Supra, A Division of UTCFS

iBox BT LE

FCC 15.247:2013 (FHSS)

Bluetooth EDR Radio

Report #: SUPR0100.1

Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF TEST

Last Date of Test: January 30, 2013
Supra, A Division of UTCFS
Model: iBox BT LE

Emissions

Test Description	Specification	Test Method	Pass/Fail
Channel Spacing	FCC 15.247:2013	ANSI C63.10:2009	Pass
Dwell Time	FCC 15.247:2013	ANSI C63.10:2009	Pass
Number of Hopping Frequencies	FCC 15.247:2013	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2013	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2013	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Conducted Emissions	FCC 15.247:2013	ANSI C63.10:2009	Pass
Spurious Radiated Emissions	FCC 15.247:2013	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

REV 2012.08.02

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

NORTHWEST EMC

REV 2012.05.24

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Hong Kong

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

Vietnam

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

Russia

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

SCOPE

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

MEASUREMENT UNCERTAINTY

Measurement Uncertainty

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

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

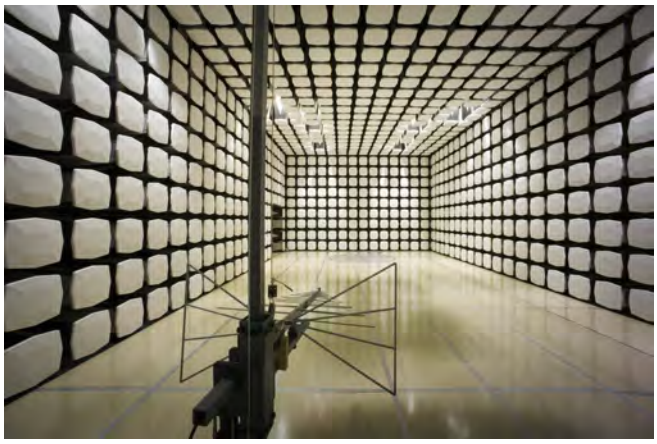
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

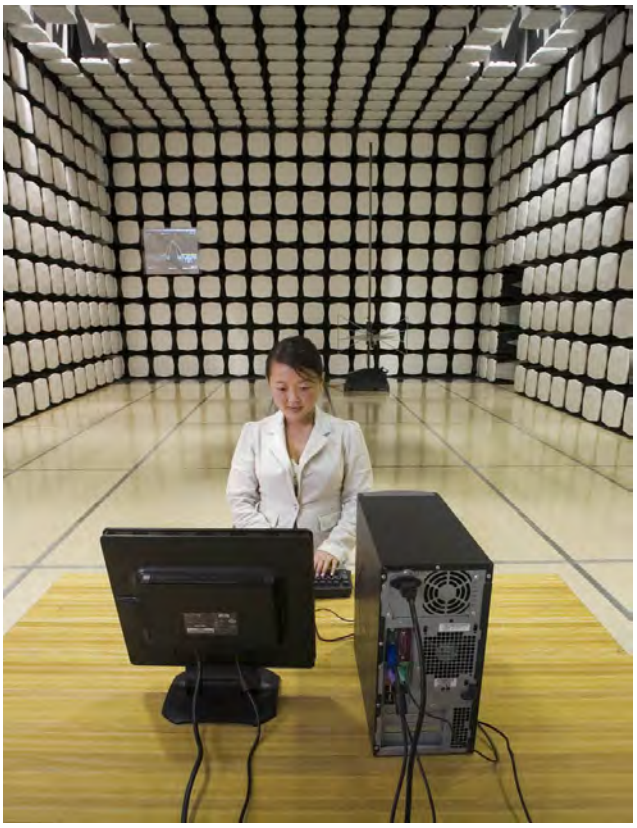
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	4.00	-4.00
AC Powerline Conducted Emissions (dB)	2.70	-2.70

LOCATIONS

REV 2013.01.07

Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	**California** Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	**New York** Labs WA01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	**Minnesota** Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	**Washington** Labs NC01-05,SU02,SU07 19201 120th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-*2*	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Supra, A Division of UTCFS
Address:	4001 Fairview Industrial Drive SE
City, State, Zip:	Salem, OR 97302-0167
Test Requested By:	Adam Purdue
Model:	iBox BT LE
First Date of Test:	January 03, 2013
Last Date of Test:	January 30, 2013
Receipt Date of Samples:	January 02, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
Bluetooth 4.0 radio module with 1 antenna.

Testing Objective:
To demonstrate compliance to FCC 15.247 FHSS requirements for the Bluetooth EDR portion of the radio.

CONFIGURATIONS

Configuration SUPR0100- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Lockbox	Supra, A Division of UTCFS	iBox BT LE	50

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
IR Programming Base Power Supply	Elpac	D7-10-01	None
IR Programming Base	Supra, A Division of UTCFS	Non-Traces Programming Base	60001809

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Dell	Latitude E6410	7V0DTM1
Laptop Power Supply	Dell	DA90PE3-00	CN-0WTCDV-48661-05N-443P-A00

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	PA	1.75m	No	IR Programming Base Power Supply	IR Programming Base
Serial Cable	Yes	1.5m	No	IR Programming Base	Serial to USB Adapter
Serial to USB Adapter	Yes	0.1m	No	Laptop PC	Serial Cable
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration SUPR0100- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Lockbox	Supra, A Division of UTCFS	iBox BT LE	45

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
IR Programming Base Power Supply	Elpac	D7-10-01	None
IR Programming Base	Supra, A Division of UTCFS	Non-Traces Programming Base	60001809
Laptop PC	Dell	Latitude E6410	7V0DTM1
Laptop Power Supply	Dell	DA90PE3-00	CN-0WTCDV-48661-05N-443P-A00

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Power	PA	1.75m	No	IR Programming Base Power Supply	IR Programming Base
Serial Cable	Yes	1.5m	No	IR Programming Base	Serial to USB adapter
Serial to USB Adapter	Yes	0.1m	No	Laptop PC	Serial Cable
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

WTD 12.5.23

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/3/2013	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	1/10/2013	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.
3	1/10/2013	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.
4	1/10/2013	Output Power	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	1/10/2013	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.
6	1/10/2013	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.
7	1/24/2013	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.
8	1/24/2013	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.
9	1/30/2013	Spurious Radiated Emissions	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
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/10/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	1019
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	EUT Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

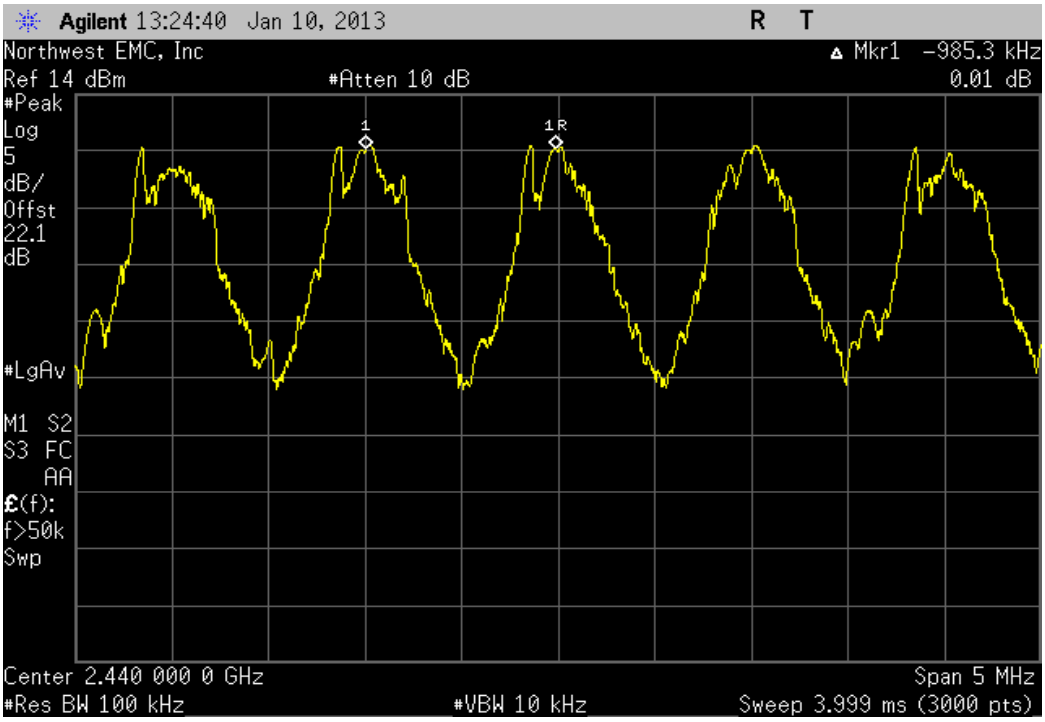
Configuration #	2	Signature

		Value	Limit	Result
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2440 MHz	1.0 MHz	≥ 1 MHz	Pass

Channel Spacing

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz

				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
DC Power Supply	MPJA	9950 PS	TQA	NCR	0
Multimeter	Fluke	111	MMN	7/22/2011	36
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/24/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.1°C
Attendees:	None			**Humidity:**	28%
Project:	None			**Barometric Pres.:**	1023
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

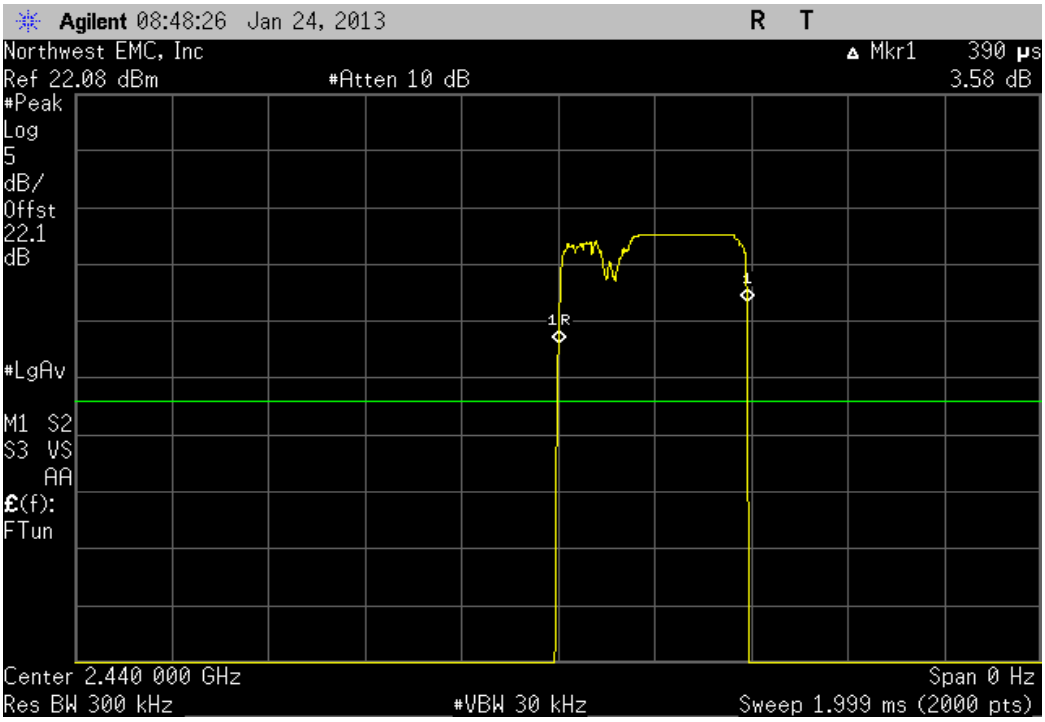
None

Configuration #	1	Signature

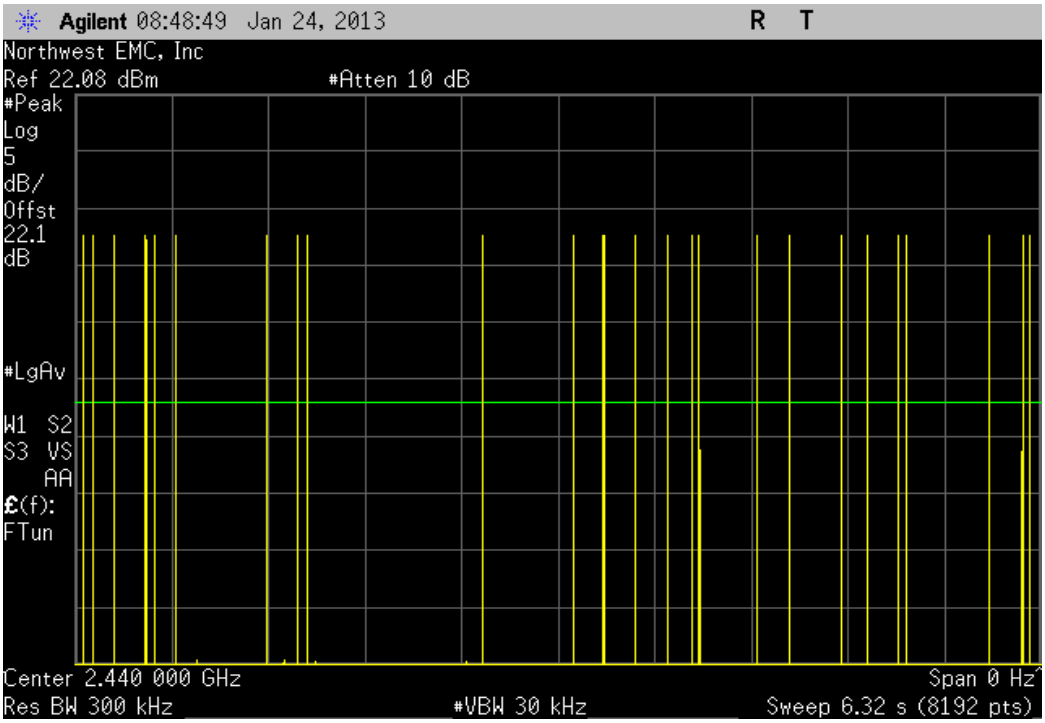
		Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
Hopping Mode								
	DH5, GFSK							
	Mid Channel, 2440 MHz	0.39	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	25	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	19	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	21	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	20	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	0.39	N/A	21.25	5	41.44	400	Pass
	2DH5, pi/4-DQPSK							
	Mid Channel, 2440 MHz	0.282	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	20	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	20	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	20	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	16	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	0.282	N/A	19	5	26.79	400	Pass
	3DH5, 8-DPSK							
	Mid Channel, 2440 MHz	0.24	N/A	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	17	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	20	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
	Mid Channel, 2440 MHz	0.24	N/A	20.25	5	24.3	400	Pass

Dwell Time

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
0.39	N/A	N/A	N/A	N/A	N/A	N/A

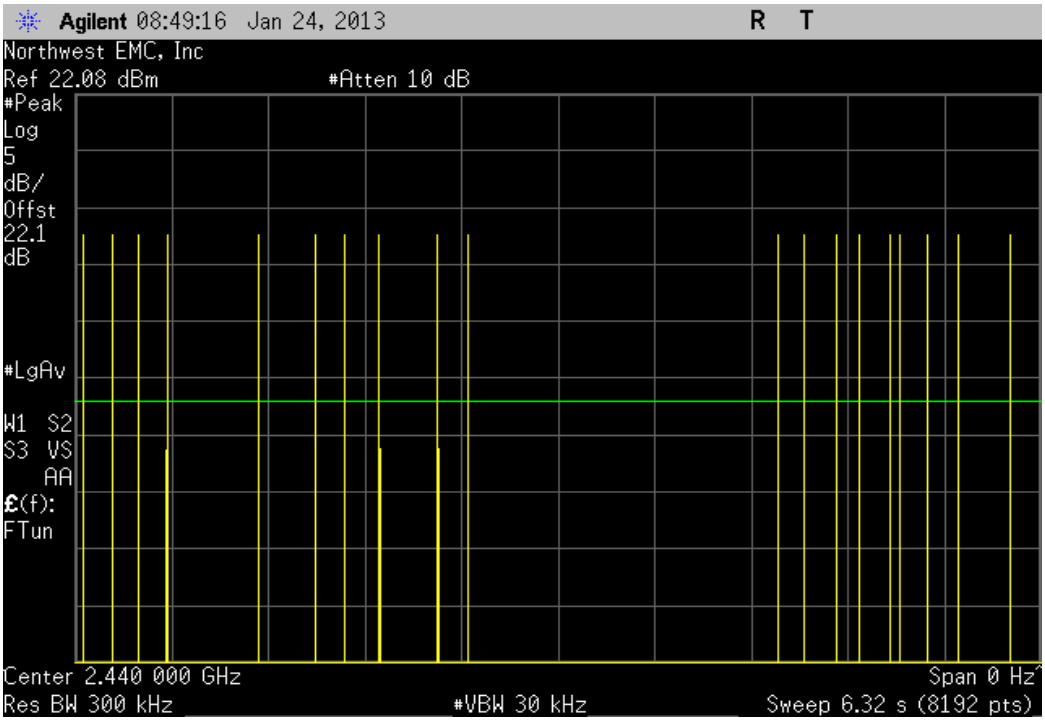


Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	25	N/A	N/A	N/A	N/A	N/A

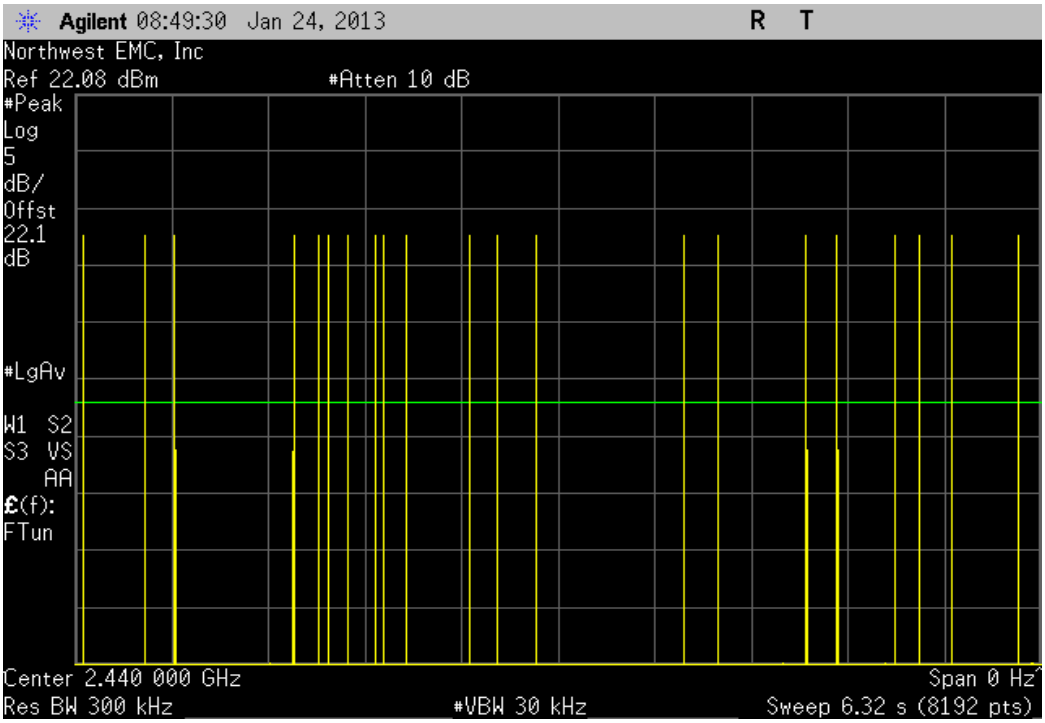


Dwell Time

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	19	N/A	N/A	N/A	N/A	N/A

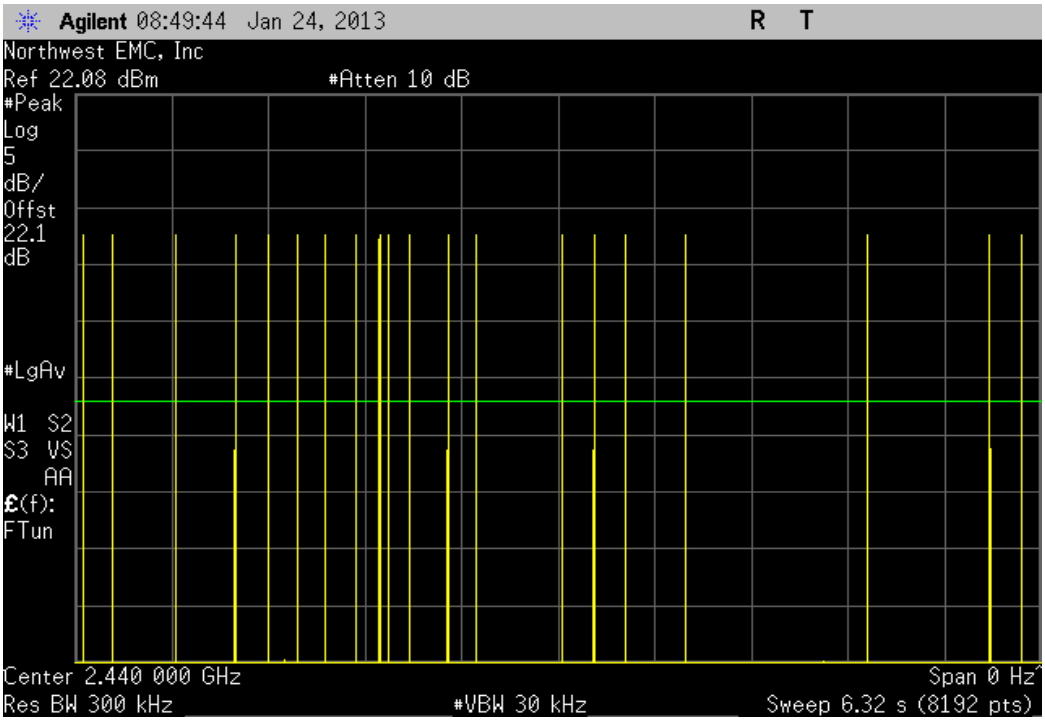


Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	21	N/A	N/A	N/A	N/A	N/A



Dwell Time

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
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



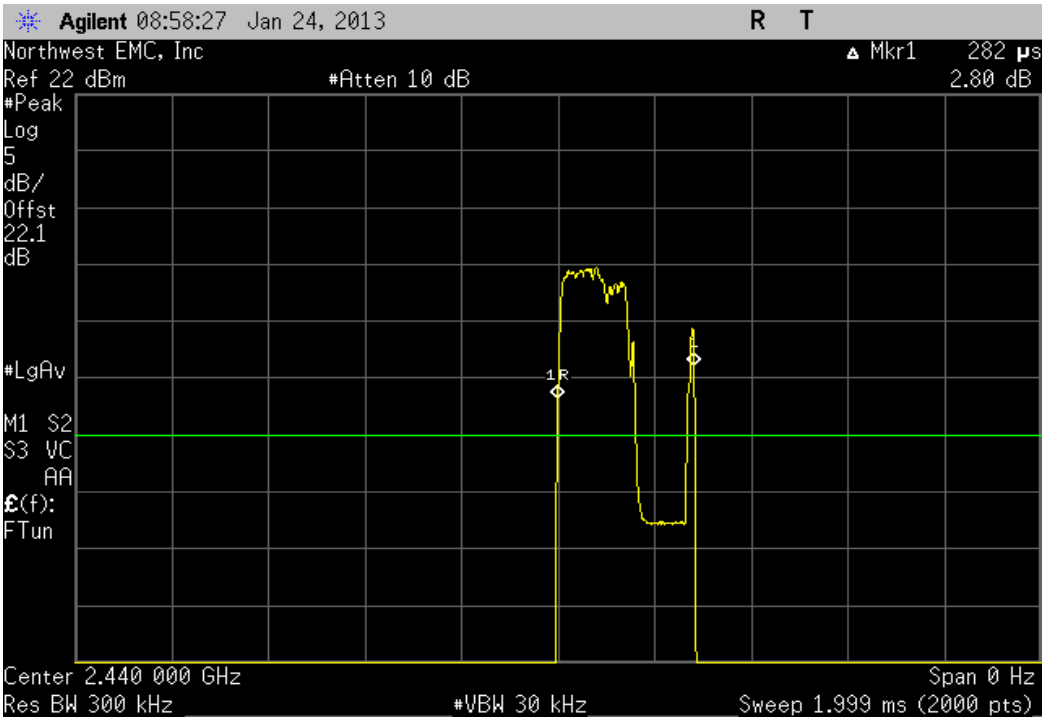
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
0.39	N/A	21.25	5	41.44	400	Pass

