



Certification Test Report

FCC Part 15, Subpart C Section 15.247

Model: i38HG
FCC ID.: PGR2Wi38HG

Project Code: W7148
Rev.: 1

Prepared for: 2Wire
333 Crown Point Circle
Suite 125
Grass Valley, CA 95945

Author: Dwaine Hartman

Issued: 21 July, 2008

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Model: i38HG

Compliance Test Report

FCC ID.: PGR2Wi38HG

Report Summary NTS Plano

Accreditation Numbers: FCC: 101741
 IC: 46405-4319 File # IC-4319A-1
 Standards A2LA Laboratory Cert. No. 0214.19

Applicant: 2Wire
 333 Crown Point Circle
 Suite 125
 Grass Valley, CA 95945

Customer Representative: Mark Rieger

EUT Description:

EUT Description	Manufacturer	Model	Revision	Serial Number
The EUT is a node transceiver used in a wireless data network.	2Wire	i38HG	-	001

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Test Summary


Appendix	Test/Requirement Description	Deviations from:			Pass / Fail	Applicable Rule Parts
		Base Standard	Test Basis	NTS Procedure		
A	TX 6 dB Bandwidth	No	No	No	PASS	15.247
B	TX Peak Power Output	No	No	No	PASS	15.247
C	TX Peak Power Density	No	No	No	PASS	15.247
D	TX Conducted Spurious Emissions	No	No	No	PASS	15.247, 15.205
E	TX Conducted Spurious Emissions Band edge	No	No	No	PASS	15.247, 15.205
F	TX Radiated Spurious Emissions 30 MHz- 25 GHz	No	No	No	PASS	15.247, 15.205
G	AC Power line Conducted Emissions	No	No	No	PASS	15.207

Test Result: The product presented for testing complied with test requirements as shown above.

This is to certify that the preceding report is true and correct to the best of my knowledge.



 Robert Stevens,
 Quality Assurance Manager



 Tom Tidwell,
 Wireless Engineer

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Register of revisions

Revision	Reason for Revision	Revision Date
0	Original	5 June, 2008
1	Changed Test Summary pg. 3 to reflect CE results. Added a comment pg. 7 to clarify worst-case modulation mode and data rate.	

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by NTS Plano to demonstrate compliance of the i38HG to FCC Part 15 Subpart C section 15.247 for DTS transmitter.

2.0 EUT DESCRIPTION

2.1 CONFIGURATION

Description of EUT

	Name	Model	Revision	Serial Number
EUT	i38HG	i38HG	-	001
RF Exposure Classification	Mobile (>20 cm. separation from user)			
Channels/Frequency Range	2412 – 2462 MHz			
Antenna type	Integral. 2.95 dBi			
Power	Battery			
Functional Description	The EUT is used for wireless LAN.			

2.1.1 EUT POWER

Voltage	5.1 Vdc (via AC to DC adaptor)
Number of Feeds	2 (powered with an AC adaptor)

2.2 EUT CABLES

NONE

Quantity	Model/Type	Routing		Shielded / Unshielded	Description	Cable Length (m)
		From	To			

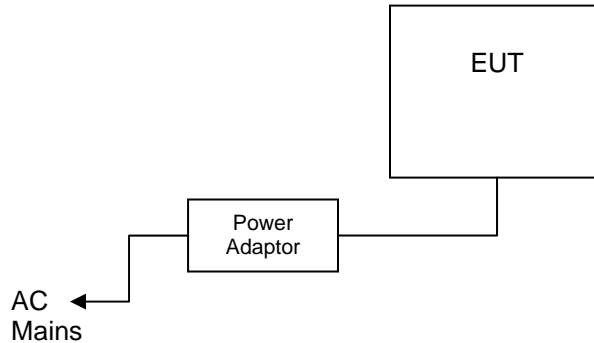
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2.3 MODE OF OPERATION DURING TESTS

The i38HG was tested while in a continuous transmit mode. The EUT was tuned to a low, middle, and high channel for all tests. The EUT continuously transmitted a modulated packet with payload. While transmitting the EUT was setup to operate at the intended maximum power output available to the end user. For all test cases pre-scans were completed in all modes to determine worst case levels. The worst-case mode for radiated emissions was the OFDM mode (data rate had no effect on measured emission levels).

3.0 SUPPORT EQUIPMENT

3.1 CONFIGURATION



3.2 TEST BED/PERIPHERAL CABLES

NA

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APPENDICES

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APPENDIX A: 6 DB BANDWIDTH

A.1. Base Standard & Test Basis

Base Standard	FCC PART 15.247 (A)
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

A.2. Specifications

15.247 (2) Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

A.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
1.2 dB / .01 ppm

A.4. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
none						

A.5. Test Procedure

RF conducted as per FCC Publication 558074

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A.6. Test Results

The EUT is in compliance with the limits as specified above

Channel	6 dB Bandwidth (MHz)
2412MHz (DSSS)	10.200000000
2437 MHz (DSSS)	9.700000000
2462 MHz (DSSS)	10.200000000
2412MHz (OFDM)	16.700000000
2437 MHz (OFDM)	16.700000000
2462 MHz (OFDM)	16.500000000

A.7. Operating Mode During Test

The i38HG was tested while in a continuous transmit mode. The EUT was tuned to a low, middle, and high channel. The EUT continuously transmitted a modulated packet with a payload. While transmitting the EUT was set to operate at maximum power.

A.8. Sample Calculation

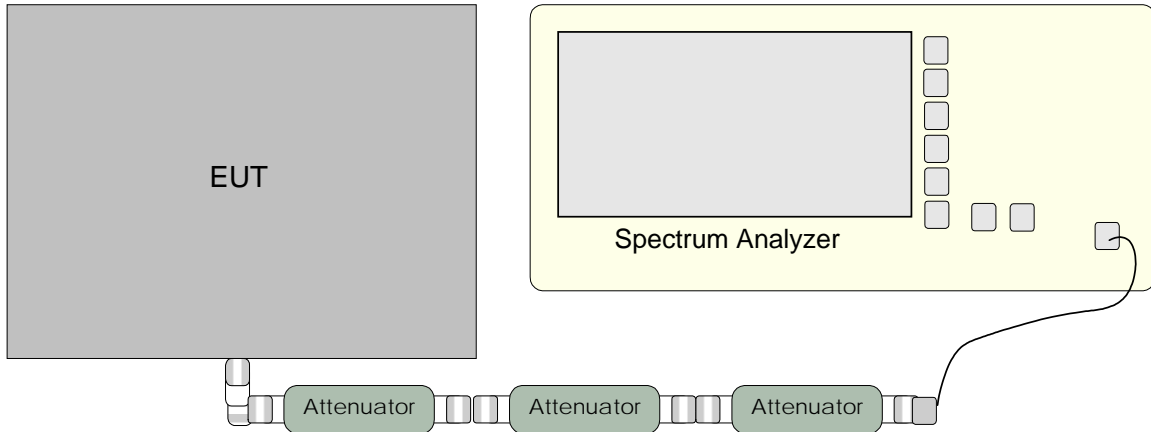
NA

A.9. Test Data

See plots on following pages

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A.10. Test Configuration



A.11. Tested By

Name: Dwaine Hartman
Date: 3 Jan., 2008

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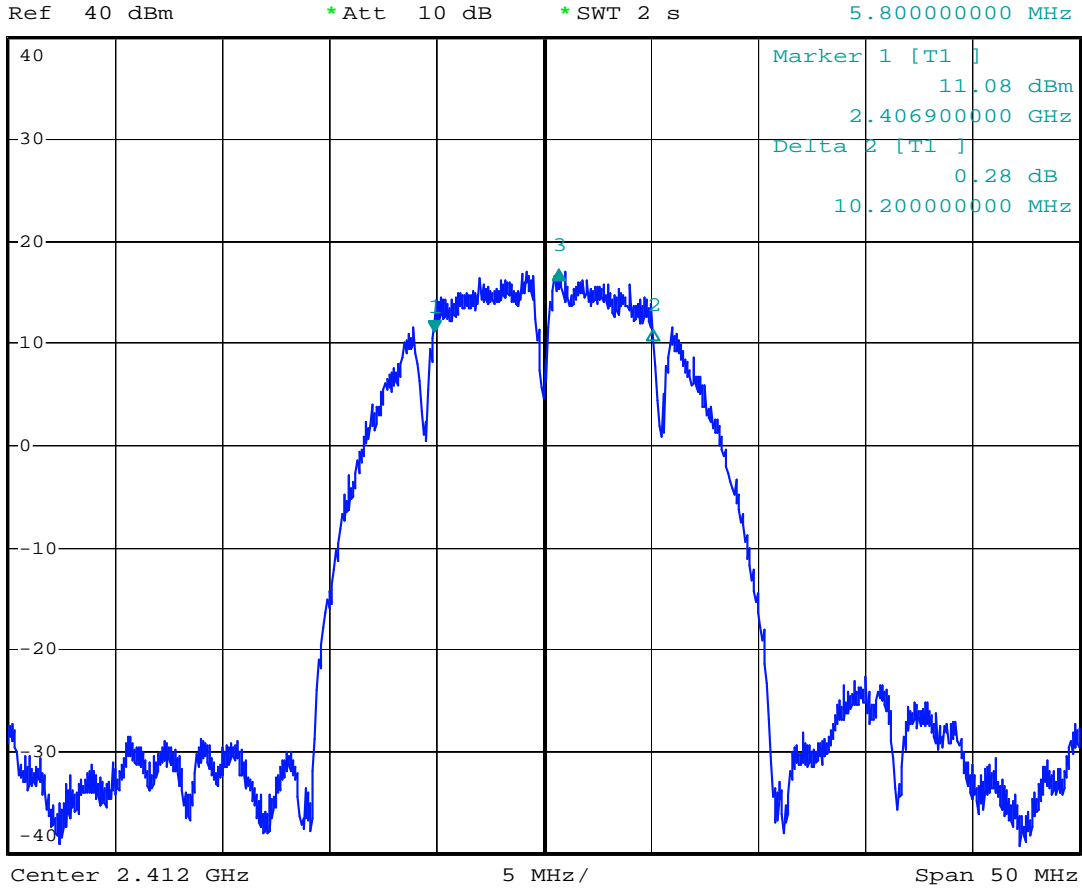
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Figure 1 6 dB Bandwidth Low Channel – 2412 MHz (DSSS)



*RBW 100 kHz Delta 3 [T1]
 VBW 300 kHz 6.03 dB
 *SWT 2 s 5.800000000 MHz



Date: 3.JAN.2008 20:59:13

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Figure 2 6 dB Bandwidth Mid Channel – 2437 MHz (DSSS)

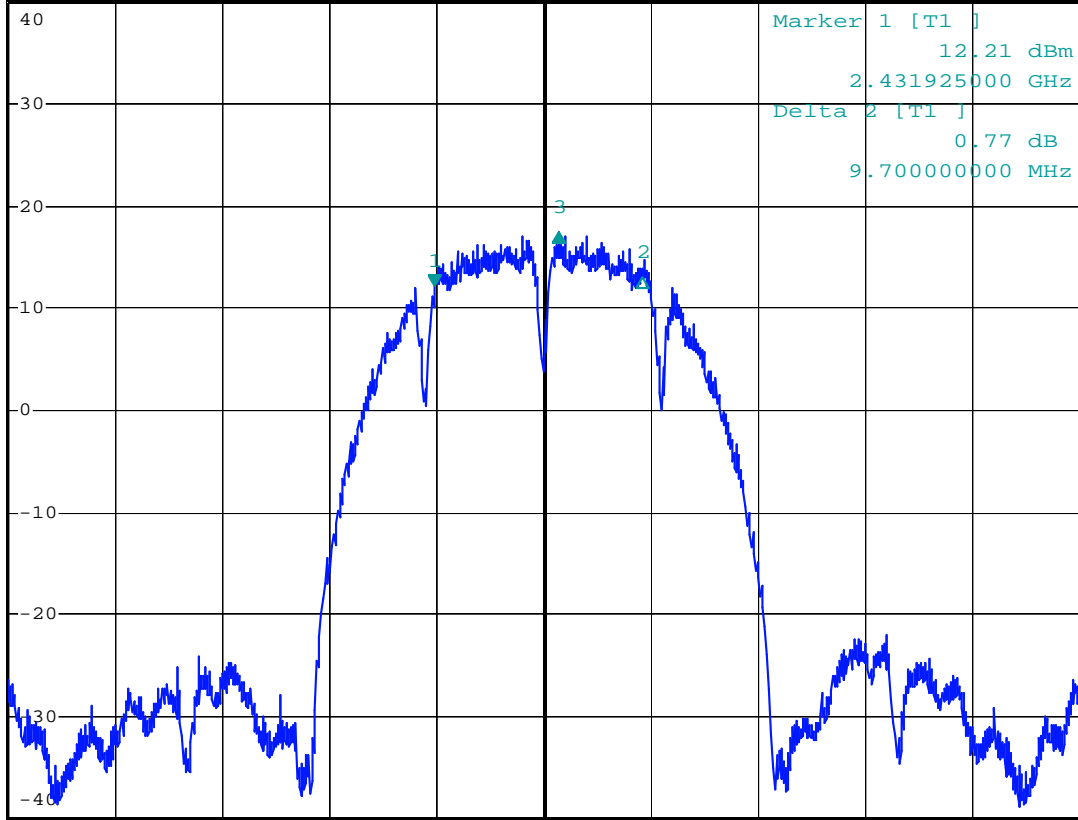


*RBW 100 kHz Delta 3 [T1]
 VBW 300 kHz 5.20 dB
 *SWT 2 s 5.800000000 MHz

Ref 40 dBm

*Att 10 dB

1 PK VIEW



Center 2.437 GHz

5 MHz/

Span 50 MHz

Date: 3.JAN.2008 20:56:39

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Figure 3 6 dB Bandwidth Upper Channel – 2462 MHz (DSSS)



