

Microsoft Corporation 1601 FCC 15.207:2013 FCC 15.247:2013

Report #: MCSO1668.1



Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington



CERTIFICATE OF TEST

Last Date of Test: July 8, 2013 Microsoft Corporation Model: 1601

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Duty Cycle	FCC 15.247:2013	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Conducted Emissions	FCC 15.247:2013	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2013	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2013	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2013	ANSI C63.10:2009	Pass
Powerline Conducted Emissions	FCC 15.207:2013	ANSI C63.10:2009	Pass

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager



NVLAP Lab Code: 200629-0

Test Facility

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

Northwest EMC, Inc. 19201 120th Avenue NE Suite 104 Bothell, WA 98011

Phone: (425) 984-6600 Fax: 984-6602

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

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

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.



REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		
00			

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



United States

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

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

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

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

Singapore

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

Hong Kong

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

Vietnam

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

Russia

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

SCOPE

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



MEASUREMENT UNCERTAINTY

Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is listed below. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-1 as applicable), and are available upon request.

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

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



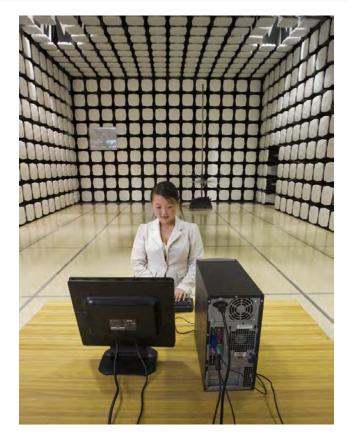
FACILITIES



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









PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Test Requested By:	Mike Boucher
Model:	1601
First Date of Test:	July 2, 2013
Last Date of Test:	July 8, 2013
Receipt Date of Samples:	July 2, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

A hand held computing device with 802.11 a/g/b/n and Bluetooth radios.

Testing Objective:

To demonstrate compliance under FCC 15.247 of the Bluetooth Low Energy portion as a DTS device for operation in the 2.4 GHz bands.



CONFIGURATIONS

Configuration MCSO1668-1

EUT					
Description	Manufacturer	Model/Part Number	Serial Number		
Handheld Computing Device	Microsoft Corporation	1601	006079632553		

Peripherals in test setup boundary					
Description Manufacturer Model/Part Number Serial Number					
AC Adapter	Microsoft Corporation	X865587-001	0D130T053ZA34		
USB Ethernet Adapter	LinkSys	USB300M	CU906M715622		

Remote Equipment Outside of Test Setup Boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
Remote Laptop	Lenovo	4171-53U	R9-N8A80 12/04		

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	0.5m	No	AC Adapter	AC Mains
DC Power	No	1.5m	No	AC Adapter	Handheld Computing Device
USB	Yes	0.1m	No	USB Ethernet Adapter	Handheld Computing Device
Ethernet	No	0.8m	No	Remote Laptop	USB Ethernet Adapter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					



CONFIGURATIONS

Configuration MCSO1668-2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computing Device	Microsoft Corporation	1601	006079632553

Peripherals in test setup boundary						
Description	Manufacturer	Model/Part Number	Serial Number			
AC Adapter	Microsoft Corporation	X865587-001	0D130T053ZA34			
USB Ethernet Adapter	LinkSys	USB300M	CU906M715622			
Detachable Keyboard	Microsoft Corporation	X865049-001	016967623751			

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
Headphone	No	1.2m	No	Handheld Computing Device	Ear Buds	
AC Power	No	0.5m	No	AC Adapter	AC Mains	
DC Power	No	1.5m	No	AC Adapter	Handheld Computing Device	
USB	Yes	0.1m	No	USB Ethernet Adapter	Handheld Computing Device	
Ethernet	No	0.8m	No	Remote Laptop	USB Ethernet Adapter	
Display Port	Yes	2.0m	No	Handheld Computing Device	Unterminated	
PA	PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					



Configuration MCSO1668-3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Computing Device	Microsoft Corporation	1601	006079632553

Peripherals in test setup bo	oundary		
Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	Microsoft Corporation	X865587-001	0D130T053ZA34
USB Ethernet Adapter	LinkSys	USB300M	CU906M715622
Detachable Keyboard	Microsoft Corporation	X865049-001	016967623751

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Headphone	No	1.2m	No	Handheld Computing Device	Ear Buds
AC Power	No	0.5m	No	AC Adapter	AC Mains
DC Power	No	1.5m	No	AC Adapter	Handheld Computing Device
USB	Yes	0.1m	No	USB Ethernet Adapter	Handheld Computing Device
Ethernet	No	0.8m	No	Remote Laptop	USB Ethernet Adapter
Display Port	Yes	2.0m	No	Handheld Computing Device	Unterminated
PA =	Cable is pe	rmanently atta	ched to the	device. Shielding and/or presence of	ferrite may be unknown.



MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
			Tested as	No EMI suppression	EUT remained at
1	7/2/2013	Duty Cycle	delivered to	devices were added or	Northwest EMC
			Test Station.	modified during this test.	following the test.
		Output	Tested as	No EMI suppression	EUT remained at
2	7/2/2013	Power	delivered to	devices were added or	Northwest EMC
		FOWEI	Test Station.	modified during this test.	following the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
3	7/2/2013	Conducted	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
		Occupied	Tested as	No EMI suppression	EUT remained at
4	7/2/2013	Bandwidth	delivered to	devices were added or	Northwest EMC
		Danuwidin	Test Station.	modified during this test.	following the test.
		Power	Tested as	No EMI suppression	EUT remained at
5	7/2/2013	Spectral	delivered to	devices were added or	Northwest EMC
		Density	Test Station.	modified during this test.	following the test.
		Band Edge	Tested as	No EMI suppression	EUT remained at
6	7/2/2013	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
7	7/5/2013	Radiated	delivered to	devices were added or	Northwest EMC
		Emissions	Test Station.	modified during this test.	following the test.
		Powerline	Tested as	No EMI suppression	Scheduled testing
8	7/8/2013	Conducted	delivered to	devices were added or	5
		Emissions	Test Station.	modified during this test.	was completed.



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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Signal Generator	Agilent	N5183A	TID	9/19/2011	36
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24

TEST DESCRIPTION

The Duty Cycle (x) were 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. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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

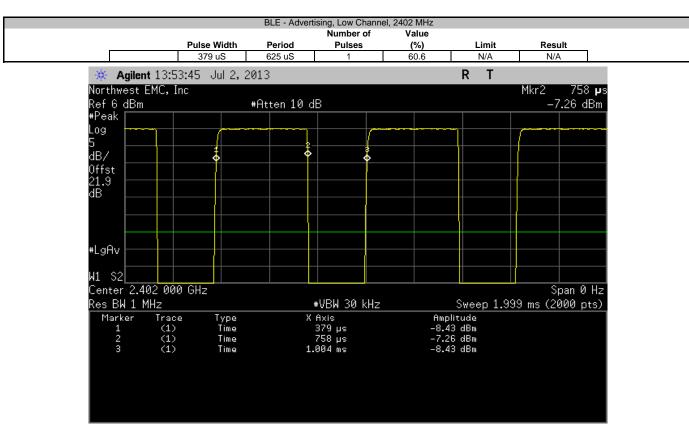
This test is used to document the operating mode of the supplied radio test software. There is no pass/fail criteria.



EUT:	1601							Work Order	: MCSO1668	
Serial Number:	006079632553							Date	: 07/02/13	
Customer:	Microsoft Corporation							Temperature	: 26°C	
Attendees:								Humidity		
Project:								Barometric Pres		
Tested by:	Richard Mellroth, Rod Pel	oquin		Power:	120 VAC / 60Hz			Job Site	:: NC02	
TEST SPECIFICATI	IONS				Test Method					
FCC 15.247:2013					ANSI C63.10:2009					
COMMENTS										
Adapter cable loss	-	er reference level offset. EU	UT power se	etting in control s	oftware were set to	Power Class: 2,	and Power Level: 4			
Adapter cable loss	of 0.75dB added to analyz	er reference level offset. EU	UT power se	etting in control s	oftware were set to	Power Class: 2,	and Power Level: 4			
Adapter cable loss	-	er reference level offset. EU	UT power se	etting in control s	oftware were set to	Power Class: 2,	and Power Level: 4			
Adapter cable loss	-		•	tting in control s		Power Class: 2,	and Power Level: 4			
Adapter cable loss DEVIATIONS FROM None	-		•			Power Class: 2,	and Power Level: 4	Value		

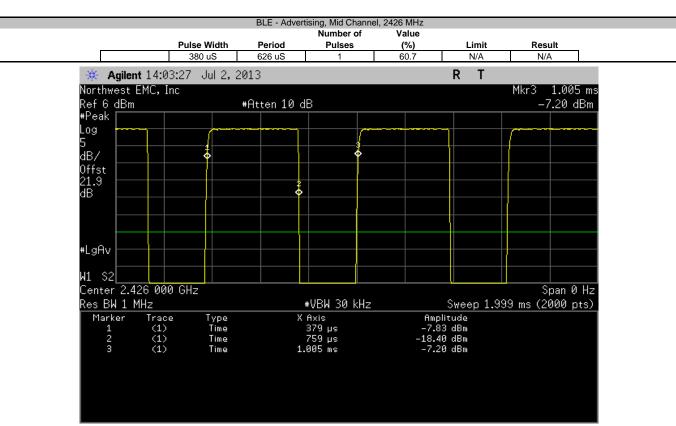
			Number of	Value		
	Pulse Width	Period	Pulses	(%)	Limit	Result
BLE - Advertising						
Low Channel, 2402 MHz	379 uS	625 uS	1	60.6	N/A	N/A
Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 2426 MHz	380 uS	626 uS	1	60.7	N/A	N/A
Mid Channel, 2426 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 2480 MHz	379 uS	626 uS	1	60.5	N/A	N/A
High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
LE - Data						
Low Channel, 2404 MHz	379 uS	625 uS	1	60.6	N/A	N/A
Low Channel, 2404 MHz	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, 2440 MHz	378 uS	624 uS	1	60.6	N/A	N/A
Mid Channel, 2440 MHz	N/A	N/A	5	N/A	N/A	N/A
High Channel, 2478 MHz	378 uS	624 uS	1	60.6	N/A	N/A
High Channel, 2478 MHz	N/A	N/A	5	N/A	N/A	N/A
6						





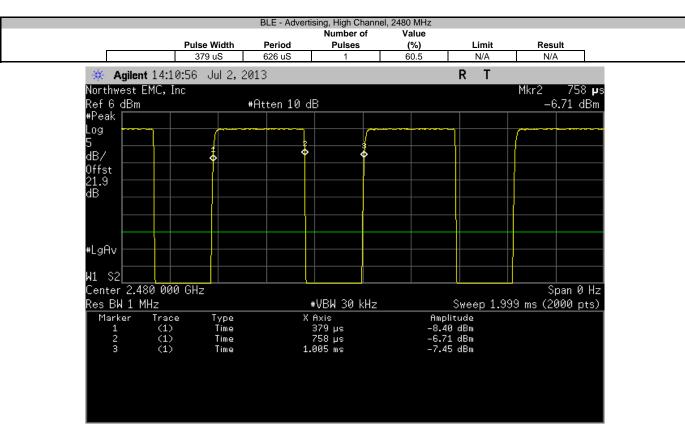
Number of Pulse Width Period Period Value Pulses N/A N/A 5 N/A N/A X Agilent 13:53:58 Jul 2, 2013 R T Northwest EMC, Inc Ref 6 dBm #Atten 10 dB #Peak Log 5 S	
N/A N/A 5 N/A N/A N/A # Agilent 13:53:58 Jul 2, 2013 R T Northwest EMC, Inc Ref 6 dBm #Atten 10 dB #Peak Image: Comparison of the second s	
Northwest EMC, Inc Ref 6 dBm #Atten 10 dB #Peak	
Ref 6 dBm #Atten 10 dB #Peak	
#Peak	
0ffst 21.9 dB	
dB	
#LgAv	
W1 S2	
W1 S2 S3 VS	
£(f):	
FTun	
Center 2.402 000 GHz Span Res BW 1 MHz #VBW 30 kHz Sweep 2.932 ms (5000	0 Hz nts)





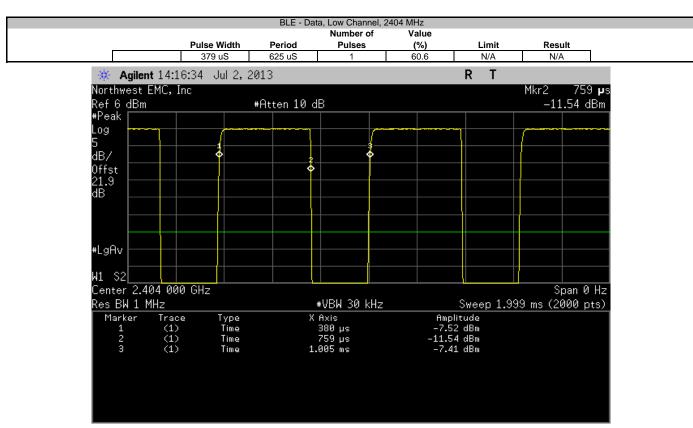
		BLE - Adverti	sing, Mid Chanr Number of			
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A
🔆 Agilent 14:0		013			RT	
Northwest EMC,	Inc	o 10 I	_			
Ref6dBm #Peak ∣		#Atten 10 dl	3			
Log 5 /						
5 dB/				- Π		
ab/ Offst						
0ffst 21.9 dB						
ав						
#LgAv						
W1 S2 S3 VS						
S3 VS						
£(f):						
FTun						
Center 2.426 00	0 GHz					Span 0 Hz
Res BW 1 MHz		+	∙VBW 30 kHz			2 ms (5000 pts)





