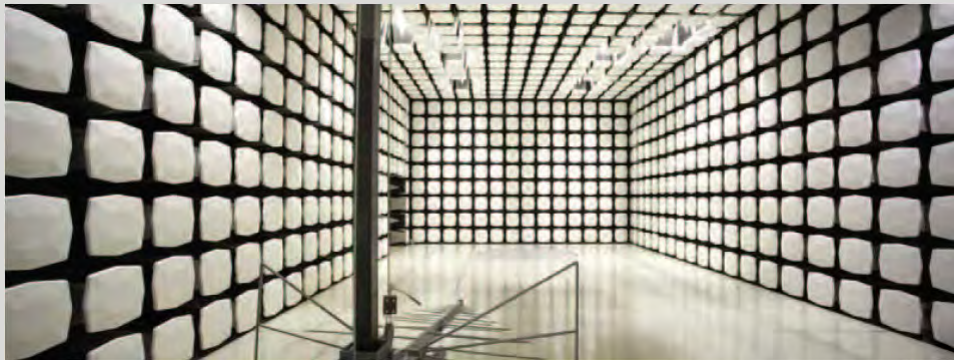




Logic PD, Inc.
37x Torpedo + Wireless SOM -31
FCC 15.407:2013
Report #: LGPD0096.2



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: June 05, 2013
Logic PD, Inc.
Model: 37x Torpedo + Wireless SOM -31

Emissions

Test Description	Specification	Test Method	Pass/Fail
Peak Transmit Power	FCC 15.407:2013	ANSI C63.10:2009	Pass
Peak Power Spectral Density	FCC 15.407:2013	ANSI C63.10:2009	Pass
Emission Bandwidth	FCC 15.407:2013	ANSI C63.10:2009	Pass
Peak Excursion	FCC 15.407:2013	ANSI C63.10:2009	Pass
Transmission Burst Duration	FCC 15.407:2013	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.407:2013	ANSI C63.10:2009	Pass
Powerline Conducted Emissions	FCC 15.407:2013	ANSI C63.10:2009	Pass
Frequency Stability	FCC 15.407:2013	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:



Tim O'Shea, Operations Manager



NVLAP Lab Code: 200881-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
9349 W Broadway Ave.
Brooklyn Park, MN 55445

Phone: (763) 425-2281 Fax: (763) 424-3469

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834E-1).

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

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. This Report may only be duplicated in its entirety. 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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

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 Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

KCC / 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.

Hong Kong

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

Vietnam

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

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

SCOPE

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

<http://www.nwemc.com/accreditations/>

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.

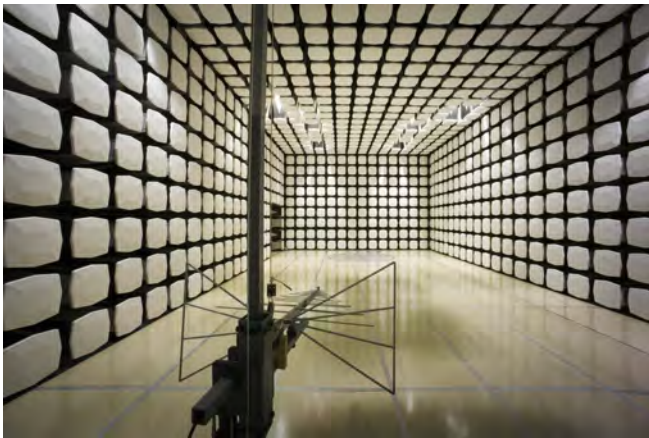
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement 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 16-4-1 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.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94



Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Minnesota Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Washington Labs NC01-05, SU02, SU07 19201 120 th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1
NVLAP				
NVLAP Lab Code: 200630-0	NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200629-0





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Logic PD, Inc.
Address:	6201 Bury Drive
City, State, Zip:	Eden Prairie, MN 55346
Test Requested By:	Nathan Kro
Model:	37x Torpedo + Wireless SOM -31
First Date of Test:	May 29, 2013
Last Date of Test:	June 03, 2013
Receipt Date of Samples:	May 21, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
802.11an SISO radio module with 1 stream and 1 antenna
Testing Objective:
To demonstrate compliance under FCC 15.407 for operation in the 5.2 GHz band.

Configuration LGPD0096- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
802.11 and BT module	Logic PD, Inc.	37x Torpedo + Wireless SOM -31	1413M00359

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply	Sceptre	AD2405A	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Acer	Aspire One	LUSAL0B1370114F42B1601
Laptop Supply	Delta Electronics Inc.	ADP-40TH A	AP0400100201108409P101

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Power	No	1.5m	No	802.11 and BT module	Power Supply
DC Power	No	2.4m	Yes	Laptop	Laptop Supply
Serial	Yes	> 3.0m	No	802.11 and BT module	Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration LGPD0096- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
802.11 and BT module	Logic PD, Inc.	37x Torpedo + Wireless SOM -31	1413M00359

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply	Sceptre	AD2405A	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Power	No	1.5m	No	802.11 and BT module	Power Supply
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration LGPD0100- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
802.11 and BT module	Logic PD, Inc	37x Torpedo + Wireless SOM -31	1413M00359

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Supply	Sceptre	AD2405A	None

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Acer	Aspire One	LUSAL0B1370114F42B1601
Laptop Supply	Delta Electronics Inc.	ADP-40TH A	AP0400100201108409P101

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8m	No	Power Supply	AC Mains
DC Power	No	1.5m	No	802.11 and BT module	Power Supply
DC Power	No	2.4m	Yes	Laptop	Laptop Supply
Serial	Yes	> 3.0m	No	802.11 and BT module	Laptop
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	5/21/2013	Spurious Radiated Emissions	Modified from delivered configuration.	Power lowered to pass radiated band edge. Modification authorized by Nathan Kro.	EUT remained at Northwest EMC following the test.
2	5/30/2013	Powerline Conducted Emissions	Modified from delivered configuration.	Had to lower power by 0.5 dB to pass the 5.2 GHz band. Modification authorized by Nathan Kro.	EUT remained at Northwest EMC following the test.
3	6/4/2013	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	6/5/2013	Emission Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	6/5/2013	Peak Excursion	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	6/5/2013	Transmission Burst Duration	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	6/5/2013	Peak Transmit Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	6/5/2013	Peak Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Peak Transmit Power

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.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section C was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak transmit power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

Method SA-1 (trace averaging with the EUT transmitting at full power throughout each sweep) was used for this test.

The spectrum analyzer settings were set per the guidance as well as the following specifics:

- RBW = 1 MHz, VBW = 3 MHz
- Sample Detector
- The number of points was set to 601. This satisfied the requirement of being $> 2 * \text{span} / \text{RBW}$
- Trace average 100 traces in power averaging mode.
- Power was integrated across "B", by using the channel power function of the analyzer.



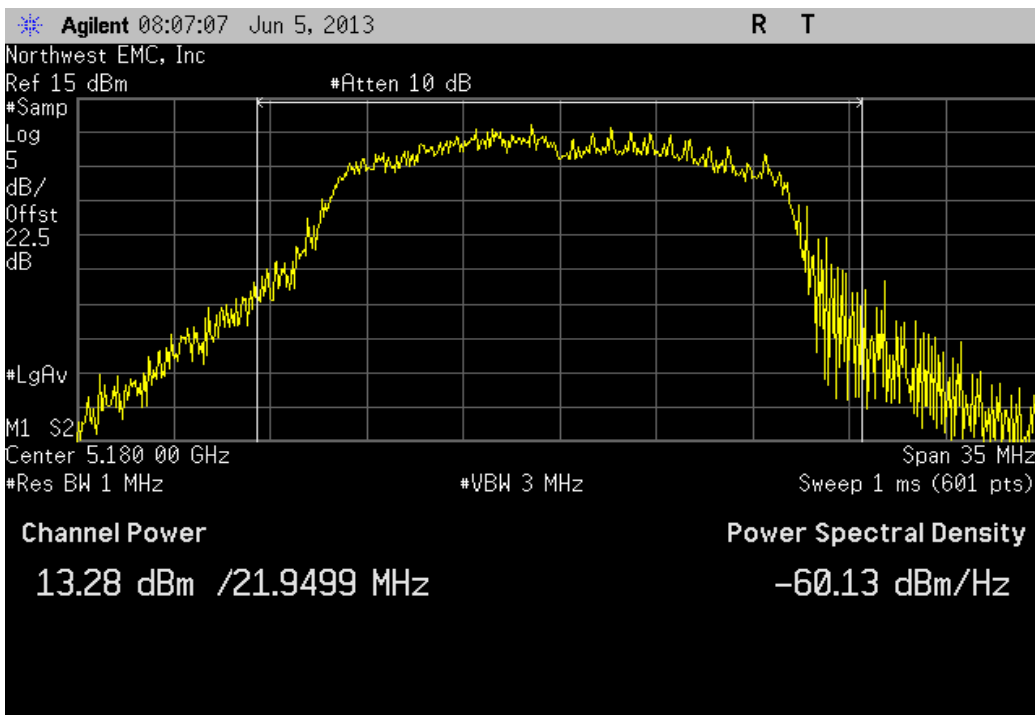
Peak Transmit Power

XMit 2013.02.28
PsaTx 2013.06.03

EUT: 37x Torpedo + Wireless SOM -31		Work Order: LGPD0096	
Serial Number: 1413M00359		Date: 06/05/13	
Customer: Logic PD, Inc.		Temperature: 23.0°C	
Attendees: None		Humidity: 48%	
Project: None		Barometric Pres.: 1016.5	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2013		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
802.11(a) 6 Mbps			Result
5150 - 5250 MHz Band			
Channel 36, Low Channel		13.28 dBm	< 17 dBm
Channel 48, High Channel		13.348 dBm	< 17 dBm
802.11(a) 36 Mbps			
5150 - 5250 MHz Band			
Channel 36, Low Channel		13.168 dBm	< 17 dBm
Channel 48, High Channel		13.541 dBm	< 17 dBm
802.11(a) 54 Mbps			
5150 - 5250 MHz Band			
Channel 36, Low Channel		12.954 dBm	< 17 dBm
Channel 48, High Channel		13.197 dBm	< 17 dBm
802.11(n) MCS0			
5150 - 5250 MHz Band			
Channel 36, Low Channel		12.931 dBm	< 17 dBm
Channel 48, High Channel		13.271 dBm	< 17 dBm
802.11(n) MCS7			
5150 - 5250 MHz Band			
Channel 36, Low Channel		12.162 dBm	< 17 dBm
Channel 48, High Channel		12.383 dBm	< 17 dBm

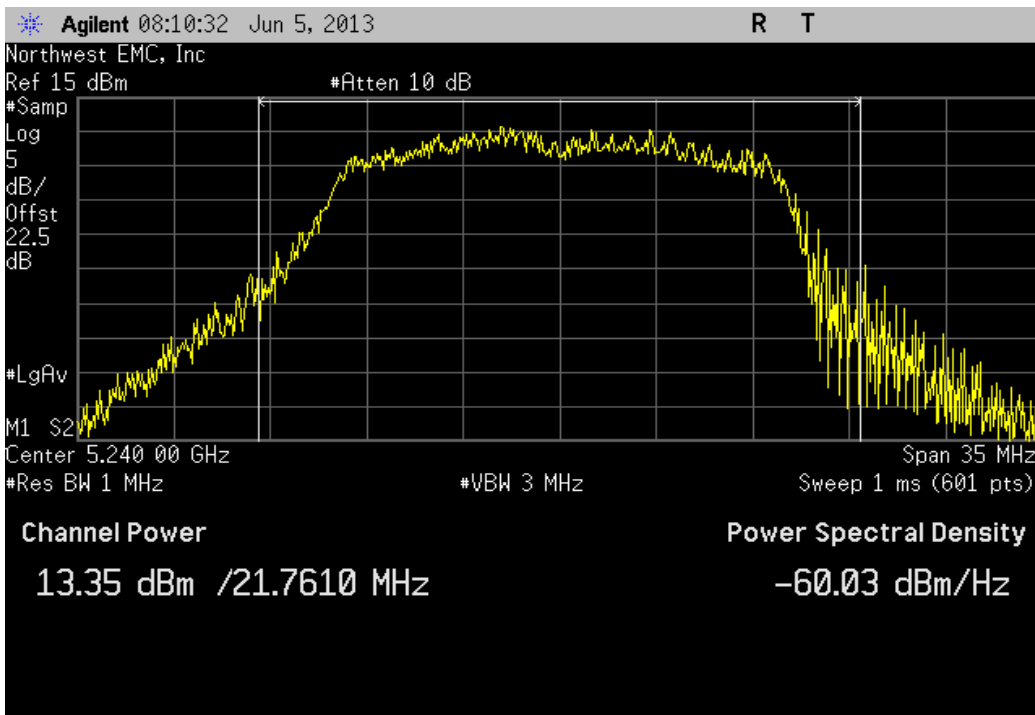
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
13.28 dBm	< 17 dBm	Pass



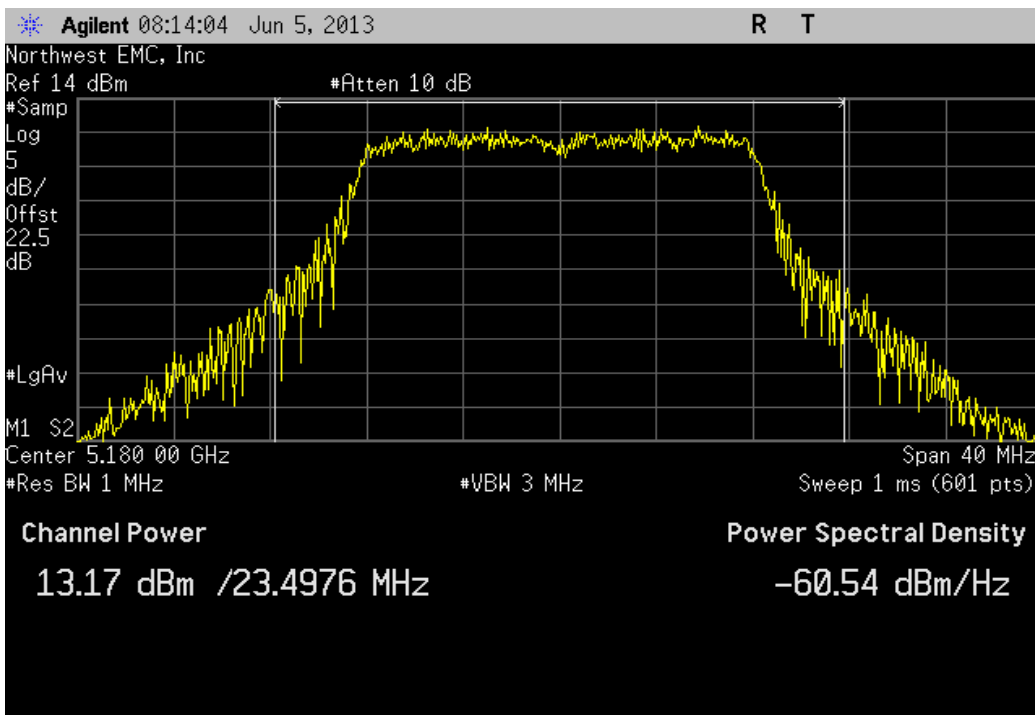
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
13.348 dBm	< 17 dBm	Pass



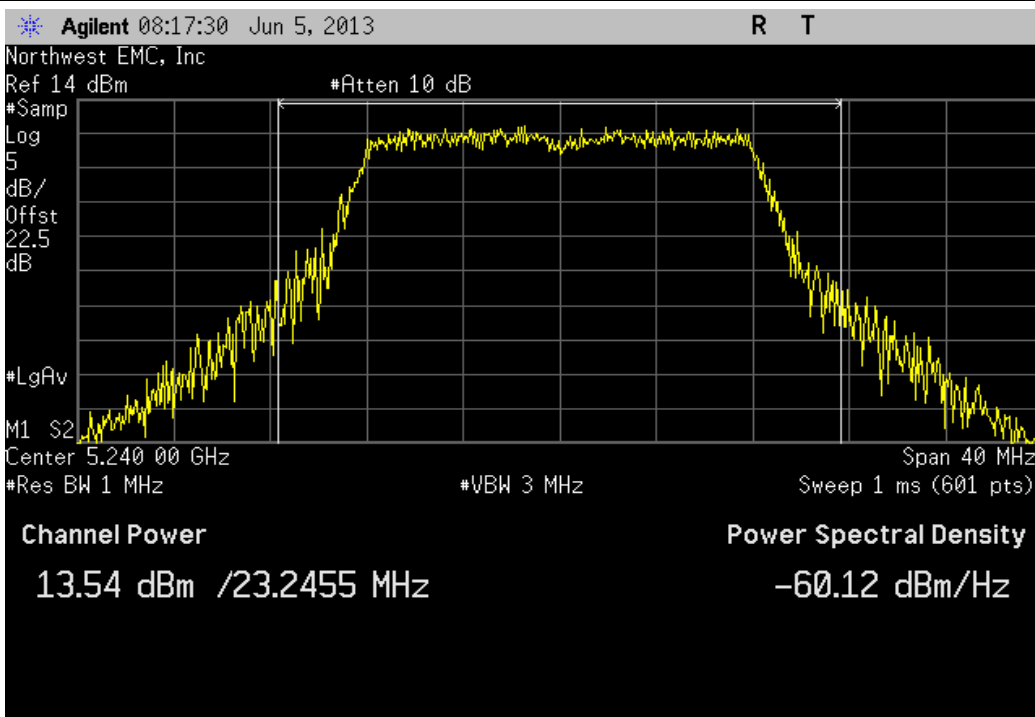
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
13.168 dBm	< 17 dBm	Pass



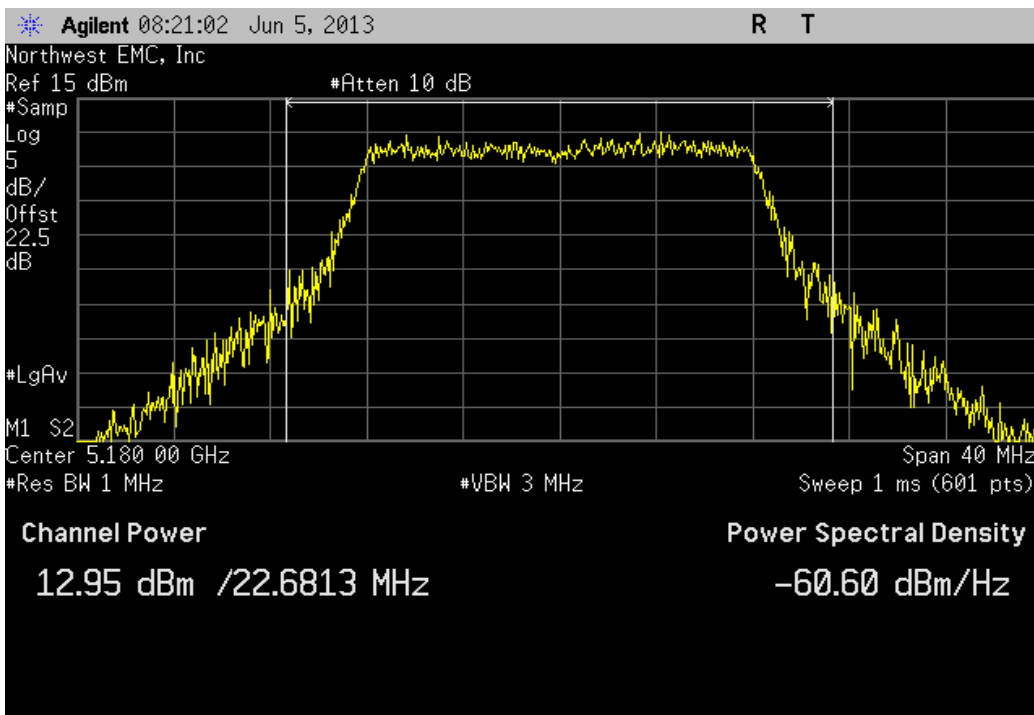
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
13.541 dBm	< 17 dBm	Pass



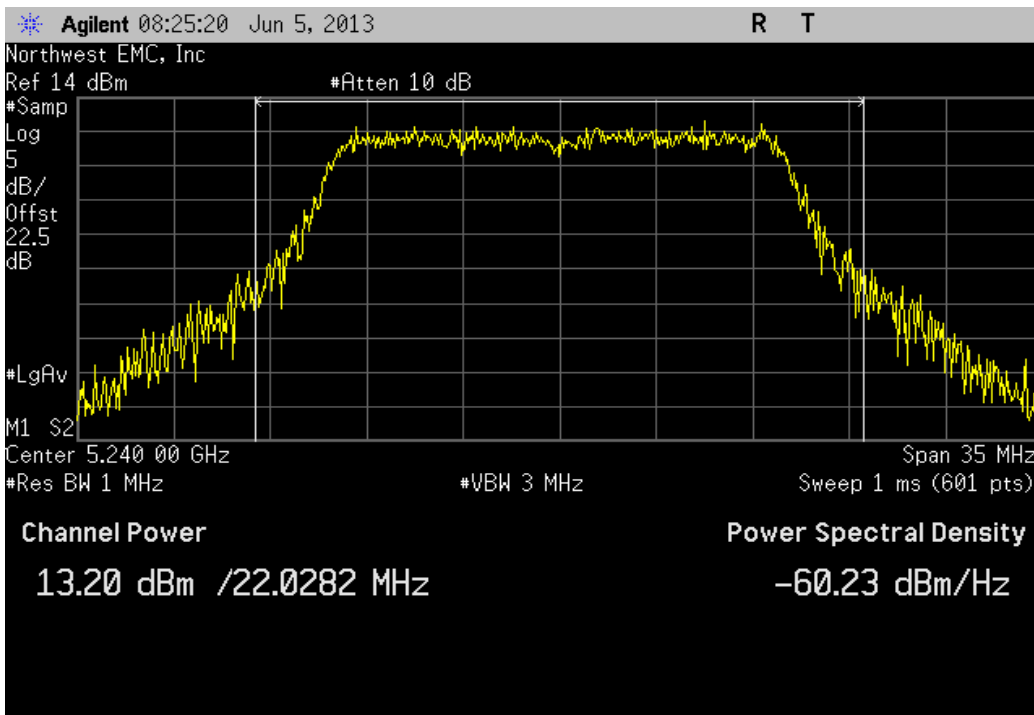
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
12.954 dBm	< 17 dBm	Pass



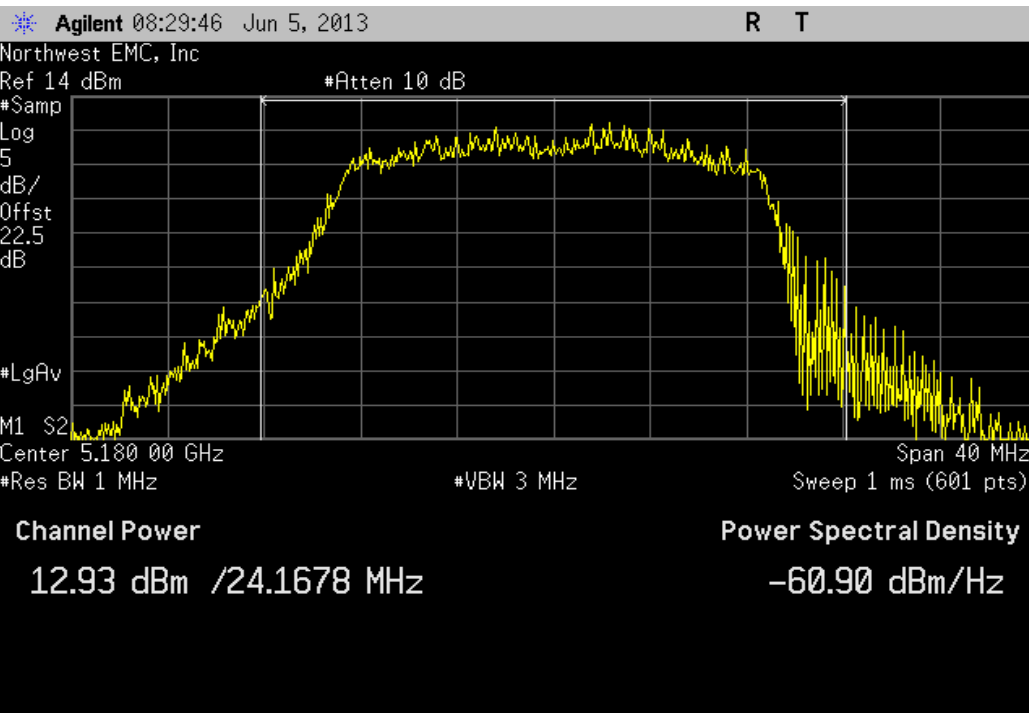
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
13.197 dBm	< 17 dBm	Pass



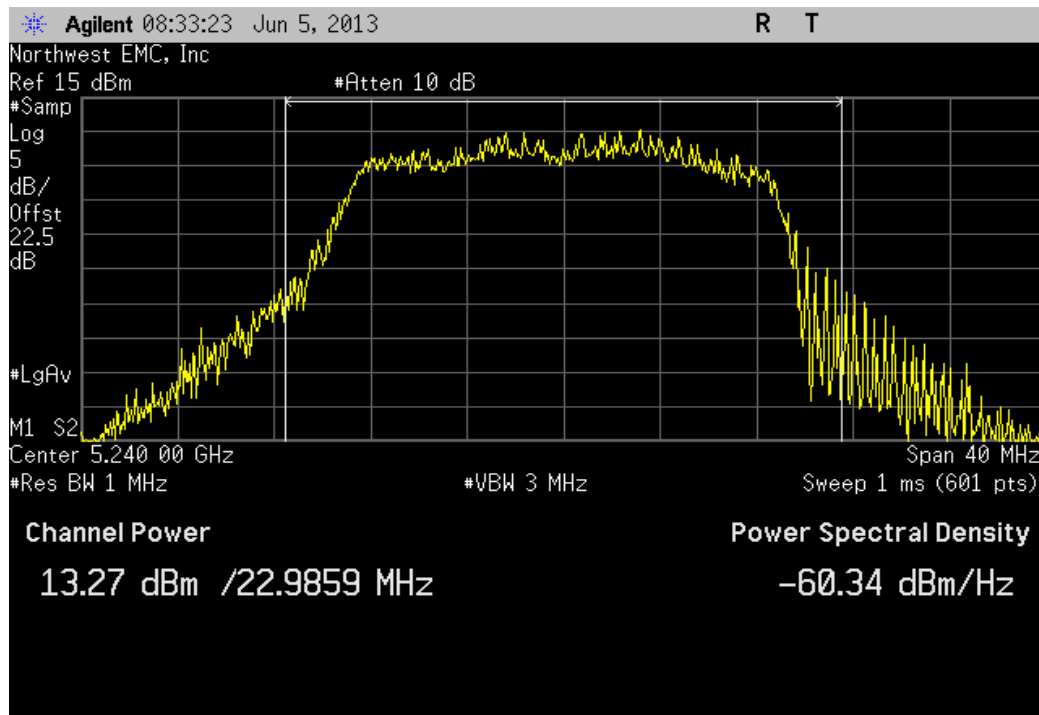
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
12.931 dBm	< 17 dBm	Pass



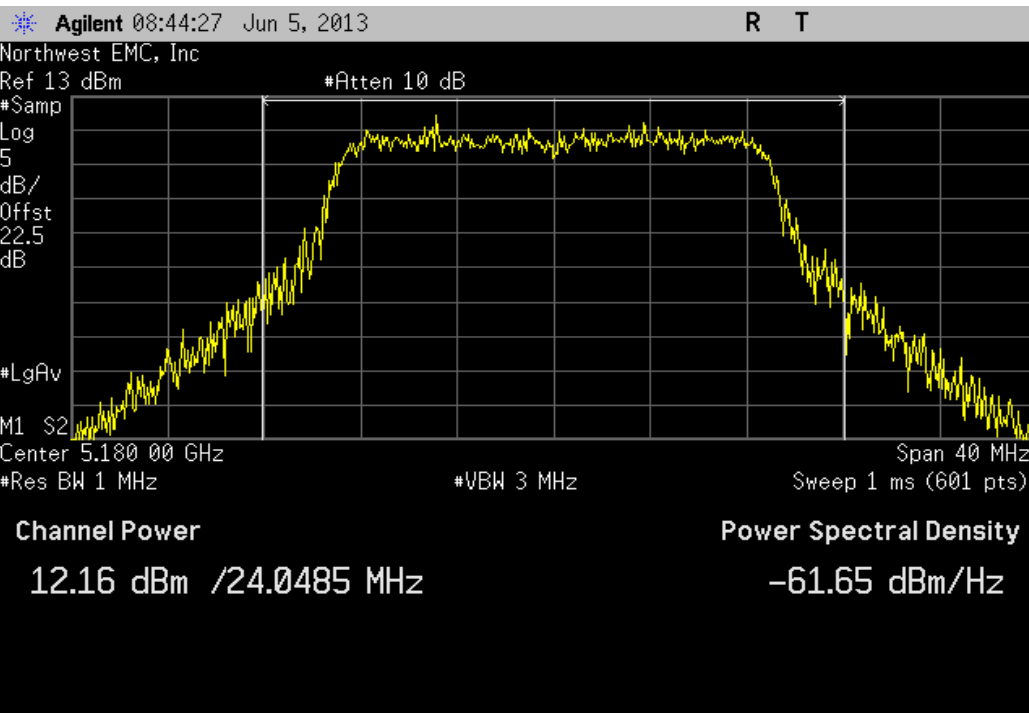
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
13.271 dBm	< 17 dBm	Pass



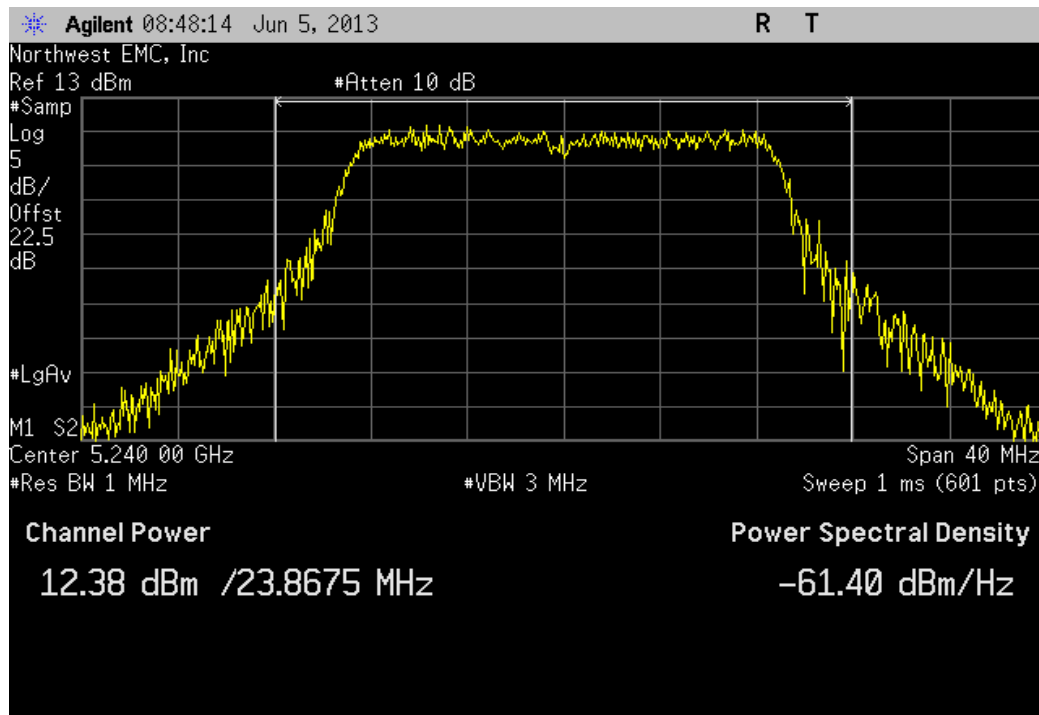
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
12.162 dBm	< 17 dBm	Pass



802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
12.383 dBm	< 17 dBm	Pass



Peak Power Spectral Density

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.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section E was followed. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The data rate(s) listed in the datasheet were tested. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

Prior to measuring peak power spectral density, the transmission pulse duration (T) was measured. The transmission pulse duration and the associated data are found elsewhere in this test report.

The spectrum analyzer settings were as follows:

- The span was set to encompass entire emission bandwidth (B), centered on the transmit channel.
- RBW = 1 MHz, VBW ≥ 3 MHz
- Sample detector was used because Method SA-1 Alternate was used to measure the Maximum Conducted Output Power.
- Trace average 100 traces in power averaging mode (not video averaging).

The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of power averaging (not video averaging).



