



**Microsoft Corporation**  
**1516**

**Report #: MCSO1601.3**  
**FCC 15.247: 2012**  
**Bluetooth EDR Radio**



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – [www.nwemc.com](http://www.nwemc.com)

California – Minnesota – Oregon – New York – Washington

**Last Date of Test: August 9, 2012  
Microsoft Corporation  
Model: 1516**

**Emissions**

Test Description	Specification	Test Method	Pass/Fail
Channel Spacing	FCC 15.247:2012	ANSI C63.10:2009	Pass
Dwell Time	FCC 15.247:2012	ANSI C63.10:2009	Pass
Number of Hopping Frequencies	FCC 15.247:2012	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2012	ANSI C63.10:2009	Pass
Band Edge compliance	FCC 15.247:2012	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2012	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	Pass

**Deviations From Test Standards**

None

**Approved By:**



Tim O'Shea, Operations Manager



**NVLAP Lab Code: 200630-0**

**Test Facility**

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

Northwest EMC, Inc.  
22975 NW Evergreen Parkway, Suite 400  
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

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

## Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

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## 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

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## Canada

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

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## 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.

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## Australia/New Zealand

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

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## Korea

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

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## Japan

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

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## 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.

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## Singapore

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

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## Hong Kong

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

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## Vietnam

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

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## Russia

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

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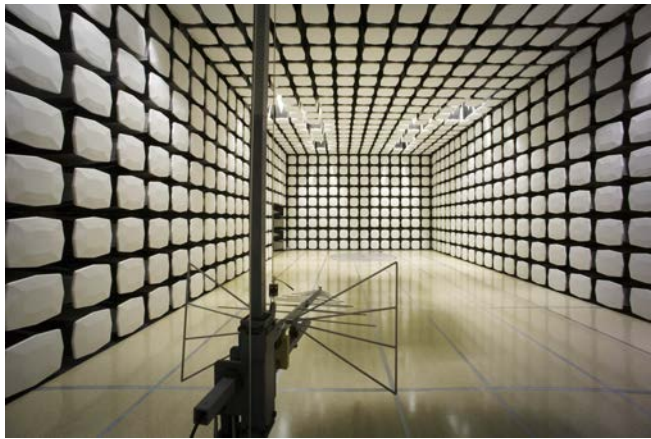
## SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>



<p><b>Oregon</b> Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066</p>	<p><b>California</b> Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918</p>	<p><b>New York</b> Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796</p>	<p><b>Minnesota</b> Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281</p>	<p><b>Washington</b> Labs SU01-SU07 14128 339<sup>th</sup> Ave. SE Sultan, WA 98294 (360) 793-8675</p>
<b>VCCI</b>				
A-0108	A-0029		A-0109	A-0110
<b>Industry Canada</b>				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1





WTD 12.5.23

# PRODUCT DESCRIPTION

## Client and Equipment Under Test (EUT) Information

<b>Company Name:</b>	Microsoft Corporation
<b>Address:</b>	One Microsoft Way
<b>City, State, Zip:</b>	Redmond, WA 98052-6399
<b>Test Requested By:</b>	Mike Boucher
<b>Model:</b>	1516
<b>First Date of Test:</b>	July 19, 2012
<b>Last Date of Test:</b>	August 9, 2012
<b>Receipt Date of Samples:</b>	July 16, 2012
<b>Equipment Design Stage:</b>	Production
<b>Equipment Condition:</b>	No Damage

## Information Provided by the Party Requesting the Test

<b>Functional Description of the EUT (Equipment Under Test):</b>
Tablet computer containing WLAN (802.11a/b/g/n, 2x2 MIMO) and Bluetooth (EDR, LE) radios
<b>Clocks and Oscillators of the EUT:</b>
None Provided
<b>Testing Objective:</b>
To demonstrate compliance of the Bluetooth EDR radio to FCC 15.247 frequency hopping requirements.



**Configuration MCSO1601- 1**

Software/Firmware Running during test	
Description	Version
BT_scripts	1.0

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Tablet	Microsoft	EV3BB-V24	000309122652

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Remote PC	Lenovo	L420	7854CT0

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC mains	Yes	1.0m	No	AC Mains	Tablet
USB adapter	Yes	.2m	No	Tablet	Ethernet CAT 5 Cable
Ethernet CAT 5 Cable	Yes	1.0m	No	USB adapter	Remote PC

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

**Configuration MCSO1608- 1**

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
1516 Sample 2	Microsoft	1516	000364122652

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Membrane Keyboard	Microsoft	Unknown	000759722151
AC Adapter	Microsoft	PA-1240-06MX	0D21005652219
USB Ethernet Adapter	Cisco	USB300M	CU906M310544
Earbuds	Microsoft	Unknown	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.5m	No	DC Power Supply	1516
Headphone	No	1.3m	No	1516	Earbuds
CAT-5e	No	3.0m	Yes	USB Ethernet Adapter	Ethernet Hub
USB	Yes	0.1m	No	USB Ethernet Adapter	1516
HDMI	Yes	1.0m	No	1516	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

## Configuration MCSO1608- 3

<b>EUT</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>
1516 Sample 4	Microsoft	1516	000215622952

<b>Peripherals in test setup boundary</b>			
<b>Description</b>	<b>Manufacturer</b>	<b>Model/Part Number</b>	<b>Serial Number</b>
Membrane Keyboard	Microsoft	Unknown	000759722151
AC Adapter	Microsoft	PA-1240-06MX	0D21005652219
USB Ethernet Adapter	Cisco	USB300M	CU906M310544
Earbuds	Microsoft	Unknown	None

<b>Cables</b>					
<b>Cable Type</b>	<b>Shield</b>	<b>Length (m)</b>	<b>Ferrite</b>	<b>Connection 1</b>	<b>Connection 2</b>
DC Power	No	1.5m	No	DC Power Supply	1516
Headphone	No	1.3m	No	1516	Earbuds
CAT-5e	No	3.0m	Yes	USB Ethernet Adapter	Ethernet Hub
USB	Yes	0.1m	No	USB Ethernet Adapter	1516
HDMI	Yes	1.0m	No	1516	Unterminated

**PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.**



## Configuration MCSO1602- 2

Software/Firmware Running during test	
Description	Version
BT_scripts	1.0

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Tablet	Microsoft Corporation	EV3BB-V24	000309122652

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
USB Ethernet Adapter	Cisco		
DC Power Supply	Topward Electric	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Digital Multi-Meter	Tektronix	DMM912	AL2807
Remote PC	Lenovo	L420	7854CT0

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.5m	No	DC Power Supply	1516
CAT-5e	No	3.0m	Yes	USB Ethernet Adapter	Ethernet Hub
USB	Yes	0.1m	No	USB Ethernet Adapter	1516

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

## Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/16/2012	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	7/20/2012	Channel Separation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	7/20/2012	Dwell Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	7/20/2012	Number of Hopping Channels	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	7/24/2012	Band Edge compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	8/8/2012	AC Power line Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	8/9/2012	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	8/9/2012	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

## Channel Spacing

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
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
e-Amplifier (FOR REFERENCE ONL	Hewlett-Packard	83017A	APL	NCR	0
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Or, if the output power is less than 125 mW, the channel separation can be 25 kHz or 2/3 of the 20dB bandwidth. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.

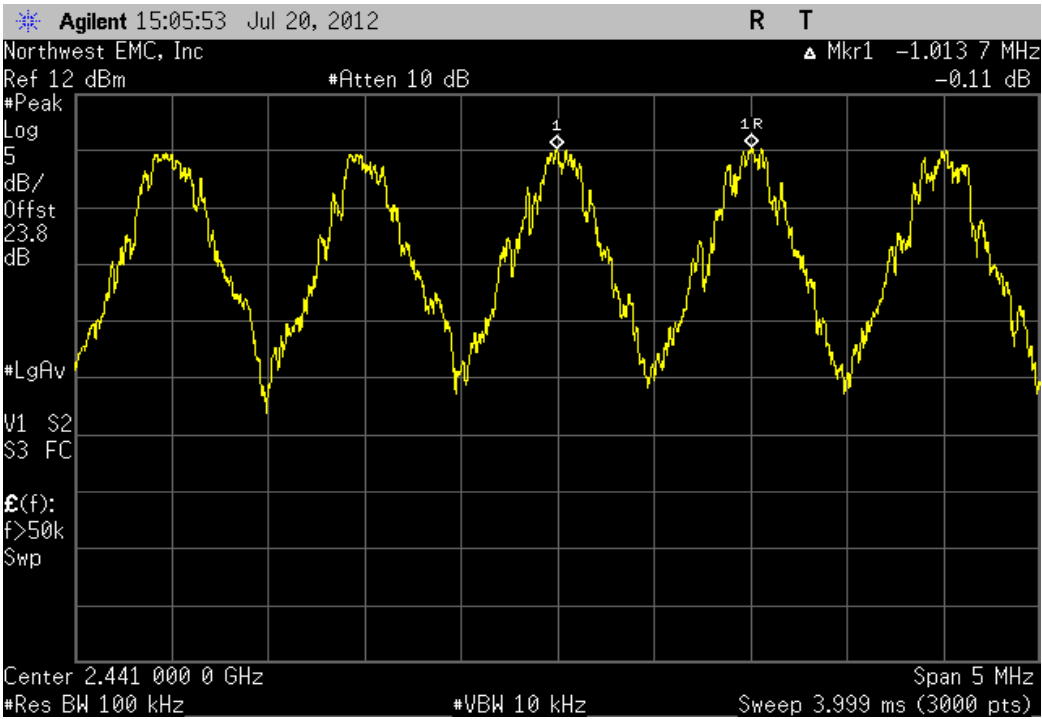


# Channel Spacing

EUT: 1516		Work Order: MCSO1601	
Serial Number: 000309122652		Date: 07/20/12	
Customer: Microsoft Corporation		Temperature: 24c°C	
Attendees: Mike Boucher		Humidity: 47%	
Project: None		Barometric Pres.: 1021	
Tested by: Brandon Hobbs		Power: 12VDC	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Only antenna port B was able to be tested in Bluetooth 2.4GHz transmit mode			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Paul Le Polys</i>	
		Value	Limit
DH5, GFSK		1.0 MHz	≥ 1 MHz
Mid Channel			Pass

DH5, GFSK, Mid Channel

Value	Limit	Result
1.0 MHz	≥ 1 MHz	Pass



## Dwell Time

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

### TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

The dwell time limit is based on the Number of Hopping Channels \* 400 mS. For Bluetooth this would be 79 Channels \* 400mS = 31.6 Sec.

On Time During 31.6 Sec = Pulse Width \* Average Number of Pulses \* Scale Factor

➤ Average Number of Pulses is based on 4 samples.

Scale Factor = 31.6 Sec / Screen Capture Sweep Time = 31.6 Sec / 6.32 Sec = 5



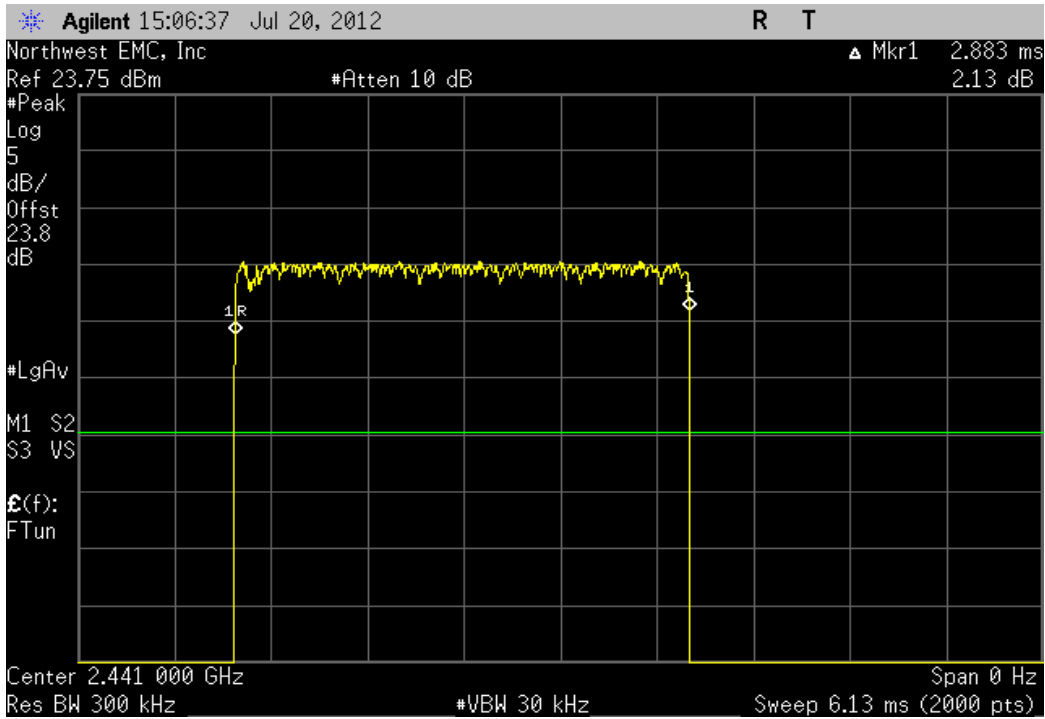


# Dwell Time

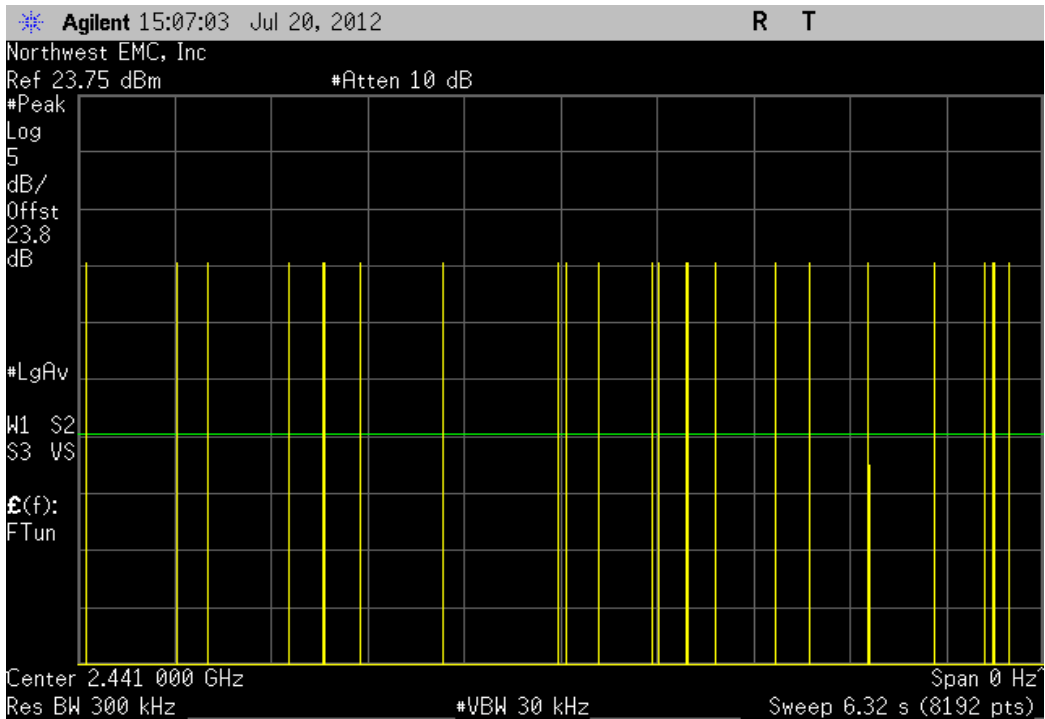
XMit 2012.05.09  
PsaTx 2012.05.24

EUT: 1516		Work Order: MSC01601	
Serial Number: 000309122652		Date: 07/20/12	
Customer: Microsoft Corporation		Temperature: 24c°C	
Attendees: Mike Boucher		Humidity: 47%	
Project: None		Barometric Pres.: 1021	
Tested by: Brandon Hobbs		Power: 12VDC	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Only antenna port B was able to be tested in Bluetooth 2.4GHz transmit mode			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Andy Le Polyn</i>	
		Pulse Width (mS)	Number of Pulses
		Average No. of Pulses	Scale Factor
		On Time (mS) During 31.6 S	Limit (mS)
			Result
<b>DH5, GFSK</b>			
	Mid Channel	2.883	N/A
	Mid Channel	N/A	21
	Mid Channel	N/A	24
	Mid Channel	N/A	22
	Mid Channel	N/A	18
	Mid Channel	2.883	N/A
			21.25
			5
			306.31875
			400
			Pass
<b>2DH5, 4-DQPSK</b>			
	Mid Channel	2.883	N/A
	Mid Channel	N/A	27
	Mid Channel	N/A	24
	Mid Channel	N/A	25
	Mid Channel	N/A	28
	Mid Channel	2.883	N/A
			26
			5
			374.79
			400
			Pass
<b>3DH5, 8-DPSK</b>			
	Mid Channel	2.886	N/A
	Mid Channel	N/A	25
	Mid Channel	N/A	29
	Mid Channel	N/A	21
	Mid Channel	N/A	20
	Mid Channel	2.886	N/A
			23.75
			5
			342.7125
			400
			Pass

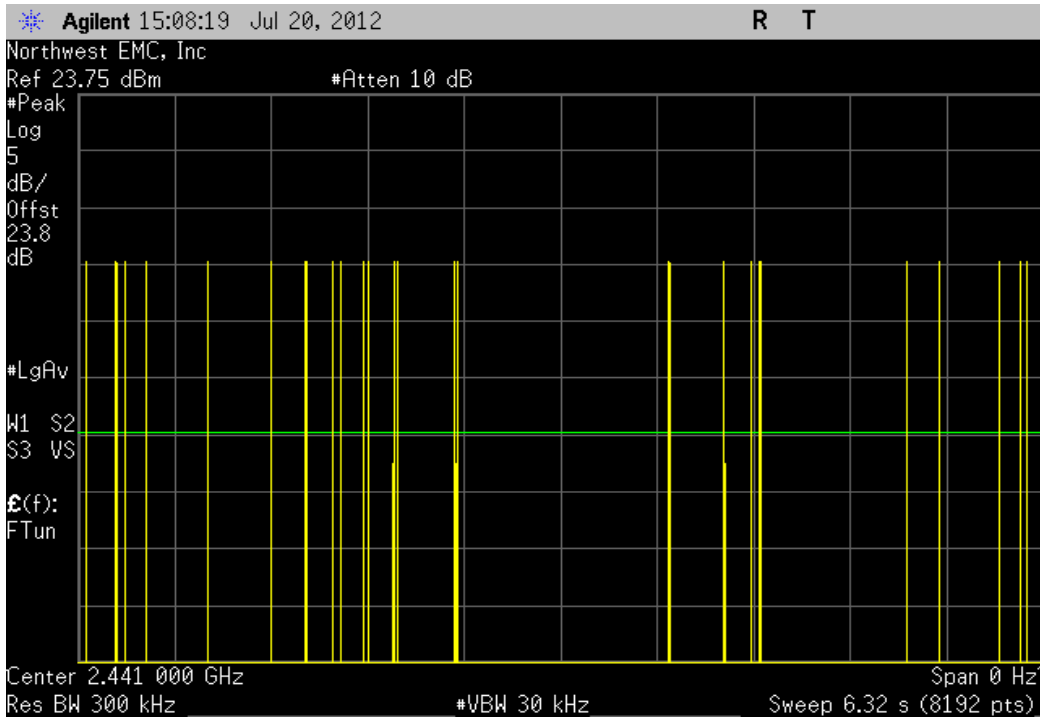
DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.883	N/A	N/A	N/A	N/A	N/A	N/A



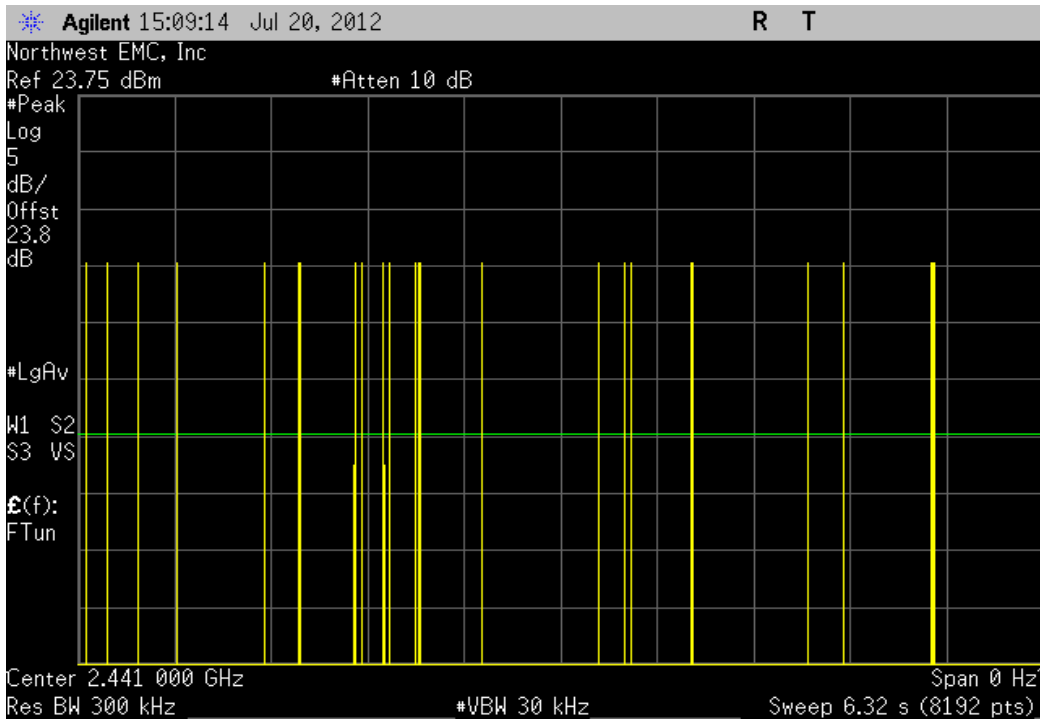
DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	21	N/A	N/A	N/A	N/A	N/A



