National Technical Systems

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Certification Test Report

CFR 47 FCC Part 15, Subpart C Section 15.247
Industry Canada RSS 210, Issue 6

Model: RTC2400
FCC ID.: S2ZRTC2400

Report No. W7237-1

Revision: 0

Prepared for:	Crane Aerospace 1820 Preston Park Blvd. Suite 2800 Plano, Texas 75093
Author:	Tom Tidwell
Issued:	25 June, 2007

Report Summary

NTS Plano

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

Applicant: Signal Technologies Corporation
1820 Preston Park Blvd.
Suite 2800
Plano, Texas 75093
Contact: Magnus Aronsson

Customer Representative: Tom Shinham

EUT Description:

EUT Description	Manufacturer	Model	Revision	Serial Number
The device tested is a wireless data radio design to be used in a low speed data network	Crane Aerospace	RTC2400	1	2007051400212

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 ,RSS 210 Issue 5 RX Spurious Emissions	No	No	No	PASS	15.247, 15.205, RSS 210
G	AC Power line Conducted Emissions	No	No	No	NOT TESTED*	15.207
H	Test Equipment List					

*AC Powerline conducted emissions testing was not performed since the device is battery powered and during installation the battery will be charged with the power supplied by the host device.

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,
Manager of Wireless Services

Table of Contents

Register of revisions

Revision	Reason for Revision	Revision Date
0	Original	25 June, 2007
1	Changed peak rf power to “+23 dBm (200 mW)” on page 6	29 June, 2007

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 RTC2400 to FCC Part 15 Subpart C section 15.247 for DTS transmitter and the equivalent sections of Industry Canada's RSS 210, Issue 6.

2.0 EUT DESCRIPTION

2.1 CONFIGURATION

Description of EUT

	Name	Model	Revision	Serial Number
EUT	Wireless data transmitter	RTC2400	0	2007051400212
RF Exposure Classification	Mobile			
Channels/Frequency Range	2405 – 2480 MHz			
RF Power Output	+23 dBm (200 mW) at antenna terminal			
Functional Description	The device is intended to operate in a vending machine and is used to periodically transmit data to a central location for monitoring inventory and sales.			

2.1.1 EUT POWER

Voltage	12 Vdc
Number of Feeds	Battery (The end product will operate from the internal power supply of the vending machine and will include the battery supply for backup)

2.2 EUT CABLES

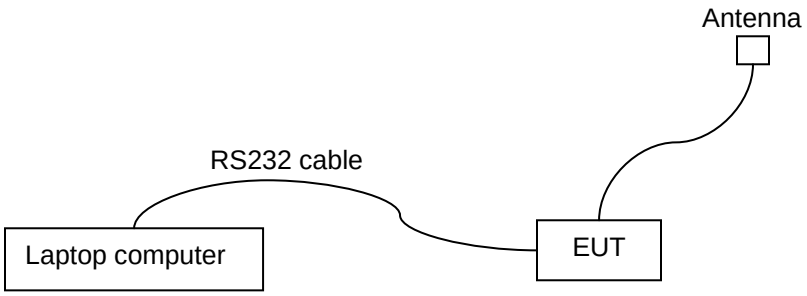
Quantity	Model/Type	Routing		Shielded / Unshielded	Description	Cable Length (m)
		From	To			
1	RS232	Auxillary computer	EUT	shielded	Used for test configuration only	1.5

2.3 MODE OF OPERATION DURING TESTS

The RTC2400 was tested while in a continuous transmit mode. The EUT was tuned to a low, middle, and high channel to perform power, occupied bandwidth, and spurious/harmonic tests. For conducted emissions the device was tuned to its center frequency. The EUT continuously transmitted a non-pulsed, 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.

3.0 SUPPORT EQUIPMENT

3.1 CONFIGURATION



APPENDICES

APPENDIX A: ANTENNA CHARACTERISTICS

Antenna Type	Manufacturer	Gain (dBi)
Omni-Directional	MAXRAD	3.5
Omni-Directional “Rubber Duck”	HyperLink	5.5

1 - MAXRAD Omnidirectional 3.5 dBi antenna with reverse gender SMA connector

2 - HyperLink 5.5 dBi antenna

3 - Reverse SMA Connection

APPENDIX B: 6 DB BANDWIDTH

B.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

B.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.

B.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
1 Hz, +1.11/-1.22 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 Procedure

RF conducted as per FCC Publication 558074

B.6. Test Results

The EUT is in compliance with the limits as specified above

Frequency	6 dB Bandwidth (MHz)
2405 MHz	1.59
2440 MHz	1.62
2480 MHz	1.59

B.7. Operating Mode During Test

The device was tested while in a continuous transmit mode. The EUT was tuned to the lowest, middle, and highest channels to perform power, occupied bandwidth, and spurious/harmonic tests. For conducted emissions the device was tuned to its center frequency. The EUT continuously transmitted a pulsed modulated packet with a payload. While transmitting the EUT was setup to operate at maximum power.

B.8. Sample Calculation

NA

B.9. Test Data

See plots on following pages

B.10. Tested By

Name: Dwaine Hartman
Function: Wireless Test Technician
Date: 30 May, 2007

B.11. Test Setup Diagram

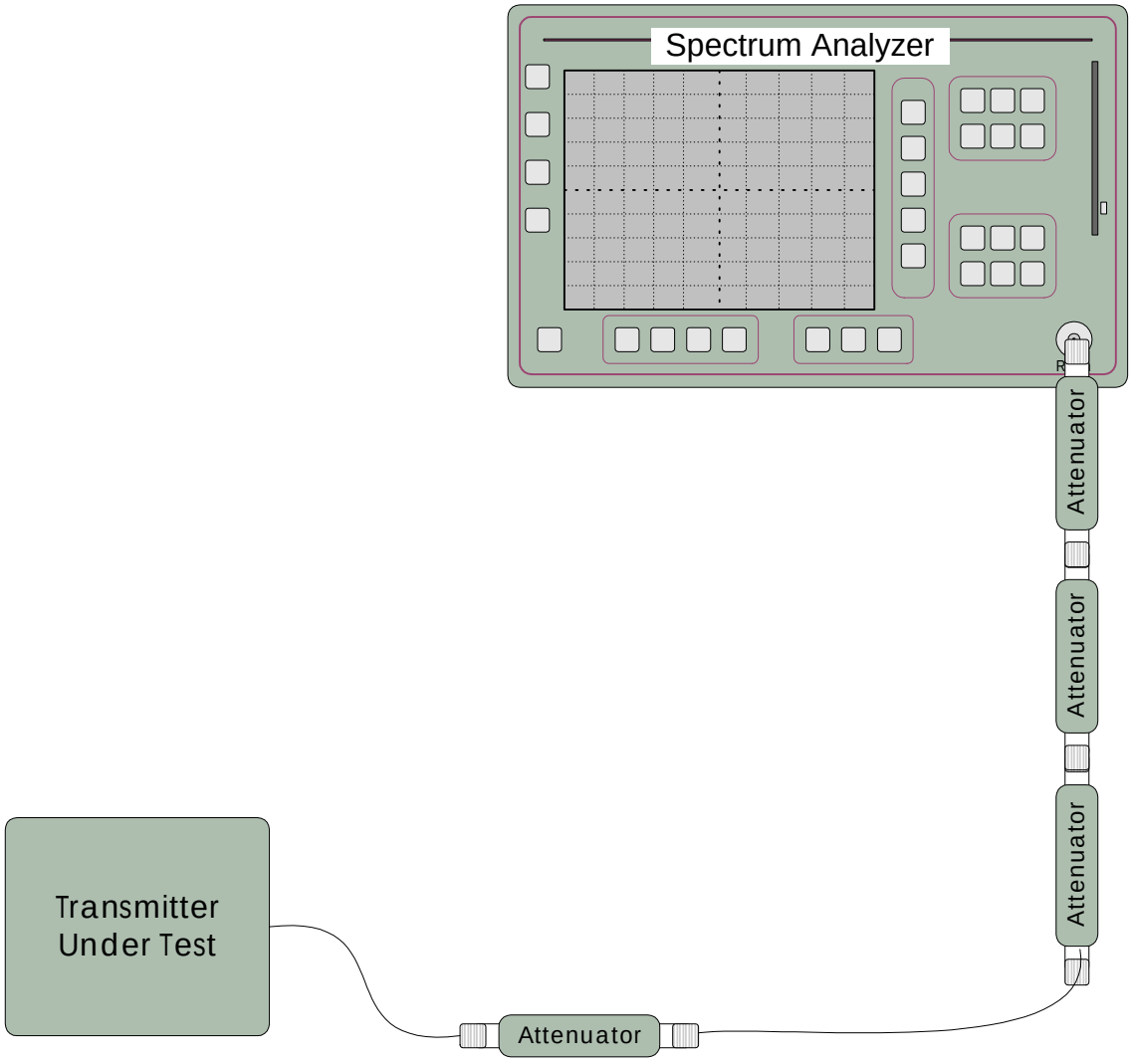


Figure 1 6 dB Bandwidth Low Channel

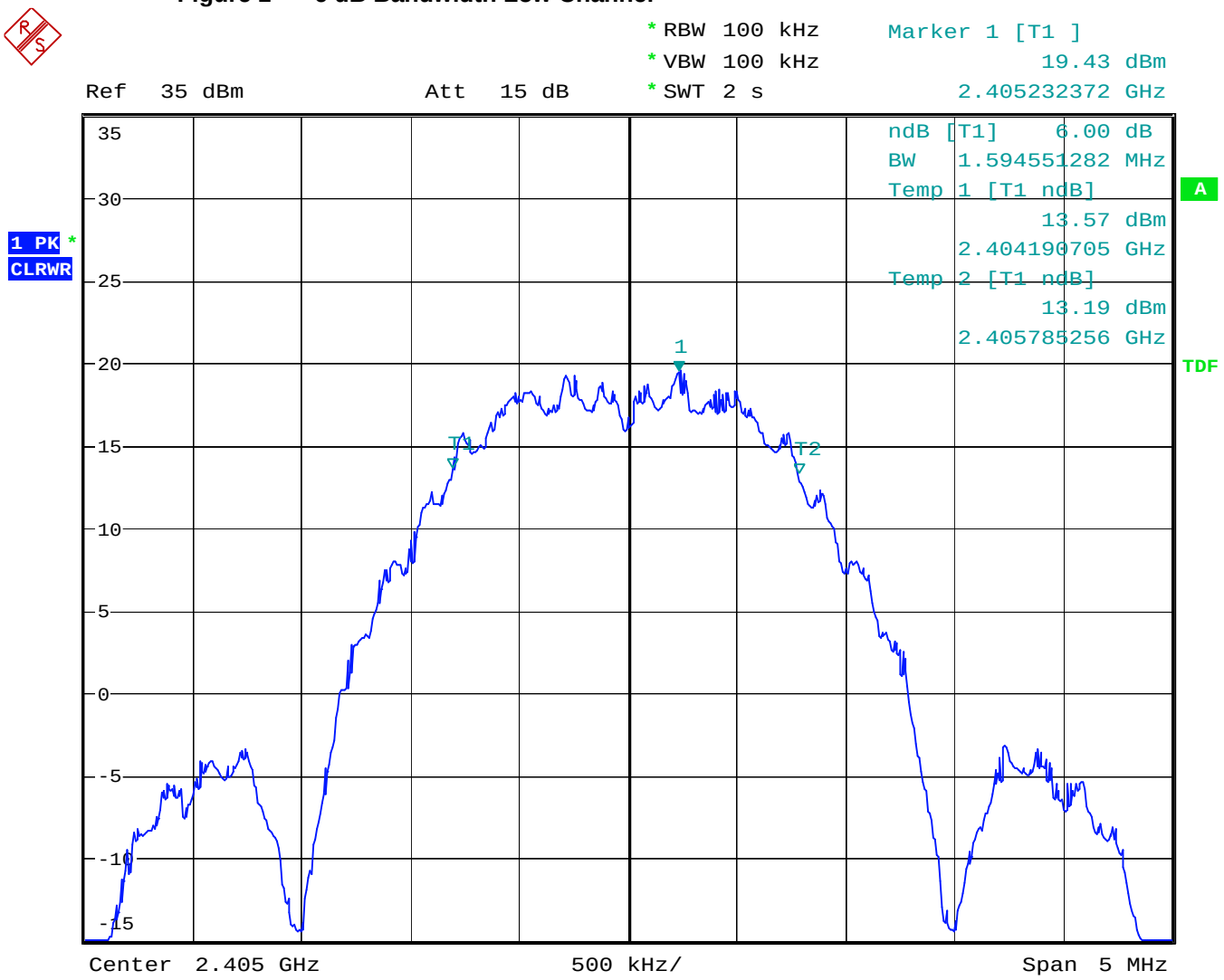


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Figure 2 6 dB Bandwidth Mid Channel

