

**ELECTRO MAGNETIC TEST, INC.**1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

**FCC PART 15, SUBPART C
TEST REPORT***for**the***HDMI DONGLE****MODEL: REV. E4**

Prepared for

**ALWAYS INNOVATING, INC.
1245 BRODERICK STREET
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(650) 965-4000****DATE: MARCH 5, 2013**

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	27	105	5	3	2	2	144

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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Electro Magnetic Test, Inc., which is an independent testing and consulting firm. The test report is based on testing performed Electro Magnetic Test, Inc. personnel according to the measurement procedure described in the test specification given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced in any form unless done so in full.

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Federal Government.

The measurement data and conclusions contained in this test report are deemed satisfactory evidence of compliance with Industry Canada Interference-Causing Equipment Standard ICES-003, Issue 5, August 2012.

Electro Magnetic Test, Inc. is recognized by the following agencies for performing EMI/EMC testing:

COUNTRY	AGENCY	IDENTIFYING #
USA	Federal Communications Commission (FCC) (EMT's test site is recognized by the FCC)	Registration Number: 90576
USA, Canada, Taiwan, Australia/New Zealand, European Community	National Voluntary Lab Accreditation Program (NVLAP) (EMT is accredited by NVLAP. A copy of the NVLAP Scope Of Accreditation is available upon request.)	Lab Code: 200147-0
Canada	Industry Canada	File No.: IC 2804
Japan	Voluntary Control Council For Interference (VCCI)	A-0018
	Open Field Test Site "A"	-
	Mains Conducted Emissions Test Site "A"	-
	Telecom Conducted Emissions Test Site "A"	-
	3 Meter Semi-Anechoic Chamber Site "E"	-
	3 Meter Semi-Anechoic Chamber Site "E" (1GHz – 6GHz)	-
	Mains Conducted Emissions Test Site "E"	-
	Telecom Conducted Emissions Test Site "E"	-
Korea	Ministry of Information and Communication's Radio Research Laboratory (RRL) under the Asia Pacific Economic Cooperation (APEC) Mutual Recognition Arrangement (A copy of the Scope Of Accreditation is available upon request)	US0036
Taiwan	Bureau Of Standards, Metrology and Inspection (BSMI)	Reference Number: SL2-IN-E-1024
Australia / New Zealand	Australian Communications Authority (AUSTEL)	*

*These agencies do not issue an identifying number to test labs.

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GENERAL REPORT SUMMARY (CONTINUED)

Device Tested: HDMI Dongle
Model: Rev. E4
S/N: N/A

Product Description: The HDMI Dongle is a portable set-top box. The dongle should be plugged in the HDMI port of a TV. The USB port should only be connected to provide power to the unit. A DC-to-USB adapter should be used (not provided) or an available USB port of the TV can also be used. The device then offers an Android experience on the TV.

Modifications: The EUT was modified in order to meet the specifications listed in Appendix D.

Manufacturer: Always Innovating, Inc.
1245 Broderick Street
San Francisco, CA 94115

Test Date(s): January 16, 22, February 13, 27, 2013

Test Specifications: EMI requirements
Limits: FCC Title 47, Part 15 Subpart C
Test Procedure: ANSI C63.4: 2009

Test Deviations: The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	REMARKS	RESULTS
7.1	Radiated Emissions	Radiated	PASS
7.2	Conducted Emissions	Conducted	PASS
7.3	Occupied Bandwidth	Conducted	PASS
7.4	Maximum Peak Output Power	Conducted	PASS
7.5	Maximum Power Spectral Density	Conducted	PASS
7.6	Band Edge	Conducted	PASS
7.7	Conducted Spurious Emissions	Conducted	PASS
7.8	Antenna Requirement	N/A	N/A


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TECHNICAL DESCRIPTION OF THE EUT

Manufacturer:	Always Innovating, Inc.		
Manufacturer Address:	1245 Broderick Street, San Francisco, CA, 94115		
EUT Name:	HDMI Dongle		
Model No:	REV. E4		
Operation frequency:	2412 MHz to 2467 MHz		
Channel Number:	12		
Modulation Technology:	802.11b: DSSS – (1, 2, 5.5, 11) Mbps 802.11g: OFDM, DSSS - (6, 9, 12, 18, 24, 36, 48, 54) Mbps 802.11n: OFDM DSSS - MSC0, MSC1, MSC2, MSC3, MSC4, MSC5, MSC6, MSC7 (7.2, 14.4, 21.7, 28.9, 43.3, 57.8, 65, 72.2) Mbps		
Antenna Type:	Internal Antenna		
Antenna Gain:			
Serial No:	N/A		
Power Supply Range:	5.0V DC		
Power Supply:	5.0V DC		
Power Cord:	Micro USB Cable		
Maximum Output Power:	802.11b: 4.32 dBm 802.11g: 5.82 dBm 802.11n: 5.22 dBm		
Description of Channel:			
802.11b/802.11g/802.11n			
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	12	2467

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1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the HDMI Dongle Model: REV. E4. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2009. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the specification limits defined in FCC Title 47, Part 15, Subpart C.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Electro Magnetic Test, Inc., 1547 Plymouth Street, Mountain View, California, 94043.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The measurement results in this report and the calibration of the test equipment are traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Always Innovating, Inc.

Gregoire Gentil	Founder
-----------------	---------

Electro Magnetic Test, Inc.

George Hsu	Test Technician
Joe Vang	Test Technician
Mario Garcia	Test Technician
Kevin Bothmann	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on January 15, 2013.

2.5 Disposition of the Test Sample

The test sample has not yet been returned to Always Innovating, Inc..

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2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
CISPR	International Special Committee On Radio Interference
FCC	Federal Communications Commission

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3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
FCC Title 47, Part 15, Subpart C	FCC Rules - Radio frequency devices (including digital devices).
ANSI C63.4 2009	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.
FCC Publication KDB558074	Measurement of Digital Transmission Systems Operating Under Section 15.247, March 23, 2005

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4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration – EMI

The HDMI Dongle was connected to an LCD TV and USB power adapter through the HDMI Dongle's HDMI Connector, and Micro USB ports, respectively. The remote was placed on the edge of the table opposite the LCD TV. The unit was started and was running Android 4.x. The LCD TV displayed the output of the EUT, continuously. The Dongle was transmitting on the modes as noted on the data sheets.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The cables were moved to maximize the emissions. The final conducted as well as radiated data was taken in this mode of operation. All initial investigations were performed with the EMI receiver in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix B.

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4.1.1 Cable Construction and Termination

Cables #1

This is a 6 foot foil shielded USB cable connecting the EUT to a USB power supply. It has a micro USB metallic connector at the EUT end, and a “Type A” metallic USB connector at the USB power supply end. The shield of the cable was grounded to the chassis via the connectors.

Cable #2

This is a 4.5 ft. unshielded power cable connecting the LCD TV to its AC power supply. It has a 1/4 inch round power connector on the TV end and is hardwired into the AC power supply.

Cable #3

This is a 6 foot unshielded power cable connecting the LCD TV’s AC power supply to the AC outlet.

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5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT TYPE	MANUFACTURER	MODEL	SERIAL NUMBER	FCC ID
HDMI DONGLE (EUT)	ALWAYS INNOVATING, INC.	REV E4	N/A	N/A
REMOTE	ALWAYS INNOVATING, INC.	REV E5	N/A	N/A
LCD TV	LG	M2342D	205MXQA3W796	BEJM2352D
TV POWER ADAPTER	LG	P5AB-L101A	LC#LT6271040100 06(H)	N/A
USB POWER ADAPTER	SAMSUNG	ETAOU8OJBE	SC2BC23FS1A-E	N/A


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5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
Spectrum Analyzer	Hewlett Packard	8566B	3013A07296	July 31, 2012	1 Year
RF Preselector	Hewlett Packard	85685A	3010A01157	July 31, 2012	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650	2521A00584	July 31, 2012	1 Year
Radiated EMI Software	Sector Design	N/A	Ver.1.4.6	N/A	N/A
Conducted EMI Software	Hewlett Packard	85869PC	Ver. A.02.03	N/A	N/A
Preamplifier	Com Power	PA-102	1482	March 2, 2013	1 Year
RF Attenuator	Mini-Circuits	CAT-10	Asset #1000	December 8, 2012	1 Year
LISN	Com Power	LI-200	12012	September 21, 2012	1 Year
LISN	Com Power	LI-200	12214	September 21, 2012	1 Year
LISN	Com Power	LI-200	1767	September 21, 2012	1 Year
LISN	Com Power	LI-200	1768	September 21, 2012	1 Year
Biconical Antenna	Com Power	AB-100	01557	June 16, 2012	1 Year
Log Periodic Antenna	Com Power	AL-100	16001	June 3, 2012	1 Year
Horn Antenna	Com Power	AHA-118	711054	N/A	N/A
Antenna Mast	Com Power	AM-400	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Dell, Inc.	DHS	DNSV641	N/A	N/A
Printer	Hewlett Packard	C8124A	CN39B2234T	N/A	N/A
Plotter	Hewlett Packard	7470A	2308A96499	N/A	N/A


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5.2 EMI Test Equipment (Continued)

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. CYCLE
EMI Receiver	Rohde & Schwarz	ESU40	100127	December 22, 2012	1 Year
EMI Test Software	Rohde & Schwarz	EMC32	V8.40.0	N/A	N/A
Passive Loop Antenna (9 KHz – 30 MHz)	ETS-Lindgren	6512	00128210	October 28, 2011	2 Year
BiConiLog Antenna (30 MHz – 1 GHz)	ETS-Lindgren	3142D	00102183	June 21, 2012	1 Year
Horn Antenna (1 GHz – 18 GHz)	ETS-Lindgren	3117	00109294	June 16, 2012	1 Year
Preamplifier (1 GHz – 18 GHz)	Rohde & Schwarz	TS-PR18	100056	October 31, 2012	1 Year
Horn Antenna (18 GHz – 26.5 GHz)	ETS-Lindgren	3160-09	102646	June 20, 2012	1 Year
Preamplifier (18 GHz – 26.5 GHz)	Rohde & Schwarz	TS-PR26	100034	June 20, 2012	1 Year
Horn Antenna (26.5 GHz – 40 GHz)	ETS-Lindgren	3160-10	109153	June 21, 2012	1 Year
Preamplifier (26.5 GHz – 40 GHz)	Rohde & Schwarz	TS-PR40	100030	June 20, 2012	1 Year
Antenna Mast	ETS-Lindgren	2175	00095727	N/A	N/A
Turntable	ETS-Lindgren	2187-3.0	00118231	N/A	N/A
Computer	Acer	Aspire 8930	85100050123	N/A	N/A
Multi-Function Controller	ETS-Lindgren	2090	00102270	N/A	N/A

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6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to the table below and section 7 of this report for the details of which sites were used for testing. All sites are located at 1547 Plymouth Street, Mountain View, California 94043.

Site Used For Test	Site Description
	Open Field Test Site "A"
X	Mains Conducted Emissions Test Site "A"
	Telecom Conducted Emissions Test Site "A"
X	3 Meter Semi-Anechoic Chamber Site "E"
	Mains Conducted Emissions Test Site "E"
	Telecom Conducted Emissions Test Site "E"

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

6.3 Facility Environmental Characteristics

All tests were performed in a climate controlled building. The temperature was 22° C, humidity 45%, and barometric pressure 102.6 kPa.


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7. TEST PROCEDURES

7.1 Radiated Emissions Test – Semi-Anechoic Chamber

7.1.1 Limit (FCC PART 15 Section 15.209(a)(1))

Frequency of Emission (MHz)	Field Strength		Measurement Distance (Meters)
	$\mu\text{V/m}$	$\text{dB}\mu\text{V/m}$	
0.009-0.49	2400/F(kHz)		300
0.49-1.705	24000/F(kHz)		30
1.705-30	30		30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

7.1.2 Test Procedure

The Rohde & Schwarz ESU40 EMI receiver was used as a measuring meter while under software control by the Rohde & Schwarz EMC32 software. To increase the sensitivity of the instrument, the built in preamplifier was used from 9 KHz to 1 GHz and an external preamplifier was used from 1 GHz to 26.5 GHz. The EMI receiver was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the EMI receiver records the highest measured reading over all the sweeps. The built in quasi-peak or average detector was used only for those readings which are marked accordingly on the data sheets. The effective measurement bandwidth used for the radiated emissions test was 100 kHz from 9 kHz to to 26.5 GHz.

The Loop Antenna, Broadband BiConiLog and horn antennas were used as transducers during the measurement. The Loop antenna was used from 9 KHz to 30 MHz, the BiConiLog antenna was used from 30 MHz to 1000 MHz and horn antennas were used from 1GHz – 26.5 GHz. The frequency spans were wide (9 kHz to 150 kHz, 150 kHz to 30 MHz, 30 MHz to 88 MHz, 88 MHz to 216 MHz, 216 to 300 MHz, 300 MHz to 1 GHz, 1 GHz to 18 GHz and 18 GHz to 26.5 GHz) during preliminary investigations. The final data was taken with a frequency span of 1 MHz. Furthermore, the frequency span was reduced during the preliminary investigations as deemed necessary.

The 5 meter semi-anechoic chamber of Electro Magnetic Test, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2009. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission)

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configuration of the EUT. The EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength).

The presence of non EUT signals was verified by turning the EUT off. In case a non EUT signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the other signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance from 9 kHz to 26.5 GHz. to obtain final test data.

Calculation Of Radiated Emission Test Data:

Amplitude - Gain + Antenna Factor + Cable Loss = Corrected Amplitude

Corrected Amplitude - Limit = Margin


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7.2 Conducted Emissions Test – Mains Ports

7.2.1 Limit (FCC PART 15 Section 15.207(a))

Frequency of Emission (MHz)	Conducted Limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

*Note: Decreases with the logarithm of the frequency

7.2.2 Test Procedure

The HP 8566B spectrum analyzer was used as a measuring meter along with the HP 85650A quasi-peak adapter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak detector was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the spectrum analyzer offset was adjusted accordingly to read the actual data measured. The LISN output was read by the HP 8566B spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for the conducted emissions test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2009. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The initial test data was taken in manual mode while scanning the frequency ranges of 0.15 MHz to 1.6 MHz, 1.6 MHz to 5 MHz and 5 MHz to 30 MHz. The conducted emissions from the EUT were maximized for operating mode as well as cable and peripheral placement. Once a predominant frequency (within 12 dB of the limit) was found, it was more closely examined with the spectrum analyzer span adjusted to 1 MHz.

The final data was collected under program control by the HP 85869PC software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave.

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7.3 Occupied Bandwidth

7.3.1 Limit (FCC PART 15 Section 15.247(a)(2))

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

Limit
6 dB Bandwidth $\geq$ 500 kHz

7.3.2 Test Procedure

Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator, set the Spectrum Analyzer as below:

RBW: (1% to 5%) of 6db Bandwidth, not exceeding 100 Khz

VBW: $\geq 3 \times$ RBW

Detector: Peak

Trace Mode: Max Hold

- (1) When the trace is completed, mark the peak value
- (2) Measure the 6db bandwidth using Xdb down function, If this does not encompass the full bandwidth, then "Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission"

7.3.3 Test Result

The EUT meets the requirements. Please see the datasheets in Appendix A for the measurement results.

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Maximum Peak Output Power**7.4.1 Limit (FCC PART 15 Section 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.

Limit
Maximum Peak Output Power (Digital Modulation) $\leq$ 1 Watt or 30 dBm

7.4.2 Test Procedure**If (RBW $\geq$ DTS BW)**

Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator and set the Spectrum Analyzer as below:

RBW $\geq$ DTS bandwidth

VBW: $\geq 3 \times$ RBW

Detector: Peak

Trace Mode: Max Hold

(1) Set Span to greater than RBW

(2) Use peak marker function

Alternate Procedure (Used when ONLY when maximum RBW of spectrum analyzer is less than DTS bandwidth)

Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator and set the Spectrum Analyzer as below:

RBW = Maximum available (at least 1 MHz)

VBW: $\geq 3 \times$ RBW or Maximum Available Setting (Must be $\geq$ RBW)

Detector: Peak

Trace Mode: Max Hold

(1) Set Span to encompass bandwidth

(2) Use spectrum analyzer's channel power measurement

7.4.3 Test Result

The EUT meets the requirements. Please see the datasheets in Appendix A for the measurement results.

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7.5 Maximum Power Spectral Density

7.5.1 Limit (FCC PART 15 Section 15.247(e))

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

Limit
8 dBm

7.5.2 Test Procedure

Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator and set the Spectrum Analyzer as below:

RBW $\geq$ 3 kHz.

VBW $\geq$ 3 x RBW

Detector: Peak

Trace Mode: Max Hold

- (1) Set center frequency to DTS channel center frequency
- (2) Set span to 1.5 times DTS channel bandwidth
- (3) Use peak marker to determine maximum amplitude level
- (4) If measured value exceeds limit, reduce RBW (no less than 3 KHz) and repeat

Note: The upper curve in the measurements in this report were done at RBW = 100kHz and VBW = 300kHz

7.5.3 Test Result

The EUT meets the requirements. Please see the datasheets in Appendix A for the measurement results.

**ELECTRO MAGNETIC TEST, INC.**

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7.6 Bandedge

7.6.1 Limit (FCC PART 15 Section 15.247(d))

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 Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

Limit
20db Below PSD Measurements For Digital Modulation

7.6.2 Test Procedure

(1) Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator, set the Spectrum Analyzer as below:

RBW: 100 KHz

VBW: ≥ 300 KHz

Detector: Peak

Trace Mode: Max Hold

- (1) Set Frequency Span to 100 MHz
- (2) Move center frequency away from fundamental frequency, while still showing the fundamental.
- (3) Set marker to peak
- (4) Set display line to 20db below the marker
- (5) Place marker at appropriate band edge.
- (6) Place markers at highest emissions beyond the band edges.



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7.6.3

Test Result

The EUT meets the requirements. Please see the datasheets in Appendix A for the measurement results.

**ELECTRO MAGNETIC TEST, INC.**

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7.7 Conducted Spurious Emissions

7.7.1 Limit (FCC PART 15 Section 15.247(d))

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.

Limit
20db Below PSD Measurements For Digital Modulation

7.7.2 Test Procedure

(1) Connect the antenna port of the EUT to the spectrum analyzer via an Attenuator, set the Spectrum Analyzer as below:

RBW: 100 KHz

VBW: $\geq$ 300 KHz

Detector: Peak

Trace Mode: Max Hold

- (1) Set start frequency to DTS channel edge Frequency
- (2) Set stop frequency to encompass spectrum to be examined.
- (3) Mark Fundamental
- (4) Set display line to 20dB below PSD.
- (5) Mark 3 highest emissions relative to the limit.

7.7.3 Test Result

The EUT meets the requirements. Please see the datasheets in Appendix A for the measurement results.

**ELECTRO MAGNETIC TEST, INC.**1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

7.8 Antenna Requirement

7.8.1 Requirement (FCC PART 15 SECTION 15.203,15.247(b)(4))

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.

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

7.11.2 Test Result

The antenna is integrated on the main PCB with no consideration for replacement on the HDMI Dongle.



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8. CONCLUSIONS / COMPLIANCE STATEMENT

Based upon the results contained in this report, Electro Magnetic Test, Inc. has determined that the HDMI Dongle, Model: REV. E4 meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C.



ELECTRO MAGNETIC TEST, INC.

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APPENDIX A

RADIATED AND CONDUCTION DATA SHEETS

**ELECTRO MAGNETIC TEST, INC.**1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Radiated Emissions

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11 b/g/n	Test Date:	1/16/13
Test Engineer:	George Hsu	Measurement:	9 KHz to 30 MHz

The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators were attenuated more than 20 dB below the permissible value


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EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/16/13
Test Engineer:	George Hsu	Measurement:	30 MHz to 1 GHz

Peak Measurements:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.27	37.5	119.0	V	332.0	16.6	2.50	40.00
40.71	46.5	110.0	V	0.0	11.3	-6.50	40.00
188.13	36.7	166.0	H	157.0	11.9	6.80	43.50
308.76	42.2	100.0	H	179.0	15.8	3.80	46.00
525.45	43.8	100.0	V	167.0	21.0	2.20	46.00
656.07	44.2	100.0	H	195.0	23.9	1.80	46.00
736.77	45.9	124.0	V	178.0	24.7	0.10	46.00
982.74	45.9	123.0	H	187.0	28.2	8.10	54.00

Quasipeak Measurements:

Frequency (MHz)	Quasipeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
30.27	33.1	119.0	V	332.0	16.6	6.90	40.00
40.71	37.0	110.0	V	0.0	11.3	3.00	40.00
188.13	32.8	166.0	H	157.0	11.9	10.70	43.50
308.76	39.5	100.0	H	179.0	15.8	6.50	46.00
525.45	39.4	100.0	V	167.0	21.0	6.60	46.00
656.07	33.6	100.0	H	195.0	23.9	12.40	46.00
736.77	38.6	124.0	V	178.0	24.7	7.40	46.00
982.74	39.3	123.0	H	187.0	28.2	14.70	54.00


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11b	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4823.626667	49.5	154	H	119	7.8	24.5	74
4823.626667	50.1	123	V	180	7.8	23.9	74
7236.88	54.8	100	H	172	12.2	19.2	74
7237.386667	49.3	169	V	86	12.2	24.7	74
11901.25333	53.6	259	V	211	20.4	20.4	74
11914.93333	53.8	244	H	280	20.5	20.2	74
15770.16	57.5	334	V	165	26.2	16.5	74
15777.76	57.8	119	H	158	26.2	16.2	74
17254.18667	57.8	400	H	74	25.9	16.2	74
17298.77333	57.9	341	V	337	26.1	16.1	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4823.626667	37.8	154	H	119	7.8	16.2	54
4823.626667	38.7	123	V	180	7.8	15.3	54
7236.88	42.5	100	H	172	12.2	11.5	54
7237.386667	36	169	V	86	12.2	18	54
11901.25333	40.2	259	V	211	20.4	13.8	54
11914.93333	40.4	244	H	280	20.5	13.6	54
15770.16	44.6	334	V	165	26.2	9.4	54
15777.76	44.6	119	H	158	26.2	9.4	54
17254.18667	44.6	400	H	74	25.9	9.4	54
17298.77333	44.6	341	V	337	26.1	9.4	54

802.11b, Channel 1, 2412 MHz, 1 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11b	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4823.626667	51.5	114	H	199	7.8	22.5	74
7234.853333	55.4	100	H	173	12.2	18.6	74
7237.893333	50.4	100	V	164	12.2	23.6	74
8493.413333	47.4	341	V	158	13.5	26.6	74
8526.346667	48.5	100	H	320	13.6	25.5	74
13920.82667	54	145	H	61	22	20	74
13933.49333	54.6	383	V	150	22.1	19.4	74
15766.10667	57.9	210	V	125	26.3	16.1	74
15778.77333	58.1	337	H	235	26.1	15.9	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4823.626667	34.8	114	H	199	7.8	19.2	54
7234.853333	37.4	100	H	173	12.2	16.6	54
7237.893333	35	100	V	164	12.2	19	54
8493.413333	34.6	341	V	158	13.5	19.4	54
8526.346667	34.7	100	H	320	13.6	19.3	54
13920.82667	40.9	145	H	61	22	13.1	54
13933.49333	41.3	383	V	150	22.1	12.7	54
15766.10667	44.6	210	V	125	26.3	9.4	54
15778.77333	44.7	337	H	235	26.1	9.3	54

802.11b, Channel 1, 2412 MHz, 11 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11b	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4873.786667	54.1	100	H	198	8	19.9	74
4873.786667	47.6	100	V	255	8	26.4	74
7310.853333	53.9	100	H	177	12.3	20.1	74
7311.36	49.5	167	V	203	12.3	24.5	74
12694.69333	53.5	137	V	106	20.8	20.5	74
12718	52.9	220	H	86	20.8	21.1	74
15782.32	57.8	100	V	355	26.1	16.2	74
15783.84	58.4	365	H	292	26.1	15.6	74

Average Measurement

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4873.786667	43.9	100	H	198	8	10.1	54
4873.786667	35.3	100	V	255	8	18.7	54
7310.853333	39.5	100	H	177	12.3	14.5	54
7311.36	35.6	167	V	203	12.3	18.4	54
12694.69333	40	137	V	106	20.8	14	54
12718	39.8	220	H	86	20.8	14.2	54
15782.32	44.6	100	V	355	26.1	9.4	54
15783.84	44.6	365	H	292	26.1	9.4	54

802.11b, Channel 6, 2437 MHz, 1 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11b	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4873.786667	51.3	117	V	151	8	22.7	74
7310.346667	53.4	110	H	190	12.3	20.6	74
7311.866667	51	200	V	174	12.3	23	74
13396.933333	53.9	400	H	269	21.8	20.1	74
13404.533333	53.8	153	V	112	21.8	20.2	74
15768.64	58.3	119	V	112	26.3	15.7	74
15774.213333	59	233	V	213	26.2	15	74

Average Measurement

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4873.786667	34.5	117	V	151	8	19.5	54
7310.346667	36.4	110	H	190	12.3	17.6	54
7311.866667	35.1	200	V	174	12.3	18.9	54
13396.933333	40.5	400	H	269	21.8	13.5	54
13404.533333	40.5	153	V	112	21.8	13.5	54
15768.64	44.8	119	V	112	26.3	9.2	54
15774.213333	44.6	233	V	213	26.2	9.4	54

802.11b, Channel 6, 2437 MHz, 11 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11b	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4933.573333	53.1	150	H	211	8.4	20.9	74
4933.573333	49.8	100	V	328	8.4	24.2	74
7402.053333	49.8	100	V	201	12.3	24.2	74
7402.56	54.6	159	H	184	12.3	19.4	74
10119.81333	49.5	383	H	112	16.6	24.5	74
10183.65333	49.7	194	V	167	16.6	24.3	74
15753.44	57.6	400	V	263	26.3	16.4	74
15762.05333	57.8	114	H	352	26.3	16.2	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4933.573333	41.8	150	H	211	8.4	12.2	54
4933.573333	37.7	100	V	328	8.4	16.3	54
7402.053333	36.6	100	V	201	12.3	17.4	54
7402.56	42.3	159	H	184	12.3	11.7	54
10119.81333	36	383	H	112	16.6	18	54
10183.65333	36.3	194	V	167	16.6	17.7	54
15753.44	44.5	400	V	263	26.3	9.5	54
15762.05333	44.5	114	H	352	26.3	9.5	54

802.11b, Channel 12, 2467 MHz, 1 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11b	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4934.08	50.4	100	V	162	8.4	23.6	74
4934.08	56.7	100	H	192	8.4	17.3	74
7400.533333	55.5	137	H	166	12.3	18.5	74
7403.573333	50	142	V	203	12.3	24	74
12922.18667	53.8	119	H	256	21.5	20.2	74
12937.89333	53.7	177	V	278	21.5	20.3	74
15776.74667	58.4	286	H	342	26.2	15.6	74
15777.25333	58.4	344	V	316	26.2	15.6	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
4934.08	34.3	100	V	162	8.4	19.7	54
4934.08	38.2	100	H	192	8.4	15.8	54
7400.533333	37.8	137	H	166	12.3	16.2	54
7403.573333	35.8	142	V	203	12.3	18.2	54
12922.18667	40.3	119	H	256	21.5	13.7	54
12937.89333	40.7	177	V	278	21.5	13.3	54
15776.74667	44.5	286	H	342	26.2	9.5	54
15777.25333	44.6	344	V	316	26.2	9.4	54

802.11b, Channel 12, 2467 MHz, 11 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7234.853333	55.4	115	H	199	12.2	18.6	74
7239.92	51.2	100	V	165	12.2	22.8	74
11868.82667	53.5	395	V	-2	20.2	20.5	74
11872.88	53.3	155	H	216	20.2	20.7	74
15772.18667	57.7	164	H	185	26.2	16.3	74
15773.2	57.6	129	V	233	26.2	16.4	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7234.853333	34.3	115	H	199	12.2	19.7	54
7239.92	34.1	100	V	165	12.2	19.9	54
11868.82667	39.7	395	V	-2	20.2	14.3	54
11872.88	39.8	155	H	216	20.2	14.2	54
15772.18667	44.5	164	H	185	26.2	9.5	54
15773.2	44.5	129	V	233	26.2	9.5	54

802.11g, Channel 1, 2412 MHz, 6 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7233.333333	51.8	100	H	137	12.2	22.2	74
11037.89333	51.2	350	H	7	18.5	22.8	74
11044.98667	51.4	200	V	195	18.5	22.6	74
15742.8	58.1	359	H	38	26.1	15.9	74
15791.94667	58.4	400	V	275	26	15.6	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7233.333333	34	100	H	137	12.2	20	54
11037.89333	37.8	350	H	7	18.5	16.2	54
11044.98667	37.8	200	V	195	18.5	16.2	54
15742.8	44.5	359	H	38	26.1	9.5	54
15791.94667	44.5	400	V	275	26	9.5	54

802.11g, Channel 1, 2412 MHz, 54 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7310.853333	53.5	147	H	177	12.3	20.5	74
11820.69333	52.9	100	V	348	19.9	21.1	74
11847.54667	52.9	242	H	98	20.1	21.1	74
15752.93333	58	173	V	163	26.3	16	74
15765.09333	57.9	119	H	121	26.3	16.1	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7310.853333	34.8	147	H	177	12.3	19.2	54
11820.69333	39.4	100	V	348	19.9	14.6	54
11847.54667	39.6	242	H	98	20.1	14.4	54
15752.93333	44.6	173	V	163	26.3	9.4	54
15765.09333	44.8	119	H	121	26.3	9.2	54

802.11g, Channel 6, 2437 MHz, 6 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
12067.94667	53.1	319	H	6	20.6	20.9	74
12089.73333	53.5	259	V	191	20.5	20.5	74
16093.92	57.5	341	V	248	25.8	16.5	74
16104.05333	57.9	245	H	355	25.8	16.1	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
12067.94667	39.9	319	H	6	20.6	14.1	54
12089.73333	40	259	V	191	20.5	14	54
16093.92	44.3	341	V	248	25.8	9.7	54
16104.05333	44.5	245	H	355	25.8	9.5	54

802.11g, Channel 6, 2437 MHz, 54 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7403.573333	54.5	141	H	199	12.3	19.5	74
7403.573333	48.3	252	V	194	12.3	25.7	74
11647.92	51.5	149	V	305	19.4	22.5	74
11652.98667	51.9	387	H	7	19.4	22.1	74
15779.28	57.7	332	H	354	26.1	16.3	74
15781.81333	58	349	V	7	26.1	16	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7403.573333	35.6	141	H	199	12.3	18.4	54
7403.573333	35.1	252	V	194	12.3	18.9	54
11647.92	38.3	149	V	305	19.4	15.7	54
11652.98667	38.4	387	H	7	19.4	15.6	54
15779.28	44.7	332	H	354	26.1	9.3	54
15781.81333	44.6	349	V	7	26.1	9.4	54

802.11g, Channel 12, 2467 MHz, 6 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11g	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7399.520000	49.0	141.0	H	355.0	12.3	25.00	74.00
7399.520000	49.5	287.0	V	134.0	12.3	24.50	74.00
12290.373333	53.2	400.0	H	258.0	20.4	20.80	74.00
12298.986667	53.2	200.0	V	48.0	20.4	20.80	74.00
15786.373333	57.8	390.0	H	284.0	26.1	16.20	74.00
15787.893333	57.8	168.0	V	129.0	26.0	16.20	74.00

Average Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7399.520000	35.1	141.0	H	355.0	12.3	18.90	54.00
7399.520000	35.1	287.0	V	134.0	12.3	18.90	54.00
12290.373333	39.8	400.0	H	258.0	20.4	14.20	54.00
12298.986667	39.7	200.0	V	48.0	20.4	14.30	54.00
15786.373333	44.6	390.0	H	284.0	26.1	9.40	54.00
15787.893333	44.5	168.0	V	129.0	26.0	9.50	54.00

802.11g, Channel 12, 2467 MHz, 54 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7232.826667	57.5	114	H	176	12.2	16.5	74
11651.46667	52.8	245	V	273	19.4	21.2	74
11658.05333	52.3	315	H	235	19.4	21.7	74
16098.98667	57.6	250	V	164	25.8	16.4	74
16148.64	57.9	235	H	97	25.7	16.1	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7232.826667	34.7	114	H	176	12.2	19.3	54
11651.46667	38.4	245	V	273	19.4	15.6	54
11658.05333	38.6	315	H	235	19.4	15.4	54
16098.98667	44.5	250	V	164	25.8	9.5	54
16148.64	44.4	235	H	97	25.7	9.6	54

802.11n, Channel 1, 2412 MHz, 7.2 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7231.813333	48.4	100	V	134	12.2	25.6	74
7231.813333	53.5	100	H	177	12.2	20.5	74
10860.05333	51.4	134	V	348	18.2	22.6	74
10875.76	51.3	300	H	71	18.3	22.7	74
15750.4	57.6	182	H	172	26.2	16.4	74
15759.01333	57.9	227	V	329	26.3	16.1	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7231.813333	34	100	V	134	12.2	20	54
7231.813333	34.2	100	H	177	12.2	19.8	54
10860.05333	37.8	134	V	348	18.2	16.2	54
10875.76	37.7	300	H	71	18.3	16.3	54
15750.4	44.6	182	H	172	26.2	9.4	54
15759.01333	44.6	227	V	329	26.3	9.4	54

802.11n, Channel 1, 2412 MHz, 72.2 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7305.28	54.5	100	H	143	12.3	19.5	74
7310.346667	52.5	133	V	176	12.3	21.5	74
10733.38667	51.2	119	V	290	18	22.8	74
10751.62667	50.8	377	H	293	18.1	23.2	74
15782.82667	57.7	133	V	183	26.1	16.3	74
15791.44	57.5	269	H	148	26	16.5	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7305.28	34.4	100	H	143	12.3	19.6	54
7310.346667	34	133	V	176	12.3	20	54
10733.38667	37.7	119	V	290	18	16.3	54
10751.62667	37.6	377	H	293	18.1	16.4	54
15782.82667	44.6	133	V	183	26.1	9.4	54
15791.44	44.4	269	H	148	26	9.6	54

802.11n, Channel 6, 2437 MHz, 7.2 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7315.413333	58.2	152	H	182	12.3	15.8	74
11605.36	51.9	123	V	142	19.3	22.1	74
11609.41333	51.5	128	H	245	19.3	22.5	74
16115.70667	57.6	127	H	236	25.7	16.4	74
16158.77333	57.5	100	V	282	25.6	16.5	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7315.413333	34.1	152	H	182	12.3	19.9	54
11605.36	38.2	123	V	142	19.3	15.8	54
11609.41333	38.2	128	H	245	19.3	15.8	54
16115.70667	44.4	127	H	236	25.7	9.6	54
16158.77333	44.3	100	V	282	25.6	9.7	54

802.11n, Channel 6, 2437 MHz, 72.2 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
11929.12	53.5	300	V	200	20.5	20.5	74
11973.2	53.3	333	H	243	20.5	20.7	74
15784.34667	58.2	164	H	0	26.1	15.8	74
15797.01333	58	164	V	59	25.9	16	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
11929.12	40.1	300	V	200	20.5	13.9	54
11973.2	40	333	H	243	20.5	14	54
15784.34667	44.3	164	H	0	26.1	9.7	54
15797.01333	44.6	164	V	59	25.9	9.4	54

802.11n, Channel 12, 2467 MHz, 7.2 Mbps


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	1 GHz to 18 GHz

Peak Measurement:

Frequency (MHz)	MaxPeak (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7404.08	48.7	200	H	-6	12.3	25.3	74
7421.813333	48.2	130	V	92	12.3	25.8	74
11886.56	53.6	173	V	238	20.3	20.4	74
11896.18667	53.6	247	H	44	20.4	20.4	74
15731.65333	58	146	V	183	26	16	74
15774.72	58	126	H	136	26.2	16	74

Average Measurement:

Frequency (MHz)	Average (dBμV/m)	Height (cm)	Polarization	Azimuth (deg)	Corr. (dB)	Margin (dB)	Limit (dBμV/m)
7404.08	35.1	200	H	-6	12.3	18.9	54
7421.813333	35	130	V	92	12.3	19	54
11886.56	40.1	173	V	238	20.3	14	54
11896.18667	40.2	247	H	44	20.4	13.8	54
15731.65333	44.3	146	V	183	26	9.7	54
15774.72	44.7	126	H	136	26.2	9.3	54

802.11n, Channel 12, 2467 MHz, 72.2 Mbps

**ELECTRO MAGNETIC TEST, INC.**1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

EUT:	HDMI Dongle	Model Name:	REV. E4
Test Mode:	802.11 b/g/n	Test Date:	1/22/13
Test Engineer:	George Hsu	Measurement:	18 GHz to 26.5 GHz

The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators were attenuated more than 20 dB below the permissible value



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Conducted Emissions

hp

ELECTRO MAGNETIC TEST, INC.