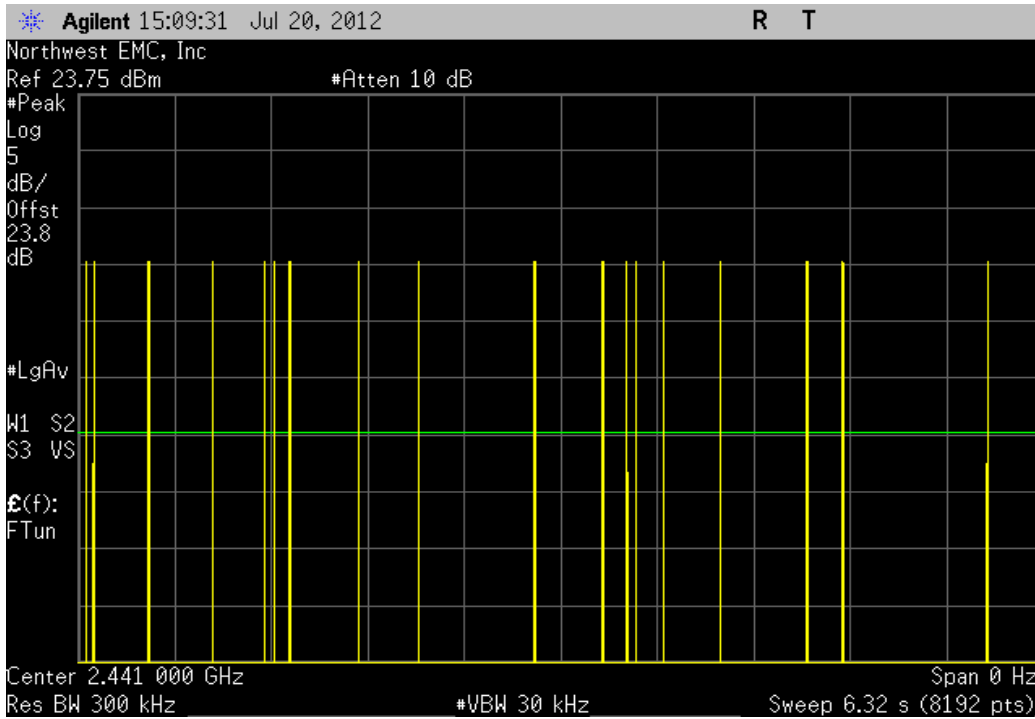
DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	24	N/A	N/A	N/A	N/A	N/A



DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A

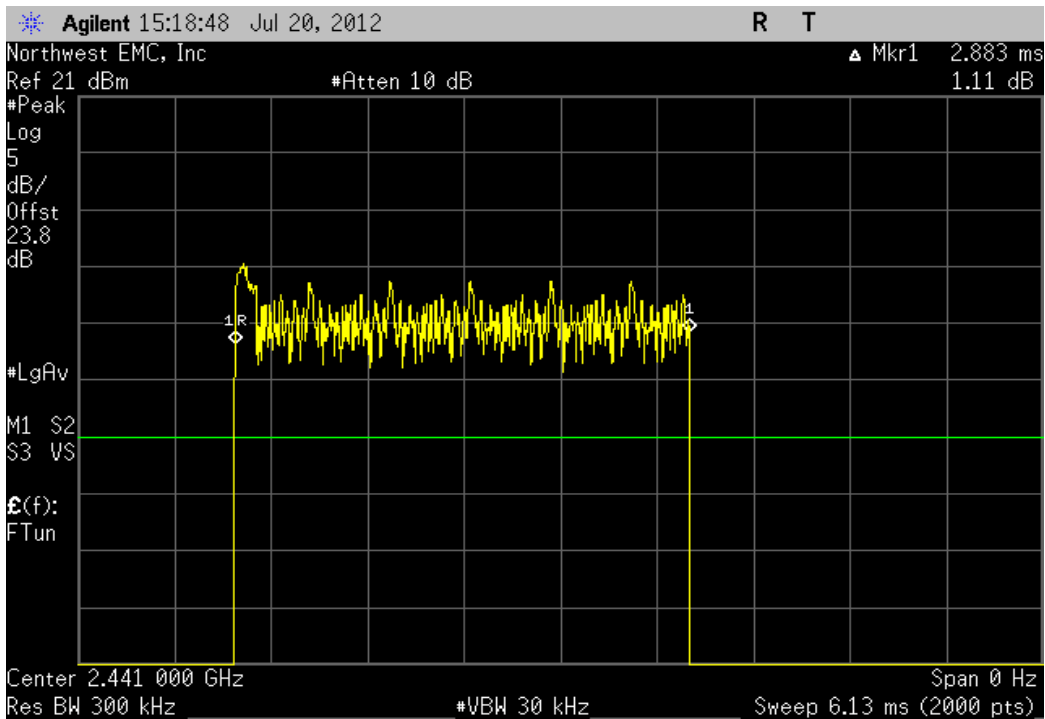


DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	18	N/A	N/A	N/A	N/A	N/A

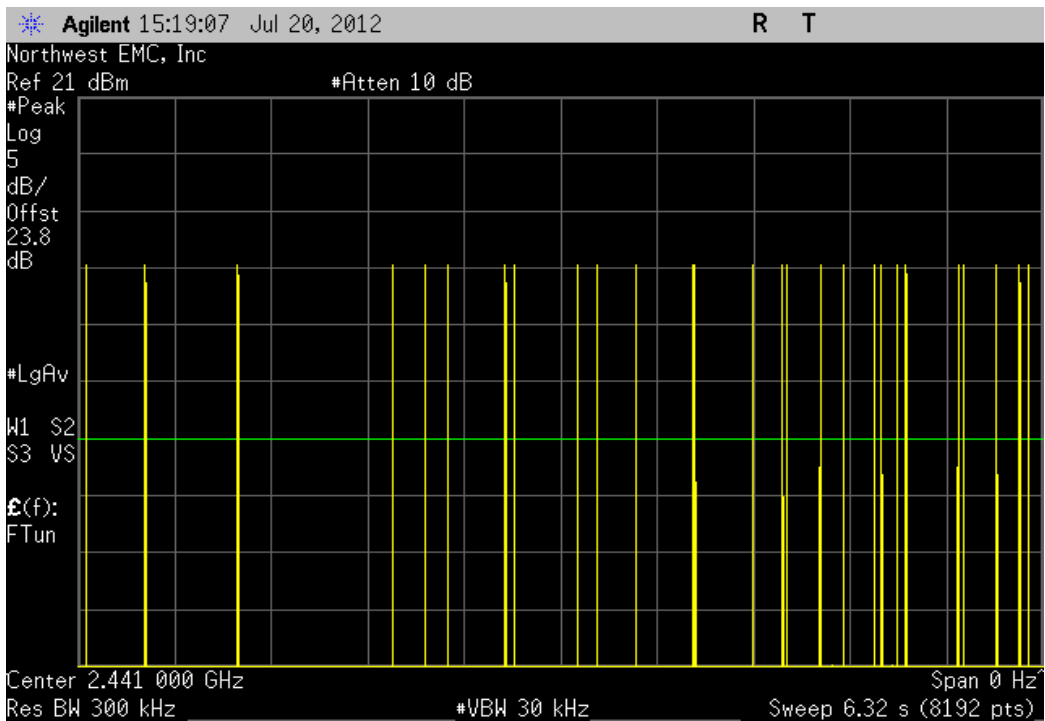


DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.883	N/A	21.25	5	306.31875	400	Pass

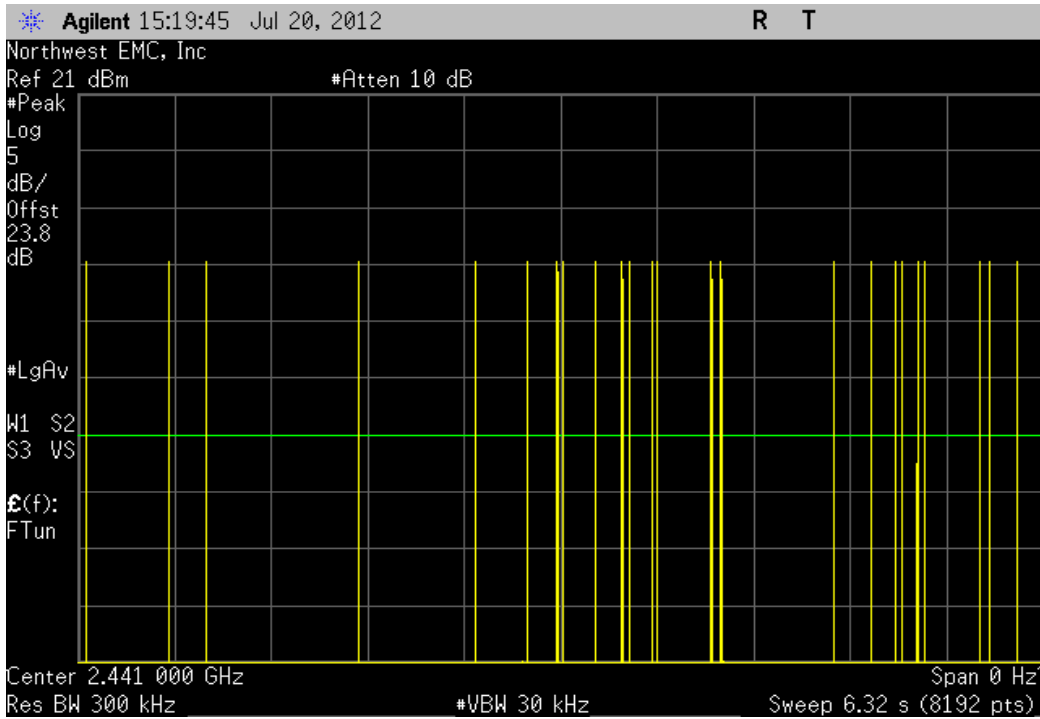
2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.883	N/A	N/A	N/A	N/A	N/A	N/A



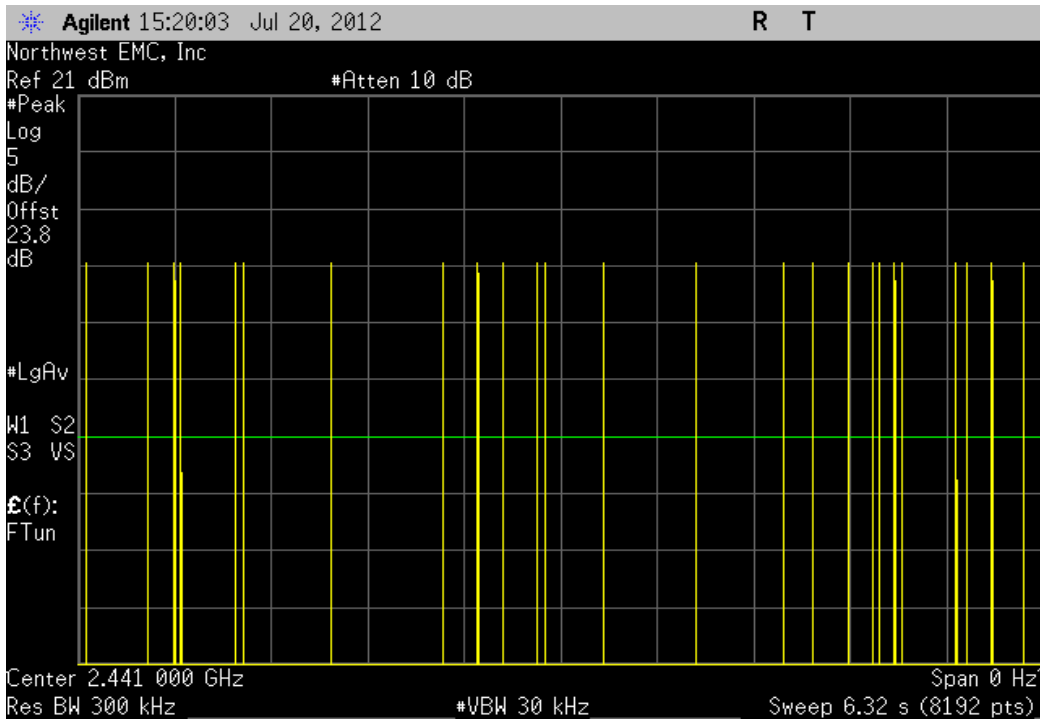
2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	27	N/A	N/A	N/A	N/A	N/A



2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	24	N/A	N/A	N/A	N/A	N/A

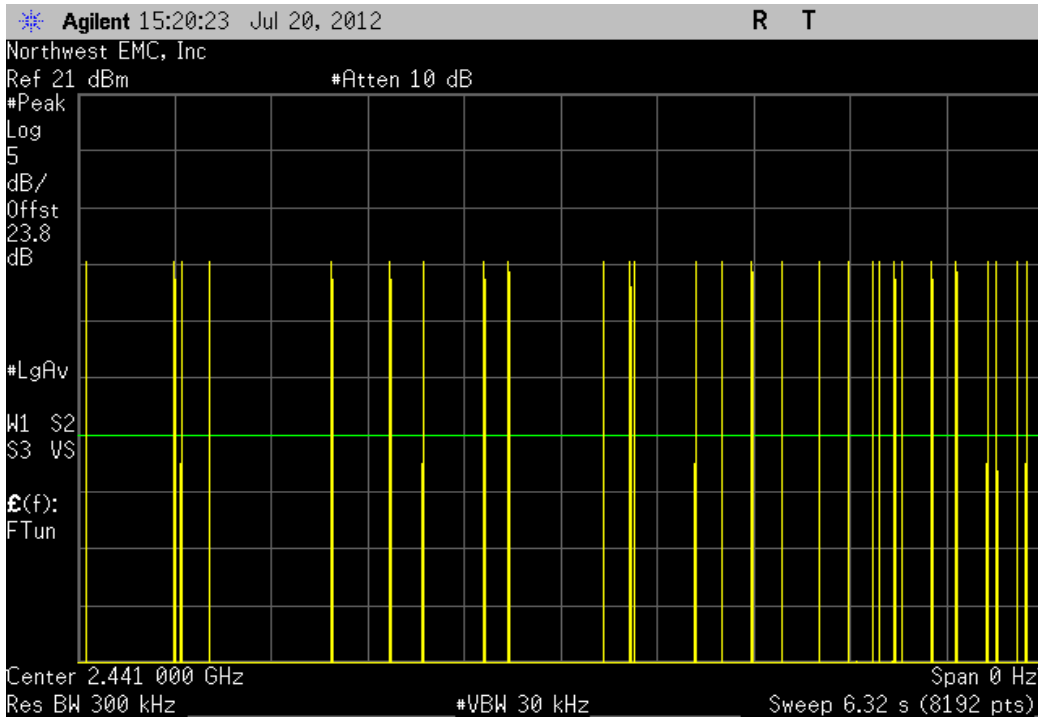


2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	25	N/A	N/A	N/A	N/A	N/A



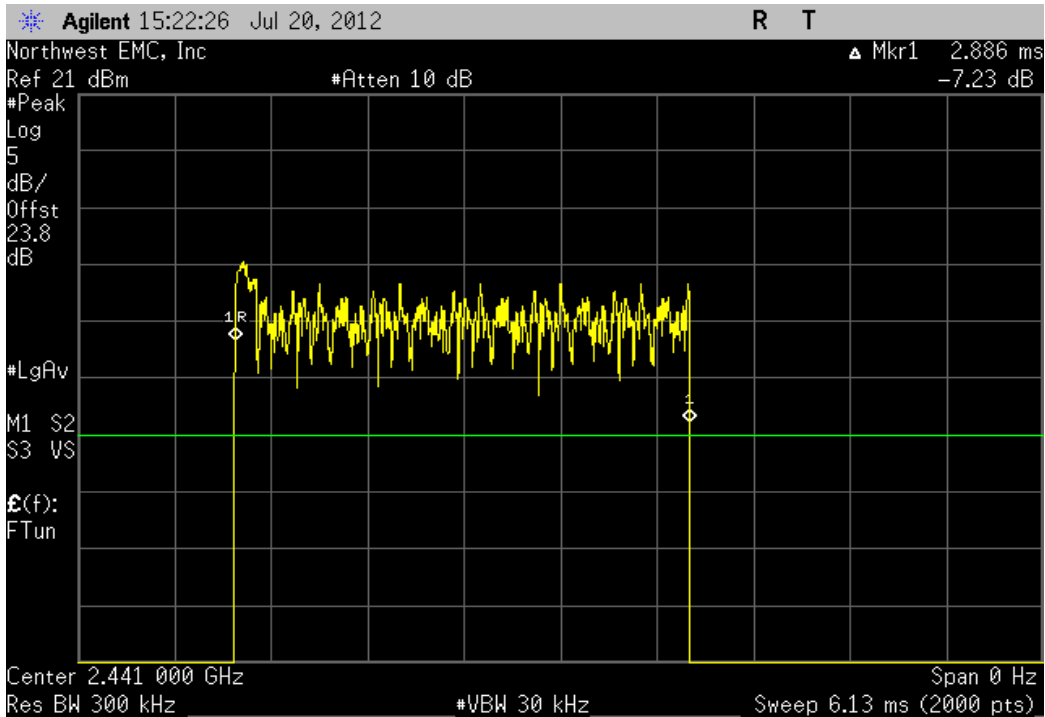


2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	28	N/A	N/A	N/A	N/A	N/A

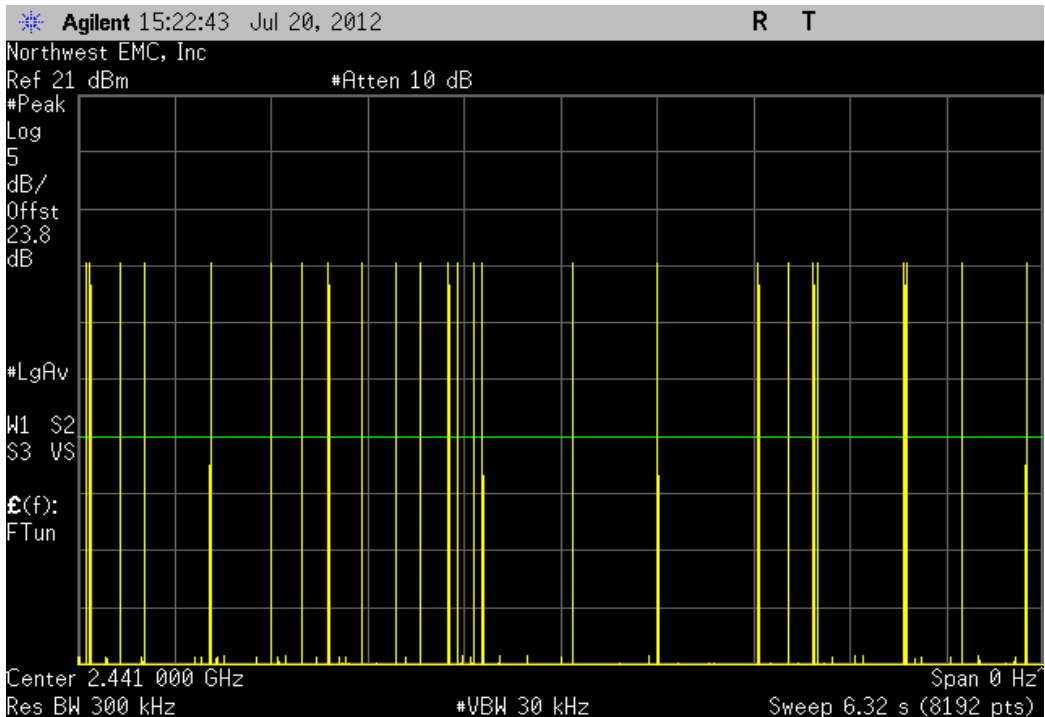


2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.883	N/A	26	5	374.79	400	Pass

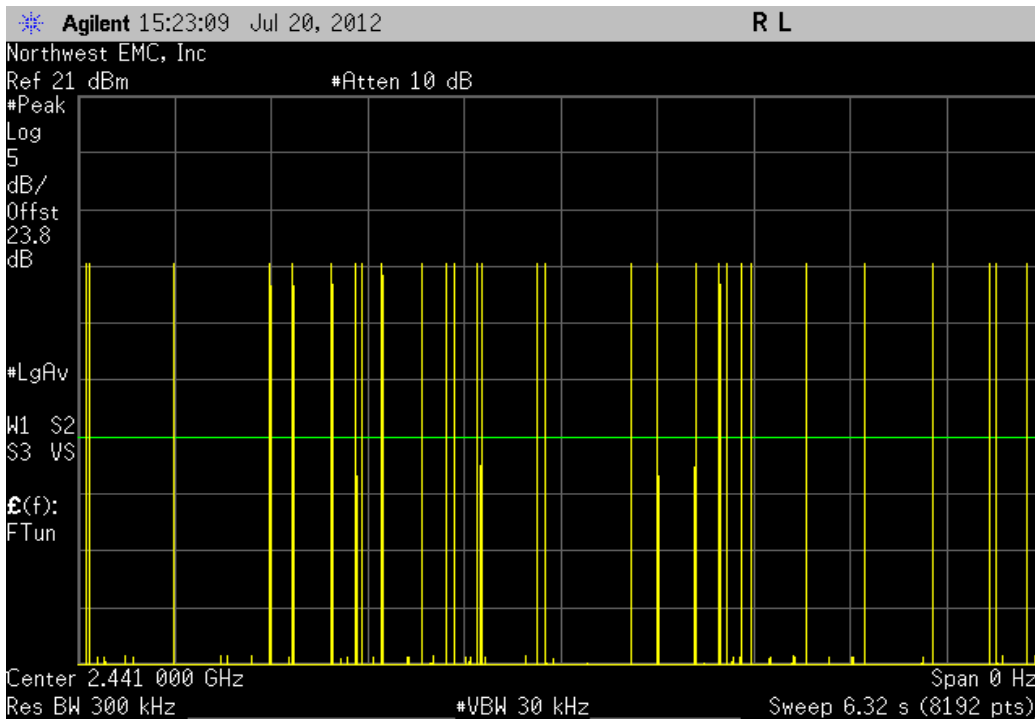
3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.886	N/A	N/A	N/A	N/A	N/A	N/A



