

Microsoft Corporation

1790 FCC 15.247:2016 802.11gn SISO Radio

Report # MCSO1761 Rev 01



(R) TESTING

NVLAP Lab Code: 200629-0

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CERTIFICATE OF TEST



Last Date of Test: December 08, 2016 Microsoft Corporation Model: 1790

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2016	ANSI C63.10:2013
FCC 15.247:2016	KDB 558074

Results

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

Deviations From Test Standards

None

Approved By:

Rod Munro, 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
01	Revised EUT description	5/22/17	9

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

European Commission – Validated by the European Commission as a Notified Body under the R&TTE Directive.

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: <u>http://www.nwemc.com/accreditations/</u> http://gsi.nist.gov/global/docs/cabs/designations.html

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 120 th Ave NE	
Irvine, CA 92618	Brooklyn Park, MN 55445	Elbridge, NY 13060	Hillsboro, OR 97124	Plano, TX 75074	Bothell, WA 98011	
(949) 861-8918	(612)-638-5136	(315) 554-8214	(503) 844-4066	(469) 304-5255	(425)984-6600	
	_		_	_	_	
		NV	LAP			
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0	
Innovation, Science and Economic Development Canada						
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1	
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	



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

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

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

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)	5.0 dB	-5.0 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams





PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Microsoft Corporation
Address:	17760 NE 67th Ct, Redmond
City, State, Zip:	Redmond, WA 98052
Test Requested By:	Chaitrali Limaye
Model:	1790
First Date of Test:	October 28, 2016
Last Date of Test:	December 08, 2016
Receipt Date of Samples:	October 28, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT: USB powered 802.11agn SISO radio with one antenna supporting 20 MHz channel bandwidth only.

Testing Objective:

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

CONFIGURATIONS



Configuration MCSO1761-1

Software/Firmware Running during test			
Description	Version		
MT7662 QA	V1.0.3.13		

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
USB Wireless Device	Microsoft Corporation	1790	DV-1-0546

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
Laptop PC	Lenovo	T420S	4054600		
AC Adapter (Laptop)	Lenovo	ADLX65NDT2A	None		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Extension	No	1.2m	No	Laptop PC	USB Wireless Device
AC Power	No	1.0m	No	AC Mains	AC Adapter (Laptop)
DC Power	No	2.0m	Yes	AC Adapter (Laptop)	Laptop PC

Configuration MCSO1761-4

Software/Firmware Running during test	
Description	Version
MT7662 QA	V1.0.3.13

EUT				
Description	Manufacturer	Model/Part Number	Serial Number	
USB Wireless Device	Microsoft Corporation	1790	DV-1-0336	

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
Laptop PC	Lenovo	T420S	4054600		
AC Adapter (Laptop)	Lenovo	ADLX65NDT2A	None		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
USB Extension	No	1.2m	No	Laptop PC	USB Wireless Device
AC Power	No	1.0m	No	AC Mains	AC Adapter (Laptop)
DC Power	No	2.0m	Yes	AC Adapter (Laptop)	Laptop PC

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	10/28/2016	Duty Cycle	Tested as delivered to	No EMI suppression devices were added or	EUT remained at Northwest EMC
			Test Station.	modified during this test.	following the test.
		Occupied	Tested as	No EMI suppression	EUT remained at
2	10/28/2016	Bandwidth	delivered to	devices were added or	Northwest EMC
		20.101101	Test Station.	modified during this test.	following the test.
		Output	Tested as	No EMI suppression	EUT remained at
3	10/28/2016	Power	delivered to	devices were added or	Northwest EMC
		TOWEI	Test Station.	modified during this test.	following the test.
		Power	Tested as	No EMI suppression	EUT remained at
4 10/28/2016	Spectral	delivered to	devices were added or	Northwest EMC	
		Density	Test Station.	modified during this test.	following the test.
		Rond Edgo	Tested as	No EMI suppression	EUT remained at
5	10/28/2016	Compliance	delivered to	devices were added or	Northwest EMC
		Compliance	Test Station.	modified during this test.	following the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
6	10/28/2016	Conducted	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
7	11/22/2016	Radiated	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
8	12/08/2016	AC – Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.



TEST DESCRIPTION

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARE	8/8/2016	8/8/2017
Cable - Conducted Cable Assembly	Northwest EMC	NC4, HHF, TYL	NC4A	5/6/2016	5/6/2017
LISN	Solar Electronics	9252-50-R-24-BNC	LIM	9/23/2016	9/23/2017

MEASUREMENT UNCERTAINTY

	scription		
Expanded K=2 2.4 dB -2.4 dB	panded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

MCSO1761-4

MODES INVESTIGATED

Transmitting 802.11(g), 6Mps, Power Settings at Default. Mid Channel 6, 2437 MHz.



EUT:	1790	Work Order:	MCSO1761
Serial Number:	DV-1-0336	Date:	12/08/2016
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Relative Humidity:	23%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1761-4

TEST SPECIFICATIONS

Specification:	
FCC 15.207:2016	

Method: ANSI C63.10:2013

TEST PARAMETERS

Run #:	1	Line:	High Line	Add. Ext. Attenuation (dB):	0
COMMENT	ſS				
None					

EUT OPERATING MODES

Transmitting 802.11(g), 6Mps, Power Settings at Default. Mid Channel 6, 2437 MHz.

DEVIATIONS FROM TEST STANDARD

None



Average Data - vs - Average Limit





RESULTS - Run #1

Q	Quasi Peak Data - vs - Quasi Peak Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)			
0.530	23.5	20.6	44.1	56.0	-11.9			
0.155	32.6	20.8	53.4	65.7	-12.3			
0.564	20.6	20.6	41.2	56.0	-14.8			
0.465	19.8	20.6	40.4	56.6	-16.2			
0.335	21.8	20.6	42.4	59.3	-16.9			
0.210	24.7	20.7	45.4	63.2	-17.8			

Average Data - vs - Average Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
0.530	15.4	20.6	36.0	46.0	-10.0		
0.564	12.2	20.6	32.8	46.0	-13.2		
0.465	7.5	20.6	28.1	46.6	-18.5		
0.335	9.2	20.6	29.8	49.3	-19.5		
0.155	12.7	20.8	33.5	55.7	-22.2		
0.210	9.0	20.7	29.7	53.2	-23.5		

CONCLUSION

Pass

Tested By



EUT:	1790	Work Order:	MCSO1761
Serial Number:	DV-1-0336	Date:	12/08/2016
Customer:	Microsoft Corporation	Temperature:	22°C
Attendees:	None	Relative Humidity:	23%
Customer Project:	None	Bar. Pressure:	1020 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	USB via 110VAC/60Hz	Configuration:	MCSO1761-4

TEST SPECIFICATIONS

Specification:	
FCC 15.207:2016	

Method: ANSI C63.10:2013

TEST PARAMETERS

12011/00					
Run #:	2	Line:	Neutral	Add. Ext. Attenuation (dB):	0
COMMENT	ſS				
None					

EUT OPERATING MODES

Transmitting 802.11(g), 6Mps, Power Settings at Default. Mid Channel 6, 2437 MHz.

DEVIATIONS FROM TEST STANDARD

None



Average Data - vs - Average Limit





RESULTS - Run #2

Q	uasi Peak	Data - vs	- Quasi P	eak Limit	
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.524	22.7	20.6	43.3	56.0	-12.7
0.504	21.3	20.6	41.9	56.0	-14.1
0.160	29.8	20.8	50.6	65.5	-14.9
0.445	20.0	20.6	40.6	57.0	-16.4
0.312	21.6	20.6	42.2	59.9	-17.7
0.330	21.1	20.6	41.7	59.5	-17.8

	Average I	Data - vs	 Average 	Limit	
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.524	14.0	20.6	34.6	46.0	-11.4
0.504	11.7	20.6	32.3	46.0	-13.7
0.312	10.5	20.6	31.1	49.9	-18.8
0.330	9.5	20.6	30.1	49.5	-19.4
0.445	7.0	20.6	27.6	47.0	-19.4
0.160	11.0	20.8	31.8	55.5	-23.7

CONCLUSION

Pass

Tested By



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	6/8/2016	6/8/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	TKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017

