PolyVision Corporation

PolyVision Bluetooth Radio
Model: Eno Receiver

Report #: POLV0114

Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

WTD 12.5.23

Last Date of Test: August 6, 2012
PolyVision Corporation
PolyVision Bluetooth Radio Model: Eno Receiver

Emissions

Test Description	Specification	Test Method	Pass/Fail
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	Pass
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 Channels	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 Conducted Emissions	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: (503) 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).

Revision History

Revision Number	Description	Date	Page Number
00	None		

Accreditations and Authorizations

Revision
02/21/2012

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. The scope includes radio, ITE, and medical standards from around the world. See: http://www.nwemc.com/accreditations/

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.

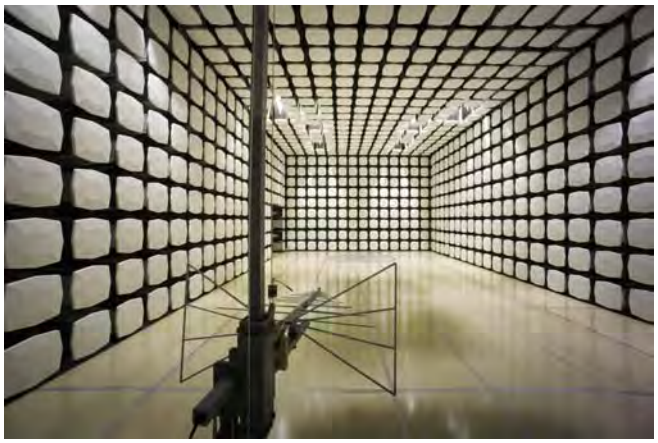
Russia

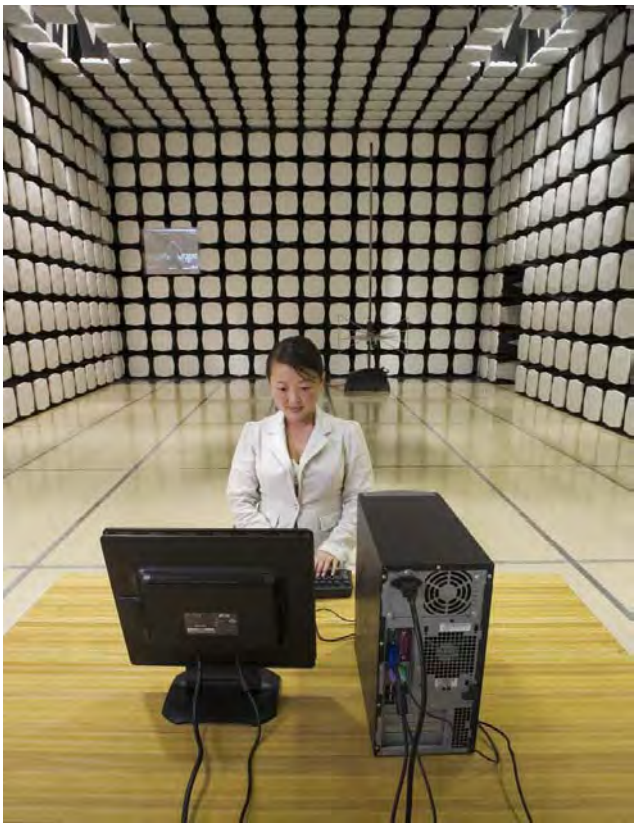
GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards**.**

Locations

Revision 8/3/12

Oregon Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	**California** Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	**New York** Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	**Minnesota** Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	**Washington** Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675
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





PRODUCT DESCRIPTION

WTD 12.5.23

Client and Equipment Under Test (EUT) Information

Company Name:	PolyVision Corporation
Address:	3970 Johns Creek Ct., Suite 325
City, State, Zip:	Suwanee, GA 30024
Test Requested By:	David Behner
Model:	PolyVision Bluetooth Radio, Model: Eno Receiver
First Date of Test:	August 2, 2012
Last Date of Test:	August 6, 2012
Receipt Date of Samples:	August 2, 2012
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

Bluetooth EDR radio, 3dBm output, PCB antenna with a gain less than 2dBi

Clocks and Oscillators of the EUT:

None Provided

Testing Objective:

To demonstrate compliance to FCC 15.247 requirements.

CONFIGURATIONS

WTD 12.5.23

Configuration POLV0114- 1

Software/Firmware Running during test	
Description	**Version**
Firmware	0.81

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Bluetooth Dongle	PolyVision Corporation	Eno Receiver	PV1928006A

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB Power Supply - Remote	unknown	unknown	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0m	No	Bluetooth Dongle	USB Power Supply
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration POLV0114- 3

Software/Firmware Running during test	
Description	**Version**
Firmware	0.81
BlueTest3	None

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Bluetooth Dongle	PolyVision Corporation	Eno Receiver	PV1928006A

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Power Supply	MPJA	DC Regulated Power Supply	006708

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	2.0m	No	Bluetooth Dongle	USB Power Supply
DC Power	No	0.9m	No	Bluetooth Dongle	Power Supply
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

WTD 12.5.23

Configuration POLV0114- 4

Software/Firmware Running during test	
Description	**Version**
Firmware	0.81
BlueTest3	None

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Bluetooth Dongle	PolyVision Corporation	Eno Receiver	PV1982006C

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Programming Board	CSR	SPI Level Shifter	None
USB-SPI Converter	CSR	1324	259370

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	4.0m	No	Bluetooth Dongle	Computer
USB	Yes	1.8m	No	USB-SPI Converter	Computer
RJ-45	No	1.8m	No	USB-SPI Converter	Programming Board
Programming	No	0.2m	No	Bluetooth Dongle	Programming Board
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

NORTHWEST EMC

WTD 12.5.23

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	8/2/2012	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	8/3/2012	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.
3	8/6/2012	Spurious 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.
4	8/6/2012	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.
5	8/6/2012	Channel Spacing	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	8/6/2012	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.
7	8/6/2012	Number of Hopping Frequencies	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	8/6/2012	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.
9	8/6/2012	Dwell Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

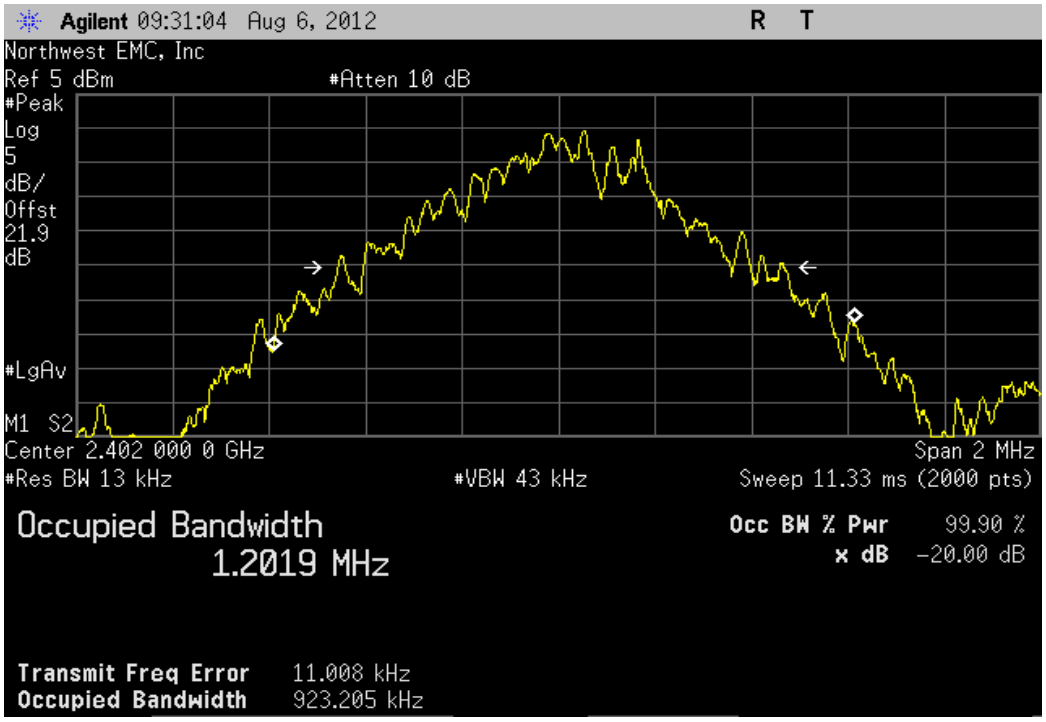
Configuration #	4	Signature

		Value	Limit	Result
DH5, GFSK				
	Low Channel	923.205 kHz	< 1.5 MHz	Pass
	Mid Channel	921.102 kHz	< 1.5 MHz	Pass
	High Channel	923.067 kHz	< 1.5 MHz	Pass
2DH5, 4-DQPSK				
	Low Channel	1.23 MHz	< 1.5 MHz	Pass
	Mid Channel	1.237 MHz	< 1.5 MHz	Pass
	High Channel	1.234 MHz	< 1.5 MHz	Pass
3DH5, 8-DPSK				
	Low Channel	1.26 MHz	< 1.5 MHz	Pass
	Mid Channel	1.277 MHz	< 1.5 MHz	Pass
	High Channel	1.256 MHz	< 1.5 MHz	Pass

Occupied Bandwidth

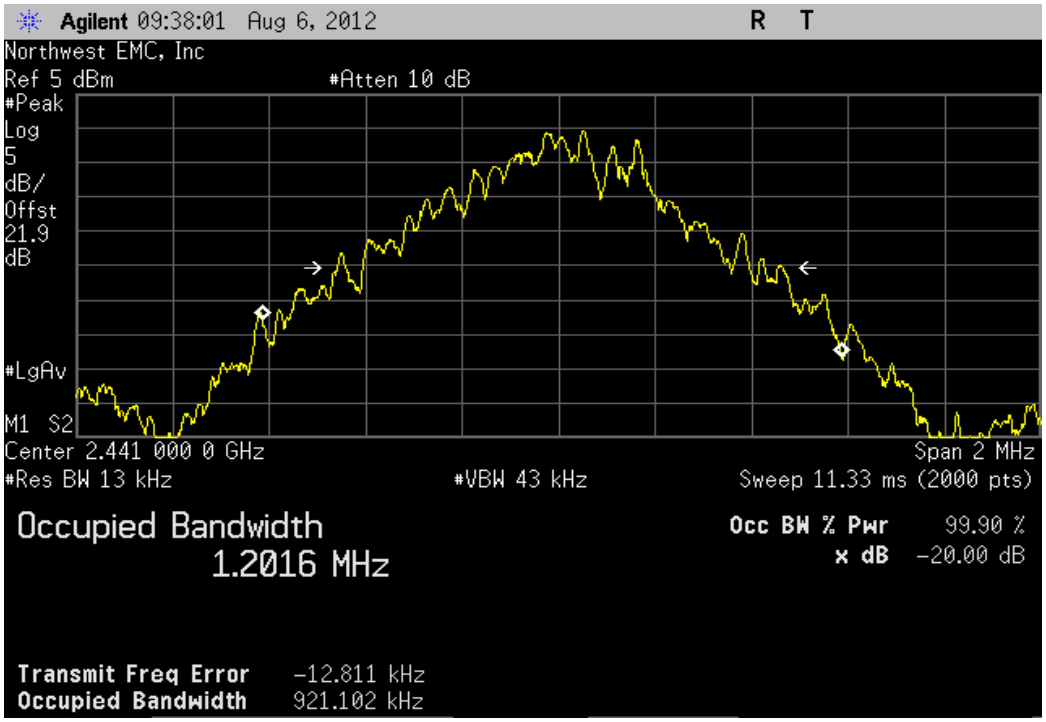
DH5, GFSK, Low Channel

				Value	Limit	Result
				923.205 kHz	< 1.5 MHz	Pass



DH5, GFSK, Mid Channel

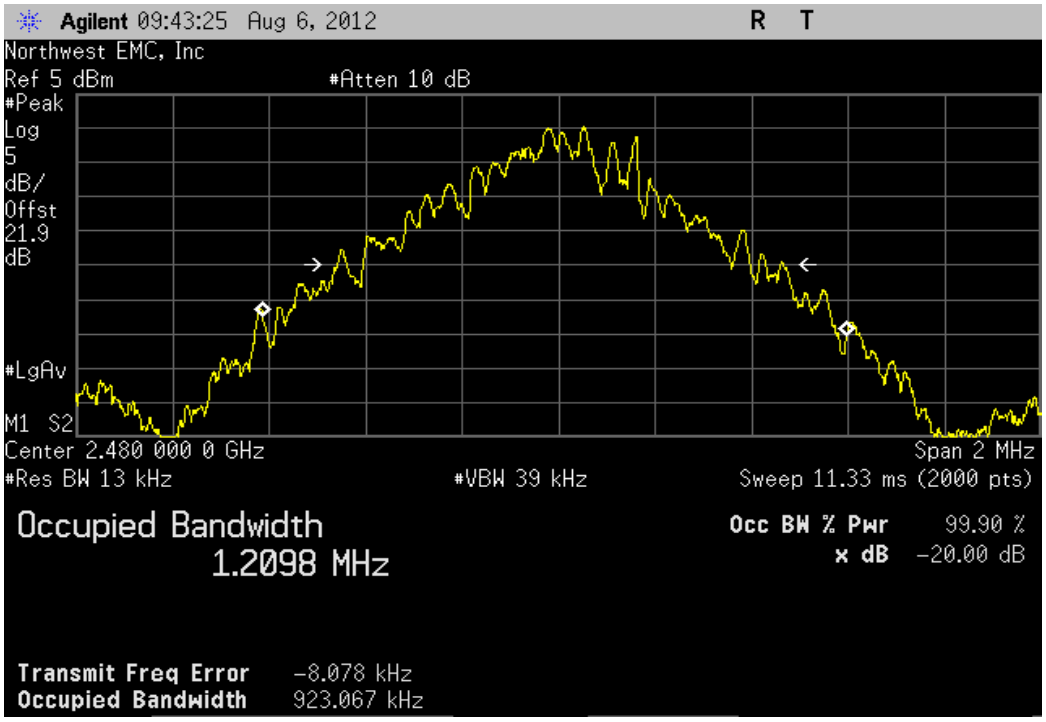
				Value	Limit	Result
				921.102 kHz	< 1.5 MHz	Pass



Occupied Bandwidth

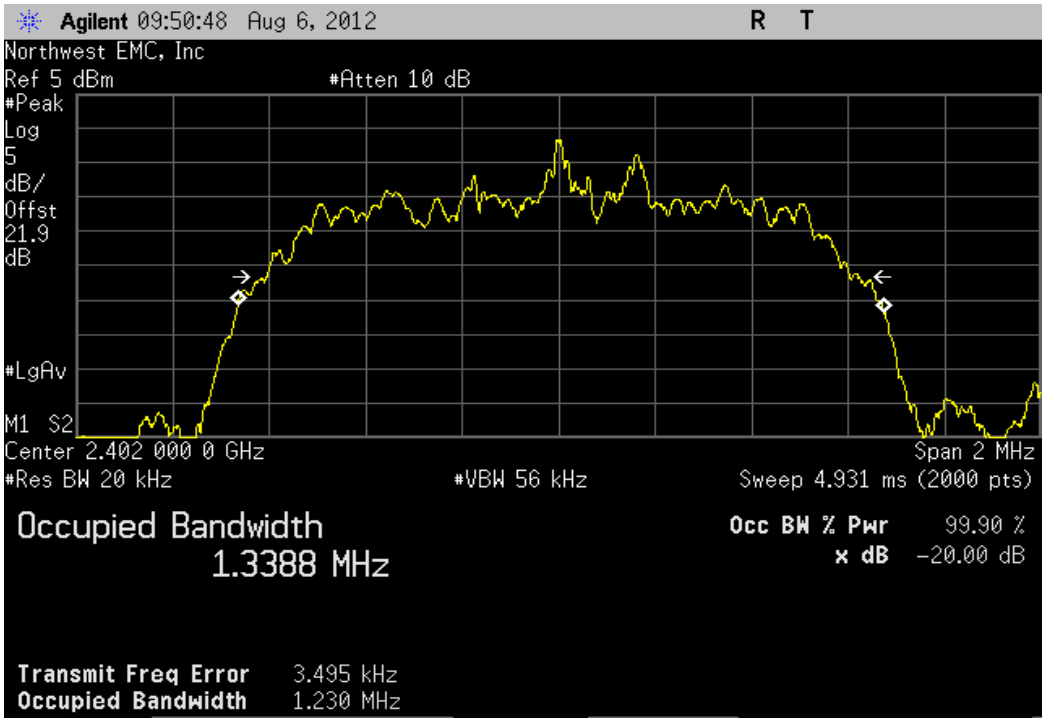
DH5, GFSK, High Channel

				Value	Limit	Result
				923.067 kHz	< 1.5 MHz	Pass



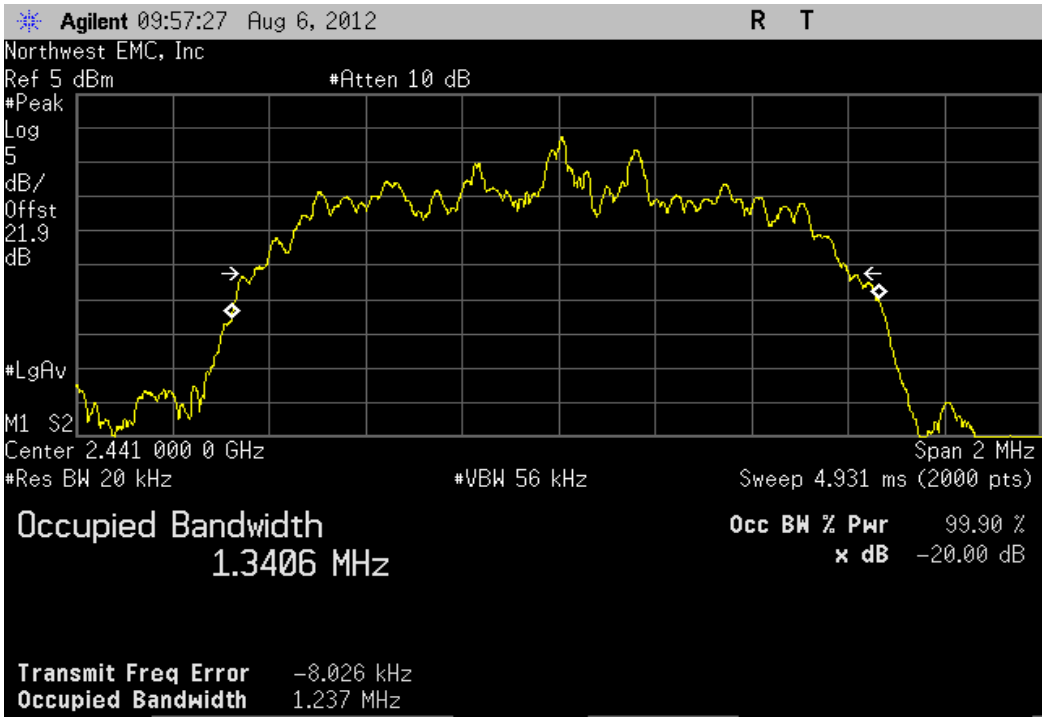
2DH5, 4-DQPSK, Low Channel

				Value	Limit	Result
				1.23 MHz	< 1.5 MHz	Pass



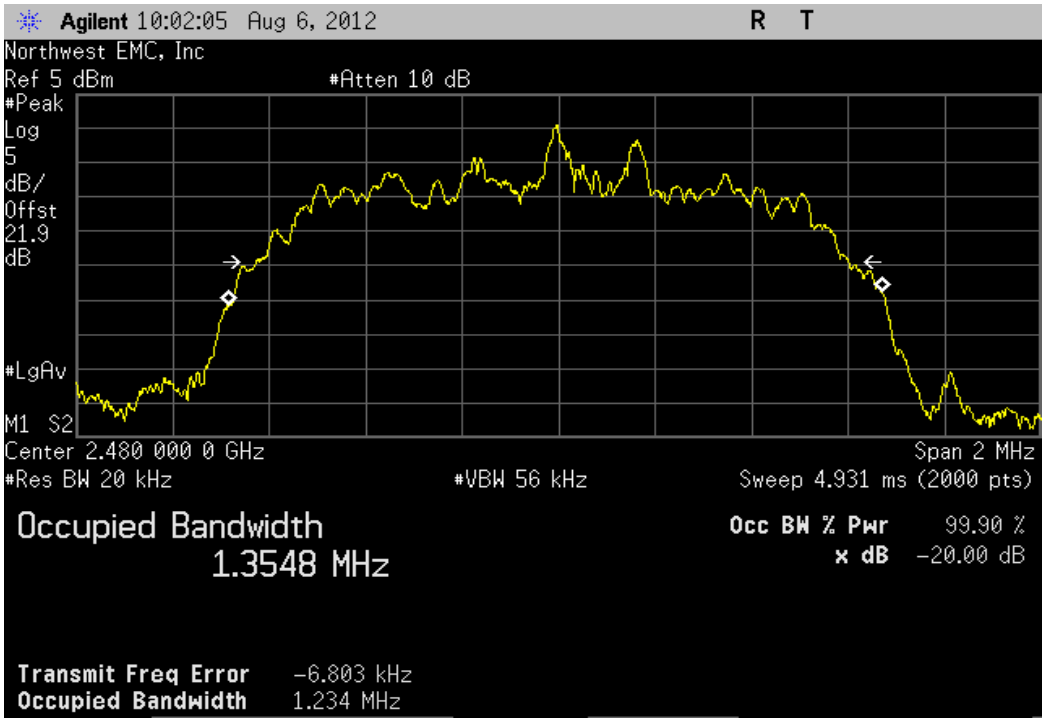
2DH5, 4-DQPSK, Mid Channel

				Value	Limit	Result
				1.237 MHz	< 1.5 MHz	Pass



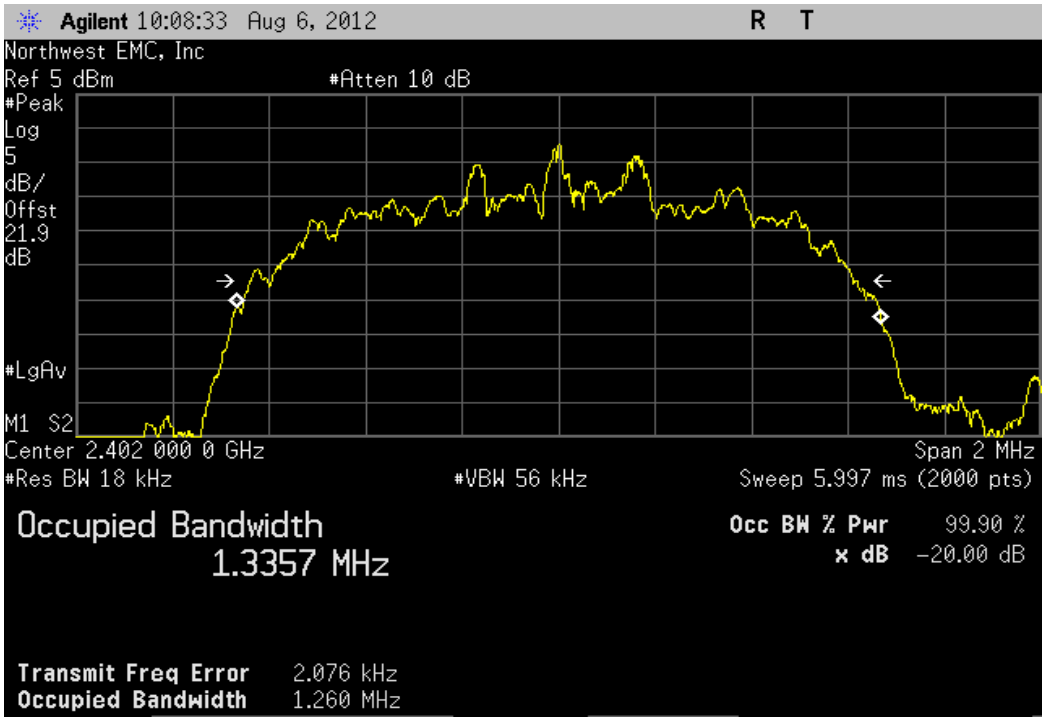
2DH5, 4-DQPSK, High Channel

				Value	Limit	Result
				1.234 MHz	< 1.5 MHz	Pass



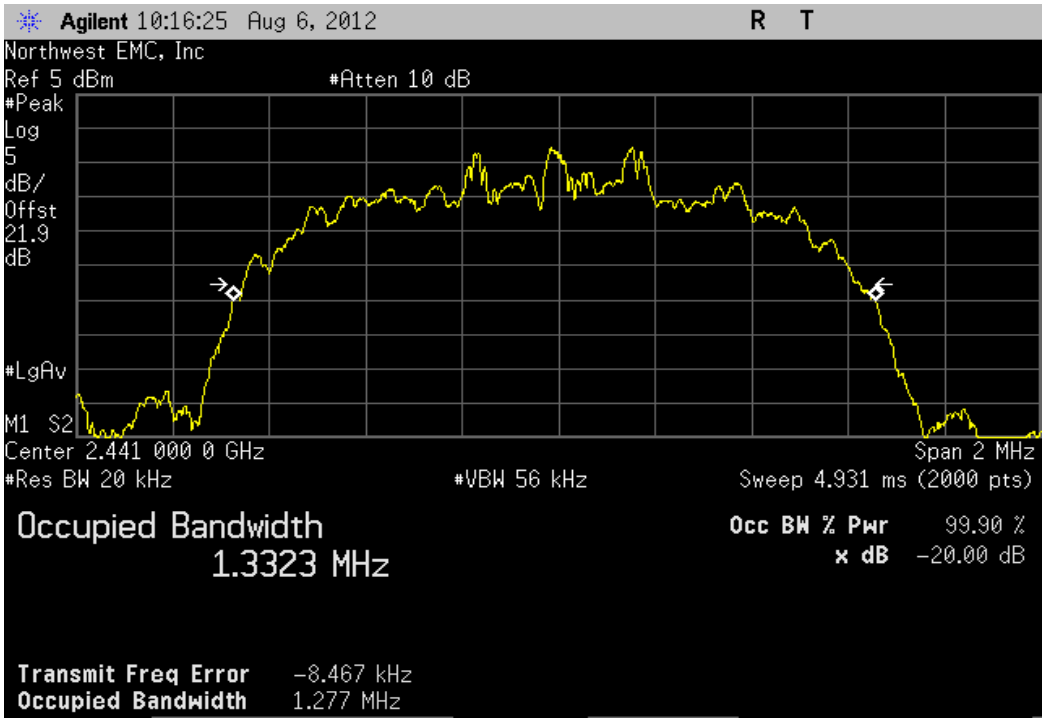
3DH5, 8-DPSK, Low Channel

				Value	Limit	Result
				1.26 MHz	< 1.5 MHz	Pass



3DH5, 8-DPSK, Mid Channel

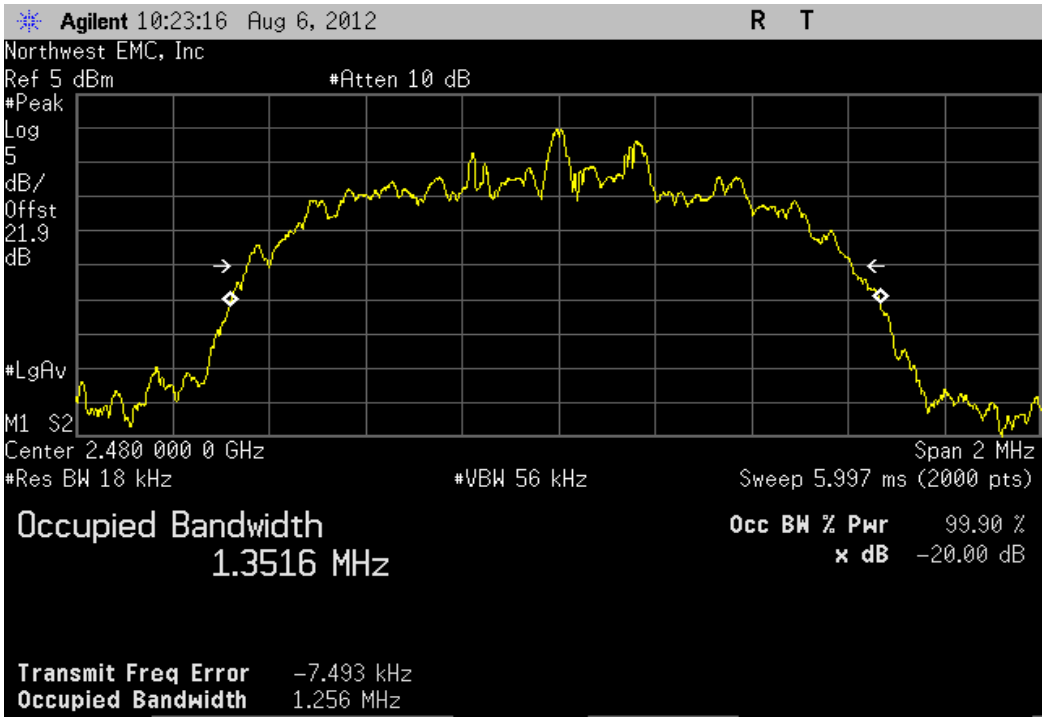
				Value	Limit	Result
				1.277 MHz	< 1.5 MHz	Pass



