1701 E. Plano Parkway, Suite 150
Plano, Texas 75074
Phone: (972) 509-2566
Fax: (972) 509-0073

Certification Test Report

CFR 47 FCC Part 2 and Part 27, Subpart C

Model: 2.3-BTS3A-R1 (AC Unit)
2.3-BTS3T-R1 (24 VDC Unit)
2.3-BTS3F-R1 (-48 VDC Unit)

FCC ID No.: PL6-2300-BTS3-R1

Project Code: W6398

Revision: 1

Prepared for:	Navini Networks 2240 Campbell Creek Blvd. Suite 110 Richardson, TX 75082
Author:	Tom Tidwell, Manager of Wireless Services
Issued:	18 December, 2006

Report Summary

NTS Plano

Accreditation Numbers: FCC: 101741
IC: 46405-4319 File # IC-4319A-1

Applicant: Navini Networks, Inc.
2240 Campbell Creek Blvd.
Suite 110
Richardson, TX 75082

Customer Representative: Larry Zhou

EUT Description:

EUT Description	Manufacturer	Model	Revision	Serial Number
The equipment tested is a point-to-multipoint base station for data transmission.	Navini Networks	2.3-BTS3A-R1 (AC Unit) 2.3-BTS3T-R1 (24 VDC Unit) 2.3-BTS3F-R1 (-48 VDC Unit)	Digital: revA RF: revC	Digital: 054502001 RF: 061502001

Test Summary

Appendix	Test/Requirement Description	Deviations from:			Pass / Fail	Applicable Rule Parts
		Base Standard	Test Basis	NTS Procedure		
A	RF Power Output	No	No	No	*NOT TESTED	CFR 47, Part 2, Para. 2.1046 CFR 47, Part 27, Para. 27.50(a)
B	Modulation Characteristics	No	No	No	PASS	CFR 47, Part 2, Para. 2.1047
C	Occupied Bandwidth	No	No	No	PASS	CFR 47, Part 2, Para. 2.1049 CFR 47, Part 27, Para. 27.53(a)
D	Spurious Emissions at Antenna Terminals	No	No	No	PASS	CFR 47, Part 2, Para. 2.1051 CFR 47, Part 27, Para. 27.53(a)
E	Field Strength of Spurious Radiation	No	No	No	PASS	CFR 47, Part 2, Para. 2.1053 CFR 47, Part 27, Para. 27.53(a)
F	Frequency Stability	No	No	No	*NOT TESTED	CFR 47, Part 2, Para. 2.1055 CFR 47, Part 24, Para. 27.54

*RF Power Output and Frequency stability was not re-tested since no rf power or frequency-determining components were modified.

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 Test Engineer

Table of Contents

Register of revisions

Revision	Reason for Revision	Release Date
0	Original	11/29/2006
1	Re-plotted using average detector (pg. 36 – 63 and pg. 89)	12/18/06

INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by NTS Plano to demonstrate that the 2.3-BTS3A-R1, 2.3-BTS3T-R1, and 2.3-BTS3F-R1 base station transmitter continues to comply to FCC Part 27 Subparts C and M in accordance with the certification requirements of CFR 47, Part 2 following modification as described in the FCC filing. Modification was made to improve the spurious emission performance of the device. No modification was made to frequency-determining components.

2.0 EUT DESCRIPTION

2.1 CONFIGURATION

Description of EUT

	Name	Model	Revision	Serial Number
EUT	BTS	2.3-BTS3A-R1 2.3-BTS3T-R1 2.3-BTS3F-R1	Digital: revA RF: revC	Digital: 054502001 RF: 061502001
RF Exposure Classification	Fixed Outdoor			
Channels/Frequency Range	2305 – 2320 MHz 2345 – 2380 MHz			
Power	2 watts at antenna terminals (avg.) 20 watts at antenna terminals (peak)			
Emission Designator:	5M00F9W 5M00W7D			
TX antenna details	The antenna is fixed-mounted on outdoor permanent structures. RF exposure is addressed at the time of licensing.			
Functional Description	The device tested is used to deliver broadband data services.			

2.1.1 EUT POWER

Voltage	120 Vac, 60 Hz
Number of Feeds	Single phase (L1 and Neutral)

2.2 EUT CABLES

Quantity	Model/Type	Routing		Shielded / Unshielded	Description	Cable Length (m)
		From	To			
1	Coaxial	EUT	Test equipment	Shielded	Coaxial cable	3
1	Ethernet	EUT	Support/configuration PC	unshielded		2

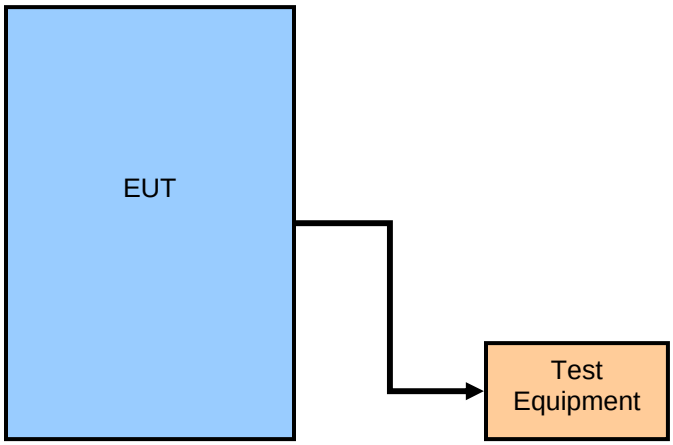
2.3 MODE OF OPERATION DURING TESTS

3.0 SUPPORT EQUIPMENT

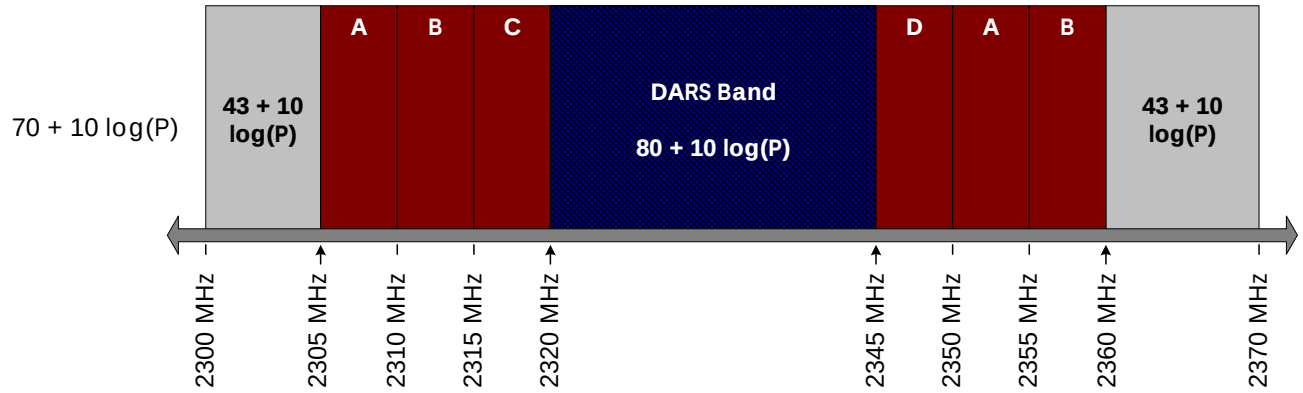
3.1 CONFIGURATION

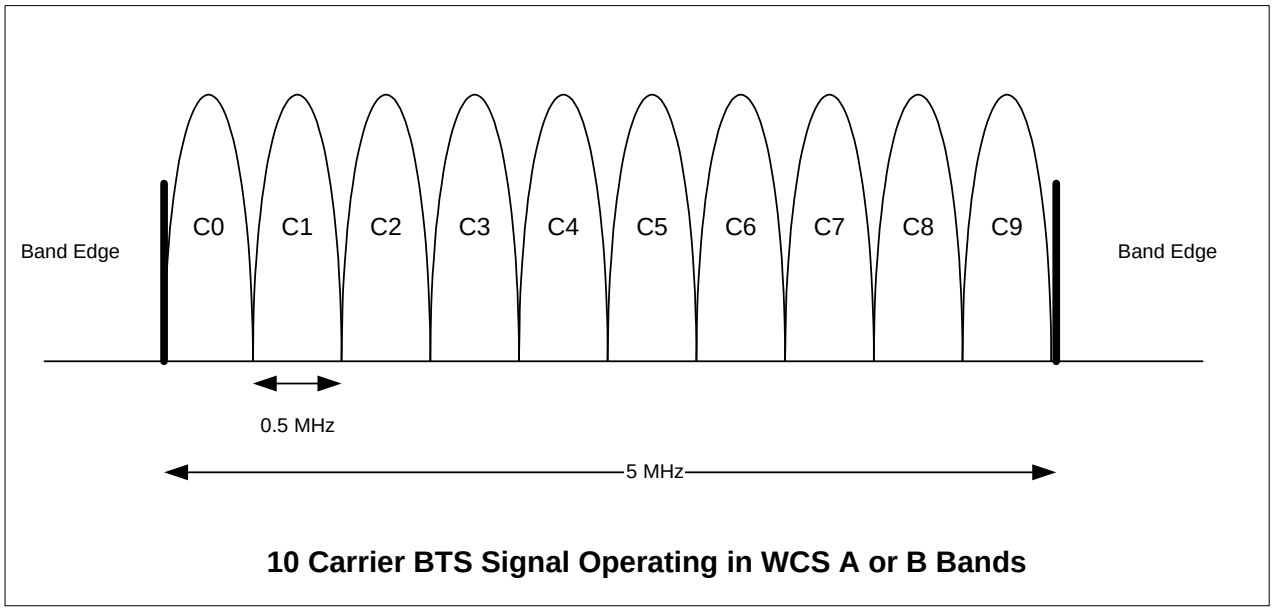
The radio was activated using customer-supplied test software. The software allowed the test engineer to change modulation modes and data rates and transmit channel.

3.2 TEST BED/PERIPHERAL CONFIGURATION

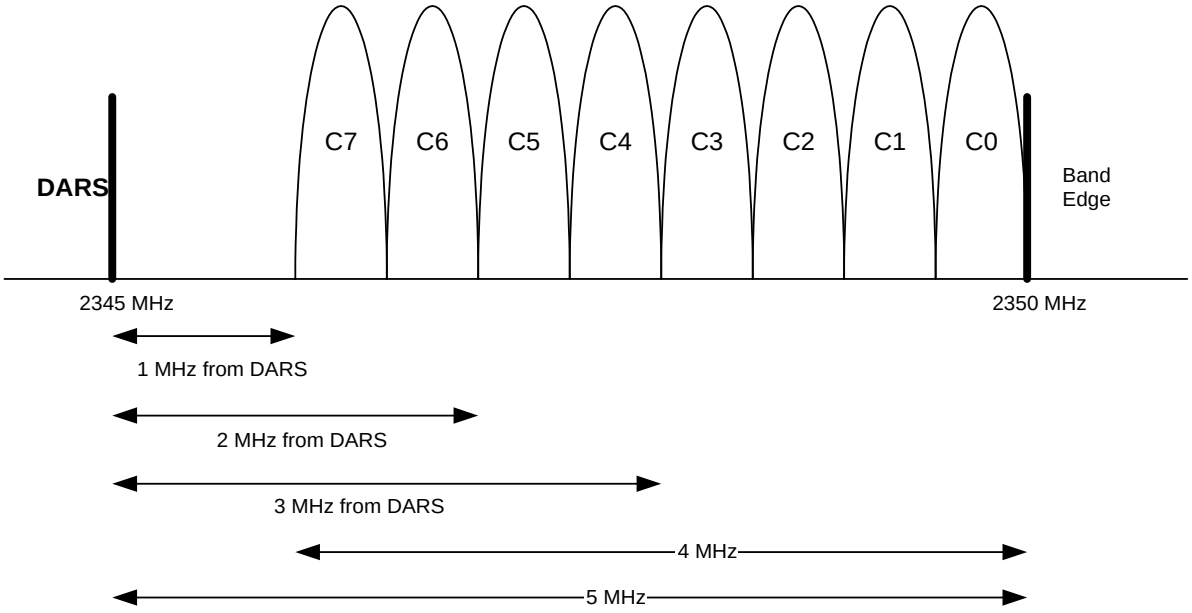


4.0 FREQUENCY SPECTRUM

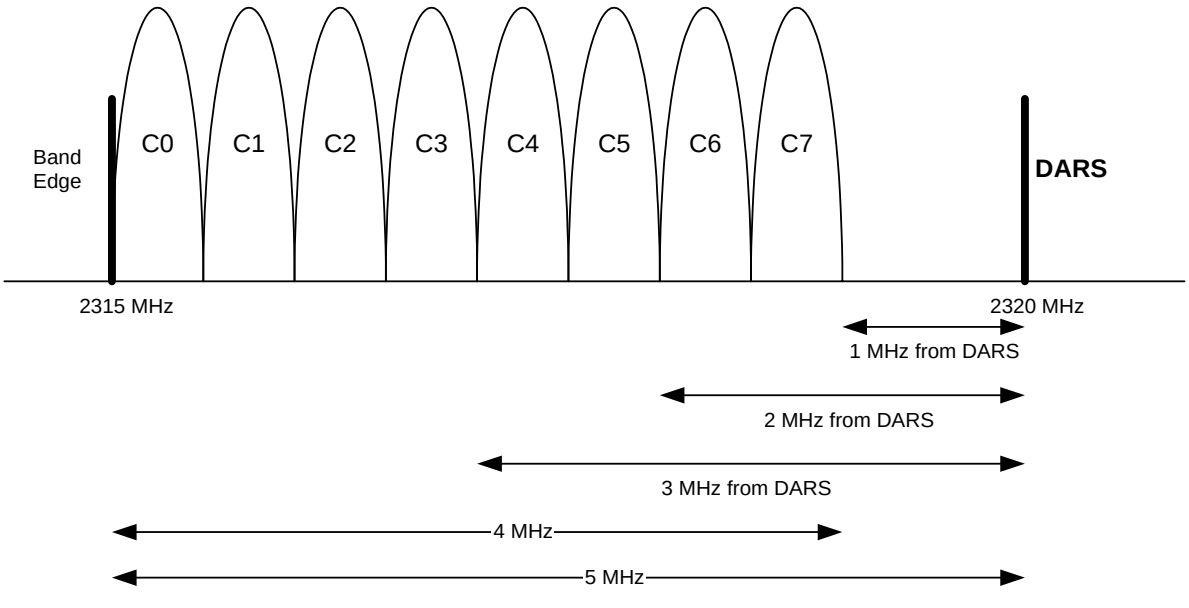




10 Carrier BTS Signal Operating in WCS A or B Bands



8 Carrier BTS Signal Operating in WCS D Band



8 Carrier BTS Signal Operating in WCS C Band

APPENDICES

APPENDIX A: 2.1046 RF POWER OUTPUT

A.1. Base Standard & Test Basis

Base Standard	FCC PART 2.1046
Test Basis	TIA 603-C, 2004
Test Method	TIA 603-C, 2004

A.2. Specifications

27.50 Power and antenna height requirements
(a) The following power limits apply to the 2305–2320 MHz and 2345–2360 MHz bands:
(1) Fixed, land, and radiolocation land stations transmitting are limited to 2000 watts peak equivalent isotropically radiated power (EIRP).
(2) Mobile and radiolocation mobile stations transmitting are limited to 20 watts EIRP peak power.

Applicable RF Power Limit from Above: The maximum power is 2000 watts peak eirp.

A.3. Deviations

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

A.4. Test Procedure

TIA 603-C, 2004 and 27.50(h)(2)(i)

A.5. Test Results

Not tested

A.6. Operating Mode During Test

The transmitter was tested while in a continuous transmit mode.

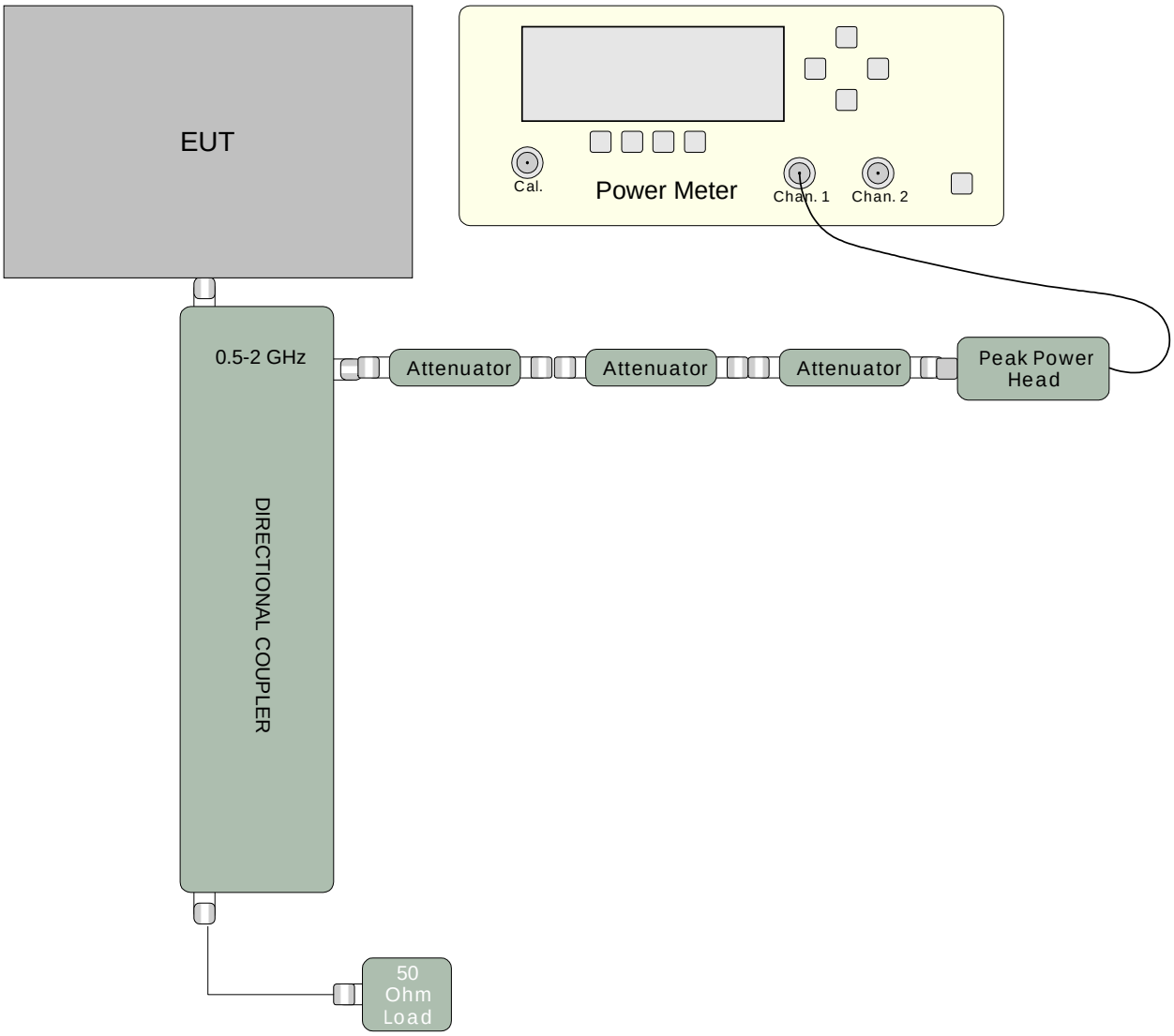
A.7. Sample Calculation

Rf power(watts) = $10^{(\text{rf power(dBm)}/10)}$ x 1000

A.8. Test Data

Test Date: Not Tested

A.9. Test Diagram



A.10. Tested By

Name: Tom Tidwell,
Function: Manager of Wireless Services

APPENDIX B: 2.1047 MODULATION CHARACTERISTICS

B.1. Base Standard & Test Basis

Base Standard	FCC 2.1047
Test Basis	FCC 2.1047 Modulation Characteristics
Test Method	TIA 603-C, 2004

B.2. Specifications

2.1047 – Modulation Characteristics

(a) *Voice modulated communication equipment.* A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.
(b) *Equipment which employs modulation limiting.* A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.
(c) *Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power.* A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.
(d) *Other types of equipment.* A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

B.3. Deviations

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

B.4. Test Method

This device generates a complex digitally modulated waveform.

B.5. Test Results

Not applicable – The device does not produce an analogue modulated waveform. The device produces either a CDMA waveform (Navini mode) or OFDM (OFDM mode) waveform.

Test Data Summary

Emission Designators: 5M00F9W Navini mode
5M00W7D OFDM mode

B.6. Test Diagram

N/A

B.7. Tested By

Name: Tom Tidwell
Function: Manager of Wireless Services

APPENDIX C: 2.10.49 OCCUPIED BANDWIDTH

C.1. Base Standard & Test Basis

Base Standard	FCC 2.1049
Test Basis	FCC 2.1049 Occupied Bandwidth
Test Method	TIA 603-C, 2004

C.2. Specifications

27.53

(a) For operations in the bands 2305–2320 MHz and 2345–2360 MHz, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by the following amounts:

(1) *For fixed, land, and radiolocation land stations:* By a factor not less than 80 + 10 log (p) dB on all frequencies between 2320 and 2345 MHz;

(2) *For mobile and radiolocation mobile stations:* By a factor not less than 110 + 10 log (p) dB on all frequencies between 2320 and 2345 MHz;

(3) *For fixed, land, mobile, radiolocation land and radiolocation mobile stations:* By a factor not less than 70 + 10 log (p) dB on all frequencies below 2300 MHz and on all frequencies above 2370 MHz; and not less than 43 + 10 log (p) dB on all frequencies between 2300 and 2320 MHz and on all frequencies between 2345 and 2370 MHz that are outside the licensed bands of operation;

(4) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth;

(5) In complying with the requirements in §27.53(a)(1) and §27.53(a)(2), WCS equipment that uses opposite sense circular polarization from that used by Satellite DARS systems in the 2320–2345 MHz band shall be permitted an allowance of 10 dB;

(6) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the edges, both upper and lower, of the licensee's bands of operation as the design permits;

(7) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power;

C.3. Deviations

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

C.4. Test Method

TIA 603-C, 2004 and 27.53(a)

C.5. Test Results

Compliant.

C.6. Deviations from Normal Operating Mode During Test

None.

C.7. Sample Calculation

70 + 10 log(P)
70 + 10 log(2)
70 + 10 * 0.3
70 + 3 = 73 dB
33 dBm – 73 dB = -40 dBm

C.8. Test Data

See plots following.

Figure 1 A Low Band - Navini Mode

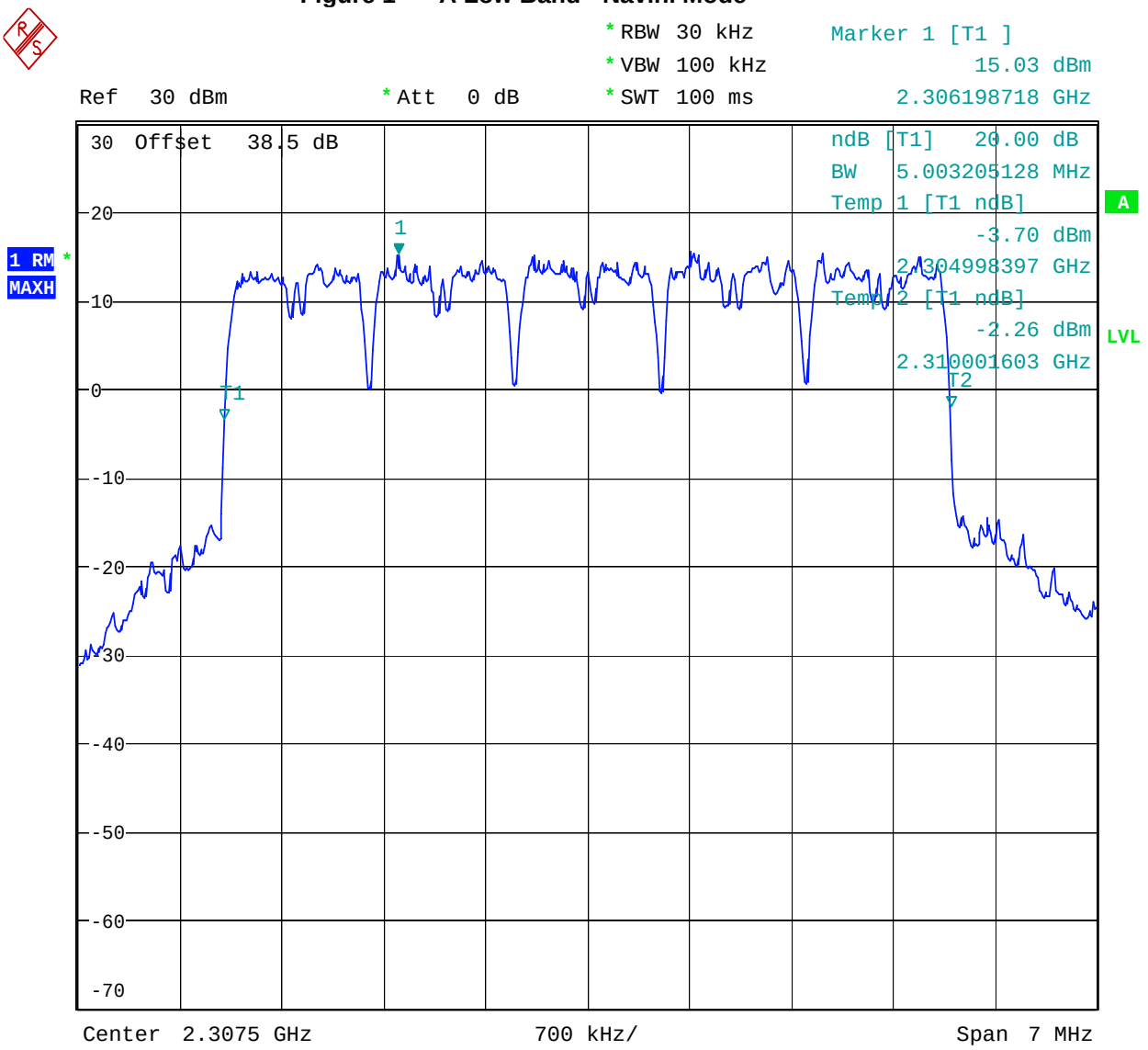


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Figure 2 B Low Band - Navini Mode

