

# Electric Imp, Inc. IMP004M

FCC 15.247:2017

802.11bgn SISO Radio

Report # ELIM0013





NVLAP Lab Code: 200676-0

# **CERTIFICATE OF TEST**



Last Date of Test: June 6, 2017 Electric Imp, Inc. Model: IMP004M

# **Radio Equipment Testing**

### **Standards**

Specification	Method		
FCC 15.247:2017	ANSI C63.10:2013, KDB 558074		

### **Results**

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
11.12.1, 11.13.2, 6.5, 6.6	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.2.2.4	Output Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

### **Deviations From Test Standards**

None

Approved By:

Victor Ratinoff, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

Report No. ELIM0013 2/124

# **REVISION HISTORY**



Revision Description		Date	Page Number
00	None		

Report No. ELIM0013 3/124

# ACCREDITATIONS AND AUTHORIZATIONS



### **United States**

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

**A2LA** - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

### Canada

**ISED** - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

### **European Union**

**European Commission** – Validated by the European Commission as a Notified Body under the R&TTE Directive. Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

### Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

### Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

### Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

### **Taiwan**

**BSMI** – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

### Singapore

**IDA** – Recognized by IDA as a CAB for the acceptance of test data.

### Israel

MOC - Recognized by MOC as a CAB for the acceptance of test data.

### Hong Kong

**OFCA** – Recognized by OFCA as a CAB for the acceptance of test data.

### **Vietnam**

MIC - Recognized by MIC as a CAB for the acceptance of test data.

# SCOPE

For details on the Scopes of our Accreditations, please visit:

http://portlandcustomer.element.com/ts/scope/scope.htm http://gsi.nist.gov/global/docs/cabs/designations.html

Report No. ELIM0013 4/124

# **MEASUREMENT UNCERTAINTY**



### **Measurement Uncertainty**

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

<u>Test</u>	+ MU	<u>- MU</u>
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Report No. ELIM0013 5/124

# **FACILITIES**







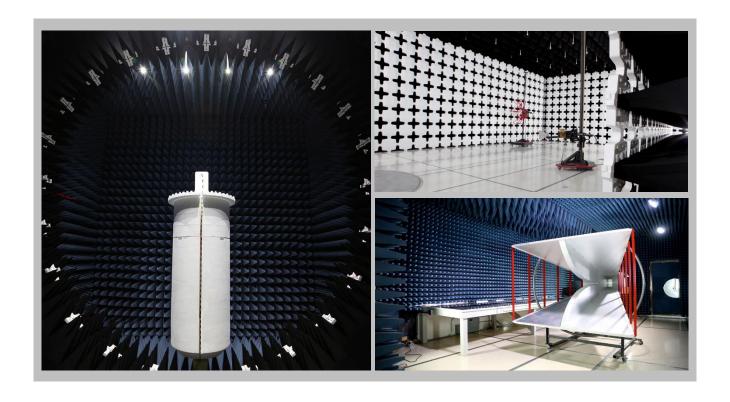
California
Labs OC01-13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136 New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214 Oregon
Labs EV01-12
22975 NW Evergreen Pkwy
Hillsboro, OR 97124
(503) 844-4066

**Texas**Labs TX01-09
3801 E Plano Pkwy
Plano, TX 75074
(469) 304-5255

**Washington**Labs NC01-05
19201 120<sup>th</sup> Ave NE
Bothell, WA 98011
(425)984-6600

Irvine, CA 92618 (949) 861-8918	Brooklyn Park, MN 55445 (612)-638-5136	Elbridge, NY 13060 (315) 554-8214	Hillsboro, OR 97124 (503) 844-4066	Plano, TX 75074 (469) 304-5255	Bothell, WA 98011 (425)984-6600		
NVLAP							
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0		
	Innovation, Science and Economic Development Canada						
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1		
		BS	МІ				
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R		
		VC	CI				
A-0029	A-0109	N/A	A-0108	A-0201	A-0110		
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA							
US0158	US0175	N/A	US0017	US0191	US0157		

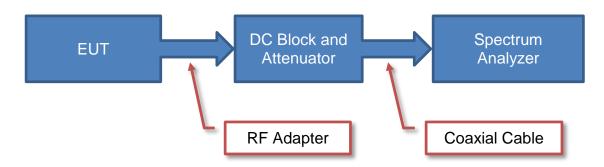


Report No. ELIM0013 6/124

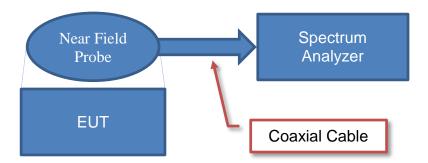
# **Test Setup Block Diagrams**



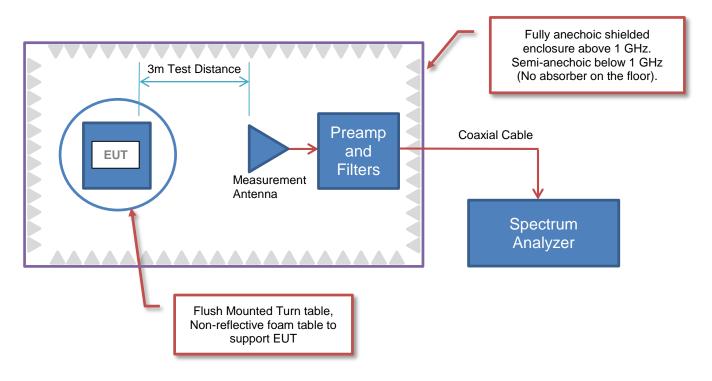
### **Antenna Port Conducted Measurements**



# **Near Field Test Fixture Measurements**



# **Spurious Radiated Emissions**



Report No. ELIM0013 7/124

# PRODUCT DESCRIPTION



# **Client and Equipment Under Test (EUT) Information**

Company Name:	Electric Imp, Inc.
Address:	5150 El Camino Real, Ste C-31
City, State, Zip:	Los Altos, CA 94022
Test Requested By:	Hugo Fiennes
Model:	IMP004M
First Date of Test:	May 26, 2017
Last Date of Test:	June 6, 2017
Receipt Date of Samples:	May 23, 2017
Equipment Design Stage:	Production
<b>Equipment Condition:</b>	No Damage
Purchase Authorization:	Verified

# **Information Provided by the Party Requesting the Test**

### **Functional Description of the EUT:**

802.11bgn SISO radio WiFi module with added Bluetooth radio, with embedded OS that works with the Electric Imp cloud to allow internet connectivity for devices that use this WiFi/BT module.

### **Testing Objective:**

To demonstrate compliance of the 802.11 radio under FCC 15.247 for operation in the 2.4 GHz band.

Report No. ELIM0013 8/124

# **CONFIGURATIONS**



# Configuration ELIM0013-1

EUT							
Description	Manufacturer	Model/Part Number	Serial Number				
WiFi Radio Module	Murata	IMP004M	IMP0107				

Peripherals in test setup boundary						
Description Manufacturer Model/Part Number Serial Number						
Host Laptop	HP	15-ba009dx	CND71420K3			
Laptop Power Supply	HP	HSTNN-DA40	1WFTLD0CAR63O5H			

Cables							
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2		
USB Cable	Yes	2.0m	No	USB Extension	WiFi Radio Module		
AC Cable	No	1.1m	No	AC Mains	Laptop Power Supply		
DC Cable	No	2.0m	No	Host Laptop	Laptop Power Supply		

# Configuration ELIM0013- 2

EUT						
Description	Manufacturer	Model/Part Number	Serial Number			
WiFi Radio Module	Murata	IMP004M	IMP0107			

Peripherals in test setup boundary						
Description Manufacturer Model/Part Number Serial Number						
Host Laptop	HP	15-ba009dx	CND71420K3			
Laptop Power Supply	HP	HSTNN-DA40	1WFTLD0CAR63O5H			

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Cable	Yes	2.0m	No	USB Extension	WiFi Radio Module
AC Cable	No	1.1m	No	AC Mains	Laptop Power Supply
DC Cable	No	2.0m	No	Host Laptop	Laptop Power Supply
USB Extension Cable	No	2.0m	No	Host Laptop	USB Cable

Report No. ELIM0013 9/124

# **CONFIGURATIONS**



# **Configuration ELIM0013-3**

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
WiFi Radio Module	Murata	IMP004M	IMP0107

Peripherals in test setup boundary								
Description Manufacturer Model/Part Number Serial Number								
Host Laptop	HP	15-ba009dx	CND71420K3					
Laptop Power Supply	HP	HSTNN-DA40	1WFTLD0CAR63O5H					
DC Power Supply	HQ Power	PS3003U	DK10103872					

Cables									
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2				
USB Cable	Yes	2.0m	No	USB Extension	WiFi Radio Module				
AC Cable	No	1.1m	No	AC Mains	Laptop Power Supply				
DC Cable	No	2.0m	No	Host Laptop	Laptop Power Supply				
AC Cable	No	1.8m	No	AC Mains	DC Power Supply				
DC Cables	No	1.0m	No	WiFi Radio Module	DC Power Supply				

Report No. ELIM0013 10/124

# **MODIFICATIONS**



# **Equipment Modifications**

Item	Date	Test	Modification	Note	Disposition of EUT	
		Spurious	Tested as	No EMI suppression	EUT remained at	
1	5/26/2017	Radiated	delivered to	devices were added or	Element following the	
		Emissions	Test Station.	modified during this test.	test.	
			Tested as	No EMI suppression	EUT remained at	
2	5/31/2017	Output Power	delivered to	devices were added or	Element following the	
			Test Station.	modified during this test.	test.	
		Spurious	Tested as	No EMI suppression	EUT remained at	
3	5/31/2017	Conducted	delivered to	devices were added or	Element following the	
		Emissions	Test Station.	modified during this test.	test.	
		Band Edge	Tested as	No EMI suppression	EUT remained at	
4	5/31/2017	Compliance	delivered to	devices were added or	Element following the	
		Compliance	Test Station.	modified during this test.	test.	
		/31/2017 Duty Cycle	Tested as	No EMI suppression	EUT remained at	
5	5/31/2017		delivered to	devices were added or	Element following the	
			Test Station.	modified during this test.	test.	
		Occupied	Tested as	No EMI suppression	EUT remained at	
6	5/31/2017	Bandwidth	delivered to	devices were added or	Element following the	
		Danawiatii	Test Station.	modified during this test.	test.	
		Power	Tested as	No EMI suppression	EUT remained at	
7	5/31/2017	Spectral	delivered to	devices were added or	Element following the	
		Density	Test Station.	modified during this test.	test.	
		Powerline	Tested as	No EMI suppression	Scheduled testing	
8	6/6/2017	Conducted	delivered to	devices were added or	was completed.	
		Emissions	Test Station.	modified during this test.	was completed.	

Report No. ELIM0013 11/124

# POWERLINE CONDUCTED EMISSIONS



PSA-ESCI 2017.01.26

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### MODES OF OPERATION

Transmitting 802.11(b) at Mid Ch 6-2437MHz

### **POWER SETTINGS INVESTIGATED**

3.3VDC

### **CONFIGURATIONS INVESTIGATED**

ELIM0013 - 3

### SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable - Conducted Cable Assembly	Cable - Conducted Cable Assembly Element		OCPA	3/28/2017	12 mo
LISN	Solar Electronics	9252-50-24-BNC	LIB	1/25/2017	12 mo
LISN	Solar Electronics	9252-50-24-BNC	LIA	2/17/2017	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAQ	4/25/2017	12 mo

### **MEASUREMENT BANDWIDTHS**

Frequency Range	Peak Data	Quasi-Peak Data	Average Data
(MHz)	(kHz)	(kHz)	(kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

### **MEASUREMENT UNCERTAINTY**

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### **TEST DESCRIPTION**

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 500hm measuring port is terminated by a 500hm EMI meter or a 500hm resistive load. All 500hm measuring ports of the LISN are terminated by 500hm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

Report No. ELIM0013 12/124

# **POWERLINE CONDUCTED EMISSIONS**



								EmiR5 2017.01.25	PSA-ESCI 2017.01.26	
Wo	ork Order:	ELIM0013	Date:	06/0	5/17		11		1 92	
	Project:	None	Temperature:	22.6	°C		4	4	1	
	Job Site:	OC06	Humidity:	48.3%	RH				2 3/70	
Serial	Number:	IMP0107	Barometric Pres.:	1015	nbar		Tested by:	Mark Baytan		
	EUT:	IMP004M	•	•		•				
Confi	iguration:	3								
C	ustomer:	Electric Imp, Inc.								
Α	ttendees:	None								
EU	JT Power:	3.3VDC								
Operati	ing Mode:	Transmitting 802.11(b	ransmitting 802.11(b) at Mid Ch 6-2437MHz							
De	eviations:	None								
Co	omments:		gh external DC power s	supply.						
Test Speci	fications				Test Meth	od				
FCC 15.20					ANSI C63.	10:2013				
Run #	2	Line:	High Line	Ext. Att	enuation:	0		Results	Pass	

# 100 90 80 70 60 40 30 20 10

MHz

10.0

100.0

Quasi Peak Data - vs - Quasi Peak Limit

# Average Data - vs - Average Limit 100 90 80 70 60 40 30 20 10 0.1 1.0 MHz

	Quasi Peak Data - vs - Quasi Peak Limit								
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)				
0.157	31.9	20.2	52.1	65.6	-13.5				
0.828	15.5	20.0	35.5	56.0	-20.5				
0.214	22.0	20.1	42.1	63.0	-20.9				
0.483	11.7	20.0	31.7	56.3	-24.6				
0.644	11.2	20.0	31.2	56.0	-24.8				
1.146	9.9	20.0	29.9	56.0	-26.1				

0.1

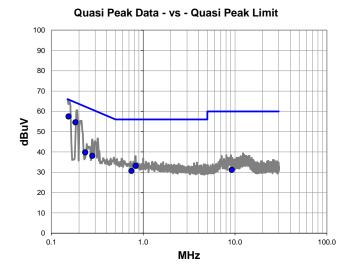
Average Data - vs - Average Limit						
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)	
0.828	11.1	20.0	31.1	46.0	-14.9	
0.483	4.2	20.0	24.2	46.3	-22.1	
0.644	3.6	20.0	23.6	46.0	-22.4	
1.146	2.4	20.0	22.4	46.0	-23.6	
0.214	6.5	20.1	26.6	53.0	-26.4	
0.157	7.2	20.2	27.4	55.6	-28.2	

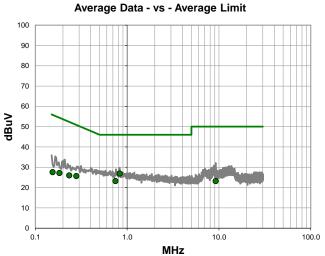
Report No. ELIM0013 13/124

# **POWERLINE CONDUCTED EMISSIONS**



								EmiR5 2017.01.25	PSA-ESCI 2017.01.26	
Wo	ork Order:	ELIM0013	Date:	06/0	6/17		11		1 7	
	Project:	None	Temperature:	22.6	°C		4		1	
	Job Site:	OC06	Humidity:	48.39	6 RH	-			2.050	
Seria	I Number:	IMP0107	Barometric Pres.:	1015	mbar		Tested by:	Mark Baytan		
	EUT:	IMP004M		-		-				
Conf	iguration:	3								
C	Customer:	Electric Imp, Inc.								
Α	ttendees:	None								
El	JT Power:	3.3VDC								
Operati	ing Mode:	Transmitting 802.11(b	ransmitting 802.11(b) at Mid Ch 6-2437MHz							
D	eviations:	None								
Co	omments:	'	gh external DC power s	supply.						
Test Speci	ifications				Test Meth	od				
FCC 15.20	7:2017				ANSI C63.	10:2013	I.			
	-									
Run #	3	Line:	Neutral	Ext. At	enuation:	0		Results	Pass	





	Quasi Peak Data - vs - Quasi Peak Limit								
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)				
0.154	37.3	20.2	57.5	65.8	-8.3				
0.183	34.4	20.2	54.6	64.3	-9.7				
0.234	19.7	20.1	39.8	62.3	-22.5				
0.279	18.0	20.1	38.1	60.8	-22.7				
0.828	13.2	20.0	33.2	56.0	-22.8				
0.745	10.7	20.0	30.7	56.0	-25.3				
9.209	10.8	20.4	31.2	60.0	-28.8				

Average Data - vs - Average Limit							
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)		
0.828	6.9	20.0	26.9	46.0	-19.1		
0.745	3.2	20.0	23.2	46.0	-22.8		
0.279	5.6	20.1	25.7	50.8	-25.1		
0.234	5.9	20.1	26.0	52.3	-26.3		
9.209	2.8	20.4	23.2	50.0	-26.8		
0.183	7.0	20.2	27.2	54.3	-27.1		
0.154	7.4	20.2	27.6	55.8	-28.2		

Report No. ELIM0013 14/124

### SPURIOUS RADIATED EMISSIONS



PSA-FSCI 2017 01 26

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

### MODES OF OPERATION

Transmitting 802.11(b/g/n) at Low Ch 1-2412MHz, Mid Ch 6-2437MHz, High Ch 11-2462MHz

### POWER SETTINGS INVESTIGATED

3.3VDC regulated down from USB 5V

### CONFIGURATIONS INVESTIGATED

FLIM0013 - 1

### FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 26500 MHz

### SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable	ESM Cable Corp.	8-18GHz cables	OCY	5/15/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	JSDWK42-18004000-60-5P	PAN	1/4/2017	12 mo
Cable	ESM Cable Corp.	1-8GHz cables	OCX	5/15/2017	12 mo
Cable	D-Coax	None	OC4	1/4/2017	12 mo
Antenna - Double Ridge	A.H. Systems, Inc.	SAS-574	AXV	5/3/2016	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVP	8/15/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVL	10/17/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVJ	8/15/2016	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIR	6/23/2016	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHX	NCR	0 mo
Antenna - Standard Gain	EMCO	3160-08	AHK	NCR	0 mo
Cable	ESM Cable Corp.	30-1GHz cables	OCW	5/15/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	8/15/2016	12 mo
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	10/25/2016	12 mo

### TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector

PK = Peak Detector

AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

Report No. ELIM0013 15/124

# **SPURIOUS RADIATED EMISSIONS**



■ PK ◆ AV • QP

Work Ord	ler:	ELIN	/I001	3			Dat	e:	05/2	6/17				~					
Proje			one			Ten	peratur		22.8		7		1	Oni	200	in			
Job S			C07				Humidit	ν:	44.79		_		- 0						
Serial Numb			107		Е		tric Pres		1018				Test	ed by:	Mike T	ran			
		ИР004M												· · · · · ·					
Configuration																			
Custom	er: E	lectric In	np, In	c.															
Attende	es: J	onathan	Dillor	1															
EUT Pow	er: 3	.3VDC re	egula	ted c	lown fr	om USI	B 5V												
Operating Mo	7	ransmitti	ng 80	)2.11	(b/g/n	) at Low	/ Ch 1-24	412MF	Hz, Mid (	ch 6-243	7MHz,	High	Ch 1	-2462N	ИHz				
Deviatio	ns:	lone																	
Commer		efault T	( pow	er															
st Specification	ns									Test Me	thod								
C 15.247:2017										ANSI C6		013	_						
<b>Run #</b> 75		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to	4(m)			Resu	ults		Pas	S
Run # 75		Test Di	stan	ce (r	n)	3	Anten	ına He	eight(s)		1 to	4(m)			Resi	ults		Pas	ss
		Test Di	stan	ce (r	n)	3	Anten	ına He	eight(s)		1 to	4(m)			Resu	ults		Pas	SS
80		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to	9 4(m)			Resu	ults		Pas	ss
		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to	0 4(m)			Resi	ults		Pas	SS
80		Test Di	stan	ce (r	n)	3	Anten	nna He	eight(s)		1 to	0 4(m)			Resu	ults		Pas	SS
70		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to	0 4(m)			Resi	ults		Pas	SS
80		Test Di	stan	ce (r	n)	3	Anten	nna He	eight(s)		1 to	0 4(m)			Resi	ults		Pas	SS
70		Test Di	stan	ce (r	n)	3	Anten	nna He	eight(s)		1 to	0 4(m)			Resu	ults	,	Pas	SS
70 60		Test Di	stan	ce (r	n)	3	Anten	nna He	eight(s)		1 to	0 4(m)			Resu	ults		Pas	SS
80 70 60 50		Test Di	stand	ce (r	n)	3	Anten	nna He	eight(s)		1 to	0 4(m)			Resu	ults		Pas	SS
80 70 60 50		Test Di	stand	ce (r	n)	3	Anten	nna He	eight(s)		1 to	0 4(m)			Resu	ults		Pas	SS
80 70 60 50		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to	0 4(m)			Resu	ults		Pas	SS
80 70 60 50		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to				Resu	ılts		Pas	SS
80 70 60 50		Test Di	stan	ce (r	n)	3	Anten	na He	eight(s)		1 to	0 4(m)			Resu	ults		Pas	SS
80 70 60 50		Test Di	stand	ce (r	n)	3	Anten	na He	eight(s)		1 to				Resi	ults		Pas	SS
80 70 60 50 40		Test Di	stand	cce (r	n)	3	Anten	ina He	eight(s)		1 to				Resi	ults		Pas	SS
80 70 60 50		Test Di	stane	cce (r	n)	3	Anten	nna He	eight(s)		1 to				Resi	ults		Pas	SS
80 70 60 50		Test Di	stane	ce (r	n)	3	Anten	nna He	eight(s)		1 to		•		Resu	ults		Pas	SS
80 70 60 50 40 30		Test Di	stand	ce (r	n)	3	Anten	nna He	eight(s)		1 to		•		Resu	ults		Pas	SS
80 70 60 50 40 30 20		Test Di	stand	ce (r	n)	3	Anten	nna He	eight(s)		1 to				Resi	ults		Pas	SS
80 70 60 50 50 30		Test Di	stand	ce (r	n)	3	Anten	nna He	eight(s)		1 to				Resi	ults		Pas	SS
80 70 60 50 40 30		Test Di	stand	ce (r	n)	3	Anten	na He	eight(s)		1 to		*		Resu	ults		Pas	SS
80 70 60 50 50 30 20		Test Di	stand	ce (r	n)	3	Anten	ana He	eight(s)		1 to		•		Resu	ults		Pas	SS
80 70 60 50 40 30		Test Di	stanc	To the state of th		3	Anten	ana He	1000		1 to				Resu	ults			00000

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7385.130	37.4	11.4	1.0	216.0	3.0	0.0	Horz	AV	0.0	48.8	54.0	-5.2	EUT Hor, High Ch 11, 1Mbps
7384.930	37.2	11.4	1.0	132.0	3.0	0.0	Vert	AV	0.0	48.6	54.0	-5.4	EUT Hor, High Ch 11, 1Mbps
7385.095	37.2	11.4	1.0	353.0	3.0	0.0	Horz	AV	0.0	48.6	54.0	-5.4	EUT on Side, High Ch 11, 1Mbps
7310.185	37.8	10.8	1.0	202.0	3.0	0.0	Horz	AV	0.0	48.6	54.0	-5.4	EUT Hor, Mid Ch 6, 1Mbps
7384.980	36.1	11.4	1.0	242.0	3.0	0.0	Vert	AV	0.0	47.5	54.0	-6.5	EUT Ver, High Ch 11, 1Mbps
7385.175	35.9	11.4	1.0	194.0	3.0	0.0	Horz	AV	0.0	47.3	54.0	-6.7	EUT Hor, High Ch 11, 11Mbps
7310.090	36.2	10.8	1.1	133.0	3.0	0.0	Vert	AV	0.0	47.0	54.0	-7.0	EUT Hor, Mid Ch 6, 1Mbps
7384.995	35.5	11.4	2.8	97.0	3.0	0.0	Vert	AV	0.0	46.9	54.0	-7.1	EUT on Side, High Ch 11, 1Mbps
7384.875	34.9	11.4	1.0	78.0	3.0	0.0	Horz	AV	0.0	46.3	54.0	-7.7	EUT Ver, High Ch 11, 1Mbps
7384.905	32.2	11.4	1.0	194.0	3.0	0.0	Horz	AV	0.0	43.6	54.0	-10.4	EUT Hor, High Ch 11, 6Mbps
7386.595	32.1	11.5	1.0	194.0	3.0	0.0	Horz	AV	0.0	43.6	54.0	-10.4	EUT Hor, High Ch 11, 36Mbps
7384.680	32.1	11.4	1.0	194.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT Hor, High Ch 11, 54Mbps
7384.745	31.9	11.4	1.0	194.0	3.0	0.0	Horz	AV	0.0	43.3	54.0	-10.7	EUT Hor, High Ch 11, MCS0
7385.680	31.8	11.4	1.0	194.0	3.0	0.0	Horz	AV	0.0	43.2	54.0	-10.8	EUT Hor, High Ch 11, MCS7
4923.980	36.3	4.2	1.1	306.0	3.0	0.0	Vert	AV	0.0	40.5	54.0	-13.5	EUT Hor, High Ch 11, 1Mbps
4924.040	36.0	4.2	1.1	327.0	3.0	0.0	Horz	AV	0.0	40.2	54.0	-13.8	EUT Hor, High Ch 11, 1Mbps
4873.940	35.4	3.8	1.0	324.0	3.0	0.0	Horz	AV	0.0	39.2	54.0	-14.8	EUT Hor, Mid Ch 6, 1Mbps
4873.985	34.9	3.8	1.0	307.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3	EUT Hor, Mid Ch 6, 1Mbps
14471.950	34.2	4.1	1.8	294.0	3.0	0.0	Vert	AV	0.0	38.3	54.0	-15.7	EUT Hor, Low Ch 1, 1Mbps
7386.075	46.6	11.5	1.0	194.0	3.0	0.0	Horz	PK	0.0	58.1	74.0	-15.9	EUT Hor, High Ch 11, 11Mbps
7386.160	46.5	11.5	1.0	353.0	3.0	0.0	Horz	PK	0.0	58.0	74.0	-16.0	EUT on Side, High Ch 11, 1Mbps
7385.775	45.9	11.5	1.0	242.0	3.0	0.0	Vert	PK	0.0	57.4	74.0	-16.6	EUT Ver, High Ch 11, 1Mbps

