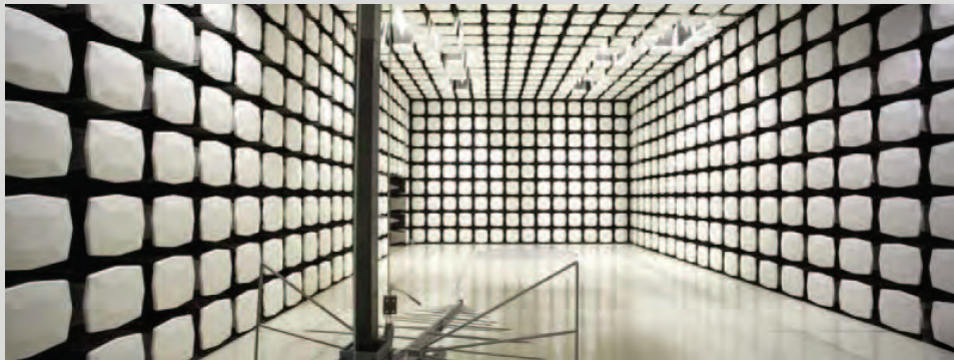




**Trimble Navigation Limited MCS
Nomad**

Report #: TRPO0073



Report Prepared By Northwest EMC Inc.

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

California – Minnesota – Oregon – New York – Washington



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test
Last Date of Test: January 26, 2012
Trimble Navigation Limited MCS
Model: Nomad

Emissions

Test Description	Specification	Test Method	Pass/Fail
Spurious Radiated Emissions (in the restricted bands)	FCC 15.247:2012	ANSI C63.10:2009	Pass
Spurious Radiated Emissions (outside of the restricted bands)	FCC 15.209:2012	ANSI C63.10:2009	Pass
Occupied Bandwidth	FCC 15.247:2012	ANSI C63.10:2009	Pass
Output Power	FCC 15.247:2012	ANSI C63.10:2009	Pass
Band Edge Compliance	FCC 15.247:2012	ANSI C63.10:2009	Pass
Power Spectral Density	FCC 15.247:2012	ANSI C63.10:2009	Pass
AC Powerline Conducted Emissions	FCC 15.207:2012	ANSI C63.10:2009	Pass
Number of Hopping Frequencies	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

Deviations From Test Standards

None

Approved By:

Tim O'Shea, Operations Manager



NVLAP Lab Code: 200676-0

Test Facility

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

Northwest EMC, Inc.
41 Tesla Ave.
Irvine, CA 92618

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 #2834B-1).

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

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



Revision History

Revision Number	Description	Date	Page Number
00	None		

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP

Northwest EMC, Inc. is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)

CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).

VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers*. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-3265, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).

BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017).

GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers*: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175)

VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

SCOPE

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

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



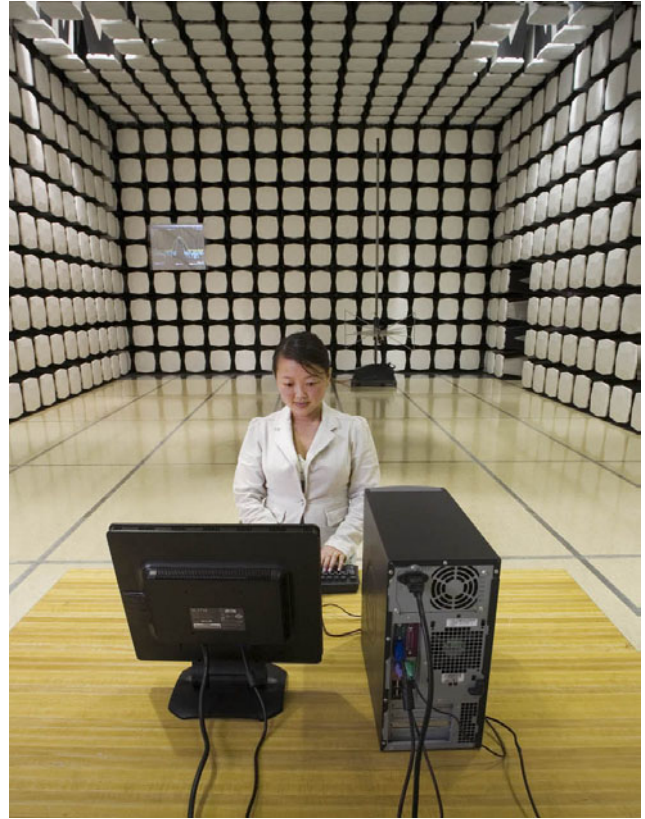
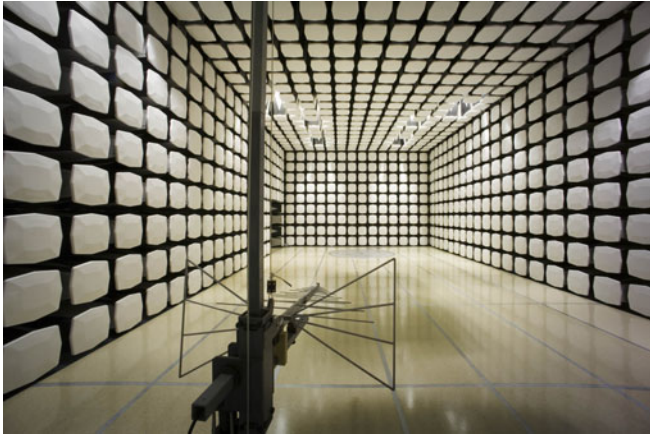
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

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

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



**Client and Equipment Under Test (EUT) Information**

Company Name:	Trimble Navigation Limited MCS
Address:	345 SW Avery Ave
City, State, Zip:	Corvallis, OR 97333
Test Requested By:	Bob Grant
Model:	Nomad
First Date of Test:	January 13, 2012
Last Date of Test:	January 26, 2012
Receipt Date of Samples:	January 13, 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):**

Trimble Nomad outdoor rugged handheld computer with integrated Bluetooth

Testing Objective:

To demonstrate compliance under FCC 15.247

EUT Photo



Configuration 1 TRPO0073

Software/Firmware Running during test	
Description	Version
Bluetooth Spew	3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Handheld Deivce	Trimble Navigation Limited MCS	Nomad	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	Cincon Electronics Co., LTD	TR30RAM050	30050-0036018

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Adapter	No	1.8m	Yes	AC Adapter	Nomad
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Modifications

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/13/2012	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.
2	1/17/2012	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.
3	1/17/2012	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	1/17/2012	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.
5	1/18/2012	Power Spectral Density	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	1/18/2012	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.
7	1/18/2012	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.
8	1/26/2012	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	1/26/2012	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.
10	1/26/2012	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.
11	1/26/2012	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
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/13/2011	12
Spectrum Analyzer	Agilent	E4446A	AAY	1/9/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The 20 dB occupied bandwidth was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier full maximized for its highest radiated power.



OCCUPIED BANDWIDTH

EUT: Nomad		Work Order: TRPO0073	
Serial Number: None		Date: 01/17/12	
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C	
Attendees: None		Humidity: 35%	
Project: None		Barometric Pres.: 1012.4	
Tested by: Jaemi Suh		Power: 110VAC/60Hz	
		Job Site: OC10	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2012		ANSI C63.10:2009	

COMMENTS

X-Axis

DEVIATIONS FROM TEST STANDARD

None

Configuration #	1	Signature
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	Value	Limit	Result
GFSK, DH5			
Low Channel, 2402MHz	875.011 kHz	< 1.5 MHz	Pass
Mid Channel, 2441 MHz	957.240 kHz	< 1.5 MHz	Pass
High Channel, 2480 MHz	867.643 kHz	< 1.5 MHz	Pass
pi/4-DQPSK, 2DH5			
Low Channel, 2402MHz	1.336 MHz	< 1.5 MHz	Pass
Mid Channel, 2441 MHz	1.339 MHz	< 1.5 MHz	Pass
High Channel, 2480 MHz	1.337 MHz	< 1.5 MHz	Pass
8DPSK, 3DH5			
Low Channel, 2402MHz	1.335 MHz	< 1.5 MHz	Pass
Mid Channel, 2441 MHz	1.337 MHz	< 1.5 MHz	Pass
High Channel, 2480 MHz	1.328 MHz	< 1.5 MHz	Pass