21 Feb 2013 16:43:28

EMISSION LEVEL

dBuV

PEAK

AVERAGE

100

80

60

40

20

CISPR 22 CLASS B CONDUCTED
ALWAYS INNOVATING
HDMI DONGLE
M/N: REV E4
BLACK LEAD 128U

CLASS B QP

CLASS B AVG

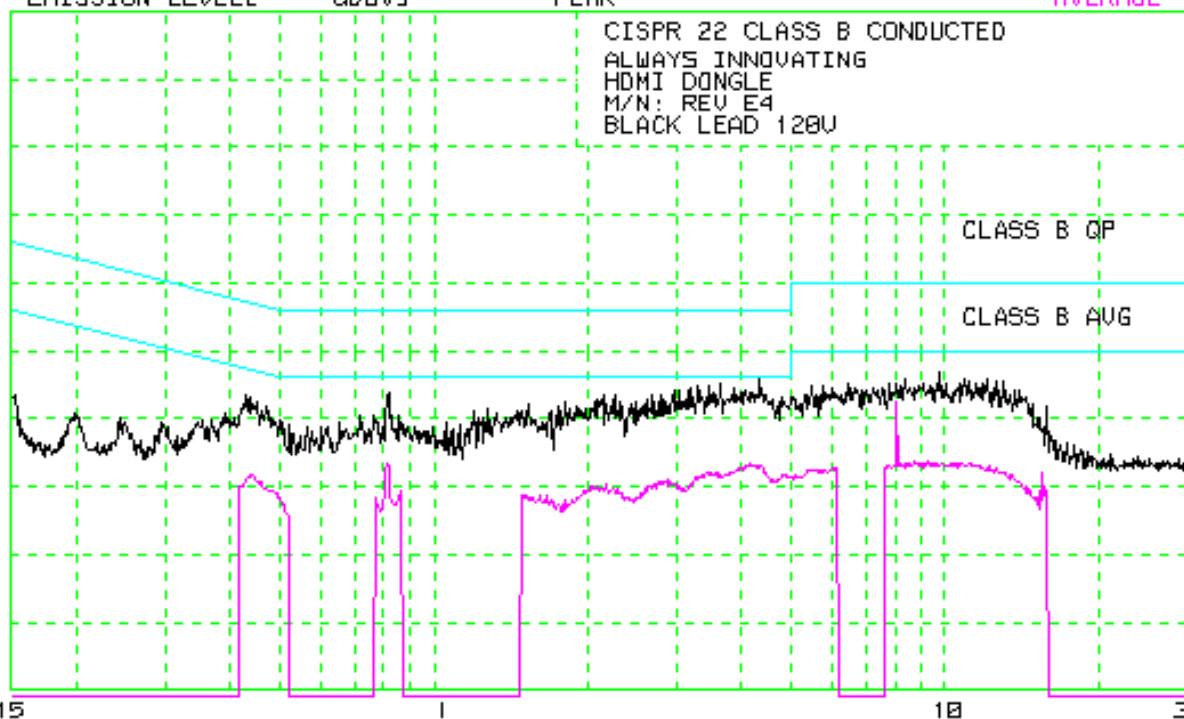
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FREQUENCY [MHz]



1. CONDUCTED WITH PRESELECTOR

1.2 CISPR 22 CLASS B CONDUCTED

=====

58 highest Peaks above -50 dB of Limit Line #2

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBUV)	DELTA
1	4.346	45.9	-.1
2	3.649	45.3	-.7
3	3.283	44.8	-1.2
4	3.443	44.7	-1.3
5	3.18	44.5	-1.5
6	3.868	44.5	-1.5
7	2.953	44.3	-1.7
8	4.057	44.2	-1.8
9	3.032	44	-2.0
10	3.13	44	-2.0
11	3.517	43.9	-2.1
12	3.993	43.9	-2.1
13	4.21	43.9	-2.1
14	.816	43.8	-2.2
15	4.166	43.7	-2.3
16	2.671	43.6	-2.4
17	4.255	43.6	-2.4
18	2.15	43.5	-2.5
19	2.254	43.5	-2.5
20	3.827	43.5	-2.5
21	4.439	43.5	-2.5
22	3.554	43.4	-2.6
23	2.786	43.3	-2.7
24	3.909	43.3	-2.7
25	3.353	43	-3.0
26	4.78	43	-3.0
27	4.582	42.9	-3.1
28	2.093	42.8	-3.2
29	3.747	42.8	-3.2
30	9.768	46.8	-3.2
31	2.231	42.7	-3.3
32	2.615	42.7	-3.3
33	2.48	42.6	-3.4
34	4.831	42.6	-3.4
35	2.071	42.5	-3.5
36	2.116	42.5	-3.5
37	2.315	42.5	-3.5
38	2.846	42.5	-3.5
39	2.985	42.5	-3.5
40	3.081	42.4	-3.6
41	1.815	42.3	-3.7
42	2.757	42.3	-3.7
43	.4301	43.4	-3.8
44	1.532	42.1	-3.9
45	2.172	42.1	-3.9
46	2.441	42.1	-3.9
47	3.407	42.1	-3.9
48	.4393	43	-4.0
49	2.876	41.9	-4.1
50	10.92	45.8	-4.2
51	1.749	41.7	-4.3
52	1.893	41.7	-4.3
53	2.56	41.7	-4.3
54	4.68	41.7	-4.3
55	8.334	45.7	-4.3
56	12.01	45.7	-4.3
57	.4511	42.4	-4.4
58	2.642	41.6	-4.4

1. CONDUCTED WITH PRESELECTOR

1.2 CISPR 22 CLASS B CONDUCTED

=====

Avg Peaks above -50 dB of Limit Line #2

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBUV)	DELTA
1	8.03	42.6	-7.4
2	.8117	33.3	-12.7
3	4.144	33.3	-12.7
4	4.232	33.2	-12.8
5	4.3	33.2	-12.8
6	4.369	33	-13.0
7	3.972	32.8	-13.2
8	4.014	32.8	-13.2
9	3.425	32	-14.0
10	3.461	32	-14.0
11	3.498	32	-14.0
12	3.767	32	-14.0
13	3.573	31.9	-14.1
14	3.611	31.9	-14.1
15	3.353	31.8	-14.2
16	4.857	31.8	-14.2
17	3.231	31.3	-14.7
18	3.266	31.3	-14.7
19	2.861	31	-15.0
20	4.606	30.9	-15.1
21	2.742	30.8	-15.2
22	2.907	30.8	-15.2
23	.4393	31.7	-15.3
24	3.197	30.7	-15.3
25	2.786	30.6	-15.4
26	2.953	30.5	-15.5
27	2.172	30.4	-15.6
28	2.699	30.4	-15.6
29	2.039	30.1	-15.9
30	2.656	30.1	-15.9
31	3.032	30.1	-15.9
32	.4607	30.6	-16.0
33	2.082	30	-16.0
34	3.13	30	-16.0
35	2.138	29.8	-16.2
36	8.648	33.7	-16.3
37	2.243	29.7	-16.3
38	2.278	29.6	-16.4
39	2.601	29.6	-16.4
40	9.215	33.6	-16.4
41	9.872	33.5	-16.5
42	10.19	33.5	-16.5
43	10.69	33.5	-16.5
44	11.21	33.5	-16.5
45	2.207	29.4	-16.6
46	8.557	33.4	-16.6
47	9.07	33.4	-16.6
48	9.363	33.4	-16.6
49	9.462	33.4	-16.6
50	9.665	33.4	-16.6
51	10.3	33.4	-16.6
52	.8603	29.3	-16.7
53	.4857	29.5	-16.7
54	8.159	33.3	-16.7
55	8.334	33.3	-16.7
56	8.467	33.3	-16.7
57	8.88	33.3	-16.7
58	8.975	33.3	-16.7

59	9.563	33.3	-16.7
60	10.46	33.3	-16.7
61	10.57	33.3	-16.7
62	11.39	33.2	-16.8
63	11.51	33.2	-16.8
64	1.965	29.2	-16.8
65	2.546	29	-17.0
66	7.697	33	-17.0
67	12.2	33	-17.0
68	1.5	28.8	-17.2
69	6.034	32.8	-17.2
70	6.131	32.8	-17.2
71	12.01	32.8	-17.2
72	.4211	30.1	-17.3
73	1.607	28.7	-17.3
74	.4166	30.1	-17.4
75	1.516	28.6	-17.4
76	1.658	28.6	-17.4
77	12.53	32.6	-17.4
78	.7698	28.5	-17.5
79	1.532	28.5	-17.5
80	5.515	32.5	-17.5
81	5.815	32.5	-17.5
82	1.556	28.4	-17.6
83	2.48	28.3	-17.7
84	5.342	32.3	-17.7
85	5.663	32.3	-17.7
86	15.4	32.2	-17.8
87	2.377	28.2	-17.8
88	1.873	28.1	-17.9
89	2.428	28.1	-17.9
90	1.703	27.9	-18.1
91	1.805	27.9	-18.1
92	1.676	27.8	-18.2
93	5.094	31.6	-18.4
94	13.56	31.6	-18.4
95	1.749	27.4	-18.6
96	15.65	29.9	-20.1
97	14.53	29.7	-20.3
98	15	28.4	-21.6

hp

ELECTRO MAGNETIC TEST, INC.

21 Feb 2013 16:35:56

EMISSION LEVEL

dBuV

PEAK

AVERAGE

100

80

60

40

20

CISPR 22 CLASS B CONDUCTED
ALWAYS INNOVATING
HDMI DONGLE
M/N: REV E4
WHITE LEAD 128U

CLASS B QP

CLASS B AVG

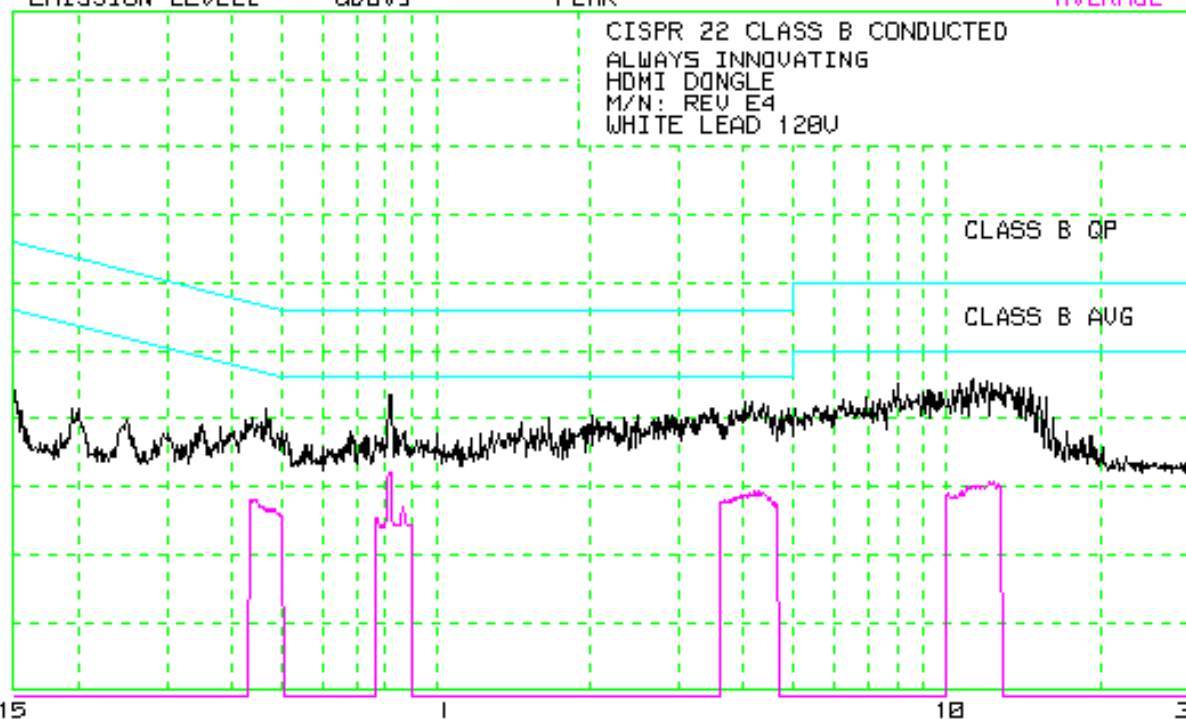
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FREQUENCY [MHz]



1. CONDUCTED WITH PRESELECTOR

1.2 CISPR 22 CLASS B CONDUCTED

=====

58 highest Peaks above -50 dB of Limit Line #2

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBuV)	DELTA
1	.816	43.4	-2.6
2	4.144	42.4	-3.6
3	4.014	42.3	-3.7
4	4.369	42	-4.0
5	11.27	45.9	-4.1
6	4.462	41.8	-4.2
7	3.48	41.5	-4.5
8	11.94	45.5	-4.5
9	4.909	41.3	-4.7
10	3.972	41.2	-4.8
11	4.3	41.2	-4.8
12	4.755	41.2	-4.8
13	12.13	45.2	-4.8
14	8.03	45.1	-4.9
15	10.57	45.1	-4.9
16	11.63	45.1	-4.9
17	12.73	45.1	-4.9
18	3.787	41	-5.0
19	3.868	41	-5.0
20	.4681	41.4	-5.1
21	3.335	40.9	-5.1
22	13.07	44.8	-5.2
23	3.573	40.7	-5.3
24	4.057	40.7	-5.3
25	2.816	40.6	-5.4
26	3.266	40.6	-5.4
27	3.371	40.6	-5.4
28	4.582	40.6	-5.4
29	4.961	40.5	-5.5
30	10.92	44.5	-5.5
31	14.15	44.5	-5.5
32	3.517	40.4	-5.6
33	13.28	44.4	-5.6
34	13.78	44.4	-5.6
35	14.45	44.4	-5.6
36	2.028	40.3	-5.7
37	2.493	40.3	-5.7
38	2.907	40.3	-5.7
39	3.747	40.3	-5.7
40	4.831	40.3	-5.7
41	7.862	44.3	-5.7
42	9.167	44.3	-5.7
43	10.41	44.3	-5.7
44	12.46	44.3	-5.7
45	1.667	40.2	-5.8
46	3.407	40.2	-5.8
47	3.081	40.1	-5.9
48	10.24	44.1	-5.9
49	2.34	40	-6.0
50	2.713	40	-6.0
51	3.114	40	-6.0
52	9.264	44	-6.0
53	12.26	44	-6.0
54	3.163	39.9	-6.1
55	8.975	43.9	-6.1
56	11.39	43.9	-6.1
57	2.071	39.8	-6.2
58	2.861	39.8	-6.2

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ELECTRO MAGNETIC TEST, INC. 21 Feb 2013 16:35:56

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1. CONDUCTED WITH PRESELECTOR

1.2 CISPR 22 CLASS B CONDUCTED

=====

Avg Peaks above -50 dB of Limit Line #2

peak criteria = .1 dB

PEAK#	FREQ (MHz)	(dBUV)	DELTA
1	.816	32	-14.0
2	4.3	29.3	-16.7
3	4.21	29.2	-16.8
4	4.122	29	-17.0
5	4.346	28.9	-17.1
6	4.014	28.7	-17.3
7	3.951	28.6	-17.4
8	3.848	28.3	-17.7
9	4.486	28.3	-17.7
10	3.669	28	-18.0
11	3.728	27.9	-18.1
12	4.582	27.6	-18.4
13	4.631	27.2	-18.8
14	.4416	28	-19.0
15	.8649	27	-19.0
16	.4346	28	-19.1
17	12.26	30.7	-19.3
18	12.01	30.6	-19.4
19	.4883	26.5	-19.6
20	12.59	30.3	-19.7
21	.4806	26.5	-19.8
22	.4756	26.5	-19.9
23	11.45	30.1	-19.9
24	11.63	30.1	-19.9
25	.4681	26.5	-20.0
26	11.15	30	-20.0
27	10.92	29.9	-20.1
28	.7658	25.4	-20.6
29	10.69	29.2	-20.8
30	10.08	29.1	-20.9
31	10.57	28.9	-21.1
32	10.3	28.6	-21.4
33	.8834	24.4	-21.6
34	.7863	24.2	-21.8


ELECTRO MAGNETIC TEST, INC.

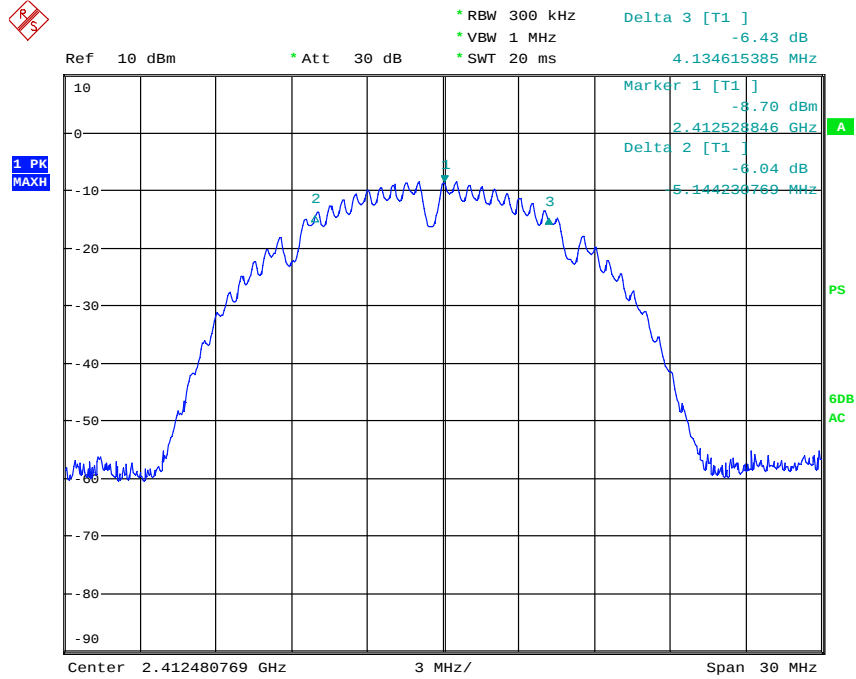
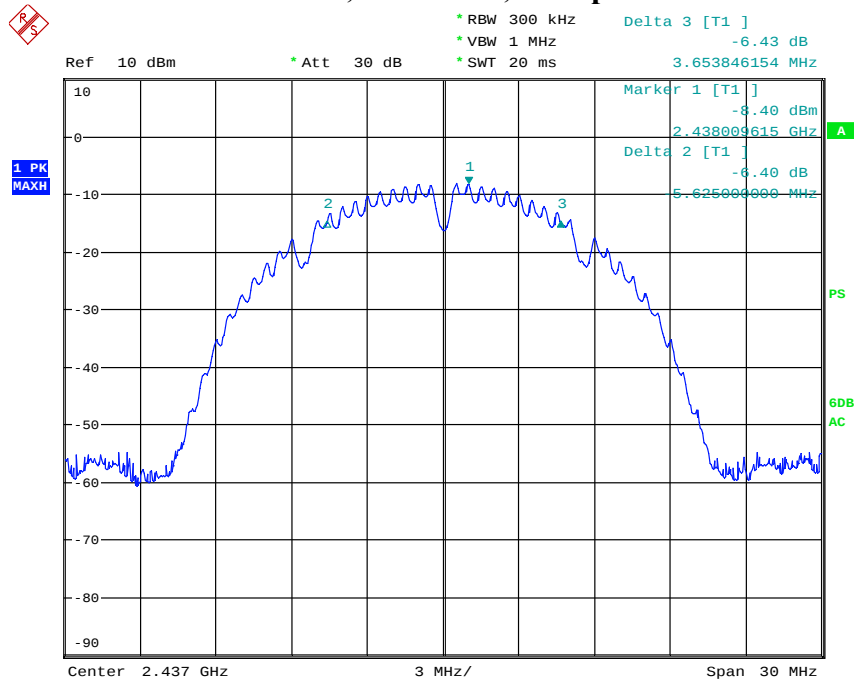
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

6dB Bandwidth Test Data

Company:	Always Innovating, Inc.		Test Date	1/26/13	
EUT Name	HDMI Dongle		Test Engineer	George Hsu	
Model:	REV. E4		Test Result	PASS	
Operating Mode	TX Mode				
Mode	Test CH	Frequency (MHz)	6 dB Bandwidth (KHz)	Limit (KHz)	Conclusion
802.11b 1 Mbps	Low	2412	9279	≥ 500	PASS
	Middle	2437	9279	≥ 500	PASS
	High	2467	9278	≥ 500	PASS
802.11b 11 Mbps	Low	2412	10000	≥ 500	PASS
	Middle	2437	10000	≥ 500	PASS
	High	2467	10673	≥ 500	PASS
802.11g 6 Mbps	Low	2412	16266	≥ 500	PASS
	Middle	2437	16105	≥ 500	PASS
	High	2467	16346	≥ 500	PASS
802.11g 54 Mbps	Low	2412	16266	≥ 500	PASS
	Middle	2437	16346	≥ 500	PASS
	High	2467	16266	≥ 500	PASS
802.11n 7.2 Mbps	Low	2412	17307	≥ 500	PASS
	Middle	2437	17227	≥ 500	PASS
	High	2467	17467	≥ 500	PASS
802.11n 72.2 Mbps	Low	2412	17467	≥ 500	PASS
	Middle	2437	17467	≥ 500	PASS
	High	2467	17147	≥ 500	PASS
Test Equipment: Please refer to section 5.2					

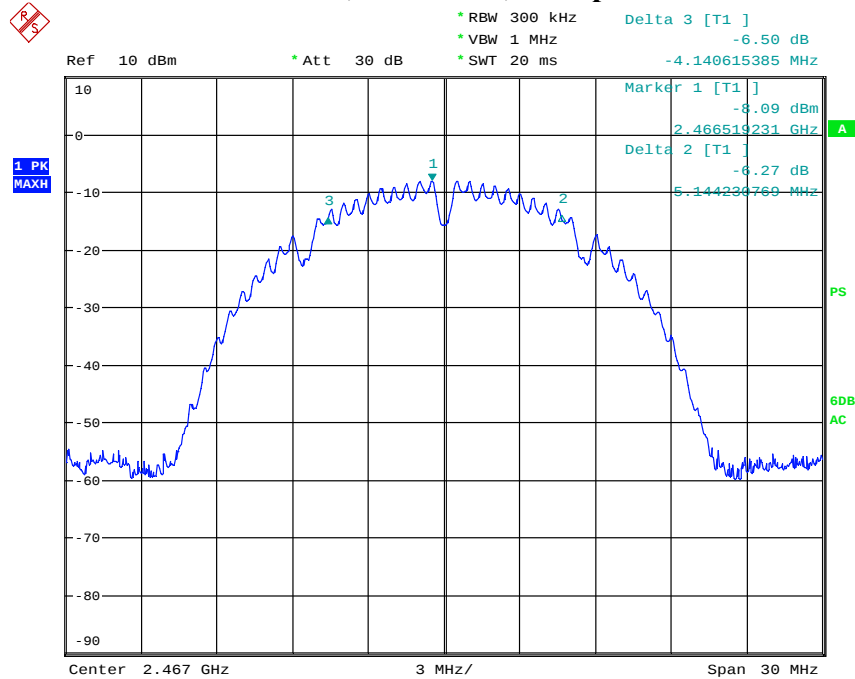
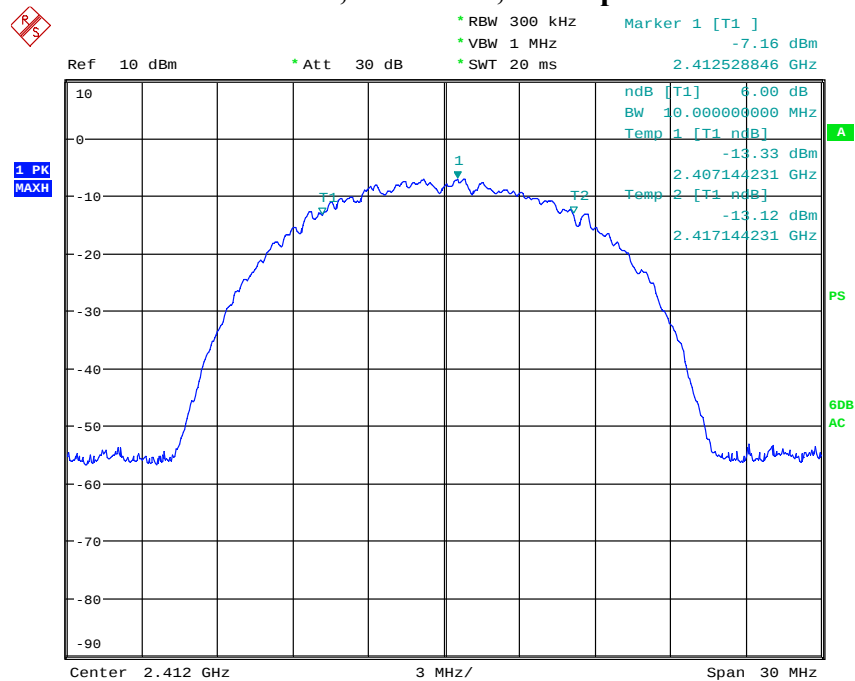
**ELECTRO MAGNETIC TEST, INC.**

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802.11b, 2412 MHz, 1 Mbps**802.11b, 2437 MHz, 1 Mbps**

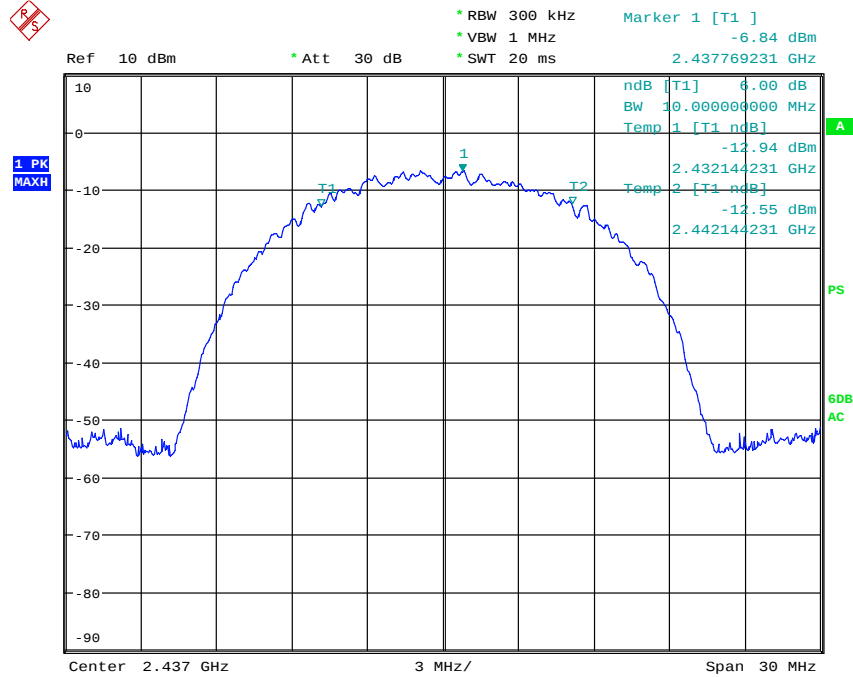
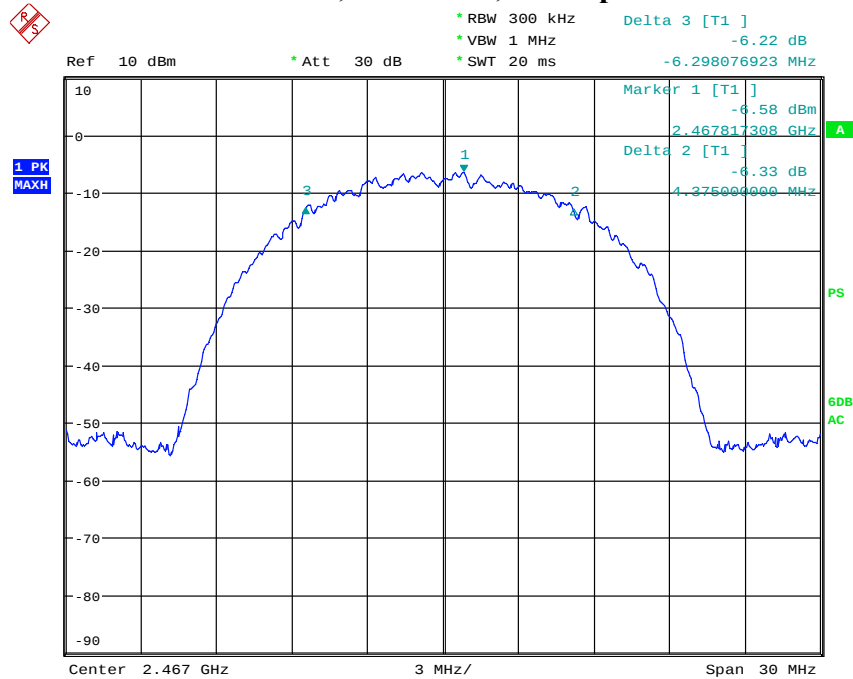
**ELECTRO MAGNETIC TEST, INC.**

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802.11b, 2467 MHz, 1 Mbps**802.11b, 2412 MHz, 11 Mbps**

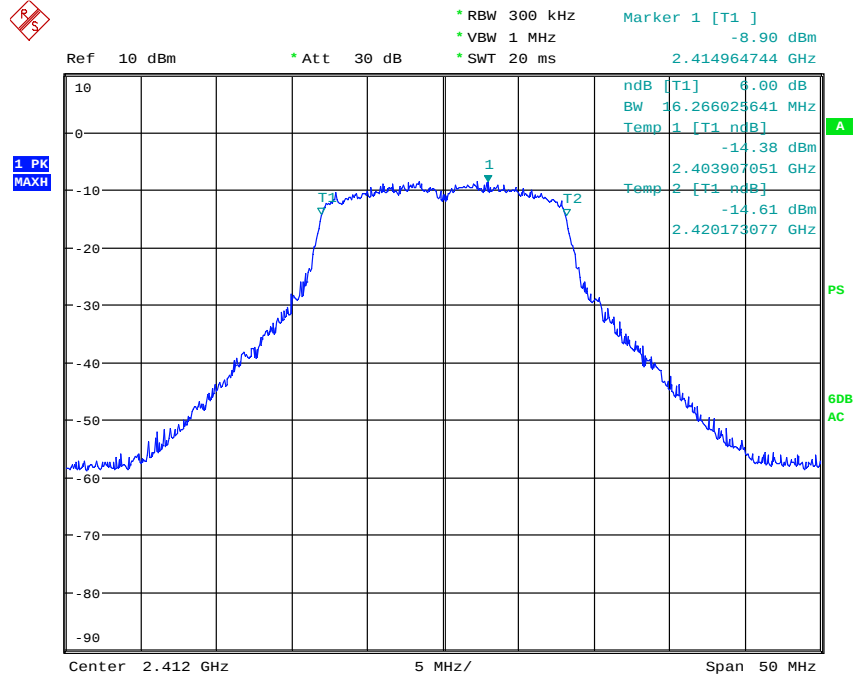
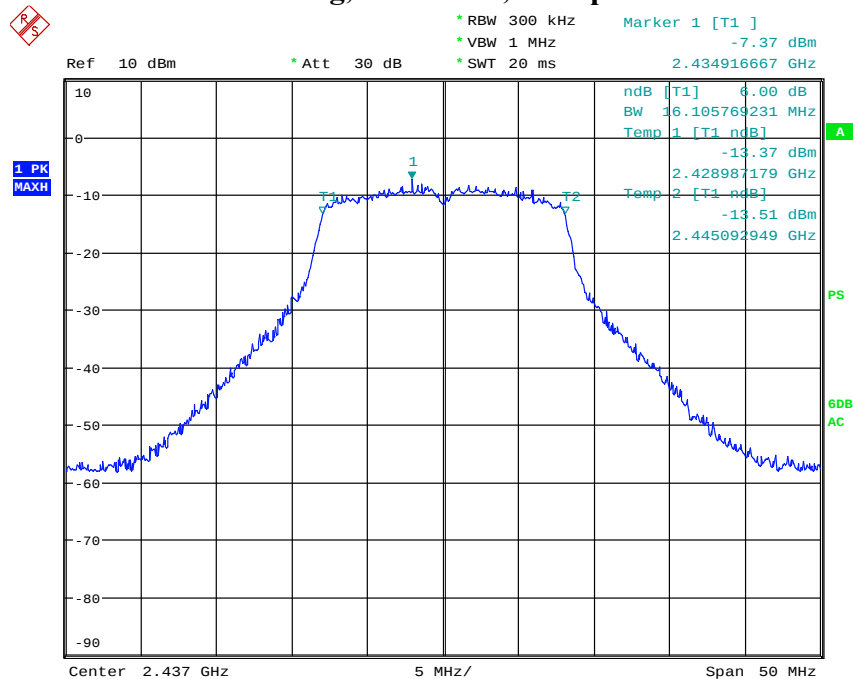
**ELECTRO MAGNETIC TEST, INC.**