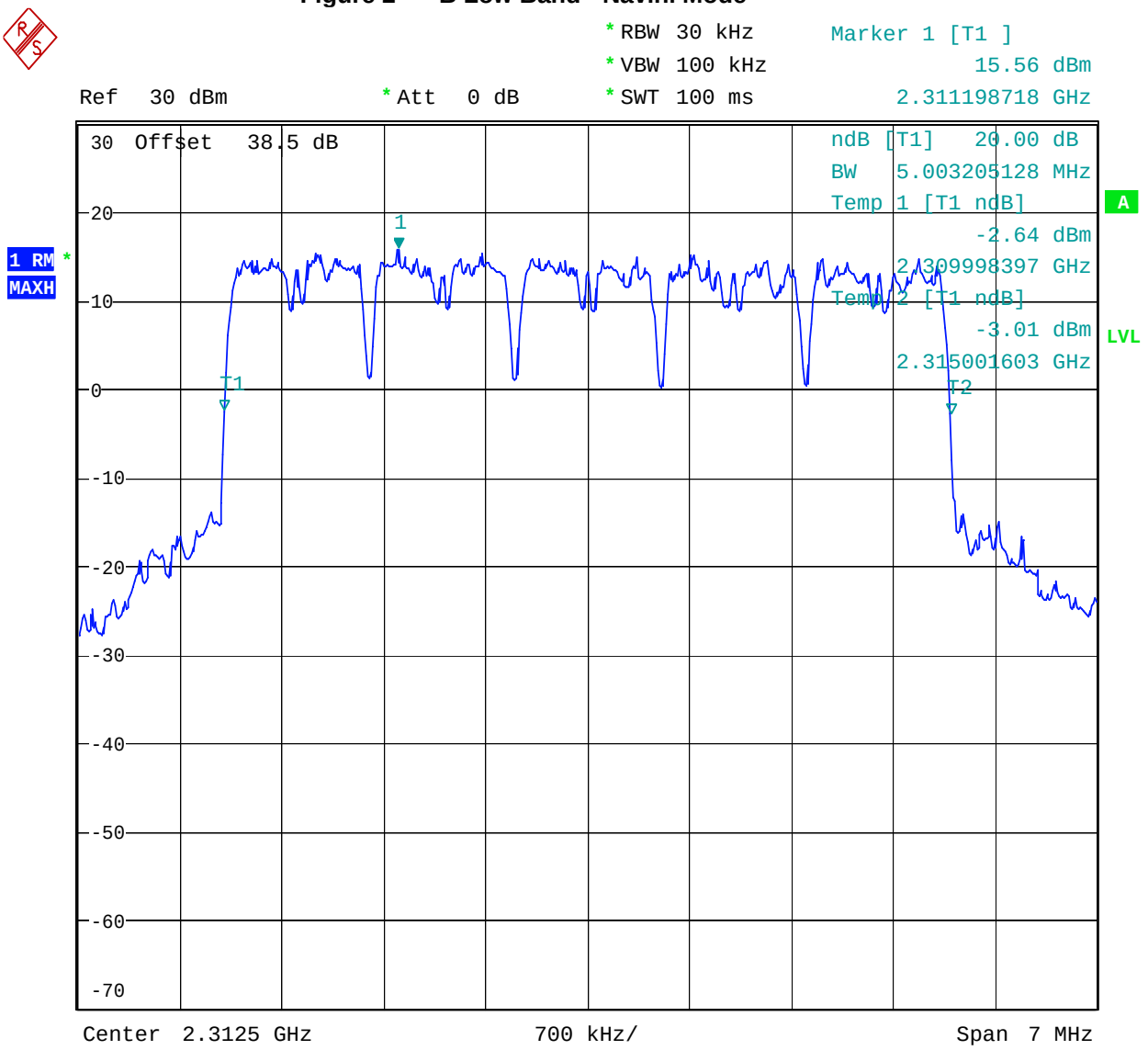

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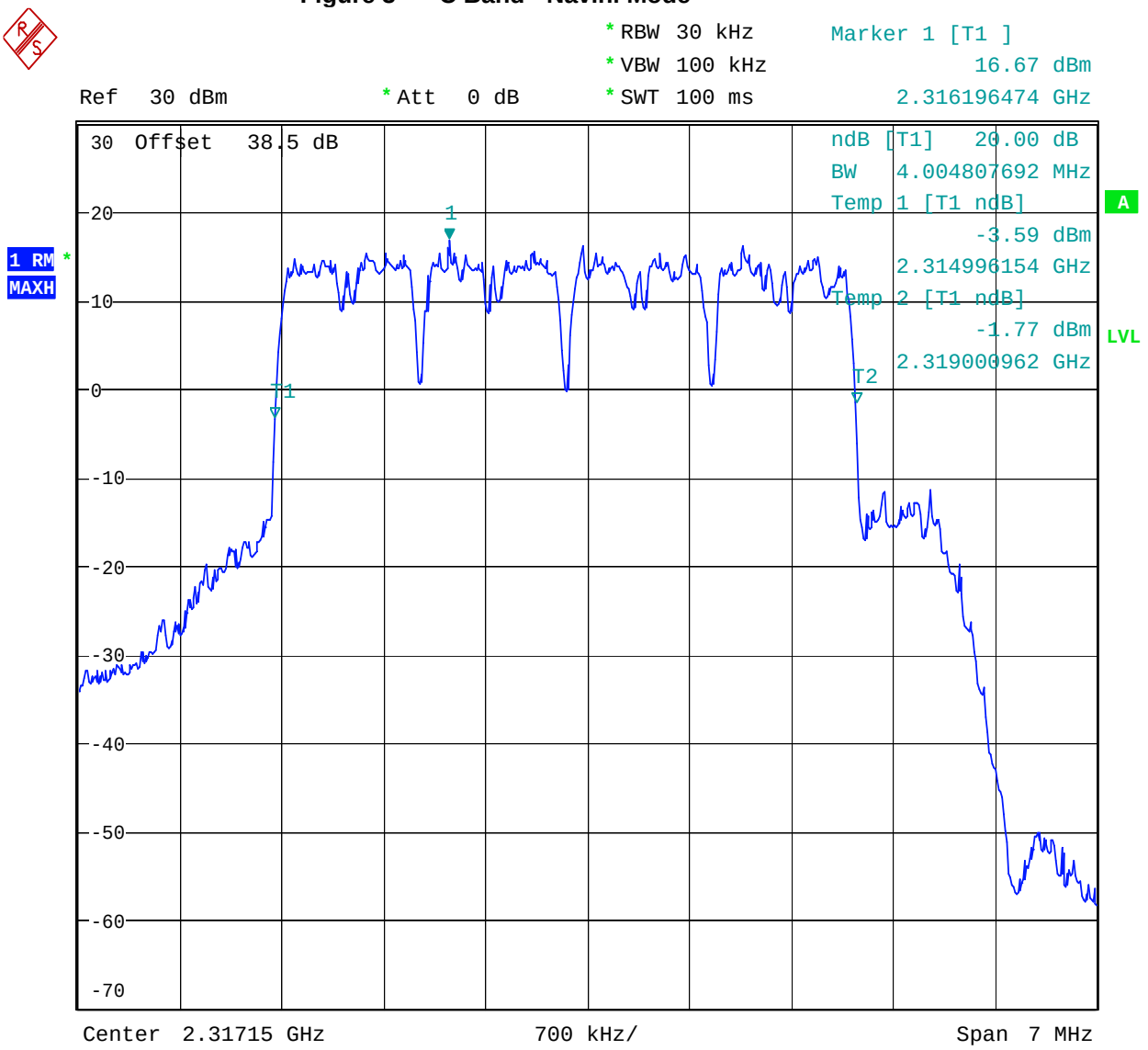
Figure 3 C Band - Navini Mode



Date: 13.NOV.2006 20:54:21

Figure 4 D Band - Navini Mode

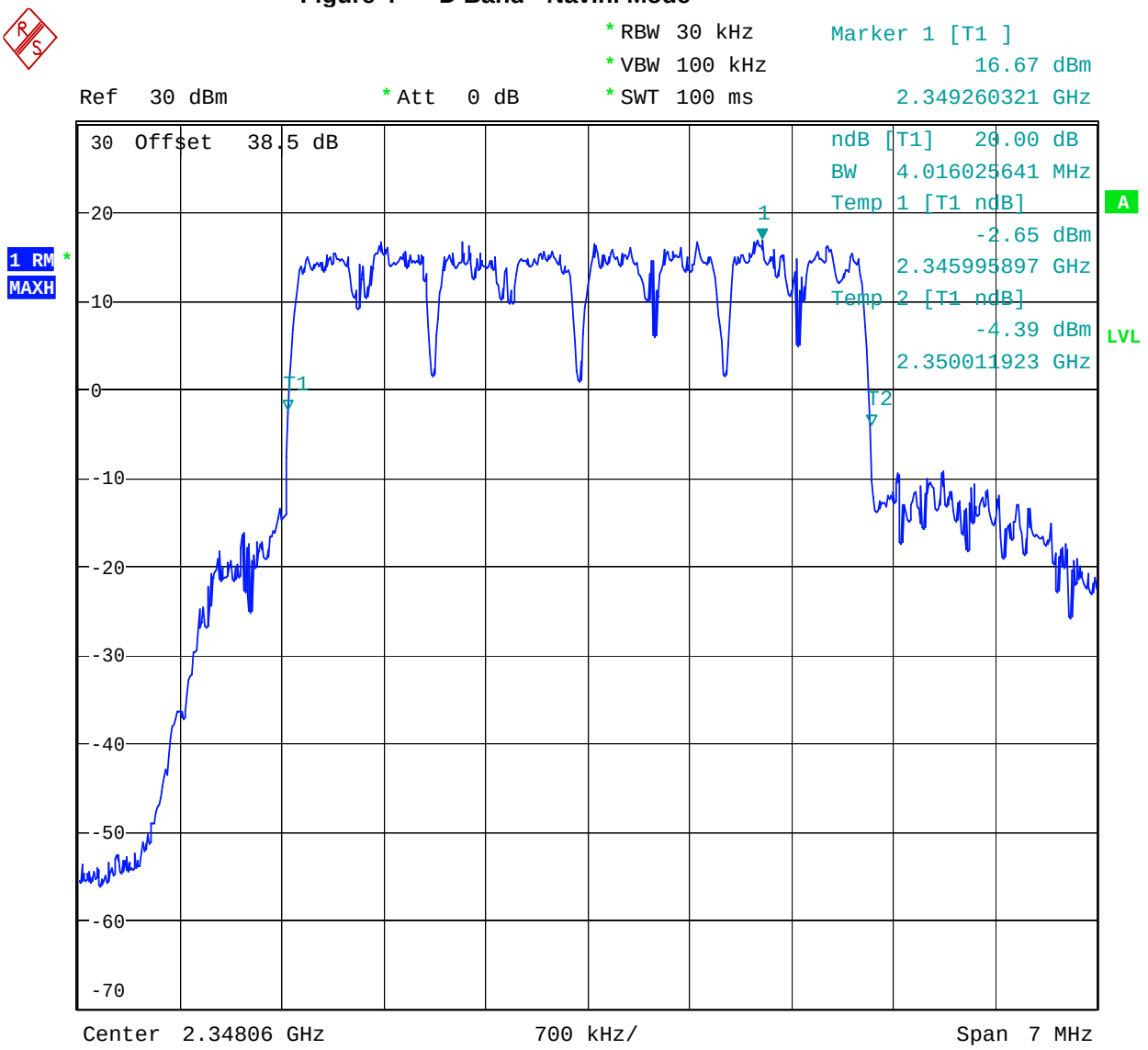


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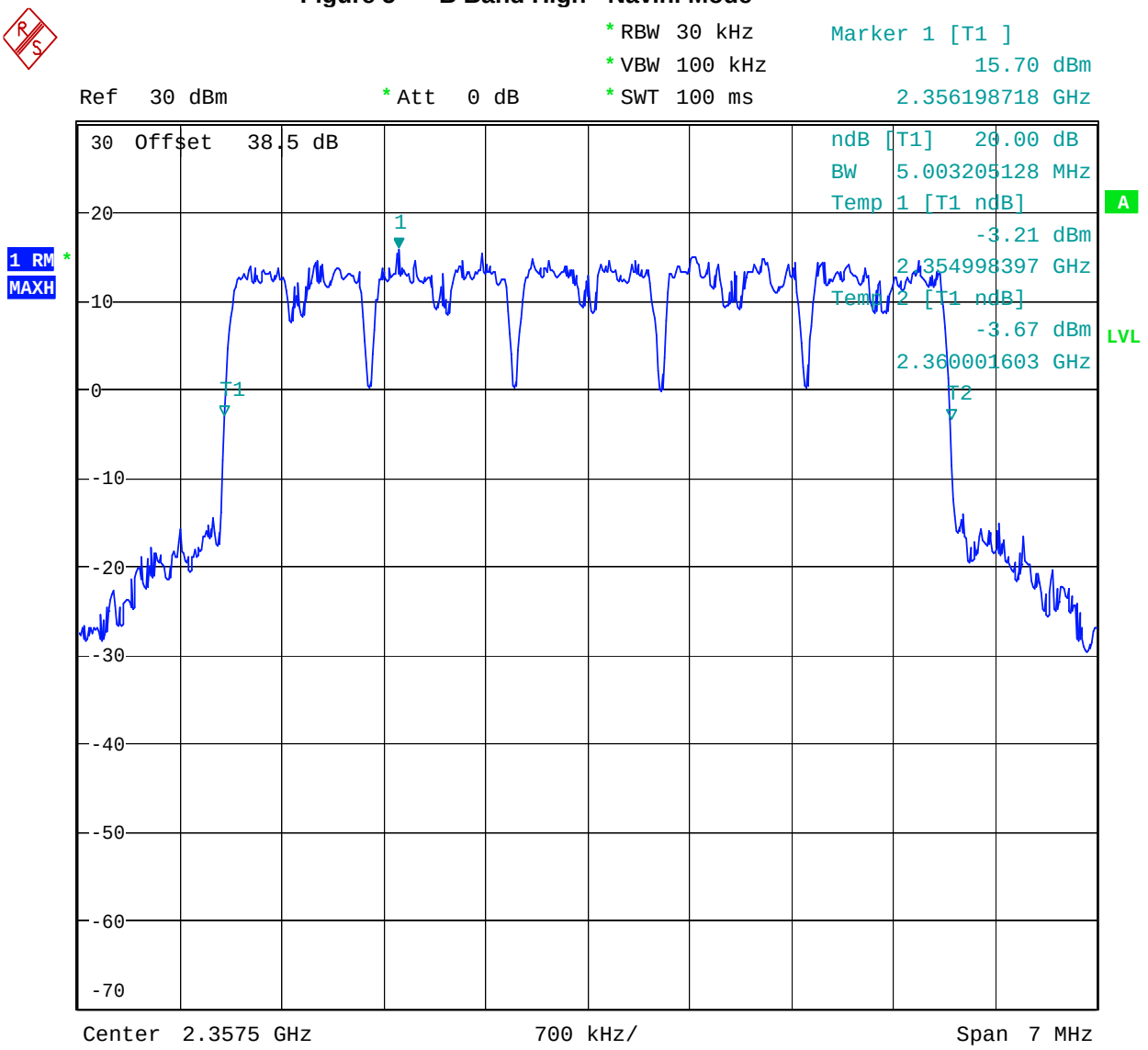
Figure 5 B Band High - Navini Mode



Date: 13.NOV.2006 20:41:17

Figure 6 A Band High - Navini Mode

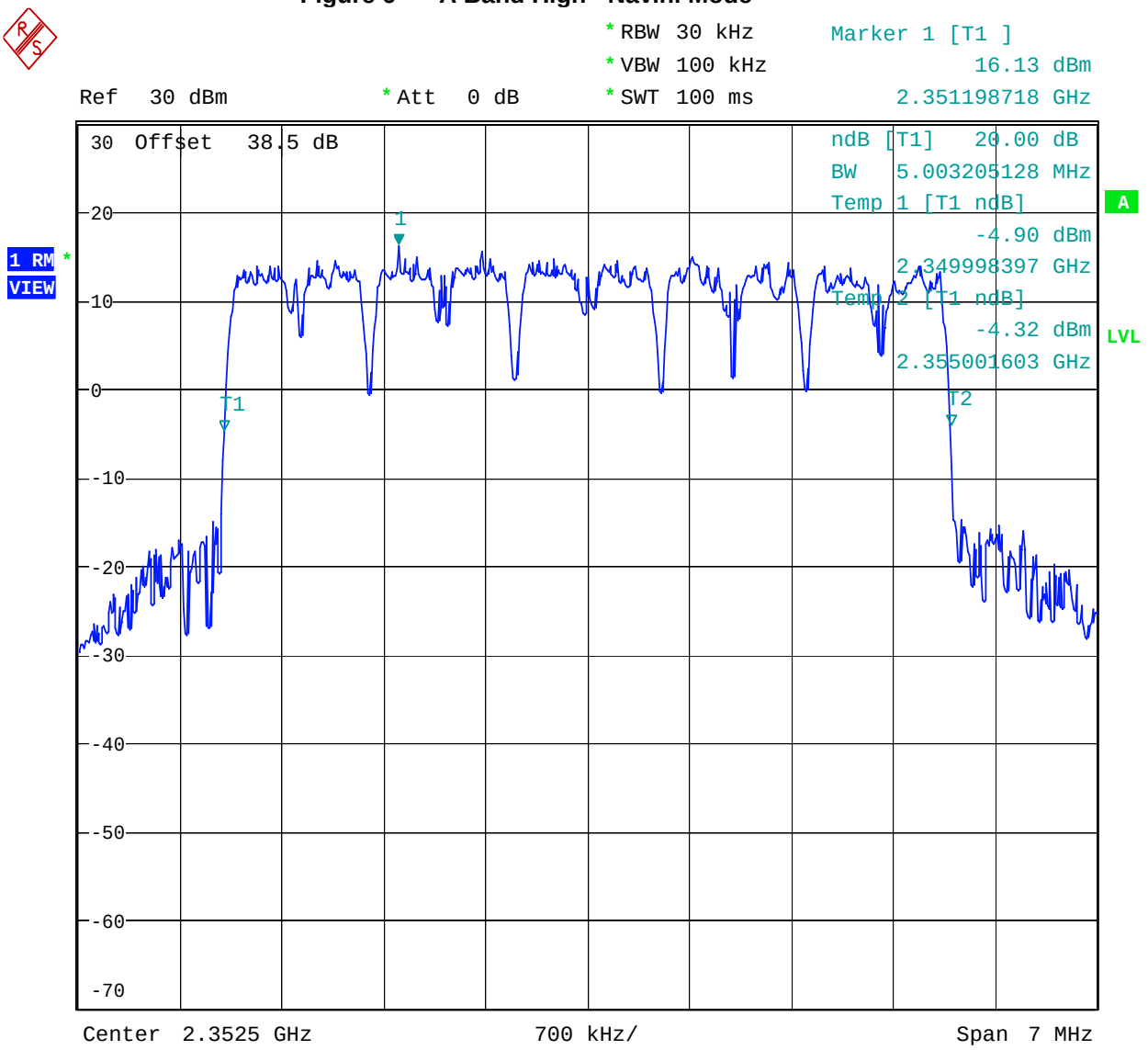


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Figure 7 A Band Low - OFDM Mode

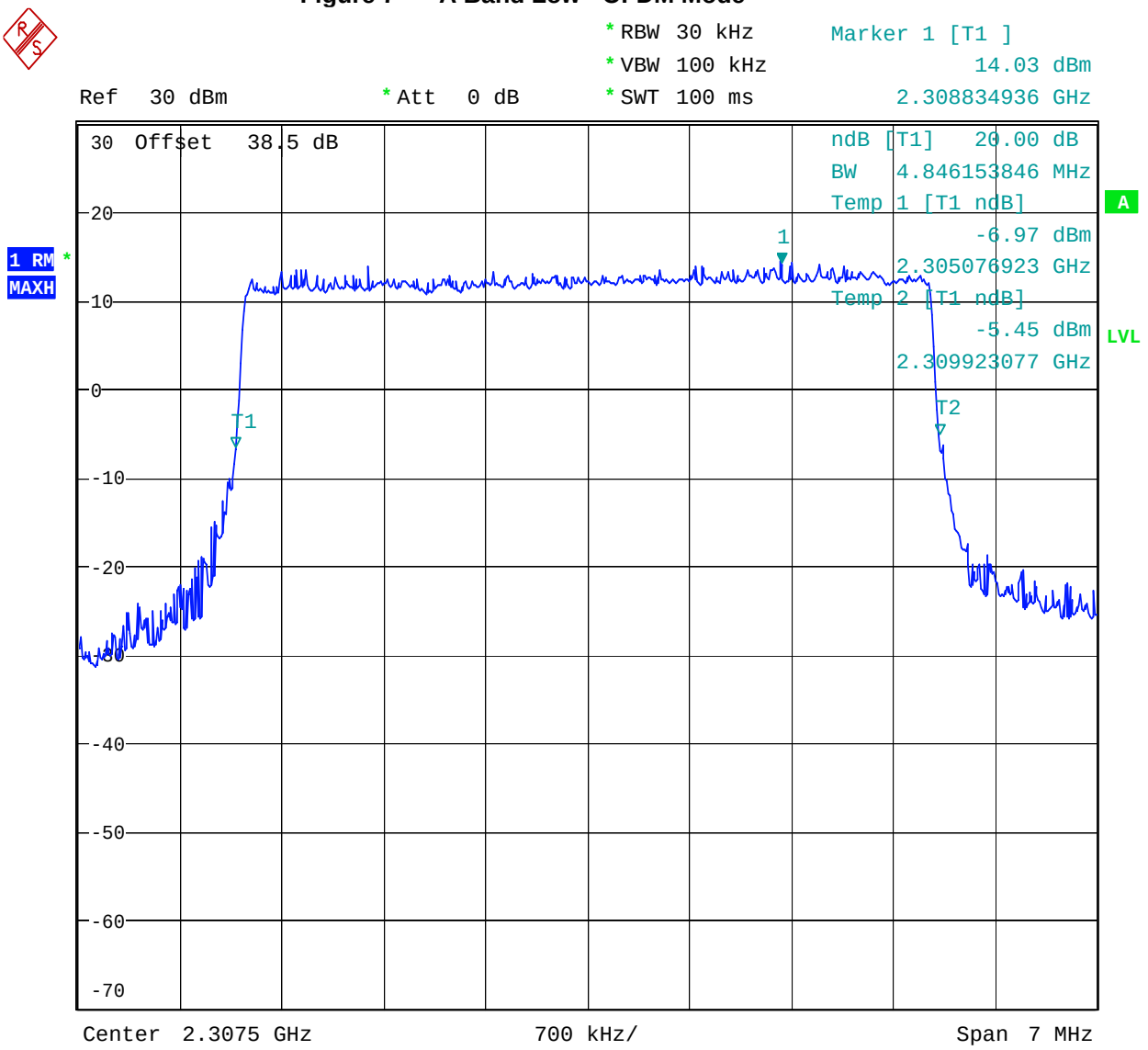

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Figure 8 B Band Low - OFDM Mode

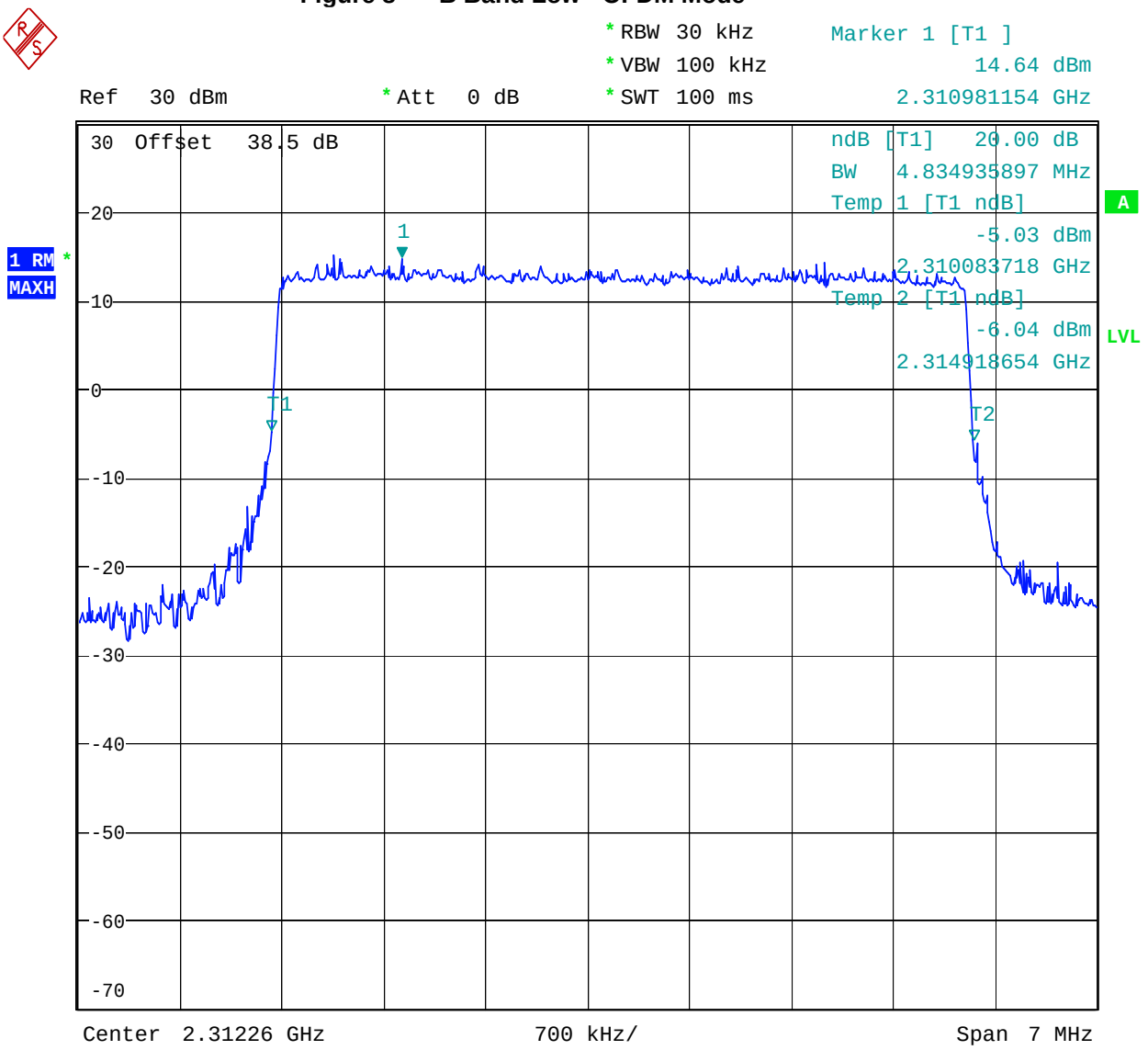

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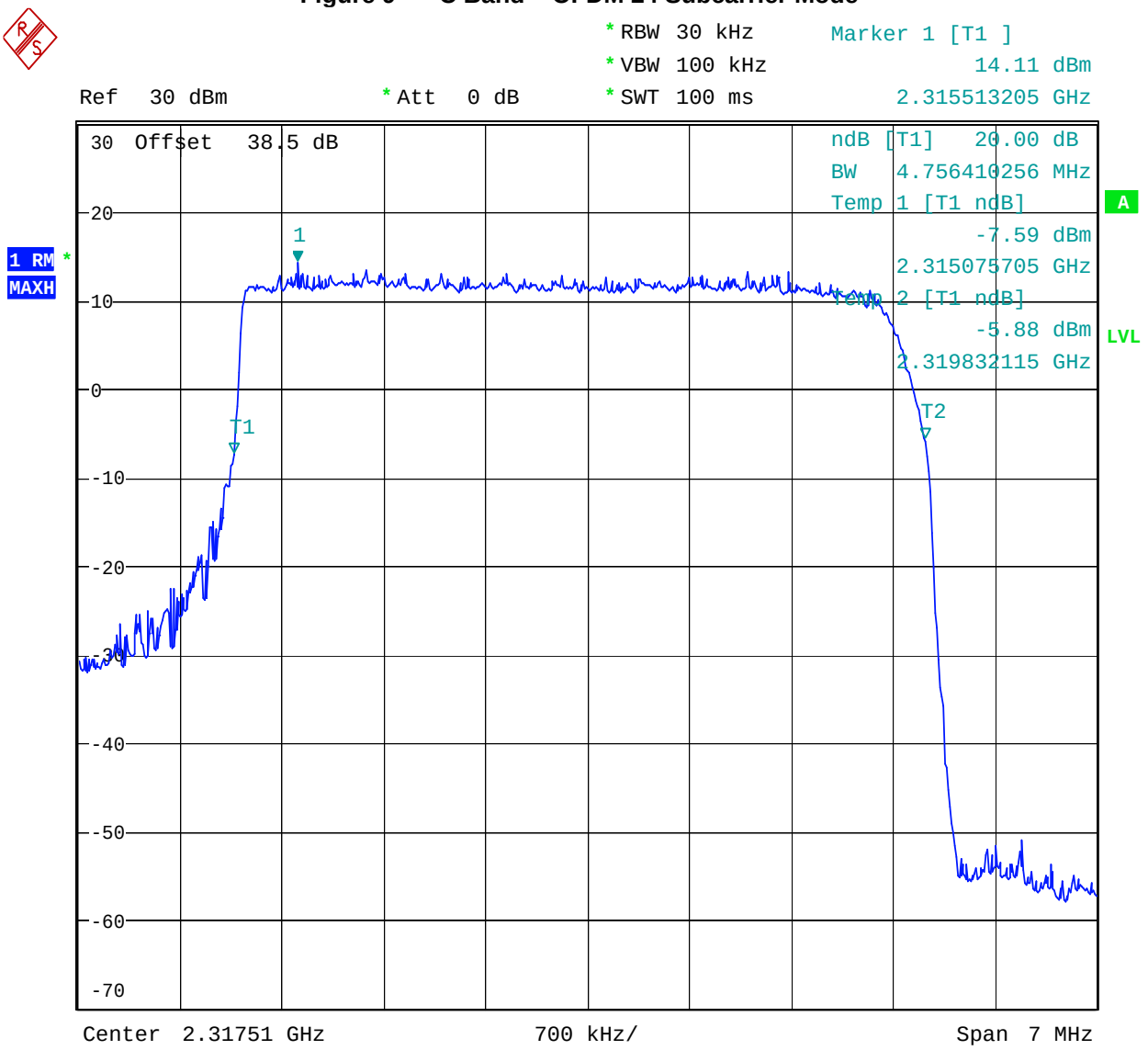
Figure 9 C Band – OFDM 24 Subcarrier Mode