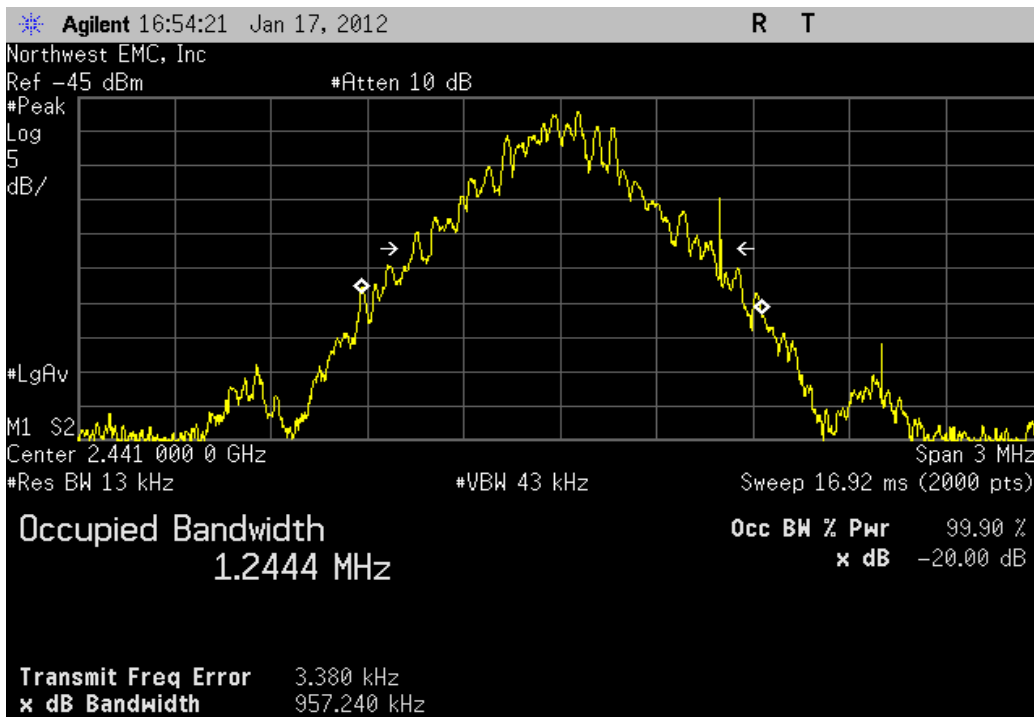
GFSK, DH5, Low Channel, 2402MHz

	Value	Limit	Result
	875.011 kHz	< 1.5 MHz	Pass



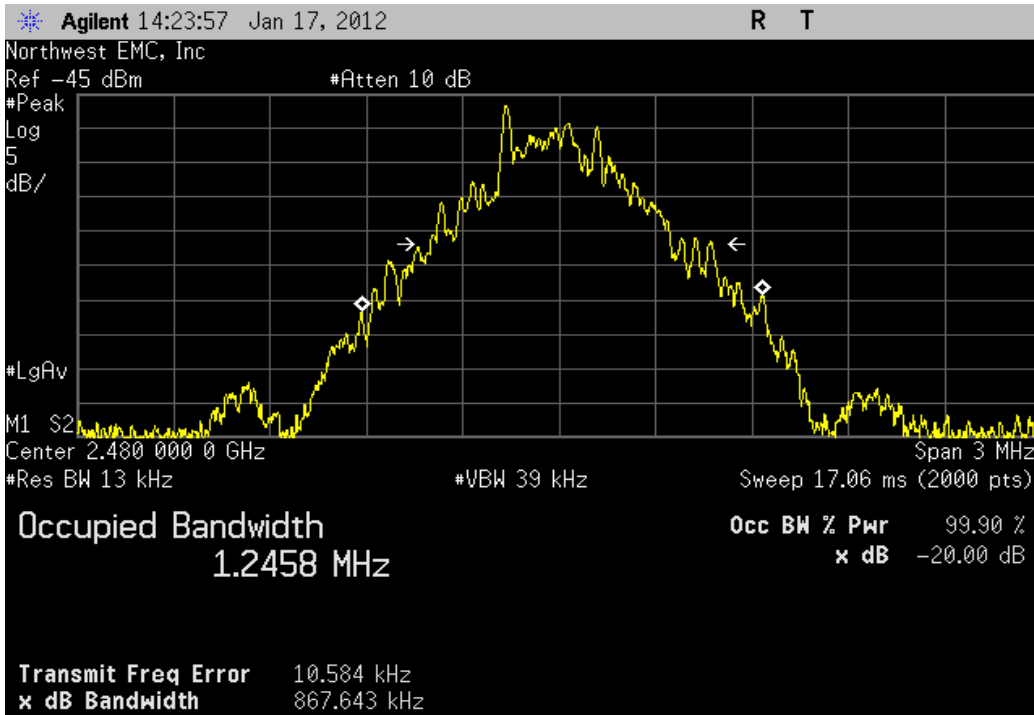
GFSK, DH5, Mid Channel, 2441 MHz

	Value	Limit	Result
	957.240 kHz	< 1.5 MHz	Pass



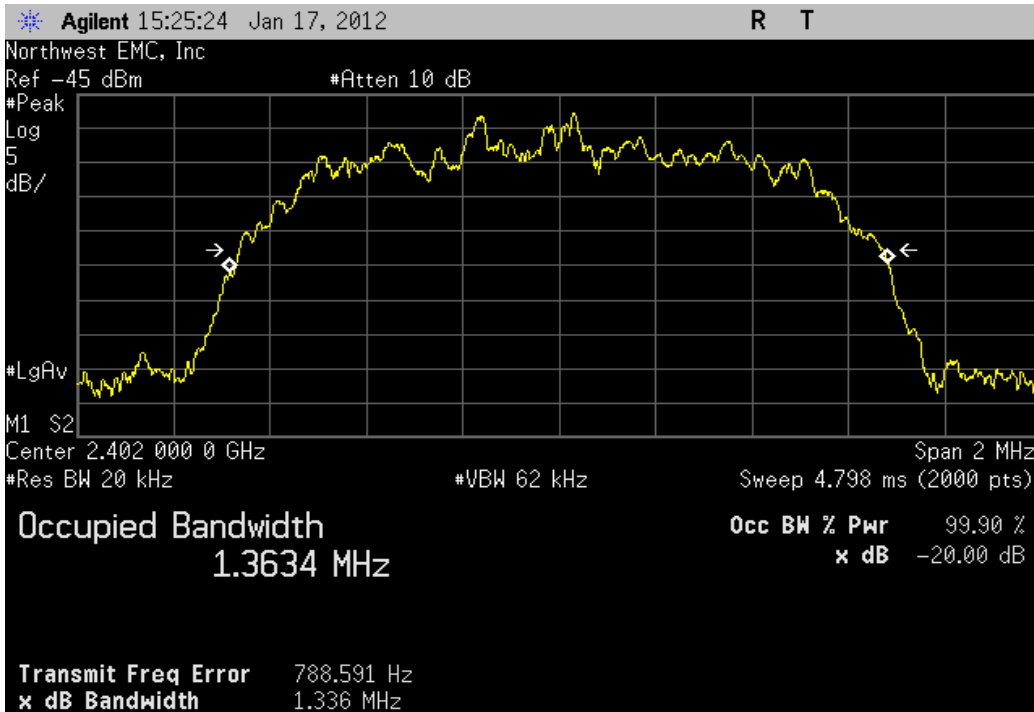
GFSK, DH5, High Channel, 2480 MHz

	Value	Limit	Result
	867.643 kHz	< 1.5 MHz	Pass

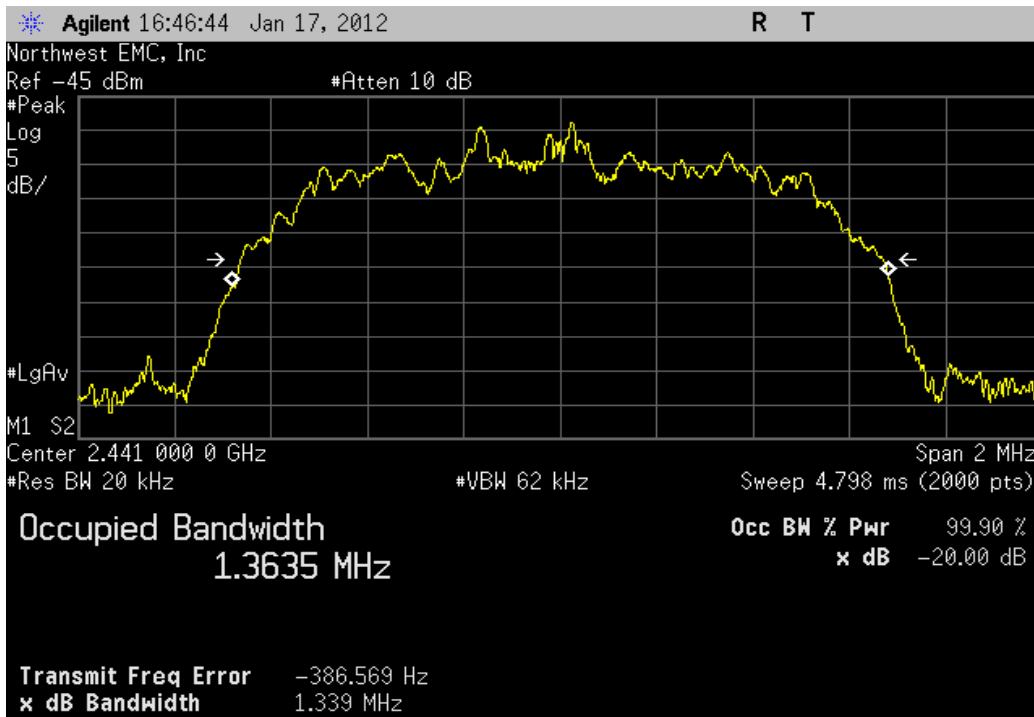


pi/4-DQPSK, 2DH5, Low Channel, 2402MHz

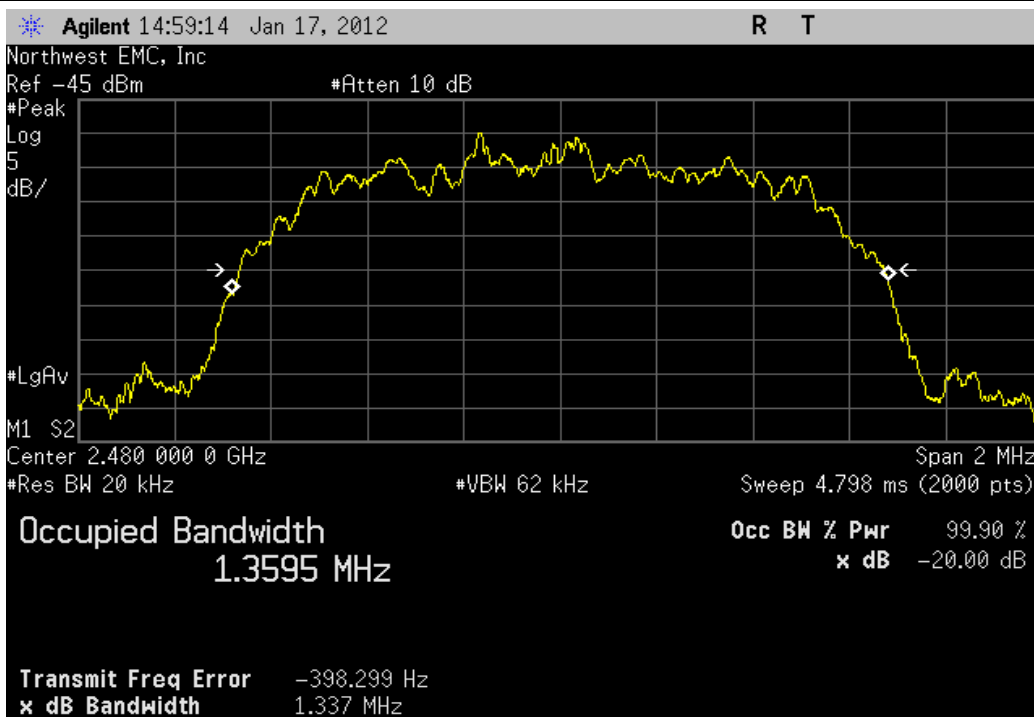
	Value	Limit	Result
	1.336 MHz	< 1.5 MHz	Pass



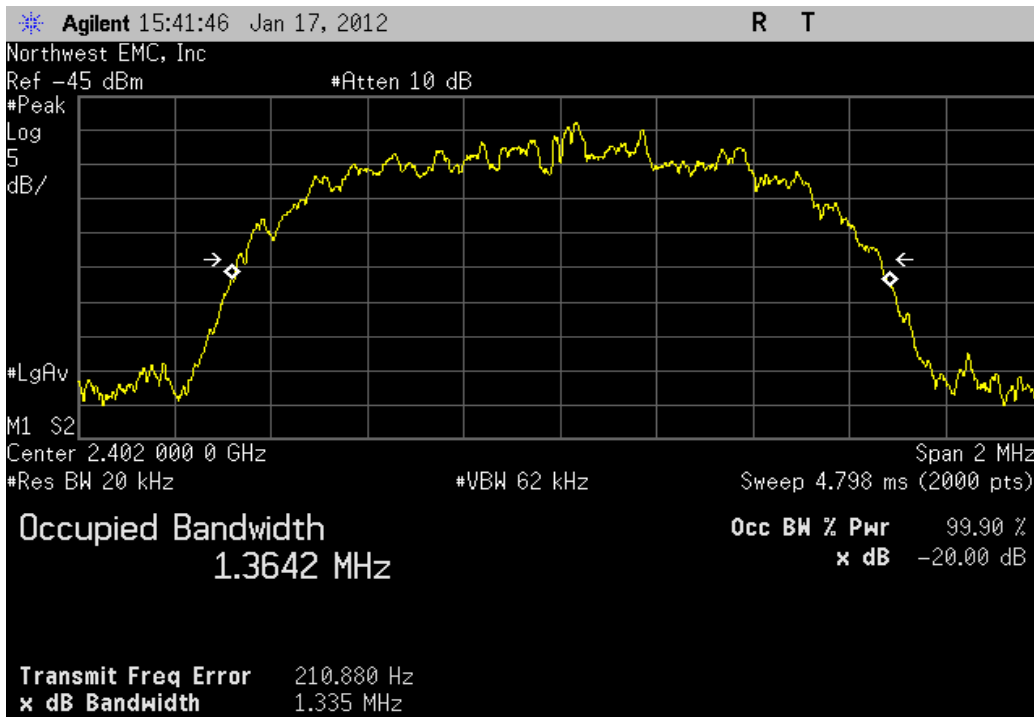
pi/4-DQPSK, 2DH5, Mid Channel, 2441 MHz			
	Value	Limit	Result
	1.339 MHz	< 1.5 MHz	Pass



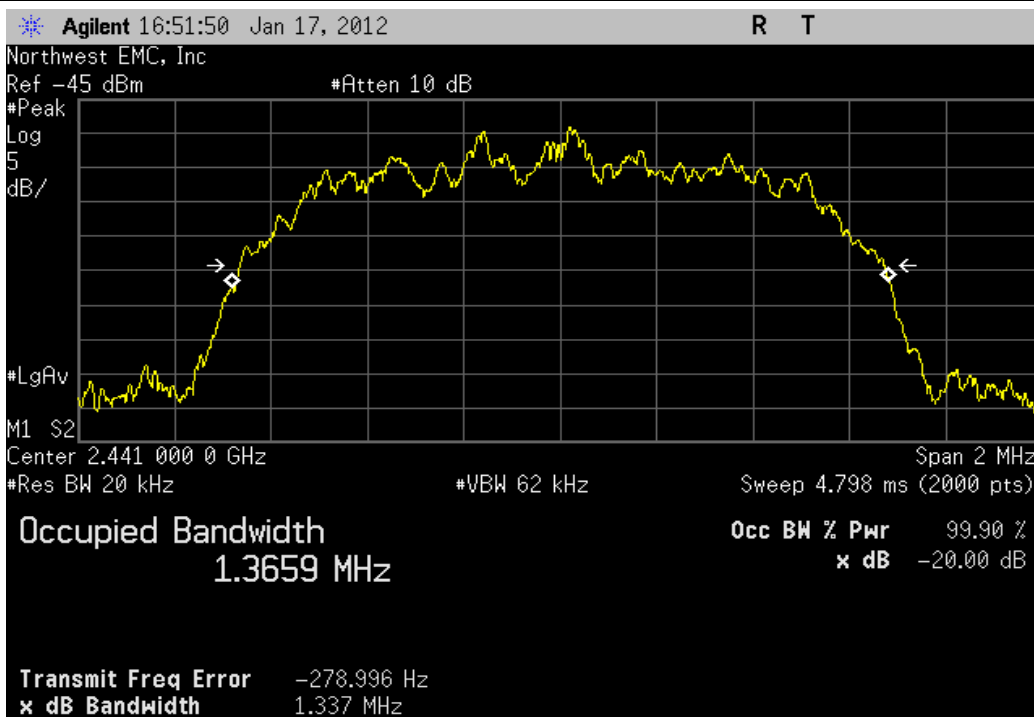
pi/4-DQPSK, 2DH5, High Channel, 2480 MHz			
	Value	Limit	Result
	1.337 MHz	< 1.5 MHz	Pass



8DPSK, 3DH5, Low Channel, 2402MHz			
	Value	Limit	Result
	1.335 MHz	< 1.5 MHz	Pass

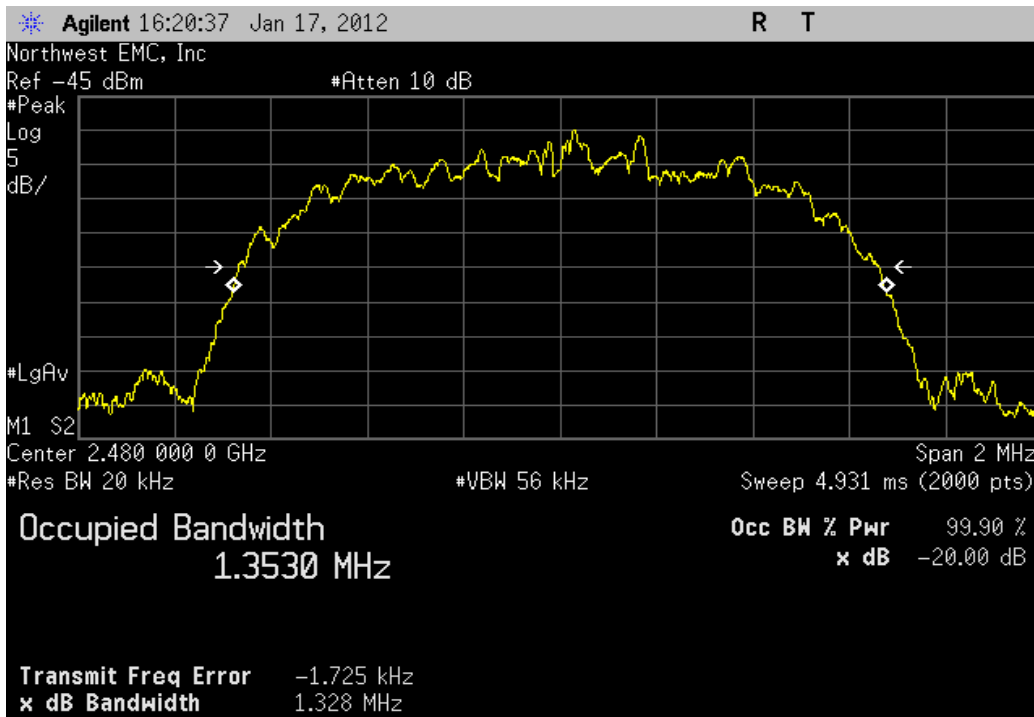


8DPSK, 3DH5, Mid Channel, 2441 MHz			
	Value	Limit	Result
	1.337 MHz	< 1.5 MHz	Pass



8DPSK, 3DH5, High Channel, 2480 MHz

	Value	Limit	Result
	1.328 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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Operating Bluetooth - Low, Mid, and High Channel

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

TRPO0073 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1000 MHz	Stop Frequency	3000 MHz
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CLOCKS AND OSCILLATORS

2402MHz, 2441MHz, 2480MHz

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
Signal Generator	Agilent	E8257D	TGU	1/26/2011	12 mo
Antenna, Dipole	EMCO	3121C -DB1, -DB2, -DB3, _DB4	ADF	NCR	0 mo
Spectrum Analyzer	Agilent	E4446A	AAV	1/9/2012	12 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	6/24/2011	12 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/13/2011	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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth 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 peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The radiated power was measured using a spectrum analyzer and horn antenna in a semi-anechoic chamber. The resolution bandwidth was set to 3 MHz and the video bandwidth was set to 8 MHz. A peak detector was used. The EUT was transmitting at its maximum data rate. The level of fundamental emission was maximized by rotating the turntable and moving the measurement antenna from 1 – 4 meters in height.


The field strength measurement was converted to effective radiated power (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 5.

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



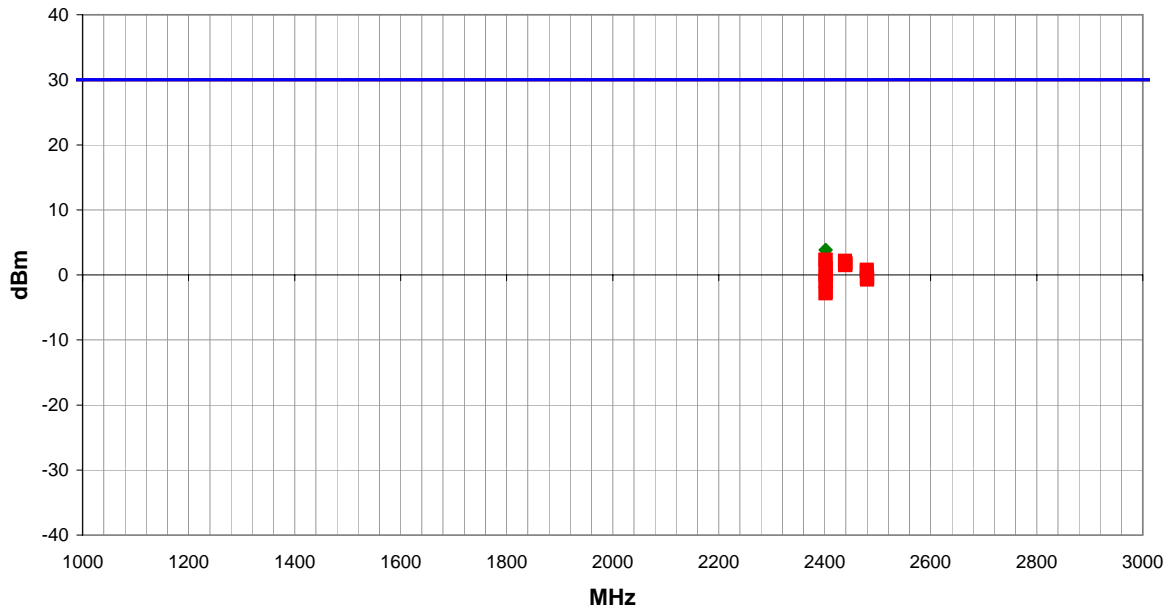
OUTPUT POWER

PSA-ESCI 2012.01.11
PSA-ESCI Version 2011.12.21

Work Order:	TRPO0073	Date:	01/13/12	
Project:	None	Temperature:	20.95 °C	
Job Site:	OC10	Humidity:	14.05% RH	
Serial Number:	None	Barometric Pres.:	1011 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low, Mid, and High Channel			
Deviations:	None			
Comments:	None			

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

Run #	1	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)
2401.831	1.2	304.0	Horz	PK	2.41E-03	3.8	30.0	-26.2
2401.998	1.2	308.0	Horz	PK	1.71E-03	2.3	30.0	-27.7
2401.898	1.2	292.0	Horz	PK	1.71E-03	2.3	30.0	-27.7
2438.840	1.0	300.0	Horz	PK	1.66E-03	2.2	30.0	-27.8
2439.033	1.1	261.0	Vert	PK	1.51E-03	1.8	30.0	-28.2
2438.960	1.0	315.0	Horz	PK	1.51E-03	1.8	30.0	-28.2
2438.873	1.1	254.0	Vert	PK	1.51E-03	1.8	30.0	-28.2
2438.867	1.1	237.0	Vert	PK	1.44E-03	1.6	30.0	-28.4
2439.147	1.0	315.0	Horz	PK	1.41E-03	1.5	30.0	-28.5
2402.144	1.4	264.0	Vert	PK	1.27E-03	1.0	30.0	-29.0
2479.853	1.0	301.0	Horz	PK	1.19E-03	0.8	30.0	-29.2
2479.840	1.0	297.0	Horz	PK	1.11E-03	0.5	30.0	-29.5
2401.938	1.2	336.0	Vert	PK	1.03E-03	0.1	30.0	-29.9
2402.111	1.4	253.0	Vert	PK	9.60E-04	-0.2	30.0	-30.2
2479.980	1.0	239.0	Vert	PK	9.49E-04	-0.2	30.0	-30.2
2480.127	1.0	239.0	Vert	PK	8.86E-04	-0.5	30.0	-30.5
2479.880	1.0	302.0	Horz	PK	8.86E-04	-0.5	30.0	-30.5

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
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/13/2011	12
Spectrum Analyzer	Agilent	E4446A	AAY	1/9/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The requirements of FCC 15.247(d) for emissions at least 20dB below the carrier in any 100kHz bandwidth outside the allowable band was measured with the EUT set to low and high transmit frequencies. The measurement was made in a radiated configuration in a semi-anechoic chamber with the fundamental of the carrier full maximized for its highest radiated power. The channels closest to the band edges were selected. The spectrum was scanned across each band edge from 10 MHz below the band edge to 10 MHz above the band edge.

The EUT was transmitting at its maximum data rate using all three types of modulations available in Bluetooth EDR.