16/124 Report No. ELIM0013

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7385.725	45.7	11.5	1.0	216.0	3.0	0.0	Horz	PK	0.0	57.2	74.0	-16.8	EUT Hor, High Ch 11, 1Mbps
7310.595	46.4	10.8	1.0	202.0	3.0	0.0	Horz	PK	0.0	57.2	74.0	-16.8	EUT Hor, Mid Ch 6, 1Mbps
7385.750	45.5	11.5	1.0	132.0	3.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	EUT Hor, High Ch 11, 1Mbps
4824.070	32.8	3.7	3.6	311.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	EUT Hor, Low Ch 1, 1Mbps
7385.600	44.9	11.4	2.8	97.0	3.0	0.0	Vert	PK	0.0	56.3	74.0	-17.7	EUT on Side, High Ch 11, 1Mbps
7311.345	45.3	10.8	1.1	133.0	3.0	0.0	Vert	PK	0.0	56.1	74.0	-17.9	EUT Hor, Mid Ch 6, 1Mbps
7385.030	44.3	11.4	1.0	78.0	3.0	0.0	Horz	PK	0.0	55.7	74.0	-18.3	EUT Ver, High Ch 11, 1Mbps
14472.130	31.4	4.1	1.0	94.0	3.0	0.0	Horz	AV	0.0	35.5	54.0	-18.5	EUT Hor, Low Ch 1, 1Mbps
4823.930	31.6	3.7	1.0	4.0	3.0	0.0	Vert	AV	0.0	35.3	54.0	-18.7	EUT Hor, Low Ch 1, 1Mbps
7384.770	43.6	11.4	1.0	194.0	3.0	0.0	Horz	PK	0.0	55.0	74.0	-19.0	EUT Hor, High Ch 11, 54Mbps
7386.325	43.3	11.5	1.0	194.0	3.0	0.0	Horz	PK	0.0	54.8	74.0	-19.2	EUT Hor, High Ch 11, MCS0
7385.735	43.0	11.5	1.0	194.0	3.0	0.0	Horz	PK	0.0	54.5	74.0	-19.5	EUT Hor, High Ch 11, 6Mbps
7386.825	42.8	11.5	1.0	194.0	3.0	0.0	Horz	PK	0.0	54.3	74.0	-19.7	EUT Hor, High Ch 11, MCS7
7385.480	42.6	11.4	1.0	194.0	3.0	0.0	Horz	PK	0.0	54.0	74.0	-20.0	EUT Hor, High Ch 11, 36Mbps
12309.990	33.5	-3.3	1.9	269.0	3.0	0.0	Vert	AV	0.0	30.2	54.0	-23.8	EUT Hor, High Ch 11, 1Mbps
12061.390	34.3	-4.9	1.0	112.0	3.0	0.0	Horz	AV	0.0	29.4	54.0	-24.6	EUT Hor, Low Ch 1, 1Mbps
12310.200	32.7	-3.3	1.0	352.0	3.0	0.0	Horz	AV	0.0	29.4	54.0	-24.6	EUT Hor, High Ch 11, 1Mbps
12061.320	33.9	-4.9	1.0	158.0	3.0	0.0	Vert	AV	0.0	29.0	54.0	-25.0	EUT Hor, Low Ch 1, 1Mbps
12184.970	32.9	-4.0	1.5	308.0	3.0	0.0	Vert	AV	0.0	28.9	54.0	-25.1	EUT Hor, Mid Ch 6, 1Mbps
4924.235	44.4	4.2	1.1	306.0	3.0	0.0	Vert	PK	0.0	48.6	74.0	-25.4	EUT Hor, High Ch 11, 1Mbps
12185.920	32.4	-4.0	1.0	110.0	3.0	0.0	Horz	AV	0.0	28.4	54.0	-25.6	EUT Hor, Mid Ch 6, 1Mbps
4924.135	44.1	4.2	1.1	327.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	EUT Hor, High Ch 11, 1Mbps
4874.075	43.9	3.8	1.0	324.0	3.0	0.0	Horz	PK	0.0	47.7	74.0	-26.3	EUT Hor, Mid Ch 6, 1Mbps
4874.310	43.8	3.8	1.0	307.0	3.0	0.0	Vert	PK	0.0	47.6	74.0	-26.4	EUT Hor, Mid Ch 6, 1Mbps
4824.070	43.6	3.7	3.6	311.0	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	EUT Hor, Low Ch 1, 1Mbps
14472.790	43.0	4.1	1.8	294.0	3.0	0.0	Vert	PK	0.0	47.1	74.0	-26.9	EUT Hor, Low Ch 1, 1Mbps
14472.270	42.5	4.1	1.0	94.0	3.0	0.0	Horz	PK	0.0	46.6	74.0	-27.4	EUT Hor, Low Ch 1, 1Mbps
4825.360	42.5	3.7	1.0	4.0	3.0	0.0	Vert	PK	0.0	46.2	74.0	-27.8	EUT Hor, Low Ch 1, 1Mbps
12060.610	45.8	-4.9	1.0	158.0	3.0	0.0	Vert	PK	0.0	40.9	74.0	-33.1	EUT Hor, Low Ch 1, 1Mbps
12311.400	44.0	-3.3	1.9	269.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	EUT Hor, High Ch 11, 1Mbps
12185.610	44.6	-4.0	1.5	308.0	3.0	0.0	Vert	PK	0.0	40.6	74.0	-33.4	EUT Hor, Mid Ch 6, 1Mbps
12311.120	43.9	-3.3	1.0	352.0	3.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4	EUT Hor, High Ch 11, 1Mbps
12059.310	45.4	-5.0	1.0	112.0	3.0	0.0	Horz	PK	0.0	40.4	74.0	-33.6	EUT Hor, Low Ch 1, 1Mbps
12186.150	43.8	-4.0	1.0	110.0	3.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2	EUT Hor, Mid Ch 6, 1Mbps

Report No. ELIM0013 17/124

# **SPURIOUS RADIATED EMISSIONS**

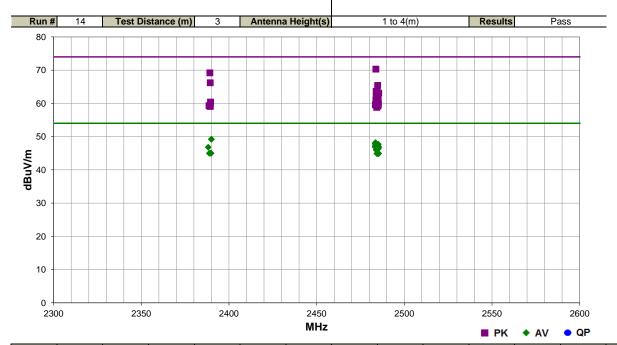


				EmiR5 2017.01.25 PSA-ESCI 2017.01.26
Work Order:	ELIM0013	Date:	05/24/17	11 3
Project:	None	Temperature:	23.7 °C	Mr Byt
Job Site:	OC07	Humidity:	45.6% RH	
Serial Number:	IMP0107	Barometric Pres.:	1012 mbar	Tested by: Mark Baytan
EUT:	IMP004M			
Configuration:	1			
Customer:	Electric Imp, Inc.			
Attendees:	Jonathan Dillon			
EUT Power:	3.3VDC regulated dov	vn from USB 5V		
		/g/n) at Low Ch 1-2412N	MHz, High Ch 11-24	62MHz
Deviations:	None			
Comments:	Default TX power was	used.		

Test Specifications Test Method

FCC 15.247:2017

ANSI C63.10:2013



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.793	54.8	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	70.3	74.0	-3.7	High Ch, EUT Horz, MCS0
2389.113	54.1	-4.9	1.0	307.0	3.0	20.0	Vert	PK	0.0	69.2	74.0	-4.8	Low Ch, EUT Vert, 6Mbps
2389.967	34.1	-4.9	1.0	307.0	3.0	20.0	Vert	AV	0.0	49.2	54.0	-4.8	Low Ch, EUT Vert, 6Mbps
2390.000	34.1	-4.9	1.0	307.0	3.0	20.0	Vert	AV	0.0	49.2	54.0	-4.8	Low Ch, EUT Vert, MCS0
2483.557	32.7	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	High Ch, EUT Horz, MCS0
2483.523	32.5	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	High Ch, EUT Horz, 54Mbps
2483.513	32.4	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch, EUT Horz, 36Mbps
2485.207	32.2	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	High Ch, EUT Horz, 1Mbps
2483.500	32.0	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	High Ch, EUT Horz, MCS7
2483.810	31.7	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	47.2	54.0	-6.8	High Ch, EUT Vert, 6Mbps
2483.567	31.6	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	47.1	54.0	-6.9	High Ch, EUT Vert, MCS0
2483.570	31.5	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	47.0	54.0	-7.0	High Ch, EUT Vert, 36Mbps
2483.540	31.5	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	47.0	54.0	-7.0	High Ch, EUT Vert, 54Mbps
2485.463	31.4	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	46.9	54.0	-7.1	High Ch, EUT Horz, 11Mbps
2483.507	31.3	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	46.8	54.0	-7.2	High Ch, EUT Vert, MCS7
2388.187	31.7	-4.9	1.0	307.0	3.0	20.0	Vert	AV	0.0	46.8	54.0	-7.2	Low Ch, EUT Vert, 1Mbps
2484.987	31.1	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	46.6	54.0	-7.4	High Ch, EUT Vert, 1Mbps
2485.253	30.9	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	46.4	54.0	-7.6	High Ch, EUT Vert, 1Mbps
2389.310	51.1	-4.9	1.0	307.0	3.0	20.0	Vert	PK	0.0	66.2	74.0	-7.8	Low Ch, EUT Vert, MCS0
2484.013	30.5	-4.5	1.0	261.0	3.0	20.0	Vert	AV	0.0	46.0	54.0	-8.0	High Ch, EUT Vert, 11Mbps
2484.807	49.9	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	65.4	74.0	-8.6	High Ch, EUT Vert, 6Mbps
2485.080	29.5	-4.5	1.0	338.0	3.0	20.0	Horz	AV	0.0	45.0	54.0	-9.0	High Ch, EUT Vert, 1Mbps

Report No. ELIM0013 18/124

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2388.843	29.9	-4.9	2.4	130.0	3.0	20.0	Horz	AV	0.0	45.0	54.0	-9.0	Low Ch, EUT Horz, 1Mbps
2389.773	29.9	-4.9	2.4	130.0	3.0	20.0	Horz	AV	0.0	45.0	54.0	-9.0	Low Ch, EUT Horz, 6Mbps
2389.597	29.9	-4.9	2.4	130.0	3.0	20.0	Horz	AV	0.0	45.0	54.0	-9.0	Low Ch. EUT Horz, MCS0
2485.207	29.4	-4.5	1.0	41.0	3.0	20.0	Vert	AV	0.0	44.9	54.0	-9.1	High Ch, EUT Horz, 1Mbps
2485.443	29.4	-4.5	1.0	142.0	3.0	20.0	Horz	AV	0.0	44.9	54.0	-9.1	High Ch, EUT on Side, 1Mbps
2484.360	29.4	-4.5	1.0	96.0	3.0	20.0	Vert	AV	0.0	44.9	54.0	-9.1	High Ch, EUT on Side, 1Mbps
2484.930	29.4	-4.5	1.0	307.0	3.0	20.0	Horz	AV	0.0	44.9	54.0	-9.1	High Ch, EUT Horz, 6Mbps
2484.420	48.2	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	63.7	74.0	-10.3	High Ch, EUT Horz, 54Mbps
2483.960	48.1	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	63.6	74.0	-10.4	High Ch, EUT Horz, 36Mbps
2485.450	47.6	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	63.1	74.0	-10.9	High Ch, EUT Horz, MCS7
2484.097	47.6	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	63.1	74.0	-10.9	High Ch, EUT Vert, 36Mbps
2484.720	47.5	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	63.0	74.0	-11.0	High Ch, EUT Vert, MCS7
2485.020	46.9	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	62.4	74.0	-11.6	High Ch, EUT Vert, 54Mbps
2483.973	46.6	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	62.1	74.0	-11.9	High Ch, EUT Vert, MCS0
2485.117	45.8	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	61.3	74.0	-12.7	High Ch, EUT Horz, 1Mbps
2483.850	45.5	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	61.0	74.0	-13.0	High Ch, EUT Horz, 11Mbps
2389.473	45.3	-4.9	1.0	307.0	3.0	20.0	Vert	PK	0.0	60.4	74.0	-13.6	Low Ch, EUT Vert, 1Mbps
2485.173	44.8	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	60.3	74.0	-13.7	High Ch, EUT Vert, 1Mbps
2484.107	44.4	-4.5	1.0	307.0	3.0	20.0	Horz	PK	0.0	59.9	74.0	-14.1	High Ch, EUT Horz, 6Mbps
2485.223	44.2	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	High Ch, EUT Vert, 1Mbps
2483.540	44.1	-4.5	1.0	41.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	High Ch, EUT Horz, 1Mbps
2484.717	44.1	-4.5	1.0	261.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	High Ch, EUT Vert, 11Mbps
2484.703	43.9	-4.5	1.0	96.0	3.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6	High Ch, EUT on Side, 1Mbps
2388.593	44.2	-4.9	2.4	130.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	Low Ch, EUT Horz, MCS0
2484.973	43.7	-4.5	1.0	338.0	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8	High Ch, EUT Vert, 1Mbps
2389.237	44.0	-4.9	2.4	130.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	Low Ch, EUT Horz, 1Mbps
2389.383	44.0	-4.9	2.4	130.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	Low Ch, EUT Horz, 6Mbps
2484.277	43.3	-4.5	1.0	142.0	3.0	20.0	Horz	PK	0.0	58.8	74.0	-15.2	High Ch, EUT on Side, 1Mbps

Report No. ELIM0013 19/124



XMit 2017.02.08

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2/5/2015	2/5/2018
Attenuator	Fairview Microwave	SA18E-20	TKS	3/6/2017	3/6/2018
Block - DC	Aeroflex	INMET 8535	AMO	3/27/2017	3/27/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

Report No. ELIM0013 20/124

High Channel 11, 2462 MHz



Work Order: ELIM0013 EUT: IMP004M Serial Number: IMP0107 Customer: Electric Imp, Inc. Temperature: 21.3 °C Humidity: 49% RH Barometric Pres.: 1014 mba Project: None Power: 3.3VDC regulated down from USB 5V
Test Method Tested by: Salvador Solorzano and Johnny Candelas TEST SPECIFICATIONS Job Site: OC13 ANSI C63.10:2013 COMMENTS Total Offset 22.59dB (20dB pad + DC Block + coax cable + client provided patch cable) at 2.4GHz DEVIATIONS FROM TEST STANDARD Configuration # Signature lumber of Pulses (%) Pulse Width Results Period (%) 2400 MHz - 2483.5 MHz Band 802.11(b) 1 Mbps Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz 8.602 ms 8.629 ms 99.7 N/A N/A N/A N/A N/A N/A Mid Channel 6, 2437 MHz 8.624 ms 8.629 ms 99.9 N/A Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz N/A N/A 5 N/A N/A N/A 8.595 ms 8.629 ms 99.6 N/A N/A High Channel 11, 2462 MHz 802.11(b) 11 Mbps N/A N/A N/A N/A N/A Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz 858.071 us 881.933 us 97.3 N/A N/A N/A N/A N/A N/A Mid Channel 6, 2437 MHz 855.574 us 880.834 us 97.1 N/A N/A Mid Channel 6, 2437 MHz N/A N/A N/A N/A N/A High Channel 11, 2462 MHz 854 542 us 879.8 us 97 1 N/A N/A High Channel 11, 2462 MHz N/A N/A N/A N/A N/A 802.11(g) 6 Mbps Low Channel 1, 2412 MHz 1.449 ms 97.6 N/A 1.485 ms N/A Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz N/A 1.447 ms N/A 98.1 N/A N/A N/A N/A 1.42 ms N/A Mid Channel 6, 2437 MHz N/A N/A 5 N/A N/A N/A High Channel 11, 2462 MHz 1.421 ms 1.445 ms 98.3 High Channel 11, 2462 MHz 802.11(g) 36 Mbps N/A N/A N/A N/A N/A Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz N/A N/A 253.691 us 276.1 us 91.9 N/A N/A N/A N/A N/A 275.223 us Mid Channel 6, 2437 MHz 252.758 us 91.8 N/A N/A Mid Channel 6, 2437 MHz N/A N/A N/A N/A High Channel 11, 2462 MHz High Channel 11, 2462 MHz 276.444 us N/A N/A N/A 253.258 us 91.6 N/A N/A N/A 802.11(g) 54 Mbps Low Channel 1, 2412 MHz 177.935 us 199.9 us 89 N/A N/A Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz N/A N/A 5 N/A N/A N/A 176.226 us 199.656 us 88.3 N/A N/A Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz N/A N/A 5 N/A N/A N/A 177.547 us 199.756 us 88.9 N/A N/A High Channel 11, 2462 MHz N/A N/A N/A N/A N/A 802.11(n) MCS0 Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz 98.1 N/A N/A N/A 1.332 ms 1.358 ms N/A N/A N/A N/A Mid Channel 6, 2437 MHz 1.332 ms 1.356 ms 98.2 N/A N/A Mid Channel 6, 2437 MHz N/A High Channel 11, 2462 MHz High Channel 11, 2462 MHz N/A N/A 1.333 ms 1.357 ms 98.2 N/A N/A N/A N/A N/A 802.11(n) MCS7 Low Channel 1, 2412 MHz 165.302 us 188.7 us 87.6 N/A N/A Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz N/A N/A 5 N/A N/A N/A 165.302 us 188.556 us 87.7 N/A N/A Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz N/A N/A 189.244 us N/A N/A N/A N/A 165.991 us 87.7

Report No. ELIM0013 21/124

N/A

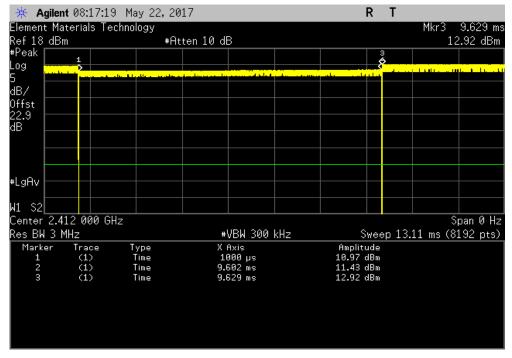
N/A

N/A

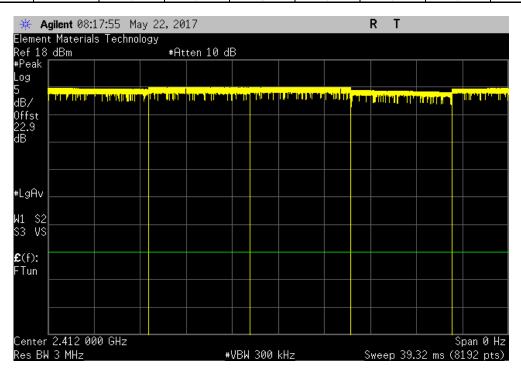
N/A



							TbtTx 2017.01.27	XMit 2017.02.08
	0.400 MILL	1400 E MILL D.	L 000 44/L) 4 BAL		4 0440 MIL			
	2400 MHZ - 2	2483.5 MHZ Band	d, 802.11(b) 1 Mb	ps, Low Channel	1, 2412 MHZ			
			Number of	Value	Limit			
	Pulse Width	Period	Pulses	(%)	(%)	Results		
	8 602 ms	8 629 ms	1	99.7	N/A	N/A		



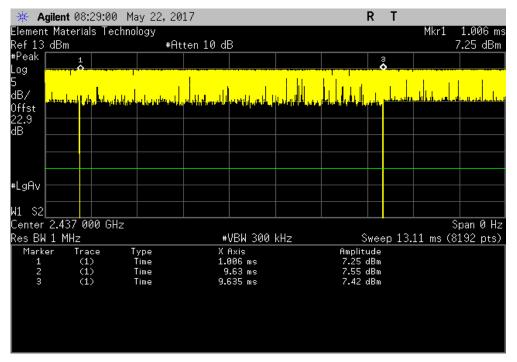
2400 MHz - 2	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Low Channel	1, 2412 MHz	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A



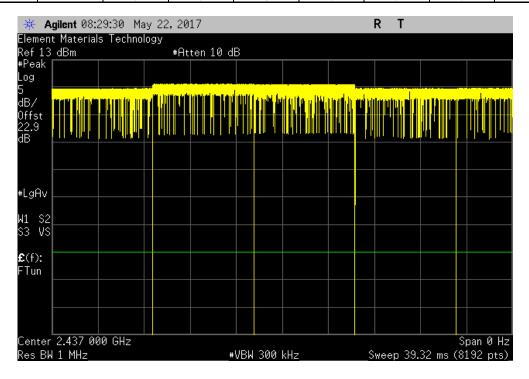
Report No. ELIM0013 22/124



							TbtTx 2017.01.27	XMit 2017.02.08
	2400 MHz - 2	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Mid Channel	6, 2437 MHz			
			Number of	Value	Limit			
	Pulse Width	Period	Pulses	(%)	(%)	Results	_	
	8.624 ms	8.629 ms	1	99.9	N/A	N/A		



	2400 MHz - 2	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Mid Channel	6, 2437 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

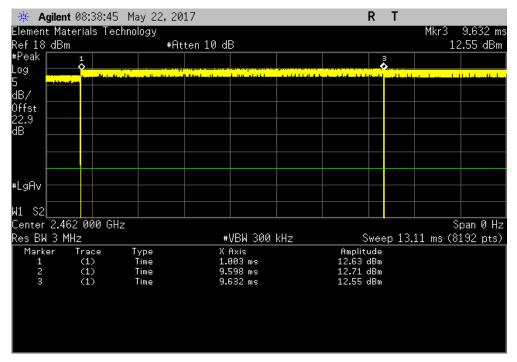


Report No. ELIM0013 23/124

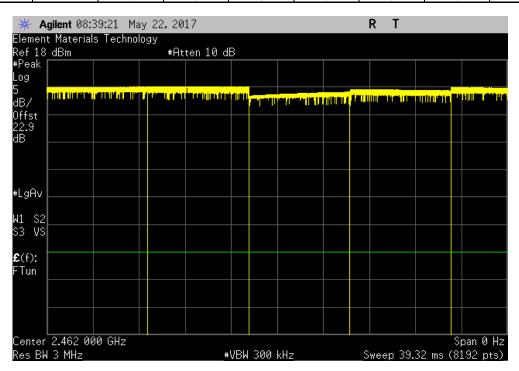


TbtTx 2017.01.27

2400 MHz - 2	483.5 MHz Band	, 802.11(b) 1 Mbp	s, High Channel	11, 2462 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
8 595 ms	8 629 ms	1	99.6	N/A	N/A



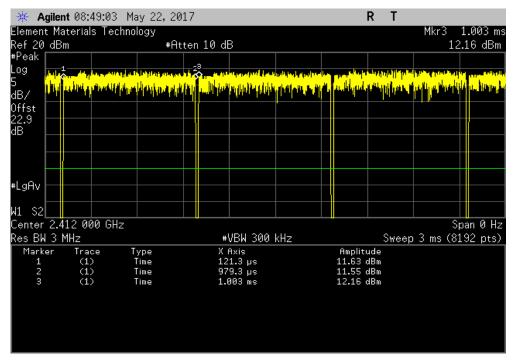
2400 MHz - 2	483.5 MHz Band,	, 802.11(b) 1 Mbp	s, High Channel	11, 2462 MHz	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A



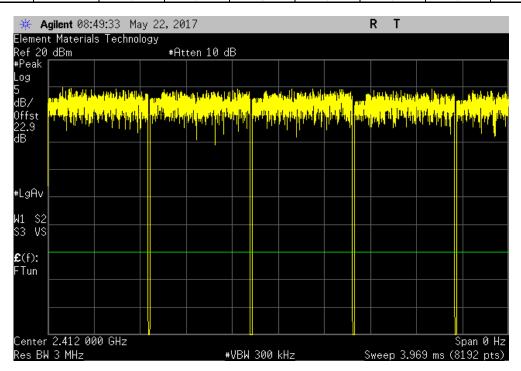
Report No. ELIM0013 24/124



							TbtTx 2017.01.27	XMit 2017.02.08
	2400 MHz - 2	483 5 MHz Band	I, 802.11(b) 11 Mb	ons Low Channe	l 1 2412 MHz			
	2100 WII 12 2	100.0 WII IZ Dana	, ,	. ,	,			
			Number of	Value	Limit			
	Pulse Width	Period	Pulses	(%)	(%)	Results		
	858.071 us	881.933 us	1	97.3	N/A	N/A	Í	



		2400 MHz - 2	483.5 MHz Band	, 802.11(b) 11 Mb	ops, Low Channel	1, 2412 MHz	
				Number of	Value	Limit	
_		Pulse Width	Period	Pulses	(%)	(%)	Results
ĺ	·	N/A	N/A	5	N/A	N/A	N/A

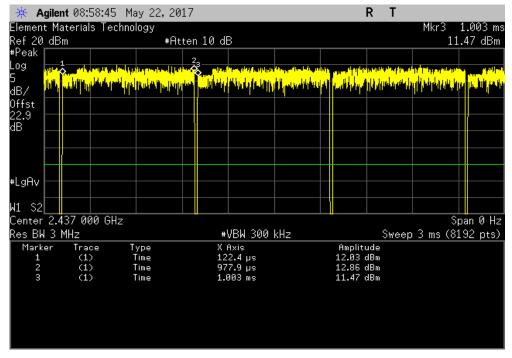


Report No. ELIM0013 25/124

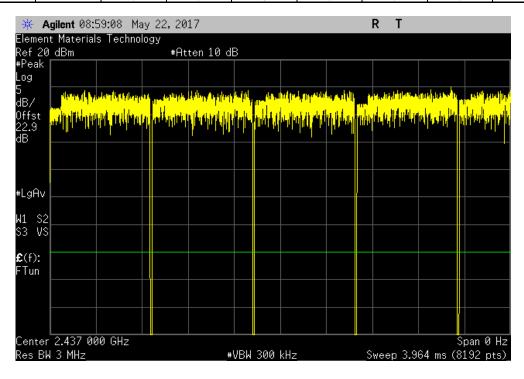


TbtTx 2017.01.27

•						
	2400 MHz - 2	483.5 MHz Band	l, 802.11(b) 11 MI	bps, Mid Channel	6, 2437 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	855.574 us	880.834 us	1	97.1	N/A	N/A



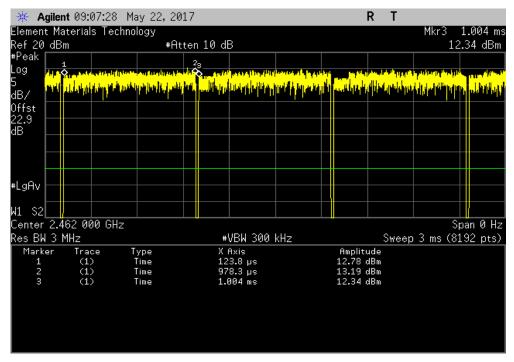
2400 MHz - 2	483.5 MHz Band	l, 802.11(b) 11 MI	bps, Mid Channel	6, 2437 MHz	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A



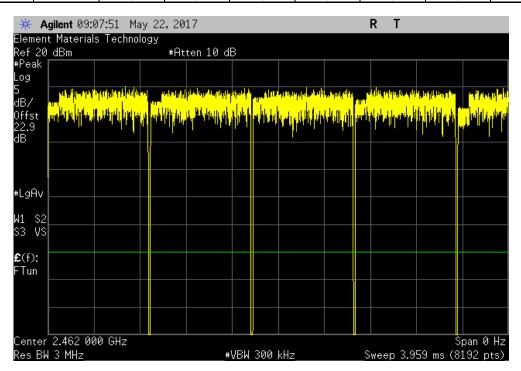
Report No. ELIM0013 26/124



						TbtTx 2017.01.27	XMit 2017.02.08
0.400 MI	L 0400 F MIL F	1 000 44/b) 44 M	hara trada Ohaara				
2400 MF	1Z - 2483.5 MHZ E	Band, 802.11(b) 11 M	pps, High Chanr	nei 11, 2462 MHZ			
		Number of	Value	Limit			
Pulse W	idth Period	l Pulses	(%)	(%)	Results		
854.542	us 879.8 u	s 1	97.1	N/A	N/A		



	2400 MHz - 24	183.5 MHz Band,	802.11(b) 11 Mb	ps, High Channel	11, 2462 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

