

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
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	ΤKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. Per ANSI C63.10, all measurements are to be performed with the EUT operating at 100% duty cycle at its maximum power level. In the event the EUT cannot be operated at 100% duty cycle, the transmission pulse duration (T) and Duty Cycle (x) are required to be measured for each of the EUT operating modes.

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, a duty cycle correction factor in dB can be calculated to add to power measurements if required in the test method guidance using the following formula

10 * LOG (1/D) = dB

Where D is duty cycle of the radio transmissions

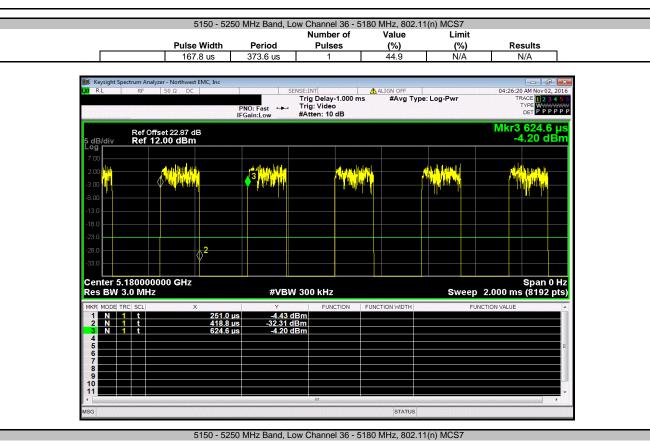


Serial Number: DV-1-0546 Customer: Microsoft Corporatin Attendees: None Project: None Tested by: Richard Mellroth TEST SPECIFICATIONS Second Seco	adapter cable loss of 1.2dB in Signature MHz MCS0 MCS7 MCS7	A	Fest Method ANSI C63.10:2013	Period 1.554 ms N/A 373.6 us	Number of Pulses	Date: Temperature: Humidity: Barometric Pres.: Job Site: Value (%) Value (%)	48% RH 1019 mbar	Results
Attendees: None Project: None Project: None Tested by: Richard Mellroth TEST SPECIFICATIONS TCC 15.407:2016 COMMENTS Power Setting at Default. Client provide DEVIATIONS FROM TEST STANDARD None Configuration # 1 S150 - 5250 MHz Band Low Channel 36 - 518 802.11(adapter cable loss of 1.2dB in Signature MHz MCS0 MCS7 MCS7	T A I	Fest Method INSI C63.10:2013 t. Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Number of Pulses	Humidity: Barometric Pres.: Job Site: Value (%) 86.7 N/A	48% RH 1019 mbar NC02 Limit (%) N/A N/A	N/A N/A
Project: None Tested by: Richard Mellroth EST SPECIFICATIONS CC 15.407:2016 COMMENTS Tower Setting at Default. Client provide SetVIATIONS FROM TEST STANDARD Ione Configuration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(8	MHz MCS0 MCS7 MCS7	T A I	Fest Method INSI C63.10:2013 t. Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Number of Pulses	Value (%) 86.7 N/A	1019 mbar NC02 Limit (%) N/A N/A	N/A N/A
Tested by: Richard Mellroth EST SPECIFICATIONS CC 15.407:2016 COMMENTS Nower Setting at Default. Client provide DEVIATIONS FROM TEST STANDARD Ione Configuration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(802	MHz MCS0 MCS7 MCS7	T A I	Fest Method INSI C63.10:2013 t. Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Number of Pulses	Job Site: Value (%) 86.7 N/A	Limit (%) N/A N/A	N/A N/A
EST SPECIFICATIONS CC 15.407:2016 COMMENTS Yower Setting at Default. Client provide DEVIATIONS FROM TEST STANDARD Ione Configuration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(802.1	MHz MCS0 MCS7 MCS7	T A I	Fest Method INSI C63.10:2013 t. Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	Value (%) 86.7 N/A	Limit (%) N/A N/A	N/A N/A
CC 15.407:2016 COMMENTS Tower Setting at Default. Client provide DEVIATIONS FROM TEST STANDARD Ione Configuration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(MHz MCS0 MCS7 MCS7	A	NSI C63.10:2013 t. Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
COMMENTS Power Setting at Default. Client provide DEVIATIONS FROM TEST STANDARD Ione Configuration # 1 1150 - 5250 MHz Band Low Channel 36 - 518 802.11(MHz MCS0 MCS7 MCS7		t. Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
Every Setting at Default. Client provide DEVIATIONS FROM TEST STANDARD Ione Configuration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(MHz MCS0 MCS7 MCS7	ncluded in reference level offset	Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
EVIATIONS FROM TEST STANDARD Ione configuration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(MHz MCS0 MCS7 MCS7	ncluded in reference level offset	Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
DEVIATIONS FROM TEST STANDARD lone ionfiguration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(802.	MHz MCS0 MCS7 MCS7	ncluded in reference level offset	Pulse Width 1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
Ione Ione Ione Ione Ione Ione Ione Ione	MHz MCS0 MCS7 MCS7 MCS7	flist	1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
tone tonfiguration # 1 150 - 5250 MHz Band Low Channel 36 - 518 802.11(802.11	MHz MCS0 MCS7 MCS7 MCS7	flist	1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
Image: system of the	MHz MCS0 MCS7 MCS7 MCS7	flist	1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
150 - 5250 MHz Band Low Channel 36 - 518 802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11) 802.11(802.11(802.11)	MHz MCS0 MCS7 MCS7 MCS7	Rist	1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
150 - 5250 MHz Band Low Channel 36 - 518 802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11) 802.11(802.11(802.11)	MHz MCS0 MCS7 MCS7 MCS7	RIGIL	1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
Low Channel 36 - 518 802.11(802.11(802.11) 802.11(High Channel 48 - 52 802.11(802.11(802.11(802.11(802.11) 802.11(802.11) 802.11(802.11)	MHz MCS0 MCS7 MCS7 MCS7	×.	1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
Low Channel 36 - 518 802.11(802.11(802.11) 802.11(High Channel 48 - 52 802.11(802.11(802.11(802.11(802.11) 802.11(802.11) 802.11(802.11)	MCS0 MCS0 MCS7 MCS7		1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	Pulses 1 5	(%) 86.7 N/A	(%) N/A N/A	N/A N/A
Low Channel 36 - 518 802.11(802.11(802.11) 802.11(High Channel 48 - 52 802.11(802.11(802.11(802.11(802.11) 802.11(802.11) 802.11(802.11)	MCS0 MCS0 MCS7 MCS7		1.348 ms N/A 167.8 us	1.554 ms N/A 373.6 us	1 5	86.7 N/A	N/A N/A	N/A N/A
Low Channel 36 - 518 802.11(802.11(802.11(802.11(High Channel 48 - 52 802.11(802.11) 802.11(802.11(802.11(802.11) 802.11(802.11(802.11(802.11) 802.11(802.11(802.11(802.11(802.11) 802.11(802.	MCS0 MCS0 MCS7 MCS7		N/A 167.8 us	N/A 373.6 us	5	N/A	N/A	N/A
802.11(802.11) 802.11(802.11) 802.11(High Channel 48 - 52 802.11(802.11(802.11) 802.11(802.11) 725 - 5785 MHz Band Low Channel 149 - 57 802.11(MCS0 MCS0 MCS7 MCS7		N/A 167.8 us	N/A 373.6 us	5	N/A	N/A	N/A
802.11(802.11(802.11(High Channel 48 - 52 802.11(802.11(802.11(802.11(802.11(725 - 5785 MHz Band Low Channel 149 - 57 802.11(MCS0 MCS7 MCS7		N/A 167.8 us	N/A 373.6 us	5	N/A	N/A	N/A
802.11 802.11 High Channel 48 - 52 802.11(802.11(802.11(802.11(802.11(802.11(802.11(802.11) 725 - 5785 MHz Band Low Channel 149 - 57 802.11(MCS7 MCS7		167.8 us	373.6 us	-			
802.11 High Channel 48 - 52 802.11 802.11 802.11 802.11 802.11 802.11 725 - 5785 MHz Band Low Channel 149 - 57 802.11	MCS7							
High Channel 48 - 52 802.11(802.11) 802.11(802.11(802.11(725 - 5785 MHz Band Low Channel 149 - 57 802.11(N/A	5	N/A	N/A	N/A N/A
802.11(802.11(802.11(802.11(802.11(802.11(725 - 5785 MHz Band Low Channel 149 - 57 802.11(IVITIZ		IN/A	N/A	5	IN/A	IN/A	IN/A
802.11(802.11(802.11) 725 - 5785 MHz Band Low Channel 149 - 57 802.11(MCSO		1.347 ms	1.554 ms	1	86.7	N/A	N/A
802.11(802.11(725 - 5785 MHz Band Low Channel 149 - 57 802.11(N/A	N/A	6	N/A	N/A	N/A
802.11(i 725 - 5785 MHz Band Low Channel 149 - 57 802.11(i			168 us	373.6 us	1	45	N/A	N/A
725 - 5785 MHz Band Low Channel 149 - 57 802.11(1			N/A	N/A	5	N/A	N/A	N/A
Low Channel 149 - 57 802.11(r	west		IN/A	11/14	5	IN/A	IN/A	19/75
802.11(5 MHz							
			1.348 ms	1.554 ms	1	86.7	N/A	N/A
			N/A	N/A	5	N/A	N/A	N/A
802.11(167.8 us	373.6 us	1	44.9	N/A	N/A
802.11(N/A	N/A	5	N/A	N/A	N/A
Mid Channel 157 - 57			19/7 5	19/75		13// 1	19/1	19/7
802.11(i			1.348 ms	1.554 ms	1	86.7	N/A	N/A
802.11(N/A	N/A	6	N/A	N/A	N/A
802.11(1			167.7 us	373.5 us	1	44.9	N/A	N/A
802.11(N/A	N/A	5	N/A	N/A	N/A
High Channel 161 - 5			11/7	11/7	5	11/7	19/75	IN/A
Righ Chariner 161 - 5 802.11(i			1.348 ms	1.554 ms	1	86.7	N/A	N/A
			N/A	N/A	5	N/A	N/A	N/A
802.11(1 802.11(1	MCSO		IN/A		5	44.9		IN/A
802.11(1 802.11(1	MCS0		167.8 us	373.6 us	1		N/A	N/A