BAND EDGE COMPLIANCE

EUT: Nomad		Work Order: TRPO0073	
Serial Number: None		Date: 01/18/12	
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C	
Attendees: None		Humidity: 35%	
Project: None		Barometric Pres.: 1012.4	
Tested by: Jaemi Suh		Power: 110VAC/60Hz	
		Job Site: OC10	

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

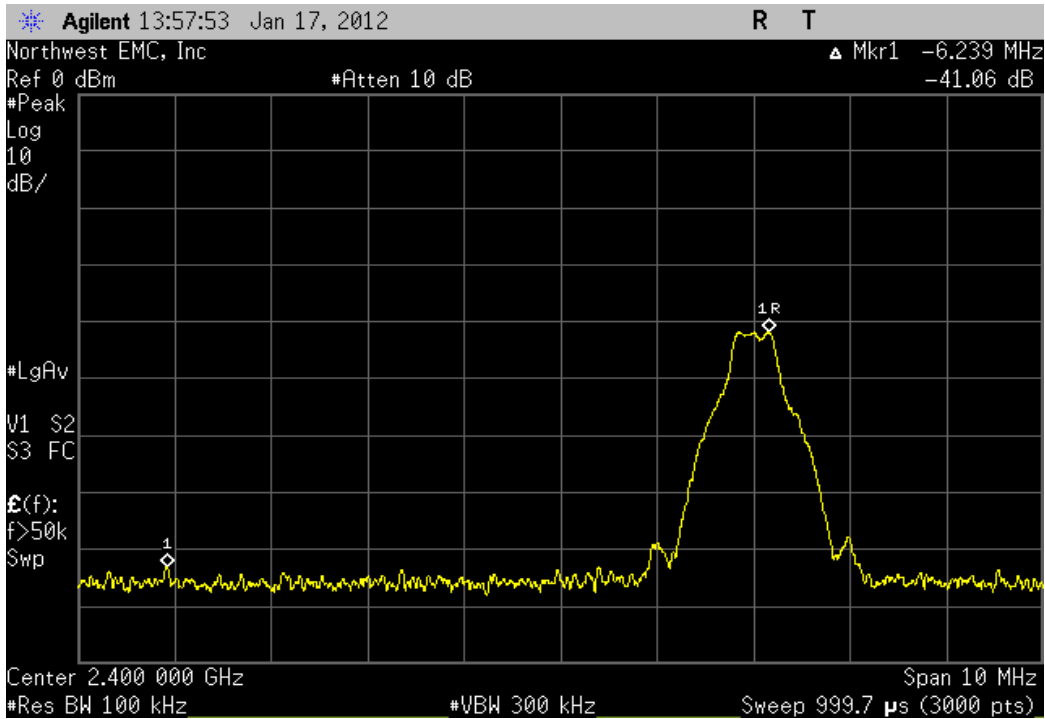
COMMENTS
Bluetooth Mode

DEVIATIONS FROM TEST STANDARD

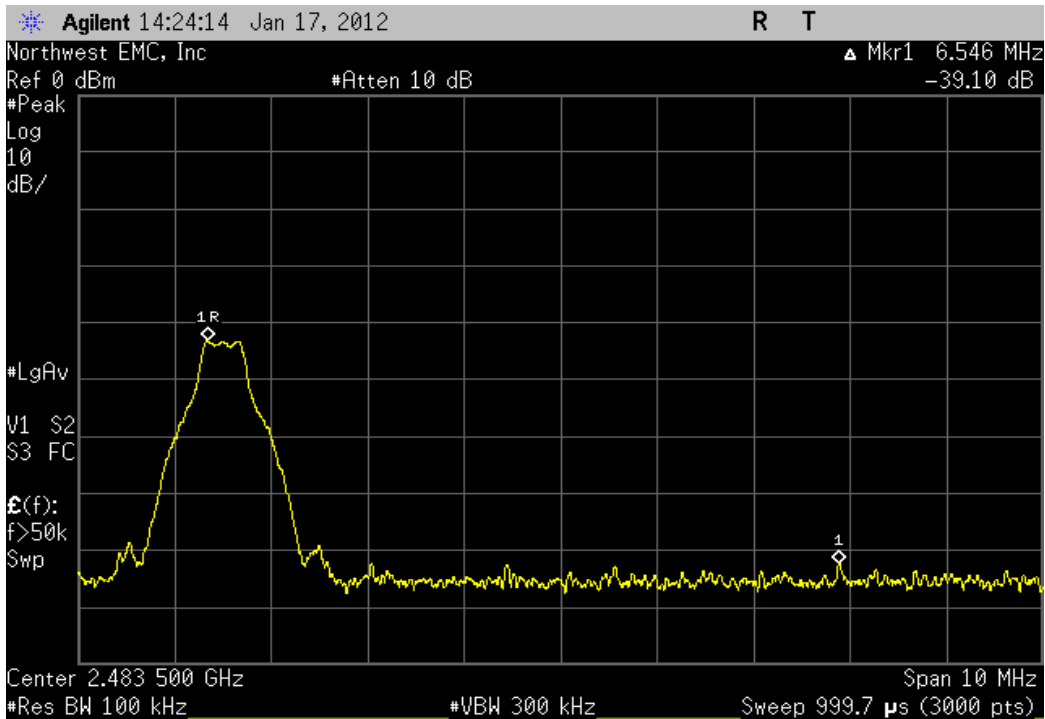
Configuration #	1	<i>Signature</i>
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	Value	Limit	Result
Single Channel			
GFSK, DH5			
Low Band Edge	-41.06 dBc	≤ -20 dBc	Pass
High Band Edge	-39.1 dBc	≤ -20 dBc	Pass
pi/4-DQPSK, 2DH5			
Low Band Edge	-39.75 dBc	≤ -20 dBc	Pass
High Band Edge	-37.57 dBc	≤ -20 dBc	Pass
8-DPSK, 3DH5			
Low Band Edge	-38.62 dBc	≤ -20 dBc	Pass
High Band Edge	-36.51 dBc	≤ -20 dBc	Pass

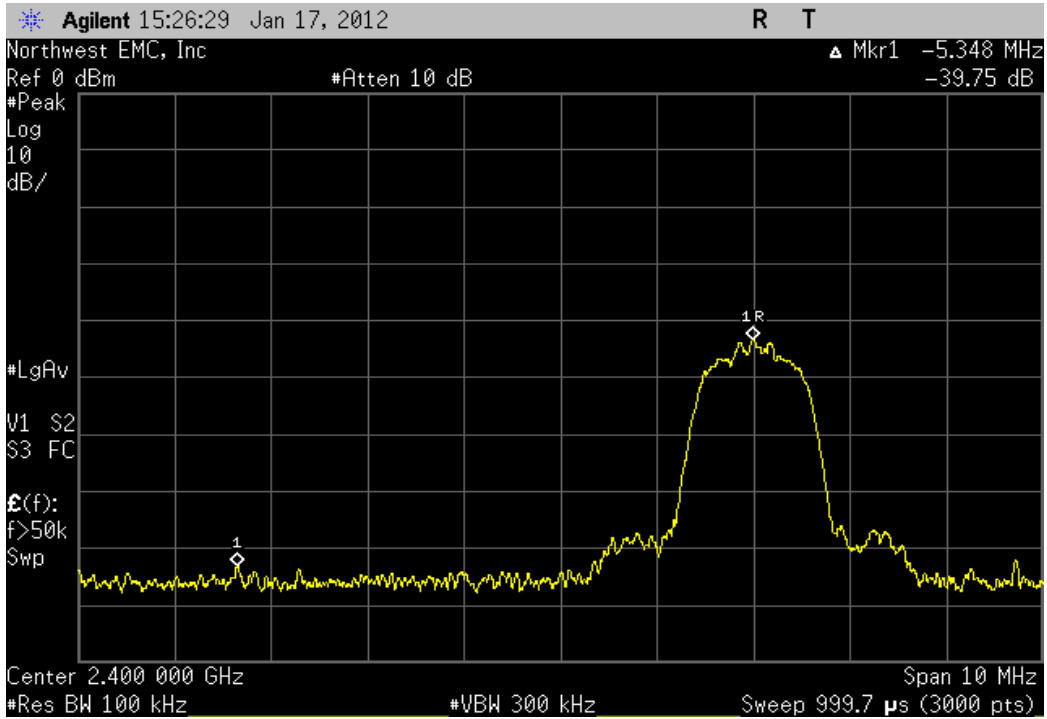
Single Channel, GFSK, DH5, Low Band Edge			
	Value	Limit	Result
	-41.06 dBc	≤ -20 dBc	Pass



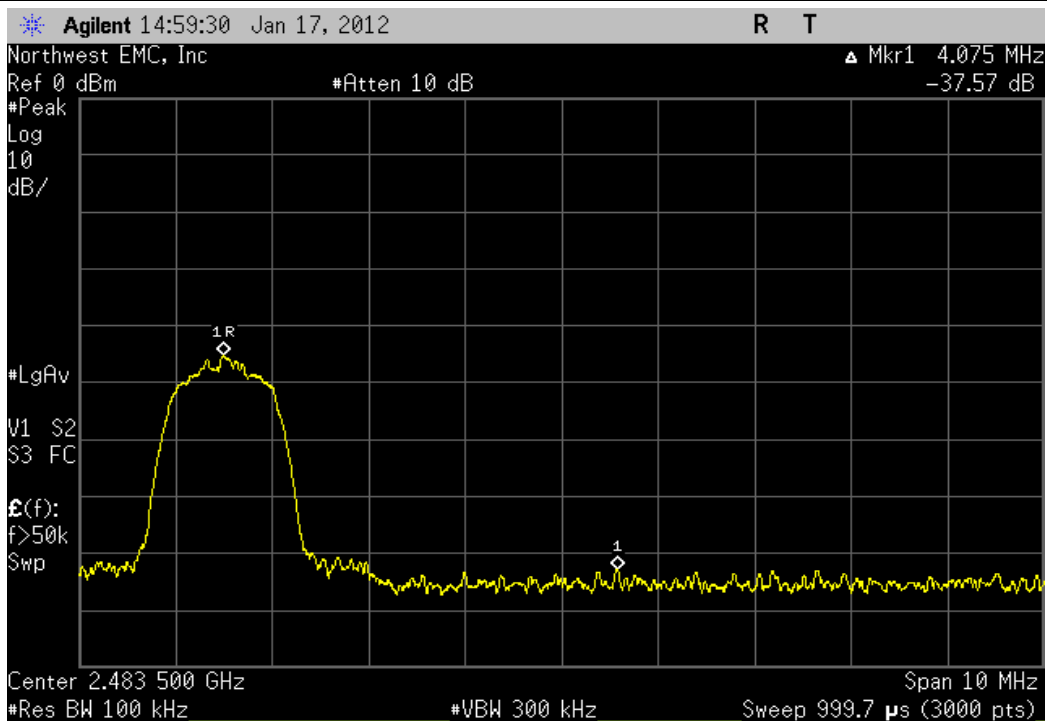
Single Channel, GFSK, DH5, High Band Edge			
	Value	Limit	Result
	-39.1 dBc	≤ -20 dBc	Pass



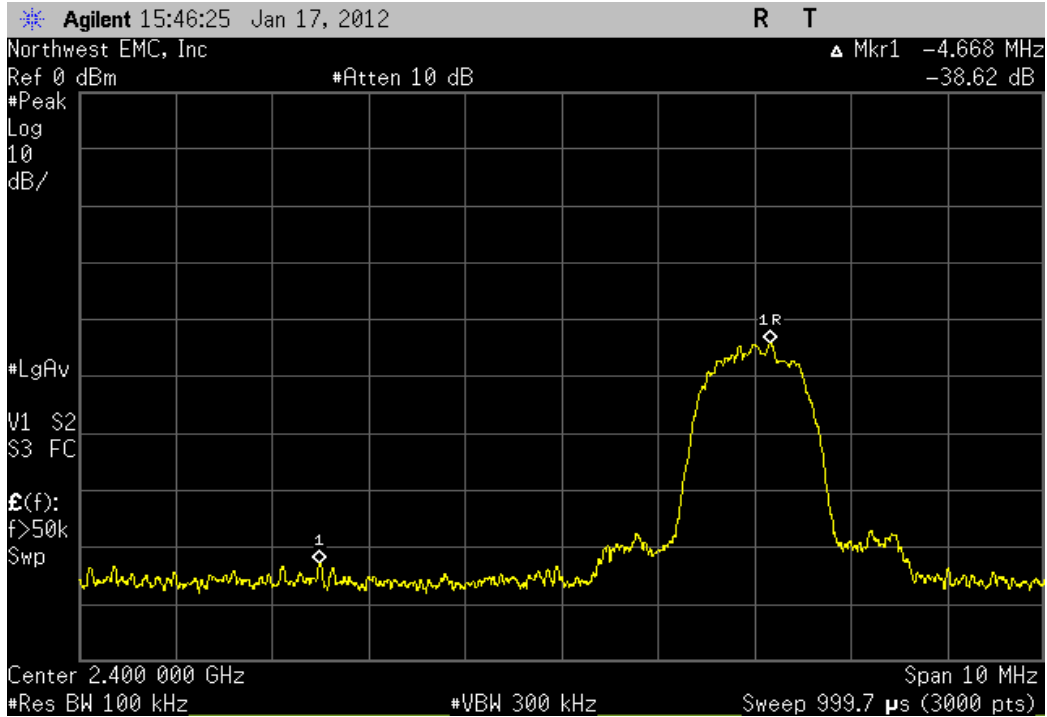
Single Channel, pi/4-DQPSK, 2DH5, Low Band Edge			
	Value	Limit	Result
	-39.75 dBc	≤ -20 dBc	Pass



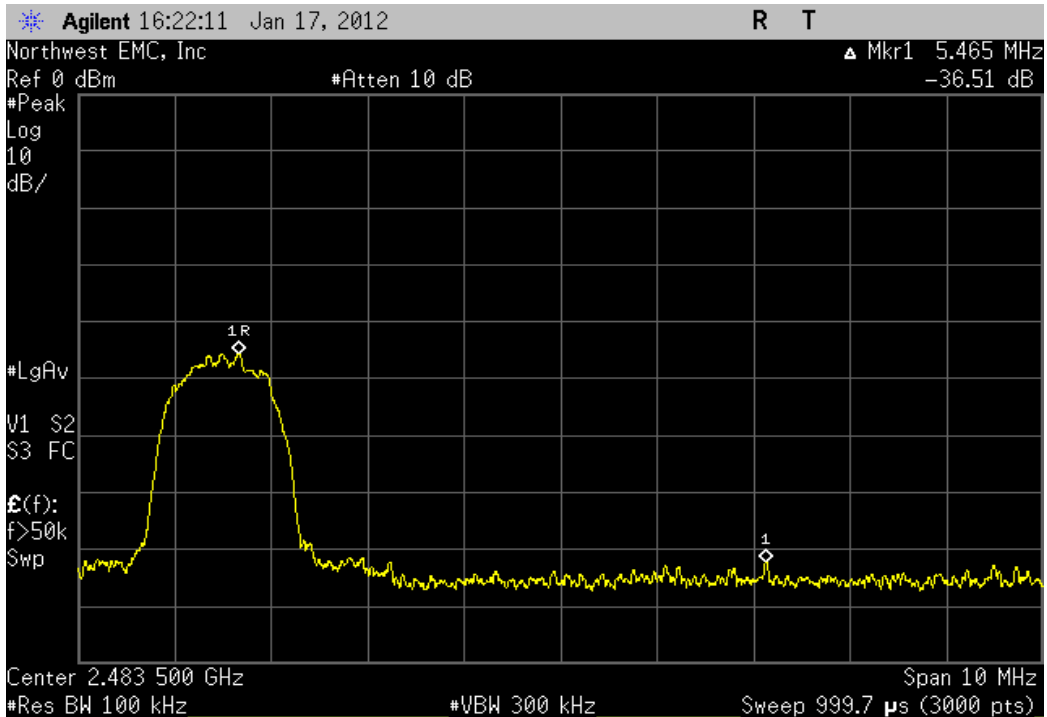
Single Channel, pi/4-DQPSK, 2DH5, High Band Edge			
	Value	Limit	Result
	-37.57 dBc	≤ -20 dBc	Pass



Single Channel, 8-DPSK, 3DH5, Low Band Edge			
	Value	Limit	Result
	-38.62 dBc	≤ -20 dBc	Pass



Single Channel, 8-DPSK, 3DH5, High Band Edge			
	Value	Limit	Result
	-36.51 dBc	≤ -20 dBc	Pass