Occupied Bandwidth

3DH5, 8-DPSK, High Channel

				Value	Limit	Result
				1.256 MHz	< 1.5 MHz	Pass



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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

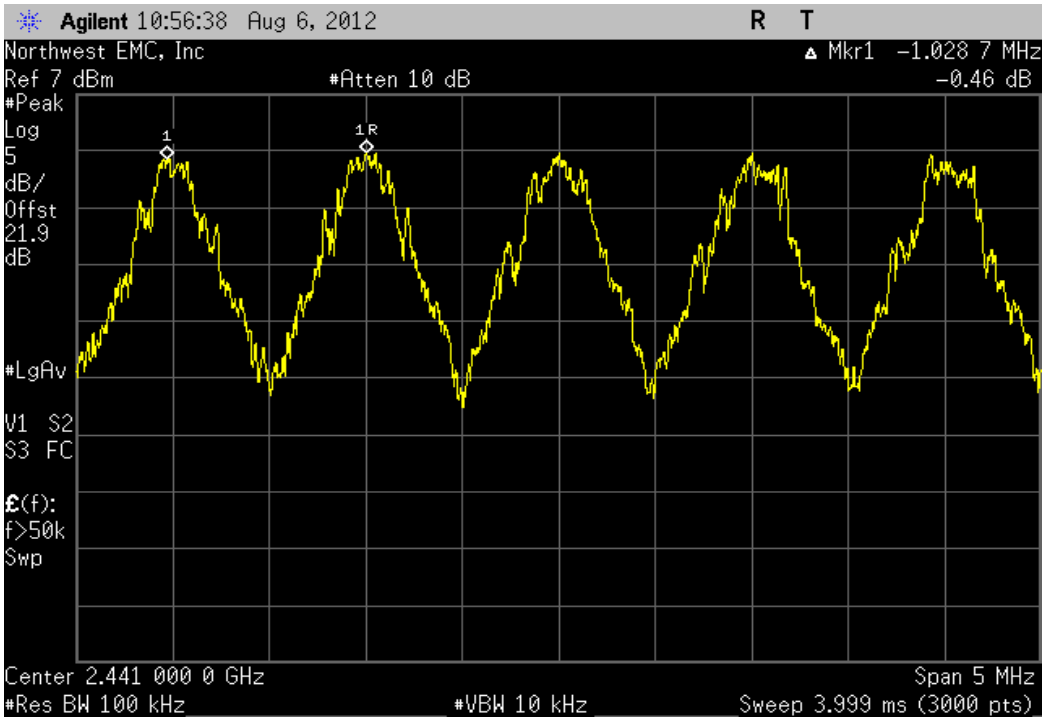
Configuration #	4	Signature	Jennifer Herrett

		Value	Limit	Result
DH5, GFSK				
	Mid Channel	1.0 MHz	≥ 1 MHz	Pass

Channel Spacing

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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

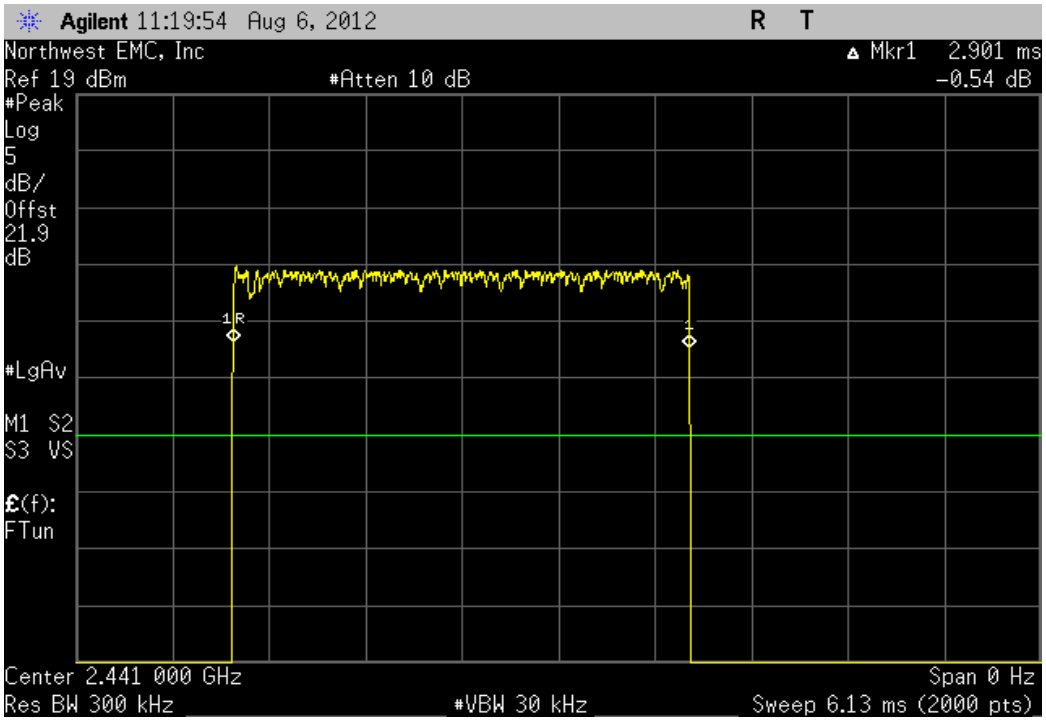
None

Configuration #	4	Signature	Jennifer Herrett

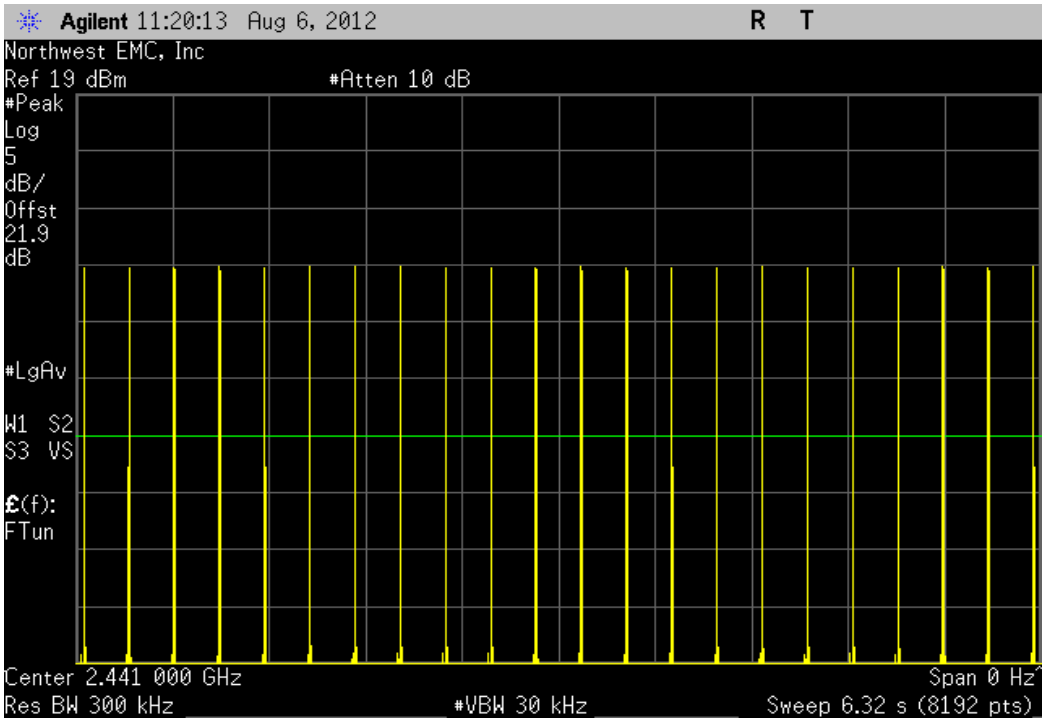
		Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
DH5, GFSK								
	Mid Channel	2.901	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	2.901	N/A	22	5	319.11	400	Pass
2DH5, 4-DQPSK								
	Mid Channel	2.91	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	2.91	N/A	22	5	320.1	400	Pass
3DH5, 8-DPSK								
	Mid Channel	2.91	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel	2.91	N/A	22	5	320.1	400	Pass

Dwell Time

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
2.901	N/A	N/A	N/A	N/A	N/A	N/A

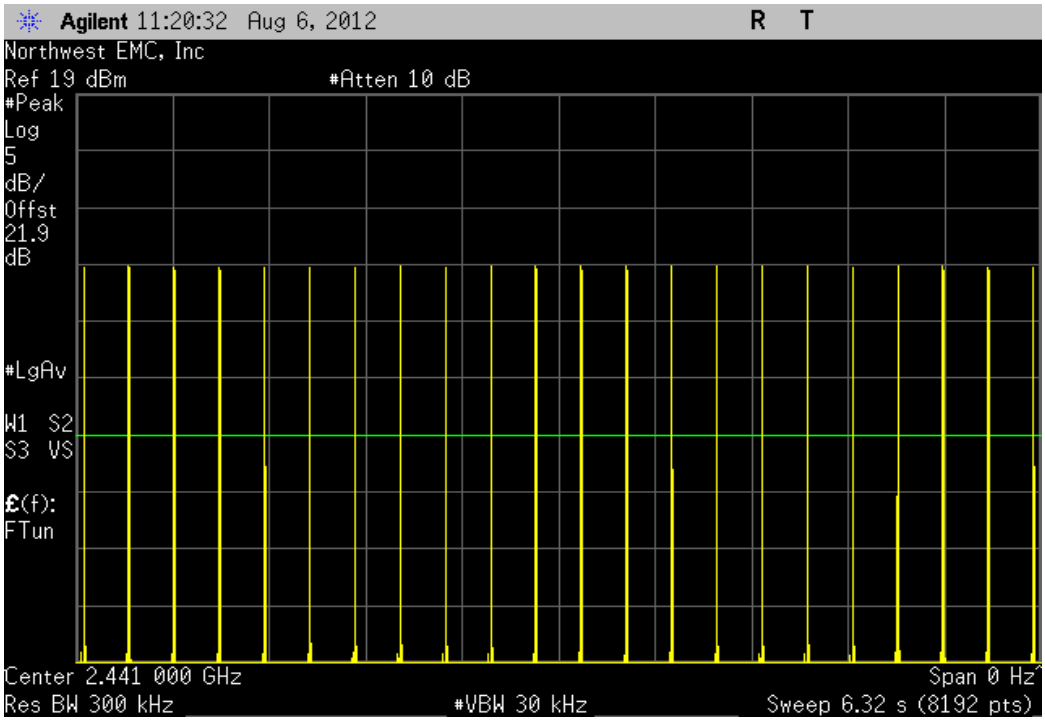


DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A

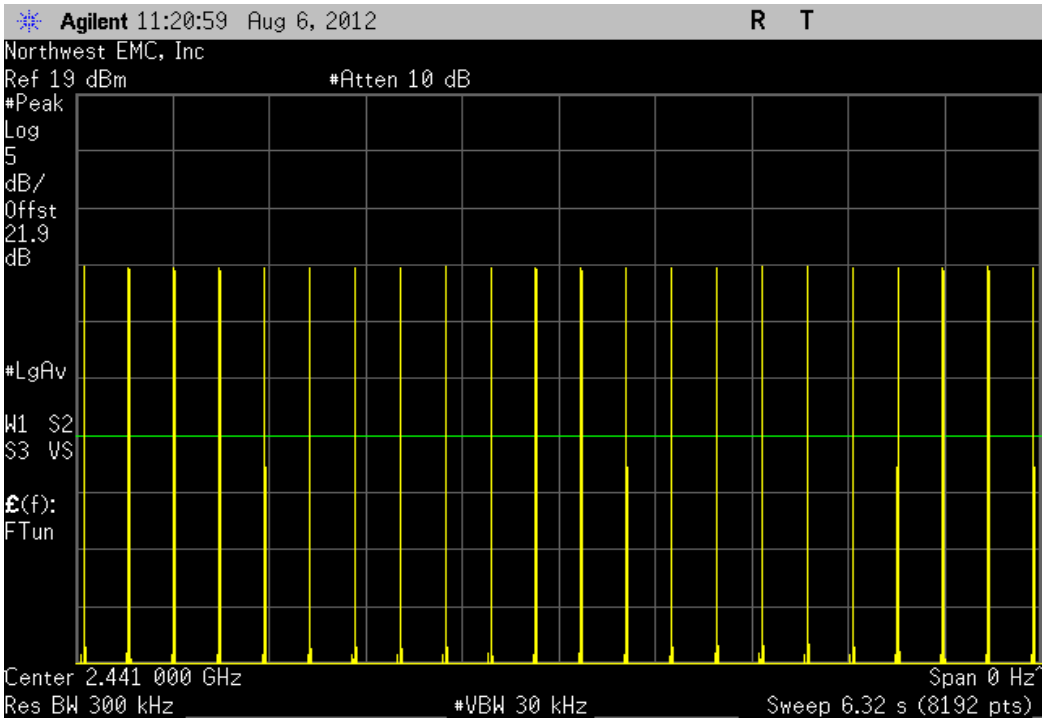


Dwell Time

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

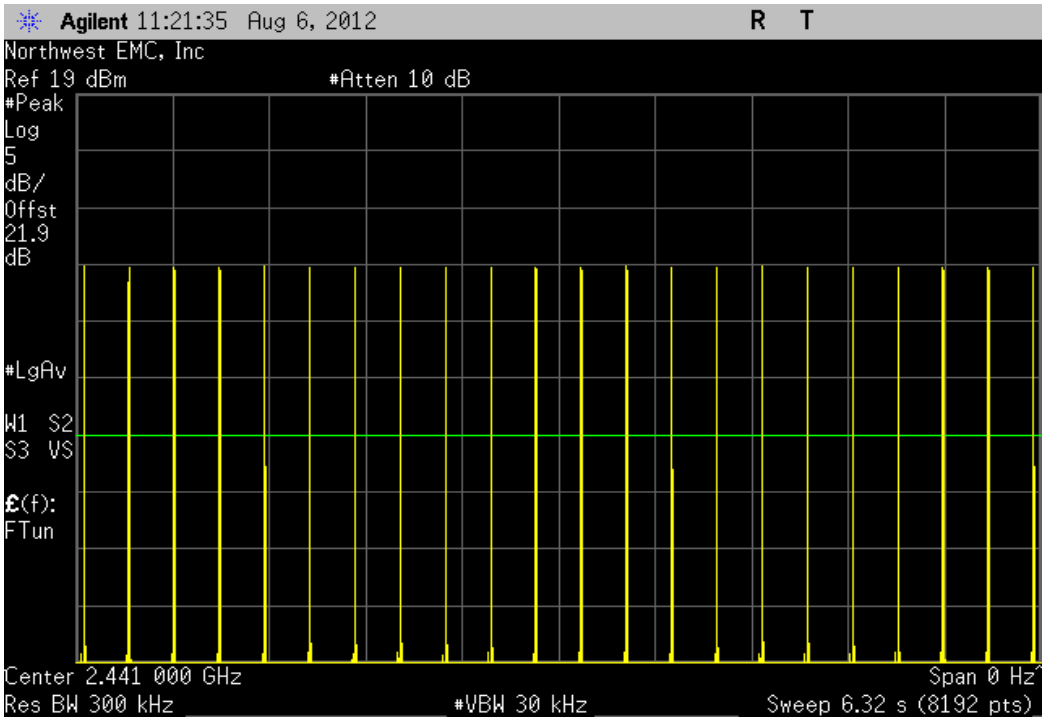


DH5, GFSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A



Dwell Time

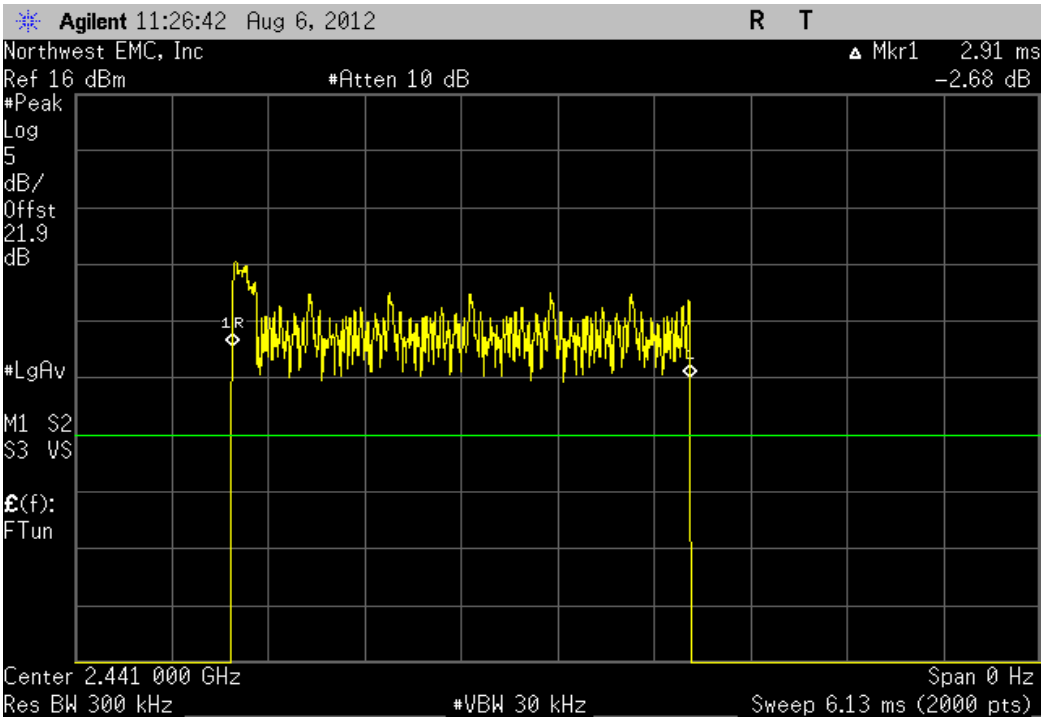
DH5, GFSK, Mid Channel						
Pulse Width (mS)	**Number of Pulses**	**Average No. of Pulses**	**Scale Factor**	**On Time (mS) During 31.6 S**	**Limit (mS)**	**Result**
N/A	22	N/A	N/A	N/A	N/A	N/A



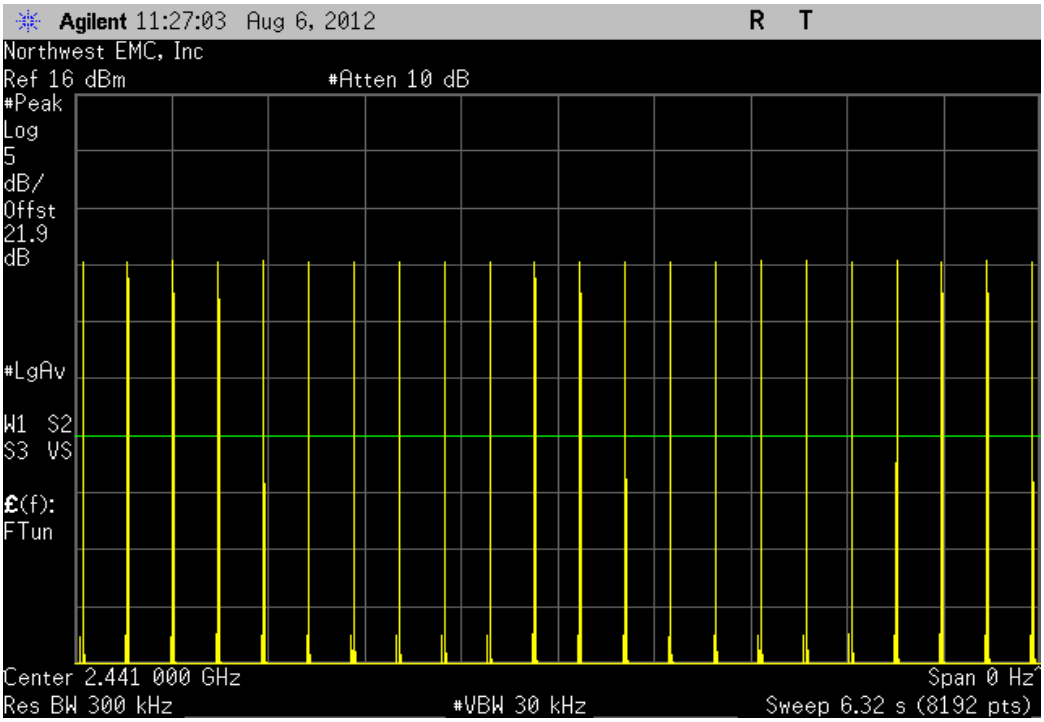
DH5, GFSK, Mid Channel						
Pulse Width (mS)	**Number of Pulses**	**Average No. of Pulses**	**Scale Factor**	**On Time (mS) During 31.6 S**	**Limit (mS)**	**Result**
2.901	N/A	22	5	319.11	400	Pass

Dwell Time

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
2.91	N/A	N/A	N/A	N/A	N/A	N/A