*RBW 100 kHz Delta 3 [T1]
 VBW 300 kHz 6.09 dB
 *Att 10 dB
 *SWT 2 s 6.100000000 MHz

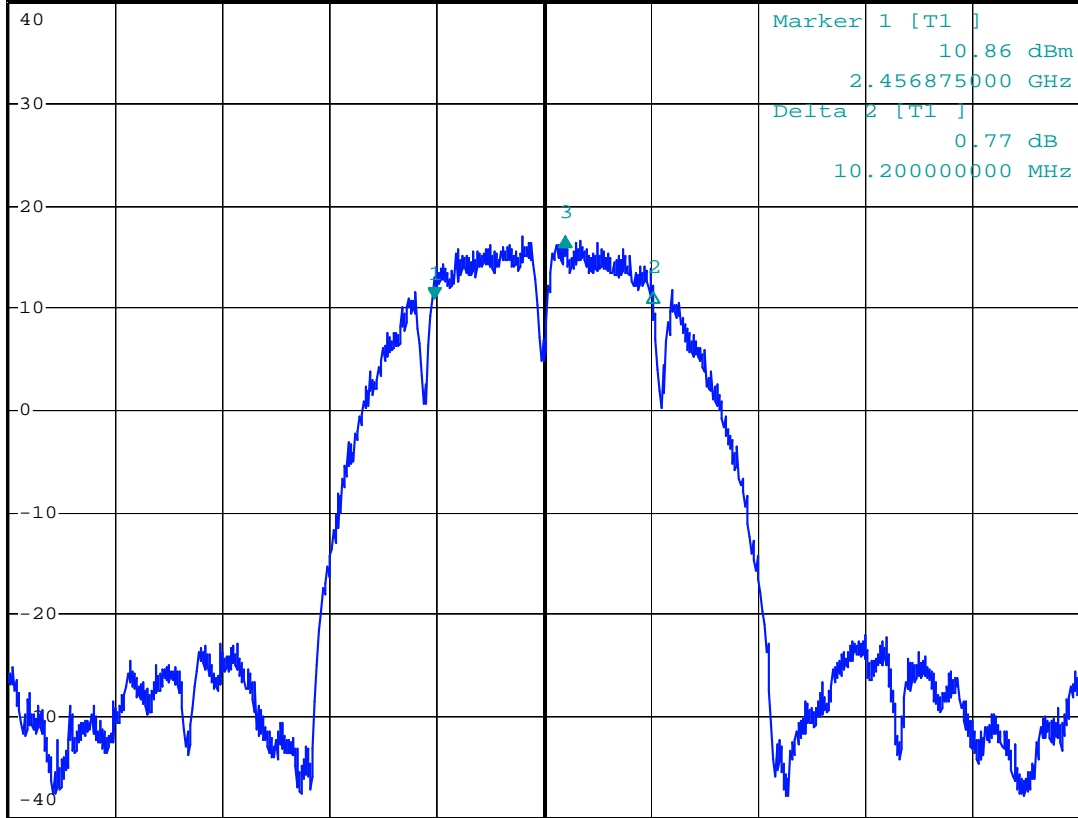
Ref 40 dBm

*Att 10 dB

*SWT 2 s

6.100000000 MHz

1 PK VIEW



Marker 1 [T1]
 10.86 dBm
 2.456875000 GHz
 Delta 2 [T1]
 0.77 dB
 10.200000000 MHz

A

TDF

3DB

Center 2.462 GHz

5 MHz/

Span 50 MHz

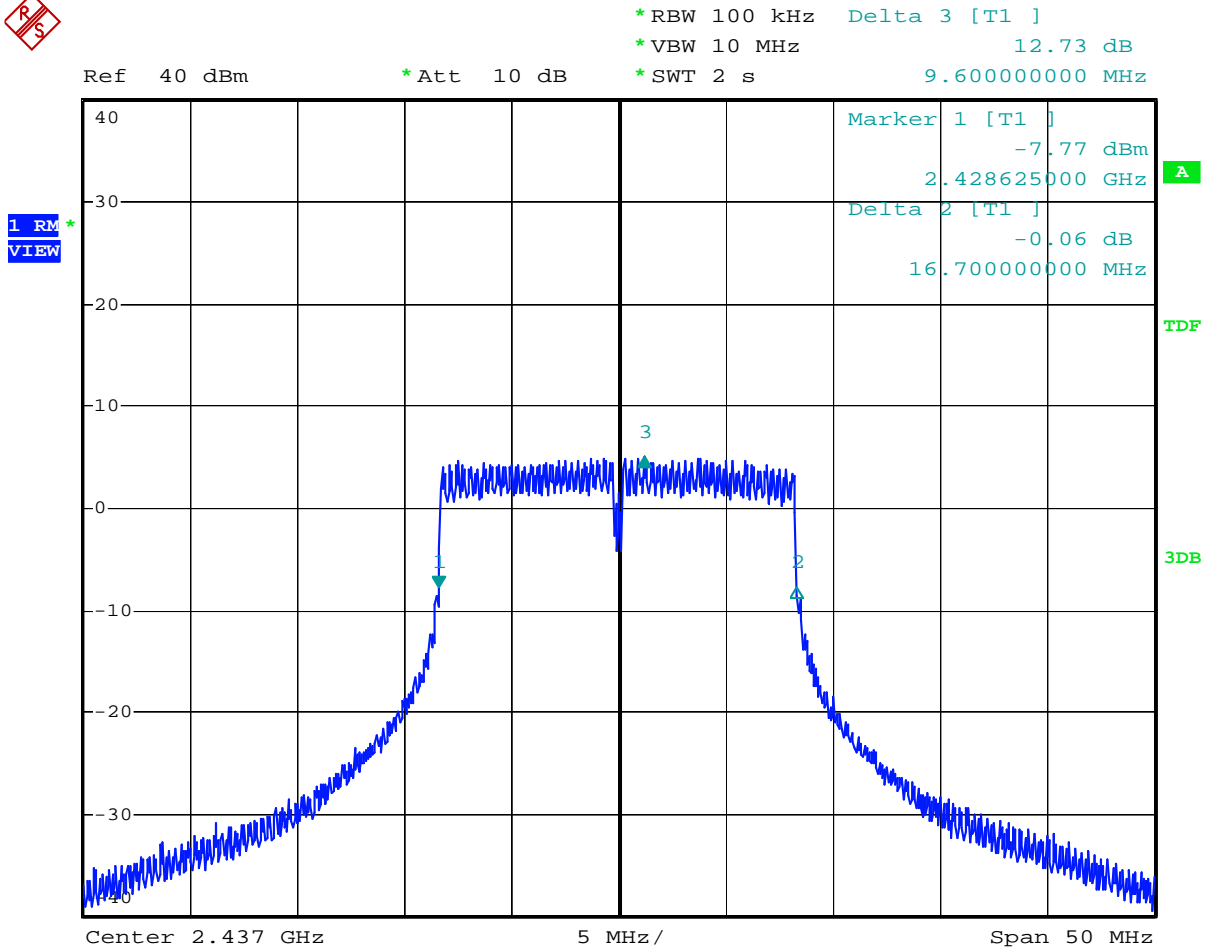
Date: 3.JAN.2008 21:01:11

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Figure 5 6 dB Bandwidth Mid Channel – 2437 MHz (OFDM)



Date: 3.JAN.2008 21:17:46

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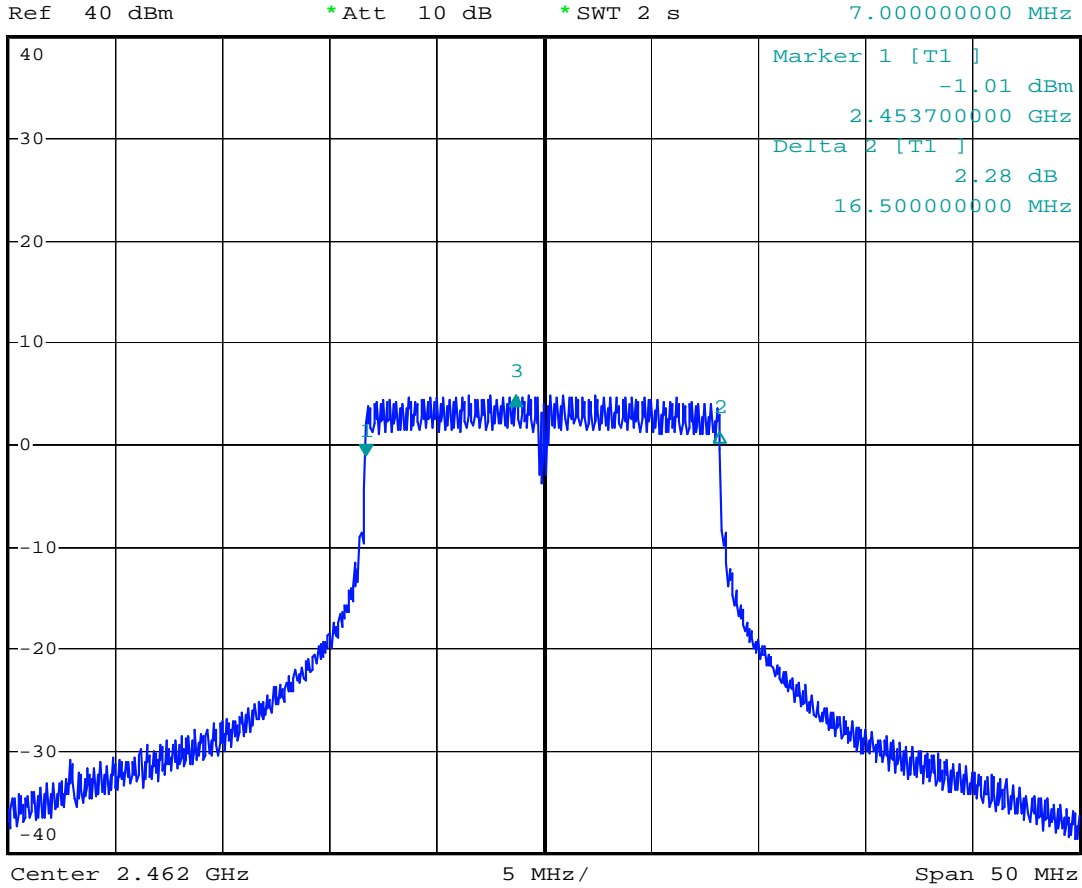
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Figure 6 6 dB Bandwidth High Channel – 2462 MHz (OFDM)



*RBW 100 kHz Delta 3 [T1]
 *VBW 300 kHz 5.88 dB
 *SWT 2 s 7.000000000 MHz



Date: 3.JAN.2008 21:08:05

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APPENDIX B: PEAK POWER OUTPUT

B.1. Base Standard & Test Basis

Base Standard	FCC 15.247
Test Basis	FCC 15.247 RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

B.2. Specifications

The maximum peak output power shall not exceed +30 dBm (1 watt) in the 2400 MHz - 2483.5 MHz band

B.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
0.06 dB

B.4. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
none						

B.5. Test Method

RF conducted as per FCC Publication 558074 using a peak power meter. The peak power meter uses a high number of samples to measure peak power over time.

B.6. Test Results

Compliant – The maximum conducted peak power was +26.0 dBm (.4 W) eirp.

B.7. Sample Calculation

Peak EIRP(dBm) = Measured max. conducted pk. power(dBm) + TX antenna directional gain(dBi)

$$\text{Peak EIRP (W)} = [10^{(\text{Peak EIRP(dBm)}/10)}] / 1000$$

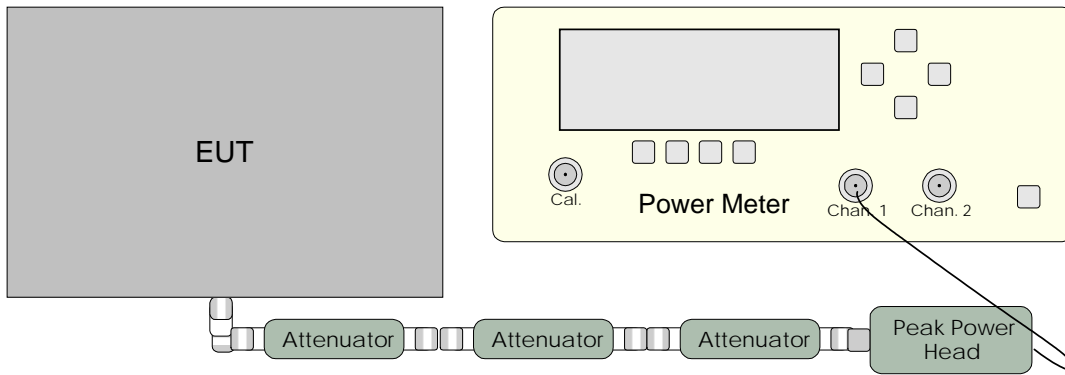
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B.8. Test Data Summary

EUT Transmit Frequency (MHz)	Measured Max. Conducted Peak Power (dBm)
2412 MHz (DSSS)	25.9
2437 MHz (DSSS)	26.0
2462 MHz (DSSS)	26.0
2412 MHz (OFDM)	26.0
2437 MHz (OFDM)	26.0
2462 MHz (OFDM)	26.0

Note: These measurements were made using a peak power meter.

