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Radio Test Report
Class II Permissive Change
CFR 47 FCC Part 15, Subpart C Section
15.247
Industry Canada RSS 210, Issue 7

Nortel Networks
Wireless AP 7215
FCC ID # AB6NTE310AG
IC # 332H-NTE310AG
Project Code CG-611
(Report CG-611-RA-1-1)
Revision: 1
October 24, 2007

Prepared for: Nortel Networks
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EMC Technologist

Approved by: Nick Kobrosly
Lab Manager

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Report Summary

Test Facility:	National Technical Systems, Canada Product Integrity Laboratory 5151-47 th Street, N.E. Calgary Alberta T3J 3R2
Accreditation Numbers:	FCC 101386 IC 46405-3978 - File # IC3978-2 Accredited by Standards Council of Canada Accredited Laboratory No. 440(Conforms with requirements of CAN-P-4D (ISO/IEC 17025)) CLIENTS SERVED: All interested parties FIELDS OF TESTING: Electrical/Electronic, Mechanical/Physical ISSUED ON: 2005-06-02 VALID TO: 2009-03-20
Performed For:	Nortel Networks 5050-40 th Street N.E. Calgary, AB T3J 4P8 Canada
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Responsible Manager:	Name: Brad Carlson Phone: (403) 769-4063 Fax: (403) 769-7806 Email Address: bcarlson@nortel.com

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Test Summary

Appendix	Test/Requirement Description	Deviations* from:			Pass / Fail	Transmit Modulation	Applicable Rule Parts
		Base Standard	Test Basis	NTS Procedure			
A	Conducted AC Power Line Emissions	No	No	No	PASS	802.11b 802.11g 802.11a	FCC Subpart C 15.207
B	6 dB Bandwidth	No	No	No	PASS	802.11b 802.11g 802.11a	FCC Subpart C 15.247 (a) (2) RSS-210 A8.2 (a)
C	Peak Power Output	No	No	No	PASS	802.11b 802.11g	FCC Subpart C 15.247 (b) RSS-210 A8.4 (4)
D	Peak Power Output	No	No	No	PASS	802.11a	FCC Subpart C 15.247 (c) RSS-210 A8.4 (4)
E	Conducted Spurious Emissions	No	No	No	PASS	802.11b 802.11g 802.11a	FCC Subpart C 15.247 (d), 15.205 RSS-210 A8.5
F	Conducted Spurious Emissions Band edge	No	No	No	PASS	802.11b 802.11g 802.11a	FCC Subpart C 15.247 (d), 15.205 RSS-210 A8.5
G	Radiated Spurious Emissions 30 MHz - 40 GHz	No	No	No	PASS	802.11b 802.11g 802.11a	FCC Subpart C 15.247 (d), 15.205, RSS-210 A8.5
H	Peak Power Density	No	No	No	PASS	802.11b 802.11g 802.11a	FCC Subpart C 15.247 (e) RSS-210 A8.2 (b)
I	Measurement Equipment	N/A	N/A	N/A	N/A	N/A	N/A

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Test Log

Appendix	Test Case	Start	End	Tester
A	Conducted AC Power Line Emissions	Sep 10, 2007	Sep 10, 2007	Spencer Watson
B	6 dB Bandwidth	Aug 29, 2007	Aug 29, 2007	Deniz Demirci
C	Peak Power Output 802.11b/g	Aug 29, 2007	Sep 18, 2007	
D	Peak Power Output 802.11a	Aug 29, 2007	Aug 29, 2007	
E	Conducted Spurious Emissions	Aug 30, 2007	Aug 30, 2007	
F	Conducted Spurious Emissions Band edge	Aug 30, 2007	Aug 30, 2007	
G	Radiated Spurious Emissions 30 MHz - 40 GHz	Sep 10, 2007	Oct 19, 2007	David Raynes Deniz Demirci Spencer Watson Lixin Wang
H	Peak Power Density	Aug 29, 2007	Aug 29, 2007	Deniz Demirci

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

Prepared By: _____
Deniz Demirci
EMC Technologist

Reviewed By: _____
Glen Moore
EMC Manager

Approved By: _____
Robyn Zuehlke
Quality Manager

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Register of revisions

Revision	Date	Description of Revisions
0	October 19, 2007	Draft Release for internal review
1	October 24, 2007	Changes after internal review

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1.0 INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by NTS Canada to demonstrate compliance of the AP7215 RoHS from Nortel Networks to FCC Part 15 Subpart C section 15.247 for DTS transmitter and the equivalent sections of Industry Canada's RSS 210, Issue 7

2.0 EUT DESCRIPTION

2.1 CONFIGURATION

Description of EUT

	Name	Model	Rev.	Unit #	Serial Number
EUT	Nortel Networks Wireless AP 7215 RoHS	NNTE310AGE6	1	1	NNTMCN000WYZ
				2	NNTMCN000WZ1
				4	NNTMCN002A8F
AC Adapter	PHIHONG	PSA31U-120	1	1	P63400441A2
	Ferrite on DC power cable Fair-Rite	0461164281		1	N/A
Classification	Wall Mount / Table Top				
Channels / Frequency Range	2400–2483.5 MHz and 5725–5850 MHz				
Functional Description	EUT has two radio sub-systems. One is the access radio (Access Link – AL) operating at 2.4 GHz. The second radio is used for traffic back-haul (i.e. Transit Link – TL) operating in the 5 GHz band.				

2.1.1 EUT POWER

EUT Voltage	12 VDC
Number of Feeds	2
Switching AC Adapter Voltage	120 VAC 60 Hz / 230 VAC 50 Hz
Number of Feeds	3 (1 Hot, 1 Return, 1 Ground)

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2.2 EUT CABLES

Quantity	Model/Type	Routing		Shielded / Unshielded	Description	Cable Length (m)
		From	To			
1	Power	AC Mains	Power Adapter	Unshielded	AC Power Cable	1.85
1	Power	Power Adapter	EUT	Unshielded	DC Power cable	1.5
1	Data	EUT	PC	Unshielded	Ethernet	1.8

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2.3 MODE OF OPERATION DURING TESTS

The AP7220 was tested while in the continuous transmit Lab Test mode with the country code: US. The EUT was tuned to an 802.11b/g, 802.11a low, middle, and high channel to perform power, occupied bandwidth, and spurious/harmonic tests. For AC conducted emissions the device was tuned to its lowest frequency. While transmitting, the EUT was setup to operate at the country code power settings. For all test cases, pre-scans were completed in all modes to determine worst case levels.

3.0 SUPPORT EQUIPMENT

3.1 CONFIGURATION

NA

3.2 TEST BED/PERIPHERAL CABLES

NA

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APPENDICES

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APPENDIX A: CONDUCTED AC POWER LINE EMISSIONS 150 KHZ – 30 MHZ

A.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	NTS Conducted Emissions 150 kHz – 30 MHz Automated Test Method 6.0A R2

A.2. Specifications

Frequency Limit MHz	Class B	
	Quasi-Peak dB μ V	Average dB μ V
0.150 – 0.500	66 to 56 ¹	56 to 46 ¹
0.500 – 5.00	56	46
5.00 – 30.00	60	50

Note 1: decrease with the logarithm of the frequency

A.3. Measurement Uncertainty

Conducted Voltage Emissions 150 kHz – 30 MHz	Measurement Uncertainty	Expanded Uncertainty (K=2)
(dB)	+1.21/-1.33	+2.41/-2.66


A.4. Deviations

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

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A.5. Test Results

Unit# 2 was tested. The EUT is in compliance with FCC CFR47 Part 15.207 Conducted emission limits. The highest emission measured was 42.18 dB μ V with average detector at 529 kHz. It has 3.82 dB margin to the average limit.

	Project Number: CG-611	Tester: Spencer Watson						
	Model: Nortel Networks AP7215 Indoor	Test ID: CE02tc-10m-611						
Comments: Conf04: AP7215 RoHS, Tabletop, PS120VAC60Hz, Ferr.onEUTside 802.11b, Ch:6,P:22.0dBm,								
Standard: FCC15_B								
Voltage/Line	Frequency (MHz)	Measurement Detector	Measured Value (dB μ V)	Correction Factors (dB)	Emission Level (dB μ V)	Limit Type	Limit (dB μ V)	Margin (dB)
AC 120V Line1A	0.464	AV	23.17	10.84	34.01	AV	46.62	12.61
AC 120V Line1A	0.663	AV	22.17	10.77	32.94	AV	46.00	13.06
AC 120V Line1A	24.311	AV	23.90	11.79	35.69	AV	50.00	14.31
AC 120V Line1A	0.198	AV	25.83	11.78	37.61	AV	53.69	16.08
AC 120V Line1A	0.529	AV	29.97	10.81	40.78	AV	46.00	5.22
AC 120V Line1A	0.727	AV	20.14	10.76	30.90	AV	46.00	15.10
AC 120V NeutralA	1.060	AV	24.00	10.67	34.67	AV	46.00	11.33
AC 120V NeutralA	3.047	AV	16.21	10.83	27.04	AV	46.00	18.96
AC 120V NeutralA	24.309	AV	23.34	11.70	35.04	AV	50.00	14.96
AC 120V NeutralA	0.198	AV	25.88	11.79	37.67	AV	53.68	16.01
AC 120V NeutralA	0.529	AV	31.44	10.74	42.18	AV	46.00	3.82
AC 120V NeutralA	0.728	AV	24.18	10.68	34.86	AV	46.00	11.14
AC 120V Line1A	0.464	QP	25.02	10.85	35.87	QP	56.62	20.75
AC 120V Line1A	0.663	QP	24.13	10.77	34.90	QP	56.00	21.10
AC 120V Line1A	24.312	QP	27.56	11.79	39.35	QP	60.00	20.65
AC 120V Line1A	0.198	QP	32.00	11.73	43.73	QP	63.69	19.96
AC 120V Line1A	0.528	QP	33.17	10.81	43.98	QP	56.00	12.02
AC 120V Line1A	0.727	QP	23.24	10.76	34.00	QP	56.00	22.00
AC 120V NeutralA	1.060	QP	25.48	10.67	36.15	QP	56.00	19.85
AC 120V NeutralA	3.047	QP	22.07	10.83	32.90	QP	56.00	23.10
AC 120V NeutralA	24.310	QP	26.72	11.70	38.42	QP	60.00	21.58
AC 120V NeutralA	0.198	QP	31.98	11.73	43.71	QP	63.68	19.97
AC 120V NeutralA	0.529	QP	34.47	10.74	45.21	QP	56.00	10.79
AC 120V NeutralA	0.728	QP	26.03	10.68	36.71	QP	56.00	19.29

A.6. Observations

None

A.7. Sample Calculation

Correction Factor = LISN Correction Factor + Cable Loss

Emission Level = Measured Value + Correction Factor

Margin = Limit – Emission Level

A.8. Test Data

See plots on following pages.

A.9. Tested By

This testing was conducted in accordance with the ISO 17025: 2005 scope of accreditation, table 1; Quality Manual.

Name: Spencer Watson
Function: EMC Technologist

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Figure 1 Line 1 – 150 kHz – 30 MHz

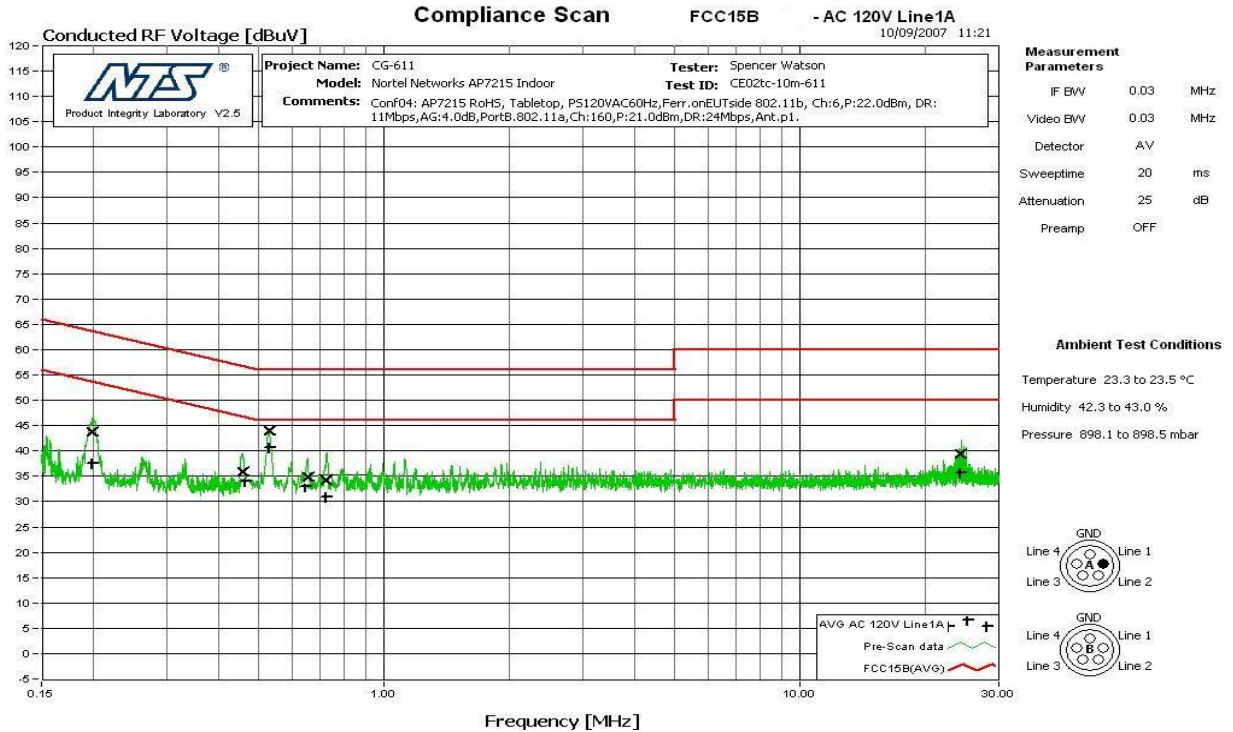
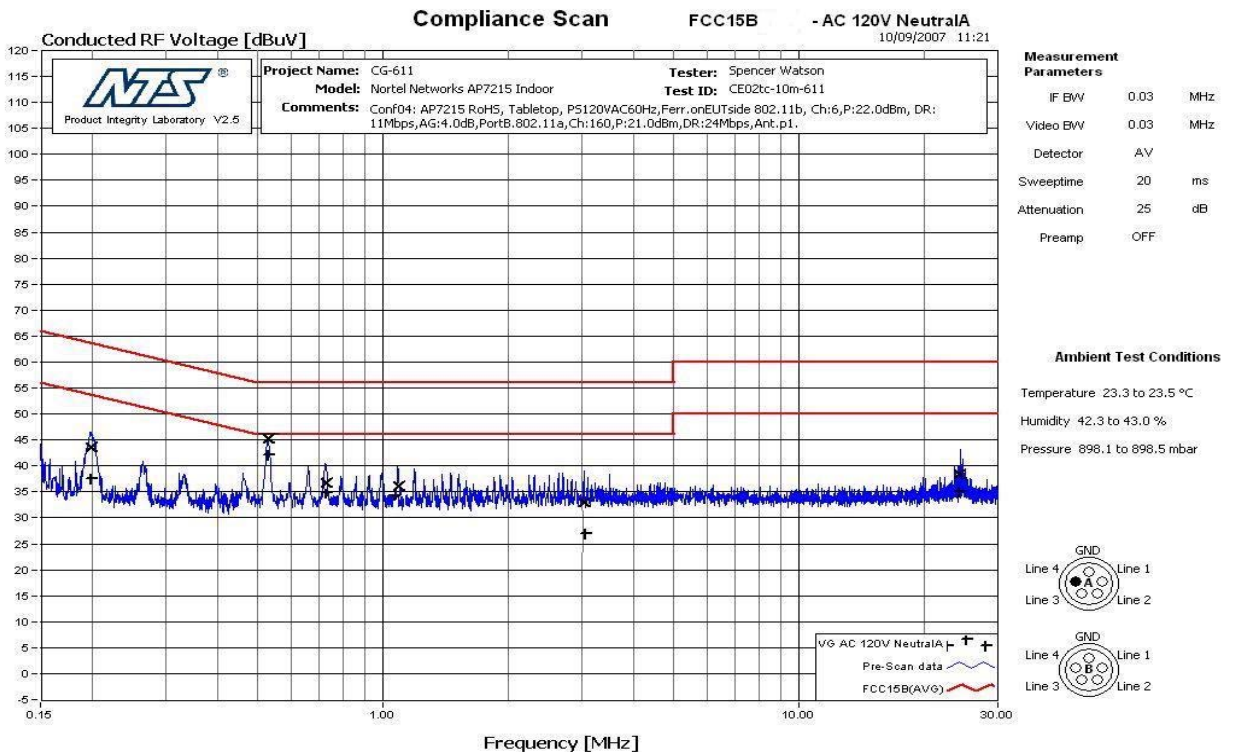


Figure 2 Return 1 – 150 kHz – 30 MHz



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APPENDIX B: 6 DB BANDWIDTH

B.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Chapter I -Radio Frequency Devices FCC Part 15.247 (a) (2) RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.2 (a)
Test Basis	RF conducted as per FCC Publication 558074 and Public Notice: DA 02-2138
Test Method	RF conducted as per FCC Publication 558074 and Public Notice: DA 02-2138

B.2. Specifications

15.247 (a) (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. Deviations

None

B.4. Test Procedure

RF conducted as per FCC Publication 558074

B.5. Test Results

Unit# 1 was tested. The EUT is in compliance with the limits as specified above

6 dB Occupied Bandwidth			
802.11b	2412 MHz	2437 MHz	2462 MHz
	11.22 MHz	11.70 MHz	11.54 MHz
802.11g	2412 MHz	2437 MHz	2462 MHz
	16.75 MHz	16.67 MHz	16.75 MHz
802.11a	5740 MHz	5800 MHz	5840 MHz
	16.65 MHz	16.77 MHz	16.95 MHz

B.6. Operating Mode During Test

The AP7215 was tested while in the continuous transmit mode with the country code: US. The EUT was setup to operate at the country code power settings and tuned to an 802.11b/g, 802.11a low, middle, and high channels.

B.7. Sample Calculation

NA

B.8. Test Data

See plots on following pages

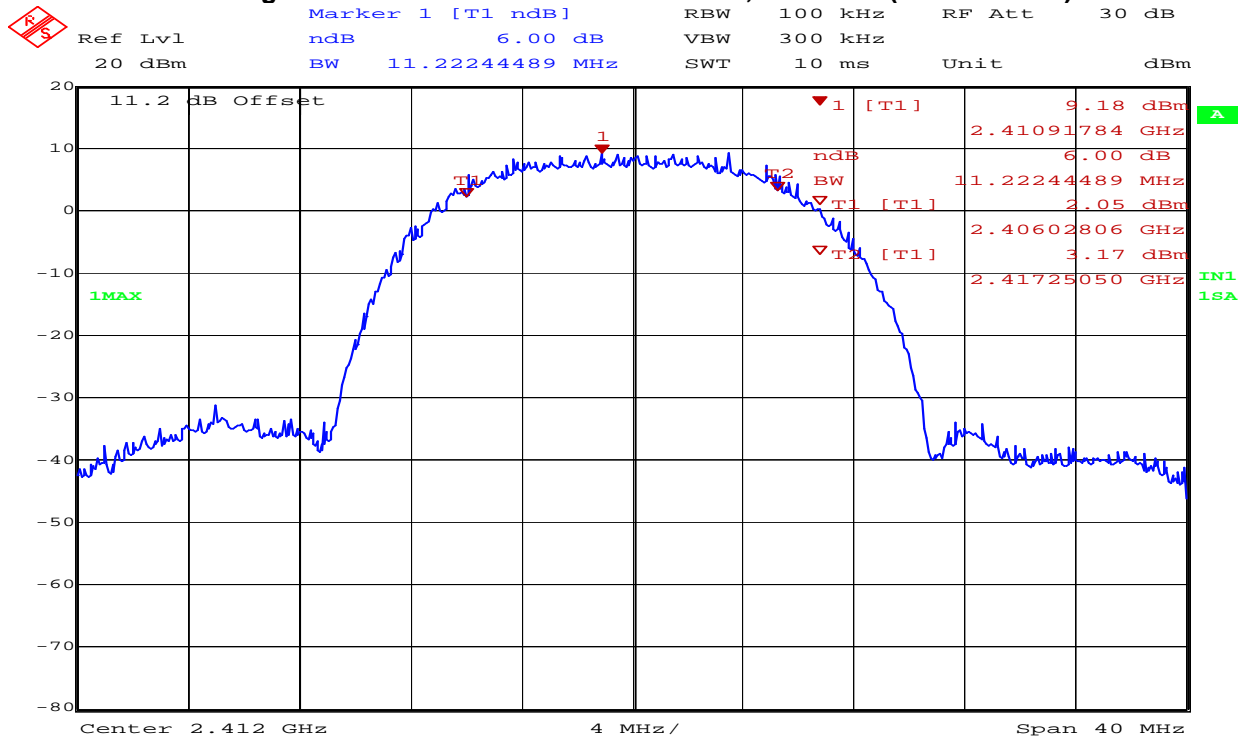
B.9. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.

