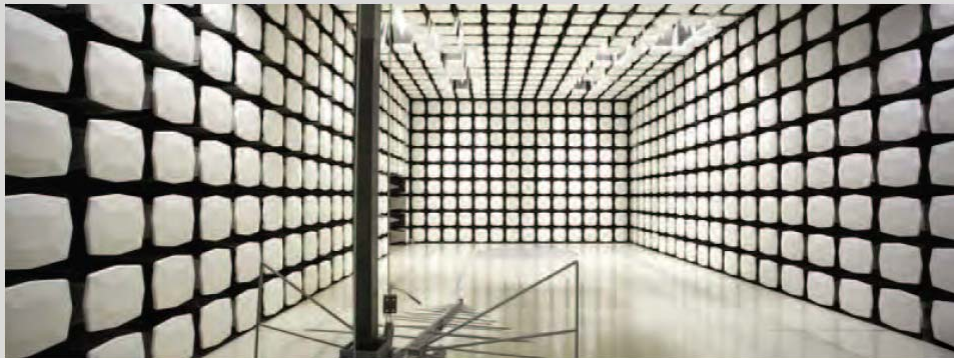# NORTHWEST EMC

Etherios Design Solutions

ConnectCore i.MX6 WiFi/Bluetooth

FCC 15.407:2014

Report # ETHE0018

NVLAP Lab Code: 200881-0

CERTIFICATE OF TEST

Last Date of Test: December 09, 2014
Etherios Design Solutions
Model: ConnectCore i.MX6 WiFi/Bluetooth

Radio Equipment Testing

Standards

Specification	Method
FCC 15.407:2014	FCC KDB 905462 D01 v01

Results

Method Clause	Test Description	Applied	Results	Comments
KDB 905462	Channel Loading/Channel Utilization	Yes	Pass	
KDB 905462	Move Time	Yes	Pass	
KDB 905462	Closing Time	Yes	Pass	
KDB 905462	Non Occupancy Period	Yes	Pass	
KDB 905462	Channel Availability Check	No	N/A	Not required.
KDB 905462	Detection Bandwidth	No	N/A	Not required.

Deviations From Test Standards

None

Approved By:

Tim O'Shea, 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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

NORTHWEST EMC
REV 2014.10.08

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

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

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.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

MEASUREMENT UNCERTAINTY

Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document 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 on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.
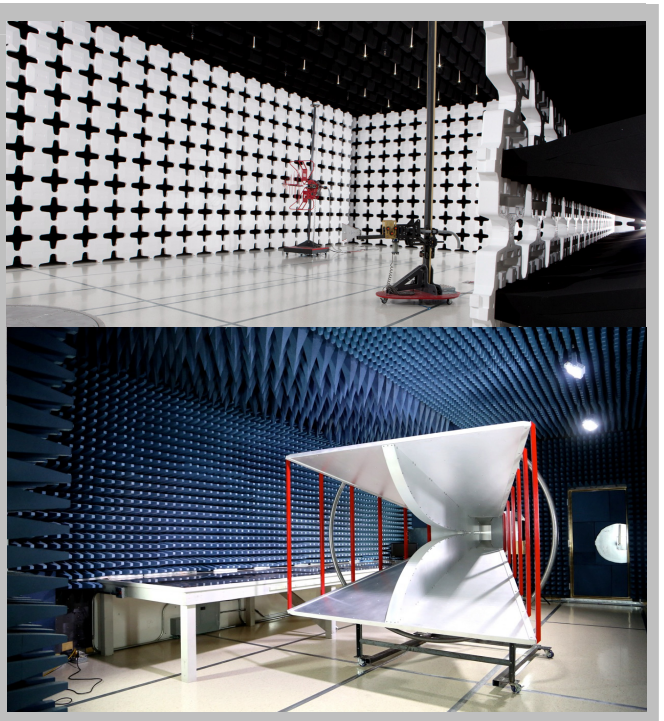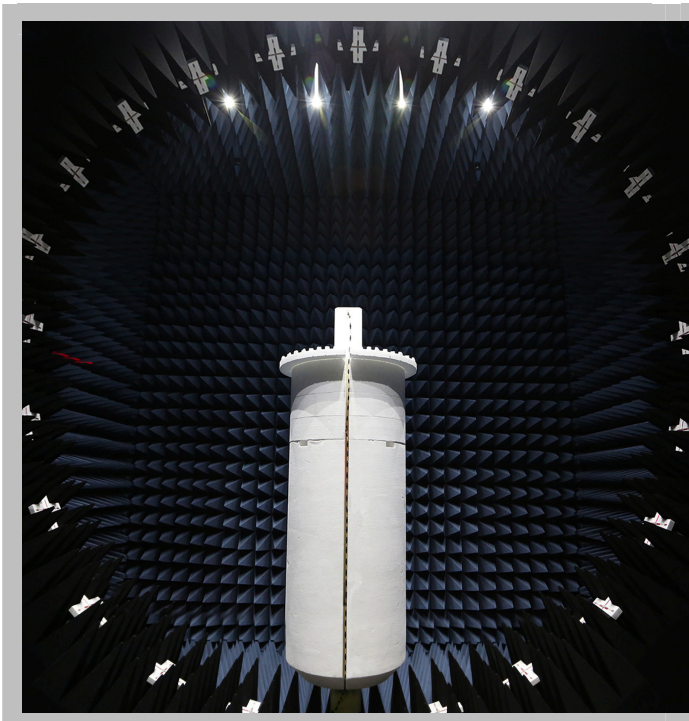
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	4.7 dB	-4.7 dB
AC Powerline Conducted Emissions (dB)	2.9 dB	-2.9 dB

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13	Labs MN01-08, MN10	Labs NY01-04	Labs EV01-12	Labs TX01-09	Labs NC01-05
41 Tesla	9349 W Broadway Ave.	4939 Jordan Rd.	22975 NW Evergreen Pkwy	3801 E Plano Pkwy	19201 120th Ave NE
Irvine, CA 92618	Brooklyn Park, MN 55445	Elbridge, NY 13060	Hillsboro, OR 97124	Plano, TX 75074	Bothell, WA 9801
(949) 861-8918	(612)-638-5136	(315) 685-0796	(503) 844-4066	(469) 304-5255	(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	In Process	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110

PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Digi International
Address:	11001 Bren Road East
City, State, Zip:	Minnetonka, MN 55343
Test Requested By:	Collin LaFave
Model:	ConnectCore i.MX6 WiFi/Bluetooth
First Date of Test:	December 05, 2014
Last Date of Test:	December 09, 2014
Receipt Date of Samples:	December 05, 2014
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

The EUT is a client device and has no radar detection and no ad-hoc capability. The module contains an IEEE 802.11a/b/g/n radio, BT Radio, Quad Core processor.

Hardware, Firmware, and OS Versions:

iPerf via command prompt

The operating frequency band(s) of the equipment.

The radio operates on channel center frequencies of 5.18–5.32 GHz, 5.50–5.70 GHz, and 5.745-5.825 GHz with Maximum occupied channel bandwidth of 20 MHz

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

Client device with no radar detection and no ad-hoc capability

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.

The client does not have radar detection and no ad-hoc capability. A DFS-compliant Master device was used for testing. It's the CISCO Model AIR-AP1252AG-A-K9. FCC ID: LDK102062, IC: 2461B-102062

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 18.1 dBm.

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 mode provided by the customer to stream data from the Master Device to the Client Device. Channel loading was greater than 55%.

PRODUCT DESCRIPTION

Transmit Power Control description.
This device does not exceed 27dBm EIRP, so 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.
IP / Load based system w/spectrum sharing mechanism based on IEEE 802.11 standard

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 1.44 minutes 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 (EUT) does not have radar detection, so the parameters of the Radar Waveforms are not available to the end user.

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.
The client device (EUT) does not have radar detection, so this requirement is not applicable.

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 utilizes three antennas. The highest gain antennas to be used with the EUT are the Ethertronics 1001932 magnetic dipole with 5.0 dBi gain in the DFS bands. The DFS testing was done as a conducted setup..

