Precor, Inc.

Precor Wi-Fi / Bluetooth Module Model 303346

802.11abgn / Bluetooth and 13.56 MHz NFC

FCC 15.407:2015 DFS Compliance

Report # PRCR0230.20

NVLAP Lab Code: 200629-0

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. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST

Last Date of Test: December 09, 2015
Precor, Inc.
Precor Wi-Fi / Bluetooth Module Model 303346

Radio Equipment Testing

Standards

Specification	Method
FCC 15.407:2015	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

Results

Test Description	Applied	Results	Comments
Channel Loading/Channel Utilization	Yes	Pass	
Move Time	Yes	Pass	
Closing Time	Yes	Pass	
Non Occupancy Period	Yes	Pass	
Channel Availability Check	No	N/A	Not required if EUT does not support DFS Bands or device is a "Client".
Detection Bandwidth	No	N/A	Not required if EUT does not support DFS Bands or device is a "Client".
Statistical Performance	No	N/A	Not required if EUT does not support DFS Bands or device is a "Client".

Deviations From Test Standards

None

Approved By:

Jeremiah Darden, 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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

NORTHWEST EMC
REV 2015.2.19

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 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

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.

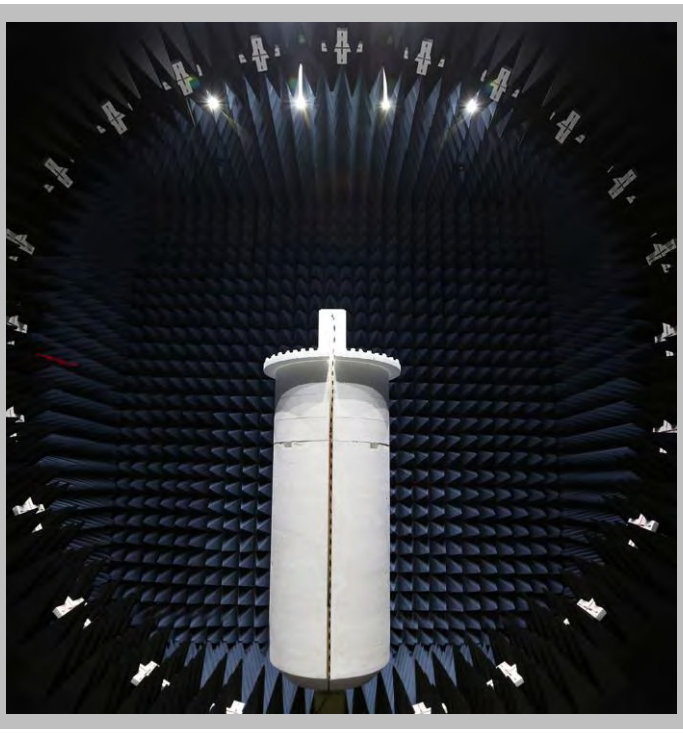
SCOPE

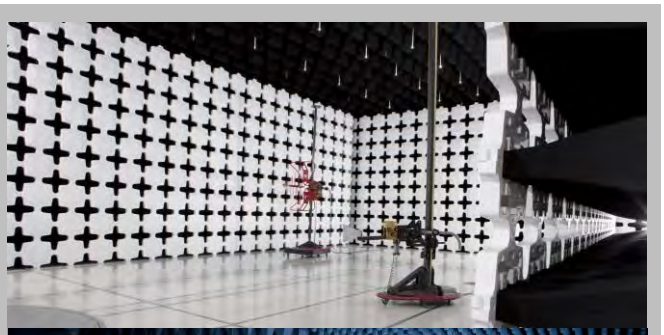
For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

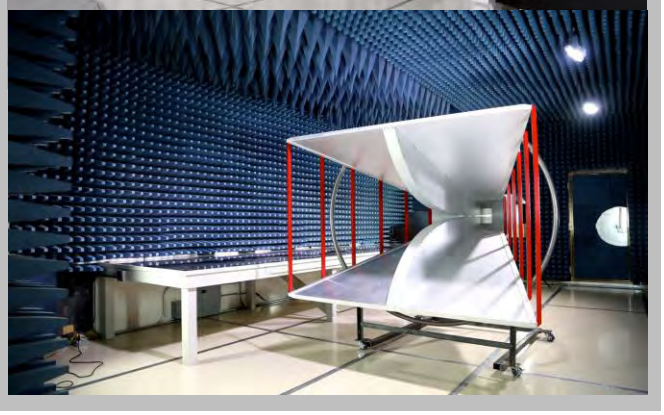
FACILITIES

NORTHWEST EMC
REV 2015.2.19

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 9801 (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
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
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







PRODUCT DESCRIPTION

NORTHWEST EMC
2014-12-10

Client and Equipment Under Test (EUT) Information

Company Name:	Precor, Inc.
Address:	PO Box 7202
City, State, Zip:	Woodinville, WA 98072-4002
Test Requested By:	James Minahan
Model:	Precor Wi-Fi / Bluetooth Module Model 303346
First Date of Test:	December 09, 2015
Last Date of Test:	December 09, 2015
Receipt Date of Samples:	September 14, 2015
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

P82 Fitness Display Console with following radios: 802.11abgn / Bluetooth and 13.56 MHz NFC. In the 2.4 GHz band, the 802.11bgn radio supports 20 MHz and 40 MHz SISO and 20 MHz MIMO for MCS12--MCS15 data rates only. In the 5 GHz bands, the 802.11an radio supports 20 MHz SISO only.

Hardware, Firmware, and OS Versions:

Hardware Version:0x6030111
Firmware Version:8.9.0.0.48
OS Version:3.0.35-IMX6.JB4.2.2_110.VAR.R13

The operating frequency band(s) of the equipment.

2400 – 2483.5 MHz
5150 – 5250 MHz
5250 – 5350 MHz
5470 – 5725 MHz
5725 – 5825 MHz

The operating modes (Master and/or Client) of the U-NII device.

Client device with no ad-hoc capability, with both 802.11a and 802.11n (20/40MHz)

For Client devices, indicate whether or not it has DFS capabilities and indicate the FCC (and IC) identifier for the Master U-NII Device that is used with it for DFS testing.

A DFS-compliant Master device was used for testing. It's the CISCO Model AIR-SAP2602E-A-K9, FCC ID:LDK102080, IC: 2461B-102080

List the highest and the lowest possible power level (equivalent isotropic radiated power (EIRP) of the equipment.

The maximum EIRP of the 5 GHz equipment is 17.1 dBm (conducted.) + 3.3 dBi = 20.4 dBm EIRP
The minimum EIRP of the 5 GHz equipment is 9.3 dBm (conducted.) + 3.3 dBi = 12.6 dBm EIRP

Test sequences or messages that should be used for communication between Master and Client Devices, which are used for loading the Channel.

1. Stream the test file from the Master Device to the Client Device for IP based systems or frame based systems which dynamically allocate the talk/listen ratio.
2. For frame based systems with fixed talk/listen ratio, set the ratio to 45%/55% and stream the test file from the Master to the Client.
3. For other system architectures, supply appropriate Channel loading methodology.

Testing was performed with a video file streamed from the Master Device to the Client Device. Channel loading was approximately 25%.

Transmit Power Control description.

No transmit power control is implemented.

System architectures, data rates, U-NII Channel bandwidths.

1. Indicate the type(s) of system architecture (e.g. IP based or Frame based) that the U-NII device employs. Each type of unique architecture must be tested.

The client device (EUT) employs IP based system architecture

The time required for the Master Device and/or Client Device to complete its power-on cycle.

The Master device used in this test setup requires a little over one minute to complete its power-on cycle. The client device (EUT) does not have radar detection so its power-on time is not applicable.

Manufacturer statement confirming that information regarding the parameters of the detected Radar Waveforms is not available to the end user.

The client device and has no radar detection.

Uniform Channel Spreading requirement for Master Devices. For Master Devices, indicate how the master provides, on aggregate, uniform Channel loading of the spectrum across all Channels.

This is a client device.

List all antenna assemblies and their corresponding gains.

1. If radiated tests are to be performed, the U-NII Device should be tested with the lowest gain antenna assembly (regardless of antenna type). The report should indicate which antenna assembly was used for the tests. For devices with adjustable output power, list the output power range and the maximum EIRP for each antenna assembly.
2. If conducted tests are to be performed, indicate which antenna port/connection was used for the tests and the antenna assembly gain that was used to set the DFS Detection Threshold level during calibration of the test setup.
    a. Indicate the calibrated conducted DFS Detection Threshold level.
    b. For devices with adjustable output power, list the output power range and the maximum EIRP for each antenna assembly.
    c. Indicate the antenna connector impedance. Ensure that the measurement instruments match (usually 50 Ohms) or use a minimum loss pad and take into account the conversion loss.
3. Antenna gain measurement verification for tested antenna.
    a. Describe procedure
    b. Describe the antenna configuration and how it is mounted
    c. If an antenna cable is supplied with the device, cable loss needs to be taken into account. Indicate the maximum cable length and either measure the gain with this cable or adjust the measured gain accordingly. State the cable loss.

The EUT has two 50 ohm antenna ports. The assembly gain of the device was measured by the antenna manufacturer. The peak gain in the 5 GHz bands is 3.3 dBi.