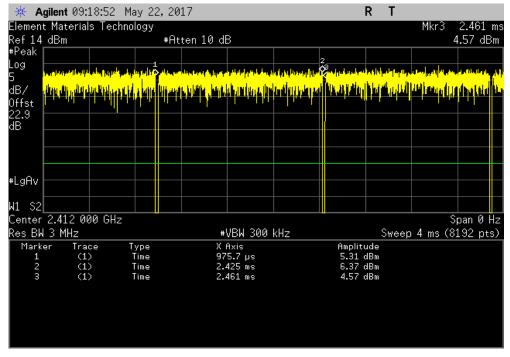


Report No. ELIM0013 27/124

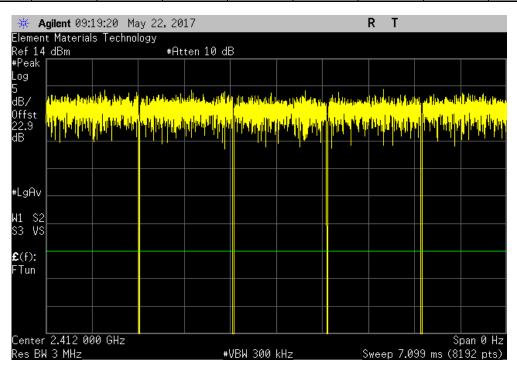


TbtTx 2017.01.27

2400 MHz - 2	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Low Channel	1, 2412 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
1 449 ms	1 485 ms	1	97.6	N/A	N/A



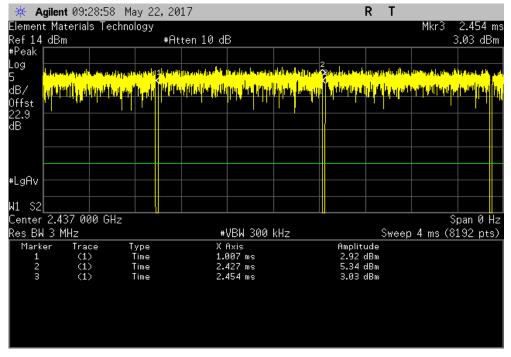
	2400 MHz - 2	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Low Channel	1, 2412 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A



Report No. ELIM0013 28/124



						TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Mid Channel	6, 2437 MHz			
		Number of	Value	Limit			
		Number of	value	LIIIII			
Pulse Width	Period	Pulses	(%)	(%)	Results		
 i disc Width	1 CHOG	i uiscs	(70)	(70)	results		
1.42 ms	1.447 ms	4	98.1	N/A	N/A		



	2400 MHz - 2	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Mid Channel	6, 2437 MHz	
			Number of	Value	Limit	
	 Pulse Width	Period	Pulses	(%)	(%)	Results
i	N/A	N/A	5	N/A	N/A	N/A

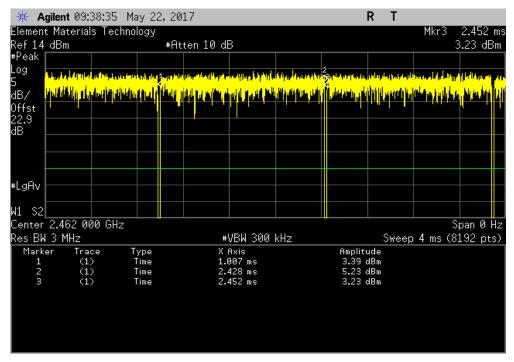


Report No. ELIM0013 29/124

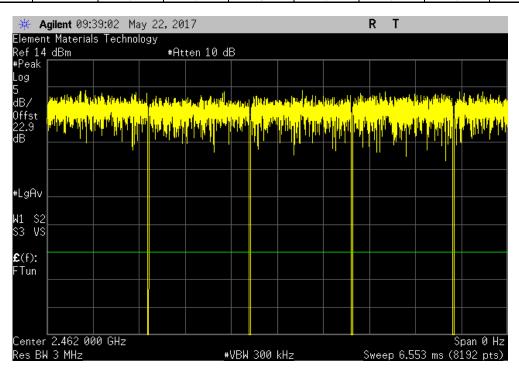


TbtTx 2017.01.27

2400 MHz - 2	483.5 MHz Band	, 802.11(g) 6 Mbp	s, High Channel	11, 2462 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
1 421 ms	1 445 ms	1	98.3	N/A	N/A



2400 MHz - 2	483.5 MHz Band,	, 802.11(g) 6 Mbp	s, High Channel	11, 2462 MHz	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A

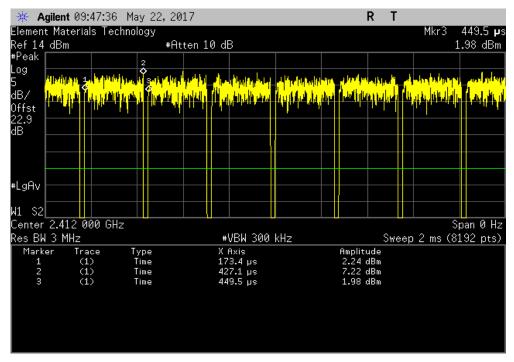


Report No. ELIM0013 30/124

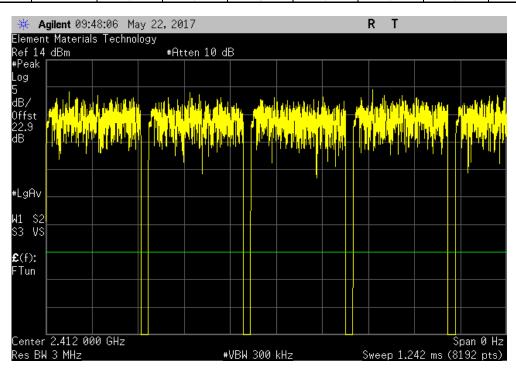


TbtTx 2017.01.27

2400 MHz - 2	483.5 MHz Band	l, 802.11(g) 36 Mb	ops, Low Channel	l 1, 2412 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
253 601 us	276.1 us	1	Q1 Q	N/A	N/A



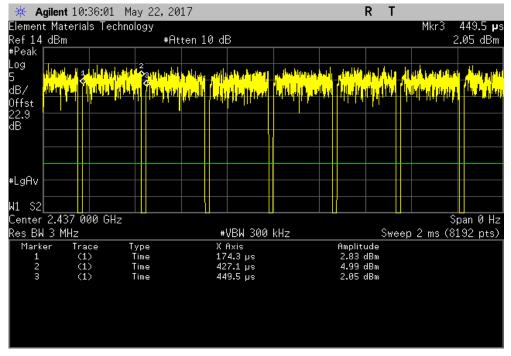
2400 MHz - 2	483.5 MHz Band	, 802.11(g) 36 Mb	ops, Low Channel	l 1, 2412 MHz	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A



Report No. ELIM0013 31/124



							TbtTx 2017.01.27	XMit 2017.02.08
	2400 MHz - 2	483 5 MHz Ranc	l, 802.11(g) 36 Mb	nns Mid Channel	6 2437 MHz			
	2400 WII 12 2	-400.5 WII IZ Danc						
			Number of	Value	Limit			
	Pulse Width	Period	Pulses	(%)	(%)	Results	_	
	252 758 us	275 223 us	1	91.8	N/A	N/A		



	2400 MHz - 2	483.5 MHz Band	l, 802.11(g) 36 MI	bps, Mid Channel	6, 2437 MHz		
			Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	N/A	N/A	5	N/A	N/A	N/A	

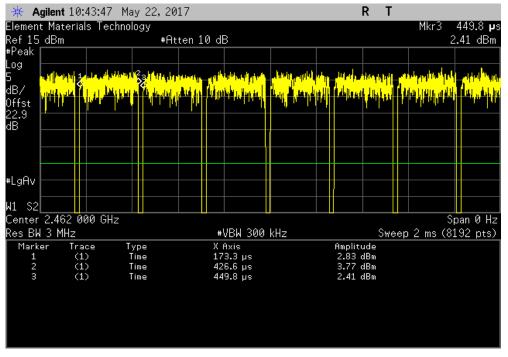


Report No. ELIM0013 32/124

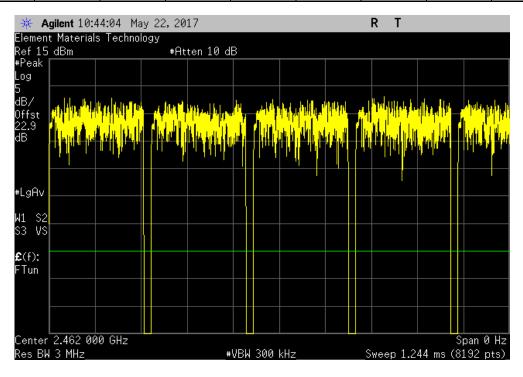


TbtTx 2017.01.27

	2400 MHz - 24	83.5 MHz Band,	802.11(g) 36 Mb	ps, High Channel	11, 2462 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	253,258 us	276,444 us	1	91.6	N/A	N/A



	2400 MHz - 24	83.5 MHz Band,	802.11(g) 36 Mb	ps, High Channel	11, 2462 MHz	
			Number of	Value	Limit	
<u></u>	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

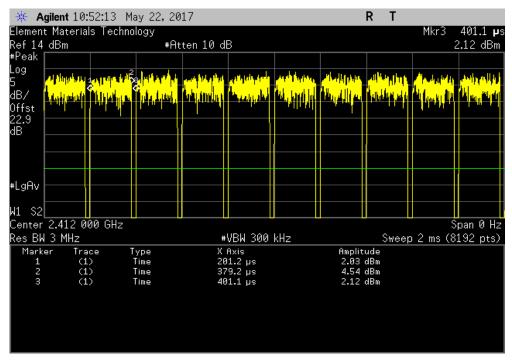


Report No. ELIM0013 33/124

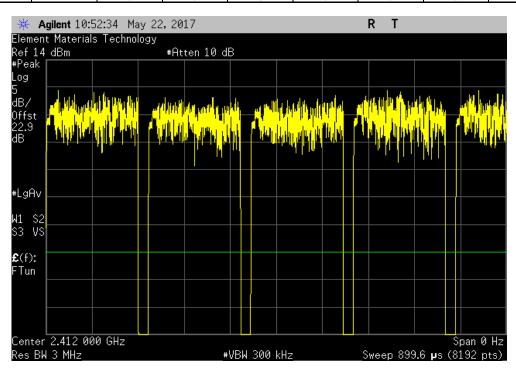


TbtTx 2017.01.27

2400 MHz - 2	483.5 MHz Band	l, 802.11(g) 54 MI	ops, Low Channe	l 1, 2412 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
177 935 us	199 9 us	1	89	N/A	N/A



2400 MHz - 2	483.5 MHz Band	, 802.11(g) 54 Mb	ps, Low Channel	l 1, 2412 MHz	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A

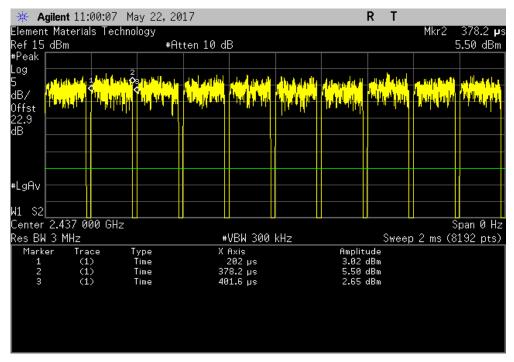


Report No. ELIM0013 34/124

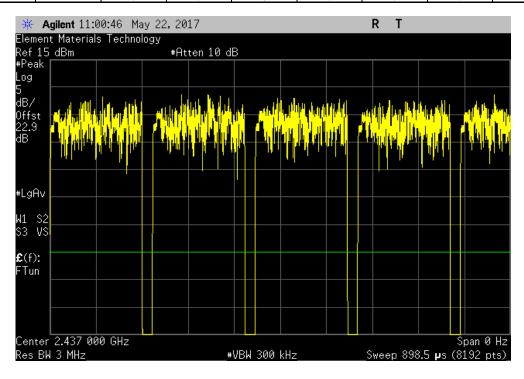


TbtTx 2017.01.27

	2400 MHz - 2	2483.5 MHz Band	l, 802.11(g) 54 MI	ops, Mid Channel	6, 2437 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	176.226 us	199.656 us	1	88.3	N/A	N/A



	2400 MHz - 2	483.5 MHz Band	l, 802.11(g) 54 MI	bps, Mid Channel	6, 2437 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

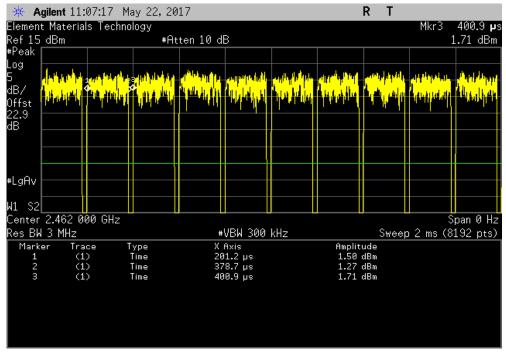


Report No. ELIM0013 35/124

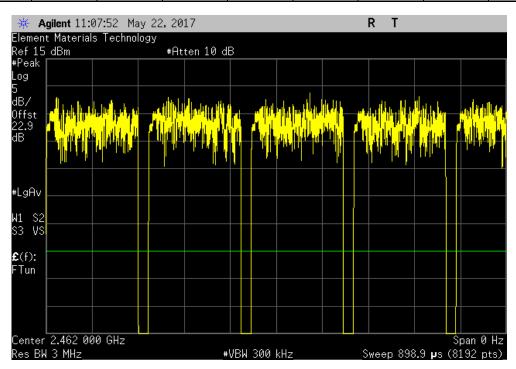


TbtTx 2017.01.27

2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz								
				Number of	Value	Limit		
		Pulse Width	Period	Pulses	(%)	(%)	Results	
		177.547 us	199.756 us	1	88.9	N/A	N/A	



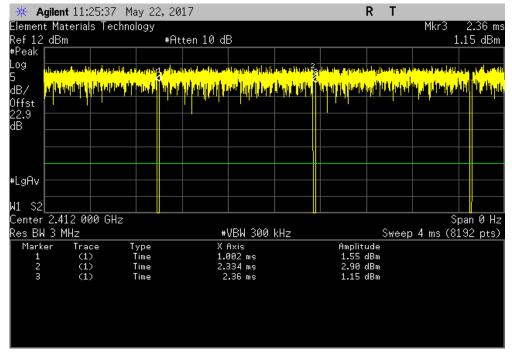
2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz												
				Number of	Value	Limit						
		Pulse Width	Period	Pulses	(%)	(%)	Results	_				
		N/A	N/A	5	N/A	N/A	N/A					



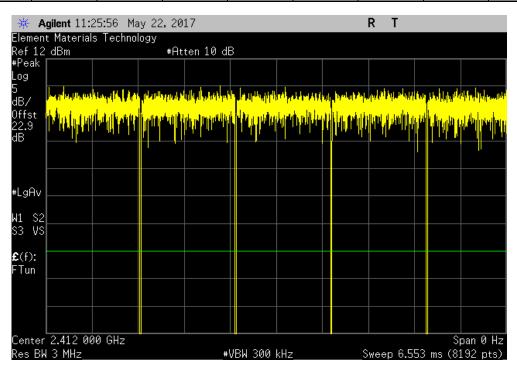
Report No. ELIM0013 36/124



							TbtTx 2017.01.27	XMit 2017.02.08
	2400 MHz -	2483 5 MHz Ran	id, 802.11(n) MCS	O Low Channel	1 2412 MHz			
	2400 IVII 12	2400.0 WII IZ Daii	ia, 002. i i(ii) ivioc	o, Low Charlici	1, 2712 1911 12			
			Number of	Value	Limit			
	Pulse Width	Period	Pulses	(%)	(%)	Results		
	1.332 ms	1 358 ms	1	98.1	N/A	N/A		



Г	2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz									
				Number of	Value	Limit				
		Pulse Width	Period	Pulses	(%)	(%)	Results			
		N/A	N/A	5	N/A	N/A	N/A			

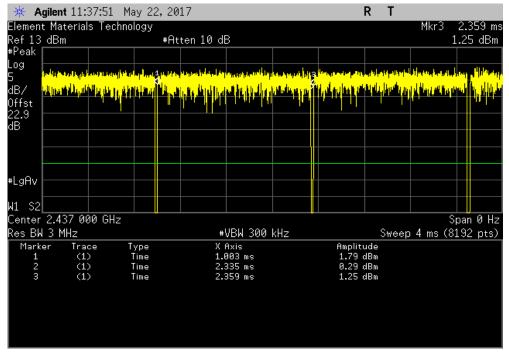


Report No. ELIM0013 37/124

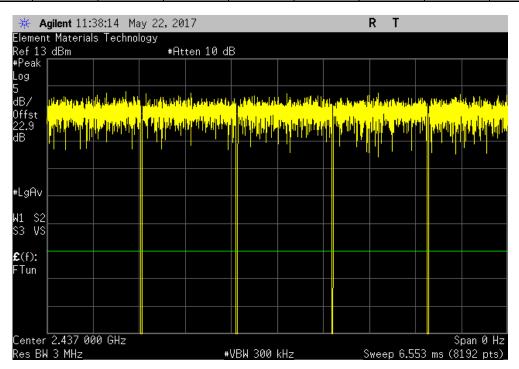


TbtTx 2017.01.27

2400 MHz -	2483.5 MHz Ban	nd, 802.11(n) MCS	60, Mid Channel 6	6, 2437 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
1.332 ms	1.356 ms	1	98.2	N/A	N/A



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz								
				Number of	Value	Limit		
		Pulse Width	Period	Pulses	(%)	(%)	Results	
l		N/A	N/A	5	N/A	N/A	N/A	

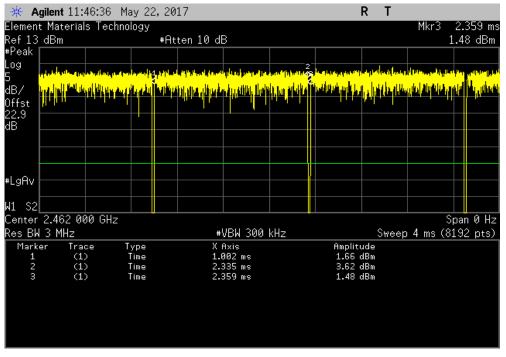


Report No. ELIM0013 38/124

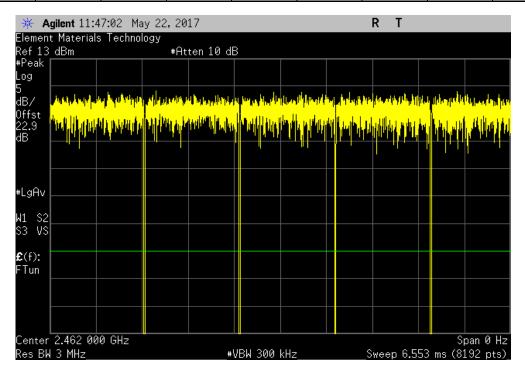


TbtTx 2017.01.27

2400 MHz - 2	2483.5 MHz Band	d, 802.11(n) MCS	0, High Channel	11, 2462 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
1.333 ms	1.357 ms	1	98.2	N/A	N/A



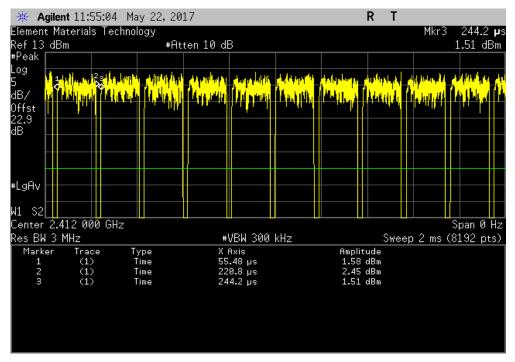
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz									
				Number of	Value	Limit			
		Pulse Width	Period	Pulses	(%)	(%)	Results		
		N/A	N/A	5	N/A	N/A	N/A		



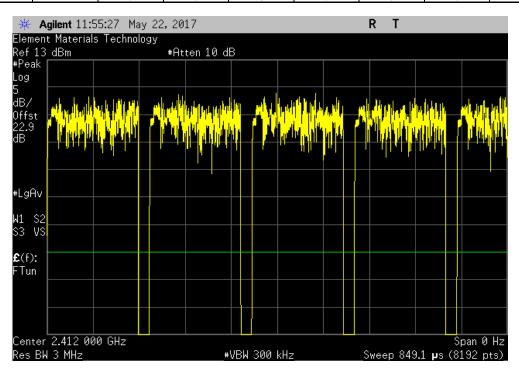
Report No. ELIM0013 39/124



2400 MHz -	2483.5 MHz Ban	nd, 802.11(n) MCS	37, Low Channel	1, 2412 MHz	
		Number of	Value	Limit	
Pulse Width	Period	Pulses	(%)	(%)	Results
165 302 us	199 7 116	1	87.6	NI/A	N/A



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz									
			Number of	Value	Limit				
	Pulse Width	Period	Pulses	(%)	(%)	Results			
	N/A	N/A	5	N/A	N/A	N/A			

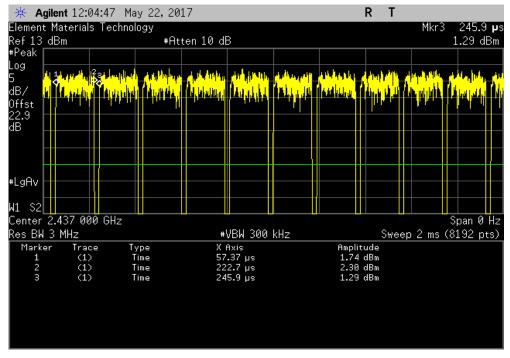


Report No. ELIM0013 40/124

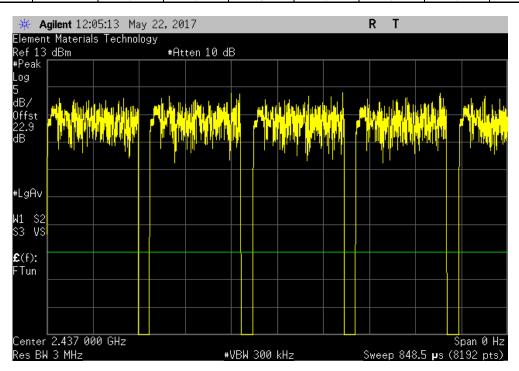


TbtTx 2017.01.27

	2400 MHz -	2483.5 MHz Ban	d, 802.11(n) MCS	67, Mid Channel 6	6, 2437 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	165.302 us	188.556 us	1	87.7	N/A	N/A



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz									
			Number of	Value	Limit				
<u></u>	Pulse Width	Period	Pulses	(%)	(%)	Results			
	N/A	N/A	5	N/A	N/A	N/A			

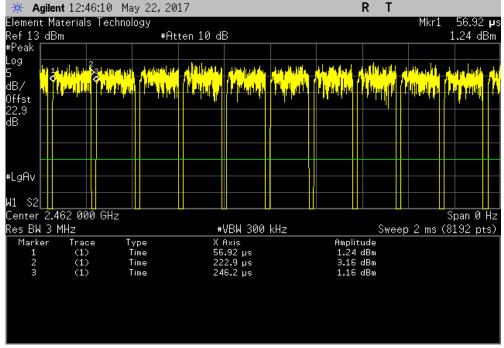


Report No. ELIM0013 41/124

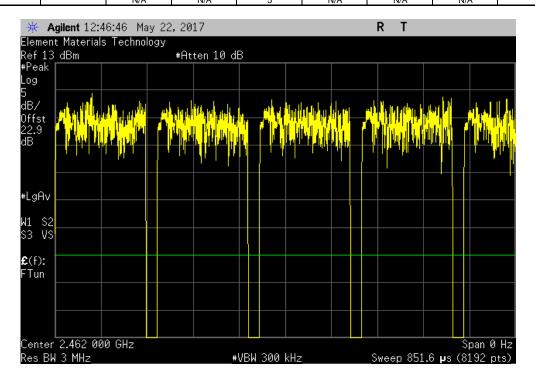


TbtTx 2017.01.27

	2400 MHz - 2	2483.5 MHz Band	I, 802.11(n) MCS	7, High Channel 1	11, 2462 MHz	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	165.991 us	189.244 us	1	87.7	N/A	N/A



2400 MHz - 2	2483.5 MHz Band	d, 802.11(n) MCS	7, High Channel 1	11, 2462 MHz		
		Number of	Value	Limit		
 Pulse Width	Period	Pulses	(%)	(%)	Results	
NI/A	NI/A	E	NI/A	NI/A	NI/A	



Report No. ELIM0013 42/124



XMit 2017.02.08

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2/5/2015	2/5/2018
Attenuator	Fairview Microwave	SA18E-20	TKS	3/6/2017	3/6/2018
Block - DC	Aeroflex	INMET 8535	AMO	3/27/2017	3/27/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.

