Intermec Technologies Corporation

Model: RC12

Tested to the following Specifications:

FCC 15.247:2010
FCC 15.207:2010

Report No. INMC0575.1

Report Prepared By

NORTHWEST EMC

www.nwemc.com
1-888-EMI-CERT

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EMC Test Report

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: August 11, 2010
Intermec Technologies Corporation
Model: RC12

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Occupied Bandwidth	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Output Power	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Band Edge Compliance	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Spurious Conducted Emissions	FCC 15.207:2010	ANSI C63.10:2009	**Pass**
Power Spectral Density	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
Spurious Radiated Emissions	FCC 15.247:2010	ANSI C63.10:2009	**Pass**
AC Powerline Conducted Emissions	FCC 15.247:2010	ANSI C63.10:2009	**Pass**

Modifications made to the product
See the Modifications section of this report

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-2).

Approved By:

Don Facteau, IS Manager

NVLAP Lab Code: 200630-0

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 Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

Accreditations and Authorizations

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 United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. 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.

NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0
NVLAP LAB CODE 200881-0

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.

NEMKO

Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).

Accreditations and Authorizations

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-1784, 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). License No.SL2-IN-E-1017.

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)*

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/

Northwest EMC Locations

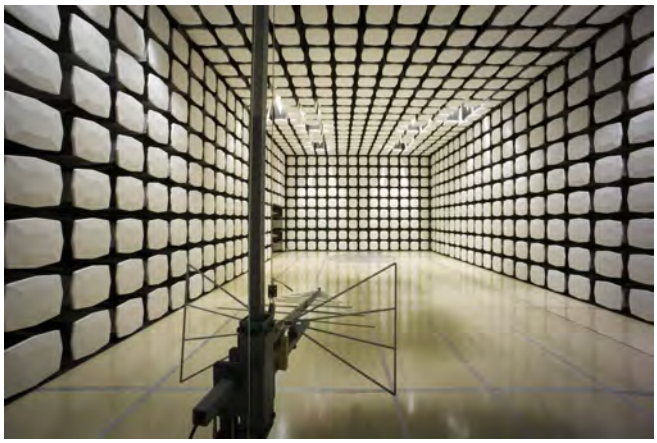
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

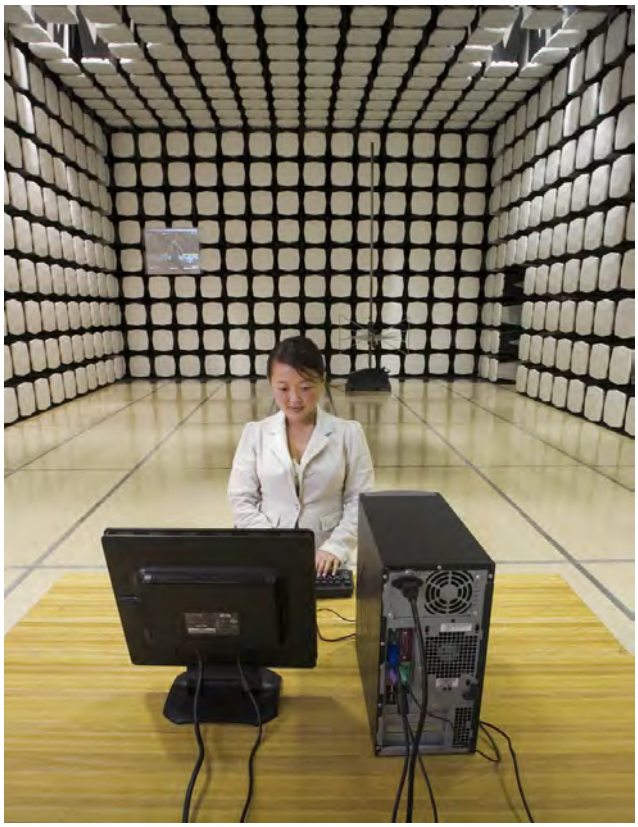
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

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





Party Requesting the Test

Company Name:	Intermec Technologies Corporation
Address:	6001 36th Avenue West
City, State, Zip:	Everett, WA 98203-1264
Test Requested By:	Wayne Rieger
Model:	RC12
First Date of Test:	August 11, 2010
Last Date of Test:	July 28, 2010
Receipt Date of Samples:	July 27, 2010
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):
One combination 802.11a/b/g/n - Bluetooth radio seeking modular approval.

Testing Objective:
Seeking to demonstrate compliance of the Bluetooth portion of the radio module to FCC 15.247 specifications.

CONFIGURATION 1 INMC0575

Software/Firmware Running during test	
Description	**Version**
Regulatory Test Tool	RTT_1.01.00.0007

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Galileo 802.11abgn and Bluetooth radio module	Intermec Technologies Corporation	ES5	R14

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Shuttle Board	Intermec Technologies Corporation	145-375-001	None
AC Adapter	Intermec Technologies Corporation	074749	None
Laird PIFA Antenna	Laird	CAF94400	None
Modular Antenna PCB Assembly	Centurion Wireless Technologies, Inc.	CAF94337	None
Power Supply	Topward Electric Instruments Co., LTD.	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote PC	Dell	Latitude D600	3XJ3H51

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC power	PA	1.85m	PA	AC Adapter	Shuttle Board
USB	Yes	5.0m	No	Shuttle Board	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 2 INMC0575

Software/Firmware Running during test	
Description	**Version**
Regulatory Test Tool	RTT_1.01.00.0007

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Galileo 802.11abgn and Bluetooth radio module	Intermec Technologies Corporation	ES5	R11

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Shuttle Board	Intermec Technologies Corporation	145-375-001	None
AC Adapter	Intermec Technologies Corporation	074749	None
Laird PIFA Antenna	Laird	CAF94400	None
Modular Antenna PCB Assembly	Centurion Wireless Technologies, Inc.	CAF94337	None
Power Supply	Topward Electric Instruments Co., LTD.	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote PC	Dell	Inspiron 6000	NW EMC IS386

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC power	PA	1.85m	PA	AC Adapter	Shuttle Board
USB	Yes	3.0m	No	Shuttle Board	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 INMC0575

Software/Firmware Running during test	
Description	**Version**
Regulatory Test Tool	RTT_1.01.00.0007

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Galileo 802.11abgn and Bluetooth radio module	Intermec Technologies Corporation	ES5	R11

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Shuttle Board	Intermec Technologies Corporation	145-375-001	None
Laird PIFA Antenna	Laird	CAF94400	None
Modular Antenna PCB Assembly	Centurion Wireless Technologies, Inc.	CAF94337	None
Power Supply	Topward Electric Instruments Co., LTD.	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote PC	Dell	Inspiron 6000	NW EMC IS386

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC power	PA	0.55m	PA	Power Supply	Shuttle Board
AC power	No	1.0m	No	Power Supply	AC Mains
USB	Yes	3.0m	No	Shuttle Board	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	7/28/2010	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	7/28/2010	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	7/28/2010	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.
4	8/4/2010	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	8/5/2010	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	8/2/2010	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.
7	8/11/2010	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

BLUETOOTH APPROVALS

FCC Procedure Received from Joe Dichoso on 2-15-02

The following exhibit indicates the FCC Spread Spectrum requirements in Section 15.247 for devices meeting the Bluetooth Specifications in the 2.4 GHz band as of February 2001 operating in the USA. The purpose of this exhibit is to help expedite the approval process for Bluetooth devices. This exhibit provides items that vary for each device and also provides a list of items that are common to Bluetooth devices that explains the remaining requirements. The list of common items can be submitted for each application for equipment authorization. This exhibit only specifies requirements in Section 15.247, requirements in other rule Sections for intentional radiators such as in Section 15.203 or 15.207 must be also be addressed. A Bluetooth device is a FHSS transmitter in the data mode and applies as a Hybrid spread spectrum device in the acquisition mode.

For each individual device, the following items, 1-7 will vary from one device to another and must be submitted.

1) The occupied bandwidth in Section 15.247(a)(1)(ii).
2) Conducted output power specified in Section 15.247(b)(1).
3) EIRP limit in Section 15.247(b)(3).
4) RF safety requirement in Section 15.247(b)(4)
5) Spurious emission limits in Section 15.247(c).
6) Processing gain and requirements for Hybrids in Section 15.247(f) in the acquisition mode.
7) Power spectral density requirement in Section 15.247(f) in the acquisition mode.

For all devices, the following items, 1-12, are common to all Bluetooth devices and will not vary from one device to another. This list can be copied into the filing.

1 Output power and channel separation of a Bluetooth device in the different operating modes:

The different operating modes (data-mode, acquisition-mode) of a Bluetooth device don't influence the output power and the channel spacing. There is only one transmitter which is driven by identical input parameters concerning these two parameters.
Only a different hopping sequence will be used. For this reason, the RF parameters in one op-mode is sufficient.

2 Frequency range of a Bluetooth device:

The maximum frequency of the device is: **2402 – 2480 M**Hz.
This is according the Bluetooth Core Specification V 1.0B (+ critical errata) for devices which will be operated in the USA. Other frequency ranges (e.g. for Spain, France, Japan) which are allowed according the Core Specification must **not be** supported by the device.

3 Co-ordination of the hopping sequence in data mode to avoid simultaneous occupancy by multiple transmitters:

Bluetooth units which want to communicate with other units must be organized in a structure called piconet. This piconet consist of max. 8 Bluetooth units. One unit is the master the other seven are the slaves. The master co-ordinates frequency occupation in this piconet for all units. As the master hop sequence is derived from it's BD address which is unique for every Bluetooth device, additional masters intending to establish new piconets will always use different hop sequences.

4 Example of a hopping sequence in data mode:

Example of a 79 hopping sequence in data mode:
40, 21, 44, 23, 42, 53, 46, 55, 48, 33, 52, 35, 50, 65, 54, 67,
56, 37, 60, 39, 58, 69, 62, 71, 64, 25, 68, 27, 66, 57, 70, 59,
72, 29, 76, 31, 74, 61, 78, 63, 01, 41, 05, 43, 03, 73, 07, 75,
09, 45, 13, 47, 11, 77, 15, 00, 64, 49, 66, 53, 68, 02, 70, 06,
01, 51, 03, 55, 05, 04

5 Equally average use of frequencies in data mode and short transmissions:

The generation of the hopping sequence in connection mode depends essentially on two input values:

1. LAP/UAP of the master of the connection
2. Internal master clock

The LAP (lower address part) are the 24 LSB's of the 48 BD_ADDRESS. The BD_ADDRESS is an unambiguous number of every Bluetooth unit. The UAP (upper address part) are the 24 MSB's of the 48 BD_ADDRESS. The internal clock of a Bluetooth unit is derived from a free running clock which is never adjusted and is never turned off. For synchronization with other units, only the offsets are used. It has no relation to the time of the day. Its resolution is at least half the RX/TX slot length of 312.5 µs. The clock has a cycle of about one day (23h30). In most case it is implemented as 28 bit counter. For the deriving of the hopping sequence the entire LAP (24 bits), 4 LSB's (4 bits) (Input 1) and the 27 MSB's of the clock (Input 2) are used. With this input values different mathematical procedures (permutations, additions, XOR-operations) are performed to generate the sequence. This will be done at the beginning of every new transmission.

Regarding short transmissions, the Bluetooth system has the following behavior:
The first connection between the two devices is established, a hopping sequence is generated. For transmitting the wanted data, the complete hopping sequence is not used and the connection ends. The second connection will be established. A new hopping sequence is generated. Due to the fact that the Bluetooth clock has a different value, because the period between the two transmission is longer (and it cannot be shorter) than the minimum resolution of the clock (312.5 µs). The hopping sequence will always differ from the first one.

6 Receiver input bandwidth, synchronization and repeated single or multiple packets:

The input bandwidth of the receiver is 1 MHz.

In every connection, one Bluetooth device is the master and the other one is the slave. The master determines the hopping sequence (see chapter 5). The slave follows this sequence. Both devices shift between RX and TX time slot according to the clock of the master. Additionally the type of connection (e.g. single or multi-slot packet) is set up at the beginning of the connection. The master adapts its hopping frequency and its TX/RX timing is according to the packet type of the connection. Also, the slave of the connection uses these settings. Repeating of a packet has no influence on the hopping sequence. The hopping sequence generated by the master of the connection will be followed in any case. That means, a repeated packet will not be send on the same frequency, it is send on the next frequency of the hopping sequence

7 Dwell time in data mode

The dwell time of 0.3797s within a 30 second period in data mode is independent from the packet type (packet length). The calculation for a 30 second period is a follows:
Dwell time = time slot length * hop rate / number of hopping channels *30s
Example for a DH1 packet (with a maximum length of one time slot)
Dwell time = 625 µs * 1600 1/s / 79 * 30s = 0.3797s (in a 30s period)

For multi-slot packet the hopping is reduced according to the length of the packet.
Example for a DH5 packet (with a maximum length of five time slots)
Dwell time = 5 * 625 µs * 1600 * 1/5 *1/s / 79 * 30s = 0.3797s (in a 30s period)
This is according the Bluetooth Core Specification V 1.0B (+ critical errata) for all Bluetooth devices. Therefore, all Bluetooth devices **comply** with the FCC dwell time requirement in the data mode.
This was checked during the Bluetooth Qualification tests.
The Dwell time in hybrid mode is approximately 2.6 mS (in a 12.8s period)

8 Channel Separation in hybrid mode

The nominal channel spacing of the Bluetooth system is 1Mhz independent of the operating mode.
The maximum “initial carrier frequency tolerance” which is allowed for Bluetooth is fcenter = 75 kHz.
This was checked during the Bluetooth Qualification tests (Test Case: TRM/CA/07-E) for three frequencies (2402, 2441, 2480 MHz).

9 Derivation and examples for a hopping sequence in hybrid mode

For the generation of the inquiry and page hop sequences the same procedures as described for the data mode are used (see item 5), but this time with different input vectors:
**For the inquiry hop sequence, a predefined fixed address is always used. This results in the same 32 frequencies used by all devices doing an inquiry but every time with a different start frequency and phase in this sequence.
**For the page hop sequence, the device address of the paged unit is used as the input vector. This results in the use of a subset of 32 frequencies which is specific for that initial state of the connection establishment between the two units. A page to different devices would result in a different subset of 32 frequencies.
So it is ensured that also in hybrid mode, the frequency is used equally on average.
Example of a hopping sequence in inquiry mode:
48, 50, 09, 13, 52, 54,41, 45, 56, 58, 11, 15, 60, 62, 43, 47, 00, 02, 64, 68, 04, 06, 17, 21, 08, 10, 66, 70, 12, 14, 19, 23
Example of a hopping sequence in paging mode:
08, 57, 68, 70, 51, 02, 42, 40, 04, 61, 44, 46, 63, 14, 50, 48, 16, 65, 52, 54, 67, 18, 58, 56, 20, 53, 60, 62, 55, 06, 66, 64

10 Receiver input bandwidth and synchronization in hybrid mode:

The receiver input bandwidth is the same as in the data mode (1 MHz). When two Bluetooth devices establish contact for the first time, one device sends an inquiry access code and the other device is scanning for this inquiry access code. If two devices have been connected previously and want to start a new transmission, a similar procedure takes place. The only difference is, instead of the inquiry access code, a special access code, derived from the BD_ADDRESS of the paged device will be, will be sent by the master of this connection. Due to the fact that both units have been connected before (in the inquiry procedure) the paging unit has timing and frequency information about the page scan of the paged unit. For this reason the time to establish the connection is reduced.

11 Spread rate / data rate of the direct sequence signal

The Spread rate / Data rate in inquiry and paging mode can be defined via the access code. The access code is the only criterion for the system to check if there is a valid transmission or not. If you regard the presence of a valid access code as one bit of information, and compare it with the length of the access code of 68 bits, the Spread rate / Data rate will be 68/1.

12 Spurious emission in hybrid mode

The Dwell in hybrid mode is shorter than in data mode. For this reason the spurious emissions average level in data mode is worst case. The spurious emissions peak level is the same for both modes.

OCCUPIED BANDWIDTH

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	4/1/2010	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Signal Generator	Agilent	E8257D	TGX	12/10/2008	24

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 using a direct connection between the RF output of the EUT and the spectrum analyzer. The Occupied Bandwidth measurement function of the spectrum analyzer was used and the value from the x dB measurement set to –20.00 db was reported. The EUT was transmitting in a no hop mode at its maximum data rate for each of the three different modulations available.

NORTHWEST EMC

OCCUPIED BANDWIDTH

XMit 2010.07.29

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R11	Date:	07/28/10
Customer:	Intermec Technologies Corporation	Temperature:	20°C
Attendees:	none	Humidity:	48%
Project:	None	Barometric Pres.:	1019.3 mb
Tested by:	Rod Peloquin	Power: 5VDC	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

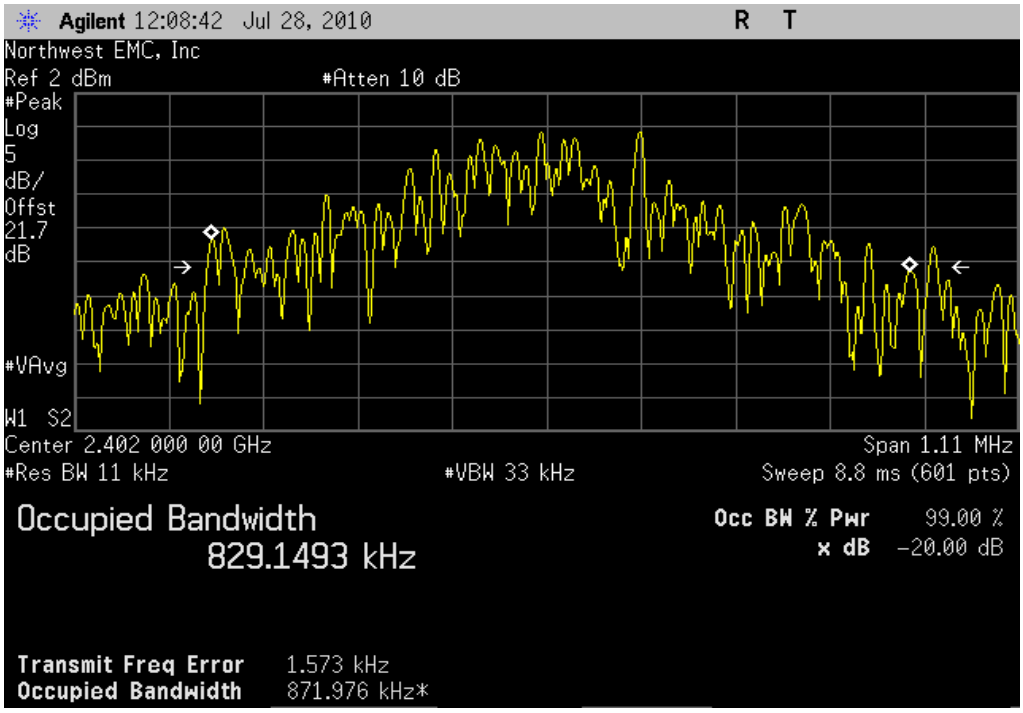
No deviations

Configuration #	2	Signature

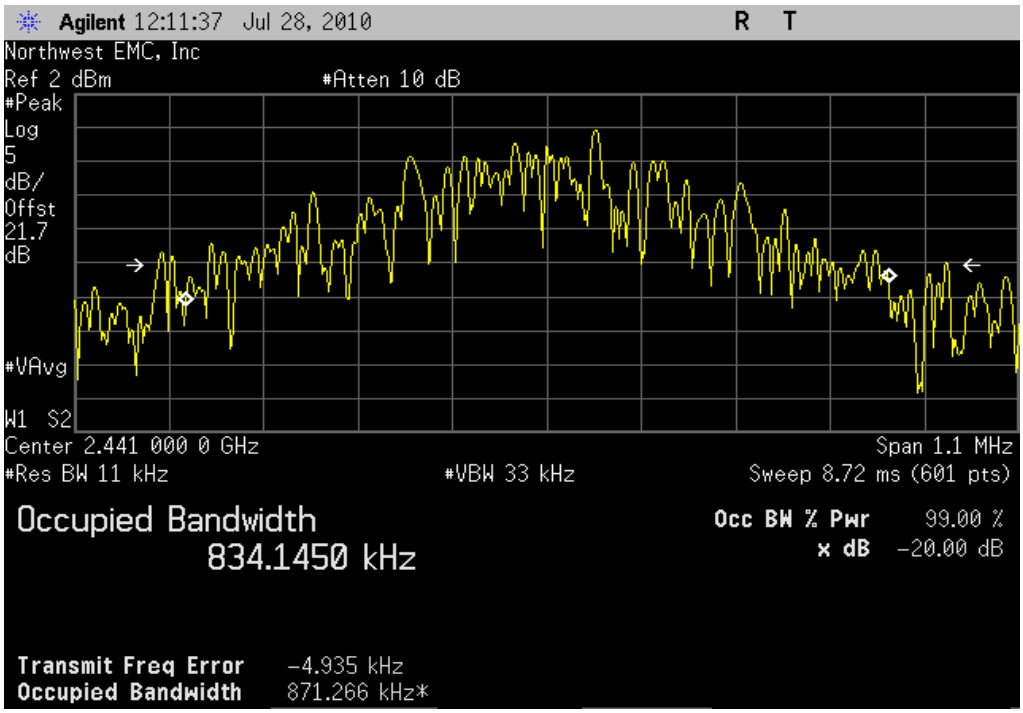
		Value	Limit	Results
GFSK, DH5				
	Low Channel, 2402MHz	871.98 kHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	871.27 kHz	1.5 MHz	Pass
	High Channel, 2480 MHz	873.86 kHz	1.5 MHz	Pass
pi/4-DQPSK, 2DH5				
	Low Channel, 2402MHz	1.336 MHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	1.332 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.344 MHz	1.5 MHz	Pass
8-DPSK, 3DH5				
	Low Channel, 2402MHz	1.345 MHz	1.5 MHz	Pass
	Mid Channel, 2441 MHz	1.343 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.349 MHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

GFSK, DH5, Low Channel, 2402MHz					
Result:	Pass	**Value:**	871.98 kHz	**Limit:**	1.5 MHz

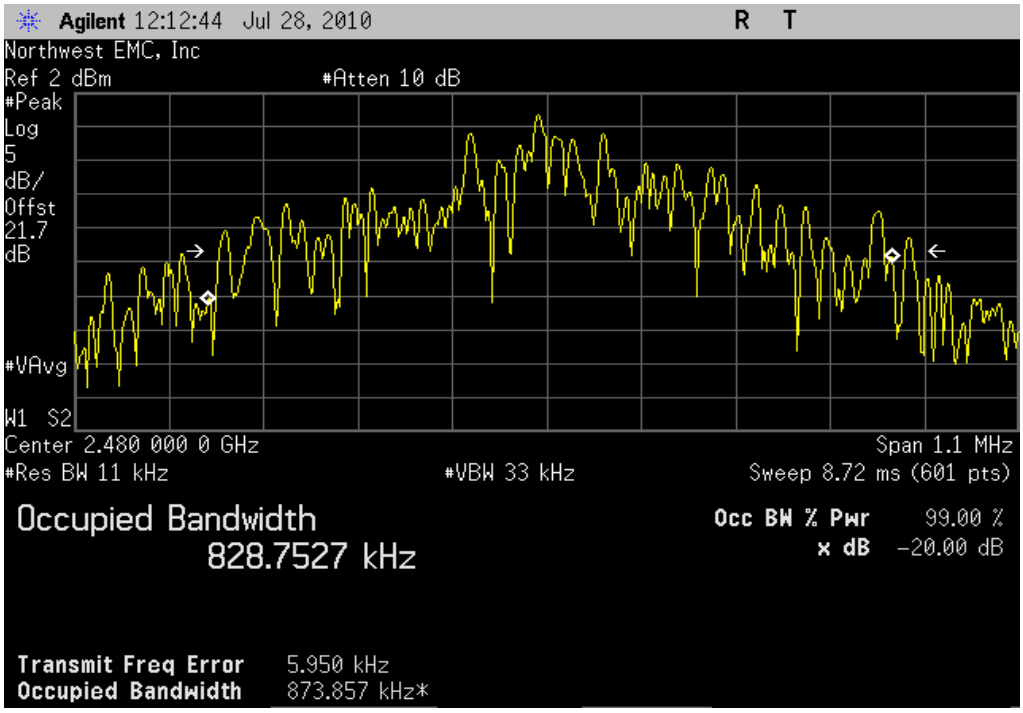


GFSK, DH5, Mid Channel, 2441 MHz					
Result:	Pass	**Value:**	871.27 kHz	**Limit:**	1.5 MHz

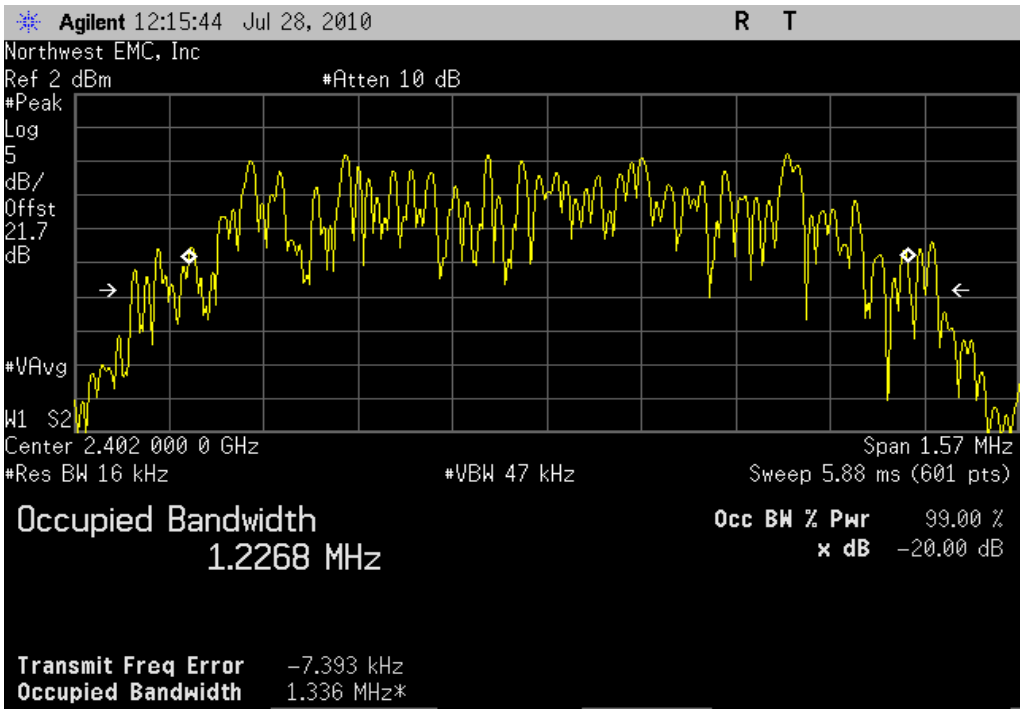


OCCUPIED BANDWIDTH

GFSK, DH5, High Channel, 2480 MHz					
Result:	Pass	**Value:**	873.86 kHz	**Limit:**	1.5 MHz

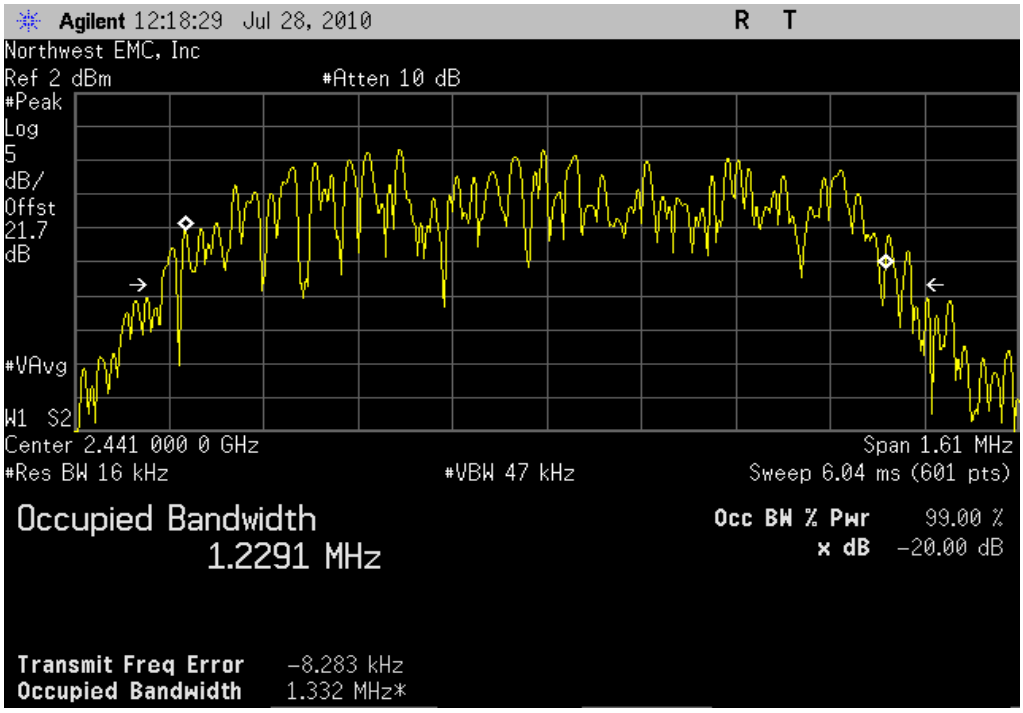


pi/4-DQPSK, 2DH5, Low Channel, 2402MHz					
Result:	Pass	**Value:**	1.336 MHz	**Limit:**	1.5 MHz