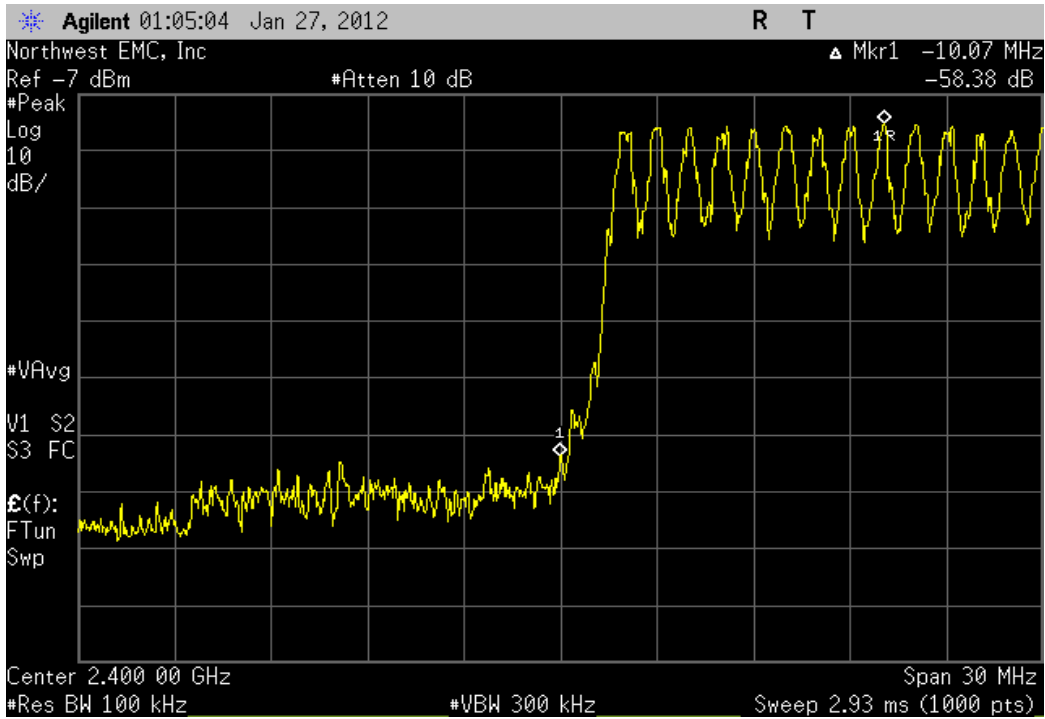




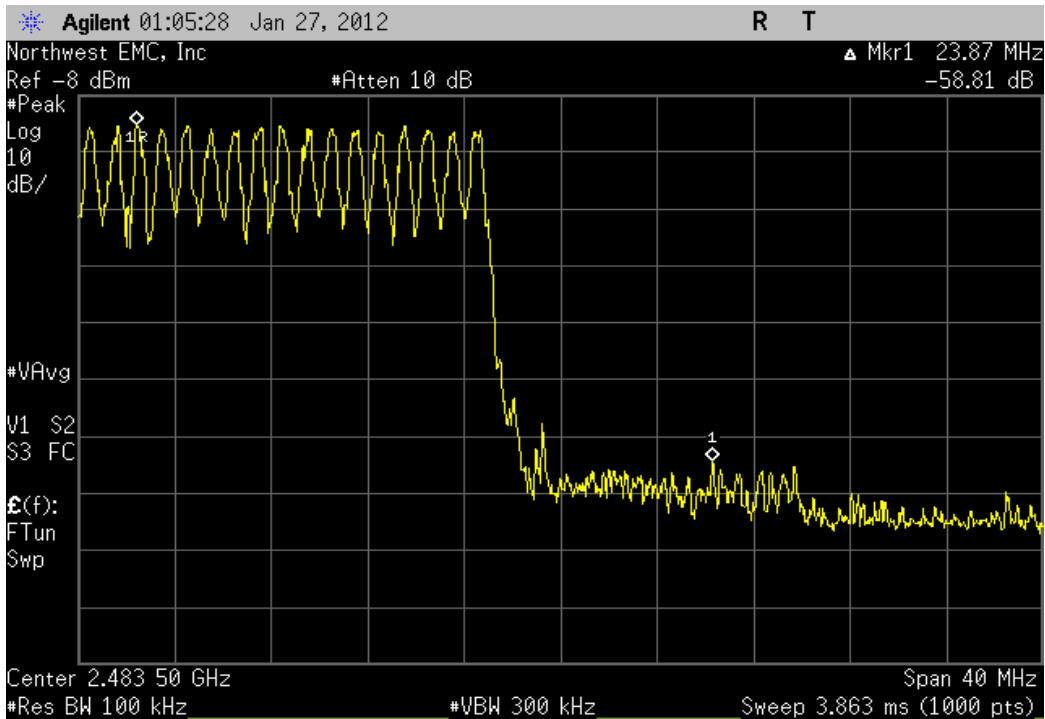
Band Edge Compliance

EUT: Nomad		Work Order: TRPO0073	
Serial Number: None		Date: 01/26/12	
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C	
Attendees: None		Humidity: 35%	
Project: None		Barometric Pres.: 1012.4	
Tested by: Jaemi Suh		Power: 110VAC/60Hz	
		Job Site: OC11	
TEST SPECIFICATIONS			
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Bluetooth Hopping Mode			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	<i>Signature</i>	
Channel			
Low Channel		Value	Limit
High Channel		-58.38 dBc	≤ -20 dBc
		-58.81 dBc	≤ -20 dBc
			Result
			Pass
			Pass

Low		
	Value	Limit
	-58.38 dBc	≤ -20 dBc
		Result
		Pass



High		
	Value	Limit
	-58.81 dBc	≤ -20 dBc
		Result
		Pass



POWER SPECTRAL DENSITY

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/13/2011	12
Spectrum Analyzer	Agilent	E4446A	AAY	1/9/2012	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The peak power spectral density was measured with the EUT set to low, medium, and high transmit frequencies. The radiated power spectral density was measured using a spectrum analyzer and horn antenna in a semi-anechoic chamber. The EUT was transmitting at its maximum data rate for each modulation type available. The level of fundamental emission was maximized by rotating the turntable and moving the measurement antenna from 1 – 4 meters in height. Per the procedure outlined in ANSI C63.10:2009, the spectrum analyzer was used as follows:

The emission peak(s) were located and zoom in on within the passband. The resolution bandwidth was set to 3 kHz, the video bandwidth was set to greater than or equal to the resolution bandwidth. The sweep speed was set equal to the span divided by 3 kHz (sweep = (SPAN/3 kHz)). For example, given a span of 1.5 MHz, the sweep should be $1.5 \times 10^6 \div 3 \times 10^3 = 500$ seconds. The following FCC procedure was used for modifying the power spectral density measurements:

"If the spectrum line spacing cannot be resolved on the available spectrum analyzer, the noise density function on most modern conventional spectrum analyzers will directly measure the noise power density normalized to a 1 Hz noise power bandwidth. Add 35 dB for correction to 3 kHz."

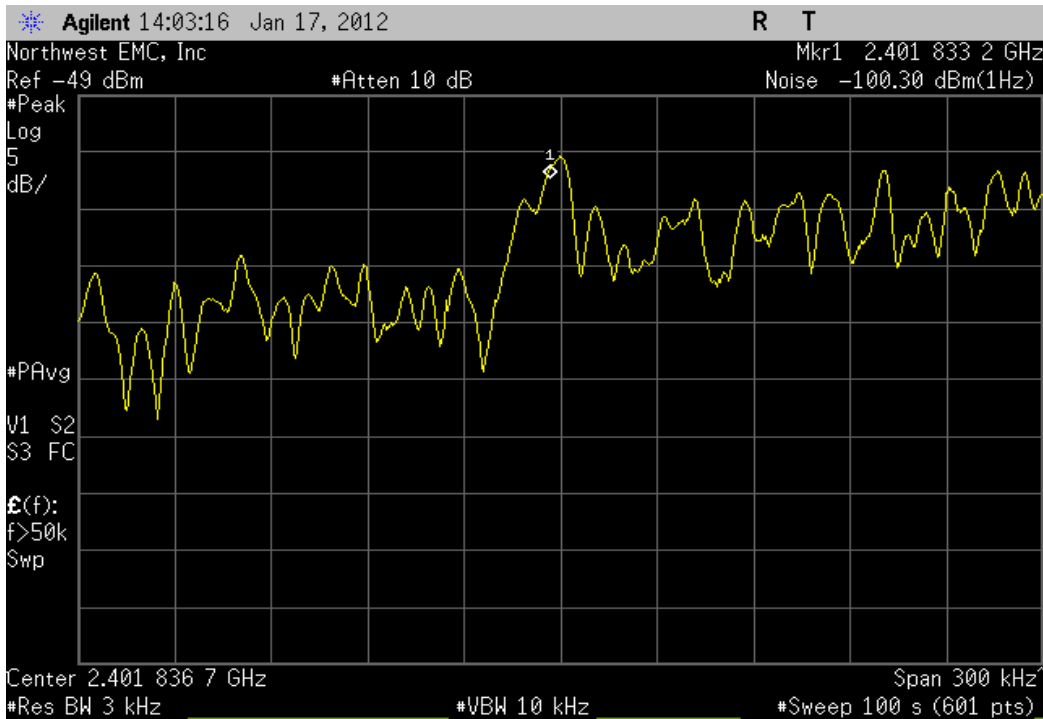
The field strength measurement of power spectral density was converted to effective radiated power spectral density (dBm/3kHz) (EIRP) using the Friis transmission equation. A simplified version is found in ANSI C63.10:2009, Equation 6.



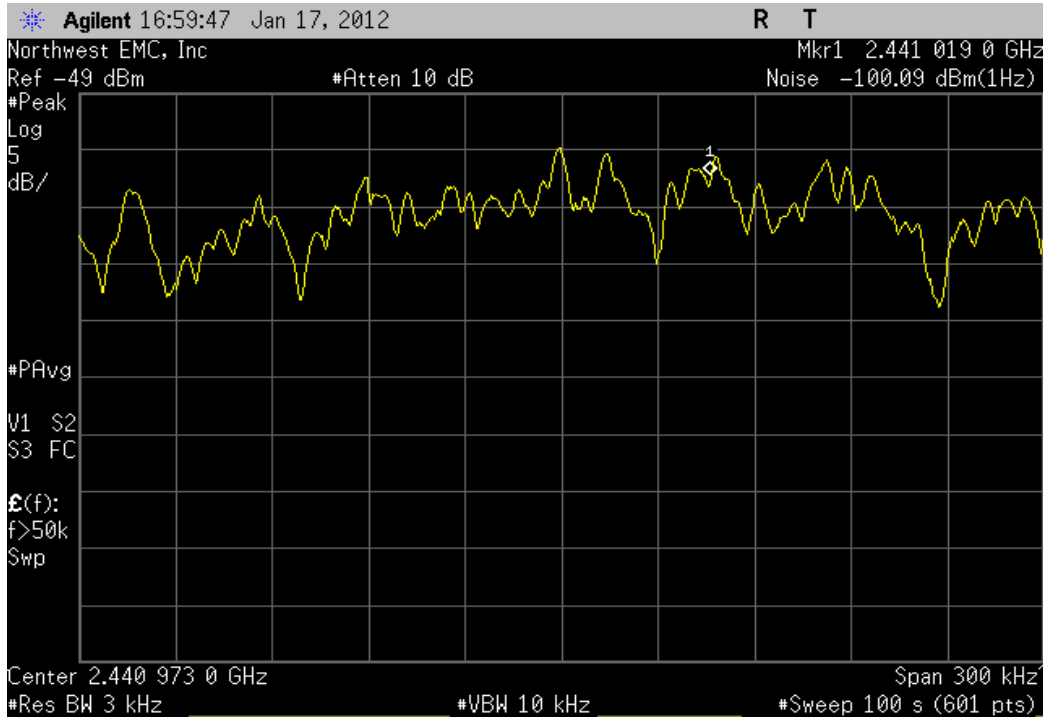
POWER SPECTRAL DENSITY

EUT: Nomad		Work Order: TRPO0073	
Serial Number: None		Date: 01/18/12	
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C	
Attendees: None		Humidity: 35%	
Project: None		Barometric Pres.: 1012.4	
Tested by: Jaemi Suh		Power: 110VAC/60Hz	
		Job Site: OC10	
TEST SPECIFICATIONS			
FCC 15.247:2012		ANSI C63.10:2009	
TEST METHOD			
COMMENTS			
X-Axis			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	Signature	
Channel		Value (dBm / 3 kHz)	Limit (dBm / 3 kHz)
DH5, GFSK			Result
Low Channel, 2402 MHz		-19.63	8
Mid Channel, 2441 MHz		-19.42	8
High Channel, 2480 MHz		-20.97	8
2-DH5, Pi/4-DQPSK			
Low Channel, 2402 MHz		-23.29	8
Mid Channel, 2441 MHz		-23.75	8
High Channel, 2480 MHz		-25.12	8
3-DH5, 8-DPSK			
Low Channel, 2402 MHz		-23.82	8
Mid Channel, 2441 MHz		-23.75	8
High Channel, 2480 MHz		-25.25	8

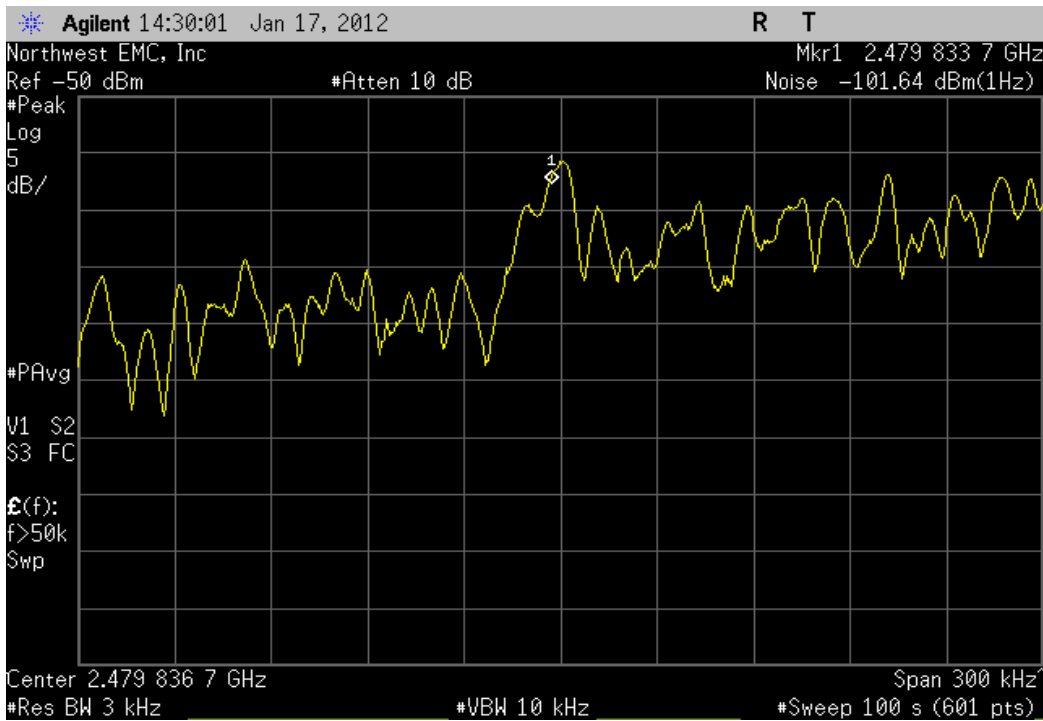
DH5, GFSK, Low Channel, 2402 MHz						
Meter Reading (dBm/Hz)	Meter Reading (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-100.3	-65.3	33.9	-31.4	-19.63	8	Pass



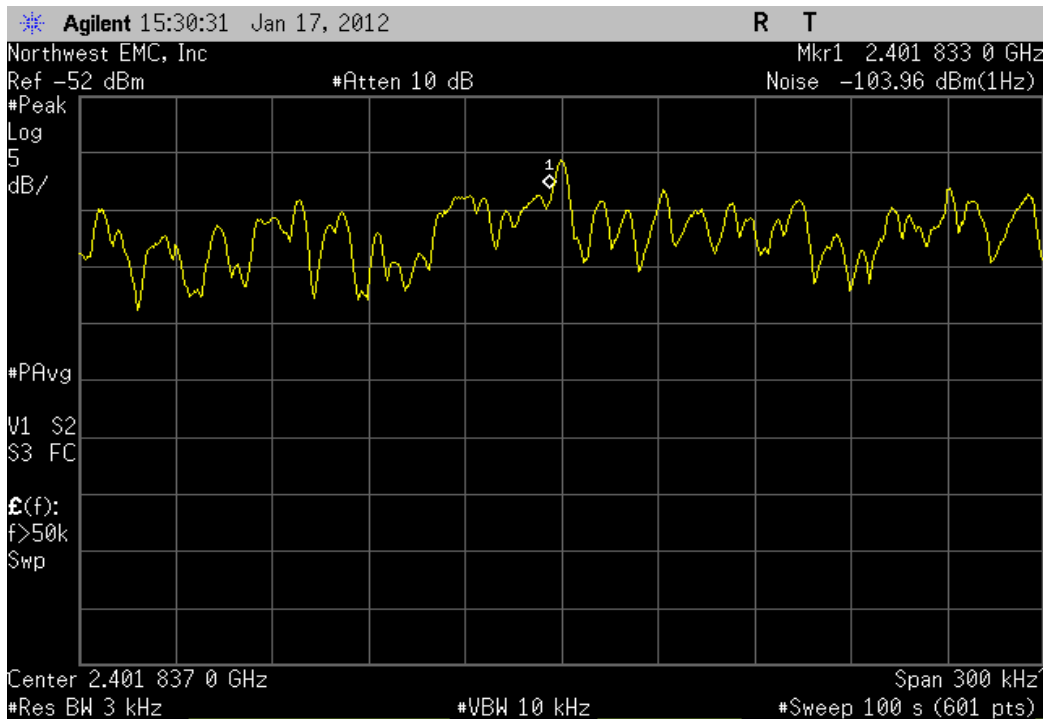
DH5, GFSK, Mid Channel, 2441 MHz						
Meter Reading (dBm/Hz)	Meter Reading (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-100.09	-65.09	33.9	-31.19	-19.42	8	Pass



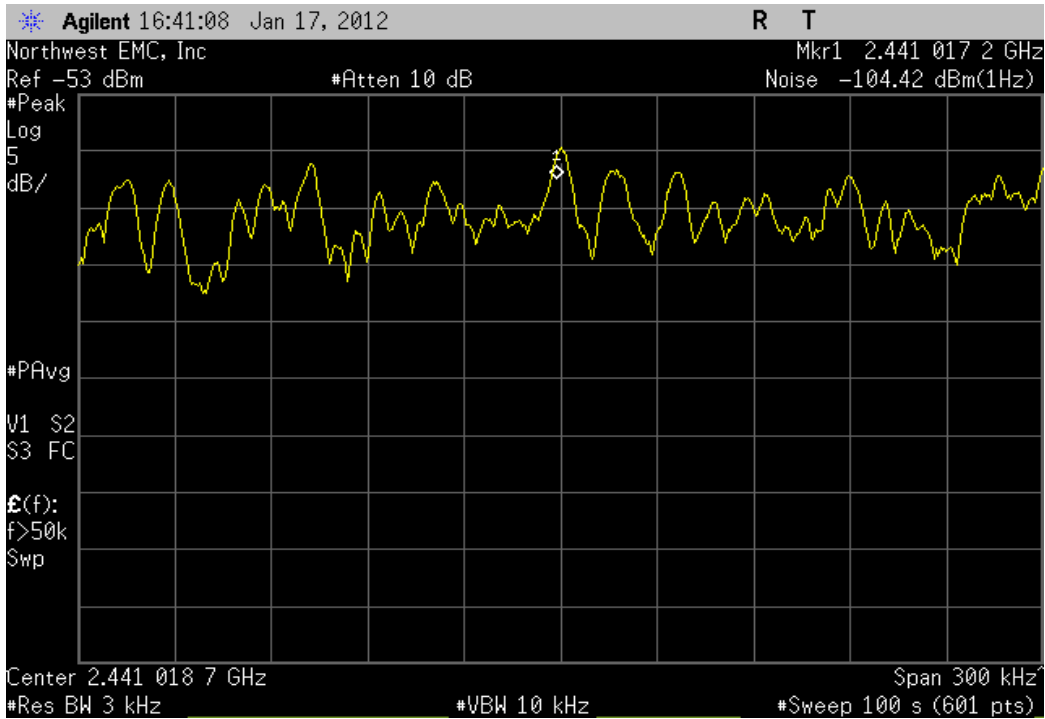
DH5, GFSK, High Channel, 2480 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-101.64	-66.64	33.9	-32.74	-20.97	8	Pass