	5150 - 5250) MHz Band, Low (Channel 36 - 5 Number of	180 MHz, 802.1 ² Value	1(n) MCS0 Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	1.348 ms	1.554 ms	1	86.7	N/A	N/A
The second second	um Analyzer - Northwest EMC, Inc					
	RF 50 Ω DC	SENSE:		ALIGN OFF		04:06:39 AM Nov 02, 2016
			g Delay-1.000 m g: Video	s #Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P P P P P
			tten: 10 dB			DET PPPPP
	Ref Offset 22.87 dB					Mkr3 1.880 ms
5 dB/div Log	Ref 10.00 dBm			1		-2.97 dBm
5.00	أعاقص وبالشرق أنزاع اعترابا بالالاس ممتري سالين	nalisas ittiii suutaaati kiist	والله والله ومر	ويرفيها أهتابا فللورم التقريرية	the street, with our case of calls	alla, da distriction da substances de la constitución de la constitución de la constitución de la constitución
0.00		d have a tradition		i da dan la publi du ngi dilat a dahi	die feliefel die konste b	
-5.00				التركيم والتركي		
-10.0						
-15.0						
-20.0		↓ 2				
-30.0						
-35.0						
0	0000000 GHz					0
Res BW 3.0		#VBW 30	0 kHz		Sweep 4	Span 0 Hz .000 ms (8192 pts)
MKR MODE TRC	SCL X	Y	FUNCTION	FUNCTION WIDTH	FUNCTI	ON VALUE
1 N 1 2 N 1		s -4.84 dBm s -25.27 dBm				
3 N 1 4	t 1.880 m	s -2.97 dBm				
5						E
7						
9						
11			m			
MSG				STATUS		
	5150 - 5250) MHz Band, Low (Channel 36 - 5 Number of	180 MHz, 802.1 ⁻ Value	1(n) MCS0 Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A
Keysight Spectr	um Analyzer - Northwest EMC, Inc RF 50 Ω DC	SENSE:		ALIGN OFF		04:06:54 AM Nov 02, 2016
		-	g: Video	#Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 6
BERT FREEDOR BERTS FREEDOR			tten: 10 dB			DETPPPPP
E altitution	Ref Offset 22.87 dB					
5 dB/div	Ref Offset 22.87 dB Ref 10.00 dBm					

5.00															
0.00	the Hall de Plan		<mark>hala khiri</mark>	<mark>, da</mark> lan Maka M	<mark>hite</mark>	1	<mark>Nista I</mark>	and the definition of the second second	<mark>dulliu</mark> t	llup.	ahu ahun di puh	<mark>hkadi ^{jak}uk</mark>	1	diglication and a	en her het b
0.00 -5.00				h h h h h h						ľ		inde i <mark>Ab</mark> ili	Î	right peak	
-10.0															
-15.0															
-20.0															
-25.0															
-30.0															
-35.0															
															A
Cen Res	ter 5.18000 BW 3.0 MH	1000 12	JU GHZ				#VB	W 300 kHz				Sw	/ee	o 7.099 ms	Span 0 H (8192 pts
MSG											STATUS				



	5150 - 52	50 MHz Band, Lo	w Channel 36 - 5	5180 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

RL RF 50 Ω DC		SENSE:INT	LIGN OFF	04:26:36 AM Nov 02, 201
	PNO: Fast 🔸 IFGain:Low	. Trig: Video #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 12345 TYPE WWWWW DET PPPPP
Ref Offset 22.87 dl dB/div Ref 12.00 dBm	B 			
00				
8.0 8.0				
enter 5.180000000 GHz es BW 3.0 MHz	#VB	W 300 kHz	Sweep 1	Span 0 F .681 ms (8192 pt

NORTHWEST

XMit 2016.05.06



		MHz Band, High	Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	1.347 ms	1.554 ms	1	86.7	N/A	N/A
Keysight Spectrum Analy RL RF	50 Ω DC	PNO: Fast +++ T	E:INT Trig Delay-1.000 ms Trig: Video Atten: 10 dB	ALIGN OFF #Avg Typ	be: Log-Pwr	07:55:34 AM Nov 02, 2016 TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P P P P P
	fset 22.87 dB 1.00 dBm					Mkr3 1.866 ms -3.11 dBm
6.00 1.00	etimolofica (n. kom atmitti) Mini kontena na stanovnika stanovnika	a di secara di sera di secara di secara Secara di secara di s	3		en en de la ferre d'Arrien de la ferre	a sector de set estador de partes A sector de la contraction de la contra
-4.00	klimating dat dig to participation participation			and the first part of the		li algo at Allika della pitte della pitte della polo ()
-14.0		\$ ²				
-24.0						
-34.0						
Center 5.240000 Res BW 3.0 MHz		#VBW 3	00 kHz		Sweep 4	Span 0 Hz 1.000 ms (8192 pts)
MKR MODE TRC SCL	Х 312.0 µs	Y -2.50 dBr		FUNCTION WIDTH	FUNC	TION VALUE
2 N 1 t 3 N 1 t 4 5	1.659 ms 1.866 ms	-18.56 dBr	n			E
6 7 8 9						
10 11			III.	1		· ·
MSG	E150 -5050	MHz Band, High	Channel 49		11(n) MCS0	
		, ,	Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results

R	L		RF	50	ΩΙ	DC			1100	16.20	S	ENSE:I	NT	2.4	and the second	A	LIGN OFF			07	:55:49 AM		
																	#Avg Type	: Lo	g-Pwr		TRACI		
George									PNO: F		••	Trig	g: Vid ten: '	leo	ле						DE	= ₩₩	PP
				1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -				l.	FGain:	_OW		#At	ten:	10 0	ав	and the second		1.00			UL		
			o f C	ffset	<u></u>	dD																	
dB	div		2ef	11.00	22.07 1 dB	m																	
og i					, ab																		
5.00																							
.00						du.,	da a			aler .			a de		and a la	n. d	the stress of		the state	as el			
	n ka ki ka		unlisi		a thurb	Weigh	nu vi	- P	<mark>հիլի</mark> սըն	1.00	a pila	an di kata	dala j		i a chikadi ta	<u>o (nali)</u>	And A Local Data And A	J,		NAME OF B	und rek al		l he
.00	like it.		a dha	n i ai	المالين ا	in chiri	lla di ta	- di	l i kualu	a Muni a	ռե	ndidda.	and 1		d anite o	di	. In the last of the last		a de di di de a	No. II LA	alia interné		o Li
			1.1	7777	1. 11					71 J M	16	n da ha	19.4		l i d'hai	11				1.001			
.00										6 GU 1	1				1.11		, i 1. juli			1 '''			
00											۱.		11			r					· 1		
00																		+					
4.0																							
1.0						_					_												
9.0																							
.0																							
1.0																							
				0000	GH	z															S	pan	0
s	BW	3.0	MH	z						#V	ΒV	V 30	0 kH	z					Sweep	7.09	9 ms (8	319	2 p
_									-	A REFERENCE AND A REFERENCE			******	-			STATUS		*****				



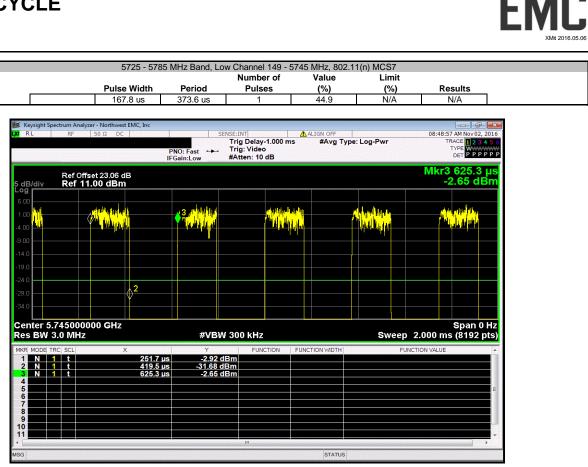
	0100	5250 MHz Band, H	Number of	Value	Limit	
	Pulse Width	h Period	Pulses	(%)	(%)	Results
	168 us	373.6 us	1	45	N/A	N/A
Keysight Spectrum	Analyzer - Northwest EMC, Inc F 50 Ω DC		ENSE:INT	ALIGN OFF		08:03:07 AM Nov 02, 2016
	30 32 00		Trig Delay-1.000 m		Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE DET P P P P P
		PNO: Fast ++- IFGain:Low	Trig: Video #Atten: 10 dB			DET PPPPP
						Mkr3 571.1 µs
5 dB/div Re	f Offset 22.87 dB ef 11.00 dBm					-4.94 dBm
Log						
6.00	and all in the second second	معياليهما الألار فشم	المناطق المراقع		and always of source of the	dia alla dian
1.00		3				
-4.00						
-9.00						
-14.0						
-19.0						
-24.0						
-29.0	²					
-34.0						
Center 5.2400						Span 0 Hz
Res BW 3.0 N	1Hz	#VBV	V 300 kHz			2.000 ms (8192 pts)
MKR MODE TRC SCI		7.5 µs -4.89	FUNCTION	FUNCTION WIDTH	H FUNC	CTION VALUE
2 N 1 t 3 N 1 t	36	5.5 µs -34.38 (dBm			
4	57	1.1 µs -4.94 (
5						E.
7 8						
9						
11						-
 			m	STATL		•
MSG				STAIL	JS	
	5150 -	5250 MHz Band, H	ligh Channel 48 - 5	5240 MHz 80)2 11(n) MCS7	
	0.00		Number of	Value	Limit	
	Pulse Width		Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A
	Analyzer - Northwest EMC, Inc					