Report No. ELIM0013 43/124

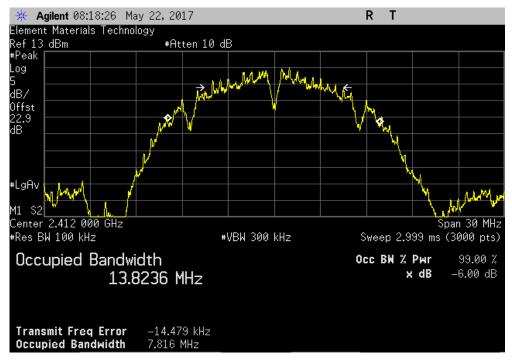


						TbtTx 2017.01.27	XMit 2017.0
	IMP004M				Work Order:		
Serial Number:					Date:	05/31/17	
Customer:	Electric Imp, Inc.				Temperature:	21.3 °C	
	Jonathan Dillon				Humidity:		
Project:					Barometric Pres.:	1014 mbar	
	Salvador Solorzano and John	ny Candelas		Power: 3.3VDC regulated down from USB 5\	/ Job Site:	OC13	
TEST SPECIFICATI	IONS			Test Method			
FCC 15.247:2017				ANSI C63.10:2013			
COMMENTS							
Total Offset 22.59d	B (20dB pad + DC Block + coa	x cable + client provided	patch cable) at 2.	4GHz			
DEVIATIONS FROM	M TEST STANDARD						
None							
Configuration #	2	Signature	for of	. Chi		Lineto	
					Value	Limit (>)	Result
2400 MHz - 2483.5 I	MHz Band					(- /	
	802.11(b) 1 Mbps						
	Low Channel 1, 24	412 MHz			7.816 MHz	500 kHz	Pass
	Mid Channel 6, 24				7.85 MHz	500 kHz	Pass
	High Channel 11,	2462 MHz			8.539 MHz	500 kHz	Pass
	802.11(b) 11 Mbps						
	Low Channel 1, 24	112 MHz			8.174 MHz	500 kHz	Pass
	Mid Channel 6, 24	37 MHz			7.698 MHz	500 kHz	Pass
	High Channel 11,	2462 MHz			8.986 MHz	500 kHz	Pass
	802.11(g) 6 Mbps						
	Low Channel 1, 24	112 MHz			15.771 MHz	500 kHz	Pass
	Mid Channel 6, 24	37 MHz			16.054 MHz	500 kHz	Pass
	High Channel 11,	2462 MHz			16.282 MHz	500 kHz	Pass
	802.11(g) 36 Mbps						
	Low Channel 1, 24	↓12 MHz			16.225 MHz	500 kHz	Pass
	Mid Channel 6, 24				16.307 MHz	500 kHz	Pass
	High Channel 11,	2462 MHz			15.904 MHz	500 kHz	Pass
	802.11(g) 54 Mbps						
	Low Channel 1, 24	↓12 MHz			16.059 MHz	500 kHz	Pass
	Mid Channel 6, 24	37 MHz			16.127 MHz	500 kHz	Pass
	High Channel 11,	2462 MHz			16.008 MHz	500 kHz	Pass
	802.11(n) MCS0						
		112 MHz			15.698 MHz	500 kHz	Pass
	Low Channel 1, 24				15.078 MHz	500 kHz	Pass
	Low Channel 1, 24 Mid Channel 6, 24				13.070 WII 12	300 KHZ	. 400
		37 MHz			16.128 MHz	500 kHz	Pass
	Mid Channel 6, 24	37 MHz			16.128 MHz		
	Mid Channel 6, 24 High Channel 11,	37 MHz 2462 MHz					
	Mid Channel 6, 24 High Channel 11, 802.11(n) MCS7	37 MHz 2462 MHz 412 MHz			16.128 MHz	500 kHz	Pass

Report No. ELIM0013 44/124



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz
Limit
Value (>) Result
7.816 MHz 500 kHz Pass



	2400 MHz - :	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Mid Channel	6, 2437 MHz		
					Limit		
_				Value	(>)	Result	
				7.85 MHz	500 kHz	Pass	



Report No. ELIM0013 45/124

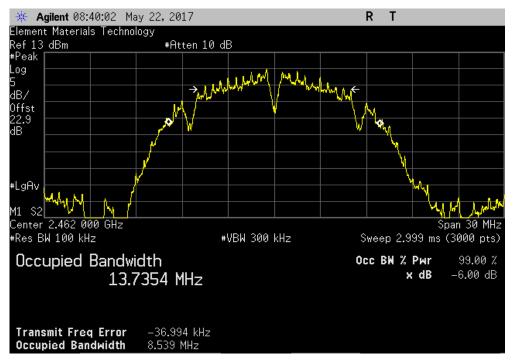


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

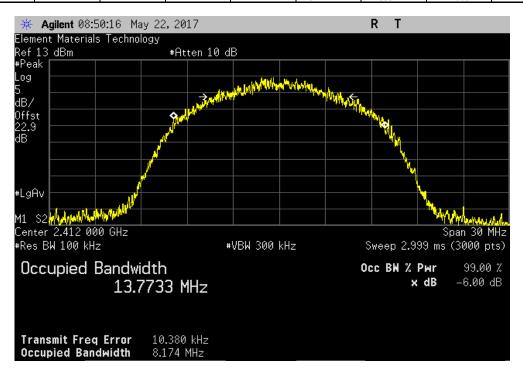
Limit

Value (>) Result

8.539 MHz 500 kHz Pass



	2400 MHz - 2	2483.5 MHz Band	l, 802.11(b) 11 MI	ops, Low Channel	1, 2412 MHz		
					Limit		
				Value	(>)	Result	
				8.174 MHz	500 kHz	Pass	



Report No. ELIM0013 46/124

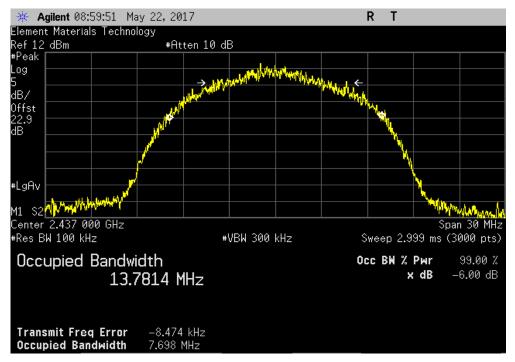


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

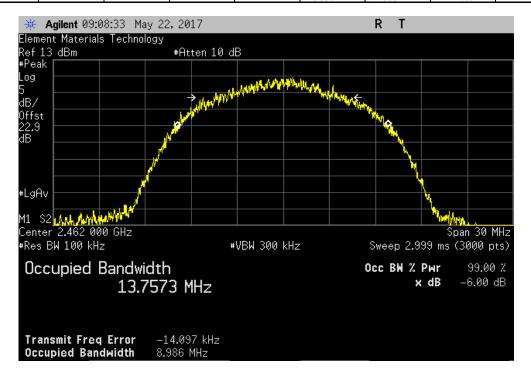
Limit

Value (>) Result

7.698 MHz | 500 kHz | Pass



	2400 MHz - 24	183.5 MHz Band,	802.11(b) 11 Mb	os, High Channel	11, 2462 MHz		
					Limit		
				Value	(>)	Result	
l				8.986 MHz	500 kHz	Pass	



Report No. ELIM0013 47/124

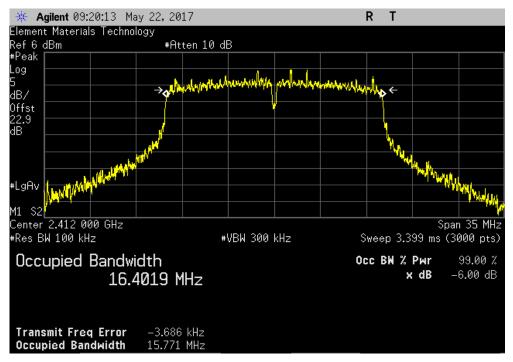


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

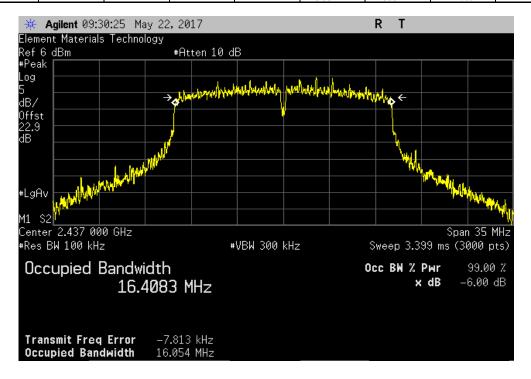
Limit

Value (>) Result

15.771 MHz 500 kHz Pass



	2400 MHz - 2	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Mid Channel	6, 2437 MHz		
					Limit		
				Value	(>)	Result	_
Г				16.054 MHz	500 kHz	Pass	ı



Report No. ELIM0013 48/124

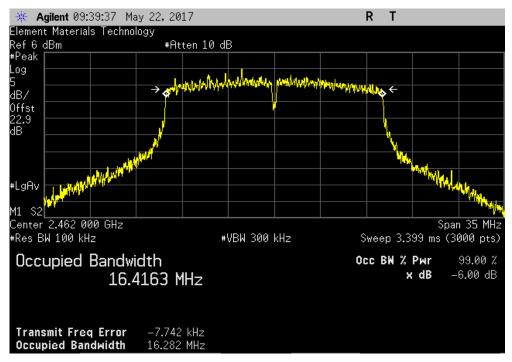


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

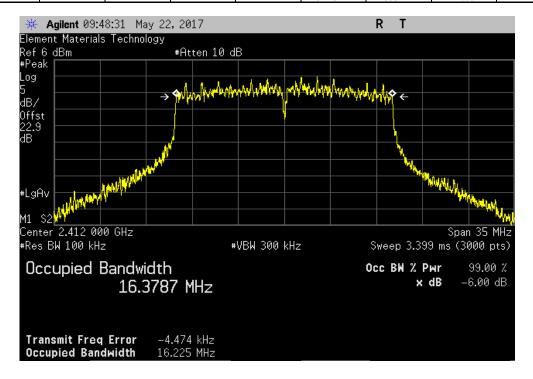
Limit

Value (>) Result

16.282 MHz 500 kHz Pass



	2400 MHz - 2	483.5 MHz Band	, 802.11(g) 36 Mb	ps, Low Channel	1, 2412 MHz		
					Limit		
				Value	(>)	Result	
				16.225 MHz	500 kHz	Pass	Ī



Report No. ELIM0013 49/124

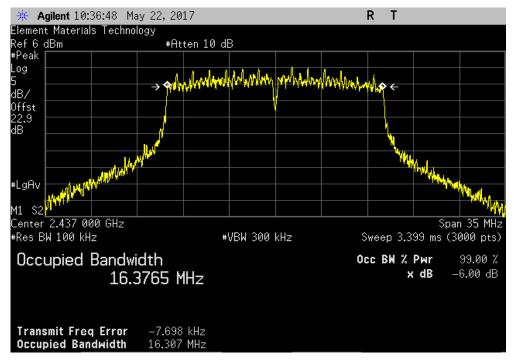


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

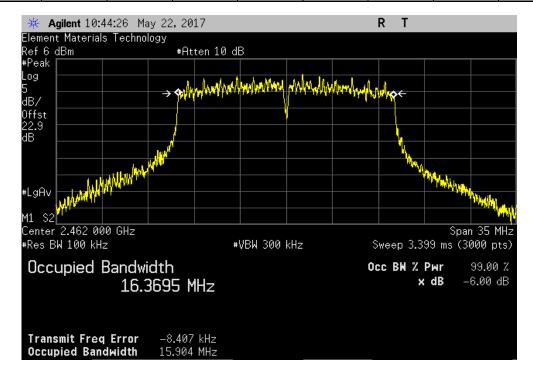
Limit

Value (>) Result

16.307 MHz 500 kHz Pass



	2400 MHz - 24	183.5 MHz Band,	802.11(g) 36 Mb	os, High Channel	11, 2462 MHz		
					Limit		
_				Value	(>)	Result	
l				15.904 MHz	500 kHz	Pass	



Report No. ELIM0013 50/124

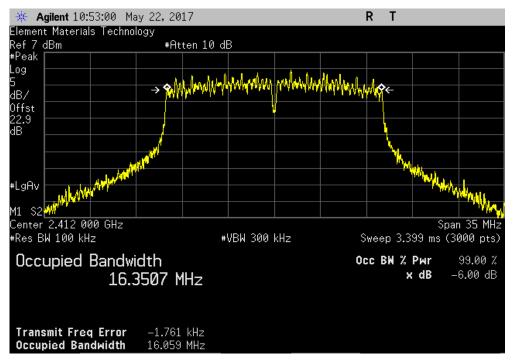


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

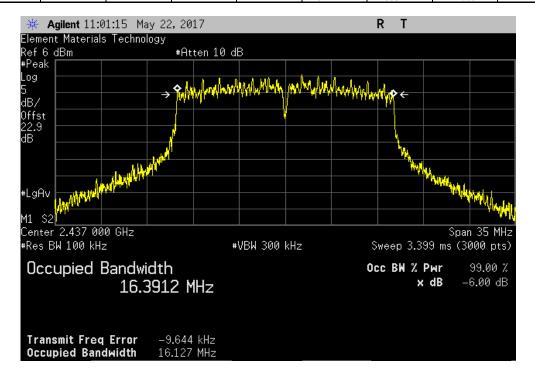
Limit

Value (>) Result

16.059 MHz 500 kHz Pass



	2400 MHz - 2	2483.5 MHz Band	l, 802.11(g) 54 MI	ops, Mid Channel	6, 2437 MHz		
					Limit		
				Value	(>)	Result	
				16.127 MHz	500 kHz	Pass	



Report No. ELIM0013 51/124

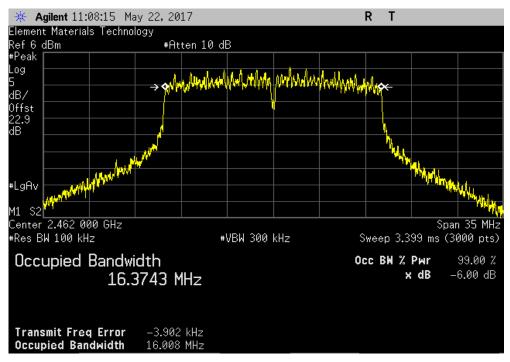


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

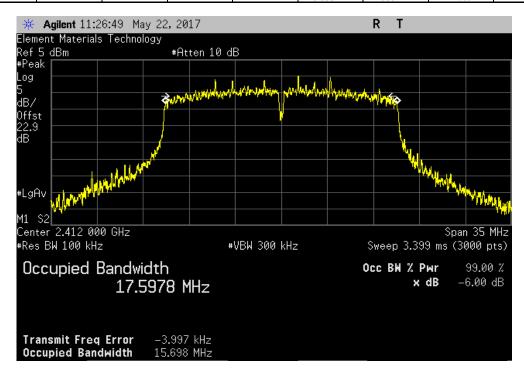
Limit

Value (>) Result

16.008 MHz 500 kHz Pass



	2400 MHz -	2483.5 MHz Ban	d, 802.11(n) MCS	0, Low Channel	1, 2412 MHz	
					Limit	
				Value	(>)	Result
				15.698 MHz	500 kHz	Pass



Report No. ELIM0013 52/124

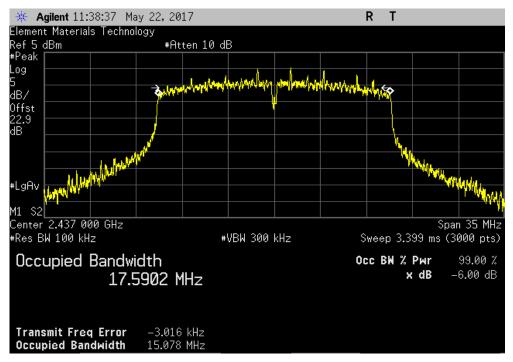


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

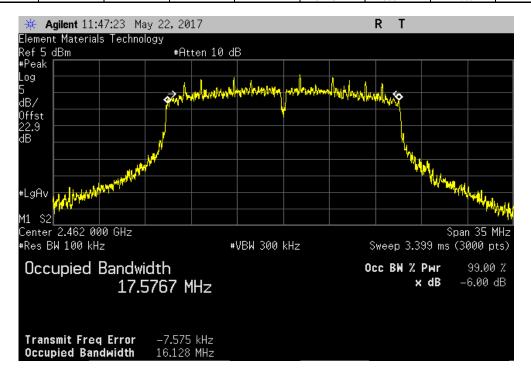
Limit

Value (>) Result

15.078 MHz 500 kHz Pass



	2400 MHz - 2	2483.5 MHz Band	l, 802.11(n) MCS	), High Channel 1	1, 2462 MHz		
					Limit		
				Value	(>)	Result	
				16.128 MHz	500 kHz	Pass	



Report No. ELIM0013 53/124

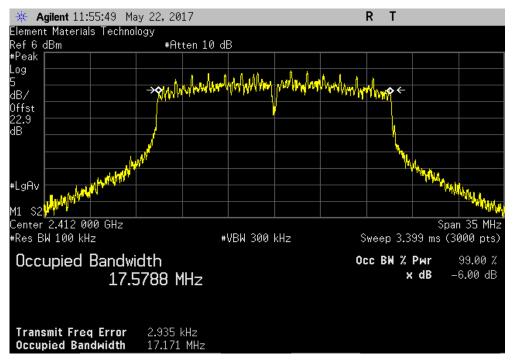


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

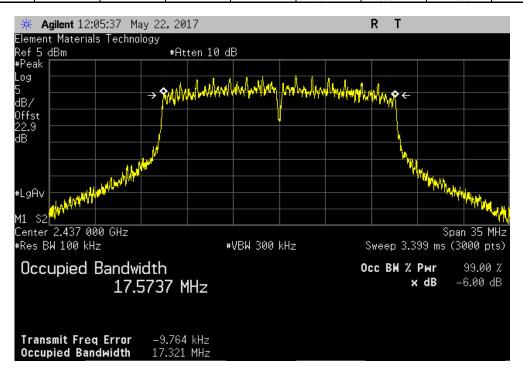
Limit

Value (>) Result

17.171 MHz 500 kHz Pass



	2400 MHz -	2483.5 MHz Ban	d, 802.11(n) MCS	67, Mid Channel 6	6, 2437 MHz		
					Limit		
_				Value	(>)	Result	_
ĺ				17.321 MHz	500 kHz	Pass	ĺ



Report No. ELIM0013 54/124

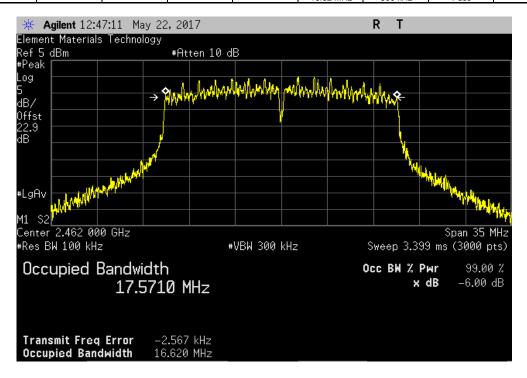


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Limit

Value (>) Result

16.62 MHz 500 kHz Pass



Report No. ELIM0013 55/124



XMit 2017.02.08

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2/5/2015	2/5/2018
Attenuator	Fairview Microwave	SA18E-20	TKS	3/6/2017	3/6/2018
Block - DC	Aeroflex	INMET 8535	AMO	3/27/2017	3/27/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.2.2.4 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

Report No. ELIM0013 56/124



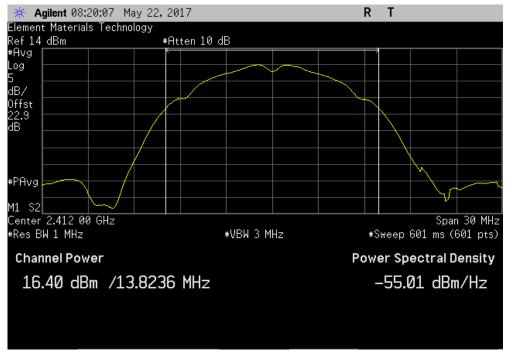
EUT:	1				TbtTx 2017.01.27	XMit 201
	IMP004M			Work Order:		
Serial Number:					05/31/17	
	Electric Imp, Inc.			Temperature:		
	Jonathan Dillon			Humidity:		
Project:				Barometric Pres.:		
	Salvador Solorzano and Johnny Candelas	Power: 3.3VDC regulated	down from USB 5V	Job Site:	OC13	
EST SPECIFICATI	IONS	Test Method				
CC 15.247:2017		ANSI C63.10:2013				
COMMENTS						
Total Offset 22.59d	B (20dB pad + DC Block + coax cable + client provide	led patch cable) at 2.4GHz				
EVIATIONS EDON	// TEST STANDARD					
one	I IEST STANDARD					
OHE						
Configuration #	2	for d. lother				
oga.ao	_ Signature					
	oigraturo.	Avg Cond	Duty Cycle	Value	Limit	
		Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results
400 MHz - 2483.5 M	MHz Band	· (a2)		(42)	(45)	rtoounte
100111112 2100.01	802.11(b) 1 Mbps					
	Low Channel 1, 2412 MHz	16.398	0	16.4	30	Pass
	Mid Channel 6, 2437 MHz	16.256	Ö	16.3	30	Pass
	High Channel 11, 2462 MHz	16.485	0	16.5	30	Pass
	802.11(b) 11 Mbps	10.400		10.0	- 50	1 433
	Low Channel 1, 2412 MHz	16.284	0.1	16.4	30	Pass
	Mid Channel 6, 2437 MHz	16.213	0.1	16.3	30	Pass
	High Channel 11, 2462 MHz	16.481	0.1	16.6	30	Pass
	802.11(g) 6 Mbps	10.401	0.1	10.0		1 433
		11 885	0.1	12	30	Page
	Low Channel 1, 2412 MHz	11.885 11.918	0.1	12 12	30 30	Pass
	Mid Channel 6, 2437 MHz	11.918	0.1	12	30	Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz					
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps	11.918 12.047	0.1 0.1	12 12.1	30 30	Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz	11.918 12.047 11.355	0.1 0.1 0.4	12 12.1 11.7	30 30	Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz	11.918 12.047 11.355 11.646	0.1 0.1 0.4 0.4	12 12.1 11.7 12	30 30 30 30 30	Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz	11.918 12.047 11.355	0.1 0.1 0.4	12 12.1 11.7	30 30	Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps	11.918 12.047 11.355 11.646 11.845	0.1 0.1 0.4 0.4 0.4	12 12.1 11.7 12 12.2	30 30 30 30 30 30	Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz	11.918 12.047 11.355 11.646 11.845	0.1 0.1 0.4 0.4 0.4	12 12.1 11.7 12 12.2	30 30 30 30 30 30	Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz	11.918 12.047 11.355 11.646 11.845	0.1 0.1 0.4 0.4 0.4	12 12.1 11.7 12 12.2	30 30 30 30 30 30	Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz	11.918 12.047 11.355 11.646 11.845 11.425 11.491	0.1 0.1 0.4 0.4 0.4 0.5	12 12.1 11.7 12 12.2 11.9	30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(n) MCS0	11.918 12.047 11.355 11.646 11.845 11.425 11.491 11.508	0.1 0.4 0.4 0.4 0.4 0.5 0.5 0.5	12 12.1 11.7 12 12.2 11.9 12	30 30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz  802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz  802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz  802.11(n) MCS0 Low Channel 11, 2412 MHz	11.918 12.047 11.355 11.646 11.845 11.425 11.491 11.508	0.1 0.1 0.4 0.4 0.4 0.5 0.5 0.5	12 12.1 11.7 12 12.2 11.9 12 12	30 30 30 30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(n) MCS0 Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz Mid Channel 6, 2437 MHz Mid Channel 6, 2437 MHz	11.918 12.047 11.355 11.646 11.845 11.425 11.491 11.508	0.1 0.4 0.4 0.4 0.5 0.5 0.5	12 12.1 11.7 12 12.2 11.9 12 12 10.8 10.9	30 30 30 30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(n) MCS0 Low Channel 11, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2412 MHz Mid Channel 11, 2412 MHz Mid Channel 11, 2412 MHz Mid Channel 11, 2412 MHz High Channel 11, 2462 MHz	11.918 12.047 11.355 11.646 11.845 11.425 11.491 11.508	0.1 0.1 0.4 0.4 0.4 0.5 0.5 0.5	12 12.1 11.7 12 12.2 11.9 12 12	30 30 30 30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz  802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz  802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz  802.11(n) MCS0 Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(n) MCS0	11.918 12.047 11.355 11.646 11.845 11.425 11.491 11.508	0.1 0.4 0.4 0.4 0.5 0.5 0.5 0.1 0.1	12 12.1 11.7 12 12.2 11.9 12 12 10.8 10.9 11	30 30 30 30 30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass
	Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 36 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(g) 54 Mbps Low Channel 1, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2462 MHz 802.11(n) MCS0 Low Channel 11, 2412 MHz Mid Channel 6, 2437 MHz High Channel 11, 2412 MHz Mid Channel 11, 2412 MHz Mid Channel 11, 2412 MHz Mid Channel 11, 2412 MHz High Channel 11, 2462 MHz	11.918 12.047 11.355 11.646 11.845 11.425 11.491 11.508	0.1 0.4 0.4 0.4 0.5 0.5 0.5	12 12.1 11.7 12 12.2 11.9 12 12 10.8 10.9	30 30 30 30 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass

Report No. ELIM0013 57/124

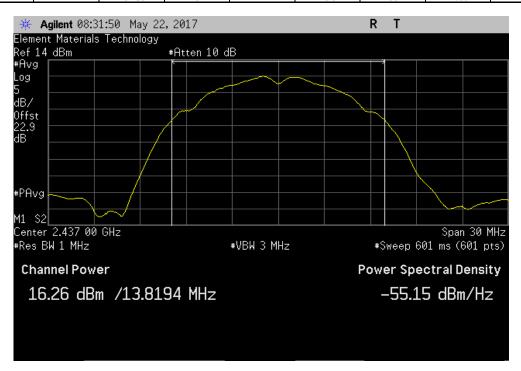


TbtTx 2017.01.27

	2400 MHz - 2	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Low Channe	l 1, 2412 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	16.398	0		16.4	30	Pass



	2400 MHz - 2	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Mid Channel	6, 2437 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	16.256	0		16.3	30	Pass

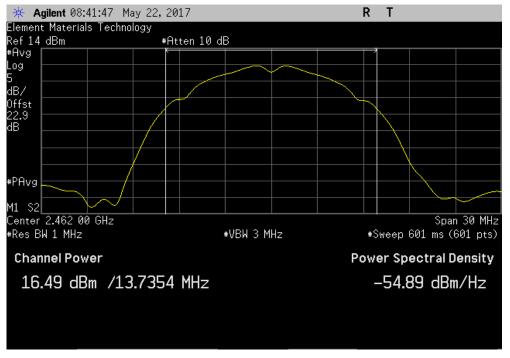


Report No. ELIM0013 58/124

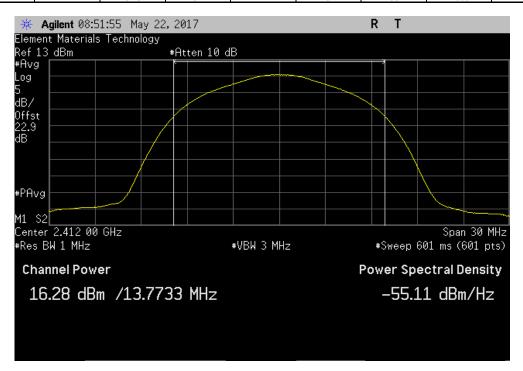


TbtTx 2017.01.27 XMit 2017.02.08

	2400 MHz - 2	483.5 MHz Band	, 802.11(b) 1 Mbp	s, High Channel	11, 2462 MHz		
	Avg Cond	Duty Cycle		Value	Limit		
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results	
	16.485	0		16.5	30	Pass	



	2400 MHz - 2	2483.5 MHz Band	l, 802.11(b) 11 Mb	ps, Low Channe	l 1, 2412 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	16.284	0.1		16.4	30	Pass

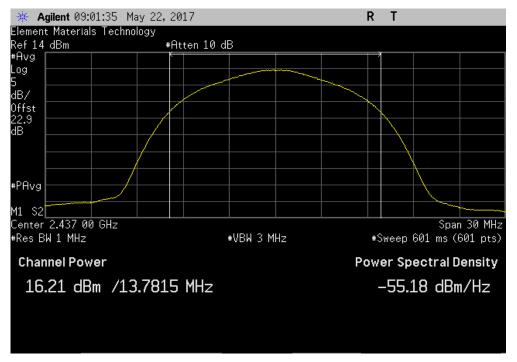


Report No. ELIM0013 59/124

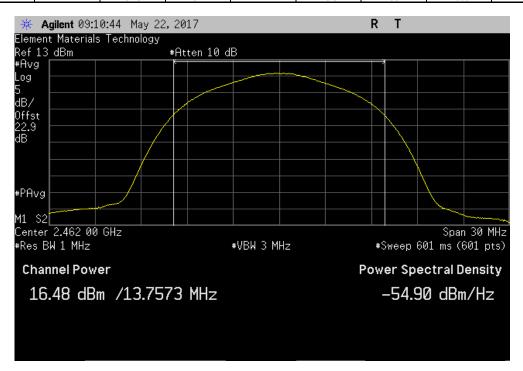


TbtTx 2017.01.27

2400 MHz -	2483.5 MHz Band	d, 802.11(b) 11 Mbps, Mid Cha	annel 6, 2437 MHz	
Avg Cond	Duty Cycle	Value	Limit	
Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results
16 213	0.1	16.3	30	Pass



	2400 MHz - 24	183.5 MHz Band,	802.11(b) 11 Mbps, High Channel	11, 2462 MHz	
	Avg Cond	Duty Cycle	Value	Limit	
	Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results
1	16.481	0.1	16.6	30	Pass