Name: Deniz Demirci
Function: EMC Technologist

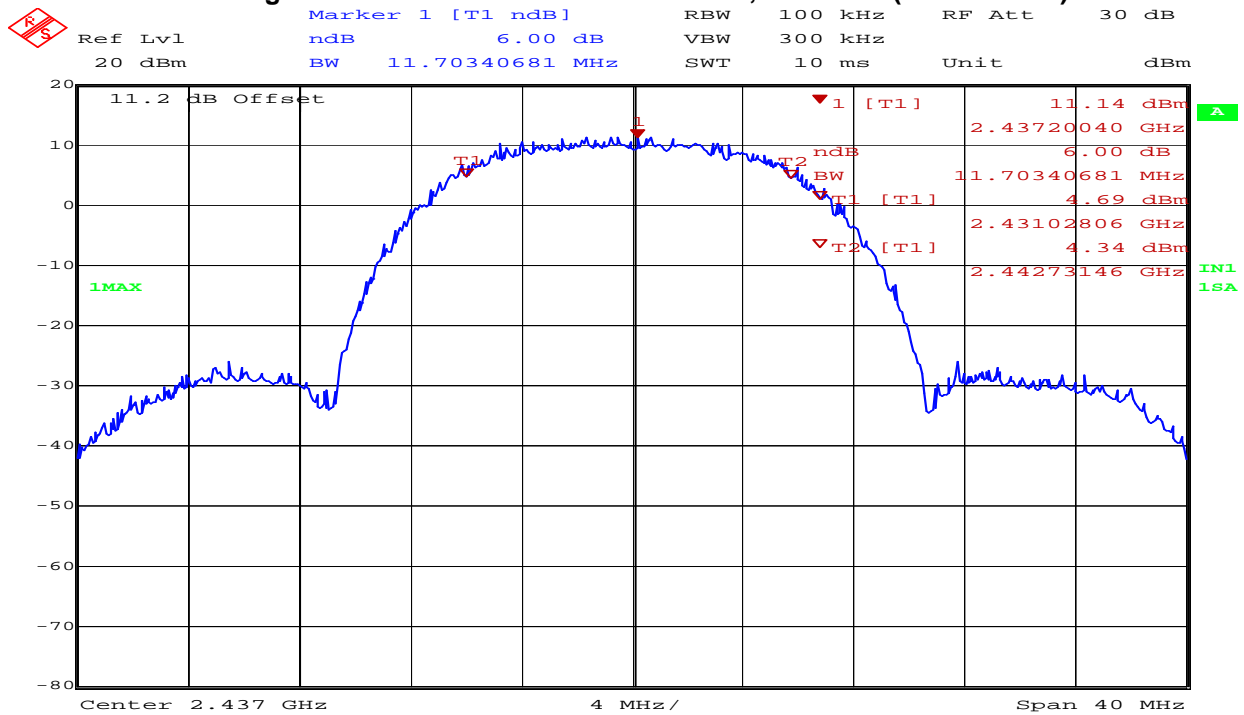
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Figure 3 6 dB Bandwidth 802.11b Ch1, 2412 MHz (Low Channel)



Title: CG-611 AP7215
Comment A: 802.11b, Ch1, Cont.TX., P:21dBm, DR:11Mbps, G:4dB
Date: 29.AUG.2007 18:02:10

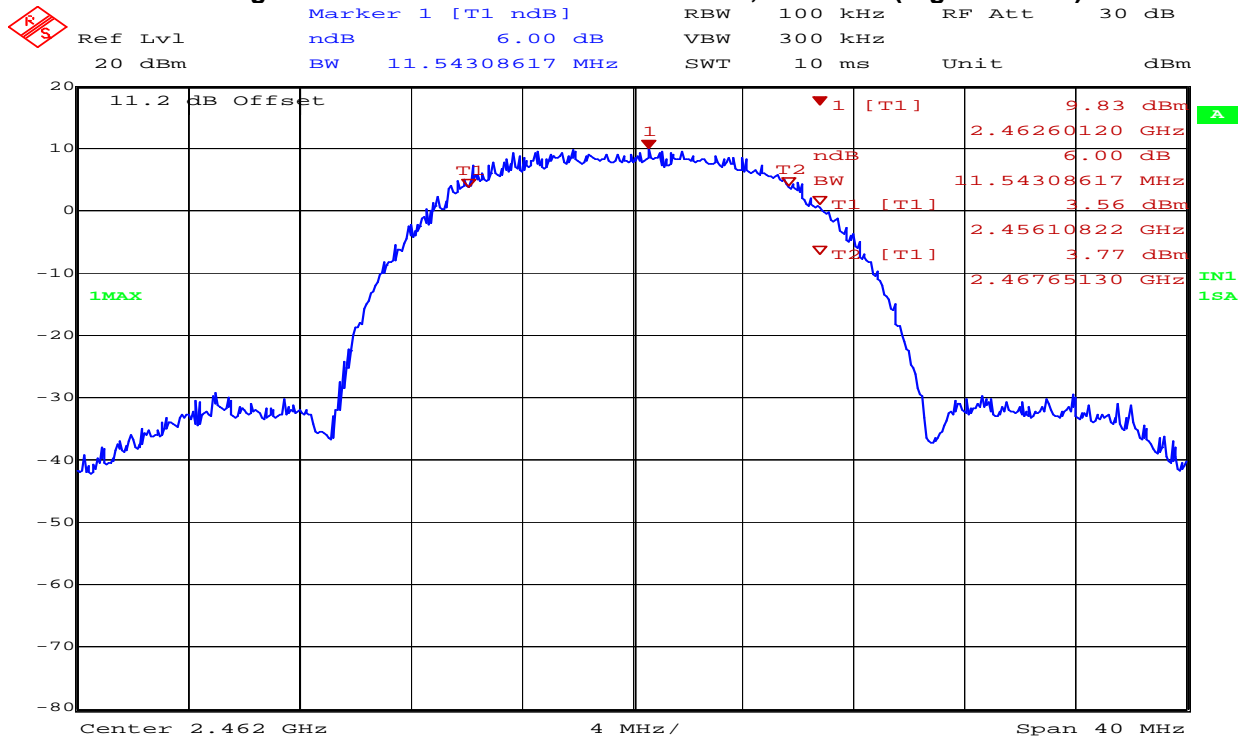
Figure 4 6 dB Bandwidth 802.11b Ch6, 2437 MHz (Mid Channel)



Title: CG-611 AP7215
Comment A: 802.11b, Ch6, Cont.TX., P:22dBm, DR:11Mbps, G:4dB
Date: 29.AUG.2007 18:08:47

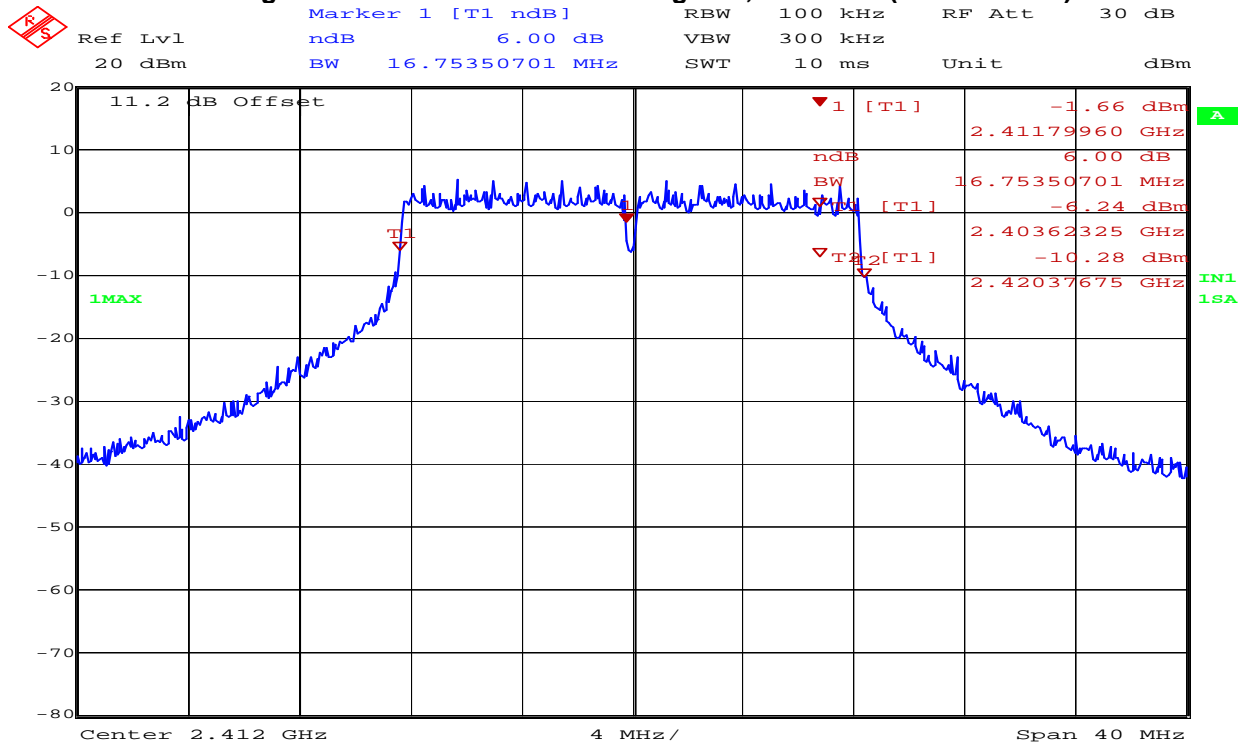
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Figure 5 6 dB Bandwidth 802.11b Ch11, 2642 MHz (High Channel)



Title: CG-611 AP7215
Comment A: 802.11b, Ch11, Cont.TX., P:21dBm, DR:11Mbps, G:4dB
Date: 29.AUG.2007 18:40:31

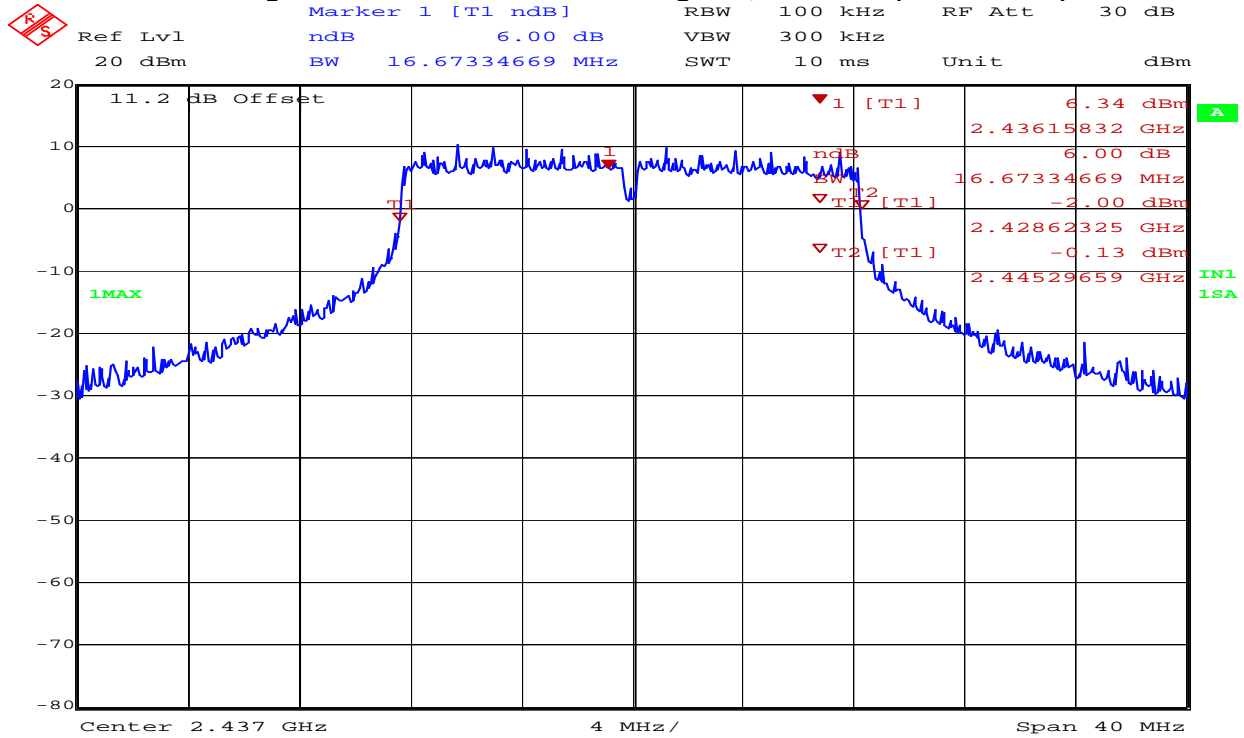
Figure 6 6 dB Bandwidth 802.11g Ch1, 2412 MHz (Low Channel)



Title: CG-611 AP7215
Comment A: 802.11g, Ch1, Cont.TX., P:16dBm, DR:24Mbps, G:4dB
Date: 29.AUG.2007 18:46:41

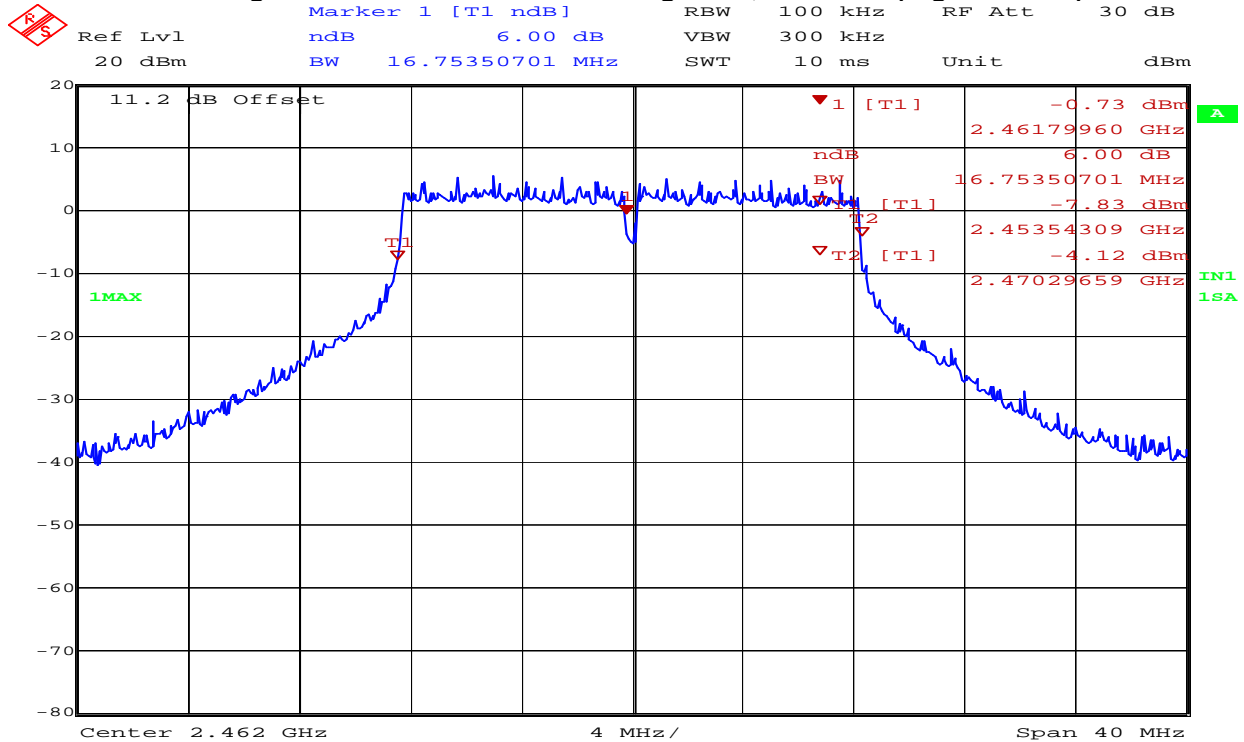
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Figure 7 6 dB Bandwidth 802.11g Ch6, 2437 MHz (Mid Channel)



Title: CG-611 AP7215
Comment A: 802.11g, Ch6, Cont.TX.,P:20dBm, DR:24mbps, G:4dB
Date: 29.AUG.2007 18:52:45

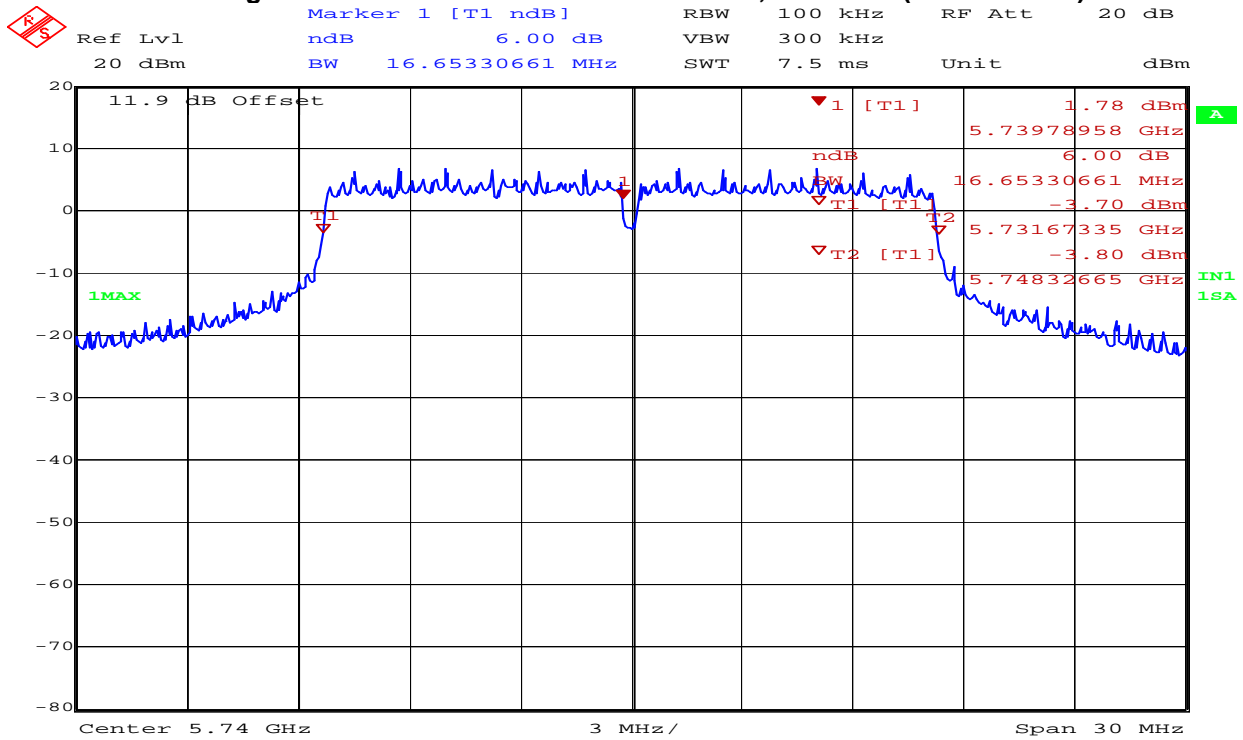
Figure 8 6 dB Bandwidth 802.11g CH11, 2462 MHz (High Channel)



Title: CG-611 AP7215
Comment A: 802.11g, Ch11, Cont.TX.,P:16dBm, DR:24mbps, G:4dB
Date: 29.AUG.2007 18:57:18

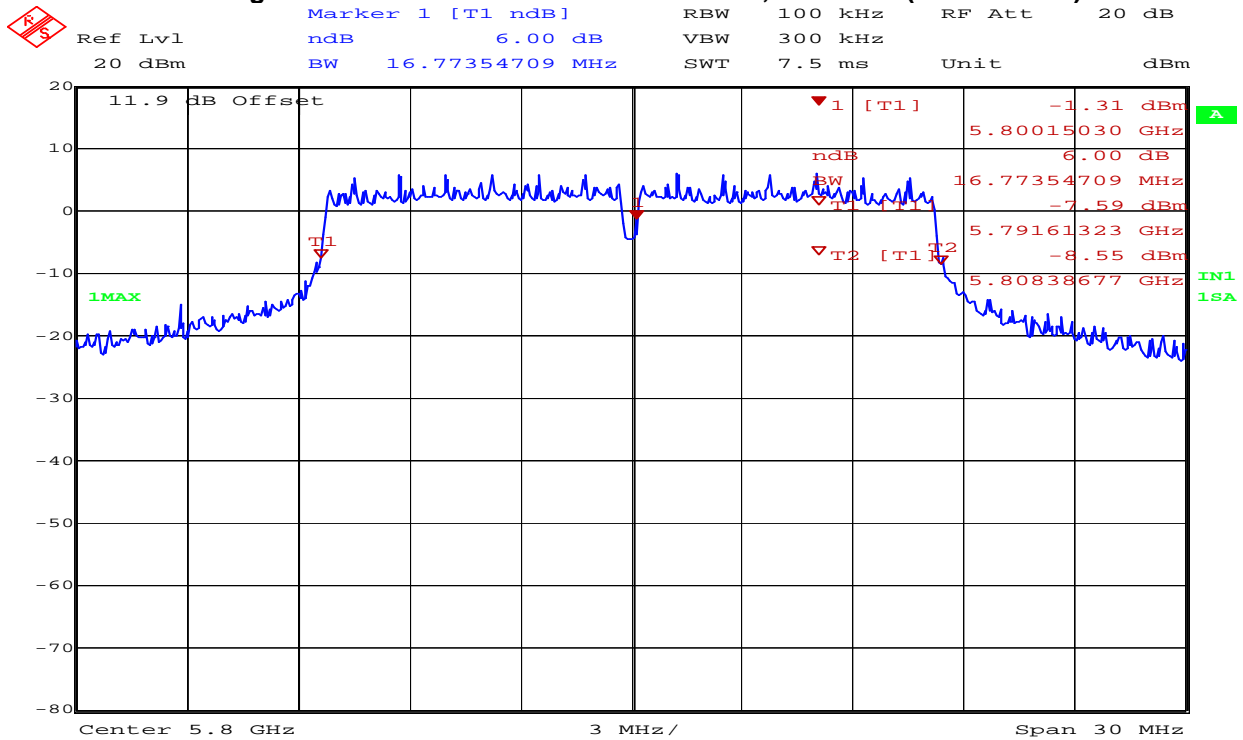
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Figure 9 6 dB Bandwidth 802.11a Ch148, 5740 MHz (Low Channel)



Title: CG-611 AP7215
Comment A: 802.11a, Ch148, AUX2, Cont.TX., P:21dBm, DR:24mbps, G:10dB
Date: 30.AUG.2007 10:49:38