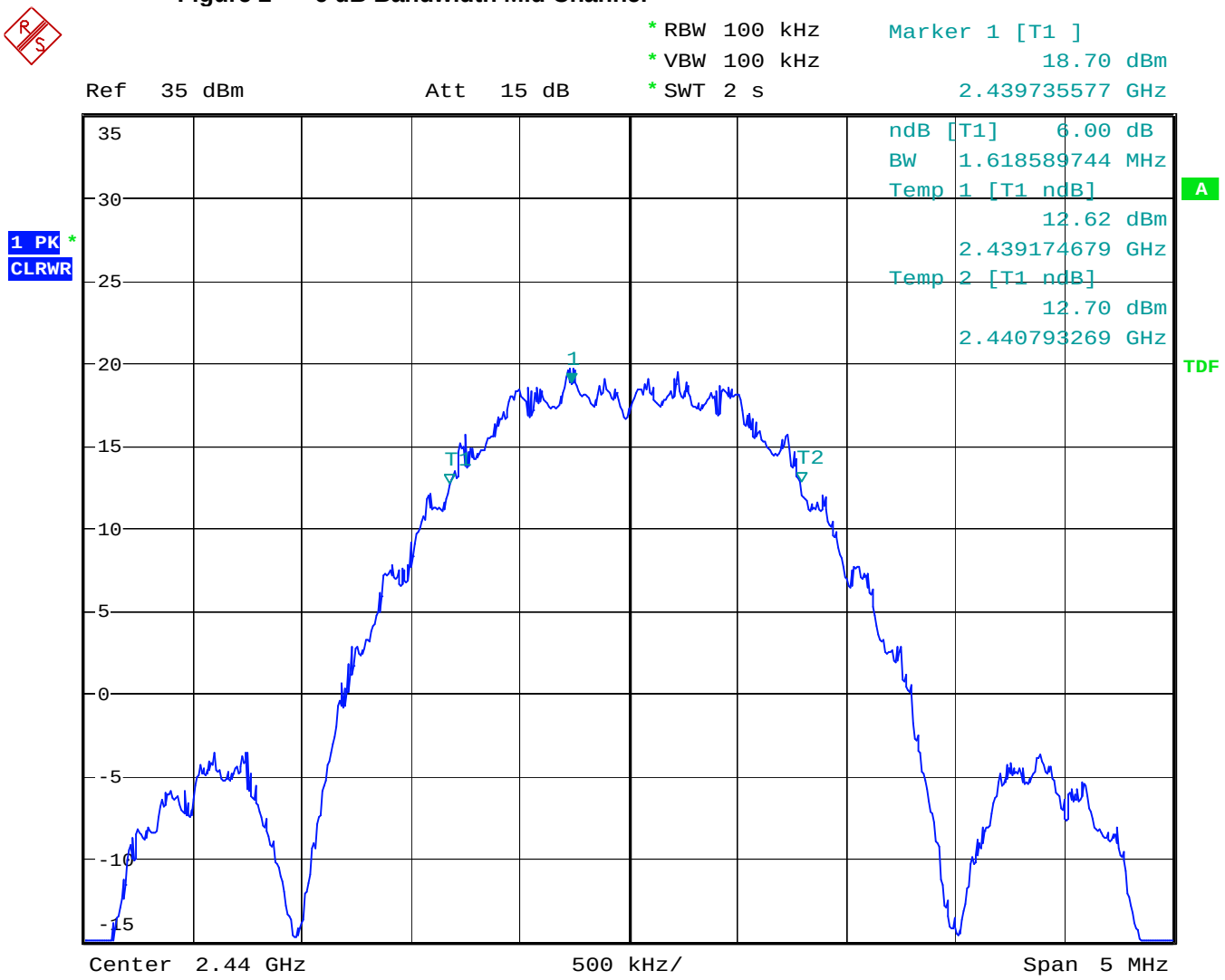

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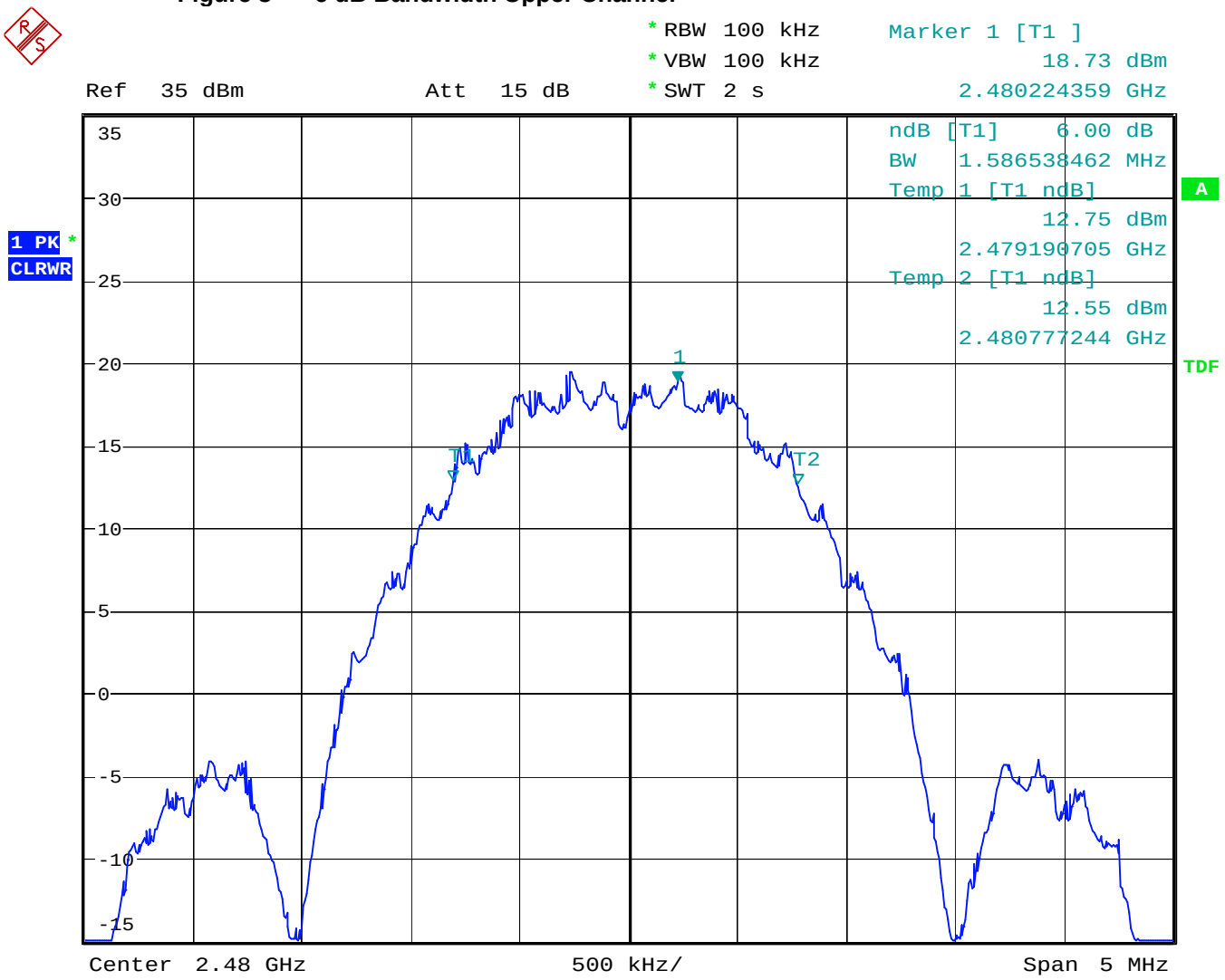
Figure 3 6 dB Bandwidth Upper Channel



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APPENDIX C: PEAK POWER OUTPUT

C.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

C.2. Specifications

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

C.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+1.11/-1.22 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 conducted peak power was 22.9 dBm (Maximum 0.692 watts eirp).

C.7. Sample Calculation

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

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

C.8. Test Data Summary

EUT Transmit Frequency	Measured Max. Conducted Peak Power (dBm)	Antenna Directional Gain (dBi)	EIRP (dBm)	EIRP (W)
2.405 MHz	+22.9	3.5	+26.4	0.437
2.440 MHz	+22.8	3.5	+26.3	0.427
2.480 MHz	+21.9	3.5	+25.4	0.347
2.405 MHz	+22.9	5.5	+28.4	0.692
2.440 MHz	+22.8	5.5	+28.3	0.676
2.480 MHz	+21.9	5.5	+27.4	0.550

Testing was done with a spectrum analyzer with RBW set to 10 MHz, VBW set to 10 MHz, and detector set to Peak.