TEST DESCRIPTION

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

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

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

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

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



EUT	1790					Work Order:	MCSO1761	
Serial Number	: DV-1-0546					Date:	10/28/16	
Customer	Microsoft Corporation					Temperature:	23 °C	
Attendees	Chaitrali Limaye					Humidity:	45% RH	
Project	None					Barometric Pres.:	1015 mbar	
Tested by	Richard Mellroth		Power: USB			Job Site:	NC02	
TEST SPECIFICAT	IONS		Test Method					
FCC 15.247:2016			ANSI C63.10:2013					
COMMENTS								
Power Setting at D	Default. Client provided ad	dapter cable loss of 0.7dB included in	reference level offset.					
DEVIATIONS FRO	WIESI SIANDARD							
None								
Configuration #	1	Signature	flist					
			Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
Low Channel 1, 241	12 MHz							
	802.11(g) 6 Mbps		1.44 ms	1.646 ms	1	87.5	N/A	N/A
	802.11(g) 6 Mbps		N/A	N/A	6	N/A	N/A	N/A
	802.11(g) 36 Mbps		259.8 us	465.7 us	1	55.8	N/A	N/A
	802.11(g) 36 Mbps		N/A	N/A	5	N/A	N/A	N/A
	802.11(g) 54 Mbps		179.7 us	385.6 us	1	46.6	N/A	N/A
	802.11(g) 54 Mbps		N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS0		1.348 ms	1.554 ms	1	86.8	N/A	N/A
	802.11(n) MCS0		N/A	N/A	6	N/A	N/A	N/A
	802.11(n) MCS7		168 us	373.6 us	1	45	N/A	N/A
	802.11(n) MCS7		N/A	N/A	5	N/A	N/A	N/A
Mid Channel 6, 243	7 MHz							
	802.11(a) 6 Mbps		1.44 ms	1.646 ms	1	87.5	N/A	N/A
	802.11(g) 6 Mbps		N/A	N/A	6	N/A	N/A	N/A
	802.11(g) 36 Mbps		259.8 us	465.7 us	1	55.8	N/A	N/A
	802.11(g) 36 Mbps		N/A	N/A	5	N/A	N/A	N/A
	802.11(g) 54 Mbps		179.7 us	385.5 us	1	46.6	N/A	N/A
	802.11(g) 54 Mbps		N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS0		1.348 ms	1.554 ms	1	86.7	N/A	N/A
	802.11(n) MCS0		N/A	N/A	6	N/A	N/A	N/A
	802.11(n) MCS7		168 us	373.6 us	1	45	N/A	N/A
	802.11(n) MCS7		N/A	N/A	5	N/A	N/A	N/A
High Channel 11, 24	462 MHz							
	802.11(g) 6 Mbps		1.44 ms	1.646 ms	1	87.5	N/A	N/A
	802.11(g) 6 Mbps		N/A	N/A	6	N/A	N/A	N/A
	802.11(g) 36 Mbps		259.6 us	465.7 us	1	55.7	N/A	N/A
	802.11(g) 36 Mbps		N/A	N/A	6	N/A	N/A	N/A
	802.11(g) 54 Mbps		179.5 us	385.5 us	1	46.6	N/A	N/A
	802.11(g) 54 Mbps		N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS0		1.348 ms	1.553 ms	1	86.8	N/A	N/A
	802.11(n) MCS0		N/A	N/A	5	N/A	N/A	N/A
	802.11(n) MCS7		168 us	373.6 us	- 1	45	N/A	N/A
	802.11(n) MCS7		N/A	N/A	5	N/A	N/A	N/A
					0			



	Low	Channel 1, 2412 MHz, 8	302.11(g) 6 Mbps	Limit		
	Pulse Width Pe	rind Pulses	(%)	(%)	Results	
	1.44 ms 1.64	6 ms 1	87.5	N/A	N/A	
<u> </u>		51116	0.10	1.0,		
Keysight Spectrum Analyzer -	- Northwest EMC, Inc					1
LXIRL RF 5	10 Ω DC	SENSE:INT	ALIGN OFF	- I am Duur	05:59:42 AM Oct 29, 2016	
	PNO: F	st Trig: Video	Ums #/\vgiye-	: Log-Pwi		
	IFGain:L	ow #Atten: 10 d⊟				
Ref Offset	22.17 dB				Mkr3 3.125 ms	
5 dB/div Ref 9.00	dBm				-0.05 0.511	
4.00	The street of the state of the state	Low L. Lee Detroforests at A	i a ta bi da da ta cata da f		in textile of the second state	
-1.00 North Physics of the second	alia, a maid di na manda il a in antiana a da		n a faith anns an ann anns anns anns an anns a Muannaicht air anns anns anns anns anns anns anns ann	3,11	and a superior of the superior	
-6.00					<u>n tankun antin an haur</u>	
-11.0	و و مستار کم	ويندعنا والا				
-16.0		ويصحيهم				
-21.0						
-26.0	ويعصاكم	و عديد کا ک		2	TRIG LVL	
31.0		ويعيدوا				
36.0	و و معا کم	و وروا و ا		<u>د و کا ا</u> ا		
Center 2.41200000	0 GHz	#\/B\/ 200 kHz		Sween 4	Span 0 Hz	
Res BW 5.0 WHZ		#VBW 300 KH2		Sweep 4.	000 ms (8192 pts)	
MKR MODE TRC SCL	× 1.479 ms	Y FUNCTION -6.03 dBm	FUNCTION WIDTH	FUNCTION	ON VALUE	
2 N 1 t	2.919 ms	-30.40 dBm				
	3.125 ms	-6.03 dBm				
5					E	
7						
9						
10						
		m			•	
		-	STATUS			
MSG						
MSG						
MSG	Low	Channel 1, 2412 MHz, 8	302.11(g) 6 Mbps			
MSG	Low I	Channel 1, 2412 MHz, ≀ Number of	302.11(g) 6 Mbps Value	Limit	Degulto	

🚺 Keys	sight Sp	ectrum Ar	nalyzer - N	lorthwes	t EMC,	Inc														
LXI RL		RF	50 9	Ω DC	14 V.S.S.		1.0	See See		SENSE:I	NT			<u>∧</u> ∧	LIGN OFF			06:00):07	AM Oct 29, 2016
							P	NO: Fas Gain:Lo	st 🔸	. Tri #At	g: Vi	deo 10	dB		#Avg	Type	: Log-Pwr		TRA	ACE 1 2 3 4 5 6 YPE WWWWWW DET P P P P P P
5 dB/c	div	Ref (Ref	Offset 2 9.00 d	2.17 d IBm	в															
4.00		ha kulupluti	li ka da a	ullu.t	<mark>AL-PI</mark>	h	e Ni	<u>lidad e</u>	ala dal			ηų.	olyo dagaa	trout	a di tara bat		and of the last	destilles date		<mark>heleta kollaskolp</mark>
-1.00	l T	W hite	(W)	THE T	W ^{IM} Y	ļĺ	W	ikpuh*	t III the	Mirth		<u>i</u> ft)	din din k	" <mark>In In</mark> In In				<u>t serv</u> h		
-6.00		•	ļI										r					· ·		
-11.0 -																				
-16.0												_								
-21.0																				
-26.0																				TRIG LVL
-31.0																				
26.0																				
-38.0																				
Cente Res E	er 2. 3W 3	41200 3.0 MH	0000 Iz	GHz					#VE	W 30	0 kl	۰z					Swee	20 7.645	ms	Span 0 Hz (8192 pts)
MSG															STATU	IS				



			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	259.8 us	465.7 us	1	55.8	N/A	N/A
Keyright Spectrum Ar	paluger - Northwert EMC Inc					
RE RE	50 Ω DC	S	ENSE:INT	ALIGN OFF	0	6:07:01 AM Oct 29, 2016
			Trig Delay-1.000 m	s #Avg Typ	e: Log-Pwr	TRACE 1 2 3 4 5 6
		PNO: Fast	#Atten: 10 dB			DET PPPPP
		II Gam.cow				
Ref	Offset 22.17 dB				IV	4 57 dBm
5 dB/div Ref	10.00 dBm			1	1	-4.57 UBII
5.00						
الاستارين محمد	la, kao la, Madi	الاردانية والمالية الدراج	di Aliza di Ange	dana dina di k	ومراوية التقريل المتراجل والمتقادية	l dian
Olly Angle		his of the sole list and	1	la da catala da la		
-5.00			- tour at st	and the state of the second	╶╴╴╴╎╓╓╸╺╟╎┇╓╶┢┤╹╢╎╖	
-10.0						
-15.0						
-20.0						
25.0						
-20.0	2					
-30.0						
-35.0						
Center 2 41200						Snan () Hz
Res BW 3.0 MH	17	#VB\	A/ 300 kHz		Sweep 2.00	0 ms (8192 pts)
					0.0000 2.000	
1 N 1 f	×) us -5.20	HUNCTION	FUNCTION WIDTH	FUNCTION V	ALUE
2 N 1 t	327.	us -33.57	dBm			
3 N 1 t	533.	3 µs -4.57	dBm			
5						Б
6						
8						
9						
11						-
•			m			•
MSG				STATUS		