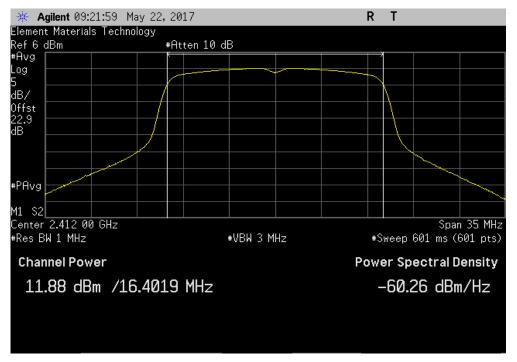


Report No. ELIM0013 60/124

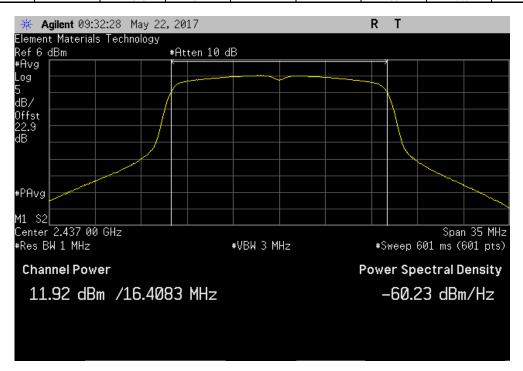


TbtTx 2017.01.27

2400 MHz -	2483.5 MHz Band, 802	2.11(g) 6 Mbps, Low Channel	1, 2412 MHz	
Avg Cond	Duty Cycle	Value	Limit	
Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results
11 885	0.1	12	30	Pass



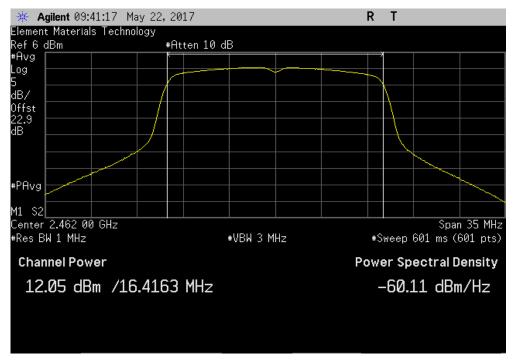
	2400 MHz - :	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Mid Channel	6, 2437 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	11.918	0.1		12	30	Pass



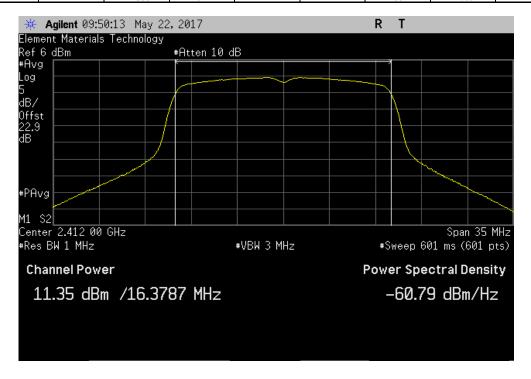
Report No. ELIM0013 61/124



							TbtTx 2017.01.27	XMit 2017.02.08
	2400 MHz - 2	483.5 MHz Band	, 802.11(g) 6 Mbp	s, High Channel	11, 2462 MHz			
	Avg Cond	Duty Cycle		Value	Limit			
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results		
	12 047	0.1		12 1	30	Pass	Ī	



2400 MHz - 2	2483.5 MHz Band	, 802.11(g) 36 Mbps, Low Channe	l 1, 2412 MHz	
Avg Cond	Duty Cycle	Value	Limit	
 Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results
11.355	0.4	11.7	30	Pass

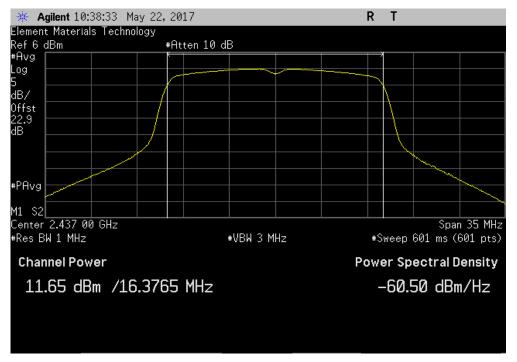


Report No. ELIM0013 62/124

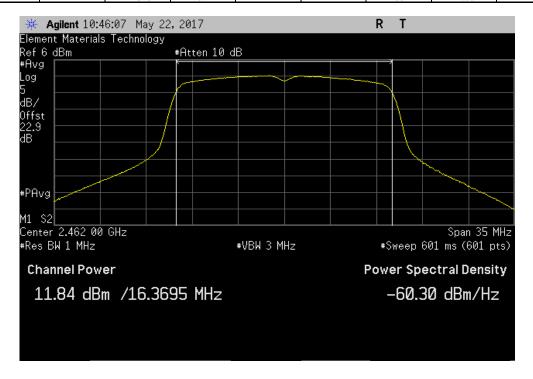


TbtTx 2017.01.27

2400 M	Hz - 2483.5 MHz Ban	d, 802.11(g) 36 Mbps, Mid Cha	nnel 6, 2437 MHz	
Avg Co	nd Duty Cycle	Value	Limit	
Pwr (dE	m) Factor (dB)	(dBm)	(dBm)	Results
11 64	0.4	12	30	Pass



2400 MHz - 24	483.5 MHz Band,	802.11(g) 36 Mbps, High Channel	11, 2462 MHz			
Avg Cond Duty Cycle Value Limit						
 Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results		
11.845	0.4	12.2	30	Pass		

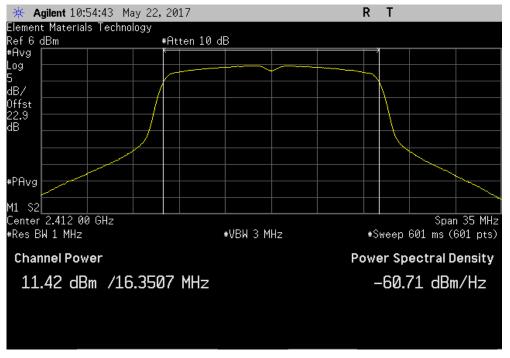


Report No. ELIM0013 63/124

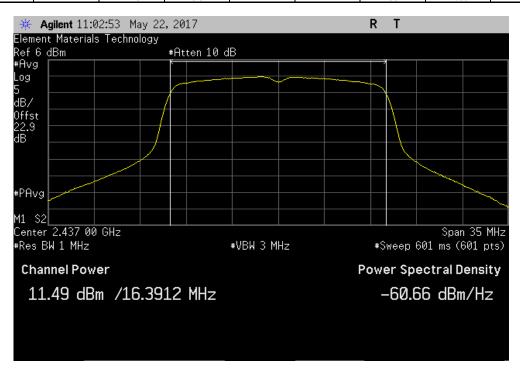


TbtTx 2017.01.27 XMit 2017.02.08

	2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz							
		Avg Cond	Duty Cycle		Value	Limit		
_		Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results	
		11.425	0.5		11.9	30	Pass	



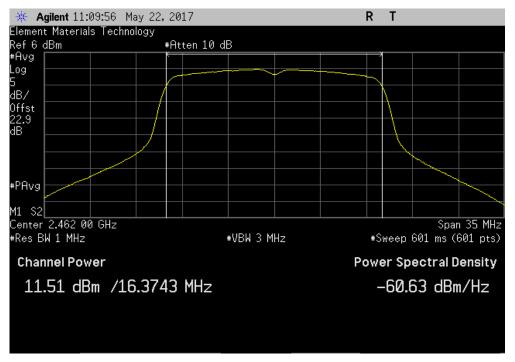
	2400 MHz - 2	2483.5 MHz Band	l, 802.11(g) 54 Mb <sub>l</sub>	os, Mid Channel	6, 2437 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	11.491	0.5		12	30	Pass



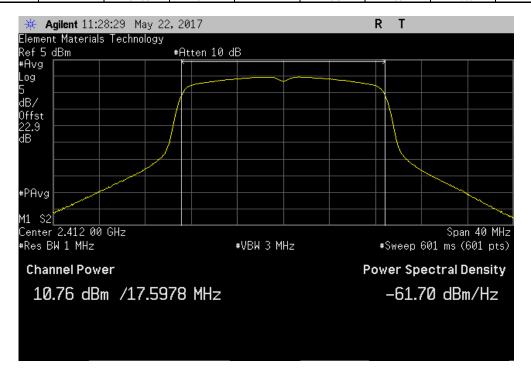
Report No. ELIM0013 64/124



	2400 MHz - 24	183.5 MHz Band,	802.11(g) 54 Mbr	os, High Channe	l 11, 2462 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	11.508	0.5		12	30	Pass



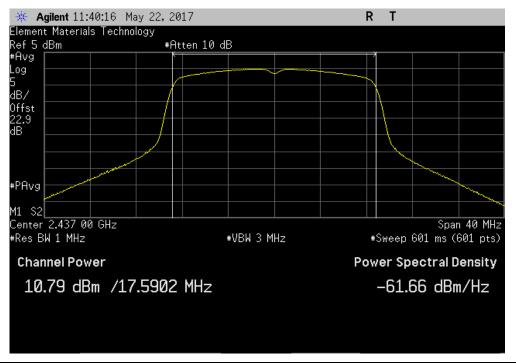
	2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz								
	Avg Cond Duty Cycle Value Limit								
	Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results				
	10.758	0.1	10.8	30	Pass				



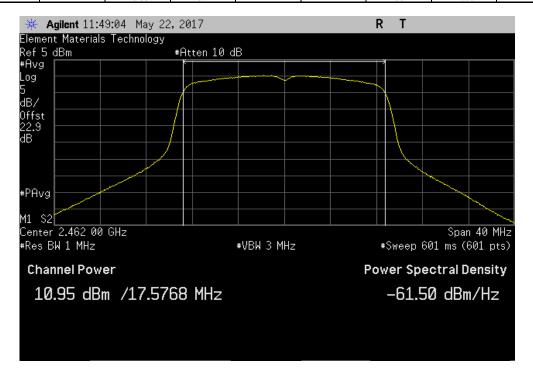
Report No. ELIM0013 65/124



	2400 MHz -	2483.5 MHz Ban	nd, 802.11(n) MCS	80, Mid Channel 6	6, 2437 MHz	
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	10.79	0.1		10.9	30	Pass



2400 MHz - 2	2483.5 MHz Band	l, 802.11(n) MCS0, High Channel 1	1, 2462 MHz	
Avg Cond	Duty Cycle	Value	Limit	
 Pwr (dBm)	Factor (dB)	(dBm)	(dBm)	Results
10.95	0.1	11	30	Pass

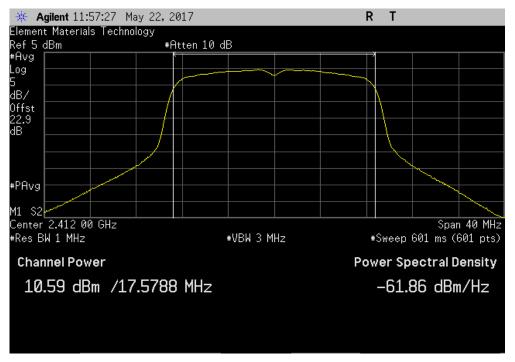


Report No. ELIM0013 66/124

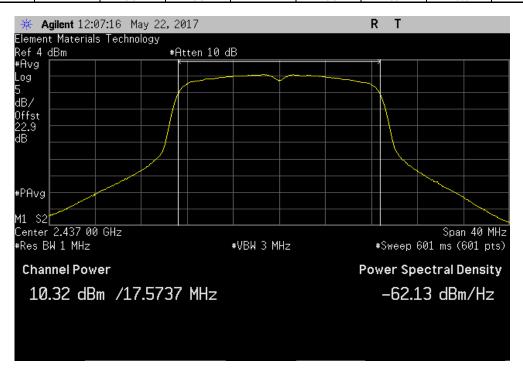


TbdTx 2017.01.27 XMM; 2017.02.1

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz								
Avg Cond Duty Cycle Value Limit								
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results		
	10.586	0.6		11.2	30	Pass		



	2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Mid Channel 6, 2437 MHz								
	Avg Cond	Duty Cycle		Value	Limit				
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results			
	10.317	0.6		10.9	30	Pass			

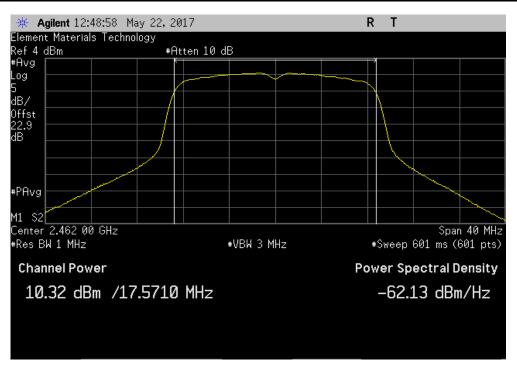


Report No. ELIM0013 67/124



	TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483 5 MHz Rand, 802 11(n) MCS7, High Channel 11, 2462 MHz		

2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz								
	Avg Cond	Duty Cycle		Value	Limit			
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results		
	10.321	0.6		10.9	30	Pass	ï	



Report No. ELIM0013 68/124



XMit 2017.02.08

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2/5/2015	2/5/2018
Attenuator	Fairview Microwave	SA18E-20	TKS	3/6/2017	3/6/2018
Block - DC	Aeroflex	INMET 8535	AMO	3/27/2017	3/27/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

Report No. ELIM0013 69/124



			TbtTx 2017.01.27	XMit 20
	: IMP004M	Work Order:		
Serial Number:	: IMP0107		05/31/17	
	Electric Imp, Inc.	Temperature:		
	: Jonathan Dillon	Humidity:		
Project:		Barometric Pres.:		
		lated down from USB 5V Job Site:	OC13	
ST SPECIFICATI				
C 15.247:2017	ANSI C63.10	.2013		
OMMENTS				
otal Offset 22.59d	dB (20dB pad + DC Block + coax cable + client provided patch cable) at 2.4GHz			
VIATIONS EDON	M TEST STANDARD			
one	III TEGI STANDAND			
ле				
onfiguration #	2 fe d. letter			
	Signature			
	<u> </u>	Value	Limit	
		dBm/3kHz	< dBm/3kHz	Results
00 MHz - 2483.5 I	MHz Band			
	802.11(b) 1 Mbps			
	Low Channel 1, 2412 MHz	-5.55	8	Pass
	Mid Channel 6, 2437 MHz	-6.407	8	Pass
	High Channel 11, 2462 MHz	-5.718	8	Pass
	802.11(b) 11 Mbps			
	Low Channel 1, 2412 MHz	-6.434	8	Pass
	Mid Channel 6, 2437 MHz	-6.289	8	Pass
	High Channel 11, 2462 MHz	-6.196	8	Pass
	802.11(g) 6 Mbps			
	Low Channel 1, 2412 MHz	-11.827	8	Pass
	Mid Channel 6, 2437 MHz	-12.955	8	Pass
	High Channel 11, 2462 MHz	-12.515	8	Pass
	802.11(g) 36 Mbps			
	Low Channel 1, 2412 MHz	-11.447	8	Pass
	Mid Channel 6, 2437 MHz	-13.013	8	Pass
	High Channel 11, 2462 MHz	-11.814	8	Pass
	802.11(g) 54 Mbps			
	Low Channel 1, 2412 MHz	-12.413	8	Pass
	Mid Channel 6, 2437 MHz	-12.722	8	Pass
	High Channel 11, 2462 MHz	-11.872	8	Pass
	802.11(n) MCS0			
	Low Channel 1, 2412 MHz	-14.118	8	Pass
	Mid Channel 6, 2437 MHz	-13.681	8	Pass
	High Channel 11, 2462 MHz	-13.364	8	Pass
	802.11(n) MCS7			
	Low Channel 1, 2412 MHz	-13.006	8	Pass
		-13.006 -14.033 -11.738	8 8 8	Pass Pass Pass

Report No. ELIM0013 70/124

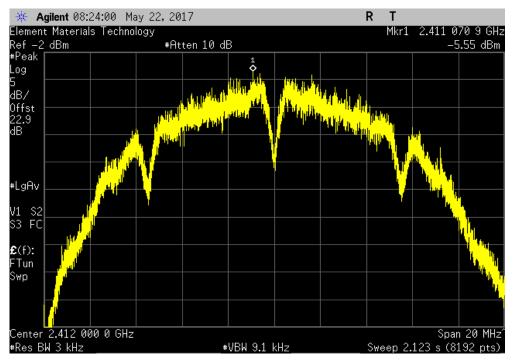


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

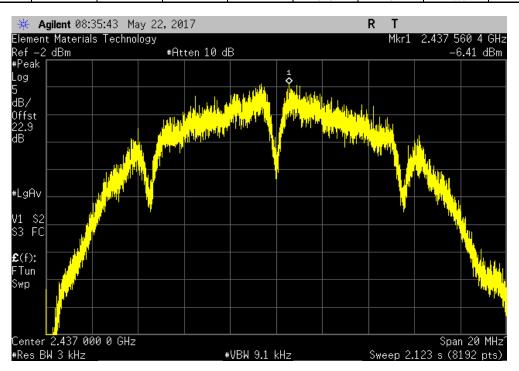
Value Limit

dBm/3kHz < dBm/3kHz Results

-5.55 8 Pass



	2400 MHz - 2	2483.5 MHz Band	d, 802.11(b) 1 Mb	ps, Mid Channel	6, 2437 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-6.407	8	Pass



Report No. ELIM0013 71/124

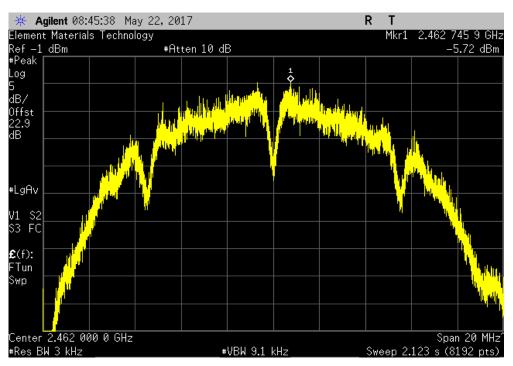


2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

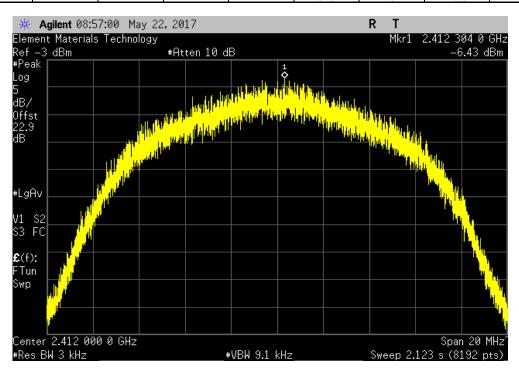
Value Limit

dBm/3kHz < dBm/3kHz Results

-5.718 8 Pass



	2400 MHz - 2	483.5 MHz Band	l, 802.11(b) 11 Mb	ps, Low Channel	l 1, 2412 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-6.434	8	Pass



Report No. ELIM0013 72/124

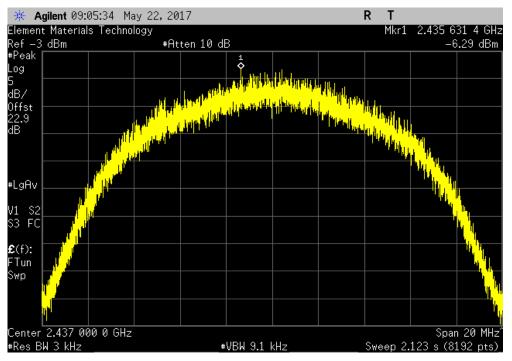


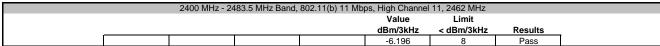
2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

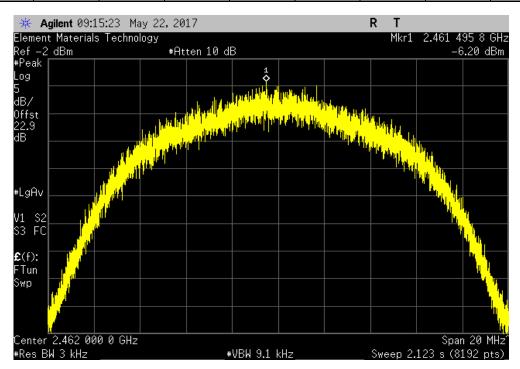
Value Limit

dBm/3kHz < dBm/3kHz Results

-6.289 8 Pass







Report No. ELIM0013 73/124

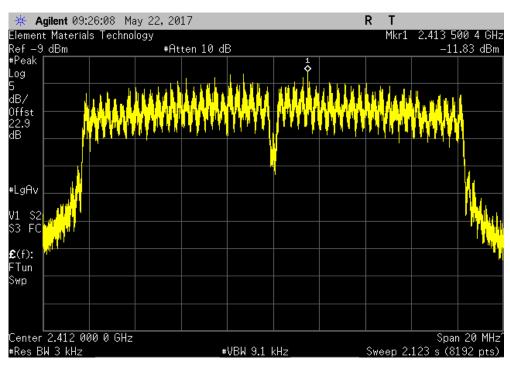


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

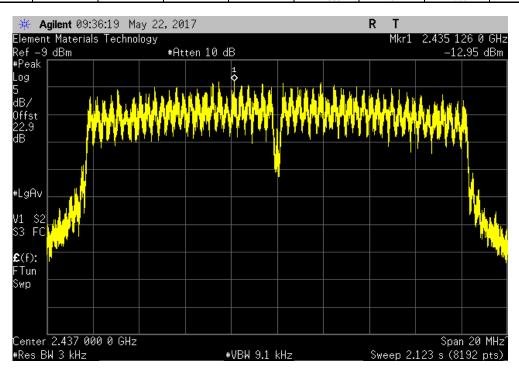
Value Limit

dBm/3kHz < dBm/3kHz Results

-11.827 8 Pass



	2400 MHz - 2	2483.5 MHz Band	d, 802.11(g) 6 Mb	ps, Mid Channel	6, 2437 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-12.955	8	Pass



Report No. ELIM0013 74/124

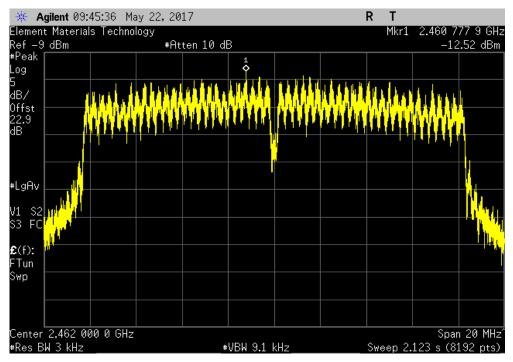


2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, High Channel 11, 2462 MHz

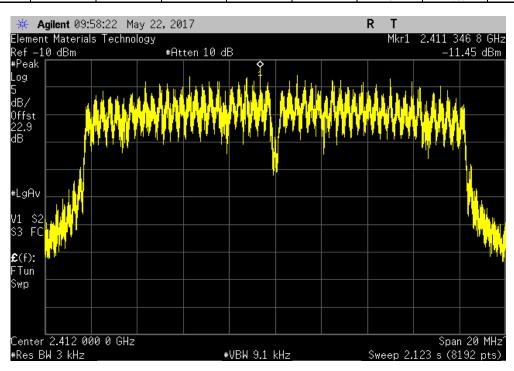
Value Limit

dBm/3kHz < dBm/3kHz Results

-12.515 8 Pass



	2400 MHz - 2	483.5 MHz Band	, 802.11(g) 36 Mb	ps, Low Channel	1, 2412 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-11.447	8	Pass



Report No. ELIM0013 75/124

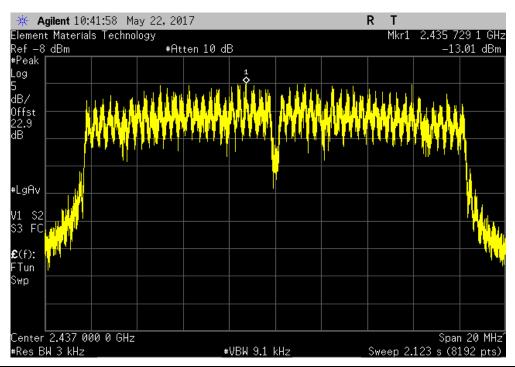


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

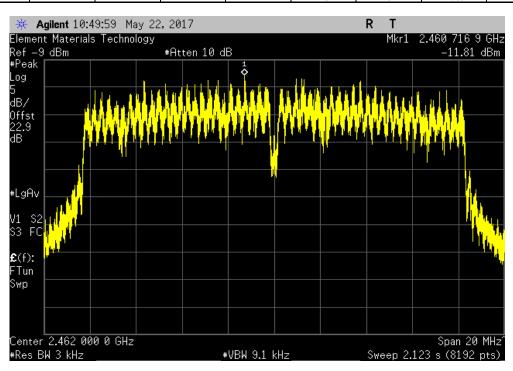
Value Limit

dBm/3kHz < dBm/3kHz Results

-13.013 8 Pass



	2400 MHz - 248	3.5 MHz Band,	802.11(g) 36 Mb	os, High Channel	11, 2462 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
		-		-11.814	8	Pass



Report No. ELIM0013 76/124

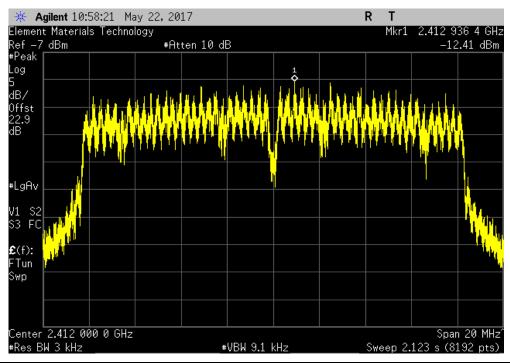


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

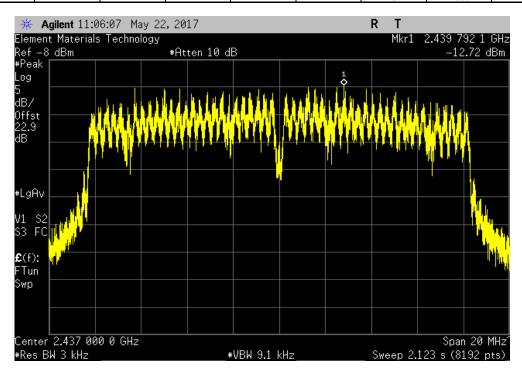
Value Limit

dBm/3kHz < dBm/3kHz Results

-12.413 8 Pass



	2400 MHz - 24	183.5 MHz Band	I, 802.11(g) 54 MI	ops, Mid Channel	6, 2437 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-12 722	8	Pass



Report No. ELIM0013 77/124

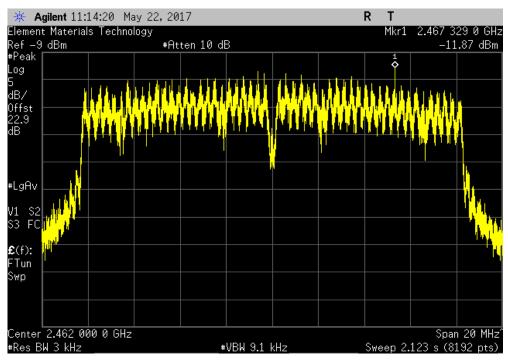


2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz

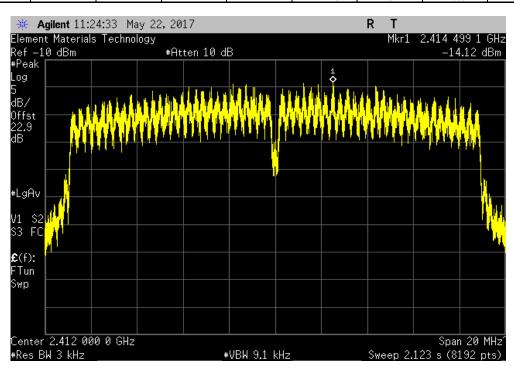
Value Limit

dBm/3kHz < dBm/3kHz Results

-11.872 8 Pass



	2400 MHz -	2483.5 MHz Ban	d, 802.11(n) MCS	0, Low Channel	1, 2412 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-14.118	8	Pass