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802.11b, 2437 MHz, 11 Mbps**802.11b, 2467 MHz, 11 Mbps**

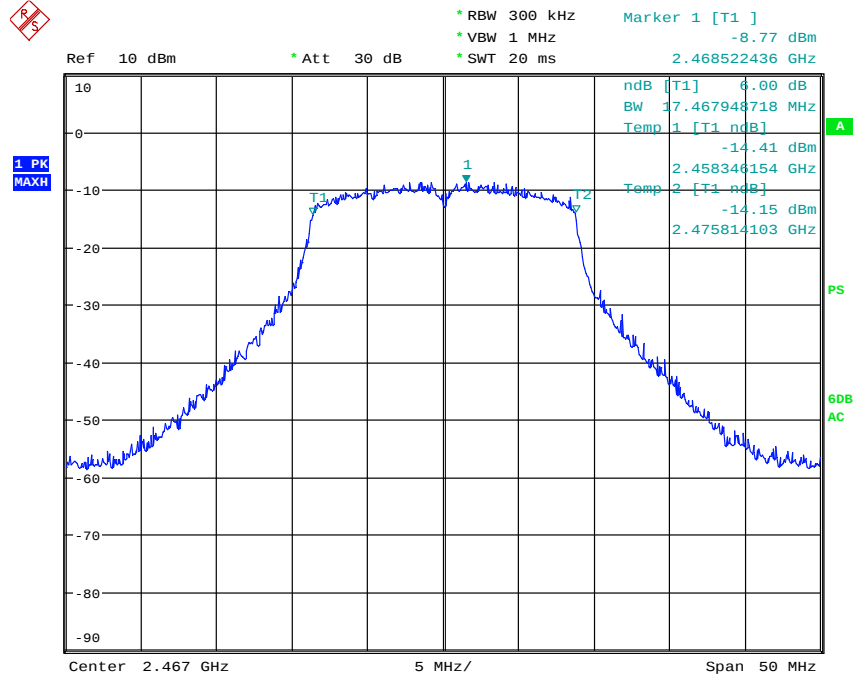
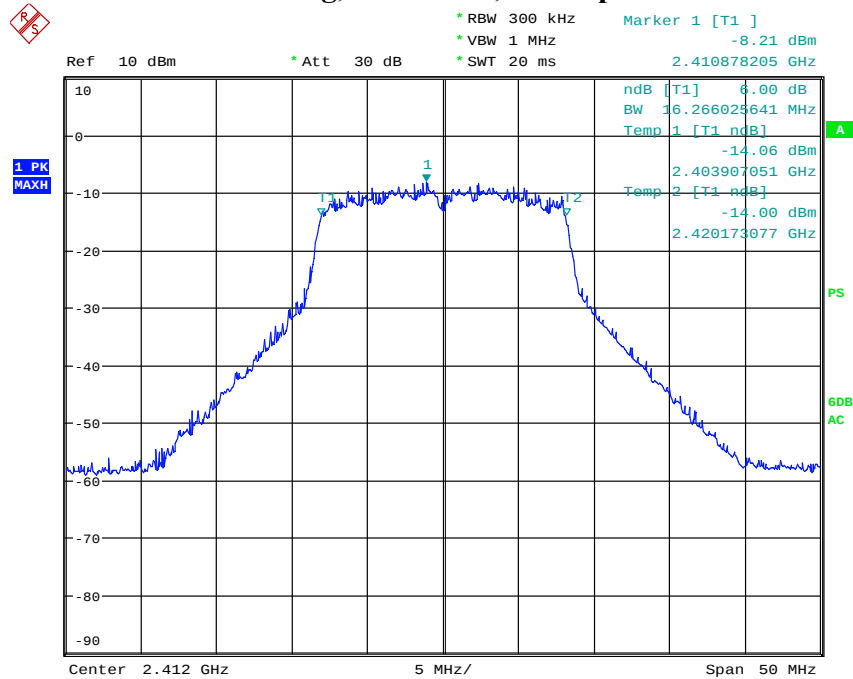
**ELECTRO MAGNETIC TEST, INC.**

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802.11g, 2412 MHz, 6 Mbps**802.11g, 2437 MHz, 6 Mbps**

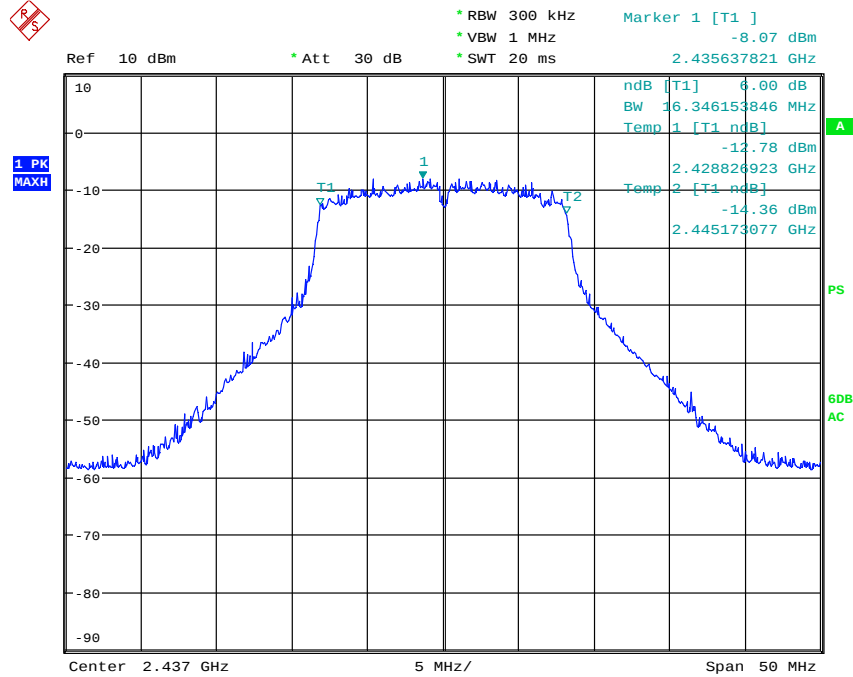
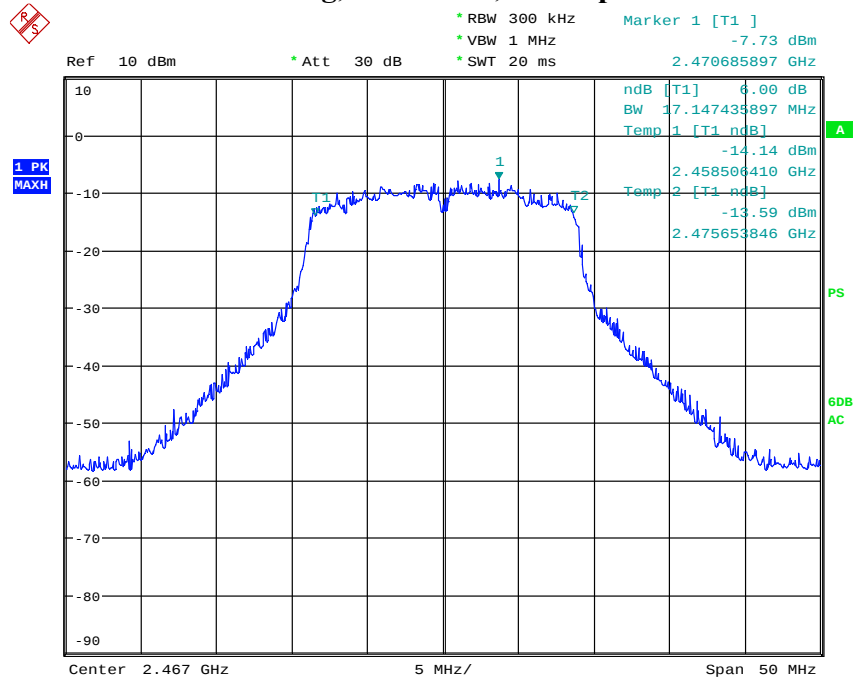
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802.11g, 2467 MHz, 6 Mbps**802.11g, 2412 MHz, 54 Mbps**

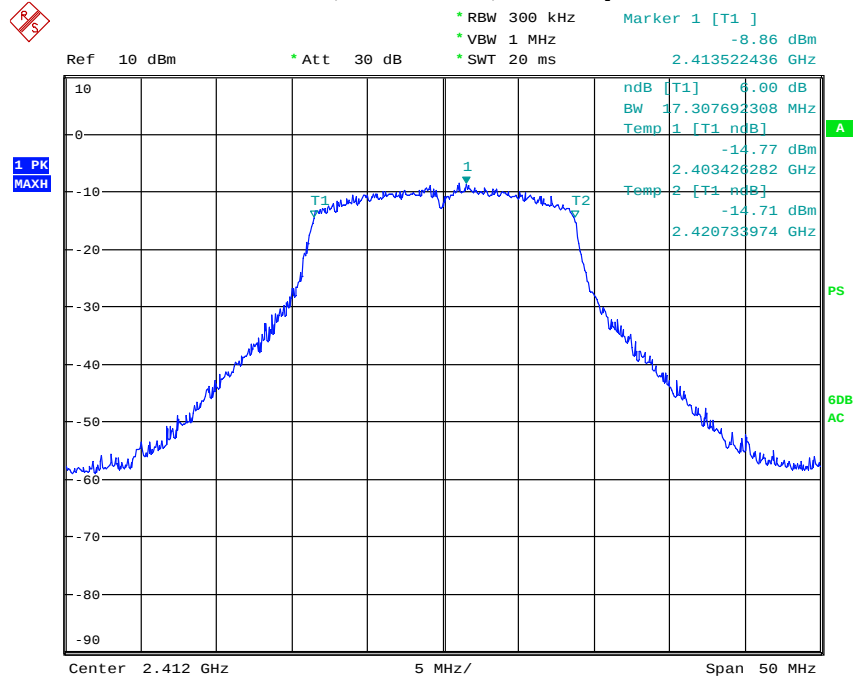
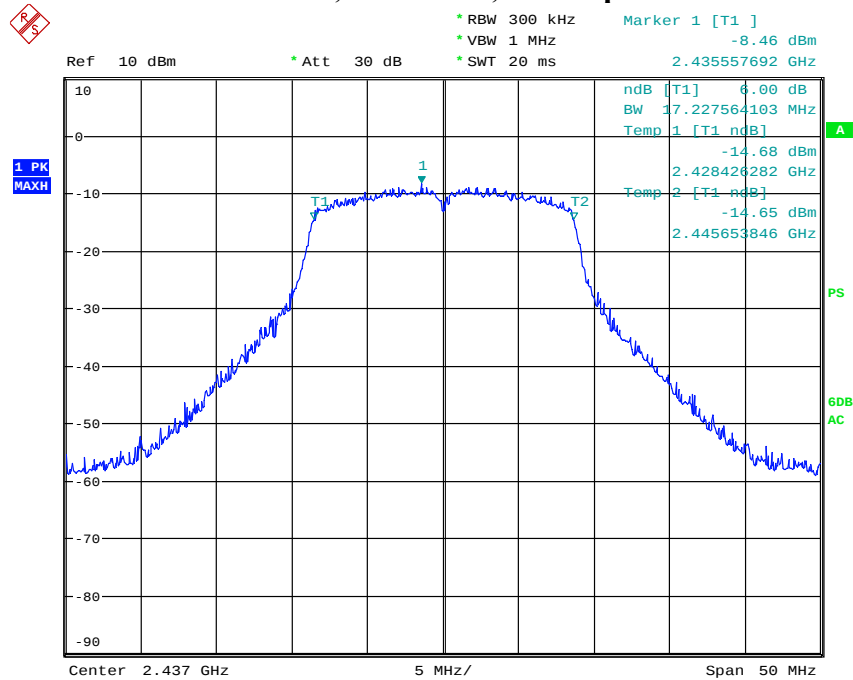
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2437 MHz, 54 Mbps**802.11g, 2467 MHz, 54 Mbps**

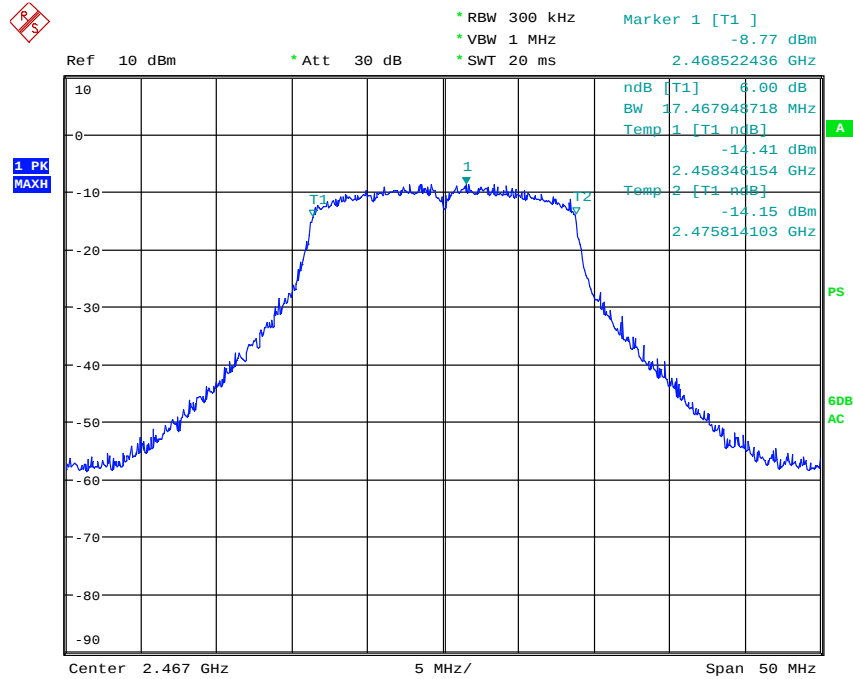
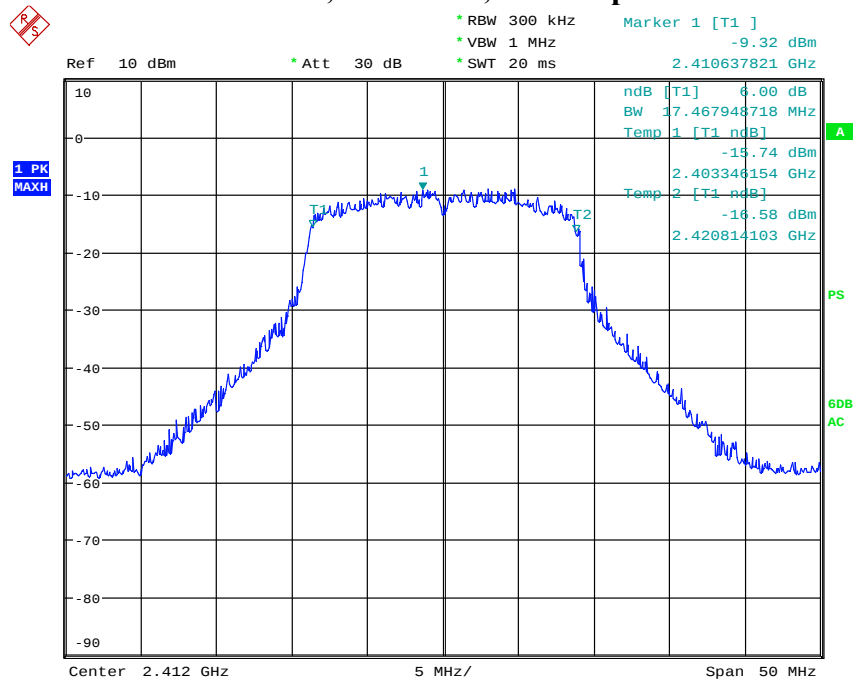
**ELECTRO MAGNETIC TEST, INC.**

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802.11n, 2412 MHz, 7.2 Mbps**802.11n, 2437 MHz, 7.2 Mbps**

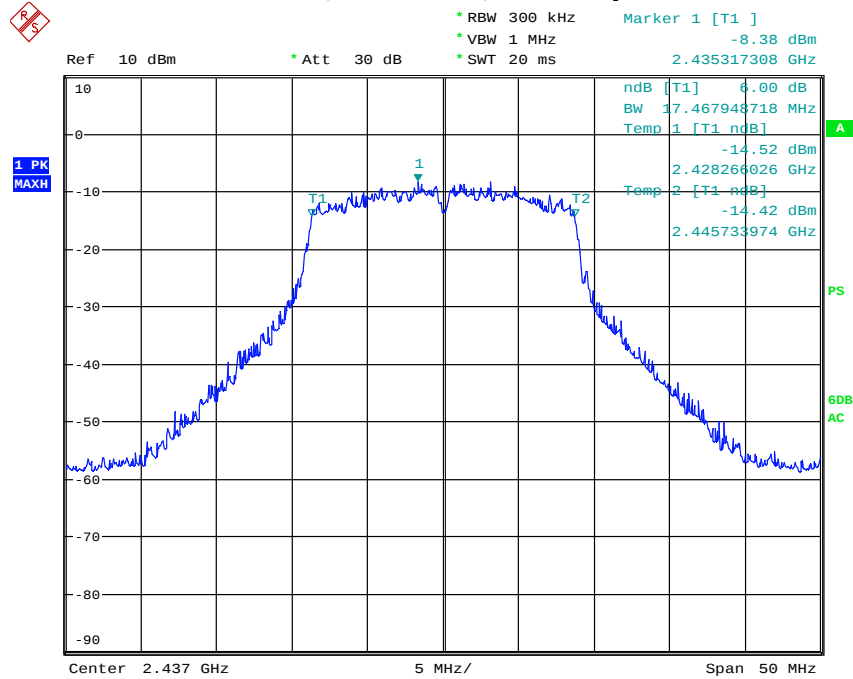
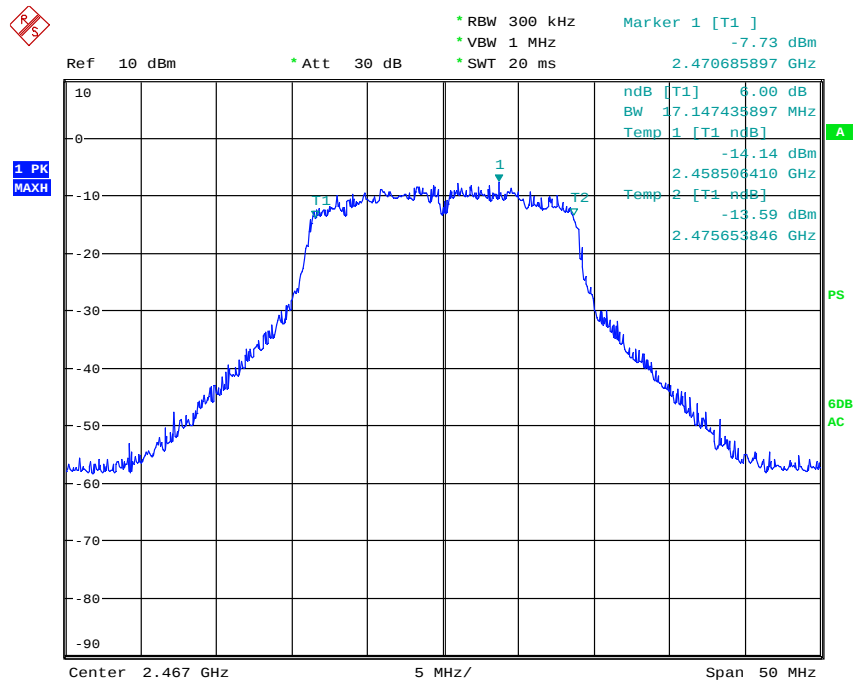
**ELECTRO MAGNETIC TEST, INC.**

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802.11n, 2467 MHz, 7.2 Mbps**802.11n, 2412 MHz, 72.2 Mbps**

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802.11n, 2437 MHz, 72.2 Mbps**802.11n 2467 MHz, 72.2 Mbps**


ELECTRO MAGNETIC TEST, INC.

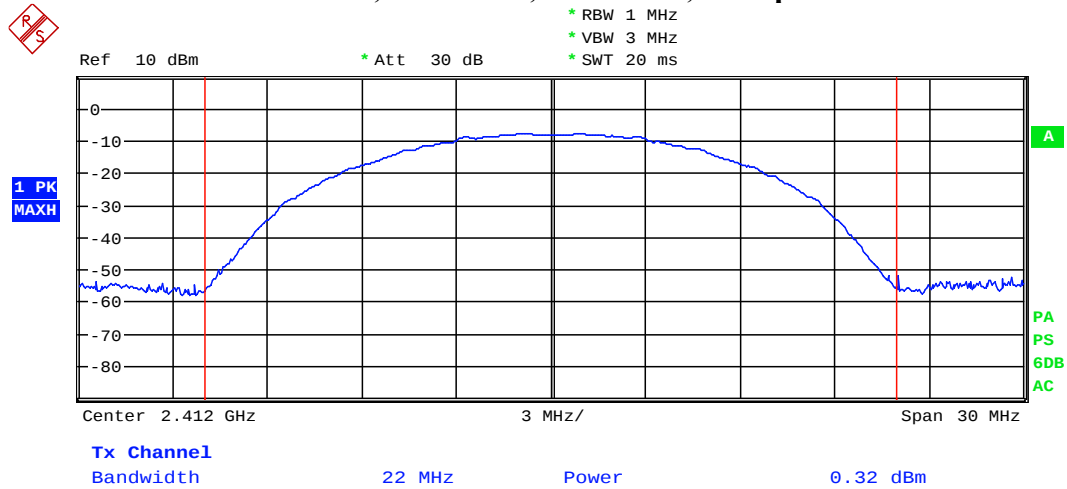
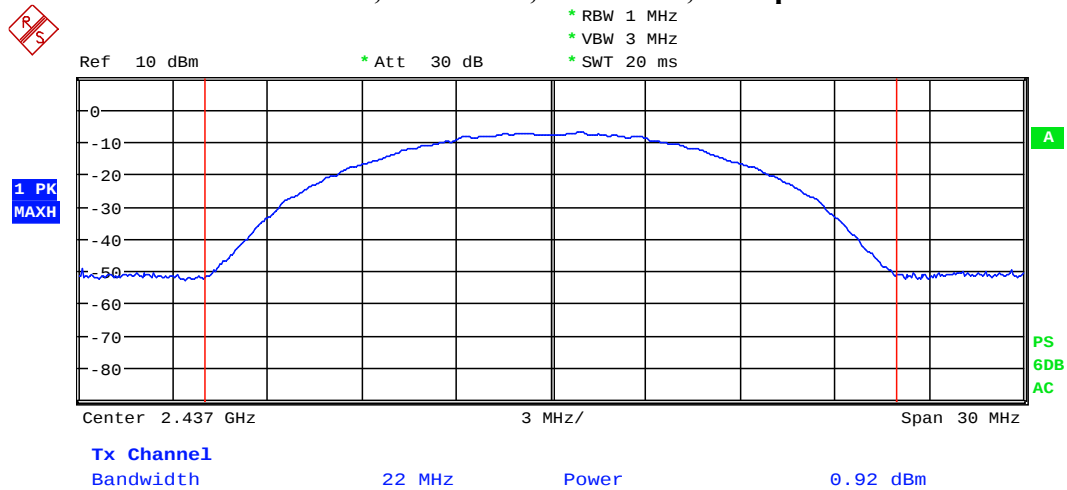
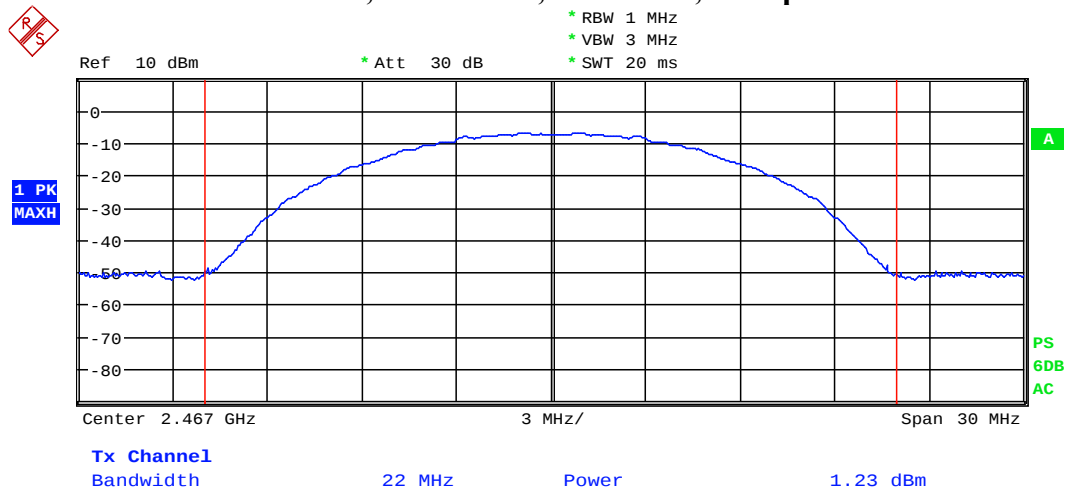
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Maximum Peak Output Power Test Data (DSSS)

Company:	Always Innovating, Inc.		Test Date	1/26/13	
EUT Name	HDMI Dongle		Test Engineer	George Hsu	
Model:	REV. E4		Test Result	PASS	
Operating Mode	TX Mode				
Mode	Test CH	Frequency (MHz)	Peak Output Power (dBm)	Limit (dBm)	Conclusion
802.11b 1 Mbps	Low	2412	0.32	≤ 30	Pass
	Middle	2437	0.92	≤ 30	Pass
	High	2467	1.23	≤ 30	Pass
802.11b 11 Mbps	Low	2412	3.52	≤ 30	Pass
	Middle	2437	4.10	≤ 30	Pass
	High	2467	4.32	≤ 30	Pass
802.11g 6 Mbps	Low	2412	4.21	≤ 30	Pass
	Middle	2437	5.12	≤ 30	Pass
	High	2467	5.22	≤ 30	Pass
802.11g 54 Mbps	Low	2412	5.43	≤ 30	Pass
	Middle	2437	5.82	≤ 30	Pass
	High	2467	5.79	≤ 30	Pass
802.11n 7.2 Mbps	Low	2412	4.64	≤ 30	Pass
	Middle	2437	4.91	≤ 30	Pass
	High	2467	5.13	≤ 30	Pass
802.11n 72.2 Mbps	Low	2412	5.03	≤ 30	Pass
	Middle	2437	5.03	≤ 30	Pass
	High	2467	5.22	≤ 30	Pass
Test Equipment: Please refer to section 5.2					

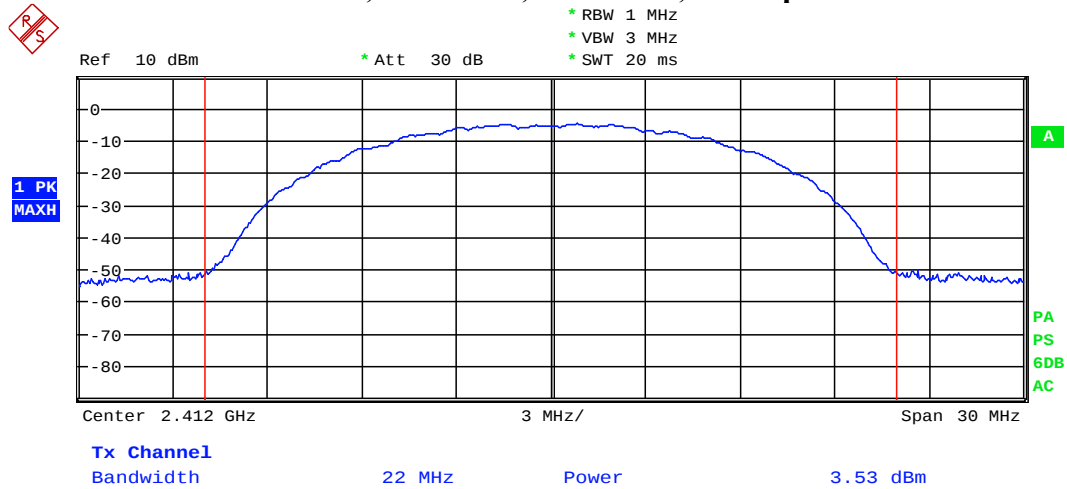
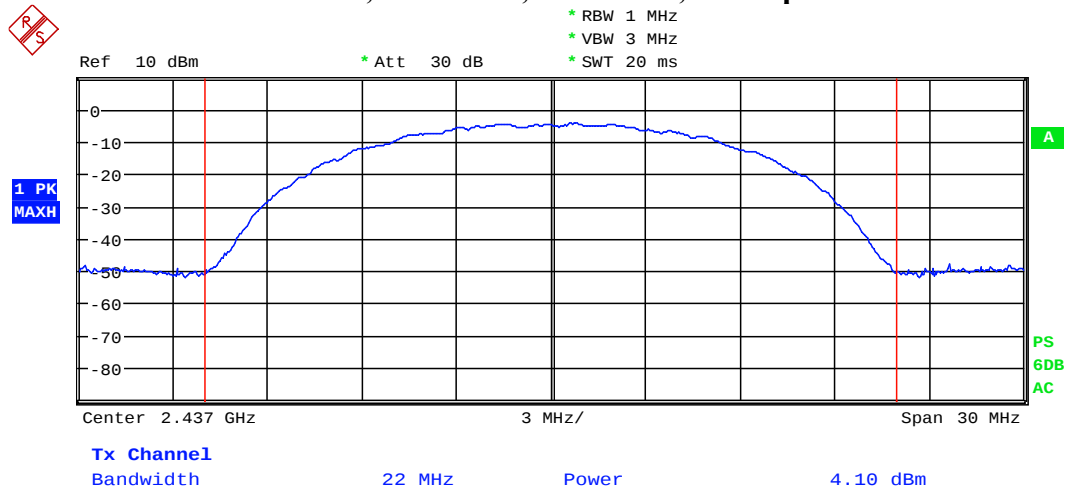
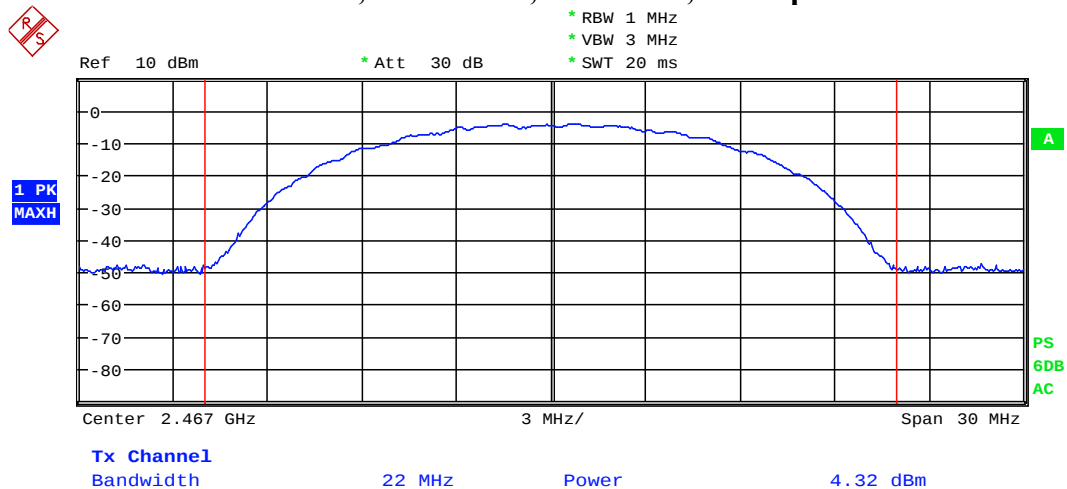
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11b, Channel 1, 2412 MHz, 1 Mbps**802.11b, Channel 6, 2437 MHz, 1 Mbps****802.11b, Channel 12, 2467 MHz, 1 Mbps**