			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

📁 Keysight Spectrum Analyzer - Northwest EMC, Inc						3
💢 RL RF 50 Ω DC	SENSE:IN	IT 🔼 AL	IGN OFF		06:07:20 AM Oct 29, 2016	5
	PNO: Fast ↔ Trig IFGain:Low #Att	: Video en: 10 dB	#Avg Type.	Log-rwr	TYPE WWWWWW DET PPPP	₽
Ref Offset 22.17 dB 5 dB/div Ref 10.00 dBm						
5.00						
o.co <mark>lutu III (da d</mark>					<mark> 0 100</mark> 0 0 0 0 0 0 0 0 0 0 0 0	
-5.00					<mark>/ 21. (1, 4) (11. (14.), 11</mark>	
-10.0					/	
-15.0						
-20.0					TRIG LVI	
-30.0						
-35.0						
Center 2.412000000 GHz Res BW 3.0 MHz	#VBW 300	l kHz		Sweep	Span 0 Hz 2.096 ms (8192 pts	Z
MSG			STATUS			M



		Low Channel 1	2412 MHz 803	2 11(a) 54 Mbps			
			Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	179.7 us	385.6 us	1	46.6	N/A	N/A	
Keysight Spectrum Analy	zer - Northwest EMC, Inc			•			
CAU KL RF	SUΩ DC	SEN	Trig Delay-1.000 r	ns #Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 6	
		PNO: Fast	Trig: Video			DET P P P P P	
		PGalli.Low				Mkr3 //3 2 us	f.
Ref Off 5 dB/div Ref 1	fset 22.17 dB 0.00 dBm					-4.28 dBm	l.
Log							1
5.00	. Hilda mea	Line .				itada, du ta	
						landa la da	6
-5.00							6
-10.0							1
-15.0							
-20.0							[
-25.0						TRIG EV.	í.
-30.0	2						ĺ.
-35.0	řesta k se						1
Center 2.412000	000 GHz					Span 0 Hz	
Res BW 3.0 MHz		#VBW	300 kHz		Sweep	2.000 ms (8192 pts)	ĺ.
MKR MODE TRC SCL	x	Y	FUNCTION	FUNCTION WIDTH	FUNG	CTION VALUE	8
	57.60 μs 237.3 μs	-4.63 dl	sm Sm				
3 N 1 t	443.2 µs	-4.28 di	3m				
5						E	
7							
8							
10							
			m			•	
MSG				STATUS			
International and a subsection of the subsection							-
							-
		Low Channel 1	, 2412 MHz, 802	2.11(g) 54 Mbps			
		Low Channel 1	, 2412 MHz, 802 Number of	2.11(g) 54 Mbps Value	Limit	Beculto	

	2011 011011101 1	,	(g) o i inopo		
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A

Keysight Spectrum Analyzer - Northwest EMC, Inc			
LX/ RL RF 50 Ω DC	SENSE:INT	ALIGN OFF #Avg Type: Log-Pwr	06:15:23 AM Oct 29, 2016 TRACE 1 2 3 4 5 6
	PNO: Fast Trig: Video	dB	TYPE WWWWWWW DET P P P P P P
	IFGam:Low #Atten: To		
Ref Offset 22.17 dB 5 dB/div Ref 10.00 dBm			
5 00			
	ու ել հետ լեւ	at the state of th	and hereitstates
	ANNI MAN		A MATAKANA A
-10.0			
-15.0			
-20.0			
-25.0			TRIG LVL
-30.0			
-35.0			
Center 2.412000000 GHz	#\/B\\(300 kHz	Sween	Span 0 Hz 1 735 ms (8192 nts)
MSG	#**BW 300 KHZ	STATUS	in so ins (6192 pts)

.



	I	Low Channel 1	, 2412 MHz, 80	2.11(n) MCS0			
		_	Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	1
	1.348 ms	1.554 ms	<u> </u>	86.8	N/A	N/A	
📕 Keysight Spectrum Analyzer -	Northwest EMC, Inc						x
LXI RL RF 51	JΩ DC	SENS	EINT Delay-1 000 m	ALIGN OFF	e: Log-Pwr	06:46:30 AM Oct 29, 2/	016
	PN IFC	lO: Fast ↔ → Sain:Low	frig: Video #Atten: 10 dB	з #лту туре.	. Log-F wi	TYPE WWWW DET P P P	2 0 2 P P
Ref Offset	22.17 dB					Mkr3 3.019 r -3.82 dF	ns Sm
	ивш						
						terrainet design	
	and the other state for one of the second state of the second stat		And the first operation of the first operation operation of the first operation op				
-6.00	المستقلا بتقرير فكألك						
-11.0	استكنى لكنا		منا کام	ستكناكم	ر قط کار	سد عتم	
-11.0							
-16.0							
-21.0							
-26.0							
-31.0							
36.0							
Center 2.412000000 Res BW 3.0 MHz) GHz	#VBW	300 kHz		Sweep 4	Span 0 .000 ms (8192 p	Hz ots)
MKR MODE TRC SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCT	ION VALUE	
1 N 1 t	1.466 ms	-5.99 dB	<u>m</u>				
2 N 1 t 3 N 1 t	2.814 ms 3.019 ms	-35.98 dB) -3.82 dB	m				
4	رعقتهم		مصعقة				
6							
7			ر و و و و و و و و و و و و و و و و و و و				
8							
10			ر و و و و و و و و و و و و و و و و و و و				
							-
HSC .				STATUS			
MSG				STATUS			

			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	6	N/A	N/A	N/A

🊺 Key	/sight Spec	trum Ai	nalyzer - Northwes	t EMC, Inc					an we want a strong to					0	x
LXI RI	L	RF	50 Ω DC				SENSE:INT		<u>A</u>	LIGN OFF	1		06:46:55	AM Oct 29	, 2016
					PNO: F IFGain:	ast ↔ Low	Trig: Video #Atten: 10	dB		#Avg Type.	LOG-L M		ī		9 4 3 0 9 9 9 9 9
5 dB/	/div	Ref (Ref	Offset 22.17 d 9.00 dBm	в											
Log															
4.00															
	hall Hele	di	<mark>jilahin la</mark> ngtari	periodi, alputori	n n'	hi di	i de liger de la de l	and a	<mark>na labili</mark>	ab Halenthan	nte ^{lli} nt	<mark>d like</mark>	<mark>() shile, shile da</mark>	<mark>n bih dirika</mark>	<mark>11</mark>
-1.00	1 marth	۹ <mark>۱</mark>	and the second s				n an Island I.	M	111111	NAMA NA TA	<mark>had Mu</mark>	<mark>N.</mark> A	a the spatia de	r <mark>i Niti</mark> ri	-
-6.00			· ·	4 . 1 . 4											
-11.0		_													
-16.0		_			+										
-21.0		_													
-26.0		_			$\left \right $										
-31.0															
-36.0															
Cent Res	ter 2.4 BW <u>3.</u>	1200 0 MH	00000 GHz Iz			#VB	W 300 k <u>Hz</u>				S	weep	7.099 <u>ms</u>	Span (819 <u>2</u>	0 Hz pts)
MSG										STATUS					



			Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	168 us	373.6 us	1	45	N/A	N/A	
📕 Keysight Spectrum Analy:	zer - Northwest EMC, Inc						×
LXI RL RF	50 Ω DC	SE	NSE:INT	ALIGN OFF	Type: Log Pur	06:56:42 AM Oct 29, 2	016
		PNO: Fast ++-	Trig: Video	1113 #A¥Ø	Type. Log-r wi	TYPE WWW	www
		IFGain:Low	#Atten: 10 dB			DET PPP	P P
Ref Off	set 22.17 dB					Mkr3 625.3	μs
5 dB/div Ref 10).00 dBm					-6.32 dE	m
5.00							
	and a life fill of the second	and Caralica and the		and the second s	and a state of the state of the	المربية وماراطه والم	
		3	7166				
-5.00	Y			n 11 11 11			
-10.0							
-15.0							
-20.0							
-25.0							
-30.0	Q [∠]						
-35.0							
Center 2.4120000	000 GHz	<i>(</i>) () ()				Span 0	Hz
Res BW 3.0 MHz		#VBW	300 KHZ		Sweep 2	.000 ms (8192 p)(S)
MKR MODE TRC SCL	x	Y	FUNCTION	FUNCTION WIDT	H FUNCT	ION VALUE	-
	251.7 µ 419.7 µ	s -6.10 d s -31.40 d	Bm Bm				
3 N 1 t	625.3 µ	s -6.32 d	Bm				
5							
6							
8							
9							
11							-
•			m				r i
MSG				STAT	US		

