114.27	N/A	N/A	Fund.
2452	66.13	Ave.	82	1.3	V	30.20	3.11	N/A	99.44	N/A	N/A	Fund.
988.64	50.20	QP	0	3.7	H	21.30	4.00	25.50	50.00	54.00	4.00*	Spurious
999.33	42.20	QP	0	3.3	H	21.40	4.00	25.40	42.20	54.00	11.80	Harmonic
7356	18.12	Ave	187	1.0	V	37.20	5.21	26.50	34.03	54.00	19.97	Harmonic
7356	35.63	PK	187	1.0	V	37.20	5.21	26.50	51.54	74.00	22.46	Harmonic
4904	38.34	PK	74	1.1	H	34.60	4.36	26.50	50.80	74.00	23.20	Harmonic
4904	18.33	Ave	74	1.1	H	34.60	4.36	26.50	30.79	54.00	23.21	Harmonic
2490.1	19.11	Ave	125	1.3	V	30.20	3.11	26.50	25.92	54.00	28.08	Spurious
2484.3	19.25	Ave.	123	1.1	H	29.00	2.98	26.50	24.73	54.00	29.27	Spurious

2490.1	37.04	PK	125	1.3	V	30.20	3.11	26.50	43.85	74.00	30.15	Spurious
2382.5	18.11	Ave.	35	1.3	V	29.00	2.98	26.50	23.59	54.00	30.41	Spurious
2484.3	33.87	PK	123	1.1	H	29.00	2.98	26.50	39.35	74.00	34.65	Spurious
2382.5	32.24	PK	35	1.3	V	29.00	2.98	26.50	37.72	74.00	36.28	Spurious
3244.9	42.03	PK	68	1.1	V	32.40	3.49	26.50	51.42	97.27	45.85	Spurious
3244.9	16.87	Ave.	68	1.1	V	32.40	3.49	26.50	26.26	87.44	61.18	Spurious

*Within measurement uncertainty.

Note:
Corrected Amplitude = Receiver Reading + Cable loss + Antenna Factor – Amplifier Gain
Margin = Limit – Corr. Amplitude

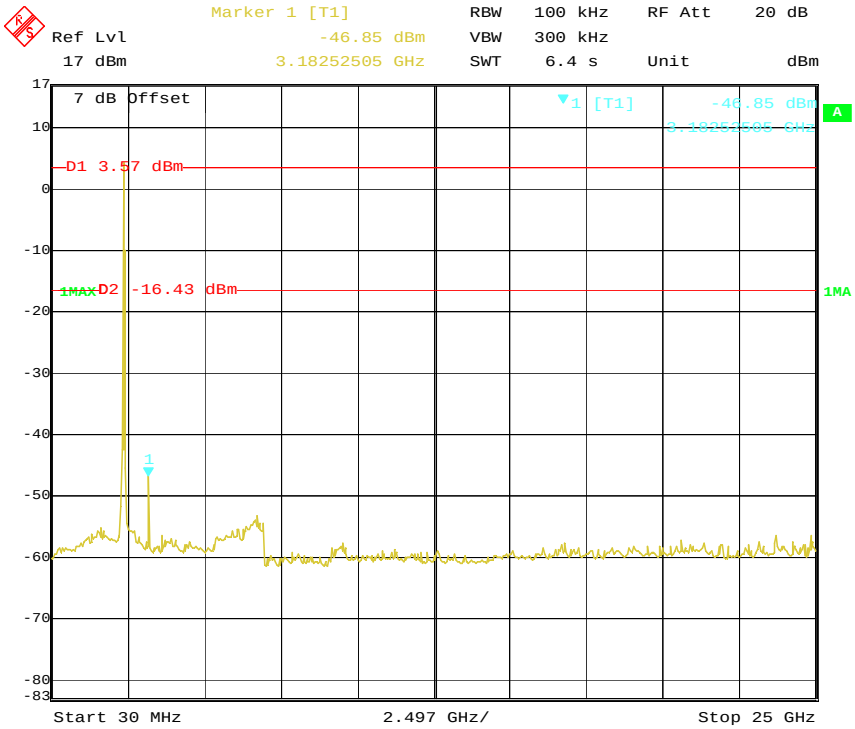
Antenna Port Conducted Spurious Emissions:

Please refer to the following table and plots:

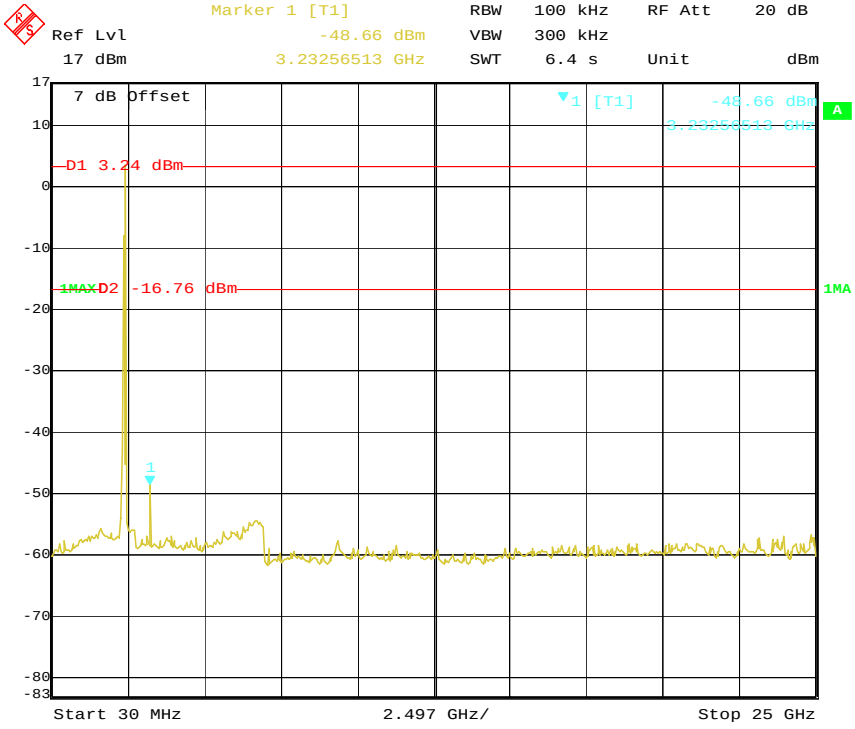
Channel	Frequency (MHz)	Power spectral density (dBm/100kHz)	Antenna port	Spurious Emission (Max) (dBm)	Delta Value (dBc)	Delta Limit (dBc)	Result
802.11b mode							
Low	3182.53	9.37	1	-46.85	56.22	20	Pass
Low	3182.53	9.26	2	-51.01	60.27	20	Pass
Middle	3232.56	9.76	1	-48.66	58.42	20	Pass
Middle	3232.56	9.93	2	-51.77	61.70	20	Pass
High	3282.61	9.81	1	-46.94	56.75	20	Pass
High	3282.61	9.64	2	-50.60	60.24	20	Pass
802.11g mode							
Low	3182.53	4.73	1	-47.03	51.76	20	Pass
Low	3182.53	3.85	2	-51.77	55.62	20	Pass
Middle	3232.56	5.12	1	-46.88	52.00	20	Pass
Middle	3232.56	4.25	2	-50.86	55.11	20	Pass
High	3282.61	5.34	1	-47.27	52.61	20	Pass
High	3282.61	4.64	2	-50.52	55.16	20	Pass
802.11n-HT20 mode							
Low	3182.53	5.53	1	-46.98	52.51	20	Pass
Low	3182.53	4.23	2	-52.24	56.47	20	Pass
Middle	3232.56	5.13	1	-48.58	53.71	20	Pass
Middle	3232.56	4.50	2	-52.06	56.56	20	Pass
High	3232.61	5.45	1	-48.01	53.46	20	Pass
High	3232.61	4.81	2	-51.60	56.41	20	Pass
802.11n-HT40 mode							
Low	3232.56	1.64	1	-47.06	48.70	20	Pass
Low	3232.56	1.16	2	-52.29	53.45	20	Pass
Middle	3232.56	1.52	1	-47.08	48.60	20	Pass
Middle	3232.56	1.31	2	-51.57	52.88	20	Pass
High	3232.56	1.65	1	-46.14	47.79	20	Pass
High	3232.56	1.68	2	-50.70	52.38	20	Pass

Channel	Frequency (MHz)	Power spectral density (dBm/100kHz)	SpuriousMax (dBm)	Delta Value (dBc)	Delta Limit (dBc)	Result
802.11n-HT20 mode (ANT1+ANT2) (with measure and sum the spectra technique)						
Low	3182.53	5.53	-45.86	20	51.39	Pass
Middle	3232.56	5.13	-46.96	20	52.09	Pass
High	3232.61	5.45	-46.44	20	51.89	Pass
802.11n-HT40 mode (ANT1+ANT2) (with measure and sum the spectra technique)						
Low	3232.56	1.64	-45.92	20	47.56	Pass
Middle	3232.56	1.52	-44.86	20	46.38	Pass
High	3232.56	1.68	-43.58	20	45.26	Pass