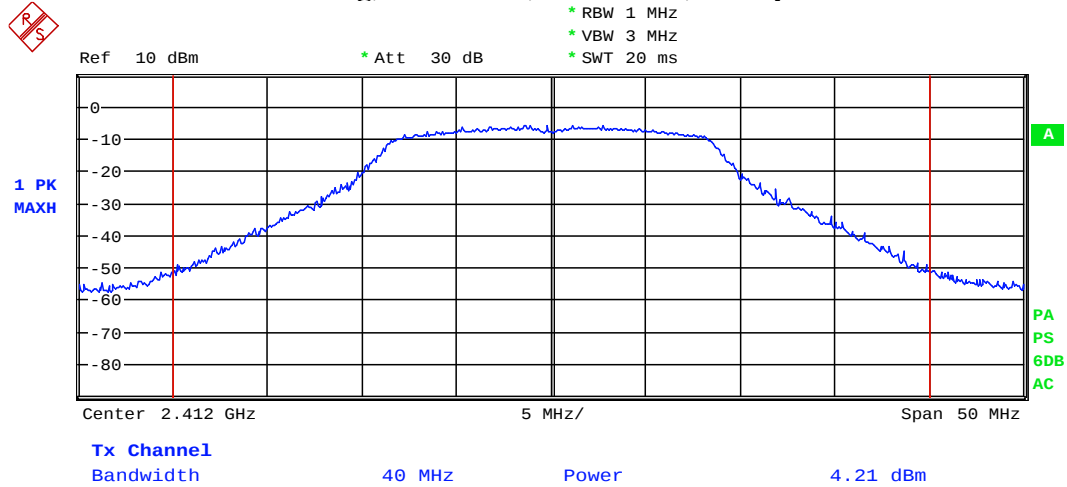
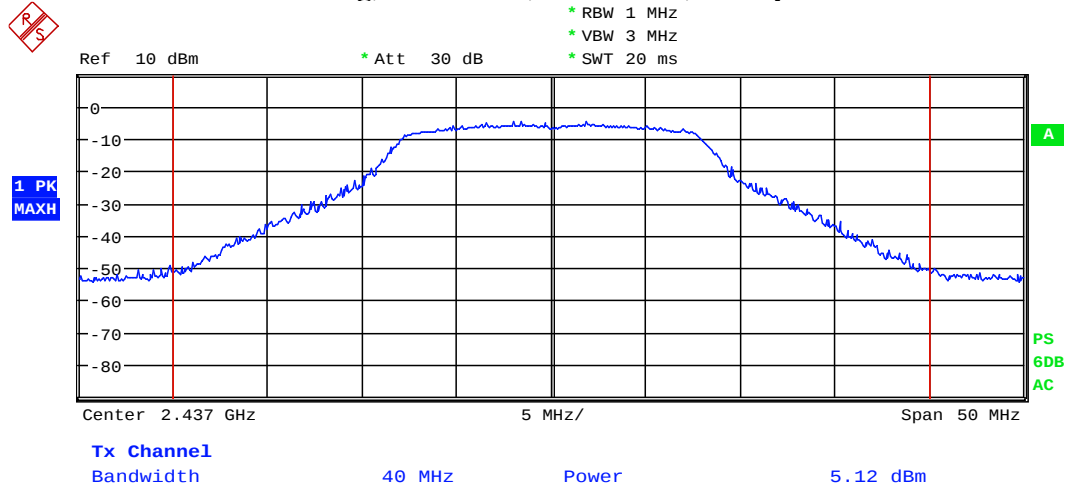
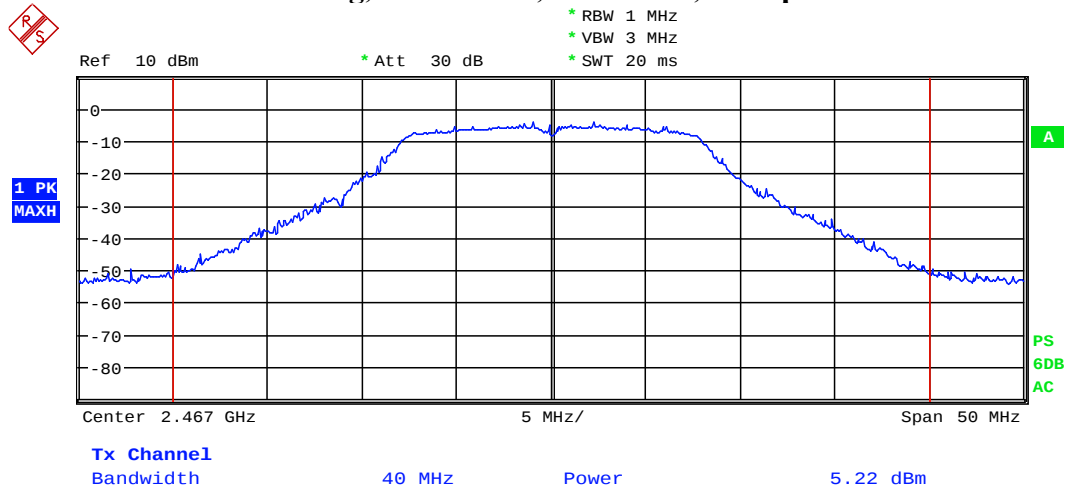
**ELECTRO MAGNETIC TEST, INC.**

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802.11b, Channel 1, 2412 MHz, 11 Mbps**802.11b, Channel 6, 2437 MHz, 11 Mbps****802.11b, Channel 12, 2467 MHz, 11 Mbps**

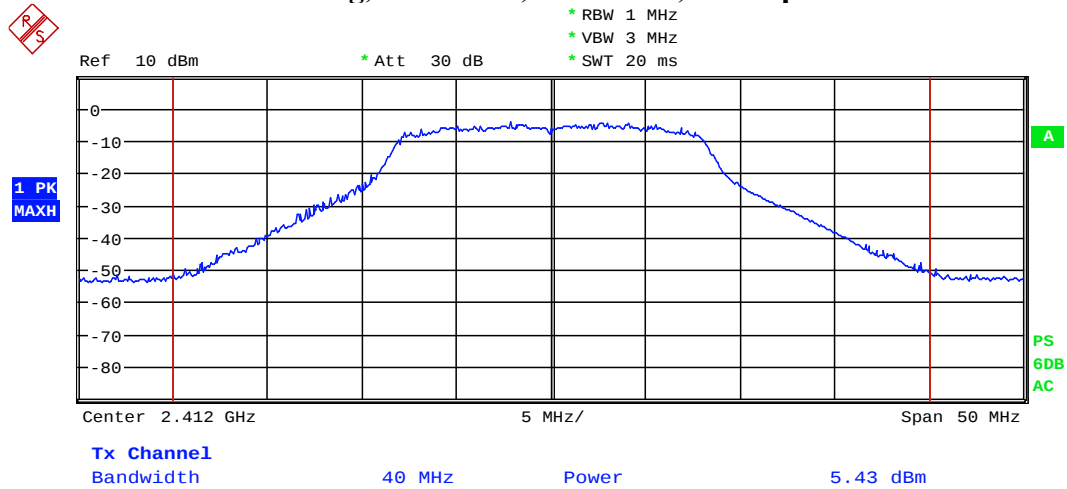
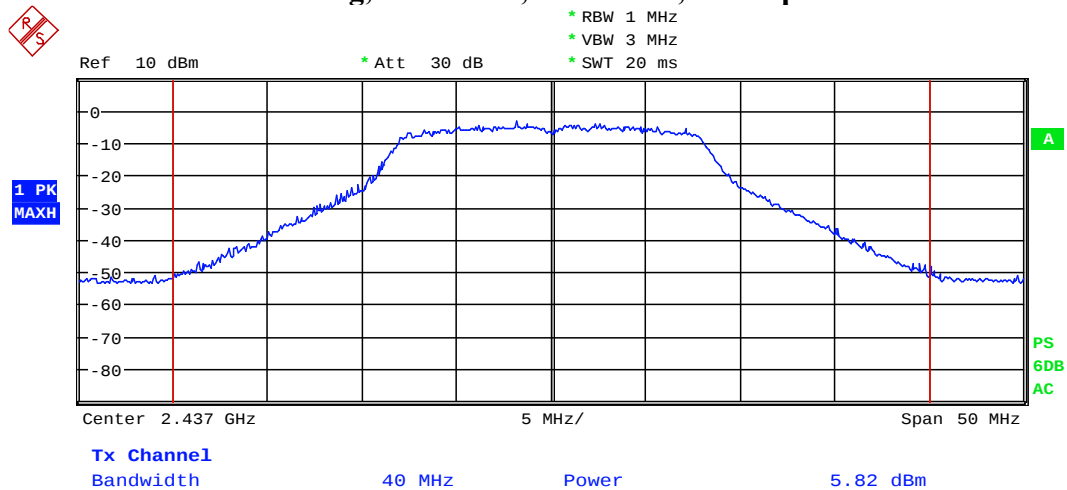
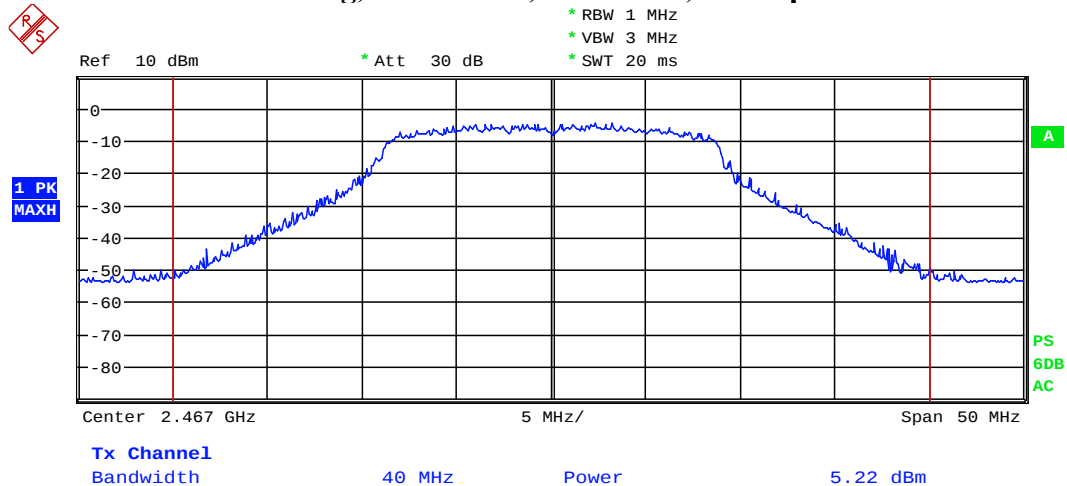
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, Channel 1, 2412 MHz, 6 Mbps**802.11g, Channel 6, 2437 MHz, 6 Mbps****802.11g, Channel 12, 2467 MHz, 6 Mbps**

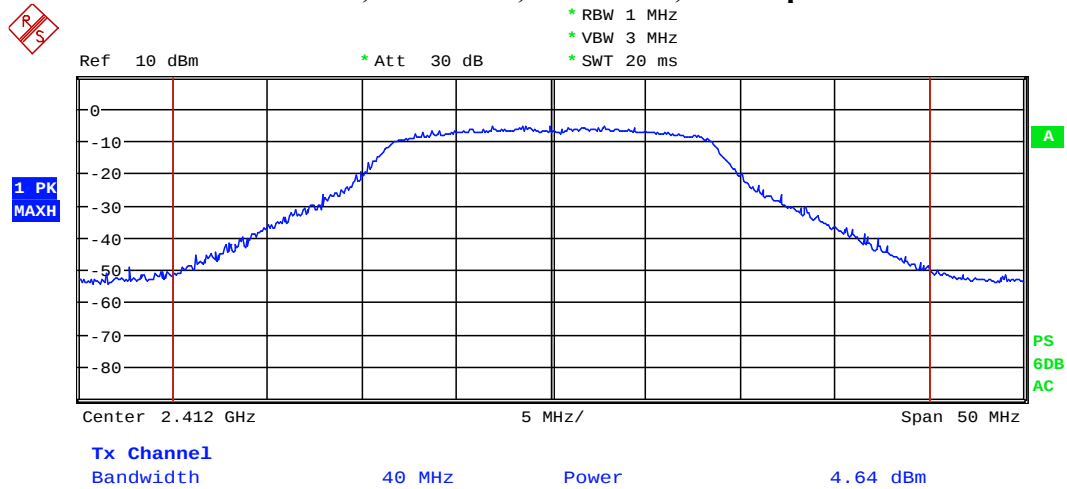
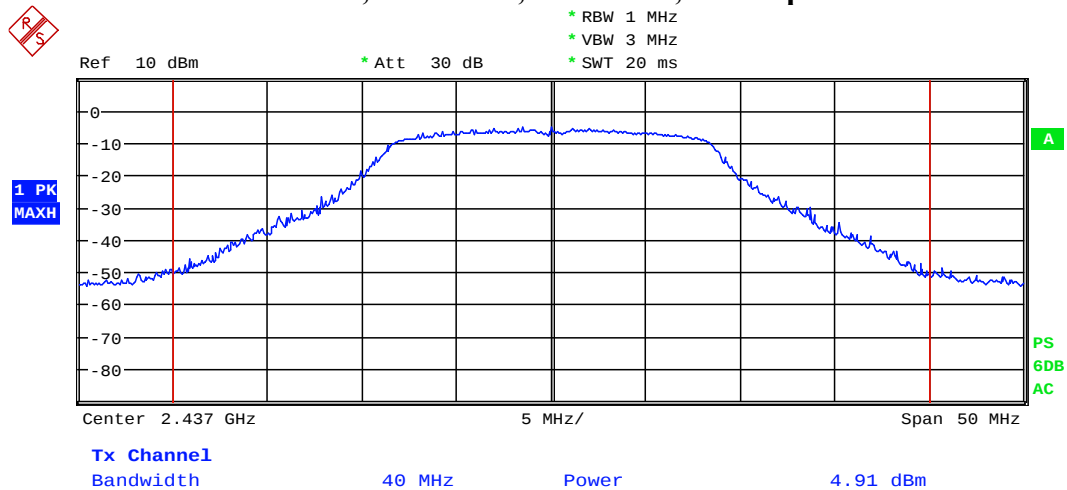
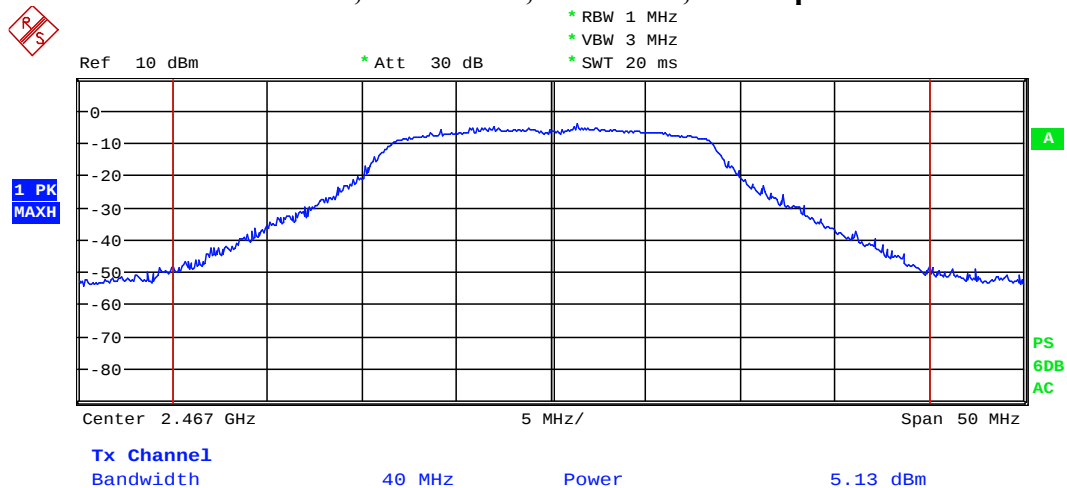
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, Channel 1, 2412 MHz, 54 Mbps**802.11g, Channel 6, 2437 MHz, 54 Mbps****802.11g, Channel 12, 2467 MHz, 54 Mbps**

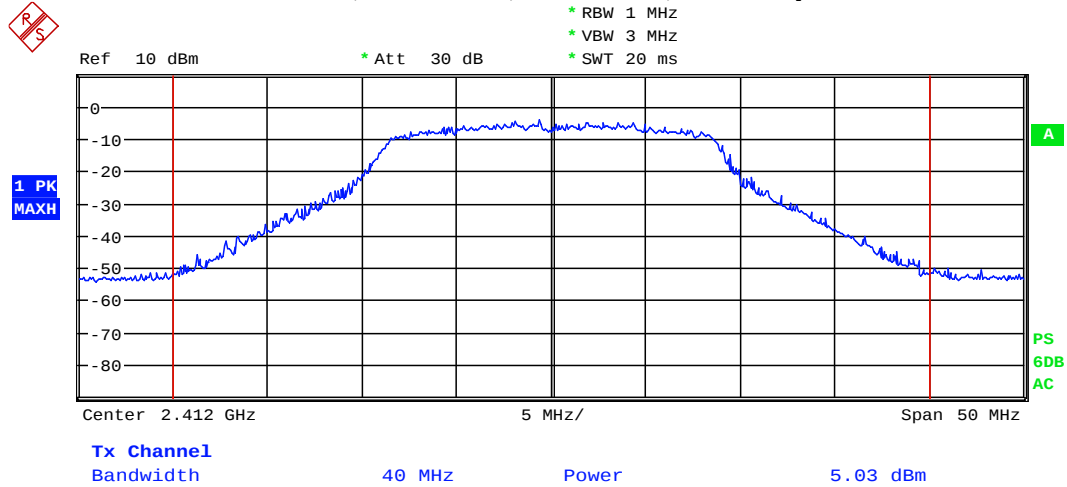
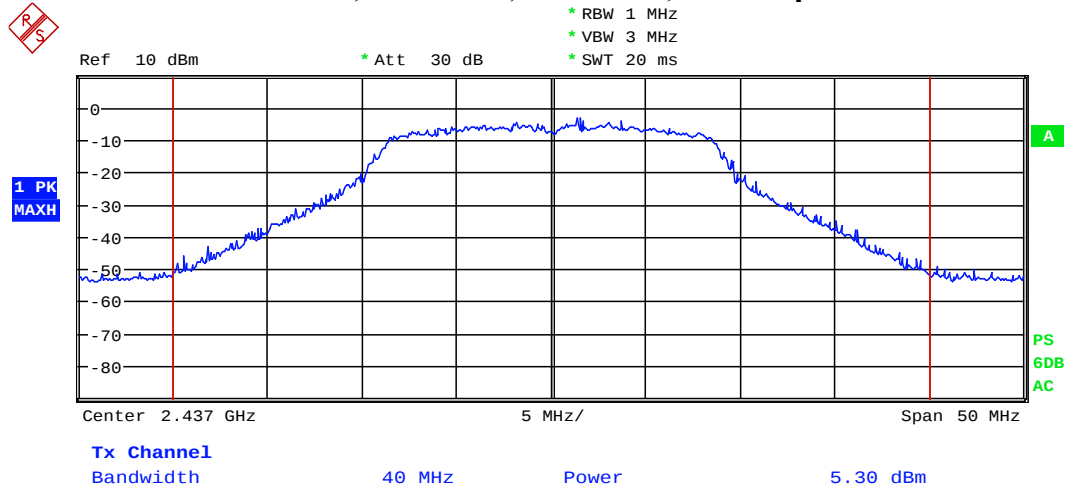
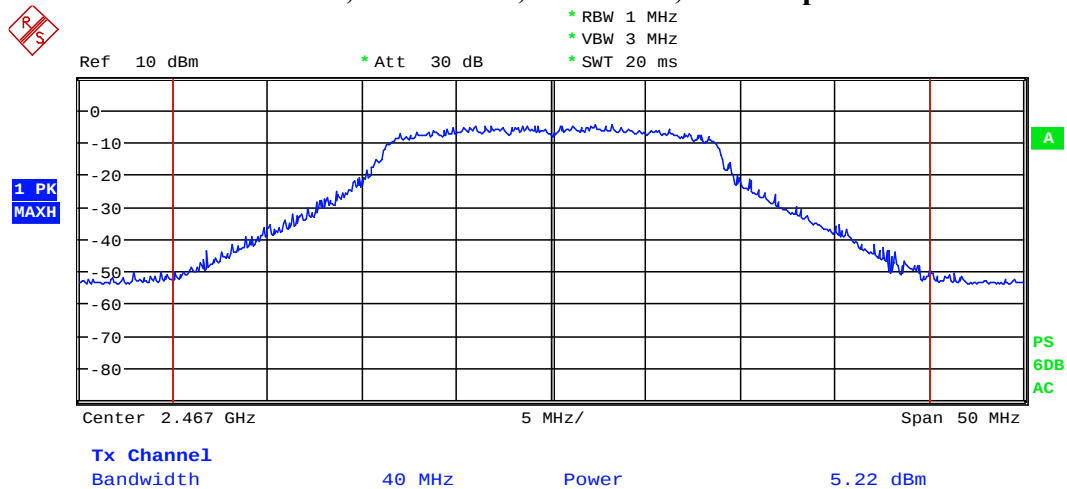
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802.11n, Channel 1, 2412 MHz, 7.2 Mbps**802.11n, Channel 6, 2437 MHz, 7.2 Mbps****802.11n, Channel 12, 2467 MHz, 7.2 Mbps**

**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

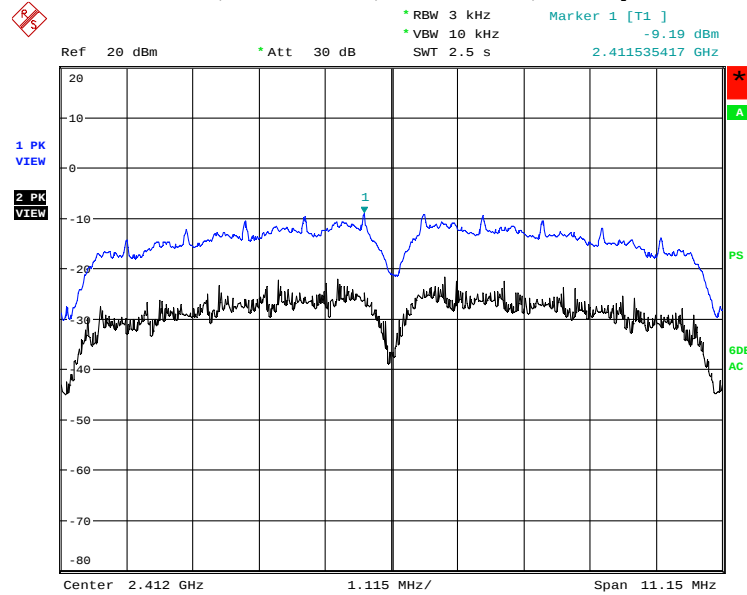
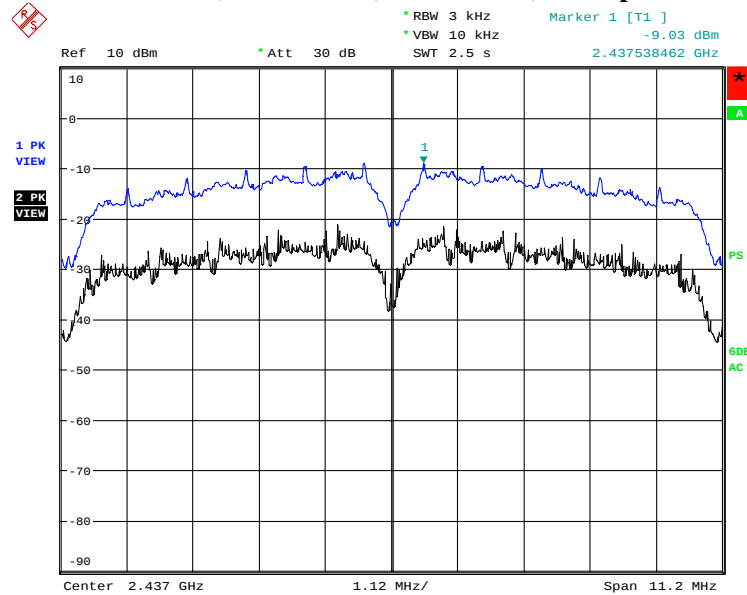
802.11n, Channel 1, 2412 MHz, 72.2 Mbps**802.11n, Channel 6, 2437 MHz, 72.2 Mbps****802.11n, Channel 12, 2467 MHz, 72.2 Mbps**



Company:	Always Innovating, Inc.		Test Date		1/26/13	
EUT Name	HDMI Dongle		Test Engineer		George Hsu	
Model:	REV. E4		Test Result		PASS	
Operating Mode	TX Mode					
Mode	Test CH	Frequency (MHz)	Peak (dBm)	With BWCF	Limit (dBm)	Conclusion
802.11b 1 Mbps	Low	2412	-9.19	-23.528	≤ 8	Pass
	Middle	2437	-9.03	-23.368	≤ 8	Pass
	High	2467	-8.60	-22.938	≤ 8	Pass
802.11b 11 Mbps	Low	2412	-10.49	-24.828	≤ 8	Pass
	Middle	2437	-10.14	-24.478	≤ 8	Pass
	High	2467	-10.62	-24.958	≤ 8	Pass
802.11g 6 Mbps	Low	2412	-12.07	-26.408	≤ 8	Pass
	Middle	2437	-11.33	-25.668	≤ 8	Pass
	High	2467	-10.88	-25.218	≤ 8	Pass
802.11g 54 Mbps	Low	2412	-11.69	-26.028	≤ 8	Pass
	Middle	2437	-11.30	-25.638	≤ 8	Pass
	High	2467	-10.94	-25.278	≤ 8	Pass
802.11n 7.2 Mbps	Low	2412	-12.07	-26.408	≤ 8	Pass
	Middle	2437	-11.47	-25.808	≤ 8	Pass
	High	2467	-10.81	-25.148	≤ 8	Pass
802.11n 72.2 Mbps	Low	2412	-11.72	-26.058	≤ 8	Pass
	Middle	2437	-11.19	-25.528	≤ 8	Pass
	High	2467	-10.57	-24.908	≤ 8	Pass
Test Equipment: Please refer to 5.2						

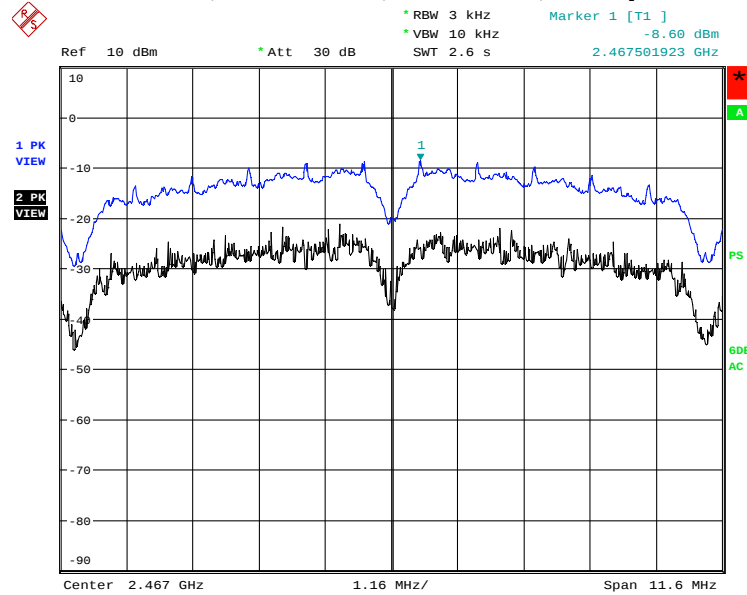
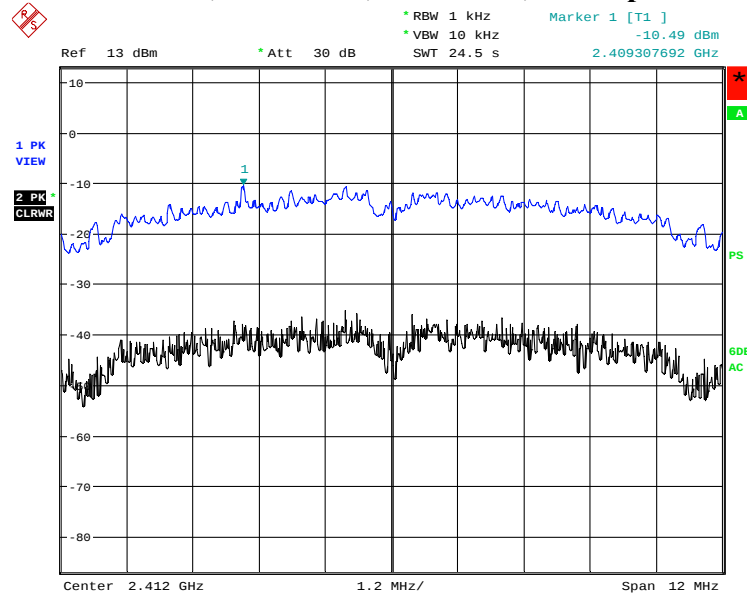
**ELECTRO MAGNETIC TEST, INC.**

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802.11b, Channel 1, 2412 MHz, 1 Mbps**802.11b, Channel 6, 2437 MHz, 1 Mbps**

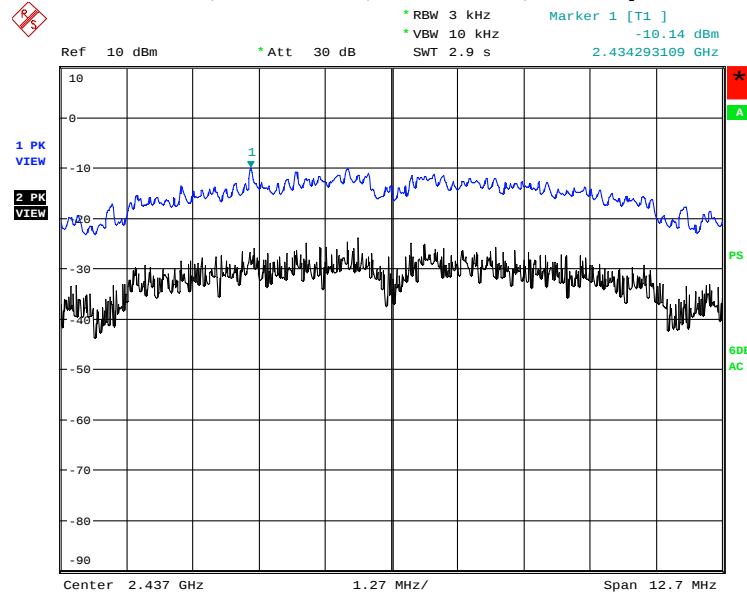
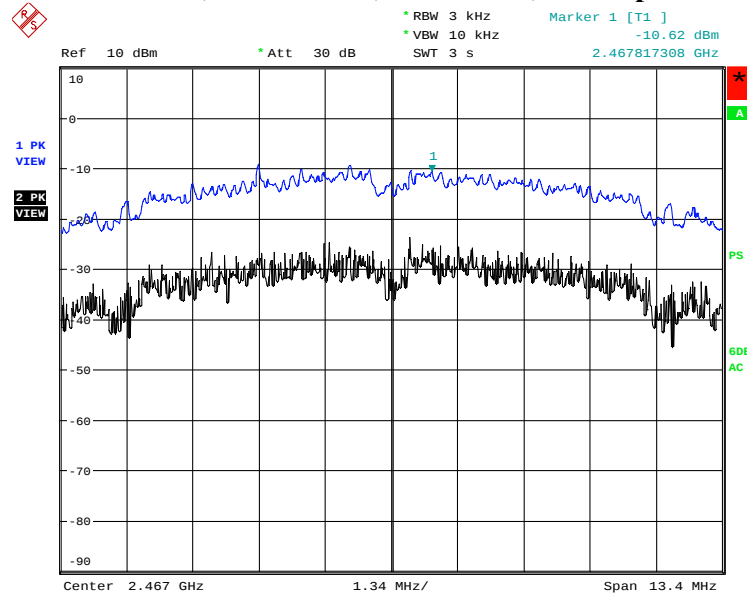
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11b, Channel 12, 2467 MHz, 1 Mbps**802.11b, Channel 1, 2412 MHz, 11 Mbps**

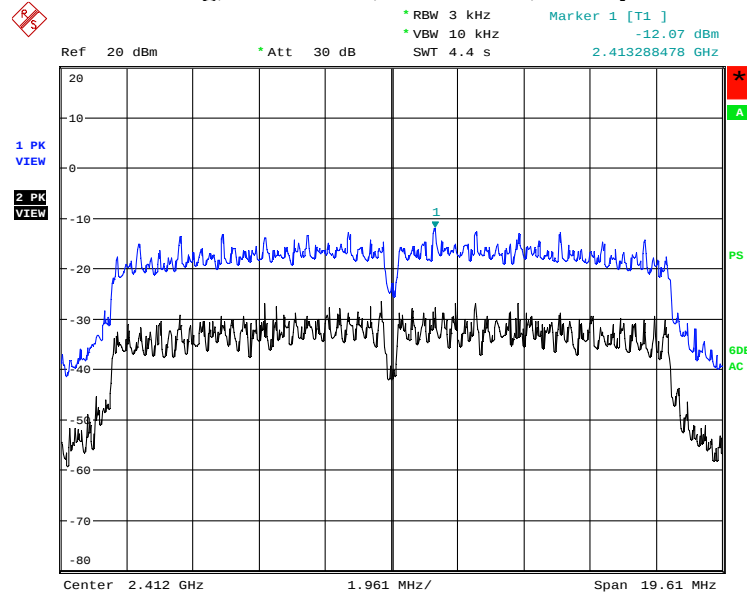
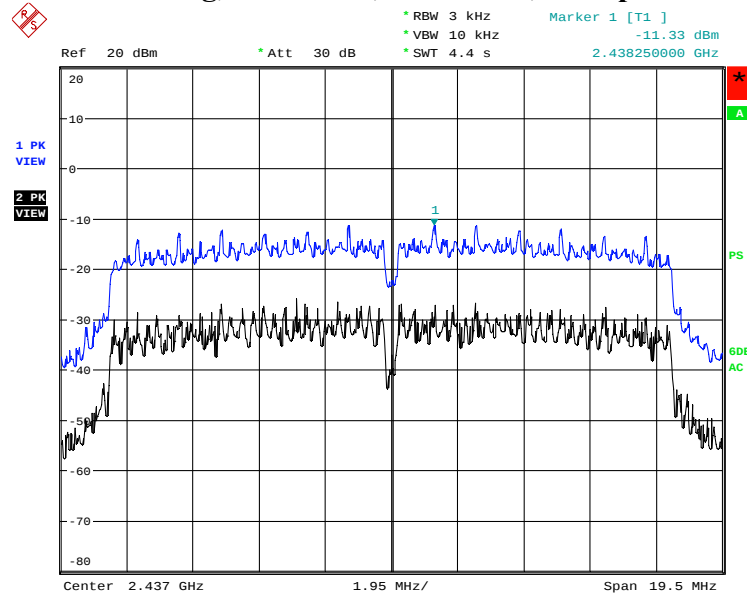
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11b, Channel 6, 2437 MHz, 11 Mbps**802.11b, Channel 12, 2467 MHz, 11 Mbps**