			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

📁 Keysight Spectrum Analyzer - Northwest EMC, Inc				
IX RL RF 50Ω DC	SENSE:INT	ALIGN OFF	Log-Pwr	06:56:58 AM Oct 29, 2016
	PNO: Fast Trig: Video	4P		TYPE WWWWWWW DET P P P P P P
	IFGain:Low #Atten: To	uB		
Ref Offset 22.17 dB 5 dB/div Ref 10.00 dBm				
5.00				and the second
-5.00				
u tutu. III u u di				
-10.0				
-15.0				
20.0				
20.0				
-25.0				
-30.0				
25.0				
-58.0				
Center 2.412000000 GHz				Span 0 Hz
Res BW 3.0 MHz	#VBW 300 kHz		Sweep	1.681 ms (8192 pts)
MSG		STATUS		



ivita Grianner 6, 2437 Minz, 602.11(g) 6 Mbps													
	Number of Value Limit												
		Pulse Width	Period	Pulses	(%)	(%)	Results						
		N/A	N/A	6	N/A	N/A	N/A						

🊺 Key	/sight	Spectru	ım Ar	alyzer	- Northy	vest El	ИC, Inc																	6	
LXI RI	<u>1</u>		RF	L.	50Ω I	DC		1811		a an		SENS	E:INT	1.000	5.00		ΔA	LIGN OFF			_		06:37:46	5 AM	Oct 29, 2016
			1						PN IFG	O: Fas ain:Lo	t ⊶ w	. 1 #	rig: \ Attei	Video n: 10	dB			#Avg	Туре	: L	og-Pwr		TF	TYPE DE	123456 WWWWWWW PPPPPP
5 dB/	div	F F	lef C lef	offset 10.0	22.17 0 dB	dB m																			
5.00																									
0.00			d <mark>e jul</mark>	<mark>lul</mark> l	w ji l	alle a		ļ	<mark>[</mark>	de at d	la th	les ^{li} u)			<mark>n hh</mark>	did yp	eth, Di	t dat bet	diji)	ļ		h _i l	1. Allen of planted		lite the second state
-5.00		ſ	V			l, ¹ l				TT								N N		ľ					Weblink hoel
-10.0																									
-15.0																									
-20.0																									
-25.0																									
-30.0																									
-35.0																									
Cent Res	ter : BW	2.43	700 MH	000 z	0 GH	Z					#VE	sw s	300	kHz							Swee	ep	7.645 ms	S s (8	pan 0 Hz 3192 pts)
MSG																		STAT	US						

NORTHWEST



			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	259.8 us	465.7 us	1	55.8	N/A	N/A
Keysight Spectrum Analyze Ref Offs dB/div Ref 10.	er - Northwest EMC, Inc 50 Ω DC et 22.17 dB .00 dBm	PNO: Fast + IFGain:Low	VSE:INT Trig Delay-1.000 ms Trig: Video #Atten: 10 dB	ALIGN OFF #Avg Typ	e: Log-Pwr	07:05:21 AM OCT 29, 2016 TRace [] 23 4 5 6 TYPE WAY YOU DET PPPPPP Mkr3 862.2 µs -3.57 dBm
00 GHz		¢ ²				Span 0 Hz
s BW 3.0 MHz		#VBW	300 kHz		Sweep 2.0	000 ms (8192 pts)
IKR MODE TRC SCL 1 N 1 t 2 N 1 t 3 N 1 t 4	Х 396.5 µ 656.3 µ 862.2 µ	s4.86 dE s34.00 dE s3.57 dE	FUNCTION Bm Bm Bm Bm	FUNCTION WIDTH	FUNCTIC	IN VALUE
8 9 10 11			m			

Mid Channel 6, 2437 MHz, 802.11(g) 36 Mbps													
Number of Value Limit													
Pulse Width	Period	Pulses	(%)	(%)	Results								
N/A	N/A	5	N/A	N/A	N/A								

Keysight Spectrum Analyzer - Northwest EMC, Inc					
LXI RL RF 50 Ω DC	SEN	ISE:INT	ALIGN OFF		07:05:39 AM Oct 29, 2016
	PNO: Fast +++ IFGain:Low	Trig: Video #Atten: 10 dB	#Avg Type:	Log-Pwr	TRACE 2 3 4 5 6 TYPE WWWWWW DET P P P P P
Ref Offset 22.17 dB 5 dB/div Ref 10.00 dBm					
	.14.6.7	ti and ti i	LL . au	الدال مال	and to date
-10.0					
-15.0					
20.0					
-20.0					
-25.0					
-30.0					
-35.0					
Center 2.437000000 GHz					Span <u>0 Hz</u>
Res BW 3.0 MHz	#VBW	300 kHz		Sweep	2.096 ms (8192 pts)
MSG			STATUS		



		N	lumber of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	179.7 us	385.5 us	1	46.6	N/A	N/A	
Keyright Spectrum A	aliger - Northwest EMC Inc						57
XI RL RF	50 Ω DC	SENSE:I	TI	ALIGN OFF		07:18:15 AM Oct 29, 20	16
		PNO: Fast +++ Trig	Delay-1.000 m Video	s #Avg Typ	e: Log-Pwr	TRACE 1 2 3 4 TYPE WWWW	56 WW
		IFGain:Low #At	ten: 10 dB				
Ref 5 dB/div Ref	Offset 22.17 dB f 10.00 dBm					Mkr3 613.1 j -6.15 dB	m
5.00							
0.00		3					
-5.00							
-10.0							
-15.0							
-20.0							
-25.0	2						
-30.0	ľ						
-35.0							
Center 2/1370	00000 CHz					Snan ()	17
Res BW 3.0 MI	Hz	#VBW 30	0 kHz		Sweep 2.0	00 ms (8192 p	S)
MKR MODE TRC SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION	I VALUE	-
	227.6	IS -5.52 dBm IS -29.64 dBm					
3 N 1 t	613.1	ıs -6.15 dBm					
5							E
6							
8							
9							
11							-
1			m			+	

		Mid Channel 6	, 2437 MHz, 802.	.11(g) 54 Mbps		
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

Keysight Spectrum Analyzer - Northwest E	MC, Inc			
XIRL RF 50Ω DC		SENSE:INT	ALIGN OFF	07:18:32 AM Oct 29, 2016
	PNO: Fast ↔ IFGain:Low	. Trig: Video #Atten: 10 dB	#Avg Type: Log-Pwr	TYPE WWWWWW DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 10.00 dBm				
5.00				
0.00 				
-5.00				
-10.0				
-15.0				
-20.0				
-25.0				
-30.0				
-35.0				
Center 2.437000000 GHz Res BW 3.0 MHz	#VB	W 300 kHz	Sweep	Span 0 Hz 1.735 ms (8192 pts)
MSG			STATUS	



	ľ	vilu Channel (Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	1.348 ms	1.554 ms	1	86.7	N/A	N/A
Keysight Spectrum Analyzer Ref Offse Ref Offse Log 4.00 Herrichter Herrichter 100 100 100 110	- Northwest EMC, Inc 50 Ω DC PN IFG t 22.17 dB 0 dBm Vol 00(100, 100 mm of 100 m	O: Fast →→	NSE:INT Trig Delay-1.000 n Trig: Video #Atten: 10 dB	ALIGN OFF	2 Log-Pwr	07:27:34 AM Oct 29, 2016 TRACE 12.34 Oct 29, 2016 TRACE 12.34 Oct 29, 2016 TYPE WWWWW DET DET P P P P P Mkr3 2.995 ms -3,43 dBm
Center 2.43700000 Res BW 3.0 MHz	0 GHz	#VBW	300 kHz FUNCTION	FUNCTION WIDTH	Sweep 4	Span 0 Hz .000 ms (8192 pts) ION VALUE
2 N 1 t 3 N 1 t 4 6 7 9 10 11	2,788 ms 2,995 ms	-30.32 df -3.43 df	3m 3m			
•			m			•
MSG				STATUS		
		Aid Channel (6 2437 MHz 80	2 11(n) MCS0		
	ľ		Number of		Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	6	N/A	N/A	N/A
	N/A	N/A	6	N/A	N/A	N/A

Reysignt spectrum Analyzer - Northwest Elvic, Inc			
RL RF 50Ω DC	SENSE:INT	ALIGN OFF	07:27:54 AM Oct 29, 2016
	PNO: Fast ↔ Trig: Video IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWWW DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 9.00 dBm			
4.00			
and the second s	r - All Human Alles Street area have	and had been been been been been been been bee	Depending of the book of the second
		inter and the product of the second	i dela de la constante filita de la constante d
-6.00			
-11.0			
-16.0			
-21.0			
-26.0			
-31.0			
-36.0			
Center 2.437000000 GHz Res BW 3.0 MHz	#VBW 300 kHz	Sweep	Span 0 Hz 7.099 ms (8192 pts)
MSG		STATUS	