Keysight Spectrum Analyzer - North RL RF 50 Ω				08:03:21 AM Nov 02, 201
RL RF 50 Ω	DC PNO: Fast ← IFGain:Low		IGN OFF #Avg Type: Log-Pwr	08:03:21 AM NoV02, 201 TRACE 1 2 3 4 5 TYPE DET P P P P
Ref Offset 22.8 dB/div Ref 11.00 dE	7 dB 3m			
.0				
0				
0				
enter 5.240000000 GF s BW 3.0 MHz	lz #V	BW 300 kHz	Sweep 1	Span 0 F .681 ms (8192 pt
			STATUS	

YCLE							
	5705	5785 MHz Band, Lo	w Channel 140				
	5725 -	5785 MHZ Band, LO	Number of	Value	Limit		
	Pulse Widt		Pulses	(%)	(%)	Results	-
	1.348 ms	1.554 ms	1	86.7	N/A	N/A	
	n Analyzer - Northwest EMC, In RF 50 Ω DC		NSE:INT Trig Delay-1.000 m Trig: Video #Atten: 10 dB	ALIGN OFF	Log-Pwr	08:36:50 AM Nov 02, 2 TRACE 1234 TYPE WWW DET PPPF	1 5 6
	ef Offset 23.06 dB ef 10.00 dBm					Mkr3 2.366 r -3.42 dE	
		n han ta da ta ja dini a baran ta Ta mata han ka da ta ta da ka sa ta	nde listerte des en als stiet de Transferen et als regioner als de liste		a destructure de la constante de la constante Constante de la constante de la c	and here it materia	
0.00 11 11 11 11 11 -5.00		i de state de la competencia de la comp				and an element of the sta-	
0.00 (100) (10) -5.00 -10.0 		ek kantise nin aan di pekinten nan 1944 - Diplog an di pekinten nan 1946 - Diplog an diplog an diplog an di				and how the state of the state	
0.00 -5.00 -10.0 -15.0		n fann de regelen fan de seren Minne fan de seren				and the and the sector of the	
0.00 (100) (10) -5.00 -10.0 		i ingening in den sen in die het in den sen in Fragmening in den sen in die het in den sen in die het in	11111111111111111111111111111111111111				
0.00 (1000) -5.00 (1000) -10.0 (1000) -15.0 (1000) -20.0 (1000)		n an					
0.00 (1000) -5.00 (1000) -10.0 (1000) -15.0 (1000) -20.0 (1000) -25.0 (1000)							
0.00 00 00 00 00 00 00 00 00 00 00 00 00	000000 GHz					Span 0	Hz
0.00 (100) 5.00 (100) 10.0 (100) 15.0 (100) -20.0 (100) -25.0 (100) -30.0 (100) -35.0 (100) (100) -35.0 (100) -35.0 (100)	000000 GHz	1911 are in the second s					Hz
0.00 00 000000000000000000000000000000		<u>Жалан Алтрини</u> #VВW	/ 300 kHz	S Alve 199 per la S Alve 199 pe	Sweep 4	Span 0	Hz Its)
0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000000 GHz MHz 21 × 81 21 × 81	#VBW	/ 300 kHz		Sweep 4	Span 0 4.000 ms (8192 p	Hz ts)
0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000000 GHz MHz 21 × 81 21 × 81	#VBW	/ 300 kHz		Sweep 4	Span 0 4.000 ms (8192 p	Hz ts)
0.00 (100) 5.00 (100) 10.0	0000000 GHz MHz 21 × 81 21 × 81	#VBW	/ 300 kHz		Sweep 4	Span 0 4.000 ms (8192 p	Hz ss)
0.00 1 1 1 1 1 -6.00 1 1 1 1 -6.00 1 1 1 -7.00 -200 -250 -250 -250 -250 -250 -250 -2	0000000 GHz MHz 21 × 81 21 × 81	#VBW	/ 300 kHz		Sweep 4	Span 0 4.000 ms (8192 p	Hz fs)
0.00 Center 5.745 0 -30.0	0000000 GHz MHz 21 × 81 21 × 81	#VBW	/ 300 kHz		Sweep 4	Span 0 4.000 ms (8192 p	Hz ts)
0.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000000 GHz MHz 21 × 81 21 × 81	#VBW	/ 300 kHz		Sweep 4	Span 0 4.000 ms (8192 p	HIZ ts)

	5725 - 578	5 MHz Band, Lov	w Channel 149 -	5745 MHz, 802.1	1(n) MCS0	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

🚺 Keysight Spectrum Analyz					
XIRL RF	50 Ω DC		SENSE:INT	ALIGN OFF	08:37:05 AM Nov 02, 2016
		PNO: Fast IFGain:Low	Trig: Video #Atten: 10 dB	#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWWW DET P P P P P
Ref Offs 5 dB/div Ref 10	et 23.06 d .00 dBm	B			
5.00					
	la ptil		ada lahan bang barbar	a Hillin daharka Hilamiya and Hisikadi	an and a had a proper the particular
-5.00					
-10.0					
-15.0					
20.0					
25.0					
30.0					
35.0					
Center 5.7450000 Res BW 3.0 MHz	00 GHz		VBW 300 kHz	Swee	Span 0 H p 7.099 ms (8192 pts
			VOW SUU KHZ	STATUS	p 7.099 ms (8192 pts



	5725 - 578	5 MHz Band, Lov	w Channel 149 - !	5745 MHz, 802.1	1(n) MCS7	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
1	N/A	N/A	5	N/A	N/A	N/A

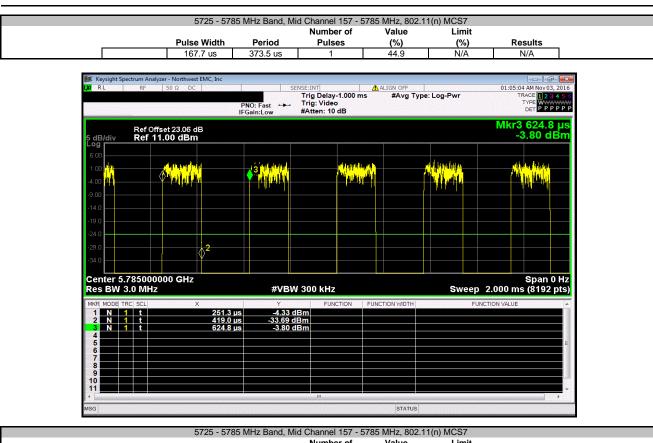
RL RF 50 Ω	west EMC, Inc	SENSE:INT	ALIGN OFF	08:49:09 AM Nov 02, 2016
	PNO: Fas IFGain:Lo	🛶 Trig: Video	#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWW DET P P P P P
Ref Offset 23.00 dB/div Ref 11.00 dE	6 dB Sm			
5.00 N. 1. II.	aleatanti.	a bit of the	Al taba a di	
I.00 (I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.I.				
I				
9.0				
4.0				
4.0				
enter 5.745000000 GH es BW 3.0 MHz	Iz	#VBW 300 kHz	Sweep	Span 0 F 1.681 ms (8192 pt
G			STATUS	

NORTHWEST

YCLE							NORTHW
	5725 - 5785	5 MHz Band, Mi	id Channel 157 -	5785 MHz, 802.11	(n) MCS0		
			Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	1.348 ms	1.554 ms	1	86.7	N/A	N/A	
Keysight Spectrum Analyze	er - Northwest EMC, Inc 50 Ω DC	SE	ENSE:INT	ALIGN OFF		01:00:41 AM Nov 03, 2016	<u>d</u>
			Trig Delay-1.000 r Trig: Video		Log-Pwr	TRACE 1 2 3 4 5 6	1
		PNO: Fast +++ IFGain:Low	#Atten: 10 dB			TYPE WWWWWW DET P P P P P P	
Ref Offe	et 23.06 dB					Mkr3 2.175 ms	Í
5 dB/div Ref 10.	.00 dBm					-3.41 dBm	
Log 5.00							
فالله فانتجعه بارتجاله	المحاطين وأفرار وفرار وسالتان	Period of the second	and a state of the	3 phillip Him Alle	and the state of the large data and	wither the states of the state	
0.00 allocation and the second	opped and the second second	. Majabell we delaited		THE REAL PROPERTY AND INCOME.	الأرور الرابية فللهر المأرا أربيها	William Real Contractions in the second s	
-5.00			ومرازعة والمتكرك				
-10.0							
-15.0							
-20.0			.2				
-25.0			Ŷ [^]				
-30.0							
-35.0							
Center 5.7850000	00 CH7					Span 0 Hz	
Res BW 3.0 MHz		#VBW	/ 300 kHz		Sweep 4	5parro H2 1.000 ms (8192 pts)	
MKR MODE TRC SCL	x	Y	FUNCTION	FUNCTION WIDTH	-	FION VALUE	
1 N 1 t	621.2 µ	s -4.92 d	IBm				and a second
2 N 1 t 3 N 1 t	1.969 m 2.175 m	s -27.33 d s -3.41 d					
4 5							
6							Tablerov,
8							
9							and a constant
11							
MSG			m			•	
MSG				STATUS			
MSG	5725 - 5785	MHz Band Mi	d Channel 157 -		(p) MCS0		
MSG	5725 - 5785	i MHz Band, Mi	id Channel 157 - Number of	5785 MHz, 802.11 Value	(n) MCS0 Limit		