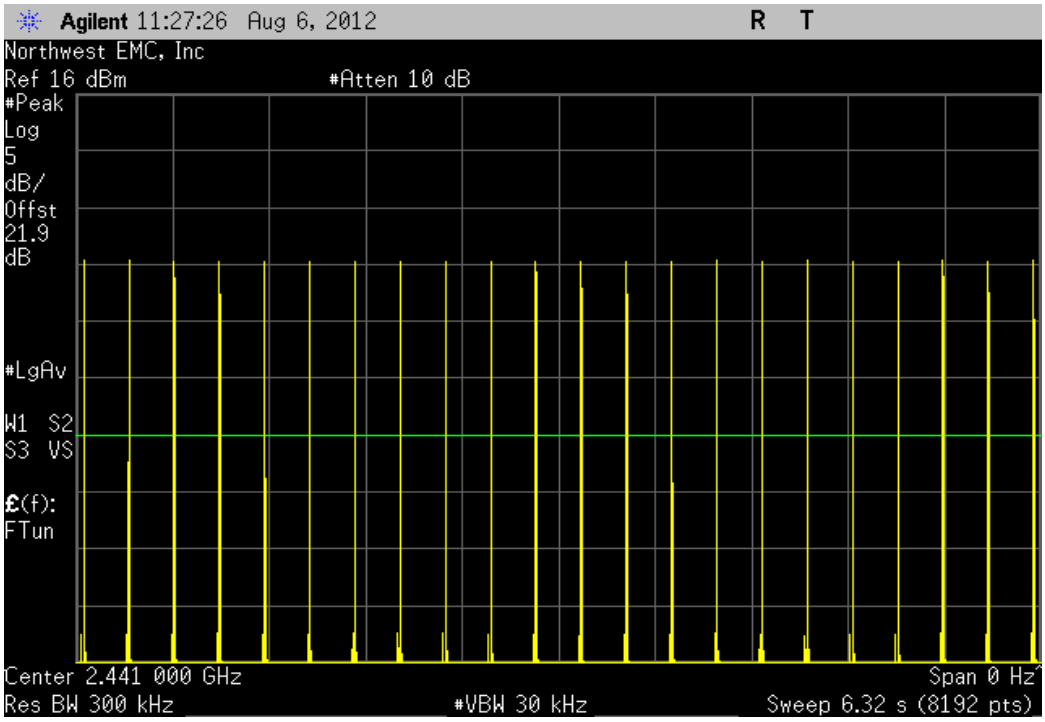


2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A

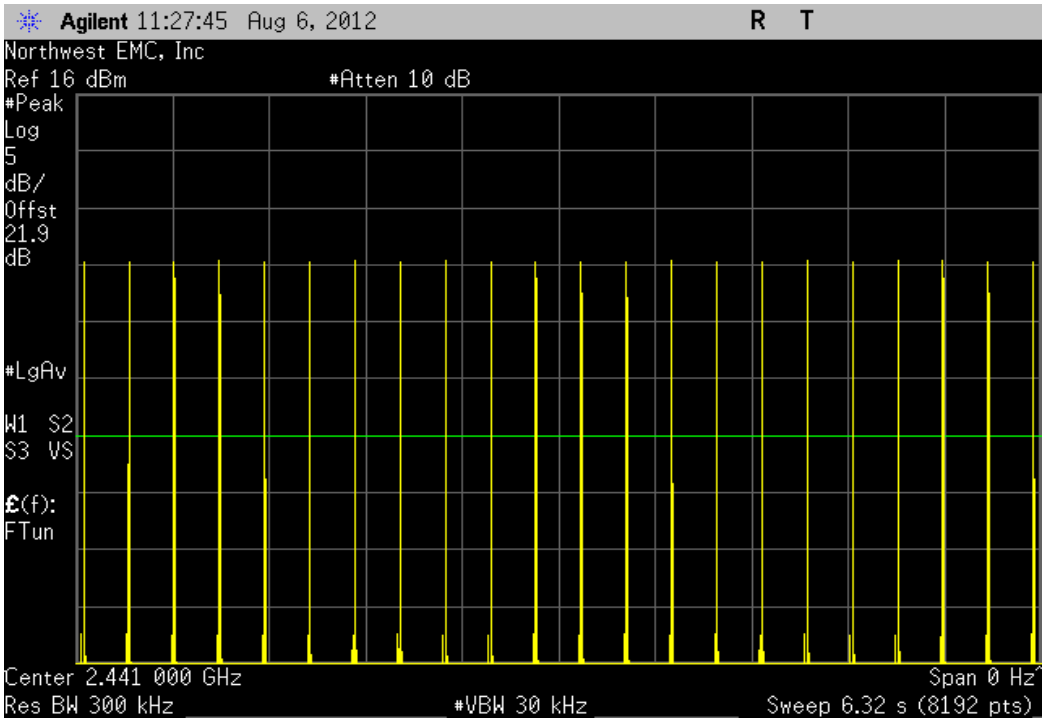


Dwell Time

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	22	N/A	N/A	N/A	N/A	N/A

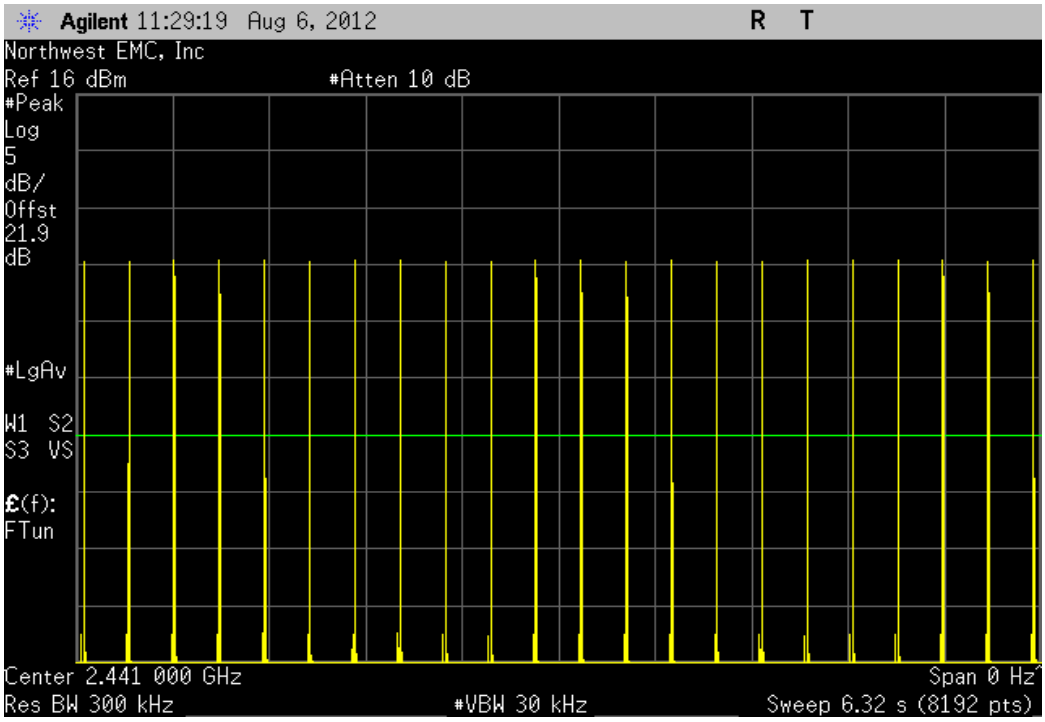


2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A



Dwell Time

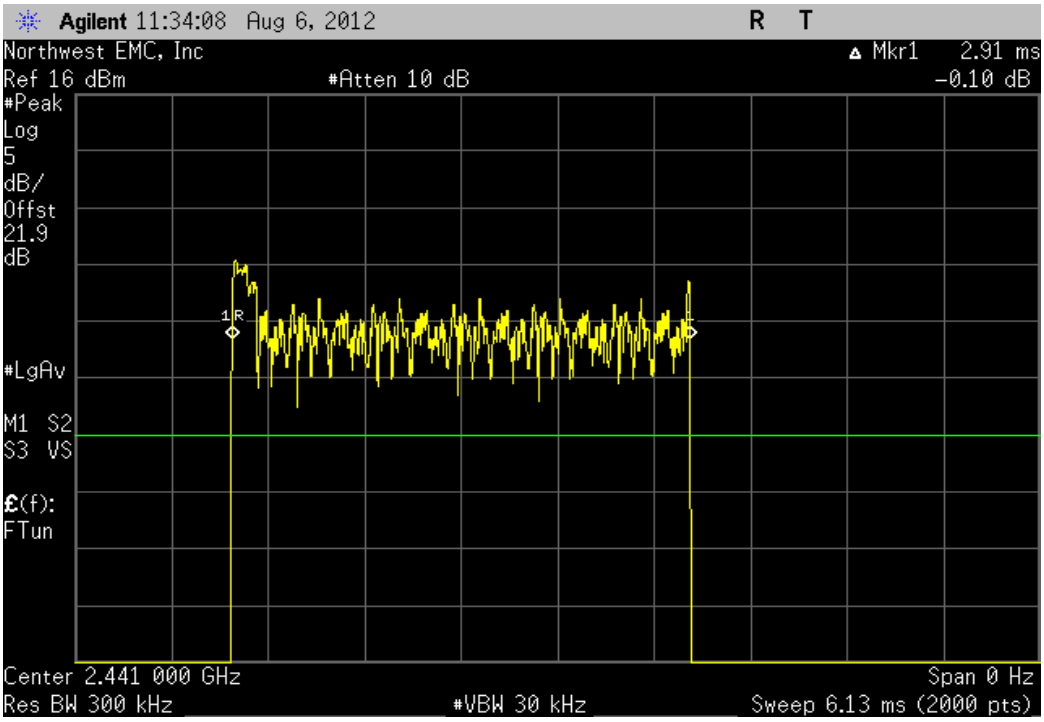
2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A



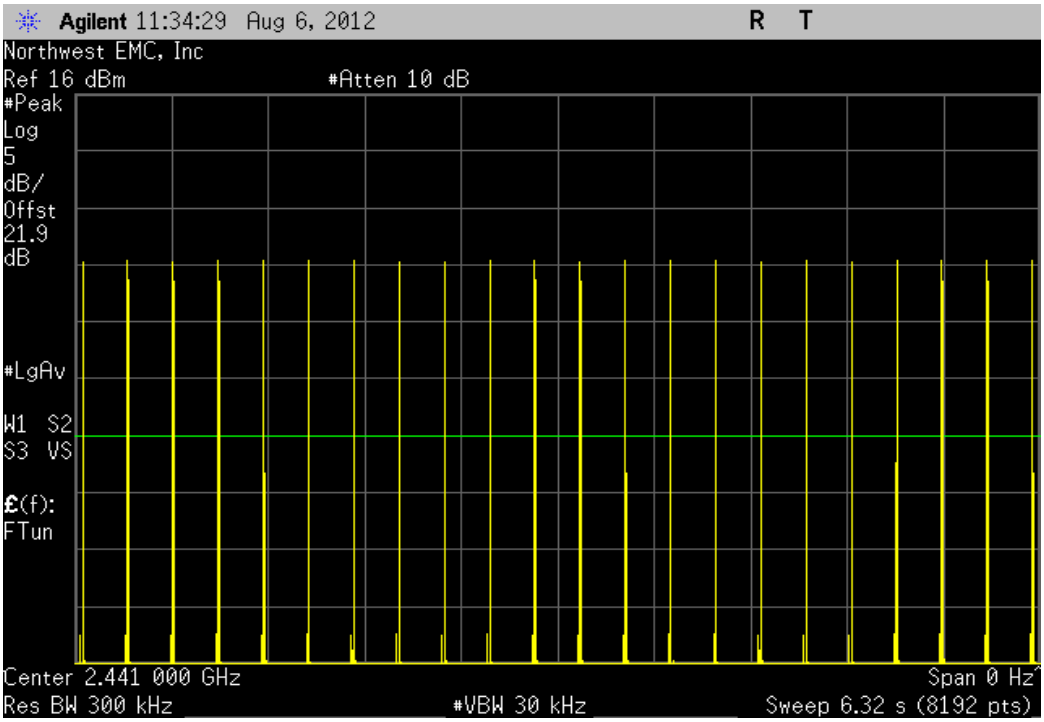
2DH5, 4-DQPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.91	N/A	22	5	320.1	400	Pass

Dwell Time

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
2.91	N/A	N/A	N/A	N/A	N/A	N/A

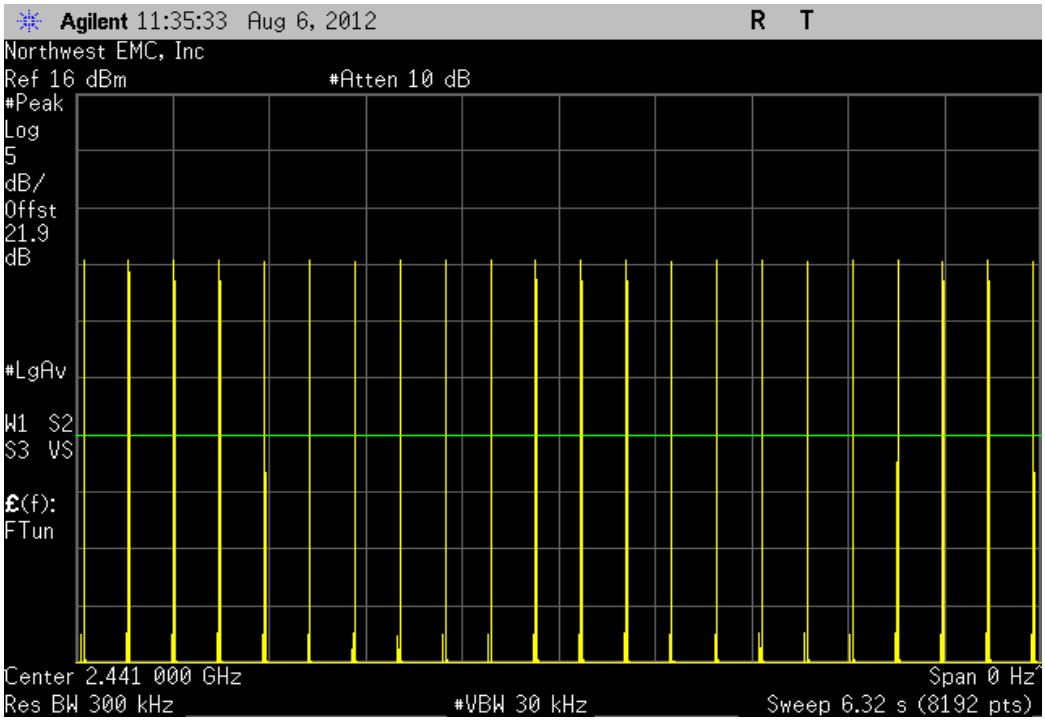


3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A

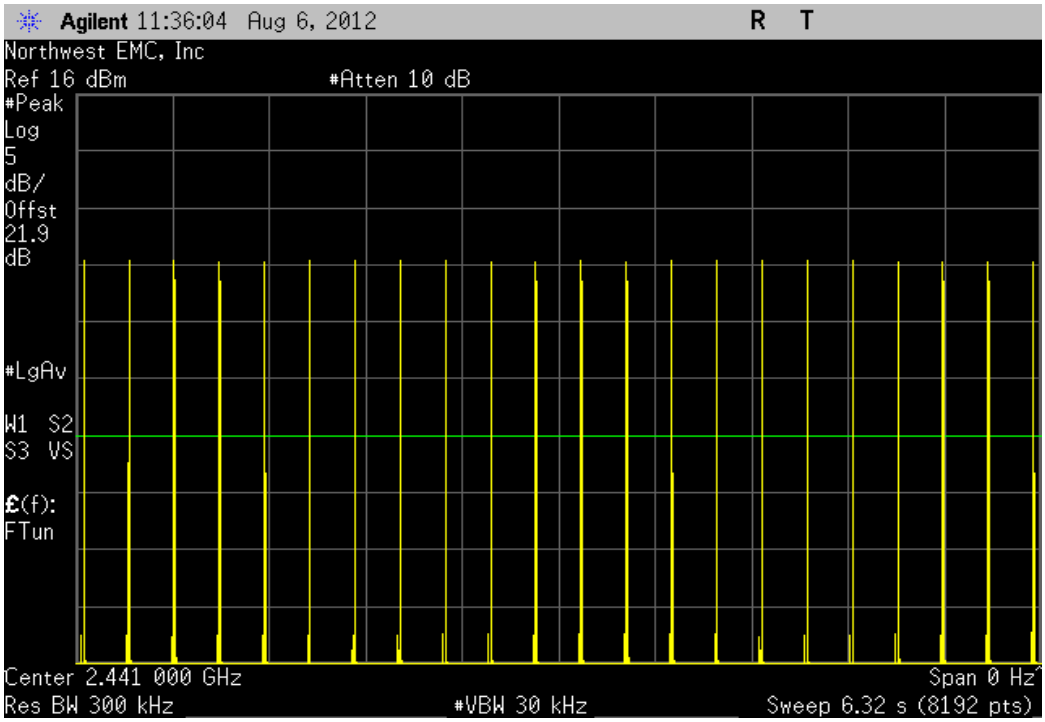


Dwell Time

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	22	N/A	N/A	N/A	N/A	N/A

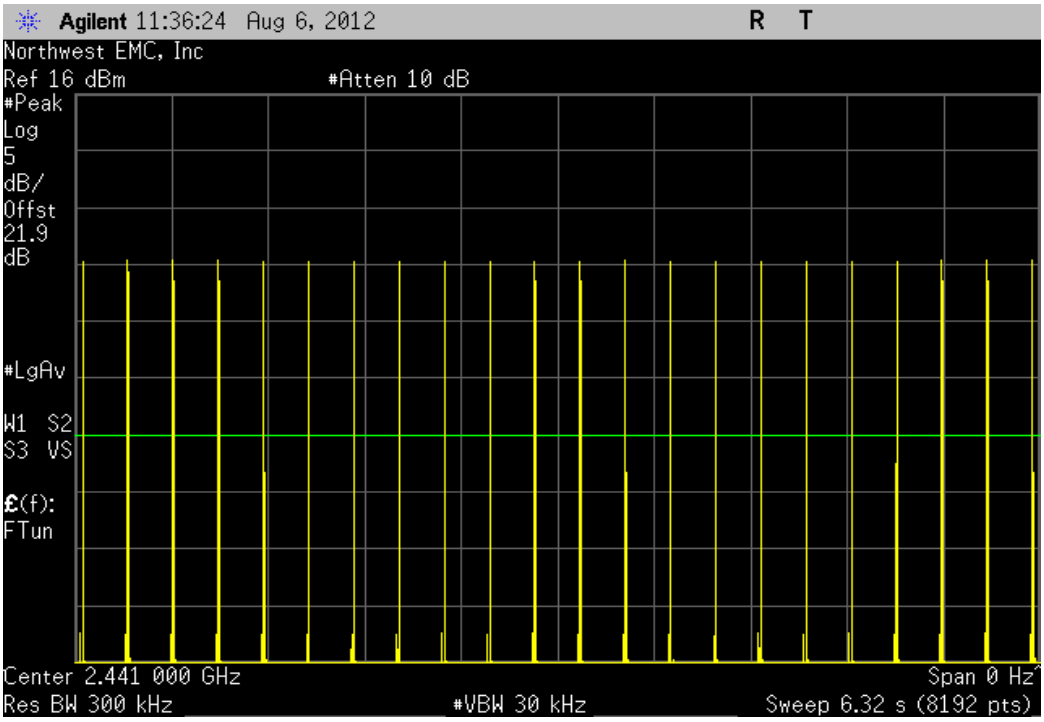


3DH5, 8-DPSK, Mid Channel						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A



Dwell Time

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	22	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
2.91	N/A	22	5	320.1	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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

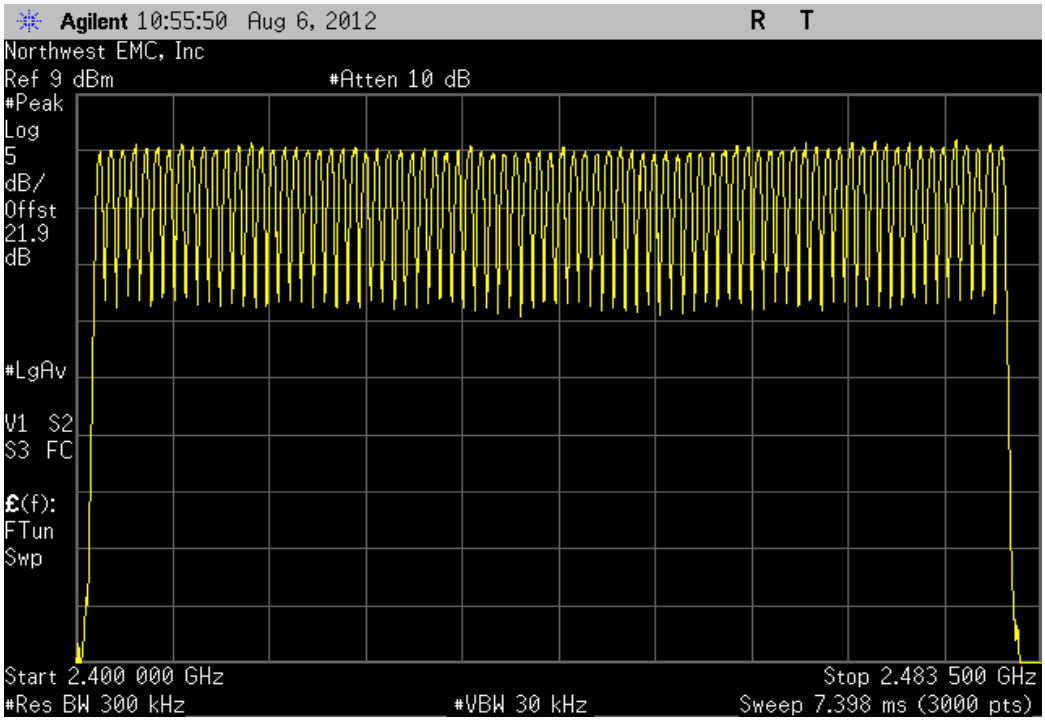
None

Configuration #	4	Signature	Jennifer Herrett

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

Number of Hopping Frequencies

DH5, GFSK, Mid Channel							
					Number of Channels	Limit	Result
					79	≥ 15	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
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

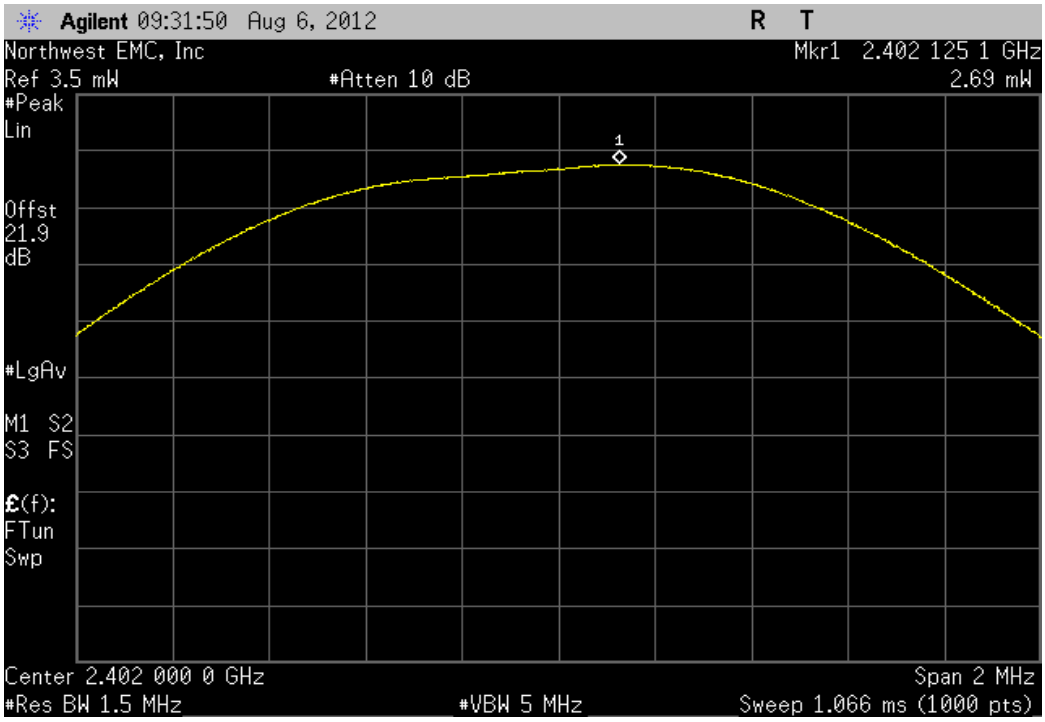
Configuration #	4	Signature	Jennifer Herrett

		Value	Limit	Result
DH5, GFSK				
	Low Channel	2.686 mW	< 125 mW	Pass
	Mid Channel	2.663 mW	< 125 mW	Pass
	High Channel	3.035 mW	< 125 mW	Pass
2DH5, 4-DQPSK				
	Low Channel	1.693 mW	< 125 mW	Pass
	Mid Channel	1.975 mW	< 125 mW	Pass
	High Channel	2.488 mW	< 125 mW	Pass
3DH5, 8-DPSK				
	Low Channel	1.787 mW	< 125 mW	Pass
	Mid Channel	2.084 mW	< 125 mW	Pass
	High Channel	2.586 mW	< 125 mW	Pass

Output Power

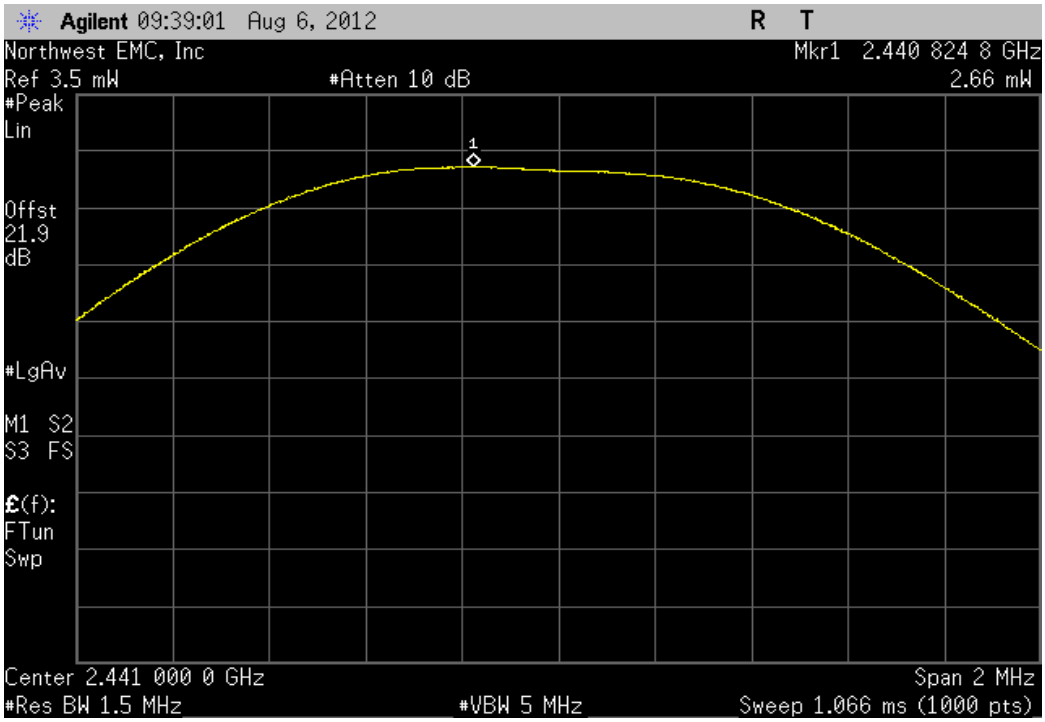
DH5, GFSK, Low Channel

				Value	Limit	Result
				2.686 mW	< 125 mW	Pass



DH5, GFSK, Mid Channel

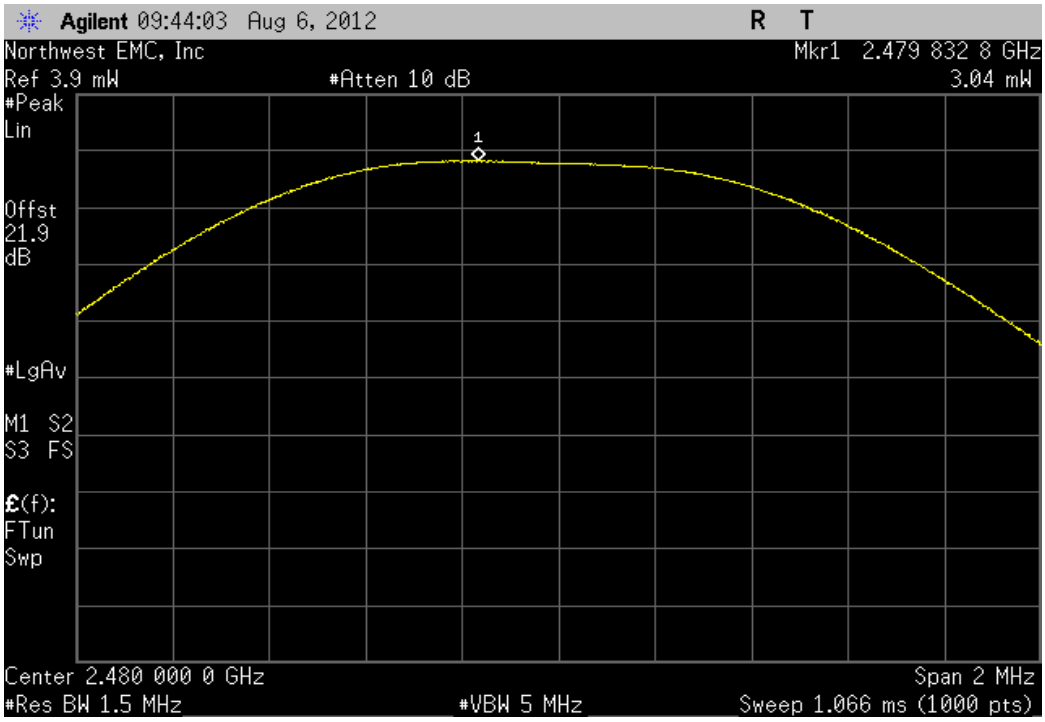
				Value	Limit	Result
				2.663 mW	< 125 mW	Pass



