Lab Code: 200707-0

FCC PART 15.247

TEST REPORT

For

Shenzhen CE and IT Limited

#602 A Block, Xinxin Bld, Hua Fu Rd, Fu Tian District, Shenzhen, Guangdong, China

FCC ID: YG5STEALTHG2

Report Type:	**Product Type:**
Original Report	MID

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Report Number:	RSZ130114005-00B
Report Date:	2013-01-29
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen CE and IT Limited*'s product, model number: *Trio Stealth G2 (FCC ID: YG5STEALTHG2)* or the "EUT" in this report was a MID, *named as Trio Stealth G2 by applicant*, which was measured approximately: 194.3 mm (L) x 120.5 mm (W) x 10.2 mm (H), rated input voltage: DC 3.7 V Li-ion battery or DC 5V from adapter

Adapter Information:
Model : AW007WR-0500150UH
Input: 100-240V~50/60Hz 0.5A
Output: 5V DC 1.5 A

** All measurement and test data in this report was gathered from production sample serial number: 1209140 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2013-01-14.*

Objective

This report is prepared on behalf of *Shenzhen CE and IT Limited* 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 submission with FCC ID: YG5STEALTHG2.

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 at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on 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 C63.4-2003.

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 an ISO/IEC 17025 accredited laboratory, and is accredited by National Voluntary Laboratory Accredited Program (Lab Code 200707-0).

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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 802.11 n-HT20 modes, 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 was tested with Channel 1, 6 and 11.

The worst case data rate is determined with the data rate with highest output power. For 802.11b mode: 1 Mbps data rate was chosen for full testing. For 802.11g mode: 6 Mbps data rate was chosen for full testing. For 802.11n-HT20 mode: MSC0 data rate was chosen for full testing.

EUT Exercise Software

WiFi EMI Tester, VER: 0.7
The test was performed under:
Tx PWR:-45dBm
802.11b: Data rate: 1 Mbps.
802.11g: Data rate: 6 Mbps.
802.11n-HT20: Data rate: MSC0.

Equipment Modifications

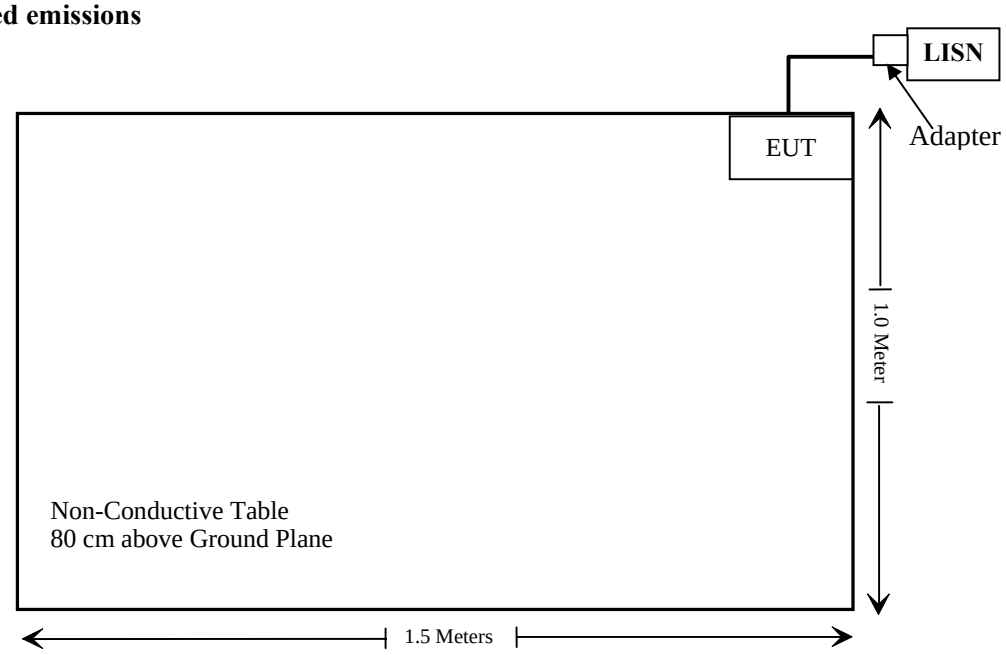
No modification was made to the EUT tested.

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding Detachable Adapter Cable	1.5	EUT	Adapter
Un-shielding Detachable USB Cable	0.8	EUT	Host PC

Block Diagram of Test Setup

For conducted emissions



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.247 (i), §1.1307 (b) (1)& §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§15.247 (i), §1.1307 (b) (1) &§2.1093 – RF EXPOSURE

Applicable Standard

According to §15.247 (i) and §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 General Population/Uncontrolled Exposure

Result: Compliant

Please refer to the SAR report, report number RSZ130128001-20.

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

The EUT has an integral antenna for WiFi, the gain is 2.0 dBi; fulfill the requirement of this section.
Please refer to the internal photos.

Result: Compliance.

FCC §15.207 (a) – AC LINE 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 16-4-2, 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), and the uncertainty will not be taken into consideration for the test data recorded in the report.
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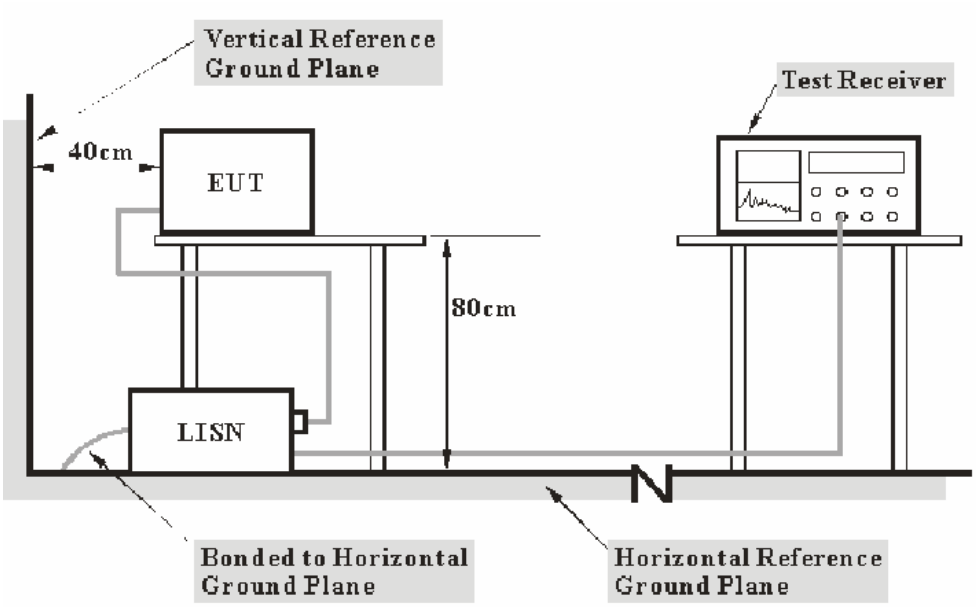
EUT Setup



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 C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.207 limits.

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 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 Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2012-11-24	2013-11-23
Rohde & Schwarz	L.I.S.N.	ESH2-Z5	892107/021	2012-08-22	2013-08-21
Rohde & Schwarz	Pulse limiter	ESH3Z2	DE25985	2012-07-08	2013-07-07
BACL	CE Test software	BACL-CE	V1.0	-	-

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

11.88 dB at **0.575 MHz** in the **Line** conducted mode

Test Data

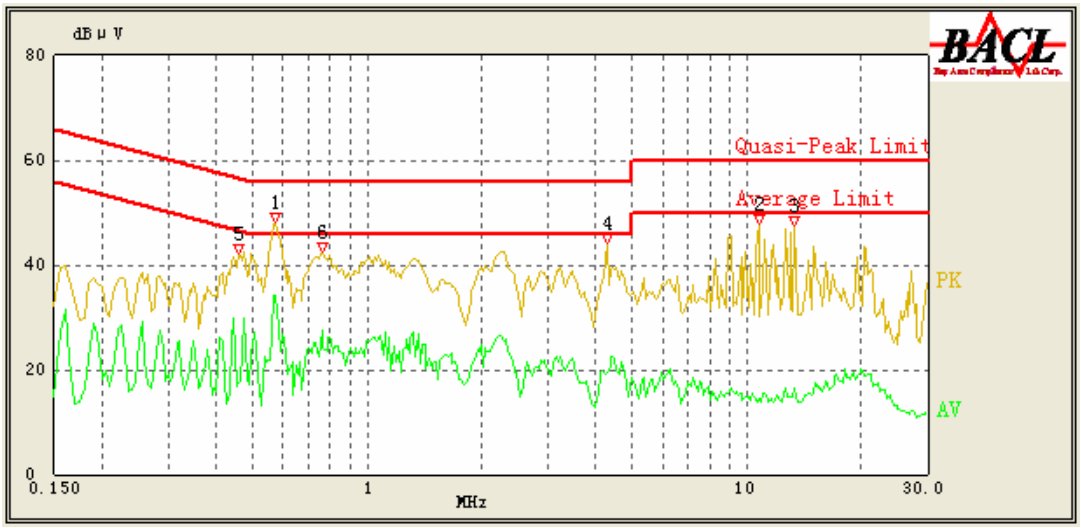
Environmental Conditions

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

The testing was performed by Tiger Ye on 2013-01-25.

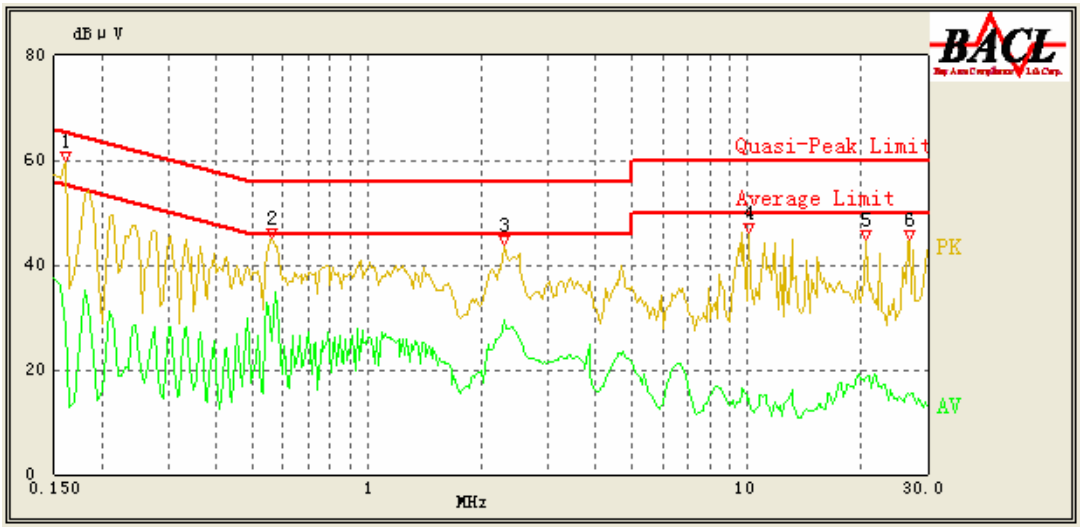
EUT operation mode: Charging &Transmitting

120 V, 60 Hz, Line:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.575	34.12	10.24	46.00	11.88	Ave.
0.575	39.41	10.24	56.00	16.59	QP
0.760	27.50	10.21	46.00	18.50	Ave.
4.225	19.29	10.27	46.00	26.71	Ave.
0.460	17.56	10.26	47.14	29.58	Ave.
4.275	24.13	10.28	56.00	31.87	QP
0.760	24.13	10.21	56.00	31.87	QP
0.460	24.13	10.26	57.14	33.01	QP
13.405	16.34	11.06	50.00	33.66	Ave.
10.760	14.44	10.62	50.00	35.56	Ave.
10.760	24.13	10.62	60.00	35.87	QP
13.405	24.13	11.06	60.00	35.87	QP

120V, 60 Hz, Neutral:



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.560	40.13	10.23	56.00	15.87	QP
2.305	29.44	10.21	46.00	16.56	Ave.
0.560	25.56	10.23	46.00	20.44	Ave.
2.300	33.90	10.21	56.00	22.10	QP
0.160	28.31	10.24	55.71	27.40	Ave.
20.675	18.35	12.50	50.00	31.65	Ave.
26.870	15.11	11.64	50.00	34.89	Ave.
10.165	14.40	10.51	50.00	35.60	Ave.
20.515	24.36	12.51	60.00	35.64	QP
26.870	22.19	11.64	60.00	37.81	QP
0.160	26.62	10.24	65.71	39.09	QP
10.165	17.78	10.51	60.00	42.22	QP

Note:
1) Correction Factor =LISN/ISN VDF (Voltage Division Factor) + Cable Loss + Pulse Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
2) Corrected Amplitude = Reading + Correction Factor
3) Margin = Limit – Corrected Amplitude

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

Applicable Standard

FCC §15.247 (d); §15.209; §15.205;

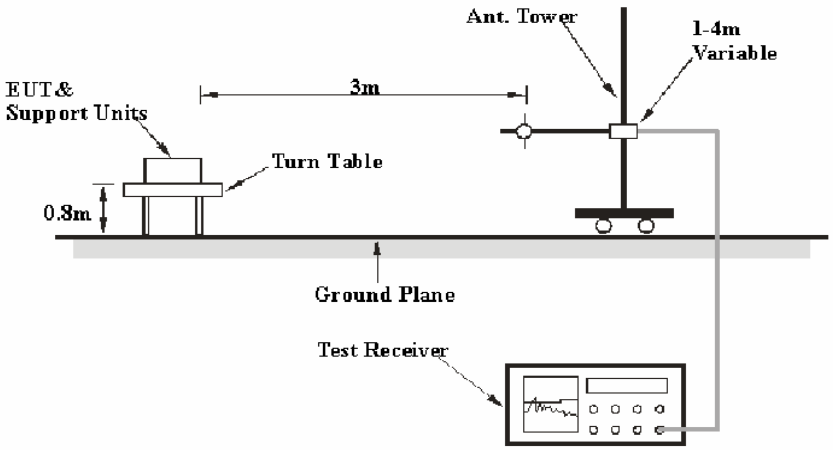
Measurement Uncertainty

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.

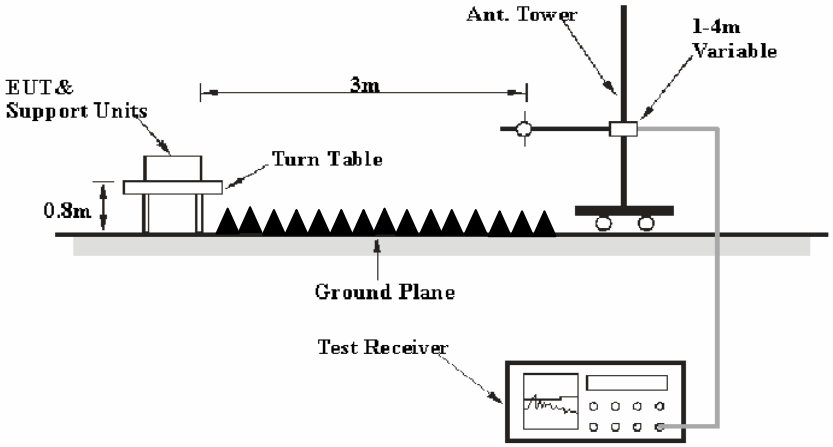
Based on CISPR 16-4-2, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Laboratories Corp. (Shenzhen) is 4.0 dB(k=2, 95% level of confidence), and the uncertainty will not be taken into consideration for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

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters 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.