B.9. Test Diagram



B.10. Tested By

Name: Dwaine Hartman
 Date: 3 Jan., 2008

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APPENDIX C: PEAK POWER DENSITY

C.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Chapter I - FCC Part 15.247 – Radio Frequency Devices - Subpart C– intentional Radiators
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

C.2. Specifications

15.247 e) 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. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

C.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+/-1.2 dB

C.4. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
none						

C.5. Test Method

RF conducted as per FCC Publication 558074

C.6. Test Results

Compliant. The maximum measured Peak Power Density was +3.9 dBm/3 kHz.

C.7. Deviations from Normal Operating Mode During Test

None.

C.8. Sample Calculation

None.

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C.9. Test Data

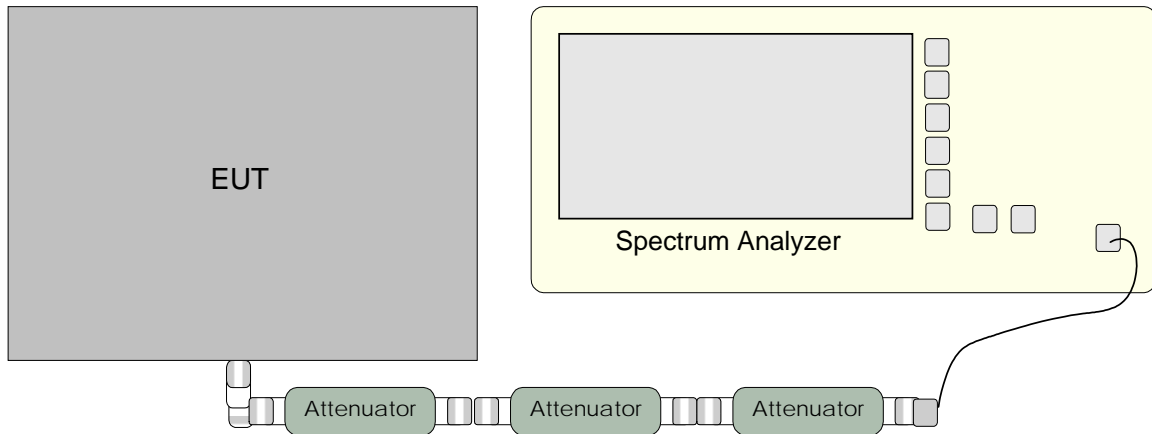
EUT Transmit Channel	Peak Power Density (dBm)
2412MHz (DSSS)	+2.4
2437 MHz (DSSS)	+2.9
2462 MHz (DSSS)	+3.2
2412MHz (OFDM)	+3.9
2437 MHz (OFDM)	+2.7
2462 MHz (OFDM)	+3.1

See previous DSSS plots and OFDM diagram following.

C.10. Tested By

Name: Dwaine Hartman

Date: 19 Dec., 2007



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Figure 7 Power Density Low Channel – 2412 MHz (DSSS)

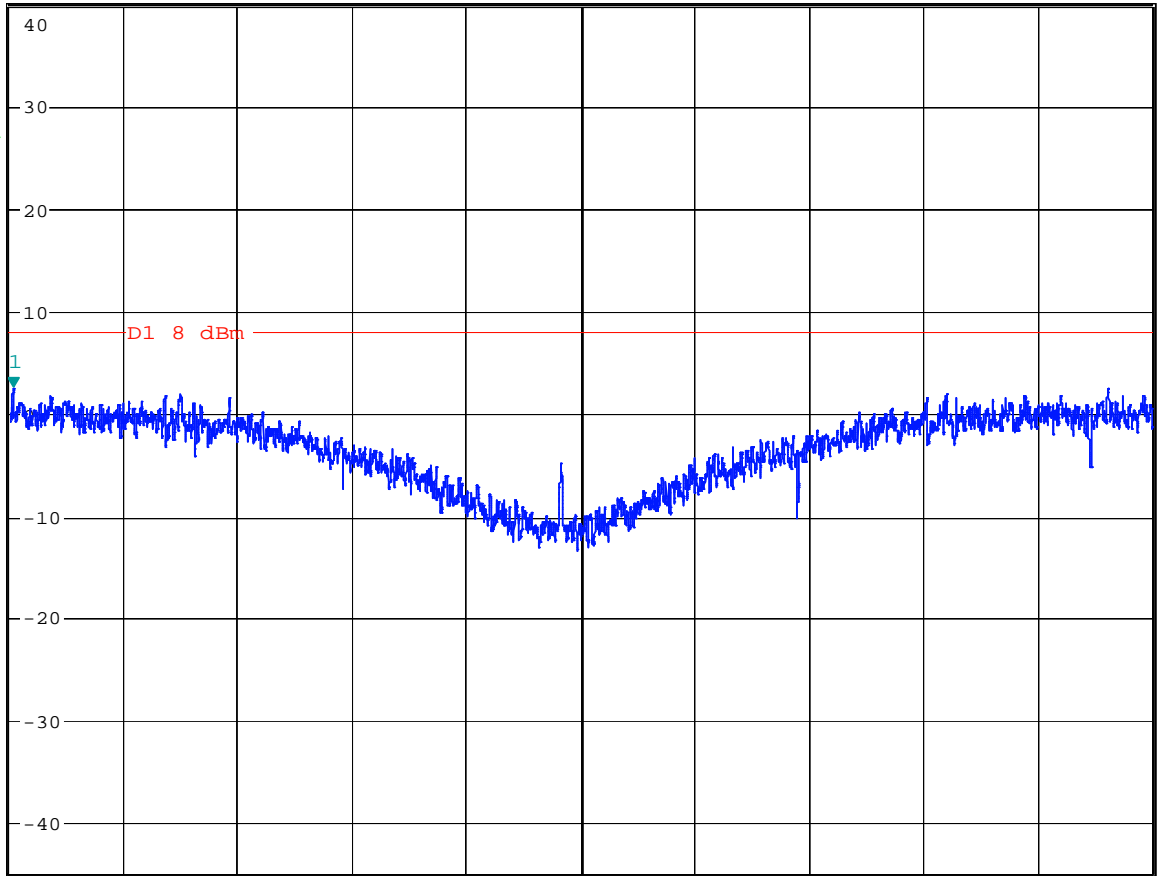


* RBW 3 kHz Marker 1 [T1]
 * VBW 5 kHz 2.44 dBm
 * SWT 500 s 2.411254500 GHz

Ref 40 dBm

* Att 5 dB

1 PK *
CLRWR



Center 2.412 GHz

150 kHz/

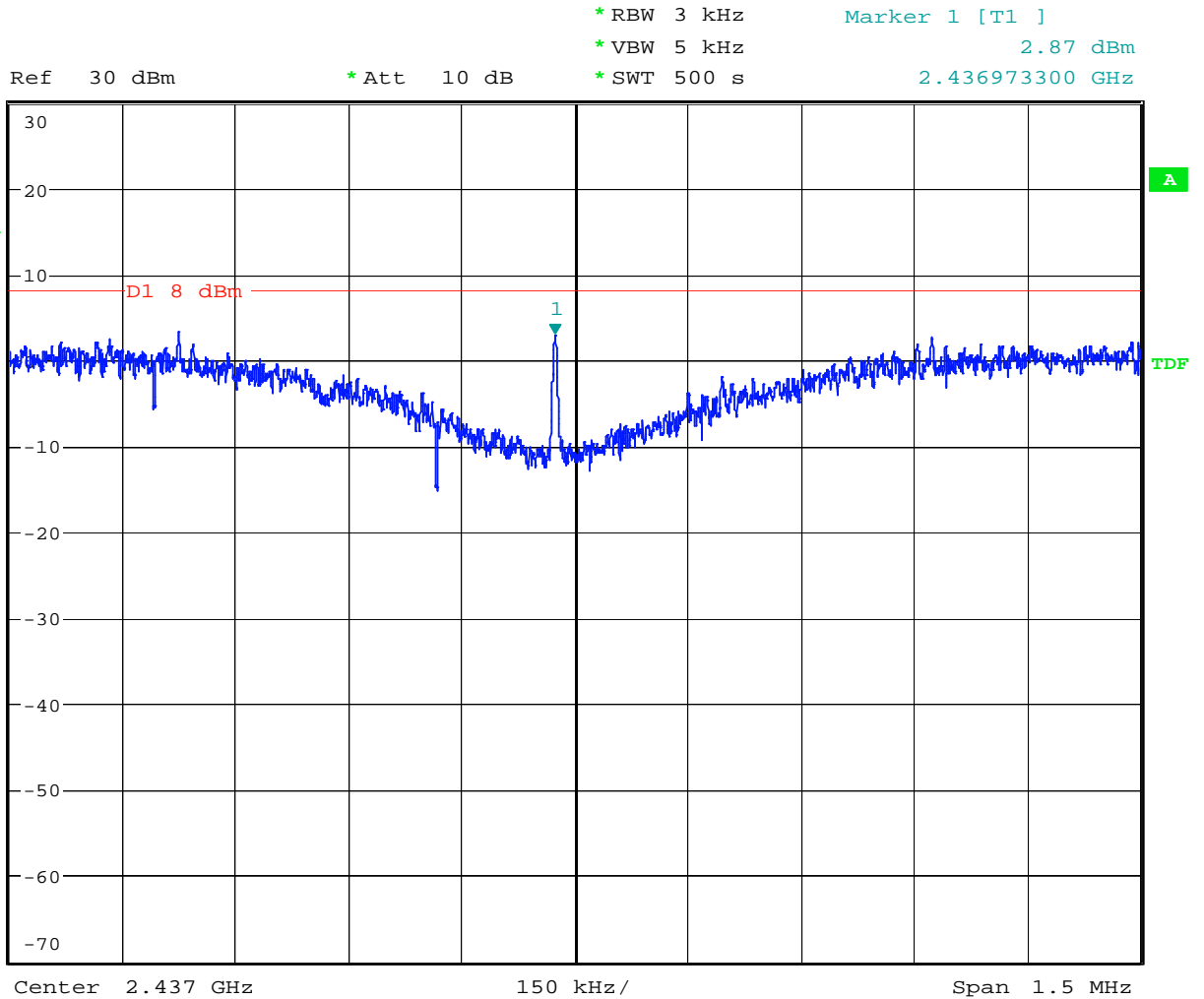
Span 1.5 MHz

Date: 21.DEC.2007 14:58:46

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Figure 8 Power Density Mid Channel – 2437 MHz (DSSS)



Date: 19.DEC.2007 10:00:06

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Figure 9 Power Density High Channel – 2462 MHz (DSSS)