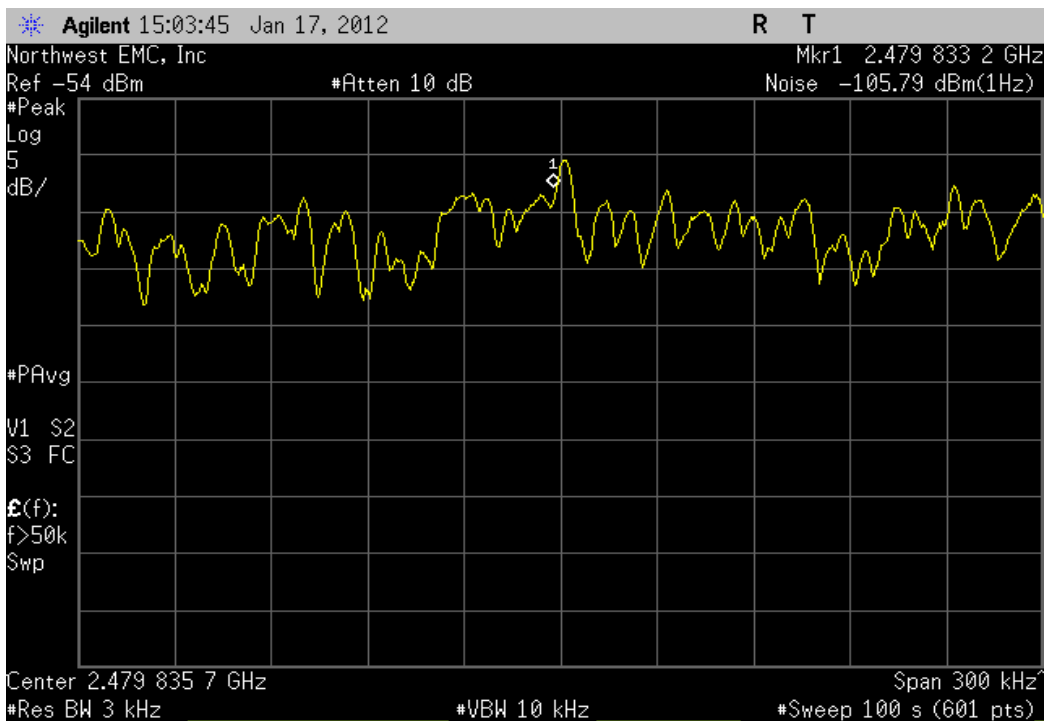
2-DH5, Pi/4-DQPSK, Low Channel, 2402 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-103.96	-68.96	33.9	-35.06	-23.29	8	Pass



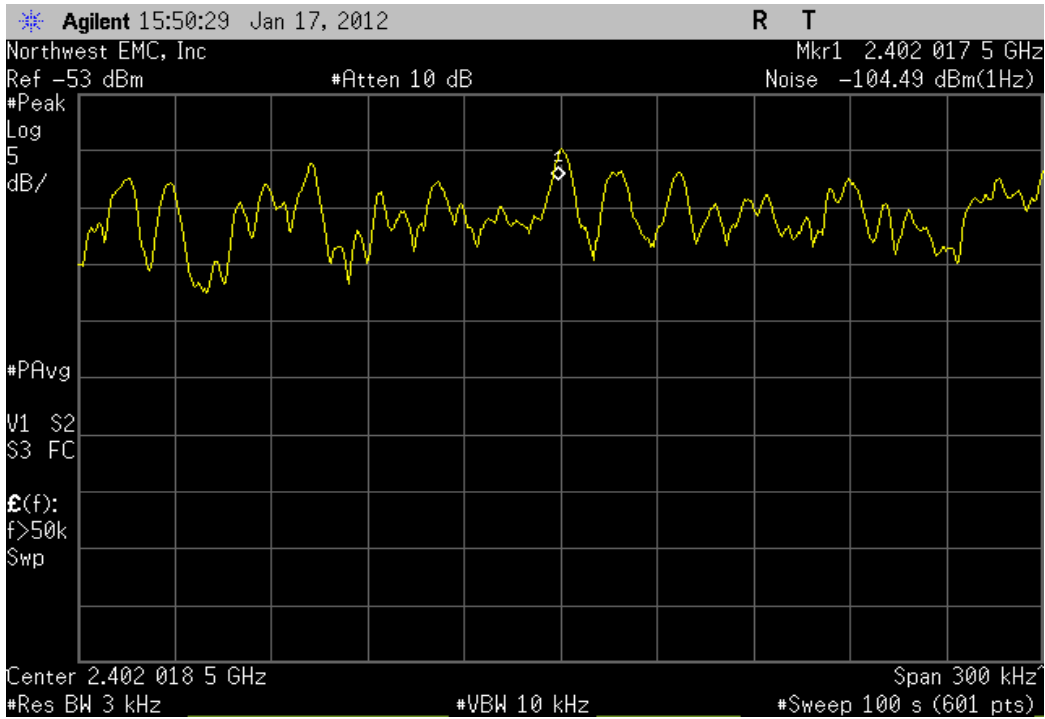
2-DH5, Pi/4-DQPSK, Mid Channel, 2441 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-104.42	-69.42	33.9	-35.52	-23.75	8	Pass



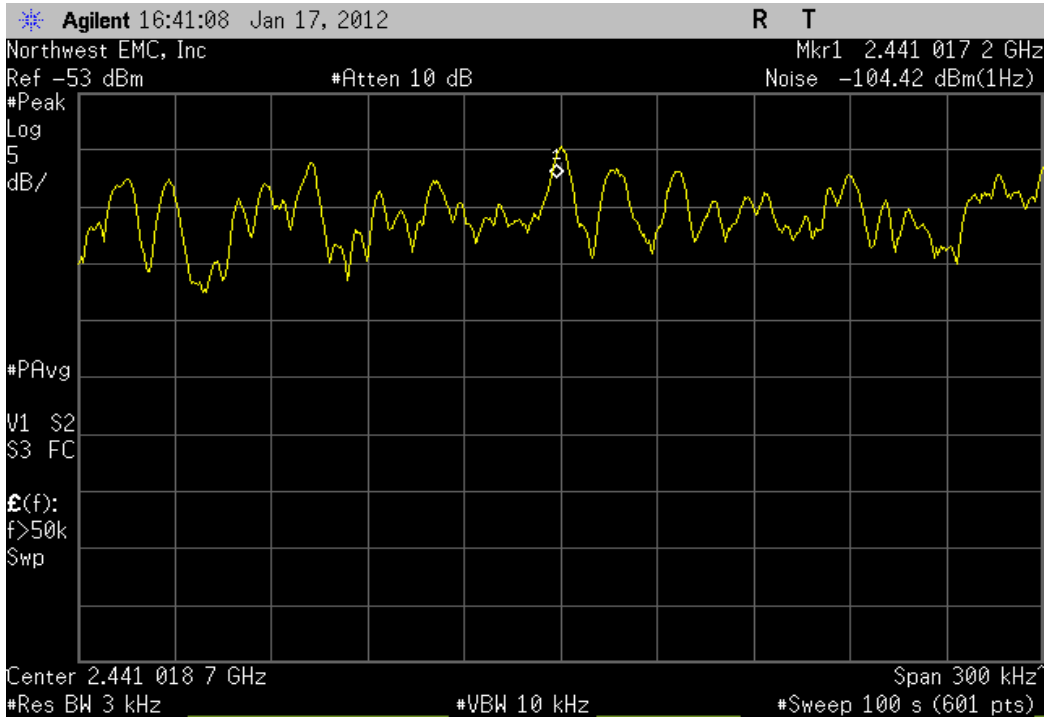
2-DH5, Pi/4-DQPSK, High Channel, 2480 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-105.79	-70.79	33.9	-36.89	-25.12	8	Pass



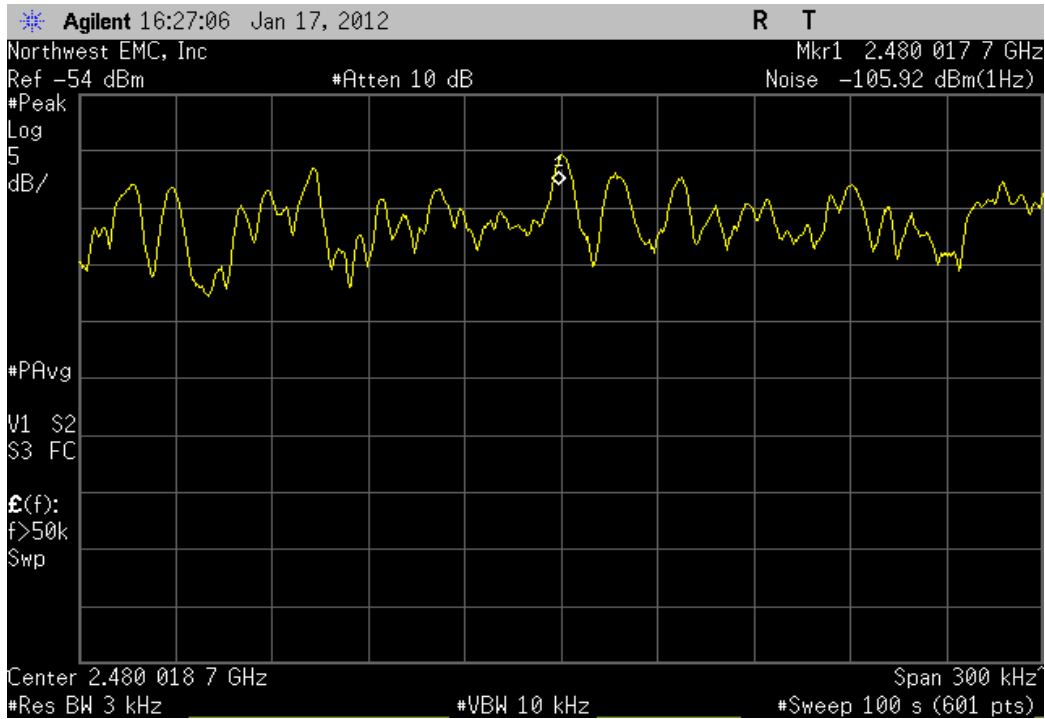
3-DH5, 8-DPSK, Low Channel, 2402 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-104.49	-69.49	33.9	-35.59	-23.82	8	Pass



3-DH5, 8-DPSK, Mid Channel, 2441 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-104.42	-69.42	33.9	-35.52	-23.75	8	Pass



3-DH5, 8-DPSK, High Channel, 2480 MHz						
Meter Reading (dBm/Hz)	#REF! (dBm/3kHz)	Factor (dB)	Fields Strength PSD (dBm/3kHz/meter)	PSD EIRP (dBm/3kHz)(EIRP)	Limit (dBm / 3 kHz)	Result
-105.92	-70.92	33.9	-37.02	-25.25	8	Pass



SPURIOUS 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 Bluetooth, GFSK modulation, DH5 data rate
 Transmitting Bluetooth, Pi / 4-DQPSK modulation, 2DH5 data rate
 Transmitting Bluetooth, 8-DPSK modulation, 3DH5 data rate

CHANNELS USED FOR FINAL DATA

Low Channel 1, 2402 MHz
 Mid Channel 39, 2441 MHz
 High Channel 79, 2480 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

TRPO0073 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency | 30 MHz | Stop Frequency | 26000 MHz

CLOCKS AND OSCILLATORS

2402MHz, 2441MHz, 2480MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	4/29/2011	12 mo
Antenna, Horn	EMCO	3160-09	AHN	NCR	0 mo
OC floating Cable	N/A	18-26GHz RE Cables	OCK	4/29/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	11/21/2011	12 mo
Antenna, Horn	ETS	3160-08	AHT	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	11/21/2011	12 mo
Antenna, Horn	ETS	3160-07	AHR	NCR	0 mo
OC 10 Cables	N/A	12-18GHz RE Cables	OCO	10/13/2011	12 mo
Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	6/24/2011	12 mo
Antenna, Horn	EMCO	3115	AHB	3/8/2011	24 mo
OC10 Cables	N/A	1-8GHz RE Cables	OCJ	10/13/2011	12 mo
Antenna, Biconilog	EMCO	3142	AXB	3/28/2011	12 mo
OC10 Cables	N/A	10kHz-1GHz RE Cables	OCH	6/24/2011	12 mo
Pre-Amplifier	Miteq	AM-1064-9079	AOO	6/28/2011	12 mo
Spectrum Analyzer	Agilent	E4446A	AAY	1/9/2012	12 mo

MEASUREMENT BANDWIDTHS

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the

MEASUREMENT UNCERTAINTY

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

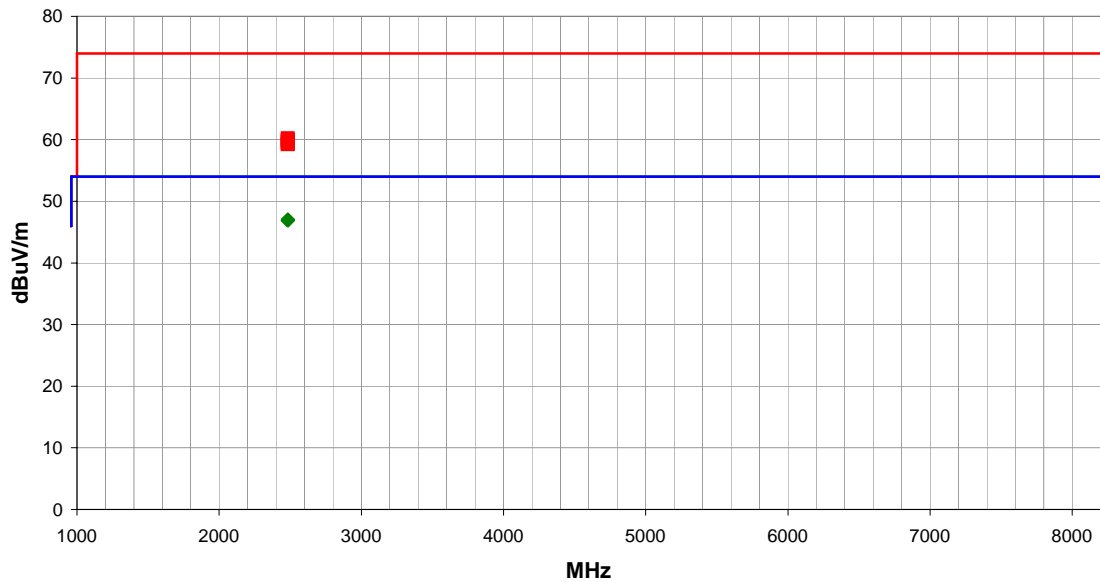
TEST DESCRIPTION

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 axes, 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.