CONFIGURATIONS

Configuration ETHE0018- 1

Software/Firmware Running during test	
Description	Version
iPerf via command prompt	Unknown

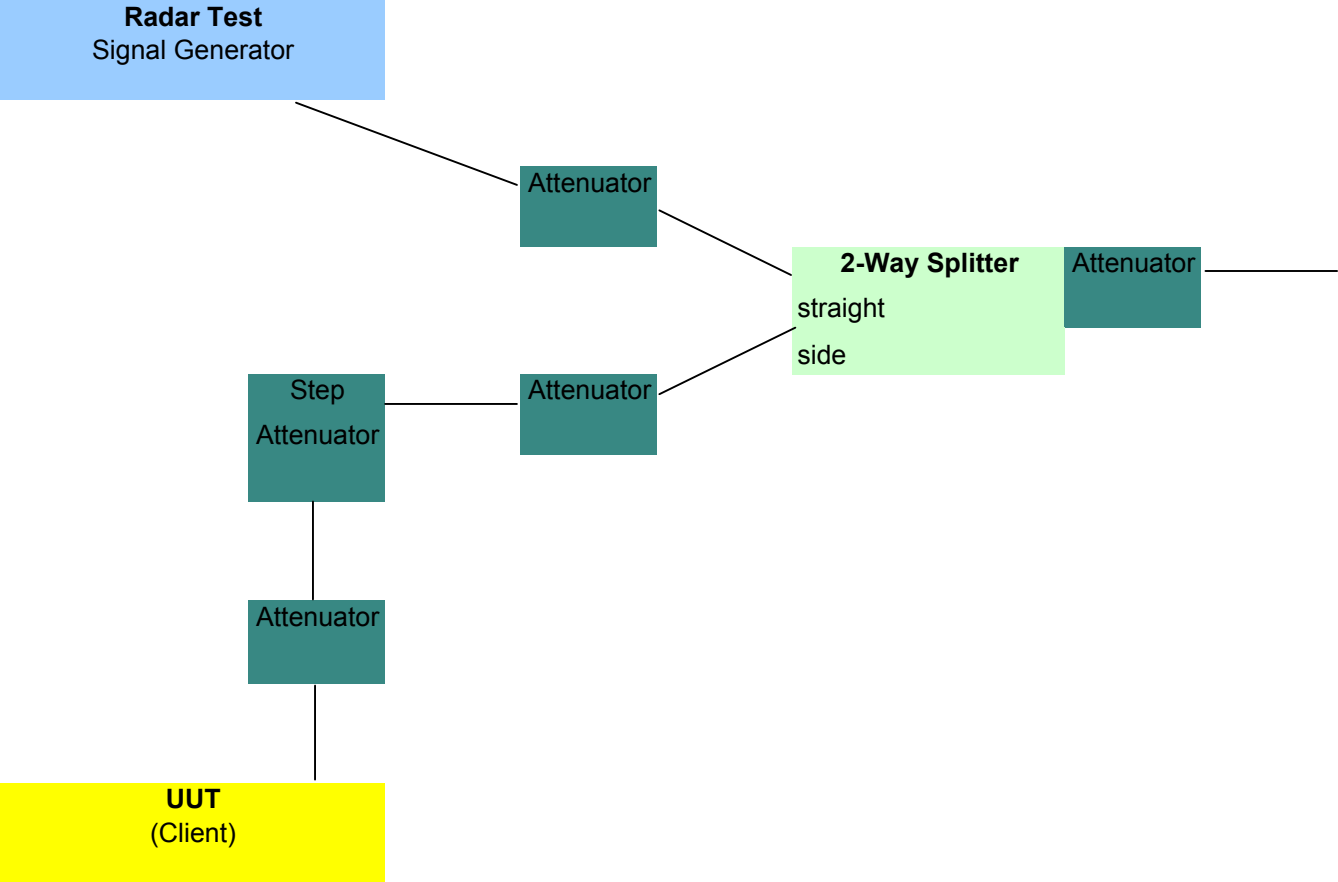| EUT			
Description	Manufacturer	Model/Part Number	Serial Number
ConnectCore i.MX6 WiFi/Bluetooth	Etherios Design Solutions	5001475-02	00409D 7C03D2

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop Supply	Lenovo	92P1160	None
Laptop	Lenovo	T400	L3-A9984 08/09
DC Power Supply	EZ	GP-4303D	TPY

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Mains Cable	No	1.8m	No	AC Mains	Laptop Supply
USB to Serial	Yes	2.2m	No	Laptop	ConnectCore i.MX6 WiFi/Bluetooth
AC Mains Cable	No	1.80m	No	AC Mains	Power Supply
DC Power	No	1.80m	Yes	Laptop Supply	Laptop
DC Power	No	1.20m	No	Power Supply	ConnectCore i.MX6 WiFi/Bluetooth

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	12/5/2014	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.
2	12/8/2014	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.
3	12/9/2014	Move 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.
4	12/9/2014	Closing Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Radar Test
Signal Generator

Attenuator

2-Way Splitter
straight
side

Attenuator

Step
Attenuator

Attenuator

Attenuator

UUT
(Client)

Spectrum Analyzer
(int 10db attenuation)

Attenuator

Attenuator   **2-Way Splitter**

straight

side

Attenuator

Step
Attenuator

Attenuator

Master
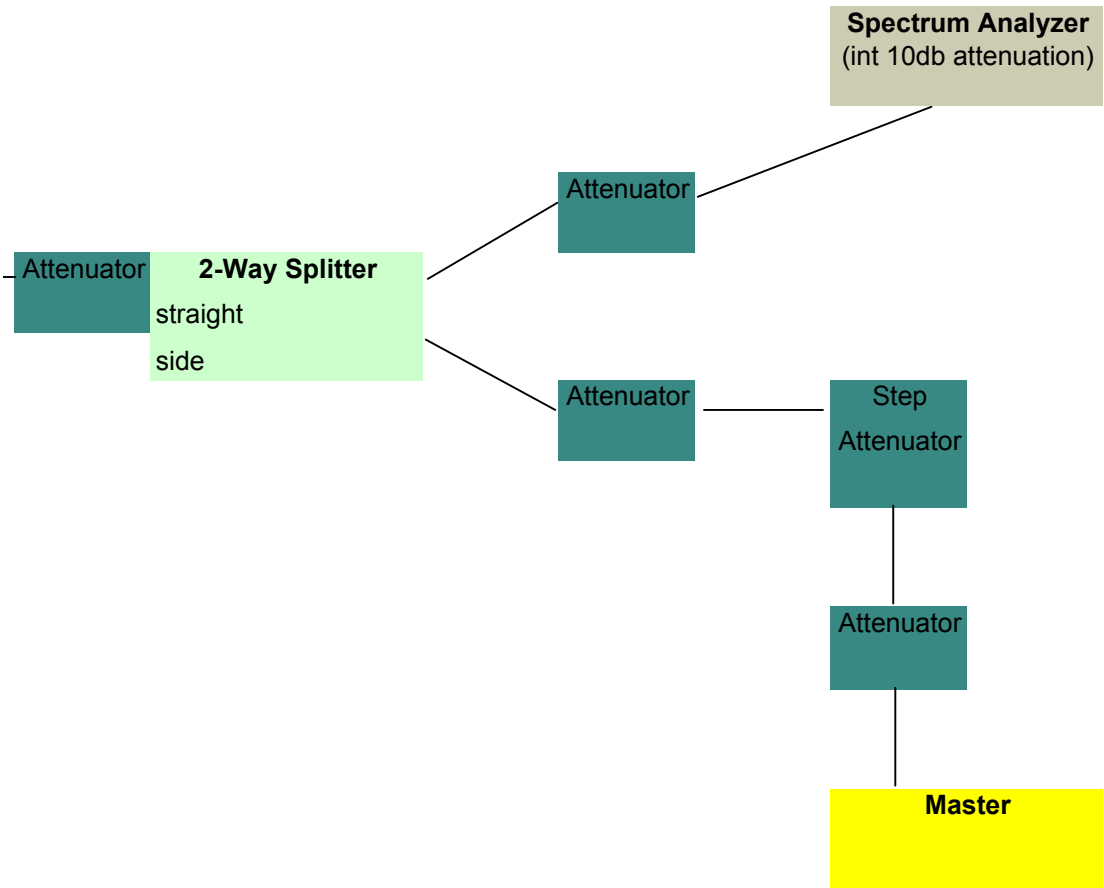
Test Signal #	1
	2
	3
	4
	5
	6
	7
	8
	9
	10
	11
	12
	13
	14
	15
	16
	17
	18
	19
	20

#DIV/0!