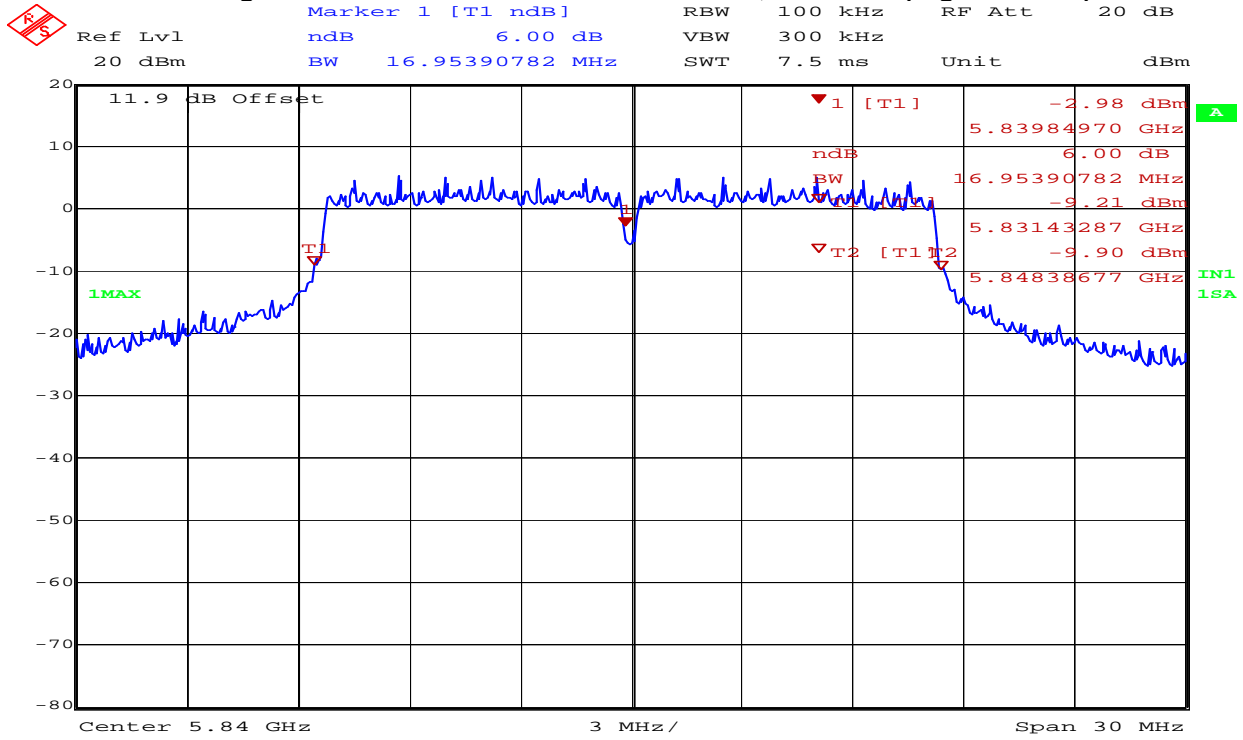
Figure 10 6 dB Bandwidth 802.11a Ch160, 5800 MHz (Mid Channel)



Title: CG-611 AP7215
Comment A: 802.11a, Ch160, AUX1, Cont.TX., P:21dBm, DR:24mbps, G:10dB
Date: 30.AUG.2007 10:54:01

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Figure 11 6 dB Bandwidth 802.11a Ch168, 5840 MHz (High Channel)



Title: CG-611 AP7215
 Comment A: 802.11a, Ch168, AUX1, Cont.TX., P:21dBm, DR:24mbps, G:10dB
 Date: 30.AUG.2007 10:57:19

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APPENDIX C: PEAK POWER OUTPUT FOR 802.11B/G

C.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Part 15 Subpart C-intentional radiators FCC Part 15.247 (b) RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.4 (4)
Test Basis	FCC 15.247 RF conducted as per FCC Publication 558074
Test Method	RF conducted output power using sample detector as per FCC Publication 558074 and Public Notice: DA 02-2138

C.2. Specifications

15.247 (b) (3) For systems using digital modulation, the maximum peak conducted output power shall not exceed 1 Watt (30 dBm) in the 2400 MHz- 2483.5 MHz band

C.3. Deviations

None

C.4. Test Results

Compliant. Unit# 1 was tested.

The maximum conducted peak power was 20.72 dBm for 802.11b and 19.71 dBm for 802.11g modes

Measured Conducted Power (dBm) at Radio Antenna 1

Data rate (Mbps)	802.11b				802.11g				
	1	2	5.5	11	6	24	36	48	54
2412 MHz	18.95	18.99	19.12	19.02	15.05	15.19	15.03	14.96	14.94
2437 MHz	20.63	20.65	20.69	20.72	19.54	19.71	19.43	19.39	19.35
2462 MHz	19.39	19.42	20.09	19.75	15.17	15.31	15.13	15.08	15.07

Measured Conducted Power (dBm) at Radio Antenna 2

Data rate (Mbps)	802.11b				802.11g				
	1	2	5.5	11	6	24	36	48	54
2412 MHz	18.79	18.84	18.94	19.67	14.76	15.04	14.67	14.66	14.61
2437 MHz	20.46	20.51	20.54	20.59	19.35	19.50	19.37	19.27	19.29
2462 MHz	19.71	19.82	20.04	20.07	15.15	15.49	15.04	14.98	14.94

Note:

Two graphics shown for each mode representing maximum output powers (Figure 10 - Figure 13)

C.5. Sample Calculation

None

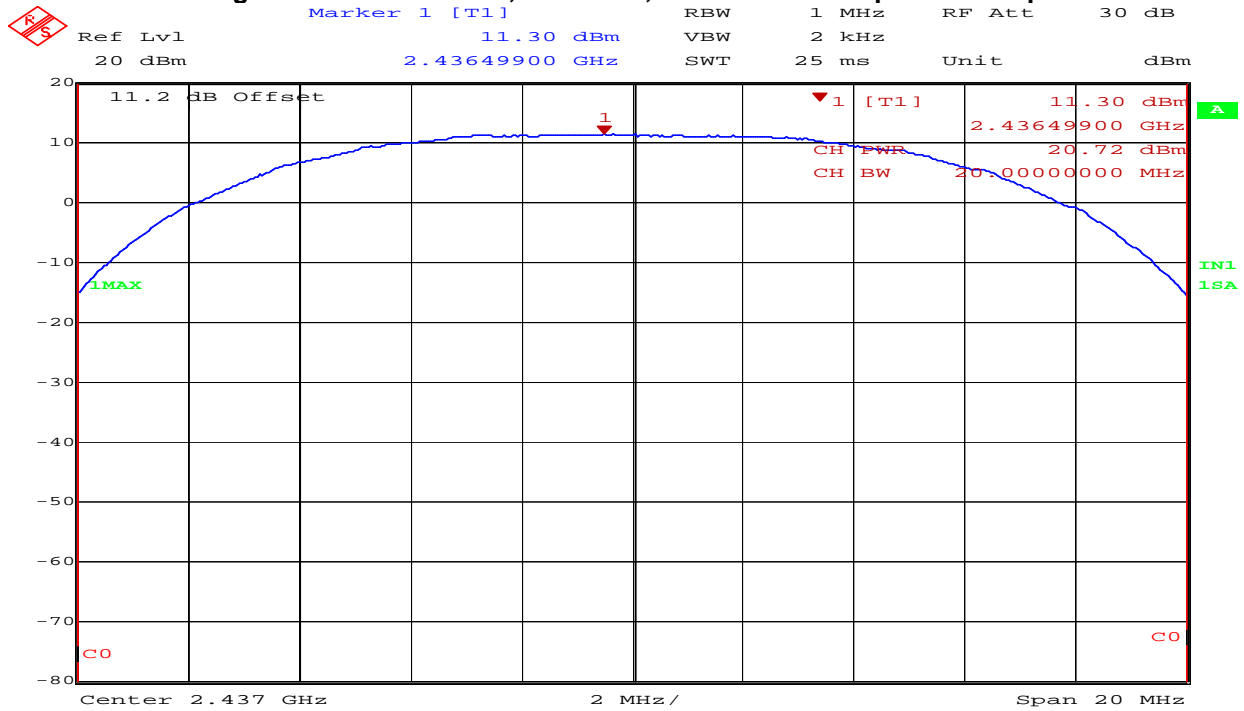
C.6. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.

Name: Deniz Demirci
Function: EMC Technologist

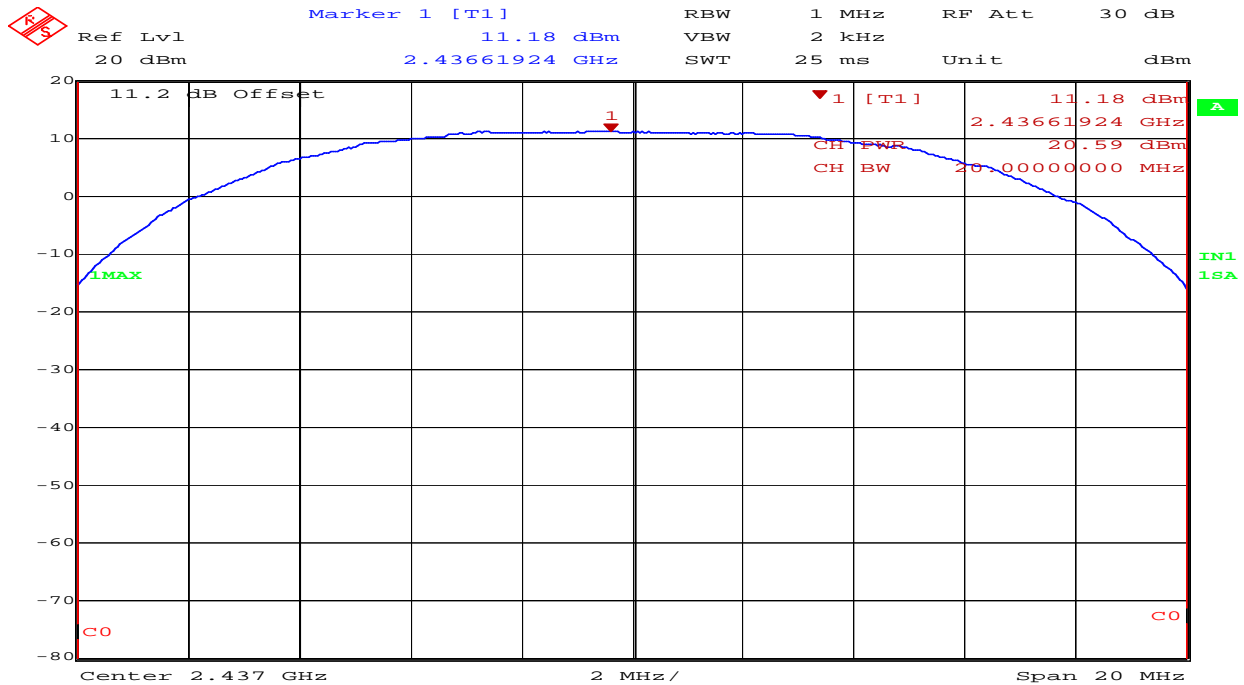
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 12 802.11b Ch6, 2437 MHz, Data Rate: 11 Mbps Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11b, Ch6, Cont.TX.,P:22dBm, DR:11Mbps, G:4dB
Date: 29.AUG.2007 19:45:08

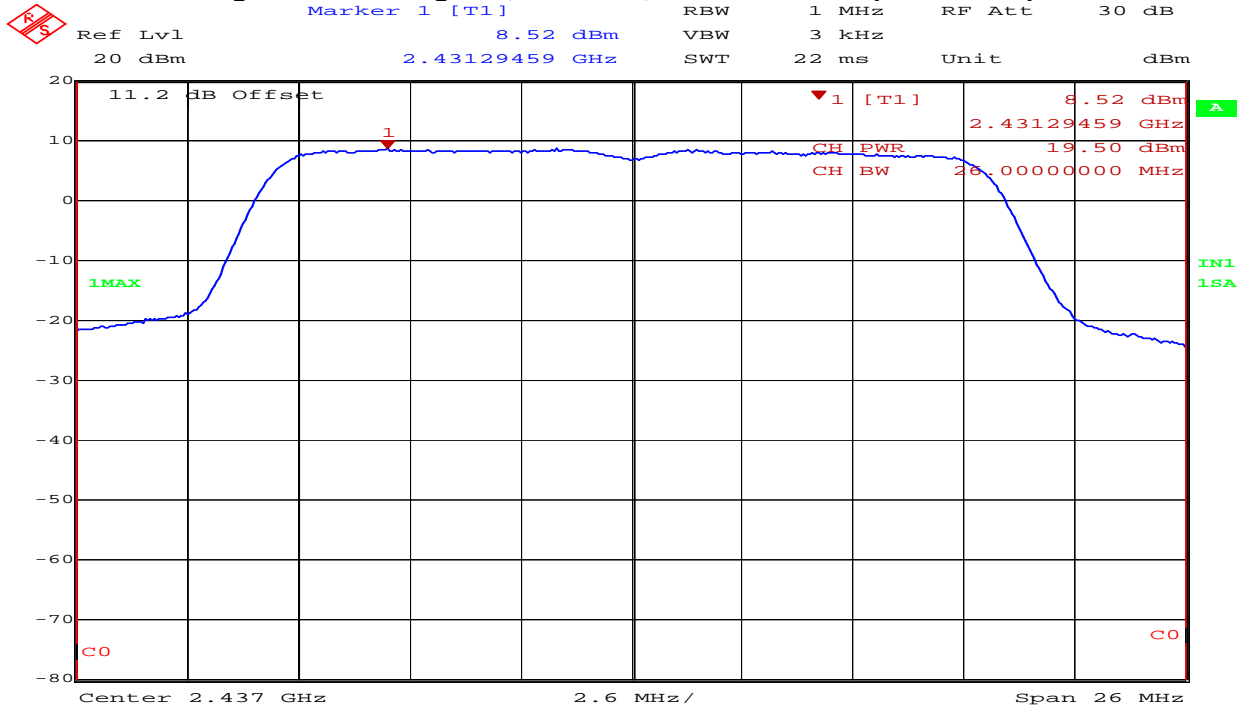
Figure 13 802.11b Ch6, 2437 MHz, Data Rate: 11 Mbps Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11b, Ch6, Antenna2, Cont.TX.,P:22dBm, DR:11Mbps, G:4dB
Date: 29.AUG.2007 20:00:05

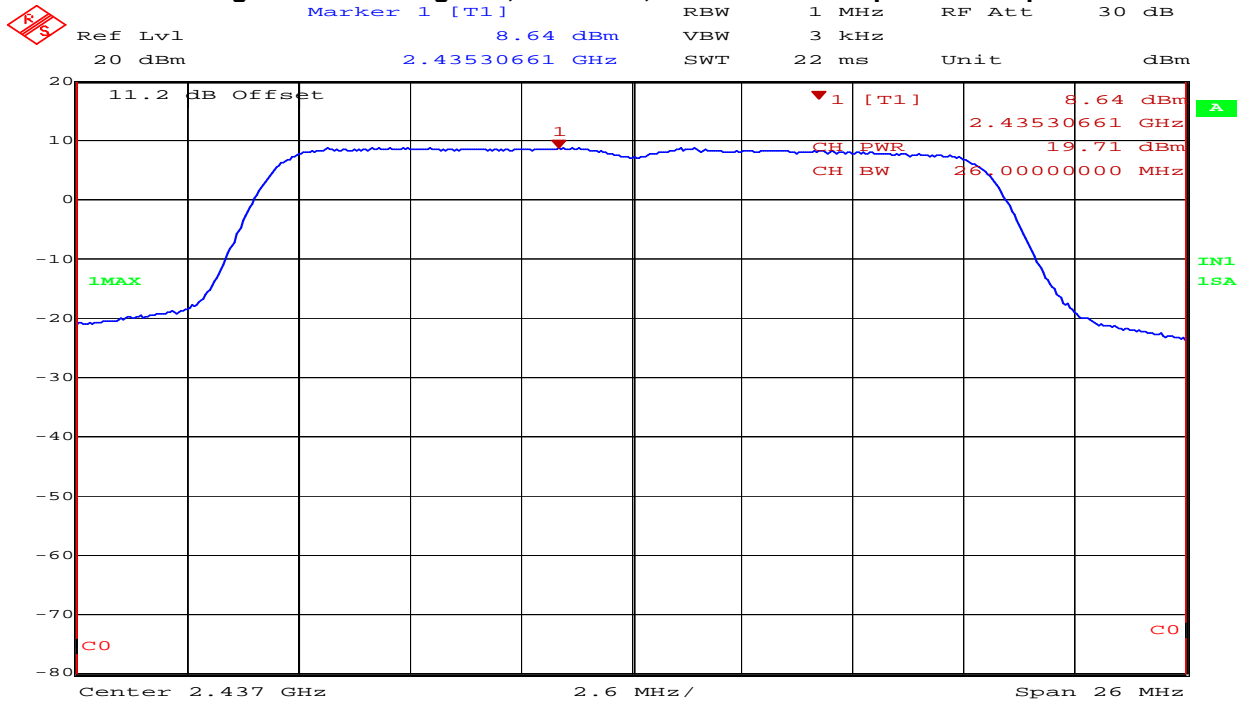
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 14 802.11g Ch6, 2437 MHz, Data Rate: 24 Mbps Antenna port 2



Title: CG-611 AP7215
 Comment A: 802.11g, Ch6, Antenna2, Cont.TX., P:20dBm, DR:24mbps, G:4dB
 Date: 29.AUG.2007 20:24:12

Figure 15 802.11g Ch6, 2437 MHz, Data Rate: 24 Mbps Antenna port 1



Title: CG-611 AP7215
 Comment A: 802.11g, Ch6, Antenna1, Cont.TX., P:20dBm, DR:24mbps, G:4dB
 Date: 29.AUG.2007 20:54:32

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.

APPENDIX D: PEAK POWER OUTPUT FOR 802.11A

D.1. Base Standard & Test Basis

Base Standard	CFR Title 47 – Telecommunications, Part 15 Subpart C-intentional radiators FCC Part 15.247 (b) RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.4 (4)
Test Basis	FCC 15.247 (c) RF conducted as per FCC Publication 558074
Test Method	Peak output power using peak detector on the spectrum analyzer according to FCC “Digital Transmission System Test Procedure”

D.2. Specifications

15.247 (b) (3) For systems using digital modulation, the maximum peak conducted output power shall not exceed 1 Watt (30 dBm) in the 5740 MHz – 5840 MHz band

D.3. Deviations

None

D.4. Test Results

Compliant. Unit# 1 was tested.

The maximum conducted peak power was 26.26 dBm for 802.11a mode

Measured Conducted Power (dBm) at Radio Antenna Port AUX1 and AUX2

802.11a										
Port	AUX1					AUX2				
Data rate (Mbps)	6	24	36	48	54	6	24	36	48	54
5740 MHz	26.05	26.26	26.06	24.72	22.42	25.85	26.13	25.98	24.51	22.25
5800 MHz	25.31	25.44	25.35	23.63	21.48	25.19	25.32	25.11	23.06	21.16
5840 MHz	24.41	24.56	24.63	22.82	20.91	24.21	24.41	24.27	22.63	20.59

One graphic shown for each antenna port representing maximum output powers (Figure 14 - Figure 15)

D.5. Sample Calculation

None

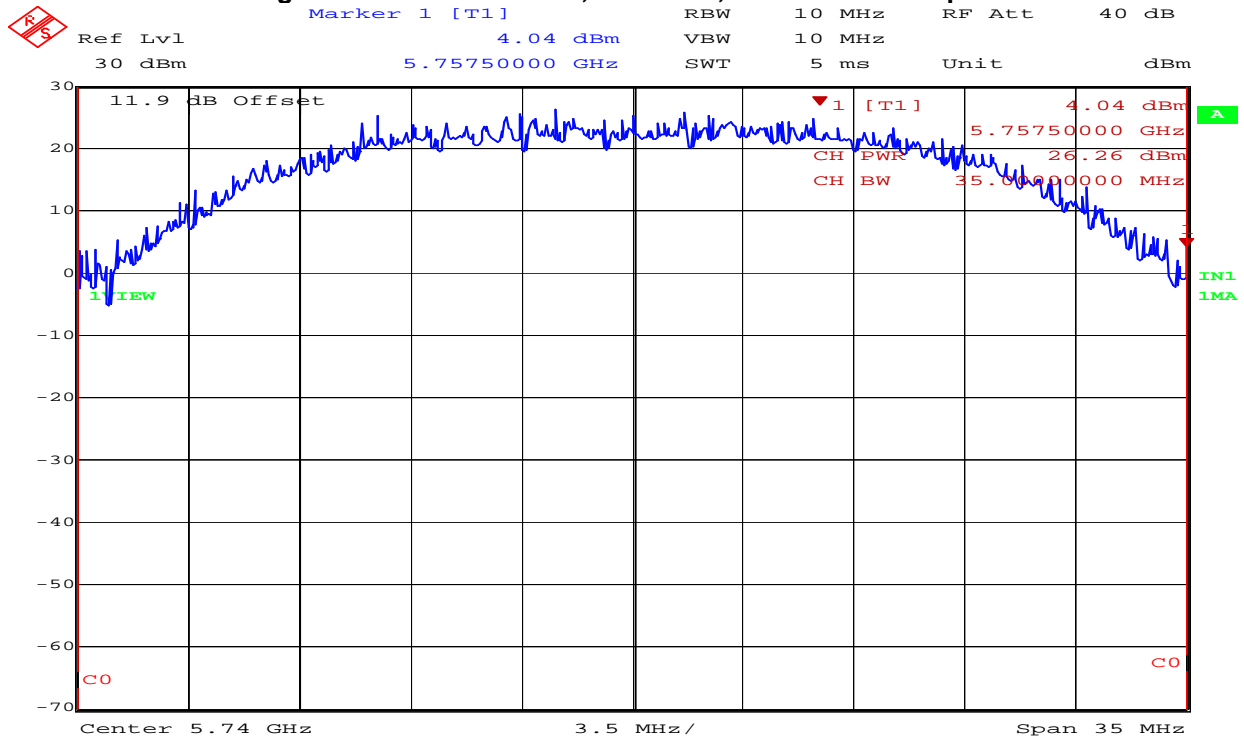
D.6. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.