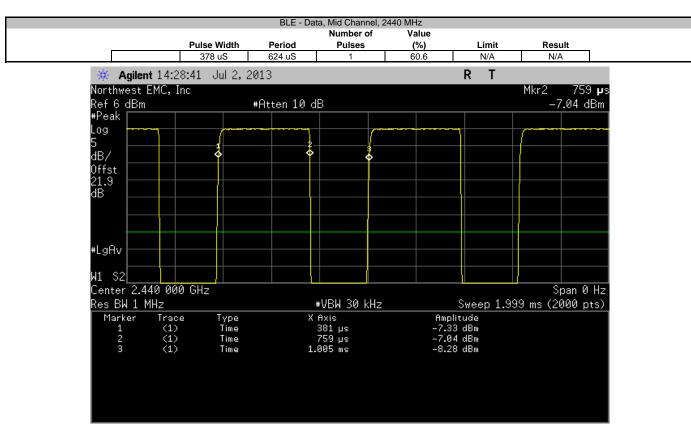
		BLE - Adverti	sing, High Chan			
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A
🔆 Agilent 14:1	.1:03 Jul 2, 2	2013			RT	
Northwest EMC, I						
Ref 6 dBm		#Atten 10 dl	В			
#Peak						
Log						
5 dB/			ſ			
Offst						
Offst 21.9 dB						
dB						
#LgAv						
*L9110						
W1 S2						
W1 S2 S3 VS						
£ (f):						
FTun						
Center 2.480 00	0 GHz					Span 0 Hz
Res BW 1 MHz		+	⊧VBW 30 kHz		Sweep 2.932	2 ms (5000 pts)





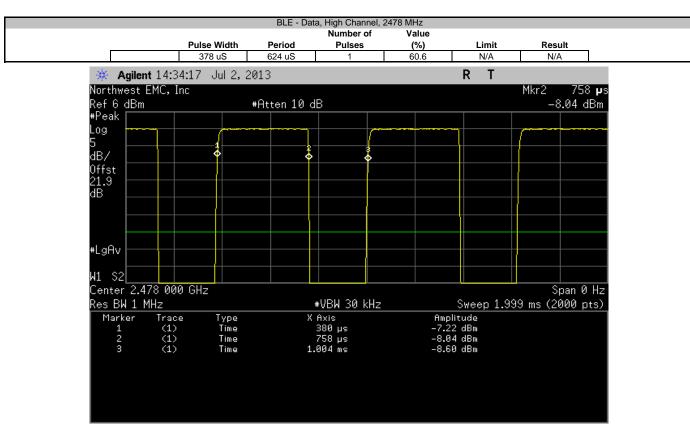
		BLE - Dat	a, Low Channe Number of	I, 2404 MHz Value		
	Pulse Width	Period	Pulses	(%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A
🔆 Agilent 14:	L6:42 Jul 2, 2	013			RT	
Northwest EMC,	Inc					
Ref 6 dBm		#Atten 10 d	В			
#Peak						
Log						
5 dB/					[[[[[[[[[[[[[[[[[[[
QD∕ Affet						
0ffst 21.9 dB						
dB						
#LgAv						
u1 s2						
W1 S2 S3 VS						
£ (f):						
FTun						
Center 2.404 00	10 GHz				0 000	Span 0 H
Res BW 1 MHz_			⊭VBW 30 kH	Z	Sweep 2.93	32 ms (5000 pts





		BLE - Dat	a, Mid Channel			
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/Á	N/A	N/A
🔆 Agilent 14:		13			RT	
Northwest EMC,			_			
Ref6dBm #Peak	1#	Atten 10 di	3			
Log						
5 dB/				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
ab/ Offst				\rightarrow		
Offst 21.9 dB						
ав						
#LgAv						
W1 S2 S3 VS						
S3 VS						
£ (f):						
FTun						
						_
Center 2.440 0	00 GHz					Span 0 Hz
Res BW 1 MHz_		+	⊧VBW 30 kH:	Ζ		ms (5000 pts)





		BLE - Dat	a, High Channel,			
	Pulse Width	Period	Number of Pulses	Value (%)	Limit	Result
	N/A	N/A	5	N/A	N/A	N/A
🔆 Agilent 14:3	34:25 Jul 2, 2	013			RT	
Northwest EMC,						
Ref 6 dBm		#Atten 10 d	B			
#Peak						
Log						
5 dB/				\neg		
Affst			↓ 	\rightarrow		
Offst 21.9 dB						
dB			⊢			
#LgAv						
W1 S2						
W1 S2 S3 VS						
£ (f):						
FTun						
Center 2.478 00	0 GHz				0	Span 0 Hz
Res BW 1 MHz_			#VBW 30 kHz			ms (5000 pts)



Occupied Bandwidth

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Signal Generator	Agilent	N5183A	TID	9/19/2011	36
Attenuator	Fairview Microwave	SA4014-20	TKE	2/12/2013	12
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24

TEST DESCRIPTION

The 6dB occupied bandwidth was measured. The 26 dB (99.9%) emission bandwidth (EBW) was also measured at the same time.

The EUT was set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

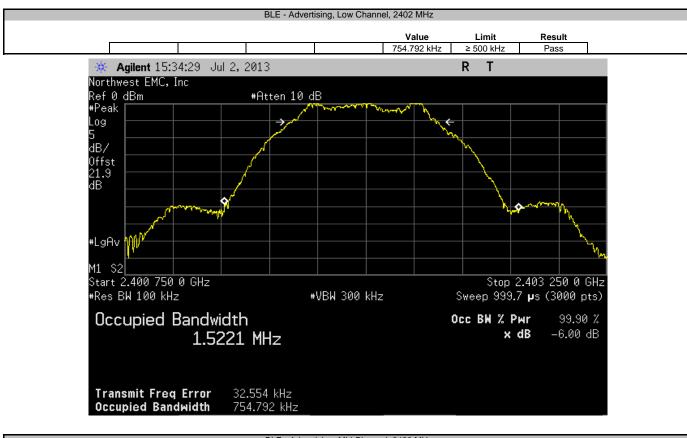


Occupied Bandwidth

XMit 2013.02.28
PsaTx 2013.06.07

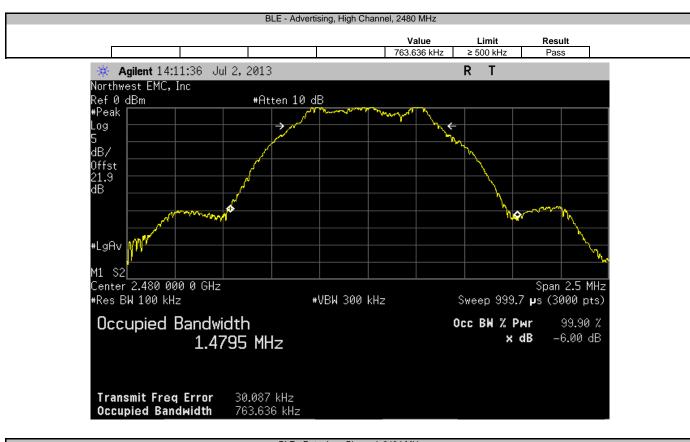
	T: 1601		Work Order:		
Serial Numbe	er: 006079632553		Date:	07/02/13	
Custome	er: Microsoft Corporation		Temperature:	26°C	
Attendee	s: None		Humidity:	46%	
Projec	t: None		Barometric Pres.:	1020 mb	
Tested b	y: Richard Mellroth, Rod Peloquin	Power: 120 VAC / 60Hz	Job Site:	NC02	
TEST SPECIFICA	TIONS	Test Method			
FCC 15.247:2013		ANSI C63.10:2009			
COMMENTS					
Adapter cable los	ss of 0.75dB added to analyzer reference level offset. EUT powe	er setting in control software were set to Power Class: 2, a	nd Power Level: 4		
	·····				
DEVIATIONS FRO	OM TEST STANDARD				
None					
	1	OI PO			
Configuration #	1 /600	and the Rolings			
	Signature	0			
			Value	Limit	Result
BLE - Advertising					
	Low Channel, 2402 MHz		754.792 kHz	≥ 500 kHz	Pass
	Mid Channel, 2426 MHz		749.586 kHz	≥ 500 kHz	Pass
	High Channel, 2480 MHz		763.636 kHz	≥ 500 kHz	Pass
BLE - Data					
	Low Channel, 2404 MHz		766.508 kHz	≥ 500 kHz	Pass
	Mid Channel, 2440 MHz		758.948 kHz	≥ 500 kHz	Pass
	High Channel, 2478 MHz		757.921 kHz	≥ 500 kHz	Pass

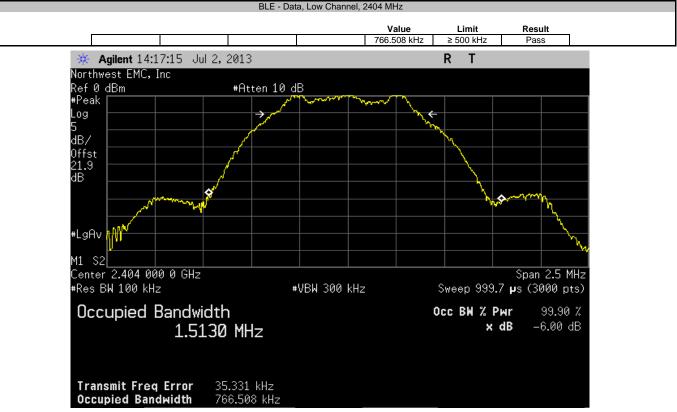














BLE - Data, Mid Channel, 2440 MHz Limit Result Value 758.948 kHz ≥ 500 kHz Pass Agilent 14:29:23 Jul 2, 2013 R T ** Northwest EMC, Inc Ref 0 dBm #Atten 10 dB #Peak Log \rightarrow ÷ 5 dB/ Offst 21.9 dB ¢, #LgAv M1 S2 Center 2.440 000 0 GHz Span 2.5 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 999.7 µs (3000 pts) Occupied Bandwidth Occ BW % Pwr 99.90 % x dB -6.00 dB 1.5140 MHz 42.626 kHz Transmit Freq Error **Occupied Bandwidth** 758.948 kHz





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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Signal Generator	Agilent	N5183A	TID	9/19/2011	36
Attenuator	Fairview Microwave	SA4014-20	TKE	2/12/2013	12
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24

TEST DESCRIPTION

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

Method Option 1 found in KDB 558074 DTS D01 Measurement Section 8.1.1 was used because the RBW on the analyzer was greater than the Emission Bandwidth of the radio.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.



Output Power

	T: 1601				Work Order:		
	er: 006079632553					07/02/13	
Custome	r: Microsoft Corporation				Temperature:	26°C	
Attendees	s: None				Humidity:	46%	
Projec	t: None				Barometric Pres.:	1020 mb	
Tested by	y: Richard Mellroth, Rod Pel	oquin	Power:	120 VAC / 60Hz	Job Site:	NC02	
TEST SPECIFICA	TIONS			Test Method			
FCC 15.247:2013				ANSI C63.10:2009			
COMMENTS							
Adapter cable los	ss of 0.75dB added to analyze	er reference level offset. EUT power s	setting in control so	oftware were set to Power Class: 2, a	nd Power Level: 4		
DEVIATIONS FRC	OM TEST STANDARD						
None							
		1	0 1	Pl			
Configuration #	1	1 de	gue	Relings			
		Signature		E			
					Malua	1 1 14	Decell
					Value	Limit	Result
BLE - Advertising	Level Observation 4000 Million				1.431 mW	< 1 W	Deve
	Low Channel, 2402 MHz						Pass
	Mid Channel, 2426 MHz				1.421 mW	< 1 W	Pass
	High Channel, 2480 MHz				1.422 mW	< 1 W	Pass
BLE - Data							
	Low Channel, 2404 MHz				1.428 mW	< 1 W	Pass
	Mid Channel, 2440 MHz				1.425 mW	< 1 W	Pass
	High Channel, 2478 MHz						



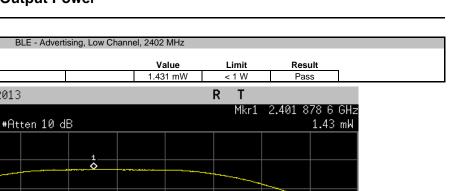
**

Offst 21.9 dB

Northwest EMC, Inc Ref 1.9 mW #Peak Lin

Output Power

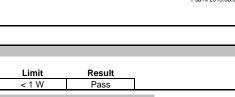
Agilent 13:55:11 Jul 2, 2013

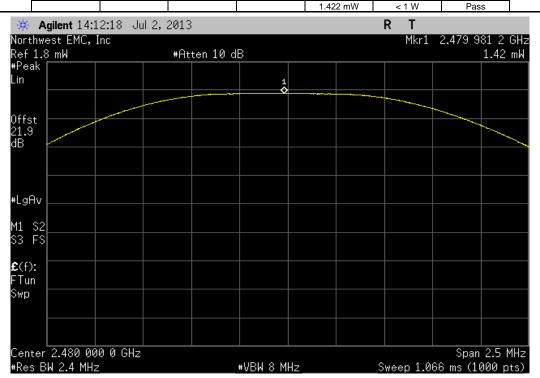


ub 卢						+
#LgAv						
M1 S2 S3 FS						
£(f): FTun						
Swp						
Lenter 2.4 #Res BW 2.	02 000 0 GHz .4 MHz		#VBW 8 MF	Ηz	Sweep 1.0	Span 2.5 MH: 066 ms (1000 pts)
		BLE - Ad	vertising, Mid Cha			
				Value 1.421 m	e Limit NW < 1 W	Result Pass
	nt 14:05:16 Jul	2,2013			RT	
Northwest Ref 1.8 mW		#Atten 10) dB		Mkr1	. 2.425 943 7 GH 1.42 mk
#Peak						
Lin			1 •			
0ffst						<u> </u>
Offst 21.9 dB						
#LgAv						
M1 S2 S3 FS						
S3 FS						
£(f): FTun						
Flun Swp						
Center 2.4 #Res BW 2.	26 000 0 GHz 4 MH 2				Sween 1 (Span 2.5 MH: 066 ms (1000 pts)
MOJ DN 2.				16-	Oncop 1.0	