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	21.72 °C	
Job Site:	OC10	Humidity:	32.29% RH	
Serial Number:	None	Barometric Pres.:	1026.8 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low, Mid, and High Channel			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
FCC 15.209:2012	ANSI C63.10:2009

Run #	10	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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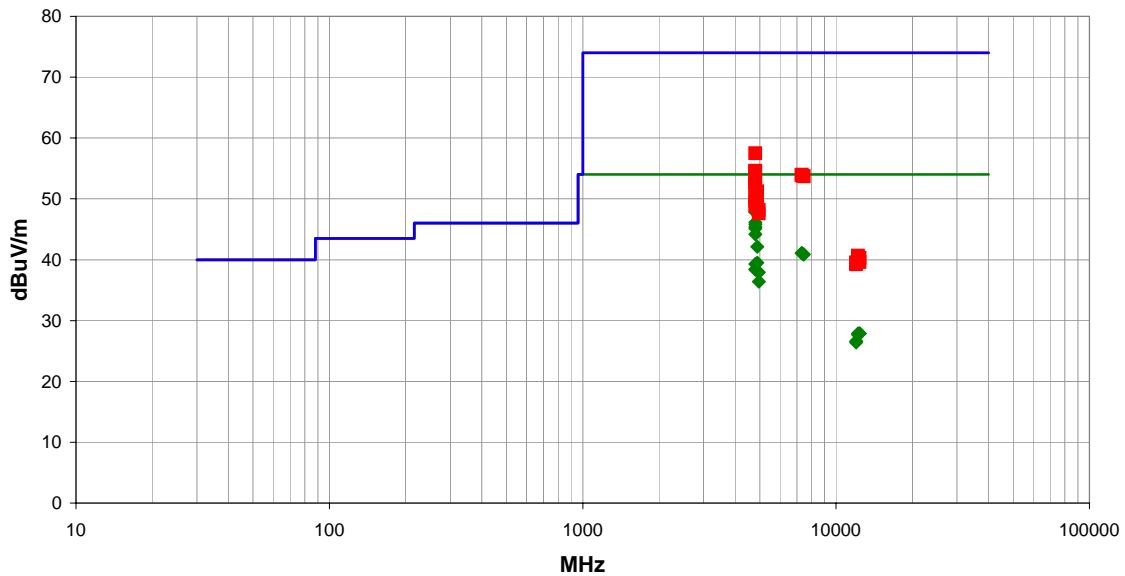


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
2483.499	25.2	1.8	1.2	257.0	3.0	20.0	Vert	AV	0.0	47.0	54.0	-7.0
2483.495	25.2	1.8	2.7	357.0	3.0	20.0	Horz	AV	0.0	47.0	54.0	-7.0
2483.503	25.1	1.8	1.2	51.0	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1
2483.505	25.1	1.8	1.2	28.0	3.0	20.0	Horz	AV	0.0	46.9	54.0	-7.1
2483.504	25.1	1.8	1.5	214.0	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1
2483.496	25.1	1.8	1.2	129.0	3.0	20.0	Horz	AV	0.0	46.9	54.0	-7.1
2483.496	25.1	1.8	1.2	46.0	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1
2483.505	25.1	1.8	3.7	210.0	3.0	20.0	Horz	AV	0.0	46.9	54.0	-7.1
2483.500	25.1	1.8	1.2	10.0	3.0	20.0	Vert	AV	0.0	46.9	54.0	-7.1
2483.497	25.1	1.8	2.8	272.0	3.0	20.0	Horz	AV	0.0	46.9	54.0	-7.1
2483.505	38.4	1.8	1.5	214.0	3.0	20.0	Vert	PK	0.0	60.2	74.0	-13.8
2483.501	38.3	1.8	1.2	10.0	3.0	20.0	Vert	PK	0.0	60.1	74.0	-13.9
2483.497	38.1	1.8	1.2	51.0	3.0	20.0	Vert	PK	0.0	59.9	74.0	-14.1
2483.502	38.0	1.8	3.7	210.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2
2483.504	38.0	1.8	2.8	272.0	3.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2
2483.497	37.8	1.8	1.2	129.0	3.0	20.0	Horz	PK	0.0	59.6	74.0	-14.4
2483.500	37.7	1.8	1.2	257.0	3.0	20.0	Vert	PK	0.0	59.5	74.0	-14.5
2483.498	37.5	1.8	1.2	46.0	3.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7
2483.495	37.4	1.8	1.2	28.0	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8
2483.501	37.4	1.8	2.7	357.0	3.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8

Work Order:	TRPO0073	Date:	01/17/12	
Project:	None	Temperature:	20.73 °C	
Job Site:	OC10	Humidity:	36.1% RH	
Serial Number:	None	Barometric Pres.:	1011 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low, Mid, and High Channel			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
FCC 15.209:2012	ANSI C63.10:2009

Run #	7	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (m)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dB)	Spec. Limit (dB)	Compared to Spec. (dB)
4804.027	42.8	9.5	1.8	260.0	3.0	0.0	Horz	AV	0.0	52.3	54.0	-1.7
4804.012	38.3	9.5	1.0	159.0	3.0	0.0	Vert	AV	0.0	47.8	54.0	-6.2
4803.979	36.6	9.5	1.0	234.0	3.0	0.0	Horz	AV	0.0	46.1	54.0	-7.9
4803.988	36.3	9.5	1.0	78.0	3.0	0.0	Vert	AV	0.0	45.8	54.0	-8.2
4803.975	35.9	9.5	1.0	83.0	3.0	0.0	Horz	AV	0.0	45.4	54.0	-8.6
4804.010	35.6	9.5	1.0	79.0	3.0	0.0	Horz	AV	0.0	45.1	54.0	-8.9
4803.993	34.7	9.5	1.0	302.0	3.0	0.0	Vert	AV	0.0	44.2	54.0	-9.8
4881.990	32.3	9.8	1.0	84.0	3.0	0.0	Horz	AV	0.0	42.1	54.0	-11.9
7323.124	24.4	16.7	1.0	322.0	3.0	0.0	Vert	AV	0.0	41.1	54.0	-12.9
7323.268	24.4	16.7	1.4	266.0	3.0	0.0	Horz	AV	0.0	41.1	54.0	-12.9
7440.307	24.3	16.6	2.2	131.0	3.0	0.0	Vert	AV	0.0	40.9	54.0	-13.1
7440.435	24.3	16.6	1.1	1.0	3.0	0.0	Horz	AV	0.0	40.9	54.0	-13.1
4881.965	29.7	9.8	1.0	300.0	3.0	0.0	Vert	AV	0.0	39.5	54.0	-14.5
4804.000	29.8	9.5	1.0	81.0	3.0	0.0	Vert	AV	0.0	39.3	54.0	-14.7
4803.995	28.9	9.5	1.0	99.0	3.0	0.0	Horz	AV	0.0	38.4	54.0	-15.6
4803.997	28.9	9.5	1.0	6.0	3.0	0.0	Vert	AV	0.0	38.4	54.0	-15.6
4960.001	27.7	10.2	1.0	115.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1
4803.808	48.0	9.5	1.8	260.0	3.0	0.0	Horz	PK	0.0	57.5	74.0	-16.5
4959.979	26.2	10.2	1.0	299.0	3.0	0.0	Vert	AV	0.0	36.4	54.0	-17.6
4804.335	45.1	9.5	1.0	83.0	3.0	0.0	Horz	PK	0.0	54.6	74.0	-19.4



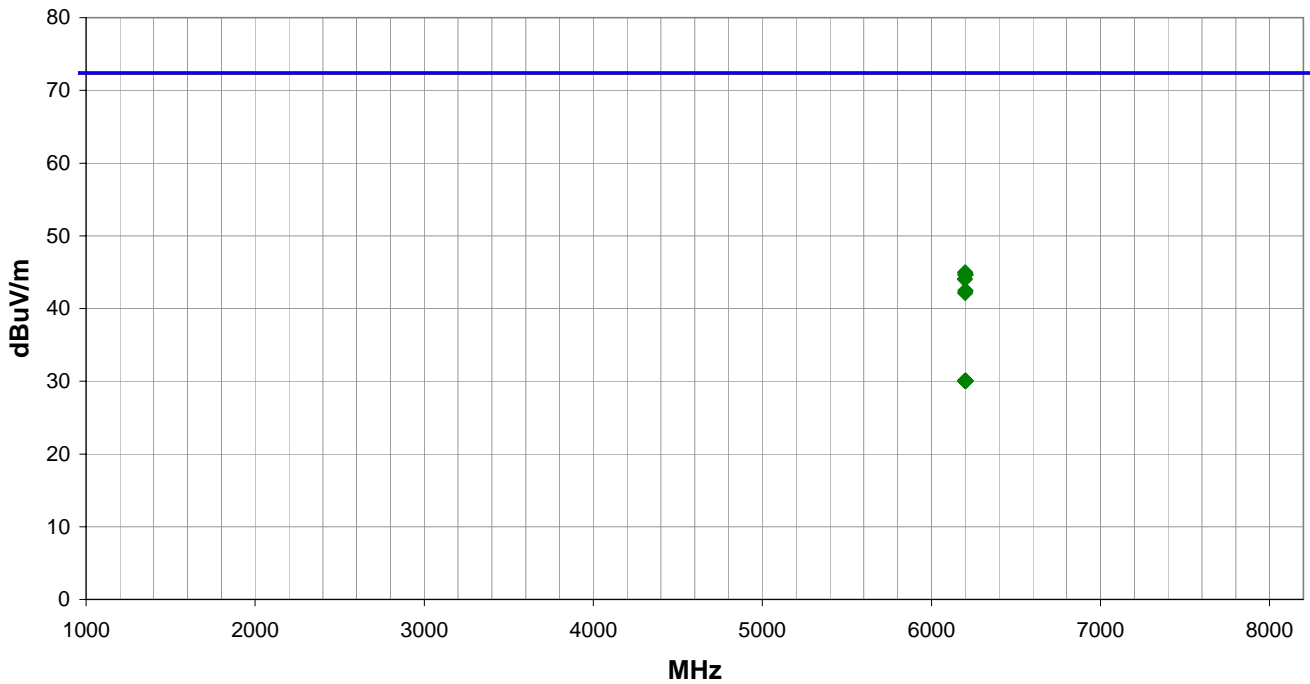
SPURIOUS EMISSIONS

PSA-ESCI 2012.01.11
PSA-ESCI Version 2011.12.21

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	20.73 °C	
Job Site:	OC10	Humidity:	36.1% RH	
Serial Number:	None	Barometric Pres.:	1011 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low, Mid, and High Channel			
Deviations:	None			
Comments:	Y-Axis. Outside restricted band measurements. Limit = Lowest Radiated Output Power - 20dB (92.4 dBuV/m - 20dB = 72.4dBuV/m).			

Test Specifications	Test Method
FCC 15.247:2011	ANSI C63.10:2009


Run #	22	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
6201.380	17.3	12.8	1.0	247.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9
6201.253	17.3	12.8	1.0	193.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9
6201.087	17.3	12.8	1.0	356.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9
6199.660	17.3	12.7	1.0	264.0	3.0	0.0	Horz	AV	0.0	30.0	54.0	-24.0
6199.187	17.3	12.7	1.4	188.0	3.0	0.0	Vert	AV	0.0	30.0	54.0	-24.0
6199.120	17.3	12.7	1.0	257.0	3.0	0.0	Vert	AV	0.0	30.0	54.0	-24.0

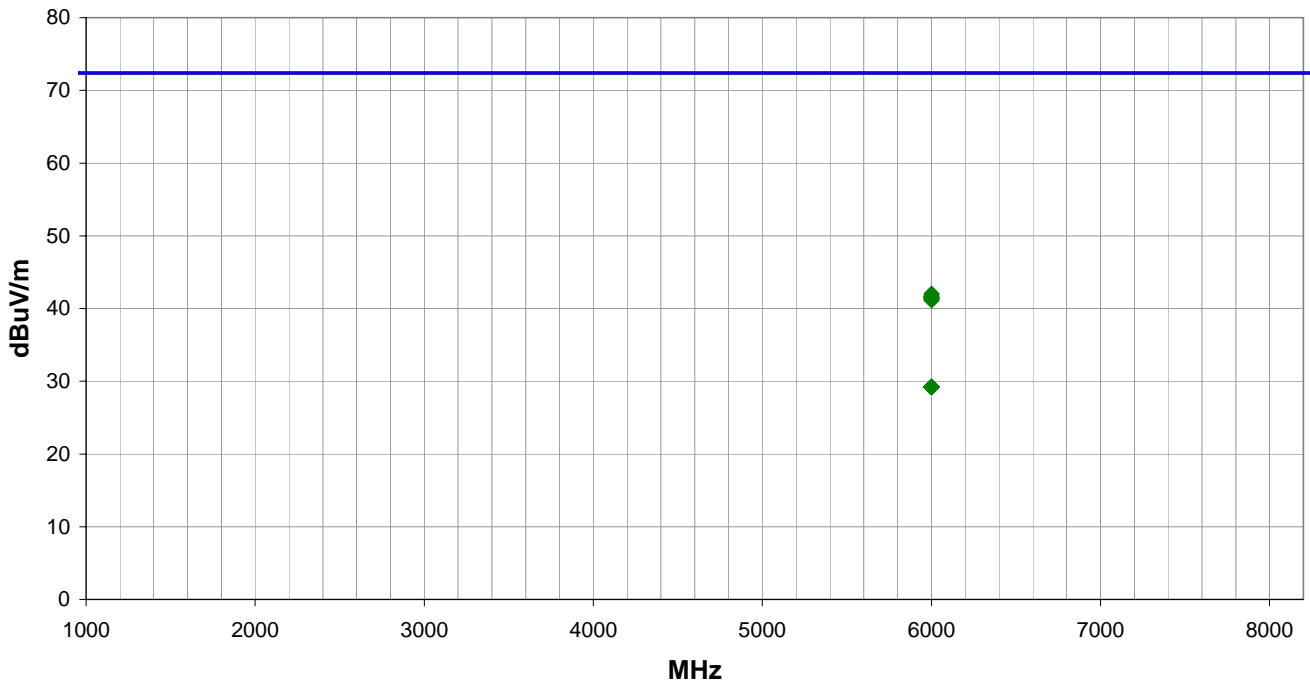


SPURIOUS EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	20.73 °C	
Job Site:	OC10	Humidity:	36.1% RH	
Serial Number:	None	Barometric Pres.:	1011 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low, Mid, and High Channel			
Deviations:	None			
Comments:	Y-Axis. Outside restricted band measurements. Limit = Lowest Radiated Output Power - 20dB (92.4 dBuV/m - 20dB = 72.4dBuV/m).			

Test Specifications	Test Method
FCC 15.247:2011	ANSI C63.10:2009

Run #	22	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
6001.447	17.2	12.0	1.3	1.0	3.0	0.0	Horz	AV	0.0	29.2	54.0	-24.8



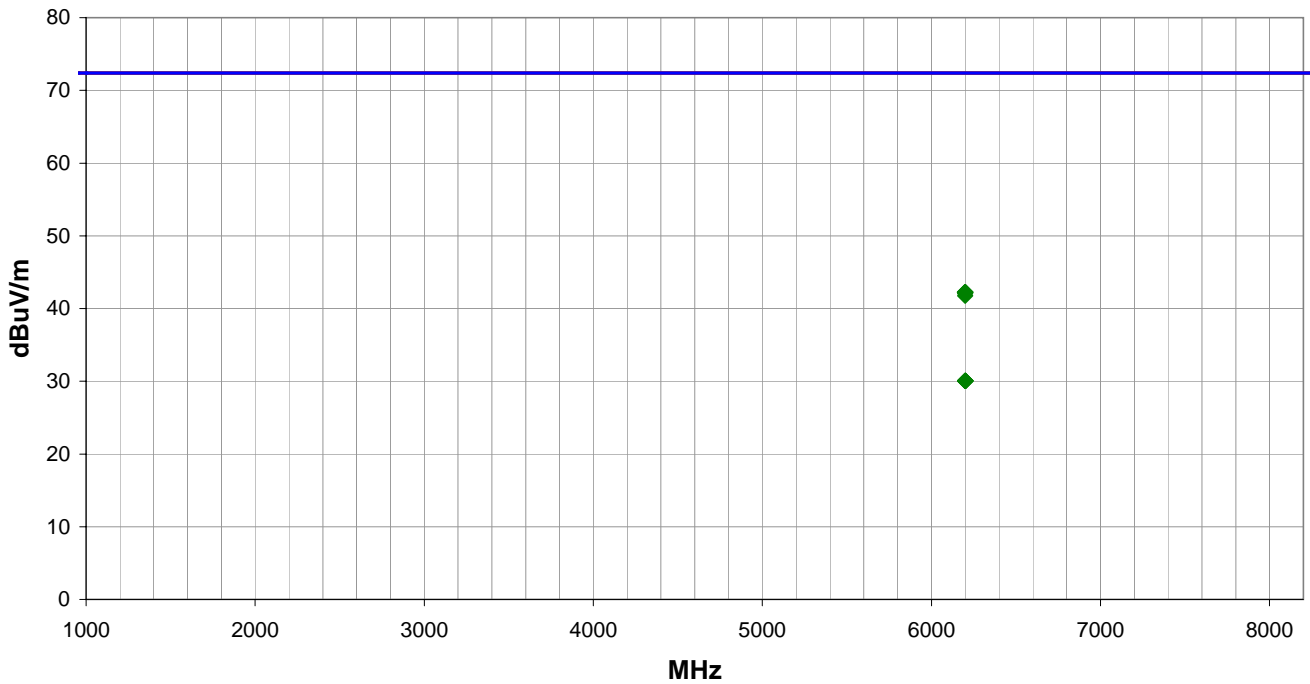
SPURIOUS EMISSIONS

PSA-ESCI 2012.01.11
PSA-ESCI Version 2011.12.21

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	20.73 °C	
Job Site:	OC10	Humidity:	36.1% RH	
Serial Number:	None	Barometric Pres.:	1011 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low, Mid, and High Channel			
Deviations:	None			
Comments:	Y-Axis. Outside restricted band measurements. Limit = Lowest Radiated Output Power - 20dB (92.4 dBuV/m - 20dB = 72.4dBuV/m).			

Test Specifications	Test Method
FCC 15.247:2011	ANSI C63.10:2009

Run #	22	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
6201.033	17.3	12.8	1.0	1.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9
6201.027	17.3	12.8	1.0	1.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9
6200.553	17.3	12.8	1.0	1.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9
6200.120	17.3	12.8	1.0	1.0	3.0	0.0	Vert	AV	0.0	30.1	54.0	-23.9
6200.093	17.3	12.8	1.0	1.0	3.0	0.0	Horz	AV	0.0	30.1	54.0	-23.9
6199.100	17.3	12.7	1.0	1.0	3.0	0.0	Vert	AV	0.0	30.0	54.0	-24.0

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

Operating Bluetooth - DH5 - High Channel - 2480 MHz
 Operating Bluetooth - DH5 - Mid Channel - 2441 MHz
 Operating Bluetooth - DH5 - Low Channel - 2402 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

TRPO0073 - 1

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
LISN	Solar	9252-50-24-BNC	LIA	6/13/2011	12 mo
Attenuator	Pasternack	6N10W-20	AWC	3/2/2011	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HFP	3/8/2010	24 mo
OC06 Cables	N/A	CE Cables	OCM	4/7/2011	12 mo
Receiver	Rohde & Schwarz	ESCI	ARF	4/1/2011	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.

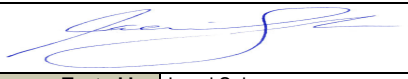
MEASUREMENT UNCERTAINTY

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.

