Intermec Technologies Corporation

Galileo Modular Radio (TI) Model RC11

Report No. INMC0549.3

Report Prepared By

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

EMC Test Report

NORTHWEST EMC

22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: August 11, 2009
Intermec Technologies Corporation
Model: Galileo Modular Radio (TI)

Emissions			
Test Description	**Specification**	**Test Method**	**Pass/Fail**
Spurious Radiated Emissions	FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000	**Pass**
Occupied Bandwidth	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Output Power	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Power Spectral Density	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Spurious Conducted Emissions	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Band Edge Compliance	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
AC Powerline Conducted Emissions	FCC 15.207:2009	ANSI C63.4:2003	**Pass**
Band Edge Compliance	FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074	**Pass**
Duty Cycle Correction	FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000	**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-1).

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.

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

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)*

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).

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, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294).*

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)*

SCOPE

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

Northwest EMC Locations

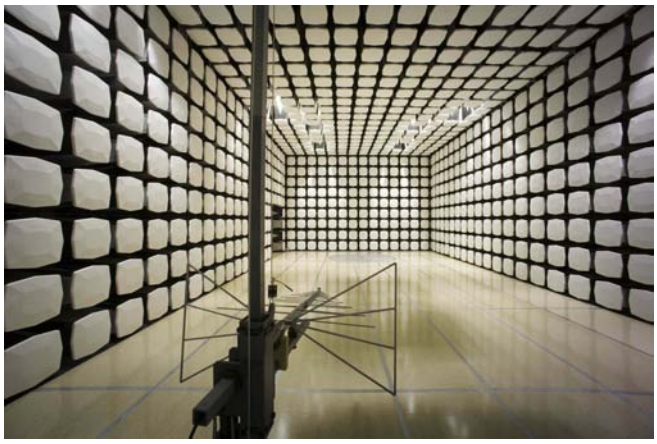
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

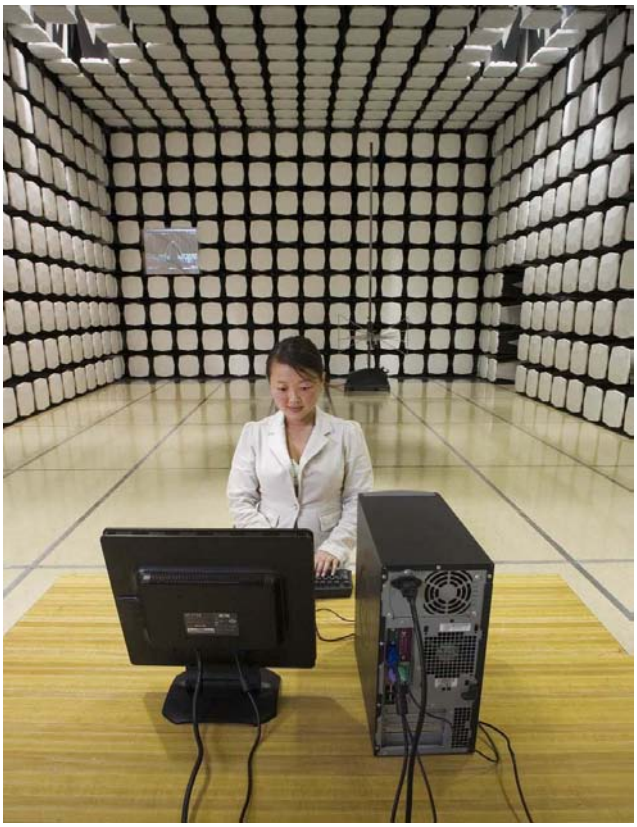
California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

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:	Galileo Modular Radio (TI) Model RC11
First Date of Test:	June 4, 2009
Last Date of Test:	August 11, 2009
Receipt Date of Samples:	June 3, 2009
Equipment Design Stage:	Preproduction
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 - Bluetooth radio module

Testing Objective:
Seeking to demonstrate compliance of the Bluetooth portion of the radio to FCC 15.247 for operation in the 2.4 GHz band.

CONFIGURATION 1 INMC0519

Software/Firmware Running during test	
Description	**Version**
HCI Tester (Bluetooth)	2.3.1.0
Radio Scope (802.11)	1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - Combined 802.11bg and Bluetooth radio module	Intermec Technologies Corporation	Galileo Modular Radio	7

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Power Supply	Intermec Technologies Corporation	3-304029-Q1	01669

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

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC power	No	2.3m	No	AC Mains	Power Supply
DC power	PA	2.3m	PA	Power Supply	Test Module
USB	No	5.0m	No	EUT	Remote PC
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 3 INMC0519

Software/Firmware Running during test	
Description	**Version**
HCI Tester (Bluetooth)	2.3.1.0
Radio Scope (802.11)	1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - Combined 802.11bg and Bluetooth radio module	Intermec Technologies Corporation	Galileo Modular Radio	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Power Supply	Topward Electric Instruments Co. LTD.	TPS-2000	946425

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Power Supply	Intermec Technologies Corporation	3-304029-Q1	590490
Remote PC	Dell	Latitude D600	unknown

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC power	No	2.3m	No	AC Mains	Power Supply
DC power	PA	2.3m	PA	Power Supply	Test Module
USB	No	5.0m	No	EUT	Remote PC
DC power	No	0.6m	No	EUT	Power Supply
AC power	No	1.8m	No	Power Supply	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 6 INMC0546

Software/Firmware Running during test	
Description	**Version**
Radio Scope (802.11)	1.0
HCI Tester (Bluetooth)	2.3.1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - Combined 802.11bg and Bluetooth radio module	Intermec Technologies Corporation	Galileo Modular Radio	00-21-e8-70-09-c4
Whip Antenna	Laird	MAF94367	None

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote PC	Dell	Latitude D600	SAC 2
Power Supply	Intermec Technologies Corporation	3-304029-01	690490

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC power	No	2.3m	No	AC Mains	Power Supply
USB	No	5.0m	No	EUT	Remote PC
DC power	PA	3.5m	PA	Power Supply	EUT - Combined 802.11bg and Bluetooth radio module
Antenna	Yes	0.6m	No	EUT - Combined 802.11bg and Bluetooth radio module	Whip Antenna
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATION 8 INMC0546

Software/Firmware Running during test	
Description	**Version**
Radio Scope (802.11)	1.0
HCI Tester (Bluetooth)	2.3.1.0

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT - Combined 802.11bg and Bluetooth radio module	Intermec Technologies Corporation	Galileo Modular Radio	00-21-e8-70-09-c4
Whip Antenna	Laird	MAF94367	None

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
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	SAC 2

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Antenna	Yes	0.6m	No	EUT - Combined 802.11bg and Bluetooth radio module	Whip Antenna
DC power	No	1.8m	No	EUT - Combined 802.11bg and Bluetooth radio module	Power Supply
AC power	No	1.8m	No	Power Supply	AC Mains
USB	Yes	3.0m	No	EUT - Combined 802.11bg and Bluetooth radio module	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	8/7/2009	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	6/4/2009	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.
3	6/4//2009	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.
4	6/4/2009	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.
5	6/4/2009	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.
6	6/11/2009	Duty Cycle Correction	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	7/31/2009	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.
8	8/11/2009	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.

EMC 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, High Channel, GFSK/DH5.
Transmitting Bluetooth, Mid Channel, GFSK/DH5.
Transmitting Bluetooth, Low Channel, GFSK/DH5.

POWER SETTINGS INVESTIGATED
5VDC (120V/60Hz)

CONFIGURATIONS INVESTIGATED
INMC0546 - 8

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Receiver	Rohde & Schwarz	ESCI	ARH	8/28/2008	24 mo
EV07 Cables		Conducted Cables	EVG	6/1/2009	13 mo
Attenuator	Coaxicom	66702 2910-20	ATO	7/21/2009	13 mo
High Pass Filter	TTE	H97-100K-50-720B	HFX	5/27/2009	13 mo
LISN	Solar	9252-50-R-24-BNC	LIR	2/4/2009	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 either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-2003.

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2009.06.09
Version 2009.5.18

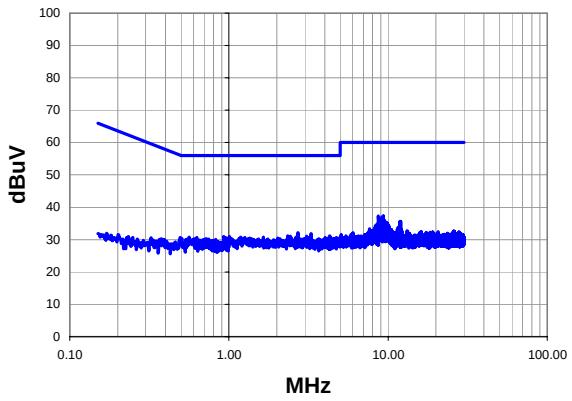
Work Order:	INMC0546	**Date:**	08/11/09		
Project:	None	**Temperature:**	25°C		
Job Site:	EV07	**Humidity:**	49		
Serial Number:	00-21-e8-70-09-c4	**Barometric Pres.:**	1017.5mb	**Tested by:**	Jennifer Herrett

EUT:	Galileo modular radio (TI)
Configuration:	8 - AC Powerline Conducted Emissions with Laird MAF94367 Whip Antenna
Customer:	Intermec Technologies Corporation
Attendees:	None
EUT Power:	5VDC (120V/60Hz)
Operating Mode:	Transmitting Bluetooth, Low Channel, GFSK/DH5.
Deviations:	No deviations.
Comments:	Laird MAF94367 Whip Antenna.

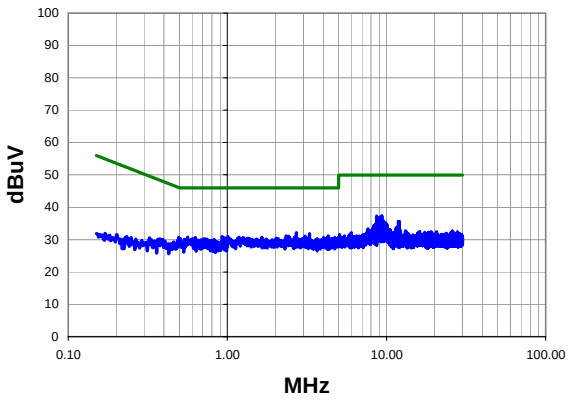
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	23	**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)
9.350	16.8	20.5	37.3	60.0	-22.7
8.690	16.8	20.5	37.3	60.0	-22.7
9.110	16.5	20.5	37.0	60.0	-23.0
8.930	15.8	20.5	36.3	60.0	-23.7
2.720	11.7	20.4	32.1	56.0	-23.9
3.280	11.5	20.4	31.9	56.0	-24.1
9.530	15.3	20.5	35.8	60.0	-24.2
12.000	15.0	20.6	35.6	60.0	-24.4
11.900	15.0	20.6	35.6	60.0	-24.4
8.810	15.0	20.5	35.5	60.0	-24.5
9.410	14.9	20.5	35.4	60.0	-24.6
9.290	14.9	20.5	35.4	60.0	-24.6
9.440	14.8	20.5	35.3	60.0	-24.7
9.170	14.8	20.5	35.3	60.0	-24.7
4.296	10.8	20.3	31.1	56.0	-24.9
9.880	14.6	20.5	35.1	60.0	-24.9
2.344	10.7	20.4	31.1	56.0	-24.9
9.860	14.5	20.5	35.0	60.0	-25.0
3.072	10.6	20.4	31.0	56.0	-25.0
9.050	14.5	20.5	35.0	60.0	-25.0

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.350	16.8	20.5	37.3	50.0	-12.7
8.690	16.8	20.5	37.3	50.0	-12.7
9.110	16.5	20.5	37.0	50.0	-13.0
8.930	15.8	20.5	36.3	50.0	-13.7
2.720	11.7	20.4	32.1	46.0	-13.9
3.280	11.5	20.4	31.9	46.0	-14.1
9.530	15.3	20.5	35.8	50.0	-14.2
12.000	15.0	20.6	35.6	50.0	-14.4
11.900	15.0	20.6	35.6	50.0	-14.4
8.810	15.0	20.5	35.5	50.0	-14.5
9.410	14.9	20.5	35.4	50.0	-14.6
9.290	14.9	20.5	35.4	50.0	-14.6
9.440	14.8	20.5	35.3	50.0	-14.7
9.170	14.8	20.5	35.3	50.0	-14.7
4.296	10.8	20.3	31.1	46.0	-14.9
9.880	14.6	20.5	35.1	50.0	-14.9
2.344	10.7	20.4	31.1	46.0	-14.9
9.860	14.5	20.5	35.0	50.0	-15.0
3.072	10.6	20.4	31.0	46.0	-15.0
9.050	14.5	20.5	35.0	50.0	-15.0

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2009.06.09
Version 2009.5.18

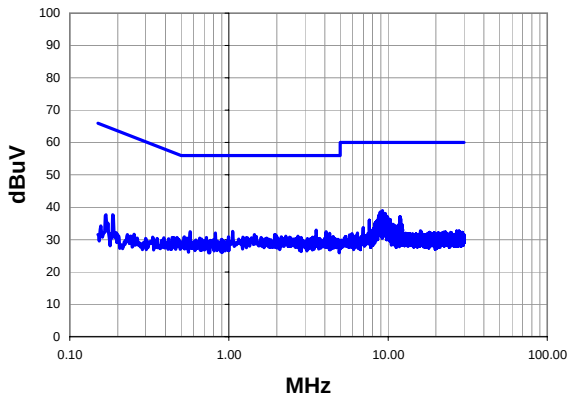
Work Order:	INMC0546	**Date:**	08/11/09		
Project:	None	**Temperature:**	25°C		
Job Site:	EV07	**Humidity:**	49		
Serial Number:	00-21-e8-70-09-c4	**Barometric Pres.:**	1017.5mb	**Tested by:**	Jennifer Herrett

EUT:	Galileo modular radio (TI)
Configuration:	8 - AC Powerline Conducted Emissions with Laird MAF94367 Whip Antenna
Customer:	Intermec Technologies Corporation
Attendees:	None
EUT Power:	5VDC (120V/60Hz)
Operating Mode:	Transmitting Bluetooth, Low Channel, GFSK/DH5.
Deviations:	No deviations.
Comments:	Laird MAF94367 Whip Antenna.

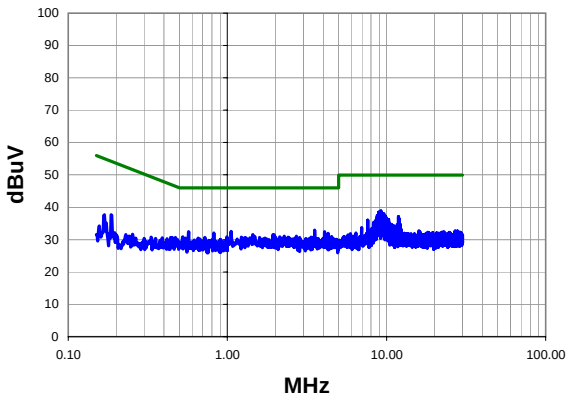
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	24	**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)
9.230	18.4	20.5	38.9	60.0	-21.1
8.930	18.0	20.5	38.5	60.0	-21.5
9.350	17.7	20.5	38.2	60.0	-21.8
9.590	17.6	20.5	38.1	60.0	-21.9
8.750	17.0	20.5	37.5	60.0	-22.5
9.520	16.8	20.5	37.3	60.0	-22.7
9.820	16.7	20.5	37.2	60.0	-22.8
8.810	16.7	20.5	37.2	60.0	-22.8
9.410	16.6	20.5	37.1	60.0	-22.9
11.900	16.5	20.6	37.1	60.0	-22.9
9.650	16.5	20.5	37.0	60.0	-23.0
9.470	16.5	20.5	37.0	60.0	-23.0
3.536	12.6	20.3	32.9	56.0	-23.1
9.170	16.4	20.5	36.9	60.0	-23.1
9.060	16.4	20.5	36.9	60.0	-23.1
8.700	16.4	20.5	36.9	60.0	-23.1
9.950	16.3	20.5	36.8	60.0	-23.2
9.770	16.1	20.5	36.6	60.0	-23.4
1.056	12.2	20.4	32.6	56.0	-23.4
0.570	12.0	20.5	32.5	56.0	-23.5

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.230	18.4	20.5	38.9	50.0	-11.1
8.930	18.0	20.5	38.5	50.0	-11.5
9.350	17.7	20.5	38.2	50.0	-11.8
9.590	17.6	20.5	38.1	50.0	-11.9
8.750	17.0	20.5	37.5	50.0	-12.5
9.520	16.8	20.5	37.3	50.0	-12.7
9.820	16.7	20.5	37.2	50.0	-12.8
8.810	16.7	20.5	37.2	50.0	-12.8
9.410	16.6	20.5	37.1	50.0	-12.9
11.900	16.5	20.6	37.1	50.0	-12.9
9.650	16.5	20.5	37.0	50.0	-13.0
9.470	16.5	20.5	37.0	50.0	-13.0
3.536	12.6	20.3	32.9	46.0	-13.1
9.170	16.4	20.5	36.9	50.0	-13.1
9.060	16.4	20.5	36.9	50.0	-13.1
8.700	16.4	20.5	36.9	50.0	-13.1
9.950	16.3	20.5	36.8	50.0	-13.2
9.770	16.1	20.5	36.6	50.0	-13.4
1.056	12.2	20.4	32.6	46.0	-13.4
0.570	12.0	20.5	32.5	46.0	-13.5

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2009.06.09
Version 2009.5.18

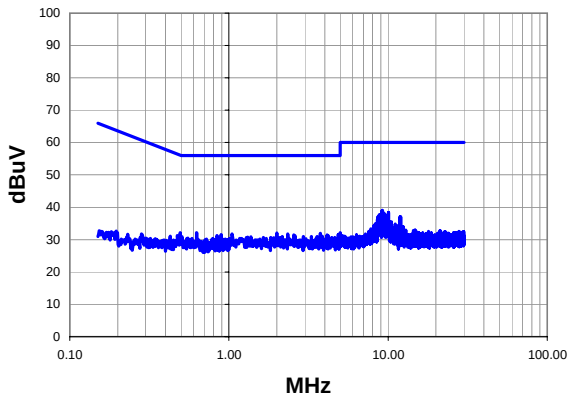
Work Order:	INMC0546	**Date:**	08/11/09		
Project:	None	**Temperature:**	25°C		
Job Site:	EV07	**Humidity:**	49		
Serial Number:	00-21-e8-70-09-c4	**Barometric Pres.:**	1017.5mb	**Tested by:**	Jennifer Herrett

EUT:	Galileo modular radio (TI)
Configuration:	8 - AC Powerline Conducted Emissions with Laird MAF94367 Whip Antenna
Customer:	Intermec Technologies Corporation
Attendees:	None
EUT Power:	5VDC (120V/60Hz)
Operating Mode:	Transmitting Bluetooth, Mid Channel, GFSK/DH5.
Deviations:	No deviations.
Comments:	Laird MAF94367 Whip Antenna.

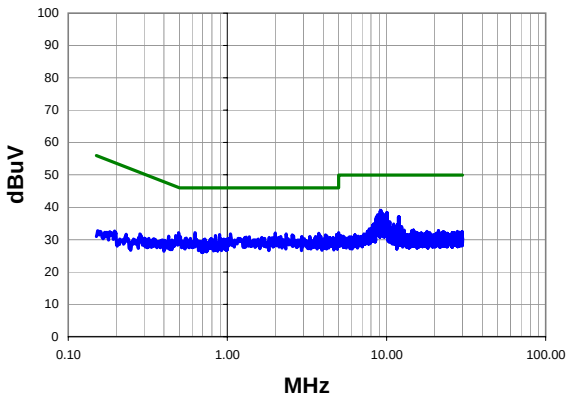
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	25	**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)
9.230	18.5	20.5	39.0	60.0	-21.0
9.110	18.4	20.5	38.9	60.0	-21.1
10.060	17.8	20.5	38.3	60.0	-21.7
9.170	17.8	20.5	38.3	60.0	-21.7
9.410	17.7	20.5	38.2	60.0	-21.8
8.990	17.3	20.5	37.8	60.0	-22.2
8.810	17.2	20.5	37.7	60.0	-22.3
9.650	17.1	20.5	37.6	60.0	-22.4
8.930	16.9	20.5	37.4	60.0	-22.6
9.350	16.8	20.5	37.3	60.0	-22.7
9.530	16.6	20.5	37.1	60.0	-22.9
8.630	16.5	20.5	37.0	60.0	-23.0
12.000	16.4	20.6	37.0	60.0	-23.0
11.900	16.4	20.6	37.0	60.0	-23.0
8.740	16.4	20.5	36.9	60.0	-23.1
9.470	16.3	20.5	36.8	60.0	-23.2
9.770	15.9	20.5	36.4	60.0	-23.6
9.290	15.9	20.5	36.4	60.0	-23.6
8.580	15.9	20.5	36.4	60.0	-23.6
0.626	11.7	20.5	32.2	56.0	-23.8

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.230	18.5	20.5	39.0	50.0	-11.0
9.110	18.4	20.5	38.9	50.0	-11.1
10.060	17.8	20.5	38.3	50.0	-11.7
9.170	17.8	20.5	38.3	50.0	-11.7
9.410	17.7	20.5	38.2	50.0	-11.8
8.990	17.3	20.5	37.8	50.0	-12.2
8.810	17.2	20.5	37.7	50.0	-12.3
9.650	17.1	20.5	37.6	50.0	-12.4
8.930	16.9	20.5	37.4	50.0	-12.6
9.350	16.8	20.5	37.3	50.0	-12.7
9.530	16.6	20.5	37.1	50.0	-12.9
8.630	16.5	20.5	37.0	50.0	-13.0
12.000	16.4	20.6	37.0	50.0	-13.0
11.900	16.4	20.6	37.0	50.0	-13.0
8.740	16.4	20.5	36.9	50.0	-13.1
9.470	16.3	20.5	36.8	50.0	-13.2
9.770	15.9	20.5	36.4	50.0	-13.6
9.290	15.9	20.5	36.4	50.0	-13.6
8.580	15.9	20.5	36.4	50.0	-13.6
0.626	11.7	20.5	32.2	46.0	-13.8

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2009.06.09
Version 2009.5.18

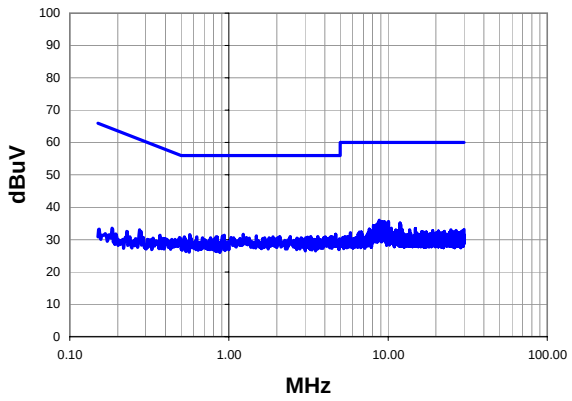
Work Order:	INMC0546	**Date:**	08/11/09		
Project:	None	**Temperature:**	25°C		
Job Site:	EV07	**Humidity:**	49		
Serial Number:	00-21-e8-70-09-c4	**Barometric Pres.:**	1017.5mb	**Tested by:**	Jennifer Herrett

EUT:	Galileo modular radio (TI)
Configuration:	8 - AC Powerline Conducted Emissions with Laird MAF94367 Whip Antenna
Customer:	Intermec Technologies Corporation
Attendees:	None
EUT Power:	5VDC (120V/60Hz)
Operating Mode:	Transmitting Bluetooth, Mid Channel, GFSK/DH5.
Deviations:	No deviations.
Comments:	Laird MAF94367 Whip Antenna.

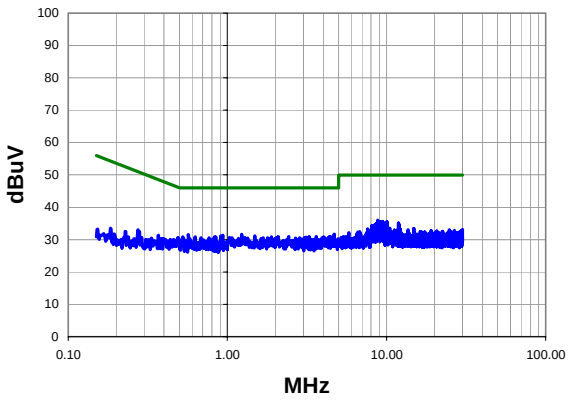
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	26	**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)
8.810	15.5	20.5	36.0	60.0	-24.0
1.232	11.3	20.4	31.7	56.0	-24.3
4.688	11.3	20.4	31.7	56.0	-24.4
9.110	15.1	20.5	35.6	60.0	-24.4
0.568	11.1	20.5	31.6	56.0	-24.4
10.050	15.0	20.5	35.5	60.0	-24.5
9.470	15.0	20.5	35.5	60.0	-24.5
9.170	14.9	20.5	35.4	60.0	-24.6
0.934	11.0	20.4	31.4	56.0	-24.6
9.940	14.8	20.5	35.3	60.0	-24.7
8.750	14.8	20.5	35.3	60.0	-24.7
1.488	10.8	20.4	31.2	56.0	-24.8
11.900	14.6	20.6	35.2	60.0	-24.8
0.910	10.7	20.4	31.1	56.0	-24.9
8.640	14.5	20.5	35.0	60.0	-25.0
2.088	10.6	20.4	31.0	56.0	-25.0
3.264	10.6	20.4	31.0	56.0	-25.0
4.376	10.6	20.3	30.9	56.0	-25.1
3.624	10.6	20.3	30.9	56.0	-25.1
9.050	14.4	20.5	34.9	60.0	-25.1

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
8.810	15.5	20.5	36.0	50.0	-14.0
1.232	11.3	20.4	31.7	46.0	-14.3
4.688	11.3	20.4	31.7	46.0	-14.4
9.110	15.1	20.5	35.6	50.0	-14.4
0.568	11.1	20.5	31.6	46.0	-14.4
10.050	15.0	20.5	35.5	50.0	-14.5
9.470	15.0	20.5	35.5	50.0	-14.5
9.170	14.9	20.5	35.4	50.0	-14.6
0.934	11.0	20.4	31.4	46.0	-14.6
9.940	14.8	20.5	35.3	50.0	-14.7
8.750	14.8	20.5	35.3	50.0	-14.7
1.488	10.8	20.4	31.2	46.0	-14.8
11.900	14.6	20.6	35.2	50.0	-14.8
0.910	10.7	20.4	31.1	46.0	-14.9
8.640	14.5	20.5	35.0	50.0	-15.0
2.088	10.6	20.4	31.0	46.0	-15.0
3.264	10.6	20.4	31.0	46.0	-15.0
4.376	10.6	20.3	30.9	46.0	-15.1
3.624	10.6	20.3	30.9	46.0	-15.1
9.050	14.4	20.5	34.9	50.0	-15.1

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2009.06.09
Version 2009.5.18

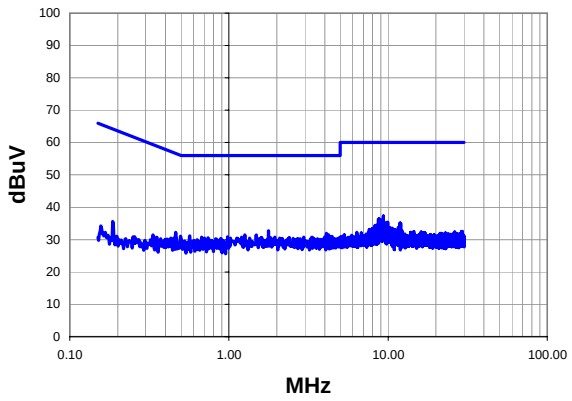
Work Order:	INMC0546	**Date:**	08/11/09		
Project:	None	**Temperature:**	25°C		
Job Site:	EV07	**Humidity:**	49		
Serial Number:	00-21-e8-70-09-c4	**Barometric Pres.:**	1017.5mb	**Tested by:**	Jennifer Herrett

EUT:	Galileo modular radio (TI)
Configuration:	8 - AC Powerline Conducted Emissions with Laird MAF94367 Whip Antenna
Customer:	Intermec Technologies Corporation
Attendees:	None
EUT Power:	5VDC (120V/60Hz)
Operating Mode:	Transmitting Bluetooth, High Channel, GFSK/DH5.
Deviations:	No deviations.
Comments:	Laird MAF94367 Whip Antenna.

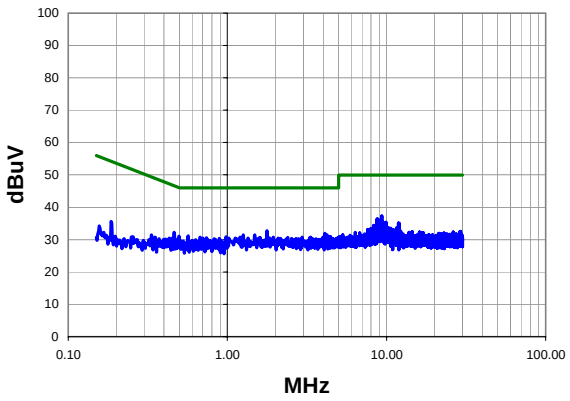
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	27	**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)
9.350	16.8	20.5	37.3	60.0	-22.7
1.776	12.3	20.4	32.7	56.0	-23.3
8.750	15.9	20.5	36.4	60.0	-23.6
8.700	15.7	20.5	36.2	60.0	-23.8
8.990	15.6	20.5	36.1	60.0	-23.9
4.096	11.6	20.3	31.9	56.0	-24.1
9.170	15.3	20.5	35.8	60.0	-24.2
0.463	11.8	20.5	32.3	56.6	-24.4
9.410	15.0	20.5	35.5	60.0	-24.5
1.256	11.1	20.4	31.5	56.0	-24.5
1.488	11.1	20.4	31.5	56.0	-24.5
4.152	11.1	20.3	31.4	56.0	-24.6
4.224	11.1	20.3	31.4	56.0	-24.6
9.940	14.9	20.5	35.4	60.0	-24.6
8.810	14.9	20.5	35.4	60.0	-24.6
8.870	14.8	20.5	35.3	60.0	-24.7
9.830	14.7	20.5	35.2	60.0	-24.8
0.567	10.7	20.5	31.2	56.0	-24.8
11.900	14.6	20.6	35.2	60.0	-24.8
12.000	14.5	20.6	35.1	60.0	-24.9

Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
9.350	16.8	20.5	37.3	50.0	-12.7
1.776	12.3	20.4	32.7	46.0	-13.3
8.750	15.9	20.5	36.4	50.0	-13.6
8.700	15.7	20.5	36.2	50.0	-13.8
8.990	15.6	20.5	36.1	50.0	-13.9
4.096	11.6	20.3	31.9	46.0	-14.1
9.170	15.3	20.5	35.8	50.0	-14.2
0.463	11.8	20.5	32.3	46.6	-14.4
9.410	15.0	20.5	35.5	50.0	-14.5
1.256	11.1	20.4	31.5	46.0	-14.5
1.488	11.1	20.4	31.5	46.0	-14.5
4.152	11.1	20.3	31.4	46.0	-14.6
4.224	11.1	20.3	31.4	46.0	-14.6
9.940	14.9	20.5	35.4	50.0	-14.6
8.810	14.9	20.5	35.4	50.0	-14.6
8.870	14.8	20.5	35.3	50.0	-14.7
9.830	14.7	20.5	35.2	50.0	-14.8
0.567	10.7	20.5	31.2	46.0	-14.8
11.900	14.6	20.6	35.2	50.0	-14.8
12.000	14.5	20.6	35.1	50.0	-14.9

NORTHWEST

EMC

AC POWERLINE CONDUCTED EMISSIONS

PSA-ESCI 2009.06.09
Version 2009.5.18

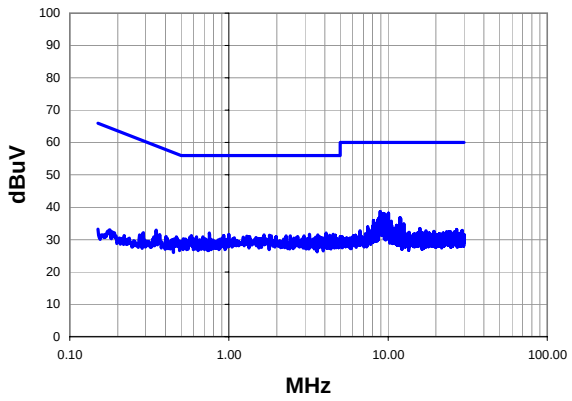
Work Order:	INMC0546	**Date:**	08/11/09		
Project:	None	**Temperature:**	25°C		
Job Site:	EV07	**Humidity:**	49		
Serial Number:	00-21-e8-70-09-c4	**Barometric Pres.:**	1017.5mb	**Tested by:**	Jennifer Herrett

EUT:	Galileo modular radio (TI)
Configuration:	8 - AC Powerline Conducted Emissions with Laird MAF94367 Whip Antenna
Customer:	Intermec Technologies Corporation
Attendees:	None
EUT Power:	5VDC (120V/60Hz)
Operating Mode:	Transmitting Bluetooth, High Channel, GFSK/DH5.
Deviations:	No deviations.
Comments:	Laird MAF94367 Whip Antenna.