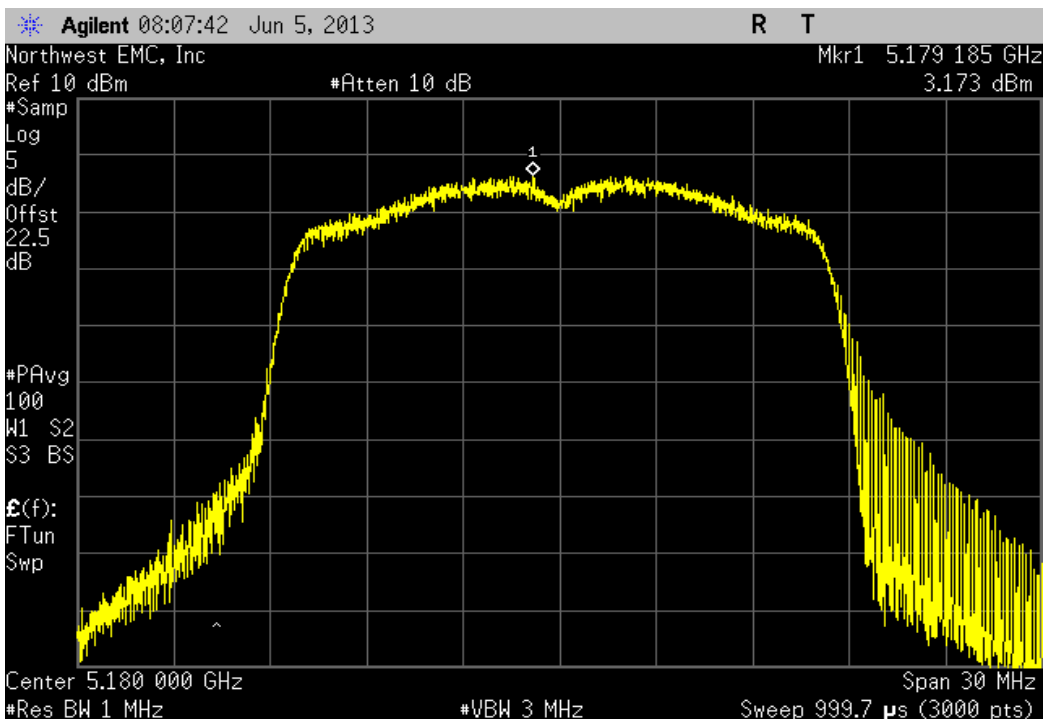
Peak Power Spectral Density

XMit 2013.02.28
PsaTx 2013.06.03

EUT: 37x Torpedo + Wireless SOM -31		Work Order: LGPD0096	
Serial Number: 1413M00359		Date: 06/05/13	
Customer: Logic PD, Inc.		Temperature: 23.0°C	
Attendees: None		Humidity: 48%	
Project: None		Barometric Pres.: 1016.5	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.407:2013		Test Method	
		ANSI C63.10:2009	
COMMENTS			
Some of the measurements were taken with a reduced reference level offset to account for 0.33 dB of cable loss for the normally attached antenna cable.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value (dBm / MHz)	Limit (dBm / MHz)
			Result
802.11(a) 6 Mbps	5150 - 5250 MHz Band		
	Channel 36, Low Channel	3.173	4
	Channel 48, High Channel	3.84	4
			Pass
802.11(a) 36 Mbps	5150 - 5250 MHz Band		
	Channel 36, Low Channel	3.123	4
	Channel 48, High Channel	3.479	4
			Pass
802.11(a) 54 Mbps	5150 - 5250 MHz Band		
	Channel 36, Low Channel	2.473	4
	Channel 48, High Channel	2.5	4
			Pass
802.11(n) MCS0	5150 - 5250 MHz Band		
	Channel 36, Low Channel	3.838	4
	Channel 48, High Channel	3.771	4
			Pass
802.11(n) MCS7	5150 - 5250 MHz Band		
	Channel 36, Low Channel	1.398	4
	Channel 48, High Channel	1.252	4
			Pass

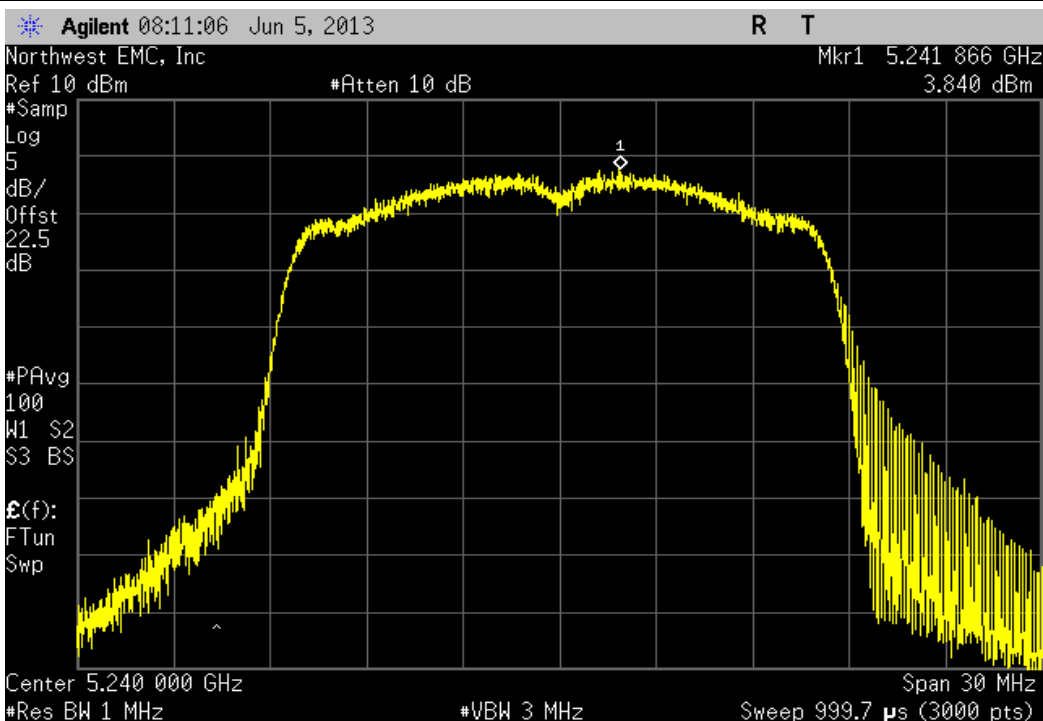
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
3.173	4	Pass



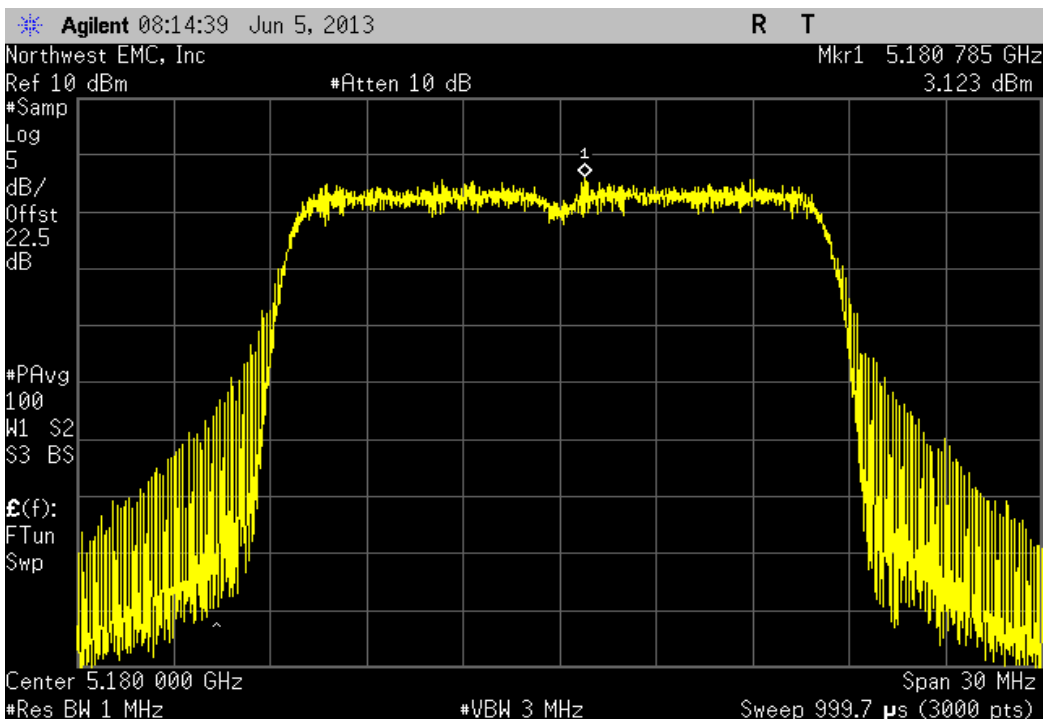
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
3.84	4	Pass



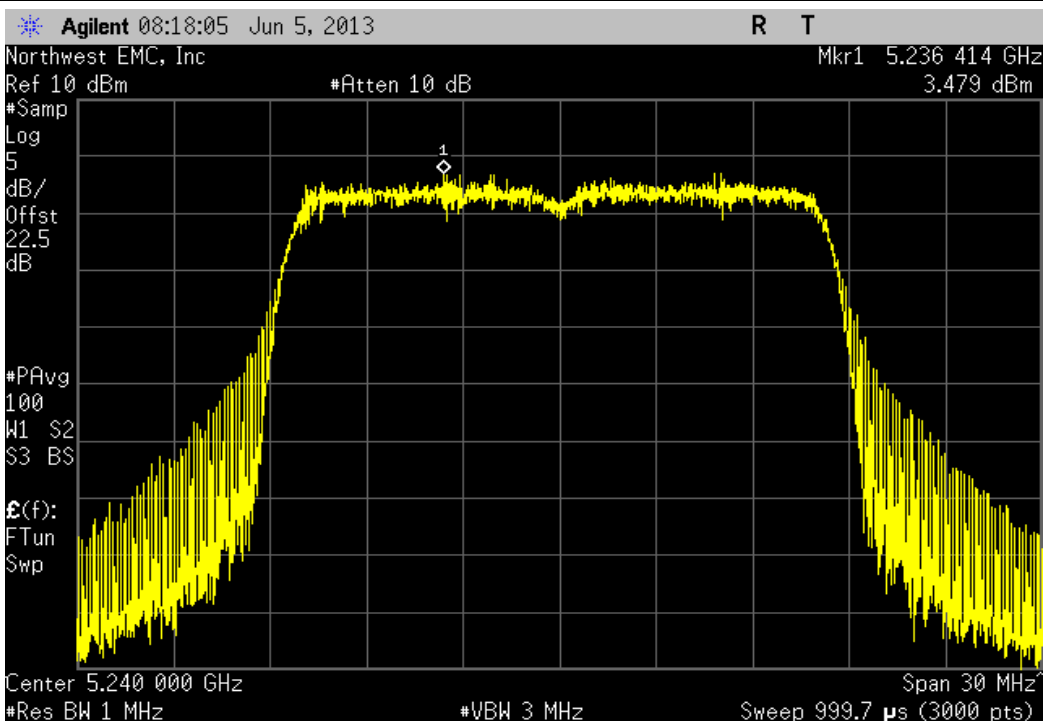
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
3.123	4	Pass



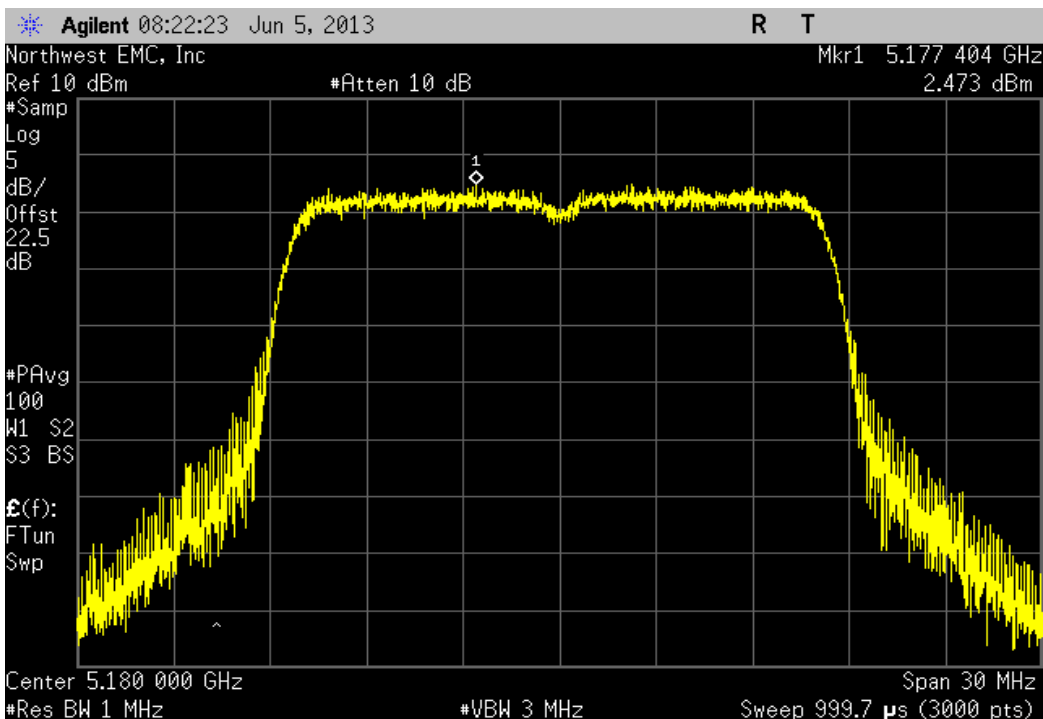
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
3.479	4	Pass



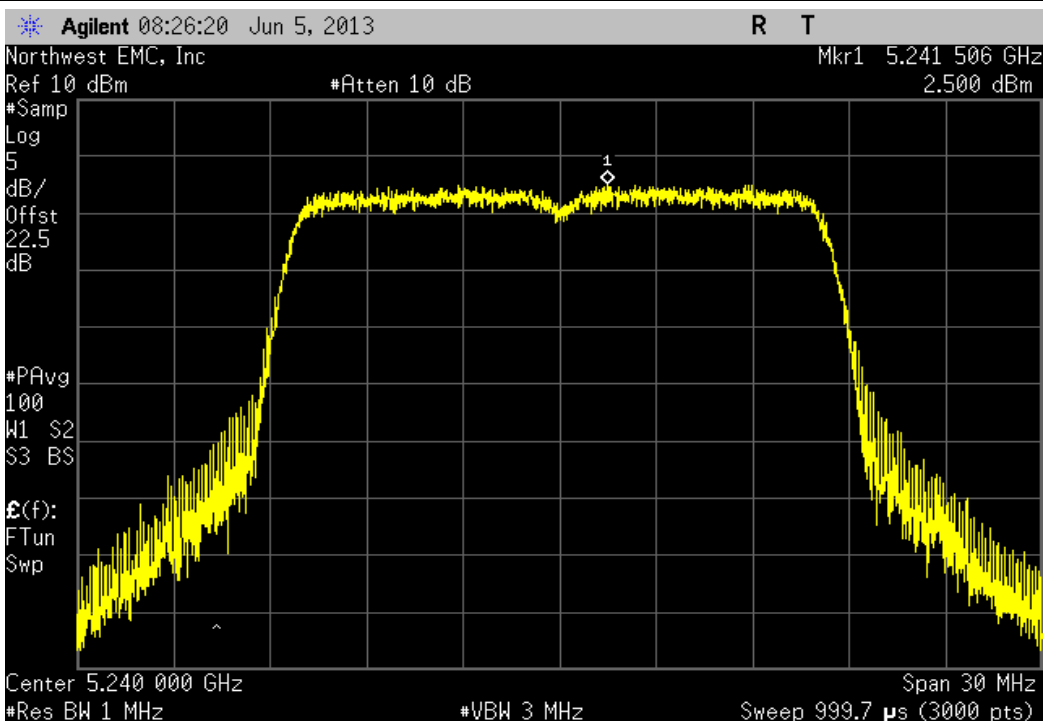
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
2.473	4	Pass



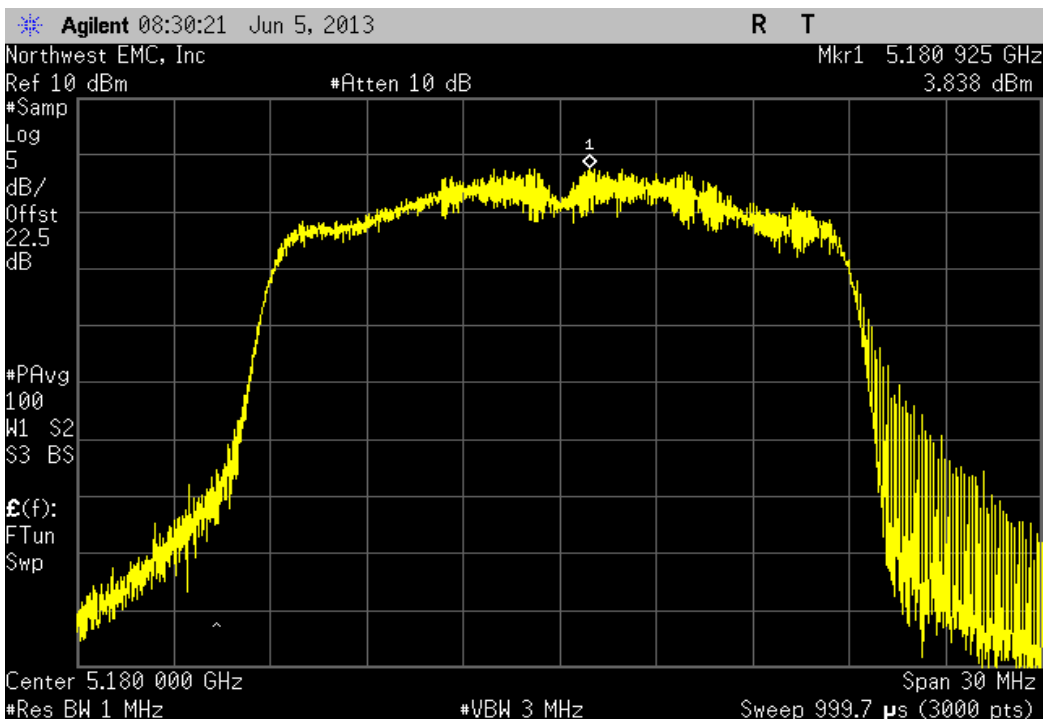
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
2.5	4	Pass



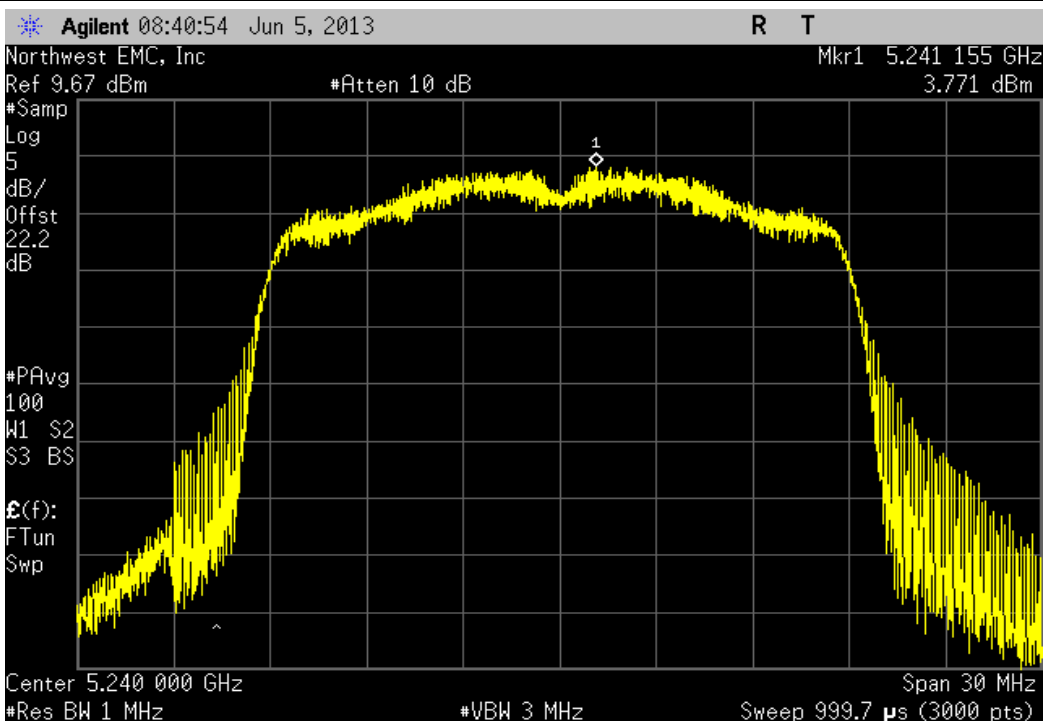
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
3.838	4	Pass



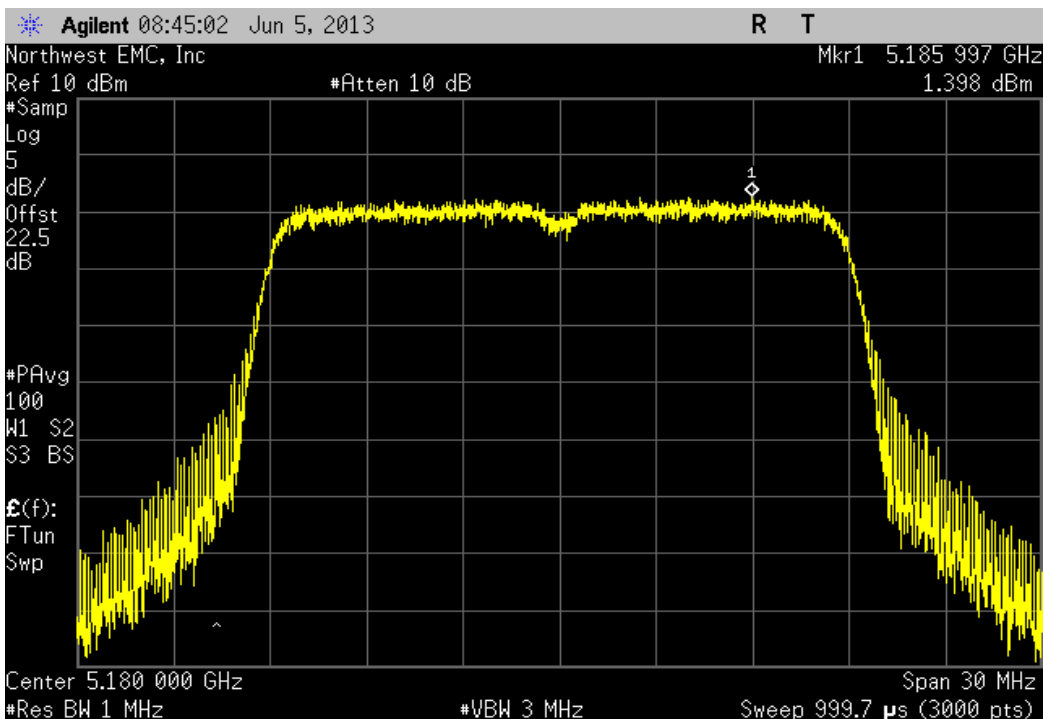
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
3.771	4	Pass



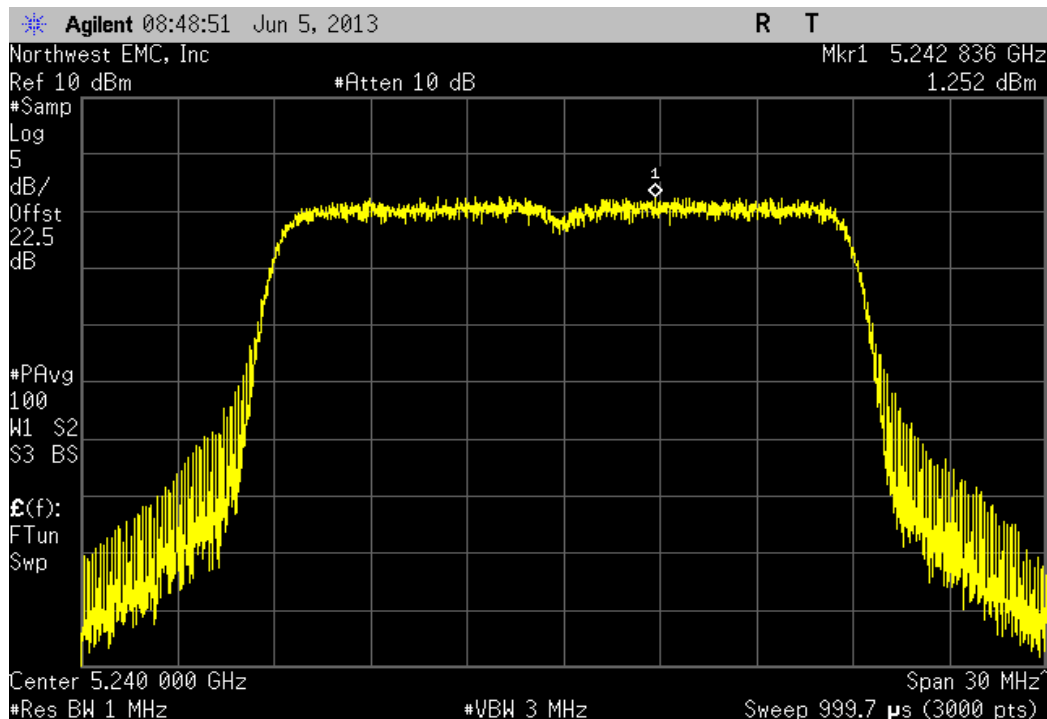
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
1.398	4	Pass



802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

Value (dBm / MHz)	Limit (dBm / MHz)	Result
1.252	4	Pass



Emission Bandwidth

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.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section D was followed. The transmit frequency was set to the lowest, a medium, and the highest channels in each band. The transmit power was set to its default maximum. The data rate(s) listed in the datasheet were measured. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

- Span = approximately 1.5 to 2 times the emission bandwidth, centered on the transmit channel.
- RBW = Approx. 1% of the emission bandwidth (B). This was an iterative process to determine the RBW based on the emissions bandwidth (B).
- A peak detector was used.

The spectrum analyzer Occupied Bandwidth measurement function was then used to measure 26 dB emission bandwidth.



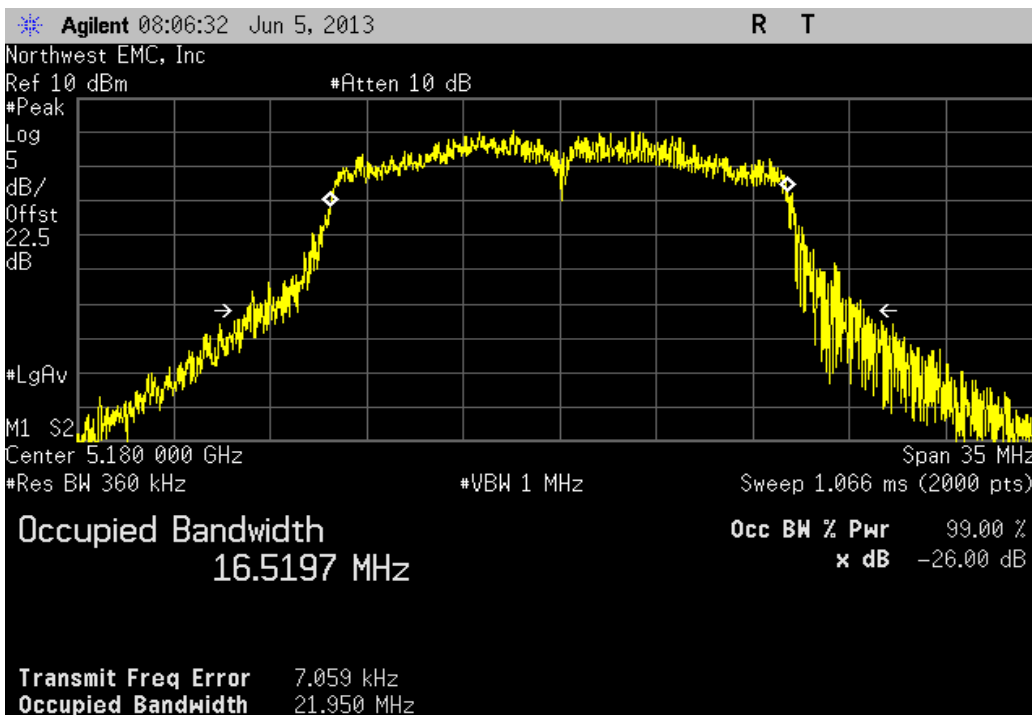
Emission Bandwidth

XMit 2013.02.28
PsaTx 2013.06.03

EUT: 37x Torpedo + Wireless SOM -31		Work Order: LGPD0096	
Serial Number: 1413M00359		Date: 06/05/13	
Customer: Logic PD, Inc.		Temperature: 23.0°C	
Attendees: None		Humidity: 48%	
Project: None		Barometric Pres.: 1016.5	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.407:2013		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Value	Limit
802.11(a) 6 Mbps			
5150 - 5250 MHz Band			
Channel 36, Low Channel		21.95 MHz	> 500 kHz
Channel 48, High Channel		21.761 MHz	> 500 kHz
802.11(a) 36 Mbps			
5150 - 5250 MHz Band			
Channel 36, Low Channel		23.498 MHz	> 500 kHz
Channel 48, High Channel		23.245 MHz	> 500 kHz
802.11(a) 54 Mbps			
5150 - 5250 MHz Band			
Channel 36, Low Channel		22.681 MHz	> 500 kHz
Channel 48, High Channel		22.028 MHz	> 500 kHz
802.11(n) MCS0			
5150 - 5250 MHz Band			
Channel 36, Low Channel		24.168 MHz	> 500 kHz
Channel 48, High Channel		22.986 MHz	> 500 kHz
802.11(n) MCS7			
5150 - 5250 MHz Band			
Channel 36, Low Channel		24.049 MHz	> 500 kHz
Channel 48, High Channel		23.868 MHz	> 500 kHz

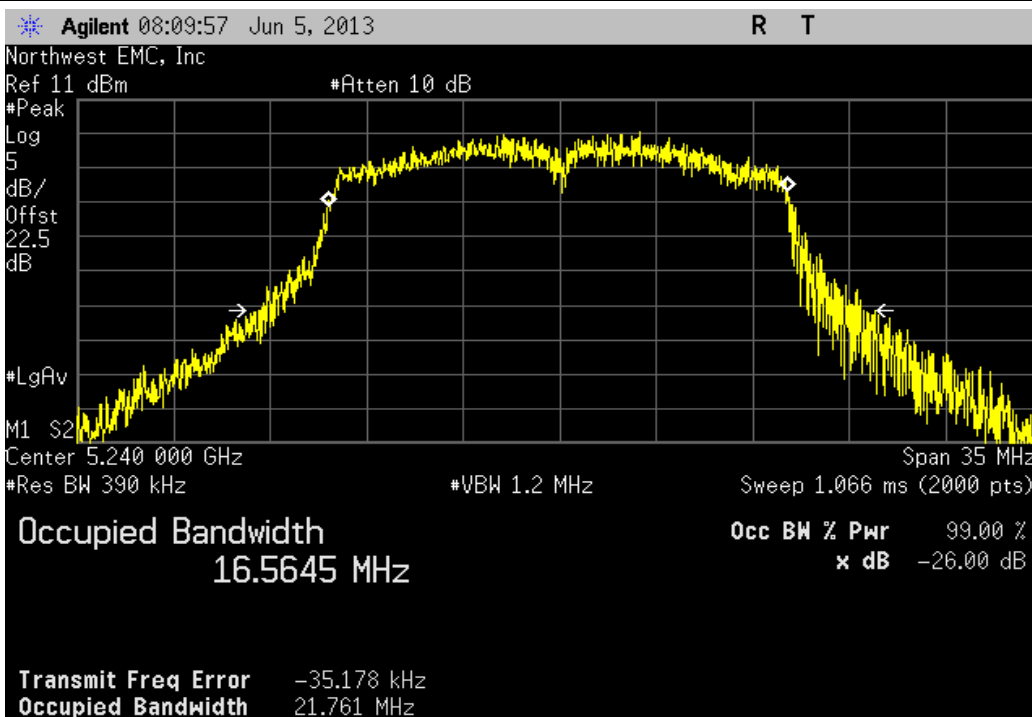
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				21.95 MHz	> 500 kHz	Pass



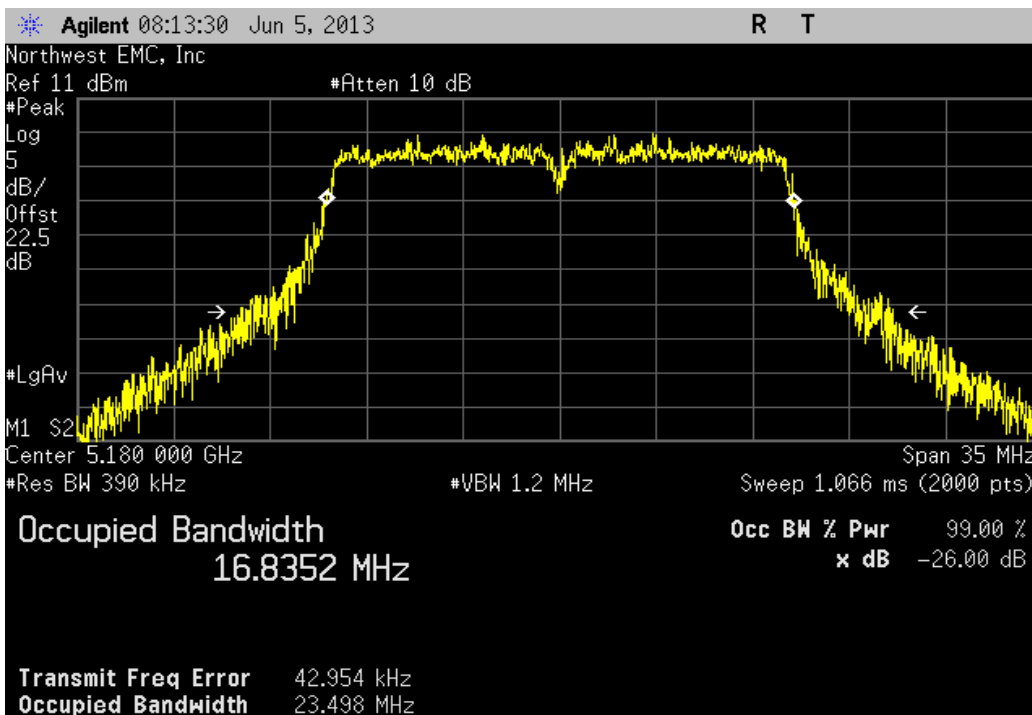
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				21.761 MHz	> 500 kHz	Pass



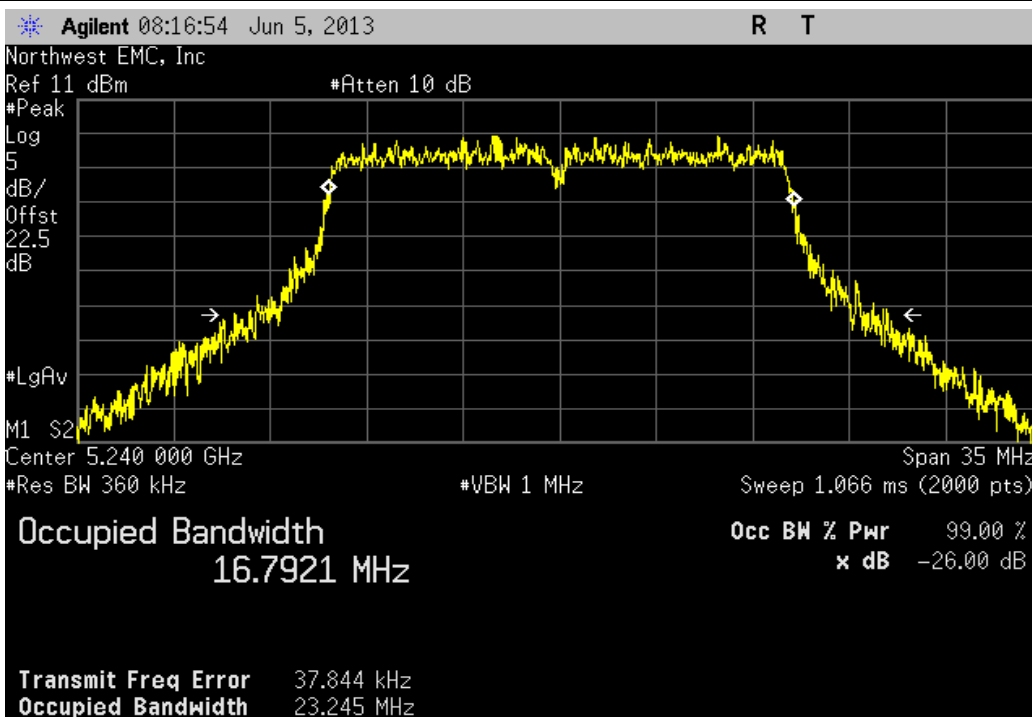
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				23.498 MHz	> 500 kHz	Pass