Date: 13.NOV.2006 21:34:46

Figure 10 C Band – OFDM 22 Subcarrier Mode

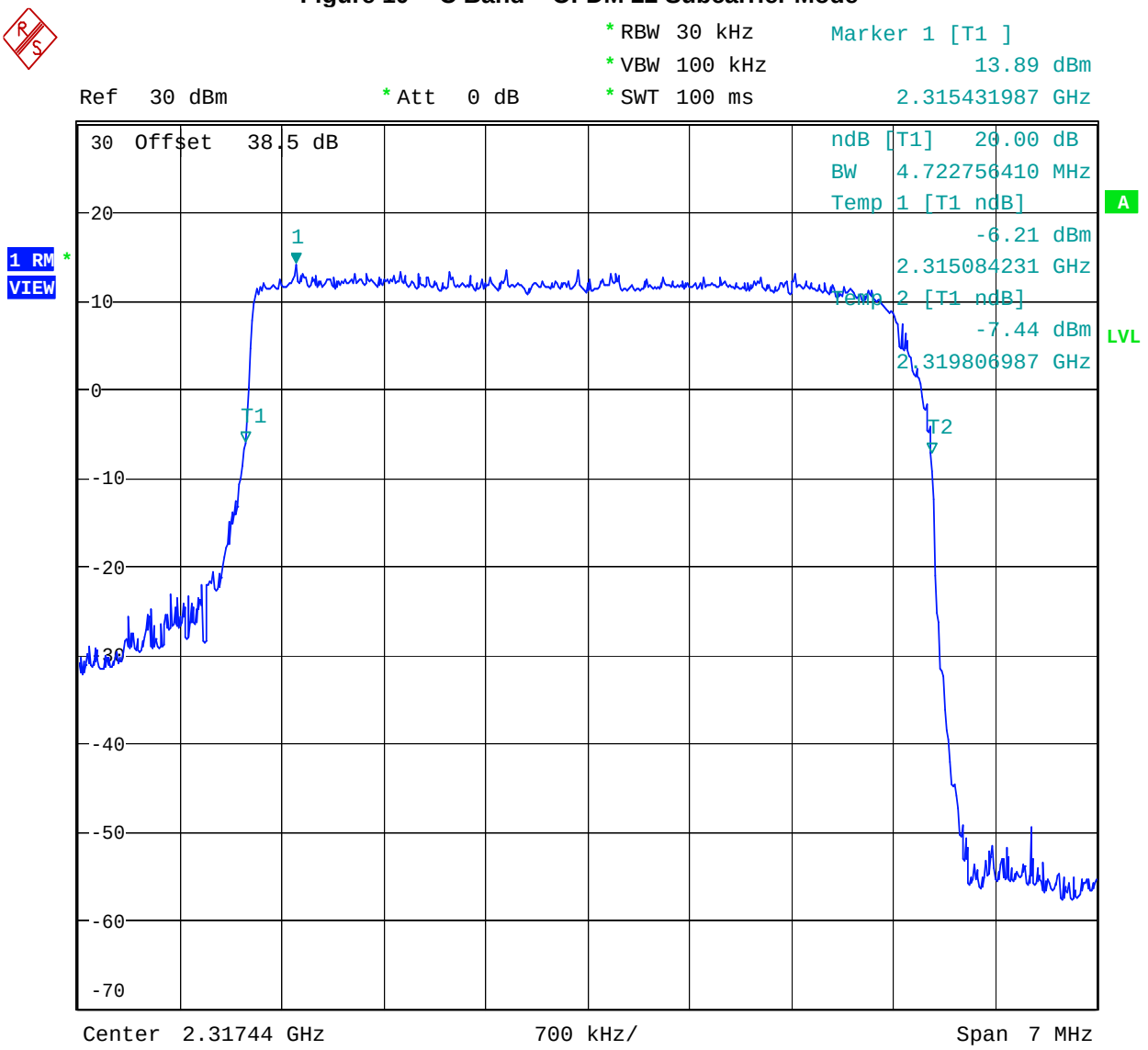


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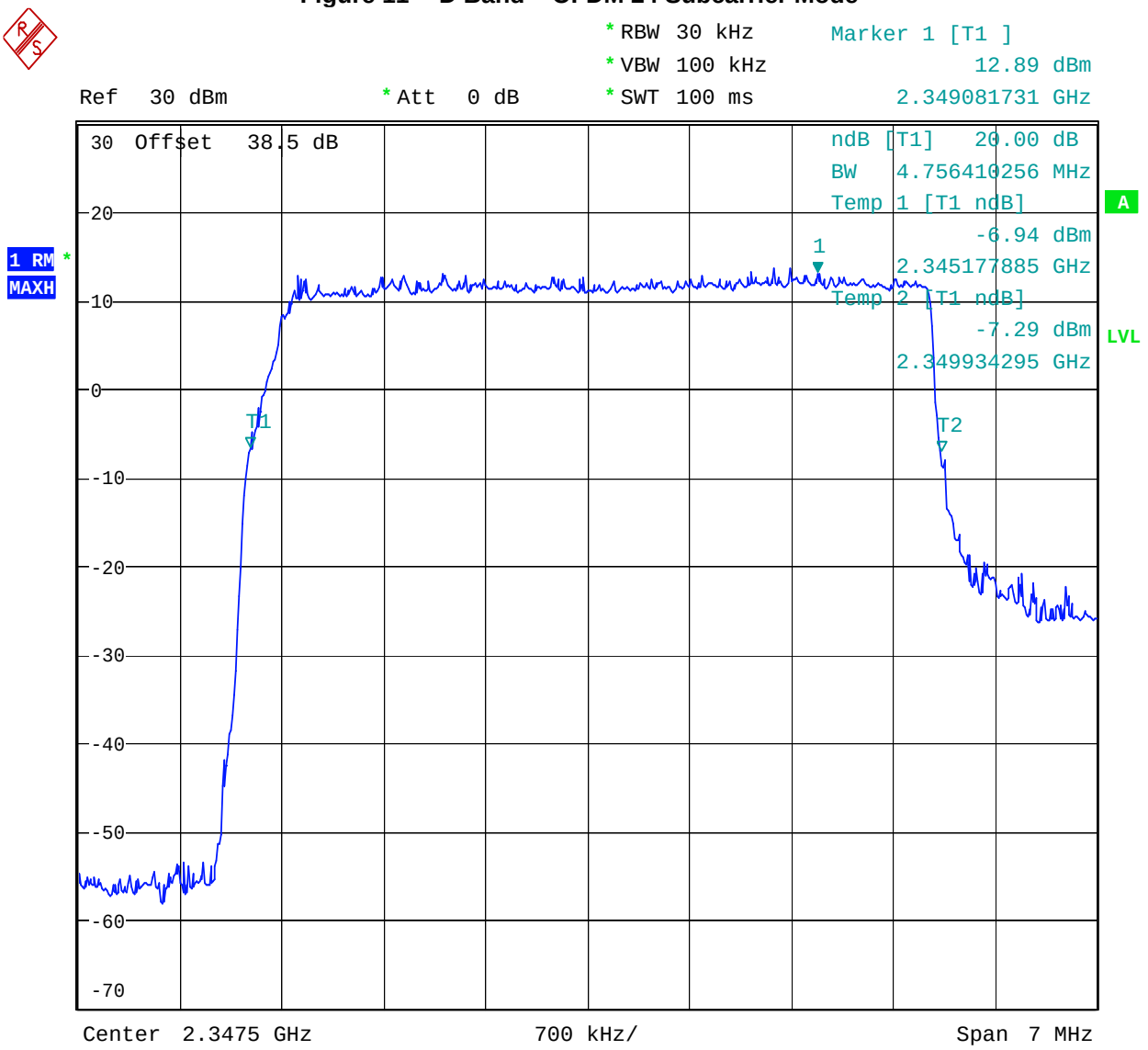
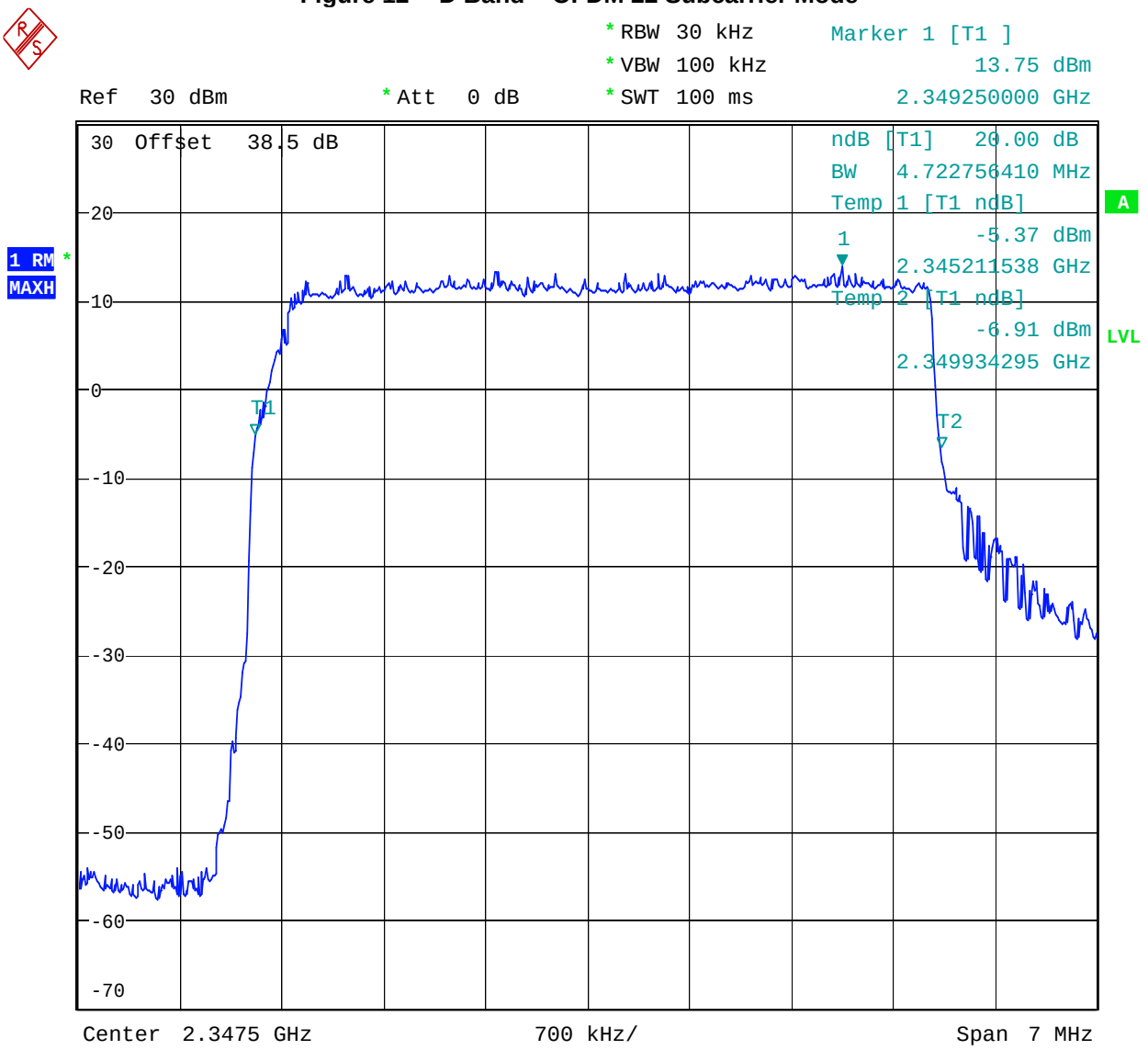
Figure 11 D Band – OFDM 24 Subcarrier Mode



Date: 13.NOV.2006 21:19:38

Figure 12 D Band – OFDM 22 Subcarrier Mode



Date: 15.NOV.2006 17:39:41

Figure 13 B Band High – OFDM Mode

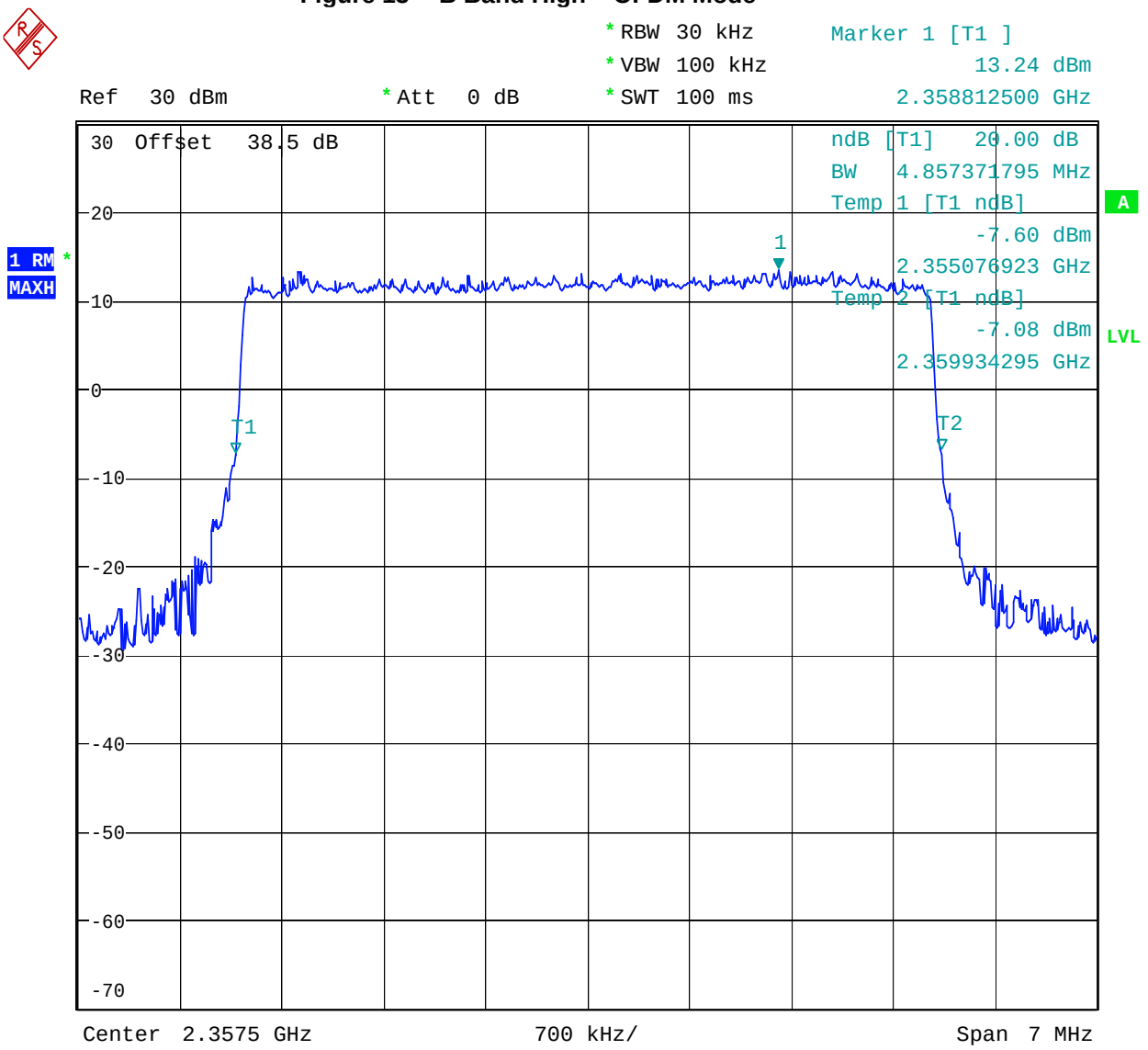


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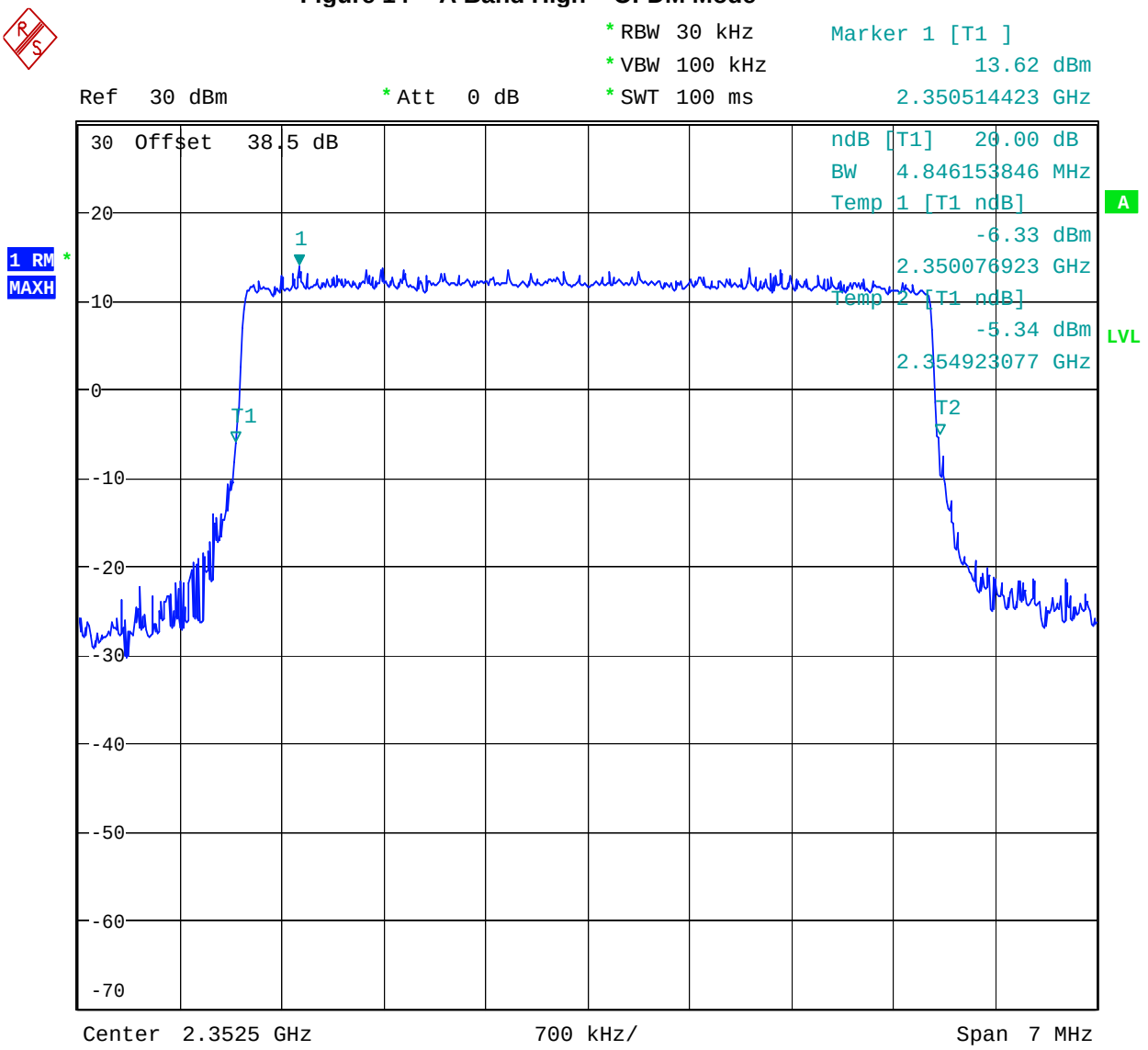
Figure 14 A Band High – OFDM Mode



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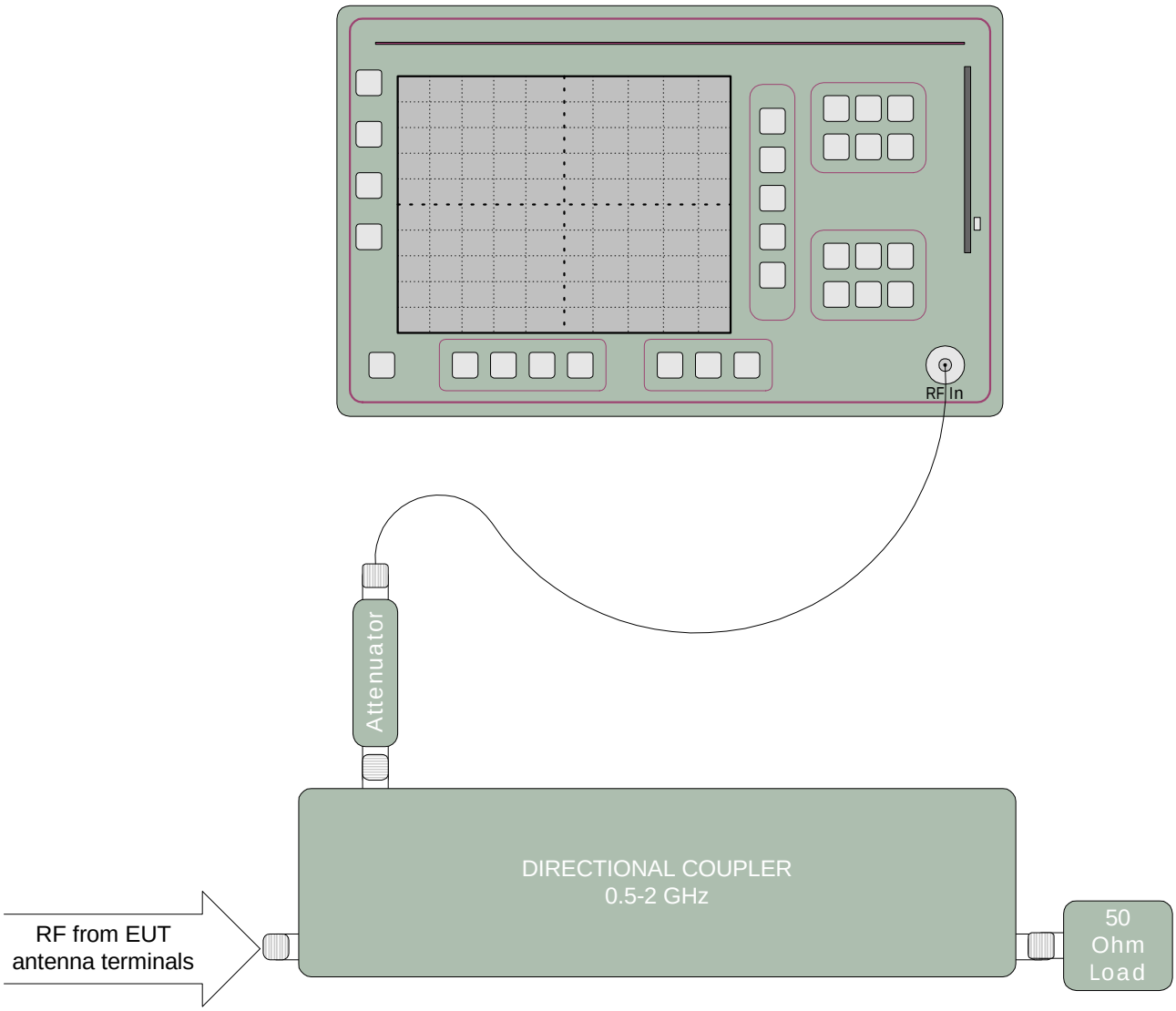
C.9. Test Diagram



C.10. Tested By

Name: Tom Tidwell,
Function: Manager of Wireless Services

APPENDIX D: 2.1051 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

D.1. Base Standard & Test Basis

Base Standard	FCC 2.1051
Test Basis	FCC 2.1051 Spurious Emissions at Antenna Terminals
Test Method	TIA 603-C, 2004

D.2. Specifications

27.53

(a) For operations in the bands 2305–2320 MHz and 2345–2360 MHz, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by the following amounts:

(1) *For fixed, land, and radiolocation land stations:* By a factor not less than 80 + 10 log (p) dB on all frequencies between 2320 and 2345 MHz;

(2) *For mobile and radiolocation mobile stations:* By a factor not less than 110 + 10 log (p) dB on all frequencies between 2320 and 2345 MHz;

(3) *For fixed, land, mobile, radiolocation land and radiolocation mobile stations:* By a factor not less than 70 + 10 log (p) dB on all frequencies below 2300 MHz and on all frequencies above 2370 MHz; and not less than 43 + 10 log (p) dB on all frequencies between 2300 and 2320 MHz and on all frequencies between 2345 and 2370 MHz that are outside the licensed bands of operation;

(4) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth;

(5) In complying with the requirements in §27.53(a)(1) and §27.53(a)(2), WCS equipment that uses opposite sense circular polarization from that used by Satellite DARS systems in the 2320–2345 MHz band shall be permitted an allowance of 10 dB;

(6) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the edges, both upper and lower, of the licensee's bands of operation as the design permits;

(7) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power;

D.3. Measurement Uncertainty

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

D.4. Deviations

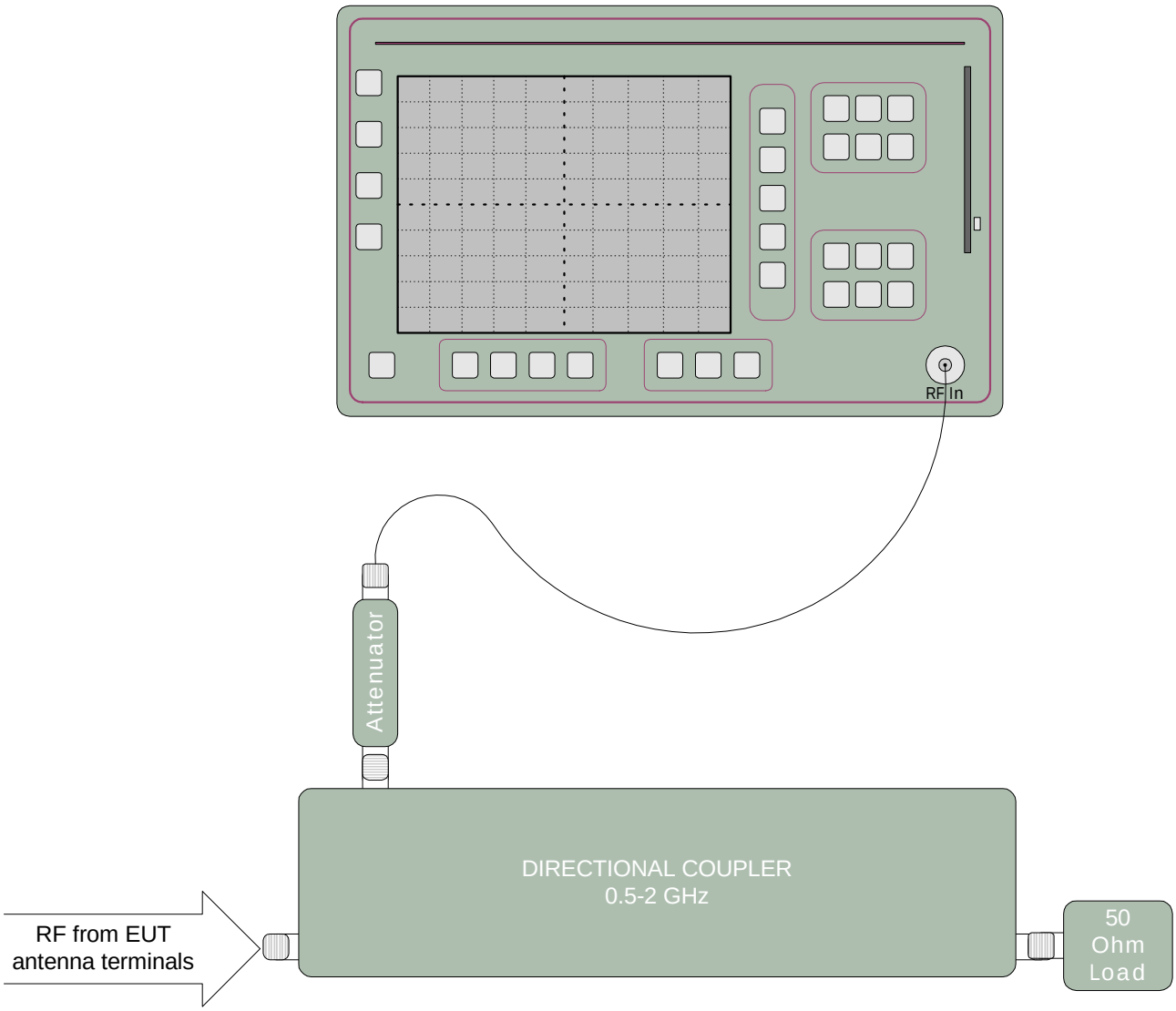
Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
none						

D.5. Test Results

Complies. All emissions meet the out of band limits.

Out-of-Band Emissions limit is 70 + 10 log(P) which relates to -40 dBm absolute power.

D.6. Test Diagram



D.7. Test Data

See following pages.