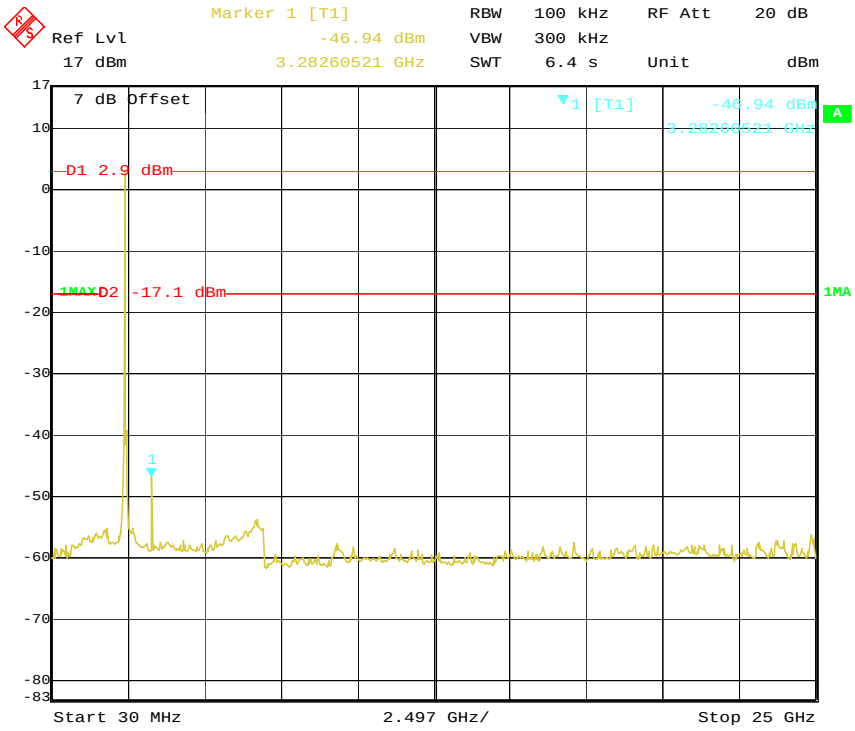
802.11b Low Channel, Antenna 1



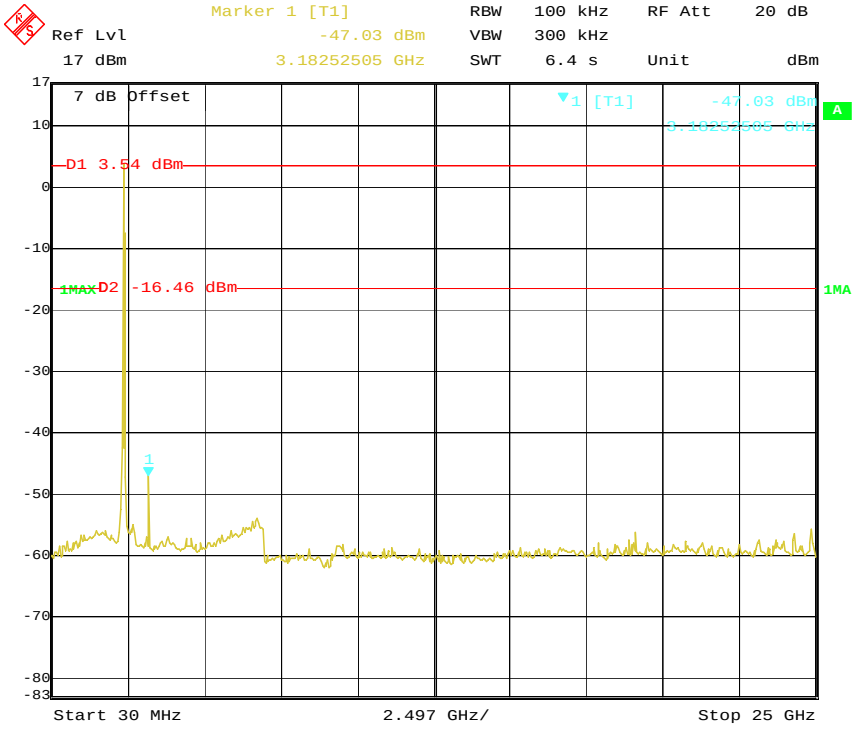
802.11b Middle Channel, Antenna 1



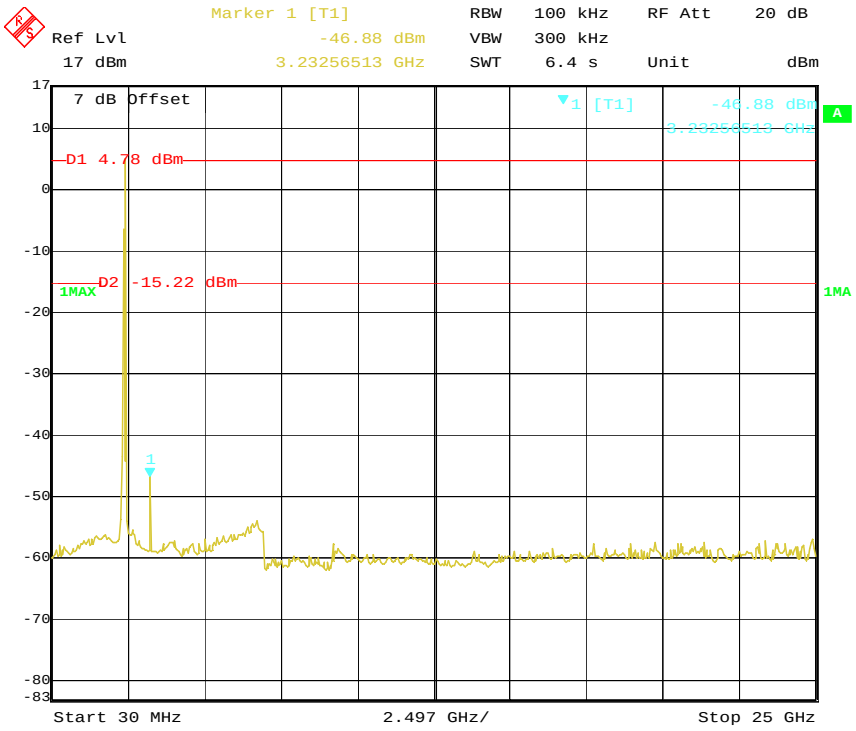
802.11b High Channel, Antenna 1



802.11g Low Channel, Antenna 1

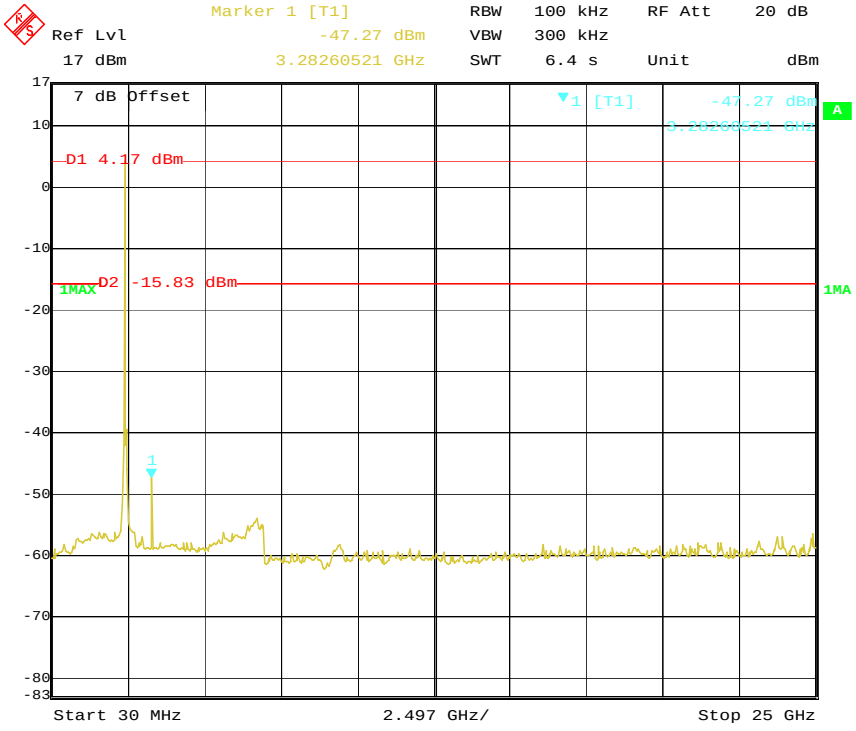


802.11g Middle Channel, Antenna 1



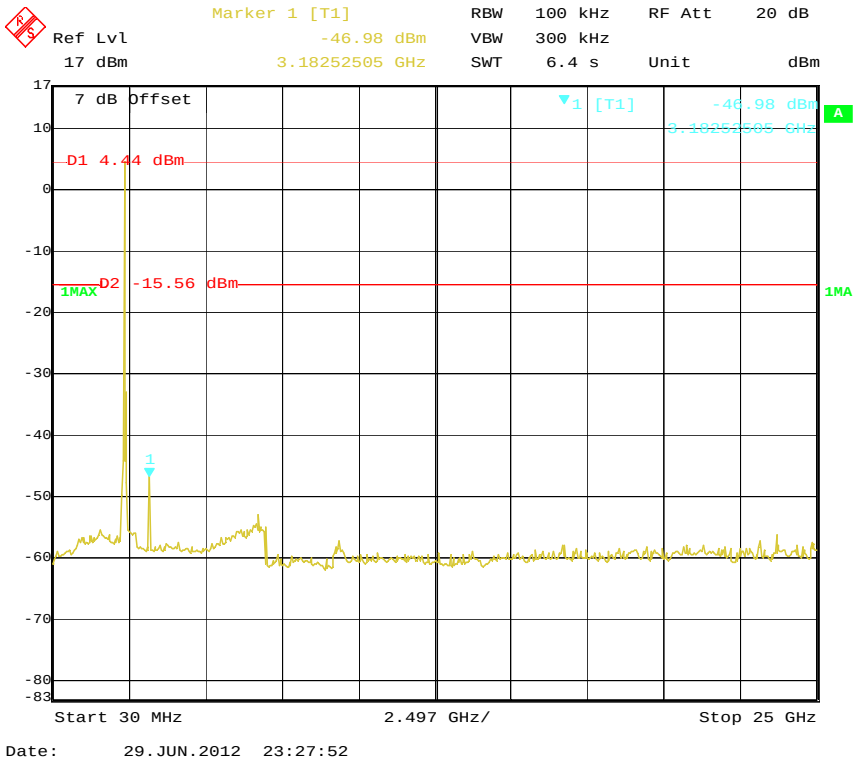
Date: 29.JUN.2012 23:17:19

802.11g High Channel, Antenna 1

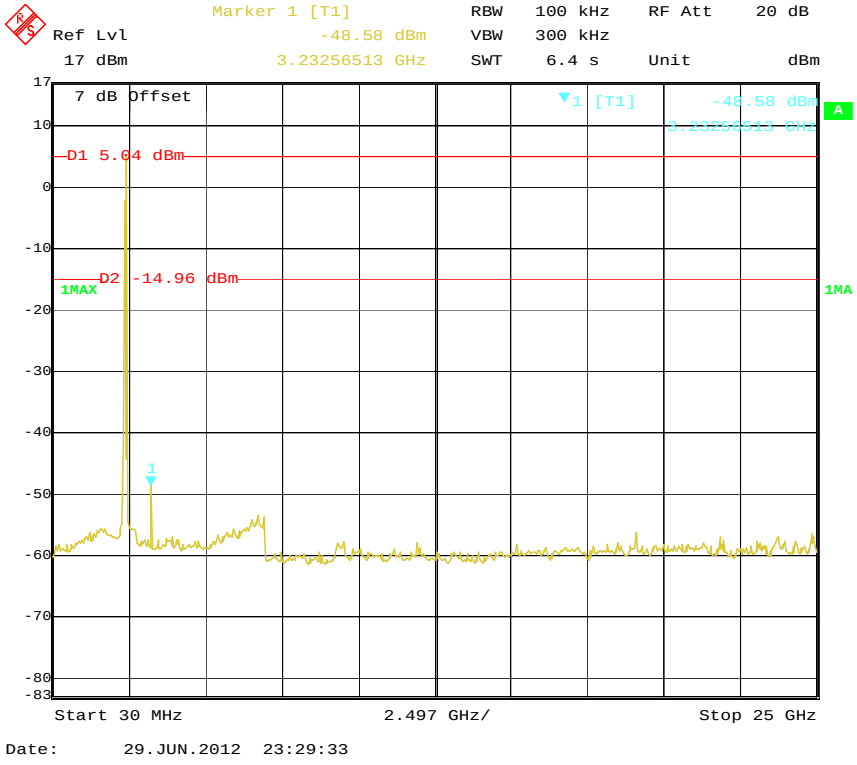


Date: 29.JUN.2012 23:18:06

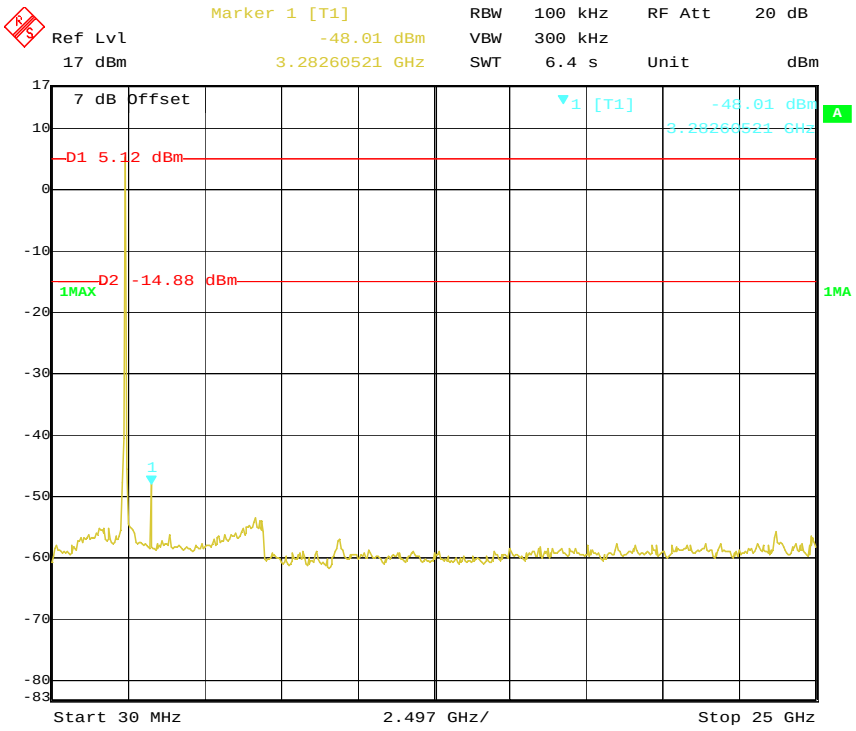
802.11n-HT20 Low Channel, Antenna 1



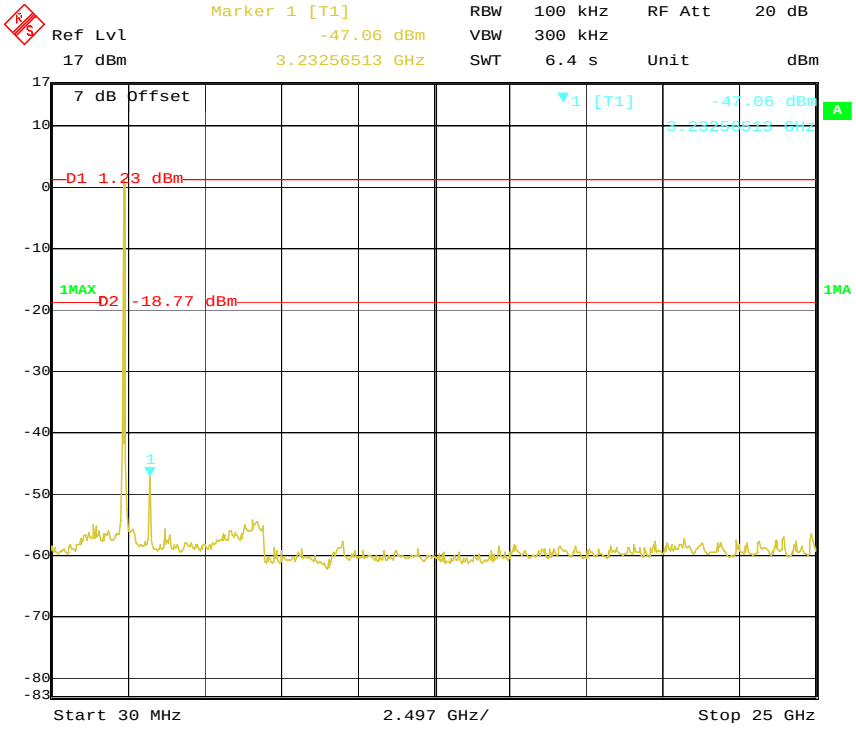
802.11n-HT20 Middle Channel, Antenna 1



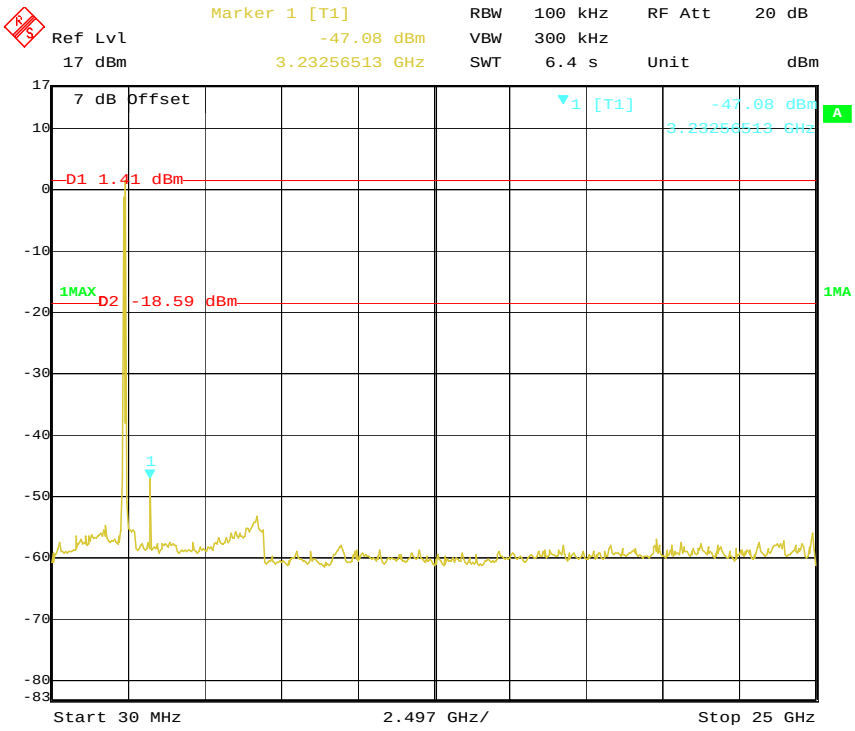
802.11n-HT20 High Channel, Antenna 1



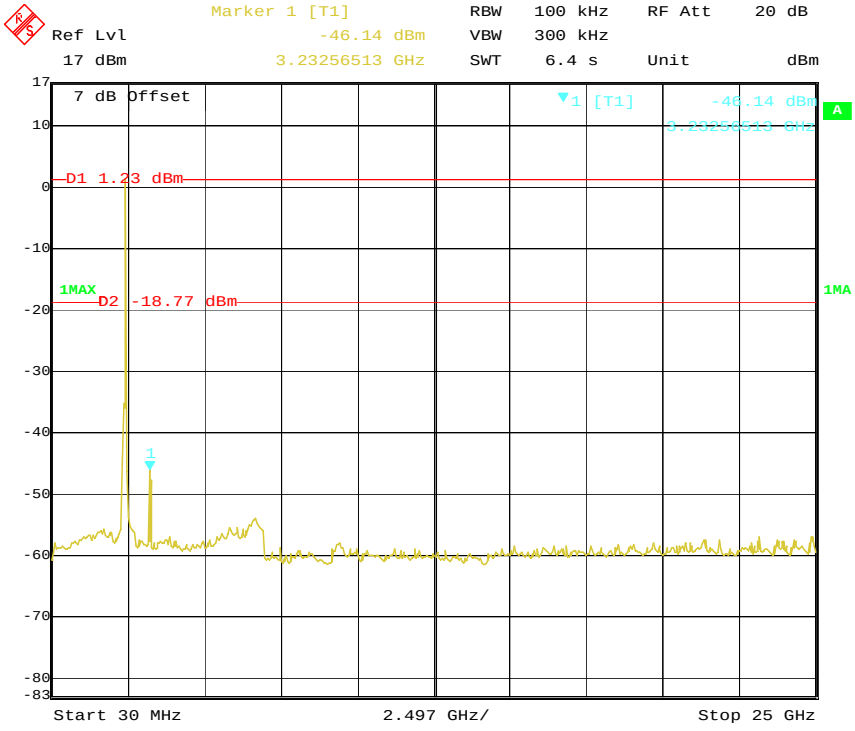
802.11n-HT40 Low Channel, Antenna 1



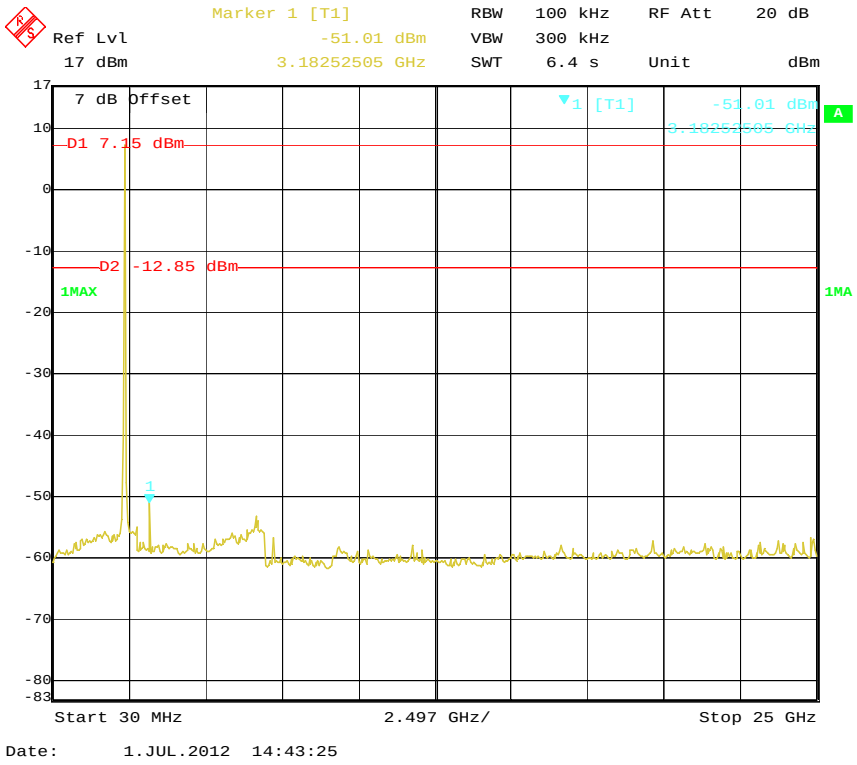
802.11n-HT40 Middle Channel, Antenna 1



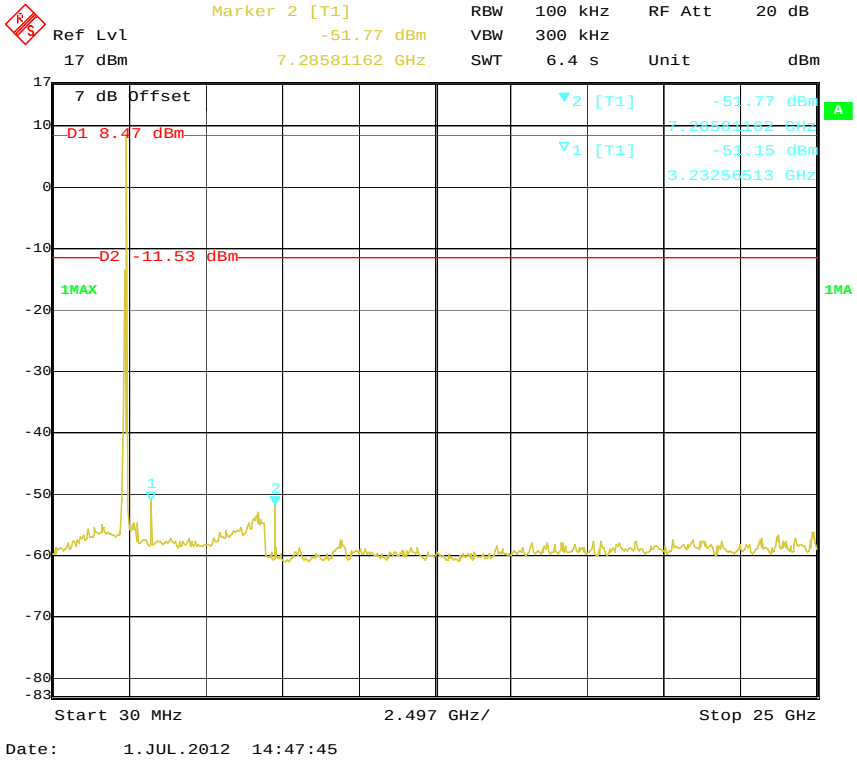
802.11n-HT40 High Channel, Antenna 1



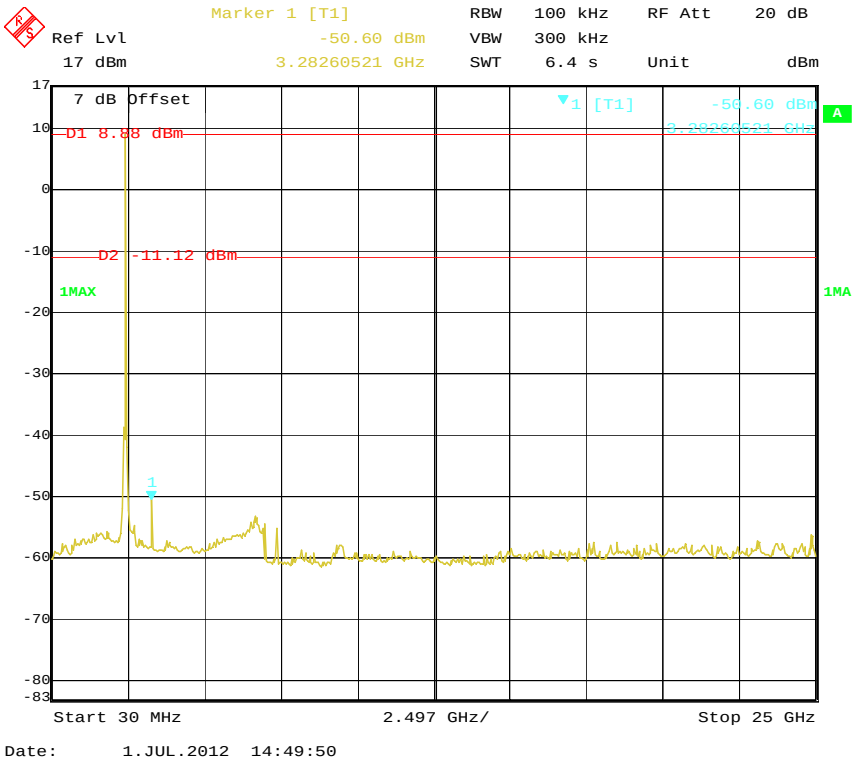
802.11b Low Channel, Antenna 2



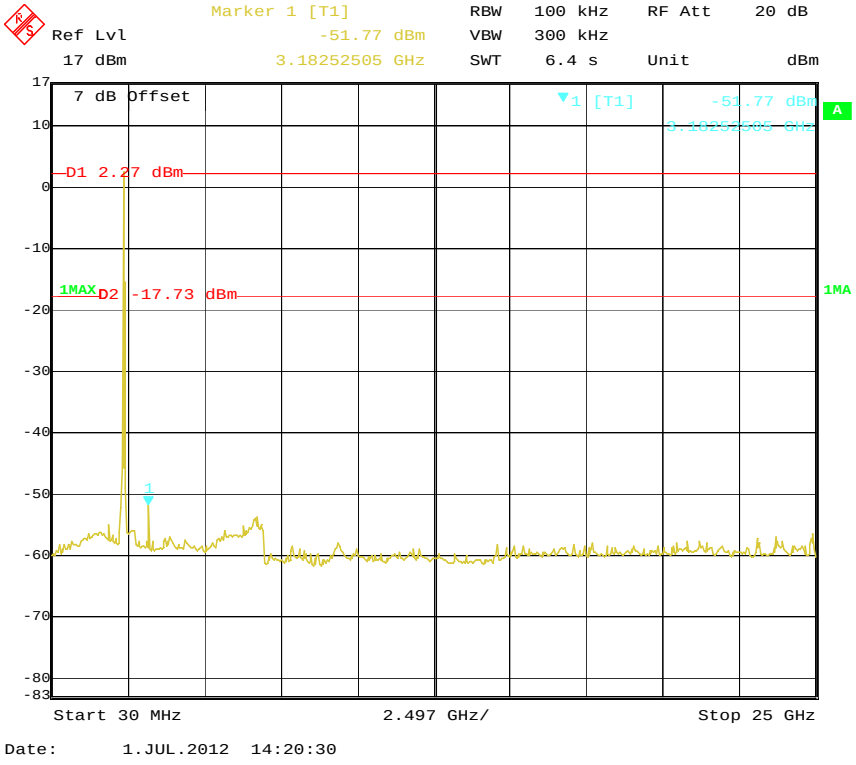
802.11b Middle Channel, Antenna 2



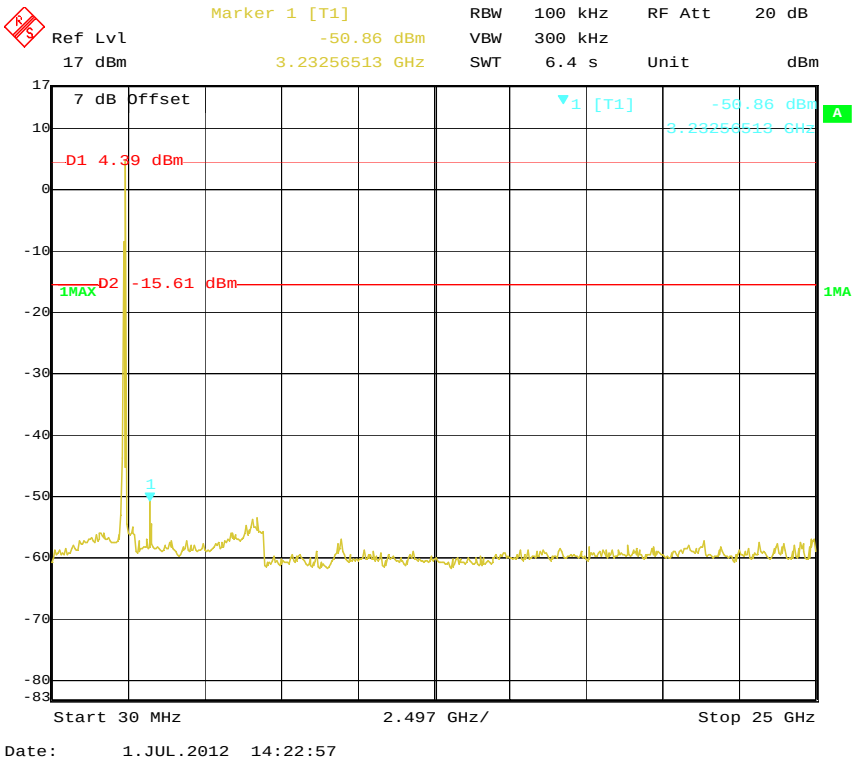
802.11b High Channel, Antenna 2



802.11g Low Channel, Antenna 2

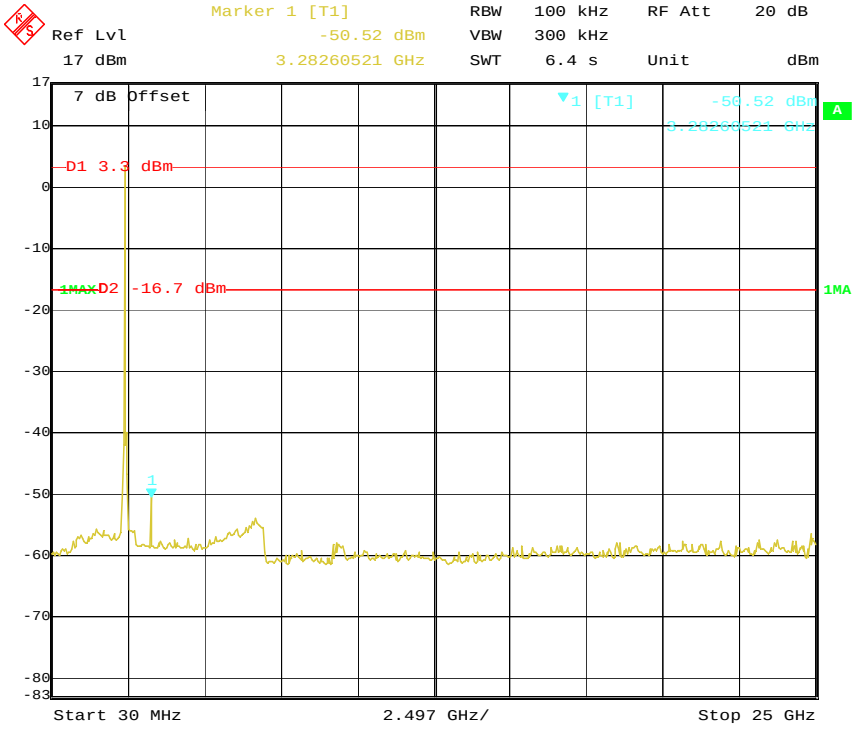


802.11g Middle Channel, Antenna 2



Date: 1.JUL.2012 14:22:57

802.11g High Channel, Antenna 2



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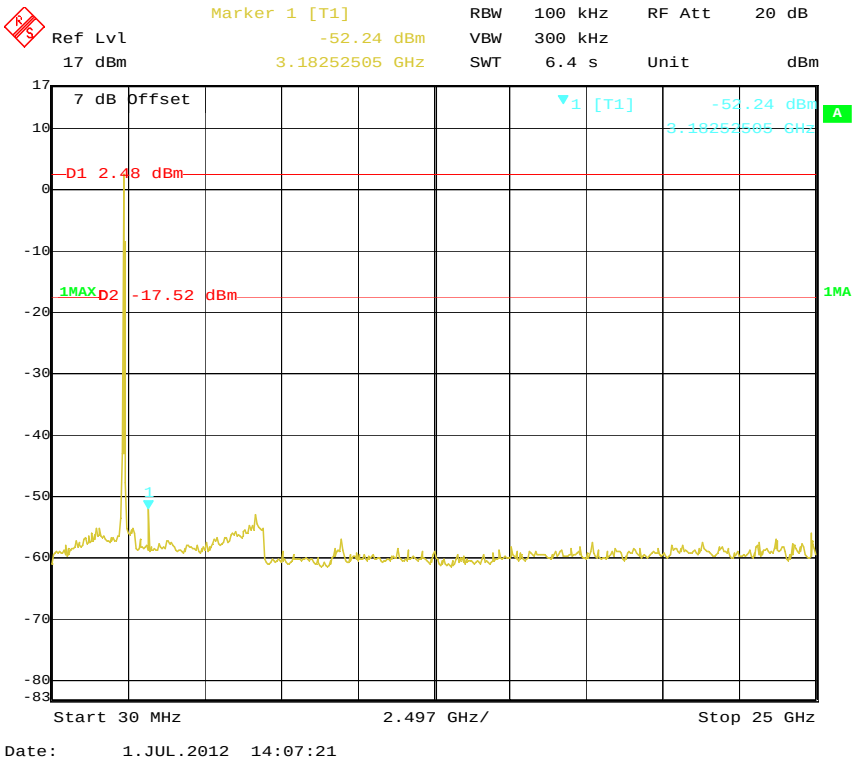
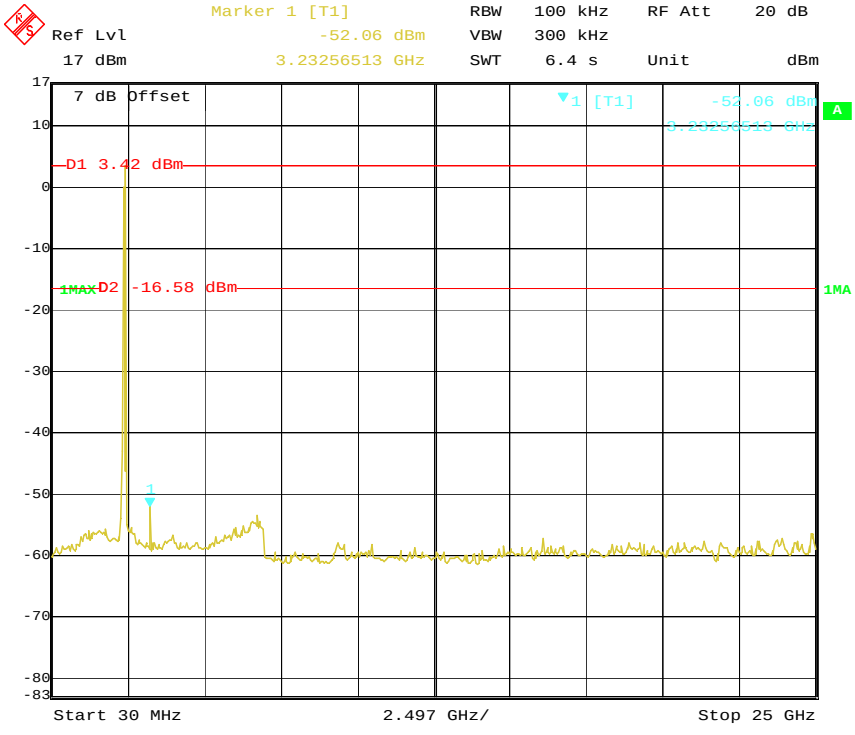
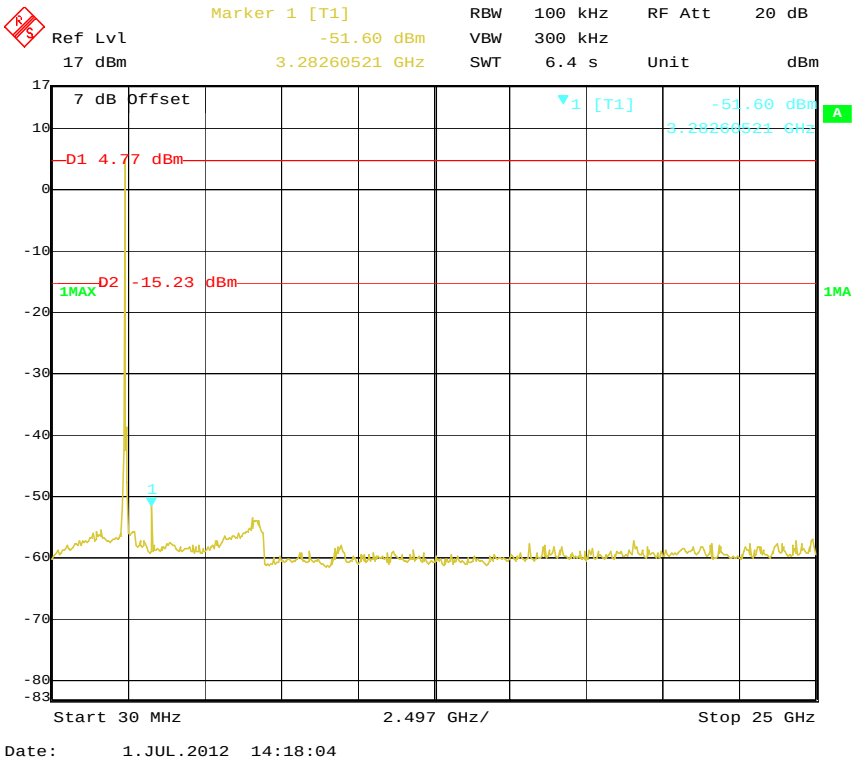
802.11n-HT20 Low Channel, Antenna 2



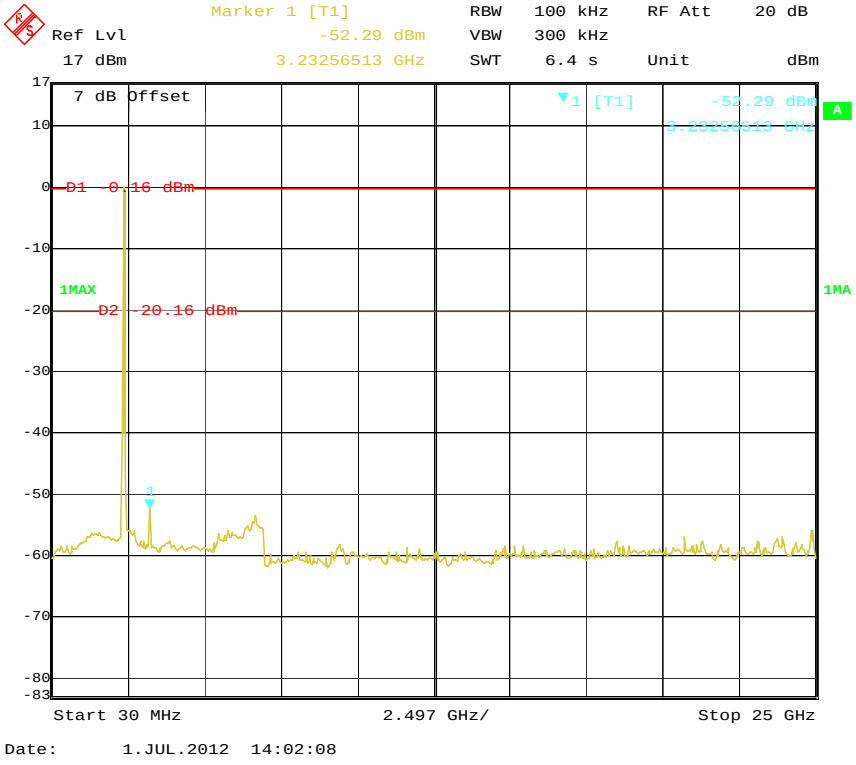
802.11n-HT20 Middle Channel, Antenna 2



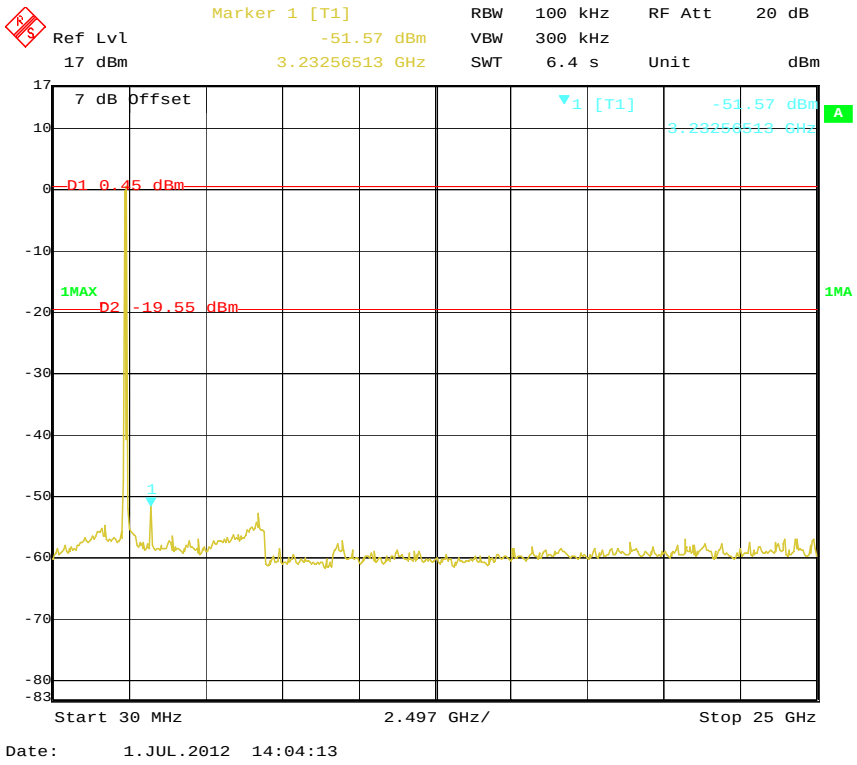
802.11n-HT20 High Channel, Antenna 2



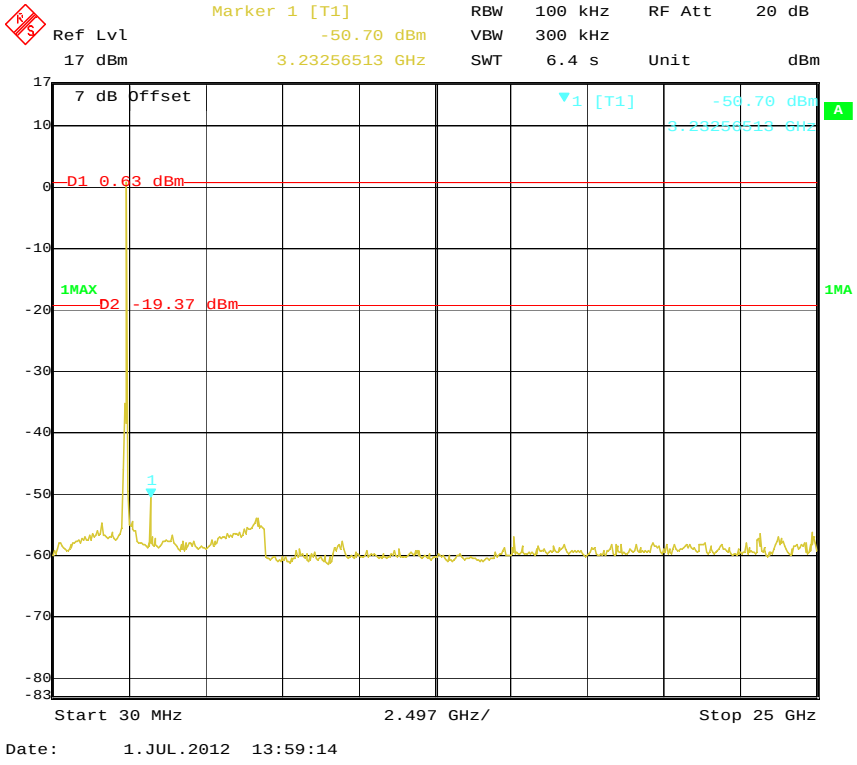
802.11n-HT40 Low Channel, Antenna 2



802.11n-HT40 Middle Channel, Antenna 2



802.11n-HT40 High Channel, Antenna 2



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

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.

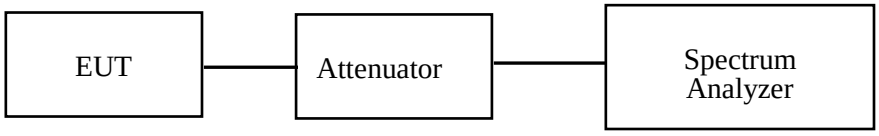
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 Data

Environmental Conditions

Temperature:	25~26℃
Relative Humidity:	54~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Sula Huang from 2012-06-29 to 2012-07-01.

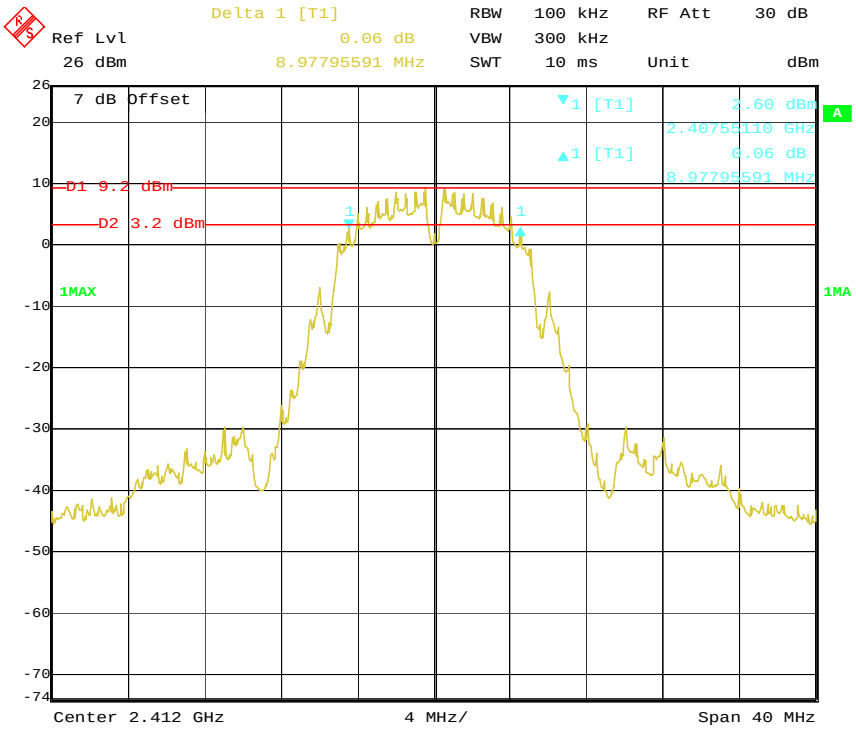
Test Mode: Transmitting

Test Result: Pass.

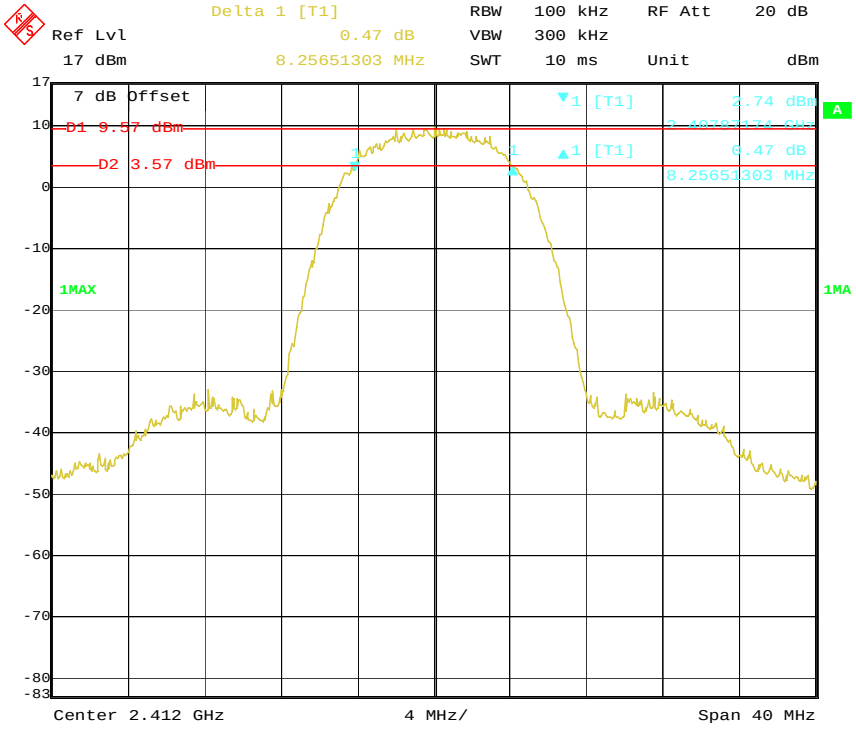
Please refer to the following tables and plots.