		Mid Channel 6	, 2437 MHz, 802	11(n) MCS7	1.1		
	Dules Width	Devied	Number of	value	Limit	Desults	
	Puise width	272 Guo	Puises	(%)	(%)	Results	
	100 US	373.0 US	I	40	IN/A	N/A	
Keysight Spectrum An	alyzer - Northwest EMC, Inc	L conc					
		SENS	Frig Delay-1.000 m		e: Log-Pwr	TRACE 1 2 3 4 5 6	
		PNO: Fast +++	Frig: Video			TYPE WWWWWWW	
		IFGain:Low #	Atten: 10 dB				
Ref C	ffset 22.17 dB					Mkr3 625.3 µs	
5 dB/div Ref	9.00 dBm					-6.77 aBm	
4.00							
1.00 11	ada and a fair and the	وروان وأرال فكأربل الكمر	بالديارية والمنارك	a mit	ad . to Luci wheel Will	and all the local diversity	
-1.00		3	1 The Lands	1 (b)	a de de la tra		
-6.00	- W - CO (BOIL - ABC						
-11.0							
-16.0							
-21.0							
-26.0							
21.0	0²						
00.0							
-36.0							
Center 2.43700	0000 GHz					Span 0 Hz	
Res BW 3.0 MH	Z	#VBW 3	300 kHz		Sweep 2.	000 ms (8192 pts)	
MKB MODE TBC SCL	x	Y	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE	
1 N 1 t	251.7 µ	s -6.65 dB	m				
2 N 1 t	<u>419.7 µ</u> 625 3 µ	<u>-32.11 dB</u>	n				
4	υ20.0 μ.	-0.11 dB					
5						E	
7							
10							
11						-	
MSG				STATUS			
Dem				STATUS			
		Mid Channel 6	2437 MHz. 802	.11(n) MCS7			
			Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	N/A	N/A	5	N/A	N/A	N/A	

📕 Keysight Spectrum Analyzer - Northwest E	MC, Inc			
LX RL RF 50Ω DC		SENSE:INT	ALIGN OFF	07:38:32 AM Oct 29, 2016
	PNO: Fast ↔ IFGain:Low		#Avg Type: Log-Pwr	TRACE 123456 TYPE WWWWWW DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 9.00 dBm		1		
4.00				n at alle a
-1.00	-A hhhhh			
-6.00				
-11.0				
-16.0				
-21.0				
-26.0				
-31.0				
-36.0				
Center 2.437000000 GHz Res BW 3.0 MHz	#VE	300 kHz	Sweep	Span 0 Hz 1.681 ms (8192 pts)
MSG			STATUS	

Keysigh RL

5 dB/d Log



tes BV	V 3.0) MHz		#VBW 300	kHz		Sweep 4.000 ms (8192
MKR MOD	TRC	SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE
1 N	1	t	105.5 µs	-3.70 dBm			
2 N	1	t	1.545 ms	-23.03 dBm			
3 N	1	t	1.751 ms	-3.39 dBm			
4							
5							
6							
7							
8							
9							
10							
11							

		High Channel 1	1, 2462 MHz , 80)2.11(g) 6 Mbps		
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	6	N/A	N/A	N/A

🇾 Key	sight	Spect	rum Ar	nalyzer ·	Northw	est EMC,	Inc						14.1							_ @ <mark>.x.</mark>
LXI RI	-		RF	5	0Ω D	C		P	NO: Fast		Trig:	Vide			LIGN OF #Av	g Type	: Log-Pwr	07:47:3 T	8 AM RACE TYPE	Oct 29, 2016
5 dB/	div		Ref (Offset	22.17 0 dBr	dB n		IF	Gain:Low		#Atte	en: 10	Ja	IB						
Log																				
5.00	h da	4	l _{eg} pelli,	<mark>Almayha</mark>	hlabbe	<mark>lel ud</mark> ile lu		lun.	hen all has	all a	<mark>han lak</mark>		11.1	ta din da ka ka ka ka ka		i Nije		uline landilike at te		hila kalingayan
-5.00	i		W		il <mark>n</mark> itsv I			(hrti			(Mpd M				槲州		Med M			
-10.0	<u> </u>									<u> </u>										
-15.0																				
-20.0																				
-25.0																				
-30.0																				
-35.0																				
Cent Res	er BW	2.46 / 3.0	6200 0 MH	0000 Iz) GHz				#	VВ	W 300	kHz	z				Swee	p 7.645 m	S S (1	pan 0 Hz 8192 pt <u>s</u>)
MSG															STA	TUS				



			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	259.6 us 4	65.7 us	1	55.7	N/A	N/A
Keysight Spectrum Ana	alvzer - Northwest EMC. Inc					
IXI RL RF	50 Ω DC	SENS	E:INT	ALIGN OFF		07:59:01 AM Oct 29, 2016
	PNC IFGa):Fast ⊶⊷ in:Low	Trig Delay-1.000 ms Trig: Video #Atten: 10 dB	#Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWWW DET P P P P P P
Ref O	ffset 22.17 dB					Mkr3 782.1 µs
5 dB/div Ref	9.00 dBm				,	-3.52 dBm
400						
-1 00 HIMML		<mark>_3</mark> 1			a data Managala	Million Boy and Dis Million Boyers
			in the later of the			
-6.00 F						
-11.0						
-16.0		<mark>.</mark>				
-21.0						
-26.0	Å2					
-31.0	Ψ					
-36.0						
Center 2.46200	0000 GHz					Span 0 Hz
Res BW 3.0 MH	Z	#VBW :	300 kHz		Sweep 2	2.000 ms (8192 pts)
MKR MODE TRC SCL	X	Y	FUNCTION F	JNCTION WIDTH	FUNCT	TION VALUE
1 N 1 t	316.4 µs	-3.88 dB	m			
3 N 1 t	782.1 µs	-3.52 dB	m			
4						=
6						
8						
9						
10						
•			ш			•
MSG				STATUS		

		High Channel 1	1, 2462 MHz , 80	2.11(g) 36 Mbps		
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	6	N/A	N/A	N/A

Keysight Spectrum Analyzer - Northwest EMC, Inc			
LXI RL RF 50 Ω DC	SENSE:INT	ALIGN OFF	07:59:21 AM Oct 29, 2016
	PNO: Fast + Trig: Video IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE [] 2 3 4 5 6 TYPE WWWWWW DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 9.00 dBm			
4.00			
-1.00			
-6.00	ar to be been		
-11.0			
-16.0			
-21.0			
-26.0			
-31.0			
-36.0			
Center 2.462000000 GHz Res BW 3.0 MHz	#VBW 300 kHz	Swe	Span 0 Hz eep 2.096 ms (8192 pts)
MSG		STATUS	



	Hi	gh Channel 11	, 2462 MHz , 80	2.11(g) 54 Mbps	3		
			Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	179.5 us	385.5 us	1	46.6	N/A	N/A	
Keysight Spectrum Analyzer	r - Northwest EMC, Inc						
LXI RE RE	50 Ω DC	SEN	ISE:INT	ALIGN OFF		08:08:16 AM Oct 29, 2016	
			Trig Delay-1.000 m	is #Avg Typ	e: Log-Pwr	TRACE 1 2 3 4 5 6	
	P IE	NO: Fast	#Atten: 10 dB			DET PPPPP	
		Gameen	<i>"</i> ,			Miles 612 9 up	
RefOffse	et 22.17 dB					MKr3 613.8 µs	
5 dB/div Ref 9.0	0 dBm					-4.20 UDIII	
4.00							
4.00	a tableat the	الملغان بالأطراف	all all of	to puel b	. the state	وأجريا ألبانهم الشادم	
-1.00	A NUL AN ALL MADE			ulter.			
-6.00			- hulling	Mar.			
-11.0							
-16.0							
			وي ويدار				
-21.0							
-26.0	2						
-31.0							
-36.0							
Center 2.4620000	00 GHz					Span 0 Hz	
Res BW 3.0 MHz		#VBW	300 kHz		Sweep 2.	000 ms (8192 pts)	
MKR MODE TRC SCI	Y	Y	EUNCTION	FUNCTION WIDTH	FUNCTIO		
	228.3 µs	-4.36 dE	Sm	FUNCTION WIDTH	FUNCTION	JN VALUE	
2 N 1 t	407.8 µs	-30.52 dB	m				
	613.8 µs	-4.28 dE	8m				
5						E	
6			<u> </u>				
9 9 10 10 10 10 10 10 10 10 10 10 10 10 10 							
10							
						•	
MSG				STATUS			
mod l				014.00			
			0 100 MIL 00		_		_
	H	gh Channel 11	, 2462 MHz , 80	2.11(g) 54 Mops	S		
			Number of	Value	Limit	- •	
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	N/A	N/A	5	N/A	N/A	N/A	

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

📁 Keysight Spectrum Analyzer - Northwest EMC, Inc			
IXI RL RF 50Ω DC	SENSE:INT	ALIGN OFF	08:08:33 AM Oct 29, 2016
	PNO: Fast +++ Trig: Video IFGain:Low #Atten: 10 d	#Avg Type: Log-Pwr	TYPE WWWWWW DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 9.00 dBm			
4.00			
-1.00			
-6.00 ALT	(THP)CP)CP		
-11.0			
-16.0			
-21.0			
-26.0			
-31.0			
-36.0			
Center 2.462000000 GHz Res BW 3.0 MHz	#VBW 300 kHz	Sweep	Span 0 Hz 1.735 ms (8192 pts)
MSG		STATUS	