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	100 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 outlet of the floor.

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

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

Corrected Amplitude & Margin Calculation

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

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

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

Margin = Limit – Corrected Amplitude

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447E	1937A01046	2012-11-24	2013-11-23
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2012-08-08	2013-08-07
Sunol Sciences	Broadband Antenna	JB1	A040904-2	2011-11-28	2014-11-27
SUPER ULTRA	Amplifier	ZVA-213+	N/A	2012-11-24	2013-11-23
Sunol Sciences	Horn Antenna	DRH-118	A052304	2011-12-01	2014-11-30
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2013-11-23
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2010-10-14	2013-10-13

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to NVLAP requirements, 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, Subpart C, section 15.205, 15.209 and 15.247, with the worst margin reading of:

3.66 dB at **4824 MHz** in the **Vertical** polarization

Test Data

Environmental Conditions

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

The testing was performed by Tiger Ye on 2013-12-26.

30 MHz-25 GHz:

802.11b Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBuV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412	95.08	PK	178	1.8	H	6.13	101.21	\	\
2412	89.40	Ave.	178	1.8	H	6.13	95.53	\	\
2412	104.20	PK	243	1.7	V	6.13	110.33	\	\
2412	98.91	Ave.	243	1.7	V	6.13	105.04	\	\
4824	37.94	Ave.	122	1.1	V	12.4	50.34	54	3.66
2387.3	40.38	Ave.	339	1.1	V	6.13	46.51	54	7.49
561.0	46.25	QP	86	1.1	V	-9.10	37.15	46.0	8.85
627.0	45.14	QP	238	1.1	V	-8.00	37.14	46.0	8.86
2491.8	33.31	Ave.	345	1.6	V	7.38	40.69	54	13.31
2341.3	32.73	Ave.	242	1.3	V	5.48	38.21	54	15.79
9648	18.32	Ave.	280	1.9	V	19.29	37.61	54	16.39
2387.3	49.73	PK	339	1.1	V	6.13	55.86	74	18.14
7236	17.56	Ave.	271	1.4	V	16.62	34.18	54	19.82
4824	41.62	PK	122	1.1	V	12.4	54.02	74	19.98
2341.3	48.39	PK	242	1.3	V	5.48	53.87	74	20.13
9648	33.42	PK	280	1.9	V	19.29	52.71	74	21.29
2491.8	44.54	PK	345	1.6	V	7.38	51.92	74	22.08
7236	32.05	PK	271	1.4	V	16.62	48.67	74	25.33
Middle Channel (2437 MHz)									
2437	94.69	PK	296	1.3	H	6.72	101.41	\	\
2437	89.38	Ave.	296	1.3	H	6.72	96.10	\	\
2437	104.31	PK	63	1.6	V	6.72	111.03	\	\
2437	99.02	Ave.	63	1.6	V	6.72	105.74	\	\
627.0	46.62	QP	358	1.1	V	-8.00	38.62	46.0	7.38
561.0	47.36	QP	260	1.1	V	-9.10	38.26	46.0	7.74
2490	37.43	Ave.	279	1.2	V	7.38	44.81	54	9.19
2356.9	38.11	Ave.	99	1.2	V	6.13	44.24	54	9.76
4874	28.04	Ave.	116	1.3	V	12.46	40.50	54	13.50
9748	18.44	Ave.	183	1.6	V	19.29	37.73	54	16.27
2490	48.53	PK	279	1.2	V	7.38	55.91	74	18.09
7311	18.01	Ave.	216	1.8	V	16.62	34.63	54	19.37
4874	41.83	PK	116	1.3	V	12.46	54.29	74	19.71
2340.6	28.59	Ave.	318	1.5	V	5.48	34.07	54	19.93
9748	34.56	PK	183	1.6	V	19.29	53.85	74	20.15
2356.9	47.59	PK	99	1.2	V	6.13	53.72	74	20.28
2340.6	46.62	PK	318	1.5	V	5.48	52.10	74	21.90
7311	33.42	PK	216	1.8	V	16.62	50.04	74	23.96

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBuV/m)	FCC Part 15.247/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
High Channel (2462 MHz)									
2462	93.84	PK	144	1.8	H	7.21	101.05	\	\
2462	88.79	Ave.	144	1.8	H	7.21	96.00	\	\
2462	102.77	PK	226	1.8	V	7.21	109.98	\	\
2462	97.33	Ave.	226	1.8	V	7.21	104.54	\	\
4924	35.13	Ave.	87	2.0	V	12.5	47.63	54	6.37
2486	37.36	Ave.	232	2.0	V	7.38	44.74	54	9.26
561.0	45.20	QP	230	1.1	V	-9.10	36.10	46.0	9.90
627.0	44.00	QP	81	1.1	V	-8.00	36.00	46.0	10.00
9848	19.32	Ave.	24	1.3	V	19.39	38.71	54	15.29
2486	49.85	PK	232	2.0	V	7.38	57.23	74	16.77
2382.9	28.52	Ave.	243	1.5	V	6.13	34.65	54	19.35
7386	18.22	Ave.	96	1.3	V	15.91	34.13	54	19.87
2340.9	28.09	Ave.	23	1.3	V	5.48	33.57	54	20.43
9848	34.17	PK	24	1.3	V	19.39	53.56	74	20.44
4924	40.11	PK	87	2.0	V	12.5	52.61	74	21.39
2340.9	44.60	PK	23	1.3	V	5.48	50.08	74	23.92
2382.9	43.93	PK	243	1.5	V	6.13	50.06	74	23.94
7386	33.52	PK	96	1.3	V	15.91	49.43	74	24.57

802.11g Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBuV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412.0	92.41	PK	148	1.0	H	6.13	98.54	\	\
2412.0	79.13	Ave.	148	1.0	H	6.13	85.26	\	\
2412.0	99.89	PK	110	1.7	V	6.13	106.02	\	\
2412.0	86.93	Ave.	110	1.7	V	6.13	93.06	\	\
2339.8	35.86	Ave.	319	1.2	V	5.48	41.34	54	12.66
9648.0	18.32	Ave.	314	1.9	V	19.29	37.61	54	16.39
627.0	37.13	QP	234	1.1	V	-8.00	29.13	46.0	16.87
7236.0	20.11	Ave.	98	1.4	V	16.62	36.73	54	17.27
561.0	37.62	QP	355	1.1	V	-9.10	28.52	46.0	17.48
4824.0	22.56	Ave.	128	1.6	V	12.4	34.96	54	19.04
2389.9	28.07	Ave.	227	1.5	V	6.13	34.20	54	19.80
2389.9	46.94	PK	227	1.5	V	6.13	53.07	74	20.93
2339.8	47.35	PK	319	1.2	V	5.48	52.83	74	21.17
9648.0	33.42	PK	314	1.9	V	19.29	52.71	74	21.29
7236.0	35.66	PK	98	1.4	V	16.62	52.28	74	21.72
4824.0	38.76	PK	128	1.6	V	12.4	51.16	74	22.84
2487.7	23.72	Ave.	118	1.2	V	7.38	31.10	54	22.90
2487.7	40.03	PK	118	1.2	V	7.38	47.41	74	26.59
Middle Channel (2437 MHz)									
2437.0	91.82	PK	281	1.5	H	6.72	98.54	\	\
2437.0	78.62	Ave.	281	1.5	H	6.72	85.34	\	\
2437.0	98.88	PK	187	1.2	V	6.72	105.60	\	\
2437.0	85.92	Ave.	187	1.2	V	6.72	92.64	\	\
561.0	44.96	QP	110	1.1	V	-9.10	35.86	46.0	10.14
627.0	43.50	QP	18	1.1	V	-8.00	35.50	46.0	10.50
4874.0	26.32	Ave.	191	1.1	V	12.46	38.78	54	15.22
2340.7	33.16	Ave.	253	1.9	V	5.48	38.64	54	15.36
9748.0	18.83	Ave.	287	1.1	V	19.29	38.12	54	15.88
7311.0	19.73	Ave.	316	1.1	V	16.62	36.35	54	17.65
9748.0	34.79	PK	287	1.1	V	19.29	54.08	74	19.92
2340.7	47.89	PK	253	1.9	V	5.48	53.37	74	20.63
4874.0	40.06	PK	191	1.1	V	12.46	52.52	74	21.48
7311.0	33.56	PK	316	1.1	V	16.62	50.18	74	23.82
2357.6	23.58	Ave.	358	1.5	V	6.13	29.71	54	24.29
2490.2	21.81	Ave.	267	1.7	V	7.38	29.19	54	24.81
2490.2	41.03	PK	267	1.7	V	7.38	48.41	74	25.59
2357.6	39.06	PK	358	1.5	V	6.13	45.19	74	28.81

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBuV/m)	FCC Part 15.247/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
High Channel (2462 MHz)									
2462.0	93.44	PK	5	1.6	H	7.21	100.65	\	\
2462.0	80.86	Ave.	5	1.6	H	7.21	88.07	\	\
2462.0	96.94	PK	162	1.2	V	7.21	104.15	\	\
2462.0	83.87	Ave.	162	1.2	V	7.21	91.08	\	\
627.0	45.43	QP	196	1.1	V	-8.00	37.43	46.0	8.57
561.0	44.54	QP	175	1.1	V	-9.10	35.44	46.0	10.56
9848.0	19.17	Ave.	162	1.8	V	19.39	38.56	54	15.44
2341.2	30.80	Ave.	25	1.3	V	5.48	36.28	54	17.72
7386.0	20.01	Ave.	81	1.6	V	15.91	35.92	54	18.08
2486.5	28.43	Ave.	49	1.1	V	7.38	35.81	54	18.19
4924.0	23.13	Ave.	316	1.4	V	12.5	35.63	54	18.37
2383.0	29.39	Ave.	61	1.2	V	6.13	35.52	54	18.48
2341.2	49.42	PK	25	1.3	V	5.48	54.90	74	19.10
9848.0	32.59	PK	162	1.8	V	19.39	51.98	74	22.02
4924.0	39.12	PK	316	1.4	V	12.5	51.62	74	22.38
2383.0	44.03	PK	61	1.2	V	6.13	50.16	74	23.84
7386.0	33.72	PK	81	1.6	V	15.91	49.63	74	24.37
2486.5	39.82	PK	49	1.1	V	7.38	47.20	74	26.80

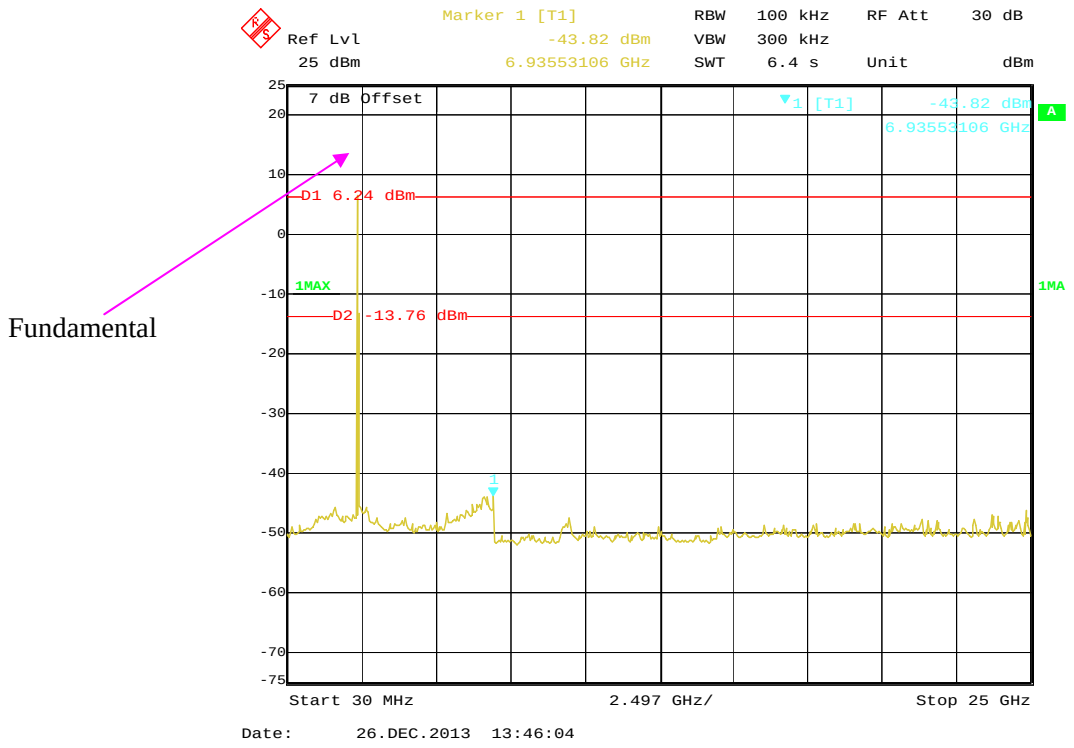
802.11n-HT20 Mode:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBuV/m)	FCC Part 15.247/205/209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel (2412 MHz)									
2412.0	92.88	PK	260	1.2	H	6.13	99.01	\	\
2412.0	80.03	Ave.	260	1.2	H	6.13	86.16	\	\
2412.0	97.33	PK	21	1.1	V	6.13	103.46	\	\
2412.0	84.90	Ave.	21	1.1	V	6.13	91.03	\	\
627.0	46.06	QP	135	1.1	V	-8.00	38.06	46.0	7.94
561.0	45.74	QP	132	1.1	V	-9.10	36.64	46.0	9.36
2340.9	36.79	Ave.	314	1.7	V	5.48	42.27	54	11.73
4824.0	29.32	Ave.	4	1.3	V	12.4	41.72	54	12.28
2488.9	33.56	Ave.	93	2.0	V	7.38	40.94	54	13.06
9648.0	19.24	Ave.	291	1.4	V	19.29	38.53	54	15.47
2340.9	52.44	PK	314	1.7	V	5.48	57.92	74	16.08
2391.6	31.03	Ave.	150	1.9	V	6.13	37.16	54	16.84
7236.0	20.06	Ave.	269	1.6	V	16.62	36.68	54	17.32
2391.6	48.11	PK	150	1.9	V	6.13	54.24	74	19.76
9648.0	33.59	PK	291	1.4	V	19.29	52.88	74	21.12
4824.0	39.96	PK	4	1.3	V	12.4	52.36	74	21.64
2488.9	43.84	PK	93	2.0	V	7.38	51.22	74	22.78
7236.0	34.40	PK	269	1.6	V	16.62	51.02	74	22.98
Middle Channel (2437 MHz)									
2437.0	91.19	PK	13	1.8	H	6.72	97.91	\	\
2437.0	79.12	Ave.	13	1.8	H	6.72	85.84	\	\
2437.0	96.47	PK	133	1.5	V	6.72	103.19	\	\
2437.0	82.05	Ave.	133	1.5	V	6.72	88.77	\	\
561.0	46.40	QP	109	1.1	V	-9.10	37.30	46.0	8.70
627.0	44.88	QP	70	1.1	V	-8.00	36.88	46.0	9.12
4874.0	30.12	Ave.	224	1.0	V	12.46	42.58	54	11.42
9748.0	19.83	Ave.	289	1.3	V	19.29	39.12	54	14.88
2358.2	31.09	Ave.	180	1.6	V	6.13	37.22	54	16.78
7311.0	20.44	Ave.	226	1.7	V	16.62	37.06	54	16.94
2341.7	30.02	Ave.	215	1.2	V	5.48	35.50	54	18.50
9748.0	34.76	PK	289	1.3	V	19.29	54.05	74	19.95
2491.8	25.22	Ave.	305	1.6	V	7.38	32.60	54	21.40
7311.0	35.03	PK	226	1.7	V	16.62	51.65	74	22.35
2358.2	45.11	PK	180	1.6	V	6.13	51.24	74	22.76
2341.7	43.71	PK	215	1.2	V	5.48	49.19	74	24.81
2491.8	40.11	PK	305	1.6	V	7.38	47.49	74	26.51
4874.0	29.09	PK	224	1.0	V	12.46	41.55	74	32.45