Channel	Frequency (MHz)	Data Rate (Mbps)	Antenna port	6dB bandwidth (MHz)	Limit (kHz)	Result
802.11b mode						
Low	2412	1	1	8.98	≥500	Pass
Low	2412	1	2	8.26	≥500	Pass
Middle	2437	1	1	9.06	≥500	Pass
Middle	2437	1	2	8.50	≥500	Pass
High	2462	1	1	8.98	≥500	Pass
High	2462	1	2	8.34	≥500	Pass
802.11g mode						
Low	2412	6	1	16.19	≥500	Pass
Low	2412	6	2	15.95	≥500	Pass
Middle	2437	6	1	16.03	≥500	Pass
Middle	2437	6	2	16.11	≥500	Pass
High	2462	6	1	16.11	≥500	Pass
High	2462	6	2	15.95	≥500	Pass
802.11n-HT20 mode						
Low	2412	6.5	1	17.56	≥500	Pass
Low	2412	6.5	2	17.39	≥500	Pass
Middle	2437	6.5	1	17.47	≥500	Pass
Middle	2437	6.5	2	17.55	≥500	Pass
High	2462	6.5	1	17.47	≥500	Pass
High	2462	6.5	2	17.39	≥500	Pass
802.11n-HT40 mode						
Low	2422	13.5	1	36.67	≥500	Pass
Low	2422	13.5	2	36.55	≥500	Pass
Middle	2437	13.5	1	36.67	≥500	Pass
Middle	2437	13.5	2	36.79	≥500	Pass
High	2452	13.5	1	36.67	≥500	Pass
High	2452	13.5	2	36.55	≥500	Pass