Figure 15 A Low Band - Navini Mode

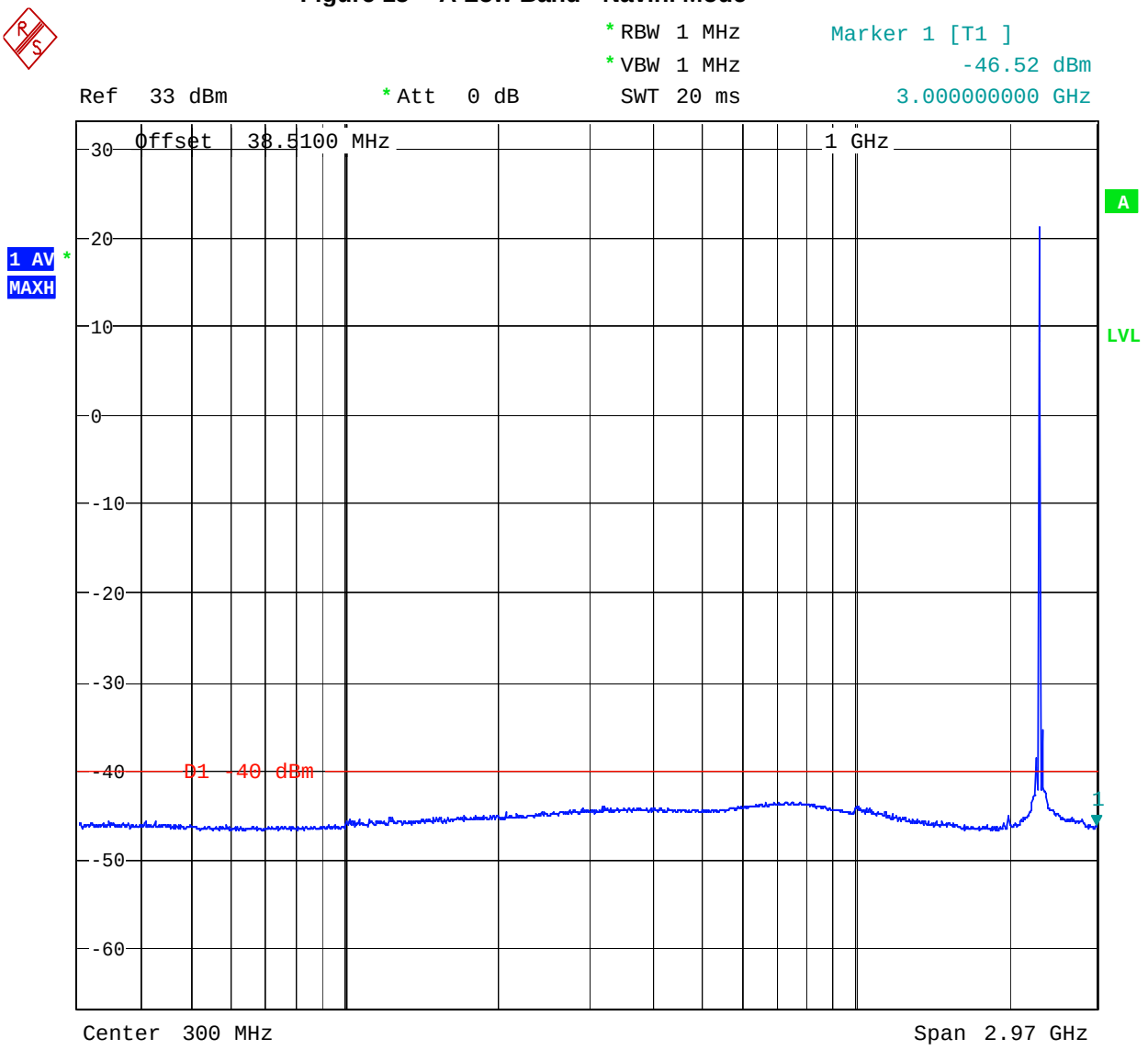


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Figure 16 A Low Band - Navini Mode

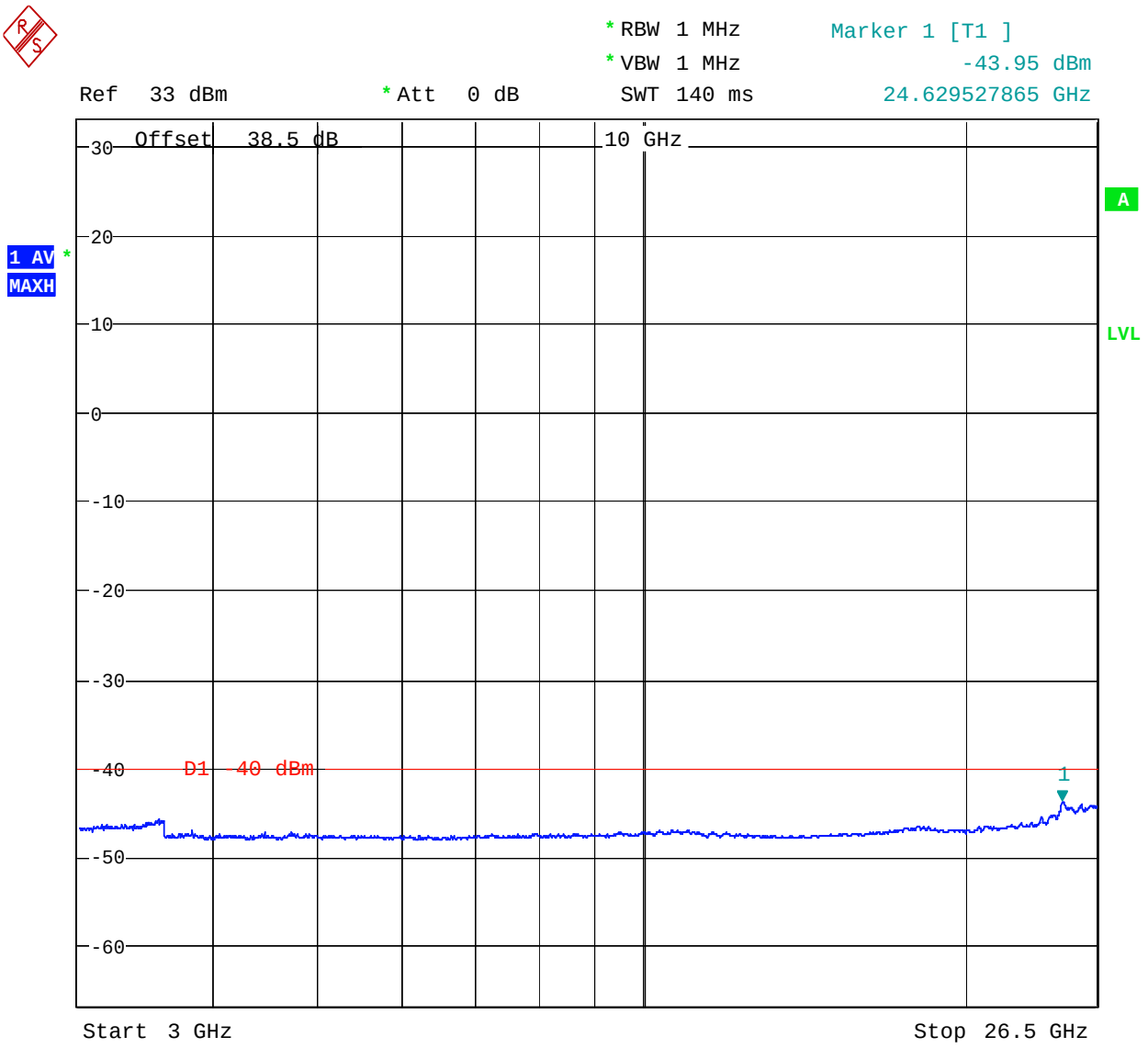

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Figure 17 B Low Band - Navini Mode

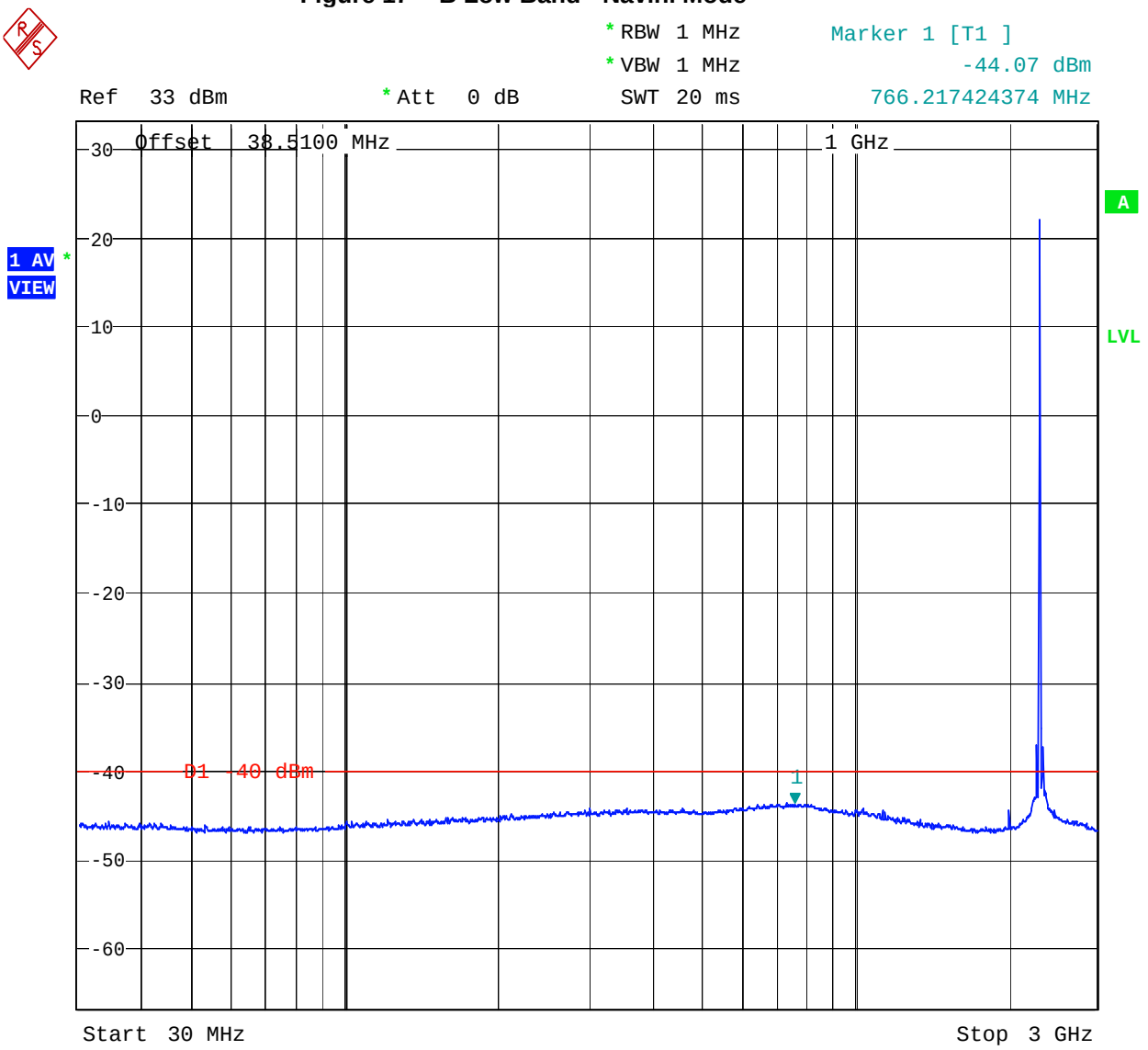

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Figure 18 B Low Band - Navini Mode

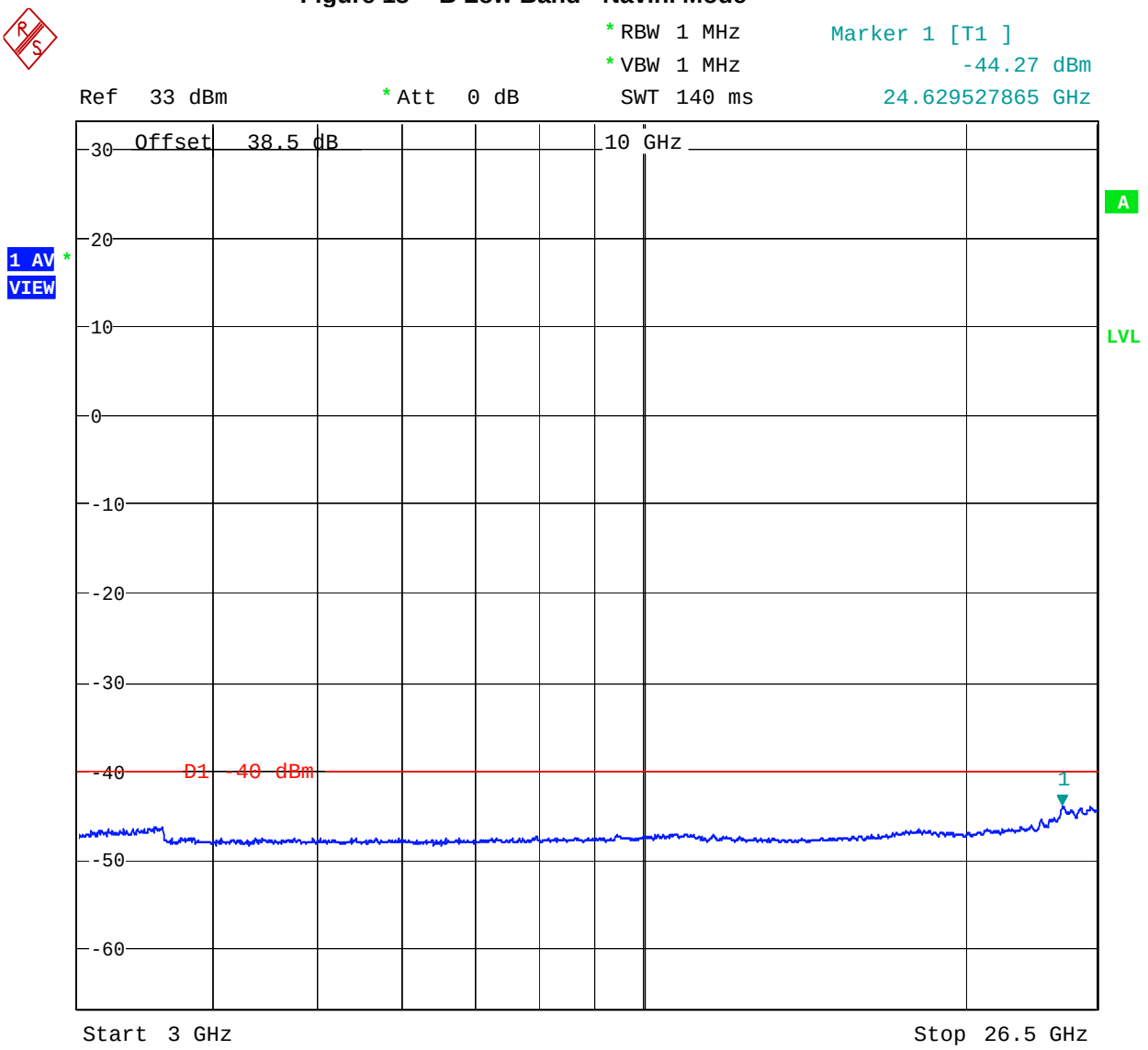

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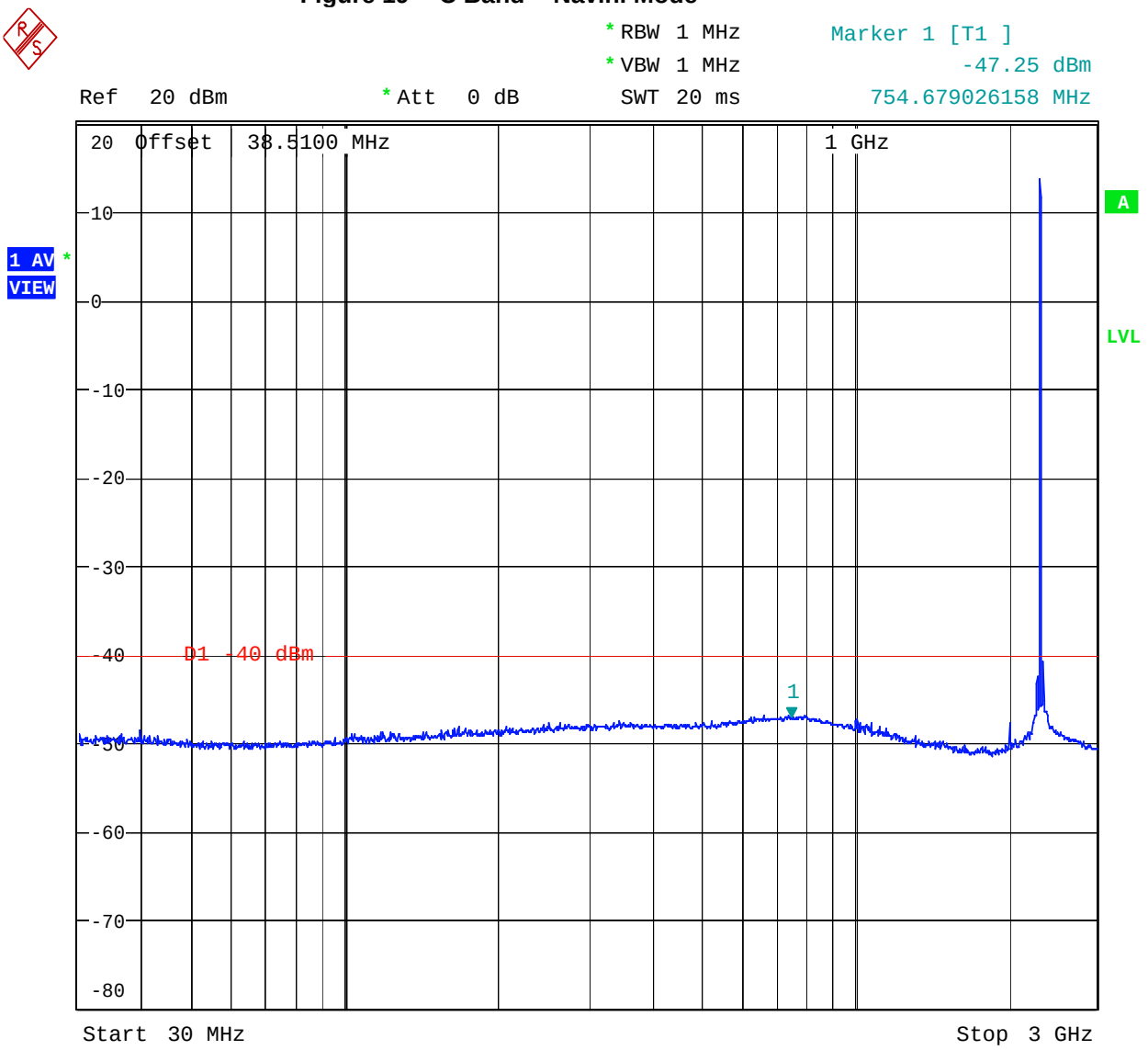
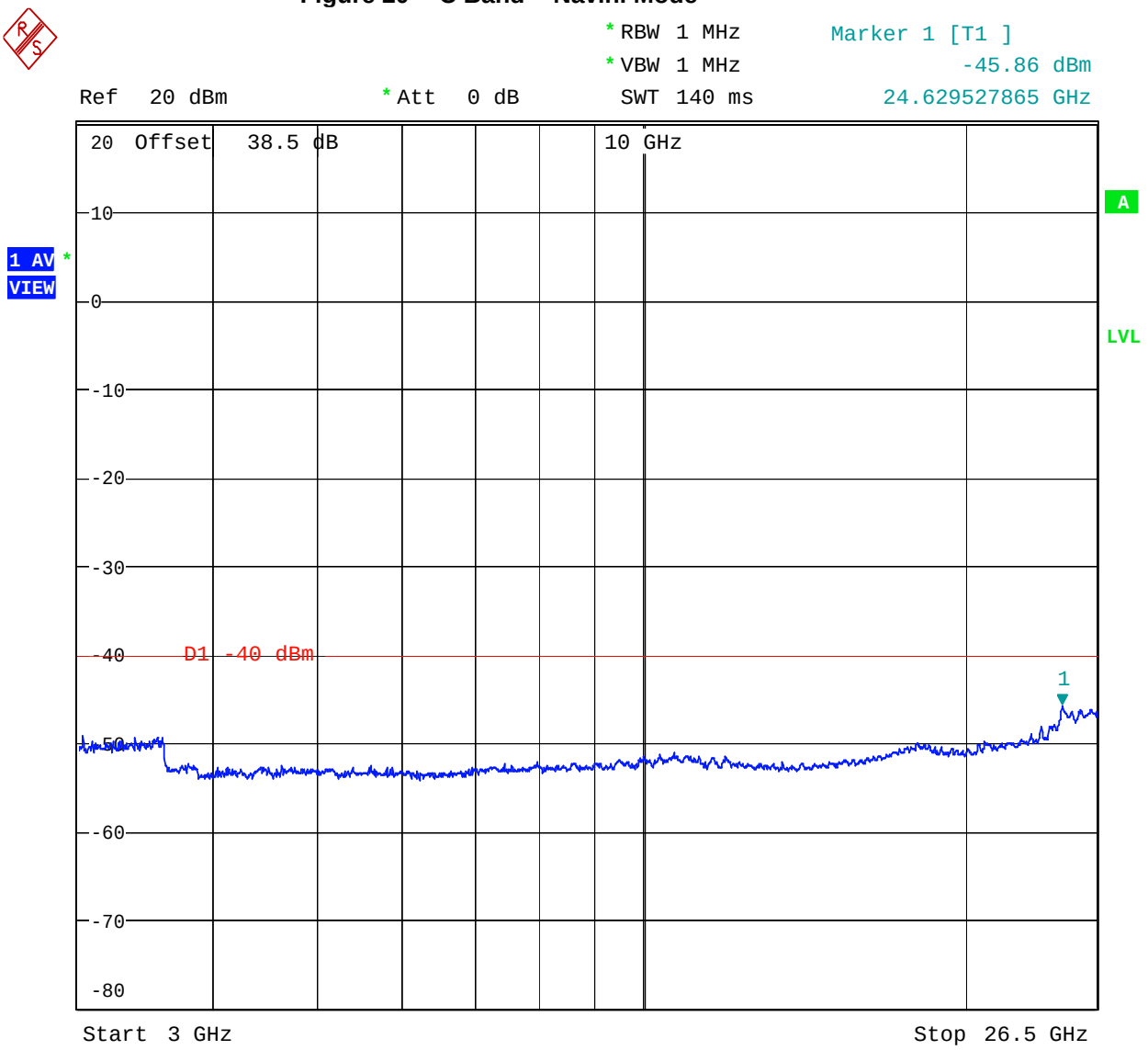
Figure 19 C Band - Navini Mode