Output Power





BLE - Advertising, High Channel, 2480 MHz

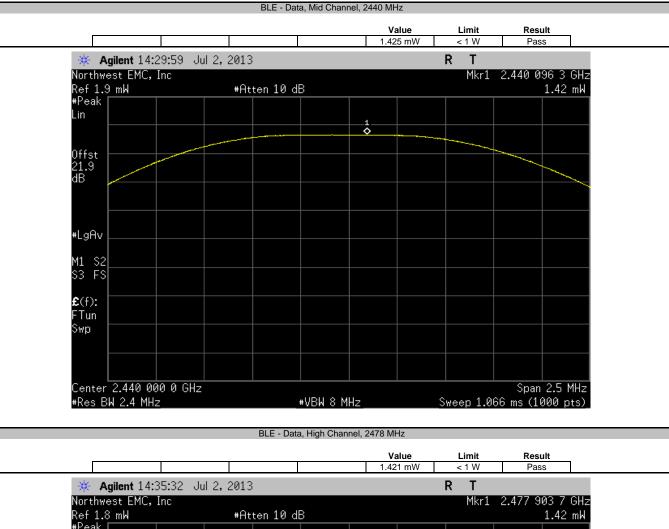
Value

BLE - Data, Low Channel, 2404 MHz Value Limit Result 1.428 mW < 1 W Pass 🔆 Agilent 14:17:51 Jul 2, 2013 R Т Northwest EMC, Inc Ref 1.9 mW #Peak Mkr1 2.403 963 7 GHz #Atten 10 dB 1.43 mW Lin 1 Offst 21.9 dB #LgAv M1 S2 S3 FS £(f): FTun Swp Center 2.404 000 0 GHz Span 2.5 MHz #Res BW 2.4 MHz ₩VBW 8 MHz Sweep 1.066 ms (1000 pts)



Output Power





🛛 🔆 Agilent 14:35:32 🛛 Jul 2	2,2013	R	2 T	
Northwest EMC, Inc			Mkr1 2.47	7 903 7 GHz
Ref 1.8 mW	#Atten 10 dB			1.42 mW
#Peak				
Lin				
Offst 21.9 dB				
#LgAv				
M1 S2				
S3 FS				
£(f): FTun				
Swp				
Center 2.478 000 0 GHz			St	oan 2.5 MHz
#Res BW 2.4 MHz	#VBW 8	MHzSw	eep 1.066 ms	

EMC

Band Edge Compliance

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Signal Generator	Agilent	N5183A	TID	9/19/2011	36
Attenuator	Fairview Microwave	SA4014-20	TKE	2/12/2013	12
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

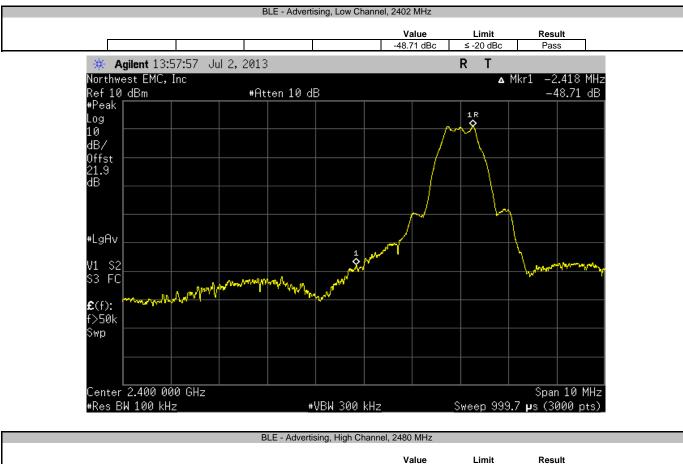
The spectrum was scanned below the lower band edge and above the higher band edge.

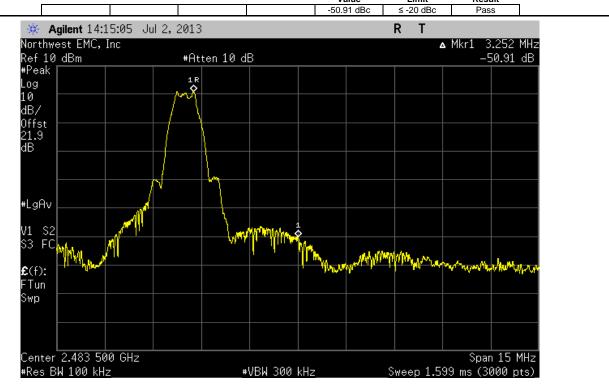


Band Edge Compliance

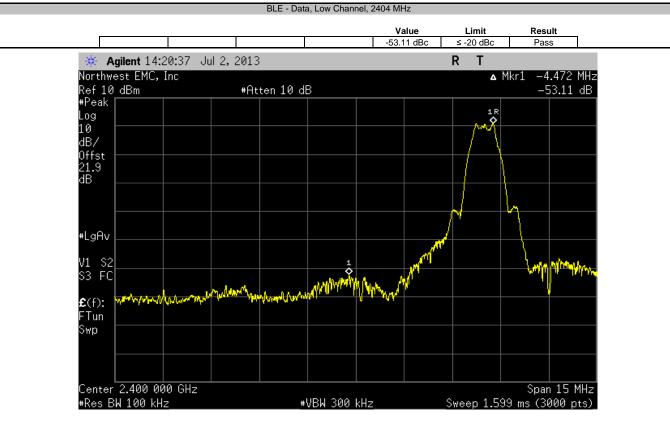
	1001						
	1601				Work Order:		
	006079632553					07/02/13	
	Microsoft Corporation				Temperature:		
Attendees	None				Humidity:		
Project:	None				Barometric Pres.:	1020 mb	
Tested by:	Richard Mellroth, Rod Pele	oquin	Power:	120 VAC / 60Hz	Job Site:	NC02	
TEST SPECIFICAT	IONS			Test Method			
FCC 15.247:2013				ANSI C63.10:2009			
COMMENTS							
Adapter cable loss	of 0.75dB added to analyze	er reference level offset. EUT	power setting in control so	oftware were set to Power Class: 2, an	nd Power Level: 4		
			, ,	, , , , , , , , , , , , , , , , , , , ,			
DEVIATIONS FROM	M TEST STANDARD						
None							
			101	PP			
Configuration #	1	· · · · · · · · · · · · · · · · · · ·	Rocky le	Telengo			
		Signature	U	0			
					Value	Limit	Result
BLE - Advertising							
	Low Channel, 2402 MHz				-48.71 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz				-50.91 dBc	≤ -20 dBc	Pass
BLE - Data							
	Low Channel, 2404 MHz				-53.11 dBc	≤ -20 dBc	Pass
	High Channel, 2478 MHz				-55.01 dBc	≤ -20 dBc	Pass

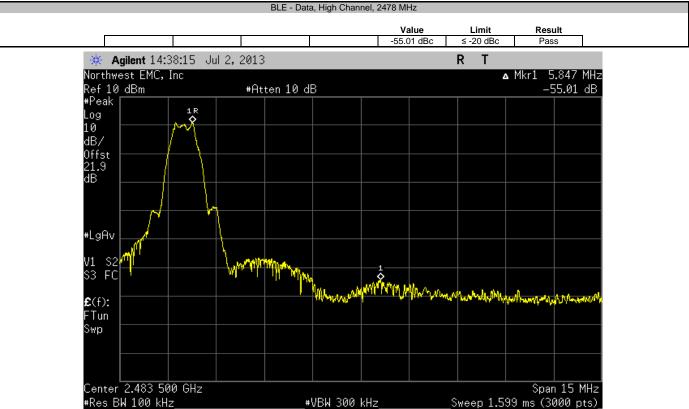














Spurious Conducted Emissions

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Signal Generator	Agilent	N5183A	TID	9/19/2011	36
Attenuator	Fairview Microwave	SA4014-20	TKE	2/12/2013	12
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24

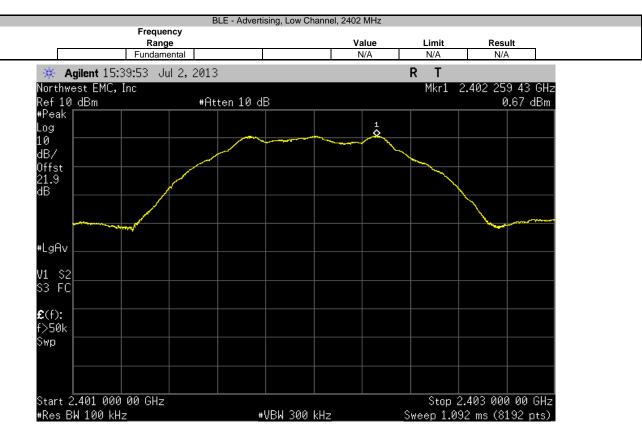
TEST DESCRIPTION

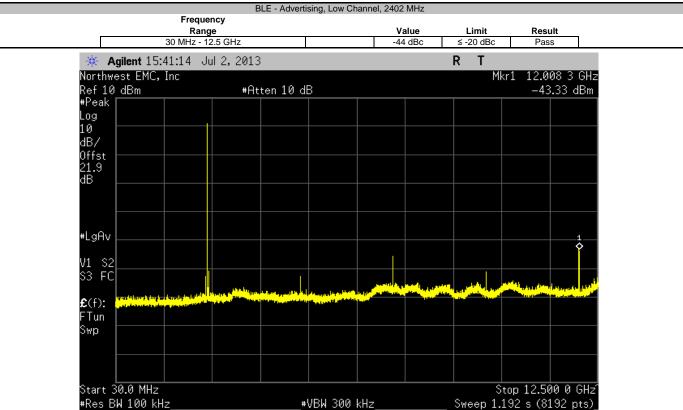
The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.



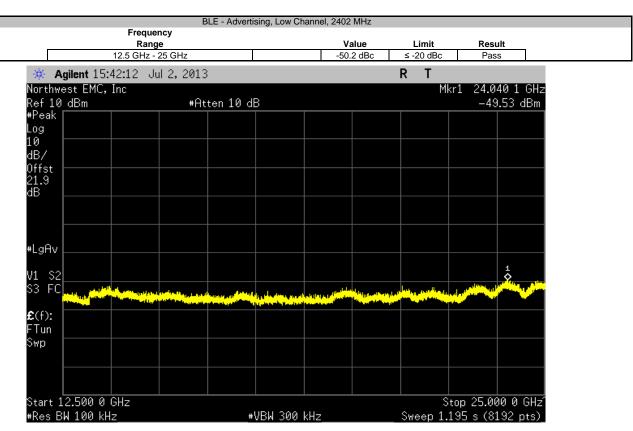
				Work Order:	10501668	
	: 1601 : 006079632553				07/02/13	
	: Microsoft Corporation			Temperature:		
Attendees				Humidity:		
Project				Barometric Pres.:		
	Richard Mellroth, Rod Peloguin		Power: 120 VAC / 60Hz	Job Site:		
TEST SPECIFICAT			Test Method		1002	
CC 15.247:2013			ANSI C63.10:2009			
00 10.247.2010			/ 4101 000110.2000			
COMMENTS						
	s of 0.75dB added to analyzer reference l	evel offset. FUT power	setting in control software were set to Power Class	: 2, and Power Level: 4		
		ererencea zer pener				
DEVIATIONS FRO	M TEST STANDARD					
None						
		1	0, 20			
Configuration #	1	1600	lay to Reling			
		Signature	0 0			
			Frequency			
			Range	Value	Limit	Result
SLE - Advertising						
LE - Advertising	Low Channel, 2402 MHz		Fundamental	N/A	N/A	N/A
LE - Advertising	Low Channel, 2402 MHz		30 MHz - 12.5 GHz	-44 dBc	≤ -20 dBc	Pass
SLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-44 dBc -50.2 dBc	≤ -20 dBc ≤ -20 dBc	Pass Pass
BLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	-44 dBc -50.2 dBc N/A	≤ -20 dBc ≤ -20 dBc N/A	Pass Pass N/A
SLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc	Pass Pass N/A Pass
SLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc	Pass Pass N/A Pass Pass
BLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc N/A	Pass Pass N/A Pass Pass N/A
SLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc	Pass Pass N/A Pass Pass N/A Pass
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc N/A	Pass Pass N/A Pass Pass N/A
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc	Pass Pass N/A Pass Pass N/A Pass Pass
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc	Pass Pass N/A Pass N/A Pass Pass N/A
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc	Pass Pass N/A Pass Pass N/A Pass Pass N/A Pass
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc N/A -43.9 dBc -49.76 dBc	≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc	Pass Pass N/A Pass N/A Pass Pass N/A Pass Pass
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Mid Channel, 2404 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz Fundamental	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc -43.9 dBc -43.9 dBc -43.76 dBc N/A	≤ -20 dBc > -20 dBc N/A ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc ≤ -20 dBc N/A	Pass Pass N/A Pass Pass Pass N/A Pass Pass N/A
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Mid Channel, 2440 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc -43.9 dBc -43.9 dBc -43.76 dBc N/A -43.52 dBc	≤ -20 dBc > -20 dBc N/A ≤ -20 dBc ≤ -20 dBc > -20 dBc > -20 dBc N/A ≤ -20 dBc > -20 dBc > -20 dBc > -20 dBc > -20 dBc > -20 dBc	Pass Pass N/A Pass Pass Pass Pass Pass Pass N/A Pass N/A Pass
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Mid Channel, 2404 MHz Mid Channel, 2440 MHz Mid Channel, 2440 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc N/A -43.9 dBc -49.76 dBc N/A -43.52 dBc -50.15 dBc -50.15 dBc	≤ -20 dBc N/A ≤ -20 dBc N/A ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc × -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc	Pass Pass N/A Pass Pass Pass Pass N/A Pass Pass N/A Pass Pass Pass
	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Mid Channel, 2440 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz Fundamental 30 MHz - 12.5 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc -50.08 dBc N/A -43.9 dBc -49.76 dBc N/A -45.52 dBc N/A -45.52 dBc N/A	≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc N/A ≤ -20 dBc N/A	Pass N/A Pass N/A Pass Pass N/A Pass N/A Pass N/A
SLE - Advertising	Low Channel, 2402 MHz Low Channel, 2402 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz Mid Channel, 2426 MHz High Channel, 2480 MHz High Channel, 2480 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Low Channel, 2404 MHz Mid Channel, 2404 MHz Mid Channel, 2440 MHz Mid Channel, 2440 MHz		30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	-44 dBc -50.2 dBc N/A -45.26 dBc -49.92 dBc N/A -46.07 dBc -50.08 dBc N/A -43.9 dBc -49.76 dBc N/A -43.52 dBc -50.15 dBc -50.15 dBc	≤ -20 dBc N/A ≤ -20 dBc N/A ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc × -20 dBc ≤ -20 dBc N/A ≤ -20 dBc ≤ -20 dBc	Pass Pass N/A Pass Pass Pass Pass Pass N/A Pass Pass N/A Pass Pass Pass

