FCC 47 CFR PART 15 SUBPART C & INDUSTRY CANADA RSS-210

TEST REPORT

For

Notebook Computer

Model: MH330

Trade Name: FUJITSU

Issued to

Fujitsu Limited
1-1, Kamikodanaka 4-chome, Nakahara-ku,
Kawasaki, 211-8588, Japan

Issued by

Compliance Certification Services Inc.
No. 11, Wu-Gong 6th Rd., Wugu Industrial Park,
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Testing Laboratory
1309

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1. TEST RESULT CERTIFICATION

Applicant: Fujitsu Limited
1-1, Kamikodanaka 4-chome, Nakahara-ku,
Kawasaki, 211-8588, Japan

Manufacturer: Fujitsu Limited
4-1-1 Kamikodanaka, Nakahara-ku Kawasaki-shi,
Kanagawa, 211-8588 JAPAN

Equipment Under Test: Notebook Computer

Trade Name: FUJITSU

Model: MH330

Date of Test: March 17 ~ 25, 2010

APPLICABLE STANDARDS	
STANDARD	**TEST RESULT**
FCC 47 CFR Part 15 Subpart C & INDUSTRY CANADA RSS-210	No non-compliance noted

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in **ANSI C63.4: 2003** and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Rex Lai
Section Manager
Compliance Certification Services Inc.

Reviewed by:

Gina Lo
Section Manager
Compliance Certification Services Inc.

2. EUT DESCRIPTION

Product	Notebook Computer
Trade Name	FUJITSU
Model Number	MH330
Module Trade Name	Broadcom
Module Model Number	BCM92070MD_REF
Model Discrepancy	N/A
Power Supply	1. Power Adapter: DELTA / ADP-30JH B I/P: AC 100-240V, 50-60Hz, 1.2A O/P: 19V, 1.58A 2. VDC from Battery a) Rating: 10.8V, 2200mAh/23Wh b) Rating: 11.1V, 5200mAh/57Wh
Frequency Range	2402 ~ 2480 MHz
Transmit Power	0.35 dBm
Modulation Technique	GFSK for 1Mbps; π/4-DQPSK for 2Mbps; 8DPSK for 3Mbps
Number of Channels	79 Channels
Antenna Specification	Gain: 1.86 dBi
Antenna Designation	PCB Antenna

Remark:

1. *The sample selected for test was production product and was provided by manufacturer.*

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4: 2003 and FCC CFR 47 FCC CFR 47 Part 15.207, 15.209 and 15.247, RSS-GEN Issue 2, and RSS-210 Issue 7.

3.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

3.2 EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

The tests documented in this report were performed in accordance with IC RSS-210, IC RSS-Gen, IC RSS-102, and ANSI C63.4: 2003.

3.3 GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4: 2003.

3.4 FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	([2])
13.36 - 13.41	322 - 335.4		

[1] Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

[2] Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

3.5 DESCRIPTION OF TEST MODES

The EUT (model: MH330) had been tested under operating condition.

Test program used to control the EUT for staying in continuous transmitting mode was programmed.

Software used to control the EUT for staying in continuous transmitting mode was programmed.

After verification, all tests were carried out with the worst case test modes as shown below except radiated spurious emission below 1GHz and power line conducted emissions below 30MHz, which worst case was in normal link mode only.

During the preliminary test, GFSK, π/4-QPSK & 8DPSK with DH1 were pre-tested and found that 8DPSK emits the highest output power. Then the tests were carried on with DH1 compare to DH3 & DH5 and found that 8DPSK with DH5 emit the highest output power, and therefore had been tested under operating condition.

Following channels were selected for the radiated emission testing only as listed below:

Tested Channel	Modulation Type	Packet Type	Date Rate
Low, Mid, High	GFSK	DH 5	1
Low, Mid, High	8DPSK	DH 5	3

4. INSTRUMENT CALIBRATION

4.1 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

4.2 MEASUREMENT EQUIPMENT USED

Equipment Used for Emissions Measurement

Remark: *Each piece of equipment is scheduled for calibration once a year.*

Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	MY43360131	03/05/2011
Power Meter	Agilent	E4416A	GB41291611	04/05/2010
Power Sensor	Agilent	E9327A	US40441097	06/18/2010

3M Semi Anechoic Chamber				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
Spectrum Analyzer	Agilent	E4446A	US42510252	09/09/2010
Test Receiver	Rohde&Schwarz	ESCI	100064	11/28/2010
Switch Controller	TRC	Switch Controller	SC94050010	05/02/2010
4 Port Switch	TRC	4 Port Switch	SC94050020	05/02/2010
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Horn-Antenna	TRC	HA-0502	06	06/03/2010
Horn-Antenna	TRC	HA-0801	04	06/18/2010
Horn-Antenna	TRC	HA-1201A	01	08/10/2010
Horn-Antenna	TRC	HA-1301A	01	08/10/2010
Bilog- Antenna	Sunol Sciences	JB3	A030205	03/26/2011
Loop Antenna	EMCO	6502	8905/2356	05/28/2010
Turn Table	Max-Full	MFT-120S	T120S940302	N.C.R.
Antenna Tower	Max-Full	MFA-430	A440940302	N.C.R.
Controller	Max-Full	MF-CM886	CC-C-1F-13	N.C.R.
Site NSA	CCS	N/A	FCC MRA: TW1039 IC: 2324G-1/-2	10/17/2010 11/04/2010
Test S/W	LABVIEW (V 6.1)			

Powerline Conducted Emissions Test Site				
Name of Equipment	**Manufacturer**	**Model**	**Serial Number**	**Calibration Due**
EMI Test Receiver 9kHz-30MHz	Rohde & Schwarz	ESHS30	828144/003	11/24/2010
Two-Line V-Network 9kHz-30MHz	Schaffner	NNB41	03/10013	06/10/2010
LISN 10kHz-100MHz	EMCO	3825/2	9106-1809	04/08/2010
Test S/W	LABVIEW (V 6.1)			

4.3 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
Powerline Conducted Emission	+/-1.1559
3M Semi Anechoic Chamber / 30M~200M	+/-3.9944
3M Semi Anechoic Chamber / 200M~1000M	+/-3.9285
3M Semi Anechoic Chamber / 1G~8G	+/-2.4734
3M Semi Anechoic Chamber / 8G~18G	+/-2.4878
3M Semi Anechoic Chamber / 18G~26G	+/-2.6215
3M Semi Anechoic Chamber / 26G~40G	+/-2.8603

***Remark**: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.*

5. FACILITIES AND ACCREDITATIONS

5.1 FACILITIES

All measurement facilities used to collect the measurement data are located at

☐ No.199, Chunghsen Road, Hsintien City, Taipei Hsien, Taiwan, R.O.C.
Tel: 886-2-2217-0894 / Fax: 886-2-2217-1029

☒ No.11, Wugong 6th Rd., Wugu Industrial Park, Taipei Hsien 248, Taiwan
Tel: 886-2-2299-9720 / Fax: 886-2-2298-4045

☐ No.81-1, Lane 210, Bade 2nd Rd., Luchu Hsiang, Taoyuan Hsien 338, Taiwan
Tel: 886-3-324-0332 / Fax: 886-3-324-5235

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

5.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, “Radio Interference Measuring Apparatus and Measurement Methods.”

5.3 TABLE OF ACCREDITATIONS AND LISTINGS

Country	Agency	Scope of Accreditation	Logo
USA	FCC	3M Semi Anechoic Chamber (FCC MRA: TW1039) to perform FCC Part 15 measurements	FCC MRA: TW1039
Taiwan	TAF	LP0002, RTTE01, FCC Method-47 CFR Part 15 Subpart C, D, E, RSS-210, RSS-310 IDA TS SRD, AS/NZS 4268, AS/NZS 4771, TS 12.1 & 12,2, ETSI EN 300 440-1, ETSI EN 300 440-2, ETSI EN 300 328, ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 301 893, ETSI EN 301 489-1/3/7/17 FCC OET Bulletin 65 + Supplement C, EN 50360, EN 50361, EN 50371, RSS 102, EN 50383, EN 50385, EN 50392, IEC 62209, CNS 14958-1, CNS 14959 FCC Method –47 CFR Part 15 Subpart B IEC / EN 61000-3-2, IEC / EN 61000-3-3, IEC / EN 61000-4-2/3/4/5/6/8/11	TAF Testing Laboratory 1309
Canada	Industry Canada	3M Semi Anechoic Chamber (IC 2324G-1 / IC 2324G-2) to perform	Canada IC 2324G-1 IC 2324G-2

** No part of this report may be used to claim or imply product endorsement by A2LA or any agency of the US Government.*

6. SETUP OF EQUIPMENT UNDER TEST

6.1 SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

6.2 SUPPORT EQUIPMENT

No.	Device Type	Brand	Model	Series No.	FCC ID	Data Cable	Power Cord
1.	LCD Monitor	Samsung	710V	GS17H9NXA05864E	FCC DoC	VGA Cable: Shielded, 1.8m with two cores	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
2.	Multimedia Earphone	Ergotech	ET-E220	N/A	FCC DoC	Unshielded, 1.8m*2	N/A
3.	320GB 2.5" HDD	Seagate	9ZA2MG-500	2GE3NKMY	FCC DoC	Shielded, 1.8m	N/A
4.	320GB 2.5" HDD	Seagate	9ZA2MG-500	2GE3NHH0	FCC DoC	Shielded, 1.8m	N/A
5.	USB Mouse	DELL	MO56UO	408031121	FCC DoC	Shielded, 1.8m	N/A
6.	Notebook PC (Remote)	HP	dv6-1332TX	CNF9491GM9	PD9112BNHU	LAN Cable: Unshielded, 10m	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core
7.	Wireless Pre-N Router (MIMO) (Remote)	BELKIN	F5D8230-4	N/A	SA3-AGN0901AP0100	N/A	AC I/P: Unshielded, 1.8m DC O/P: Unshielded, 1.8m with a core

Remark:

1. *All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.*
2. *Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.*

7. APPLICABLE RULES

RSS-210 §2 General Certification Requirements and Specifications

RSS-210 §2.1 Frequency Stability

When the carrier frequency stability is not specified, it need not be tested, provided that the carrier frequency is chosen such that the fundamental modulation products (meaning the nominal bandwidth) lie totally within the bands listed in Tables 2, 3, 4 and 5 and do not fall into any restricted band listed in Table 1. Due account shall be taken of carrier frequency drift as a result of aging, temperature, humidity, and supply voltage variations when using frequencies near the band edges.

RSS-210 §2.2 Restricted Bands and Unwanted Emission Frequencies

Restricted bands, identified in Table 1, are designated primarily for safety-of-life services (distress calling and certain aeronautical bands), certain satellite downlinks, radio astronomy, and some government uses. Except where otherwise indicated, the following restrictions apply:
(a) Fundamental components of modulation of LPDs shall not fall within the restricted bands of Table 1.
(b) Unwanted emissions falling into restricted bands of Table 1 shall meet Tables 2 and 3 limits. It should also be noted that unwanted emissions falling in non-restricted bands do not need to be suppressed to a level lower than the Table 2 and 3 limits.
(c) Unwanted emissions not falling within restricted frequency bands may also use the limits specified in the applicable annex.

RSS-210 §2.3 Licence-exempt Receivers

Category I licence-exempt receivers are required to have their spurious emissions comply with Section 7.2.3 of RSS-Gen.

RSS-210 §2.6 General Field Strength Limits

Tables 2 and 3 show the general field strength limits of unwanted emissions, where applicable, for transmitters and receivers operating in accordance with the provisions specified in this RSS. Transmitters whose wanted emissions are also within the limits shown in Tables 2 and 3 may operate in any of the frequency bands of Tables 2 and 3, other than the restricted bands of Table 1 and the TV bands, and shall be certified under RSS-210. (Note: Devices operating below 490 kHz all of whose emissions are at least 40 dB below the limit given in Table 3 are Category II devices subject to RSS-310.) Unwanted emissions of transmitters and receivers are permitted to fall into Table 1 and TV frequencies but intentional emissions are prohibited. See the note of Table 2 for further details.

RSS-210 §2.7 Tables

RSS-210 Table 1: Restricted Frequency Bands (Note)

MHz	MHz	MHz	MHz	GHz
0.090-0.110	8.37625-8.38675	--	1718.8-1722.2	9.0-9.2
--	8.41425-8.41475	156.52475-156.52525	2200-2300	9.3-9.5
2.1735-2.1905	12.29-12.293	156.7-156.9	2310-2390	10.6-12.7
3.020-3.026	12.51975-12.52025	--	--	13.25-13.4
4.125-4.128	12.57675-12.57725	--	2655-2900	14.47-14.5
4.17725-4.17775	13.36-13.41	240-285	3260-3267	15.35-16.2
4.20725-4.20775	16.42-16.423	322-335.4	3332-3339	17.7-21.4
5.677-5.683	16.69475-16.69525	399.9-410	3345.8-3358	22.01-23.12
6.215-6.218	16.80425-16.80475	608-614	3500-4400	23.6-24.0
6.26775-6.26825	25.5-25.67	960-1427	4500-5150	31.2-31.8
6.31175-6.31225	37.5-38.25	1435-1626.5	5350-5460	36.43-36.5
8.291-8.294	73-74.6; 74.8-75.2	1645.5-1646.5	7250-7750	Above 38.6
8.362-8.366	108-138	1660-1710	8025-8500	

Note: *Certain frequency bands listed in Table 2 and above 38.6 GHz are designated for low-power licence-exempt applications. These frequency bands and the requirements that apply to the devices are set out in this Standard as well as RSS-310.*

RSS-210 Table 2: General Field Strength Limits for Transmitters and Receivers at Frequencies Above 30 MHz (Note)

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Note: *Transmitting devices are not permitted in Table 1 bands or in TV bands (54-72 MHz, 76-88 MHz, 174-216 MHz, 470-608 MHz, and 614-806 MHz). Prohibition of operation in TV bands does not apply to momentary devices, or to medical telemetry devices in the band 174-216 MHz, and to perimeter protection systems in the bands 54-72 and 76-88 MHz. The perimeter protection devices are to meet Table 3 field strengths limits.*

RSS-210 Table 3: General Field Strength Limits for Transmitters at Frequencies Below 30 MHz (Transmit)

Frequency (fundamental or spurious)	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/377F (F in Hz)	300
490-1.705 kHz	24,000/F (F in kHz)	24,000/377F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Note: *The emission limits for the bands 9-90 kHz and 110-490 kHz are based on measurements employing an average detector.*

RSS-210 §Annex 8: Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands

This section applies to systems that employ frequency hopping (FH) and digital modulation technology in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. Systems in these bands may employ frequency hopping, digital modulation and or a combination (hybrid) of both techniques.

A frequency hopping system that synchronizes with another or several other systems (to avoid frequency collision among them) via off-air sensing or via connecting cables is not hopping randomly and therefore is not in compliance with RSS-210.

RSS-210 §A8.2 Digital Modulation Systems

These include systems employing digital modulation techniques resulting in spectral characteristics similar to direct sequence systems. The following applies to all three bands.

RSS-210 §A8.4 Transmitter Output Power and e.i.r.p. Requirements

(2) For frequency hopping systems operating in the band 2400-2483.5 MHz employing at least 75 hopping channels, the maximum peak conducted output power shall not exceed 1 W; for all other frequency hopping systems in the band, the maximum peak conducted output power shall not exceed 0.125 W. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4W.
(4) For systems employing digital modulation techniques operating in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands, the maximum peak conducted power shall not exceed 1 W. Except as provided in Section A8.4(5), the e.i.r.p. shall not exceed 4 W.
As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power (see RSS-Gen)
(5) Point-to-point systems in the bands 2400-2483.5 MHz and 5725-5850 MHz are permitted to have an e.i.r.p. higher than 4 W, provided that the higher e.i.r.p. is achieved by employing higher gain directional antennas and not higher transmitter output powers. Point-to-multipoint systems, omni-directional applications and multiple co-located transmitters transmitting the same information are prohibited from exceeding 4 W e.i.r.p. However, remote stations of point-to-multipoint systems shall be allowed to operate at greater than 4 W e.i.r.p, under the same conditions as for point-to- point systems.
Note: "Fixed, point-to-point operation", excludes point-to-multipoint systems, omnidirectional applications and multiple co-located transmitters transmitting the same information.

RSS-210 §A8.5 Out-of-band Emissions

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated device is operating, the radio frequency power that is produced shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under section A8.4(4), the attenuation required shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in Tables 2 and 3 is not required.

RSS-Gen §2 General Information

Unless otherwise indicated, radiocommunications equipment is subject to licensing pursuant to subsection 4(1) of the *Radiocommunication Act.*

RSS-Gen §2.1.2 Category II Equipment

Category II equipment comprises radio devices where a standard has been prescribed but for which a TAC is not required, that is, equipment certification by Industry Canada or a Certification Body (CB) is not required (certification exempt), pursuant to subsection 4(3) of the *Radiocommunication Act*. The manufacturer or importer shall nevertheless ensure that the standards are complied with. A test report shall be available on request and the device shall be properly labelled.

RSS-Gen §2.2 Receivers

Radiocommunication receivers are defined as Category I equipment or Category II equipment by the characteristics outlined below.

RSS-Gen §2.2.1 Category I Equipment Receivers

A receiver is classified as Category I equipment if it meets one of the following conditions:
(a) is a stand-alone receiver that is tunable to any frequency in the band 30-960 MHz;
(b) is a receiver that is associated with Category I transmitters; or
(c) is a scanner receiver.

Except for scanner receivers, which have their own RSSs, Category I receivers shall comply with the limits for receiver spurious emissions set out in Section 6 of this RSS-Gen, and shall be certified under the RSS applicable to the transmitter type with which the receiver is associated or designed to operate (NOT under RSS-Gen).

RSS-Gen §2.2.2 Category II Equipment Receivers

A receiver is classified as Category II equipment if it is not meeting the conditions of Section 2.2.1.

RSS-Gen §2.2.3 Licence-exempt Receivers

Paging receivers, "receive-only" earth stations operating with satellites approved by Industry Canada, and stand-alone receivers which are exempted from licensing, can be classified as either Category I or Category II. These receivers shall comply with the requirements of RSS-210 or RSS-310, respectively.

RSS-Gen §2.3 Licence-exempt Low-power Radiocommunication Devices (LPDs)

Licence-exempt low-power radiocommunication devices are devices which have intentional and unwanted emissions of very low signal levels such that they can co-exist with licensed radio services. LPDs are required to operate on a **"no-interference no-protection"** basis (i.e. they may not cause radio interference and cannot claim protection from interference). The requirements for LPDs are generally described in Section 7.

RSS-Gen §5.5 Exposure of Humans to RF Fields

Before equipment certification is granted, the applicable requirements of RSS-102 shall be met.

RSS-Gen §6 Receiver Spurious Emission Standard

The following receiver spurious emission limits shall be complied with:
(a) If a radiated measurement is made, all spurious emissions shall comply with the limits of Table 1.

RSS-Gen Table 1 - Spurious Emission Limits for Receivers

Frequency (MHz)	Field Strength microvolts/m at 3 metres
30-88	100
88-216	150
216-960	200
Above 960	500

(b) If a conducted measurement is made, no spurious output signals appearing at the antenna terminals shall exceed 2 nanowatts per any 4 kHz spurious frequency in the band 30-1000 MHz, or 5 nanowatts above 1 GHz.

RSS-Gen §7.1.4 Transmitter Antenna

A transmitter can only be sold or operated with antennas with which it was certified. A transmitter may be certified with multiple antenna types. An antenna type comprises antennas having similar in-band and out-of-band radiation patterns. Testing shall be performed using the highest-gain antenna of each combination of transmitter and antenna type for which certification is being sought, with the transmitter output power set at the maximum level. Any antenna of the same type and having equal or lesser gain as an antenna that had been successfully tested for certification with the transmitter, will also be considered certified with the transmitter, and may be used and marketed with the transmitter. The manufacturer shall include with the application for certification a list of acceptable antenna types to be used with the transmitter.
When a measurement at the antenna connector is used to determine RF output power, the effective gain of the device's antenna shall be stated, based on measurement or on data from the antenna manufacturer. Any antenna gain in excess of 6 dBi (6 dB above isotropic gain) shall be added to the measured RF output power before using the power limits specified in RSS-210 or RSS-310 for devices of RF output powers of 10 milliwatts or less. For devices of output powers greater than 10 milliwatts, except devices subject to RSS-210 Annex 8 (Frequency Hopping and Digital Modulation Systems Operating in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz Bands) or RSS-210 Annex 9 (Local Area Network Devices), the total antenna gain shall be added to the measured RF output power before using the specified power limits. For devices subject to RSS-210 Annex 8 or Annex 9, the antenna gain shall not be added.

RSS-Gen §7.2.2 Transmitter and Receiver AC Power Lines Conducted Emission Limits

Except when the requirements applicable to a given device state otherwise, for any licence-exempt radiocommunication device equipped to operate from the public utility AC power supply, either directly or indirectly, the radio frequency voltage that is conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in Table 2. The tighter limit applies at the frequency range boundaries.

RSS-Gen Table 2 – AC Power Lines Conducted Emission Limits

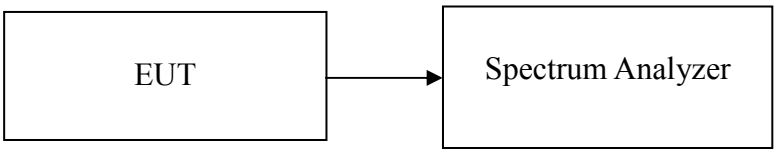
Frequency Range (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 to 0.5	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

**Decreases with the logarithm of the frequency.*

8. FCC PART 15.247 REQUIREMENTS & RSS 210 REQUIREMENTS

8.1 99% BANDWIDTH

Test Configuration



TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1%. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical, a sampling detector shall be used since a peak or, peak hold.

Test Data

For GFSK / DH5

Channel	Frequency (MHz)	99% Bandwidth (kHz)
Low	2402	909.7556
Mid	2441	901.5573
High	2480	907.6586

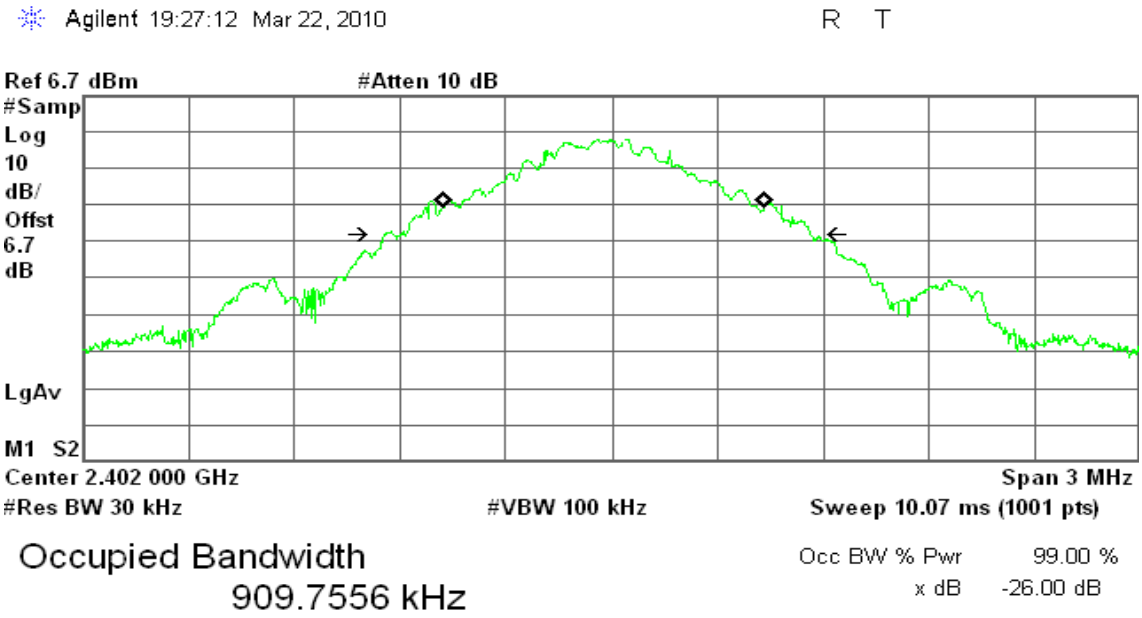
For 8DPSK / DH5

Channel	Frequency (MHz)	99% Bandwidth (kHz)
Low	2402	1177.7
Mid	2441	1175.5
High	2480	1180.4

Test Plot

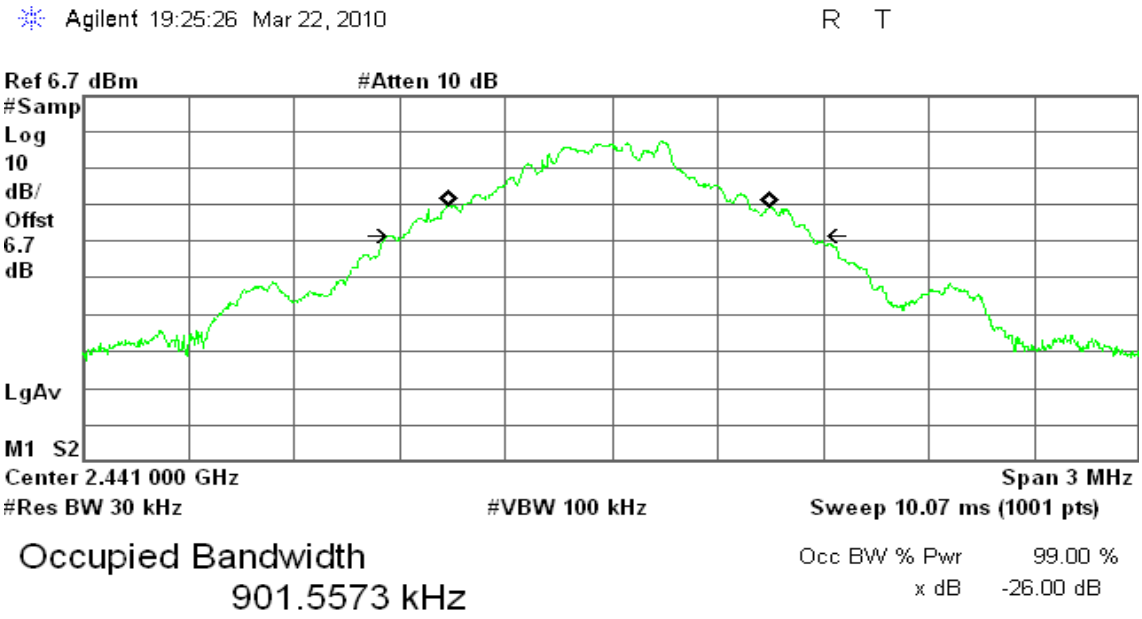
For GFSK / DH5

99% Bandwidth (CH Low)



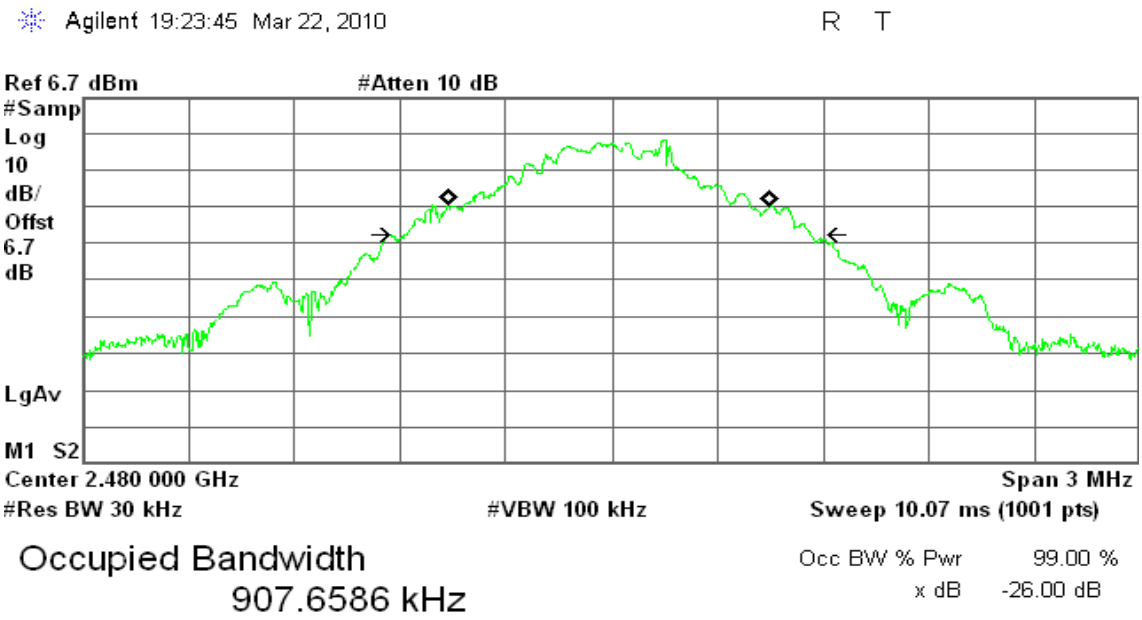
Transmit Freq Error	-22.160 kHz
x dB Bandwidth	1.206 MHz*

99% Bandwidth (CH Mid)