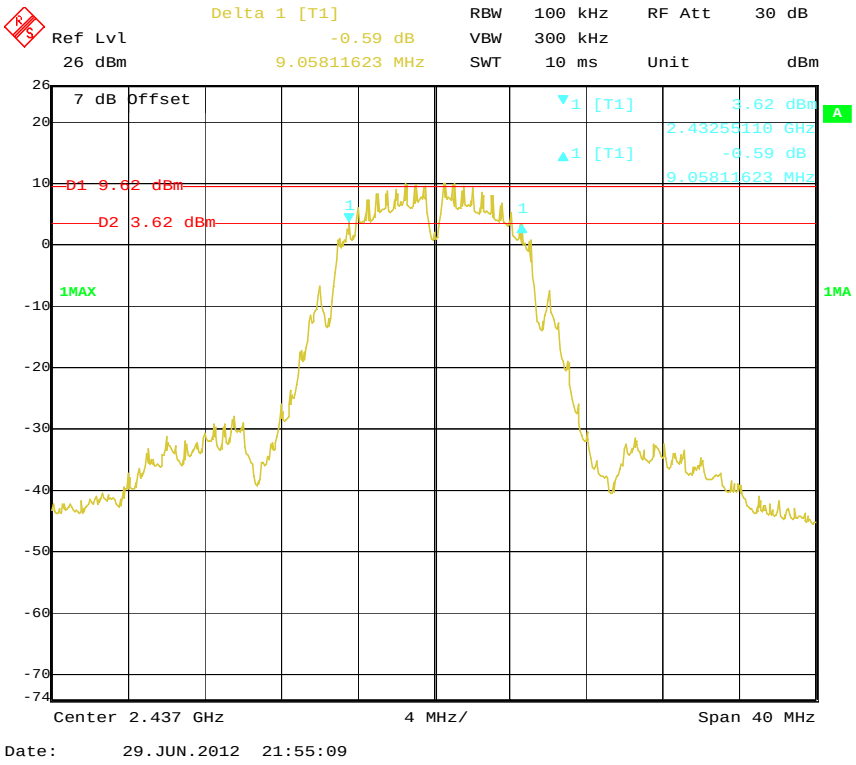
802.11b Low Channel, Antenna 1



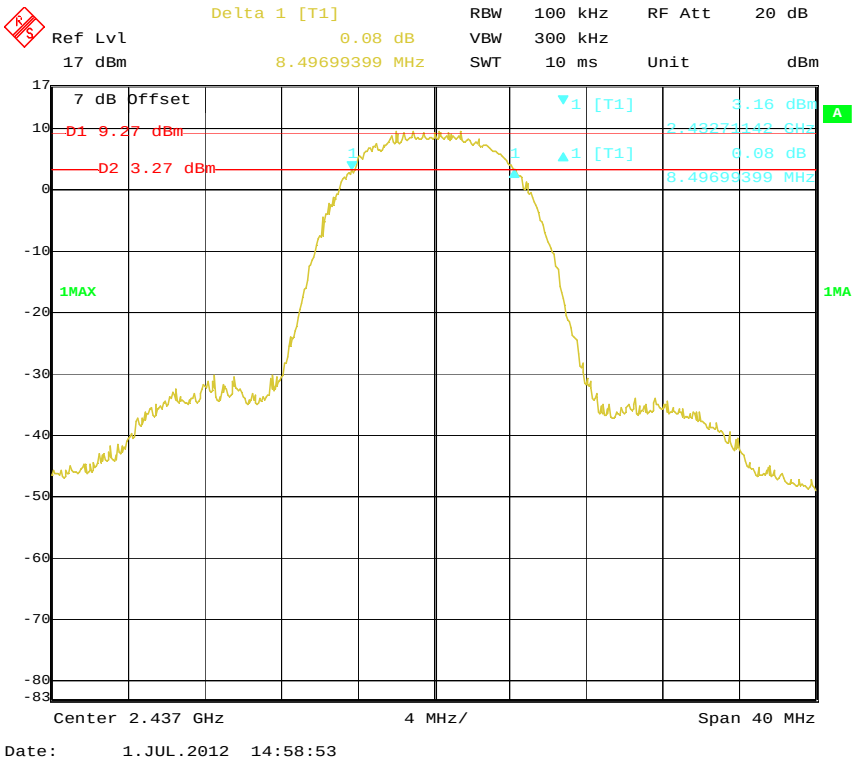
802.11b Low Channel, Antenna 2



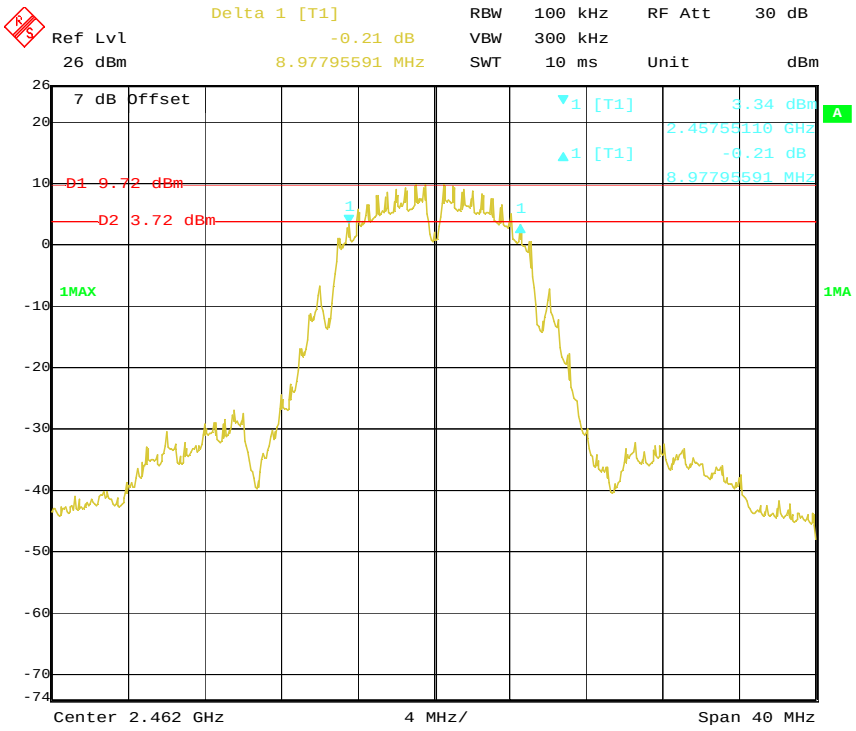
802.11b Middle Channel, Antenna 1



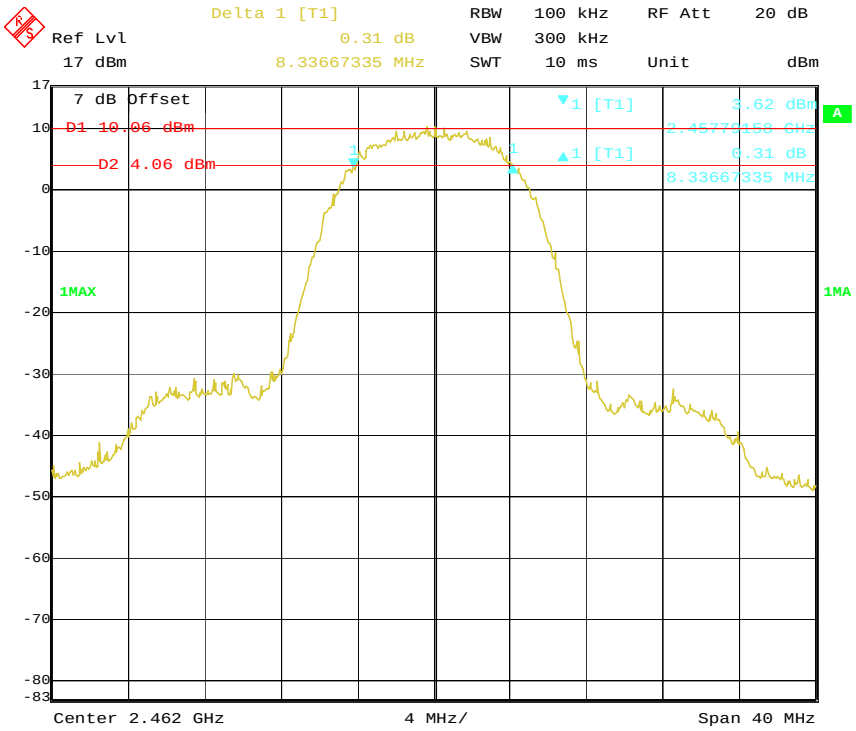
802.11b Middle Channel, Antenna 2



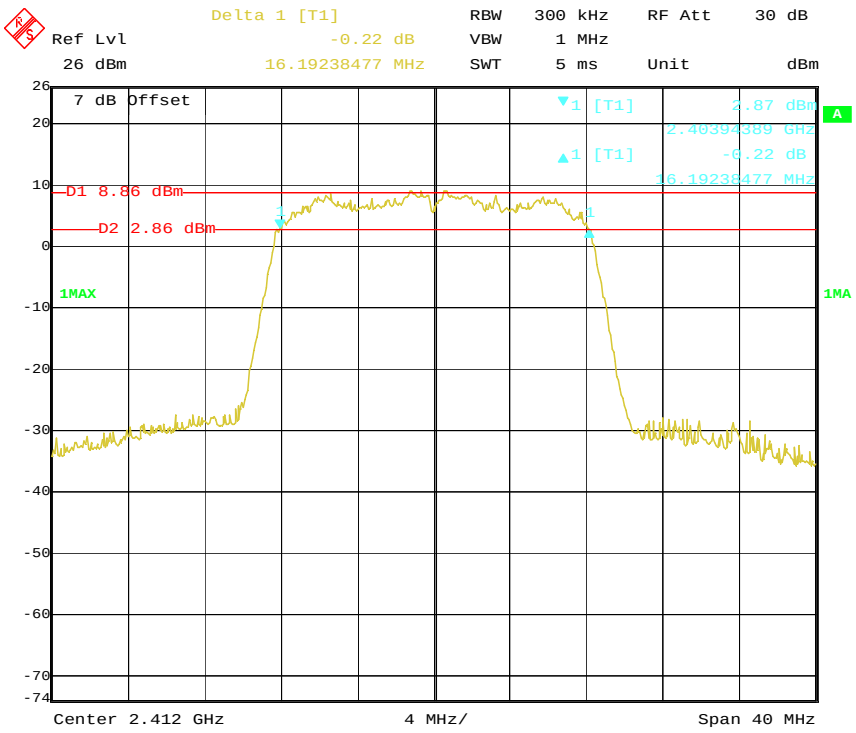
802.11b High Channel, Antenna 1



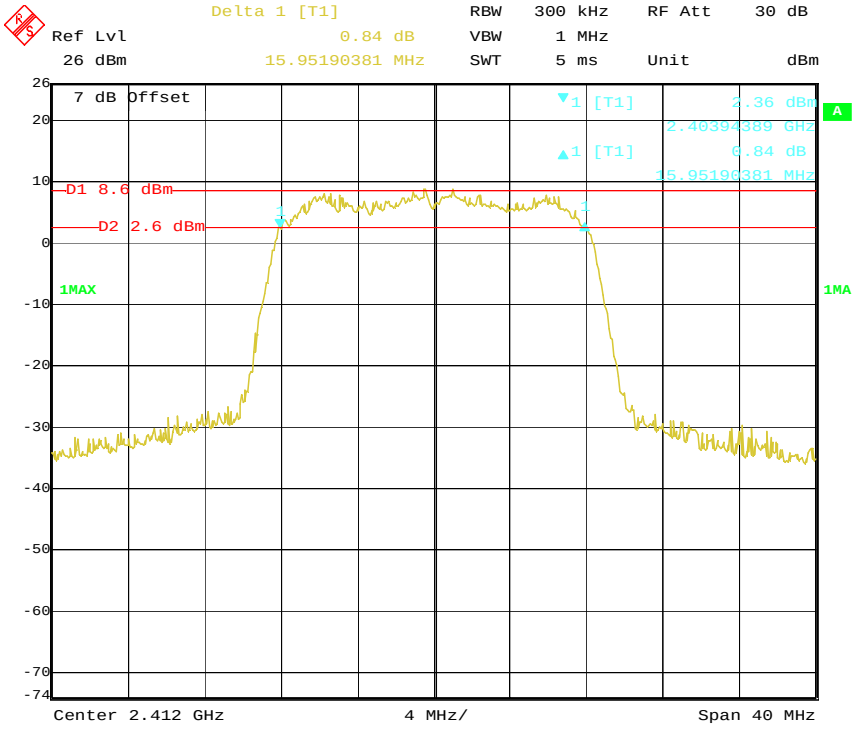
802.11b High Channel, Antenna 2



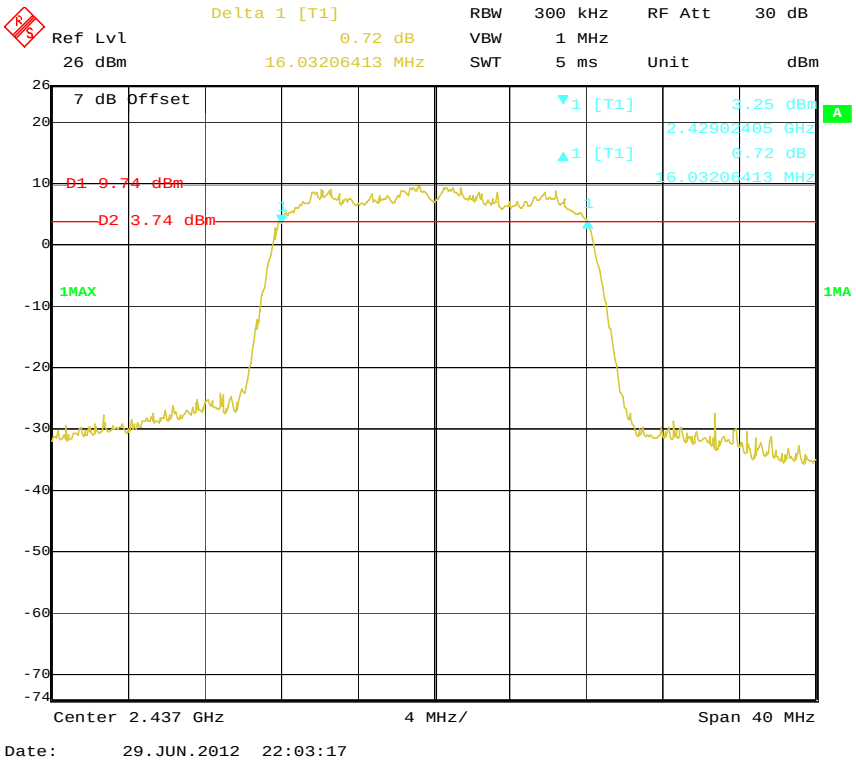
802.11g Low Channel, Antenna 1



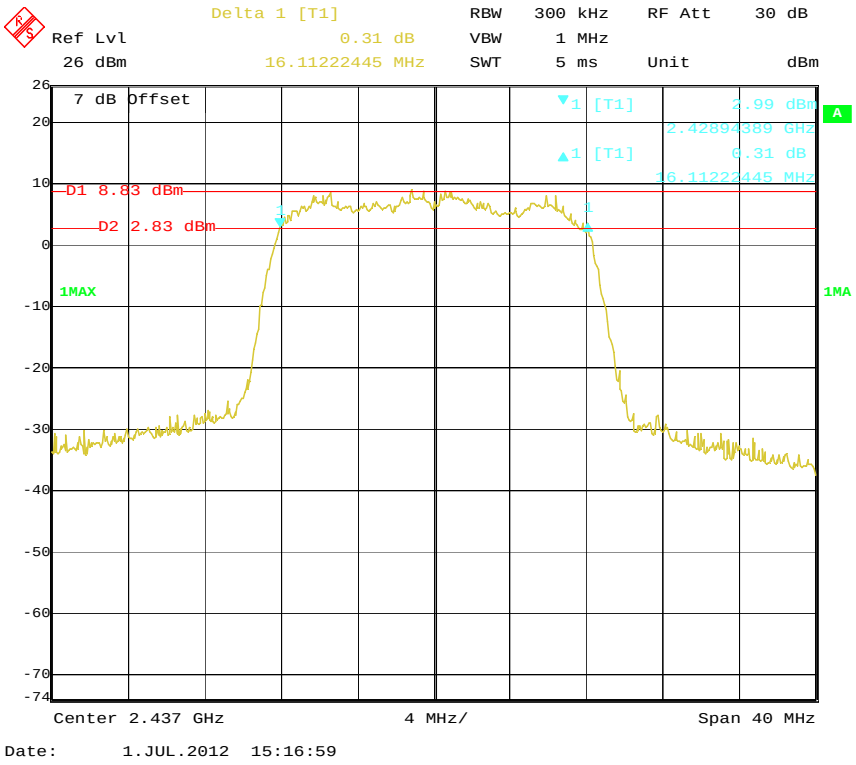
802.11g Low Channel, Antenna 2



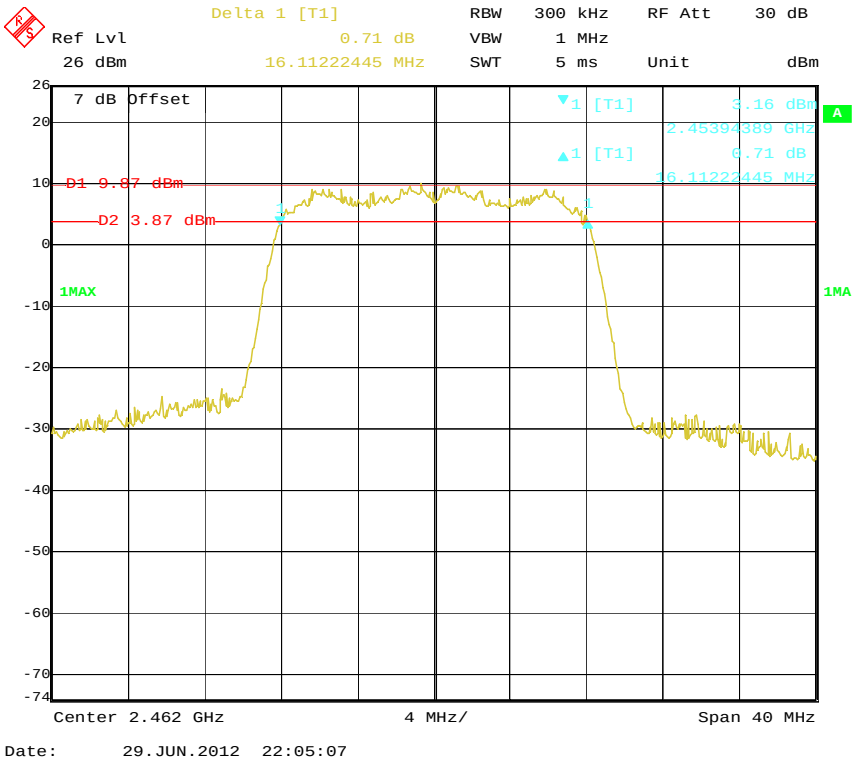
802.11g Middle Channel, Antenna 1



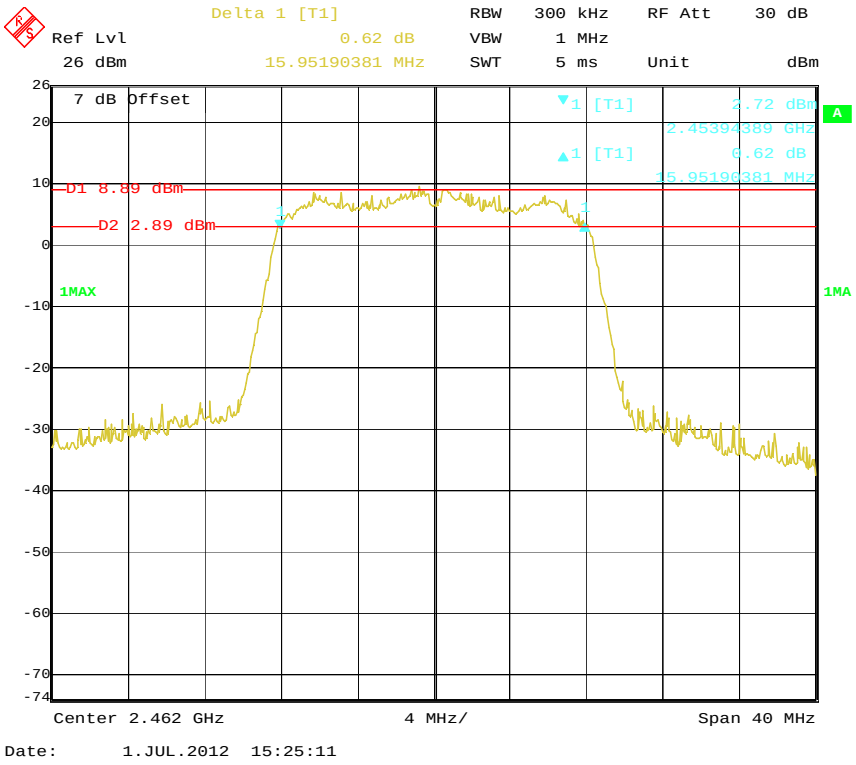
802.11g Middle Channel, Antenna 2



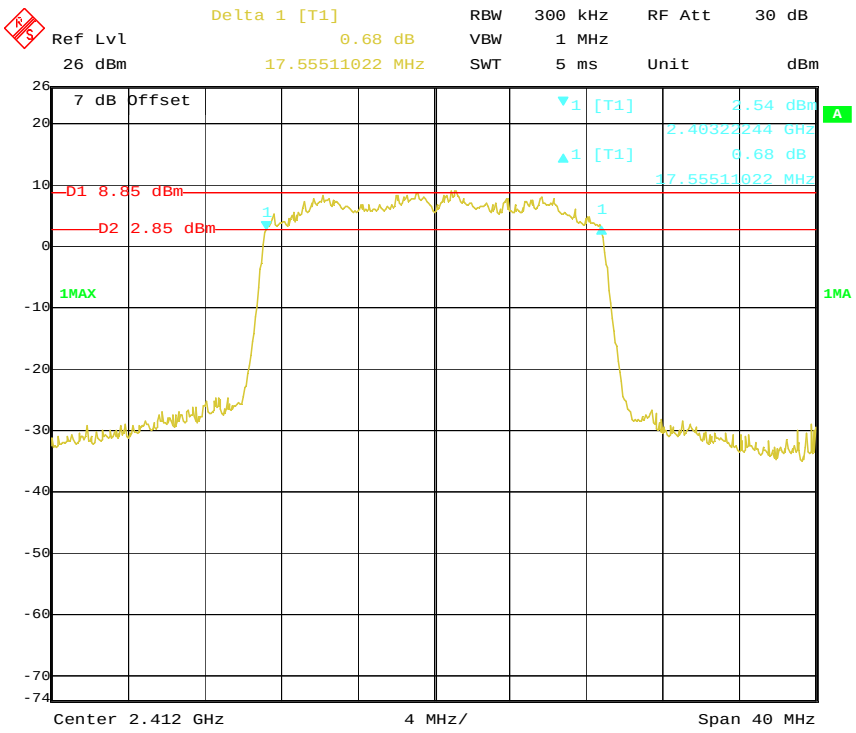
802.11g High Channel, Antenna 1



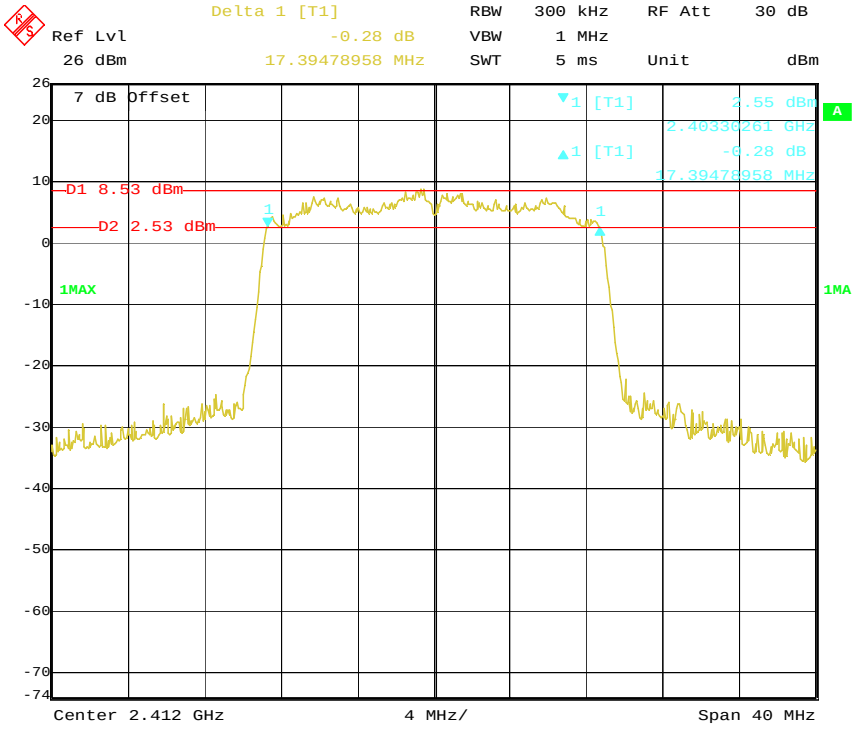
802.11g High Channel, Antenna 2



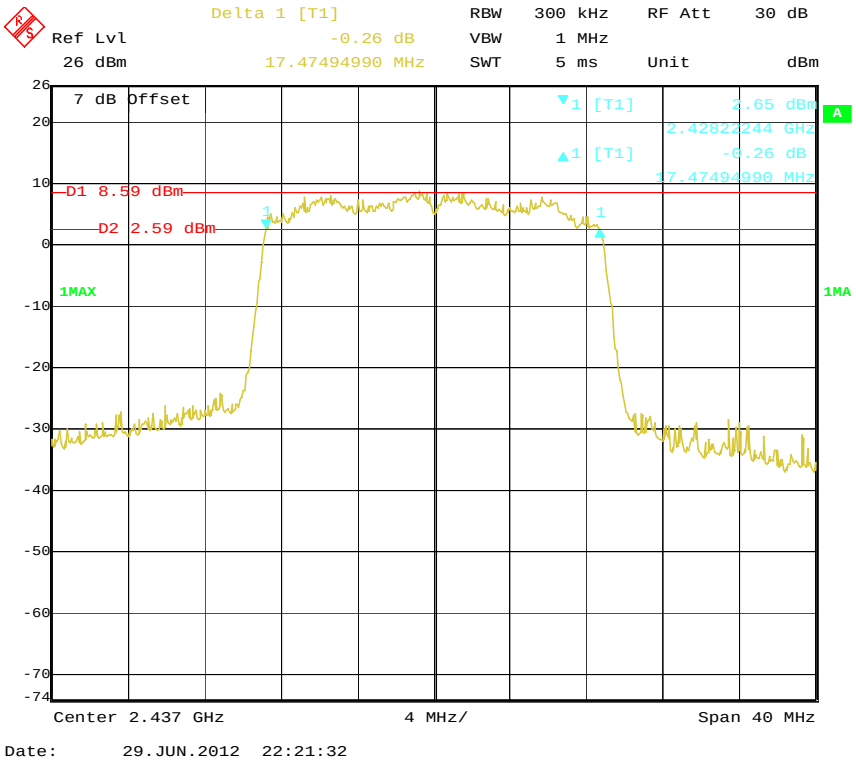
802.11n-HT20 Low Channel, Antenna 1



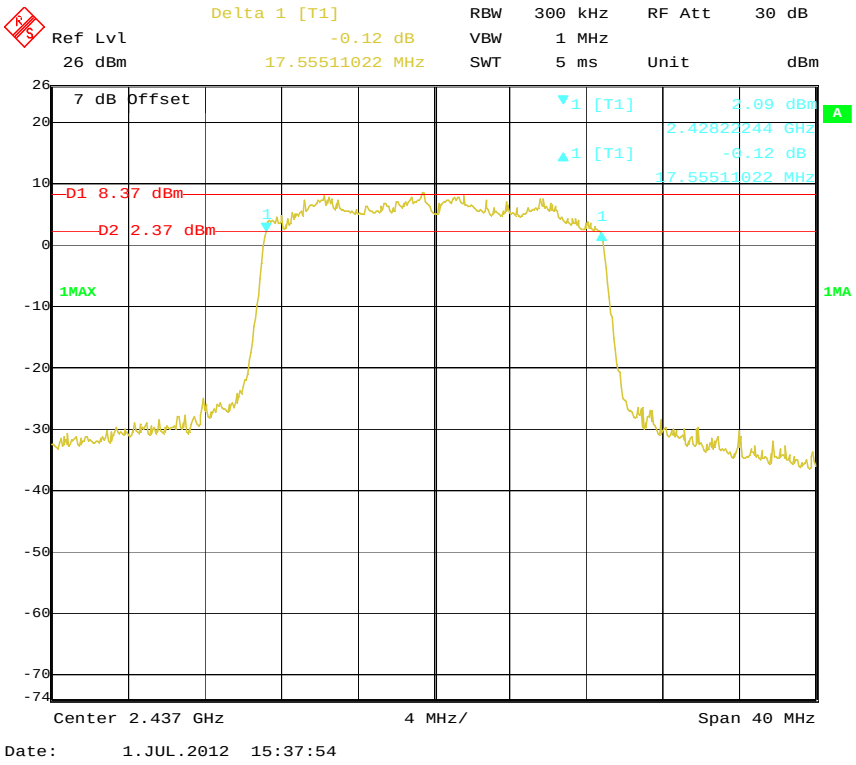
802.11n-HT20 Low Channel, Antenna 2



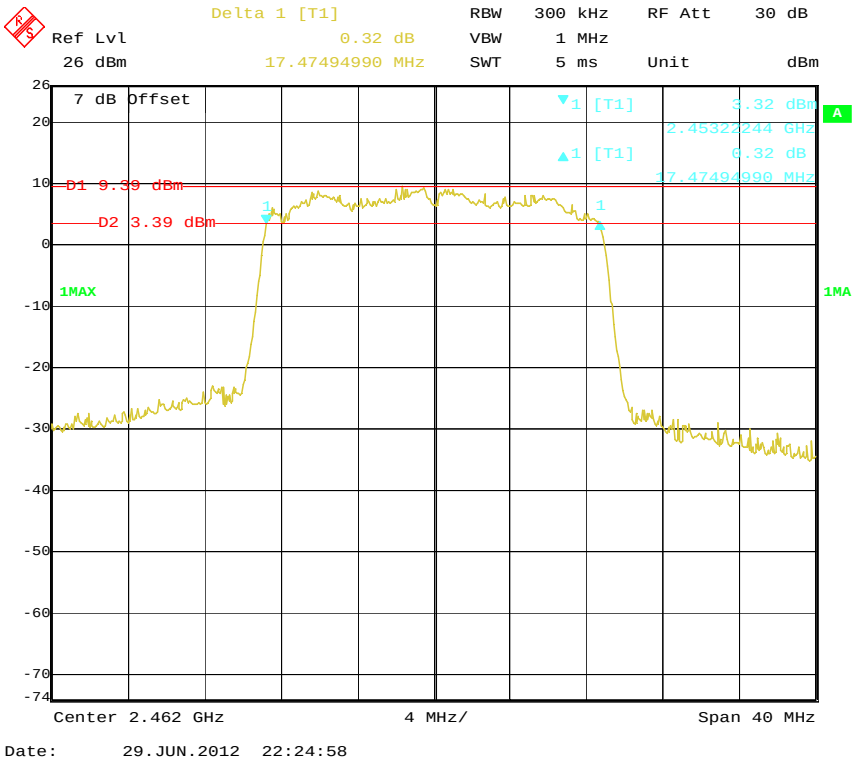
802.11n-HT20 Middle Channel, Antenna 1



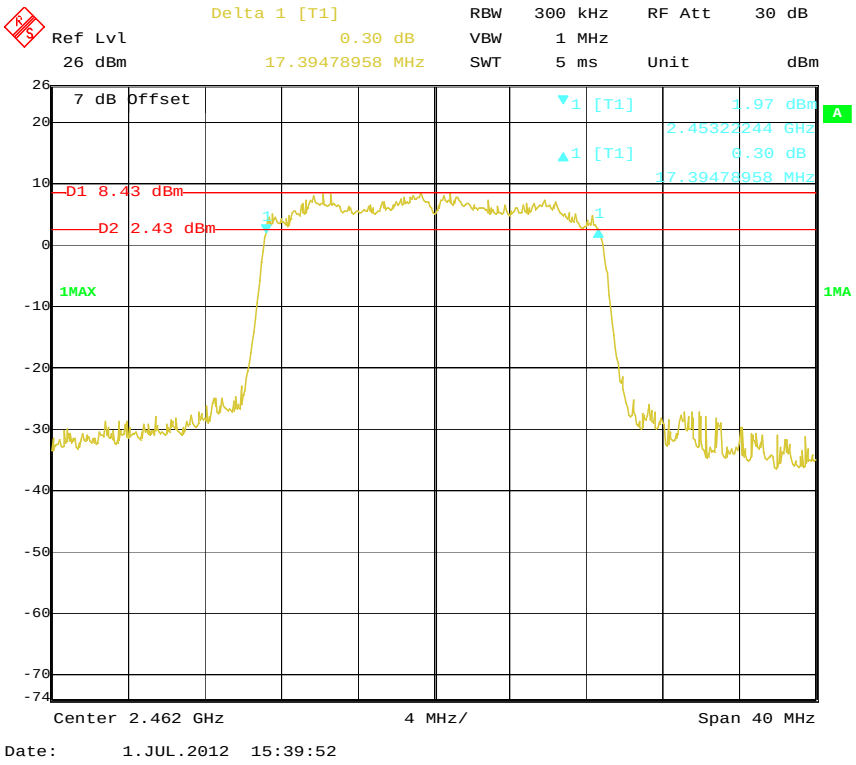
802.11n-HT20 Middle Channel, Antenna 2



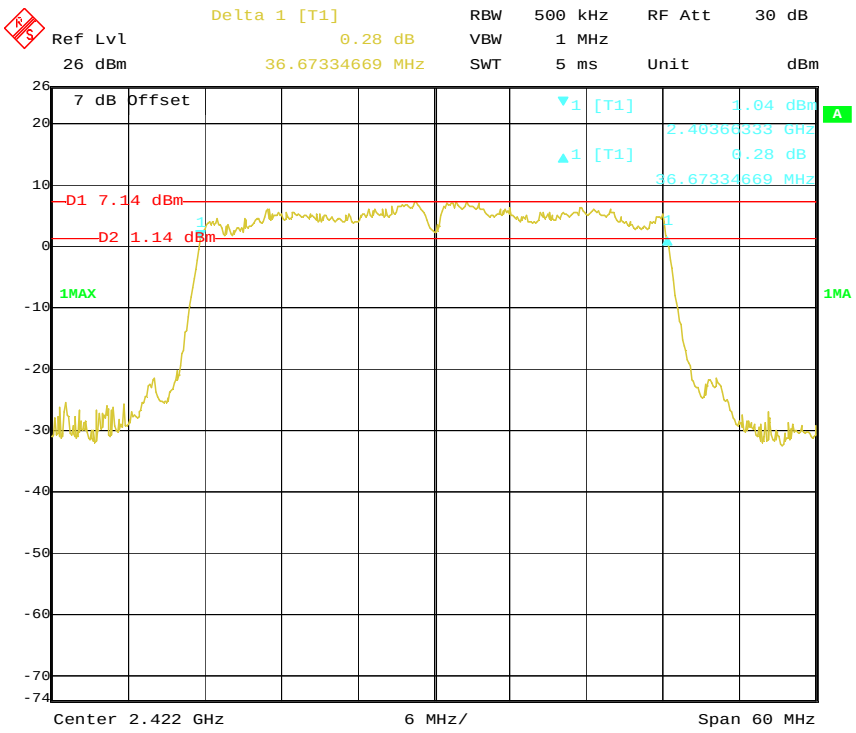
802.11n-HT20 High Channel, Antenna 1



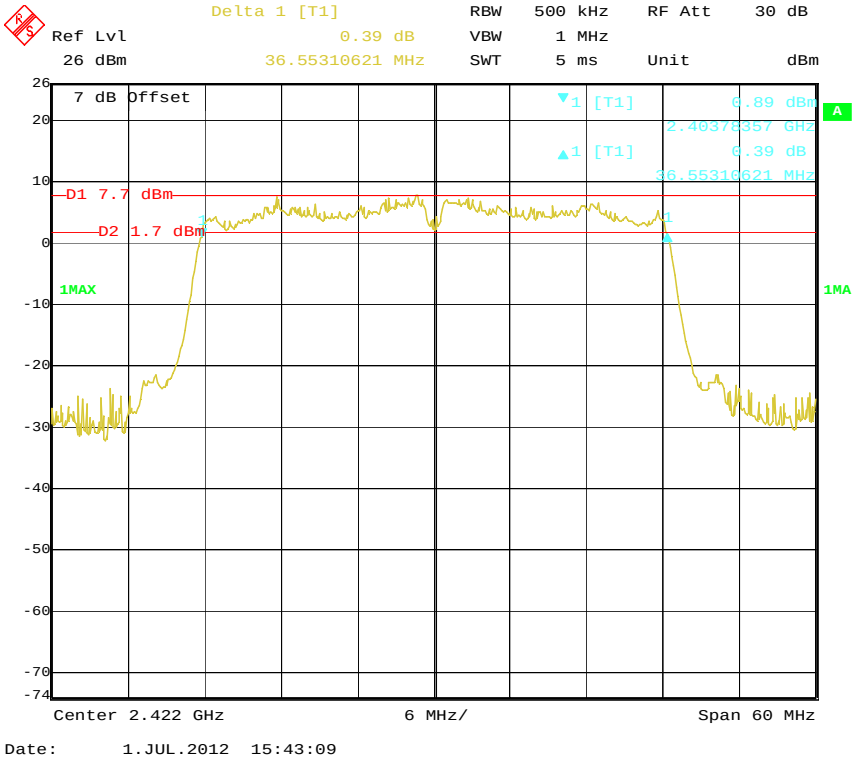
802.11n-HT20 High Channel, Antenna 2



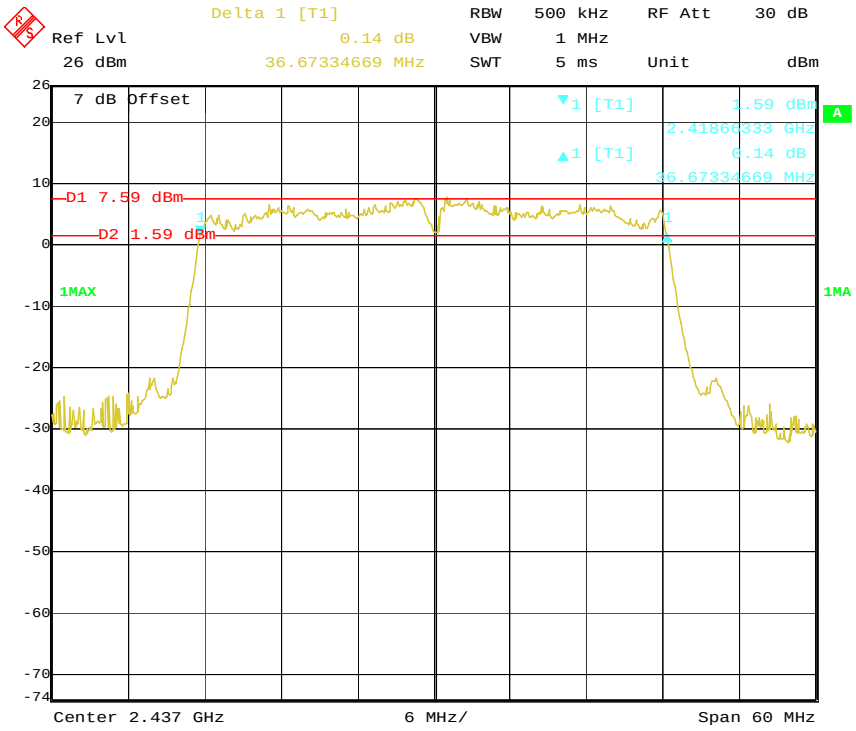
802.11n-HT40 Low Channel, Antenna 1



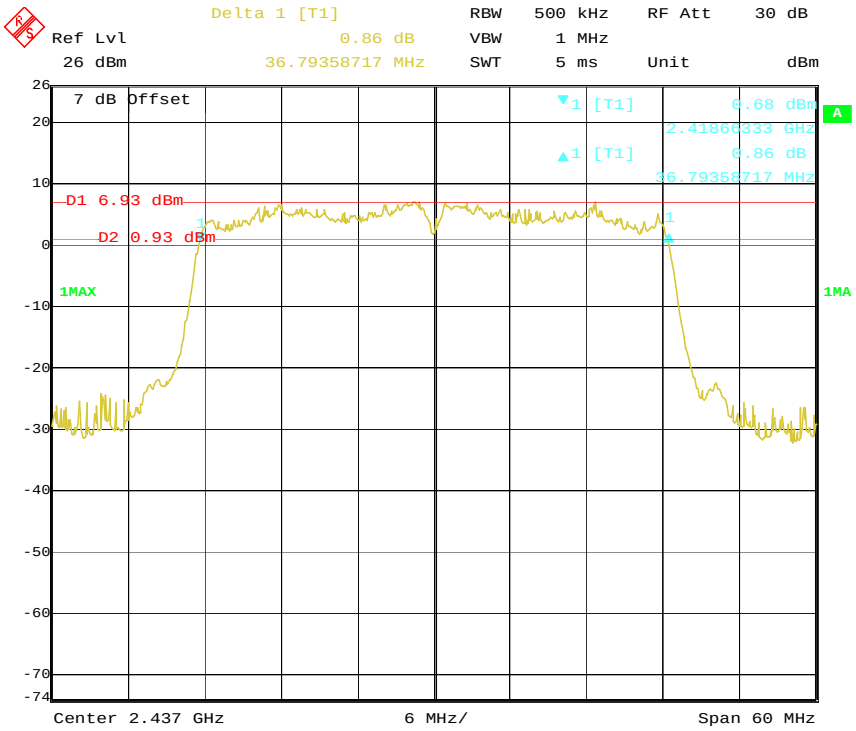
802.11n-HT40 Low Channel, Antenna 2



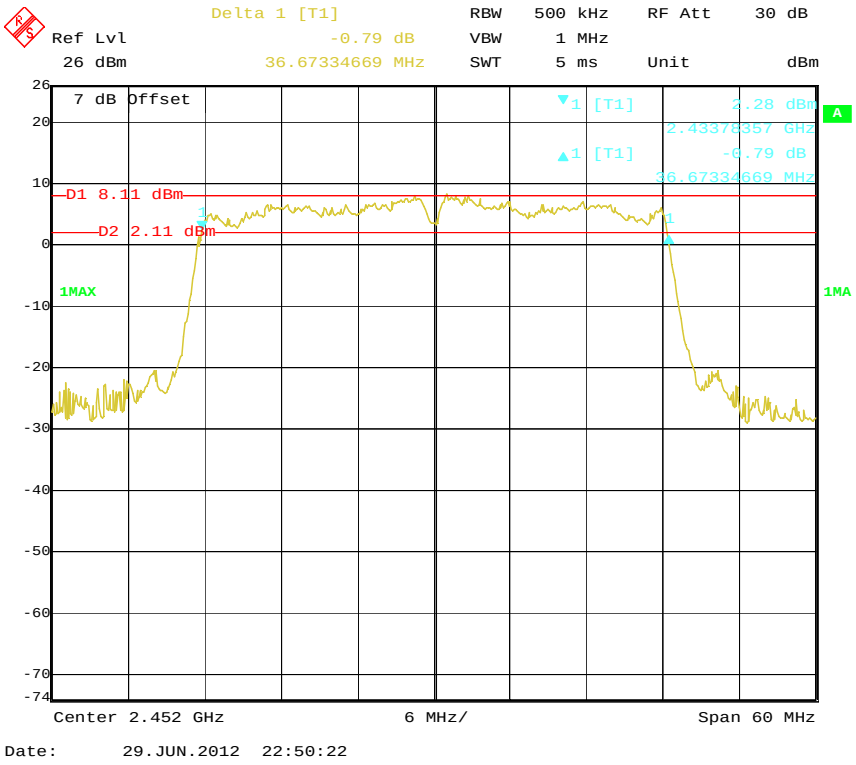
802.11n-HT40 Middle Channel, Antenna 1



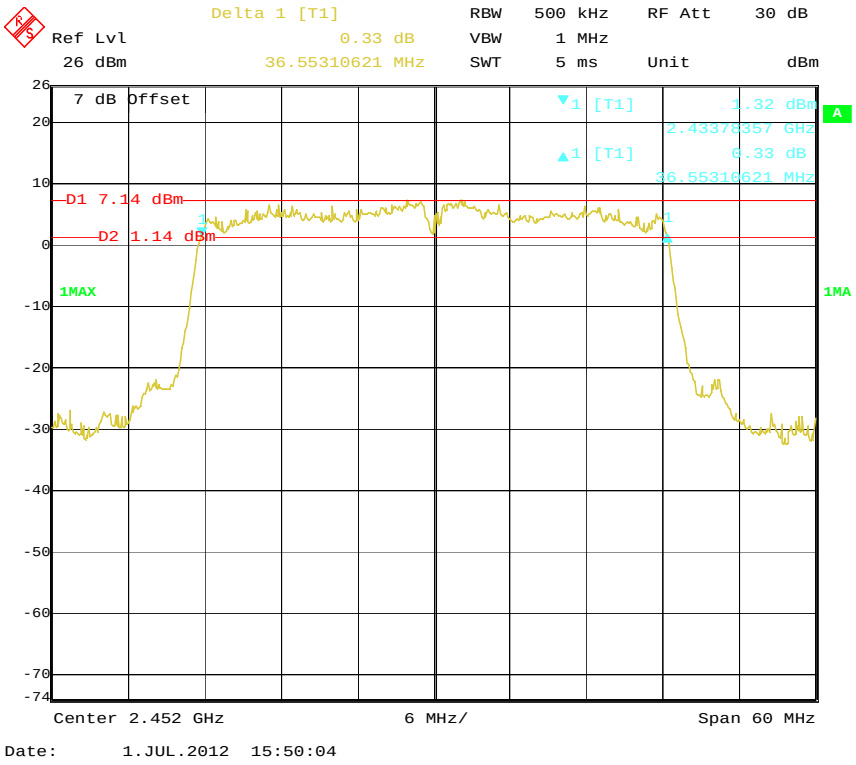
802.11n-HT40 Middle Channel, Antenna 2



802.11n-HT40 High Channel, Antenna 1



802.11n-HT40 High Channel, Antenna 2



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

Applicable Standard

According to §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.

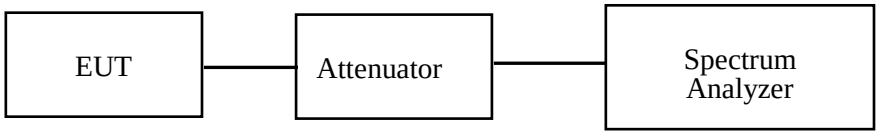
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 Data

Environmental Conditions

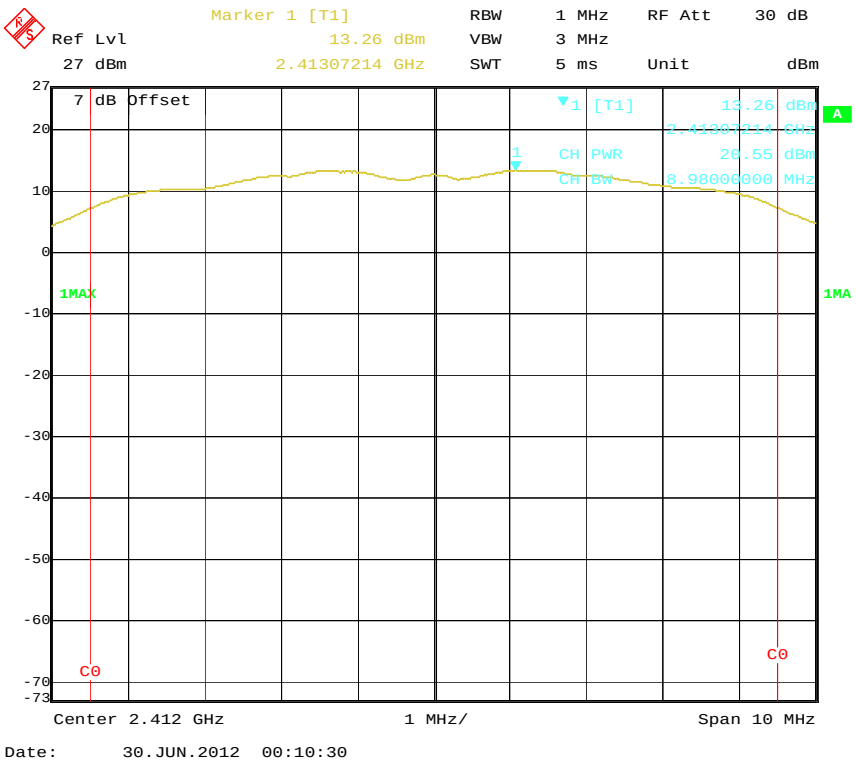
Temperature:	25~26℃
Relative Humidity:	54~56 %
ATM Pressure:	101.0 kPa

The testing was performed by Sula Huang on 2012-06-30 to 2012-07-01.

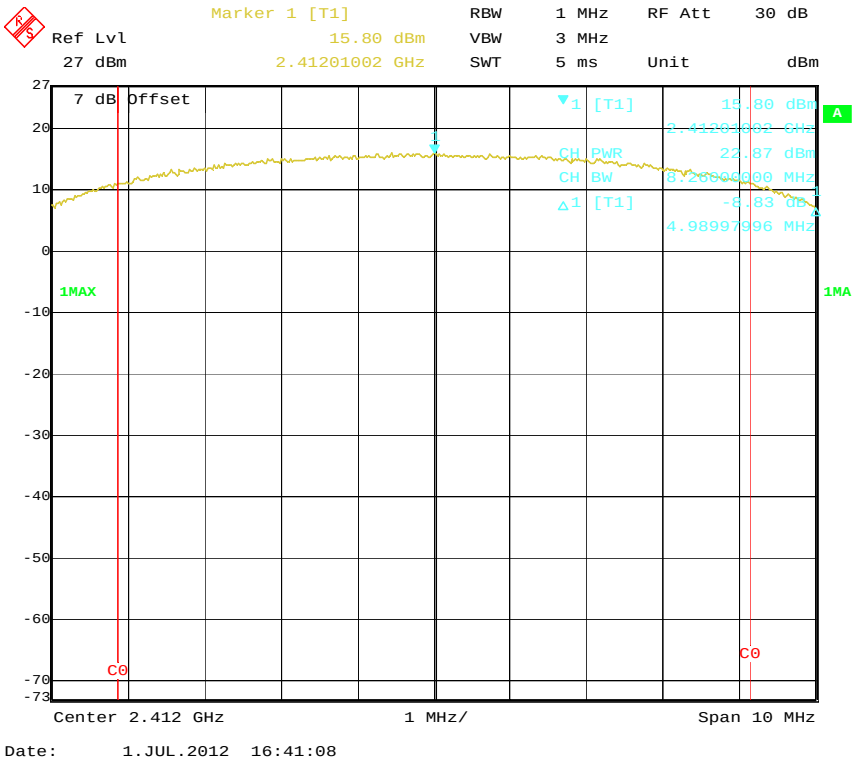
Test Mode: Transmitting

Channel	Frequency (MHz)	Data Rate (Mbps)	Antenna Port	Output Power (dBm)		Limit (dBm)	Result
802.11b mode							
Low	2412	1	1	20.25		30	Pass
Low	2412	1	2	22.87			
Middle	2437	1	1	21.39		30	Pass
Middle	2437	1	2	23.32			
High	2462	1	1	21.23		30	Pass
High	2462	1	2	23.40			
802.11g mode							
Low	2412	6	1	23.88		30	Pass
Low	2412	6	2	22.65			
Middle	2437	6	1	24.20		30	Pass
Middle	2437	6	2	23.03			
High	2462	6	1	24.06		30	Pass
High	2462	6	2	23.23			
802.11n-HT20 mode							
Low	2412	6.5	1	23.53	26.21	30	Pass
Low	2412	6.5	2	22.84			
Middle	2437	6.5	1	23.64	26.21	30	Pass
Middle	2437	6.5	2	22.70			
High	2462	6.5	1	23.99	26.40	30	Pass
High	2462	6.5	2	22.70			
802.11n-HT40 mode							
Low	2422	13.5	1	23.05	25.80	30	Pass
Low	2422	13.5	2	22.51			
Middle	2437	13.5	1	23.44	25.87	30	Pass
Middle	2437	13.5	2	22.67			
High	2452	13.5	1	22.83	25.78	30	Pass
High	2452	13.5	2	22.70			

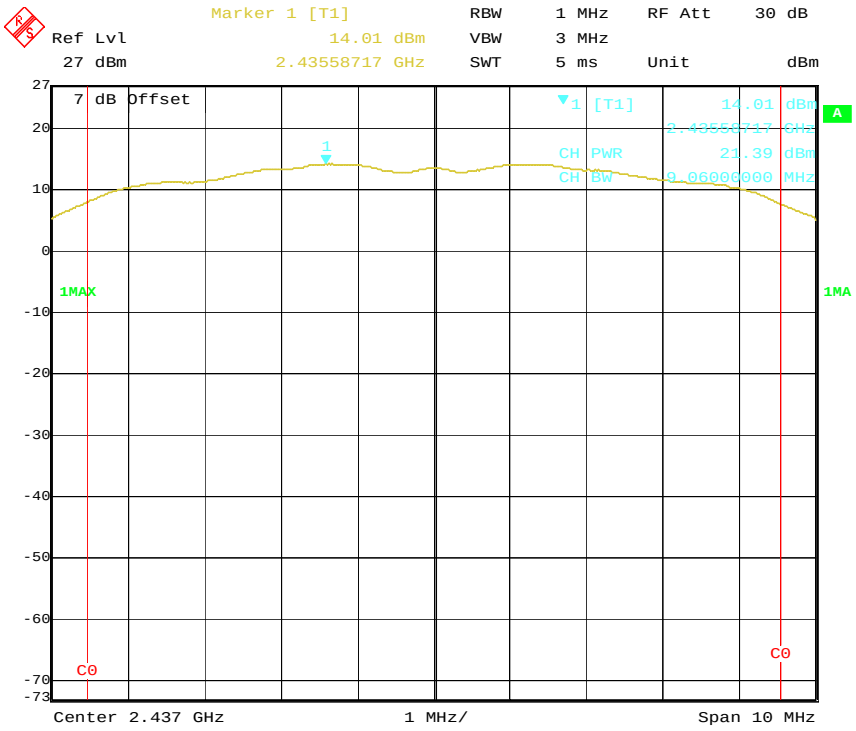
802.11b RF Output Power, Low Channel, Antenna 1



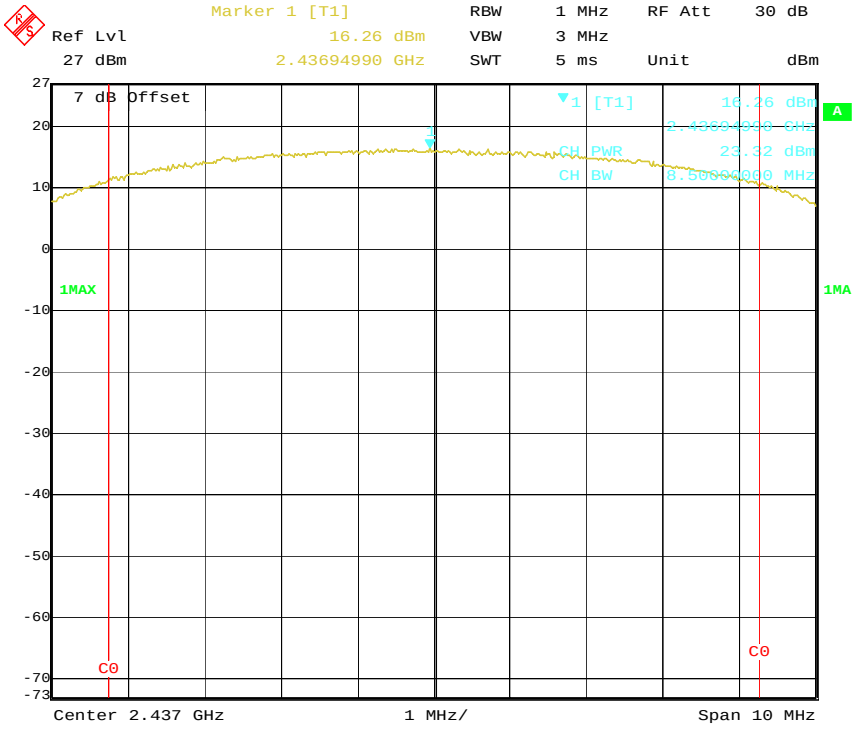
802.11b RF Output Power, Low Channel, Antenna 2



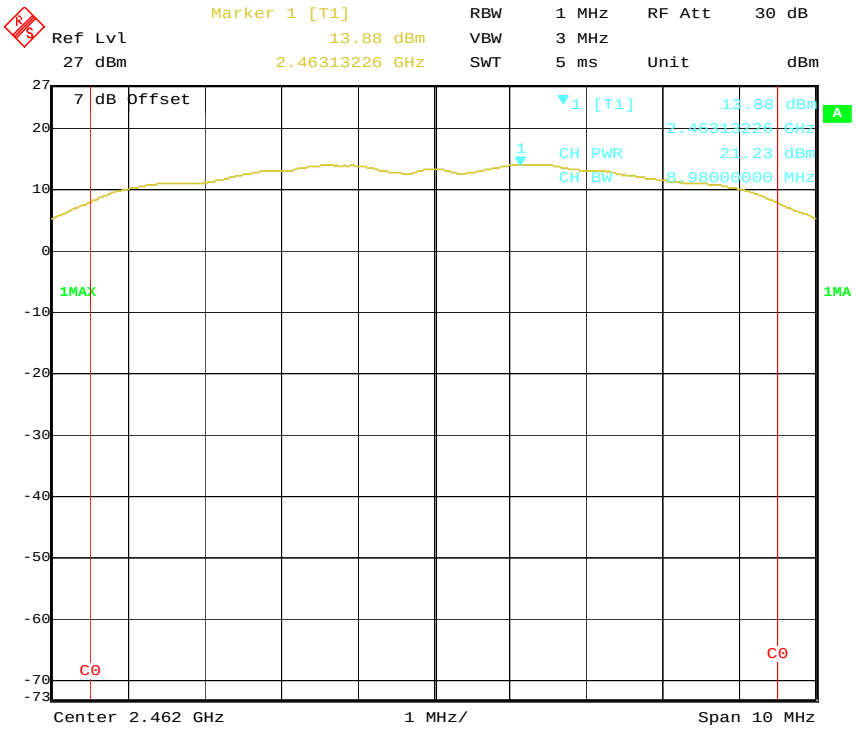
802.11b RF Output Power, Middle Channel, Antenna 1



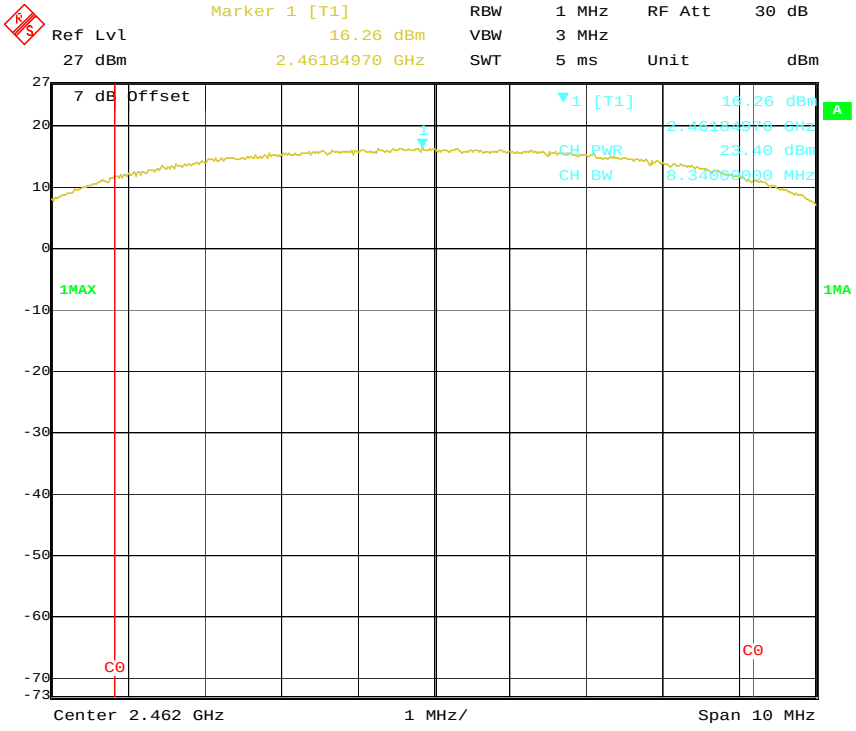
802.11b RF Output Power, Middle Channel, Antenna 2



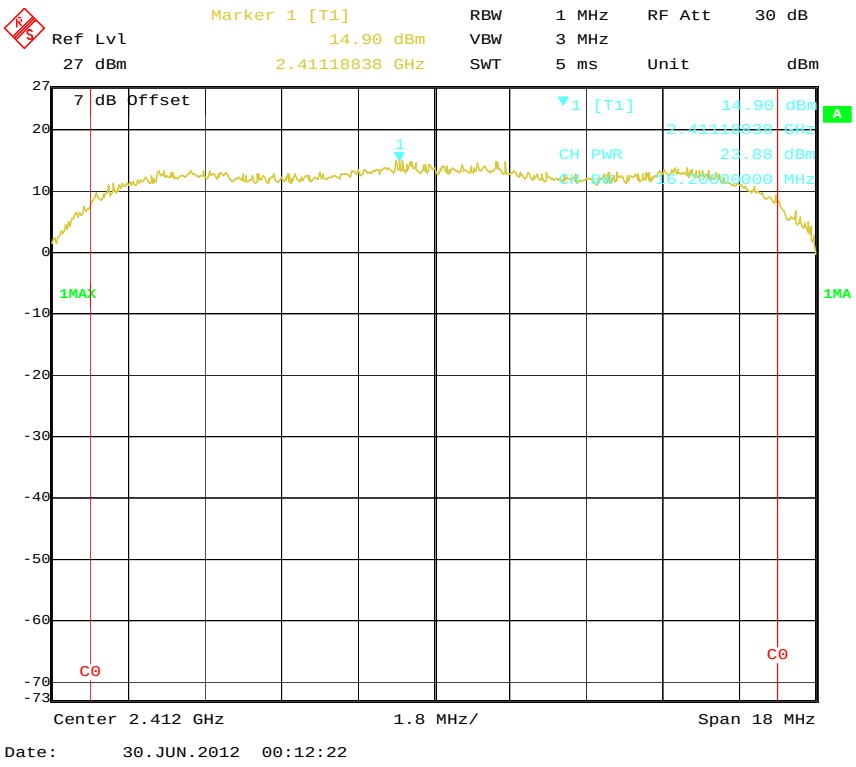
802.11b RF Output Power, High Channel, Antenna 1