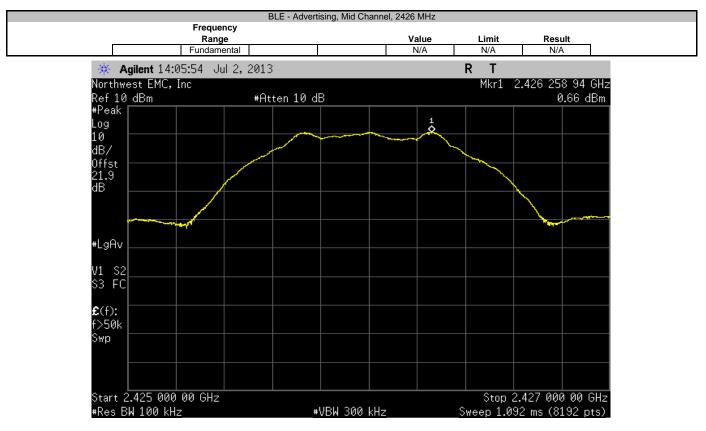




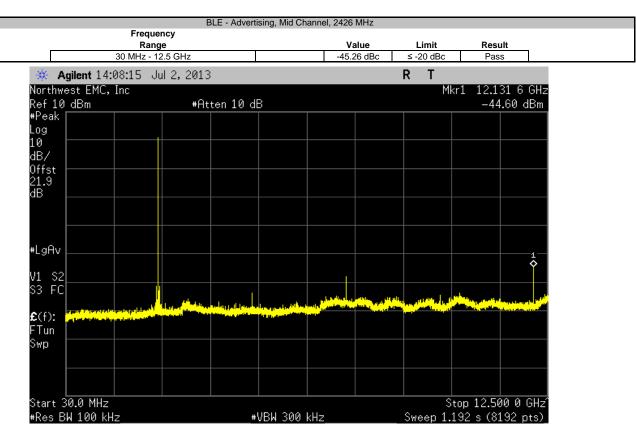






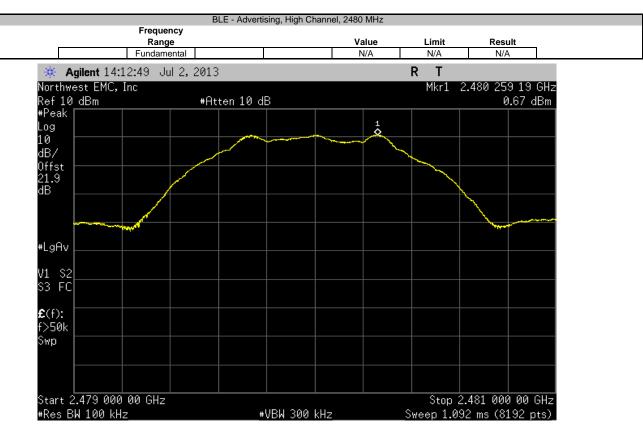






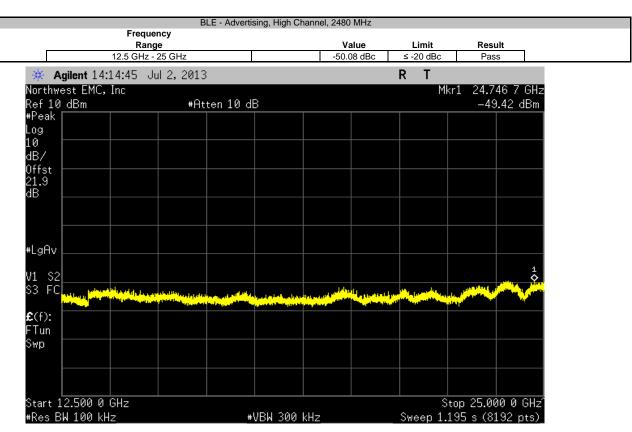
	BL	_E - Advertising, Mid Ch	annel, 2426 MHz		
	Frequency				
	Range 12.5 GHz - 25 GHz		Value -49.92 dBc	Limit Res ≤ -20 dBc Pa	sult ISS
Anile Anile	ent 14:09:14 Jul 2, 2013	·		RT	
Northwest					888 6 GHz
Ref 10 dB		en 10 dB			9.26 dBm
#Peak					
Log 10					
dB/					
Offst 🛏					
21.9 dB					
4D					
#LgAv					
V1 S2					1
V1 S2 S3 FC	La Marine Manager and State	alta du	and a state of the	and a sublimity of the second statements	A STATE OF STATE
£ (f):					
FTun					
Swp					
	500 0 GHz				00 0 GHzî
#Res BW 1	100 kHz	#VBW 300	kHz	Sweep 1.195 s (8	3192 pts)_

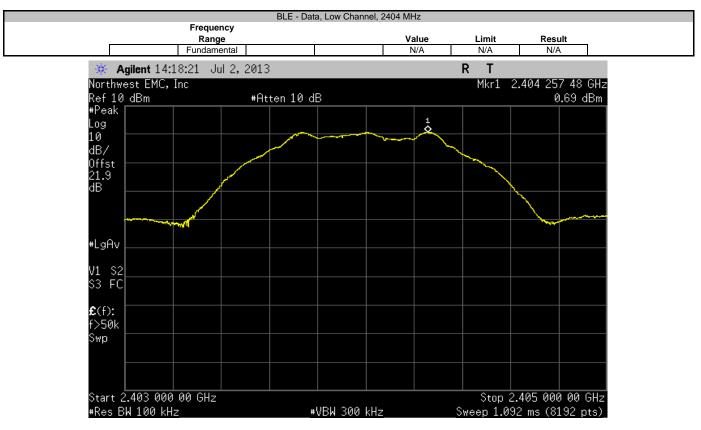




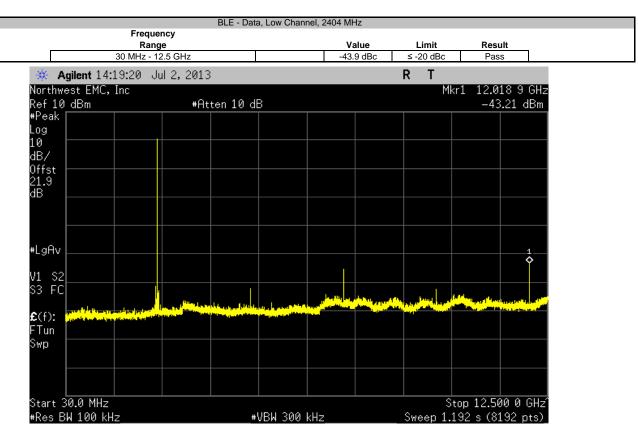
			BLE - A	dvertising, High C	Channel, 2480) MHz				
		Frequency				_		_	_	
		Range 30 MHz - 12.5 (GH7			alue 07 dBc	Limit ≤ -20 dBc	Resu Pas		
					+0.1			1 43	5	
*			2,2013				RT	4 40 4	04 0 011	
	thwest EMC,	Inc		A JD			M		01 0 GHz	
кет #Ре	10 dBm	1	#Atten 1			1		-43	6.41 dBm	
Log										
10										
dB7	/									
Offs	st 📃									
0ffs 21.9 dB	3									
#Lg	Av									
									¢	
V1	<u>\$2</u>						ļ			
\$3	FC	J		- I	والما أتساري	يعربي مسطر	المراجلة المراجل الم	All and the second	والمراجعة المراجعة	
£(f	A. MARTING MARTIN	and the billing of		a de la companya de l	haala <mark>aan taariya</mark>	Aliable.		Alter , , and the	Altrane Malays, and	
FTu										
Swp										
Sta	rt 30.0 MHz						S	top 12.50	00 0 GHzî	
#Re	s BW 100 k⊦	lz		<u>+</u> VBW 300	kHz		Sweep 1.	192 s (81	192 pts)_	