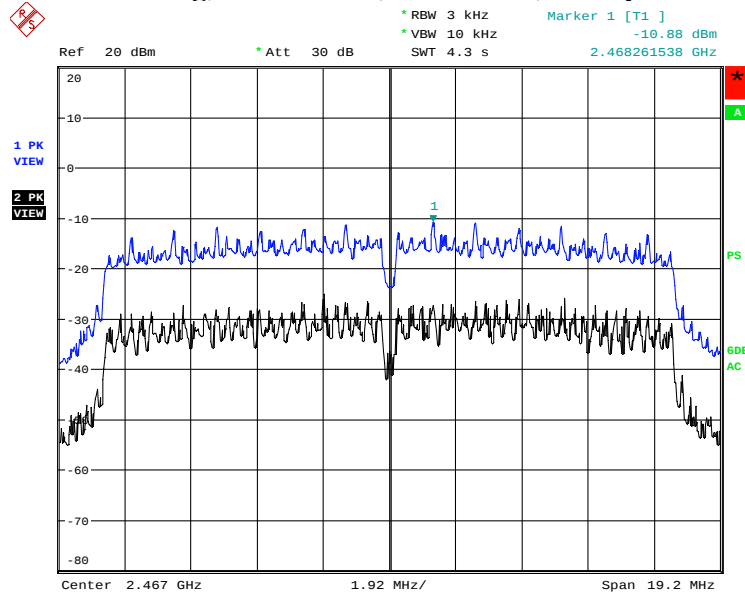
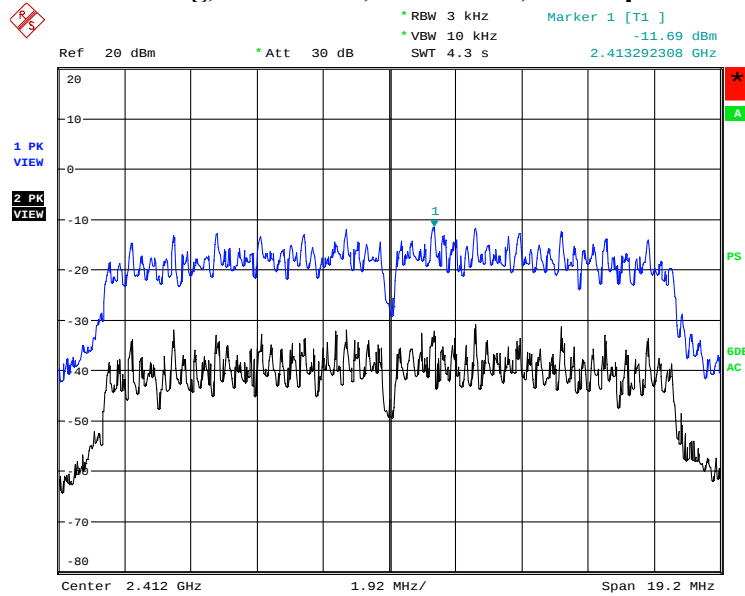
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, Channel 1, 2412 MHz, 6 Mbps**802.11g, Channel 6, 2437 MHz, 6 Mbps**

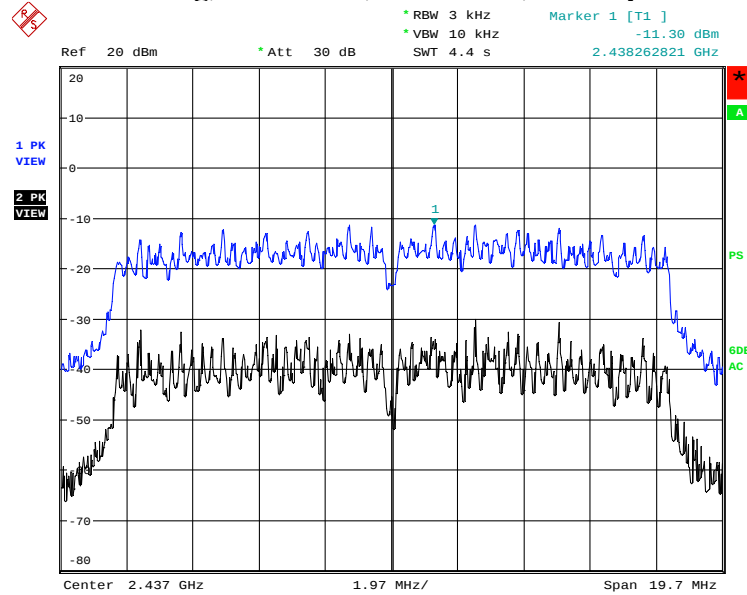
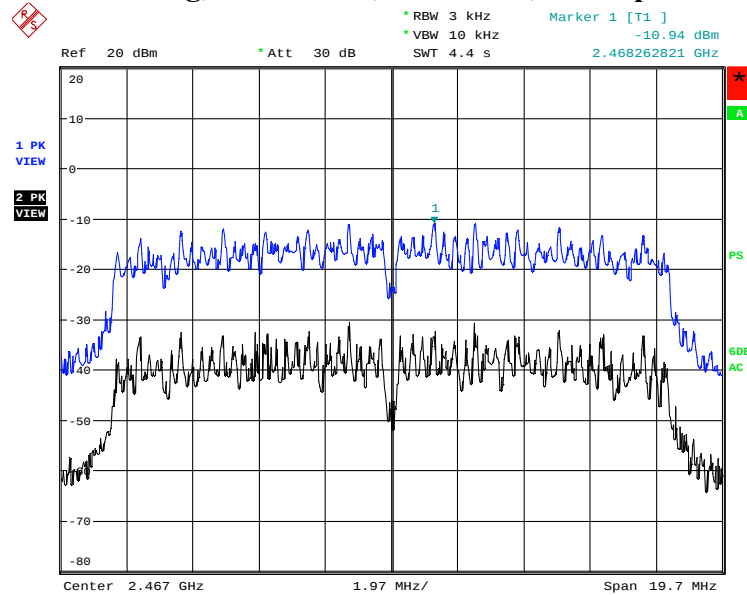
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, Channel 12, 2467 MHz, 6 Mbps**802.11g, Channel 1, 2412 MHz, 54 Mbps**

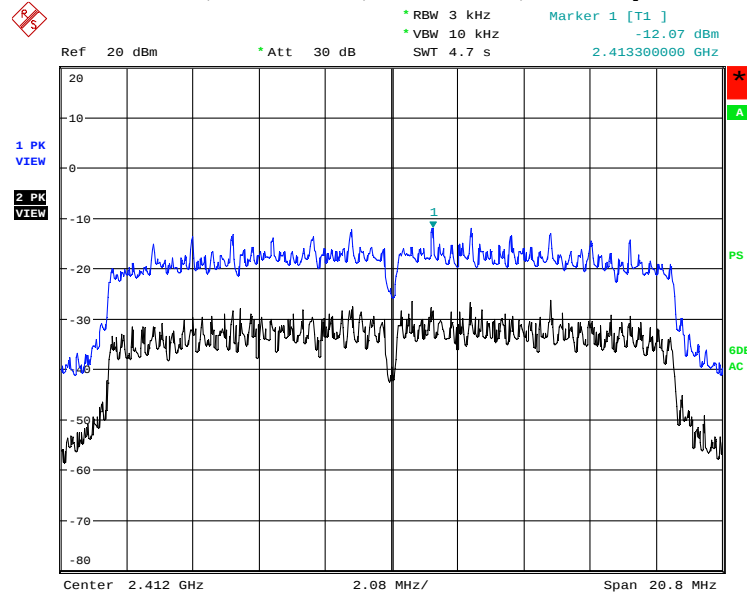
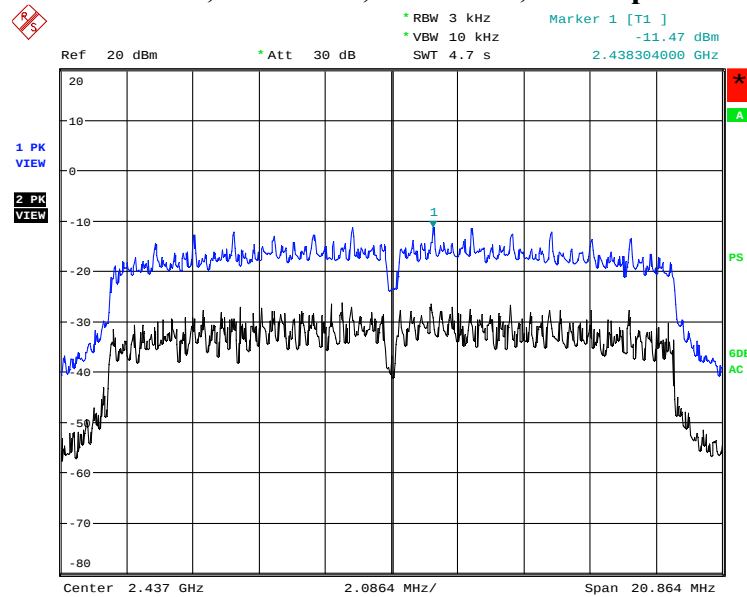
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, Channel 6, 2437 MHz, 54 Mbps**802.11g, Channel 12, 2467 MHz, 54 Mbps**

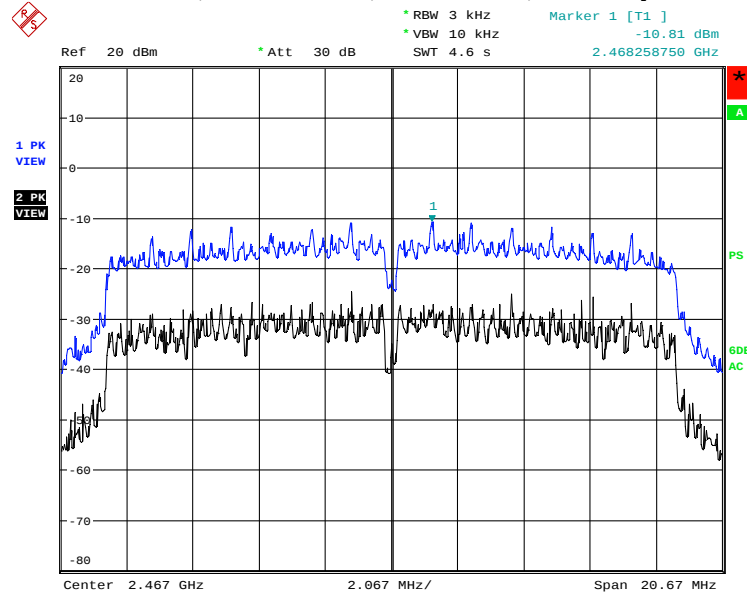
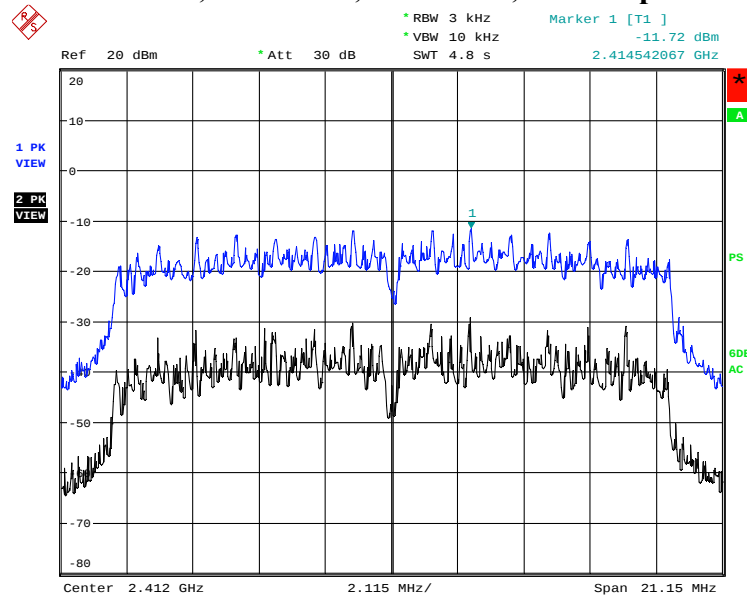
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, Channel 1, 2412 MHz, 7.2 Mbps**802.11n, Channel 6, 2437 MHz, 7.2 Mbps**

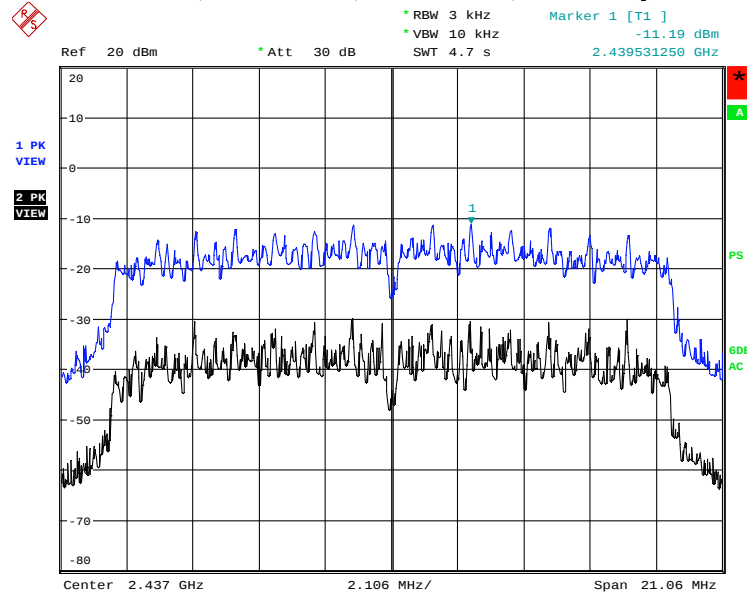
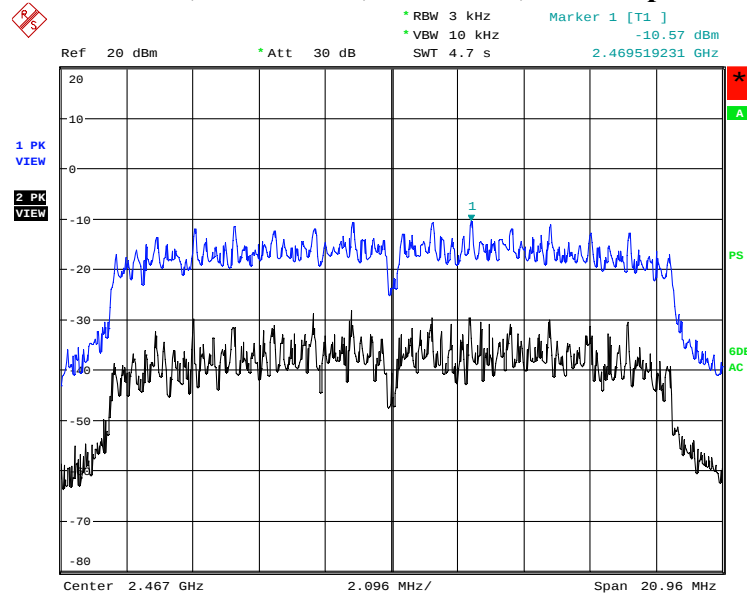
**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, Channel 12, 2467 MHz, 7.2 Mbps**802.11n, Channel 1, 2412 MHz, 72.2 Mbps**

**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, Channel 6, 2437 MHz, 72.2 Mbps**802.11n, Channel 12, 2467 MHz, 72.2 Mbps**

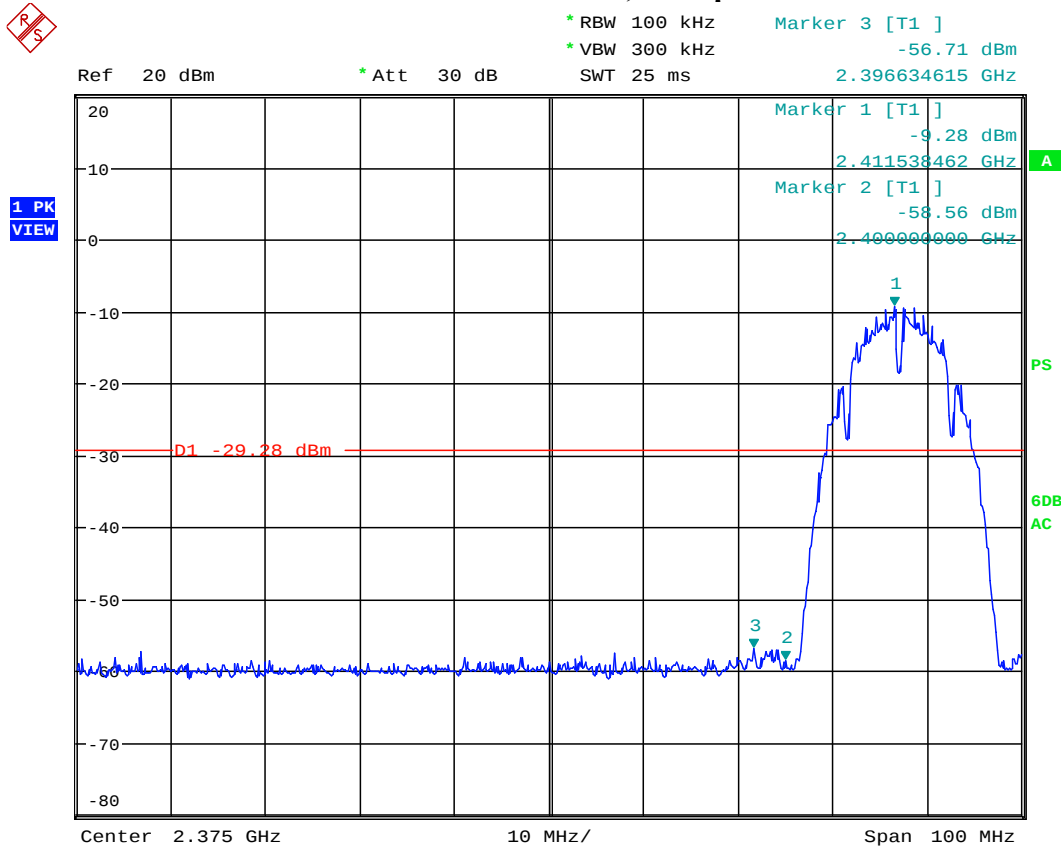


ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Bandedge Test Data

Below 2.4Ghz 802.11b, 1 Mbps



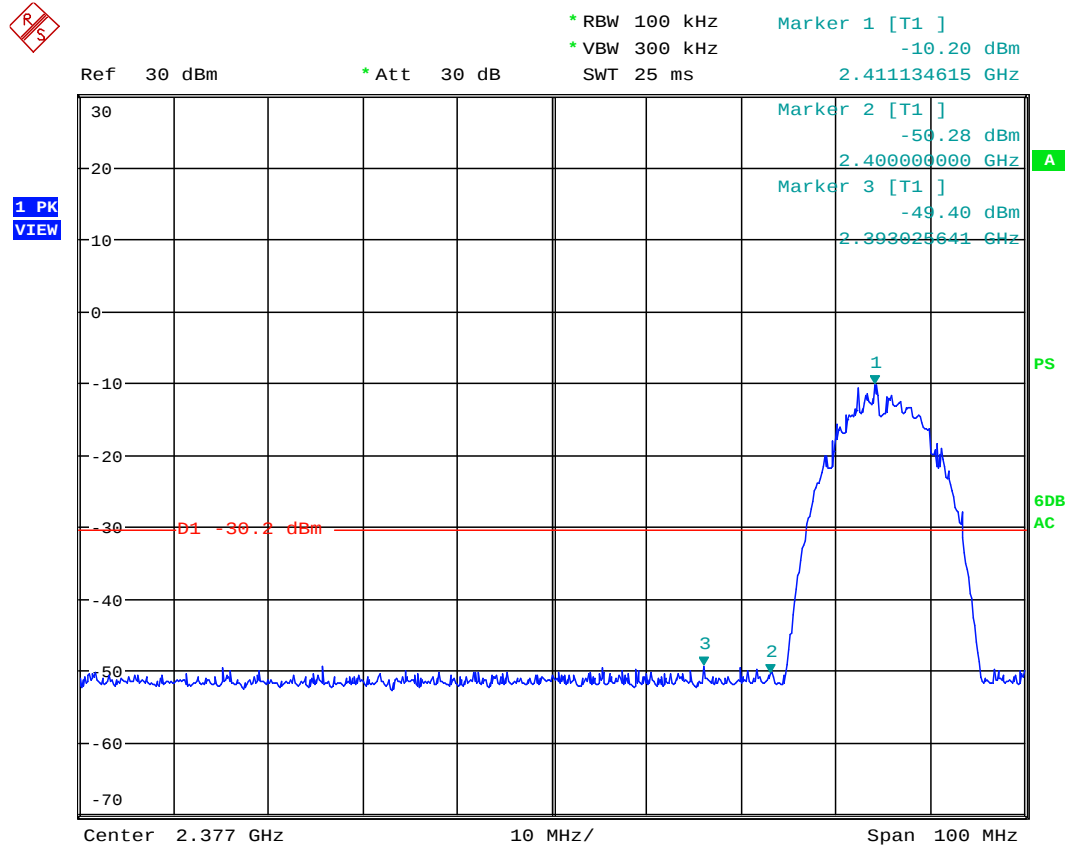
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2411.538	-9.28	N/A
2400	-58.56	-29.28
2396.634	-56.71	-29.28



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

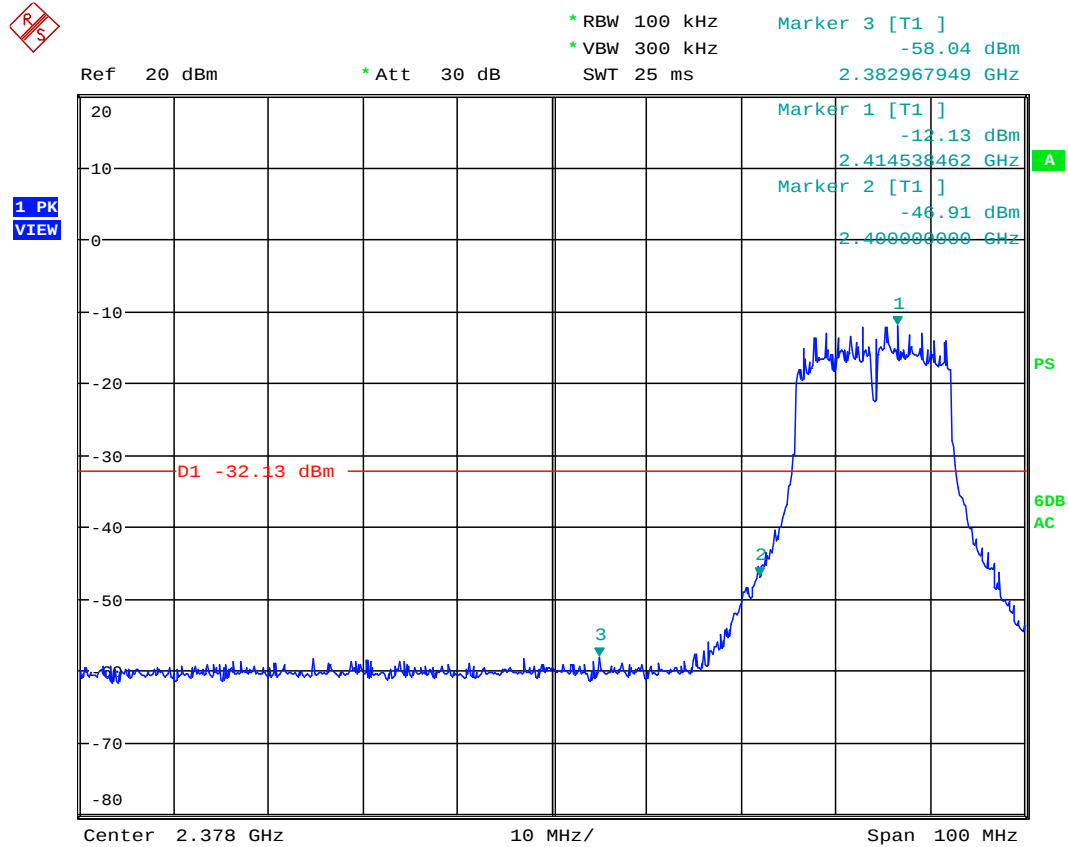
Below 2.4Ghz 802.11b, 11 Mbps



Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2411.134	-10.2	N/A
2400	-50.28	-30.2
2393.025	-45.4	-30.2

**ELECTRO MAGNETIC TEST, INC.**

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Below 2.4Ghz 802.11g, 6 Mbps

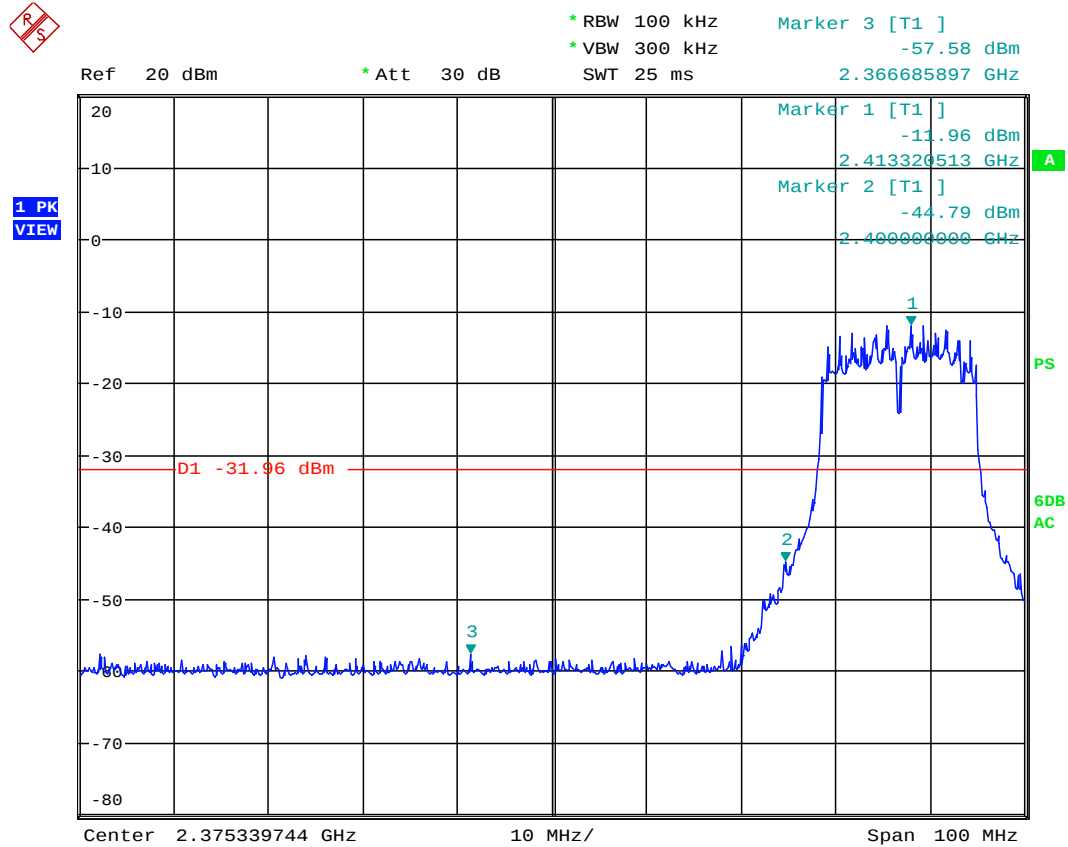
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2413.378	-12.01	N/A
2400	-44.84	-32.01
2386.134	-58.22	-32.01



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Below 2.4Ghz 802.11g, 54 Mbps



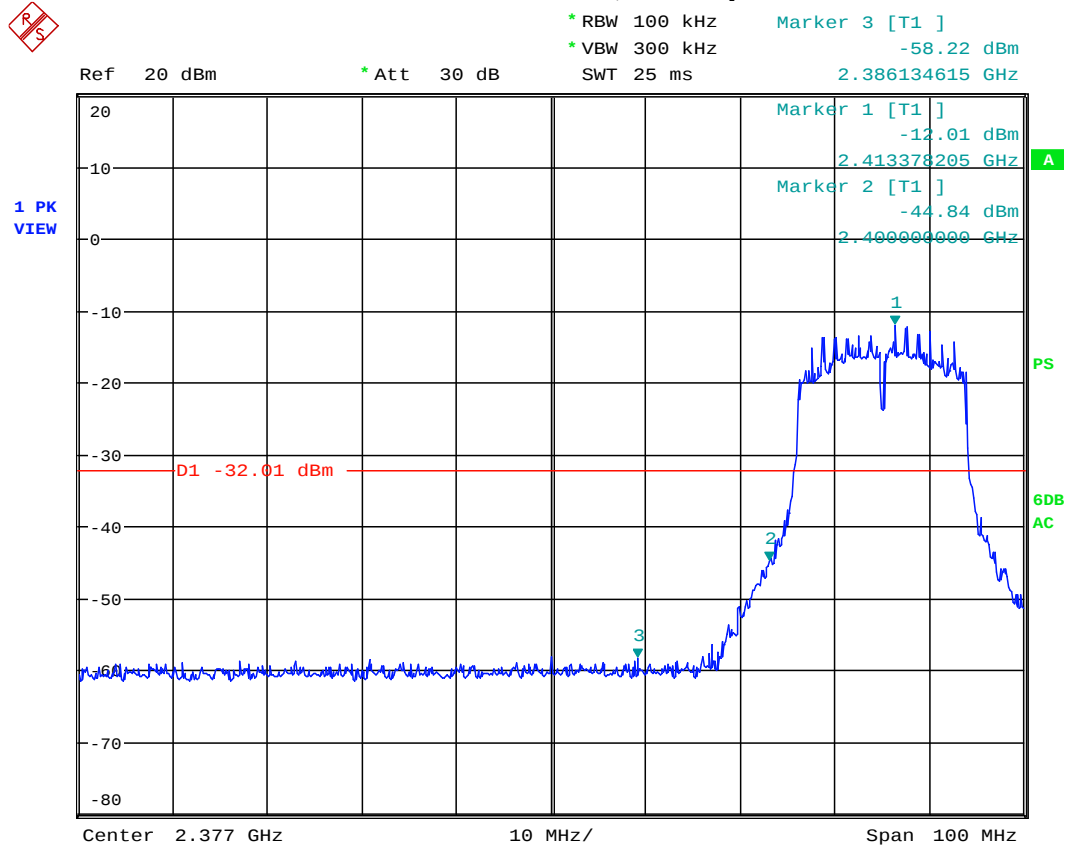
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2413.339	-11.84	N/A
2400	-45.98	-31.84
2369.589	-57.97	-31.84



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Below 2.4Ghz 802.11n, 7.2 Mbps



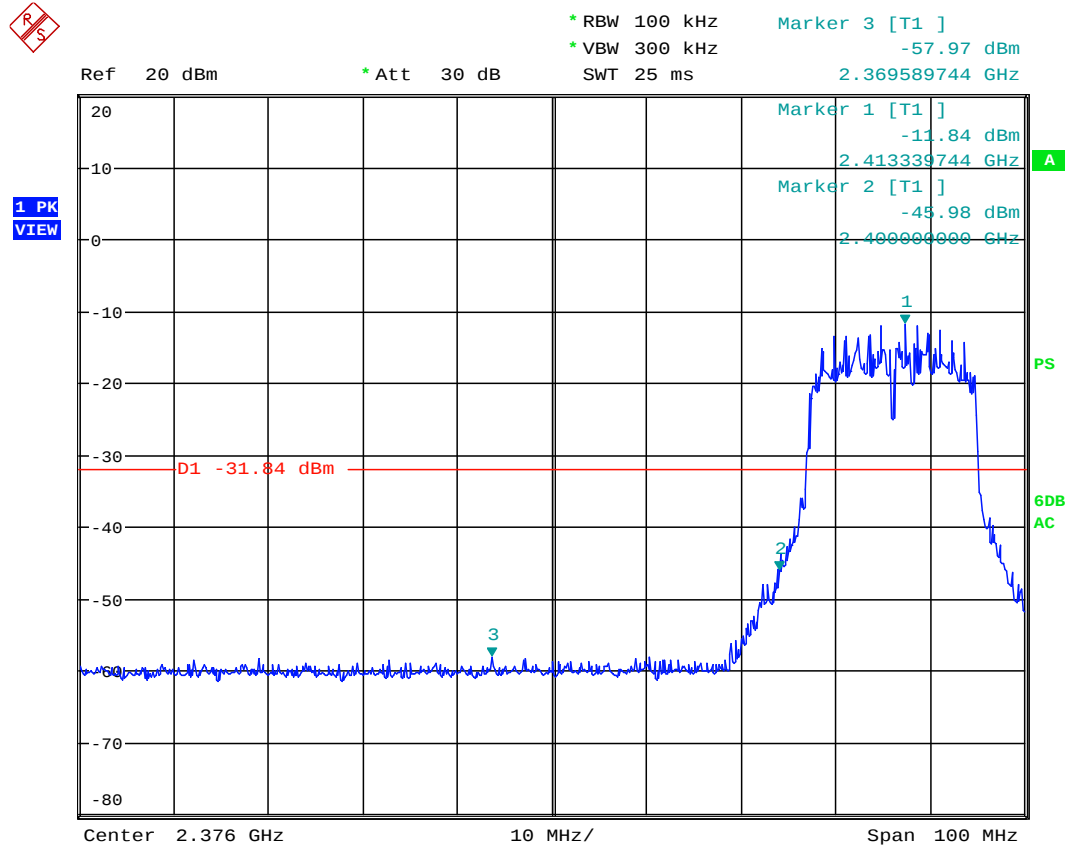
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2413.378	-12.01	N/A
2400	-44.84	-32.01
2386.134	-58.22	-32.01



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Below 2.4GHz 802.11n, 72.2 Mbps



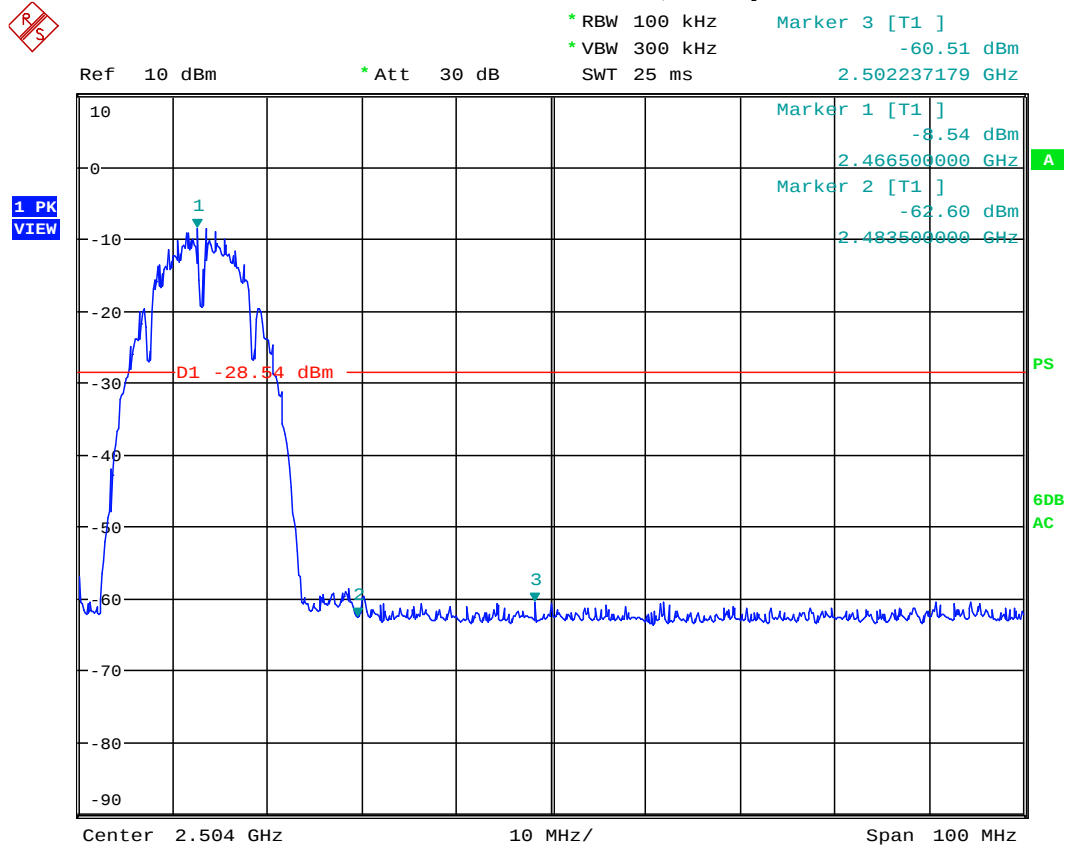
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2413.339	-11.84	N/A
2400	-45.98	-31.84
2369.589	-57.97	-31.84