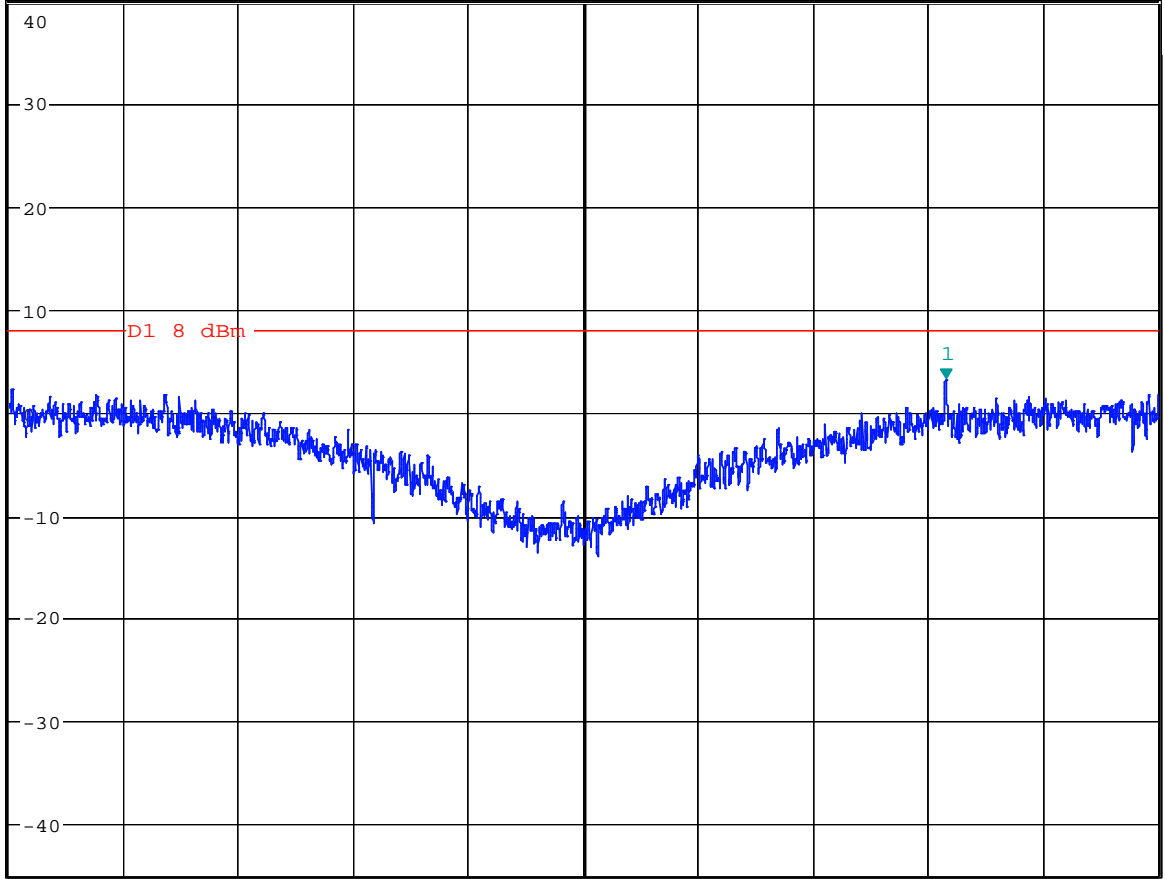


* RBW 3 kHz Marker 1 [T1]
 * VBW 5 kHz 3.17 dBm
 * SWT 500 s 2.462472800 GHz

Ref 40 dBm

* Att 5 dB

1 PK *
CLRWR



Center 2.462 GHz

150 kHz/

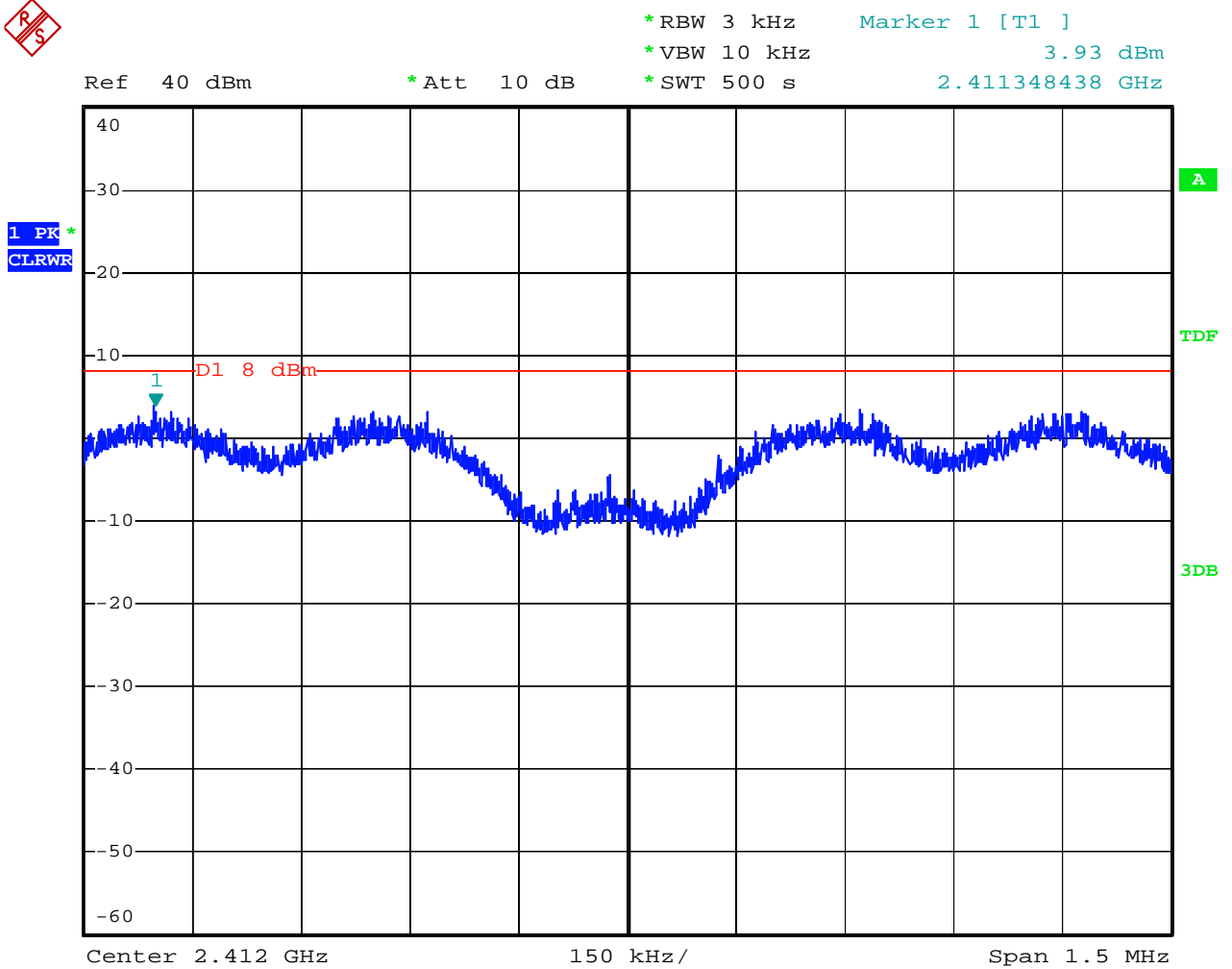
Span 1.5 MHz

Date: 21.DEC.2007 13:56:04

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Figure 10 Power Density Low Channel – 2412 MHz (OFDM)



Date: 2.JAN.2008 22:38:51

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Figure 11 Power Density Mid Channel – 2437 MHz (OFDM)

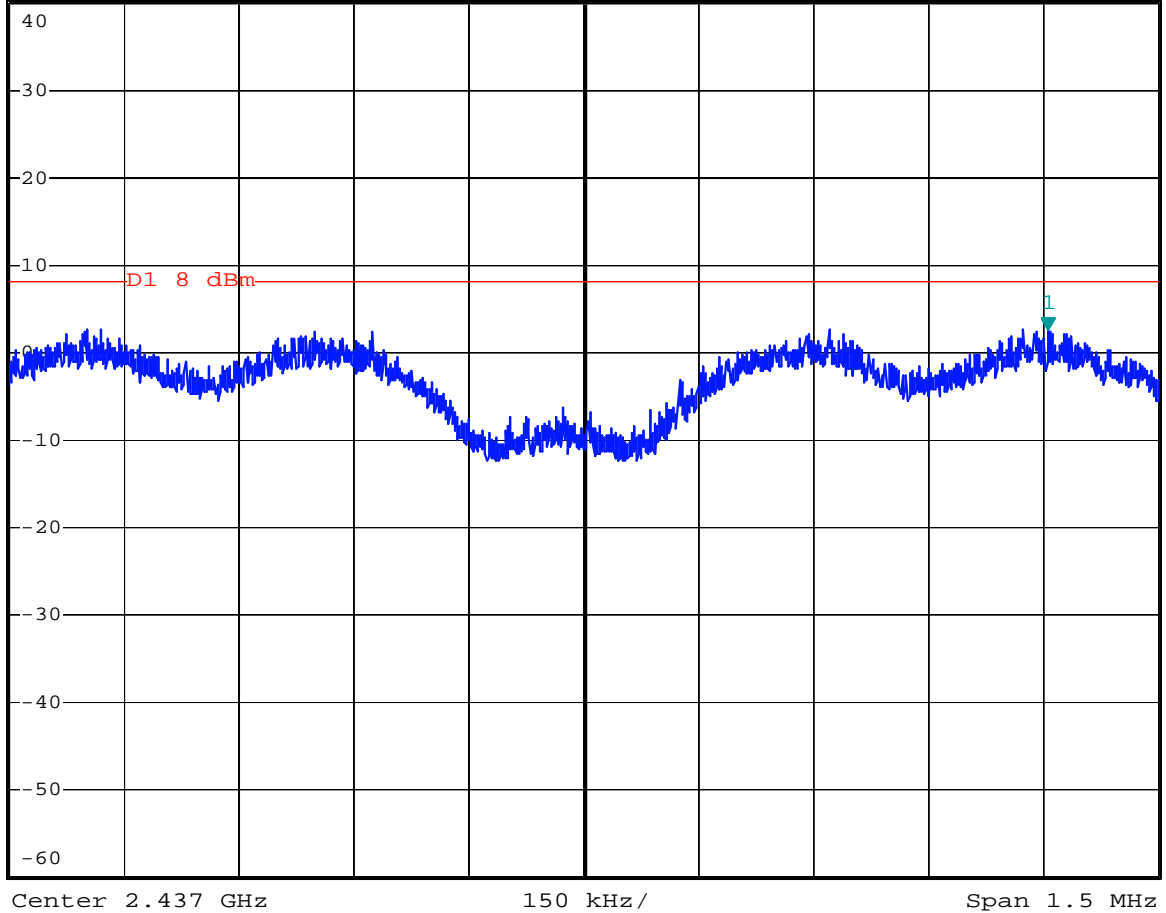


*RBW 3 kHz Marker 1 [T1]
 *VBW 3 kHz 2.65 dBm
 *SWT 500 s 2.437605062 GHz

Ref 40 dBm

*Att 10 dB

1 PK*
CLRWR



Date: 2.JAN.2008 23:42:32

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Figure 12 Power Density High Channel – 2462 MHz (OFDM)

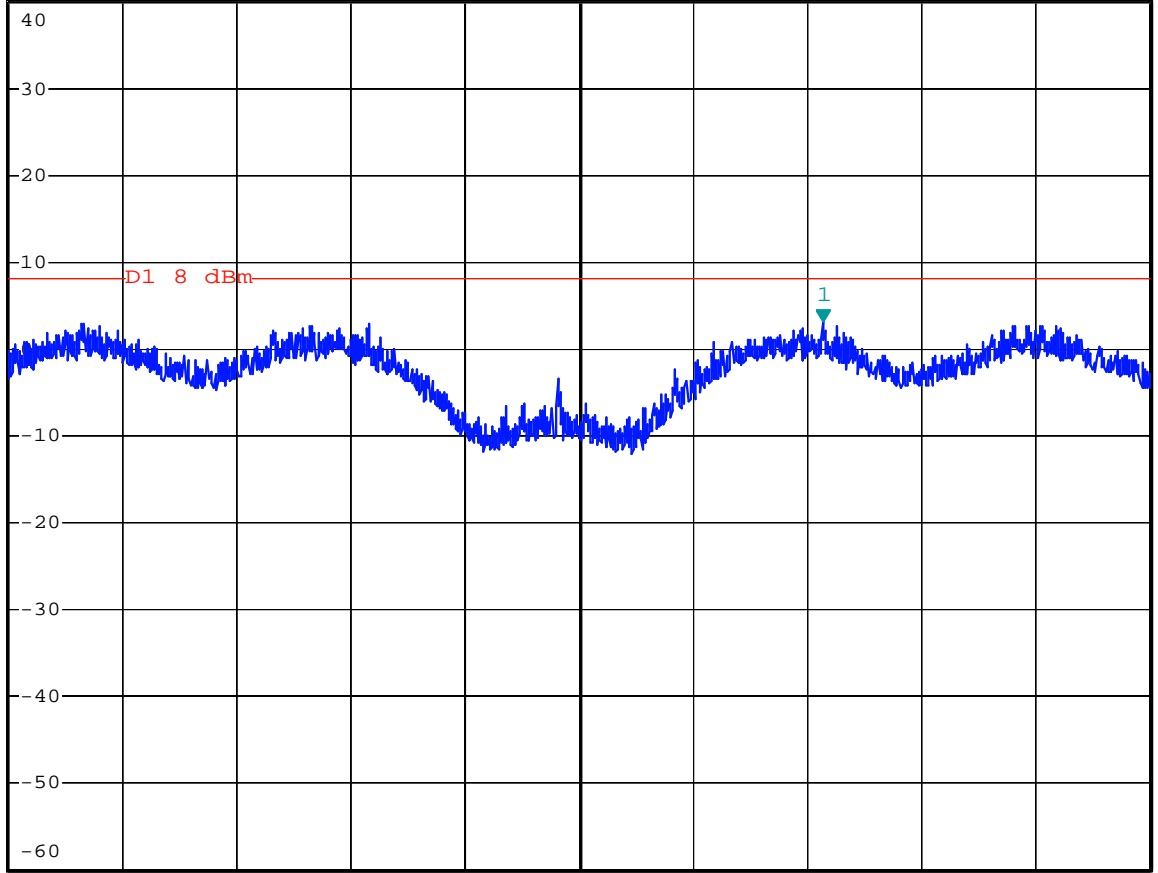


*RBW 3 kHz Marker 1 [T1]
 *VBW 10 kHz 3.08 dBm
 *SWT 500 s 2.462320437 GHz

Ref 40 dBm

*Att 10 dB

1 PK*
 CLRWR



Center 2.462 GHz

150 kHz/

Span 1.5 MHz

Date: 2.JAN.2008 23:16:30

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APPENDIX D: 15.247 CONDUCTED SPURIOUS EMISSIONS

D.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Chapter I – FCC Part 15.247 – Radio Frequency Devices - Subpart C– intentional Radiators
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

D.2. Specifications

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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 §15.205(c)).

D.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+/- 1.2 dB

D.4. Deviations

Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
none						

D.5. Test Results

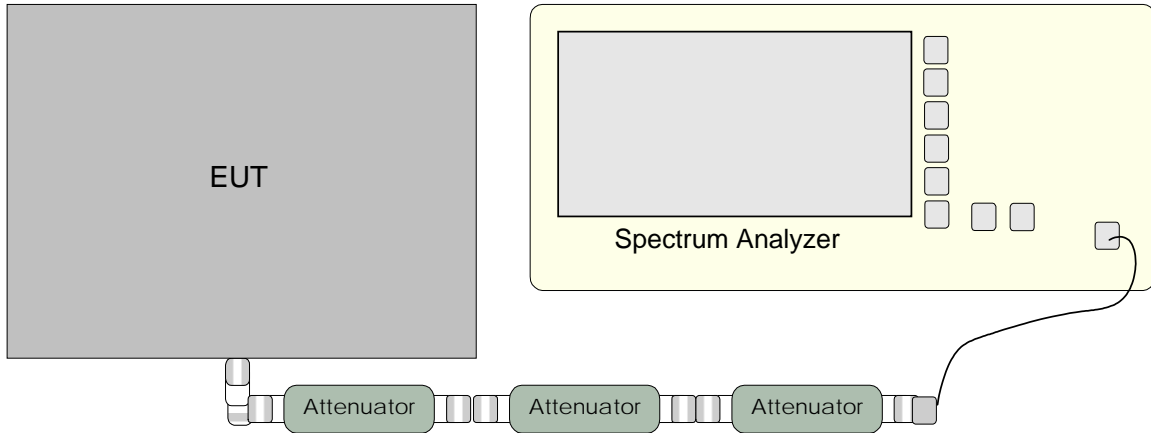
Compliant. All peak emissions were more than 20 dB below the in-band power.