	5725 - 578	85 MHz Band, M	id Channel 157 -	5785 MHz, 802.1	1(n) MCS0	
			Number of	Value	Limit	
 Pul	se Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	6	N/A	N/A	N/A

		alyzer - Northw										
RL	RF	50 Ω D	iC		SENSE:INT		Al 🔼	#Avg Type:	Log Dur			AM Nov 03, 20
				PNO: Fast FGain:Low	++- Trig: Vide #Atten: 10	o) dB		#Avg Type:	Log-Pwr		Т	YPE WWWW DET PPPP
B/div	Ref O	ffset 23.06	dB									
	Rei	10.00 dBi										
	n allalla	<mark>dell</mark> adad <mark>d</mark>	lia de la casa de la dela de la casa de la de	<mark>All Instit</mark>	<mark>Heister (</mark> traditional)	<mark>hydraedy</mark>	, <mark>NWA</mark>	adhord an University	ner (Inder	<mark>pal</mark>	<mark>pillispesikalekplett</mark>	linder of the
	n in prairi		he de la factaria		tollo hallo hall	<u>Mun</u>			hh	N N		NI WIN
	· · · · · · · · · · · · · · · · · · ·				<u> </u>						+ 1 + 1	" "
.0												
.0												
.0												
.0												
.0												
.0												
	5.785000 3.0 MH	0000 GHz z		;	≠VBW 300 kH:	z			Sv	veer	7.099 ms	Span 0 (8192 p
		******	*****					STATUS				



	5725 - 578	35 MHZ Band, Mil	d Channel 157 - :	5785 MHZ, 802.1		
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

Keysight Spectrum Analyzer - Northwes RL RF 50 Ω DC		SENSE:INT	ALIGN OFF	01:05:19 AM Nov 03, 201
	PNO: Fast ↔ IFGain:Low		#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWW DET PPPPP
Ref Offset 23.06 d dB/div Ref 11.00 dBm	IB I			
5.00 		a ta Mur		ر ان ان ا
1.00 (1.1)				
4.0				
9.0				
9.0				
4.0				
enter 5.785000000 GHz es BW 3.0 MHz	#VE	3W 300 kHz	Sweep 7	Span 0 F 1.681 ms (8192 pt
3			STATUS	

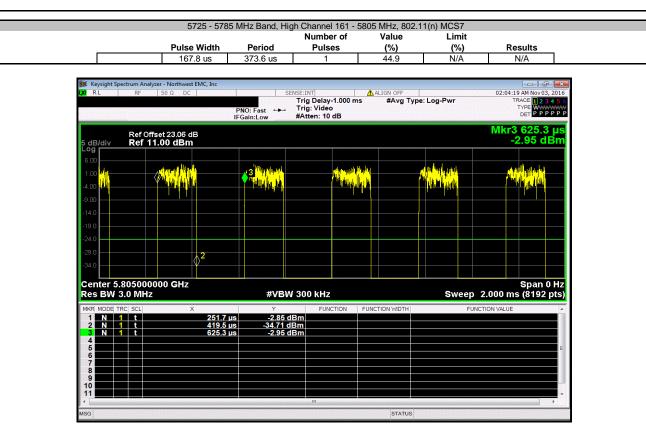
NORTHWEST

XMit 2016.05.06

	5725 - 5	5785 MHz Band, H	ligh Channel 161 -				
	Pulse Widtl	h Period	Number of Pulses	Value (%)	Limit (%)	Results	
	1.348 ms	1.554 ms	1	86.7	N/A	N/A	
- Kaurisht Saastaur Aral	yzer - Northwest EMC, Inc						X
	yzer - Northwest EMC, Inc 50 Ω DC		SENSE:INT	ALIGN OFF		01:49:52 AM Nov 03, 2	016
		PNO: Fast 🔸	Trig Delay-1.000 n Trig: Video	ns #Avg Type:	Log-Pwr	TRACE 1 2 3 4 TYPE WWWW DET P P P P	56 WW PP
		IFGain:Low	#Atten: 10 dB			Mkr3 2.552 n	
dB/div Ref 1	fset 23.06 dB 0.00 dBm					-4.68 dB	
og 5.00							
a categolit it diamat.	akadhana datila		and the state of the second		de testisciler opticie dite <mark>Testisciler opticie di</mark> te	a hand particular backs by	
5.00 Art unit alithic and	yliptping 👌	s in a sign part of the	Winter Challer , the Network		and the part of th	ile, i ett. <mark>Alle taiste des Antipicaente</mark>	
10.0							
15.0				2			
20.0							
25.0							
35.0							HZ
35.0 Center 5.805000		#VP	W 300 kHz		Sweep_4	Span 0 000 ms (8192 n	
enter 5.805000 es BW 3.0 MHz	4	#VB	W 300 kHz			.000 ms (8192 p	
enter 5.805000	2 X 99	Y	FUNCTION	FUNCTION WIDTH			

5725 - 578	5 MHz Band, Hi	gh Channel 161 -	5805 MHz, 802.1	1(n) MCS0	
		Number of	Value	Limit	
 Pulse Width	Period	Pulses	(%)	(%)	Results
N/A	N/A	5	N/A	N/A	N/A

RL	RF		Ω D	st EMC, Inc			SENSE:INT			LIGN OFF		0	1:50:10 AM	D @ .
N.E	10	100		-			SENSENIN		<u> </u>	#Avg Type:	Log-Pwr			1234
					PNO: Fast		, Trig: Vide	0		ming type.	Logim		TYPE	Малалала
					IFGain:Lo		#Atten: 10	dB					DET	PPPP
					IFGall.LO	N .	witten. it	ub.	3122					
	Dof	Offset 2	22.06											
dB/div	. Dot	10.00	20.000	10 0										
g r	i Nel	10.00	, abi											
3														
00														
	de la factoria		ي الر	han dialam	and been		المتعادية المرا	and all a sea		alus bar o d	to the data set of the		a challe an	
1 de l	ada in a da anti a da a	1.1.1	la, ik b	also de la companya d	l di di mada se		and the second state	ol. Britstein, f M 1	·	Alitania de Vá. La Andri La	Abid Martin Annaldare	i dun l	alla tour de l	REALER
00 11	an shiild	da ar		الاستثناء المستن	in the set of	,	المراسية المراجعة	. in king		satada da lasta	a fill fran i	- da	i i odini	Lo Ella
- 147	T <mark>Phan In Man</mark>	di da i	- 1910	n la plat de la la la la la	i a ball a bhi							l l <mark>u</mark> nn		
	10 I I I I I I I I I I I I I I I I I I I	1 11.	11	a na sana sa	11 1 1 1		THE REFE	11. 11.	1	1 4 4 1 1 4 1	and the little		ן שייון	142
DO			-				· · ·			· · · ·	N		<u> </u>	
					P						1			
.0										1				
.0														
.0														
.0														
.0														
enter	r 5.8050	00000	GHz										Sp	oan 0 I
s Bi	W 3.0 M	Hz				#VE	3W 300 kHz				Swee	0 7.09	9 ms (8	192 p
									-					
										STATUS				



	5725 - 578	5 MHz Band, Hig	h Channel 161 -	5805 MHz, 802.1	1(n) MCS7	
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	N/A	N/A	5	N/A	N/A	N/A

RL RF 50 Ω DC		SENSE:INT	ALIGN OFF		02:04:39 AM Nov 03, 201
	PNO: Fast ↔ IFGain:Low		#Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWW DET P P P P P
Ref Offset 23.06 dE	3				
	له المار بالدار الم	في الرائدا الله الم		Lable	بار المربي الأرام.
4.0					
.0					
0.0					
4.0					
enter 5.805000000 GHz es BW 3.0 MHz	#V	BW 300 kHz	STATUS	Sweep 1	Span 0 F 1.681 ms (8192 pt

NORTHWEST

XMit 2016.05.06



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
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	ΤKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

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

The maximum conducted output power was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor).

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

-RMS Detector

-Trace average 100 traces in power averaging mode.

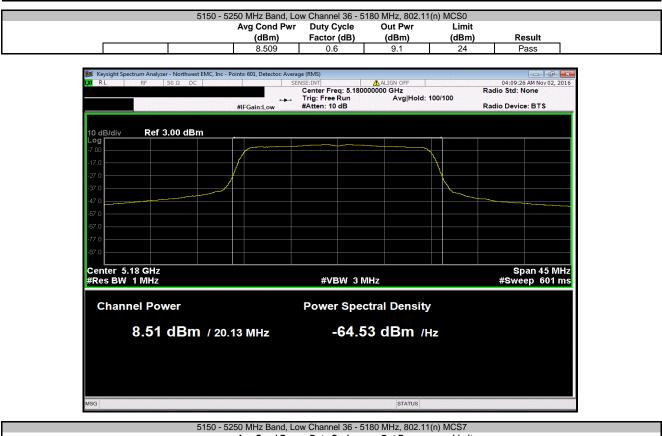
-Power was integrated across "B", by using the channel power function of the analyzer.

A duty cycle correction factor was added to the measurement using the results of the formula of 10*LOG(1/D) where D is the duty cycle.