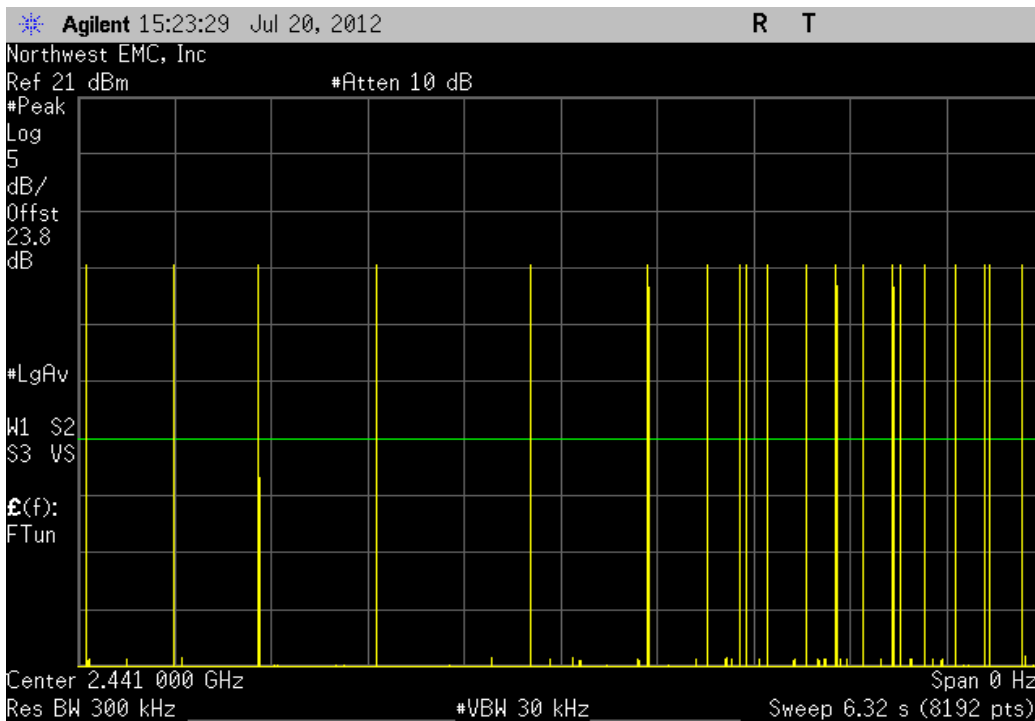
3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	25	N/A	N/A	N/A	N/A	N/A



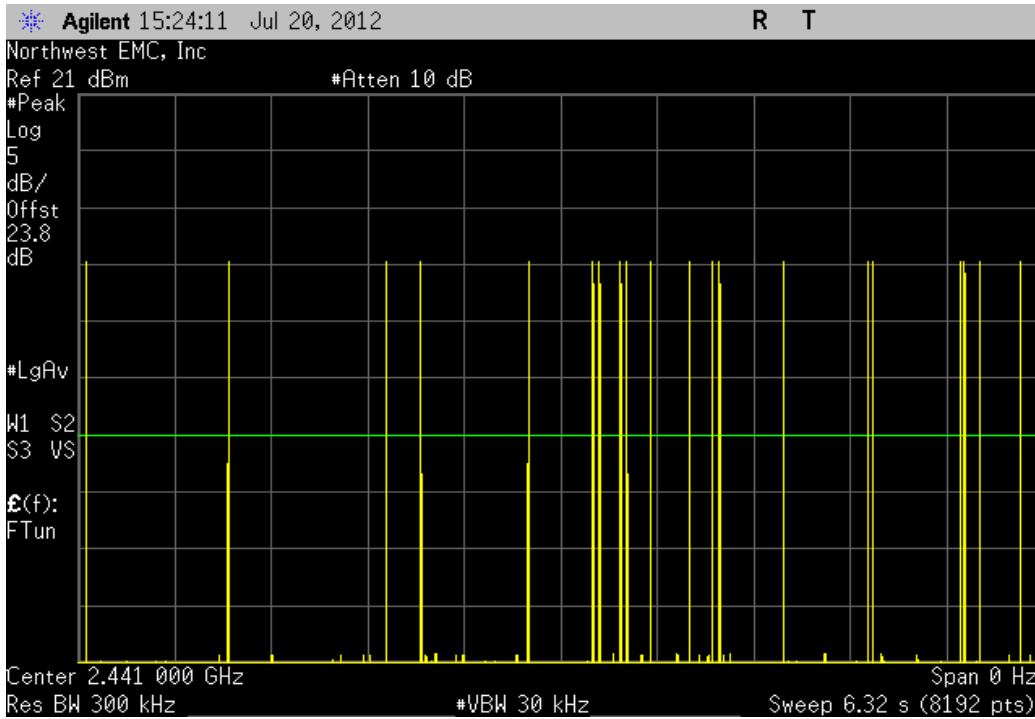
3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	29	N/A	N/A	N/A	N/A	N/A



3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	21	N/A	N/A	N/A	N/A	N/A



3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	20	N/A	N/A	N/A	N/A	N/A



3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.886	N/A	23.75	5	342.7125	400	Pass

## Number of Hopping Frequencies

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
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.



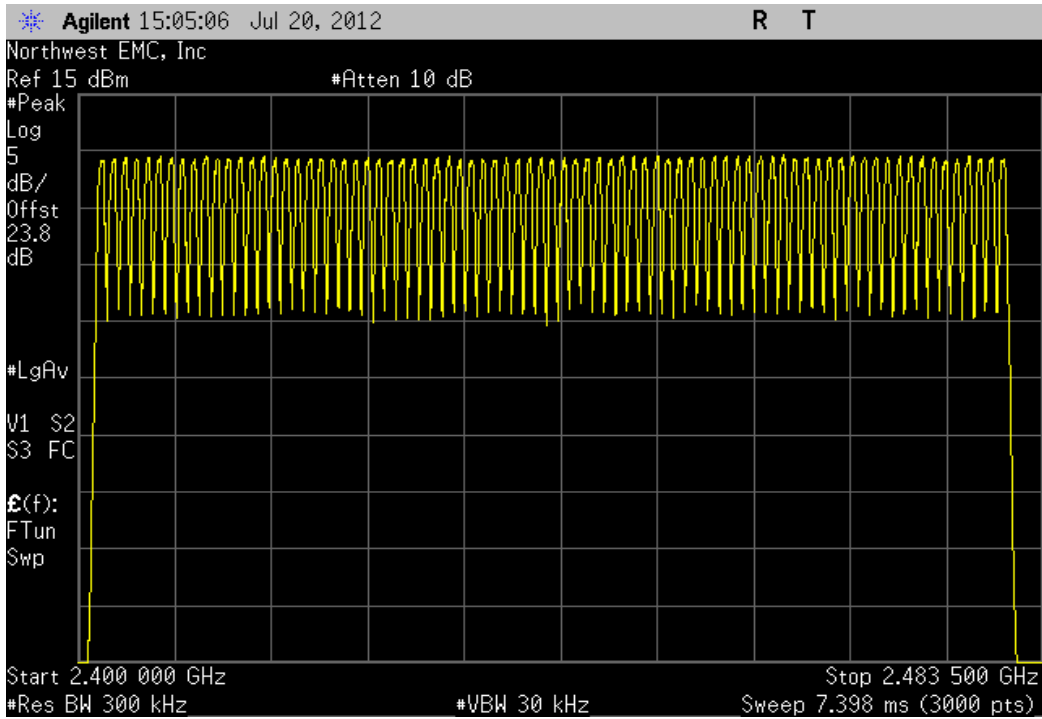
# Number of Hopping Frequencies

XMit 2012.05.09  
PsaTx 2012.05.24

EUT: 1516		Work Order: MCSO1601	
Serial Number: 000309122652		Date: 07/20/12	
Customer: Microsoft Corporation		Temperature: 24°C	
Attendees: Mike Boucher		Humidity: 47%	
Project: None		Barometric Pres.: 1021	
Tested by: Brandon Hobbs		Power: 12VDC	
		Job Site: EV06	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Only antenna port B was able to be tested in Bluetooth 2.4GHz transmit mode			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Roby Le Polign</i>	
		Number of Channels	Limit
DH5, GFSK	Mid Channel	79	≥ 15
			Result
			Pass



DH5, GFSK, Mid Channel				Number of Channels	Limit	Result
				79	≥ 15	Pass



## 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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
Multimeter	Tektronix	DMM912	MMH	1/28/2011	24
DC Power Supply	Topward	TPS-2000	TPD	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The occupied bandwidth was measured with the EUT 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 in a no-hop mode.



# Occupied Bandwidth

XMit 2012.07.31  
PsaTx 2012.08.06

EUT: 1516	Work Order: MCSO1602
Serial Number: 000309122652	Date: 08/09/12
Customer: Microsoft Corporation	Temperature: 24°C
Attendees: None	Humidity: 45%
Project: None	Barometric Pres.: 1016
Tested by: Brandon Hobbs	Power: 12VDC
	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

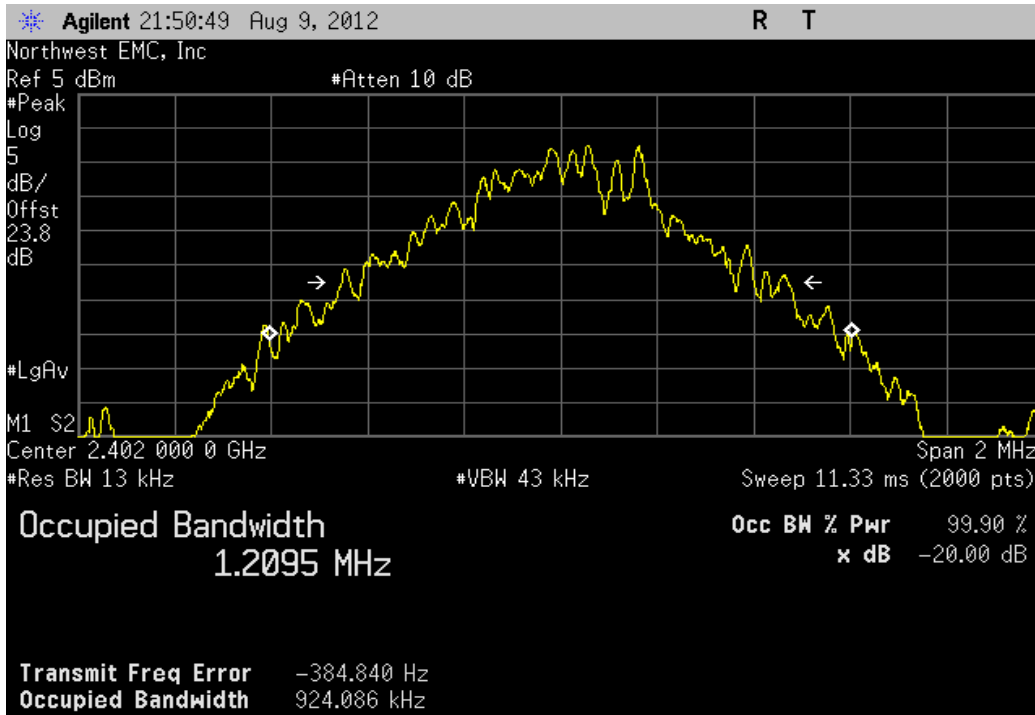
COMMENTS  
None

DEVIATIONS FROM TEST STANDARD  
None

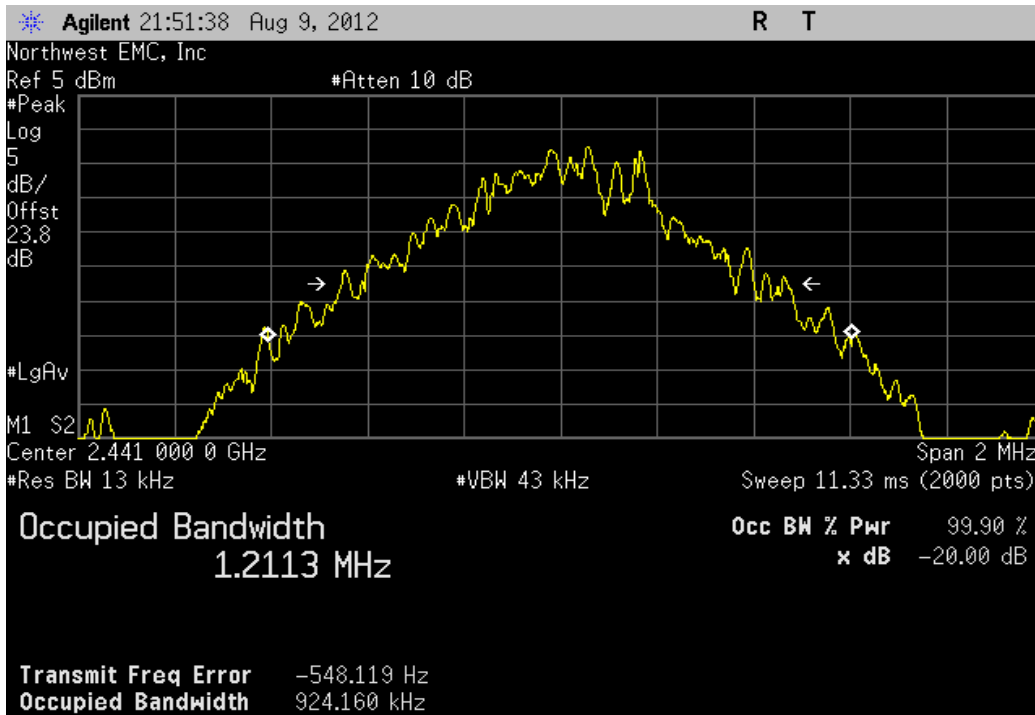
Configuration #	1	Signature <i>Anthony La Polizza</i>
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	Value	Limit	Result
Antenna A, Normal Test Conditions			
GFSK, DH5			
Low Channel, 2402MHz	924.086 kHz	< 1.5 MHz	Pass
Mid Channel, 2441 MHz	924.16 kHz	< 1.5 MHz	Pass
High Channel, 2480 MHz	924.449 kHz	< 1.5 MHz	Pass
pi/4-DQPSK, 2DH5			
Low Channel, 2402MHz	1.311 MHz	< 1.5 MHz	Pass
Mid Channel, 2441 MHz	1.323 MHz	< 1.5 MHz	Pass
High Channel, 2480 MHz	1.31 MHz	< 1.5 MHz	Pass
8DPSK, 3DH5			
Low Channel, 2402MHz	1.277 MHz	< 1.5 MHz	Pass
Mid Channel, 2441 MHz	1.265 MHz	< 1.5 MHz	Pass
High Channel, 2480 MHz	1.259 MHz	< 1.5 MHz	Pass

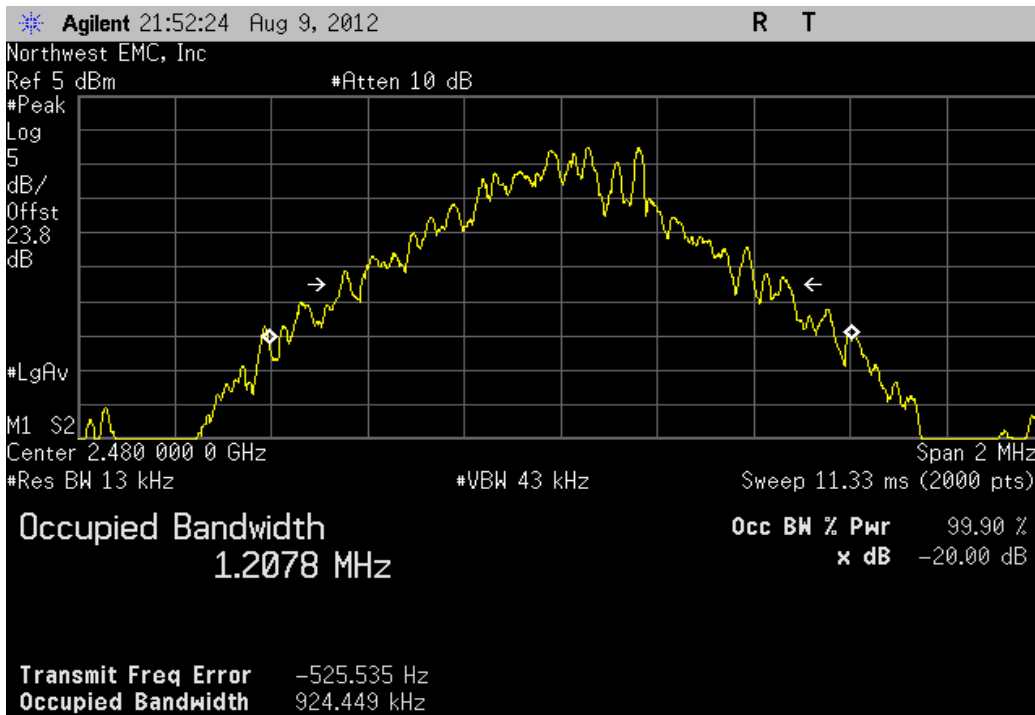
Antenna A, Normal Test Conditions , GFSK, DH5, Low Channel, 2402MHz			
	Value	Limit	Result
	924.086 kHz	< 1.5 MHz	Pass



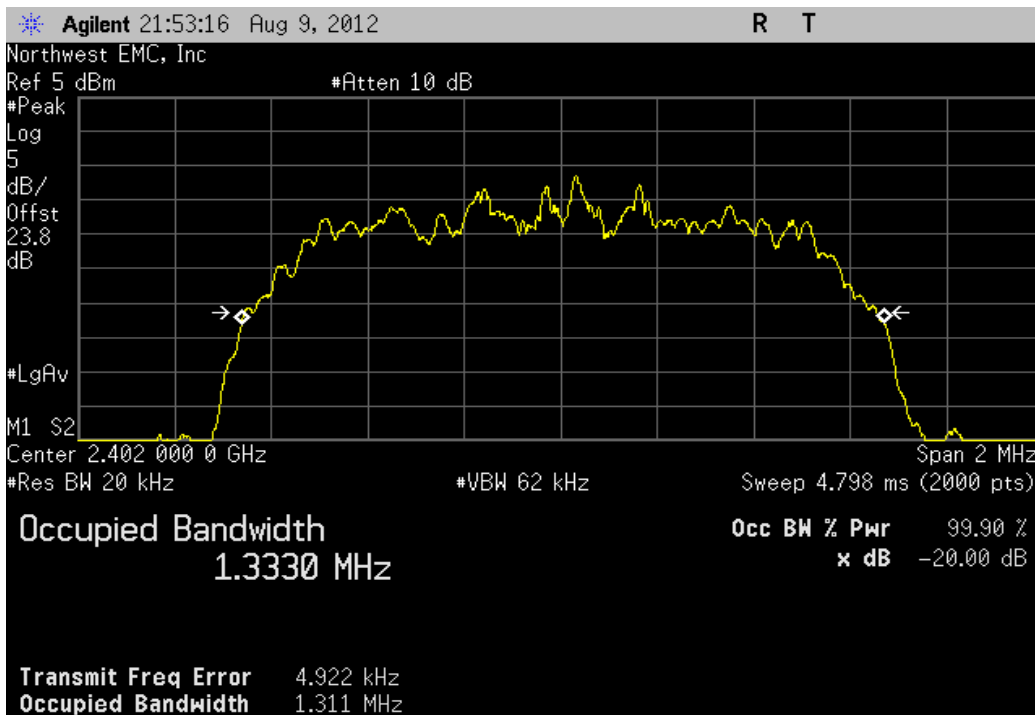
Antenna A, Normal Test Conditions , GFSK, DH5, Mid Channel, 2441 MHz			
	Value	Limit	Result
	924.16 kHz	< 1.5 MHz	Pass



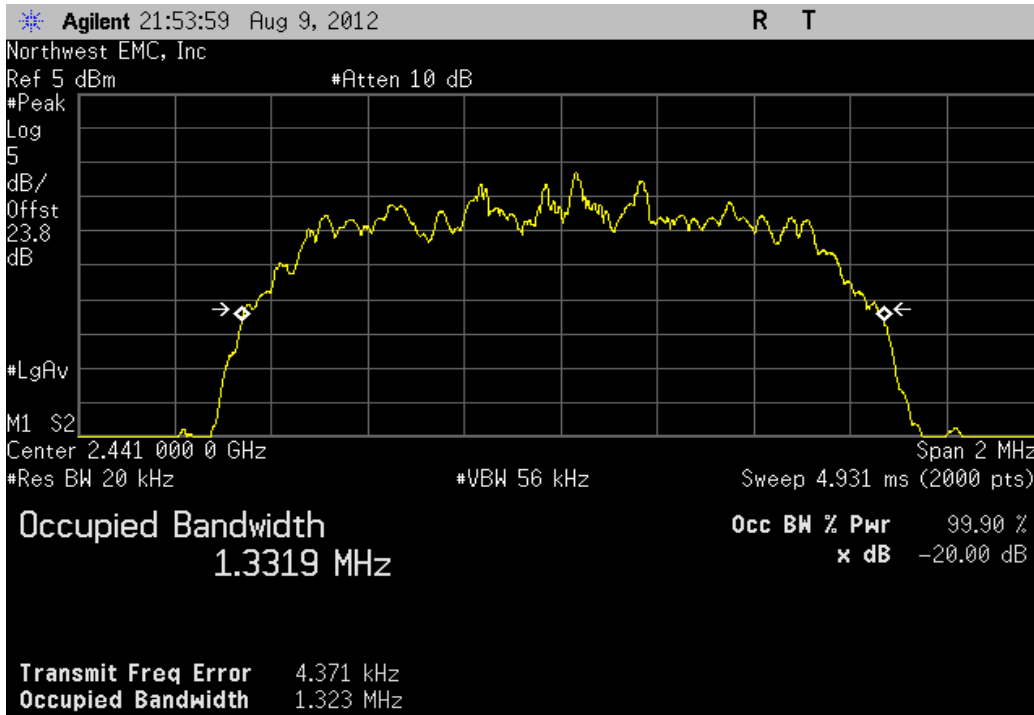
Antenna A, Normal Test Conditions , GFSK, DH5, High Channel, 2480 MHz			
	Value	Limit	Result
	924.449 kHz	< 1.5 MHz	Pass



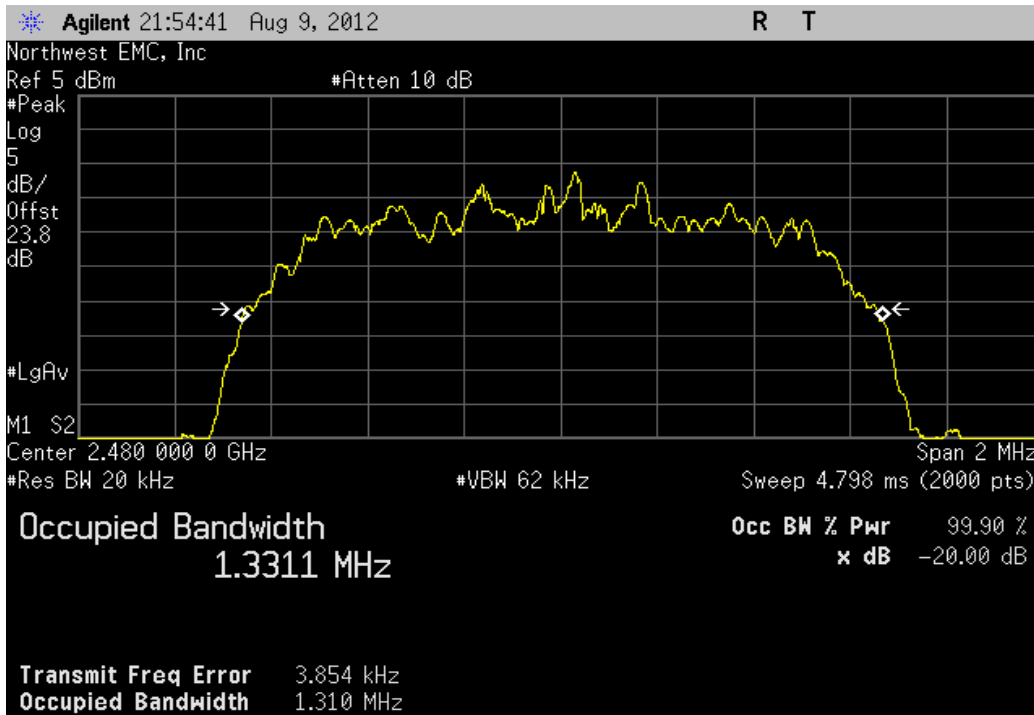
Antenna A, Normal Test Conditions , pi/4-DQPSK, 2DH5, Low Channel, 2402MHz			
	Value	Limit	Result
	1.311 MHz	< 1.5 MHz	Pass