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D.6. Test Data

See following pages.

D.7. Test Configuration



D.8. Tested By

Name: Dwaine Hartman
Date: 21 December, 2007

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Figure 13 Conducted Spurious Emissions Low Channel – 2412MHz (DSSS)

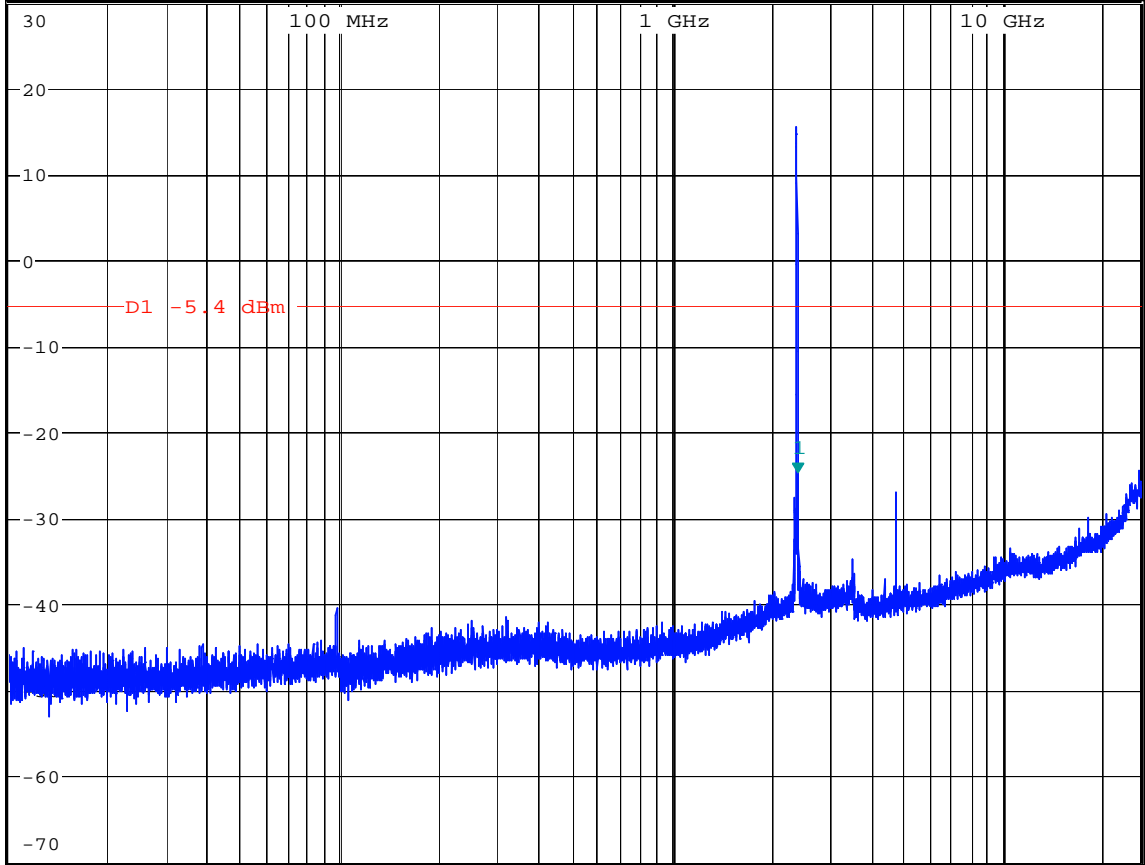


* RBW 100 kHz Marker 1 [T1]
 * VBW 300 kHz -24.85 dBm
 * SWT 5 s 2.428386025 GHz

Ref 30 dBm

* Att 10 dB

1 PK
VIEW



Start 10 MHz

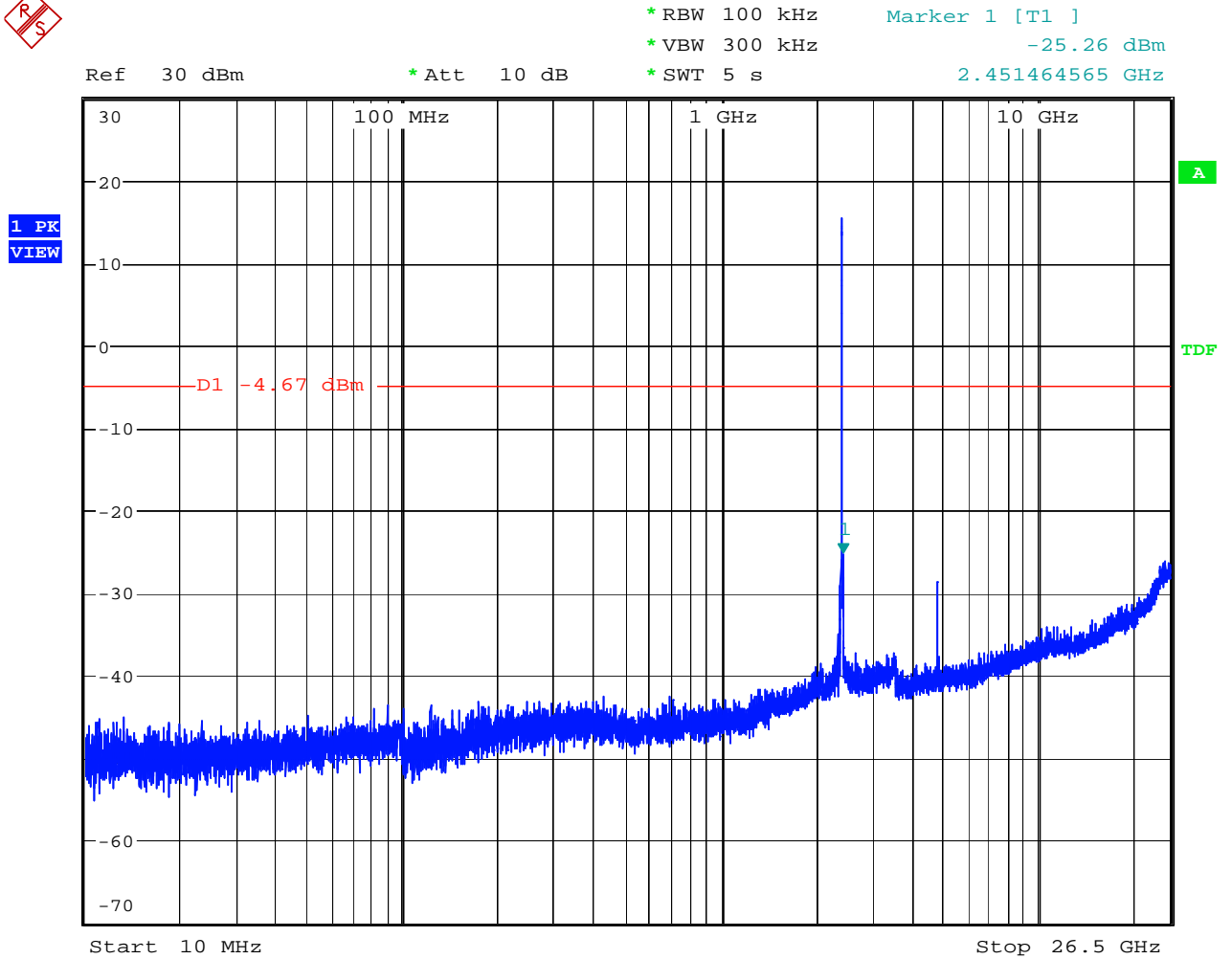
Stop 26.5 GHz

Date: 21.DEC.2007 14:28:30

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Figure 14 Conducted Spurious Emissions Mid Channel – 2437 MHz (DSSS)



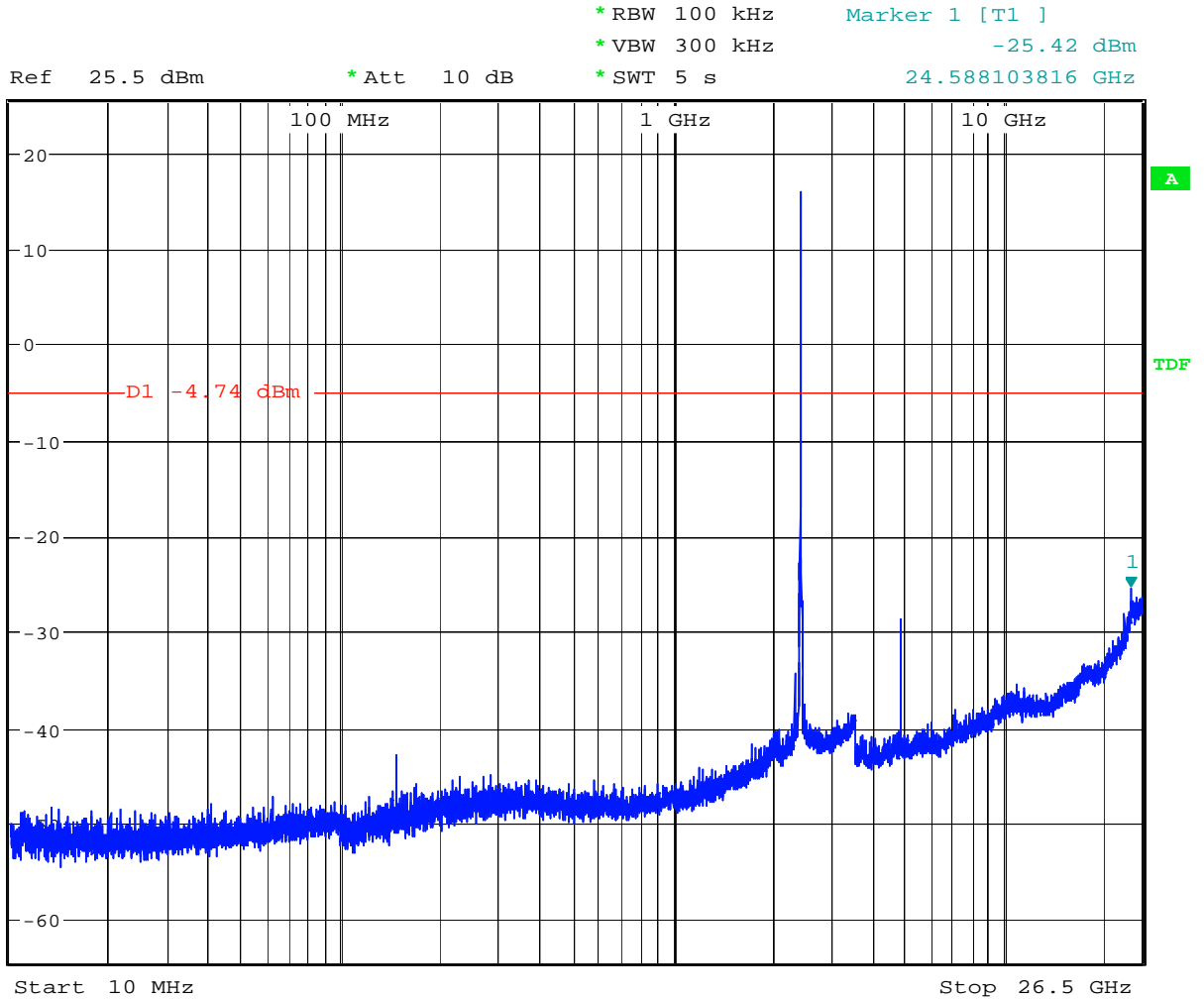
Date: 21.DEC.2007 14:32:11

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Figure 15 Conducted Spurious Emissions High Channel – 2462 MHz (DSSS)



Date: 21.DEC.2007 14:04:05

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Figure 16 Conducted Spurious Emissions Low Channel – 2412MHz (OFDM)