CONFIGURATIONS

NORTHWEST EMC
2014-12-10

Configuration PRCR0230- 9

Software/Firmware Running during test	
Description	**Version**
Android System	Driver 8.6

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Host Console	Precor, Inc.	P82	AXKRF22150081
Precor Wi-Fi / Bluetooth Module	Precor, Inc.	303346	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Power Adapter	Phihong	PSAC60N-120	DOE6 (Level 6 Sample)

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	No	0.8m	No	AC Power Adapter	P82 Console
AC Power	No	1.8m	No	AC Mains	AC Power Adapter

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	12/9/2015	Non Occupancy Period	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.
2	12/9/2015	Closing Time	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.
3	12/9/2015	Channel Loading/Channel Utilization	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	12/9/2015	Move Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

INTRODUCTION & CLIENT DEVICE DFS CONFORMANCE

NORTHWEST EMC
2014-12-10

Overview

For a Client Device without DFS, the Channel Move Time and Channel Closing Transmission Time requirements are verified with one Short Pulse Radar and one Long Pulse Radar. Non-occupancy period can be confirmed with either short or long pulses.

Channel Closing Transmission Time: The total duration of transmissions, consisting of data signals and the aggregate of control signals, by a U-NII device during the Channel Move Time.

Channel Move Time: The time to cease all transmissions on the current Channel upon detection of a Radar Waveform above the DFS Detection Threshold. A Client Device will not transmit before having received appropriate control signals from a Master Device. A Client Device will stop all its transmissions whenever instructed by a Master Device to which it is associated and will meet the Channel Move Time and Channel Closing Transmission Time requirements. The Client Device will not resume any transmissions until it has again received control signals from a Master Device.

Non-Occupancy Period: Time during which both the client and master device shall not make any transmissions on a channel after a radar signal was detected on that channel. It should at least the minimum requirements but it can be more.

Applicability of DFS Requirements Prior to Use of a Channel

Requirement	Operational Mode		
	Master	Client (without DFS)	Client (with DFS)
Non-Occupancy Period	Yes	Yes	Yes
DFS Detection Threshold	Yes	Not required	Yes
Channel Availability Check Time	Yes	Not required	Not required
Uniform Spreading	Yes	Not required	Not required
U-NII Detection Bandwidth	Yes	Not required	Yes

Applicability of DFS requirements during normal operation

Requirement	Operational Mode		
	Master	Client (without DFS)	Client (with DFS)
DFS Detection Threshold	Yes	Not required	Yes
Channel Closing Transmission Time	Yes	Yes	Yes
Channel Move Time	Yes	Yes	Yes
U-NII Detection Bandwidth	Yes	Not required	Yes

INTRODUCTION & CLIENT DEVICE DFS CONFORMANCE

NORTHWEST EMC
2014-12-10

DFS Response Requirement Values

Parameter	Value
Non-occupancy	Minimum 30 minutes
Channel Availability Check Time	60 seconds
Channel Move Time	10 seconds (See Note 1)
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. (See Notes 1 and 2).
U-NII Detection Bandwidth	Minimum 80% of the UNII 99% transmission power bandwidth. (See Note 3).

Note 1: The instant that the Channel Move Time and the Channel Closing Transmission Time begins is as follows:

- For the Short Pulse Radar Test Signals this instant is the end of the Burst.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar Burst generated.
- For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the Radar Waveform.

Note 2: The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

Note 3: During the U-NII Detection Bandwidth detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.

DFS Detection Thresholds for Master or Client Devices Incorporating DFS

Maximum Transmit Power	Value (See Notes 1 and 2)
≥ 200 milliwatt	-64 dBm
< 200 milliwatt	-62 dBm

Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna.
Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.

Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	1	1428	18	60%	30
2	1 - 5	150 - 230	23 - 29	60%	30
3	6 -10	200 - 500	16 – 18	60%	30
4	11 - 20	200 - 500	12 -16	60%	30
Aggregate (Radar Types 1-4)				80%	120

Long Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per Burst	Number of Bursts	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50 - 100	5 - 20	1000 - 2000	1 - 3	8 - 20	80%	30

Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

Setting the Test Signal Level

The radar test signal level is set at the Master Device, or the Client Device with In-Service Monitoring, as appropriate for the particular test. This device is known as the Radar Detection Device (RDD).

• When a Client Device without In-Service Monitoring is the UUT, the Master Device is the RDD.
• When a Client Device with In-Service Monitoring is the UUT, and is tested for response to the Master Device detections, the Master Device is the RDD.
• When a Client Device with In-Service Monitoring is the UUT, and is tested for independent response to detections by the Client Device, the Client Device is the RDD.

Using the mode of operations and configurations noted within this report, a series of Dynamic frequency selection tests were performed according to the standard. A spectrum analyzer is used to establish the test signal level for each radar type. During this process, there are no transmissions by either the Master Device or Client Device. The spectrum analyzer is switched to the zero span (time domain) mode at the frequency of the Radar Waveform generator when necessary. The peak detector function of the spectrum analyzer is utilized. The spectrum analyzer resolution bandwidth (RBW) and video bandwidth (VBW) are set to at least 3 MHz. The signal generator amplitude and/or step attenuators are set so that the power level measured at the spectrum analyzer is equal to the DFS Detection Threshold that is required for the tests. The signal generator and attenuator settings are recorded for use during the test and the necessary screen captures and data are recorded in the report.

CHANNEL LOADING / CHANNEL UTILIZATION

XMit 2015.01.14

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 (mo)
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	9/29/2015	12
Attenuator	Aeroflex/Weinschel	3053	RKG	NCR	0
Attenuator	Aeroflex/Weinschel	3053	RKF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAJ	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAI	NCR	0
Access Point	Cisco	AIR-SAP2602E-A-K9	TIY	NCR	0
Generator - Signal	Benchforge Manufacturing	Colt	TIN	NCR	0

TEST DESCRIPTION

The master and client were connected using the conducted method described in the FCC KDB procedure via a series of splitters and attenuators which allows the radar signals to be injected and monitored Where required, an approved Media file was streamed through the master and client or an alternative method to load the channel may be used instead. Channel loading requirements were verified. Configuration and status of the master and client devices were then monitored using the spectrum analyzer.

CHANNEL LOADING / CHANNEL UTILIZATION

NORTHWEST EMC

XMit 2015.01.14

EUT:	Precor Wi-Fi / Bluetooth Module Model 303346	Work Order:	PRCR0230
Serial Number:	None	Date:	12/09/15
Customer:	Precor, Inc.	Temperature:	23°C
Attendees:	Rich Whitbeck	Humidity:	43%
Project:	None	Barometric Pres.:	1003 mbar
Tested by:	Rod Peloquin, Richard Mellroth	Power: 110VAC/60Hz	Job Site: NC06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

COMMENTS

Client EUT streaming TIA MPEG Test File from Master, data rate set at 6Mbps, directly connected to antenna port 1. The average channel loading was found to be approximately 25%.

DEVIATIONS FROM TEST STANDARD

None

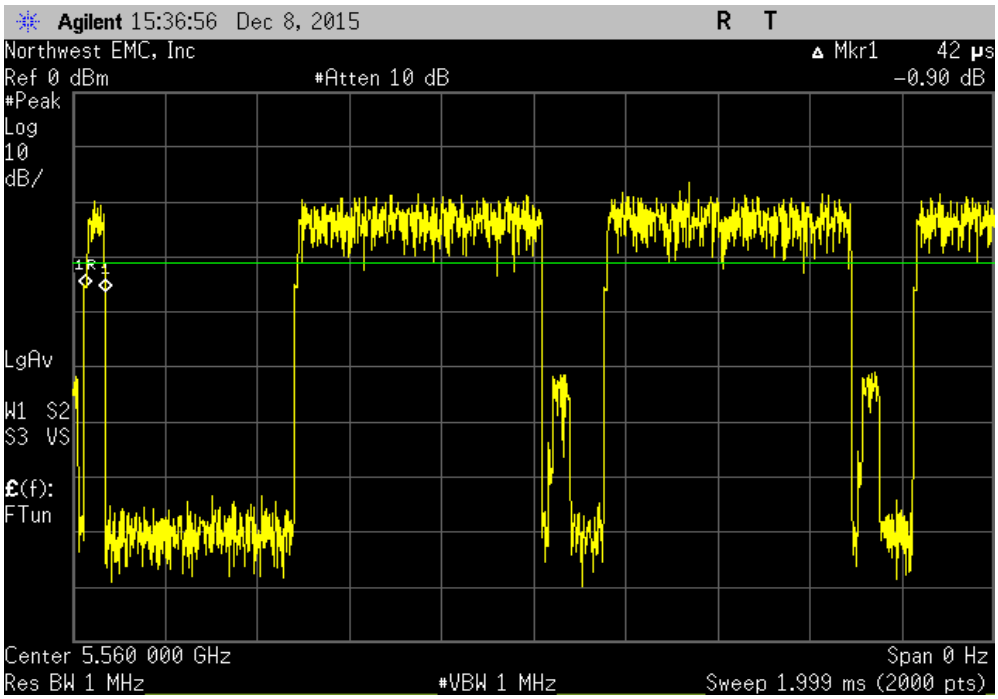
Configuration #	9	Signature

	Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
Channel 112, 5560 MHz					
802.11(a) 6 Mbps					
2ms Sweep (1)	0.042	64	N/A	> 17	N/A
2ms Sweep (2)	0.534	80	N/A	> 17	N/A
2ms Sweep (3)	0.229	11	52	> 17	Pass
10ms Sweep (1)	N/A	66	N/A	> 17	N/A
10ms Sweep (2)	N/A	2	N/A	> 17	N/A
10ms Sweep (3)	N/A	37	35	> 17	Pass
25ms Sweep (1)	N/A	23	N/A	> 17	N/A
25ms Sweep (2)	N/A	44	N/A	> 17	N/A
25ms Sweep (3)	N/A	9	25	> 17	Pass
100ms Sweep (1)	N/A	N/A	25	> 17	Pass
100ms Sweep (2)	N/A	N/A	25	> 17	Pass
100ms Sweep (3)	N/A	N/A	25	> 17	Pass
10s Sweep	N/A	N/A	25	> 17	Pass