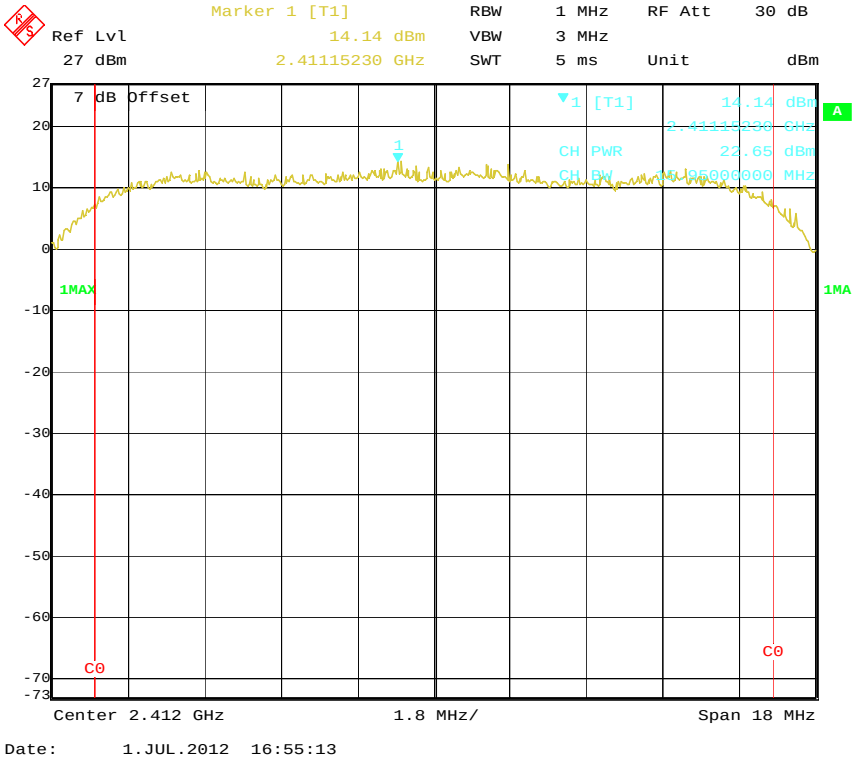
802.11b RF Output Power, High Channel, Antenna 2



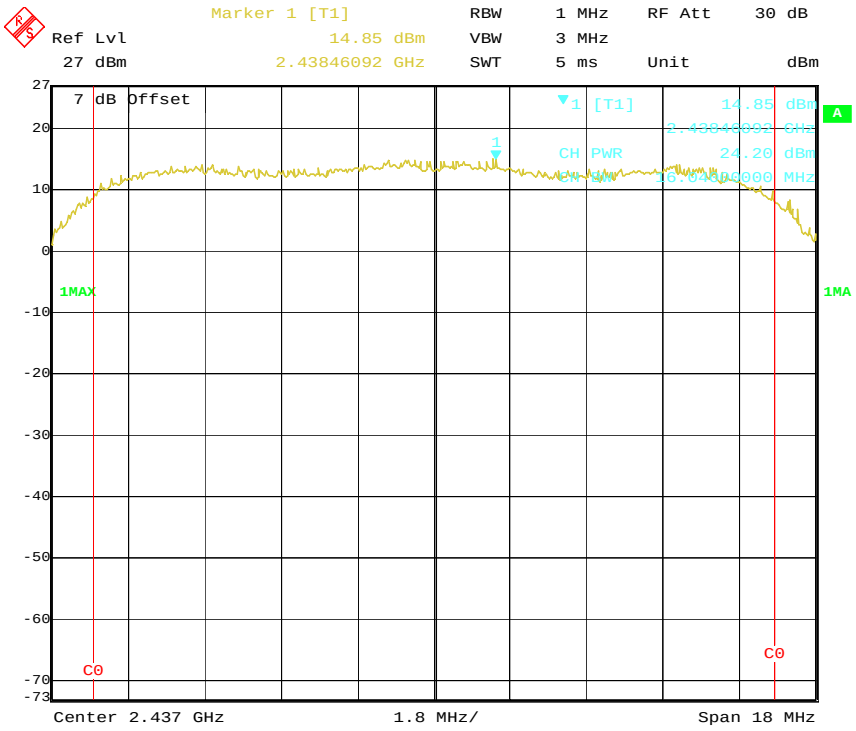
802.11g RF Output Power, Low Channel, Antenna 1



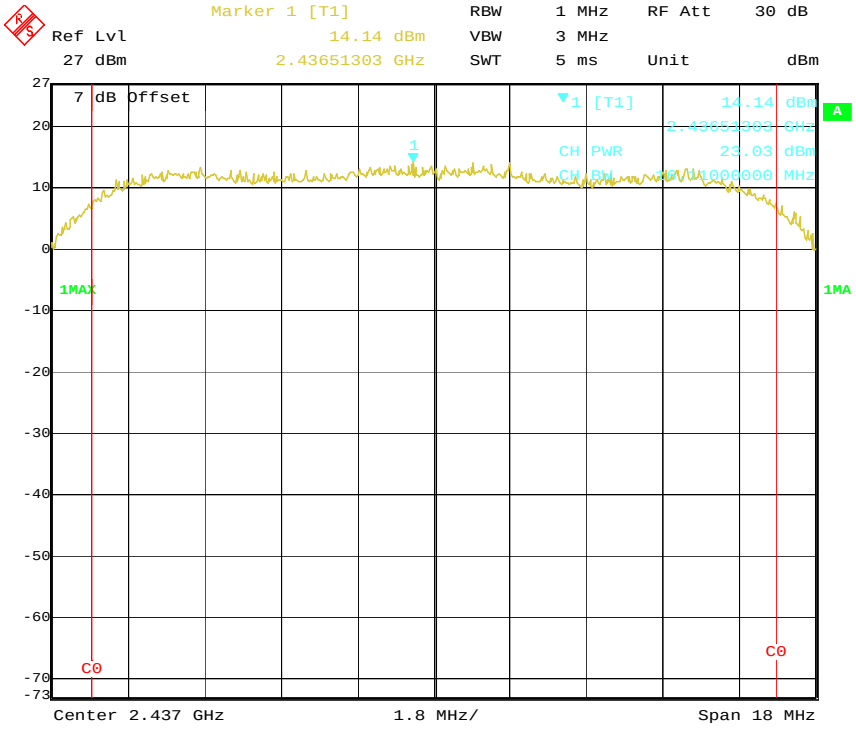
802.11g RF Output Power, Low Channel, Antenna 2



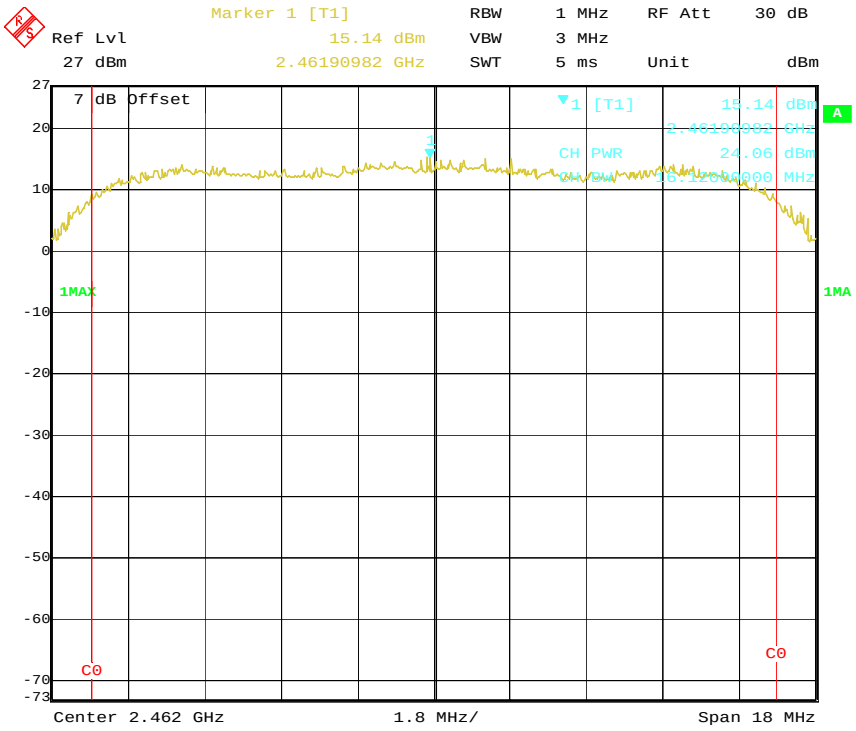
802.11g RF Output Power, Middle Channel, Antenna 1



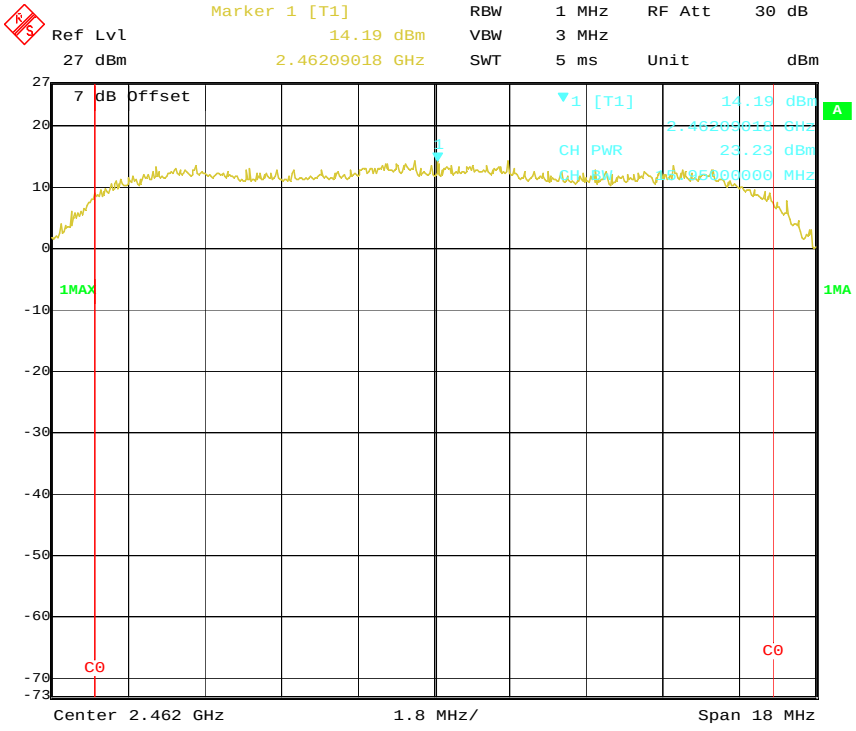
802.11g RF Output Power, Middle Channel, Antenna 2



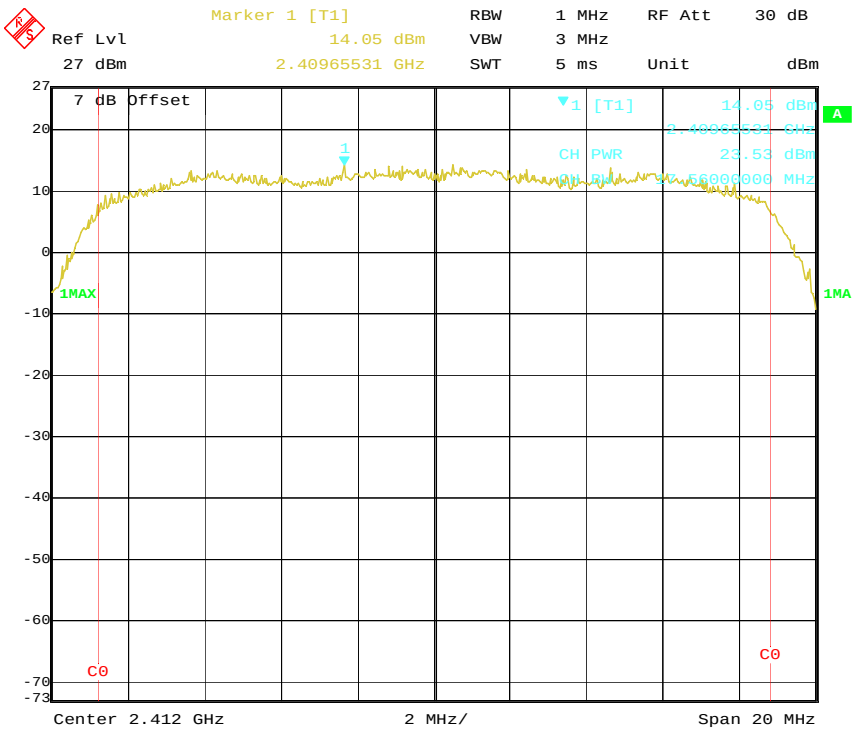
802.11g RF Output Power, High Channel, Antenna 1



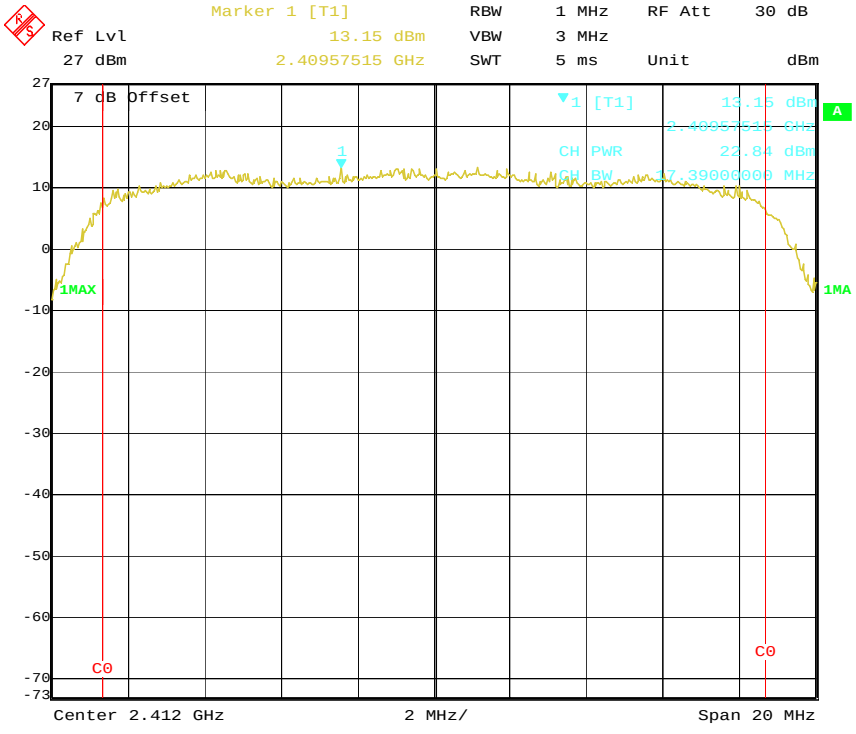
802.11g RF Output Power, High Channel, Antenna 2



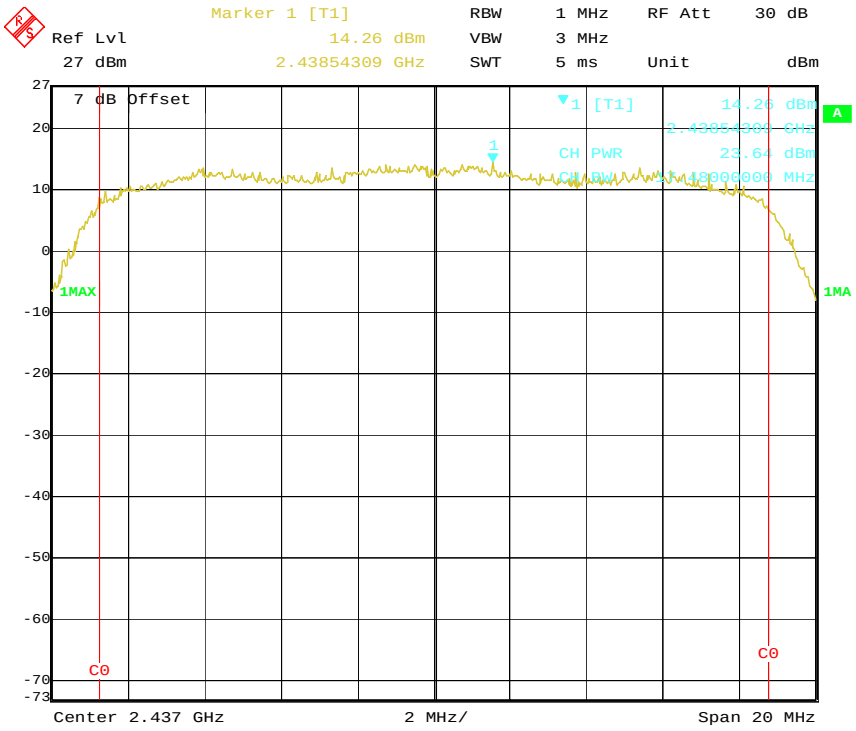
802.11n-HT20 RF Output Power, Low Channel, Antenna 1



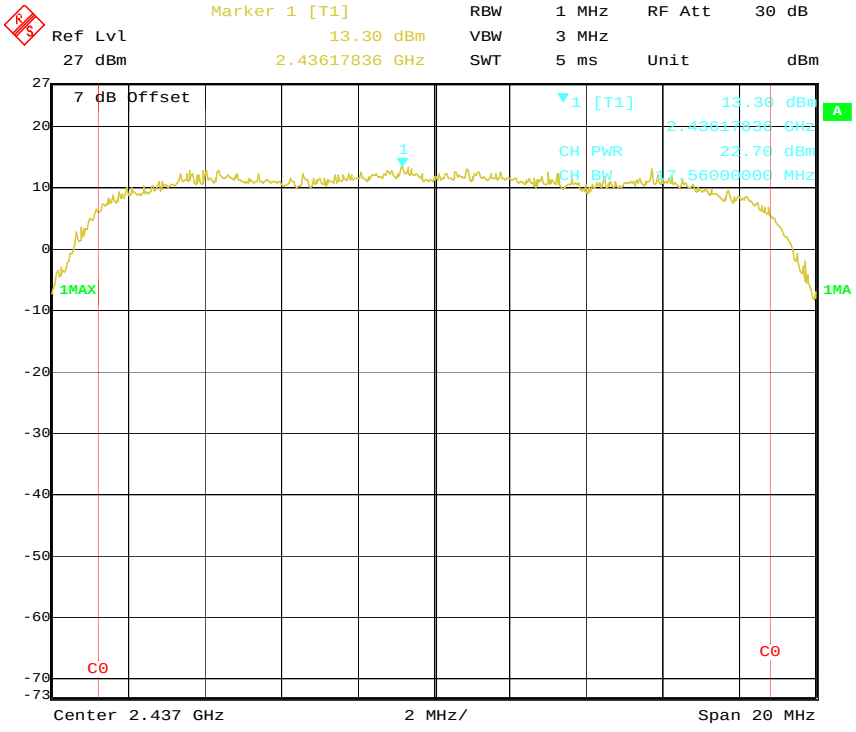
802.11n-HT20 RF Output Power, Low Channel, Antenna 2



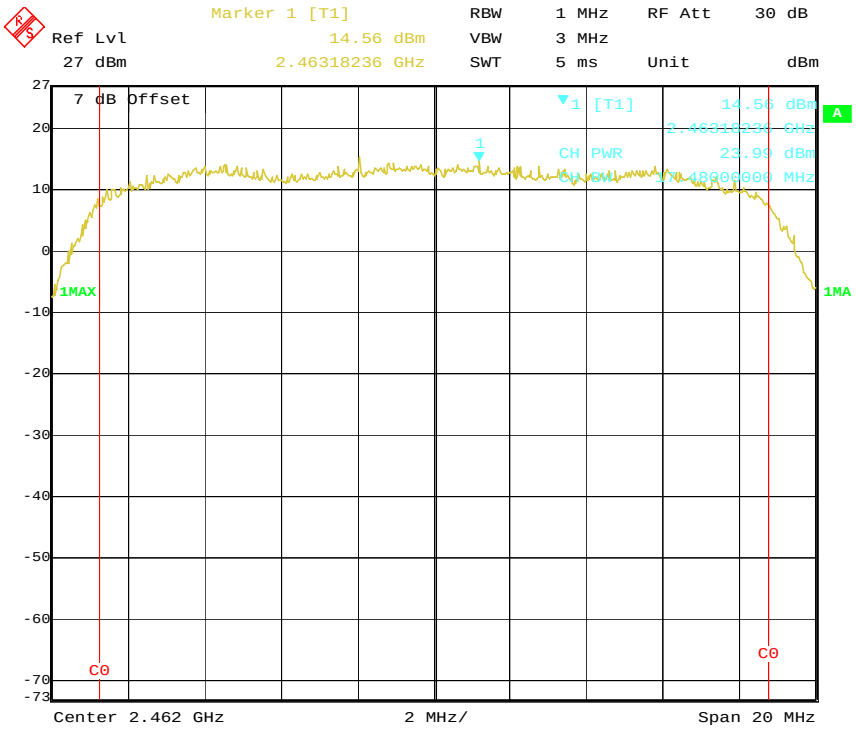
802.11n-HT20 RF Output Power, Middle Channel, Antenna 1



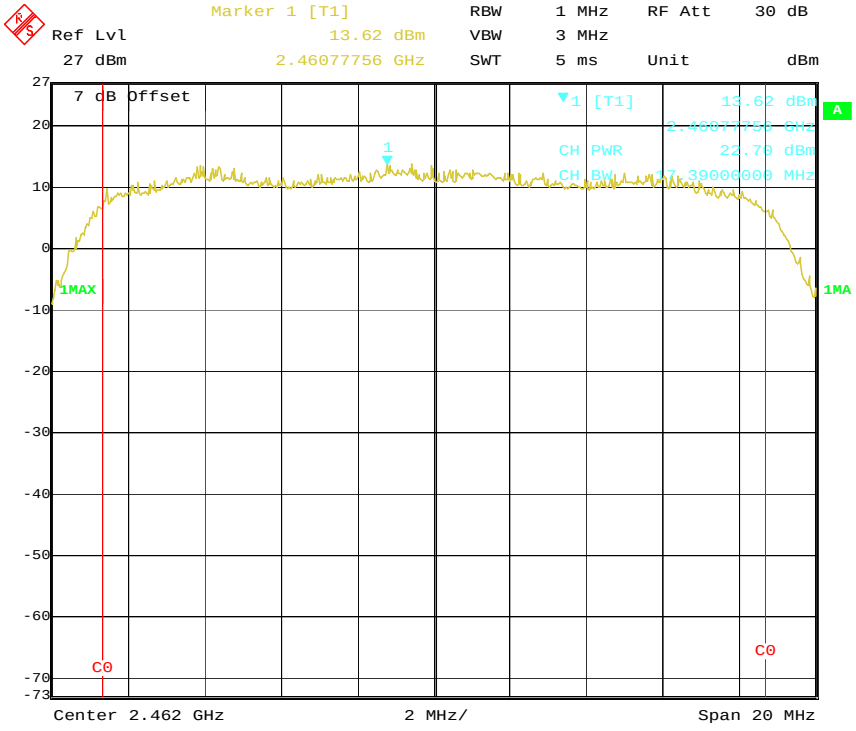
802.11n-HT20 RF Output Power, Middle Channel, Antenna 2



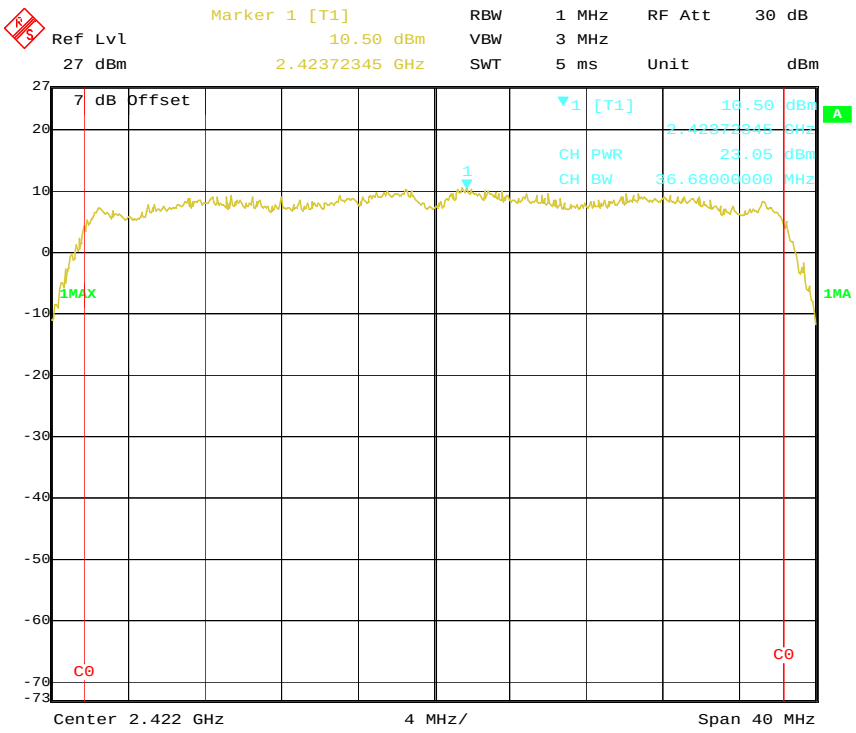
802.11n-HT20 RF Output Power, High Channel, Antenna 1



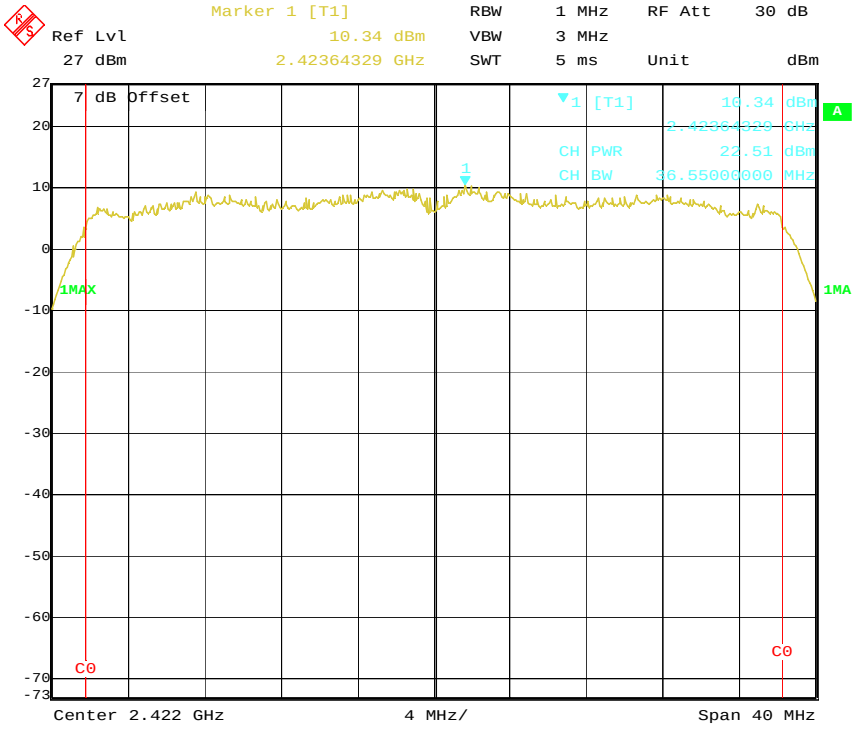
802.11n-HT20 RF Output Power, High Channel, Antenna 2



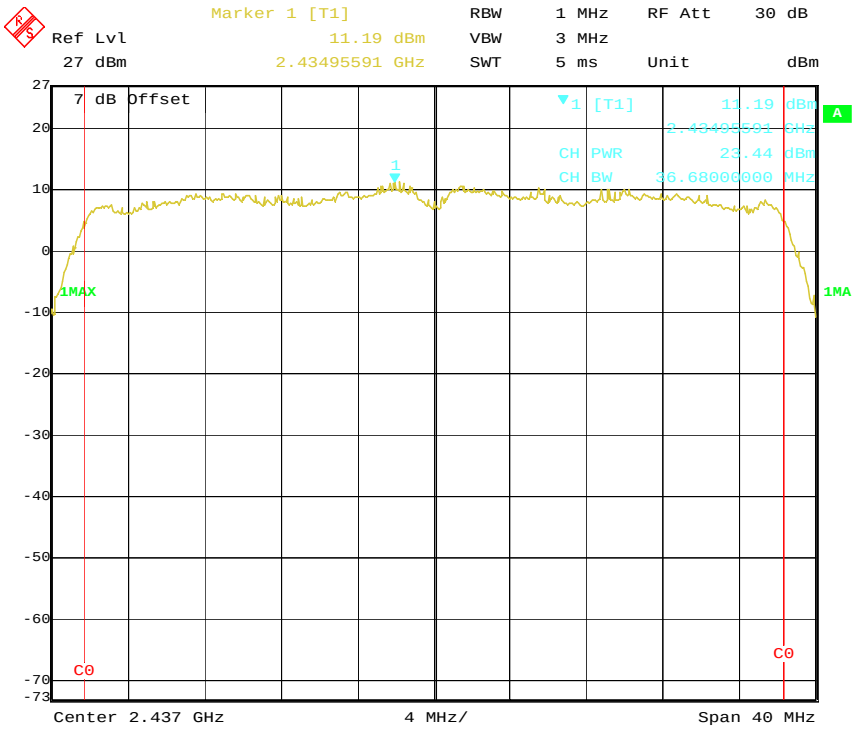
802.11n-HT40 RF Output Power, Low Channel, Antenna 1



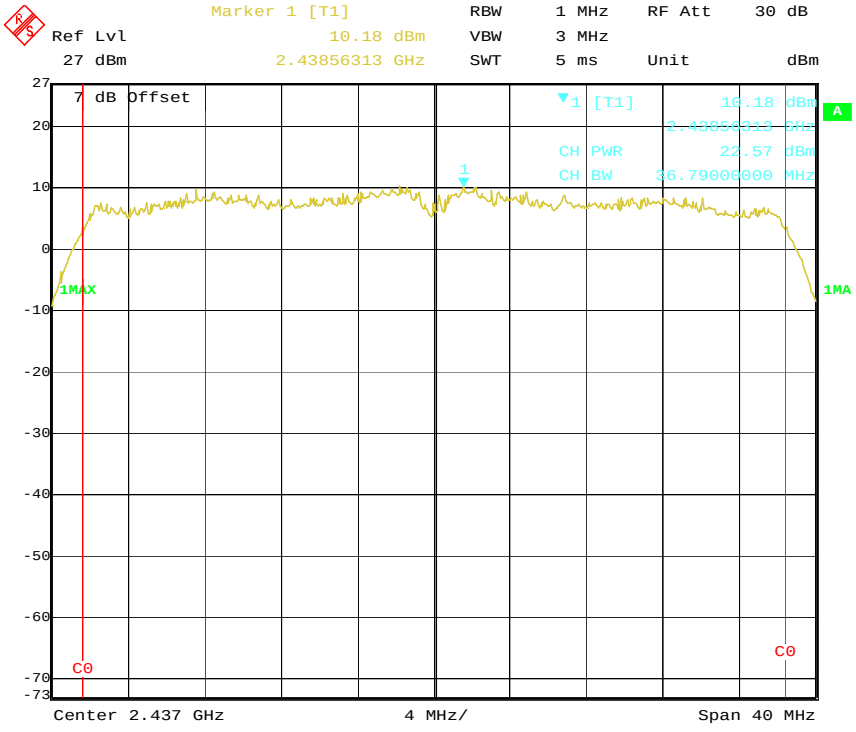
802.11n-HT40 RF Output Power, Low Channel, Antenna 2



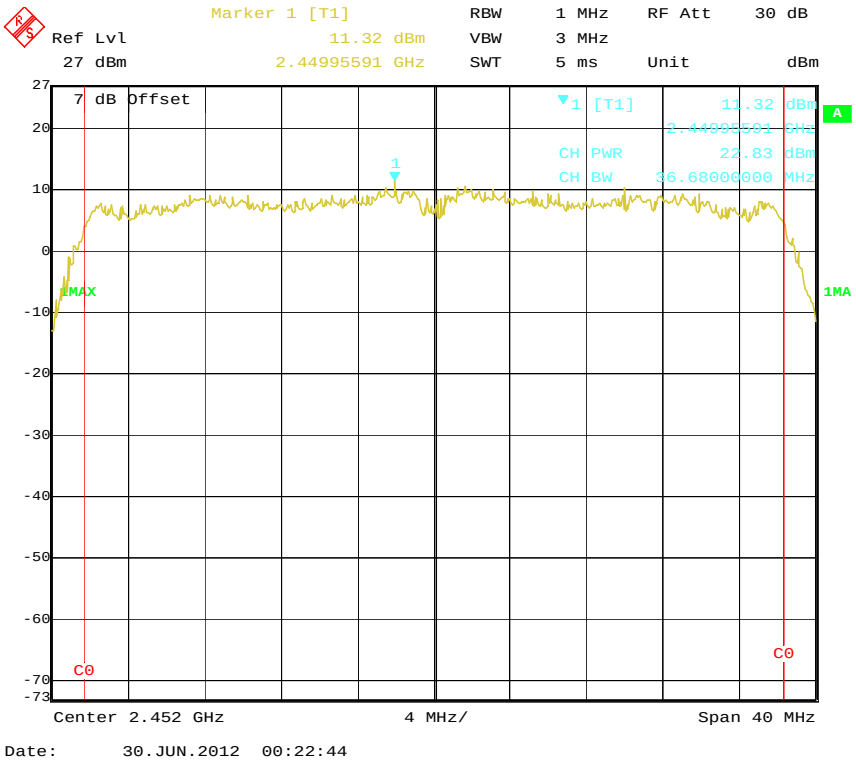
802.11n-HT40 RF Output Power, Middle Channel, Antenna 1



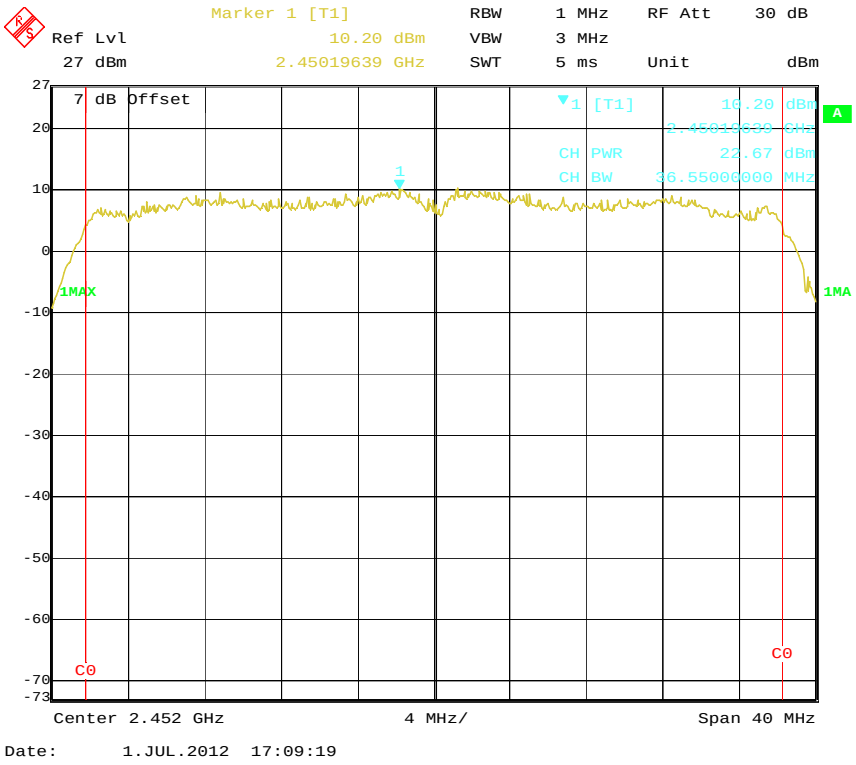
802.11n-HT40 RF Output Power, Middle Channel, Antenna 2



802.11n-HT40 RF Output Power, High Channel, Antenna 1



802.11n-HT40 RF Output Power, High Channel, Antenna 2



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)).