C.9. Tested By

Name: Dwaine Hartman
Function: Wireless Test Technician
Date: 31 May, 2007

Figure 4 2405 MHz

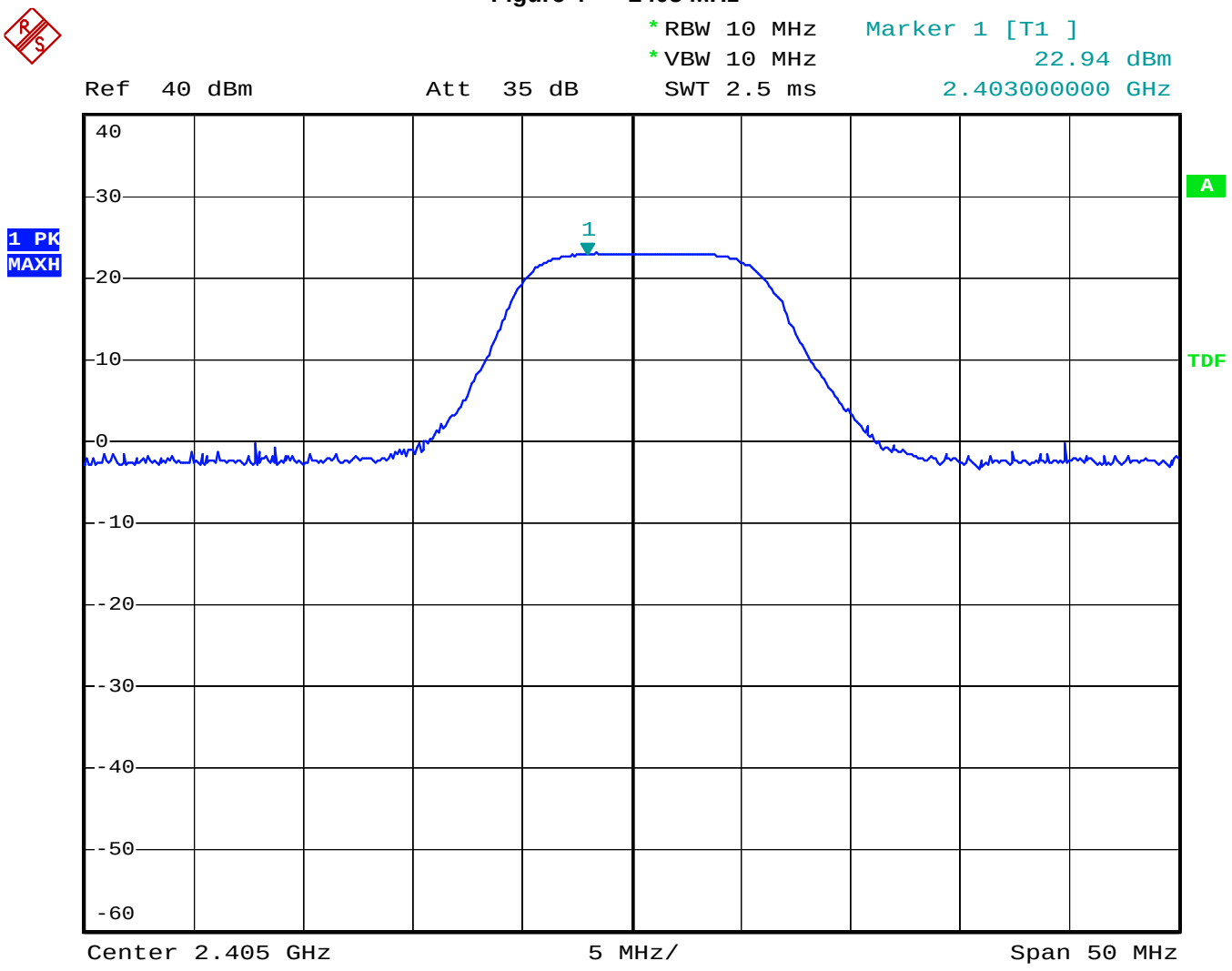

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Figure 5 2.440 MHz

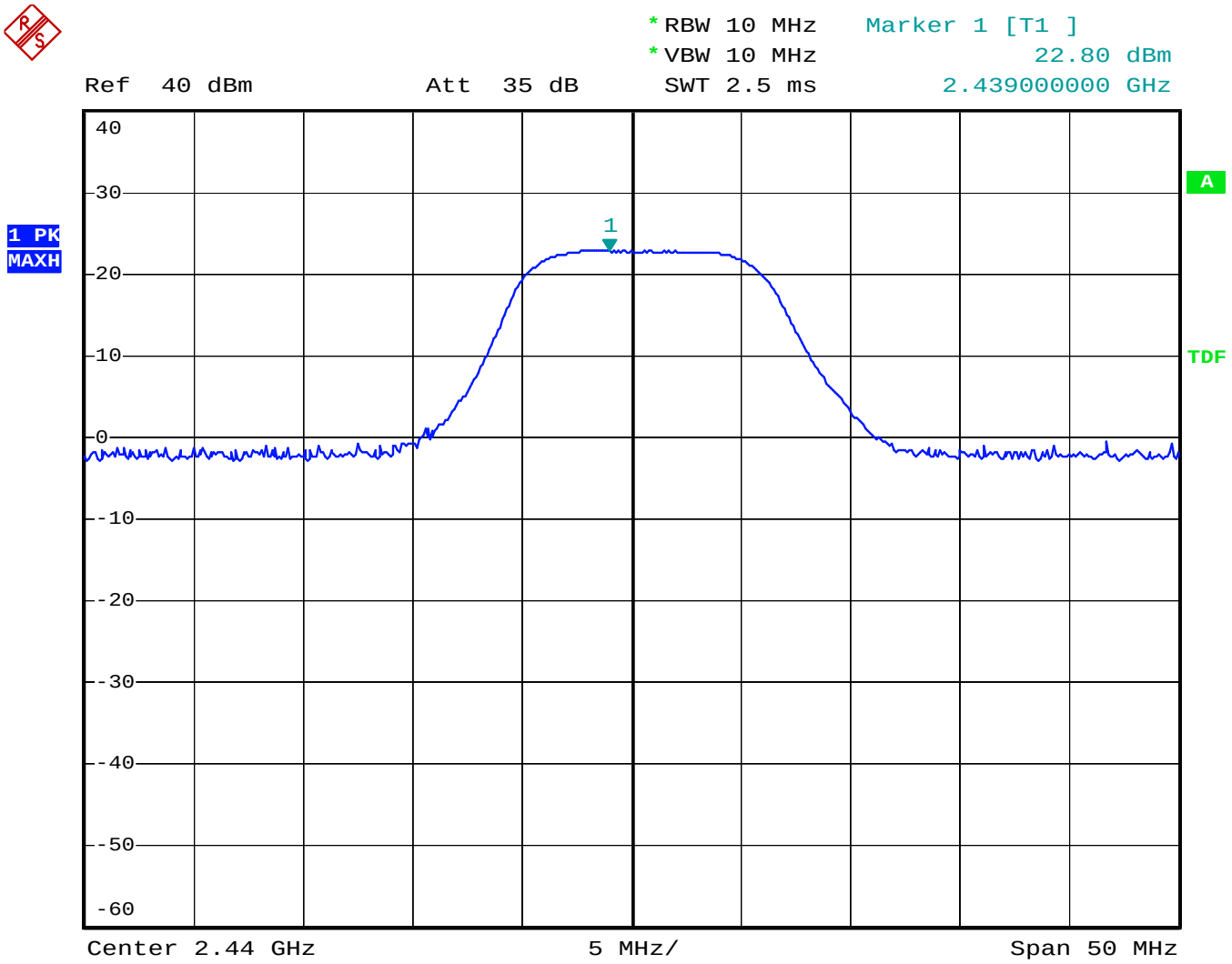

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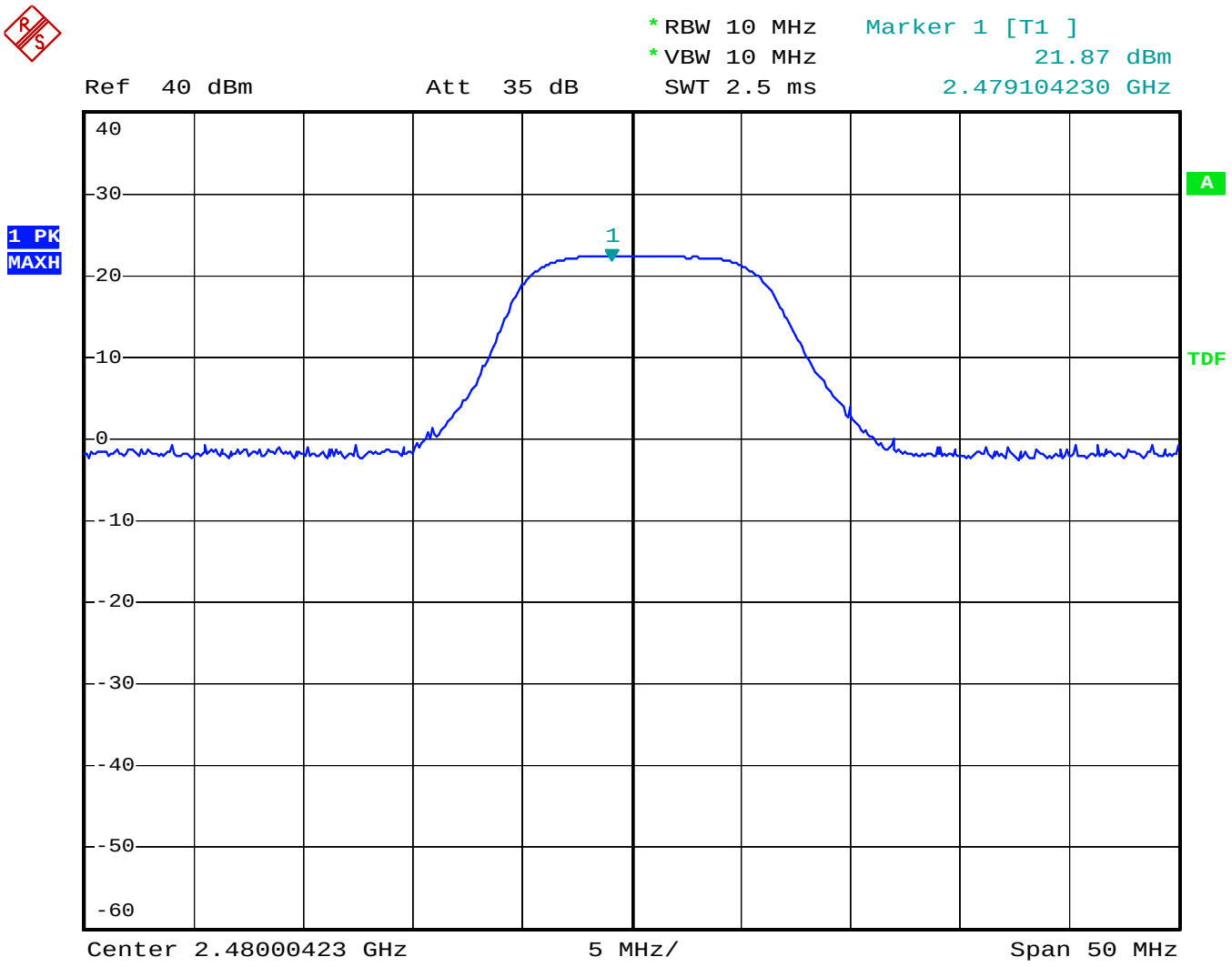
Figure 6 2.480 MHz



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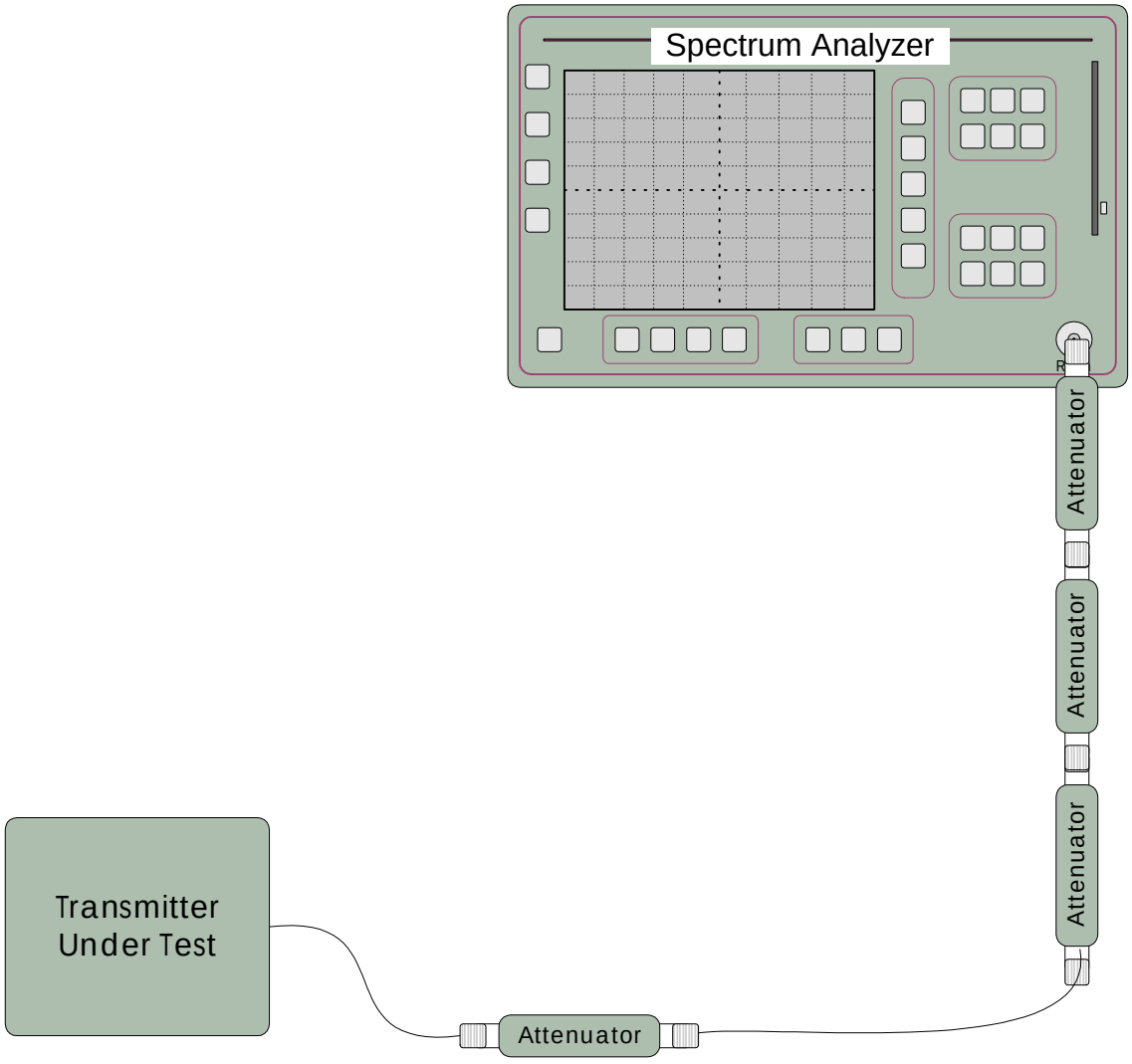
C.10. Test Setup Diagram



APPENDIX D: PEAK POWER DENSITY

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

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.

D.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+1.11/-1.22 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 Method

RF conducted as per FCC Publication 558074

D.6. Test Results

Compliant. The maximum measured Peak Power Density was +7.86 dBm

D.7. Deviations from Normal Operating Mode During Test

None.

D.8. Sample Calculation

None.

D.9. Test Data

EUT Transmit Channel	Peak Power Density (dBm)
2405 MHz	+7.86
2440 MHz	+7.53
2480 MHz	+6.00

See plots below.