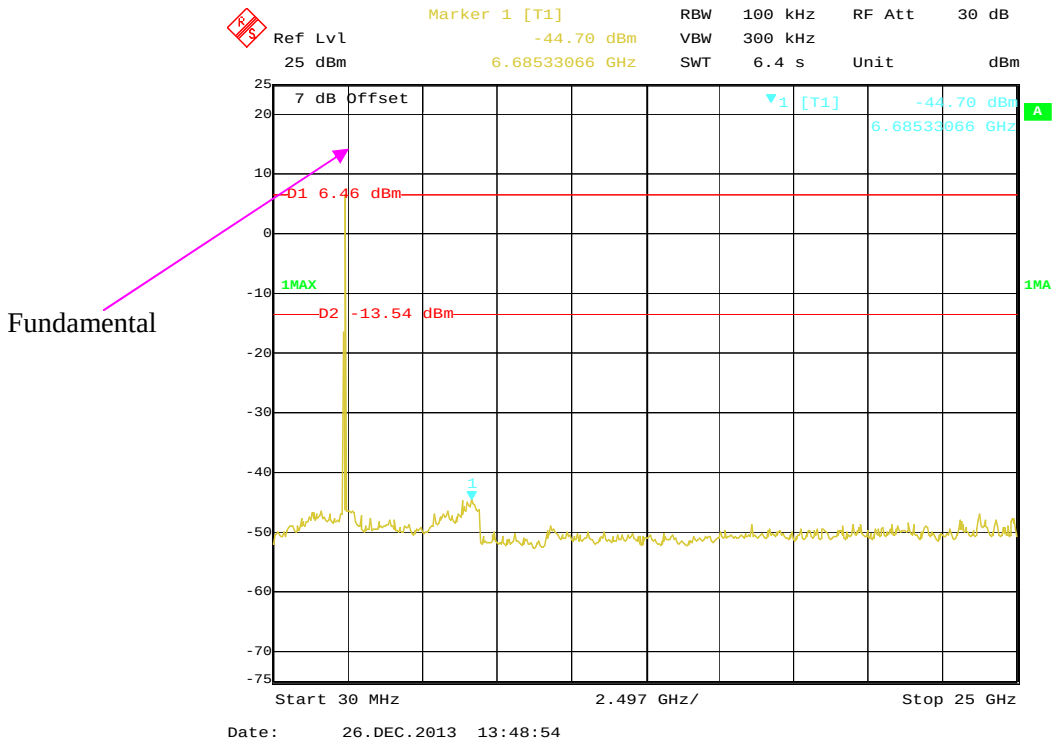
Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBuV/m)	FCC Part 15.247/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
High Channel (2462 MHz)									
2462.0	94.46	PK	354	1.4	H	7.21	101.67	\	\
2462.0	80.98	Ave.	354	1.4	H	7.21	88.19	\	\
2462.0	96.87	PK	287	1.6	V	7.21	104.08	\	\
2462.0	81.33	Ave.	287	1.6	V	7.21	88.54	\	\
561.0	45.45	QP	155	1.1	V	-9.10	36.35	46.0	9.65
627.0	44.33	QP	194	1.1	V	-8.00	36.33	46.0	9.67
4924.0	30.06	Ave.	338	1.5	V	12.5	42.56	54	11.44
2488.1	52.92	PK	277	1.2	V	7.38	60.30	74	13.70
9848.0	17.73	Ave.	264	1.1	V	19.39	37.12	54	16.88
2384.3	29.92	Ave.	120	1.9	V	6.13	36.05	54	17.95
2488.1	28.64	Ave.	277	1.2	V	7.38	36.02	54	17.98
7386.0	20.05	Ave.	249	1.1	V	15.91	35.96	54	18.04
2342.1	28.06	Ave.	211	1.7	V	5.48	33.54	54	20.46
9848.0	33.57	PK	264	1.1	V	19.39	52.96	74	21.04
2384.3	45.09	PK	120	1.9	V	6.13	51.22	74	22.78
4924.0	38.72	PK	338	1.5	V	12.5	51.22	74	22.78
7386.0	34.11	PK	249	1.1	V	15.91	50.02	74	23.98
2342.1	43.74	PK	211	1.7	V	5.48	49.22	74	24.78

Conducted Spurious Emissions at Antenna Port:

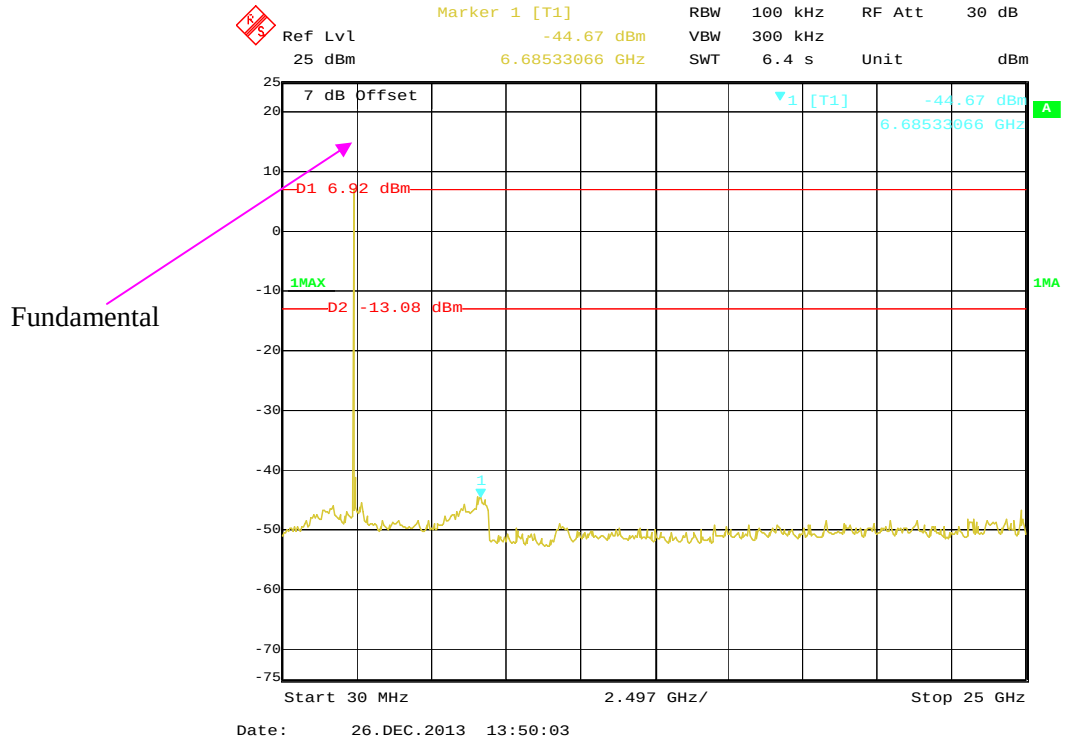
802.11b Low Channel



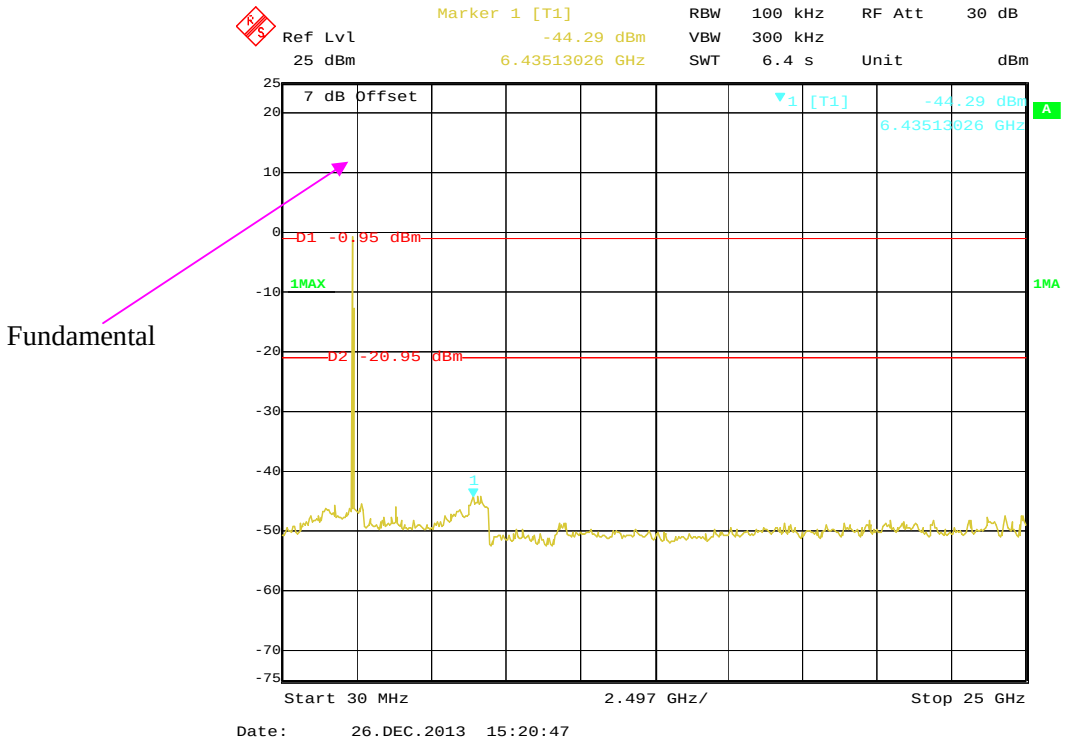
802.11b Middle Channel



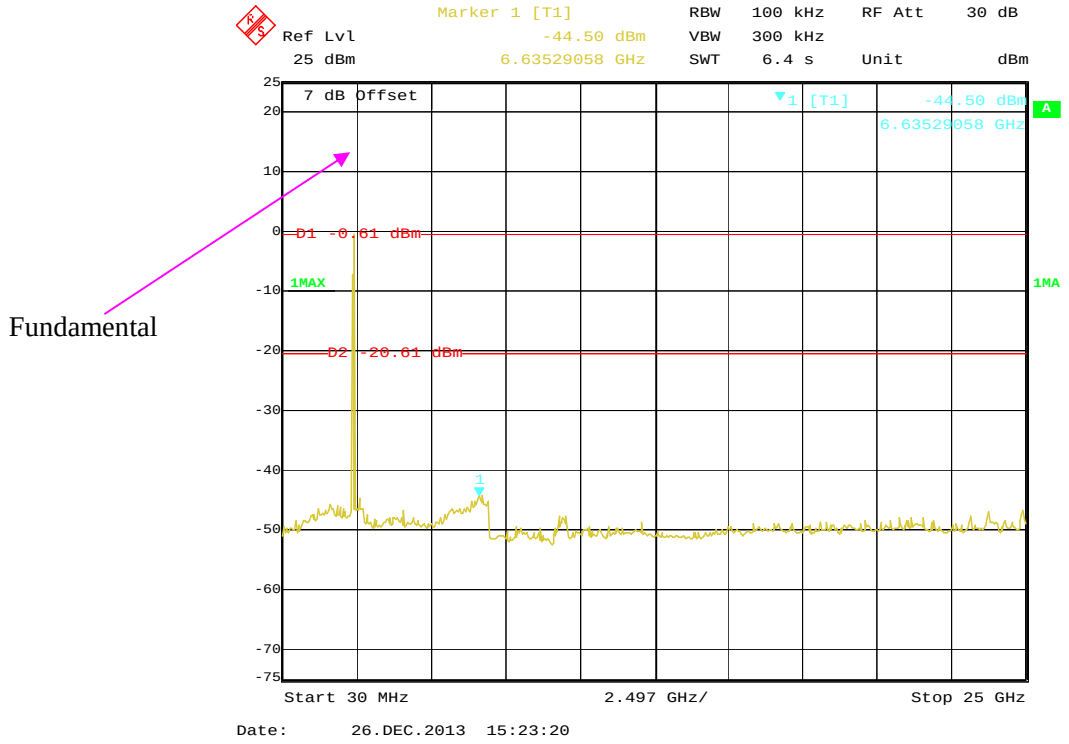
802.11b High Channel



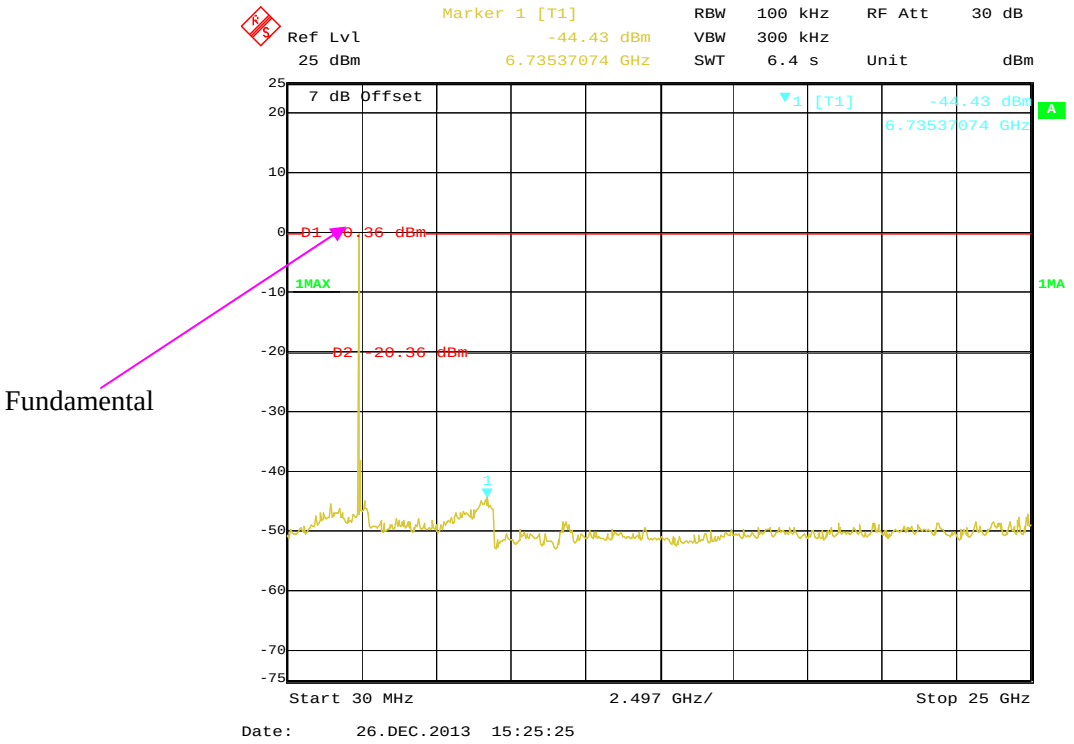
802.11g Low Channel



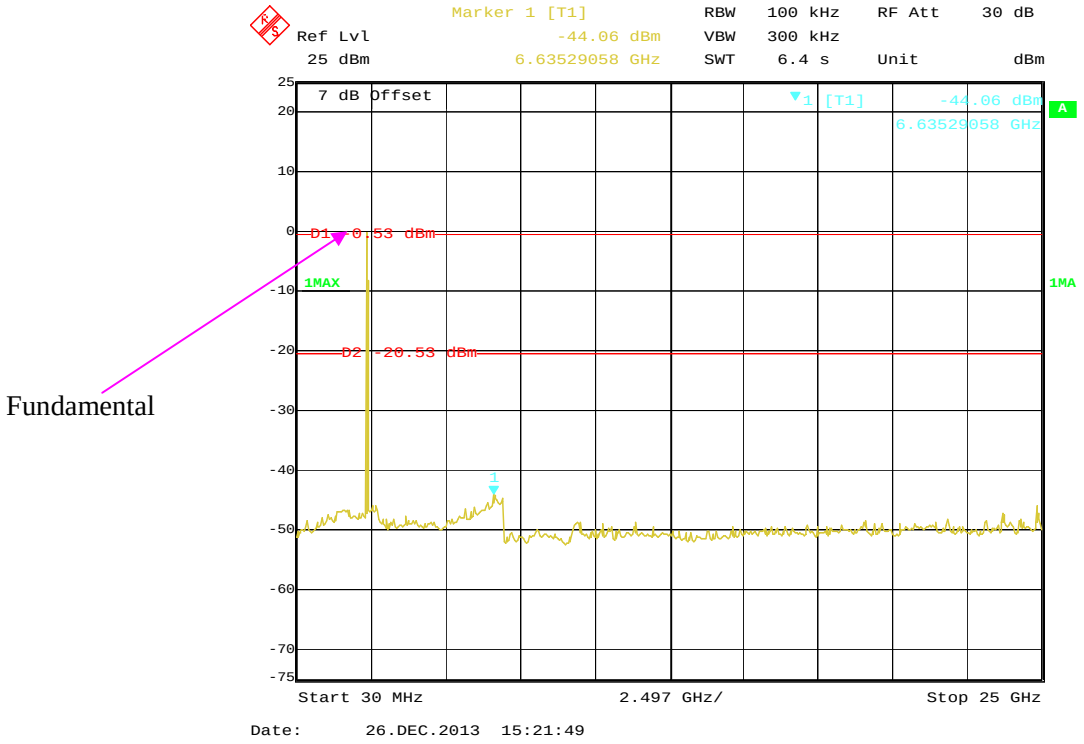
802.11g Middle Channel



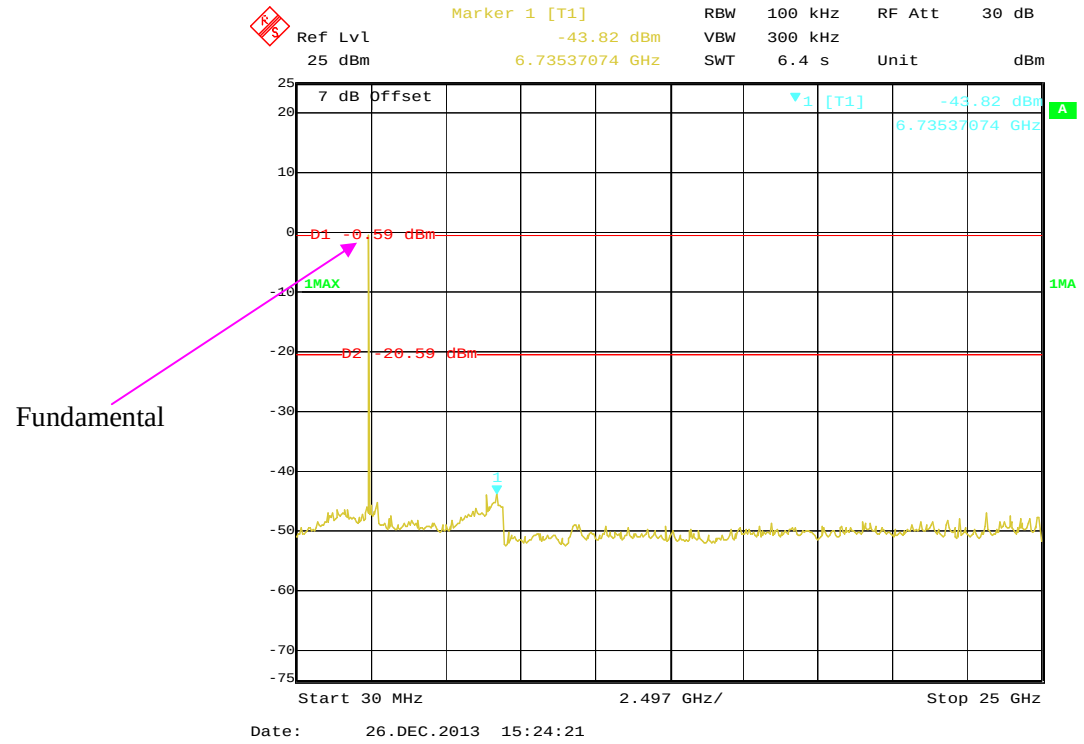
802.11g High Channel



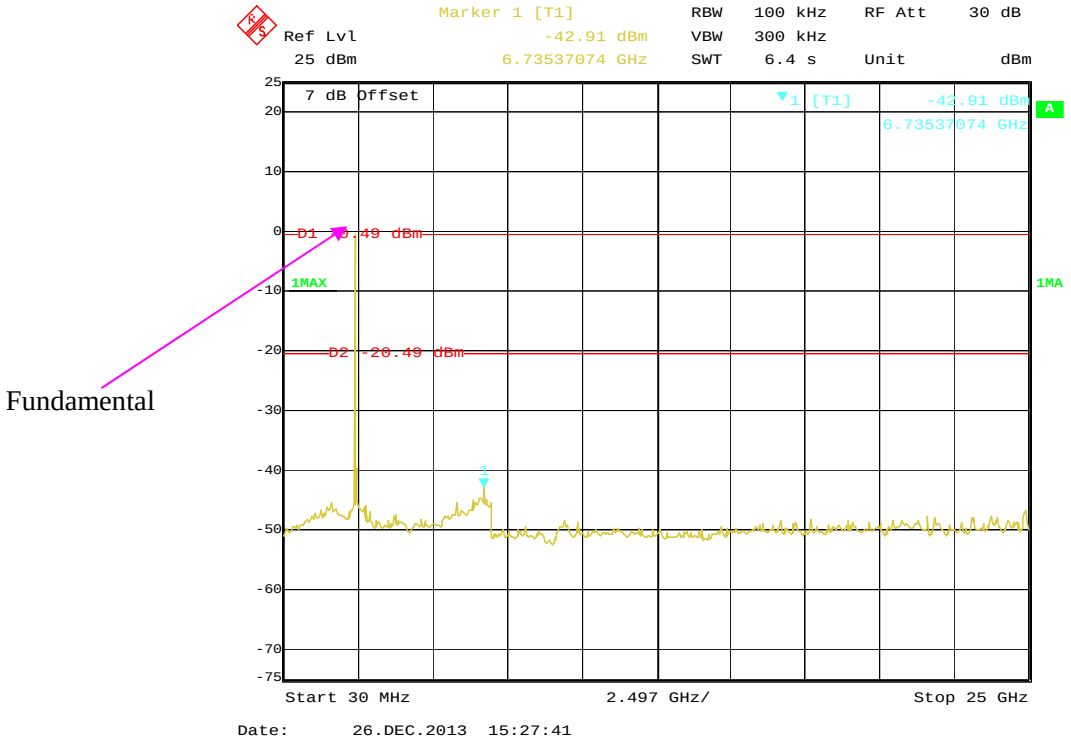
802.11n-HT20 Low Channel



802.11n-HT20 Middle Channel



802.11n-HT20 High Channel



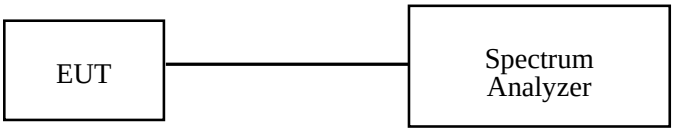
FCC §15.247(a) (2) – 6 dB EMISSION BANDWIDTH

Applicable Standard

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2013-11-23

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

Test Data

Environmental Conditions

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

The testing was performed by Tiger Ye on 2012-12-25.

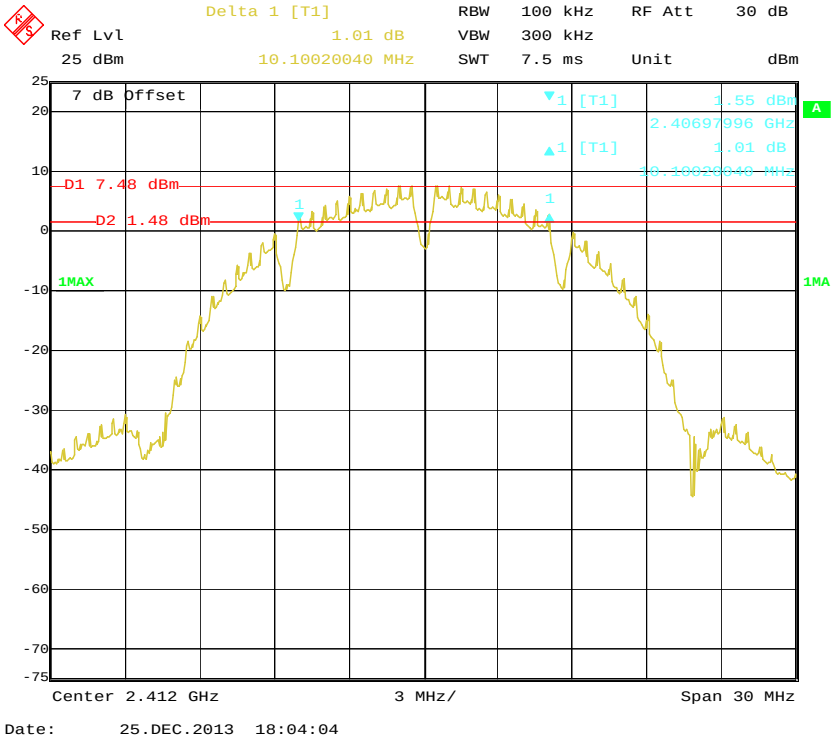
Test Result: Pass.

Please refer to the following tables and plots.

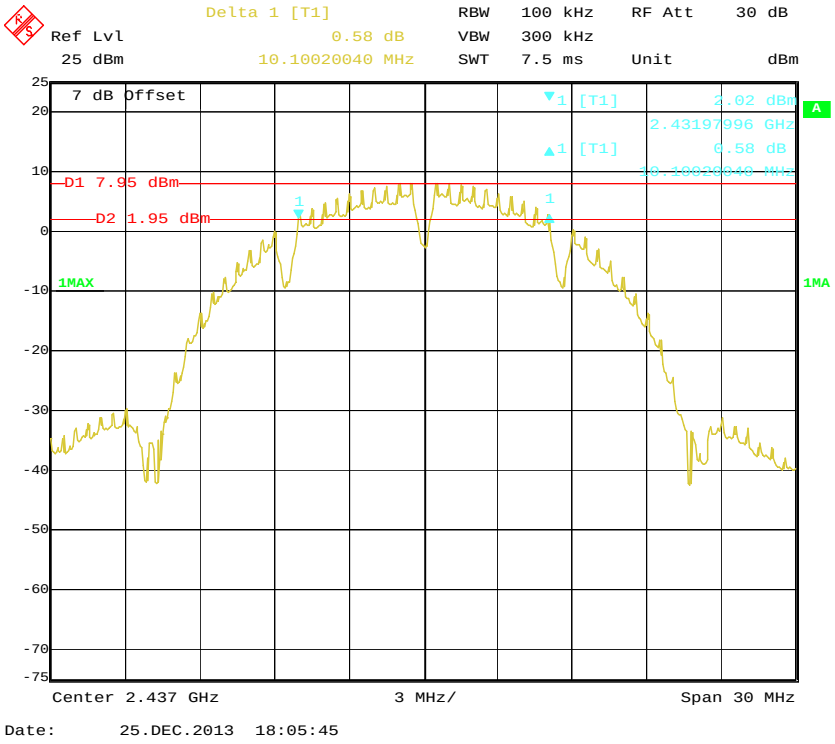
EUT operation mode: Transmitting

Channel	Channel Frequency (MHz)	Data Rate (Mbps)	6dB Bandwidth (MHz)	FCC Part 15.247 Limit (kHz)
802.11b mode				
Low	2412	1	10.10	>500
Middle	2437	1	10.10	>500
High	2462	1	10.10	>500
802.11g mode				
Low	2412	6	16.41	>500
Middle	2437	6	16.41	>500
High	2462	6	16.41	>500
802.11n-HT20 mode				
Low	2412	MSC0	17.62	>500
Middle	2437	MSC0	17.62	>500
High	2462	MSC0	17.62	>500