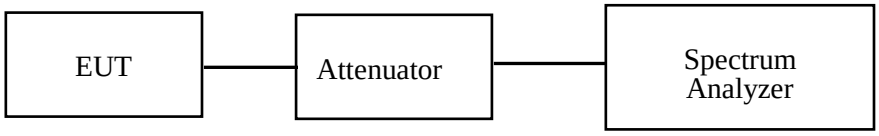
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

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 Data

Environmental Conditions

Temperature:	25~26℃
Relative Humidity:	54~56 %
ATM Pressure:	100.0 kPa

The testing was performed by Sula Huang on 2012-06-30 and 2012-07-02.

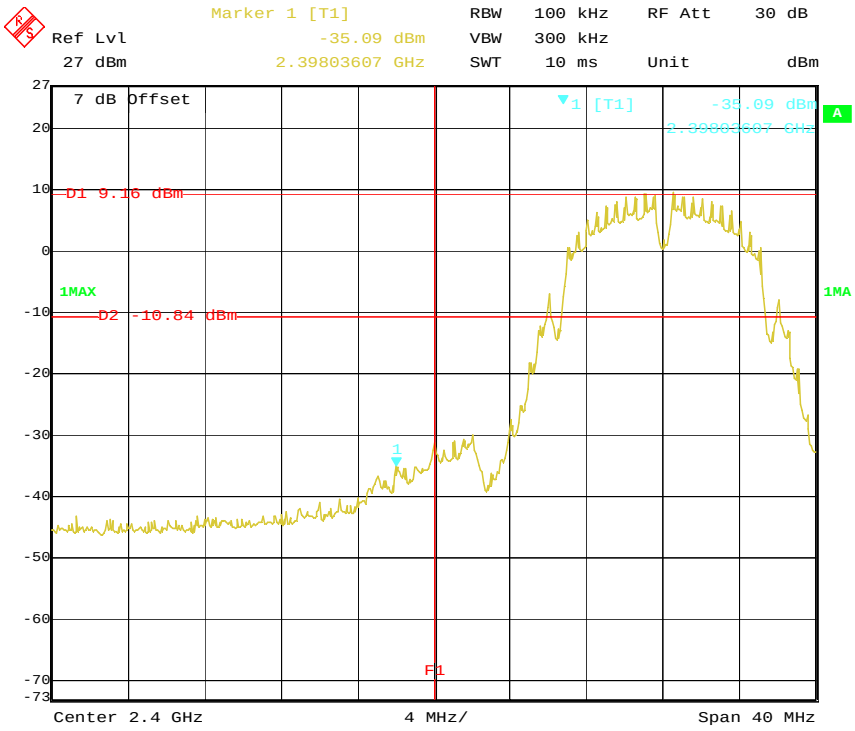
Test Result: *Compliance.*

Please refer to following table and plots:

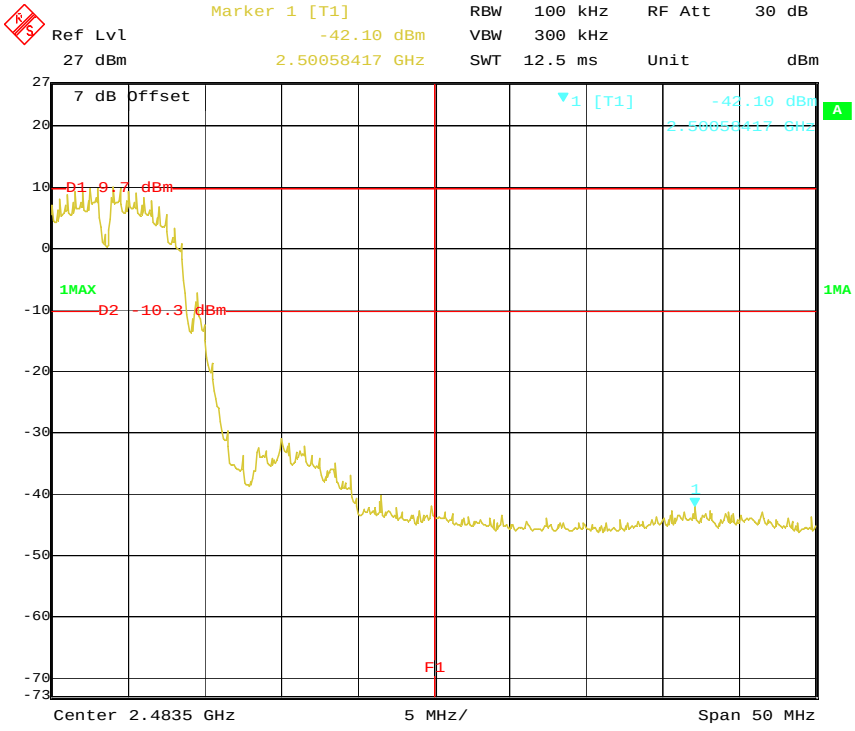
Band edge	Antenna Port	Delta Peak to Band Emission (dBc)	Delta Limit (dBc)	Result
802.11b mode				
Left side	1	44.25	20	Pass
Right side	1	51.80		
Left side	2	42.59	20	Pass
Right side	2	52.45		
802.11g mode				
Left side	1	37.51	20	Pass
Right side	1	44.70		
Left side	2	41.68	20	Pass
Right side	2	43.36		
802.11n-HT20 mode				
Left side	1	36.77	20	Pass
Right side	1	43.91		
Left side	2	37.68	20	Pass
Right side	2	42.73		
802.11n-HT40 mode				
Left side	1	29.07	20	Pass
Right side	1	34.72		
Left side	2	28.92	20	Pass
Right side	2	37.00		

Band edge	Antenna Port	Spurious Emission Max (dBm)	Spurious Emission (Sum) (dBm)	PSD (dBm/100kHz)	Delta Value (dBc)	Delta Limit (dBc)
802.11n-HT20 mode (ANT1+ANT2) (with measure and sum the spectra technique)						
Left side	1	-31.72	-29.04	5.53	-34.57	20
Left side	2	-32.42				
Right side	1	-38.56	-35.09	5.45	-40.54	20
Right side	2	-37.68				
802.11n-HT40 mode (ANT1+ANT2) (with measure and sum the spectra technique)						
Left side	1	-27.80	-24.69	1.64	-26.33	20
Left side	2	-27.82				
Right side	1	-33.01	-31.07	1.68	-32.75	20
Right side	2	-35.49				

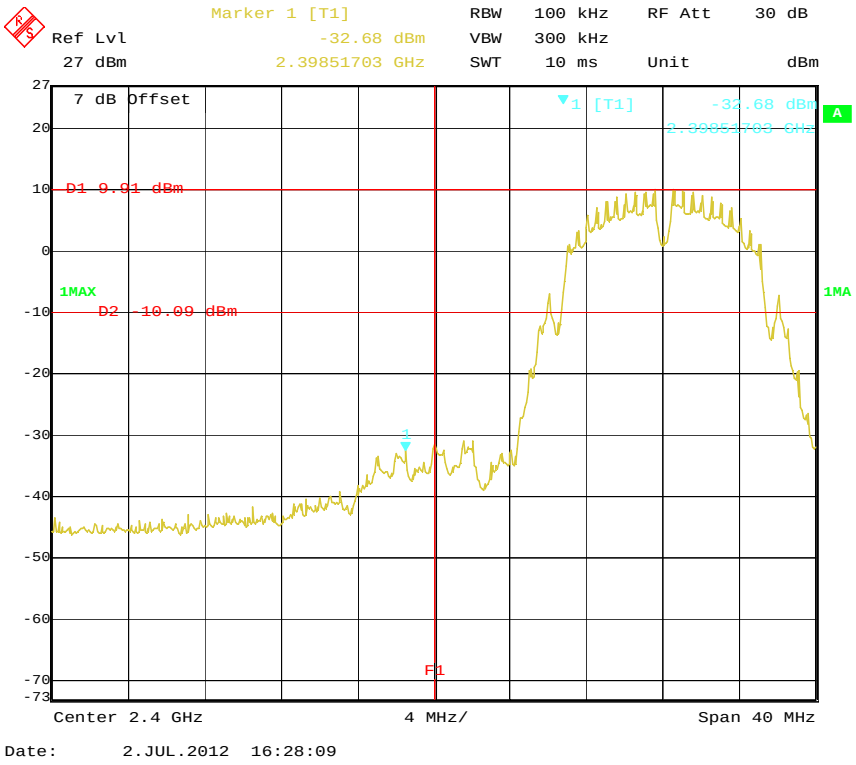
802.11b Band Edge, Left Side, Antenna 1



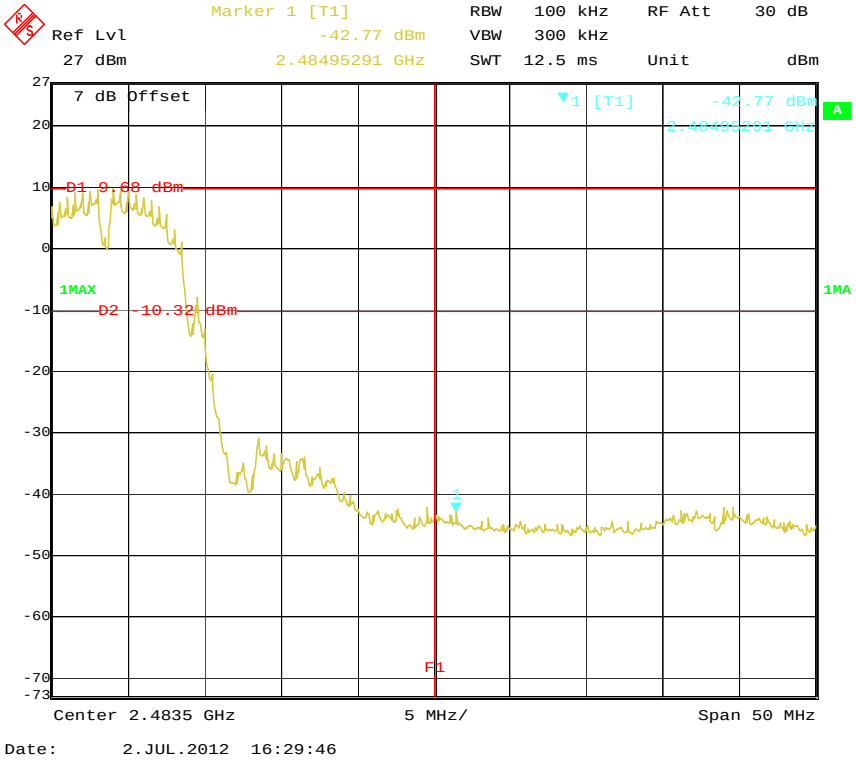
802.11b Band Edge, Right Side, Antenna 1



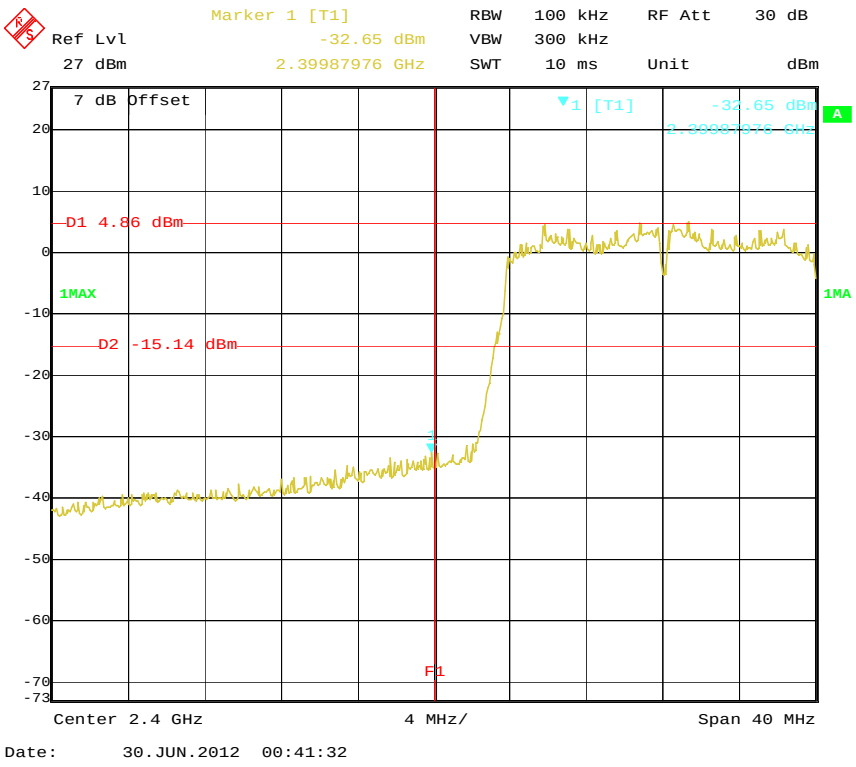
802.11b Band Edge, Left Side, Antenna 2



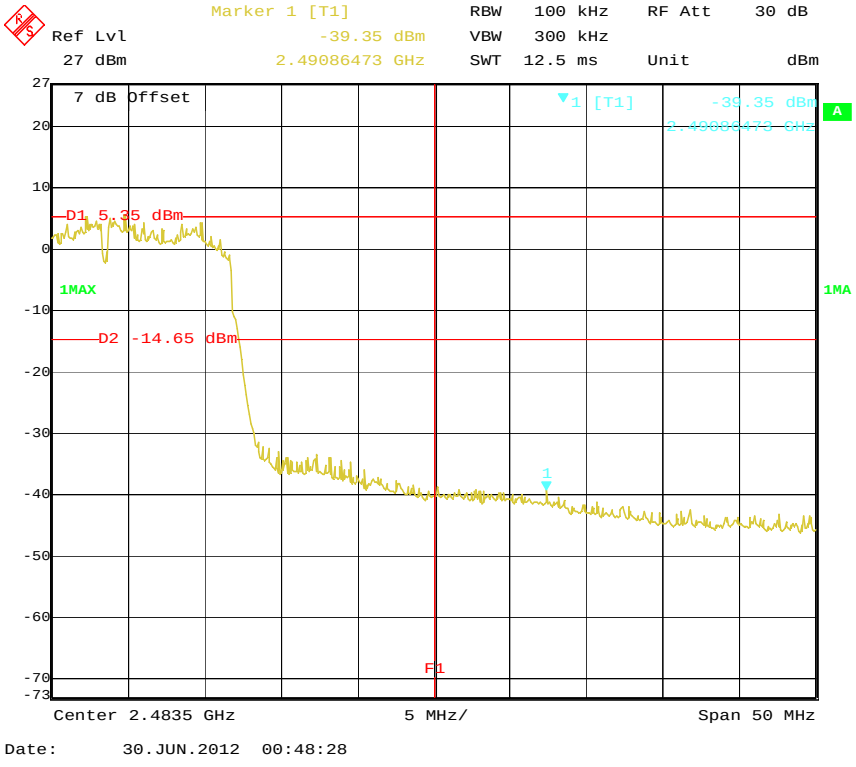
802.11b Band Edge, Right Side, Antenna 2



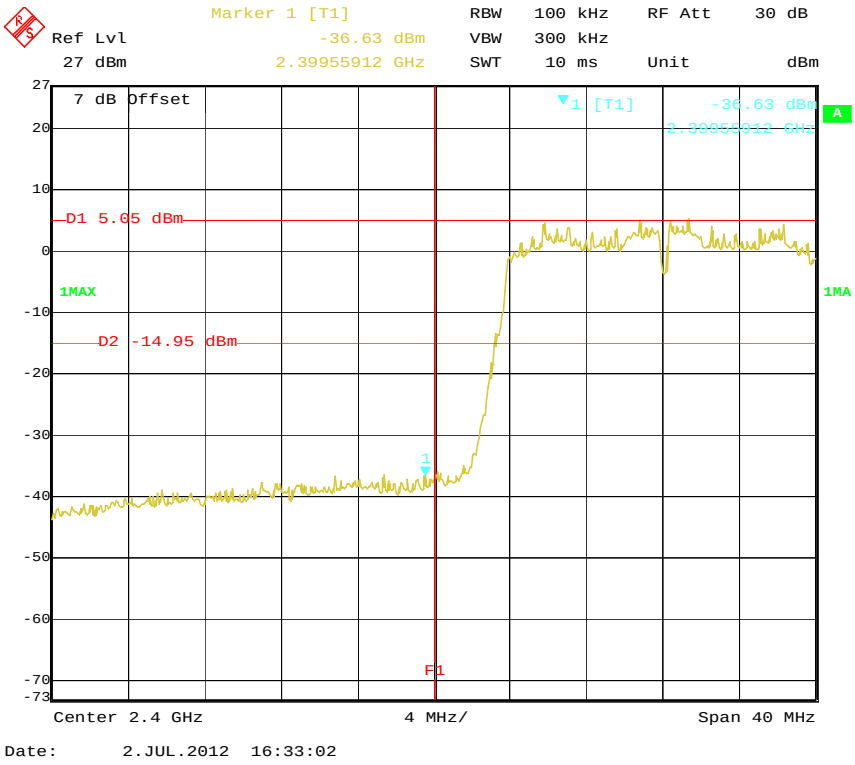
802.11g Band Edge, Left Side, Antenna 1



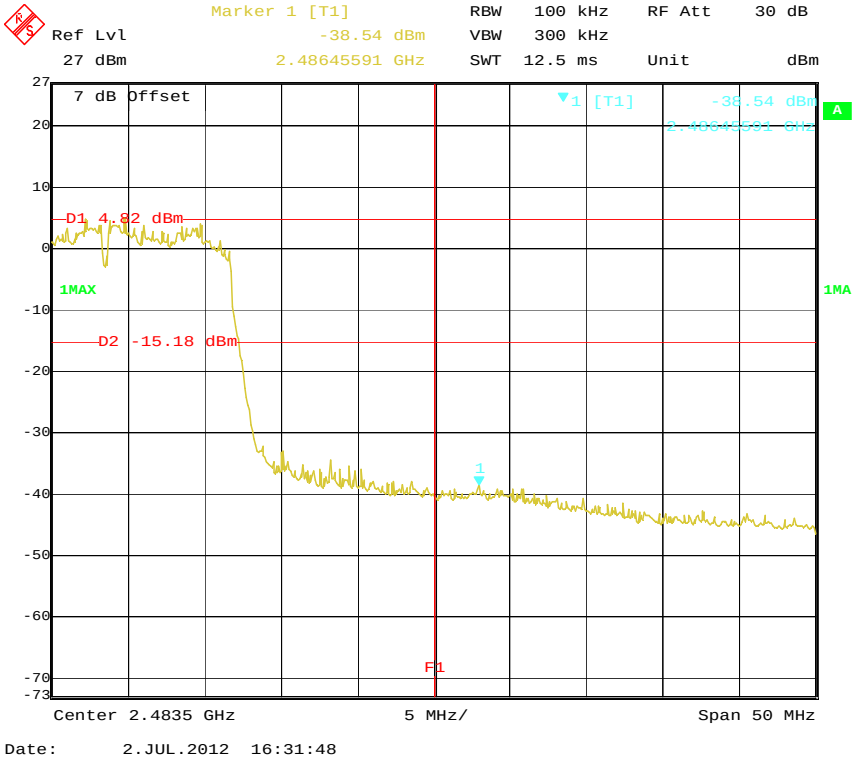
802.11g Band Edge, Right Side, Antenna 1



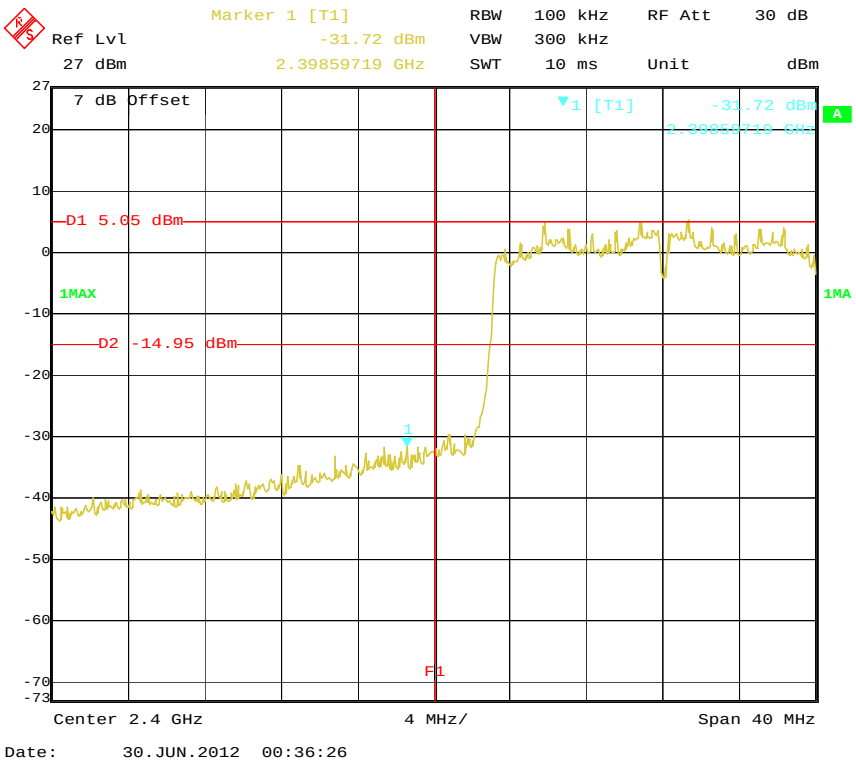
802.11g Band Edge, Left Side, Antenna 2



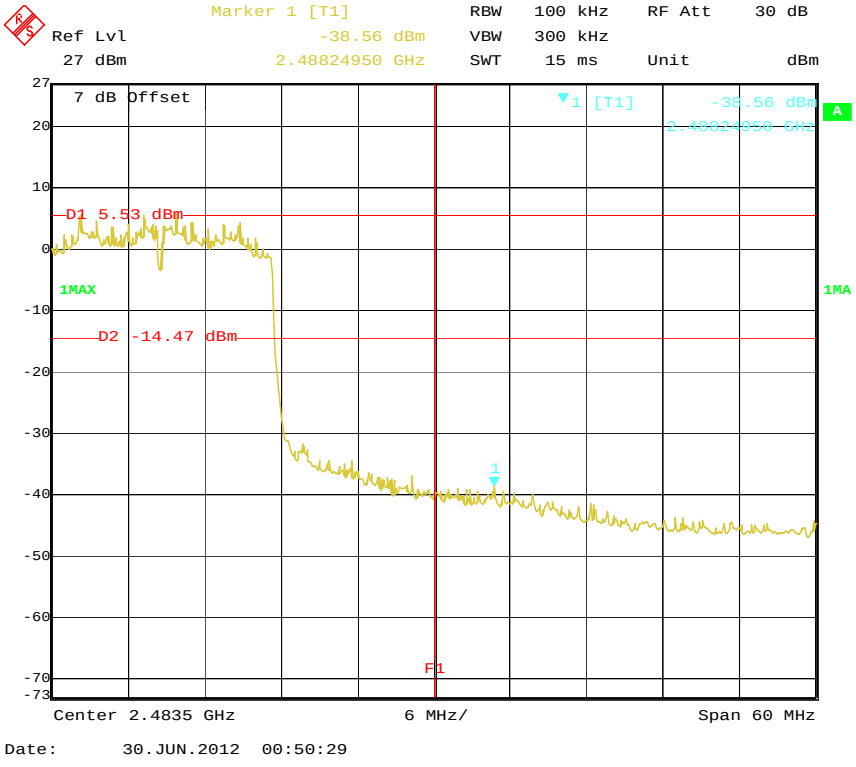
802.11g Band Edge, Right Side, Antenna 2



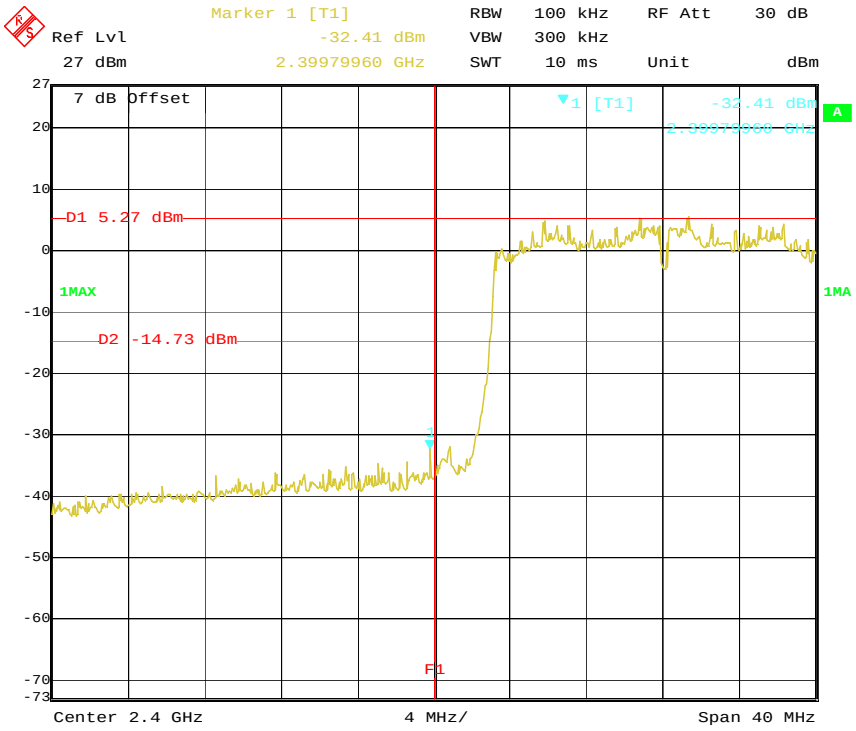
802.11n-HT20 Band Edge, Left Side, Antenna 1



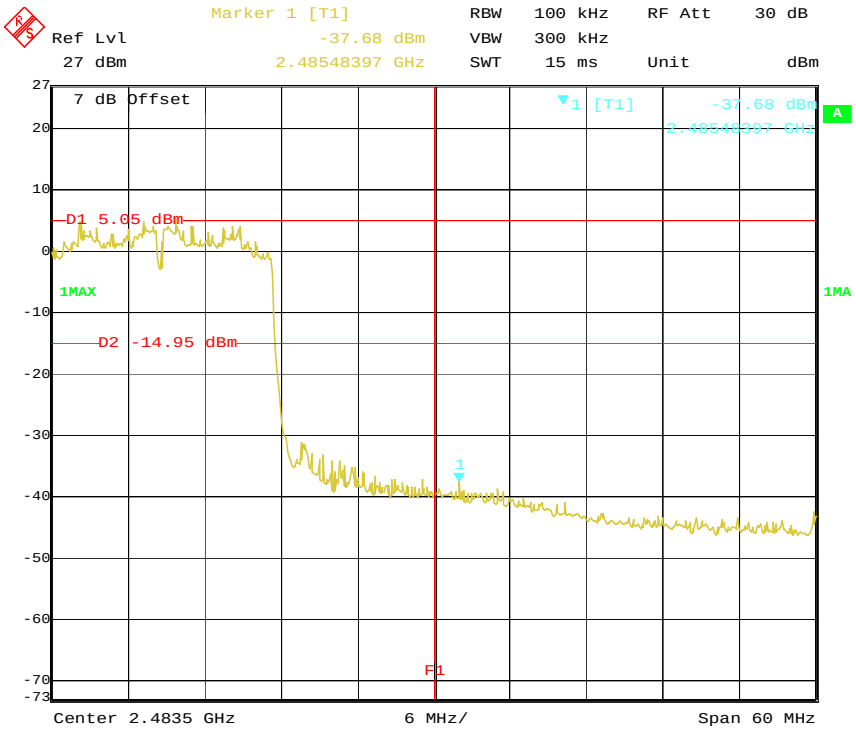
802.11n-HT20 Band Edge, Right Side, Antenna 1