0	0						

CHANNEL LOADING/CHANNEL UTILIZATION

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 (mos)
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAE	NCR	0
Step Attenuator	Aeroflex/Weinschel	3053	RKN	NCR	0
Step Attenuator	Aeroflex/Weinschel	3053	RKM	NCR	0
DC Power Supply	EZ Digital Co	GP-4303D	TPY	NCR	0
DFS Access Point	Cisco	AIR-AP1252AG-A-K9	TIV	NCR	0
DFS Signal Generator	Benchforge Manufacturing	Colt	TIP	NCR	0
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

The measurements were made using a zero span on the spectum analyzer to see the pulses in the time domain as further described be the sweep times listed in the datasheet. A direct connection was made between the RF output of the master and client system setup which used the conducted method described in the FCC KDB 905462 test procedure via a series of splitters and attenuators.

NORTHWEST EMC

CHANNEL LOADING/CHANNEL UTILIZATION

EUT: ConnectCore i.MX6 Wi-Fi/Bluetooth			**Work Order:** ETHE0018	
Serial Number: 00409D 7C03D2			**Date:** 12/05/14	
Customer: Etherios Design Solutions			**Temperature:** 21.2°C	
Attendees: None			**Humidity:** 18%	
Project: None			**Barometric Pres.:** 1022.3	
Tested by: Trevor Buls	**Power:** 5VDC		**Job Site:** MN08	

TEST SPECIFICATIONS	Test Method
FCC 15.407:2014	FCC KDB 905462 D01 v01

COMMENTS

Mode of operation was provided by the client.

DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	*Signature*	*Trevor Buls*

	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
5250 - 5350 MHz Band					
Ch 60: 5300 MHz					
2ms	N/A	N/A	N/A	N/A	N/A
10ms	2	4	80%	> 45	Pass
25ms	2	7.5	60%	> 45	Pass
100ms	2	25	50%	> 45	Pass
10s	N/A	N/A	N/A	N/A	N/A
5470 - 5725 MHz Band					
Ch 112: 5560 MHz					
2ms	N/A	N/A	N/A	N/A	N/A
10ms	2	3	60%	> 45	Pass
25ms	2	9	72%	> 45	Pass
100ms	2	29	58%	> 45	Pass
10s	N/A	N/A	N/A	N/A	N/A

CHANNEL LOADING/CHANNEL UTILIZATION

5250 - 5350 MHz Band, Ch 60: 5300 MHz, 2ms					
	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
	N/A	N/A	N/A	N/A	N/A
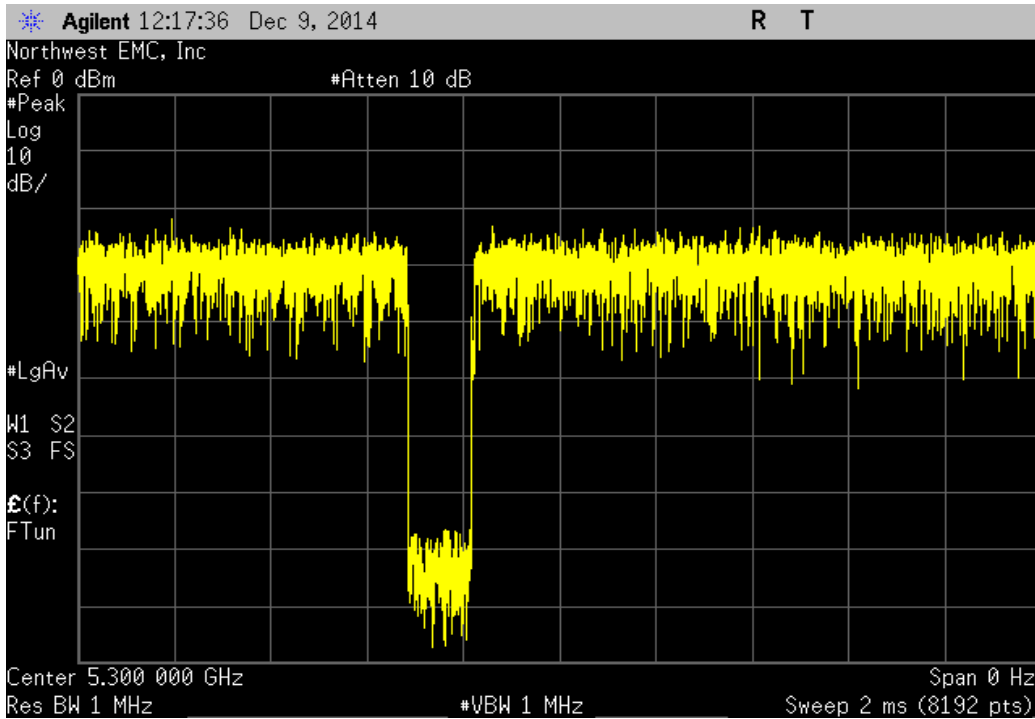
5250 - 5350 MHz Band, Ch 60: 5300 MHz, 10ms					
	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
	2	4	80%	> 45	Pass

CHANNEL LOADING/CHANNEL UTILIZATION
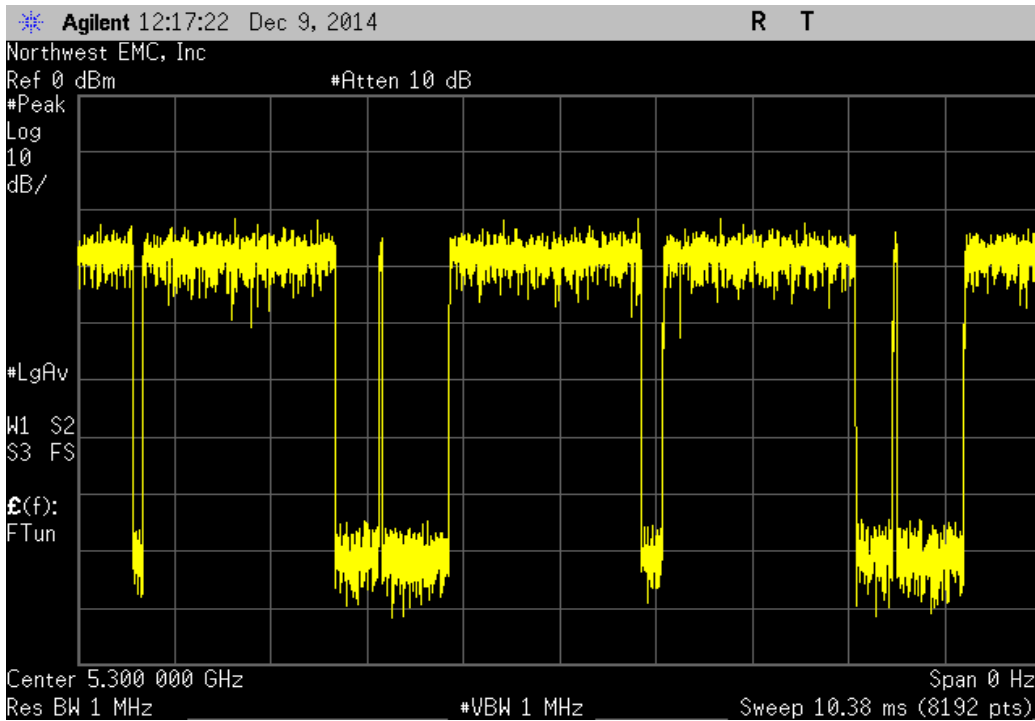
5250 - 5350 MHz Band, Ch 60: 5300 MHz, 25ms				
Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
2	7.5	60%	> 45	Pass
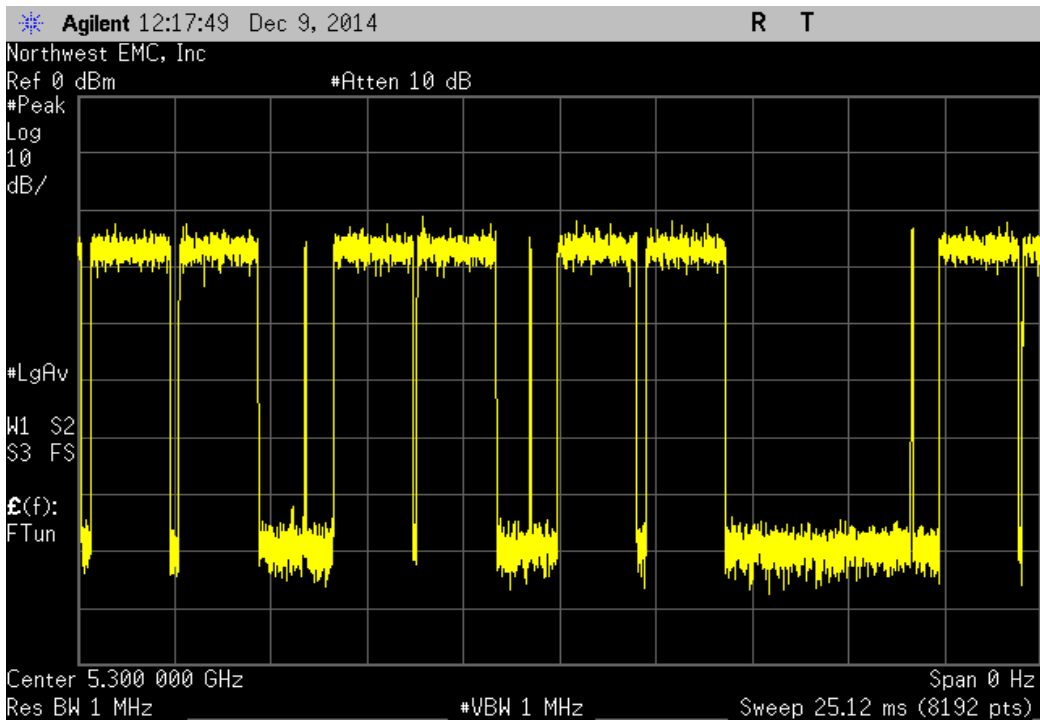
5250 - 5350 MHz Band, Ch 60: 5300 MHz, 100ms				
Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
2	25	50%	> 45	Pass