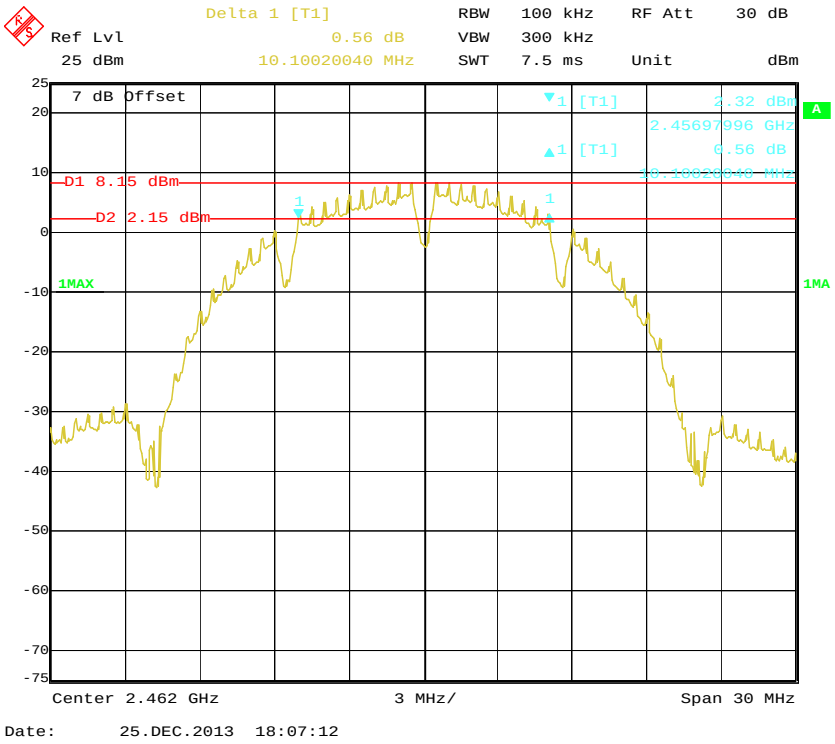
802.11b Low Channel



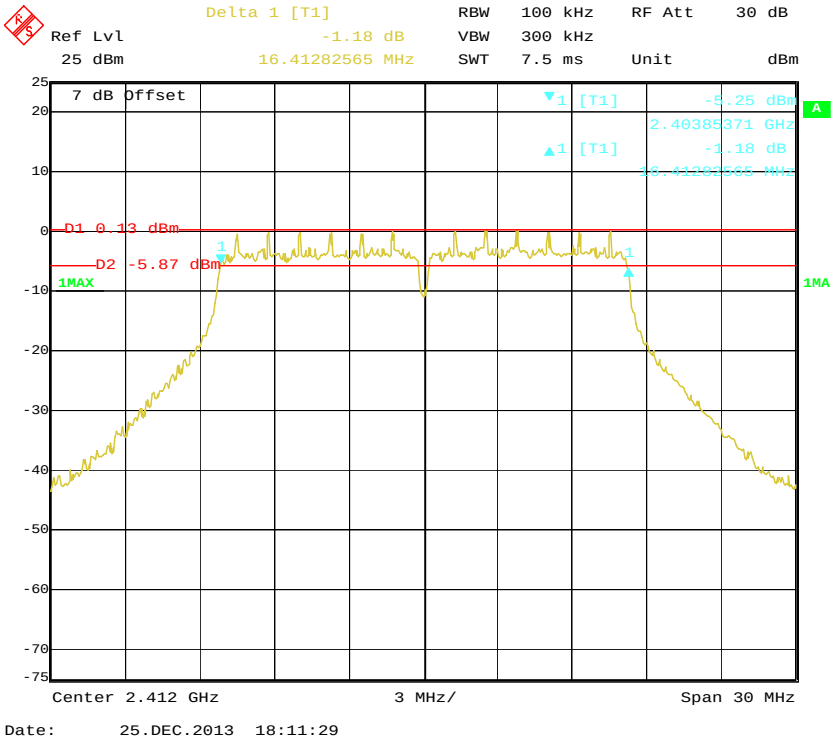
802.11b Middle Channel



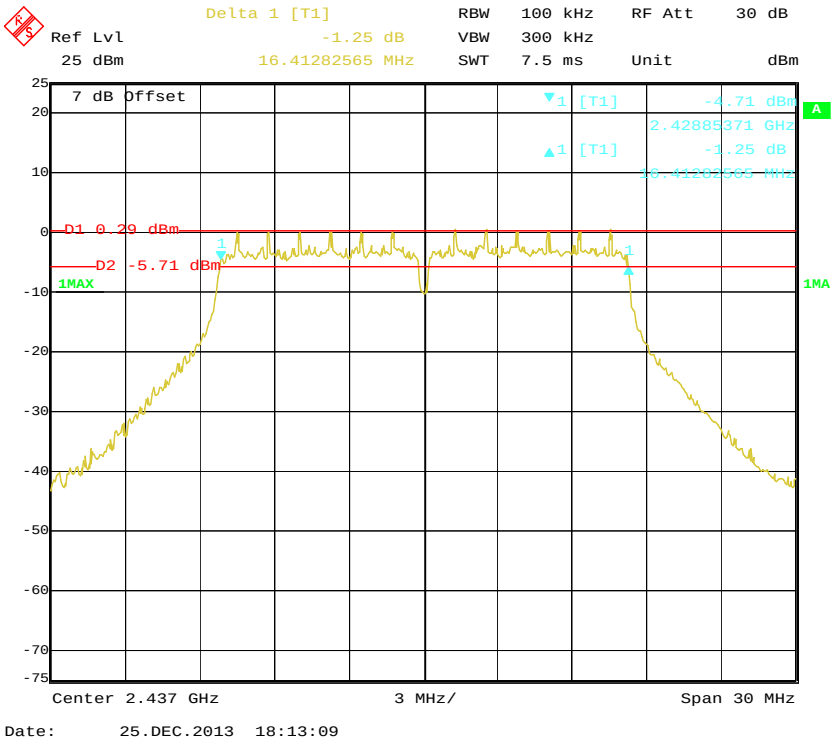
802.11b High Channel



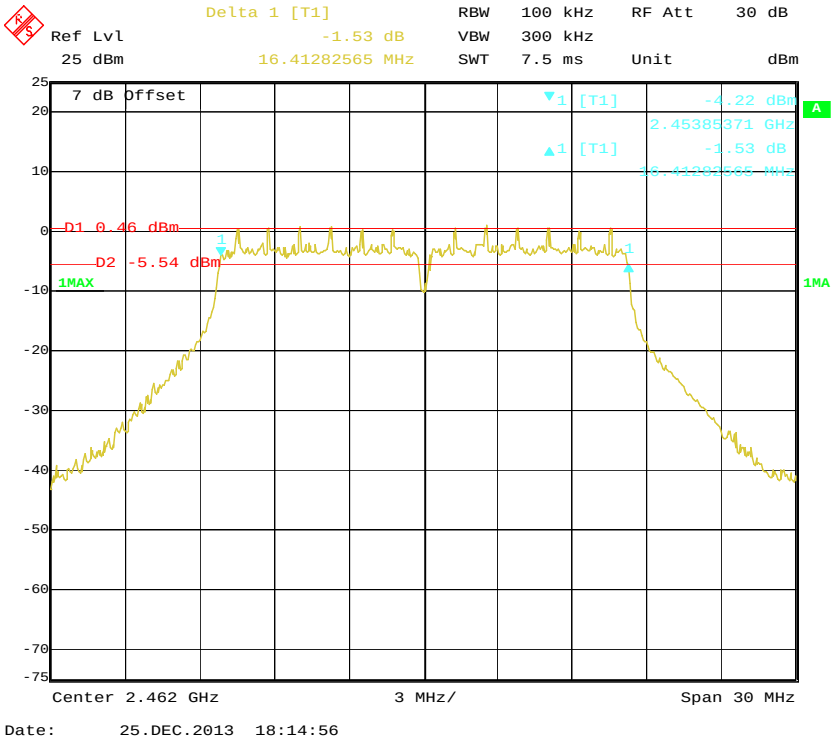
802.11g Low Channel



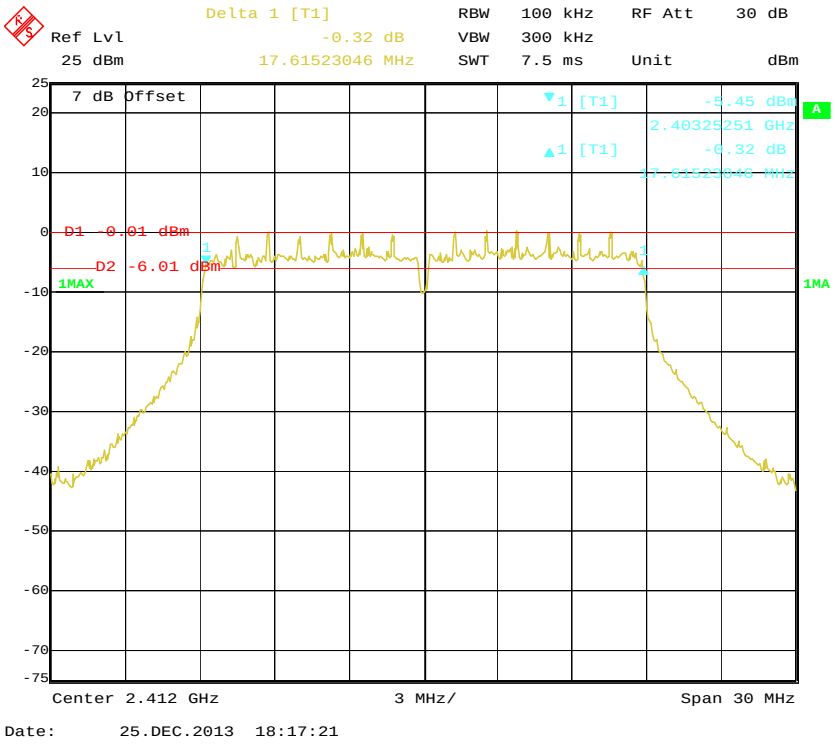
802.11g Middle Channel



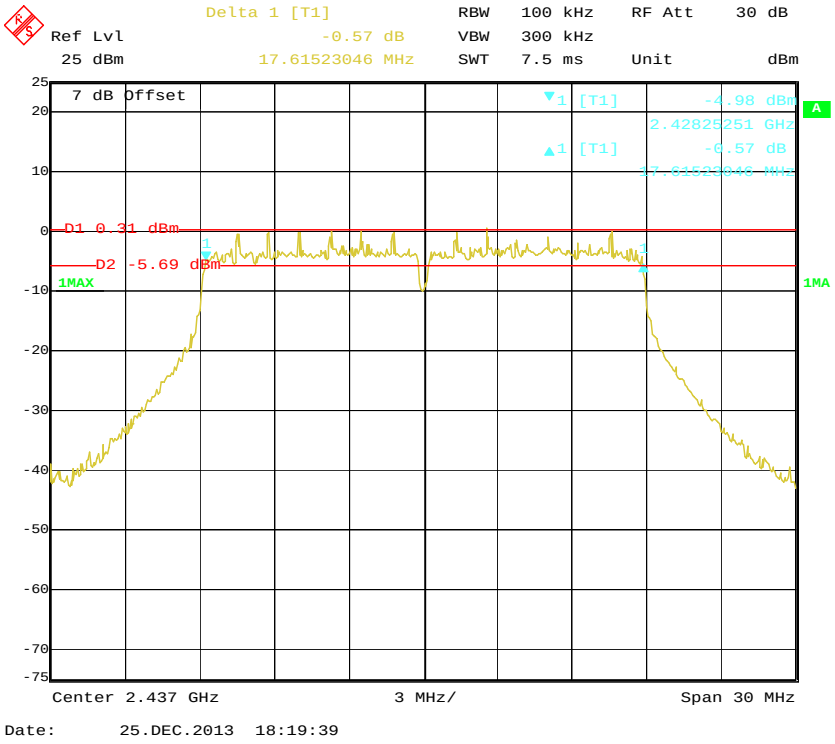
802.11g High Channel



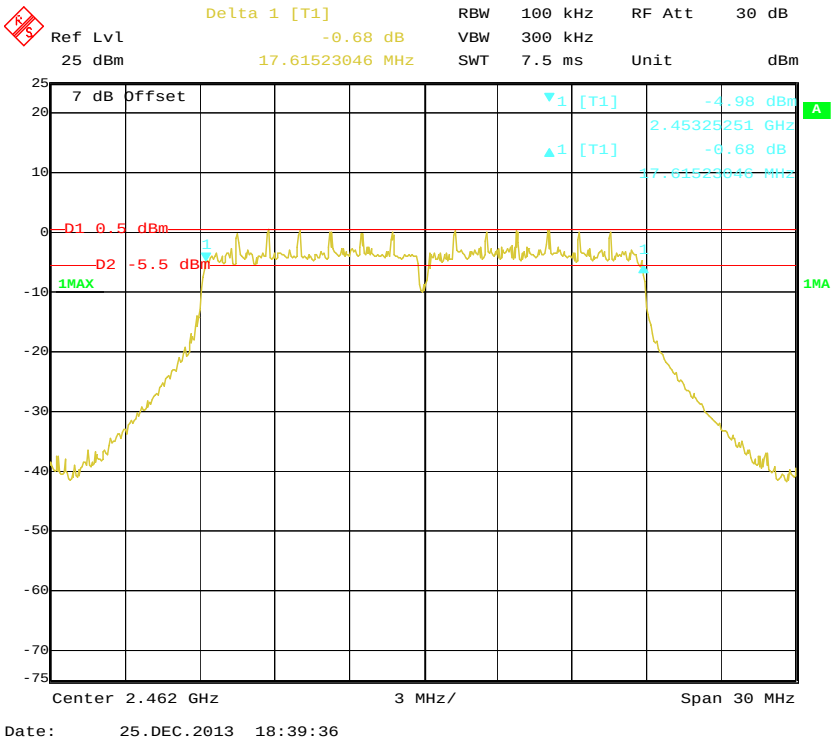
802.11n-HT20 Low Channel



802.11n-HT20 Middle Channel



802.11n-HT20 High Channel



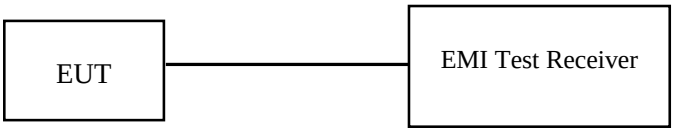
FCC §15.247(b) (3) - MAXIMUM PEAK OUTPUT POWER

Applicable Standard

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

Test Procedure

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



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2013-11-23

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

Test Data

Environmental Conditions

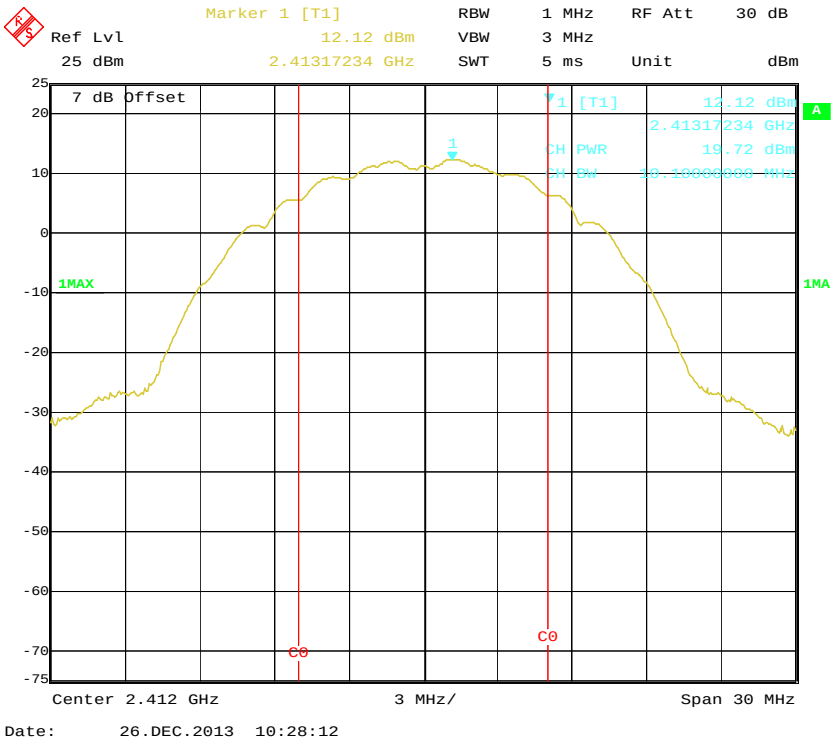
Temperature:	25 ℃
Relative Humidity:	56 %
ATM Pressure:	100.0 kPa

The testing was performed by Tiger Ye on 2012-12-26.