Name: Deniz Demirci
Function: EMC Technologist

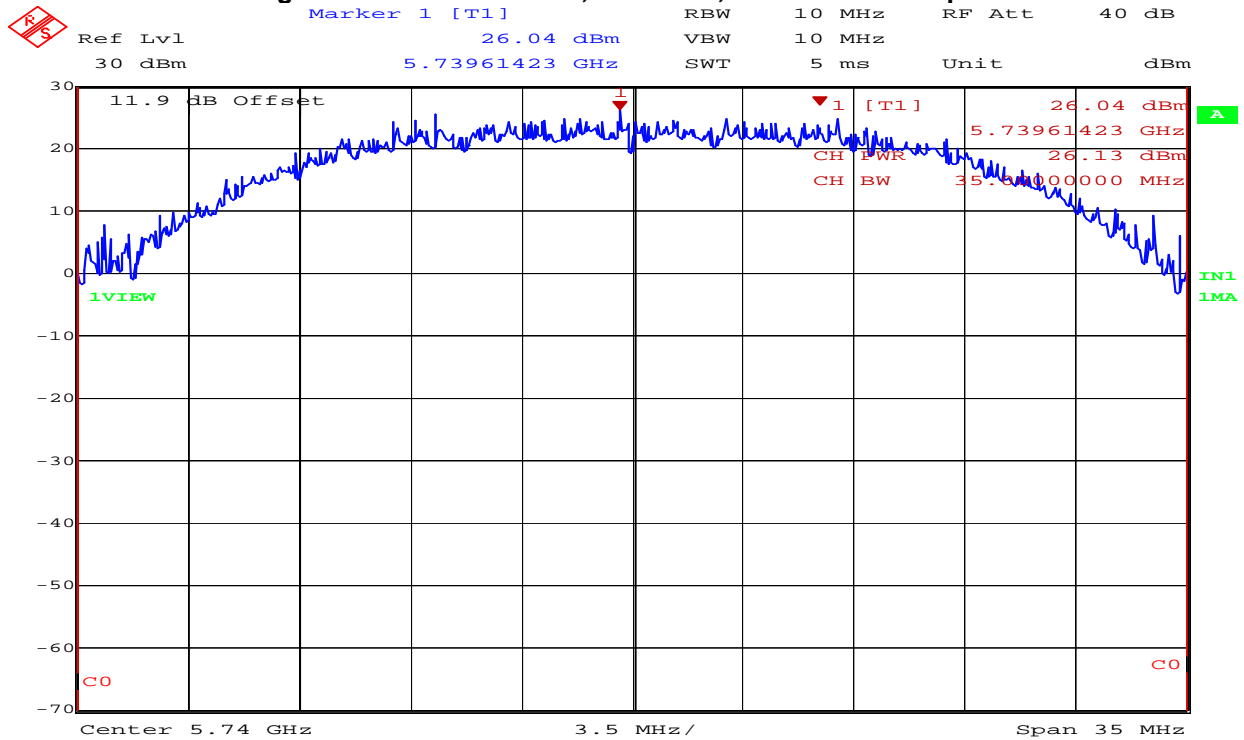
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 16 802.11a Ch148, 5740 MHz, Data Rate: 24 Mbps AUX1



Title: CG-611 AP7215
Comment A: 802.11a, Ch148, AUX1, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
Date: 29.AUG.2007 21:23:42

Figure 17 802.11a Ch148, 5740 MHz, Data Rate: 24 Mbps AUX2



Title: CG-611 AP7215
Comment A: 802.11a, Ch148, AUX2, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
Date: 29.AUG.2007 21:35:55

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.

APPENDIX E: CONDUCTED SPURIOUS EMISSIONS

E.1. Base Standard & Test Basis

Base Standards	CFR Title 47 – Telecommunications, Part 15 Subpart C-intentional radiators FCC Part 15.247 (d) FCC Part 15.205 Restricted Bands of Operation RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.5
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. Deviations

None

E.4. Test Results

Compliant,
Unit#1 was tested. All peak emissions were more than 20 dB below the in band power.
The EUT conducted emission was measured to the 10th harmonic and for low, medium and high frequencies at each frequency band and for all outputs. Only worst cases were reported for 802.11b/g and 802.11a radios.

E.5. Test Data & Photographs

See following pages.

E.6. Tested By

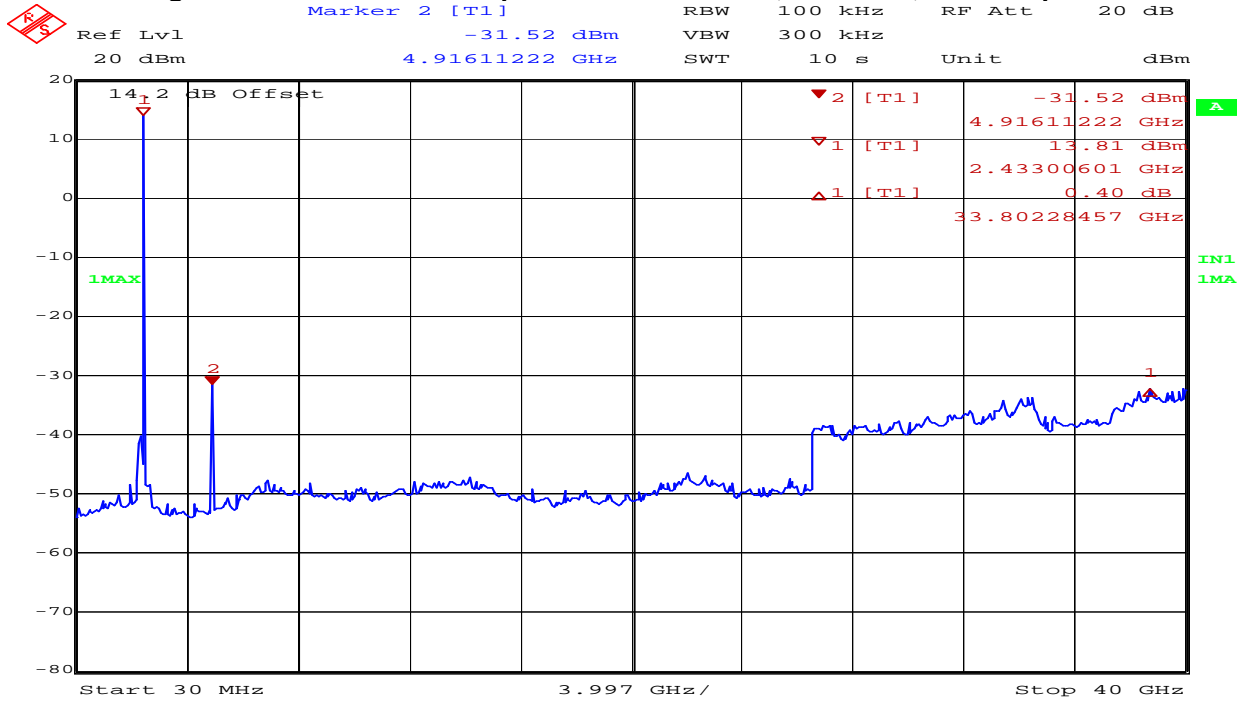
This testing was conducted in accordance with the ISO 17025: 2005 scope of accreditation, table 1; Quality Manual.

Name: Deniz Demirci
Function: EMC Technologist

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.

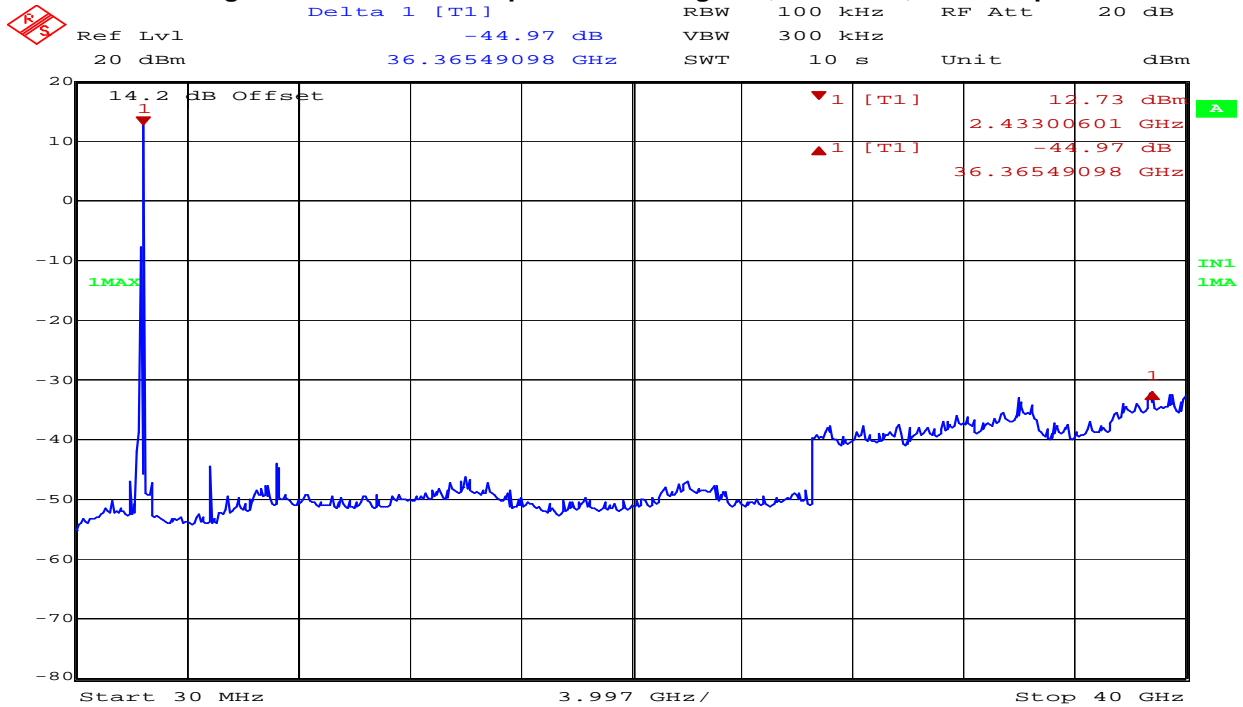
NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

Figure 18 Conducted Spurious 802.11b Ch11, 2462 MHz, Antenna port 1



Title: CG-611 AP7215
 Comment A: 802.11b, Ch11, Antenna port2, Cont.TX., P:21dBm, DR:11mbps, G:4dB
 Date: 30.AUG.2007 09:13:51

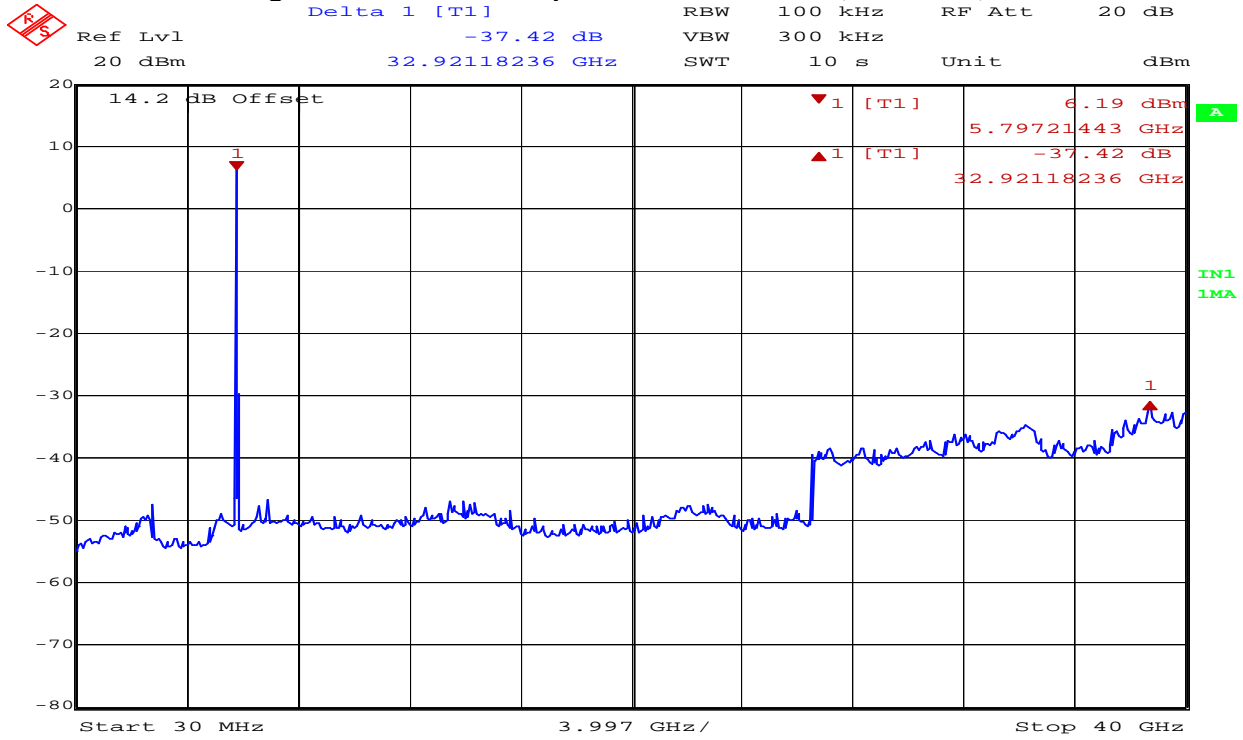
Figure 19 Conducted Spurious 802.11g Ch6, 2437 MHz, Antenna port 1



Title: CG-611 AP7215
 Comment A: 802.11g, Ch6, Antenna port1, Cont.TX., P:20dBm, DR:24mbps, G:4dB
 Date: 30.AUG.2007 09:33:57

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.

Figure 20 Conducted Spurious 802.11a Ch168, 2412 MHz, AUX2



Title: CG-611 AP7215
 Comment A: 802.11a, Ch168, AUX2, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
 Date: 30.AUG.2007 10:17:50

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.

APPENDIX F: CONDUCTED SPURIOUS EMISSIONS BAND EDGE MEASUREMENTS

F.1. Base Standard & Test Basis

Base Standards	CFR Title 47 – Telecommunications, Part 15 Subpart C-intentional radiators 15.247 (d) FCC Part 15.205 Restricted Bands of Operation RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.5
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

F.2. Limits

15.247 (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. Test Results

Compliant

Unit# 1 was tested.

Worst case spurious emission was -22.62 dBi @ Channel 168, 802.11a radio. It has 2.62 dB margin to the limit.

F.4. Deviations from Normal Operating Mode During Test

None.

F.5. Sample Calculation

None.

F.6. Test Data

See plots on following pages.

F.7. Tested By

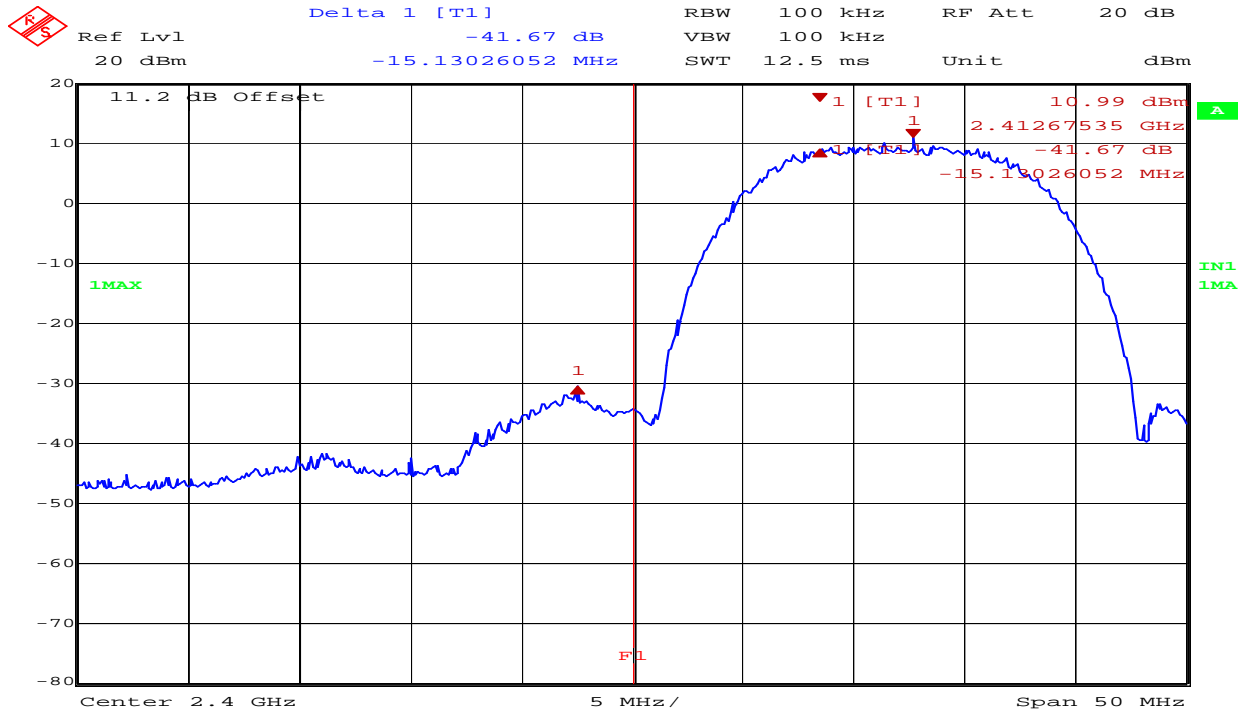
This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.

Name: Deniz Demirci
Function: EMC Technologist

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.

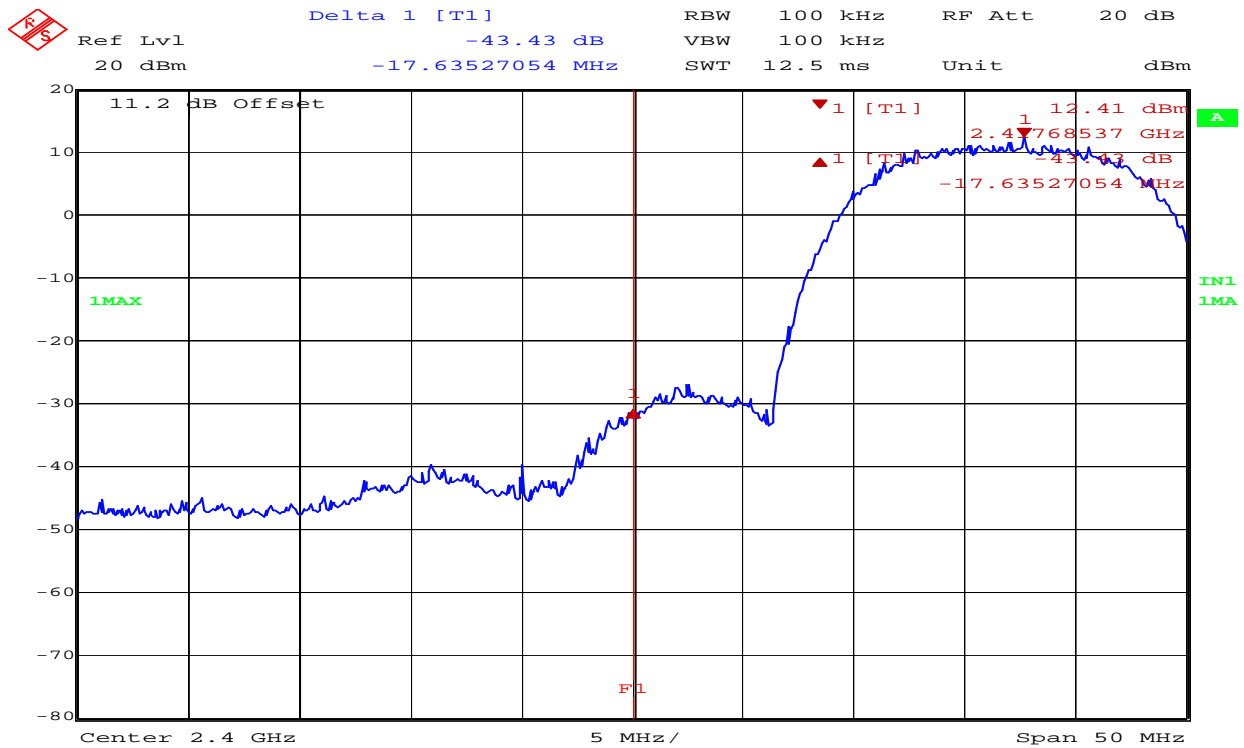
NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

Figure 21 Conducted Band edge Measurement 802.11b Ch1, 2412 MHz



Title: CG-611 AP7215
 Comment A: 802.11b, Ch1, Ant.port1, Cont.TX., P:21dBm, DR:11Mbps, G:4dB
 Date: 30.AUG.2007 14:21:10

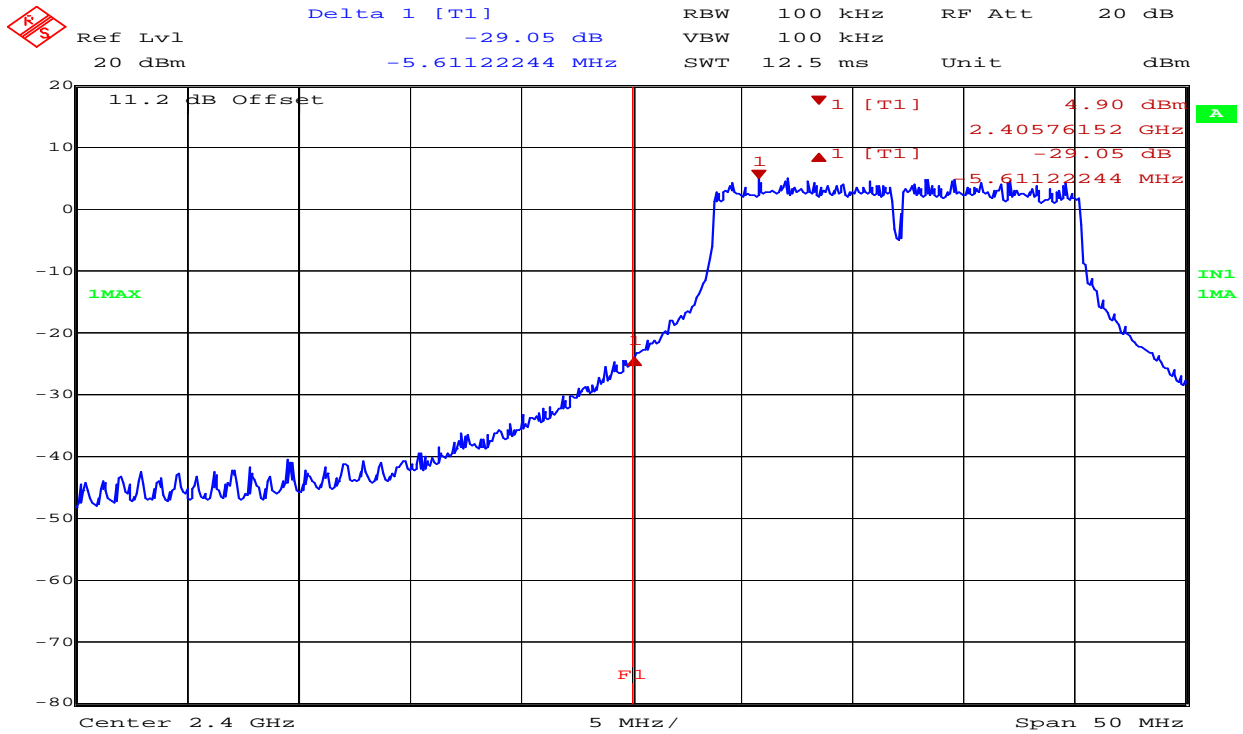
Figure 22 Conducted Band edge Measurement 802.11b Ch2, 2417 MHz