Transmit Freq Error	-7.155 kHz
x dB Bandwidth	1.150 MHz*

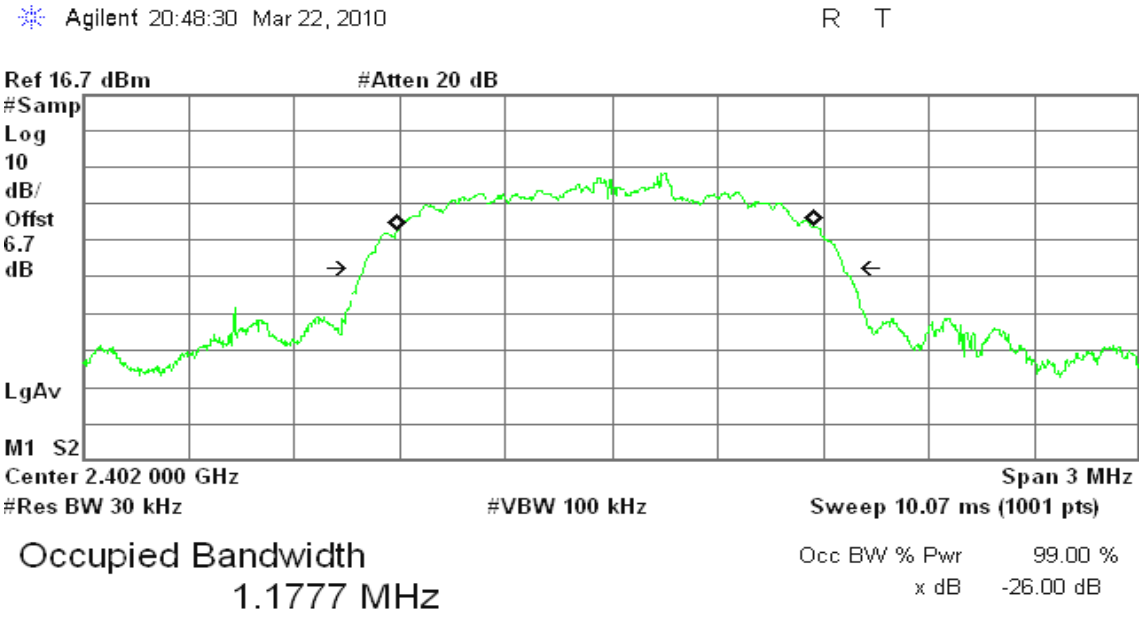
99% Bandwidth (CH High)



Transmit Freq Error	-7.497 kHz
x dB Bandwidth	1.145 MHz*

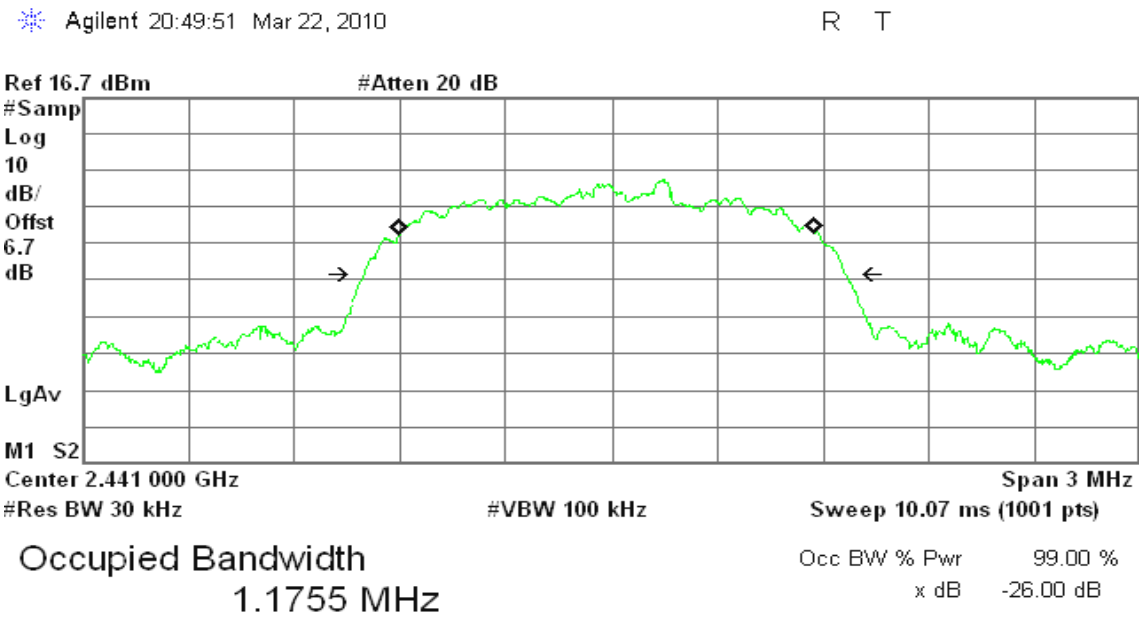
For 8DPSK / DH5

99% Bandwidth (CH Low)



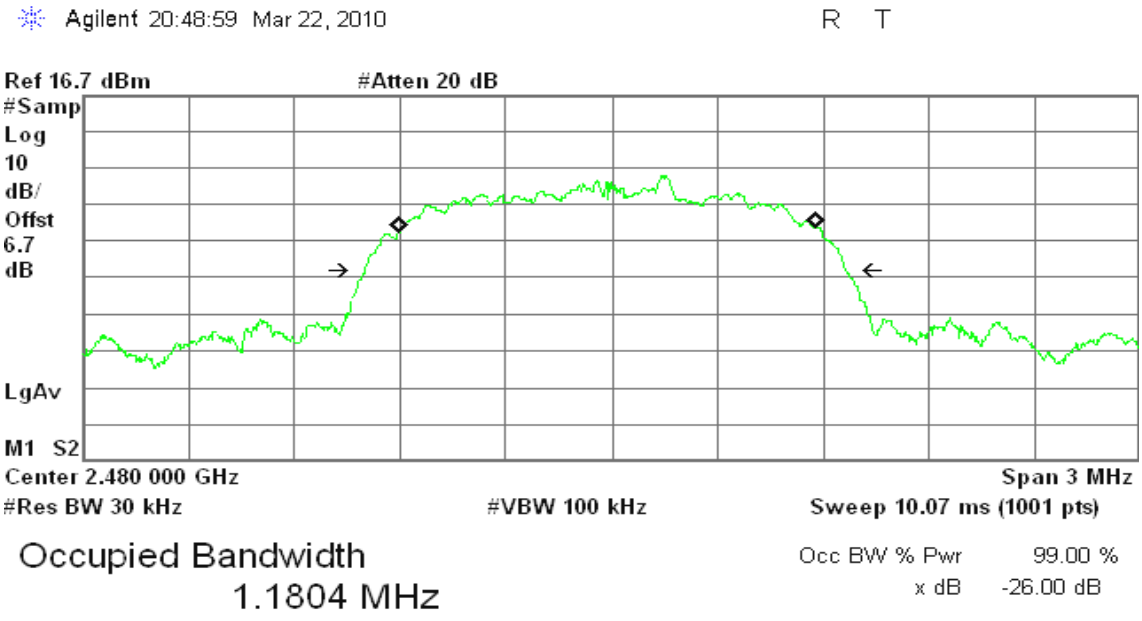
Transmit Freq Error	-16.402 kHz
x dB Bandwidth	1.360 MHz*

99% Bandwidth (CH Mid)



Transmit Freq Error	-13.740 kHz
x dB Bandwidth	1.361 MHz*

99% Bandwidth (CH High)



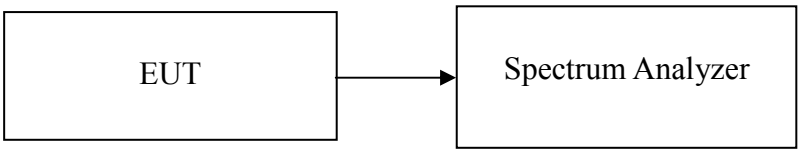
Transmit Freq Error	-11.957 kHz
x dB Bandwidth	1.362 MHz*

8.2 20 DB BANDWIDTH

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=10kHz, VBW = 30kHz, Span = 1.55MHz, Sweep = auto.
4. Mark the peak frequency and 20dB (upper and lower) frequency.
5. Repeat until all the rest channels are investigated.

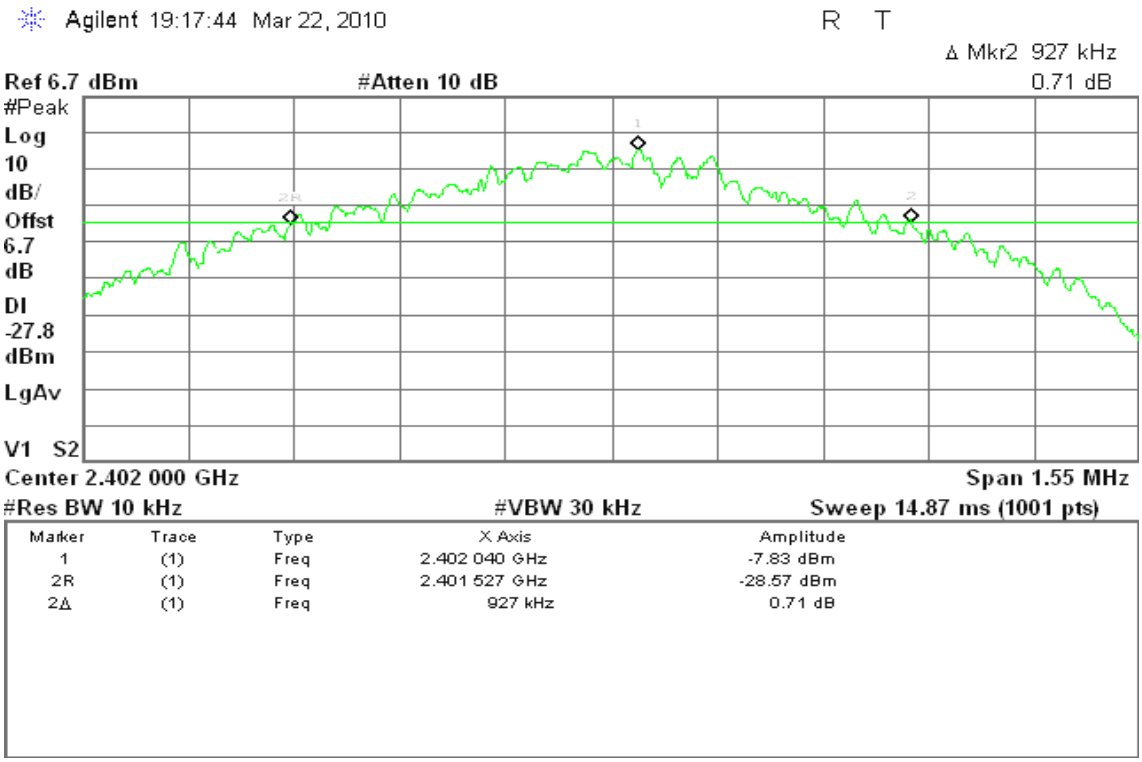
TEST RESULTS

No non-compliance noted.

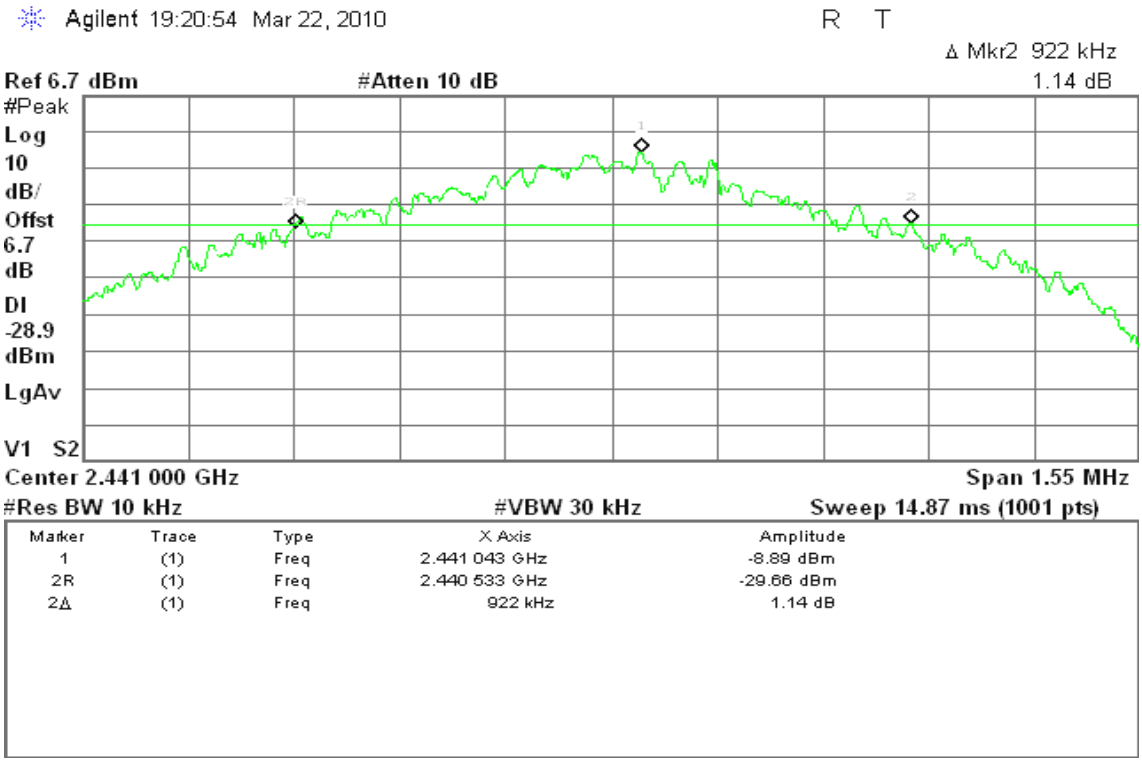
Test Plot

For GFSK / DH5

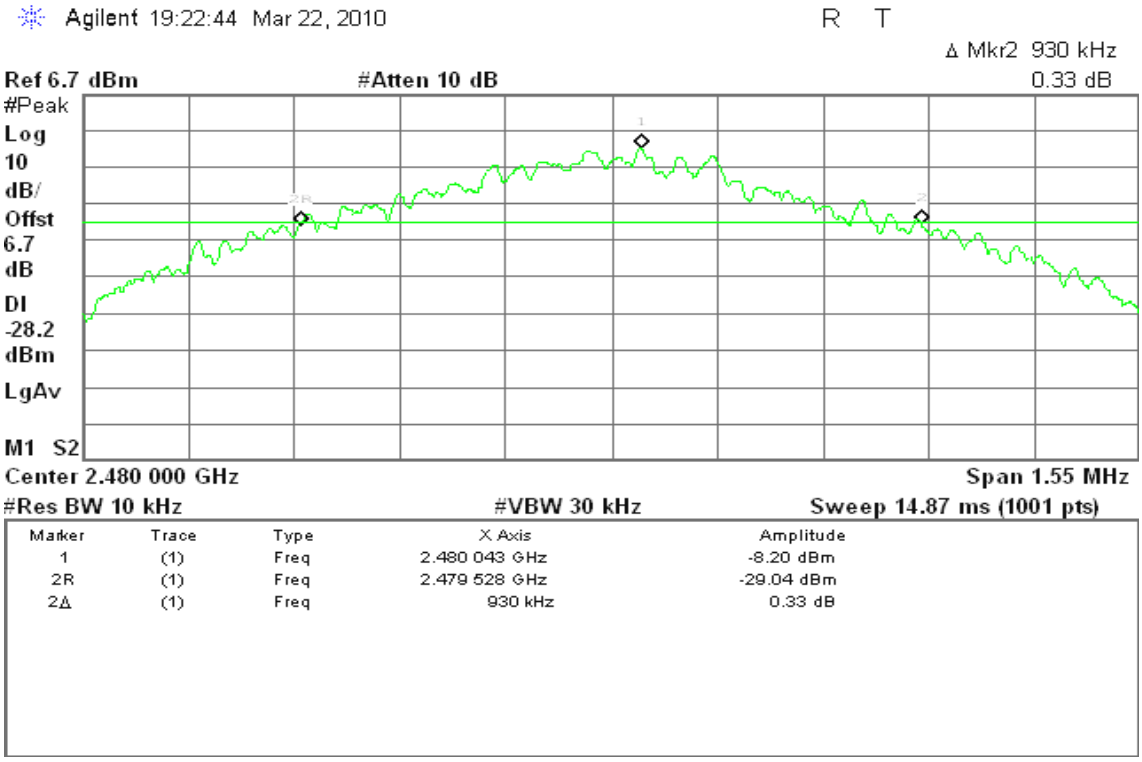
20dB Bandwidth (CH Low)



20dB Bandwidth (CH Mid)

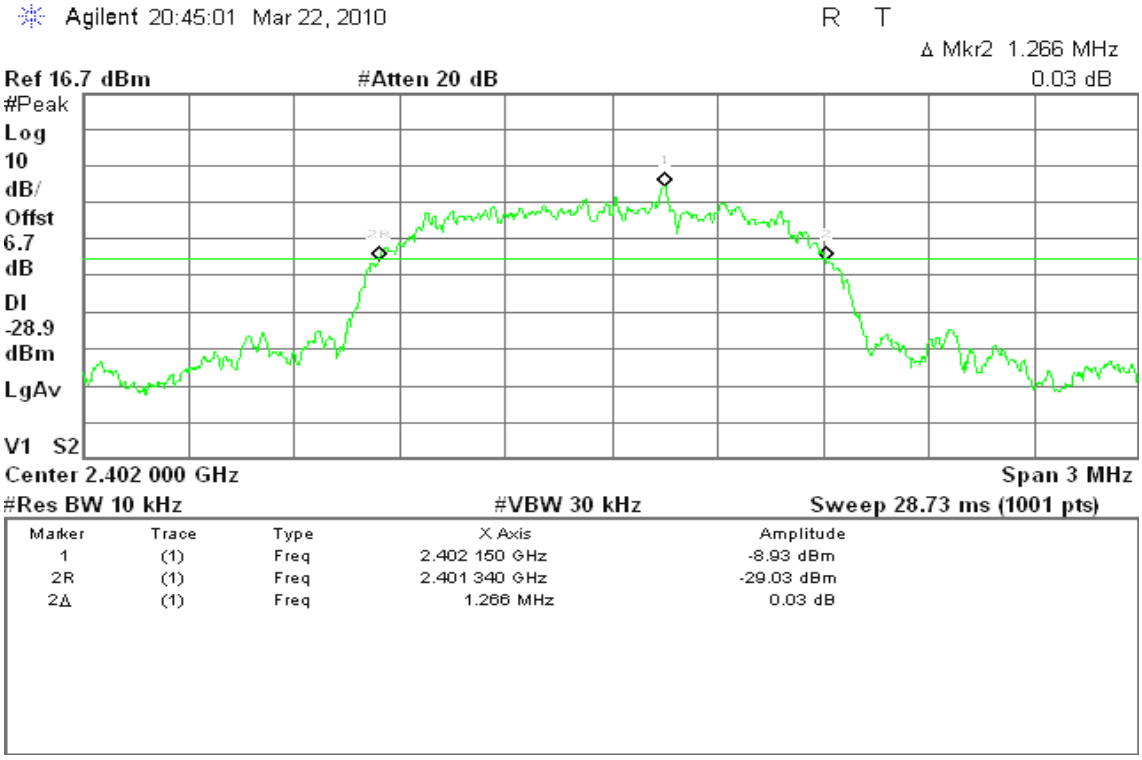


20dB Bandwidth (CH High)

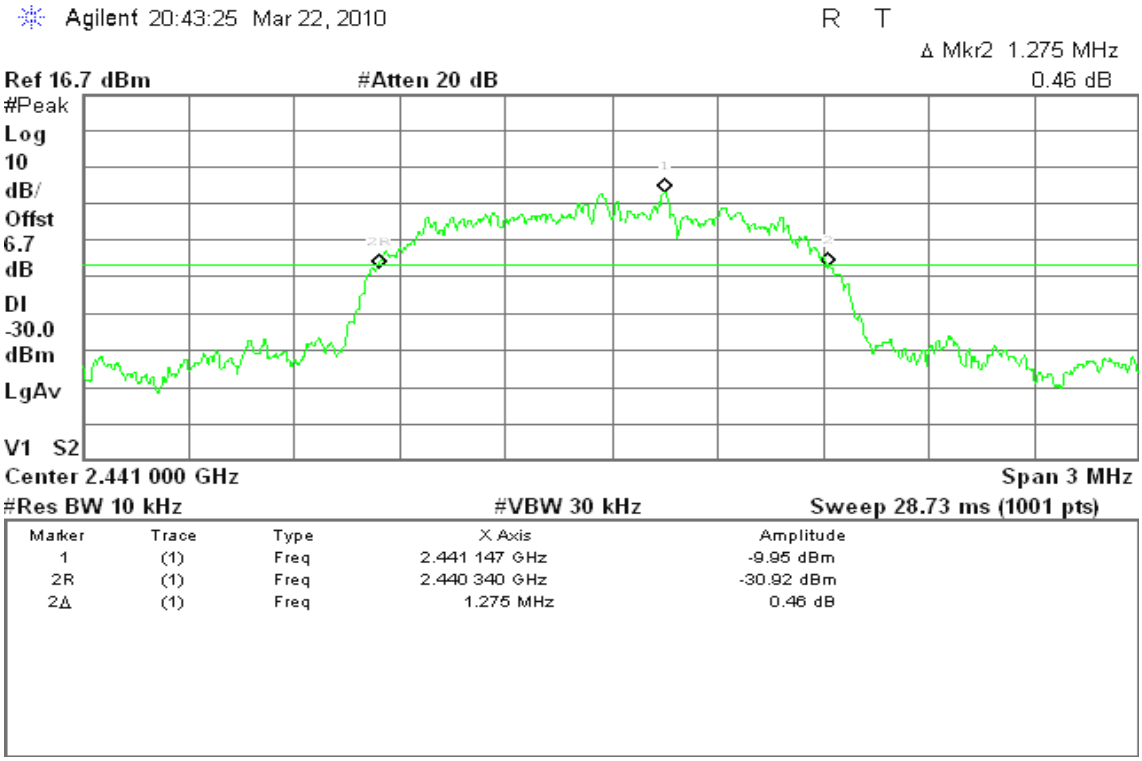


For 8DPSK / DH5

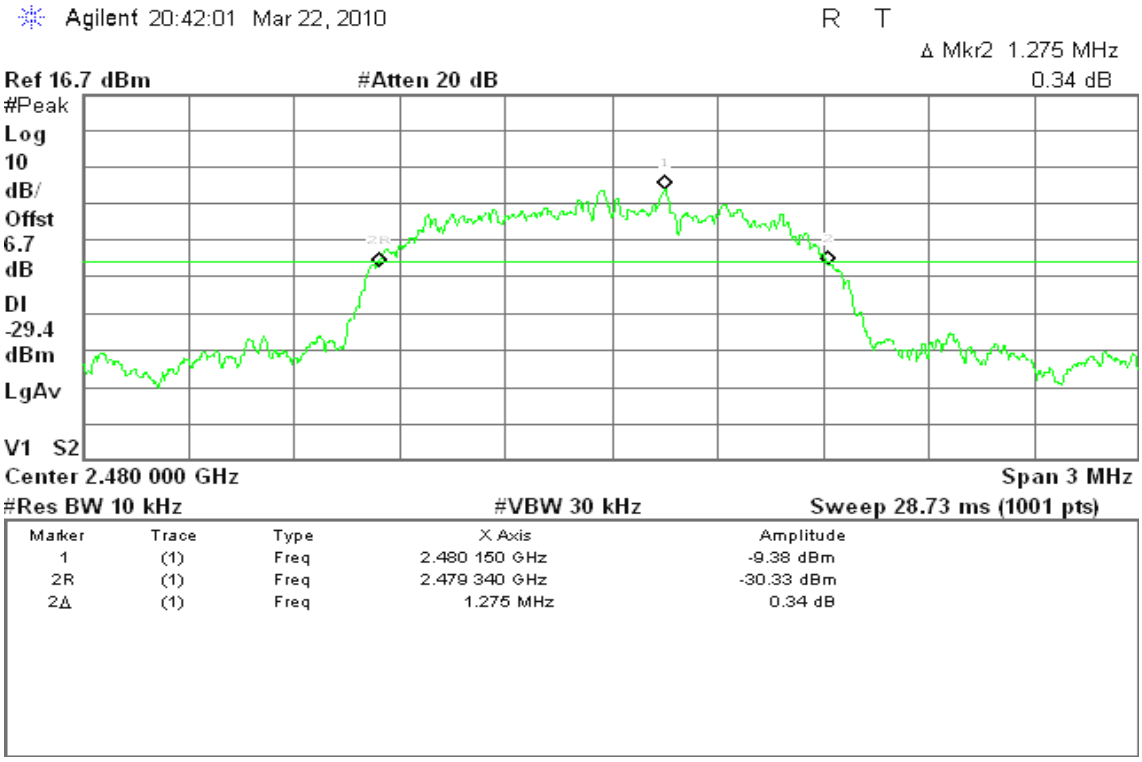
20dB Bandwidth (CH Low)



20dB Bandwidth (CH Mid)



20dB Bandwidth (CH High)



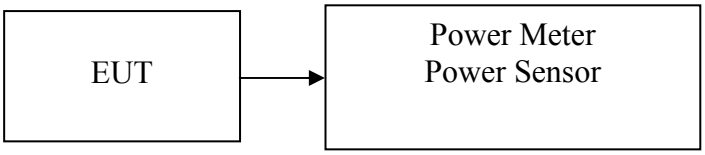
8.3 PEAK POWER

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

1. According to §15.247(a)(1) & RSS-210 §A8.1 (2) , Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.
2. According to §15.247(b)(3) & RSS 210 §A8.4(4),, for systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 Watt.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter. The Power Meter is set to the peak power detection.

TEST RESULTS

No non-compliance noted.

Test Data

For GFSK / DH5

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2402	-3.33	0.0005	0.125	PASS
Mid	2441	-3.97	0.0004		PASS
High	2480	-2.40	0.0006		PASS

For 8DPSK / DH5

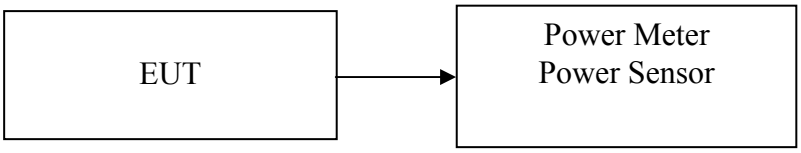
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)	Limit (W)	Result
Low	2402	-0.36	0.000920	0.125	PASS
Mid	2441	-1.07	0.000782		PASS
High	2480	0.35	0.001084		PASS

8.4 AVERAGE POWER

LIMIT

None; for reporting purposes only.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Power Meter The Power Meter is set to the average power detection.

TEST RESULTS

No non-compliance noted.

Test Data

For GFSK / DH5

Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2402	-4.77	0.000333
Mid	2441	-5.31	0.000294
High	2480	-3.77	0.000420

For 8DPSK / DH5

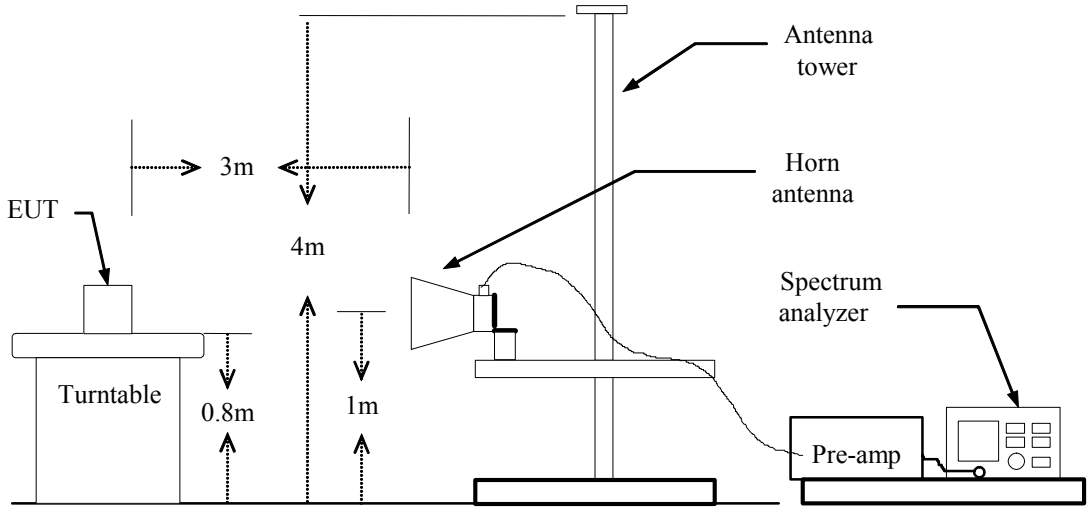
Channel	Frequency (MHz)	Output Power (dBm)	Output Power (W)
Low	2402	-4.72	0.000337
Mid	2441	-5.28	0.000296
High	2480	-3.79	0.000418

8.5 BAND EDGES MEASUREMENT

LIMIT

According to §15.247(d) & RSS-210 §A8.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Test Configuration



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

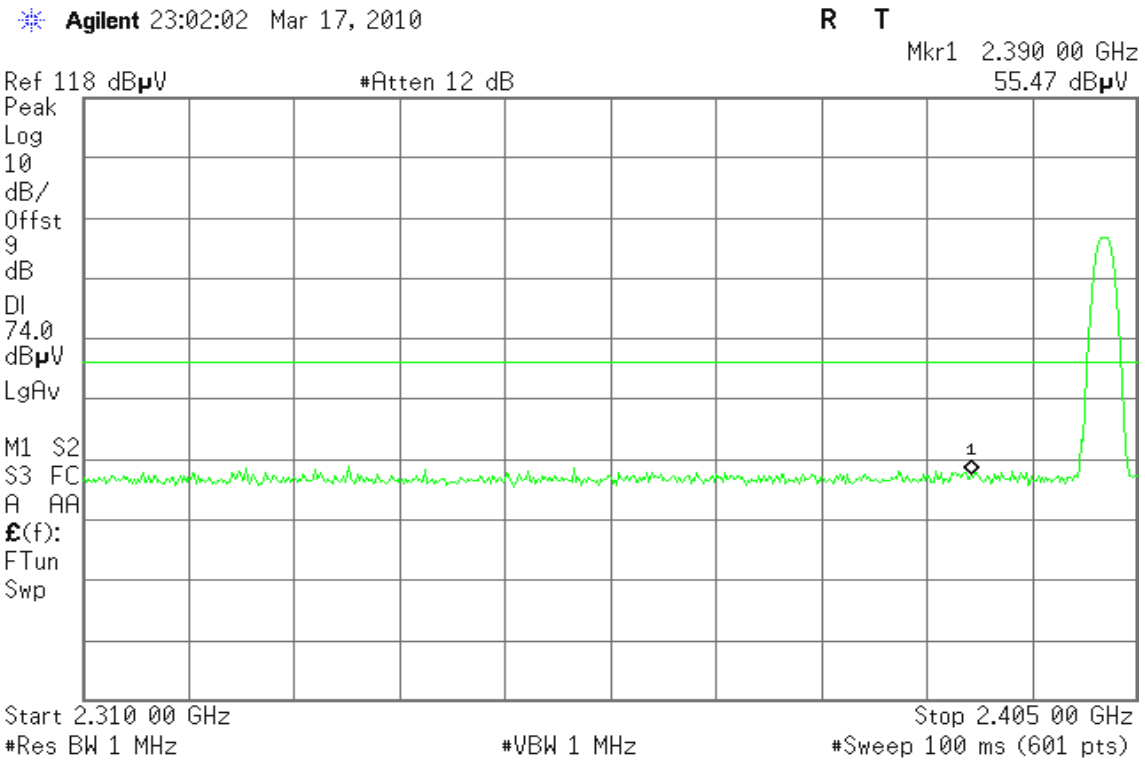
TEST RESULTS

Refer to attach spectrum analyzer data chart.