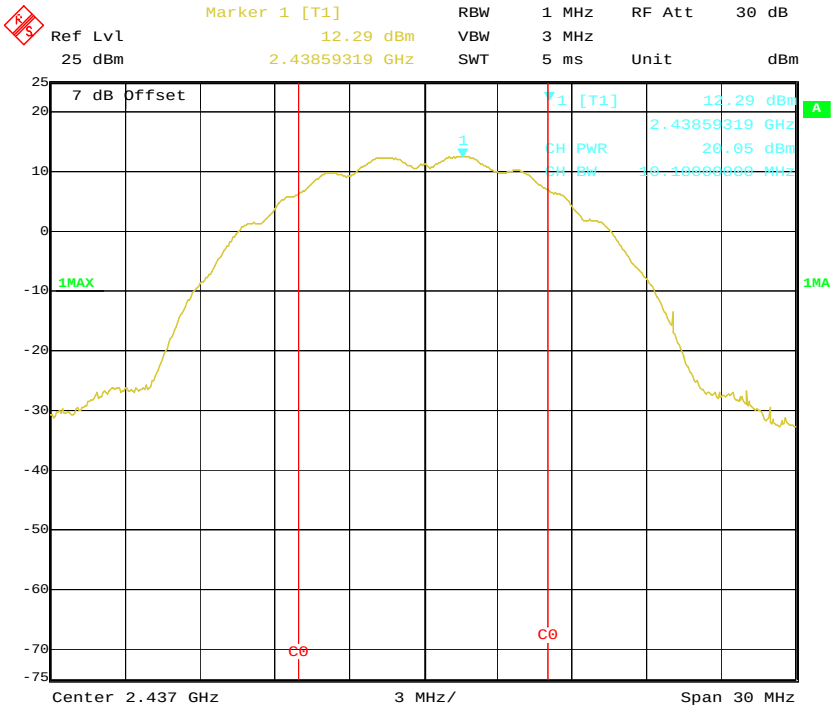
EUT operation mode: Transmitting

Channel	Frequency (MHz)	Data Rate (Mbps)	Reading Power (dBm)	Limit (dBm)	Result
802.11b mode					
Low	2412	1	19.72	30	Pass
Middle	2437	1	20.05	30	Pass
High	2462	1	20.09	30	Pass
802.11g mode					
Low	2412	6	19.75	30	Pass
Middle	2437	6	20.01	30	Pass
High	2462	6	20.30	30	Pass
802.11n-HT20 mode					
Low	2412	MSC0	19.71	30	Pass
Middle	2437	MSC0	19.91	30	Pass
High	2462	MSC0	20.18	30	Pass

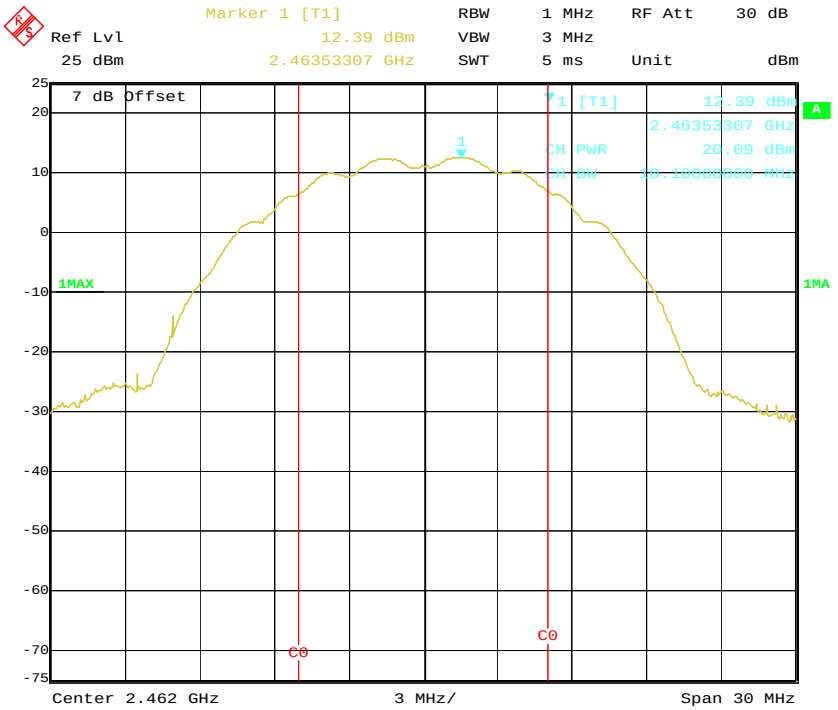
802.11b RF Output Power, Low Channel



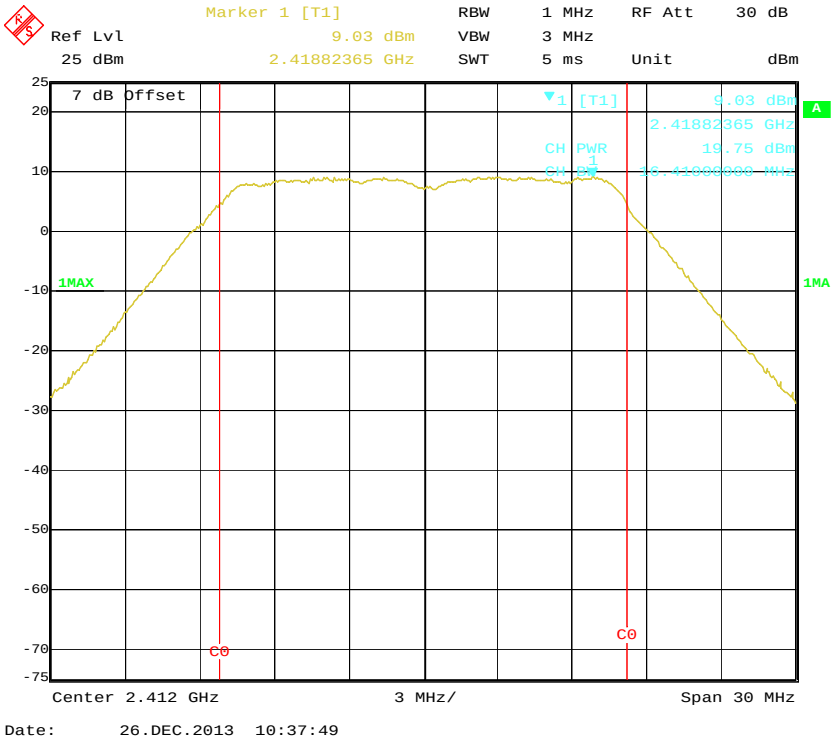
802.11b RF Output Power, Middle Channel



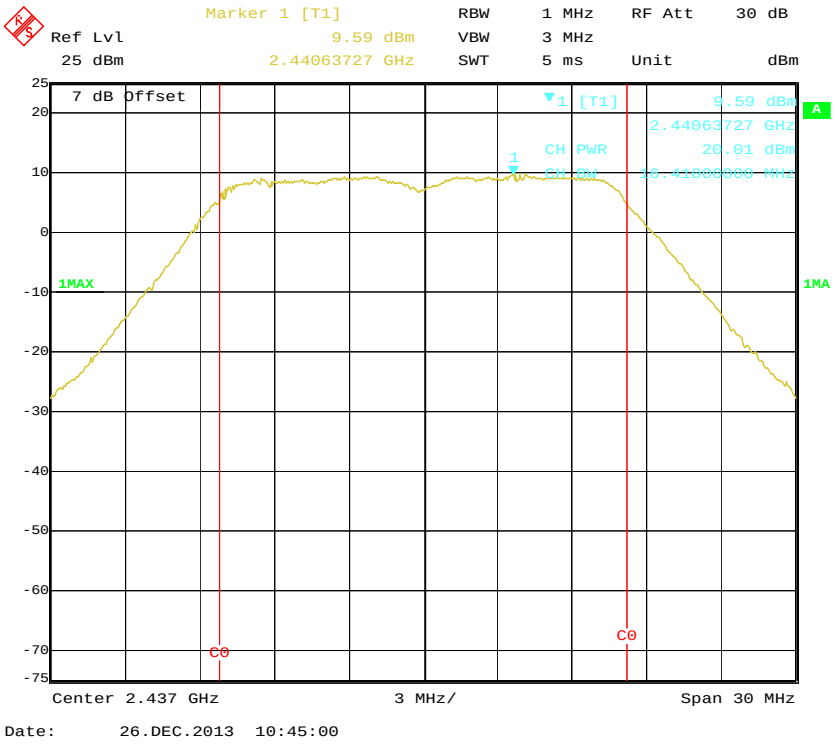
802.11b RF Output Power, High Channel



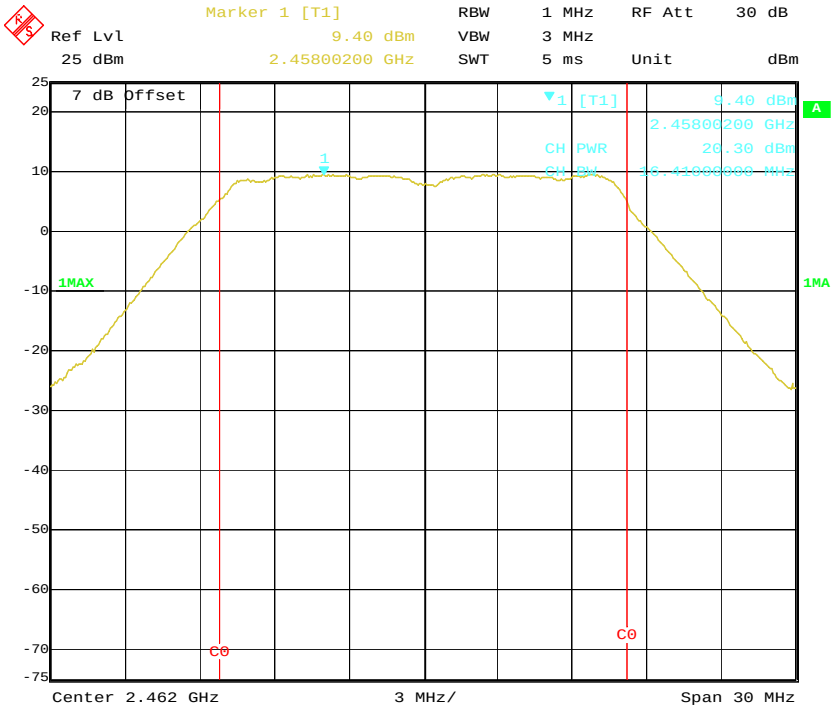
802.11g RF Output Power, Low Channel



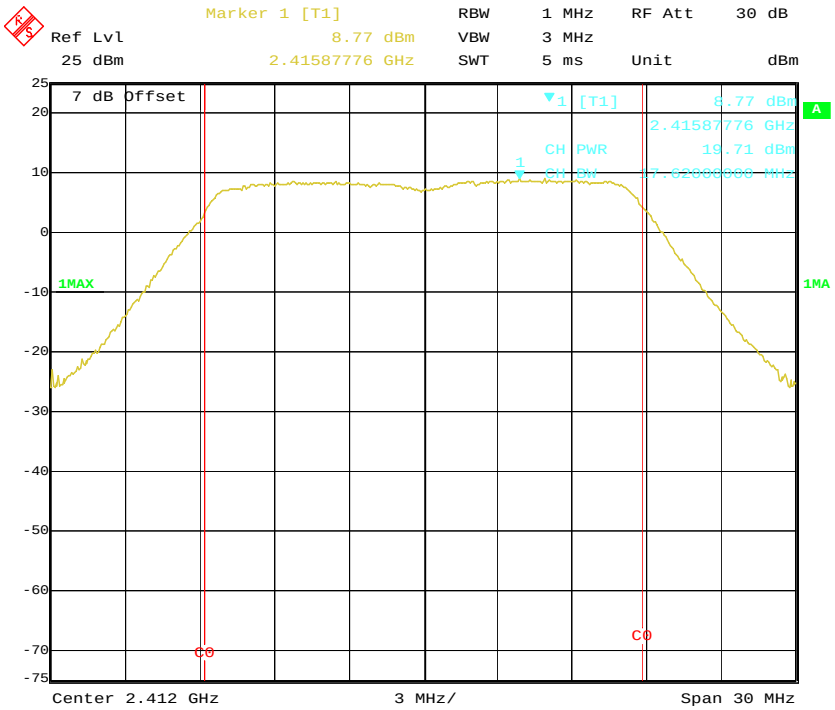
802.11g RF Output Power, Middle Channel



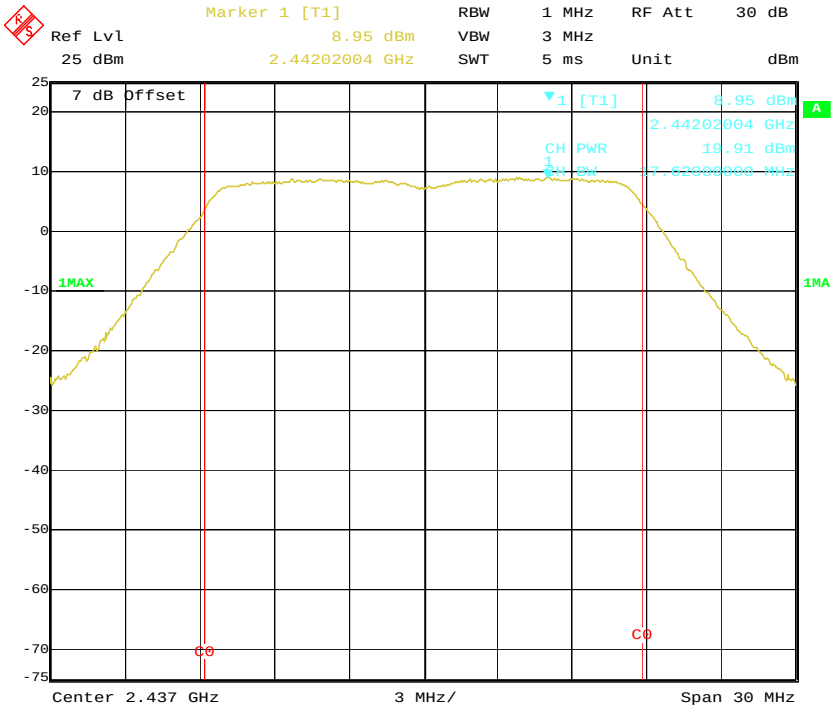
802.11g RF Output Power, High Channel



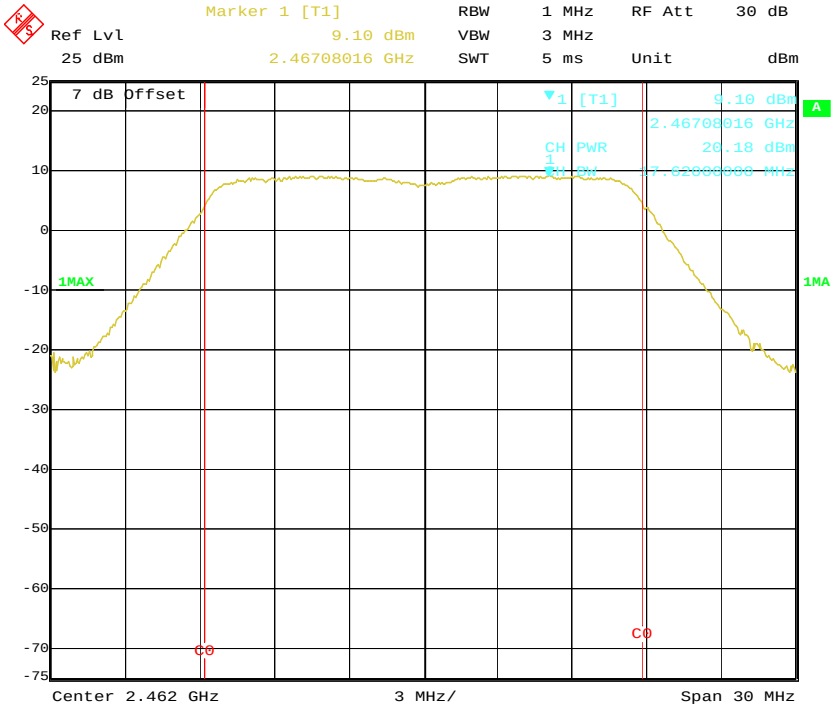
802.11n-HT20 RF Output Power, Low Channel



802.11 n-HT20 RF Output Power, Middle Channel



802.11 n-HT20 RF Output Power, High Channel



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

Applicable Standard

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2013-11-23

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

Test Data

Environmental Conditions

Temperature:	20~25℃
Relative Humidity:	50~56 %
ATM Pressure:	100.0~100.1 kPa

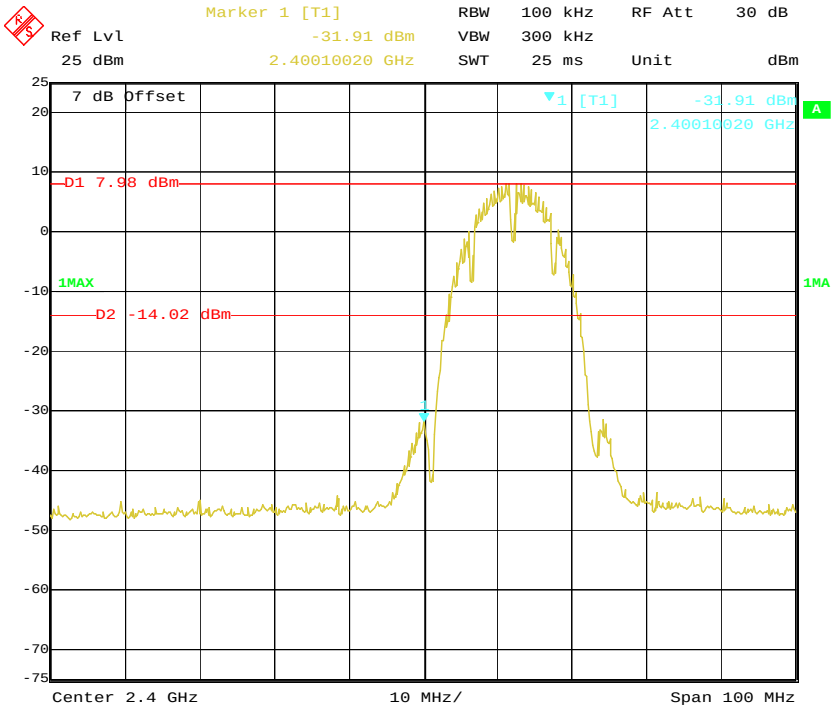
The testing was performed by Tiger Ye on from 2012-12-26 to 2013-01-28.