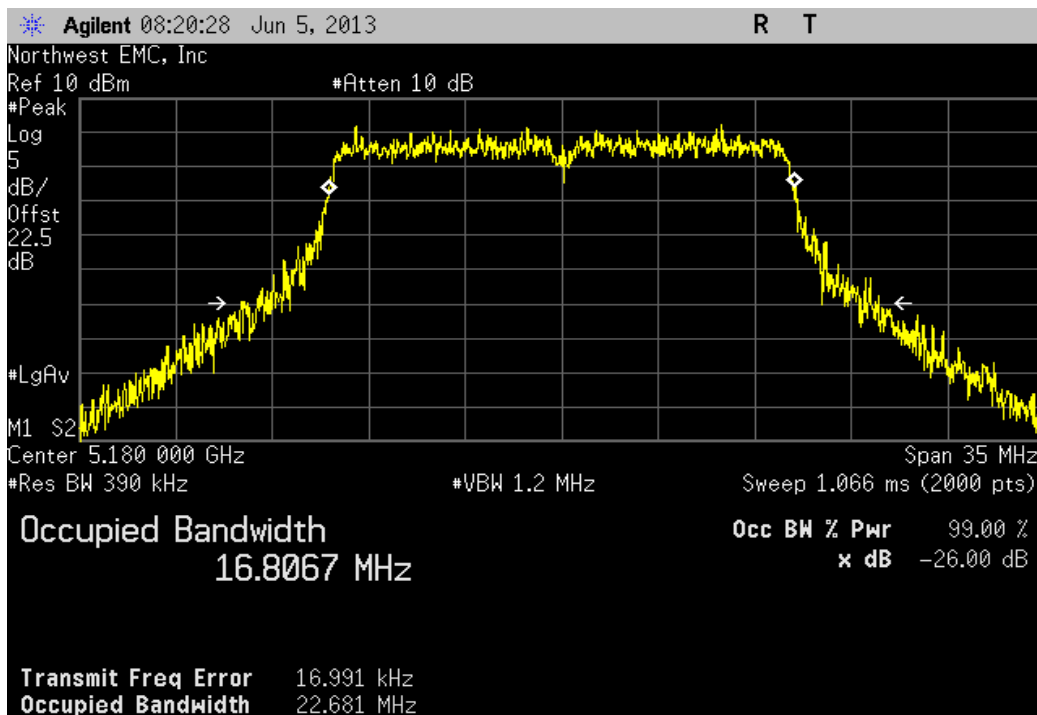
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				23.245 MHz	> 500 kHz	Pass



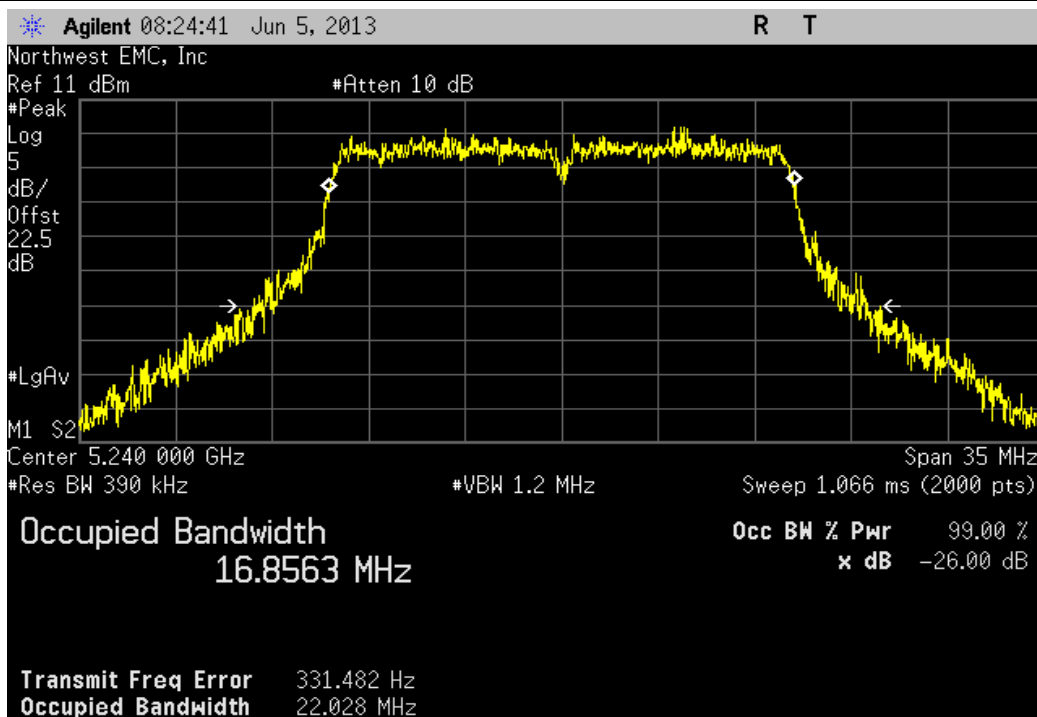
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				22.681 MHz	> 500 kHz	Pass



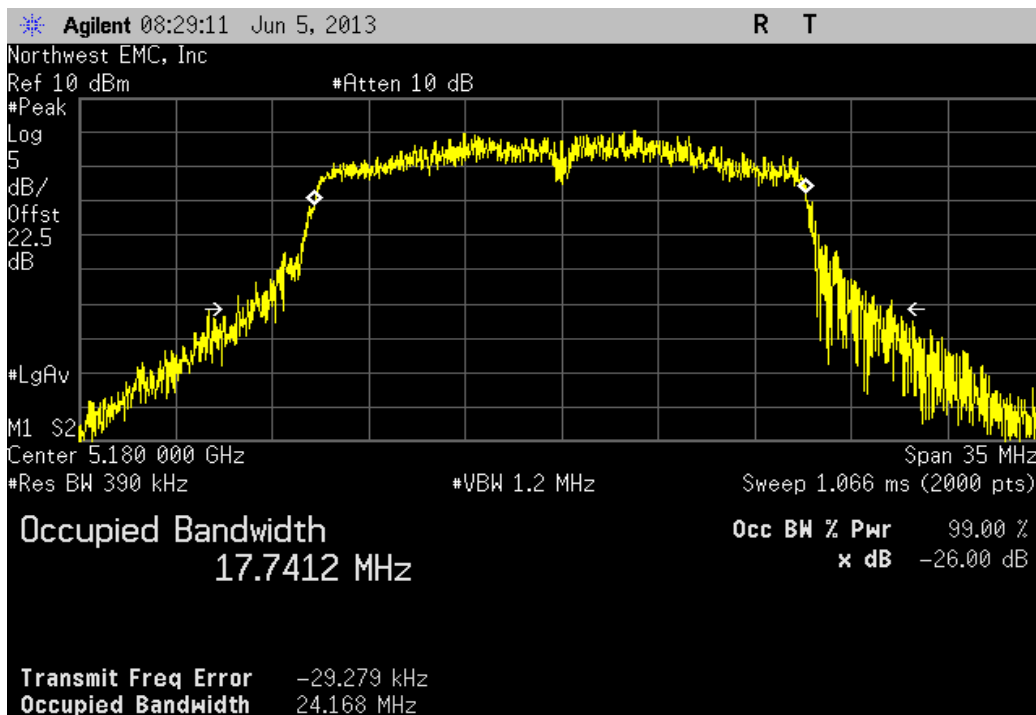
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				22.028 MHz	> 500 kHz	Pass



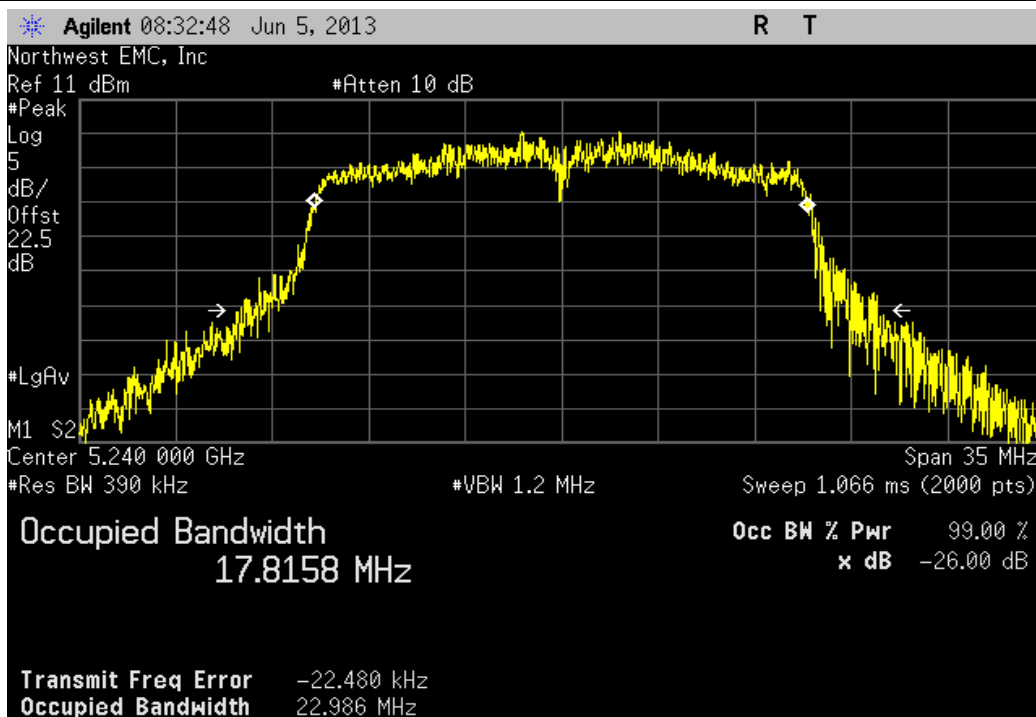
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

				Value	Limit	Result
				24.168 MHz	> 500 kHz	Pass



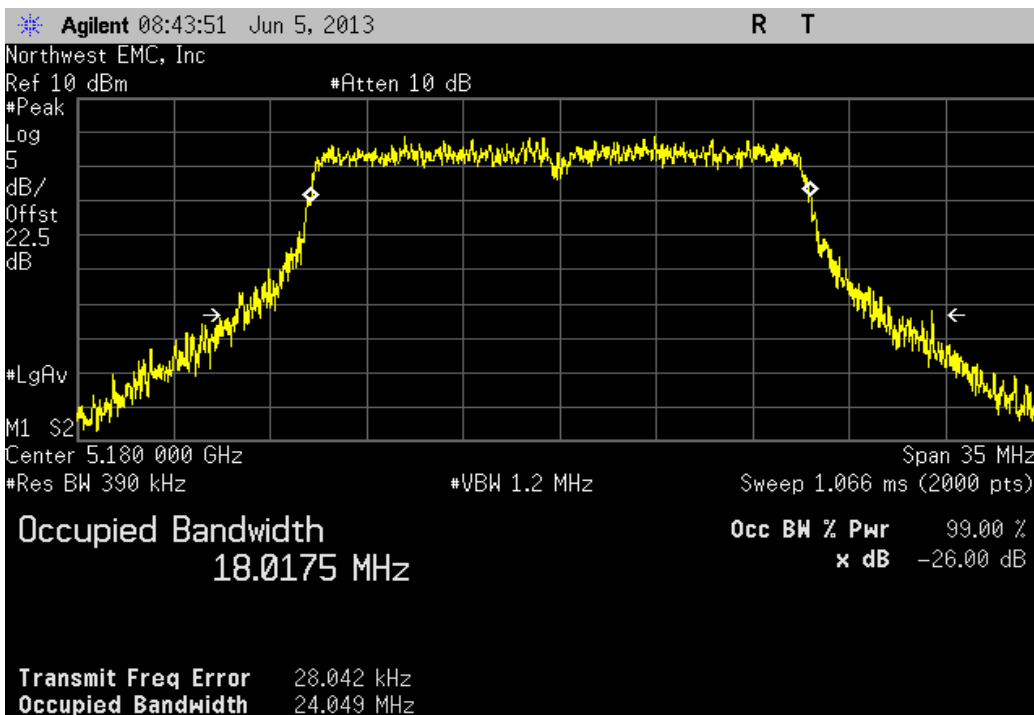
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

				Value	Limit	Result
				22.986 MHz	> 500 kHz	Pass



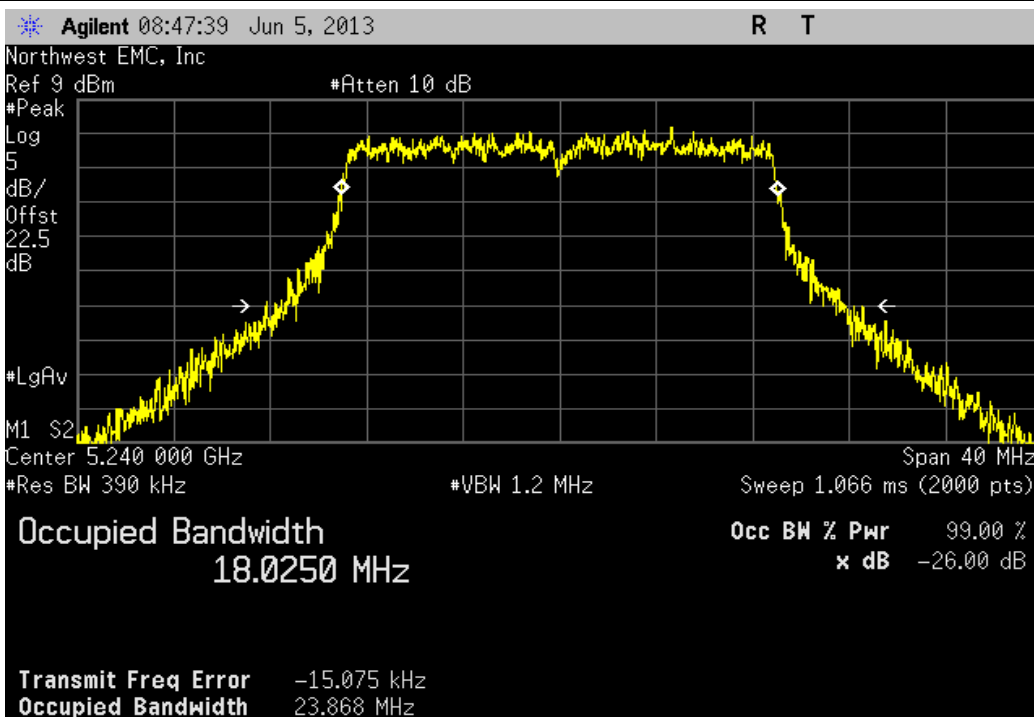
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

	Value	Limit	Result
	24.049 MHz	> 500 kHz	Pass



802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

	Value	Limit	Result
	23.868 MHz	> 500 kHz	Pass



Peak Excursion

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.	Interval
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

FCC KDB 789033 D01 General UNII Test Procedures Section F was followed to show that the ratio of the maximum peak-max-hold spectrum to the maximum of the average spectrum does not exceed 13 dBm.

The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used. The reference level offset on the spectrum analyzer was adjusted to compensate for cable loss and the external attenuation used between the RF output and the spectrum analyzer input.

The spectrum analyzer settings were as follows:

Span set to encompass the entire emission bandwidth (B), centered on the transmit channel.

Using the marker delta function, the largest difference between the following two traces was measured:

➤1st Trace: RBW = 1 MHz, VBW $\geq$ 3 MHz with peak detector and trace max-hold..

➤2nd Trace: The same procedure and settings as was used for peak power spectral density



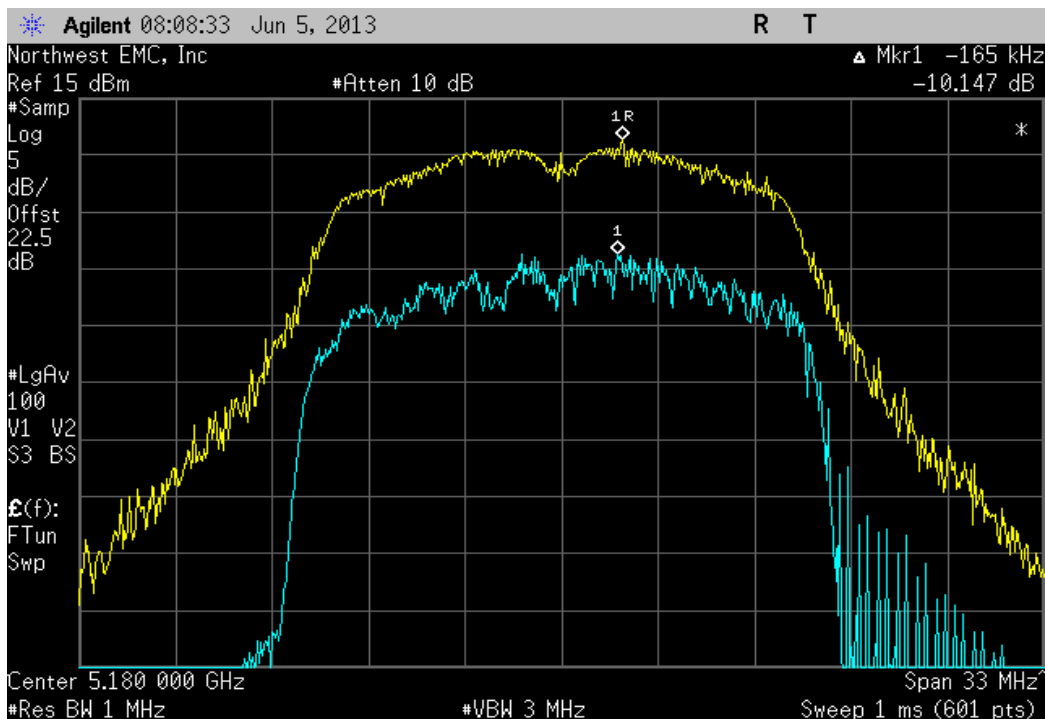
Peak Excursion

XMit 2013.02.28
PsaTx 2013.06.03

EUT: 37x Torpedo + Wireless SOM -31		Work Order: LGPD0096		
Serial Number: 1413M00359		Date: 06/05/13		
Customer: Logic PD, Inc.		Temperature: 23.0°C		
Attendees: None		Humidity: 48%		
Project: None		Barometric Pres.: 1016.5		
Tested by: Trevor Buls		Power: 110VAC/60Hz		
		Job Site: MN08		
TEST SPECIFICATIONS		Test Method		
FCC 15.407:2013		ANSI C63.10:2009		
COMMENTS				
None				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration #	1	Signature <i>Trevor Buls</i>		
		Value	Limit	Result
802.11(a) 6 Mbps				
5150 - 5250 MHz Band				
Channel 36, Low Channel		10.147 dB	≤ 13 dB	Pass
Channel 48, High Channel		8.712 dB	≤ 13 dB	Pass
802.11(a) 36 Mbps				
5150 - 5250 MHz Band				
Channel 36, Low Channel		10.673 dB	≤ 13 dB	Pass
Channel 48, High Channel		9.821 dB	≤ 13 dB	Pass
802.11(a) 54 Mbps				
5150 - 5250 MHz Band				
Channel 36, Low Channel		9.623 dB	≤ 13 dB	Pass
Channel 48, High Channel		10.68 dB	≤ 13 dB	Pass
802.11(n) MCS0				
5150 - 5250 MHz Band				
Channel 36, Low Channel		7.227 dB	≤ 13 dB	Pass
Channel 48, High Channel		7.794 dB	≤ 13 dB	Pass
802.11(n) MCS7				
5150 - 5250 MHz Band				
Channel 36, Low Channel		10.393 dB	≤ 13 dB	Pass
Channel 48, High Channel		11.175 dB	≤ 13 dB	Pass

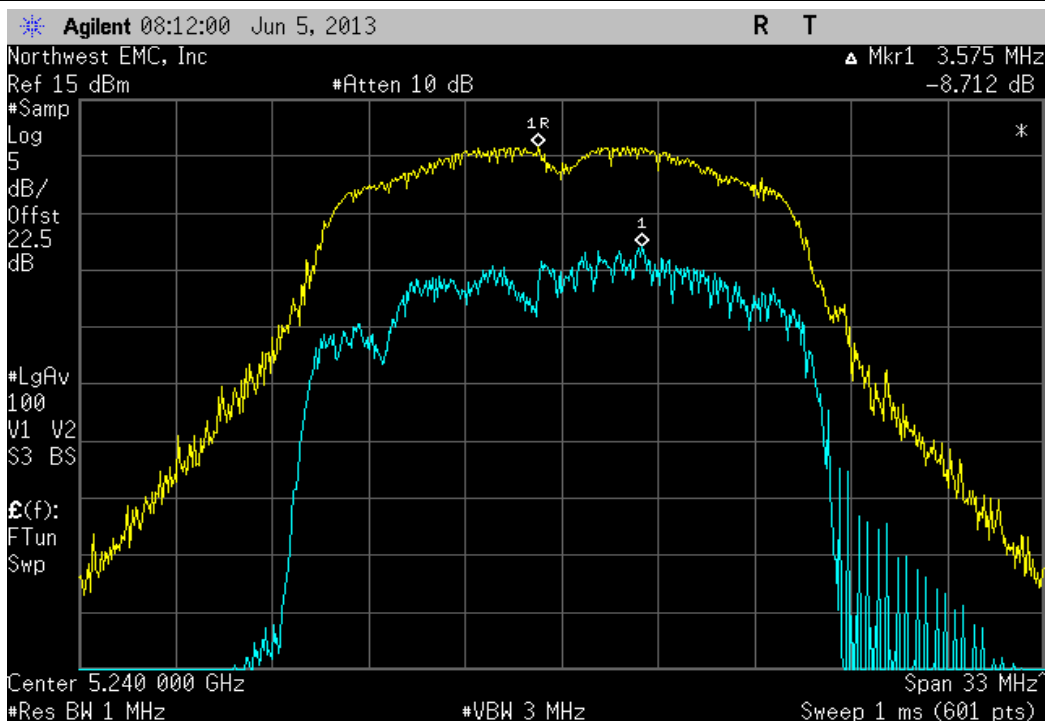
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

	Value	Limit	Result
	10.147 dB	≤ 13 dB	Pass



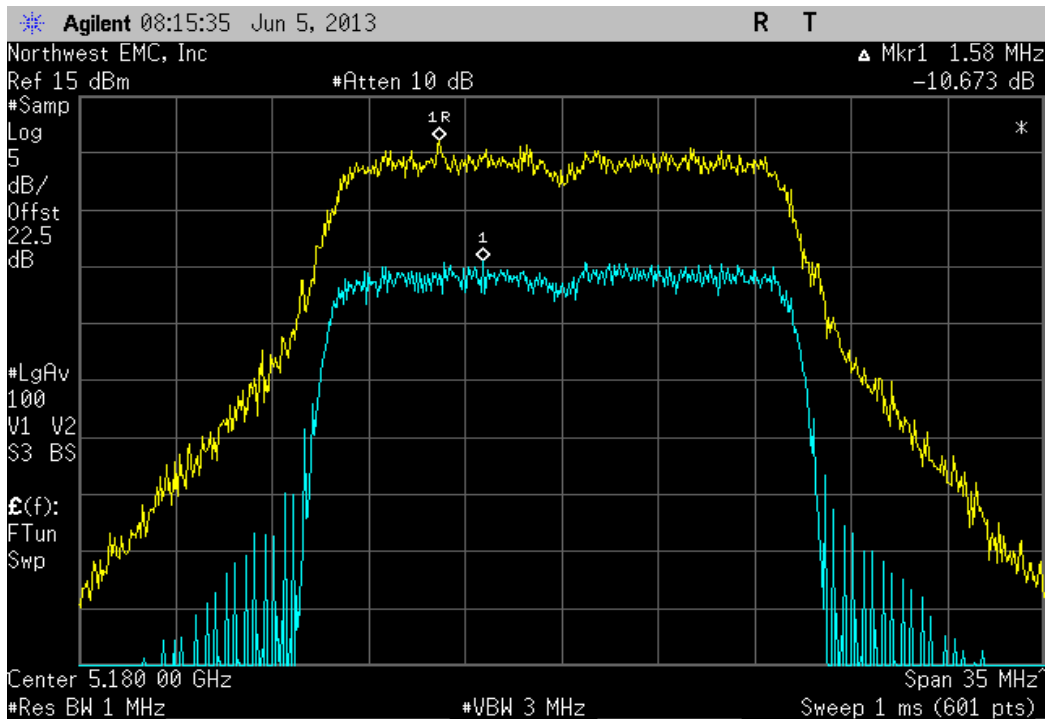
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

	Value	Limit	Result
	8.712 dB	≤ 13 dB	Pass



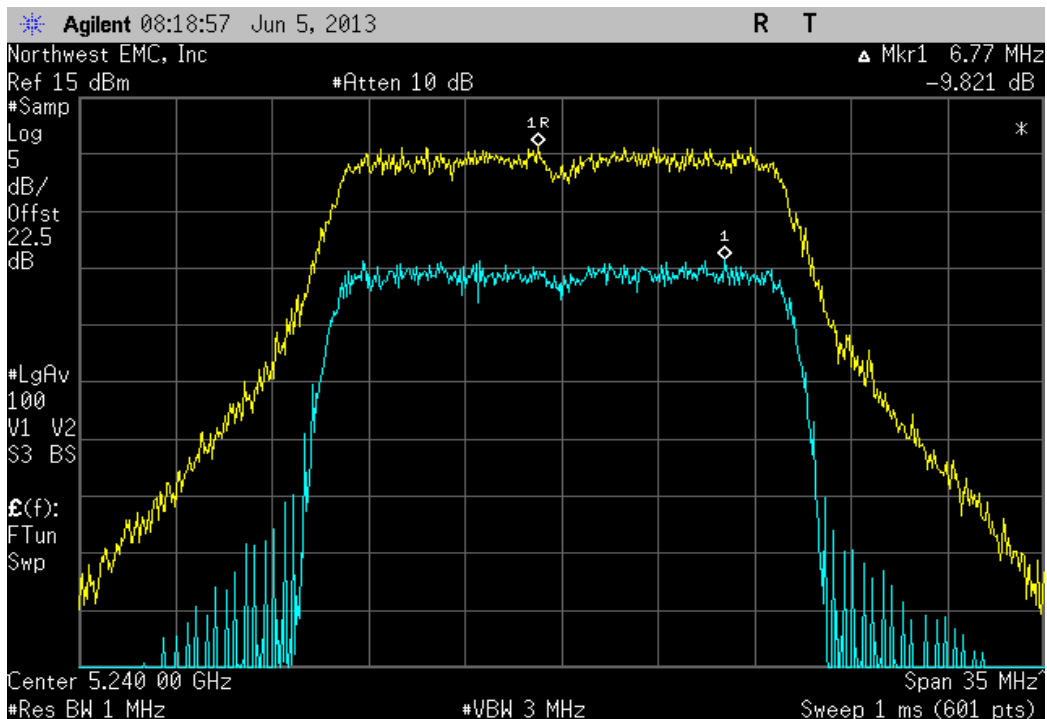
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
10.673 dB	≤ 13 dB	Pass



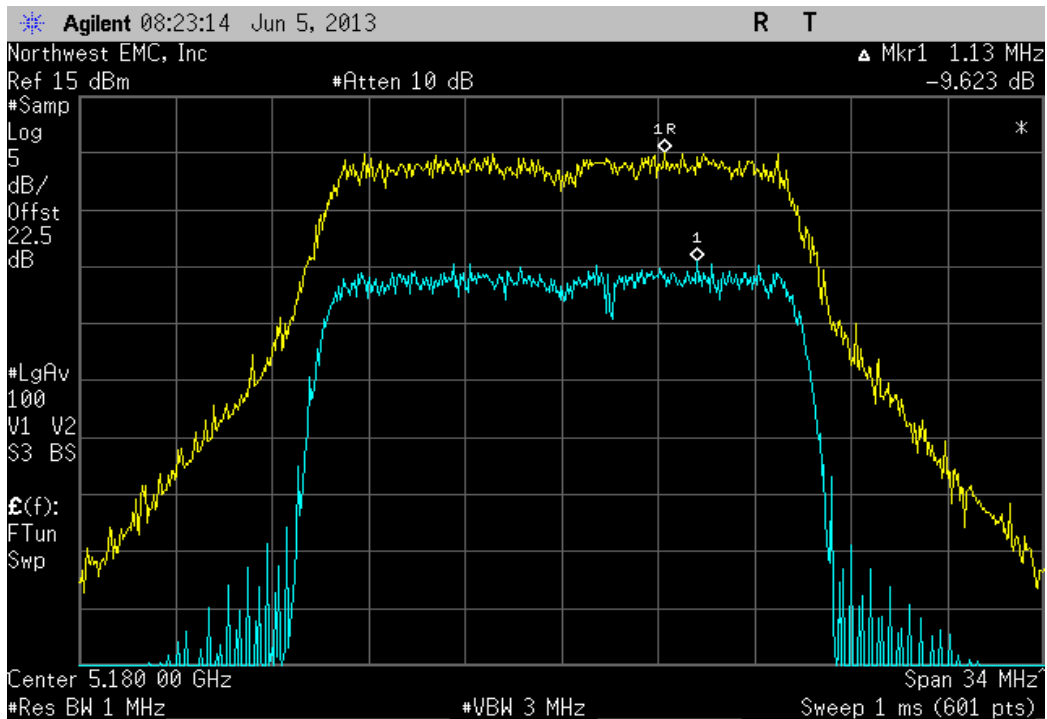
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
9.821 dB	≤ 13 dB	Pass



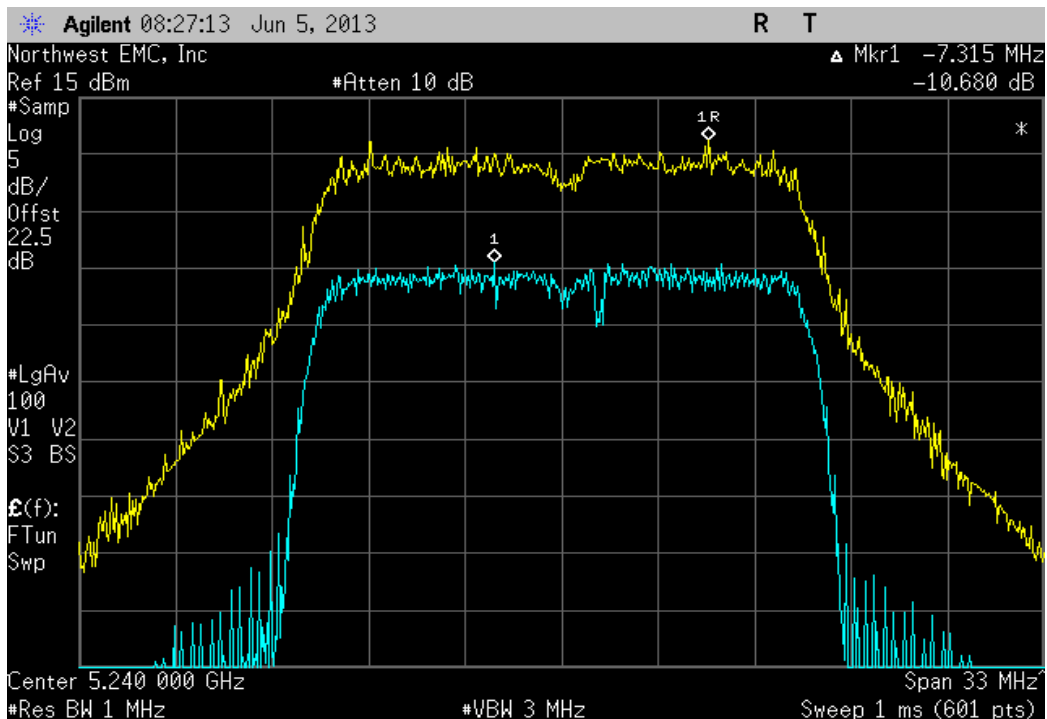
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
9.623 dB	≤ 13 dB	Pass



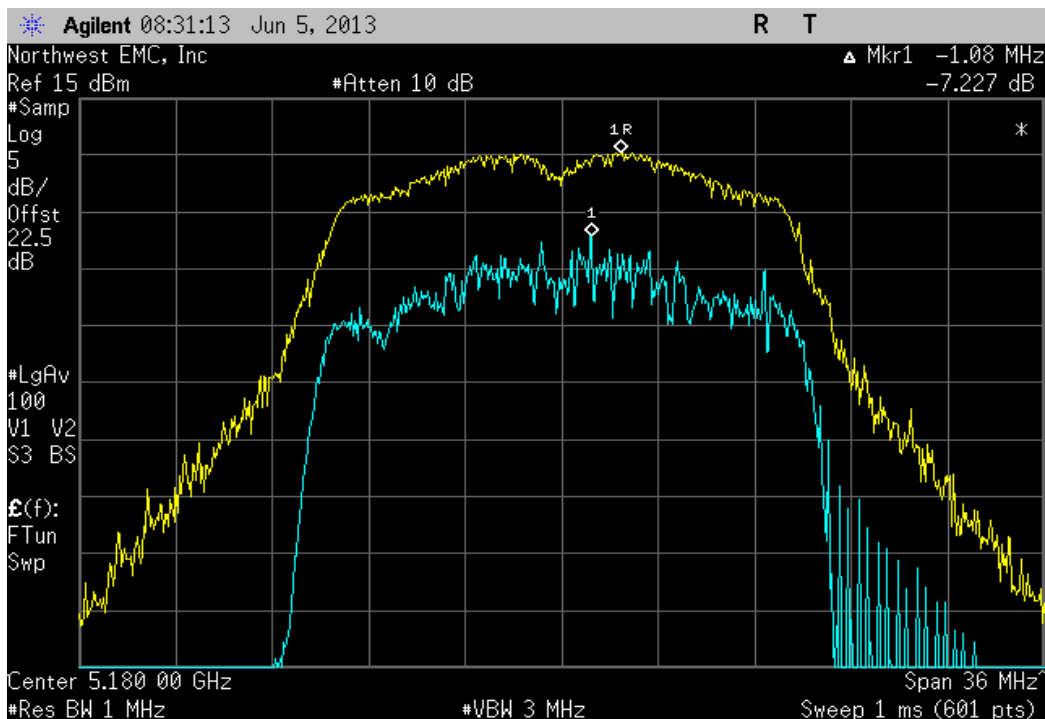
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
10.68 dB	≤ 13 dB	Pass