Antenna A, Normal Test Conditions , pi/4-DQPSK, 2DH5, Mid Channel, 2441 MHz			
	Value	Limit	Result
	1.323 MHz	< 1.5 MHz	Pass

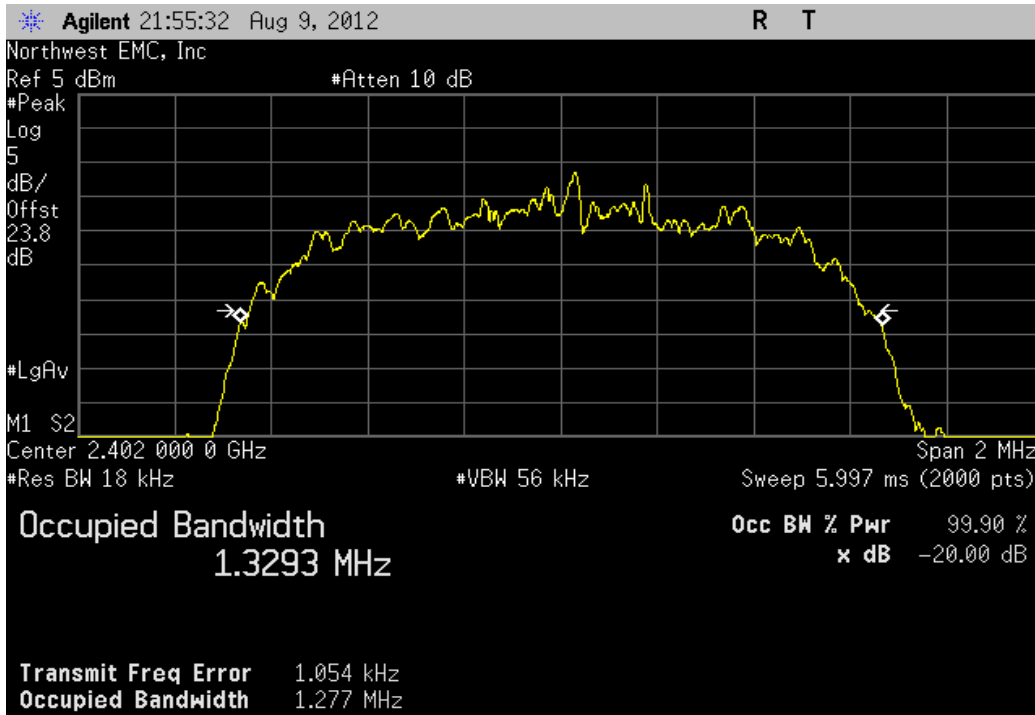


Antenna A, Normal Test Conditions , pi/4-DQPSK, 2DH5, High Channel, 2480 MHz			
	Value	Limit	Result
	1.31 MHz	< 1.5 MHz	Pass

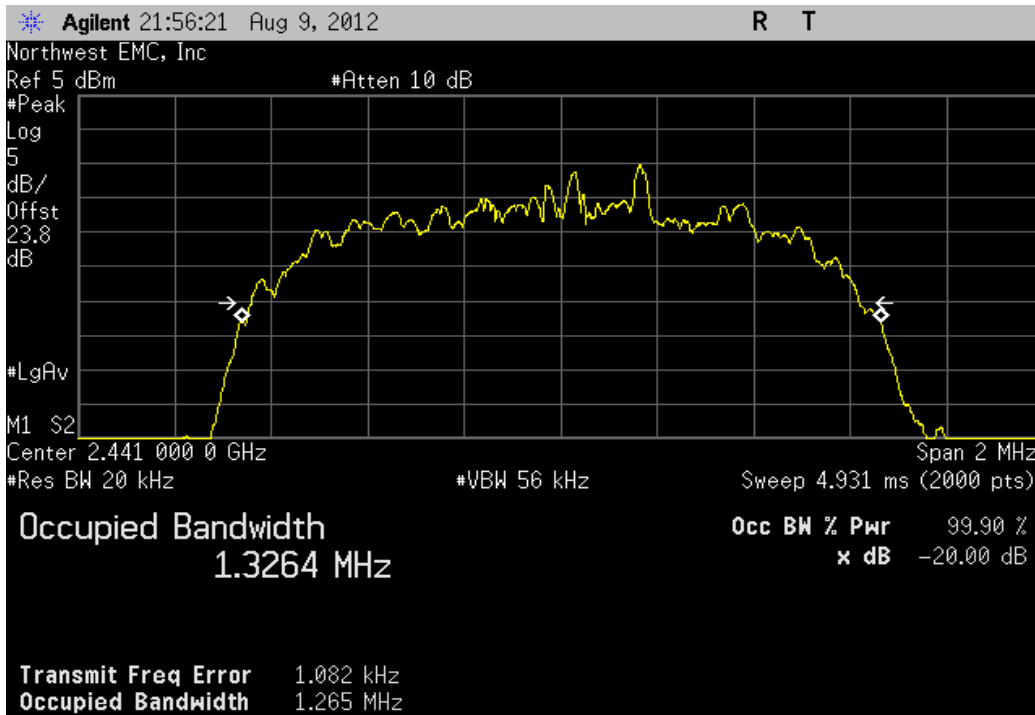




Antenna A, Normal Test Conditions , 8DPSK, 3DH5, Low Channel, 2402MHz			
	Value	Limit	Result
	1.277 MHz	< 1.5 MHz	Pass

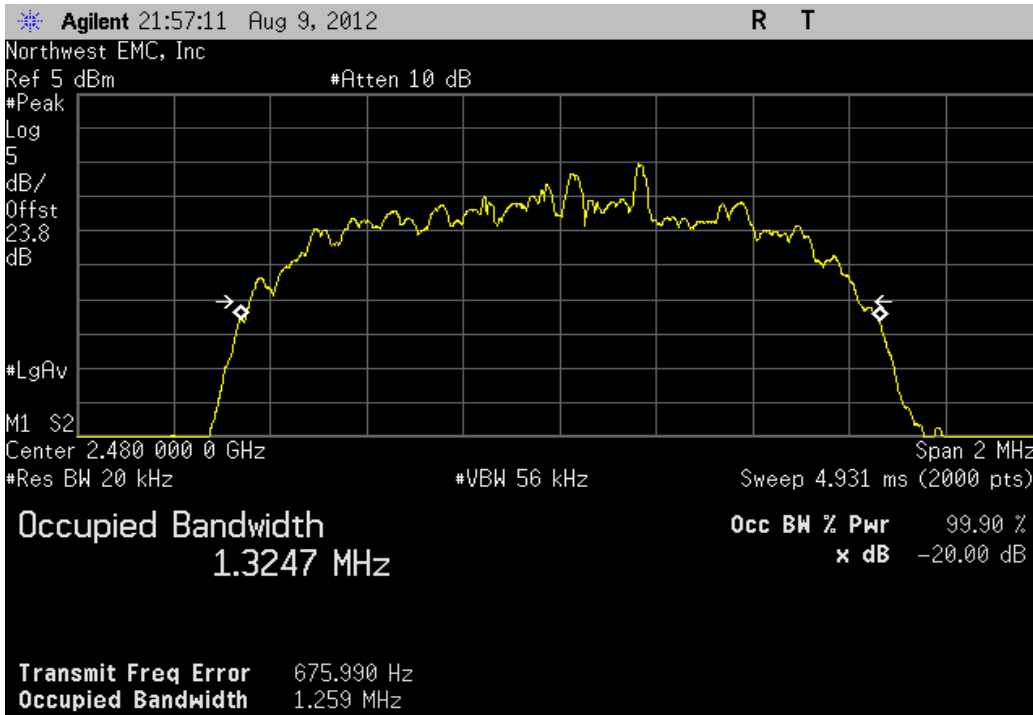


Antenna A, Normal Test Conditions , 8DPSK, 3DH5, Mid Channel, 2441 MHz			
	Value	Limit	Result
	1.265 MHz	< 1.5 MHz	Pass



Antenna A, Normal Test Conditions , 8DPSK, 3DH5, High Channel, 2480 MHz

Value	Limit	Result
1.259 MHz	< 1.5 MHz	Pass



## Output Power

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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
DC Power Supply	Topward	TPS-2000	TPD	NCR	0
Multimeter	Tektronix	DMM912	MMH	1/28/2011	24
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +27dBm.



# Output Power

XMit 2012.07.31  
PsaTx 2012.05.24

EUT: 1516	Work Order: MCSO1621
Serial Number: 000309122652	Date: 09/04/12
Customer: Microsoft Corporation	Temperature: 22°C
Attendees: None	Humidity: 49%
Project: None	Barometric Pres.: 1021
Tested by: Brandon Hobbs	Power: 110ACV/60Hz
	Job Site: EV06

TEST SPECIFICATIONS	
FCC 15.247:2012	ANSI C63.10:2009
Test Method	

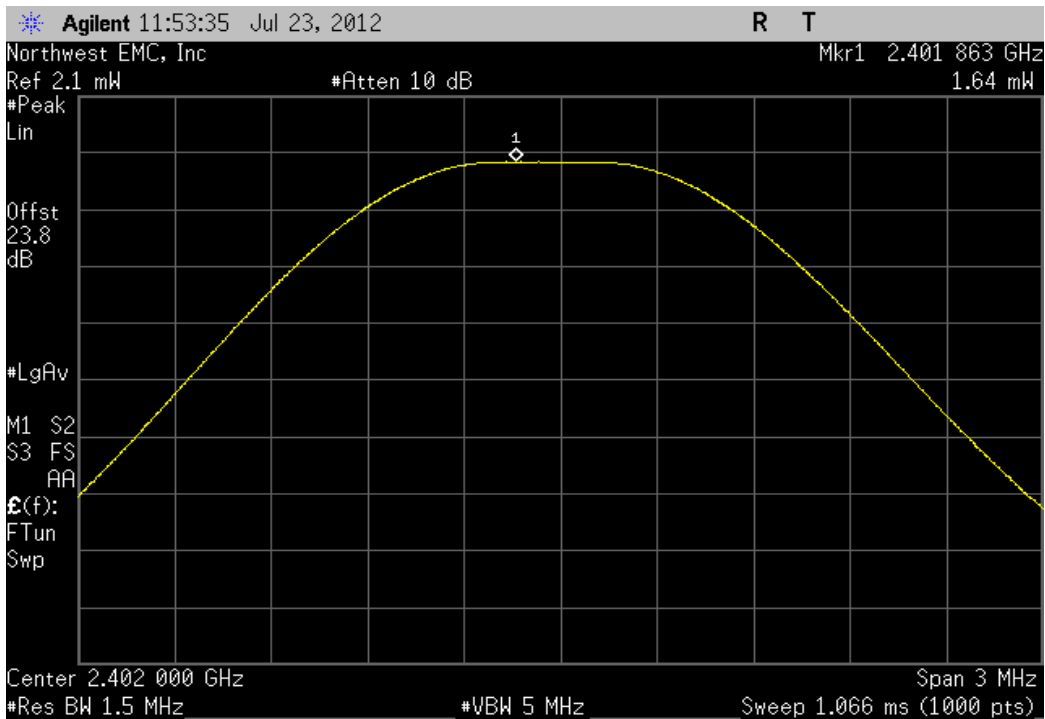
COMMENTS  
None

DEVIATIONS FROM TEST STANDARD  
None

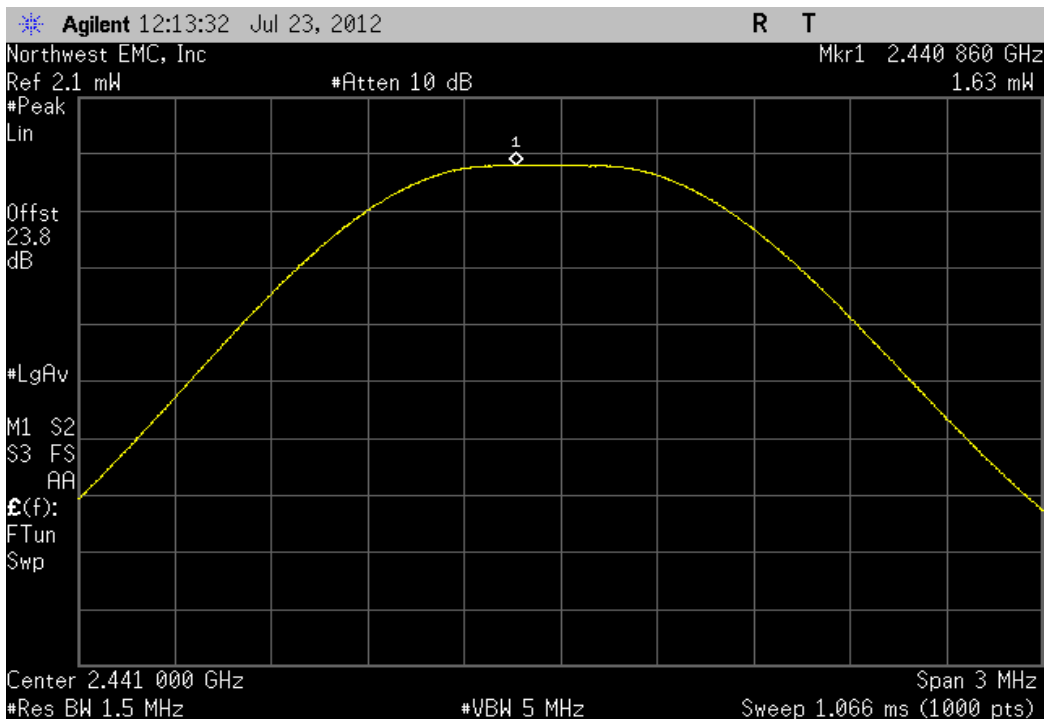
Configuration #	1	Signature <i>Patrick W. Poling</i>
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		Value	Limit	Result
<b>DH5, GFSK</b>				
	Low Channel	1.641 mW	< 125 mW	Pass
	Mid Channel	1.627 mW	< 125 mW	Pass
	High Channel	1.624 mW	< 125 mW	Pass
<b>2DH5, 4-DQPSK</b>				
	Low Channel	1.009 mW	< 125 mW	Pass
	Mid Channel	999.079 uW	< 125 mW	Pass
	High Channel	1.006 mW	< 125 mW	Pass
<b>3DH5, 8-DPSK</b>				
	Low Channel	1.126 mW	< 125 mW	Pass
	Mid Channel	1.118 mW	< 125 mW	Pass
	High Channel	1.131 mW	< 125 mW	Pass

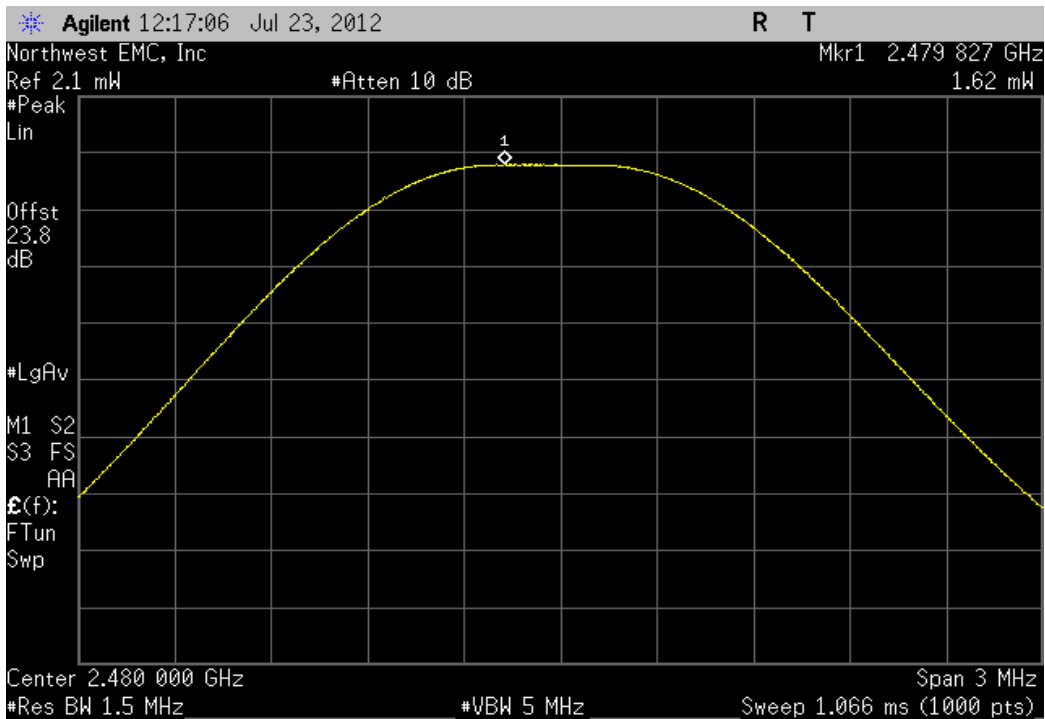
DH5, GFSK, Low Channel			
	Value	Limit	Result
	1.641 mW	< 125 mW	Pass



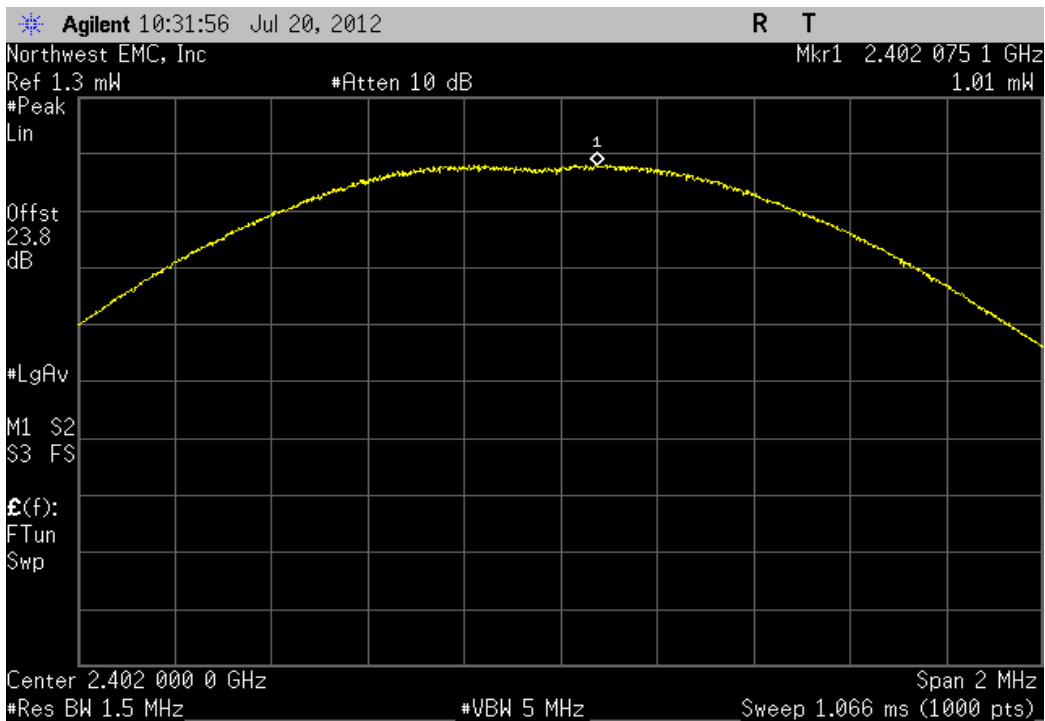
DH5, GFSK, Mid Channel			
	Value	Limit	Result
	1.627 mW	< 125 mW	Pass



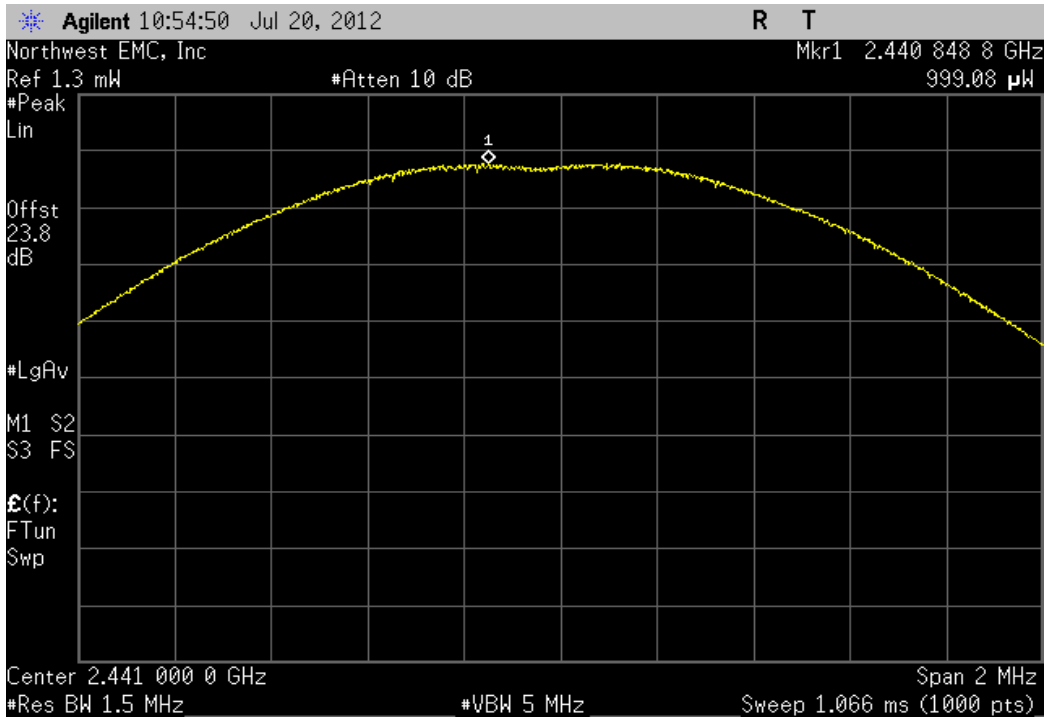
DH5, GFSK, High Channel			
	Value	Limit	Result
	1.624 mW	< 125 mW	Pass