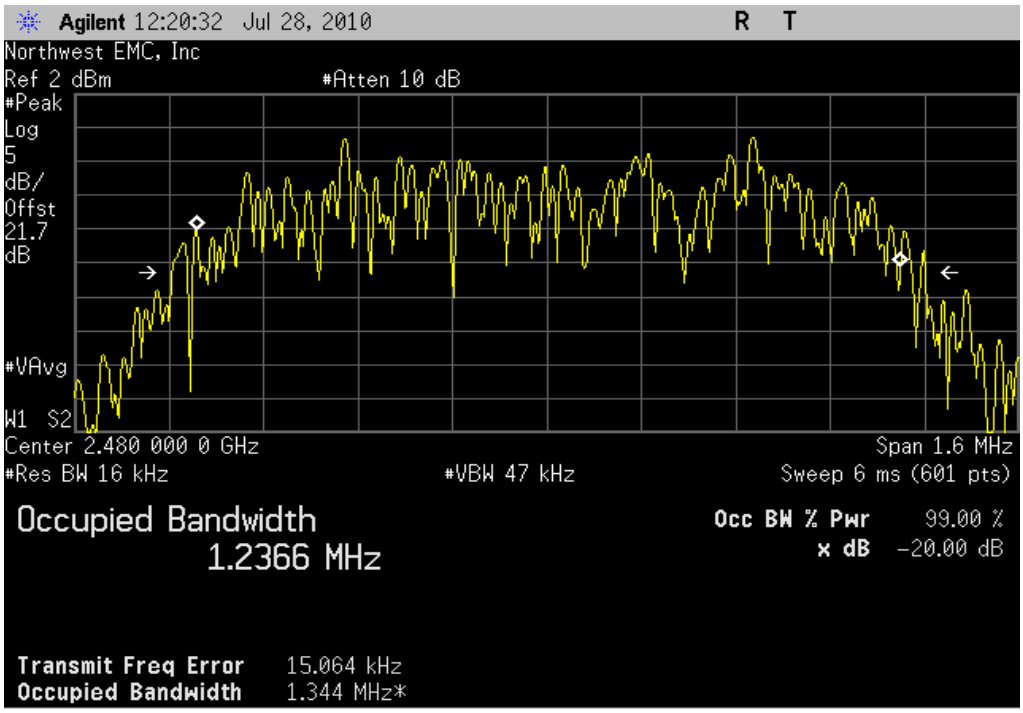


OCCUPIED BANDWIDTH

pi/4-DQPSK, 2DH5, Mid Channel, 2441 MHz					
Result:	Pass	**Value:**	1.332 MHz	**Limit:**	1.5 MHz

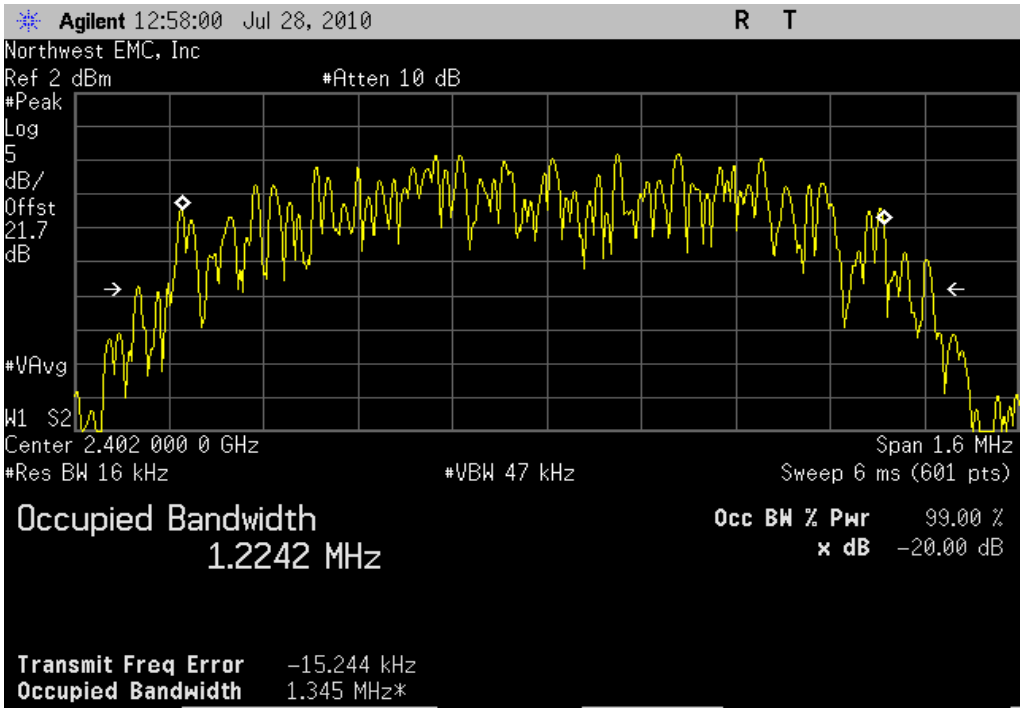


pi/4-DQPSK, 2DH5, High Channel, 2480 MHz					
Result:	Pass	**Value:**	1.344 MHz	**Limit:**	1.5 MHz

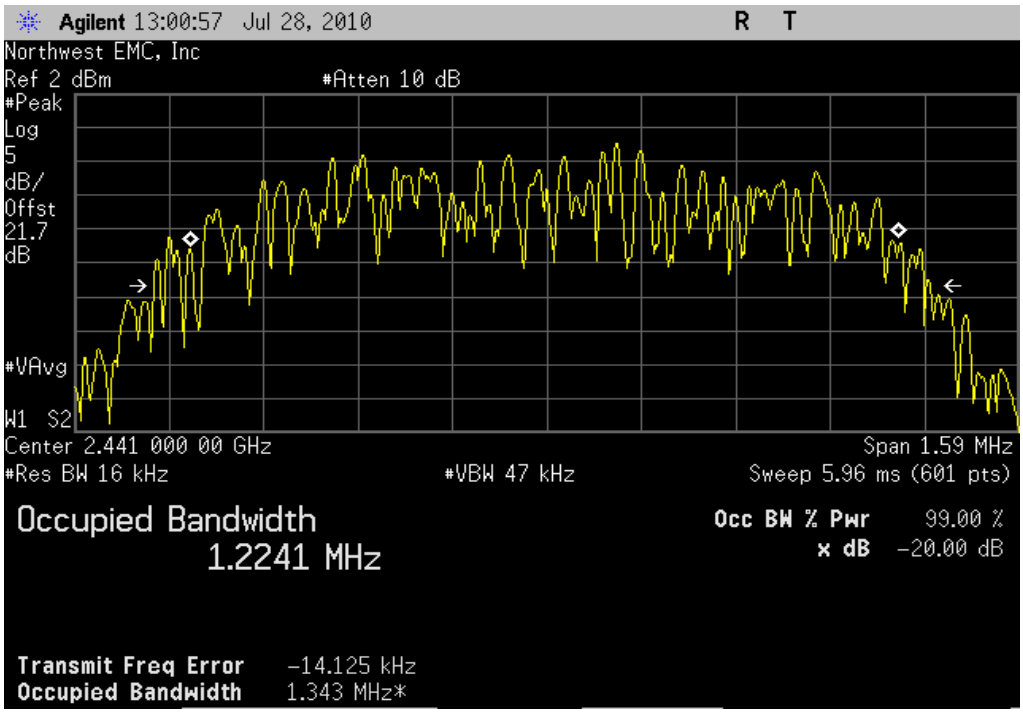


OCCUPIED BANDWIDTH

8-DPSK, 3DH5, Low Channel, 2402MHz					
Result:	Pass	**Value:**	1.345 MHz	**Limit:**	1.5 MHz

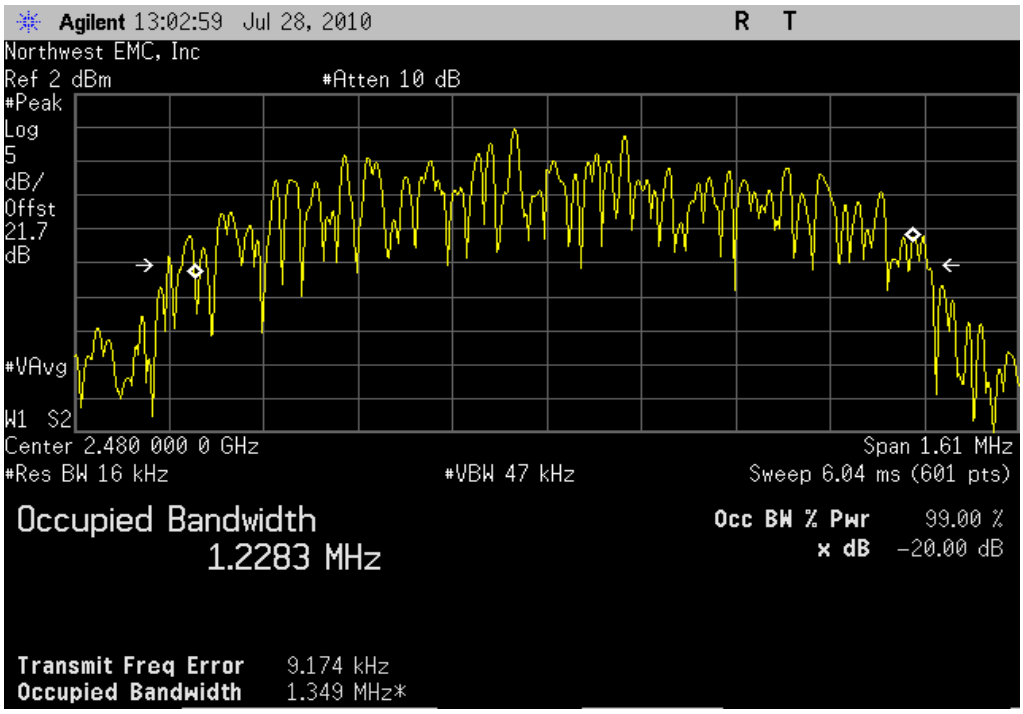


8-DPSK, 3DH5, Mid Channel, 2441 MHz					
Result:	Pass	**Value:**	1.343 MHz	**Limit:**	1.5 MHz

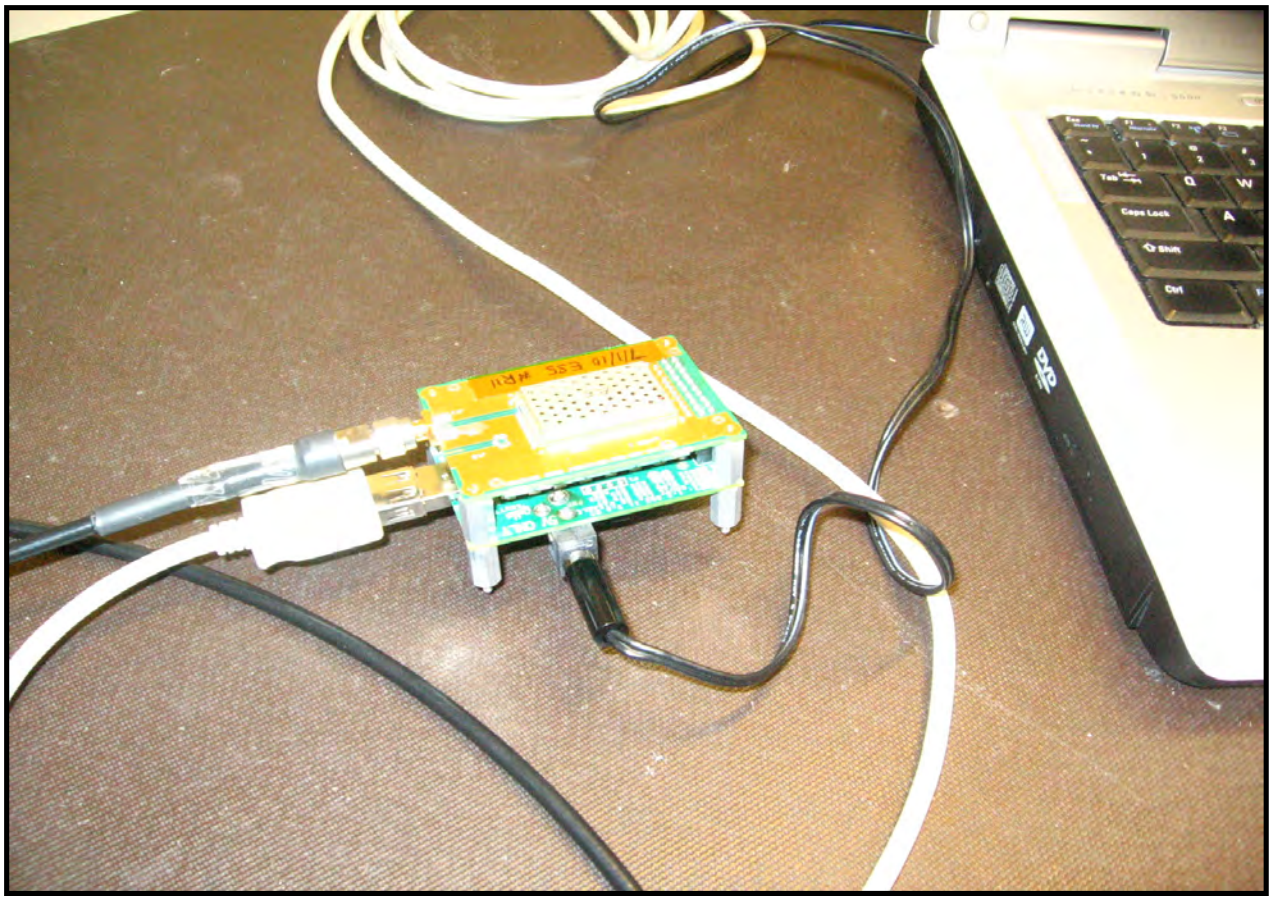


OCCUPIED BANDWIDTH

8-DPSK, 3DH5, High Channel, 2480 MHz					
Result:	Pass	**Value:**	1.349 MHz	**Limit:**	1.5 MHz



OCCUPIED BANDWIDTH



OUTPUT POWER

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	4/1/2010	13
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Signal Generator	Agilent	E8257D	TGX	12/10/2008	24

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium, and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. . The EUT was transmitting in a no hop mode at its maximum data rate for each of the three different modulations available.

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

NORTHWEST EMC

OUTPUT POWER

XMit 2010.01.14

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R11	Date:	07/28/10
Customer:	Intermec Technologies Corporation	Temperature:	24°C
Attendees:	none	Humidity:	44%
Project:	None	Barometric Pres.:	1015.4 mb
Tested by:	Rod Peloquin	Power: 5VDC	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

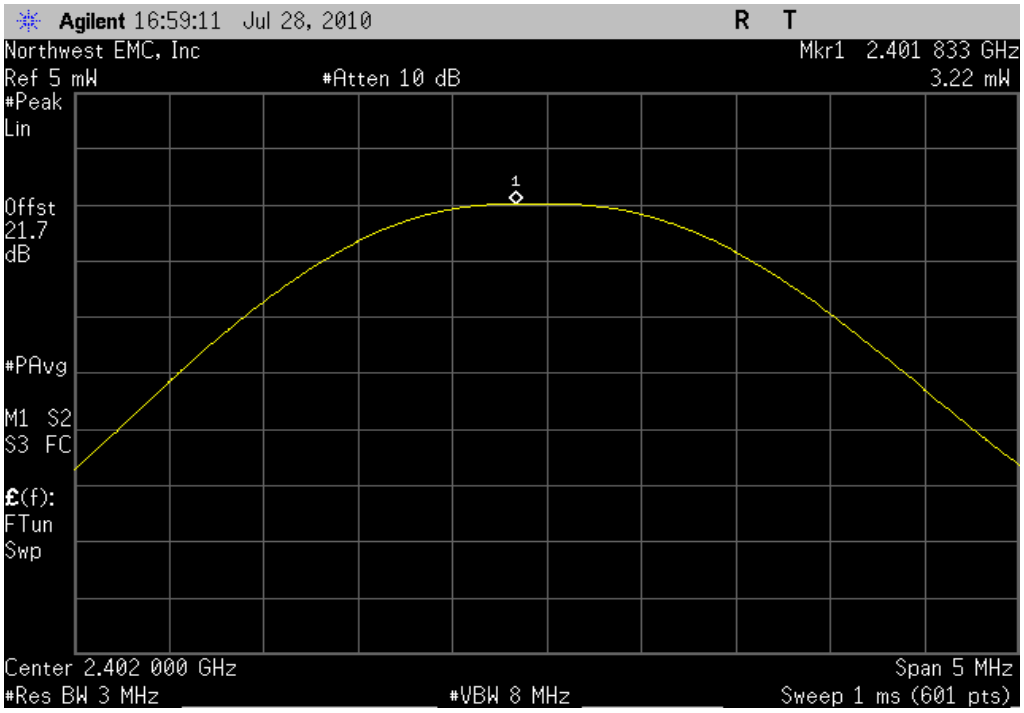
No Deviations

Configuration #	2	Signature

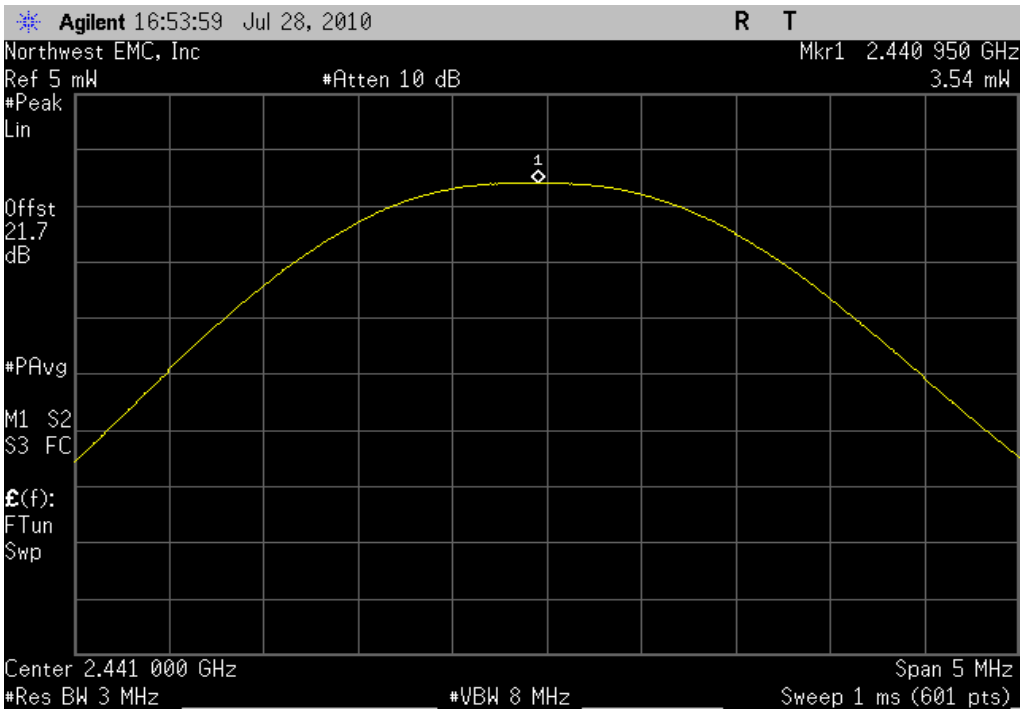
	Value	Limit	Results
DH5, GFSK			
Low Channel	3.2 mW	125 mW	Pass
Mid Channel	3.5 mW	125 mW	Pass
High Channel	3.7 mW	125 mW	Pass
2DH5, 4-DQPSK			
Low Channel	5.8 mW	125 mW	Pass
Mid Channel	6.2 mW	125 mW	Pass
High Channel	6.2 mW	125 mW	Pass
3DH5, 8-DPSK			
Low Channel	6.7 mW	125 mW	Pass
Mid Channel	7.2 mW	125 mW	Pass
High Channel	7.1 mW	125 mW	Pass

OUTPUT POWER

DH5, GFSK, Low Channel					
Result:	Pass	**Value:**	3.2 mW	**Limit:**	125 mW

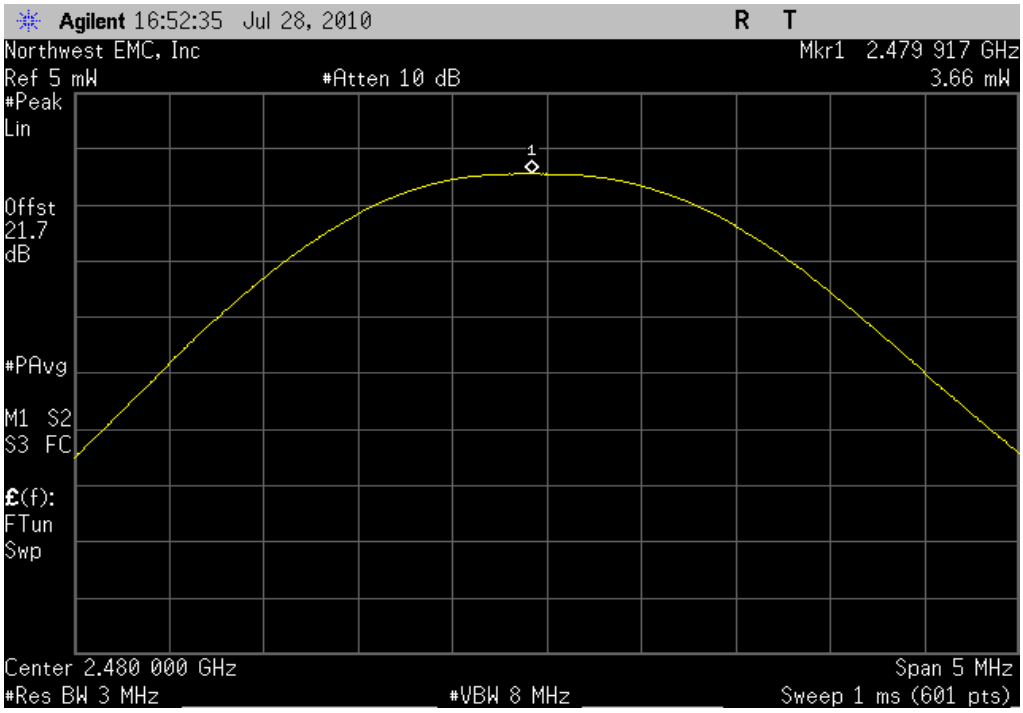


DH5, GFSK, Mid Channel					
Result:	Pass	**Value:**	3.5 mW	**Limit:**	125 mW

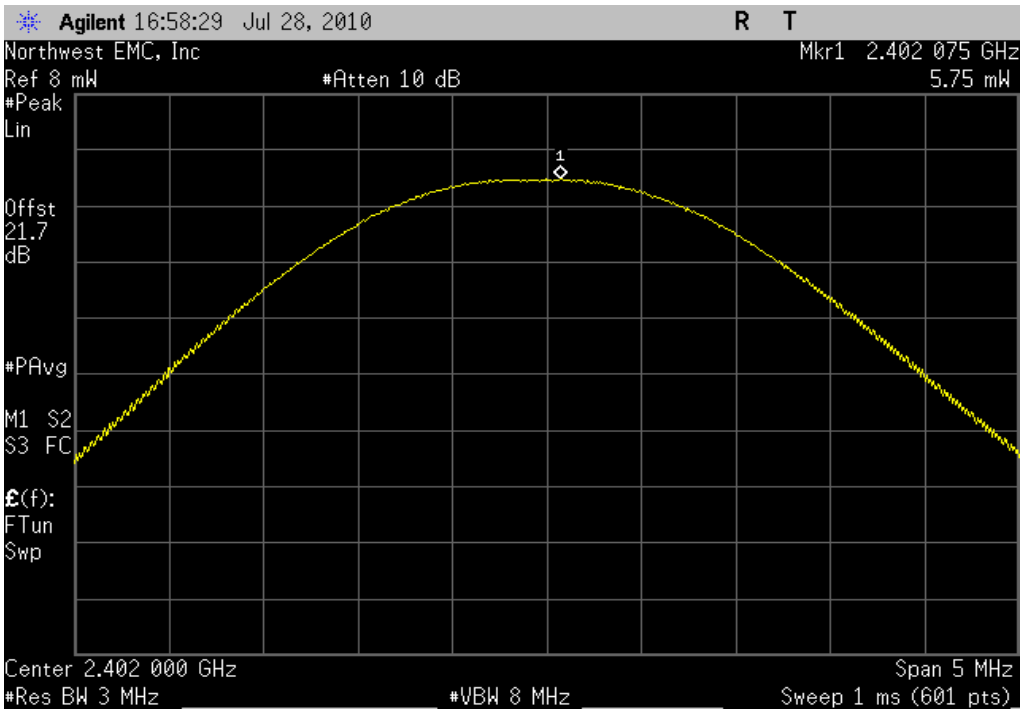


OUTPUT POWER

DH5, GFSK, High Channel					
Result:	Pass	**Value:**	3.7 mW	**Limit:**	125 mW

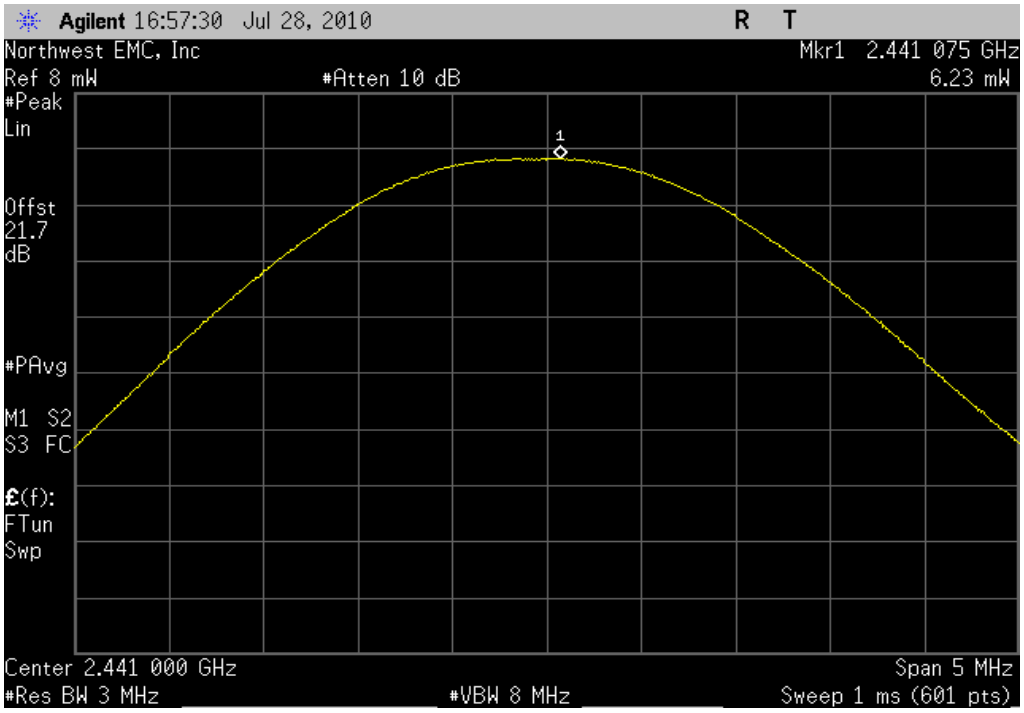


2DH5, 4-DQPSK, Low Channel					
Result:	Pass	**Value:**	5.8 mW	**Limit:**	125 mW

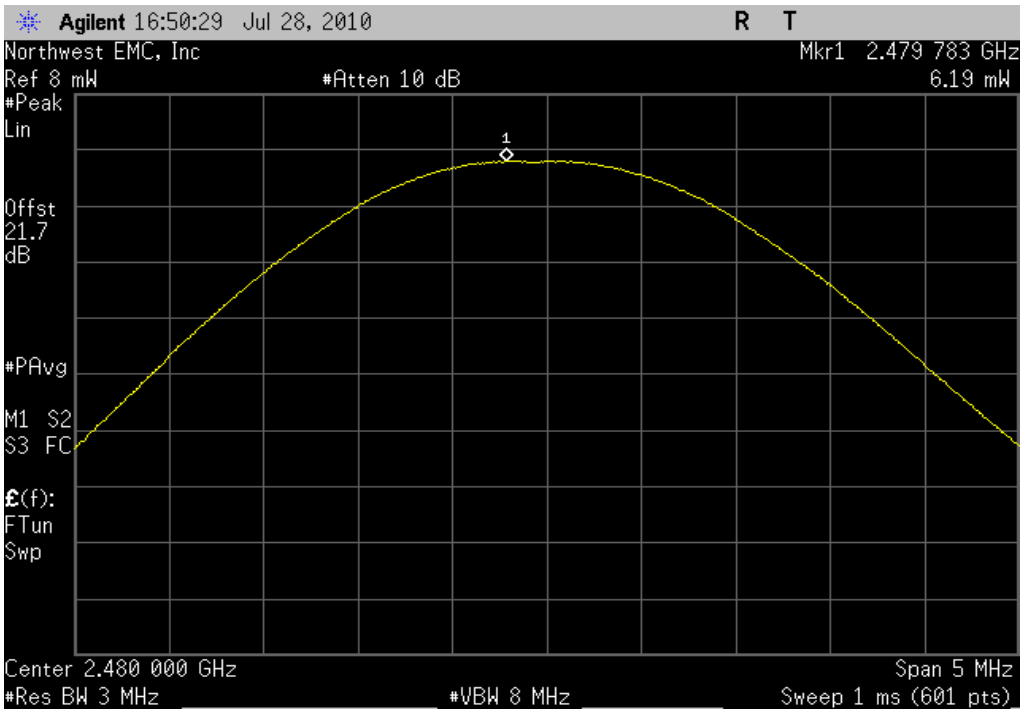


OUTPUT POWER

2DH5, 4-DQPSK, Mid Channel					
Result:	Pass	**Value:**	6.2 mW	**Limit:**	125 mW

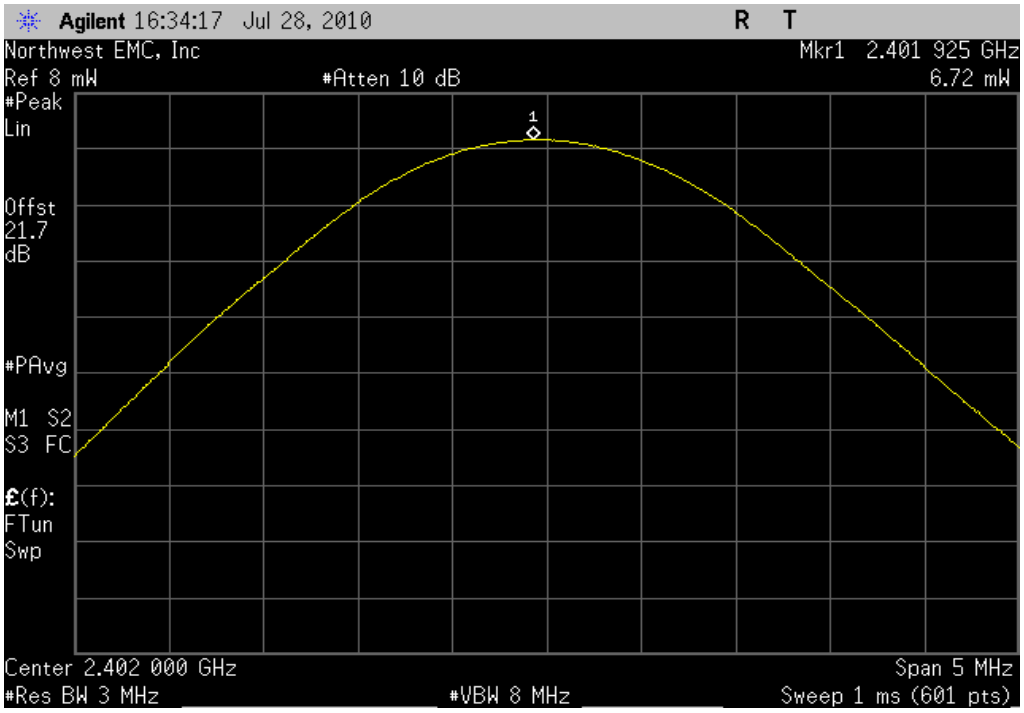


2DH5, 4-DQPSK, High Channel					
Result:	Pass	**Value:**	6.2 mW	**Limit:**	125 mW