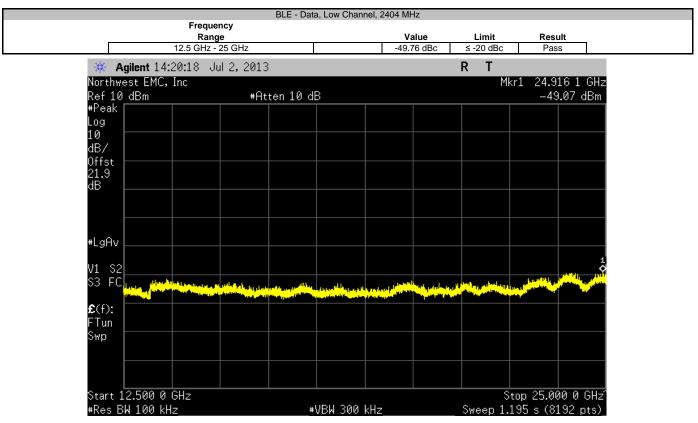




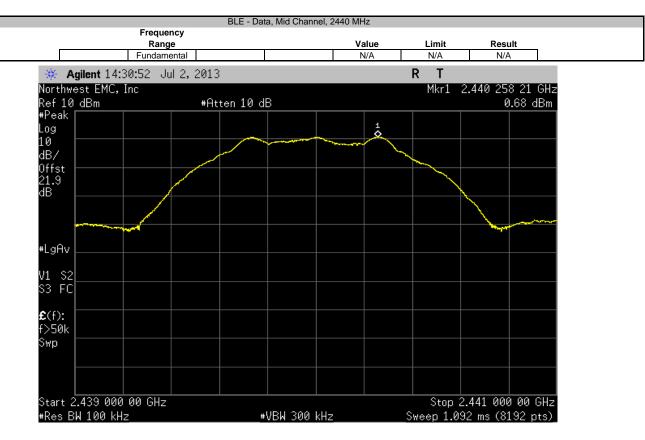


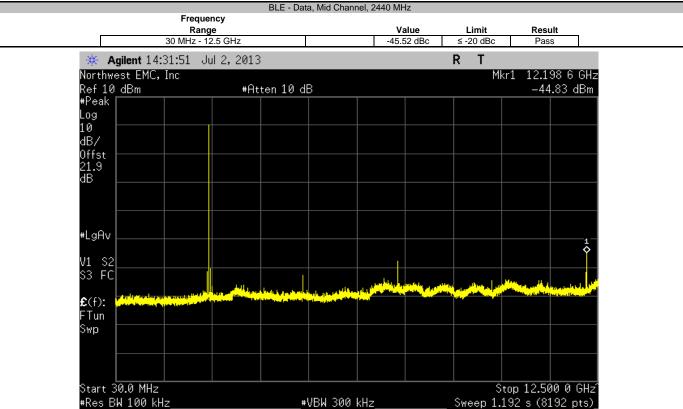




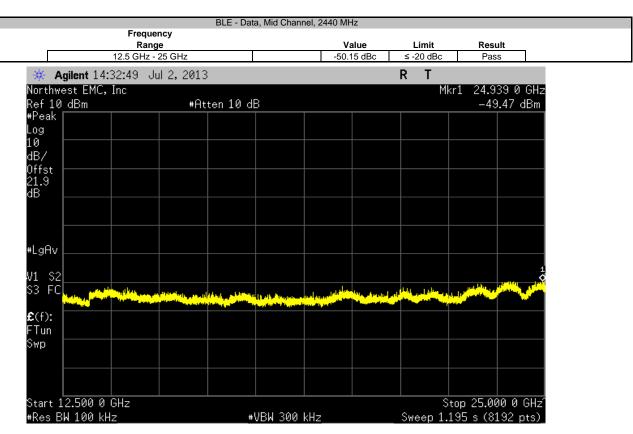


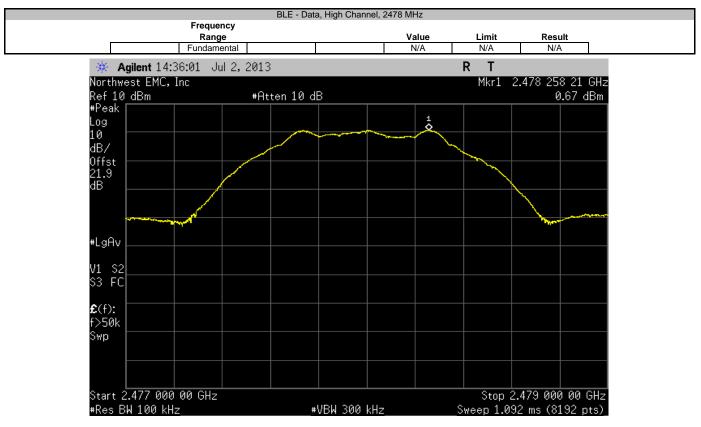




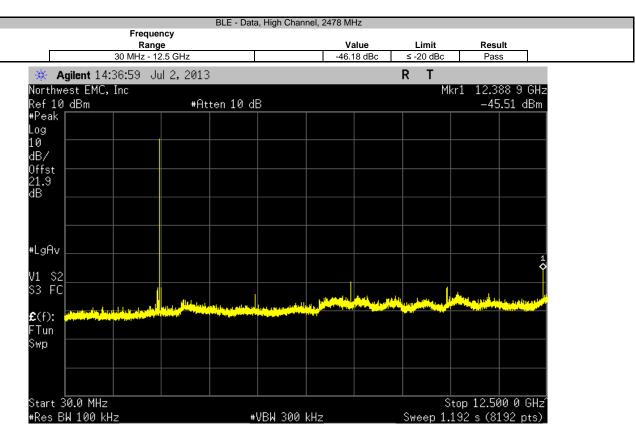


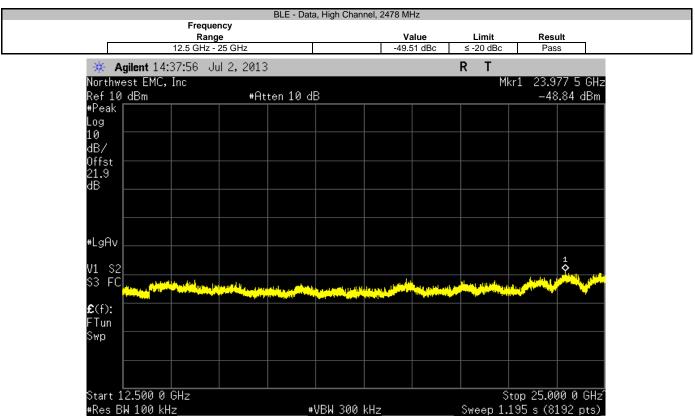












ENC

Power Spectral Density

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Signal Generator	Agilent	N5183A	TID	9/19/2011	36
Attenuator	Fairview Microwave	SA4014-20	TKE	2/12/2013	12
Spectrum Analyzer	Agilent	E4446A	AAT	6/28/2012	24

TEST DESCRIPTION

The maximum power spectral density measurements were measured with the EUT set to the required transmit frequencies in each band. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the lowest, middle, and maximum data rate for each modulation type available.

Per the procedure outlined in FCC KDB 558074 D01 DTS Measurement Section 5.3.1, the spectrum analyzer was used as follows:

≻RBW = 100 kHz

≻VBW = 300 kHz

>Detector = Peak (to match method used for power measurement)

➤Trace = Max hold

The observed power level is then scaled to an equivalent value in 3 kHz by adding a Bandwidth Correction Factor (BWCF) where:

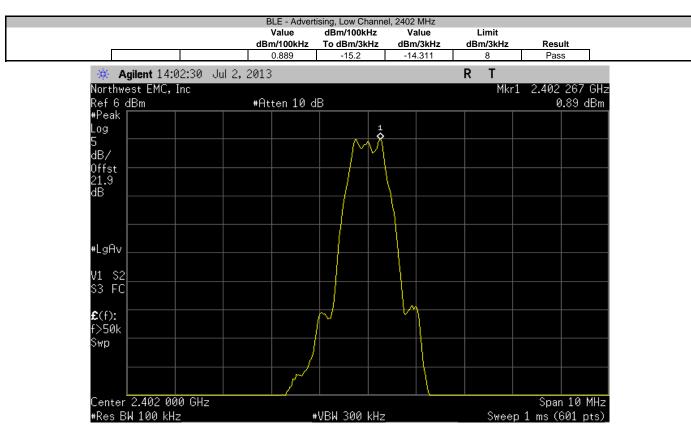
BWCF = 10*LOG (3 kHz / 100 kHz) = -15.2 dB

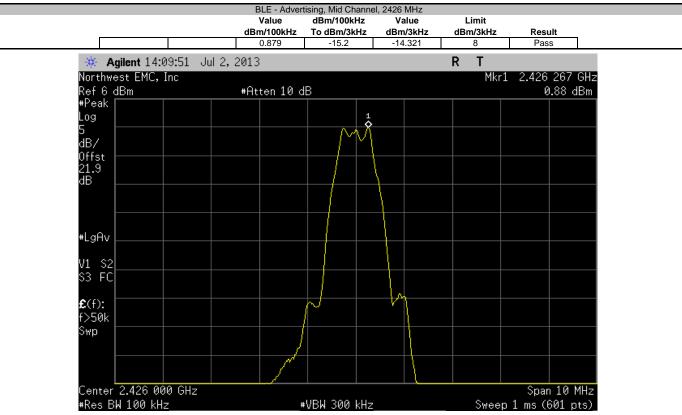


Power Spectral Density

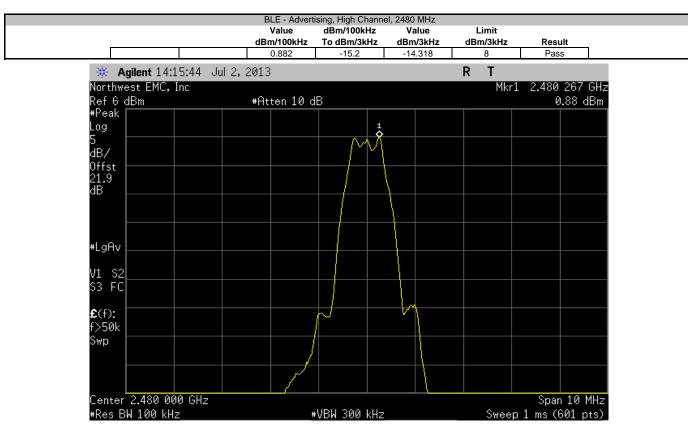
EUT									
	T: 1601						Work Order:		
	r: 006079632553							07/02/13	
Customer	r: Microsoft Corporation						Temperature:	26°C	
Attendees	s: None						Humidity:	46%	
Project	t: None						Barometric Pres.:	1020 mb	
Tested by	: Richard Mellroth, Rod Pelo	quin	Power:	120 VAC / 60Hz			Job Site:	NC02	
EST SPECIFICAT	TIONS	•		Test Method					
CC 15.247:2013				ANSI C63.10:2009					
COMMENTS				•					
EVIATIONS FRO	M TEST STANDARD								
lone									
Configuration #	1	Signature	halog he	Relings					
onfiguration #	1	Signature	halog le		Value Bm/100kHz	dBm/100kHz To dBm/3kHz	Value dBm/3kHz	Limit dBm/3kHz	Result
-	1	Signature	haling to		Bm/100kHz	To dBm/3kHz	dBm/3kHz		
Configuration #	1 Low Channel, 2402 MHz	Signature	haling te		Bm/100kHz	To dBm/3kHz -15.2	dBm/3kHz -14.311		Result Pass
	Mid Channel, 2426 MHz	Signature	halog te		0.889 0.879	To dBm/3kHz -15.2 -15.2	dBm/3kHz -14.311 -14.321	dBm/3kHz	
		Signature	lading te		Bm/100kHz	To dBm/3kHz -15.2	dBm/3kHz -14.311	dBm/3kHz	Pass
-	Mid Channel, 2426 MHz	Signature	haling te		0.889 0.879	To dBm/3kHz -15.2 -15.2	dBm/3kHz -14.311 -14.321	dBm/3kHz 8 8	Pass Pass
LE - Advertising	Mid Channel, 2426 MHz	Signature	laling le		0.889 0.879	To dBm/3kHz -15.2 -15.2	dBm/3kHz -14.311 -14.321	dBm/3kHz 8 8	Pass Pass
LE - Advertising	Mid Channel, 2426 MHz High Channel, 2480 MHz	Signature	haling te		Bm/100kHz 0.889 0.879 0.882	To dBm/3kHz -15.2 -15.2 -15.2	dBm/3kHz -14.311 -14.321 -14.318	dBm/3kHz 8 8 8	Pass Pass Pass

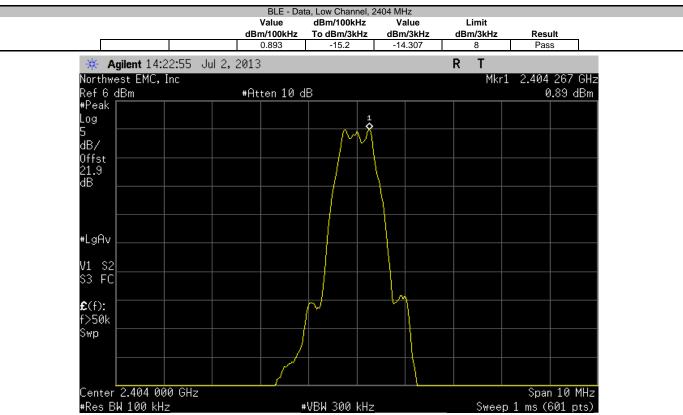




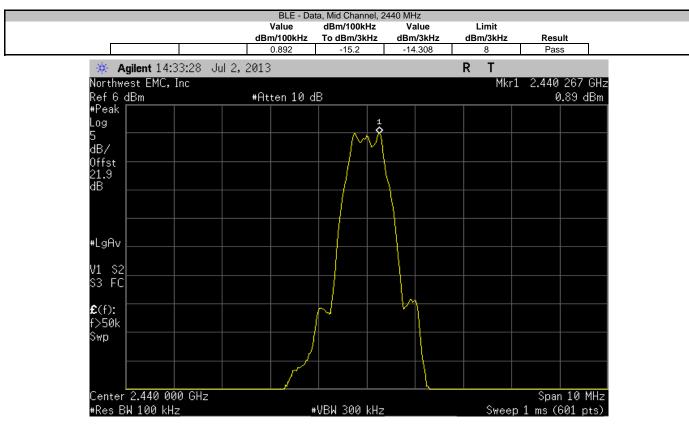


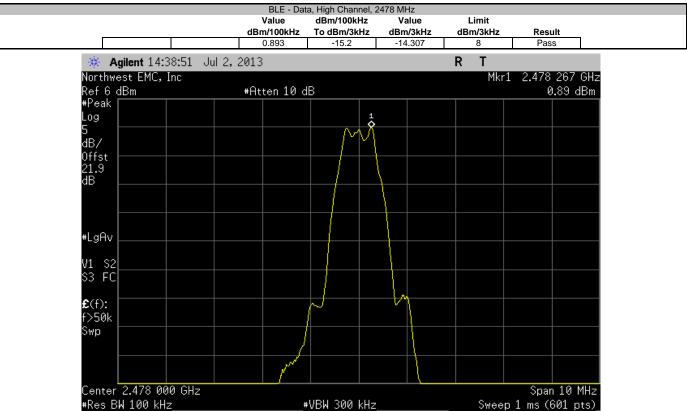












EMC

SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Low Channel, Advertisement Mode
Mid Channel, Advertisement Mode
High Channel, Advertisement Mode
Low Channel,, Data Mode
Mid Channel, Data Mode
High Channel, Data Mode

POWER SETTINGS INVESTIGATED

120 VAC / 60Hz

CONFIGURATIONS INVESTIGATED

MCSO1668 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 25 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOJ	12/14/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	12/14/2012	12 mo
HP Filter	Micro-Tronics	HPM50111	HHI	1/18/2013	24 mo
Attenuator	Fairview Microwave	SA18E-20	AQV	1/18/2013	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	12/13/2012	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	PAB	12/13/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOD	7/10/2013	12 mo
Attenuator, 'N'	S.M. Electronics	SA3N-20	REG	1/17/2013	12 mo
NC01 Cables	N/A	Standard Gain Horn Cable	NC3	12/14/2012	12 mo
NC01 Cables	N/A	3115 Horn Cable	NC2	12/13/2012	12 mo
NC01 Cables	N/A	Bilog Cables	NC1	12/13/2012	12 mo
Cable I	N/A	Standard Gain Horn Cable	SUM	7/10/2013	12 mo
Antenna, Horn	EMCO	3160-08	AHO	NCR	0 mo
Antenna, Horn	EMCO	3160-07	AHP	NCR	0 mo
Antenna, Horn	EMCO	3115	AHM	6/19/2012	24 mo
Antenna, Horn	ETS	3160-09	AIY	NCR	0 mo
Antenna, Biconilog	EMCO	3142	AXJ	5/16/2012	36 mo
Spectrum Analyzer	Agilent	E4440A	AAW	2/21/2013	24 mo

MEASUREMENT BANDWIDTHS

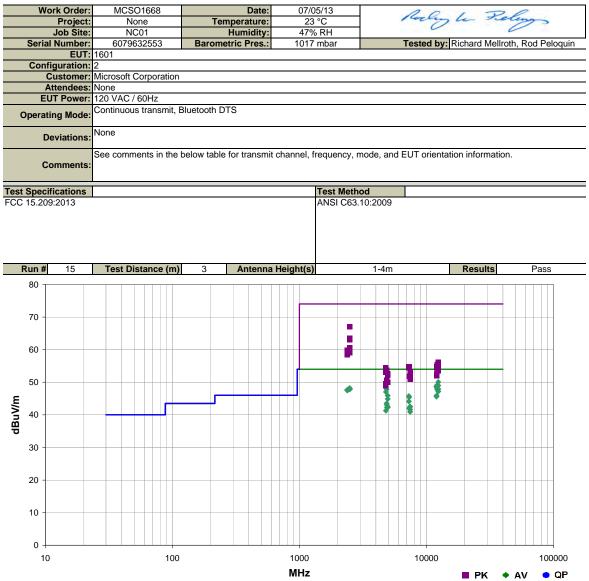
Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.