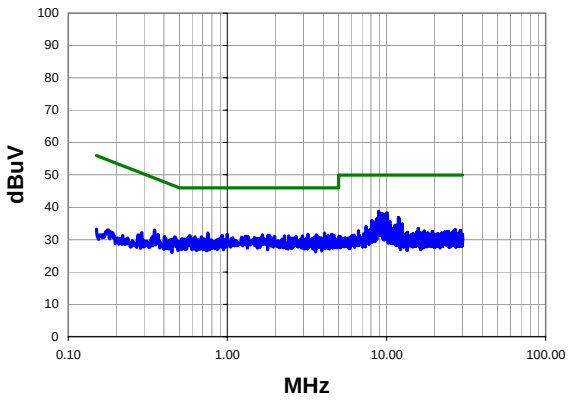
Test Specifications	**Test Method**
FCC 15.207:2009	ANSI C63.4:2003

Run #	28	**Line:**	Neutral	**Ext. Attenuation:**	20	**Results**	Pass

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit

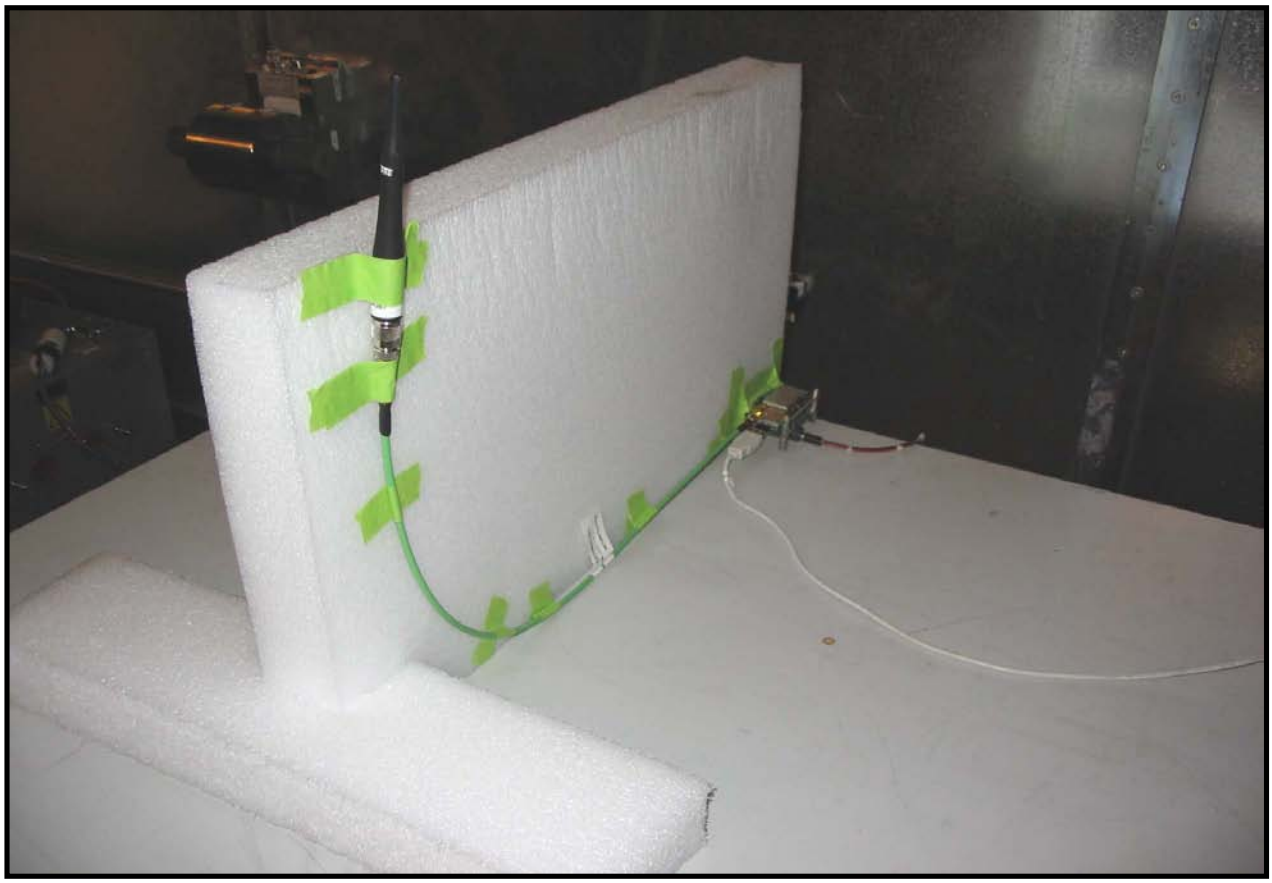


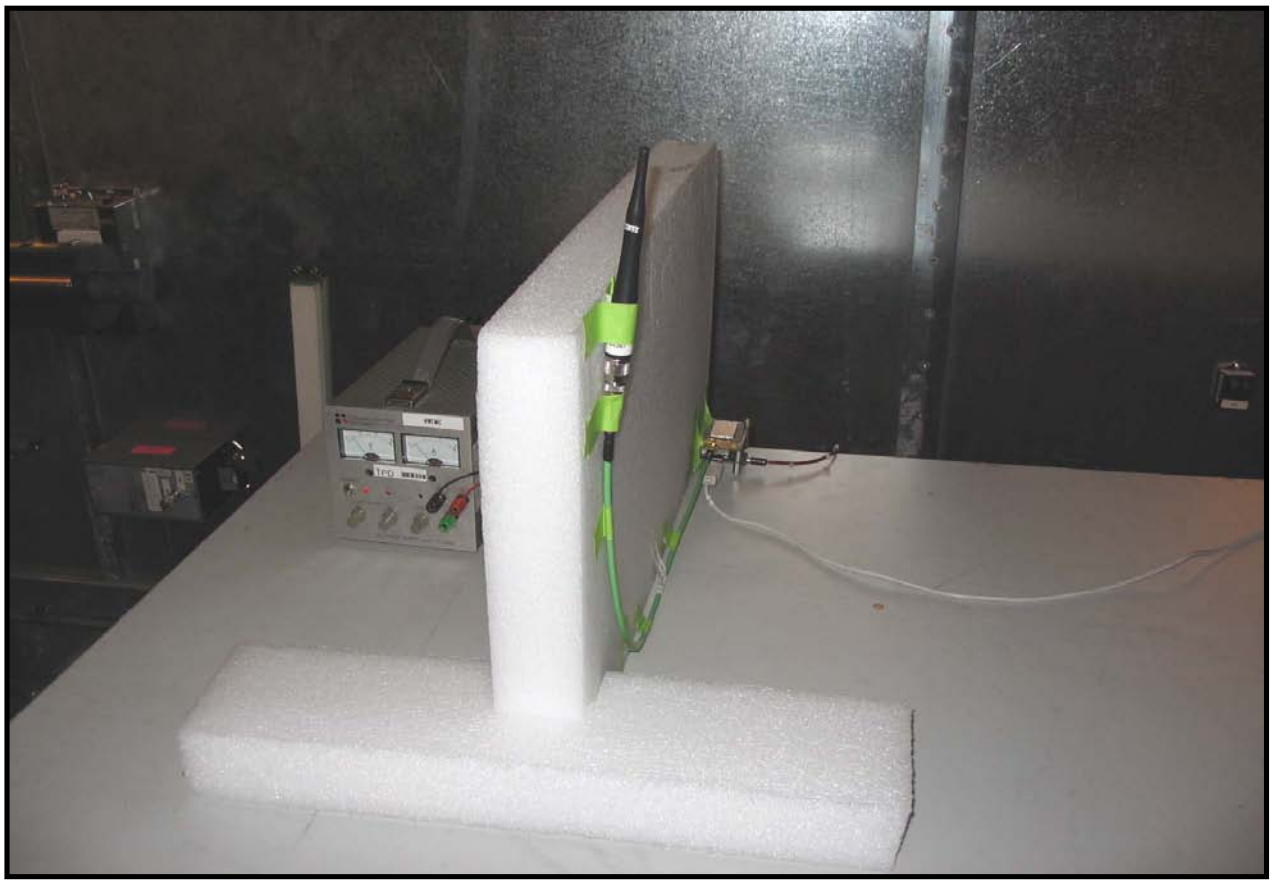
Peak Data - vs - Quasi Peak Limit

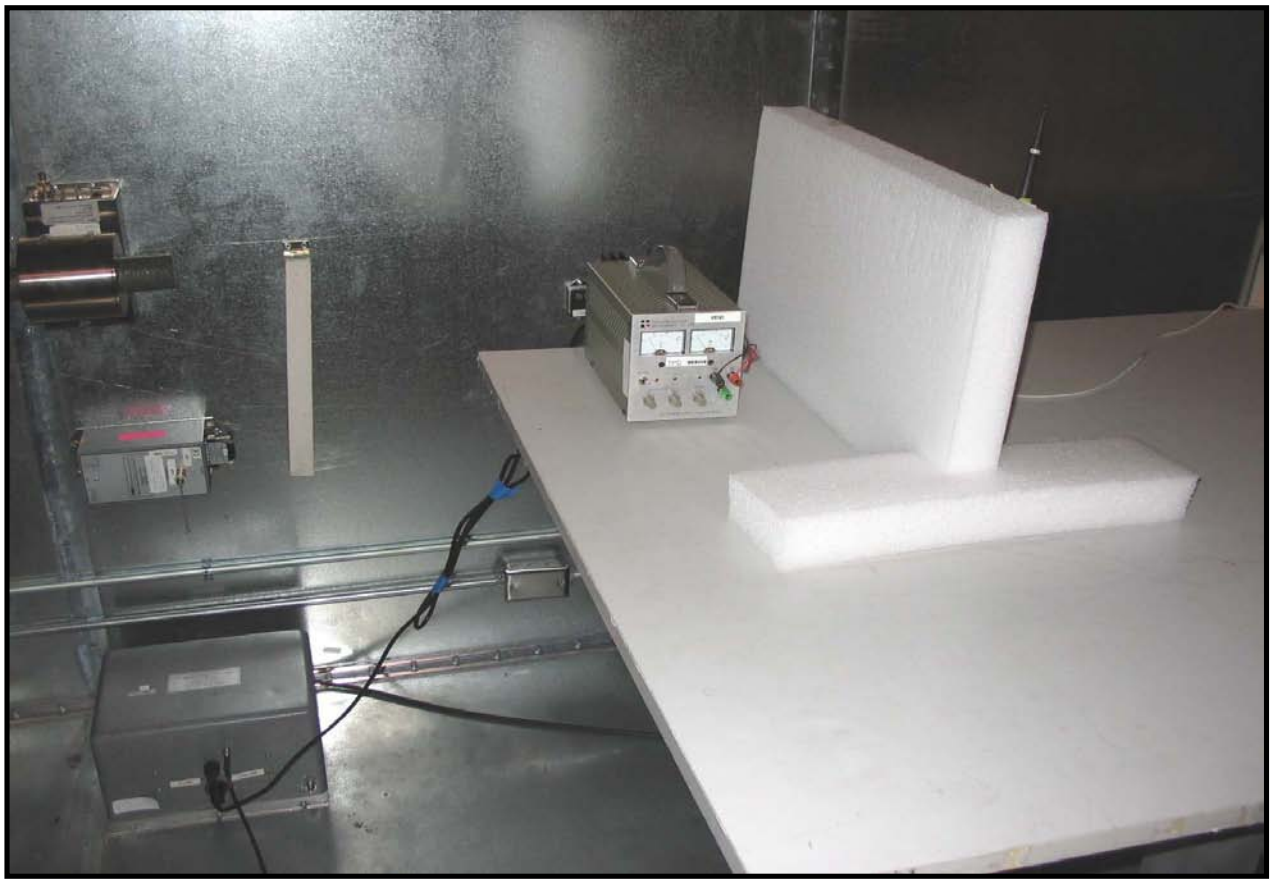
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
8.930	18.2	20.5	38.7	60.0	-21.3
10.050	17.6	20.5	38.1	60.0	-21.9
9.350	17.6	20.5	38.1	60.0	-21.9
9.590	17.4	20.5	37.9	60.0	-22.1
8.990	17.2	20.5	37.7	60.0	-22.3
9.470	17.1	20.5	37.6	60.0	-22.4
9.530	16.6	20.5	37.1	60.0	-22.9
9.110	16.5	20.5	37.0	60.0	-23.0
9.890	16.3	20.5	36.8	60.0	-23.2
8.810	16.3	20.5	36.8	60.0	-23.2
11.900	16.2	20.6	36.8	60.0	-23.2
9.230	16.1	20.5	36.6	60.0	-23.4
9.050	16.1	20.5	36.6	60.0	-23.4
8.870	16.0	20.5	36.5	60.0	-23.5
12.000	15.9	20.6	36.5	60.0	-23.5
8.760	15.9	20.5	36.4	60.0	-23.6
8.700	15.9	20.5	36.4	60.0	-23.6
9.770	15.6	20.5	36.1	60.0	-23.9
9.650	15.6	20.5	36.1	60.0	-23.9
0.753	11.7	20.4	32.1	56.0	-23.9

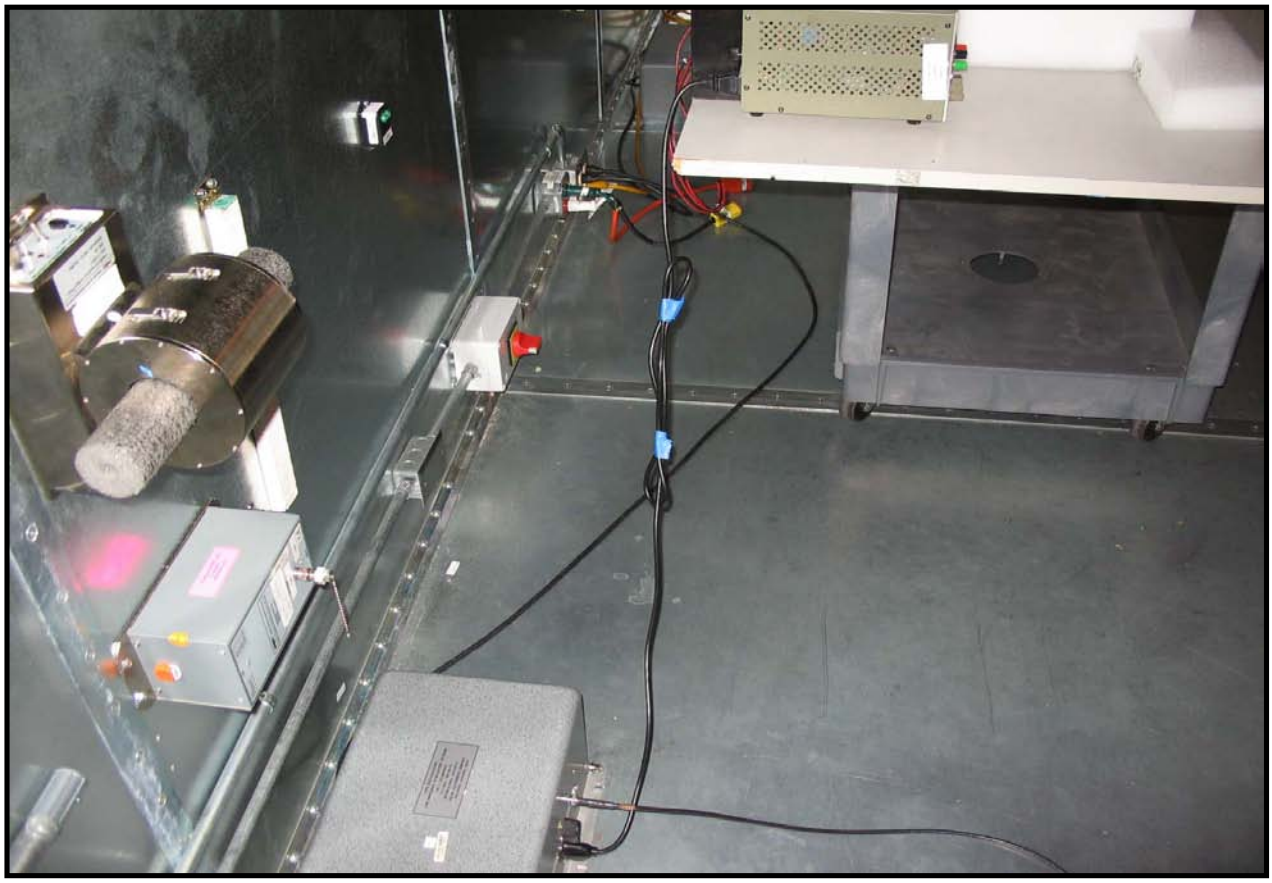
Peak Data - vs - Average Limit

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Compared to Spec. (dB)
8.930	18.2	20.5	38.7	50.0	-11.3
10.050	17.6	20.5	38.1	50.0	-11.9
9.350	17.6	20.5	38.1	50.0	-11.9
9.590	17.4	20.5	37.9	50.0	-12.1
8.990	17.2	20.5	37.7	50.0	-12.3
9.470	17.1	20.5	37.6	50.0	-12.4
9.530	16.6	20.5	37.1	50.0	-12.9
9.110	16.5	20.5	37.0	50.0	-13.0
9.890	16.3	20.5	36.8	50.0	-13.2
8.810	16.3	20.5	36.8	50.0	-13.2
11.900	16.2	20.6	36.8	50.0	-13.2
9.230	16.1	20.5	36.6	50.0	-13.4
9.050	16.1	20.5	36.6	50.0	-13.4
8.870	16.0	20.5	36.5	50.0	-13.5
12.000	15.9	20.6	36.5	50.0	-13.5
8.760	15.9	20.5	36.4	50.0	-13.6
8.700	15.9	20.5	36.4	50.0	-13.6
9.770	15.6	20.5	36.1	50.0	-13.9
9.650	15.6	20.5	36.1	50.0	-13.9
0.753	11.7	20.4	32.1	46.0	-13.9









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, QPSK/2DH5, 8DPSK/3DH5

POWER SETTINGS INVESTIGATED

120VAC/60Hz

FREQUENCY RANGE INVESTIGATED

Start Frequency	30MHz	Stop Frequency	25GHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4446A	AAY	12/11/2008	13
EV01 Cables		18-26GHz Standard Gain Horn Cable	EVD	12/2/2008	13
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	12/2/2008	13
Antenna, Horn	ETS	3160-09	AHG	NCR	0
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVD	7/10/2009	13
Antenna, Horn	ETS	3160-08	AHV	NCR	0
EV01 Cables		Standard Gain Horns Cables	EVF	11/13/2008	13
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	7/10/2009	13
Antenna, Horn	ETS	3160-07	AHU	NCR	0
High Pass Filter	Micro-Tronics	HPM50111	HFO	7/10/2009	13
EV01 Cables		Double Ridge Horn Cables	EVB	7/10/2009	13
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	7/10/2009	13
Antenna, Horn	EMCO	3115	AHC	8/12/2008	24
EV01 Cables		Bilog Cables	EVA	7/10/2009	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	7/10/2009	13
Antenna, Biconilog	EMCO	3141	AXE	1/15/2008	24

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 C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

NORTHWEST EMC

Spurious Radiated Emissions

PSA 2008.07.21
EMI 2009.4.13

EUT:	Galileo modular radio (TI)	Work Order:	INMC0546
Serial Number:	00-21-e8-70-09-c4	Date:	08/05/09
Customer:	Intermec Technologies Corporation	Temperature:	26 °C
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	1015.0mb
Tested by:	Jennifer Herrett	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000

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

COMMENTS

Laird MAF 94367 Dipole LP. Average detector data reflects the application of a duty cycle correction factor. Data showing the measurements and calculation for this are found elsewhere in the report.

EUT OPERATING MODES

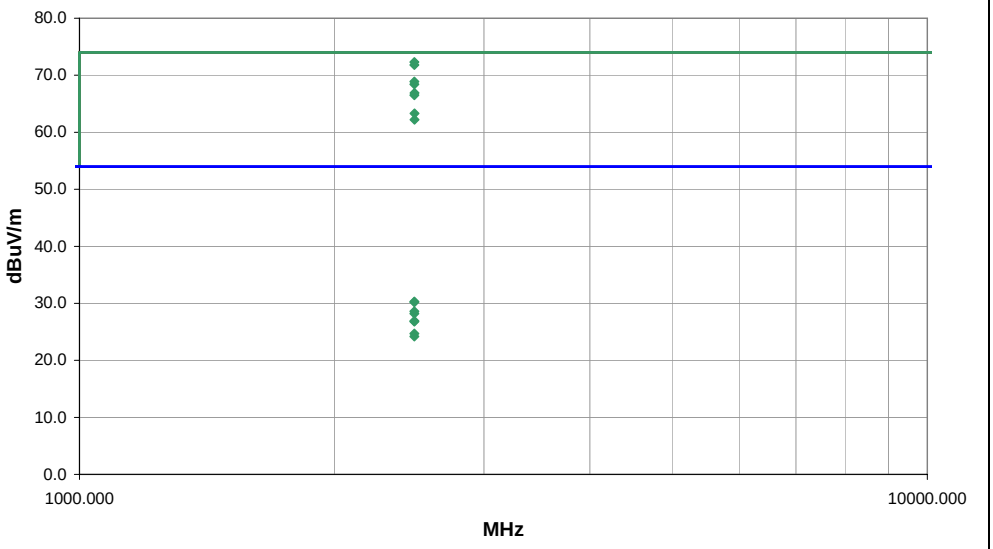
Continuous Tx Bluetooth, High Channel

DEVIATIONS FROM TEST STANDARD

None

Run #	14
Configuration #	6
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Duty Cycle Correction (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.510	49.8	2.5	252.0	1.2	3.0	20.0	H-Horn	PK	0.0	72.3	74.0	-1.7	EUT horizontal. 8DPSK/3DH5.
2483.547	49.3	2.5	252.0	1.2	3.0	20.0	H-Horn	PK	0.0	71.8	74.0	-2.2	EUT horizontal. QPSK/2DH5.
2483.543	46.4	2.5	28.0	1.2	3.0	20.0	V-Horn	PK	0.0	68.9	74.0	-5.1	EUT vertical. QPSK/2DH5.
2483.530	45.9	2.5	57.0	1.9	3.0	20.0	H-Horn	PK	0.0	68.4	74.0	-5.6	EUT on side. QPSK/2DH5.
2483.577	44.4	2.5	6.0	1.2	3.0	20.0	V-Horn	PK	0.0	66.9	74.0	-7.1	EUT horizontal. 8DPSK/3DH5.
2483.500	44.0	2.5	272.0	1.0	3.0	20.0	V-Horn	PK	0.0	66.5	74.0	-7.5	EUT on side. QPSK/2DH5.
2483.607	40.8	2.5	195.0	1.1	3.0	20.0	V-Horn	PK	0.0	63.3	74.0	-10.7	EUT horizontal. QPSK/2DH5.
2483.617	39.7	2.5	146.0	1.1	3.0	20.0	H-Horn	PK	0.0	62.2	74.0	-11.8	EUT vertical. QPSK/2DH5.
2483.510	32.5	2.5	252.0	1.2	3.0	20.0	H-Horn	AV	24.7	30.3	54.0	-23.7	EUT horizontal. 8DPSK/3DH5.
2483.510	32.4	2.5	252.0	1.2	3.0	20.0	H-Horn	AV	24.7	30.2	54.0	-23.8	EUT horizontal. QPSK/2DH5.
2483.520	30.8	2.5	28.0	1.2	3.0	20.0	V-Horn	AV	24.7	28.6	54.0	-25.4	EUT vertical. QPSK/2DH5.
2483.507	30.4	2.5	57.0	1.9	3.0	20.0	H-Horn	AV	24.7	28.2	54.0	-25.8	EUT on side. QPSK/2DH5.
2483.500	29.1	2.5	272.0	1.0	3.0	20.0	V-Horn	AV	24.7	26.9	54.0	-27.1	EUT on side. QPSK/2DH5.
2483.510	29.0	2.5	6.0	1.2	3.0	20.0	V-Horn	AV	24.7	26.8	54.0	-27.2	EUT horizontal. 8DPSK/3DH5.
2483.537	26.9	2.5	195.0	1.1	3.0	20.0	V-Horn	AV	24.7	24.7	54.0	-29.3	EUT horizontal. QPSK/2DH5.
2483.517	26.4	2.5	146.0	1.1	3.0	20.0	H-Horn	AV	24.7	24.2	54.0	-29.8	EUT vertical. QPSK/2DH5.

NORTHWEST EMC

Spurious Radiated Emissions

PSA 2008.07.21
EMI 2009.4.13

EUT:	Galileo modular radio (TI)	Work Order:	INMC0546
Serial Number:	00-21-e8-70-09-c4	Date:	08/06/09
Customer:	Intermec Technologies Corporation	Temperature:	26 °C
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	1015.0mb
Tested by:	Jennifer Herrett	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000

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

COMMENTS

Laird MAF 94367 Dipole LP. Average detector data reflects the application of a duty cycle correction factor. Data showing the measurements and calculation for this are found elsewhere in the report.

EUT OPERATING MODES

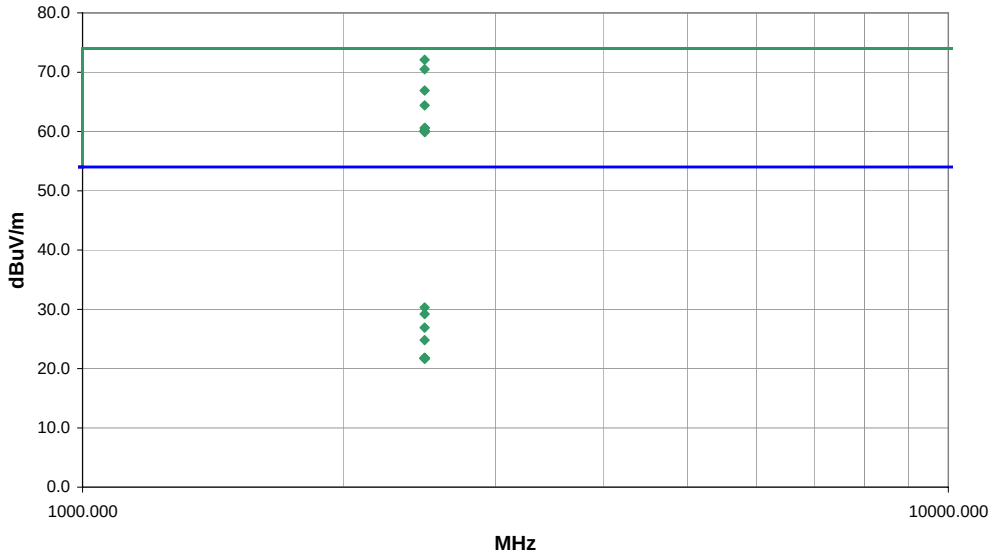
Continuous Tx Bluetooth, High Channel

DEVIATIONS FROM TEST STANDARD

None

Run #	15
Configuration #	6
Results	Pass

Signature: Jennifer Herrett



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Duty Cycle Correction (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2483.560	49.6	2.5	25.0	1.0	3.0	20.0	H-Horn	PK	0.0	72.1	74.0	-1.9	EUT on side. 8DPSK/3DH5.
2483.580	48.0	2.5	112.0	1.0	3.0	20.0	V-Horn	PK	0.0	70.5	74.0	-3.5	EUT vertical. 8DPSK/3DH5.
2483.547	44.4	2.5	295.0	1.1	3.0	20.0	V-Horn	PK	0.0	66.9	74.0	-7.1	EUT on side. 8DPSK/3DH5.
2483.527	41.9	2.5	117.0	1.0	3.0	20.0	H-Horn	PK	0.0	64.4	74.0	-9.6	EUT vertical. 8DPSK/3DH5.
2484.913	38.1	2.5	76.0	1.0	3.0	20.0	V-Horn	PK	0.0	60.6	74.0	-13.4	EUT vertical. GFSK/DH5.
2485.293	38.1	2.5	24.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.6	74.0	-13.4	EUT on side. GFSK/DH5.
2483.550	37.6	2.5	116.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.1	74.0	-13.9	EUT horizontal. GFSK/DH5.
2483.773	37.6	2.5	23.0	1.0	3.0	20.0	V-Horn	PK	0.0	60.1	74.0	-13.9	EUT horizontal. GFSK/DH5.
2483.893	37.6	2.5	118.0	1.0	3.0	20.0	H-Horn	PK	0.0	60.1	74.0	-13.9	EUT vertical. GFSK/DH5.
2484.767	37.4	2.5	56.0	1.0	3.0	20.0	V-Horn	PK	0.0	59.9	74.0	-14.1	EUT on side. GFSK/DH5.
2483.517	32.5	2.5	25.0	1.0	3.0	20.0	H-Horn	AV	24.7	30.3	54.0	-23.7	EUT on side. 8DPSK/3DH5.
2483.503	31.4	2.5	112.0	1.0	3.0	20.0	V-Horn	AV	24.7	29.2	54.0	-24.8	EUT vertical. 8DPSK/3DH5.
2483.517	29.1	2.5	295.0	1.1	3.0	20.0	V-Horn	AV	24.7	26.9	54.0	-27.1	EUT on side. 8DPSK/3DH5.
2483.520	27.0	2.5	117.0	1.0	3.0	20.0	H-Horn	AV	24.7	24.8	54.0	-29.2	EUT vertical. 8DPSK/3DH5.
2483.563	24.0	2.5	24.0	1.0	3.0	20.0	H-Horn	AV	24.7	21.8	54.0	-32.2	EUT on side. GFSK/DH5.
2483.817	24.0	2.5	116.0	1.0	3.0	20.0	H-Horn	AV	24.7	21.8	54.0	-32.2	EUT horizontal. GFSK/DH5.
2483.520	23.9	2.5	118.0	1.0	3.0	20.0	H-Horn	AV	24.7	21.7	54.0	-32.3	EUT vertical. GFSK/DH5.
2483.537	23.9	2.5	76.0	1.0	3.0	20.0	V-Horn	AV	24.7	21.7	54.0	-32.3	EUT vertical. GFSK/DH5.
2484.083	23.9	2.5	23.0	1.0	3.0	20.0	V-Horn	AV	24.7	21.7	54.0	-32.3	EUT horizontal. GFSK/DH5.
2484.583	23.9	2.5	56.0	1.0	3.0	20.0	V-Horn	AV	24.7	21.7	54.0	-32.3	EUT on side. GFSK/DH5.

NORTHWEST EMC

Spurious Radiated Emissions

PSA 2008.07.21
EMI 2009.4.13

EUT:	Galileo modular radio (TI)	Work Order:	INMC0546
Serial Number:	00-21-e8-70-09-c4	Date:	08/07/09
Customer:	Intermec Technologies Corporation	Temperature:	26 °C
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	1015.0mb
Tested by:	Jennifer Herrett	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000

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

COMMENTS

Laird MAF 94367 Dipole LP. Average detector data reflects the application of a duty cycle correction factor. Data showing the measurements and calculation for this are found elsewhere in the report.

EUT OPERATING MODES

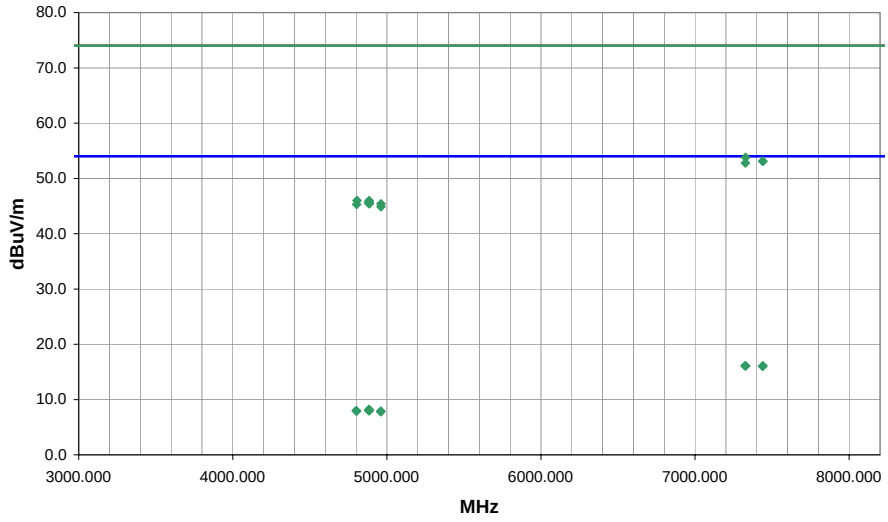
Continuous Tx Bluetooth.

DEVIATIONS FROM TEST STANDARD

None

Run #	18
Configuration #	6
Results	Pass

Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Duty Cycle Correction (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7327.767	37.9	15.9	78.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.8	74.0	-20.2	EUT on side. Mid Channel, GFSK/DH5.
7439.092	36.9	16.2	158.0	1.0	3.0	0.0	H-Horn	PK	0.0	53.1	74.0	-20.9	EUT on side. High Channel, GFSK/DH5.
7439.542	36.9	16.2	132.0	3.3	3.0	0.0	V-Horn	PK	0.0	53.1	74.0	-20.9	EUT on side. High Channel, GFSK/DH5.
7326.892	36.9	15.9	0.0	2.0	3.0	0.0	V-Horn	PK	0.0	52.8	74.0	-21.2	EUT on side. Mid Channel, GFSK/DH5.
4805.892	36.8	9.2	291.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.0	74.0	-28.0	EUT on side. Low Channel, GFSK/DH5.
4884.333	36.7	9.3	47.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.0	74.0	-28.0	EUT horizontal. Mid Channel, GFSK/DH5.
4883.233	36.5	9.3	121.0	2.7	3.0	0.0	V-Horn	PK	0.0	45.8	74.0	-28.2	EUT on side. Mid Channel, GFSK/DH5.
4883.483	36.4	9.3	249.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.7	74.0	-28.3	EUT on side. Mid Channel, GFSK/DH5.
4884.192	36.2	9.3	123.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.5	74.0	-28.5	EUT horizontal. Mid Channel, GFSK/DH5.
4886.142	36.2	9.3	149.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.5	74.0	-28.5	EUT vertical. Mid Channel, GFSK/DH5.
4961.067	35.9	9.5	149.0	1.0	3.0	0.0	V-Horn	PK	0.0	45.4	74.0	-28.6	EUT on side. High Channel, GFSK/DH5.
4884.925	36.1	9.3	128.0	2.1	3.0	0.0	V-Horn	PK	0.0	45.4	74.0	-28.6	EUT vertical. Mid Channel, GFSK/DH5.
4803.483	36.1	9.2	90.0	3.2	3.0	0.0	H-Horn	PK	0.0	45.3	74.0	-28.7	EUT on side. Low Channel, GFSK/DH5.
4960.967	35.4	9.5	219.0	1.0	3.0	0.0	H-Horn	PK	0.0	44.9	74.0	-29.1	EUT on side. High Channel, GFSK/DH5.
7324.125	24.9	15.9	0.0	2.0	3.0	0.0	V-Horn	AV	24.7	16.1	54.0	-37.9	EUT on side. Mid Channel, GFSK/DH5.
7329.350	24.9	15.9	78.0	1.0	3.0	0.0	H-Horn	AV	24.7	16.1	54.0	-37.9	EUT on side. Mid Channel, GFSK/DH5.
7439.867	24.6	16.2	132.0	3.3	3.0	0.0	V-Horn	AV	24.7	16.1	54.0	-37.9	EUT on side. High Channel, GFSK/DH5.
7438.317	24.5	16.2	158.0	1.0	3.0	0.0	H-Horn	AV	24.7	16.0	54.0	-38.0	EUT on side. High Channel, GFSK/DH5.
4883.950	23.6	9.3	249.0	1.0	3.0	0.0	H-Horn	AV	24.7	8.2	54.0	-45.8	EUT on side. Mid Channel, GFSK/DH5.
4884.217	23.6	9.3	121.0	2.7	3.0	0.0	V-Horn	AV	24.7	8.2	54.0	-45.8	EUT on side. Mid Channel, GFSK/DH5.

NORTHWEST EMC

Spurious Radiated Emissions

PSA 2008.07.21
EMI 2009.4.13

EUT:	Galileo modular radio (TI)	Work Order:	INMC0546
Serial Number:	00-21-e8-70-09-c4	Date:	08/07/09
Customer:	Intermec Technologies Corporation	Temperature:	26 °C
Attendees:	None	Humidity:	41%
Project:	None	Barometric Pres.:	1015.0mb
Tested by:	Jennifer Herrett	Power: 120VAC/60Hz	Job Site: EV01

TEST SPECIFICATIONS	Test Method
FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000

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

COMMENTS

Laird MAF 94367 Dipole LP. Average detector data reflects the application of a duty cycle correction factor. Data showing the measurements and calculation for this are found elsewhere in the report.

EUT OPERATING MODES

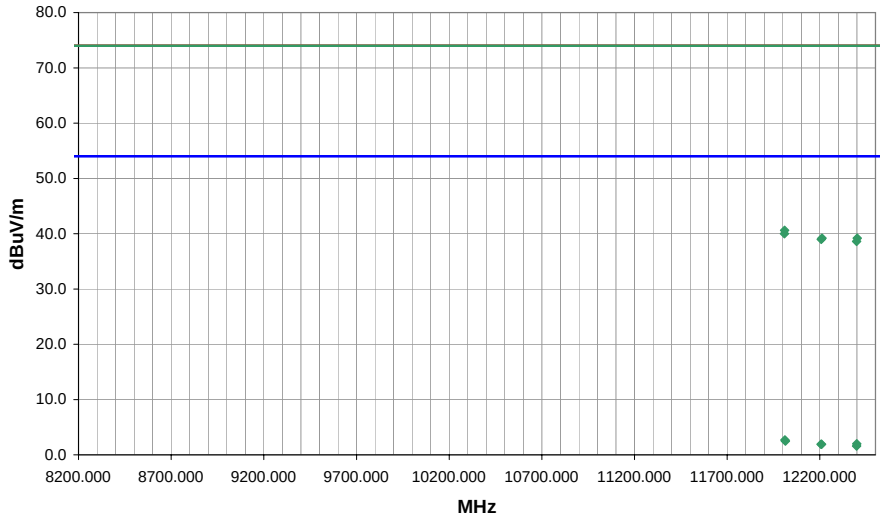
Continuous Tx Bluetooth.