Calculation Only

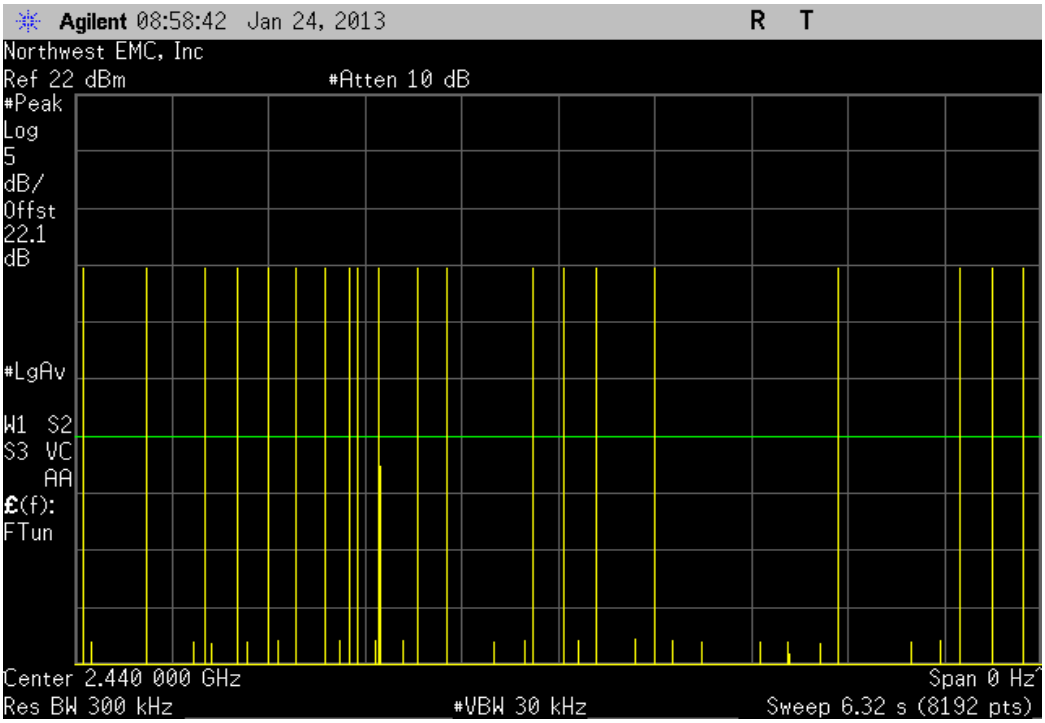
No Screen Capture Required

Dwell Time

Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
0.282	N/A	N/A	N/A	N/A	N/A	N/A

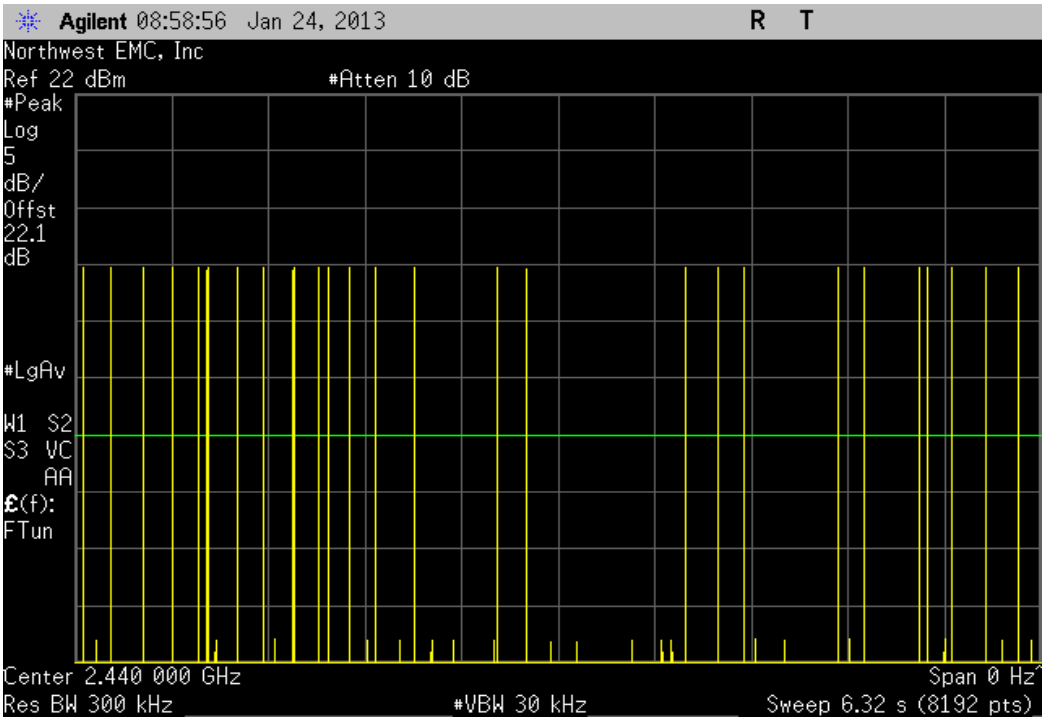


Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	20	N/A	N/A	N/A	N/A	N/A



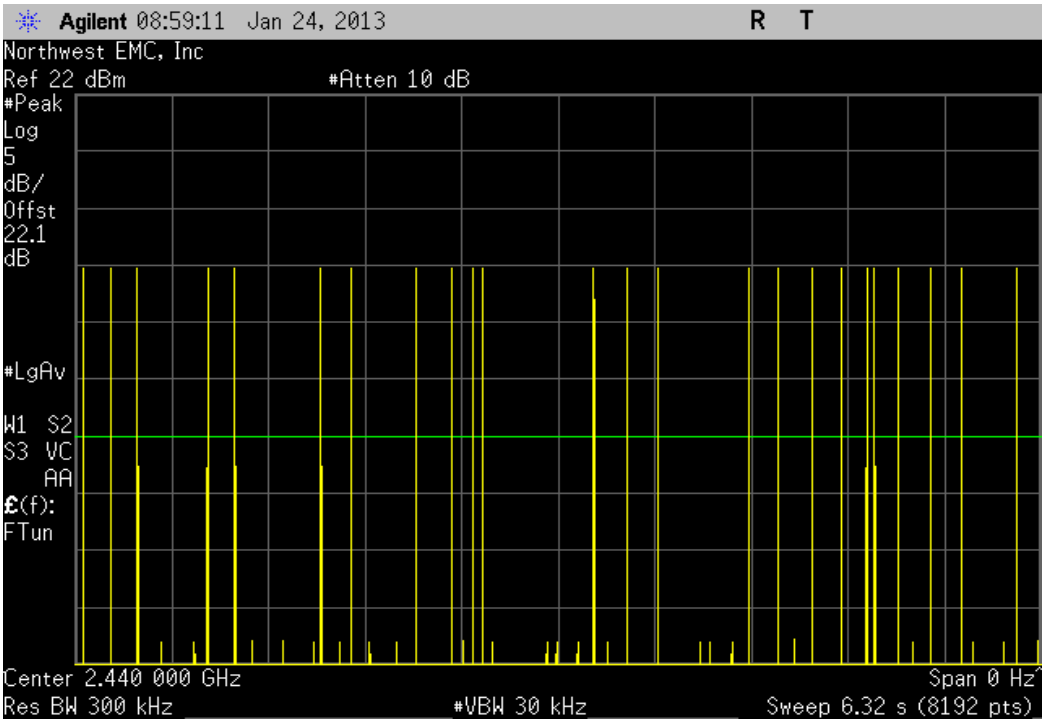
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz

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



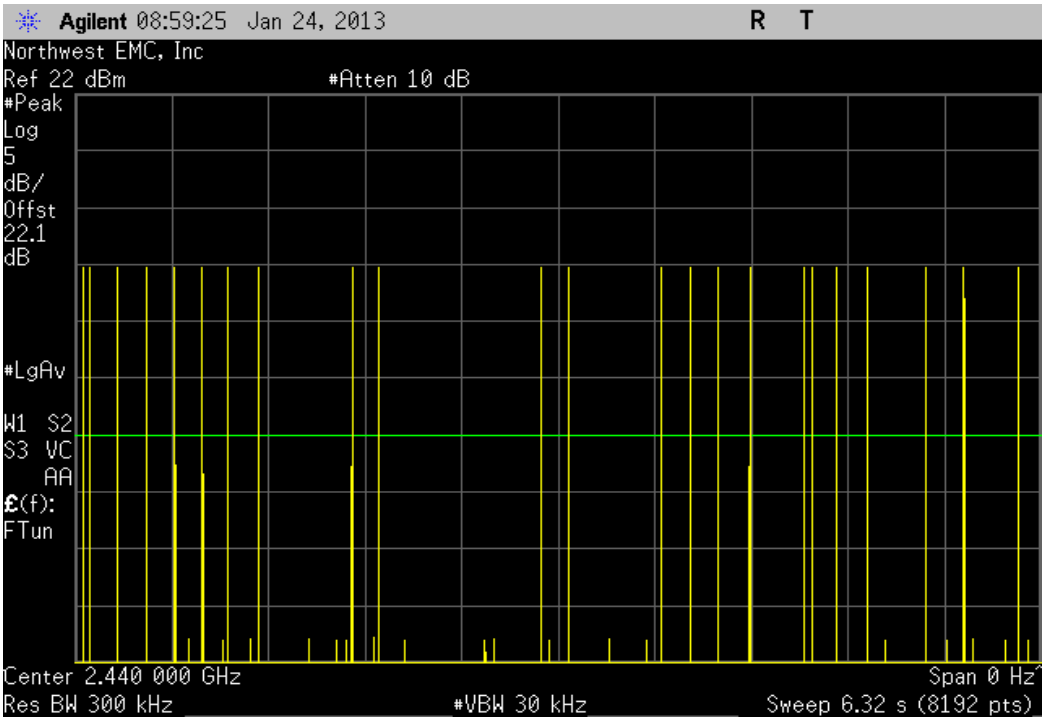
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz

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



Dwell Time

Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	16	N/A	N/A	N/A	N/A	N/A



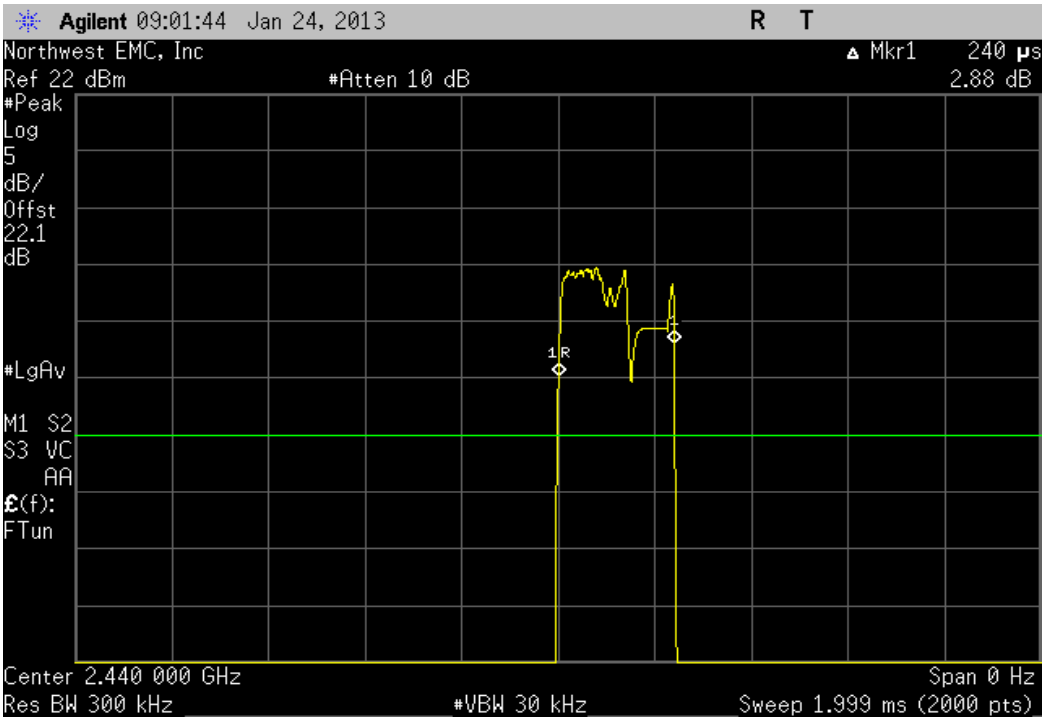
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
0.282	N/A	19	5	26.79	400	Pass

Calculation Only

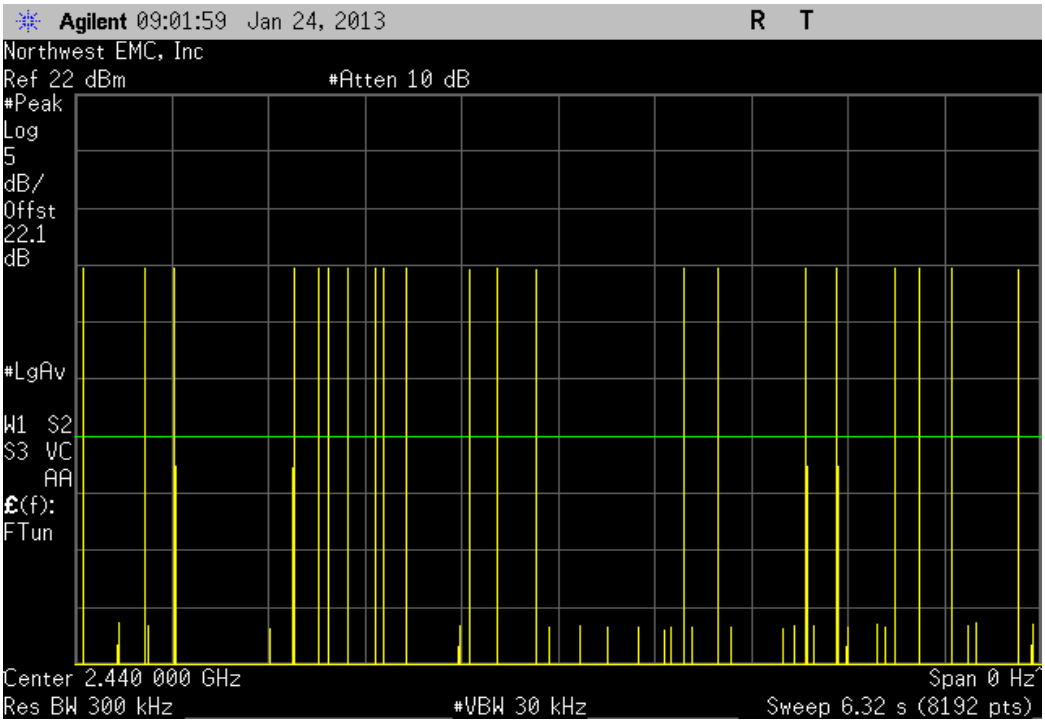
No Screen Capture Required

Dwell Time

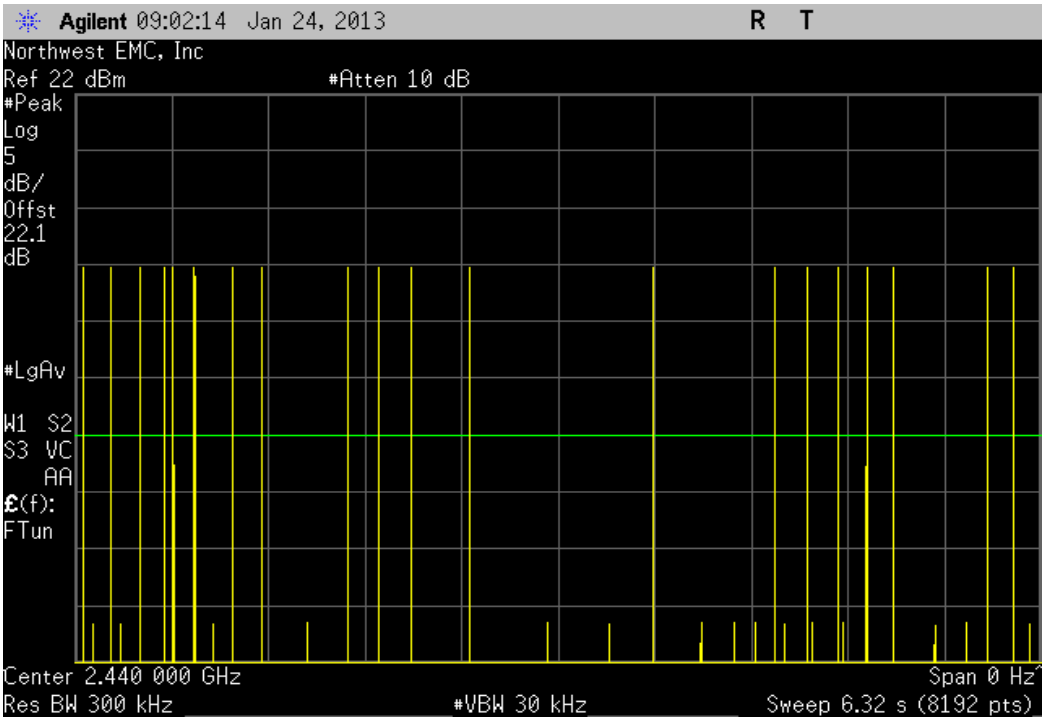
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
0.24	N/A	N/A	N/A	N/A	N/A	N/A



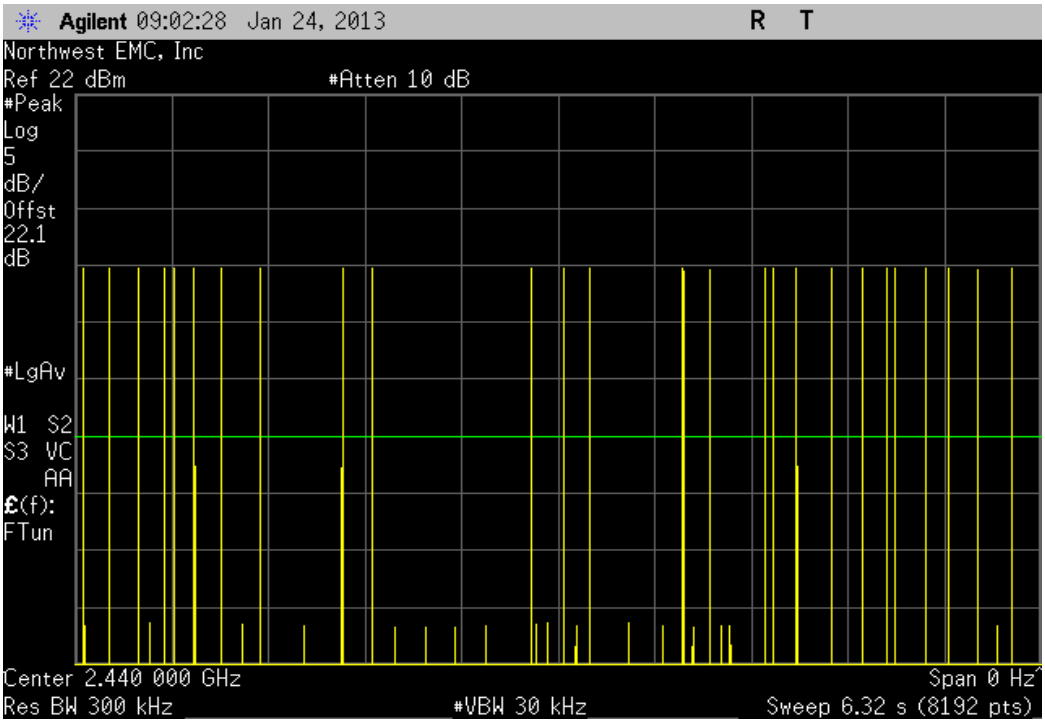
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	17	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
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

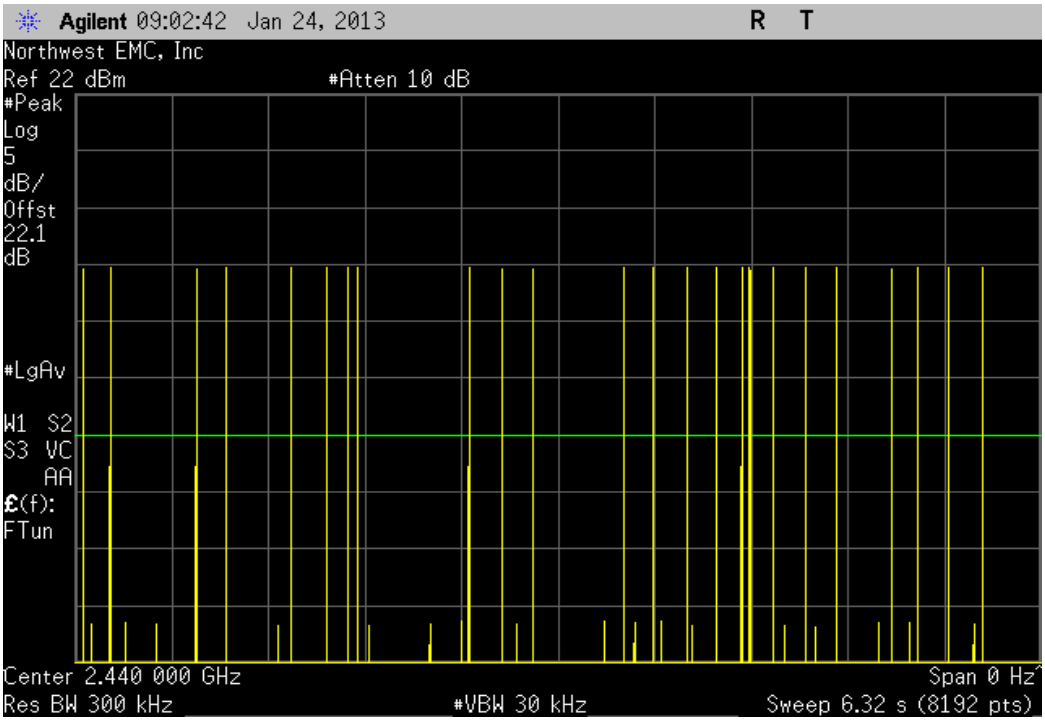


Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
N/A	22	N/A	N/A	N/A	N/A	N/A



Dwell Time

Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
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



Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
Pulse Width (mS)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
0.24	N/A	20.25	5	24.3	400	Pass

Calculation Only

No Screen Capture Required

Duty Cycle

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

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

The EUT operates at 100% Duty Cycle.