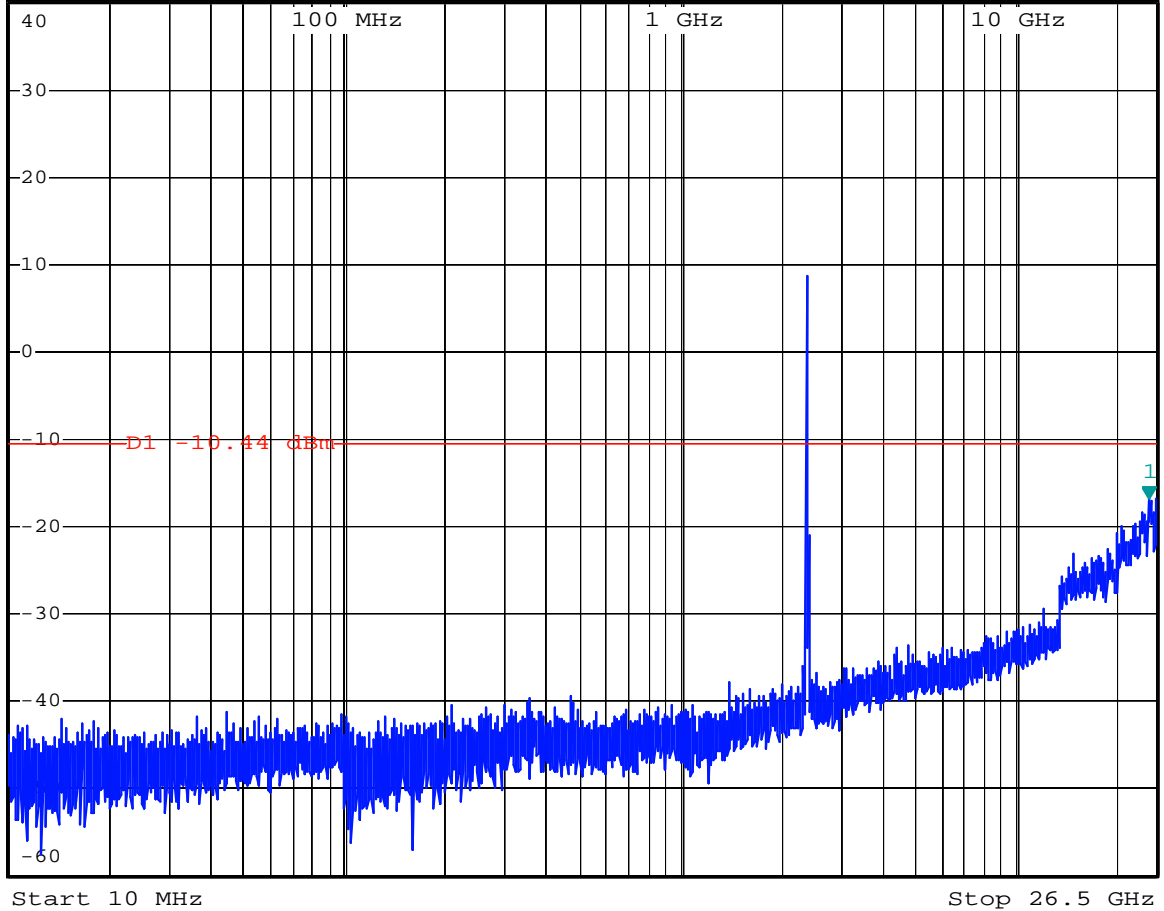


*RBW 100 kHz Marker 1 [T1]
*VBW 300 kHz -16.84 dBm
*SWT 2.7 s 25.226127545 GHz

Ref 40 dBm

*Att 10 dB

1 PK*
VIEW

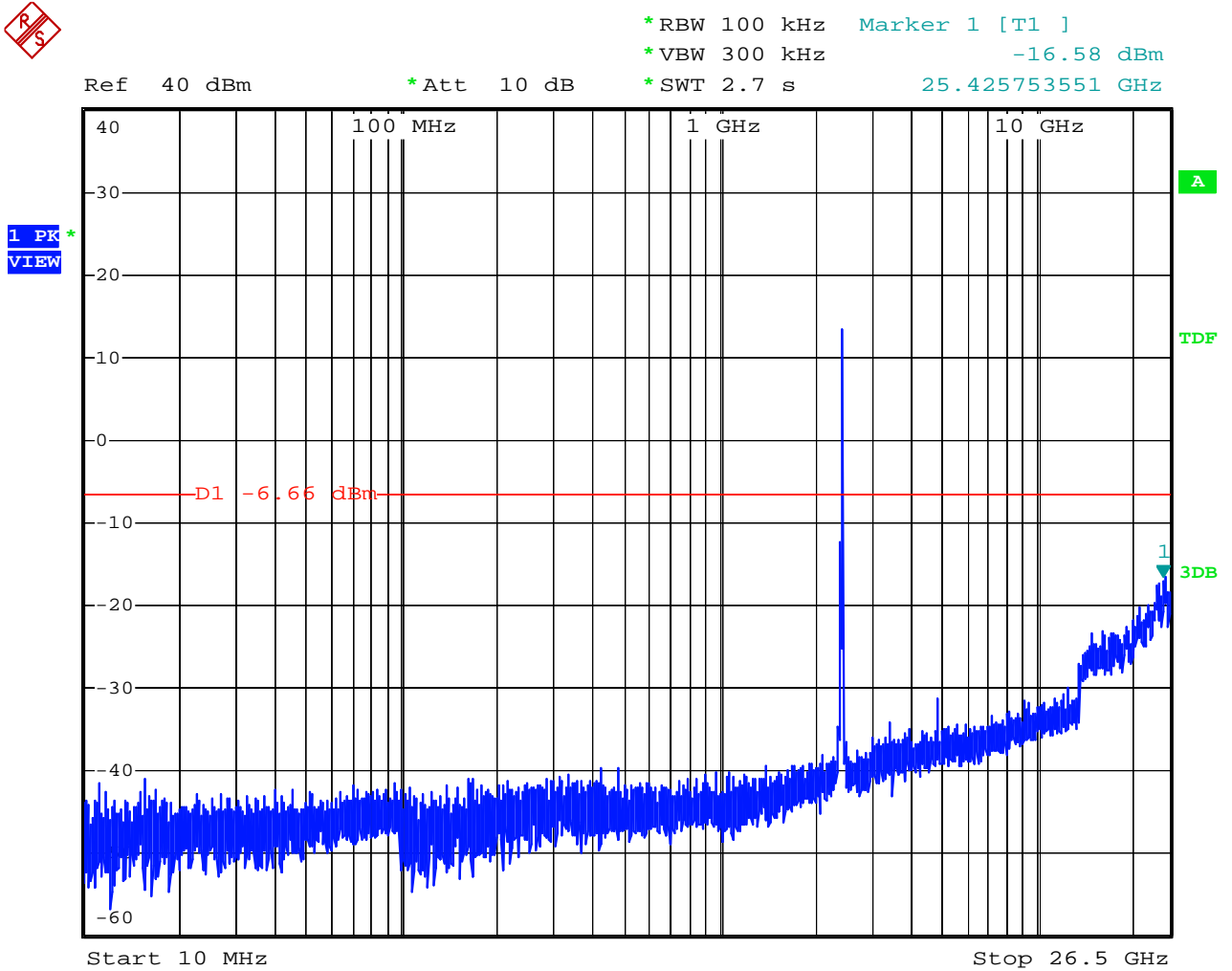


Date: 2.JAN.2008 21:52:37

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Figure 17 Conducted Spurious Emissions Mid Channel – 2437 MHz (OFDM)

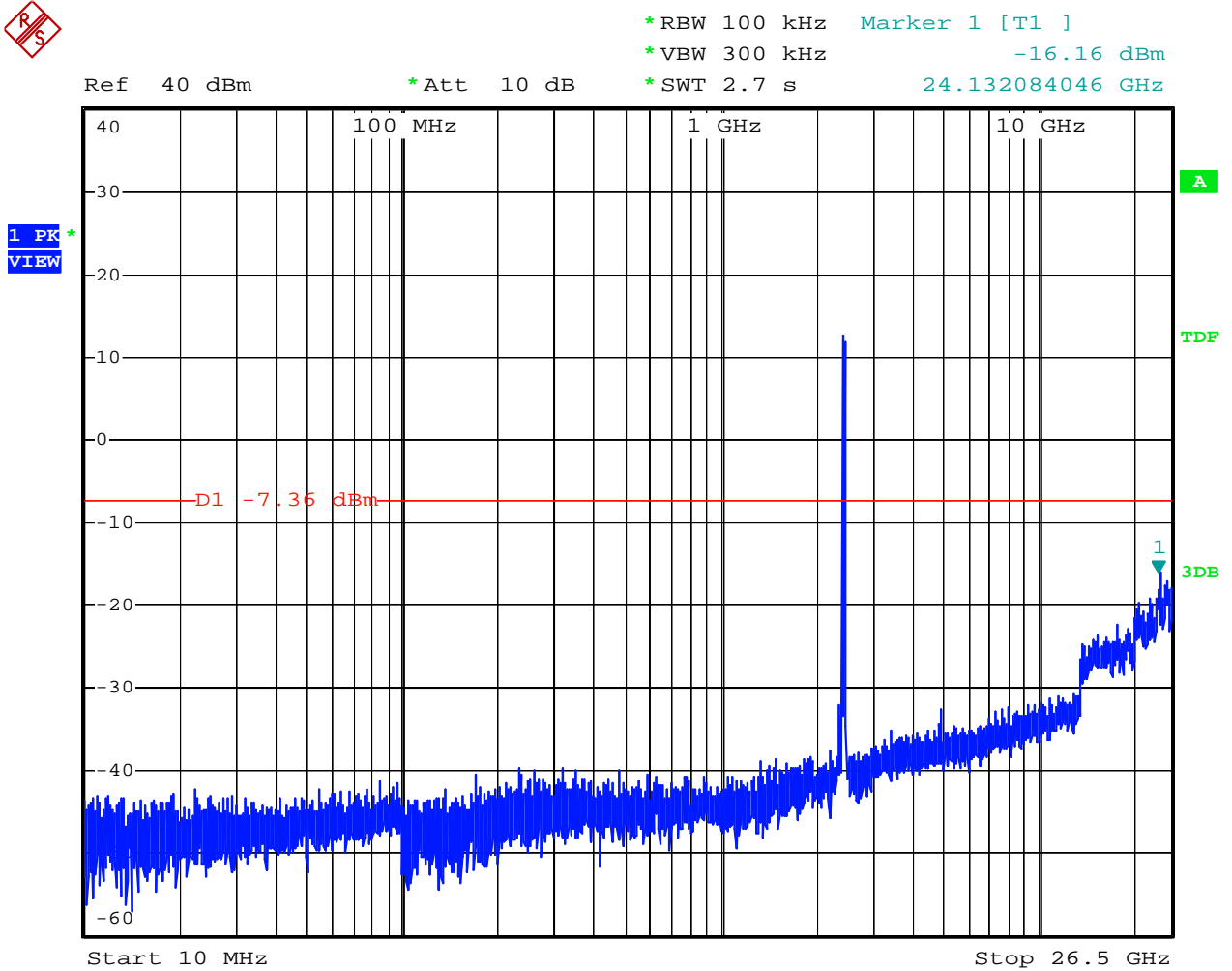


Date: 2.JAN.2008 23:47:07

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Figure 18 Conducted Spurious Emissions High Channel – 2462 MHz (OFDM)



Date: 2.JAN.2008 23:22:02

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APPENDIX E: CONDUCTED SPURIOUS EMISSIONS BAND EDGE MEASUREMENTS

E.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Chapter I – FCC Part 15.247 – Radio Frequency Devices - Subpart C– intentional Radiators.
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

E.2. Limits

(d) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is 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. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. 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 §15.205(c)).

E.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+/- 1.2 dB, .01 ppm

E.4. Test Results

Compliant. All out of band spurious emissions are more than 20 dB below the in band power of the fundamental.

E.5. Deviations from Normal Operating Mode During Test

None.

E.6. Sample Calculation

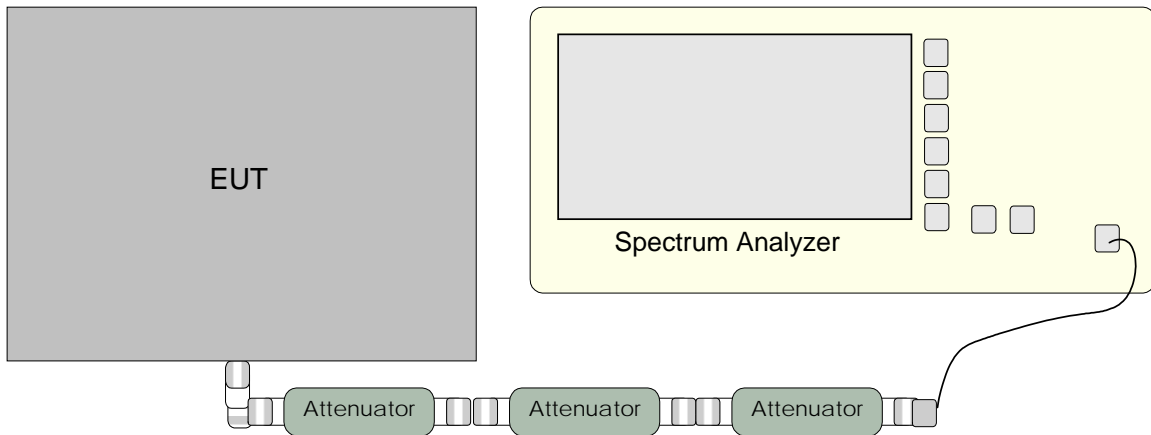
NA.

E.7. Test Data

See plots on following pages.