Report No. ELIM0013 78/124

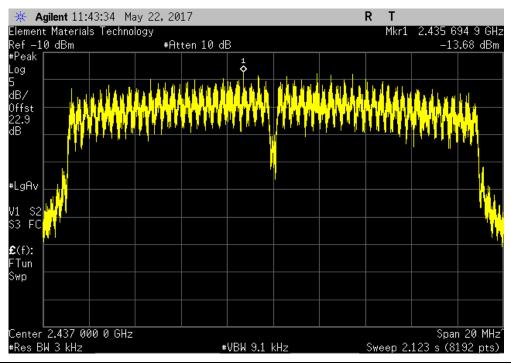


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

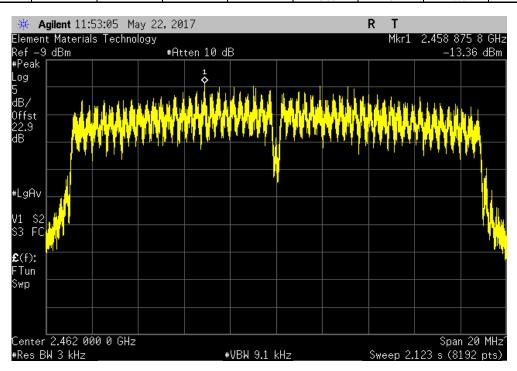
Value Limit

dBm/3kHz < dBm/3kHz Results

-13.681 8 Pass



	2400 MHz - 2	483.5 MHz Band	I, 802.11(n) MCS	0, High Channel 1	11, 2462 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-13.364	8	Pass



Report No. ELIM0013 79/124

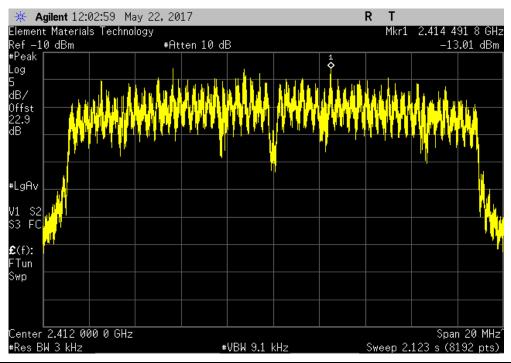


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

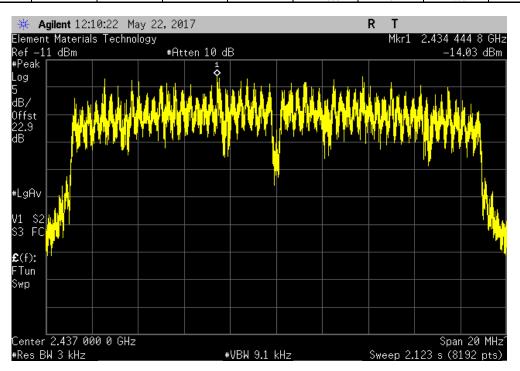
Value Limit

dBm/3kHz < dBm/3kHz Results

-13.006 8 Pass



	2400 MHz - 2	2483.5 MHz Ban	id, 802.11(n) MCS	7, Mid Channel 6	6, 2437 MHz	
				Value	Limit	
				dBm/3kHz	< dBm/3kHz	Results
				-14.033	8	Pass



Report No. ELIM0013 80/124

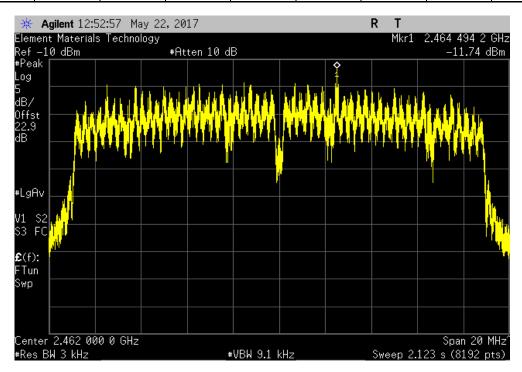


2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Value Limit

dBm/3kHz < dBm/3kHz Results

-11.738 8 Pass



Report No. ELIM0013 81/124



XMit 2017.02.08

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2/5/2015	2/5/2018
Attenuator	Fairview Microwave	SA18E-20	TKS	3/6/2017	3/6/2018
Block - DC	Aeroflex	INMET 8535	AMO	3/27/2017	3/27/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

Report No. ELIM0013 82/124



OMMENTS  otal Offset 22.59dB (20dB pad + DC Block + coax cable + client provided patch cable) at 2.4GHz  EVIATIONS FROM TEST STANDARD  one  onfiguration # 2  Signature  Value Limit				TbtTx 2017.01.27	XMit 2017.02.0
Customer   Electric lamp, Inc.   Temperature   21.3 °C					
Attendess   Jonathan Dillon   Bargentric Press   1014 mbar   Tested by   Salvador Solorzano and Johnny Candelas   Power   3.3VDC regulated down from USB 5V   Job Sites   DC13   STS SPECIFICATIONS   Tested by   Salvador Solorzano and Johnny Candelas   Power   3.3VDC regulated down from USB 5V   Job Sites   DC13   STS SPECIFICATIONS   Test Method   Job Sites   DC13   STS STANDARD   Job Sites   DC13					
Project: None	Customer:	Electric Imp, Inc.			
Tested by:   Salvador Solorzano and Johnny Candelas   Power:   3.310C regulated down from USB 5V   Job Sites   OC13	Attendees:	Jonathan Dillon	Humidity:	49% RH	
SET SPECIFICATIONS   Test Method					
ANSI C83.10:2013			Job Site:	OC13	
OMMENTS					
Paral Offset 22.59dB (20dB pad + DC Block + coax cable + client provided patch cable) at 2.4GHz	FCC 15.247:2017	ANSI C63.10:2013			
Paral Offset 22.59dB (20dB pad + DC Block + coax cable + client provided patch cable) at 2.4GHz					
EVIATIONS FROM TEST STANDARD  One    Signature   Signature   Value   Limit	COMMENTS				
## Signature    Signature   S	Total Offset 22.59d	B (20dB pad + DC Block + coax cable + client provided patch cable) at 2.4GHz			
Signature   Sig	DEVIATIONS FROM	I TEST STANDARD			
Signature   Value   Limit   (dBc)   ≤ (dBc)   Result	None				
Mod MHz - 2483.5 MHz Band   S02.11(b) 1 Mbps   S	Configuration #	2 Signature			
S02.11(b) 1 Mbps		•			Result
Low Channel 1, 2412 MHz High Channel 11, 2462 MHz B02.11(b) 11 Mbps Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz Low Channel 11, 2462 MHz B02.11(b) 11 Mbps Low Channel 11, 2462 MHz B02.11(g) 6 Mbps Low Channel 11, 2462 MHz B02.11(g) 16 M	2400 MHz - 2483.5	MHz Band			
High Channel 11, 2462 MHz		802.11(b) 1 Mbps			
802.11(b) 11 Mbps		Low Channel 1, 2412 MHz	-34.96	-30	Pass
Low Channel 1, 2412 MHz High Channel 11, 2462 MHz B02.11(g) 6 Mbps Low Channel 11, 2412 MHz Low Channel 11, 2412 MHz Low Channel 11, 2462 MHz B02.11(g) 86 Mbps B02.11(g) 86 Mbps B02.11(g) 86 Mbps B02.11(g) 86 Mbps Low Channel 11, 2462 MHz B02.11(g) 86 Mbps Low Channel 11, 2462 MHz B02.11(g) 86 Mbps Low Channel 11, 2462 MHz B02.11(g) 86 Mbps B02.11(g) 86 Mbps Low Channel 11, 2462 MHz B02.11(g) 86 Mbps B02.1		High Channel 11, 2462 MHz	-51.04	-30	Pass
High Channel 11, 2462 MHz					
802.11(g) 6 Mbps					
Low Channel 1, 2412 MHz High Channel 11, 2462 MHz High Channel 11, 2462 MHz  802.11(g) 86 Mbps Low Channel 1, 2412 MHz Low Channel 11, 2462 MHz  802.11(g) 54 Mbps  802.11(g) 54 Mbps Low Channel 11, 2462 MHz  802.11(g) 54 Mbps Low Channel 11, 2462 MHz  Low Channel 11, 2462 MHz  Low Channel 11, 2462 MHz  1-31.38 1-30 1-30 1-30 1-30 1-30 1-30 1-30 1-30			-57.58	-30	Pass
High Channel 11, 2462 MHz   49.17   -30   Pass   802.11(g) 36 Mbps   -30.95   -30   Pass   20.11(g) 36 Mbps   -30.95   -30   Pass   -30.95					
802.11(g) 36 Mbps					
Low Channel 1, 2412 MHz High Channel 11, 2462 MHz B02.11(g) 54 Mbps Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz Low Channel 1, 2412 MHz Low Channel 11, 2462 MHz Low Channel 11, 2412 MHz			-49.17	-30	Pass
High Channel 11, 2462 MHz					_
802.11(g) 54 Mbps					
Low Channel 1, 2412 MHz High Channel 11, 2462 MHz  802.11(n) MCS0 Low Channel 1, 2412 MHz High Channel 11, 2462 MHz  802.11(n) MCS0  Low Channel 1, 2412 MHz High Channel 11, 2462 MHz  802.11(n) MCS7 Low Channel 1, 2412 MHz  47.52 30 Pass  802.11(n) MCS7 Low Channel 1, 2412 MHz			-48.86	-30	Pass
High Channel 11, 2462 MHz  802.11(n) MCS0  Low Channel 1, 2412 MHz  High Channel 11, 2462 MHz  802.11(n) MCS7  Low Channel 1, 2412 MHz  47.52  30.21  47.52  30.82ss  802.11(n) MCS7  Low Channel 1, 2412 MHz  31.99  30. Pass			04.00		
802.11(n) MCS0					
Low Channel 1, 2412 MHz High Channel 11, 2462 MHz 802.11(n) MCS7 Low Channel 1, 2412 MHz  -30.21 -30 Pass 802.11(n) MCS7  Low Channel 1, 2412 MHz  -31.99 -30 Pass			-49.83	-30	Pass
High Channel 11, 2462 MHz -47.52 -30 Pass 802.11(n) MCS7 Low Channel 1, 2412 MHz -31.99 -30 Pass			00.04	00	D
802.11(n) MCS7  Low Channel 1, 2412 MHz -31.99 -30 Pass					
Low Channel 1, 2412 MHz -31.99 -30 Pass			-47.52	-30	rass
			31.00	20	Poss
Figur Charmer 11, 2402 MFZ -47.64 -30 Pass					
		nigh Channel 11, 2402 Minz	-47.04	-30	Pass

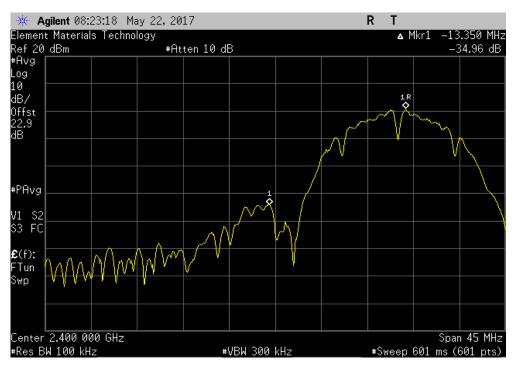
Report No. ELIM0013 83/124



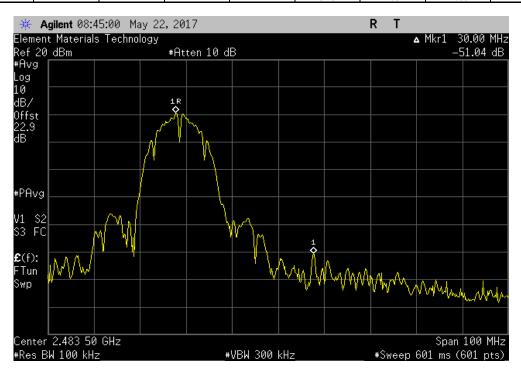
2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

Value Limit
(dBc) ≤ (dBc) Result

-34.96 -30 Pass



	2400 MHz - 2	483.5 MHz Band,	, 802.11(b) 1 Mbp	s, High Channel	11, 2462 MHz	
				Value	Limit	
				(dBc)	≤ (dBc)	Result
				-51.04	-30	Pass



Report No. ELIM0013 84/124

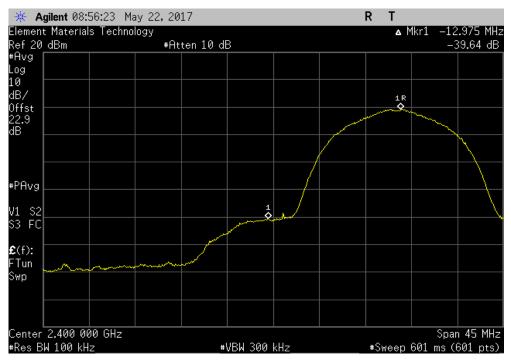


2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

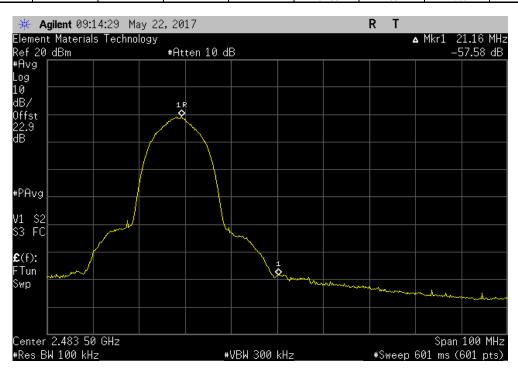
Value Limit

(dBc) ≤ (dBc) Result

-39.64 -30 Pass



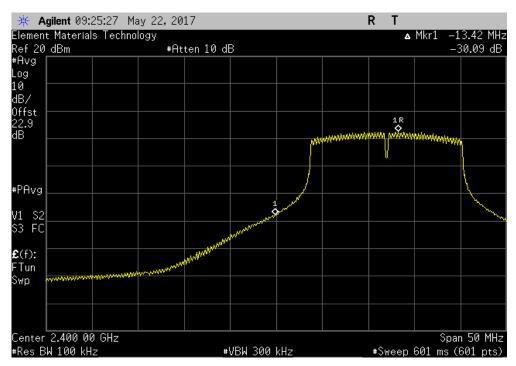
	2400 MHz - 24	83.5 MHz Band,	802.11(b) 11 Mb	os, High Channel	11, 2462 MHz	
				Value	Limit	
				(dBc)	≤ (dBc)	Result
				-57.58	-30	Pass



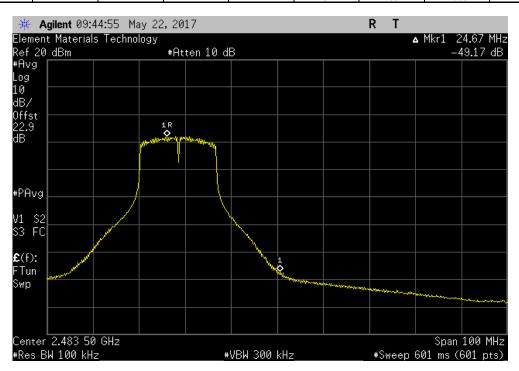
Report No. ELIM0013 85/124



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz		
Value Limit		
(dBc) ≤ (dBc) Result		
-30.09 -30 Pass	7	



	2400 MHz - 2	483.5 MHz Band,	, 802.11(g) 6 Mbp	s, High Channel	11, 2462 MHz	
				Value	Limit	
				(dBc)	≤ (dBc)	Result
				-49.17	-30	Pass



Report No. ELIM0013 86/124

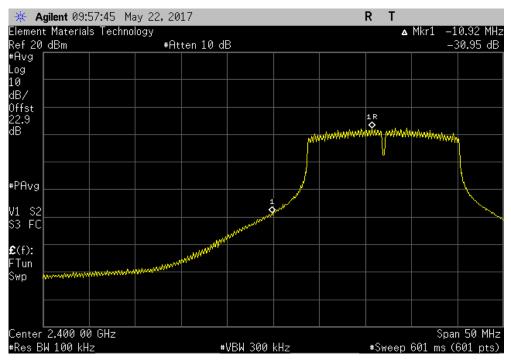


2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

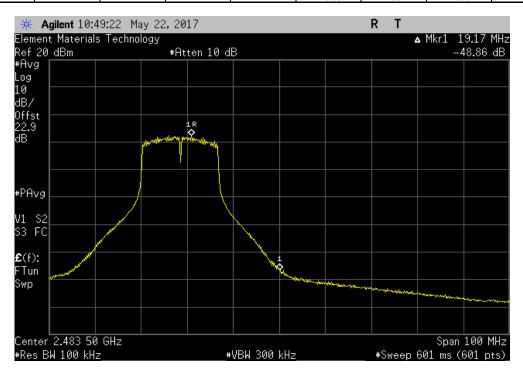
Value Limit

(dBc) ≤ (dBc) Result

-30.95 -30 Pass



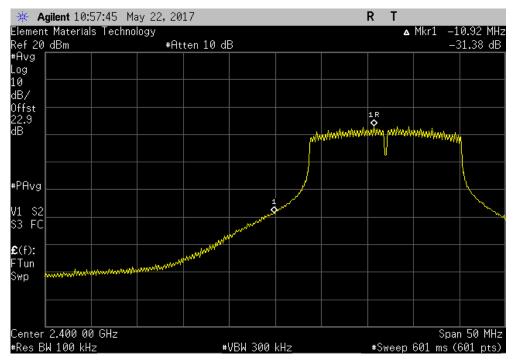
2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	
				(dBc)	≤ (dBc)	Result
				-48.86	-30	Pass



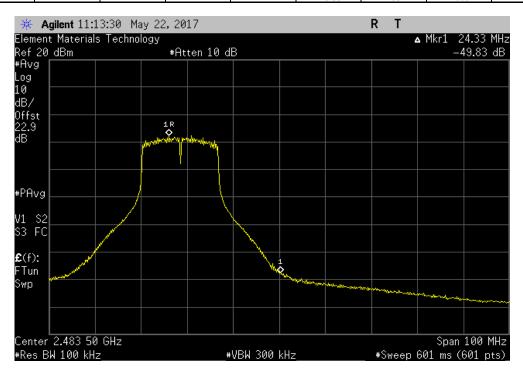
Report No. ELIM0013 87/124



_		10(1)(2017.01.27	AWIII 2017.02.06
Ξ			
	2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz		
I	Value Limit		
	(dBc) ≤(dBc) Result		
1	-31.38 -30 Pass		



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz						
				Value	Limit	
				(dBc)	≤ (dBc)	Result
				-49.83	-30	Pass



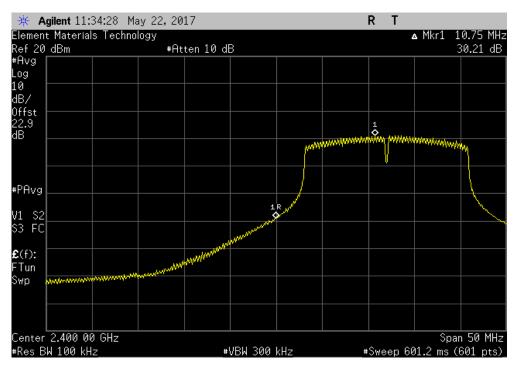
Report No. ELIM0013 88/124



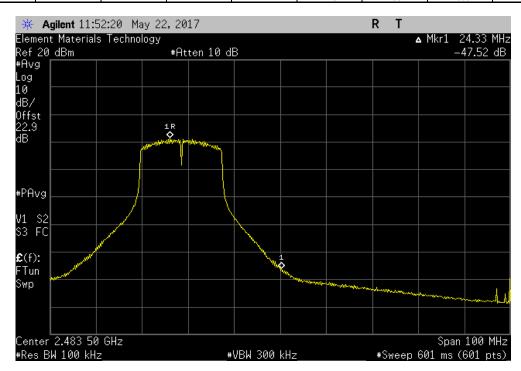
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Low Channel 1, 2412 MHz

Value Limit
(dBc) ≤ (dBc) Result

-30.21 -30 Pass



	2400 MHz - 2	2483.5 MHz Band	l, 802.11(n) MCS	0, High Channel 1	1, 2462 MHz		
				Value	Limit		
				(dBc)	≤ (dBc)	Result	_
				-47.52	-30	Pass	



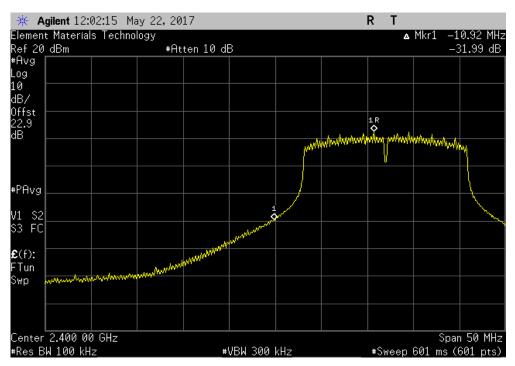
Report No. ELIM0013 89/124



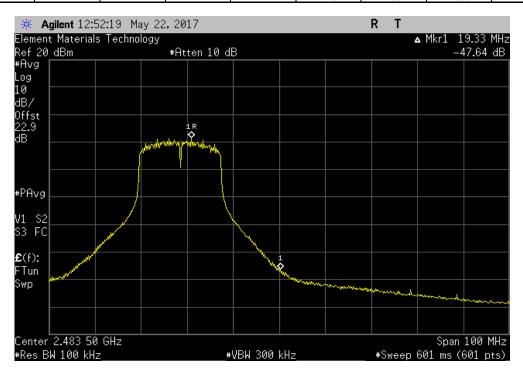
2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz

Value Limit
(dBc) ≤ (dBc) Result

-31.99 -30 Pass



	2400 MHz - 2	2483.5 MHz Band	, 802.11(n) MCS	7, High Channel 1	1, 2462 MHz	
				Value	Limit	
				(dBc)	≤ (dBc)	Result
				-47.64	-30	Pass



Report No. ELIM0013 90/124



XMit 2017.02.08

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

#### **TEST EQUIPMENT**

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	2/5/2015	2/5/2018
Attenuator	Fairview Microwave	SA18E-20	TKS	3/6/2017	3/6/2018
Block - DC	Aeroflex	INMET 8535	AMO	3/27/2017	3/27/2018
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	11/2/2016	11/2/2017

#### **TEST DESCRIPTION**

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

Report No. ELIM0013 91/124



	F. IMPROVIM				TbtTx 2017.01.27	XMit 2
	T: IMP004M			Work Order:		
Serial Number Customer				Date: Temperature:	05/31/17	
	: Jonathan Dillon			Humidity:		
	t: None			Barometric Pres.:		
	: Salvador Solorzano and J	Johnny Candelas	Power: 3.3VDC regulated down from USB 5V	Job Site:		
ST SPECIFICAT			Test Method			
C 15.247:2017			ANSI C63.10:2013			
MMENTS						
tal Offset 22.59	dB (20dB pad + DC Block +	coax cable + client provided patch c	able) at 2.4GHz			
VIATIONS FRO	OM TEST STANDARD					
ne						
		0	1100			
nfiguration #	2	Je	d. lefter			
		Signature				
			Frequency	Max Value	Limit	D
00 MHz - 2483.5	MI In Dond		Range	(dBc)	≤ (dBc)	Result
JU IVITIZ - 2463.5	802.11(b) 1 Mbps					
	Low Channel	1 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel		30 MHz - 12.5 GHz	-50.05	-30	Pass
	Low Channel		12.5 GHz - 25 GHz	-60.27	-30	Pass
	Mid Channel 6		Fundamental	N/A	N/A	N/A
	Mid Channel 6		30 MHz - 12.5 GHz	-58.43	-30	Pass
	Mid Channel 6		12.5 GHz - 25 GHz	-60.49	-30 N/A	Pass
	High Channel		Fundamental 30 MHz - 12.5 GHz	N/A -58.8	N/A -30	N/A Pass
	High Channel High Channel		12.5 GHz - 12.5 GHz	-58.8 -61.18	-30	Pass
	802.11(b) 11 Mbps	, = .022	I ELO OLIE ELO OLIE	01.10	30	1 433
	Low Channel	1, 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel 7	1, 2412 MHz	30 MHz - 12.5 GHz	-54.53	-30	Pass
	Low Channel 1		12.5 GHz - 25 GHz	-59.53	-30	Pass
	Mid Channel 6		Fundamental	N/A	N/A	N/A
	Mid Channel 6		30 MHz - 12.5 GHz	-59.25	-30	Pass
	Mid Channel 6 High Channel		12.5 GHz - 25 GHz Fundamental	-60.28 N/A	-30 N/A	Pass N/A
	High Channel		30 MHz - 12.5 GHz	-59.23	-30	Pass
	High Channel		12.5 GHz - 25 GHz	-62.02	-30	Pass
	802.11(g) 6 Mbps					
	Low Channel		Fundamental	N/A	N/A	N/A
	Low Channel		30 MHz - 12.5 GHz	-51.45	-30	Pass
	Low Channel		12.5 GHz - 25 GHz	-52.9	-30	Pass
	Mid Channel 6 Mid Channel 6		Fundamental	N/A -31.04	N/A -30	N/A Pass
	Mid Channel 6		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-51.04 -52.98	-30	Pass
	High Channel		Fundamental	N/A	N/A	N/A
	High Channel		30 MHz - 12.5 GHz	-50.61	-30	Pass
	High Channel		12.5 GHz - 25 GHz	-52.58	-30	Pass
	802.11(g) 36 Mbps					
	Low Channel		Fundamental	N/A	N/A	N/A
	Low Channel		30 MHz - 12.5 GHz	-48.12	-30	Pass
	Low Channel 6 Mid Channel 6		12.5 GHz - 25 GHz Fundamental	-53.13 N/A	-30 N/A	Pass N/A
	Mid Channel 6		30 MHz - 12.5 GHz	-51.62	-30	Pass
	Mid Channel 6		12.5 GHz - 25 GHz	-53.54	-30	Pass
	High Channel	11, 2462 MHz	Fundamental	N/A	N/A	N/A
	High Channel		30 MHz - 12.5 GHz	-50.63	-30	Pass
	High Channel	11, 2462 MHz	12.5 GHz - 25 GHz	-52.51	-30	Pass
	802.11(g) 54 Mbps	4. 0442 MH I=	Front dome and the	\$1/A	NI/A	B1/4
	Low Channel 1		Fundamental 30 MHz - 12.5 GHz	N/A -51.2	N/A -30	N/A Pass
	Low Channel		12.5 GHz - 25 GHz	-51.2 -52.29	-30	Pass
	Mid Channel 6		Fundamental	N/A	N/A	N/A
	Mid Channel 6		30 MHz - 12.5 GHz	-51.74	-30	Pass
	Mid Channel 6	6, 2437 MHz	12.5 GHz - 25 GHz	-53.33	-30	Pass
	High Channel		Fundamental	N/A	N/A	N/A
	High Channel		30 MHz - 12.5 GHz	-49.51	-30	Pass
	High Channel 802.11(n) MCS0	11, 2462 MHZ	12.5 GHz - 25 GHz	-53.16	-30	Pass
	Low Channel	1. 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel		30 MHz - 12.5 GHz	-48.9	-30	Pass
	Low Channel	1, 2412 MHz	12.5 GHz - 25 GHz	-51.84	-30	Pass
	Mid Channel 6		Fundamental	N/A	N/A	N/A
	Mid Channel 6		30 MHz - 12.5 GHz	-43.36	-30	Pass
	Mid Channel 6 High Channel		12.5 GHz - 25 GHz	-51.65 N/A	-30 N/A	Pass
	High Channel High Channel		Fundamental 30 MHz - 12.5 GHz	N/A -49.15	N/A -30	N/A Pass
	High Channel		12.5 GHz - 12.5 GHz	-49.15 -51.68	-30 -30	Pass
	802.11(n) MCS7	, 2.02 WII IZ	12.0 OF 12 20 OF 12	-51.00	30	1 455
	Low Channel	1, 2412 MHz	Fundamental	N/A	N/A	N/A
	Low Channel		30 MHz - 12.5 GHz	-48.6	-30	Pass
	Low Channel		12.5 GHz - 25 GHz	-51.87	-30	Pass
	Mid Channel 6	5, 2437 MHz	Fundamental	N/A	N/A	N/A
					00	Daga
	Mid Channel 6		30 MHz - 12.5 GHz	-50.29	-30	
	Mid Channel 6	6, 2437 MHz	12.5 GHz - 25 GHz	-52.34	-30	Pass
	Mid Channel 6 High Channel	6, 2437 MHz				Pass Pass N/A Pass