Output Power

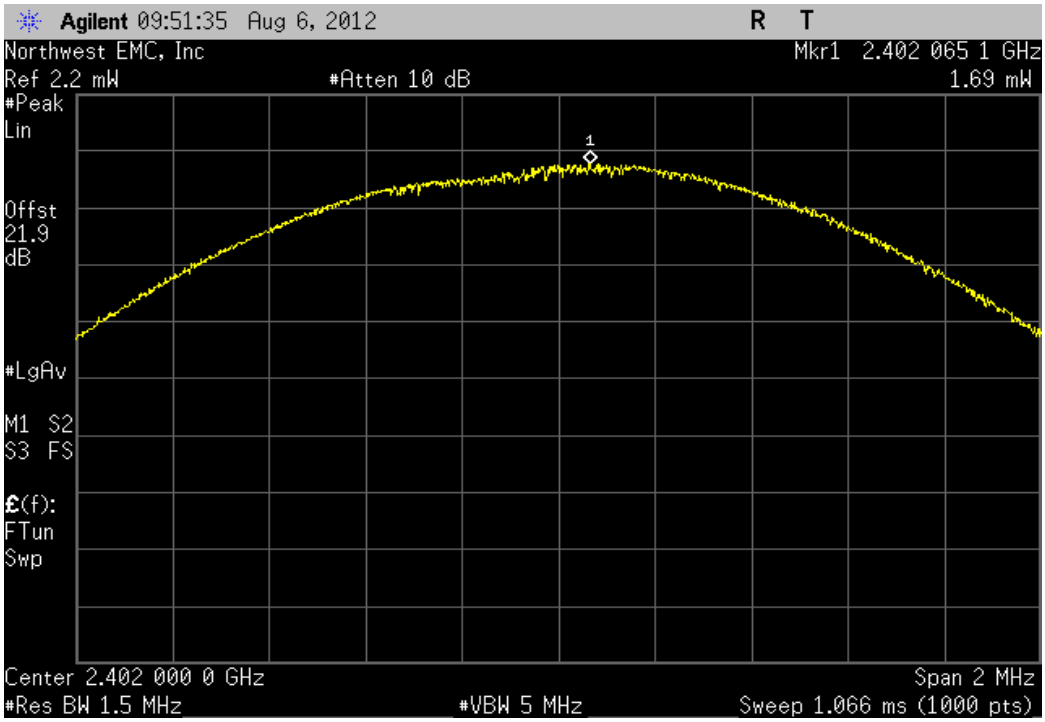
DH5, GFSK, High Channel

				Value	Limit	Result
				3.035 mW	< 125 mW	Pass



2DH5, 4-DQPSK, Low Channel

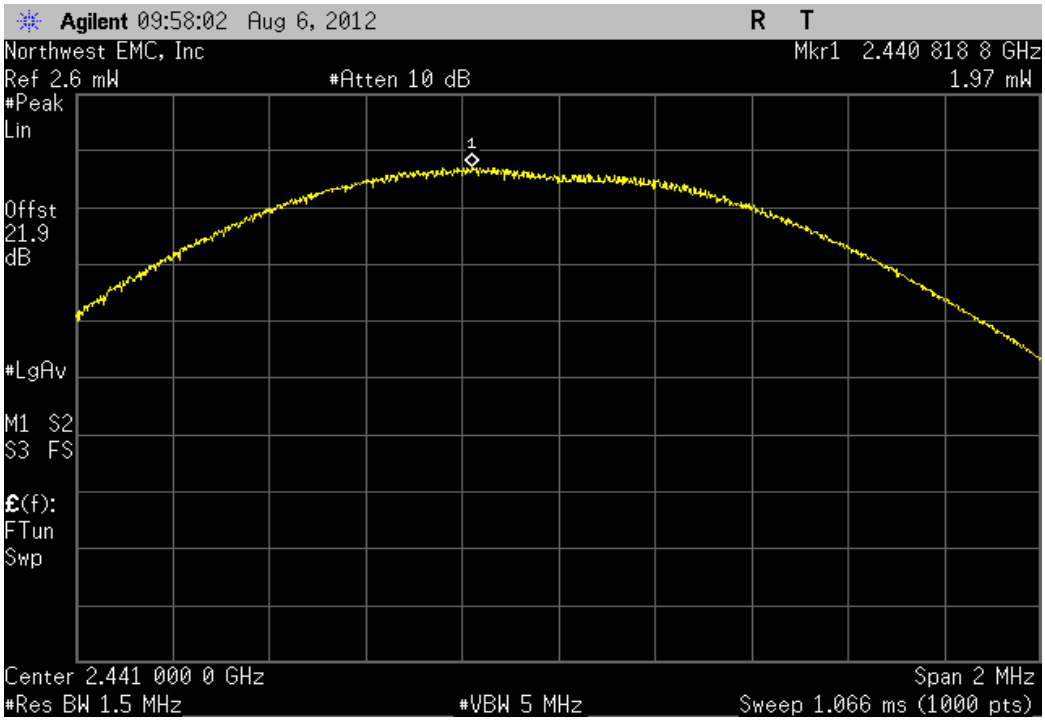
				Value	Limit	Result
				1.693 mW	< 125 mW	Pass



Output Power

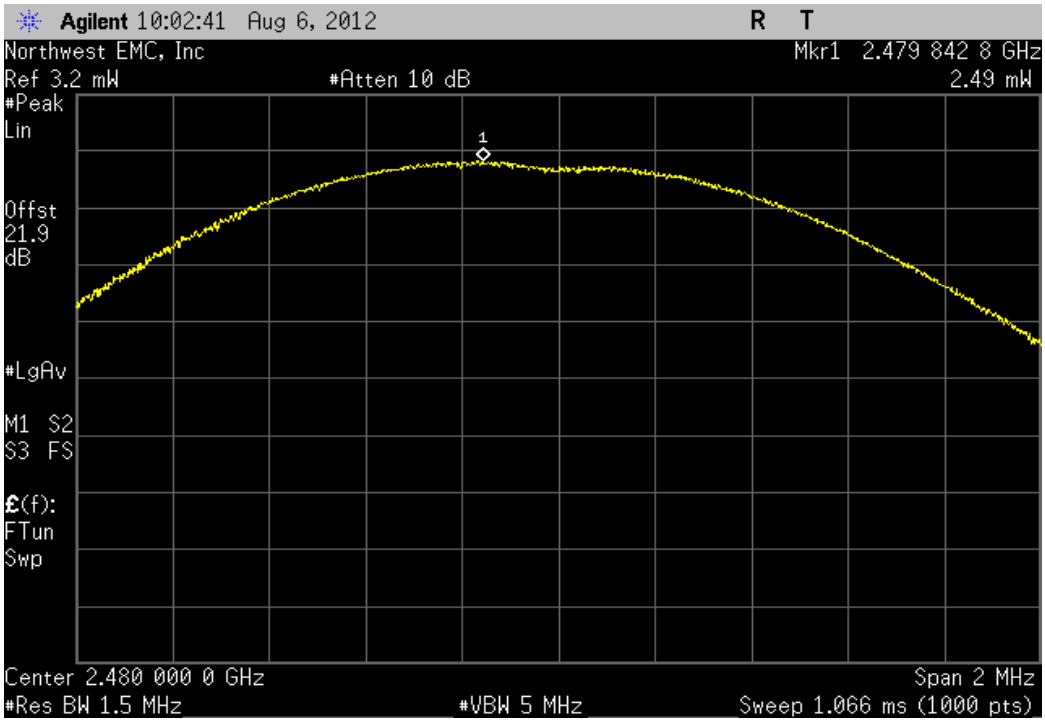
2DH5, 4-DQPSK, Mid Channel

				Value	Limit	Result
				1.975 mW	< 125 mW	Pass



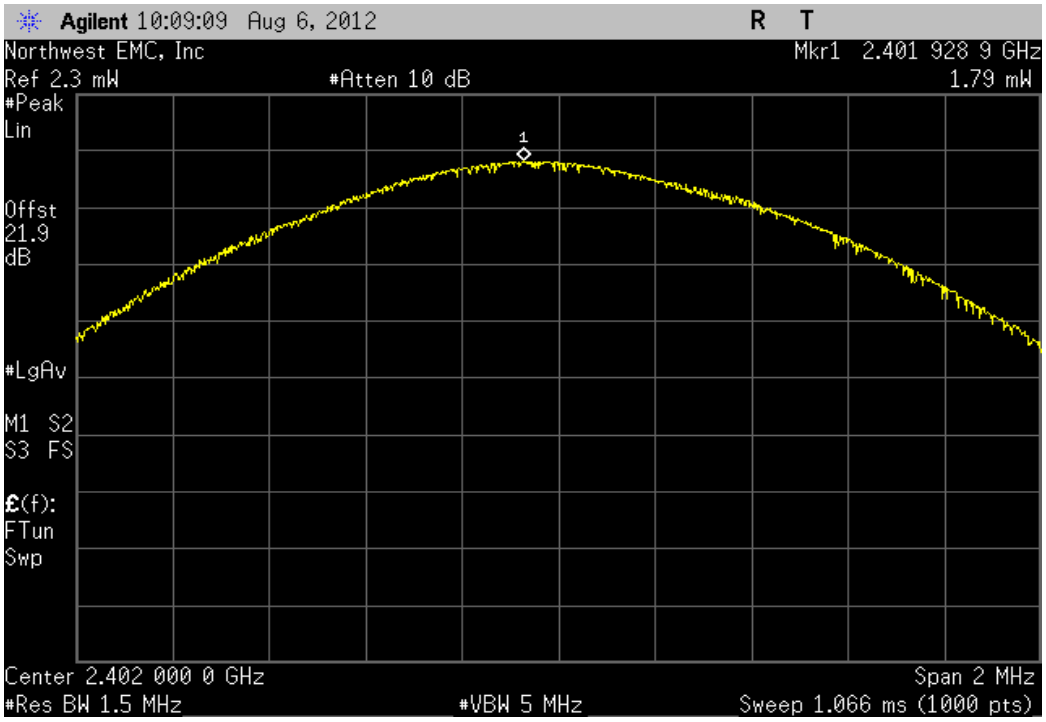
2DH5, 4-DQPSK, High Channel

				Value	Limit	Result
				2.488 mW	< 125 mW	Pass

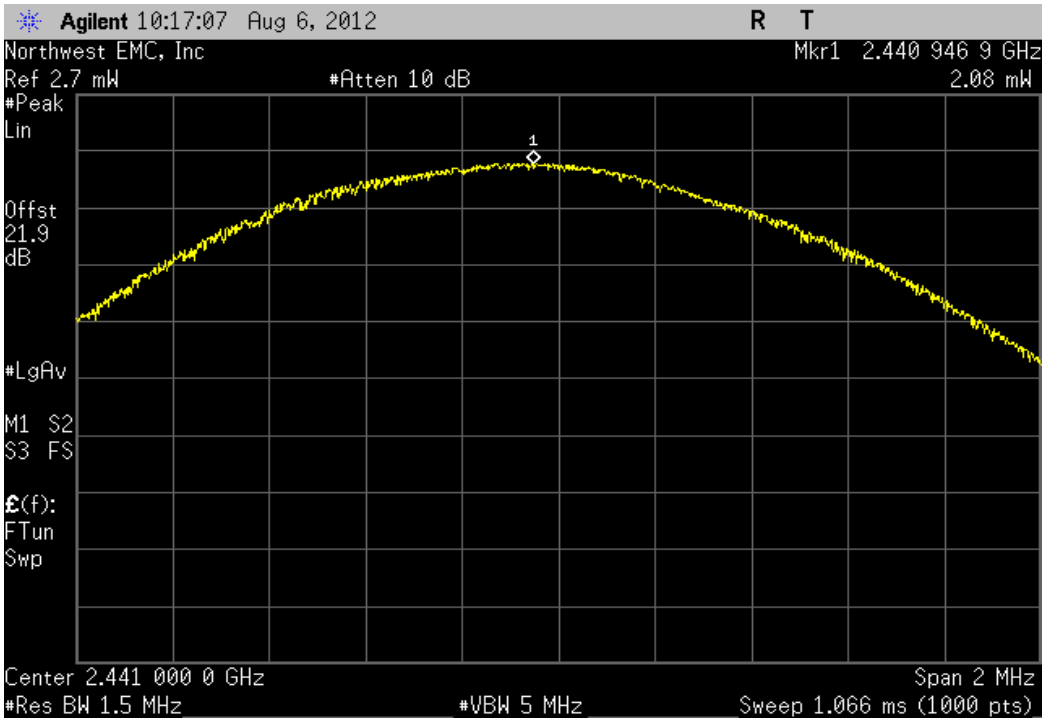


Output Power

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



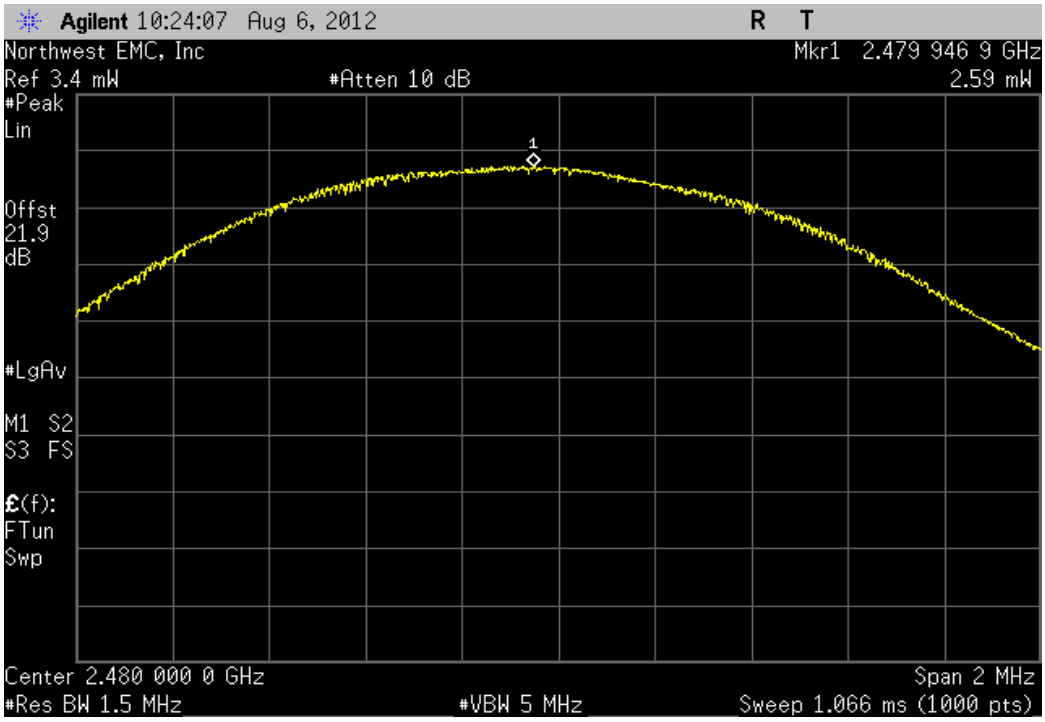
3DH5, 8-DPSK, Mid Channel							
					Value	Limit	Result
					2.084 mW	< 125 mW	Pass



Output Power

3DH5, 8-DPSK, High Channel

				Value	Limit	Result
				2.586 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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low 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. The channels closest to the band edges were selected.

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

Band Edge Compliance

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

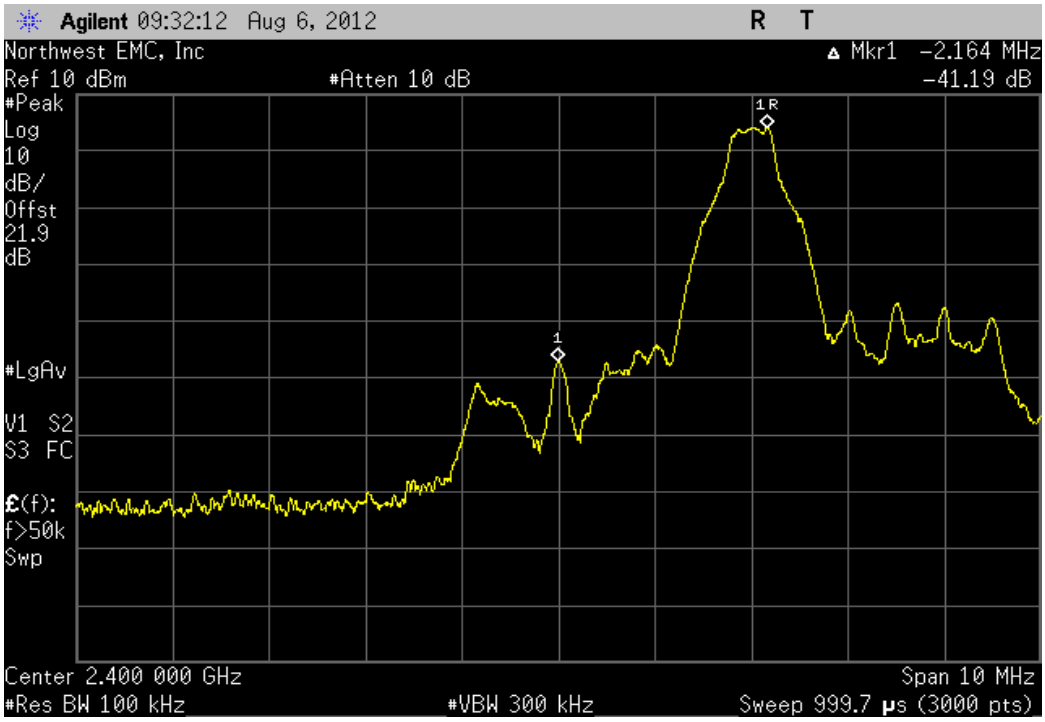
Configuration #	4	Signature

		Value	Limit	Result
DH5, GFSK				
	Low Channel	-41.19 dBc	≤ -20 dBc	Pass
	High Channel	-62.01 dBc	≤ -20 dBc	Pass
2DH5, 4-DQPSK				
	Low Channel	-49.53 dBc	≤ -20 dBc	Pass
	High Channel	-59.21 dBc	≤ -20 dBc	Pass
3DH5, 8-DPSK				
	Low Channel	-50.67 dBc	≤ -20 dBc	Pass
	High Channel	-57 dBc	≤ -20 dBc	Pass

Band Edge Compliance

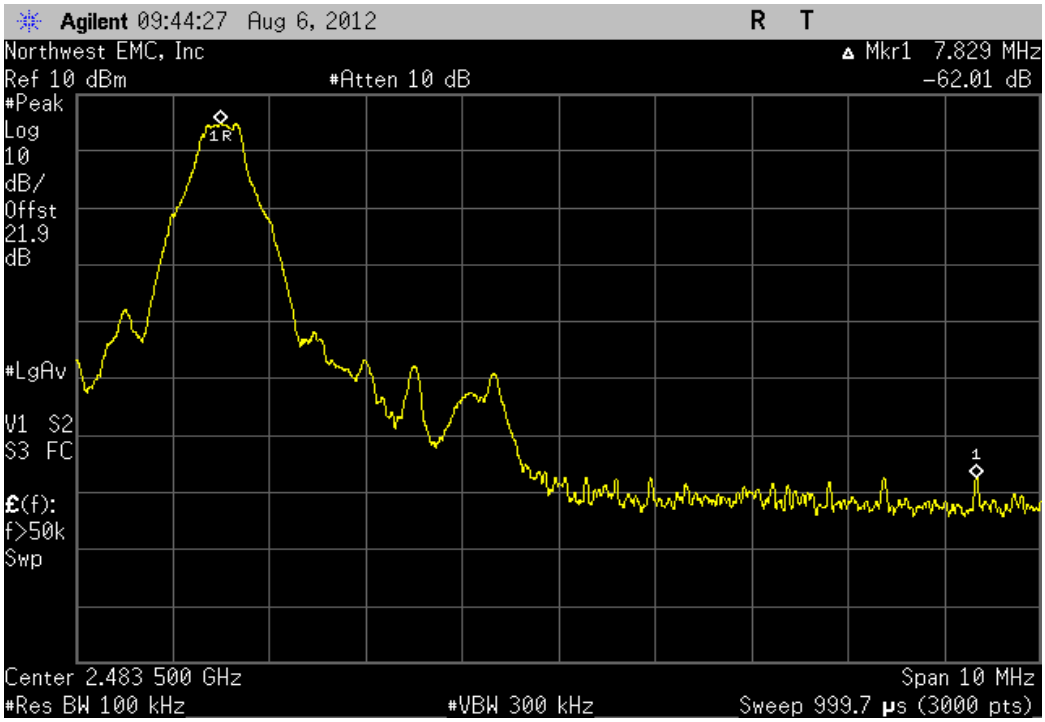
DH5, GFSK, Low Channel

				Value	Limit	Result
				-41.19 dBc	≤ -20 dBc	Pass



DH5, GFSK, High Channel

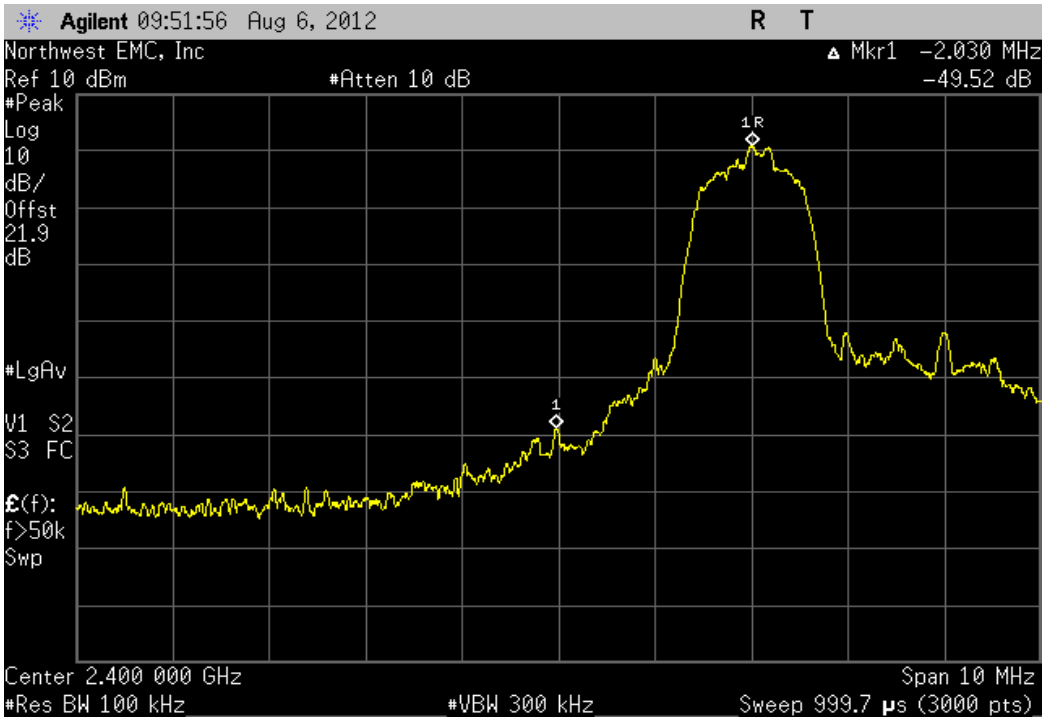
				Value	Limit	Result
				-62.01 dBc	≤ -20 dBc	Pass



Band Edge Compliance

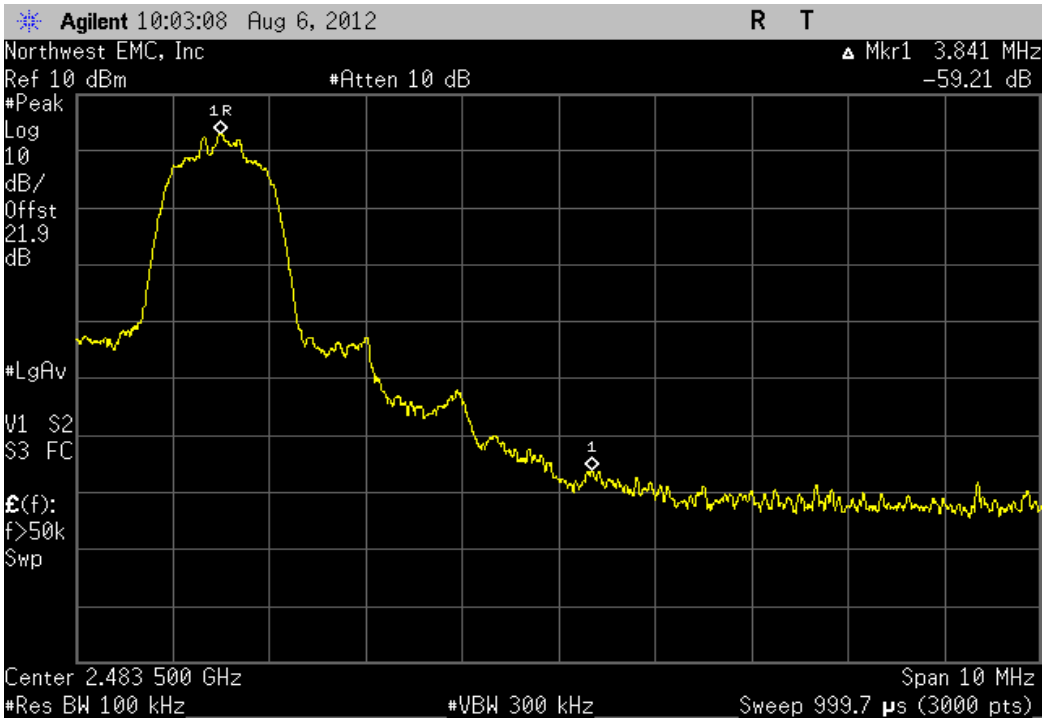
2DH5, 4-DQPSK, Low Channel

				Value	Limit	Result
				-49.53 dBc	≤ -20 dBc	Pass



2DH5, 4-DQPSK, High Channel

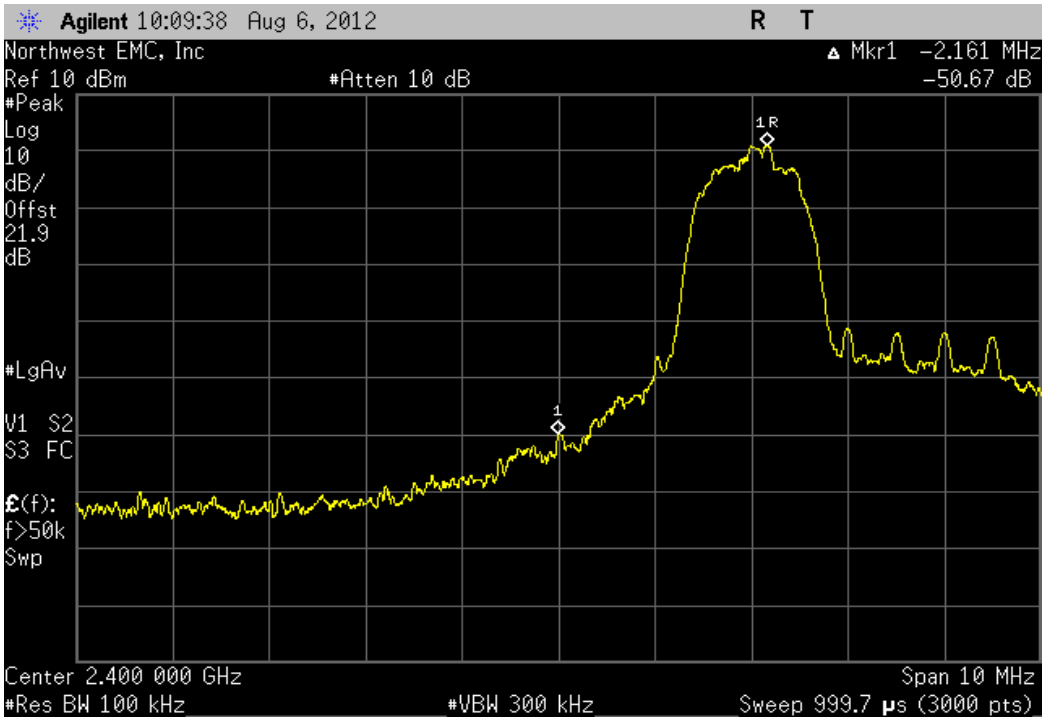
				Value	Limit	Result
				-59.21 dBc	≤ -20 dBc	Pass