SPURIOUS RADIATED EMISSIONS



											+ AV	- -	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
12398.820	53.0	-2.9	1.2	307.0	3.0	0.0	Vert	AV	0.0	50.1	54.0	-3.9	High Ch. (2480 MHz), Adv, EUT Side
12128.820	52.3	-3.2	1.2	308.0	3.0	0.0	Vert	AV	0.0	49.1	54.0	-4.9	Mid Ch. (2426 MHz), Adv, EUT Side
12388.820	51.9	-2.9	1.2	320.0	3.0	0.0	Vert	AV	0.0	49.0	54.0	-5.0	High Ch. (2478 MHz), LE, EUT Side
12018.780	52.0	-3.2	1.2	309.0	3.0	0.0	Vert	AV	0.0	48.8	54.0	-5.2	Low Ch. (2404 MHz), LE, EUT Side
4803.767	40.4	8.2	1.1	7.0	3.0	0.0	Horz	AV	0.0	48.6	54.0	-5.4	Low Ch. (2402 MHz), Adv, EUT Side
12008.780	51.7	-3.2	1.2	308.0	3.0	0.0	Vert	AV	0.0	48.5	54.0	-5.5	Low Ch. (2402 MHz), Adv, EUT Side
2483.503	29.7	-1.5	1.2	282.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	High Ch. (2480 MHz), Adv, EUT Flat
2485.373	29.6	-1.5	1.2	270.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-5.9	High Ch. (2478 MHz), LE, EUT Side
2485.353	29.4	-1.5	1.2	198.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High Ch. (2478 MHz), LE, EUT Flat
2485.293	29.4	-1.5	1.2	181.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High Ch. (2480 MHz), Adv, EUT Side
2485.247	29.4	-1.5	1.2	99.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High Ch. (2478 MHz), LE, EUT Vert
2485.260	29.4	-1.5	1.2	195.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch. (2480 MHz), Adv, EUT Side
2484.750	29.4	-1.5	1.9	195.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch. (2478 MHz), LE, EUT Vert
2483.820	29.4	-1.5	2.8	252.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch. (2478 MHz), LE, EUT Flat
2483.727	29.4	-1.5	1.2	305.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High Ch. (2480 MHz), Adv, EUT Vert
2483.653	29.4	-1.5	1.2	276.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch. (2480 MHz), Adv, EUT Vert
2483.543	29.4	-1.5	1.2	176.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	High Ch. (2478 MHz), LE, EUT Side
2483.507	29.4	-1.5	2.9	293.0	3.0	20.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch. (2480 MHz), Adv, EUT Flat
12398.840	50.8	-2.9	1.3	269.0	3.0	0.0	Horz	AV	0.0	47.9	54.0	-6.1	High Ch. (2480 MHz), Adv, EUT Side
12198.840	51.0	-3.1	1.2	307.0	3.0	0.0	Vert	AV	0.0	47.9	54.0	-6.1	Mid Ch. (2440 MHz), LE, EUT Side
4851.817	39.6	8.3	1.1	8.0	3.0	0.0	Horz	AV	0.0	47.9	54.0	-6.1	Mid Ch. (2426 MHz), Adv, EUT Side
12128.780	51.0	-3.2	1.1	269.0	3.0	0.0	Horz	AV	0.0	47.8	54.0	-6.2	Mid Ch. (2426 MHz), Adv, EUT Side
12198.760	50.9	-3.1	1.1	271.0	3.0	0.0	Horz	AV	0.0	47.8	54.0	-6.2	Mid Ch. (2440 MHz), LE, EUT Side
2389.400	29.4	-1.8	1.2	350.0	3.0	20.0	Vert	AV	0.0	47.6	54.0	-6.4	Low Ch. (2404 MHz), LE, EUT Side
2388.743	29.4	-1.8	1.2	169.0	3.0	20.0	Horz	AV	0.0	47.6	54.0	-6.4	Low Ch. (2404 MHz), LE, EUT Flat
2388.410	29.4	-1.8	1.2	321.0	3.0	20.0	Vert	AV	0.0	47.6	54.0	-6.4	Low Ch. (2402 MHz), Adv, EUT Side
2388.197	29.4	-1.8	1.2	41.0	3.0	20.0	Horz	AV	0.0	47.6	54.0	-6.4	Low Ch. (2402 MHz), Adv, EUT Side

							Polarity/						
Freq	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	
(MHz) 2389.697	29.3	-1.8	1.2	202.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	Comments Low Ch. (2404 MHz), LE, EUT Side
2389.697	29.3	-1.8	1.2	129.0	3.0	20.0	Vert	AV	0.0	47.5	54.0	-6.5	Low Ch. (2402 MHz), Adv, EUT Flat
2388.957 2388.903	29.3 29.3	-1.8 -1.8	1.2 1.2	208.0 352.0	3.0 3.0	20.0 20.0	Horz Vert	AV AV	0.0 0.0	47.5 47.5	54.0 54.0	-6.5 -6.5	Low Ch. (2404 MHz), LE, EUT Vert Low Ch. (2404 MHz), LE, EUT Vert
2388.483	29.3	-1.8	1.2	336.0	3.0	20.0	Horz	AV	0.0	47.5	54.0	-6.5	Low Ch. (2402 MHz), Adv, EUT Flat
2388.430	29.3	-1.8	1.2	190.0	3.0	20.0	Vert	AV	0.0	47.5	54.0	-6.5	Low Ch. (2402 MHz), Adv, EUT Vert
2388.170 2388.040	29.3 29.3	-1.8 -1.8	1.2 1.2	338.0 43.0	3.0 3.0	20.0 20.0	Horz Vert	AV AV	0.0 0.0	47.5 47.5	54.0 54.0	-6.5 -6.5	Low Ch. (2402 MHz), Adv, EUT Vert Low Ch. (2404 MHz), LE, EUT Flat
12388.780	50.1	-2.9	1.2	266.0	3.0	0.0	Horz	AV	0.0	47.2	54.0	-6.8	High Ch. (2478 MHz), LE, EUT Side
2483.510 4807.842	48.5 38.8	-1.5 8.2	1.2 1.3	282.0 36.0	3.0 3.0	20.0 0.0	Vert Horz	PK AV	0.0 0.0	67.0 47.0	74.0 54.0	-7.0 -7.0	High Ch. (2480 MHz), Adv, EUT Flat Low Ch. (2404 MHz), LE, EUT Side
12008.780	49.1	-3.2	1.2	272.0	3.0	0.0	Horz	AV	0.0	45.9	54.0	-8.1	Low Ch. (2402 MHz), Adv, EUT Side
4959.925 7277.367	37.3 33.6	8.6 12.1	1.2 1.2	22.0 271.0	3.0 3.0	0.0 0.0	Horz Horz	AV AV	0.0 0.0	45.9 45.7	54.0 54.0	-8.1 -8.3	High Ch. (2480 MHz), Adv, EUT Side Mid Ch. (2426 MHz), Adv, EUT Side
12018.780	48.8	-3.2	1.2	269.0	3.0	0.0	Horz	AV	0.0	45.6	54.0	-8.4	Low Ch. (2404 MHz), LE, EUT Side
7319.325	33.0	12.4	1.1	296.0	3.0	0.0	Horz	AV	0.0	45.4	54.0	-8.6	Mid Ch. (2440 MHz), LE, EUT Side
4955.900 7277.342	36.3 32.0	8.6 12.1	1.2 1.2	3.0 0.0	3.0 3.0	0.0 0.0	Horz Vert	AV AV	0.0 0.0	44.9 44.1	54.0 54.0	-9.1 -9.9	High Ch. (2478 MHz), LE, EUT Side Mid Ch. (2426 MHz), Adv, EUT Side
2484.967	45.0	-1.5	1.2	270.0	3.0	20.0	Horz	PK	0.0	63.5	74.0	-10.5	High Ch. (2478 MHz), LE, EUT Side
4851.817 4879.875	35.2 34.7	8.3 8.3	1.2 1.2	306.0 3.0	3.0 3.0	0.0 0.0	Vert Horz	AV AV	0.0 0.0	43.5 43.0	54.0 54.0	-10.5 -11.0	Mid Ch. (2426 MHz), Adv, EUT Side Mid Ch. (2440 MHz), LE, EUT Side
2483.527	44.5	-1.5	1.2	276.0	3.0	20.0	Horz	PK	0.0	63.0	74.0	-11.0	High Ch. (2480 MHz), Adv, EUT Vert
7439.408 4956.017	29.6 33.9	12.9 8.6	1.2 1.2	295.0 346.0	3.0 3.0	0.0 0.0	Horz Vert	AV AV	0.0 0.0	42.5 42.5	54.0 54.0	-11.5 -11.5	High Ch. (2480 MHz), Adv, EUT Side High Ch. (2478 MHz), LE, EUT Side
7433.433	29.5	12.9	1.2	295.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.6	High Ch. (2478 MHz), LE, EUT Side
4959.967	33.7	8.6	1.2	346.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High Ch. (2480 MHz), Adv, EUT Side
4879.900 7319.450	33.9 29.6	8.3 12.4	1.2 1.2	309.0 305.0	3.0 3.0	0.0 0.0	Vert Vert	AV AV	0.0 0.0	42.2 42.0	54.0 54.0	-11.8 -12.0	Mid Ch. (2440 MHz), LE, EUT Side Mid Ch. (2440 MHz), LE, EUT Side
7433.317	28.7	12.9	1.2	299.0	3.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	High Ch. (2478 MHz), LE, EUT Side
4803.925 7439.258	33.1 28.0	8.2 12.9	1.2 1.2	307.0 34.0	3.0 3.0	0.0 0.0	Vert Vert	AV AV	0.0 0.0	41.3 40.9	54.0 54.0	-12.7 -13.1	Low Ch. (2402 MHz), Adv, EUT Side High Ch. (2480 MHz), Adv, EUT Side
2483.610	42.0	-1.5	1.2	181.0	3.0	20.0	Vert	PK	0.0	60.5	74.0	-13.5	High Ch. (2480 MHz), Adv, EUT Side
4807.850	32.2	8.2	1.2	240.0	3.0	0.0	Vert	AV	0.0	40.4	54.0	-13.6	Low Ch. (2404 MHz), LE, EUT Side
2485.050 2389.577	41.4 41.6	-1.5 -1.8	1.9 1.2	195.0 321.0	3.0 3.0	20.0 20.0	Horz Vert	PK PK	0.0 0.0	59.9 59.8	74.0 74.0	-14.1 -14.2	High Ch. (2478 MHz), LE, EUT Vert Low Ch. (2402 MHz), Adv, EUT Side
2484.850	41.3	-1.5	2.9	293.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2	High Ch. (2480 MHz), Adv, EUT Flat
2484.667 2483.553	41.0 41.0	-1.5 -1.5	1.2 1.2	195.0 176.0	3.0 3.0	20.0 20.0	Horz Vert	PK PK	0.0 0.0	59.5 59.5	74.0 74.0	-14.5 -14.5	High Ch. (2480 MHz), Adv, EUT Side High Ch. (2478 MHz), LE, EUT Side
2484.027	40.8	-1.5	1.2	305.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	High Ch. (2480 MHz), Adv, EUT Vert
2389.917 2389.157	40.9 40.9	-1.8 -1.8	1.2 1.2	43.0 350.0	3.0 3.0	20.0 20.0	Vert Vert	PK PK	0.0 0.0	59.1 59.1	74.0 74.0	-14.9 -14.9	Low Ch. (2404 MHz), LE, EUT Flat Low Ch. (2404 MHz), LE, EUT Side
2388.330	40.9	-1.8	1.2	336.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	Low Ch. (2402 MHz), Adv, EUT Flat
2484.760	40.6	-1.5	2.8	252.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	High Ch. (2478 MHz), LE, EUT Flat
2483.680 2389.397	40.6 40.8	-1.5 -1.8	1.2 1.2	198.0 202.0	3.0 3.0	20.0 20.0	Vert Horz	PK PK	0.0 0.0	59.1 59.0	74.0 74.0	-14.9 -15.0	High Ch. (2478 MHz), LE, EUT Flat Low Ch. (2404 MHz), LE, EUT Side
2483.710	40.5	-1.5	1.2	99.0	3.0	20.0	Vert	PK	0.0	59.0	74.0	-15.0	High Ch. (2478 MHz), LE, EUT Vert
2389.327 2388.227	40.7 40.7	-1.8 -1.8	1.2 1.2	338.0 190.0	3.0 3.0	20.0 20.0	Horz Vert	PK PK	0.0 0.0	58.9 58.9	74.0 74.0	-15.1 -15.1	Low Ch. (2402 MHz), Adv, EUT Vert Low Ch. (2402 MHz), Adv, EUT Vert
2388.103	40.7	-1.8	1.2	352.0	3.0	20.0	Vert	PK	0.0	58.9	74.0	-15.1	Low Ch. (2404 MHz), LE, EUT Vert
2389.993 2389.157	40.4 40.4	-1.8 -1.8	1.2 1.2	129.0 41.0	3.0 3.0	20.0 20.0	Vert Horz	PK PK	0.0 0.0	58.6 58.6	74.0 74.0	-15.4 -15.4	Low Ch. (2402 MHz), Adv, EUT Flat Low Ch. (2402 MHz), Adv, EUT Side
2388.050	40.4	-1.8	1.2	208.0	3.0	20.0	Horz	PK	0.0	58.6	74.0	-15.4	Low Ch. (2404 MHz), LE, EUT Vert
2388.583 12401.380	40.1 59.0	-1.8 -2.9	1.2 1.2	169.0 307.0	3.0 3.0	20.0 0.0	Horz Vert	PK PK	0.0 0.0	58.3 56.1	74.0 74.0	-15.7 -17.9	Low Ch. (2404 MHz), LE, EUT Flat
12401.380	59.0 58.5	-2.9	1.2	307.0	3.0	0.0	Vert	PK	0.0	55.3	74.0	-17.9	High Ch. (2480 MHz), Adv, EUT Side Mid Ch. (2426 MHz), Adv, EUT Side
12391.330	58.1	-2.9	1.2	320.0	3.0	0.0	Vert	PK	0.0	55.2	74.0	-18.8	High Ch. (2478 MHz), LE, EUT Side
7321.083 12021.370	42.4 58.0	12.4 -3.2	1.1 1.2	296.0 309.0	3.0 3.0	0.0 0.0	Horz Vert	PK PK	0.0 0.0	54.8 54.8	74.0 74.0	-19.2 -19.2	Mid Ch. (2440 MHz), LE, EUT Side Low Ch. (2404 MHz), LE, EUT Side
7277.067	42.6	12.1	1.2	271.0	3.0	0.0	Horz	PK	0.0	54.7	74.0	-19.3	Mid Ch. (2426 MHz), Adv, EUT Side
12008.680 7277.208	57.7 42.3	-3.2 12.1	1.2 1.2	308.0 0.0	3.0 3.0	0.0 0.0	Vert Vert	PK PK	0.0 0.0	54.5 54.4	74.0 74.0	-19.5 -19.6	Low Ch. (2402 MHz), Adv, EUT Side Mid Ch. (2426 MHz), Adv, EUT Side
4803.700	46.2	8.2	1.1	7.0	3.0	0.0	Horz	PK	0.0	54.4	74.0	-19.6	Low Ch. (2402 MHz), Adv, EUT Side
12201.360 12128.670	57.4 57.4	-3.1 -3.2	1.1 1.1	271.0 269.0	3.0 3.0	0.0 0.0	Horz Horz	PK PK	0.0 0.0	54.3 54.2	74.0 74.0	-19.7 -19.8	Mid Ch. (2440 MHz), LE, EUT Side Mid Ch. (2426 MHz), Adv, EUT Side
12128.670	57.4 57.0	-3.2 -2.9	1.1	269.0 269.0	3.0	0.0	Horz	PK	0.0	54.2 54.1	74.0	-19.8 -19.9	High Ch. (2426 MHz), Adv, EUT Side
12198.690	57.2	-3.1	1.2	307.0	3.0	0.0	Vert	PK	0.0	54.1	74.0	-19.9	Mid Ch. (2440 MHz), LE, EUT Side
4851.783 12391.330	45.5 56.5	8.3 -2.9	1.1 1.2	8.0 266.0	3.0 3.0	0.0 0.0	Horz Horz	PK PK	0.0 0.0	53.8 53.6	74.0 74.0	-20.2 -20.4	Mid Ch. (2426 MHz), Adv, EUT Side High Ch. (2478 MHz), LE, EUT Side
7433.158	40.1	12.9	1.2	295.0	3.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	High Ch. (2478 MHz), LE, EUT Side
4807.625 7434.817	44.8 39.9	8.2 12.9	1.3 1.2	36.0 299.0	3.0 3.0	0.0 0.0	Horz Vert	PK PK	0.0 0.0	53.0 52.8	74.0 74.0	-21.0 -21.2	Low Ch. (2404 MHz), LE, EUT Side High Ch. (2478 MHz), LE, EUT Side
4959.750	44.1	8.6	1.2	22.0	3.0	0.0	Horz	PK	0.0	52.7	74.0	-21.2	High Ch. (2480 MHz), Adv, EUT Side
12008.780	55.7	-3.2	1.2	272.0	3.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	Low Ch. (2402 MHz), Adv, EUT Side
7440.450 4956.592	39.5 43.5	12.9 8.6	1.2 1.2	295.0 3.0	3.0 3.0	0.0 0.0	Horz Horz	PK PK	0.0 0.0	52.4 52.1	74.0 74.0	-21.6 -21.9	High Ch. (2480 MHz), Adv, EUT Side High Ch. (2478 MHz), LE, EUT Side
12018.770	55.2	-3.2	1.2	269.0	3.0	0.0	Horz	PK	0.0	52.0	74.0	-22.0	Low Ch. (2404 MHz), LE, EUT Side
7318.800 7439.658	39.4 38.0	12.4 12.9	1.2 1.2	305.0 34.0	3.0 3.0	0.0 0.0	Vert Vert	PK PK	0.0 0.0	51.8 50.9	74.0 74.0	-22.2 -23.1	Mid Ch. (2440 MHz), LE, EUT Side High Ch. (2480 MHz), Adv, EUT Side
4851.367	42.4	8.3	1.2	306.0	3.0	0.0	Vert	PK	0.0	50.7	74.0	-23.3	Mid Ch. (2426 MHz), Adv, EUT Side
4880.633	42.3	8.3 8.6	1.2 1.2	3.0 346.0	3.0 3.0	0.0	Horz Vert	PK PK	0.0	50.6	74.0 74.0	-23.4 -23.9	Mid Ch. (2440 MHz), LE, EUT Side
4960.733 4955.458	41.5 41.5	8.6 8.6	1.2	346.0 346.0	3.0 3.0	0.0 0.0	Vert	PK	0.0 0.0	50.1 50.1	74.0 74.0	-23.9 -23.9	High Ch. (2480 MHz), Adv, EUT Side High Ch. (2478 MHz), LE, EUT Side
4880.517	41.7	8.3	1.2	309.0	3.0	0.0	Vert	PK	0.0	50.0	74.0	-24.0	Mid Ch. (2440 MHz), LE, EUT Side
4804.717 4807.575	41.3 40.8	8.2 8.2	1.2 1.2	307.0 240.0	3.0 3.0	0.0 0.0	Vert Vert	PK PK	0.0 0.0	49.5 49.0	74.0 74.0	-24.5 -25.0	Low Ch. (2402 MHz), Adv, EUT Side Low Ch. (2404 MHz), LE, EUT Side
		5.2			2.0	2.0			2.0			_0.0	