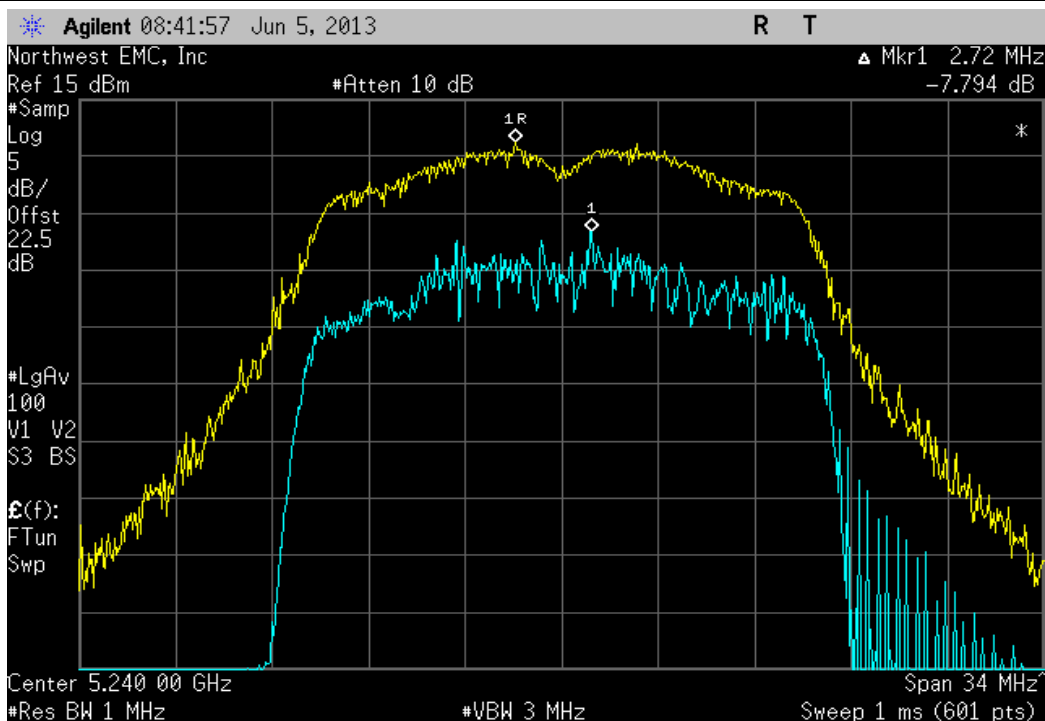
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel

	Value	Limit	Result
	7.227 dB	≤ 13 dB	Pass



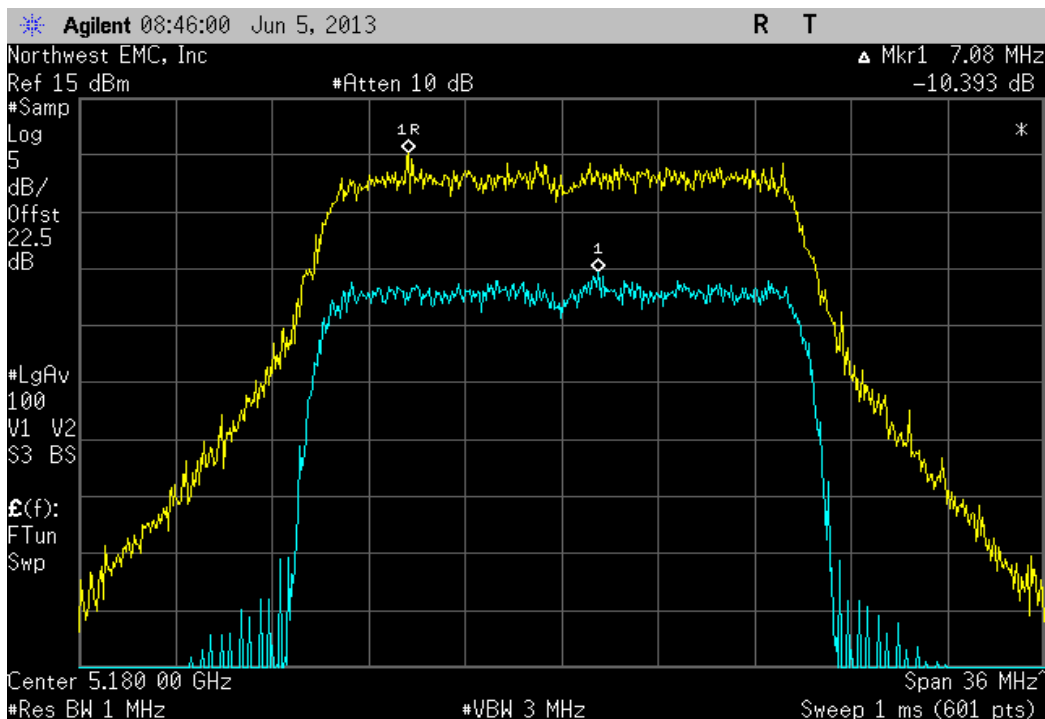
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel

	Value	Limit	Result
	7.794 dB	≤ 13 dB	Pass



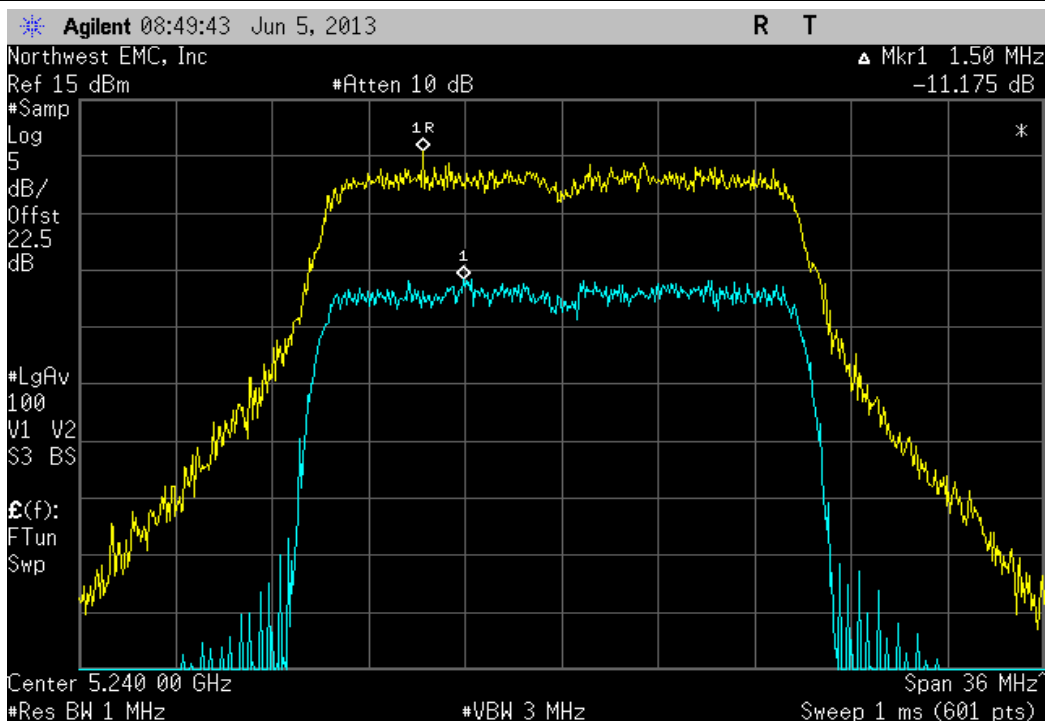
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel

Value	Limit	Result
10.393 dB	≤ 13 dB	Pass



802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel

Value	Limit	Result
11.175 dB	≤ 13 dB	Pass



Transmissions Burst Duration

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.	Interval
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

The transmission pulse duration (T) and Duty Cycle (x) were measured for each of the EUT operating modes per the FCC KDB 789033 D01 General UNII Test Procedures.

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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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 was used during some of the other tests in this report only measure during the burst duration.

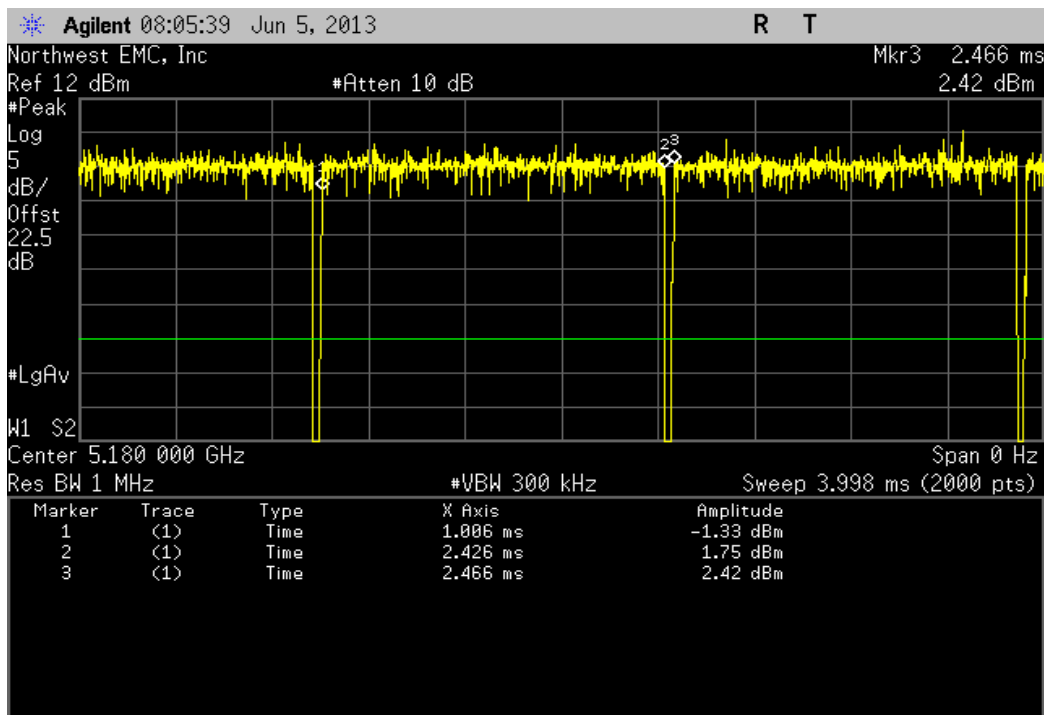


Transmissions Burst Duration

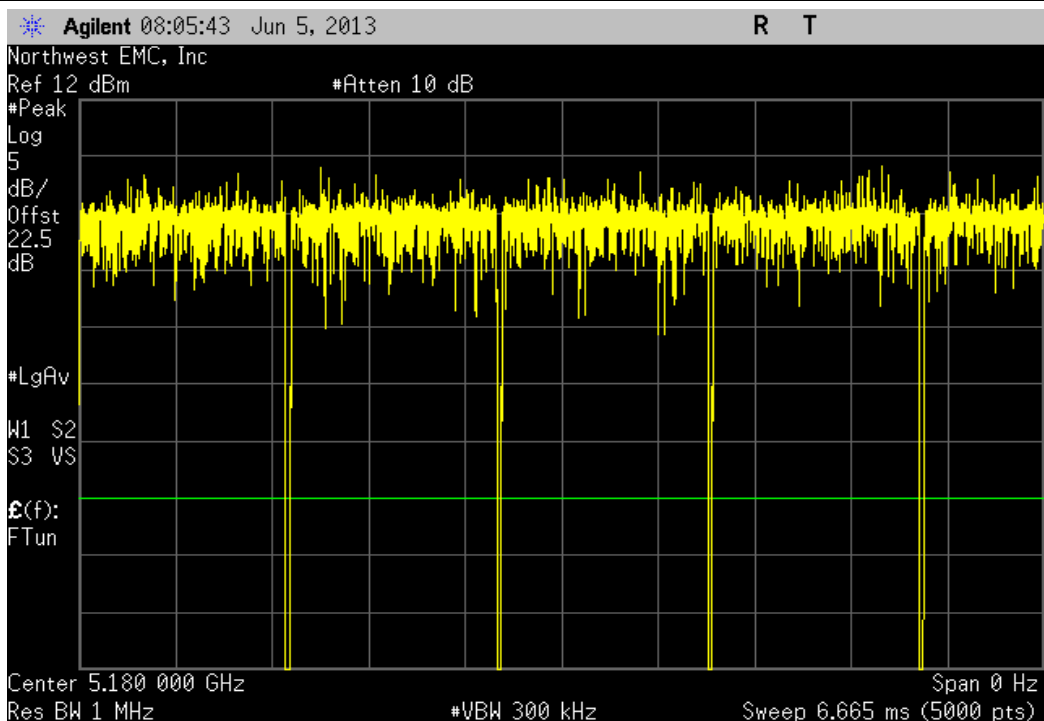
XMit 2013.02.28
PsaTx 2013.06.03

EUT: 37x Torpedo + Wireless SOM -31		Work Order: LGPD0096	
Serial Number: 1413M00359		Date: 06/05/13	
Customer: Logic PD, Inc.		Temperature: 23.0°C	
Attendees: None		Humidity: 48%	
Project: None		Barometric Pres.: 1016.5	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
TEST SPECIFICATIONS		Job Site: MN08	
FCC 15.407:2013		Test Method	
		ANSI C63.10:2009	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Trevor Buls</i>	
		Pulse Width	Period
		Number of Pulses	Value (%)
		Limit	Result
802.11(a) 6 Mbps	5150 - 5250 MHz Band		
	Channel 36, Low Channel	1.42 mS	1.46 mS
	Channel 36, Low Channel	N/A	N/A
	Channel 48, High Channel	1.42 mS	1.458 mS
	Channel 48, High Channel	N/A	N/A
802.11(a) 36 Mbps	5150 - 5250 MHz Band		
	Channel 36, Low Channel	248 uS	287 uS
	Channel 36, Low Channel	N/A	N/A
	Channel 48, High Channel	248 uS	287 uS
	Channel 48, High Channel	N/A	N/A
802.11(a) 54 Mbps	5150 - 5250 MHz Band		
	Channel 36, Low Channel	172 uS	211 uS
	Channel 36, Low Channel	N/A	N/A
	Channel 48, High Channel	173 uS	211 uS
	Channel 48, High Channel	N/A	N/A
802.11(n) MCS0	5150 - 5250 MHz Band		
	Channel 36, Low Channel	1.328 mS	1.366 mS
	Channel 36, Low Channel	N/A	N/A
	Channel 48, High Channel	1.328 mS	1.366 mS
	Channel 48, High Channel	N/A	N/A
802.11(n) MCS7	5150 - 5250 MHz Band		
	Channel 36, Low Channel	160 uS	198 uS
	Channel 36, Low Channel	N/A	N/A
	Channel 48, High Channel	160 uS	199 uS
	Channel 48, High Channel	N/A	N/A

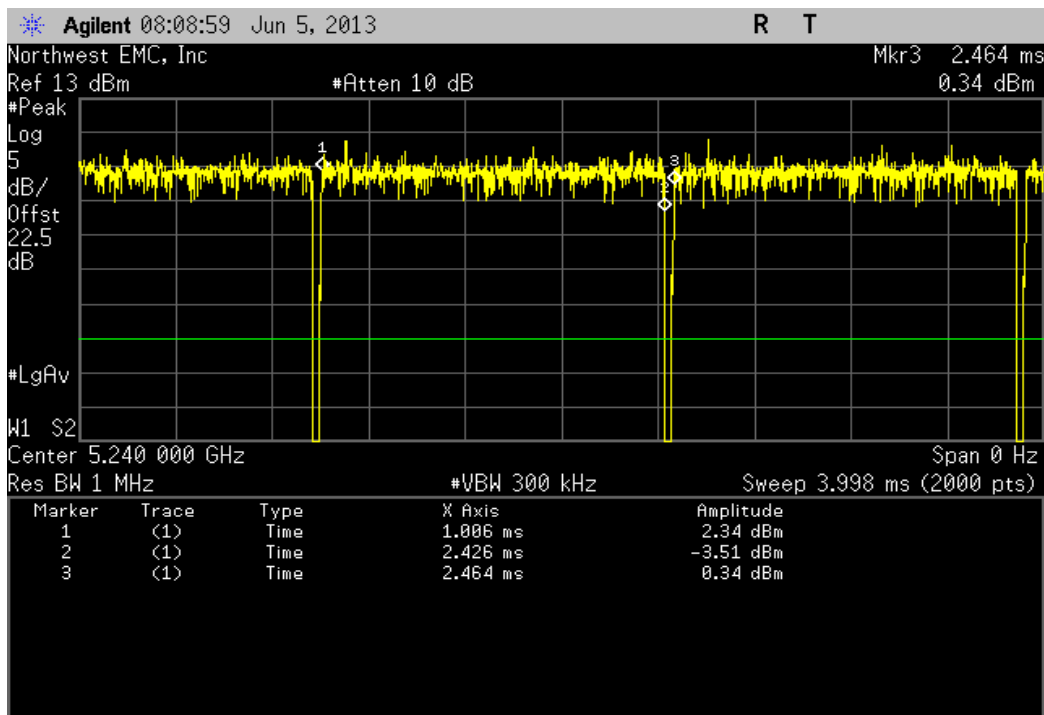
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.42 mS	1.46 mS	1	97.3	N/A	N/A



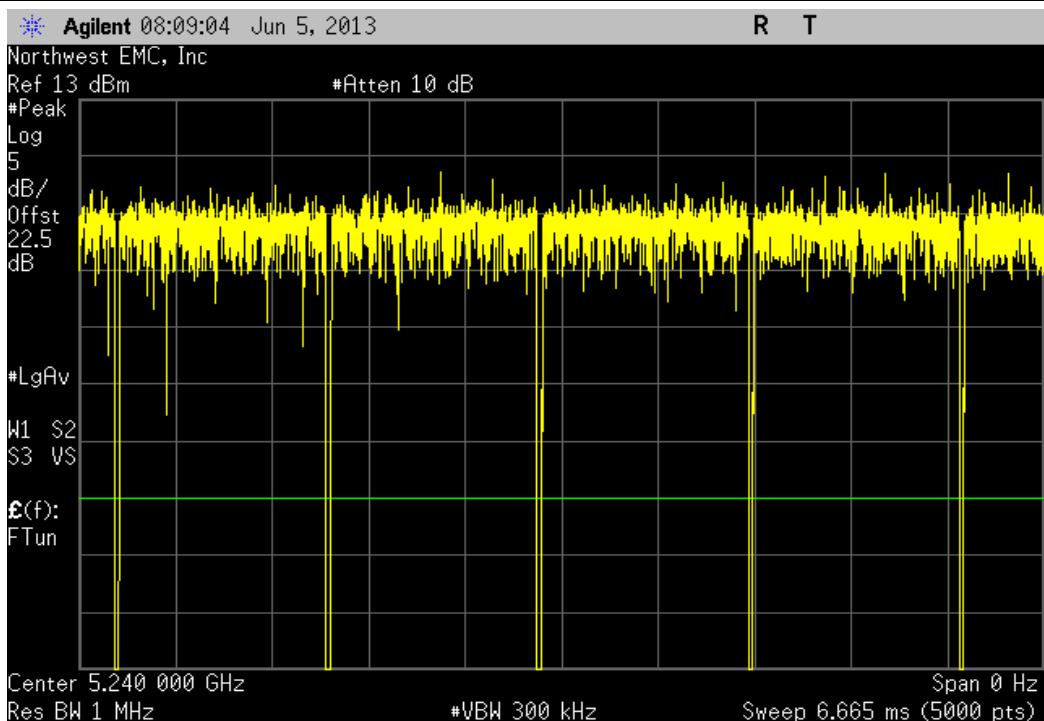
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



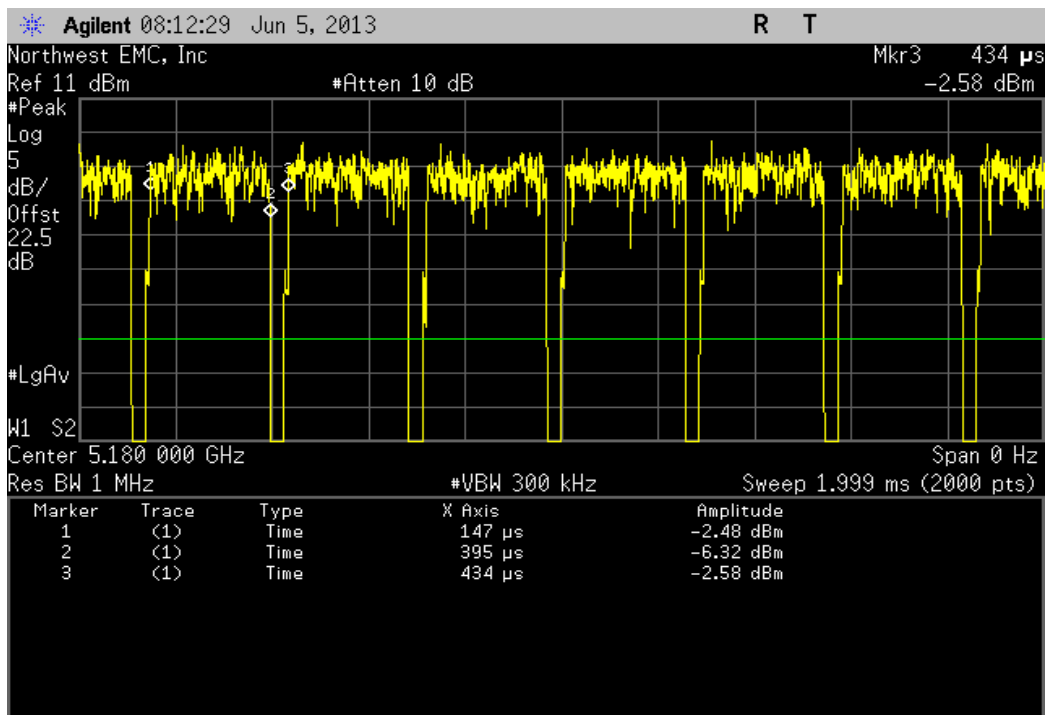
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
1.42 mS	1.458 mS	1	97.4	N/A	N/A	



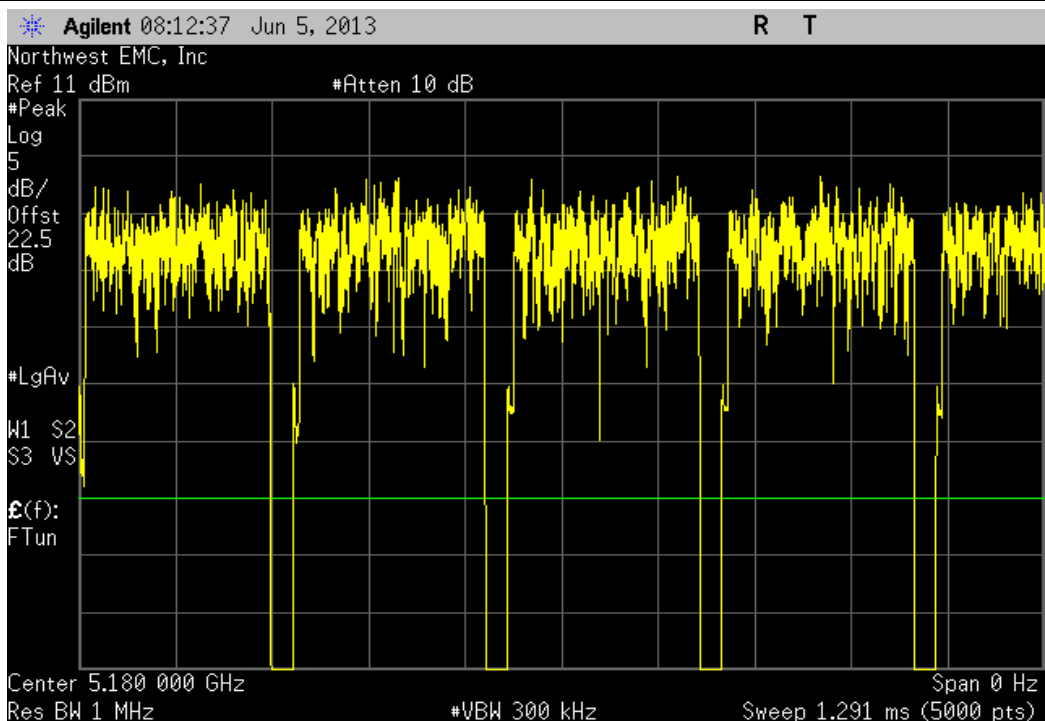
802.11(a) 6 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	6	N/A	N/A	N/A	



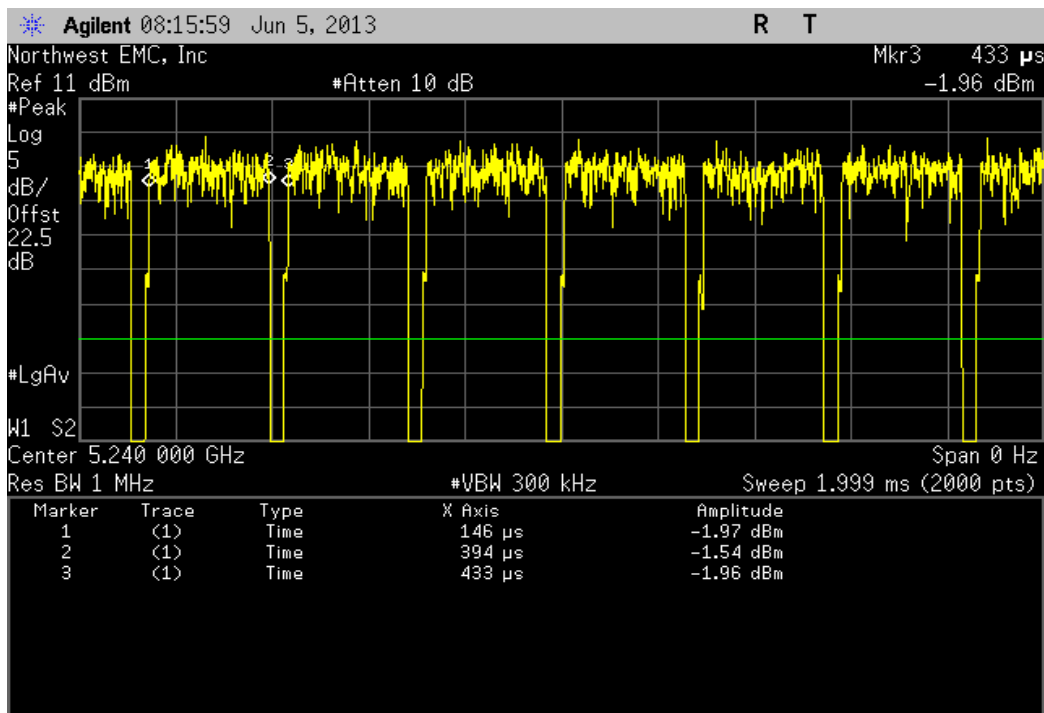
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	248 uS	287 uS	1	86.4	N/A	N/A



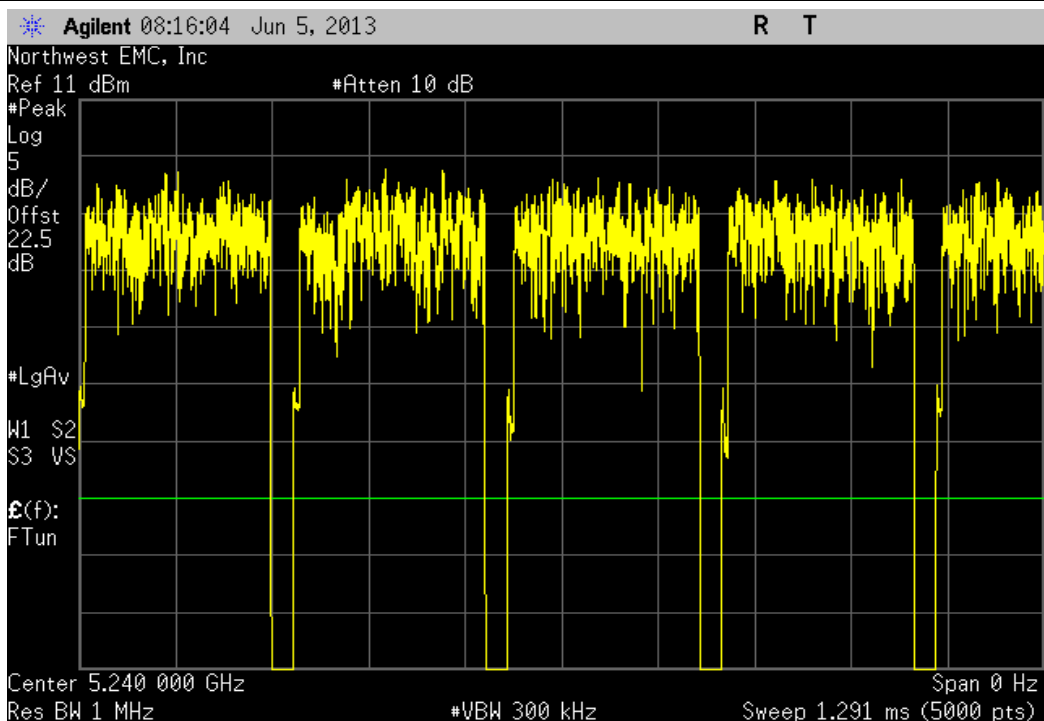
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



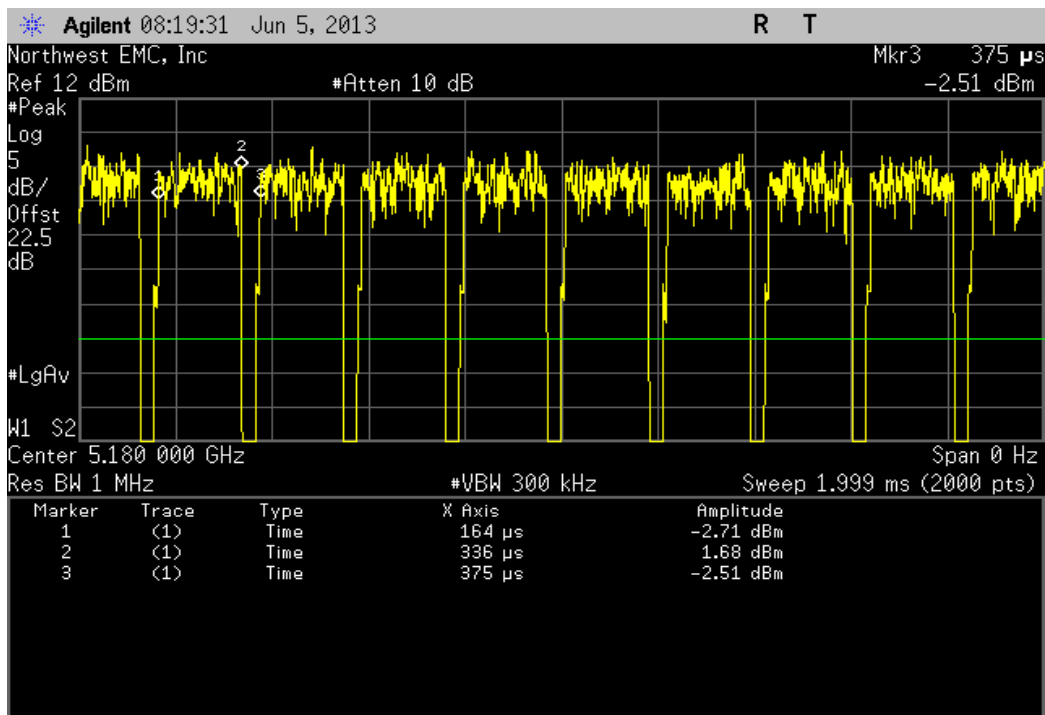
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	248 uS	287 uS	1	86.4	N/A	N/A



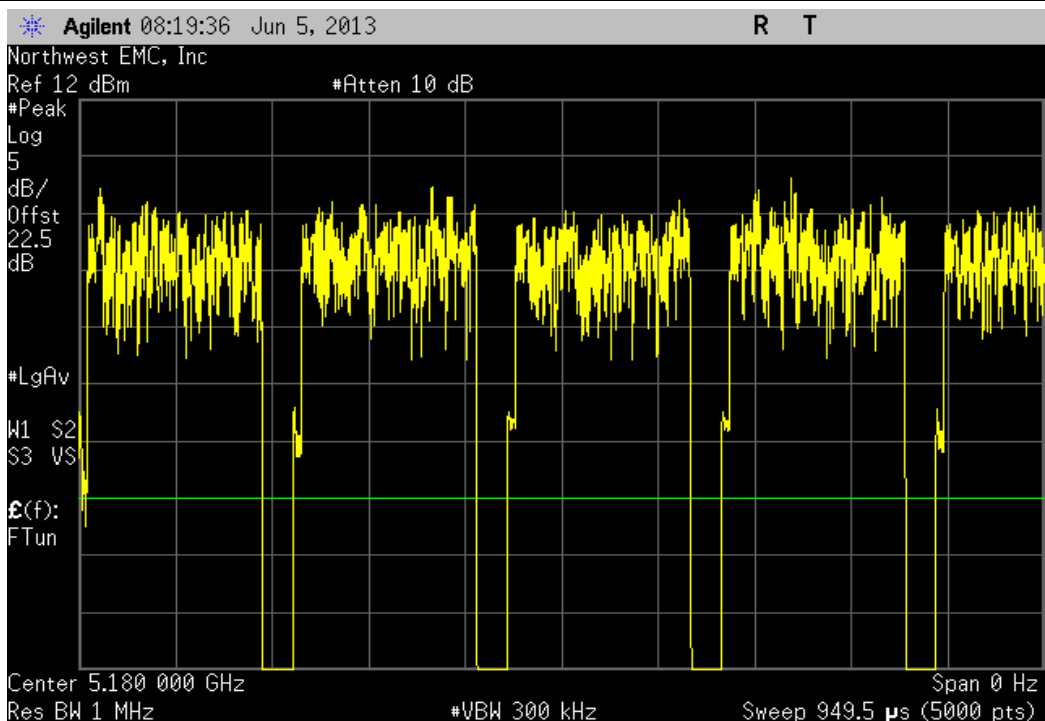
802.11(a) 36 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



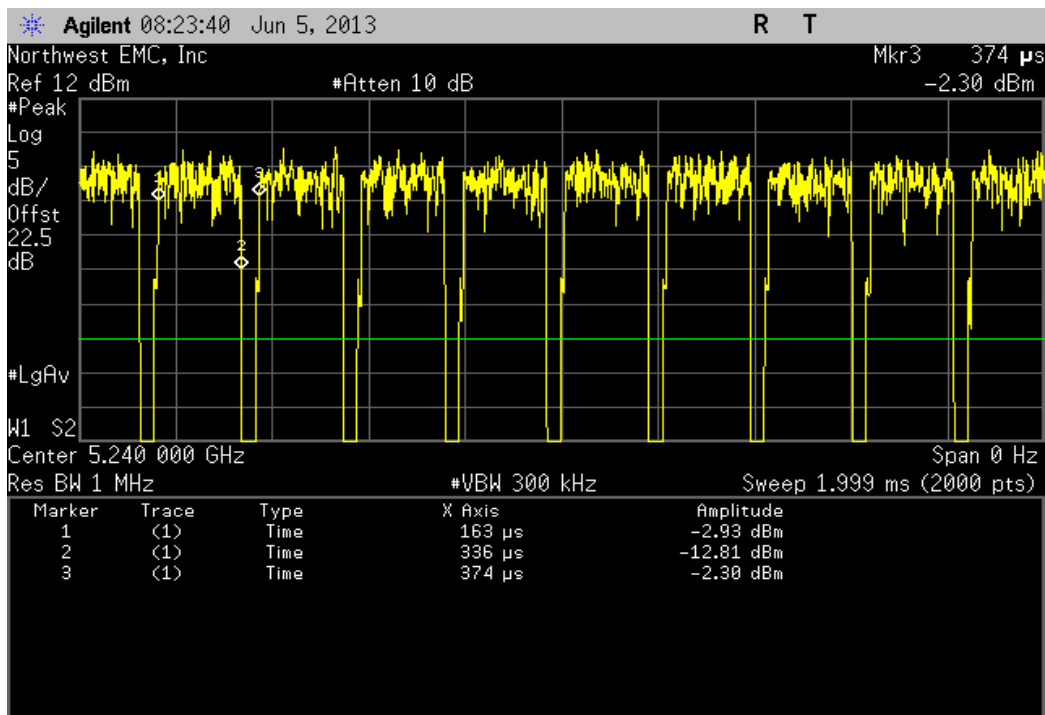
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	172 uS	211 uS	1	81.5	N/A	N/A