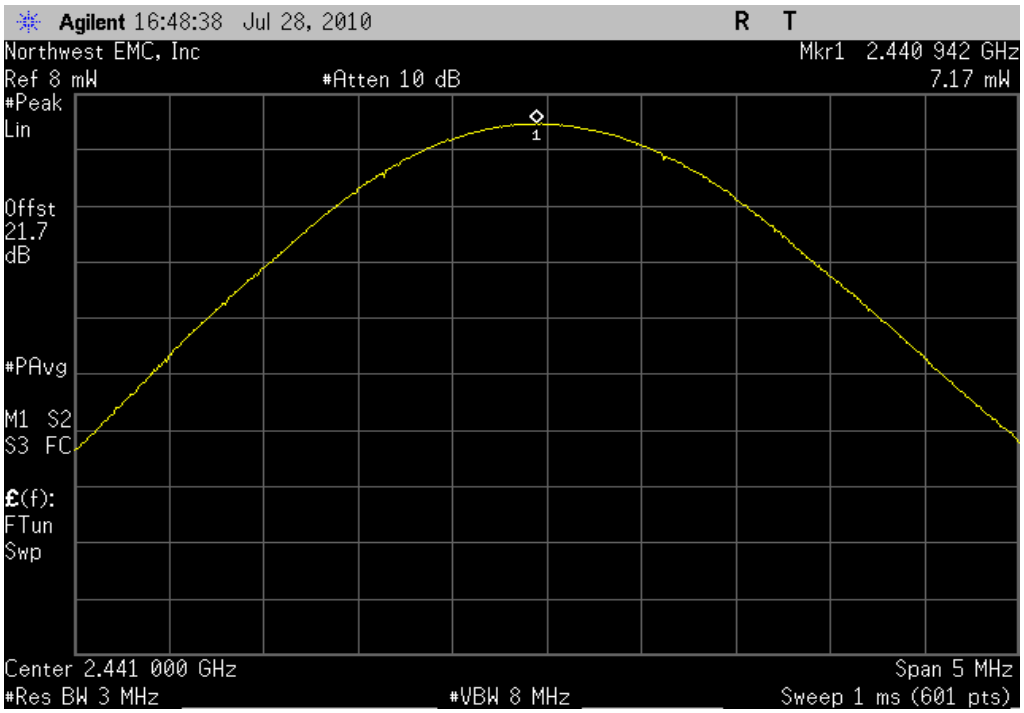


OUTPUT POWER

3DH5, 8-DPSK, Low Channel					
Result:	Pass	**Value:**	6.7 mW	**Limit:**	125 mW

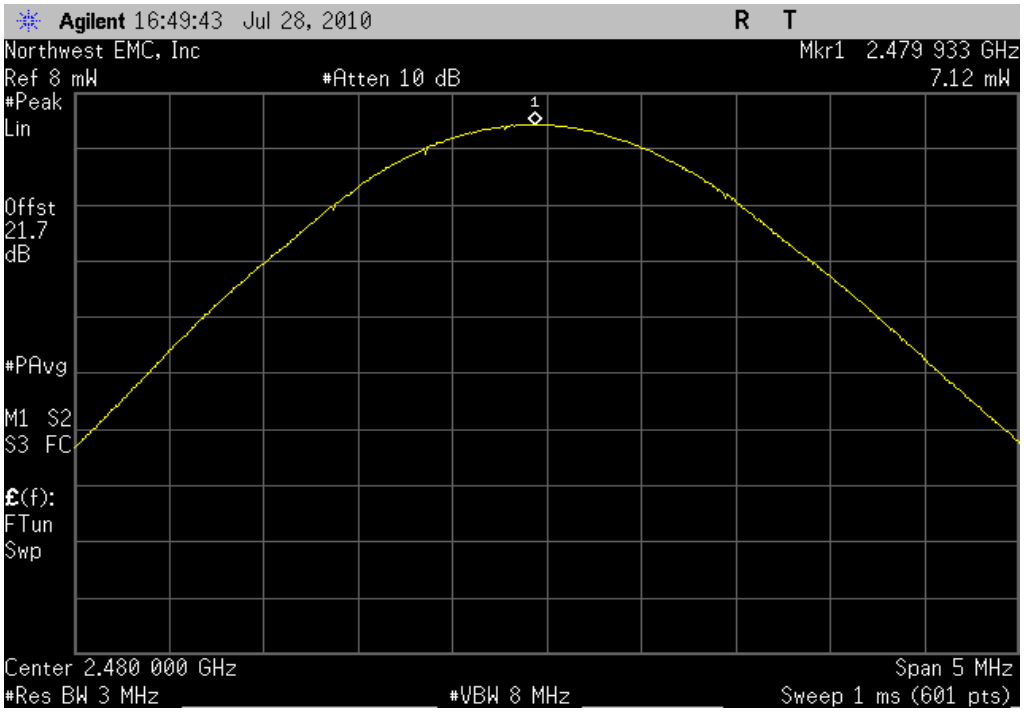


3DH5, 8-DPSK, Mid Channel					
Result:	Pass	**Value:**	7.2 mW	**Limit:**	125 mW

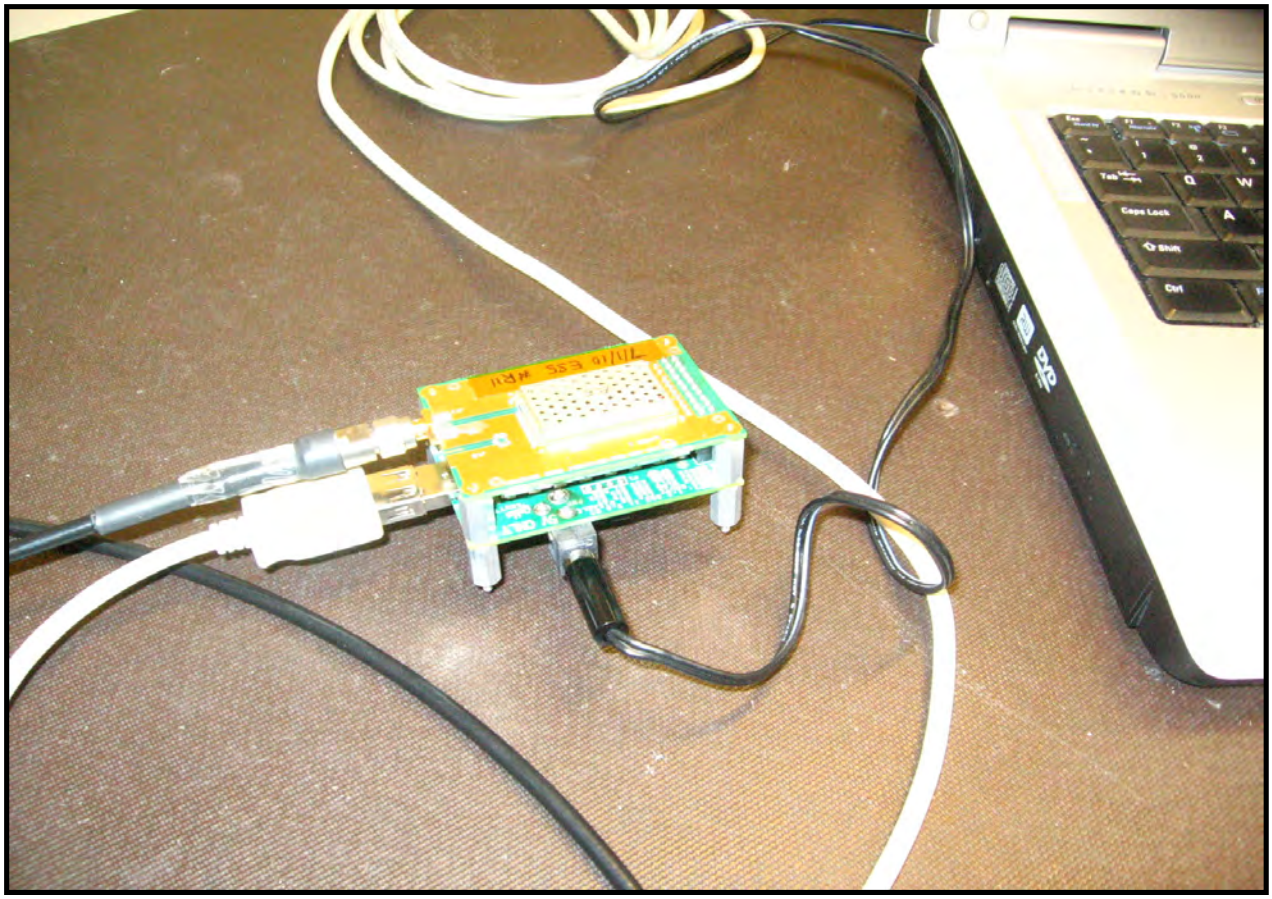


OUTPUT POWER

3DH5, 8-DPSK, High Channel					
Result:	Pass	**Value:**	7.1 mW	**Limit:**	125 mW



mW



BAND EDGE COMPLIANCE

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The 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 using a direct connection between the RF output of the EUT and the spectrum analyzer. 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.

NORTHWEST EMC

BAND EDGE COMPLIANCE

XMit 2010.01.14

EUT:	RC12			Work Order:	INMC0575
Serial Number:	R11			Date:	07/28/10
Customer:	Intermec Technologies Corporation			Temperature:	24°C
Attendees:	none			Humidity:	44%
Project:	None			Barometric Pres.:	1015.4 mb
Tested by:	Rod Peloquin	Power:	5VDC	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

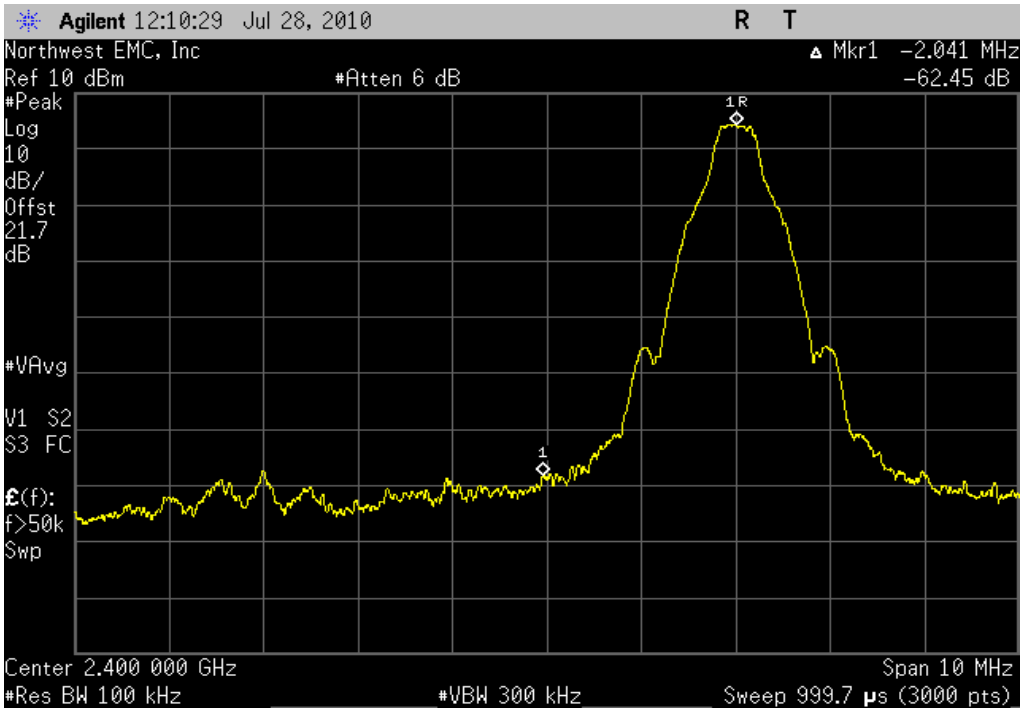
No Deviations

Configuration #	2	Signature

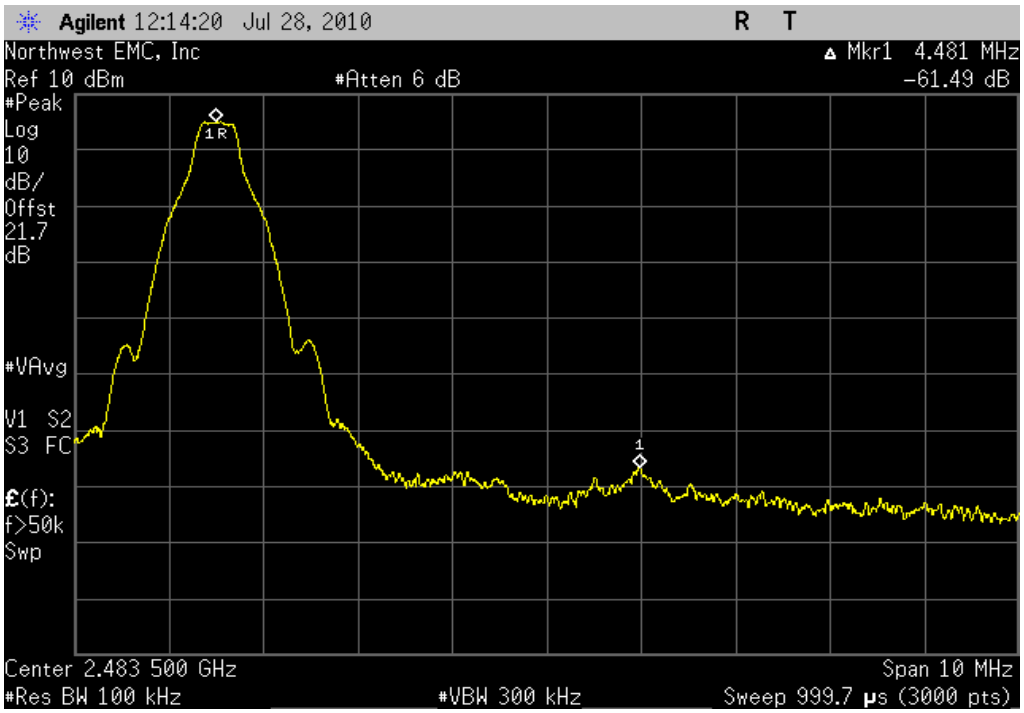
		Value	Limit	Results
GFSK, DH5				
	Low Channel	-62.5 dBc	≤ -20 dBc	Pass
	High Channel	-61.5 dBc	≤ -20 dBc	Pass
pi/4-DQPSK, 2DH5				
	Low Channel	-48.9 dBc	≤ -20 dBc	Pass
	High Channel	-55.6 dBc	≤ -20 dBc	Pass
8-DPSK, 3DH5				
	Low Channel	-48.3 dBc	≤ -20 dBc	Pass
	High Channel	-54.4 dBc	≤ -20 dBc	Pass

BAND EDGE COMPLIANCE

GFSK, DH5, Low Channel					
Result:	Pass	**Value:**	-62.5 dBc	**Limit:**	≤ -20 dBc

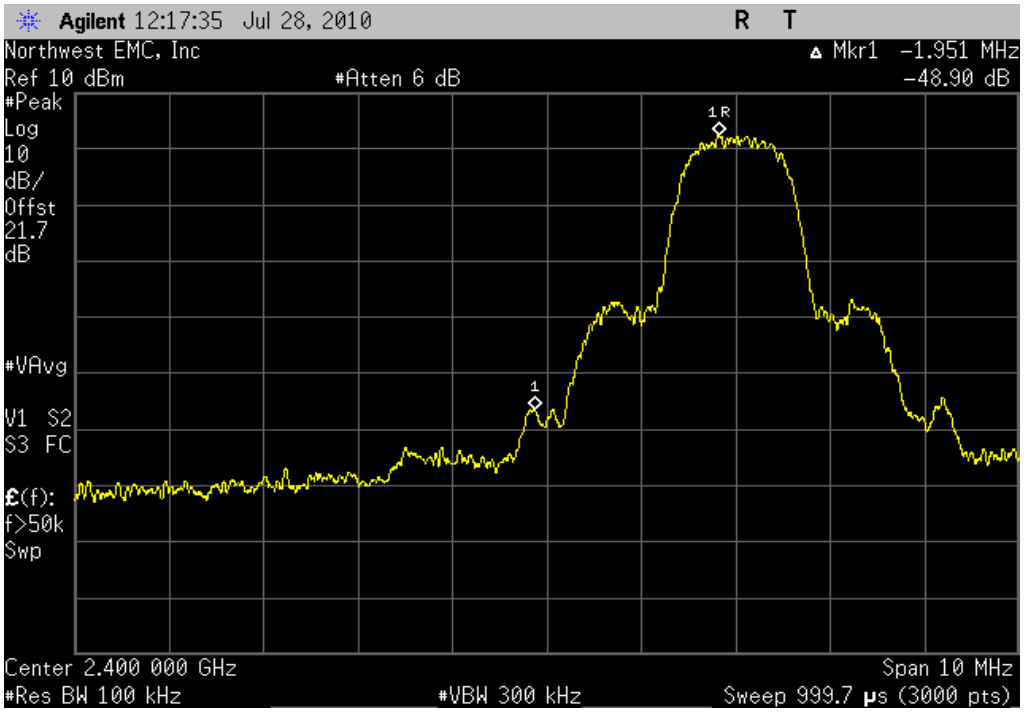


GFSK, DH5, High Channel					
Result:	Pass	**Value:**	-61.5 dBc	**Limit:**	≤ -20 dBc

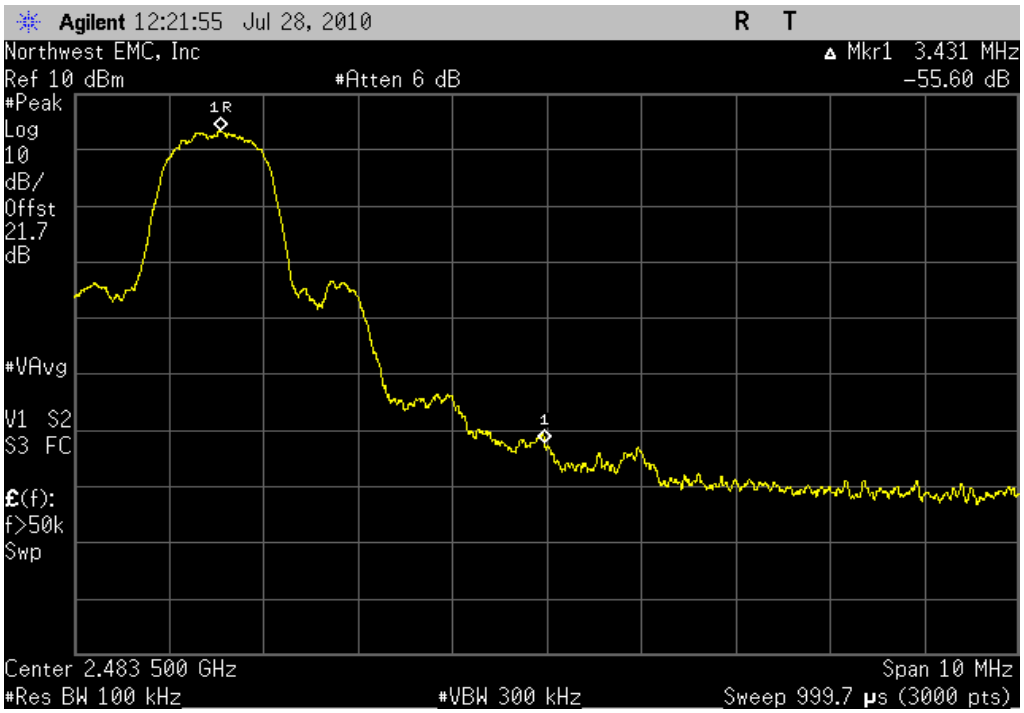


BAND EDGE COMPLIANCE

pi/4-DQPSK, 2DH5, Low Channel					
Result:	Pass	**Value:**	-48.9 dBc	**Limit:**	≤ -20 dBc

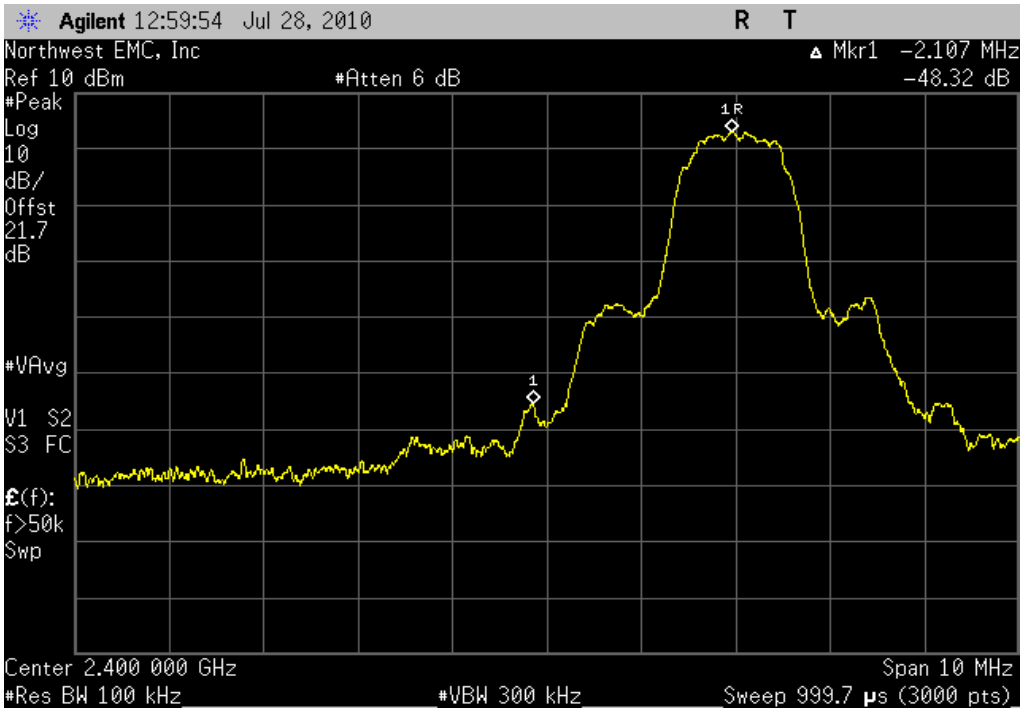


pi/4-DQPSK, 2DH5, High Channel					
Result:	Pass	**Value:**	-55.6 dBc	**Limit:**	≤ -20 dBc

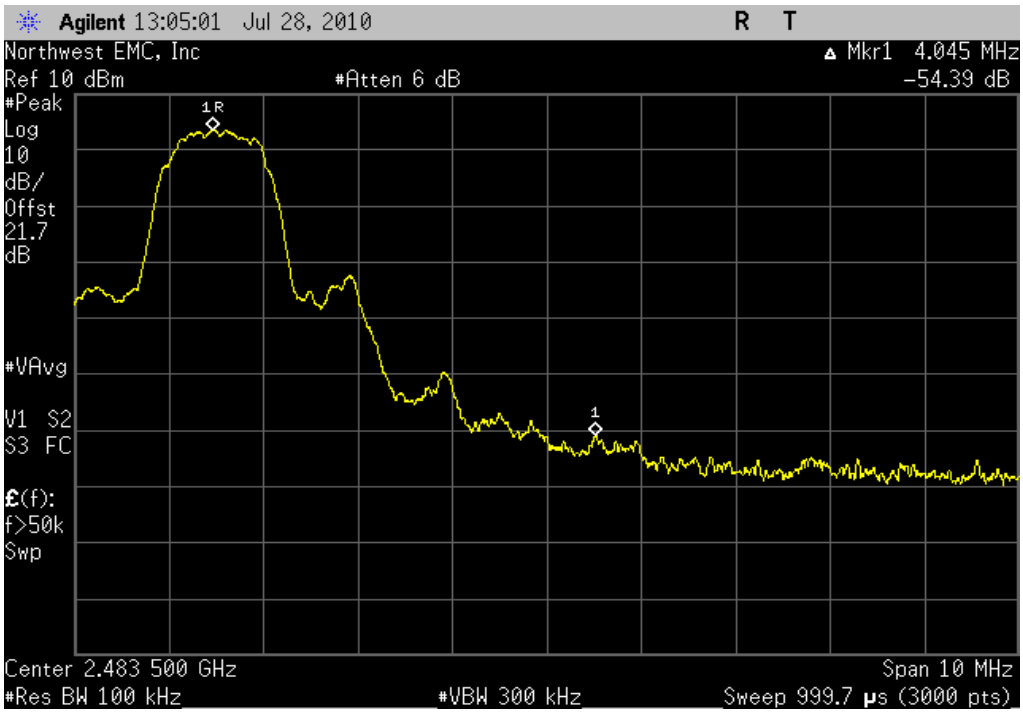


BAND EDGE COMPLIANCE

8-DPSK, 3DH5, Low Channel					
Result:	Pass	**Value:**	-48.3 dBc	**Limit:**	≤ -20 dBc



8-DPSK, 3DH5, High Channel					
Result:	Pass	**Value:**	-54.4 dBc	**Limit:**	≤ -20 dBc



BAND EDGE COMPLIANCE

SPURIOUS CONDUCTED EMISSIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0

MEASUREMENT UNCERTAINTY

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

TEST DESCRIPTION

The spurious RF conducted emissions were measured with the EUT set to low, medium, and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at its maximum data rate in a no hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency.

NORTHWEST EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2010.07.29

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R11	Date:	08/05/10
Customer:	Intermec Technologies Corporation	Temperature:	23°C
Attendees:	none	Humidity:	36%
Project:	None	Barometric Pres.:	1015.5 mb
Tested by:	Rod Peloquin	Power: 5VDC	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

Transmitting in Bluetooth mode at default power.