DEVIATIONS FROM TEST STANDARD

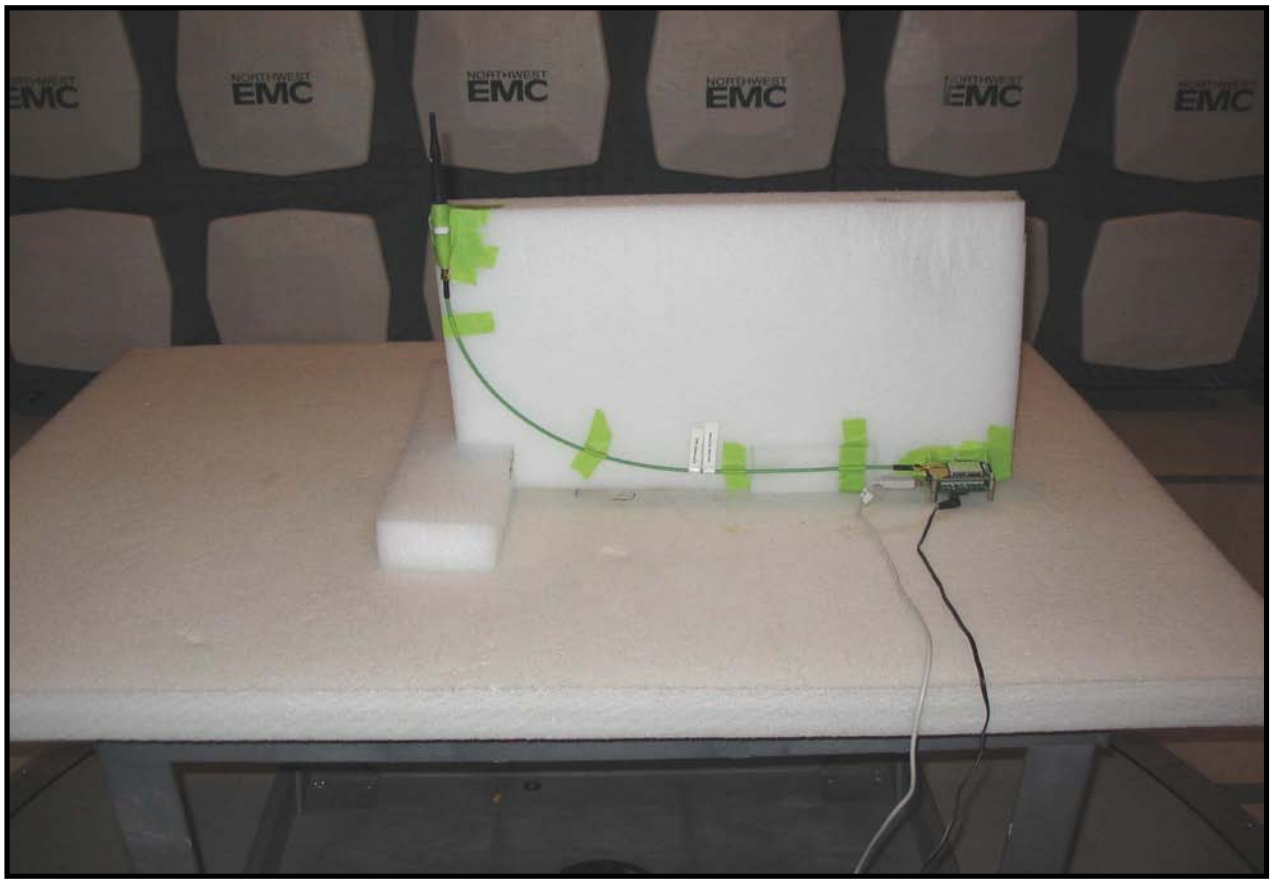
None

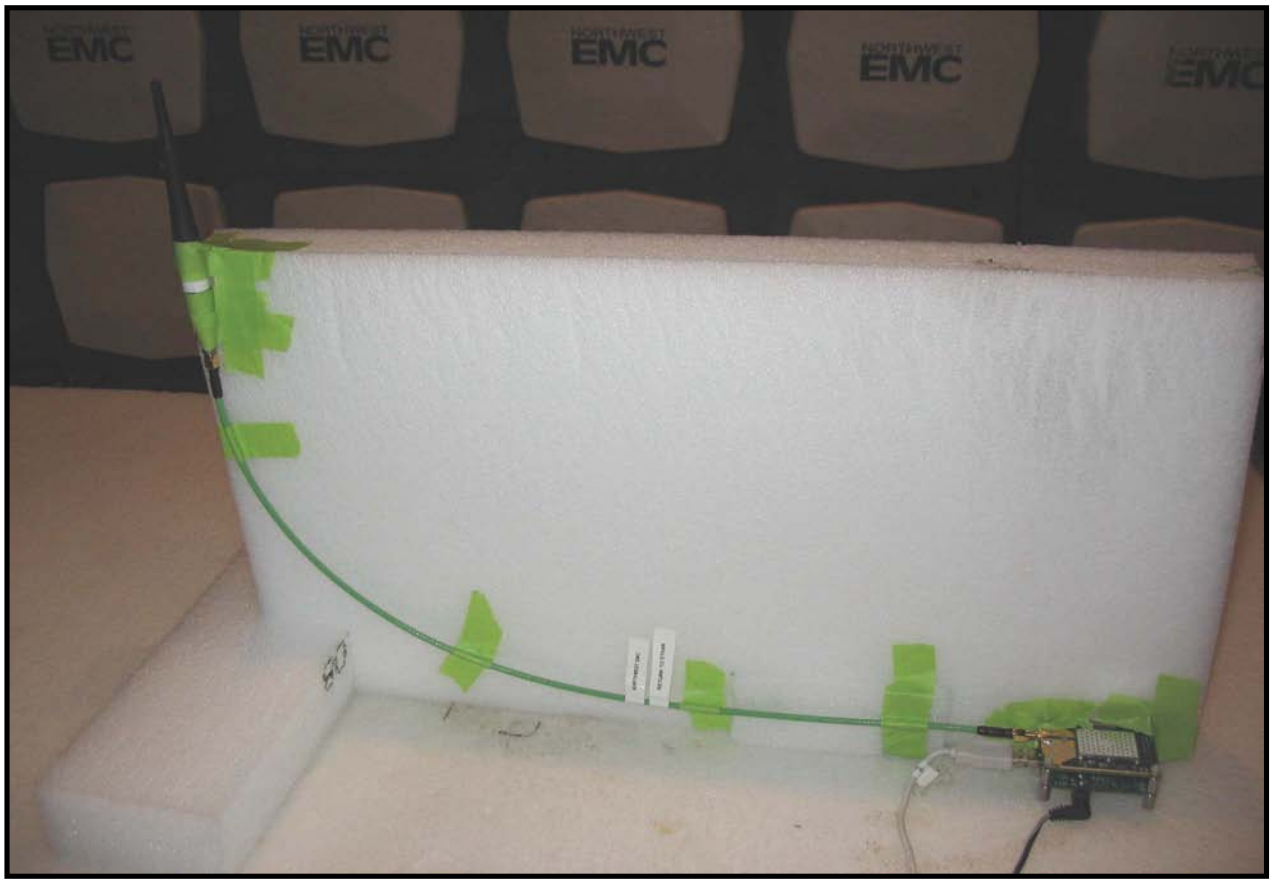
Run #	19
Configuration #	6
Results	Pass

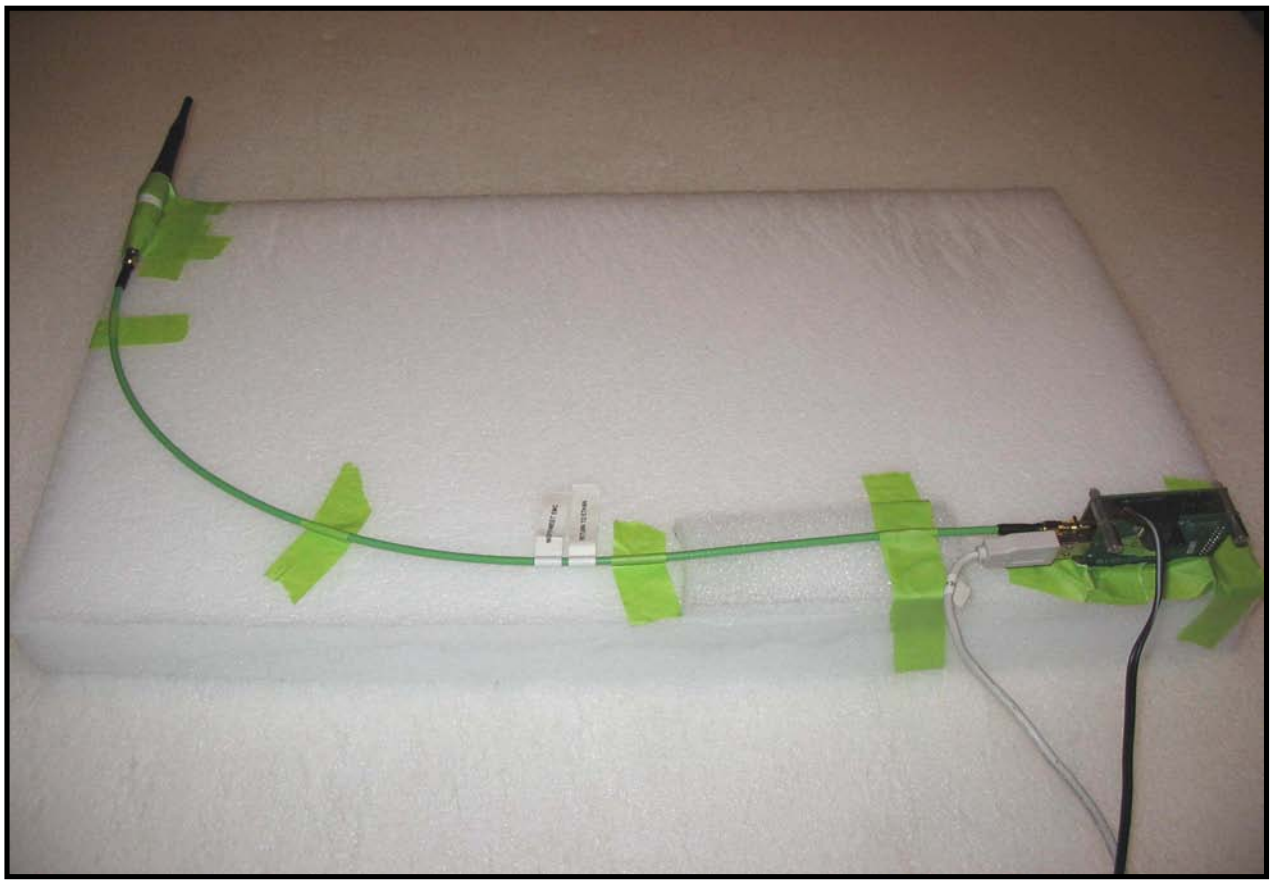
Signature: Jennifer Herrett



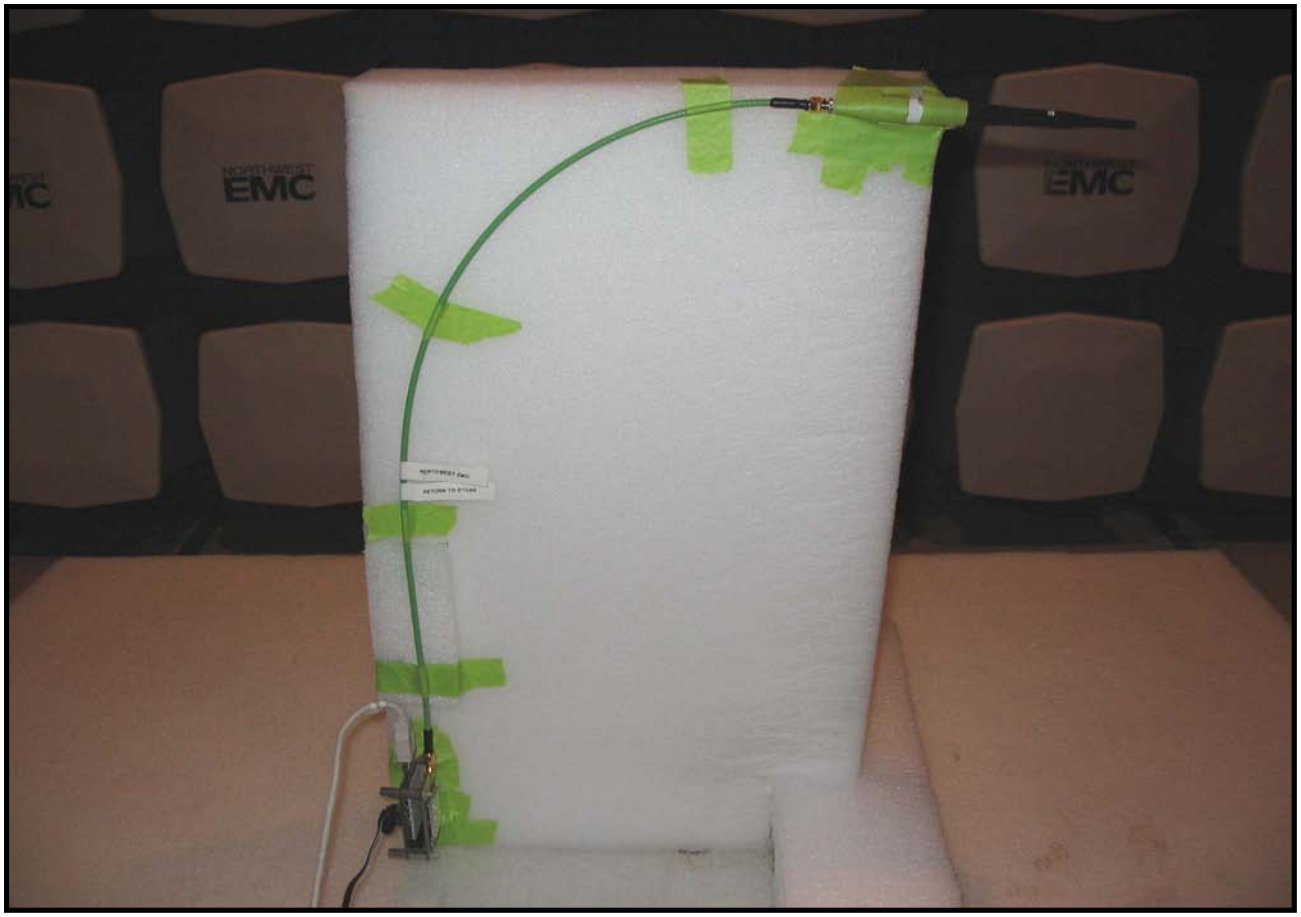
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Duty Cycle Correction (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
12009.780	43.7	-3.1	241.0	1.0	3.0	0.0	V-Horn	PK	0.0	40.6	74.0	-33.4	EUT on side. Low Channel, GFSK/DH5.
12008.370	43.1	-3.1	215.0	1.0	3.0	0.0	H-Horn	PK	0.0	40.0	74.0	-34.0	EUT on side. Low Channel, GFSK/DH5.
12211.380	42.2	-3.0	307.0	1.0	3.0	0.0	H-Horn	PK	0.0	39.2	74.0	-34.8	EUT on side. Mid Channel, GFSK/DH5.
12401.210	42.0	-2.8	114.0	1.0	3.0	0.0	H-Horn	PK	0.0	39.2	74.0	-34.8	EUT on side. High Channel, GFSK/DH5.
12207.570	42.0	-3.0	267.0	1.0	3.0	0.0	V-Horn	PK	0.0	39.0	74.0	-35.0	EUT on side. Mid Channel, GFSK/DH5.
12398.110	41.4	-2.8	10.0	1.0	3.0	0.0	V-Horn	PK	0.0	38.6	74.0	-35.4	EUT on side. High Channel, GFSK/DH5.
12010.960	30.5	-3.1	215.0	1.0	3.0	0.0	H-Horn	AV	24.7	2.7	54.0	-51.3	EUT on side. Low Channel, GFSK/DH5.
12014.180	30.3	-3.1	241.0	1.0	3.0	0.0	V-Horn	AV	24.7	2.5	54.0	-51.5	EUT on side. Low Channel, GFSK/DH5.
12399.220	29.5	-2.8	114.0	1.0	3.0	0.0	H-Horn	AV	24.7	2.0	54.0	-52.0	EUT on side. High Channel, GFSK/DH5.
12206.540	29.5	-2.9	267.0	1.0	3.0	0.0	V-Horn	AV	24.7	1.9	54.0	-52.1	EUT on side. Mid Channel, GFSK/DH5.
12208.830	29.6	-3.0	307.0	1.0	3.0	0.0	H-Horn	AV	24.7	1.9	54.0	-52.1	EUT on side. Mid Channel, GFSK/DH5.
12397.760	29.2	-2.9	10.0	1.0	3.0	0.0	V-Horn	AV	24.7	1.6	54.0	-52.4	EUT on side. High Channel, GFSK/DH5.







Spurious Radiated Emissions



DUTY CYCLE CORRECTION

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	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

For software controlled or pre-programmed devices, the manufacturer shall declare the duty cycle class or classes for the equipment under test. For manually operated or event dependant devices, with or without software controlled functions, the manufacturer shall declare whether the device once triggered, follows a pre-programmed cycle, or whether the transmission is constant until the trigger is released or manually reset. The manufacturer shall also give a description of the application for the device and include a typical usage pattern. The typical usage pattern as declared by the manufacturer shall be used to determine the duty cycle and hence the duty class.

Where an acknowledgement is required, the additional transmitter on-time shall be included and declared by the manufacturer.

To derive average emission measurements, a duty cycle correction factor per 15.35(c) was utilized:

Duty Cycle = On time/100 milliseconds (or the period, whichever is less)

Where “On time” = N1L1 +N2L2 +….

Where N1 is the number of type 1 pulses, L1 is length of type 1 pulses, N2 is the number of type 2 pulses, L2 is the length of type 2 pulses, etc.

Therefore, Duty Cycle = (N1L1 +N2L2 +…)/100mS. Where T is the period of the pulse train.

The measured values for the all the EUT’s modes are as follows:

Period = 100 mSec

Pulsewidth of Type 1 Pulse = 2.925 mSec

Number of Type 1 Pulses = 2

Duty Cycle = 20 log [(2)(2.925))/100] = -24.7 dB

NORTHWEST EMC

DUTY CYCLE CORRECTION

XMit 2008.12.29

EUT:	Galileo modular radio (TI)			**Work Order:**	INMC0519
Serial Number:	7			**Date:**	06/11/09
Customer:	Intermec Technologies Corporation			**Temperature:**	22.8°C
Attendees:	None			**Humidity:**	49%
Project:	None			**Barometric Pres.:**	29.76 in
Tested by:	Rod Peloquin	**Power:**	5VDC	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000

COMMENTS

Transmitting in a hopping mode on all channels: Duty Cycle Correction to be applied to average measurements. Duty Cycle Correction is calculated by taking all the transmission times of all the pulses in the worst case 100ms period, dividing that number by 100ms, and multiplying that by twenty times the log: 20* LOG((T1+T2)/100ms)

DEVIATIONS FROM TEST STANDARD

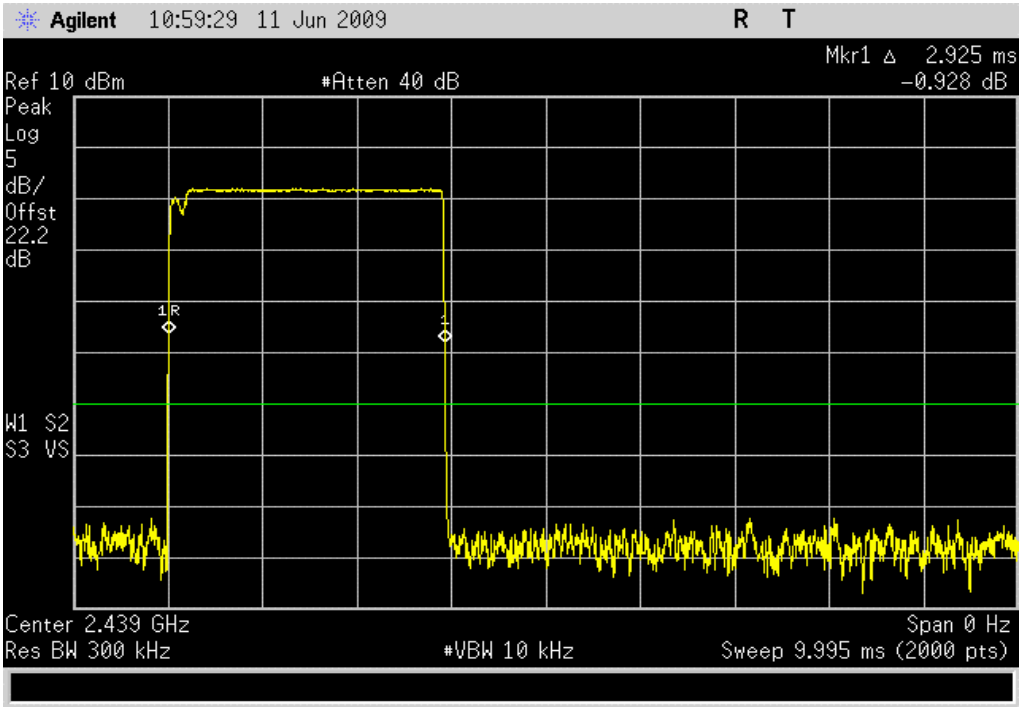
No Deviations

Configuration #	**1**	*Signature*

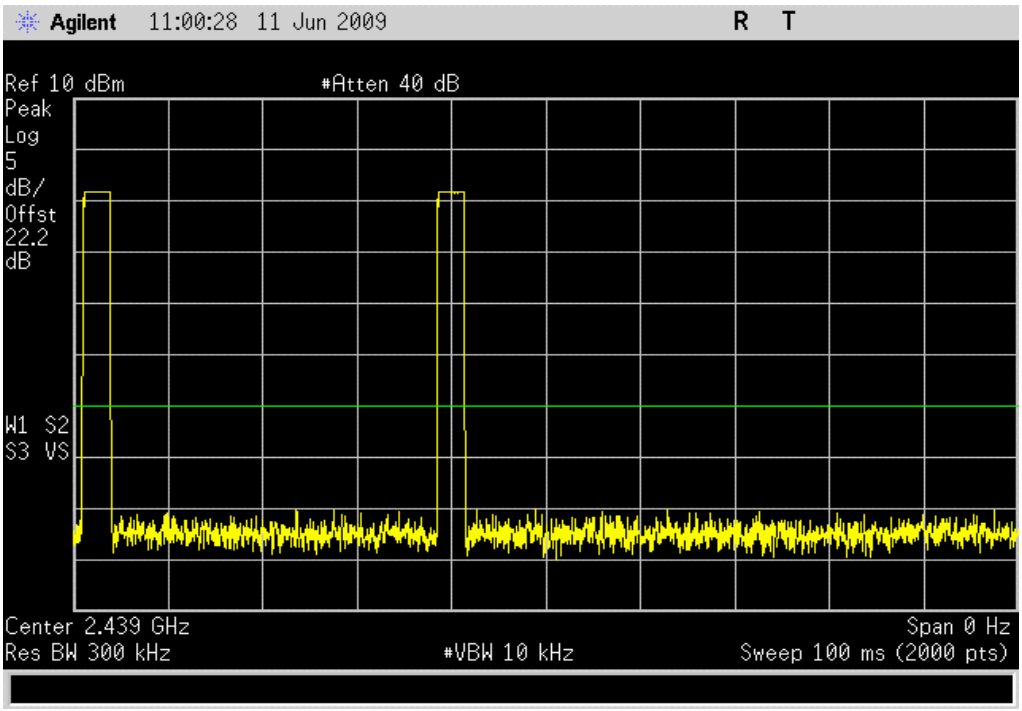
	Value	Limit	Results
GFSK/DH5, 339 packet length			
Pulse Width	2.925	N/A	-24.7
Transmissions in 100ms	2	N/A	
pi/4-QPSK / 2-DH5, 679 packet length			
Pulse Width	2.925	N/A	-24.7
Transmissions in 100ms	2	N/A	
8DQPSK / 3-DH5, 1021 packet length			
Pulse Width	2.925	N/A	-24.7
Transmissions in 100ms	2	N/A	

DUTY CYCLE CORRECTION

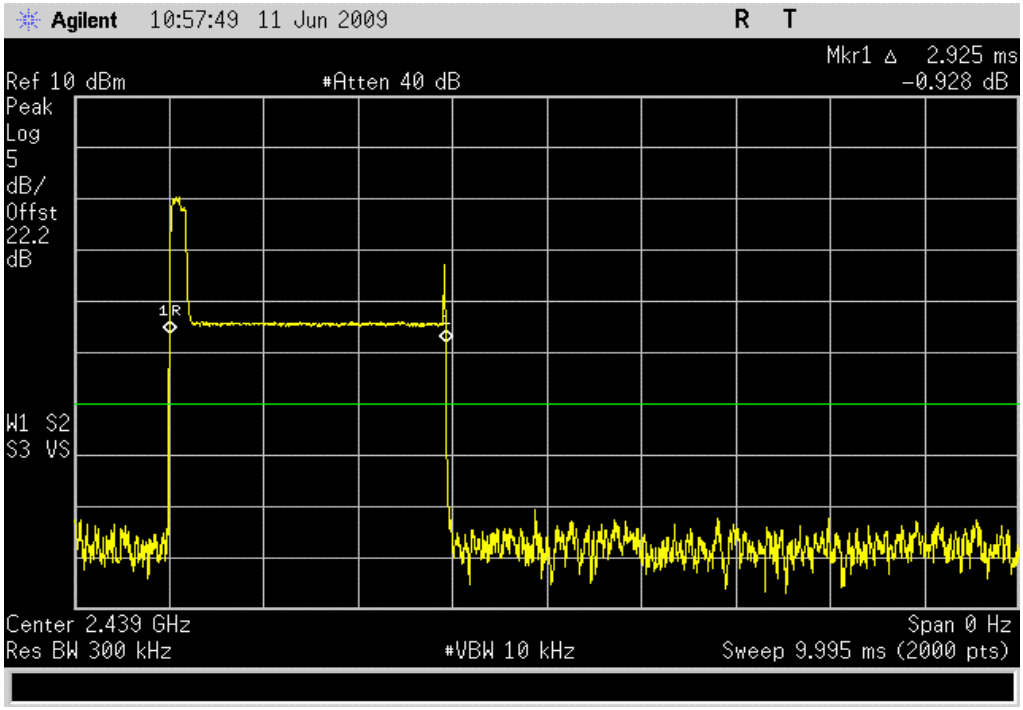
GFSK/DH5, Pulse Width					
Result:	-24.7 dB	**Value:**	2.925 ms	**Limit:**	N/A



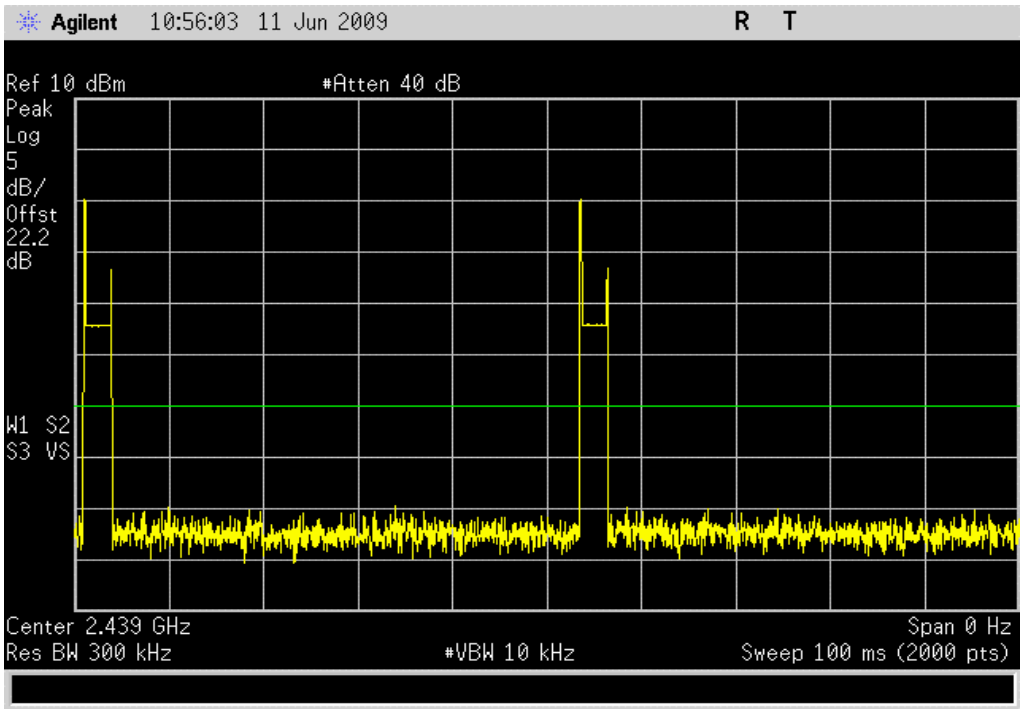
GFSK/DH5, Transmissions in 100ms					
Result:		**Value:**	2	**Limit:**	N/A



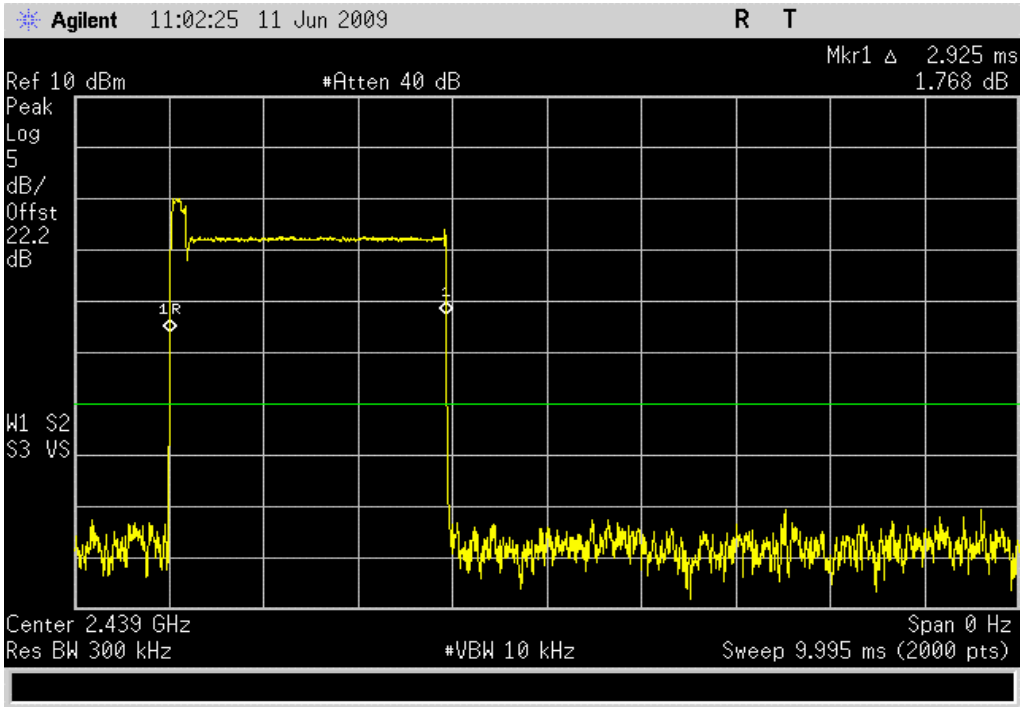
pi/4-QPSK / 2-DH5, Pulse Width					
Result:	-24.7 dB	**Value:**	2.925 ms	**Limit:**	N/A



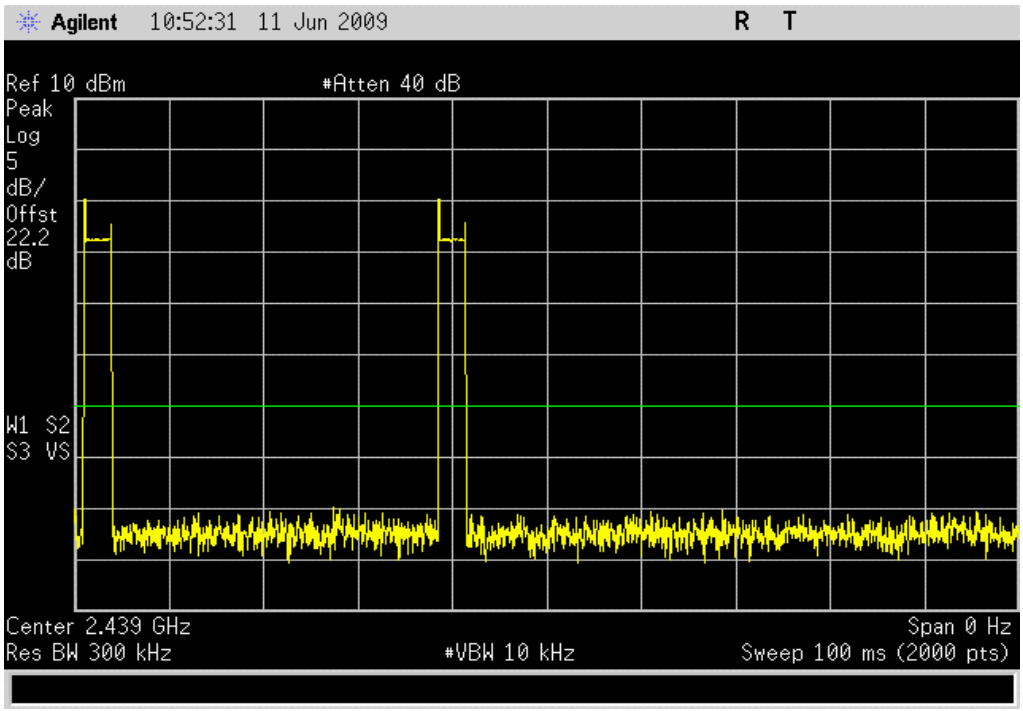
pi/4-QPSK / 2-DH5, Transmissions in 100ms					
Result:		**Value:**	2	**Limit:**	N/A



8DQPSK / 3-DH5, Pulse Width					
Result:	-24.7 dB	**Value:**	2.925 ms	**Limit:**	N/A



8DQPSK / 3-DH5, Transmissions in 100ms					
Result:		**Value:**	2	**Limit:**	N/A



DUTY CYCLE CORRECTION

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	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is 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 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 2008.12.29

EUT:	Galileo modular radio (TI)			**Work Order:**	INMC0519
Serial Number:	7			**Date:**	06/04/09
Customer:	Intermec Technologies Corporation			**Temperature:**	23.00°C
Attendees:	None			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	29.76 in
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (FHSS):2009	ANSI C63.4:2003 DA 00-705:2000