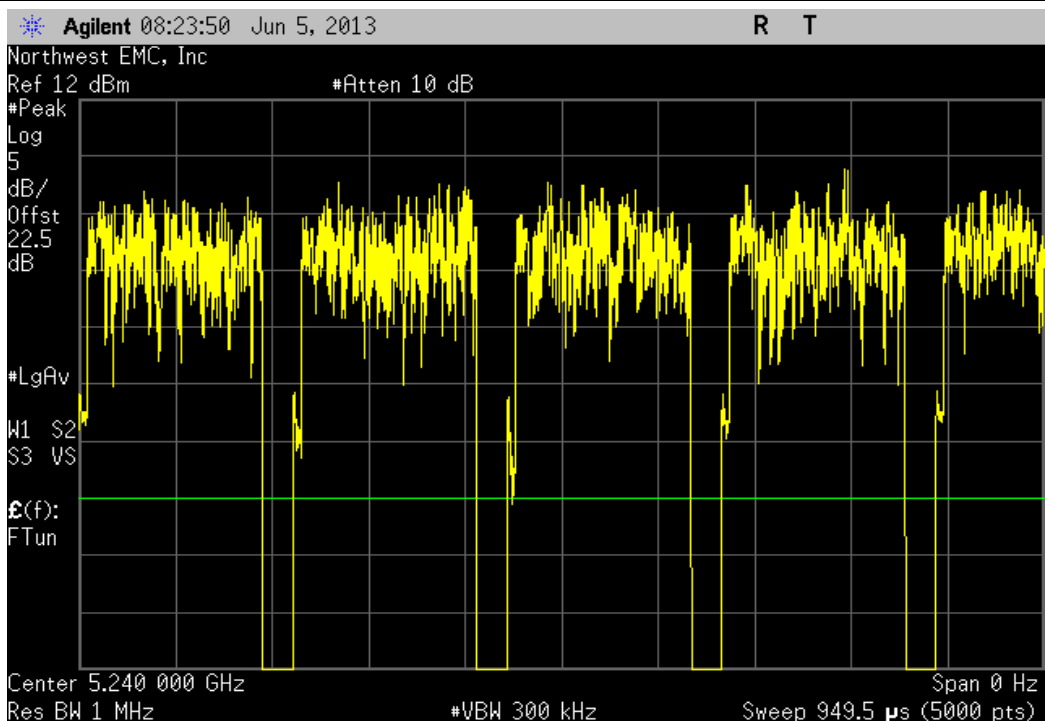
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	6	N/A	N/A	N/A



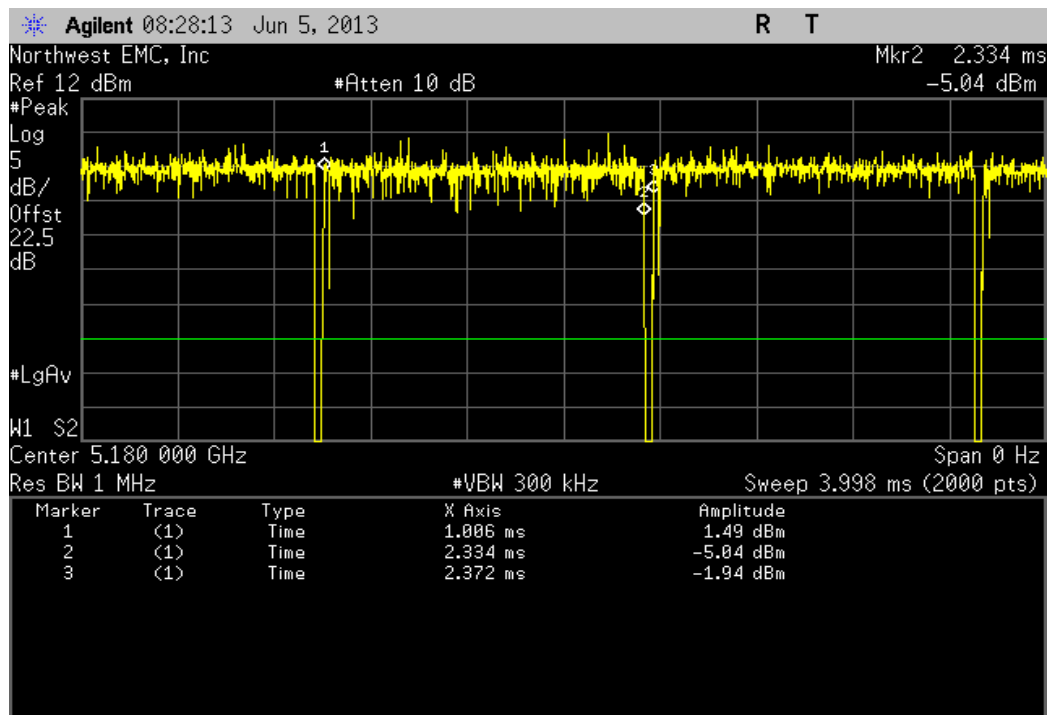
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	173 uS	211 uS	1	82	N/A	N/A



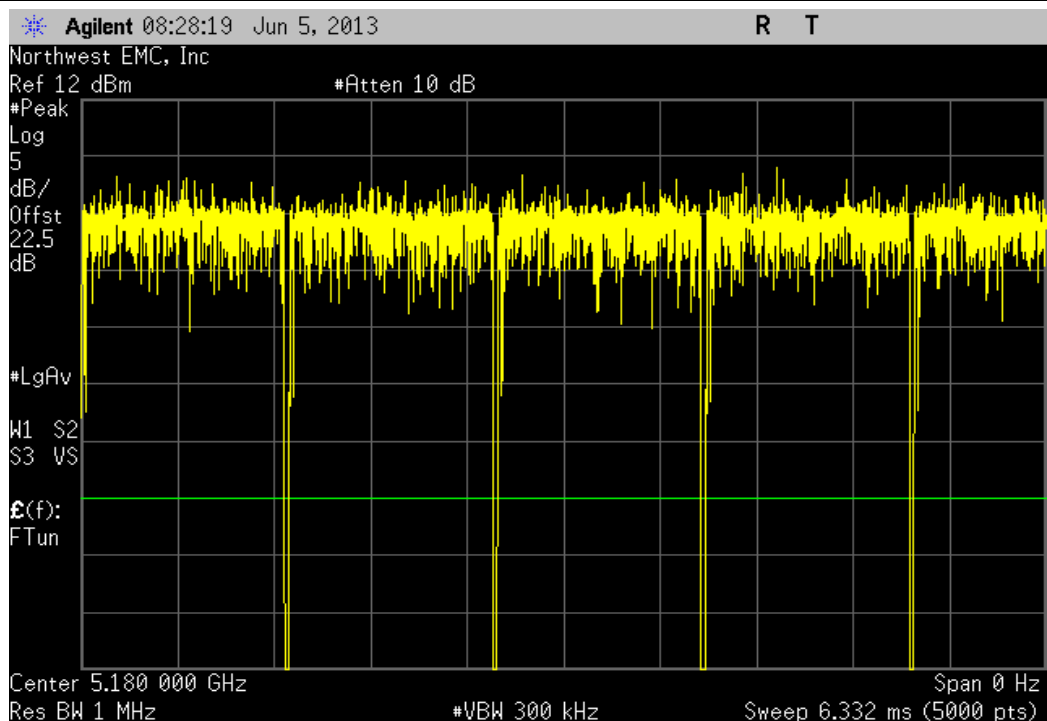
802.11(a) 54 Mbps, 5150 - 5250 MHz Band, Channel 48, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



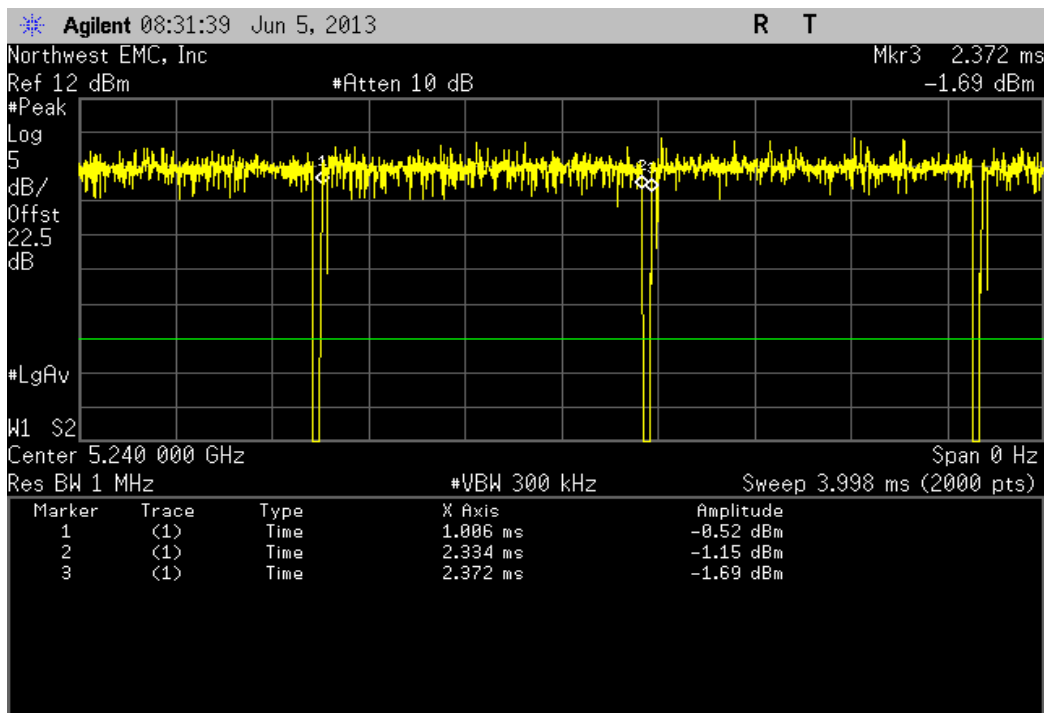
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	1.328 mS	1.366 mS	1	97.2	N/A	N/A



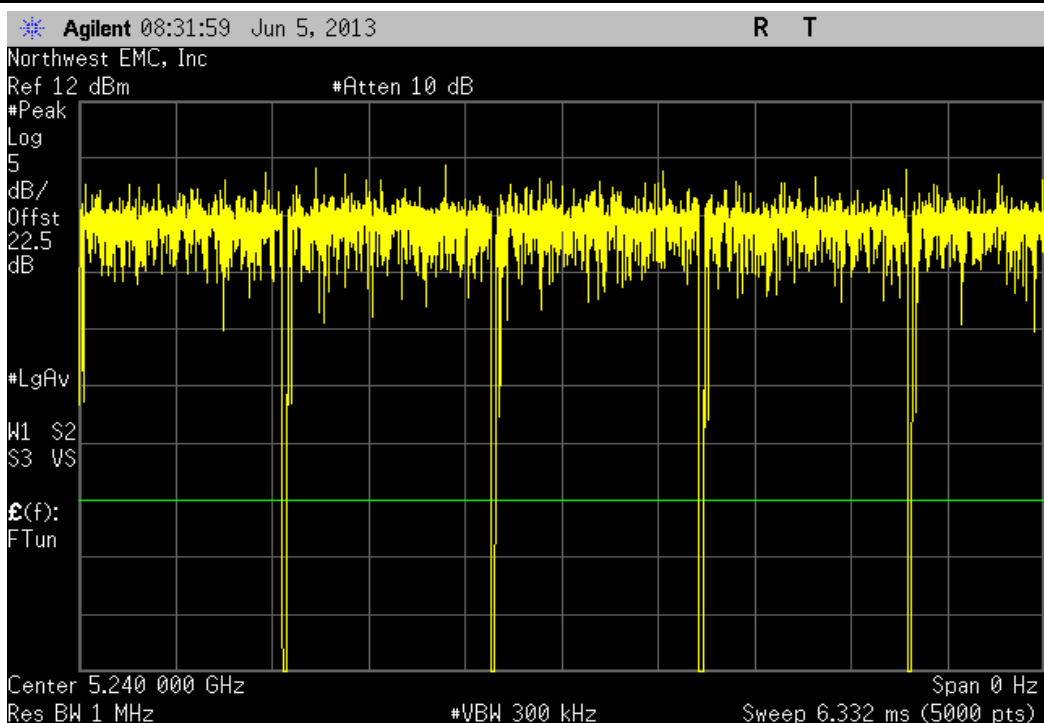
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



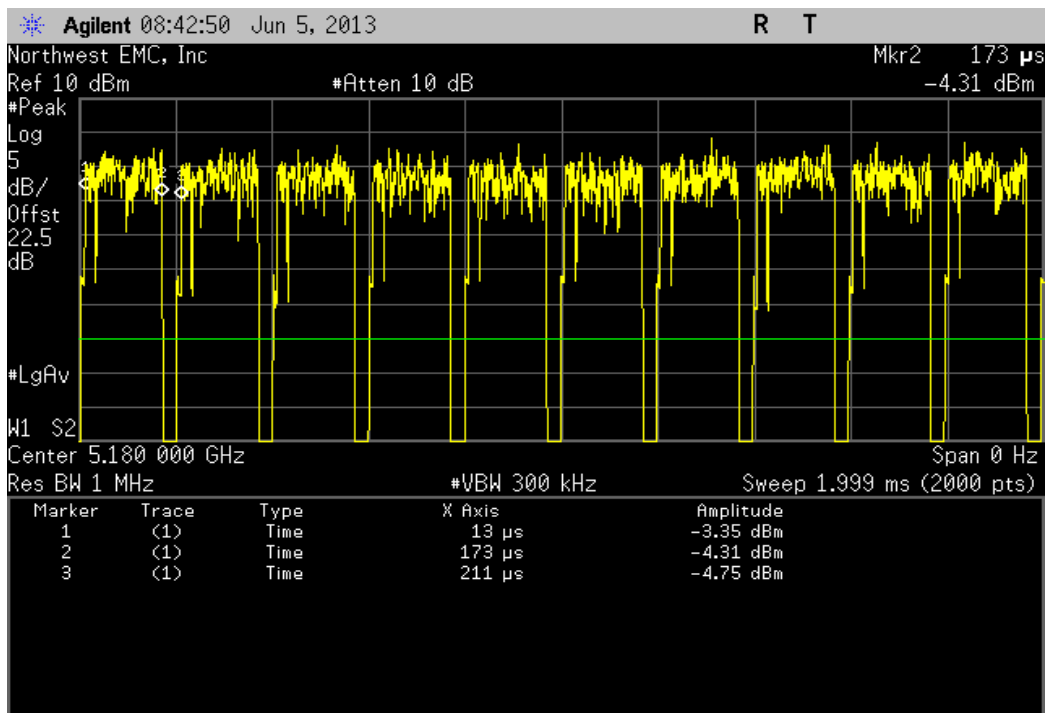
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
1.328 mS	1.366 mS	1	97.2	N/A	N/A	



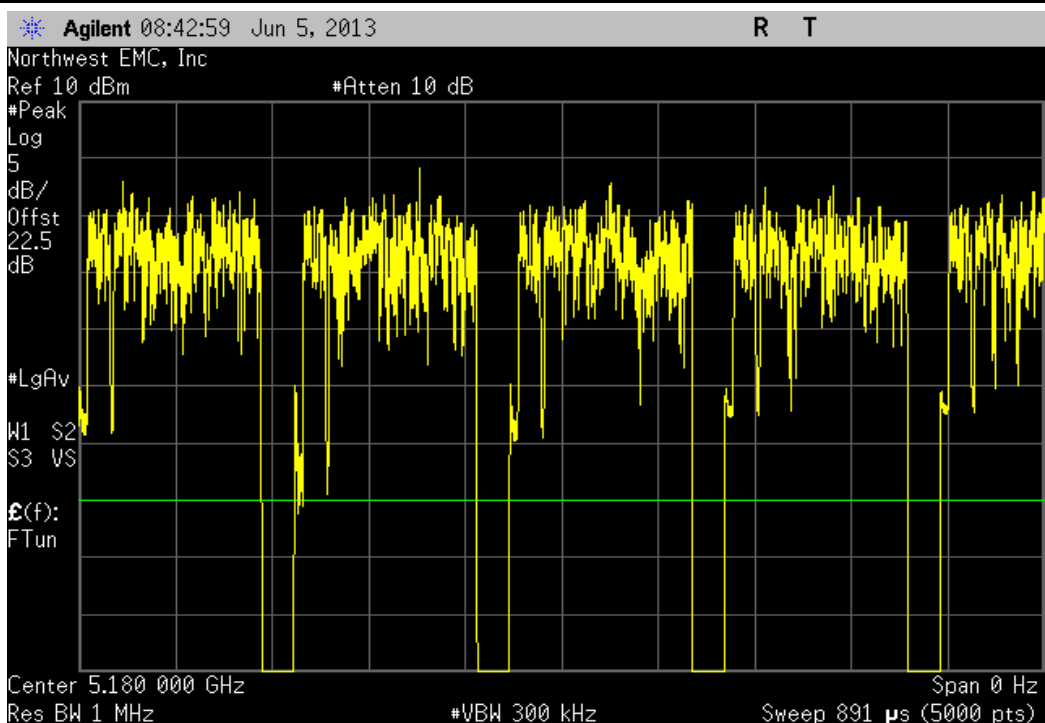
802.11(n) MCS0, 5150 - 5250 MHz Band, Channel 48, High Channel						
Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result	
N/A	N/A	5	N/A	N/A	N/A	



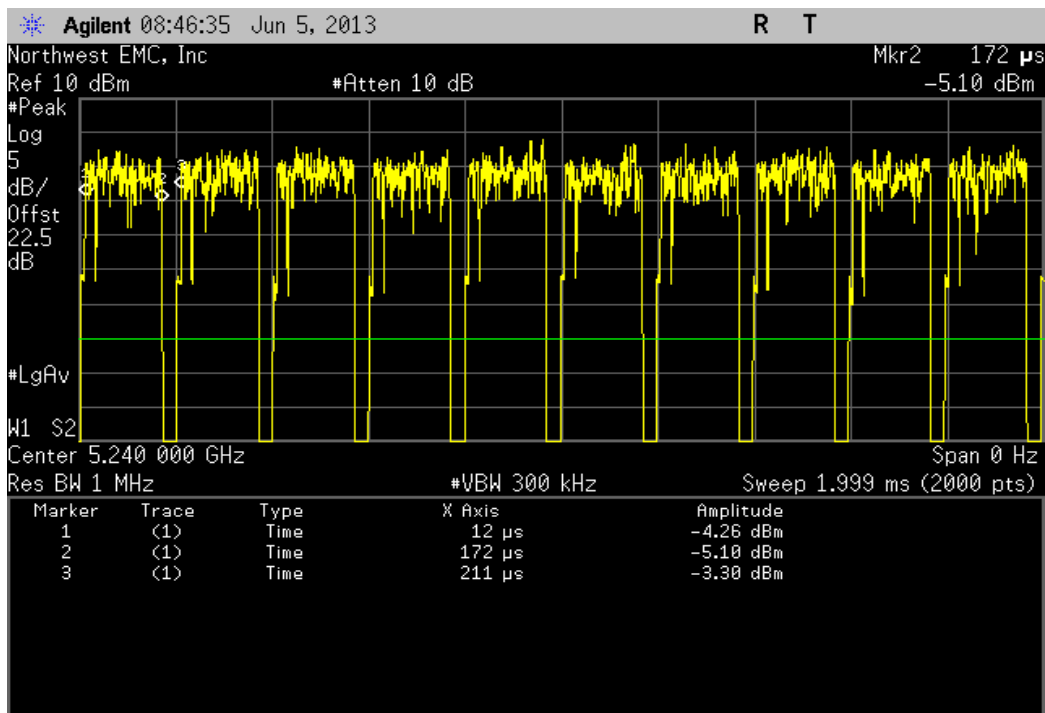
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	160 μ S	198 μ S	1	80.8	N/A	N/A



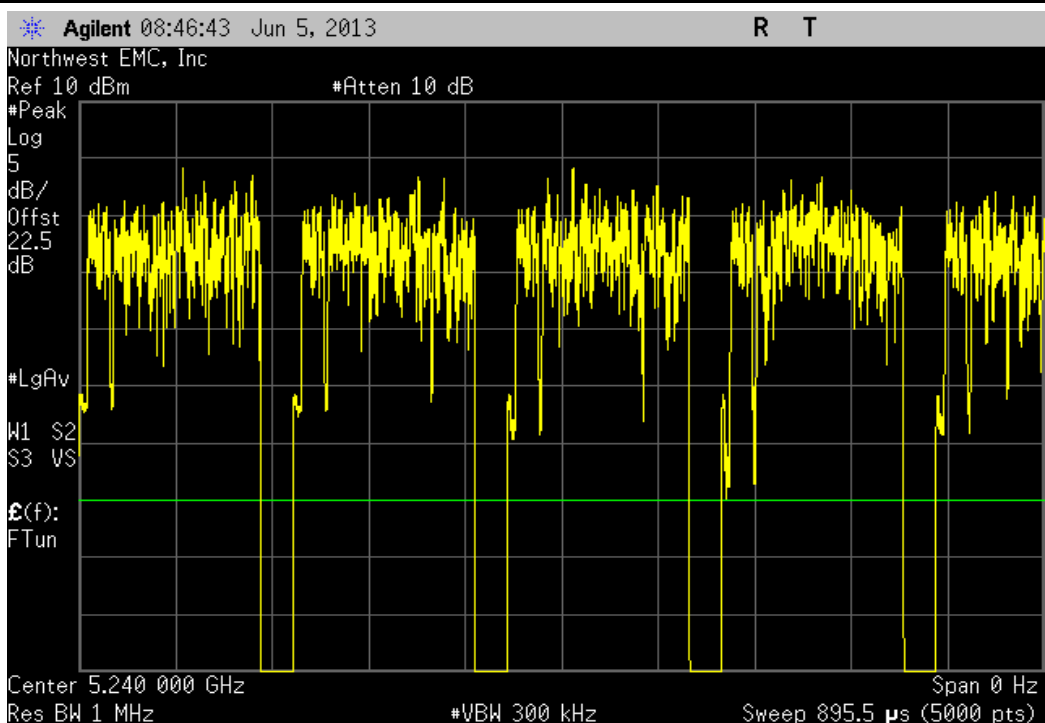
802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 36, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	160 μ S	199 μ S	1	80.4	N/A	N/A



802.11(n) MCS7, 5150 - 5250 MHz Band, Channel 48, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A



Spurious Radiated Emissions

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 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -PIFA (See comments)

Transmitting 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -Chip (See comments)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

LGPD0096 - 1

LGPD0100 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz Stop Frequency 40 GHz

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
5G Notch Filter	Micro-Tronics	BRC50703	HHB	6/2/2011	36 mo
Low Pass Filter	Micro-Tronics	LPM50004	HGK	5/31/2012	24 mo
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36 mo
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24 mo
Antenna, Horn	ETS	3115	AJA	5/13/2011	36 mo
MN05 1m Horn Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNO	8/28/2012	12 mo
Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVN	10/5/2012	12 mo
26-40GHz Cable	N/A	TTBJ141-KMKM-72	MNQ	10/5/2012	12 mo
Antenna, Horn	ETS	3160-10	AIC	NCR	0 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	10/5/2012	12 mo
MN05 Cables	N/A	18-26GHz Standard Gain Horn Cable	MNP	10/5/2012	12 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	5/30/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	5/30/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	5/30/2012	12 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	5/30/2012	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	5/30/2012	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	36 mo
Pre-Amplifier	Miteq	AM-1616-1000	PAD	8/28/2012	12 mo
Antenna, Bilog	Teseq	CBL 6141B	AYD	12/17/2012	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	5/31/2012	12 mo
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (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

TEST DESCRIPTION

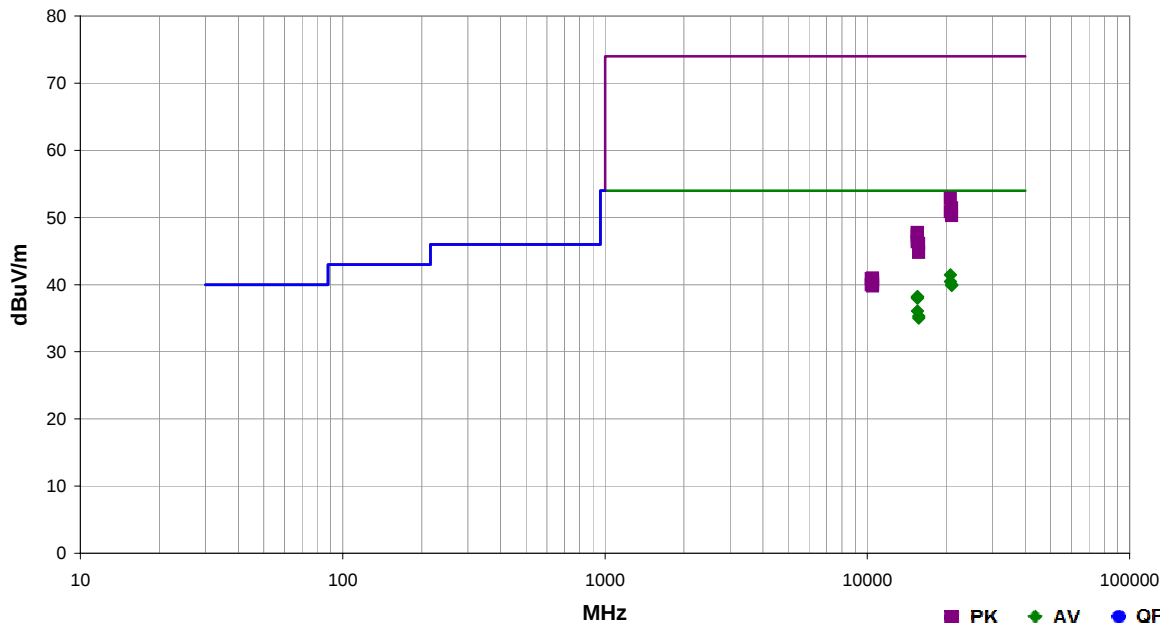
The highest gain antenna of each type to be used with the EUT were tested. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. Measurements were made to satisfy the three requirements of 47 CFR 15.407: Field strength under 1GHz, Restricted Bands of 47 CFR 15.205, and EIRP of 47 CFR 15.407.

While scanning, 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, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Work Order:	LGPD0096	Date:	05/21/13	<i>Trevor Buls</i>
Project:	None	Temperature:	22.2 °C	
Job Site:	MN05	Humidity:	48.5% RH	
Serial Number:	1413M00359	Barometric Pres.:	1000 mbar	
EUT:	37x Torpedo + Wireless SOM -31			
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -PIFA (See comments)			
Deviations:	None			
Comments:	EUT orientation is based on the transmit module.			

Test Specifications	Test Method
FCC 15.407:2013	ANSI C63.10:2009

Run #	4	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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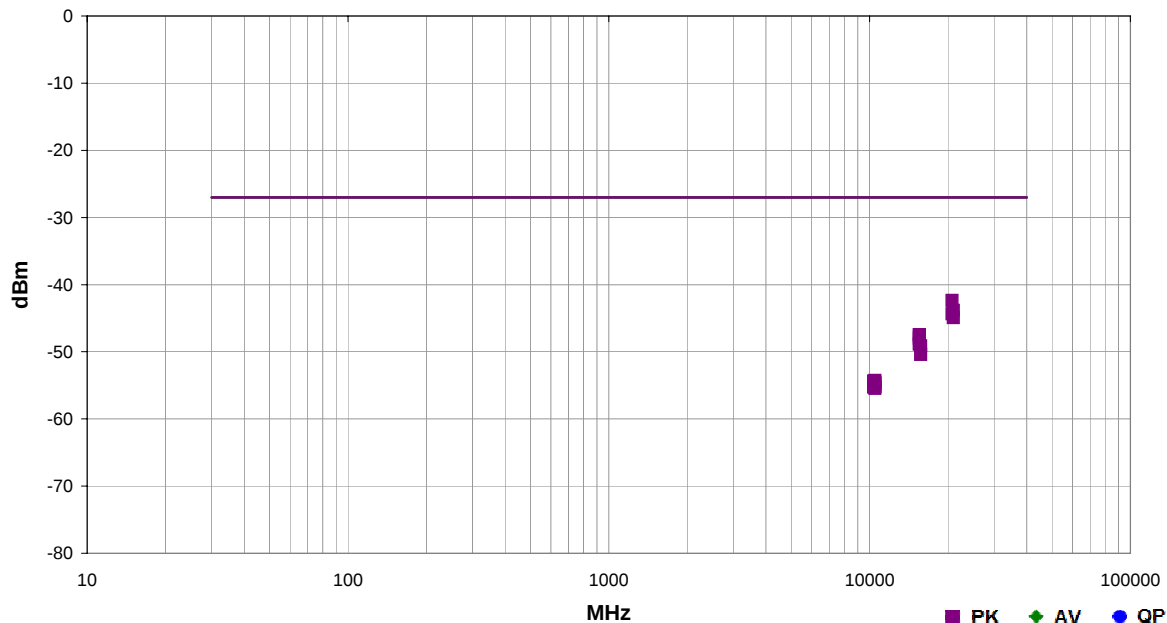
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
20720.040	29.4	12.0	1.2	308.0	3.0	0.0	Vert	AV	0.0	41.4	54.0	-12.6	EUT on Side, Ch 36, 6 Mbps
20719.380	28.4	12.0	1.2	301.0	3.0	0.0	Horz	AV	0.0	40.4	54.0	-13.6	EUT on Side, Ch 36, 6 Mbps
20958.840	27.9	12.1	1.2	196.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0	EUT on Side, Ch 48, 6 Mbps
20961.260	27.8	12.1	1.2	106.0	3.0	0.0	Horz	AV	0.0	39.9	54.0	-14.1	EUT on Side, Ch 48, 6 Mbps
15540.090	34.8	3.4	1.0	281.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT on Side, Ch 36, MCS7
15540.010	34.8	3.4	1.0	281.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT on Side, Ch 36, MCS0
15539.940	34.8	3.4	1.0	281.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT on Side, Ch 36, 54 Mbps
15540.030	34.8	3.4	1.0	281.0	3.0	0.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT on Side, Ch 36, 36 Mbps
15539.970	34.6	3.4	1.0	281.0	3.0	0.0	Vert	AV	0.0	38.0	54.0	-16.0	EUT on Side, Ch 36, 6 Mbps
15540.170	32.7	3.4	1.0	246.0	3.0	0.0	Horz	AV	0.0	36.1	54.0	-17.9	EUT on Side, Ch 36, 6 Mbps
15720.130	31.9	3.4	1.0	249.0	3.0	0.0	Horz	AV	0.0	35.3	54.0	-18.7	EUT on Side, Ch 48, 6 Mbps
15721.810	31.6	3.4	1.0	99.0	3.0	0.0	Vert	AV	0.0	35.0	54.0	-19.0	EUT on Side, Ch 48, 6 Mbps
20719.980	40.8	12.0	1.2	308.0	3.0	0.0	Vert	PK	0.0	52.8	74.0	-21.2	EUT on Side, Ch 36, 6 Mbps
20960.980	39.3	12.1	1.2	106.0	3.0	0.0	Horz	PK	0.0	51.4	74.0	-22.6	EUT on Side, Ch 48, 6 Mbps
20718.380	38.8	12.0	1.2	301.0	3.0	0.0	Horz	PK	0.0	50.8	74.0	-23.2	EUT on Side, Ch 36, 6 Mbps
20957.870	38.2	12.1	1.2	196.0	3.0	0.0	Vert	PK	0.0	50.3	74.0	-23.7	EUT on Side, Ch 48, 6 Mbps
15540.380	44.4	3.4	1.0	281.0	3.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	EUT on Side, Ch 36, MCS0
15539.930	44.4	3.4	1.0	281.0	3.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	EUT on Side, Ch 36, 54 Mbps
15539.890	44.1	3.4	1.0	281.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	EUT on Side, Ch 36, 36 Mbps
15540.370	43.8	3.4	1.0	281.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	EUT on Side, Ch 36, MCS7
15541.450	43.1	3.4	1.0	246.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	EUT on Side, Ch 36, 6 Mbps
15539.850	43.0	3.4	1.0	281.0	3.0	0.0	Vert	PK	0.0	46.4	74.0	-27.6	EUT on Side, Ch 36, 6 Mbps
15718.780	42.7	3.4	1.0	249.0	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	EUT on Side, Ch 48, 6 Mbps
15721.970	41.4	3.4	1.0	99.0	3.0	0.0	Vert	PK	0.0	44.8	74.0	-29.2	EUT on Side, Ch 48, 6 Mbps

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
10479.810	49.5	-8.5	1.0	253.0	3.0	0.0	Horz	PK	0.0	41.0	74.0	-33.0	EUT on Side, Ch 48, 6 Mbps
10360.170	49.5	-8.6	1.1	268.0	3.0	0.0	Horz	PK	0.0	40.9	74.0	-33.1	EUT on Side, Ch 36, 6 Mbps
10480.040	49.2	-8.5	1.0	279.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	EUT on Side, Ch 48, 6 Mbps
10480.200	49.0	-8.5	1.1	1.0	3.0	0.0	Horz	PK	0.0	40.5	74.0	-33.5	EUT Vertical, Ch 48, 6 Mbps
10482.360	48.6	-8.5	1.0	3.0	3.0	0.0	Horz	PK	0.0	40.1	74.0	-33.9	EUT Horizontal, Ch 48, 6 Mbps
10481.960	48.6	-8.5	1.0	170.0	3.0	0.0	Vert	PK	0.0	40.1	74.0	-33.9	EUT Horizontal, Ch 48, 6 Mbps
10360.240	48.6	-8.6	1.0	283.0	3.0	0.0	Vert	PK	0.0	40.0	74.0	-34.0	EUT on Side, Ch 36, 6 Mbps
10479.530	48.3	-8.5	1.0	316.0	3.0	0.0	Vert	PK	0.0	39.8	74.0	-34.2	EUT Vertical, Ch 48, 6 Mbps

Work Order:	LGPD0096	Date:	05/21/13	<i>Trevor Buls</i>
Project:	None	Temperature:	22.2 °C	
Job Site:	MN05	Humidity:	48.5% RH	
Serial Number:	1413M00359	Barometric Pres.:	1000 mbar	
EUT:	37x Torpedo + Wireless SOM -31			
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -PIFA (See comments)			
Deviations:	None			
Comments:	EUT orientation is based on the transmit module.			