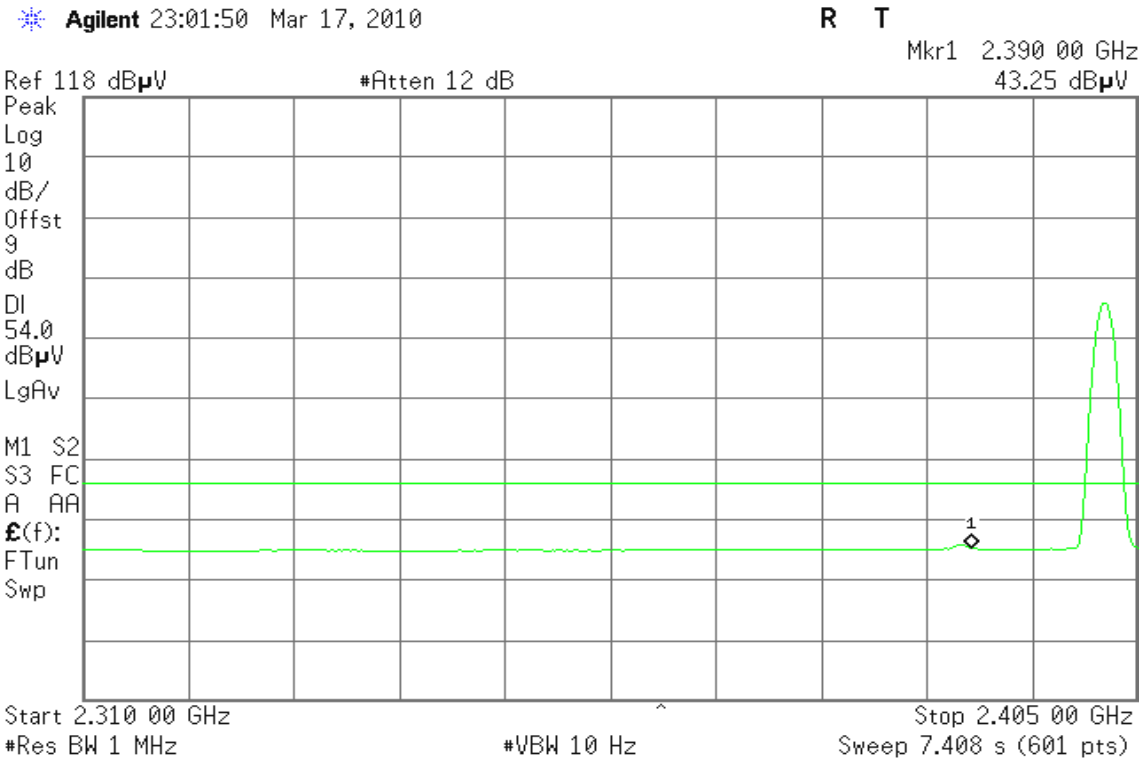
For GFSK / DH5

Band Edges (CH Low)

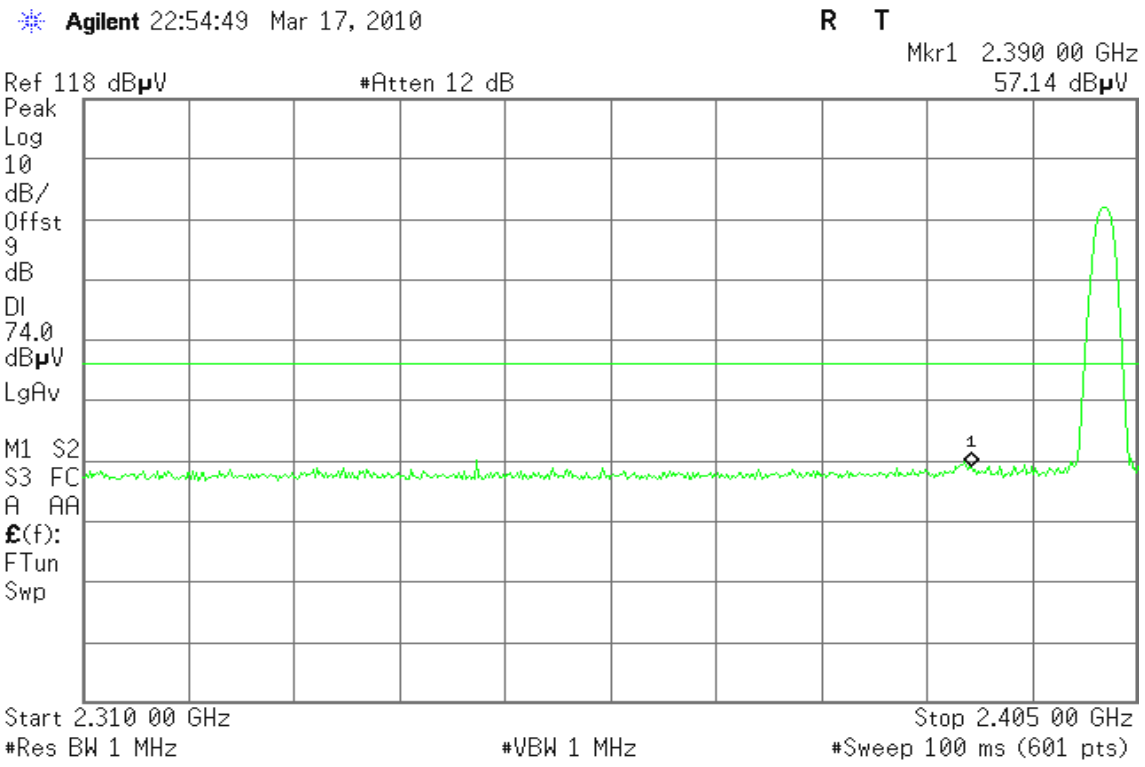
Detector mode: Peak **Polarity: Vertical**



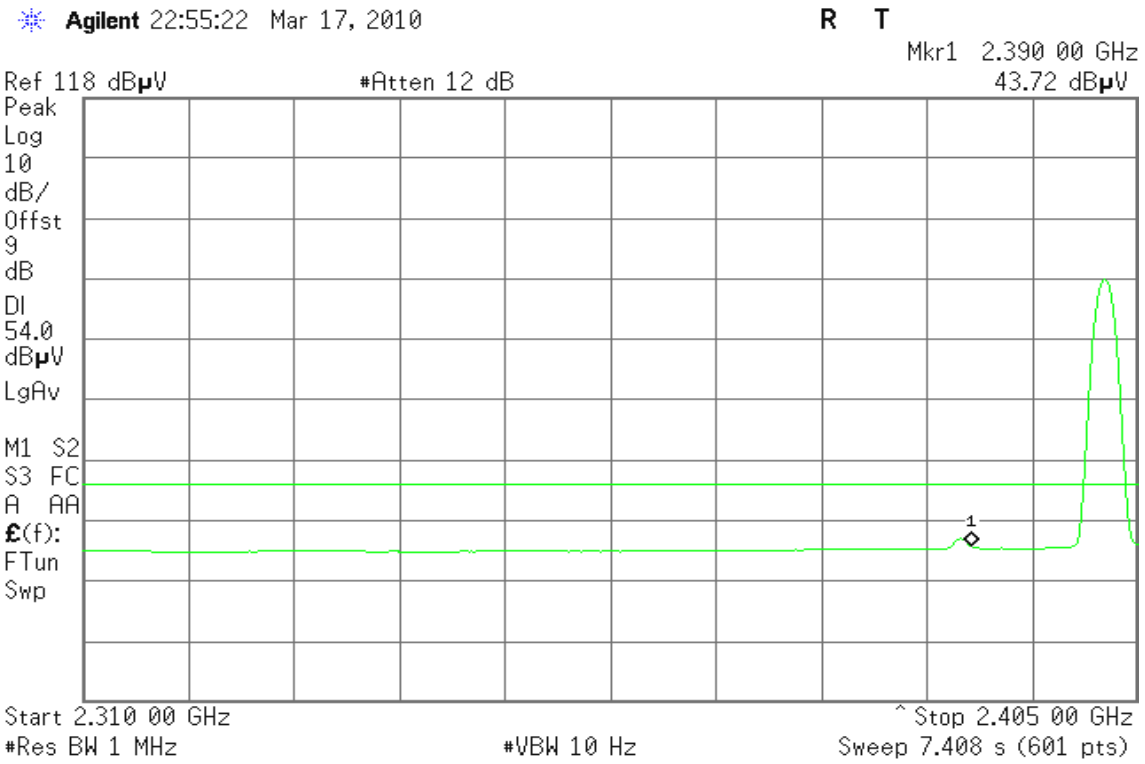
Detector mode: Average **Polarity: Vertical**



Detector mode: Peak **Polarity: Horizontal**

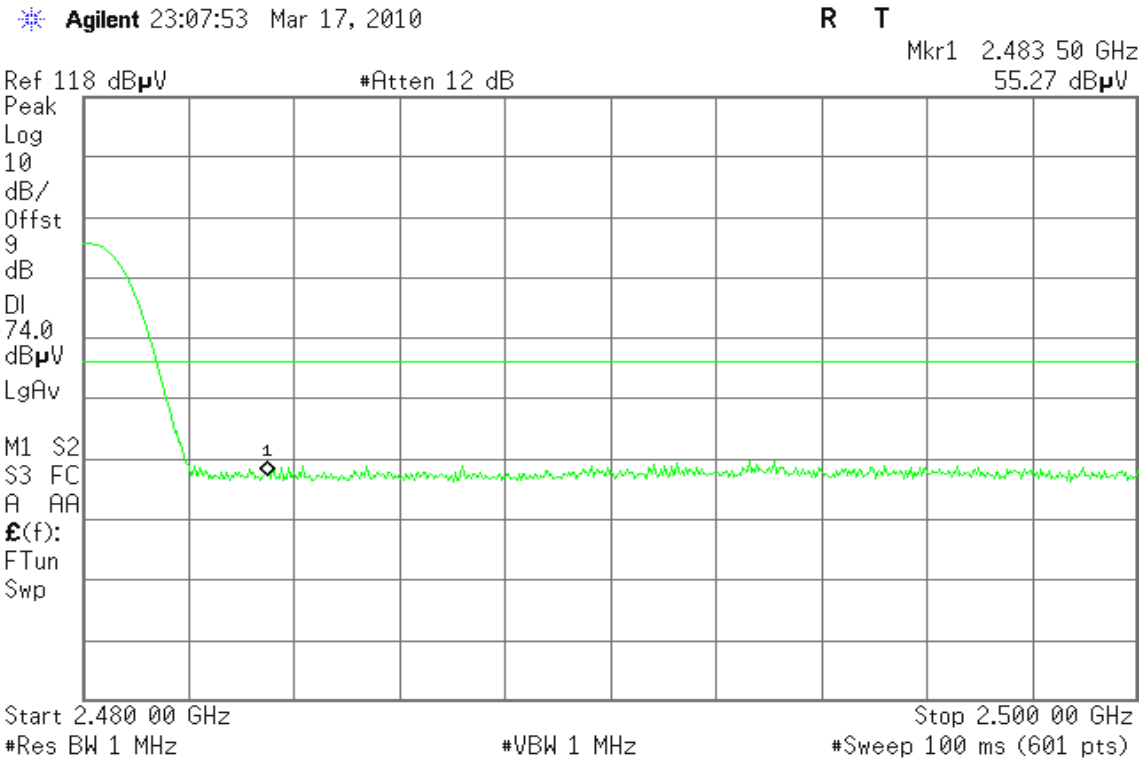


Detector mode: Average **Polarity: Horizontal**

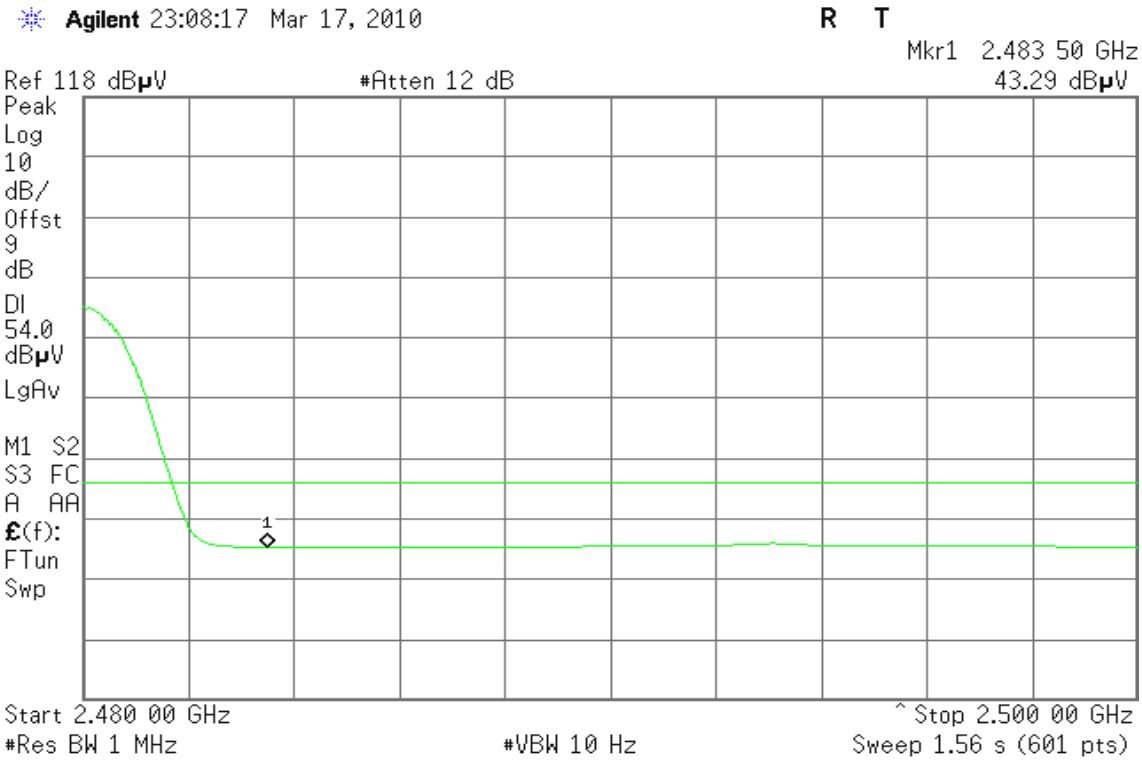


Band Edges (CH High)

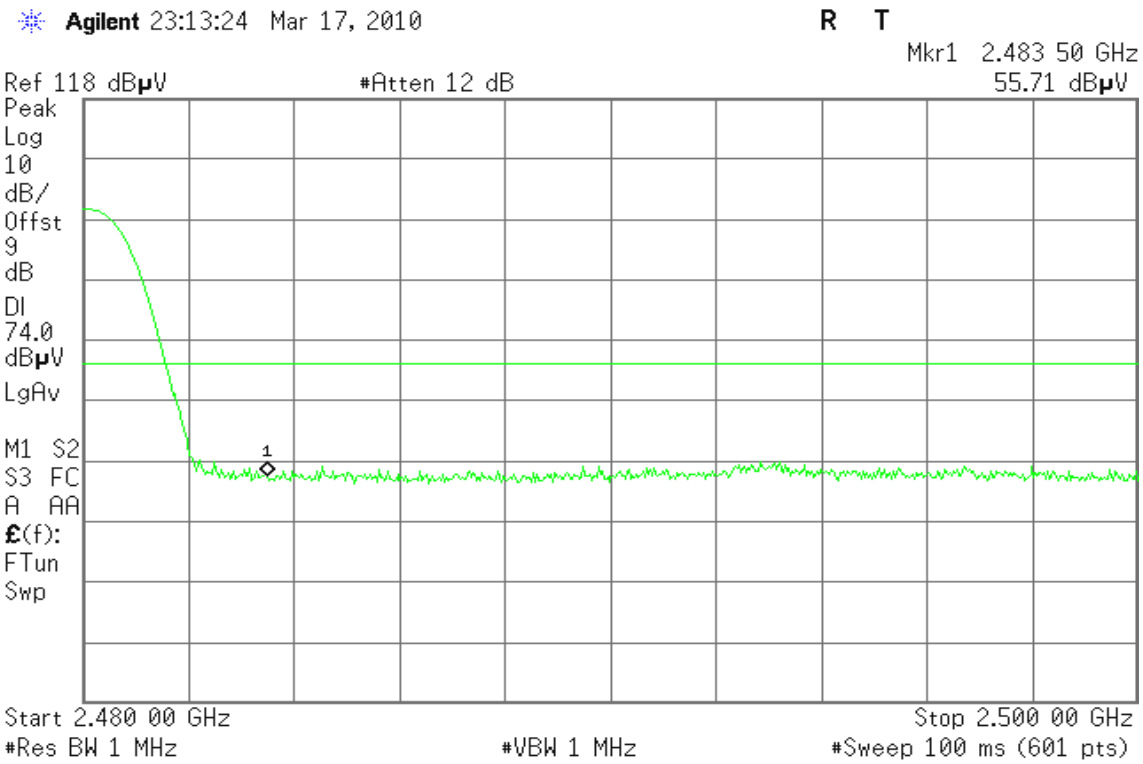
Detector mode: Peak Polarity: Vertical



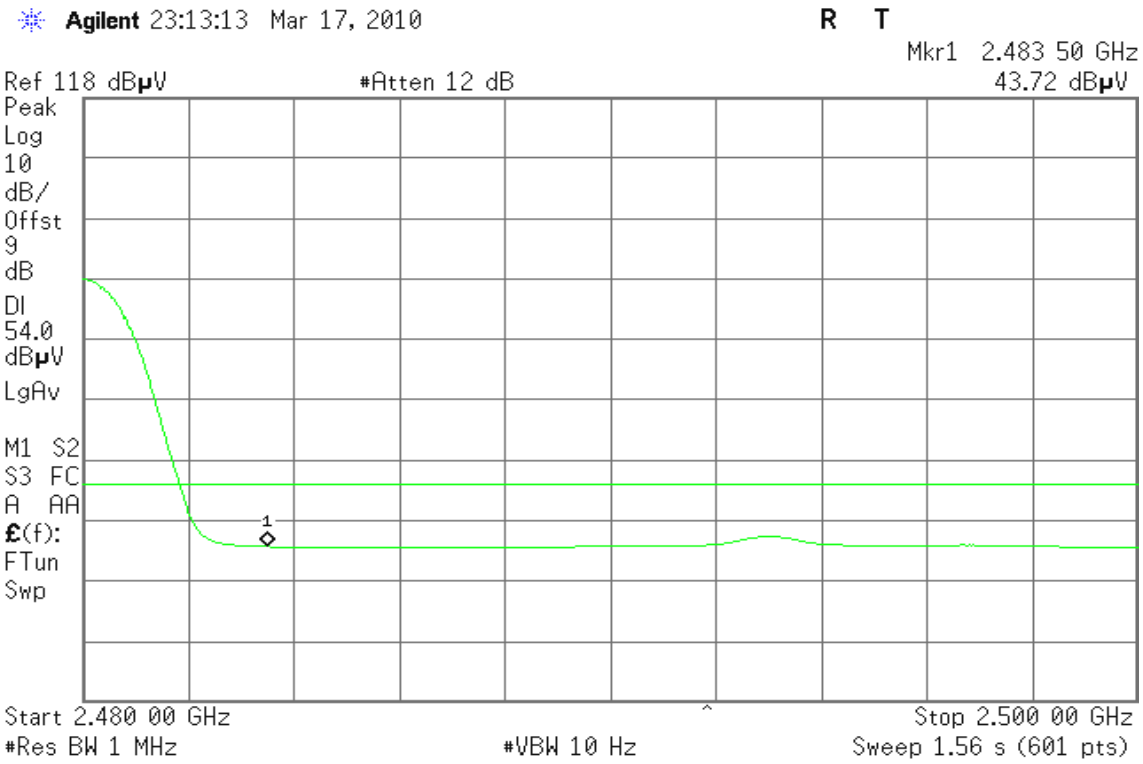
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**



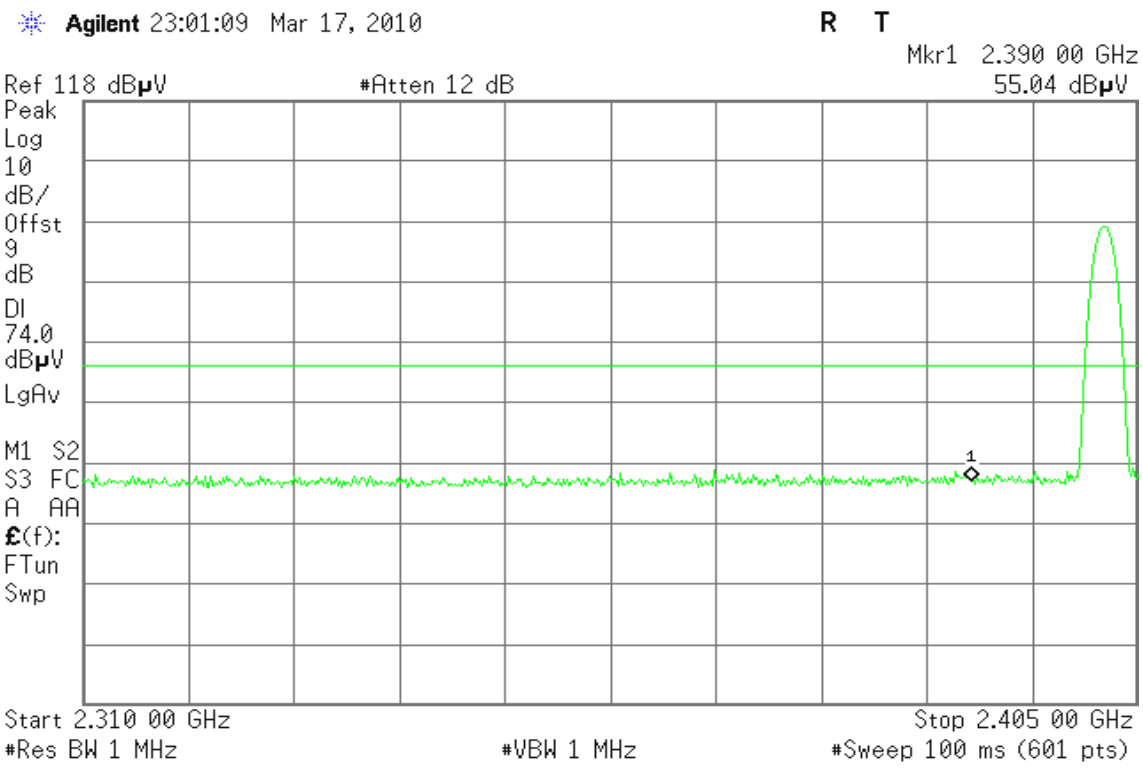
Detector mode: Average **Polarity: Horizontal**



For 8DPSK / DH5

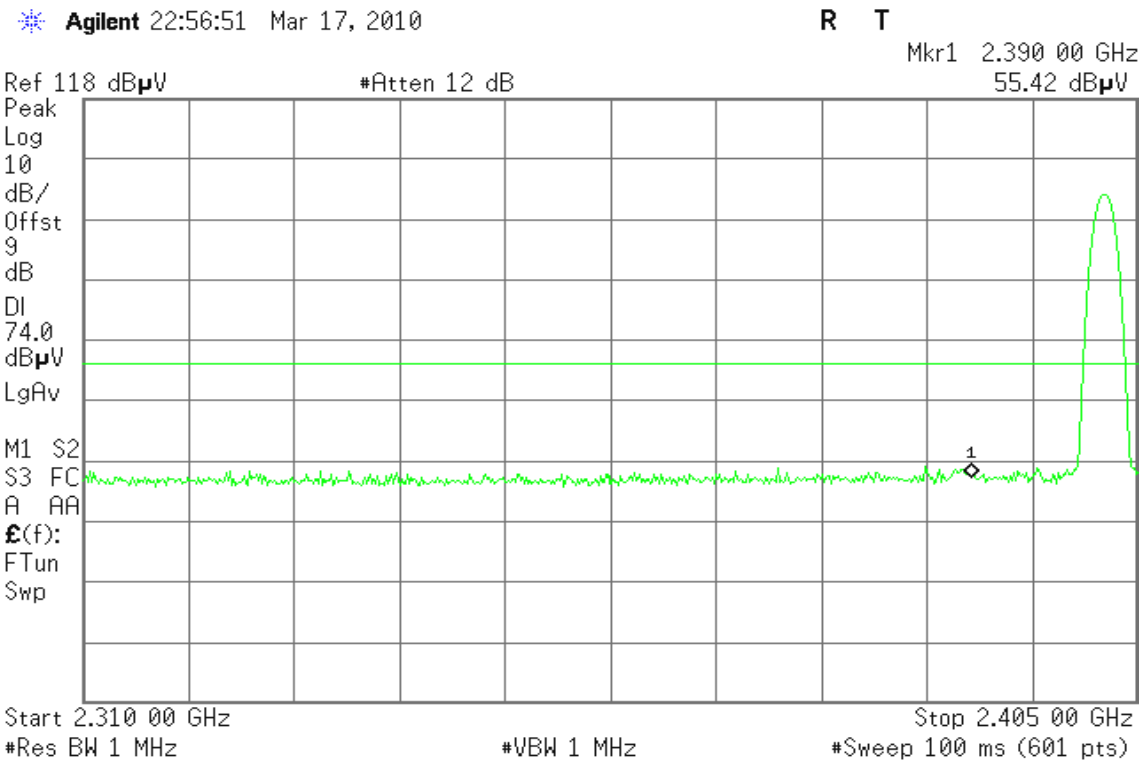
Band Edges (CH Low)