Report No. ELIM0013 92/124



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Low Channel 1, 2412 MHz

Frequency

Range

(dBc)

Fundamental

N/A

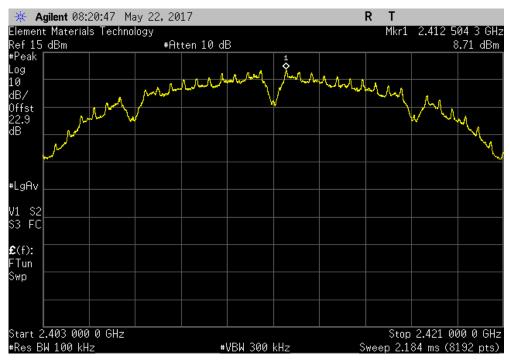
N/A

N/A

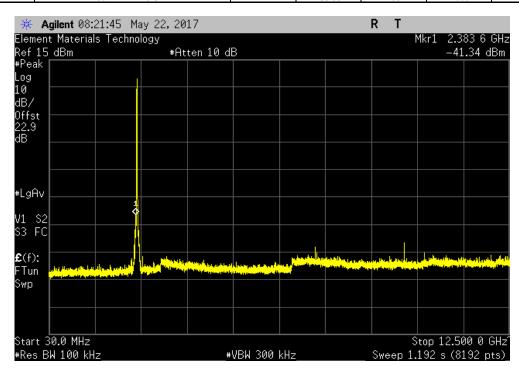
N/A

N/A

N/A



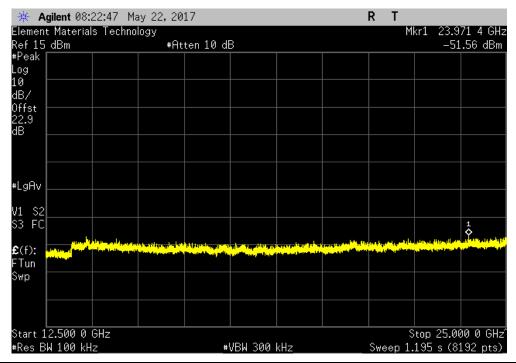
2400 MHz - 2483.5 MHz Band, 802.11	1(b) 1 Mbps, Low Channel	1, 2412 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-50.05	-30	Pass



Report No. ELIM0013 93/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Ban	d, 802.11(b) 1 Mb	ps, Low Channel	1, 2412 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
12.5 GHz - 25 GHz		-60.27	-30	Pass		



2400 MHz - 2483.5 MHz Band, 80.	2.11(b) 1 Mbps, Mid Channe	6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



Report No. ELIM0013 94/124



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, Mid Channel 6, 2437 MHz

Frequency

Range

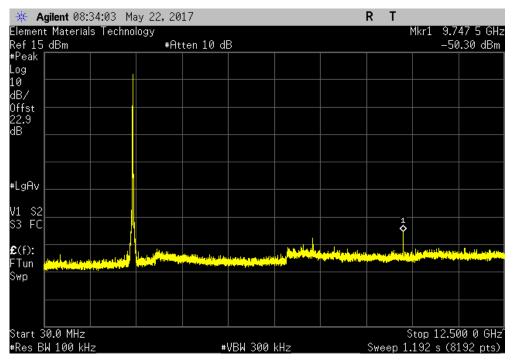
(dBc)

30 MHz - 12.5 GHz

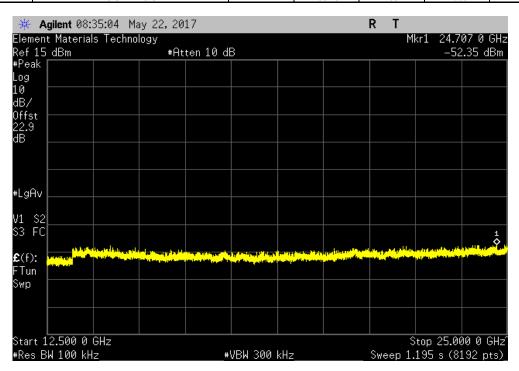
-58.43

-30

Pass



2400 MHz - 2483.5 MHz Ban	d, 802.11(b) 1 Mbps, Mid C	nannel 6, 2437 MHz	
Frequency	Max V	alue Limit	
Range	(dB	:) ≤ (dBc)	Result
12.5 GHz - 25 GHz	-60.4	9 -30	Pass



Report No. ELIM0013 95/124



2400 MHz - 2483.5 MHz Band, 802.11(b) 1 Mbps, High Channel 11, 2462 MHz

Frequency

Max Value

Limit

Range

(dBc) ≤ (dBc)

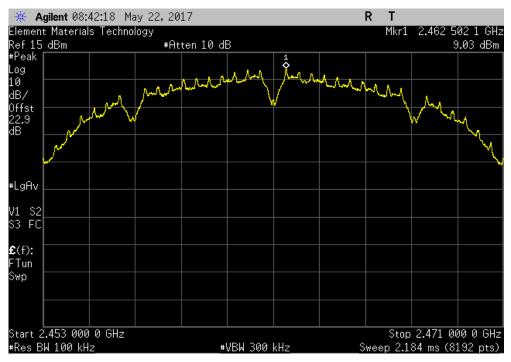
Fundamental

N/A

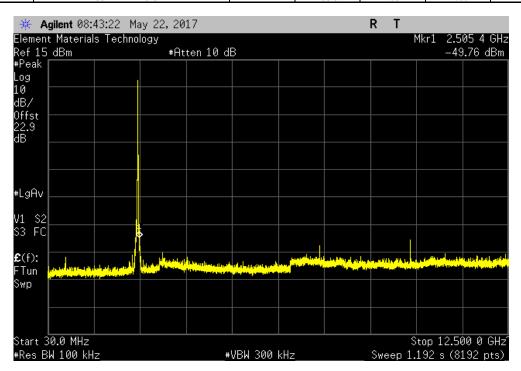
N/A

N/A

N/A



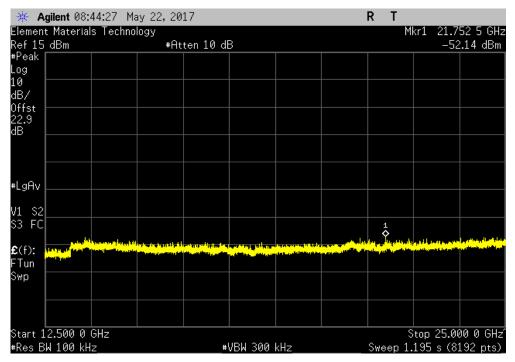
2400 MHz - 2483.5 MHz Band, 802.11(	b) 1 Mbps, High Channel	11, 2462 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-58.8	-30	Pass



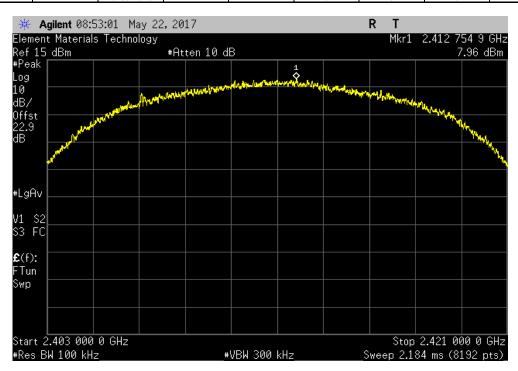
Report No. ELIM0013 96/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Band	I, 802.11(b) 1 Mbps,	High Channel 1	1, 2462 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
12.5 GHz - 25 GHz		-61.18	-30	Pass		



2400 MHz - 2483.5 MHz Band,	802.11(b) 11 Mbps, Low Channe	l 1, 2412 MHz	
Frequency	Max Value	Limit	
 Range	(dBc)	≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



Report No. ELIM0013 97/124



2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Low Channel 1, 2412 MHz

Frequency

Range

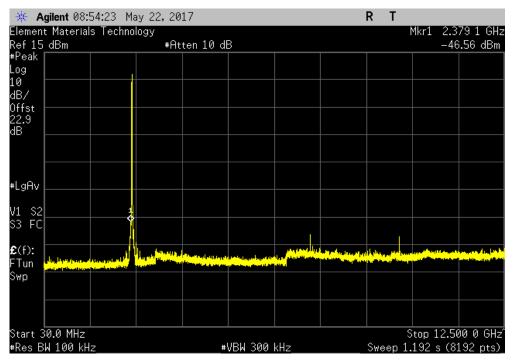
(dBc)

30 MHz - 12.5 GHz

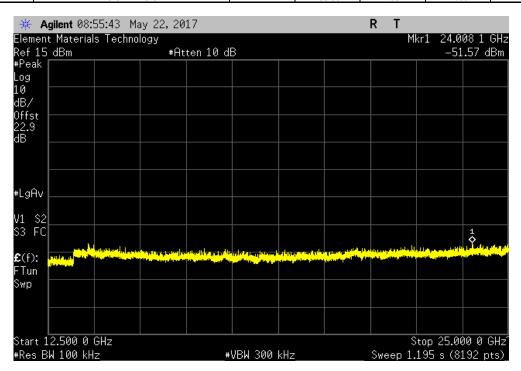
-54.53

-30

Pass



2400 MHz - 2483.5 MHz Band, 802.11(b	) 11 Mbps, Low Channel	1, 2412 MHz		
Frequency	Max Value	Limit		
Range	(dBc)	≤ (dBc)	Result	_
12.5 GHz - 25 GHz	-59.53	-30	Pass	ı



Report No. ELIM0013 98/124



2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, Mid Channel 6, 2437 MHz

Frequency

Max Value

Limit

Range

(dBc) ≤ (dBc)

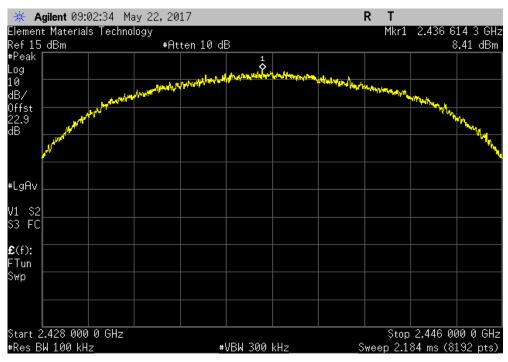
Fundamental

N/A

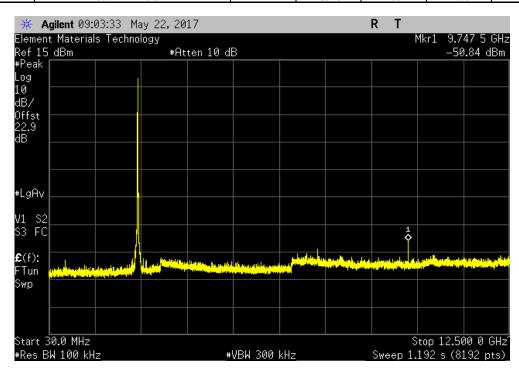
N/A

N/A

N/A



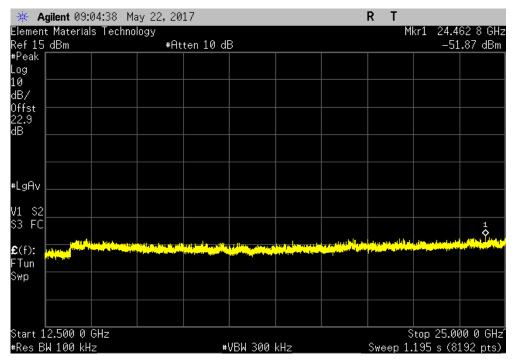
2400 MHz - 2483.5 MHz Band, 802.1	1(b) 11 Mbps, Mid Channe	6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-59.25	-30	Pass



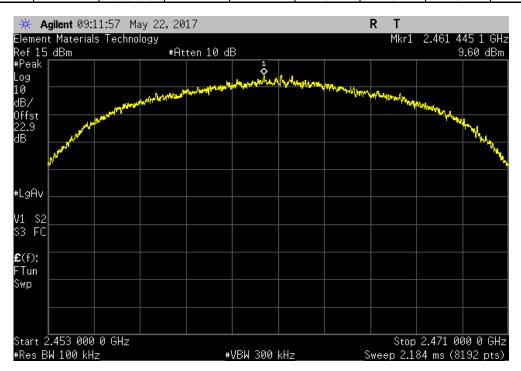
Report No. ELIM0013 99/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Band	I, 802.11(b) 11 M	ops, Mid Channel	6, 2437 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
12.5 GHz - 25 GHz		-60.28	-30	Pass	Ī	



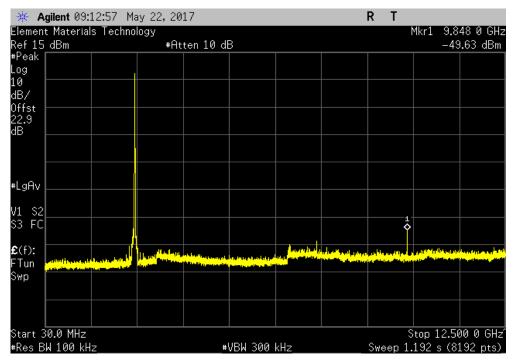
	2400 MHz - 2483.5 MHz Band, 8	802.11(b) 11 Mbps, High Ch	annel 11, 2462 MHz	
	Frequency	Max Va	ue Limit	
_	Range	(dBc	≤ (dBc)	Result
	Fundamental	N/A	N/A	N/A



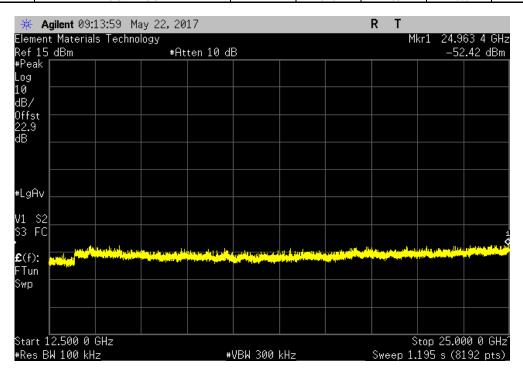
Report No. ELIM0013 100/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Band,	802.11(b) 11 Mb	ps, High Channel	11, 2462 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
30 MHz - 12.5 GHz		-59.23	-30	Pass	Ī	



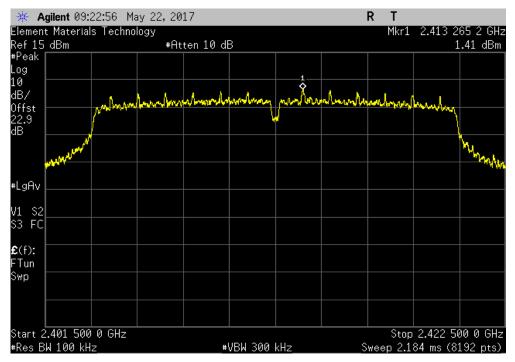
2400 MHz - 2483.5 MHz	2400 MHz - 2483.5 MHz Band, 802.11(b) 11 Mbps, High Channel 11, 2462 MHz					
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
12.5 GHz - 25 GHz		-62.02	-30	Pass		



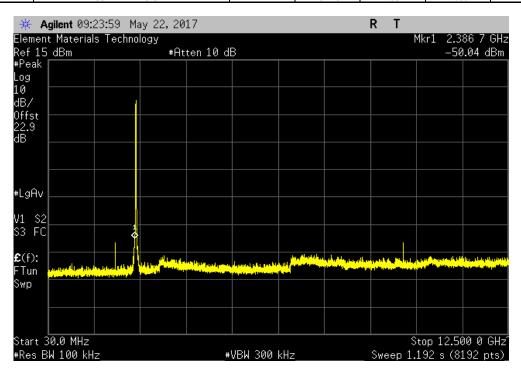
Report No. ELIM0013 101/124



-							
	2400 MHz - 2	483.5 MHz Band	, 802.11(g) 6 Mb	ps, Low Channel	1, 2412 MHz		
	Frequency			Max Value	Limit		
	Range			(dBc)	≤ (dBc)	Result	
	Fundamental			N/A	N/A	N/A	



2400 MHz -	2483.5 MHz Band, 802.11(g) 6 MI	ops, Low Channel	1, 2412 MHz	
Frequency		Max Value	Limit	
Range		(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GH	Hz	-51.45	-30	Pass



Report No. ELIM0013 102/124



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Low Channel 1, 2412 MHz

Frequency

Max Value

Limit

Range

(dBc) ≤ (dBc)

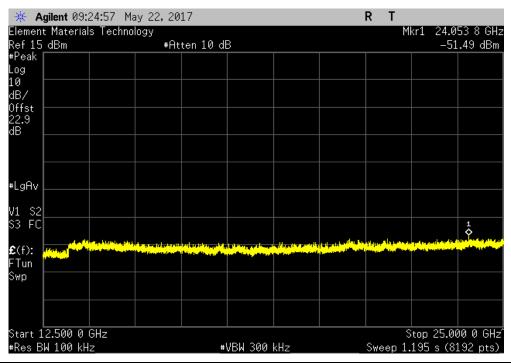
Result

12.5 GHz - 25 GHz

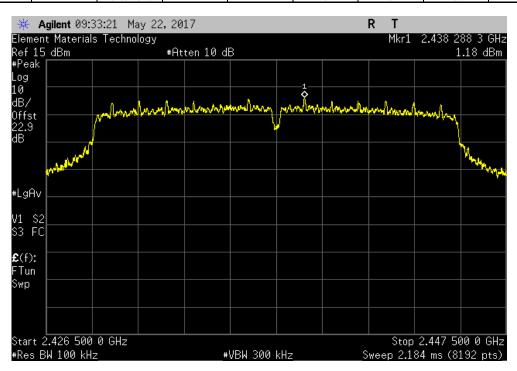
-52.9

-30

Pass



2400 MHz - 2483.5 MHz Band, 802.1	1(g) 6 Mbps, Mid Channel	6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



Report No. ELIM0013 103/124



2400 MHz - 2483.5 MHz Band, 802.11(g) 6 Mbps, Mid Channel 6, 2437 MHz

Frequency

Range

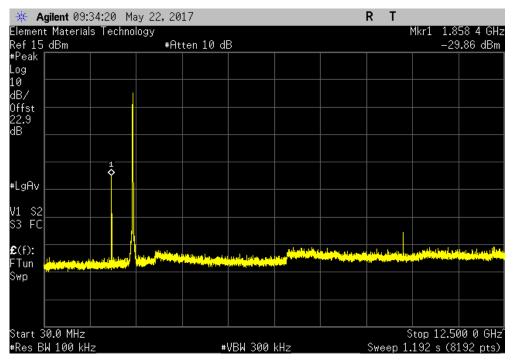
(dBc)

30 MHz - 12.5 GHz

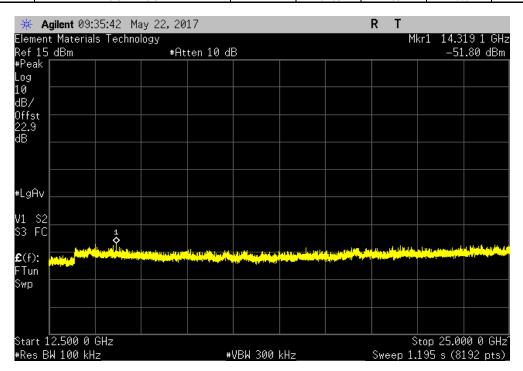
-31.04

-30

Pass



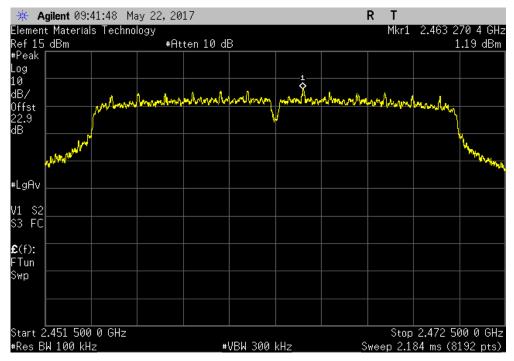
2400 MHz - 2483.5 MHz Ban	d, 802.11(g) 6 Mbps, Mid	Channel 6, 2437 M	1Hz
Frequency	Max '	/alue Lim	nit
Range	(dl	Bc) ≤ (di	Bc) Result
12.5 GHz - 25 GHz	-52	.98 -30	) Pass



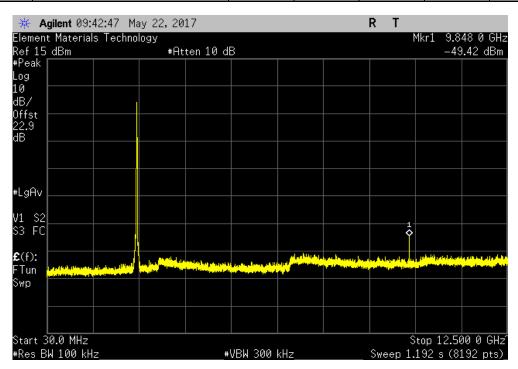
Report No. ELIM0013 104/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz B	and, 802.11(g) 6 Mb	ps, High Channel '	11, 2462 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
Fundamental		N/A	N/A	N/A	Ī	



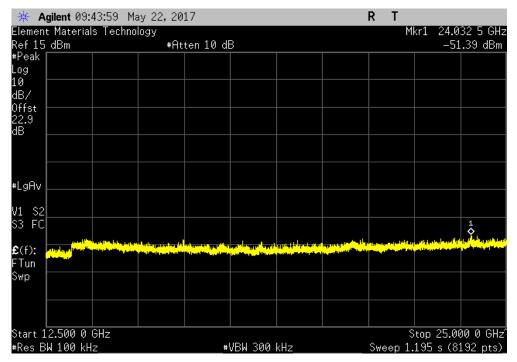
2400 MHz - 2483.5 MHz Band, 80	02.11(g) 6 Mbps, High Channel	11, 2462 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-50.61	-30	Pass



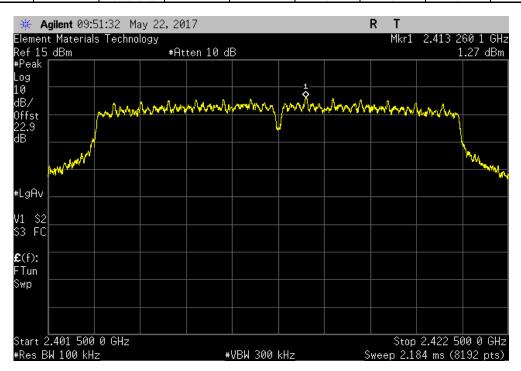
Report No. ELIM0013 105/124



				10(17.2017.01.27	AWIII 2017.02.08
2400 MHz - 2483.5 MHz Band	I, 802.11(g) 6 Mbps, High Channel	11, 2462 MHz			
Frequency	Max Value	Limit			
Range	(dBc)	≤ (dBc)	Result		
12.5 GHz - 25 GHz	-52.58	-30	Pass	Ī	l.