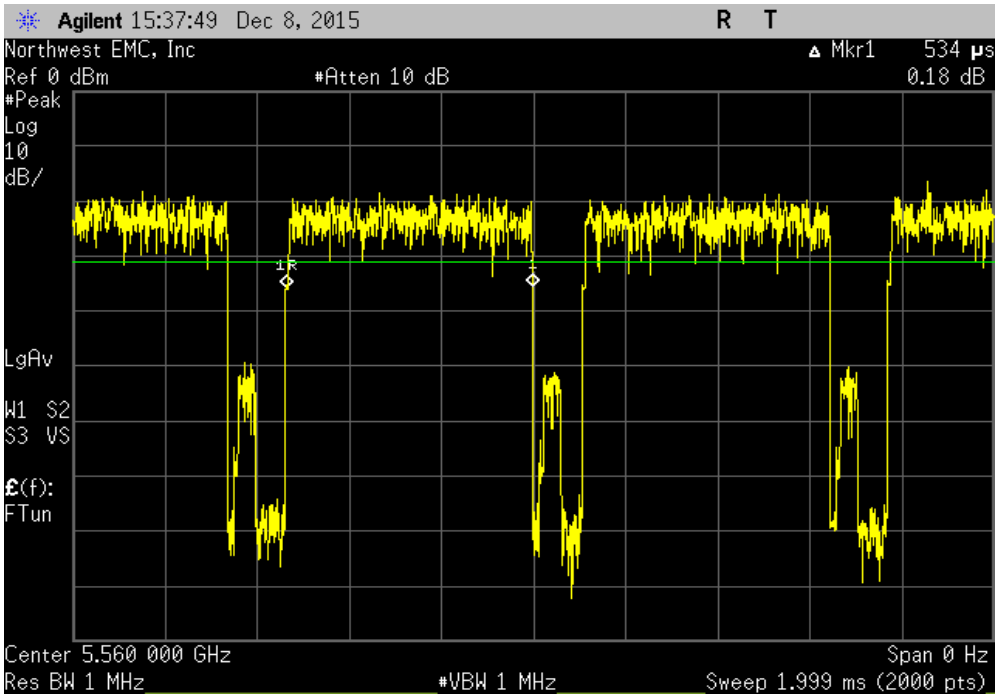
CHANNEL LOADING / CHANNEL UTILIZATION

NORTHWEST EMC
XMit 2015.01.14

Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 2ms Sweep (1)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		0.042	64	N/A	> 17	N/A



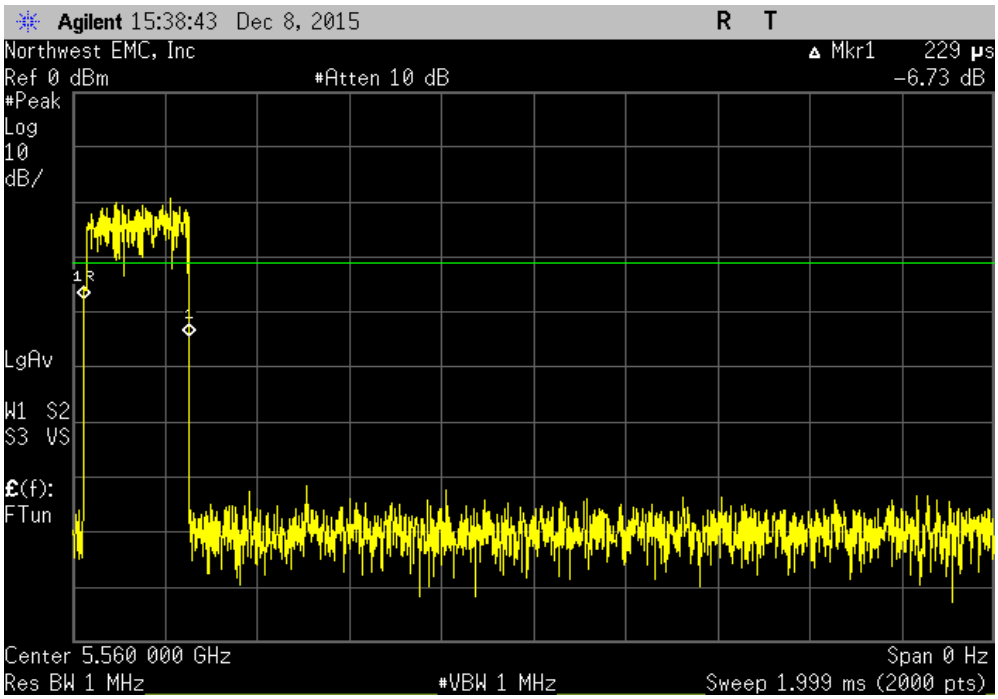
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 2ms Sweep (2)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		0.534	80	N/A	> 17	N/A



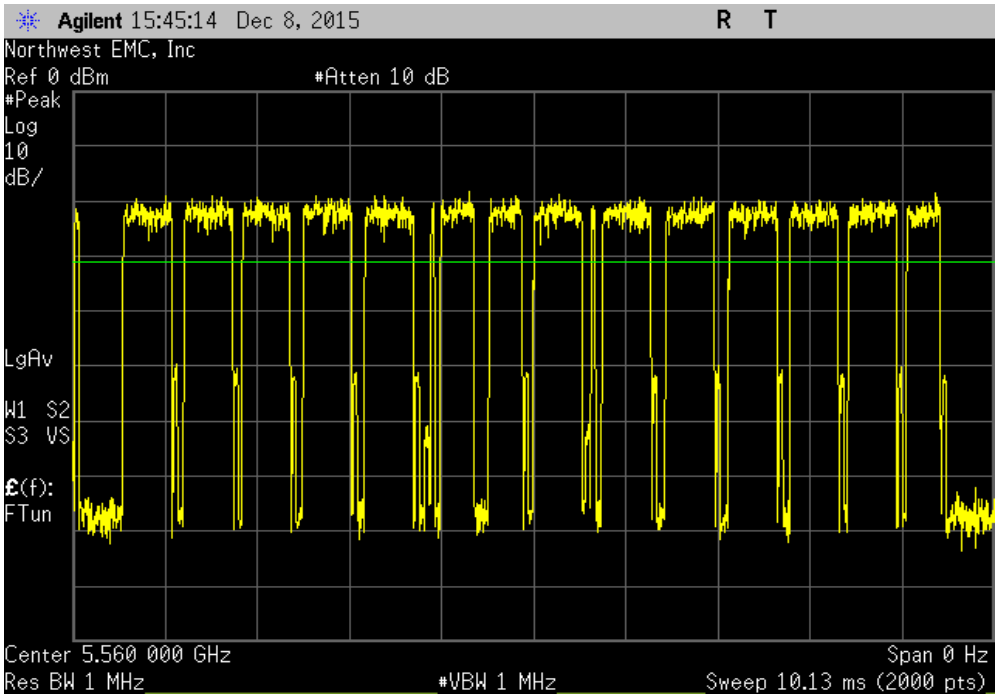
CHANNEL LOADING / CHANNEL UTILIZATION

NORTHWEST EMC
XMit 2015.01.14

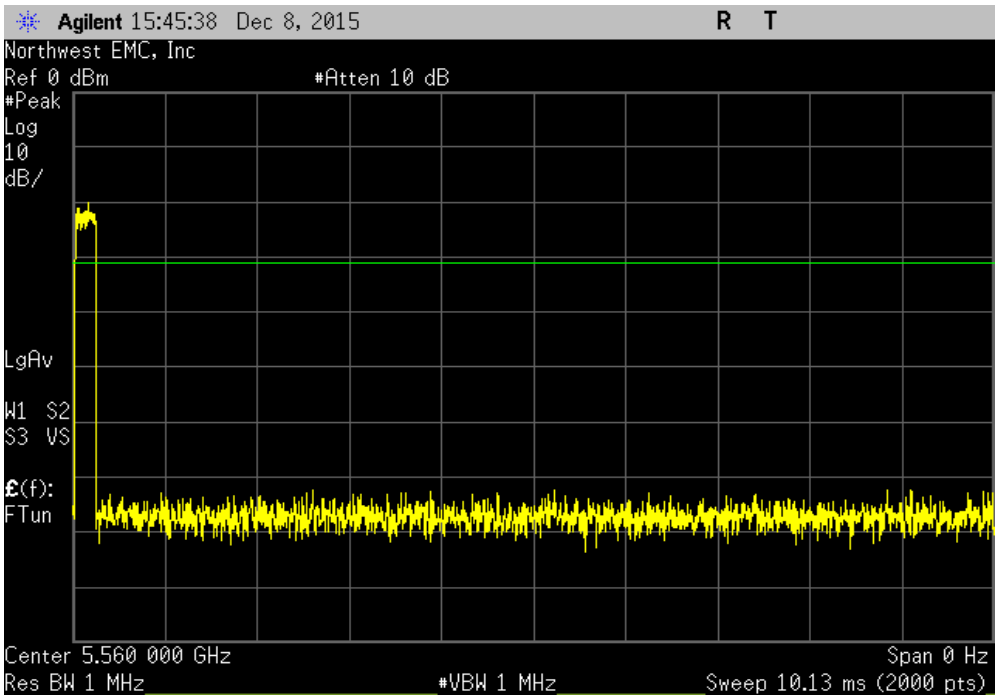
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 2ms Sweep (3)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		0.229	11	52	> 17	Pass