Title: CG-611 AP7215
 Comment A: 802.11b, Ch2, Ant.port1, Cont.TX., P:22dBm, DR:11Mbps, G:4dB
 Date: 30.AUG.2007 14:23:21

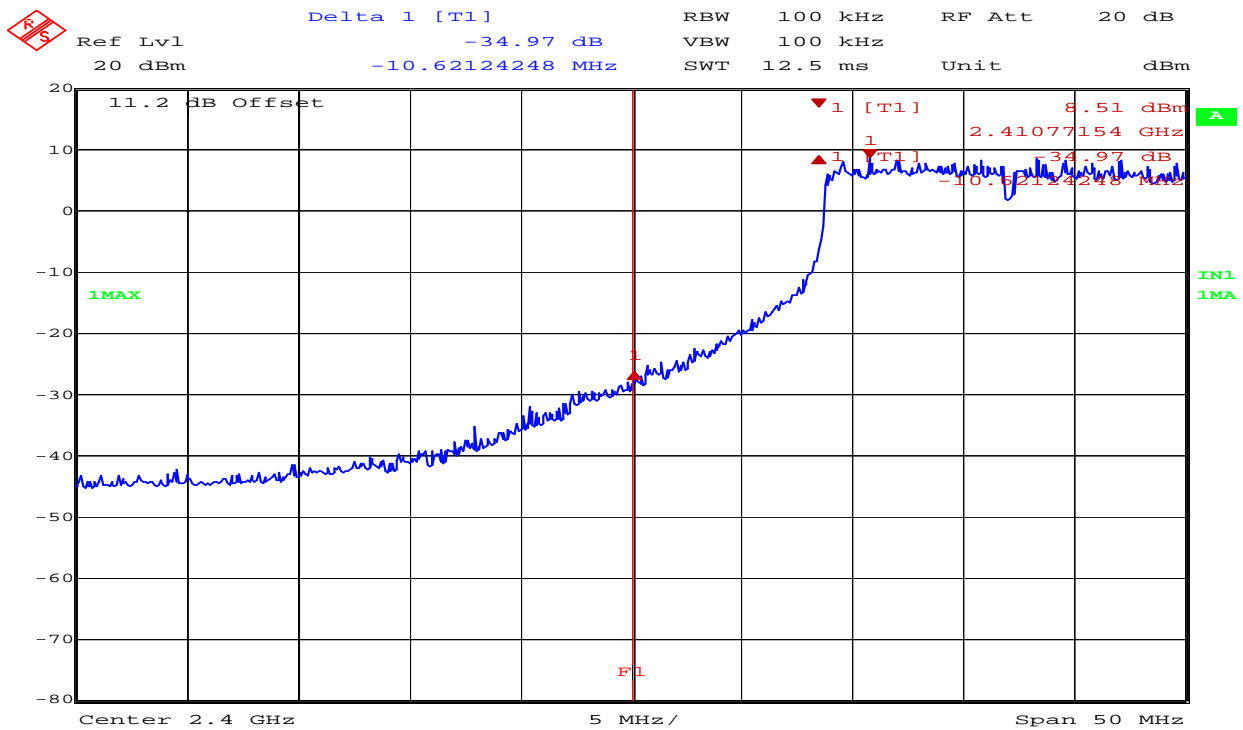
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 23 Conducted Band edge Measurement 802.11g Ch1, 2412 MHz



Title: CG-611 AP7215
Comment A: 802.11g, Ch1, Ant.port1, Cont.TX., P:16dBm, DR:24mbps, G:4dB
Date: 30.AUG.2007 14:02:46

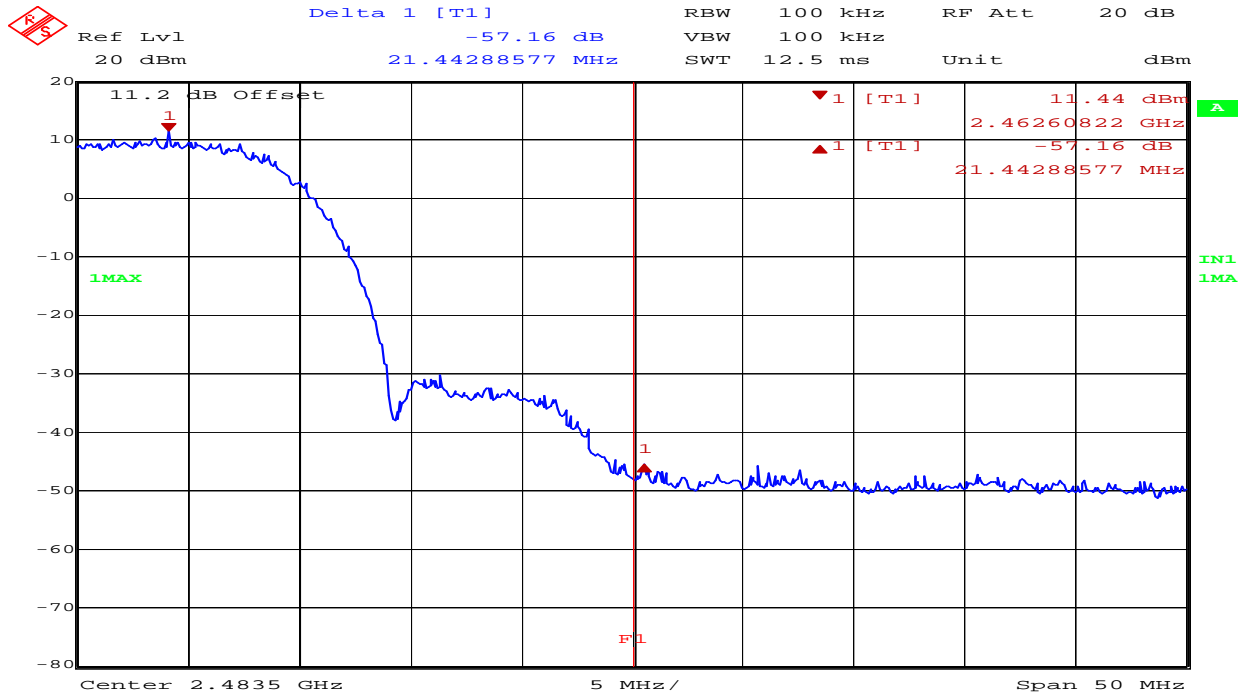
Figure 24 Conducted Band edge Measurement 802.11g Ch2, 2417 MHz



Title: CG-611 AP7215
Comment A: 802.11g, Ch2, Ant.port1, Cont.TX., P:19dBm, DR:24mbps, G:4dB
Date: 30.AUG.2007 14:05:31

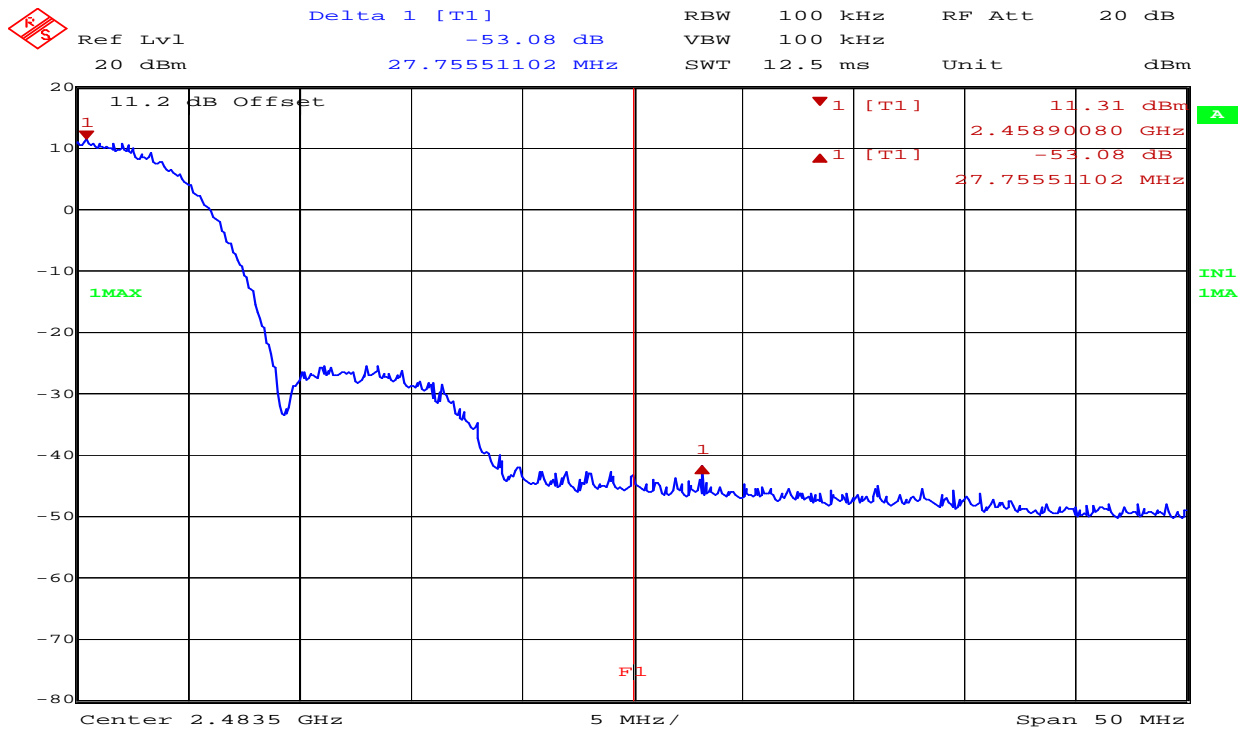
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 25 Conducted Band edge Measurement 802.11b Ch11, 2462 MHz



Title: CG-611 AP7215
 Comment A: 802.11b, Ch11, Ant.port1, Cont.TX., P:21dBm, DR:11Mbps, G:4d
 B
 Date: 30.AUG.2007 14:14:50

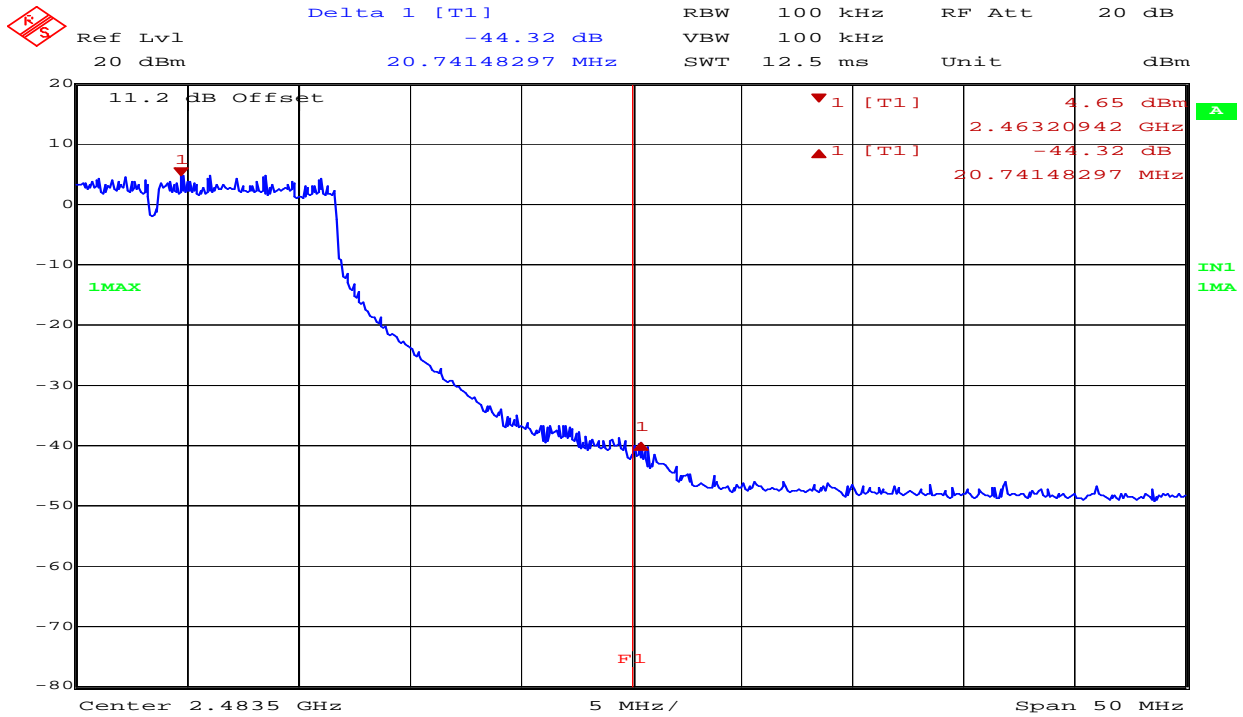
Figure 26 Conducted Band edge Measurement 802.11b Ch10, 2457 MHz



Title: CG-611 AP7215
 Comment A: 802.11b, Ch10, Ant.port1, Cont.TX., P:22dBm, DR:11Mbps, G:4d
 B
 Date: 30.AUG.2007 14:17:04

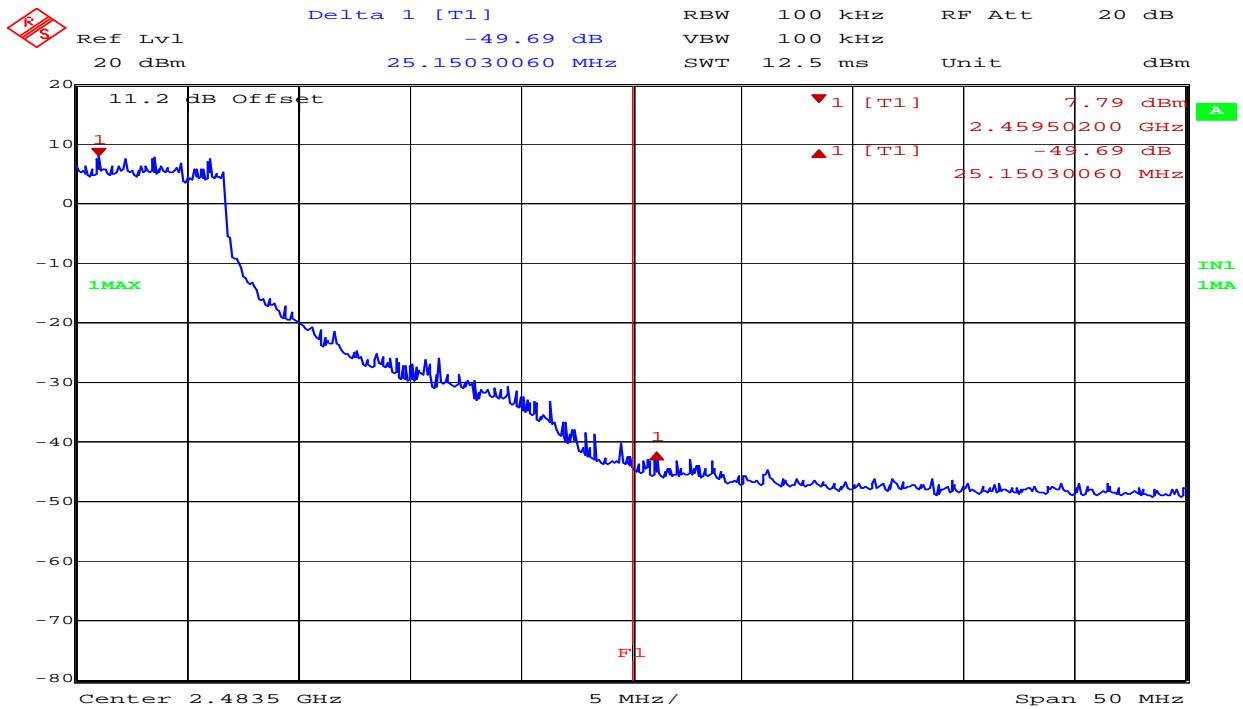
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 27 Conducted Band edge Measurement 802.11g Ch11, 2462 MHz



Title: CG-611 AP7215
 Comment A: 802.11g, Ch11, Ant.port1, Cont.TX., P:16dBm, DR:24mbps, G:4d
 B
 Date: 30.AUG.2007 14:08:38

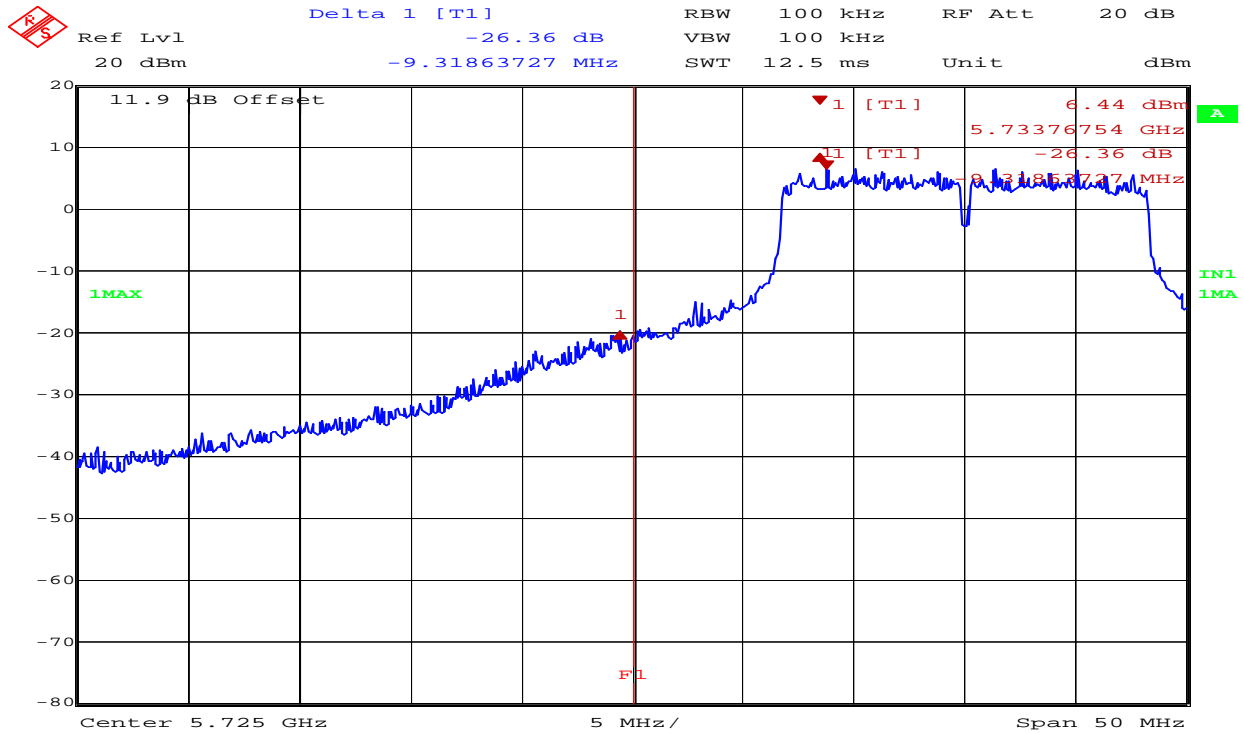
Figure 28 Conducted Band edge Measurement 802.11g Ch10, 2457 MHz



Title: CG-611 AP7215
 Comment A: 802.11g, Ch10, Ant.port1, Cont.TX., P:19dBm, DR:24mbps, G:4d
 B
 Date: 30.AUG.2007 14:10:52

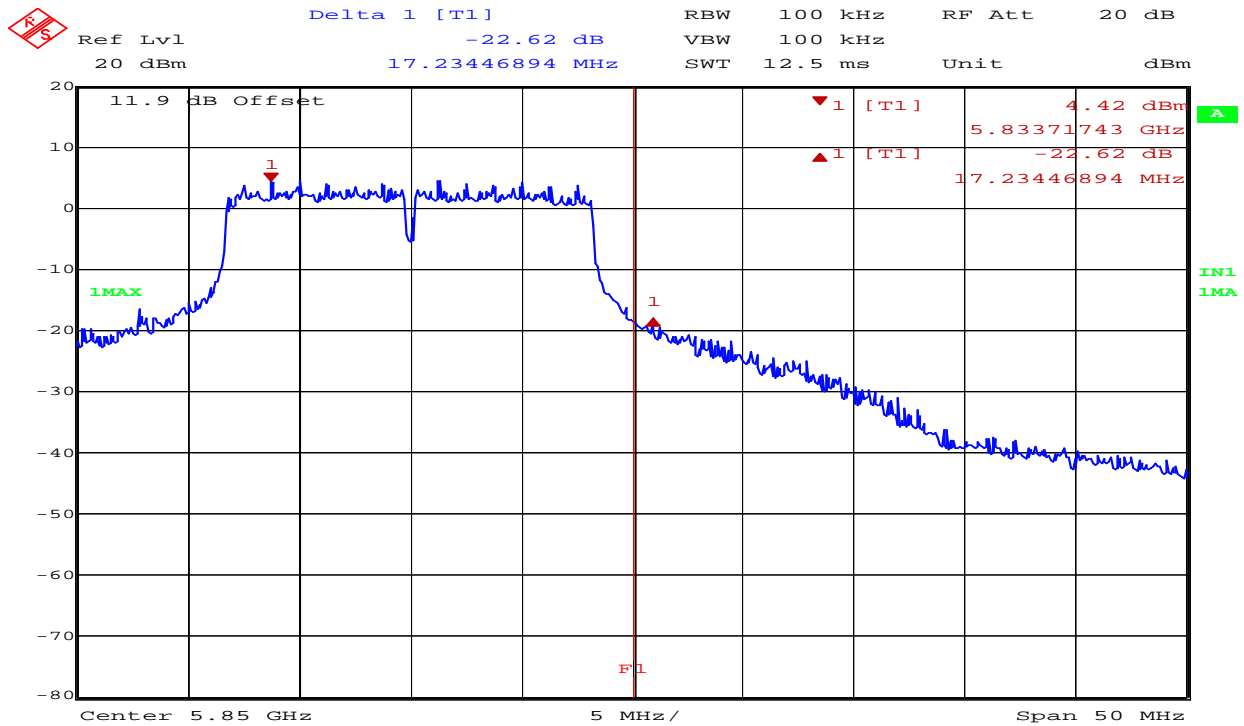
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 29 Conducted Band edge Measurement 802.11a Ch148, 5740 MHz



Title: CG-611 AP7215
Comment A: 802.11a, Ch148, AUX2, Cont.TX., P:21dBm, DR:24mbps, G:10dB
Date: 30.AUG.2007 13:52:16

Figure 30 Conducted Band edge Measurement 802.11a Ch168, 5840 MHz



Title: CG-611 AP7215
Comment A: 802.11a, Ch168, AUX2, Cont.TX., P:21dBm, DR:24mbps, G:10dB
Date: 30.AUG.2007 13:57:05

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.