DEVIATIONS FROM TEST STANDARD

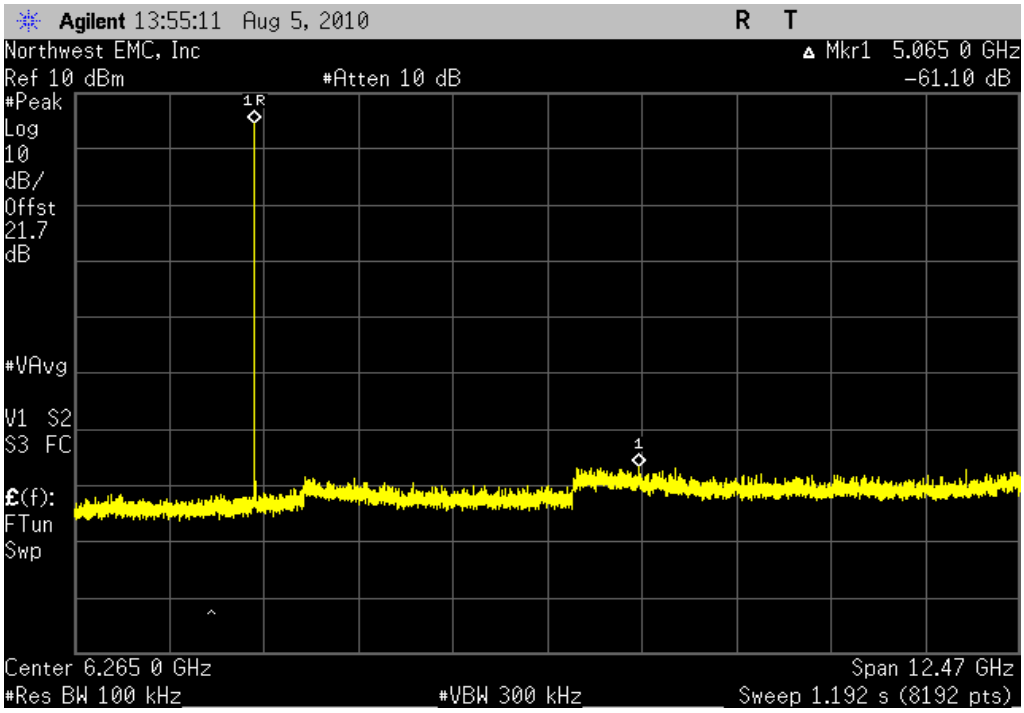
No Deviations

Configuration #	2	Signature

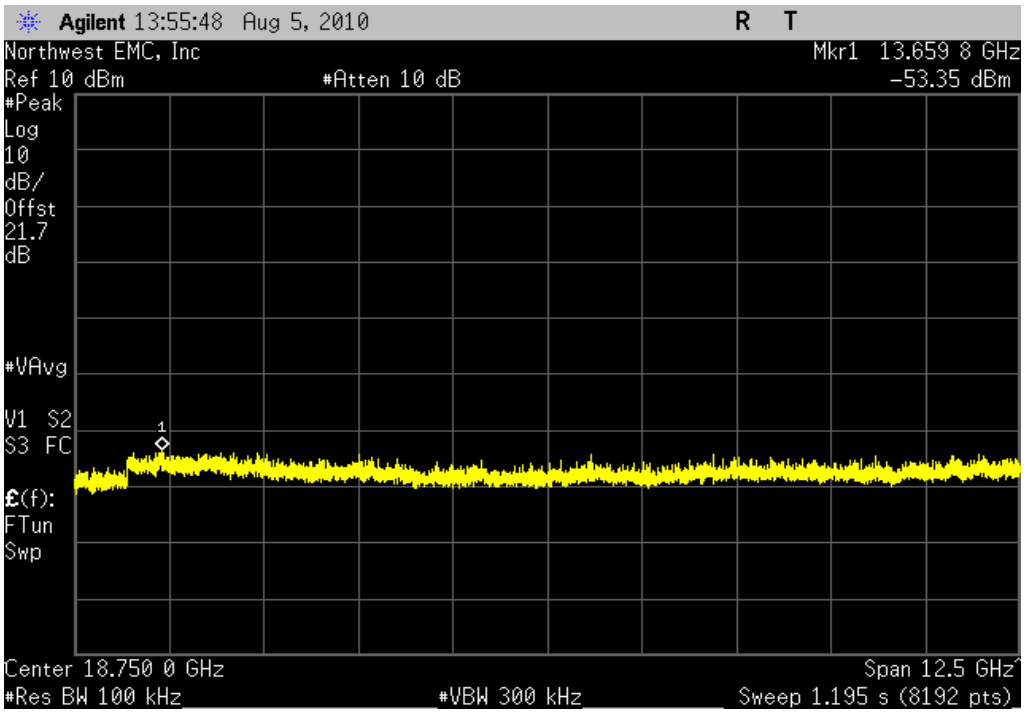
		Value	Limit	Results
GFSK, DH5				
	Low Channel			
	30MHz - 12.5GHz	-61.1 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.4 dBc	< -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-60.7 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.4 dBc	< -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-60.5 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.4 dBc	< -20 dBc	Pass
pi/4-DQPSK, 2DH5				
	Low Channel			
	30MHz - 12.5GHz	-54.3 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.3 dBc	< -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-58.4 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.1 dBc	< -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-53.8 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-52.6 dBc	< -20 dBc	Pass
8DPSK, 3DH5				
	Low Channel			
	30MHz - 12.5GHz	-50.8 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-52.6 dBc	< -20 dBc	Pass
	Mid Channel			
	30MHz - 12.5GHz	-57.7 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.1 dBc	< -20 dBc	Pass
	High Channel			
	30MHz - 12.5GHz	-53.2 dBc	< -20 dBc	Pass
	12.4GHz-25GHz	-53.5 dBc	< -20 dBc	Pass

SPURIOUS CONDUCTED EMISSIONS

GFSK, DH5, Low Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-61.1 dBc	**Limit:**	< -20 dBc

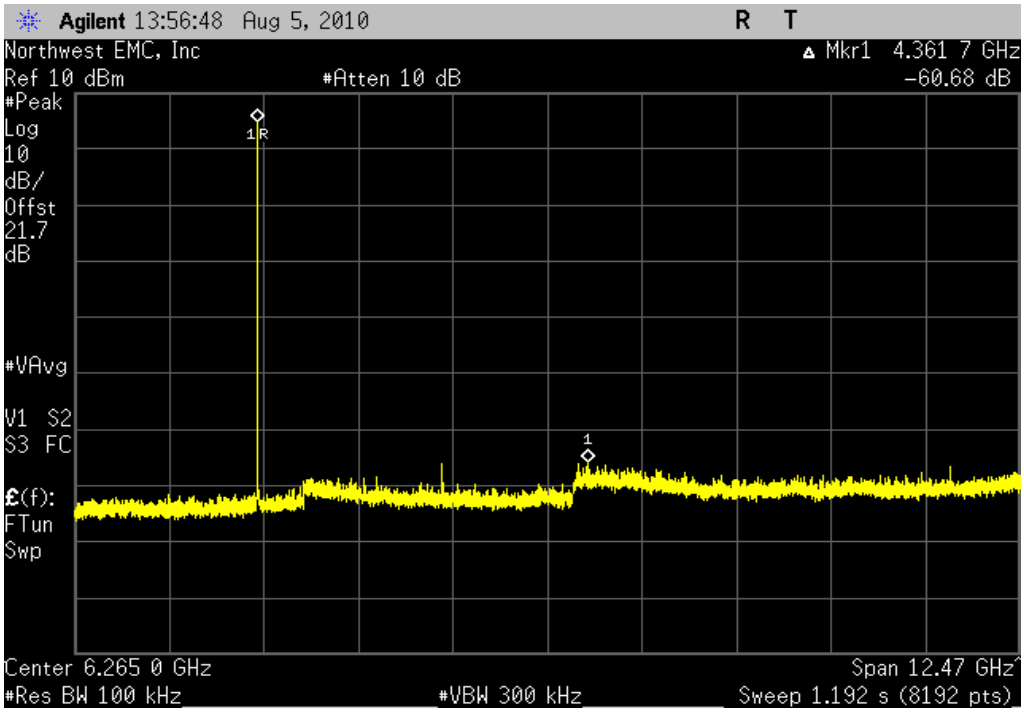


GFSK, DH5, Low Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.4 dBc	**Limit:**	< -20 dBc

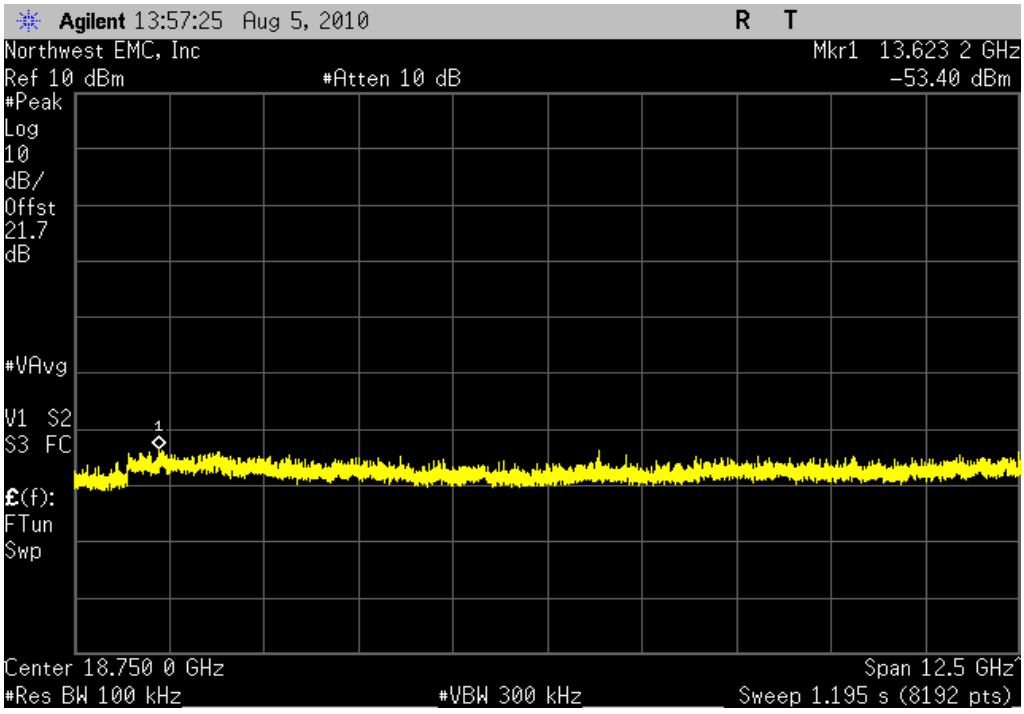


SPURIOUS CONDUCTED EMISSIONS

GFSK, DH5, Mid Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-60.7 dBc	**Limit:**	< -20 dBc

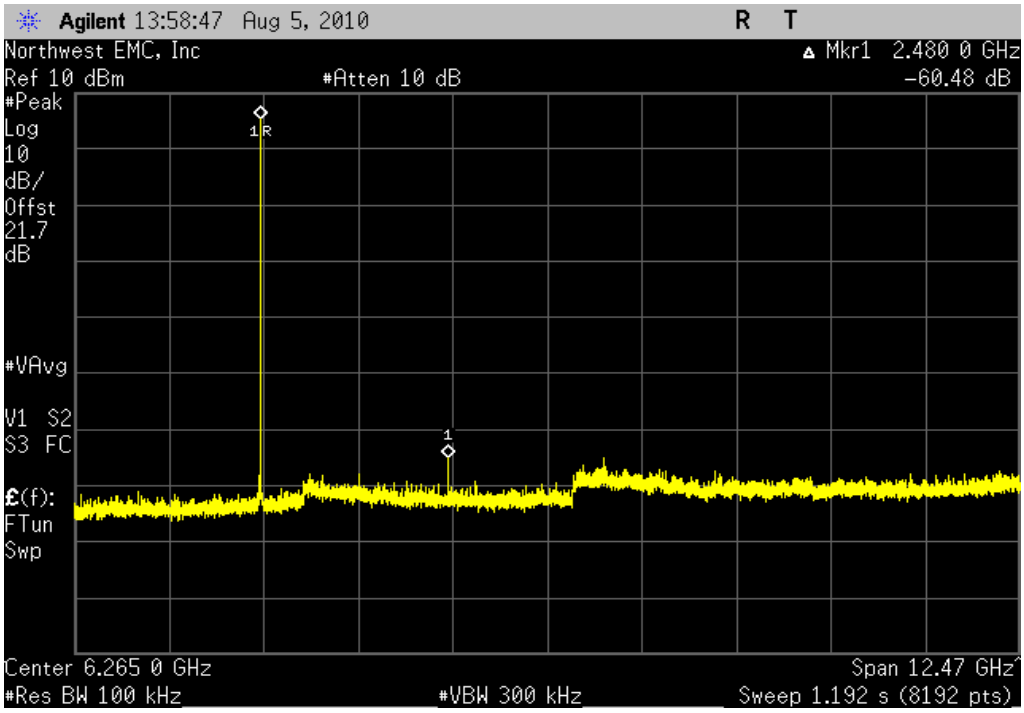


GFSK, DH5, Mid Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.4 dBc	**Limit:**	< -20 dBc

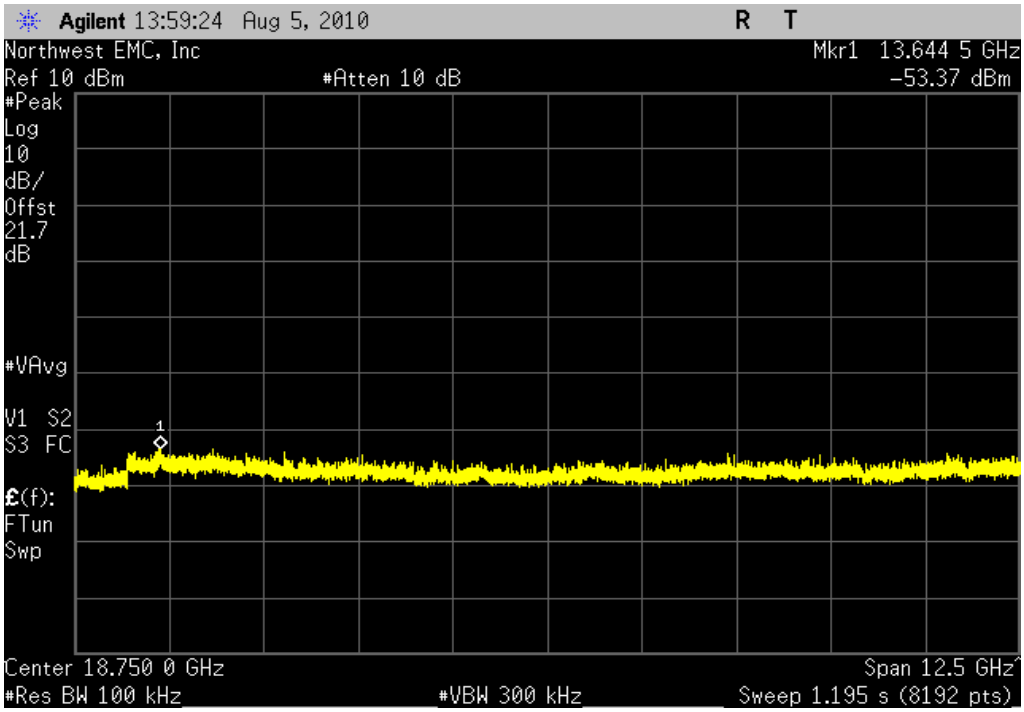


SPURIOUS CONDUCTED EMISSIONS

GFSK, DH5, High Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-60.5 dBc	**Limit:**	< -20 dBc

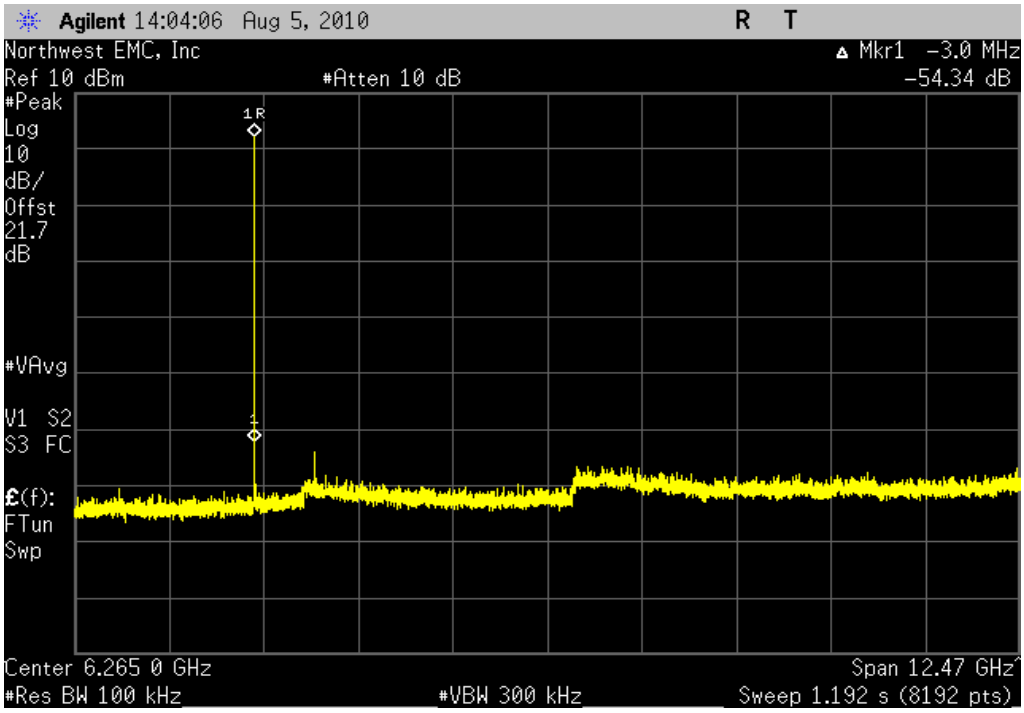


GFSK, DH5, High Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.4 dBc	**Limit:**	< -20 dBc

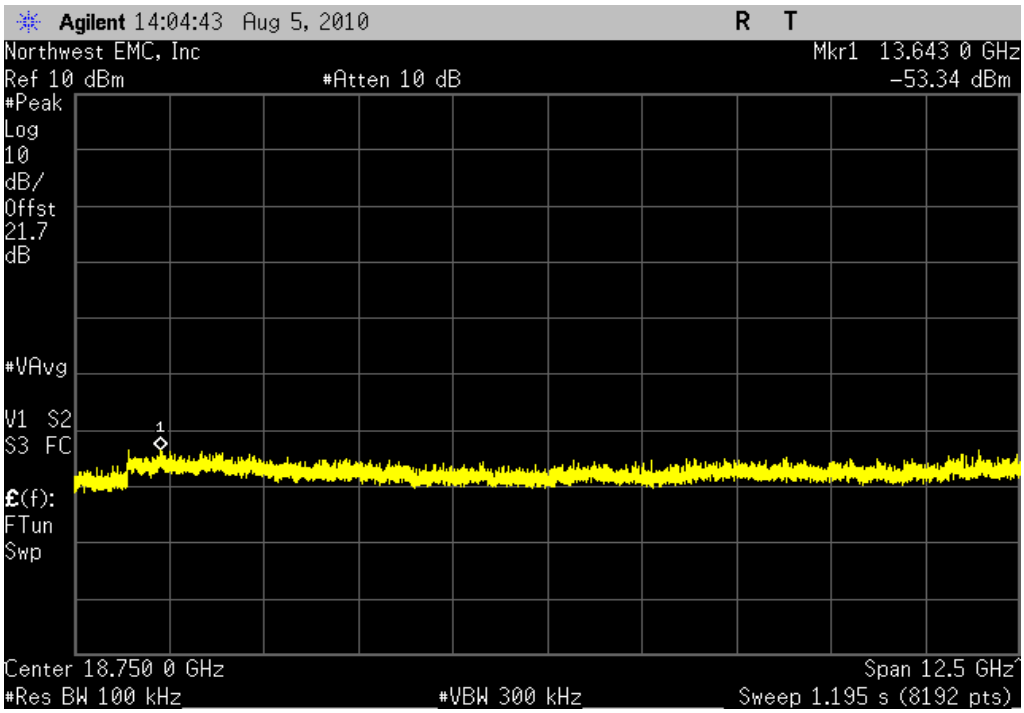


SPURIOUS CONDUCTED EMISSIONS

pi/4-DQPSK, 2DH5, Low Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-54.3 dBc	**Limit:**	< -20 dBc

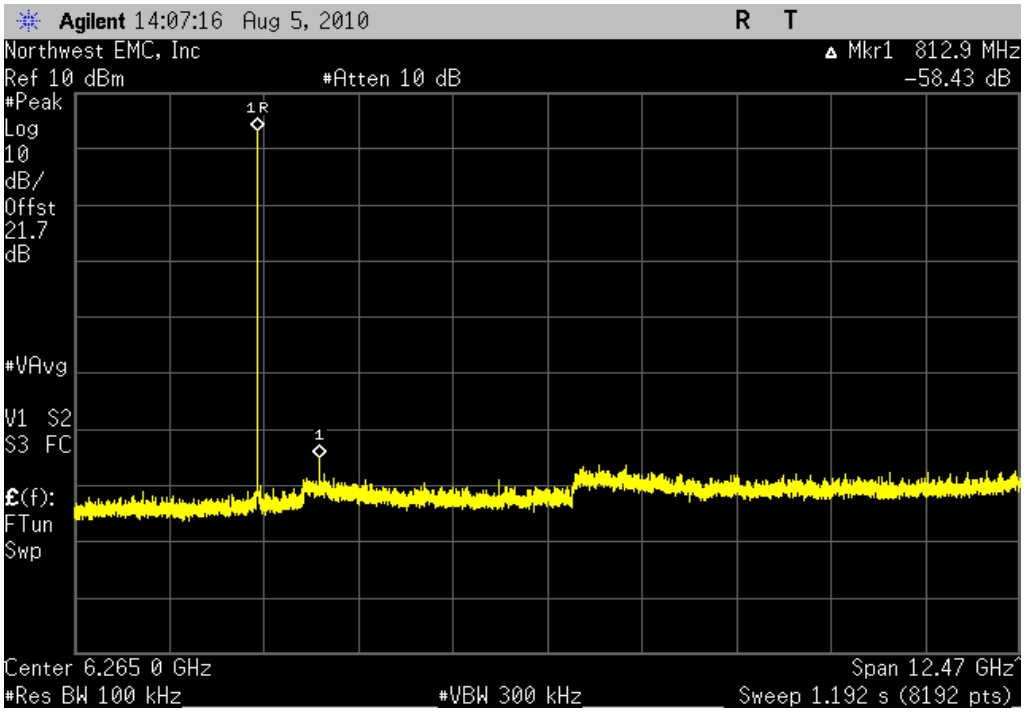


pi/4-DQPSK, 2DH5, Low Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.3 dBc	**Limit:**	< -20 dBc

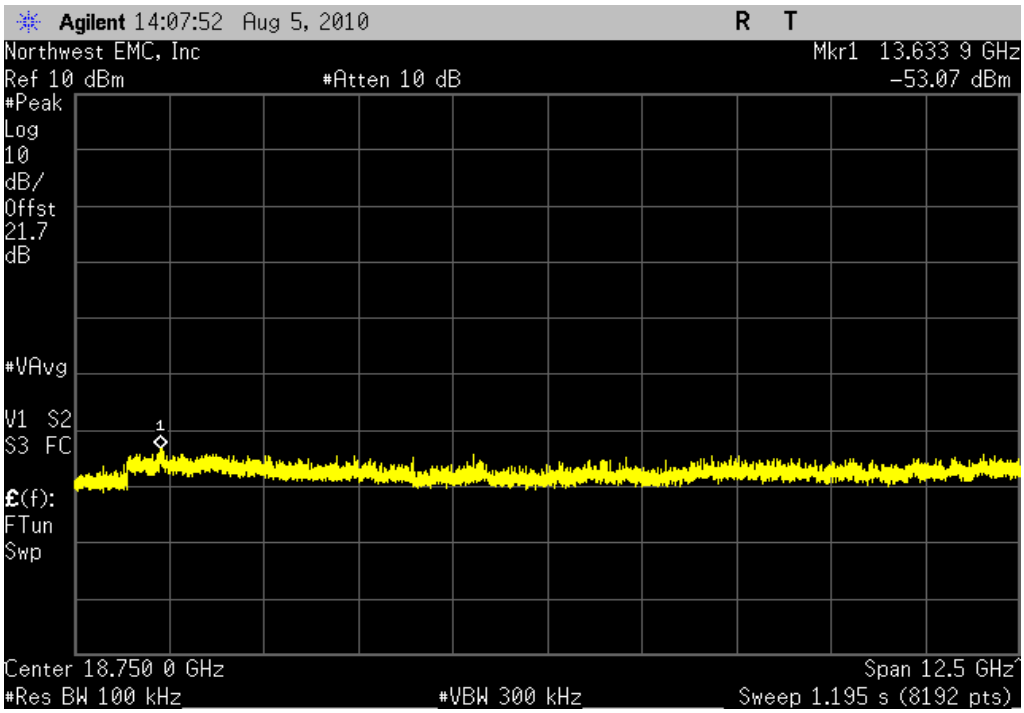


SPURIOUS CONDUCTED EMISSIONS

pi/4-DQPSK, 2DH5, Mid Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-58.4 dBc	**Limit:**	< -20 dBc

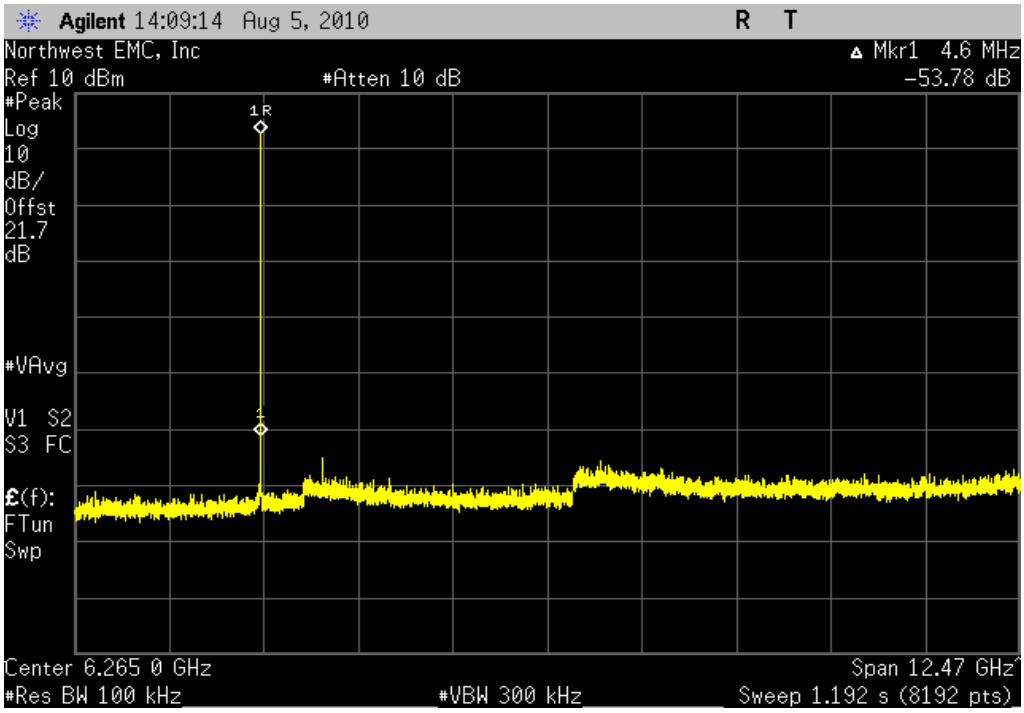


pi/4-DQPSK, 2DH5, Mid Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.1 dBc	**Limit:**	< -20 dBc

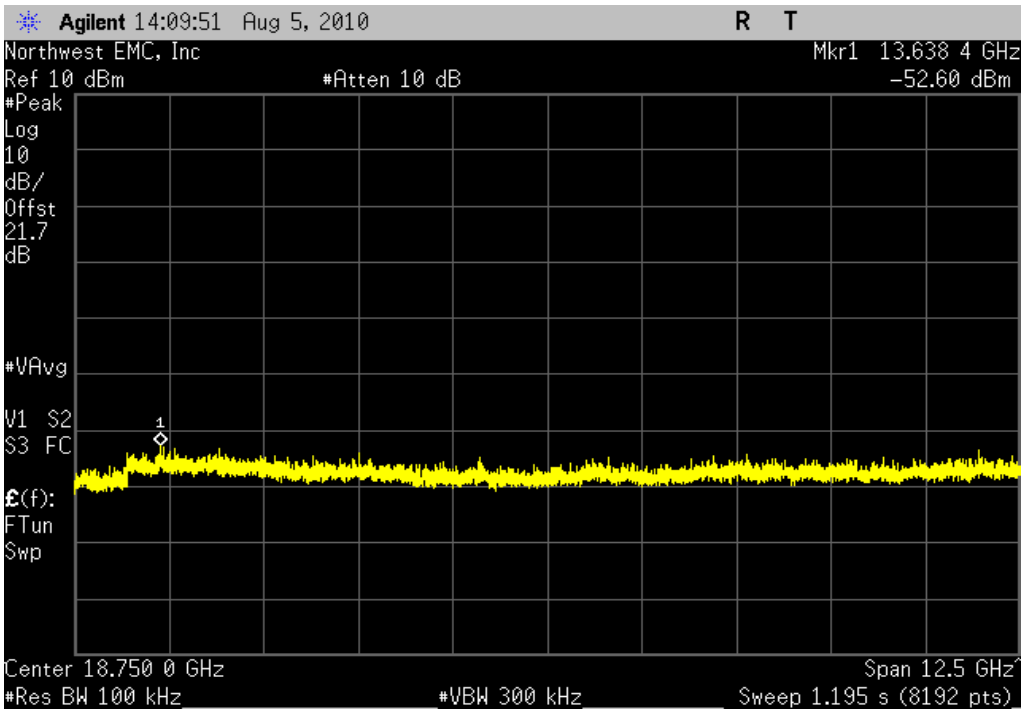


SPURIOUS CONDUCTED EMISSIONS

pi/4-DQPSK, 2DH5, High Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-53.8 dBc	**Limit:**	< -20 dBc