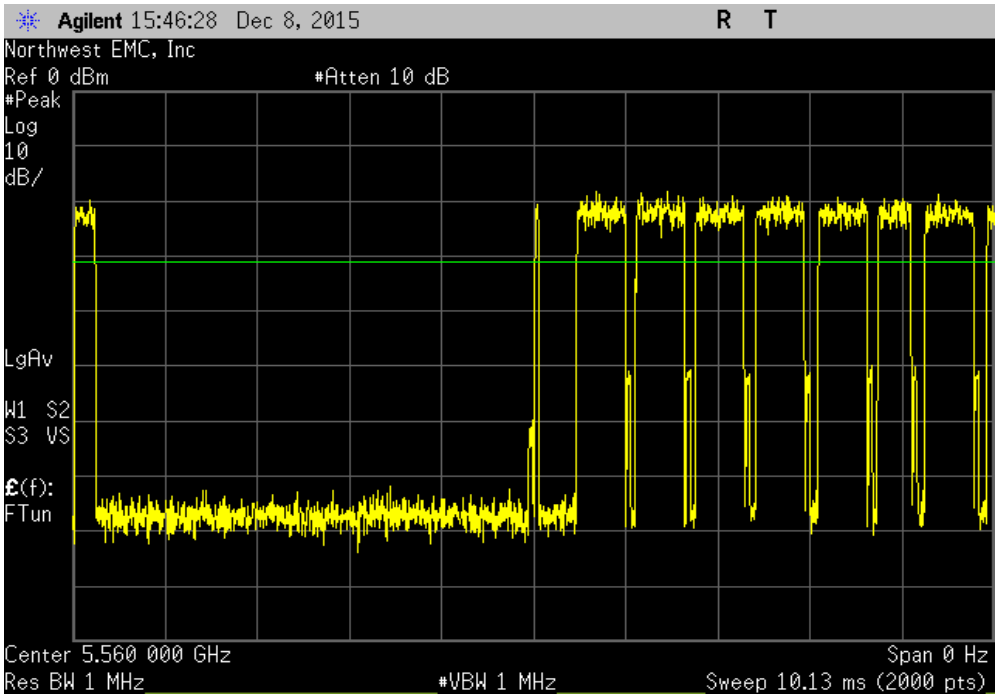
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 10ms Sweep (1)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	66	N/A	> 17	N/A



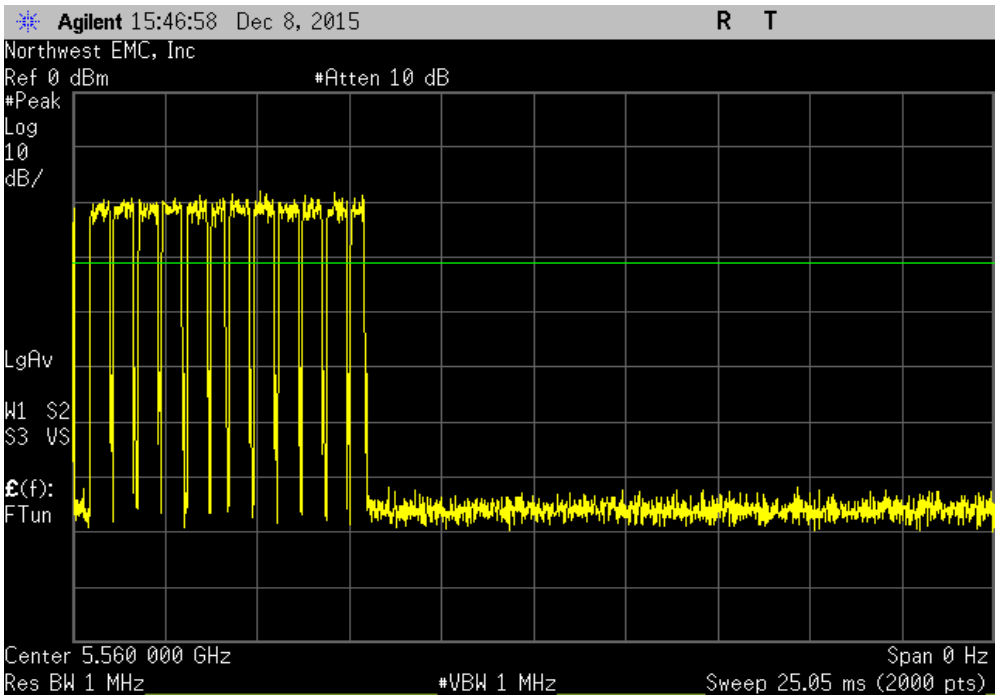
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 10ms Sweep (2)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	2	N/A	> 17	N/A



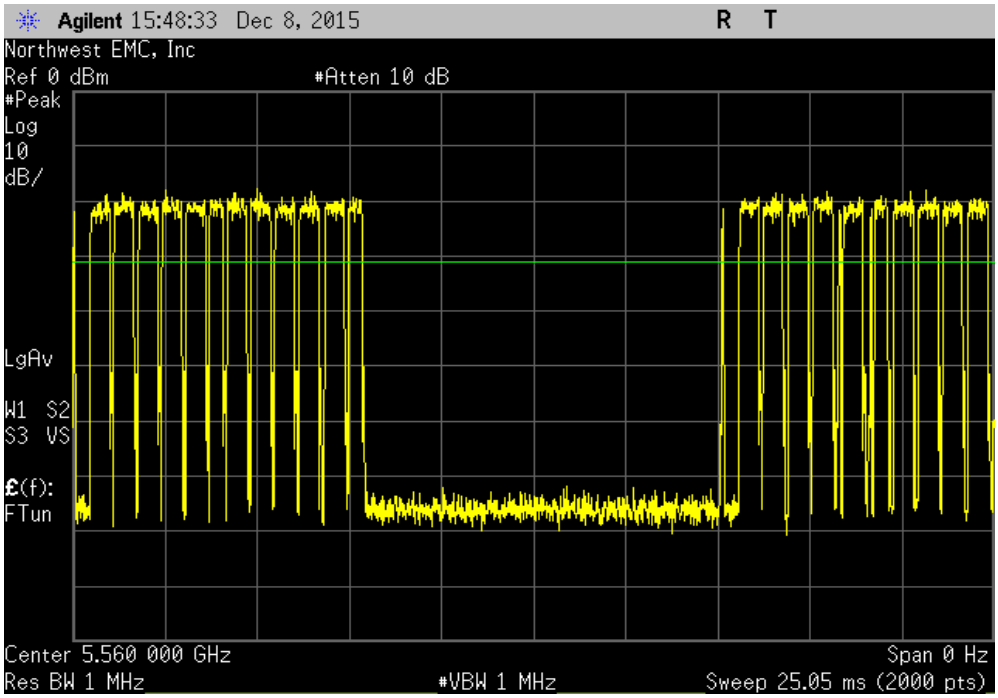
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 10ms Sweep (3)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	37	35	> 17	Pass



Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 25ms Sweep (1)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	23	N/A	> 17	N/A



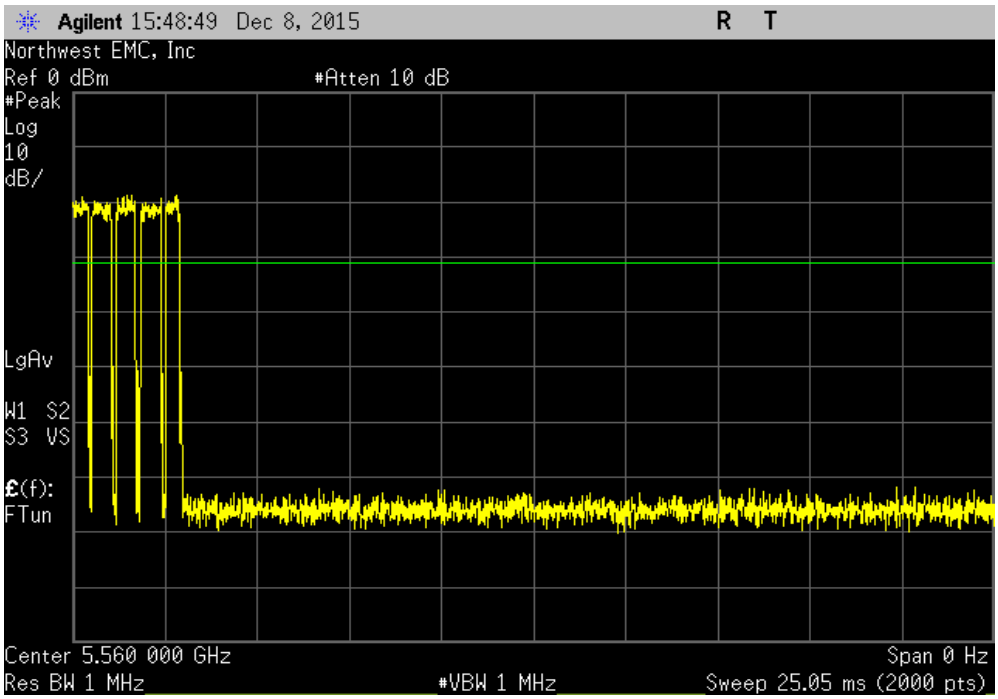
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 25ms Sweep (2)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	44	N/A	> 17	N/A