APPENDIX G: RADIATED SPURIOUS EMISSIONS 30 MHZ – 40 GHZ

G.1. Base Standard & Test Basis

Base Standards	CFR Title 47 – Telecommunications, Part 15 Subpart C-intentional radiators FCC Part 15.209, 15.205, 15.247(d) RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.5
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	NTS Radiated Emissions Test Method E001R7

Specifications

§ 15.205 Restricted bands of operation.

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	
13.36–13.41			

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 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.

NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970

G.2. Deviations

None


G.3. Test Results

The EUT is in compliance with FCC CFR47 Part 15.247/15.205/15.209 Radiated emission limits. The worst case emission was 53.91 dBµV/m with 10 Hz Video bandwidth (Video Average) at 22957.82 MHz in 3 meters measurement, a pass margin of 0.07 dB.

Band Edge Radiated Spurious

Mode / Channel	Measured Frequency (MHz)	Measured Level (dBµV)	Measurement Detector	Correction Factor (dB/m)	Emission Level (dBµV/m)	Limit (dBµV/m)	EUT Orientation	EUT Tested
802.11b Channel 1	2386.44	22.63	Video Average	30.59	53.22	54	Wall Mount	EUT #1
	2385.99	35.23	Peak	30.60	65.83	74	Wall Mount	EUT #1
	2386.44	22.02	Video Average	30.59	52.61	54	Tabletop	EUT #2
	2386.04	33.92	Peak	30.59	64.51	74	Tabletop	EUT #2
802.11g Channel 1	2390.00	20.31	Video Average	30.60	50.91	54	Wall Mount	EUT #1
	2390.50	37.99	Peak	30.60	68.59	74	Wall Mount	EUT #1
	2390.00	22.00	Video Average	30.60	52.60	54	Tabletop	EUT #1
	2389.35	42.13	Peak	30.60	72.73	74	Tabletop	EUT #1
802.11b Channel 11	2483.50	22.73	Video Average	30.80	53.53	54	Wall Mount	EUT #1
	2484.00	42.07	Peak	30.80	72.87	74	Wall Mount	EUT #1
	2483.50	21.91	Video Average	30.80	52.71	54	Tabletop	EUT #2
	2484.35	33.26	Peak	30.81	64.07	74	Tabletop	EUT #2
802.11g Channel 11	2483.50	20.56	Video Average	30.80	51.36	54	Wall Mount	EUT #1
	2483.85	37.64	Peak	30.80	68.44	74	Wall Mount	EUT #1
	2483.50	22.75	Video Average	30.81	53.56	54	Tabletop	EUT #2
	2484.95	42.15	Peak	30.80	72.95	74	Tabletop	EUT #2

30 MHz – 40 GHz Radiated Spurious

	Project Number: CG-611	Tester: David Raynes, Deniz Demirci Spencer Watson, Lixin Wang									
	Model: Nortel Networks AP7215	Test ID: RE02c-10m-611									
Standard: FCC15_B	Measurement Distance:	<1GHz 10 meters >1GHz 3 meters									
Antenna Polarization	Frequency (MHz)	Measured Level (dBµV)	Measurement Detector	Correction Factors (dB/m)	Emission Level (dBµV/m)	Limit Line	Limit (dBµV/m)	Margin (dB)	Mast Height (cm)	Turntable Angle (degrees)	EUT Config. Number
Horizontal	259.19	30.61	Q.Peak	-10.77	19.84	Q.Peak	35.56	15.72	100	80	4
Horizontal	400.42	29.27	Q.Peak	-7.99	21.28	Q.Peak	35.56	14.28	105	322	4
Horizontal	11475.68	34.88	Video Av.	15.80	50.68	Video Av.	53.98	3.30	100	0	2
Horizontal	11559.54	34.43	Video Av.	15.70	50.13	Video Av.	53.98	3.85	100	0	5
Horizontal	11641.09	36.38	Video Av.	15.96	52.34	Video Av.	53.98	1.64	100	0	4
Horizontal	22958.02	71.25	Video Av.	-19.47	51.78	Video Av.	53.98	2.20	133	326	23
Vertical	250.00	40.26	Q.Peak	-11.49	28.77	Q.Peak	35.56	6.79	106	99	4
Vertical	408.95	38.94	Q.Peak	-7.13	31.81	Q.Peak	35.56	3.75	100	104	4
Vertical	4874.90	41.81	Video Av.	5.66	47.47	Video Av.	53.98	6.51	108	122	29
Vertical	22957.82	73.39	Video Av.	-19.48	53.91	Video Av.	53.98	0.07	105	245	25

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.

EUT Configurations:

Conf02: AP7215, Unit # 1 serial # NNTMCN000WYZ, Wall Mount, PS 120VA C60Hz, Ferrite on EUT side 802.11b, Ch: 1, P:21.0dBm, DR:11Mbps, AG:4.0dB, PortB.802.11a, Ch:148, P:21.0dBm, DR:24Mbps, Ant.p1.

Conf04: AP7215, Unit # 1 serial # NNTMCN000WYZ, Wall Mount, PS 120VAC 60Hz, Ferrite on EUT side 802.11b, Ch: 11, P:21.0dBm, DR:11Mbps, AG:4.0dB, PortB.802.11a, Ch:164, P:21.0dBm, DR:24Mbps, Ant.p1.

Conf05: AP7215, Unit # 1 serial # NNTMCN000WYZ, Wall Mount, PS120VAC 60Hz, Ferrite on EUT side 802.11g, Ch:6,P:21.0dBm, DR:11Mbps, AG:4.0dB, PortB.802.11a, Ch:156, P:21.0dBm, DR:24Mbps, Ant.p1.

Conf23: AP7215, Unit # 2 serial # NNTMCN000WZ1, Tabletop, PS: 120VAC 60Hz, Ferrite on EUT side, 802.11a, Ch: 140, P: 21.0dBm, DR: 24 Mbps, AG: 2.0 dB, Port B.

Conf25: AP7215, Unit # 4 serial # NNTMCN002A8F, Tabletop, PS120VAC 60Hz, Ferrite on EUT side 802.11b, Ch:1, P:21.0dBm, DR:11Mbps, AG:4.0dB, Port B. 802.11a, Ch:148, P:21dBm, DR:24Mbps, Ant.p1. AG:2dB

Conf29: AP7215 Unit # 4 serial # NNTMCN002A8F, Tabletop, PS120VAC 60Hz, Ferrite on EUT side 802.11g, Ch:6, P:20dBm, DR:24Mbps, AG:4.0dB, Port B, 802.11a, Ch:160, P:21dBm, DR:24Mbps, Ant.p1, AG:2dB

G.4. Observations

The EUT was tested with low, mid and high channels of 802.11b/g and 802.11a radio modes. Radios were operating in RX and TX mode during these tests. EUT orientation was Wall Mount and Table Top. Only worst case modes were reported.

G.5. Deviations from Normal Operating Mode During Test

None.

G.6. Sample Calculation

Emission Level = Measured Level + Correction Factors.
Margin = Limit – Emission Level.

G.7. Test Data & Photographs

Plots were not provided in order to reduce file size.

G.8. Tested By

This testing was conducted in accordance with the ISO 17025: 2005 scope of accreditation, table 1; Quality Manual.

Name:	David Raynes	Deniz Demirci
Function:	Senior EMC Technologist	EMC Technologist

Name:	Spencer Watson	Lixin Wang
Function:	EMC Technologist	EMC Technologist

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APPENDIX H: PEAK POWER DENSITY

H.1. Base Standard & Test Basis

Base Standard	FCC CFR Title 47 – Telecommunications, Part 15 Subpart C-intentional radiators 15.247 (e) RSS-210 Issue 7 – Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category 1 Equipment A8.2 (b)
Test Basis	RF conducted as per FCC Publication 558074
Test Method	RF conducted as per FCC Publication 558074

H.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.

H.3. Deviations

None

H.4. Test Results

Compliant,
Unit# 1 was tested.
The maximum measured Peak Power Density was 2.40 dBm/3 kHz

Power Spectral Density (dBm/3kHz)

802.11b	Antenna port 1			Antenna port 2		
	2412.481 MHz	2437.354 MHz	2462.481 MHz	2411.996 MHz	2436.986 MHz	2462.355 MHz
	-1.14	2.40	0.03	1.07	0.96	1.18
802.11g	2413.568 MHz	2430.700 MHz	2461.996 MHz	2410.729 MHz	2432.63 MHz	2461.986 MHz
	-7.19	-2.66	-7.27	-8.44	-3.74	-7.42
802.11a	AUX1			AUX2		
	5733.711 MHz	5796.275 MHz	5844.954 MHz	5736.275 MHz	5793.709 MHz	5833.752 MHz
	-6.00	-6.29	-8.47	-5.67	-7.75	-9.23

See plots below

H.5. Deviations from Normal Operating Mode During Test

None.

H.6. Sample Calculation

None.

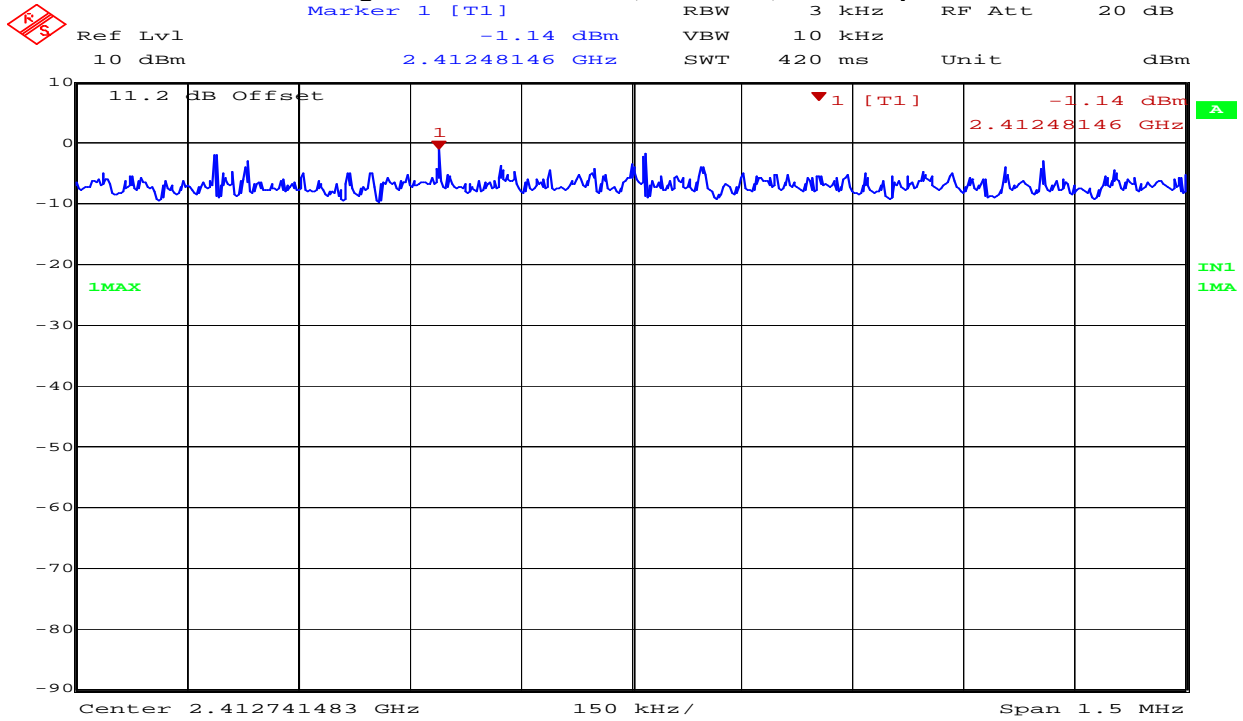
H.7. Tested By

This testing was conducted in accordance with the ISO 17025:2005 scope of accreditation, table 1; Quality Manual.

Name: Deniz Demirci
Function: EMC Technologist

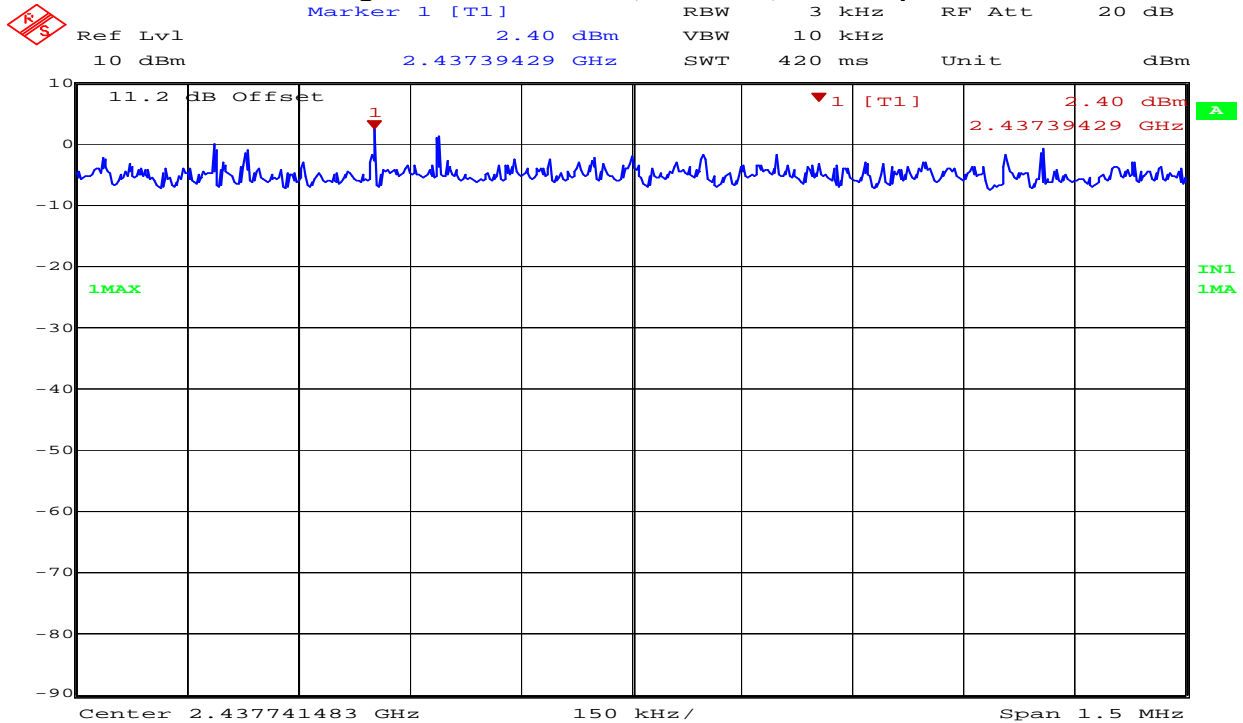
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Figure 31 802.11b Ch1, 2412 MHz, Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11b, Ch1, Antenna port1, Cont.TX., P:21dBm, DR:11mbps, G:4dB
Date: 29.AUG.2007 22:47:01

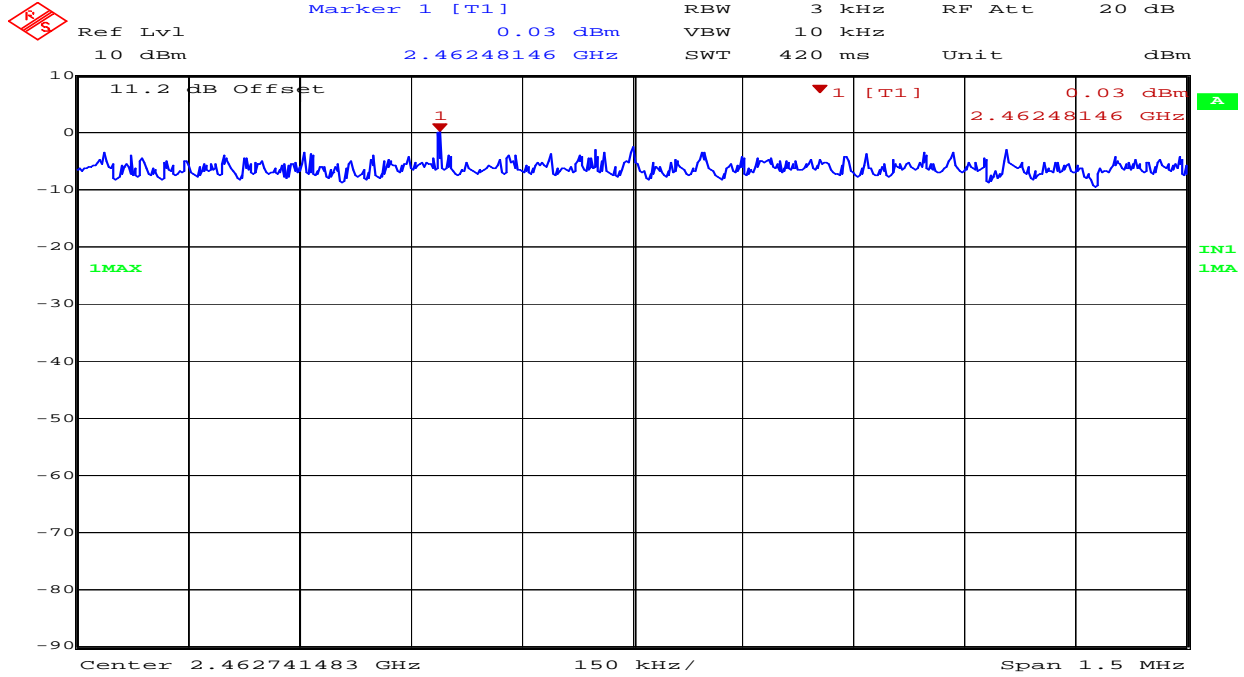
Figure 32 802.11b Ch6, 2437 MHz, Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11b, Ch6, Antenna port1, Cont.TX., P:22dBm, DR:11mbps, G:4dB
Date: 29.AUG.2007 22:42:49

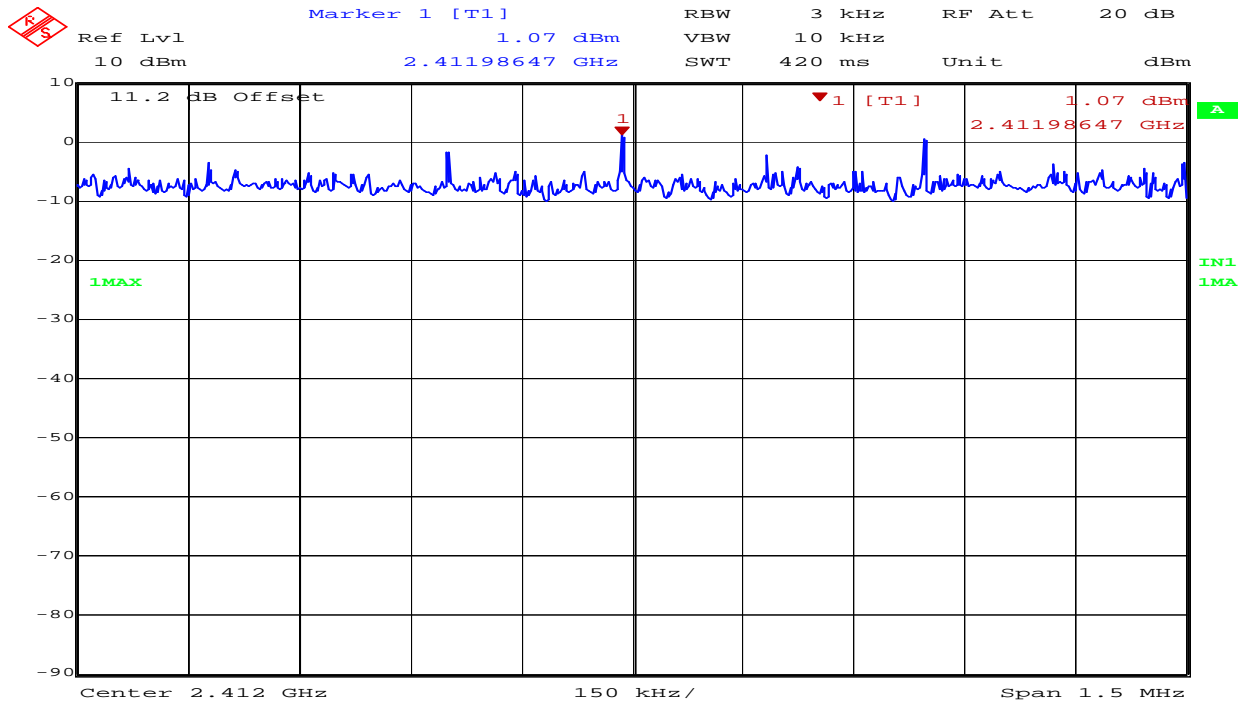
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 33 802.11b Ch11, 2462 MHz, Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11b, Ch11, Antenna port1, Cont.TX., P:21dBm, DR:11mbps, G:4 dB
Date: 29.AUG.2007 22:38:43