D.10. Tested By

Name: Dwaine Hartman
Function: Wireless Test Technician

Figure 7 Power Density –2.405MHz

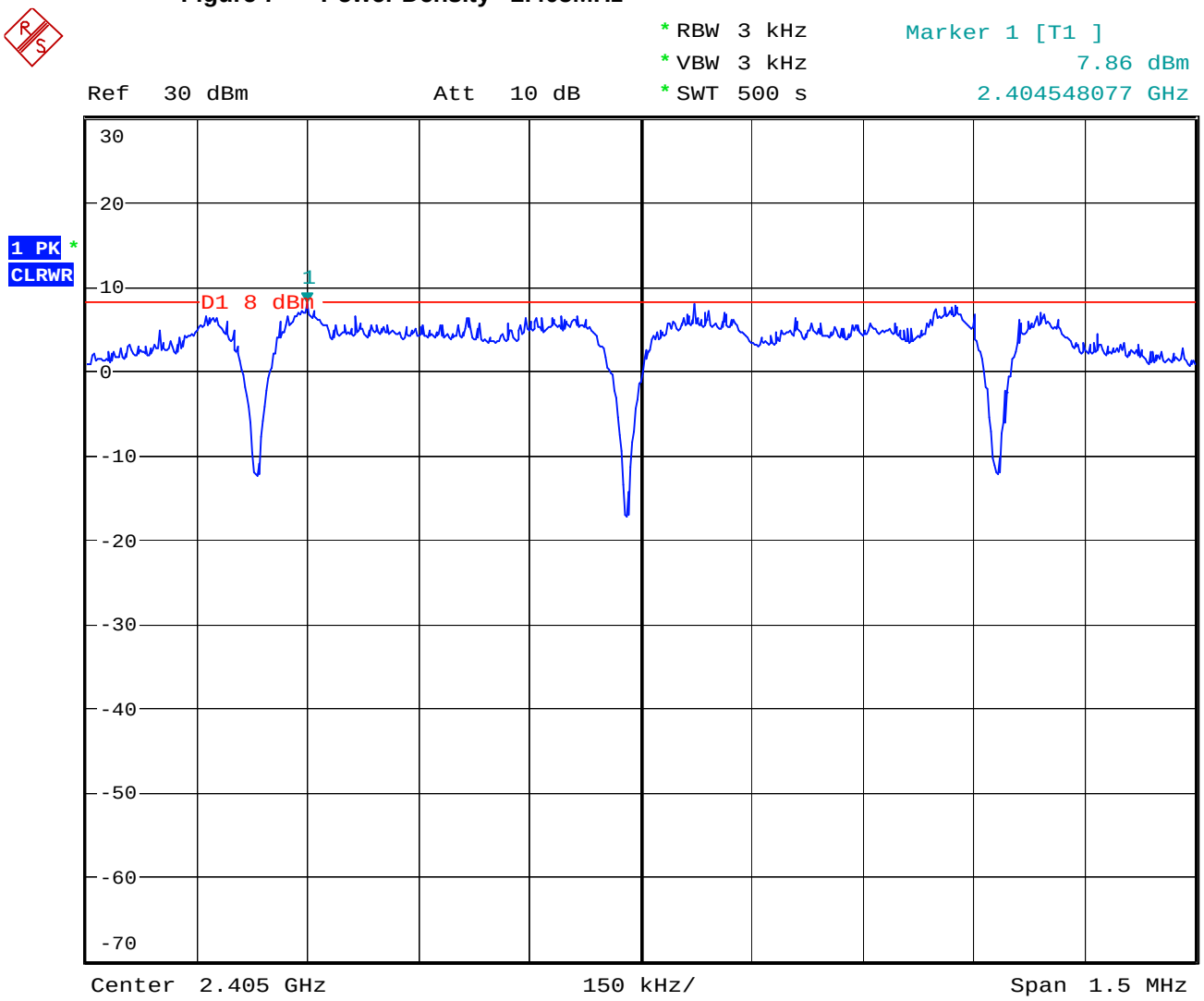


Figure 8 Power Density –2.44MHz

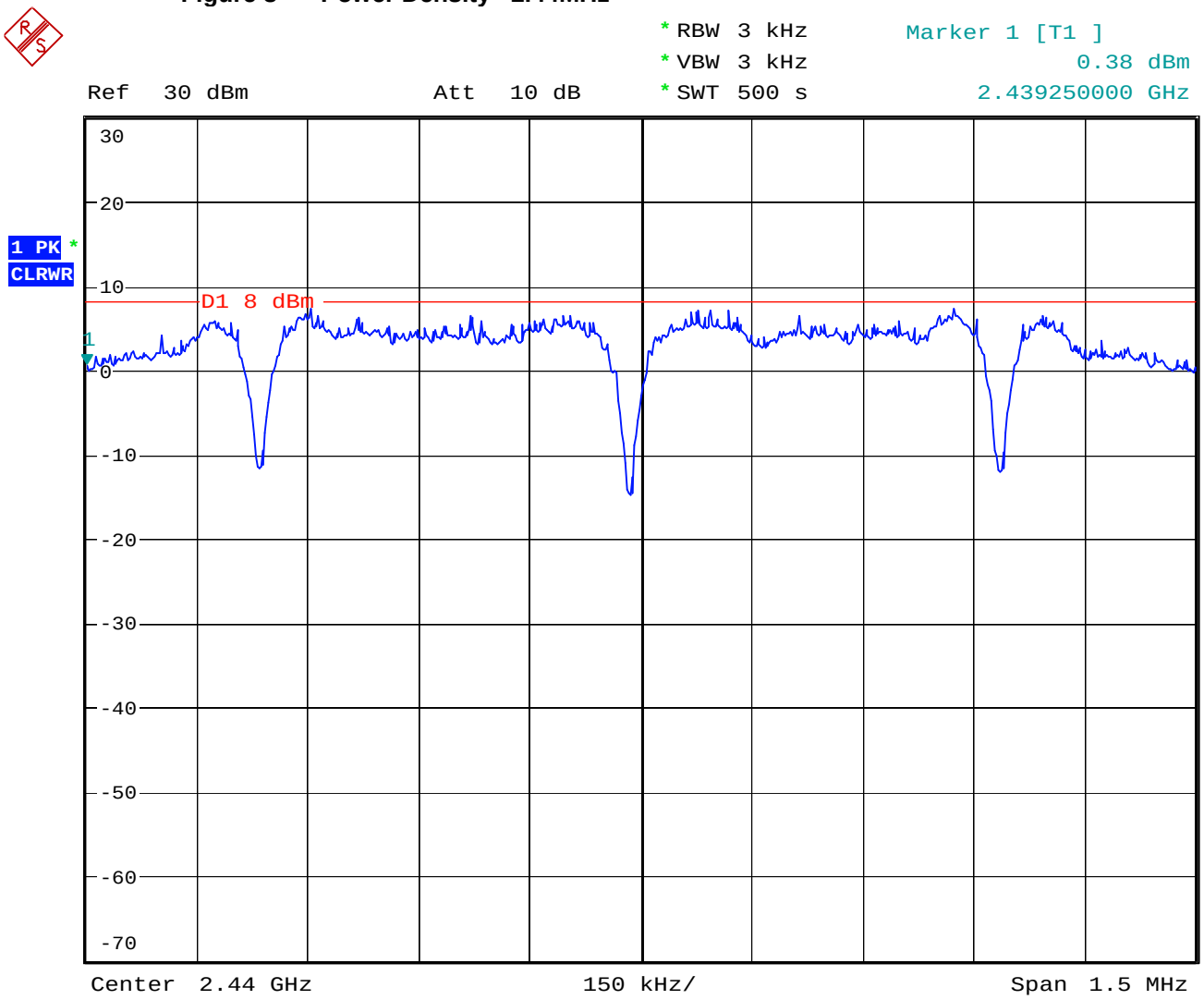


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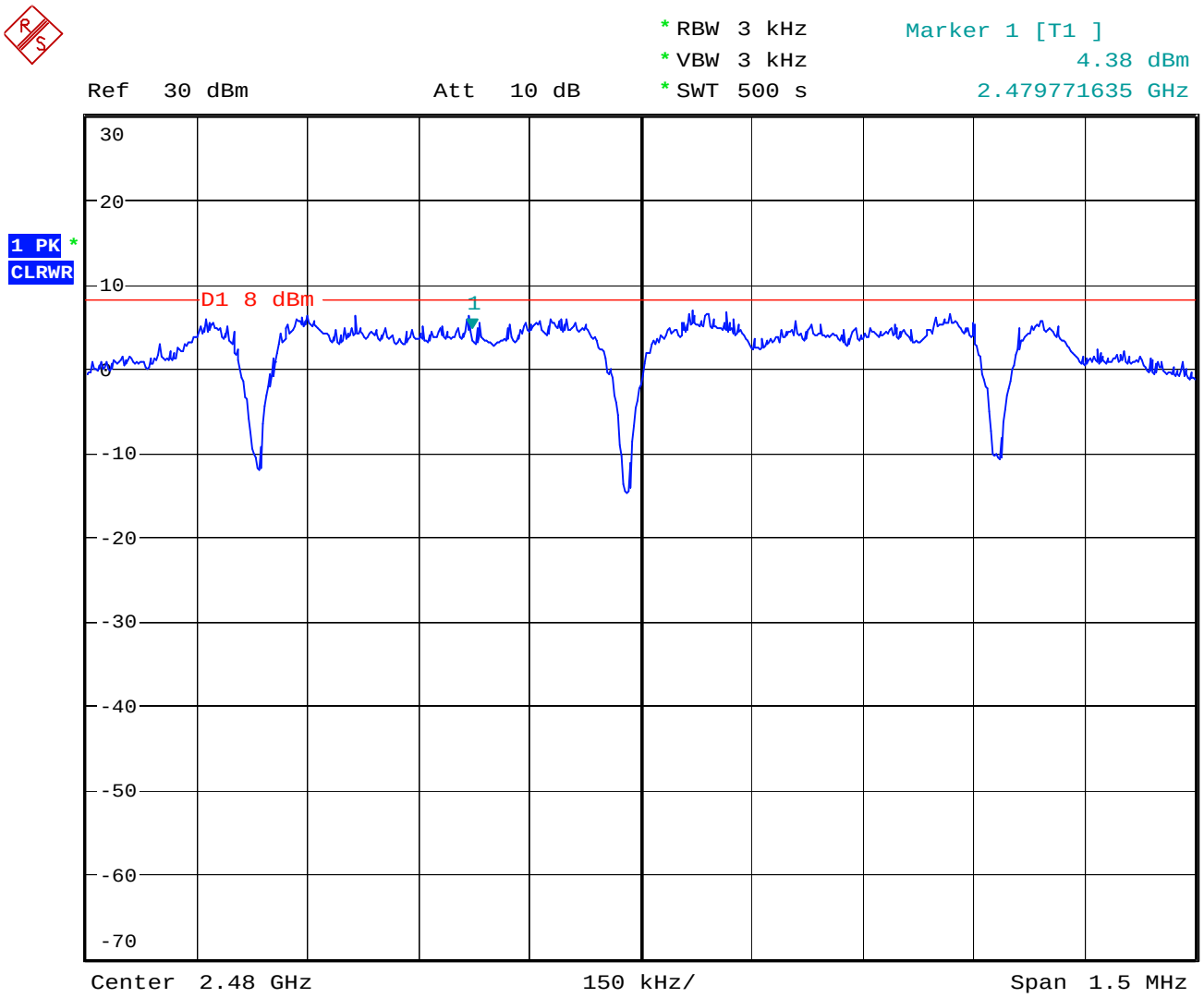
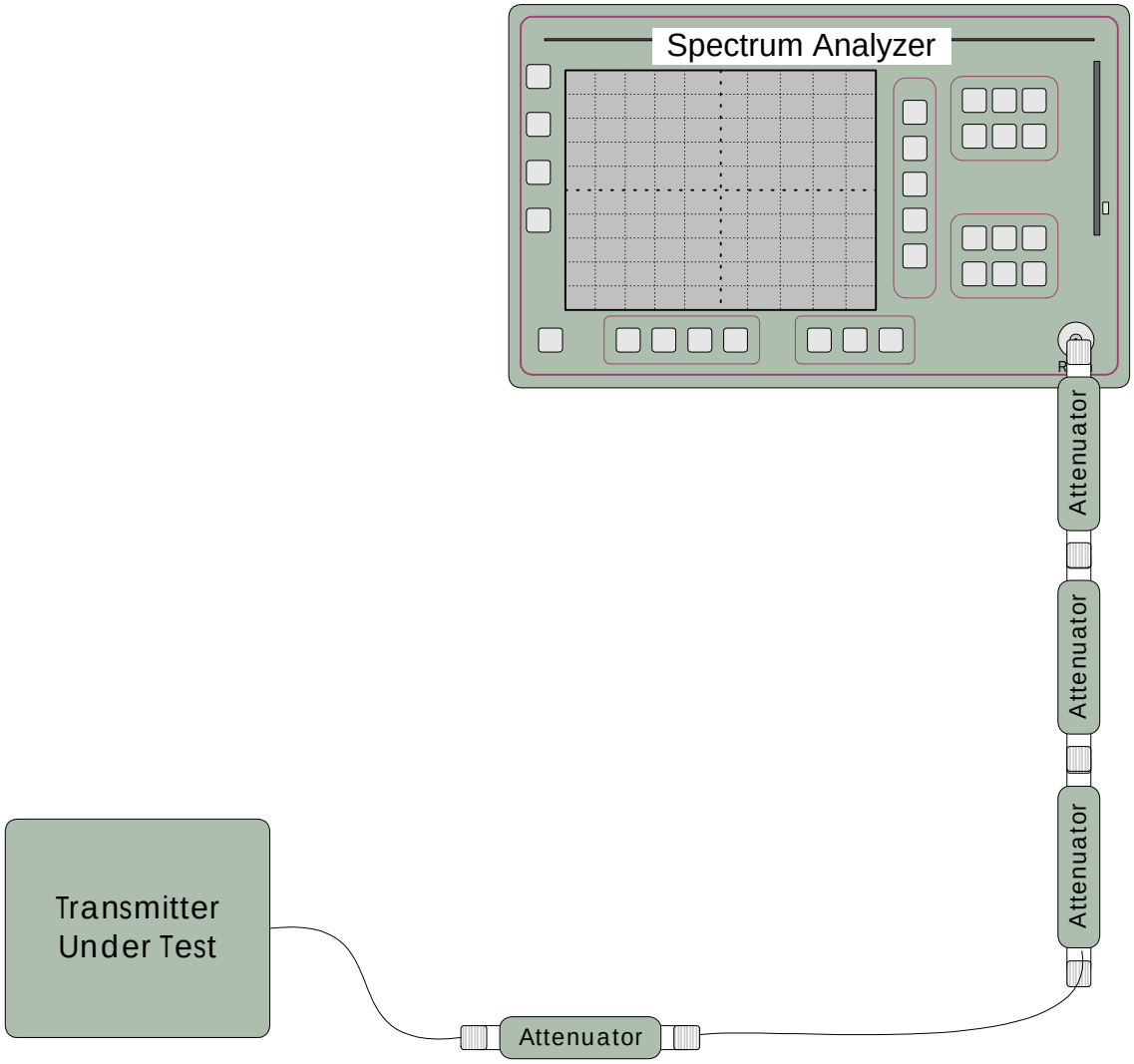
Figure 9 Power Density –2.48MHz