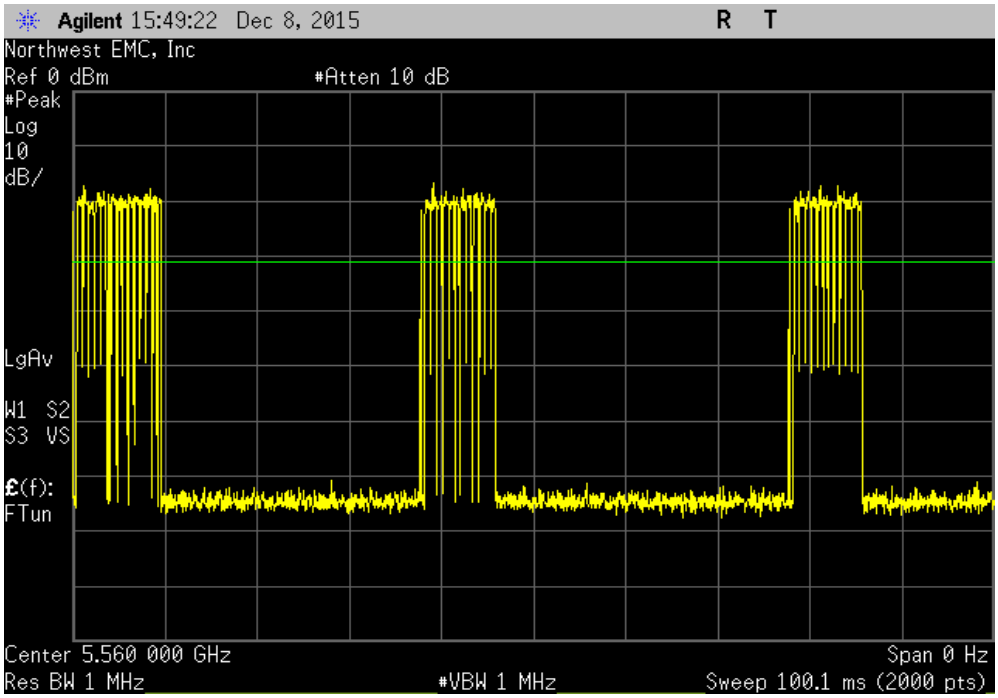
CHANNEL LOADING / CHANNEL UTILIZATION

NORTHWEST EMC
XMit 2015.01.14

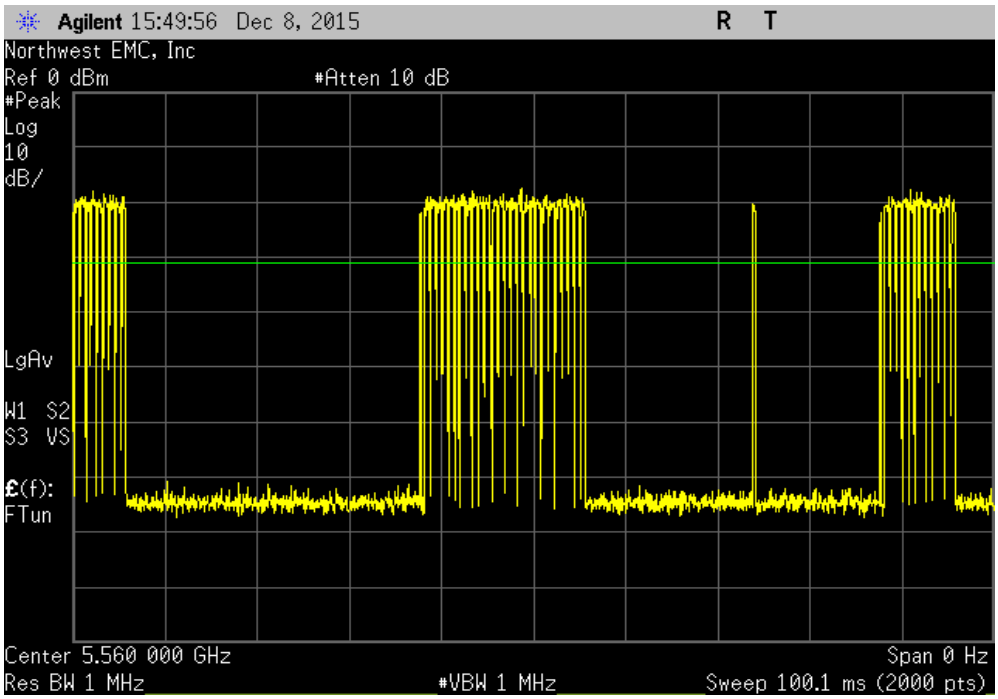
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 25ms Sweep (3)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	9	25	> 17	Pass



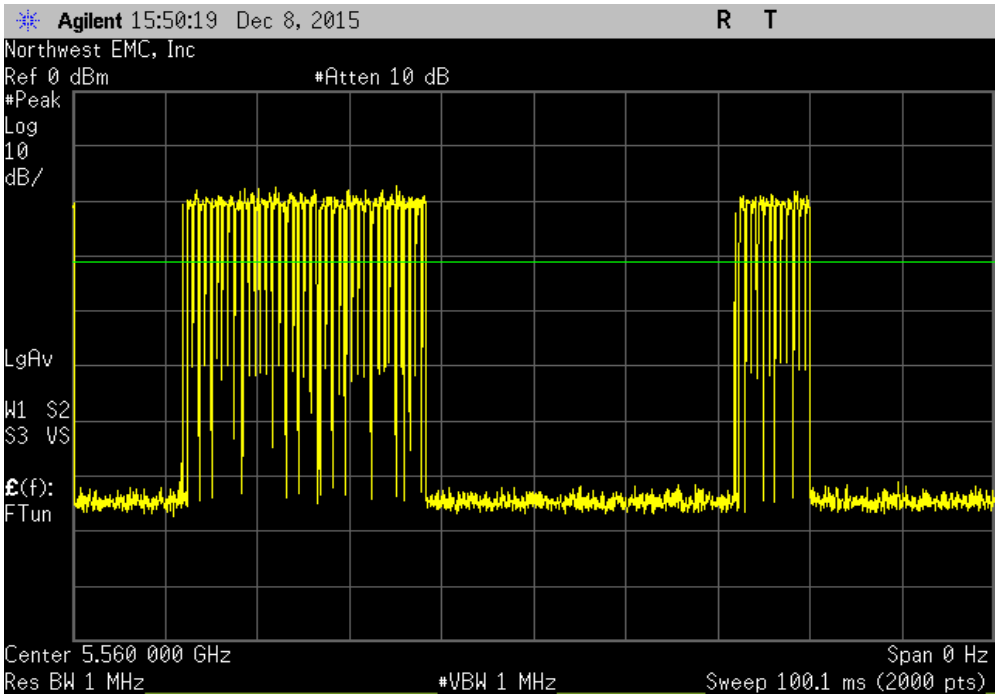
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 100ms Sweep (1)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	N/A	25	> 17	Pass



Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 100ms Sweep (2)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	N/A	25	> 17	Pass



Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 100ms Sweep (3)						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	N/A	25	> 17	Pass

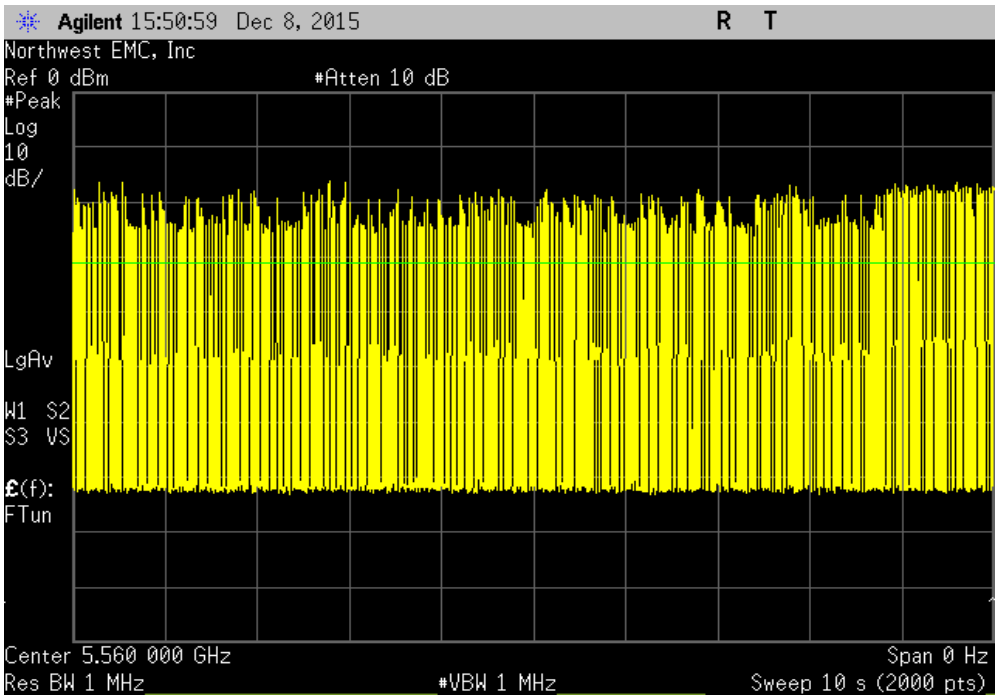


CHANNEL LOADING / CHANNEL UTILIZATION

NORTHWEST EMC

XMit 2015.01.14

Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 10s Sweep						
		Pulse Width (ms)	Ch. Loading (%)	Avg Loading (%)	Limit (%)	Result
		N/A	N/A	25	> 17	Pass



MOVE TIME

XMit 2015.01.14

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 (mo)
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	9/29/2015	12
Attenuator	Aeroflex/Weinschel	3053	RKG	NCR	0
Attenuator	Aeroflex/Weinschel	3053	RKF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAJ	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAI	NCR	0
Access Point	Cisco	AIR-SAP2602E-A-K9	TIY	NCR	0
Generator - Signal	Benchforge Manufacturing	Colt	TIN	NCR	0

TEST DESCRIPTION

The master and client were connected using the conducted method described in the FCC KDB procedure via a series of splitters and attenuators which allows the radar signals to be injected and monitored Where required, an approved Media file was streamed between the master and client or an alternative method to load the channel may be used instead. Channel loading requirements were also verified prior to testing. Configuration and status of the master and client devices were then monitored using the spectrum analyzer. The Move Time test was performed by starting a transmission between the master and client device, and then injecting the appropriate radar signals and making sure both the master and client device vacate the DFS channel within the time specified by the standard.