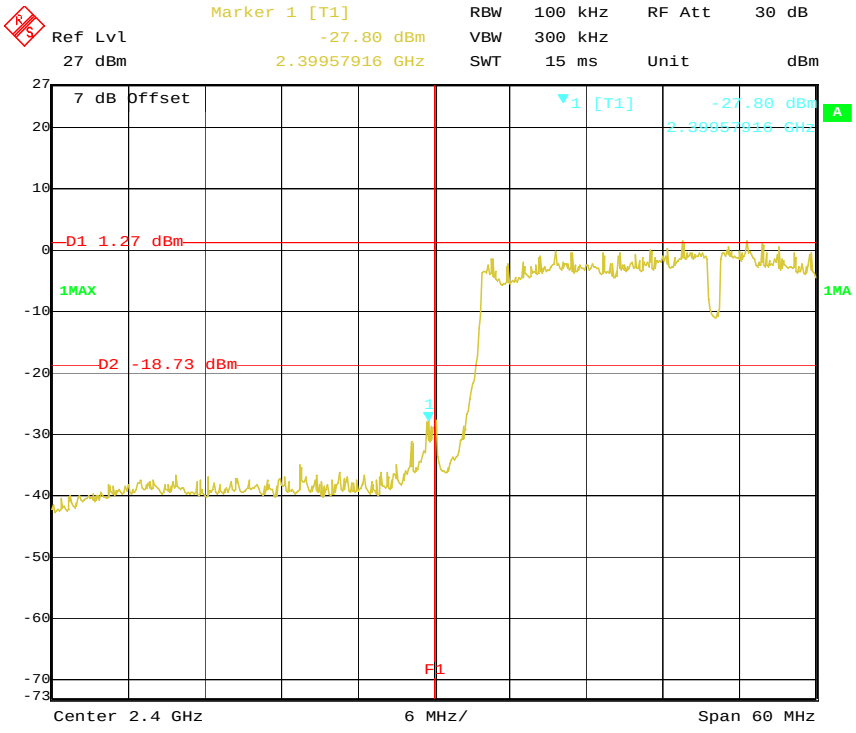
802.11n-HT20 Band Edge, Left Side, Antenna 2



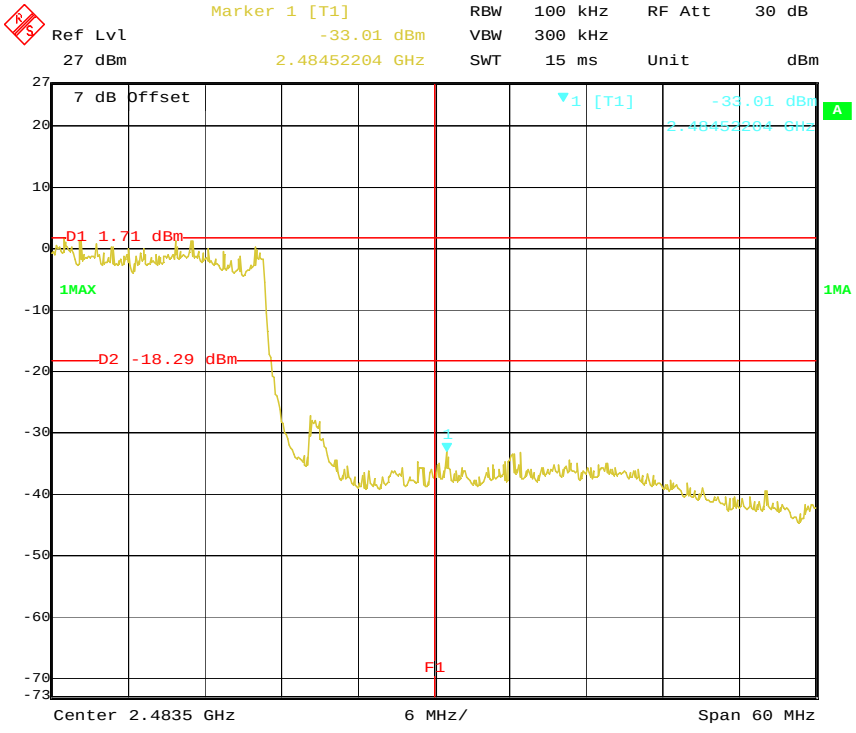
802.11n-HT20 Band Edge, Right Side, Antenna 2



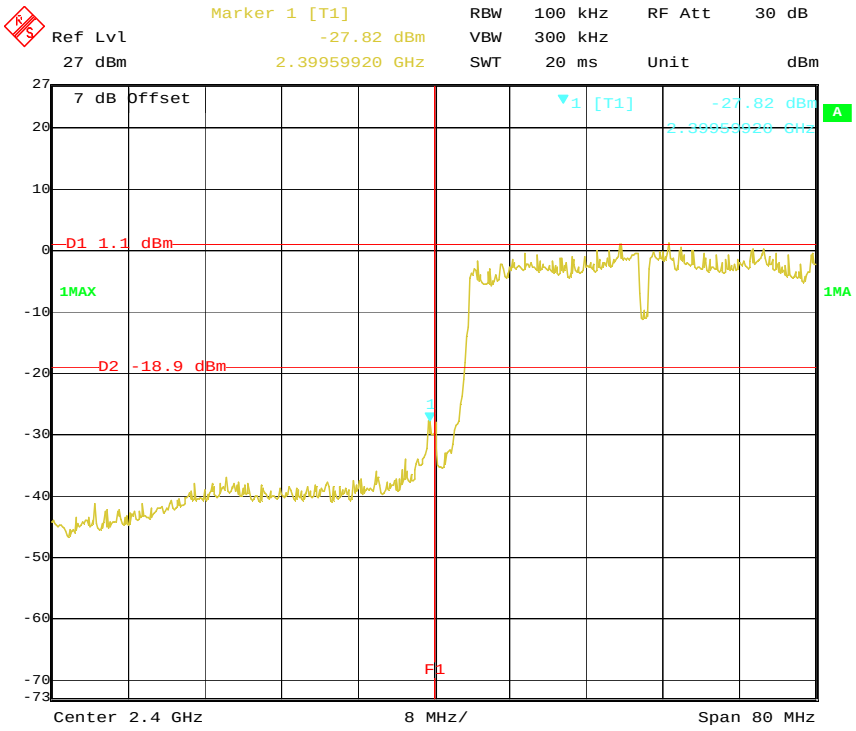
802.11n-HT40 Band Edge, Left Side, Antenna 1



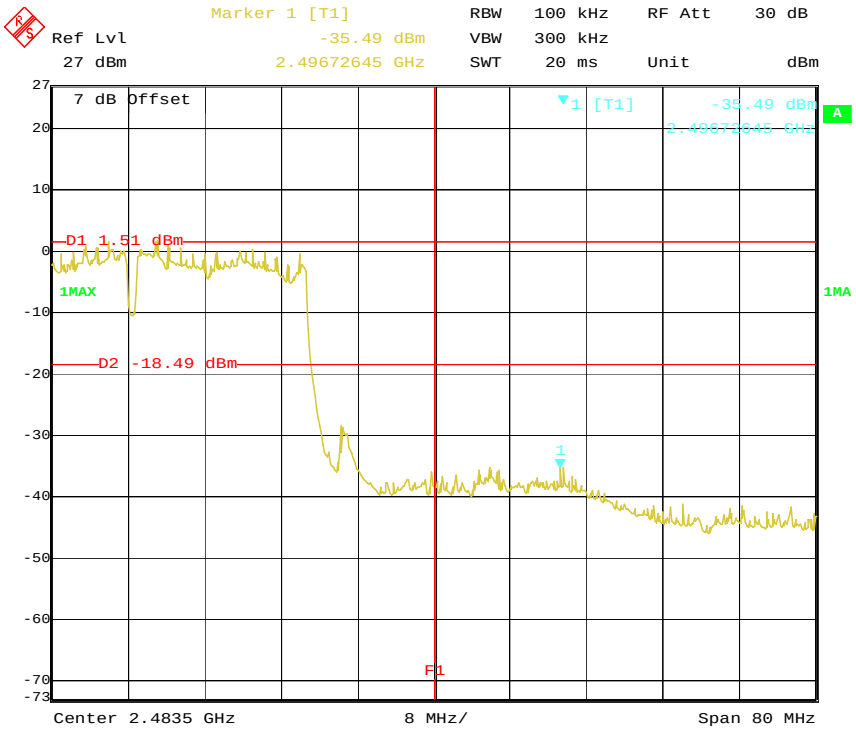
802.11n-HT40 Band Edge, Right Side, Antenna 1



802.11n-HT40 Band Edge, Left Side, Antenna 2



802.11n-HT40 Band Edge, Right Side, Antenna 2



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.

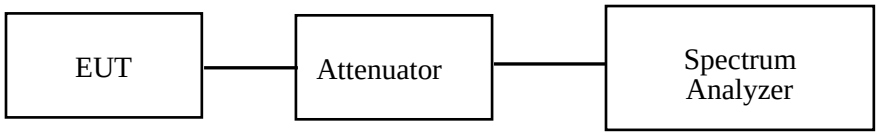
Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2012-11-23

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

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



Test Data

Environmental Conditions

Temperature:	25~26℃
Relative Humidity:	54~56 %
ATM Pressure:	100.0 kPa

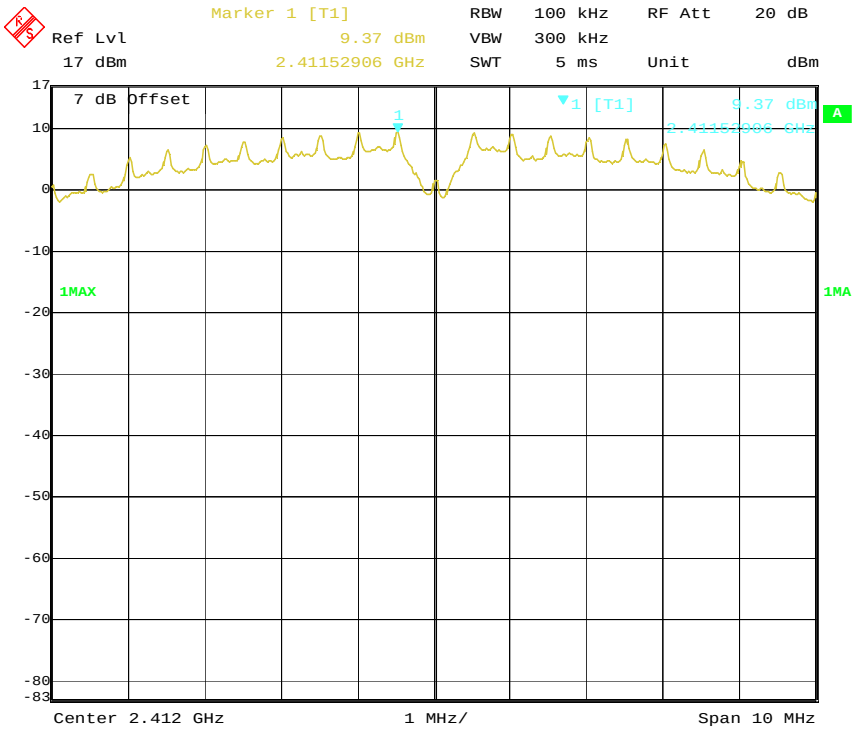
The testing was performed by Sula Huang from 2012-06-29 to 2012-07-01.

Test Mode: Transmitting

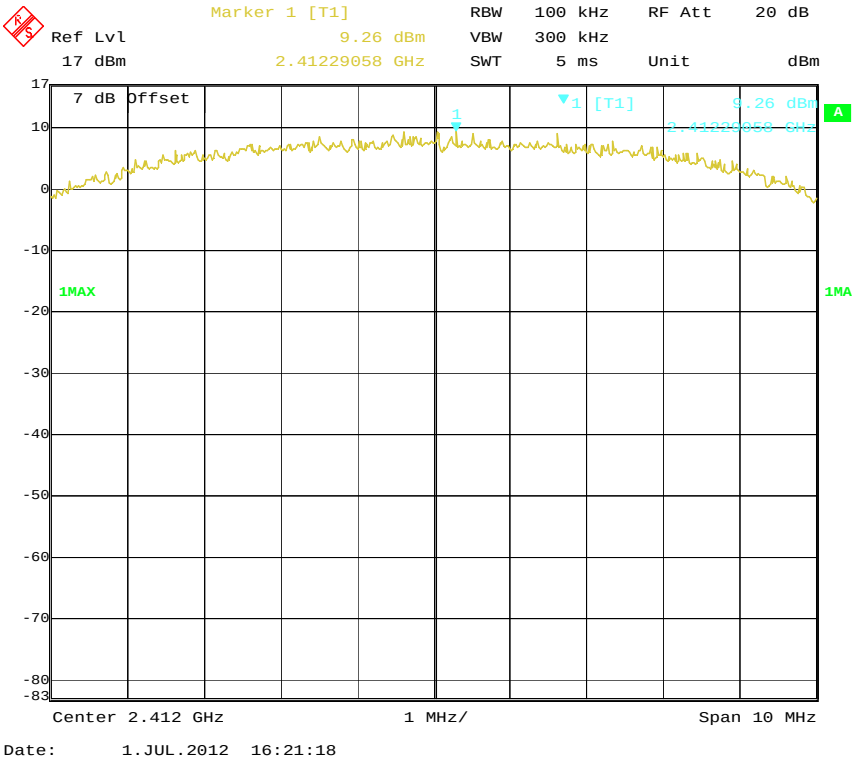
Test Result: Pass

Channel	Frequency (MHz)	Data Rate (Mbps)	Antenna port	Power spectral density (dBm/100kHz)	BWCF (dB)	Power spectral density (dBm/3kHz)		Limit (dBm/3kHz)
802.11b								
Low	2412	1	1	9.37	-15.2	-5.83		8
Low	2412	1	2	9.26	-15.2	-5.94		
Middle	2437	1	1	9.76	-15.2	-5.44		8
Middle	2437	1	2	9.93	-15.2	-5.27		
High	2462	1	1	9.81	-15.2	-5.39		8
High	2462	1	2	9.64	-15.2	-5.56		
802.11g								
Low	2412	6	1	4.73	-15.2	-10.47		8
Low	2412	6	2	3.85	-15.2	-11.35		
Middle	2437	6	1	5.12	-15.2	-10.08		8
Middle	2437	6	2	4.25	-15.2	-10.95		
High	2462	6	1	5.34	-15.2	-9.86		8
High	2462	6	2	4.64	-15.2	-10.56		
802.11n-HT20 mode								
Low	2412	6.5	1	5.53	-15.2	-9.67	-7.26	8
Low	2412	6.5	2	4.23	-15.2	-10.97		
Middle	2437	6.5	1	5.13	-15.2	-10.07	-7.36	8
Middle	2437	6.5	2	4.50	-15.2	-10.70		
High	2462	6.5	1	5.45	-15.2	-9.75	-7.05	8
High	2462	6.5	2	4.81	-15.2	-10.39		
802.11n-HT40 mode								
Low	2422	13.5	1	1.64	-15.2	-13.56	-10.78	8
Low	2422	13.5	2	1.16	-15.2	-14.04		
Middle	2437	13.5	1	1.52	-15.2	-13.68	-10.77	8
Middle	2437	13.5	2	1.31	-15.2	-13.89		
High	2452	13.5	1	1.65	-15.2	-13.55	-10.52	8
High	2452	13.5	2	1.68	-15.2	-13.52		

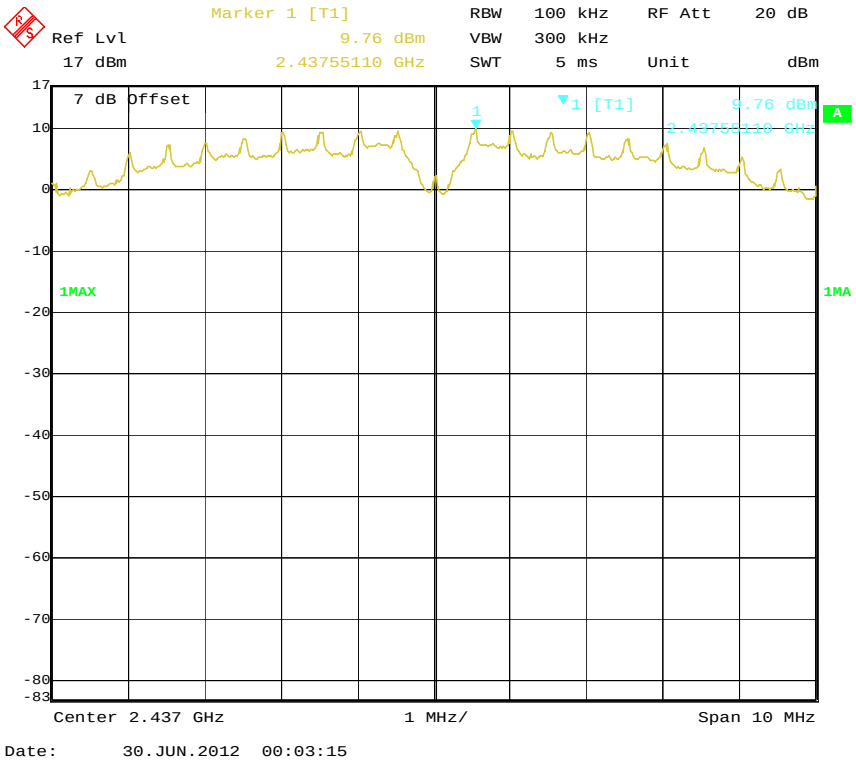
Power Spectral Density, 802.11b Low Channel, Antenna 1



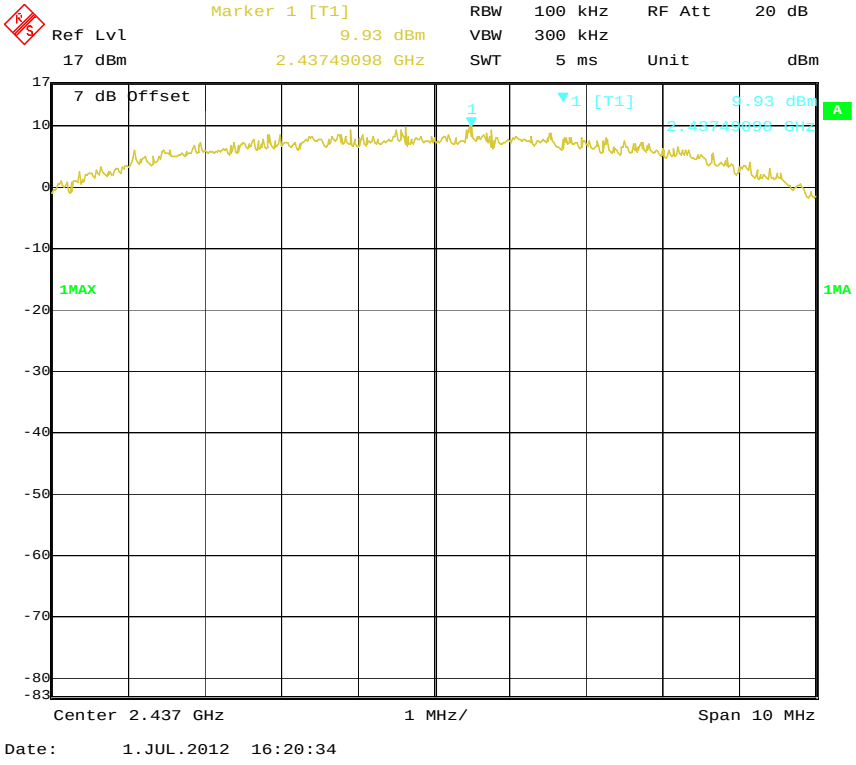
Power Spectral Density, 802.11b Low Channel, Antenna 2



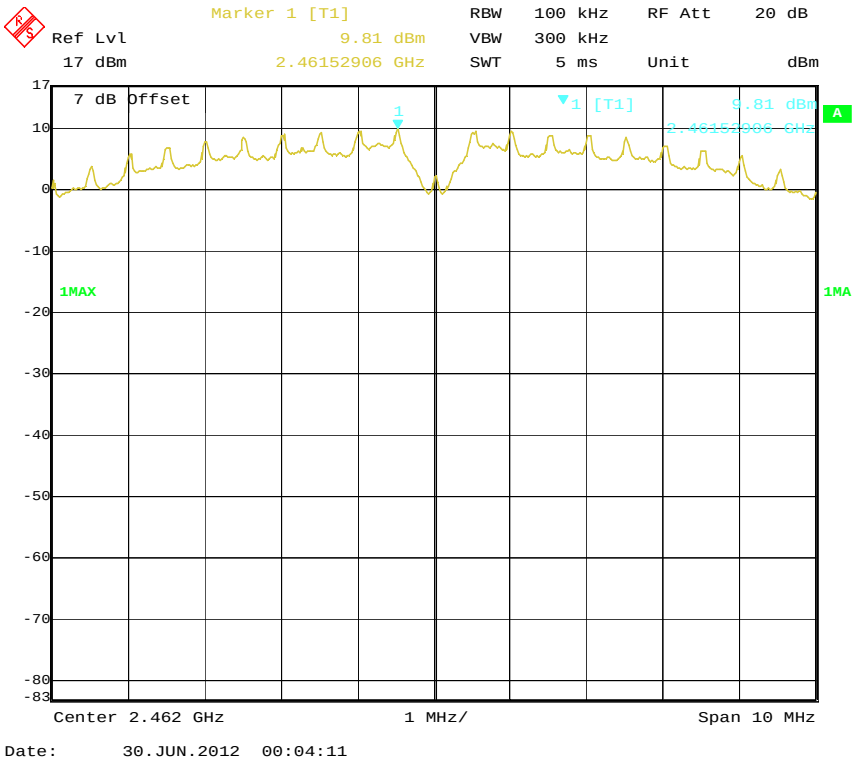
Power Spectral Density, 802.11b Middle Channel, Antenna 1



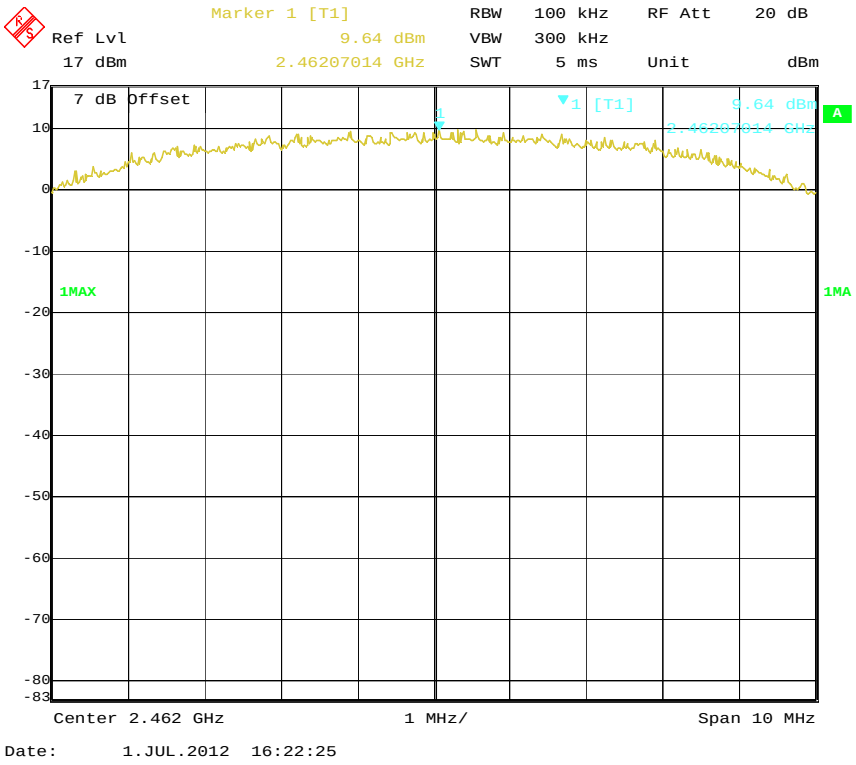
Power Spectral Density, 802.11b Middle Channel, Antenna 2



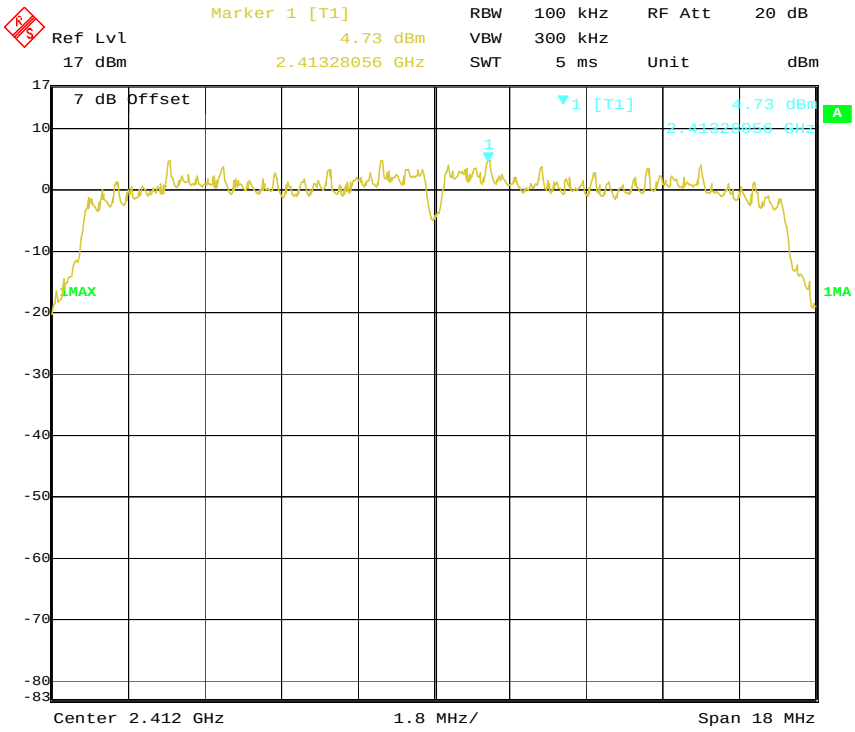
Power Spectral Density, 802.11b High Channel, Antenna 1



Power Spectral Density, 802.11b High Channel, Antenna 2



Power Spectral Density, 802.11g Low Channel, Antenna 1



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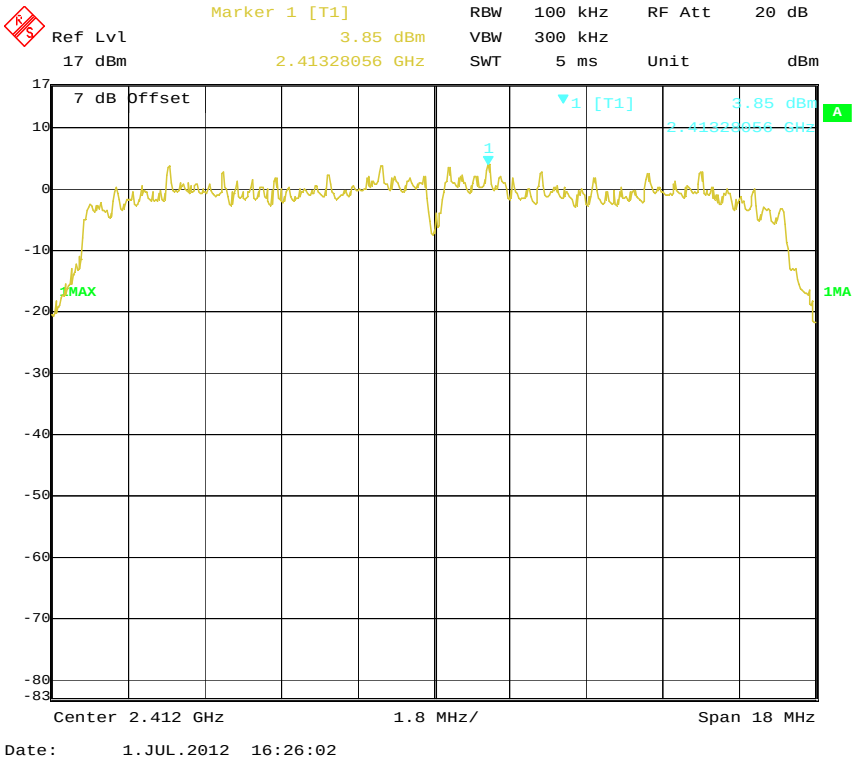
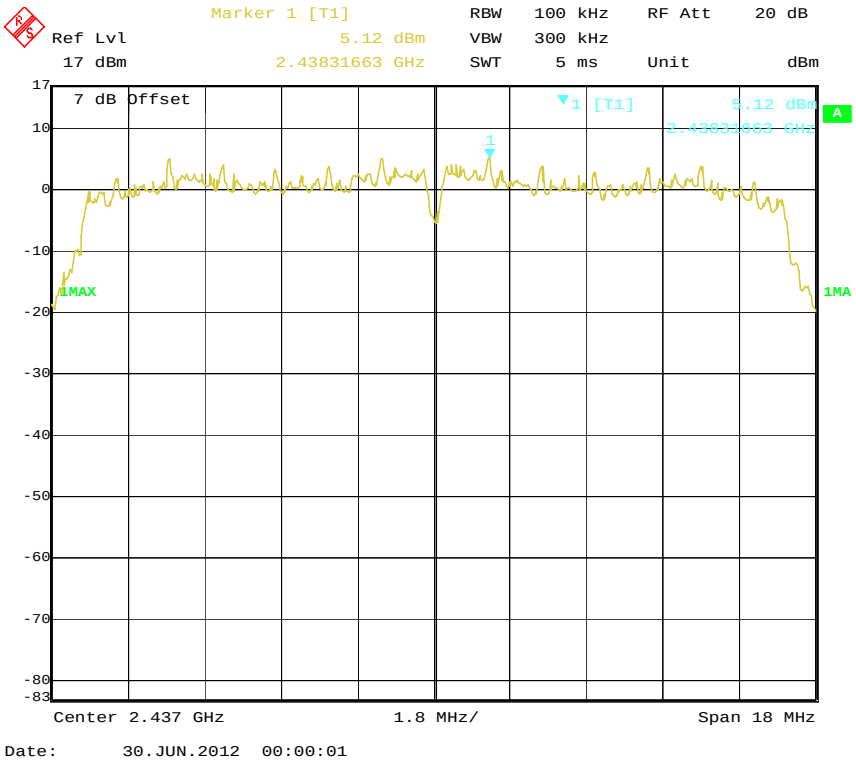