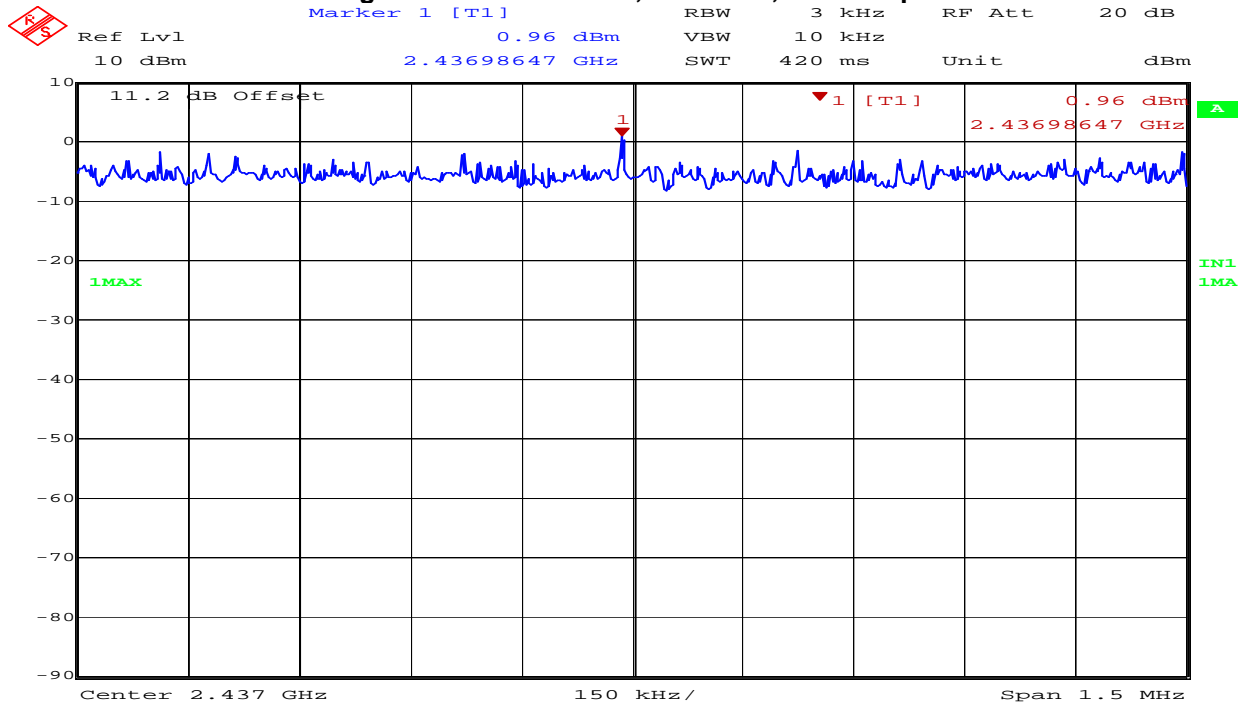
Figure 34 802.11b Ch1, 2412 MHz, Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11b, Ch1, Antenna port2, Cont.TX., P:21dBm, DR:11mbps, G:4 dB
Date: 29.AUG.2007 22:28:02

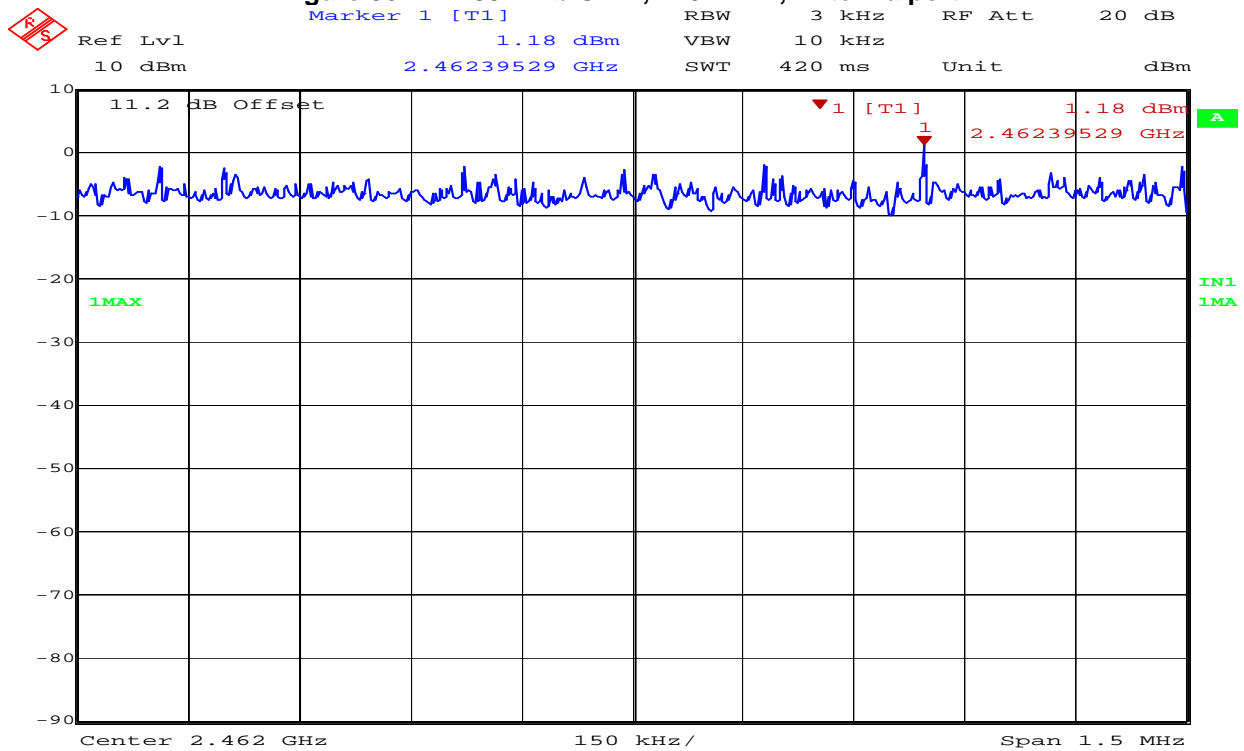
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 35 802.11b Ch6, 2437 MHz, Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11b, Ch6, Antenna port2, Cont.TX., P:22dBm, DR:11mbps, G:4d
B
Date: 29.AUG.2007 22:30:48

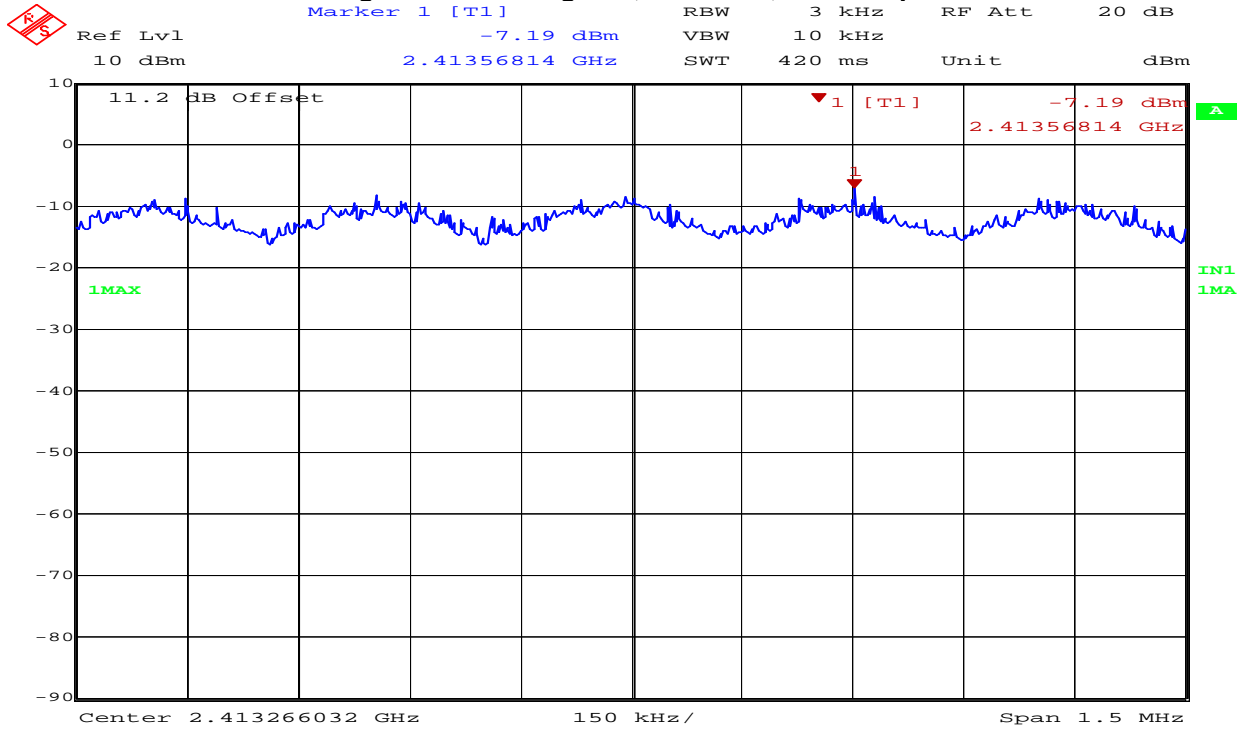
Figure 36 802.11b Ch11, 2462 MHz, Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11b, Ch11, Antenna port2, Cont.TX., P:21dBm, DR:11mbps, G:4
dB
Date: 29.AUG.2007 22:33:42

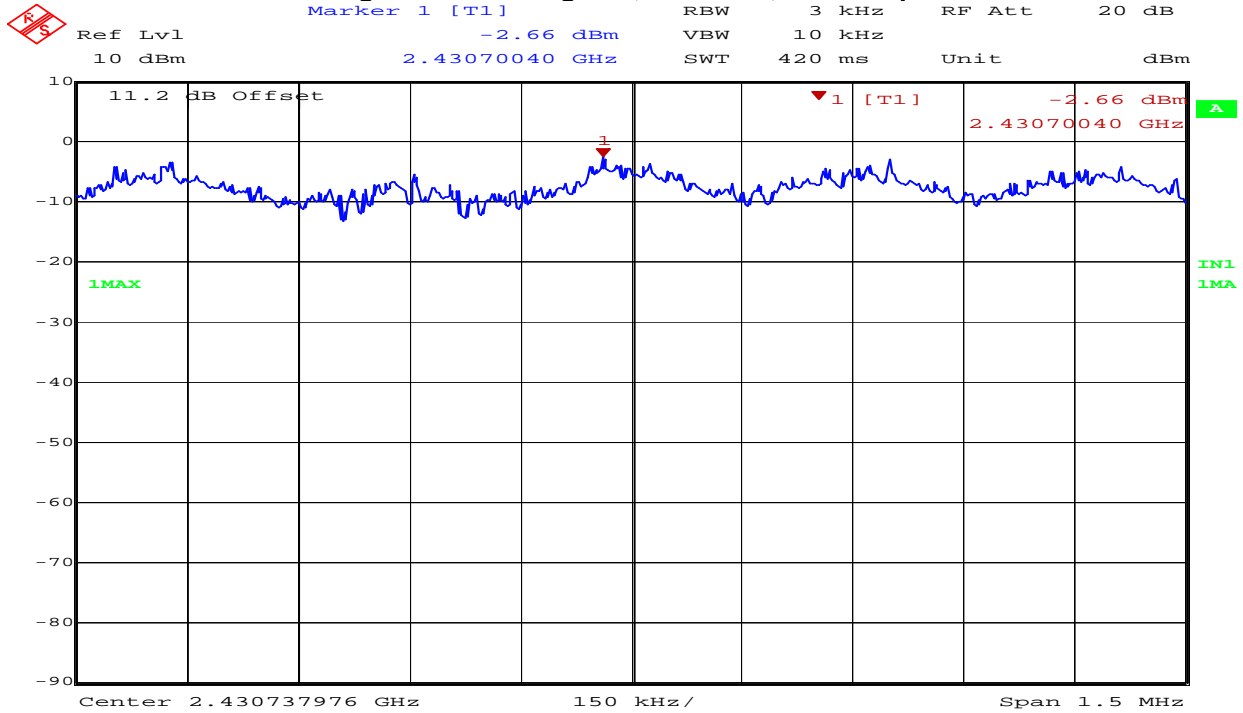
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 37 802.11g Ch1, 2412 MHz, Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11g, Ch1, Antenna port1, Cont.TX., P:16dBm, DR:24mbps, G:
4dB
Date: 29.AUG.2007 22:04:11

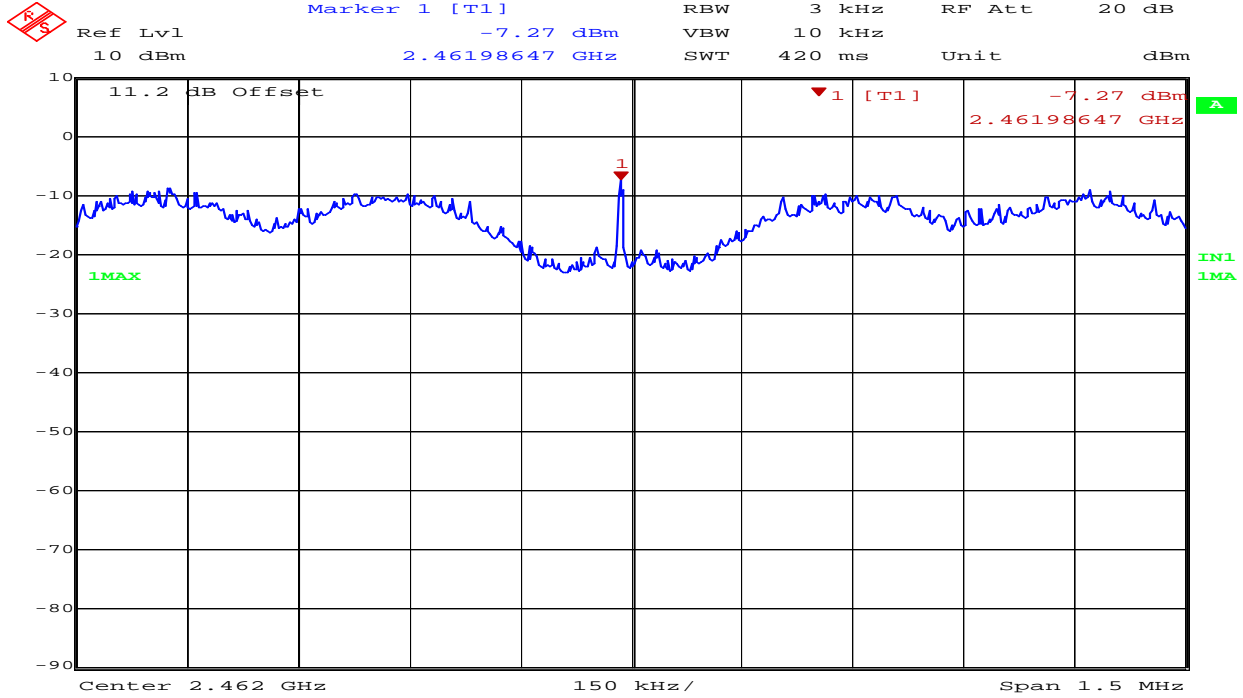
Figure 38 802.11g Ch6, 2437 MHz, Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11g, Ch6, Antenna port1, Cont.TX., P:20dBm, DR:24mbps, G:
4dB
Date: 29.AUG.2007 21:58:17

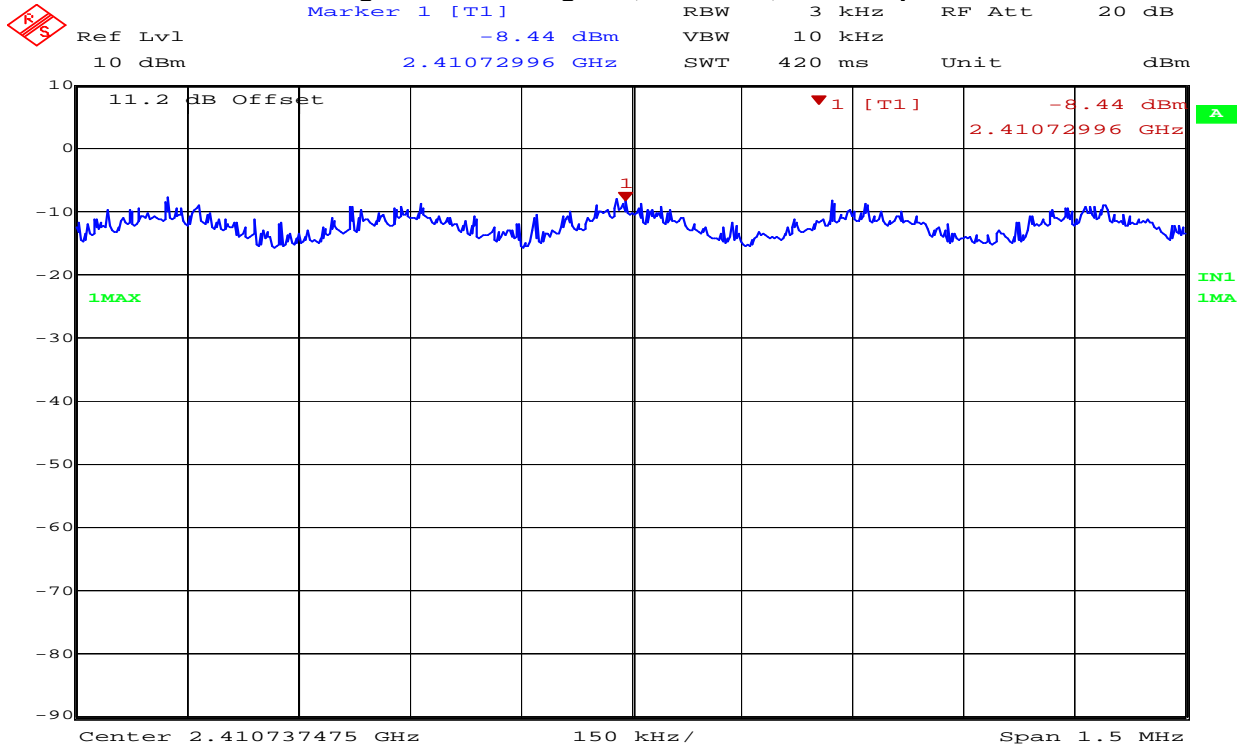
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 39 802.11g Ch11, 2462 MHz, Antenna port 1



Title: CG-611 AP7215
Comment A: 802.11g, Ch11, Antenna port1, Cont.TX., P:16dBm, DR:24mbps, G:4dB
Date: 29.AUG.2007 22:08:19

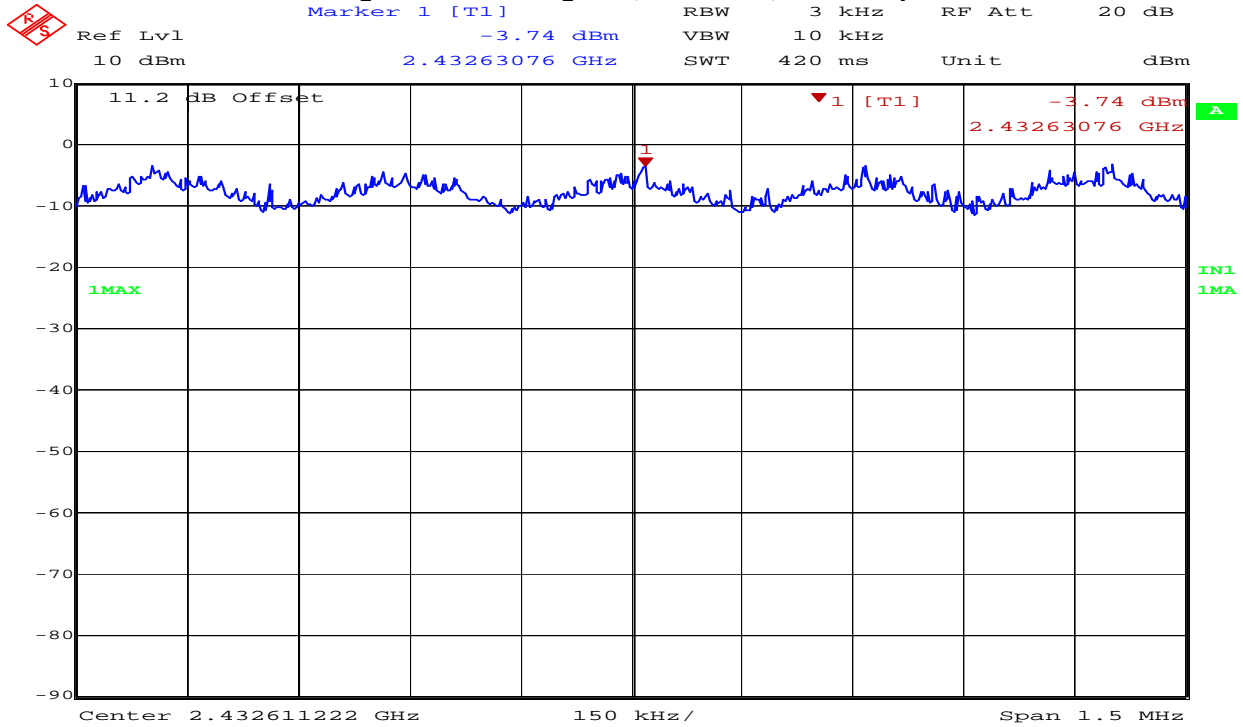
Figure 40 802.11g Ch1, 2412 MHz, Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11g, Ch1, Antenna port2, Cont.TX., P:16dBm, DR:24mbps, G:4dB
Date: 29.AUG.2007 22:19:08