D.11. Test Setup Diagram



APPENDIX E: 15.247 CONDUCTED SPURIOUS EMISSIONS

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 FCC Part 15.205 Restricted Bands of Operation
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

E.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)).

E.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+1.11/-1.22 dB

E.4. Deviations

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

E.5. Test Results

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

E.6. Test Data

See following pages.

E.7. Tested By

Name: Dwaine Hartman
Function: Wireless Test Technician
Date: 31 May, 2007

Figure 10 Conducted Spurious - 2405 MHz

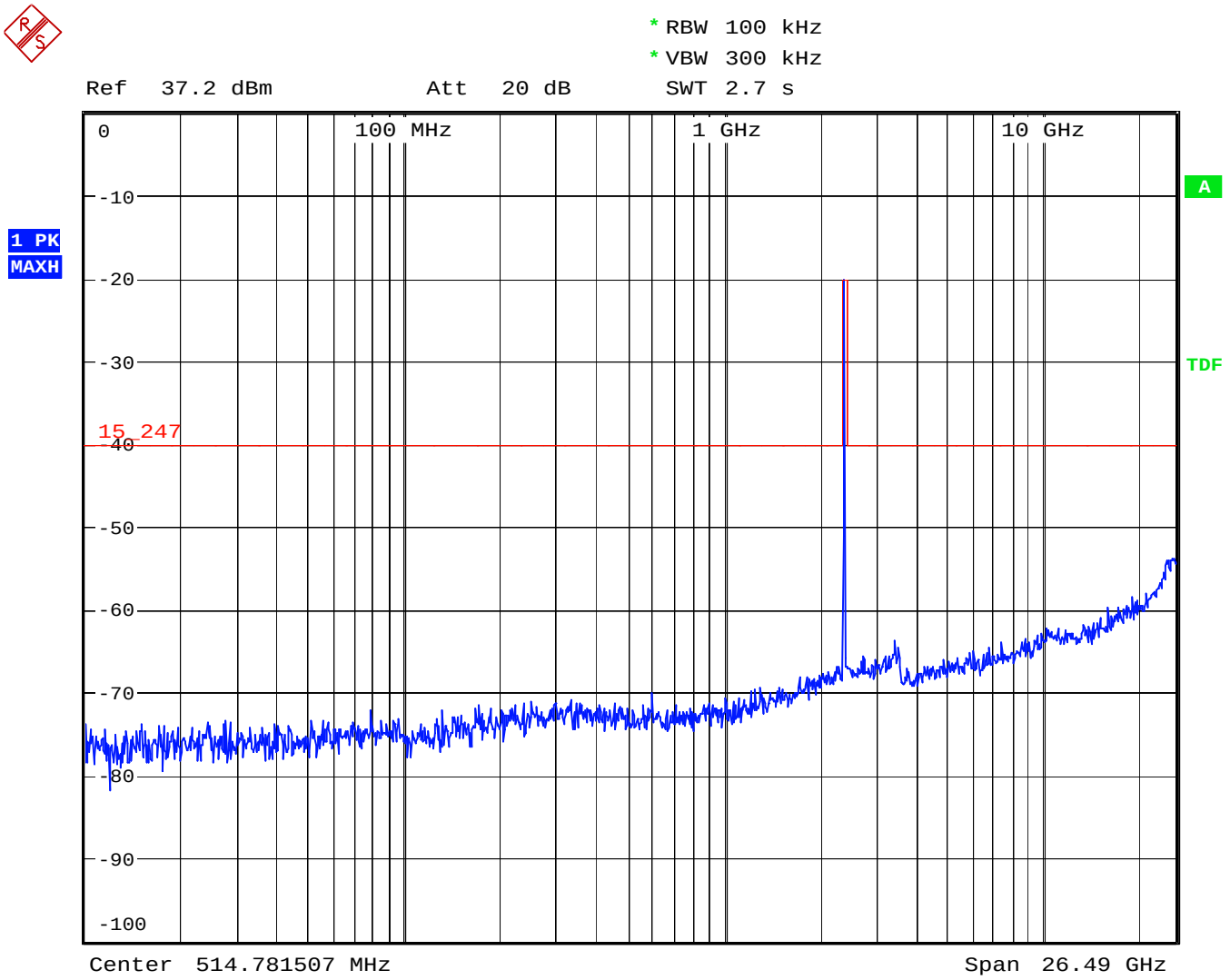


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Figure 11 Conducted Spurious Emissions – 2440 MHz