CHANNEL LOADING/CHANNEL UTILIZATION
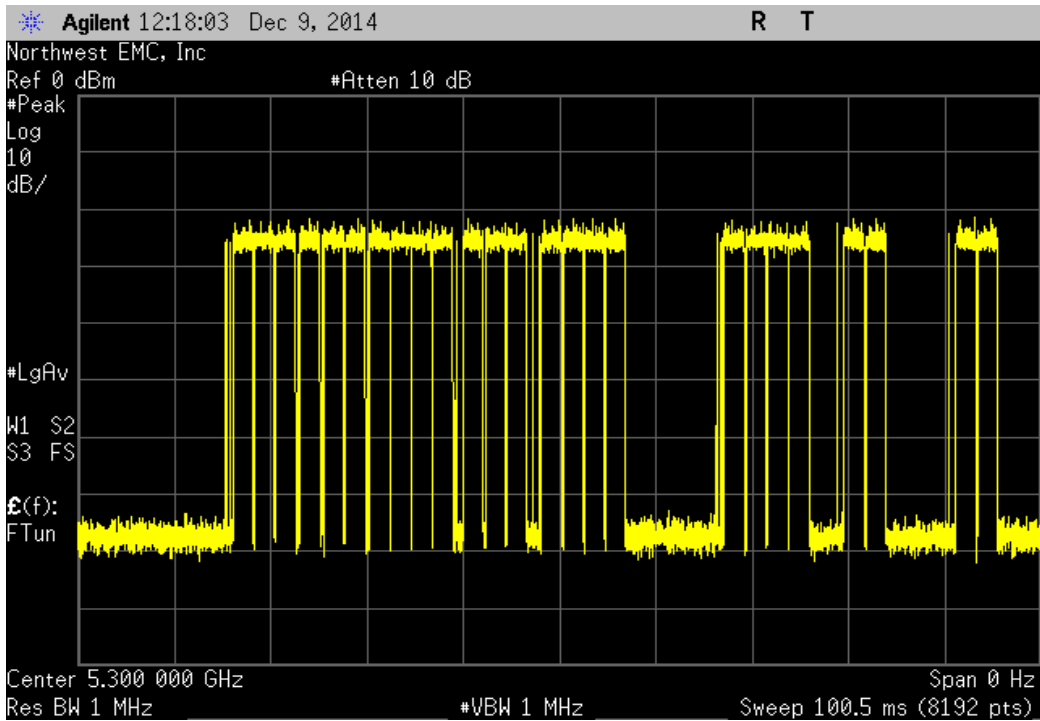
5250 - 5350 MHz Band, Ch 60: 5300 MHz, 10s					
	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
	N/A	N/A	N/A	N/A	N/A
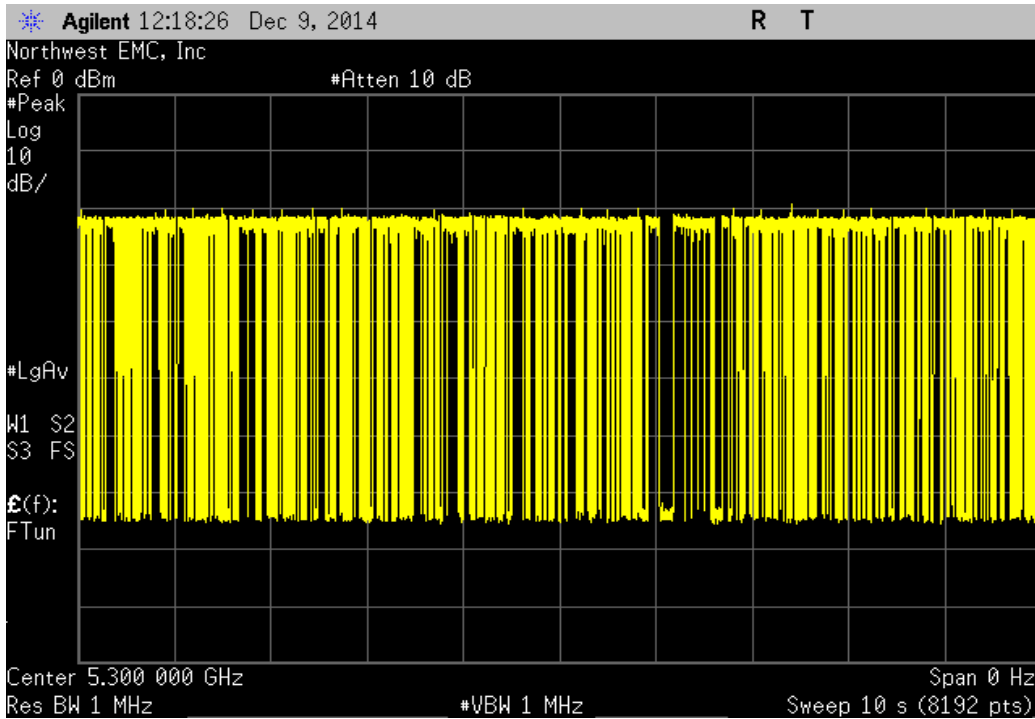
5470 - 5725 MHz Band, Ch 112: 5560 MHz, 2ms					
	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
	N/A	N/A	N/A	N/A	N/A
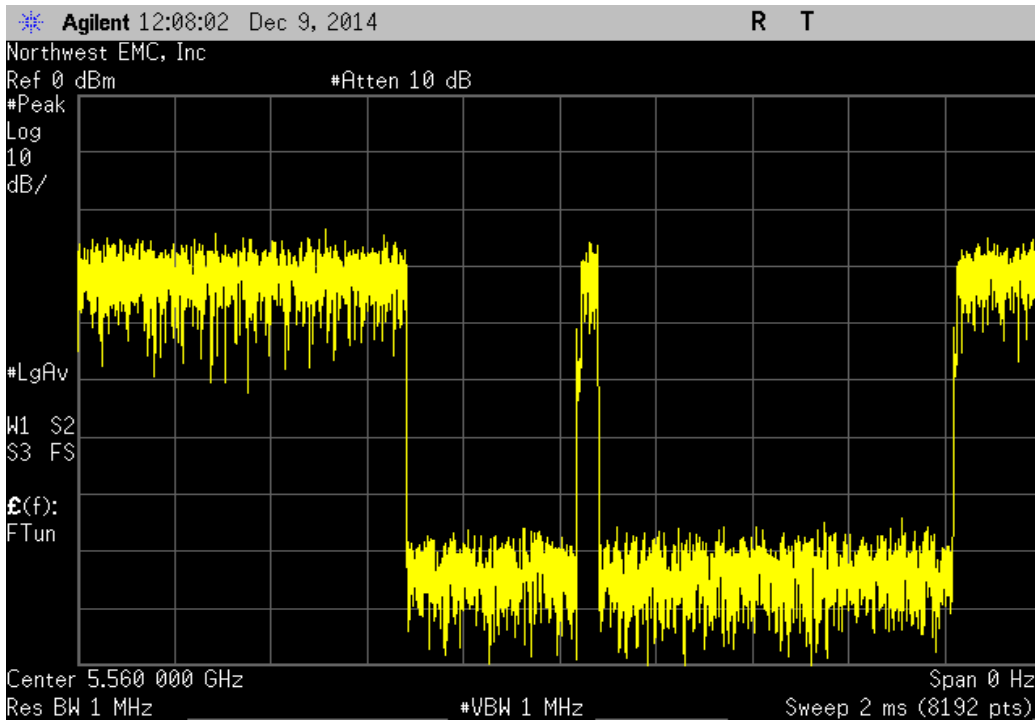
CHANNEL LOADING/CHANNEL UTILIZATION