	ł	ligh Channel 1	1, 2462 MHz , 8	02.11(n) MCS0		
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	1.348 ms	1.553 ms	1	86.8	N/A	N/A
New						
Keysight Spectrum Analyze	r - Northwest EMC, Inc	SEN	ICE-INT			08:16:21 AMOCT 20, 2016
	30 32 0 0	32	Trig Delay-1.000 n	ns #Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 6
	P	NO:Fast ↔→→	Trig: Video #Atten: 10 dB			DET P P P P P P
		Guin.Eow				Mkr3 2 930 me
Ref Offs	et 22.17 dB 0 dBm					-5.72 dBm
Log	U dBill					
4.00	Hederica I. Mittighed and a sector sector	المرابعة والأليان فيتعلى ور	والمحادية والمحادية والمحادية والمحاد	والتلاريطية المتاريكية أتتقا وتراري	والدين ورجيا والرادين	ويعربها والانتقار والأناط والارتقاع المراجع المائدين ويعهدوه
-1.00 ALL MARINE HEAL	i de prégeralités de services de la company de la comp		ير الالألطانية () إن أحد لأطلقا أن	in decine constitution	3 Jerhande	Mala Javie in the initial second bid and days to
-6.00						
-11.0						
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-31.0				Ŷ		
-36.0						
Center 2.4620000	00 GHz	#\/B\//	300 kHz		Sween 4	Span 0 Hz 000 ms (8192 nts)
		# V D V V	SOO KIIZ	SUNCTION LOT	омеер ч	.000 ma (0132 pta)
1 N 1 t	^ 1.377 ms	-3.39 di	Bm	PONCTION WIDTH	FUNCT	
2 N 1 t	2.725 ms 2 930 ms	<u>-32.10 dE</u>	3m 3m			
4	2.500 ms	-0.72 dt				
6						
7						
9						
11						
•			m			•
MSG				STATUS		
	ŀ	ligh Channel 1	1, 2462 MHz , 8	02.11(n) MCS0	Lineit	
	Pulse Width	Period	NUMBER OF	value	Limit (%)	Results
	N/A	N/A	5	(/o) N/A	(/o) N/A	N/A
	11/7		5	11/7	11/1	11/17

Keysight Spectrum Analyzer - Northwest EMC, Inc			
LXI RE 50 Ω DC	SENSE:INT	ALIGN OFF	08:16:53 AM Oct 29, 2016
	PNO: Fast ↔ Trig: Video IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWWWW DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 9.00 dBm			
4.00			
antipart, physical digits y difer in the second second	hala an	<mark>n Andra Albert (1966) a baile a bhaile an </mark>	
-11.0			
-16.0			
-21.0			
-26.0			
-31.0			
-36.0			
Center 2.462000000 GHz Res BW 3.0 MHz	#VBW 300 kHz	Sweep	Span 0 Hz 7.099 ms (8192 pts)
MSG		STATUS	(>/



High Channel 11, 2462 MHz , 802.11(n) MCS7 Number of Value Limit Pulse Width Period Pulses (%) Results N/A N/A 5 N/A N/A N/A

Keysight Spectrum Analyzer - Northwest EMC, Inc				
LX RL RF 50 Ω DC	SENSE:INT	ALIGN OFF #Avg Type	: Log-Pwr	08:29:08 AM Oct 29, 2016 TRACE 1 2 3 4 5 6
	PNO: Fast +++ Trig: Vide IFGain:Low #Atten: 10	o IdB		DET PPPPP
Ref Offset 22.17 dB 5 dB/div Ref 9.00 dBm				
4.00				
	halta statut.			e <mark>len elen (1994)</mark>
-11.0				
-16.0				
-21.0				
-26.0				
-31.0				
-36.0				
Center 2.462000000 GHz Res BW 3.0 MHz	#VBW 300 kHz		Sweep 1	Span 0 Hz .681 ms (8192 pts)
MSG		STATUS		

NORTHWEST



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	6/8/2016	6/8/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	TKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017

TEST DESCRIPTION

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

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

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	XMit	2016.05.06

EUT:	1790				Work Order:	MCSO1761	
Serial Number:	DV-1-0546				Date:	10/28/16	
Customer:	Microsoft Corporation				Temperature	23 °C	
Attendees:	Chaitrali Limaye				Humidity:	45% RH	
Project:	None				Barometric Pres.:	1015 mbar	
Tested by:	Richard Mellroth		Power:	USB	Job Site:	NC02	
TEST SPECIFICAT	IONS			Test Method			
FCC 15.247:2016				ANSI C63.10:2013			
COMMENTS							
Power Setting at D	efault. Client provided ad	dapter cable loss of 0.7dB included i	n reference level offs	set.			
DEVIATIONS FROM	I TEST STANDARD						
None							
			0 x				
Configuration #	1		VUSIL				
		Signature	1				
					Walter	Limit	Barrill
Low Channel 1, 244	0 MU=				Value	(>)	Result
Low Channel 1, 241	2 IVITIZ 902 11(a) 6 Mbpo				16.052 MHz	500 kHz	Boos
	802.11(g) 26 Mbps				16.003 MHZ	500 KHZ	Pass
	802 11(g) 54 Mbps				16.359 MHz	500 kHz	Pass
	802 11(p) MCS0				16.000 MHZ	500 kHz	Pass
	802 11(n) MCS7				16.862 MHz	500 kHz	Pass
Mid Channel 6, 2437	7 MHz						
	802.11(g) 6 Mbps				16.083 MHz	500 kHz	Pass
	802.11(g) 36 Mbps				16.421 MHz	500 kHz	Pass
	802.11(g) 54 Mbps				16.375 MHz	500 kHz	Pass
	802.11(n) MCS0				16.919 MHz	500 kHz	Pass
	802.11(n) MCS7				17.217 MHz	500 kHz	Pass
High Channel 11, 24	62 MHz						
	802.11(g) 6 Mbps				16.275 MHz	500 kHz	Pass
	802.11(g) 36 Mbps				16.392 MHz	500 kHz	Pass
	802.11(g) 54 Mbps				16.38 MHz	500 kHz	Pass
	802.11(n) MCS0				16.929 MHz	500 kHz	Pass
	802.11(n) MCS7				16.677 MHz	500 kHz	Pass





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-13.0					1						
-10.0	^{لى} ر ا									۷ u	
-28.0	- Marine - M									Mue	
-33.0	N									- Tenk	
-38.0	^W									¥	<u> </u>
-43.0											M. 10
0.00									_		
#Re	s BW 100 kHz				#VE	SW 300 KH	z			sp Sweep	2.399 ms
C	ccupied Band	wi	dth		Total P	ower	14.7 di	3m			
			16.409 I	MHz							
Т	ransmit Freq Err	or	-12.32	22 kHz	OBW P	ower	99.00	%			
					v dD		-6.00	dD			
x	dB Bandwidth		16.4	3 MHZ	хив		-0.00	uв			
x	dB Bandwidth		16.4	3 MHZ	хив		-0.00	uв			
×	dB Bandwidth		16.4	3 MHZ	хuв		-0.00	uв			
x	dB Bandwidth		16.4	3 MHZ	xub		-0.00	uв			





Total Power

OBW Power

x dB

14.2 dBm

99.00 %

-6.00 dB

STATUS

Occupied Bandwidth

Transmit Freq Error

x dB Bandwidth

17.556 MHz

-17.858 kHz

16.94 MHz





-33.0 -38.0 -43.0				- Mymho	
Center 2.437 GHz #Res BW 100 kHz		#VBW 300 kł	Span 25 MHz Sweep 2.399 ms		
Occupied Bandwidt	h	Total Power	14.7 dBm		
16	6.435 MHz				
Transmit Freq Error	-23.959 kHz	OBW Power	99.00 %		
x dB Bandwidth	16.08 MHz	x dB	-6.00 dB		
MEC			STATIS		





	# IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold: 50/50	Radio Device: BTS
5 dB/div Ref 2.00 dBm	1	1		
-3.00 -8.00	mmmmm	want man	manna	M
-23.0				
-28.0 -33.0 -38.0				Www.
-43.0 Center 2.437 GHz #Res BW 100 kHz		#VBW 300 ki	Hz	Span 25 MHz Sweep 2.399 ms
Occupied Bandwid	th 6.347 MHz	Total Power	15.5 dBm	
Transmit Freq Error	-6.358 kHz	OBW Power	99.00 %	
x dB Bandwidth	16.37 MHz	x dB	-6.00 dB	
MSG			STATUS	





5 dB/div Ref 2.00 dBm 3.00 8.00 13.0 14.0 15.0 1	
-3.00	
Center 2.437 GHz Span 30 #Res BW 100 kHz #VBW 300 kHz Sweep 2.99	0 MHz 99 ms
Occupied Bandwidth Total Power 15.3 dBm 17.496 MHz	
Transmit Freq Error -13.932 kHz OBW Power 99.00 %	
x dB Bandwidth 17.22 MHz x dB -6.00 dB	
MSG STATUS	











OBW Power

x dB

99.00 %

-6.00 dB

STATUS

Transmit Freq Error

x dB Bandwidth

-18.763 kHz

16.93 MHz







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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	6/8/2016	6/8/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	TKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The fundamental emission output power (maximum average conducted output power) was measured using the channels and modes as called out on the following data sheets. The transmit power was set to its default maximum.