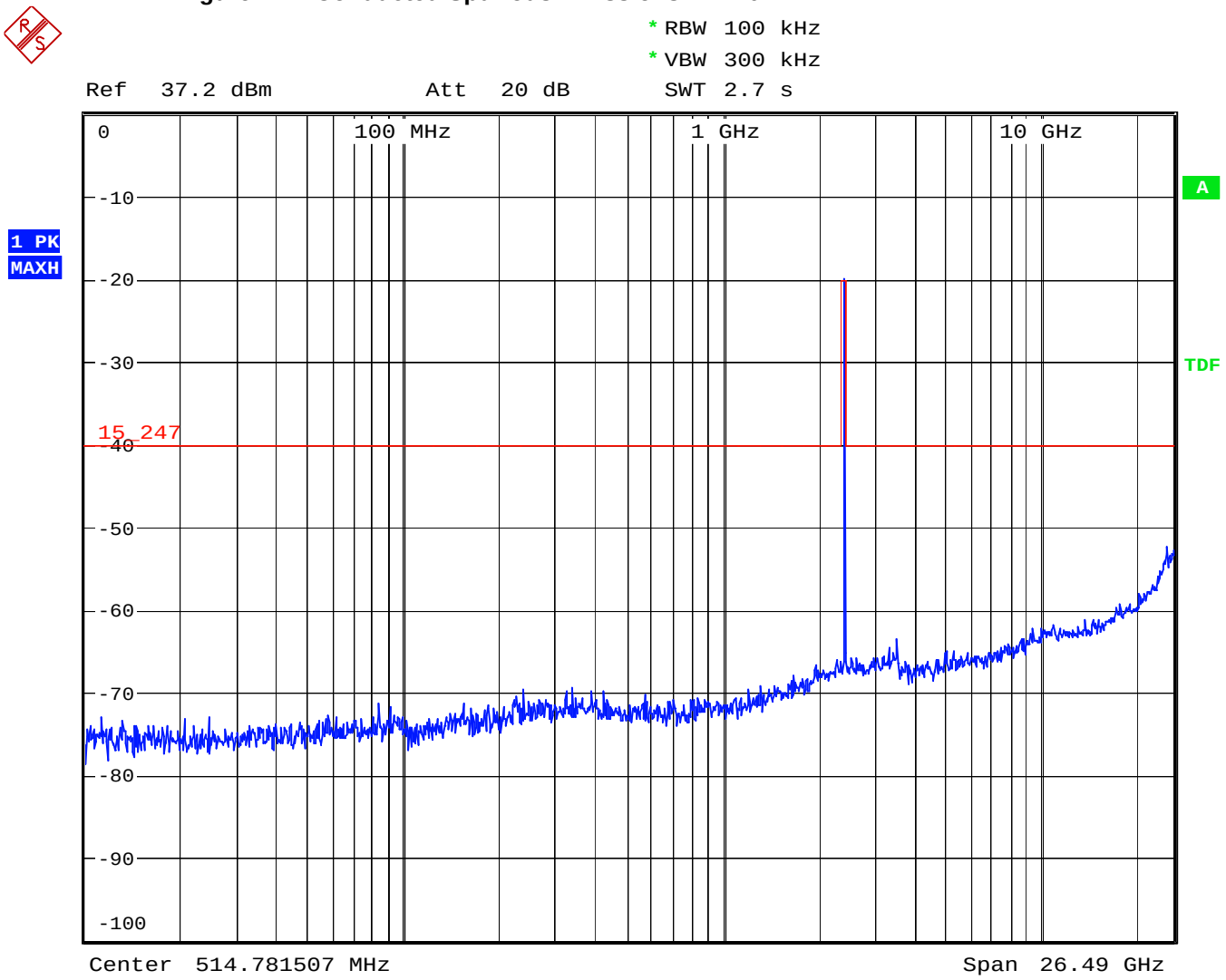

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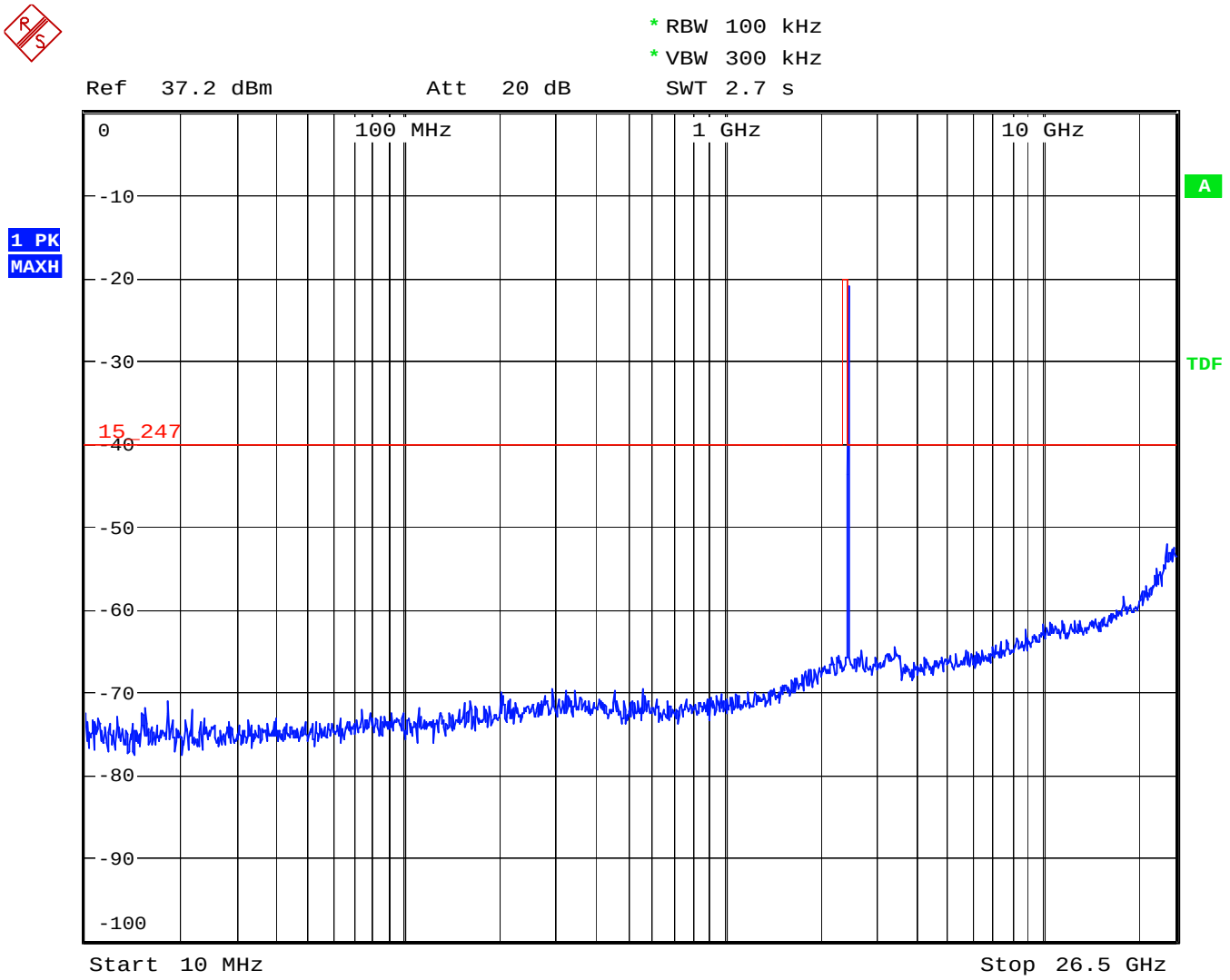
Figure 12 Conducted Spurious Emissions – 2480 MHz



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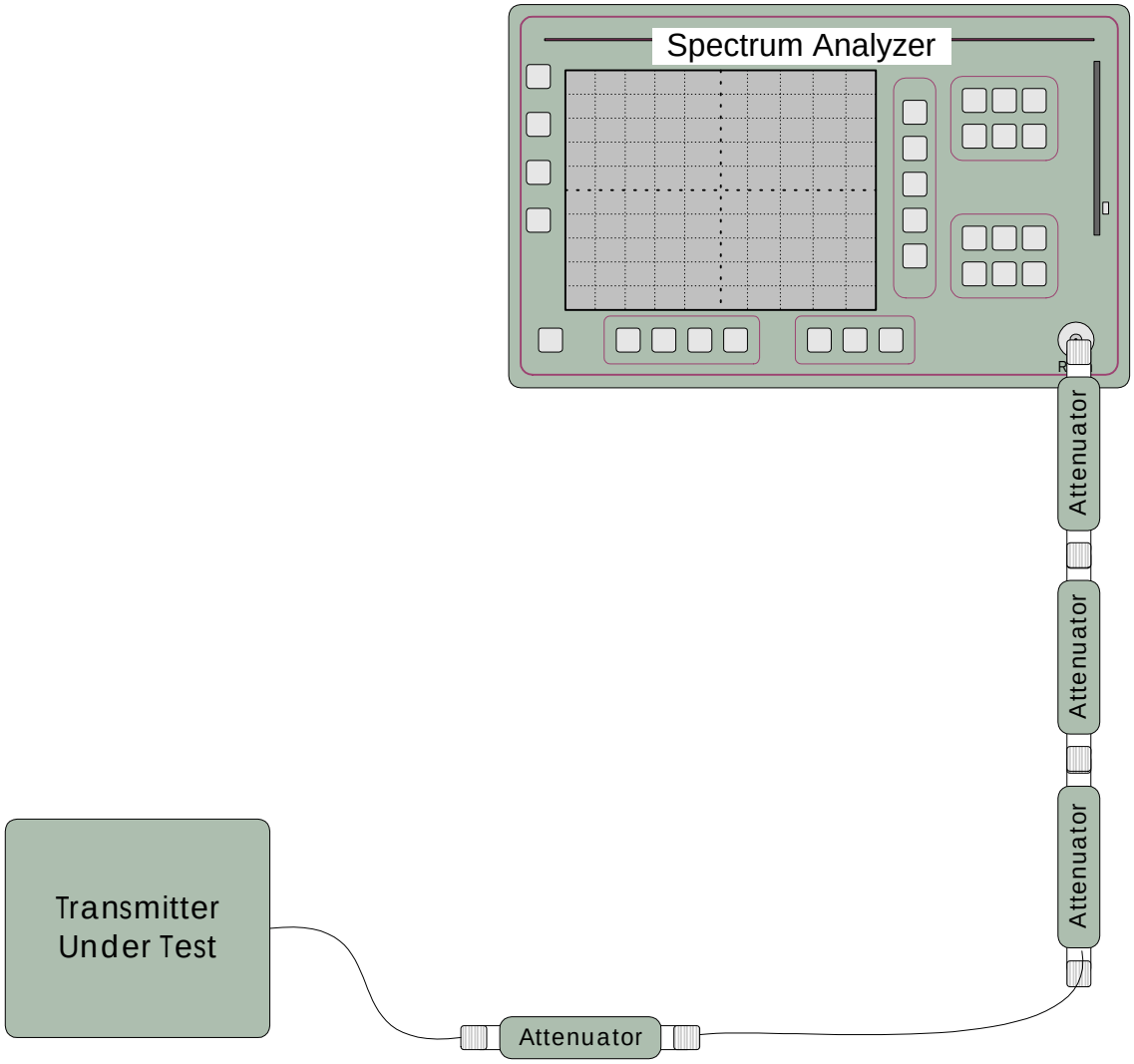
E.8. Test Setup Diagram



APPENDIX F: CONDUCTED SPURIOUS EMISSIONS BAND EDGE MEASUREMENTS

F.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

F.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)).

F.3. Measurement Uncertainty

Expanded Uncertainty (K=2)
+1.11/-1.22 dB

F.4. Test Results

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

F.5. Deviations from Normal Operating Mode During Test

None.

F.6. Test Data

See plots on following pages.

F.7. Tested By

Name: Dwaine Hartman
Function: Wireless Test Technician
Date: 31 May, 2007

Figure 13 2405 MHz Band edge Measurement

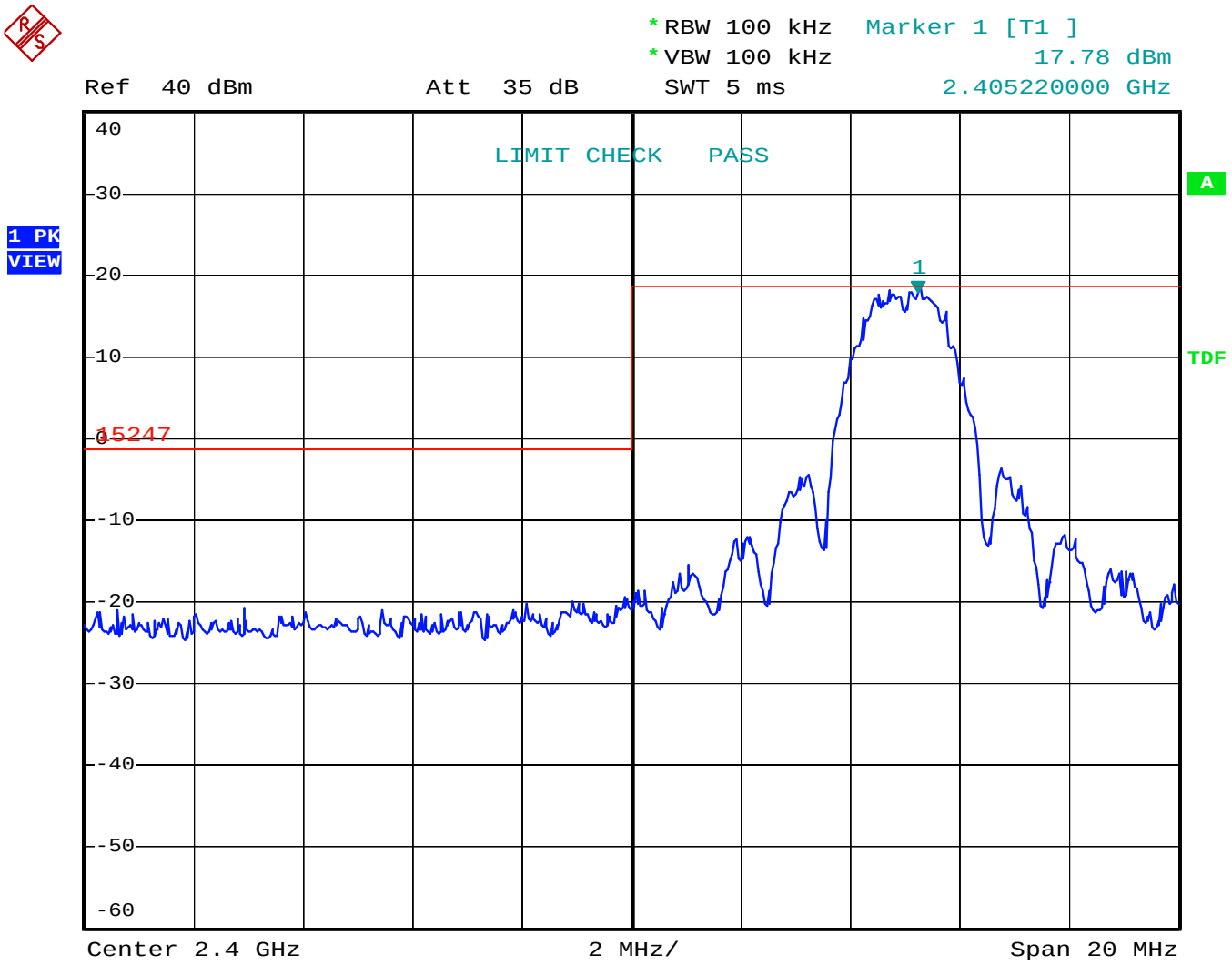


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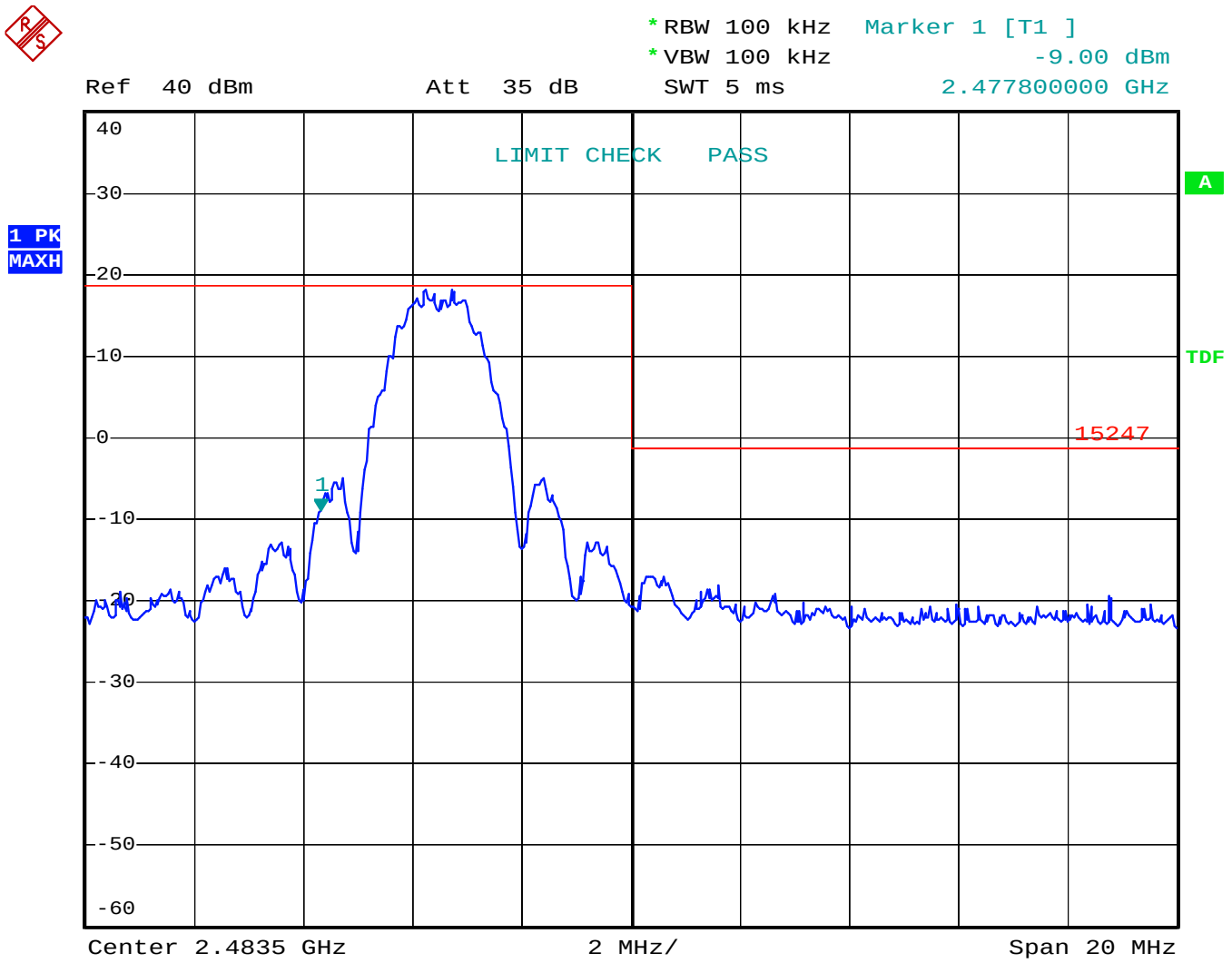
Figure 14 2483.5 MHz Band edge Measurement