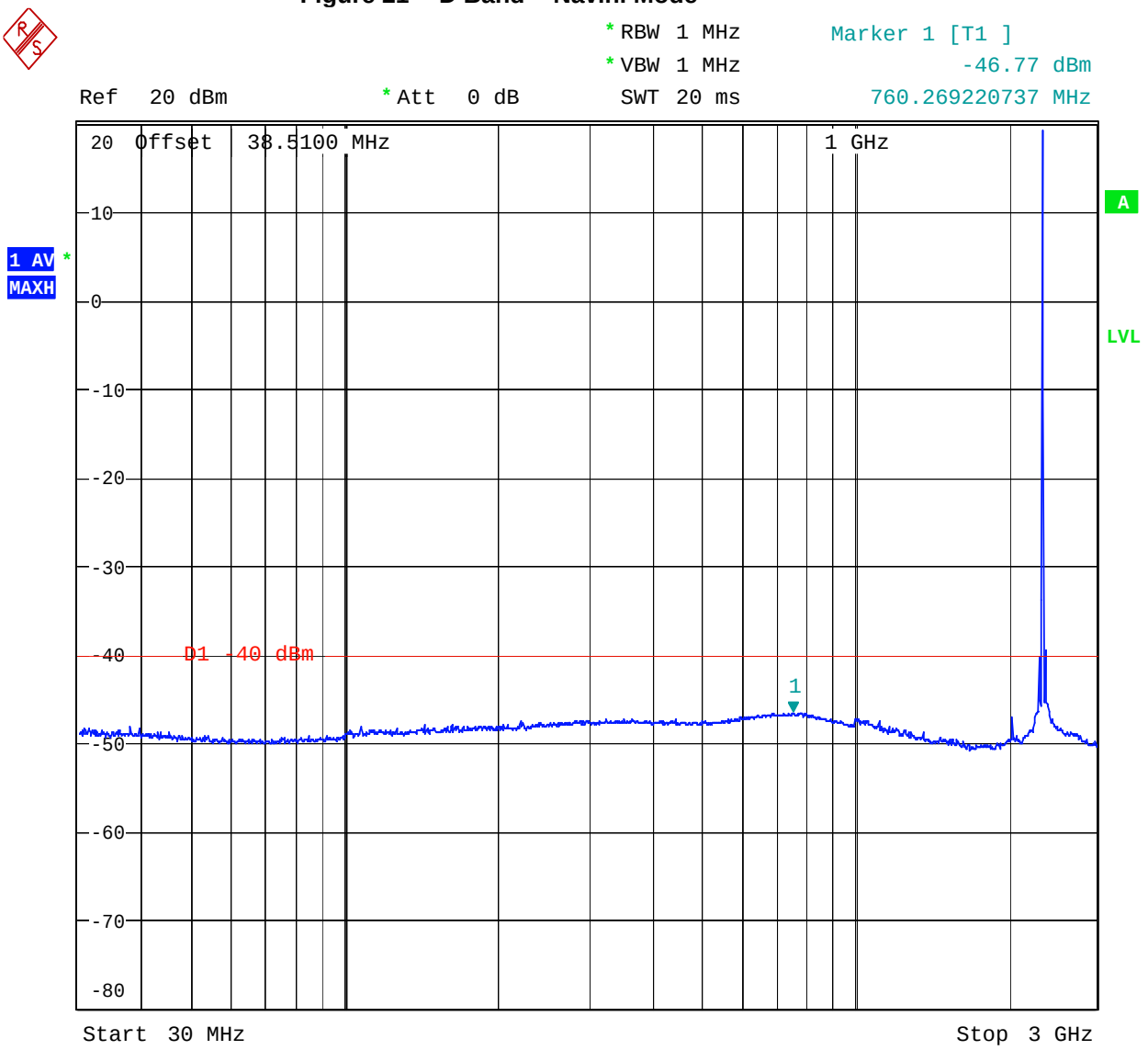
Date: 18.DEC.2006 18:33:02

Figure 20 C Band - Navini Mode



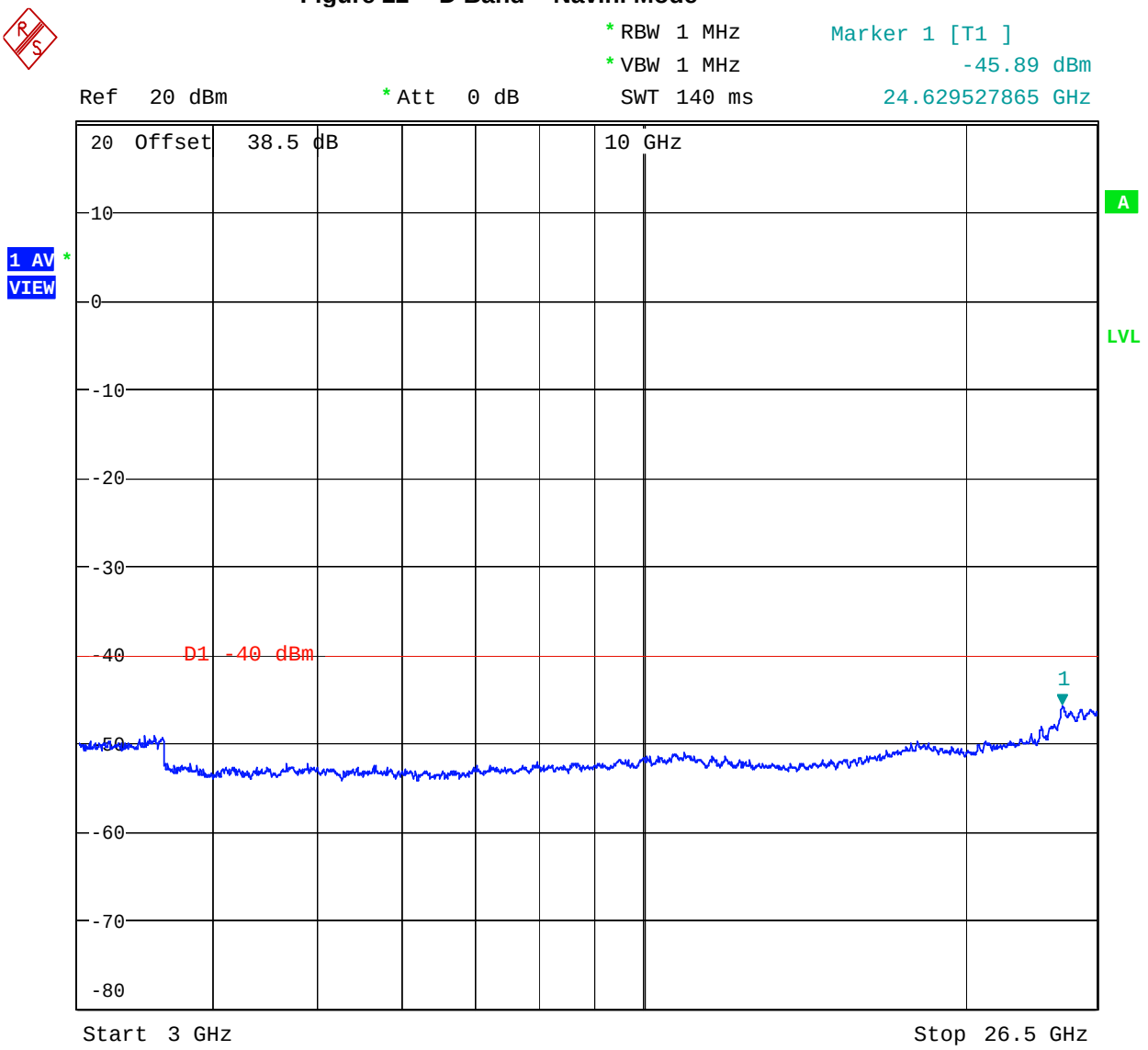
Date: 18.DEC.2006 18:33:55

Figure 21 D Band - Navini Mode



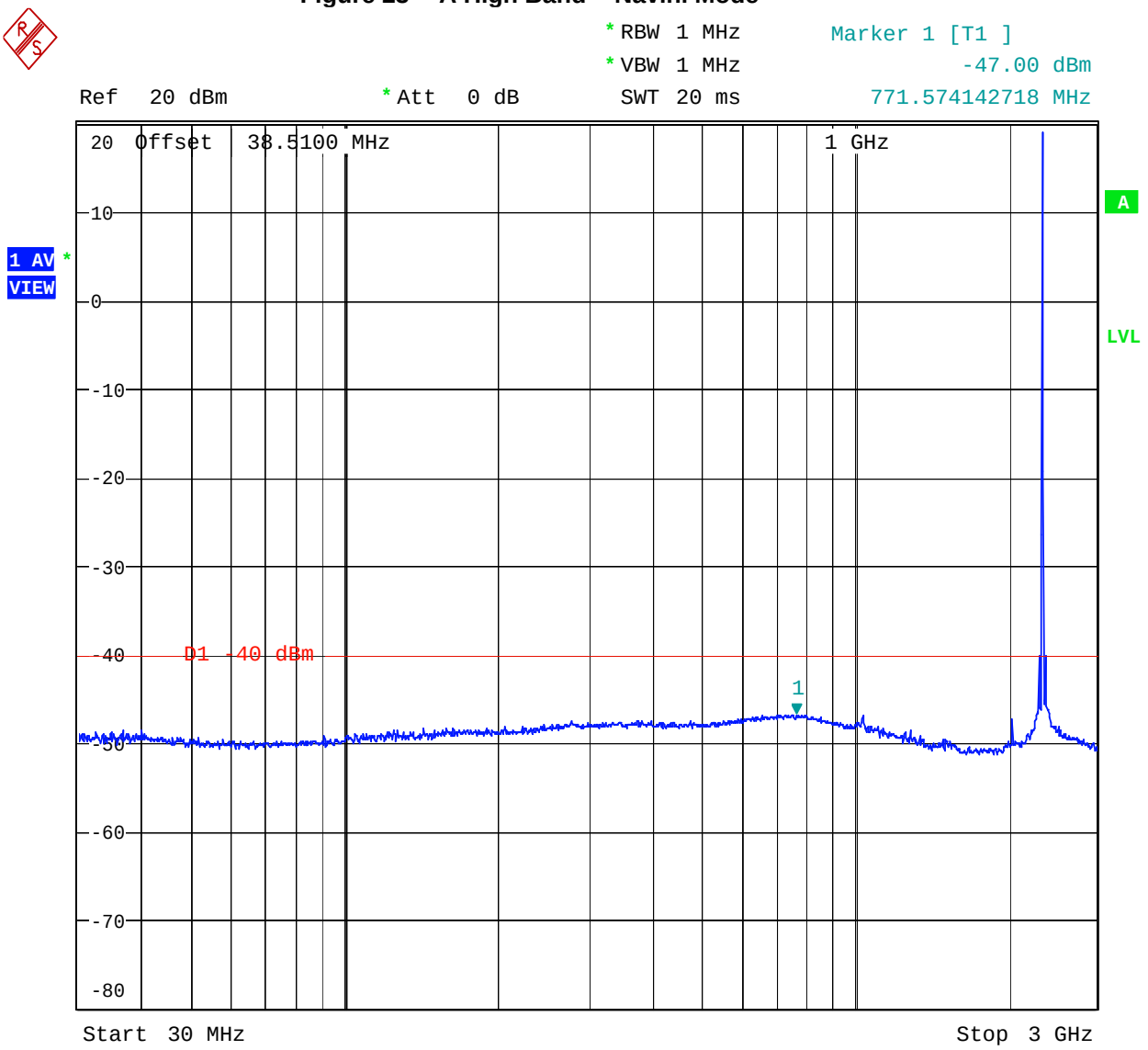
Date: 18.DEC.2006 18:36:56

Figure 22 D Band - Navini Mode



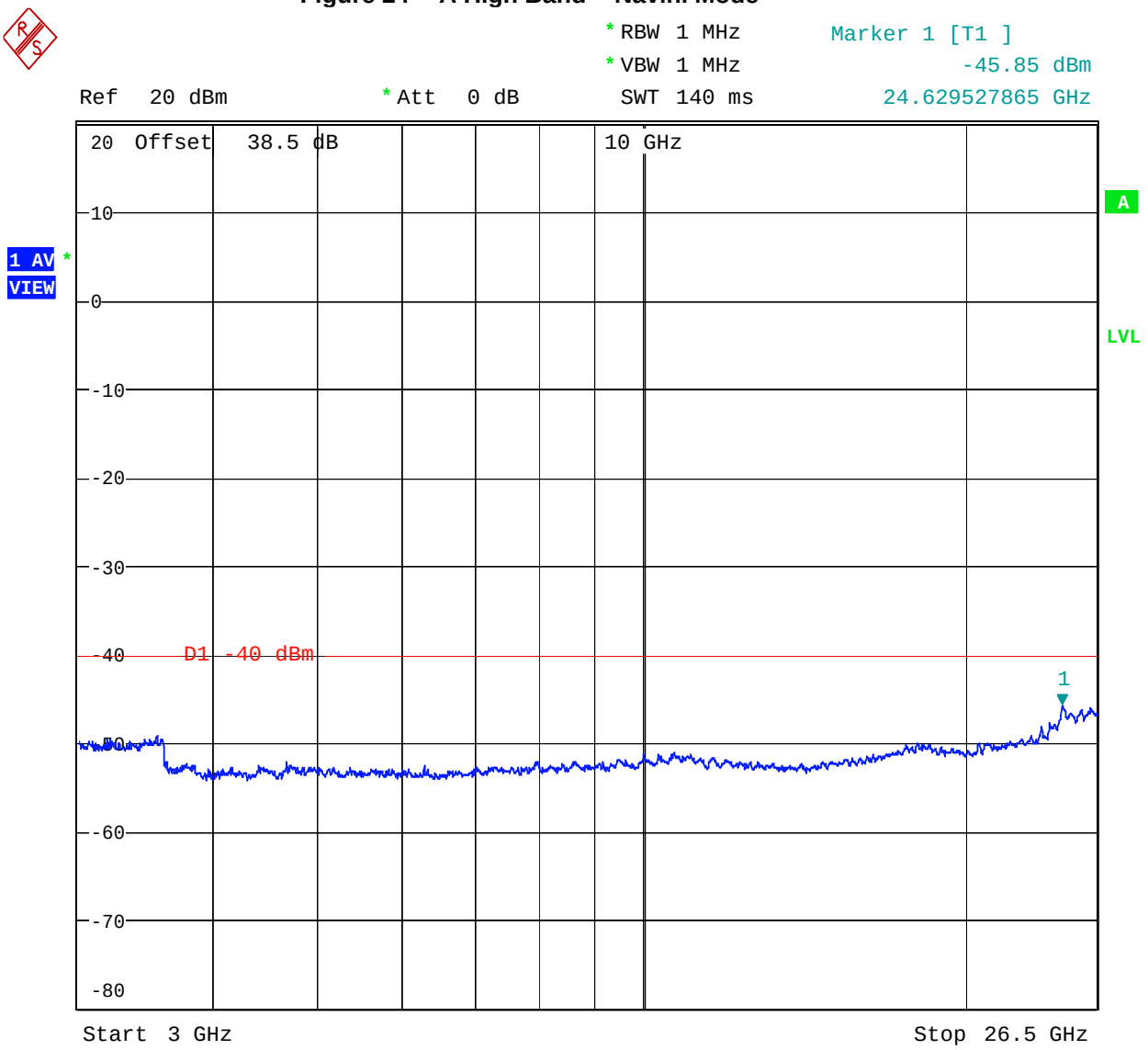
Date: 18.DEC.2006 18:37:42

Figure 23 A High Band - Navini Mode



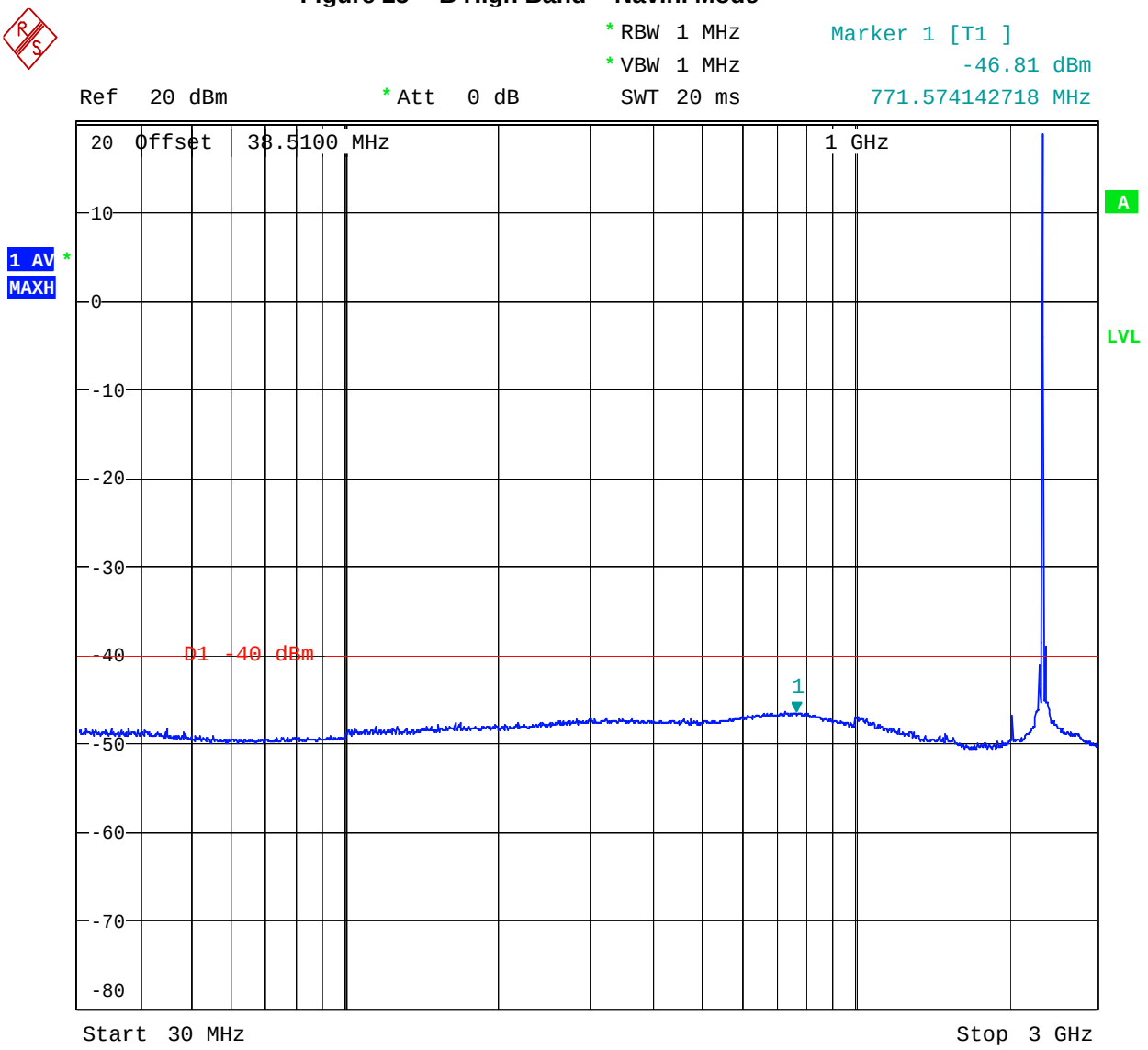
Date: 18.DEC.2006 18:39:45

Figure 24 A High Band - Navini Mode



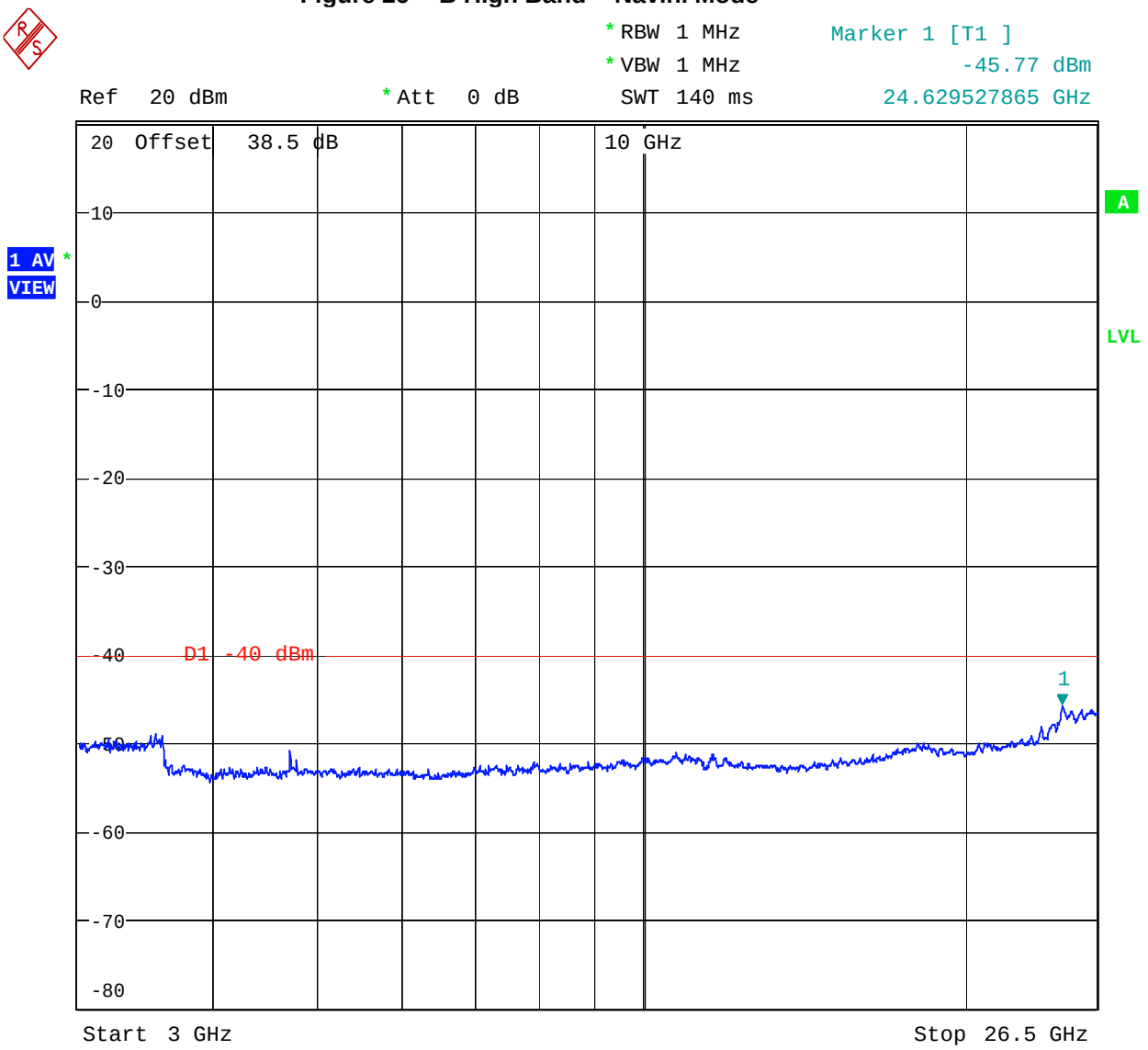
Date: 18.DEC.2006 18:40:26

Figure 25 B High Band - Navini Mode



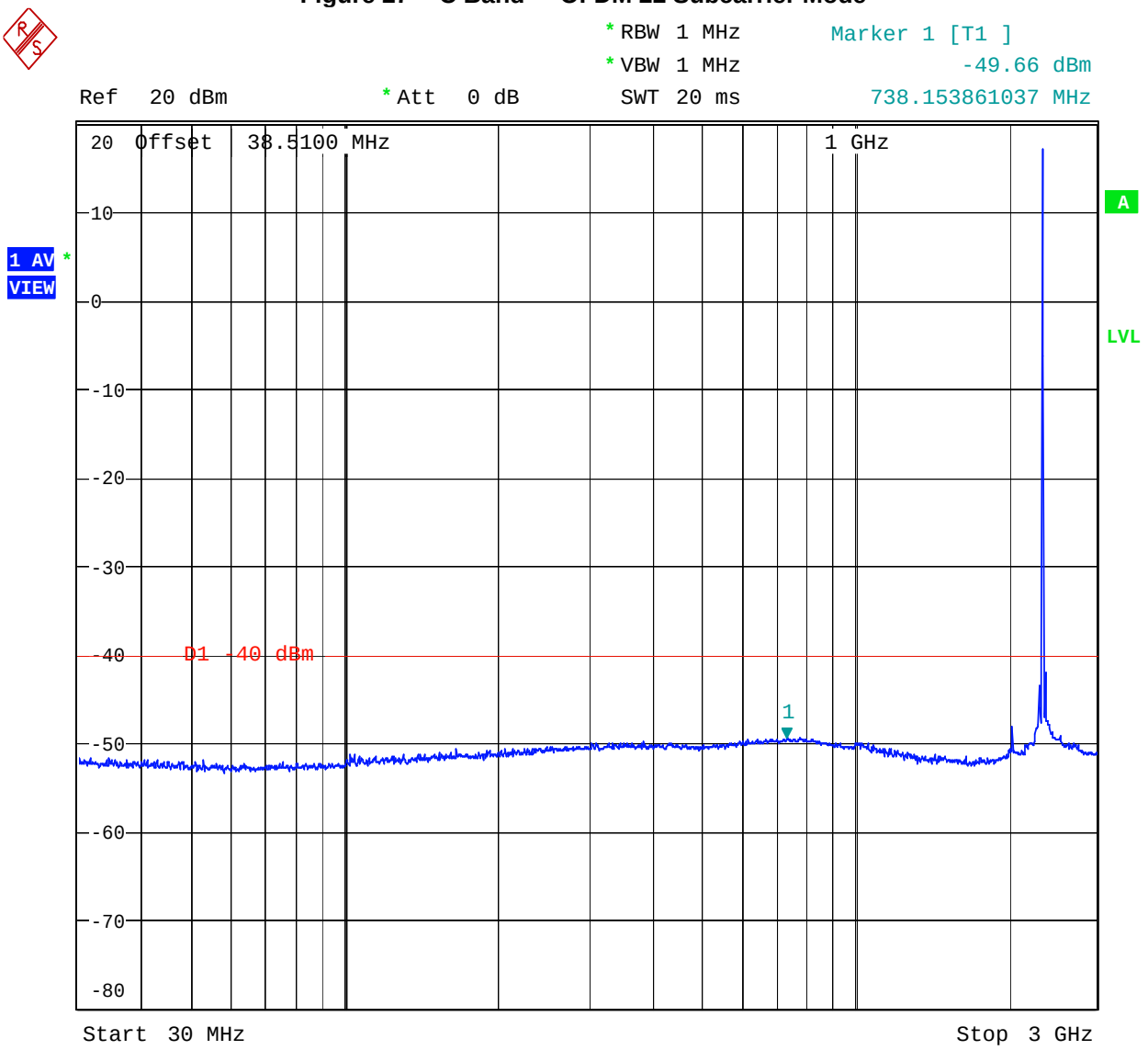
Date: 18.DEC.2006 18:42:14

Figure 26 B High Band - Navini Mode



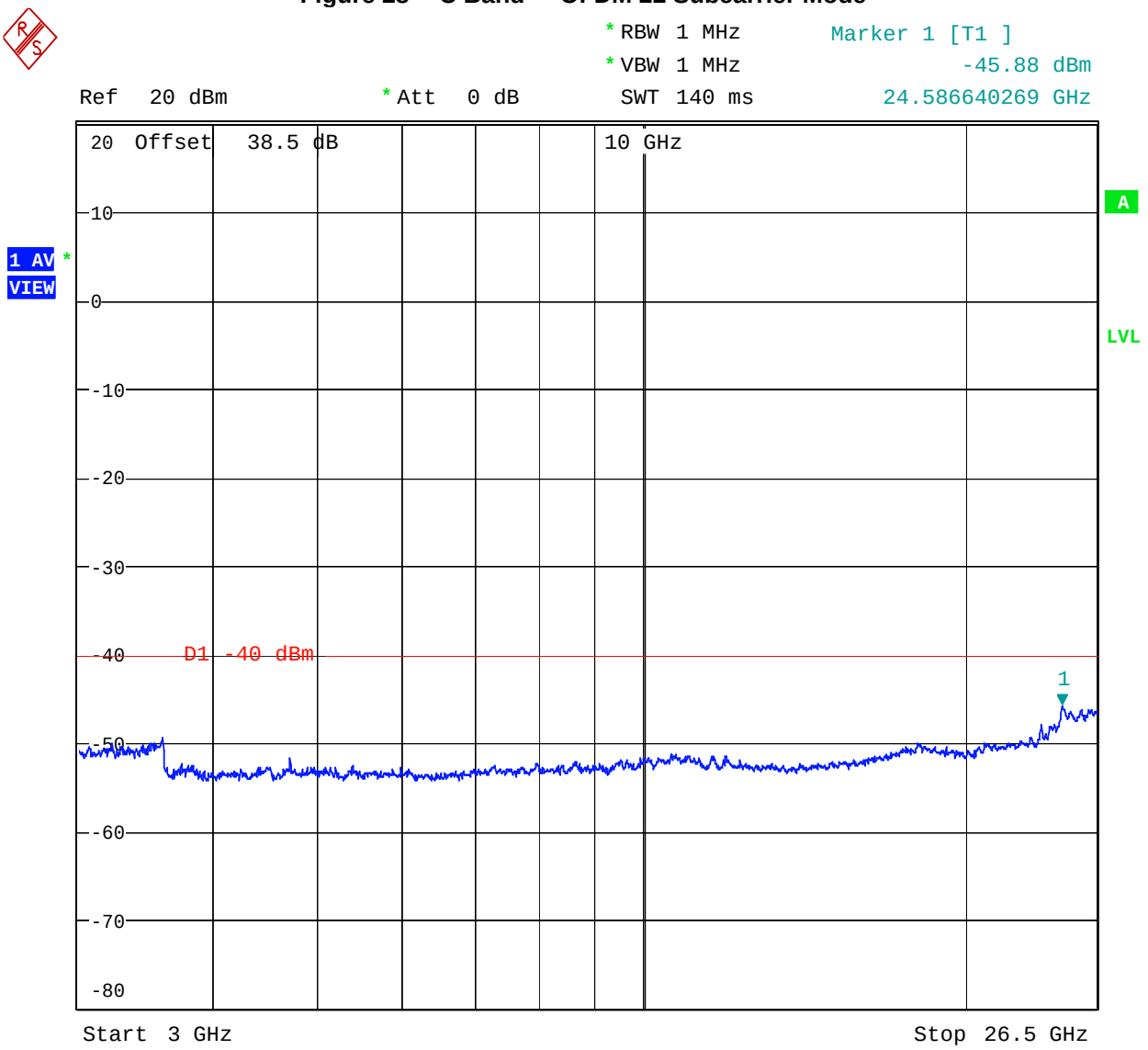
Date: 18.DEC.2006 18:43:14

Figure 27 C Band - OFDM 22 Subcarrier Mode



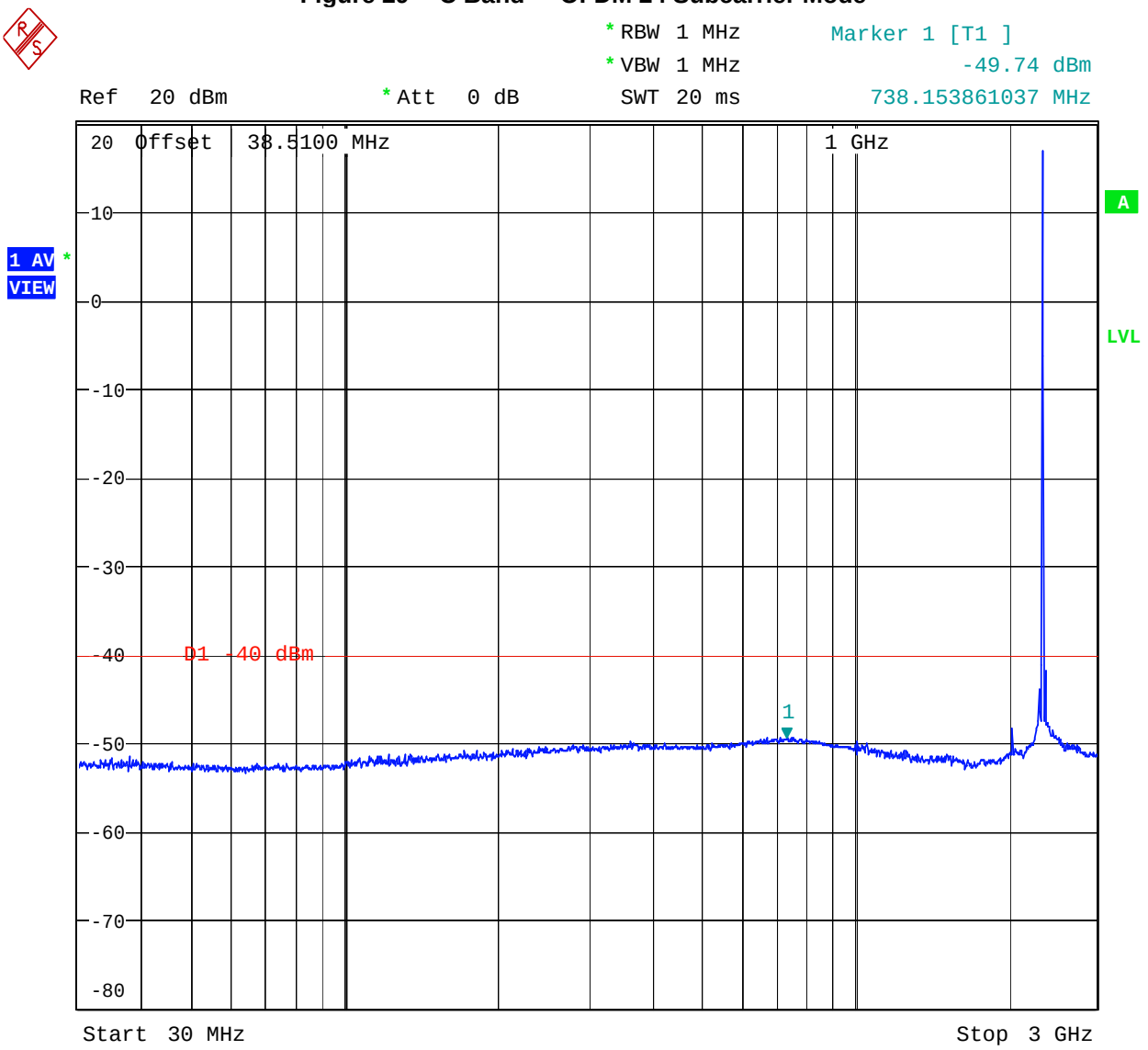
Date: 18.DEC.2006 18:46:01