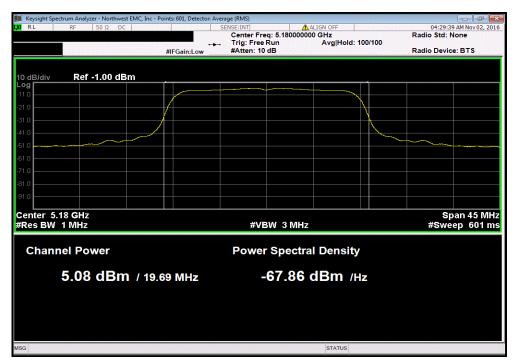


EUT	1790					Work Order:	MC604764	
Serial Number							11/08/16	
	Microsoft Corporation					Temperature:		
Attendees						Humidity:		
Project						Barometric Pres.:		
	Richard Mellroth		Power:	A SI		Job Site:		
TEST SPECIFICAT				Test Method		Job Sile.	NCUZ	
FCC 15.407:2016	10113			ANSI C63.10:2013				
FCC 13.407.2010				ANSI C03.10.2013				
COMMENTS								
Power Setting at D	efault. Client provided ada	apter cable loss of 1.2dB included in r	reference level offs	et.				
i olioi oottiing ut o								
DEVIATIONS FROM	M TEST STANDARD							
None								
		C). h					
Configuration #	1							
		Signature	process (co					
				Avg Cond Pwr	Duty Cycle	Out Pwr	Limit	
				(dBm)	Factor (dB)	(dBm)	(dBm)	Result
5150 - 5250 MHz B								Result
5150 - 5250 MHz B	and Low Channel 36 - 5180 MH:	Z		(dBm)				
5150 - 5250 MHz B	Low Channel 36 - 5180 MH 802.11(n) MC	S0		(dBm) 8.509	Factor (dB)	(dBm) 9.1	(dBm) 24	Pass
5150 - 5250 MHz Ba	Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC	S0 S7		(dBm)	Factor (dB)	(dBm)	(dBm)	
5150 - 5250 MHz B	Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH	S0 S7 Iz		(dBm) 8.509 5.081	Factor (dB) 0.6 3.5	(dBm) 9.1 8.6	(dBm) 24 24	Pass Pass
5150 - 5250 MHz B	Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH 802.11(n) MC	S0 S7 Hz S0		(dBm) 8.509 5.081 8.705	Factor (dB) 0.6 3.5 0.6	(dBm) 9.1 8.6 9.3	(dBm) 24 24 24 24	Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH 802.11(n) MC 802.11(n) MC	S0 S7 Hz S0		(dBm) 8.509 5.081	Factor (dB) 0.6 3.5	(dBm) 9.1 8.6	(dBm) 24 24	Pass Pass
5150 - 5250 MHz Ba 5725 - 5785 MHz Ba	Low Channel 36 - 5180 MH. 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH 802.11(n) MC 802.11(n) MC	S0 S7 Hz S0 S7		(dBm) 8.509 5.081 8.705	Factor (dB) 0.6 3.5 0.6	(dBm) 9.1 8.6 9.3	(dBm) 24 24 24 24	Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: and Low Channel 149 - 5745 Mi	S0 S7 tz S0 S7 Hz		(dBm) 8.509 5.081 8.705 5.111	Factor (dB) 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6	(dBm) 24 24 24 24 24	Pass Pass Pass Pass
	Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH 802.11(n) MC 802.11(n) MC and Low Channel 149 - 5745 MH 802.11(n) MC	80 S7 4z S0 S7 Hz S0		(dBm) 8.509 5.081 8.705 5.111 6.987	Factor (dB) 0.6 3.5 0.6 3.5 0.6	(dBm) 9.1 8.6 9.3 8.6 7.6	(dBm) 24 24 24 24 24 30	Pass Pass Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC: 802.11(n) MC: High Channel 48 - 5240 MH 802.11(n) MC: 802.11(n) MC: and Low Channel 149 - 5745 MH 802.11(n) MC: 802.11(n) MC:	S0 S7 Z2 S0 S7 Hz S0 S7		(dBm) 8.509 5.081 8.705 5.111	Factor (dB) 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6	(dBm) 24 24 24 24 24	Pass Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: and Low Channel 149 - 5745 MH 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC: 802.11(n) MC:	S0 S7 tz S0 S7 Hz S0 S7 tz		(dBm) 8.509 5.081 8.705 5.111 6.987 4.481	Factor (dB) 0.6 3.5 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6 7.6 8	(dBm) 24 24 24 24 24 24 30 30 30	Pass Pass Pass Pass Pass Pass
	Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH 802.11(n) MC 802.11(n) MC and Low Channel 149 - 5745 MH 802.11(n) MC 802.11(n) MC 802.11(n) MC 802.11(n) MC 802.11(n) MC	S0 S7 4z S0 S7 Hz S0 S7 4z S0		(dBm) 8.509 5.081 8.705 5.111 6.987 4.481 7.088	Factor (dB) 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6 7.6 8 7.7	(dBm) 24 24 24 24 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC: 802.11(n) MC:	\$0 \$7 \$2 \$0 \$7 Hz \$0 \$7 42 \$0 \$7 \$2 \$3		(dBm) 8.509 5.081 8.705 5.111 6.987 4.481	Factor (dB) 0.6 3.5 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6 7.6 8	(dBm) 24 24 24 24 24 24 30 30 30	Pass Pass Pass Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC: High Channel 48 - 5240 MH 802.11(n) MC: 802.11(n) MC: 802.11	S0 S7 S7 S0 S7 Hz S0 S7 Z2 S0 S7 Hz		(dBm) 8.509 5.081 8.705 5.111 6.987 4.481 7.088 3.976	Factor (dB) 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6 7.6 8 7.7 7.5	(dBm) 24 24 24 24 24 24 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass
	Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC High Channel 48 - 5240 MH 802.11(n) MC 802.11(n) MC	S0 S7 Z2 S0 S7 Hz S0 S7 Z2 S0 S7 Hz S0		(dBm) 8.509 5.081 8.705 5.111 6.987 4.481 7.088 3.976 6.82	Factor (dB) 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5 0.6	(dBm) 9.1 8.6 9.3 8.6 7.6 8 7.7 7.5 7.4	(dBm) 24 24 24 24 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass
	Low Channel 36 - 5180 MH. 802.11(n) MC: High Channel 48 - 5240 MH 802.11(n) MC: 802.11(n) MC: 802.11	S0 S7 Z2 S0 S7 Hz S0 S7 Z2 S0 S7 Hz S0		(dBm) 8.509 5.081 8.705 5.111 6.987 4.481 7.088 3.976	Factor (dB) 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5 0.6 3.5	(dBm) 9.1 8.6 9.3 8.6 7.6 8 7.7 7.5	(dBm) 24 24 24 24 24 24 30 30 30 30 30 30	Pass Pass Pass Pass Pass Pass Pass Pass

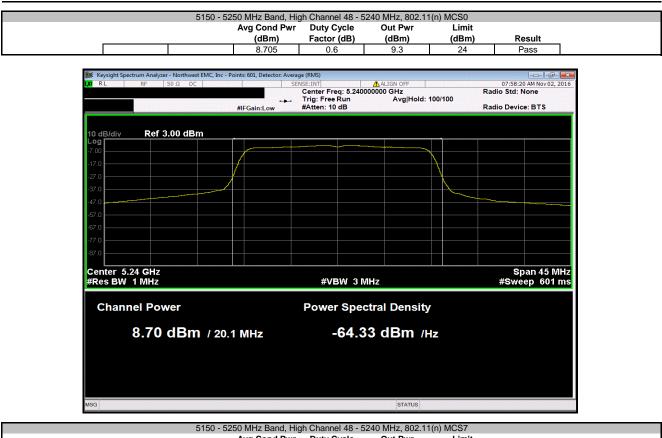




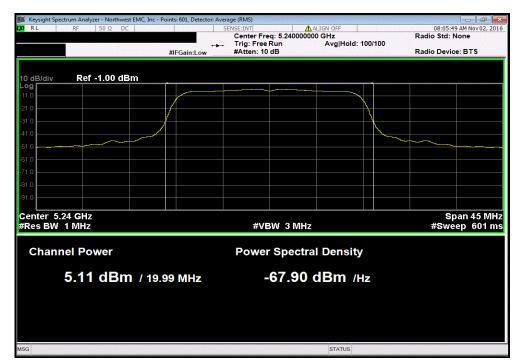
	5150 - 52	50 IVITZ Dariu, LO	w Channel 36 - 5	5150 - 5250 MHZ Barld, LOW Channel 50 - 5180 MHZ, 802.11(1) MC57									
		Avg Cond Pwr	Duty Cycle	Out Pwr	Limit								
		(dBm)	Factor (dB)	(dBm)	(dBm)	Result							
		5.081	3.5	8.6	24	Pass							



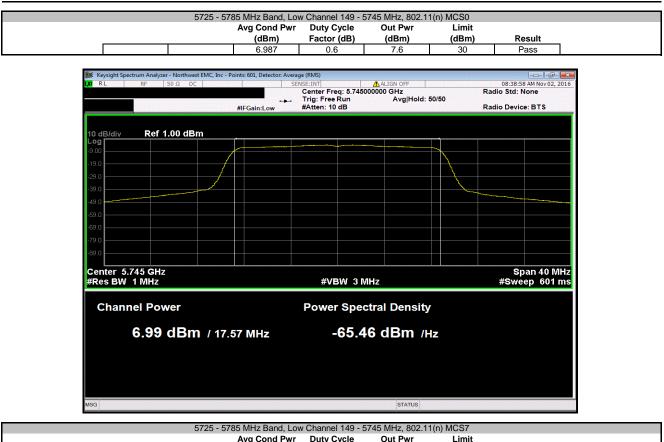




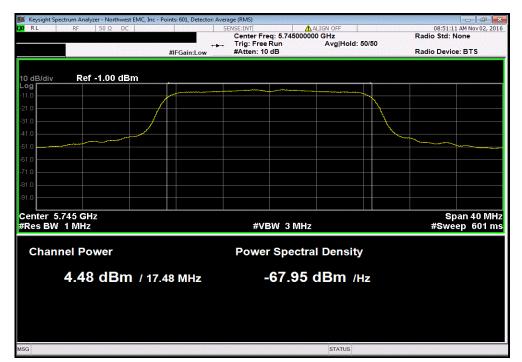
	5150 520	Avg Cond Pwr	Duty Cycle	Out Pwr	Limit	
		(dBm)	Factor (dB)	(dBm)	(dBm)	Result
		5.111	3.5	8.6	24	Pass