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
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/10/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	1019
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	EUT Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

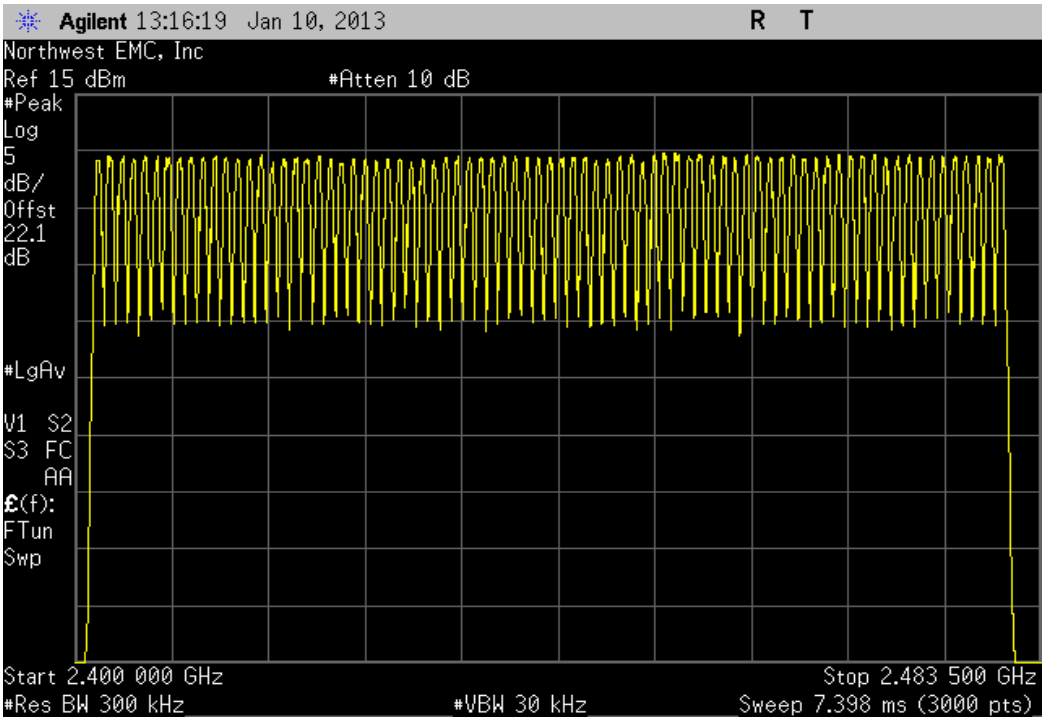
None

Configuration #	2	Signature

		Number of Channels	Limit	Result
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2440 MHz	79	≥ 15	Pass

Number of Hopping Frequencies

Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz						
				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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/10/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	1019
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	EUT Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

The EUT was operating at a 100% duty cycle

DEVIATIONS FROM TEST STANDARD

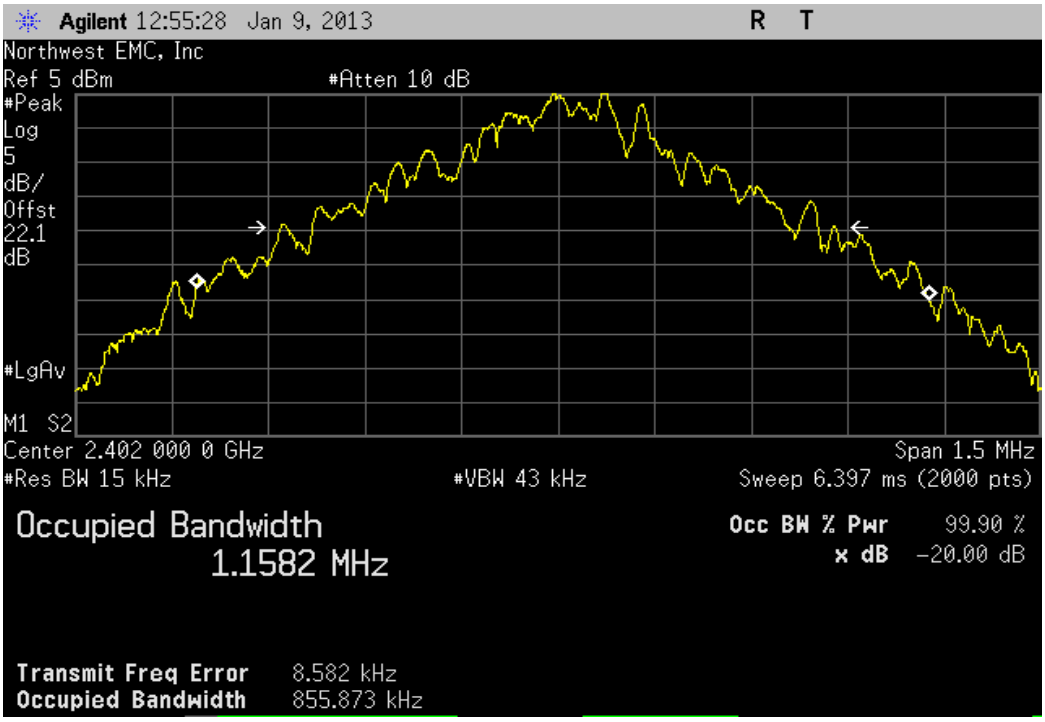
None

Configuration #	2	Signature

		Value	Limit	Result
Hopping Mode				
	DH5, GFSK			
	Low Channel, 2402 MHz	855.873 kHz	< 1.5 MHz	Pass
	Mid Channel, 2440 MHz	876.78 kHz	< 1.5 MHz	Pass
	High Channel, 2480 MHz	883.856 kHz	< 1.5 MHz	Pass
	2DH5, pi/4-DQPSK			
	Low Channel, 2402 MHz	1.369 MHz	< 1.5 MHz	Pass
	Mid Channel, 2440 MHz	1.371 MHz	< 1.5 MHz	Pass
	High Channel, 2480 MHz	1.369 MHz	< 1.5 MHz	Pass
	3DH5, 8-DPSK			
	Low Channel, 2402 MHz	1.351 MHz	< 1.5 MHz	Pass
	Mid Channel, 2440 MHz	1.352 MHz	< 1.5 MHz	Pass
	High Channel, 2480 MHz	1.354 MHz	< 1.5 MHz	Pass

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz

				Value	Limit	Result
				855.873 kHz	< 1.5 MHz	Pass

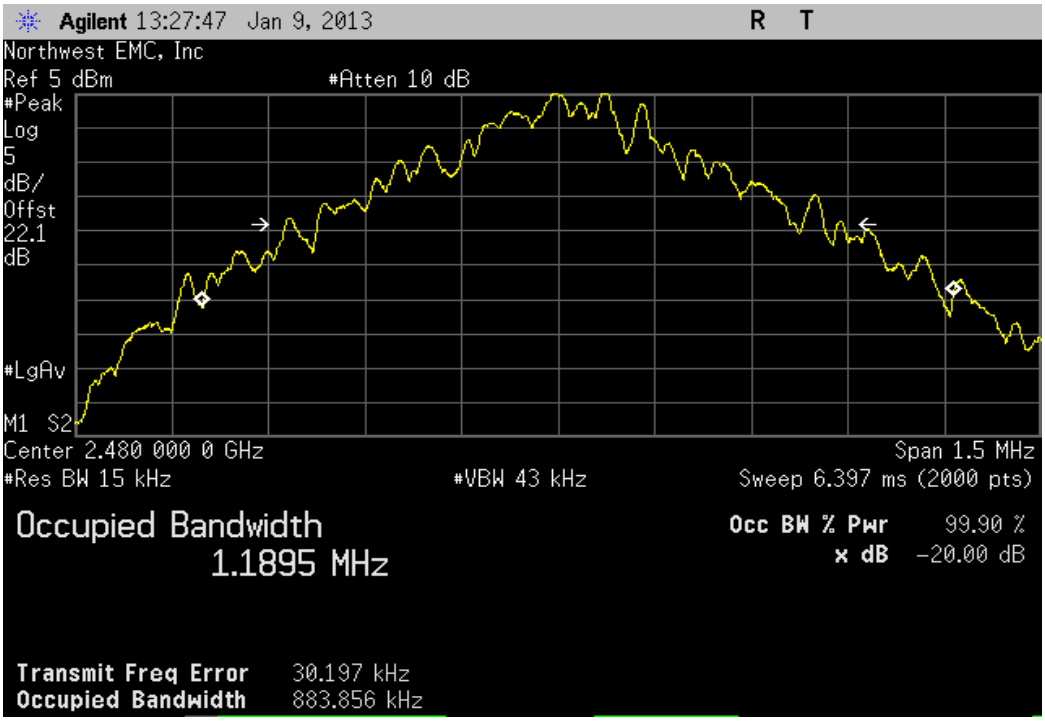


Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz

				Value	Limit	Result
				876.78 kHz	< 1.5 MHz	Pass

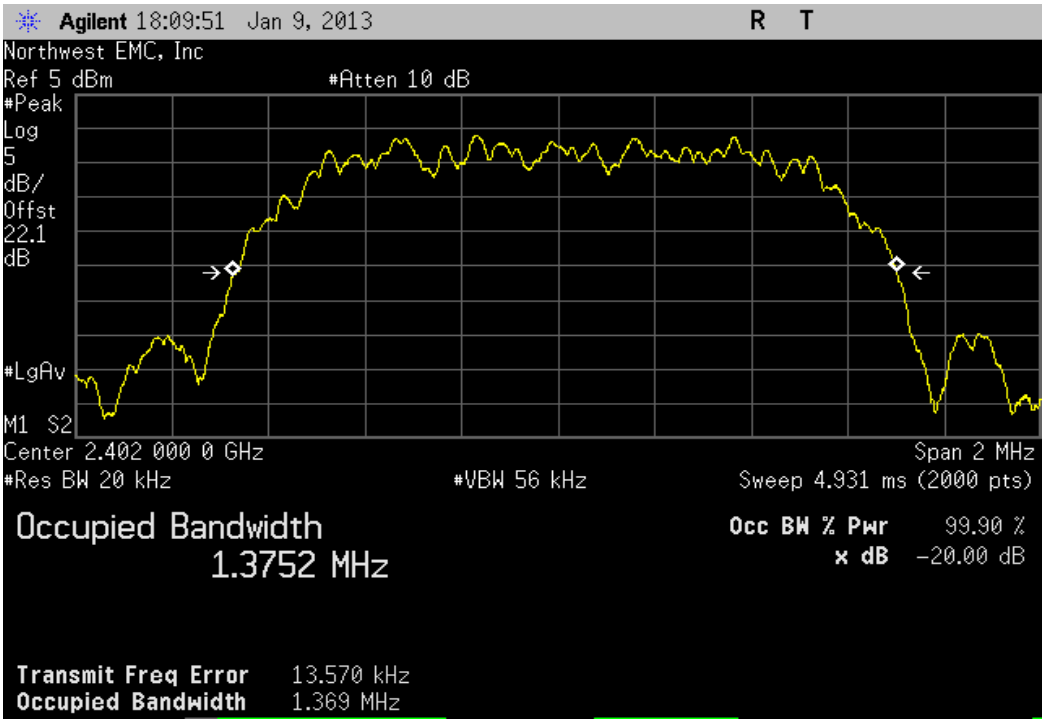
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz

				Value	Limit	Result
				883.856 kHz	< 1.5 MHz	Pass



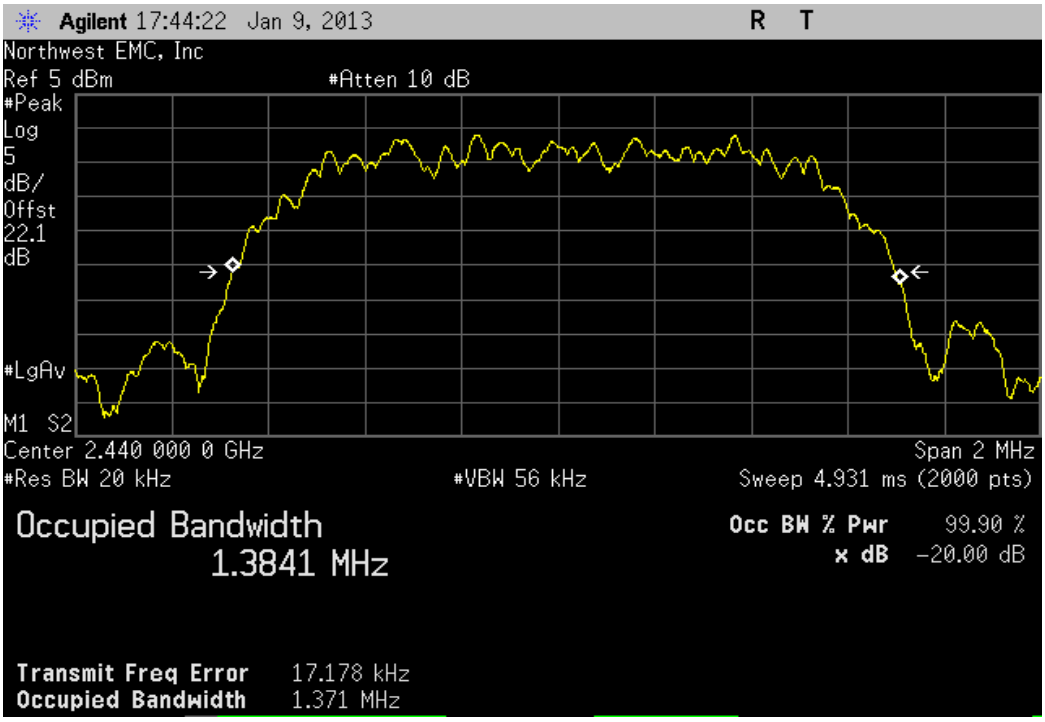
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				1.369 MHz	< 1.5 MHz	Pass



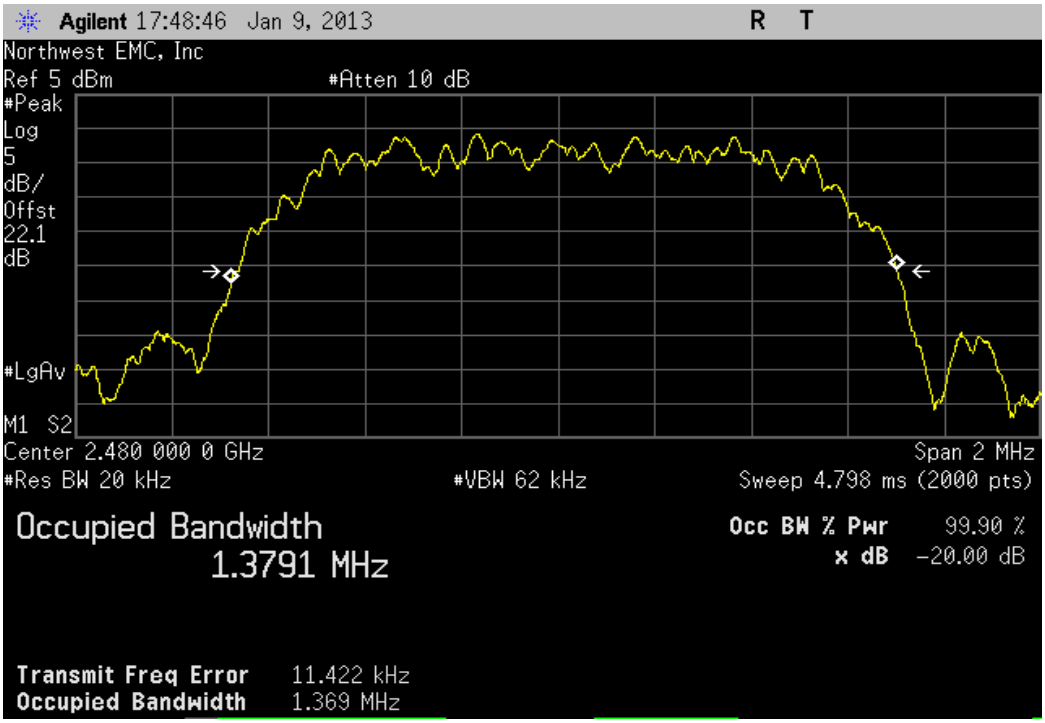
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz

				Value	Limit	Result
				1.371 MHz	< 1.5 MHz	Pass



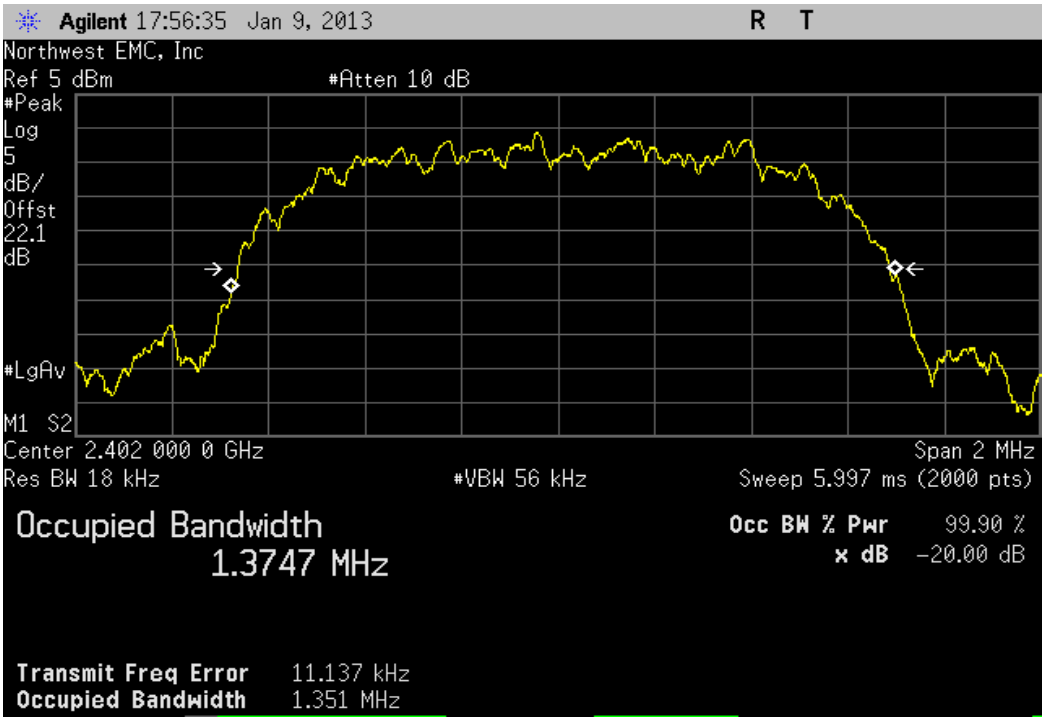
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz

				Value	Limit	Result
				1.369 MHz	< 1.5 MHz	Pass



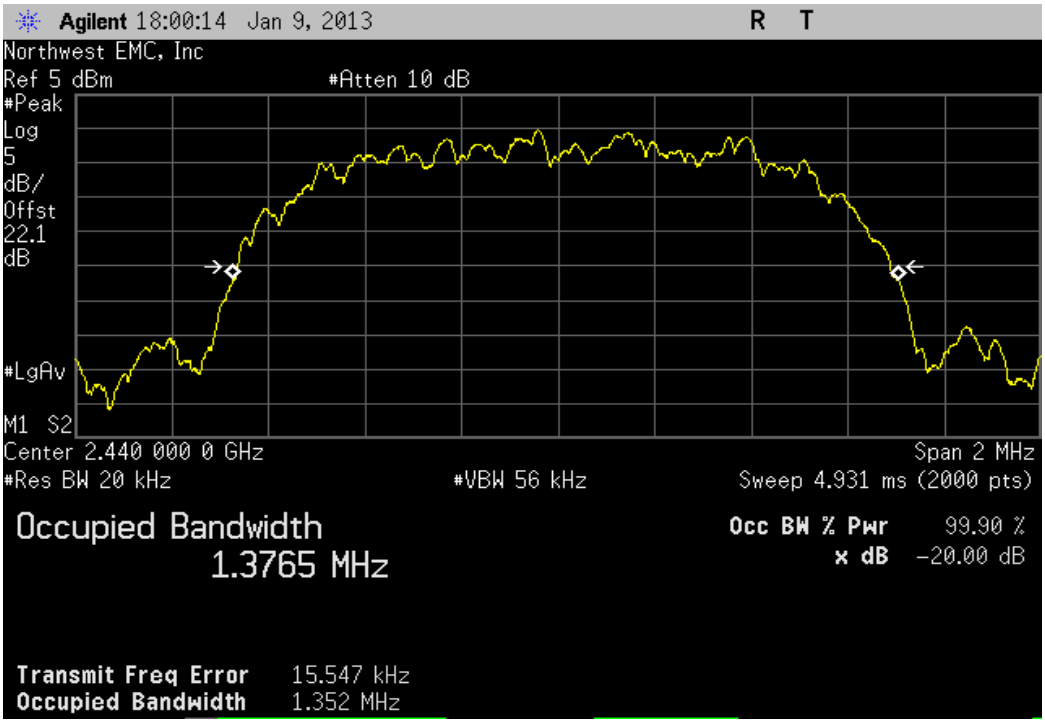
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				1.351 MHz	< 1.5 MHz	Pass



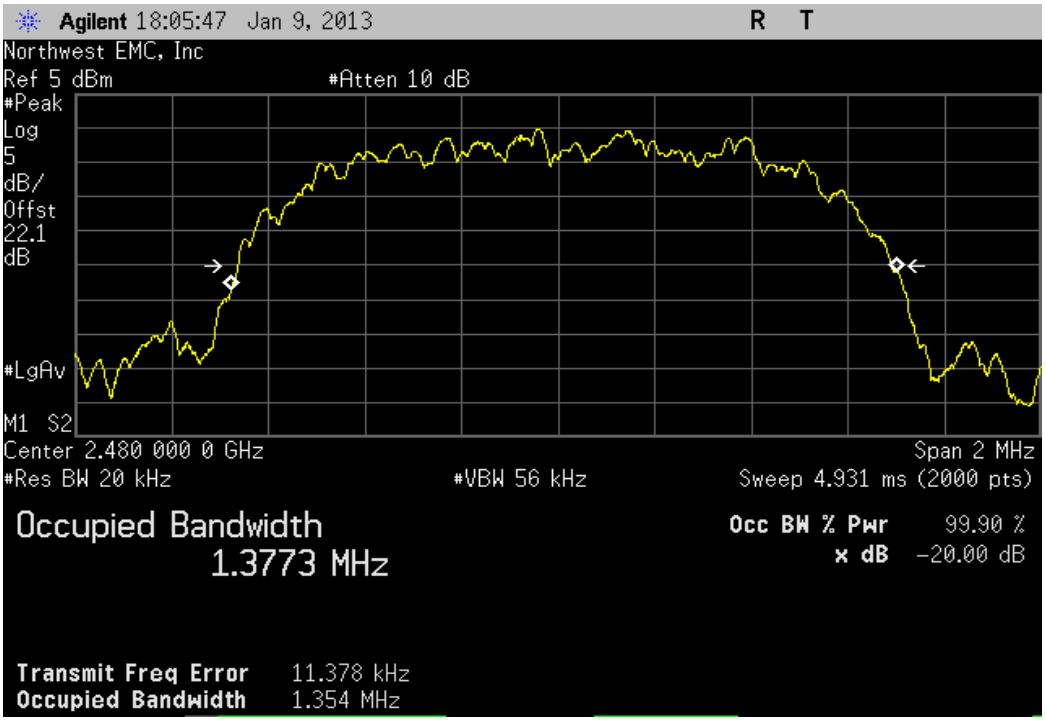
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz

				Value	Limit	Result
				1.352 MHz	< 1.5 MHz	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz

				Value	Limit	Result
				1.354 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
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/10/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	1019
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	EUT Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