Test Specifications	Test Method
FCC 15.407:2013	ANSI C63.10:2009

Run #	4	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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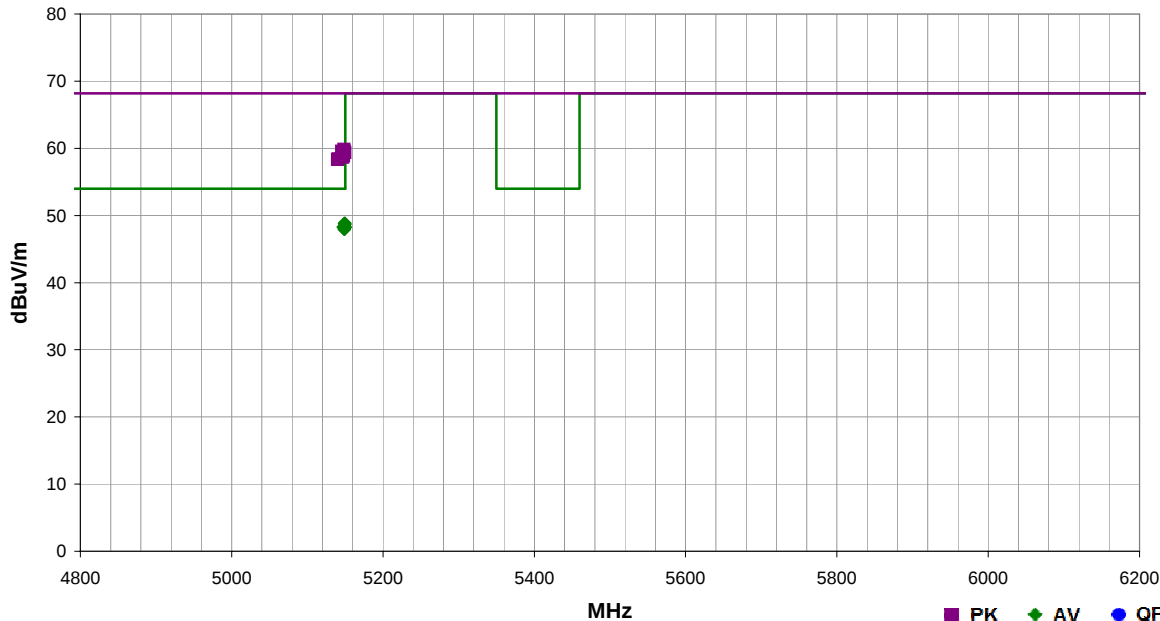


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
20719.980	1.2	308.0	Vert	PK	5.78E-08	-42.4	-27.0	-15.4	EUT on Side, Ch 36, 6 Mbps
20960.980	1.2	106.0	Horz	PK	4.13E-08	-43.8	-27.0	-16.8	EUT on Side, Ch 48, 6 Mbps
20718.380	1.2	301.0	Horz	PK	3.65E-08	-44.4	-27.0	-17.4	EUT on Side, Ch 36, 6 Mbps
20957.870	1.2	196.0	Vert	PK	3.21E-08	-44.9	-27.0	-17.9	EUT on Side, Ch 48, 6 Mbps
15540.380	1.0	281.0	Vert	PK	1.79E-08	-47.5	-27.0	-20.5	EUT on Side, Ch 36, MCS0
15539.930	1.0	281.0	Vert	PK	1.79E-08	-47.5	-27.0	-20.5	EUT on Side, Ch 36, 54 Mbps
15539.890	1.0	281.0	Vert	PK	1.67E-08	-47.8	-27.0	-20.8	EUT on Side, Ch 36, 36 Mbps
15540.370	1.0	281.0	Vert	PK	1.56E-08	-48.1	-27.0	-21.1	EUT on Side, Ch 36, MCS7
15541.450	1.0	246.0	Horz	PK	1.33E-08	-48.8	-27.0	-21.8	EUT on Side, Ch 36, 6 Mbps
15539.850	1.0	281.0	Vert	PK	1.30E-08	-48.9	-27.0	-21.9	EUT on Side, Ch 36, 6 Mbps
15718.780	1.0	249.0	Horz	PK	1.22E-08	-49.1	-27.0	-22.1	EUT on Side, Ch 48, 6 Mbps
15721.970	1.0	99.0	Vert	PK	9.08E-09	-50.4	-27.0	-23.4	EUT on Side, Ch 48, 6 Mbps
10479.810	1.0	253.0	Horz	PK	3.75E-09	-54.3	-27.0	-27.3	EUT on Side, Ch 48, 6 Mbps
10360.170	1.1	268.0	Horz	PK	3.67E-09	-54.4	-27.0	-27.4	EUT on Side, Ch 36, 6 Mbps
10480.040	1.0	279.0	Vert	PK	3.50E-09	-54.6	-27.0	-27.6	EUT on Side, Ch 48, 6 Mbps
10480.200	1.1	1.0	Horz	PK	3.35E-09	-54.8	-27.0	-27.8	EUT Vertical, Ch 48, 6 Mbps
10482.360	1.0	3.0	Horz	PK	3.05E-09	-55.2	-27.0	-28.2	EUT Horizontal, Ch 48, 6 Mbps
10481.960	1.0	170.0	Vert	PK	3.05E-09	-55.2	-27.0	-28.2	EUT Horizontal, Ch 48, 6 Mbps
10360.240	1.0	283.0	Vert	PK	2.98E-09	-55.3	-27.0	-28.3	EUT on Side, Ch 36, 6 Mbps
10479.530	1.0	316.0	Vert	PK	2.85E-09	-55.5	-27.0	-28.5	EUT Vertical, Ch 48, 6 Mbps

Work Order:	LGPD0096	Date:	05/22/13	<i>Trevor Buls</i>
Project:	None	Temperature:	22 °C	
Job Site:	MN05	Humidity:	42.5% RH	
Serial Number:	1413M00359	Barometric Pres.:	1006.8 mbar	
EUT:		37x Torpedo + Wireless SOM -31		
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -PIFA (See comments)			
Deviations:	None			
Comments:	EUT orientation is based on the transmit module.			

Test Specifications	Test Method
FCC 15.407:2013	ANSI C63.10:2009

Run #	25	Test Distance (m)	1	Antenna Height(s)	1-4m	Results	Pass
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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
5149.833	23.1	35.3	1.0	267.0	1.0	0.0	Horz	AV	-9.5	48.9	54.0	-5.1	EUT on Side, Ch 36, MCS0
5149.133	23.1	35.3	1.0	271.0	1.0	0.0	Horz	AV	-9.5	48.9	54.0	-5.1	EUT on Side, Ch 36, 6 Mbps
5149.850	22.9	35.3	1.0	19.0	1.0	0.0	Horz	AV	-9.5	48.7	54.0	-5.3	EUT Horizontal, Ch 36, 6 Mbps
5149.850	22.5	35.3	1.0	267.0	1.0	0.0	Horz	AV	-9.5	48.3	54.0	-5.7	EUT on Side, Ch 36, 54 Mbps
5149.783	22.5	35.3	1.0	267.0	1.0	0.0	Horz	AV	-9.5	48.3	54.0	-5.7	EUT on Side, Ch 36, 36 Mbps
5149.633	22.5	35.3	1.0	267.0	1.0	0.0	Horz	AV	-9.5	48.3	54.0	-5.7	EUT on Side, Ch 36, MCS7
5147.217	22.5	35.3	1.0	360.0	1.0	0.0	Vert	AV	-9.5	48.3	54.0	-5.7	EUT Vertical, Ch 36, 6 Mbps
5149.833	22.4	35.3	1.0	13.0	1.0	0.0	Vert	AV	-9.5	48.2	54.0	-5.8	EUT Horizontal, Ch 36, 6 Mbps
5149.050	22.2	35.3	1.0	353.0	1.0	0.0	Horz	AV	-9.5	48.0	54.0	-6.0	EUT Vertical, Ch 36, 6 Mbps
5148.800	22.2	35.3	1.0	64.0	1.0	0.0	Vert	AV	-9.5	48.0	54.0	-6.0	EUT on Side, Ch 36, 6 Mbps
5148.567	34.1	35.3	1.0	360.0	1.0	0.0	Vert	PK	-9.5	59.9	68.2	-8.3	EUT Vertical, Ch 36, 6 Mbps
5148.767	33.8	35.3	1.0	19.0	1.0	0.0	Horz	PK	-9.5	59.6	68.2	-8.6	EUT Horizontal, Ch 36, 6 Mbps
5145.567	33.8	35.3	1.0	267.0	1.0	0.0	Horz	PK	-9.5	59.5	68.2	-8.7	EUT on Side, Ch 36, MCS0
5149.900	33.6	35.3	1.0	271.0	1.0	0.0	Horz	PK	-9.5	59.4	68.2	-8.8	EUT on Side, Ch 36, 6 Mbps
5147.750	33.6	35.3	1.0	267.0	1.0	0.0	Horz	PK	-9.5	59.4	68.2	-8.8	EUT on Side, Ch 36, 54 Mbps
5148.067	33.1	35.3	1.0	267.0	1.0	0.0	Horz	PK	-9.5	58.9	68.2	-9.3	EUT on Side, Ch 36, 36 Mbps
5146.500	33.1	35.3	1.0	13.0	1.0	0.0	Vert	PK	-9.5	58.9	68.2	-9.3	EUT Horizontal, Ch 36, 6 Mbps
5146.733	32.9	35.3	1.0	267.0	1.0	0.0	Horz	PK	-9.5	58.7	68.2	-9.5	EUT on Side, Ch 36, MCS7
5140.750	32.7	35.3	1.0	64.0	1.0	0.0	Vert	PK	-9.5	58.4	68.2	-9.8	EUT on Side, Ch 36, 6 Mbps
5140.150	32.6	35.3	1.0	353.0	1.0	0.0	Horz	PK	-9.5	58.3	68.2	-9.9	EUT Vertical, Ch 36, 6 Mbps



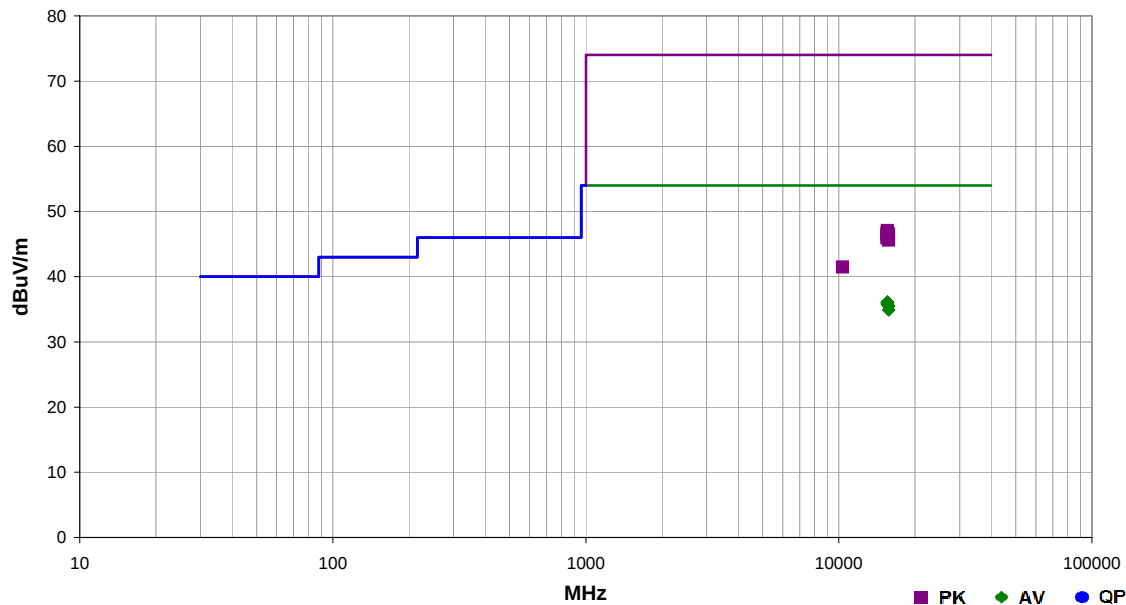
Spurious Radiated Emissions

PSA-ESCI 2012.12.14
PSA-ESCI Version 2013.2.20

Work Order:	LGPD0100	Date:	05/29/13	<i>Trevor Buls</i>
Project:	None	Temperature:	22.4 °C	
Job Site:	MN05	Humidity:	50.2% RH	
Serial Number:	1413M00359	Barometric Pres.:	1009.4 mbar	
		Tested by:		Trevor Buls
EUT:	37x Torpedo + Wireless SOM -31			
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -Chip (See comments)			
Deviations:	None			
Comments:	EUT orientation is based on the transmit module.			

Test Specifications	Test Method
FCC 15.407:2013	ANSI C63.10:2009

Run #	6	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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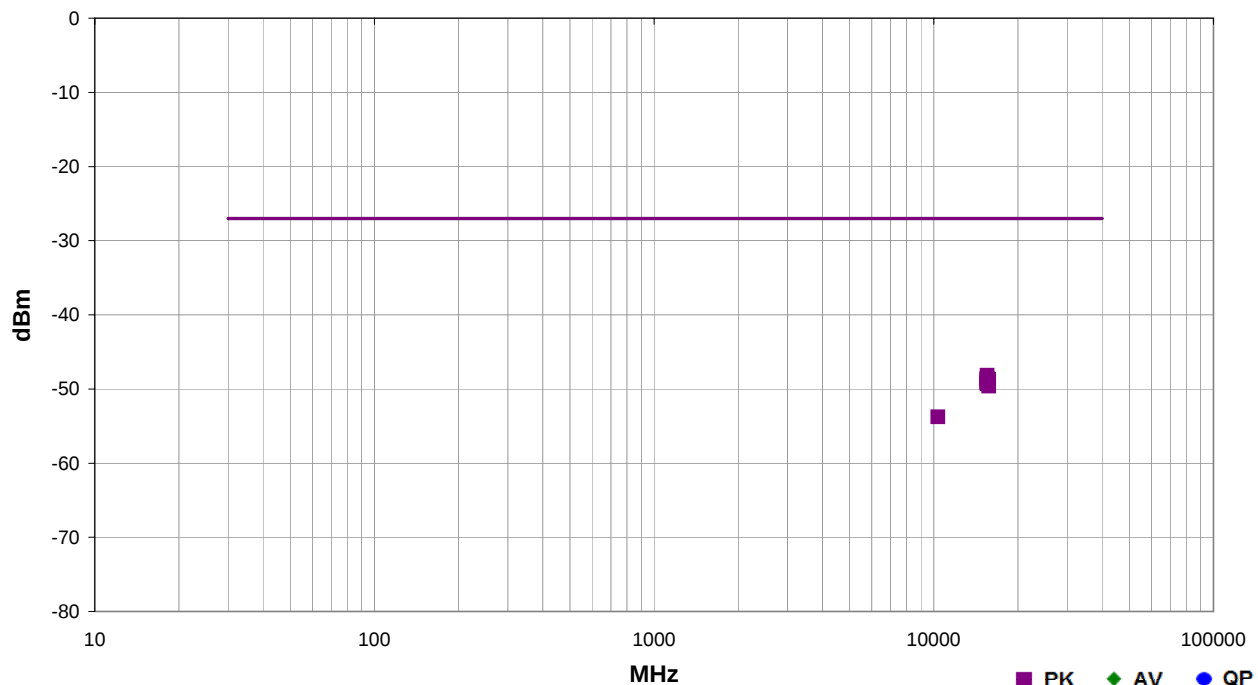
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
15540.260	32.7	3.4	1.0	265.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	EUT Vertical, Ch 36, MCS7
15539.940	32.7	3.4	1.1	304.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	EUT Vertical, Ch 36, 6 Mbps
15539.900	32.7	3.4	1.0	265.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	EUT Vertical, Ch 36, 36 Mbps
15539.970	32.7	3.4	1.0	265.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	EUT Vertical, Ch 36, 54 Mbps
15540.040	32.7	3.4	1.0	265.0	3.0	0.0	Vert	AV	0.0	36.1	54.0	-17.9	EUT Vertical, Ch 36, MCS0
15540.300	32.6	3.4	1.0	278.0	3.0	0.0	Vert	AV	0.0	36.0	54.0	-18.0	EUT on Side, Ch 36, 6 Mbps
15538.930	32.5	3.4	3.5	159.0	3.0	0.0	Horz	AV	0.0	35.9	54.0	-18.1	EUT on Side, Ch 36, 6 Mbps
15541.130	32.4	3.4	1.0	323.0	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2	EUT Horizontal, Ch 36, 6 Mbps
15539.930	32.4	3.4	1.7	158.0	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2	EUT Vertical, Ch 36, 6 Mbps
15539.310	32.4	3.4	1.0	54.0	3.0	0.0	Vert	AV	0.0	35.8	54.0	-18.2	EUT Horizontal, Ch 36, 6 Mbps
15720.110	32.1	3.4	1.0	252.0	3.0	0.0	Horz	AV	0.0	35.5	54.0	-18.5	EUT on Side, Ch 48, 6 Mbps
15721.660	31.5	3.4	1.0	45.0	3.0	0.0	Vert	AV	0.0	34.9	54.0	-19.1	EUT Vertical, Ch 48, 6 Mbps
15538.450	43.7	3.4	1.0	265.0	3.0	0.0	Vert	PK	0.0	47.1	74.0	-26.9	EUT Vertical, Ch 36, MCS0
15538.290	43.3	3.4	1.0	265.0	3.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	EUT Vertical, Ch 36, MCS7
15541.580	43.2	3.4	1.0	265.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	EUT Vertical, Ch 36, 36 Mbps
15539.130	43.2	3.4	1.0	54.0	3.0	0.0	Vert	PK	0.0	46.6	74.0	-27.4	EUT Horizontal, Ch 36, 6 Mbps
15719.810	43.1	3.4	1.0	252.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	EUT on Side, Ch 48, 6 Mbps
15540.020	43.1	3.4	1.0	323.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	EUT Horizontal, Ch 36, 6 Mbps
15539.430	42.9	3.4	1.0	265.0	3.0	0.0	Vert	PK	0.0	46.3	74.0	-27.7	EUT Vertical, Ch 36, 54 Mbps
15542.480	42.7	3.4	1.0	278.0	3.0	0.0	Vert	PK	0.0	46.1	74.0	-27.9	EUT on Side, Ch 36, 6 Mbps
15539.840	42.7	3.4	3.5	159.0	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	EUT on Side, Ch 36, 6 Mbps
15541.990	42.6	3.4	1.7	158.0	3.0	0.0	Horz	PK	0.0	46.0	74.0	-28.0	EUT Vertical, Ch 36, 6 Mbps
15538.970	42.6	3.4	1.1	304.0	3.0	0.0	Vert	PK	0.0	46.0	74.0	-28.0	EUT Vertical, Ch 36, 6 Mbps
15722.100	42.2	3.4	1.0	45.0	3.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	EUT Vertical, Ch 48, 6 Mbps
10359.980	50.1	-8.6	1.0	261.0	3.0	0.0	Vert	PK	0.0	41.5	74.0	-32.5	EUT Vertical, Ch 36, 6 Mbps

Spurious Radiated Emissions

Work Order:	LGPD0100	Date:	05/29/13	<i>Trevor Buls</i>
Project:	None	Temperature:	22.4 °C	
Job Site:	MN05	Humidity:	50.2% RH	
Serial Number:	1413M00359	Barometric Pres.:	1009.4 mbar	
		Tested by:	Trevor Buls	
EUT:	37x Torpedo + Wireless SOM -31			
Configuration:	1			
Customer:	Logic PD, Inc.			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 802.11an, Ch 36, 48 (5180, 5240 MHz) at 6, 36, 54 Mbps, MCS0, MCS7 -Chip (See comments)			
Deviations:	None			
Comments:	EUT orientation is based on the transmit module.			

Test Specifications	Test Method
FCC 15.407:2013	ANSI C63.10:2009

Run #	6	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
15538.450	1.0	265.0	Vert	PK	1.52E-08	-48.2	-27.0	-21.2	EUT Vertical, Ch 36, MCS0
15538.290	1.0	265.0	Vert	PK	1.39E-08	-48.6	-27.0	-21.6	EUT Vertical, Ch 36, MCS7
15541.580	1.0	265.0	Vert	PK	1.36E-08	-48.7	-27.0	-21.7	EUT Vertical, Ch 36, 36 Mbps
15539.130	1.0	54.0	Vert	PK	1.36E-08	-48.7	-27.0	-21.7	EUT Horizontal, Ch 36, 6 Mbps
15719.810	1.0	252.0	Horz	PK	1.34E-08	-48.7	-27.0	-21.7	EUT on Side, Ch 48, 6 Mbps
15540.020	1.0	323.0	Horz	PK	1.33E-08	-48.8	-27.0	-21.8	EUT Horizontal, Ch 36, 6 Mbps
15539.430	1.0	265.0	Vert	PK	1.27E-08	-49.0	-27.0	-22.0	EUT Vertical, Ch 36, 54 Mbps
15542.480	1.0	278.0	Vert	PK	1.21E-08	-49.2	-27.0	-22.2	EUT on Side, Ch 36, 6 Mbps
15539.840	3.5	159.0	Horz	PK	1.21E-08	-49.2	-27.0	-22.2	EUT on Side, Ch 36, 6 Mbps
15541.990	1.7	158.0	Horz	PK	1.18E-08	-49.3	-27.0	-22.3	EUT Vertical, Ch 36, 6 Mbps
15538.970	1.1	304.0	Vert	PK	1.18E-08	-49.3	-27.0	-22.3	EUT Vertical, Ch 36, 6 Mbps
15722.100	1.0	45.0	Vert	PK	1.09E-08	-49.6	-27.0	-22.6	EUT Vertical, Ch 48, 6 Mbps
10359.980	1.0	261.0	Vert	PK	4.22E-09	-53.8	-27.0	-26.8	EUT Vertical, Ch 36, 6 Mbps

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the DC input of the EUT. The power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10-2009.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARG	04/01/2013	12 mo
Attenuator 20dB, BNC	Fairview Microwave	SA01B-20	AQP	08/15/2012	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HGN	05/31/2012	24 mo
DC Power Supply	EZ Digital Co	GP-4303D	TPY	NCR	0 mo
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	01/17/2013	12 mo
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	05/24/2013	12 mo

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.94 dB	-2.94 dB

CONFIGURATIONS INVESTIGATED

LGPD0096-2

MODES INVESTIGATED

Transmitting 802.11 Ch. 36
Transmitting 802.11 Ch. 48

POWERLINE CONDUCTED EMISSIONS

EUT:	37x Torpedo + Wireless SOM -31	Work Order:	LGPD0096
Serial Number:	1413M00359	Date:	05/30/2013
Customer:	Logic PD, Inc.	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	60.6%
Customer Project:	None	Bar. Pressure:	1002.2 mb
Tested By:	Mike Sutherland, Trevor Buls	Job Site:	MN03
Power:	5VDC	Configuration:	LGPD0096-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2013	ANSI C63.10:2009

TEST PARAMETERS

Run #:	13	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

None

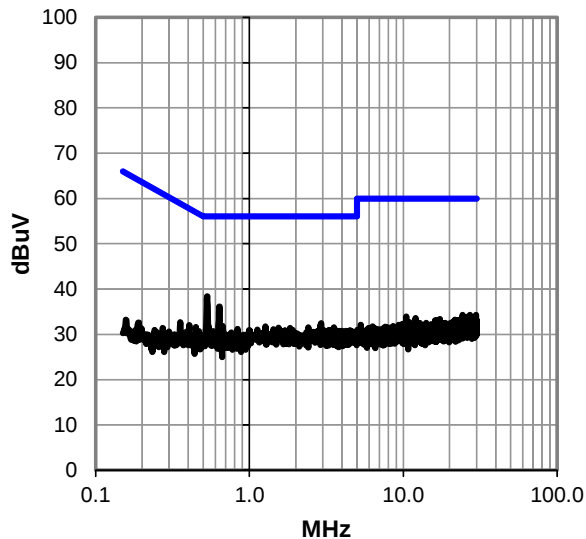
EUT OPERATING MODES

Transmitting 802.11 Ch. 36

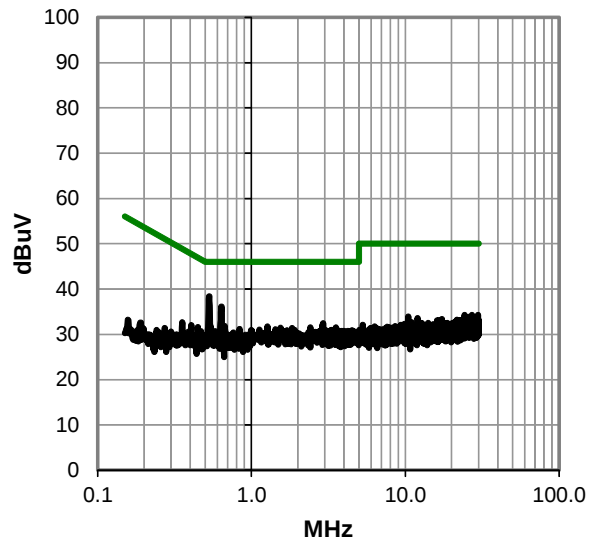
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #13

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.531	18.2	20.2	38.4	56.0	-17.6
0.638	15.9	20.2	36.1	56.0	-19.9
2.920	12.1	20.3	32.4	56.0	-23.6
2.880	11.6	20.3	31.9	56.0	-24.1
0.670	11.6	20.2	31.8	56.0	-24.2
1.272	11.5	20.2	31.7	56.0	-24.3
3.536	11.2	20.4	31.6	56.0	-24.4
2.416	11.2	20.3	31.5	56.0	-24.5
1.544	11.2	20.3	31.5	56.0	-24.5
1.832	11.1	20.3	31.4	56.0	-24.6
0.837	11.0	20.2	31.2	56.0	-24.8
1.432	10.9	20.2	31.1	56.0	-24.9
3.328	10.6	20.3	30.9	56.0	-25.1
4.504	10.5	20.4	30.9	56.0	-25.1
1.704	10.6	20.3	30.9	56.0	-25.1
3.704	10.5	20.4	30.9	56.0	-25.1
4.232	10.4	20.4	30.8	56.0	-25.2
3.984	10.4	20.4	30.8	56.0	-25.2
0.449	11.4	20.2	31.6	56.9	-25.3
0.582	10.5	20.2	30.7	56.0	-25.3
2.344	10.2	20.3	30.5	56.0	-25.5
0.762	10.2	20.2	30.4	56.0	-25.6
27.190	12.2	22.1	34.3	60.0	-25.7
29.800	11.9	22.4	34.3	60.0	-25.7
24.290	12.5	21.8	34.3	60.0	-25.7
0.405	11.8	20.2	32.0	57.8	-25.8

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.531	18.2	20.2	38.4	46.0	-7.6
0.638	15.9	20.2	36.1	46.0	-9.9
2.920	12.1	20.3	32.4	46.0	-13.6
2.880	11.6	20.3	31.9	46.0	-14.1
0.670	11.6	20.2	31.8	46.0	-14.2
1.272	11.5	20.2	31.7	46.0	-14.3
3.536	11.2	20.4	31.6	46.0	-14.4
2.416	11.2	20.3	31.5	46.0	-14.5
1.544	11.2	20.3	31.5	46.0	-14.5
1.832	11.1	20.3	31.4	46.0	-14.6
0.837	11.0	20.2	31.2	46.0	-14.8
1.432	10.9	20.2	31.1	46.0	-14.9
3.328	10.6	20.3	30.9	46.0	-15.1
4.504	10.5	20.4	30.9	46.0	-15.1
1.704	10.6	20.3	30.9	46.0	-15.1
3.704	10.5	20.4	30.9	46.0	-15.1
4.232	10.4	20.4	30.8	46.0	-15.2
3.984	10.4	20.4	30.8	46.0	-15.2
0.449	11.4	20.2	31.6	46.9	-15.3
0.582	10.5	20.2	30.7	46.0	-15.3
2.344	10.2	20.3	30.5	46.0	-15.5
0.762	10.2	20.2	30.4	46.0	-15.6
27.190	12.2	22.1	34.3	50.0	-15.7
29.800	11.9	22.4	34.3	50.0	-15.7
24.290	12.5	21.8	34.3	50.0	-15.7
0.405	11.8	20.2	32.0	47.8	-15.8

CONCLUSION

Pass

Trevor Buls
Tested_By

POWERLINE CONDUCTED EMISSIONS

EUT:	37x Torpedo + Wireless SOM -31	Work Order:	LGPD0096
Serial Number:	1413M00359	Date:	05/30/2013
Customer:	Logic PD, Inc.	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	60.6%
Customer Project:	None	Bar. Pressure:	1002.2 mb
Tested By:	Mike Sutherland, Trevor Buls	Job Site:	MN03
Power:	5VDC	Configuration:	LGPD0096-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2013	ANSI C63.10:2009

TEST PARAMETERS

Run #:	14	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

None

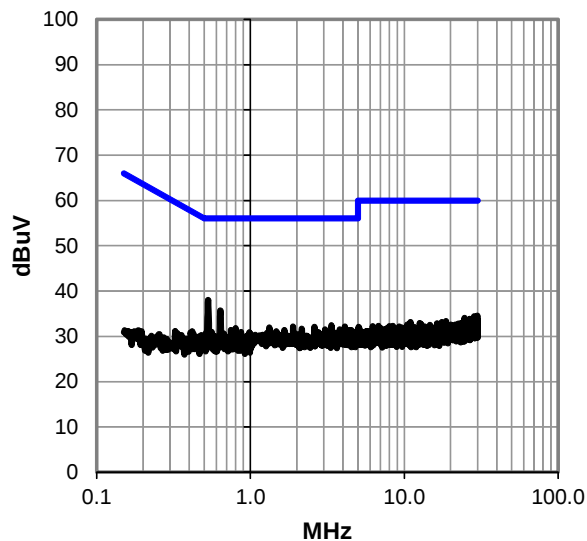
EUT OPERATING MODES

Transmitting 802.11 Ch. 36

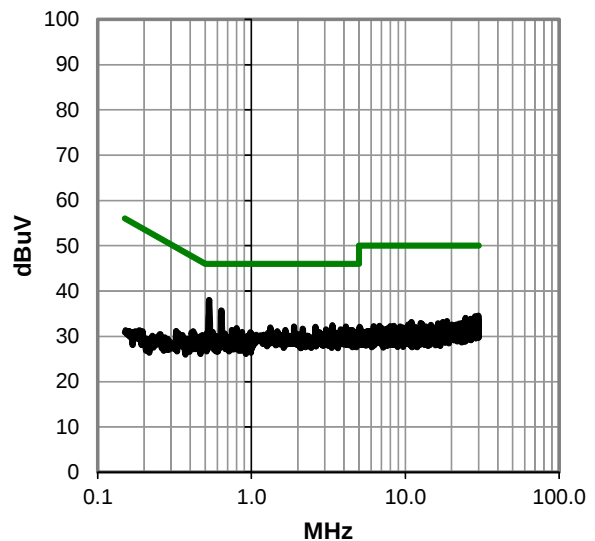
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #14

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.531	17.8	20.2	38.0	56.0	-18.0
0.638	15.5	20.2	35.7	56.0	-20.3
3.360	12.1	20.3	32.4	56.0	-23.6
1.888	11.9	20.3	32.2	56.0	-23.8
4.104	11.8	20.4	32.2	56.0	-23.8
2.600	11.8	20.3	32.1	56.0	-23.9
1.328	11.7	20.2	31.9	56.0	-24.1
0.801	11.6	20.2	31.8	56.0	-24.2
2.152	11.4	20.3	31.7	56.0	-24.3
3.800	11.2	20.4	31.6	56.0	-24.4
3.056	11.2	20.3	31.5	56.0	-24.5
0.747	11.2	20.2	31.4	56.0	-24.6
4.520	11.0	20.4	31.4	56.0	-24.6
4.376	11.0	20.4	31.4	56.0	-24.6
1.664	11.1	20.3	31.4	56.0	-24.6
2.648	11.0	20.3	31.3	56.0	-24.7
4.960	10.9	20.4	31.3	56.0	-24.7
1.472	10.9	20.2	31.1	56.0	-24.9
3.416	10.8	20.3	31.1	56.0	-24.9
0.869	10.8	20.2	31.0	56.0	-25.0
0.985	10.7	20.2	30.9	56.0	-25.1
4.736	10.5	20.4	30.9	56.0	-25.1
0.516	10.6	20.2	30.8	56.0	-25.2
0.765	10.4	20.2	30.6	56.0	-25.4
1.000	10.4	20.2	30.6	56.0	-25.4
29.940	12.2	22.4	34.6	60.0	-25.4

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.531	17.8	20.2	38.0	46.0	-8.0
0.638	15.5	20.2	35.7	46.0	-10.3
3.360	12.1	20.3	32.4	46.0	-13.6
1.888	11.9	20.3	32.2	46.0	-13.8
4.104	11.8	20.4	32.2	46.0	-13.8
2.600	11.8	20.3	32.1	46.0	-13.9
1.328	11.7	20.2	31.9	46.0	-14.1
0.801	11.6	20.2	31.8	46.0	-14.2
2.152	11.4	20.3	31.7	46.0	-14.3
3.800	11.2	20.4	31.6	46.0	-14.4
3.056	11.2	20.3	31.5	46.0	-14.5
0.747	11.2	20.2	31.4	46.0	-14.6
4.520	11.0	20.4	31.4	46.0	-14.6
4.376	11.0	20.4	31.4	46.0	-14.6
1.664	11.1	20.3	31.4	46.0	-14.6
2.648	11.0	20.3	31.3	46.0	-14.7
4.960	10.9	20.4	31.3	46.0	-14.7
1.472	10.9	20.2	31.1	46.0	-14.9
3.416	10.8	20.3	31.1	46.0	-14.9
0.869	10.8	20.2	31.0	46.0	-15.0
0.985	10.7	20.2	30.9	46.0	-15.1
4.736	10.5	20.4	30.9	46.0	-15.1
0.516	10.6	20.2	30.8	46.0	-15.2
0.765	10.4	20.2	30.6	46.0	-15.4
1.000	10.4	20.2	30.6	46.0	-15.4
29.940	12.2	22.4	34.6	50.0	-15.4

CONCLUSION

Pass

Trevor Buls
Tested_By

POWERLINE CONDUCTED EMISSIONS

EUT:	37x Torpedo + Wireless SOM -31	Work Order:	LGPD0096
Serial Number:	1413M00359	Date:	05/30/2013
Customer:	Logic PD, Inc.	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	60.6%
Customer Project:	None	Bar. Pressure:	1002.2 mb
Tested By:	Mike Sutherland, Trevor Buls	Job Site:	MN03
Power:	5VDC	Configuration:	LGPD0096-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2013	ANSI C63.10:2009