Band Edge Compliance

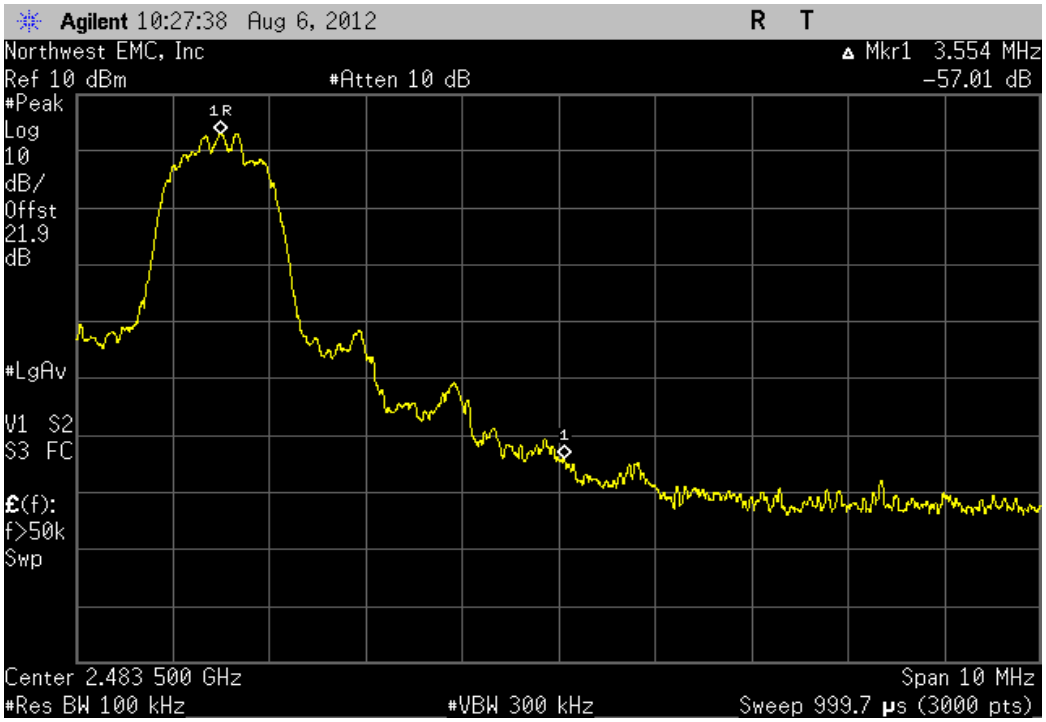
3DH5, 8-DPSK, Low Channel

				Value	Limit	Result
				-50.67 dBc	≤ -20 dBc	Pass



3DH5, 8-DPSK, High Channel

				Value	Limit	Result
				-57 dBc	≤ -20 dBc	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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

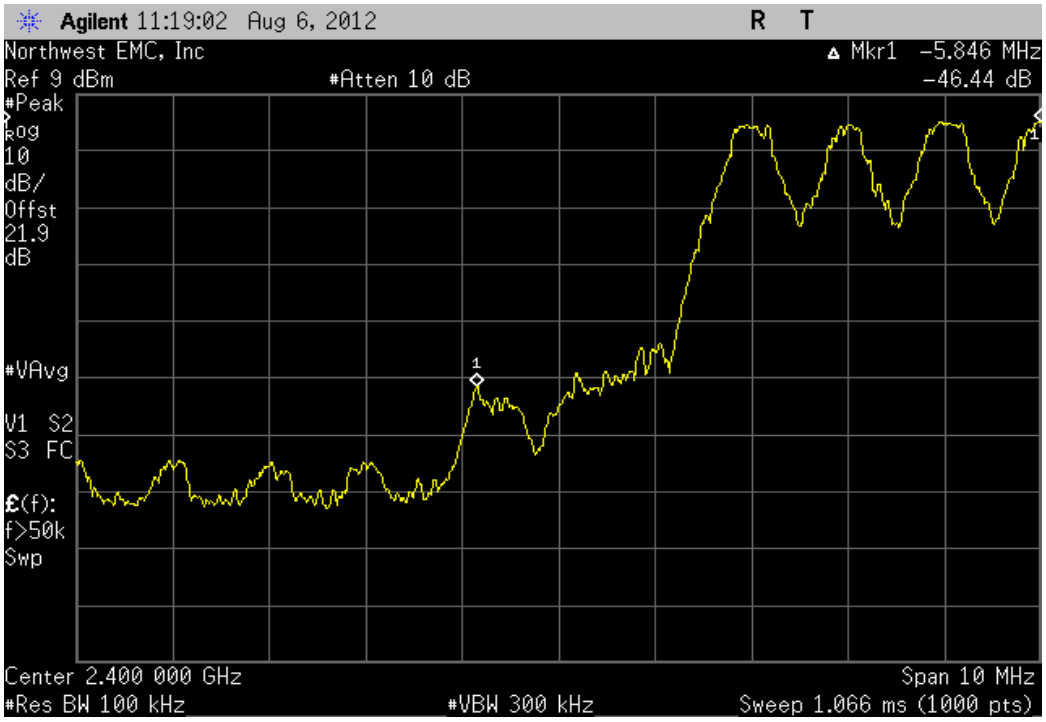
Configuration #	4	Signature

		Value	Limit	Result
DH5, GFSK				
	Low Channel	-46.44 dBc	≤ -20 dBc	Pass
	High Channel	-57.38 dBc	≤ -20 dBc	Pass
2DH5, 4-DQPSK				
	Low Channel	-54.53 dBc	≤ -20 dBc	Pass
	High Channel	-58.74 dBc	≤ -20 dBc	Pass
3DH5, 8-DPSK				
	Low Channel	-55.89 dBc	≤ -20 dBc	Pass
	High Channel	-58.61 dBc	≤ -20 dBc	Pass

Band Edge Compliance

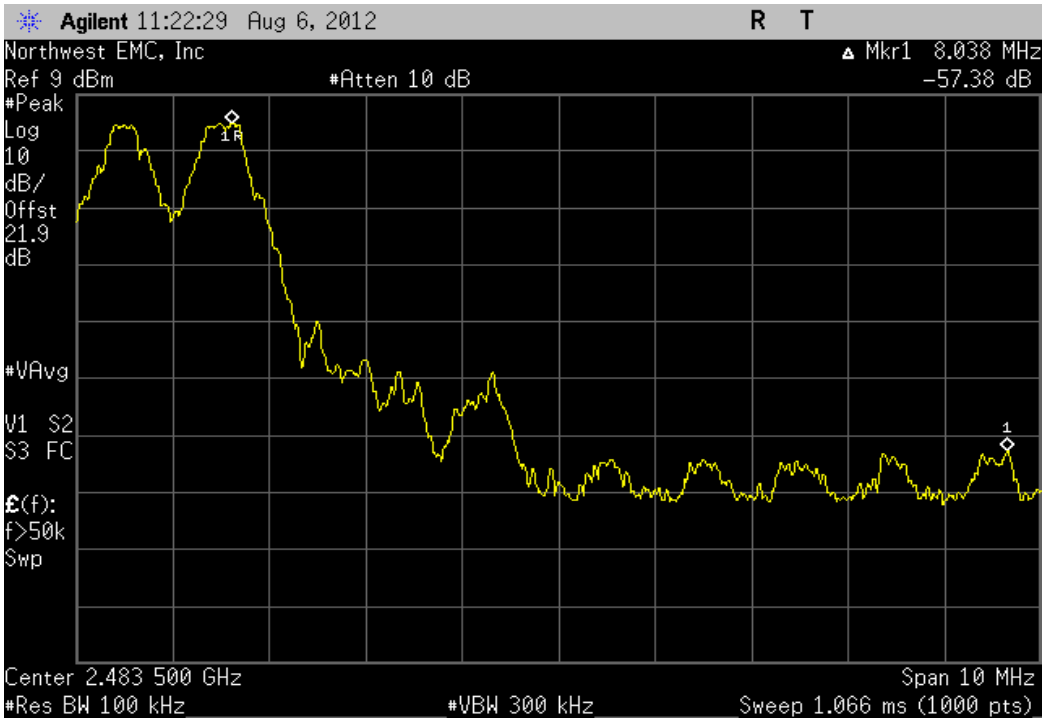
DH5, GFSK, Low Channel

				Value	Limit	Result
				-46.44 dBc	≤ -20 dBc	Pass



DH5, GFSK, High Channel

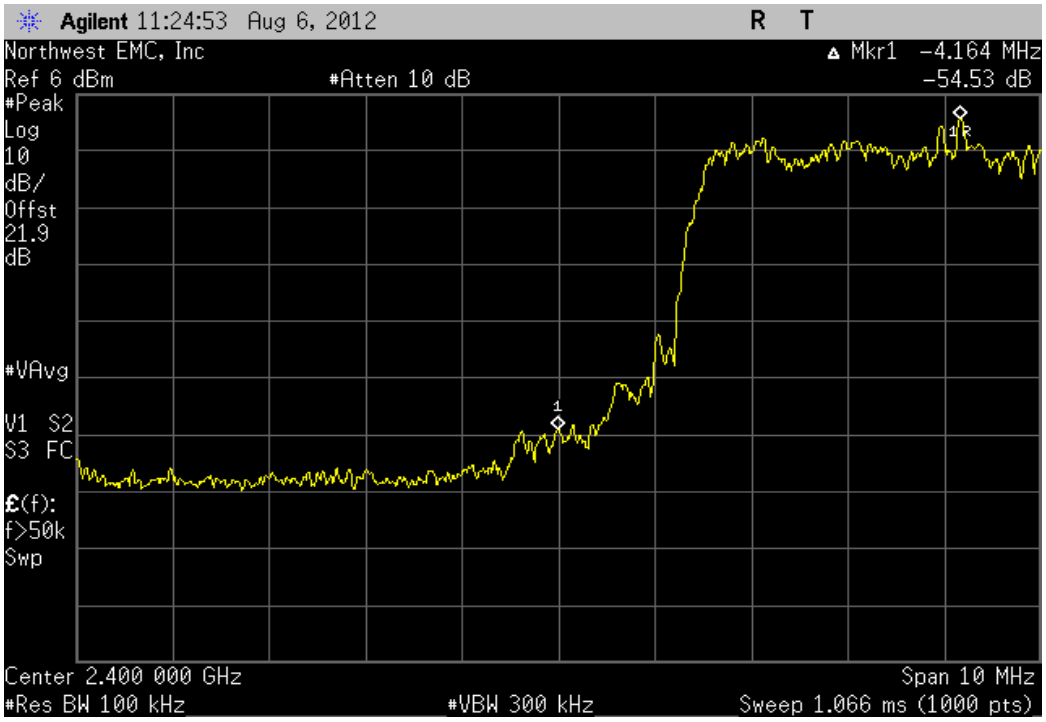
				Value	Limit	Result
				-57.38 dBc	≤ -20 dBc	Pass



Band Edge Compliance

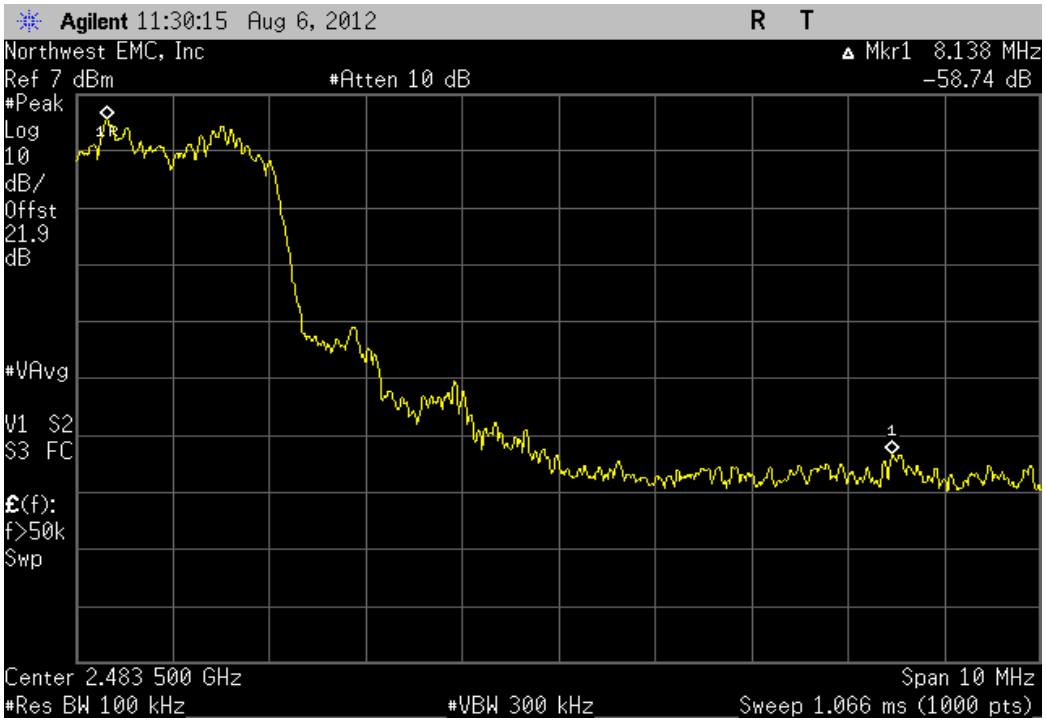
2DH5, 4-DQPSK, Low Channel

				Value	Limit	Result
				-54.53 dBc	≤ -20 dBc	Pass



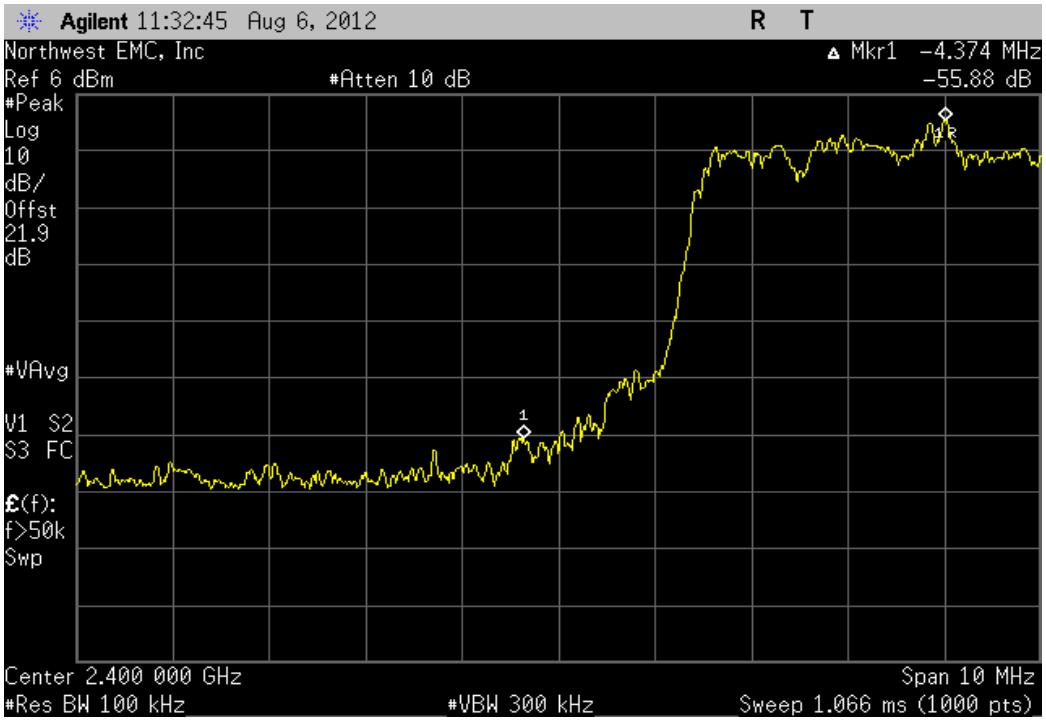
2DH5, 4-DQPSK, High Channel

				Value	Limit	Result
				-58.74 dBc	≤ -20 dBc	Pass

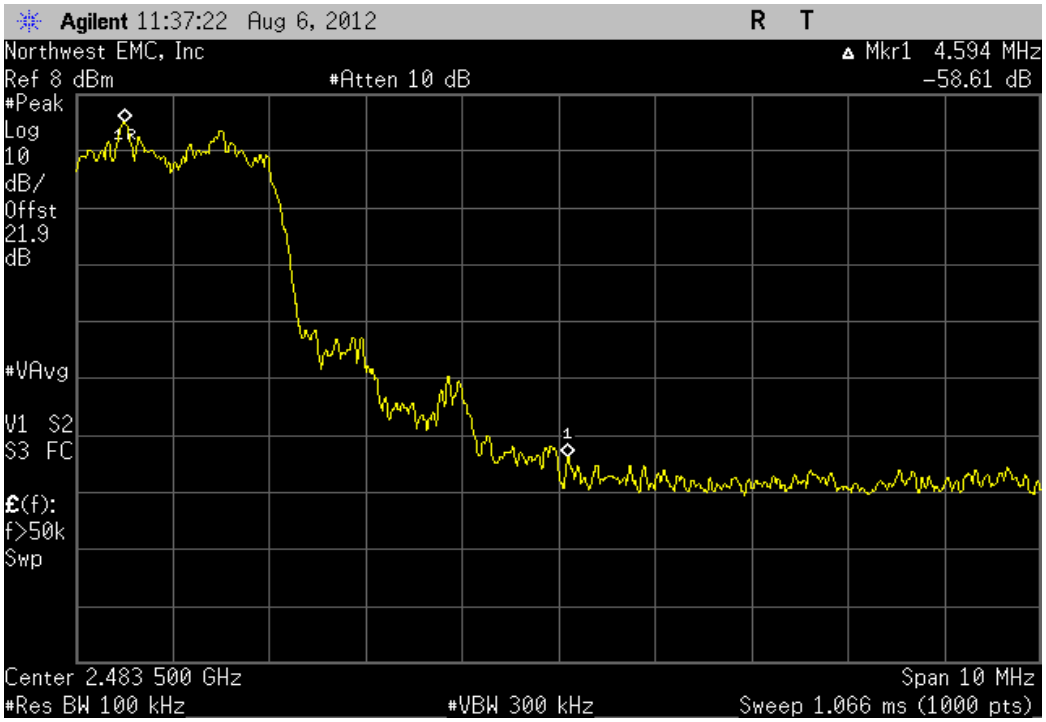


Band Edge Compliance

3DH5, 8-DPSK, Low Channel							
					Value	Limit	Result
					-55.89 dBc	≤ -20 dBc	Pass



3DH5, 8-DPSK, High Channel							
					Value	Limit	Result
					-58.61 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
Spectrum Analyzer	Agilent	E4440	AFE	1/23/2012	12
40GHz DC Block	Miteq	DCB4000	AMD	6/25/2012	12
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	NCR	0
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	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 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 in a no-hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

Spurious Conducted Emissions

EUT:	PolyVision Bluetooth Radio			**Work Order:**	POLV0114
Serial Number:	PV1928006C			**Date:**	08/06/12
Customer:	PolyVision Corporation			**Temperature:**	24c°C
Attendees:	David Behner			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	1015.5
Tested by:	Jennifer Herrett	**Power:**	5VDC USB	**Job Site:**	EV06

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

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

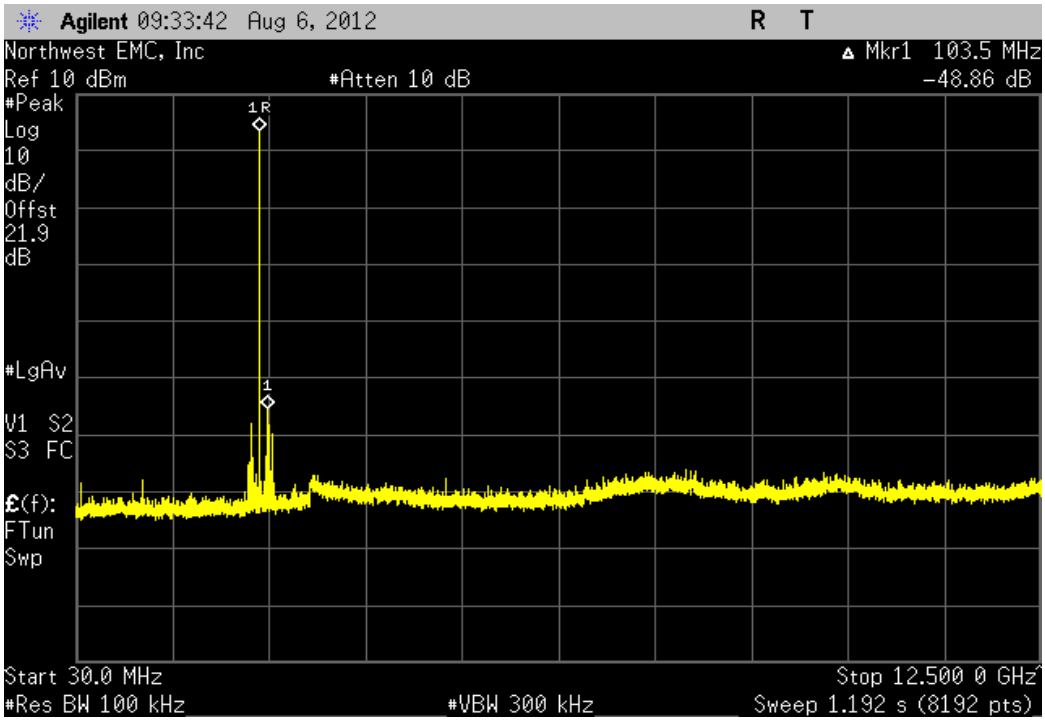
None

Configuration #	4	Signature

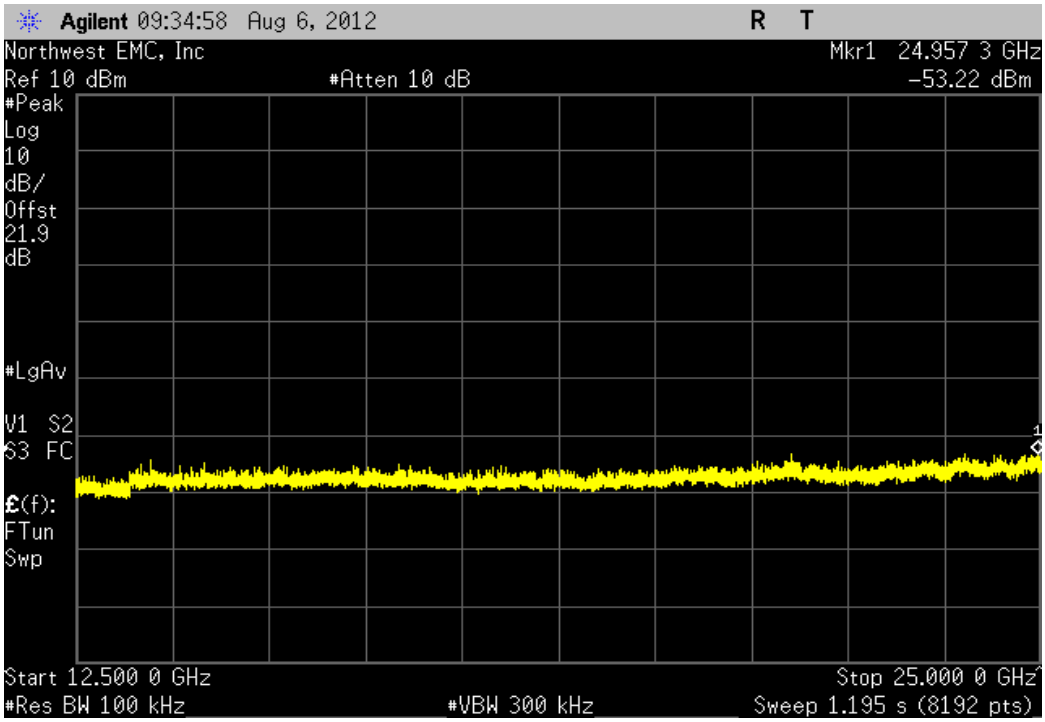
		Frequency Range	Value	Limit	Result
DH5, GFSK					
	Low Channel	30 MHz - 12.5 GHz	-48.86 dBc	≤ -20 dBc	Pass
	Low Channel	12.5 GHz - 25 GHz	-56.73 dBc	≤ -20 dBc	Pass
	Mid Channel	30 MHz - 12.5 GHz	-49.55 dBc	≤ -20 dBc	Pass
	Mid Channel	12.5 GHz - 25 GHz	-56.3 dBc	≤ -20 dBc	Pass
	High Channel	30 MHz - 12.5 GHz	-51.24 dBc	≤ -20 dBc	Pass
	High Channel	12.5 GHz - 25 GHz	-56.95 dBc	≤ -20 dBc	Pass
2DH5, 4-DQPSK					
	Low Channel	30 MHz - 12.5 GHz	-49.05 dBc	≤ -20 dBc	Pass
	Low Channel	12.5 GHz - 25 GHz	-52.75 dBc	≤ -20 dBc	Pass
	Mid Channel	30 MHz - 12.5 GHz	-46.15 dBc	≤ -20 dBc	Pass
	Mid Channel	12.5 GHz - 25 GHz	-51.68 dBc	≤ -20 dBc	Pass
	High Channel	30 MHz - 12.5 GHz	-50.84 dBc	≤ -20 dBc	Pass
	High Channel	12.5 GHz - 25 GHz	-53.12 dBc	≤ -20 dBc	Pass
3DH5, 8-DPSK					
	Low Channel	30 MHz - 12.5 GHz	-44.78 dBc	≤ -20 dBc	Pass
	Low Channel	12.5 GHz - 25 GHz	-50.97 dBc	≤ -20 dBc	Pass
	Mid Channel	30 MHz - 12.5 GHz	-47.73 dBc	≤ -20 dBc	Pass
	Mid Channel	12.5 GHz - 25 GHz	-52.1 dBc	≤ -20 dBc	Pass
	High Channel	30 MHz - 12.5 GHz	-49.78 dBc	≤ -20 dBc	Pass
	High Channel	12.5 GHz - 25 GHz	-51.34 dBc	≤ -20 dBc	Pass

Spurious Conducted Emissions

DH5, GFSK, Low Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-48.86 dBc	≤ -20 dBc	Pass