Detector mode: Peak **Polarity: Vertical**

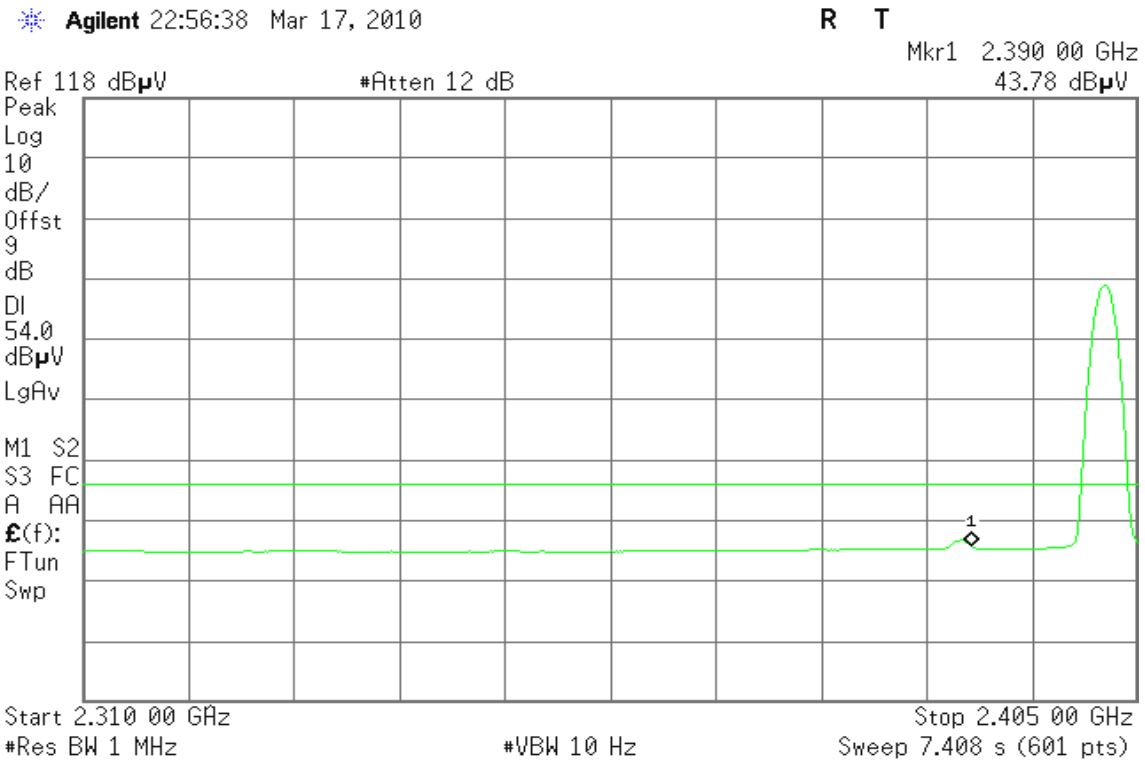


Detector mode: Average **Polarity: Vertical**

Detector mode: Peak **Polarity: Horizontal**

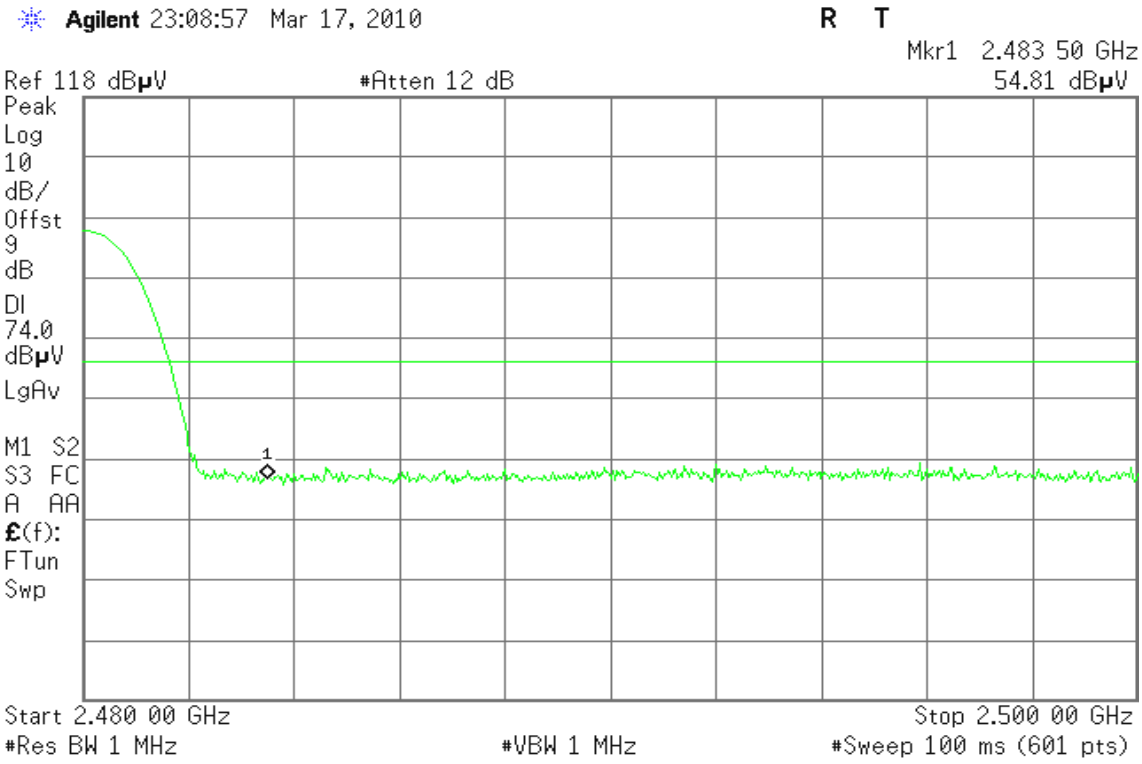


Detector mode: Average **Polarity: Horizontal**

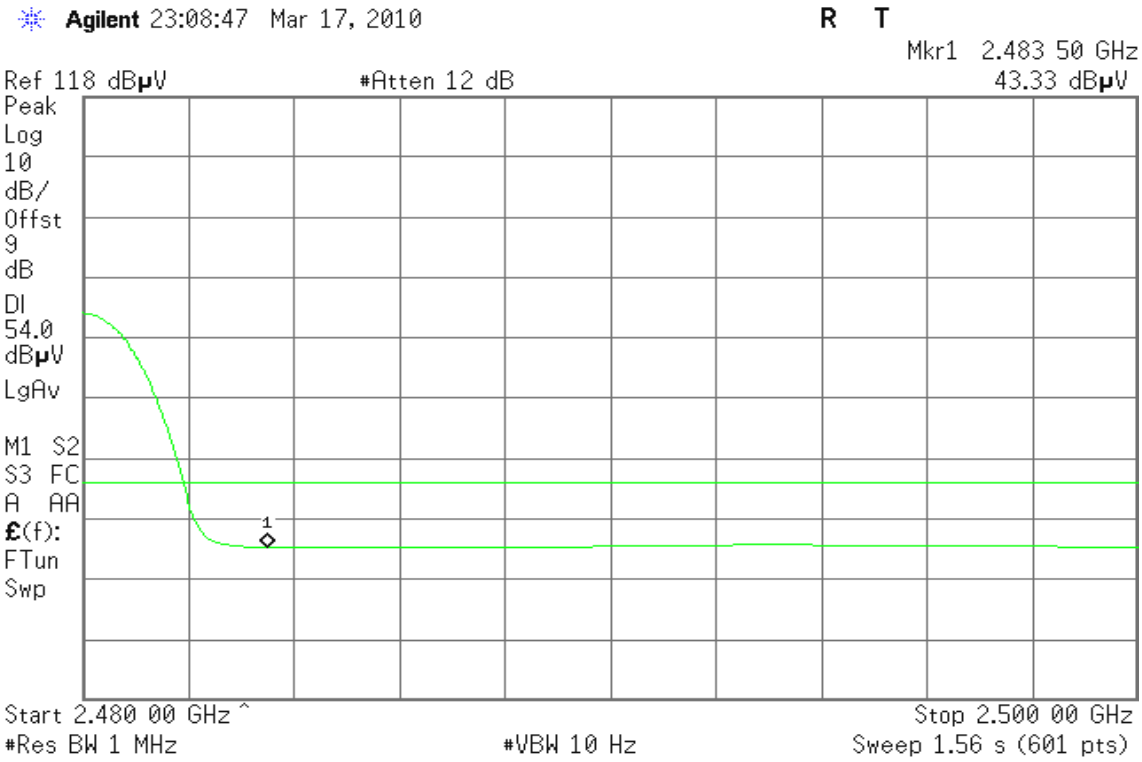


Band Edges (CH High)

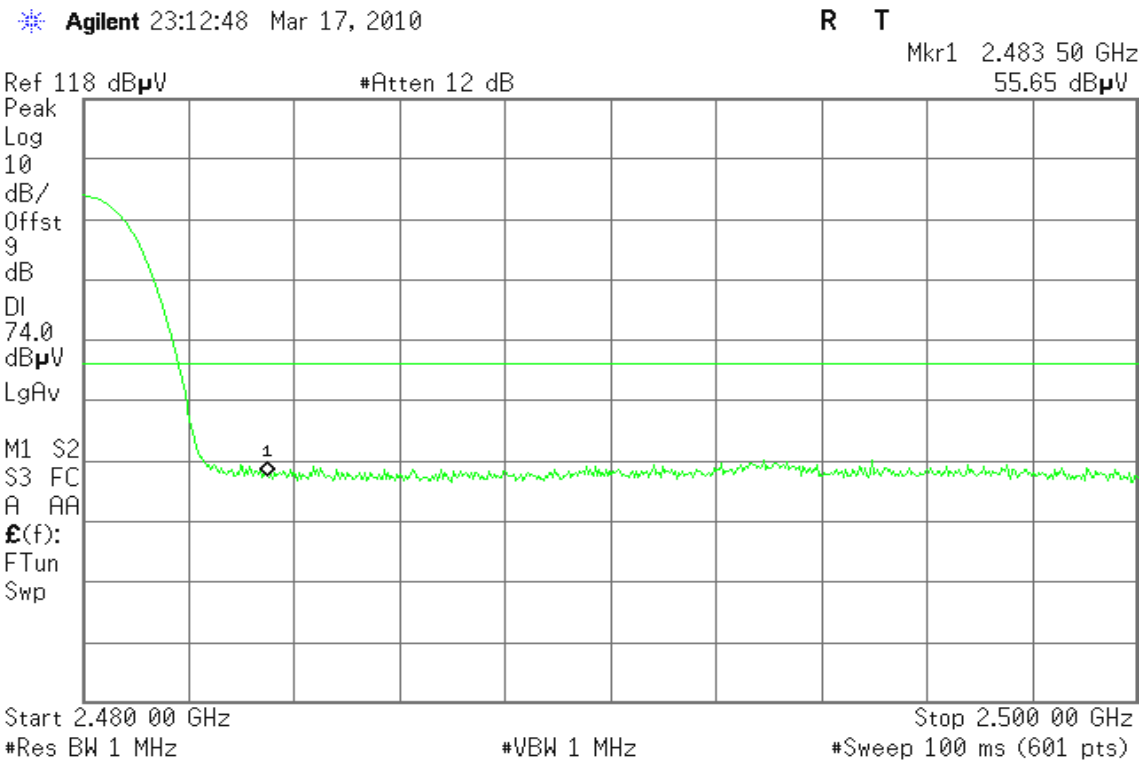
Detector mode: Peak Polarity: Vertical



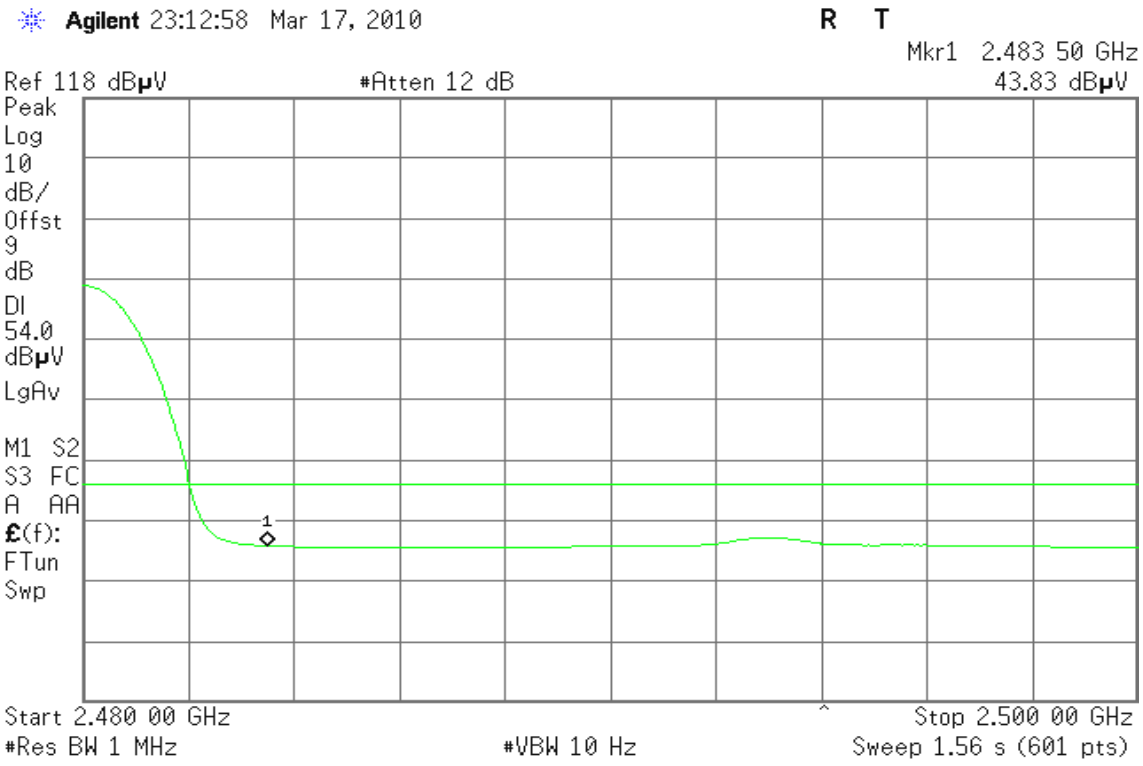
Detector mode: Average Polarity: Vertical



Detector mode: Peak **Polarity: Horizontal**



Detector mode: Average **Polarity: Horizontal**

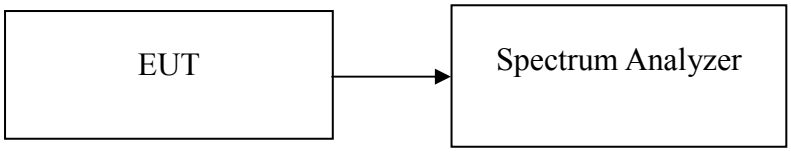


8.6 PEAK POWER SPECTRAL DENSITY

LIMIT

1. According to §15.247(e) & RSS-210 §A8.2, for digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.
2. According to §15.247(f), the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
4. Record the max. reading.
5. Repeat the above procedure until the measurements for all frequencies are completed.

TEST RESULTS

No non-compliance noted

Test Data

For GFSK / DH5

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2402	-13.85	8.00	PASS
Mid	2441	-14.71		PASS
High	2480	-14.08		PASS

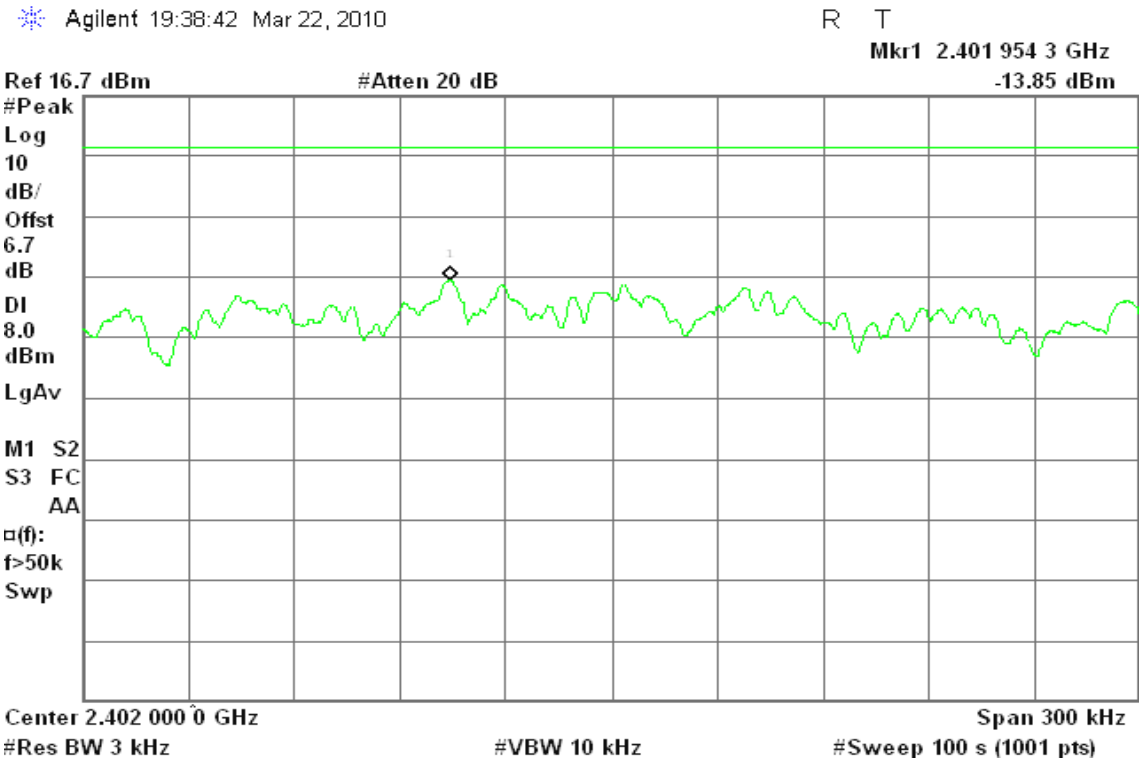
For 8DPSK / DH5

Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Result
Low	2402	-29.34	8.00	PASS
Mid	2441	-30.46		PASS
High	2480	-29.47		PASS

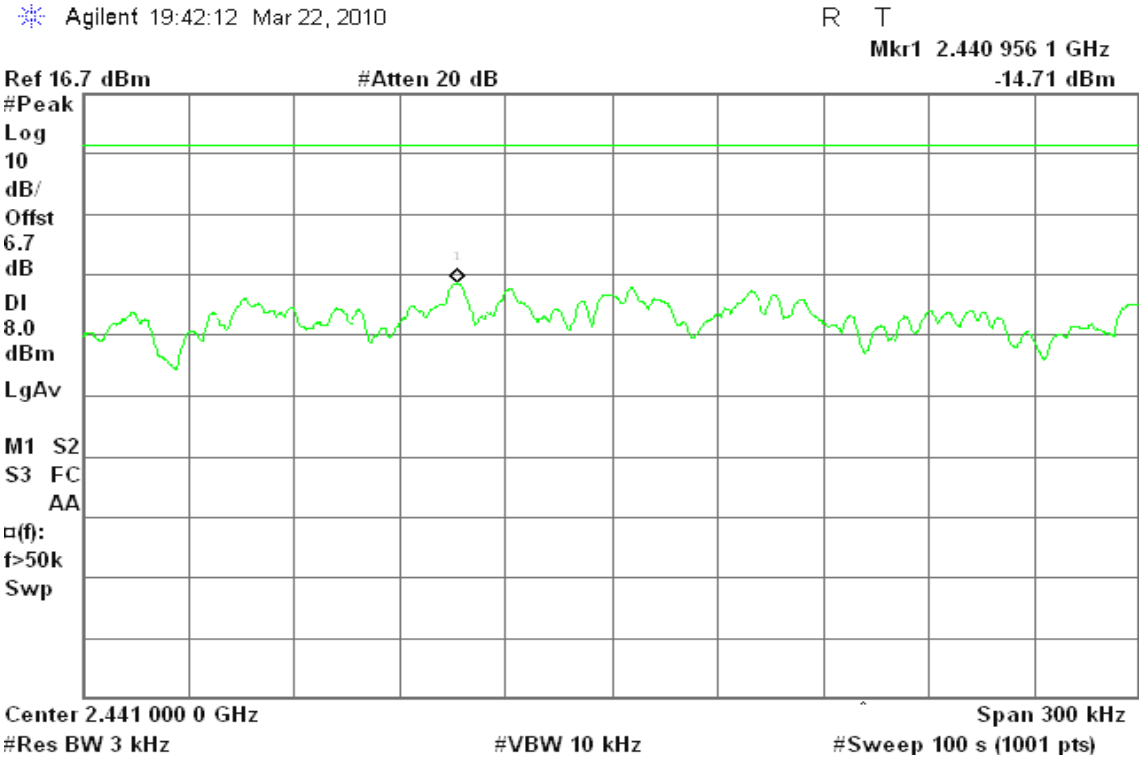
Test Plot

For GFSK / DH5

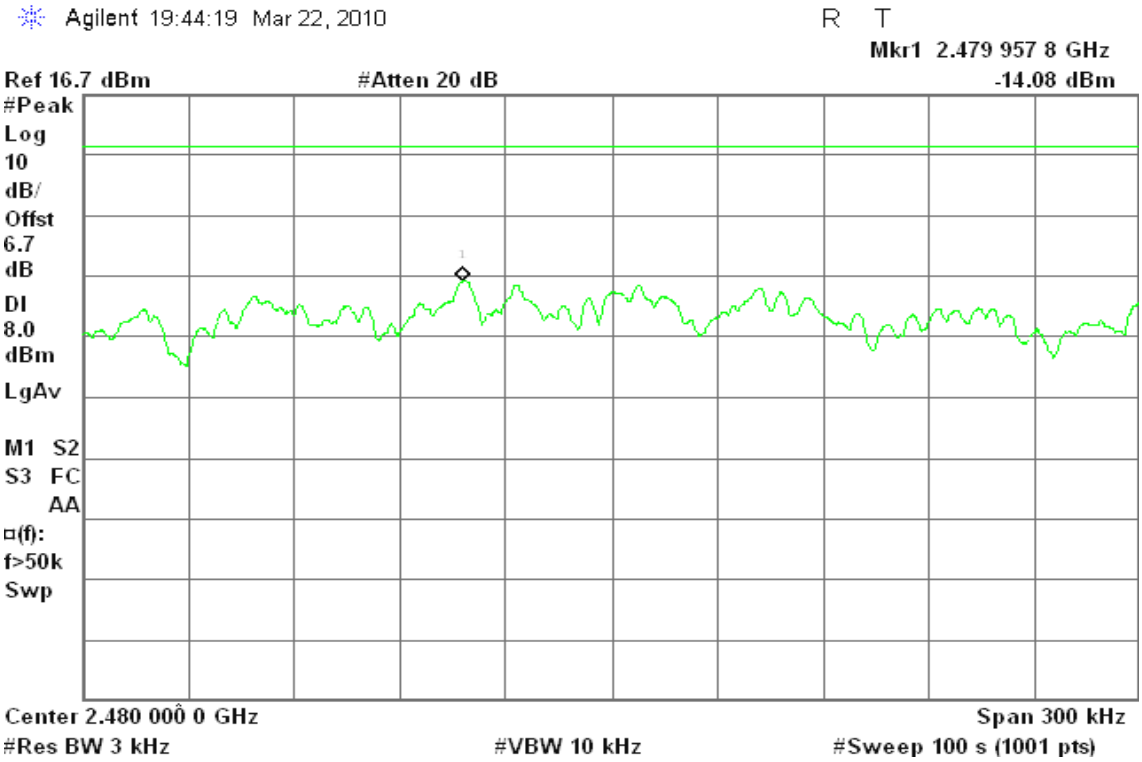
PPSD (CH Low)



PPSD (CH Mid)

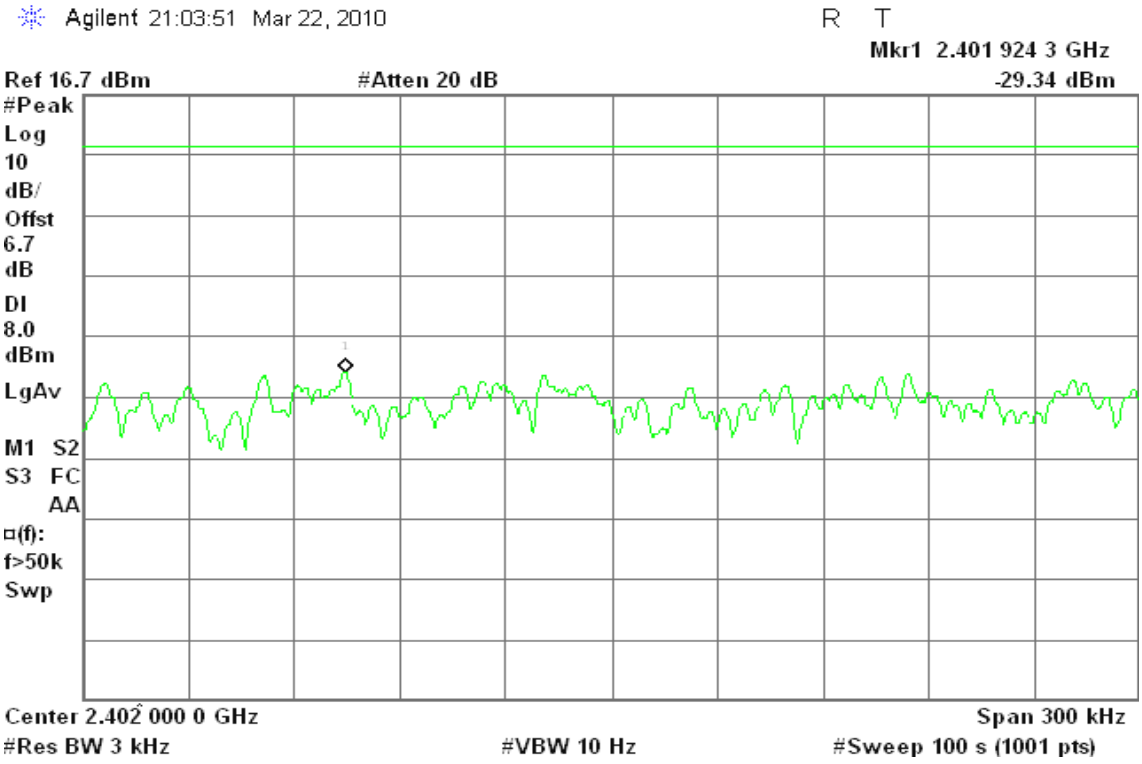


PPSD (CH High)

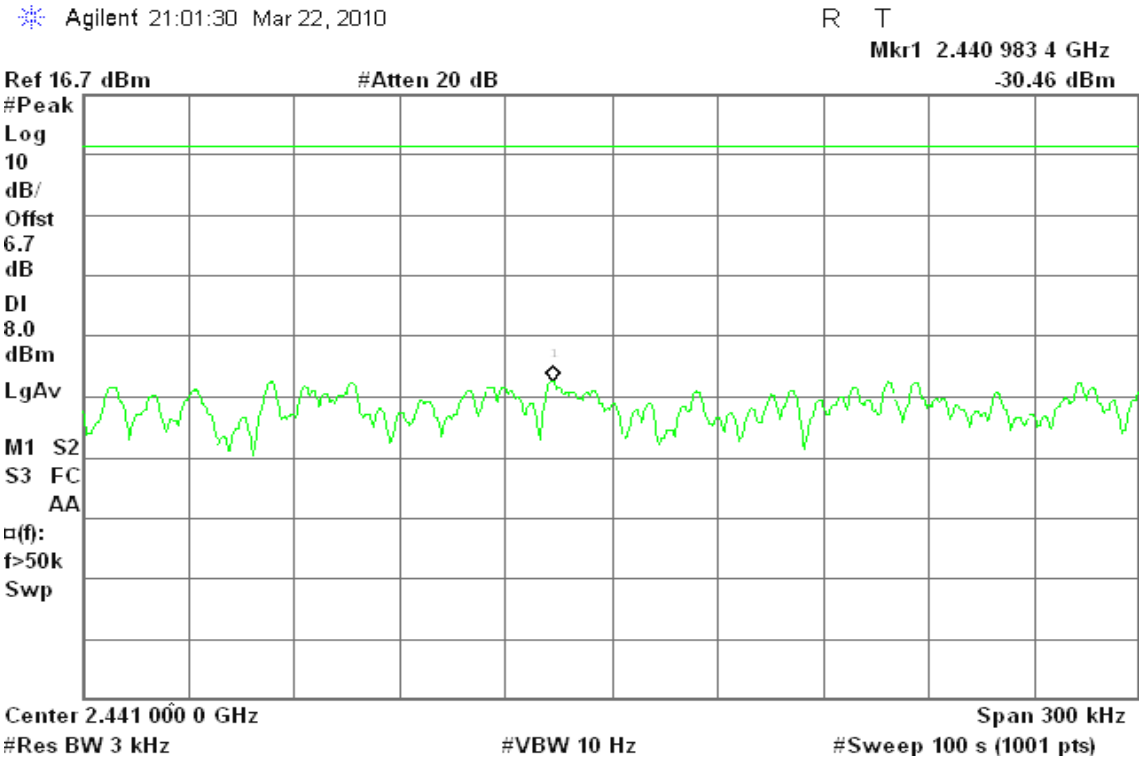

Agilent 19:44:19 Mar 22, 2010
R T
Mkr1 2.479 957 8 GHz
Ref 16.7 dBm
#Atten 20 dB
-14.08 dBm
#Peak
Log
10
dB/
Offst
6.7
dB
Dl
8.0
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.480 000 0 GHz
Span 300 kHz
#Res BW 3 kHz
#VBW 10 kHz
#Sweep 100 s (1001 pts)

For 8DPSK / DH5

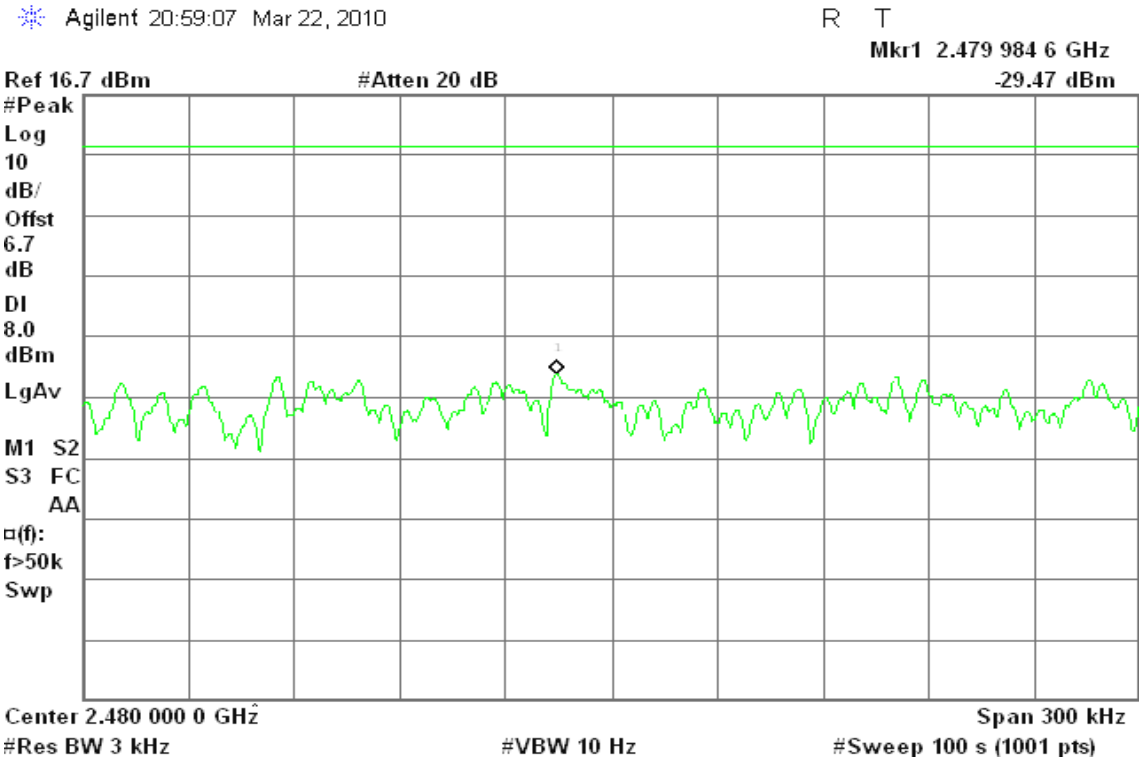
PPSD (CH Low)



PPSD (CH Mid)



PPSD (CH High)

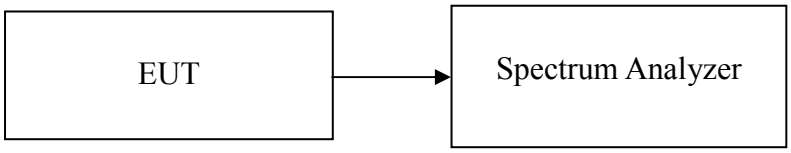

Agilent 20:59:07 Mar 22, 2010
R T
Mkr1 2.479 984 6 GHz
Ref 16.7 dBm
#Atten 20 dB
-29.47 dBm
#Peak
Log
10
dB/
Offst
6.7
dB
Dl
8.0
dBm
LgAv
M1 S2
S3 FC
AA
¤(f):
f>50k
Swp
Center 2.480 000 0 GHz
Span 300 kHz
#Res BW 3 kHz
#VBW 10 Hz
#Sweep 100 s (1001 pts)

8.7 FREQUENCY SEPARATION

LIMIT

According to §15.247(a)(1) & RSS-210 §A8.1 (2), Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = middle of hopping channel.
4. Set the spectrum analyzer as RBW = 30kHz, VBW = 100kHz, Span = 3MHz, Sweep = auto.
5. Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency.