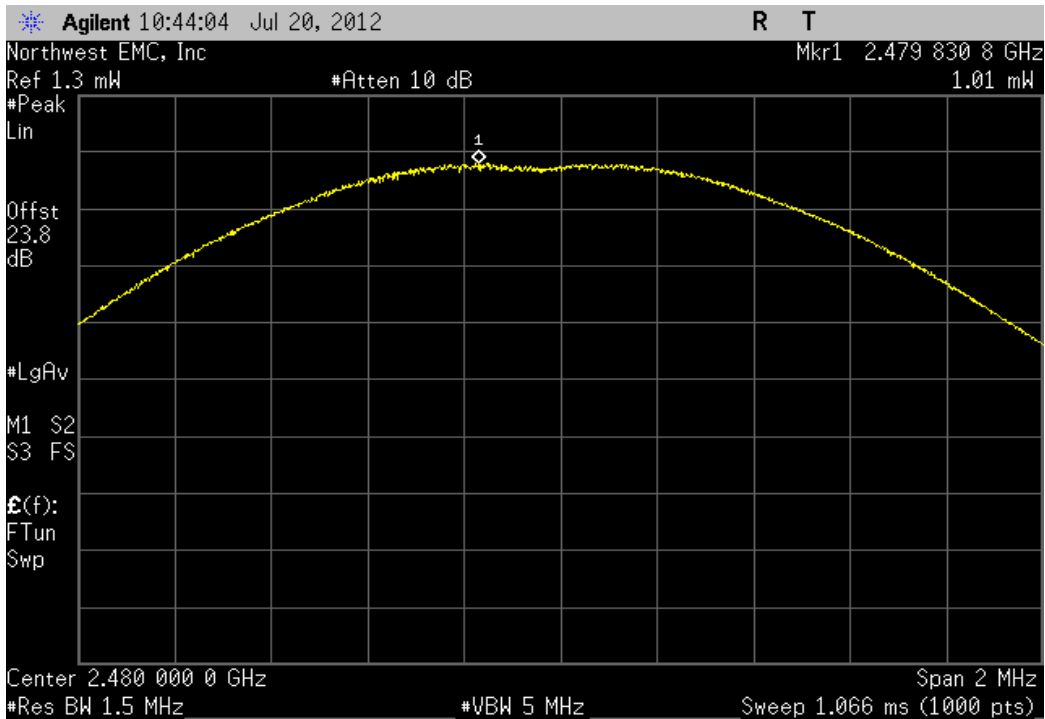
2DH5, 4-DQPSK, Low Channel			
	Value	Limit	Result
	1.009 mW	< 125 mW	Pass



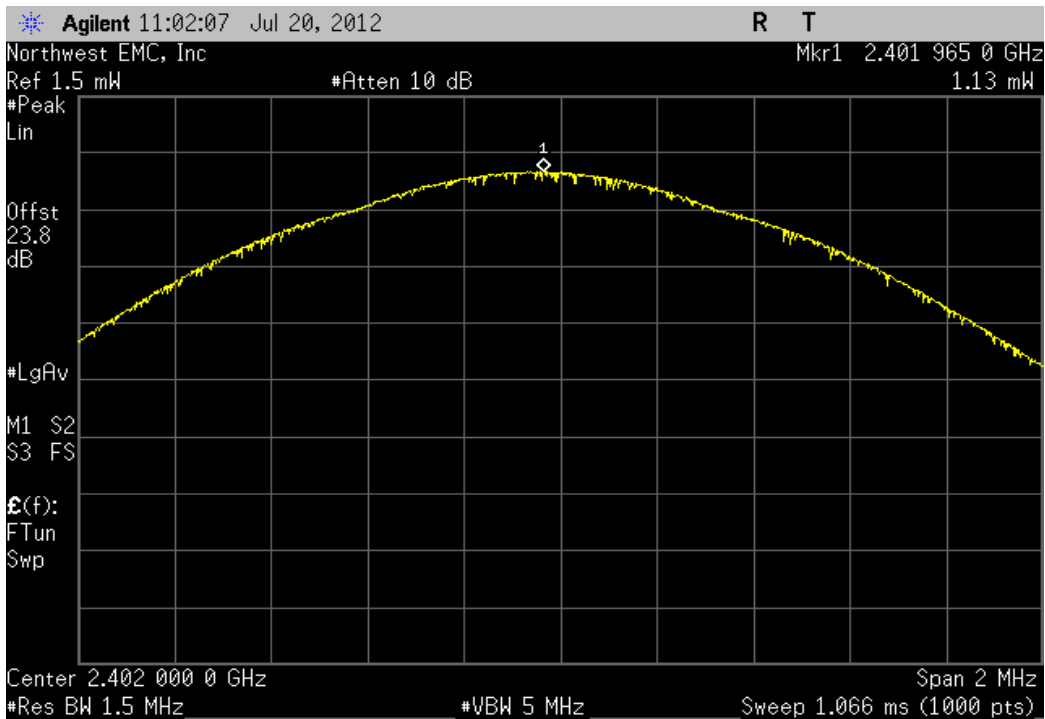
2DH5, 4-DQPSK, Mid Channel			
	Value	Limit	Result
	999.079 $\mu$ W	< 125 mW	Pass



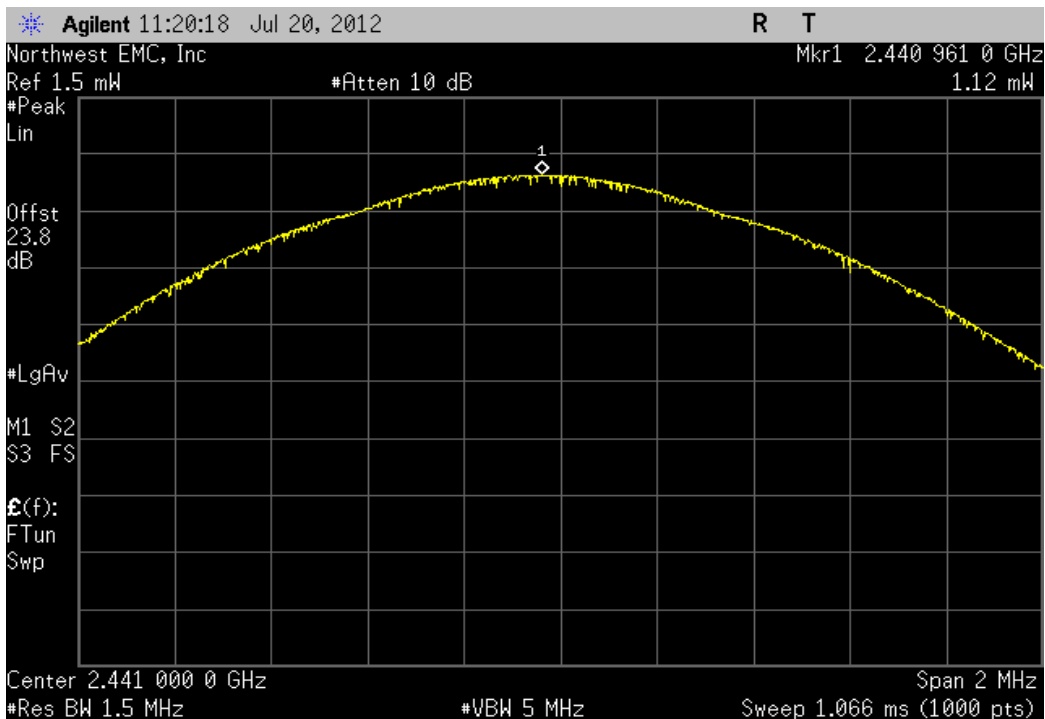
2DH5, 4-DQPSK, High Channel			
	Value	Limit	Result
	1.006 mW	< 125 mW	Pass



3DH5, 8-DPSK, Low Channel			
	Value	Limit	Result
	1.126 mW	< 125 mW	Pass



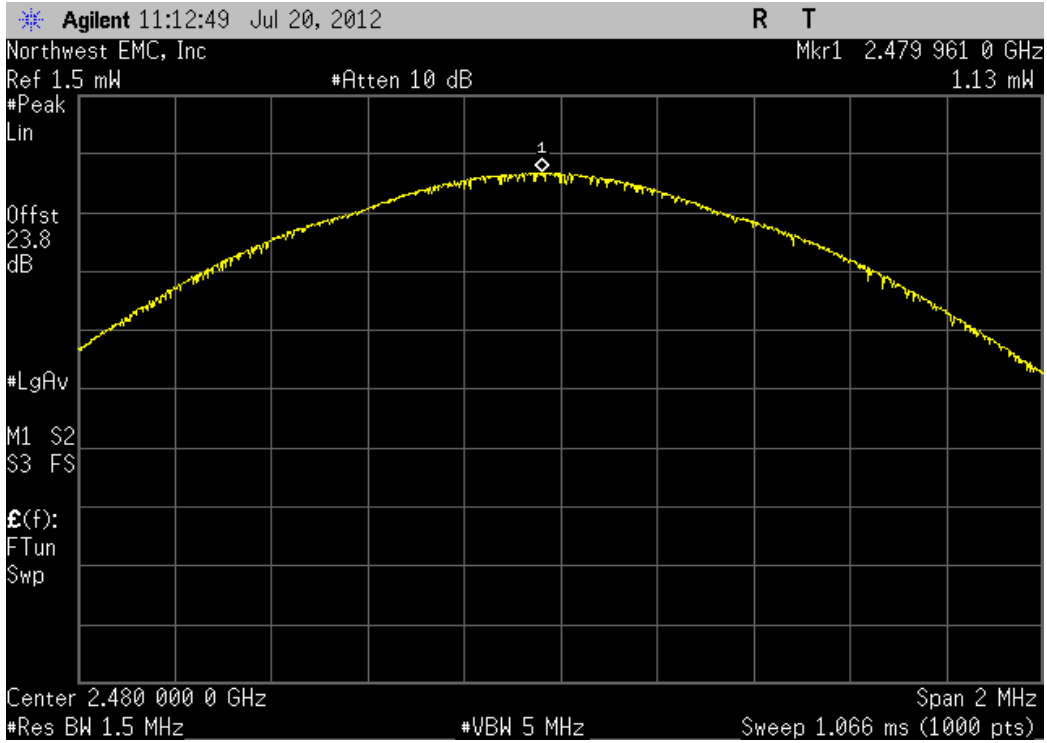
3DH5, 8-DPSK, Mid Channel			
	Value	Limit	Result
	1.118 mW	< 125 mW	Pass





3DH5, 8-DPSK, High Channel

				Value	Limit	Result
				1.131 mW	< 125 mW	Pass



## 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
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	8/2/2011	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator, 'N'	Coaxicom	66702 5910-6	ATZ	3/21/2012	12
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12

### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

### TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its normal pseudo-random hopping sequence. 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

XMit 2012.05.09  
PsaTx 2012.05.24

EUT: 1516	Work Order: MSC01601
Serial Number: 000309122652	Date: 07/24/12
Customer: Microsoft Corporation	Temperature: 22°C
Attendees: None	Humidity: 52%
Project: None	Barometric Pres.: 1018
Tested by: Brandon Hobbs	Power: 12VDC
	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2012	ANSI C63.10:2009

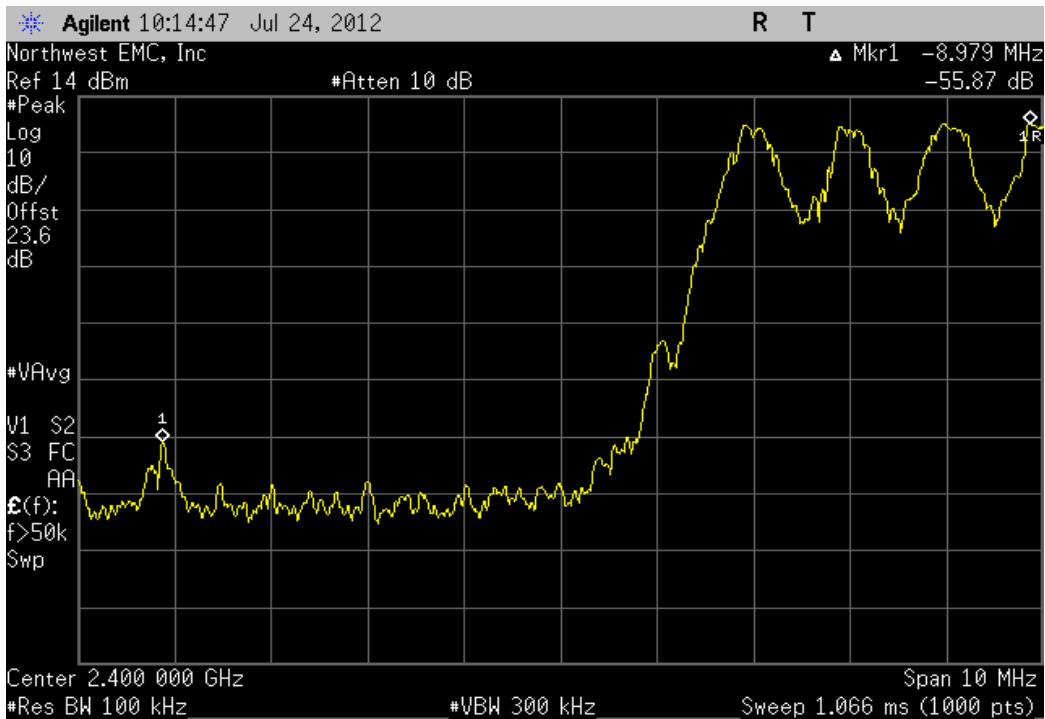
**COMMENTS**  
BLE mode does not have a hopping mode available for test

**DEVIATIONS FROM TEST STANDARD**  
None

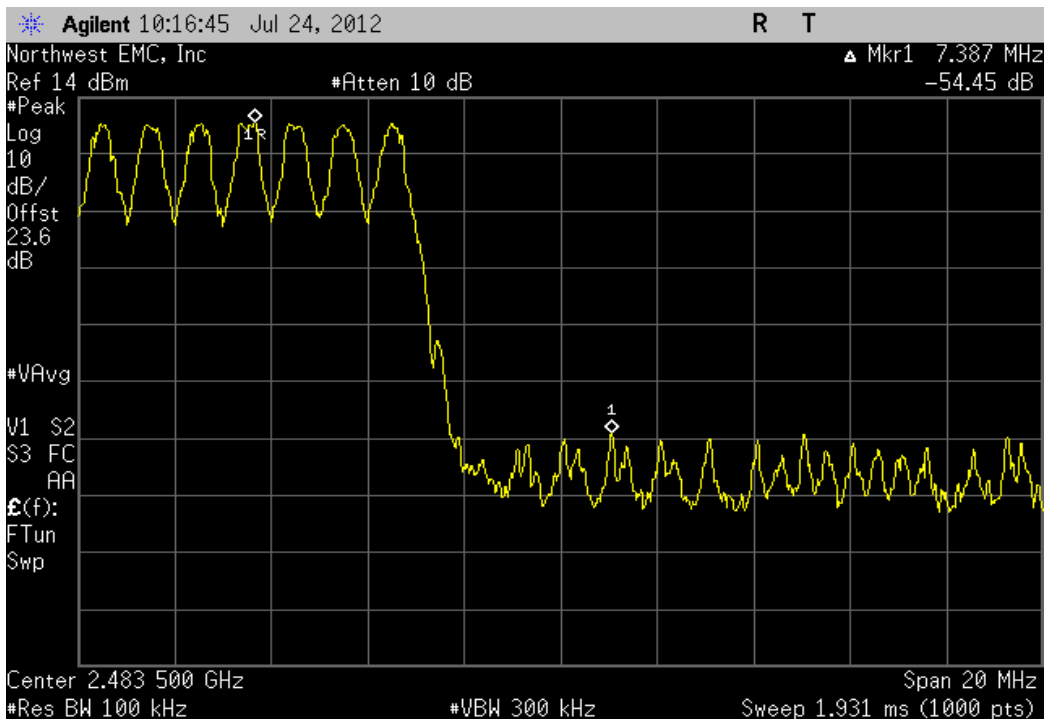
Configuration #	1	Signature <i>Patrick W. Poling</i>
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		Value	Limit	Result
DH5, GFSK	Low Channel	-55.87 dBc	≤ -20 dBc	Pass
	High Channel	-54.45 dBc	≤ -20 dBc	Pass
2DH5, 4-DQPSK	Low Channel	-54.04 dBc	≤ -20 dBc	Pass
	High Channel	-56.36 dBc	≤ -20 dBc	Pass
3DH5, 8-DPSK	Low Channel	-51.46 dBc	≤ -20 dBc	Pass
	High Channel	-57.34 dBc	≤ -20 dBc	Pass

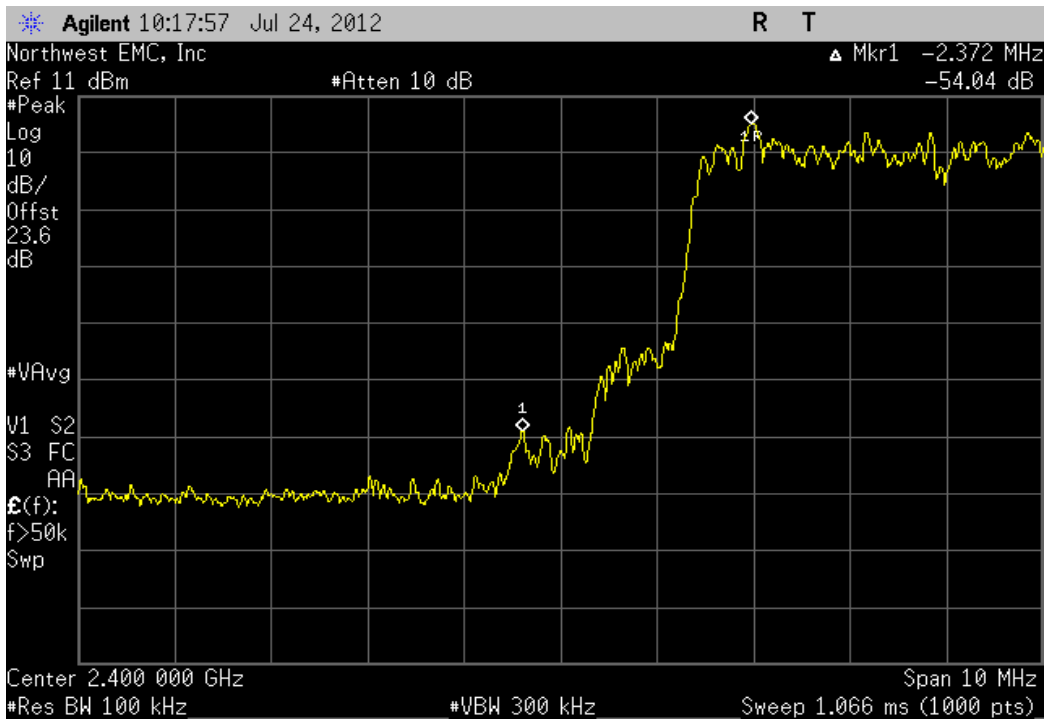
DH5, GFSK, Low Channel			
	Value	Limit	Result
	-55.87 dBc	≤ -20 dBc	Pass



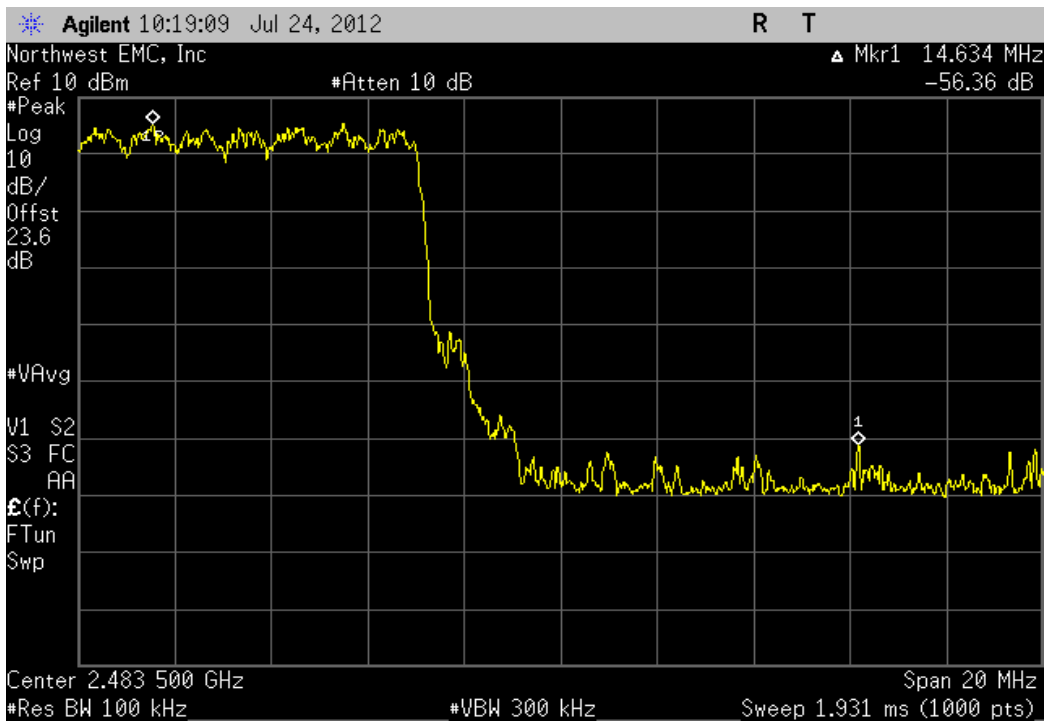
DH5, GFSK, High Channel			
	Value	Limit	Result
	-54.45 dBc	≤ -20 dBc	Pass