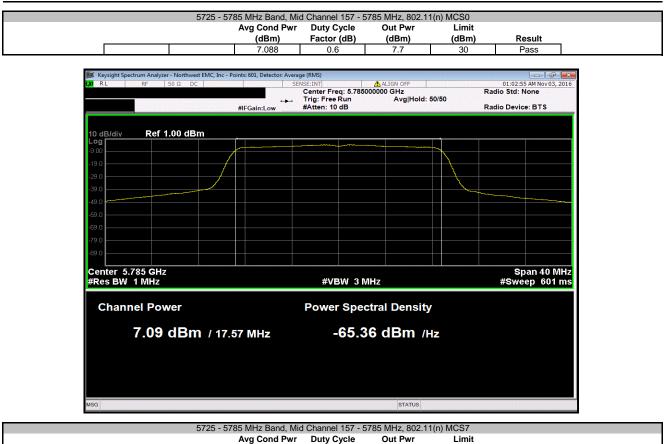




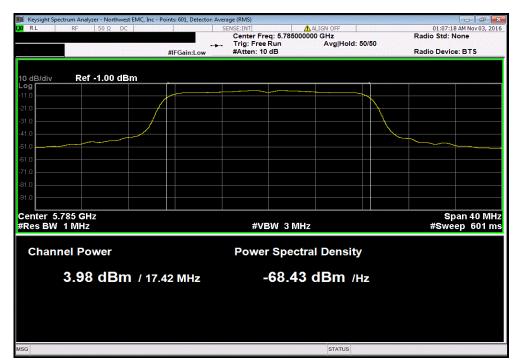
	Avg Cond Pwr	Duty Cycle	Out Pwr	Limit	
	(dBm)	Factor (dB)	(dBm)	(dBm)	Result
	4.481	3.5	8	30	Pass







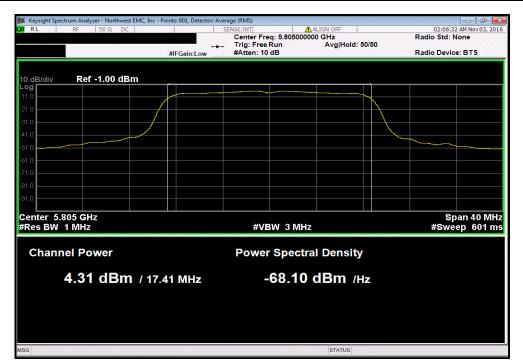
	Avg Cond Pwr	Duty Cycle	Out Pwr	Limit	
	(dBm)	Factor (dB)	(dBm)	(dBm)	Result
	3.976	3.5	7.5	30	Pass







	Avg Cond Pwr	Duty Cycle	Out Pwr	Limit	
	(dBm)	Factor (dB)	(dBm)	(dBm)	Result
	4.306	3.5	7.8	30	Pass





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
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	ΤKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

Per ANSI C63.10, the spectrum analyzer settings were as follows:

-RBW = Approx. 1% of the emission bandwidth (B).

-VBW = > RBW

-Detector = Peak

-Trace mode = max hold

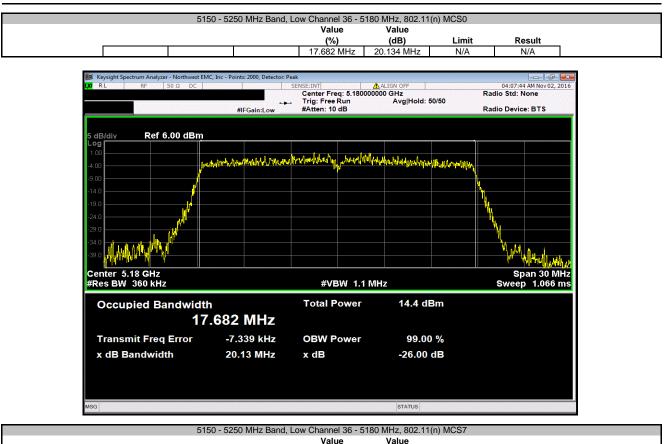
The spectrum analyzer occupied bandwidth measurement function was then used to measure 26 dB emission bandwidth.

There is no required limit to be met in the rule part for this test. The purpose of the test is to both report the results as required and to utilize the emission bandwidth for setting the channel power integration bandwidth during conducted output power testing.

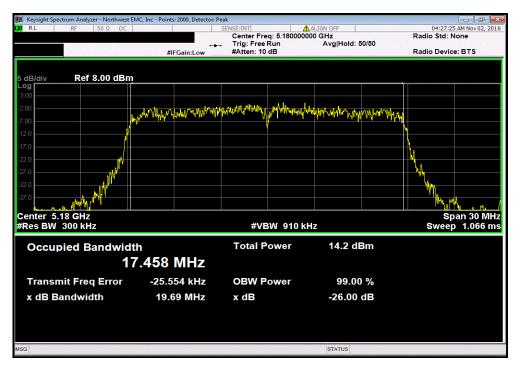


EUT: 1790		Work Order:	MCSO1761	
Serial Number: DV-1-0546		Date: 1	11/08/16	
Customer: Microsoft Corporation		Temperature: 2	22 °C	
Attendees: None		Humidity: 4		
Project: None		Barometric Pres.: 1	1021 mbar	
Tested by: Richard Mellroth Power: USB		Job Site:	NC02	
TEST SPECIFICATIONS Test Method				
FCC 15.407:2016 ANSI C63.10:2013				
COMMENTS				
Power Setting at Default. Client provided adapter cable loss of 1.2dB included in reference level offset.				
DEVIATIONS FROM TEST STANDARD				
DEVIATIONS FROM TEST STANDARD None				
None				
None Configuration # 1				
None				
None Configuration # 1	Value	Value		
None Configuration # 1 Signature	Value (%)	Value (dB)	Limit	Result
None Signature Configuration # 1 5150 - 5250 MHz Band Signature			Limit	Result
None Configuration # 1 Signature	(%)			
None Signature Configuration # 1 5150 - 5250 MHz Band Signature Low Channel 36 - 5180 MHz 802.11(n) MCS0	(%) 17.682 MHz	(dB) 20.134 MHz	N/A	N/A
None Signature Configuration # 1 5150 - 5250 MHz Band Signature Low Channel 36 - 5180 MHz 802.11(n) MCS0 802.11(n) MCS7 802.11(n) MCS7	(%)	(dB)		
None Configuration # 1 Signature 5150 - 5250 MHz Band Low Channel 36 - 5180 MHz 802.11(n) MCS0 802.11(n) MCS7 Bit Mit A8 - 5240 MHz Bit Mit A8 - 5240 MHz	(%) 17.682 MHz 17.458 MHz	(dB) 20.134 MHz 19.685 MHz	N/A N/A	N/A N/A
None Signature Configuration # 1 5150 - 5250 MHz Band Signature Low Channel 36 - 5180 MHz 802.11(n) MCS0 802.11(n) MCS7 802.11(n) MCS7	(%) 17.682 MHz	(dB) 20.134 MHz	N/A	N/A

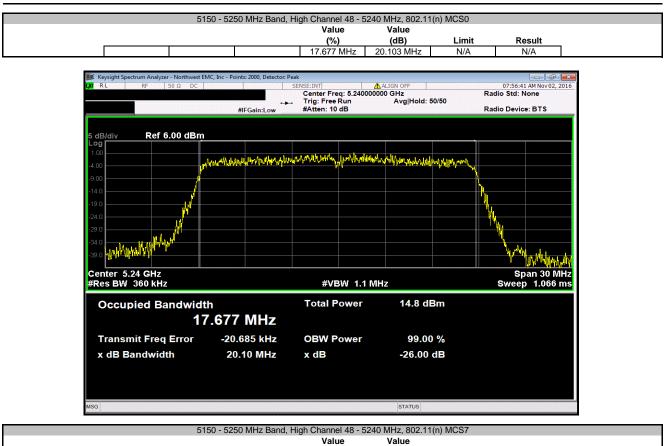




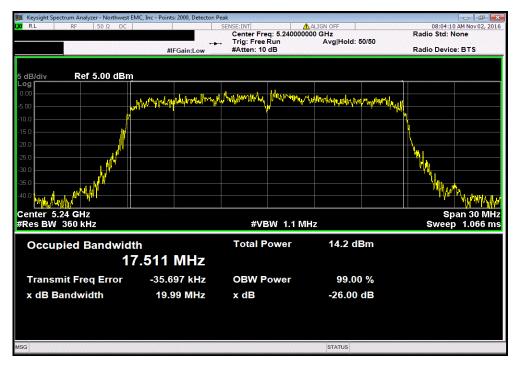
		Value	Value		
		(%)	(dB)	Limit	Result
		17.458 MHz	19.685 MHz	N/A	N/A







	5150 - 523	50 MHZ Band, Hig	gn Channel 48 - 5	240 MHZ, 802.11		
			Value	Value		
			(%)	(dB)	Limit	Result
			17.511 MHz	19.988 MHz	N/A	N/A





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
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	ΤKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequencies and data rates listed in the datasheet were measured in each band utilized by the radio. The transmit power was set to its default maximum.

Per ANSI C63.10, the spectrum analyzer settings were as follows:

-RBW = 100 kHz

-VBW = ≥ 3x RBW

-Detector = Peak

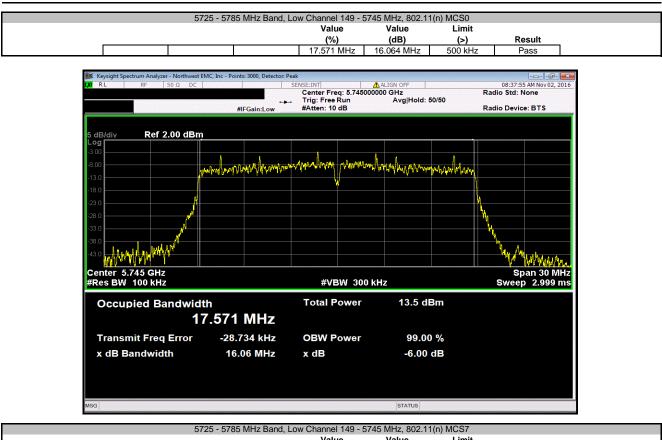
-Trace mode = max hold

The spectrum analyzer occupied bandwidth measurement function was then used to measure the 6 dB emission bandwidth.