MOVE TIME

NORTHWEST EMC

XMit 2015.01.14

EUT:	Precor Wi-Fi / Bluetooth Module Model 303346	Work Order:	PRCR0230
Serial Number:	None	Date:	12/09/15
Customer:	Precor, Inc.	Temperature:	23°C
Attendees:	Rich Whitbeck	Humidity:	43%
Project:	None	Barometric Pres.:	1003 mbar
Tested by:	Rod Peloquin, Richard Mellroth	Power: 110VAC/60Hz	Job Site: NC06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

COMMENTS

Client EUT streaming TIA MPEG Test File from Master, data rate set at 6Mbps, directly connected to antenna port 1.

DEVIATIONS FROM TEST STANDARD

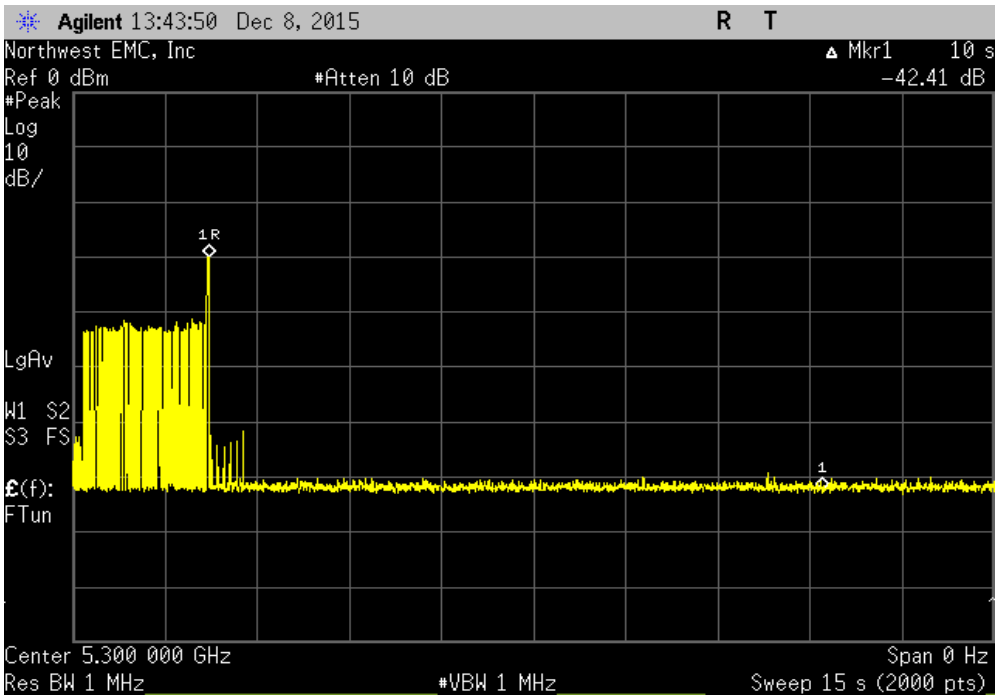
None

Configuration #	9	Signature

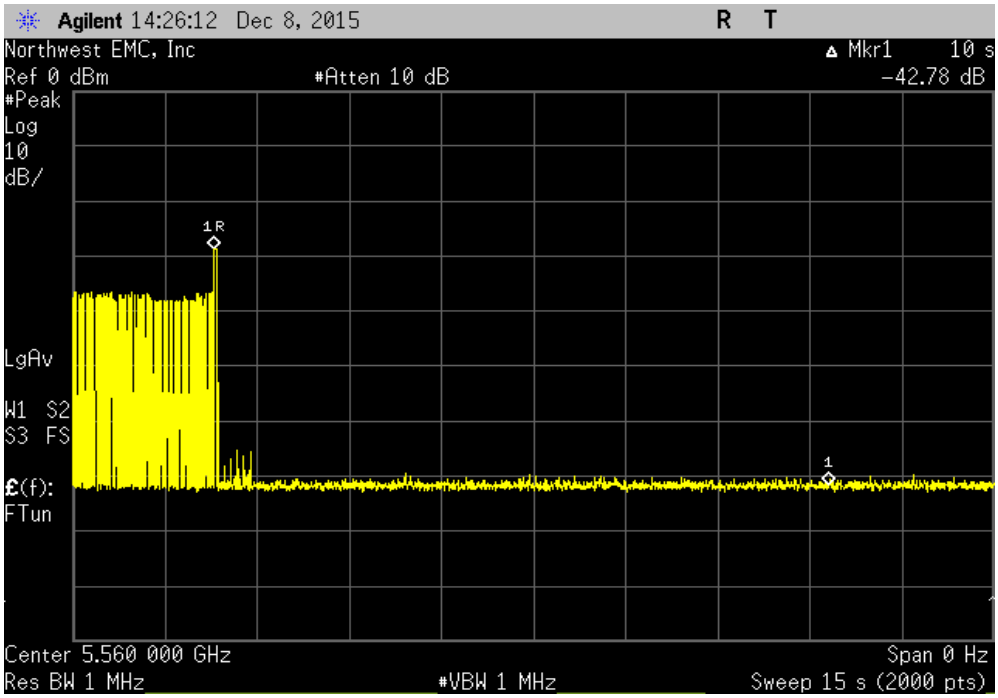
	Value	Limit	Result
Channel 60, 5300 MHz			
802.11(a) 6 Mbps			
Radar Type 0	See Graph	< 10s	Pass
Channel 112, 5560 MHz			
802.11(a) 6 Mbps			
Radar Type 0	See Graph	< 10s	Pass

MOVE TIME

Channel 60, 5300 MHz, 802.11(a) 6 Mbps, Radar Type 0						
				Value	**Limit**	**Result**
				See Graph	< 10s	Pass



Channel 112, 5560 MHz, 802.11(a) 6 Mbps, Radar Type 0						
				Value	**Limit**	**Result**
				See Graph	< 10s	Pass



CLOSING TIME

XMit 2015.01.14

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 (mo)
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	9/29/2015	12
Attenuator	Aeroflex/Weinschel	3053	RKG	NCR	0
Attenuator	Aeroflex/Weinschel	3053	RKF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAJ	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAI	NCR	0
Access Point	Cisco	AIR-SAP2602E-A-K9	TIY	NCR	0
Generator - Signal	Benchforge Manufacturing	Colt	TIN	NCR	0

TEST DESCRIPTION

The master and client were connected using the conducted method described in the FCC KDB procedure via a series of splitters and attenuators which allows the radar signals to be injected and monitored. Where required, an approved Media file was streamed through the master and client or an alternative method to load the channel may be used instead. Channel loading requirements were also verified prior to testing. Configuration and status of the master and client devices were then monitored using the spectrum analyzer. The Closing Time test was performed by starting a transmission between the master and client device, and then injecting the appropriate radar signals. All transmission signals between the master and client in the first 200mS are allowed. After this time period, the number of transmissions signals are counted and multiplied by the pulse width value(s). This aggregate is then added to the 200mS allowance for the final value and compared to the specified limit.

CLOSING TIME

NORTHWEST EMC

XMit 2015.01.14

EUT:	Precor Wi-Fi / Bluetooth Module Model 303346			Work Order:	PRCR0230
Serial Number:	None			Date:	12/09/15
Customer:	Precor, Inc.			Temperature:	23°C
Attendees:	Rich Whitbeck			Humidity:	43%
Project:	None			Barometric Pres.:	1003 mbar
Tested by:	Rod Peloquin, Richard Mellroth	Power:	110VAC/60Hz	Job Site:	NC06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

COMMENTS

Client EUT streaming TIA MPEG Test File from Master, data rate set at 6Mbps, directly connected to antenna port 1.