Prior to measuring output power; the emission bandwidth (B) and the transmission pulse duration (T) were measured. Both are required to determine the method of measuring Maximum Conducted Output Power. The transmission pulse duration (T) was measured using a zero span on the spectrum analyzer to see the pulses in the time domain.

The method AVGSA-2 in section 11.9.2.2.4 of ANSI C63.10:2013 was used to make the measurement. This method uses trace averaging across ON and OFF times of the EUT transmissions in the spectrum analyzer channel power function using an RMS detector. Following the measurement a duty cycle correction was applied by adding [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times.

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

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EUT	1790				Work Order:	MCSO1761	
Serial Number	: DV-1-0546				Date:	10/28/16	
Customer	Microsoft Corporation				Temperature:	23 °C	
Attendees	: Chaitrali Limaye				Humidity:	45% RH	
Project	None				Barometric Pres.:	1015 mbar	
Tested by	Richard Mellroth		Power: USB		Job Site:	NC02	
TEST SPECIFICAT	IONS		Test Method				
FCC 15.247:2016			ANSI C63.10:2013				
COMMENTS							
Power Setting at D	Default. Client provided ad	dapter cable loss of 0.7dB included	in reference level offset.				
DEVIATIONS FRO	M TEST STANDARD						
None		-					
			OI XI				
Configuration #	1		VUEIL				
		Signature					
			Avg Cond	Duty Cycle	Value	Limit	Baardea
			Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	(dBm)	Results
Low Channel 1, 241	12 MHz		Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)	Value (dBm)	(dBm)	Results
Low Channel 1, 241	12 MHz 802.11(g) 6 Mbps		Avg Cond Pwr (dBm) 6.568	Duty Cycle Factor (dB)	Value (dBm) 7.1	(dBm)	Results Pass
Low Channel 1, 241	12 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 0.054	0.6 2.5	Value (dBm) 7.1 6.9 7.0	(dBm) 30 30	Pass Pass
Low Channel 1, 241	12 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 0.040	0.6 2.5 3.3	Value (dBm) 7.1 6.9 7.2 0.0	Limit (dBm) 30 30 30	Results Pass Pass Pass
Low Channel 1, 241	12 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS0		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 2.746	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 2.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2	Limit (dBm) 30 30 30 30 30	Results Pass Pass Pass Pass Pass
Low Channel 1, 241	12 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 6.9 7.2	Limit (dBm) 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass
Low Channel 1, 241 Mid Channel 6, 243	12 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 902.11(a) 6 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.82	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.4	Limit (dBm) 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243	2 MHz 802,11(g) 6 Mbps 802,11(g) 36 Mbps 802,11(g) 54 Mbps 802,11(n) MCS0 802,11(n) MCS7 7 MHz 802,11(g) 6 Mbps 802,11(g) 6 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.2 7.4 7.4	Limit (dBm) 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243	12 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 36 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.262	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 0.6 2.5 3.2	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.4 7.4	Limit (dBm) 30 30 30 30 30 30 30 30 20	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.87	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 2.5 3.3 0.6	Value (dBm) 7.1 6.9 7.2 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.7 7.5	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243	2 MHz 802,11(g) 6 Mbps 802,11(g) 36 Mbps 802,11(g) 54 Mbps 802,11(n) MCS0 802,11(n) MCS7 7 MHz 802,11(g) 6 Mbps 802,11(g) 54 Mbps 802,11(g) 54 Mbps 802,111(g) MCS7 802,111(g) MCS7		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.073	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 2.5 3.3 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.2 7.4 7.4 7.4 7.7 7.5 7.5	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 36 Mbps 802.11(n) MCS0 802.11(n) MCS7		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.073	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 3.3 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.4 7.4 7.5 7.5 7.5	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243 High Channel 11, 2	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 462 MHz 802.11(g) 6 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.073 7.043	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 2.5 3.3 0.6 3.5 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.4 7.7 7.5 7.5 7.5	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243 High Channel 11, 24	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 462 MHz 802.11(g) 6 Mbps 802.11(g) 6 Mbps 802.11(g) 6 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.073 7.043 4.969	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 3.5 0.6 3.5 0.6 2.5 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.7 7.5 7.5 7.5 7.5	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243 High Channel 11, 24	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 54 Mbps 802.11(n) MCS7 462 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.073 7.043 4.969 4.413	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.4 7.4 7.5 7.5 7.5 7.5 7.5	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243 High Channel 11, 2	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(g) 6 Mbps 802.11(g) 64 Mbps 802.11(g) 54 Mbps 802.11(g) 64 Mbps 802.11(g) 64 Mbps 802.11(g) 64 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.073 7.043 4.969 4.413 6.978	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 3.5 0.6 3.5 0.6 2.5 3.3 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.4 7.4 7.5 7.5 7.5 7.5 7.6 7.5 7.7 7.6	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa
Low Channel 1, 241 Mid Channel 6, 243 High Channel 11, 2	2 MHz 802.11(g) 6 Mbps 802.11(g) 36 Mbps 802.11(g) 54 Mbps 802.11(n) MCS0 802.11(n) MCS7 7 MHz 802.11(g) 6 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 6 Mbps 802.11(g) 6 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) 54 Mbps 802.11(g) MCS7		Avg Cond Pwr (dBm) 6.568 4.34 3.854 6.319 3.716 6.83 4.892 4.368 6.877 4.969 4.073 7.043 4.969 4.413 6.978 4.198	Duty Cycle Factor (dB) 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 2.5 3.3 0.6 3.5 0.6 2.5 3.3 0.6 3.5	Value (dBm) 7.1 6.9 7.2 6.9 7.2 7.4 7.4 7.4 7.4 7.7 7.5 7.5 7.5 7.5 7.5 7.5 7.7 7.6 7.7	Limit (dBm) 30 30 30 30 30 30 30 30 30 30 30 30 30	Results Pass Pass Pass Pass Pass Pass Pass Pa

	Avg Cond	Low Channe	l 1, 2412 MHz, 802	.11(g) 6 Mbps	Limit	
	Pwr (dBm)	Factor (dR)		(dBm)	(dBm)	Results
	6.568	0.6		7.1	30	Pass
Keysight Spectrum Analy O RL RF 10 dB/div Ref -0.00	2er - Northwest EMC, Inc - Po 50 Ω DC 1.00 dBm	#IFGain:Low	rage (RM5) ENSE:INT Center Freq: 2.412 Trig: Free Run #Atten: 10 dB	ALIGN OFF 0000000 GHz Avg Hold: 1	00/100 R:	adio Device: BTS
Center 2.412 GH #Res BW 1 MHz	Z		#VBW 31	ЛНz		Span 35 MHz #Sweep 601 ms
Channel Po 6.57	wer ' dBm / 16.4	12 MHz	Power Spec	ctral Density 59 dBm /H	z	
MSG				STATUS		
		Low Channel	1 2412 MHz 802	11(a) 36 Mbps		
		Duty Cycle	., _ 112 10112, 002	Value	Limit	
	Avg Cond Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results



	• • ·	Low Channel	1, 2412 MHz, 802	.11(g) 54 Mbps		
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)	1	(dBm)	(dBm)	Results
	3.854	3.3		1.2	30	Pass
			(0) (0)			
Keysight Spectrum Analyzer	- Northwest EMC, Inc - P 50 Ω DC	oints: 601, Detector: Aver	ENSE:INT	ALIGN OFF		06:17:33 AM Oct 29, 2016
			Center Freq: 2.412	000000 GHz	Ra	dio Std: None
		#IFGain:Low	#Atten: 10 dB	Avginoia: 1	00/100 Ra	dio Device: BTS
10 dB/div Ref -	2.00 dBm					
Log						
-12.0						
-22.0						
-32.0						
-42.0	~					
-52.0						
-62.0						
-72.0						
-82.0						
.92 n						
02.0						
Center 2.412 GHz						Span 35 MHz
#Res BW 1 MHz			#VBW 3	۷Hz		#Sweep 601 ms
Channel Day			Denver Cree	stral Danaity		
Channel Pow	/er		Power Spe	ctral Density		
2.05	dBm (40)		60 4		-	
	UDIII / 16.	54 MIHZ	-00.		Z	
3.80						
3.85						
3.85						
3.85						
3.85						
J.85				STATUS		
3.89				STATUS		
J.85		Low Channe	il 1, 2412 MHz, 80	status 2.11(n) MCS0		
J.85	Avg Cond	Low Channe Duty Cycle	il 1, 2412 MHz, 80	status 2.11(n) MCS0 Value	Limit	
3.89 MSG	Avg Cond Pwr (dBm)	Low Channe Duty Cycle Factor (dB)	el 1, 2412 MHz, 80	2.11(n) MCS0 Value (dBm)	Limit (dBm)	Results