COMMENTS

None

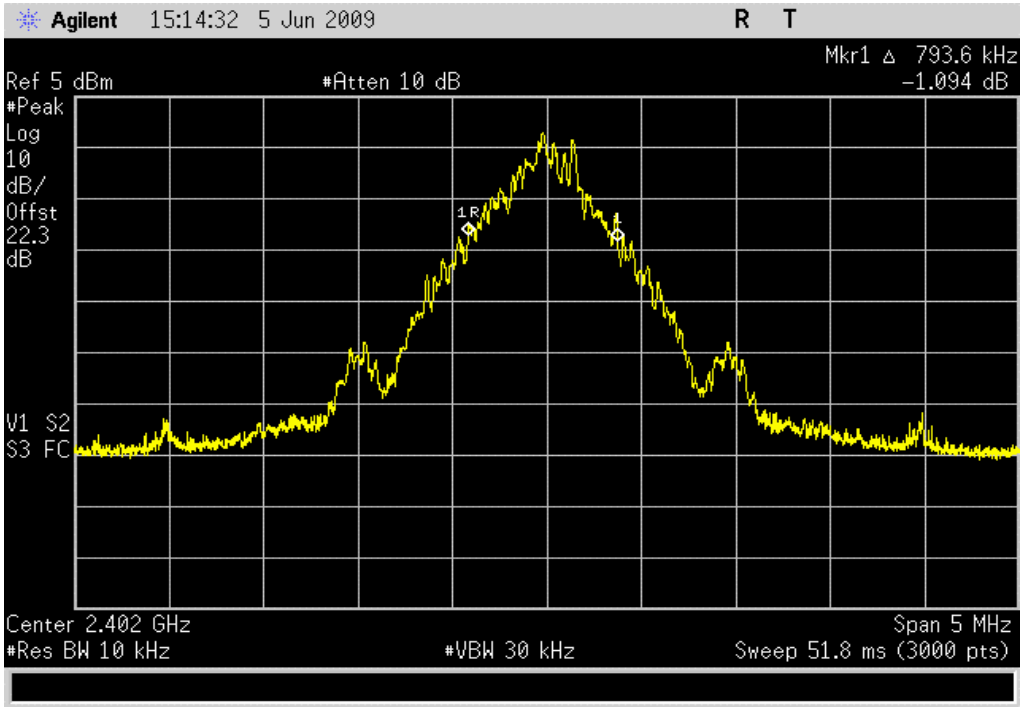
DEVIATIONS FROM TEST STANDARD

No Deviations

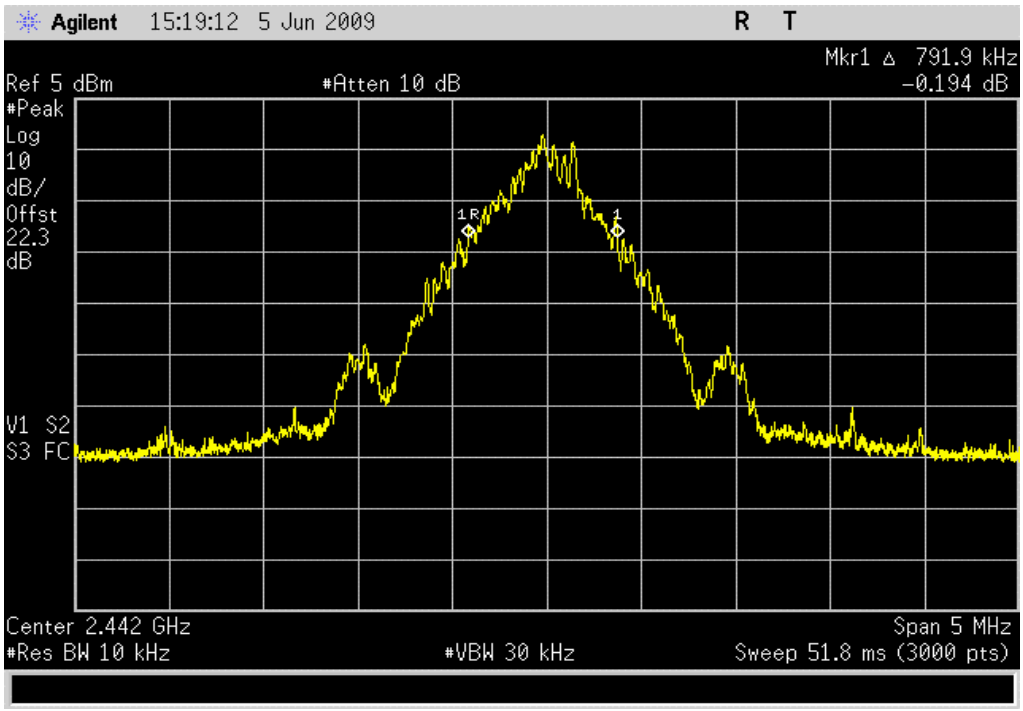
Configuration #	1	Signature

		Value	Limit	Results
GFSK, DH5				
	Low Channel, 2402MHz	794 kHz	1.5 MHz	Pass
	Mid Channel, 2442 MHz	792 kHz	1.5 MHz	Pass
	High Channel, 2480 MHz	792 kHz	1.5 MHz	Pass
pi/4-DQPSK, 2DH5				
	Low Channel, 2402MHz	1.235 MHz	1.5 MHz	Pass
	Mid Channel, 2442 MHz	1.302 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.250 MHz	1.5 MHz	Pass
8-DPSK, 3DH5				
	Low Channel, 2402MHz	1.260 MHz	1.5 MHz	Pass
	Mid Channel, 2442 MHz	1.260 MHz	1.5 MHz	Pass
	High Channel, 2480 MHz	1.260 MHz	1.5 MHz	Pass

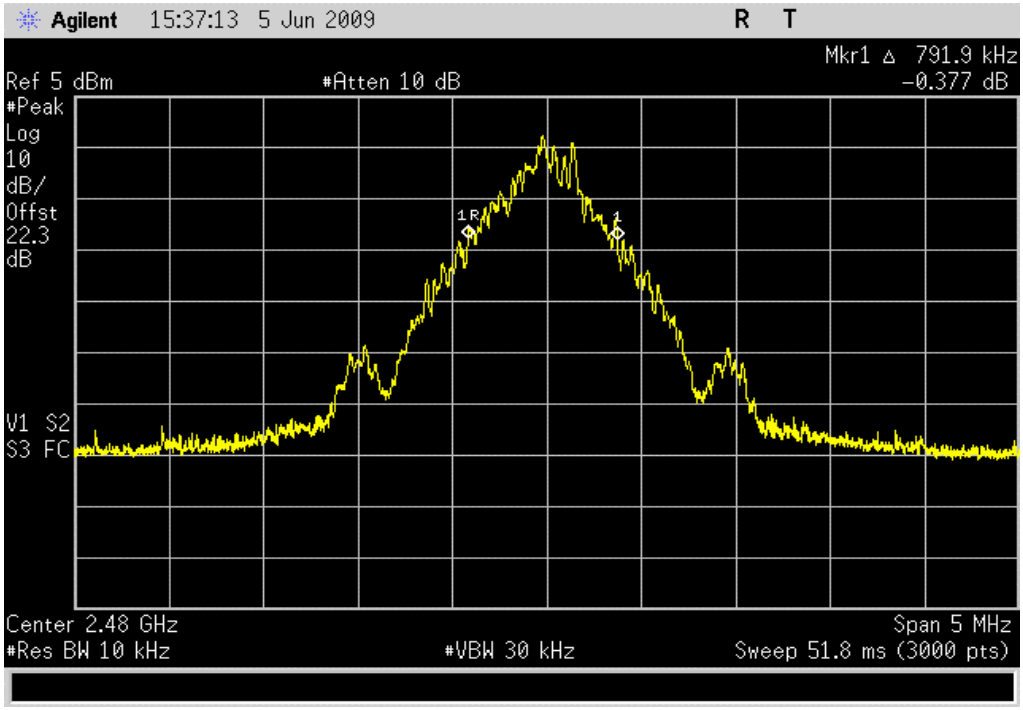
GFSK, DH5, Low Channel, 2402MHz					
Result:	Pass	**Value:**	794 kHz	**Limit:**	1.5 MHz



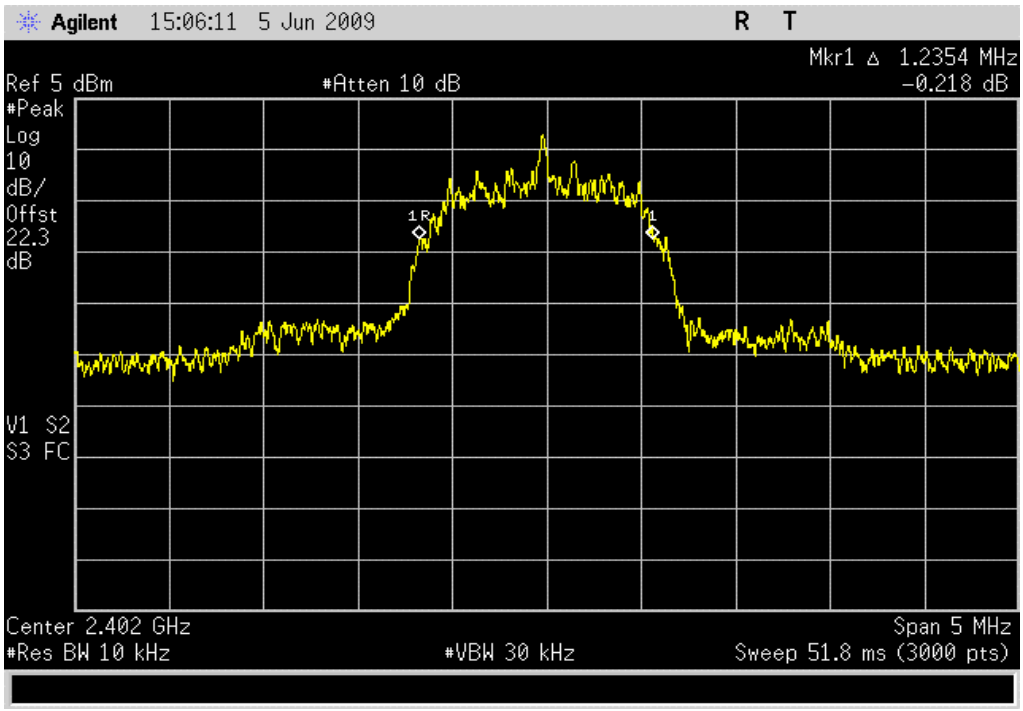
GFSK, DH5, Mid Channel, 2442 MHz					
Result:	Pass	**Value:**	792 kHz	**Limit:**	1.5 MHz



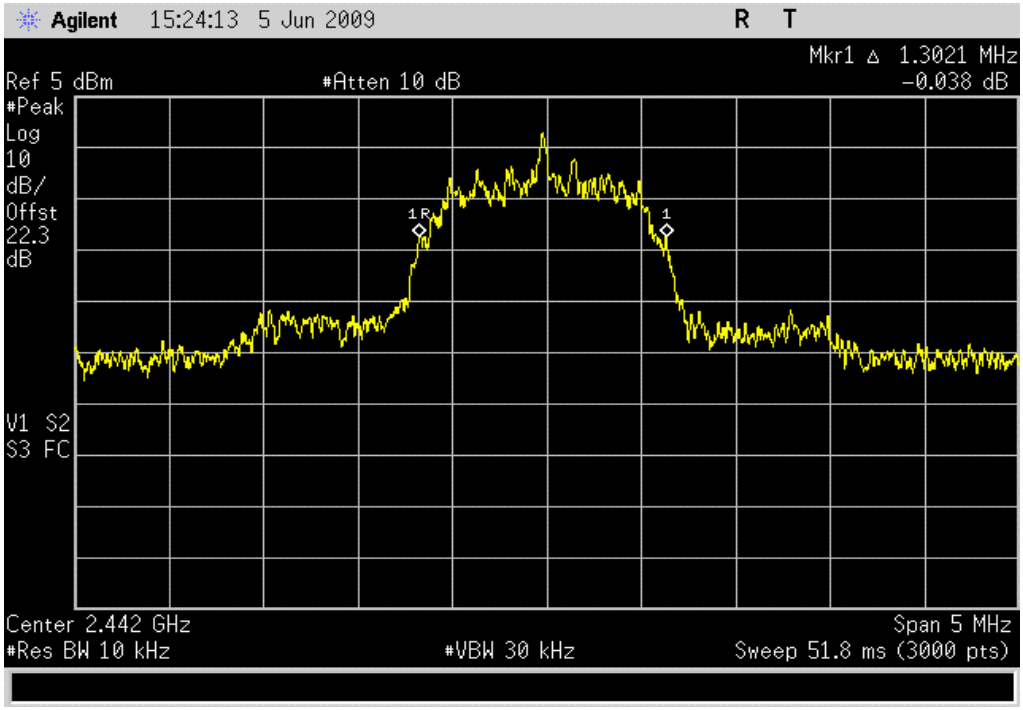
GFSK, DH5, High Channel, 2480 MHz					
Result:	Pass	**Value:**	792 kHz	**Limit:**	1.5 MHz



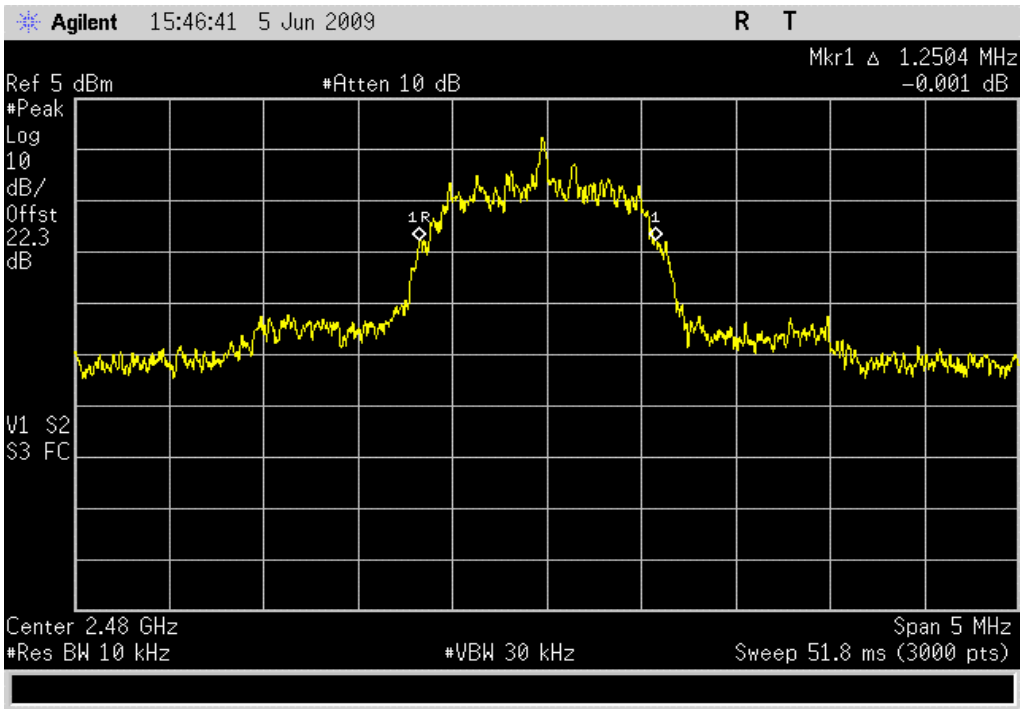
pi/4-DQPSK, 2DH5, Low Channel, 2402MHz					
Result:	Pass	**Value:**	1.235 MHz	**Limit:**	1.5 MHz



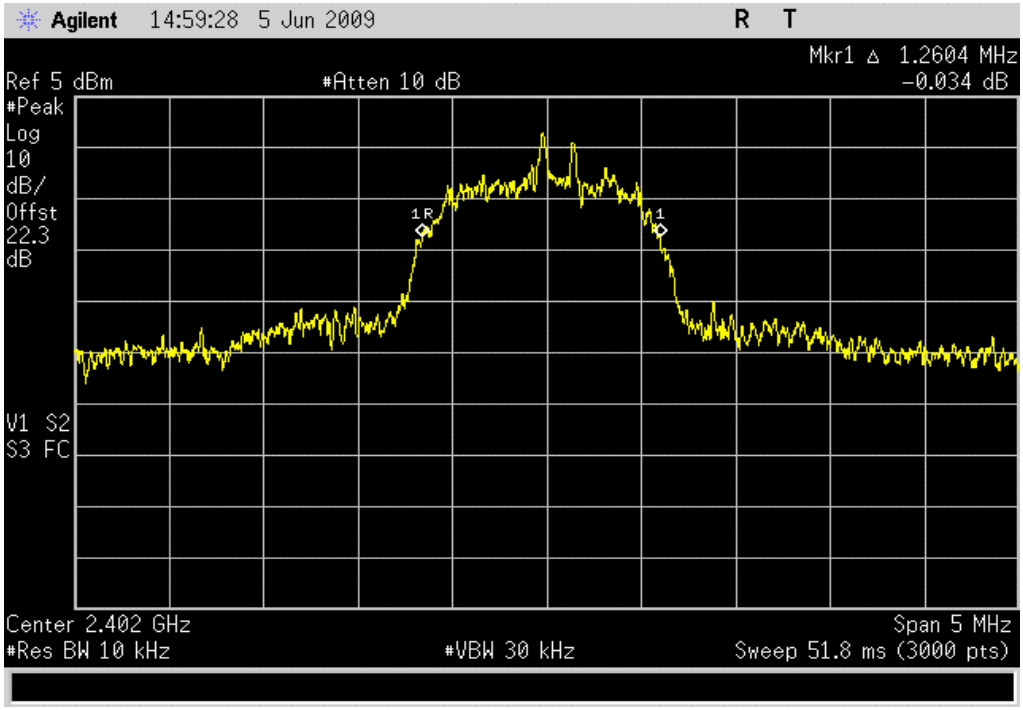
pi/4-DQPSK, 2DH5, Mid Channel, 2442 MHz					
Result:	Pass	**Value:**	1.302 MHz	**Limit:**	1.5 MHz



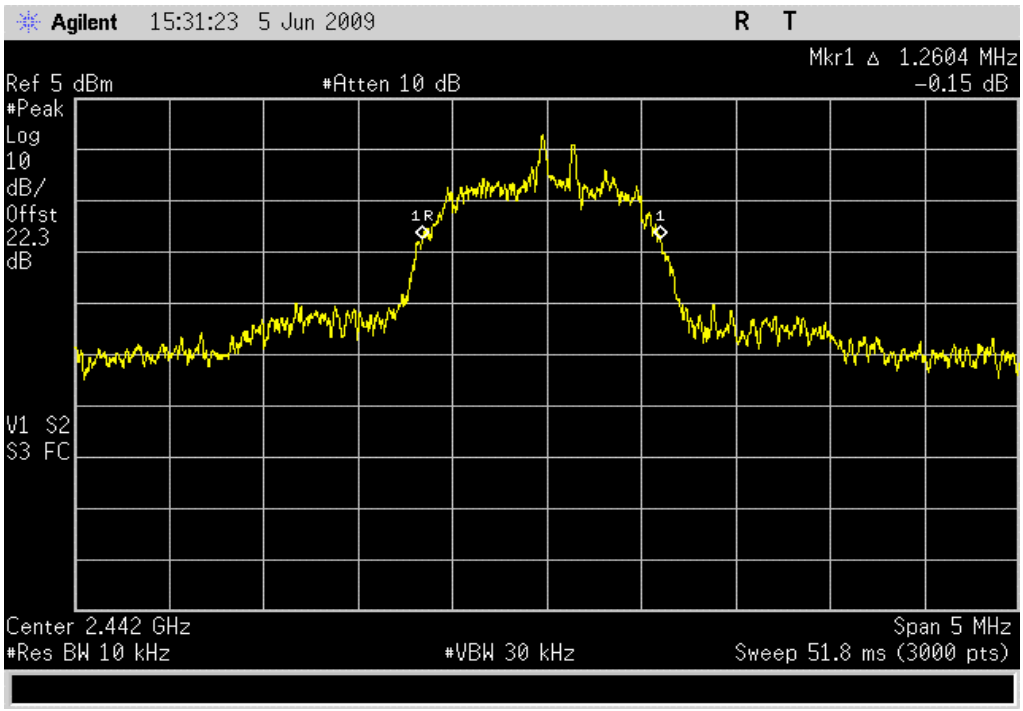
pi/4-DQPSK, 2DH5, High Channel, 2480 MHz					
Result:	Pass	**Value:**	1.250 MHz	**Limit:**	1.5 MHz



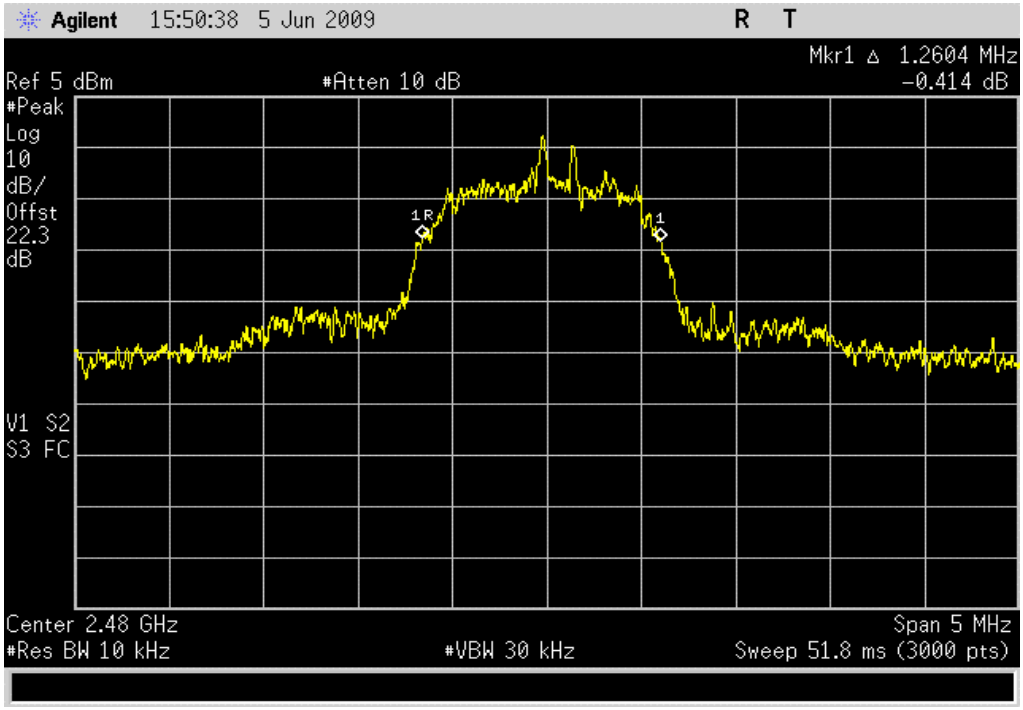
8-DPSK, 3DH5, Low Channel, 2402MHz					
Result:	Pass	**Value:**	1.260 MHz	**Limit:**	1.5 MHz



8-DPSK, 3DH5, Mid Channel, 2442 MHz					
Result:	Pass	**Value:**	1.260 MHz	**Limit:**	1.5 MHz



8-DPSK, 3DH5, High Channel, 2480 MHz					
Result:	Pass	**Value:**	1.260 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	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
Power Meter	Gigatronics	8651A	SPM	12/10/2008	13
Power Sensor	Gigatronics	80701A	SPL	12/10/2008	13
Signal Generator	Hewlett-Packard	8648D	TGC	12/9/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is 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 2008.12.29

EUT:	Galileo modular radio (TI)			**Work Order:**	INMC0519
Serial Number:	7			**Date:**	06/04/09
Customer:	Intermec Technologies Corporation			**Temperature:**	23.00°C
Attendees:	None			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	29.76 in
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

None

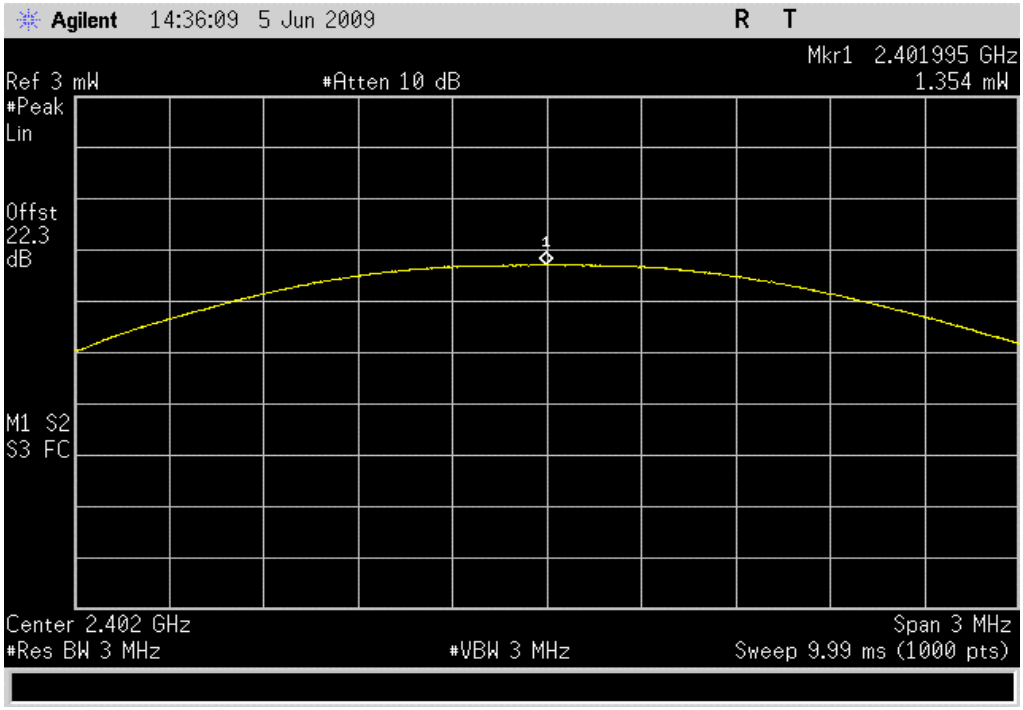
DEVIATIONS FROM TEST STANDARD

No Deviations

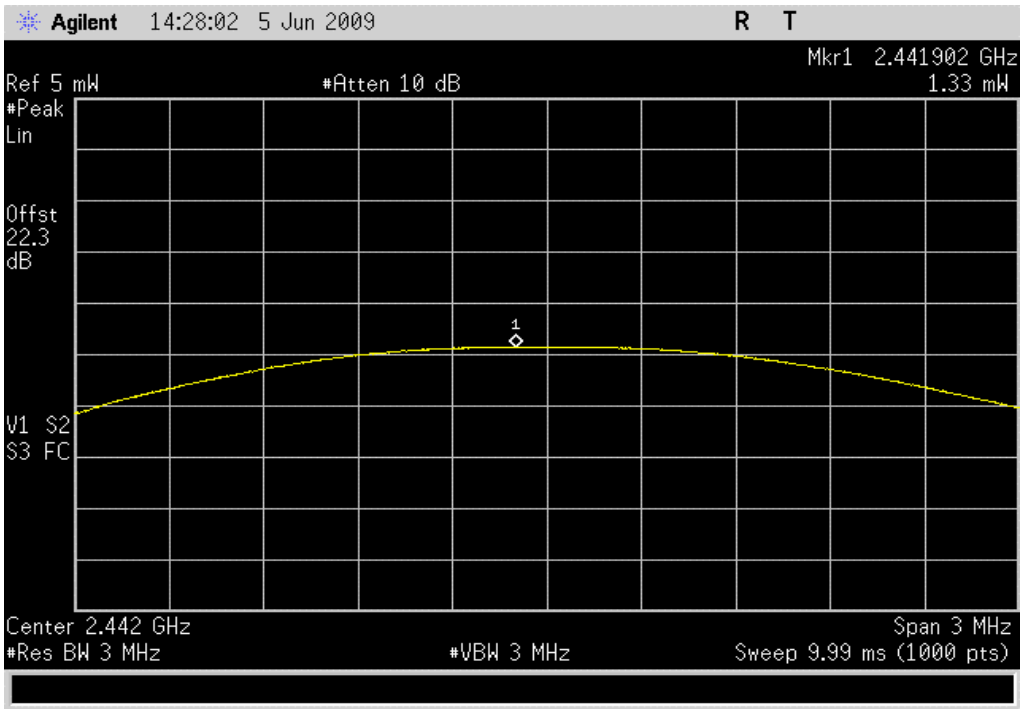
Configuration #	1	Signature

		Value	Limit	Results
DH5, GFSK				
	Low Channel	1.35 mW	1 W	Pass
	Mid Channel	1.33 mW	1 W	Pass
	High Channel	1.15 mW	1 W	Pass
2DH5, 4-DQPSK				
	Low Channel	2.00 mW	1 W	Pass
	Mid Channel	1.86 mW	1 W	Pass
	High Channel	1.66 mW	1 W	Pass
3DH5, 8-DPSK				
	Low Channel	2.17 mW	1 W	Pass
	Mid Channel	2.01 mW	1 W	Pass
	High Channel	1.81 mW	1 W	Pass

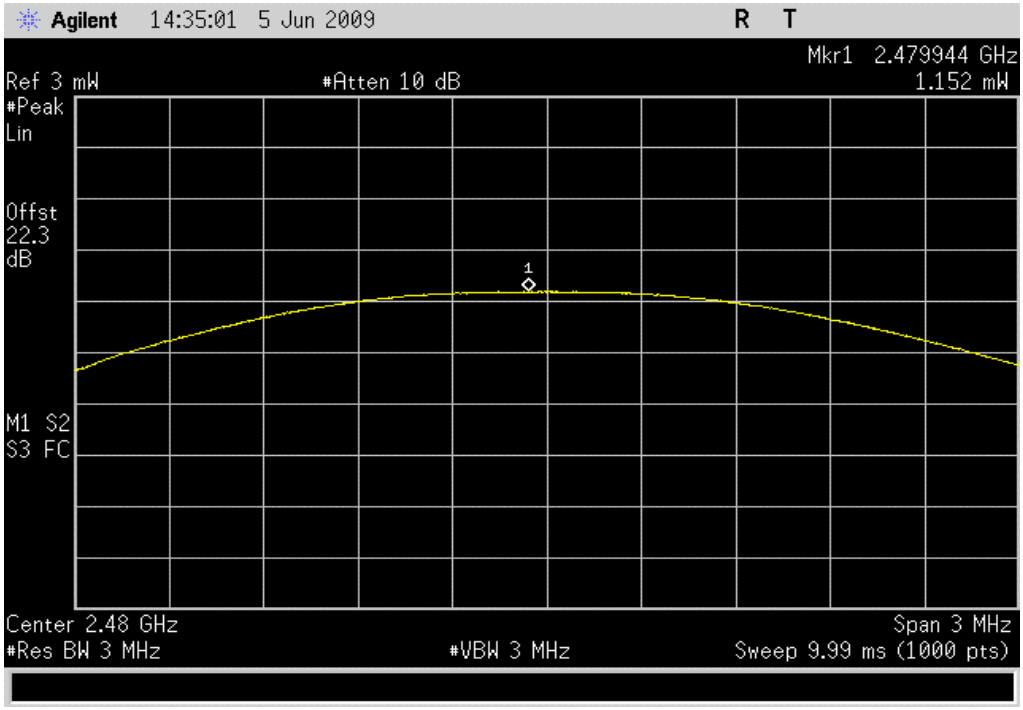
DH5, GFSK, Low Channel					
Result:	Pass	**Value:**	1.35 mW	**Limit:**	1 W



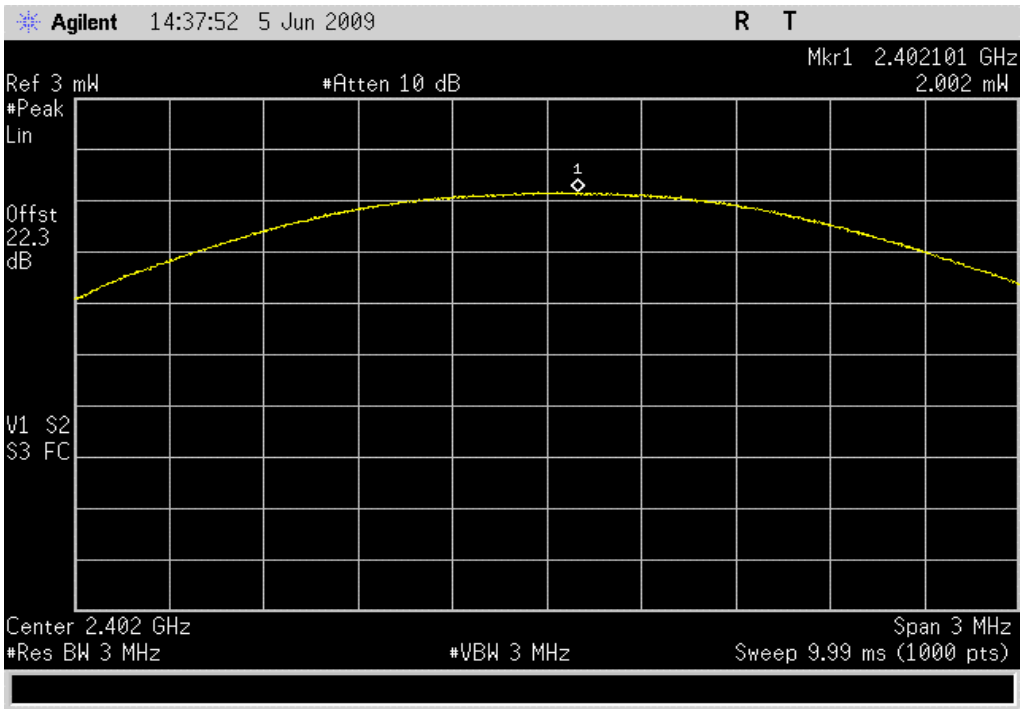
DH5, GFSK, Mid Channel					
Result:	Pass	**Value:**	1.33 mW	**Limit:**	1 W



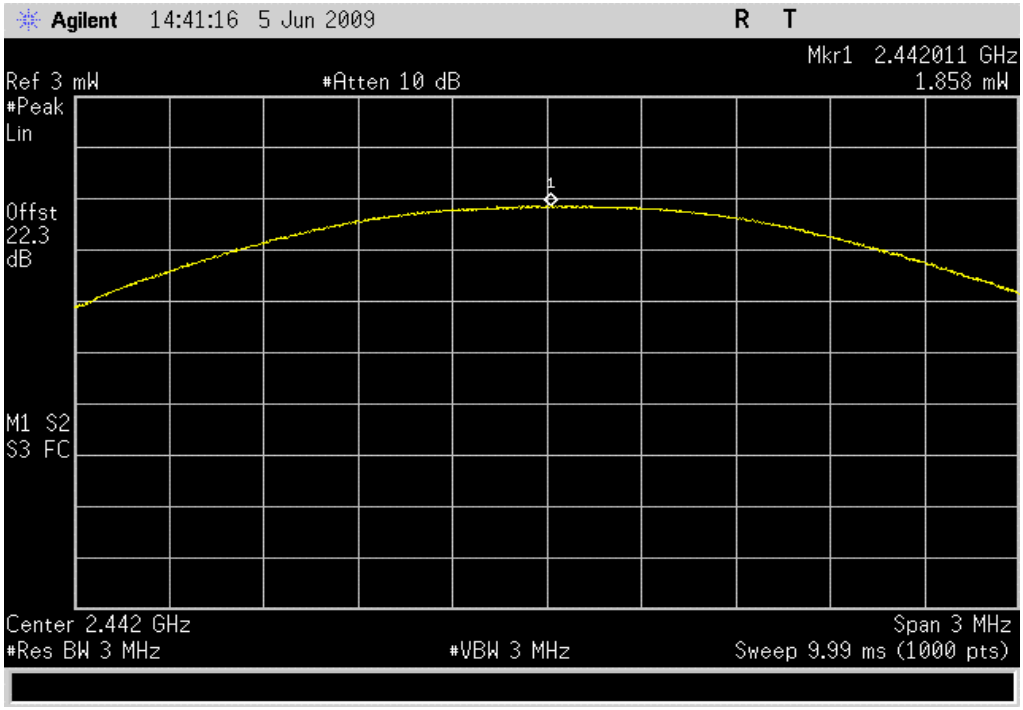
DH5, GFSK, High Channel					
Result:	Pass	**Value:**	1.15 mW	**Limit:**	1 W