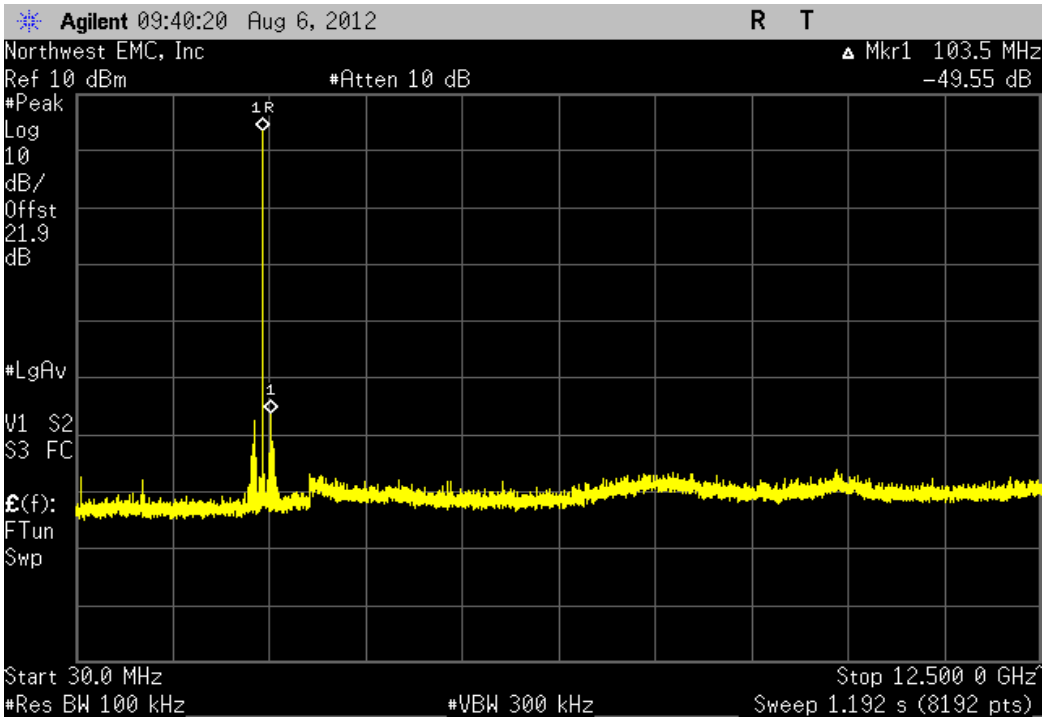


DH5, GFSK, Low Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.73 dBc	≤ -20 dBc	Pass

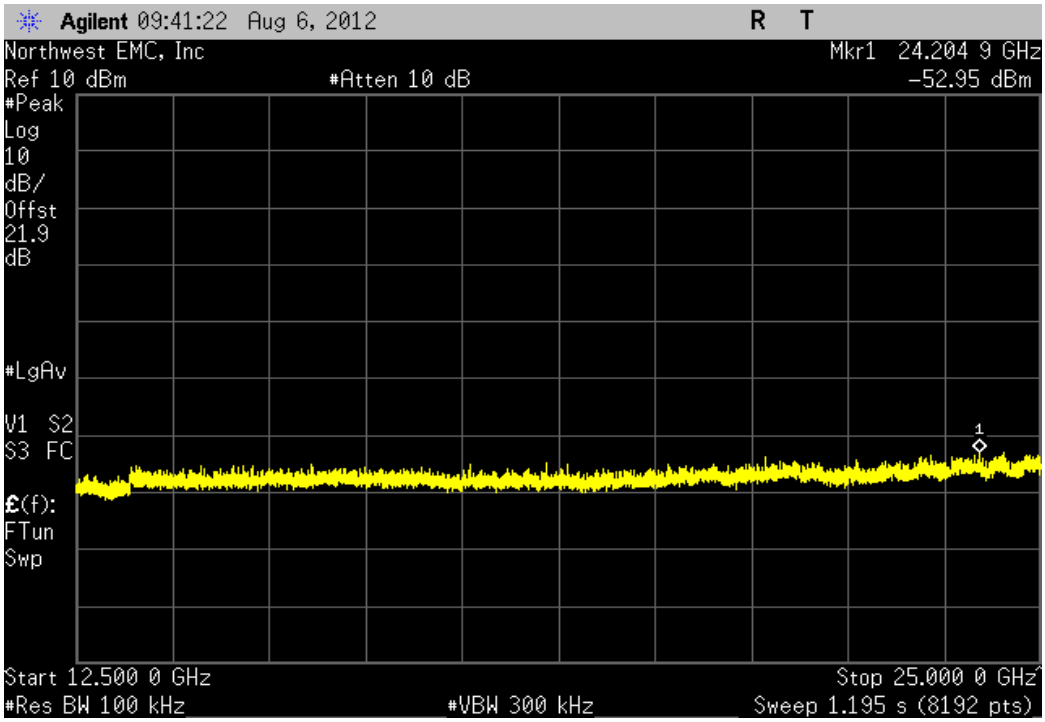


Spurious Conducted Emissions

DH5, GFSK, Mid Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-49.55 dBc	≤ -20 dBc	Pass

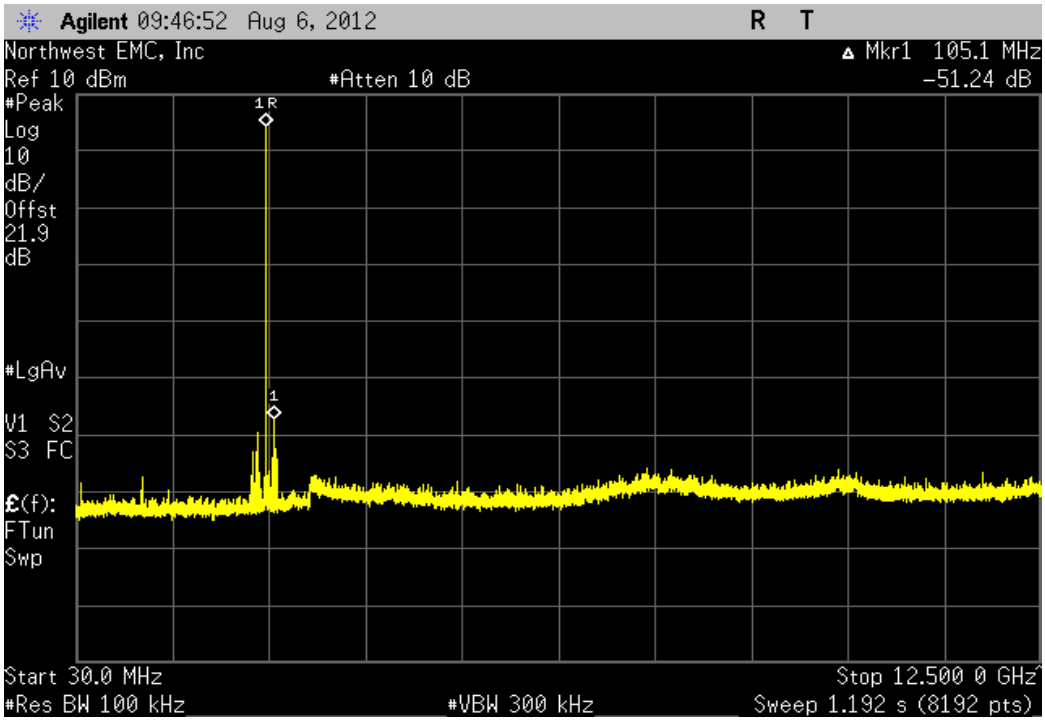


DH5, GFSK, Mid Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.3 dBc	≤ -20 dBc	Pass

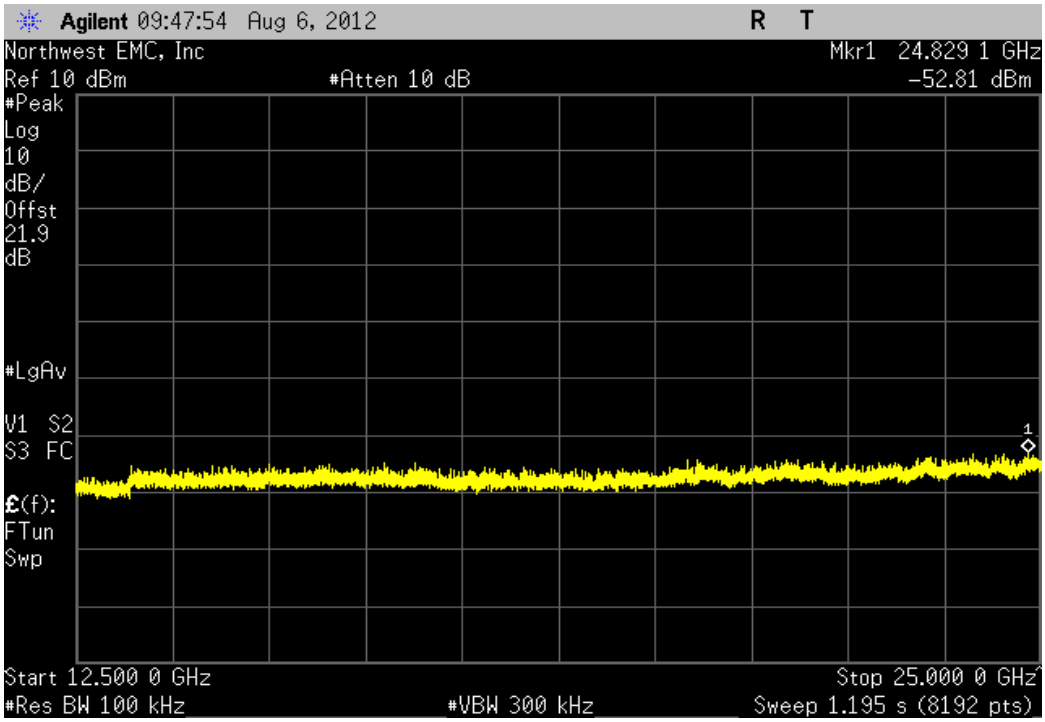


Spurious Conducted Emissions

DH5, GFSK, High Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-51.24 dBc	≤ -20 dBc	Pass

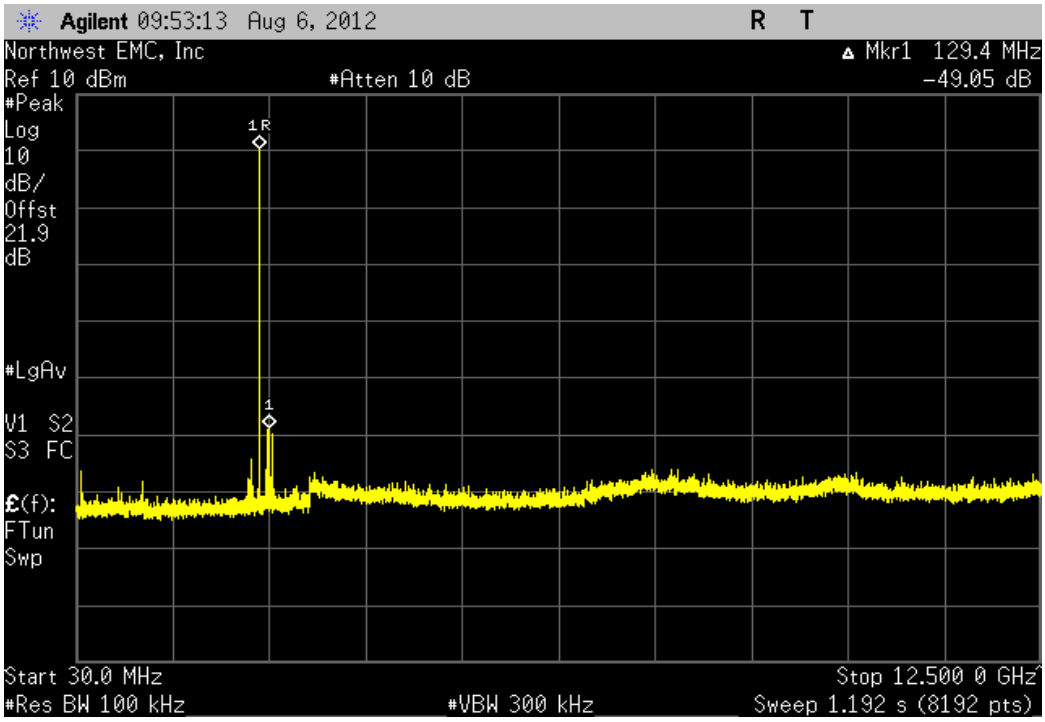


DH5, GFSK, High Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-56.95 dBc	≤ -20 dBc	Pass

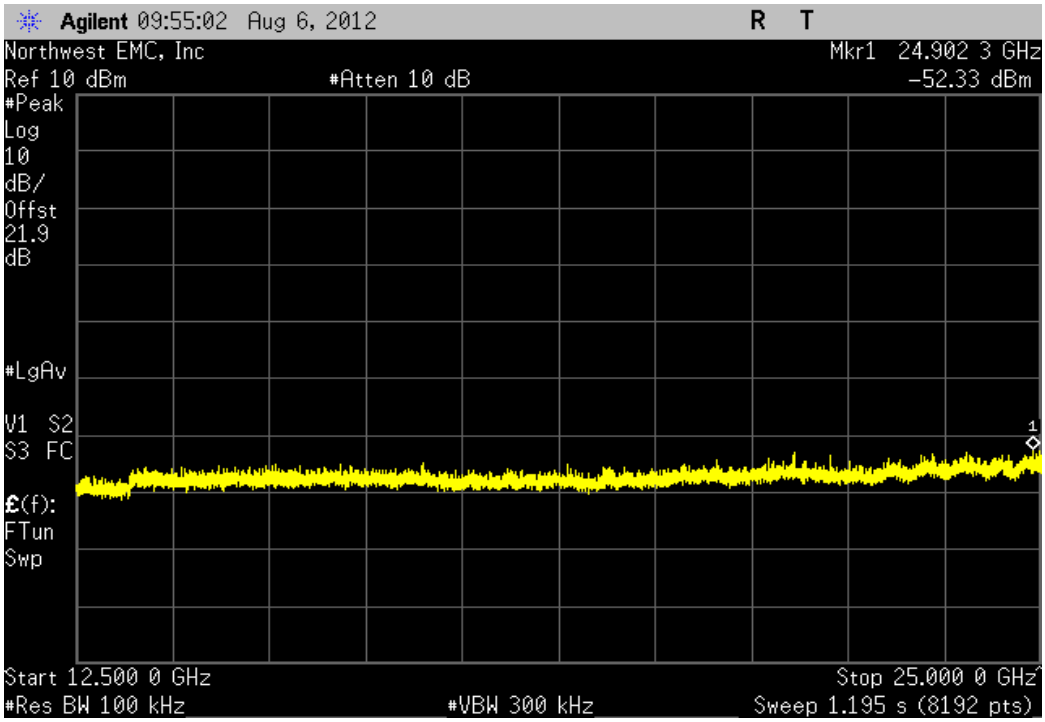


Spurious Conducted Emissions

2DH5, 4-DQPSK, Low Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-49.05 dBc	≤ -20 dBc	Pass

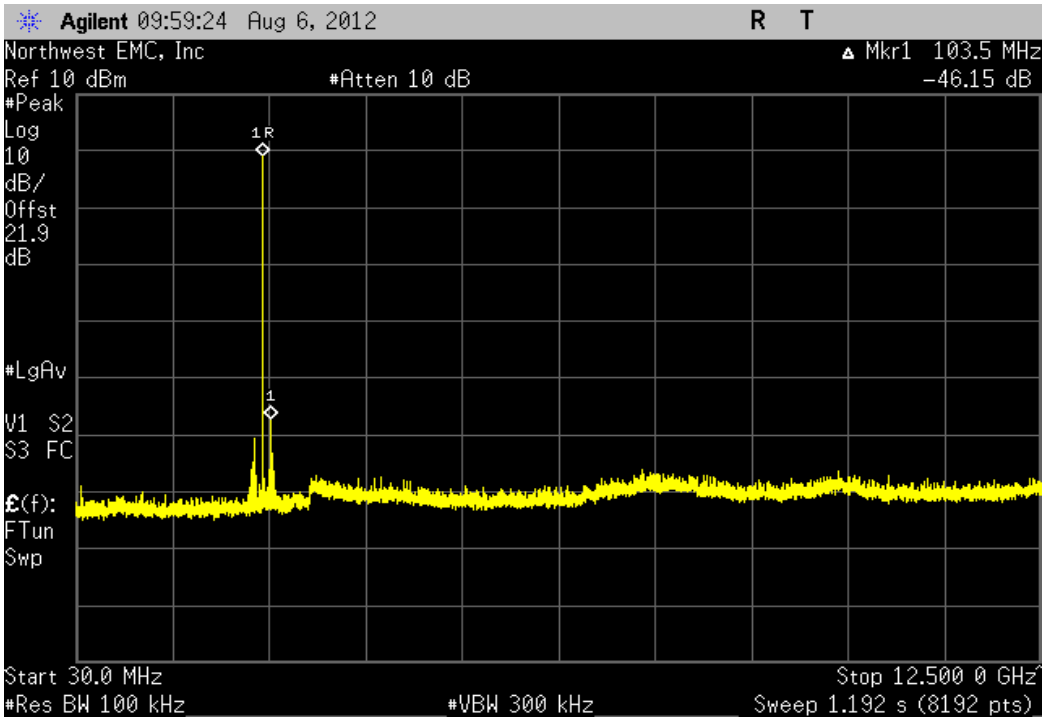


2DH5, 4-DQPSK, Low Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-52.75 dBc	≤ -20 dBc	Pass

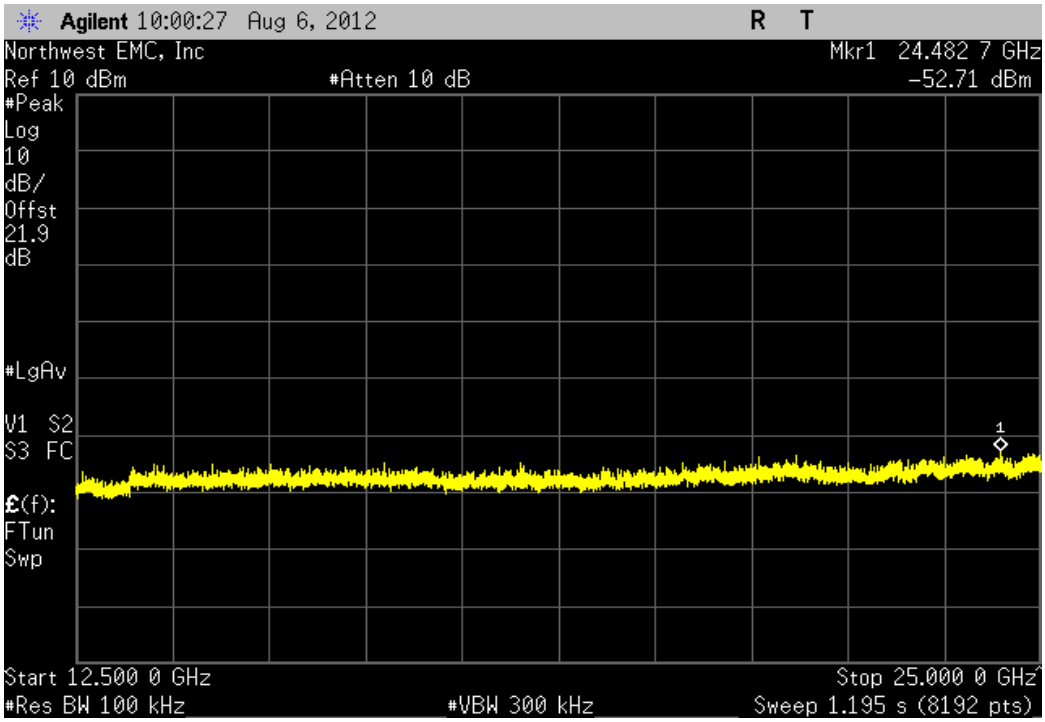


Spurious Conducted Emissions

2DH5, 4-DQPSK, Mid Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-46.15 dBc	≤ -20 dBc	Pass

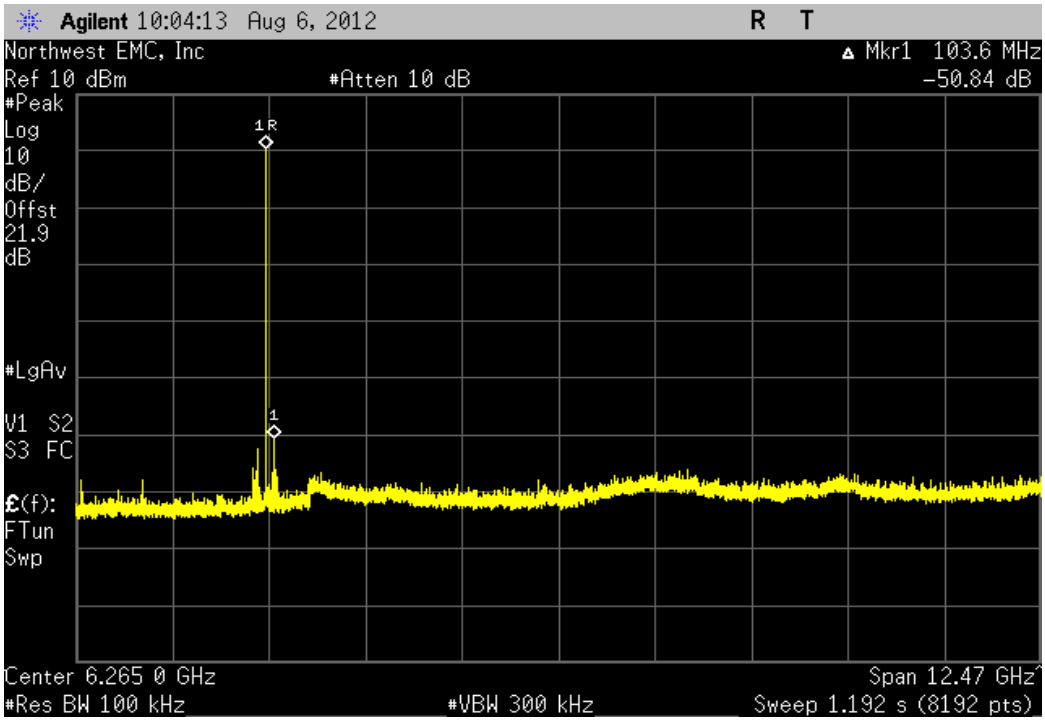


2DH5, 4-DQPSK, Mid Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-51.68 dBc	≤ -20 dBc	Pass

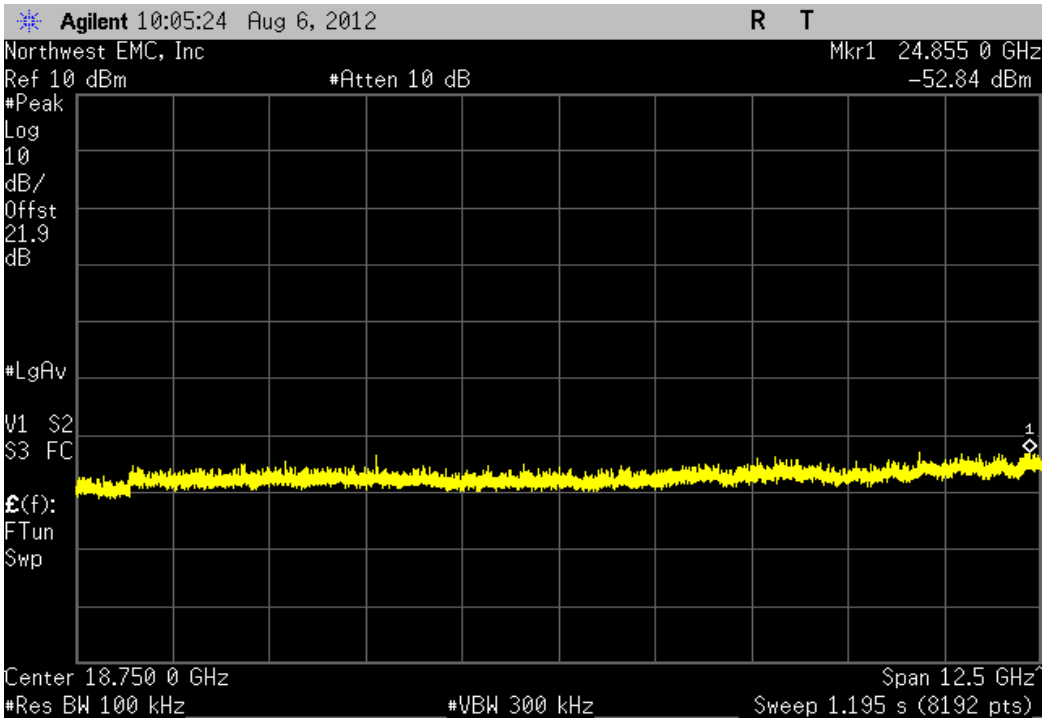


Spurious Conducted Emissions

2DH5, 4-DQPSK, High Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-50.84 dBc	≤ -20 dBc	Pass

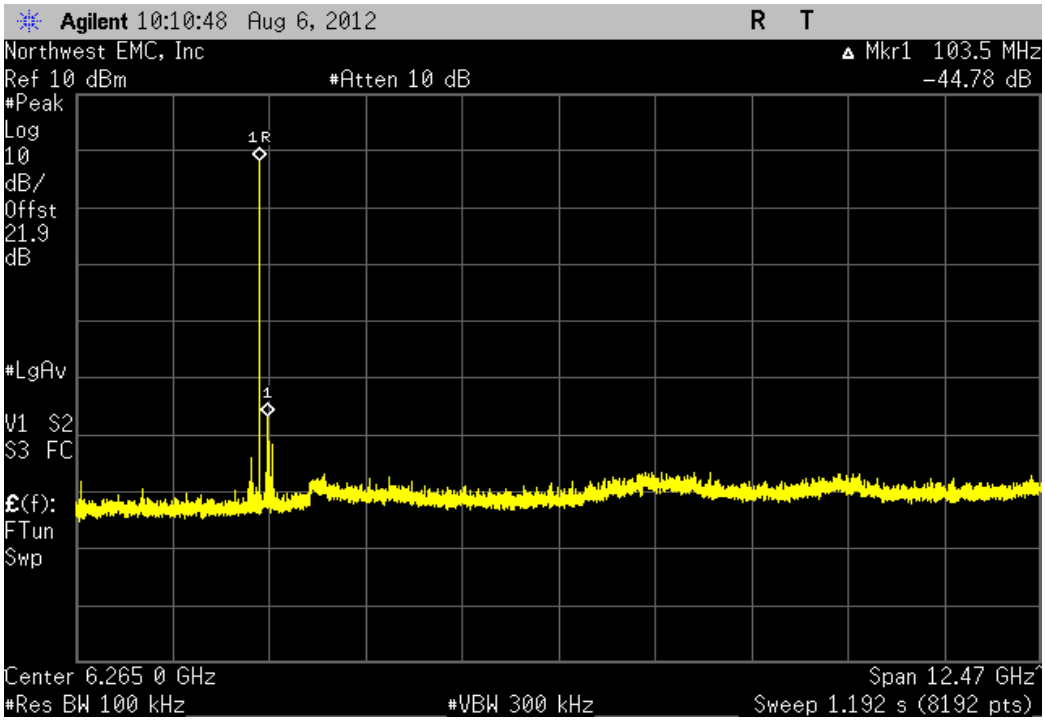


2DH5, 4-DQPSK, High Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-53.12 dBc	≤ -20 dBc	Pass