EMC

Powerline Conducted Emissions

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

MODES OF OPERATION

Transmitting Bluetooth LE

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MCSO1668 - 3

SAMPLE CALCULATIONS

Conducted Emissions: Adjusted Level = Measured Level + Transducer Factor + Cable Attenuation Factor + External Attenuator

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
High Pass Filter	TTE	H97-100K-50-720B	HHF	2/1/2012	24 mo
NC01 Cables	N/A	Conducted / NF Probe Cable	NC4	12/14/2012	12 mo
LISN	Solar	9252-50-R-24-BNC	LIM	1/16/2013	12 mo
Receiver	Rohde & Schwarz	ESCI	ARE	5/30/2013	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0
N			· · · · · · · · · · · · · · · · · · ·

Measurements were made using the bandwidths and detectors specified. No video filter was used.

TEST DESCRIPTION

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



Powerline Conducted Emissions

Work O		MCSO1668	Date:	07/08/13	10	1 -	0
	oject:	None	Temperature:	23 °C	Hoch	ghe Re	lings
	Site:	NC05	Humidity:	49% RH			
Serial Nur		6079632553	Barometric Pres.:	1018 mbar	Tested b	y: Richard Mellrot	th, Rod Peloqu
	EUT: 1						
Configura	ation: 3						
		Aicrosoft Corporation	n				
	dees: N						
EUT P		10VAC/60Hz					
Operating N	Node:	Fransmitting Blueto	oth LE				
Deviat	tions:	Vone					
Comm		DTS Advertising, Lo	w Channel 2402 MHz				
est Specificat				Test Meth			
CC 15.207:20	13			ANSI C63.	10:2009		
Run #	52	Line	High Line	Ext. Attenuation:	20	Results	Pass
						• • • • •	Pass
		Line eak Data - vs - Qua			20 Iverage Data - vs -	• • • • •	Pass
Q				A		• • • • •	Pass
Q 100				100		• • • • •	Pass
Q 100 90				100 90		• • • • •	Pass
Q 100 90 80				100 90 80		• • • • •	Pass
Q 100 90 80 70 60				100 90 80 70 60		• • • • •	Pass
Q 100 90 80 70 60 50				A 100 90 80 70 60 50 50		• • • • •	Pass
				100 90 80 70 60		• • • • •	Pass
		eak Data - vs - Qua		A 100 90 80 70 60 50 50		• • • • •	Pass
				A 100 90 80 70 60 60 40 40	verage Data - vs -	Average Limit	Pass
C C C C C C C C C C C C C C C C C C C		eak Data - vs - Qua		A 100 90 80 70 60 50 40 30 20		Average Limit	Pass
C C C C C C C C C C C C C C C C C C C		eak Data - vs - Qua		A 100 90 80 70 60 50 40 30 20 10	verage Data - vs -	Average Limit	Pass
C C C C C C C C C C C C C C C C C C C		eak Data - vs - Qua		A 100 90 80 70 60 50 40 30 20 10 0	verage Data - vs -	Average Limit	Pass

	Quasi Pe	ak Data - v	s - Quasi P	eak Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	26.3	20.3	46.6	66.0	-19.4
0.162	23.6	20.3	43.9	65.4	-21.4
3.076	6.1	20.4	26.5	56.0	-29.5
3.140	5.7	20.4	26.1	56.0	-29.9
2.708	5.0	20.4	25.4	56.0	-30.6
1.412	0.2	20.3	20.5	56.0	-35.5

	Avera	ige Data - v	s - Average	e Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	10.7	20.3	31.0	56.0	-25.0
3.076	-0.6	20.4	19.8	46.0	-26.2
0.162	8.6	20.3	28.9	55.4	-26.4
3.140	-0.9	20.4	19.5	46.0	-26.5
2.708	-1.7	20.4	18.7	46.0	-27.3
1.412	-3.0	20.3	17.3	46.0	-28.7



Powerline Conducted Emissions

Work Order	MCC01669	Date:	07/00/40			
			07/08/13 23 °C	Roch	the Ren	lan
Project Job Site		Temperature: Humidity:	49% RH	- 0	7	0
Serial Number		Barometric Pres.:	1018 mbar		oy: Richard Mellrot	
	: 1601	Darometric Fres.	1010111041	Testeur		n, Nou Feloqui
Configuration						
	Microsoft Corporation	า				
Attendees		1				
	110VAC/60Hz					
Operating Mode	Transmitting Divetosi	th LE				
Deviations	None					
Comments	DTS Advertising, Lov	v Channel 2402 MHz				
st Specifications	i		Test	Method		
C 15.207:2013			ANS	C63.10:2009		
Run # 53	Line	Neutral	Ext. Attenua	tion: 20	Results	Pass
			Ext. Attenua			Pass
	Line: Peak Data - vs - Quas		Ext. Attenua	tion: 20 Average Data - vs -		Pass
Quasi						Pass
Quasi			100			Pass
Quasi			100 90 80			Pass
Quasi			100 90 80 70			Pass
Quasi 100 90 80 70 60			100 90 80 70 60			Pass
Quasi 100 90 80 70 60			100 90 80 70 60			Pass
Quasi 100 90 80 70 60 50			100 90 80 70 60 50			Pass
Quasi 100 90 80 70 60			100 90 80 70 60			Pass
Quasi 100 90 80 70 60 50	Peak Data - vs - Quas		100 90 80 70 60 50			Pass
Quasi 100 90 80 70 60 50 40 30	Peak Data - vs - Quas		100 90 80 70 60 50 40 30			Pass
Quasi	Peak Data - vs - Quas		100 90 80 70 60 50 40			Pass
Quasi 100 90 80 70 60 50 40 30	Peak Data - vs - Quas		100 90 80 70 60 50 40 30			Pass
Quasi	Peak Data - vs - Quas		100 90 80 70 60 50 40 30 20 10			Pass
Quasi 100 90 80 70 60 50 40 30 20	Peak Data - vs - Quas		100 90 80 70 60 50 40 30 20 10 0			