The EUT was operating at a 100% duty cycle

DEVIATIONS FROM TEST STANDARD

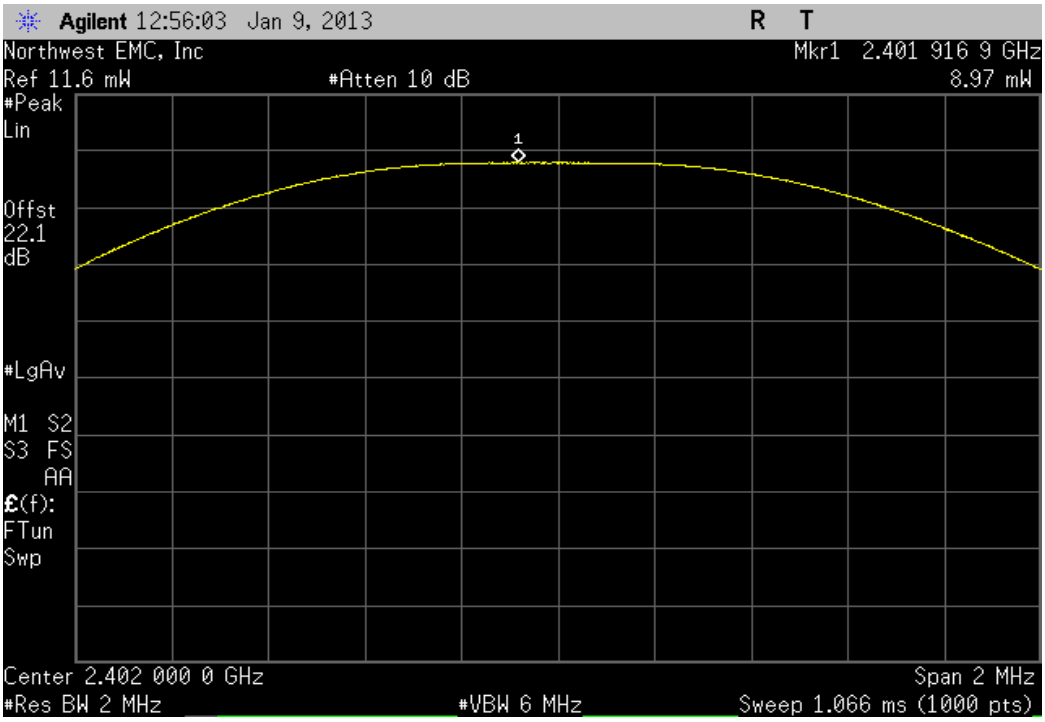
None

Configuration #	2	Signature

		Value	Limit	Result
Hopping Mode				
	DH5, GFSK			
	Low Channel, 2402 MHz	8.966 mW	< 125 mW	Pass
	Mid Channel, 2440 MHz	9.068 mW	< 125 mW	Pass
	High Channel, 2480 MHz	9.264 mW	< 125 mW	Pass
	2DH5, pi/4-DQPSK			
	Low Channel, 2402 MHz	9.051 mW	< 125 mW	Pass
	Mid Channel, 2440 MHz	9.112 mW	< 125 mW	Pass
	High Channel, 2480 MHz	9.341 mW	< 125 mW	Pass
	3DH5, 8-DPSK			
	Low Channel, 2402 MHz	10.742 mW	< 125 mW	Pass
	Mid Channel, 2440 MHz	10.829 mW	< 125 mW	Pass
	High Channel, 2480 MHz	11.071 mW	< 125 mW	Pass

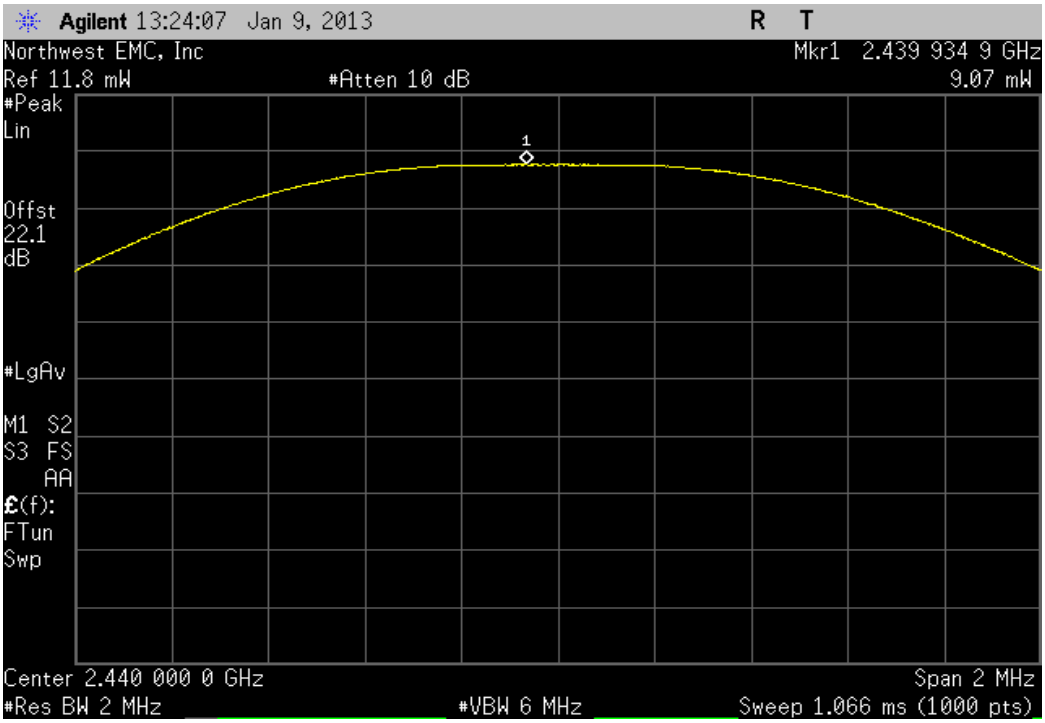
Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz

				Value	Limit	Result
				8.966 mW	< 125 mW	Pass



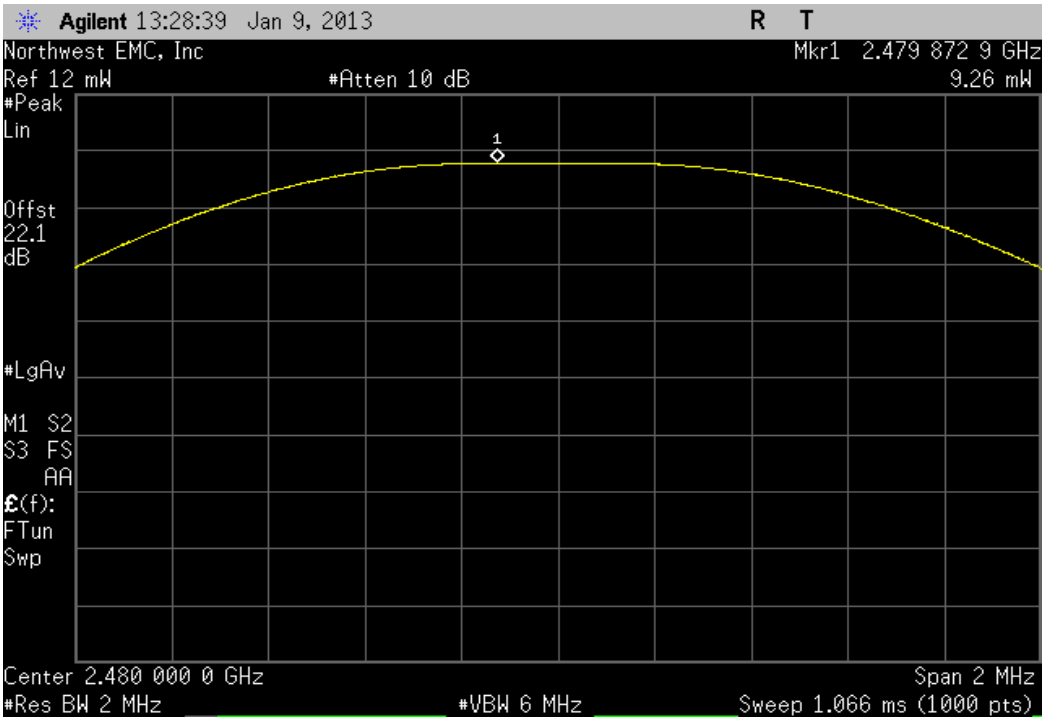
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz

				Value	Limit	Result
				9.068 mW	< 125 mW	Pass



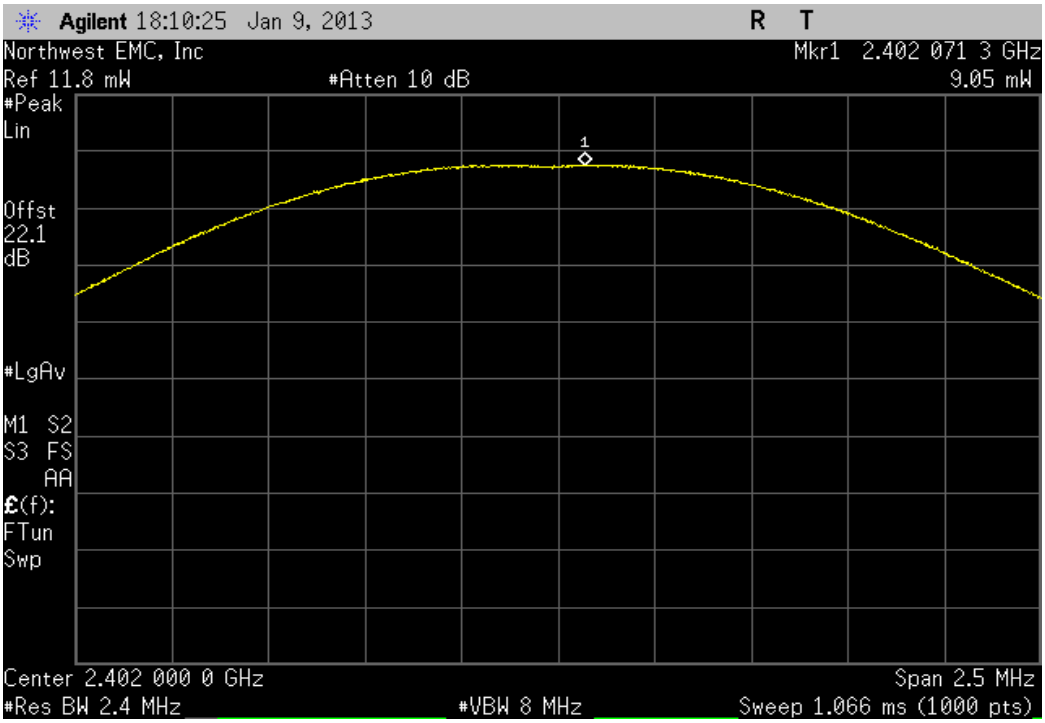
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz

				Value	Limit	Result
				9.264 mW	< 125 mW	Pass



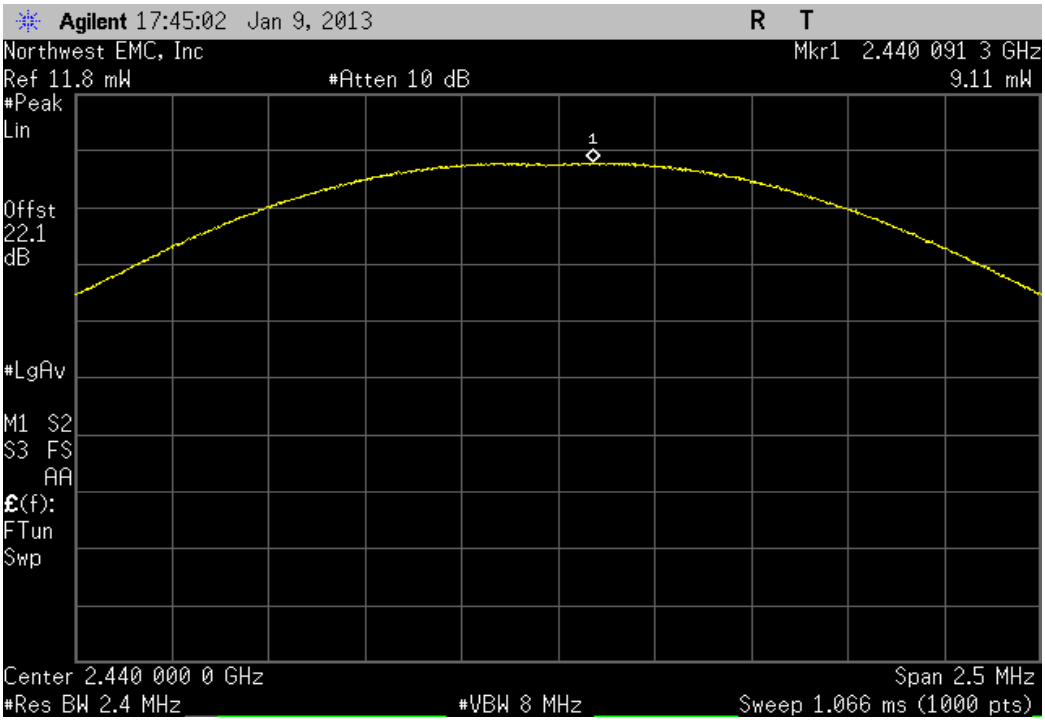
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				9.051 mW	< 125 mW	Pass



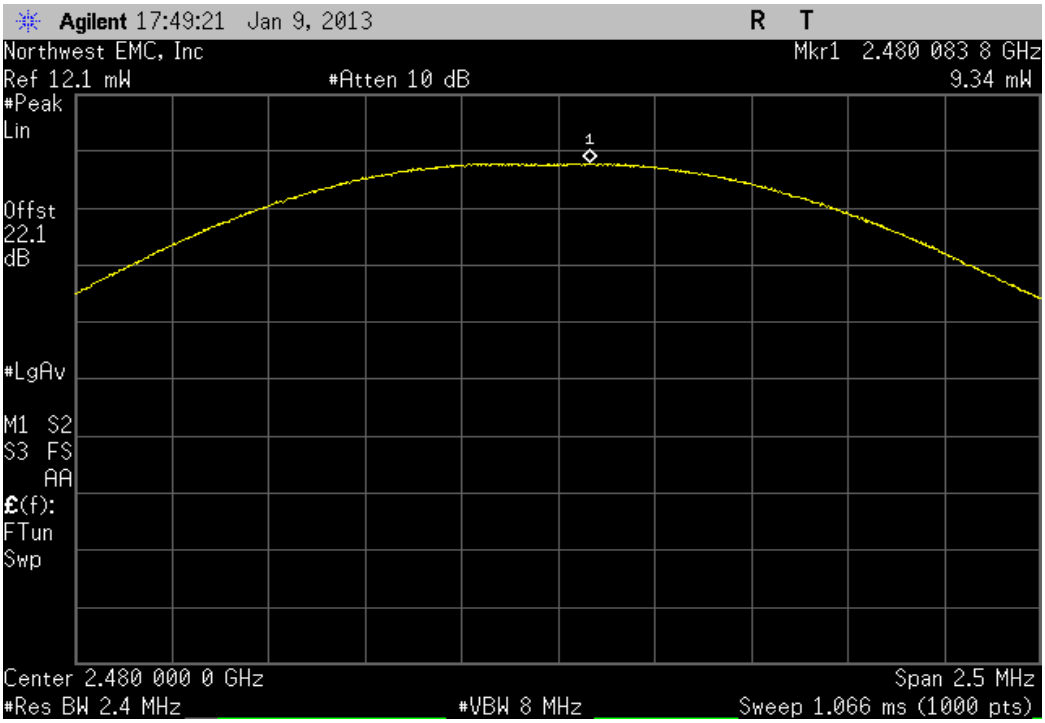
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz

				Value	Limit	Result
				9.112 mW	< 125 mW	Pass



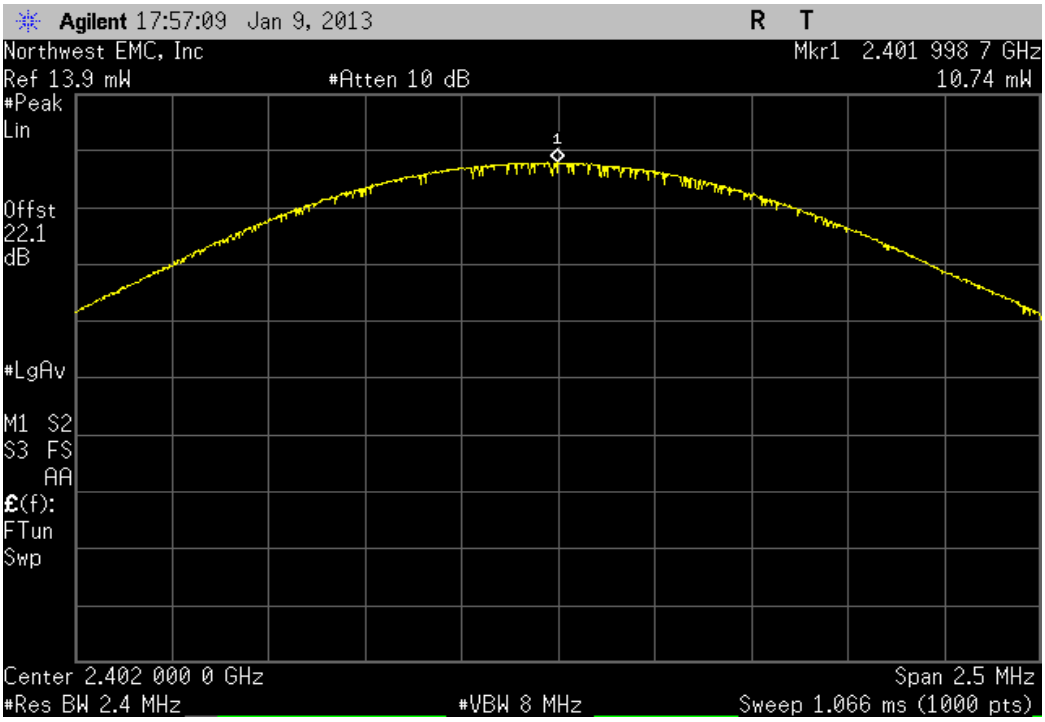
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz

				Value	Limit	Result
				9.341 mW	< 125 mW	Pass



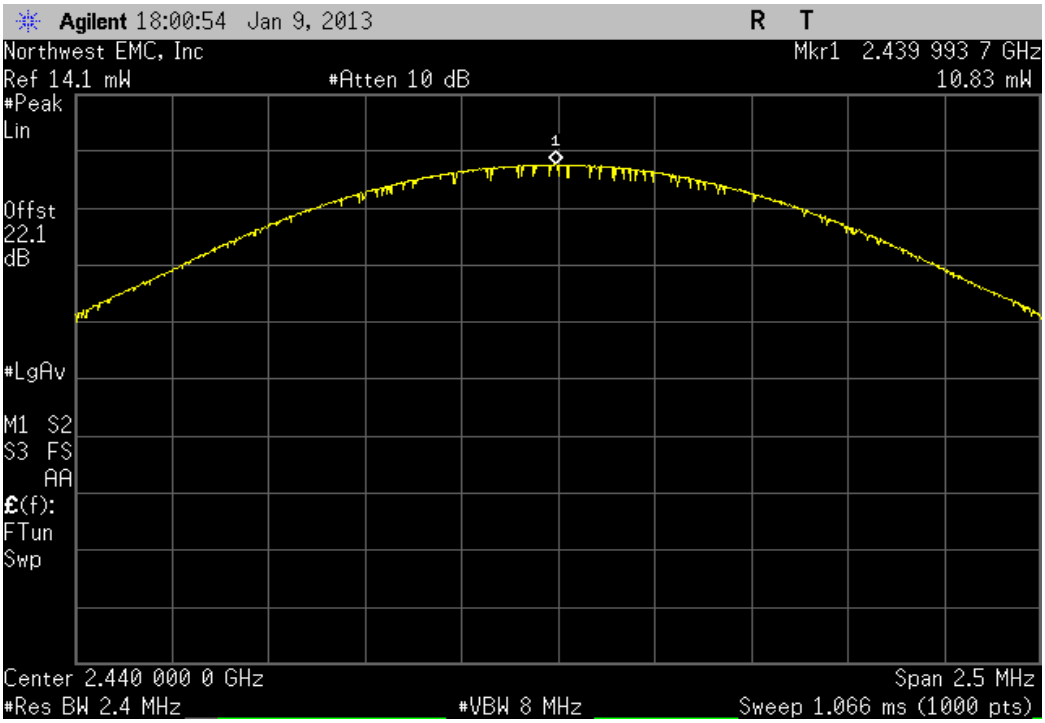
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				10.742 mW	< 125 mW	Pass



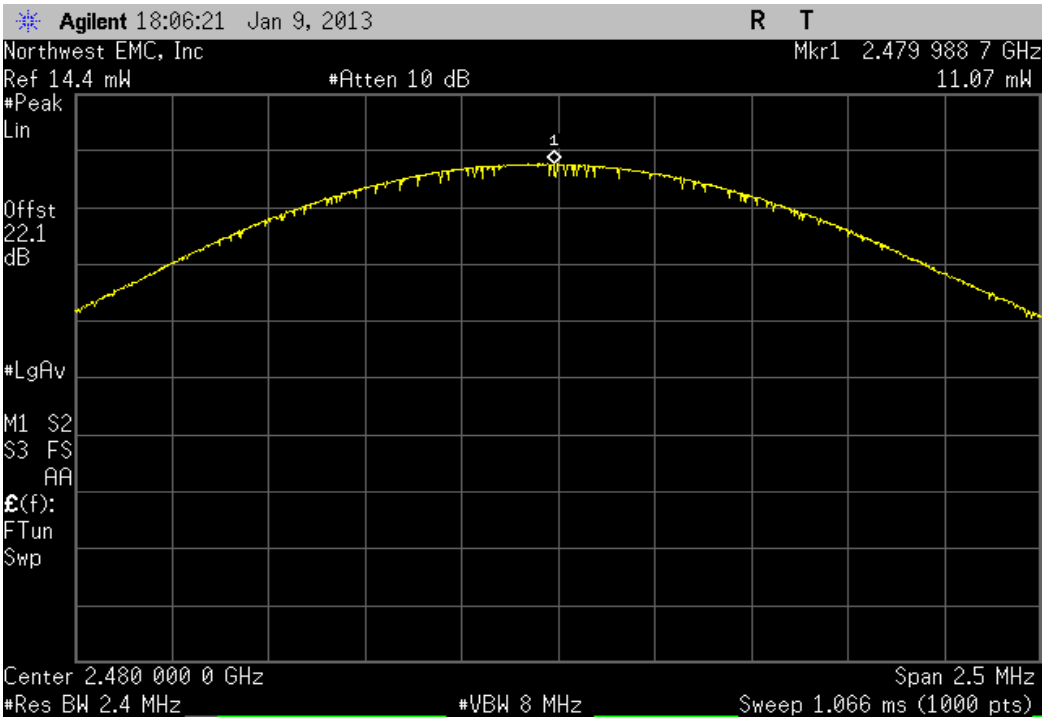
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz

				Value	Limit	Result
				10.829 mW	< 125 mW	Pass



Output Power

Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
				Value	Limit	Result
				11.071 mW	< 125 mW	Pass



Band Edge Compliance - Hopping

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
DC Power Supply	MPJA	9950 PS	TQA	NCR	0
Multimeter	Fluke	111	MMN	7/22/2011	36
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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 while in hopping mode.