5470 - 5725 MHz Band, Ch 112: 5560 MHz, 10ms					
	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
	2	3	60%	> 45	Pass
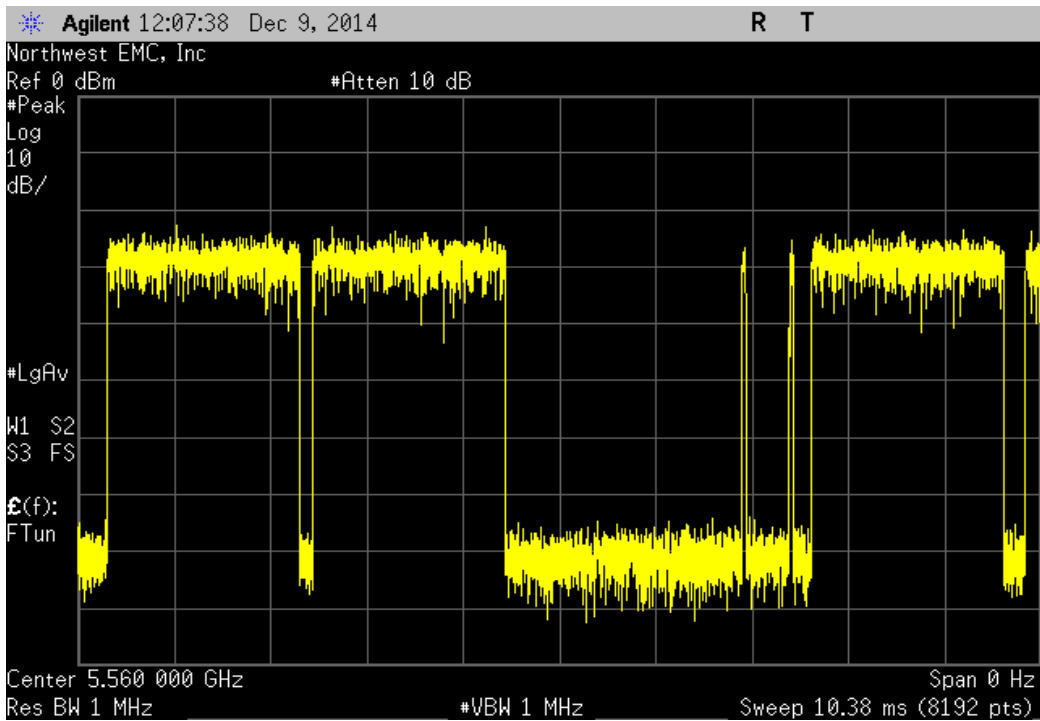
5470 - 5725 MHz Band, Ch 112: 5560 MHz, 25ms					
	Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
	2	9	72%	> 45	Pass

CHANNEL LOADING/CHANNEL UTILIZATION

XMit 2014.02.07
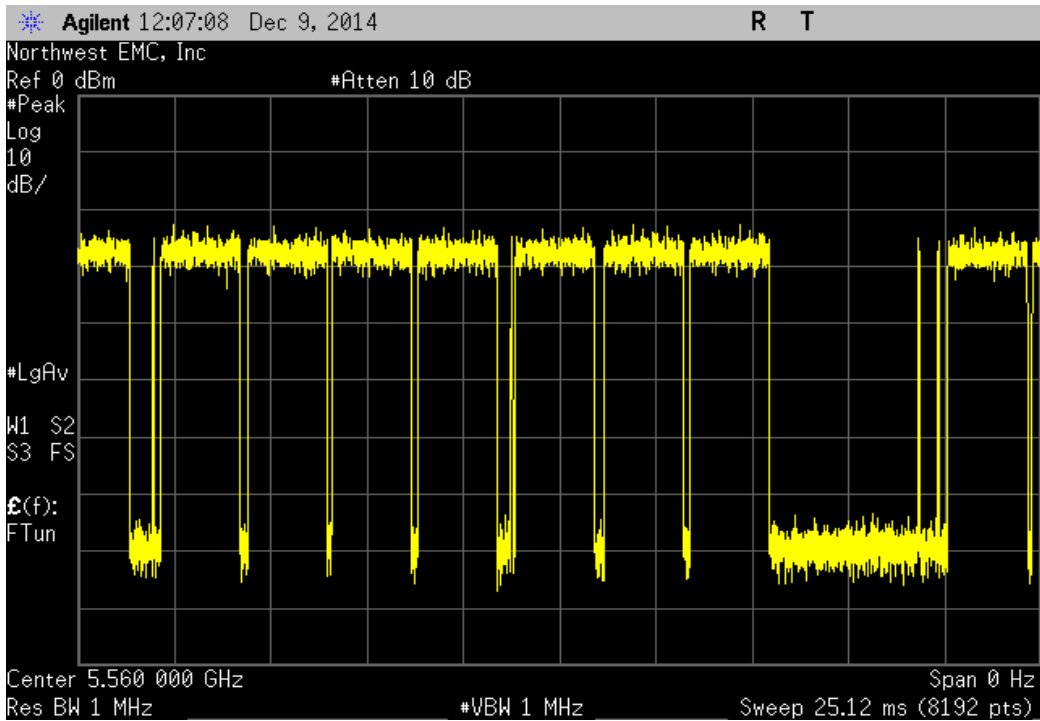
5470 - 5725 MHz Band, Ch 112: 5560 MHz, 100ms						
		Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
		2	29	58%	> 45	Pass
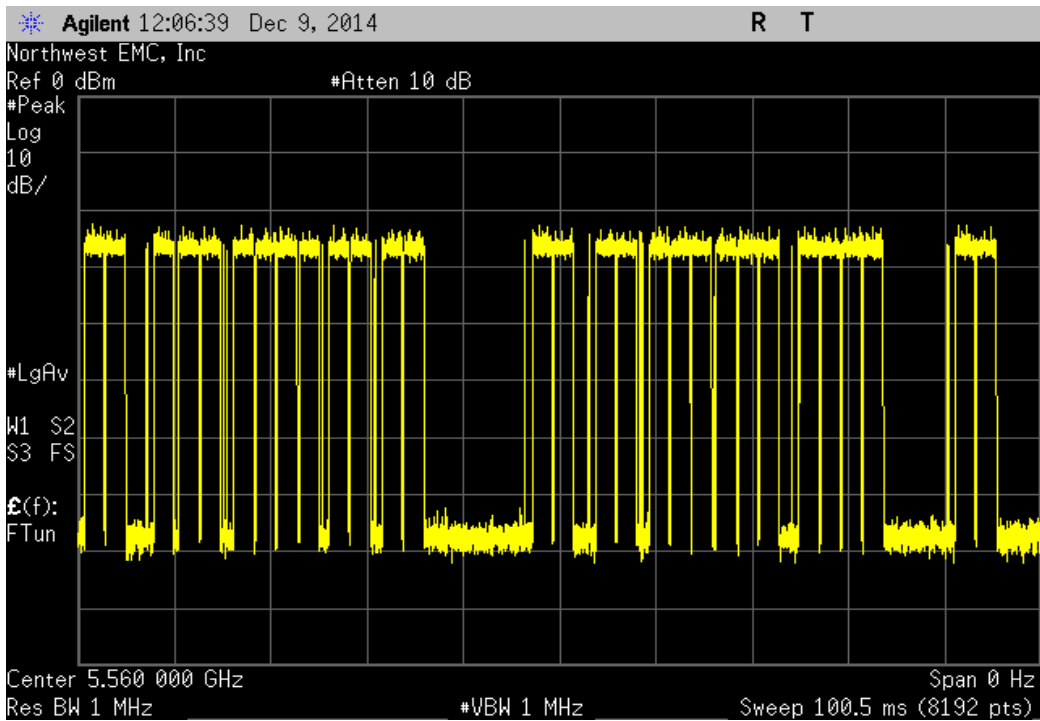
5470 - 5725 MHz Band, Ch 112: 5560 MHz, 10s						
		Pulse Width (ms)	Number of Pulses	Duty Cycle (%)	Limit (%)	Result
		N/A	N/A	N/A	N/A	N/A