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E.8. Test Configuration



E.9. Tested By

Name: Dwaine Hartman
Date: 21 December, 2007

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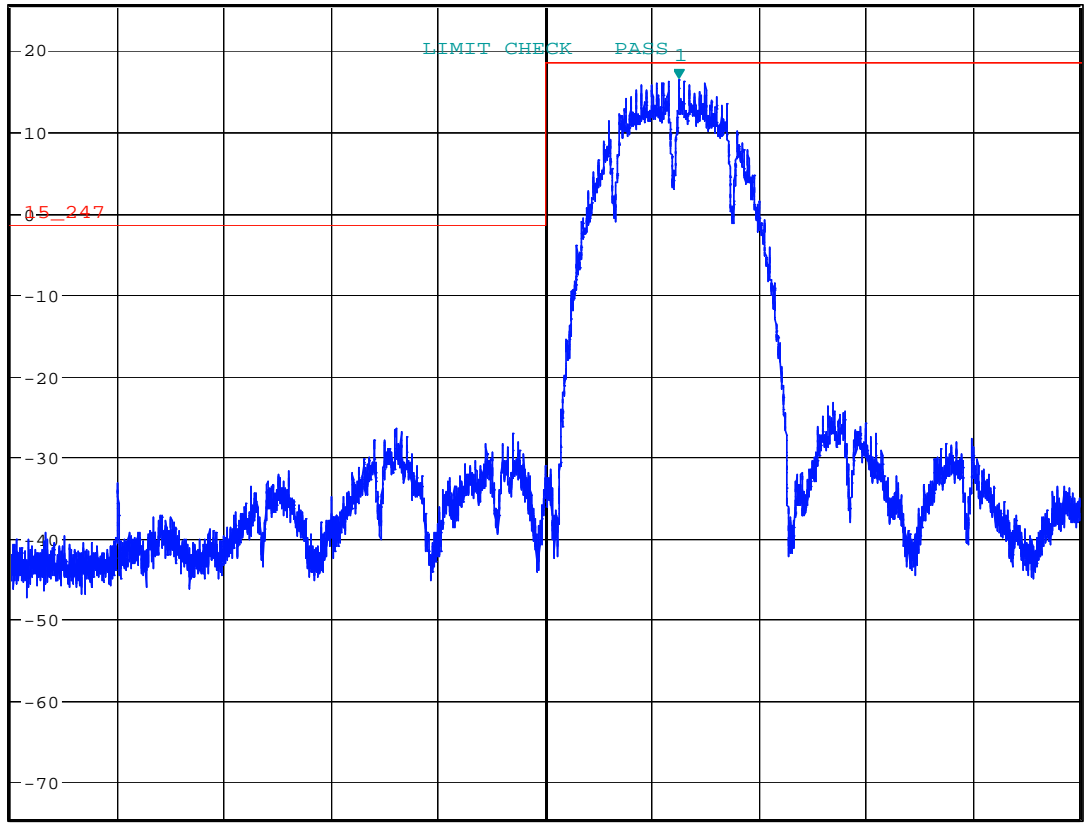


Figure 19 2400 MHz Band edge Measurement – (DSSS)



* RBW 100 kHz Marker 1 [T1]
 * VBW 300 kHz 16.42 dBm
 * SWT 45 ms 2.412470000 GHz
 Ref 25.5 dBm * Att 10 dB

1 PK VIEW



Center 2.4 GHz 10 MHz / Span 100 MHz

Date: 21.DEC.2007 14:13:44

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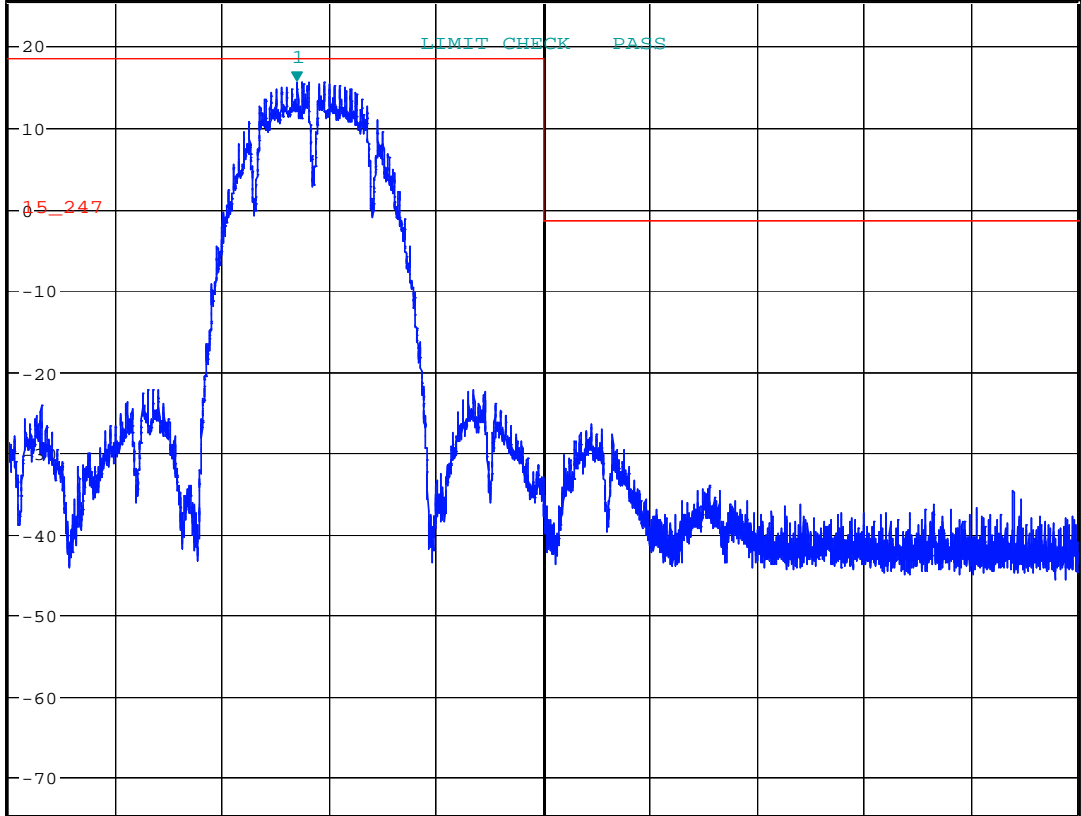


Figure 20 2483.5 MHz Band edge Measurement – (DSSS)



* RBW 100 kHz Marker 1 [T1]
 * VBW 300 kHz 15.59 dBm
 * Att 10 dB * SWT 45 ms 2.460470000 GHz
 Ref 25.5 dBm

1 PK VIEW



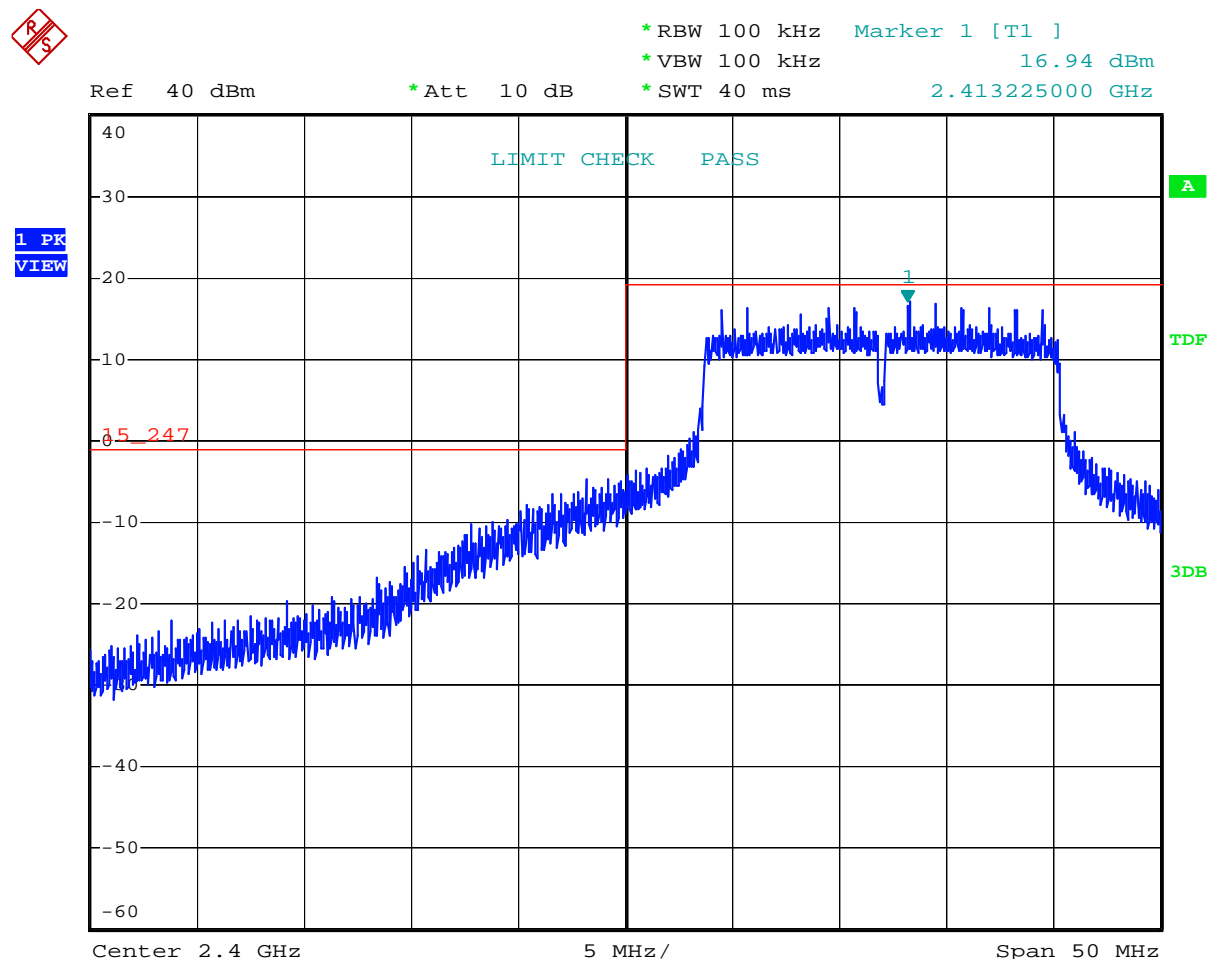
Center 2.4835 GHz 10 MHz/ Span 100 MHz

Date: 21.DEC.2007 14:09:58

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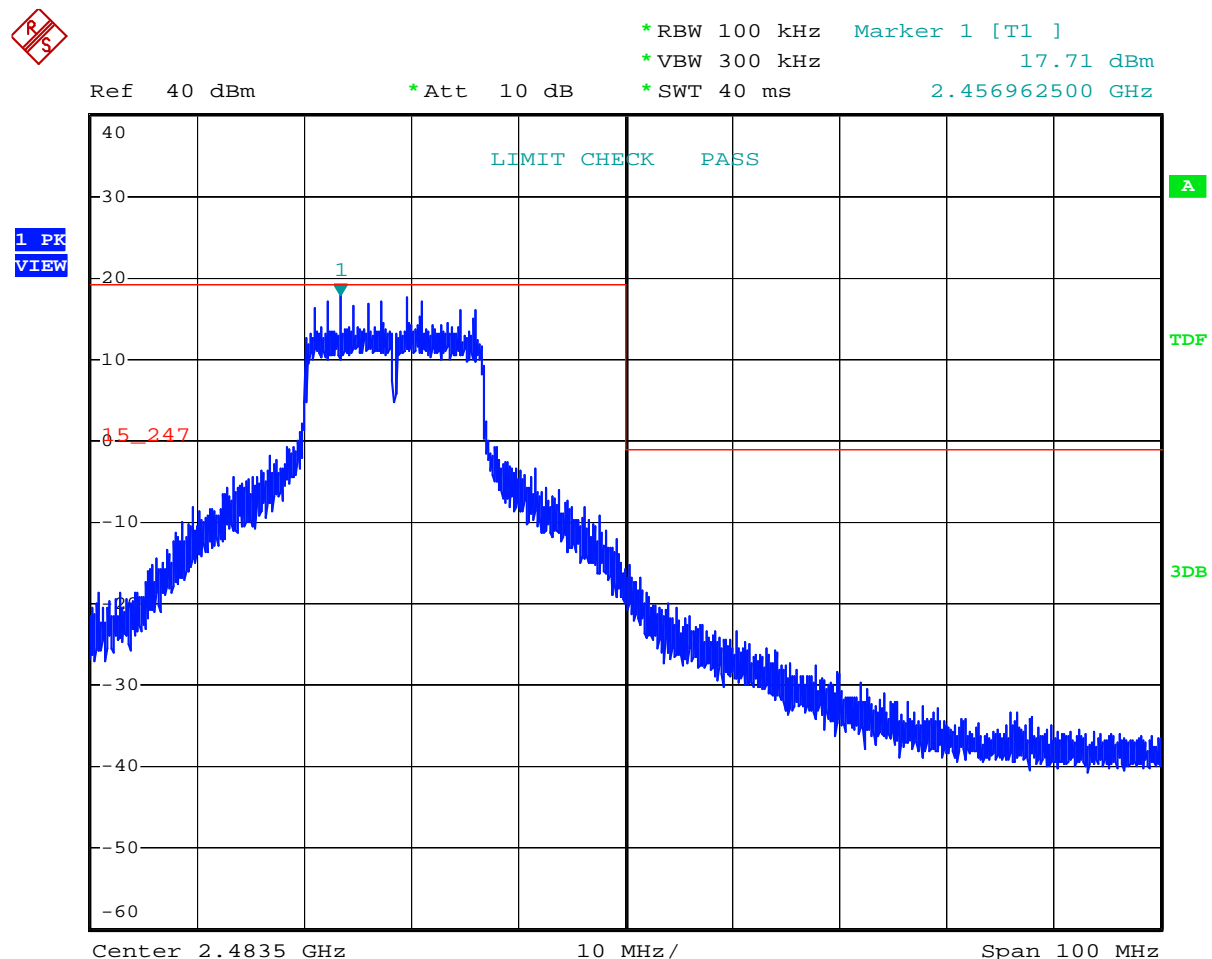
Figure 21 2400 MHz Band edge Measurement – (OFDM)



Date: 2.JAN.2008 22:48:06

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Figure 22 2483.5 MHz Band edge Measurement – (OFDM)



Date: 2.JAN.2008 23:27:06

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APPENDIX F: RADIATED EMISSIONS IN RESTRICTED BANDS 30 MHz – 25 GHz (TX AND RX)

F.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Chapter I - FCC Part 15.209 – Radio Frequency Devices
Test Basis	ANSI C63.4-2003 Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Test Method	ANSI C63.4-2003 and FCC Publication 558074

Specifications

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	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(\2\)
13.36-13.41			

\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) of this section, the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

F.2. Test Results

The EUT is in compliance with FCC CFR47 Part 15.205/15209 Radiated emission limits.

F.3. Observations

None

F.4. Deviations from Normal Operating Mode During Test

None.

F.5. Sample Calculation

Emission Level = Measured Level + Correction Factors.

Margin = Limit – Emission Level. A positive margin indicates a passing result.

F.6. Test Data & Photographs

Plots were not provided in order to reduce file size.

F.7. Tested By

Name: Dwaine Hartman

Date: 3 Jan., 2008



Note: The frequency spectrum was searched up to 25 GHz at each channel.