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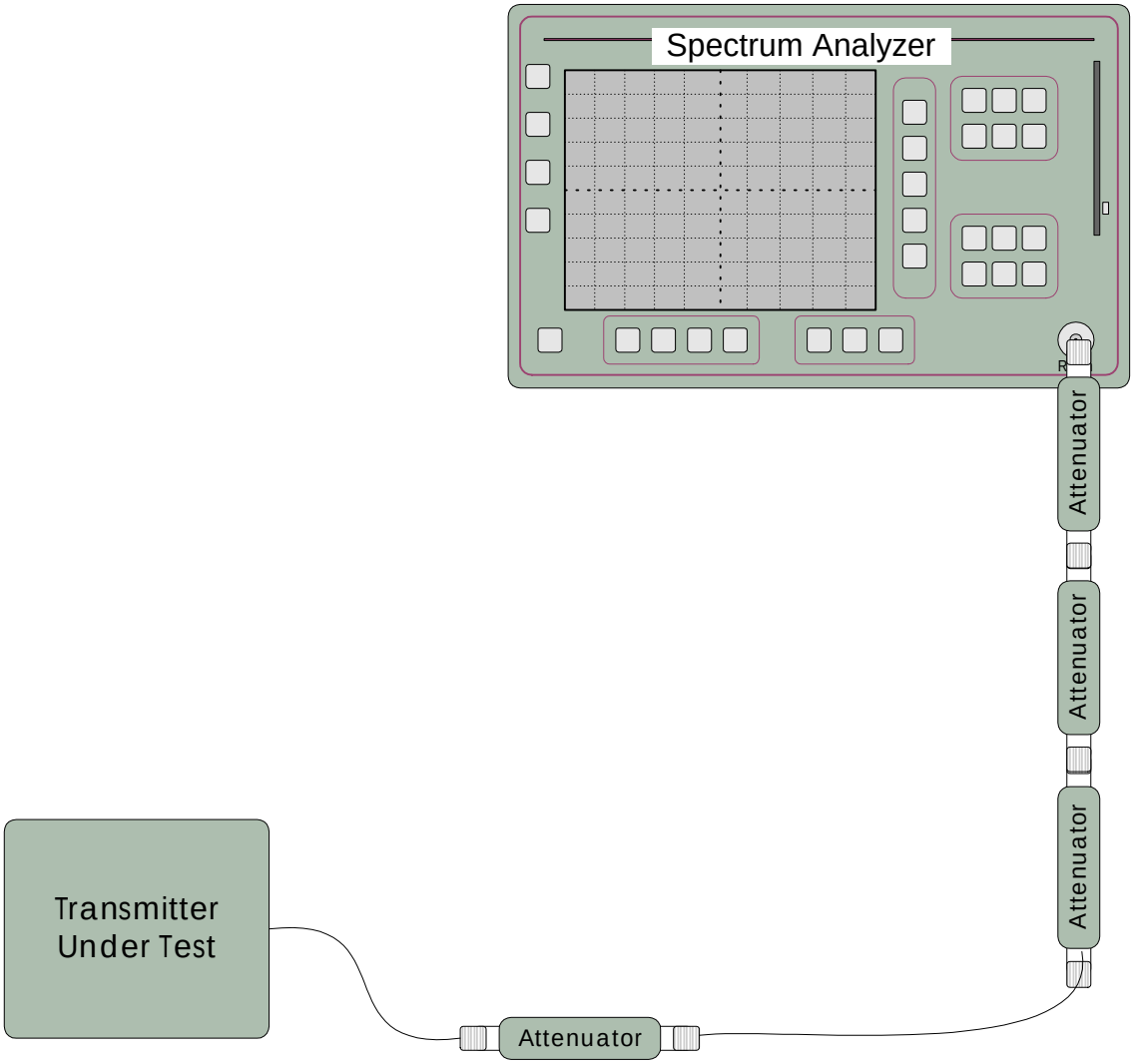
F.8. Test Setup Diagram



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

G.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 Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

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.

G.2. Measurement Uncertainty

Radiated Emissions	Expanded Uncertainty (K=2)
(dB)	+/- 3.6

G.3. Deviations

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

G.4. Test Results

The EUT is in compliance with FCC CFR47 Part 15.205/15.209 Radiated emission limits. The worst case emission was 65.7 dBμV/m(Peak) @ 3 meters @ 7440 MHz, a pass margin of 8.3 dB. The average level of this emission was 44.1 dB which is 10.1 dB below the average limit. The EUT was operating in RX and TX mode during this test.

G.5. Observations

None

G.6. Deviations from Normal Operating Mode During Test

None.

G.7. Sample Calculation

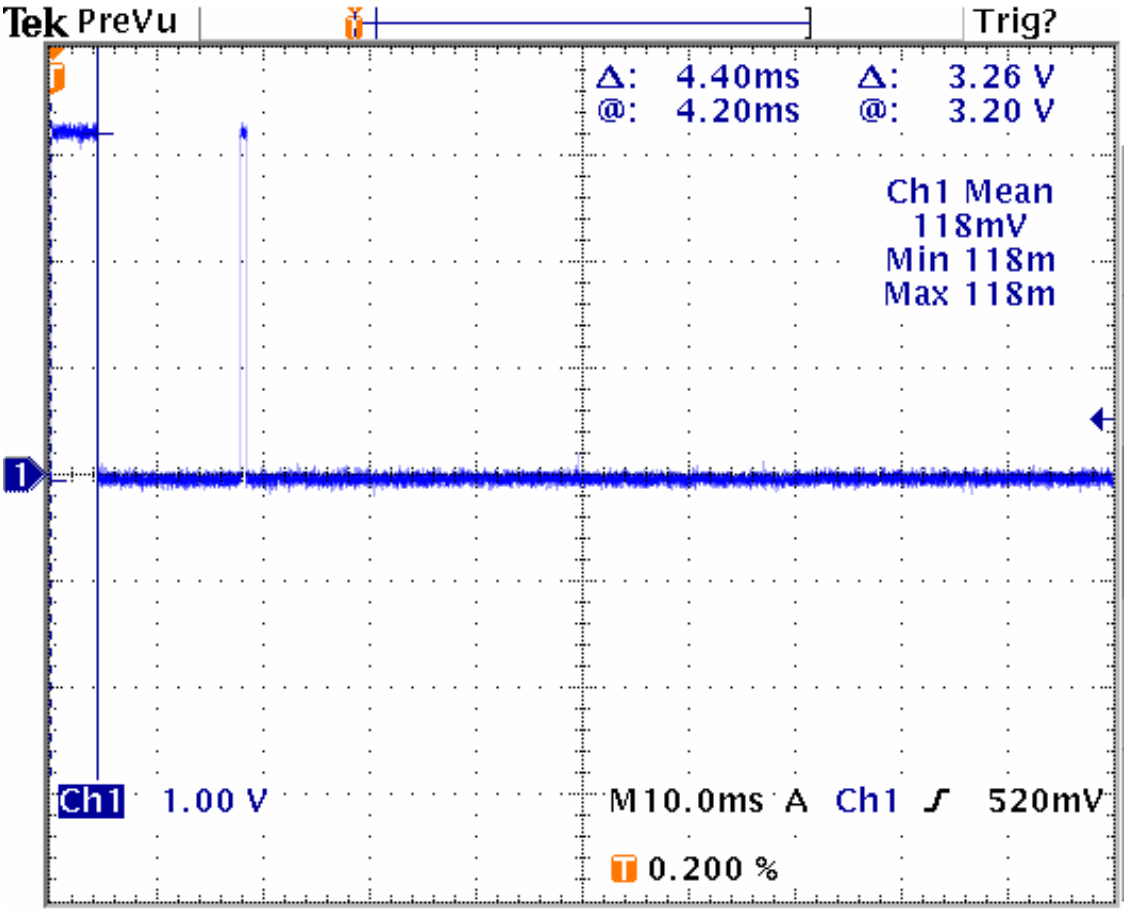
Emission Level = Measured Level + Correction Factors.
Margin = Limit – Emission Level. A positive margin indicates a passing result.

The spectrum was searched from 30 MHz up to 25 GHz. The transmitter was tuned to low mid and high frequencies for testing. The worst-case results are presented for each TX antenna.

G.8. Test Data & Photographs

Plots were not provided in order to reduce file size.

Duty Cycle Correction



From the above plot:

There are two pulses. The duration of the first pulse is 4.4 msec. The second pulse is 1 msec.

Therefore the duty cycle correction factor was determined by:

Duty cycle correction factor (dB) = 20 log (max. rf on time in msec./100 msec.)

= 20 log (5.4/100)
= -25.4 dB

3.5 dBi antenna

Project No:	W7237
Model:	RTC2400 with 3 dB antenna attached.
Comments:	The device was test a 3 frequencies (2405 MHz, 2440 MHz, and 2480 MHz). The data presented here is worst-case result.
Tested by:	Dwaine Hartman/Tom Tidwell Date: 6/11/2007

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

Comment	Polarization	Frequency	Antenna Factor	Cable Loss + LNA	Duty Cycle Correction	Total Correction	Detector	Measured	Corrected	Limit	Margin
	(V/H)	(MHz)	(dB/m)	(dB)	(dB)	(dB/m)	(Pk/Avg)	(dBuV)	dBuV/m)	(dBuV/m)	(dB)
Band edge	V	2483.5	27.4	-29.4	-25.4	-27.4	Avg	47.2	19.8	54.0	34.2
Band edge	V	2483.5	27.4	-29.4	0.0	-2.0	Pk	56.7	54.7	74.0	19.3
Band edge	H	2483.5	27.4	-29.4	-25.4	-27.4	Avg	50.7	23.3	54.0	30.7
Band edge	H	2483.5	27.4	-29.4	0.0	-2.0	Pk	41.5	39.5	74.0	34.5
Noise Floor	V	2390.0	27.4	-29.4	-25.4	-27.4	Avg	27.1	-0.3	54.0	54.3
Noise Floor	V	2390.0	27.4	-29.4	0.0	-2.0	Pk	35.0	33.0	74.0	41.0
Noise Floor	V	4960.0	32.3	-26.5	-25.4	-19.6	Avg	26.3	6.7	54.0	47.3
Noise Floor	V	4960.0	32.3	-26.5	0.0	5.8	Pk	34.9	40.7	74.0	33.3
Noise Floor	H	4960.0	32.3	-26.5	-25.4	-19.6	Avg	27.0	7.4	54.0	46.6
Noise Floor	H	4960.0	32.3	-26.5	0.0	5.8	Pk	34.9	40.7	74.0	33.3
	V	7440.0	35.2	-25.1	-25.4	-15.3	Avg	44.1	28.8	54.0	25.2
	V	7440.0	35.2	-25.1	0.0	10.1	Pk	55.6	65.7	74.0	8.3
	H	7440.0	35.2	-25.1	-25.4	-15.3	Avg	44.0	28.7	54.0	25.3
	H	7440.0	35.2	-25.1	0.0	10.1	Pk	55.5	65.6	74.0	8.4
Noise Floor	V	17360.0	40.6	-13.7	-25.4	1.5	Avg	28.4	29.9	54.0	24.1
Noise Floor	V	17360.0	40.6	-13.7	0.0	26.9	Pk	39.0	65.9	74.0	8.1
Noise Floor	H	17360.0	40.6	-13.7	-25.4	1.5	Avg	28.4	29.9	54.0	24.1
Noise Floor	H	17360.0	40.6	-13.7	0.0	26.9	Pk	38.5	65.4	74.0	8.6

Notes:
(1) A positive margin indicates a passing result
(2) For 15.247 emissions Peak detector indicates 1 MHz RBW/ 1 MHz VBW and Average indicates 1 MHz RBW / 10 Hz VBW
(3) If duty cycle correction is indicated, plots are included in the test report to validate the factor used.