MOVE TIME

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 (mos)
DFS Access Point	Cisco	AIR-AP1252AG-A-K9	TIV	NCR	0
DFS Signal Generator	Benchforge Manufacturing	Colt	TIP	NCR	0
Step Attenuator	Aeroflex/Weinschel	3053	RKN	NCR	0
Step Attenuator	Aeroflex/Weinschel	3053	RKM	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAE	NCR	0
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

FCC KDB 905462 describes the compliance measurement procedures including acceptable instrument system configurations for performing Dynamic Frequency Selection (DFS) tests under FCC Part 15 Subpart E Rules required for Unlicensed - National Information Infrastructure (U-NII) equipment that operates in the frequency bands 5.25 GHz to 5.35 GHz and/or 5.47 GHz to 5.725 GHz. The master and client were connected using the conducted method described in the 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. Configuration and status of the master and client devices were monitored. The Move Time test was performed by starting a transmission between the Master and Slave device, and then injecting the appropriate radar signals and making sure both the Master and Slave device vacate the DFS channel within the time specified by the standard.

MOVE TIME

EUT:	ConnectCore i.MX6 Wi-Fi/Bluetooth	**Work Order:**	ETHE0018
Serial Number:	00409D 7C03D2	**Date:**	12/09/14
Customer:	Etherios Design Solutions	**Temperature:**	23.1°C
Attendees:	None	**Humidity:**	18%
Project:	None	**Barometric Pres.:**	1034.9
Tested by:	Trevor Buls	**Power:** 5VDC	**Job Site:** MN08

TEST SPECIFICATIONS	Test Method
FCC 15.407:2014	FCC KDB 905462 D01 v01

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	*Signature*	*Trevor Buls*

	Value (sec)	Limit (sec)	Result
Ch 60: 5300 MHz			
Radar Type 1	0.6758	< 10	Pass
Ch 112: 5560 MHz			
Radar Type 1	0.6922	< 10	Pass

MOVE TIME

				Value (sec)	Limit (sec)	Result	
Ch 60: 5300 MHz, Radar Type 1							
				0.6758	< 10	Pass	
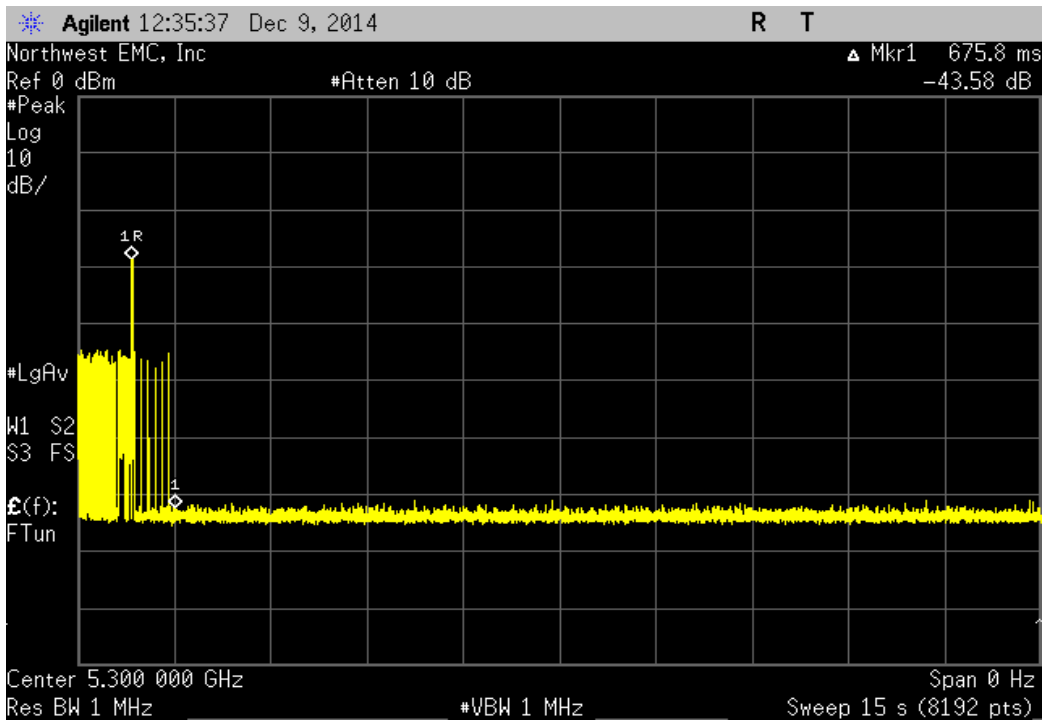
				Value (sec)	Limit (sec)	Result	
Ch 112: 5560 MHz, Radar Type 1							
				0.6922	< 10	Pass	
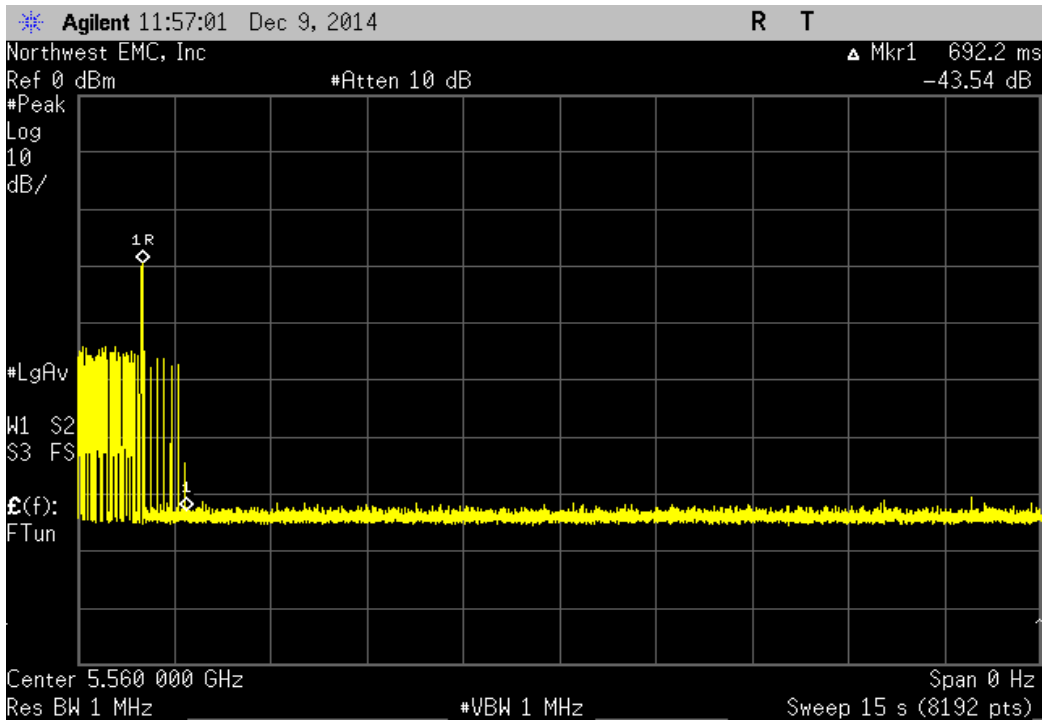
CLOSING TIME

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 (mos)
Step Attenuator	Aeroflex/Weinschel	3053	RKN	NCR	0
Step Attenuator	Aeroflex/Weinschel	3053	RKM	NCR	0
DFS Access Point	Cisco	AIR-AP1252AG-A-K9	TIV	NCR	0
DFS Signal Generator	Benchforge Manufacturing	Colt	TIP	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAE	NCR	0
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

FCC KDB 905462 describes the compliance measurement procedures including acceptable instrument system configurations for performing Dynamic Frequency Selection (DFS) tests under FCC Part 15 Subpart E Rules required for Unlicensed - National Information Infrastructure (U-NII) equipment that operates in the frequency bands 5.25 GHz to 5.35 GHz and/or 5.47 GHz to 5.725 GHz. The master and client were connected using the conducted method described in the 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. Configuration and status of the master and client devices were monitored. 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. This aggregate is then added to the 200mS allowance for the final value.