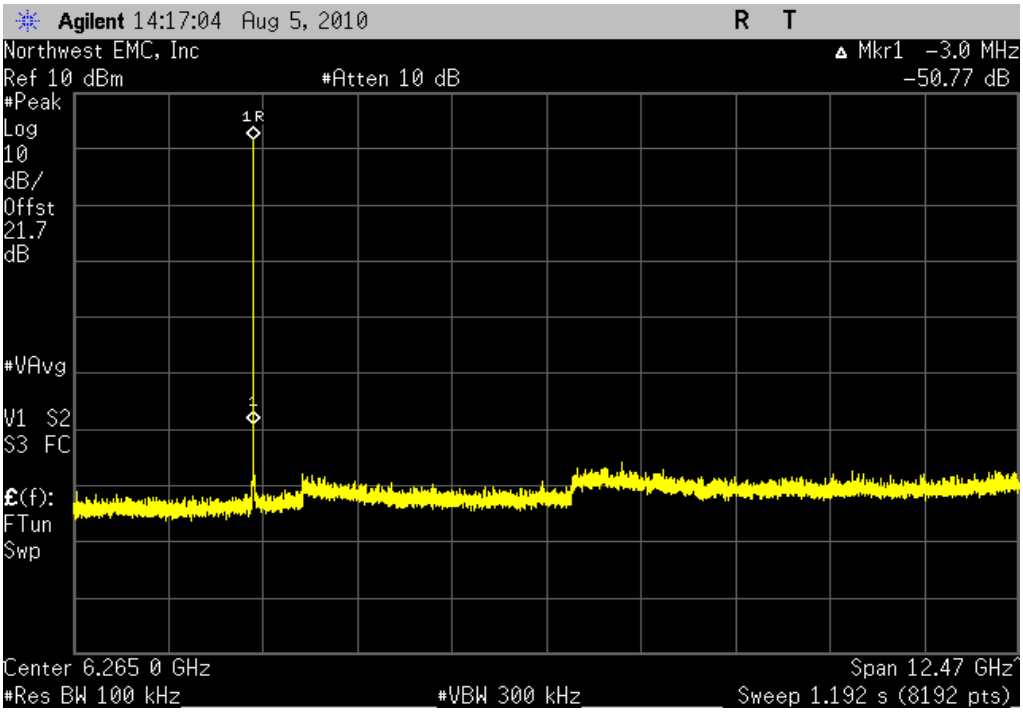


pi/4-DQPSK, 2DH5, High Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-52.6 dBc	**Limit:**	< -20 dBc

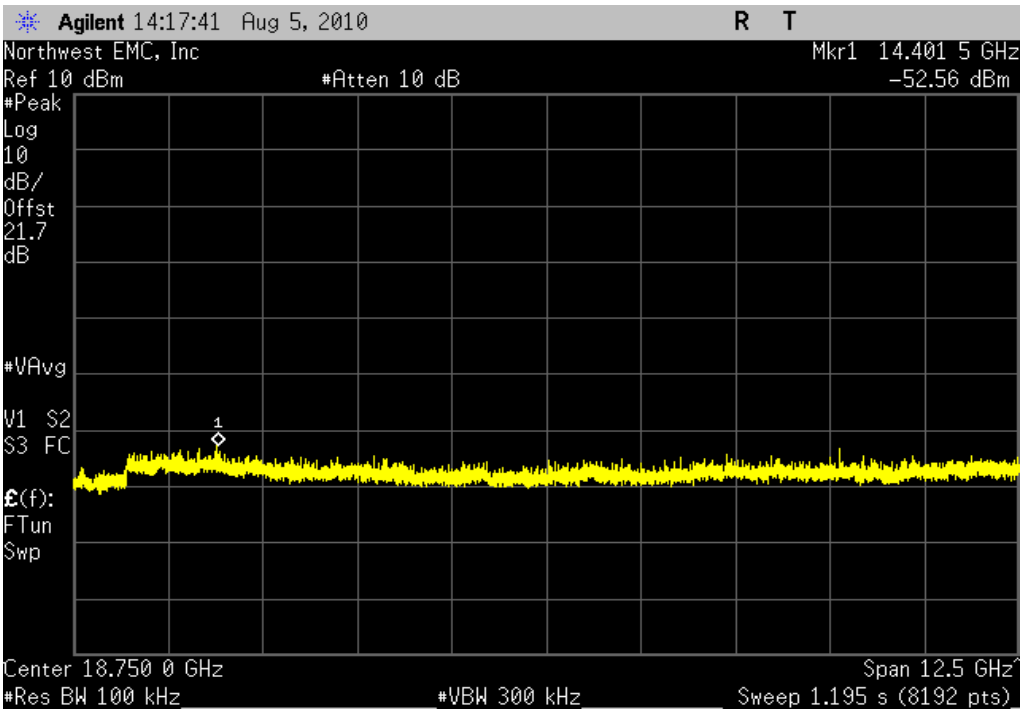


SPURIOUS CONDUCTED EMISSIONS

8DPSK, 3DH5, Low Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-50.8 dBc	**Limit:**	< -20 dBc

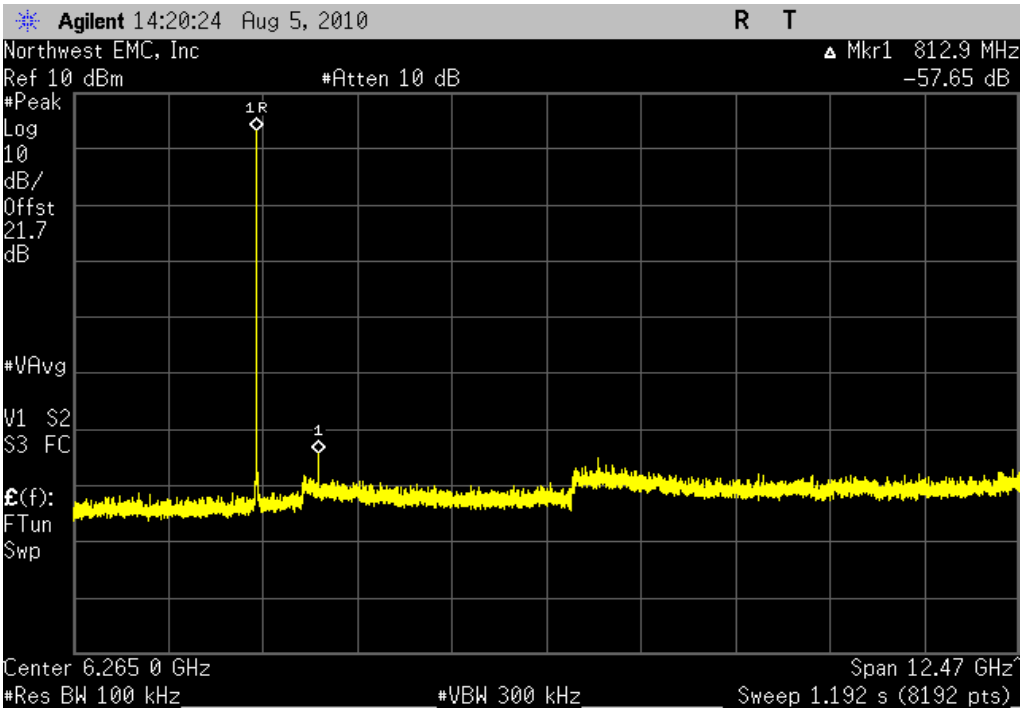


8DPSK, 3DH5, Low Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-52.6 dBc	**Limit:**	< -20 dBc

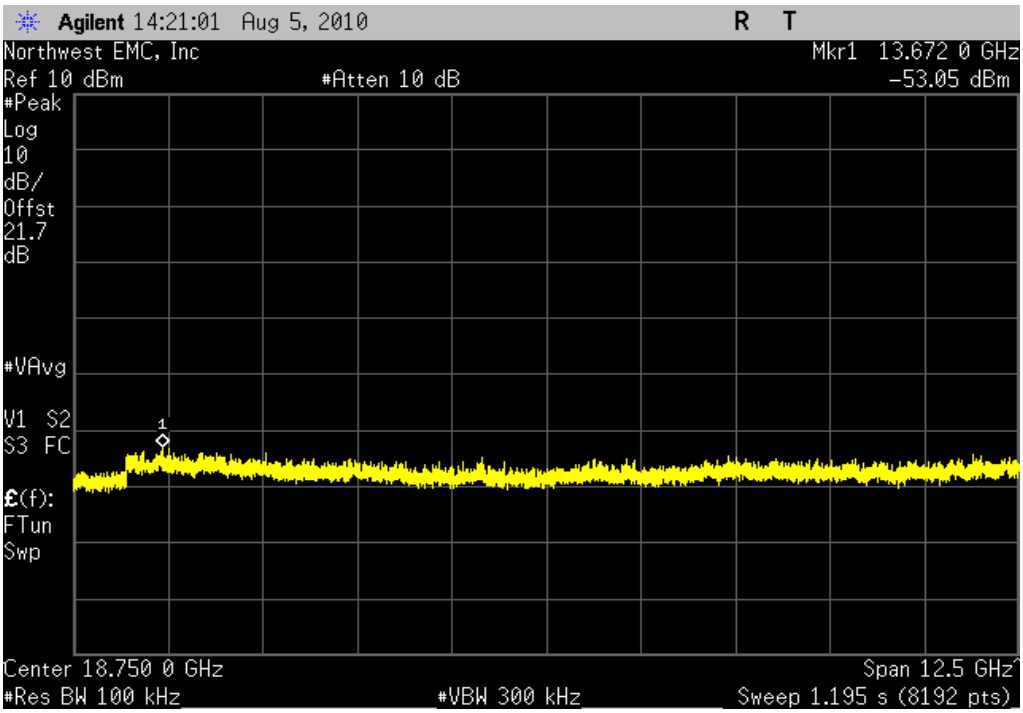


SPURIOUS CONDUCTED EMISSIONS

8DPSK, 3DH5, Mid Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-57.7 dBc	**Limit:**	< -20 dBc

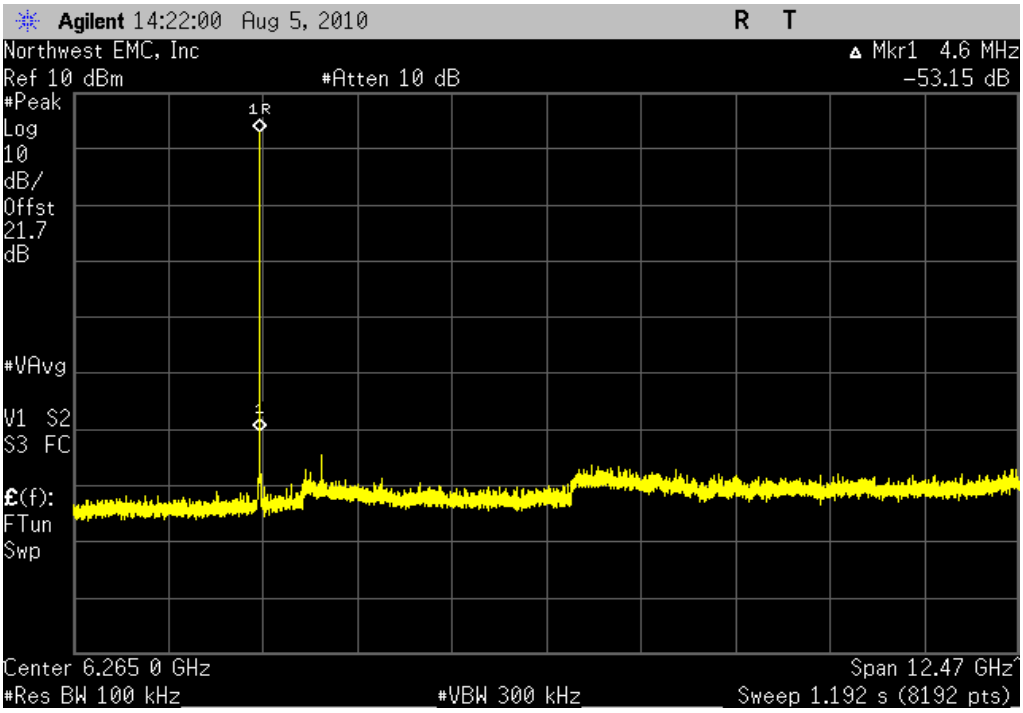


8DPSK, 3DH5, Mid Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.1 dBc	**Limit:**	< -20 dBc

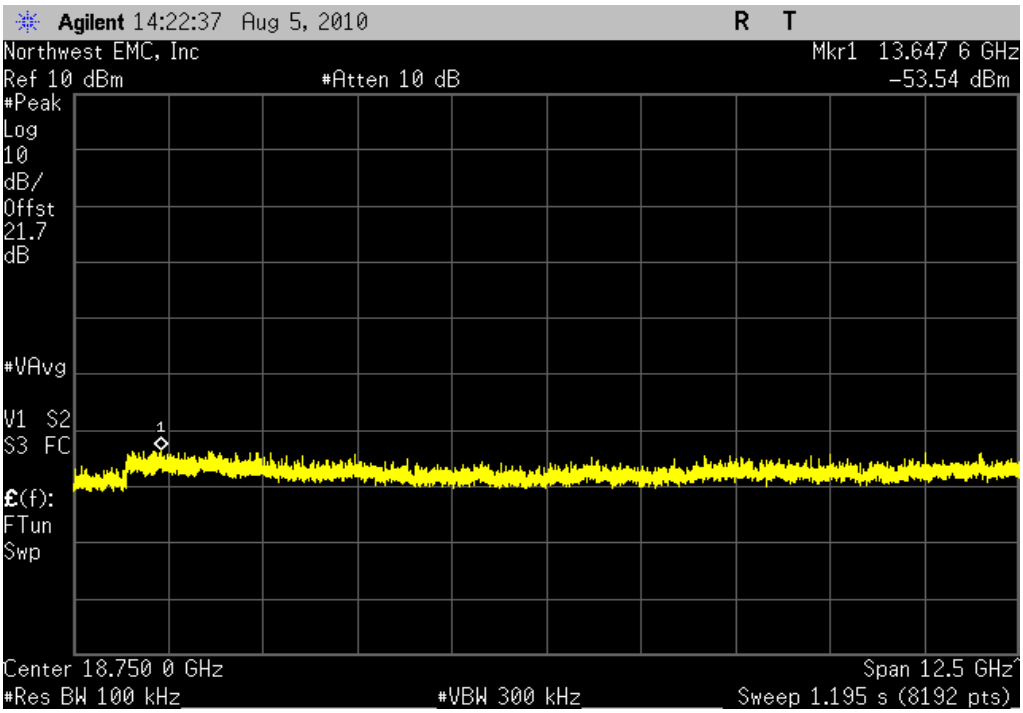


SPURIOUS CONDUCTED EMISSIONS

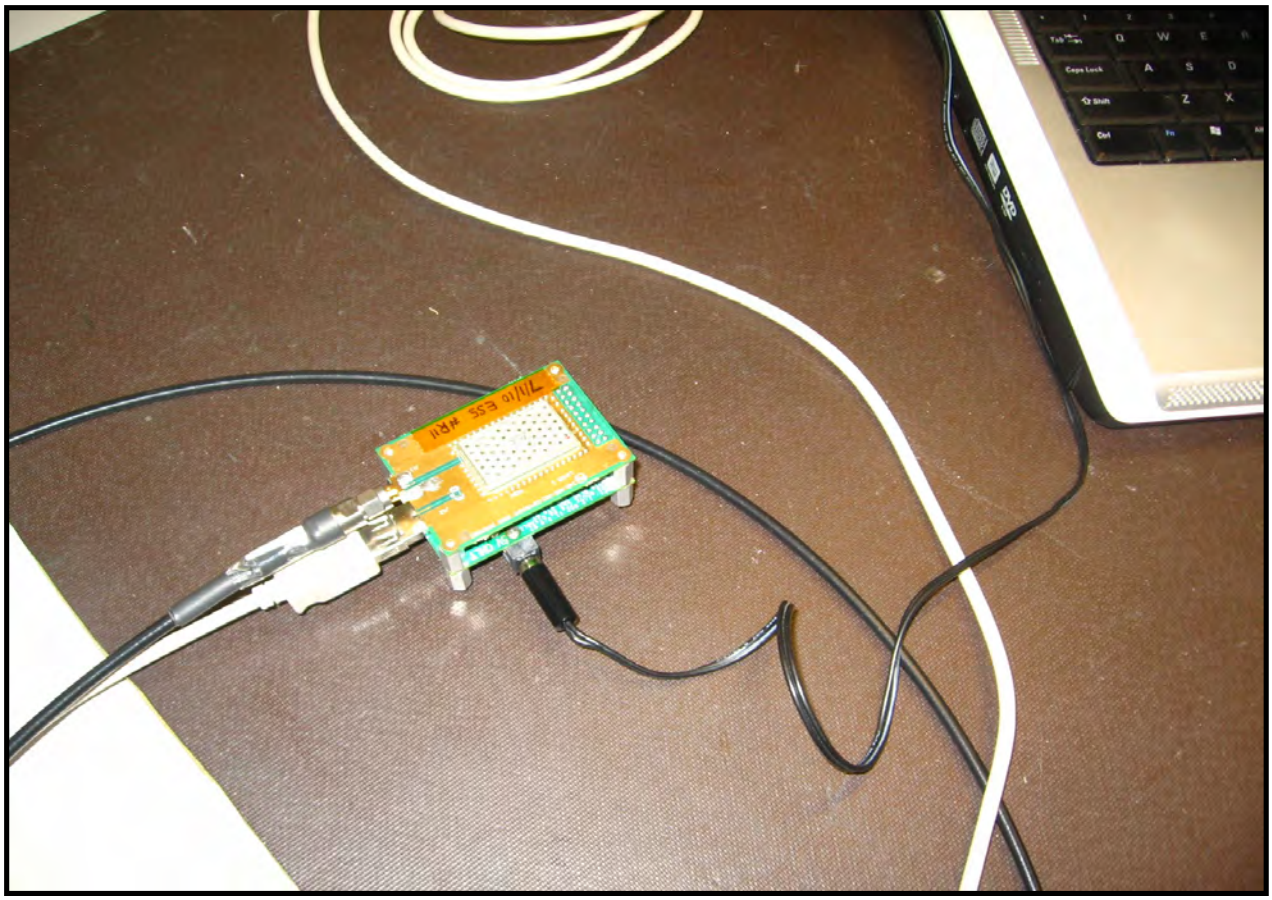
8DPSK, 3DH5, High Channel, 30MHz - 12.5GHz					
Result:	Pass	**Value:**	-53.2 dBc	**Limit:**	< -20 dBc



8DPSK, 3DH5, High Channel, 12.4GHz-25GHz					
Result:	Pass	**Value:**	-53.5 dBc	**Limit:**	< -20 dBc



SPURIOUS CONDUCTED EMISSIONS



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
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24
26 GHz DC Block, SMA	Pasternack	PE8210	AME	10/19/2009	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	7/21/2009	13
Attenuator, 6 dB, 'SMA'	N/A	93459 3330A-6	AUF	4/1/2010	13
EV06 Direct Connect Cable	ESM Cable Corp.	TT	ECA	NCR	0
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Signal Generator	Agilent	E8257D	TGX	12/10/2008	24

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 power spectral density measurements were measured with the EUT set to low, mid, 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 its maximum data rate for each modulation type available. ANSI C63.10:2009, Section 6.11.2.3 was followed.

The spectrum analyzer was set as follows:

The emission peak was located and zoomed in on within the passband.

a) RBW = 3 kHz

b) VBW = 10 kHz

c) Span = 300 kHz

d) Sweep time = 100s

e) Trace set to MAX

f) The 1 hz Marker Noise function on the analyzer was used. The data was corrected to 3 kHz by adding 34.8 dB to the reading.

NORTHWEST EMC

POWER SPECTRAL DENSITY

XMit 2010.07.29

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R11	Date:	08/02/10
Customer:	Intermec Technologies Corporation	Temperature:	23°C
Attendees:	none	Humidity:	38%
Project:	None	Barometric Pres.:	1015.5 mb
Tested by:	Rod Peloquin	Power: 5VDC	Job Site: EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

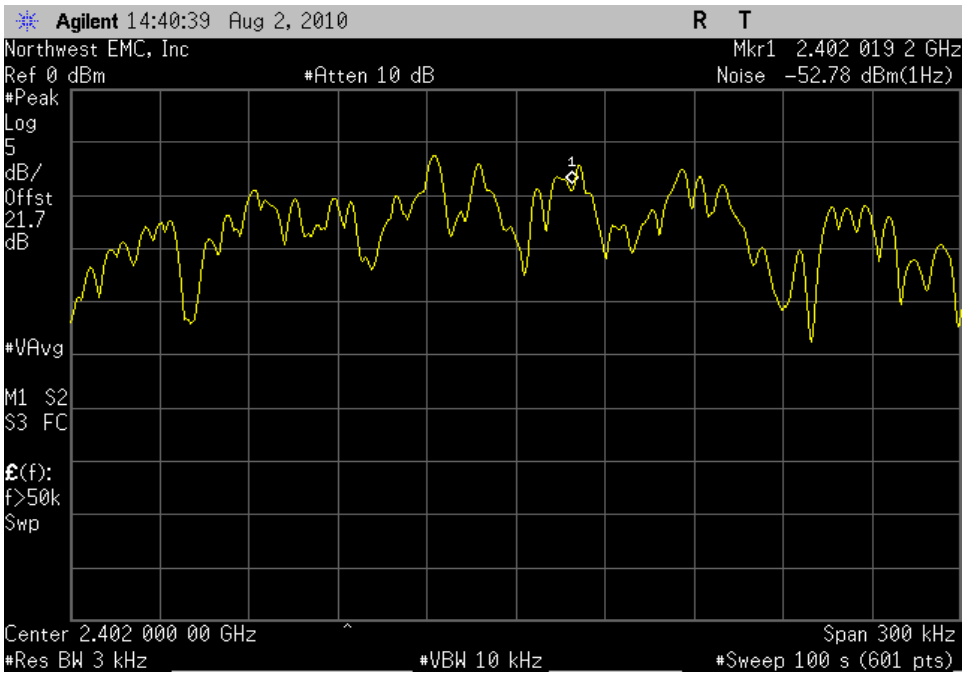
No Deviations

Configuration #	2	Signature

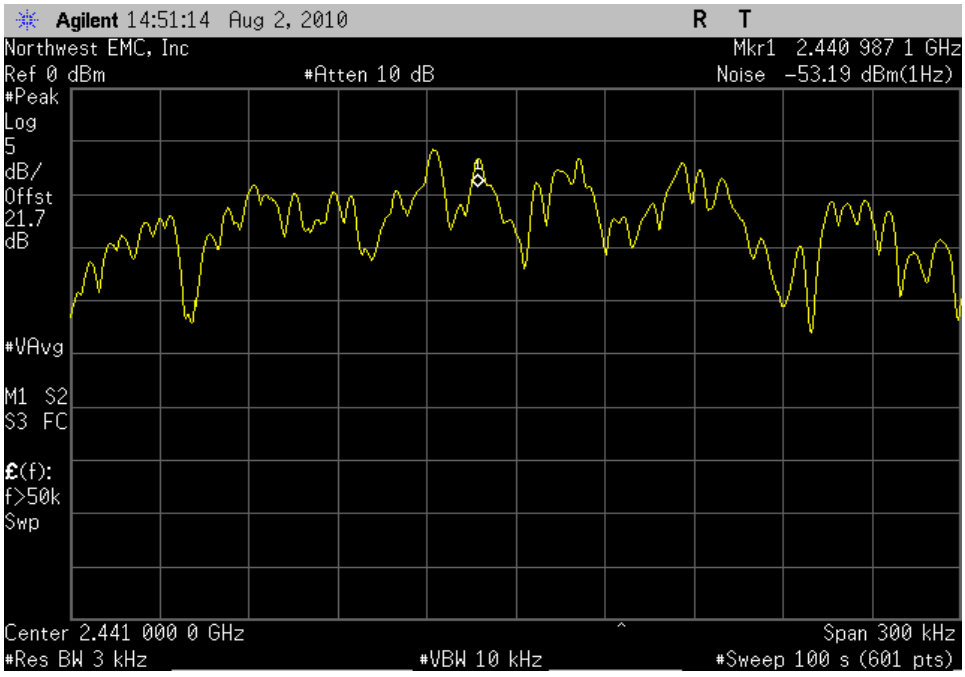
		Value	Limit	Results
DH5, GFSK				
	Low Channel, 2402 MHz	-18.0 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel, 2441 MHz	-18.4 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel, 2480 MHz	-17.4 dBm / 3 kHz	8 dBm / 3 kHz	Pass
2-DH5, Pi/4-DQPSK				
	Low Channel, 2402 MHz	-22.4 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel, 2441 MHz	-21.9 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel, 2480 MHz	-21.7 dBm / 3 kHz	8 dBm / 3 kHz	Pass
3-DH5, 8-DPSK				
	Low Channel, 2402 MHz	-22.0 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel, 2441 MHz	-21.5 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel, 2480 MHz	-21.3 dBm / 3 kHz	8 dBm / 3 kHz	Pass

POWER SPECTRAL DENSITY

DH5, GFSK, Low Channel, 2402 MHz					
Result:	Pass	**Value:**	-18.0 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

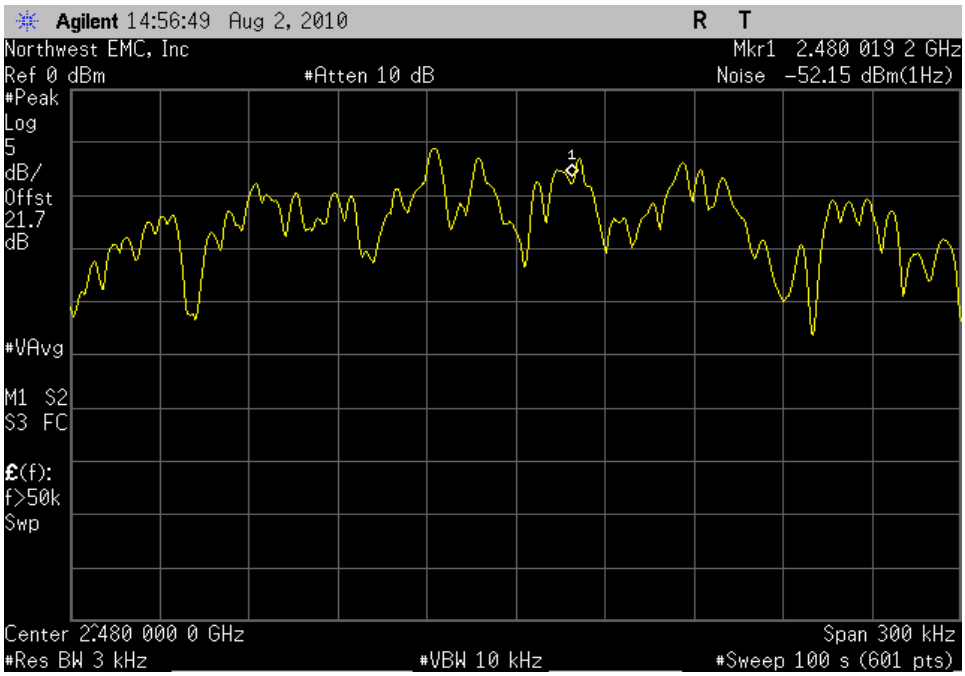


DH5, GFSK, Mid Channel, 2441 MHz					
Result:	Pass	**Value:**	-18.4 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

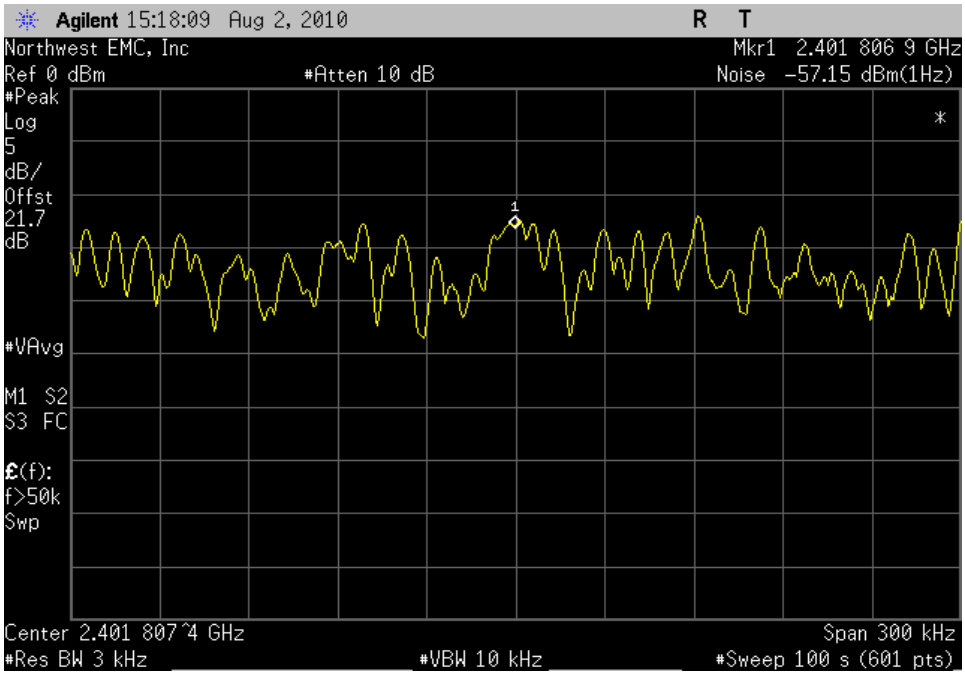


POWER SPECTRAL DENSITY

DH5, GFSK, High Channel, 2480 MHz					
Result:	Pass	**Value:**	-17.4 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