Band Edge Compliance - Hopping

EUT:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/24/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	29%
Project:	None			**Barometric Pres.:**	1023
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

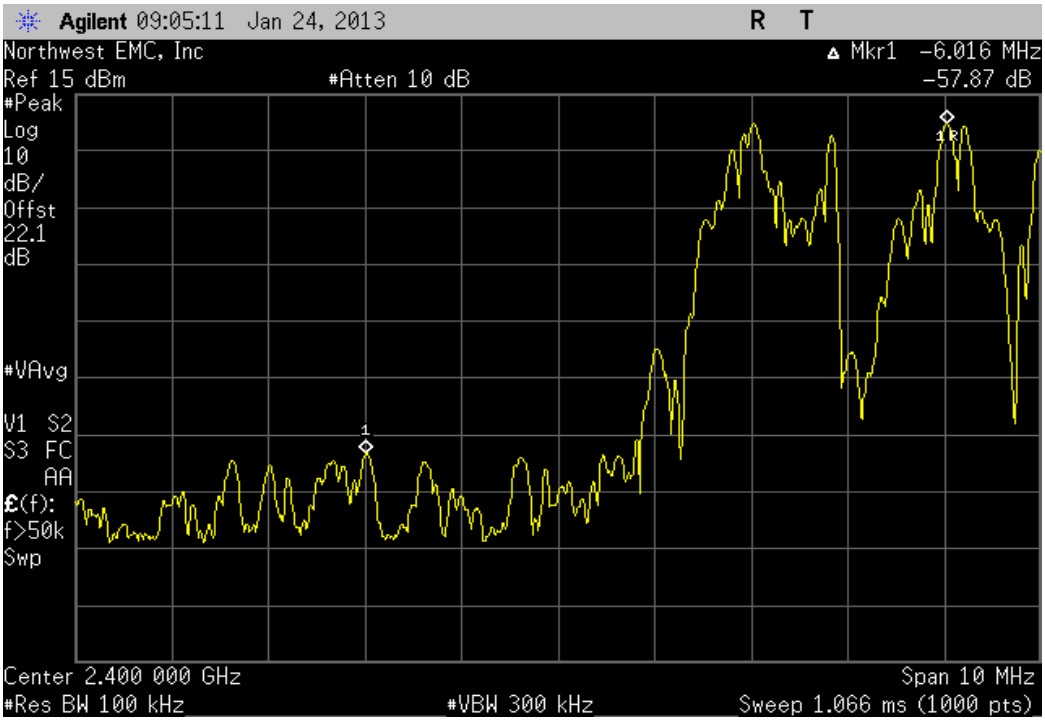
None

Configuration #	1	Signature

		Value	Limit	Result
Hopping Mode				
	DH5, GFSK			
	Low Channel, 2402 MHz	-57.87 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	-58.74 dBc	≤ -20 dBc	Pass
	2DH5, pi/4-DQPSK			
	Low Channel, 2402 MHz	-53.63 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	-57.69 dBc	≤ -20 dBc	Pass
	3DH5, 8-DPSK			
	Low Channel, 2402 MHz	-56.53 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	-56.26 dBc	≤ -20 dBc	Pass

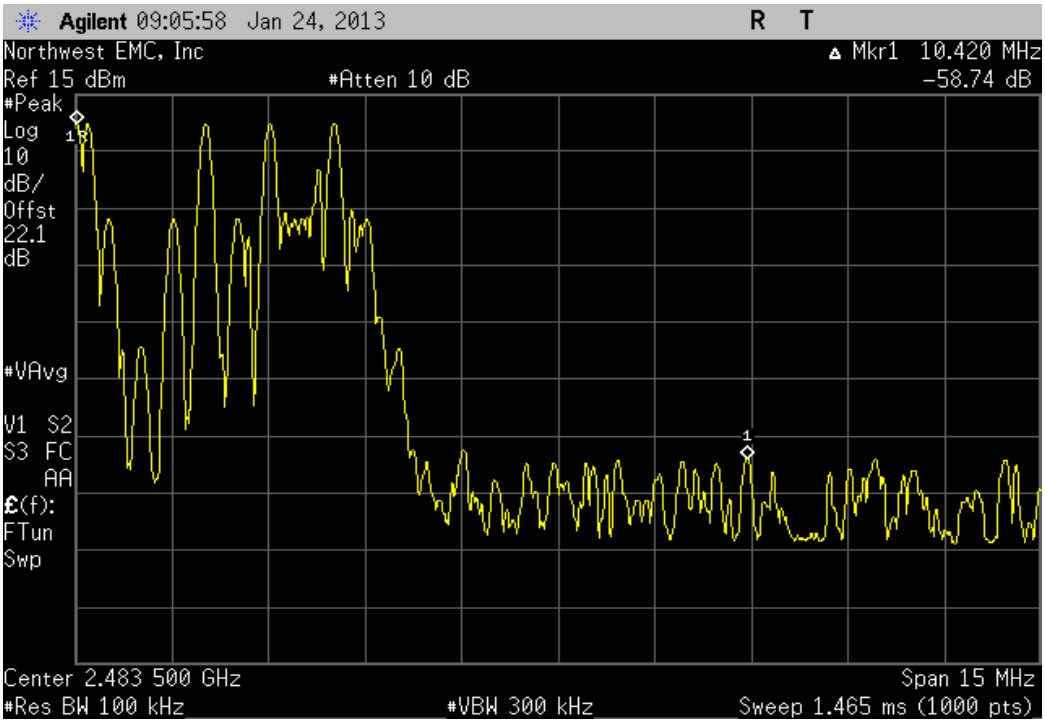
Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz

				Value	Limit	Result
				-57.87 dBc	≤ -20 dBc	Pass



Hopping Mode, DH5, GFSK, High Channel, 2480 MHz

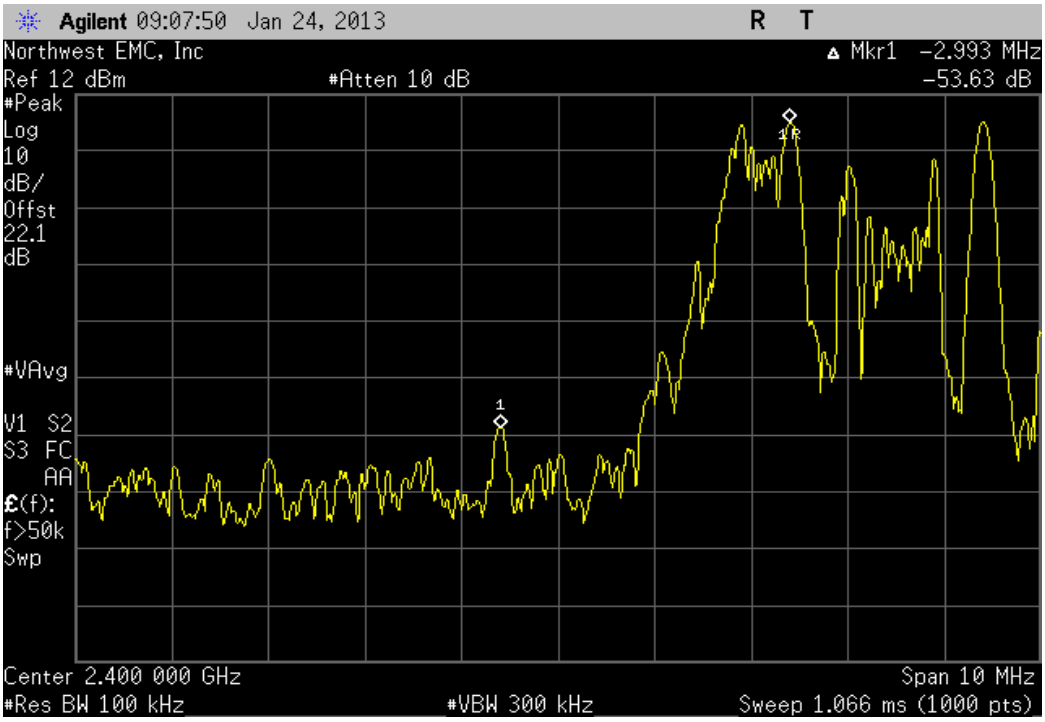
				Value	Limit	Result
				-58.74 dBc	≤ -20 dBc	Pass



Band Edge Compliance - Hopping

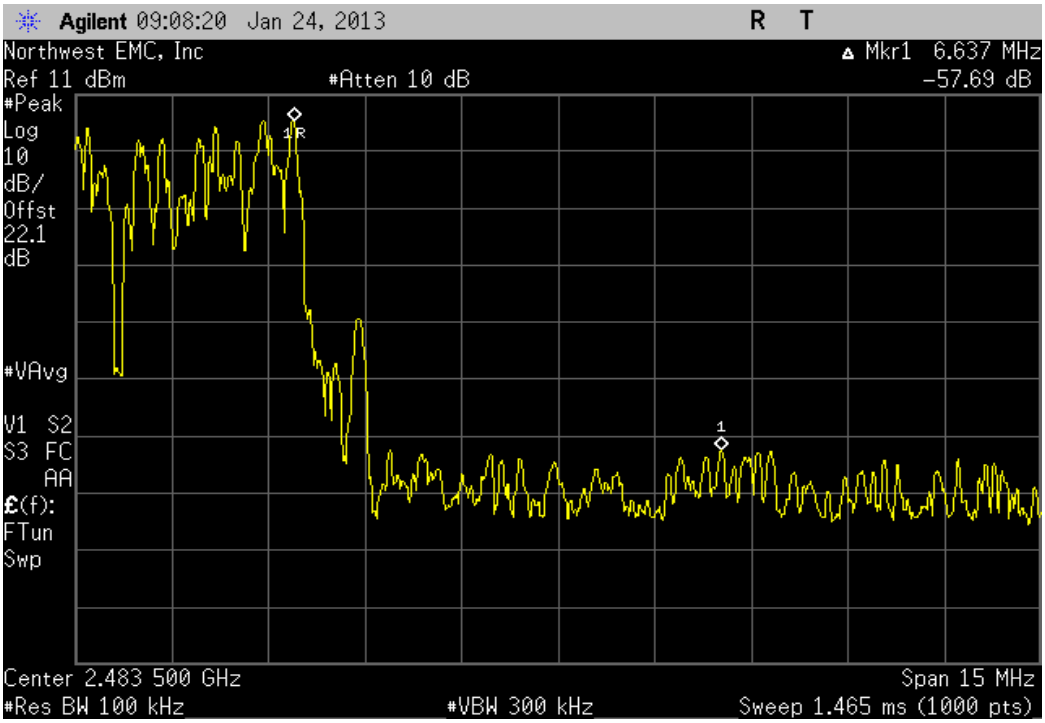
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				-53.63 dBc	≤ -20 dBc	Pass



Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz

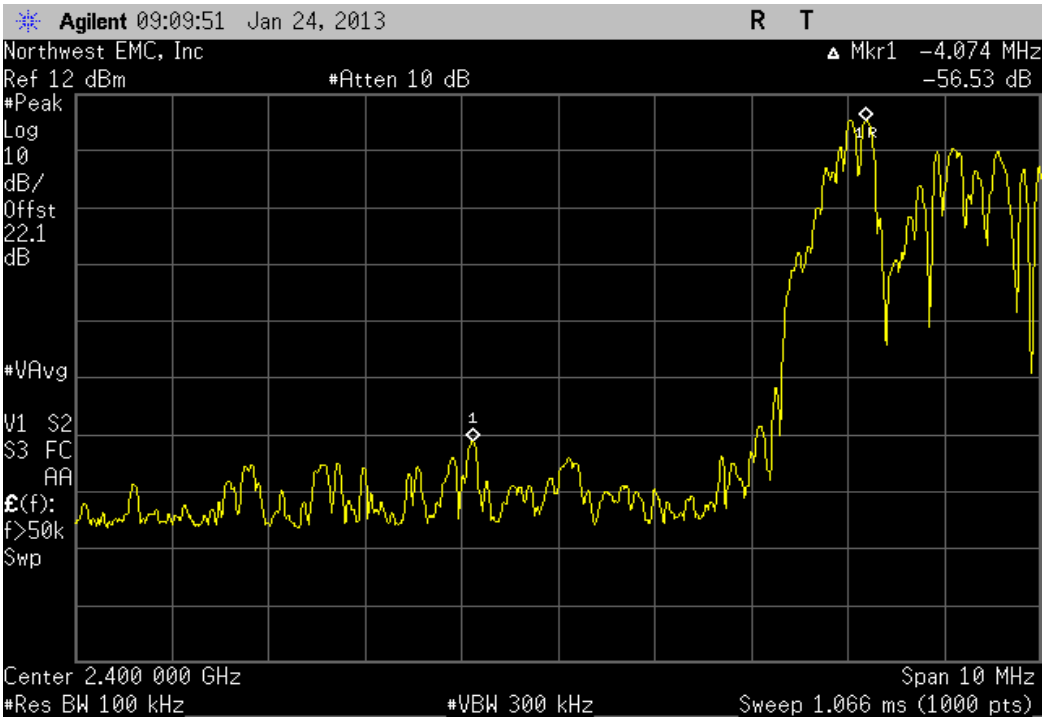
				Value	Limit	Result
				-57.69 dBc	≤ -20 dBc	Pass



Band Edge Compliance - Hopping

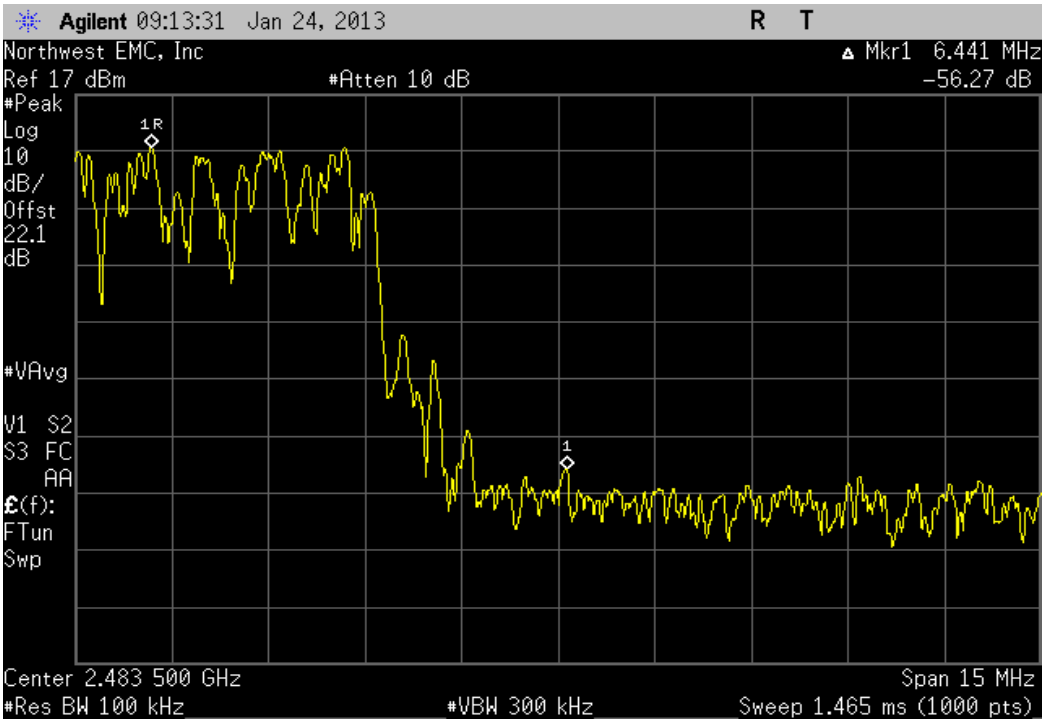
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				-56.53 dBc	≤ -20 dBc	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz

				Value	Limit	Result
				-56.26 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
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/10/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	1019
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	EUT Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

The EUT was operating at a 100% duty cycle

DEVIATIONS FROM TEST STANDARD

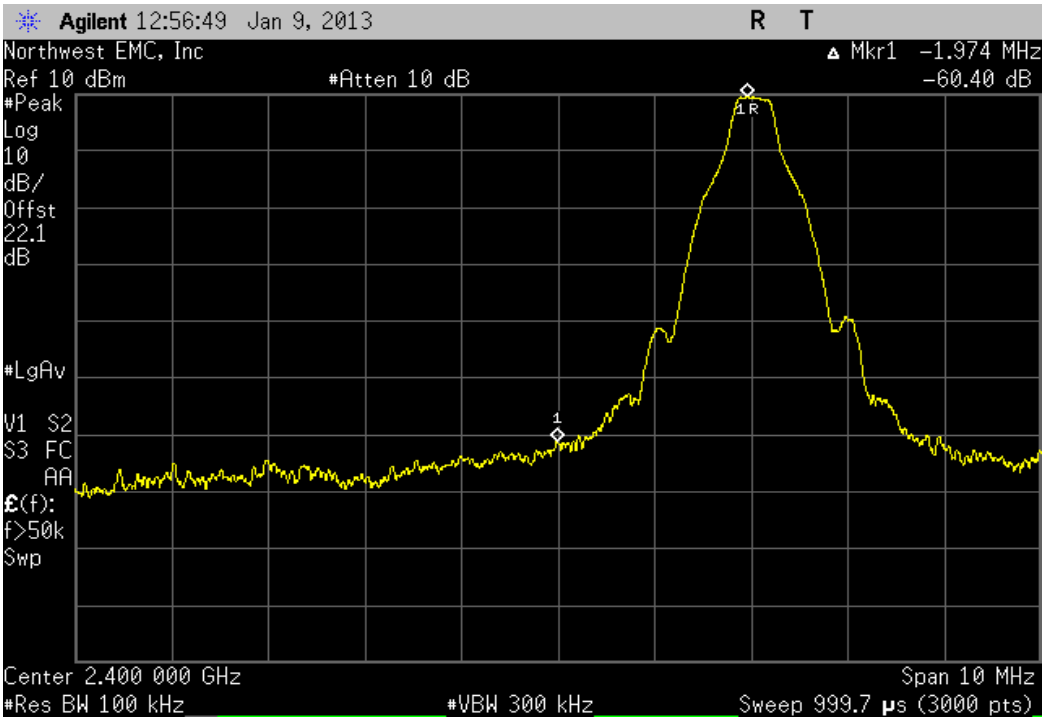
None

Configuration #	2	Signature

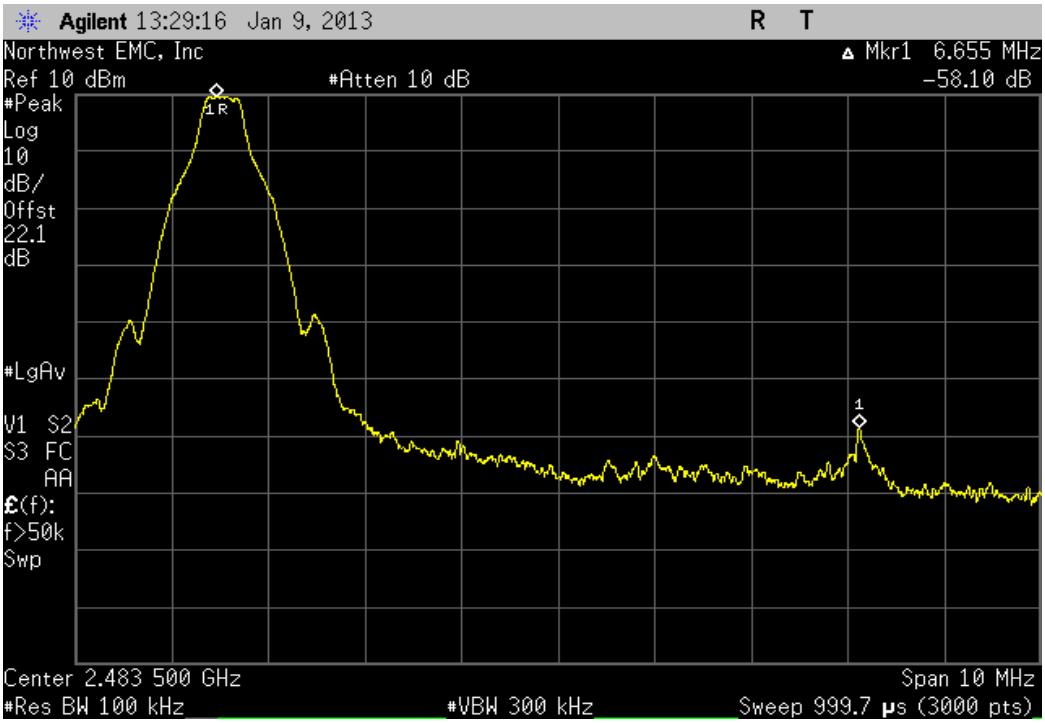
		Value	Limit	Result
Hopping Mode				
	DH5, GFSK			
	Low Channel, 2402 MHz	-60.4 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	-58.1 dBc	≤ -20 dBc	Pass
	2DH5, pi/4-DQPSK			
	Low Channel, 2402 MHz	-47.38 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	-56.51 dBc	≤ -20 dBc	Pass
	3DH5, 8-DPSK			
	Low Channel, 2402 MHz	-47.06 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	-55.34 dBc	≤ -20 dBc	Pass

Band Edge Compliance

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz							
					Value	Limit	Result
					-60.4 dBc	≤ -20 dBc	Pass

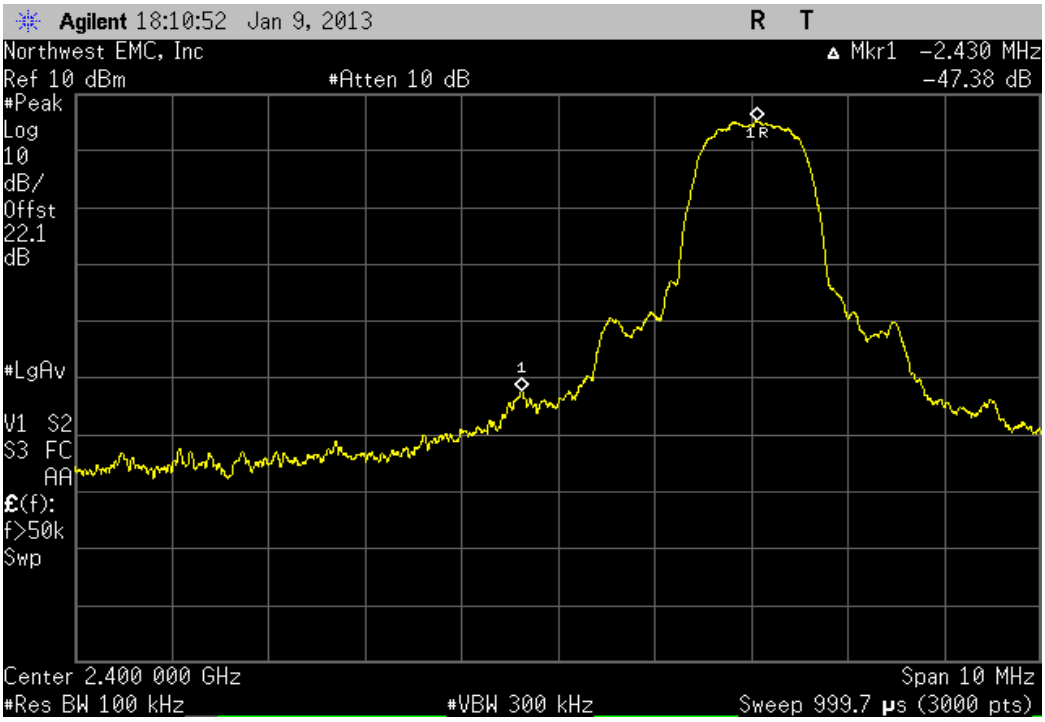


Hopping Mode, DH5, GFSK, High Channel, 2480 MHz							
					Value	Limit	Result
					-58.1 dBc	≤ -20 dBc	Pass



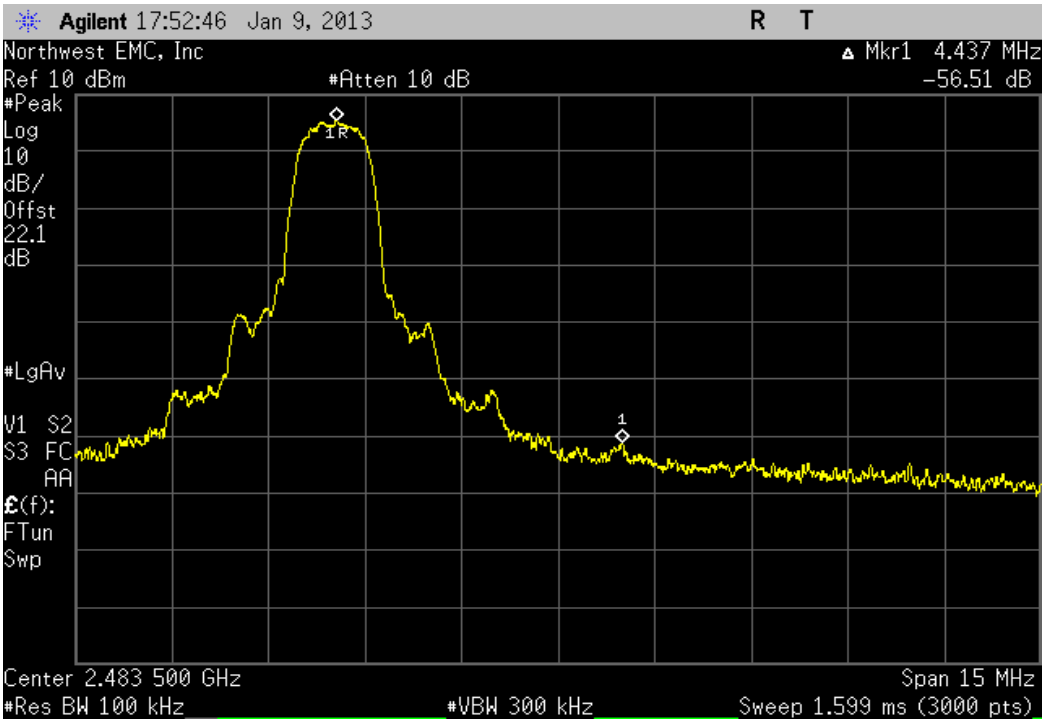
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz

				Value	Limit	Result
				-47.38 dBc	≤ -20 dBc	Pass



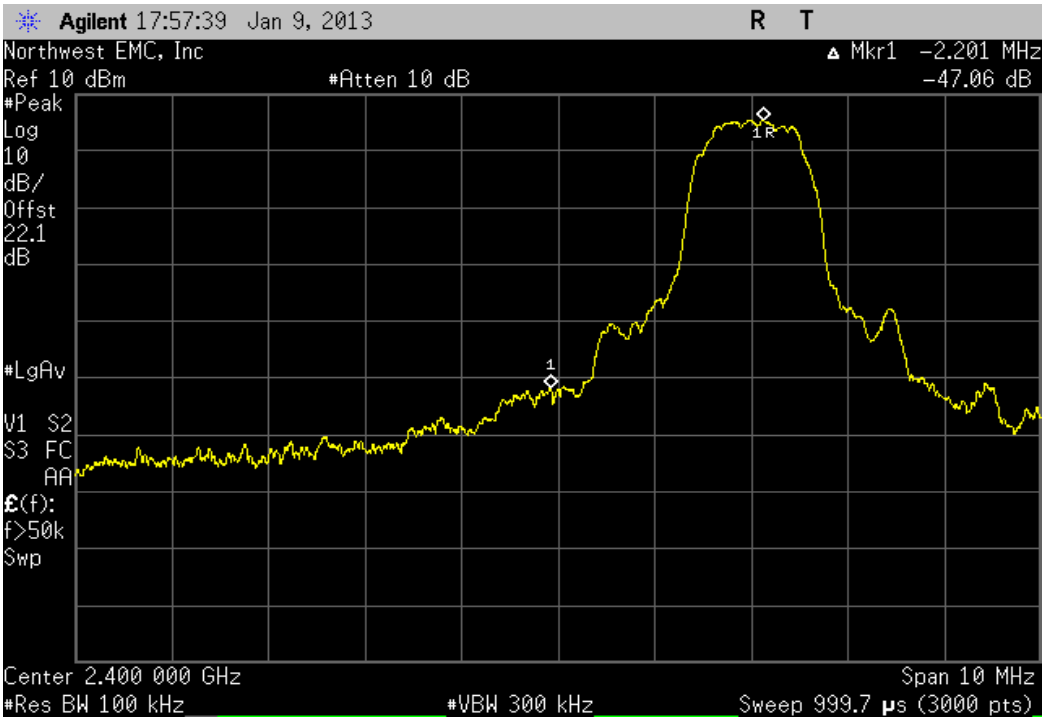
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz

				Value	Limit	Result
				-56.51 dBc	≤ -20 dBc	Pass



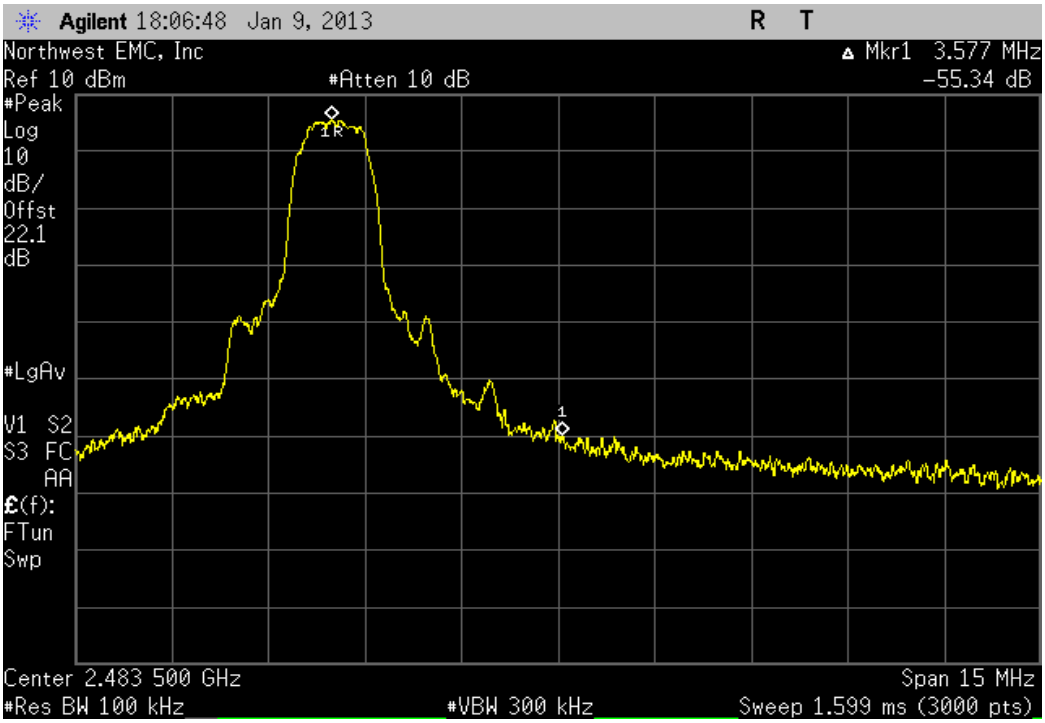
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz

Value	Limit	Result
-47.06 dBc	≤ -20 dBc	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz

Value	Limit	Result
-55.34 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
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
Power Meter	Gigatronics	8651A	SPM	1/9/2012	24
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0
Attenuator, 6dB	S.M. Electronics	18N-06	AWN	3/26/2012	12
Power Sensor	Gigatronics	80701A	SPL	7/8/2011	24
Spectrum Analyzer	Agilent	E4440A	AFD	7/5/2012	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

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 non-hopping mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

Spurious Conducted Emissions

EUT:	iBox BT LE			**Work Order:**	SUPR0100
Serial Number:	50			**Date:**	01/10/13
Customer:	Supra, A Division of UTCFS			**Temperature:**	22.6°C
Attendees:	None			**Humidity:**	31%
Project:	None			**Barometric Pres.:**	1019
Tested by:	Brandon Hobbs and Rod Peloquin	**Power:**	EUT Battery	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2013	ANSI C63.10:2009

COMMENTS

The EUT was operating at a 100% duty cycle

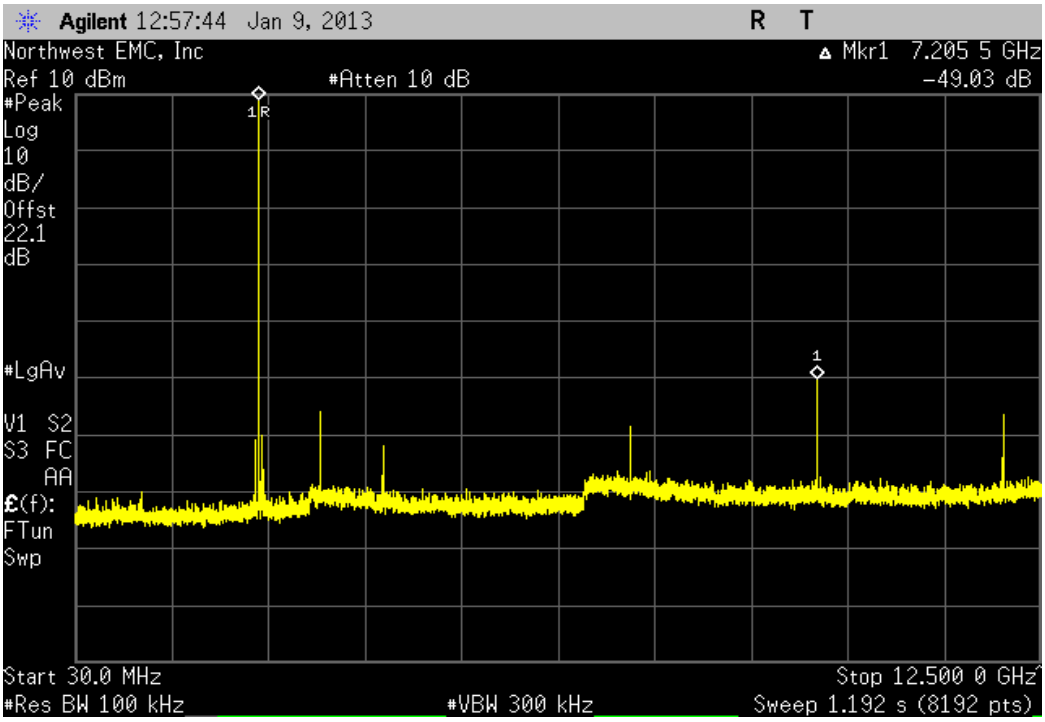
DEVIATIONS FROM TEST STANDARD

None

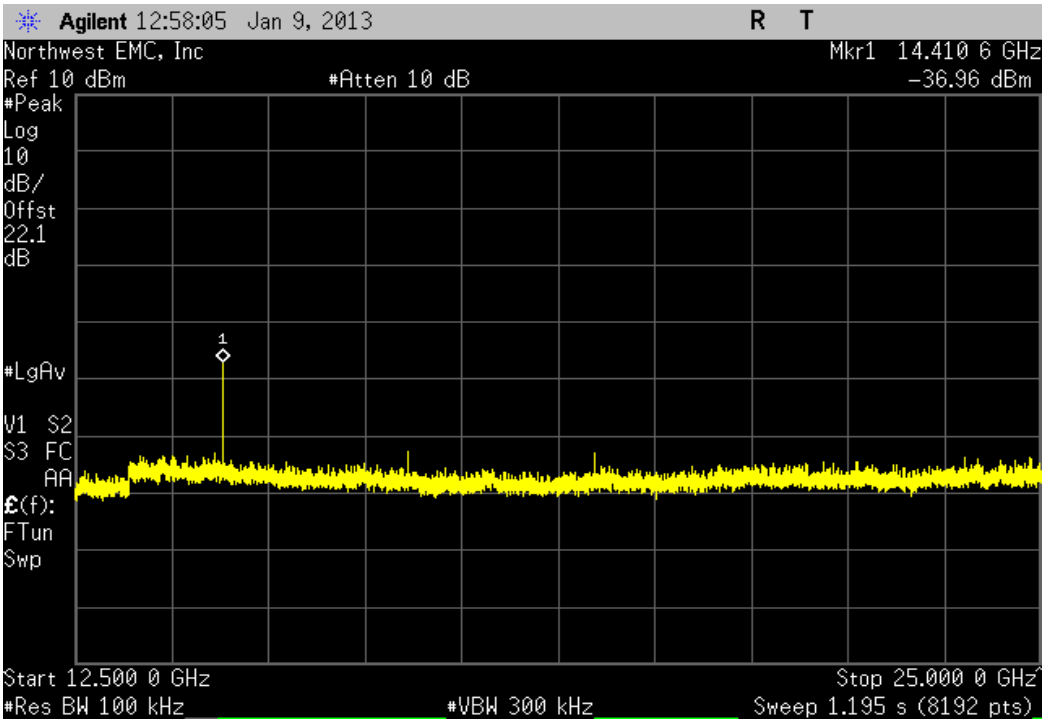
Configuration #	2	Signature

		Frequency Range	Value	Limit	Result
Hopping Mode					
	DH5, GFSK				
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-49.03 dBc	≤ -20 dBc	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-45.9 dBc	≤ -20 dBc	Pass
	Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	-50.84 dBc	≤ -20 dBc	Pass
	Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	-44.49 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	-53.78 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	-44.35 dBc	≤ -20 dBc	Pass
	2DH5, pi/4-DQPSK				
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-49.7 dBc	≤ -20 dBc	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-47.94 dBc	≤ -20 dBc	Pass
	Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	-50.15 dBc	≤ -20 dBc	Pass
	Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	-45.47 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	-53.03 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	-46.67 dBc	≤ -20 dBc	Pass
	3DH5, 8-DPSK				
	Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-52.79 dBc	≤ -20 dBc	Pass
	Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-49.24 dBc	≤ -20 dBc	Pass
	Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	-54.4 dBc	≤ -20 dBc	Pass
	Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	-47.28 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	30 MHz - 12.5 GHz	-53.52 dBc	≤ -20 dBc	Pass
	High Channel, 2480 MHz	12.5 GHz - 25 GHz	-48.36 dBc	≤ -20 dBc	Pass

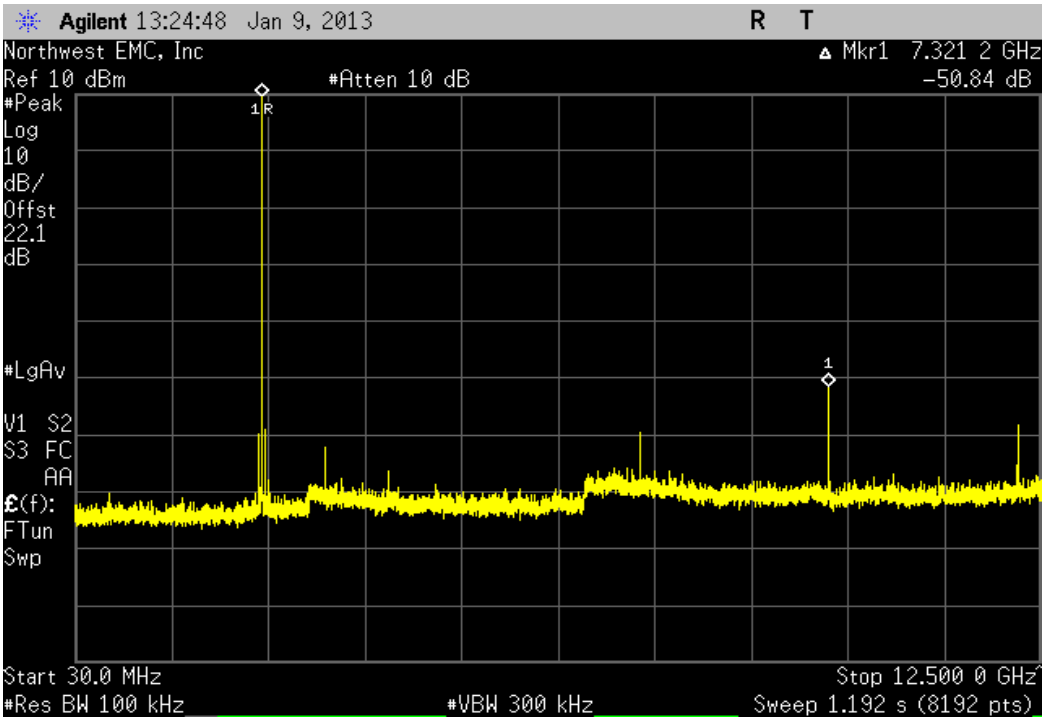
Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-49.03 dBc	≤ -20 dBc	Pass



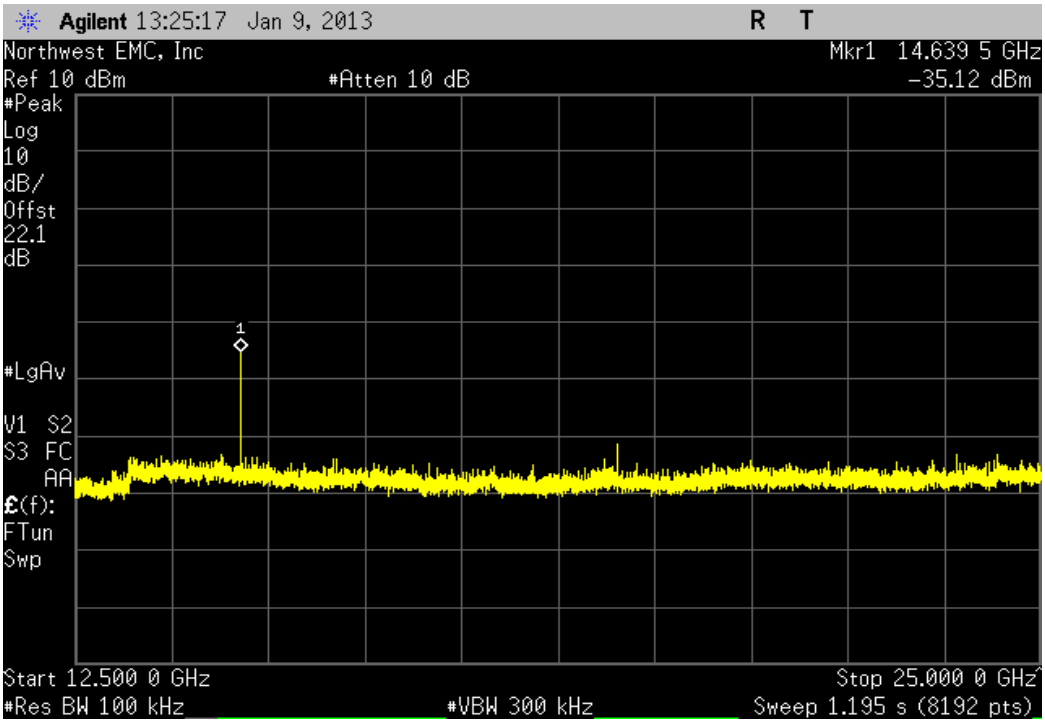
Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-45.9 dBc	≤ -20 dBc	Pass



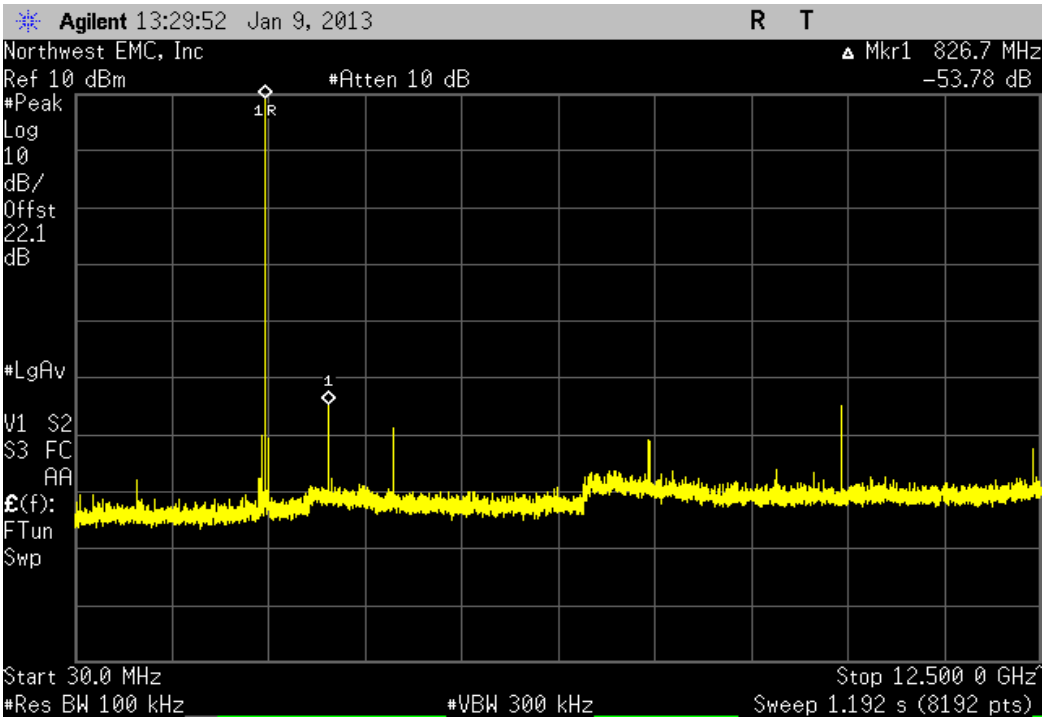
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-50.84 dBc	≤ -20 dBc	Pass



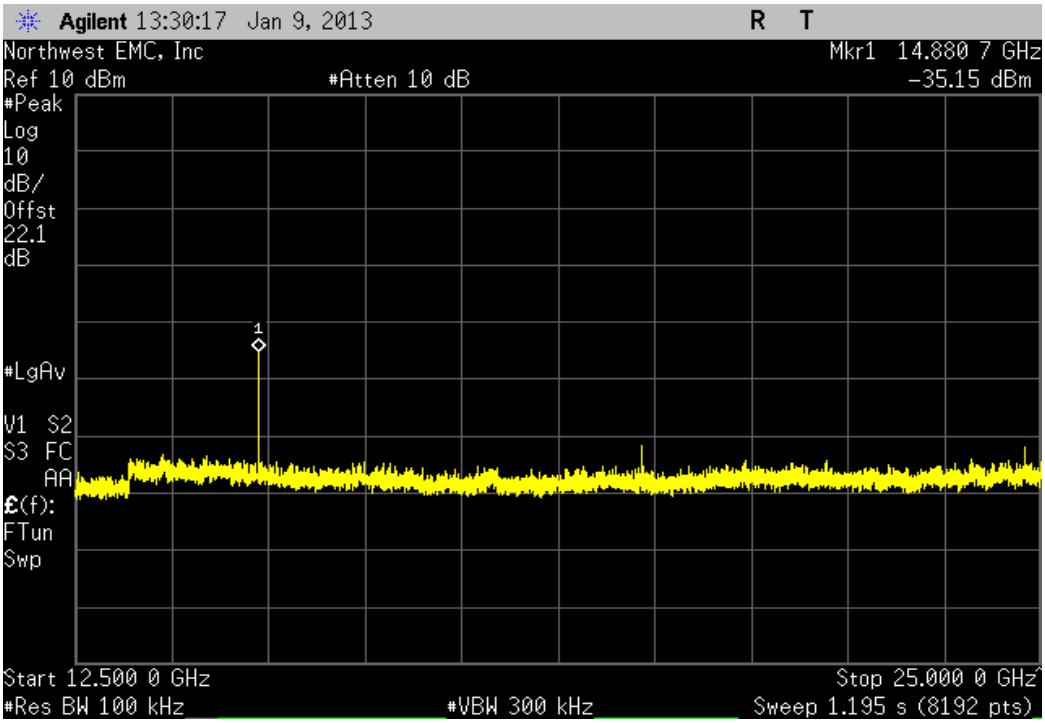
Hopping Mode, DH5, GFSK, Mid Channel, 2440 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-44.49 dBc	≤ -20 dBc	Pass