Figure 28 C Band - OFDM 22 Subcarrier Mode



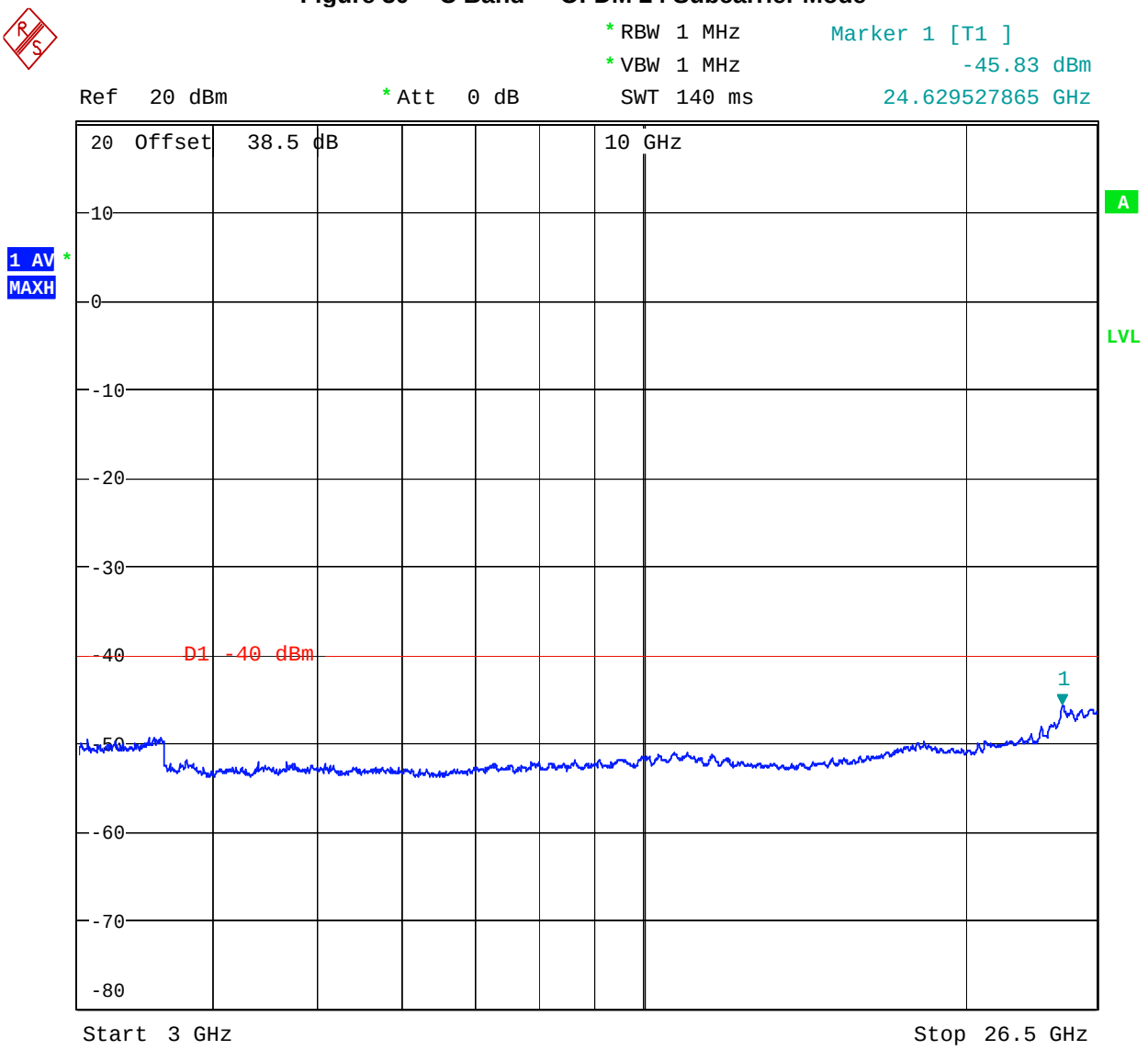
Date: 18.DEC.2006 18:46:52

Figure 29 C Band - OFDM 24 Subcarrier Mode



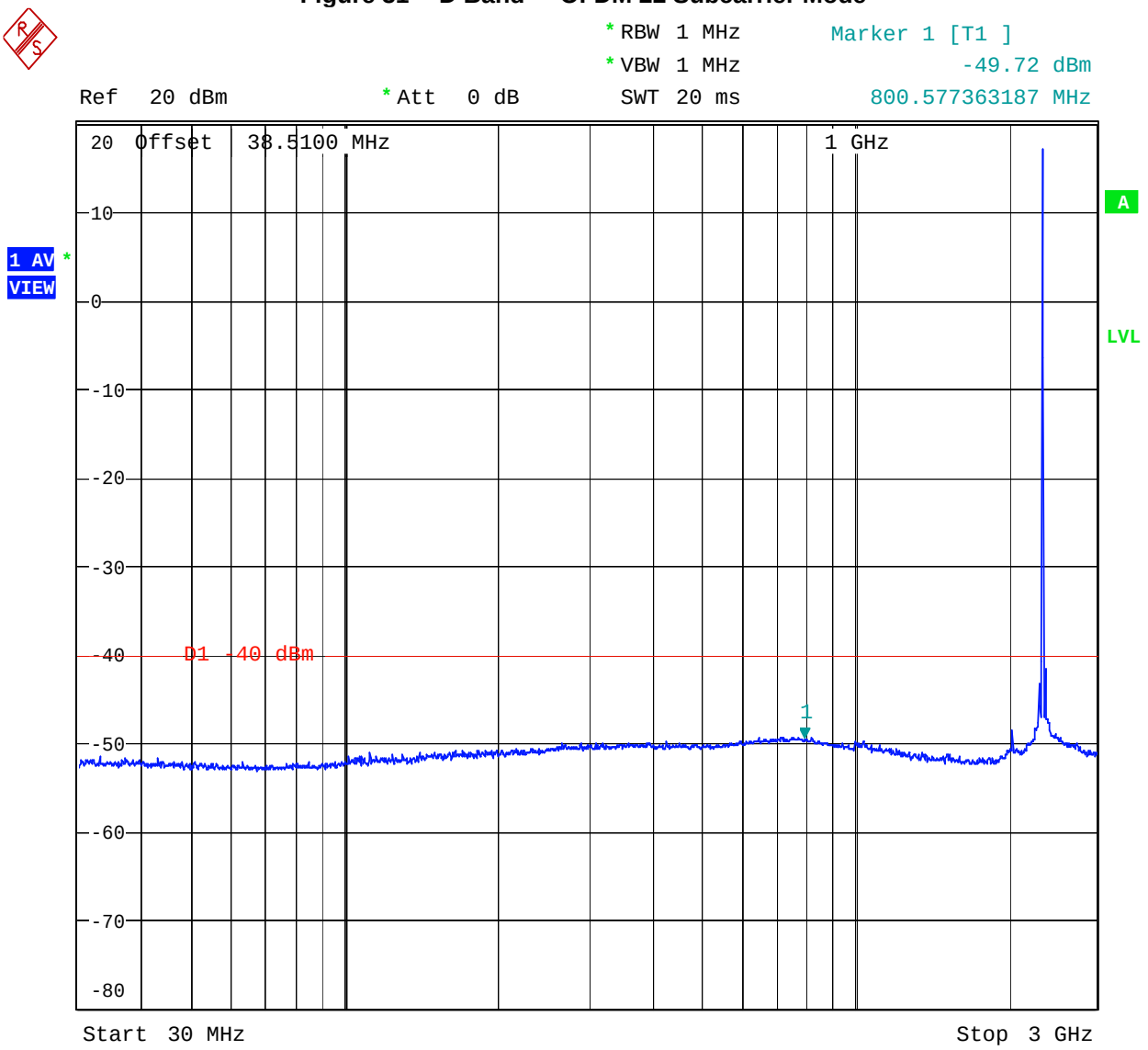
Date: 18.DEC.2006 18:47:56

Figure 30 C Band - OFDM 24 Subcarrier Mode



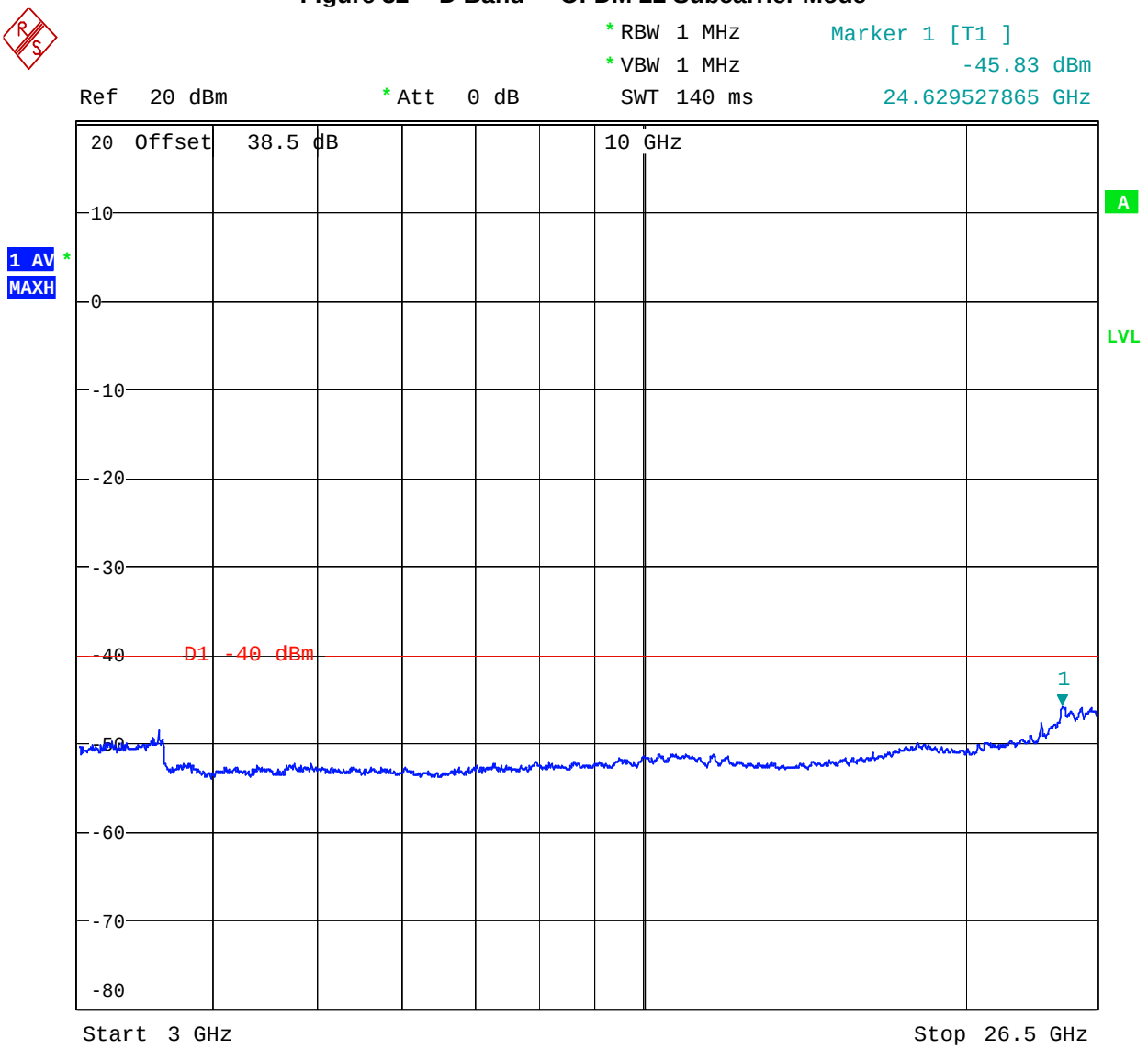
Date: 18.DEC.2006 18:48:33

Figure 31 D Band - OFDM 22 Subcarrier Mode



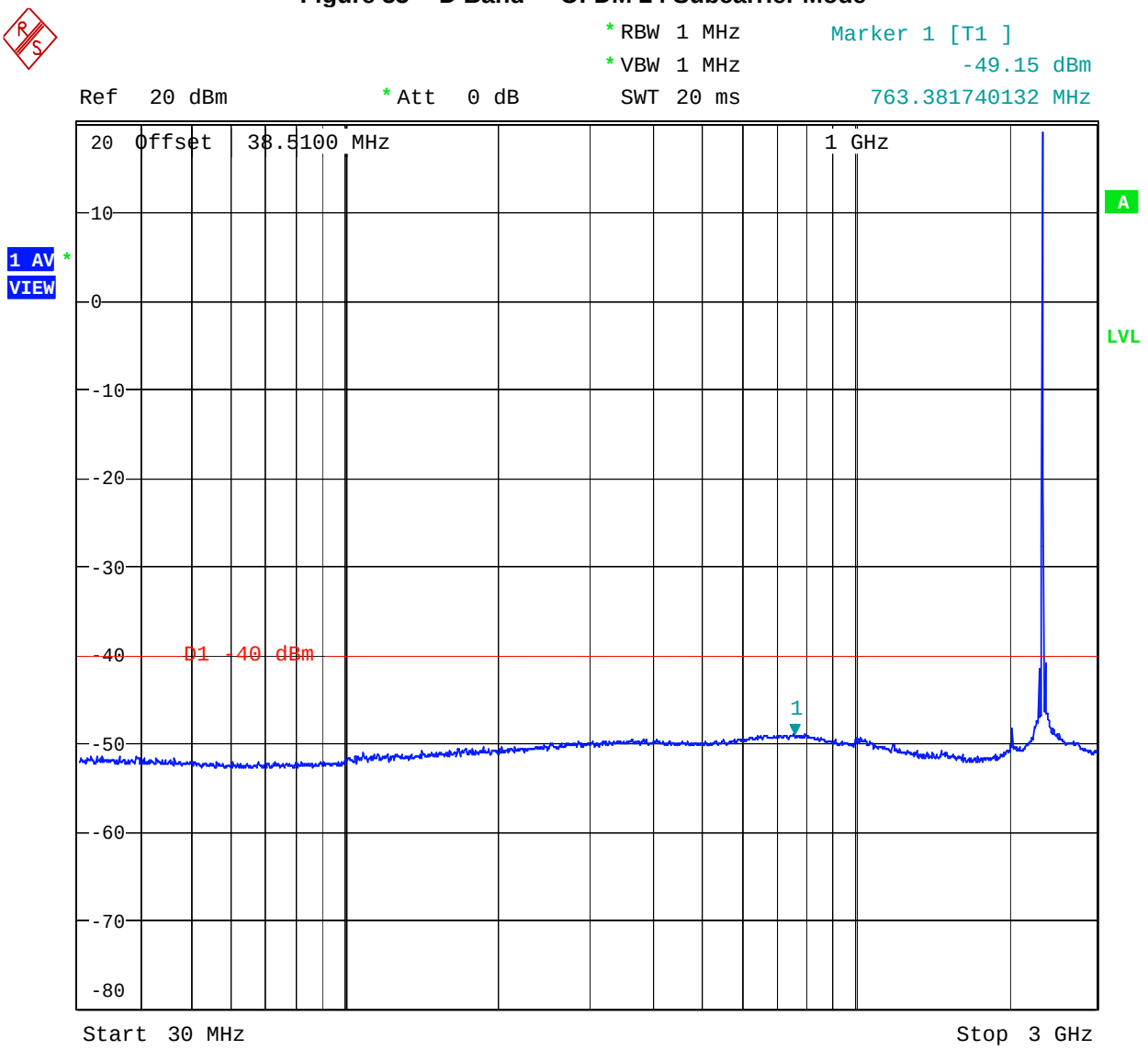
Date: 18.DEC.2006 18:49:27

Figure 32 D Band - OFDM 22 Subcarrier Mode



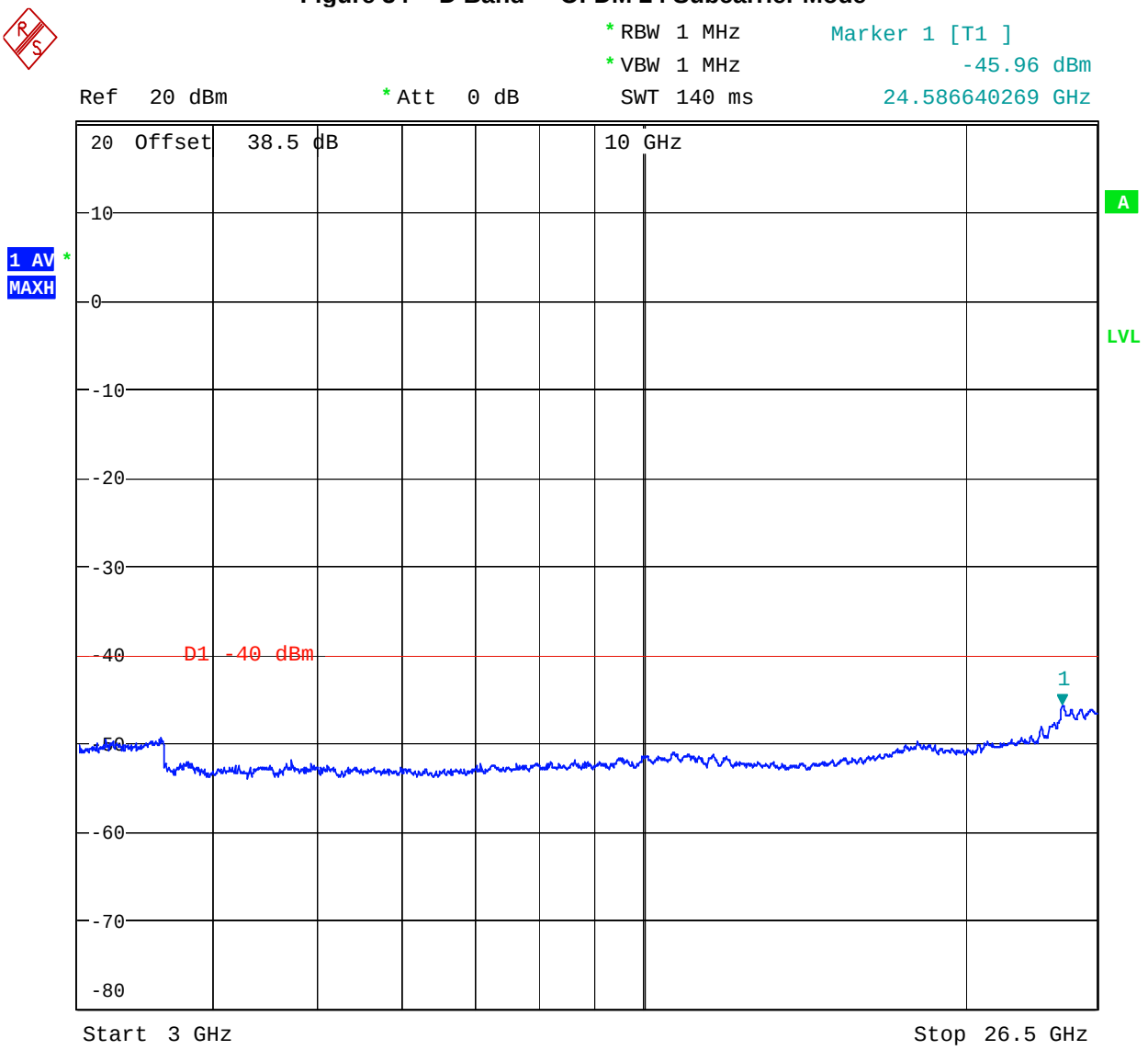
Date: 18.DEC.2006 18:50:01

Figure 33 D Band - OFDM 24 Subcarrier Mode



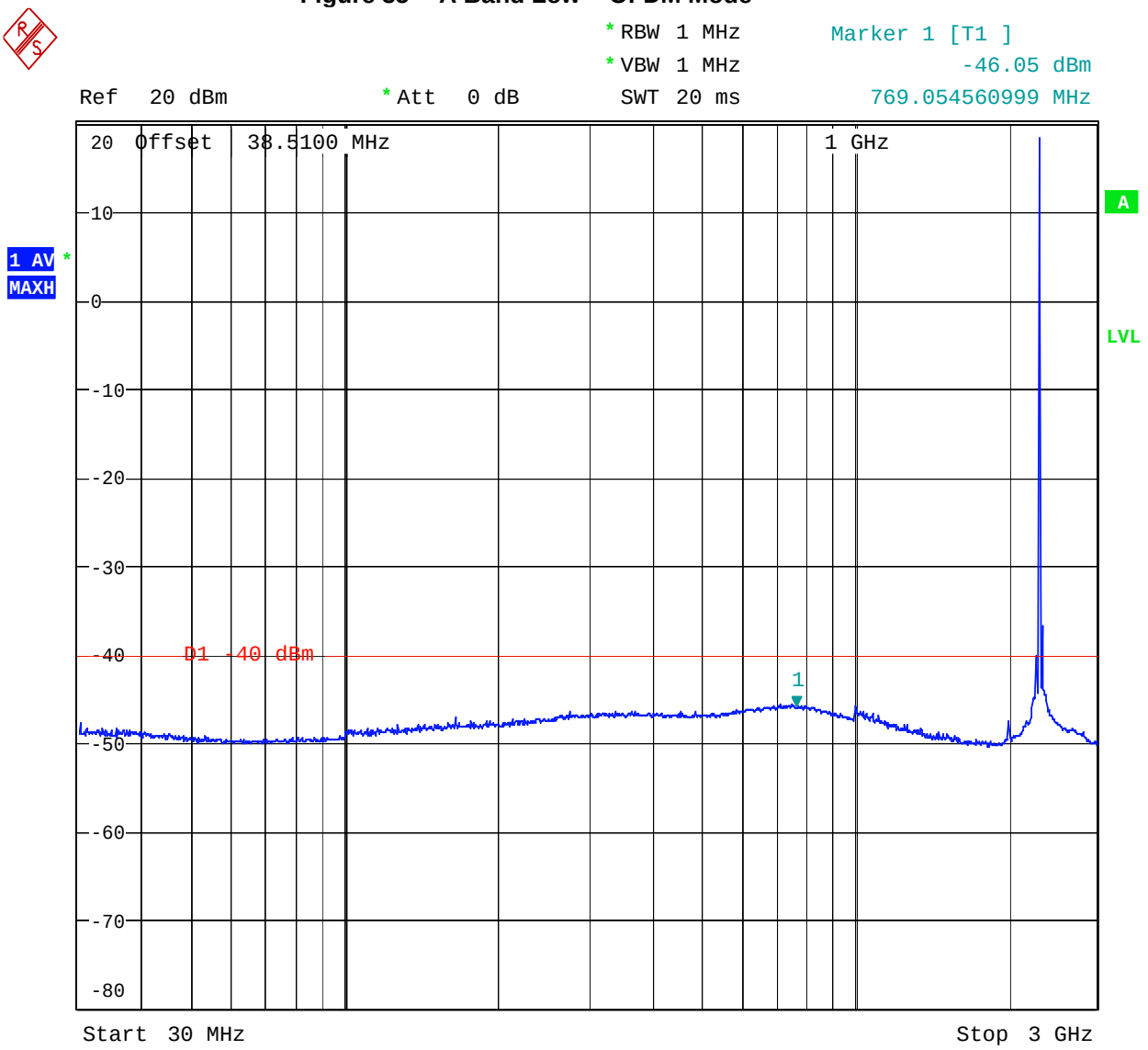
Date: 18.DEC.2006 18:52:02

Figure 34 D Band - OFDM 24 Subcarrier Mode



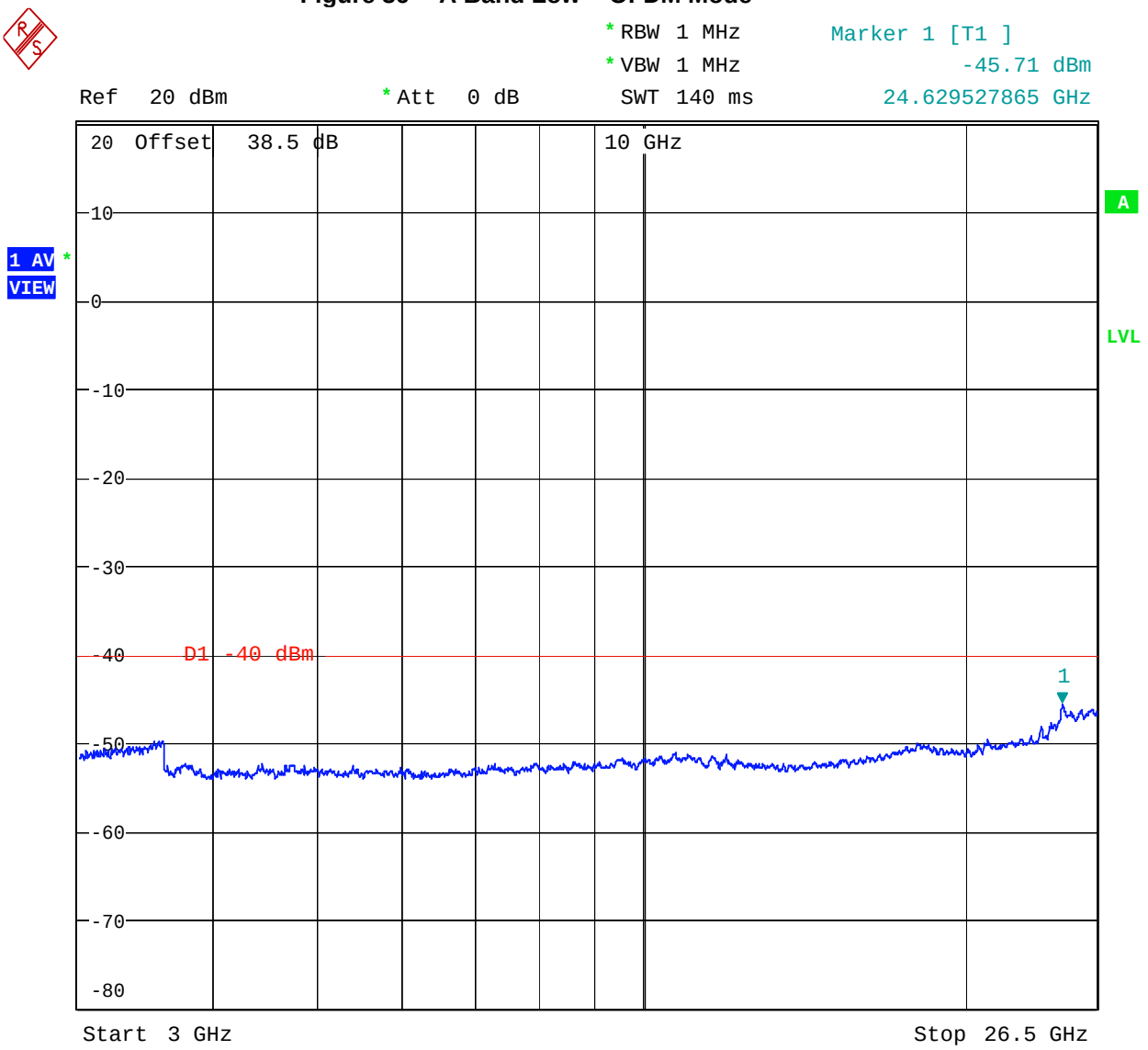
Date: 18.DEC.2006 18:52:36

Figure 35 A Band Low - OFDM Mode



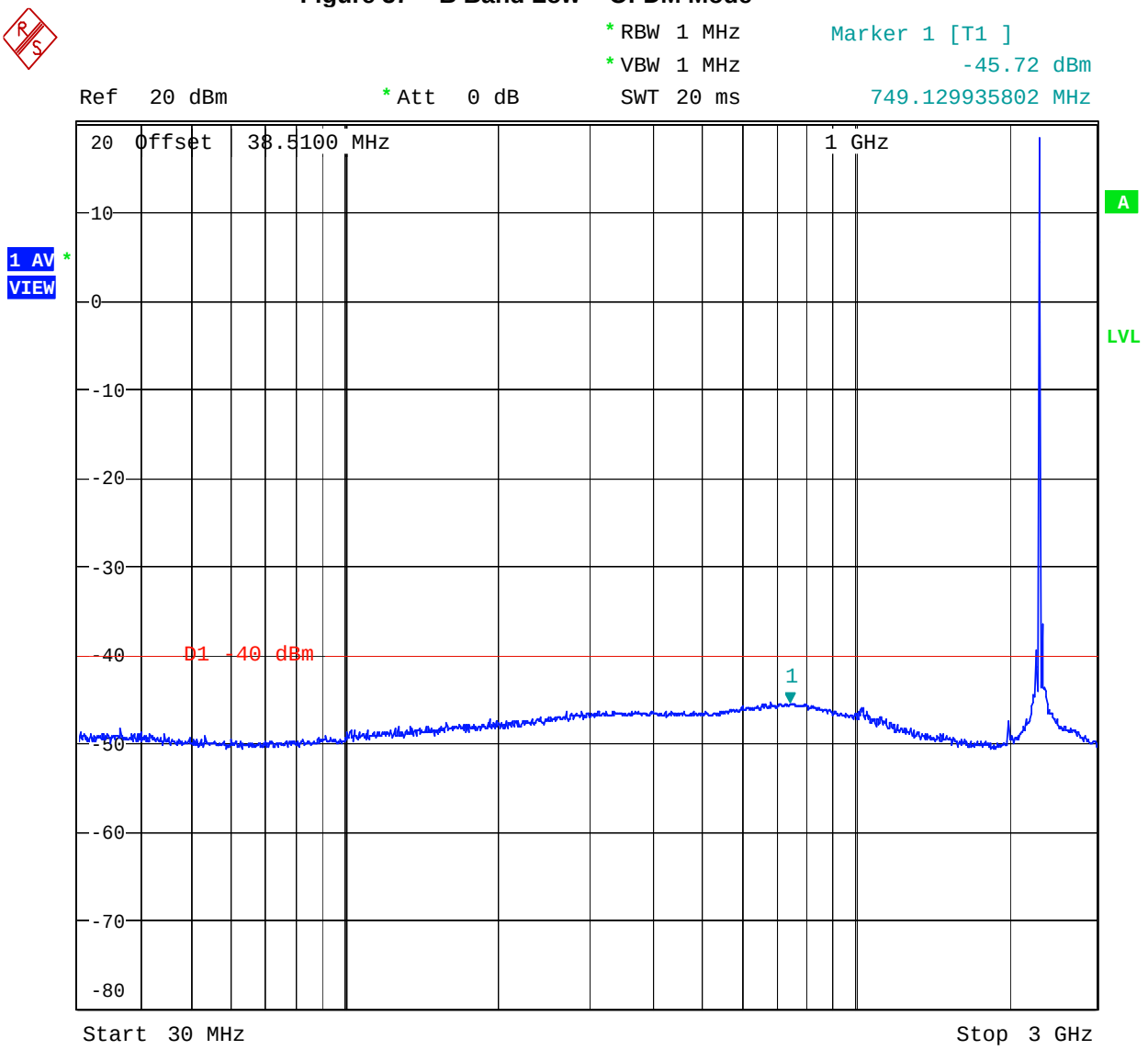
Date: 18.DEC.2006 18:55:17