	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	3.716	3.5		7.2	30	Pass
Keysight Spectrum Analyzer	- Northwest EMC, Inc - P 50 Ω DC	oints: 601, Detector: Aver	age (RMS) ENSE:INT	ALIGN OFF		06:59:04 AM Oct 29, 201
			Center Freq: 2.41	2000000 GHz	R	adio Std: None
		#IFGain:Low	#Atten: 10 dB	Avg Hold:	100/100 Ra	adio Device: BTS
10 dB/div Ref -	2.00 dBm					
-12 0						
-22.0	/					
-32.0	/					
-42.0						
-52.0						
-62.0						
-72.0						
-82.0						
-92.0						
0						0
#Res BW 1 MHz			#VBW 3	MHz		Span 40 MH #Sweep 601 m
						•
Channel Pow	ver		Power Spe	ctral Density	/	
3.72	dBm / 17.4	48 MHz	-68.	71 dBm /⊦	z	
MSG				STATUS		
		Millola	0.0407.0411.000			
	Avg Cond	Duty Cycle	o, 2437 MHZ, 80		Limit	
	Avg Cond			(dBm)	(dBm)	Results
	Pwr (dBm)	Factor (0B)		IUDIIII	(GDIII)	Neauta



		Mid Channel	6, 2437 MHz, 802	.11(g) 36 Mbps		
	Avg Cond	Duty Cycle		Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	4.892	2.5		7.4	30	Pass
Warrish Careton Archard	Nethorst FMC Inc. P	-inter 601 Detector Aug	(BMC)			
IXI RL RF 5	O Ω DC	oints: 001, Detector: Ave	ENSE:INT	ALIGN OFF		07:07:53 AM Oct 29, 20
			Center Freq: 2.437	000000 GHz	Ra	adio Std: None
		#IFGain:Low	#Atten: 10 dB	Avginoid:	100/100 Ra	adio Device: BTS
10 dB/div Ref -1	.00 dBm					
Log						
-11.0						
-21.0						
-31.0						
-41.0						
-51.0						
-61.0						
-71.0						
-81.0						
-91 በ						
Center 2.437 GHz #Res BW 1 MHz			#VBW 31	₩Hz		Span 35 Mł #Sweep 601 n
Channel Pow	er		Power Spe	ctral Density	/	
4.89	dBm / 16.:	39 MHz	-67.2	26 dBm /⊦	lz	
1150				CTATIC		
MSG				STATUS		
		Mid Channel	6, 2437 MHz, 802	.11(g) 54 Mbps		
	Avg Cond	Duty Cycle		Value	Limit	
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		Value (dBm)	Limit (dBm)	Results



	Avg Cond	Duty Cycle	10, 2407 10112, 002	Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	6.877	0.6		7.5	30	Pass
📜 Keysight Spectrum Analyzer	- Northwest EMC, Inc - F	oints: 601, Detector: Aver	age (RMS)			
L <mark>X/</mark> RL RF !	50 Ω DC	S	ENSE:INT Center Freg: 2.437	ALIGN OFF	Ra	07:30:01 AM Oct 29, 201
		#IECoint out	Trig: Free Run #Atten: 10 dB	Avg Hold	: 100/100	dio Device: BTS
		#IFGam.LOW	witten. To ub		14	
10 dB/div Ref 1.	.00 dBm					
Log					-	
-19.0	/					
-29.0	/					
-39.0						
-49.0						
-59.0						
-69.0						
-79.0						
-09.0						
Center 2.437 GHz #Res BW 1 MHz			#VBW 31	/H7		Span 40 MH #Sween 601 m
			<i>"</i> , , , , , , , , , , , , , , , , , , ,			
Channel Pow	er		Power Spe	ctral Densit	y	
0.00				7		
6.88	aBM / 17.	55 MHz	-65.0	or abm /	Hz	
MSG				STATUS		
		Mid Channel	l 6, 2437 MHz, 802	2.11(n) MCS7		
	Avg Cond	Duty Cycle		Value (dBm)	Limit (dBm)	Posulte
	4.073	3.5		7.5	30	Pass
•					•	
Keysight Spectrum Analyzer	- Northwest EMC, Inc - F	oints: 601, Detector: Aver	age (RMS)	A ULICH OFF		



	Ava Cond	Duty Cycle	11, 2402 10112, 00	Value	Limit	
	Pwr (dBm)	Factor (dB)		(dBm)	(dBm)	Results
	7.043	0.6		7.6	30	Pass
Keysight Spectrum Analyz RL RF O dB/div Ref 10 dB/div Ref -0	er - Northwest EMC, Inc - P 50 Ω DC 2.00 dBm	inits: 601, Detector: Aver S #IFGain:Low	age (RMS) ENSE.INT Center Freq: 2.462 Trig: Free Run #Atten: 10 dB	ALIGN OFF 000000 GHz Avg Hold:	100/100 Ra R	07:49:47 AM Oct 29, 2016 dio Std: None dio Device: BTS
Center 2.462 GH: #Res BW 1 MHz	Z		#VBW 31	MHz		Span 35 MHz #Sweep 601 ms
Channel Po	wer		Power Spe	ctral Density	/	
7.04	abm / 16.4	43 MHz	-65.1	rtabm /		
MSG				STATUS		
		High Channel '	11, 2462 MHz , 80	2.11(g) 36 Mbps		
				Value	Limit	
	Avg Cond	Duty Cycle		value		
	Avg Cond Pwr (dBm)	Duty Cycle Factor (dB)		(dBm)	(dBm)	Results



	Ava Cond	Duty Cycle	I I, ∠40∠ IVI⊓Z, 8U	Value	Limit	
	Pwr (dBm)	Eactor (dB)		(dBm)	(dBm)	Results
	4.413	3.3		7.7	30	Pass
Keysight Spectrum Analyz RL RF O dB/div Ref Log	-1.00 dBm	#IFGain:Low	age (RMS) ENSE:INT Center Freq: 2.46 Trig: Free Run #Atten: 10 dB	ALIGN OFF 2000000 GHz Avg Hold:	Ra Ra Ra Ra Ra Ra Ra Ra Ra Ra Ra Ra Ra R	OB:10:45 AM Oct 29, 2016 dio Std: None dio Device: BTS
enter 2.462 GH Res BW 1 MHz	Z		#VBW 3	MHz		Span 35 MHz #Sweep 601 ms
Channel Po 4.41	wer dBm / 16.	34 MHz	Power Spe -67.	ectral Density 72 dBm /ł	/ Hz	
MSG				STATUS		
			44 0400 1411			
		High Channel	11, 2462 MHz , 8	302.11(n) MCS0		
	Avg Cond	High Channel Duty Cycle	11, 2462 MHz , 8	Value	Limit	
	Avg Cond Pwr (dBm)	High Channel Duty Cycle Factor (dB)	11, 2462 MHz , 8	Value (dBm)	Limit (dBm)	Results





	4.188	3.5		(авт) 7.7	(aBm) 30	Pass	1
			•	•			
📜 Keysight Spectrum Analyzer - Nor	rthwest EMC, Inc - P	oints: 601, Detector: Avera	age (RMS)			- đ	X
LX RL RF 50 Ω	DC	SI	Center Freg: 2 46	ALIGN OFF		08:31:20 AM Oct 29, 2 Radio Std: None	2016
		·••	Trig: Free Run	Avg Hold:	100/100		
		#IFGain:Low	#Atten: 10 dB			Radio Device: B1S	_
10 dB/div Ref -1.00	dBm		1				_
-11.0							
-21.0							
-31.0	/						
-41.0							
-51.0							
-61.0							
-71.0							
-81.0							
-91.0							
Center 2462 GHz				l		Span 40 M	1117
#Res BW 1 MHz			#VBW 3 MHz			#Sweep 601 ms	
Channel Power			Power Spe	ctral Density	/		
4 19 dF	Rm / 17 /	47 MHz	-88-	24 dBm ⊮	1-		
	2 11 / 17.4		-00./		12		