	Quasi Pe	ak Data - v	s - Quasi P	eak Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	26.0	20.3	46.3	66.0	-19.7
0.454	5.3	20.3	25.6	56.8	-31.2
2.876	4.3	20.4	24.7	56.0	-31.3
1.268	3.7	20.3	24.0	56.0	-32.0
0.644	1.9	20.2	22.1	56.0	-33.9
0.747	1.2	20.3	21.5	56.0	-34.6

	Avera	ige Data - v	rs - Average	Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	10.1	20.3	30.4	56.0	-25.6
0.454	0.4	20.3	20.7	46.8	-26.1
1.268	-0.7	20.3	19.6	46.0	-26.4
2.876	-0.9	20.4	19.5	46.0	-26.5
0.644	-1.6	20.2	18.6	46.0	-27.4
0.747	-2.3	20.3	18.0	46.0	-28.1



Powerline Conducted Emissions

Work Order:						
work order.	MCSO1668	Date:	07/08/13	\cap	1	
Project:		Temperature:	23 °C	MK		
Job Site:		Humidity:	49% RH	Une	1	
Serial Number:		Barometric Pres.:	1018 mbar	Tested b	y: Richard Mellro	th
	1601					
Configuration:	3					
	Microsoft Corporation	1				
Attendees:						
EUT Power:	110VAC/60Hz					
Operating Mode:		h LE				
Deviations	None					
	DTS Advertising, Mid	Channel 2426 MHz				
Comments						
st Specifications			Test Metho			
C 15.207:2013			ANSI C63.1	10:2009		
Run # 54	Line:	High Line	Ext. Attenuation:	20	Results	Pass
Quasi	Line: Peak Data - vs - Quas		A	20 verage Data - vs -		Pass
Quasi I			A 100			Pass
Quasi			A			Pass
Quasi I			A 100			Pass
Quasi I 100 90 80			100 90 80			Pass
Quasi			A100 90			Pass
Quasi I 100 90 80			100 90 80			Pass
Quasi I 100 90 80 70 60			A 100 90 80 70 60			Pass
Quasi I 100 90 80 70 60			A 100 90 80 70 60			Pass
Quasi I 100 90 80 70 60 50			A 100 90 80 70 60 2			Pass
Quasi I 100 90 80 70 60 50 40			A 100 90 80 70 60 50 40 40			Pass
Quasi I 100 90 80 70 60 50	Peak Data - vs - Quas		A 100 90 80 70 60 50 50	verage Data - vs -	Average Limit	Pass
Quasi I 100 90 80 70 60 50 40 30	Peak Data - vs - Quas		A 100 90 80 70 60 50 40 30 •••••••••••••••••••••••••••••••••	verage Data - vs -	Average Limit	Pass
Quasi I 100 90 80 70 60 50 40	Peak Data - vs - Quas		A 100 90 80 70 60 50 40 40	verage Data - vs -	Average Limit	Pass
Quasi I 100 90 80 70 60 50 40 30	Peak Data - vs - Quas		A 100 90 80 70 60 50 40 30 •••••••••••••••••••••••••••••••••	verage Data - vs -	Average Limit	Pass

0

100.0

	Quasi Pe	ak Data - v	s - Quasi P	eak Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	26.6	20.3	46.9	66.0	-19.1
2.868	6.9	20.4	27.3	56.0	-28.7
3.096	6.7	20.4	27.1	56.0	-28.9
3.060	6.0	20.4	26.4	56.0	-29.6
2.684	5.3	20.4	25.7	56.0	-30.3
0.855	1.8	20.3	22.1	56.0	-33.9

MHz

1.0

10.0

0

	Avera	ge Data - v	s - Average	e Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	10.8	20.3	31.1	56.0	-24.9
3.096	-0.2	20.4	20.2	46.0	-25.8
2.868	-0.3	20.4	20.1	46.0	-25.9
3.060	-0.8	20.4	19.6	46.0	-26.4
2.684	-1.5	20.4	18.9	46.0	-27.1
0.855	-1.9	20.3	18.4	46.0	-27.6

MHz

10.0

100.0

1.0



Powerline Conducted Emissions

	rder:	MCSO1668	Date:	07/08/13		10	1 -	20
	oject:	None	Temperature:	23 °C		Hoching	he R	elings
	Site:	NC05	Humidity:	49% RH				
Serial Nun		6079632553	Barometric Pres.:	1018 mba	ar	Tested by	: Richard Mellro	oth, Rod Peloqu
	EUT: 10							
Configura								
		licrosoft Corporatio	n					
	dees: N							
EUT Po		10VAC/60Hz						
Operating N	lode: T	ransmitting Bluetoo	oth LE					
Deviat	ions: N	lone						
Comm		TS Advertising, Mic	d Channel 2426 MHz					
t Specificat					t Method SI C63.10:20			
Run # 5	5	Line	: Neutral	Ext. Attenu	ation: 2	0	Results	Pass
-	uasi Pe	ak Data - vs - Qua	si Peak Limit		Averag	ge Data - vs - A	Average Limit	
				100				
100				100				
				90				
100								
100 90 80				90 80				
90				90				
100 90 80				90				
100 90 80 70 60				90				
100 90 80 70				90				
100 90 80 70 60 50				90				
100 90 80 70 60 50 40				90 80 70 60 50 40				
100 90 80 70 60 50				90 80 70 60 50				
100 90 80 70 60 50 40				90 80 70 60 50 40				
				90 80 70 60 50 40 30 20				
				90 80 70 60 50 40 30				

	Quasi Pe	ak Data - v	s - Quasi P	eak Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	26.3	20.3	46.6	66.0	-19.4
0.150	26.2	20.3	46.5	66.0	-19.5
0.457	5.4	20.3	25.7	56.7	-31.1
3.104	4.2	20.4	24.6	56.0	-31.4
1.084	2.1	20.3	22.4	56.0	-33.6
0.650	1.9	20.2	22.1	56.0	-33.9

MHz

	Avera	ige Data - v	vs - Average	Limit	
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.150	10.4	20.3	30.7	56.0	-25.3
0.150	10.3	20.3	30.6	56.0	-25.4
0.457	0.4	20.3	20.7	46.7	-26.1
3.104	-1.4	20.4	19.0	46.0	-27.0
1.084	-1.4	20.3	18.9	46.0	-27.1
0.650	-1.7	20.2	18.5	46.0	-27.5

MHz



Powerline Conducted Emissions

Attendees: Nor EUT Power: 110 Operating Mode: Train the second secon	crosoft Corporatio ne 0VAC/60Hz ansmitting Bluetoc ne		07/08/13 23 °C 49% RH 1018 mbar	Tested by:	Ic. Re	
Job Site: Serial Number: EUT: 160 Configuration: 3 Customer: Mic Attendees: Nor EUT Power: 110 Operating Mode: Trai Deviations: Nor Comments: DTS Comments: DTS 2 15.207:2013 Run # 56 Quasi Peak	6079632553 01 crosoft Corporatio ne 0VAC/60Hz ansmitting Bluetoc	Humidity: Barometric Pres.:	1018 mbar	Tested by:		
EUT: 160 Configuration: 3 Customer: Mic Attendees: Nor EUT Power: 110 Operating Mode: Trai Deviations: Nor Comments: DTS Comments: DTS t Specifications DTS 2 15.207:2013 Quasi Peak 100 0 90 0 <t< th=""><th>01 crosoft Corporatio ne 0VAC/60Hz ansmitting Bluetoc ne</th><th>h LE</th><th>Test Met</th><th>hod</th><th>Richard Mellrot</th><th>h, Rod Peloqu</th></t<>	01 crosoft Corporatio ne 0VAC/60Hz ansmitting Bluetoc ne	h LE	Test Met	hod	Richard Mellrot	h, Rod Peloqu
Configuration: 3 Customer: Mic Attendees: Nor EUT Power: 110 Derating Mode: Trai Deviations: Nor Comments: DTS Comments: DTS 2 15.207:2013	crosoft Corporatio ne 0VAC/60Hz ansmitting Bluetoc ne	h LE				
Customer: Mic Attendees: Nor EUT Power: 110 Operating Mode: Tra Deviations: Nor Comments: DTS Comments: 2 15.207:2013	ne 0VAC/60Hz ansmitting Bluetoc ne	h LE				
Customer: Mic Attendees: Nor EUT Power: 110 Operating Mode: Tra Deviations: Nor Comments: DTS Comments: 2 15.207:2013	ne 0VAC/60Hz ansmitting Bluetoc ne	h LE				
Attendees: Nor EUT Power: 110 Operating Mode: Trai Deviations: Nor Comments: DTS Comments: 2 15.207:2013	ne 0VAC/60Hz ansmitting Bluetoc ne	h LE				
EUT Power: 110 Operating Mode: Trai Deviations: Nor Comments: DTS Comments: DTS t Specifications DTS 2 15.207:2013 Quasi Peak 100 0 90 0 <td>0VAC/60Hz ansmitting Bluetoc ne</td> <th></th> <td></td> <td></td> <td></td> <td></td>	0VAC/60Hz ansmitting Bluetoc ne					
Operating Mode: Training Mode: Deviations: Nor Comments: DTS t Specifications DTS t Quasi Peak Deviation 100 Deviation 90 Deviation 80 Deviation 70 Deviation 80 Deviation 70 Deviation 80 Deviation 90 Deviation 80 Deviation 90 De	ansmitting Bluetoc ne					
Comments: DTS Comments: DTS t Specifications 2 15.207:2013 Run # 56 Quasi Peak		n Channel 2480 MHz				
Comments:	S Advertising, Hiç	n Channel 2480 MHz				
C 15.207:2013						
C 15.207:2013						
Run # 56 Quasi Peak				3.10:2009	-	
		High Line	Ext. Attenuation		Results	Pass
90 80 70 60 50 40 30	k Data - vs - Qua	i Peak Limit	100	Average Data - vs - Av	erage Limit	
			90			
60 50 40 30			80			
50 40 30			70			
40 30			60			
40 30						
30						
20			D 40			
20			40			
10			40			
0.1			40			

Quasi Peak Data - vs - Quasi Peak Limit									
Freq (MHz)	Amplitude (dBuV)	Compared to Spec. (dB)							
0.150	26.5	20.3	46.8	66.0	-19.2				
0.165	23.5	20.3	43.8	65.2	-21.4				
0.175	21.3	20.4	41.7	64.7	-23.1				
3.116	6.7	20.4	27.1	56.0	-28.9				
2.638	4.4	20.4	24.8	56.0	-31.2				
3.344	2.3	20.4	22.7	56.0	-33.3				

MHz

Average Data - vs - Average Limit									
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)				
0.150	11.0	20.3	31.3	56.0	-24.7				
3.116	-0.3	20.4	20.1	46.0	-25.9				
0.165	8.9	20.3	29.2	55.2	-26.0				
0.175	7.4	20.4	27.8	54.7	-27.0				
2.638	-2.1	20.4	18.3	46.0	-27.7				
3.344	-2.8	20.4	17.6	46.0	-28.4				

MHz



Powerline Conducted Emissions

Wor	rk Order:		Date:	07/08/13	10	1 72	0
	Project:		Temperature:	23 °C	rocking	Le Ren	ings
	Job Site:		Humidity:	49% RH		6	
Serial	Number:		Barometric Pres.:	1018 mbar	Tested by	: Richard Mellro	oth, Rod Peloqui
	EUT:	1601					
	guration:						
Cı	ustomer:	Microsoft Corporatio	n				
	tendees:						
EU.	T Power:	110VAC/60Hz					
Operatir	ng Mode:	Transmitting Bluetoc	oth LE				
De	viations:	None					
Co	mments:		gh Channel 2480 MHz				
	ications			Test Metho	bd		
st Specif	.2013			ANSI C63.	10:2009		
est Specif CC 15.207	.2013						
C 15.207		line	Neutral			Results	Pass
	57	Line	: Neutral	Ext. Attenuation:	20	Results	Pass
Run #	57 Quasi F	Deak Data - vs - Qua	· ·	Ext. Attenuation:			Pass
Run #	57		· ·	Ext. Attenuation:	20		Pass
Run #	57 Quasi F		· ·	Ext. Attenuation:	20		Pass

		N	1Hz	
0.1	1	1.0	10.0	100.0
0				
10				
20		~~~		
30	Munda			
40				
50	•			
60				
70				
80				

0.1				1.	0	м	IHz		10	.0				100.
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10							$\left \right $	+	+			+	_	
20		- 10 Cor	1000	ÖĊ	0	0								$\left \right $
30	-tillu	helle and			Nature 1	اللية وم					1.0.0			
40						-	+	+	+			-		\mathbb{H}
50		+		-		+		r				-		
60				-		-	-	+	+			-		
70						-		+	+			+	-	
80						_	\vdash	+	+			-		
90				+++		-	\vdash	+				+	-	$\left \right $

Quasi Peak Data - vs - Quasi Peak Limit									
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)				
0.150	26.2	20.3	46.5	66.0	-19.5				
0.829	3.6	20.3	23.9	56.0	-32.1				
2.932	3.3	20.4	23.7	56.0	-32.3				
1.092	1.9	20.3	22.2	56.0	-33.8				
2.404	1.8	20.4	22.2	56.0	-33.8				
0.968	1.8	20.3	22.1	56.0	-33.9				

Average Data - vs - Average Limit									
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)				
0.150	10.3	20.3	30.6	56.0	-25.4				
0.829	-1.0	20.3	19.3	46.0	-26.7				
1.092	-1.5	20.3	18.8	46.0	-27.2				
0.968	-1.6	20.3	18.7	46.0	-27.3				
2.932	-1.8	20.4	18.6	46.0	-27.4				
2.404	-3.2	20.4	17.2	46.0	-28.8				