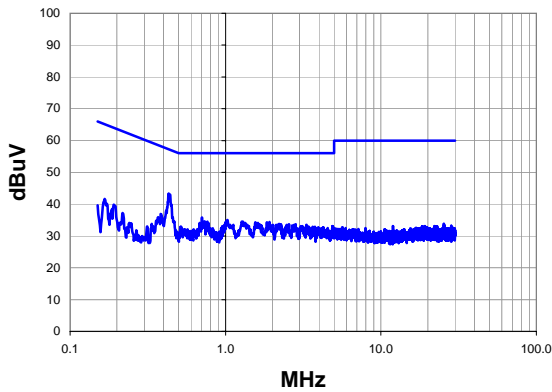
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	22 °C	
Job Site:	OC06	Humidity:	34% RH	
Serial Number:	None	Barometric Pres.:	1012 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low Channel - 2402 MHz			
Deviations:	None			
Comments:	DH5			

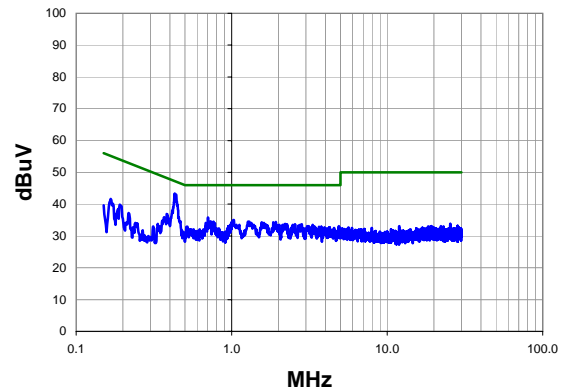
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	1	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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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)
0.431	23.3	20.1	43.4	57.2	-13.8
0.706	15.7	20.1	35.8	56.0	-20.2
1.024	14.9	20.1	35.0	56.0	-21.0
0.383	16.8	20.1	36.9	58.2	-21.3
0.764	14.4	20.1	34.5	56.0	-21.5
1.272	14.4	20.1	34.5	56.0	-21.5
1.920	14.3	20.1	34.4	56.0	-21.6
1.560	14.2	20.1	34.3	56.0	-21.7
2.208	13.7	20.1	33.8	56.0	-22.2
2.560	13.6	20.1	33.7	56.0	-22.3
2.824	13.6	20.1	33.7	56.0	-22.3
3.312	13.4	20.1	33.5	56.0	-22.5
3.056	13.0	20.1	33.1	56.0	-22.9
4.880	13.0	20.1	33.1	56.0	-22.9
0.512	12.8	20.1	32.9	56.0	-23.1
3.640	12.8	20.1	32.9	56.0	-23.1
3.944	12.6	20.1	32.7	56.0	-23.3
4.240	12.6	20.1	32.7	56.0	-23.3
4.992	12.5	20.1	32.6	56.0	-23.4
4.552	12.4	20.1	32.5	56.0	-23.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.431	23.3	20.1	43.4	47.2	-3.8
0.706	15.7	20.1	35.8	46.0	-10.2
1.024	14.9	20.1	35.0	46.0	-11.0
0.383	16.8	20.1	36.9	48.2	-11.3
0.764	14.4	20.1	34.5	46.0	-11.5
1.272	14.4	20.1	34.5	46.0	-11.5
1.920	14.3	20.1	34.4	46.0	-11.6
1.560	14.2	20.1	34.3	46.0	-11.7
2.208	13.7	20.1	33.8	46.0	-12.2
2.560	13.6	20.1	33.7	46.0	-12.3
2.824	13.6	20.1	33.7	46.0	-12.3
3.312	13.4	20.1	33.5	46.0	-12.5
3.056	13.0	20.1	33.1	46.0	-12.9
4.880	13.0	20.1	33.1	46.0	-12.9
0.512	12.8	20.1	32.9	46.0	-13.1
3.640	12.8	20.1	32.9	46.0	-13.1
3.944	12.6	20.1	32.7	46.0	-13.3
4.240	12.6	20.1	32.7	46.0	-13.3
4.992	12.5	20.1	32.6	46.0	-13.4
4.552	12.4	20.1	32.5	46.0	-13.5

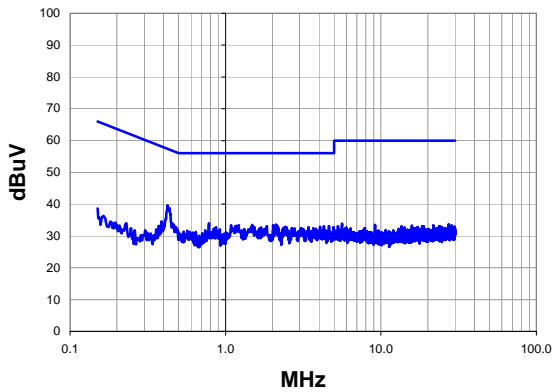
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	22 °C	
Job Site:	OC06	Humidity:	34% RH	
Serial Number:	None	Barometric Pres.:	1012 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Low Channel - 2402 MHz			
Deviations:	None			
Comments:	DH5			

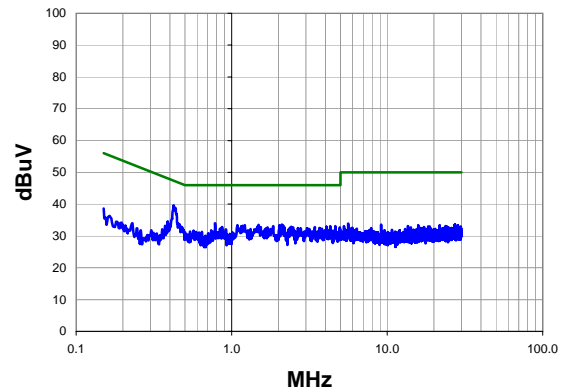
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	2	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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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)
0.424	19.5	20.1	39.6	57.4	-17.8
0.782	13.9	20.1	34.0	56.0	-22.0
2.104	13.5	20.1	33.6	56.0	-22.4
1.488	13.4	20.1	33.5	56.0	-22.5
1.088	13.3	20.1	33.4	56.0	-22.6
2.024	13.3	20.1	33.4	56.0	-22.6
1.848	13.0	20.1	33.1	56.0	-22.9
4.296	13.0	20.1	33.1	56.0	-22.9
4.632	13.0	20.1	33.1	56.0	-22.9
2.416	12.8	20.1	32.9	56.0	-23.1
4.064	12.8	20.1	32.9	56.0	-23.1
0.867	12.7	20.1	32.8	56.0	-23.2
3.424	12.7	20.1	32.8	56.0	-23.2
4.952	12.6	20.1	32.7	56.0	-23.3
2.672	12.4	20.1	32.5	56.0	-23.5
3.680	12.4	20.1	32.5	56.0	-23.5
0.388	14.5	20.1	34.6	58.1	-23.5
0.854	12.3	20.1	32.4	56.0	-23.6
1.664	12.3	20.1	32.4	56.0	-23.6
3.048	12.3	20.1	32.4	56.0	-23.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.424	19.5	20.1	39.6	47.4	-7.8
0.782	13.9	20.1	34.0	46.0	-12.0
2.104	13.5	20.1	33.6	46.0	-12.4
1.488	13.4	20.1	33.5	46.0	-12.5
1.088	13.3	20.1	33.4	46.0	-12.6
2.024	13.3	20.1	33.4	46.0	-12.6
1.848	13.0	20.1	33.1	46.0	-12.9
4.296	13.0	20.1	33.1	46.0	-12.9
4.632	13.0	20.1	33.1	46.0	-12.9
2.416	12.8	20.1	32.9	46.0	-13.1
4.064	12.8	20.1	32.9	46.0	-13.1
0.867	12.7	20.1	32.8	46.0	-13.2
3.424	12.7	20.1	32.8	46.0	-13.2
4.952	12.6	20.1	32.7	46.0	-13.3
2.672	12.4	20.1	32.5	46.0	-13.5
3.680	12.4	20.1	32.5	46.0	-13.5
0.388	14.5	20.1	34.6	48.1	-13.5
0.854	12.3	20.1	32.4	46.0	-13.6
1.664	12.3	20.1	32.4	46.0	-13.6
3.048	12.3	20.1	32.4	46.0	-13.6

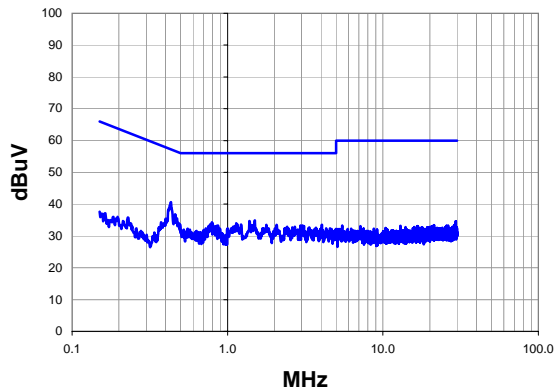
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	22 °C	
Job Site:	OC06	Humidity:	34% RH	
Serial Number:	None	Barometric Pres.:	1012 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Mid Channel - 2441 MHz			
Deviations:	None			
Comments:	DH5			

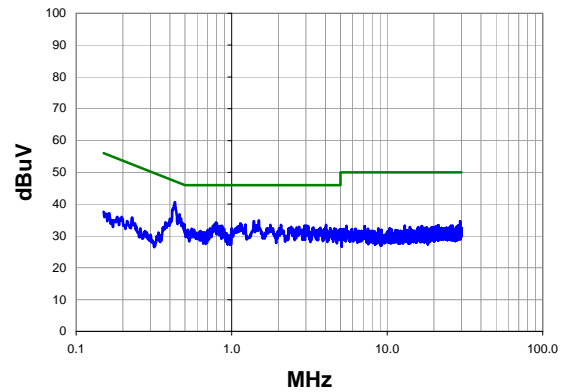
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	3	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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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)
0.432	20.5	20.1	40.6	57.2	-16.6
0.461	16.7	20.1	36.8	56.7	-19.9
1.496	14.8	20.1	34.9	56.0	-21.1
1.384	14.6	20.1	34.7	56.0	-21.3
0.793	14.2	20.1	34.3	56.0	-21.7
1.136	13.9	20.1	34.0	56.0	-22.0
0.803	13.8	20.1	33.9	56.0	-22.1
1.776	13.4	20.1	33.5	56.0	-22.5
2.072	13.4	20.1	33.5	56.0	-22.5
4.040	13.4	20.1	33.5	56.0	-22.5
2.952	13.2	20.1	33.3	56.0	-22.7
3.032	13.2	20.1	33.3	56.0	-22.7
0.869	13.1	20.1	33.2	56.0	-22.8
3.104	13.0	20.1	33.1	56.0	-22.9
2.416	12.8	20.1	32.9	56.0	-23.1
2.712	12.8	20.1	32.9	56.0	-23.1
3.352	12.6	20.1	32.7	56.0	-23.3
3.712	12.5	20.1	32.6	56.0	-23.4
4.304	12.3	20.1	32.4	56.0	-23.6
4.568	12.3	20.1	32.4	56.0	-23.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.432	20.5	20.1	40.6	47.2	-6.6
0.461	16.7	20.1	36.8	46.7	-9.9
1.496	14.8	20.1	34.9	46.0	-11.1
1.384	14.6	20.1	34.7	46.0	-11.3
0.793	14.2	20.1	34.3	46.0	-11.7
1.136	13.9	20.1	34.0	46.0	-12.0
0.803	13.8	20.1	33.9	46.0	-12.1
1.776	13.4	20.1	33.5	46.0	-12.5
2.072	13.4	20.1	33.5	46.0	-12.5
4.040	13.4	20.1	33.5	46.0	-12.5
2.952	13.2	20.1	33.3	46.0	-12.7
3.032	13.2	20.1	33.3	46.0	-12.7
0.869	13.1	20.1	33.2	46.0	-12.8
3.104	13.0	20.1	33.1	46.0	-12.9
2.416	12.8	20.1	32.9	46.0	-13.1
2.712	12.8	20.1	32.9	46.0	-13.1
3.352	12.6	20.1	32.7	46.0	-13.3
3.712	12.5	20.1	32.6	46.0	-13.4
4.304	12.3	20.1	32.4	46.0	-13.6
4.568	12.3	20.1	32.4	46.0	-13.6

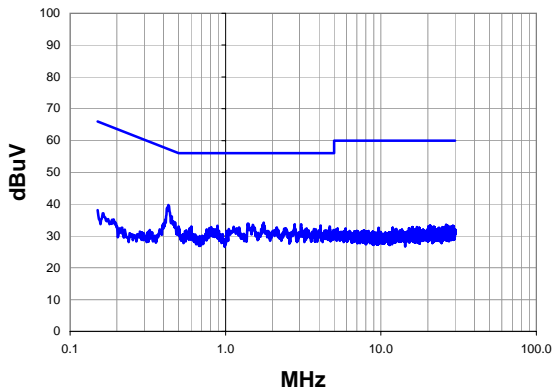
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	22 °C	
Job Site:	OC06	Humidity:	34% RH	
Serial Number:	None	Barometric Pres.:	1012 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - Mid Channel - 2441 MHz			
Deviations:	None			
Comments:	DH5			

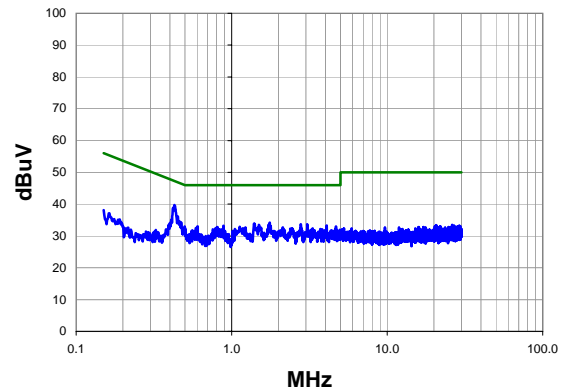
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

4	Line: Neutral	Ext. Attenuation: 20	Results	Pass
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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)
0.429	19.6	20.1	39.7	57.3	-17.6
1.760	14.1	20.1	34.2	56.0	-21.8
1.392	13.8	20.1	33.9	56.0	-22.1
2.784	13.6	20.1	33.7	56.0	-22.3
3.064	13.6	20.1	33.7	56.0	-22.3
4.088	13.2	20.1	33.3	56.0	-22.7
0.886	13.1	20.1	33.2	56.0	-22.8
0.602	12.9	20.1	33.0	56.0	-23.0
4.680	12.9	20.1	33.0	56.0	-23.0
1.128	12.8	20.1	32.9	56.0	-23.1
0.808	12.7	20.1	32.8	56.0	-23.2
2.136	12.6	20.1	32.7	56.0	-23.3
0.589	12.4	20.1	32.5	56.0	-23.5
2.432	12.3	20.1	32.4	56.0	-23.6
3.320	12.3	20.1	32.4	56.0	-23.6
3.712	12.1	20.1	32.2	56.0	-23.8
3.264	12.0	20.1	32.1	56.0	-23.9
3.816	12.0	20.1	32.1	56.0	-23.9
1.016	11.5	20.1	31.6	56.0	-24.4
0.550	11.4	20.1	31.5	56.0	-24.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.429	19.6	20.1	39.7	47.3	-7.6
1.760	14.1	20.1	34.2	46.0	-11.8
1.392	13.8	20.1	33.9	46.0	-12.1
2.784	13.6	20.1	33.7	46.0	-12.3
3.064	13.6	20.1	33.7	46.0	-12.3
4.088	13.2	20.1	33.3	46.0	-12.7
0.886	13.1	20.1	33.2	46.0	-12.8
0.602	12.9	20.1	33.0	46.0	-13.0
4.680	12.9	20.1	33.0	46.0	-13.0
1.128	12.8	20.1	32.9	46.0	-13.1
0.808	12.7	20.1	32.8	46.0	-13.2
2.136	12.6	20.1	32.7	46.0	-13.3
0.589	12.4	20.1	32.5	46.0	-13.5
2.432	12.3	20.1	32.4	46.0	-13.6
3.320	12.3	20.1	32.4	46.0	-13.6
3.712	12.1	20.1	32.2	46.0	-13.8
3.264	12.0	20.1	32.1	46.0	-13.9
3.816	12.0	20.1	32.1	46.0	-13.9
1.016	11.5	20.1	31.6	46.0	-14.4
0.550	11.4	20.1	31.5	46.0	-14.5

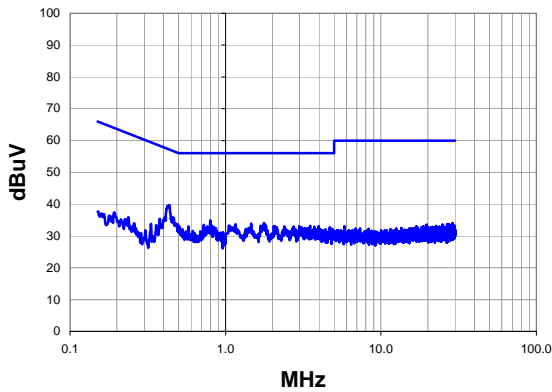
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	22 °C	
Job Site:	OC06	Humidity:	34% RH	
Serial Number:	None	Barometric Pres.:	1012 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - High Channel - 2480 MHz			
Deviations:	None			
Comments:	DH5			