DEVIATIONS FROM TEST STANDARD

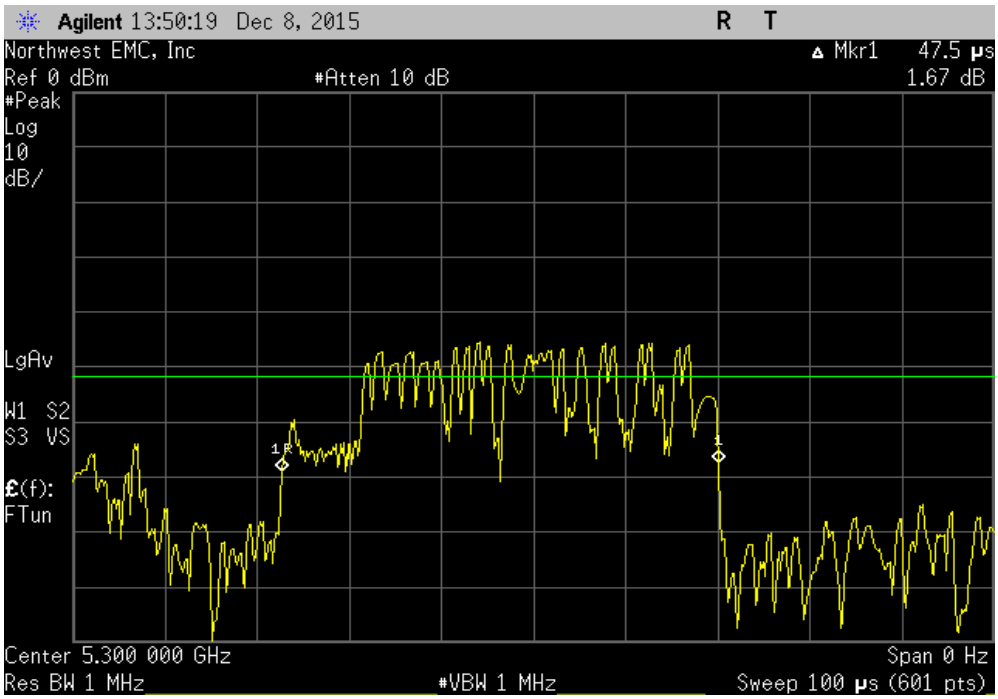
None

Configuration #	9	Signature

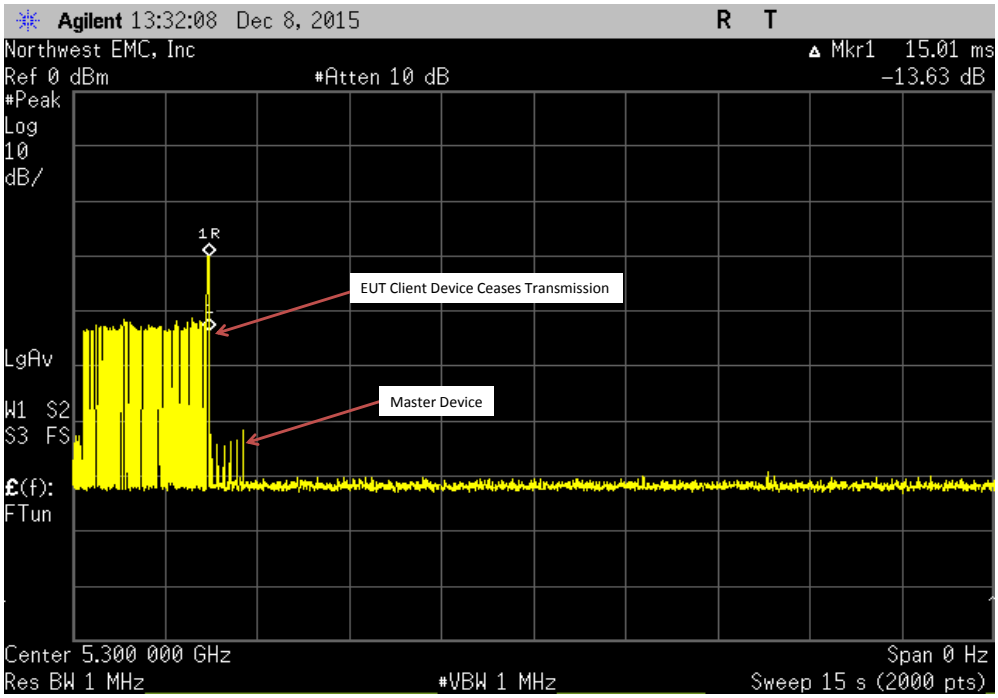
	Pulse Width (ms)	Closing Time (ms)	Limit (ms)	Result
Channel 60, 5300 MHz				
802.11(a) 6 Mbps				
Radar Type 0				
Control Signal Pulse Width	0.0475	N/A	N/A	N/A
Closing Time	N/A	15.01	200	Pass
Channel 112, 5560 MHz				
802.11(a) 6 Mbps				
Radar Type 0				
Control Signal Pulse Width	0.0475	N/A	N/A	N/A
Closing Time	N/A	53.28	200	Pass

CLOSING TIME

Channel 60, 5300 MHz, 802.11(a) 6 Mbps, Radar Type 0, Control Signal Pulse Width						
			Pulse Width (ms)	Closing Time (ms)	Limit (ms)	Result
			0.0475	N/A	N/A	N/A



Channel 60, 5300 MHz, 802.11(a) 6 Mbps, Radar Type 0, Closing Time						
			Pulse Width (ms)	Closing Time (ms)	Limit (ms)	Result
			N/A	15.01	200	Pass

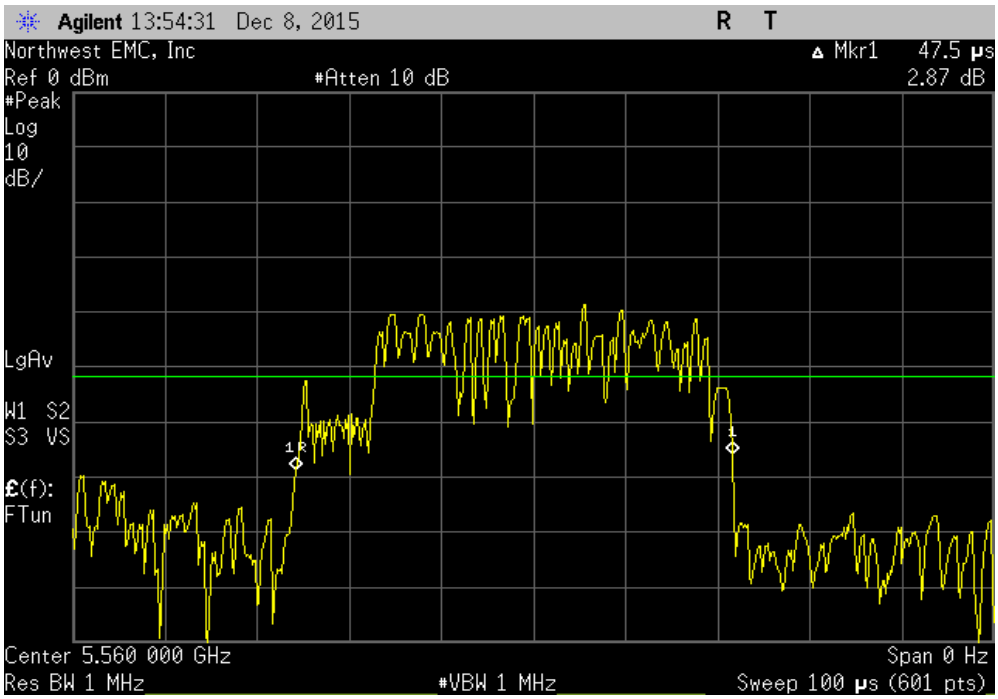


CLOSING TIME

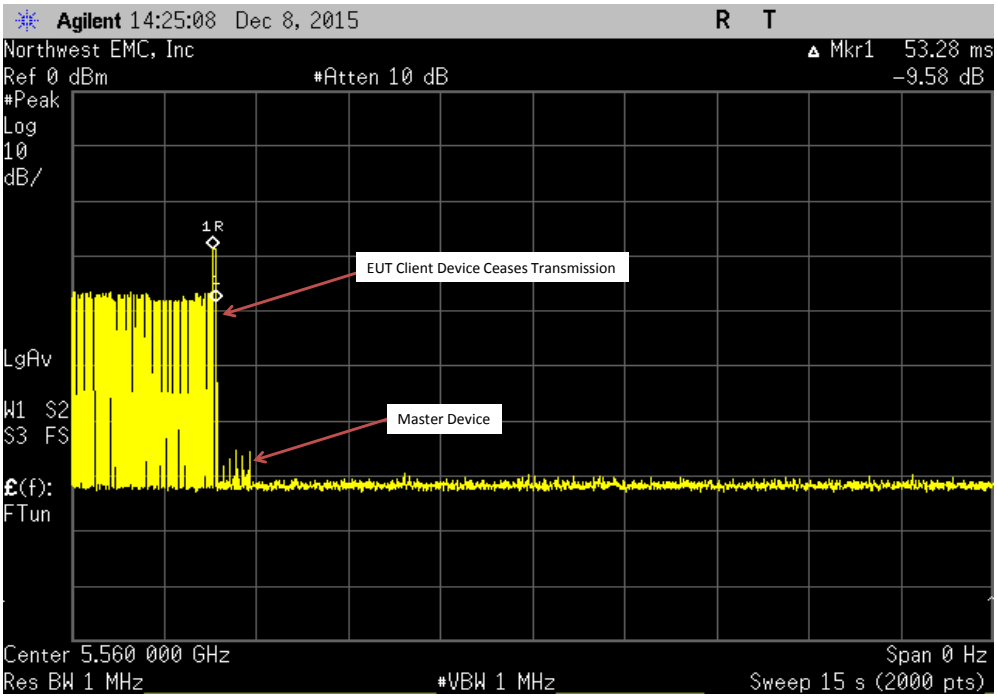
NORTHWEST EMC

XMit 2015.01.14

Channel 112, 5560 MHz, 802.11(a) 6 Mbps, Radar Type 0, Control Signal Pulse Width						
			Pulse Width (ms)	Closing Time (ms)	Limit (ms)	Result
			0.0475	N/A	N/A	N/A



Channel 112, 5560 MHz, 802.11(a) 6 Mbps, Radar Type 0, Closing Time						
			Pulse Width (ms)	Closing Time (ms)	Limit (ms)	Result
			N/A	53.28	200	Pass



NON OCCUPANCY PERIOD

XMit 2015.01.14

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 (mo)
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	9/29/2015	12
Attenuator	Aeroflex/Weinschel	3053	RKG	NCR	0
Attenuator	Aeroflex/Weinschel	3053	RKF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAJ	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAI	NCR	0
Access Point	Cisco	AIR-SAP2602E-A-K9	TIY	NCR	0
Generator - Signal	Benchforge Manufacturing	Colt	TIN	NCR	0

TEST DESCRIPTION

The master and client were connected using the conducted method described in the FCC KDB procedure via a series of splitters and attenuators which allows the communication and injected radar signals to be monitored simultaneously. The spectrum analyzer was configured to sweep the frequency for at least 30 minutes. The appropriate radar signal was injected and the channel was monitored to make sure the master and client devices vacated the channel and did not use it again for a period of time equal to or greater than 30 minutes.