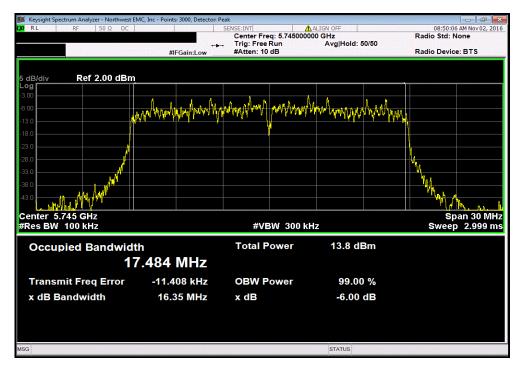


EUT: 1790		Work Order:		
Serial Number: DV-1-0546		Date:	11/08/16	
Customer: Microsoft Corporation		Temperature:		
Attendees: None			46.9% RH	
Project: None		Barometric Pres.:		
Tested by: Richard Mellroth Power: USB		Job Site:	NC02	
TEST SPECIFICATIONS Test Method				
FCC 15.407:2016 ANSI C63.10:2013				
COMMENTS				
Power Setting at Default. Client provided adapter cable loss of 1.2dB included in reference level offset.				
DEVIATIONS FROM TEST STANDARD				
None				
Configuration # 1 Signature				
	Value (%)	Value (dB)	Limit (>)	Result
5725 - 5785 MHz Band				
Low Channel 149 - 5745 MHz				
802.11(n) MCS0	17.571 MHz	16.064 MHz	500 kHz	Pass
802.11(n) MCS7	17.484 MHz	16.353 MHz	500 kHz	Pass
Mid Channel 157 - 5785 MHz				
802.11(n) MCS0	17.573 MHz	17.059 MHz	500 kHz	Pass
802.11(n) MCS7	17.419 MHz	16.235 MHz	500 kHz	Pass
High Channel 161 - 5805 MHz				
802.11(n) MCS0	17.58 MHz	17.594 MHz	500 kHz	Pass
802.11(n) MCS7	17.409 MHz	17.093 MHz	500 kHz	Pass

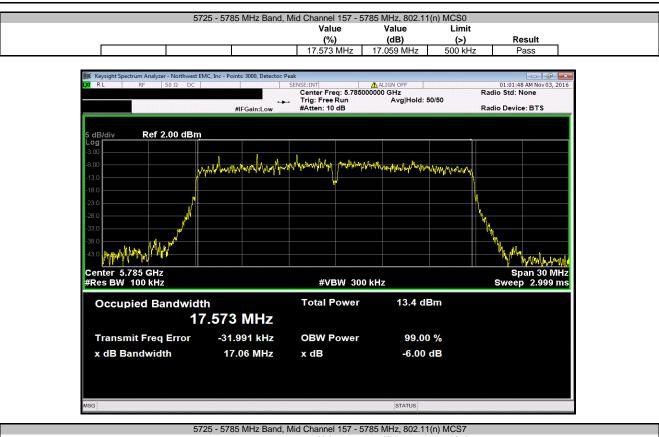




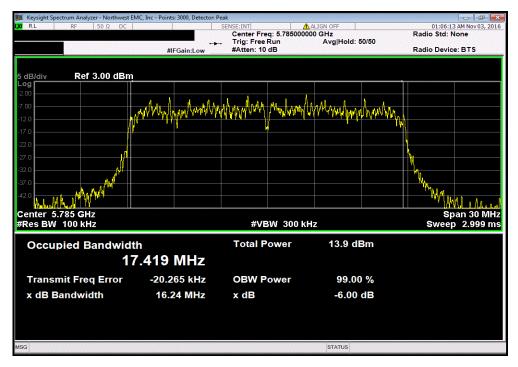
	5725	57 05 Will 12 Dalla, LO	W Onarmer 145	57 45 101 12, 002.1		
			Value	Value	Limit	
			(%)	(dB)	(>)	Result
			17.484 MHz	16.353 MHz	500 kHz	Pass



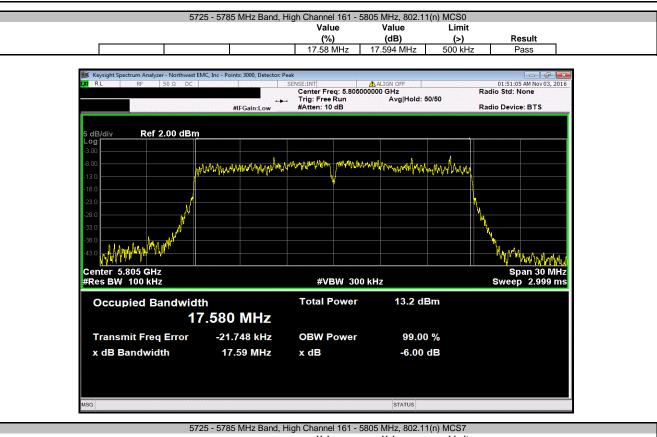




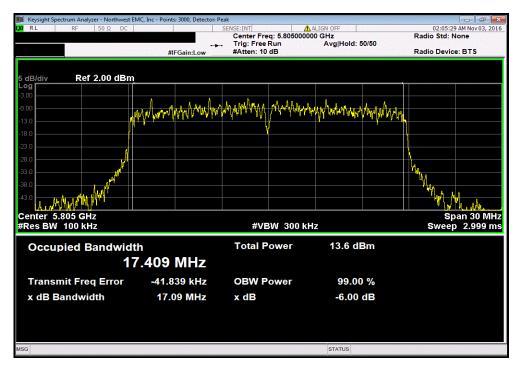
5725 - 5785 MHz Band, Mid Channel 157 - 5785 MHz, 802.11(n) MCS7									
	Value Value Limit								
				(%)	(dB)	(>)	Result		
				17.419 MHz	16.235 MHz	500 kHz	Pass		







	5125	5705 Miliz Dalia, Filg		3003 101 12, 002.1		
			Value	Value	Limit	
			(%)	(dB)	(>)	Result
			17.409 MHz	17.093 MHz	500 kHz	Pass





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
Cable	Micro-Coax	UFD150A-1-0720-200200	NCS	6/7/2016	6/7/2017
Attenuator	Fairview Microwave	SA4014-20	ΤKV	3/4/2016	3/4/2017
Block - DC	Fairview Microwave	SD3379	AMU	5/6/2016	5/6/2017
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The -26 dB emission bandwidth of the carrier was measured to ensure that no part of the emission of the carrier operating in a non-DFS band was operating in a band where DFS testing is required. This test is done with the U-NII-1 band (5.2 GHz band) to ensure no portion of the carrier is contained within the U-NII-2A band and with the U-NII-3 band (5.8 GHz band) to ensure no portion of the carrier is contained in the U-NII-2C band.

The transmit frequencies and data rates listed in the datasheet were measured. The transmit power was set to its default maximum.



	1790					Work Order:		
Serial Number:	DV-1-0546					Date:	11/08/16	
Customer:	Microsoft Corporation					Temperature:	21.9 °C	
Attendees:	None					Humidity:	46.8% RH	
Project:	None				Barc	metric Pres.:	1021 mbar	
Tested by:	Richard Mellroth		Power:	USB		Job Site:	NC02	
TEST SPECIFICATI	ONS			Test Method				
FCC 15.407:2016				ANSI C63.10:2013				
COMMENTS								
Power Setting at D	efault. Client provided ad	lapter cable loss of 1.2dB included in re	eference level offs	et.				
,								
DEVIATIONS FROM	I TEST STANDARD							
None								
		C	h. h					
Configuration #	1		()					
		Signature	p - m i -					
						Value	Limit	
						(MHz)	(MHz)	Result
5150 - 5250 MHz Ba	ind							
	High Channel, Ch 48 - 524	10 MHz						
	802.11(n) M0	CSO				5249.8	< 5250	Pass
	802.11(n) MC	CS7				5249.8	< 5250	Pass
5725 - 5825 MHz Ba								
	Low Channel, Ch 149 - 57-	45 MHz						
	802.11(n) MC	CS0				5734.7	> 5725	Pass
	802.11(n) M0	CS7				5734.9	> 5725	Pass

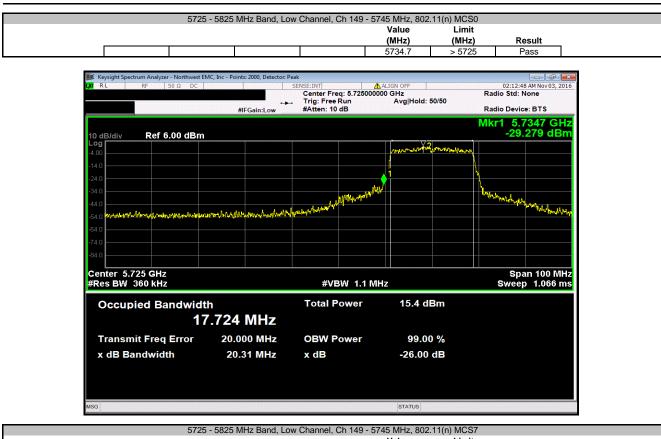




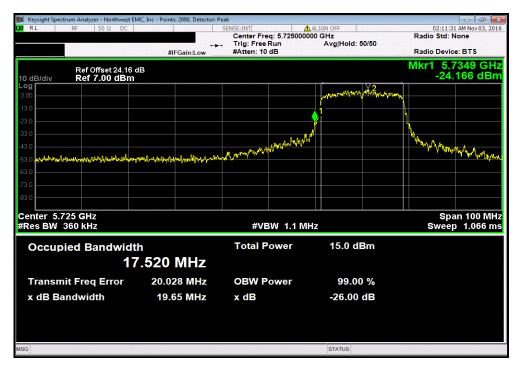
	5150 - 5250	MHz Band, High	Channel, Ch 48	- 5240 MHz, 802.	.11(n) MCS7	
				Value	Limit	
				(MHz)	(MHz)	Result
				5249.8	< 5250	Pass







	 	 	()	
		Value	Limit	
		(MHz)	(MHz)	Result
		5734.9	> 5725	Pass





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
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
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

Prior to measuring maximum power spectral density, the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

The maximum power spectral density was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor), consistent with the method used for maximum conducted output power.