Test Result: *Compliance*

Channel	Delta Peak to Band Emission (dBc)	＞Limit (dBc)	Result
802.11b mode			
Left-band	39.89	20	Pass
Right-band	54.03	20	Pass
802.11g mode			
Left-band	33.06	20	Pass
Right-band	45.23	20	Pass
802.11n-HT20 mode			
Left-band	33.15	20	Pass
Right-band	44.09	20	Pass

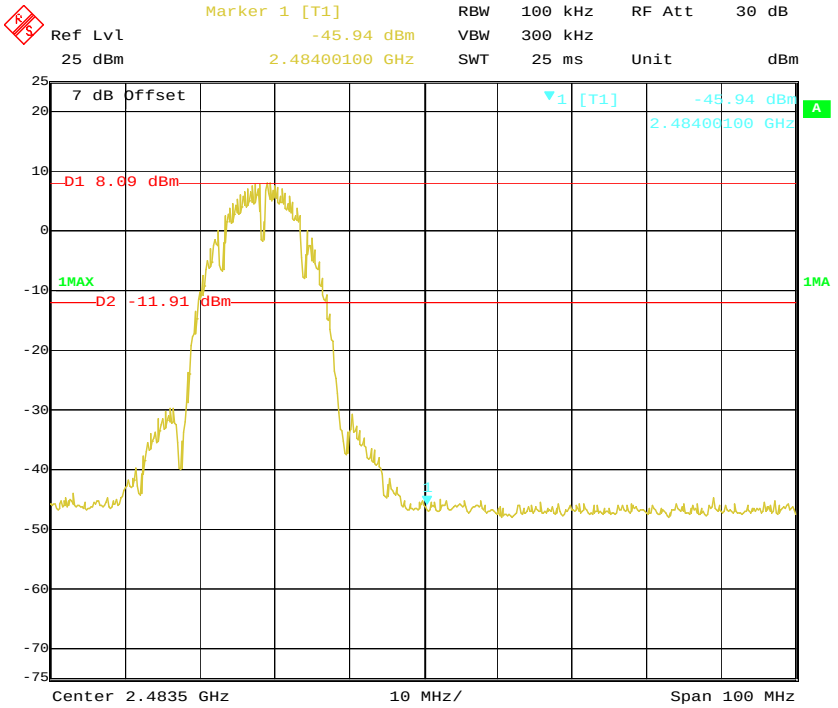
Please refer to following plots.

802.11b: Band Edge, Left Side



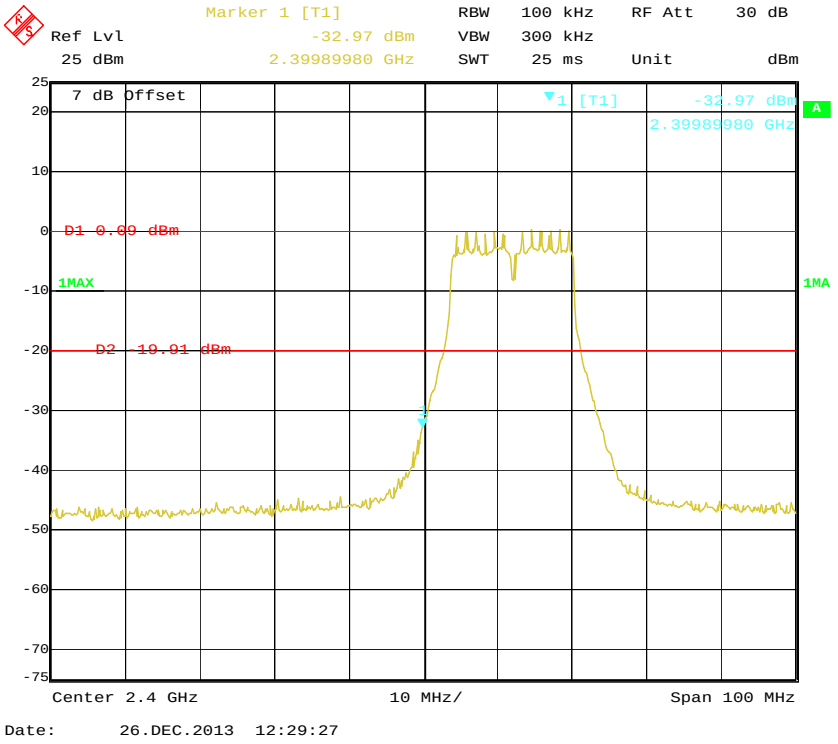
Date: 28.JAN.2013 08:24:04

802.11b: Band Edge, Right Side

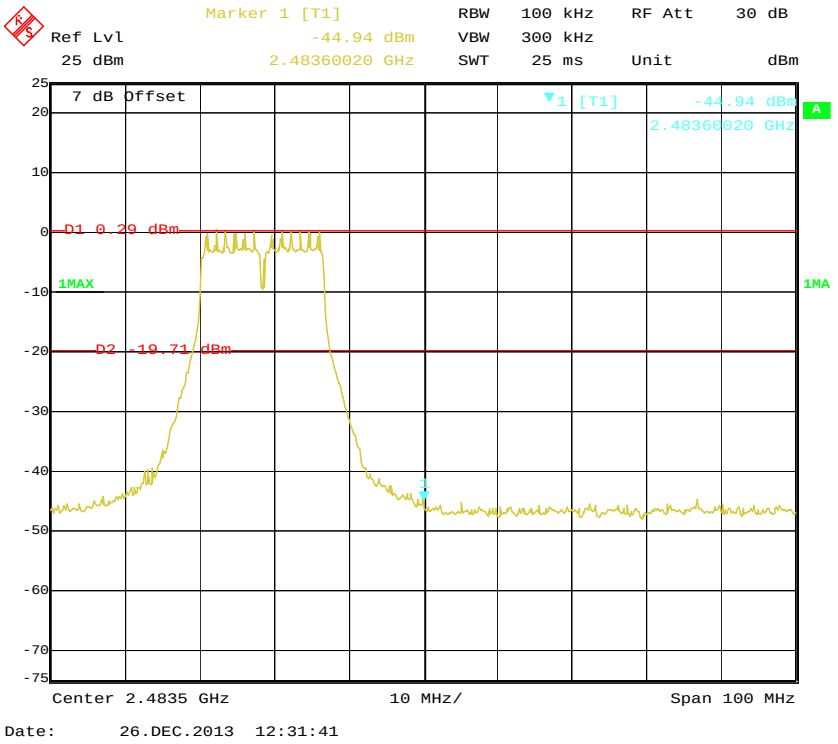


Date: 26.DEC.2013 12:24:54

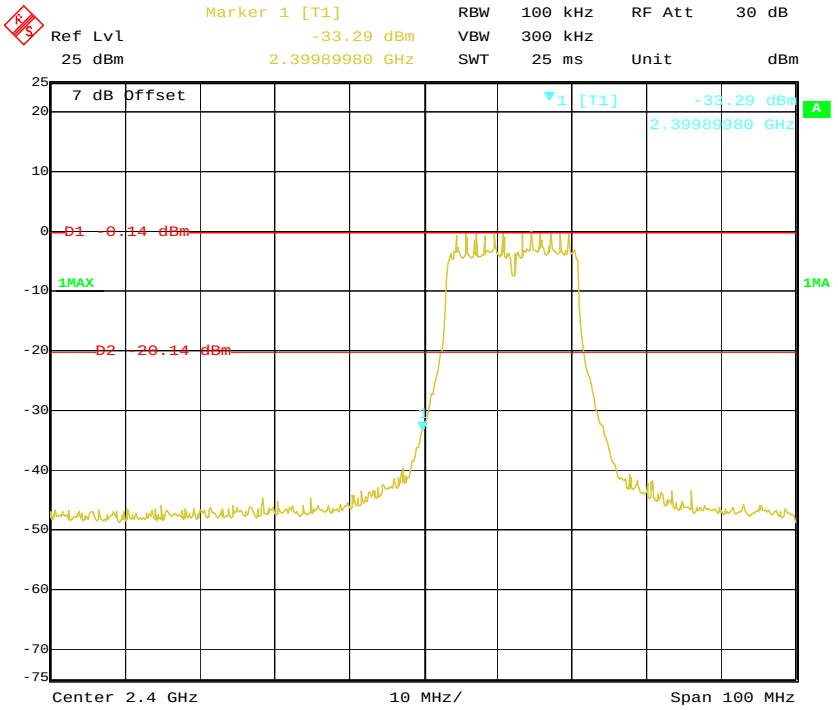
802.11g: Band Edge, Left Side



802.11g: Band Edge, Right Side



802.11n-HT20: Band Edge, Left Side



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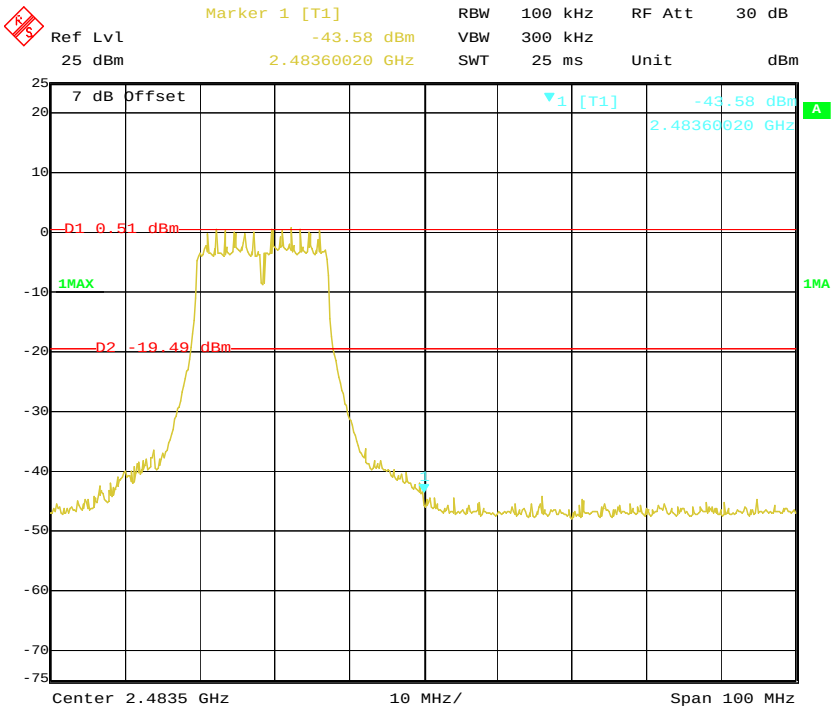
802.11n-HT20: Band Edge, Right Side



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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. Adjust the center frequency of SA on any frequency be measured and set SA to 1.5MHz span mode. And then, set RBW and VBW of spectrum analyzer to proper value. (DTS)
4. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2011-11-24	2013-11-23

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

Test Data

Environmental Conditions

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

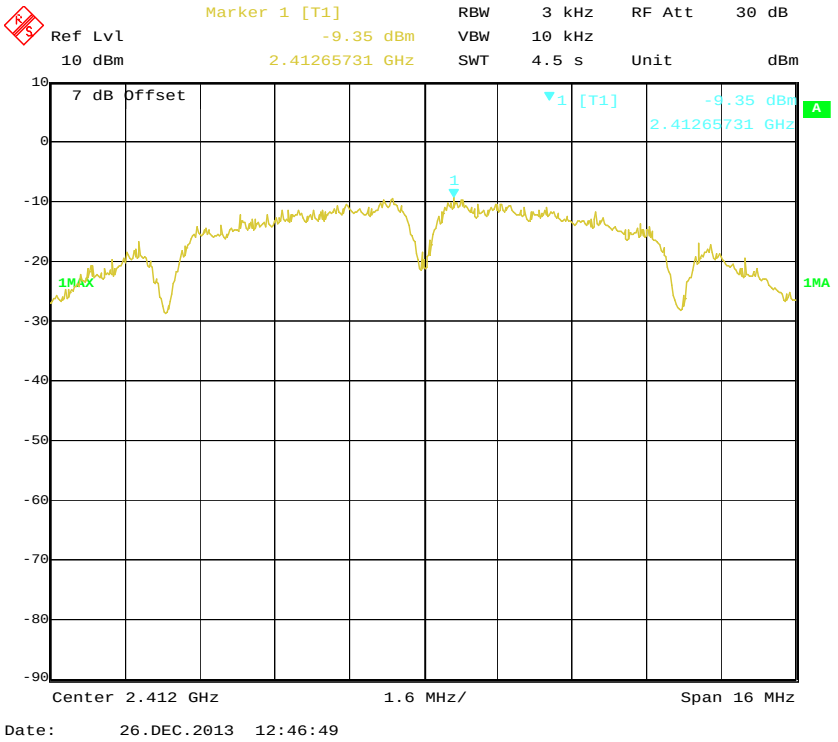
The testing was performed by Tiger Ye on 2012-12-26.