Figure 36 A Band Low - OFDM Mode



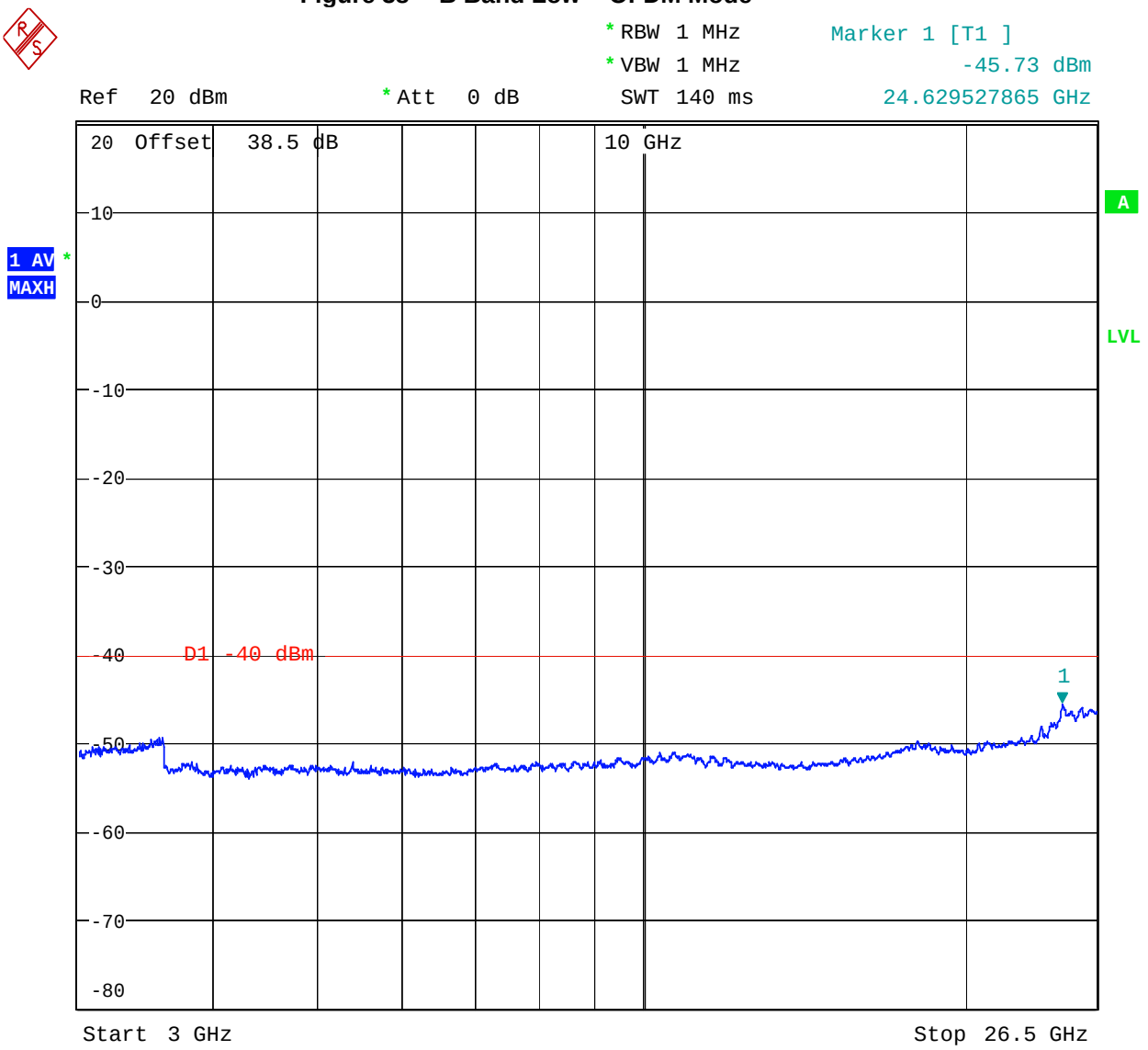
Date: 18.DEC.2006 18:56:42

Figure 37 B Band Low - OFDM Mode



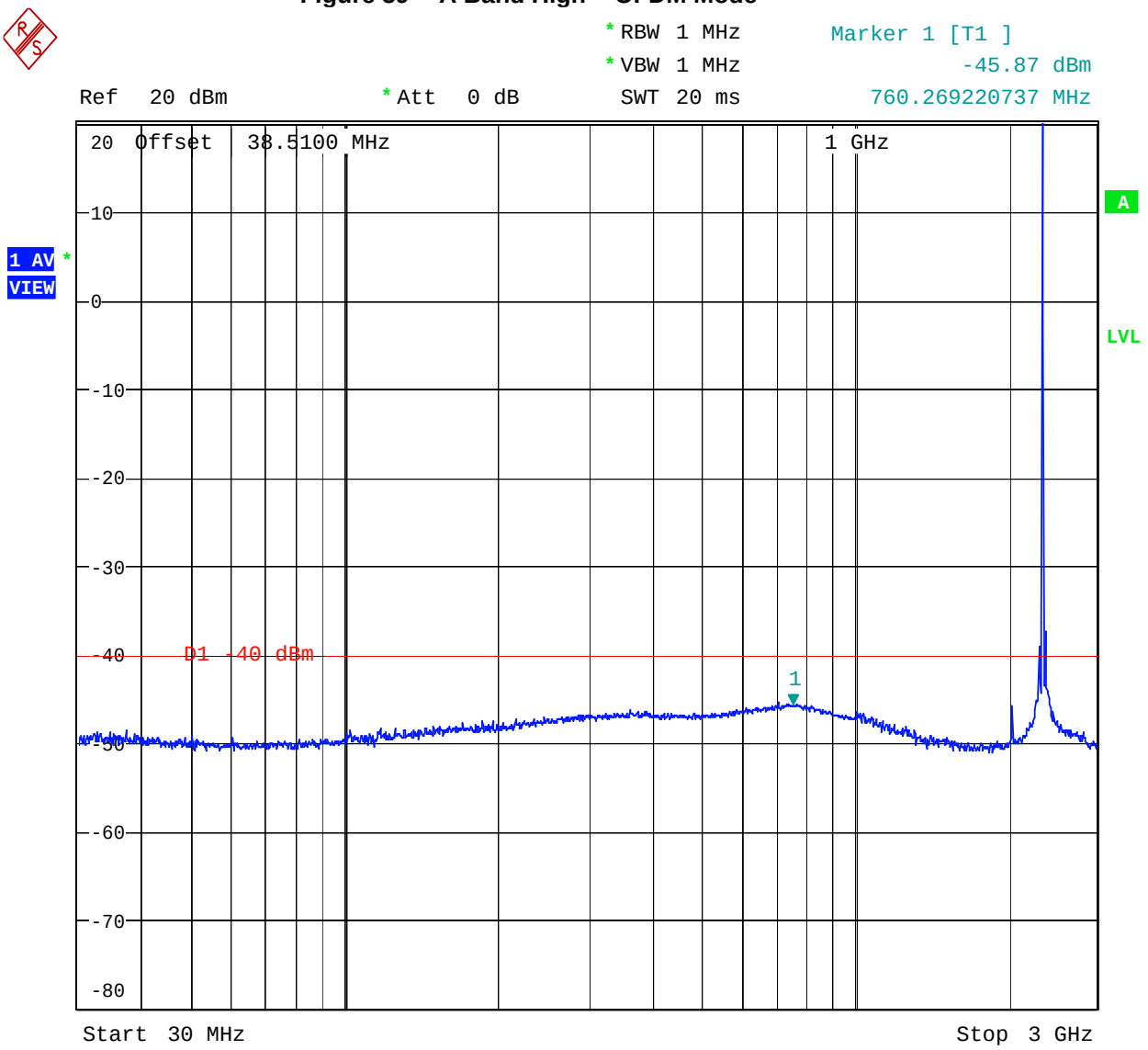
Date: 18.DEC.2006 18:59:02

Figure 38 B Band Low - OFDM Mode



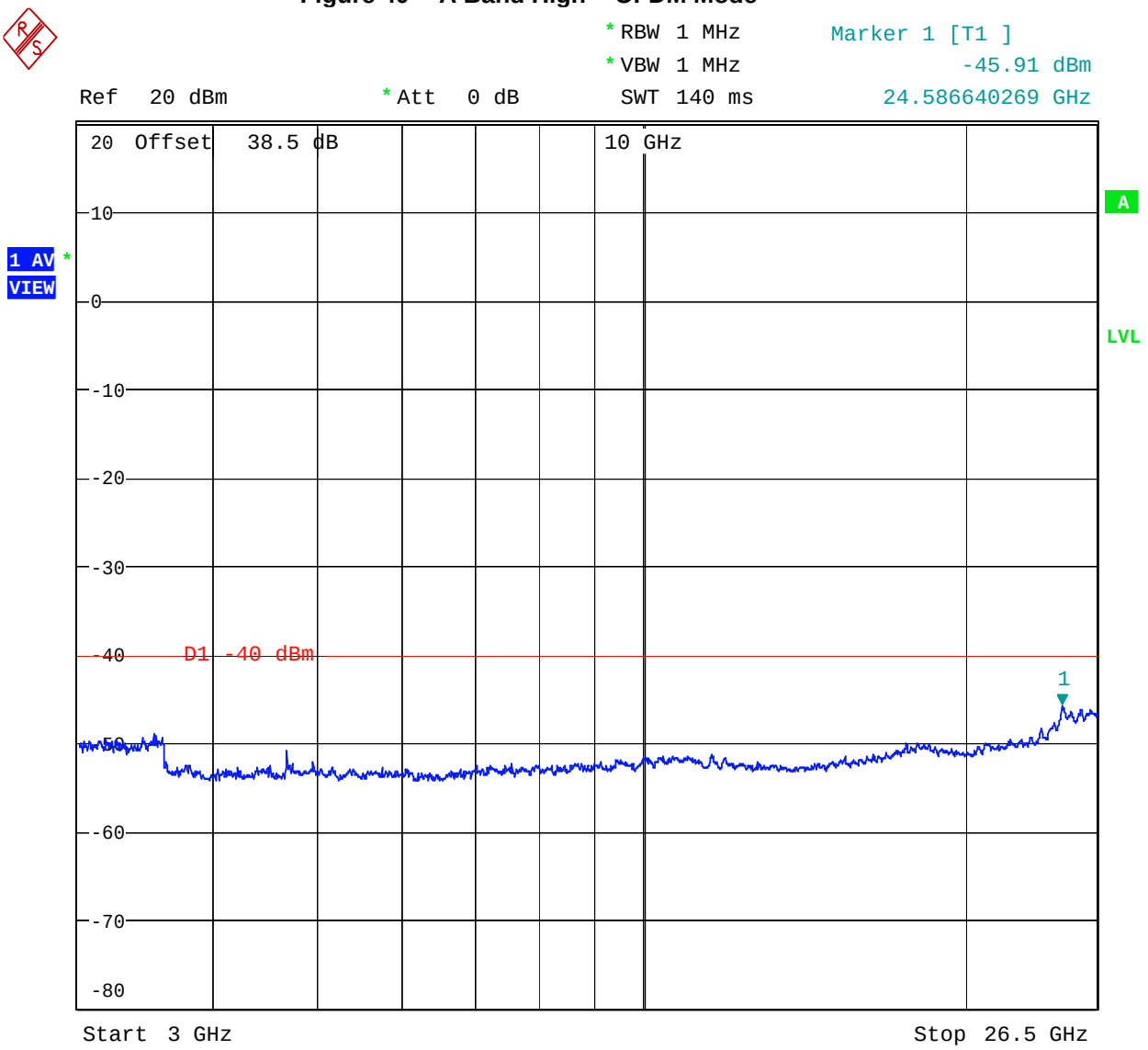
Date: 18.DEC.2006 18:59:44

Figure 39 A Band High - OFDM Mode



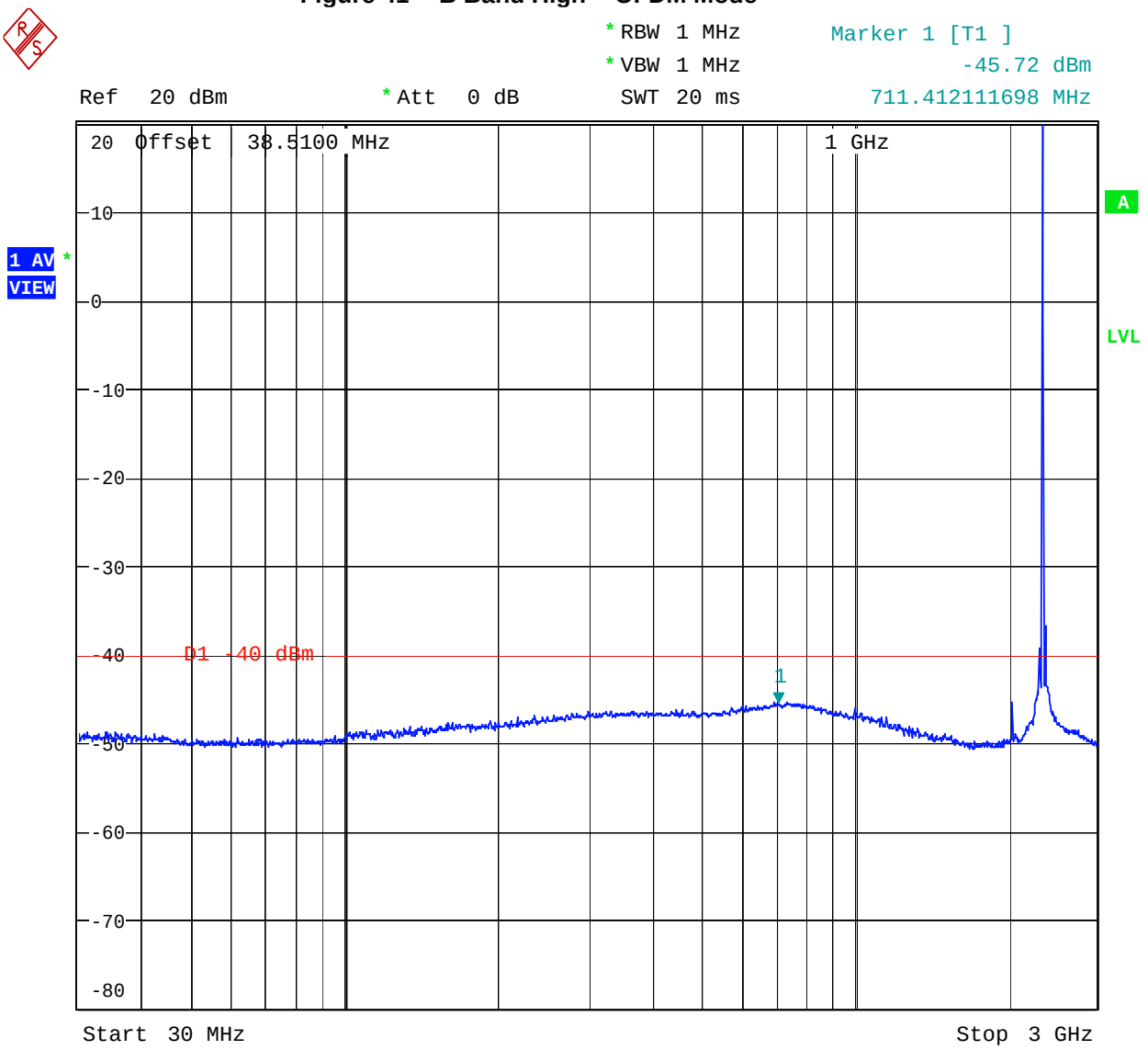
Date: 18.DEC.2006 19:03:04

Figure 40 A Band High - OFDM Mode



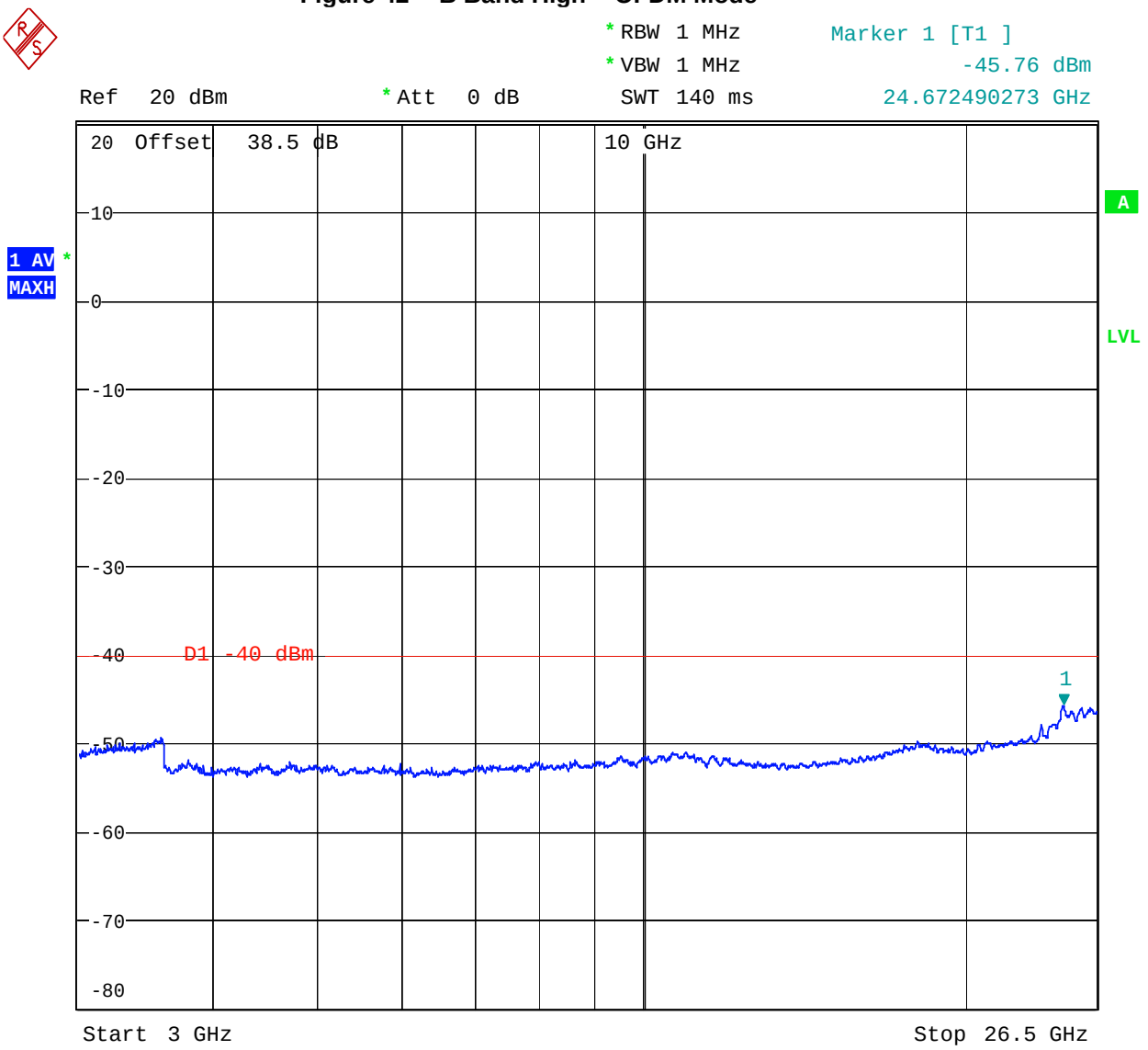
Date: 18.DEC.2006 19:03:50

Figure 41 B Band High - OFDM Mode



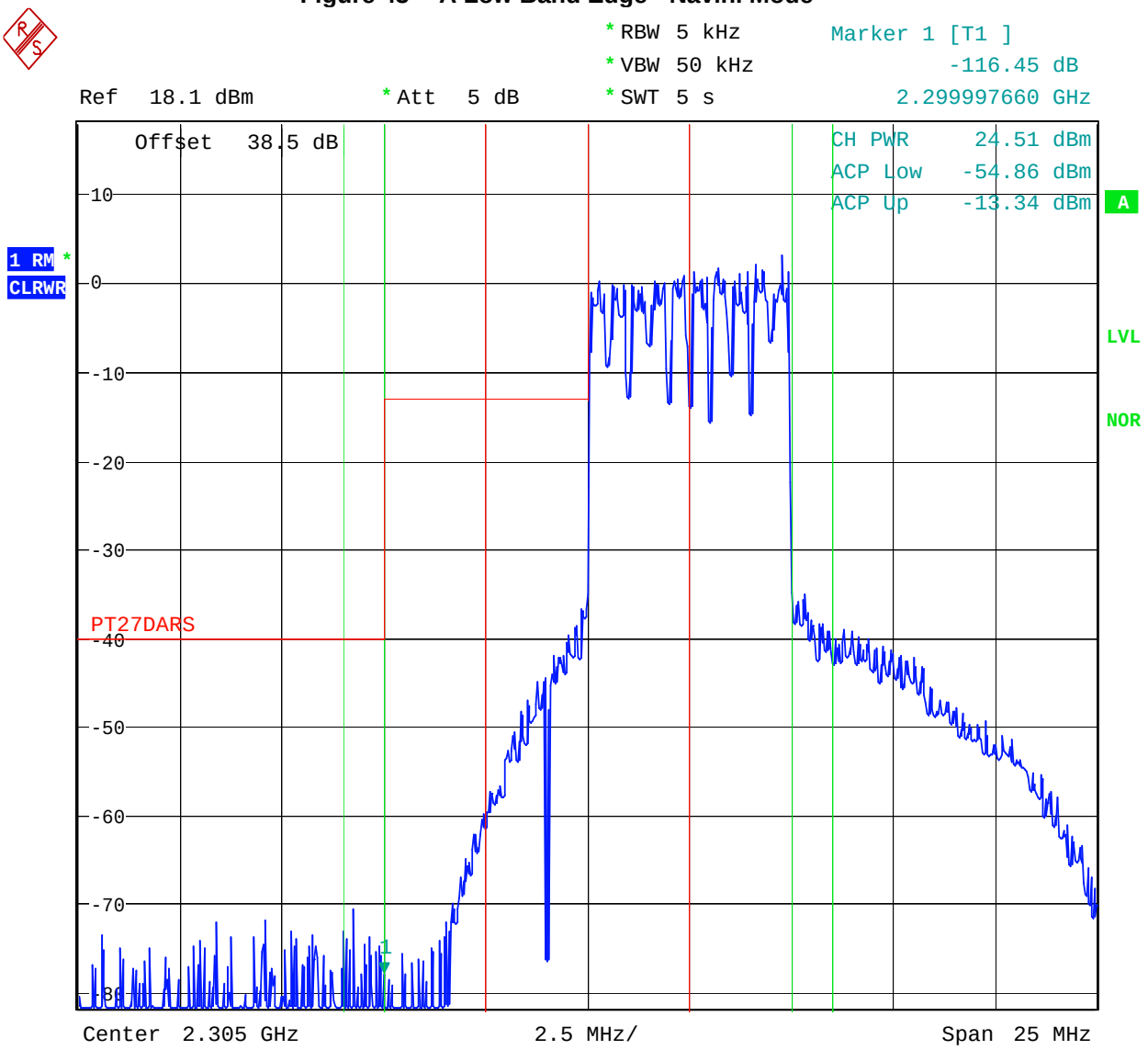
Date: 18.DEC.2006 19:05:58

Figure 42 B Band High - OFDM Mode



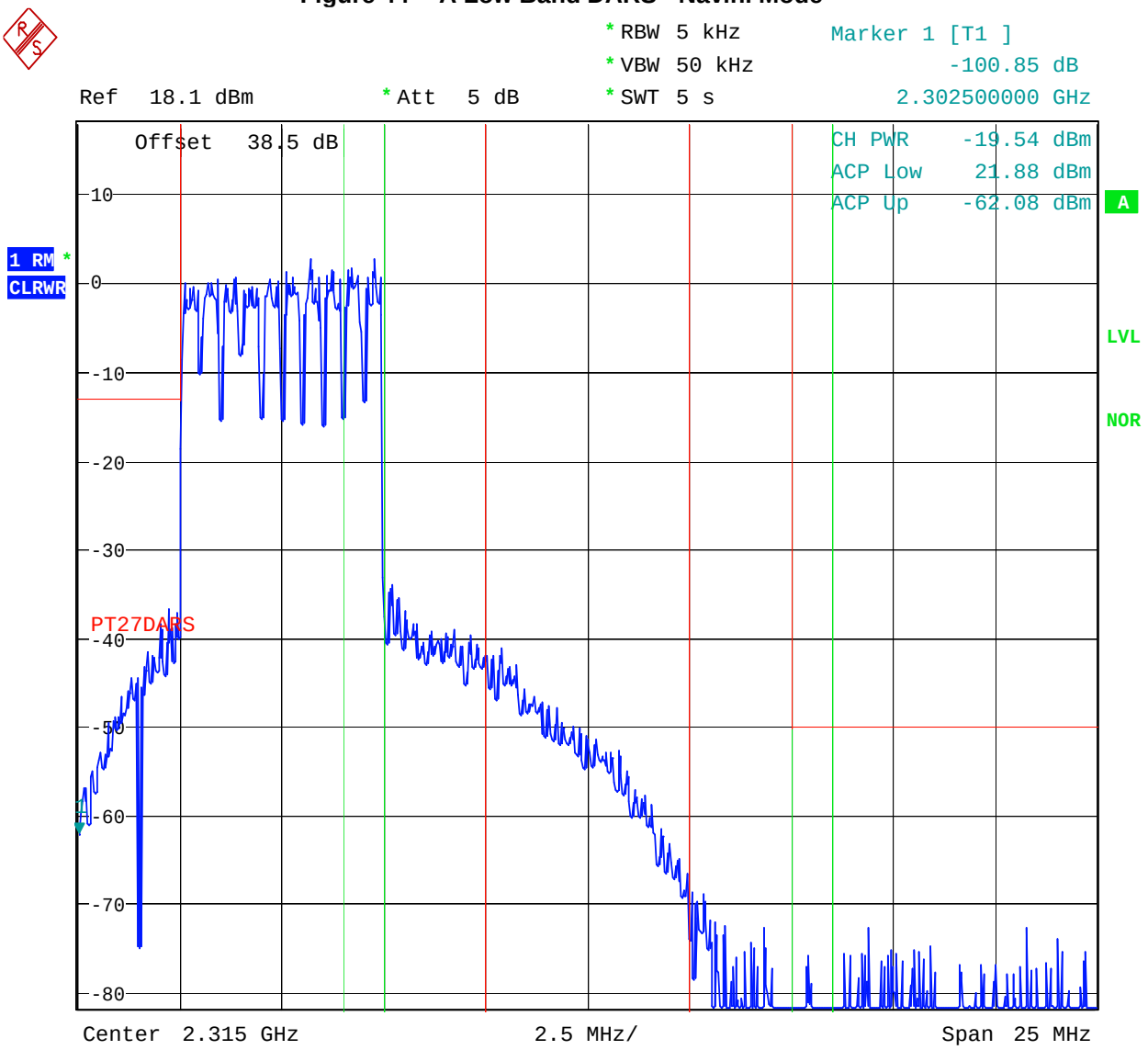
Date: 18.DEC.2006 19:07:24

Figure 43 A Low Band Edge - Navini Mode



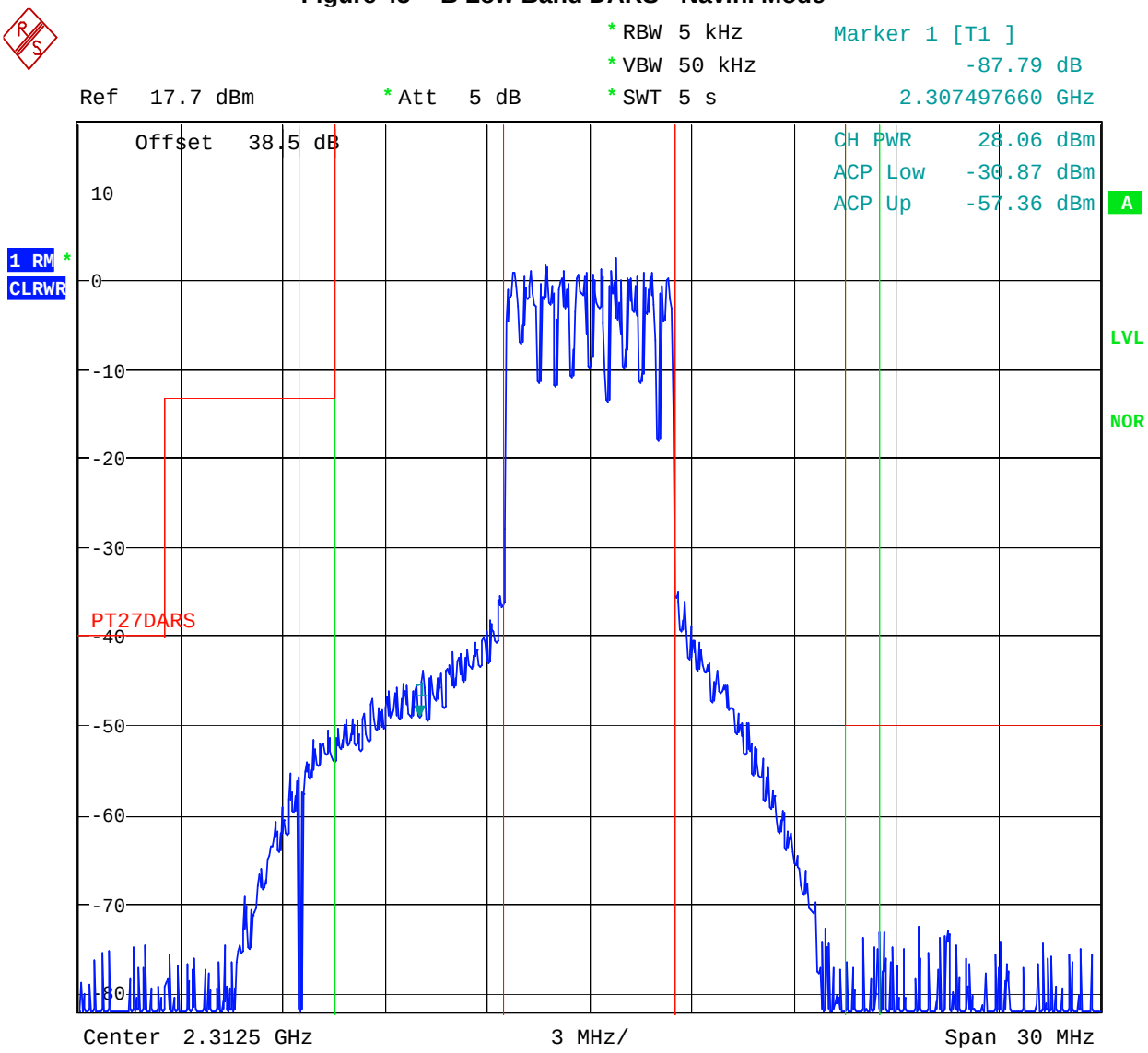
Date: 10.NOV.2006 16:09:10

Figure 44 A Low Band DARS - Navini Mode