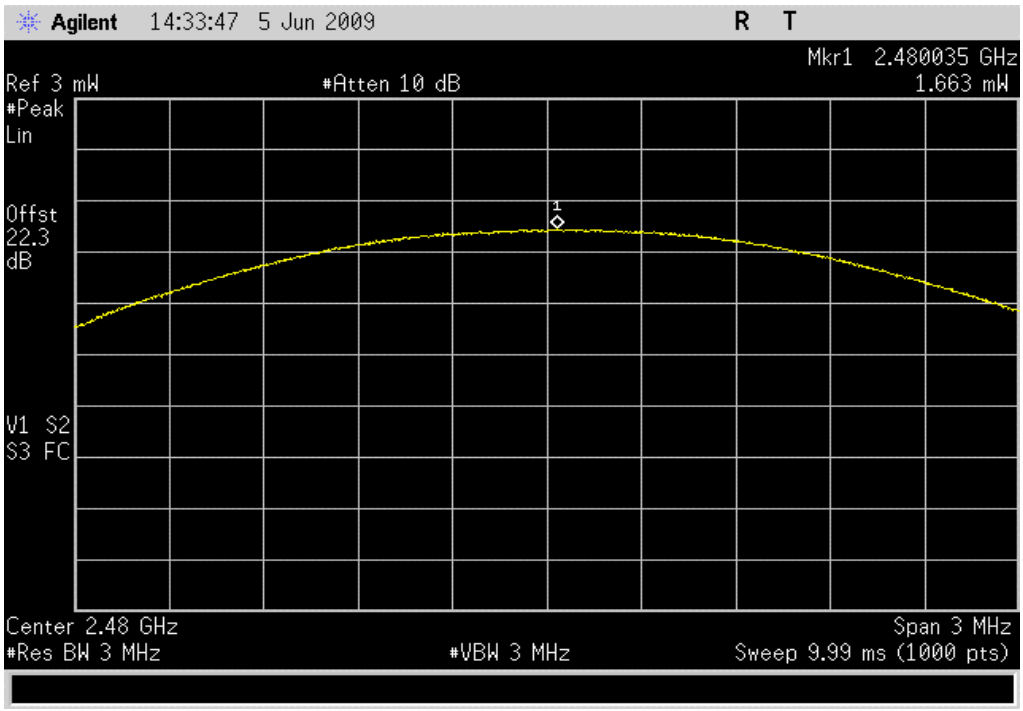
2DH5, 4-DQPSK, Low Channel					
Result:	Pass	**Value:**	2.00 mW	**Limit:**	1 W



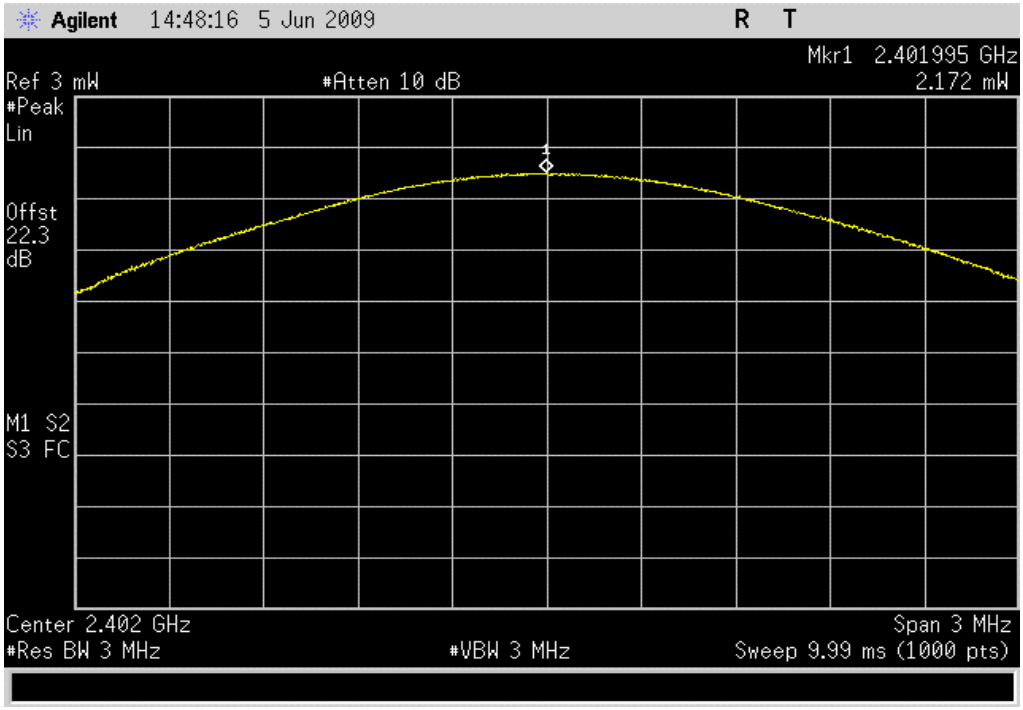
2DH5, 4-DQPSK, Mid Channel					
Result:	Pass	**Value:**	1.86 mW	**Limit:**	1 W



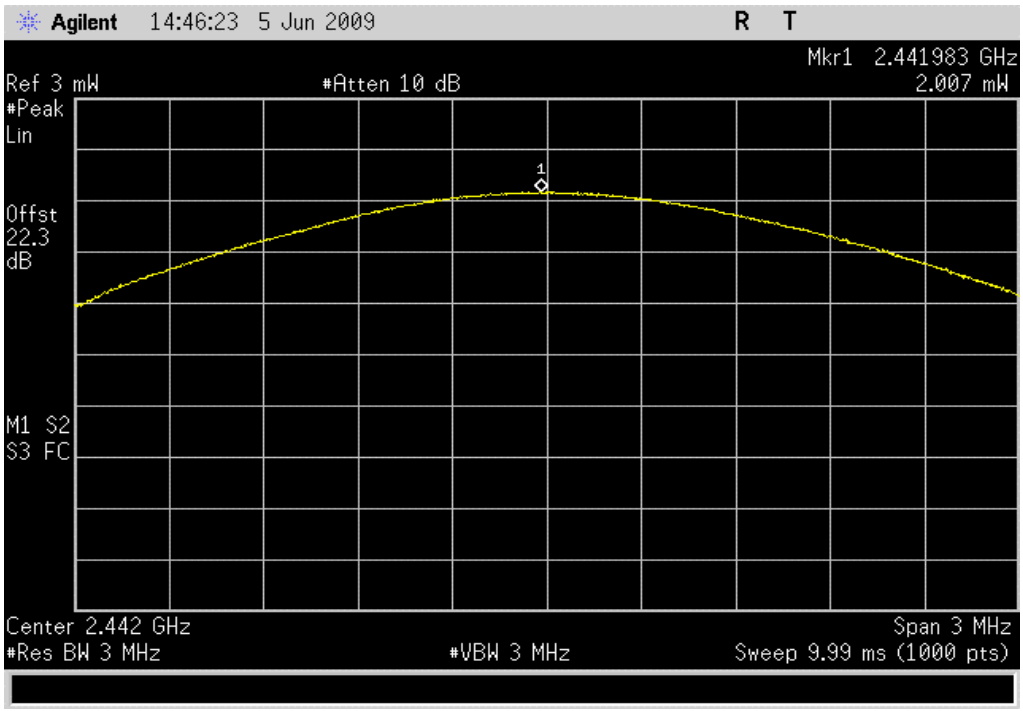
2DH5, 4-DQPSK, High Channel					
Result:	Pass	**Value:**	1.66 mW	**Limit:**	1 W



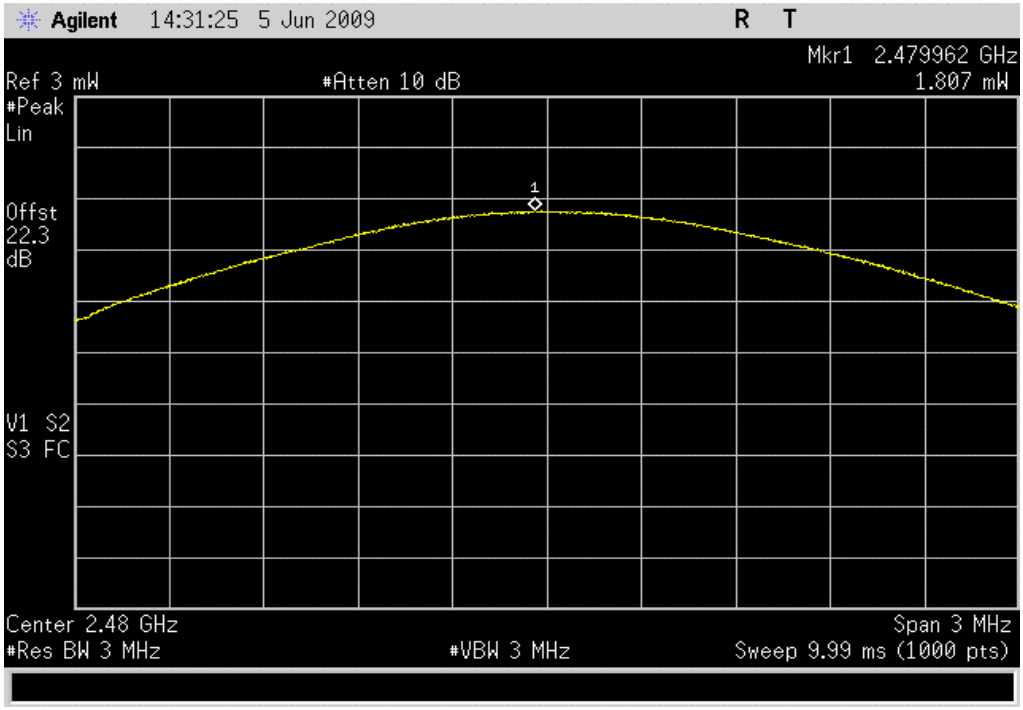
3DH5, 8-DPSK, Low Channel					
Result:	Pass	**Value:**	2.17 mW	**Limit:**	1 W

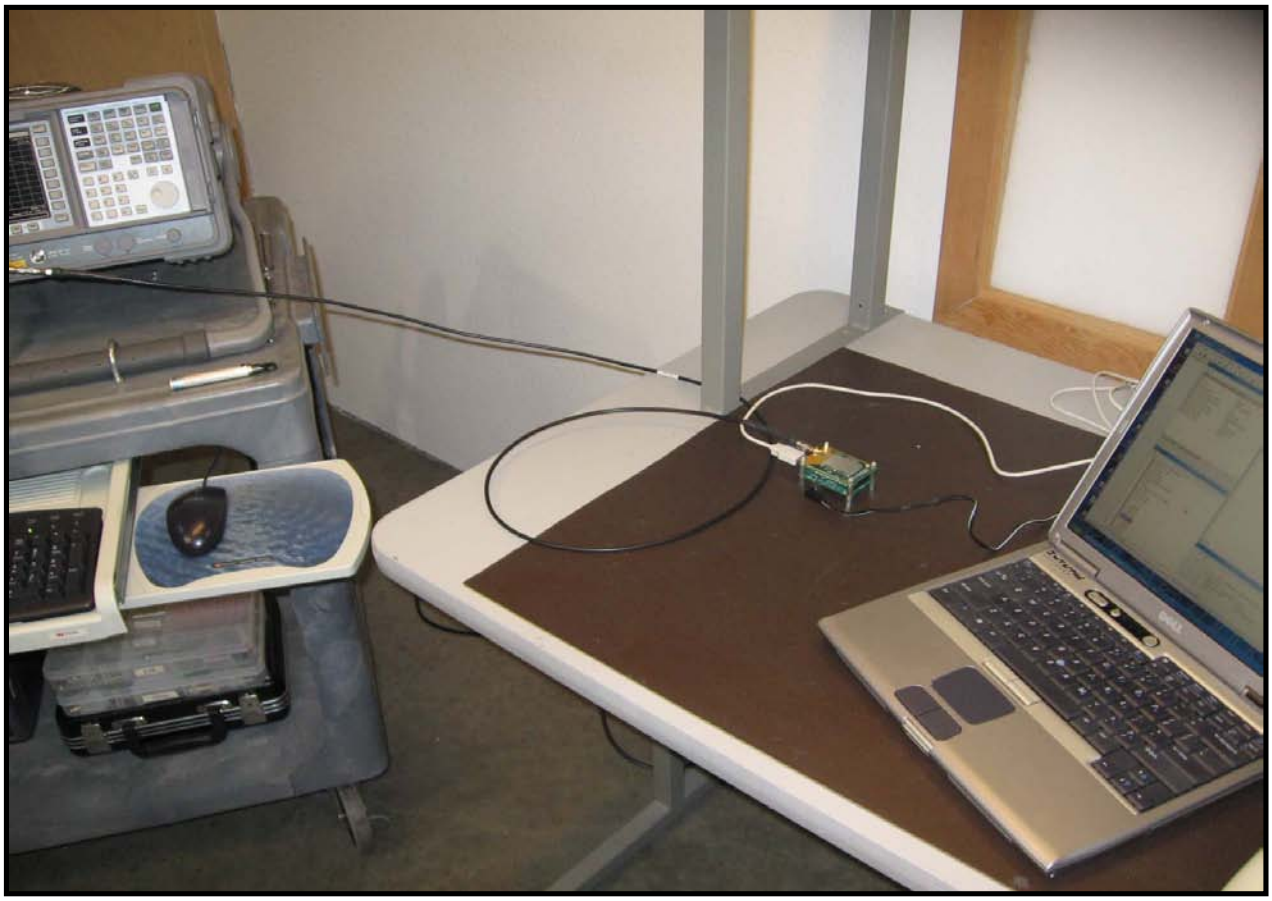


3DH5, 8-DPSK, Mid Channel					
Result:	Pass	**Value:**	2.01 mW	**Limit:**	1 W



3DH5, 8-DPSK, High Channel					
Result:	Pass	**Value:**	1.81 mW	**Limit:**	1 W





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	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is 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 2008.12.29

EUT:	Galileo modular radio (TI)			**Work Order:**	INMC0519
Serial Number:	7			**Date:**	06/04/09
Customer:	Intermec Technologies Corporation			**Temperature:**	23.00°C
Attendees:	None			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	29.76 in
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

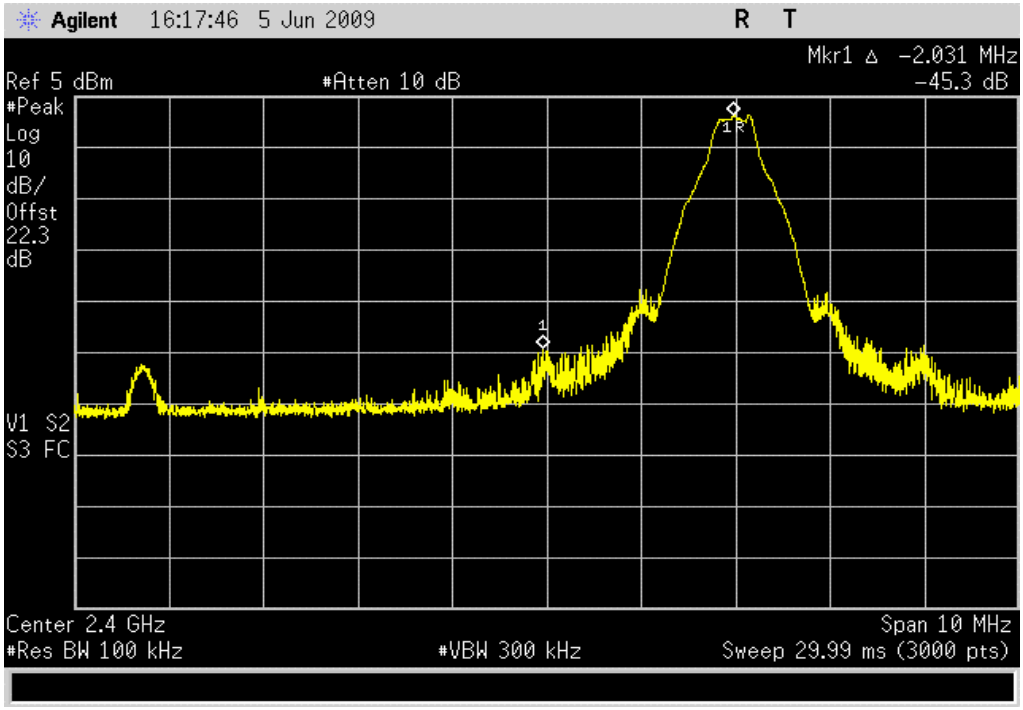
No Deviations

Configuration #	1	Signature

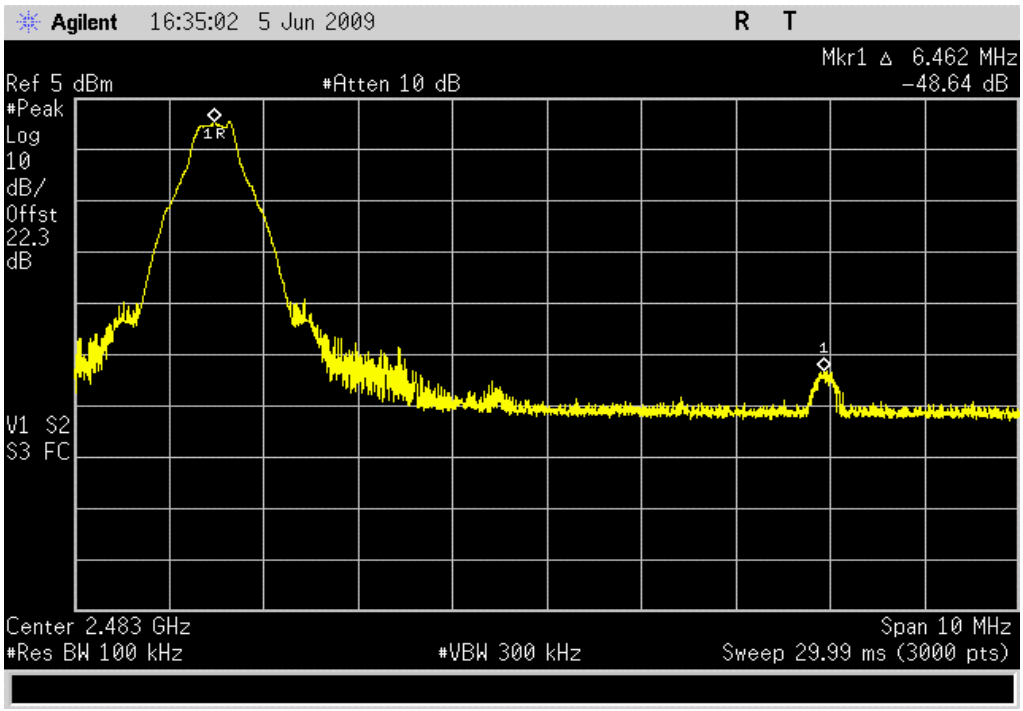
		Value	Limit	Results
GFSK, DH5				
	Low Channel	-45.3 dBc	≤ -20 dBc	Pass
	High Channel	-48.6 dBc	≤ -20 dBc	Pass
pi/4-DQPSK, 2DH5				
	Low Channel	-32.1 dBc	≤ -20 dBc	Pass
	High Channel	-39.6 dBc	≤ -20 dBc	Pass
8-DPSK, 3DH5				
	Low Channel	-33.1 dBc	≤ -20 dBc	Pass
	High Channel	-38.0 dBc	≤ -20 dBc	Pass

BAND EDGE COMPLIANCE

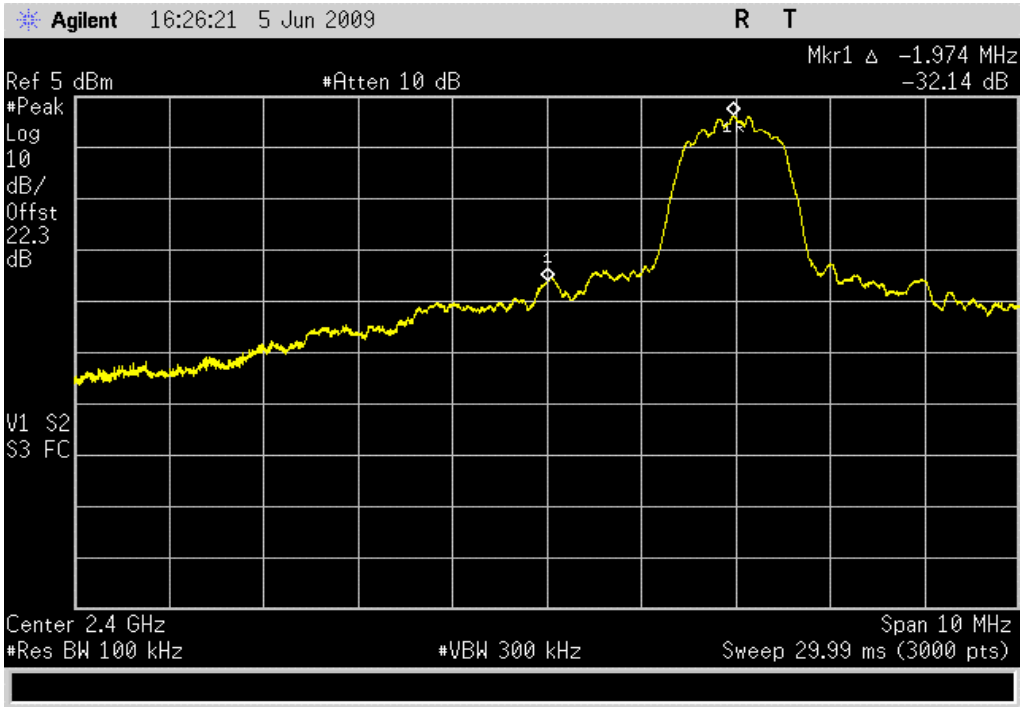
GFSK, DH5, Low Channel					
Result:	Pass	**Value:**	-45.3 dBc	**Limit:**	≤ -20 dBc



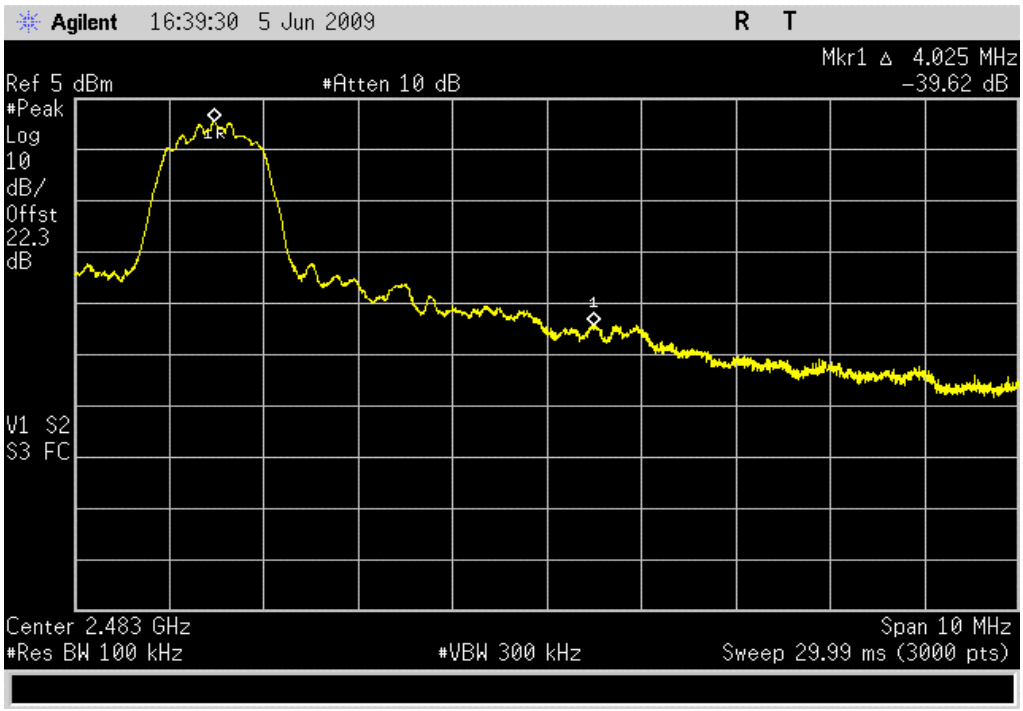
GFSK, DH5, High Channel					
Result:	Pass	**Value:**	-48.6 dBc	**Limit:**	≤ -20 dBc



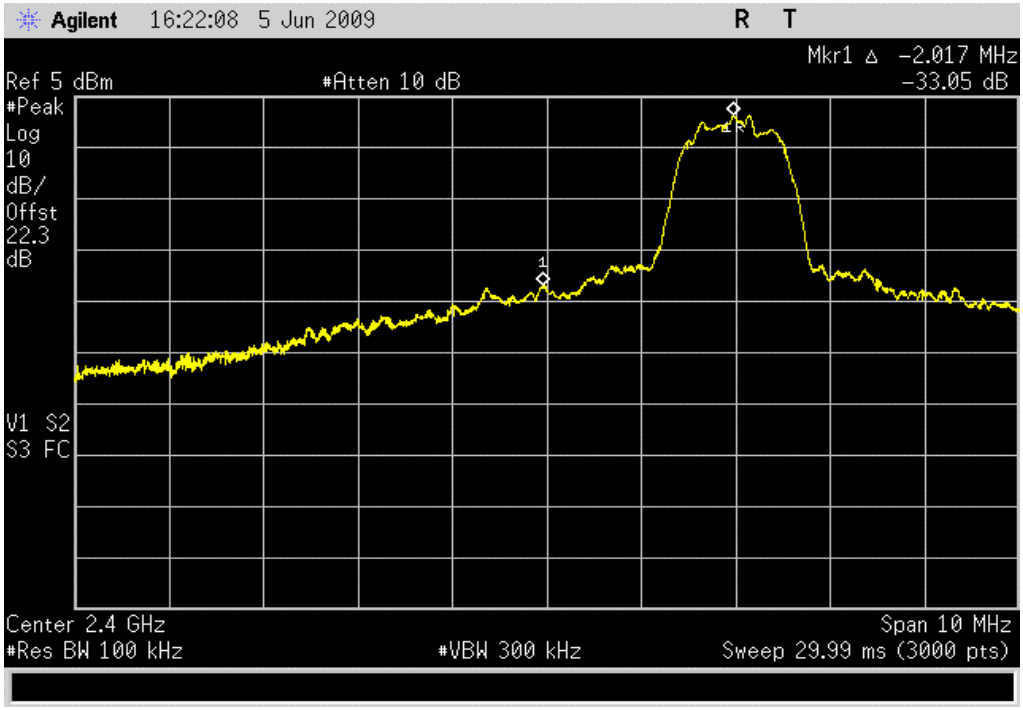
pi/4-DQPSK, 2DH5, Low Channel					
Result:	Pass	**Value:**	-32.1 dBc	**Limit:**	≤ -20 dBc



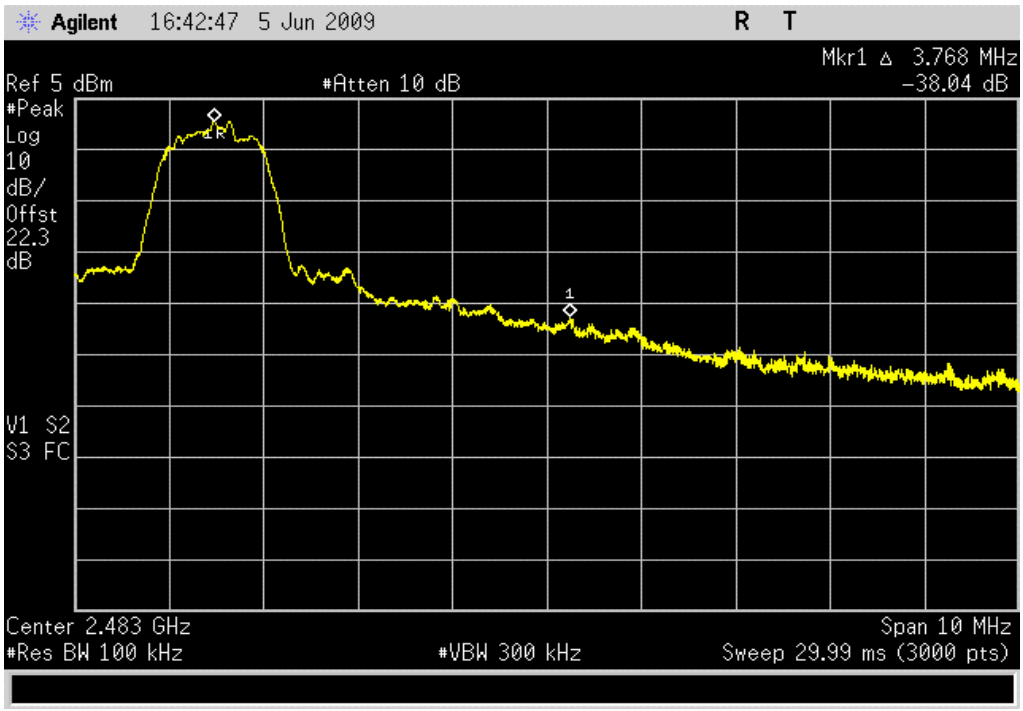
pi/4-DQPSK, 2DH5, High Channel					
Result:	Pass	**Value:**	-39.6 dBc	**Limit:**	≤ -20 dBc



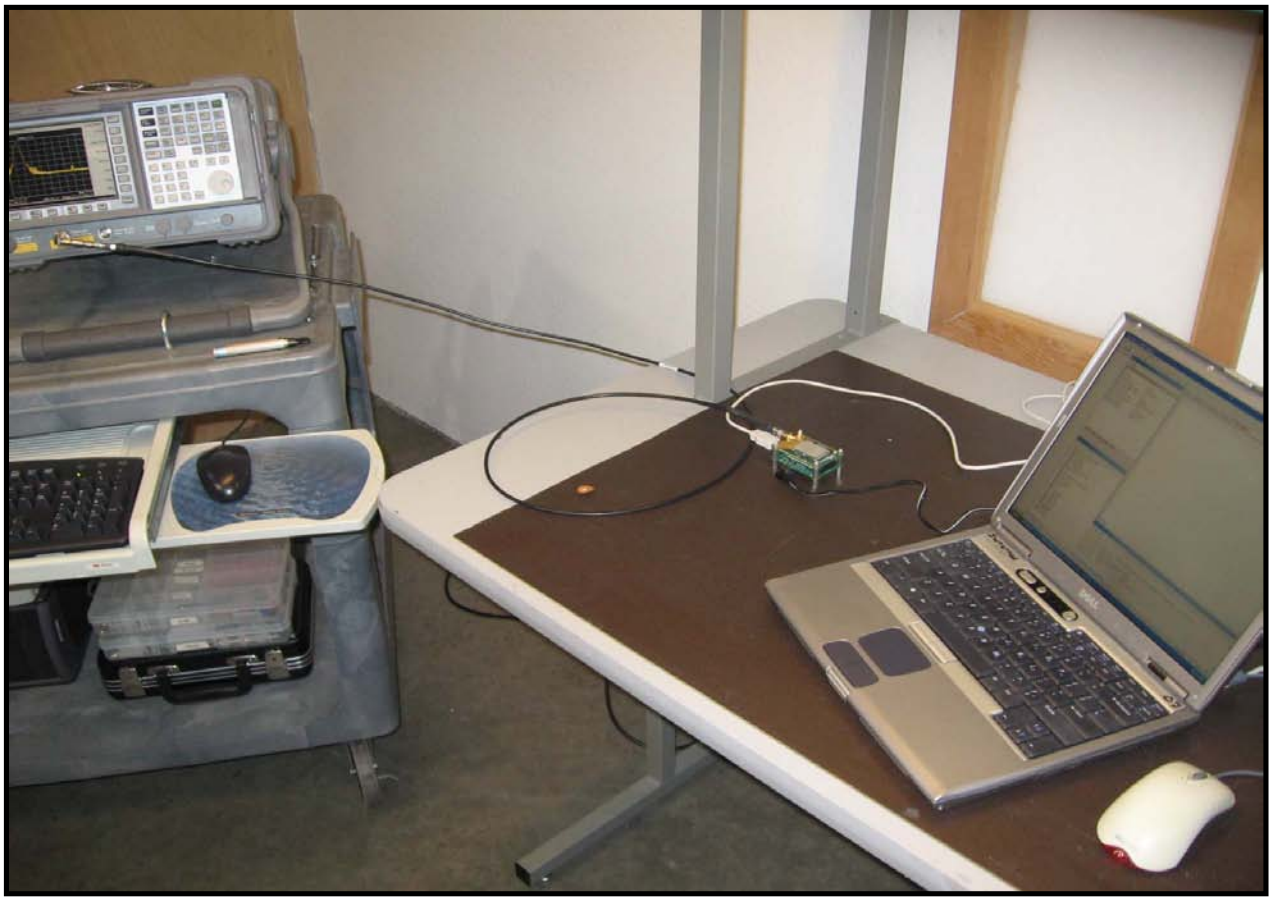
8-DPSK, 3DH5, Low Channel					
Result:	Pass	**Value:**	-33.1 dBc	**Limit:**	≤ -20 dBc



8-DPSK, 3DH5, High Channel					
Result:	Pass	**Value:**	-38.0 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	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is 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 using direct sequence modulation. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

NORTHWEST EMC

SPURIOUS CONDUCTED EMISSIONS

XMit 2008.12.29

EUT:	Galileo modular radio (TI)			**Work Order:**	INMC0519
Serial Number:	7			**Date:**	06/09/09
Customer:	Intermec Technologies Corporation			**Temperature:**	23.00°C
Attendees:	None			**Humidity:**	45%
Project:	None			**Barometric Pres.:**	29.76 in
Tested by:	Rod Peloquin	**Power:**	120VAC/60Hz	**Job Site:**	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

None

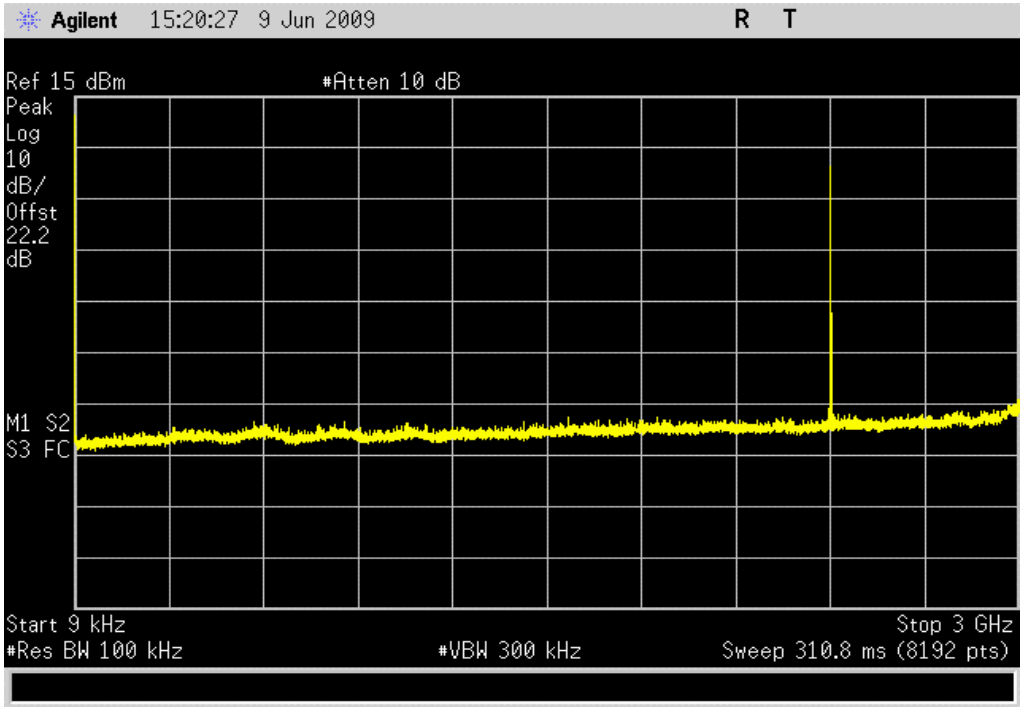
DEVIATIONS FROM TEST STANDARD

No deviations

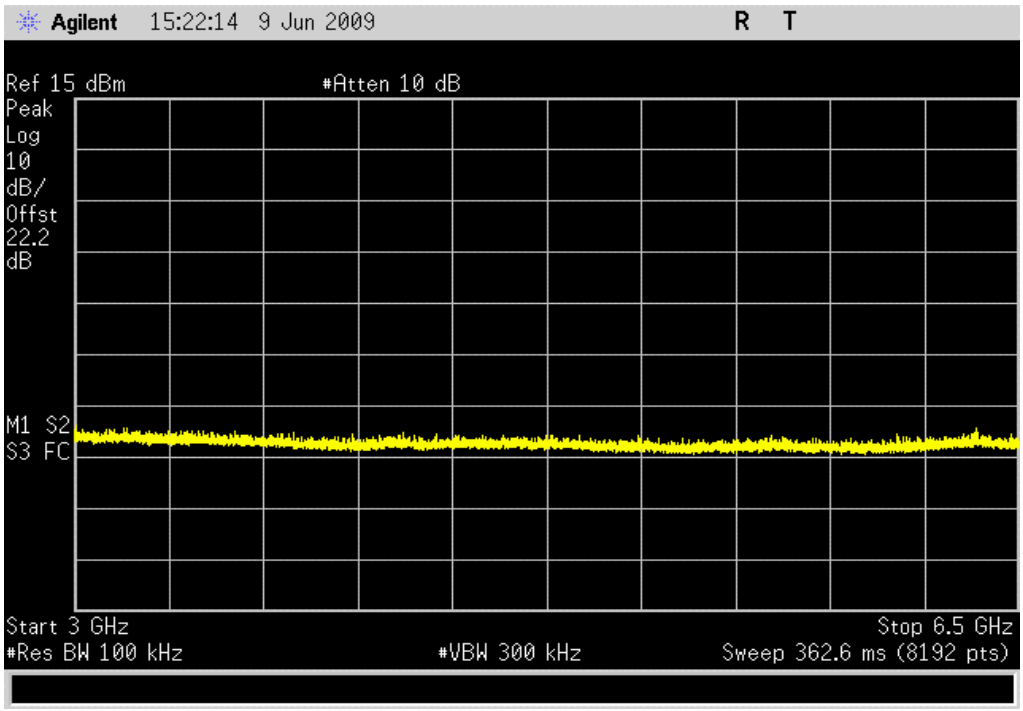
Configuration #	1	Signature

		Value	Limit	Results
GFSK, DH5				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
pi/4-DQPSK, 2DH5				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
8DPSK, 3DH5				
	Low Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	Mid Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass
	High Channel			
	0 - 3 GHz	< -40 dBc	≤ -20 dBc	Pass
	3 - 6.5 GHz	< -40 dBc	≤ -20 dBc	Pass
	6.5 - 12.8 GHz	< -40 dBc	≤ -20 dBc	Pass
	12.8 - 25 GHz	< -40 dBc	≤ -20 dBc	Pass