TEST RESULTS

No non-compliance noted

Test Data

For GFSK / DH5

Channel Separation (MHz)	two-thirds of the 20 dB bandwidth (kHz)	Channel Separation Limit	Result
1.00	620	>two-thirds of the 20 dB bandwidth	Pass

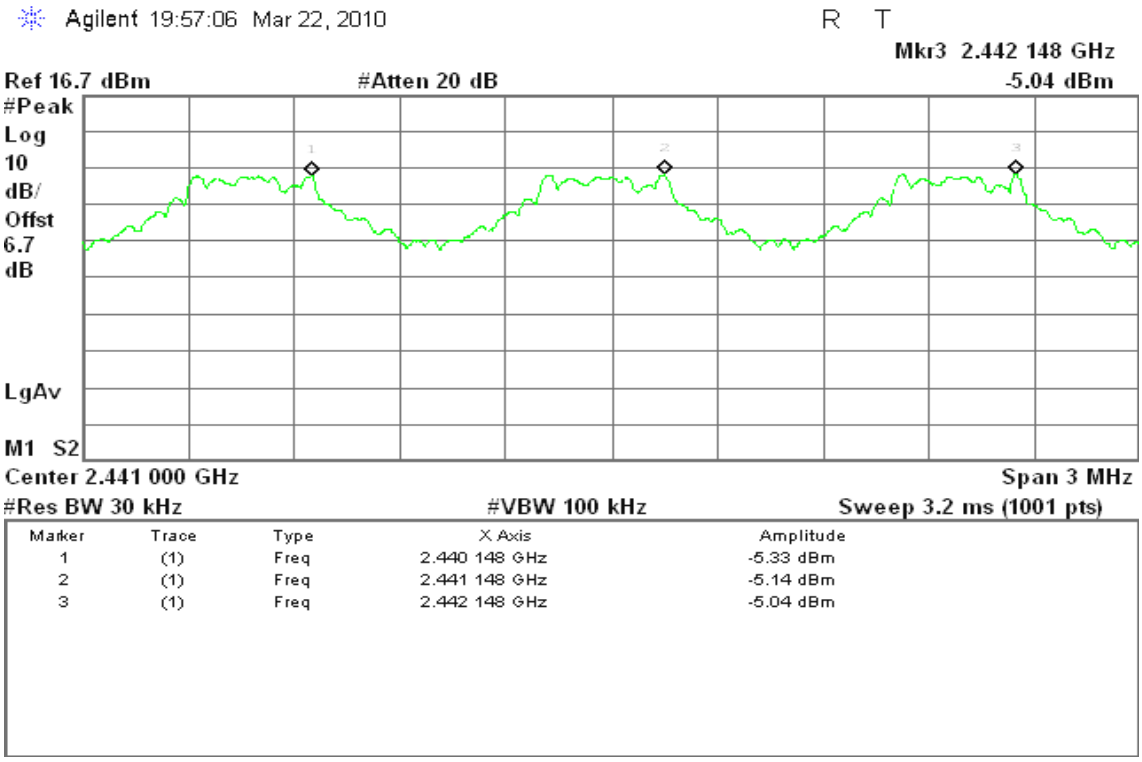
For 8DPSK / DH5

Channel Separation (MHz)	two-thirds of the 20 dB bandwidth (kHz)	Channel Separation Limit	Result
1.00	850	>two-thirds of the 20 dB bandwidth	Pass

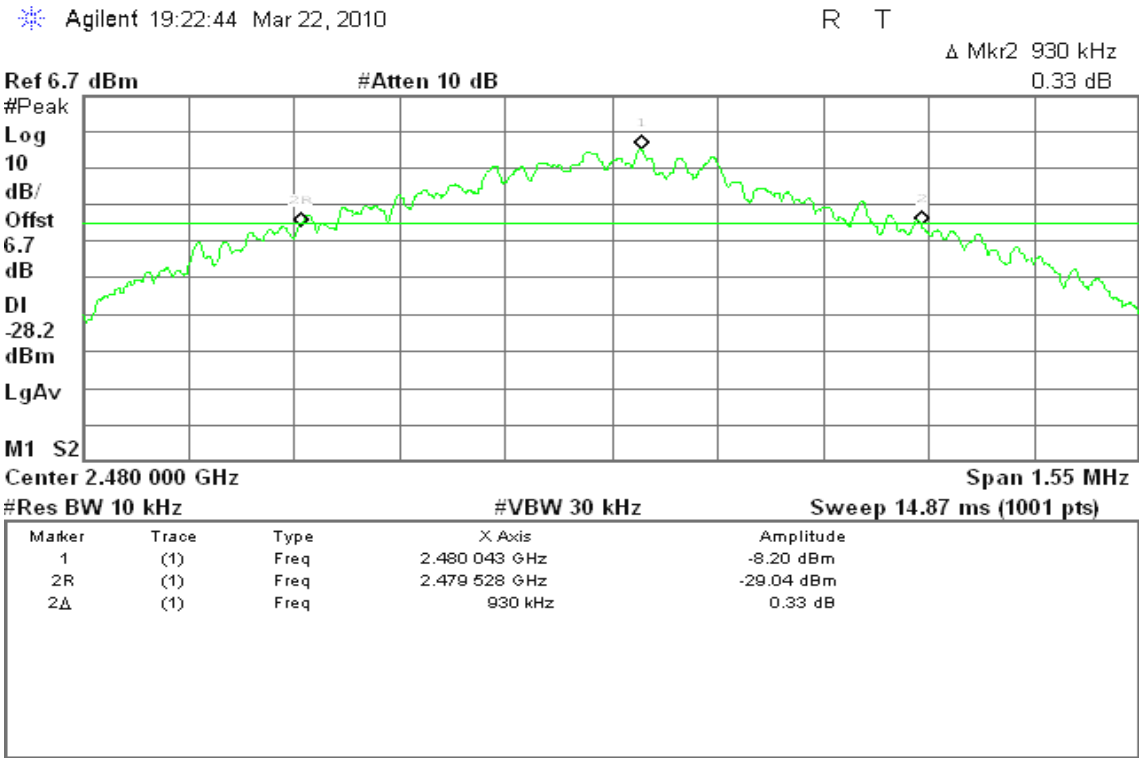
Test Plot

For GFSK / DH5

Measurement of Channel Separation

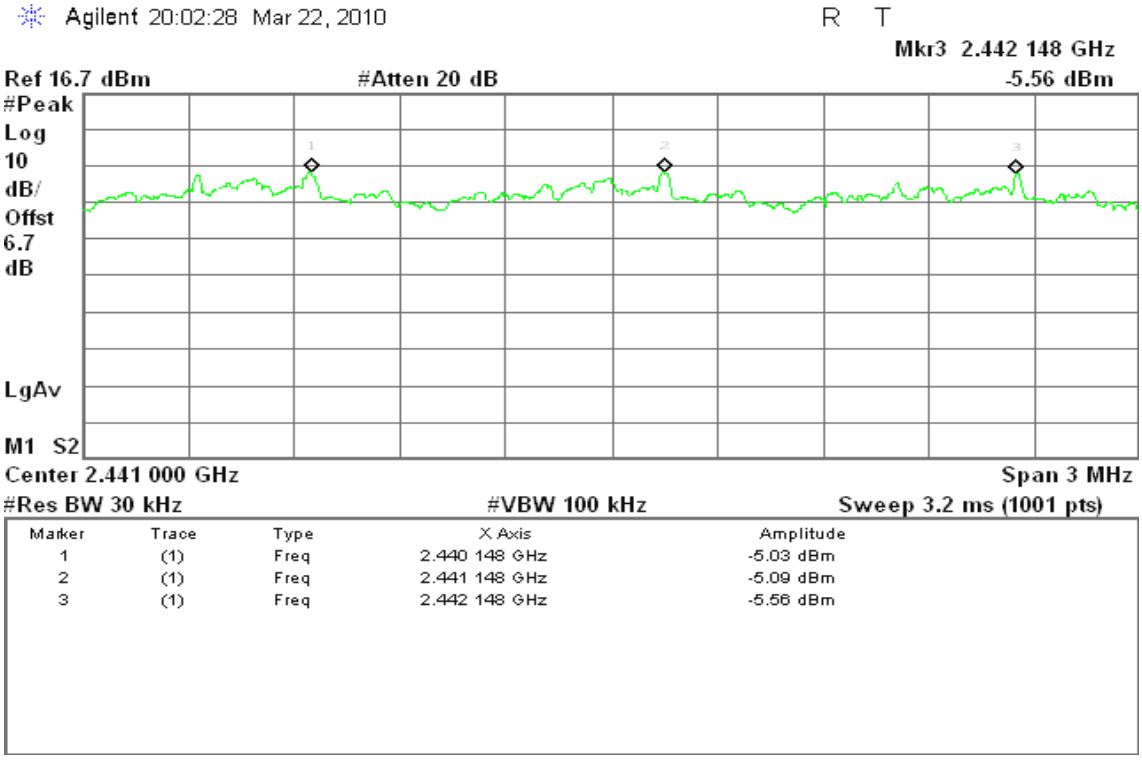


Measurement of 20dB Bandwidth

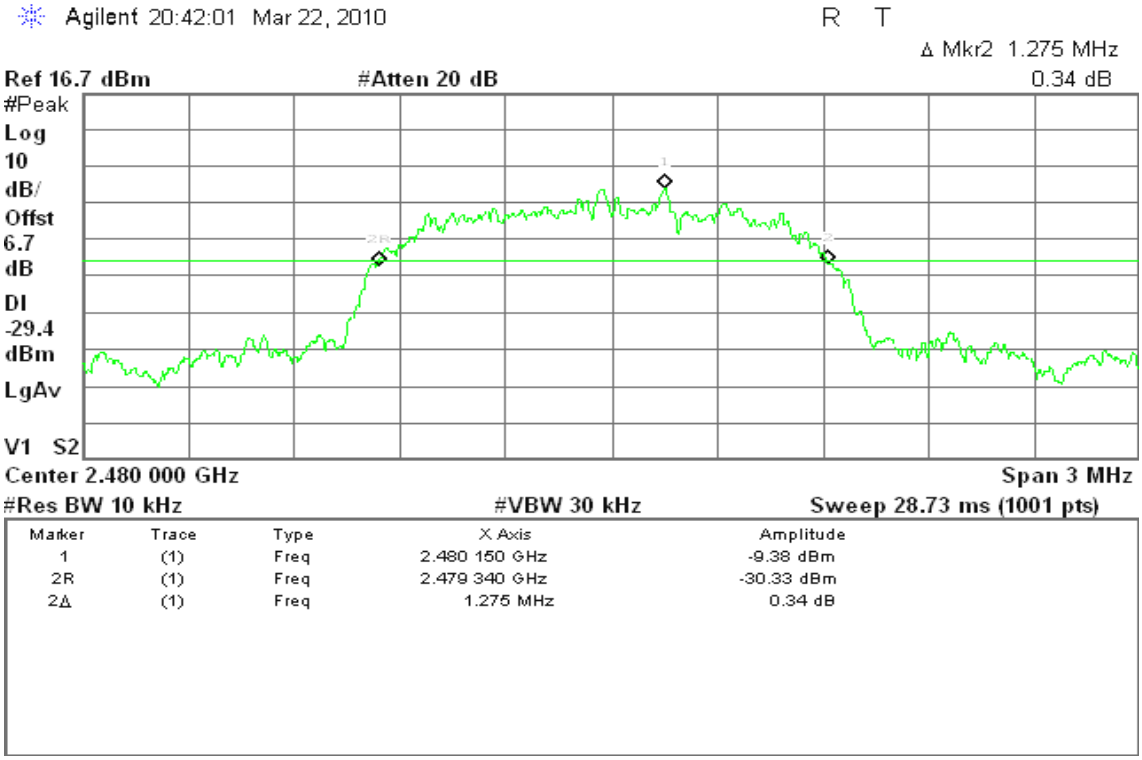


For 8DPSK / DH5

Measurement of Channel Separation



Measurement of 20dB Bandwidth

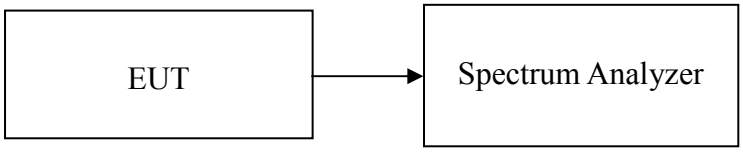


8.8 NUMBER OF HOPPING FREQUENCY

LIMIT

According to §15.247(a)(1)(iii) & RSS-210 §A8.1(4), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands shall use at least 15 hopping frequencies.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set spectrum analyzer Start=2400MHz, Stop = 2441.5MHz, Sweep = auto and Start=2441.5MHz, Stop = 2483.5MHz, Sweep = auto.
4. Set the spectrum analyzer as RBW, VBW=510kHz.
5. Max hold, view and count how many channel in the band.

TEST RESULTS

No non-compliance noted

Test Data

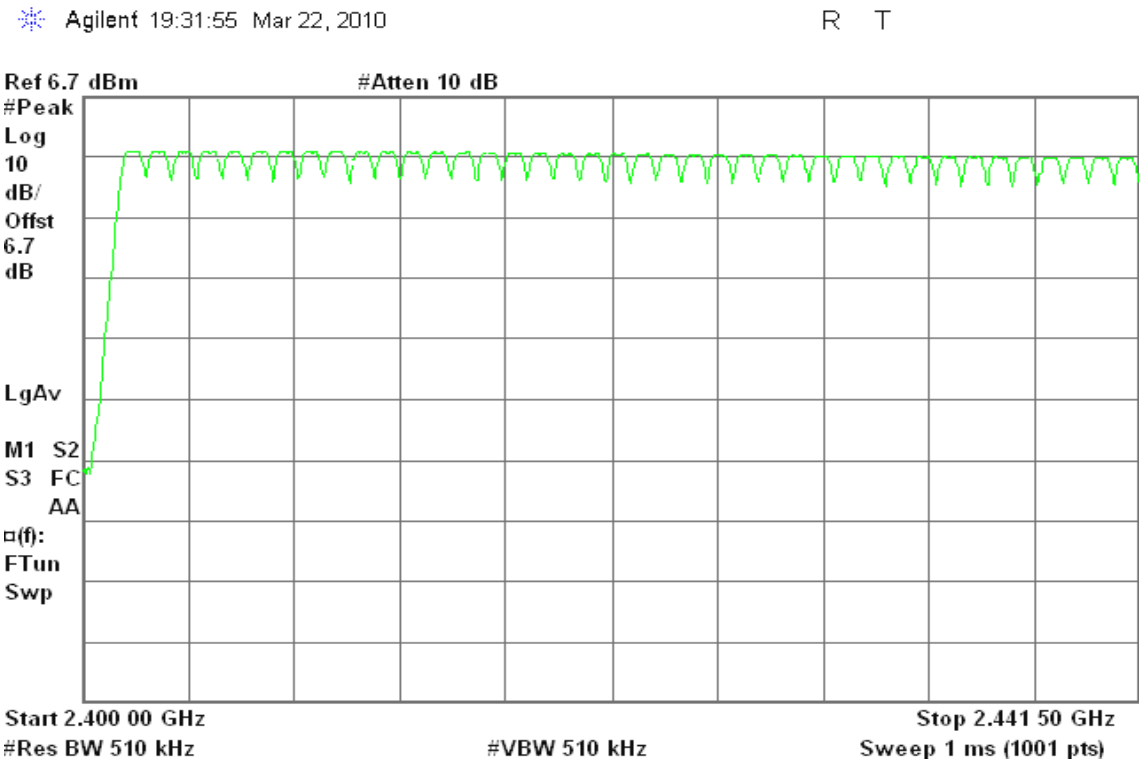
Result (No. of CH)	Limit (No. of CH)	Result
79	>15	PASS

Test Plot

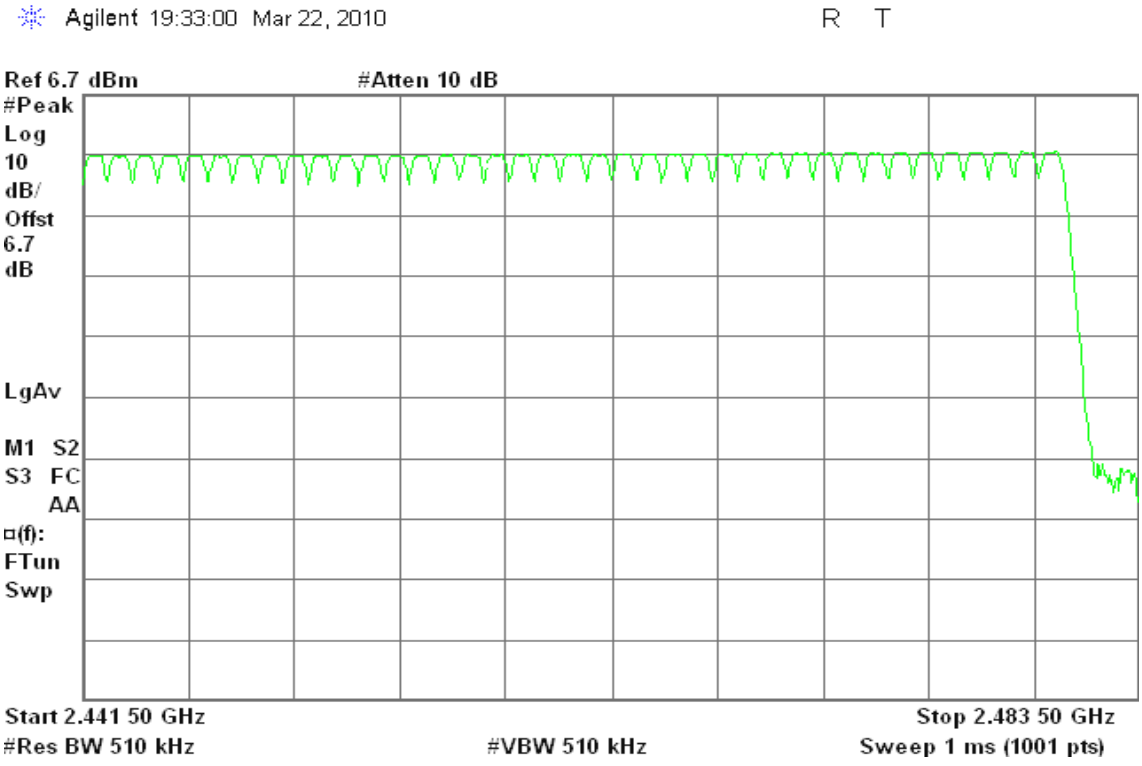
For GFSK

Channel Number

2.4 GHz – 2.4415 GHz



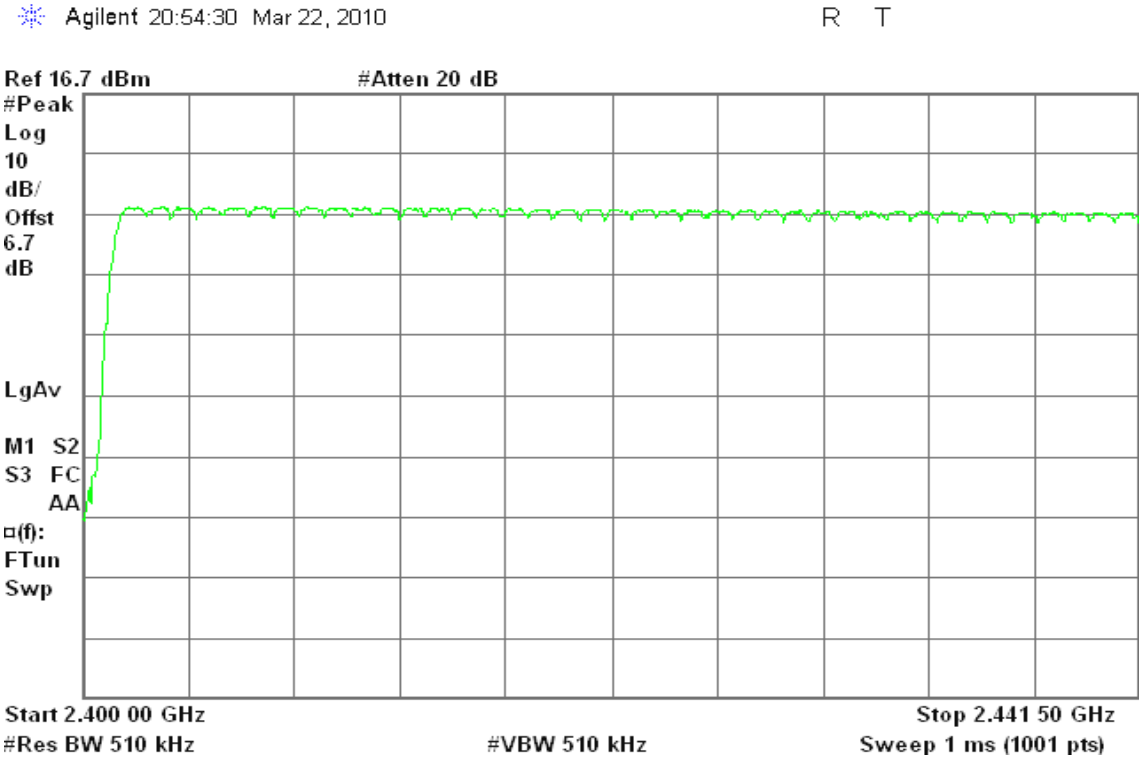
2.4415 GHz – 2.4835 GHz



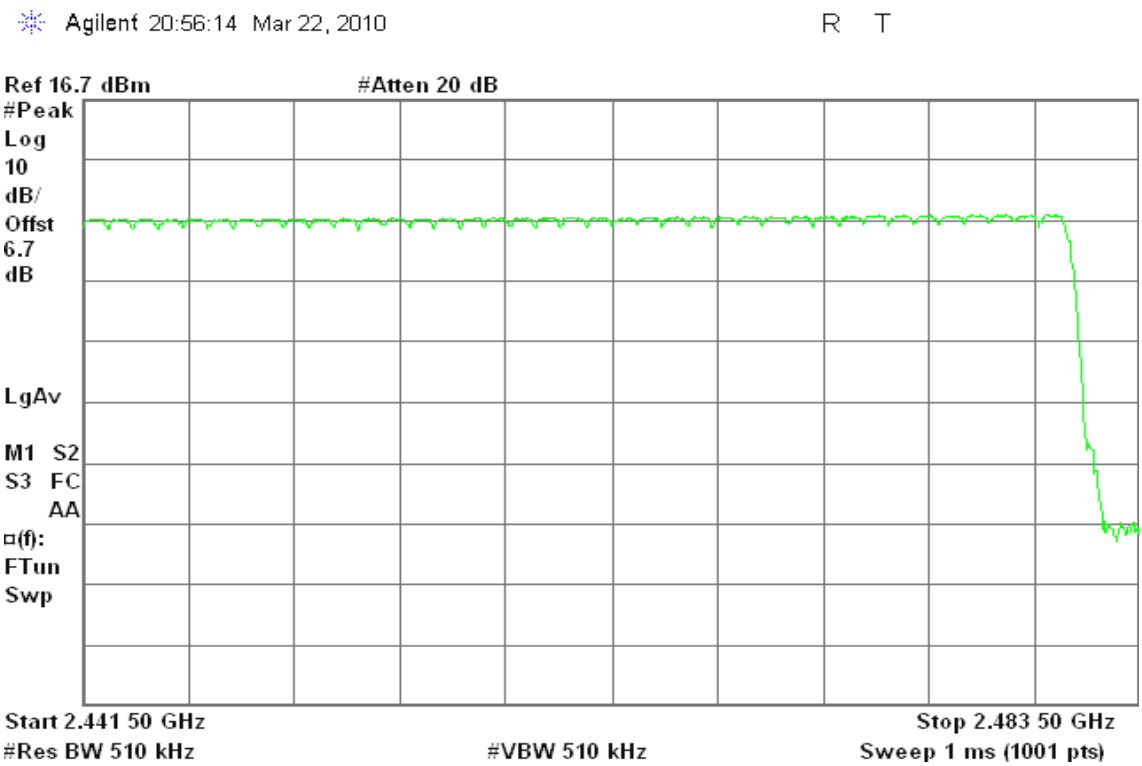
For 8DPSK

Channel Number

2.4 GHz – 2.4415 GHz



2.4415 GHz – 2.4835 GHz



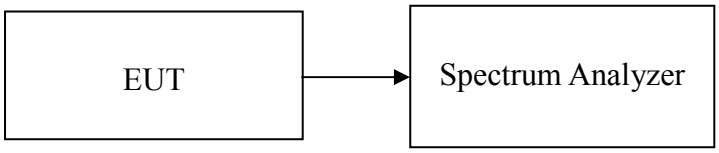
8.9 TIME OF OCCUPANCY (DWELL TIME)

LIMIT

According to §15.247(a)(1)(iii), Frequency hopping systems operating in the 2400MHz-2483.5 MHz bands. The average time of occupancy on any channels shall not greater than 0.4 s within a period 0.4 s multiplied by the number of hopping channels employed.

According to RSS-210 §A8.1(4), the average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Transmissions on particular hopping frequencies may be avoided or suppressed provided that a minimum of 15 hopping channels are used.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set center frequency of spectrum analyzer = operating frequency.
4. Set the spectrum analyzer as RBW, VBW=1MHz, Span = 0Hz, Sweep = auto.
5. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

No non-compliance noted

Test Data

For GFSK

DH 1

CH Low: 0.510 * (1600/2)/79 * 31.6 = 163.200 (ms)
CH Mid: 0.510 * (1600/2)/79 * 31.6 = 163.200 (ms)
CH High: 0.510 * (1600/2)/79 * 31.6 = 163.200 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	0.510	163.200	31.60	400.00	PASS
Mid	0.510	163.200	31.60		PASS
High	0.510	163.200	31.60		PASS

DH 3

CH Low: 1.760 * (1600/4)/79 * 31.6 = 281.600 (ms)
CH Mid: 1.760 * (1600/4)/79 * 31.6 = 281.600 (ms)
CH High: 1.760 * (1600/4)/79 * 31.6 = 281.600 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	1.760	281.600	31.60	400.00	PASS
Mid	1.760	281.600	31.60		PASS
High	1.760	281.600	31.60		PASS

DH 5

CH Low: 3.010 * (1600/6)/79 * 31.6 = 321.067 (ms)
CH Mid: 3.010 * (1600/6)/79 * 31.6 = 321.067 (ms)
CH High: 3.010 * (1600/6)/79 * 31.6 = 321.067 (ms)

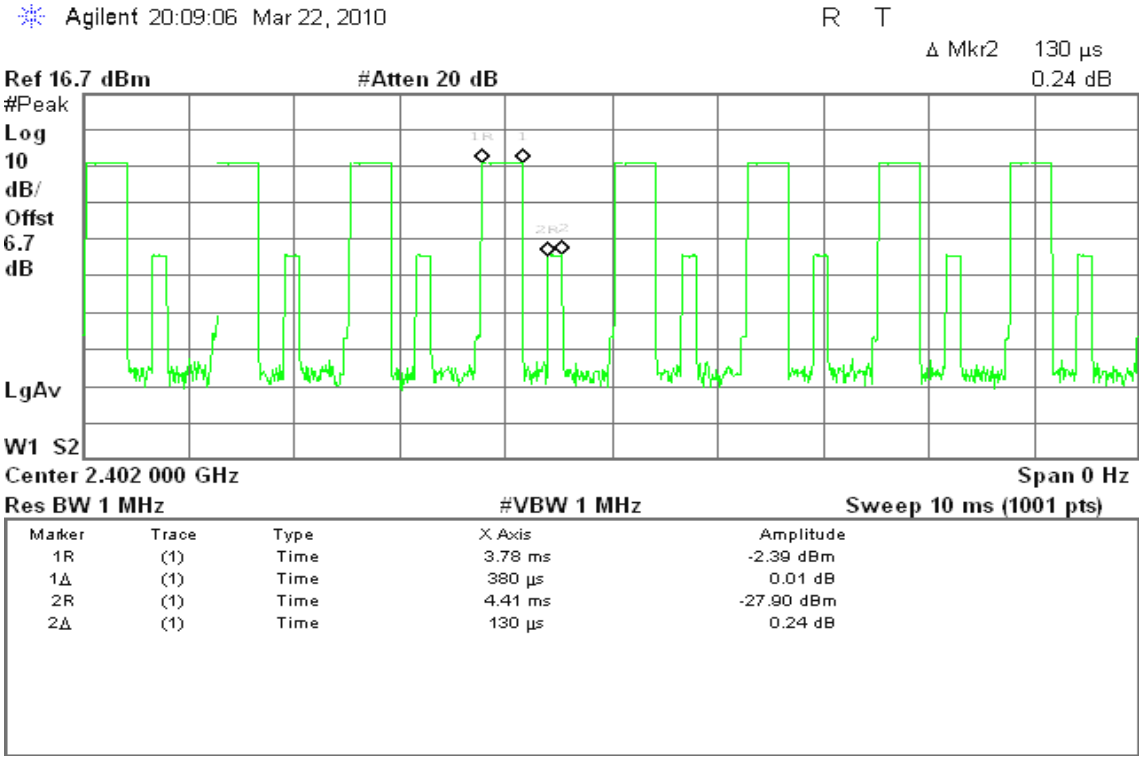
CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	3.010	321.067	31.60	400.00	PASS
Mid	3.010	321.067	31.60		PASS
High	3.010	321.067	31.60		PASS