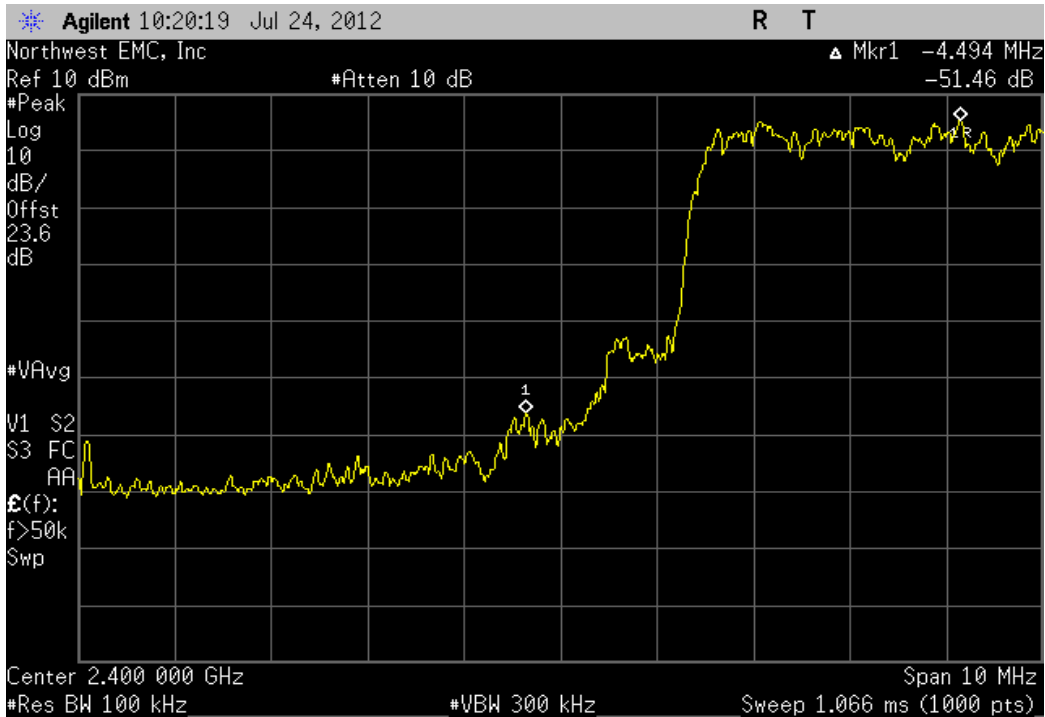
2DH5, 4-QPSK, Low Channel			
	Value	Limit	Result
	-54.04 dBc	≤ -20 dBc	Pass



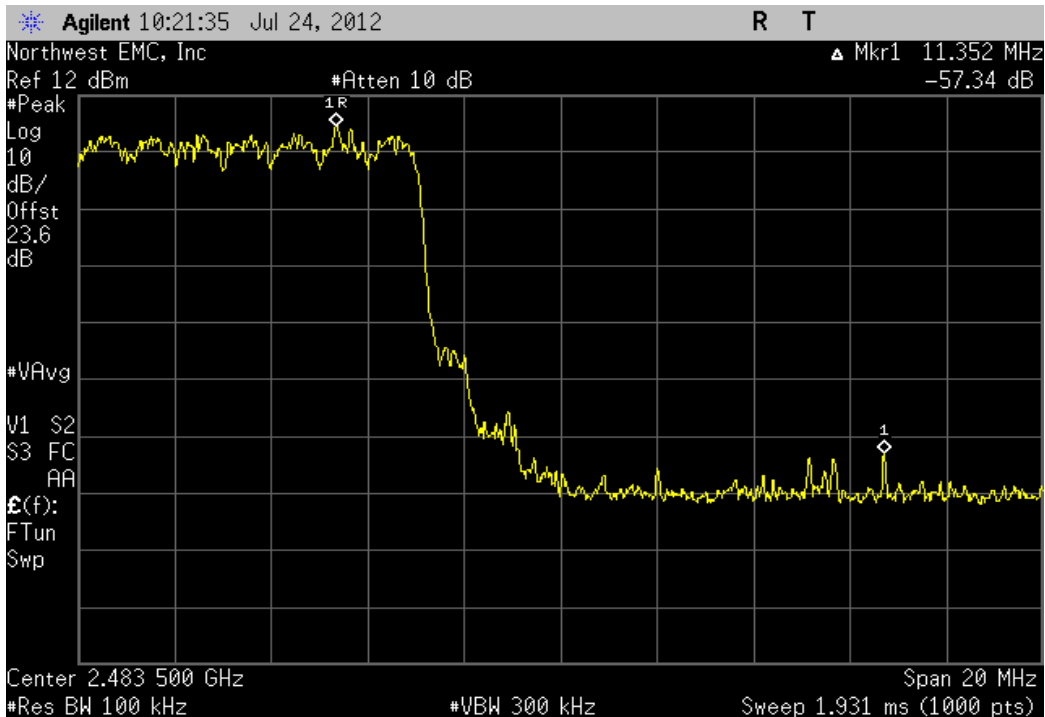
2DH5, 4-QPSK, High Channel			
	Value	Limit	Result
	-56.36 dBc	≤ -20 dBc	Pass



3DH5, 8-DPSK, Low Channel			
	Value	Limit	Result
	-51.46 dBc	≤ -20 dBc	Pass



3DH5, 8-DPSK, High Channel			
	Value	Limit	Result
	-57.34 dBc	≤ -20 dBc	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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

#### MODES OF OPERATION

DH5 (GFSK)

2-DH5 (pi/4-DQPSK)

3-DH5 (8DPSK)

#### CHANNELS TESTED

Low Channel, 2402 MHz

Mid Channel, 2441 MHz

High Channel, 2480 MHz

#### POWER SETTINGS INVESTIGATED

110VAC/60Hz

#### CONFIGURATIONS INVESTIGATED

MCSO1608 - 1

#### FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz

Stop Frequency | 26 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
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	12 mo
Cable	ESM Cable Corp.	KMKM-72	EVY	9/12/2011	12 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	7/6/2012	24 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/12/2011	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
EV01 Cables	N/A	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	6/27/2012	12 mo
Antenna, Horn	ETS	3115	AIZ	1/24/2011	24 mo
EV01 Cables	N/A	Bilog Cables	EVA	6/26/2012	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/26/2012	12 mo
Antenna, Biconilog	EMCO	3141	AXG	4/10/2012	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

#### MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

#### 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.



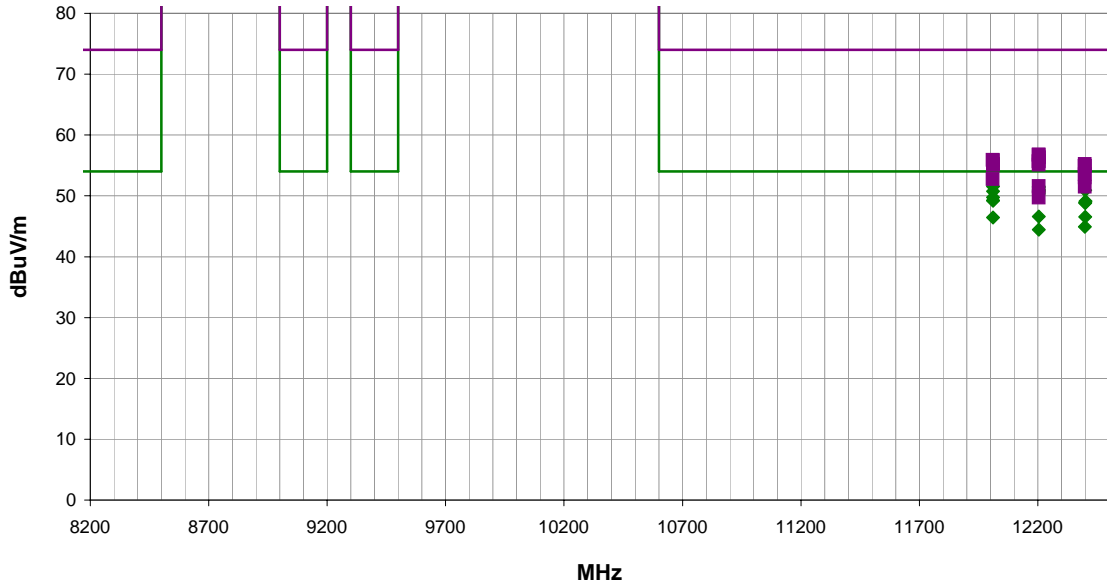
# SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	07/16/12	<i>Carl Engholm</i>
Project:	None	Temperature:	23.6 °C	
Job Site:	EV01	Humidity:	43% RH	
Serial Number:	364122652	Barometric Pres.:	1012.2 mbar	
EUT:	1516	Tested by:	Carl Engholm	
Configuration:	1			
Customer:	Microsoft Corporation			
Attendees:	Mike Boucher, Steve Stegner			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting at 100% duty cycle, Bluetooth.			
Deviations:	None			
Comments:	See Comments below for EUT Orientation, Data Rate, and Channel.			

Test Specifications	Test Method
FCC 15.247:2012	ANSI C63.10:2009

Run #	16	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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■ PK ◆ AV ● QP

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
12010.670	57.0	-5.5	1.0	1.0	3.0	0.0	Horz	AV	0.0	51.5	54.0	-2.5	EUT Vert, DH5, Low Ch
12204.540	55.7	-4.2	1.3	77.0	3.0	0.0	Horz	AV	0.0	51.5	54.0	-2.5	EUT Vert, DH5, Mid Ch
12204.490	55.5	-4.2	1.2	55.0	3.0	0.0	Vert	AV	0.0	51.3	54.0	-2.7	EUT On Side, DH5, Mid Ch
12204.480	55.2	-4.2	1.2	29.0	3.0	0.0	Vert	AV	0.0	51.0	54.0	-3.0	EUT Vert, DH5, Mid Ch
12204.290	55.1	-4.2	1.2	8.0	3.0	0.0	Horz	AV	0.0	50.9	54.0	-3.1	EUT Vert, 2DH5, Mid Ch
12399.370	53.8	-2.9	1.1	9.0	3.0	0.0	Horz	AV	0.0	50.9	54.0	-3.1	EUT Vert, DH5, High Ch
12010.700	56.2	-5.5	1.3	42.0	3.0	0.0	Vert	AV	0.0	50.7	54.0	-3.3	EUT Vert, DH5, Low Ch
12204.710	54.8	-4.2	1.2	12.0	3.0	0.0	Horz	AV	0.0	50.6	54.0	-3.4	EUT Vert, 3DH5, Mid Ch
12204.360	54.5	-4.2	1.2	47.0	3.0	0.0	Horz	AV	0.0	50.3	54.0	-3.7	EUT On Side, DH5, Mid Ch
12010.610	55.2	-5.5	1.0	-1.0	3.0	0.0	Horz	AV	0.0	49.7	54.0	-4.3	EUT Vert, 3DH5, Low Ch
12010.750	54.7	-5.5	1.1	48.0	3.0	0.0	Vert	AV	0.0	49.2	54.0	-4.8	EUT Vert, 2DH5, Low Ch
12010.730	54.7	-5.5	1.1	49.0	3.0	0.0	Vert	AV	0.0	49.2	54.0	-4.8	EUT Vert, 2DH5, Low Ch
12400.760	52.0	-2.9	1.0	352.0	3.0	0.0	Horz	AV	0.0	49.1	54.0	-4.9	EUT Vert, 2DH5, High Ch
12399.370	51.8	-2.9	1.0	38.0	3.0	0.0	Vert	AV	0.0	48.9	54.0	-5.1	EUT Vert, DH5, High Ch
12399.900	51.7	-2.9	1.0	352.0	3.0	0.0	Horz	AV	0.0	48.8	54.0	-5.2	EUT Horiz, 3DH5, High Ch
12204.350	50.8	-4.2	1.0	228.0	3.0	0.0	Horz	AV	0.0	46.6	54.0	-7.4	EUT Horiz, DH5, Mid Ch
12399.860	49.4	-2.9	1.0	39.0	3.0	0.0	Vert	AV	0.0	46.5	54.0	-7.5	EUT Vert, 3DH5, High Ch
12010.490	51.9	-5.5	1.2	332.0	3.0	0.0	Vert	AV	0.0	46.4	54.0	-7.6	EUT Vert, 3DH5, Low Ch
12399.230	47.8	-2.9	1.2	327.0	3.0	0.0	Vert	AV	0.0	44.9	54.0	-9.1	EUT Vert, 2DH5, High Ch
12204.370	48.6	-4.2	1.2	99.0	3.0	0.0	Vert	AV	0.0	44.4	54.0	-9.6	EUT Horiz, DH5, Mid Ch
12204.060	61.0	-4.2	1.2	12.0	3.0	0.0	Horz	PK	0.0	56.8	74.0	-17.2	EUT Vert, 2DH5, Mid Ch
12204.190	60.9	-4.2	1.2	8.0	3.0	0.0	Horz	PK	0.0	56.7	74.0	-17.3	EUT Vert, 3DH5, Mid Ch



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
12205.810	60.5	-4.2	1.0	207.0	3.0	0.0	Horz	PK	0.0	56.3	74.0	-17.7	EUT On Side, DH5, Mid Ch
12009.870	61.4	-5.5	1.0	-1.0	3.0	0.0	Horz	PK	0.0	55.9	74.0	-18.1	EUT Vert, 3DH5, Low Ch
12010.750	61.3	-5.5	1.0	1.0	3.0	0.0	Horz	PK	0.0	55.8	74.0	-18.2	EUT Vert, DH5, Low Ch
12204.170	59.9	-4.2	1.3	77.0	3.0	0.0	Horz	PK	0.0	55.7	74.0	-18.3	EUT Vert, DH5, Mid Ch
12204.190	59.8	-4.2	1.2	55.0	3.0	0.0	Vert	PK	0.0	55.6	74.0	-18.4	EUT On Side, DH5, Mid Ch
12010.910	60.7	-5.5	1.1	47.0	3.0	0.0	Vert	PK	0.0	55.2	74.0	-18.8	EUT Vert, 2DH5, Low Ch
12399.150	58.1	-2.9	1.1	9.0	3.0	0.0	Horz	PK	0.0	55.2	74.0	-18.8	EUT Vert, DH5, High Ch
12010.860	60.6	-5.5	1.3	42.0	3.0	0.0	Vert	PK	0.0	55.1	74.0	-18.9	EUT Vert, DH5, Low Ch
12010.570	60.6	-5.5	1.1	48.0	3.0	0.0	Vert	PK	0.0	55.1	74.0	-18.9	EUT Vert, 2DH5, Low Ch
12204.130	59.3	-4.2	1.2	29.0	3.0	0.0	Vert	PK	0.0	55.1	74.0	-18.9	EUT Vert, DH5, Mid Ch
12399.250	57.8	-2.9	1.0	352.0	3.0	0.0	Horz	PK	0.0	54.9	74.0	-19.1	EUT Vert, 2DH5, High Ch
12398.970	57.8	-2.9	1.0	352.0	3.0	0.0	Horz	PK	0.0	54.9	74.0	-19.1	EUT Horiz, 3DH5, High Ch
12399.270	56.4	-2.9	1.0	38.0	3.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	EUT Vert, DH5, High Ch
12399.290	55.9	-2.9	1.0	39.0	3.0	0.0	Vert	PK	0.0	53.0	74.0	-21.0	EUT Vert, 3DH5, High Ch
12010.010	58.2	-5.5	1.2	332.0	3.0	0.0	Vert	PK	0.0	52.7	74.0	-21.3	EUT Vert, 3DH5, Low Ch
12204.100	55.8	-4.2	1.0	228.0	3.0	0.0	Horz	PK	0.0	51.6	74.0	-22.4	EUT Horiz, DH5, Mid Ch
12399.030	54.4	-2.9	1.2	327.0	3.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	EUT Vert, 2DH5, High Ch
12204.230	53.9	-4.2	1.2	99.0	3.0	0.0	Vert	PK	0.0	49.7	74.0	-24.3	EUT Horiz, DH5, Mid Ch

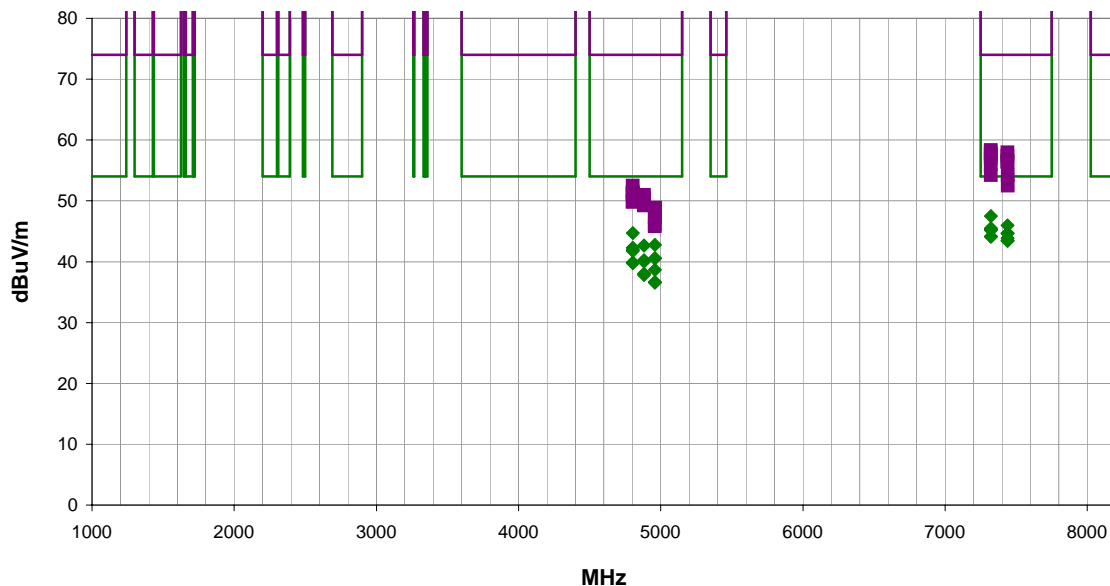


# SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1608	Date:	07/16/12	
Project:	None	Temperature:	24.1 °C	
Job Site:	EV01	Humidity:	42.6% RH	
Serial Number:	364122652	Barometric Pres.:	1008.4 mbar	
EUT:	1516	Tested by: Dan Haas		
Configuration:	1			
Customer:	Microsoft Corporation			
Attendees:	Mike Boucher, Steve Stegner			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting at 100% duty cycle, Bluetooth.			
Deviations:	None			
Comments:	See Comments below for EUT Orientation, Data Rate, and Channel.			

Test Specifications	FCC 15.247:2012	Test Method	ANSI C63.10:2009
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Run #	17	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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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
7322.760	28.5	19.0	1.6	24.0	3.0	0.0	Vert	AV	0.0	47.5	54.0	-6.5	EUT Vert, DH5, Mid Ch
7439.660	26.5	19.5	1.8	19.0	3.0	0.0	Vert	AV	0.0	46.0	54.0	-8.0	EUT Vert, DH5, High Ch
7322.793	26.5	19.0	1.2	1.0	3.0	0.0	Horz	AV	0.0	45.5	54.0	-8.5	EUT Vert, DH5, Mid Ch
7322.867	26.3	19.0	1.6	24.0	3.0	0.0	Vert	AV	0.0	45.3	54.0	-8.7	EUT Vert, 2DH5, Mid Ch
7322.900	26.2	19.0	1.6	24.0	3.0	0.0	Vert	AV	0.0	45.2	54.0	-8.8	EUT Vert, 3DH5, Mid Ch
4804.013	34.5	10.2	1.0	349.0	3.0	0.0	Vert	AV	0.0	44.7	54.0	-9.3	EUT Vert, DH5, Low Ch
7440.053	25.2	19.5	1.8	19.0	3.0	0.0	Vert	AV	0.0	44.7	54.0	-9.3	EUT Vert, 2DH5, High Ch
7439.873	25.2	19.5	1.8	19.0	3.0	0.0	Vert	AV	0.0	44.7	54.0	-9.3	EUT Vert, 3DH5, High Ch
7323.060	25.1	19.0	1.2	1.0	3.0	0.0	Horz	AV	0.0	44.1	54.0	-9.9	EUT Vert, 2DH5, Mid Ch
7322.820	25.1	19.0	1.2	1.0	3.0	0.0	Horz	AV	0.0	44.1	54.0	-9.9	EUT Vert, 3DH5, Mid Ch
7439.727	24.4	19.5	1.5	147.0	3.0	0.0	Horz	AV	0.0	43.9	54.0	-10.1	EUT Vert, DH5, High Ch
7440.047	24.0	19.5	1.5	147.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT Vert, 2DH5, High Ch
7439.913	24.0	19.5	1.5	147.0	3.0	0.0	Horz	AV	0.0	43.5	54.0	-10.5	EUT Vert, 3DH5, High Ch
4960.020	32.0	10.7	1.0	354.0	3.0	0.0	Vert	AV	0.0	42.7	54.0	-11.3	EUT Vert, DH5, High Ch
4882.013	32.2	10.4	2.0	347.0	3.0	0.0	Vert	AV	0.0	42.6	54.0	-11.4	EUT Vert, DH5, Mid Ch
4803.973	32.1	10.2	1.1	198.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	EUT Vert, DH5, Low Ch
4804.013	31.8	10.2	1.0	349.0	3.0	0.0	Vert	AV	0.0	42.0	54.0	-12.0	EUT Vert, 3DH5, Low Ch
4804.013	31.6	10.2	1.0	349.0	3.0	0.0	Vert	AV	0.0	41.8	54.0	-12.2	EUT Vert, 2DH5, Low Ch
4960.013	29.8	10.7	1.0	354.0	3.0	0.0	Vert	AV	0.0	40.5	54.0	-13.5	EUT Vert, 2DH5, High Ch
4959.987	29.8	10.7	1.0	354.0	3.0	0.0	Vert	AV	0.0	40.5	54.0	-13.5	EUT Vert, 3DH5, High Ch
4882.007	29.8	10.4	2.0	347.0	3.0	0.0	Vert	AV	0.0	40.2	54.0	-13.8	EUT Vert, 3DH5, Mid Ch
4881.967	29.7	10.4	2.0	347.0	3.0	0.0	Vert	AV	0.0	40.1	54.0	-13.9	EUT Vert, 2DH5, Mid Ch