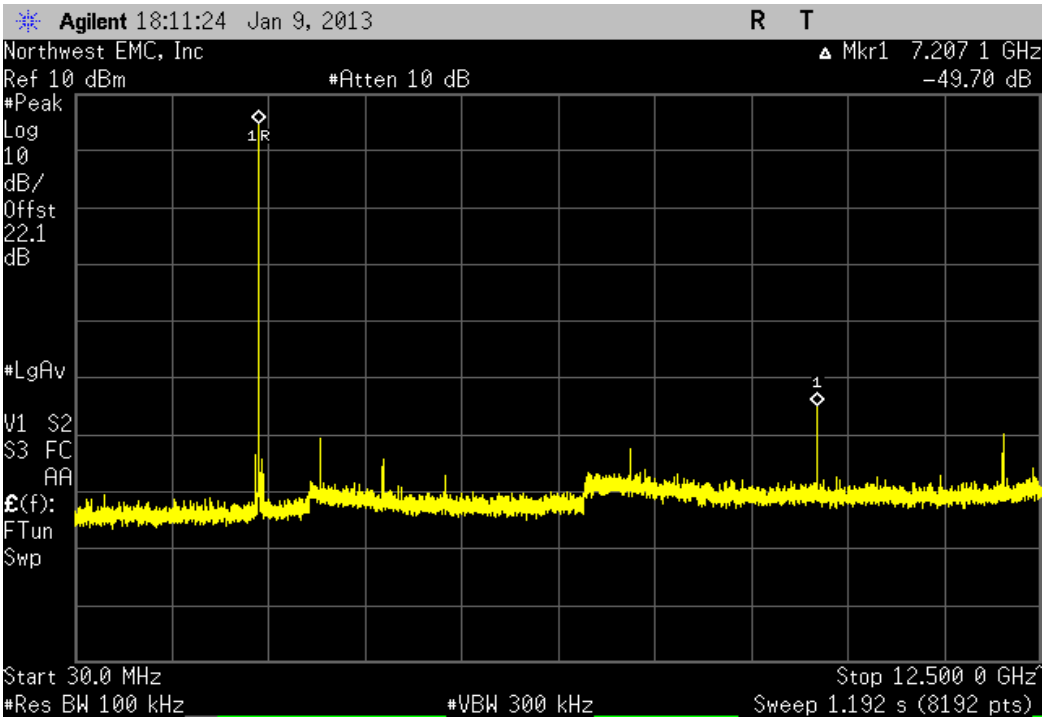
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-53.78 dBc	≤ -20 dBc	Pass



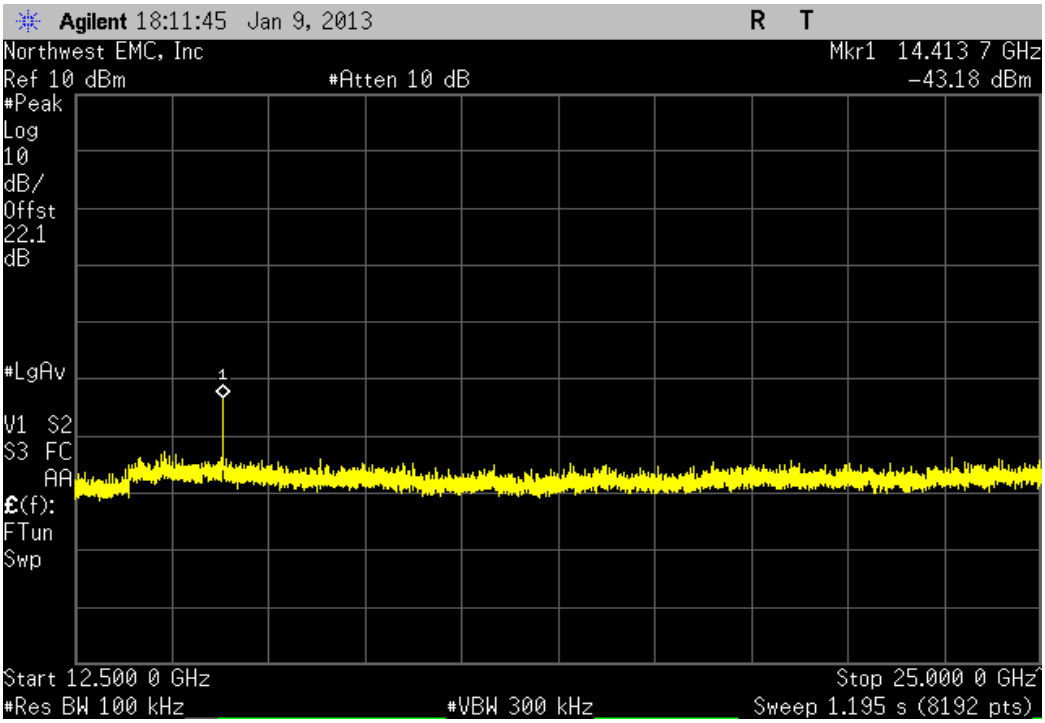
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-44.35 dBc	≤ -20 dBc	Pass



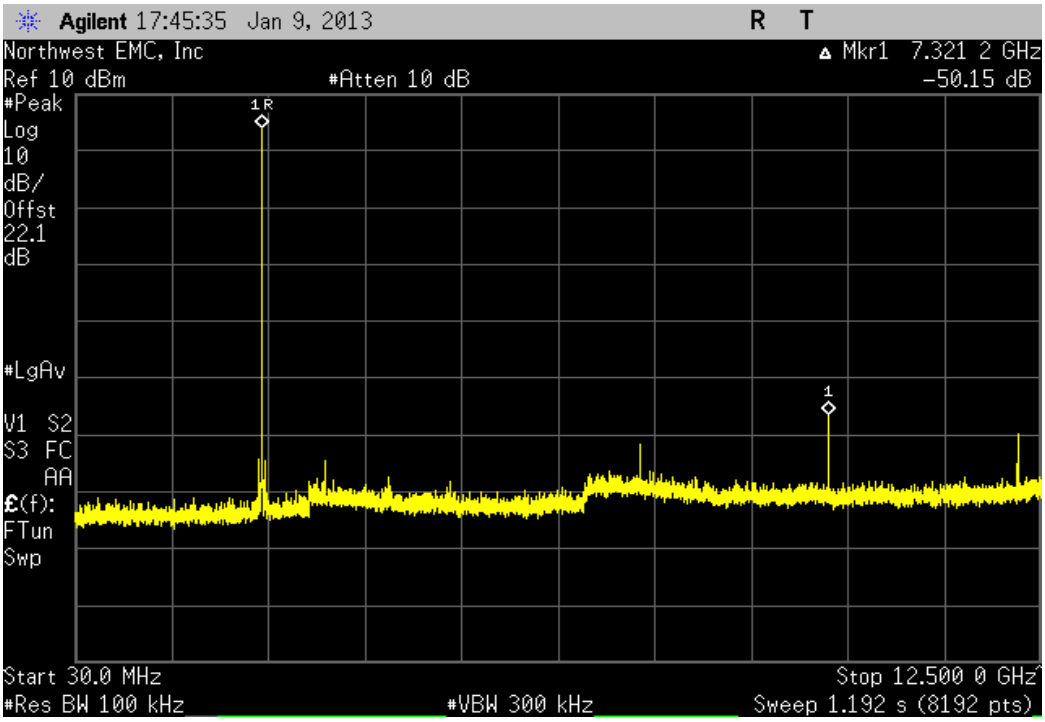
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-49.7 dBc	≤ -20 dBc	Pass



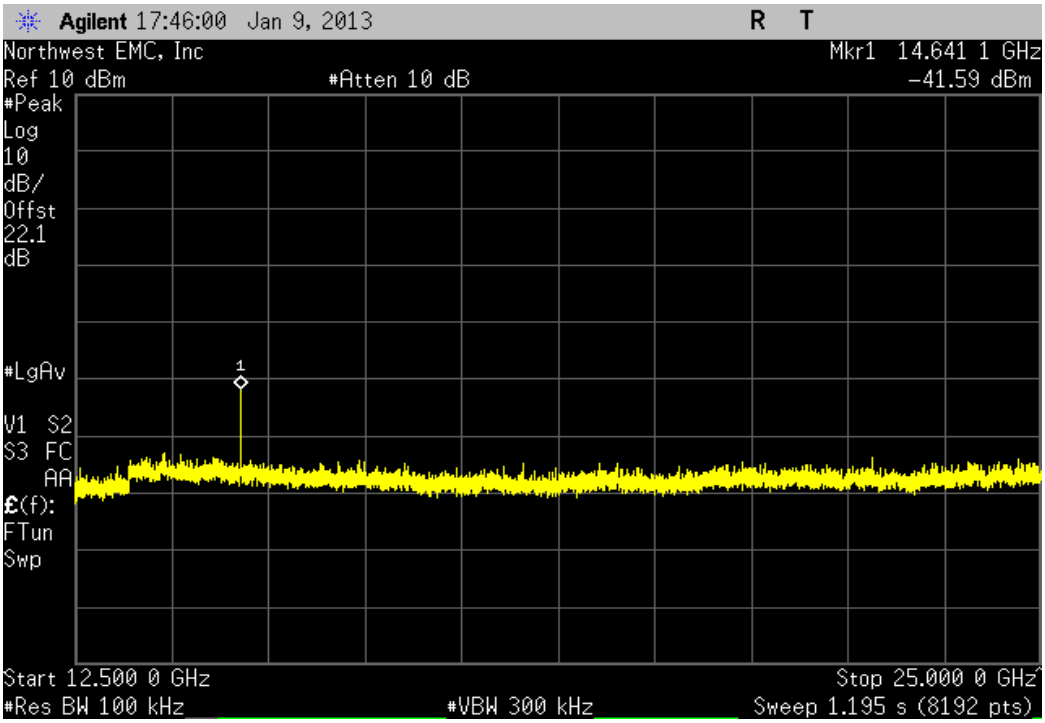
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-47.94 dBc	≤ -20 dBc	Pass



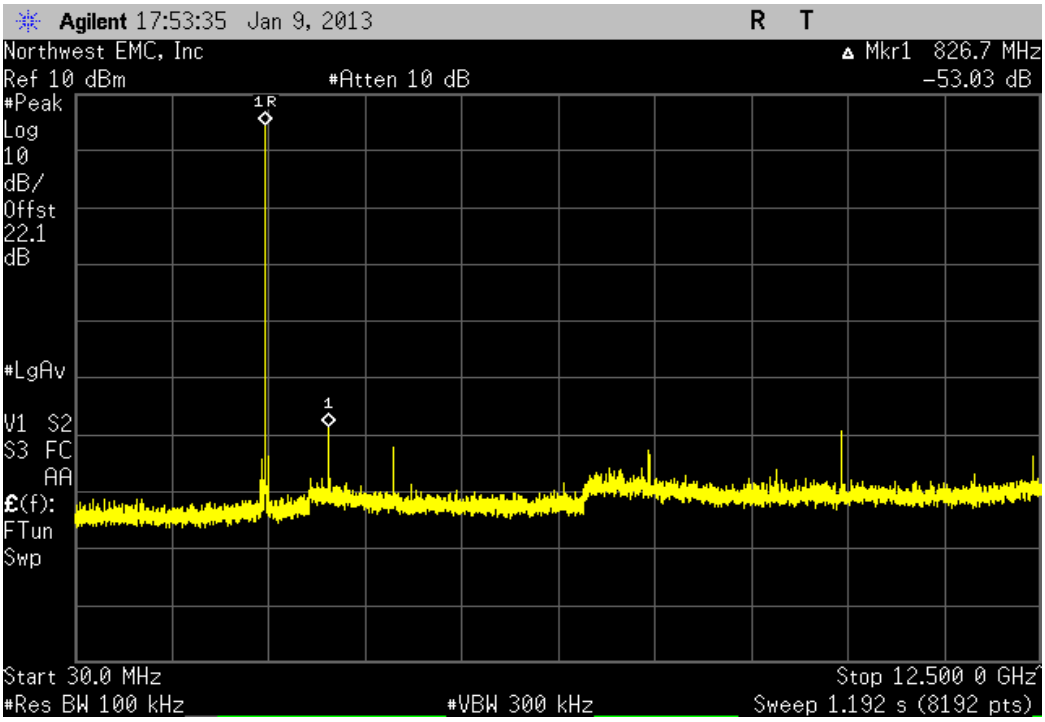
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-50.15 dBc	≤ -20 dBc	Pass



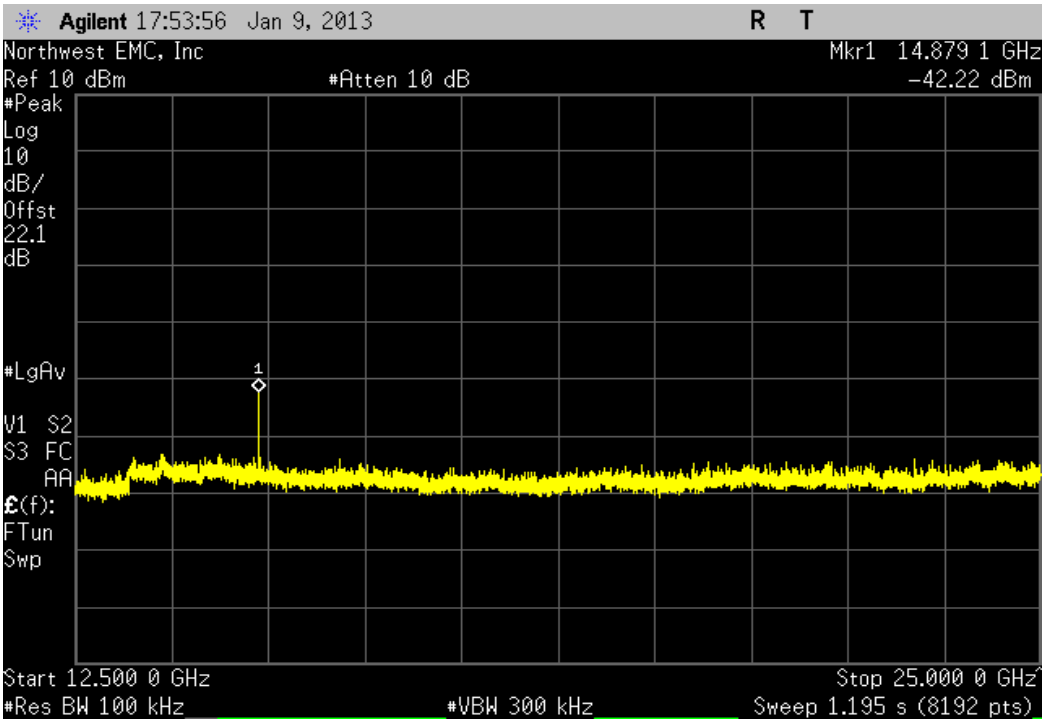
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-45.47 dBc	≤ -20 dBc	Pass



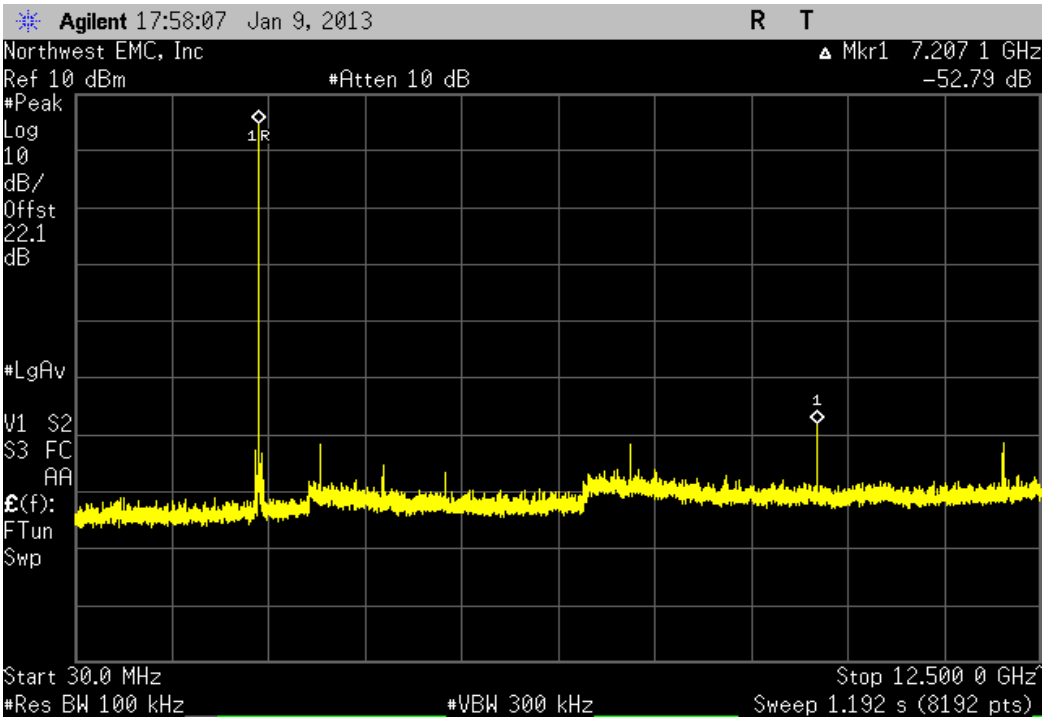
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-53.03 dBc	≤ -20 dBc	Pass



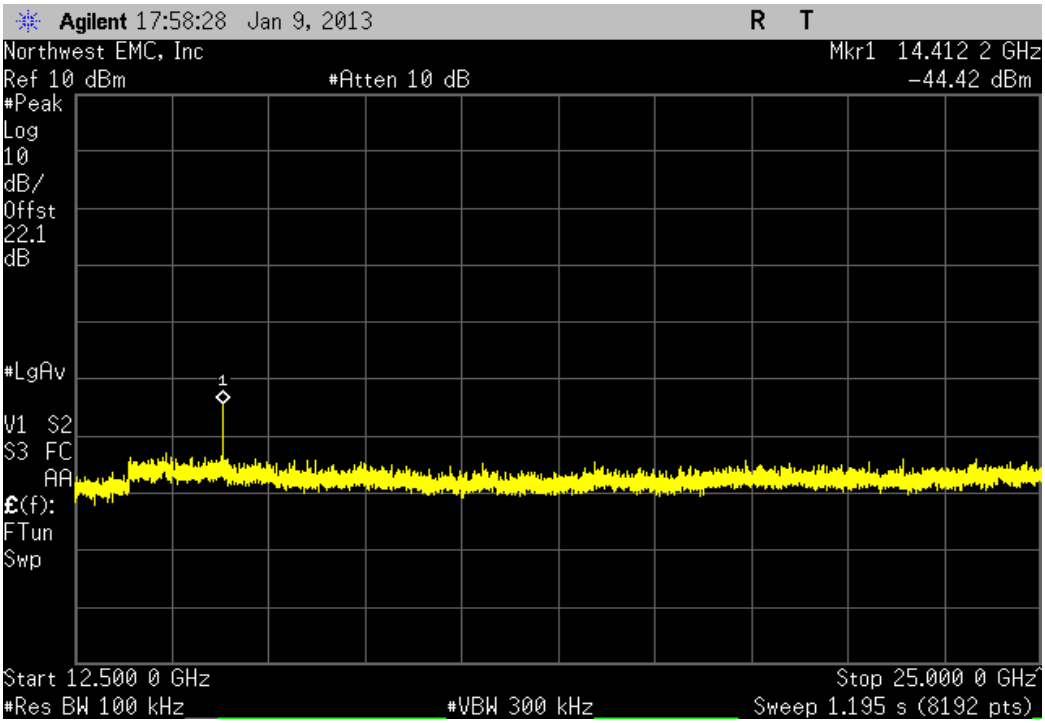
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-46.67 dBc	≤ -20 dBc	Pass



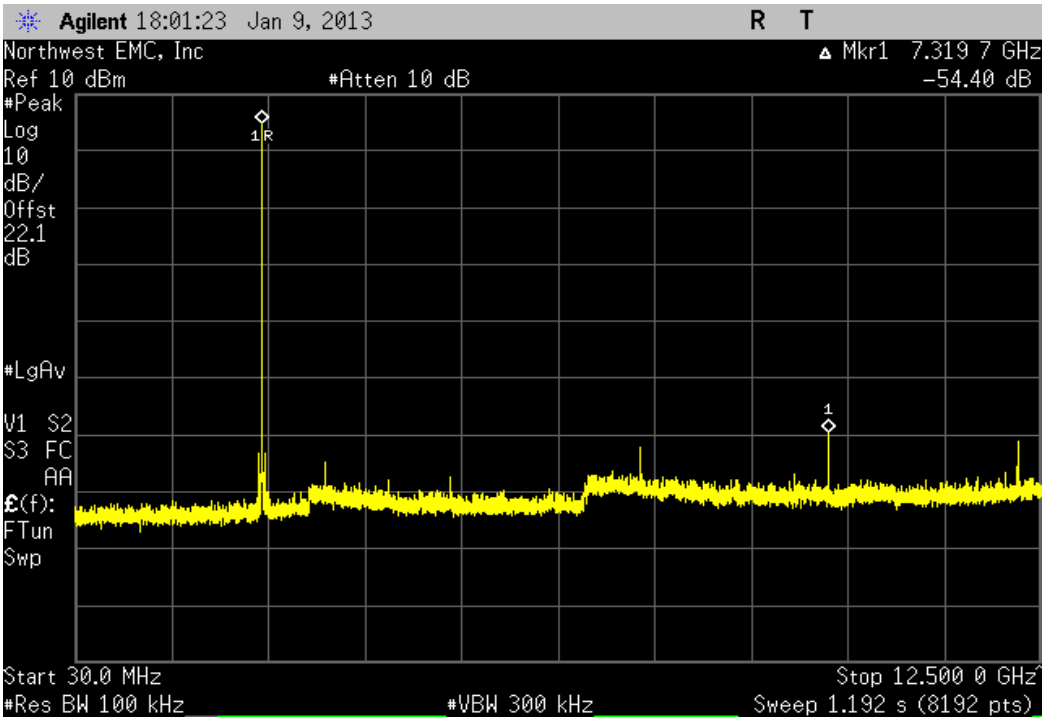
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-52.79 dBc	≤ -20 dBc	Pass



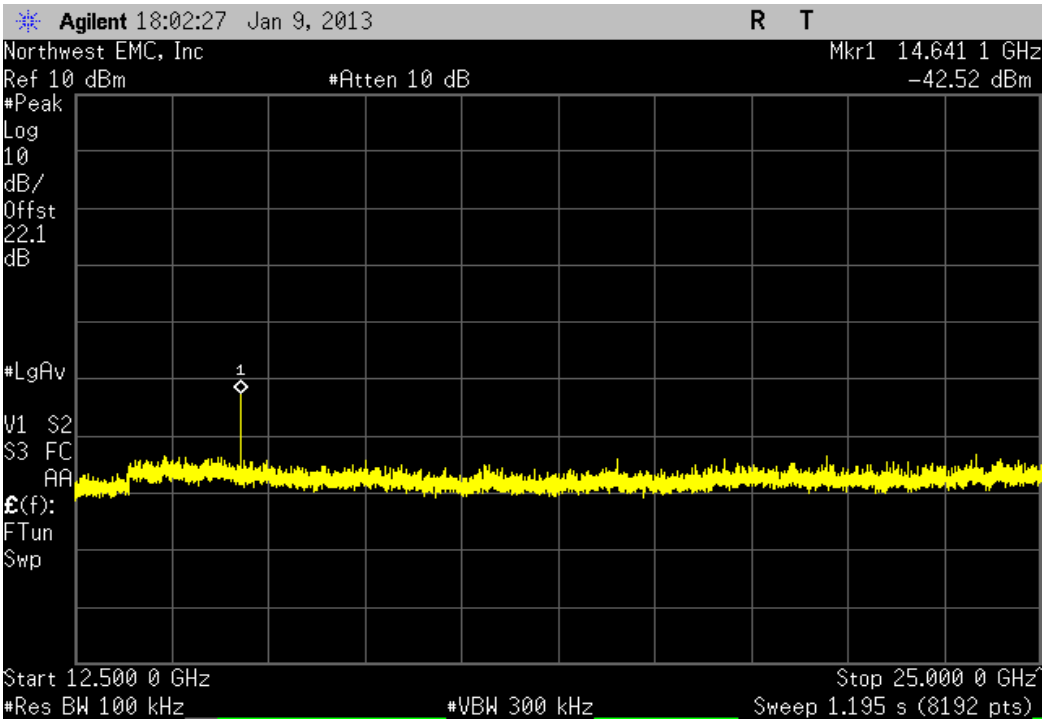
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-49.24 dBc	≤ -20 dBc	Pass