EUT operation mode: Transmitting

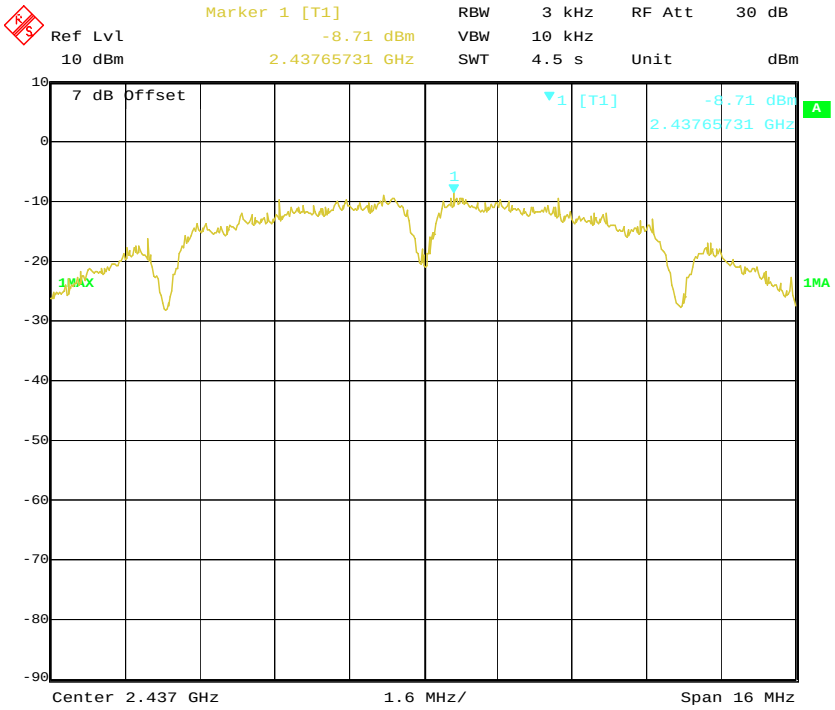
Test Result: Pass

Channel	Frequency (MHz)	Data Rate (Mbps)	Correct Power spectral density (dBm/3kHz)	Limit (dBm/3kHz)	Result
802.11b mode					
Low	2412	1	-9.17	8	Pass
Middle	2437	1	-9.35	8	Pass
High	2462	1	-8.71	8	Pass
802.11g mode					
Low	2412	6	-17.65	8	Pass
Middle	2437	6	-16.85	8	Pass
High	2462	6	-16.63	8	Pass
802.11n-HT20 mode					
Low	2412	MSC0	-16.81	8	Pass
Middle	2437	MSC0	-16.30	8	Pass
High	2462	MSC0	-16.23	8	Pass

Power Spectral Density, 802.11b Low Channel



Power Spectral Density, 802.11b Middle Channel



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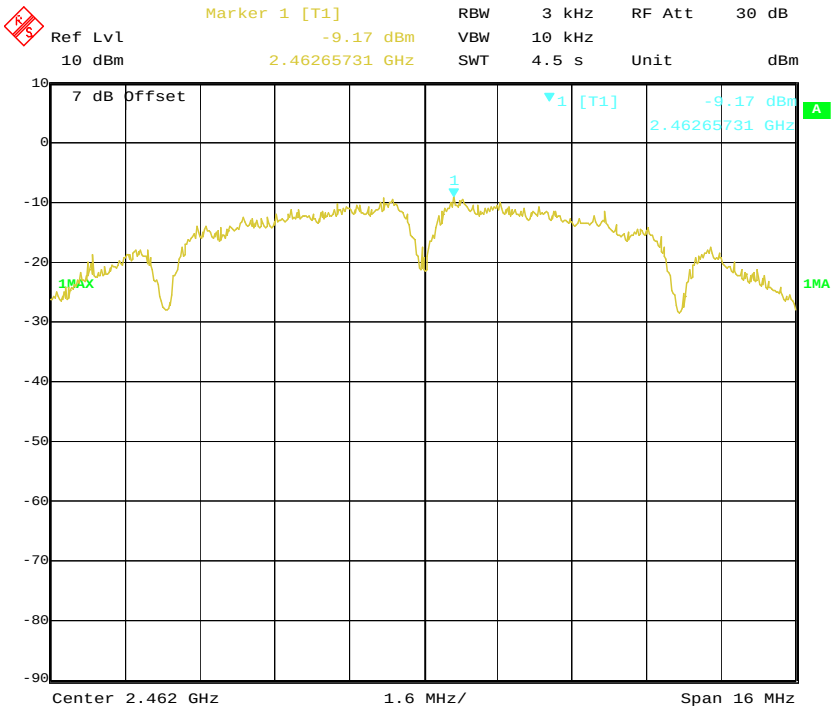
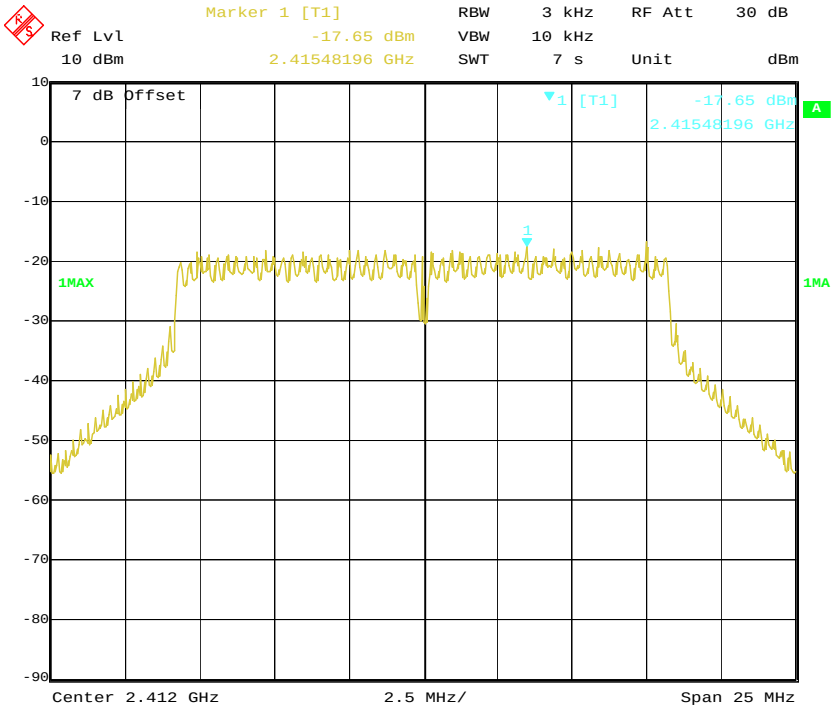
Power Spectral Density, 802.11b High Channel



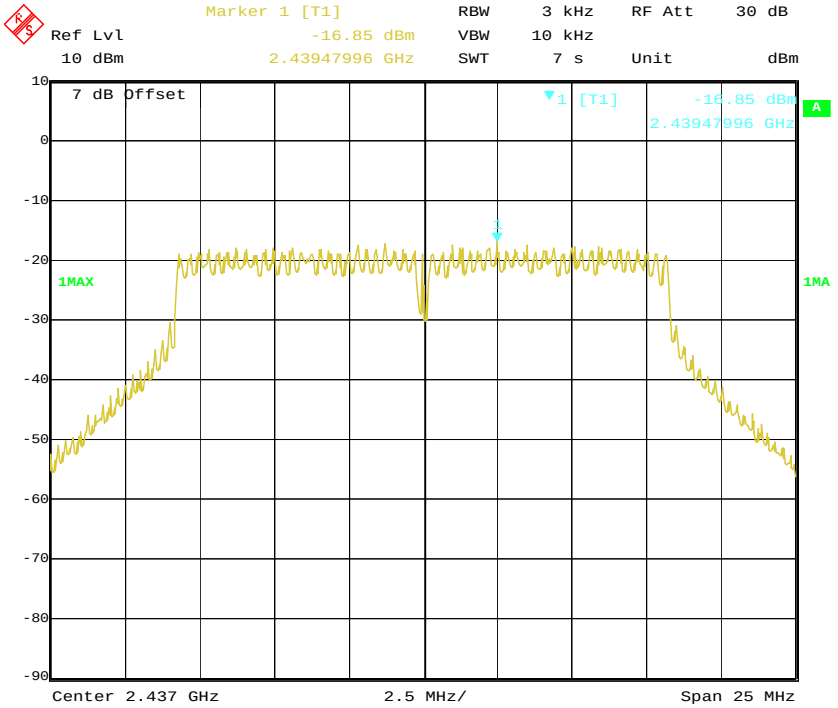
Date: 26.DEC.2013 12:52:50

Power Spectral Density, 802.11g Low Channel



Date: 26.DEC.2013 12:55:15

Power Spectral Density, 802.11g Middle Channel



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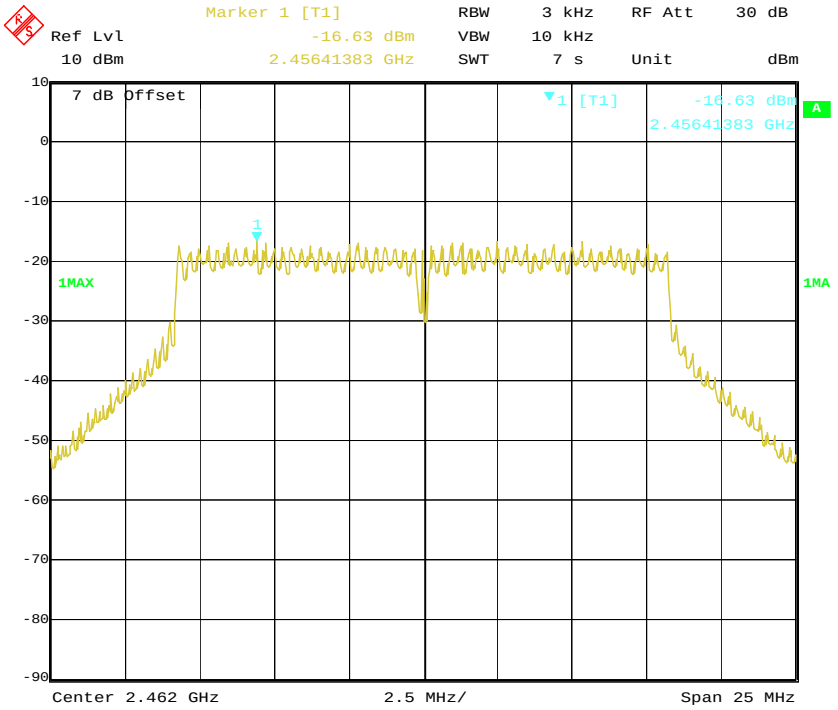
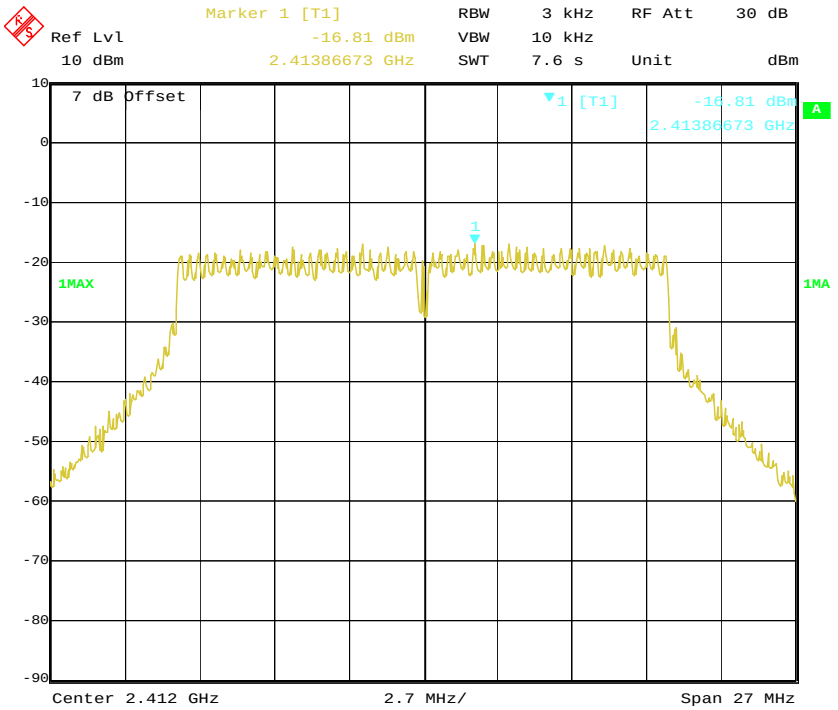
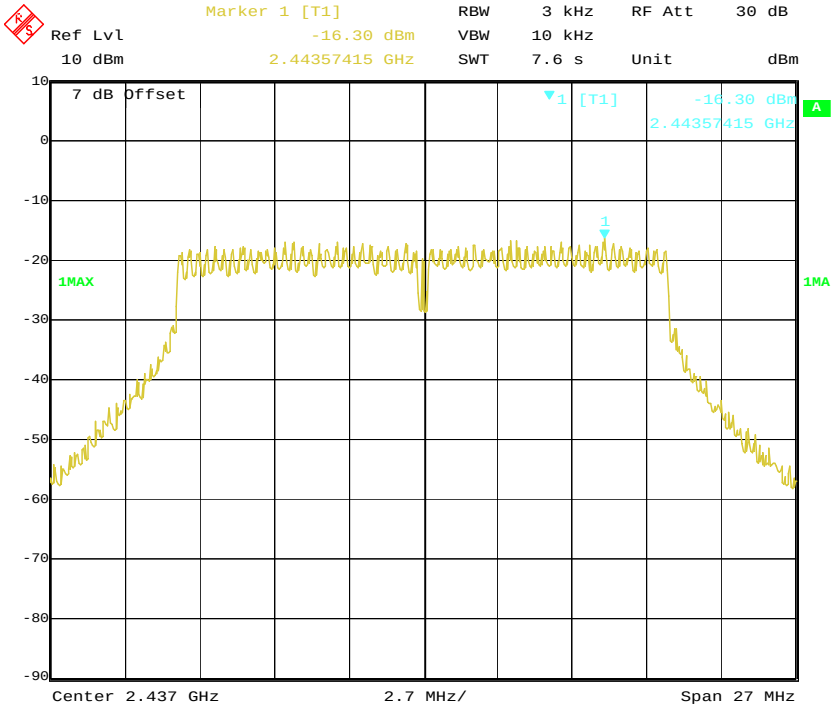
Power Spectral Density, 802.11g High Channel



Power Spectral Density, 802.11n-HT20 Low Channel



Power Spectral Density, 802.11n-HT20 Middle Channel



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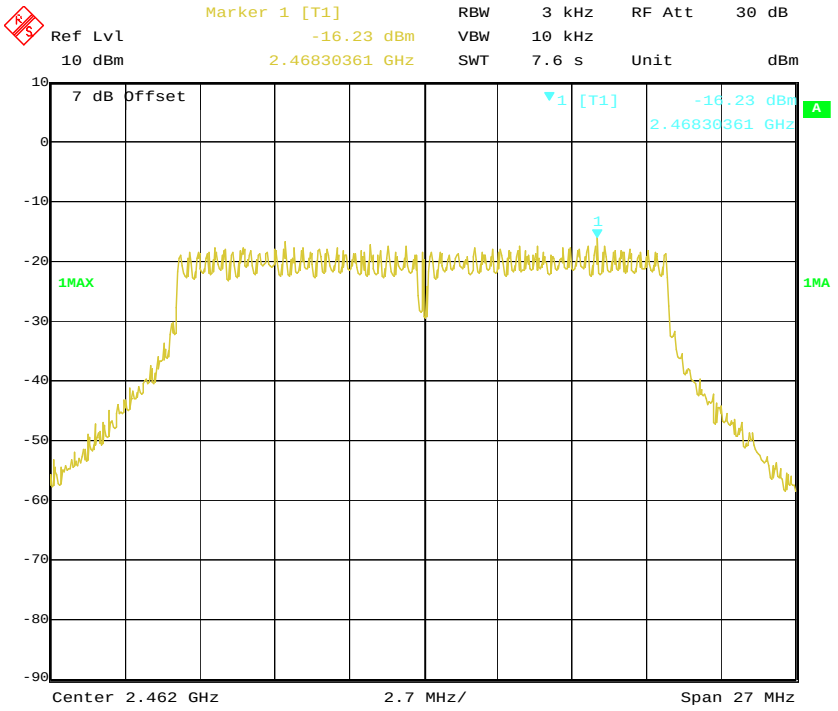
Power Spectral Density, 802.11n-HT20 High Channel



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