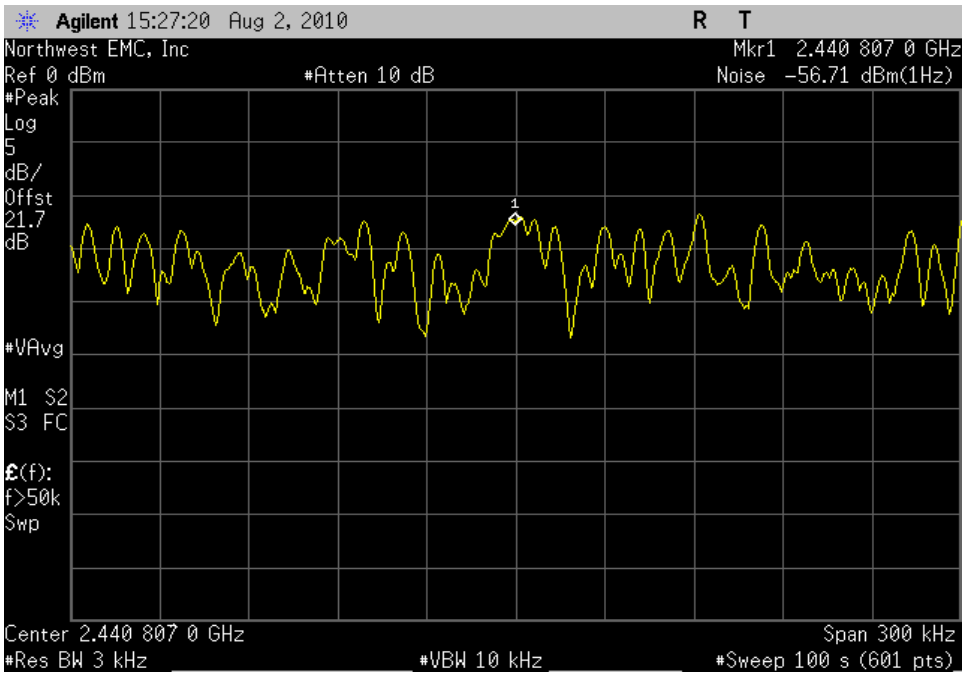


2-DH5, Pi/4-DQPSK, Low Channel, 2402 MHz					
Result:	Pass	**Value:**	-22.4 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

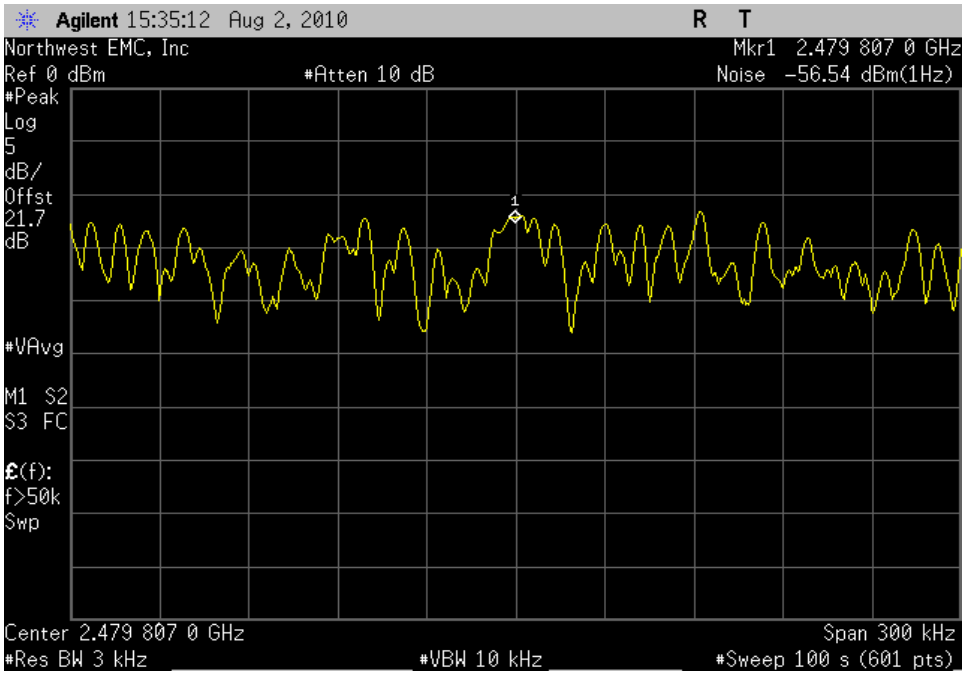


POWER SPECTRAL DENSITY

2-DH5, Pi/4-DQPSK, Mid Channel, 2441 MHz					
Result:	Pass	**Value:**	-21.9 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

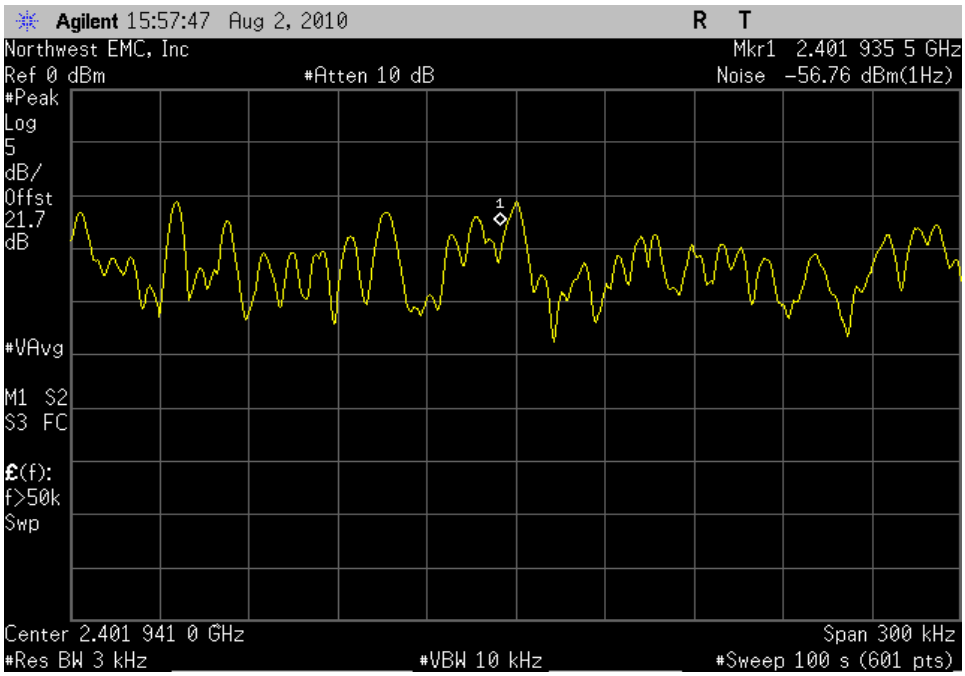


2-DH5, Pi/4-DQPSK, High Channel, 2480 MHz					
Result:	Pass	**Value:**	-21.7 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

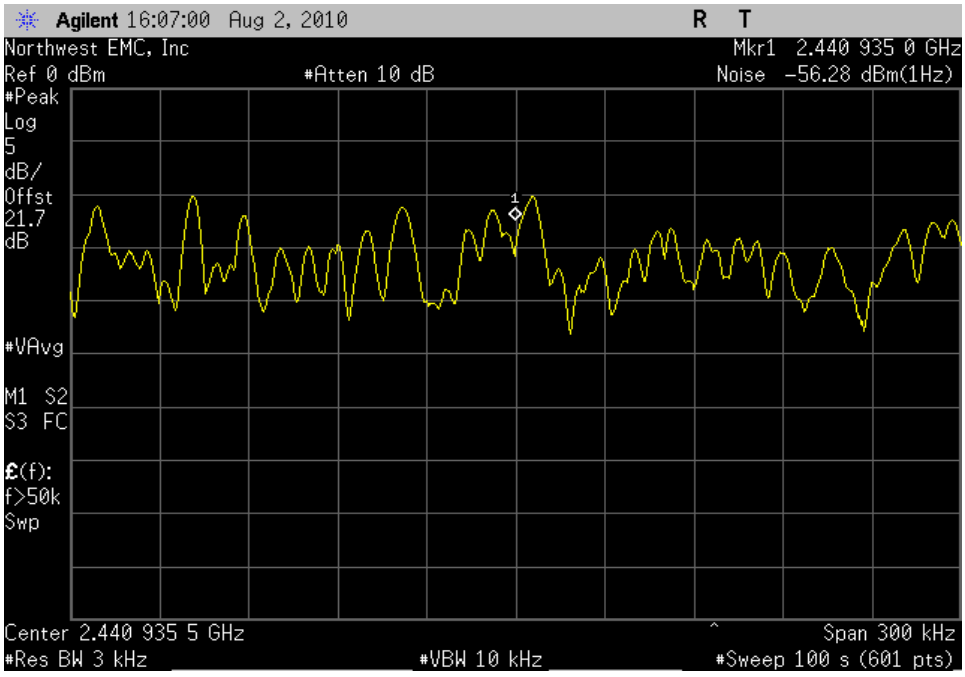


POWER SPECTRAL DENSITY

3-DH5, 8-DPSK, Low Channel, 2402 MHz					
Result:	Pass	**Value:**	-22.0 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

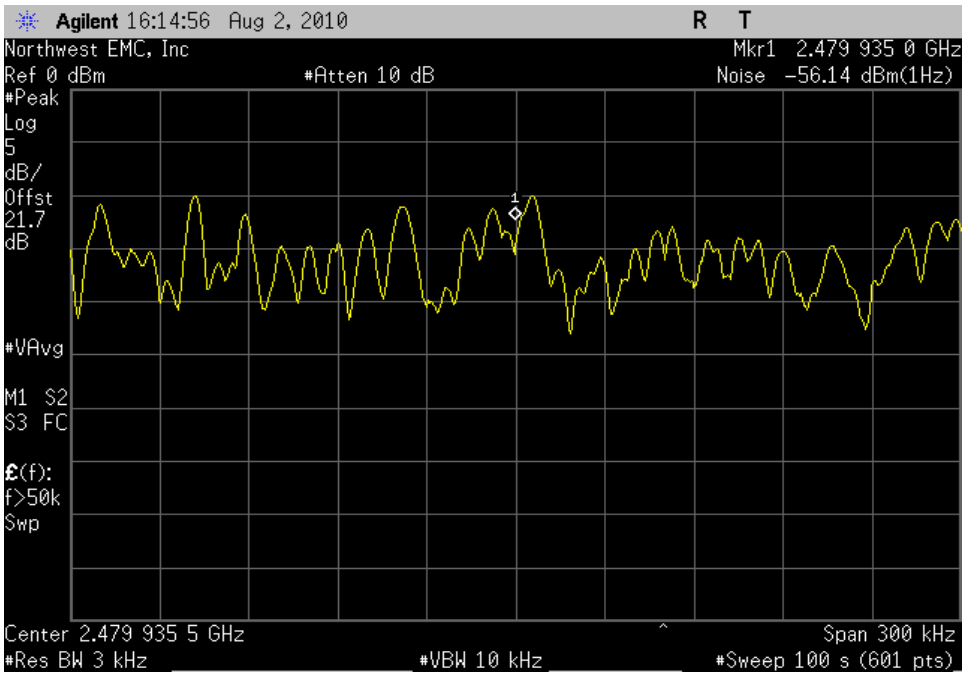


3-DH5, 8-DPSK, Mid Channel, 2441 MHz					
Result:	Pass	**Value:**	-21.5 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz

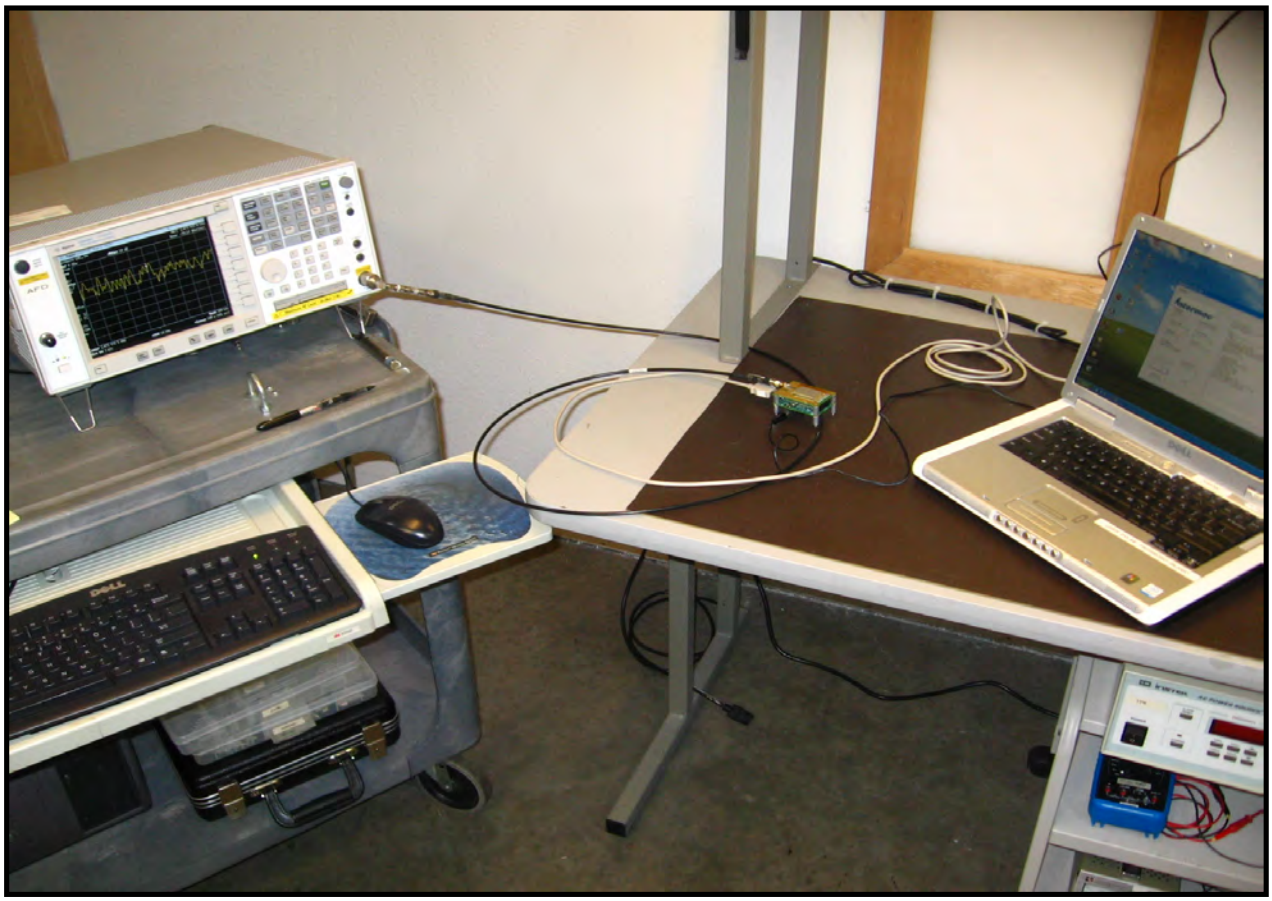


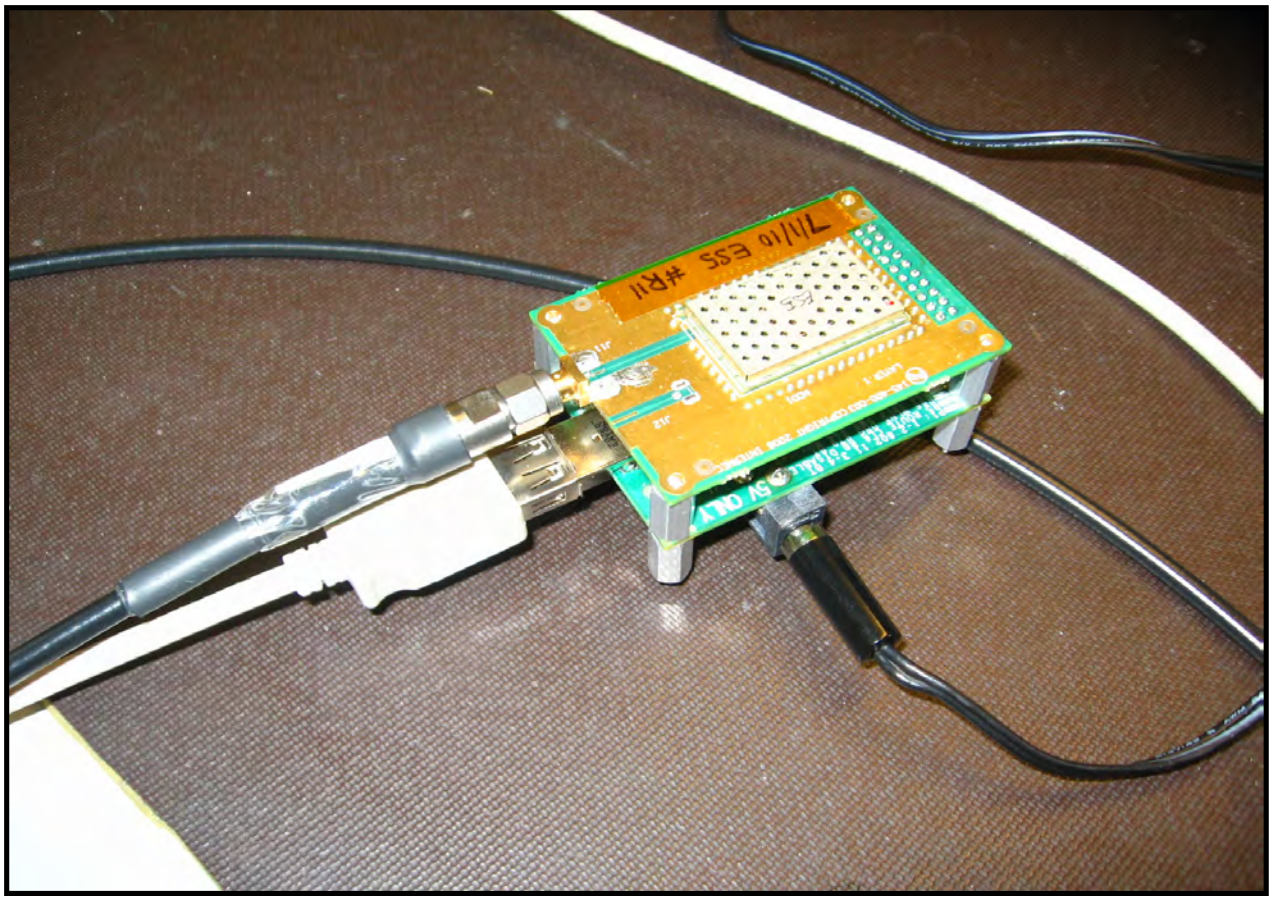
POWER SPECTRAL DENSITY

3-DH5, 8-DPSK, High Channel, 2480 MHz		
Result: Pass	**Value:** -21.3 dBm / 3 kHz	**Limit:** 8 dBm / 3 kHz



POWER SPECTRAL DENSITY





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.

MODES OF OPERATION
Continuous Tx. Bluetooth, GFSK/DH5,
Continuous Tx. Bluetooth.

MODE USED FOR FINAL DATA
Continuous Tx. Bluetooth.

POWER SETTINGS INVESTIGATED
5VDC

FREQUENCY RANGE INVESTIGATED			
Start Frequency	30 MHz	Stop Frequency	25 GHz

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AAX	5/14/2010	12
Attenuator	Pasternack	PE7005-20	AUN	7/14/2010	13
High Pass Filter	Micro-Tronics	50111	HGE	7/14/2010	13
Cable	ESM Cable Corp.	KMKM-72	EVY	11/3/2009	13
EV12 Cables	N/A	Standard Gain Horn Cables	EVU	7/14/2010	13
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	10/23/2009	13
EV12 Cables	N/A	Bilog Cables	EVS	7/14/2010	13
Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AVU	5/19/2009	16
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVI	7/14/2010	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVH	7/14/2010	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	7/14/2010	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	7/14/2010	13
Antenna, Horn	ETS Lindgren	3160-09	AIV	NCR	0
Antenna, Horn	ETS	3160-08	AIA	NCR	0
Antenna, Horn	ETS	3160.07	AHZ	10/14/2008	24
Antenna, Horn	ETS	3115	AIB	8/25/2008	24
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13

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. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2008.07.21
EMI 2008.1.9

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R14	Date:	07/30/10
Customer:	Intermec Technologies Corporation	Temperature:	19.3 °C
Attendees:	none	Humidity:	61%
Project:	None	Barometric Pres.:	1017.9 mb
Tested by:	Dan Haas	Job Site:	EV12
Power:	5VDC		

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

See note for Channel, Data rate, EUT and antenna orientations.

EUT OPERATING MODES

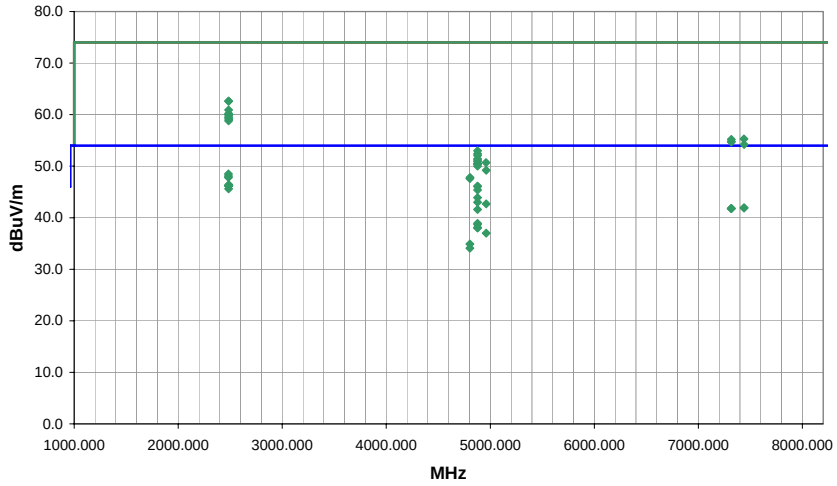
Continuous Tx. Bluetooth.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	5
Configuration #	1
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.510	28.8	-0.3	255.0	1.0	3.0	20.0	H-Horn	AV	0.0	48.5	54.0	-5.5	CH:78, ERD-3/DH5, EUT on side, antenna vertical.
2483.517	28.4	-0.3	256.0	1.0	3.0	20.0	H-Horn	AV	0.0	48.1	54.0	-5.9	CH:78, ERD-2/DH5, EUT on side, antenna vertical.
2483.510	28.1	-0.3	348.0	1.3	3.0	20.0	V-Horn	AV	0.0	47.8	54.0	-6.2	CH:78, ERD-3/DH5, EUT vertical, antenna horizontal.
2485.410	26.7	-0.3	240.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.4	54.0	-7.6	CH:78, GFSK/DH5, EUT on side, antenna vertical.
2485.423	26.6	-0.3	0.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.3	54.0	-7.7	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.
2484.540	26.5	-0.3	149.0	1.3	3.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	CH:78, ERD-2/DH5, EUT vertical, antenna horizontal.
2484.623	26.5	-0.3	113.0	1.0	3.0	20.0	H-Horn	AV	0.0	46.2	54.0	-7.8	CH:78, GFSK/DH5, EUT horizontal, antenna vertical.
2485.133	26.5	-0.3	283.0	1.0	3.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	CH:78, GFSK/DH5, EUT horizontal, antenna vertical.
2485.893	26.5	-0.3	268.0	1.3	3.0	20.0	V-Horn	AV	0.0	46.2	54.0	-7.8	CH:78, GFSK/DH5, EUT on side, antenna vertical.
4878.030	36.8	9.3	96.0	1.2	3.0	0.0	V-Horn	AV	0.0	46.1	54.0	-7.9	CH:37, GFSK/DH5, EUT vertical, antenna horizontal.
4878.063	36.8	9.3	238.0	1.7	3.0	0.0	H-Horn	AV	0.0	46.1	54.0	-7.9	CH:37, GFSK/DH5, EUT horizontal, antenna vertical.
2484.610	25.9	-0.3	0.0	1.0	3.0	20.0	H-Horn	AV	0.0	45.6	54.0	-8.4	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.
4878.030	36.1	9.3	244.0	1.3	3.0	0.0	H-Horn	AV	0.0	45.4	54.0	-8.6	CH:37, GFSK/DH5, EUT on side, antenna vertical.
4878.023	34.6	9.3	259.0	1.3	3.0	0.0	V-Horn	AV	0.0	43.9	54.0	-10.1	CH:37, GFSK/DH5, EUT on side, antenna vertical.
4878.017	33.7	9.3	147.0	1.0	3.0	0.0	H-Horn	AV	0.0	43.0	54.0	-11.0	CH:37, GFSK/DH5, EUT vertical, antenna horizontal.
4960.023	33.1	9.6	348.0	1.7	3.0	0.0	V-Horn	AV	0.0	42.7	54.0	-11.3	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.
2483.703	42.9	-0.3	255.0	1.0	3.0	20.0	H-Horn	PK	0.0	62.6	74.0	-11.4	CH:78, ERD-3/DH5, EUT on side, antenna vertical.
2484.700	42.9	-0.3	348.0	1.3	3.0	20.0	V-Horn	PK	0.0	62.6	74.0	-11.4	CH:78, ERD-3/DH5, EUT vertical, antenna horizontal.
7439.380	23.9	18.0	350.0	1.0	3.0	0.0	H-Horn	AV	0.0	41.9	54.0	-12.1	CH:78, GFSK/DH5, EUT horizontal, antenna vertical.
7440.143	23.9	18.0	115.0	1.0	3.0	0.0	V-Horn	AV	0.0	41.9	54.0	-12.1	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2008.07.21
EMI 2008.1.9

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R14	Date:	08/02/10
Customer:	Intermec Technologies Corporation	Temperature:	19.3 °C
Attendees:	none	Humidity:	62%
Project:	None	Barometric Pres.:	1017.8 mb
Tested by:	Dan Haas	Job Site:	EV12
Power:	5VDC		

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 4	Test Distance (m)	3

COMMENTS

See note for Channel, Data rate, EUT and antenna orientations.

EUT OPERATING MODES

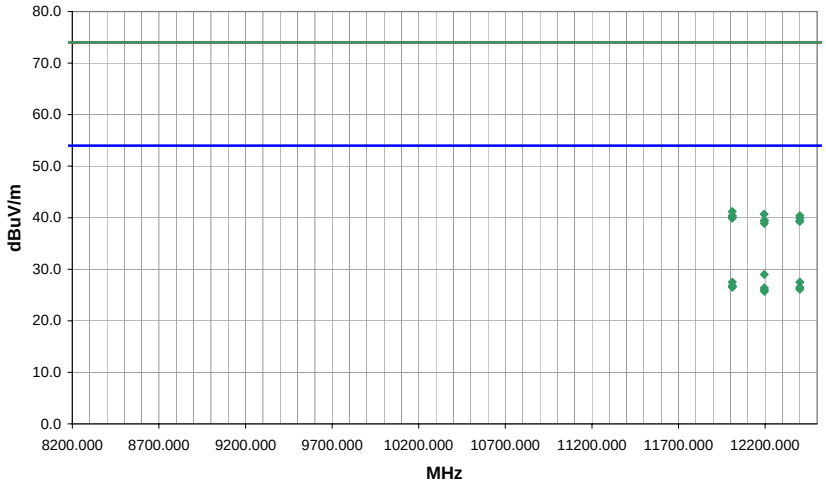
Continuous Tx. Bluetooth.

DEVIATIONS FROM TEST STANDARD

No deviations.