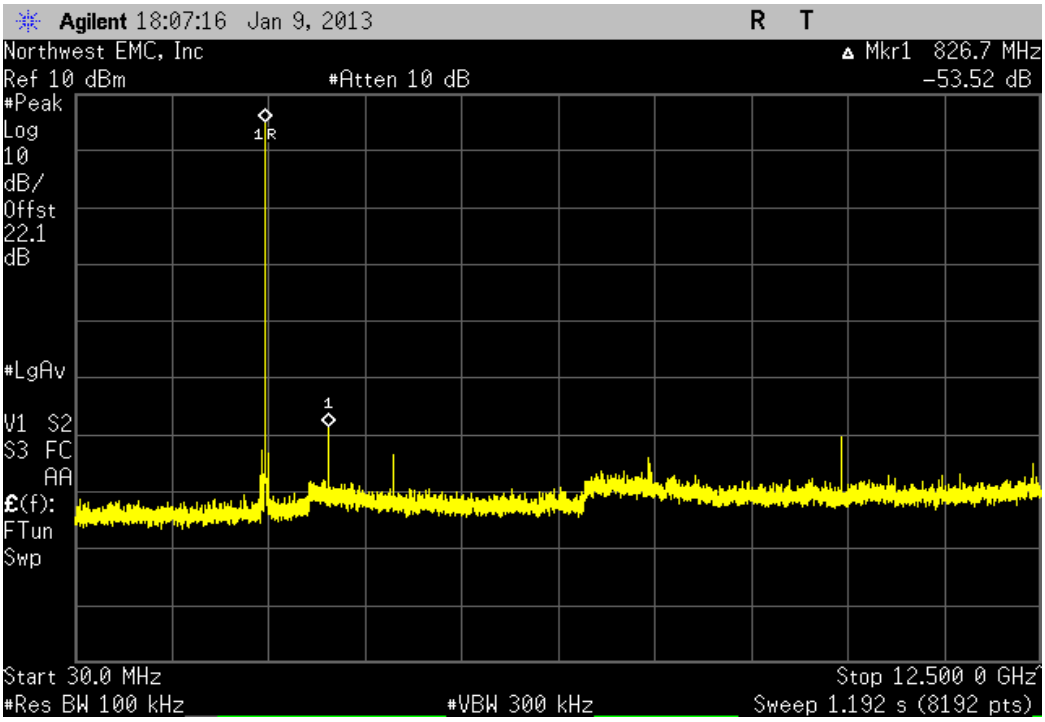
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz				
Frequency Range		Value	Limit	Result
30 MHz - 12.5 GHz		-54.4 dBc	≤ -20 dBc	Pass



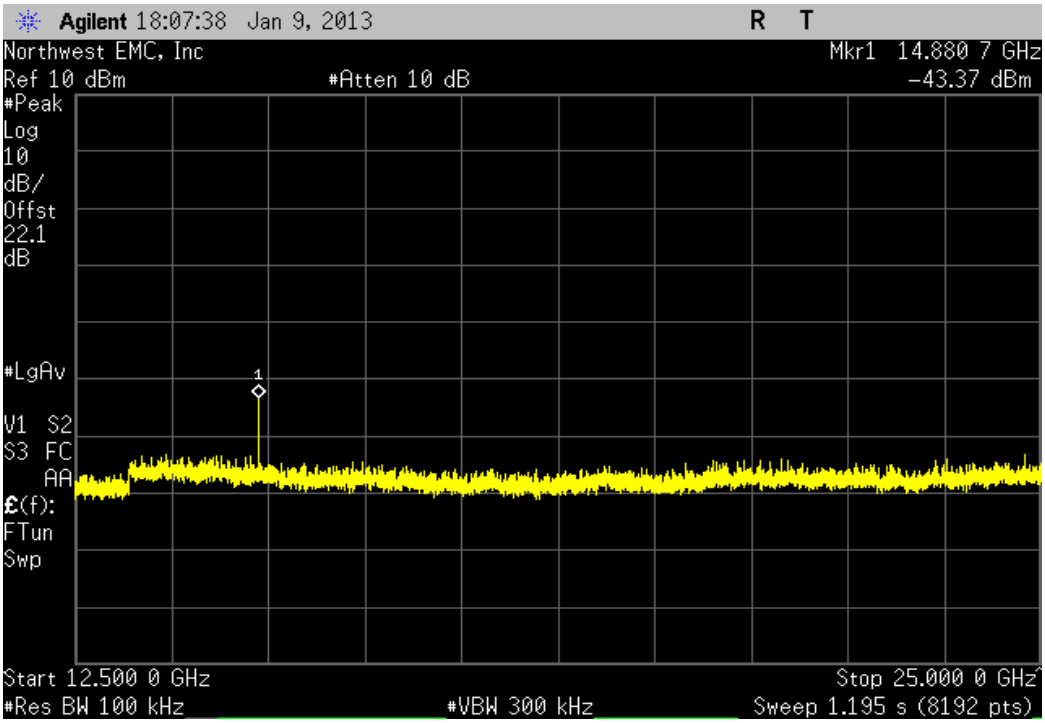
Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz				
Frequency Range		Value	Limit	Result
12.5 GHz - 25 GHz		-47.28 dBc	≤ -20 dBc	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz				
Frequency Range		**Value**	**Limit**	**Result**
30 MHz - 12.5 GHz		-53.52 dBc	≤ -20 dBc	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz				
Frequency Range		**Value**	**Limit**	**Result**
12.5 GHz - 25 GHz		-48.36 dBc	≤ -20 dBc	Pass



SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Continuous transmit, Bluetooth BR/EDR

POWER SETTINGS INVESTIGATED

EUT Battery

CONFIGURATIONS INVESTIGATED

SUPR0100 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26.5 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
Cable	ESM Cable Corp.	KMKM-72	EVY	9/11/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	9/11/2012	12 mo
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	2/28/2012	12 mo
Antenna, Horn	ETS	3160-08	AHV	NCR	0 mo
EV01 Cables	N/A	Standard Gain Horns Cables	EVF	2/28/2012	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2/28/2012	12 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
Spectrum Analyzer	Agilent	E4446A	AAQ	2/7/2012	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

TEST DESCRIPTION

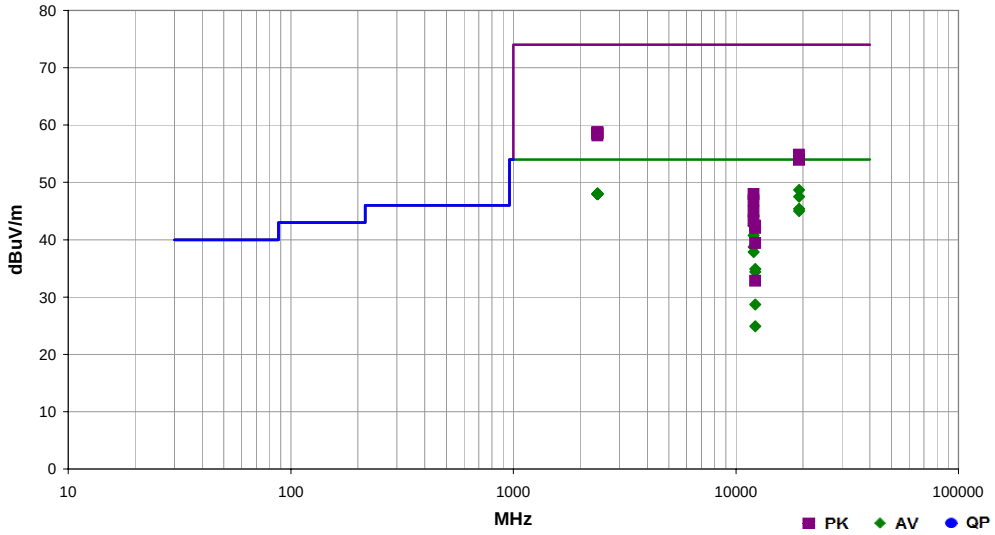
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify 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

Work Order:	SUPR0100	**Date:**	01/03/13		
Project:	None	**Temperature:**	20.9 °C		
Job Site:	EV01	**Humidity:**	25% RH		
Serial Number:	50	**Barometric Pres.:**	1022 mbar	**Tested by:**	Carl Engholm, Rod Peloquin
EUT:	iBox BT LE				
Configuration:	1				
Customer:	Supra, A Division of UTCFS				
Attendees:	Adam Purdue				
EUT Power:	EUT Battery				
Operating Mode:	Continuous transmit, Bluetooth BR/EDR				
Deviations:	None				
Comments:	See comments below for channel, frequency, data rate, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2013	ANSI C63.10:2009

Run #	48	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



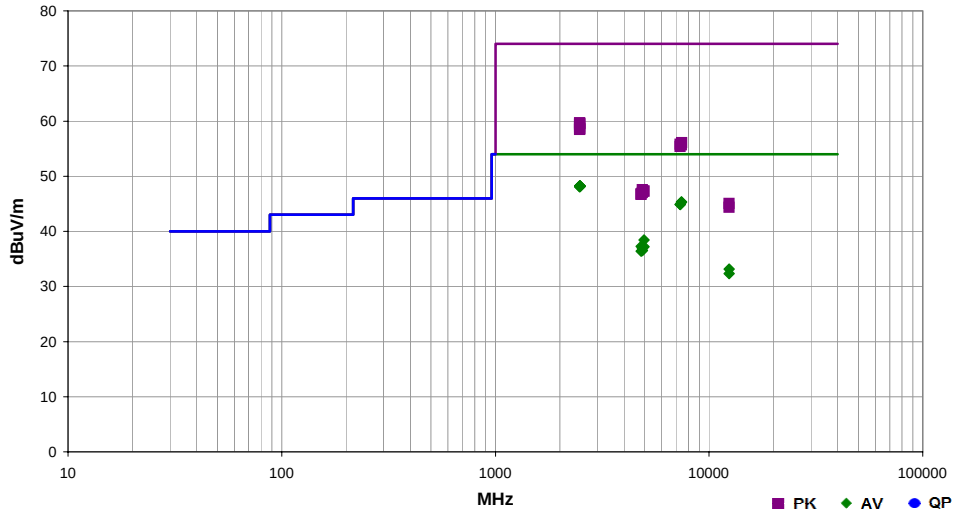
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
19217.140	52.8	-4.1	1.2	343.0	3.0	0.0	Vert	AV	0.0	48.7	54.0	-5.3	Low Ch (2402MHz), DH5, EUT On Side
2389.723	26.5	1.5	1.2	180.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	Low Ch (2402MHz), 3DH5, EUT Horizontal
2389.783	26.5	1.5	1.2	330.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	Low Ch (2402MHz), 2DH5, EUT Horizontal
2388.000	26.4	1.6	1.2	179.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	Low Ch (2402MHz), 3DH5, EUT Horizontal
2388.080	26.4	1.6	1.2	201.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0	Low Ch (2402MHz), 2DH5, EUT Horizontal
2388.410	26.4	1.6	1.6	101.0	3.0	20.0	Horz	AV	0.0	48.0	54.0	-6.0	Low Ch (2402MHz), DH5, EUT Horizontal
2389.667	26.4	1.5	1.2	141.0	3.0	20.0	Vert	AV	0.0	47.9	54.0	-6.1	Low Ch (2402MHz), DH5, EUT Horizontal
19217.180	51.6	-4.1	1.2	309.0	3.0	0.0	Horz	AV	0.0	47.5	54.0	-6.5	Low Ch (2402MHz), DH5, EUT Vertical
19217.160	49.5	-4.1	1.2	343.0	3.0	0.0	Vert	AV	0.0	45.4	54.0	-8.6	Low Ch (2402MHz), 2DH5, EUT On Side
19216.100	49.1	-4.1	1.2	343.0	3.0	0.0	Vert	AV	0.0	45.0	54.0	-9.0	Low Ch (2402MHz), 3DH5, EUT On Side
12009.540	47.9	-5.5	1.2	33.0	3.0	0.0	Horz	AV	0.0	42.4	54.0	-11.6	Low Ch (2402MHz), DH5, EUT Vertical
12010.650	46.2	-5.5	1.4	59.0	3.0	0.0	Vert	AV	0.0	40.7	54.0	-13.3	Low Ch (2402MHz), DH5, EUT On Side
2389.013	37.2	1.5	1.2	201.0	3.0	20.0	Vert	PK	0.0	58.7	74.0	-15.3	Low Ch (2402MHz), 2DH5, EUT Horizontal
2389.963	37.2	1.5	1.2	330.0	3.0	20.0	Horz	PK	0.0	58.7	74.0	-15.3	Low Ch (2402MHz), 2DH5, EUT Horizontal
12009.500	44.2	-5.5	1.3	307.0	3.0	0.0	Vert	AV	0.0	38.7	54.0	-15.3	Low Ch (2402MHz), DH5, EUT On Side
2388.313	37.0	1.6	1.2	179.0	3.0	20.0	Vert	PK	0.0	58.6	74.0	-15.4	Low Ch (2402MHz), 3DH5, EUT Horizontal
2389.440	37.0	1.5	1.2	180.0	3.0	20.0	Horz	PK	0.0	58.5	74.0	-15.5	Low Ch (2402MHz), 3DH5, EUT Horizontal
2389.950	36.9	1.5	1.6	101.0	3.0	20.0	Horz	PK	0.0	58.4	74.0	-15.6	Low Ch (2402MHz), DH5, EUT Horizontal
2388.090	36.6	1.6	1.2	141.0	3.0	20.0	Vert	PK	0.0	58.2	74.0	-15.8	Low Ch (2402MHz), DH5, EUT Horizontal
12010.620	43.3	-5.5	1.0	238.0	3.0	0.0	Horz	AV	0.0	37.8	54.0	-16.2	Low Ch (2402MHz), DH5, EUT Horizontal
12199.510	39.1	-4.2	1.2	25.0	3.0	0.0	Horz	AV	0.0	34.9	54.0	-19.1	Mid Ch (2440MHz), DH5, EUT Vertical
19217.330	58.9	-4.1	1.2	343.0	3.0	0.0	Vert	PK	0.0	54.8	74.0	-19.2	Low Ch (2402MHz), DH5, EUT On Side
12199.570	38.6	-4.2	1.2	86.0	3.0	0.0	Vert	AV	0.0	34.4	54.0	-19.6	Mid Ch (2440MHz), DH5, EUT On Side
19217.460	58.2	-4.1	1.2	309.0	3.0	0.0	Horz	PK	0.0	54.1	74.0	-19.9	Low Ch (2402MHz), DH5, EUT Vertical
19217.300	58.1	-4.1	1.2	343.0	3.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0	Low Ch (2402MHz), 2DH5, EUT On Side
19217.460	58.0	-4.1	1.2	343.0	3.0	0.0	Vert	PK	0.0	53.9	74.0	-20.1	Low Ch (2402MHz), 3DH5, EUT On Side
12199.550	32.9	-4.2	1.0	55.0	3.0	0.0	Horz	AV	0.0	28.7	54.0	-25.3	Mid Ch (2440MHz), DH5, EUT Vertical
12010.770	53.4	-5.5	1.2	33.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	Low Ch (2402MHz), DH5, EUT Vertical
12010.730	52.3	-5.5	1.4	59.0	3.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	Low Ch (2402MHz), DH5, EUT On Side
12010.970	50.4	-5.5	1.3	307.0	3.0	0.0	Vert	PK	0.0	44.9	74.0	-29.1	Low Ch (2402MHz), DH5, EUT On Side
12199.470	29.1	-4.2	1.0	210.0	3.0	0.0	Vert	AV	0.0	24.9	54.0	-29.1	Mid Ch (2440MHz), DH5, EUT On Side
12009.370	48.8	-5.5	1.0	238.0	3.0	0.0	Horz	PK	0.0	43.3	74.0	-30.7	Low Ch (2402MHz), DH5, EUT Horizontal
12200.820	46.6	-4.2	1.2	25.0	3.0	0.0	Horz	PK	0.0	42.4	74.0	-31.6	Mid Ch (2440MHz), DH5, EUT Vertical
12200.710	46.2	-4.2	1.2	86.0	3.0	0.0	Vert	PK	0.0	42.0	74.0	-32.0	Mid Ch (2440MHz), DH5, EUT On Side
12199.430	43.6	-4.2	1.0	210.0	3.0	0.0	Vert	PK	0.0	39.4	74.0	-34.6	Mid Ch (2440MHz), DH5, EUT On Side
12199.390	37.0	-4.2	1.0	55.0	3.0	0.0	Horz	PK	0.0	32.8	74.0	-41.2	Mid Ch (2440MHz), DH5, EUT Vertical

SPURIOUS RADIATED EMISSIONS

Work Order:	SUPR0100	**Date:**	01/30/13		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV01	**Humidity:**	37% RH		
Serial Number:	45	**Barometric Pres.:**	1031 mbar	**Tested by:**	Carl Engholm, Rod Peloquin
EUT:	iBox BT LE				
Configuration:	2				
Customer:	Supra, A Division of UTCFS				
Attendees:	None				
EUT Power:	EUT Battery				
Operating Mode:	Continuous transmit, Bluetooth BR/EDR				
Deviations:	None				
Comments:	See comments below for channel, frequency, data rate, and EUT orientation.				

Test Specifications	**Test Method**
FCC 15.247:2013	ANSI C63.10:2009

Run #	60	**Test Distance (m)**	3	**Antenna Height(s)**	1-4m	**Results**	Pass



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
2485.497	26.4	1.9	1.0	300.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	High Ch (2480MHz), 3DH5, EUT Horizontal
2484.833	26.4	1.9	1.0	300.0	3.0	20.0	Vert	AV	0.0	48.3	54.0	-5.7	High Ch (2480MHz), DH5, EUT Horizontal
2485.370	26.3	1.9	1.0	274.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	High Ch (2480MHz), DH5, EUT On Side
2485.277	26.3	1.9	1.0	90.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	High Ch (2480MHz), DH5, EUT Horizontal
2485.233	26.3	1.9	1.0	160.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	High Ch (2480MHz), DH5, EUT Vertical
2484.917	26.3	1.9	1.0	88.0	3.0	20.0	Horz	AV	0.0	48.2	54.0	-5.8	High Ch (2480MHz), DH5, EUT Vertical
2484.453	26.3	1.9	1.0	300.0	3.0	20.0	Vert	AV	0.0	48.2	54.0	-5.8	High Ch (2480MHz), 2DH5, EUT Horizontal
2484.940	26.2	1.9	1.0	247.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9	High Ch (2480MHz), DH5, EUT On Side
7439.087	25.9	19.5	1.0	310.0	3.0	0.0	Vert	AV	0.0	45.4	54.0	-8.6	High Ch (2480MHz), DH5, EUT Vertical
7438.460	25.8	19.5	1.0	291.0	3.0	0.0	Horz	AV	0.0	45.3	54.0	-8.7	High Ch (2480MHz), DH5, EUT Vertical
7318.613	25.9	19.0	1.1	305.0	3.0	0.0	Horz	AV	0.0	44.9	54.0	-9.1	Mid Ch (2440MHz), DH5, EUT Vertical
7318.373	25.9	19.0	1.0	347.0	3.0	0.0	Vert	AV	0.0	44.9	54.0	-9.1	Mid Ch (2440MHz), DH5, EUT Vertical
2484.160	37.8	1.9	1.0	300.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3	High Ch (2480MHz), 2DH5, EUT Horizontal
2485.263	37.7	1.9	1.0	247.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	High Ch (2480MHz), DH5, EUT On Side
2484.423	37.7	1.9	1.0	300.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	High Ch (2480MHz), DH5, EUT Horizontal
2484.207	37.5	1.9	1.0	300.0	3.0	20.0	Vert	PK	0.0	59.4	74.0	-14.6	High Ch (2480MHz), 3DH5, EUT Horizontal
2485.113	37.1	1.9	1.0	274.0	3.0	20.0	Horz	PK	0.0	59.0	74.0	-15.0	High Ch (2480MHz), DH5, EUT On Side
2485.313	36.7	1.9	1.0	90.0	3.0	20.0	Horz	PK	0.0	58.6	74.0	-15.4	High Ch (2480MHz), DH5, EUT Horizontal
2484.863	36.7	1.9	1.0	88.0	3.0	20.0	Horz	PK	0.0	58.6	74.0	-15.4	High Ch (2480MHz), DH5, EUT On Side
2484.183	36.6	1.9	1.0	160.0	3.0	20.0	Vert	PK	0.0	58.5	74.0	-15.5	High Ch (2480MHz) DH5, EUT Vertical
4959.967	27.7	10.7	1.1	327.0	3.0	0.0	Vert	AV	0.0	38.4	54.0	-15.6	High Ch (2480MHz), DH5, EUT Vertical
4804.000	27.1	10.2	1.0	196.0	3.0	0.0	Vert	AV	0.0	37.3	54.0	-16.7	Low Ch (2402MHz), DH5, EUT Vertical
4959.927	26.5	10.7	1.2	19.0	3.0	0.0	Horz	AV	0.0	37.2	54.0	-16.8	High Ch (2480MHz), DH5, EUT Vertical
4880.040	26.5	10.4	1.0	235.0	3.0	0.0	Horz	AV	0.0	36.9	54.0	-17.1	Mid Ch (2440MHz), DH5, EUT Vertical
4880.113	26.1	10.4	1.0	327.0	3.0	0.0	Vert	AV	0.0	36.5	54.0	-17.5	Mid Ch (2440MHz), DH5, EUT Vertical
4803.967	26.2	10.2	1.0	241.0	3.0	0.0	Horz	AV	0.0	36.4	54.0	-17.6	Low Ch (2402MHz), DH5, EUT Vertical
7441.353	36.6	19.5	1.0	291.0	3.0	0.0	Horz	PK	0.0	56.1	74.0	-17.9	High Ch (2480MHz), DH5, EUT Vertical
7319.833	36.8	19.0	1.1	305.0	3.0	0.0	Horz	PK	0.0	55.8	74.0	-18.2	Mid Ch (2440MHz), DH5, EUT Vertical
7438.793	36.2	19.5	1.0	310.0	3.0	0.0	Vert	PK	0.0	55.7	74.0	-18.3	High Ch (2480MHz), DH5, EUT Vertical
7319.560	36.4	19.0	1.0	347.0	3.0	0.0	Vert	PK	0.0	55.4	74.0	-18.6	Mid Ch (2440MHz), DH5, EUT Vertical
12400.600	36.0	-2.9	1.0	39.0	3.0	0.0	Horz	AV	0.0	33.1	54.0	-20.9	High Ch (2480MHz), DH5, EUT Vertical
12399.510	35.2	-2.9	1.0	33.0	3.0	0.0	Vert	AV	0.0	32.3	54.0	-21.7	High Ch (2480MHz), DH5, EUT Vertical
4881.353	37.1	10.4	1.0	327.0	3.0	0.0	Vert	PK	0.0	47.5	74.0	-26.5	Mid Ch (2440MHz), DH5, EUT Vertical
4960.673	36.6	10.7	1.1	327.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	High Ch (2480MHz), DH5, EUT Vertical
4960.013	36.5	10.7	1.2	19.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	High Ch (2480MHz), DH5, EUT Vertical
4879.700	36.6	10.4	1.0	235.0	3.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	Mid Ch (2440MHz), DH5, EUT Vertical
4804.473	36.6	10.2	1.0	241.0	3.0	0.0	Horz	PK	0.0	46.8	74.0	-27.2	Low Ch (2402MHz), DH5, EUT Vertical
4804.813	36.5	10.2	1.0	196.0	3.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	Low Ch (2402MHz), DH5, EUT Vertical
12400.830	47.9	-2.9	1.0	39.0	3.0	0.0	Horz	PK	0.0	45.0	74.0	-29.0	High Ch (2480MHz), DH5, EUT Vertical
12399.310	47.2	-2.9	1.0	33.0	3.0	0.0	Vert	PK	0.0	44.3	74.0	-29.7	High Ch (2480MHz), DH5, EUT Vertical