NON OCCUPANCY PERIOD

NORTHWEST EMC

XMit 2015.01.14

EUT:	Precor Wi-Fi / Bluetooth Module Model 303346			Work Order:	PRCR0230
Serial Number:	None			Date:	12/09/15
Customer:	Precor, Inc.			Temperature:	23°C
Attendees:	Rich Whitbeck			Humidity:	43%
Project:	None			Barometric Pres.:	1003 mbar
Tested by:	Rod Peloquin, Richard Mellroth	Power:	110VAC/60Hz	Job Site:	NC06

TEST SPECIFICATIONS	Test Method
FCC 15.407:2015	KDB 905462 D02 UNII DFS Compliance Procedures New Rules v01r02

COMMENTS

Client EUT streaming TIA MPEG Test File from Master, data rate set at 6Mbps, directly connected to antenna port 1. Ambient noise from building Wifi was observed during the Non-Occupancy period.

DEVIATIONS FROM TEST STANDARD

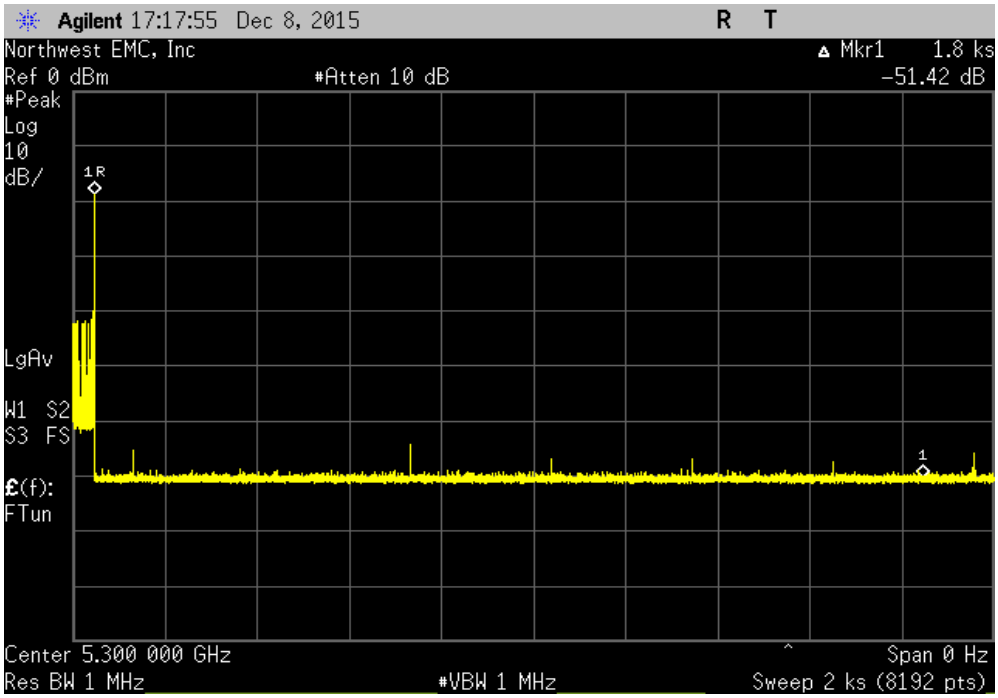
None

Configuration #	9	Signature

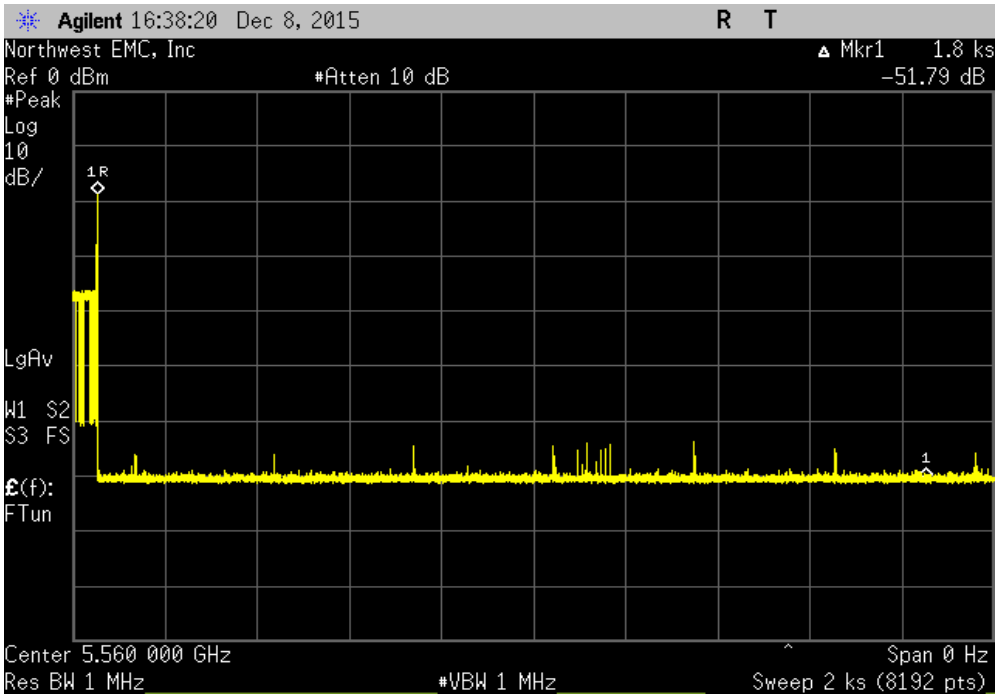
		Value	Limit	Result
Channel 60, 5300 MHz				
	802.11(a) 6 Mbps			
	30min Non Occupancy Period	> 30 min	≥ 30 min	Pass
Channel 112, 5560 MHz				
	802.11(a) 6 Mbps			
	30min Non Occupancy Period	> 30 min	≥ 30 min	Pass

NON OCCUPANCY PERIOD

Channel 60, 5300 MHz, 802.11(a) 6 Mbps, 30min Non Occupancy Period						
				Value	Limit	Result
				> 30 min	≥ 30 min	Pass



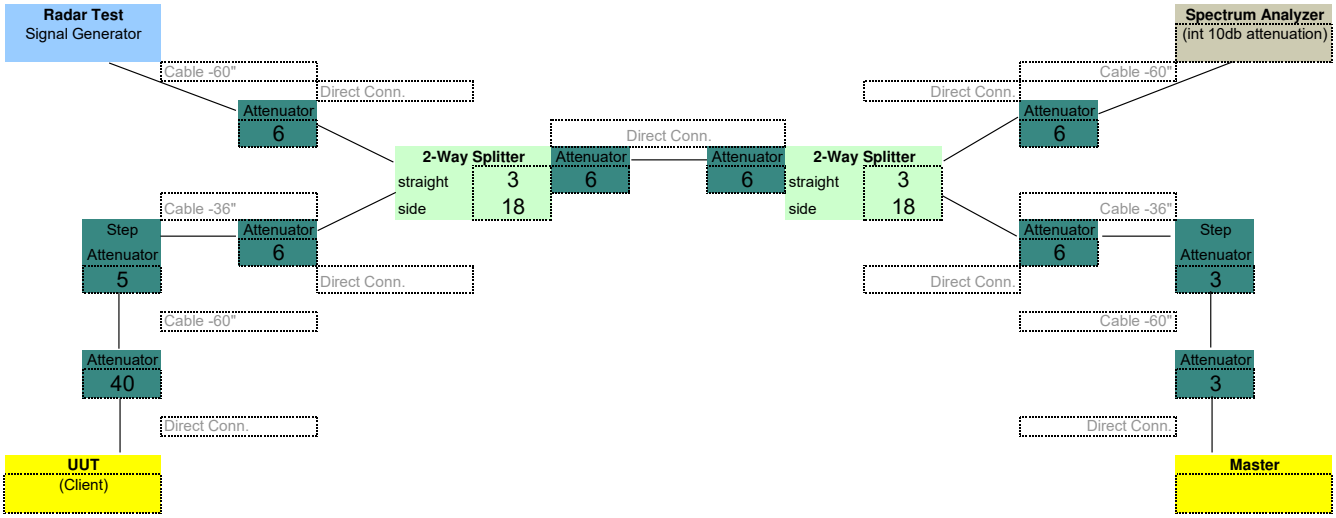
Channel 112, 5560 MHz, 802.11(a) 6 Mbps, 30min Non Occupancy Period						
				Value	Limit	Result
				> 30 min	≥ 30 min	Pass



DFS Test Setup

NORTHWEST EMC

XMit 2015.01.14



Attenuation

Master Radar Sim	Master Spec. Anal.	Client Spec. Anal.	Client Radar Sim	Master Client	Radar Sim Spec. Anal.
3	3	40	40	3	6
3	3	5	5	3	3
6	6	6	6	6	6
3	18	3	18	3	6
6	6	6	6	6	3
6		6		6	6
3		3		3	
6		6		6	
				5	
				40	
========	========	========	========	========	========
36	36	75	75	81	30