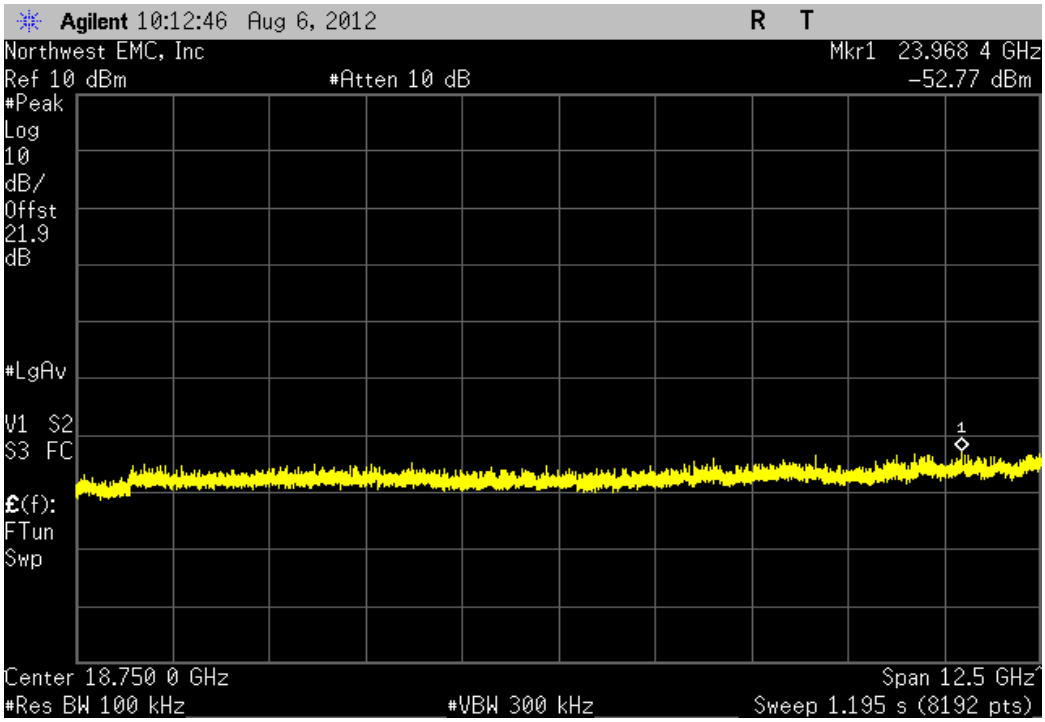


Spurious Conducted Emissions

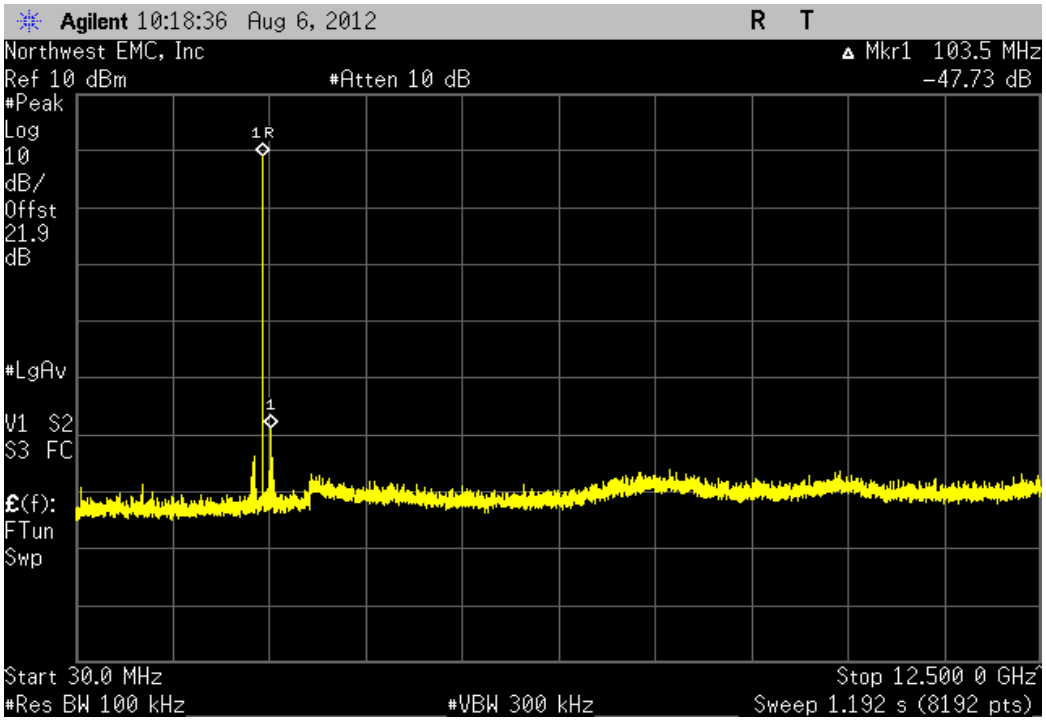
3DH5, 8-DPSK, Low Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-44.78 dBc	≤ -20 dBc	Pass



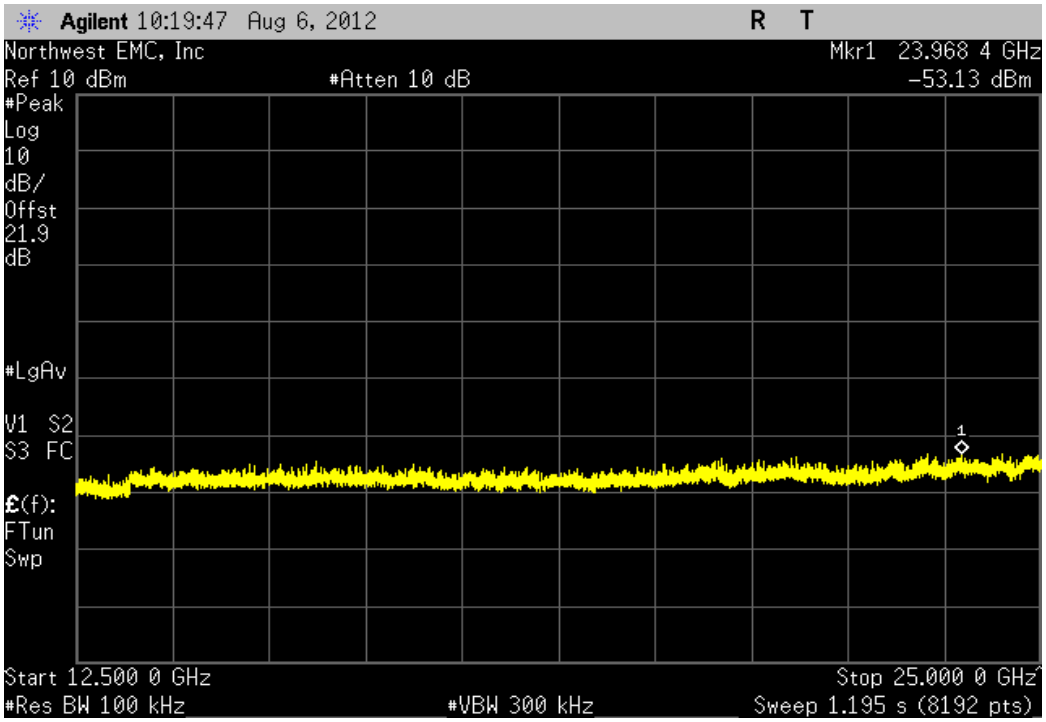
3DH5, 8-DPSK, Low Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-50.97 dBc	≤ -20 dBc	Pass



3DH5, 8-DPSK, Mid Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-47.73 dBc	≤ -20 dBc	Pass

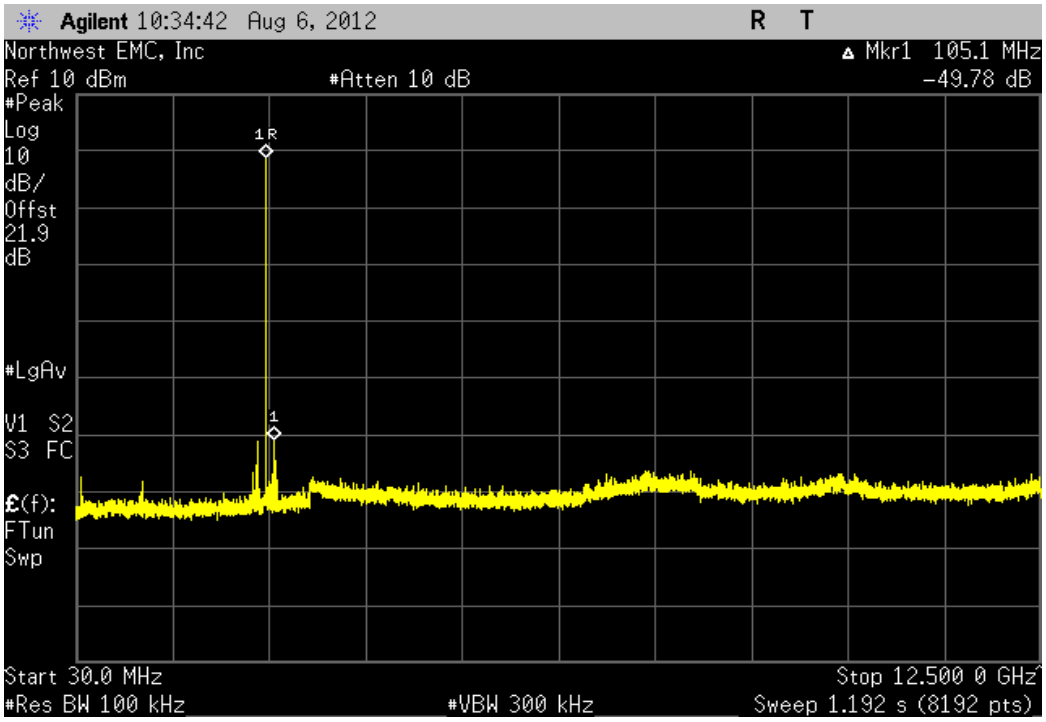


3DH5, 8-DPSK, Mid Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-52.1 dBc	≤ -20 dBc	Pass

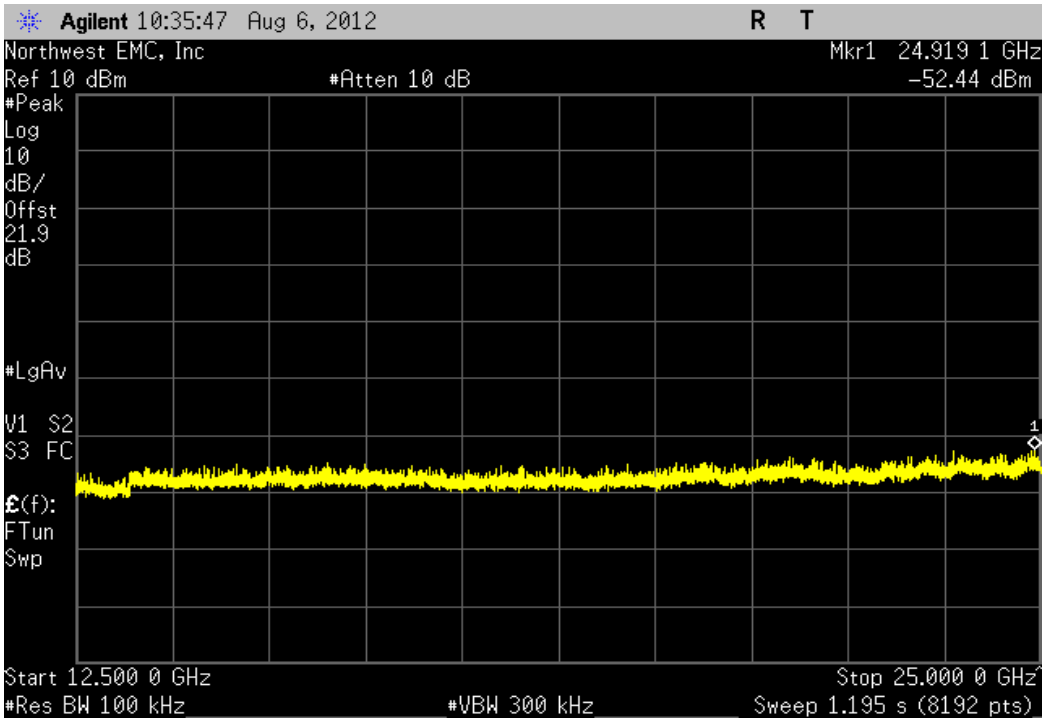


Spurious Conducted Emissions

3DH5, 8-DPSK, High Channel				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-49.78 dBc	≤ -20 dBc	Pass



3DH5, 8-DPSK, High Channel				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-51.34 dBc	≤ -20 dBc	Pass



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

Transmitting with modullation and channel as noted in comments

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

POLV0114 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26000 MHz

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
Pre-Amplifier	Miteq	AM-1616-1000	AOL	6/26/2012	12 mo
Antenna, Biconilog	EMCO	3142	AXJ	5/16/2012	12 mo
EV01 Cables	N/A	Bilog Cables	EVA	6/26/2012	12 mo
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	7/6/2012	24 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	Double Ridge Horn Cables	EVB	6/27/2012	12 mo
High Pass Filter	Micro-Tronics	HPM50111	HFO	7/6/2012	24 mo
Antenna, Horn	ETS	3160-07	AHU	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	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, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

For radiated measurements against the average limit, the FCC allows a frequency hopping radio to calculate a duty cycle correction factor to be applied. The calculation is based upon a duty cycle the transmitter on time in either the period of the transmit pulse train or 100ms whichever is less. =20*LOG(On time/Period). The on time of the Eno Receiver during all modulations is 2.9ms within a period of 100ms. Therefore the duty cycle correction is 20*LOG(2.9/100) = -30.8 dB

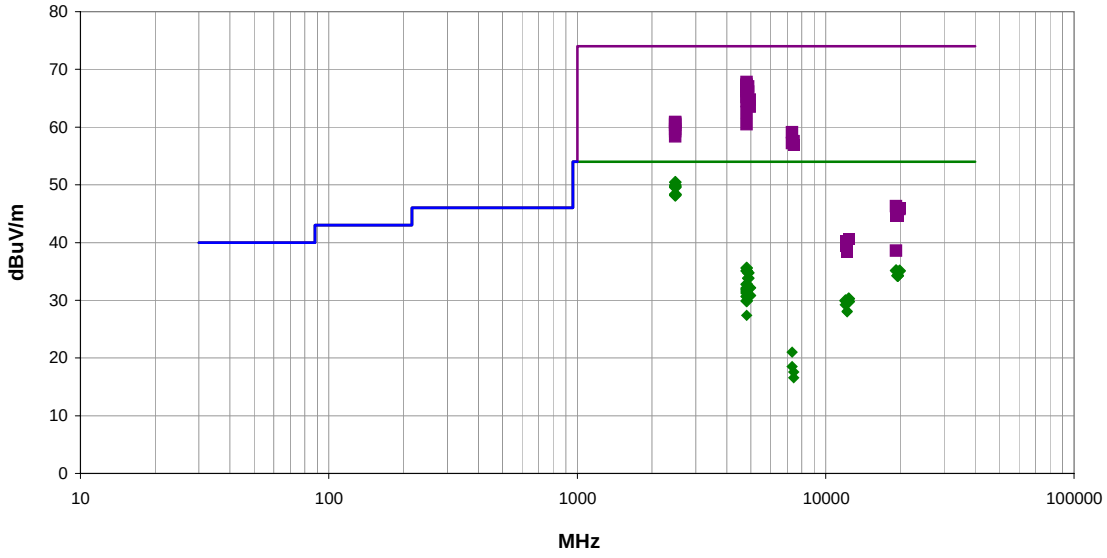
PSA-ESCI 2012.05.07
PSA-ESCI Version 2011.12.21

RADIATED EMISSIONS

Work Order:	POLV0114	**Date:**	08/02/12		
Project:	None	**Temperature:**	23.5 °C		
Job Site:	EV01	**Humidity:**	43% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015.5 mbar	**Tested by:**	Mark Baytan
EUT:	Eno Receiver				
Configuration:	1				
Customer:	Polyvision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Transmitting with modullation and channel as noted in comments				
Deviations:	None				
Comments:	None				

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

Run #	12	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance ()	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Duty Cycle Correction Factor (dB)	Adjusted ()	Spec. Limit ()	Compared to Spec. (dB)	Comments
2483.503	28.6	1.9	1.0	182.0	3.0	20.0	Horz	AV	0.0	50.5	54.0	-3.5	High Channel, DH5, EUT horizontal
2483.496	28.1	1.9	1.9	143.0	3.0	20.0	Vert	AV	0.0	50.0	54.0	-4.0	High Channel, DH5, EUT on side
2483.496	27.9	1.9	1.0	165.0	3.0	20.0	Horz	AV	0.0	49.8	54.0	-4.2	High Channel, 3DH5, EUT horizontal
2483.498	27.7	1.9	1.0	224.0	3.0	20.0	Vert	AV	0.0	49.6	54.0	-4.4	High Channel, DH5, EUT vertical
2483.500	26.5	1.9	1.0	194.0	3.0	20.0	Horz	AV	0.0	48.4	54.0	-5.6	High Channel, 2DH5, EUT horizontal
2483.503	26.5	1.9	2.1	176.0	3.0	20.0	Vert	AV	0.0	48.4	54.0	-5.6	High Channel, 3DH5, EUT vertical
2483.504	26.3	1.9	3.7	25.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	High Channel, 2DH5, EUT on side
4804.290	57.6	10.2	1.0	162.0	3.0	0.0	Vert	PK	0.0	67.8	74.0	-6.2	Low Channel, DH5, EUT on side
4804.345	57.2	10.2	1.0	186.0	3.0	0.0	Horz	PK	0.0	67.4	74.0	-6.6	Low Channel, DH5, EUT Horizontal
4804.270	57.0	10.2	1.0	183.0	3.0	0.0	Horz	PK	0.0	67.2	74.0	-6.8	Low Channel, 2-DH5, EUT horizontal
4882.180	56.6	10.4	1.0	186.0	3.0	0.0	Horz	PK	0.0	67.0	74.0	-7.0	Mid Channel, DH5, EUT horizontal
4803.900	56.8	10.2	1.0	182.0	3.0	0.0	Horz	PK	0.0	67.0	74.0	-7.0	Low Channel, 3-DH5, EUT horizontal
4804.160	56.4	10.2	1.1	169.0	3.0	0.0	Vert	PK	0.0	66.6	74.0	-7.4	Low Channel, 2-DH5, EUT on side
4804.015	56.0	10.2	1.0	183.0	3.0	0.0	Vert	PK	0.0	66.2	74.0	-7.8	Low Channel, 3-DH5, EUT on side
4881.825	55.7	10.4	1.0	169.0	3.0	0.0	Vert	PK	0.0	66.1	74.0	-7.9	Mid Channel, DH5, EUT on side
4803.705	55.0	10.2	1.1	164.0	3.0	0.0	Vert	PK	0.0	65.2	74.0	-8.8	Low Channel, DH5, EUT Horizontal
4959.670	54.0	10.7	1.0	184.0	3.0	0.0	Horz	PK	0.0	64.7	74.0	-9.3	High Channel, DH5, EUT Horizontal
4804.275	54.3	10.2	1.0	187.0	3.0	0.0	Horz	PK	0.0	64.5	74.0	-9.5	Low Channel, DH5, EUT on side
4959.630	52.8	10.7	1.0	172.0	3.0	0.0	Vert	PK	0.0	63.5	74.0	-10.5	High Channel, DH5, EUT on side
4804.265	52.4	10.2	1.0	149.0	3.0	0.0	Horz	PK	0.0	62.6	74.0	-11.4	Low Channel, DH5, EUT vertical
2483.505	39.0	1.9	1.0	165.0	3.0	20.0	Horz	PK	0.0	60.9	74.0	-13.1	High Channel, 3DH5, EUT horizontal
2483.504	38.9	1.9	1.0	182.0	3.0	20.0	Horz	PK	0.0	60.8	74.0	-13.2	High Channel, DH5, EUT horizontal
2483.503	38.7	1.9	1.9	143.0	3.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4	High Channel, DH5, EUT on side
4804.190	50.3	10.2	1.0	195.0	3.0	0.0	Vert	PK	0.0	60.5	74.0	-13.5	Low Channel, DH5, EUT vertical
2483.504	38.5	1.9	1.0	224.0	3.0	20.0	Vert	PK	0.0	60.4	74.0	-13.6	High Channel, DH5, EUT vertical
2483.503	37.8	1.9	2.1	176.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	High Channel, 3DH5, EUT vertical
2483.498	37.4	1.9	1.0	194.0	3.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	High Channel, 2DH5, EUT horizontal
7322.865	40.1	19.0	1.9	303.0	3.0	0.0	Vert	PK	0.0	59.1	74.0	-14.9	Mid Channel, DH5, EUT on side

19219.950	45.0	-6.4	1.0	274.0	3.0	0.0	Vert	AV	0.0	38.6	54.0	-15.4	Low Channel, DH5, EUT on side
2483.505	36.5	1.9	3.7	25.0	3.0	20.0	Vert	PK	0.0	58.4	74.0	-15.6	High Channel, 2DH5, EUT on side
7439.515	38.1	19.5	1.6	312.0	3.0	0.0	Vert	PK	0.0	57.6	74.0	-16.4	High Channel, DH5, EUT on side
7323.395	38.2	19.0	1.6	18.0	3.0	0.0	Horz	PK	0.0	57.2	74.0	-16.8	Mid Channel, DH5, EUT horizontal
7439.565	37.5	19.5	1.7	328.0	3.0	0.0	Horz	PK	0.0	57.0	74.0	-17.0	Low Channel, DH5, EUT Horizontal
4804.000	56.2	10.2	1.0	162.0	3.0	0.0	Vert	AV	-30.8	35.6	54.0	-18.4	Low Channel, DH5, EUT on side
19219.990	41.6	-6.4	1.0	229.0	3.0	0.0	Horz	AV	0.0	35.2	54.0	-18.8	Low Channel, DH5, EUT horizontal
19838.670	41.3	-6.2	1.0	244.0	3.0	0.0	Vert	AV	0.0	35.1	54.0	-18.9	High Channel, DH5, EUT vertical
4803.990	55.7	10.2	1.0	186.0	3.0	0.0	Horz	AV	-30.8	35.1	54.0	-18.9	Low Channel, DH5, EUT Horizontal
4881.955	55.1	10.4	1.0	186.0	3.0	0.0	Horz	AV	-30.8	34.7	54.0	-19.3	Mid Channel, DH5, EUT horizontal
19520.470	40.6	-6.3	1.0	108.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	Mid Channel, DH5, EUT on side
19518.270	40.6	-6.3	1.0	64.0	3.0	0.0	Horz	AV	0.0	34.3	54.0	-19.7	Mid Channel, DH5, EUT horizontal
4881.985	54.2	10.4	1.0	169.0	3.0	0.0	Vert	AV	-30.8	33.8	54.0	-20.2	Mid Channel, DH5, EUT on side
4803.995	53.4	10.2	1.1	164.0	3.0	0.0	Vert	AV	-30.8	32.8	54.0	-21.2	Low Channel, DH5, EUT Horizontal
4959.990	52.2	10.7	1.0	184.0	3.0	0.0	Horz	AV	-30.8	32.1	54.0	-21.9	Low Channel, DH5, EUT Horizontal
4803.995	52.7	10.2	1.0	187.0	3.0	0.0	Horz	AV	-30.8	32.1	54.0	-21.9	Low Channel, DH5, EUT on side
4804.095	52.5	10.2	1.0	183.0	3.0	0.0	Horz	AV	-30.8	31.9	54.0	-22.1	Low Channel, 2-DH5, EUT horizontal
4804.095	52.2	10.2	1.0	182.0	3.0	0.0	Horz	AV	-30.8	31.6	54.0	-22.4	Low Channel, 3-DH5, EUT horizontal
4804.010	51.9	10.2	1.1	169.0	3.0	0.0	Vert	AV	-30.8	31.3	54.0	-22.7	Low Channel, 2-DH5, EUT on side
4959.995	50.9	10.7	1.0	172.0	3.0	0.0	Vert	AV	-30.8	30.8	54.0	-23.2	High Channel, DH5, EUT on side
4804.070	51.3	10.2	1.0	183.0	3.0	0.0	Vert	AV	-30.8	30.7	54.0	-23.3	Low Channel, 3-DH5, EUT on side
12399.140	32.7	-2.4	1.0	5.0	3.0	0.0	Horz	AV	0.0	30.3	54.0	-23.7	High Channel, DH5, EUT horizontal
12010.400	34.8	-4.9	1.0	187.0	3.0	0.0	Horz	AV	0.0	29.9	54.0	-24.1	Low Channel, DH5, EUT horizontal
4804.005	50.5	10.2	1.0	149.0	3.0	0.0	Horz	AV	-30.8	29.9	54.0	-24.1	Low Channel, DH5, EUT vertical
12399.410	32.2	-2.4	1.0	143.0	3.0	0.0	Vert	AV	0.0	29.8	54.0	-24.2	High Channel, DH5, EUT on side
12009.310	34.1	-4.9	1.0	143.0	3.0	0.0	Vert	AV	0.0	29.2	54.0	-24.8	Low Channel, DH5, EUT on side
12198.070	31.8	-3.7	1.0	176.0	3.0	0.0	Horz	AV	0.0	28.1	54.0	-25.9	Mid Channel, DH5, EUT horizontal
12198.400	31.7	-3.7	1.0	34.0	3.0	0.0	Vert	AV	0.0	28.0	54.0	-26.0	Mid Channel, DH5, EUT on side
4804.000	48.0	10.2	1.0	195.0	3.0	0.0	Vert	AV	-30.8	27.4	54.0	-26.6	Low Channel, DH5, EUT vertical
19219.900	52.7	-6.4	1.0	274.0	3.0	0.0	Vert	PK	0.0	46.3	74.0	-27.7	Low Channel, DH5, EUT on side
19840.080	52.2	-6.2	1.0	244.0	3.0	0.0	Vert	PK	0.0	46.0	74.0	-28.0	High Channel, DH5, EUT vertical
19841.990	52.0	-6.2	1.0	122.0	3.0	0.0	Horz	PK	0.0	45.8	74.0	-28.2	High Channel, DH5, EUT on side
19520.730	51.8	-6.3	1.0	108.0	3.0	0.0	Vert	PK	0.0	45.5	74.0	-28.5	Mid Channel, DH5, EUT on side
19519.120	51.0	-6.3	1.0	64.0	3.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	Mid Channel, DH5, EUT horizontal
19220.650	51.0	-6.4	1.0	229.0	3.0	0.0	Horz	PK	0.0	44.6	74.0	-29.4	Low Channel, DH5, EUT horizontal
7322.890	32.8	19.0	1.9	303.0	3.0	0.0	Vert	AV	-30.8	21.0	54.0	-33.0	Mid Channel, DH5, EUT on side
12399.770	43.1	-2.4	1.0	143.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	High Channel, DH5, EUT on side
12398.880	43.1	-2.4	1.0	5.0	3.0	0.0	Horz	PK	0.0	40.7	74.0	-33.3	High Channel, DH5, EUT horizontal
12010.220	45.2	-4.9	1.0	187.0	3.0	0.0	Horz	PK	0.0	40.3	74.0	-33.7	Low Channel, DH5, EUT horizontal
12010.670	44.3	-4.9	1.0	143.0	3.0	0.0	Vert	PK	0.0	39.4	74.0	-34.6	Low Channel, DH5, EUT on side
12199.830	42.7	-3.7	1.0	176.0	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	Mid Channel, DH5, EUT horizontal
7322.910	30.3	19.0	1.6	18.0	3.0	0.0	Horz	AV	-30.8	18.5	54.0	-35.5	Mid Channel, DH5, EUT horizontal
12201.410	42.0	-3.7	1.0	34.0	3.0	0.0	Vert	PK	0.0	38.3	74.0	-35.7	Mid Channel, DH5, EUT on side
7439.920	28.9	19.5	1.6	312.0	3.0	0.0	Vert	AV	-30.8	17.6	54.0	-36.4	High Channel, DH5, EUT on side
7439.810	27.9	19.5	1.7	328.0	3.0	0.0	Horz	AV	-30.8	16.6	54.0	-37.4	Low Channel, DH5, EUT Horizontal

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

Tx, High Channel, GFSK/DH5
Tx, Mid Channel, GFSK/DH5
Tx, Low Channel, GFSK/DH5

POWER SETTINGS INVESTIGATED

120VAC/60Hz

CONFIGURATIONS INVESTIGATED

POLV0114 - 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
Receiver	Rohde & Schwarz	ESCI	ARH	3/29/2012	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HHD	2/1/2012	24 mo
Attenuator	Coaxicom	66702 2910-20	RBR	8/3/2011	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

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.