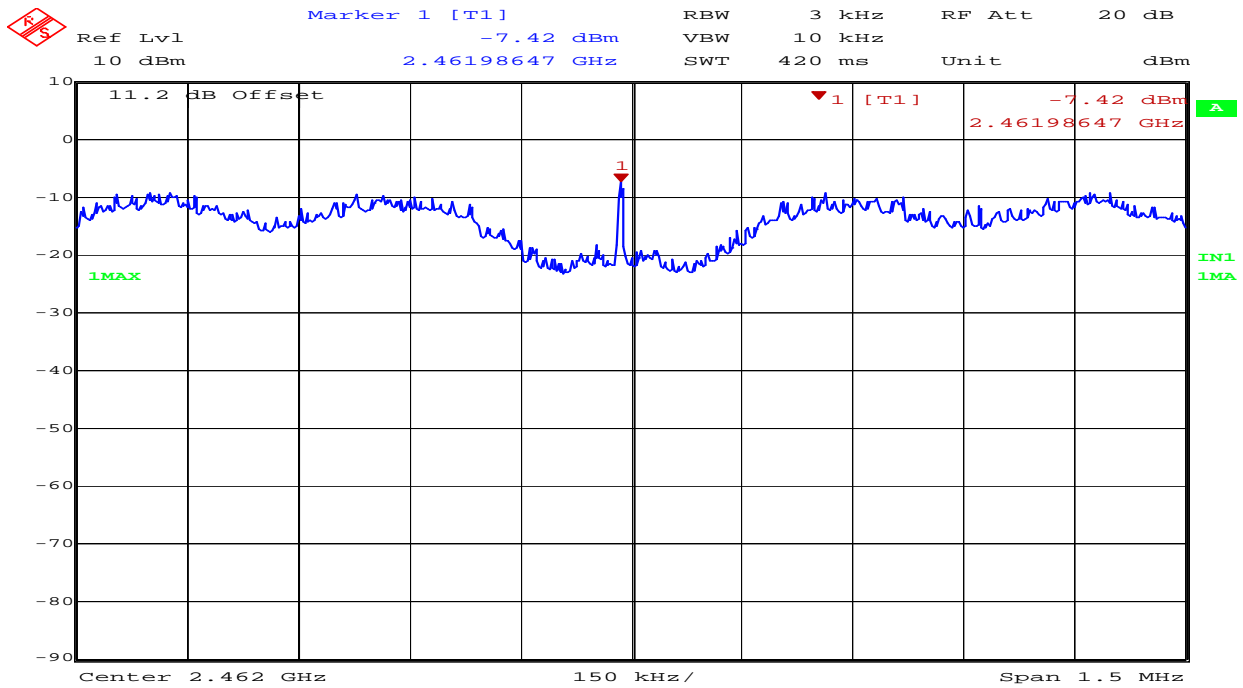
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 41 802.11g Ch6, 2437 MHz, Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11g, Ch6, Antenna port2, Cont.TX., P:20dBm, DR:24mbps, G:
4dB
Date: 29.AUG.2007 22:15:29

Figure 42 802.11g Ch11, 2462 MHz, Antenna port 2



Title: CG-611 AP7215
Comment A: 802.11g, Ch11, Antenna port2, Cont.TX., P:16dBm, DR:24mbps, G:
4dB
Date: 29.AUG.2007 22:11:26

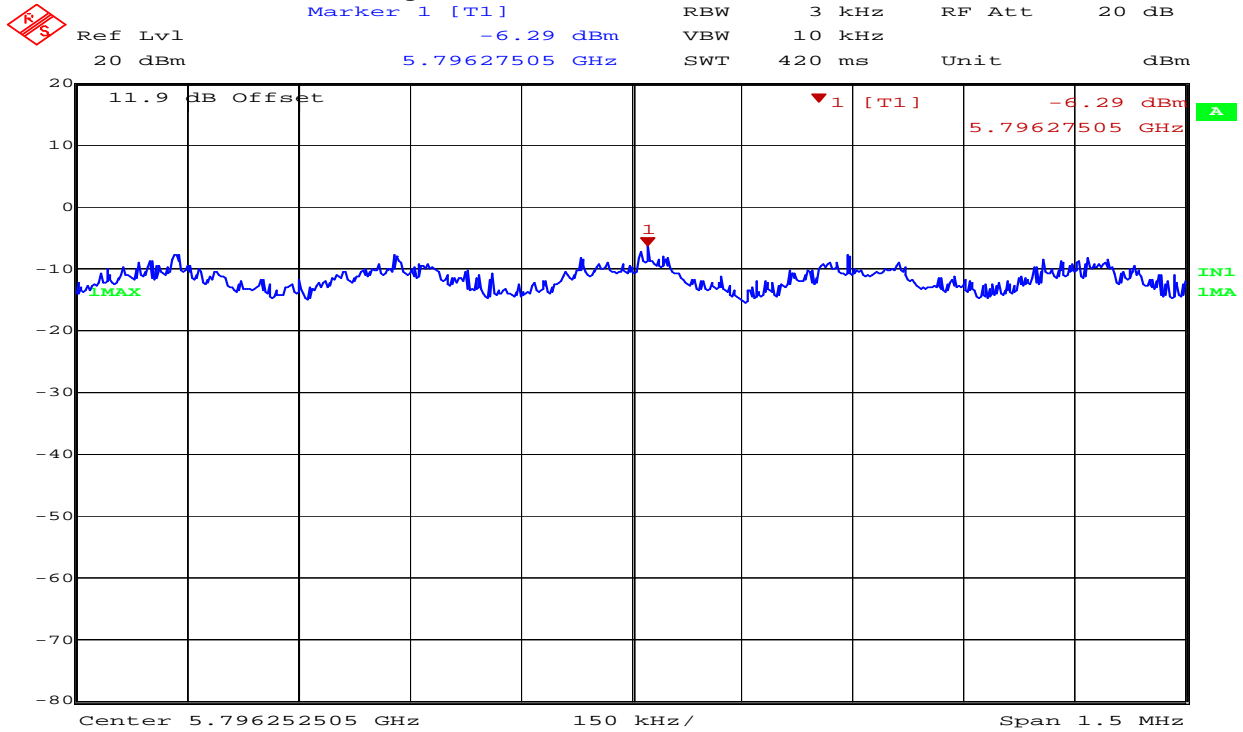
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 43 802.11a Ch148, 5740 MHz, AUX1



Title: CG-611 AP7215
Comment A: 802.11a, Ch148, AUX1, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
Date: 30.AUG.2007 12:59:27

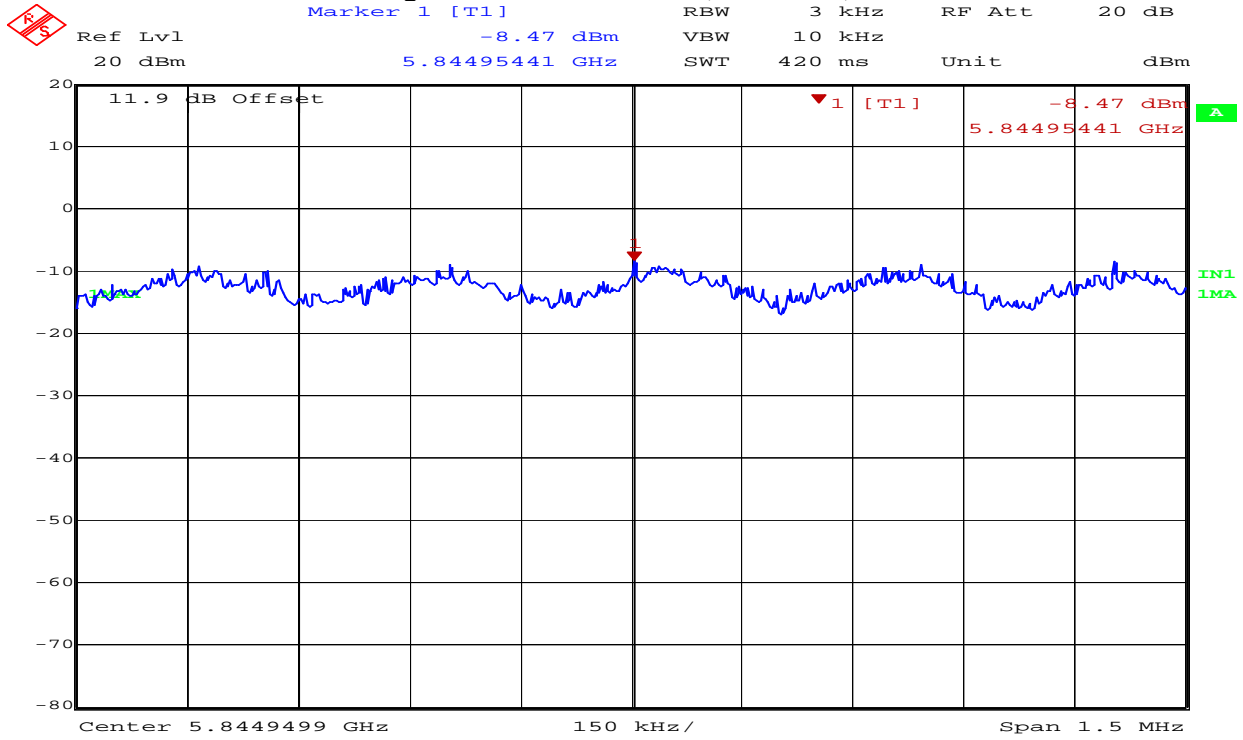
Figure 44 802.11a Ch160, 5800 MHz, AUX1



Title: CG-611 AP7215
Comment A: 802.11a, Ch160, AUX1, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
Date: 30.AUG.2007 13:02:53

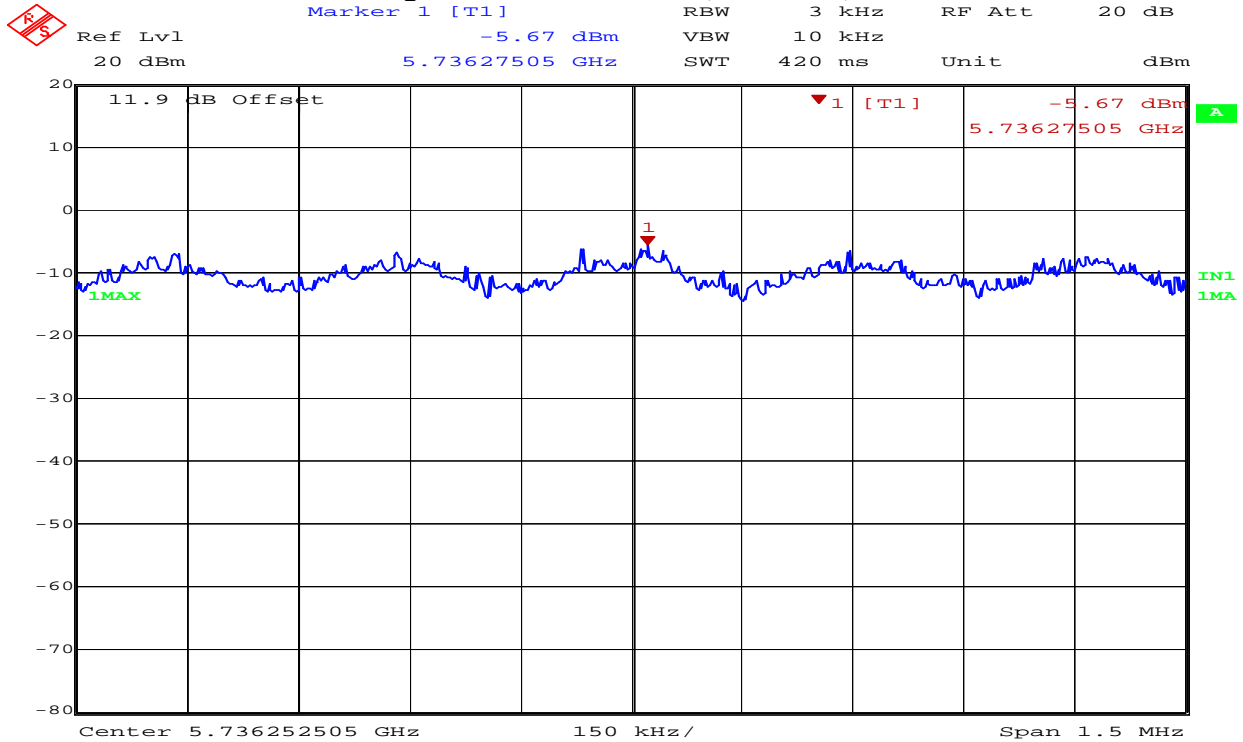
The test results contained in this report refer exclusively to the product(s) presented for testing. The test results do not cover models or products not referred herein. This test report should not be published or duplicated in whole or part without permission from the testing body and the customer.

Figure 45 802.11a Ch168, 5840 MHz, AUX1



Title: CG-611 AP7215
Comment A: 802.11a, Ch168, AUX1, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
Date: 30.AUG.2007 13:05:45

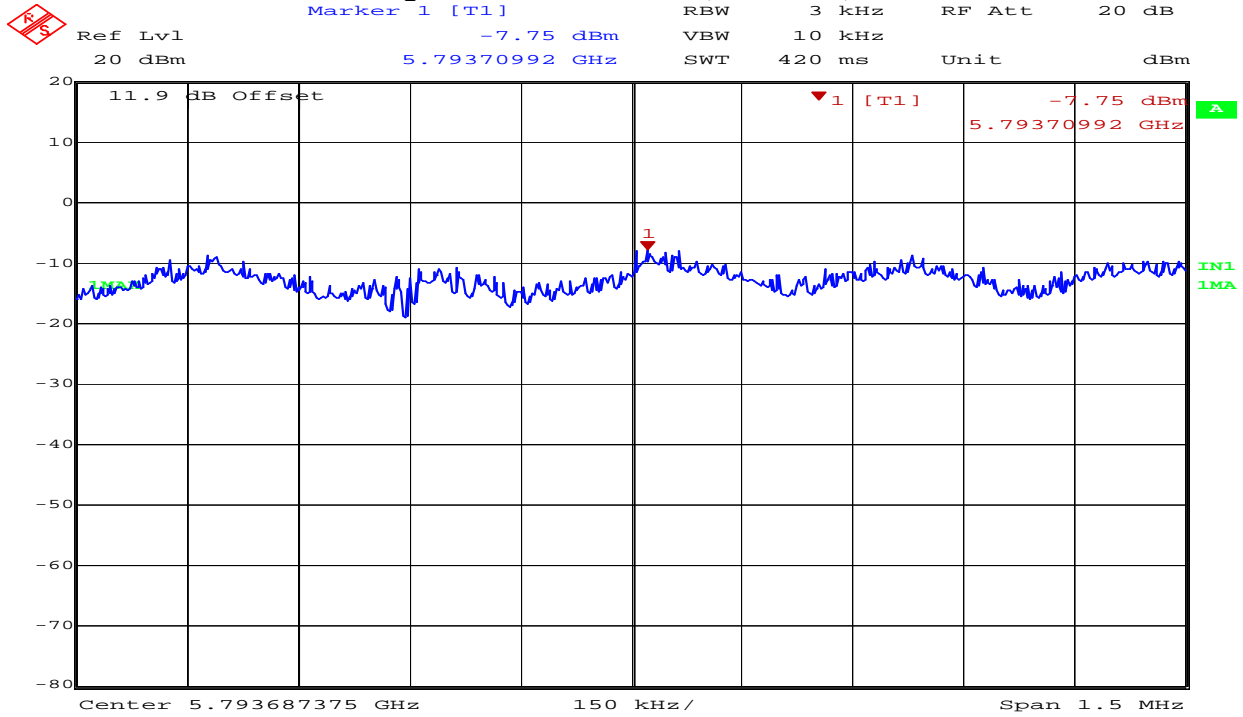
Figure 46 802.11a Ch148, 5740 MHz, AUX2



Title: CG-611 AP7215
Comment A: 802.11a, Ch148, AUX2, Cont.TX., P:21dBm, DR:24Mbps, G:10dB
Date: 30.AUG.2007 13:26:59

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.

Figure 47 802.11a Ch160, 5800 MHz, AUX2



Title: CG-611 AP7215
Comment A: 802.11a, Ch160, AUX2, Cont.TX., P:21dBm, DR:24mbps, G:10dB
Date: 30.AUG.2007 13:12:05

Figure 48 802.11a Ch168, 5840 MHz, AUX2



Title: CG-611 AP7215
Comment A: 802.11a, Ch168, AUX2, Cont.TX., P:21dBm, DR:24mbps, G:10dB
Date: 30.AUG.2007 13:08:59

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.

APPENDIX I: MEASUREMENT EQUIPMENT

I.1. Conducted Radio Measurement Equipment

Descriptions		Manufacturer	Type/Model	Serial #	Cal Due	Cal Date
EMI Receiver 9 kHz – 40 GHz	<input checked="" type="checkbox"/>	Rohde & Schwarz	ESI	CG0109	13SEP07	13SEP06
Attenuator	<input checked="" type="checkbox"/>	Weinschel	10 dB	19981	30APR08	30APR07
RF cable	<input checked="" type="checkbox"/>	Sucoflex	104	115776	30APR08	30APR07
Digital Barometer / Thermometer	<input checked="" type="checkbox"/>	Cole-Parmer	1870	CG0728	19JUN08	19JUN07

I.2. Conducted Voltage Emissions 150 kHz – 30 MHz Measurement Equipment

Descriptions		Manufacturer	Type/Model	Serial #	Cal Due	Cal Date
10m ANECHOIC CHAMBER						
LISN A Switch	<input checked="" type="checkbox"/> A	NA	NA	CG0675	18JAN08	18JAN06
Cable Switch to Limiter	<input checked="" type="checkbox"/> A	NA	NA	CG0663		
Cable LISN to Switch	<input checked="" type="checkbox"/> A1	Sucoflex	NA	CG0667	18JAN08	18JAN06
	<input checked="" type="checkbox"/> A4	Sucoflex	NA	CG0671	18JAN08	18JAN06
Table Top LISN	<input checked="" type="checkbox"/> TT	EMCO	3825	CG0367	05JAN08	05JAN06
Digital Barometer / Thermometer	<input checked="" type="checkbox"/>	Cole-Parmer	1870	CG0728	19JUN08	19JUN07
CONTROL ROOM						
Test Receiver		Rohde & Schwarz	ESMI	CG0433/ CG0434	27FEB08	27FEB07
Mast Controller		EMCO	2090	CG0179	NA	NA
Cable Transient limiter to Receiver		NA	NA	CG0678	18JAN08	18JAN06
LISN A Limiter	<input checked="" type="checkbox"/> A	NA	NA	CG0677	18JAN08	18JAN06
Cable to Limiter	<input checked="" type="checkbox"/> A	NA	NA	CG0663		

I.3. Radiated Emissions 30 MHz – 1 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Bilog Antenna	Chase	CBL 6112B	CG0314	24AUG07	24AUG06
RF Cable	Suhner Sucoflex	Ferrite bead loaded cable	CG0398	13APR08	13APR06
Digital Barometer / Thermometer	Cole-Parmer	1870	CG0728	19JUN08	19JUN07

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CONTROL ROOM					
Test Receiver	Rohde & Schwarz	ESMI	CG0433/ CG0434	27FEB08	27FEB07
Mast Controller	EMCO	2090	CG0179	N/A	N/A
Multi Device Controller TT1	EMCO	2090	CG0178	N/A	N/A
Cable	Suhner Sucoflex	NA	CG0690	13APR08	13APR06
Amplifier	Hewlett Packard	8447F	CG0177		

I.4. Radiated Emissions 1 GHz – 40 GHz Measurement Equipment

Description	Manufacturer	Type/Model	Asset #	Cal Due	Cal Date
10m ANECHOIC CHAMBER					
Horn Antenna (Rx) 1 GHz – 18 GHz	<input checked="" type="checkbox"/> EMCO	3115	CG0103	30AUG08	30AUG06
Standard Gain Horn (Rx) 18 GHz – 26.5 GHz	<input checked="" type="checkbox"/> EMCO	3160-09	CG0075	N/A (1)	27NOV01
Standard Gain Horn (Rx) 26.5 GHz – 40 GHz	<input checked="" type="checkbox"/> EMCO	3160-10	CG0076	N/A (1)	27NOV01
High pass filter f>1000MHz	<input checked="" type="checkbox"/> MicroTronics	HPM14576	CG0963	10AUG08	10AUG06
Band Reject Filter 2400MHz<f<2500MHz	<input checked="" type="checkbox"/> MicroTronics	BRM50702	CG0933	02MAR08	02MAR06
Band Reject Filter 5725MHz<f<5875MHz	<input checked="" type="checkbox"/> MicroTronics	BRC50705	CG0904	02MAR08	02MAR06
LNA 1 GHz<f<18 GHz	<input checked="" type="checkbox"/> Miteq	JSD00121	CG0317	10AUG08	10AUG06
LNA 18GHz<f<26.5GHz	<input checked="" type="checkbox"/> Miteq	JSD00119	CG0482	19JAN09	19JAN07
LNA 26.5GHz<f<40GHz	<input checked="" type="checkbox"/> Miteq	JSD00120	CG0483	19JAN09	19JAN07
Cable from Antenna to LNA	Sucoflex 104	2422774A	CG0686	10AUG08	10AUG06
Cable from LNA to SA	Sucoflex 100	115757-4	CG0686	10AUG08	10AUG06
Spectrum Analyzer 9 kHz – 40 GHz	Rohde & Schwarz	FSEK-20	CG0118	19JUN08	19JUN07
LNA DC Power Supply	Xantrex	LXO 30-2	CG0493	N/A	N/A
HPIB Extender	HP	37204	CG0110	N/A	N/A
Digital Barometer / Thermometer	Cole-Parmer	1870	CG0728	19JUN08	19JUN07
CONTROL ROOM					
PC with Man. ctrl S/W	N/A	N/A	N/A	N/A	N/A
HPIB Extender	HP	37204	CG0181	N/A	N/A
Mast Controller	EMCO	2090	CG0179	N/A	N/A
Multi Device Controller	EMCO	2090	CG0178	N/A	N/A

(1): As per manufacturer recommend, this item does not require periodic calibration. Its electromagnetic performance is almost exclusively depended on the physical dimension of the horn. A thorough mechanical check is all that is needed to guarantee the antenna performance.

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END OF DOCUMENT

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NTS Product Integrity Laboratory, 5151-47th Street N.E. Tel: 403-568-6605, Fax: 403-568-6970