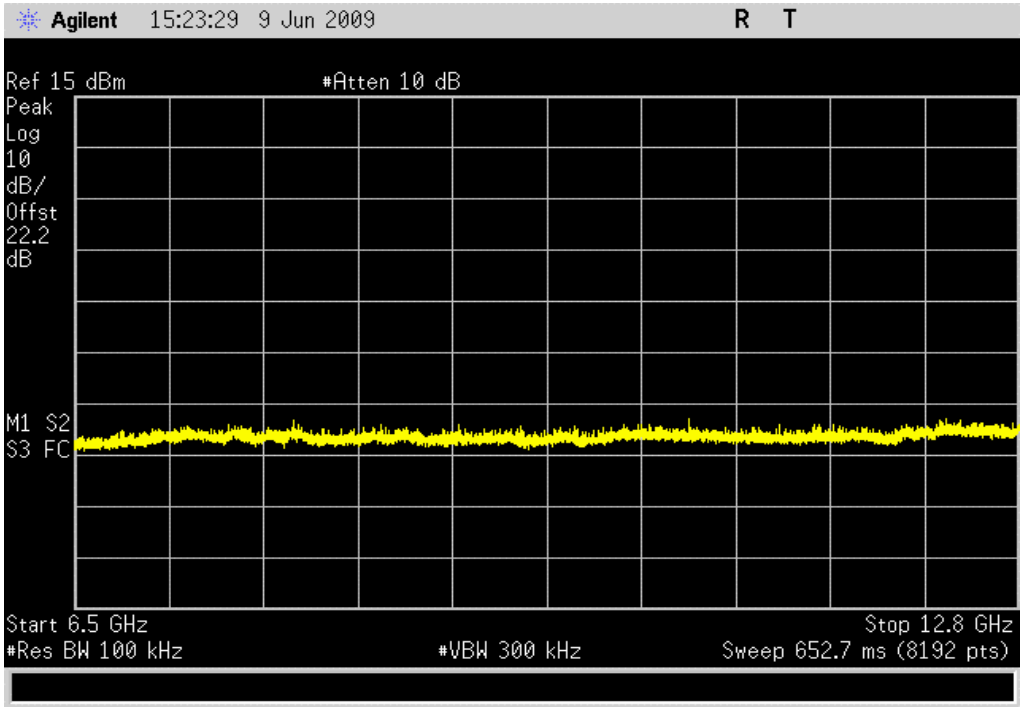
GFSK, DH5, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



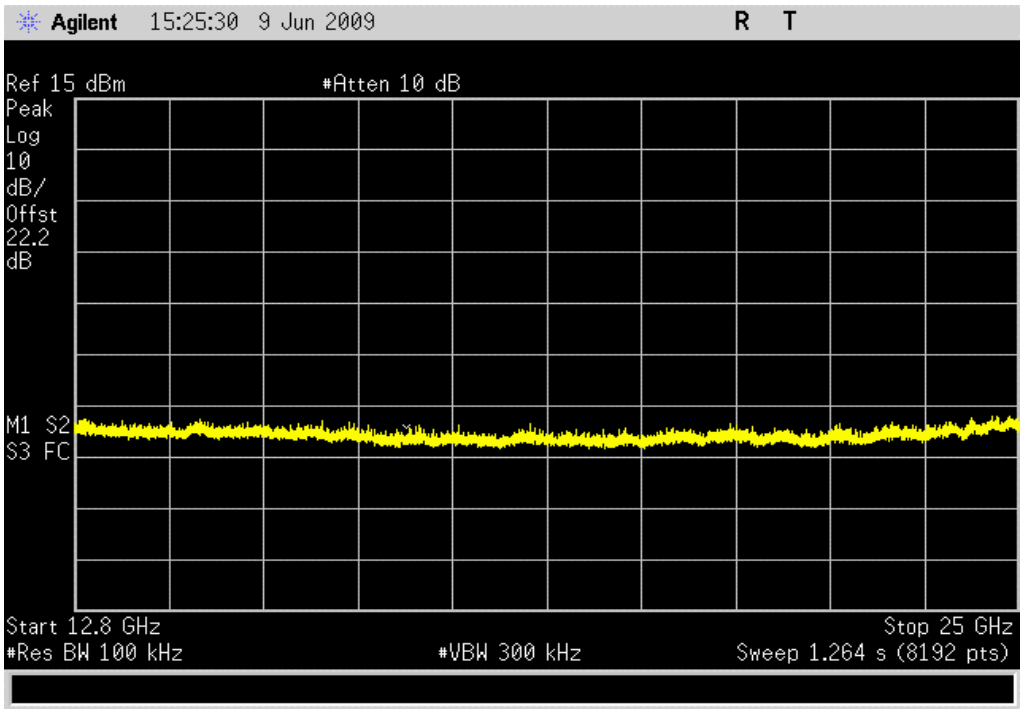
GFSK, DH5, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



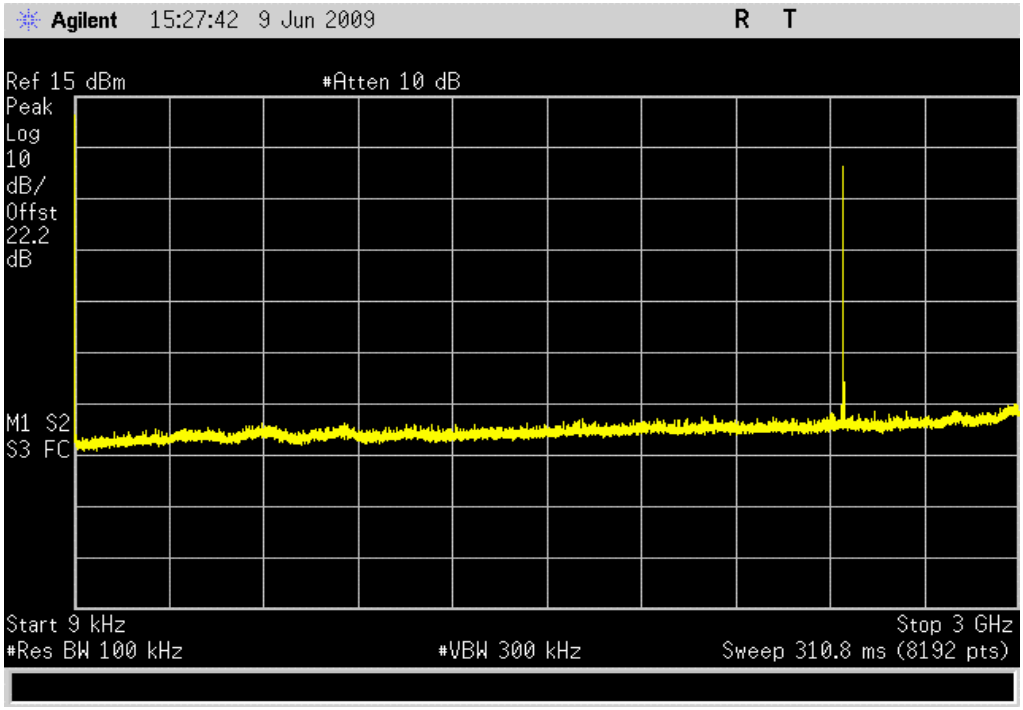
GFSK, DH5, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



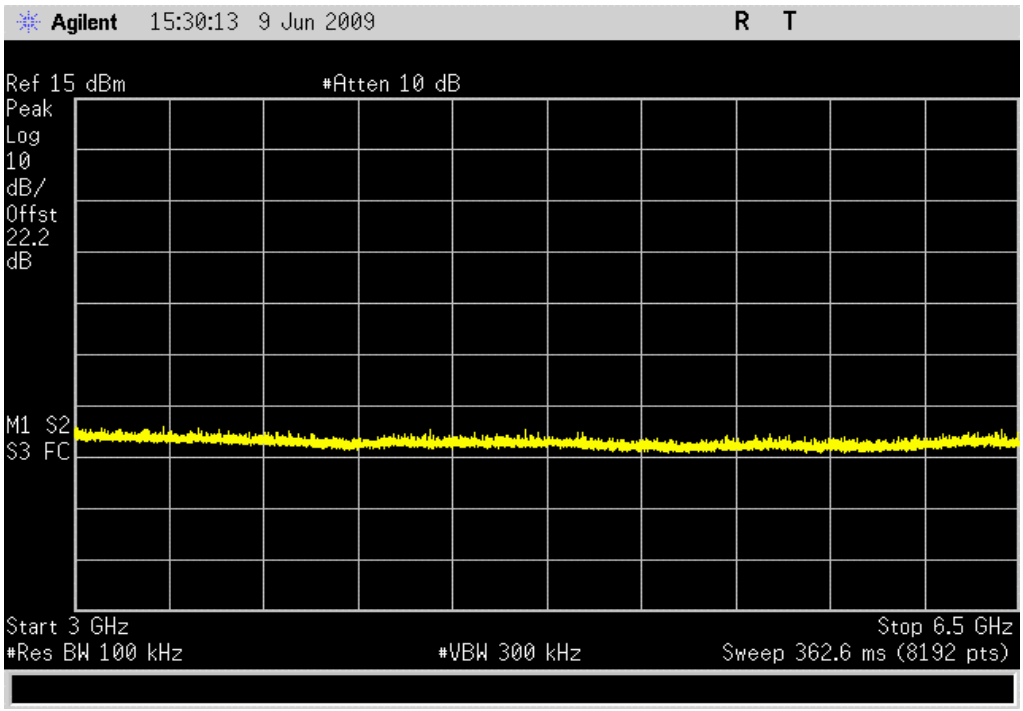
GFSK, DH5, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



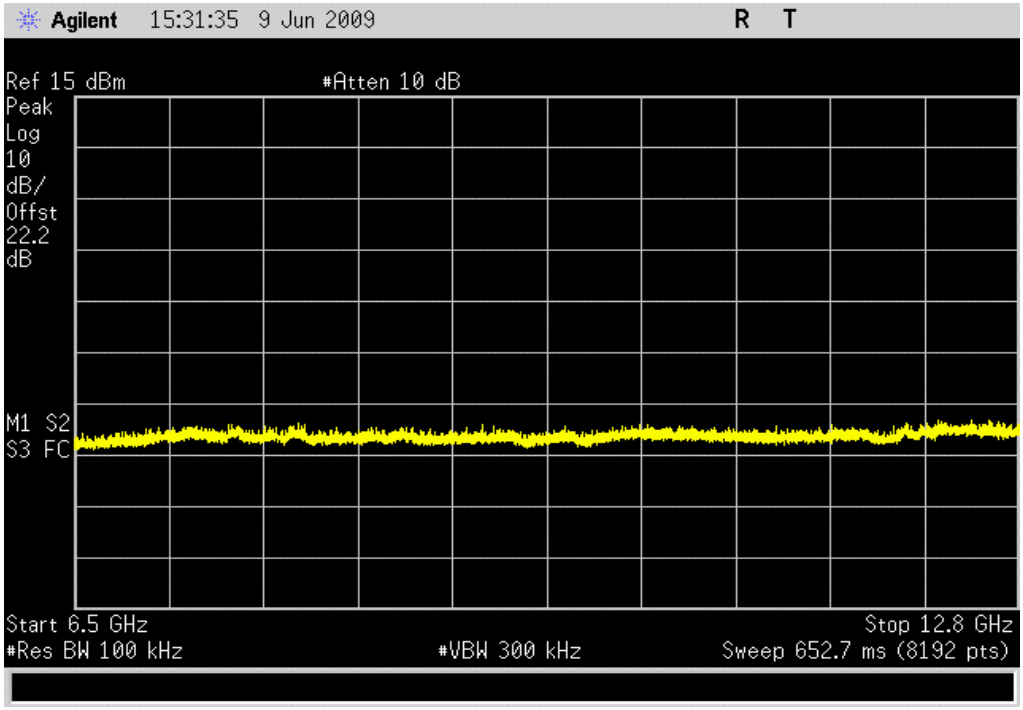
GFSK, DH5, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



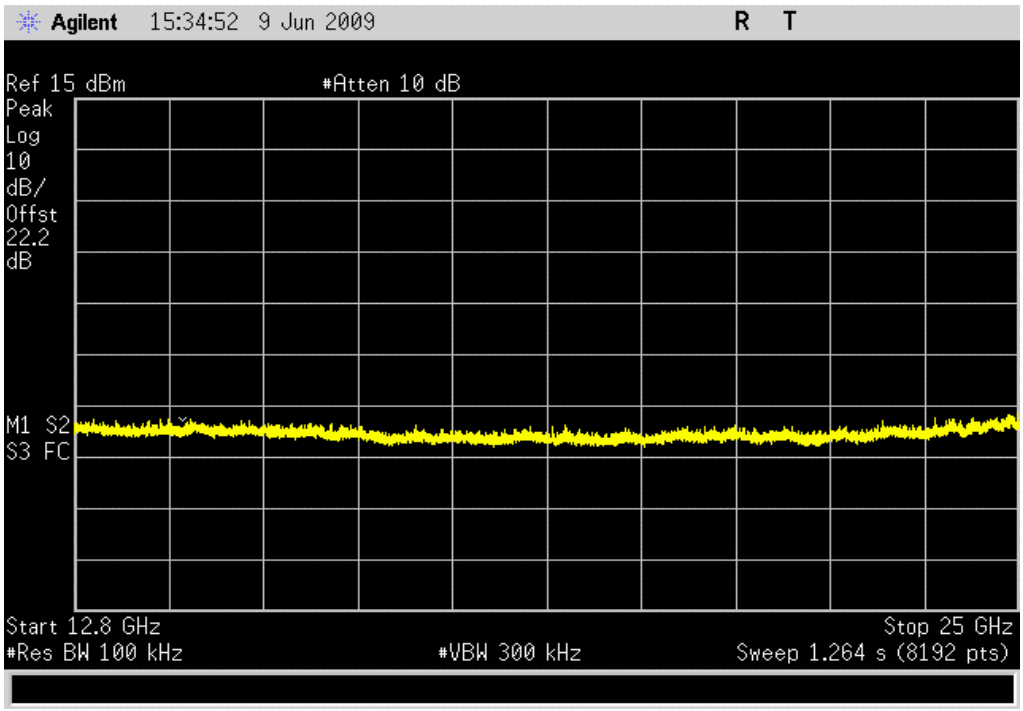
GFSK, DH5, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



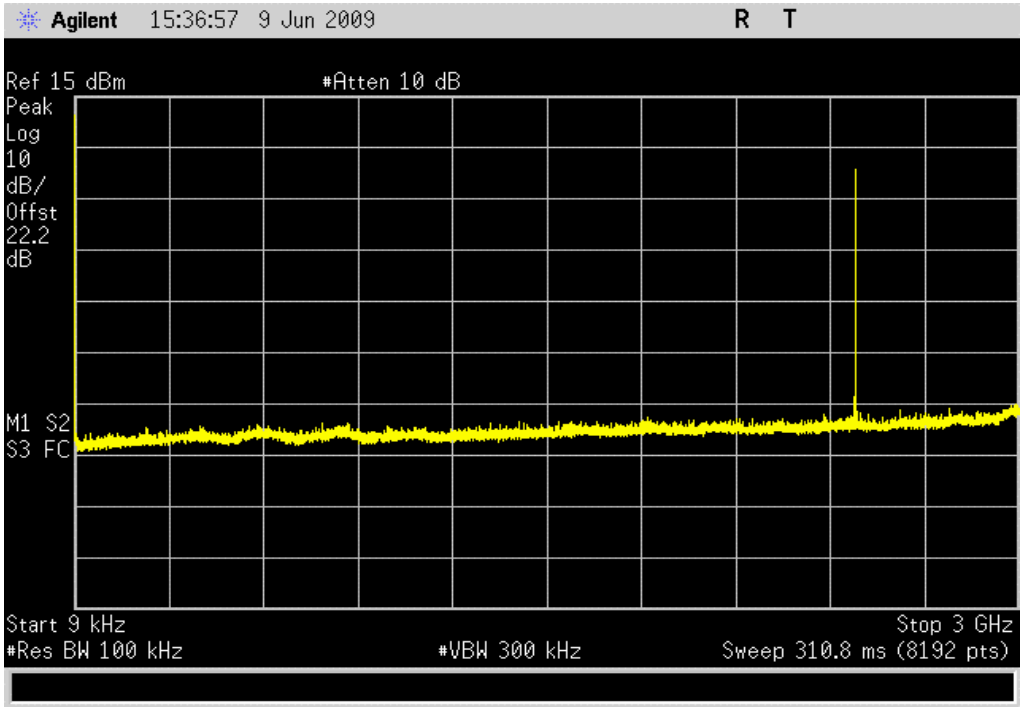
GFSK, DH5, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



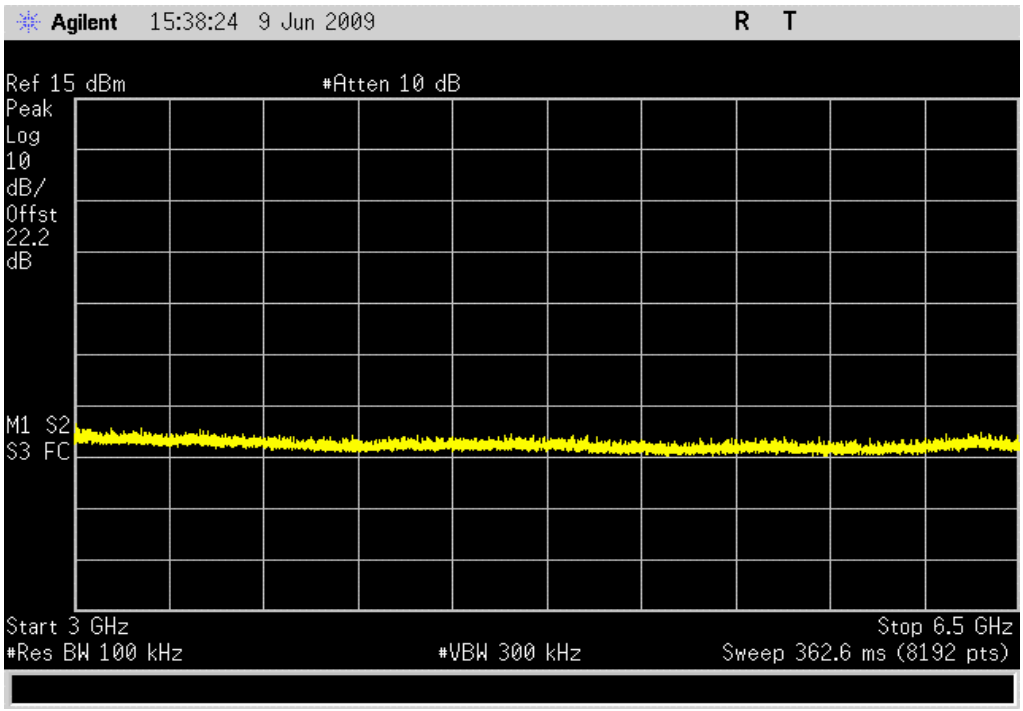
GFSK, DH5, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



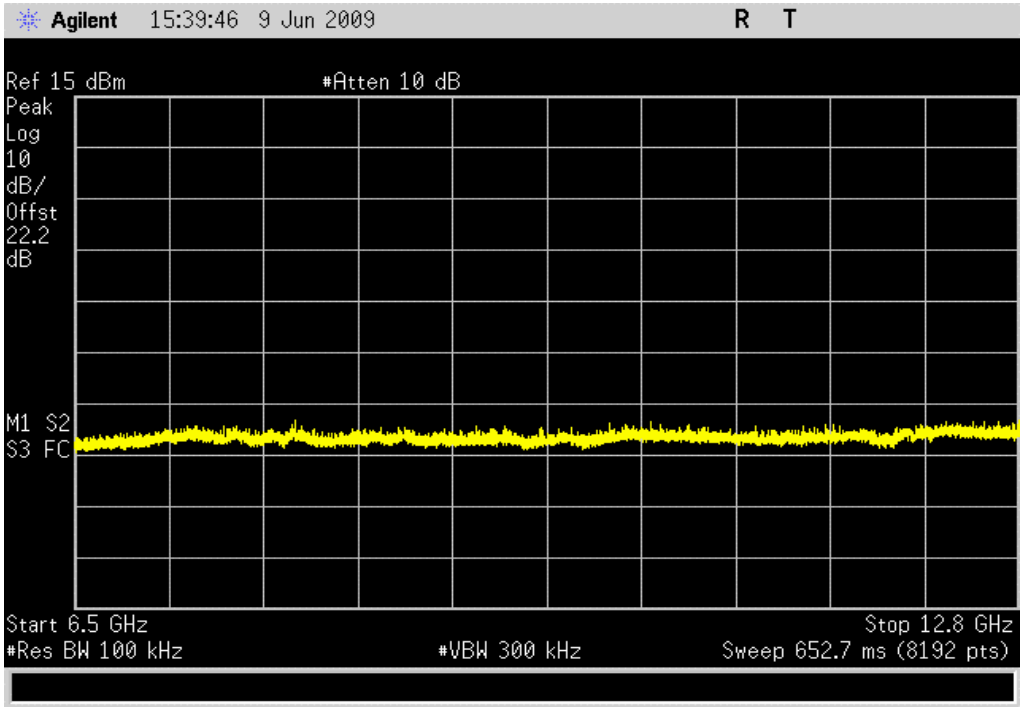
GFSK, DH5, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



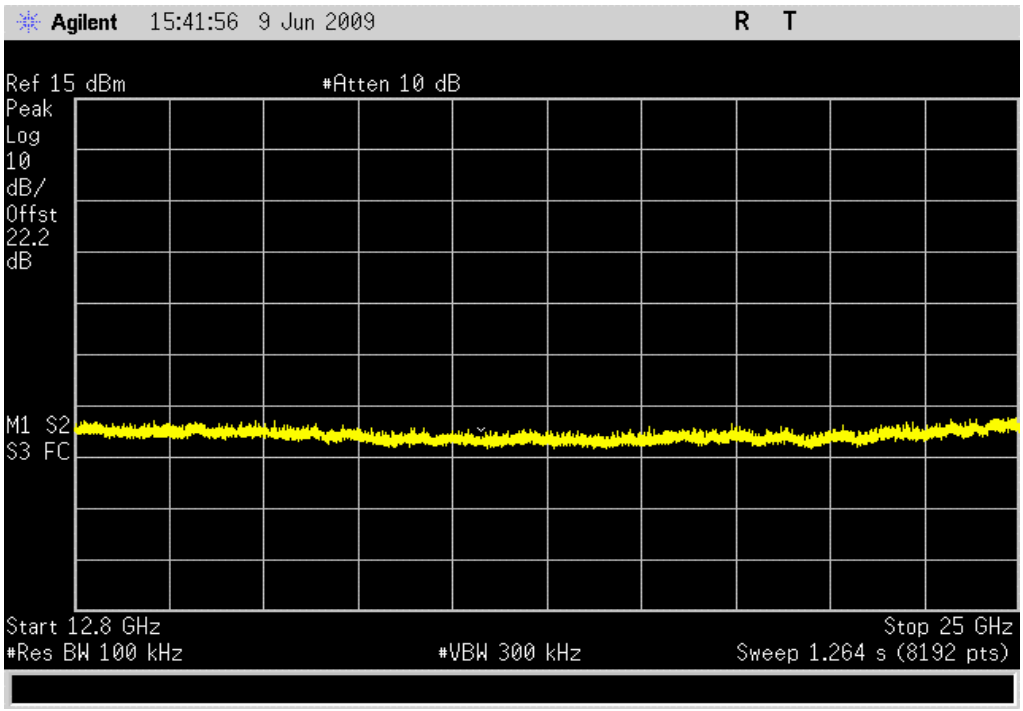
GFSK, DH5, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



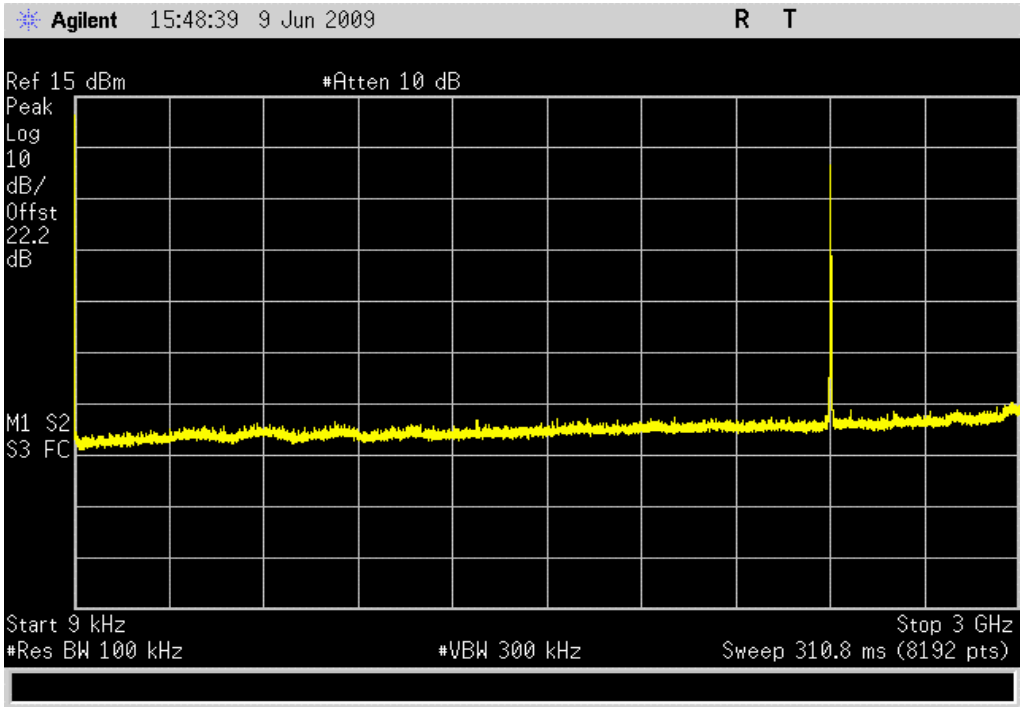
GFSK, DH5, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



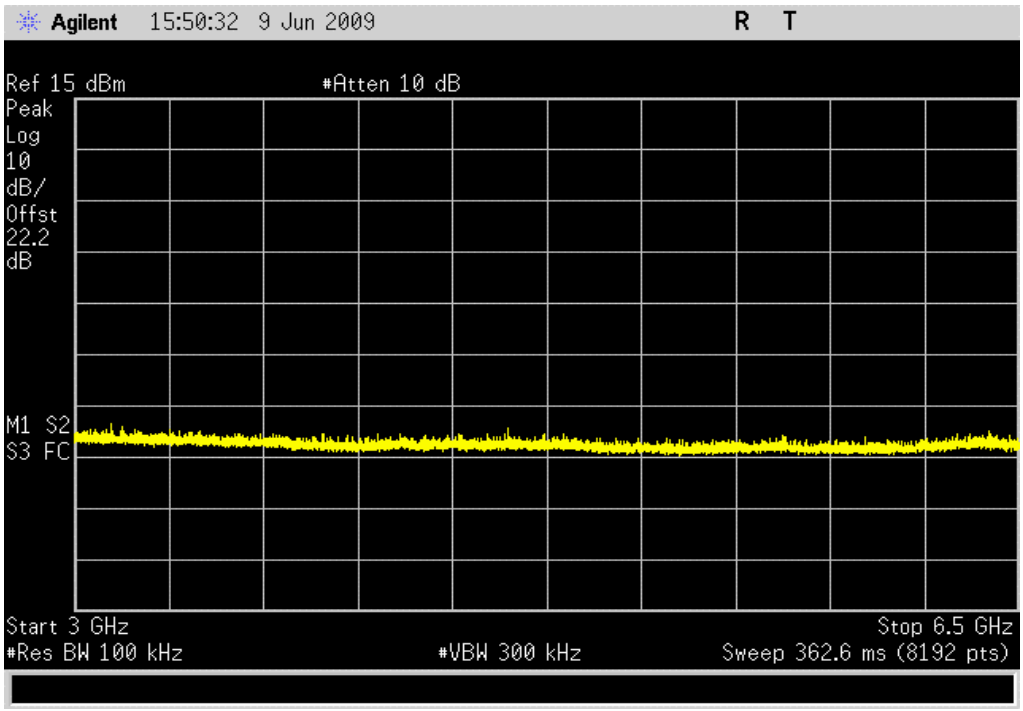
GFSK, DH5, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



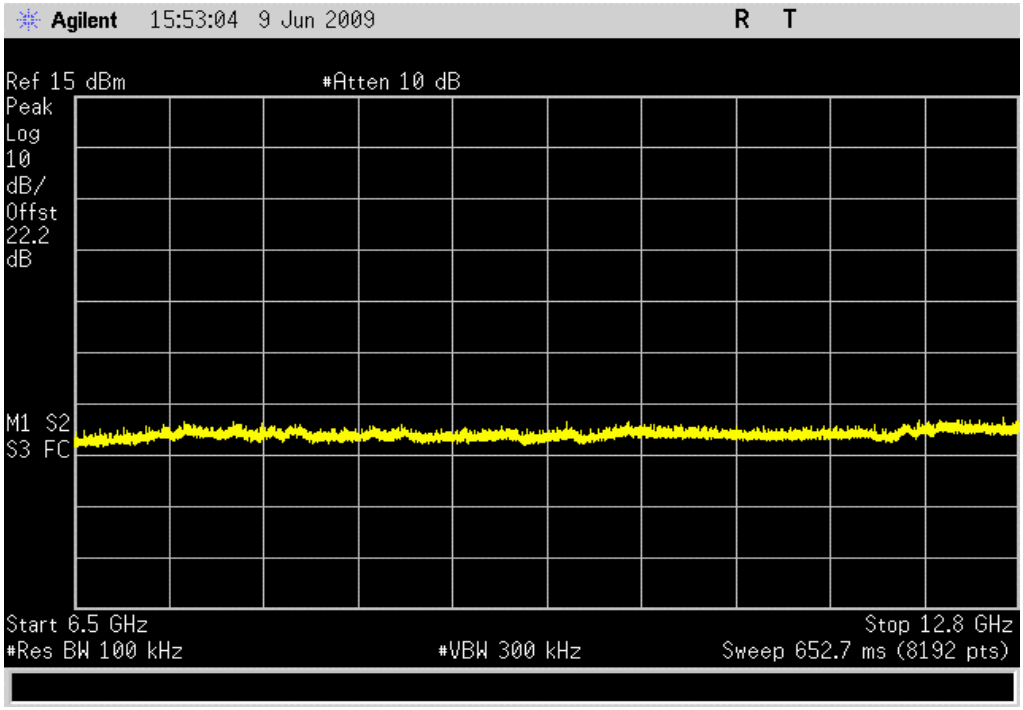
pi/4-DQPSK, 2DH5, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



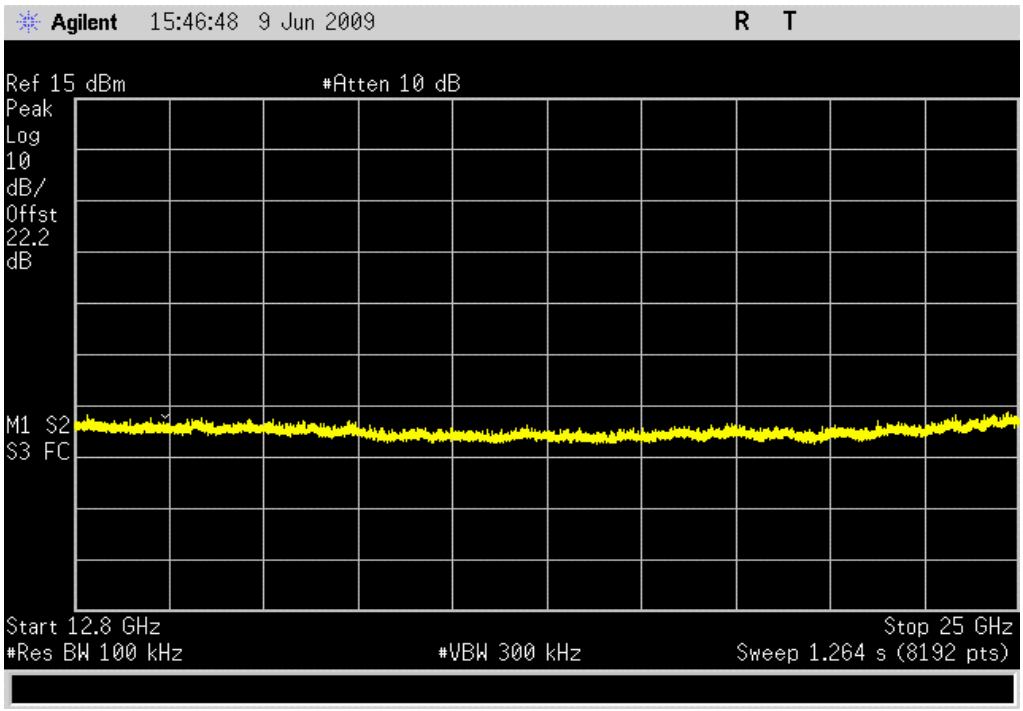
pi/4-DQPSK, 2DH5, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