NORTHWEST EMC

CLOSING TIME

EUT: ConnectCore i.MX6 Wi-Fi/Bluetooth		**Work Order:** ETHE0018	
Serial Number: 00409D 7C03D2		**Date:** 12/09/14	
Customer: Etherios Design Solutions		**Temperature:** 23.1°C	
Attendees: None		**Humidity:** 18%	
Project: None		**Barometric Pres.:** 1034.9	
Tested by: Trevor Buls	**Power:** 5VDC	**Job Site:** MN08	

TEST SPECIFICATIONS	Test Method
FCC 15.407:2014	FCC KDB 905462 D01 v01

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature	*Trevor Buls*			

		Pulses (#)	Pulse Width (ms)	Value (ms)	Limit (ms)	Result
Ch 60: 5300 MHz						
	Radar 1					
	Short Control Signal pulse width	N/A	0.2565	N/A	N/A	N/A
	200 ms plus Aggregate	6	0.2565	201.539	260	Pass
Ch 112: 5560 MHz						
	Radar 1					
	Short Control Signal pulse width	N/A	0.2485	N/A	N/A	N/A
	200 ms plus Aggregate	5	0.2565	201.539	260	Pass

Ch 60: 5300 MHz, Radar 1, Short Control Signal pulse width					
Pulses (#)	Pulse Width (ms)		Value (ms)	Limit (ms)	Result
N/A	0.2565		N/A	N/A	N/A
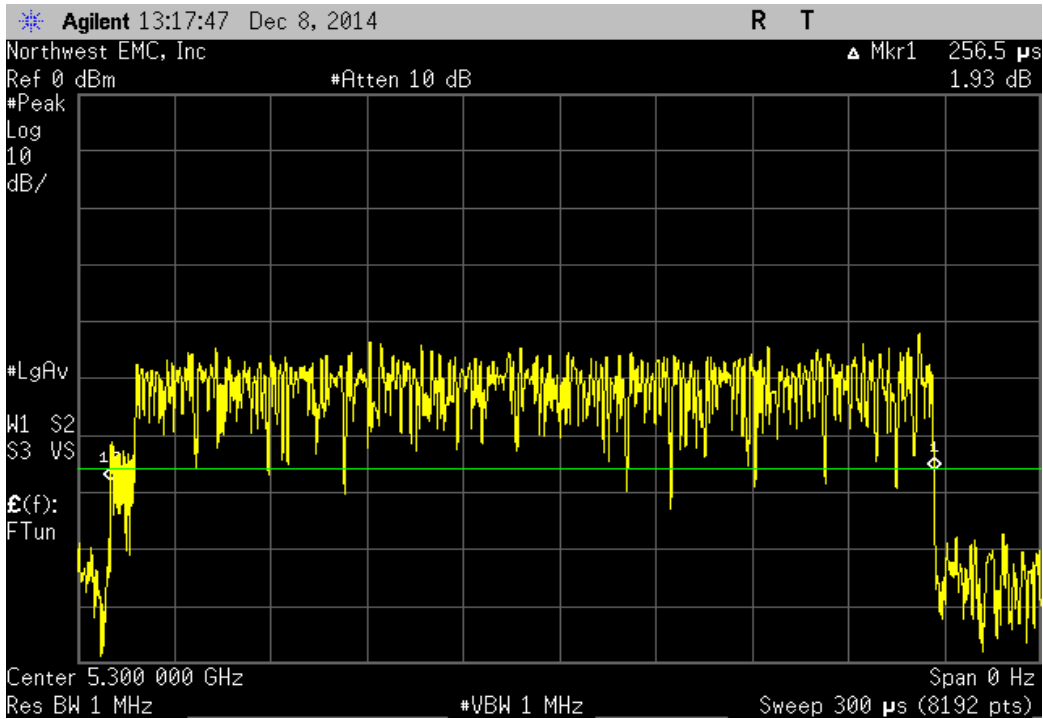
Ch 60: 5300 MHz, Radar 1, 200 ms plus Aggregate					
Pulses (#)	Pulse Width (ms)		Value (ms)	Limit (ms)	Result
6	0.2565		201.539	260	Pass
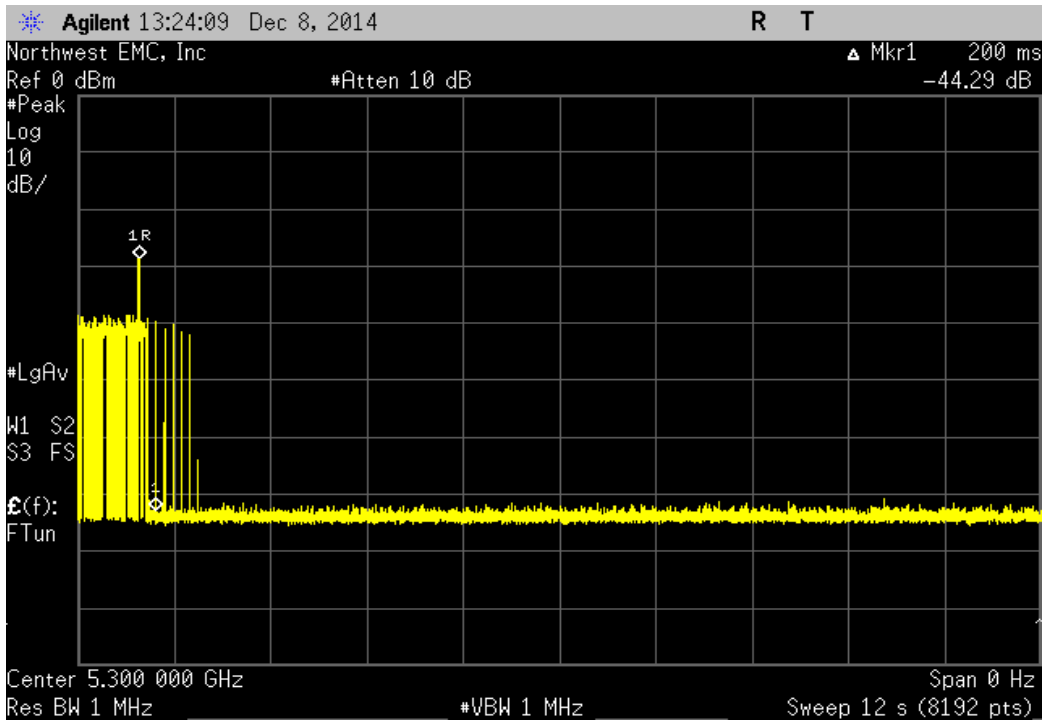
CLOSING TIME