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Above 2.4835 Ghz 802.11b, 1 Mbps



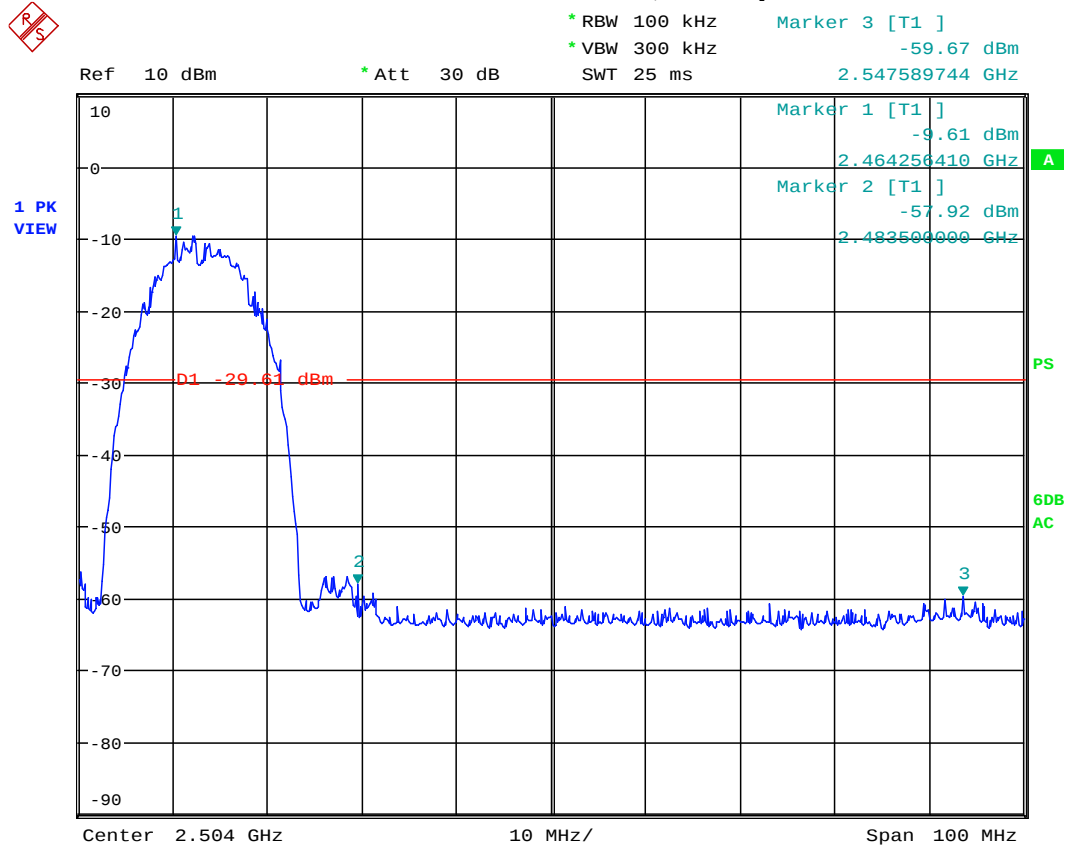
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2466.5	-8.54	N/A
2483.5	-62.6	-28.54
2502.237	-60.51	-28.54



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Above 2.4835 Ghz 802.11b, 11 Mbps



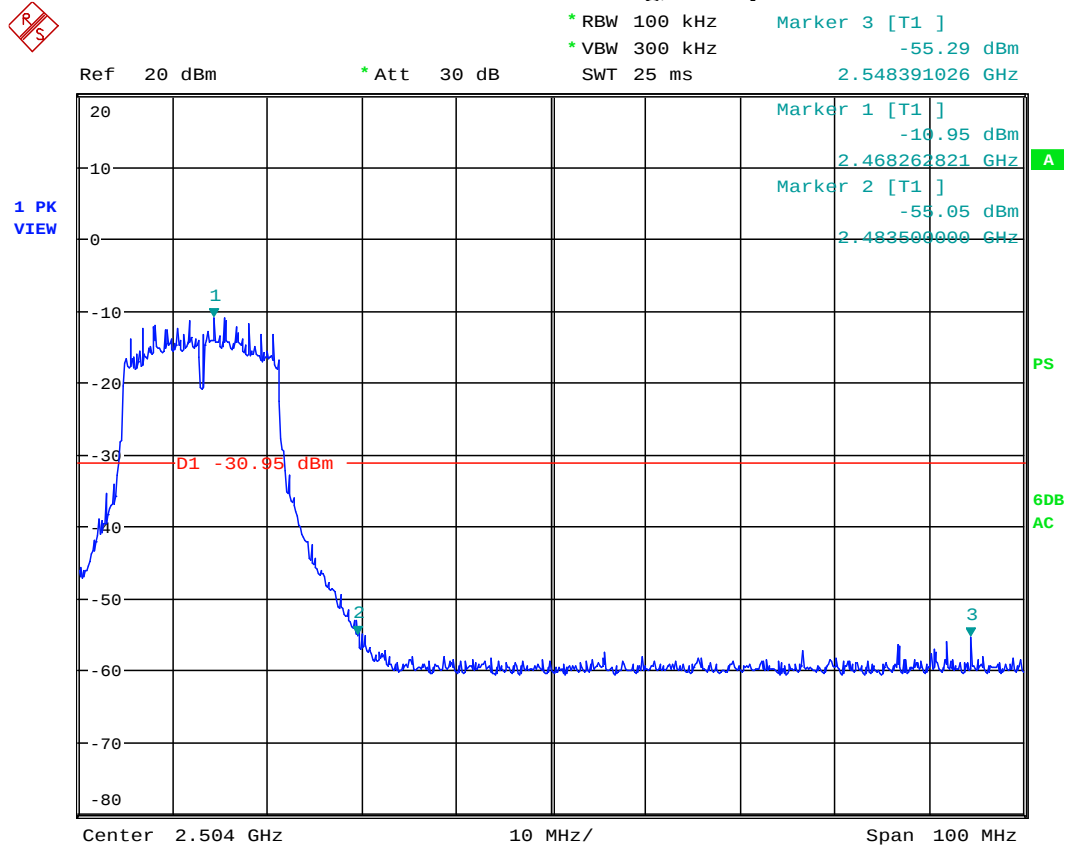
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2464.256	-9.61	N/A
2483.5	-57.92	-29.61
2547.589	-59.67	-29.61



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Above 2.4835 Ghz 802.11g, 6 Mbps



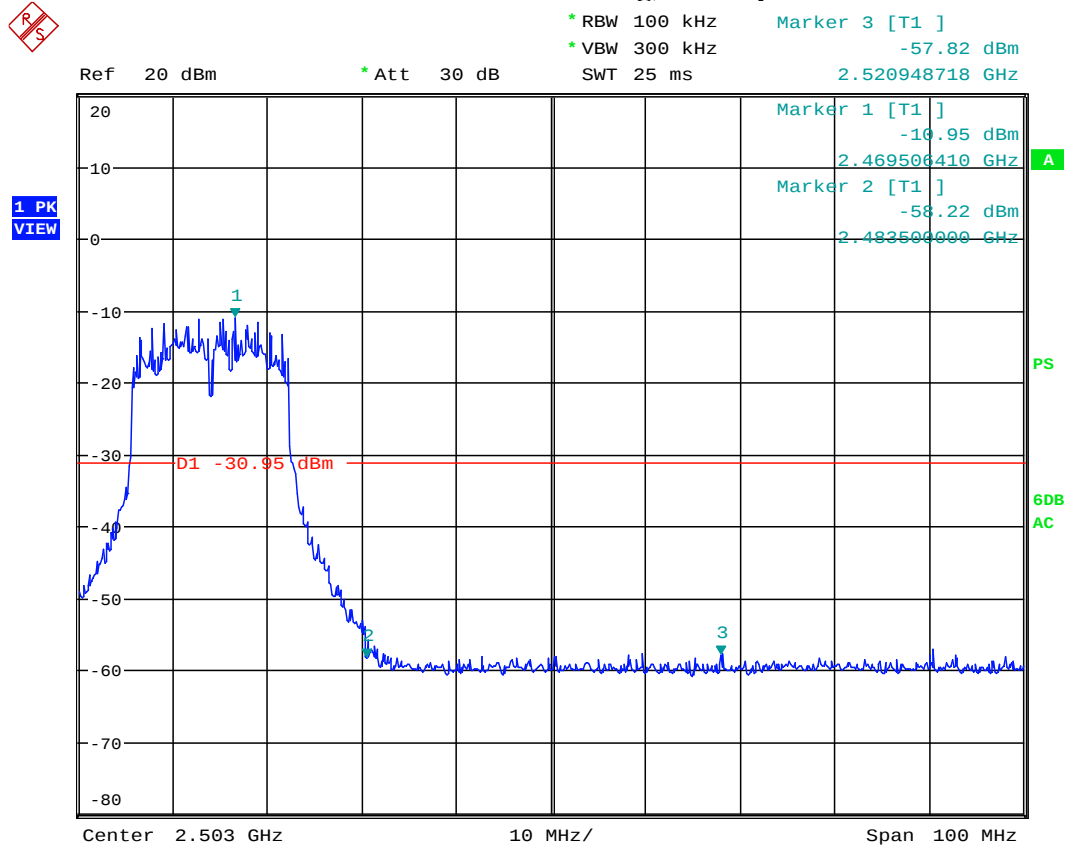
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2468.262	-10.95	N/A
2483.5	-55.05	-30.95
2548.391	-55.29	-30.95



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Above 2.4835 Ghz 802.11g, 54 Mbps



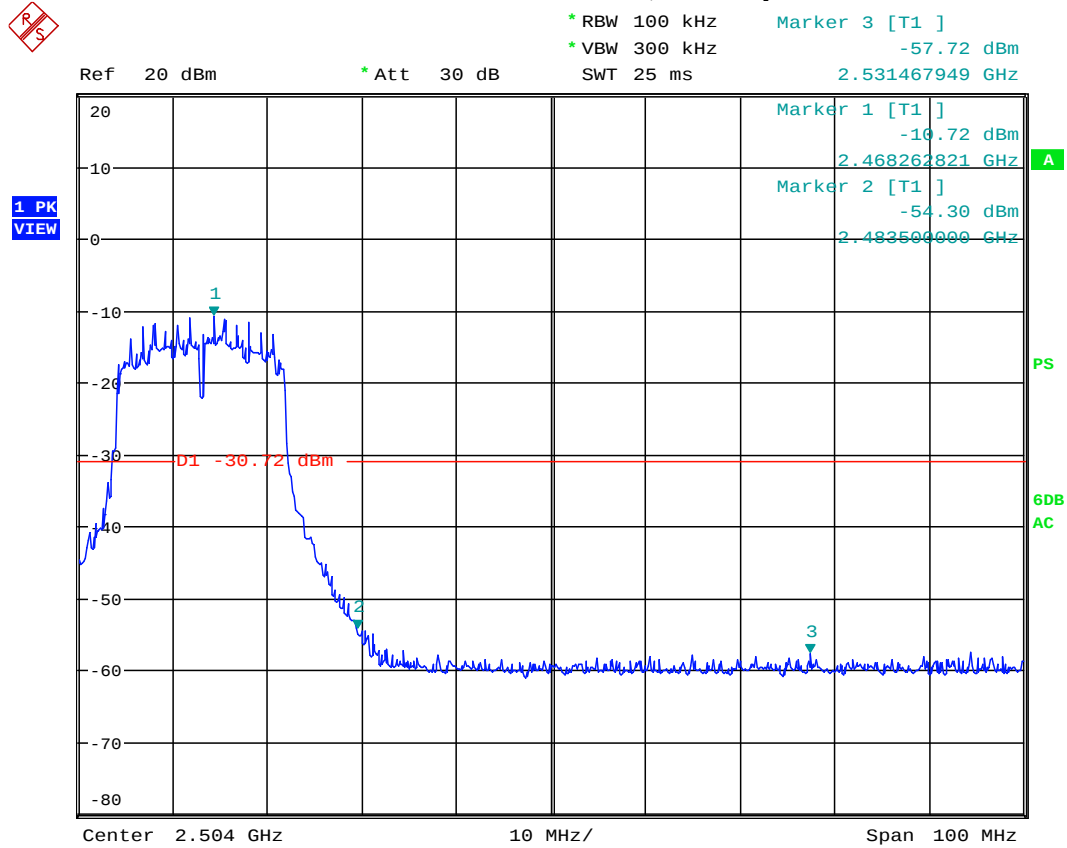
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2469.506	-10.95	N/A
2483.5	-58.22	-30.95
2520.948	-57.82	-30.95



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Above 2.4835 Ghz 802.11n, 7.2 Mbps



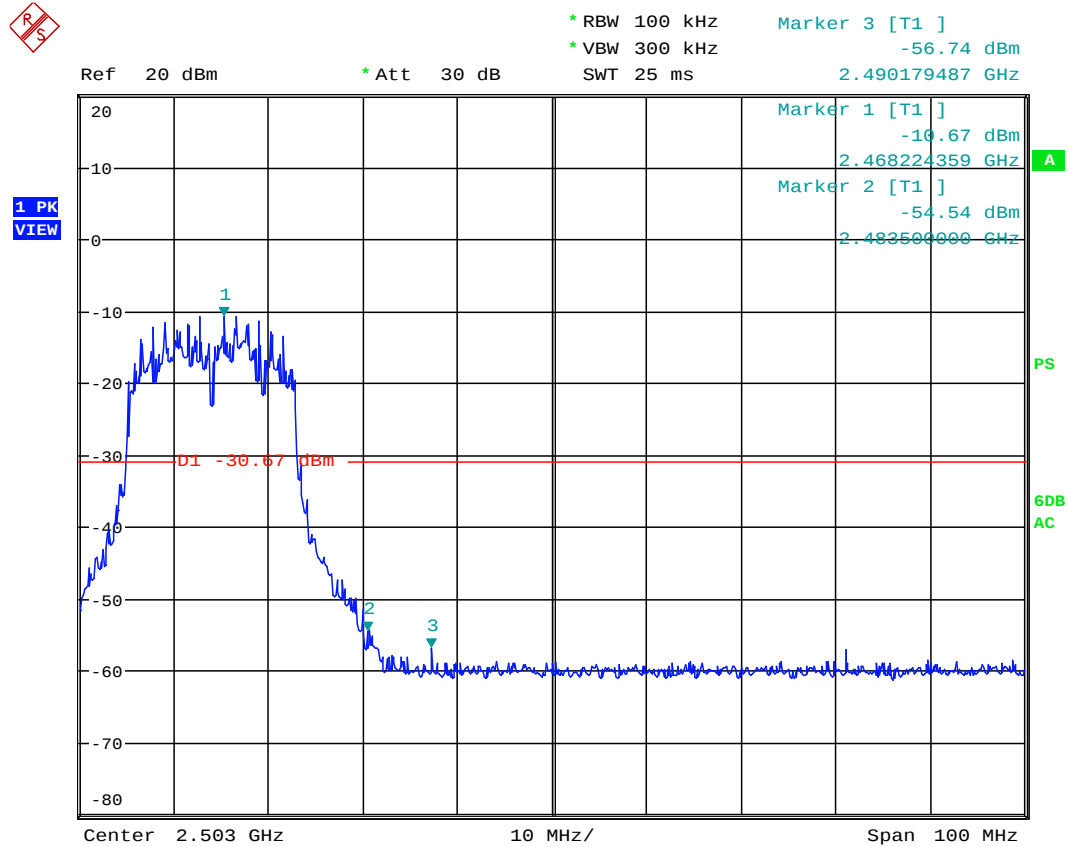
Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2468.262	-10.72	N/A
2483.5	-54.3	-30.72
2531.467	-57.72	-30.72



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

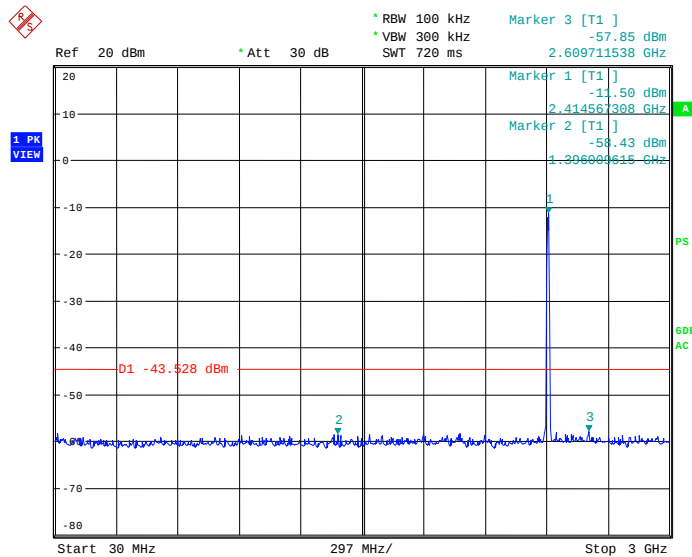
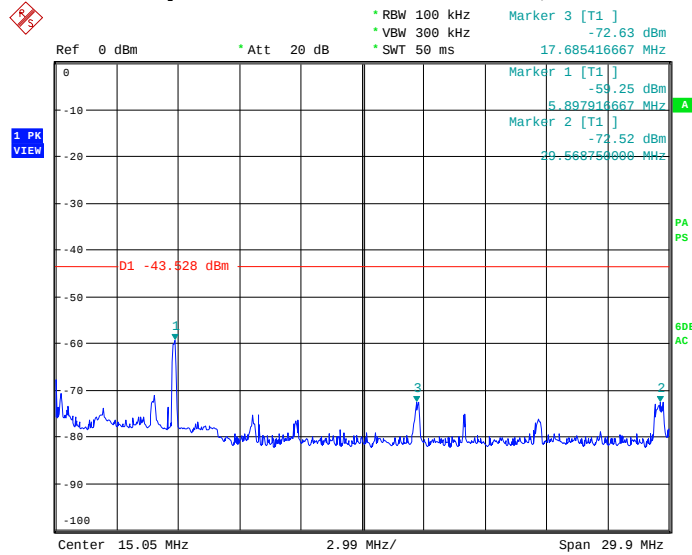
Above 2.4835 Ghz 802.11n, 72.2 Mbps



Frequency (MHz)	Measurement (dBm)	Margin (dBm)
2468.224	-10.67	N/A
2483.5	-54.54	-30.67
2490.179	-56.74	-30.67

**ELECTRO MAGNETIC TEST, INC.**

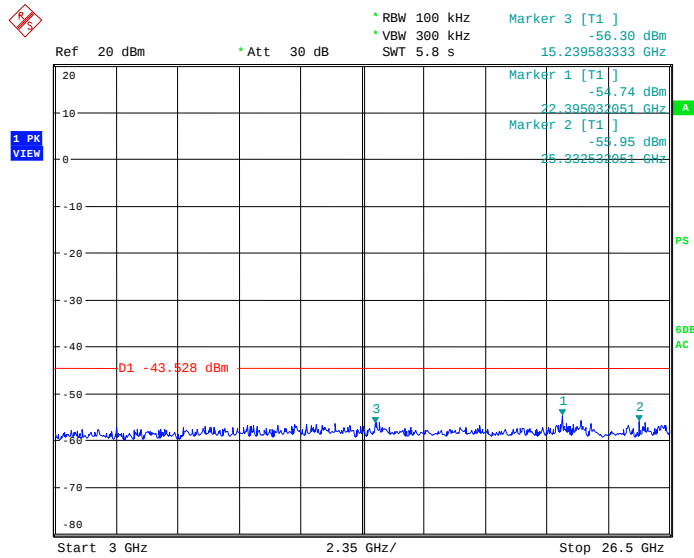
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

Conducted Spurious Emissions: 802.11b, 2412 MHz, 1 Mbps



ELECTRO MAGNETIC TEST, INC.

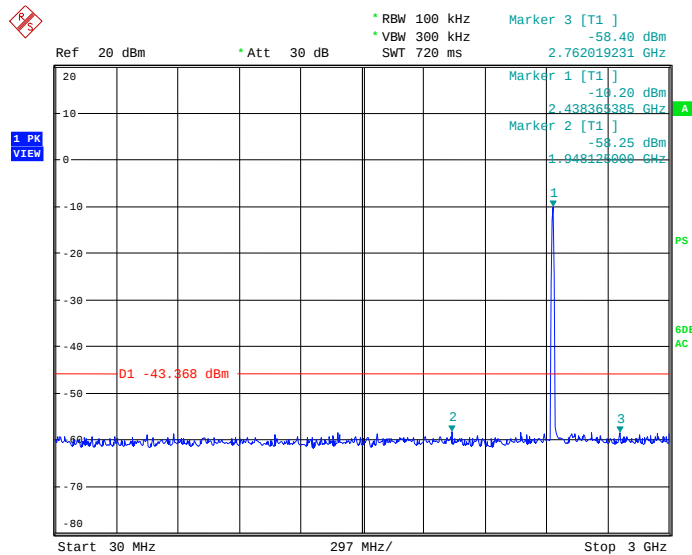
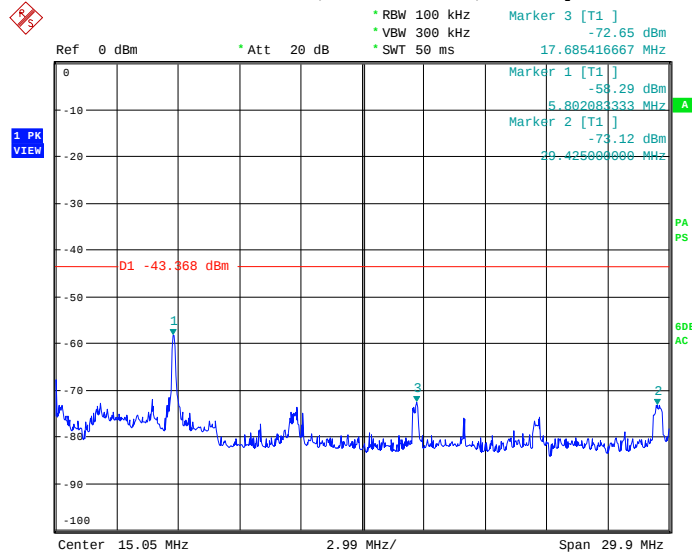
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.897	-59.25	-43.528
17.685	-72.63	-43.528
29.568	-72.52	-43.528
1396.005	-58.43	-43.528
2414.567	-11.5	Fundamental
2609.711	-57.85	-43.528
15239.583	-56.3	-43.528
22395.032	-54.74	-43.528
25332.532	-55.95	-43.528

**ELECTRO MAGNETIC TEST, INC.**

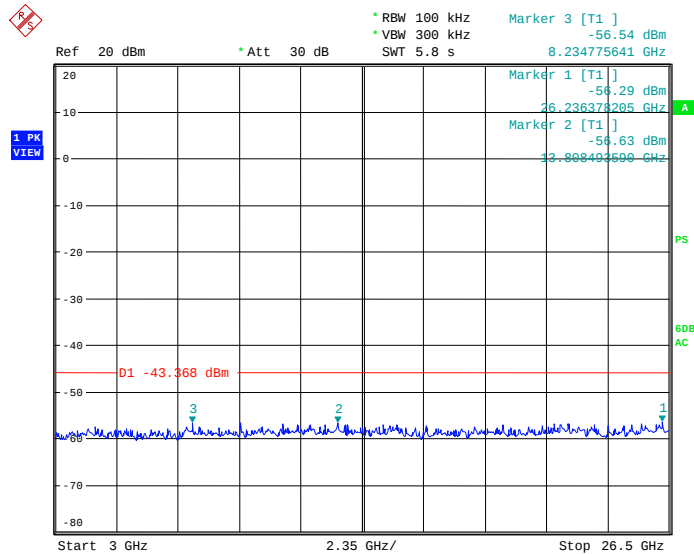
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11b, 2437 MHz, 1 Mbps



ELECTRO MAGNETIC TEST, INC.

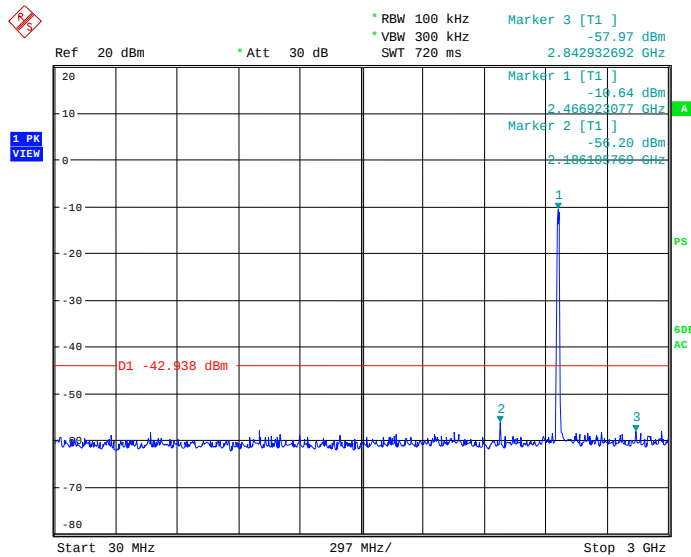
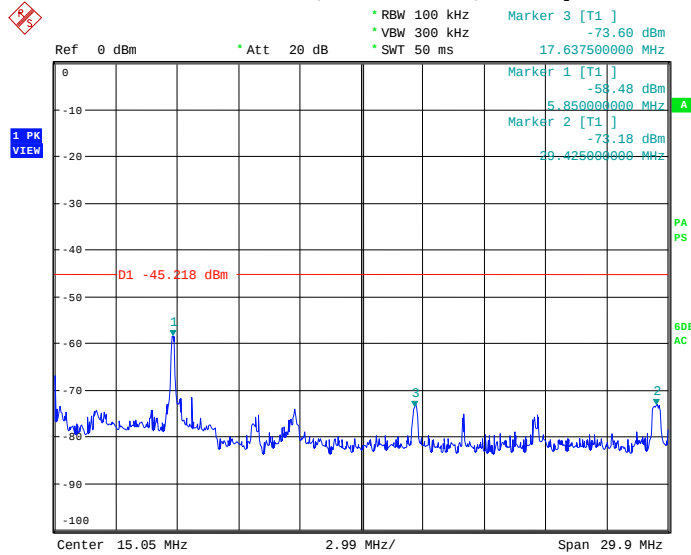
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.802	-58.29	-43.368
17.685	-72.65	-43.368
29.425	-73.12	-43.368
1948.125	-58.25	-43.368
2438.369	-10.2	Fundamental
2762.019	-58.4	-43.368
8234.776	-56.54	-43.368
13808.493	-56.63	-43.368
26236.378	-56.29	-43.368

**ELECTRO MAGNETIC TEST, INC.**

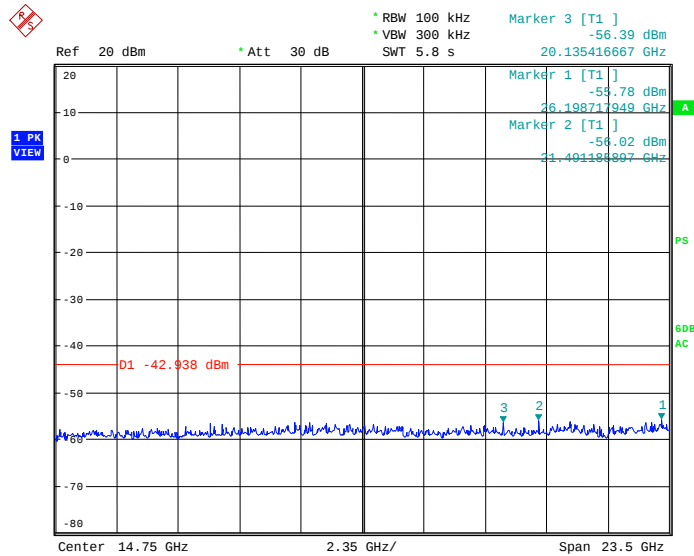
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11b, 2467 MHz, 1 Mbps



ELECTRO MAGNETIC TEST, INC.

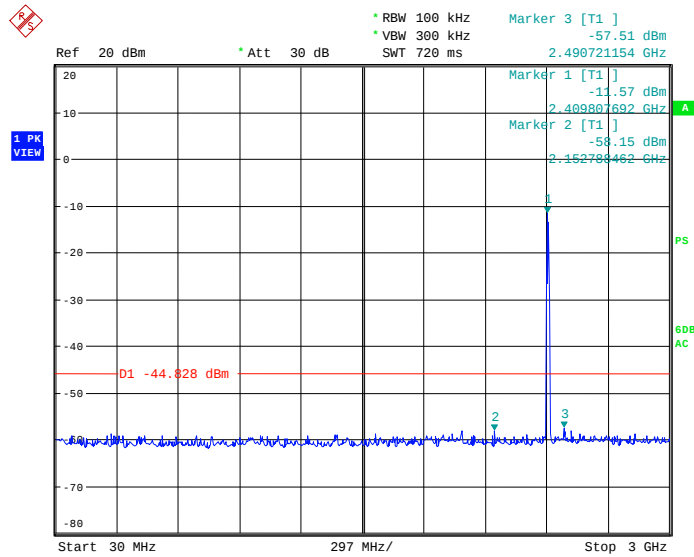
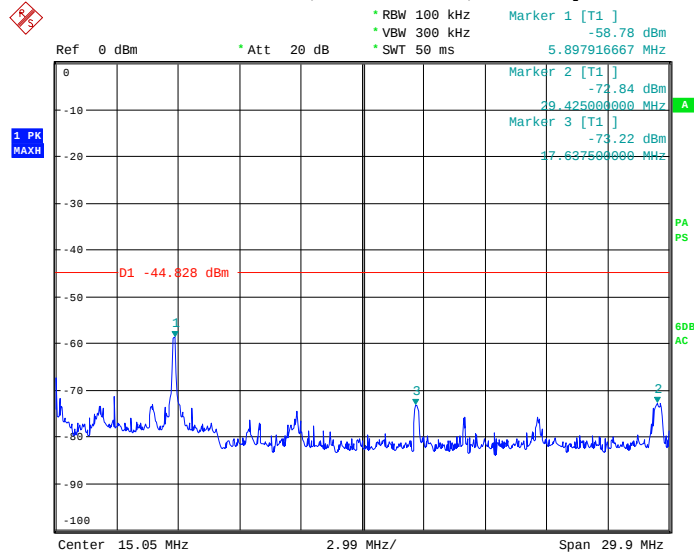
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.48	-42.938
17.637	-73.60	-42.938
29.425	-73.18	-42.938
2186.105	-56.20	-42.938
2466.923	-10.64	Fundamental
2842.932	-59.97	-42.938
20135.417	-56.39	-42.938
21491.185	-56.02	-42.938
26198.717	-55.78	-42.938

**ELECTRO MAGNETIC TEST, INC.**

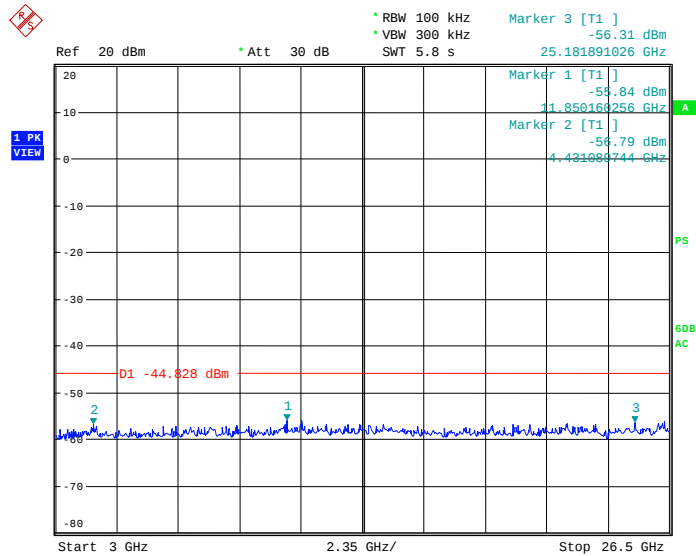
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802.11b, 2412 MHz, 11 Mbps



ELECTRO MAGNETIC TEST, INC.