2400 MHz - 2483.	5 MHz Band, 802.11(g) 36 M	bps, Low Channel	l 1, 2412 MHz	
Frequency		Max Value	Limit	
Range		(dBc)	≤ (dBc)	Result
Fundamental		N/A	N/A	N/A



Report No. ELIM0013 106/124



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Low Channel 1, 2412 MHz

Frequency

Range

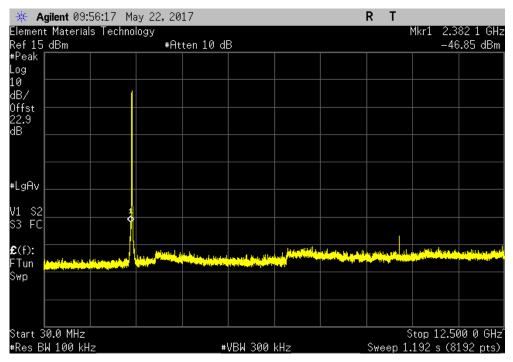
(dBc)

30 MHz - 12.5 GHz

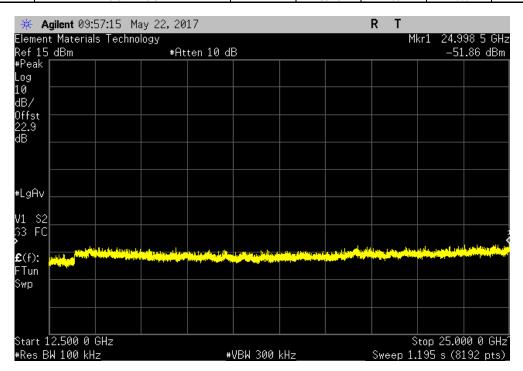
-48.12

-30

Pass



2400 MHz - 2483.5 MHz Band, 80	2.11(g) 36 Mbps, Low Channe	l 1, 2412 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz	-53.13	-30	Pass



Report No. ELIM0013 107/124



2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, Mid Channel 6, 2437 MHz

Frequency

Range

(dBc)

Fundamental

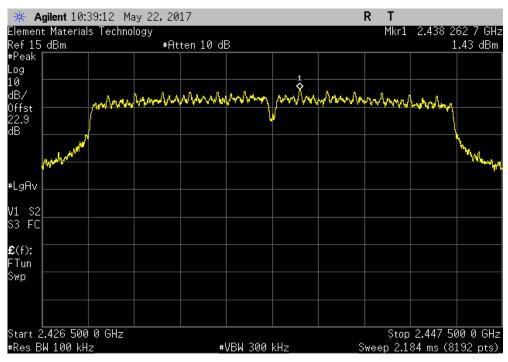
N/A

N/A

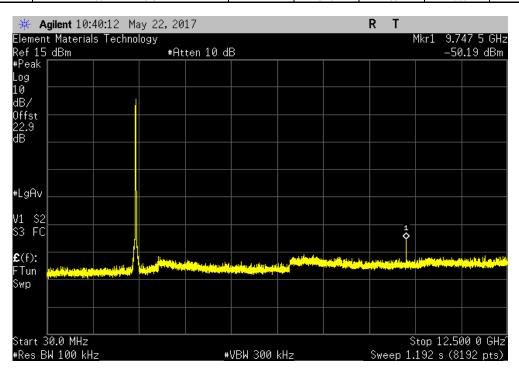
N/A

N/A

N/A



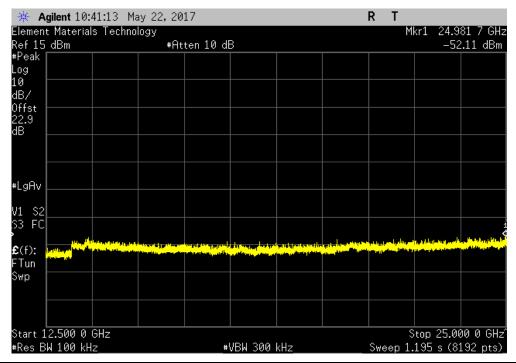
2400 MHz - 2483.5 MHz Band, 80	02.11(g) 36 Mbps, Mid Channel	6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-51.62	-30	Pass



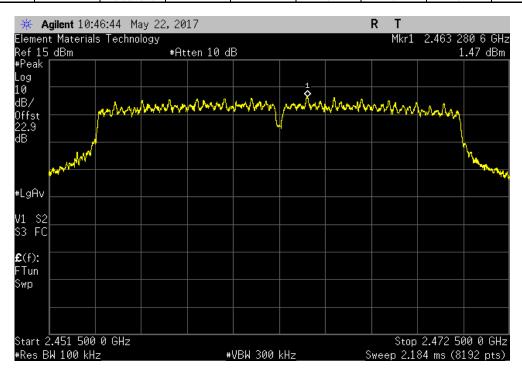
Report No. ELIM0013 108/124



2400 MHz - 2483.5 MHz Band,	802.11(g) 36 Mbps, Mid Channel	6, 2437 MHz		
Frequency	Max Value	Limit		
Range	(dBc)	≤ (dBc)	Result	
12.5 GHz - 25 GHz	-53.54	-30	Pass	



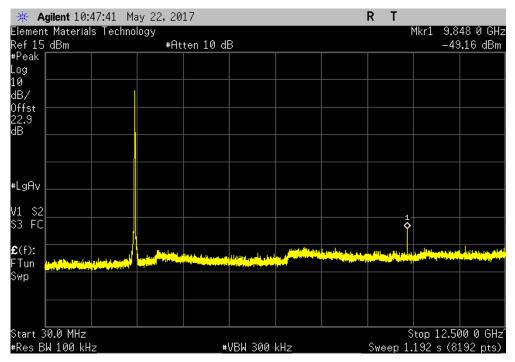
2400 MHz - 2483.5 MHz Band, 802.11(g) 36			
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



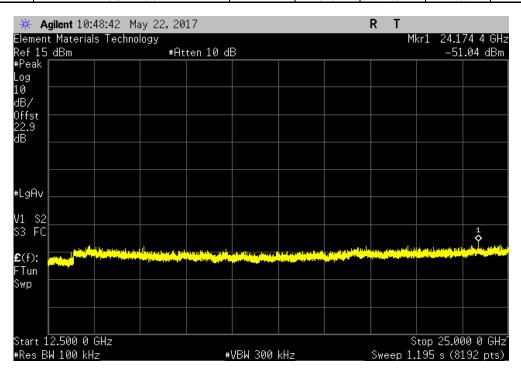
Report No. ELIM0013 109/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Band,	802.11(g) 36 Mbp	os, High Channel	11, 2462 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
30 MHz - 12.5 GHz		-50.63	-30	Pass		



2400 MHz - 2483.5 MHz Band, 802	2400 MHz - 2483.5 MHz Band, 802.11(g) 36 Mbps, High Channel 11, 2462 MHz  Frequency Max Value Limit  Range (dBc) ≤ (dBc) Result						
Frequency	Max Value	Limit					
Range	(dBc)	≤ (dBc)	Result				
12.5 GHz - 25 GHz	-52.51	-30	Pass				



Report No. ELIM0013 110/124



2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Low Channel 1, 2412 MHz

Frequency

Range

(dBc)

Fundamental

N/A

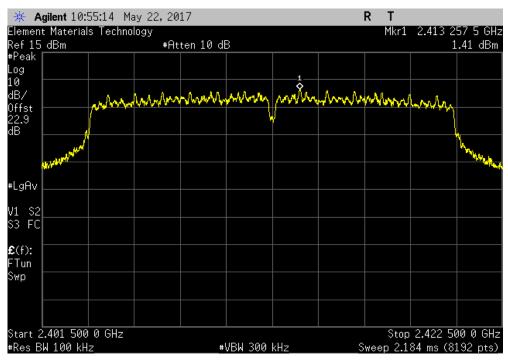
N/A

N/A

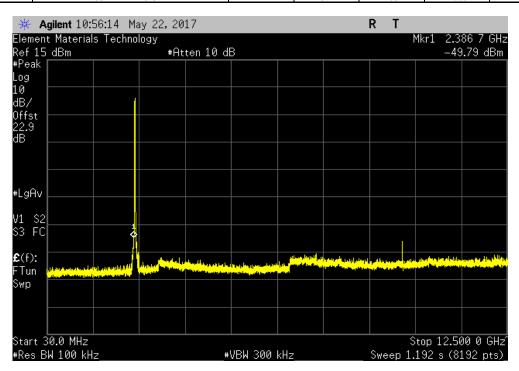
N/A

N/A

N/A



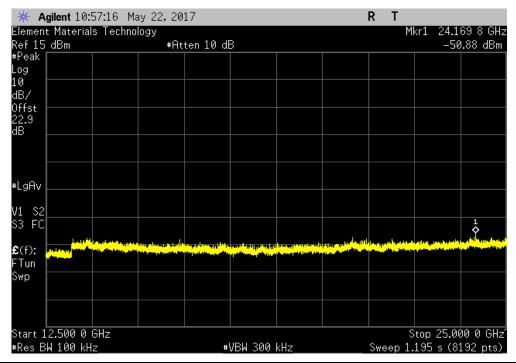
2400 MHz - 2483.5 MHz Band, 802.	11(g) 54 Mbps, Low Channe	l 1, 2412 MHz		
Frequency	Max Value	Limit		
Range	(dBc)	≤ (dBc)	Result	_
30 MHz - 12.5 GHz	-51.2	-30	Pass	İ



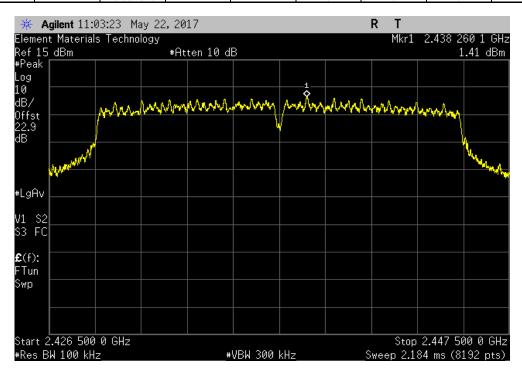
Report No. ELIM0013 111/124



2400 MHz - 2483.5 MHz Band,	, 802.11(g) 54 Mbps, Low Channel	1, 2412 MHz			
Frequency	Max Value	Limit			
Range	(dBc)	≤ (dBc)	Result		
12.5 GHz - 25 GHz	-52.29	-30	Pass	Ī	



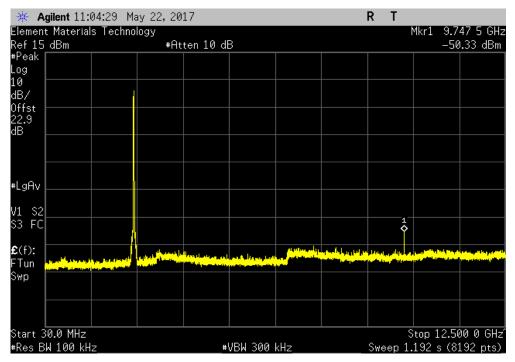
2400 MHz - 2	483.5 MHz Band, 802.11(g) 54 Mbps, Mid Chann	el 6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



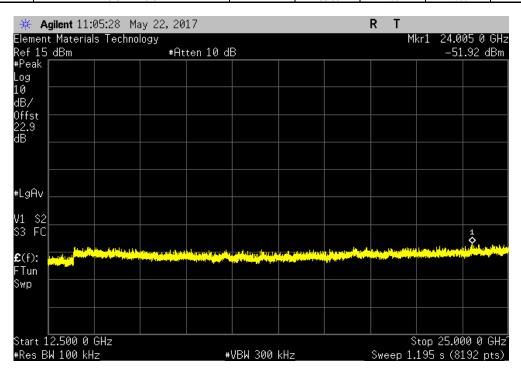
Report No. ELIM0013 112/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Band	l, 802.11(g) 54 Mb	ps, Mid Channel 6	6, 2437 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
30 MHz - 12.5 GHz		-51.74	-30	Pass		



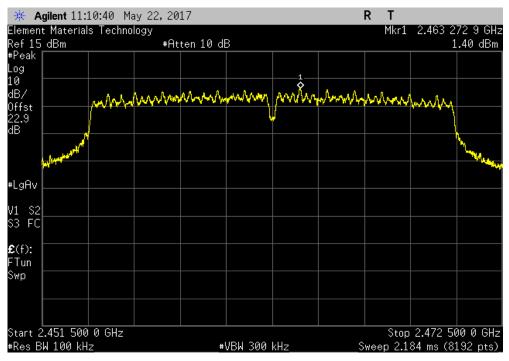
2400 MHz - 2483.	2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, Mid Channel 6, 2437 MHz  Frequency  Max Value  Limit  Range  (dBc)  5 GHz - 25 GHz  12 5 GHz - 25 GHz  Pass			
Frequency		Max Value	Limit	
Range		(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz		-53.33	-30	Pass



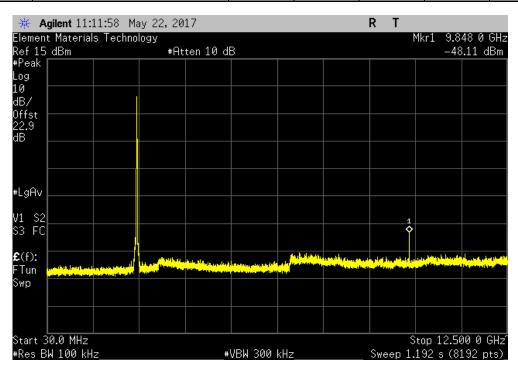
Report No. ELIM0013 113/124



				10(17.2017.01.27	AWIII 2017.02.08
2400 MHz - 2483.5 MHz Band, 802.11(g)	54 Mbps, High Channel	11, 2462 MHz			
Frequency	Max Value	Limit			
Range	(dBc)	≤ (dBc)	Result		
Fundamental	N/A	N/A	N/A		



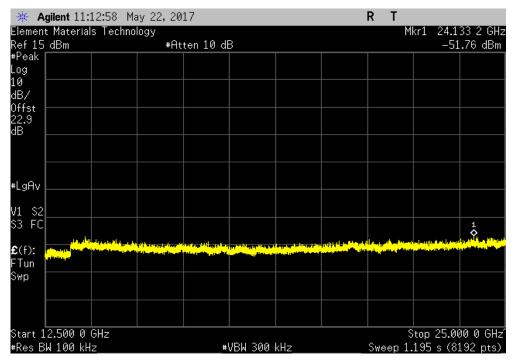
2400 MHz - 2483.5 MHz Band, 8	2400 MHz - 2483.5 MHz Band, 802.11(g) 54 Mbps, High Channel 11, 2462 MHz Frequency Max Value Limit Range (dBc) ≤ (dBc) Result				
Frequency	Max Value	Limit			
Range	(dBc)	≤ (dBc)	Result		
30 MHz - 12.5 GHz	-49.51	-30	Pass		



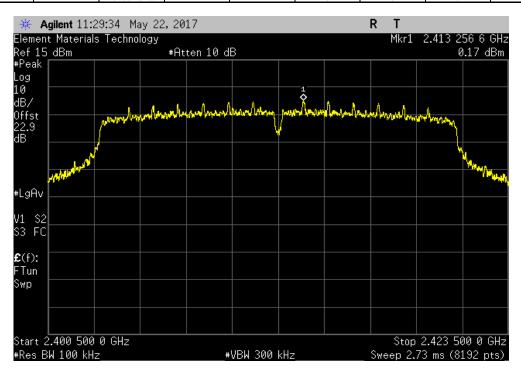
Report No. ELIM0013 114/124



2400 MHz - 2483.5 MHz Band,	802.11(g) 54 Mbps, High Channel	11, 2462 MHz		
Frequency	Max Value	Limit		
Range	(dBc)	≤ (dBc)	Result	
12.5 GHz - 25 GHz	-53.16	-30	Pass	



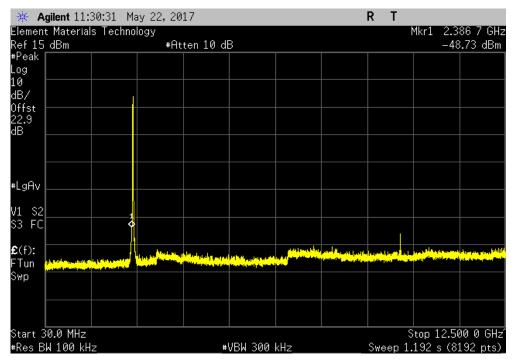
2400 MHz - 2483.5 MHz Band,	802.11(n) MCS0, Low Channel	1, 2412 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



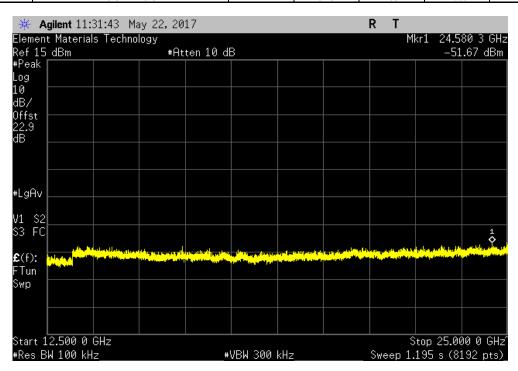
Report No. ELIM0013 115/124



				10(1)(2017:01:27	AWIII 2017.02.08
2400 MHz - 2483.5 MHz Ban	d, 802.11(n) MCS0, Low Channel	1, 2412 MHz			
Frequency	Max Value	Limit			
Range	(dBc)	≤ (dBc)	Result		
30 MHz - 12.5 GHz	-48.9	-30	Pass		



2400 MHz - 2483.5 MHz Band, 80	2.11(n) MCS0, Low Channel	1, 2412 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz	-51.84	-30	Pass



Report No. ELIM0013 116/124



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, Mid Channel 6, 2437 MHz

Frequency

Range

(dBc)

Fundamental

N/A

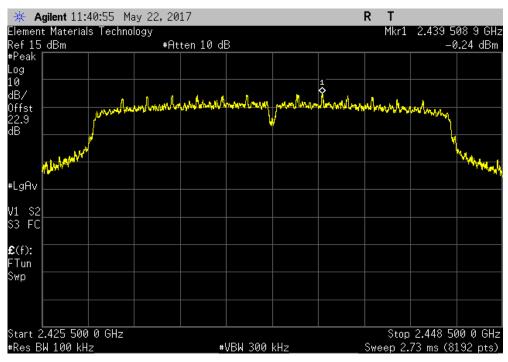
N/A

N/A

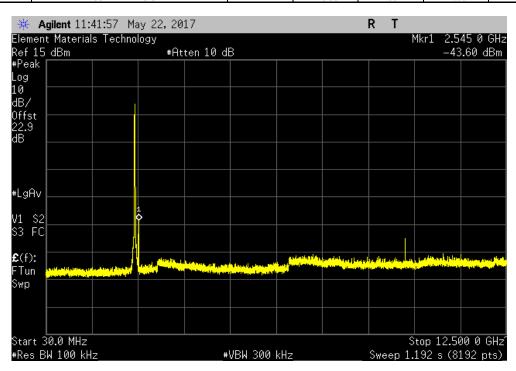
N/A

N/A

N/A



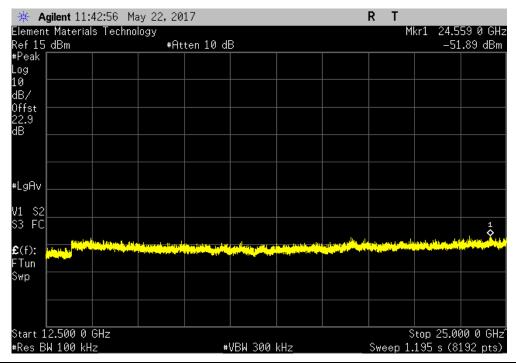
2400 MHz - 2483.5 MHz Band, 8	302.11(n) MCS0, Mid Channel	6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-43.36	-30	Pass



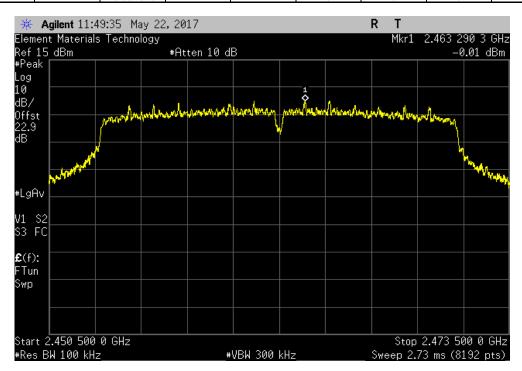
Report No. ELIM0013 117/124



2400 MHz - 2483.5 MHz Band,	802.11(n) MCS0, Mid Channel 6	, 2437 MHz		
Frequency	Max Value	Limit		
Range	(dBc)	≤ (dBc)	Result	
12 5 GHz - 25 GHz	-51 65	-30	Pass	



2400 MHz - 2	2483.5 MHz Band, 802.11(n) MCS0, H	ligh Channel 1	11, 2462 MHz	
Frequency		Max Value	Limit	
Range		(dBc)	≤ (dBc)	Result
Fundamental		N/A	N/A	N/A



Report No. ELIM0013 118/124



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS0, High Channel 11, 2462 MHz

Frequency

Range

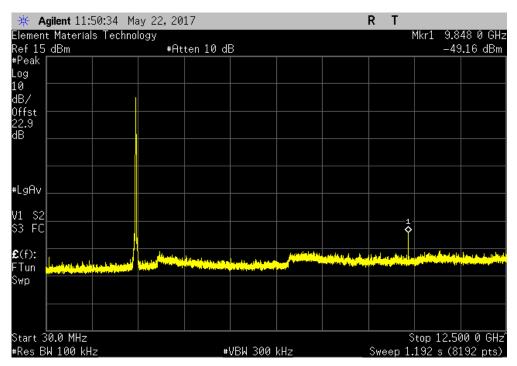
(dBc)

30 MHz - 12.5 GHz

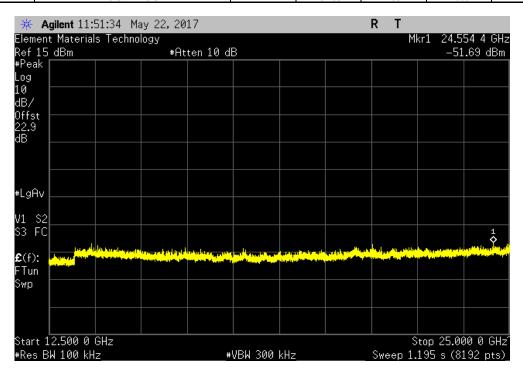
-49.15

-30

Pass

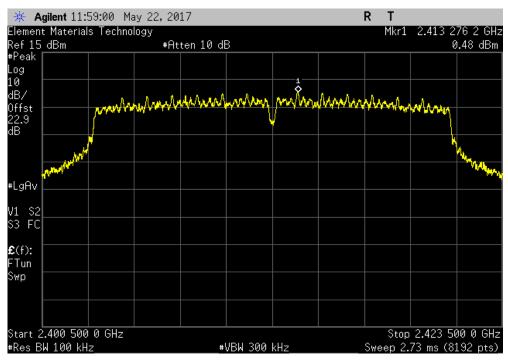


2400 MHz - 2483.5 MHz Band, 80	2.11(n) MCS0, High Channel	11, 2462 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz	-51.68	-30	Pass

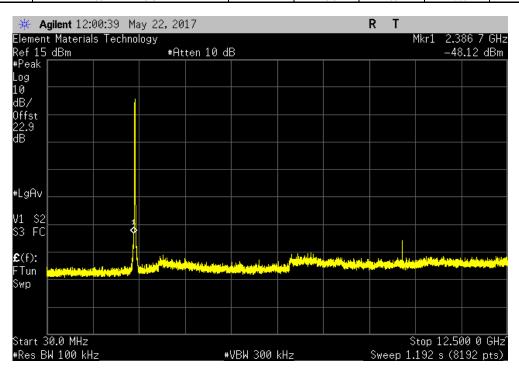


Report No. ELIM0013 119/124





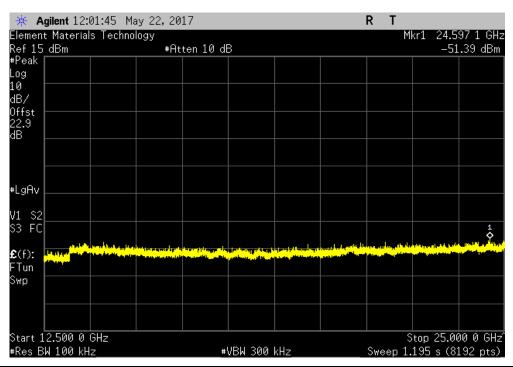
2400 MHz - 2483.5 MHz	Band, 802.11(n) MCS	S7, Low Channel	1, 2412 MHz	
Frequency		Max Value	Limit	
Range		(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz		-48.6	-30	Pass



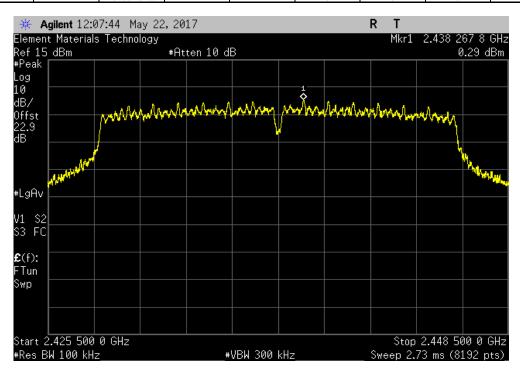
Report No. ELIM0013 120/124



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, Low Channel 1, 2412 MHz
Frequency Max Value Limit
Range (dBc) ≤ (dBc) Result
12.5 GHz - 25 GHz - 51.87 -30 Pass



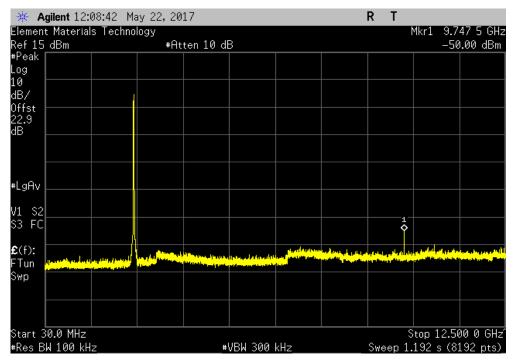
2400 MHz -	- 2483.5 MHz Band, 802.11(n) MCS7, Mid Ch	annel 6, 2437 MHz	
Frequency	Max V	alue Limit	
Range	(dBe	:) ≤ (dBc)	Result
Fundamental	N/A	N/A	N/A



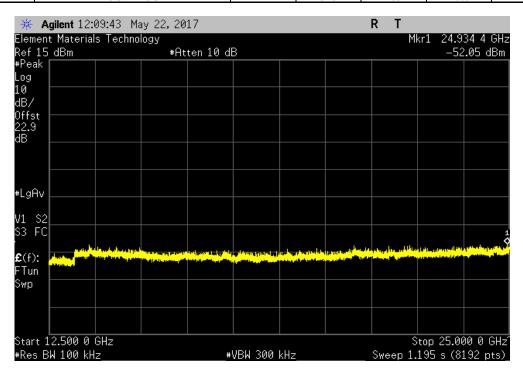
Report No. ELIM0013 121/124



					TbtTx 2017.01.27	XMit 2017.02.08
2400 MHz - 2483.5 MHz Bar	d, 802.11(n) MCS	7, Mid Channel 6	, 2437 MHz			
Frequency		Max Value	Limit			
Range		(dBc)	≤ (dBc)	Result		
30 MHz - 12.5 GHz		-50.29	-30	Pass		



2400 MHz - 2483.5 MHz Band,	802.11(n) MCS7, Mid Channel	6, 2437 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz	-52.34	-30	Pass



Report No. ELIM0013 122/124



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Frequency

Range

(dBc)

Fundamental

N/A

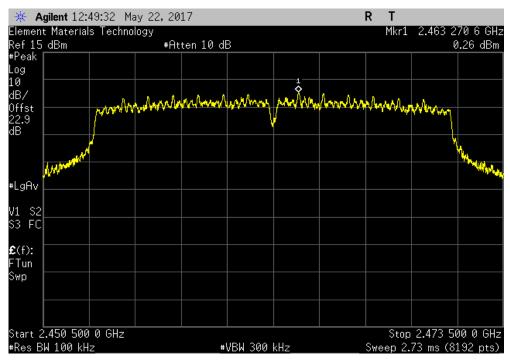
N/A

N/A

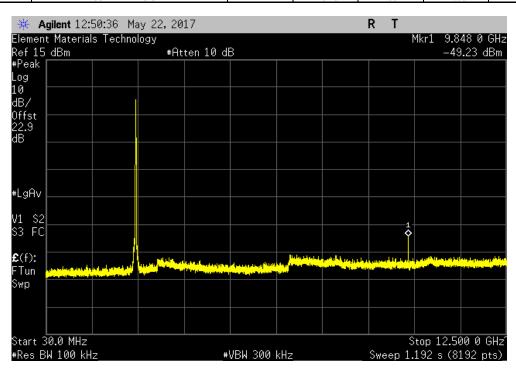
N/A

N/A

N/A



2400 MHz - 2483.5 MHz Band, 80	02.11(n) MCS7, High Channel	11, 2462 MHz	
Frequency	Max Value	Limit	
Range	(dBc)	≤ (dBc)	Result
30 MHz - 12.5 GHz	-49.49	-30	Pass



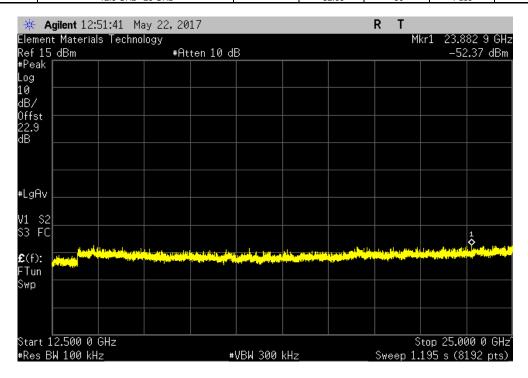
Report No. ELIM0013 123/124



2400 MHz - 2483.5 MHz Band, 802.11(n) MCS7, High Channel 11, 2462 MHz

Frequency
Max Value
Limit
Range
(dBc) ≤ (dBc) Result

12.5 GHz - 25 GHz
-52.63
-30
Pass



Report No. ELIM0013 124/124