Test Plot

For GFSK

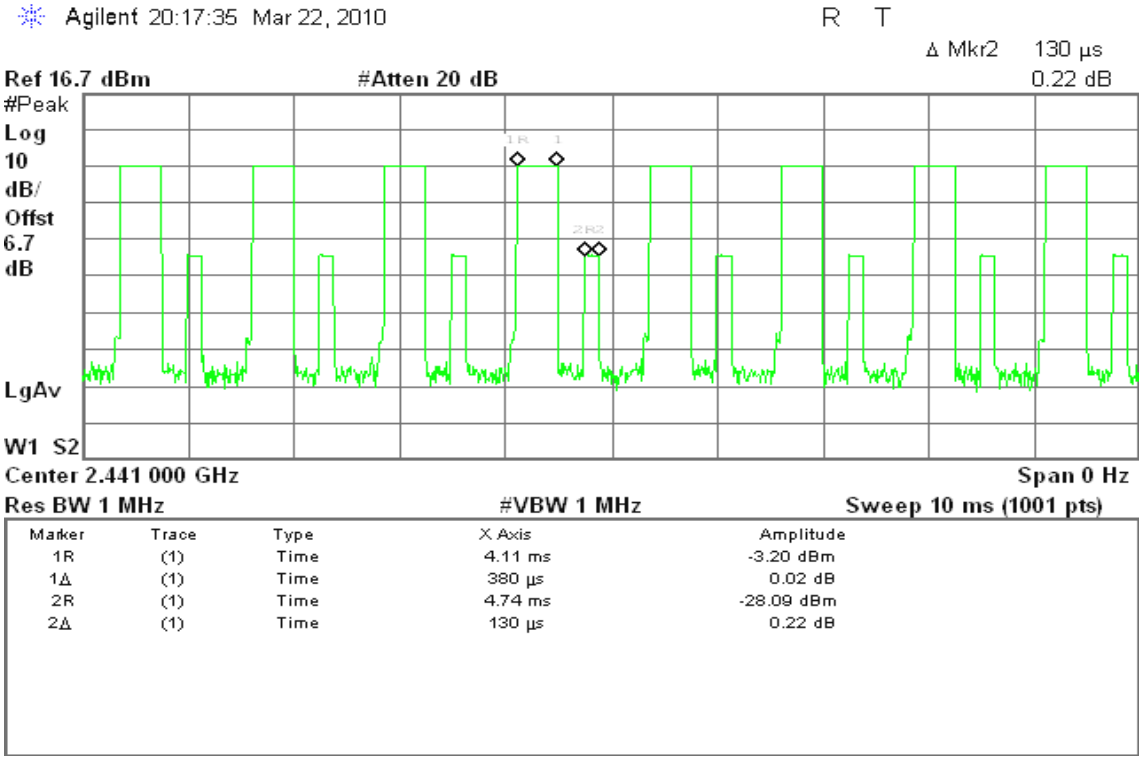
DH 1

CH Low



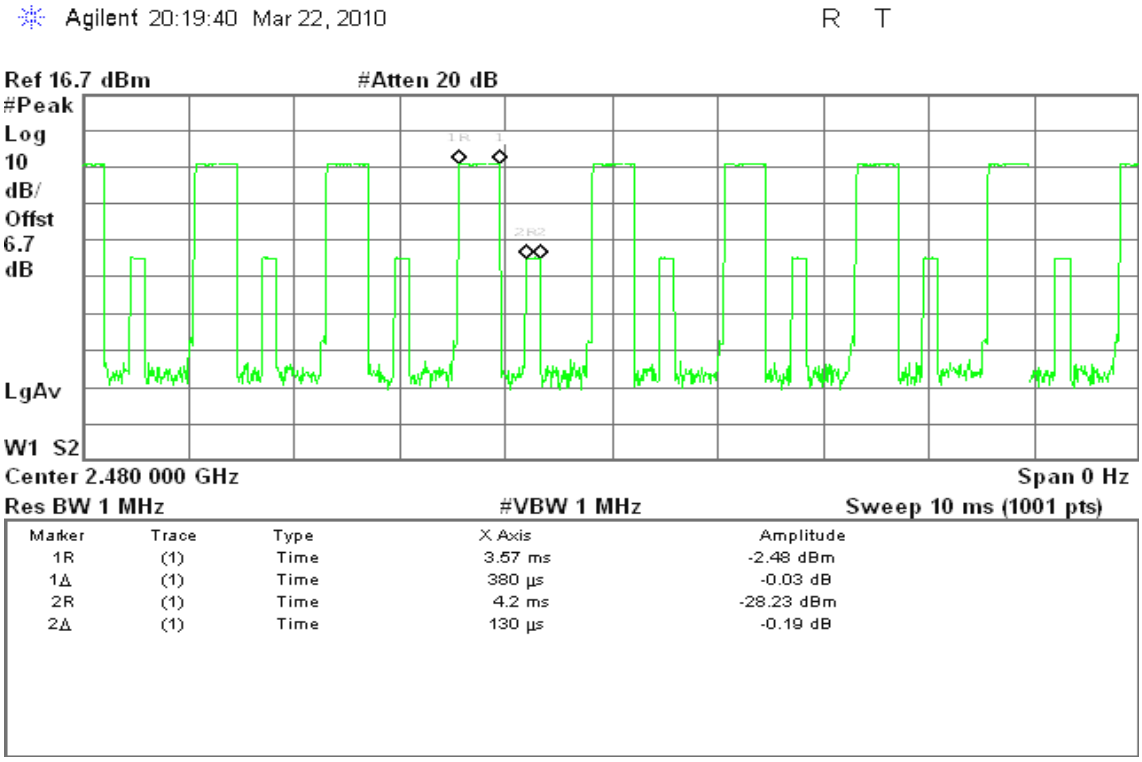
Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	3.78 ms	-2.39 dBm
1Δ	(1)	Time	380 µs	0.01 dB
2R	(1)	Time	4.41 ms	-27.90 dBm
2Δ	(1)	Time	130 µs	0.24 dB

CH Mid



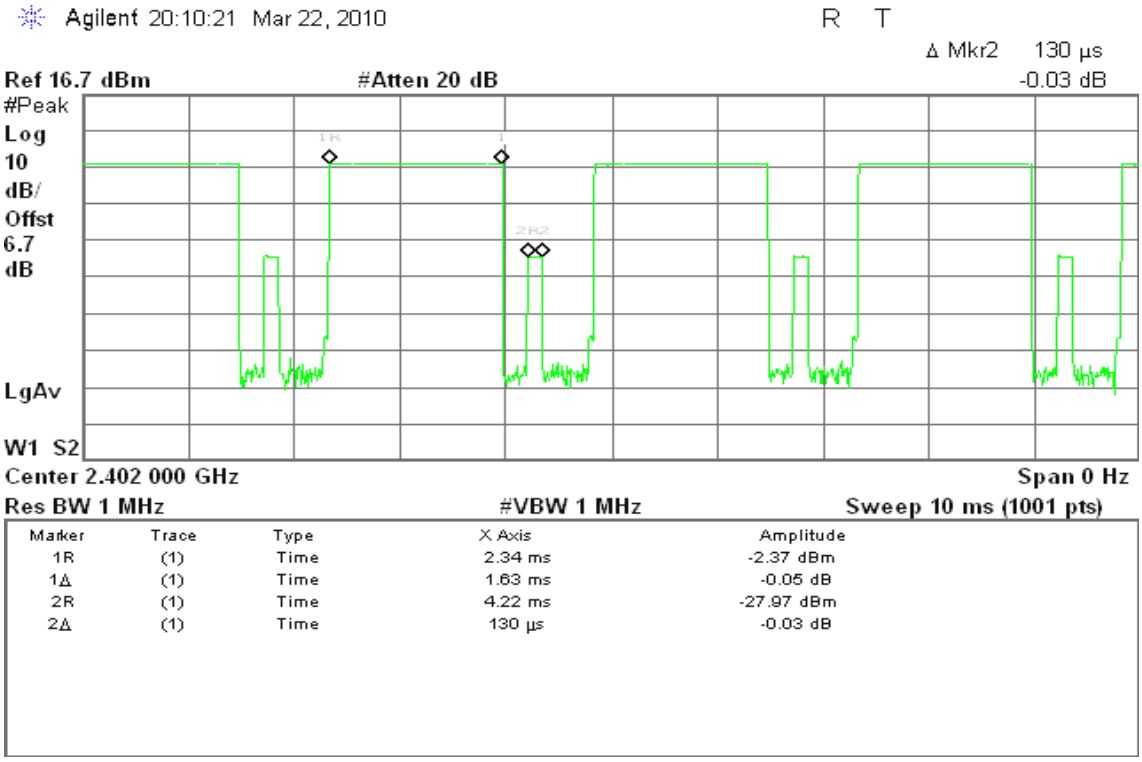
Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	4.11 ms	-3.20 dBm
1Δ	(1)	Time	380 µs	0.02 dB
2R	(1)	Time	4.74 ms	-28.09 dBm
2Δ	(1)	Time	130 µs	0.22 dB

CH High

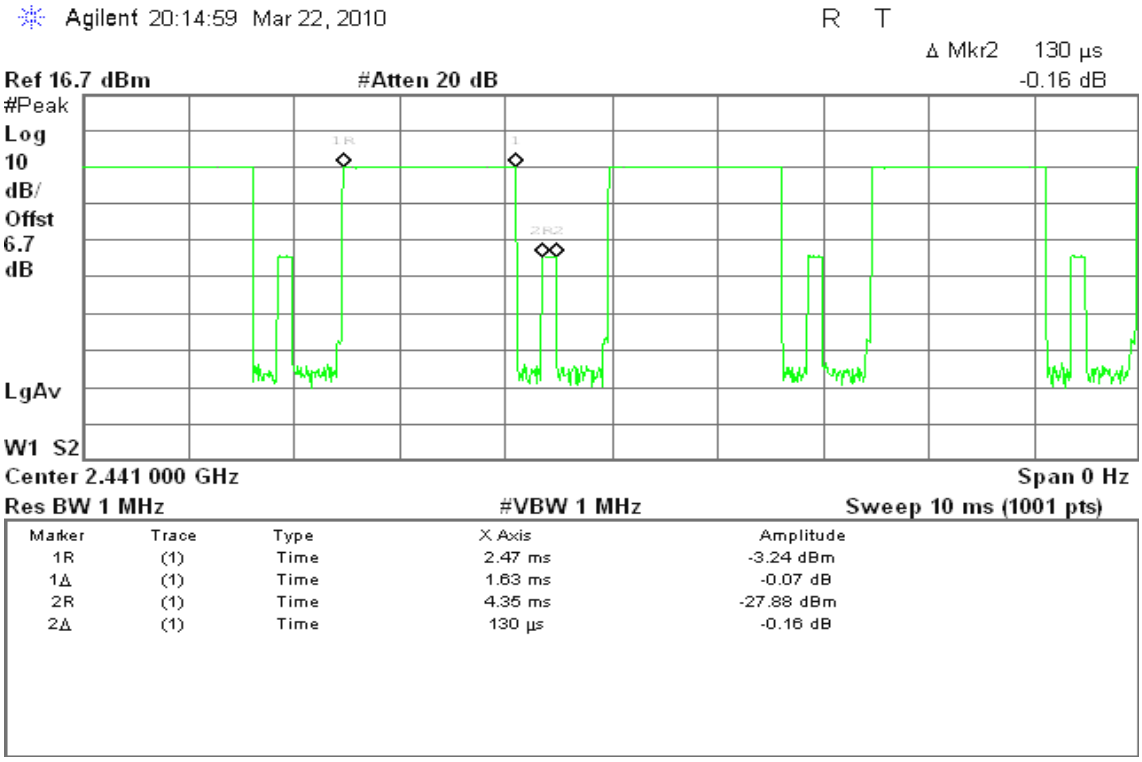


DH 3

CH Low

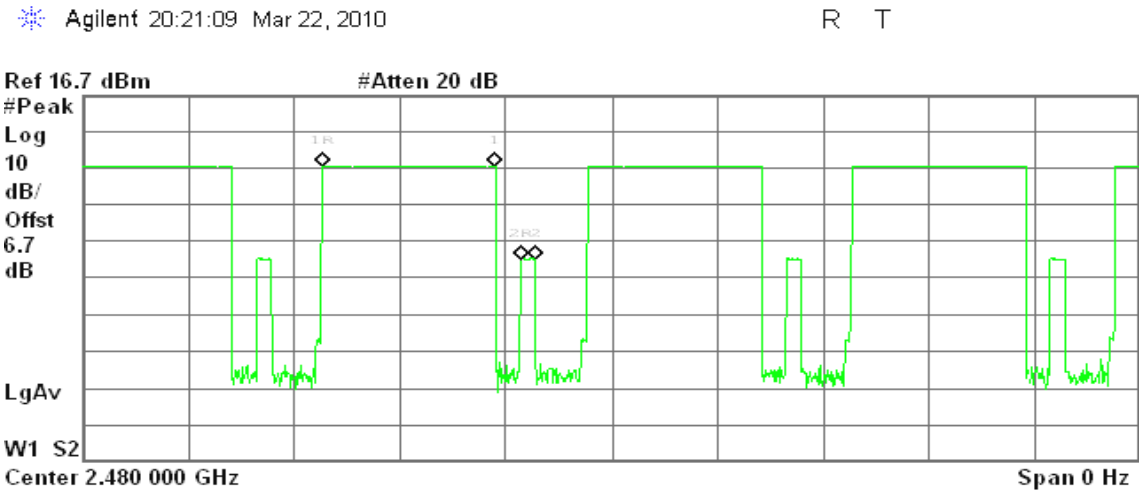


CH Mid



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.47 ms	-3.24 dBm
1Δ	(1)	Time	1.63 ms	-0.07 dB
2R	(1)	Time	4.35 ms	-27.88 dBm
2Δ	(1)	Time	130 µs	-0.16 dB

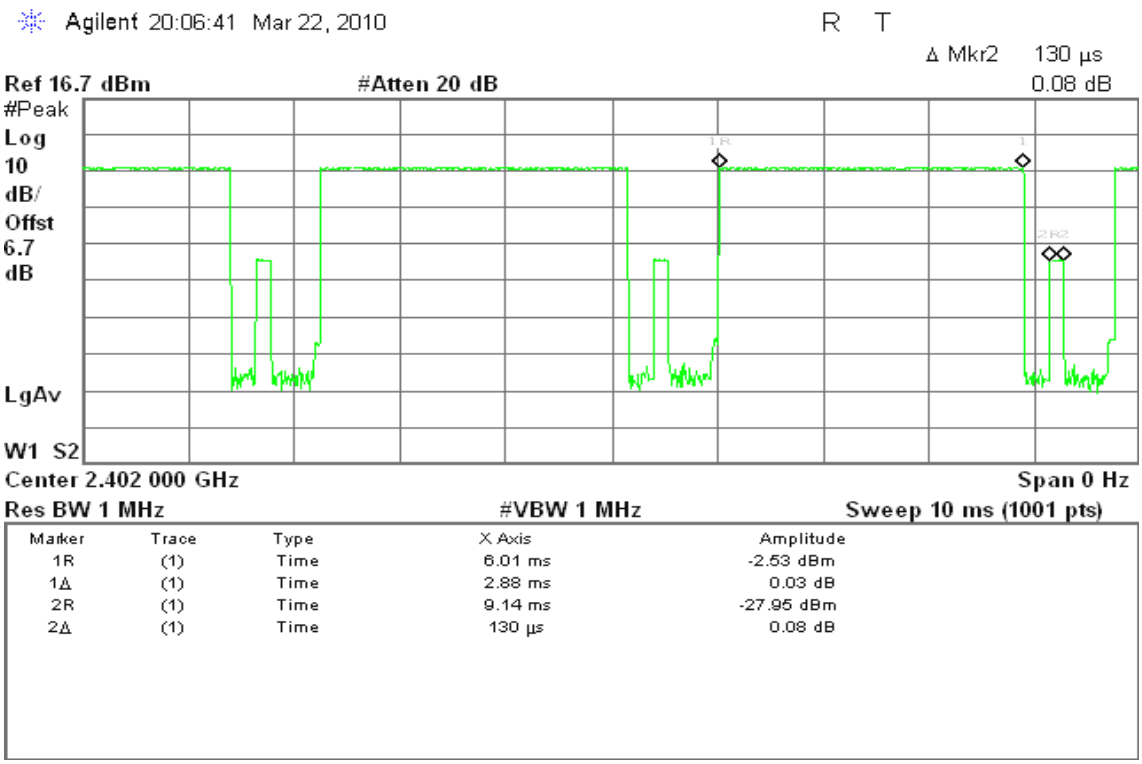
CH High



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.27 ms	-2.63 dBm
1Δ	(1)	Time	1.63 ms	-0.08 dB
2R	(1)	Time	4.15 ms	-28.25 dBm
2Δ	(1)	Time	130 µs	0.13 dB

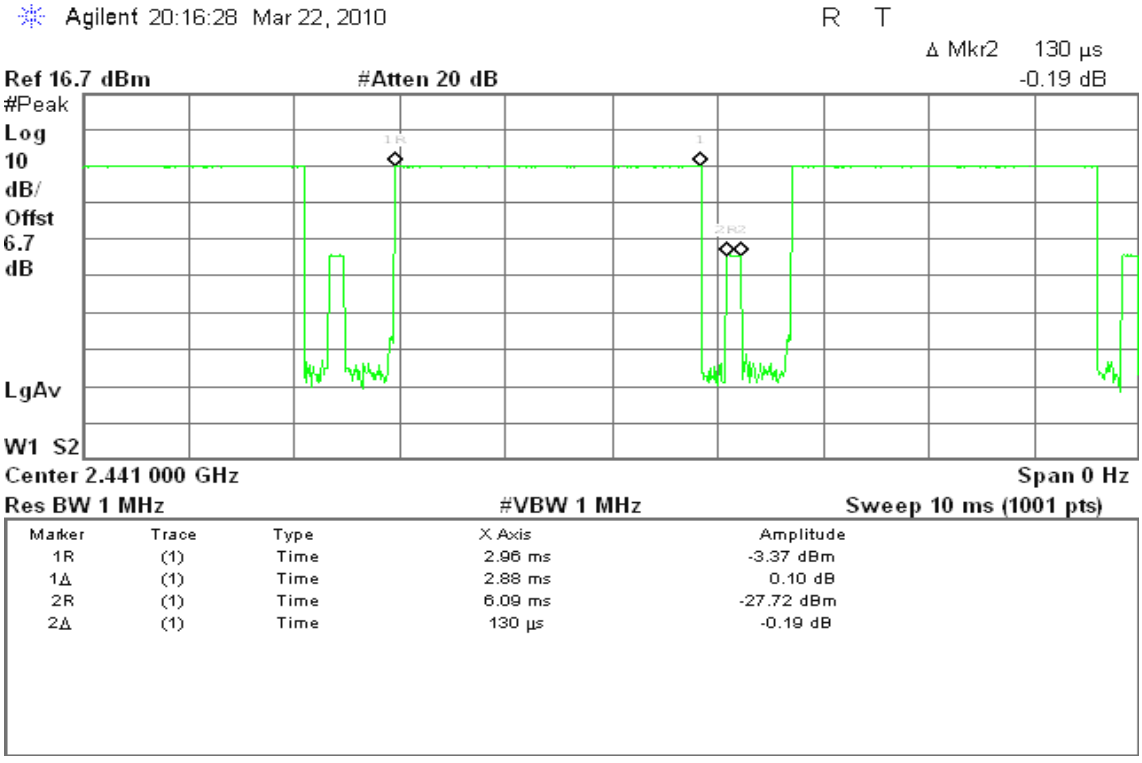
DH 5

CH Low



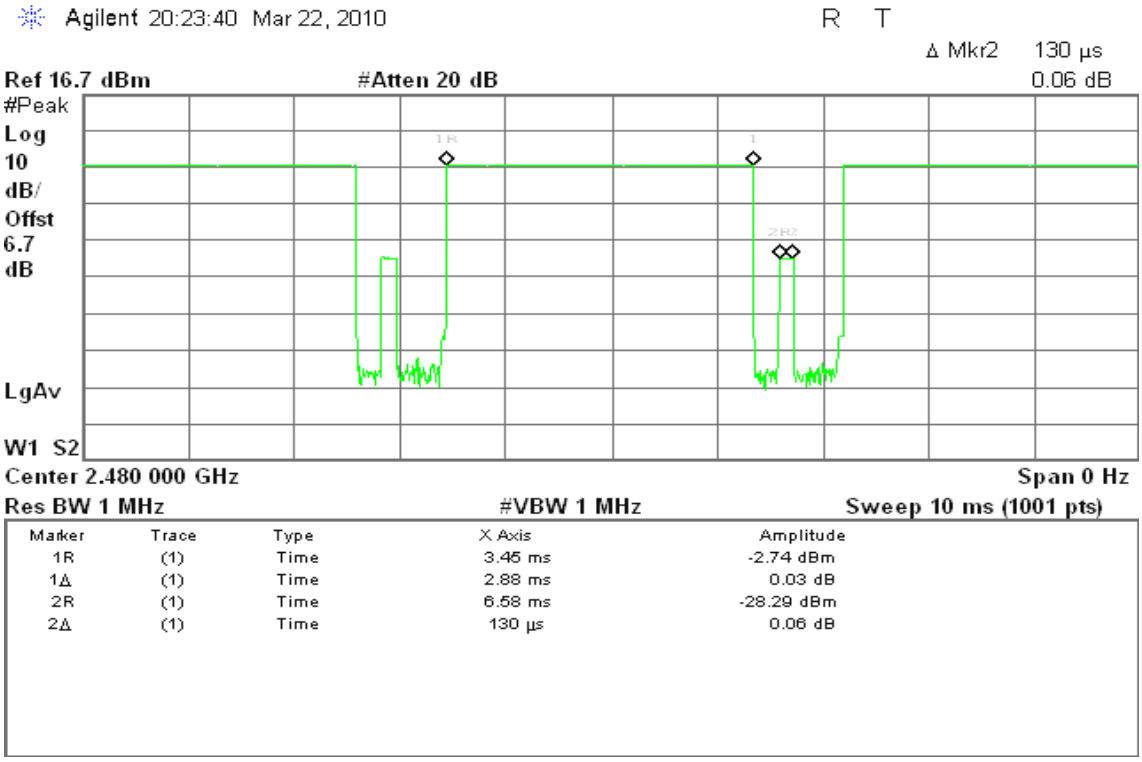
Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	6.01 ms	-2.53 dBm
1Δ	(1)	Time	2.88 ms	0.03 dB
2R	(1)	Time	9.14 ms	-27.95 dBm
2Δ	(1)	Time	130 µs	0.08 dB

CH Mid



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.96 ms	-3.37 dBm
1Δ	(1)	Time	2.88 ms	0.10 dB
2R	(1)	Time	6.09 ms	-27.72 dBm
2Δ	(1)	Time	130 µs	-0.19 dB

CH High


Agilent 20:23:40 Mar 22, 2010
R T
Δ Mkr2 130 µs
0.06 dB
Ref 16.7 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
6.7
dB
LgAv
W1 S2
Center 2.480 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 10 ms (1001 pts)
Marker Trace Type X Axis Amplitude
1R (1) Time 3.45 ms -2.74 dBm
1Δ (1) Time 2.88 ms 0.03 dB
2R (1) Time 6.58 ms -28.29 dBm
2Δ (1) Time 130 µs 0.06 dB

Test Data

For 8DPSK

DH 1

CH Low: 0.510 * (1600/2)/79 * 31.6 = 163.200 (ms)
CH Mid: 0.510 * (1600/2)/79 * 31.6 = 163.200 (ms)
CH High: 0.510 * (1600/2)/79 * 31.6 = 163.200 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	0.510	163.200	31.60	400.00	PASS
Mid	0.510	163.200	31.60		PASS
High	0.510	163.200	31.60		PASS

DH 3

CH Low: 1.760 * (1600/4)/79 * 31.6 = 281.600 (ms)
CH Mid: 1.760 * (1600/4)/79 * 31.6 = 281.600 (ms)
CH High: 1.760 * (1600/4)/79 * 31.6 = 281.600 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	1.760	281.600	31.60	400.00	PASS
Mid	1.760	281.600	31.60		PASS
High	1.760	281.600	31.60		PASS

DH 5

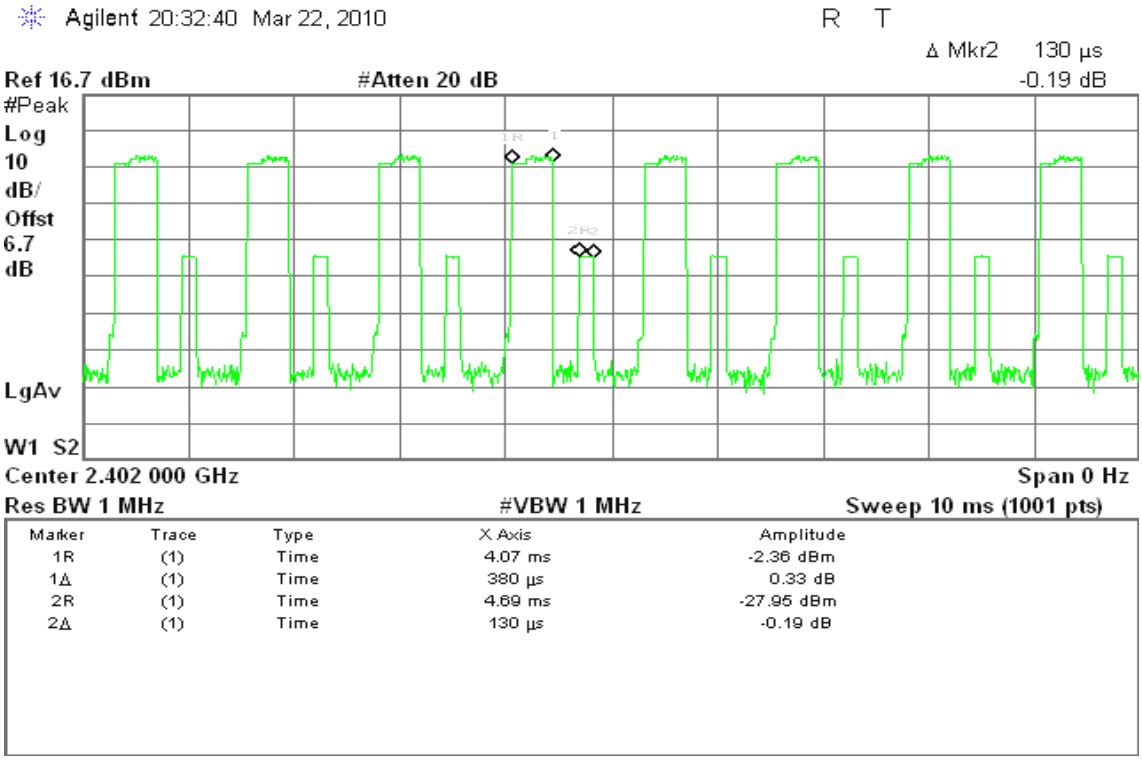
CH Low: 3.020 * (1600/6)/79 * 31.6 = 322.133 (ms)
CH Mid: 3.020 * (1600/6)/79 * 31.6 = 322.133 (ms)
CH High: 3.020 * (1600/6)/79 * 31.6 = 322.133 (ms)

CH	Pulse Time (ms)	Total of Dwell (ms)	Period Time (s)	Limit (ms)	Result
Low	3.020	322.133	31.60	400.00	PASS
Mid	3.020	322.133	31.60		PASS
High	3.020	322.133	31.60		PASS