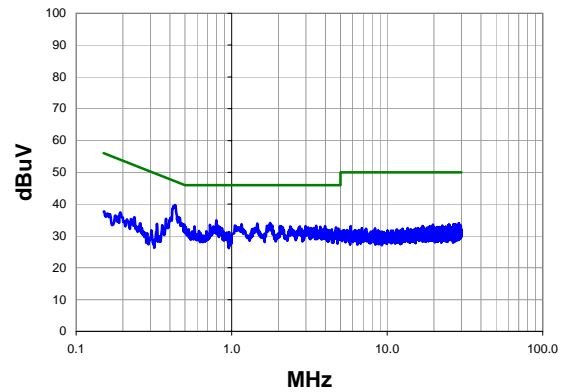
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	5	Line:	High Line	Ext. Attenuation:	20	Results	Pass
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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)
0.432	19.6	20.1	39.7	57.2	-17.5
0.796	14.8	20.1	34.9	56.0	-21.1
1.768	14.0	20.1	34.1	56.0	-21.9
1.464	13.8	20.1	33.9	56.0	-22.1
1.160	13.6	20.1	33.7	56.0	-22.3
0.725	13.4	20.1	33.5	56.0	-22.5
3.496	13.1	20.1	33.2	56.0	-22.8
2.048	13.0	20.1	33.1	56.0	-22.9
2.984	13.0	20.1	33.1	56.0	-22.9
3.984	13.0	20.1	33.1	56.0	-22.9
0.578	12.9	20.1	33.0	56.0	-23.0
2.384	12.9	20.1	33.0	56.0	-23.0
2.744	12.9	20.1	33.0	56.0	-23.0
3.720	12.8	20.1	32.9	56.0	-23.1
0.838	12.7	20.1	32.8	56.0	-23.2
4.680	12.6	20.1	32.7	56.0	-23.3
3.232	12.4	20.1	32.5	56.0	-23.5
4.848	12.2	20.1	32.3	56.0	-23.7
4.400	12.0	20.1	32.1	56.0	-23.9
4.080	11.9	20.1	32.0	56.0	-24.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.432	19.6	20.1	39.7	47.2	-7.5
0.796	14.8	20.1	34.9	46.0	-11.1
1.768	14.0	20.1	34.1	46.0	-11.9
1.464	13.8	20.1	33.9	46.0	-12.1
1.160	13.6	20.1	33.7	46.0	-12.3
0.725	13.4	20.1	33.5	46.0	-12.5
3.496	13.1	20.1	33.2	46.0	-12.8
2.048	13.0	20.1	33.1	46.0	-12.9
2.984	13.0	20.1	33.1	46.0	-12.9
3.984	13.0	20.1	33.1	46.0	-12.9
0.578	12.9	20.1	33.0	46.0	-13.0
2.384	12.9	20.1	33.0	46.0	-13.0
2.744	12.9	20.1	33.0	46.0	-13.0
3.720	12.8	20.1	32.9	46.0	-13.1
0.838	12.7	20.1	32.8	46.0	-13.2
4.680	12.6	20.1	32.7	46.0	-13.3
3.232	12.4	20.1	32.5	46.0	-13.5
4.848	12.2	20.1	32.3	46.0	-13.7
4.400	12.0	20.1	32.1	46.0	-13.9
4.080	11.9	20.1	32.0	46.0	-14.0

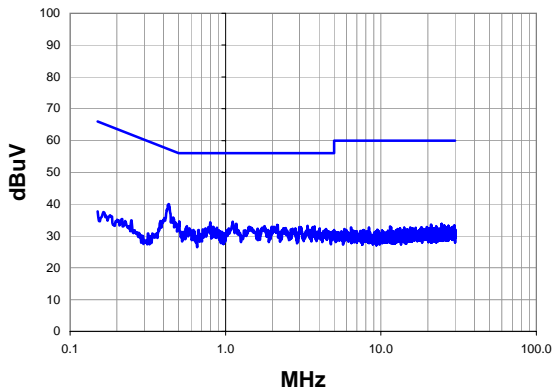
AC POWERLINE CONDUCTED EMISSIONS

Work Order:	TRPO0073	Date:	01/18/12	
Project:	None	Temperature:	22 °C	
Job Site:	OC06	Humidity:	34% RH	
Serial Number:	None	Barometric Pres.:	1012 mbar	
EUT:	Nomad			
Configuration:	1			
Customer:	Trimble Navigation Limited MCS			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Operating Bluetooth - High Channel - 2480 MHz			
Deviations:	None			
Comments:	DH5			

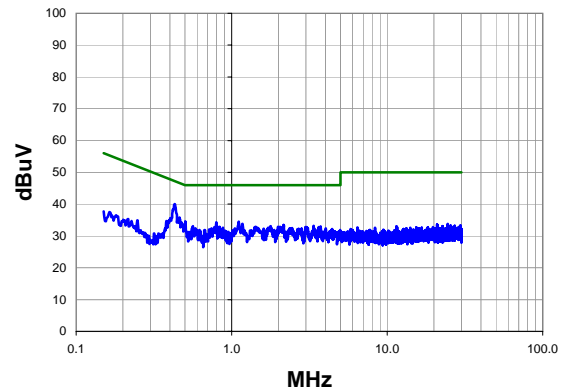
Test Specifications	Test Method
FCC 15.207:2012	ANSI C63.10:2009

Run #	6	Line:	Neutral	Ext. Attenuation:	20	Results	Pass
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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)
0.431	19.9	20.1	40.0	57.2	-17.2
0.504	14.5	20.1	34.6	56.0	-21.4
1.112	14.4	20.1	34.5	56.0	-21.5
0.796	14.2	20.1	34.3	56.0	-21.7
2.152	13.4	20.1	33.5	56.0	-22.5
3.368	13.1	20.1	33.2	56.0	-22.8
0.563	13.0	20.1	33.1	56.0	-22.9
1.784	13.0	20.1	33.1	56.0	-22.9
3.736	12.9	20.1	33.0	56.0	-23.0
0.833	12.8	20.1	32.9	56.0	-23.1
1.424	12.8	20.1	32.9	56.0	-23.1
2.976	12.7	20.1	32.8	56.0	-23.2
0.879	12.5	20.1	32.6	56.0	-23.4
2.448	12.4	20.1	32.5	56.0	-23.5
4.032	12.3	20.1	32.4	56.0	-23.6
1.608	12.2	20.1	32.3	56.0	-23.7
2.696	12.2	20.1	32.3	56.0	-23.7
4.432	12.1	20.1	32.2	56.0	-23.8
0.619	11.8	20.1	31.9	56.0	-24.1
0.672	11.8	20.1	31.9	56.0	-24.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
0.431	19.9	20.1	40.0	47.2	-7.2
0.504	14.5	20.1	34.6	46.0	-11.4
1.112	14.4	20.1	34.5	46.0	-11.5
0.796	14.2	20.1	34.3	46.0	-11.7
2.152	13.4	20.1	33.5	46.0	-12.5
3.368	13.1	20.1	33.2	46.0	-12.8
0.563	13.0	20.1	33.1	46.0	-12.9
1.784	13.0	20.1	33.1	46.0	-12.9
3.736	12.9	20.1	33.0	46.0	-13.0
0.833	12.8	20.1	32.9	46.0	-13.1
1.424	12.8	20.1	32.9	46.0	-13.1
2.976	12.7	20.1	32.8	46.0	-13.2
0.879	12.5	20.1	32.6	46.0	-13.4
2.448	12.4	20.1	32.5	46.0	-13.5
4.032	12.3	20.1	32.4	46.0	-13.6
1.608	12.2	20.1	32.3	46.0	-13.7
2.696	12.2	20.1	32.3	46.0	-13.7
4.432	12.1	20.1	32.2	46.0	-13.8
0.619	11.8	20.1	31.9	46.0	-14.1
0.672	11.8	20.1	31.9	46.0	-14.1

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	E4440A	AFG	4/28/2011	12
Near Field Probe	EMCO	7405	IPI	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

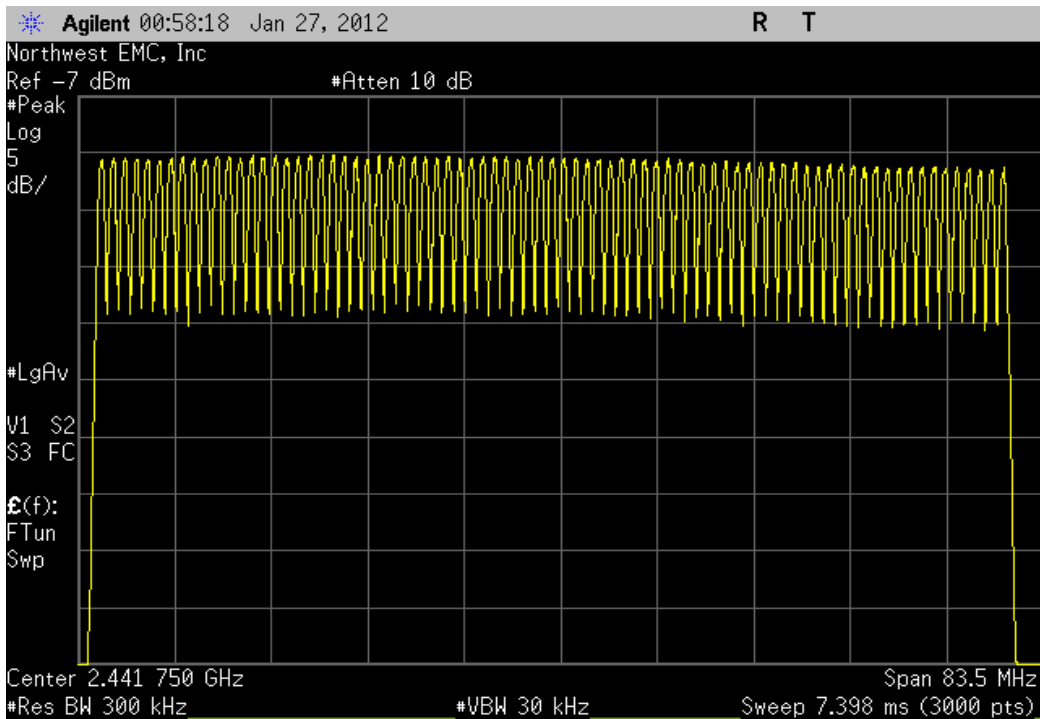
The number of hopping frequencies was measured across the authorized band. The measurements were made using a near field probe that was positioned to maximize the signal of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.



Number of Hopping Frequencies

EUT: Nomad		Work Order: TRPO0073	
Serial Number: None		Date: 01/26/12	
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C	
Attendees: None		Humidity: 35%	
Project: None		Barometric Pres.: 1012.4	
Tested by: Jaemi Suh		Power: 110VAC/60Hz	
		Job Site: OC11	
TEST SPECIFICATIONS			
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Bluetooth Hopping Mode			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	Signature 	
Channel	2402 MHz - 2480 MHz	Number of Channels	79
		Limit	≥ 15
		Result	Pass

Mid				Number of Channels	Limit	Result
				79	≥ 15	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	E4440A	AFG	4/28/2011	12
Near Field Probe	EMCO	7405	IPI	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

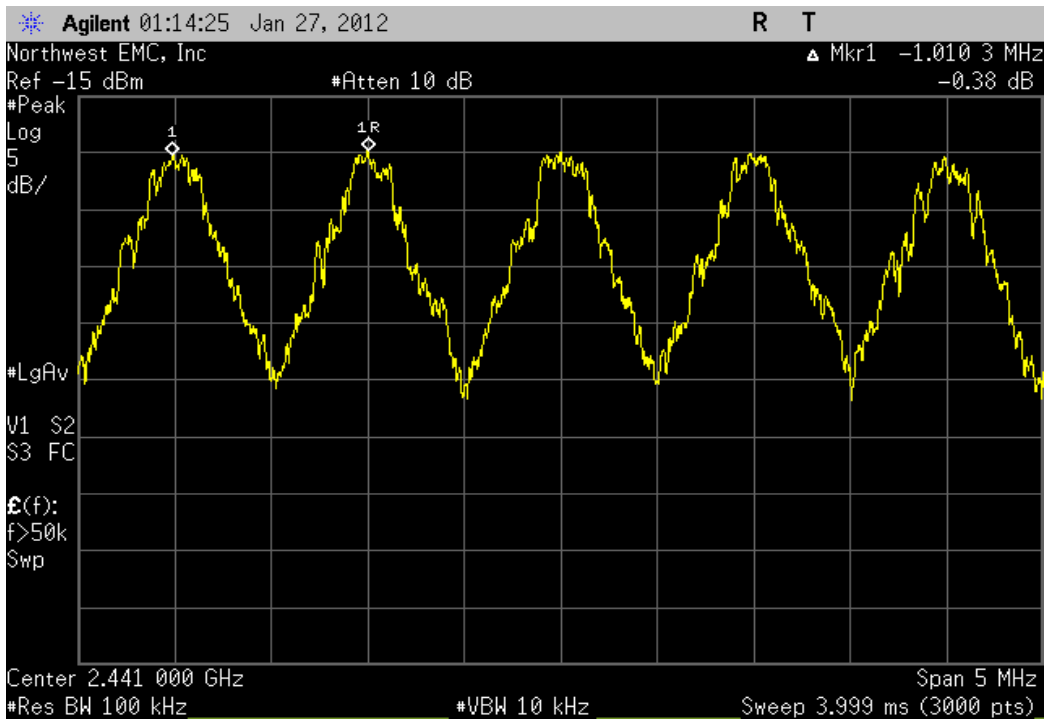
The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 1 MHz of the hopping channel. The EUT was operated in hopping mode. The spectrum was scanned across multiple adjacent peaks. The separation between the peaks of these channels was measured. The measurements were made using a near field probe that was positioned to maximize the signal of the EUT and the spectrum analyzer.



Channel Spacing

EUT: Nomad		Work Order: TRPO0073	
Serial Number: None		Date: 01/26/12	
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C	
Attendees: None		Humidity: 35%	
Project: None		Barometric Pres.: 1012.4	
Tested by: Jaemi Suh		Power: 110VAC/60Hz	
		Job Site: OC10	
TEST SPECIFICATIONS			
FCC 15.247:2012		ANSI C63.10:2009	
COMMENTS			
Bluetooth Hopping Mode.			
DEVIATIONS FROM TEST STANDARD			
Configuration #	1	Signature 	
Channel		Value	Limit
2441 MHz - Channel		1.0 MHz	≥ 1 MHz
			Result
			Pass

Mid			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
Near Field Probe	EMCO	7405	IPI	NCR	0
Spectrum Analyzer	Agilent	E4440A	AFG	4/28/2011	12

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

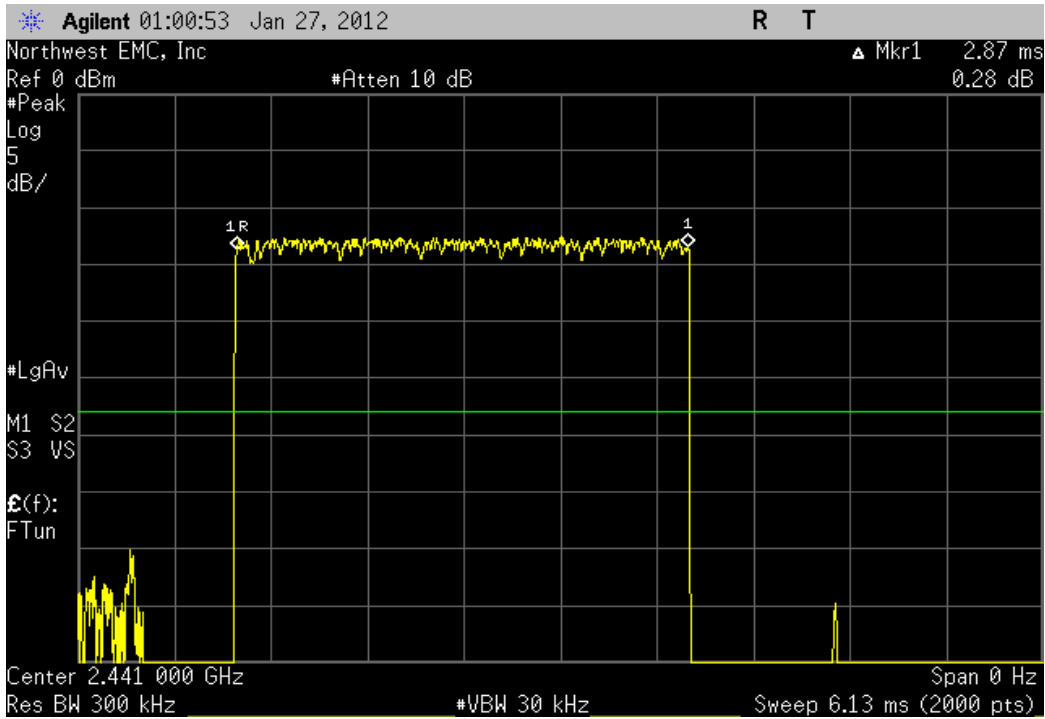
The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.



Dwell Time

EUT: Nomad		Work Order: TRPO0073					
Serial Number: None		Date: 01/26/12					
Customer: Trimble Navigation Limited MCS		Temperature: 19.42°C					
Attendees: None		Humidity: 35%					
Project: None		Barometric Pres.: 1012.4					
Tested by: Jaemi Suh		Power: 110VAC/60Hz					
		Job Site: OC11					
TEST SPECIFICATIONS							
		Test Method					
FCC 15.247:2012		ANSI C63.10:2009					
COMMENTS							
Bluetooth Hopping Mode.							
DEVIATIONS FROM TEST STANDARD							
Configuration #	1	<i>Signature</i>					
Channel	Pulse Width (mS)	Number of Pulses	Worst Case High Time (mS)	Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2402 MHz - 2480 MHz	2.87	1	N/A	N/A	2.87	400	Pass
2402 MHz - 2480 MHz	2.87	21	60.27	5	301.35	400	Pass

Pulse Width (mS)	Number of Pulses	Worst Case High Time (mS)	Mid Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.87	1	N/A	N/A	2.87	400	Pass



Pulse Width (mS)	Number of Pulses	Worst Case High Time (mS)	Mid Scale Factor	On Time (mS) During 31.6 S	Limit (mS)	Result
2.87	21	60.27	5	301.35	400	Pass