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

-Resolution Bandwidth of 1 MHz

-RMS Detector

-Trace average 100 traces in power averaging mode

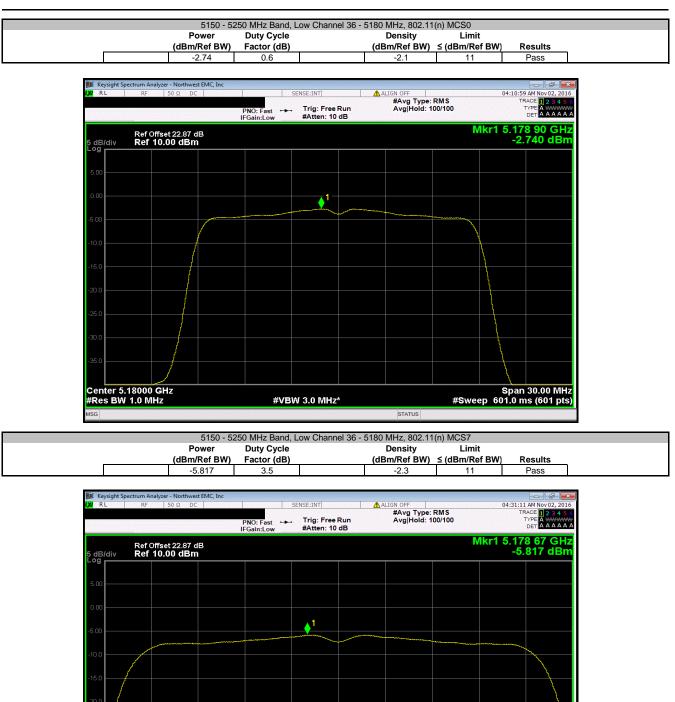
The peak power spectral density (PPSD) was determined to be the highest level found across the emission in any 1 MHz band after 100 sweeps of power averaging (not video averaging).

A duty cycle correction factor was added to the measurement using the results of the formula of 10*LOG(1/D) where D is the duty cycle.



	1790					Work Order:		
Serial Number:							11/08/16	
Customer:	Microsoft Corporation					Temperature:		
Attendees:							47.3% RH	
Project:	None					Barometric Pres.:	1022 mbar	
Tested by:	Richard Mellroth		Power:	USB		Job Site:	NC02	
TEST SPECIFICAT	TIONS			Test Method				
FCC 15.407:2016				ANSI C63.10:2013				
COMMENTS								
	·	apter cable loss of 1.2dB included in	reference level offset.					
DEVIATIONS FROM	M TEST STANDARD							
None								
Configuration #	1	Signature	prot					
	1	Signature	hen	Power	Duty Cycle	Density	Limit	
	1	Signature	her	Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results
		Signature	fret					Results
Configuration #		· · · ·	flict					Results
Configuration #	and Low Channel 36 - 5180 Mb 802.11(n) MC	1z 250	fust					Results
Configuration #	and Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC	1z 250 257	fuct	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	
Configuration #	and Low Channel 36 - 5180 Mb 802.11(n) MC	1z 250 257	fuct	(dBm/Ref BW) -2.74	Factor (dB)	(dBm/Ref BW) -2.1	≤ (dBm/Ref BW) 11	Pass
Configuration #	and Low Channel 36 - 5180 MH 802.11(n) MC 802.11(n) MC	tz 350 357 Hz 350	fuct	(dBm/Ref BW) -2.74	Factor (dB)	(dBm/Ref BW) -2.1	≤ (dBm/Ref BW) 11	Pass





#VBW 3.0 MHz*

STATUS

Center 5.18000 GHz #Res BW 1.0 MHz Span 20.00 MHz #Sweep 601.0 ms (601 pts)





Center 5.24000 GHz #Res BW 1.0 MHz ^{MSG}	#VBW 3.0 MHz	*	Spa #Sweep 601.0	n 20.00 MHz ms (601 pts)
35.0				
30.0				
25.0				
20.0				
15.0				
10.0				
5.00		♦ ¹		
0.00				



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
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
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	4/6/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum. The radio was operated in the modes as shown in the following data sheets.

Prior to measuring maximum power spectral density, the emission bandwidth (B) was measured. The method of measuring the emission bandwidth and the associated data are found elsewhere in this test report

The maximum power spectral density was measured using ANSI C63.10, Method SA-2 (RMS detection and trace averaging across the on and off times of the EUT transmission and use of a duty cycle correction factor), consistent with the method used for maximum conducted output power.

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

-Resolution Bandwidth of 510 kHz

-RMS Detector

-Trace average 100 traces in power averaging mode

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

A duty cycle correction factor was added to the measurement using the results of the formula of 10*LOG(1/D) where D is the duty cycle.



	[: 1790				Work Order:		
Serial Number: DV-1-0546						11/08/16	
Customer: Microsoft Corporation Attendees: None					Temperature:		
					Humidity:		
Project: None					Barometric Pres.:		
			Power: USB		Job Site:	NC02	
TEST SPECIFICAT	TIONS		Test Method				
FCC 15.407:2016			ANSI C63.10:2013				
COMMENTS							
Power Setting at I	Default. Client provided ad	lapter cable loss of 1.2dB included in	reference level offset.				
		•					
DEVIATIONS FRO	M TEST STANDARD						
None							
Configuration #	1	4	fuen				
		Signature					
		Signature	Power (dBm/Rof BW)	Duty Cycle	Density (dBm/Ref BW)	Limit	Populto
6726 6786 MH7 P	Rond	Signature	Power (dBm/Ref BW)	Duty Cycle Factor (dB)	Density (dBm/Ref BW)	Limit ≤ (dBm/Ref BW)	Results
5725 - 5785 MHz B							Results
5725 - 5785 MHz B	Low Channel 149 - 5745 M	ИHz	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	
5725 - 5785 MHz B	Low Channel 149 - 5745 M 802.11(n) M	/Hz CS0	(dBm/Ref BW) -6.104	Factor (dB)	(dBm/Ref BW) -5.5	≤ (dBm/Ref BW) 30	Pass
5725 - 5785 MHz B	Low Channel 149 - 5745 M 802.11(n) M 802.11(n) M	MHz CS0 CS7	(dBm/Ref BW)	Factor (dB)	(dBm/Ref BW)	≤ (dBm/Ref BW)	
5725 - 5785 MHz B	Low Channel 149 - 5745 M 802.11(n) M 802.11(n) M Mid Channel 157 - 5785 M	/Hz CS0 CS7 Hz	(dBm/Ref BW) -6.104 -8.869	Factor (dB) 0.6 3.5	(dBm/Ref BW) -5.5 -5.4	≤ (dBm/Ref BW) 30 30	Pass Pass
5725 - 5785 MHz E	Low Channel 149 - 5745 M 802.11(n) M0 802.11(n) M0 Mid Channel 157 - 5785 M 802.11(n) M0	/Hz CSO Hz CSO	(dBm/Ref BW) -6.104 -8.869 -6.864	Factor (dB) 0.6 3.5 0.6	(dBm/Ref BW) -5.5 -5.4 -6.2	≤ (dBm/Ref BW) 30 30 30	Pass Pass Pass
5725 - 5785 MHz E	Low Channel 149 - 5745 M 802.11(n) M 802.11(n) M Mid Channel 157 - 5785 M 802.11(n) M 802.11(n) M	MHz 250 257 HHz 250 257	(dBm/Ref BW) -6.104 -8.869	Factor (dB) 0.6 3.5	(dBm/Ref BW) -5.5 -5.4	≤ (dBm/Ref BW) 30 30	Pass Pass
5725 - 5785 MHz E	Low Channel 149 - 5745 M 802.11(n) M 802.11(n) M Mid Channel 157 - 5785 M 802.11(n) M 802.11(n) M High Channel 161 - 5805 I	AHz CS0 CS7 HHz CS0 CS7 MHz	(dBm/Ref BW) -6.104 -8.869 -6.864 -9.278	Factor (dB) 0.6 3.5 0.6 3.5	(dBm/Ref BW) -5.5 -5.4 -6.2 -5.8	≤ (dBm/Ref BW) 30 30 30 30 30 30	Pass Pass Pass Pass
5725 - 5785 MHz E	Low Channel 149 - 5745 M 802.11(n) M 802.11(n) M Mid Channel 157 - 5785 M 802.11(n) M 802.11(n) M	/Hz CS0 CS7 HIZ CS0 CS7 VHZ CS0 S30 S30 S30 S30 S30 S30 S30 S30 S30 S	(dBm/Ref BW) -6.104 -8.869 -6.864	Factor (dB) 0.6 3.5 0.6	(dBm/Ref BW) -5.5 -5.4 -6.2	≤ (dBm/Ref BW) 30 30 30	Pass Pass Pass