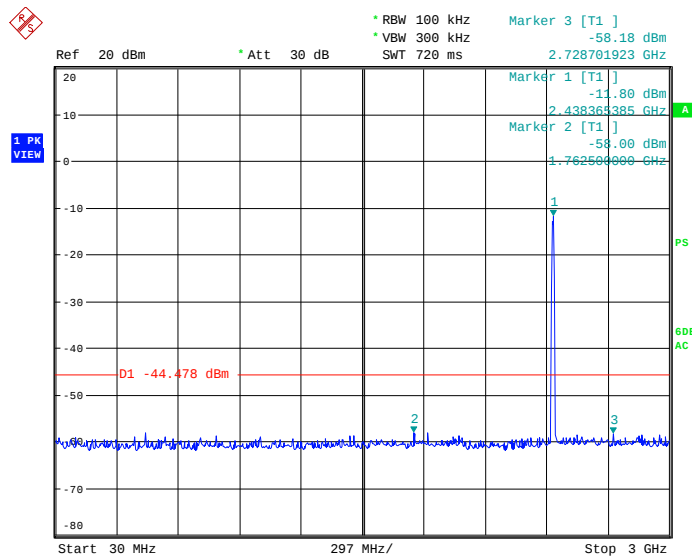
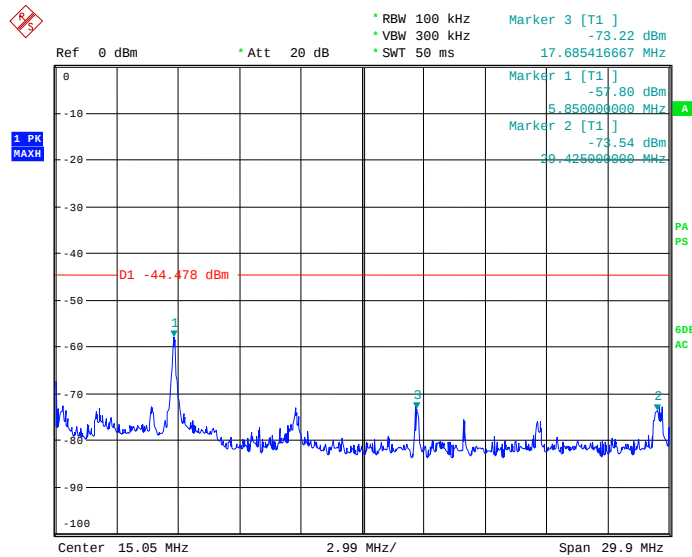
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.897	-58.78	-44.828
17.637	-73.22	-44.828
29.425	-72.84	-44.828
2152.788	-58.15	-44.828
2409.808	-11.57	Fundamental
2490.721	-57.51	-44.828
4431.086	-56.79	-44.828
11850.161	-55.84	-44.828
25181.891	-56.31	-44.828

**ELECTRO MAGNETIC TEST, INC.**

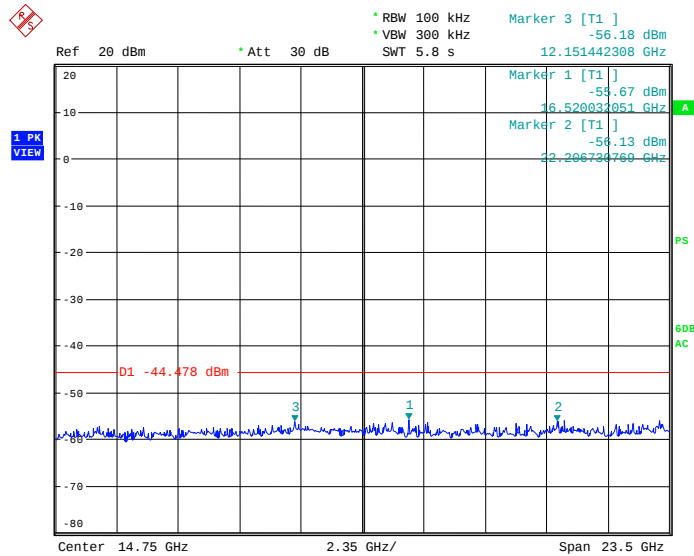
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802.11b, 2437 MHz, 11 Mbps



ELECTRO MAGNETIC TEST, INC.

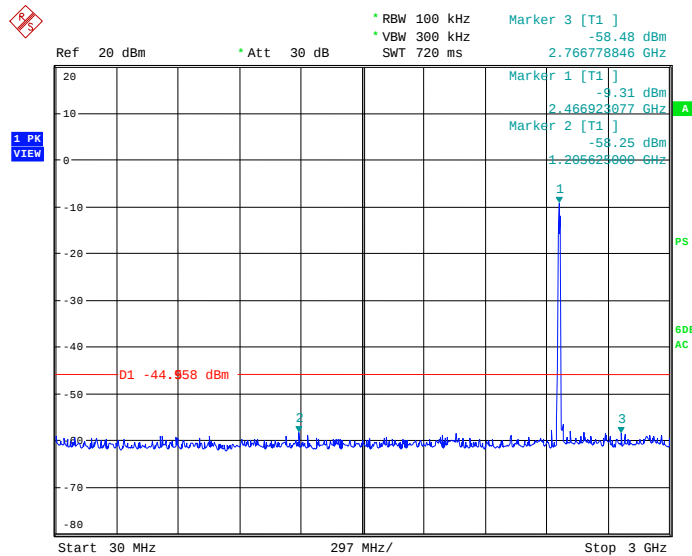
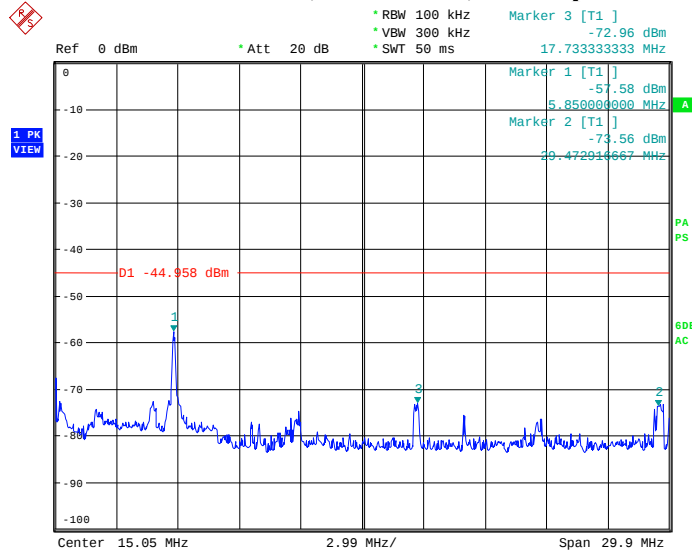
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-57.80	-44.478
17.685	-73.22	-44.478
29.425	-73.54	-44.478
1762.5	-58.00	-44.478
2438.365	-11.8	Fundamental
2728.702	-58.18	-44.478
12151.442	-56.18	-44.478
16520.032	-55.67	-44.478
22206.73	-56.13	-44.478

**ELECTRO MAGNETIC TEST, INC.**

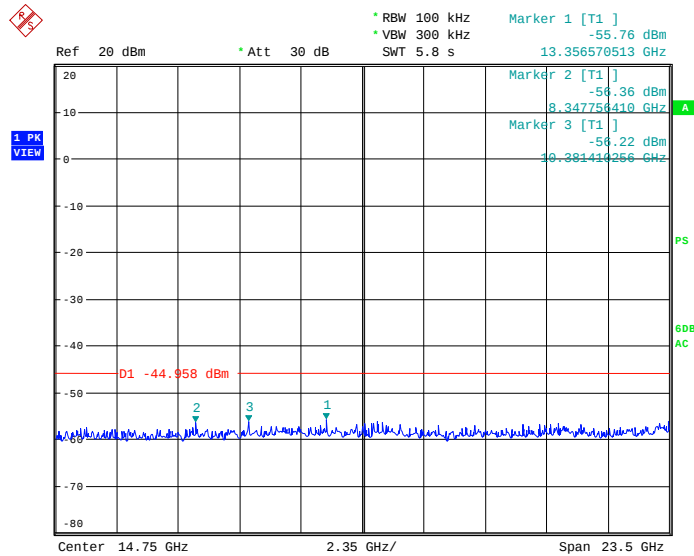
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11b, 2467 MHz, 11 Mbps



ELECTRO MAGNETIC TEST, INC.

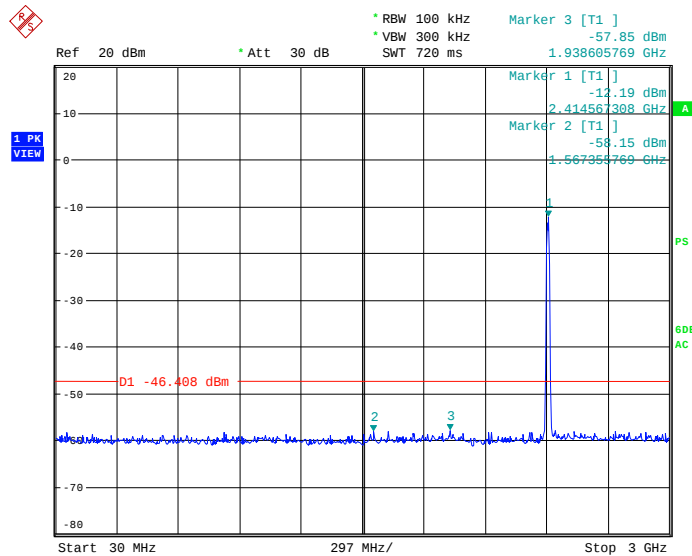
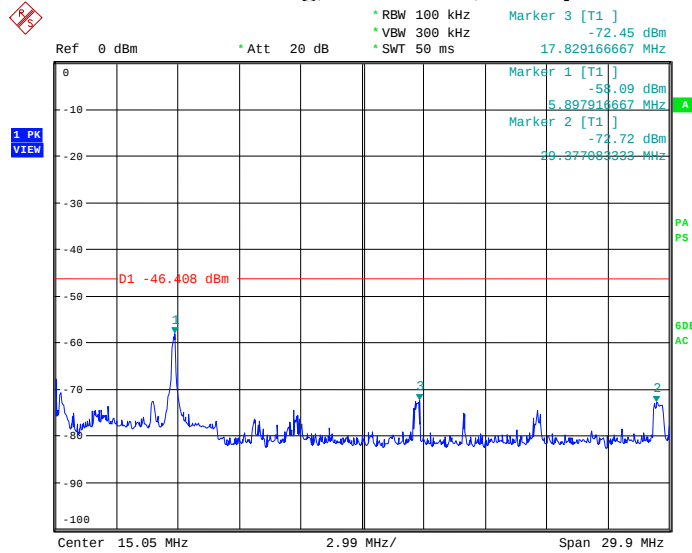
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-57.58	-44.958
17.733	-72.96	-44.958
29.673	-73.56	-44.958
1205.625	-58.25	-44.958
2466.923	-9.31	Fundamental
2766.779	-58.48	-44.958
8347.756	-56.36	-44.958
10381.41	-56.22	-44.958
13356.57	-55.76	-44.958

**ELECTRO MAGNETIC TEST, INC.**

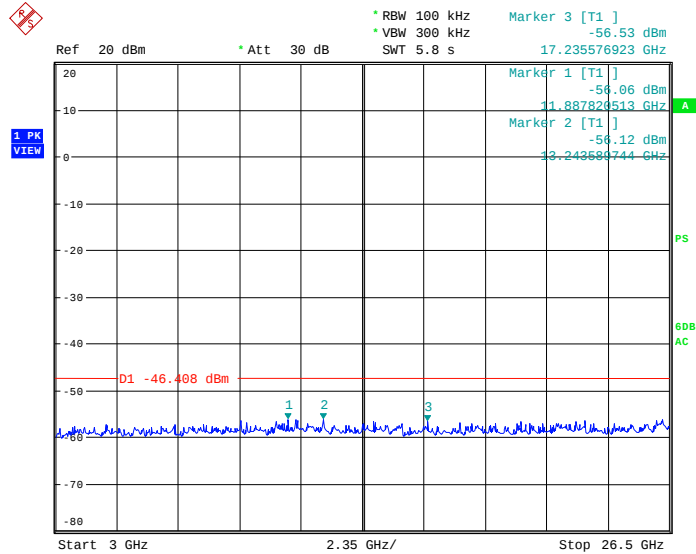
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2412 MHz, 6 Mbps



ELECTRO MAGNETIC TEST, INC.

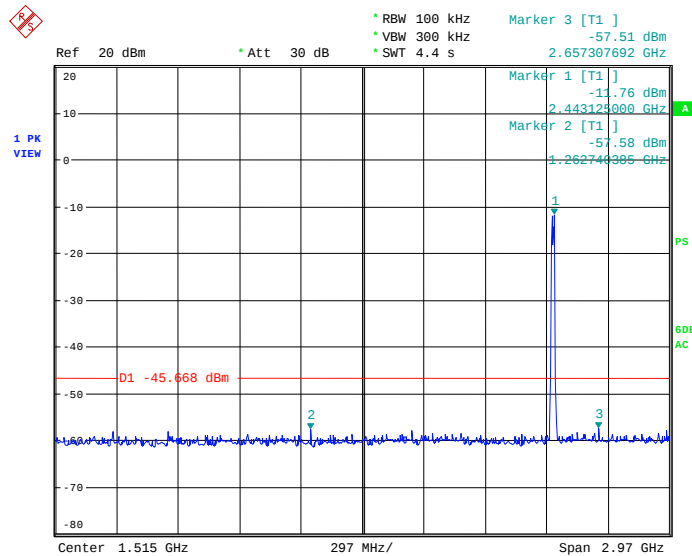
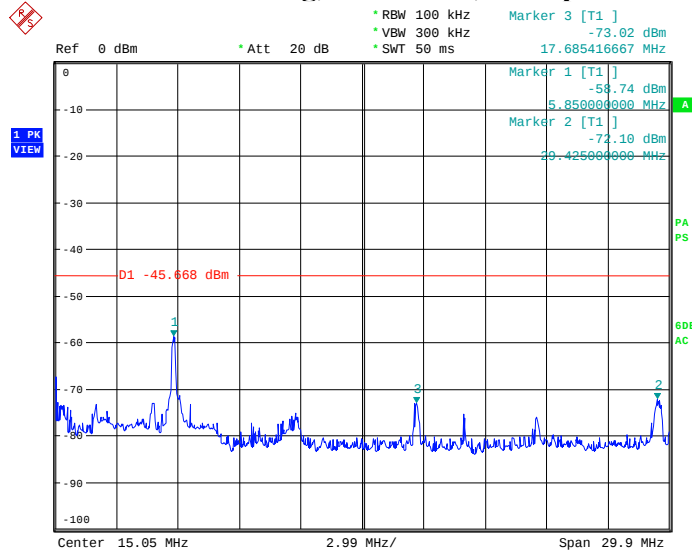
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.897	-58.09	-46.408
17.829	-72.45	-46.408
29.377	-72.72	-46.408
1567.355	-58.15	-46.408
1938.606	-57.85	-46.408
2414.567	-12.19	Fundamental
11887.82	-56.06	-46.408
13243.589	-56.12	-46.408
17235.576	-56.53	-46.408

**ELECTRO MAGNETIC TEST, INC.**

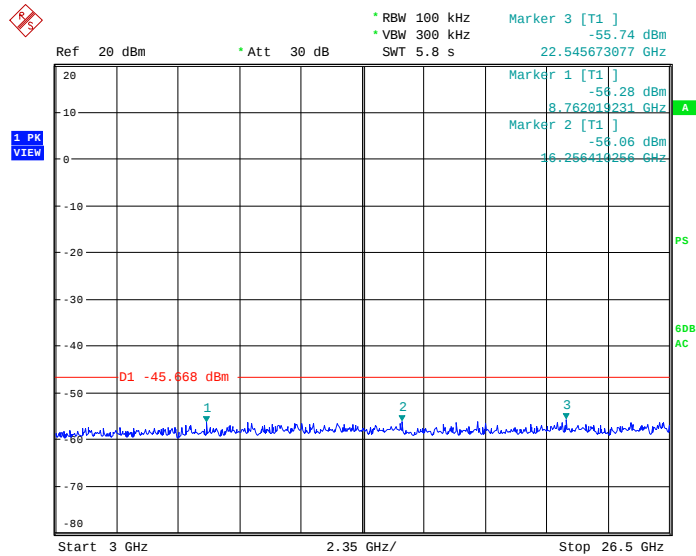
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2437 MHz, 6 Mbps



ELECTRO MAGNETIC TEST, INC.

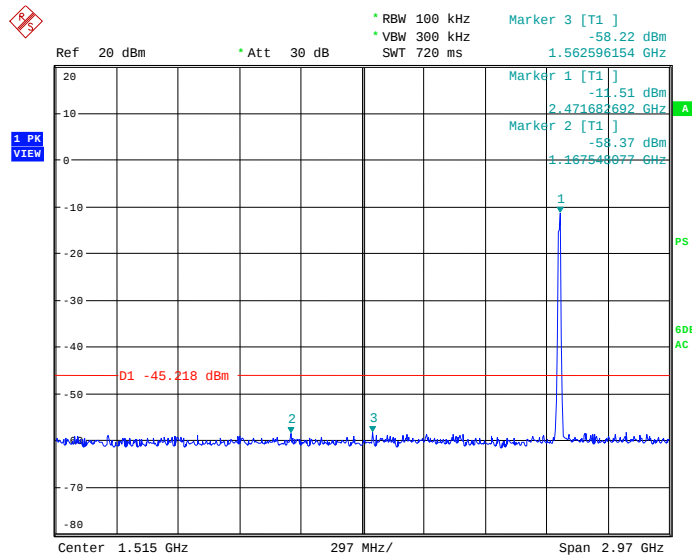
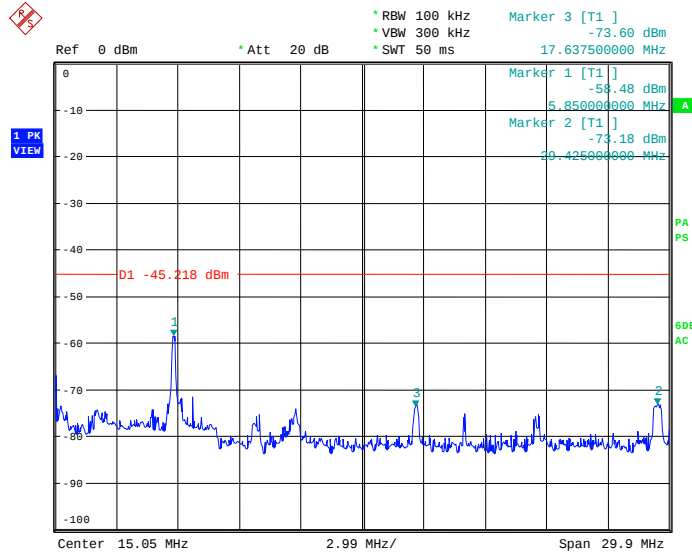
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.74	-45.668
17.685	-73.02	-45.668
29.425	-72.10	-45.668
1262.74	-57.58	-45.668
2443.125	-11.76	Fundamental
2657.307	-57.51	-45.668
8762.019	-56.28	-45.668
16256.41	-56.06	-45.668
22545.673	-55.74	-45.668

**ELECTRO MAGNETIC TEST, INC.**

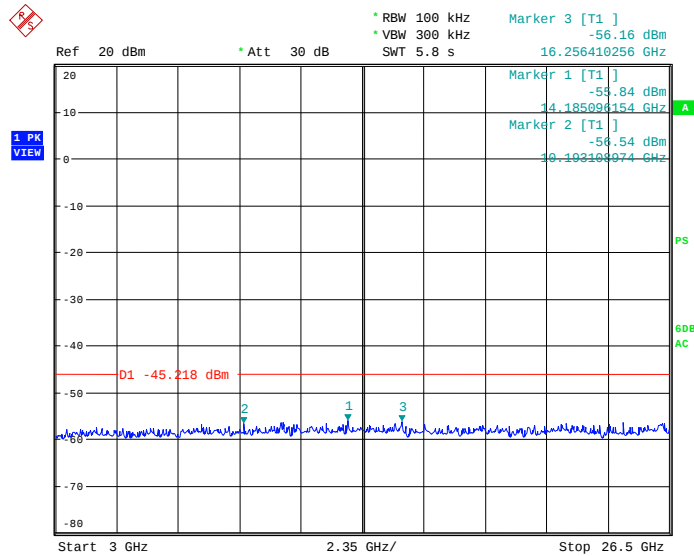
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2467 MHz, 6 Mbps



ELECTRO MAGNETIC TEST, INC.

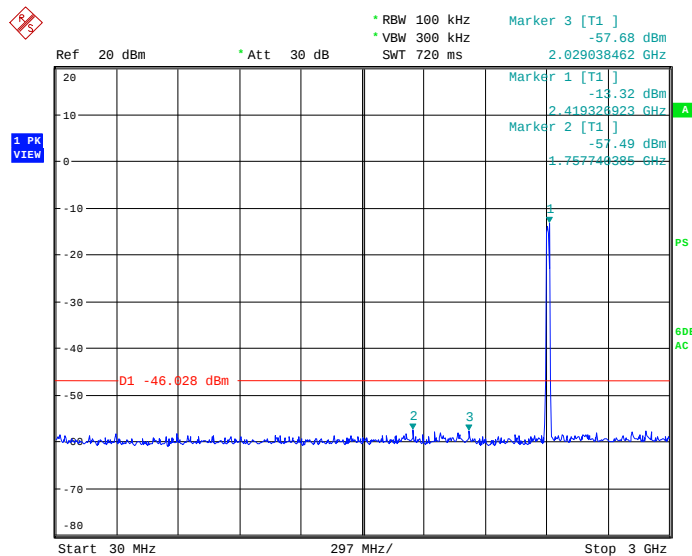
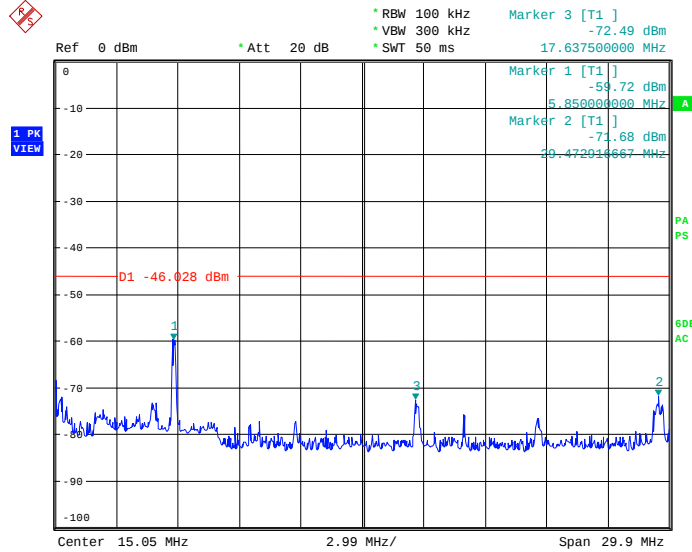
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.48	-45.218
17.637	-73.60	-45.218
29.425	-73.18	-45.218
1167.548	-58.37	-45.218
1562.596	-58.22	-45.218
2471.682	-11.51	Fundamental
10193.108	-56.54	-45.218
14185.096	-55.84	-45.218
16256.41	-56.16	-45.218

**ELECTRO MAGNETIC TEST, INC.**

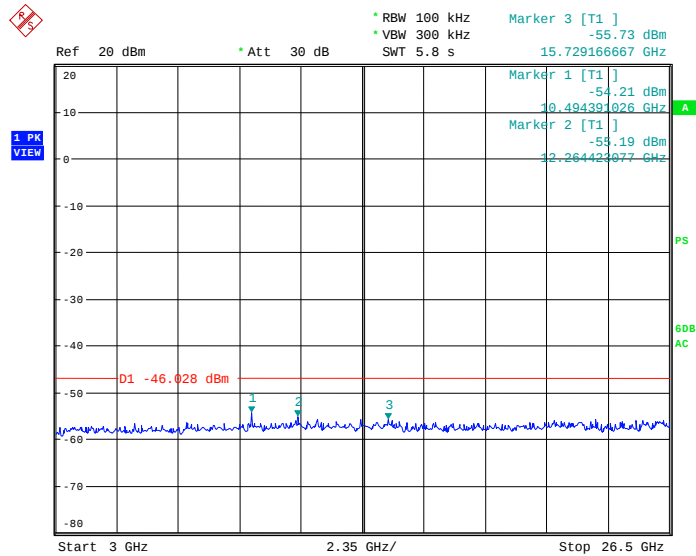
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2412 MHz, 54 Mbps



ELECTRO MAGNETIC TEST, INC.

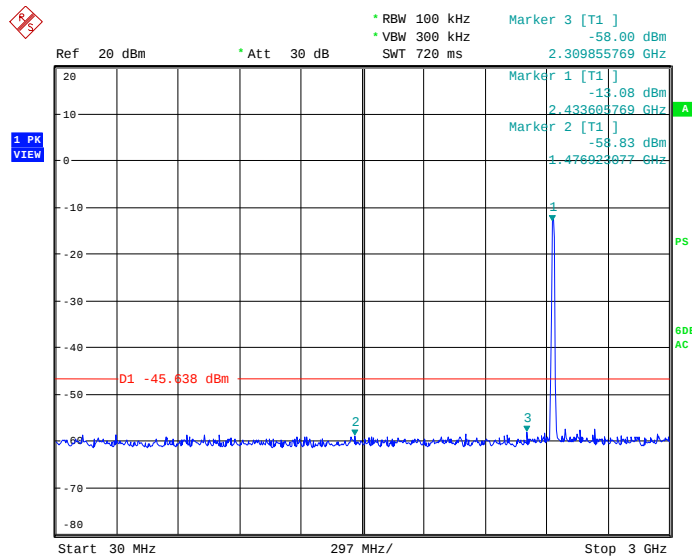
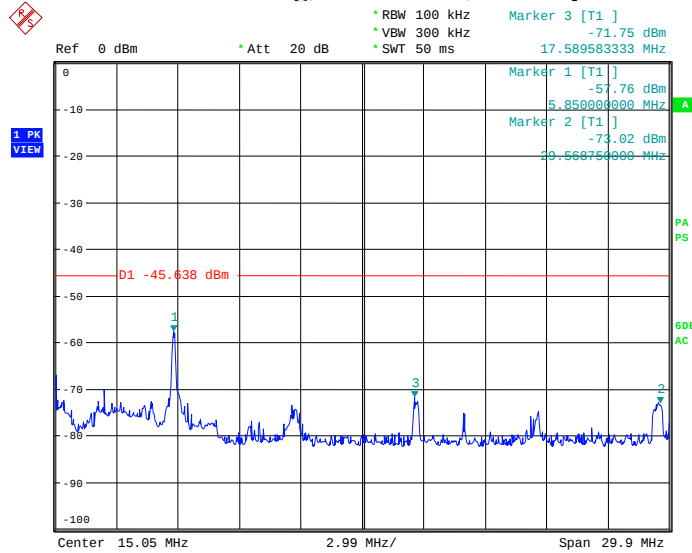
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-59.72	-46.028
17.637	-72.49	-46.028
29.472	-71.68	-46.028
1757.740	-57.49	-46.028
2029.038	-57.68	-46.028
2419.326	-13.32	Fundamental
10494.391	-54.21	-46.028
12264.423	-55.19	-46.028
15729.166	-55.73	-46.028

**ELECTRO MAGNETIC TEST, INC.**

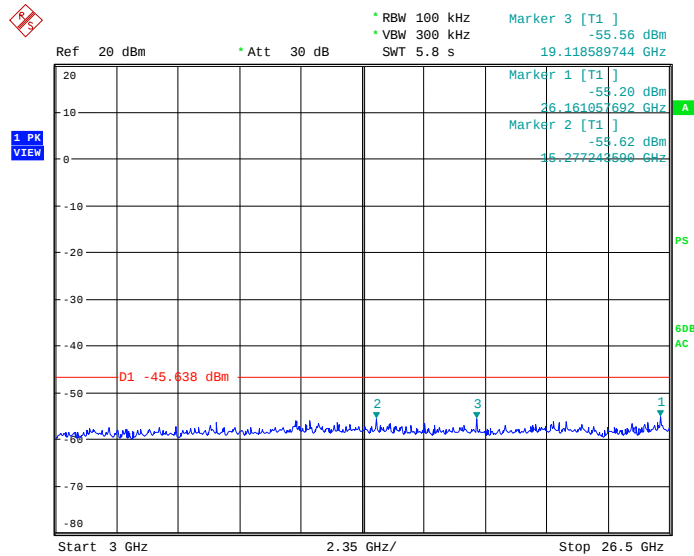
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2437 MHz, 54 Mbps



ELECTRO MAGNETIC TEST, INC.

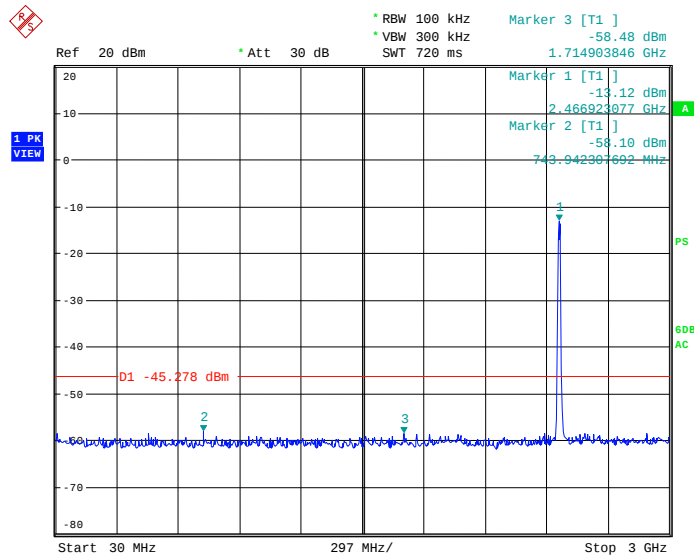
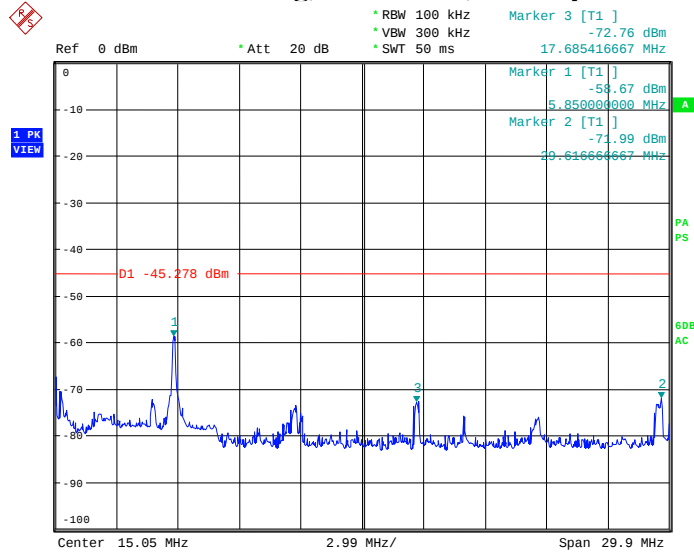
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-57.76	-45.638
17.589	-71.75	-45.638
29.568	-73.02	-45.638
1476.923	-58.83	-45.638
2309.855	-58.00	-45.638
2433.605	-13.08	Fundamental
15277.243	-55.62	-45.638
19118.589	-55.56	-45.638
26161.057	-55.2	-45.638

**ELECTRO MAGNETIC TEST, INC.**

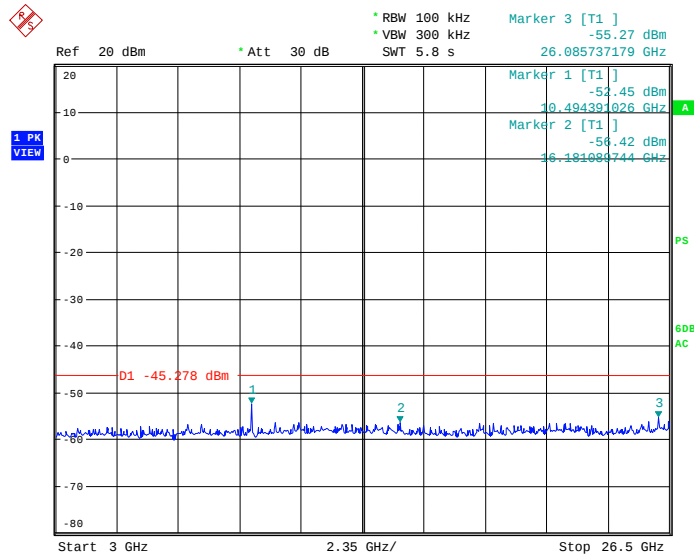
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11g, 2467 MHz, 54 Mbps



ELECTRO MAGNETIC TEST, INC.

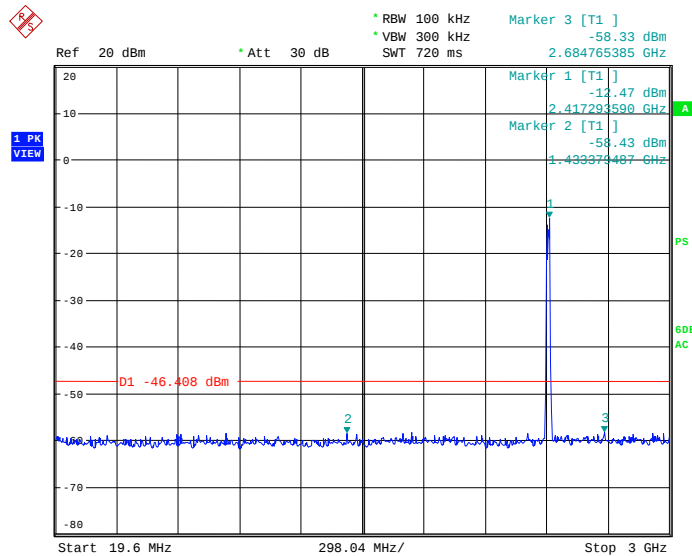
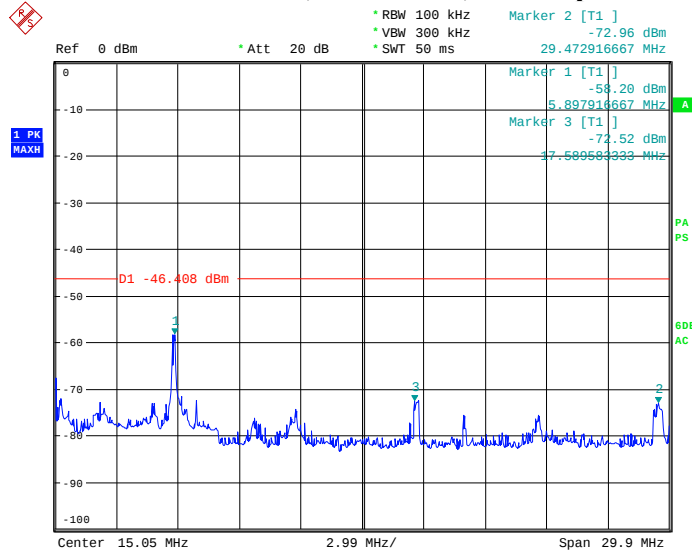
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.67	-45.278
17.685	-72.76	-45.278
29.617	-71.99	-45.278
743.942	-58.1	-45.278
1714.904	-58.48	-45.278
2466.923	-13.12	Fundamental
10494.391	-52.45	-45.278
16181.089	-56.42	-45.278
26085.737	-55.27	-45.278

**ELECTRO MAGNETIC TEST, INC.**

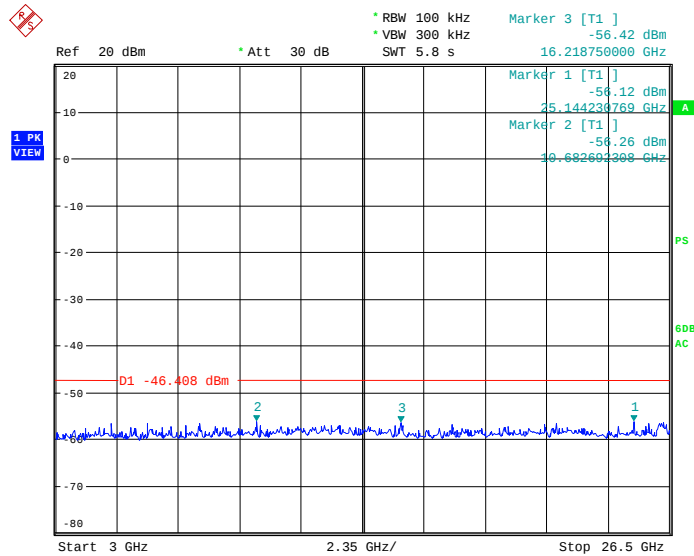
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, 2412 MHz, 7.2 Mbps



ELECTRO MAGNETIC TEST, INC.