5.5 dBi antenna

Project No:	W7237
Model:	RTC2400 with 5.5 dB antenna attached.
Comments:	The device was test a 3 frequencies (2405 MHz, 2440 MHz, and 2480 MHz). The data presented here is worst-case result.
Tested by:	Dwaine Hartman/Tom Tidwell Date: 6/22/2007

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

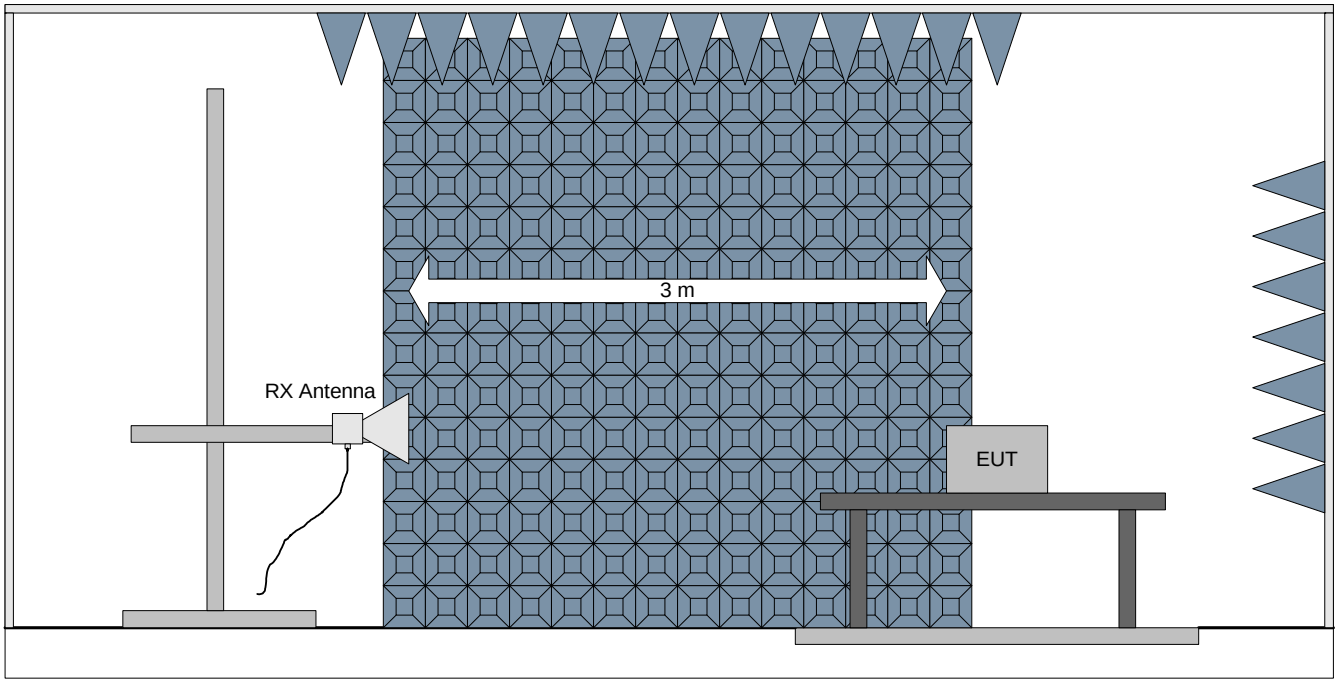
Comment	Polarization	Frequency	Antenna Factor	Cable Loss + LNA	Duty Cycle Correction	Total Correction	Detector	Measured	Corrected	Limit	Margin
	(V/H)	(MHz)	(dB/m)	(dB)	(dB)	(dB/m)	(Pk/Avg)	(dBuV)	dBuV/m)	(dBuV/m)	(dB)
Band edge	V	2483.5	27.4	-29.4	-25.4	-27.4	Avg	57.0	29.6	54.0	24.4
Band edge	V	2483.5	27.4	-29.4	0.0	-2.0	Pk	59.2	57.2	74.0	16.8
Band edge	H	2483.5	27.4	-29.4	-25.4	-27.4	Avg	50.9	23.5	54.0	30.5
Band edge	H	2483.5	27.4	-29.4	0.0	-2.0	Pk	53.1	51.1	74.0	22.9
Noise Floor	V	2390.0	27.4	-29.4	-25.4	-27.4	Avg	27.1	-0.3	54.0	54.3
Noise Floor	V	2390.0	27.4	-29.4	0.0	-2.0	Pk	35.0	33.0	74.0	41.0
Noise Floor	V	4960.0	32.3	-26.5	-25.4	-19.6	Avg	26.3	6.7	54.0	47.3
Noise Floor	V	4960.0	32.3	-26.5	0.0	5.8	Pk	34.9	40.7	74.0	33.3
Noise Floor	H	4960.0	32.3	-26.5	-25.4	-19.6	Avg	27.0	7.4	54.0	46.6
Noise Floor	H	4960.0	32.3	-26.5	0.0	5.8	Pk	34.9	40.7	74.0	33.3
Noise Floor	V	7440.0	35.2	-25.1	-25.4	-15.3	Avg	27.0	11.7	54.0	42.3
Noise Floor	V	7440.0	35.2	-25.1	0.0	10.1	Pk	35.0	45.1	74.0	28.9
Noise Floor	H	7440.0	35.2	-25.1	-25.4	-15.3	Avg	27.0	11.7	54.0	42.3
Noise Floor	H	7440.0	35.2	-25.1	0.0	10.1	Pk	35.0	45.1	74.0	28.9
Noise Floor	V	17360.0	40.6	-13.7	-25.4	1.5	Avg	28.4	29.9	54.0	24.1
Noise Floor	V	17360.0	40.6	-13.7	0.0	26.9	Pk	39.0	65.9	74.0	8.1
Noise Floor	H	17360.0	40.6	-13.7	-25.4	1.5	Avg	28.4	29.9	54.0	24.1
Noise Floor	H	17360.0	40.6	-13.7	0.0	26.9	Pk	38.5	65.4	74.0	8.6

Notes:
(1) A positive margin indicates a passing result
(2) For 15.247 emissions Peak detector indicates 1 MHz RBW/ 1 MHz VBW and Average indicates 1 MHz RBW / 10 Hz VBW
(3) If duty cycle correction is indicated, plots are included in the test report to validate the factor used.

G.9. Tested By

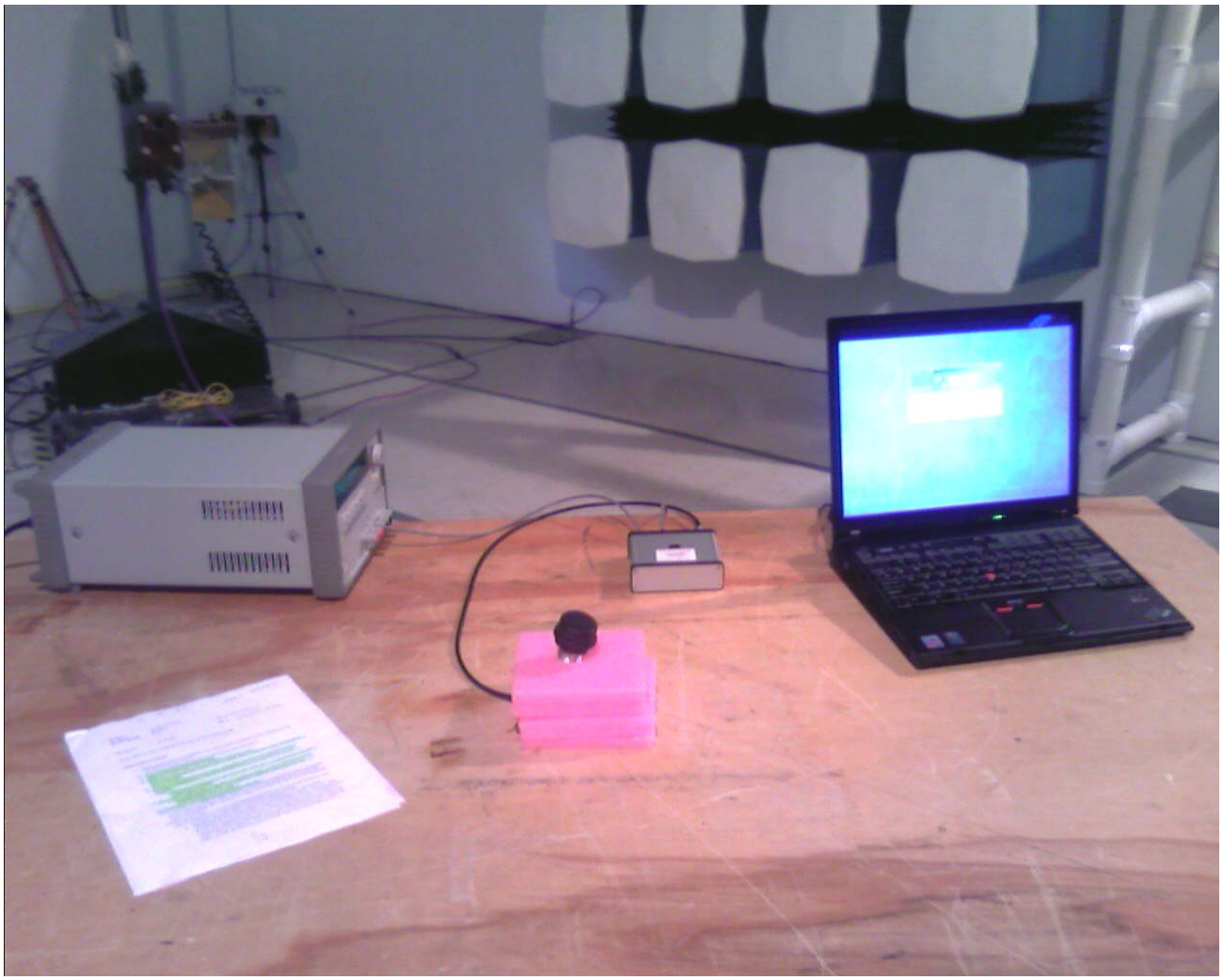
Name: Dwaine Hartman
Function: Wireless Test Technician
Date: 22 June, 2007

G.10. Test Setup Diagram



Note: A preamplifier and high-pass filter are used when measuring harmonics of the fundamental emission.

G.11. Test Setup Photos



APPENDIX H: TEST EQUIPMENT LIST

H.1. Antenna Conducted Emissions Measurement Equipment

Instrument	Manufacturer	Model	Cal Frequency	Cal Due	NTS Control No.
Spectrum Analyzer	Rohde & Schwarz	FSQ 26	12 Months	9/21/07	W1020P
High Frequency Cable	MegaPhase	TM26-3135-144	12 Months	8/23/07	W1010P
Attenuator - 3 dB	Inmet	26A-3	12 Months	9/9/07	W1016P
Attenuator - 3 dB	Inmet	26A-3	12 Months	9/9/07	W1017P
Attenuator - 10 dB	Wiltron	43KC-10	12 Months	9/9/07	W1018P
Attenuator - 20 dB	Inmet	26A-10	12 Months	9/9/07	W1019P

H.2. Radiated Emissions 30 MHz – 25 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Calibration Frequency	Cal Due	NTS Control No.
3m ANECHOIC CHAMBER					
RX Bilog Antenna	ETS	3142C	12 Months	8/17/07	E1288P
Horn Antenna	ETS	3115	12 Months	11/1/07	E1019P
High Frequency Cable	MegaPhase	TM26-3135-144	12 Months	8/23/07	W1010P
CONTROL ROOM					
Test Receiver	Rohde & Schwarz	FSQ 26	12 Months	9/21/07	W1020P
High Frequency - Cable 2	MegaPhase	NA	12 Months	8/23/07	W1011P
Amplifier	HP	8449B	12 Months	6/18/08	E1010P
High-Pass Filter	K&L	11SH10-4000	21 Months	11/12/08	W1022P

END OF DOCUMENT