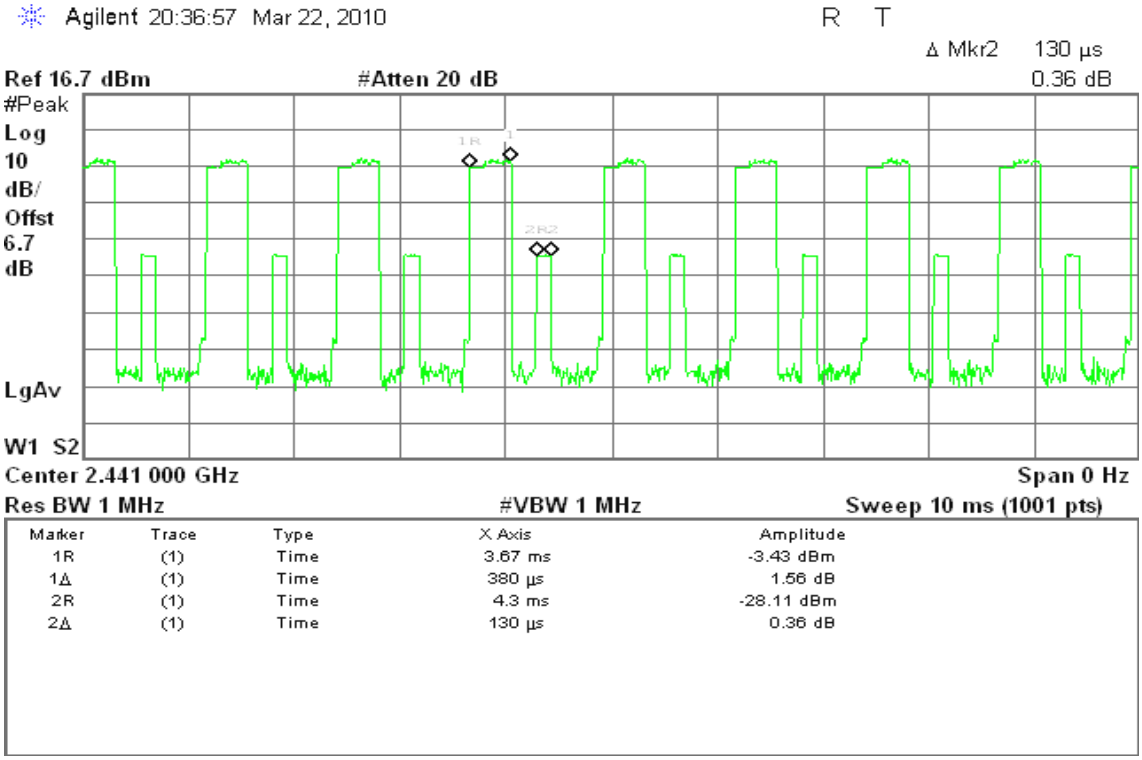
For 8DPSK

DH 1

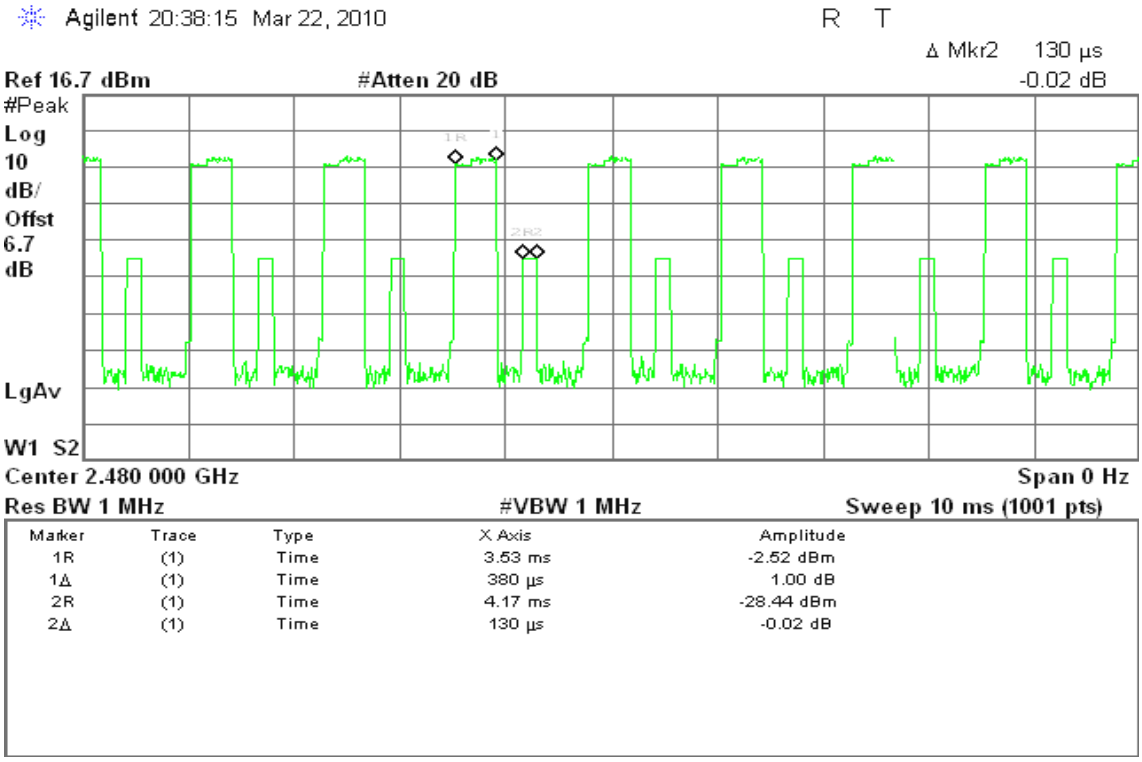
CH Low



CH Mid



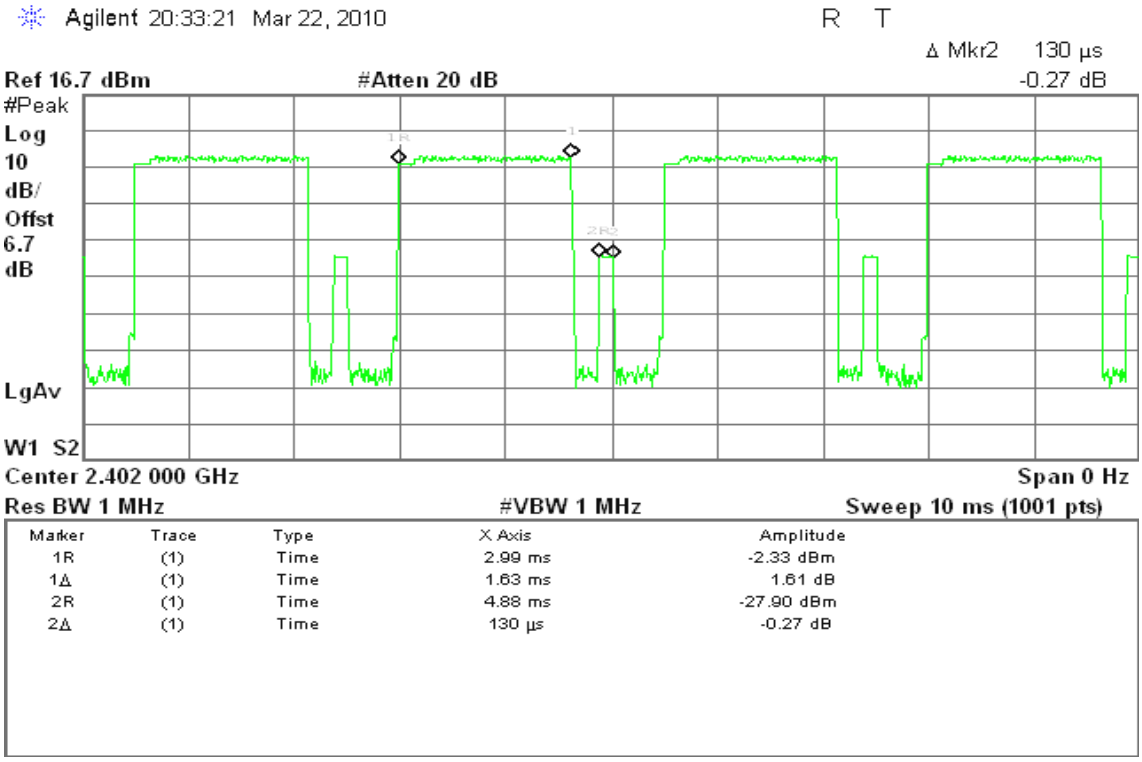
CH High



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	3.53 ms	-2.52 dBm
1Δ	(1)	Time	380 µs	1.00 dB
2R	(1)	Time	4.17 ms	-28.44 dBm
2Δ	(1)	Time	130 µs	-0.02 dB

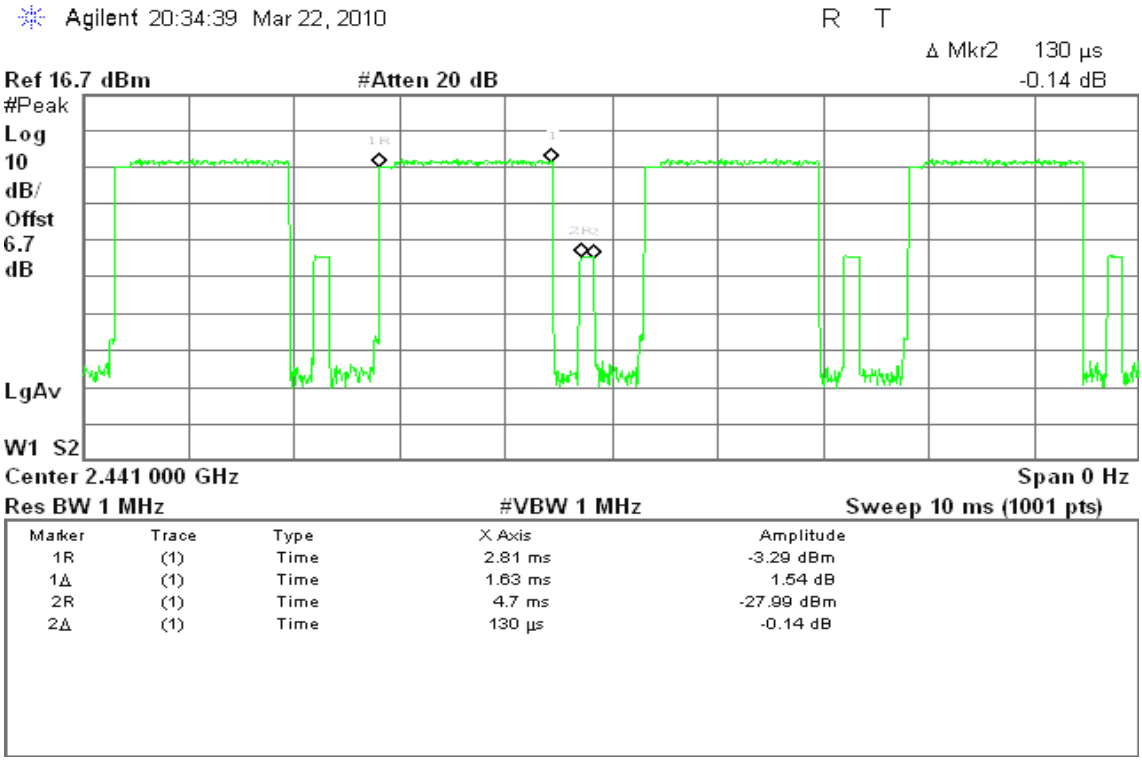
DH 3

CH Low



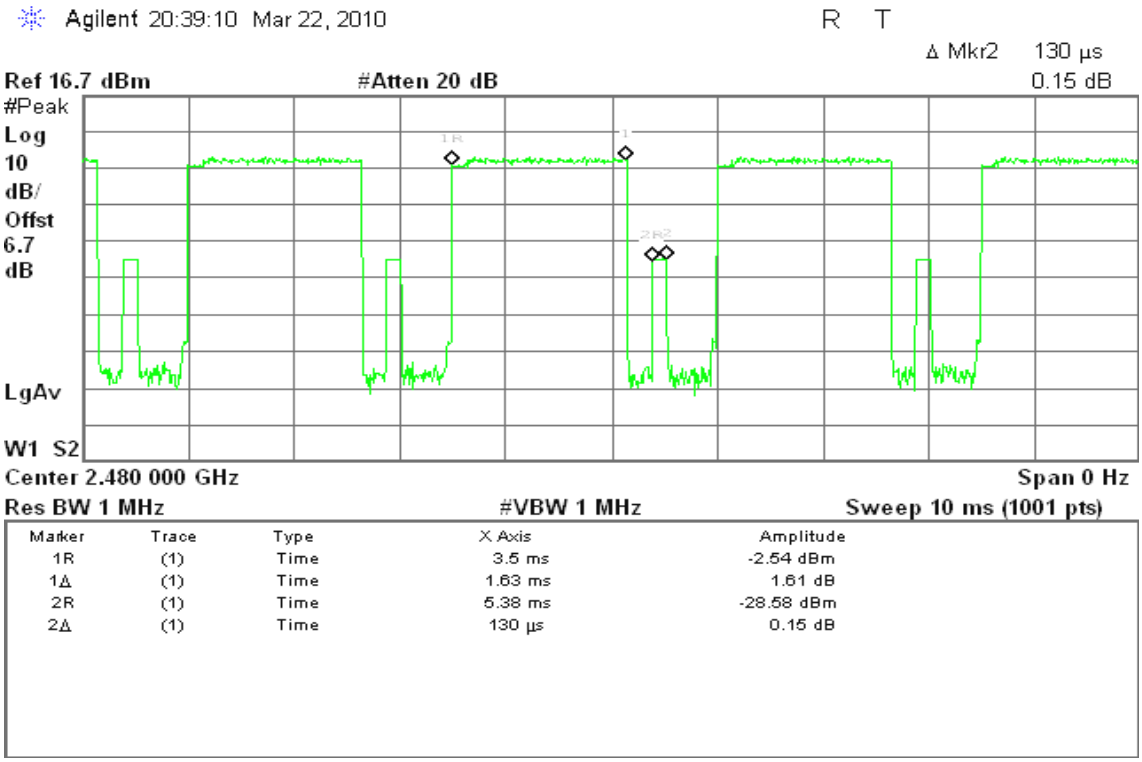
Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.99 ms	-2.33 dBm
1Δ	(1)	Time	1.63 ms	1.61 dB
2R	(1)	Time	4.88 ms	-27.90 dBm
2Δ	(1)	Time	130 µs	-0.27 dB

CH Mid



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.81 ms	-3.29 dBm
1Δ	(1)	Time	1.63 ms	1.54 dB
2R	(1)	Time	4.7 ms	-27.99 dBm
2Δ	(1)	Time	130 µs	-0.14 dB

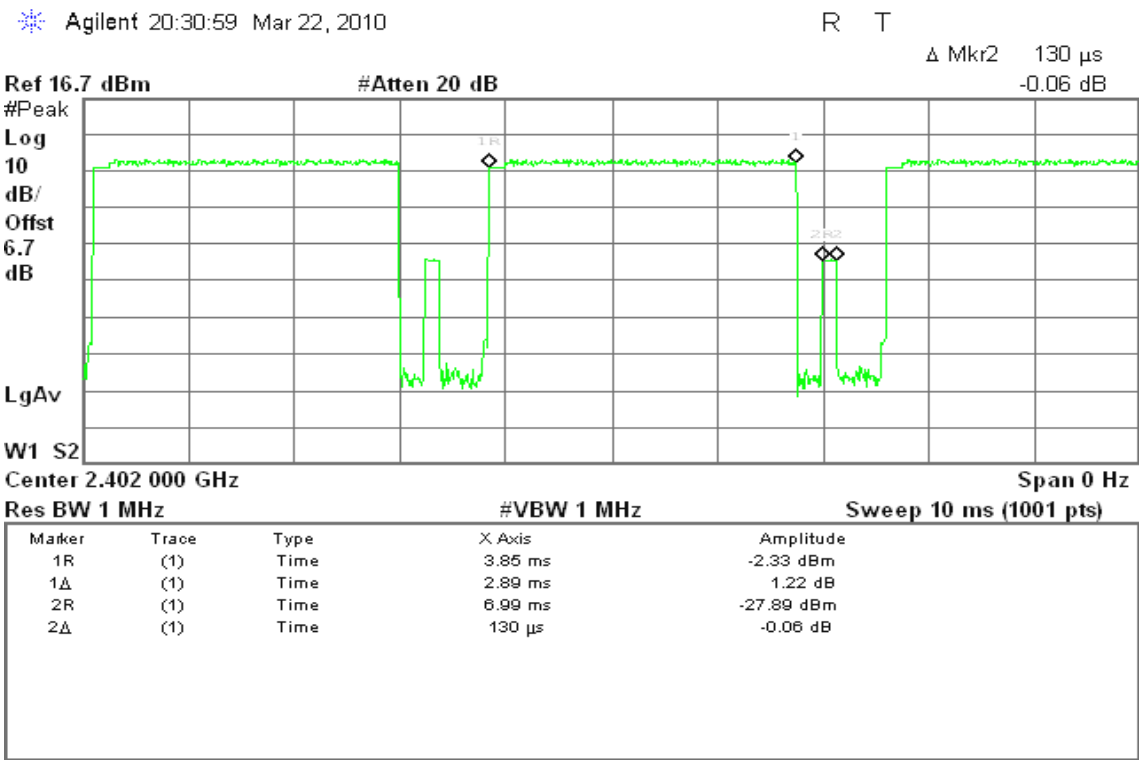
CH High



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	3.5 ms	-2.54 dBm
1Δ	(1)	Time	1.63 ms	1.61 dB
2R	(1)	Time	5.38 ms	-28.58 dBm
2Δ	(1)	Time	130 µs	0.15 dB

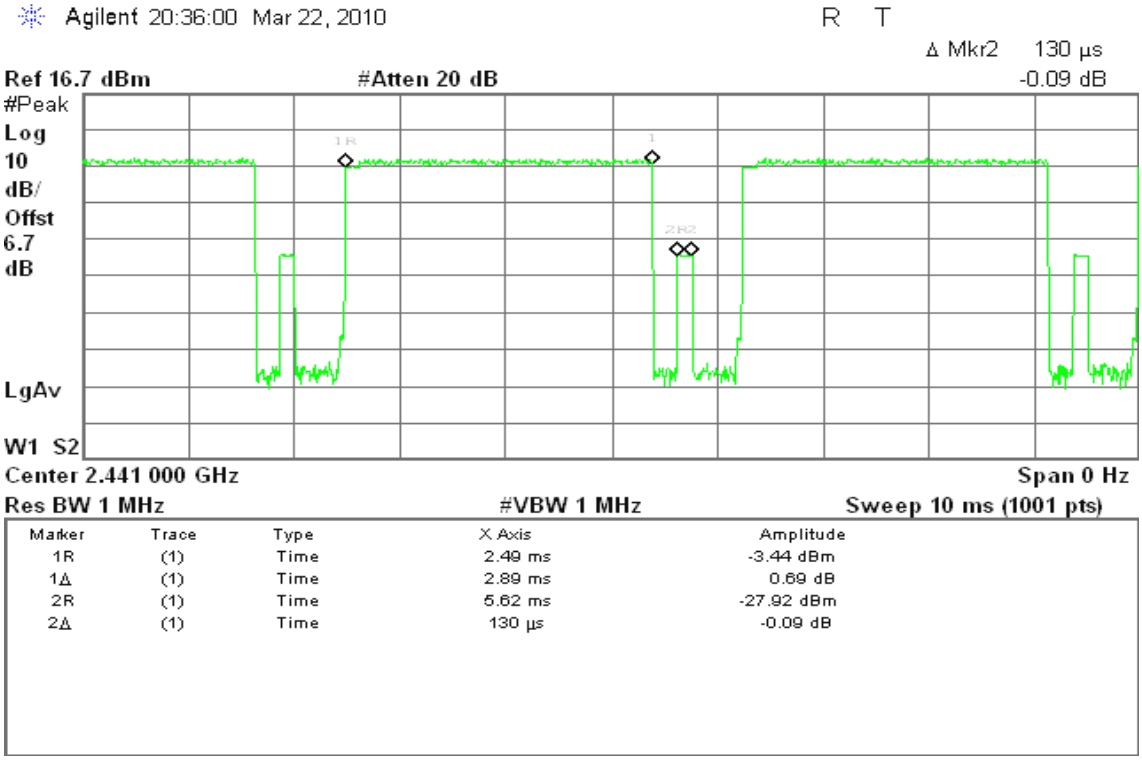
DH 5

CH Low



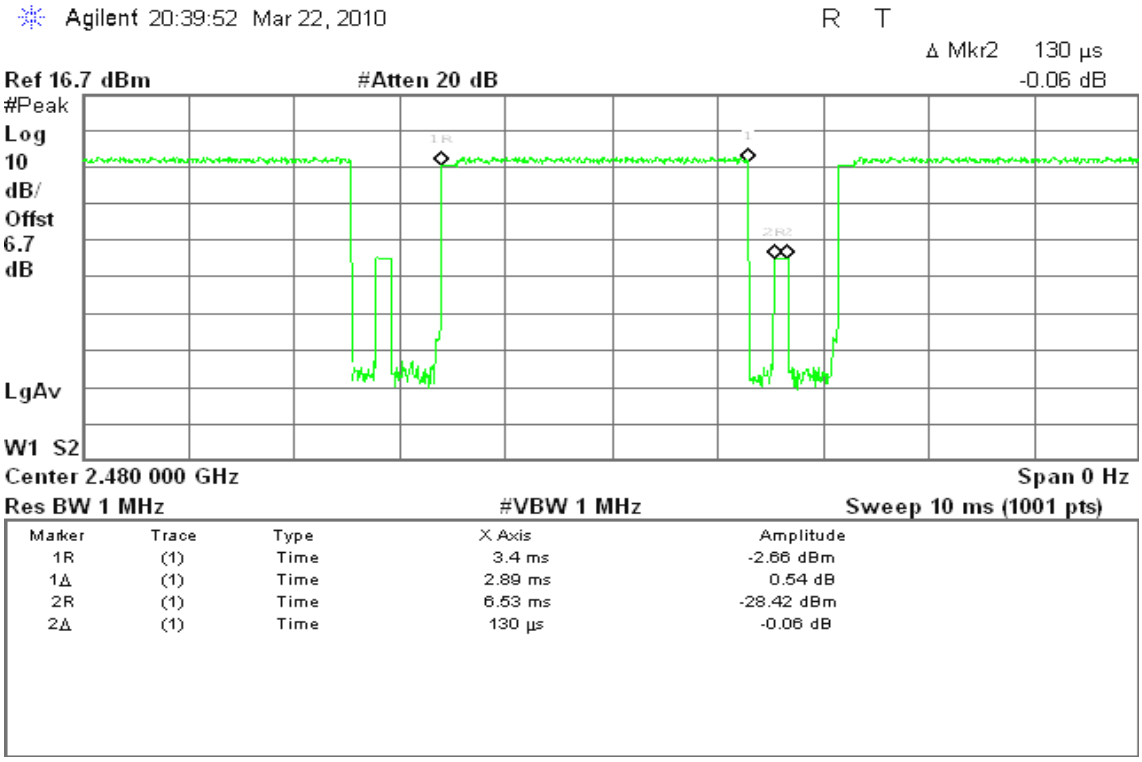
Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	3.85 ms	-2.33 dBm
1Δ	(1)	Time	2.89 ms	1.22 dB
2R	(1)	Time	6.99 ms	-27.89 dBm
2Δ	(1)	Time	130 µs	-0.06 dB

CH Mid



Marker	Trace	Type	X Axis	Amplitude
1R	(1)	Time	2.49 ms	-3.44 dBm
1Δ	(1)	Time	2.89 ms	0.69 dB
2R	(1)	Time	5.62 ms	-27.92 dBm
2Δ	(1)	Time	130 µs	-0.09 dB

CH High


Agilent 20:39:52 Mar 22, 2010
R T
Δ Mkr2 130 µs
-0.06 dB
Ref 16.7 dBm
#Atten 20 dB
#Peak
Log
10
dB/
Offst
6.7
dB
LgAv
W1 S2
Center 2.480 000 GHz
Span 0 Hz
Res BW 1 MHz
#VBW 1 MHz
Sweep 10 ms (1001 pts)
Marker Trace Type X Axis Amplitude
1R (1) Time 3.4 ms -2.66 dBm
1Δ (1) Time 2.89 ms 0.54 dB
2R (1) Time 6.53 ms -28.42 dBm
2Δ (1) Time 130 µs -0.06 dB

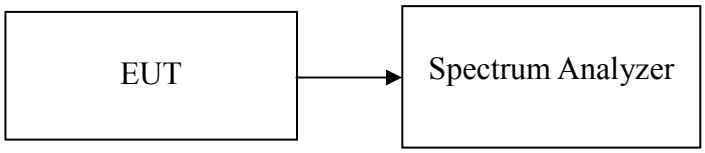
8.10 SPURIOUS EMISSIONS

8.10.1 Conducted Measurement

LIMIT

According to §15.247(d) & RSS-210 §A8.5, in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a) (see Section 15.205(c)).

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 100 kHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

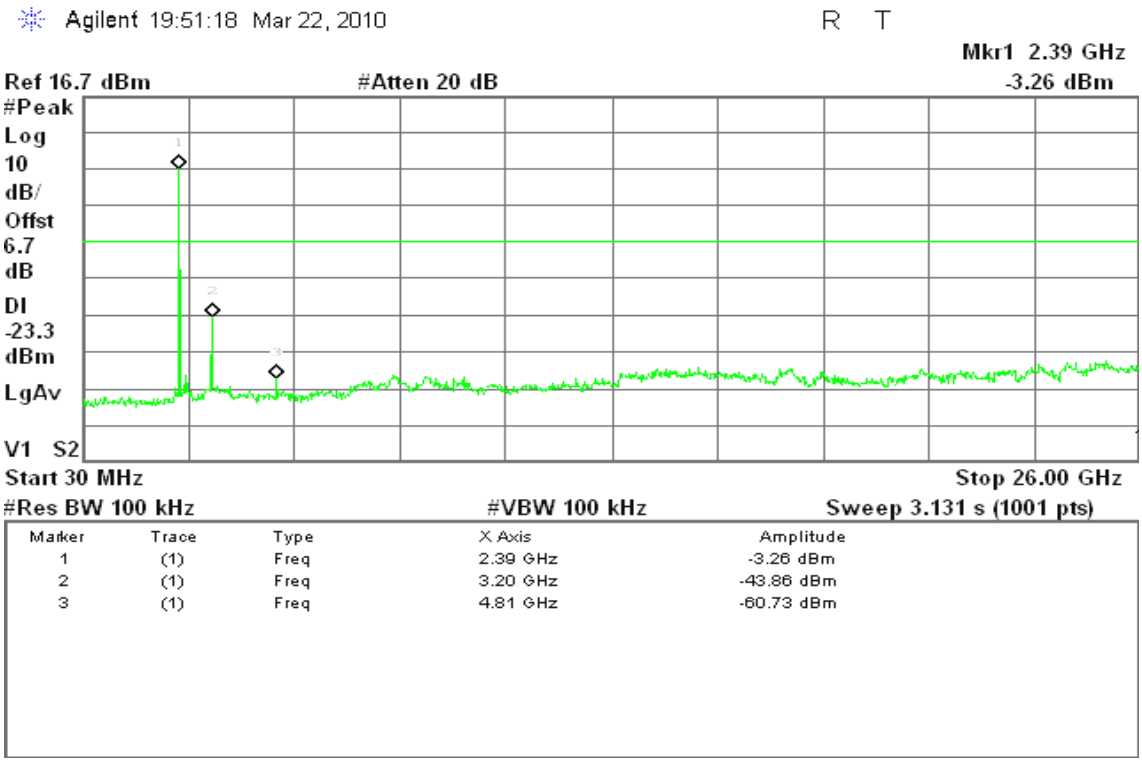
TEST RESULTS

No non-compliance noted

Test Plot

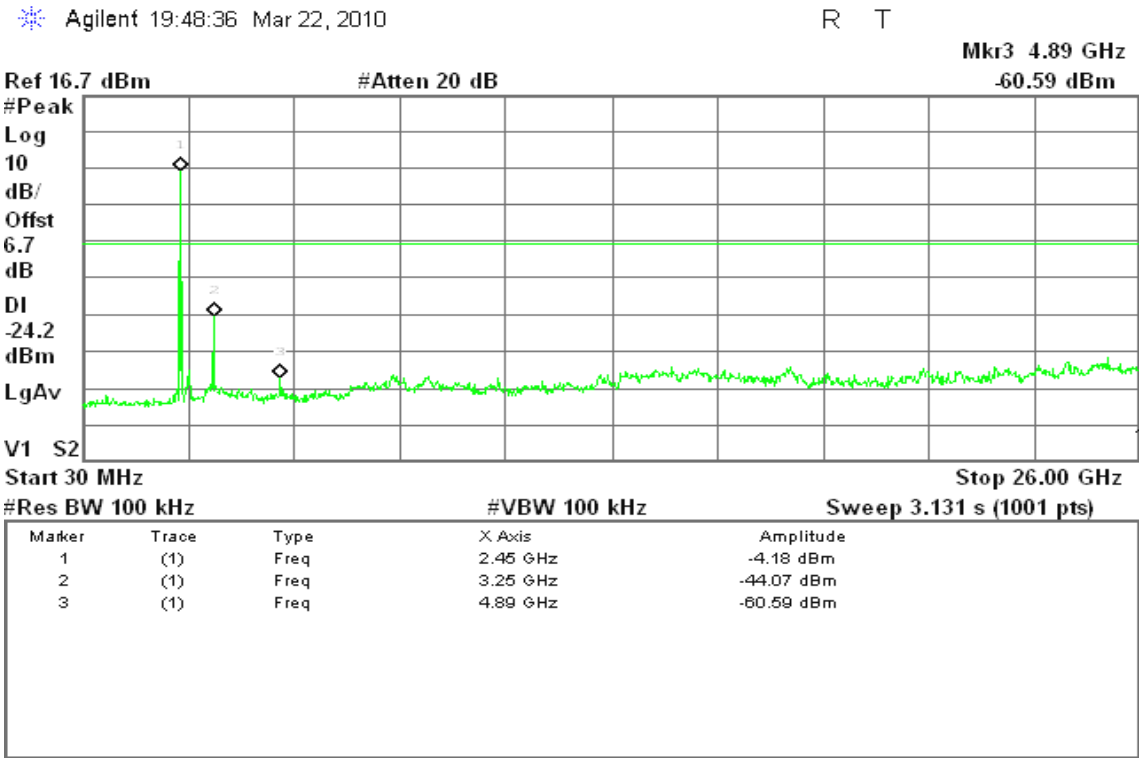
For GFSK / DH5

CH Low



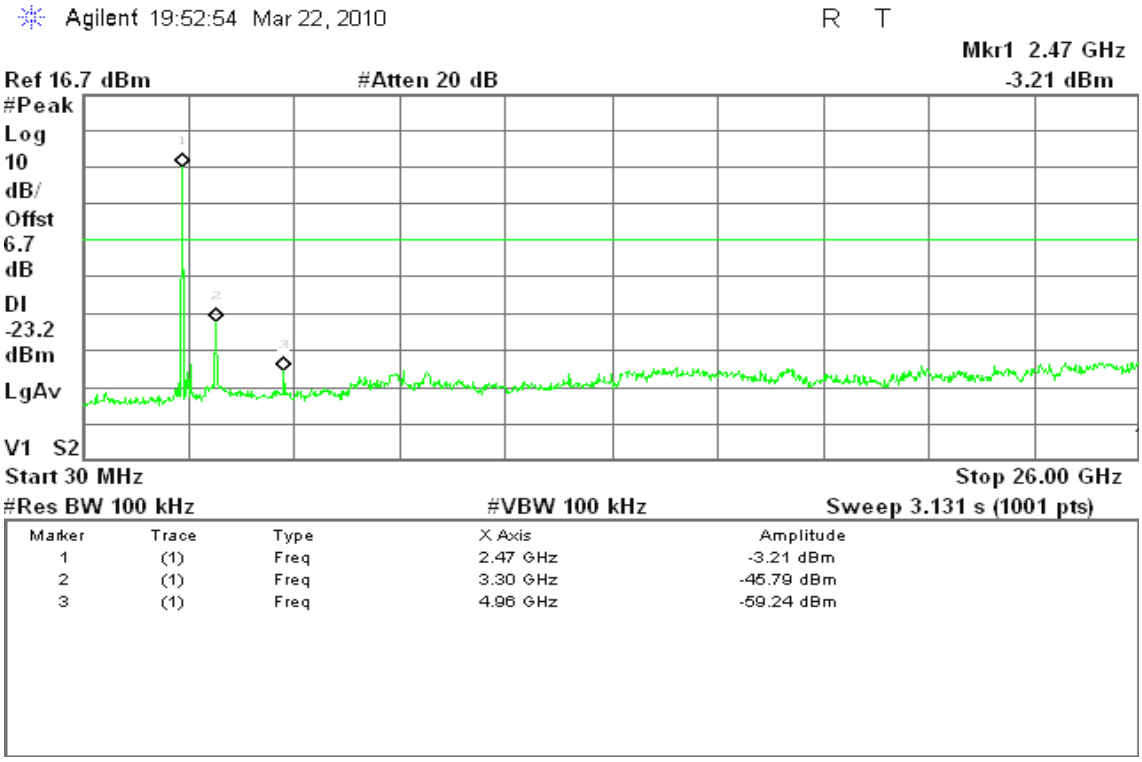
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.39 GHz	-3.26 dBm
2	(1)	Freq	3.20 GHz	-43.86 dBm
3	(1)	Freq	4.81 GHz	-60.73 dBm