Run #	6
Configuration #	1
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
12195.370	38.3	-9.3	25.0	1.0	3.0	0.0	H-Horn	AV	0.0	29.0	54.0	-25.0	CH:37, GFSK/DH5, EUT vertical, antenna horizontal.
12010.580	36.9	-9.4	360.0	1.3	3.0	0.0	H-Horn	AV	0.0	27.5	54.0	-26.5	CH:0, GFSK/DH5, EUT vertical, antenna horizontal.
12400.490	36.8	-9.3	23.0	1.0	3.0	0.0	H-Horn	AV	0.0	27.5	54.0	-26.5	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.
12010.520	36.2	-9.4	339.0	1.3	3.0	0.0	H-Horn	AV	0.0	26.8	54.0	-27.2	CH:0, GFSK/DH5, EUT horizontal, antenna vertical.
12010.290	36.0	-9.4	95.0	1.4	3.0	0.0	V-Horn	AV	0.0	26.6	54.0	-27.4	CH:0, GFSK/DH5, EUT horizontal, antenna vertical.
12010.380	35.9	-9.4	237.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.5	54.0	-27.5	CH:0, GFSK/DH5, EUT vertical, antenna horizontal.
12400.390	35.8	-9.3	354.0	1.8	3.0	0.0	H-Horn	AV	0.0	26.5	54.0	-27.5	CH:78, GFSK/DH5, EUT horizontal, antenna vertical.
12195.460	35.7	-9.3	0.0	1.3	3.0	0.0	H-Horn	AV	0.0	26.4	54.0	-27.6	CH:37, GFSK/DH5, EUT horizontal, antenna vertical.
12400.510	35.6	-9.3	290.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.3	54.0	-27.7	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.
12400.000	35.4	-9.3	285.0	1.3	3.0	0.0	V-Horn	AV	0.0	26.1	54.0	-27.9	CH:78, GFSK/DH5, EUT horizontal, antenna vertical.
12195.620	35.3	-9.3	252.0	1.0	3.0	0.0	V-Horn	AV	0.0	26.0	54.0	-28.0	CH:37, GFSK/DH5, EUT horizontal, antenna vertical.
12195.900	35.0	-9.3	316.0	1.0	3.0	0.0	V-Horn	AV	0.0	25.7	54.0	-28.3	CH:37, GFSK/DH5, EUT vertical, antenna horizontal.
12010.730	50.6	-9.4	360.0	1.3	3.0	0.0	H-Horn	PK	0.0	41.2	74.0	-32.8	CH:0, GFSK/DH5, EUT vertical, antenna horizontal.
12194.160	50.0	-9.3	25.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.7	74.0	-33.3	CH:37, GFSK/DH5, EUT vertical, antenna horizontal.
12010.750	49.8	-9.4	237.0	1.0	3.0	0.0	V-Horn	PK	0.0	40.4	74.0	-33.6	CH:0, GFSK/DH5, EUT vertical, antenna horizontal.
12400.630	49.7	-9.3	23.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.4	74.0	-33.6	CH:78, GFSK/DH5, EUT vertical, antenna horizontal.
12010.820	49.6	-9.4	339.0	1.3	3.0	0.0	H-Horn	PK	0.0	40.2	74.0	-33.8	CH:0, GFSK/DH5, EUT horizontal, antenna vertical.
12009.360	49.3	-9.4	95.0	1.4	3.0	0.0	V-Horn	PK	0.0	39.9	74.0	-34.1	CH:0, GFSK/DH5, EUT horizontal, antenna vertical.
12400.720	49.2	-9.3	354.0	1.8	3.0	0.0	H-Horn	PK	0.0	39.9	74.0	-34.1	CH:78, GFSK/DH5, EUT horizontal, antenna vertical.
12195.990	48.8	-9.3	316.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.5	74.0	-34.5	CH:37, GFSK/DH5, EUT vertical, antenna horizontal.

NORTHWEST EMC

SPURIOUS RADIATED EMISSIONS DATA SHEET

PSA 2008.07.21
EMI 2008.1.9

EUT:	RC12	Work Order:	INMC0575
Serial Number:	R14	Date:	08/04/10
Customer:	Intermec Technologies Corporation	Temperature:	23.2 °C
Attendees:	none	Humidity:	50%
Project:	None	Barometric Pres.:	1017.5 mb
Tested by:	Dan Haas	Job Site:	EV12
Power:	5VDC		

TEST SPECIFICATIONS	Test Method
FCC 15.247:2010	ANSI C63.10:2009

TEST PARAMETERS			
Antenna Height(s) (m)	1 - 2	Test Distance (m)	3

COMMENTS

See comments for channel and EUT orientaion.

EUT OPERATING MODES

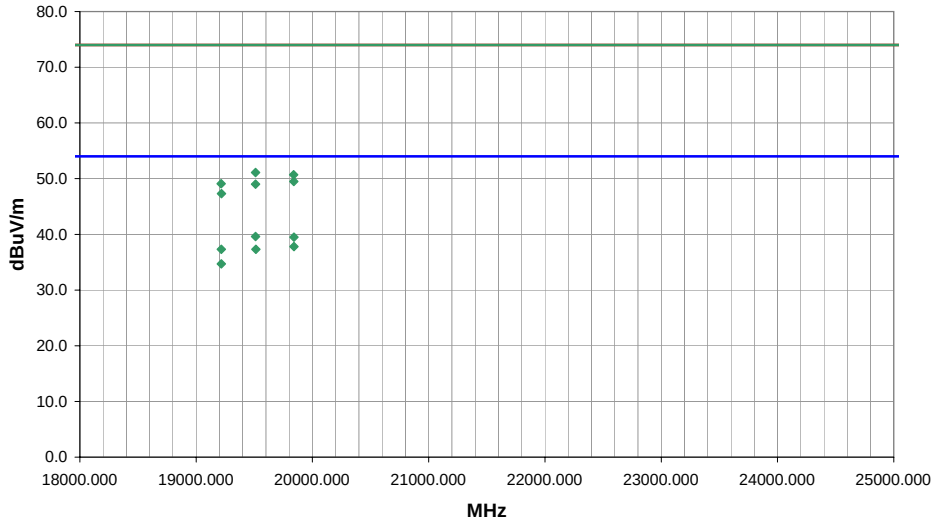
Continuous Tx. Bluetooth, GFSK/DH5,

DEVIATIONS FROM TEST STANDARD

No deviations.

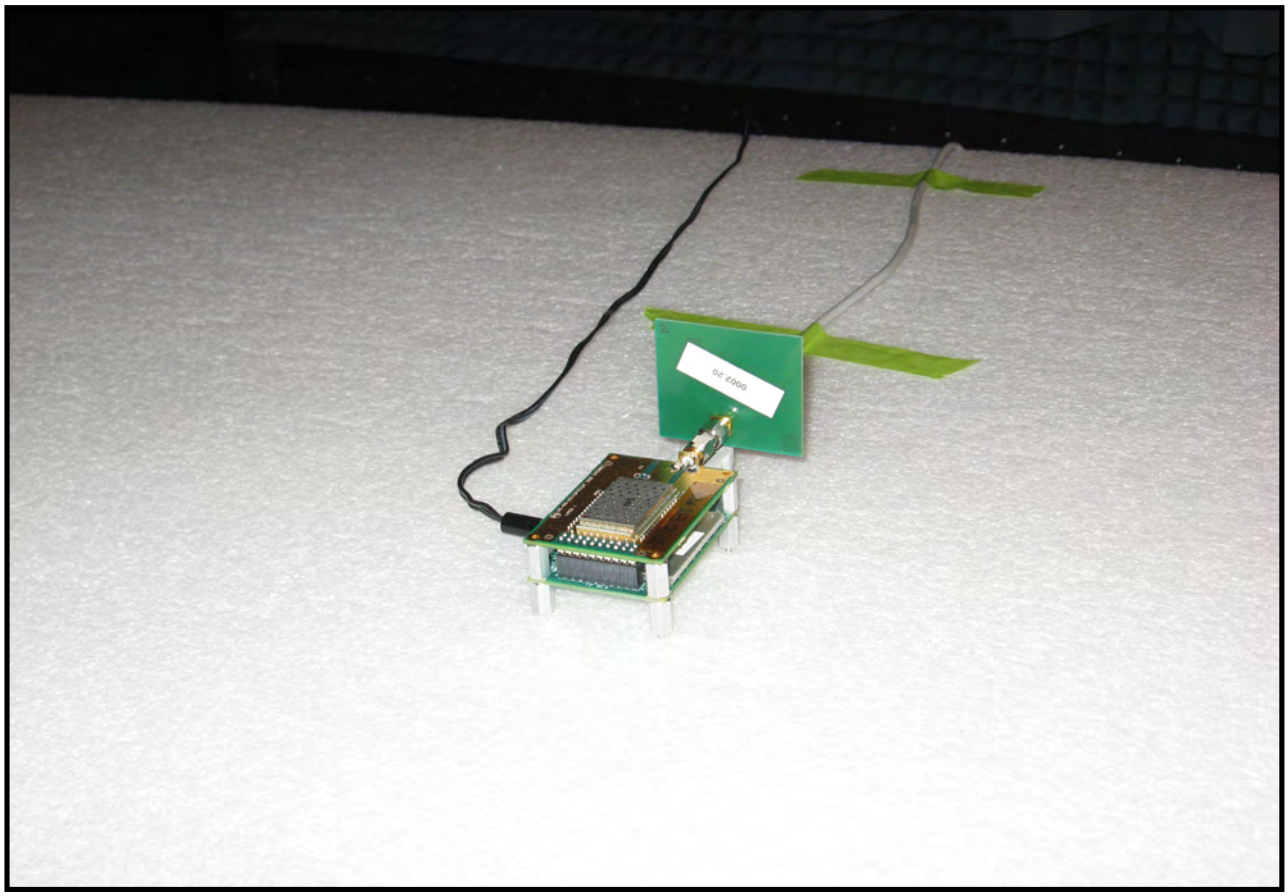
Run #	11
Configuration #	1
Results	Pass

Signature

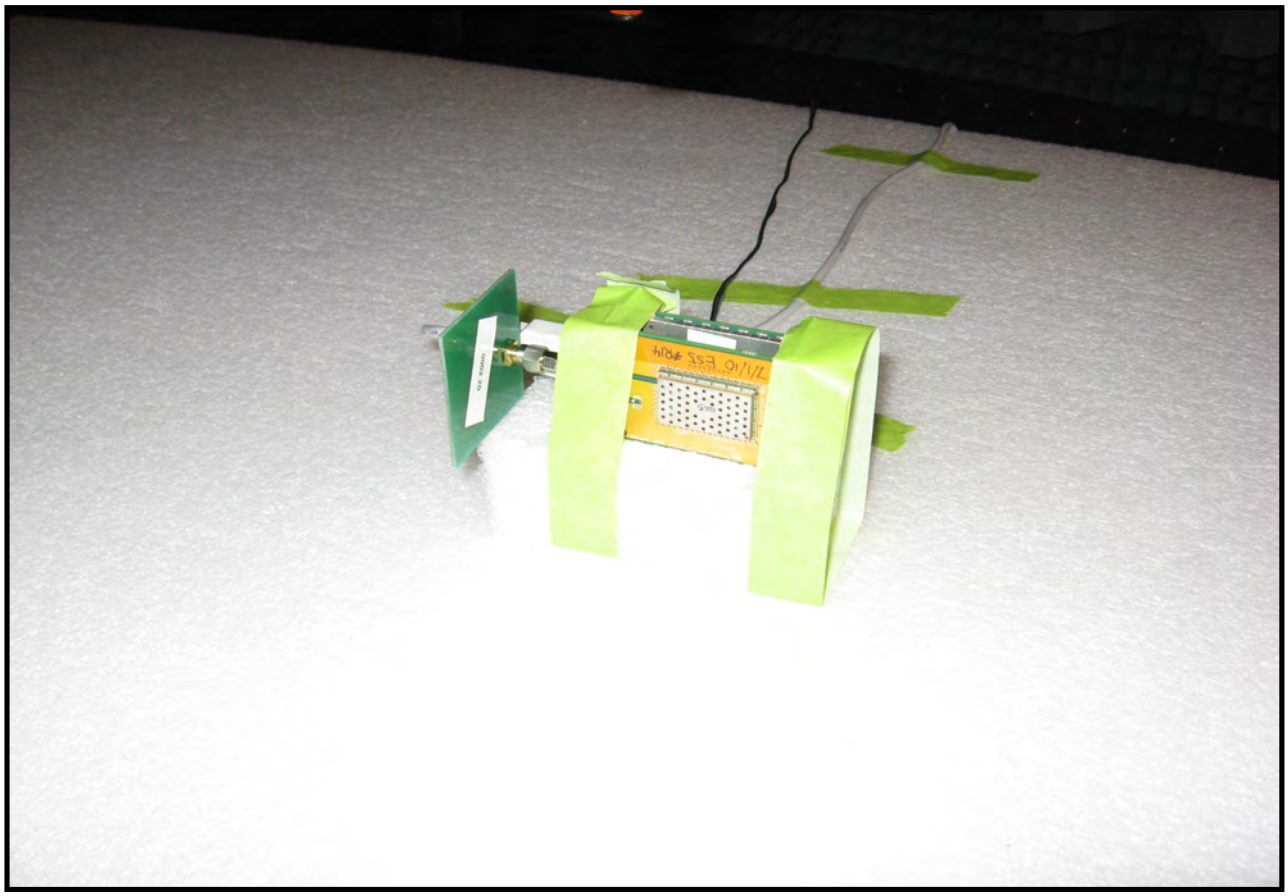


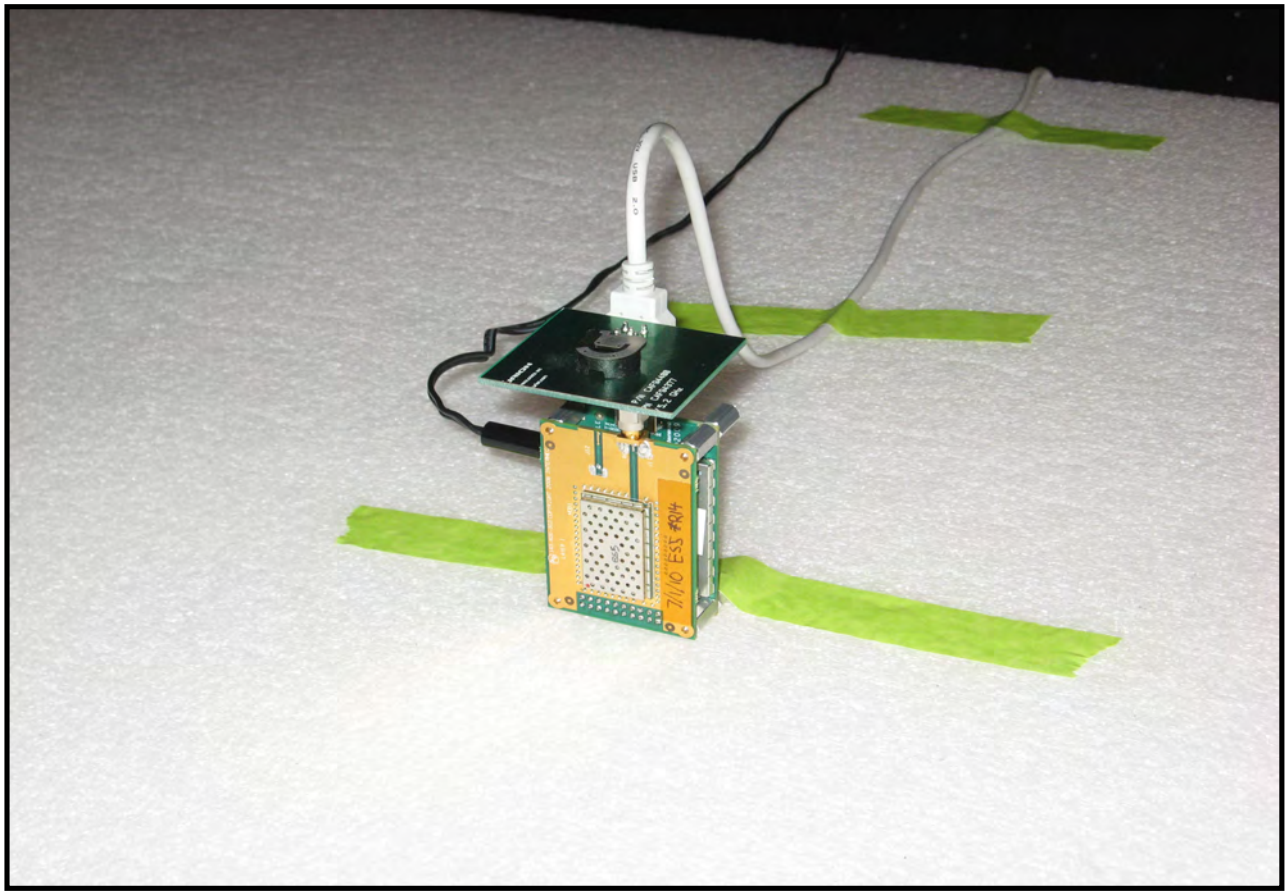
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
19511.090	48.1	-8.5	45.0	1.1	3.0	0.0	⊣-High Horr	AV	0.0	39.6	54.0	-14.4	Ch:37, EUT vertical, antenna horizontal.
19840.920	48.1	-8.6	44.0	1.1	3.0	0.0	⊣-High Horr	AV	0.0	39.5	54.0	-14.5	Ch:78, EUT vertical, antenna horizontal.
19840.950	46.4	-8.6	68.0	1.1	3.0	0.0	√-High Horr	AV	0.0	37.8	54.0	-16.2	Ch:78, EUT horizontal, antenna vertical.
19217.030	45.8	-8.5	51.0	1.1	3.0	0.0	⊣-High Horr	AV	0.0	37.3	54.0	-16.7	Ch:0, EUT vertical, antenna horizontal.
19512.980	45.8	-8.5	68.0	1.1	3.0	0.0	√-High Horr	AV	0.0	37.3	54.0	-16.7	Ch:37, EUT horizontal, antenna vertical.
19217.100	43.2	-8.5	360.0	1.1	3.0	0.0	√-High Horr	AV	0.0	34.7	54.0	-19.3	Ch:0, EUT horizontal, antenna vertical.
19510.540	59.6	-8.5	45.0	1.1	3.0	0.0	⊣-High Horr	PK	0.0	51.1	74.0	-22.9	Ch:37, EUT vertical, antenna horizontal.
19838.690	59.3	-8.6	44.0	1.1	3.0	0.0	⊣-High Horr	PK	0.0	50.7	74.0	-23.3	Ch:78, EUT vertical, antenna horizontal.
19839.140	58.1	-8.6	68.0	1.1	3.0	0.0	√-High Horr	PK	0.0	49.5	74.0	-24.5	Ch:78, EUT horizontal, antenna vertical.
19214.870	57.6	-8.5	51.0	1.1	3.0	0.0	⊣-High Horr	PK	0.0	49.1	74.0	-24.9	Ch:0, EUT vertical, antenna horizontal.
19510.550	57.5	-8.5	68.0	1.1	3.0	0.0	√-High Horr	PK	0.0	49.0	74.0	-25.0	Ch:37, EUT horizontal, antenna vertical.
19217.200	55.8	-8.5	360.0	1.1	3.0	0.0	√-High Horr	PK	0.0	47.3	74.0	-26.7	Ch:0, EUT horizontal, antenna vertical.

Spurious Radiated Emissions



Spurious Radiated Emissions





AC POWERLINE CONDUCTED EMISSIONS

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

MODES OF OPERATION

Transmitting Bluetooth GFSK/DH5 mode, High Channel
Transmitting Bluetooth GFSK/DH5 mode, Mid Channel
Transmitting Bluetooth GFSK/DH5 mode, Low Channel

POWER SETTINGS INVESTIGATED

3.3 VDC from 120VAC

CONFIGURATIONS INVESTIGATED

INMC0575 - 3

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARE	4/29/2010	12 mo
Attenuator	Coaxicom	66702 2910-20	ATO	7/21/2009	13 mo
High Pass Filter	TTE	H97-100K-50-720B	HFX	2/16/2010	13 mo
LISN	Solar	9252-50-R-24-BNC	LIR	3/2/2010	12 mo
LISN	Solar	9252-50-R-24-BNC	LIN	5/27/2010	12 mo
EV07 Cables	N/A	Conducted Cables	EVG	6/21/2010	13 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 indirectly from the AC power line while operating in a host device. Therefore, conducted emissions measurements were made on the DC input of the EUT, or on the DC input of the device used to power the EUT. The AC power line conducted emissions were measured on a linear power supply providing DC power to the module while providing no filtering of the power inputs to the module.

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 or bands. The EUT was transmitting in the mode which has the highest output power for the band. 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.

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

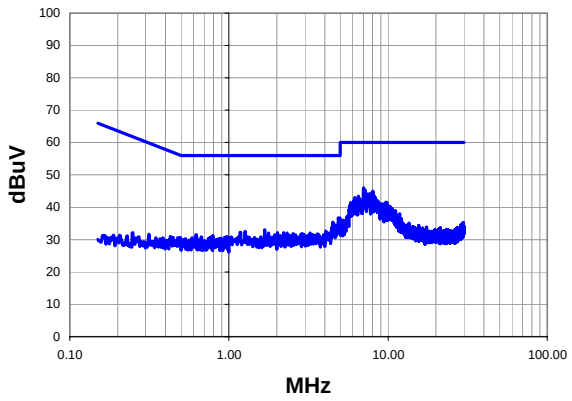
PSA-ESCI 2010.04.06
Version 2010.3.17

Work Order:	INMC0575	**Date:**	08/11/10		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV07	**Humidity:**	53		
Serial Number:	R11	**Barometric Pres.:**	1014.8 mb	**Tested by:**	Rod Peloquin
EUT:	RC12				
Configuration:	3 - AC Power Conducted Emissions				
Customer:	Intermec Technologies Corporation				
Attendees:	none				
EUT Power:	3.3 VDC from 120VAC				
Operating Mode:	Transmitting Bluetooth GFSK/DH5 mode, Low Channel				
Deviations:	No deviations.				
Comments:	Linear lab power supply				

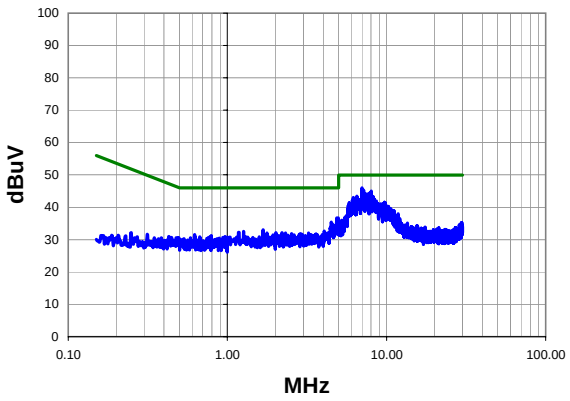
Test Specifications	**Test Method**
FCC 15.207:2010	ANSI C63.10:2009

Run #	35	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.000	25.6	20.4	46.0	60.0	-14.0
7.190	24.9	20.4	45.3	60.0	-14.7
8.030	24.6	20.4	45.0	60.0	-15.0
7.850	24.0	20.4	44.4	60.0	-15.6
7.610	23.7	20.4	44.1	60.0	-15.9
7.400	23.7	20.4	44.1	60.0	-15.9
6.520	23.1	20.3	43.4	60.0	-16.6
8.250	22.8	20.4	43.2	60.0	-16.8
6.180	22.7	20.3	43.0	60.0	-17.0
6.660	22.1	20.3	42.4	60.0	-17.6
6.110	22.0	20.3	42.3	60.0	-17.7
8.640	21.5	20.4	41.9	60.0	-18.1
9.690	21.1	20.4	41.5	60.0	-18.5
6.400	21.1	20.3	41.4	60.0	-18.6
5.830	21.1	20.3	41.4	60.0	-18.6
9.820	20.9	20.4	41.3	60.0	-18.7
9.520	20.6	20.4	41.0	60.0	-19.0
9.200	20.6	20.4	41.0	60.0	-19.0
9.360	20.4	20.4	40.8	60.0	-19.2
9.590	20.3	20.4	40.7	60.0	-19.3

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.000	25.6	20.4	46.0	50.0	-4.0
7.190	24.9	20.4	45.3	50.0	-4.7
8.030	24.6	20.4	45.0	50.0	-5.0
7.850	24.0	20.4	44.4	50.0	-5.6
7.610	23.7	20.4	44.1	50.0	-5.9
7.400	23.7	20.4	44.1	50.0	-5.9
6.520	23.1	20.3	43.4	50.0	-6.6
8.250	22.8	20.4	43.2	50.0	-6.8
6.180	22.7	20.3	43.0	50.0	-7.0
6.660	22.1	20.3	42.4	50.0	-7.6
6.110	22.0	20.3	42.3	50.0	-7.7
8.640	21.5	20.4	41.9	50.0	-8.1
9.690	21.1	20.4	41.5	50.0	-8.5
6.400	21.1	20.3	41.4	50.0	-8.6
5.830	21.1	20.3	41.4	50.0	-8.6
9.820	20.9	20.4	41.3	50.0	-8.7
9.520	20.6	20.4	41.0	50.0	-9.0
9.200	20.6	20.4	41.0	50.0	-9.0
9.360	20.4	20.4	40.8	50.0	-9.2
9.590	20.3	20.4	40.7	50.0	-9.3

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

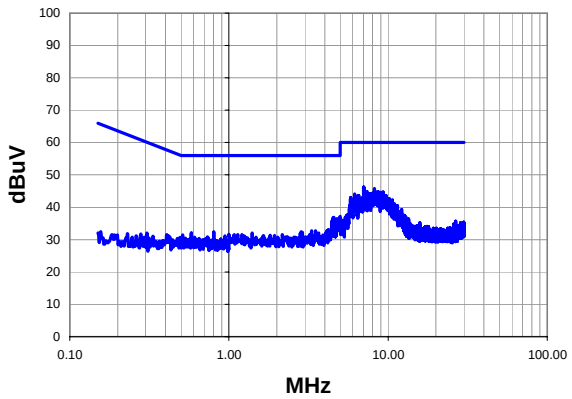
PSA-ESCI 2010.04.06
Version 2010.3.17

Work Order:	INMC0575	**Date:**	08/11/10		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV07	**Humidity:**	53		
Serial Number:	R11	**Barometric Pres.:**	1014.8 mb	**Tested by:**	Rod Peloquin
EUT:	RC12				
Configuration:	3 - AC Power Conducted Emissions				
Customer:	Intermec Technologies Corporation				
Attendees:	none				
EUT Power:	3.3 VDC from 120VAC				
Operating Mode:	Transmitting Bluetooth GFSK/DH5 mode, Low Channel				
Deviations:	No deviations.				
Comments:	Linear lab power supply				

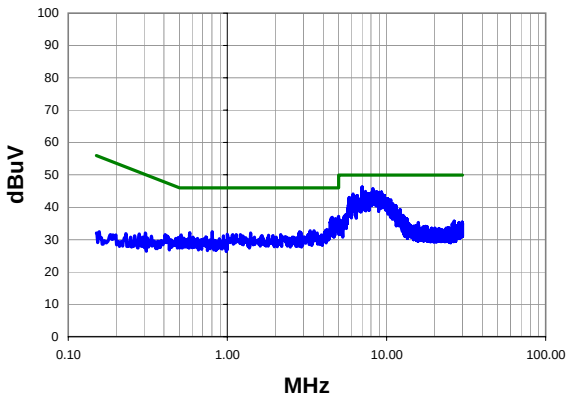
Test Specifications	**Test Method**
FCC 15.207:2010	ANSI C63.10:2009

Run #	36	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.030	25.9	20.4	46.3	60.0	-13.7
8.220	25.4	20.4	45.8	60.0	-14.2
7.370	24.5	20.4	44.9	60.0	-15.1
8.570	24.4	20.4	44.8	60.0	-15.2
9.310	24.3	20.4	44.7	60.0	-15.3
8.710	24.3	20.4	44.7	60.0	-15.3
9.000	24.2	20.4	44.6	60.0	-15.4
8.040	24.2	20.4	44.6	60.0	-15.4
7.690	23.8	20.4	44.2	60.0	-15.8
7.840	23.7	20.4	44.1	60.0	-15.9
6.170	23.8	20.3	44.1	60.0	-15.9
8.880	23.5	20.4	43.9	60.0	-16.1
7.560	23.5	20.4	43.9	60.0	-16.1
9.690	23.2	20.4	43.6	60.0	-16.4
6.540	23.3	20.3	43.6	60.0	-16.4
9.550	23.1	20.4	43.5	60.0	-16.5
5.830	22.8	20.3	43.1	60.0	-16.9
10.150	22.2	20.4	42.6	60.0	-17.4
5.800	22.3	20.3	42.6	60.0	-17.4
6.090	22.1	20.3	42.4	60.0	-17.6

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.030	25.9	20.4	46.3	50.0	-3.7
8.220	25.4	20.4	45.8	50.0	-4.2
7.370	24.5	20.4	44.9	50.0	-5.1
8.570	24.4	20.4	44.8	50.0	-5.2
9.310	24.3	20.4	44.7	50.0	-5.3
8.710	24.3	20.4	44.7	50.0	-5.3
9.000	24.2	20.4	44.6	50.0	-5.4
8.040	24.2	20.4	44.6	50.0	-5.4
7.690	23.8	20.4	44.2	50.0	-5.8
7.840	23.7	20.4	44.1	50.0	-5.9
6.170	23.8	20.3	44.1	50.0	-5.9
8.880	23.5	20.4	43.9	50.0	-6.1
7.560	23.5	20.4	43.9	50.0	-6.1
9.690	23.2	20.4	43.6	50.0	-6.4
6.540	23.3	20.3	43.6	50.0	-6.4
9.550	23.1	20.4	43.5	50.0	-6.5
5.830	22.8	20.3	43.1	50.0	-6.9
10.150	22.2	20.4	42.6	50.0	-7.4
5.800	22.3	20.3	42.6	50.0	-7.4
6.090	22.1	20.3	42.4	50.0	-7.6