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
4882.000	29.6	10.4	1.2	195.0	3.0	0.0	Horz	AV	0.0	40.0	54.0	-14.0	EUT Vert, DH5, Mid Ch
4804.033	29.7	10.2	1.1	198.0	3.0	0.0	Horz	AV	0.0	39.9	54.0	-14.1	EUT Vert, 3DH5, Low Ch
4803.987	29.6	10.2	1.1	198.0	3.0	0.0	Horz	AV	0.0	39.8	54.0	-14.2	EUT Vert, 2DH5, Low Ch
4960.013	27.9	10.7	1.1	197.0	3.0	0.0	Horz	AV	0.0	38.6	54.0	-15.4	EUT Vert, DH5, High Ch
7322.347	39.3	19.0	1.6	24.0	3.0	0.0	Vert	PK	0.0	58.3	74.0	-15.7	EUT Vert, DH5, Mid Ch
4882.013	27.6	10.4	1.2	195.0	3.0	0.0	Horz	AV	0.0	38.0	54.0	-16.0	EUT Vert, 3DH5, Mid Ch
7439.627	38.5	19.5	1.8	19.0	3.0	0.0	Vert	PK	0.0	58.0	74.0	-16.0	EUT Vert, DH5, High Ch
7322.047	38.9	19.0	1.2	1.0	3.0	0.0	Horz	PK	0.0	57.9	74.0	-16.1	EUT Vert, 3DH5, Mid Ch
4882.047	27.4	10.4	1.2	195.0	3.0	0.0	Horz	AV	0.0	37.8	54.0	-16.2	EUT Vert, 2DH5, Mid Ch
7322.980	38.6	19.0	1.6	24.0	3.0	0.0	Vert	PK	0.0	57.6	74.0	-16.4	EUT Vert, 2DH5, Mid Ch
7439.387	37.9	19.5	1.8	19.0	3.0	0.0	Vert	PK	0.0	57.4	74.0	-16.6	EUT Vert, 2DH5, High Ch
7322.973	38.0	19.0	1.6	24.0	3.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	EUT Vert, 3DH5, Mid Ch
4960.020	25.9	10.7	1.1	197.0	3.0	0.0	Horz	AV	0.0	36.6	54.0	-17.4	EUT Vert, 3DH5, High Ch
7439.773	37.1	19.5	1.8	19.0	3.0	0.0	Vert	PK	0.0	56.6	74.0	-17.4	EUT Vert, 3DH5, High Ch
4960.020	25.8	10.7	1.1	197.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	EUT Vert, 2DH5, High Ch
7440.340	36.9	19.5	1.5	147.0	3.0	0.0	Horz	PK	0.0	56.4	74.0	-17.6	EUT Vert, DH5, High Ch
7322.527	37.0	19.0	1.2	1.0	3.0	0.0	Horz	PK	0.0	56.0	74.0	-18.0	EUT Vert, DH5, Mid Ch
7440.640	34.8	19.5	1.5	147.0	3.0	0.0	Horz	PK	0.0	54.3	74.0	-19.7	EUT Vert, 3DH5, High Ch
7323.260	35.2	19.0	1.2	1.0	3.0	0.0	Horz	PK	0.0	54.2	74.0	-19.8	EUT Vert, 2DH5, Mid Ch
4804.020	42.3	10.2	1.0	349.0	3.0	0.0	Vert	PK	0.0	52.5	74.0	-21.5	EUT Vert, DH5, Low Ch
7441.987	33.0	19.5	1.5	147.0	3.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	EUT Vert, 2DH5, High Ch
4803.873	41.3	10.2	1.0	349.0	3.0	0.0	Vert	PK	0.0	51.5	74.0	-22.5	EUT Vert, 2DH5, Low Ch
4803.673	41.1	10.2	1.0	349.0	3.0	0.0	Vert	PK	0.0	51.3	74.0	-22.7	EUT Vert, 3DH5, Low Ch
4804.313	40.9	10.2	1.1	198.0	3.0	0.0	Horz	PK	0.0	51.1	74.0	-22.9	EUT Vert, DH5, Low Ch
4882.207	40.5	10.4	2.0	347.0	3.0	0.0	Vert	PK	0.0	50.9	74.0	-23.1	EUT Vert, DH5, Mid Ch
4881.847	40.1	10.4	2.0	347.0	3.0	0.0	Vert	PK	0.0	50.5	74.0	-23.5	EUT Vert, 2DH5, Mid Ch
4804.087	39.8	10.2	1.1	198.0	3.0	0.0	Horz	PK	0.0	50.0	74.0	-24.0	EUT Vert, 2DH5, Low Ch
4881.947	39.4	10.4	2.0	347.0	3.0	0.0	Vert	PK	0.0	49.8	74.0	-24.2	EUT Vert, 3DH5, Mid Ch
4804.033	39.6	10.2	1.1	198.0	3.0	0.0	Horz	PK	0.0	49.8	74.0	-24.2	EUT Vert, 3DH5, Low Ch
4882.233	39.2	10.4	1.2	195.0	3.0	0.0	Horz	PK	0.0	49.6	74.0	-24.4	EUT Vert, 3DH5, Mid Ch
4881.860	39.0	10.4	1.2	195.0	3.0	0.0	Horz	PK	0.0	49.4	74.0	-24.6	EUT Vert, DH5, Mid Ch
4882.353	38.8	10.4	1.2	195.0	3.0	0.0	Horz	PK	0.0	49.2	74.0	-24.8	EUT Vert, 2DH5, Mid Ch
4960.413	38.1	10.7	1.1	197.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	EUT Vert, DH5, High Ch
4959.780	37.6	10.7	1.1	197.0	3.0	0.0	Horz	PK	0.0	48.3	74.0	-25.7	EUT Vert, 3DH5, High Ch
4960.413	36.6	10.7	1.0	354.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	EUT Vert, 2DH5, High Ch
4959.267	36.6	10.7	1.0	354.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	EUT Vert, 3DH5, High Ch
4959.707	35.4	10.7	1.0	354.0	3.0	0.0	Vert	PK	0.0	46.1	74.0	-27.9	EUT Vert, DH5, High Ch
4959.227	35.1	10.7	1.1	197.0	3.0	0.0	Horz	PK	0.0	45.8	74.0	-28.2	EUT Vert, 2DH5, High Ch



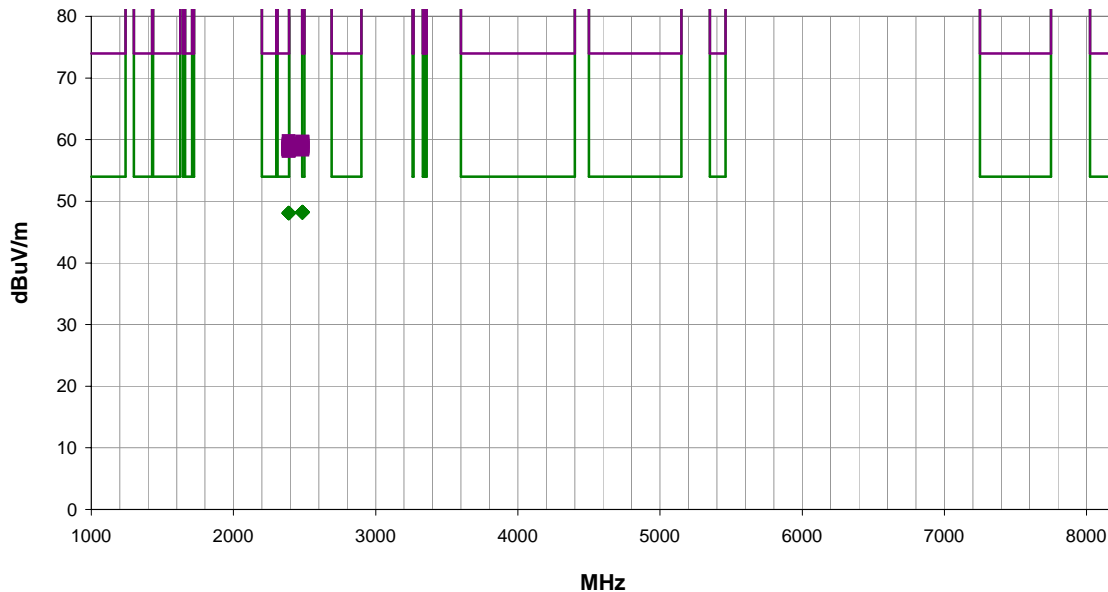
# SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	07/17/12	<i>Carl Engholm</i>
Project:	None	Temperature:	23.7 °C	
Job Site:	EV01	Humidity:	45% RH	
Serial Number:	364122652	Barometric Pres.:	1010.7 mbar	
EUT:	1516	Tested by: Carl Engholm		
Configuration:	1			
Customer:	Microsoft Corporation			
Attendees:	Mike Boucher, Steve Stegner			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting at 100% duty cycle, Bluetooth.			
Deviations:	None			
Comments:	See Comments below for EUT Orientation, Data Rate, and Channel.			

Test Specifications	FCC 15.247:2012	Test Method	ANSI C63.10:2009
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Run #	18	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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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
2485.443	26.4	1.9	1.2	286.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	EUT Horiz, 3DH5, High Ch
2485.343	26.4	1.9	1.0	341.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	EUT Vert, DH5, High Ch
2485.113	26.4	1.9	1.2	286.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	EUT Horiz, 2DH5, High Ch
2484.973	26.4	1.9	1.2	198.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT Vert, DH5, High Ch
2484.930	26.4	1.9	1.7	289.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT Horiz, DH5, High Ch
2484.577	26.4	1.9	1.0	341.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	EUT Vert, 2DH5, High Ch
2484.207	26.4	1.9	1.0	341.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	EUT Vert, 3DH5, High Ch
2483.577	26.4	1.9	1.5	93.0	3.0	20.0	Horz	AV	0.0	48.3	54.0	-5.7	EUT On Side, 3DH5, High Ch
2485.480	26.3	1.9	1.2	153.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT On Side, 3DH5, High Ch
2485.453	26.3	1.9	1.2	198.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Vert, 3DH5, High Ch
2485.423	26.3	1.9	1.2	153.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT On Side, DH5, High Ch
2485.310	26.3	1.9	1.5	93.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT On Side, 2DH5, High Ch
2485.093	26.3	1.9	1.2	286.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT Horiz, DH5, High Ch
2485.023	26.3	1.9	1.7	289.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Horiz, 3DH5, High Ch
2484.683	26.3	1.9	1.5	93.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT On Side, DH5, High Ch
2484.270	26.3	1.9	1.7	289.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Horiz, 2DH5, High Ch
2484.053	26.3	1.9	1.2	153.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT On Side, 2DH5, High Ch
2483.630	26.3	1.9	1.2	198.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Vert, 2DH5, High Ch
2388.313	26.6	1.6	1.5	108.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	EUT On Side, 2DH5, Low Ch
2388.580	26.6	1.6	1.2	247.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	EUT Vert, 2DH5, Low Ch
2389.167	26.6	1.5	1.2	175.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT On Side, DH5, Low Ch
2389.420	26.6	1.5	1.2	175.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT On Side, 3DH5, Low Ch

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
2389.920	26.6	1.5	1.2	175.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT On Side, 2DH5, Low Ch
2388.047	26.5	1.6	1.2	236.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Horiz, 2DH5, Low Ch
2388.187	26.5	1.6	1.2	0.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Vert, DH5, Low Ch
2388.193	26.5	1.6	1.2	236.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Horiz, 3DH5, Low Ch
2388.343	26.5	1.6	1.2	236.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Horiz, DH5, Low Ch
2388.490	26.5	1.6	1.2	0.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Vert, 3DH5, Low Ch
2388.613	26.5	1.6	1.2	0.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	EUT Vert, 2DH5, Low Ch
2388.573	26.5	1.6	1.2	247.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-5.9	EUT Vert, DH5, Low Ch
2388.917	26.5	1.6	1.2	247.0	3.0	20.0	Horz	AV	0.0	48.1	54.0	-6.0	EUT Vert, 3DH5, Low Ch
2389.040	26.5	1.5	1.5	108.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT On Side, 3DH5, Low Ch
2389.330	26.5	1.5	1.2	57.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT Horiz, 2DH5, Low Ch
2389.383	26.5	1.5	1.2	57.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT Horiz, 3DH5, Low Ch
2389.637	26.5	1.5	1.5	106.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	EUT On Side, DH5, Low Ch
2389.953	26.5	1.5	1.2	57.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT Horiz, DH5, Low Ch
2389.373	38.2	1.5	1.2	236.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT Horiz, DH5, Low Ch
2485.373	37.8	1.9	1.0	341.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT Vert, 3DH5, High Ch
2484.550	37.8	1.9	1.2	153.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT On Side, DH5, High Ch
2484.730	37.7	1.9	1.7	289.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4	EUT Horiz, 2DH5, High Ch
2484.643	37.4	1.9	1.7	289.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	EUT Horiz, DH5, High Ch
2483.573	37.4	1.9	1.0	341.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	EUT Vert, 2DH5, High Ch
2483.573	37.4	1.9	1.2	286.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	EUT Horiz, 3DH5, High Ch
2388.243	37.7	1.6	1.2	175.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	EUT On Side, 3DH5, Low Ch
2388.910	37.7	1.6	1.5	106.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.8	EUT On Side, DH5, Low Ch
2484.853	37.2	1.9	1.2	198.0	3.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Vert, 3DH5, High Ch
2483.660	37.2	1.9	1.2	286.0	3.0	20.0	Vert	PK	0.0	59.1	74.0	-14.9	EUT Horiz, 2DH5, High Ch
2388.787	37.5	1.6	1.5	108.0	3.0	20.0	Vert	PK	0.0	59.1	74.0	-14.9	EUT On Side, 2DH5, Low Ch
2484.790	37.1	1.9	1.2	153.0	3.0	20.0	Vert	PK	0.0	59.0	74.0	-15.0	EUT On Side, 3DH5, High Ch
2484.677	37.1	1.9	1.5	93.0	3.0	20.0	Horz	PK	0.0	59.0	74.0	-15.0	EUT On Side, 2DH5, High Ch
2389.380	37.4	1.5	1.2	236.0	3.0	20.0	Vert	PK	0.0	58.9	74.0	-15.1	EUT Horiz, 2DH5, Low Ch
2485.143	37.0	1.9	1.2	198.0	3.0	20.0	Horz	PK	0.0	58.9	74.0	-15.1	EUT Vert, 2DH5, High Ch
2484.453	37.0	1.9	1.0	341.0	3.0	20.0	Vert	PK	0.0	58.9	74.0	-15.1	EUT Vert, DH5, High Ch
2389.370	37.3	1.5	1.2	0.0	3.0	20.0	Vert	PK	0.0	58.8	74.0	-15.2	EUT Vert, 3DH5, Low Ch
2484.140	36.9	1.9	1.5	93.0	3.0	20.0	Horz	PK	0.0	58.8	74.0	-15.2	EUT On Side, 3DH5, High Ch
2484.010	36.9	1.9	1.7	289.0	3.0	20.0	Horz	PK	0.0	58.8	74.0	-15.2	EUT Horiz, 3DH5, High Ch
2389.720	37.2	1.5	1.5	108.0	3.0	20.0	Vert	PK	0.0	58.7	74.0	-15.3	EUT On Side, 3DH5, Low Ch
2485.187	36.8	1.9	1.5	93.0	3.0	20.0	Horz	PK	0.0	58.7	74.0	-15.3	EUT On Side, DH5, High Ch
2484.673	36.8	1.9	1.2	153.0	3.0	20.0	Vert	PK	0.0	58.7	74.0	-15.3	EUT On Side, 2DH5, High Ch
2388.257	37.1	1.6	1.2	247.0	3.0	20.0	Horz	PK	0.0	58.7	74.0	-15.3	EUT Vert, 3DH5, Low Ch
2388.923	37.1	1.6	1.2	57.0	3.0	20.0	Horz	PK	0.0	58.7	74.0	-15.4	EUT Horiz, 2DH5, Low Ch
2484.650	36.7	1.9	1.2	286.0	3.0	20.0	Vert	PK	0.0	58.6	74.0	-15.4	EUT Horiz, DH5, High Ch
2389.973	37.0	1.5	1.2	175.0	3.0	20.0	Horz	PK	0.0	58.5	74.0	-15.5	EUT On Side, 2DH5, Low Ch
2388.020	36.9	1.6	1.2	0.0	3.0	20.0	Vert	PK	0.0	58.5	74.0	-15.5	EUT Vert, 2DH5, Low Ch
2388.710	36.9	1.6	1.2	175.0	3.0	20.0	Horz	PK	0.0	58.5	74.0	-15.5	EUT On Side, DH5, Low Ch
2388.680	36.9	1.6	1.2	247.0	3.0	20.0	Horz	PK	0.0	58.5	74.0	-15.5	EUT Vert, 2DH5, Low Ch
2388.960	36.9	1.5	1.2	247.0	3.0	20.0	Horz	PK	0.0	58.4	74.0	-15.6	EUT Vert, DH5, Low Ch
2389.700	36.9	1.5	1.2	0.0	3.0	20.0	Vert	PK	0.0	58.4	74.0	-15.6	EUT Vert, DH5, Low Ch
2485.150	36.5	1.9	1.2	198.0	3.0	20.0	Horz	PK	0.0	58.4	74.0	-15.6	EUT Vert, DH5, High Ch
2389.527	36.7	1.5	1.2	57.0	3.0	20.0	Horz	PK	0.0	58.2	74.0	-15.8	EUT Horiz, 3DH5, Low Ch
2389.853	36.7	1.5	1.2	236.0	3.0	20.0	Vert	PK	0.0	58.2	74.0	-15.8	EUT Horiz, 3DH5, Low Ch
2389.387	36.6	1.5	1.2	57.0	3.0	20.0	Horz	PK	0.0	58.1	74.0	-15.9	EUT Horiz, DH5, Low Ch



# AC 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 DH5, High Channel, 2480 MHz
- Transmitting Bluetooth DH5, Mid Channel, 2441 MHz
- Transmitting Bluetooth DH5, Low Channel, 2402 MHz

## POWER SETTINGS INVESTIGATED

110VAC/60Hz

## CONFIGURATIONS INVESTIGATED

MCSO1608 - 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	HHH	2/1/2012	24 mo
Attenuator	Coaxicom	66702 2910-20	RBR	8/7/2012	12 mo
EV07 Cables	N/A	Conducted Cables	EVG	4/27/2012	12 mo
LISN	Solar	9252-50-R-24-BNC	LIR	11/4/2011	12 mo
LISN	Solar	9252-50-R-24-BNC	LIP	4/16/2012	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

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

## MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

## 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.



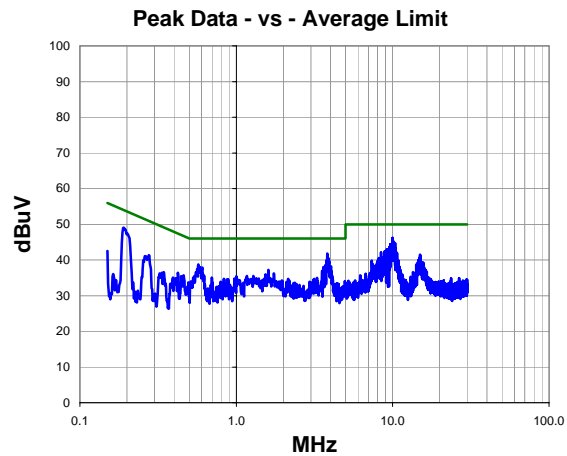
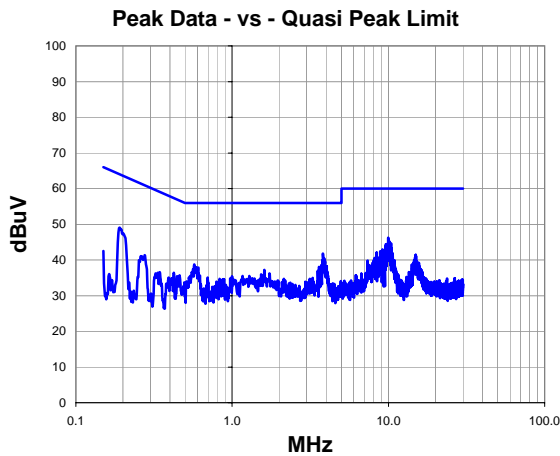
# AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	08/08/12	<i>Rod Pelouin</i>
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	46% RH	
Serial Number:	215622952	Barometric Pres.:	1022.1 mbar	
EUT:	1516			Tested by: Rod Pelouin
Configuration:	3			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Bluetooth DH5, Low Channel			
Deviations:	No deviations.			
Comments:	None			

Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	5	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.980	25.2	21.0	46.2	60.0	-13.8
3.816	21.2	20.6	41.8	56.0	-14.2
10.030	24.4	21.0	45.4	60.0	-14.6
10.160	24.1	21.0	45.1	60.0	-14.9
0.191	28.7	20.4	49.1	64.0	-15.0
10.380	23.7	21.0	44.7	60.0	-15.3
9.890	23.6	21.0	44.6	60.0	-15.4
10.220	23.4	21.0	44.4	60.0	-15.6
9.650	23.4	21.0	44.4	60.0	-15.6
10.270	23.2	21.0	44.2	60.0	-15.8
10.090	23.1	21.0	44.1	60.0	-15.9
9.780	23.1	21.0	44.1	60.0	-15.9
9.710	22.8	21.0	43.8	60.0	-16.2
9.610	22.8	21.0	43.8	60.0	-16.2
3.936	19.1	20.6	39.7	56.0	-16.3
10.450	22.3	21.0	43.3	60.0	-16.7
10.410	22.2	21.0	43.2	60.0	-16.8
9.170	22.0	20.9	42.9	60.0	-17.1
0.572	18.4	20.3	38.7	56.0	-17.3
3.720	18.0	20.6	38.6	56.0	-17.4

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.980	25.2	21.0	46.2	50.0	-3.8
3.816	21.2	20.6	41.8	46.0	-4.2
10.030	24.4	21.0	45.4	50.0	-4.6
10.160	24.1	21.0	45.1	50.0	-4.9
0.191	28.7	20.4	49.1	54.0	-5.0
10.380	23.7	21.0	44.7	50.0	-5.3
9.890	23.6	21.0	44.6	50.0	-5.4
10.220	23.4	21.0	44.4	50.0	-5.6
9.650	23.4	21.0	44.4	50.0	-5.6
10.270	23.2	21.0	44.2	50.0	-5.8
10.090	23.1	21.0	44.1	50.0	-5.9
9.780	23.1	21.0	44.1	50.0	-5.9
9.710	22.8	21.0	43.8	50.0	-6.2
9.610	22.8	21.0	43.8	50.0	-6.2
3.936	19.1	20.6	39.7	46.0	-6.3
10.450	22.3	21.0	43.3	50.0	-6.7
10.410	22.2	21.0	43.2	50.0	-6.8
9.170	22.0	20.9	42.9	50.0	-7.1
0.572	18.4	20.3	38.7	46.0	-7.3
3.720	18.0	20.6	38.6	46.0	-7.4