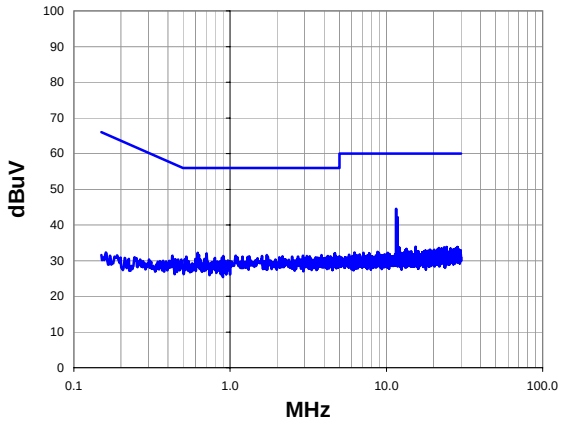
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	POLV0114	**Date:**	08/03/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV07	**Humidity:**	45% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Jennifer Herrett
EUT:	PolyVision Bluetooth Radio				
Configuration:	3				
Customer:	PolyVision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Tx, Low Channel, GFSK/DH5				
Deviations:	None				
Comments:	None				

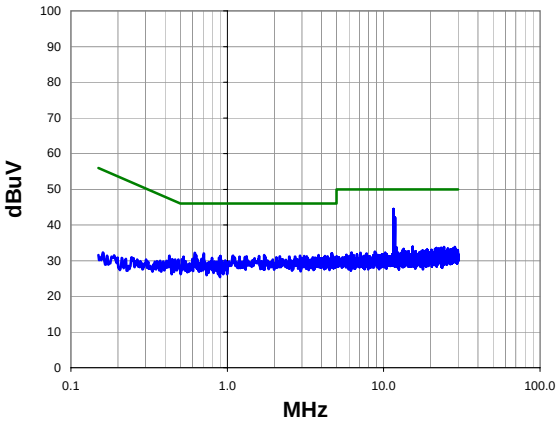
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	3	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
11.550	23.4	21.0	44.4	60.0	-15.6
11.820	21.0	21.1	42.1	60.0	-17.9
0.619	11.9	20.3	32.2	56.0	-23.8
0.708	11.7	20.3	32.0	56.0	-24.0
4.680	11.3	20.7	32.0	56.0	-24.0
0.631	11.3	20.3	31.6	56.0	-24.4
3.840	11.0	20.6	31.6	56.0	-24.4
1.720	11.1	20.4	31.5	56.0	-24.5
2.920	10.9	20.5	31.4	56.0	-24.6
1.088	11.0	20.4	31.4	56.0	-24.6
1.600	10.9	20.4	31.3	56.0	-24.7
3.096	10.8	20.5	31.3	56.0	-24.7
4.224	10.7	20.6	31.3	56.0	-24.7
0.903	10.9	20.4	31.3	56.0	-24.7
4.384	10.6	20.7	31.3	56.0	-24.7
3.224	10.7	20.5	31.2	56.0	-24.8
2.168	10.7	20.5	31.2	56.0	-24.8
1.744	10.7	20.5	31.2	56.0	-24.8
2.720	10.6	20.5	31.1	56.0	-24.9
2.496	10.6	20.5	31.1	56.0	-24.9

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
11.550	23.4	21.0	44.4	50.0	-5.6
11.820	21.0	21.1	42.1	50.0	-7.9
0.619	11.9	20.3	32.2	46.0	-13.8
0.708	11.7	20.3	32.0	46.0	-14.0
4.680	11.3	20.7	32.0	46.0	-14.0
0.631	11.3	20.3	31.6	46.0	-14.4
3.840	11.0	20.6	31.6	46.0	-14.4
1.720	11.1	20.4	31.5	46.0	-14.5
2.920	10.9	20.5	31.4	46.0	-14.6
1.088	11.0	20.4	31.4	46.0	-14.6
1.600	10.9	20.4	31.3	46.0	-14.7
3.096	10.8	20.5	31.3	46.0	-14.7
4.224	10.7	20.6	31.3	46.0	-14.7
0.903	10.9	20.4	31.3	46.0	-14.7
4.384	10.6	20.7	31.3	46.0	-14.7
3.224	10.7	20.5	31.2	46.0	-14.8
2.168	10.7	20.5	31.2	46.0	-14.8
1.744	10.7	20.5	31.2	46.0	-14.8
2.720	10.6	20.5	31.1	46.0	-14.9
2.496	10.6	20.5	31.1	46.0	-14.9

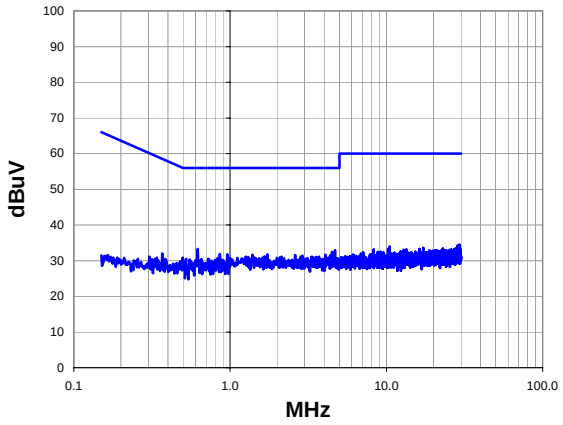
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	POLV0114	**Date:**	08/03/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV07	**Humidity:**	45% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Jennifer Herrett
EUT:	PolyVision Bluetooth Radio				
Configuration:	3				
Customer:	PolyVision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Tx, Low Channel, GFSK/DH5				
Deviations:	None				
Comments:	None				

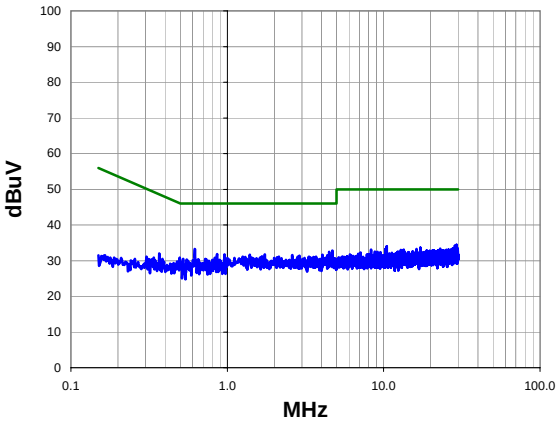
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	4	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.619	13.0	20.3	33.3	56.0	-22.7
4.688	12.1	20.7	32.8	56.0	-23.2
4.488	11.8	20.7	32.5	56.0	-23.5
0.861	11.5	20.4	31.9	56.0	-24.1
0.961	11.4	20.4	31.8	56.0	-24.2
1.736	11.3	20.5	31.8	56.0	-24.2
4.064	11.1	20.6	31.7	56.0	-24.3
1.392	11.2	20.4	31.6	56.0	-24.4
2.608	11.1	20.5	31.6	56.0	-24.4
4.376	10.8	20.7	31.5	56.0	-24.5
2.896	10.9	20.5	31.4	56.0	-24.6
1.664	10.8	20.4	31.2	56.0	-24.8
3.696	10.6	20.6	31.2	56.0	-24.8
3.336	10.6	20.5	31.1	56.0	-24.9
2.824	10.6	20.5	31.1	56.0	-24.9
1.256	10.7	20.4	31.1	56.0	-24.9
2.136	10.6	20.5	31.1	56.0	-24.9
0.497	10.6	20.3	30.9	56.1	-25.2
0.833	10.4	20.3	30.7	56.0	-25.3
0.723	10.2	20.3	30.5	56.0	-25.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.619	13.0	20.3	33.3	46.0	-12.7
4.688	12.1	20.7	32.8	46.0	-13.2
4.488	11.8	20.7	32.5	46.0	-13.5
0.861	11.5	20.4	31.9	46.0	-14.1
0.961	11.4	20.4	31.8	46.0	-14.2
1.736	11.3	20.5	31.8	46.0	-14.2
4.064	11.1	20.6	31.7	46.0	-14.3
1.392	11.2	20.4	31.6	46.0	-14.4
2.608	11.1	20.5	31.6	46.0	-14.4
4.376	10.8	20.7	31.5	46.0	-14.5
2.896	10.9	20.5	31.4	46.0	-14.6
1.664	10.8	20.4	31.2	46.0	-14.8
3.696	10.6	20.6	31.2	46.0	-14.8
3.336	10.6	20.5	31.1	46.0	-14.9
2.824	10.6	20.5	31.1	46.0	-14.9
1.256	10.7	20.4	31.1	46.0	-14.9
2.136	10.6	20.5	31.1	46.0	-14.9
0.497	10.6	20.3	30.9	46.1	-15.2
0.833	10.4	20.3	30.7	46.0	-15.3
0.723	10.2	20.3	30.5	46.0	-15.5

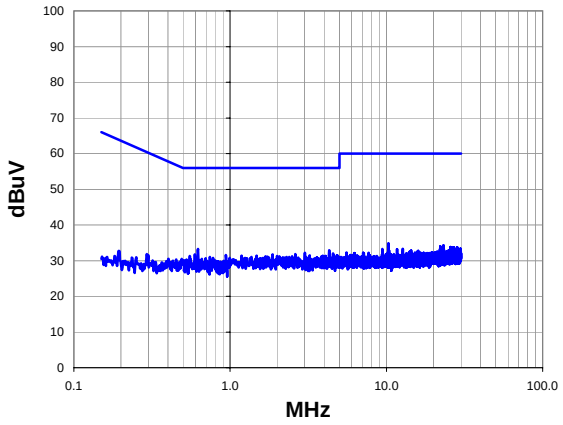
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	POLV0114	**Date:**	08/03/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV07	**Humidity:**	45% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Jennifer Herrett
EUT:	PolyVision Bluetooth Radio				
Configuration:	3				
Customer:	PolyVision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Tx, Mid Channel, GFSK/DH5				
Deviations:	None				
Comments:	None				

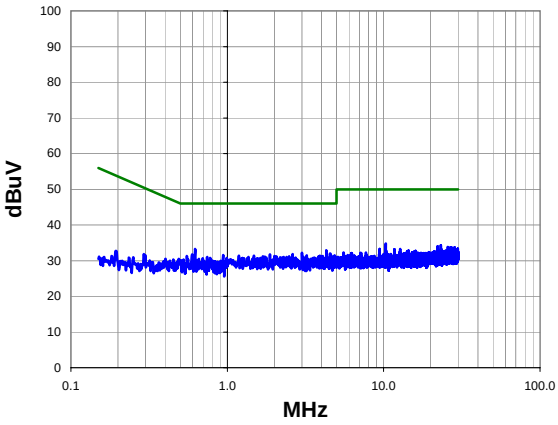
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	5	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.623	13.0	20.3	33.3	56.0	-22.7
4.304	12.3	20.6	32.9	56.0	-23.1
3.008	11.7	20.5	32.2	56.0	-23.8
4.552	11.3	20.7	32.0	56.0	-24.0
4.336	11.3	20.6	31.9	56.0	-24.1
2.616	11.3	20.5	31.8	56.0	-24.2
1.872	11.3	20.5	31.8	56.0	-24.2
0.595	11.4	20.3	31.7	56.0	-24.3
0.940	11.2	20.4	31.6	56.0	-24.4
4.848	10.8	20.7	31.5	56.0	-24.5
3.224	10.9	20.5	31.4	56.0	-24.6
1.480	11.0	20.4	31.4	56.0	-24.6
1.184	11.0	20.4	31.4	56.0	-24.6
3.912	10.8	20.6	31.4	56.0	-24.6
0.551	11.0	20.3	31.3	56.0	-24.7
4.088	10.7	20.6	31.3	56.0	-24.7
2.000	10.8	20.5	31.3	56.0	-24.7
1.688	10.8	20.4	31.2	56.0	-24.8
2.488	10.7	20.5	31.2	56.0	-24.8
4.000	10.6	20.6	31.2	56.0	-24.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.623	13.0	20.3	33.3	46.0	-12.7
4.304	12.3	20.6	32.9	46.0	-13.1
3.008	11.7	20.5	32.2	46.0	-13.8
4.552	11.3	20.7	32.0	46.0	-14.0
4.336	11.3	20.6	31.9	46.0	-14.1
2.616	11.3	20.5	31.8	46.0	-14.2
1.872	11.3	20.5	31.8	46.0	-14.2
0.595	11.4	20.3	31.7	46.0	-14.3
0.940	11.2	20.4	31.6	46.0	-14.4
4.848	10.8	20.7	31.5	46.0	-14.5
3.224	10.9	20.5	31.4	46.0	-14.6
1.480	11.0	20.4	31.4	46.0	-14.6
1.184	11.0	20.4	31.4	46.0	-14.6
3.912	10.8	20.6	31.4	46.0	-14.6
0.551	11.0	20.3	31.3	46.0	-14.7
4.088	10.7	20.6	31.3	46.0	-14.7
2.000	10.8	20.5	31.3	46.0	-14.7
1.688	10.8	20.4	31.2	46.0	-14.8
2.488	10.7	20.5	31.2	46.0	-14.8
4.000	10.6	20.6	31.2	46.0	-14.8

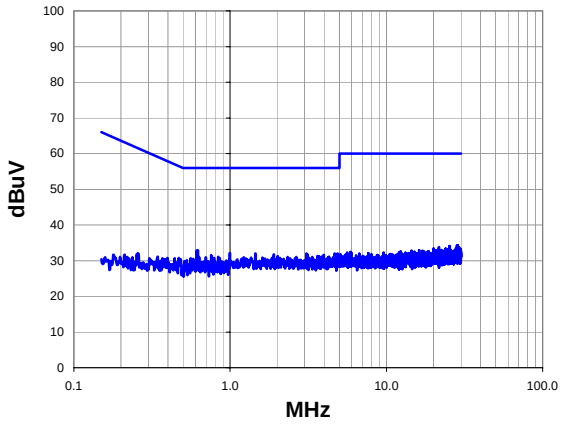
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	POLV0114	**Date:**	08/03/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV07	**Humidity:**	45% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Jennifer Herrett
EUT:	PolyVision Bluetooth Radio				
Configuration:	3				
Customer:	PolyVision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Tx, Mid Channel, GFSK/DH5				
Deviations:	None				
Comments:	None				

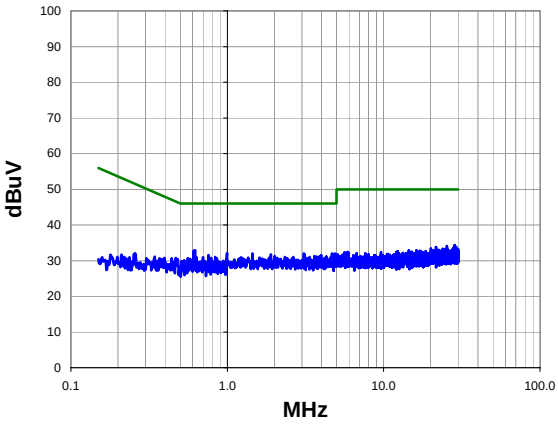
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	6	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.621	12.6	20.3	32.9	56.0	-23.1
0.611	12.5	20.3	32.8	56.0	-23.2
0.997	11.7	20.4	32.1	56.0	-23.9
3.088	11.5	20.5	32.0	56.0	-24.0
1.448	11.6	20.4	32.0	56.0	-24.0
4.872	11.3	20.7	32.0	56.0	-24.0
4.672	11.3	20.7	32.0	56.0	-24.0
1.904	11.3	20.5	31.8	56.0	-24.2
3.120	11.2	20.5	31.7	56.0	-24.3
3.976	11.0	20.6	31.6	56.0	-24.4
0.757	11.2	20.3	31.5	56.0	-24.5
4.920	10.8	20.7	31.5	56.0	-24.5
2.016	10.8	20.5	31.3	56.0	-24.7
3.616	10.7	20.6	31.3	56.0	-24.7
3.888	10.6	20.6	31.2	56.0	-24.8
3.704	10.6	20.6	31.2	56.0	-24.8
3.760	10.5	20.6	31.1	56.0	-24.9
0.838	10.7	20.4	31.1	56.0	-24.9
3.360	10.5	20.5	31.0	56.0	-25.0
2.648	10.5	20.5	31.0	56.0	-25.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.621	12.6	20.3	32.9	46.0	-13.1
0.611	12.5	20.3	32.8	46.0	-13.2
0.997	11.7	20.4	32.1	46.0	-13.9
3.088	11.5	20.5	32.0	46.0	-14.0
1.448	11.6	20.4	32.0	46.0	-14.0
4.872	11.3	20.7	32.0	46.0	-14.0
4.672	11.3	20.7	32.0	46.0	-14.0
1.904	11.3	20.5	31.8	46.0	-14.2
3.120	11.2	20.5	31.7	46.0	-14.3
3.976	11.0	20.6	31.6	46.0	-14.4
0.757	11.2	20.3	31.5	46.0	-14.5
4.920	10.8	20.7	31.5	46.0	-14.5
2.016	10.8	20.5	31.3	46.0	-14.7
3.616	10.7	20.6	31.3	46.0	-14.7
3.888	10.6	20.6	31.2	46.0	-14.8
3.704	10.6	20.6	31.2	46.0	-14.8
3.760	10.5	20.6	31.1	46.0	-14.9
0.838	10.7	20.4	31.1	46.0	-14.9
3.360	10.5	20.5	31.0	46.0	-15.0
2.648	10.5	20.5	31.0	46.0	-15.0

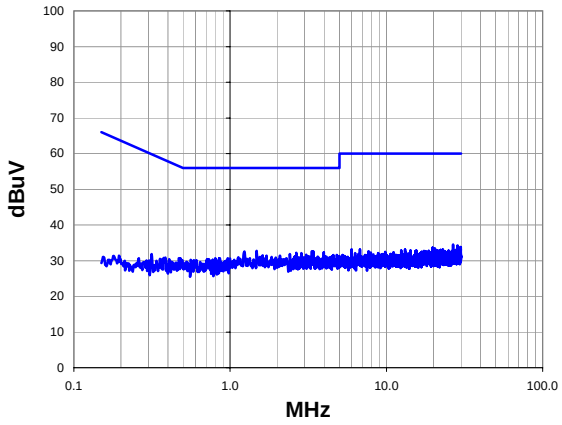
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	POLV0114	**Date:**	08/03/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV07	**Humidity:**	45% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Jennifer Herrett
EUT:	PolyVision Bluetooth Radio				
Configuration:	3				
Customer:	PolyVision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Tx, High Channel, GFSK/DH5				
Deviations:	None				
Comments:	None				

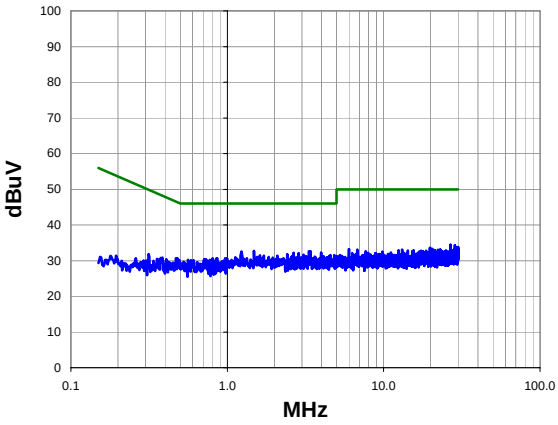
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	7	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
1.480	12.3	20.4	32.7	56.0	-23.3
3.408	12.1	20.5	32.6	56.0	-23.4
3.336	12.1	20.5	32.6	56.0	-23.4
1.232	12.2	20.4	32.6	56.0	-23.4
3.976	11.7	20.6	32.3	56.0	-23.7
2.656	11.7	20.5	32.2	56.0	-23.8
2.864	11.6	20.5	32.1	56.0	-23.9
2.416	11.3	20.5	31.8	56.0	-24.2
3.072	11.1	20.5	31.6	56.0	-24.4
4.824	10.9	20.7	31.6	56.0	-24.4
4.576	10.9	20.7	31.6	56.0	-24.4
2.088	10.9	20.5	31.4	56.0	-24.6
1.712	10.9	20.4	31.3	56.0	-24.7
3.192	10.7	20.5	31.2	56.0	-24.8
2.600	10.7	20.5	31.2	56.0	-24.8
4.032	10.6	20.6	31.2	56.0	-24.8
3.632	10.6	20.6	31.2	56.0	-24.8
4.136	10.5	20.6	31.1	56.0	-24.9
4.440	10.4	20.7	31.1	56.0	-24.9
3.248	10.5	20.5	31.0	56.0	-25.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
1.480	12.3	20.4	32.7	46.0	-13.3
3.408	12.1	20.5	32.6	46.0	-13.4
3.336	12.1	20.5	32.6	46.0	-13.4
1.232	12.2	20.4	32.6	46.0	-13.4
3.976	11.7	20.6	32.3	46.0	-13.7
2.656	11.7	20.5	32.2	46.0	-13.8
2.864	11.6	20.5	32.1	46.0	-13.9
2.416	11.3	20.5	31.8	46.0	-14.2
3.072	11.1	20.5	31.6	46.0	-14.4
4.824	10.9	20.7	31.6	46.0	-14.4
4.576	10.9	20.7	31.6	46.0	-14.4
2.088	10.9	20.5	31.4	46.0	-14.6
1.712	10.9	20.4	31.3	46.0	-14.7
3.192	10.7	20.5	31.2	46.0	-14.8
2.600	10.7	20.5	31.2	46.0	-14.8
4.032	10.6	20.6	31.2	46.0	-14.8
3.632	10.6	20.6	31.2	46.0	-14.8
4.136	10.5	20.6	31.1	46.0	-14.9
4.440	10.4	20.7	31.1	46.0	-14.9
3.248	10.5	20.5	31.0	46.0	-15.0

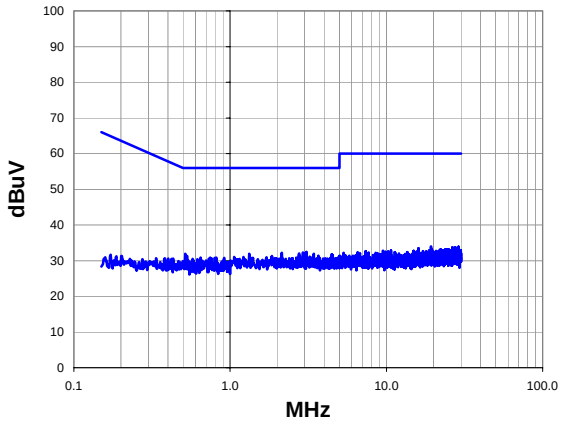
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	POLV0114	**Date:**	08/03/12		
Project:	None	**Temperature:**	24 °C		
Job Site:	EV07	**Humidity:**	45% RH		
Serial Number:	PV1928006A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Jennifer Herrett
EUT:	PolyVision Bluetooth Radio				
Configuration:	3				
Customer:	PolyVision Corporation				
Attendees:	David Behner				
EUT Power:	120VAC/60Hz				
Operating Mode:	Tx, High Channel, GFSK/DH5				
Deviations:	None				
Comments:	None				

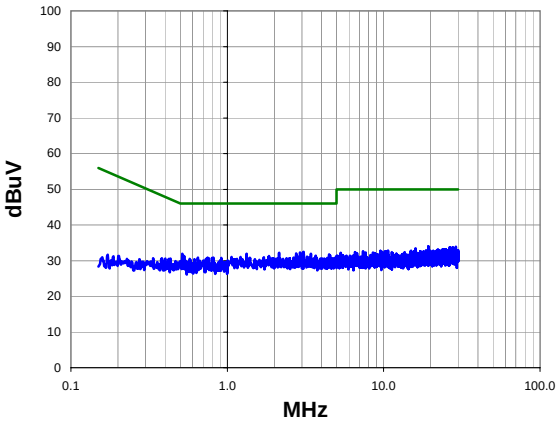
Test Specifications	**Test Method**
FCC 15.207:2012	ANSI C63.10:2009

Run #	8	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.080	11.9	20.5	32.4	56.0	-23.6
2.920	11.8	20.5	32.3	56.0	-23.7
3.040	11.7	20.5	32.2	56.0	-23.8
2.144	11.7	20.5	32.2	56.0	-23.8
2.760	11.5	20.5	32.0	56.0	-24.0
3.432	11.4	20.5	31.9	56.0	-24.1
1.328	11.5	20.4	31.9	56.0	-24.1
0.516	11.6	20.3	31.9	56.0	-24.1
4.472	11.1	20.7	31.8	56.0	-24.2
4.536	10.8	20.7	31.5	56.0	-24.5
2.792	10.9	20.5	31.4	56.0	-24.6
3.672	10.8	20.6	31.4	56.0	-24.6
0.531	11.0	20.3	31.3	56.0	-24.7
1.848	10.8	20.5	31.3	56.0	-24.7
4.944	10.3	20.7	31.0	56.0	-25.0
1.064	10.6	20.4	31.0	56.0	-25.0
1.712	10.5	20.4	30.9	56.0	-25.1
0.815	10.5	20.3	30.8	56.0	-25.2
0.747	10.5	20.3	30.8	56.0	-25.2
0.648	10.5	20.3	30.8	56.0	-25.2

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
3.080	11.9	20.5	32.4	46.0	-13.6
2.920	11.8	20.5	32.3	46.0	-13.7
3.040	11.7	20.5	32.2	46.0	-13.8
2.144	11.7	20.5	32.2	46.0	-13.8
2.760	11.5	20.5	32.0	46.0	-14.0
3.432	11.4	20.5	31.9	46.0	-14.1
1.328	11.5	20.4	31.9	46.0	-14.1
0.516	11.6	20.3	31.9	46.0	-14.1
4.472	11.1	20.7	31.8	46.0	-14.2
4.536	10.8	20.7	31.5	46.0	-14.5
2.792	10.9	20.5	31.4	46.0	-14.6
3.672	10.8	20.6	31.4	46.0	-14.6
0.531	11.0	20.3	31.3	46.0	-14.7
1.848	10.8	20.5	31.3	46.0	-14.7
4.944	10.3	20.7	31.0	46.0	-15.0
1.064	10.6	20.4	31.0	46.0	-15.0
1.712	10.5	20.4	30.9	46.0	-15.1
0.815	10.5	20.3	30.8	46.0	-15.2
0.747	10.5	20.3	30.8	46.0	-15.2
0.648	10.5	20.3	30.8	46.0	-15.2