TEST PARAMETERS

Run #:	15	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

None

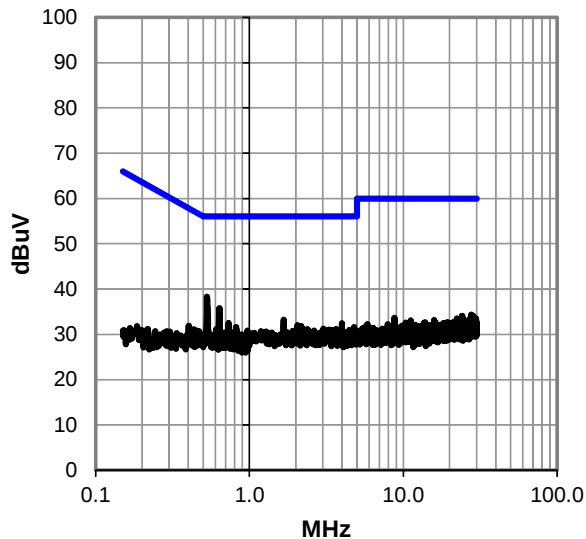
EUT OPERATING MODES

Transmitting 802.11 Ch. 48

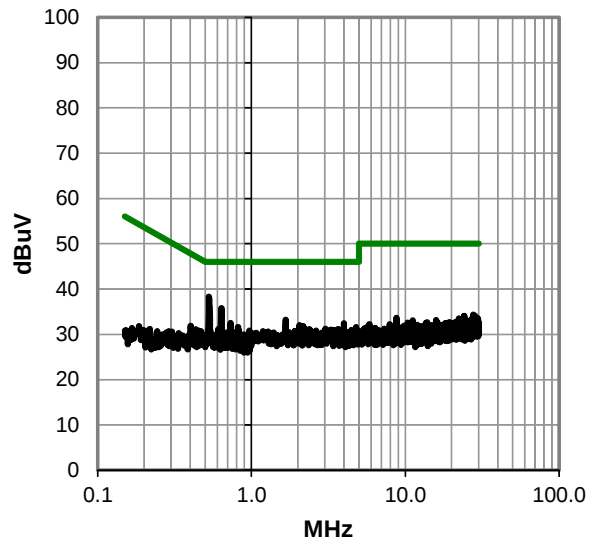
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #15

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.529	18.1	20.2	38.3	56.0	-17.7
0.638	15.6	20.2	35.8	56.0	-20.2
1.672	13.0	20.3	33.3	56.0	-22.7
0.730	12.3	20.2	32.5	56.0	-23.5
3.984	12.1	20.4	32.5	56.0	-23.5
2.048	11.7	20.3	32.0	56.0	-24.0
2.168	11.5	20.3	31.8	56.0	-24.2
0.818	11.4	20.2	31.6	56.0	-24.4
4.800	11.2	20.4	31.6	56.0	-24.4
3.024	10.9	20.3	31.2	56.0	-24.8
0.609	11.0	20.2	31.2	56.0	-24.8
3.656	10.8	20.4	31.2	56.0	-24.8
2.368	10.8	20.3	31.1	56.0	-24.9
3.288	10.7	20.3	31.0	56.0	-25.0
4.456	10.6	20.4	31.0	56.0	-25.0
0.830	10.7	20.2	30.9	56.0	-25.1
2.632	10.5	20.3	30.8	56.0	-25.2
0.971	10.6	20.2	30.8	56.0	-25.2
1.184	10.5	20.2	30.7	56.0	-25.3
0.803	10.4	20.2	30.6	56.0	-25.4
4.120	10.2	20.4	30.6	56.0	-25.4
0.687	10.2	20.2	30.4	56.0	-25.6
0.980	10.2	20.2	30.4	56.0	-25.6
27.630	12.2	22.2	34.4	60.0	-25.6
0.601	10.1	20.2	30.3	56.0	-25.7
0.470	10.5	20.2	30.7	56.5	-25.8

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.529	18.1	20.2	38.3	46.0	-7.7
0.638	15.6	20.2	35.8	46.0	-10.2
1.672	13.0	20.3	33.3	46.0	-12.7
0.730	12.3	20.2	32.5	46.0	-13.5
3.984	12.1	20.4	32.5	46.0	-13.5
2.048	11.7	20.3	32.0	46.0	-14.0
2.168	11.5	20.3	31.8	46.0	-14.2
0.818	11.4	20.2	31.6	46.0	-14.4
4.800	11.2	20.4	31.6	46.0	-14.4
3.024	10.9	20.3	31.2	46.0	-14.8
0.609	11.0	20.2	31.2	46.0	-14.8
3.656	10.8	20.4	31.2	46.0	-14.8
2.368	10.8	20.3	31.1	46.0	-14.9
3.288	10.7	20.3	31.0	46.0	-15.0
4.456	10.6	20.4	31.0	46.0	-15.0
0.830	10.7	20.2	30.9	46.0	-15.1
2.632	10.5	20.3	30.8	46.0	-15.2
0.971	10.6	20.2	30.8	46.0	-15.2
1.184	10.5	20.2	30.7	46.0	-15.3
0.803	10.4	20.2	30.6	46.0	-15.4
4.120	10.2	20.4	30.6	46.0	-15.4
0.687	10.2	20.2	30.4	46.0	-15.6
0.980	10.2	20.2	30.4	46.0	-15.6
27.630	12.2	22.2	34.4	50.0	-15.6
0.601	10.1	20.2	30.3	46.0	-15.7
0.470	10.5	20.2	30.7	46.5	-15.8

CONCLUSION

Pass

Trevor Bults
Tested_By

POWERLINE CONDUCTED EMISSIONS

EUT:	37x Torpedo + Wireless SOM -31	Work Order:	LGPD0096
Serial Number:	1413M00359	Date:	05/30/2013
Customer:	Logic PD, Inc.	Temperature:	22.8°C
Attendees:	None	Relative Humidity:	60.6%
Customer Project:	None	Bar. Pressure:	1002.2 mb
Tested By:	Mike Sutherland, Trevor Buls	Job Site:	MN03
Power:	5VDC	Configuration:	LGPD0096-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.407:2013	ANSI C63.10:2009

TEST PARAMETERS

Run #:	16	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

None

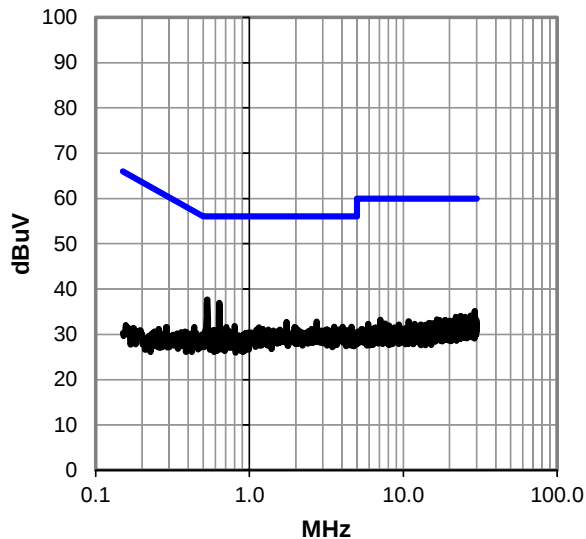
EUT OPERATING MODES

Transmitting 802.11 Ch. 48

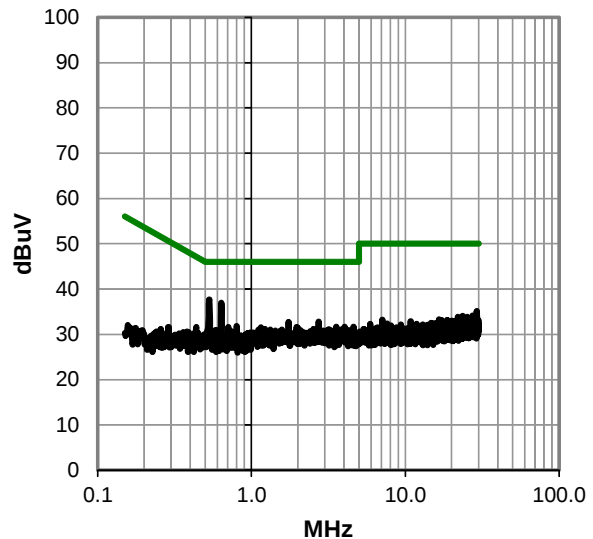
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #16

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.531	17.5	20.2	37.7	56.0	-18.3
0.638	16.8	20.2	37.0	56.0	-19.0
2.728	12.5	20.3	32.8	56.0	-23.2
1.744	12.5	20.3	32.8	56.0	-23.2
0.803	11.6	20.2	31.8	56.0	-24.2
4.600	11.3	20.4	31.7	56.0	-24.3
4.032	11.3	20.4	31.7	56.0	-24.3
3.552	11.3	20.4	31.7	56.0	-24.3
0.708	11.4	20.2	31.6	56.0	-24.4
1.968	11.3	20.3	31.6	56.0	-24.4
1.152	11.3	20.2	31.5	56.0	-24.5
2.000	11.2	20.3	31.5	56.0	-24.5
1.224	11.0	20.2	31.2	56.0	-24.8
2.528	10.9	20.3	31.2	56.0	-24.8
3.184	10.8	20.3	31.1	56.0	-24.9
29.120	12.8	22.3	35.1	60.0	-24.9
1.328	10.8	20.2	31.0	56.0	-25.0
2.088	10.6	20.3	30.9	56.0	-25.1
0.580	10.7	20.2	30.9	56.0	-25.1
0.592	10.7	20.2	30.9	56.0	-25.1
4.280	10.5	20.4	30.9	56.0	-25.1
3.312	10.5	20.3	30.8	56.0	-25.2
0.738	10.5	20.2	30.7	56.0	-25.3
0.437	11.4	20.2	31.6	57.1	-25.5
1.024	10.2	20.2	30.4	56.0	-25.6
0.986	10.2	20.2	30.4	56.0	-25.6

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.531	17.5	20.2	37.7	46.0	-8.3
0.638	16.8	20.2	37.0	46.0	-9.0
2.728	12.5	20.3	32.8	46.0	-13.2
1.744	12.5	20.3	32.8	46.0	-13.2
0.803	11.6	20.2	31.8	46.0	-14.2
4.600	11.3	20.4	31.7	46.0	-14.3
4.032	11.3	20.4	31.7	46.0	-14.3
3.552	11.3	20.4	31.7	46.0	-14.3
0.708	11.4	20.2	31.6	46.0	-14.4
1.968	11.3	20.3	31.6	46.0	-14.4
1.152	11.3	20.2	31.5	46.0	-14.5
2.000	11.2	20.3	31.5	46.0	-14.5
1.224	11.0	20.2	31.2	46.0	-14.8
2.528	10.9	20.3	31.2	46.0	-14.8
3.184	10.8	20.3	31.1	46.0	-14.9
29.120	12.8	22.3	35.1	50.0	-14.9
1.328	10.8	20.2	31.0	46.0	-15.0
2.088	10.6	20.3	30.9	46.0	-15.1
0.580	10.7	20.2	30.9	46.0	-15.1
0.592	10.7	20.2	30.9	46.0	-15.1
4.280	10.5	20.4	30.9	46.0	-15.1
3.312	10.5	20.3	30.8	46.0	-15.2
0.738	10.5	20.2	30.7	46.0	-15.3
0.437	11.4	20.2	31.6	47.1	-15.5
1.024	10.2	20.2	30.4	46.0	-15.6
0.986	10.2	20.2	30.4	46.0	-15.6

CONCLUSION

Pass

Trevor Buls
Tested_By

Frequency Stability

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.	Interval
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36
Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
Multimeter	Fluke	114	MMU	7/8/2011	36
DC Power Supply	EZ Digital Co	GP-4303D	TPY	NCR	0
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/12/2013	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	10/5/2012	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	5/15/2012	24

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from 85 % to 115% of the nominal voltage

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (-30 ° to +50° C) and at 10°C intervals.

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT. Measurements were made at the mid channel of each band to determine frequency stability. If the frequency variation is less than 100 ppm, the EUT will meet the requirement of 15.407(g), that the emissions are maintained within the band of operation.

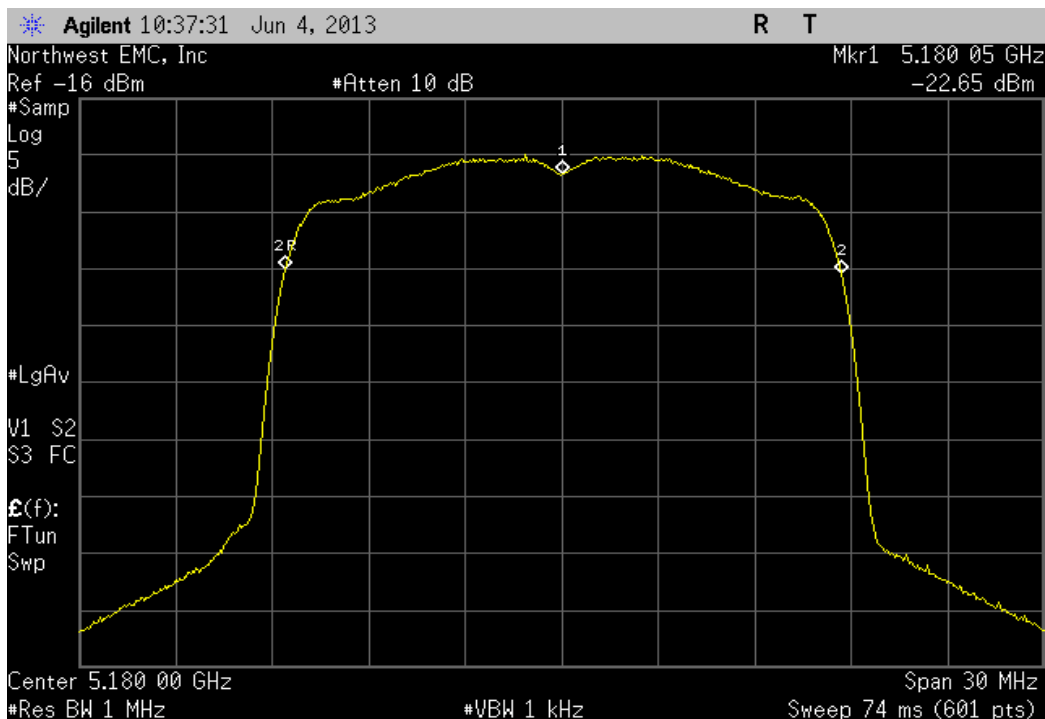


Frequency Stability

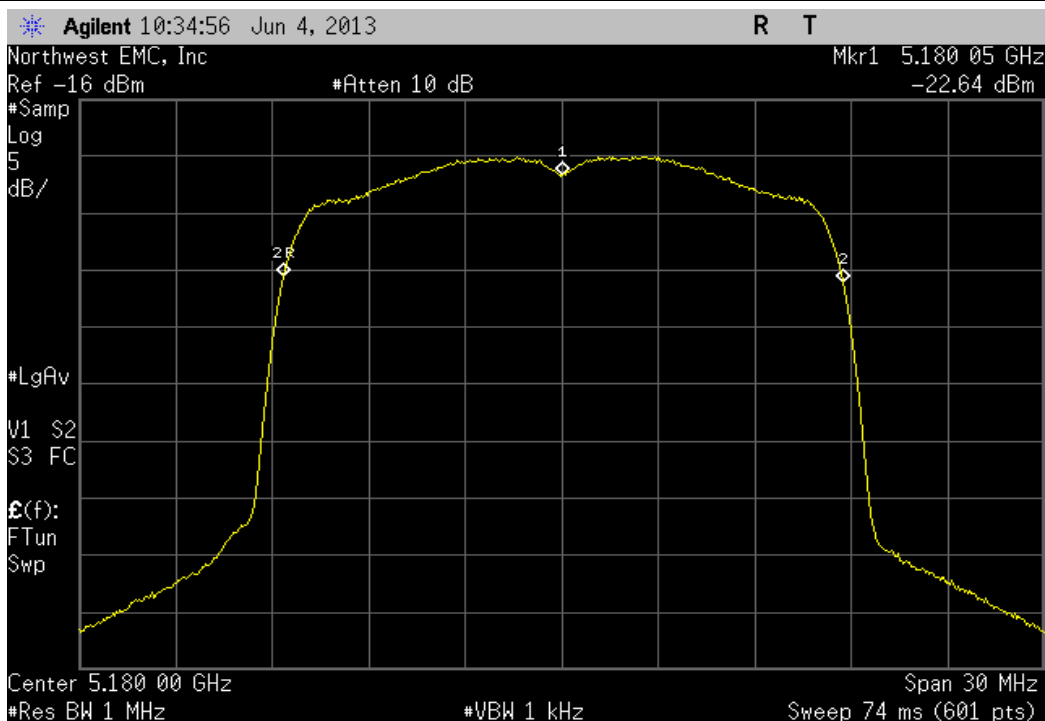
XMit 2013.02.28
PsaTx 2013.06.03

EUT: 37x Torpedo + Wireless SOM -31		Work Order: LGPD0096				
Serial Number: 1413M00359		Date: 06/04/13				
Customer: Logic PD, Inc.		Temperature: 22.9°C				
Attendees: None		Humidity: 47%				
Project: None		Barometric Pres.: 1018.2				
Tested by: Trevor Buls		Power: 5VDC				
		Job Site: MN08				
TEST SPECIFICATIONS		Test Method				
FCC 15.407:2013		ANSI C63.10:2009				
COMMENTS						
None						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature <i>Trevor Buls</i>				
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
Low Channel, 5180 MHz						
	Voltage: 115%	5180.05	5180	9.6	100	Pass
	Voltage: 100%	5180.05	5180	9.6	100	Pass
	Voltage: 85%	5180.05	5180	9.6	100	Pass
	Temperature: +50°	5180.02	5180	3.9	100	Pass
	Temperature: +40°	5180.02	5180	3.9	100	Pass
	Temperature: +30°	5180.02	5180	3.9	100	Pass
	Temperature: +20°	5180.02	5180	3.9	100	Pass
	Temperature: +10°	5180.02	5180	3.9	100	Pass
	Temperature: 0°	5180.02	5180	3.9	100	Pass
	Temperature: -10°	5180.02	5180	3.9	100	Pass
	Temperature: -20°	5180.02	5180	3.9	100	Pass
	Temperature: -30°	5180.02	5180	3.9	100	Pass
High Channel, 5240 MHz						
	Voltage: 115%	5240.05	5240	9.5	100	Pass
	Voltage: 100%	5240.05	5240	9.5	100	Pass
	Voltage: 85%	5240.02	5240	3.8	100	Pass
	Temperature: +50°	5240.02	5240	3.8	100	Pass
	Temperature: +40°	5240.05	5240	9.5	100	Pass
	Temperature: +30°	5240.05	5240	9.5	100	Pass
	Temperature: +20°	5240.02	5240	3.8	100	Pass
	Temperature: +10°	5240.05	5240	9.5	100	Pass
	Temperature: 0°	5240.02	5240	3.8	100	Pass
	Temperature: -10°	5240.05	5240	9.5	100	Pass
	Temperature: -20°	5240.02	5240	3.8	100	Pass
	Temperature: -30°	5240.05	5240	9.5	100	Pass

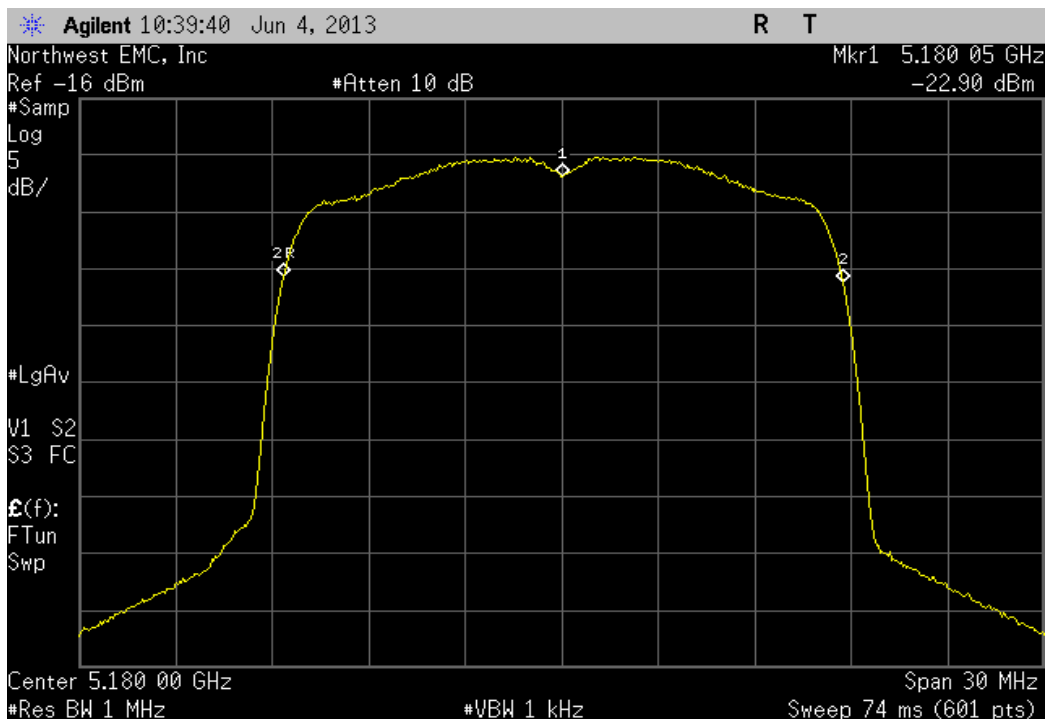
Low Channel, 5180 MHz, Voltage: 115%					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.05	5180	9.6	100	Pass



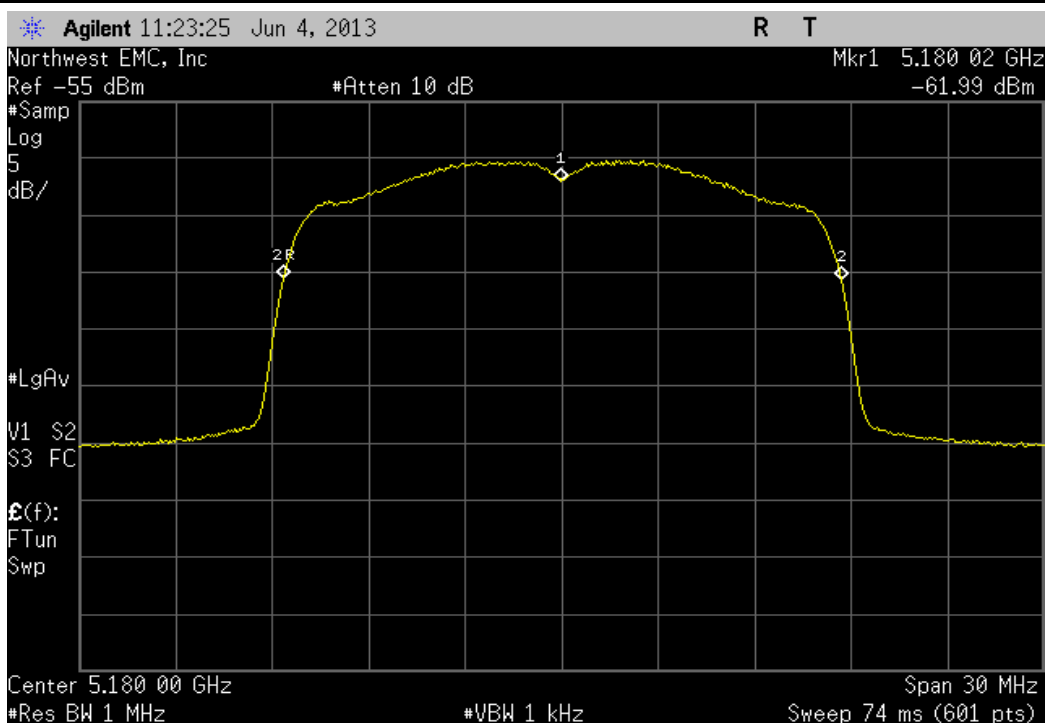
Low Channel, 5180 MHz, Voltage: 100%					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.05	5180	9.6	100	Pass



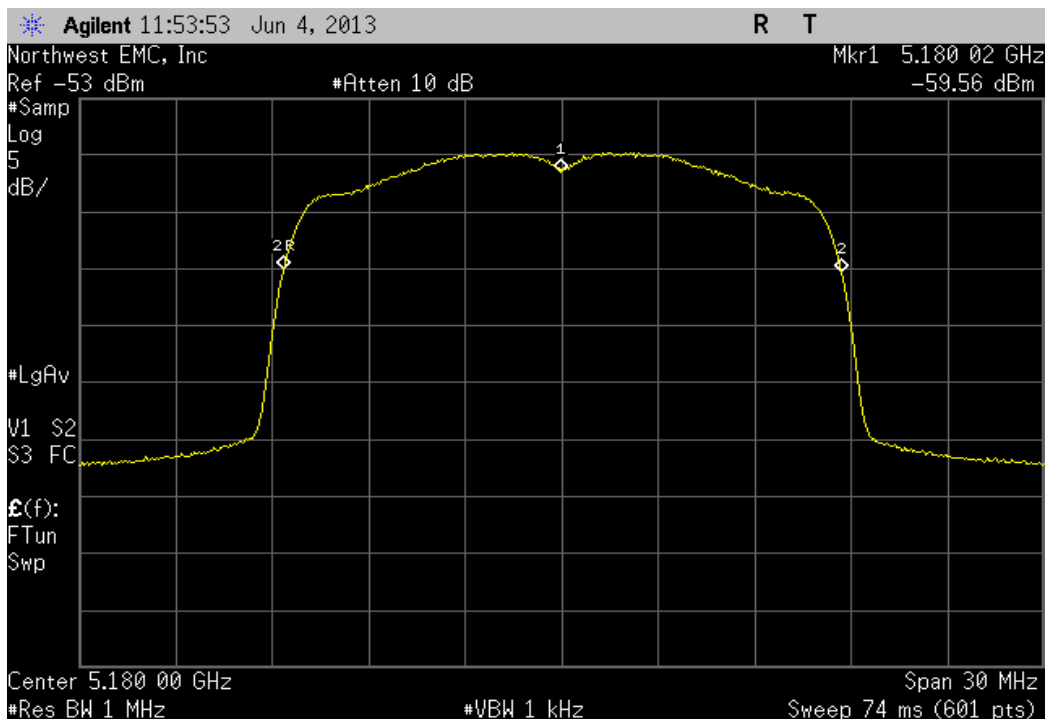
Low Channel, 5180 MHz, Voltage: 85%					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.05	5180	9.6	100	Pass



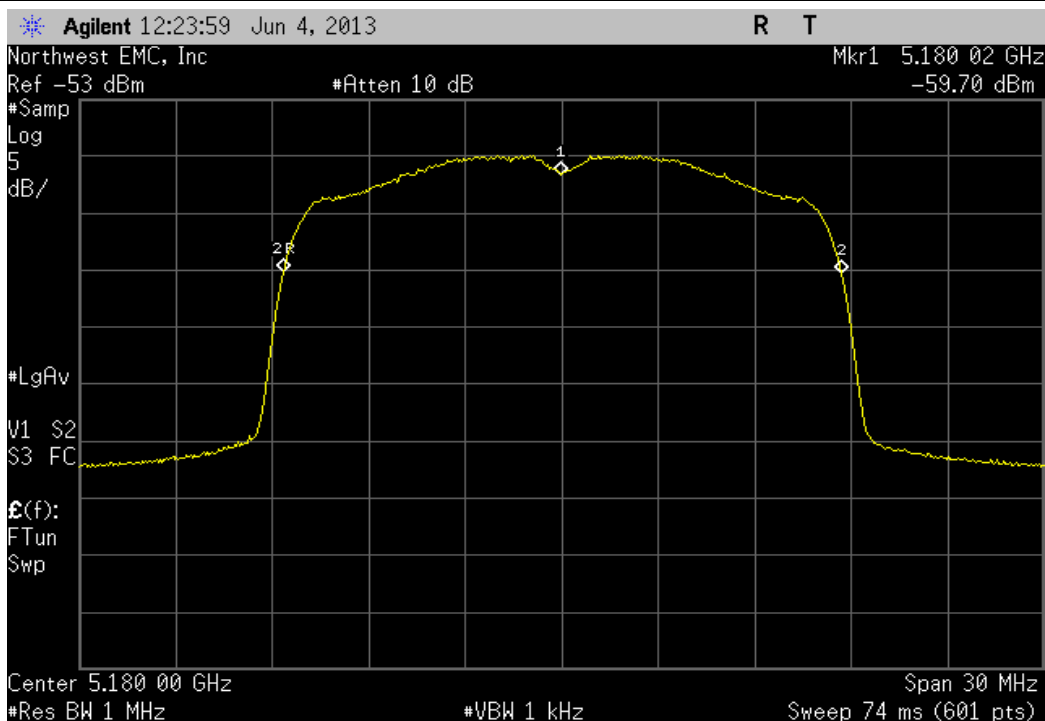
Low Channel, 5180 MHz, Temperature: +50°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



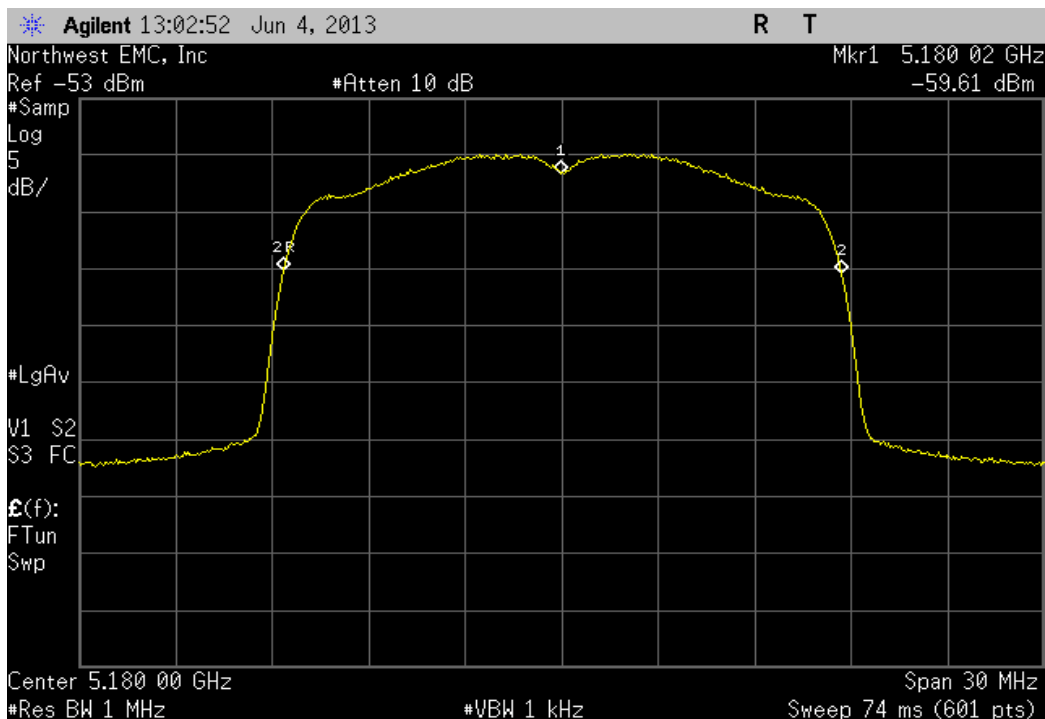
Low Channel, 5180 MHz, Temperature: +40°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



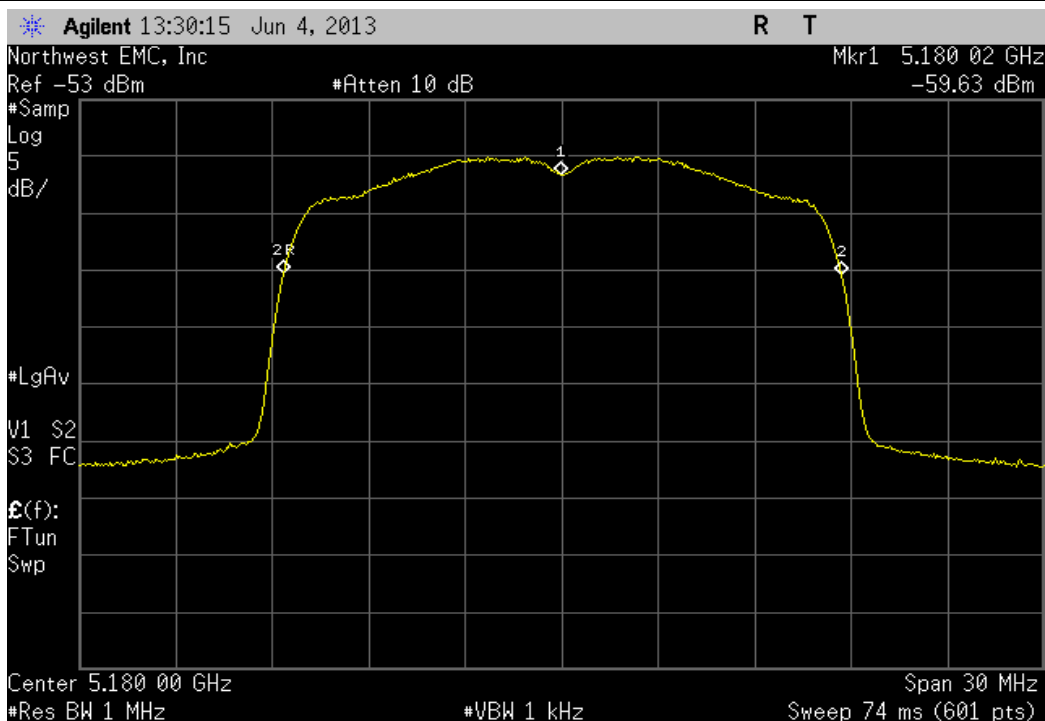
Low Channel, 5180 MHz, Temperature: +30°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



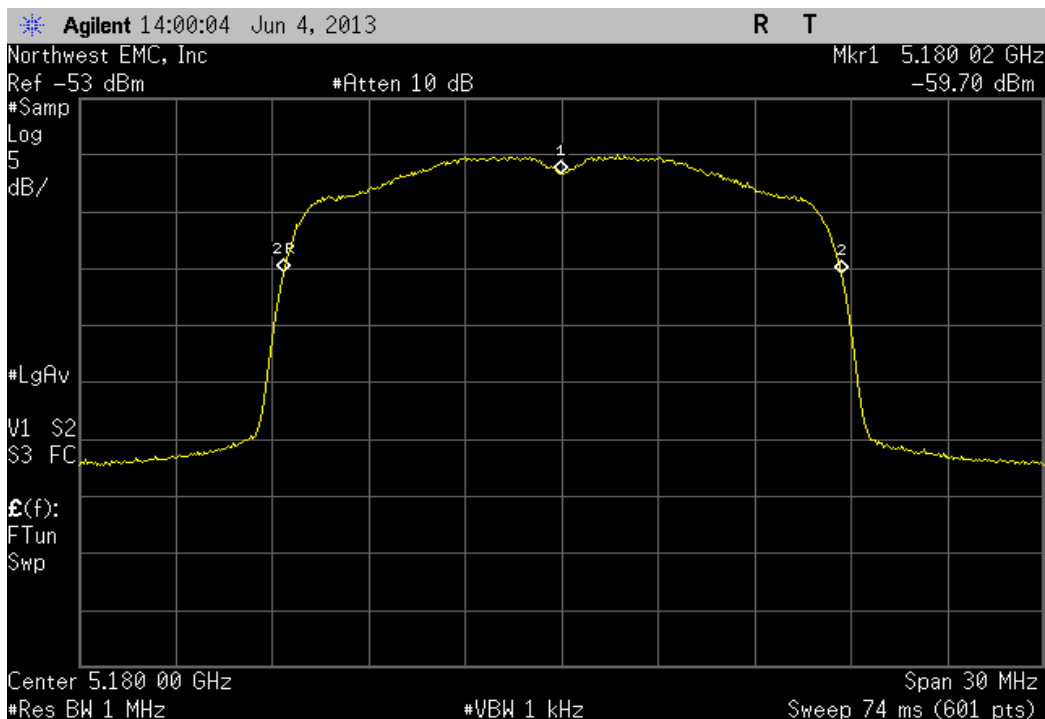
Low Channel, 5180 MHz, Temperature: +20°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