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

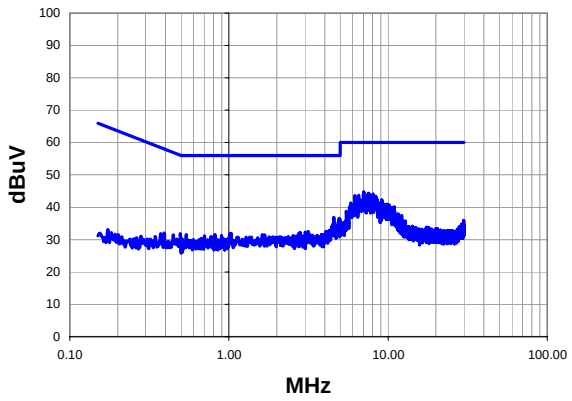
PSA-ESCI 2010.04.06
Version 2010.3.17

Work Order:	INMC0575	**Date:**	08/11/10		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV07	**Humidity:**	53		
Serial Number:	R11	**Barometric Pres.:**	1014.8 mb	**Tested by:**	Rod Peloquin
EUT:	RC12				
Configuration:	3 - AC Power Conducted Emissions				
Customer:	Intermec Technologies Corporation				
Attendees:	none				
EUT Power:	3.3 VDC from 120VAC				
Operating Mode:	Transmitting Bluetooth GFSK/DH5 mode, Mid Channel				
Deviations:	No deviations.				
Comments:	Linear lab power supply				

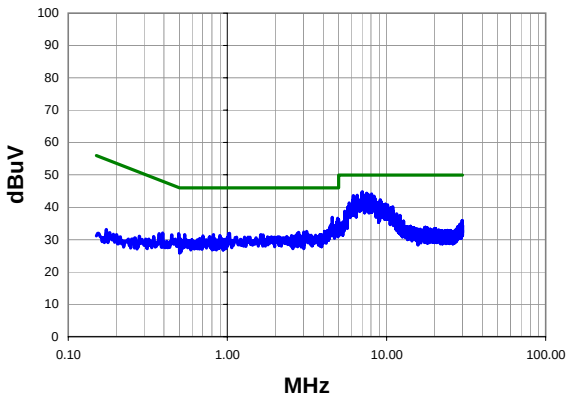
Test Specifications	**Test Method**
FCC 15.207:2010	ANSI C63.10:2009

Run #	37	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.030	24.4	20.4	44.8	60.0	-15.2
7.510	23.9	20.4	44.3	60.0	-15.7
8.040	23.7	20.4	44.1	60.0	-15.9
7.700	23.4	20.4	43.8	60.0	-16.2
6.530	23.4	20.3	43.7	60.0	-16.3
6.180	23.3	20.3	43.6	60.0	-16.4
8.350	23.0	20.4	43.4	60.0	-16.6
7.360	23.0	20.4	43.4	60.0	-16.6
8.390	22.6	20.4	43.0	60.0	-17.0
8.500	22.1	20.4	42.5	60.0	-17.5
8.160	22.0	20.4	42.4	60.0	-17.6
6.650	22.0	20.3	42.3	60.0	-17.7
9.110	21.9	20.4	42.3	60.0	-17.7
7.850	21.6	20.4	42.0	60.0	-18.0
9.230	21.5	20.4	41.9	60.0	-18.1
6.280	21.5	20.3	41.8	60.0	-18.2
5.840	21.1	20.3	41.4	60.0	-18.6
8.670	20.9	20.4	41.3	60.0	-18.7
9.830	20.5	20.4	40.9	60.0	-19.1
9.330	20.5	20.4	40.9	60.0	-19.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.030	24.4	20.4	44.8	50.0	-5.2
7.510	23.9	20.4	44.3	50.0	-5.7
8.040	23.7	20.4	44.1	50.0	-5.9
7.700	23.4	20.4	43.8	50.0	-6.2
6.530	23.4	20.3	43.7	50.0	-6.3
6.180	23.3	20.3	43.6	50.0	-6.4
8.350	23.0	20.4	43.4	50.0	-6.6
7.360	23.0	20.4	43.4	50.0	-6.6
8.390	22.6	20.4	43.0	50.0	-7.0
8.500	22.1	20.4	42.5	50.0	-7.5
8.160	22.0	20.4	42.4	50.0	-7.6
6.650	22.0	20.3	42.3	50.0	-7.7
9.110	21.9	20.4	42.3	50.0	-7.7
7.850	21.6	20.4	42.0	50.0	-8.0
9.230	21.5	20.4	41.9	50.0	-8.1
6.280	21.5	20.3	41.8	50.0	-8.2
5.840	21.1	20.3	41.4	50.0	-8.6
8.670	20.9	20.4	41.3	50.0	-8.7
9.830	20.5	20.4	40.9	50.0	-9.1
9.330	20.5	20.4	40.9	50.0	-9.1

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

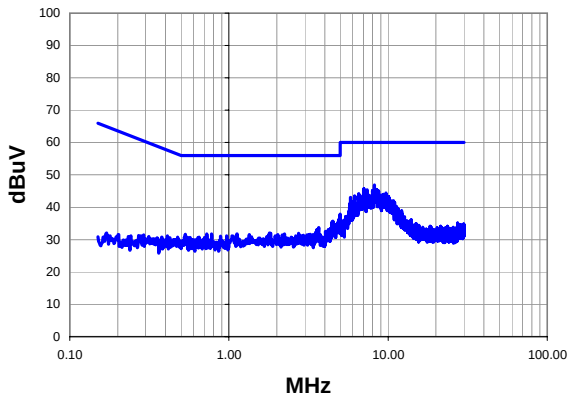
PSA-ESCI 2010.04.06
Version 2010.3.17

Work Order:	INMC0575	**Date:**	08/11/10		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV07	**Humidity:**	53		
Serial Number:	R11	**Barometric Pres.:**	1014.8 mb	**Tested by:**	Rod Peloquin
EUT:	RC12				
Configuration:	3 - AC Power Conducted Emissions				
Customer:	Intermec Technologies Corporation				
Attendees:	none				
EUT Power:	3.3 VDC from 120VAC				
Operating Mode:	Transmitting Bluetooth GFSK/DH5 mode, Mid Channel				
Deviations:	No deviations.				
Comments:	Linear lab power supply				

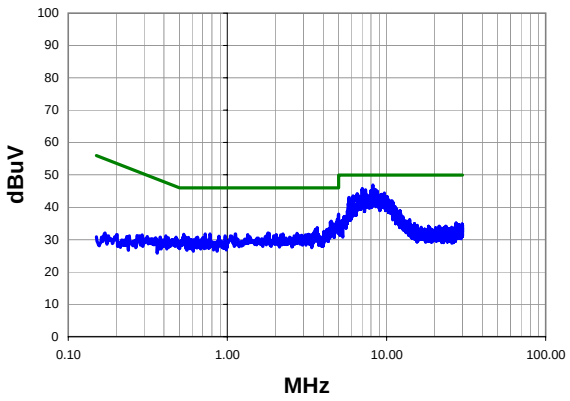
Test Specifications	**Test Method**
FCC 15.207:2010	ANSI C63.10:2009

Run #	38	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
8.190	26.5	20.4	46.9	60.0	-13.1
7.040	25.3	20.4	45.7	60.0	-14.3
8.480	25.1	20.4	45.5	60.0	-14.5
7.390	25.0	20.4	45.4	60.0	-14.6
7.990	24.7	20.4	45.1	60.0	-14.9
8.360	24.7	20.4	45.1	60.0	-14.9
8.720	24.6	20.4	45.0	60.0	-15.0
7.180	24.5	20.4	44.9	60.0	-15.1
9.710	24.0	20.4	44.4	60.0	-15.6
6.530	23.9	20.3	44.2	60.0	-15.8
9.330	23.6	20.4	44.0	60.0	-16.0
8.590	23.5	20.4	43.9	60.0	-16.1
9.200	23.4	20.4	43.8	60.0	-16.2
7.500	23.4	20.4	43.8	60.0	-16.2
9.450	23.3	20.4	43.7	60.0	-16.3
9.000	23.3	20.4	43.7	60.0	-16.3
6.680	23.2	20.3	43.5	60.0	-16.5
6.170	23.2	20.3	43.5	60.0	-16.5
7.660	23.0	20.4	43.4	60.0	-16.6
10.070	22.9	20.4	43.3	60.0	-16.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
8.190	26.5	20.4	46.9	50.0	-3.1
7.040	25.3	20.4	45.7	50.0	-4.3
8.480	25.1	20.4	45.5	50.0	-4.5
7.390	25.0	20.4	45.4	50.0	-4.6
7.990	24.7	20.4	45.1	50.0	-4.9
8.360	24.7	20.4	45.1	50.0	-4.9
8.720	24.6	20.4	45.0	50.0	-5.0
7.180	24.5	20.4	44.9	50.0	-5.1
9.710	24.0	20.4	44.4	50.0	-5.6
6.530	23.9	20.3	44.2	50.0	-5.8
9.330	23.6	20.4	44.0	50.0	-6.0
8.590	23.5	20.4	43.9	50.0	-6.1
9.200	23.4	20.4	43.8	50.0	-6.2
7.500	23.4	20.4	43.8	50.0	-6.2
9.450	23.3	20.4	43.7	50.0	-6.3
9.000	23.3	20.4	43.7	50.0	-6.3
6.680	23.2	20.3	43.5	50.0	-6.5
6.170	23.2	20.3	43.5	50.0	-6.5
7.660	23.0	20.4	43.4	50.0	-6.6
10.070	22.9	20.4	43.3	50.0	-6.7

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

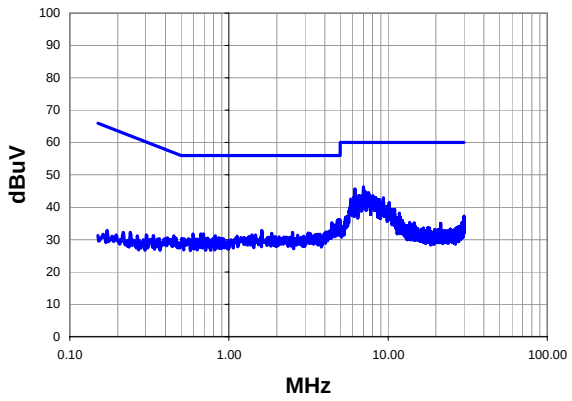
PSA-ESCI 2010.04.06
Version 2010.3.17

Work Order:	INMC0575	**Date:**	08/11/10		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV07	**Humidity:**	53		
Serial Number:	R11	**Barometric Pres.:**	1014.8 mb	**Tested by:**	Rod Peloquin
EUT:	RC12				
Configuration:	3 - AC Power Conducted Emissions				
Customer:	Intermec Technologies Corporation				
Attendees:	none				
EUT Power:	3.3 VDC from 120VAC				
Operating Mode:	Transmitting Bluetooth GFSK/DH5 mode, High Channel				
Deviations:	No deviations.				
Comments:	Linear lab power supply				

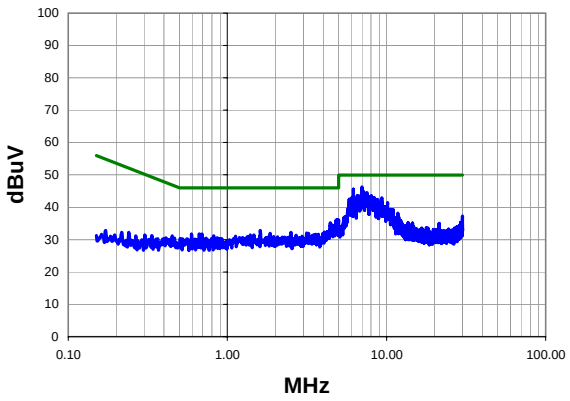
Test Specifications	**Test Method**
FCC 15.207:2010	ANSI C63.10:2009

Run #	39	**Line:**	High Line	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.000	25.9	20.4	46.3	60.0	-13.7
6.190	25.3	20.3	45.6	60.0	-14.4
7.190	24.5	20.4	44.9	60.0	-15.1
7.540	24.1	20.4	44.5	60.0	-15.5
8.010	23.2	20.4	43.6	60.0	-16.4
6.870	23.2	20.4	43.6	60.0	-16.4
6.650	23.2	20.3	43.5	60.0	-16.5
6.540	23.2	20.3	43.5	60.0	-16.5
7.650	22.9	20.4	43.3	60.0	-16.7
6.070	22.9	20.3	43.2	60.0	-16.8
9.330	22.5	20.4	42.9	60.0	-17.1
8.360	22.5	20.4	42.9	60.0	-17.1
8.150	22.4	20.4	42.8	60.0	-17.2
6.310	22.3	20.3	42.6	60.0	-17.4
5.820	22.3	20.3	42.6	60.0	-17.4
8.810	22.0	20.4	42.4	60.0	-17.6
8.540	22.0	20.4	42.4	60.0	-17.6
5.900	22.0	20.3	42.3	60.0	-17.7
10.150	20.9	20.4	41.3	60.0	-18.7
8.980	20.9	20.4	41.3	60.0	-18.7

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
7.000	25.9	20.4	46.3	50.0	-3.7
6.190	25.3	20.3	45.6	50.0	-4.4
7.190	24.5	20.4	44.9	50.0	-5.1
7.540	24.1	20.4	44.5	50.0	-5.5
8.010	23.2	20.4	43.6	50.0	-6.4
6.870	23.2	20.4	43.6	50.0	-6.4
6.650	23.2	20.3	43.5	50.0	-6.5
6.540	23.2	20.3	43.5	50.0	-6.5
7.650	22.9	20.4	43.3	50.0	-6.7
6.070	22.9	20.3	43.2	50.0	-6.8
9.330	22.5	20.4	42.9	50.0	-7.1
8.360	22.5	20.4	42.9	50.0	-7.1
8.150	22.4	20.4	42.8	50.0	-7.2
6.310	22.3	20.3	42.6	50.0	-7.4
5.820	22.3	20.3	42.6	50.0	-7.4
8.810	22.0	20.4	42.4	50.0	-7.6
8.540	22.0	20.4	42.4	50.0	-7.6
5.900	22.0	20.3	42.3	50.0	-7.7
10.150	20.9	20.4	41.3	50.0	-8.7
8.980	20.9	20.4	41.3	50.0	-8.7

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

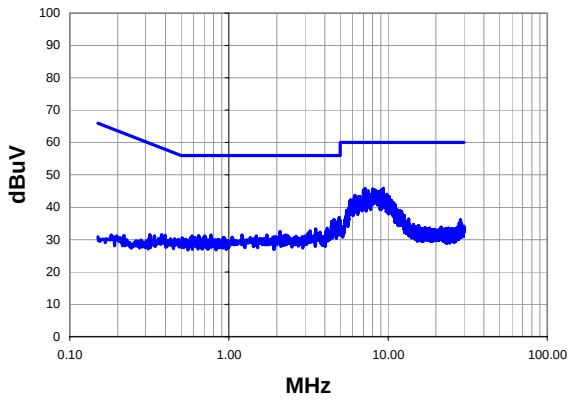
PSA-ESCI 2010.04.06
Version 2010.3.17

Work Order:	INMC0575	**Date:**	08/11/10		
Project:	None	**Temperature:**	22 °C		
Job Site:	EV07	**Humidity:**	53		
Serial Number:	R11	**Barometric Pres.:**	1014.8 mb	**Tested by:**	Rod Peloquin
EUT:	RC12				
Configuration:	3 - AC Power Conducted Emissions				
Customer:	Intermec Technologies Corporation				
Attendees:	none				
EUT Power:	3.3 VDC from 120VAC				
Operating Mode:	Transmitting Bluetooth GFSK/DH5 mode, High Channel				
Deviations:	No deviations.				
Comments:	Linear lab power supply				

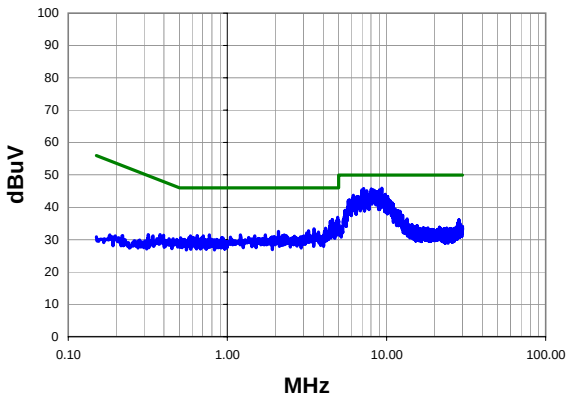
Test Specifications	**Test Method**
FCC 15.207:2010	ANSI C63.10:2009

Run #	40	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit

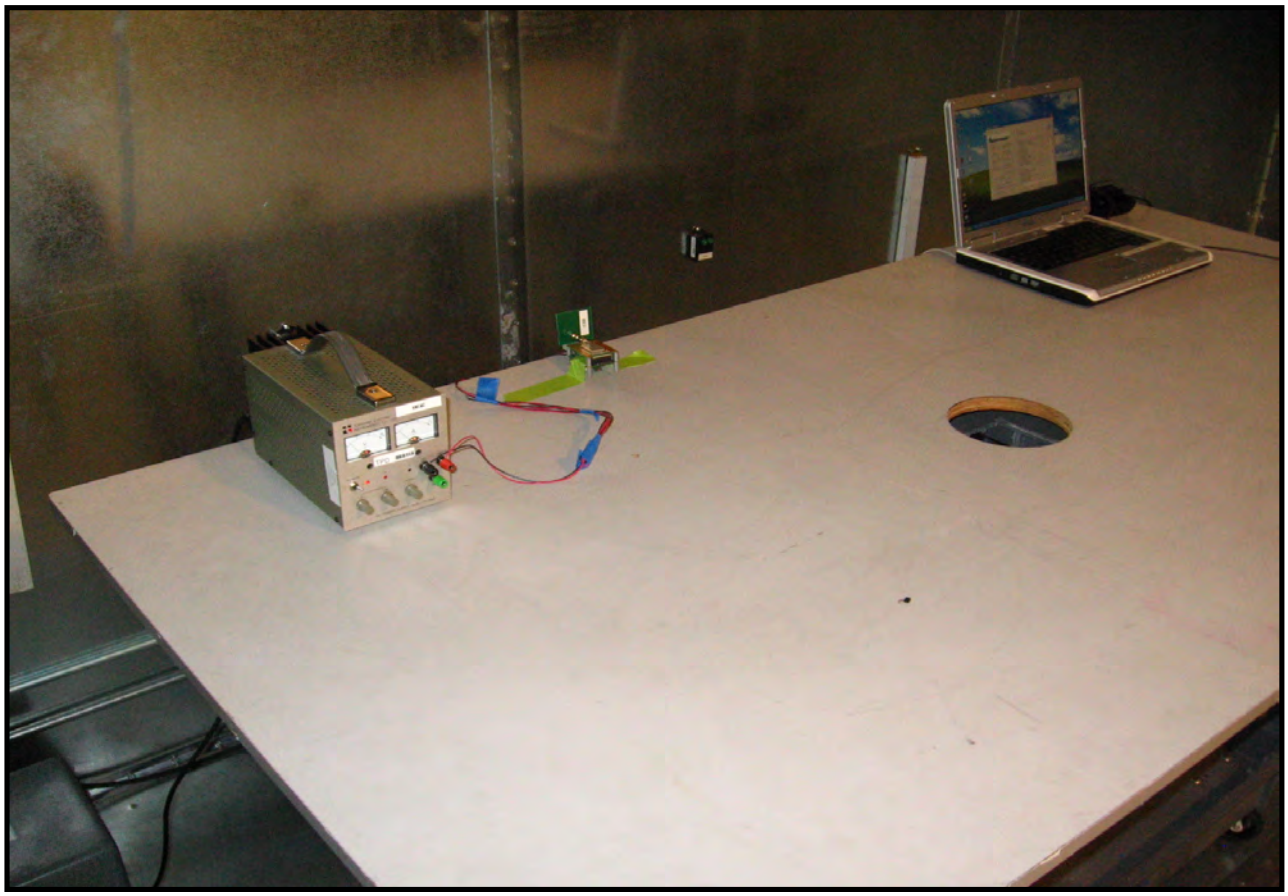
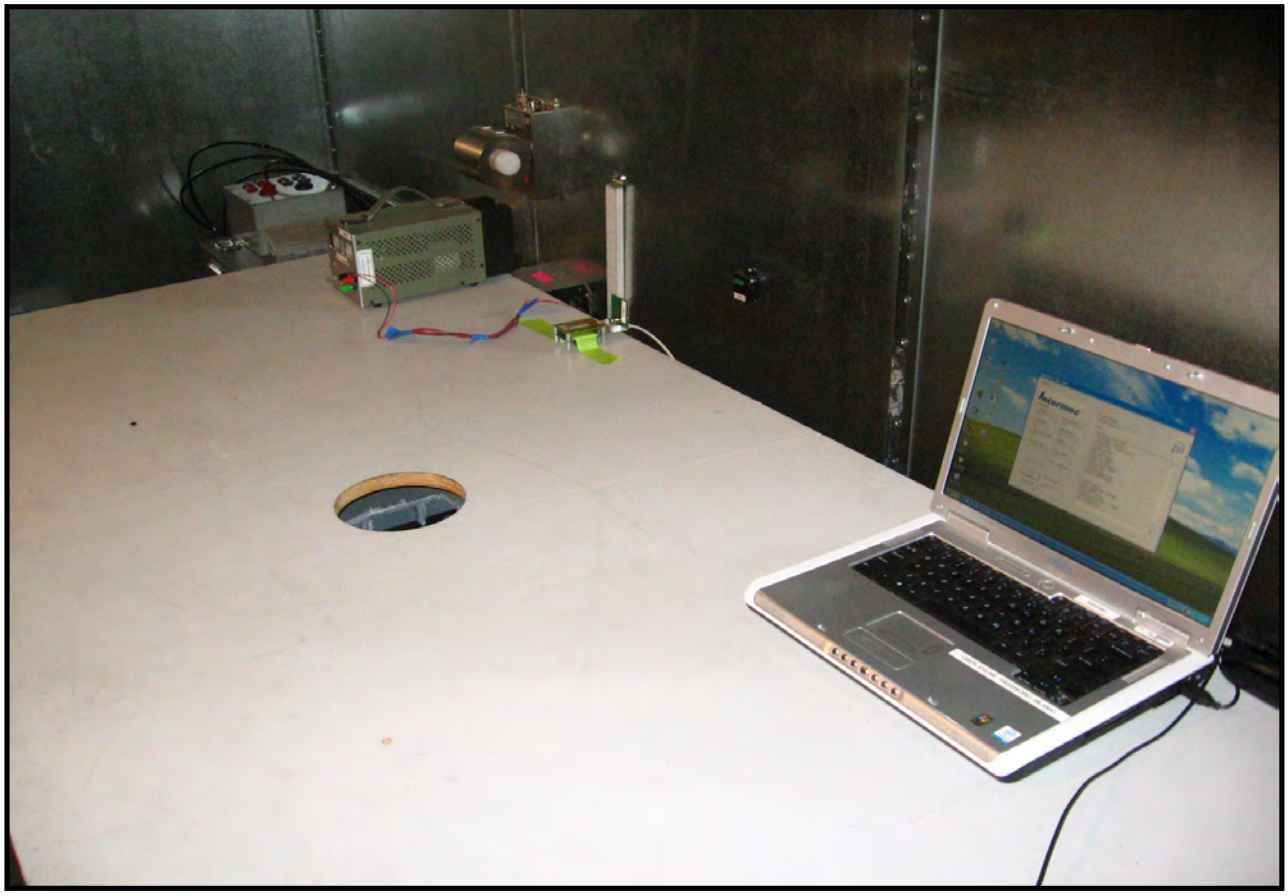
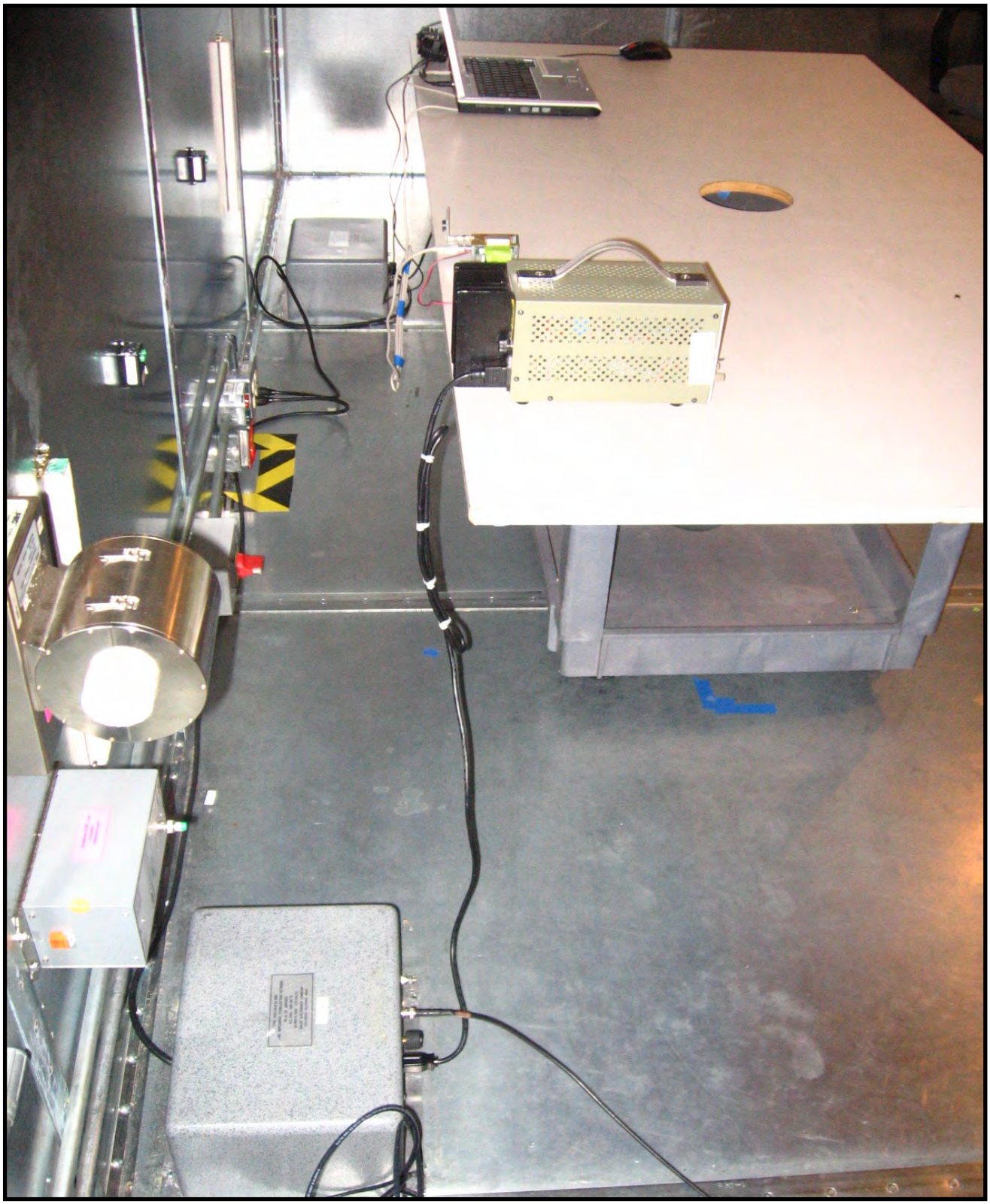


Peak Data - vs - Average Limit



Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.330	25.5	20.4	45.9	60.0	-14.1
7.180	25.3	20.4	45.7	60.0	-14.3
8.020	25.2	20.4	45.6	60.0	-14.4
9.060	25.0	20.4	45.4	60.0	-14.6
8.250	24.9	20.4	45.3	60.0	-14.7
8.170	24.8	20.4	45.2	60.0	-14.8
7.500	24.7	20.4	45.1	60.0	-14.9
7.460	24.5	20.4	44.9	60.0	-15.1
8.720	24.4	20.4	44.8	60.0	-15.2
8.980	24.1	20.4	44.5	60.0	-15.5
9.210	23.8	20.4	44.2	60.0	-15.8
8.870	23.8	20.4	44.2	60.0	-15.8
9.810	23.6	20.4	44.0	60.0	-16.0
7.670	23.6	20.4	44.0	60.0	-16.0
9.680	23.3	20.4	43.7	60.0	-16.3
6.190	23.4	20.3	43.7	60.0	-16.3
10.160	22.9	20.4	43.3	60.0	-16.7
6.520	23.0	20.3	43.3	60.0	-16.7
6.660	22.9	20.3	43.2	60.0	-16.8
6.100	22.4	20.3	42.7	60.0	-17.3

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.330	25.5	20.4	45.9	50.0	-4.1
7.180	25.3	20.4	45.7	50.0	-4.3
8.020	25.2	20.4	45.6	50.0	-4.4
9.060	25.0	20.4	45.4	50.0	-4.6
8.250	24.9	20.4	45.3	50.0	-4.7
8.170	24.8	20.4	45.2	50.0	-4.8
7.500	24.7	20.4	45.1	50.0	-4.9
7.460	24.5	20.4	44.9	50.0	-5.1
8.720	24.4	20.4	44.8	50.0	-5.2
8.980	24.1	20.4	44.5	50.0	-5.5
9.210	23.8	20.4	44.2	50.0	-5.8
8.870	23.8	20.4	44.2	50.0	-5.8
9.810	23.6	20.4	44.0	50.0	-6.0
7.670	23.6	20.4	44.0	50.0	-6.0
9.680	23.3	20.4	43.7	50.0	-6.3
6.190	23.4	20.3	43.7	50.0	-6.3
10.160	22.9	20.4	43.3	50.0	-6.7
6.520	23.0	20.3	43.3	50.0	-6.7
6.660	22.9	20.3	43.2	50.0	-6.8
6.100	22.4	20.3	42.7	50.0	-7.3