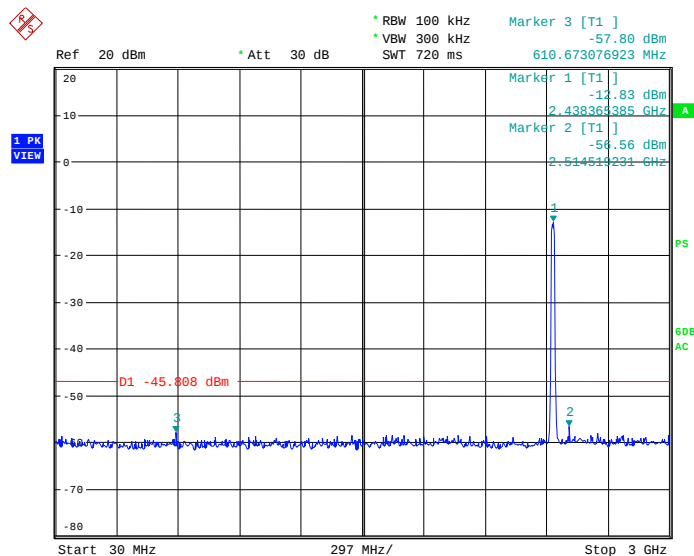
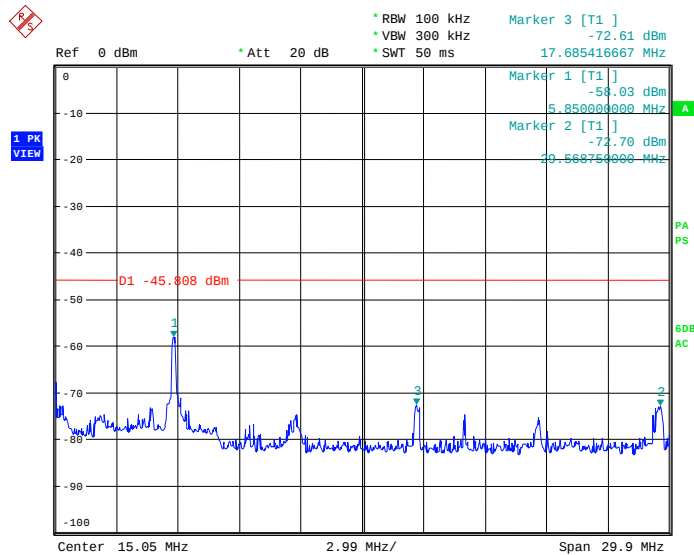
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.898	-58.20	-46.408
17.590	-72.52	-46.408
29.473	-72.96	-46.408
1433.379	-58.43	-46.408
2417.293	-12.47	Fundamental
2684.765	-58.33	-46.408
10682.692	-56.26	-46.408
16218.75	-56.42	-46.408
25144.23	-56.12	-46.408

**ELECTRO MAGNETIC TEST, INC.**

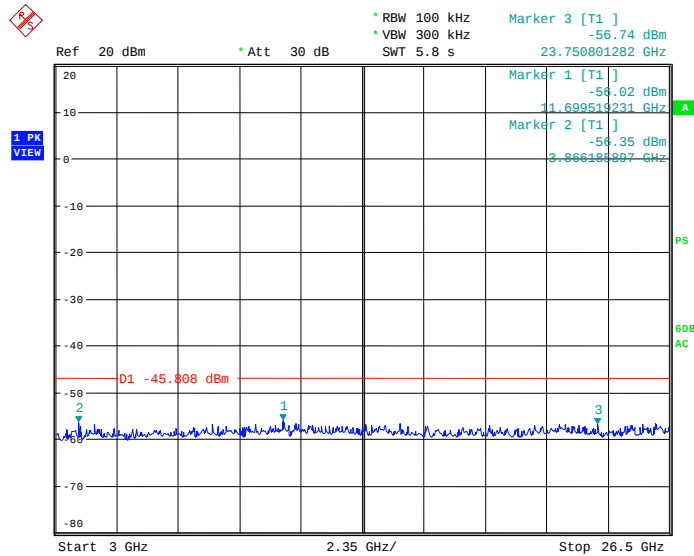
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, 2437 MHz, 7.2 Mbps



ELECTRO MAGNETIC TEST, INC.

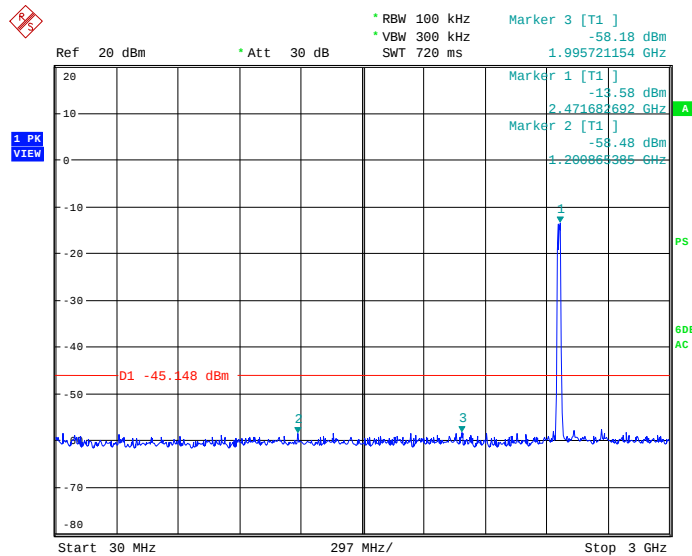
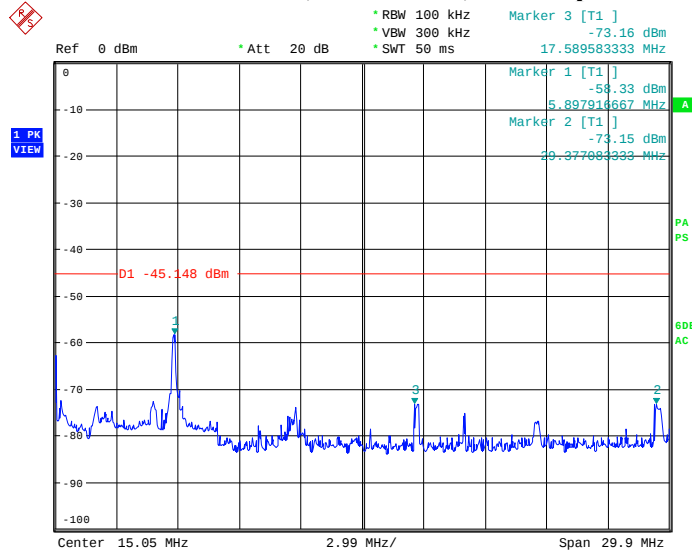
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.03	-45.808
17.685	-72.61	-45.808
29.568	-72.70	-45.808
610.673	-57.80	-45.808
2438.369	-12.83	Fundamental
2514.519	-56.56	-45.808
3866.189	-56.35	-45.808
11699.519	-56.02	-45.808
23750.801	-56.74	-45.808

**ELECTRO MAGNETIC TEST, INC.**

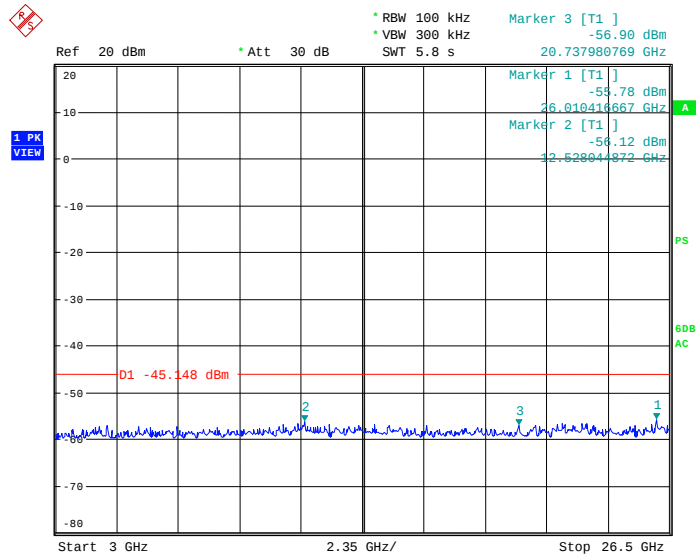
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, 2467 MHz, 7.2 Mbps



ELECTRO MAGNETIC TEST, INC.

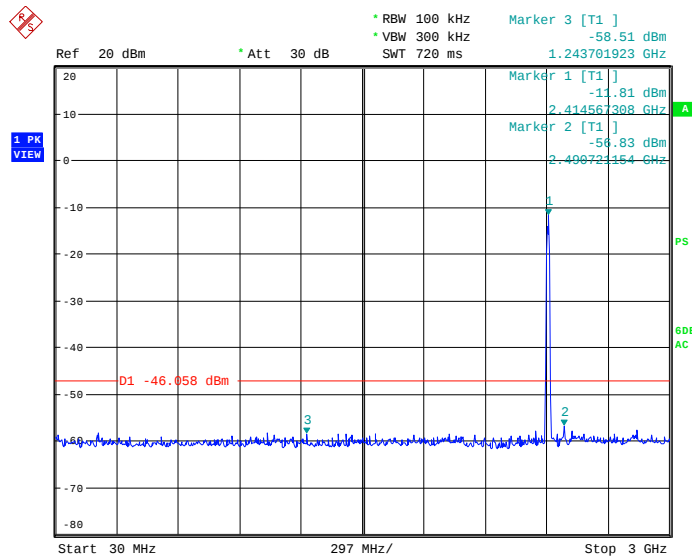
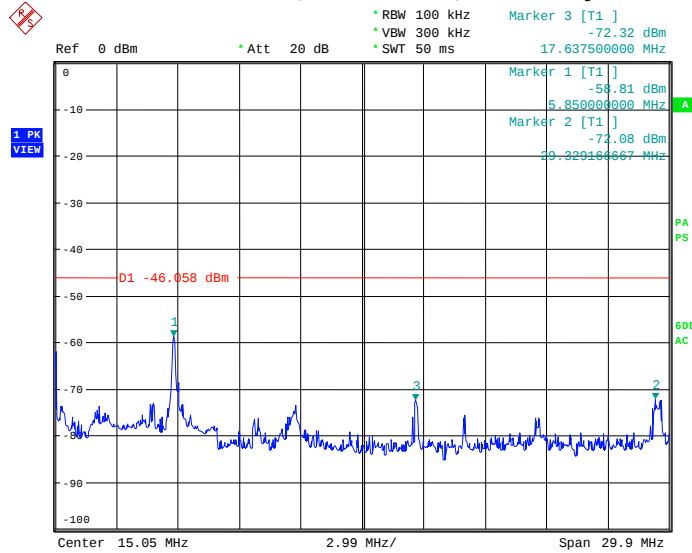
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.898	-58.33	-45.148
17.590	-73.16	-45.148
29.377	-73.15	-45.148
1200.865	-58.48	-45.148
1995.721	-58.18	-45.148
2471.682	-13.58	Fundamental
12528.044	-56.12	-45.148
20737.98	-56.9	-45.148
26010.416	-55.78	-45.148

**ELECTRO MAGNETIC TEST, INC.**

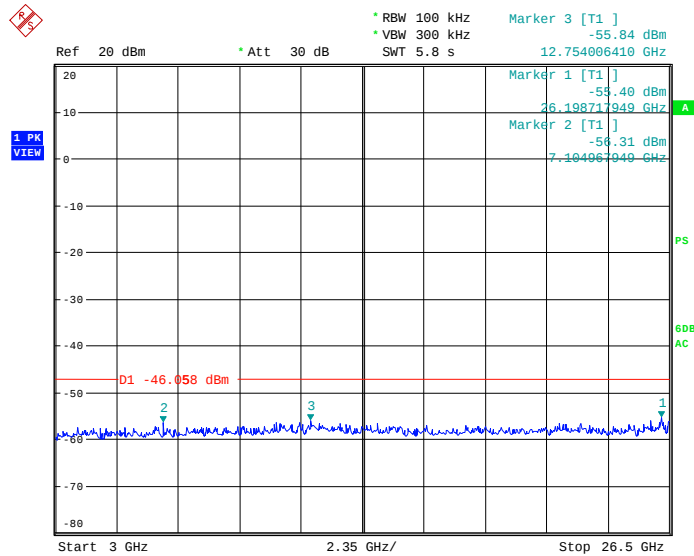
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, 2412 MHz, 72.2 Mbps



ELECTRO MAGNETIC TEST, INC.

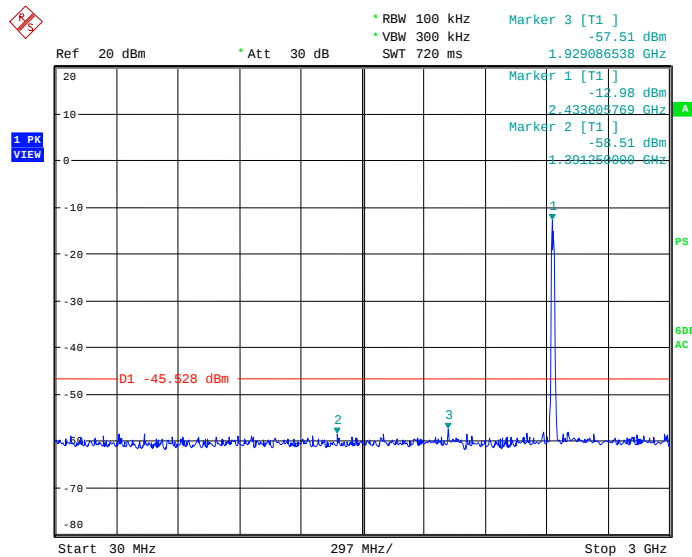
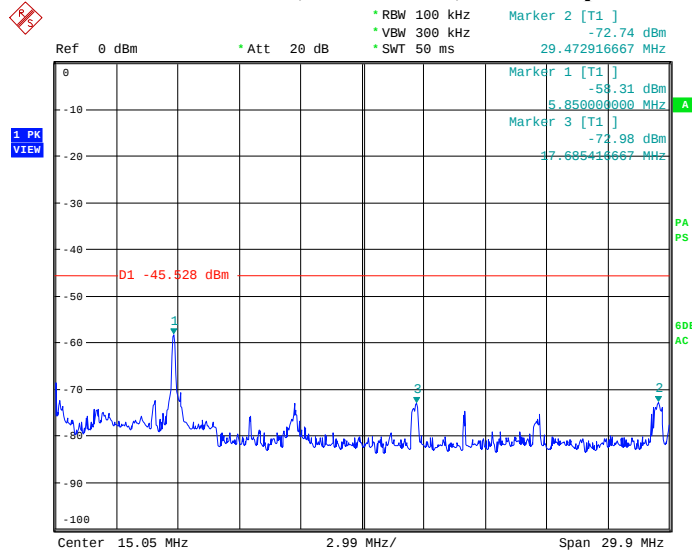
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.81	-46.058
17.637	-72.32	-46.058
29.329	-72.08	-46.058
1243.701	-58.51	-46.058
2414.567	-11.81	Fundamental
2490.721	-56.83	-46.058
7104.967	-56.31	-46.058
12754.006	-55.84	-46.058
26198.717	-55.40	-46.058

**ELECTRO MAGNETIC TEST, INC.**

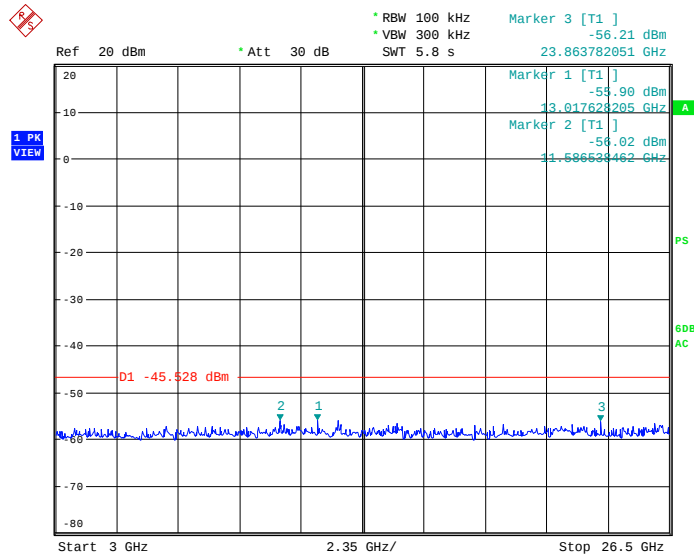
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, 2437 MHz, 72.2 Mbps



ELECTRO MAGNETIC TEST, INC.

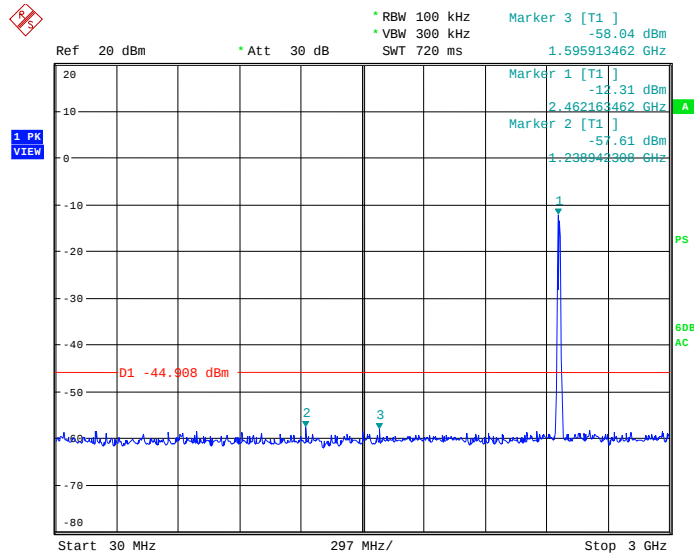
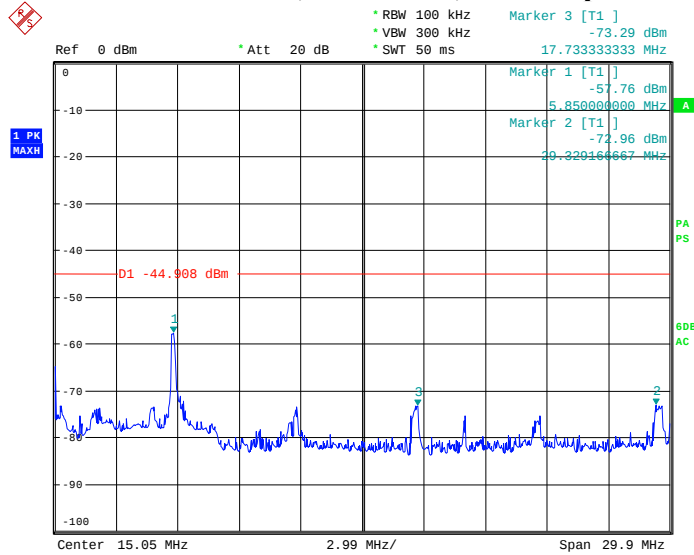
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-58.31	-45.528
17.685	-72.98	-45.528
29.473	-72.74	-45.528
1391.25	-57.51	-45.528
1929.086	-58.51	-45.528
2433.605	-12.98	Fundamental
11586.538	-56.02	-45.528
13017.628	-55.9	-45.528
23863.782	-56.21	-45.528

**ELECTRO MAGNETIC TEST, INC.**

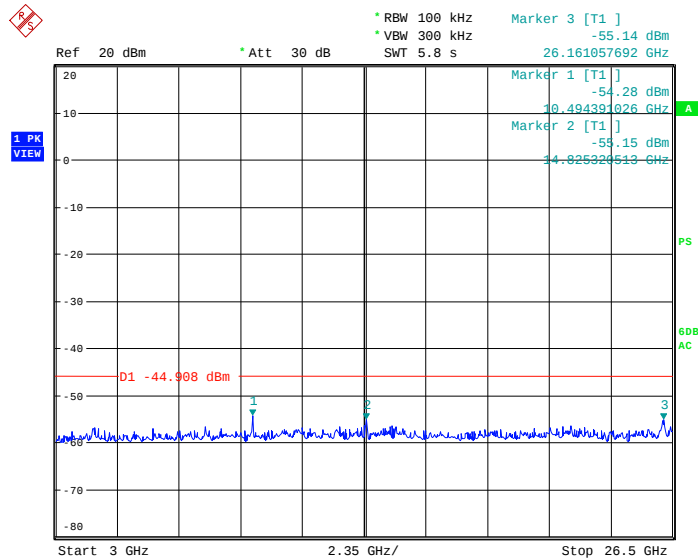
1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

802.11n, 2467 MHz, 72.2 Mbps



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



Frequency (MHz)	Measurement (dBm)	Limit (dBm)
5.850	-57.76	-44.908
17.733	-73.29	-44.908
29.329	-72.96	-44.908
1238.942	-57.61	-44.908
1595.913	-58.04	-44.908
2462.163	-12.31	Fundamental
10494.391	-54.28	-44.908
14825.32	-55.15	-44.908
26161.058	-55.14	-44.908



ELECTRO MAGNETIC TEST, INC.

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APPENDIX B

PHOTOGRAPHS



ELECTRO MAGNETIC TEST, INC.

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FRONT VIEW

ALWAYS INNOVATING, INC.

HDMI DONGLE

MODEL: REV. E4

FCC PART 15 SUBPART C - RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



REAR VIEW

ALWAYS INNOVATING, INC.

HDMI DONGLE

MODEL: REV. E4

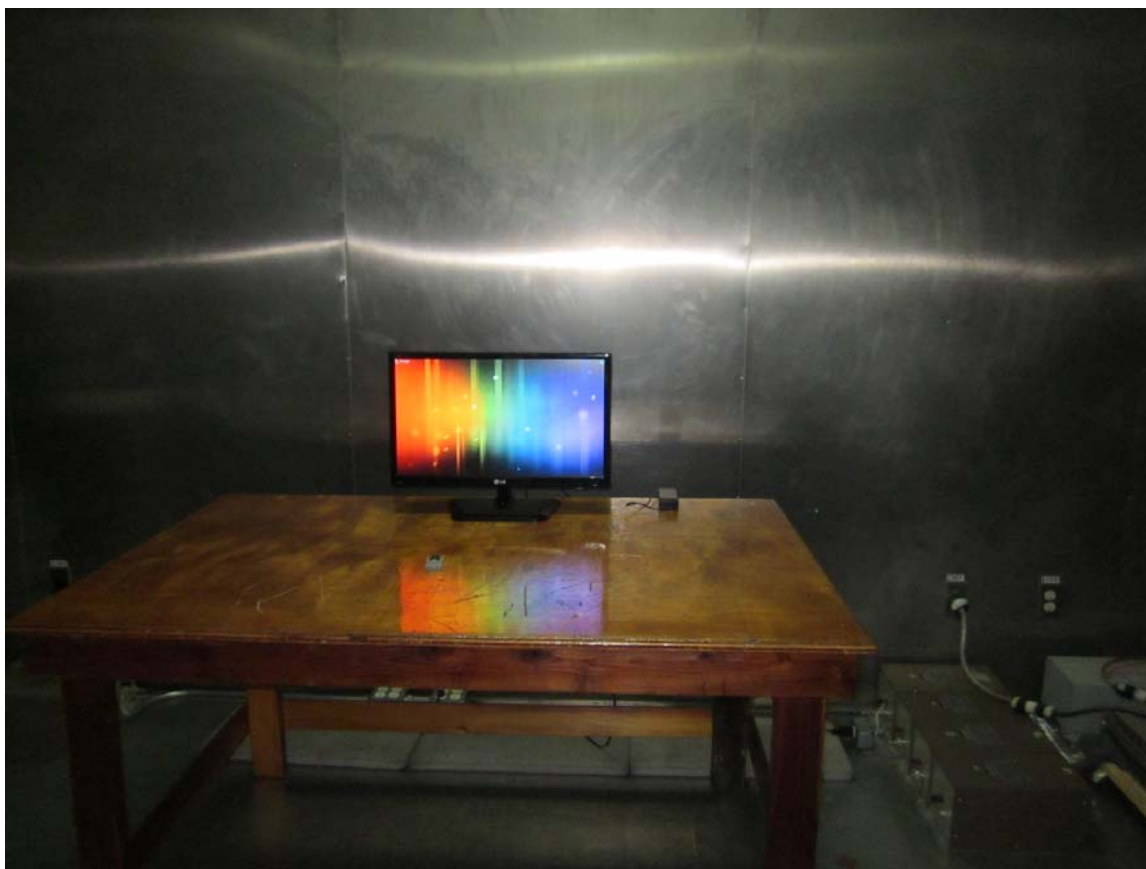
FCC PART 15 SUBPART C - RADIATED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



FRONT VIEW

ALWAYS INNOVATING, INC.

HDMI DONGLE

MODEL: REV. E4

FCC PART 15 SUBPART C - CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000



REAR VIEW

ALWAYS INNOVATING, INC.

HDMI DONGLE

MODEL: REV. E4

FCC PART 15 SUBPART C - CONDUCTED EMISSIONS

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

APPENDIX C

TEST SETUP DIAGRAMS



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

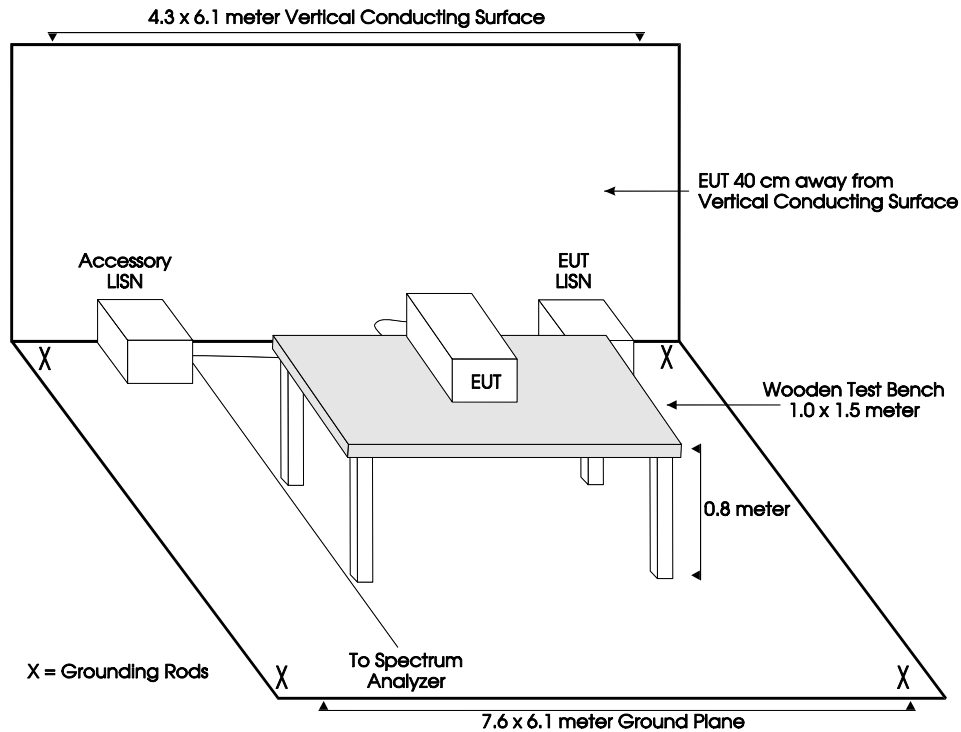


FIGURE 1 – TABLETOP CONDUCTED EMISSIONS TEST SETUP – SITE ‘A’

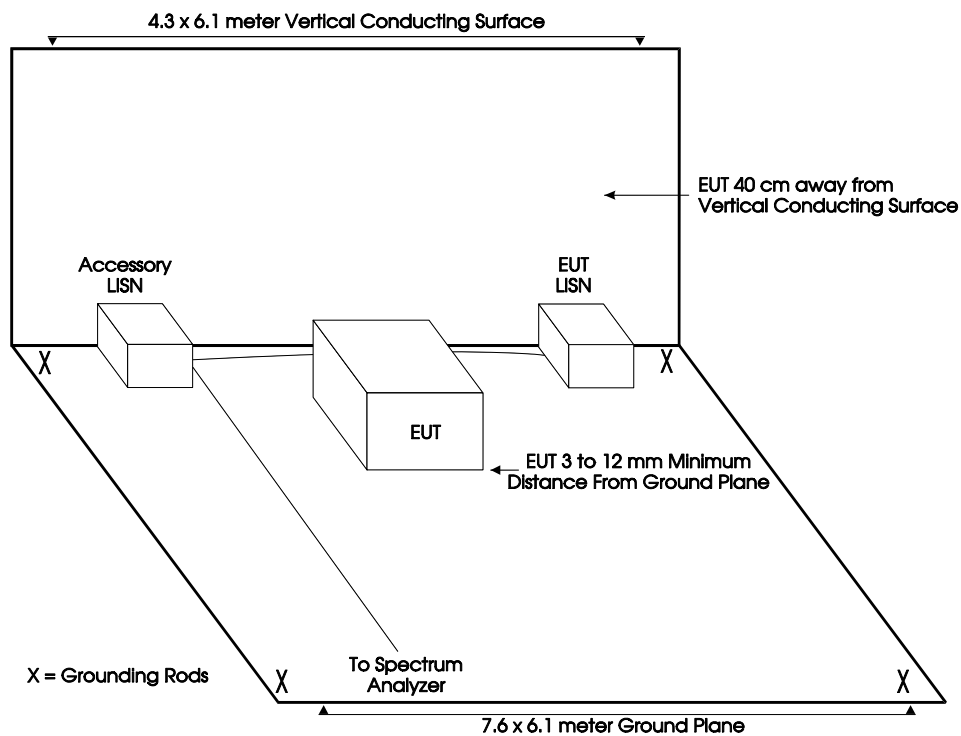
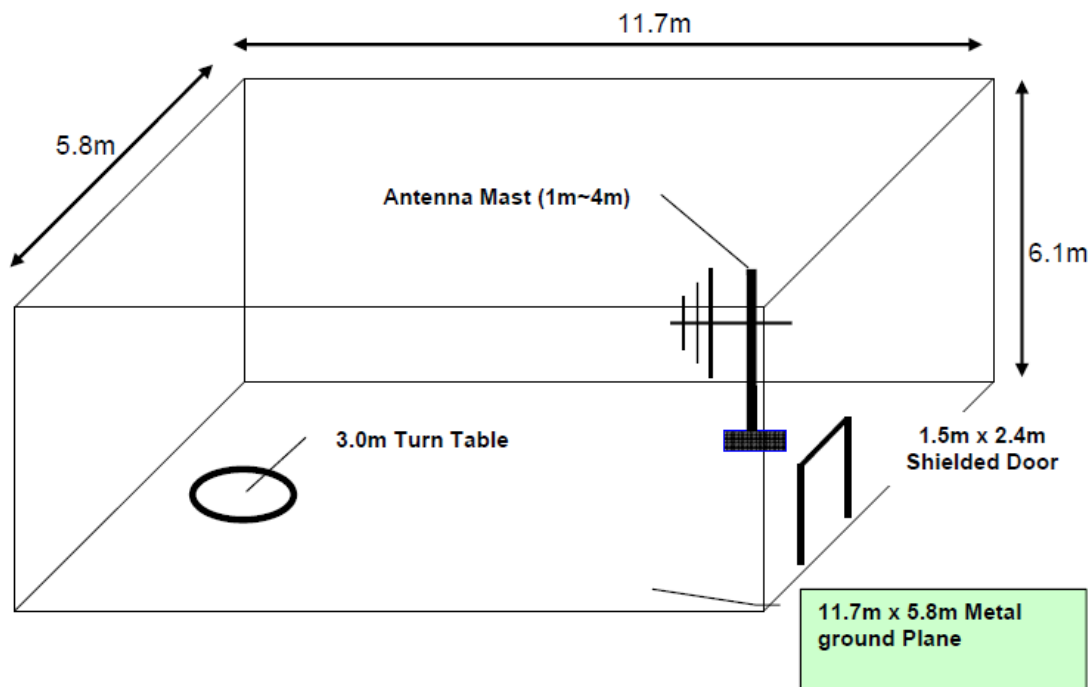


FIGURE 1a – FLOORSTANDING CONDUCTED EMISSIONS TEST SETUP – SITE ‘A’

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**FIGURE 3 - LAYOUT OF 5 METER SEMI-ANECHOIC CHAMBER**



ELECTRO MAGNETIC TEST, INC.

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APPENDIX D

MODIFICATIONS TO THE EUT



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC radiated emission specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

Modifications:

No modifications were made to the EUT by Electro Magnetic Test, Inc. personnel during the testing.



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

APPENDIX E

ADDITIONAL MODELS COVERED UNDER THIS REPORT



ELECTRO MAGNETIC TEST, INC.

1547 Plymouth Street, Mountain View, CA 94043 Tel: (650) 965-4000 Fax: (650) 965-3000

ADDITIONAL MODELS COVERED UNDER THIS REPORT

There are no additional models to be covered under this report.