Power Spectral Density, 802.11g Middle Channel, Antenna 1



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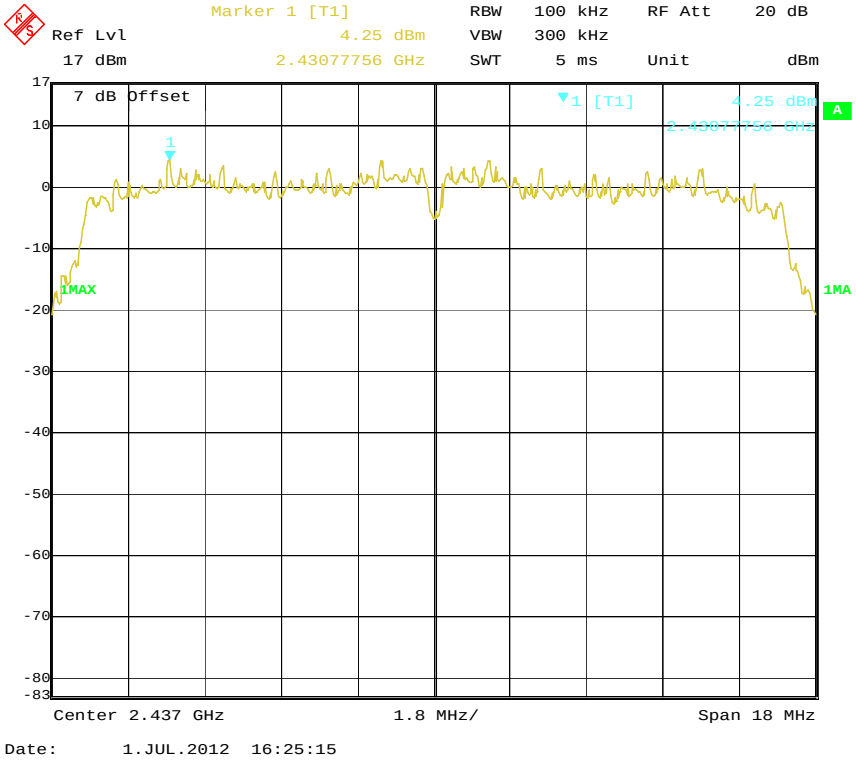
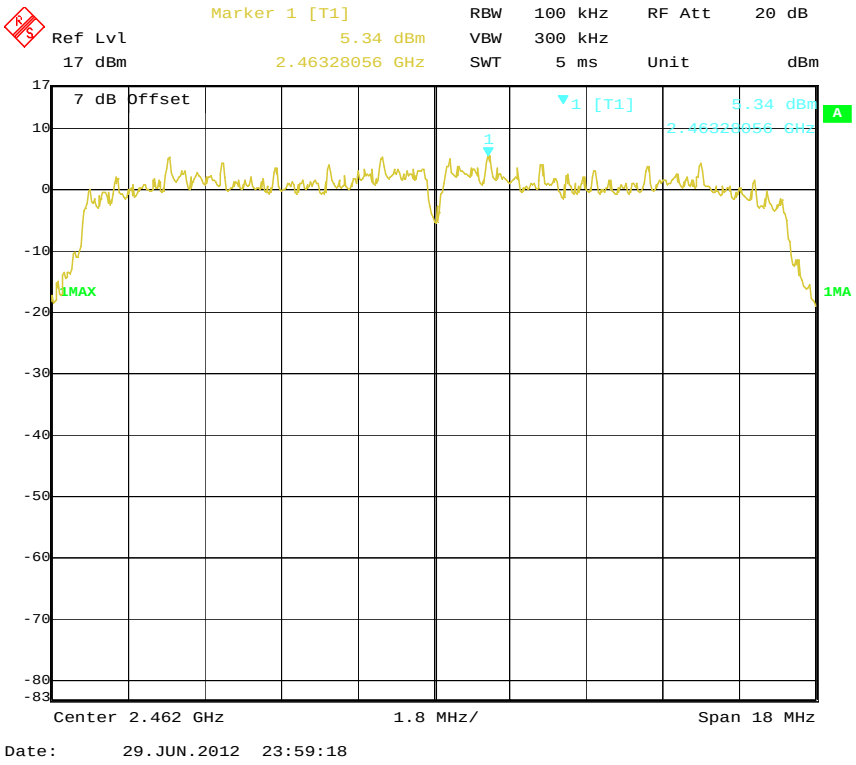
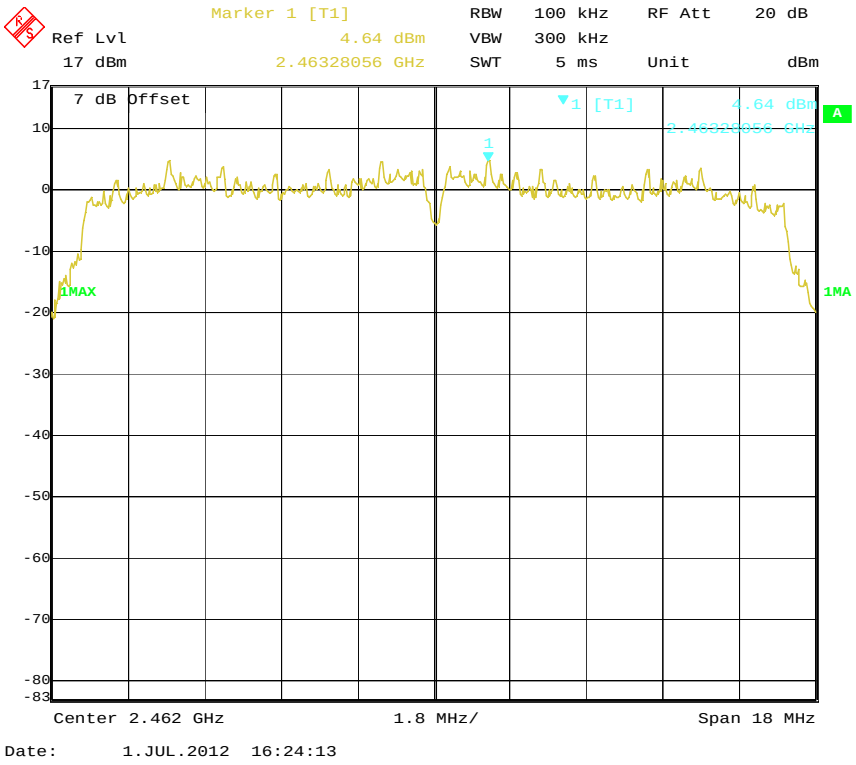


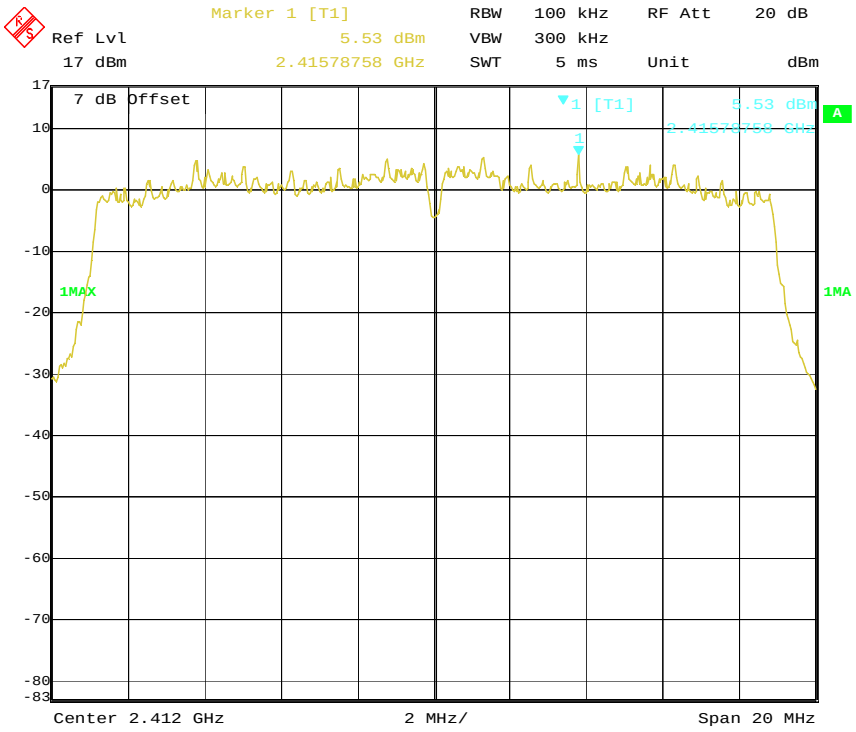
Power Spectral Density, 802.11g High Channel, Antenna 1



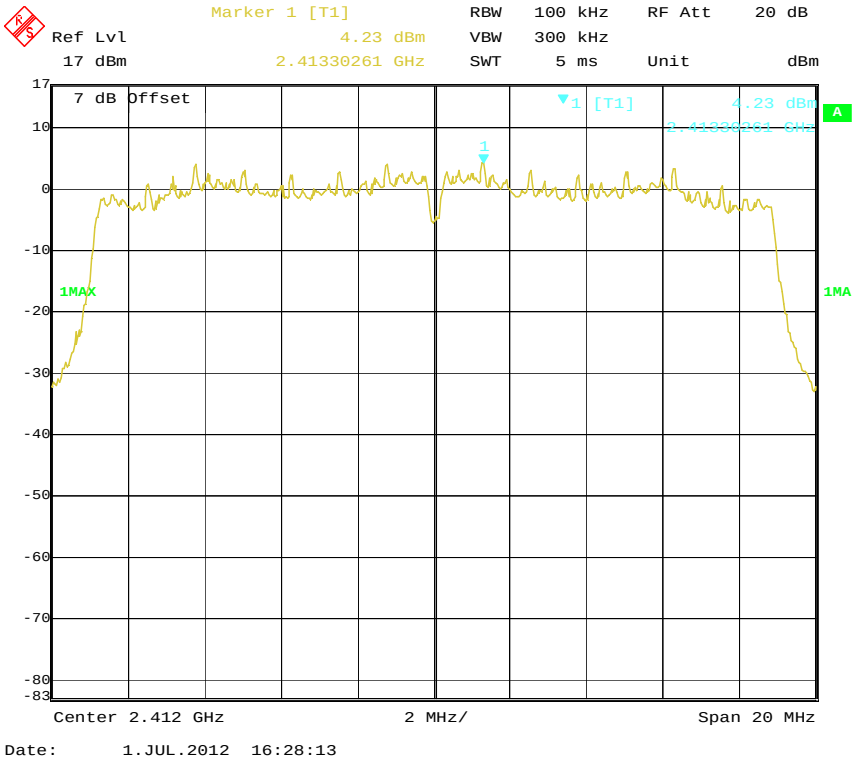
Power Spectral Density, 802.11g High Channel, Antenna 2



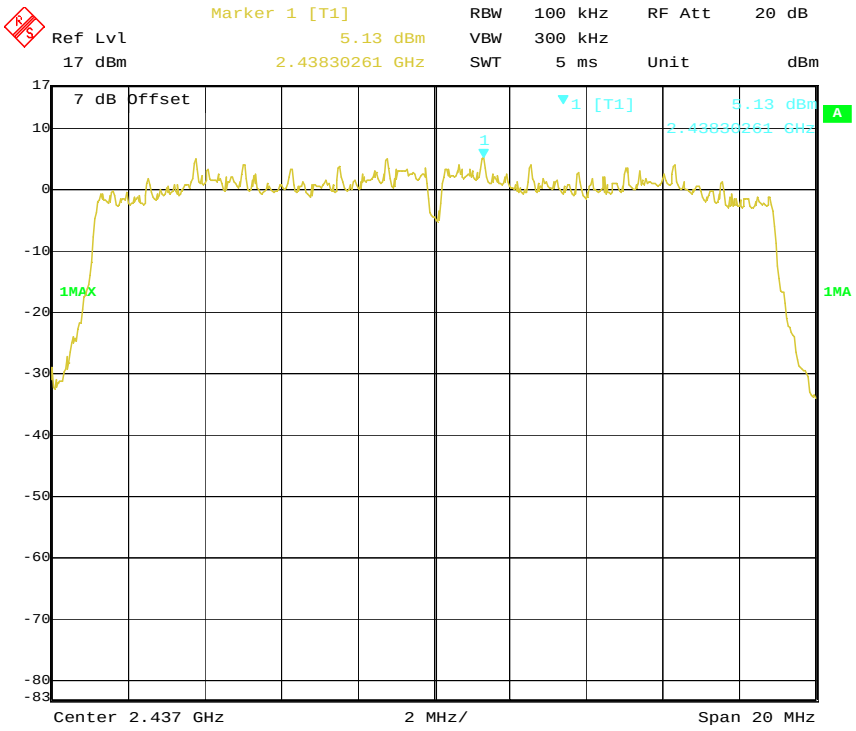
Power Spectral Density, 802.11n-HT20 Low Channel, Antenna 1



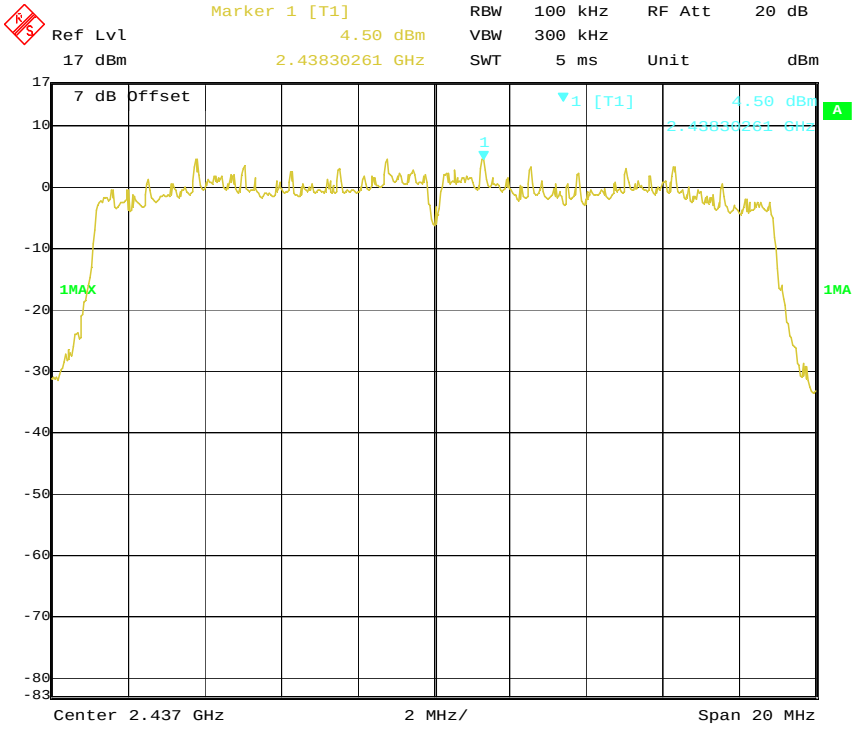
Power Spectral Density, 802.11n-HT20 Low Channel, Antenna 2



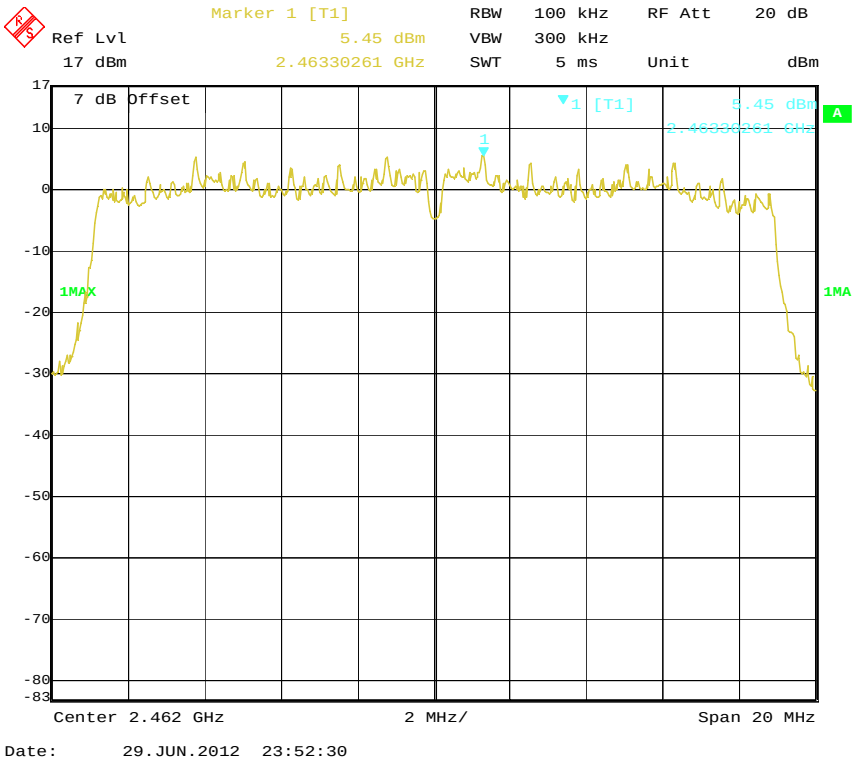
Power Spectral Density, 802.11n-HT20 Middle Channel, Antenna 1



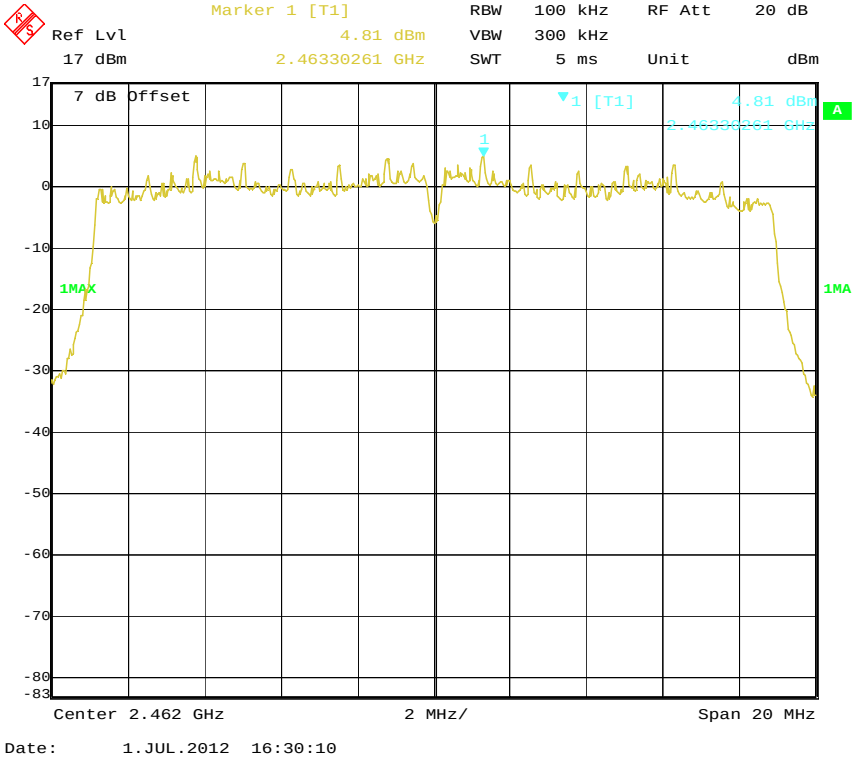
Power Spectral Density, 802.11n-HT20 Middle Channel, Antenna 2



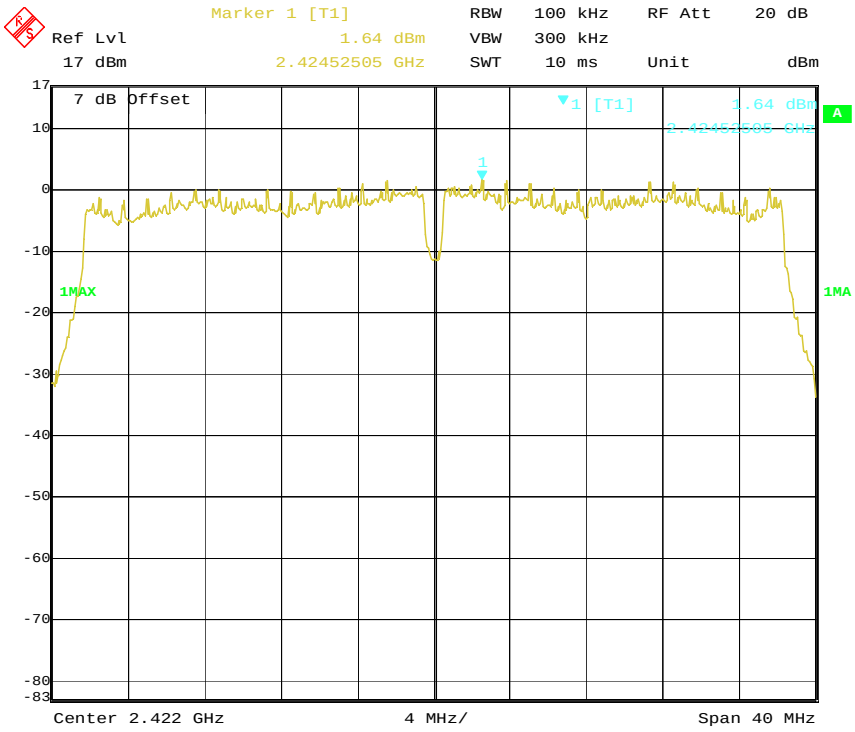
Power Spectral Density, 802.11n-HT20 High Channel, Antenna 1



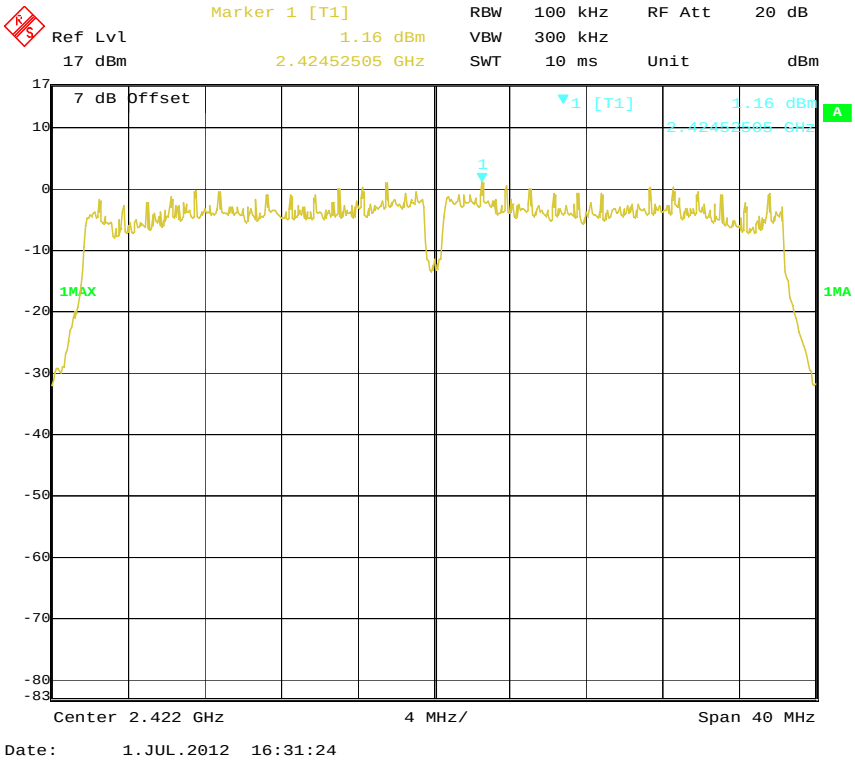
Power Spectral Density, 802.11n-HT20 High Channel, Antenna 2



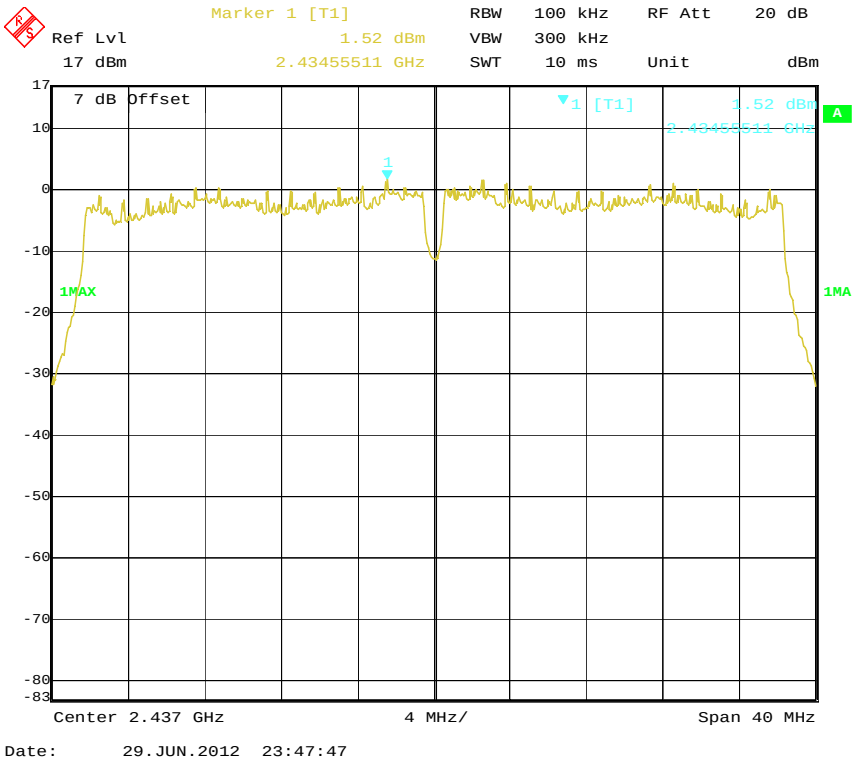
Power Spectral Density, 802.11n-HT40 Low Channe1, Antenna 1



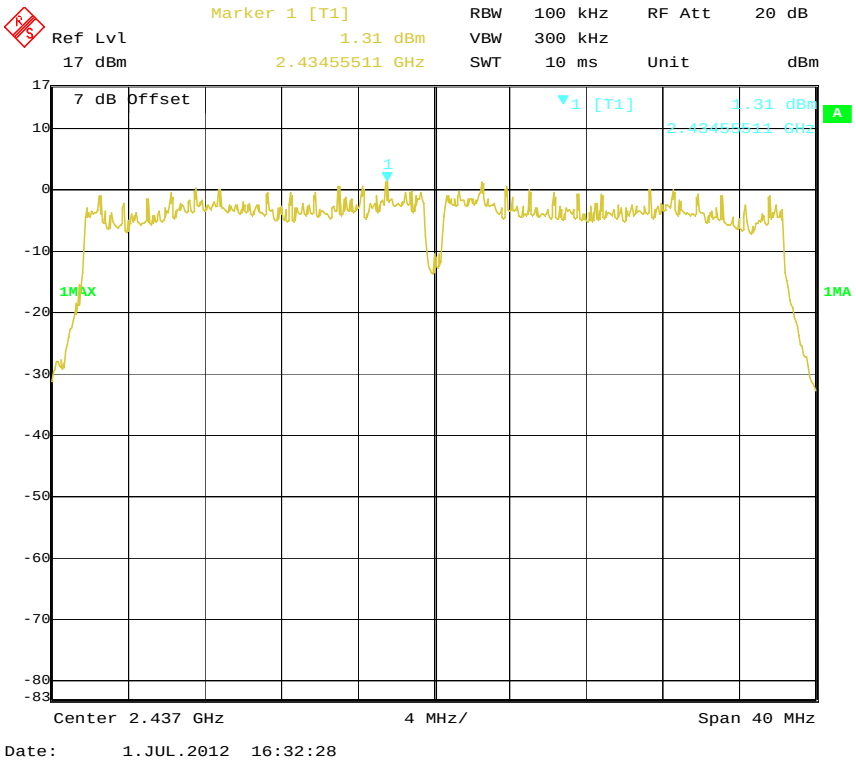
Power Spectral Density, 802.11n-HT40 Low Channel, Antenna 2



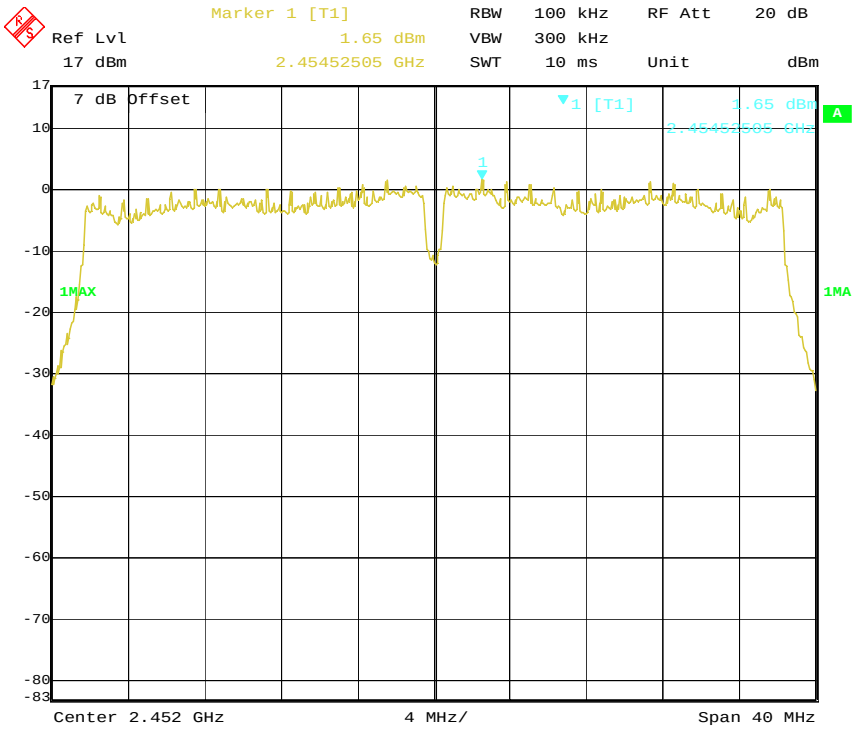
Power Spectral Density, 802.11n-HT40 Middle Channel, Antenna 1



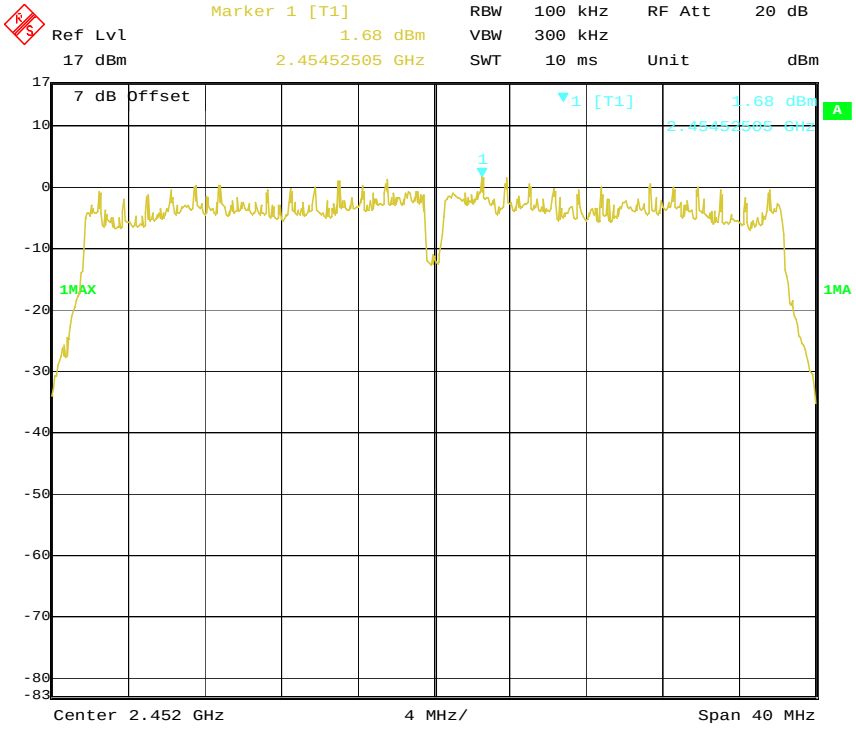
Power Spectral Density, 802.11n-HT40 Middle Channel, Antenna 2



Power Spectral Density, 802.11n-HT40 High Channel, Antenna 1



Power Spectral Density, 802.11n-HT40 High Channel, Antenna 2



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