CH Mid



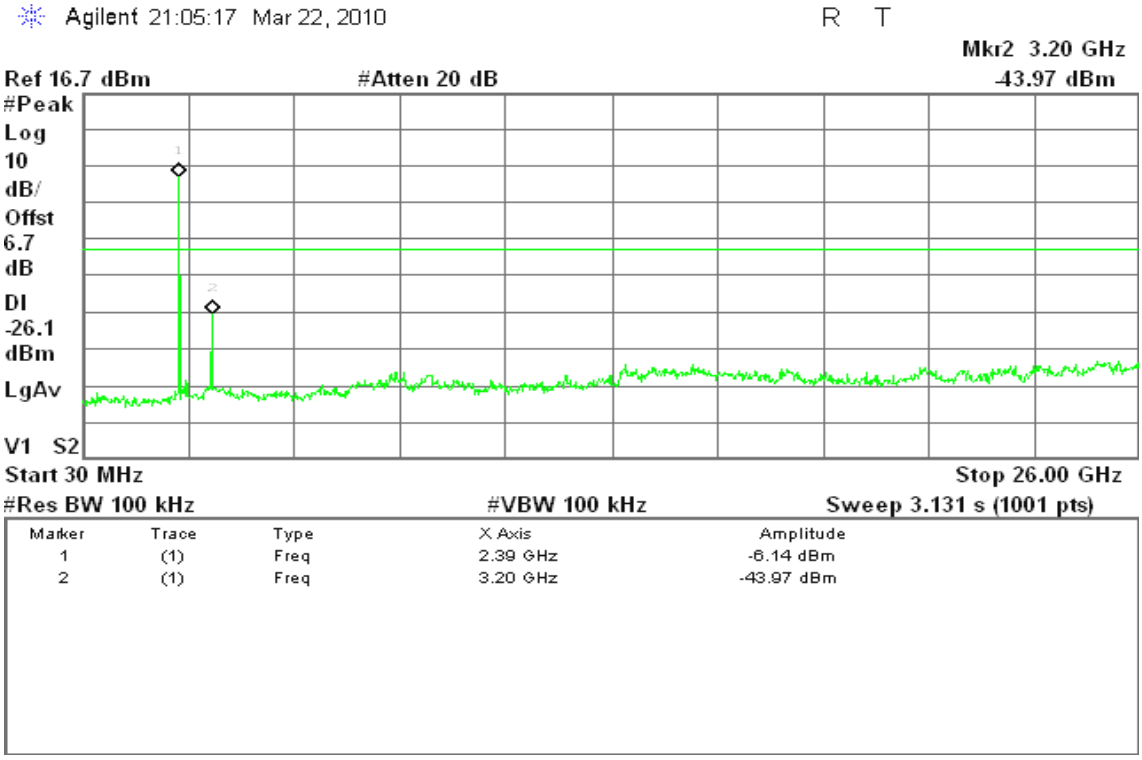
Marker	Trace	Type	X Axis	Amplitude
1	(1)	Freq	2.45 GHz	-4.18 dBm
2	(1)	Freq	3.25 GHz	-44.07 dBm
3	(1)	Freq	4.89 GHz	-60.59 dBm

CH High

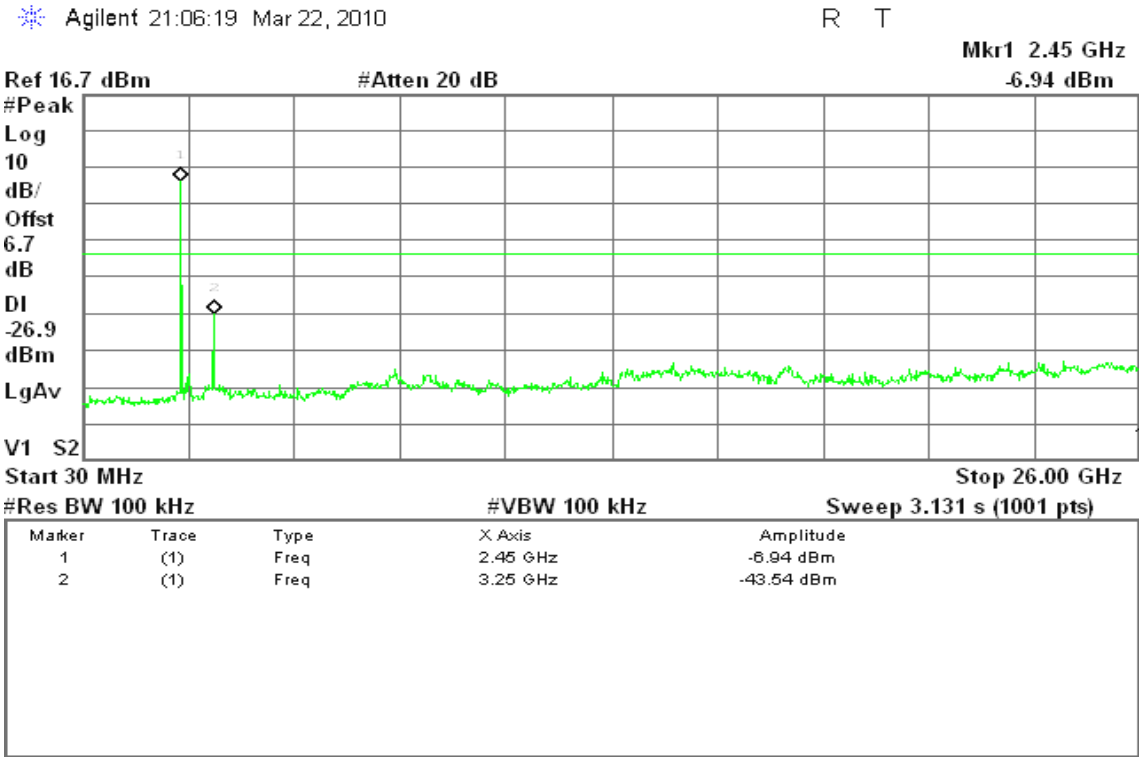

Agilent 19:52:54 Mar 22, 2010
R T
Mkr1 2.47 GHz
Ref 16.7 dBm
#Atten 20 dB
-3.21 dBm
#Peak
Log
10
dB/
Offst
6.7
dB
Dl
-23.2
dBm
LgAv
V1 S2
Start 30 MHz
Stop 26.00 GHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 3.131 s (1001 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.47 GHz -3.21 dBm
2 (1) Freq 3.30 GHz -45.79 dBm
3 (1) Freq 4.96 GHz -59.24 dBm

For 8DPSK / DH5

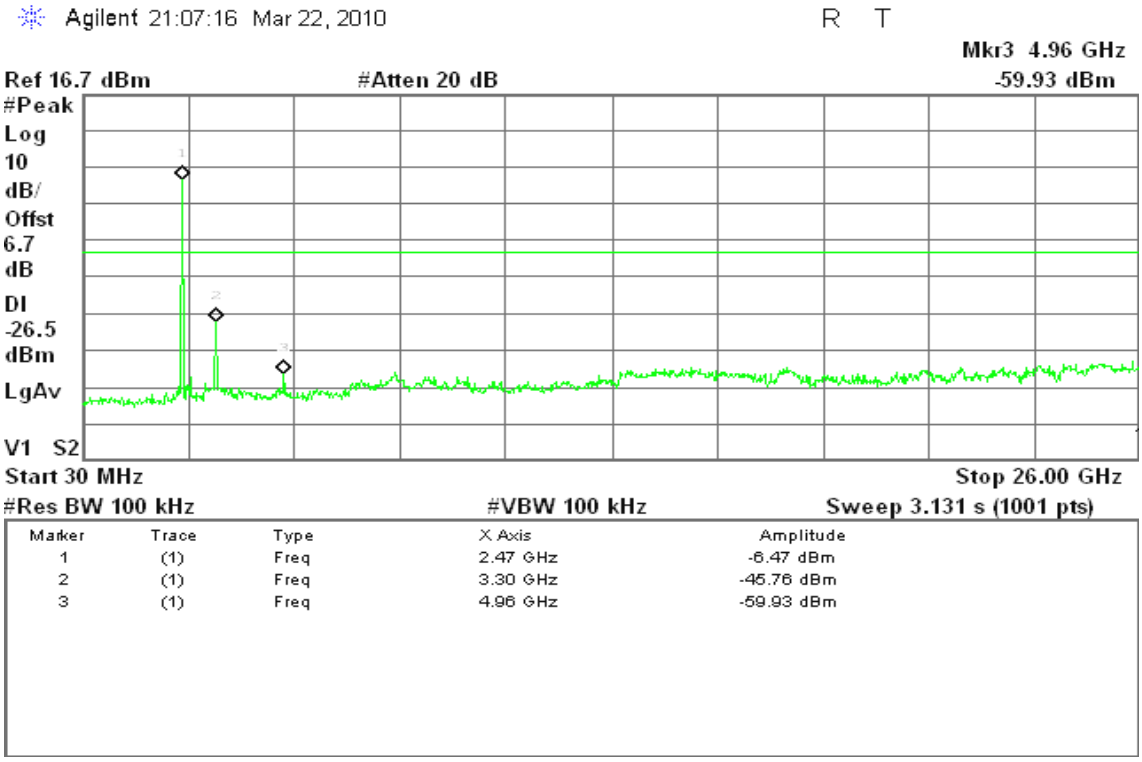
CH Low



CH Mid



CH High


Agilent 21:07:16 Mar 22, 2010
R T
Mkr3 4.96 GHz
Ref 16.7 dBm
#Atten 20 dB
-59.93 dBm
#Peak
Log
10
dB/
Offst
6.7
dB
Dl
-26.5
dBm
LgAv
V1 S2
Start 30 MHz
Stop 26.00 GHz
#Res BW 100 kHz
#VBW 100 kHz
Sweep 3.131 s (1001 pts)
Marker Trace Type X Axis Amplitude
1 (1) Freq 2.47 GHz -6.47 dBm
2 (1) Freq 3.30 GHz -45.76 dBm
3 (1) Freq 4.96 GHz -59.93 dBm

8.10.2 Radiated Emissions

LIMIT

1. According to §15.209(a) & RSS-210 Clause 2.6 (Transmitter) and IC RSS-GEN Clause 6 (Receiver), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

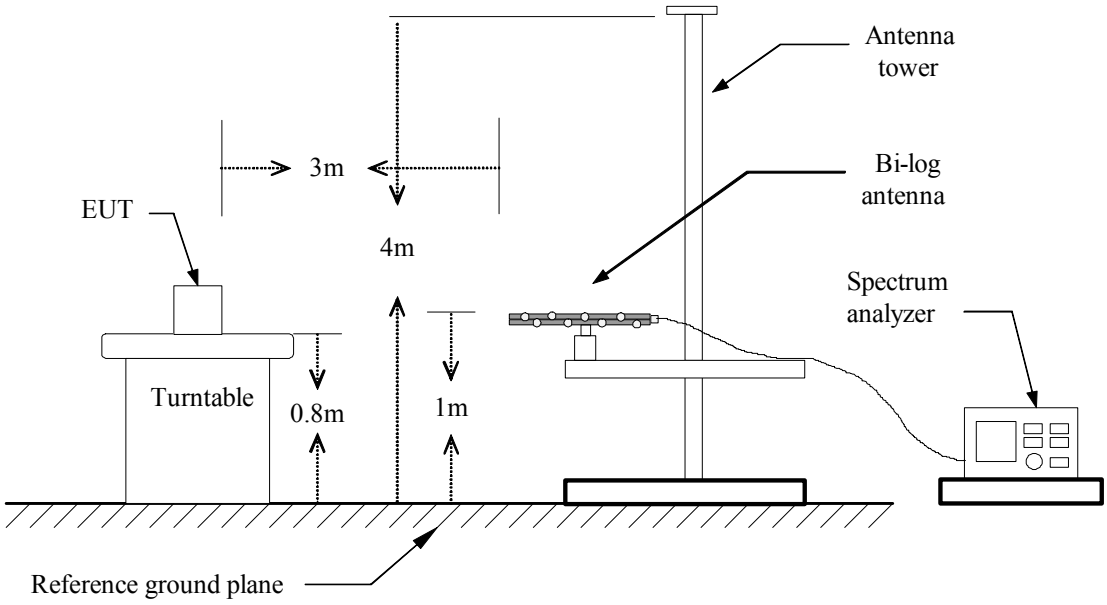
Remark: *Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.*

2. In the emission table above, the tighter limit applies at the band edges.

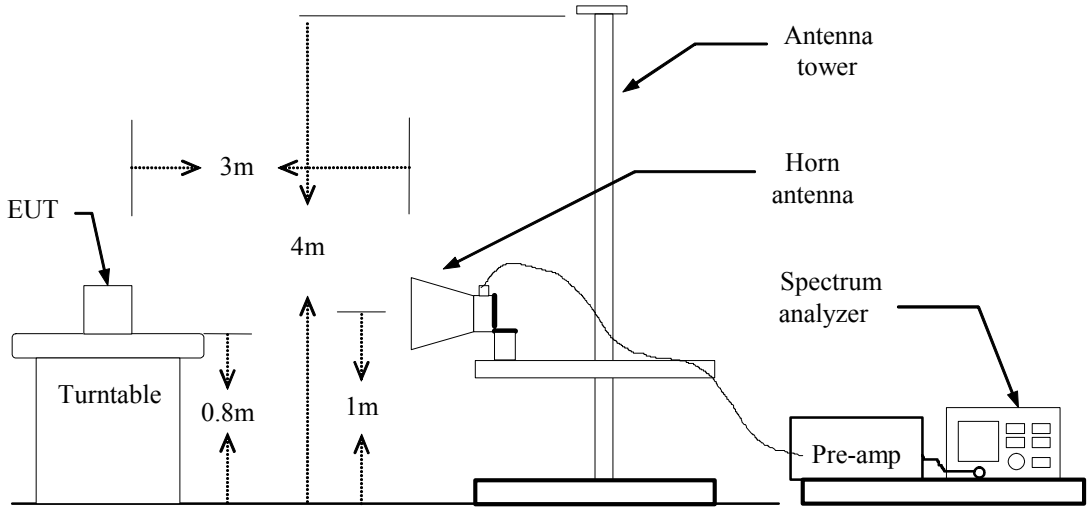
Frequency (MHz)	Field Strength (µV/m at 3-meter)	Field Strength (dBµV/m at 3-meter)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

Below 1 GHz



Above 1 GHz



TEST PROCEDURE

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

   Below 1GHz:

   RBW=100kHz / VBW=300kHz / Sweep=AUTO

   Above 1GHz:

   (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

   (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
7. Repeat above procedures until the measurements for all frequencies are complete.

Below 1 GHz

Operation Mode: Normal Link **Test Date:** March 17, 2010

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (dBuV)	Correction Factor (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
206.22	V	45.59	-10.40	35.19	43.50	-8.31	Peak
232.08	V	40.38	-11.24	29.14	46.00	-16.86	Peak
299.98	V	40.41	-9.24	31.17	46.00	-14.83	Peak
647.57	V	33.25	-2.95	30.30	46.00	-15.70	Peak
728.40	V	31.20	-2.13	29.07	46.00	-16.93	Peak
945.03	V	33.52	0.22	33.74	46.00	-12.26	Peak
212.68	H	40.06	-10.90	29.16	43.50	-14.34	Peak
298.37	H	44.79	-9.26	35.53	46.00	-10.47	Peak
539.25	H	33.75	-4.62	29.14	46.00	-16.86	Peak
872.28	H	36.13	-0.75	35.39	46.00	-10.61	Peak
948.27	H	32.48	0.29	32.76	46.00	-13.24	Peak
972.52	H	33.61	0.61	34.22	54.00	-19.78	Peak

Remark:

1. *No emission found between lowest internal used/generated frequency to 30MHz (9kHz~30MHz)*
2. *Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using peak/quasi-peak detector mode.*
3. *Quasi-peak test would be performed if the peak result were greater than the quasi-peak limit or as required by the applicant.*
4. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
5. *Margin (dB) = Remark result (dBuV/m) – Quasi-peak limit (dBuV/m).*

Operation Mode: TX / GFSK / DH5 / CH Low **Test Date:** March 18, 2010
Temperature: 23°C **Tested by:** Mimic Yang
Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1383.33	V	57.70	---	-8.95	48.75	---	74.00	54.00	-5.25	Peak
N/A										
1383.33	H	57.24	---	-8.95	48.28	---	74.00	54.00	-5.72	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit .*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / GFSK / DH5 / CH Mid **Test Date:** March 18, 2010
Temperature: 23°C **Tested by:** Mimic Yang
Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1460.00	V	57.95	---	-8.83	49.13	---	74.00	54.00	-4.87	Peak
N/A										
1496.67	H	58.42	---	-8.77	49.66	---	74.00	54.00	-4.34	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / GFSK / DH5 / CH High **Test Date:** March 18, 2010
Temperature: 23°C **Tested by:** Mimic Yang
Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1416.67	V	58.65	---	-8.90	49.75	---	74.00	54.00	-4.25	Peak
N/A										
1550.00	H	57.70	---	-8.30	49.40	---	74.00	54.00	-4.60	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / 8DPSK / DH5 / CH Low **Test Date:** March 18, 2010
Temperature: 23°C **Tested by:** Mimic Yang
Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1530.00	V	58.23	---	-8.48	49.75	---	74.00	54.00	-4.25	Peak
N/A										
1416.67	H	57.71	---	-8.90	48.82	---	74.00	54.00	-5.18	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / 8DPSK / DH5 / CH Mid **Test Date:** March 18, 2010

Temperature: 23°C **Tested by:** Mimic Yang

Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1426.67	V	56.46	---	-8.88	47.58	---	74.00	54.00	-6.42	Peak
N/A										
1540.00	H	57.86	---	-8.39	49.47	---	74.00	54.00	-4.53	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: TX / 8DPSK / DH5 / CH High **Test Date:** March 18, 2010
Temperature: 23°C **Tested by:** Mimic Yang
Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1363.33	V	58.18	---	-8.99	49.19	---	74.00	54.00	-4.81	Peak
N/A										
1443.33	H	58.46	---	-8.85	49.60	---	74.00	54.00	-4.40	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

Operation Mode: RX / Bluetooth / CH Mid **Test Date:** March 18, 2010
Temperature: 23°C **Tested by:** Mimic Yang
Humidity: 53 % RH **Polarity:** Ver. / Hor.

Frequency (MHz)	Ant.Pol. (H/V)	Reading (Peak) (dBuV)	Reading (Average) (dBuV)	Correction Factor (dB/m)	Result (Peak) (dBuV/m)	Result (Average) (dBuV/m)	Limit (Peak) (dBuV/m)	Limit (Average) (dBuV/m)	Margin (dB)	Remark
1326.67	V	56.87	---	-9.05	47.82	---	74.00	54.00	-6.18	Peak
2490.00	V	52.55	---	-2.69	49.86	---	74.00	54.00	-4.14	Peak
N/A										
2490.00	H	53.19	---	-2.69	50.50	---	74.00	54.00	-3.50	Peak
N/A										

Remark:

1. *Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.*
2. *Radiated emissions measured in frequency above 1000MHz were made with an instrument using peak/average detector mode.*
3. *Average test would be performed if the peak result were greater than the average limit or as required by the applicant.*
4. *Data of measurement within this frequency range shown " --- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
5. *Measurements above show only up to 6 maximum emissions noted, or would be lesser, with " N/A " remark, if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.*
6. *Margin (dB) = Remark result (dBuV/m) – Average limit (dBuV/m).*

8.11 POWERLINE CONDUCTED EMISSIONS

LIMIT

According to §15.207(a) & RSS-Gen §7.2.2, except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 µH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

***** *Decreases with the logarithm of the frequency.*

Test Configuration

See test photographs attached in Appendix II for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Operation Mode: Normal Link **Test Date:** March 25, 2010

Temperature: 22°C **Tested by:** Ming Chen

Humidity: 45% RH

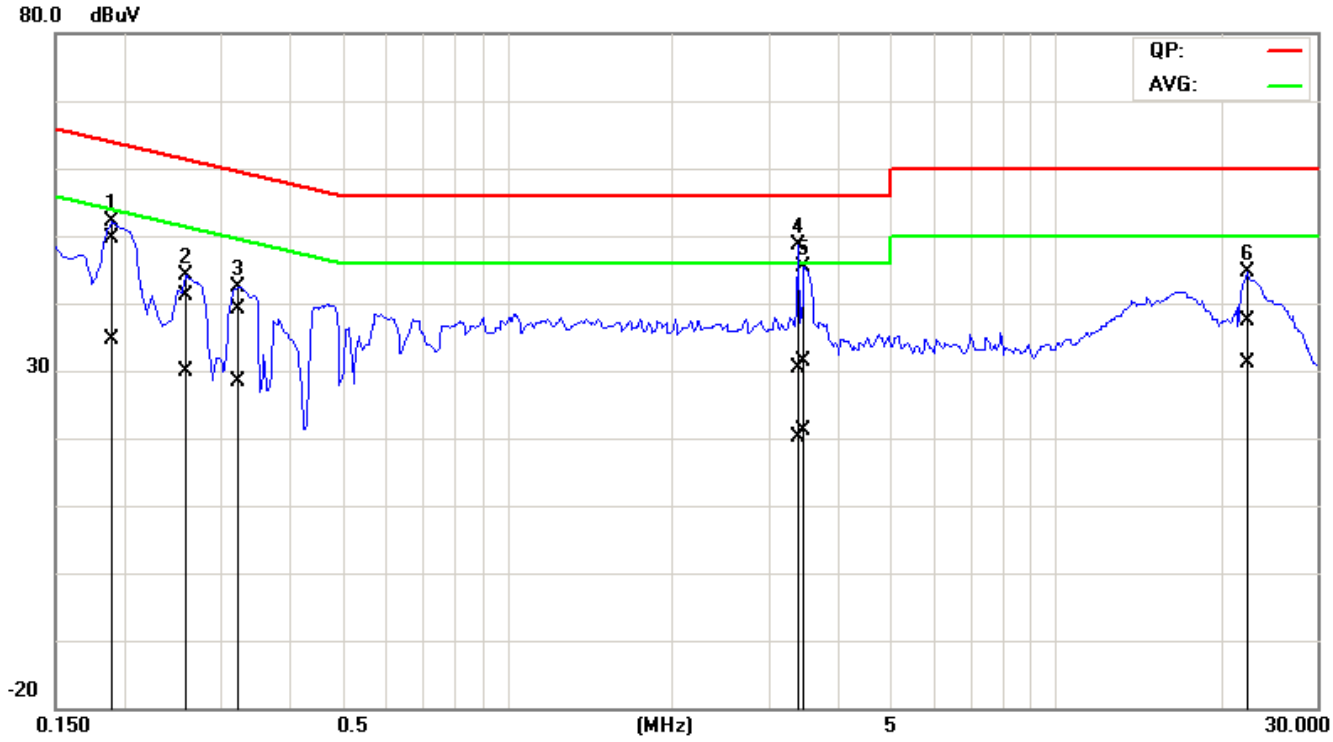
Freq. (MHz)	QP Reading (dBuV)	AV Reading (dBuV)	Corr. factor (dB)	QP Result (dBuV)	AV Result (dBuV)	QP Limit (dBuV)	AV Limit (dBuV)	QP Margin (dB)	AV Margin (dB)	Note
0.1900	49.51	34.51	0.19	49.70	34.70	64.04	54.04	-14.34	-19.34	L1
0.2600	40.94	29.64	0.16	41.10	29.80	61.43	51.43	-20.33	-21.63	L1
0.3250	38.97	28.27	0.13	39.10	28.40	59.58	49.58	-20.48	-21.18	L1
3.3950	30.30	20.10	0.10	30.40	20.20	56.00	46.00	-25.60	-25.80	L1
3.4906	31.30	21.10	0.10	31.40	21.20	56.00	46.00	-24.60	-24.80	L1
22.3800	36.57	30.37	0.83	37.40	31.20	60.00	50.00	-22.60	-18.80	L1
0.1900	49.71	34.01	0.19	49.90	34.20	64.04	54.04	-14.14	-19.84	L2
0.2550	45.34	32.14	0.16	45.50	32.30	61.59	51.59	-16.09	-19.29	L2
0.3300	39.67	28.27	0.13	39.80	28.40	59.45	49.45	-19.65	-21.05	L2
2.3700	32.14	19.94	0.06	32.20	20.00	56.00	46.00	-23.80	-26.00	L2
2.9300	30.62	19.62	0.08	30.70	19.70	56.00	46.00	-25.30	-26.30	L2
22.8650	35.96	29.76	0.84	36.80	30.60	60.00	50.00	-23.20	-19.40	L2

Remark:

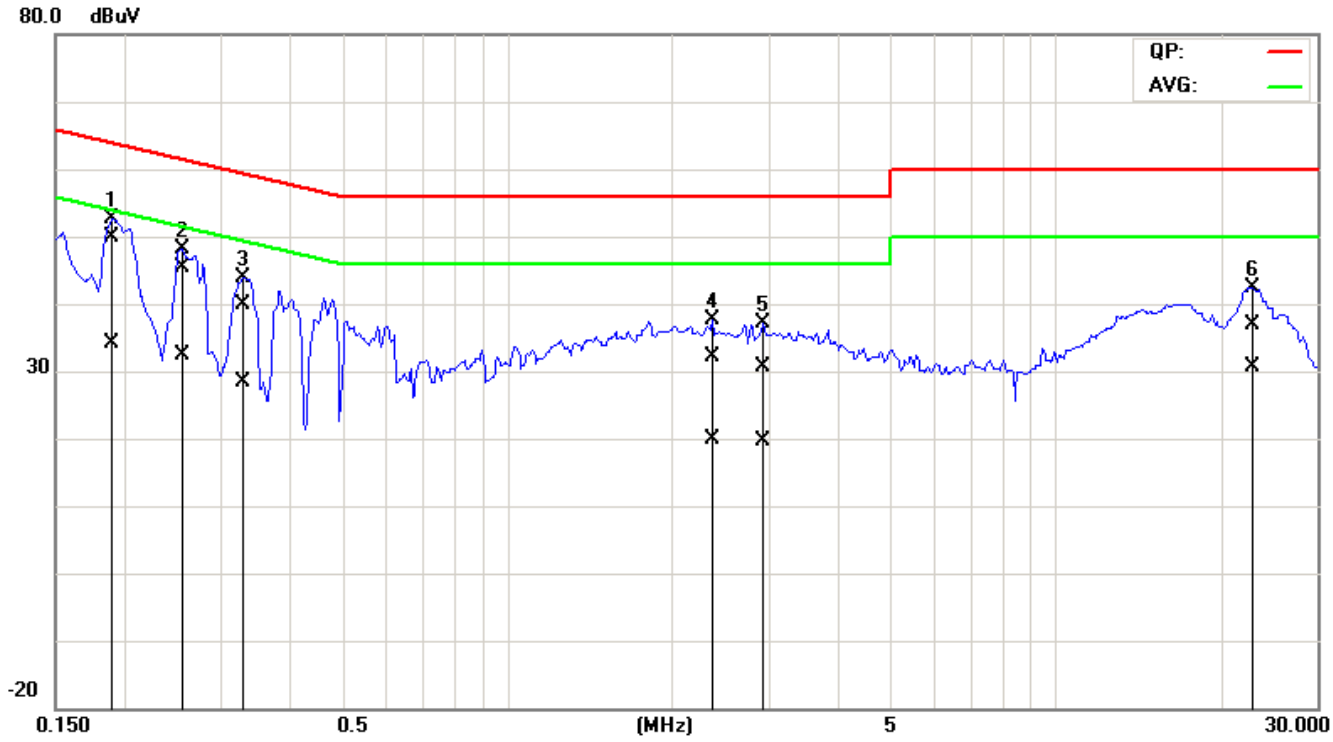
1. *Measuring frequencies from 0.15 MHz to 30MHz.*
2. *The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.*
3. *The IF bandwidth of SPA between 0.15MHz and 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz and 30MHz was 9kHz;*
4. *L1 = Line One (Live Line) / L2 = Line Two (Neutral Line)*

Test Plots

Conducted emissions (Line 1)



Conducted emissions (Line 2)



APPENDIX I
RADIO FREQUENCY EXPOSURE

LIMIT

According to §15.247(i), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See § 1.1307(b)(1) of this chapter.
According to RSS-Gen §5.5, before equipment certification is granted, the applicable requirements of RSS-102 shall be met.

EUT Specification

EUT	Notebook Computer
Frequency band (Operating)	☐ WLAN: 2.412GHz ~ 2.462GHz ☐ WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz ☐ WLAN: 5.745GHz ~ 5.825GHz ☒ Others: Bluetooth: 2.402GHz ~ 2.480GHz
Device category	☒ Portable (<20cm separation) ☐ Mobile (>20cm separation) ☐ Others _____
Exposure classification	☐ Occupational/Controlled exposure *(S = 5mW/cm^2)* ☒ General Population/Uncontrolled exposure *(S=1mW/cm^2)*
Antenna diversity	☒ Single antenna ☐ Multiple antennas ☐ Tx diversity ☐ Rx diversity ☐ Tx/Rx diversity
Max. output power	0.35 dBm (1.083 mW)
Antenna gain (Max)	1.86 dBi (Numeric gain: 1.53)
Evaluation applied	☐ MPE Evaluation ☐ SAR Evaluation ☒ N/A*
Remark: *1. The maximum output power is 0.35 dBm (1.035 mW) at 2480MHz (with 1.53 numeric antenna gain.)* *2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.* *3. For mobile or fixed location transmitters, no SAR consideration applied. The maximum power density is 1.0 mW/cm^2 even if the calculation indicates that the power density would be larger.*	

TEST RESULTS

No non-compliance noted.

(SAR evaluation is not required for the PORTABLE device while its maximum output power is lower than the general population low threshold: 60/$f_{(GHz)}$=60/2.441=24.58mW)

SAR evaluation is required if the separation distance between the user and the device is less than or equal to 20 cm, except when the device operates:

- *Above 2.2 GHz up to 3 GHz inclusively and its output power (i.e. the higher of the conducted or radiated (e.i.r.p.) source-based time-averaged output power) is less than, or equal to 20 mW for General Public Use and 100 mW for Controlled Use.*

Remark: *Please refer to the Annex A -B RF Technical Brief Cover Sheet.*