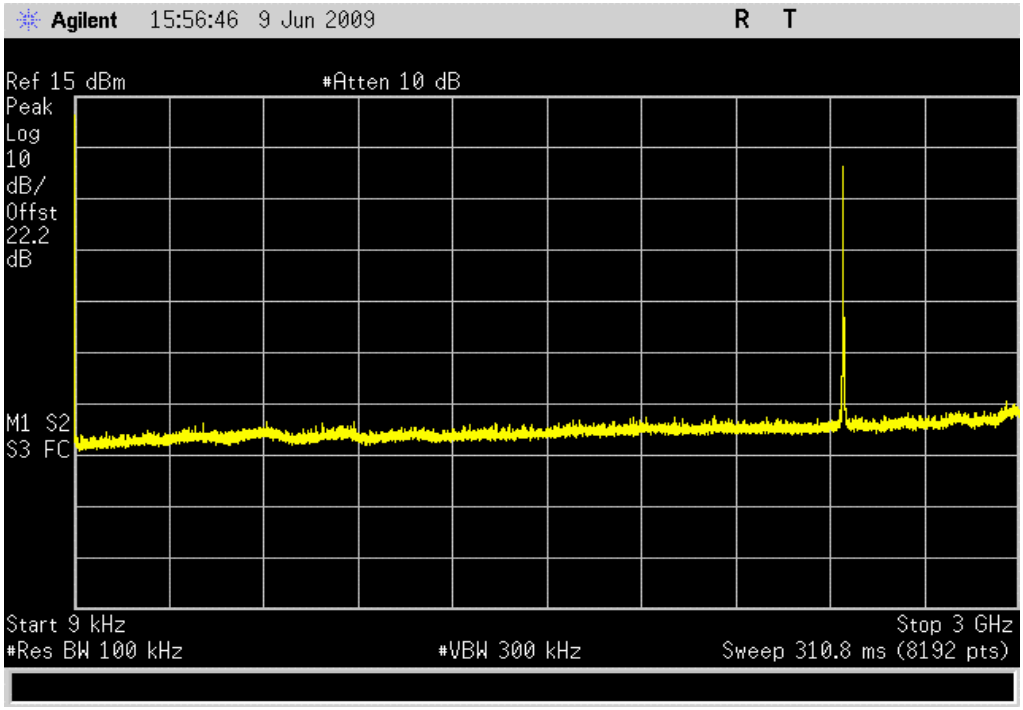
pi/4-DQPSK, 2DH5, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



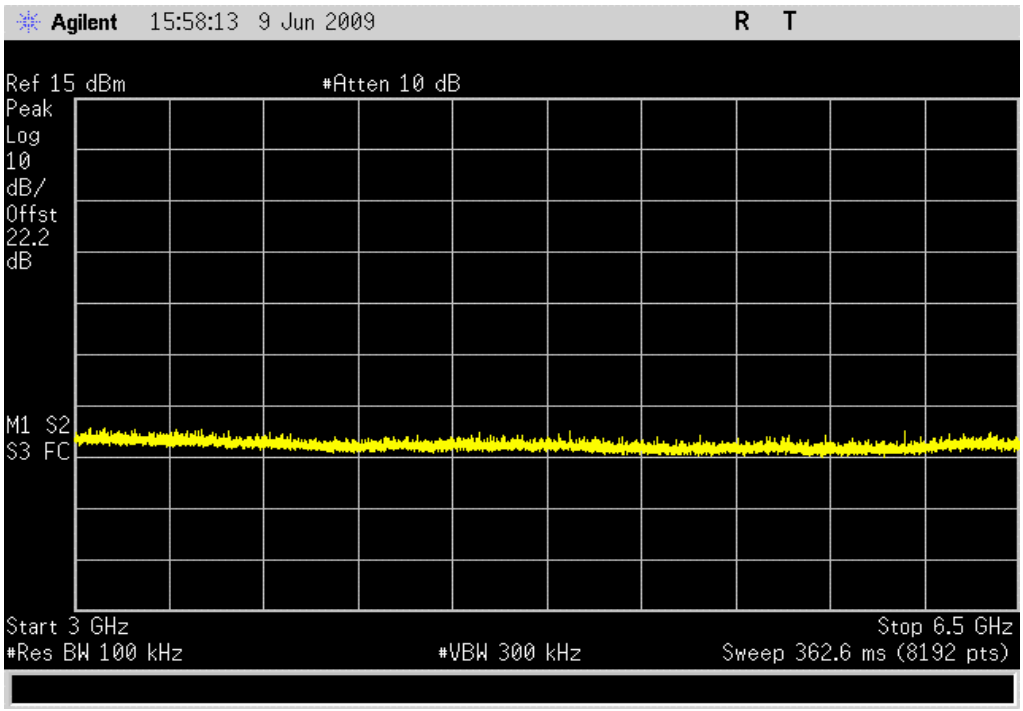
pi/4-DQPSK, 2DH5, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



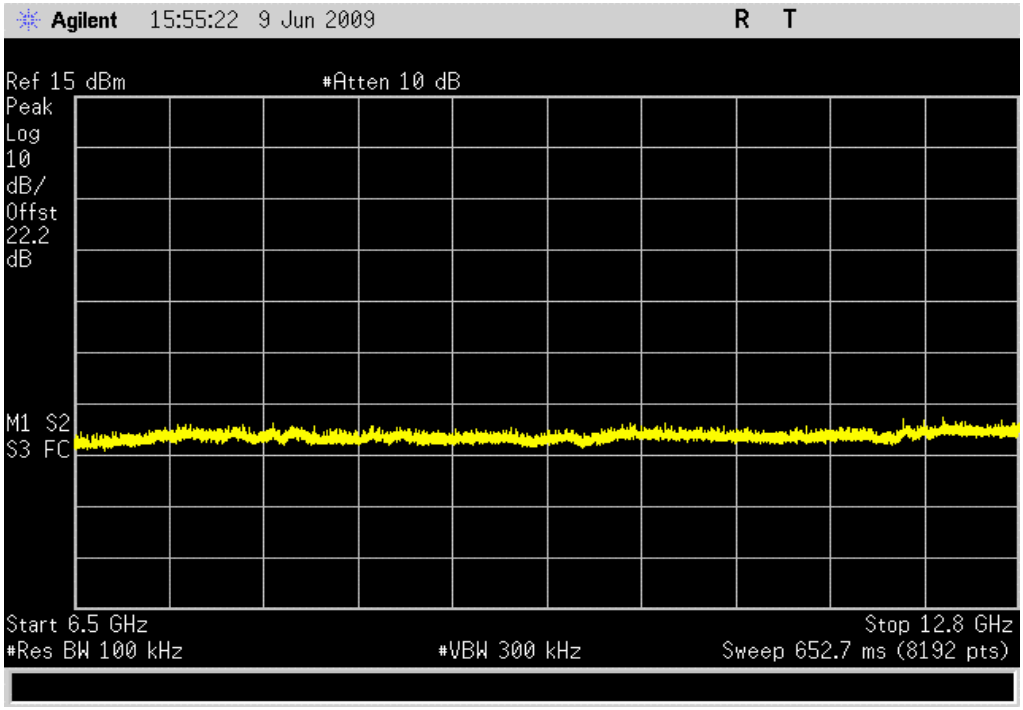
pi/4-DQPSK, 2DH5, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



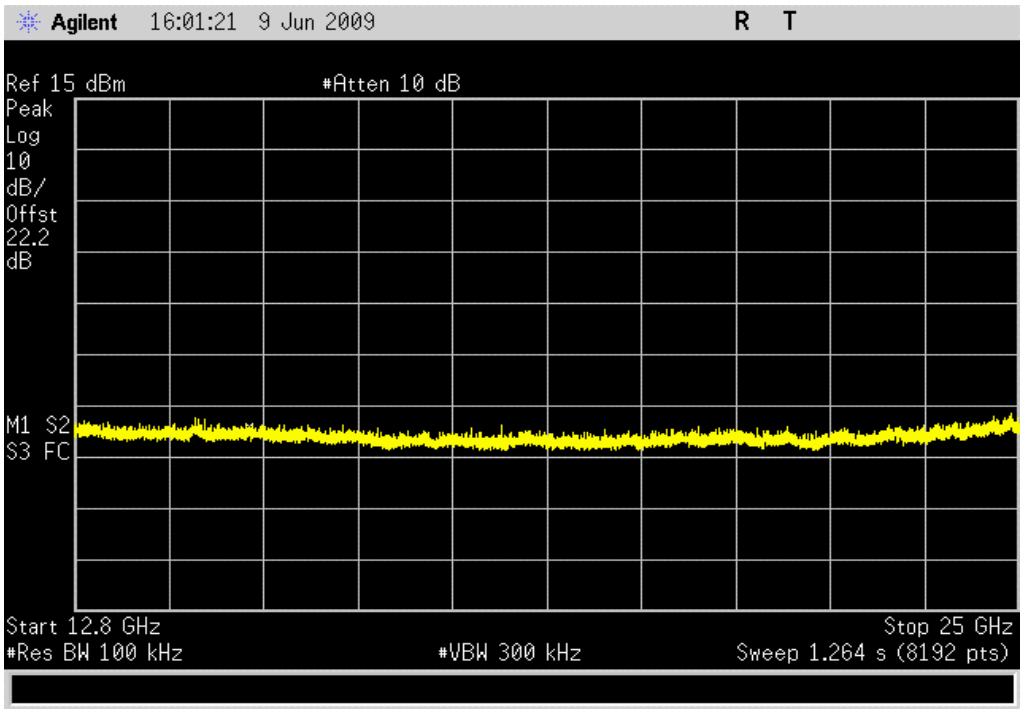
pi/4-DQPSK, 2DH5, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



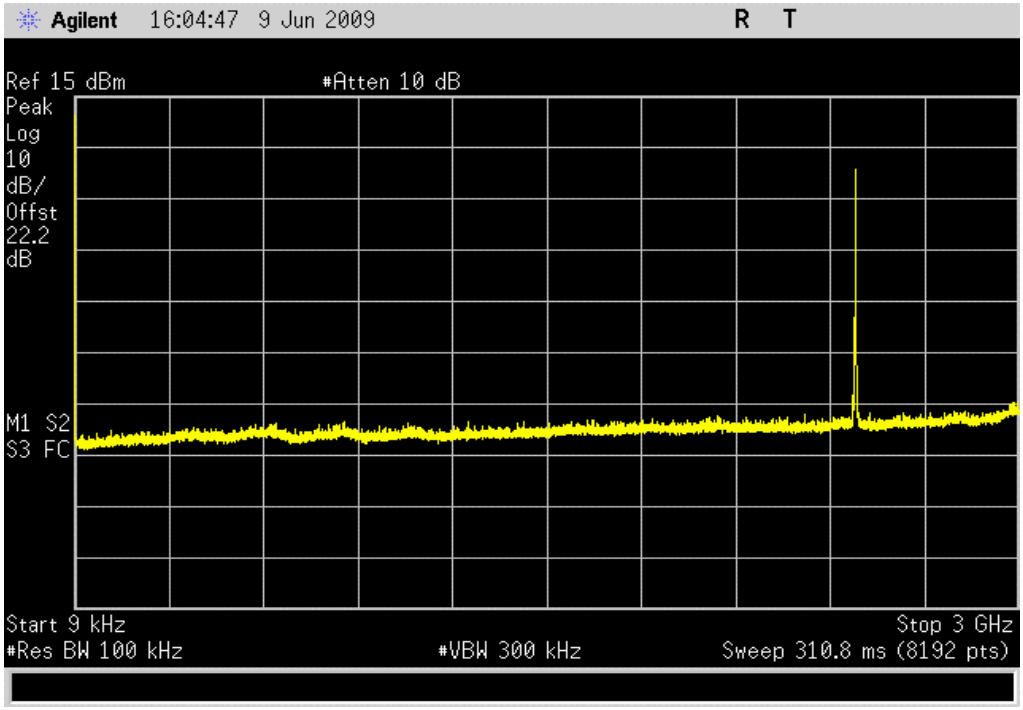
pi/4-DQPSK, 2DH5, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



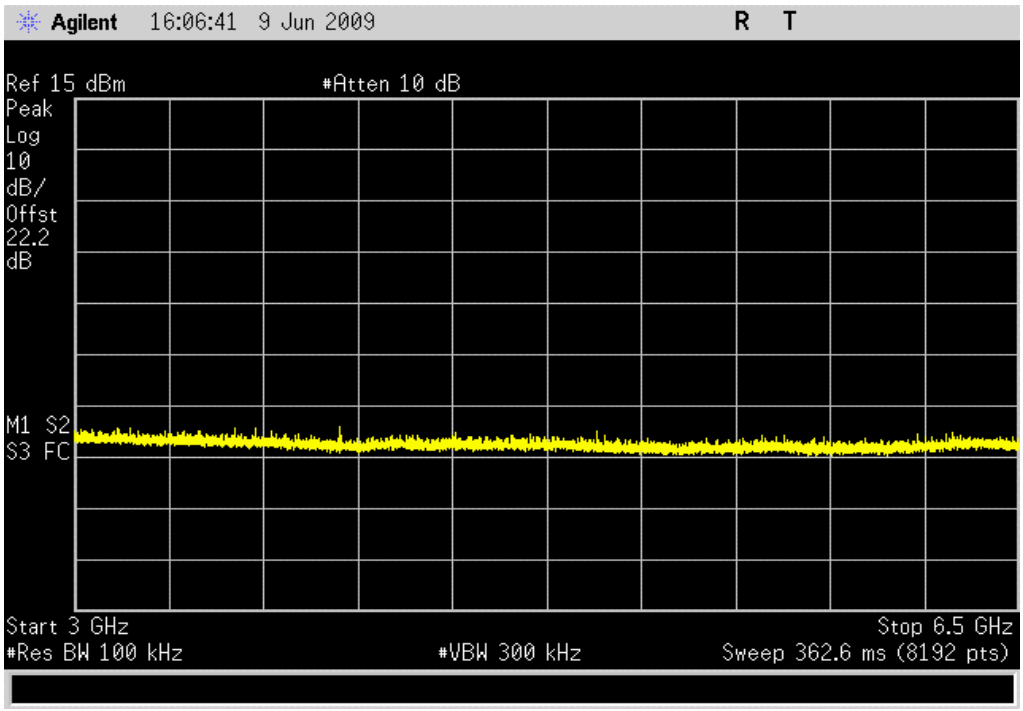
pi/4-DQPSK, 2DH5, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



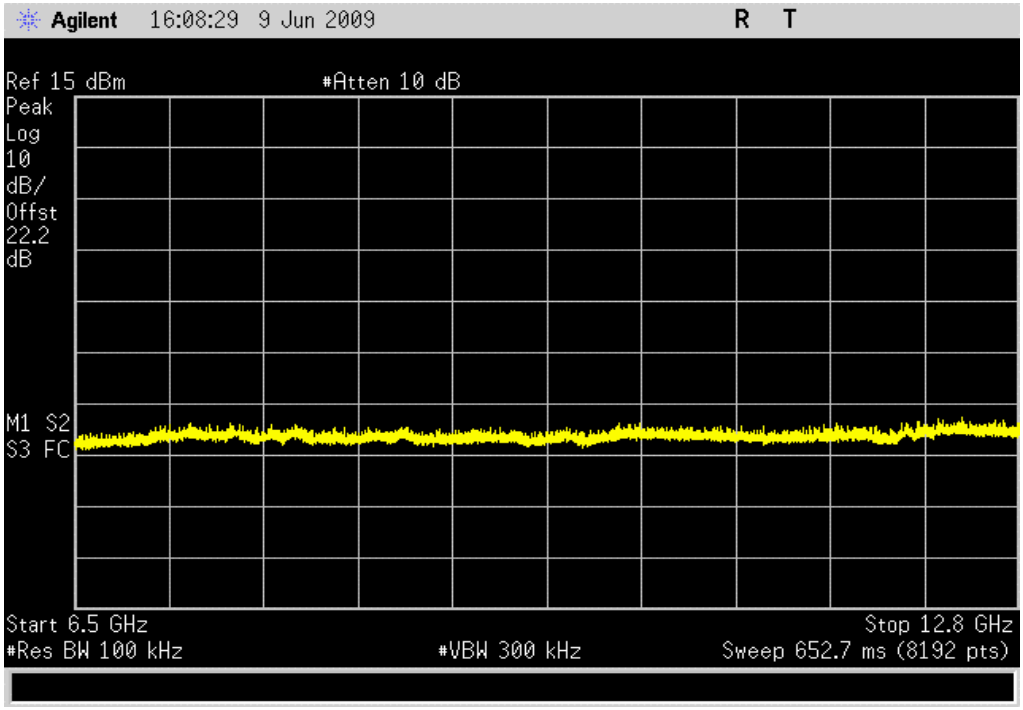
pi/4-DQPSK, 2DH5, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



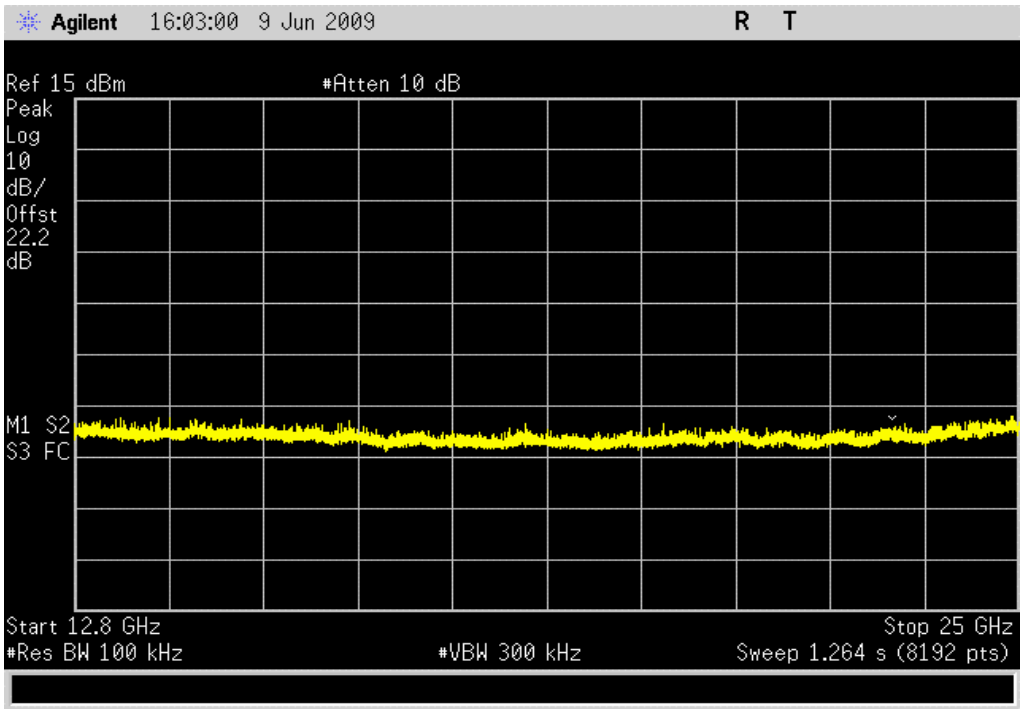
pi/4-DQPSK, 2DH5, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



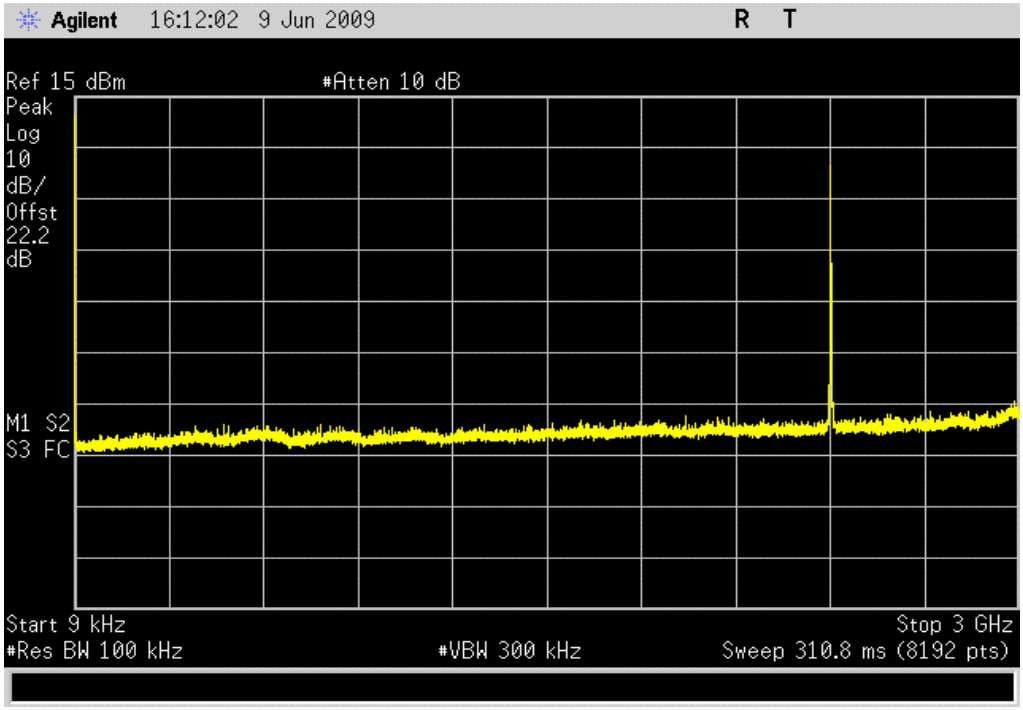
pi/4-DQPSK, 2DH5, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



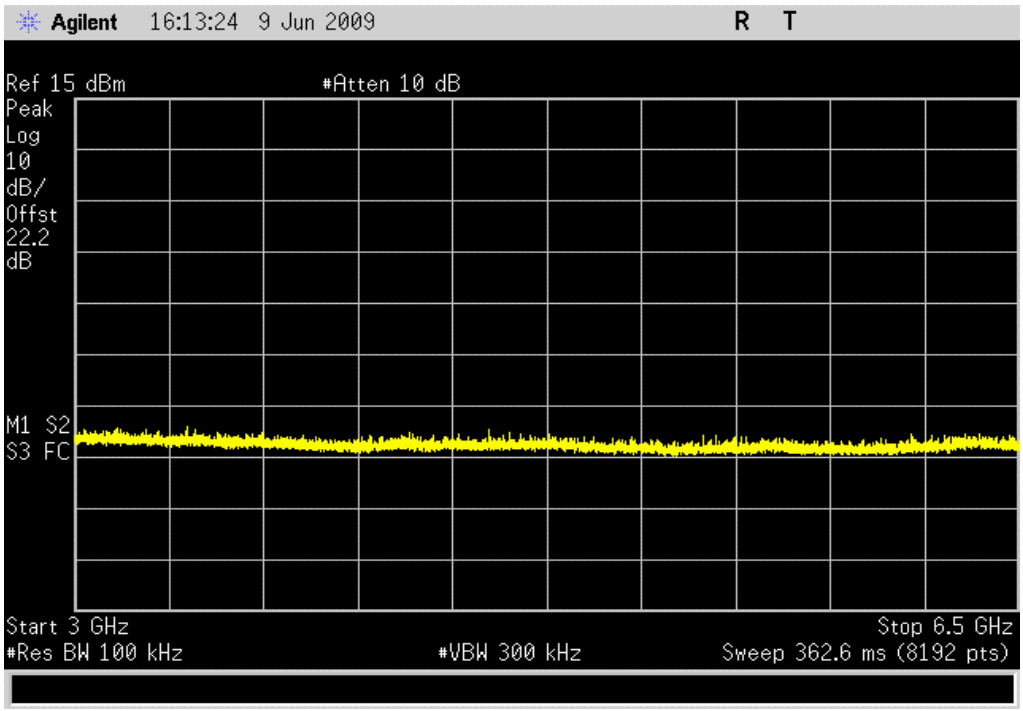
pi/4-DQPSK, 2DH5, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



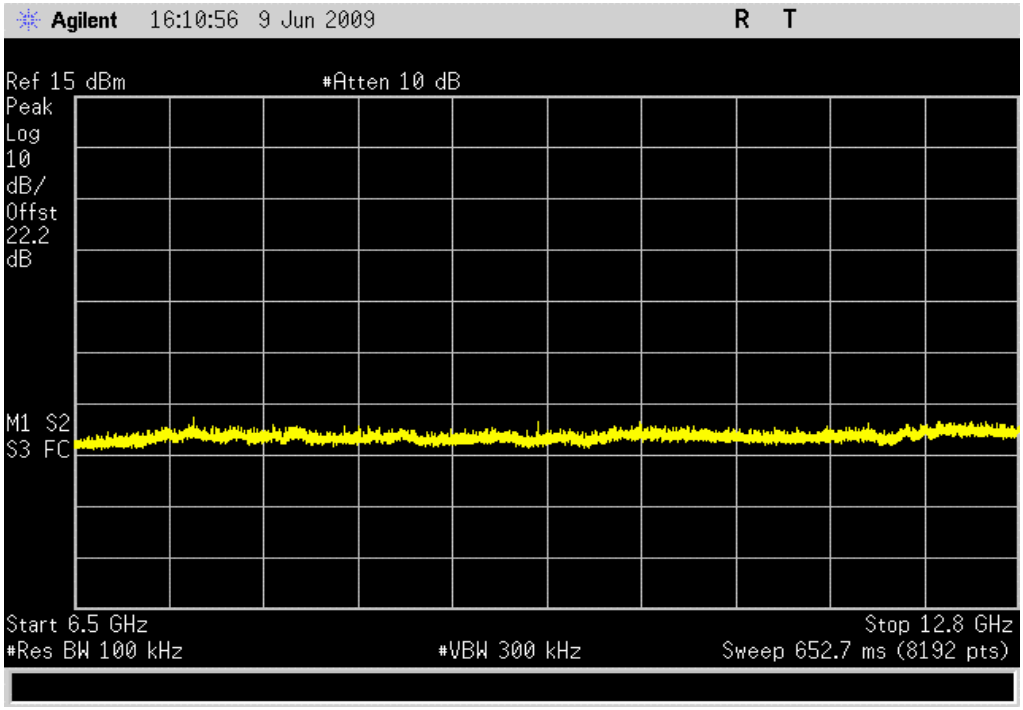
8DPSK, 3DH5, Low Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



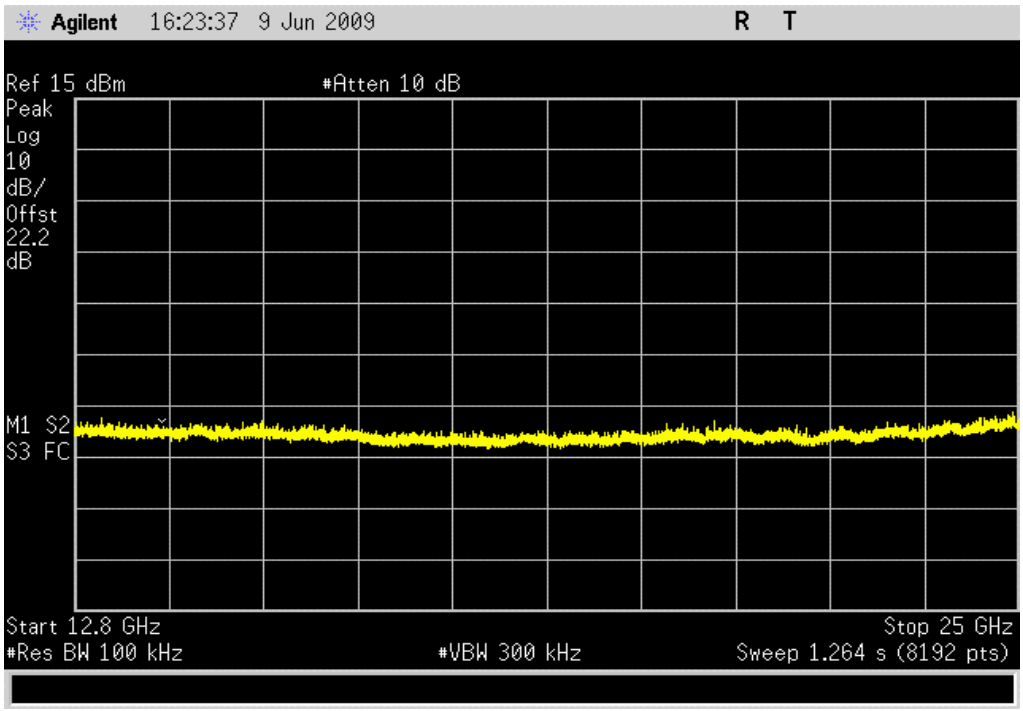
8DPSK, 3DH5, Low Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



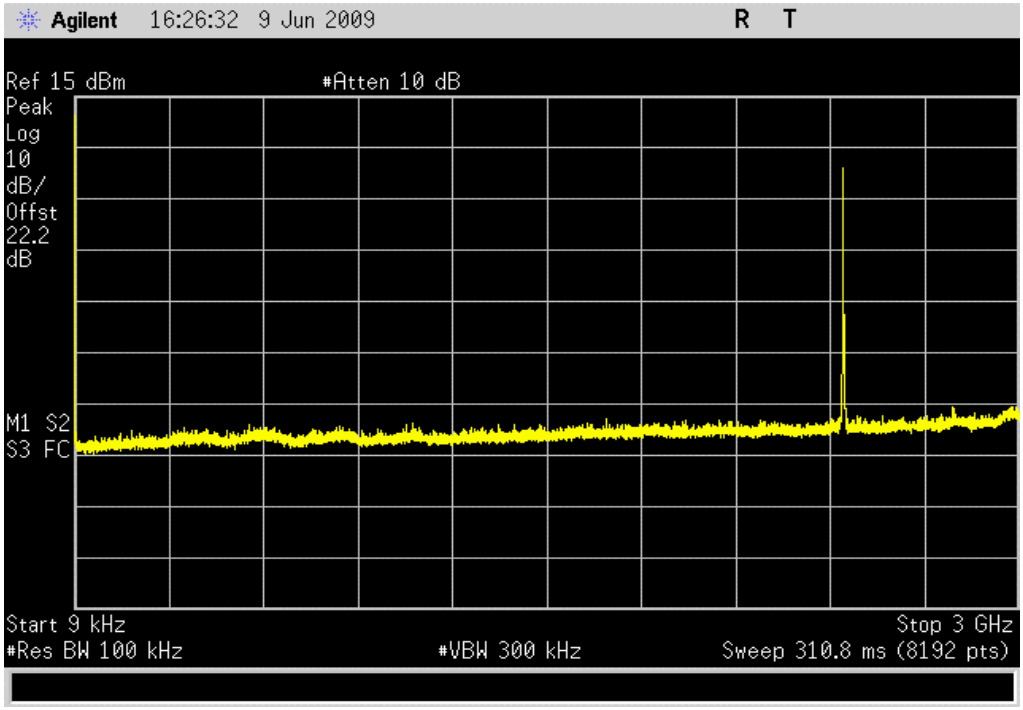
8DPSK, 3DH5, Low Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



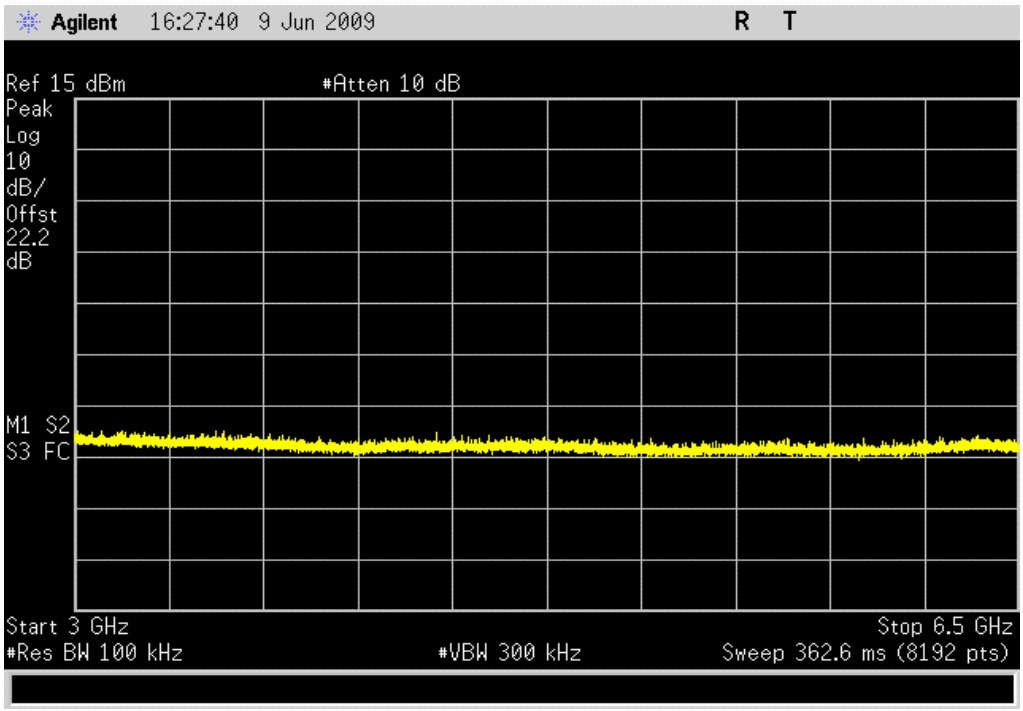
8DPSK, 3DH5, Low Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



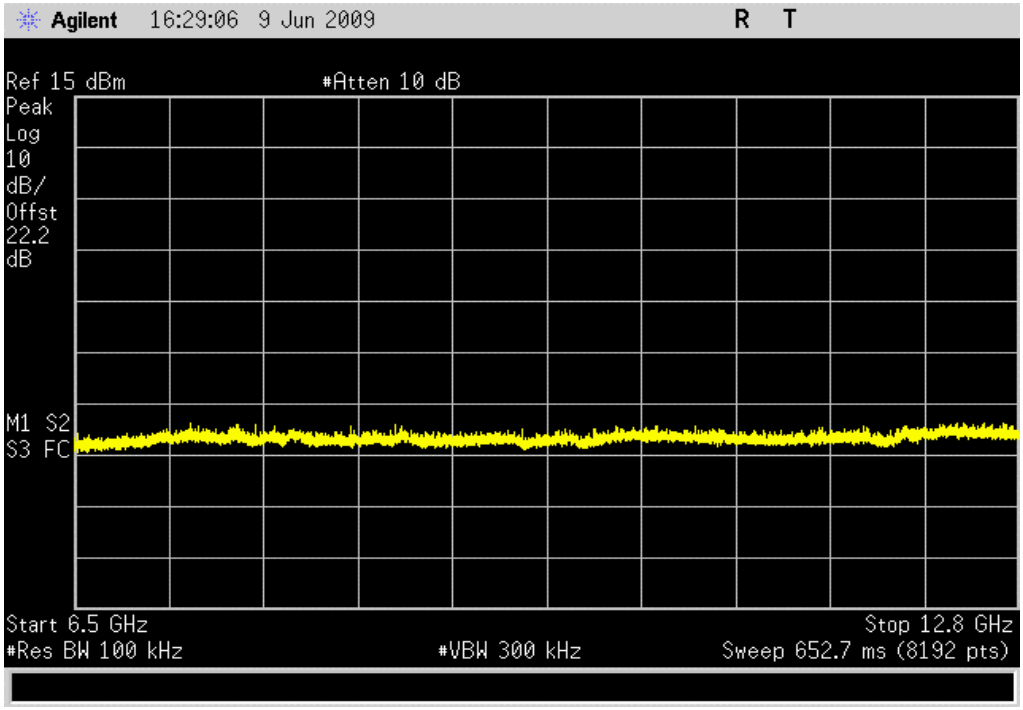
8DPSK, 3DH5, Mid Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