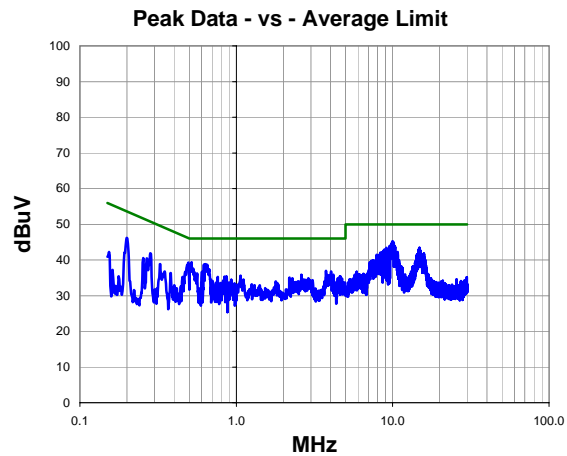
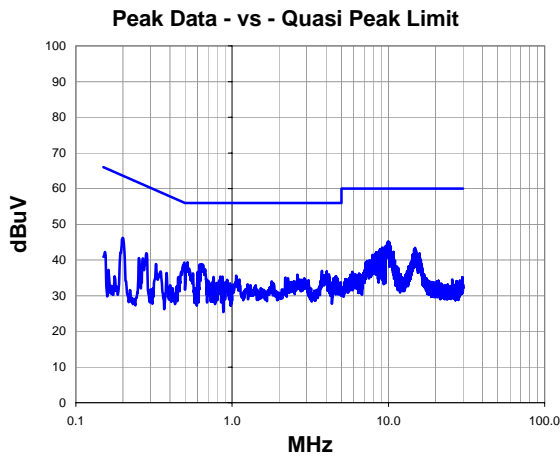
# AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	08/08/12	<i>Rod Pelouin</i>
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	46% RH	
Serial Number:	215622952	Barometric Pres.:	1022.1 mbar	
EUT:	1516			Tested by: Rod Pelouin
Configuration:	3			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Bluetooth DH5, Low Channel			
Deviations:	No deviations.			
Comments:	None			

Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	6	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.020	24.1	21.0	45.1	60.0	-14.9
9.940	24.1	21.0	45.1	60.0	-14.9
10.150	23.9	21.0	44.9	60.0	-15.1
9.830	23.7	21.0	44.7	60.0	-15.3
10.090	23.5	21.0	44.5	60.0	-15.5
9.760	23.2	21.0	44.2	60.0	-15.8
10.190	23.0	21.0	44.0	60.0	-16.0
10.260	22.9	21.0	43.9	60.0	-16.1
9.530	22.8	21.0	43.8	60.0	-16.2
10.350	22.7	21.0	43.7	60.0	-16.3
9.650	22.7	21.0	43.7	60.0	-16.3
14.840	22.2	21.3	43.5	60.0	-16.5
9.110	22.5	20.9	43.4	60.0	-16.6
0.517	19.1	20.3	39.4	56.0	-16.6
9.580	22.4	21.0	43.4	60.0	-16.6
0.493	19.0	20.3	39.3	56.1	-16.8
8.860	22.1	20.9	43.0	60.0	-17.0
9.190	22.0	20.9	42.9	60.0	-17.1
14.610	21.6	21.2	42.8	60.0	-17.2
9.000	21.9	20.9	42.8	60.0	-17.2

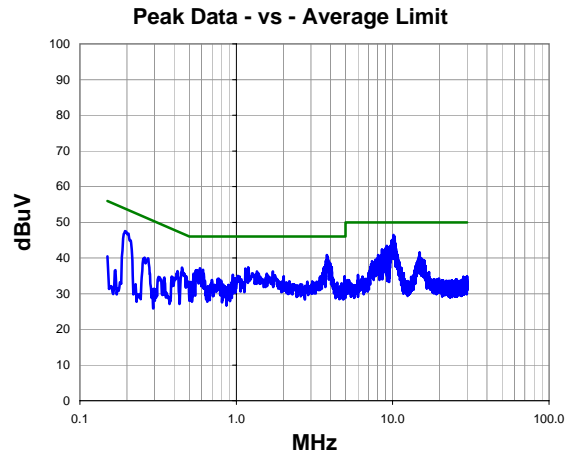
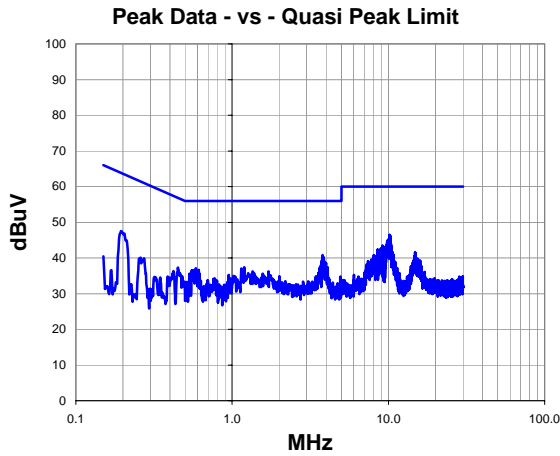
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.020	24.1	21.0	45.1	50.0	-4.9
9.940	24.1	21.0	45.1	50.0	-4.9
10.150	23.9	21.0	44.9	50.0	-5.1
9.830	23.7	21.0	44.7	50.0	-5.3
10.090	23.5	21.0	44.5	50.0	-5.5
9.760	23.2	21.0	44.2	50.0	-5.8
10.190	23.0	21.0	44.0	50.0	-6.0
10.260	22.9	21.0	43.9	50.0	-6.1
9.530	22.8	21.0	43.8	50.0	-6.2
10.350	22.7	21.0	43.7	50.0	-6.3
9.650	22.7	21.0	43.7	50.0	-6.3
14.840	22.2	21.3	43.5	50.0	-6.5
9.110	22.5	20.9	43.4	50.0	-6.6
0.517	19.1	20.3	39.4	46.0	-6.6
9.580	22.4	21.0	43.4	50.0	-6.6
0.493	19.0	20.3	39.3	46.1	-6.8
8.860	22.1	20.9	43.0	50.0	-7.0
9.190	22.0	20.9	42.9	50.0	-7.1
14.610	21.6	21.2	42.8	50.0	-7.2
9.000	21.9	20.9	42.8	50.0	-7.2



Work Order:	MCSO1608	Date:	08/08/12	<i>Rod Pelouin</i>
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	46% RH	
Serial Number:	215622952	Barometric Pres.:	1022.1 mbar	
EUT:	1516			Tested by: Rod Pelouin
Configuration:	3			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Bluetooth DH5, Mid Channel			
Deviations:	No deviations.			
Comments:	None			

Test Specifications	FCC 15.207:2012	Test Method	ANSI C63.10:2009
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Run #	7	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.150	25.5	21.0	46.5	60.0	-13.5
10.290	25.1	21.0	46.1	60.0	-13.9
9.980	24.1	21.0	45.1	60.0	-14.9
3.800	20.2	20.6	40.8	56.0	-15.2
10.210	23.7	21.0	44.7	60.0	-15.3
3.840	19.7	20.6	40.3	56.0	-15.7
10.360	23.1	21.0	44.1	60.0	-15.9
0.194	27.2	20.4	47.6	63.9	-16.3
9.690	22.5	21.0	43.5	60.0	-16.5
9.160	22.5	20.9	43.4	60.0	-16.6
9.580	22.2	21.0	43.2	60.0	-16.8
9.520	22.1	21.0	43.1	60.0	-16.9
3.952	18.2	20.6	38.8	56.0	-17.2
9.020	21.8	20.9	42.7	60.0	-17.3
10.500	21.6	21.0	42.6	60.0	-17.4
3.992	18.0	20.6	38.6	56.0	-17.4
8.950	21.6	20.9	42.5	60.0	-17.5
8.540	21.5	20.9	42.4	60.0	-17.6
8.910	21.4	20.9	42.3	60.0	-17.7
10.470	21.2	21.0	42.2	60.0	-17.8

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.150	25.5	21.0	46.5	50.0	-3.5
10.290	25.1	21.0	46.1	50.0	-3.9
9.980	24.1	21.0	45.1	50.0	-4.9
3.800	20.2	20.6	40.8	46.0	-5.2
10.210	23.7	21.0	44.7	50.0	-5.3
3.840	19.7	20.6	40.3	46.0	-5.7
10.360	23.1	21.0	44.1	50.0	-5.9
0.194	27.2	20.4	47.6	53.9	-6.3
9.690	22.5	21.0	43.5	50.0	-6.5
9.160	22.5	20.9	43.4	50.0	-6.6
9.580	22.2	21.0	43.2	50.0	-6.8
9.520	22.1	21.0	43.1	50.0	-6.9
3.952	18.2	20.6	38.8	46.0	-7.2
9.020	21.8	20.9	42.7	50.0	-7.3
10.500	21.6	21.0	42.6	50.0	-7.4
3.992	18.0	20.6	38.6	46.0	-7.4
8.950	21.6	20.9	42.5	50.0	-7.5
8.540	21.5	20.9	42.4	50.0	-7.6
8.910	21.4	20.9	42.3	50.0	-7.7
10.470	21.2	21.0	42.2	50.0	-7.8



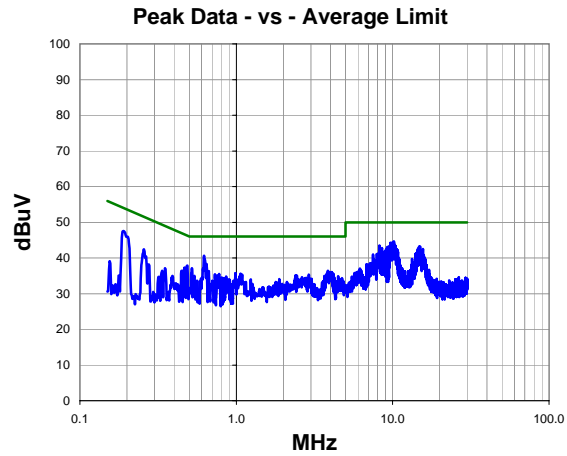
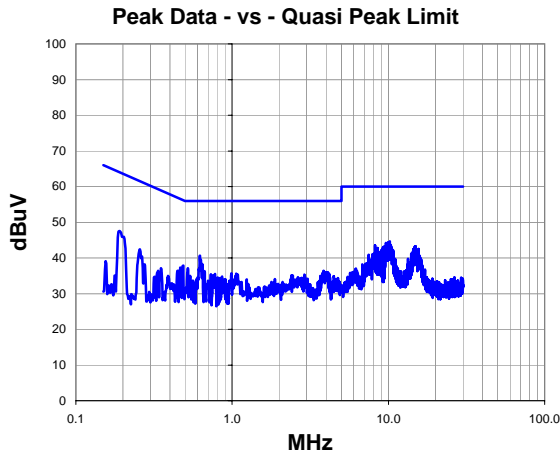
# AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	08/08/12	<i>Rod Pelouin</i>
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	46% RH	
Serial Number:	215622952	Barometric Pres.:	1022.1 mbar	
EUT:	1516			Tested by: Rod Pelouin
Configuration:	3			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Bluetooth DH5, Mid Channel			
Deviations:	No deviations.			
Comments:	None			

Test Specifications	FCC 15.207:2012	Test Method	ANSI C63.10:2009
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Run #	8	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.190	23.7	21.0	44.7	60.0	-15.3
0.623	20.3	20.3	40.6	56.0	-15.4
10.000	23.4	21.0	44.4	60.0	-15.6
10.040	23.3	21.0	44.3	60.0	-15.7
10.140	23.2	21.0	44.2	60.0	-15.8
9.660	23.2	21.0	44.2	60.0	-15.8
9.930	23.0	21.0	44.0	60.0	-16.0
9.860	23.0	21.0	44.0	60.0	-16.0
0.191	27.2	20.4	47.6	64.0	-16.5
8.220	22.7	20.8	43.5	60.0	-16.5
14.940	22.0	21.3	43.3	60.0	-16.7
9.380	22.2	21.0	43.2	60.0	-16.8
14.760	21.9	21.2	43.1	60.0	-16.9
9.580	22.1	21.0	43.1	60.0	-16.9
9.230	22.1	20.9	43.0	60.0	-17.0
10.450	21.8	21.0	42.8	60.0	-17.2
8.530	21.9	20.9	42.8	60.0	-17.2
14.630	21.4	21.2	42.6	60.0	-17.4
9.170	21.7	20.9	42.6	60.0	-17.4
10.510	21.6	21.0	42.6	60.0	-17.4

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.190	23.7	21.0	44.7	50.0	-5.3
0.623	20.3	20.3	40.6	46.0	-5.4
10.000	23.4	21.0	44.4	50.0	-5.6
10.040	23.3	21.0	44.3	50.0	-5.7
10.140	23.2	21.0	44.2	50.0	-5.8
9.660	23.2	21.0	44.2	50.0	-5.8
9.930	23.0	21.0	44.0	50.0	-6.0
9.860	23.0	21.0	44.0	50.0	-6.0
0.191	27.2	20.4	47.6	54.0	-6.5
8.220	22.7	20.8	43.5	50.0	-6.5
14.940	22.0	21.3	43.3	50.0	-6.7
9.380	22.2	21.0	43.2	50.0	-6.8
14.760	21.9	21.2	43.1	50.0	-6.9
9.580	22.1	21.0	43.1	50.0	-6.9
9.230	22.1	20.9	43.0	50.0	-7.0
10.450	21.8	21.0	42.8	50.0	-7.2
8.530	21.9	20.9	42.8	50.0	-7.2
14.630	21.4	21.2	42.6	50.0	-7.4
9.170	21.7	20.9	42.6	50.0	-7.4
10.510	21.6	21.0	42.6	50.0	-7.4

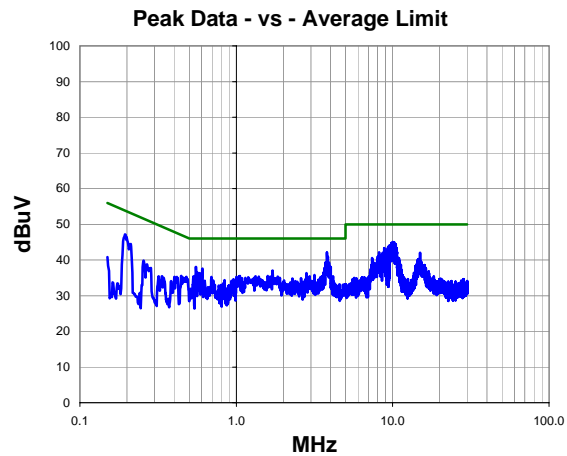
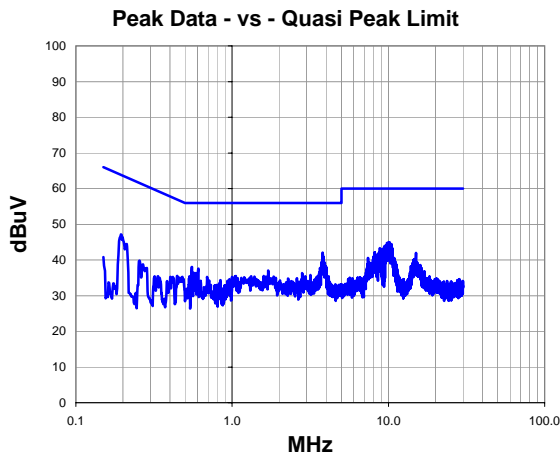


# AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	08/08/12	<i>Roddy Le Pelouin</i>
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	46% RH	
Serial Number:	215622952	Barometric Pres.:	1022.1 mbar	
EUT:	1516			Tested by: Rod Pelouin
Configuration:	3			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Bluetooth DH5, High Channel			
Deviations:	No deviations.			
Comments:	None			

Test Specifications	FCC 15.207:2012	Test Method	ANSI C63.10:2009
Run #	9	Line:	High Line
		Ext. Attenuation:	20
		Results	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.800	21.5	20.6	42.1	56.0	-13.9
10.030	24.0	21.0	45.0	60.0	-15.0
10.230	23.9	21.0	44.9	60.0	-15.1
3.848	20.3	20.6	40.9	56.0	-15.1
9.800	23.8	21.0	44.8	60.0	-15.2
9.930	23.7	21.0	44.7	60.0	-15.3
10.480	23.4	21.0	44.4	60.0	-15.6
9.480	23.0	21.0	44.0	60.0	-16.0
10.380	22.8	21.0	43.8	60.0	-16.2
9.360	22.6	21.0	43.6	60.0	-16.4
3.728	18.8	20.6	39.4	56.0	-16.6
10.620	22.3	21.0	43.3	60.0	-16.7
0.194	26.8	20.4	47.2	63.9	-16.7
8.830	22.4	20.9	43.3	60.0	-16.7
3.920	18.6	20.6	39.2	56.0	-16.8
9.040	22.0	20.9	42.9	60.0	-17.1
9.630	21.9	21.0	42.9	60.0	-17.1
9.530	21.9	21.0	42.9	60.0	-17.1
9.430	21.9	21.0	42.9	60.0	-17.1
10.640	21.5	21.0	42.5	60.0	-17.5

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.800	21.5	20.6	42.1	46.0	-3.9
10.030	24.0	21.0	45.0	50.0	-5.0
10.230	23.9	21.0	44.9	50.0	-5.1
3.848	20.3	20.6	40.9	46.0	-5.1
9.800	23.8	21.0	44.8	50.0	-5.2
9.930	23.7	21.0	44.7	50.0	-5.3
10.480	23.4	21.0	44.4	50.0	-5.6
9.480	23.0	21.0	44.0	50.0	-6.0
10.380	22.8	21.0	43.8	50.0	-6.2
9.360	22.6	21.0	43.6	50.0	-6.4
3.728	18.8	20.6	39.4	46.0	-6.6
10.620	22.3	21.0	43.3	50.0	-6.7
0.194	26.8	20.4	47.2	53.9	-6.7
8.830	22.4	20.9	43.3	50.0	-6.7
3.920	18.6	20.6	39.2	46.0	-6.8
9.040	22.0	20.9	42.9	50.0	-7.1
9.630	21.9	21.0	42.9	50.0	-7.1
9.530	21.9	21.0	42.9	50.0	-7.1
9.430	21.9	21.0	42.9	50.0	-7.1
10.640	21.5	21.0	42.5	50.0	-7.5

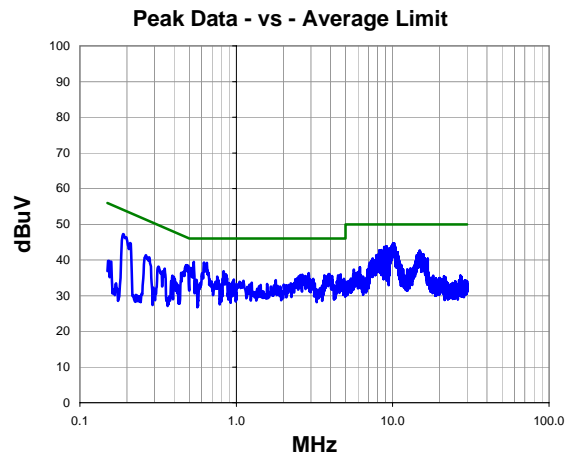
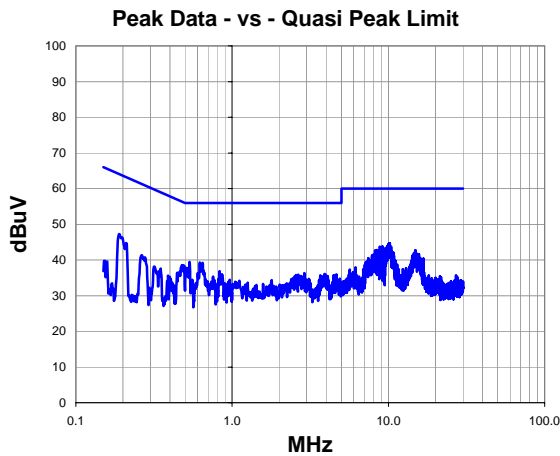


# AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2012.05.07  
PSA-ESCI Version 2011.12.21

Work Order:	MCSO1608	Date:	08/08/12	<i>Rod Pelouquin</i>
Project:	None	Temperature:	24 °C	
Job Site:	EV01	Humidity:	46% RH	
Serial Number:	215622952	Barometric Pres.:	1022.1 mbar	
EUT:	1516	Tested by: Rod Pelouquin		
Configuration:	3			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Bluetooth DH5, High Channel			
Deviations:	No deviations.			
Comments:	None			

Test Specifications	FCC 15.207:2012	Test Method	ANSI C63.10:2009
Run #	10	Line:	Neutral
Ext. Attenuation:	20	Results	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.220	23.7	21.0	44.7	60.0	-15.3
10.120	23.7	21.0	44.7	60.0	-15.3
10.020	23.5	21.0	44.5	60.0	-15.5
9.140	22.9	20.9	43.8	60.0	-16.2
10.400	22.7	21.0	43.7	60.0	-16.3
8.820	22.8	20.9	43.7	60.0	-16.3
0.534	19.2	20.3	39.5	56.0	-16.5
9.700	22.4	21.0	43.4	60.0	-16.6
9.290	22.4	21.0	43.4	60.0	-16.6
0.621	19.0	20.3	39.3	56.0	-16.7
0.189	26.9	20.3	47.2	64.1	-16.8
9.020	22.0	20.9	42.9	60.0	-17.1
8.450	21.9	20.8	42.7	60.0	-17.3
8.230	21.9	20.8	42.7	60.0	-17.3
14.870	21.4	21.3	42.7	60.0	-17.3
8.520	21.7	20.9	42.6	60.0	-17.4
14.980	21.2	21.3	42.5	60.0	-17.5
8.870	21.4	20.9	42.3	60.0	-17.7
0.482	18.3	20.3	38.6	56.3	-17.7
9.610	21.2	21.0	42.2	60.0	-17.8

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
10.220	23.7	21.0	44.7	50.0	-5.3
10.120	23.7	21.0	44.7	50.0	-5.3
10.020	23.5	21.0	44.5	50.0	-5.5
9.140	22.9	20.9	43.8	50.0	-6.2
10.400	22.7	21.0	43.7	50.0	-6.3
8.820	22.8	20.9	43.7	50.0	-6.3
0.534	19.2	20.3	39.5	46.0	-6.5
9.700	22.4	21.0	43.4	50.0	-6.6
9.290	22.4	21.0	43.4	50.0	-6.6
0.621	19.0	20.3	39.3	46.0	-6.7
0.189	26.9	20.3	47.2	54.1	-6.8
9.020	22.0	20.9	42.9	50.0	-7.1
8.450	21.9	20.8	42.7	50.0	-7.3
8.230	21.9	20.8	42.7	50.0	-7.3
14.870	21.4	21.3	42.7	50.0	-7.3
8.520	21.7	20.9	42.6	50.0	-7.4
14.980	21.2	21.3	42.5	50.0	-7.5
8.870	21.4	20.9	42.3	50.0	-7.7
0.482	18.3	20.3	38.6	46.3	-7.7
9.610	21.2	21.0	42.2	50.0	-7.8