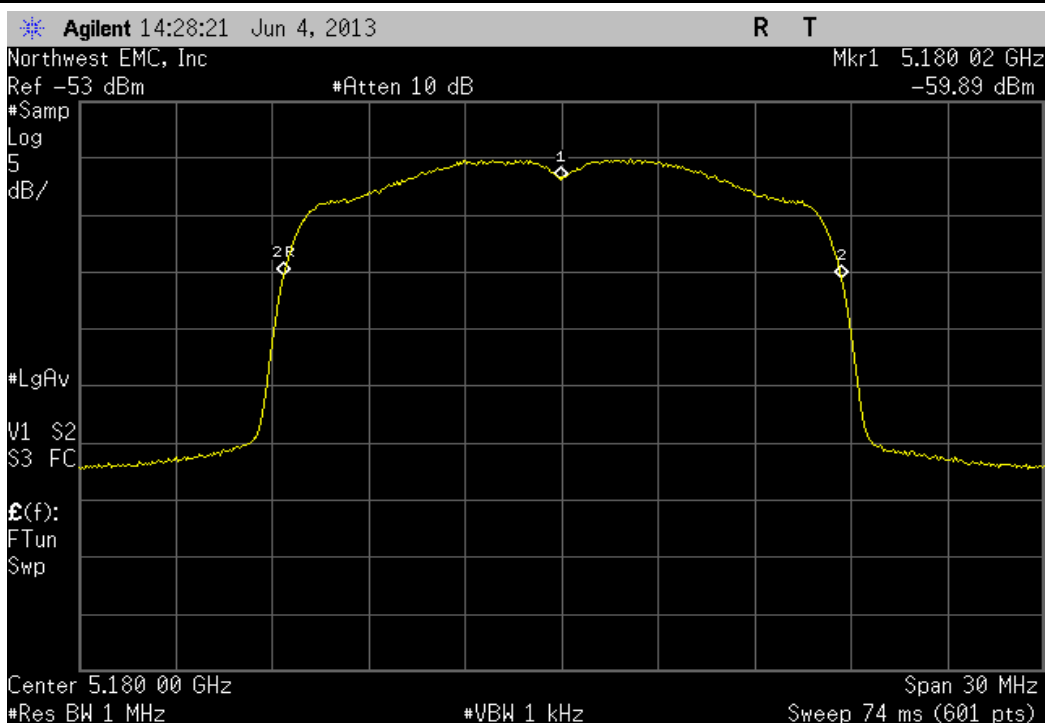
Low Channel, 5180 MHz, Temperature: +10°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



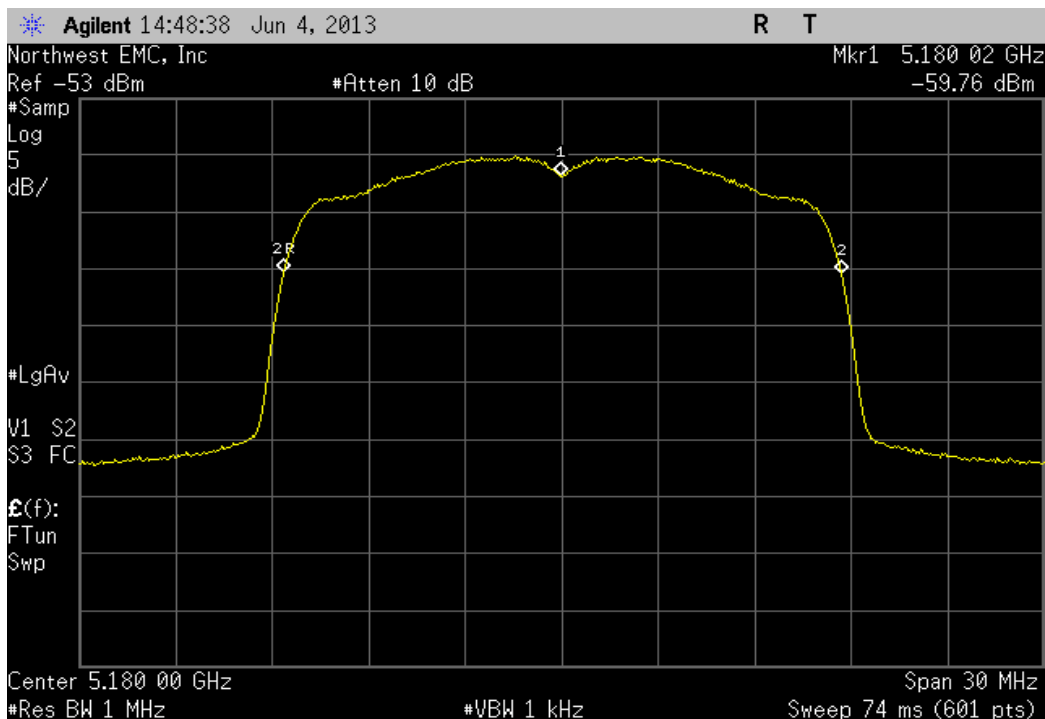
Low Channel, 5180 MHz, Temperature: 0°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



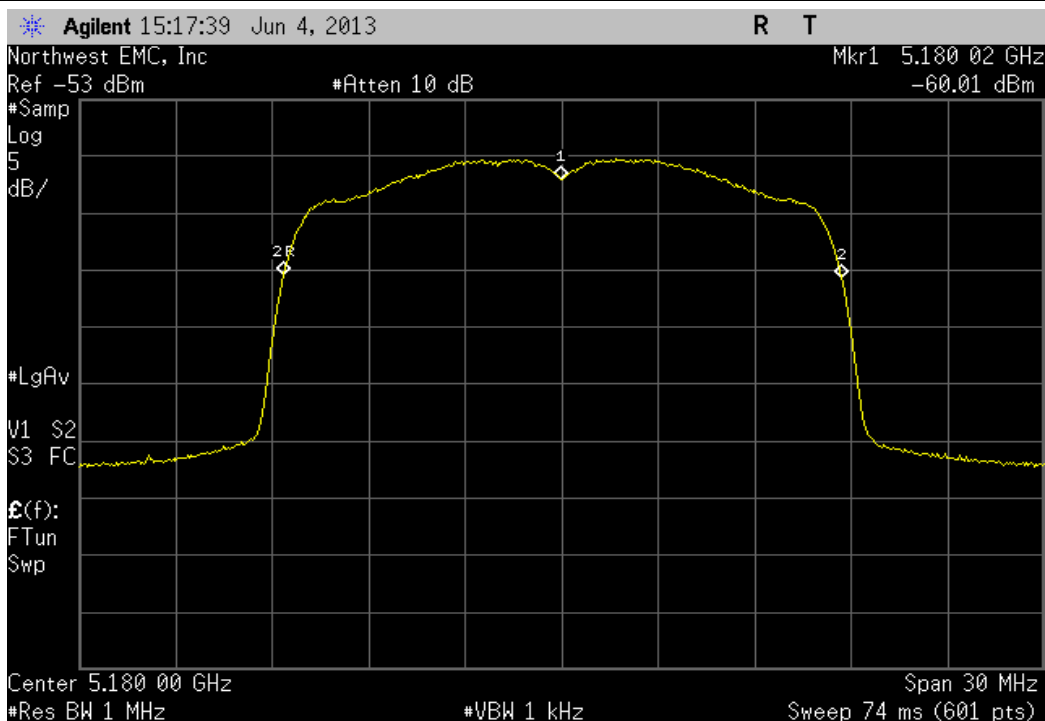
Low Channel, 5180 MHz, Temperature: -10°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



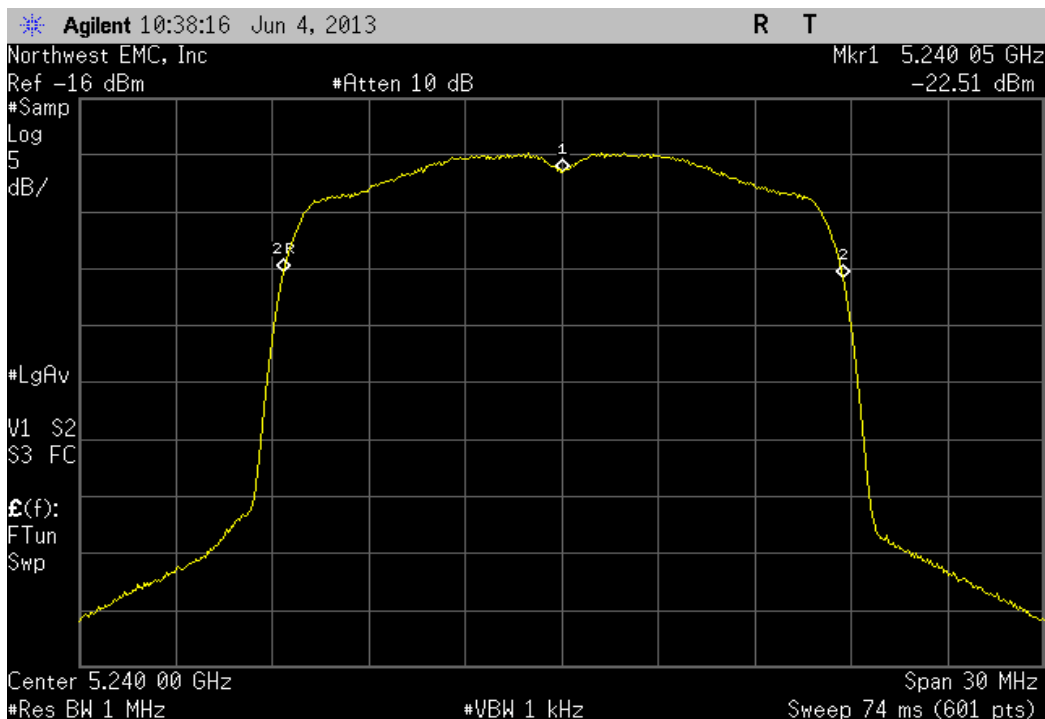
Low Channel, 5180 MHz, Temperature: -20°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



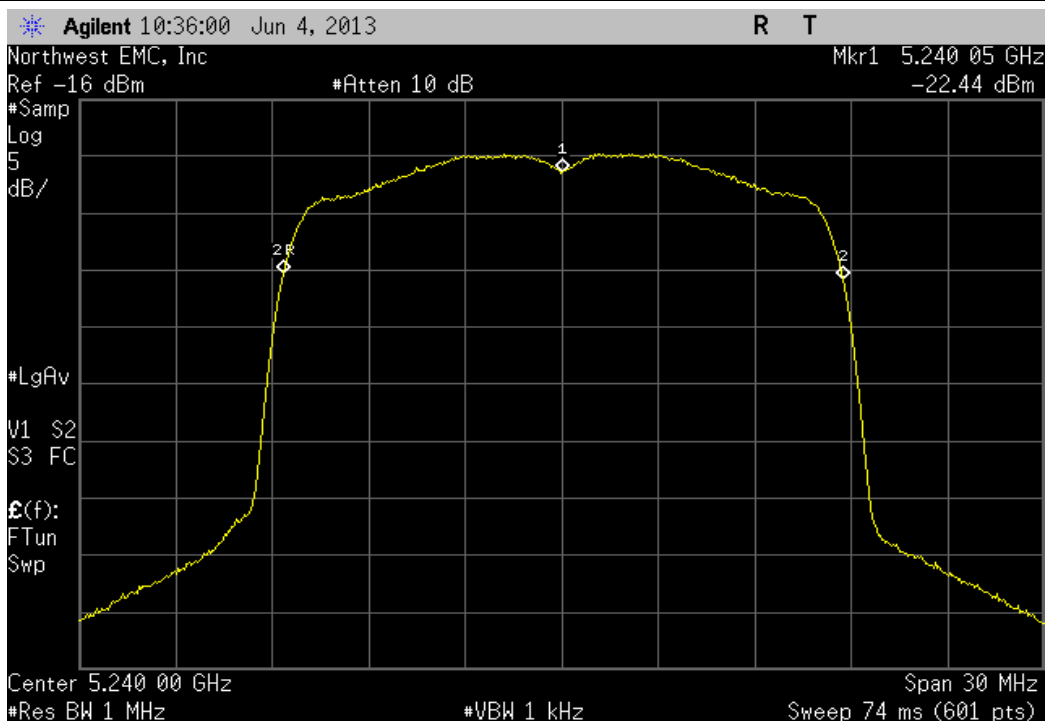
Low Channel, 5180 MHz, Temperature: -30°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5180.02	5180	3.9	100	Pass



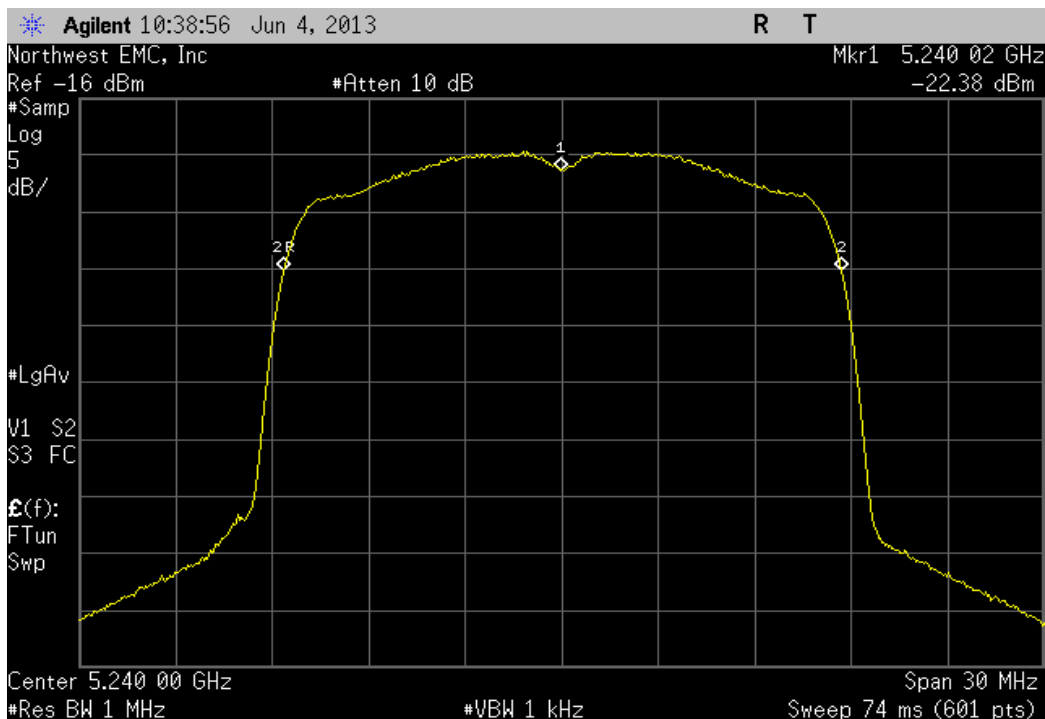
High Channel, 5240 MHz, Voltage: 115%					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass



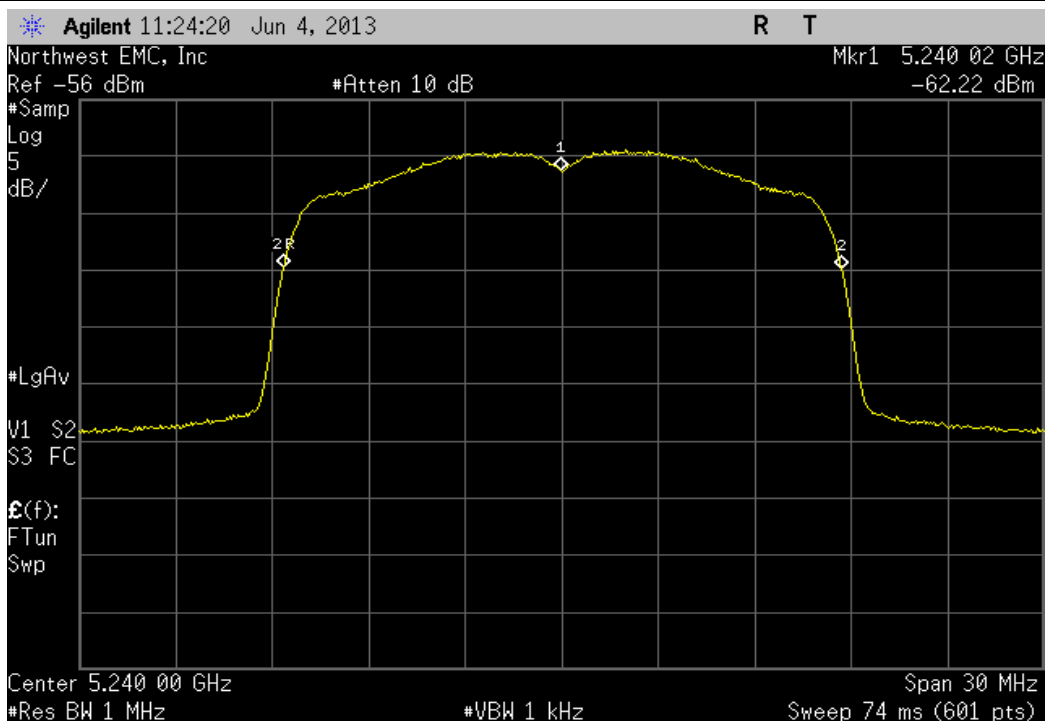
High Channel, 5240 MHz, Voltage: 100%					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass



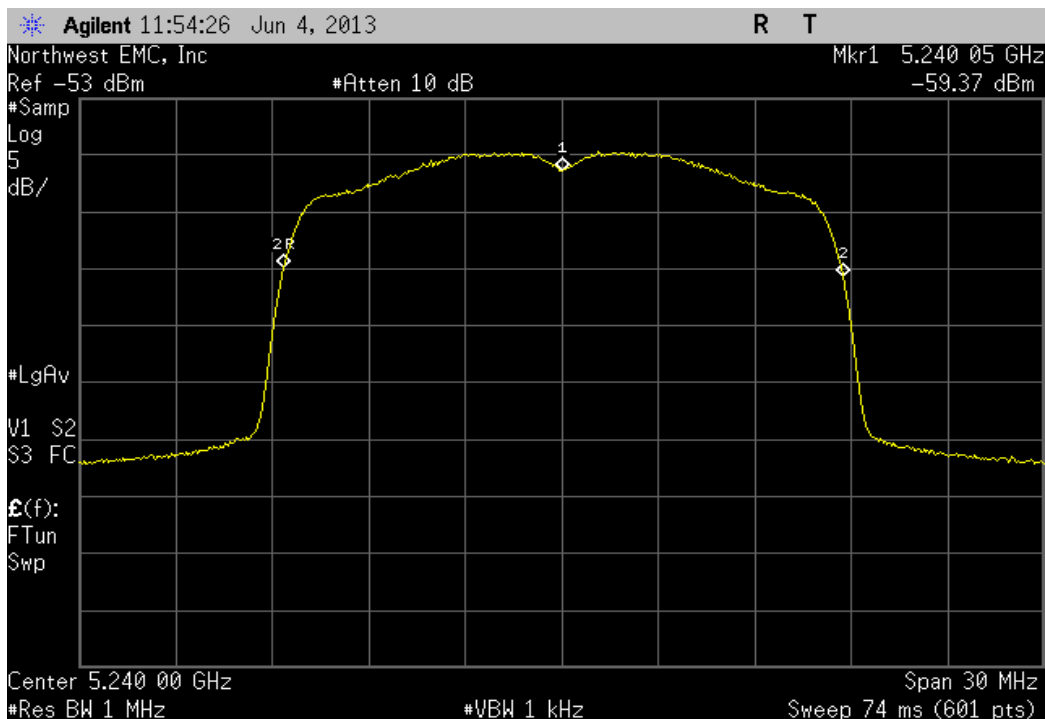
High Channel, 5240 MHz, Voltage: 85%					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.02	5240	3.8	100	Pass



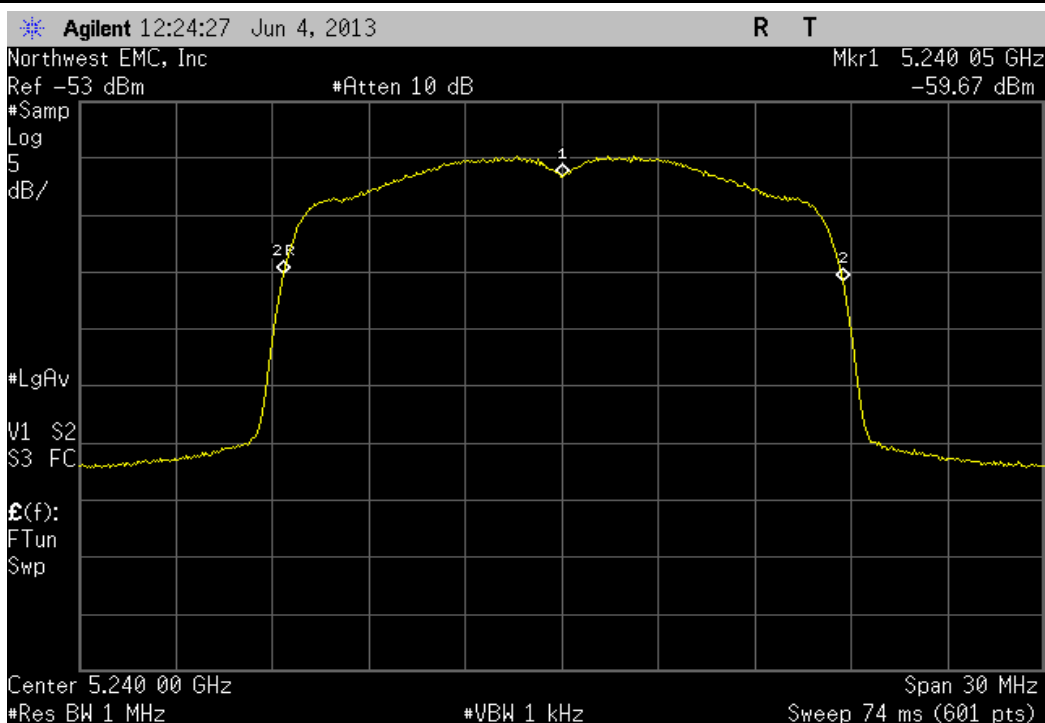
High Channel, 5240 MHz, Temperature: +50°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.02	5240	3.8	100	Pass



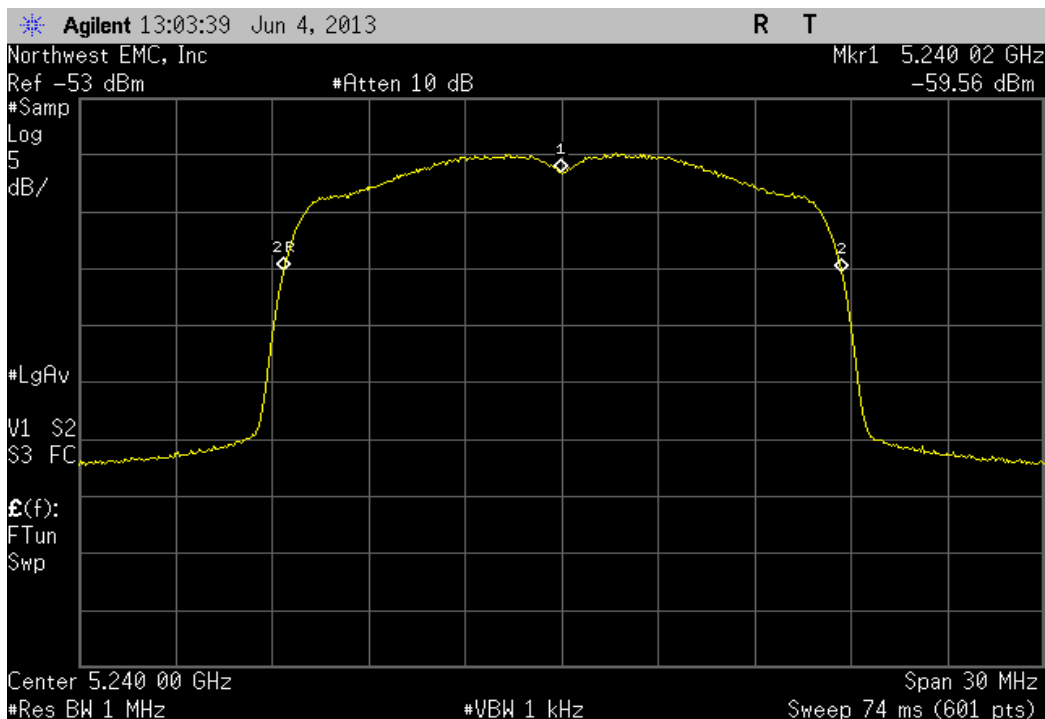
High Channel, 5240 MHz, Temperature: +40°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass



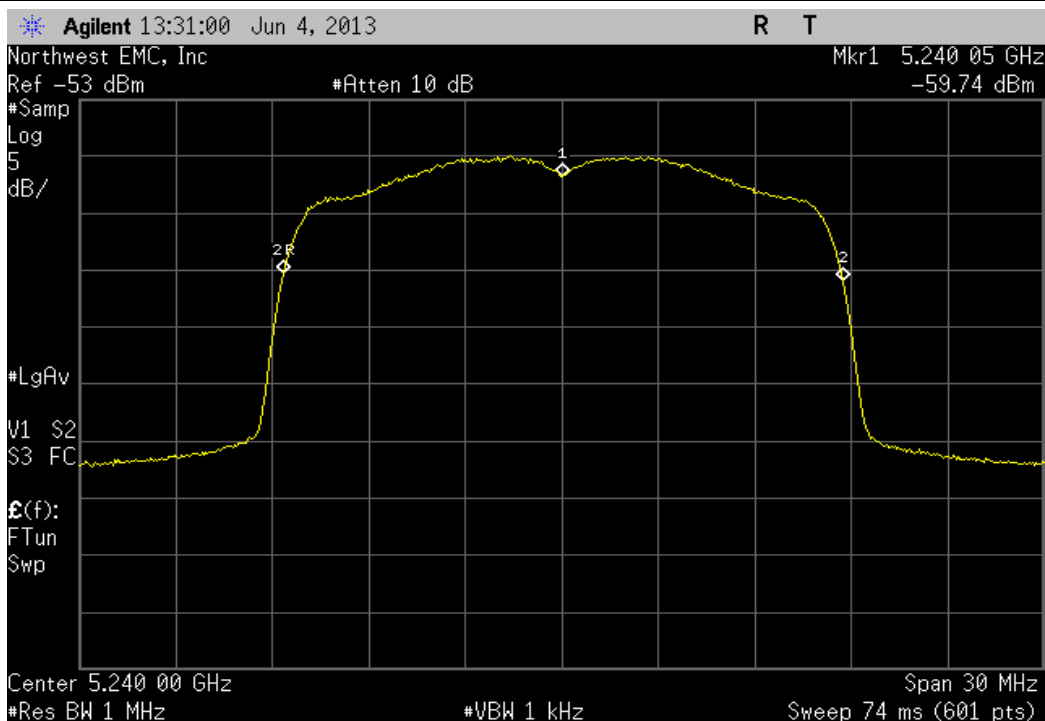
High Channel, 5240 MHz, Temperature: +30°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass



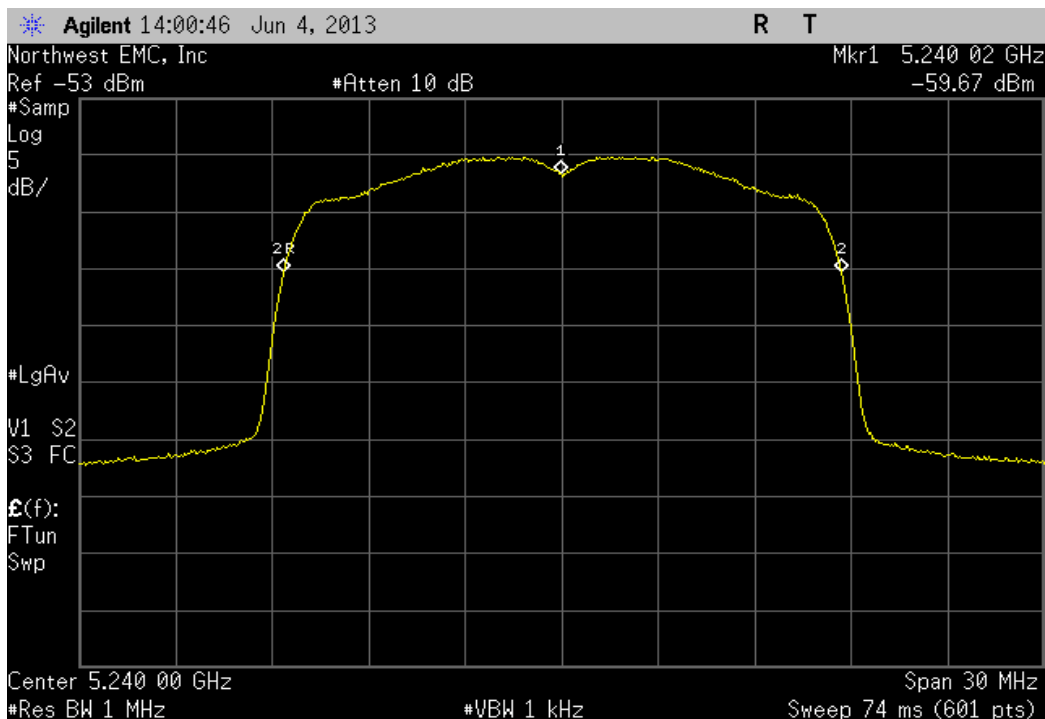
High Channel, 5240 MHz, Temperature: +20°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.02	5240	3.8	100	Pass



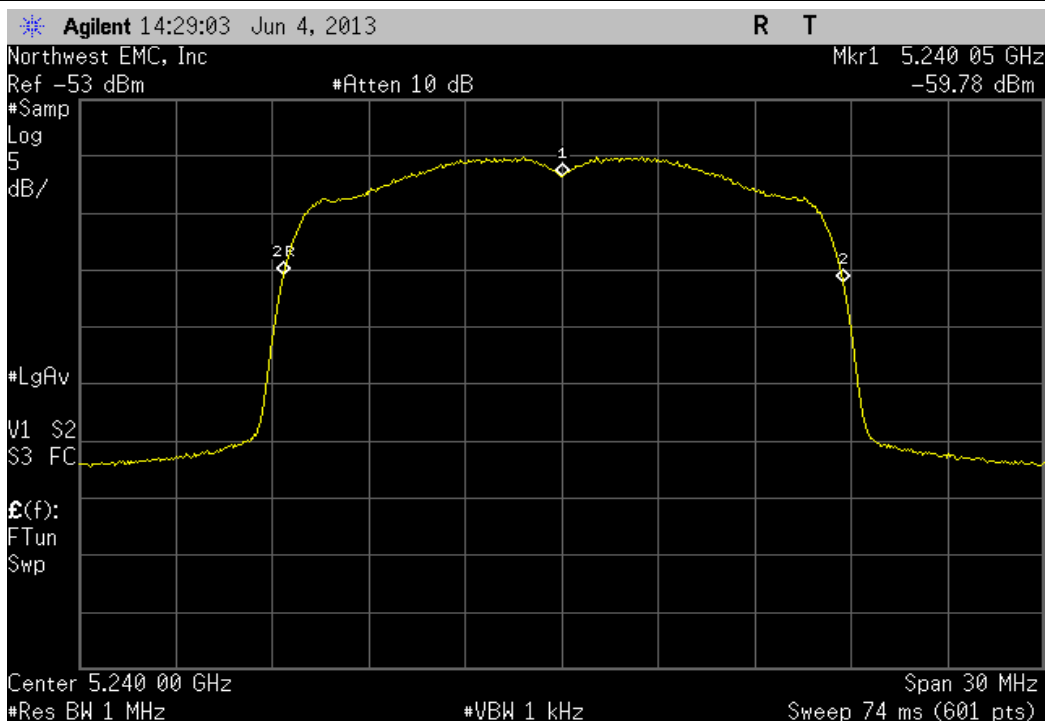
High Channel, 5240 MHz, Temperature: +10°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass



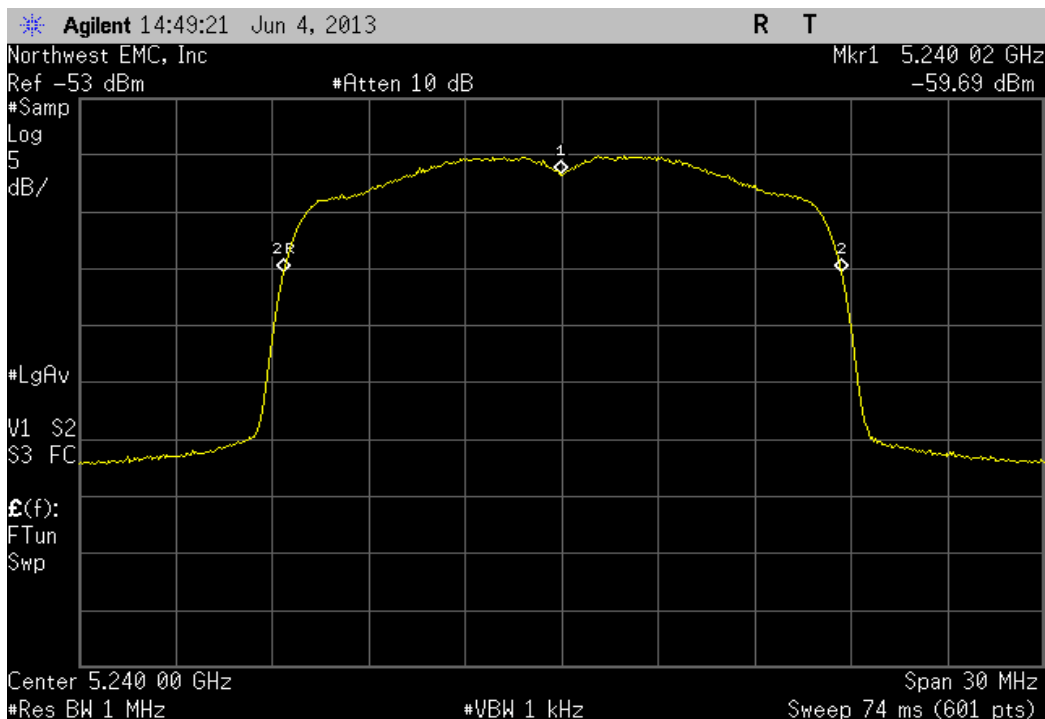
High Channel, 5240 MHz, Temperature: 0°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.02	5240	3.8	100	Pass



High Channel, 5240 MHz, Temperature: -10°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass



High Channel, 5240 MHz, Temperature: -20°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.02	5240	3.8	100	Pass



High Channel, 5240 MHz, Temperature: -30°					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	5240.05	5240	9.5	100	Pass