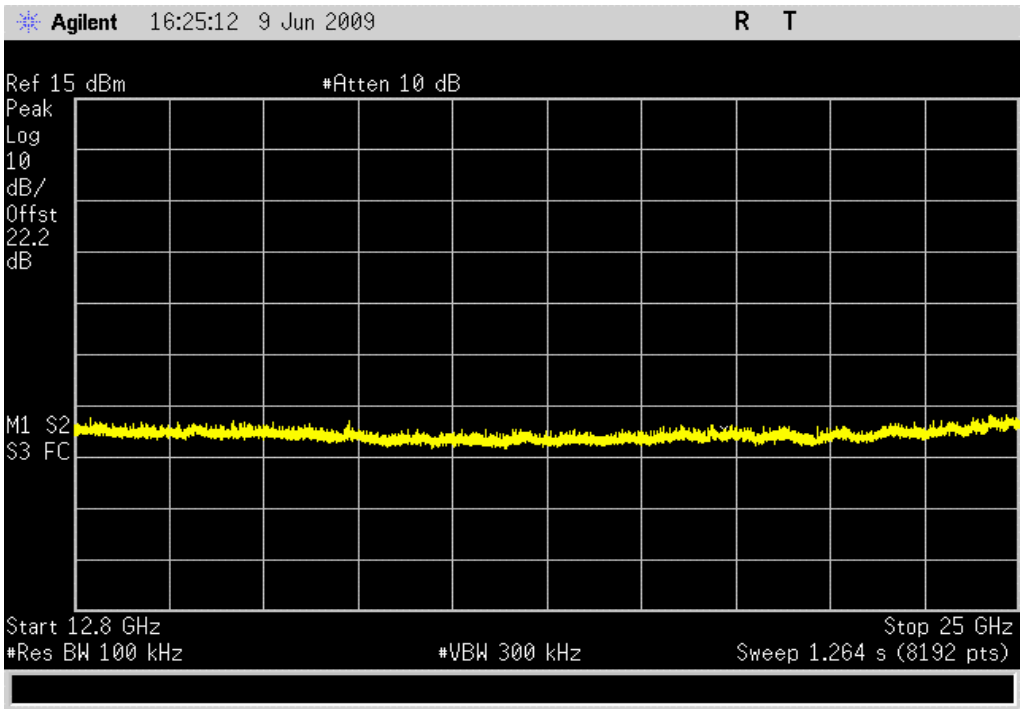
8DPSK, 3DH5, Mid Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



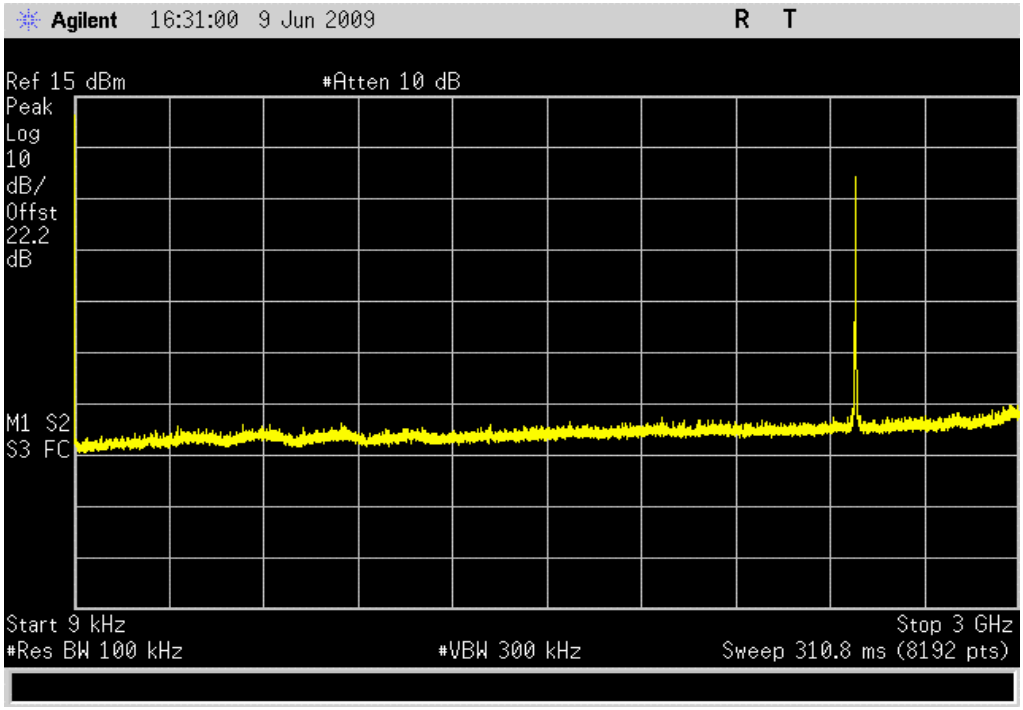
8DPSK, 3DH5, Mid Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



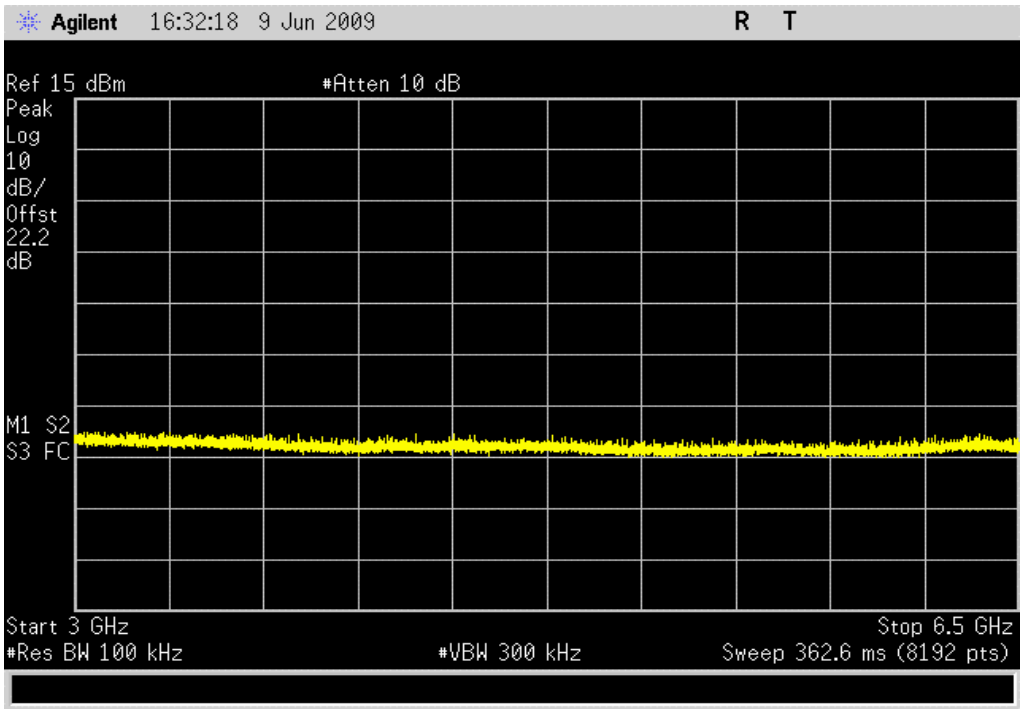
8DPSK, 3DH5, Mid Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



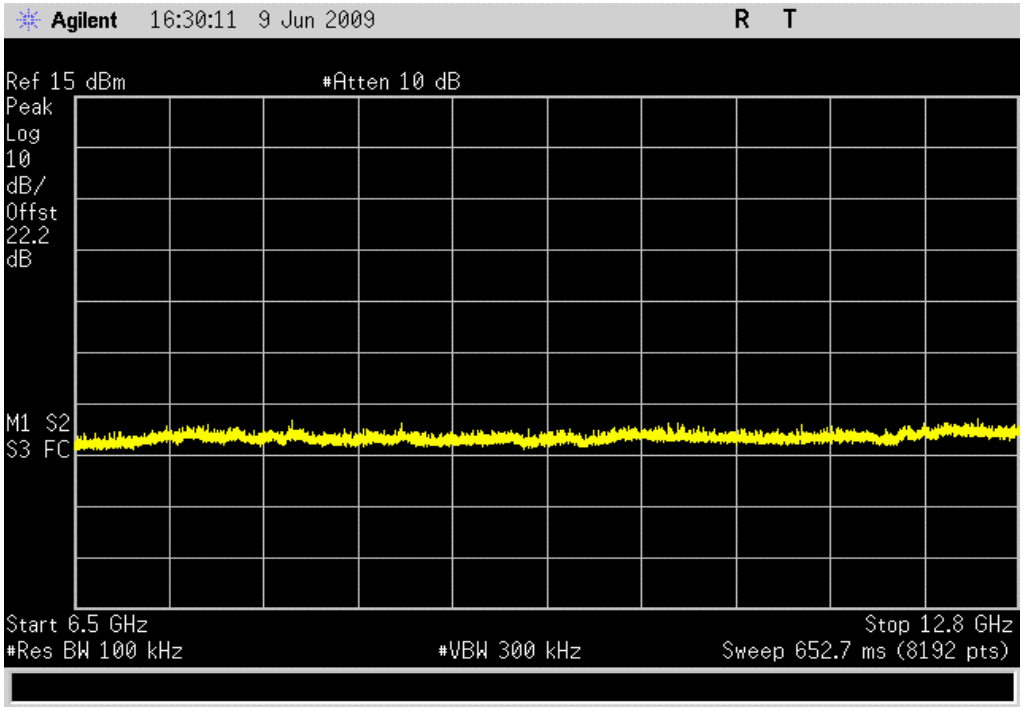
8DPSK, 3DH5, High Channel, 0 - 3 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



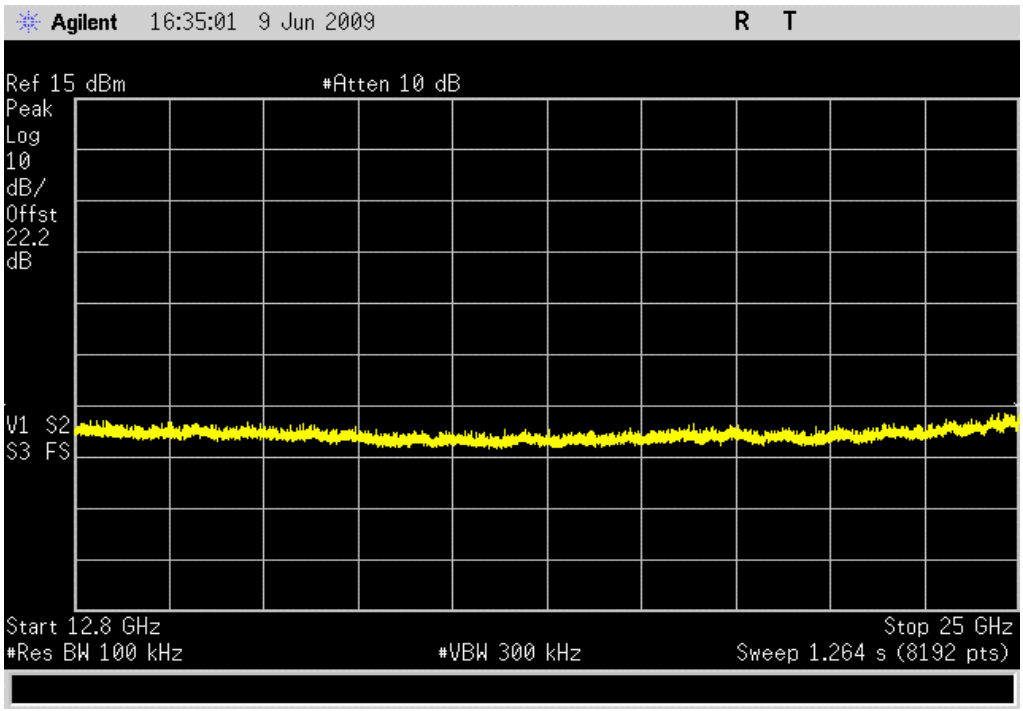
8DPSK, 3DH5, High Channel, 3 - 6.5 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



8DPSK, 3DH5, High Channel, 6.5 - 12.8 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



8DPSK, 3DH5, High Channel, 12.8 - 25 GHz					
Result:	Pass	**Value:**	< -40 dBc	**Limit:**	≤ -20 dBc



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	E4407B	AAU	12/12/2008	13
Attenuator 20 dB, SMA M/F 26GHz	S.M. Electronics	SA26B-20	AUY	6/27/2008	13
Power Meter	Gigatronics	8651A	SPM	12/10/2008	13
Power Sensor	Gigatronics	80701A	SPL	12/10/2008	13
Signal Generator	Hewlett-Packard	8648D	TGC	12/9/2008	13

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4-2. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The peak 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. Per the procedure outlined in FCC KDB 558074, March 23, 2005, the spectrum analyzer was used as follows:

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

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

NORTHWEST EMC

POWER SPECTRAL DENSITY

XMit 2008.12.29

EUT:	Galileo modular radio (TI)			Work Order:	INMC0519
Serial Number:	7			Date:	06/04/09
Customer:	Intermec Technologies Corporation			Temperature:	23.00°C
Attendees:	None			Humidity:	45%
Project:	None			Barometric Pres.:	29.76 in
Tested by:	Rod Peloquin	Power:	120VAC/60Hz	Job Site:	EV06

TEST SPECIFICATIONS	Test Method
FCC 15.247 (DTS):2009	ANSI C63.4:2003 KDB No. 558074

COMMENTS

None

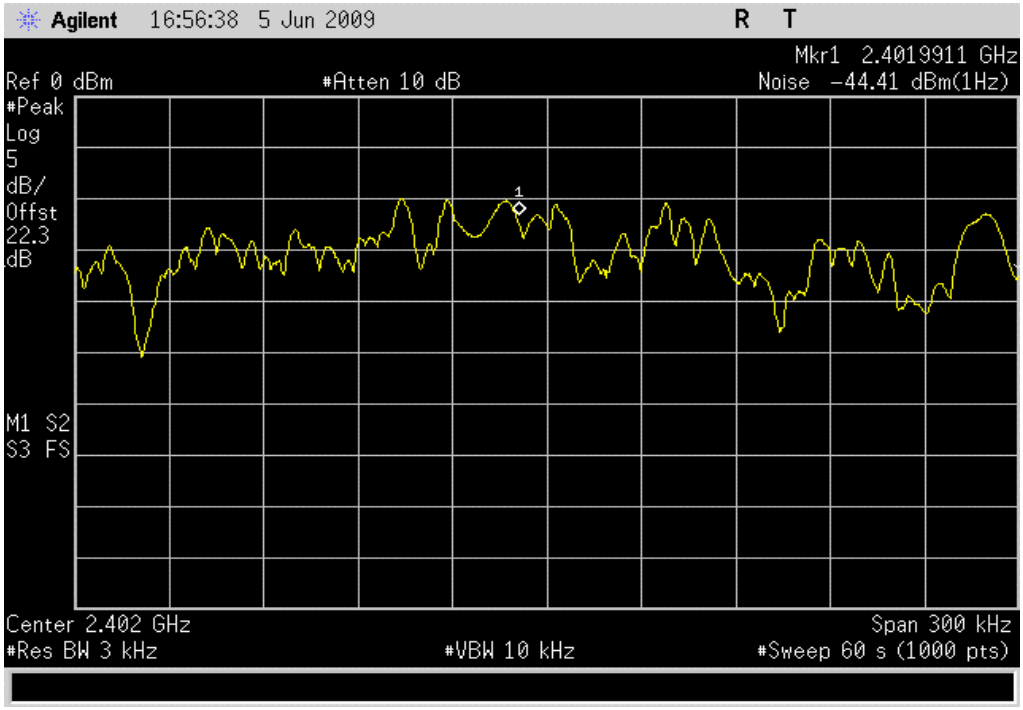
DEVIATIONS FROM TEST STANDARD

No Deviations

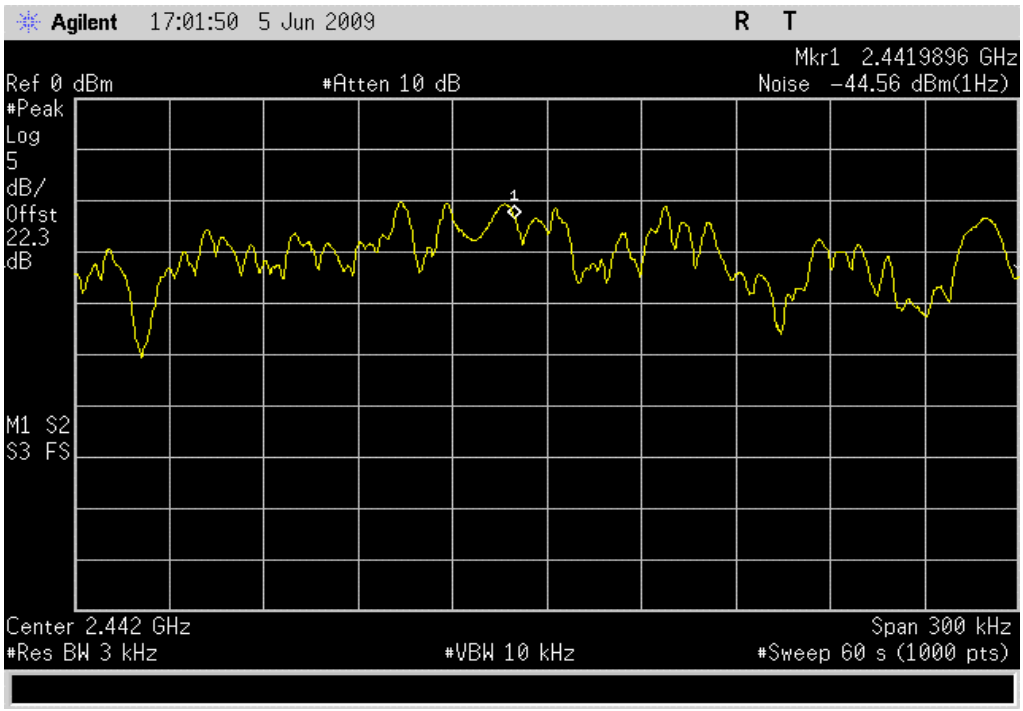
Configuration #	1	Signature

		Value	Limit	Results
DH5, GFSK				
	Low Channel, 2402 MHz	-9.6 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel, 2442 MHz	-9.8 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel, 2480 MHz	-10.0 dBm / 3 kHz	8 dBm / 3 kHz	Pass
2-DH5, Pi/4-DQPSK				
	Low Channel, 2402 MHz	-9.9 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel, 2442 MHz	-10.0 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel, 2480 MHz	-10.5 dBm / 3 kHz	8 dBm / 3 kHz	Pass
3-DH5, 8-DPSK				
	Low Channel, 2402 MHz	-9.8 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	Mid Channel, 2442 MHz	-10.0 dBm / 3 kHz	8 dBm / 3 kHz	Pass
	High Channel, 2480 MHz	-10.6 dBm / 3 kHz	8 dBm / 3 kHz	Pass

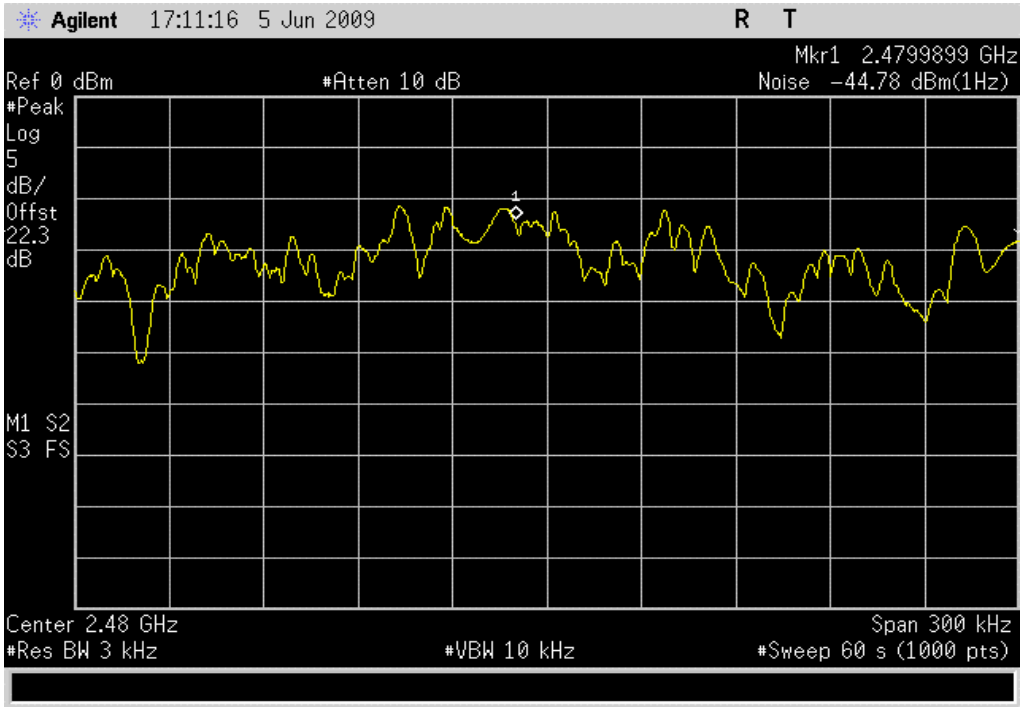
DH5, GFSK, Low Channel, 2402 MHz					
Result:	Pass	**Value:**	-9.6 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



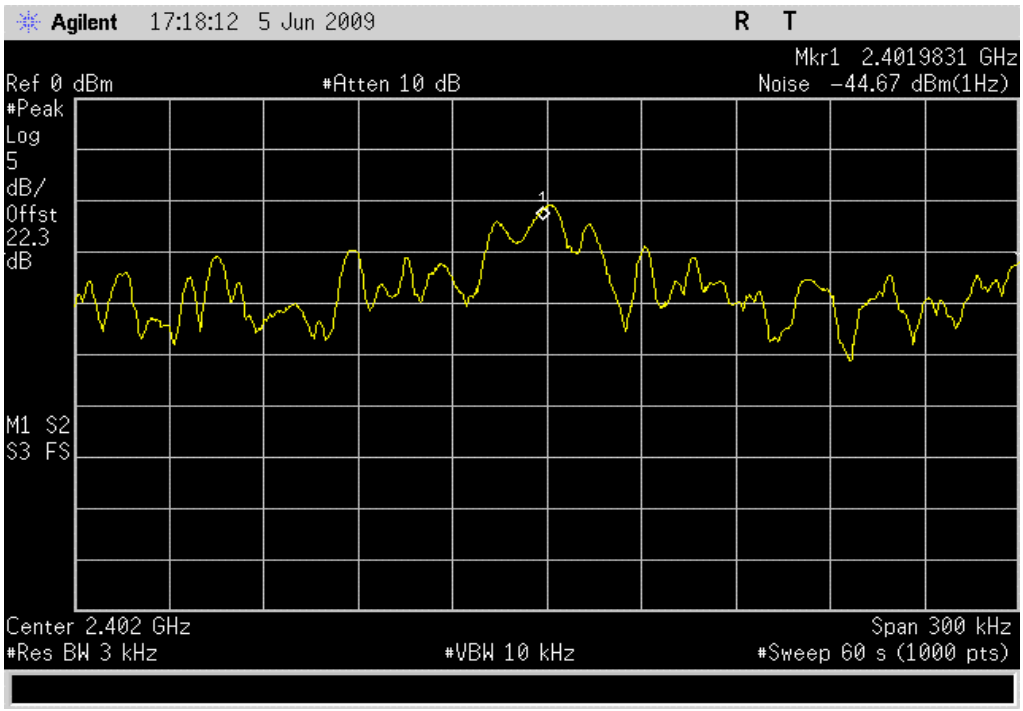
DH5, GFSK, Mid Channel, 2442 MHz					
Result:	Pass	**Value:**	-9.8 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



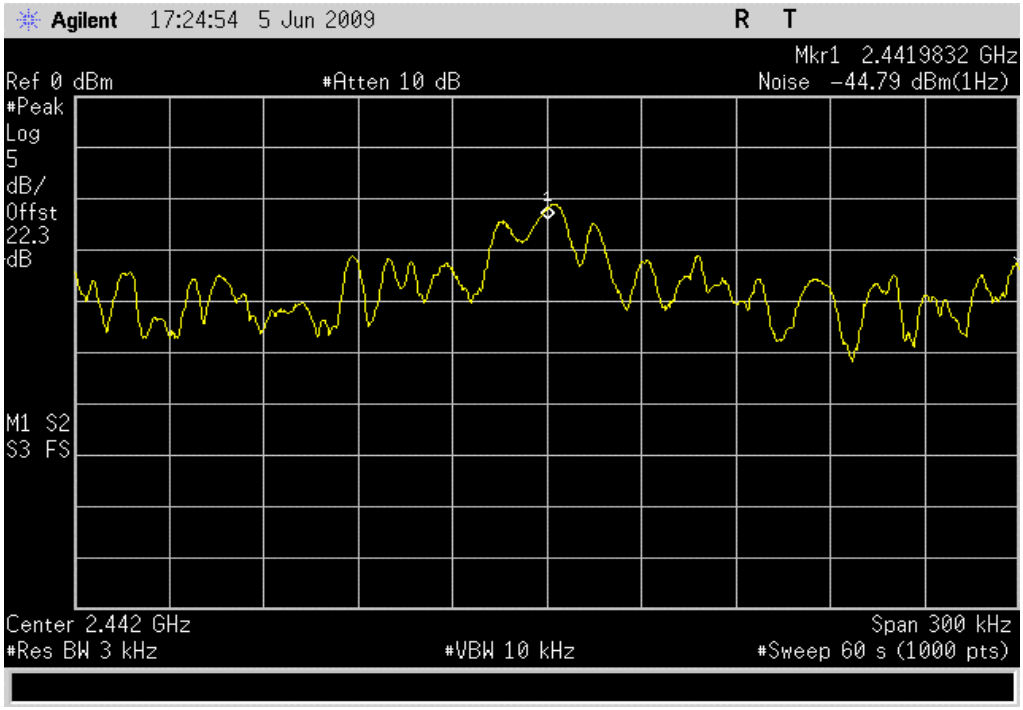
DH5, GFSK, High Channel, 2480 MHz					
Result:	Pass	**Value:**	-10.0 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



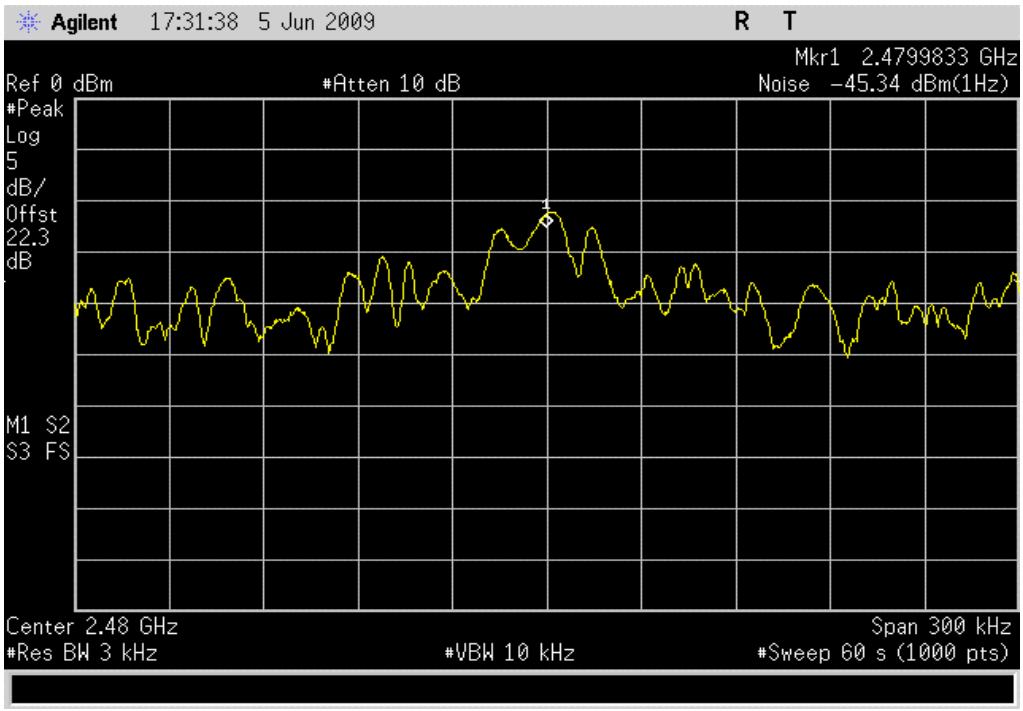
2-DH5, Pi/4-DQPSK, Low Channel, 2402 MHz					
Result:	Pass	**Value:**	-9.9 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



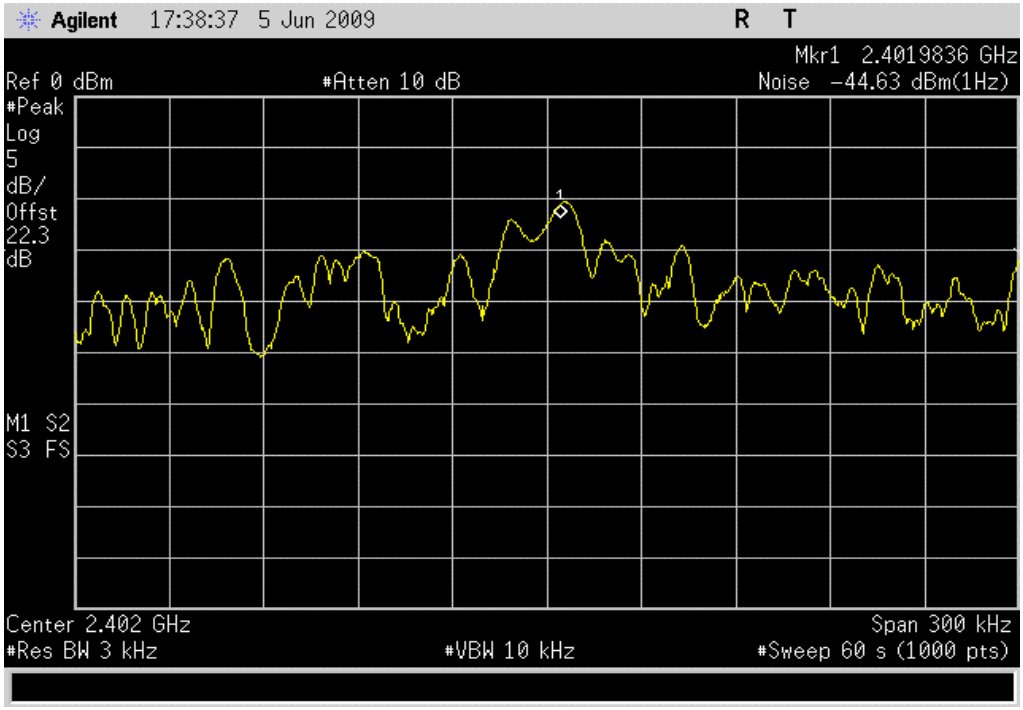
2-DH5, Pi/4-DQPSK, Mid Channel, 2442 MHz					
Result:	Pass	**Value:**	-10.0 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



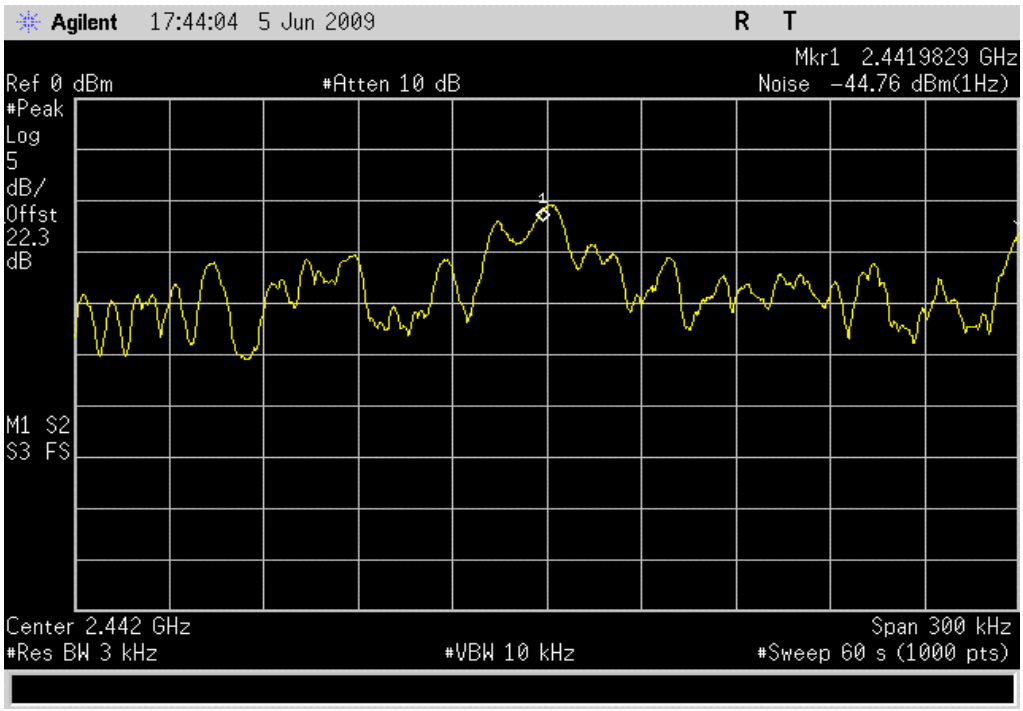
2-DH5, Pi/4-DQPSK, High Channel, 2480 MHz					
Result:	Pass	**Value:**	-10.5 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



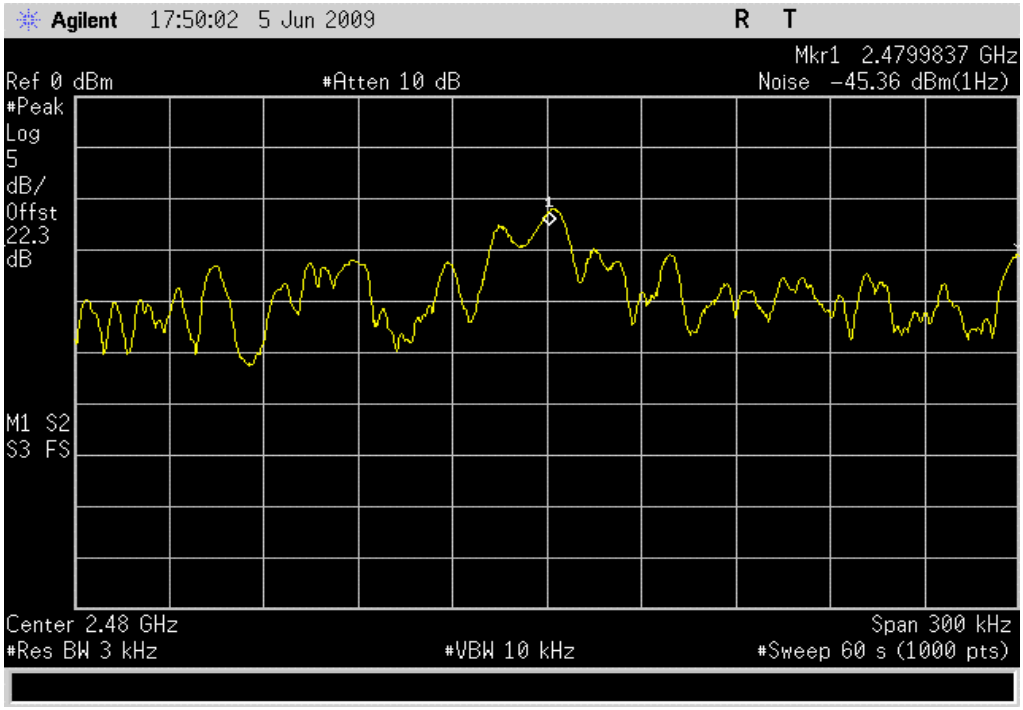
3-DH5, 8-DPSK, Low Channel, 2402 MHz					
Result:	Pass	**Value:**	-9.8 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



3-DH5, 8-DPSK, Mid Channel, 2442 MHz					
Result:	Pass	**Value:**	-10.0 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



3-DH5, 8-DPSK, High Channel, 2480 MHz					
Result:	Pass	**Value:**	-10.6 dBm / 3 kHz	**Limit:**	8 dBm / 3 kHz



POWER SPECTRAL DENSITY