Project No: W7148
Model: i38HG
Configuration: Frequency: 2412 MHz, RF Power: +26 dBm, Modulation Mode: OFDM 54 Mbps

Distance: 3 m
Standard: CFR 47, 15.247 and RSS 210, Issue 6
RBW: (unless < 1 GHz = 120 kHz noted) > 1 GHz = 1 MHz
VBW: Peak = RBW Avg. = 10 Hz

Table with 10 columns: Comments, Polarization (V/H), Frequency (MHz), Antenna Factor (dB/m), Cable Loss + LNA (dB), Total Correction (dB/m), Detector (Pk/Avg), Measured (dBuV), Corrected (dBuV/m), Limit (dBuV/m), Margin (dB). Rows include frequencies 4824.0, 7236.0, and 9648.0 MHz.

Notes:
(1) A positive margin indicates a passing result
(2) The spectrum was searched from 30 MHz to 25 GHz.
(3) If duty cycle correction is indicated, plots are included in the test report to validate the factor used.



Project No: W7148
Model: i38HG
Configuration: Frequency: 2437 MHz, RF Power: +26 dBm, Modulation Mode: OFDM 54 Mbps

Distance: 3 m
Standard: CFR 47, 15.247 and RSS 210, Issue 6
RBW: (unless < 1 GHz = 120 kHz noted) > 1 GHz = 1 MHz
VBW: Peak = RBW Avg. = 10 Hz

Table with 10 columns: Comments, Polarization (V/H), Frequency (MHz), Antenna Factor (dB/m), Cable Loss + LNA (dB), Total Correction (dB/m), Detector (Pk/Avg), Measured (dBuV), Corrected (dBuV/m), Limit (dBuV/m), Margin (dB). Rows include frequencies 4874.0, 7311.0, and Noise Floor at 14622.0 MHz.

Notes:
(1) A positive margin indicates a passing result
(2) The spectrum was searched from 30 MHz to 25 GHz.
(3) If duty cycle correction is indicated, plots are included in the test report to validate the factor used.

The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.



Project No: W7148
 Model: i38HG
 Configuration: Frequency: 2462 MHz, RF Power: +26 dBm, Modulation Mode: OFDM 54 Mbps

Distance: 3 m

Standard: CFR 47, 15.247 and RSS 210, Issue 6
 RBW: (unless < 1 GHz = 120 kHz noted) > 1 GHz = 1 MHz
 VBW: Peak = RBW, Avg. = 10 Hz

Comments	Polarization	Frequency	Antenna Factor	Cable Loss + LNA	Total Correction	Detector	Measured	Corrected	Limit	Margin
	(V/H)	(MHz)	(dB/m)	(dB)	(dB/m)	(Pk/Avg)	(dBuV)	(dBuV/m)	(dBuV/m)	(dB)
	V	2483.5	27.4	-29.4	-2.0	Pk	30.4	28.4	54.0	25.6
	H	2483.5	27.4	-29.4	-2.0	Pk	39.7	37.7	54.0	16.3
	V	4924.0	32.3	-26.4	5.9	Avg	43.0	48.9	54.0	5.1
	V	4924.0	32.3	-26.4	5.9	Pk	64.4	70.3	74.0	3.7
	H	4924.0	32.3	-26.4	5.9	Avg	43.2	49.1	54.0	4.9
	H	4924.0	32.3	-26.4	5.9	Pk	63.3	69.2	74.0	4.8
	V	7386.0	35.2	-25.0	10.2	Avg	34.3	44.5	54.0	9.5
	V	7386.0	35.2	-25.0	10.2	Pk	53.0	63.2	74.0	10.8
	H	7386.0	35.2	-25.0	10.2	Avg	21.0	31.2	54.0	22.8
	H	7386.0	35.2	-25.0	10.2	Pk	43.8	54.0	74.0	20.0
	V	9848.0	37.8	-22.6	15.2	Avg	25.1	40.3	54.0	13.7
	V	9848.0	37.8	-22.6	15.2	Pk	45.2	60.4	74.0	13.6
	H	9848.0	37.8	-22.6	15.2	Avg	24.0	39.2	54.0	14.8
	H	9848.0	37.8	-22.6	15.2	Pk	44.3	59.5	74.0	14.5

Notes: (1) A positive margin indicates a passing result
 (2) The spectrum was searched from 30 MHz to 25 GHz
 (3) If duty cycle correction is indicated, plots are included in the test report to validate the factor used.

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APPENDIX G: POWERLINE CONDUCTED SPURIOUS EMISSIONS

G.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Chapter I - FCC Part 15.207 – Radio Frequency Devices
Test Basis	ANSI C63.4-2003 Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
Test Method	ANSI C63.4-2003

Specifications

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

*Decreases with the logarithm of the frequency.

G.2. Test Results

The EUT is in compliance with FCC CFR47 Part 15.207.

G.3. Observations

None

G.4. Deviations from Normal Operating Mode During Test

None.

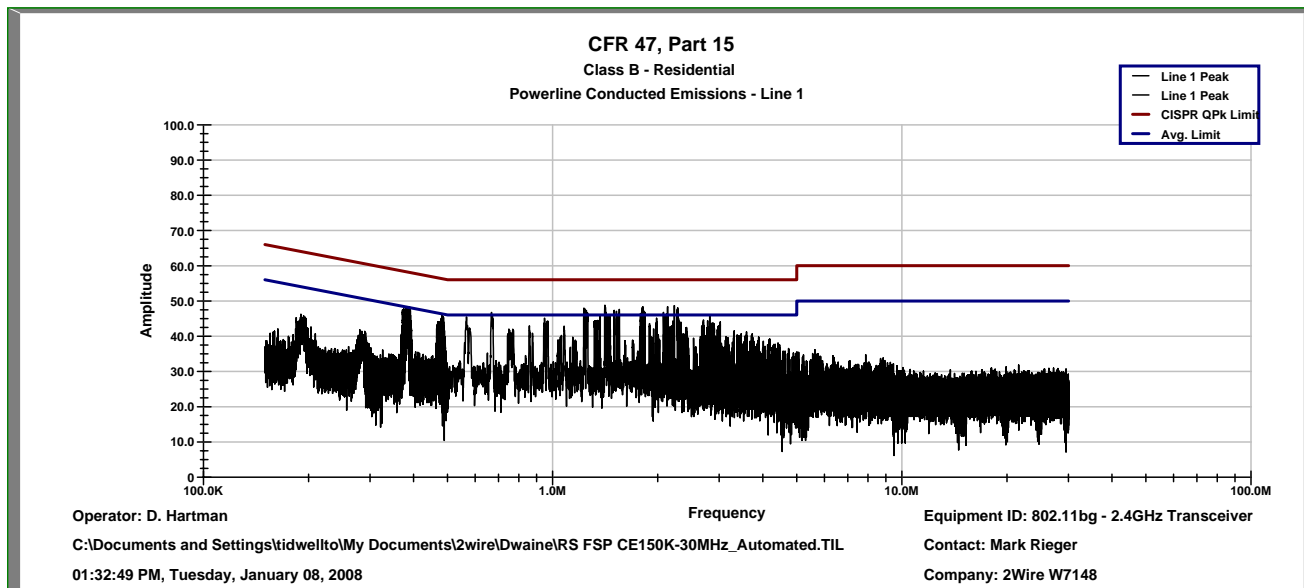
G.5. Sample Calculation

Emission Level = Measured Level + Correction Factors.

Margin = Limit – Emission Level.

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G.6. Test Data

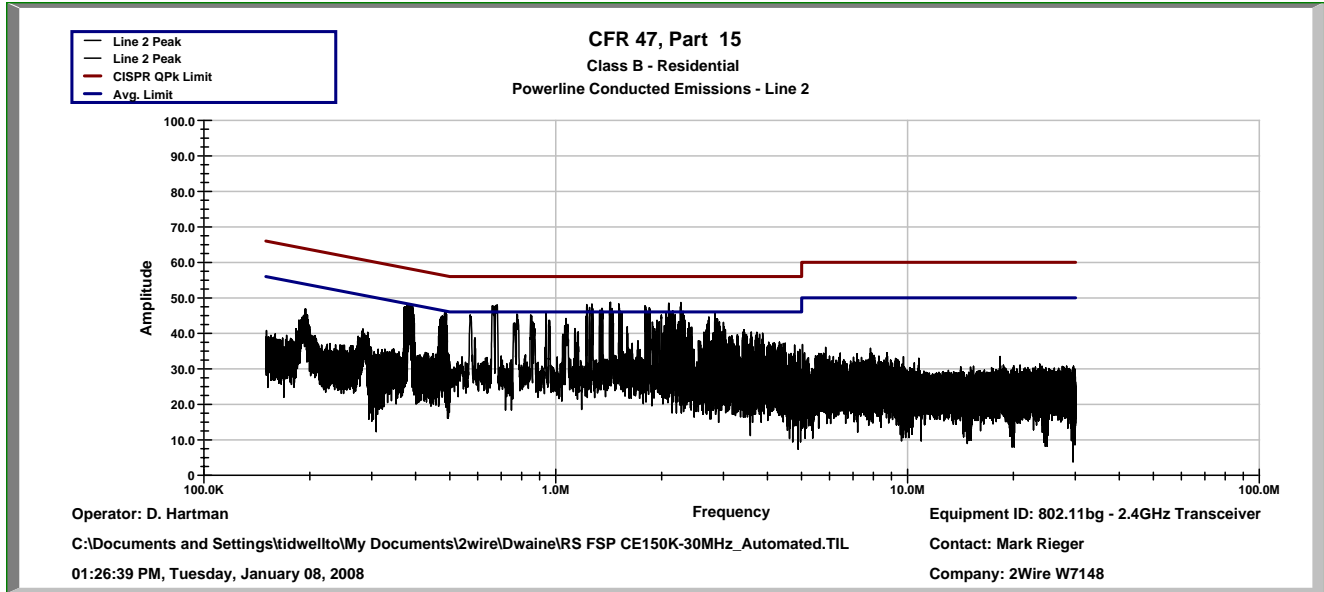


Powerline Conducted Emissions
Class B - Residential
Line 1

Operator: D. Hartman
 Contact: Mark Rieger
 Tuesday January 08, 2008
 Company: 2Wire
 Job No.: W7148

Frequency (MHz)	Meas. Avg. (dBuV)	Avg. Limit (dBuV)	Margin (dB)	Meas. QPk. (dBuV)	QPk Limit (dBuV)	Margin (dB)
0.380	40.6	49.4	-8.8	46.9	59.4	-12.5
0.382	41.7	49.4	-7.7	47.0	59.4	-12.4
0.388	43.3	49.2	-5.9	46.7	59.2	-12.5
1.410	24.3	46.0	-21.7	39.0	56.0	-17.0
1.411	24.4	46.0	-21.6	38.8	56.0	-17.2
1.411	24.3	46.0	-21.7	38.3	56.0	-17.7

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Powerline Conducted Emissions
Class B - Residential
Line 2

Operator: D. Hartman
Contact: Mark Rieger
Tuesday January 08, 2008
Company: 2Wire
Job No.: W7148

Frequency (MHz)	Meas. Avg. (dBuV)	Avg. Limit (dBuV)	Margin (dB)	Meas. QPk. (dBuV)	QPk Limit (dBuV)	Margin (dB)
0.389	41.6	49.2	-7.6	46.5	59.2	-12.7
0.389	41.7	49.2	-7.5	46.5	59.2	-12.7
0.390	40.8	49.1	-8.3	46.8	59.1	-12.4
1.430	35.4	46.0	-10.6	47.6	56.0	-8.4
1.430	35.3	46.0	-10.7	47.7	56.0	-8.4
2.268	25.7	46.0	-20.3	44.5	56.0	-11.6

G.7. Tested By

Name: Dwaine Hartman
Date: 8 Jan., 2008

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G.8. Test Photo



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NTS Plano, 1701 E. Plano Pkwy., Plano, TX 75074 Tel: (972) 509-2566, Fax: (972) 509-0073

APPENDIX H: TEST EQUIPMENT LIST

H.1. Radiated Emissions 30 MHz – 1 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due
Bilog Antenna	ETS	3142C	E1289P	8/21/08
RF Cable	Gore	FJN	EM18	9/1/08
Spectrum Analyzer	HP	8566B	E1007P	8/29/08
Quasi-Peak Adapter	HP		E1007P	8/29/08
Low Noise Amplifier	Miteq	AM-1431	E1279P	12/4/08
Multi Device Controller (Turntable and Mast)	ETS	2090	00058930	-

H.2. Radiated Emissions 1 GHz – 25 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due
Horn Antenna 1 GHz – 18 GHz	EMCO	3115	E1149P	8/24/08
Horn Antenna 18 GHz – 26.5 GHz	EMCO	3116	E1068P	8/24/08
High pass filter	K&L	11SH10- 2000	W1024P	-
Low Noise Amplifier	HP	8449B	E1010P	5/4/08
Spectrum Analyzer	HP	8566B	E1007P	8/29/08

H.3. Antenna Conducted Emissions Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due
Coaxial attenuator	Inmet	36AH-20	W1019P	9/29/08
Coaxial Cable	MegaPhase	TM26	W1010P	9/29/08
Spectrum Analyzer 20 Hz -26.5 GHz	Rohde & Schwarz	FSQ26	W1020P	1/14/09
Peak Power Meter	Boonton	4532	W1001P	9/1/08
Peak Power Sensor	Boonton	57340	W1002P	9/1/08

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END OF DOCUMENT

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NTS Plano, 1701 E. Plano Pkwy., Plano, TX 75074 Tel: (972) 509-2566, Fax: (972) 509-0073