	Ch 112: 5560 MHz, Radar 1, Short Control Signal pulse width				
Pulses (#)	Pulse Width (ms)		Value (ms)	Limit (ms)	Result
N/A	0.2485		N/A	N/A	N/A
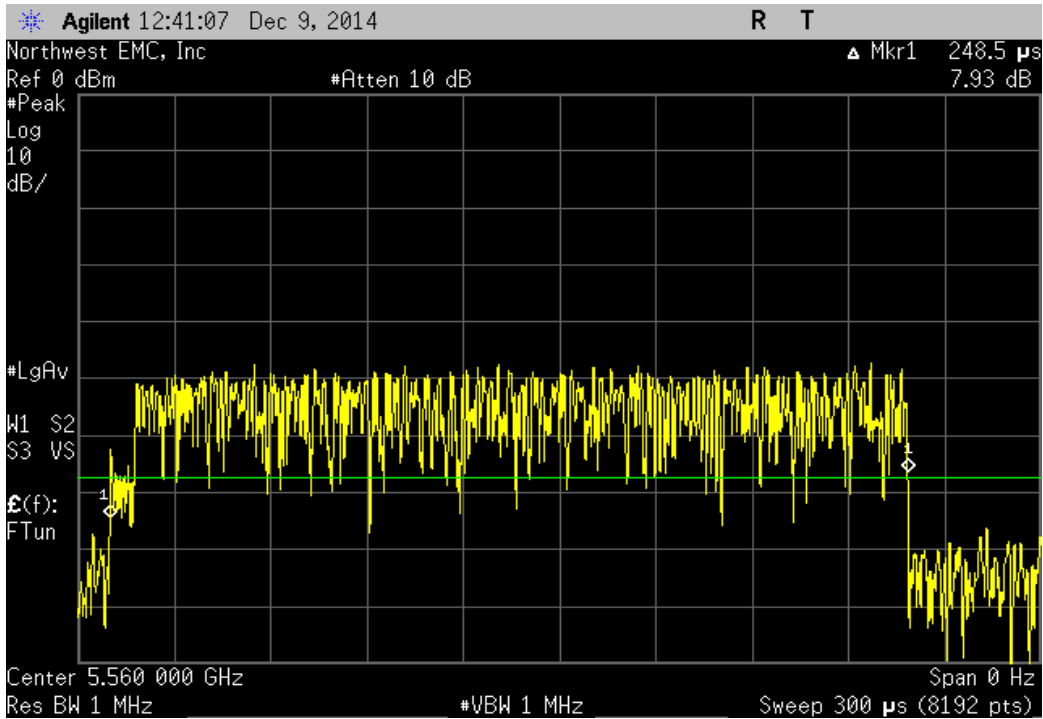
	Ch 112: 5560 MHz, Radar 1, 200 ms plus Aggregate				
Pulses (#)	Pulse Width (ms)		Value (ms)	Limit (ms)	Result
5	0.2565		201.539	260	Pass
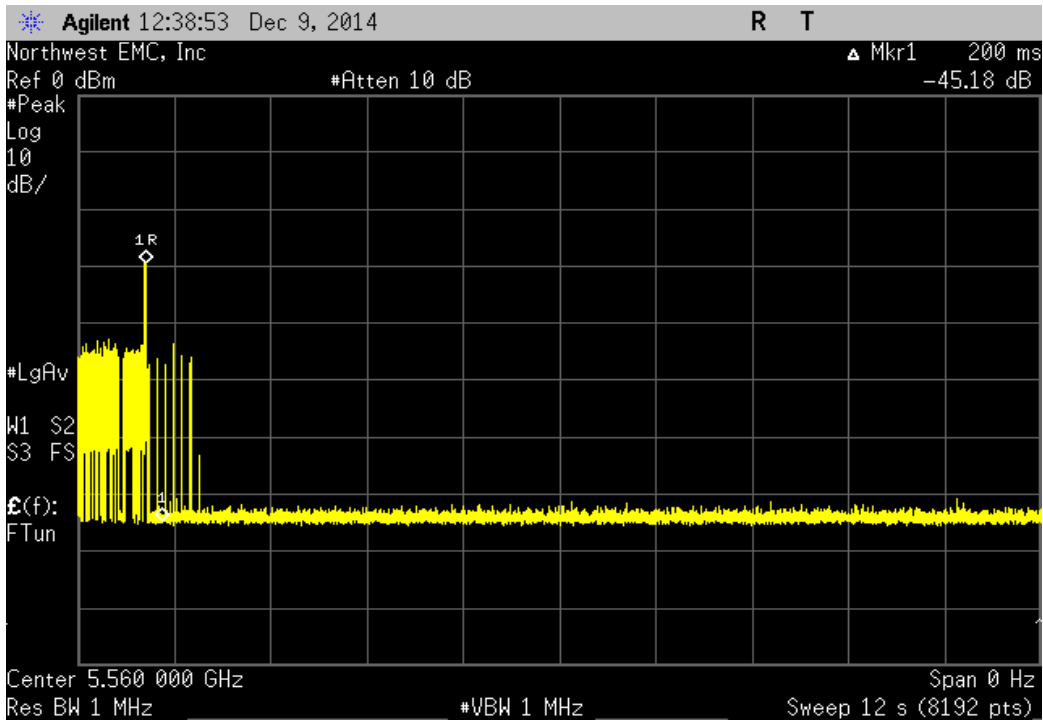
NON-OCCUPANCY PERIOD

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 (mos)
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAF	NCR	0
Power Divider/Combiner	Fairview Microwave	MP0208-2	IAE	NCR	0
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
Step Attenuator	Aeroflex/Weinschel	3053	RKN	NCR	0
Step Attenuator	Aeroflex/Weinschel	3053	RKM	NCR	0
DFS Signal Generator	Benchforge Manufacturing	Colt	TIP	NCR	0
DFS Access Point	Cisco	AIR-AP1252AG-A-K9	TIV	NCR	0
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

FCC KDB 905462 describes the compliance measurement procedures including acceptable instrument system configurations for performing Dynamic Frequency Selection (DFS) tests under FCC Part 15 Subpart E Rules required for Unlicensed - National Information Infrastructure (U-NII) equipment that operates in the frequency bands 5.25 GHz to 5.35 GHz and/or 5.47 GHz to 5.725 GHz. The master and client were connected using the conducted method described in the 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. Configuration and status of the master and client devices were monitored. The Move Time test was performed by starting a transmission between the Master and Slave device, and then injecting the appropriate radar signals and making sure both the Master and Slave device vacate the DFS channel within the time specified by the standard.

NON-OCCUPANCY PERIOD

EUT:	ConnectCore i.MX6 Wi-Fi/Bluetooth	Work Order:	ETHE0018
Serial Number:	00409D 7C03D2	Date:	12/08/14
Customer:	Etherios Design Solutions	Temperature:	22°C
Attendees:	None	Humidity:	22%
Project:	None	Barometric Pres.:	1019.6
Tested by:	Trevor Buls	Power: 5VDC	Job Site: MN08

TEST SPECIFICATIONS | **Test Method**
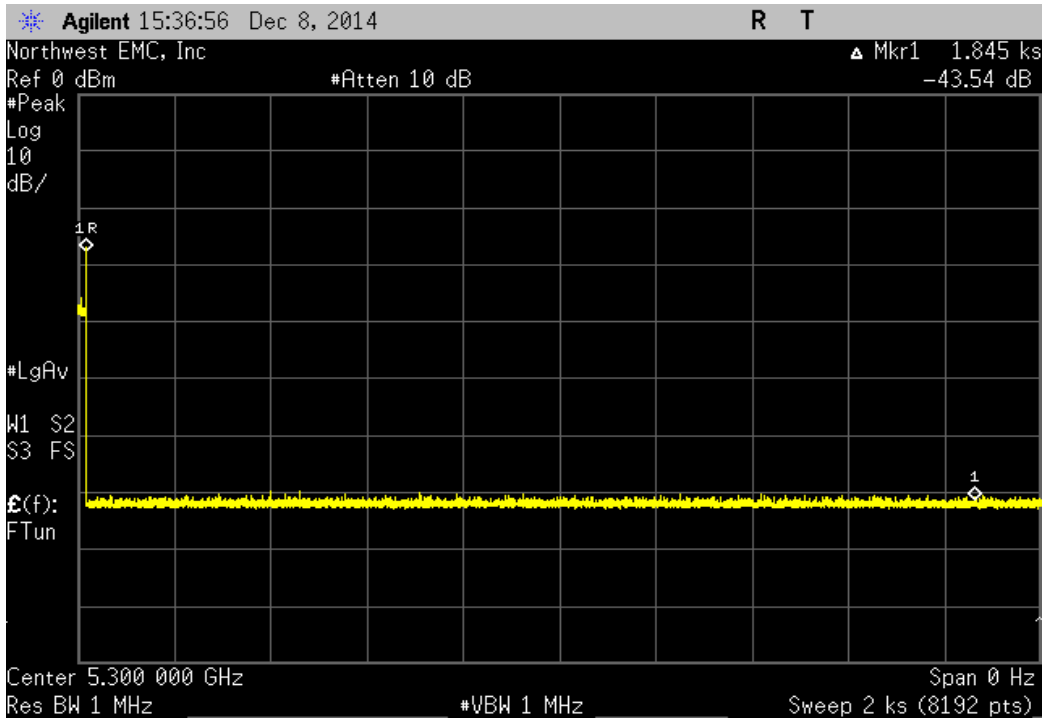FCC 15.407:2014 | FCC KDB 905462 D01 v01

COMMENTS
None

DEVIATIONS FROM TEST STANDARD
None

Configuration #	1	Signature *Trevor Buls*

	Value (min)	Limit (min)	Result
Ch 60: 5300 MHz			
Radar Type 1	> 30	> 30	Pass
Ch 112: 5560 MHz			
Radar Type 1	> 30	> 30	Pass

Ch 60: 5300 MHz, Radar Type 1			
	Value (min)	Limit (min)	Result
	> 30	> 30	Pass

Ch 112: 5560 MHz, Radar Type 1			
	Value (min)	Limit (min)	Result
	> 30	> 30	Pass