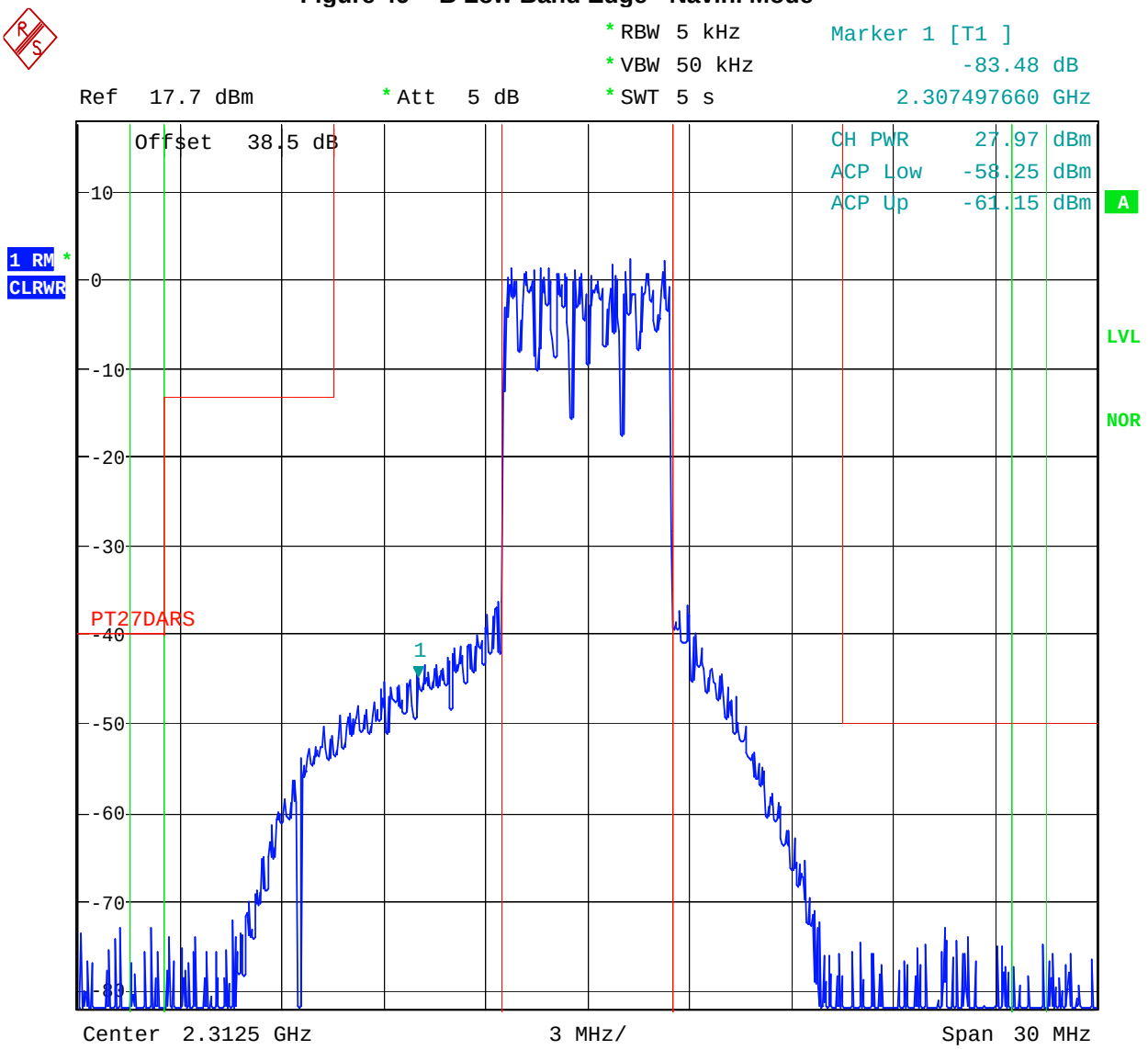
Date: 10.NOV.2006 16:11:46

Figure 45 B Low Band DARS - Navini Mode



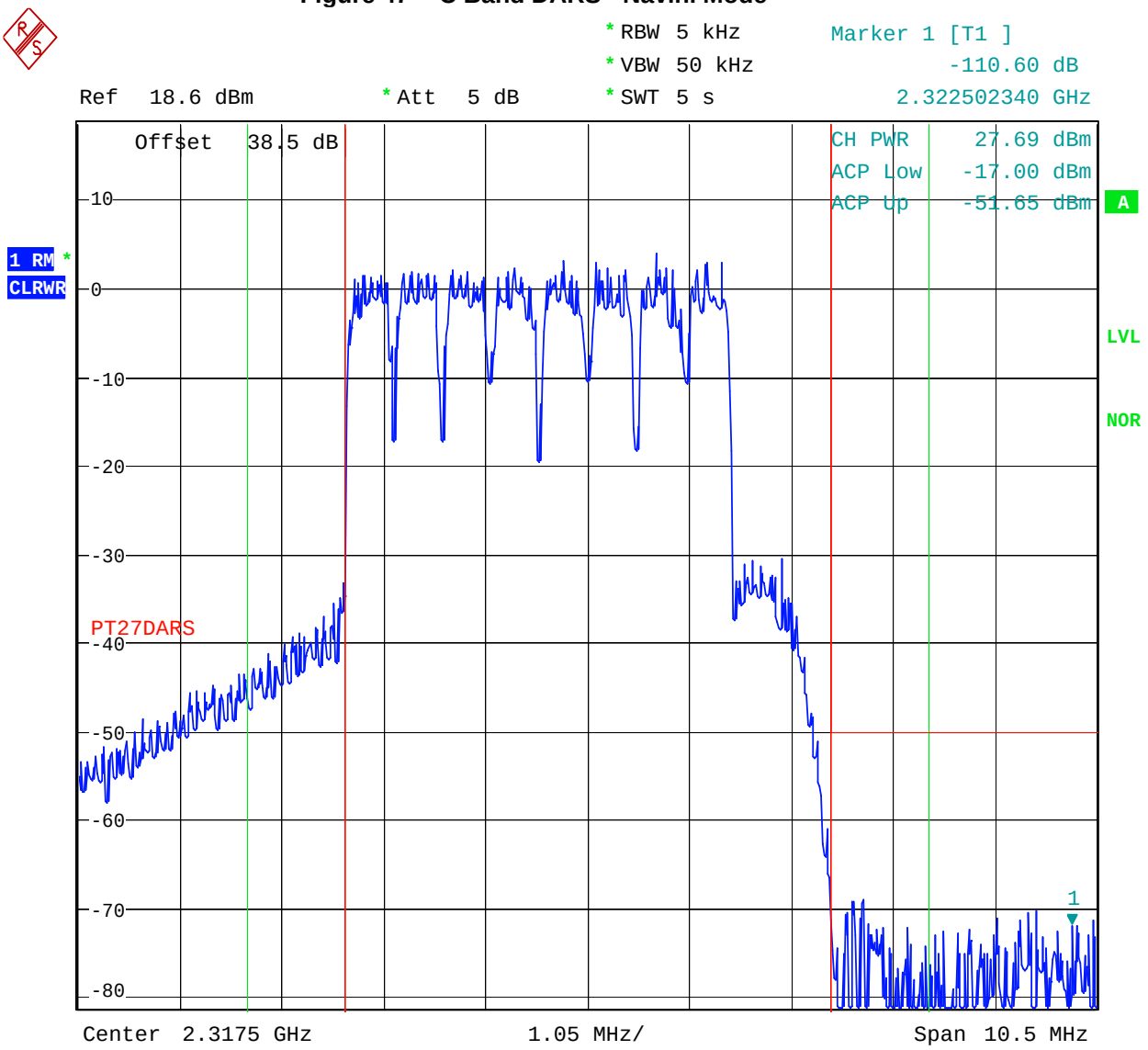
Date: 14.NOV.2006 21:59:40

Figure 46 B Low Band Edge - Navini Mode



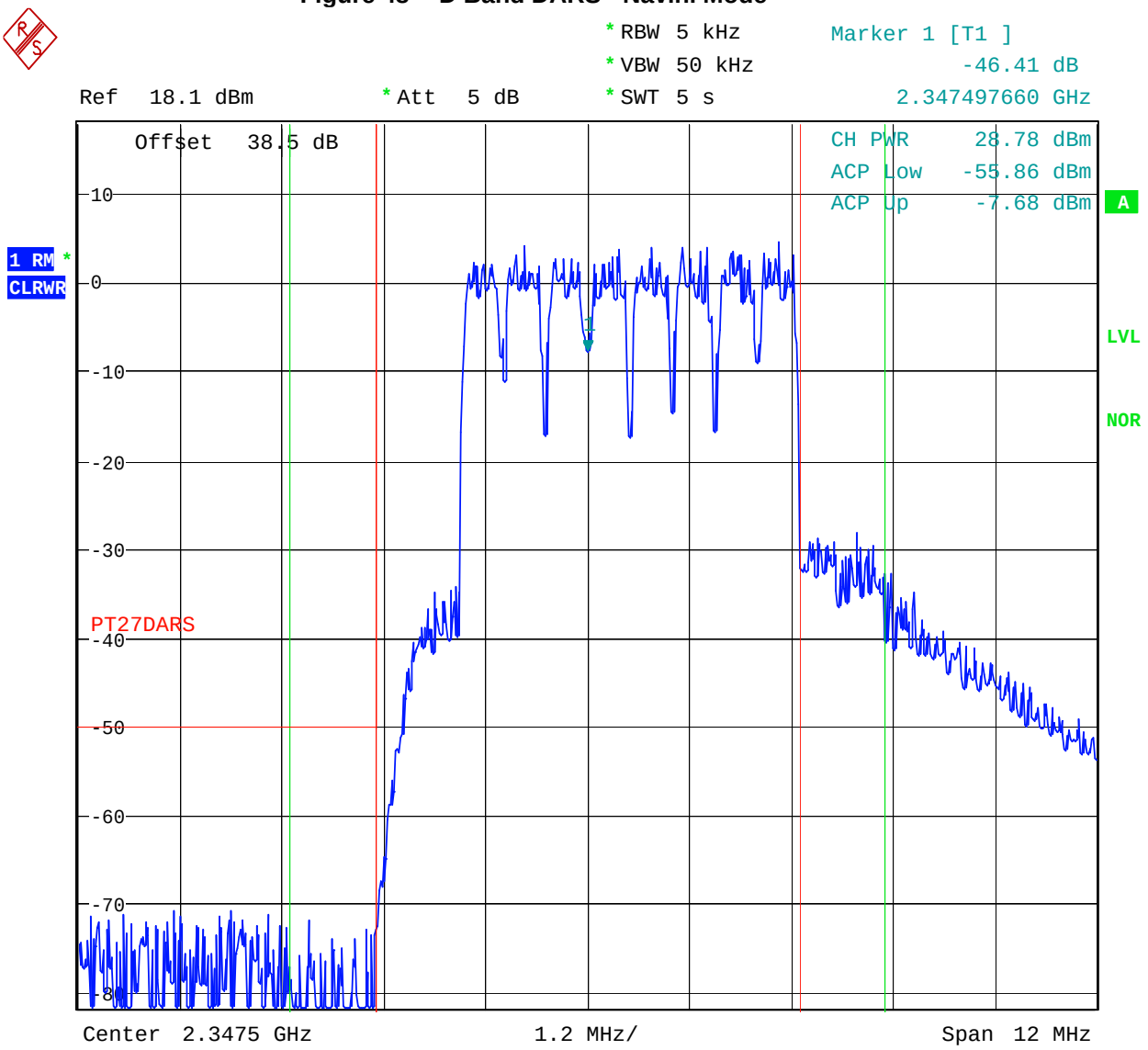
Date: 14.NOV.2006 21:58:11

Figure 47 C Band DARS - Navini Mode



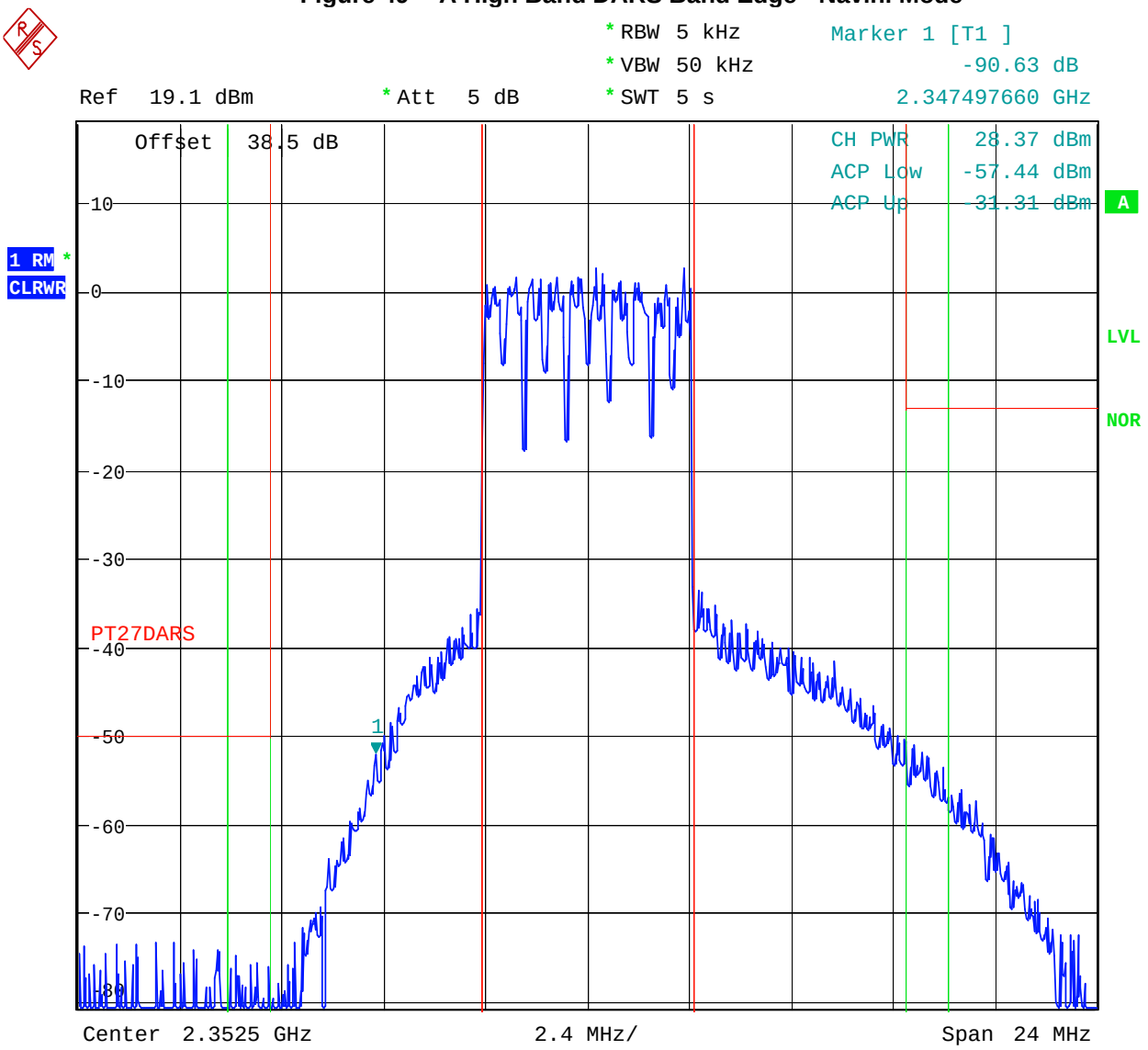
Date: 13.NOV.2006 20:50:06

Figure 48 D Band DARS - Navini Mode



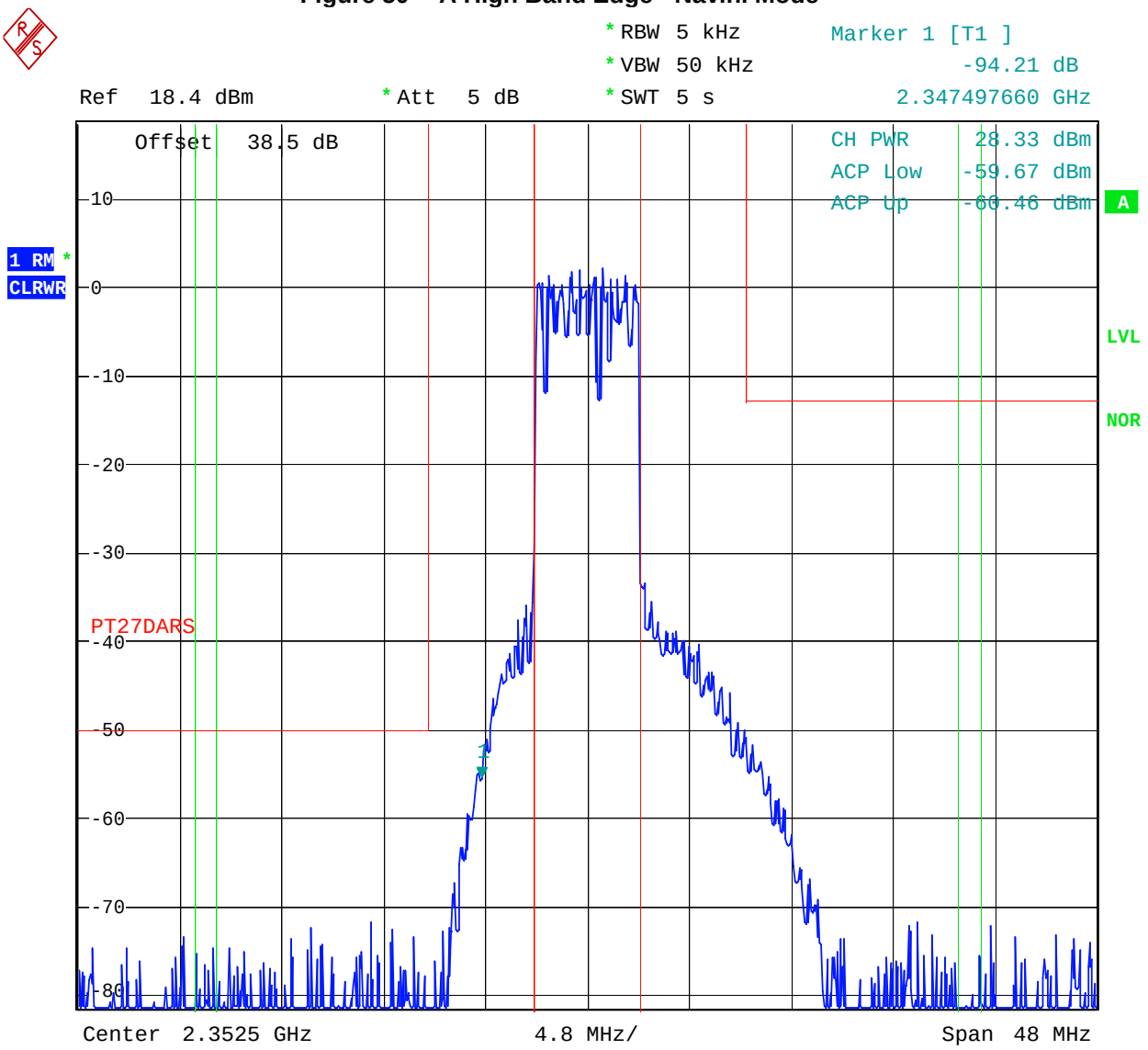
Date: 13.NOV.2006 21:00:07

Figure 49 A High Band DARS Band Edge - Navini Mode



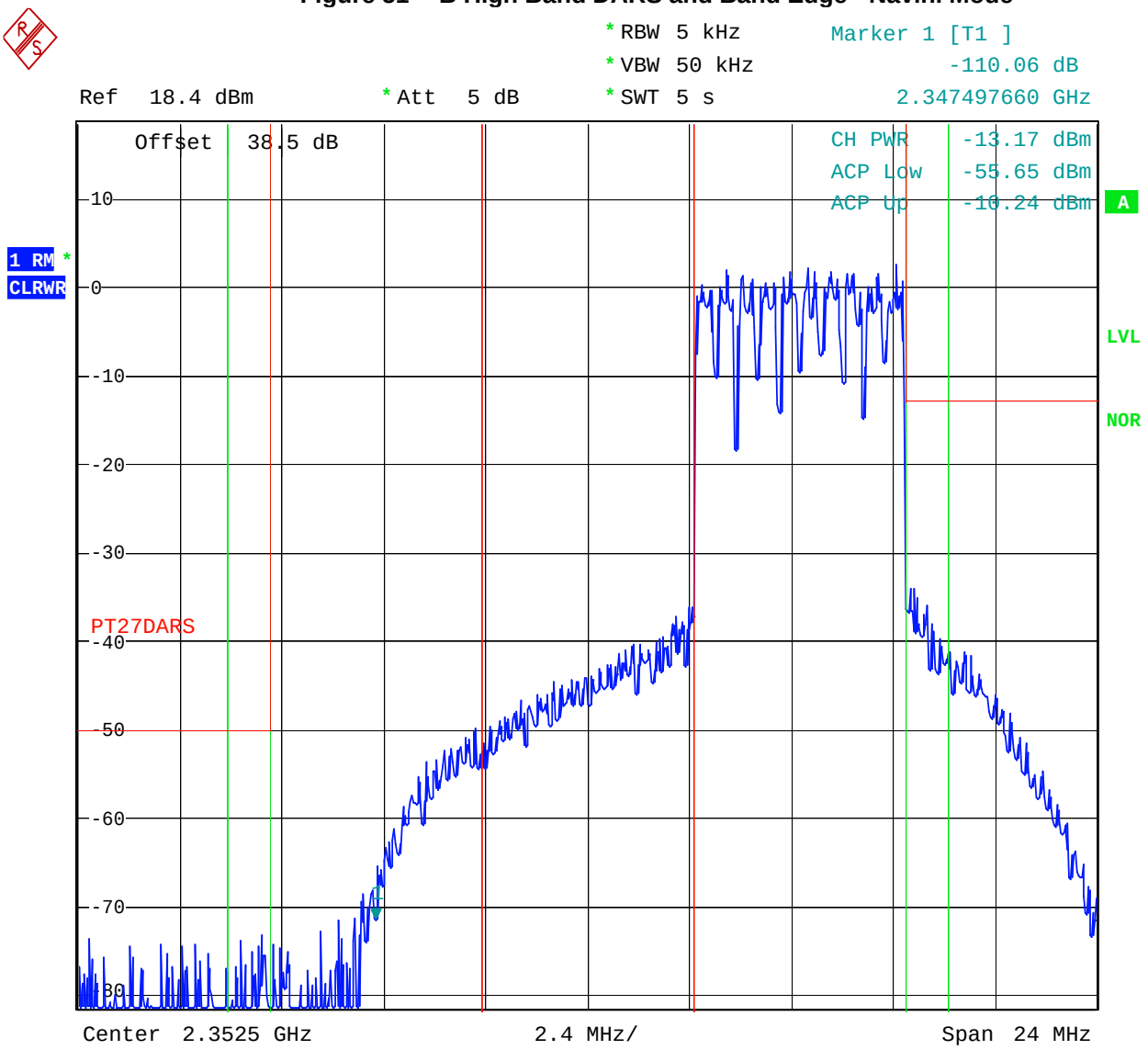
Date: 13.NOV.2006 20:24:08

Figure 50 A High Band Edge - Navini Mode



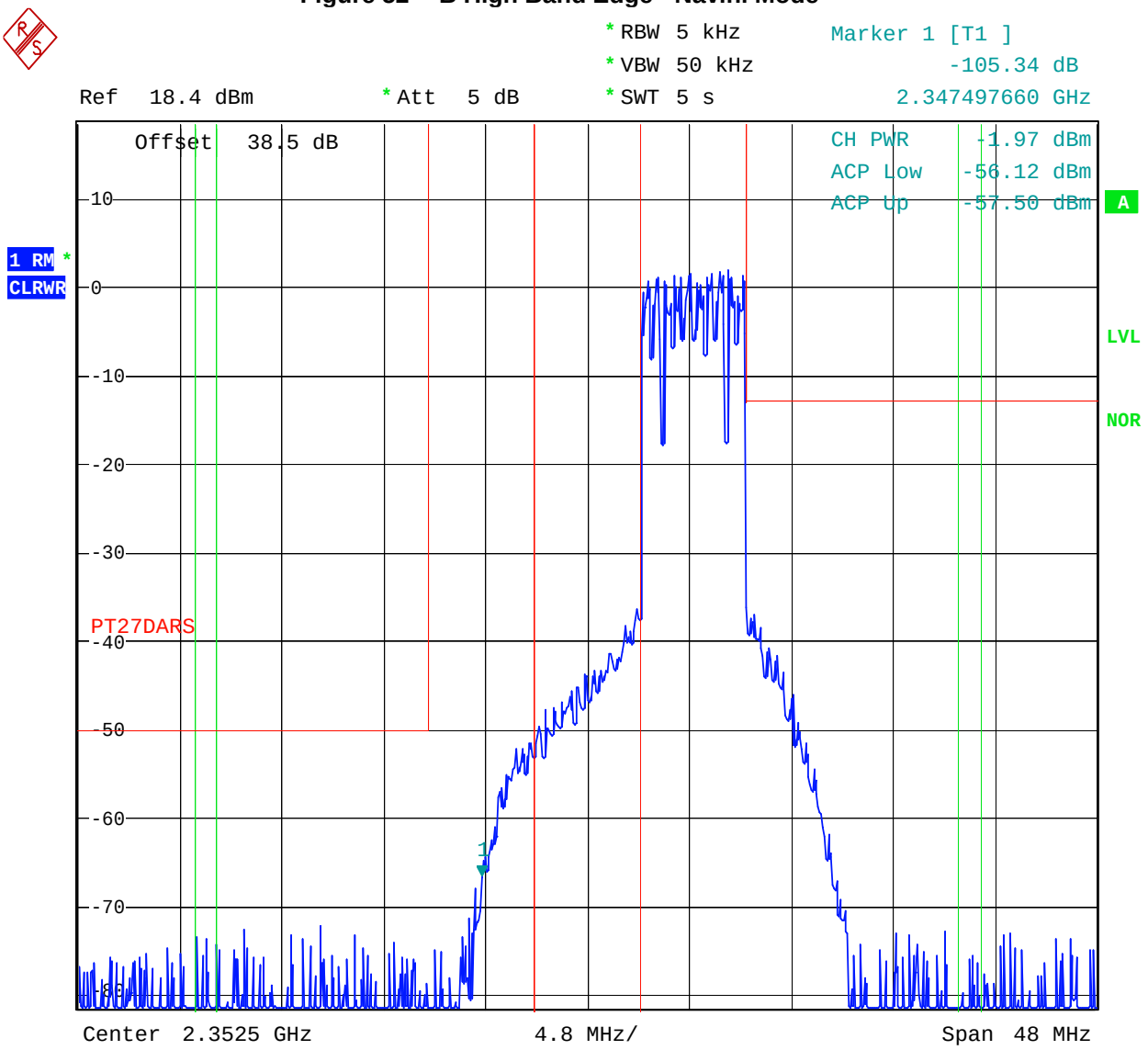
Date: 13.NOV.2006 20:28:43

Figure 51 B High Band DARS and Band Edge - Navini Mode



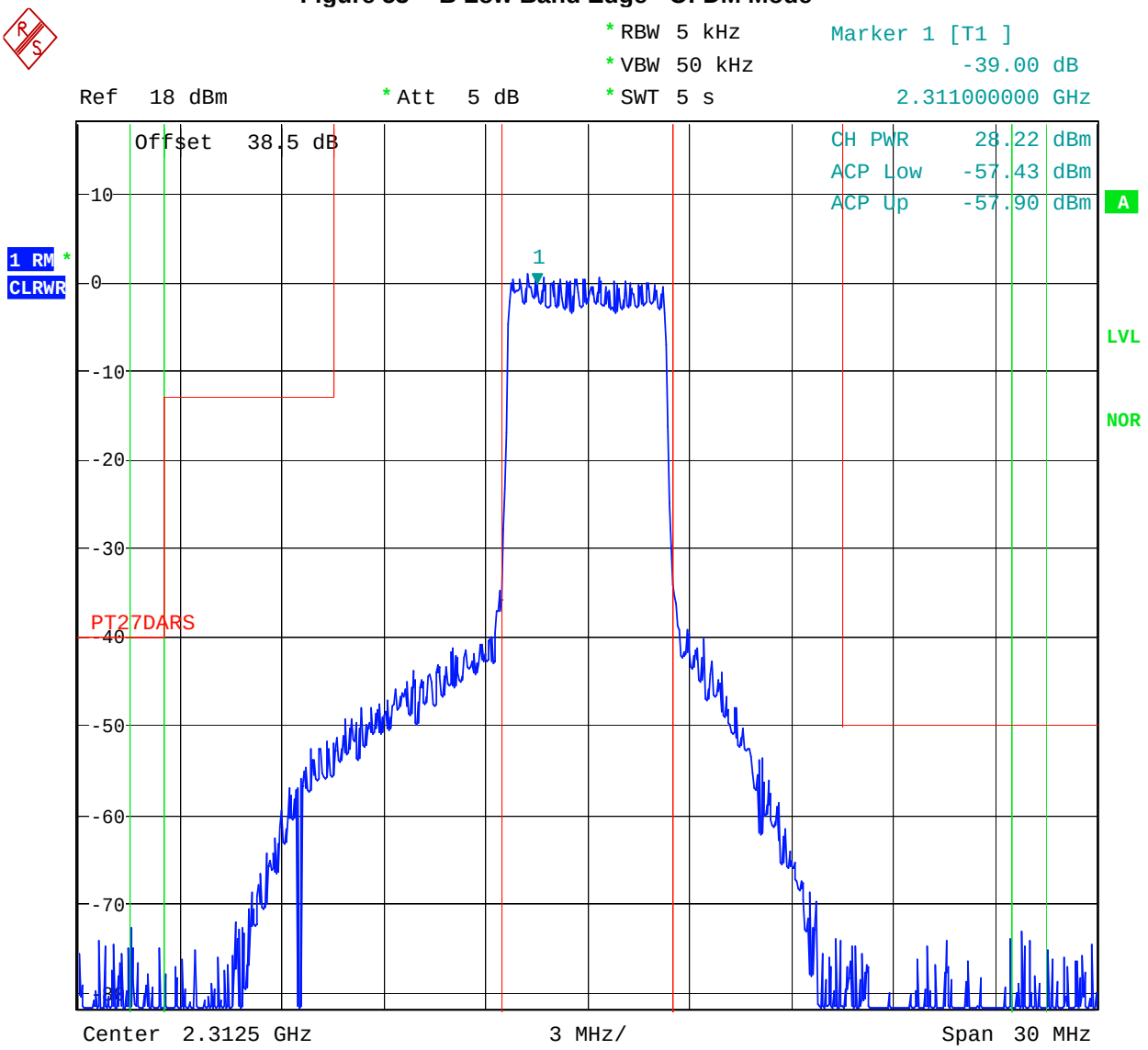
Date: 13.NOV.2006 20:44:51

Figure 52 B High Band Edge - Navini Mode



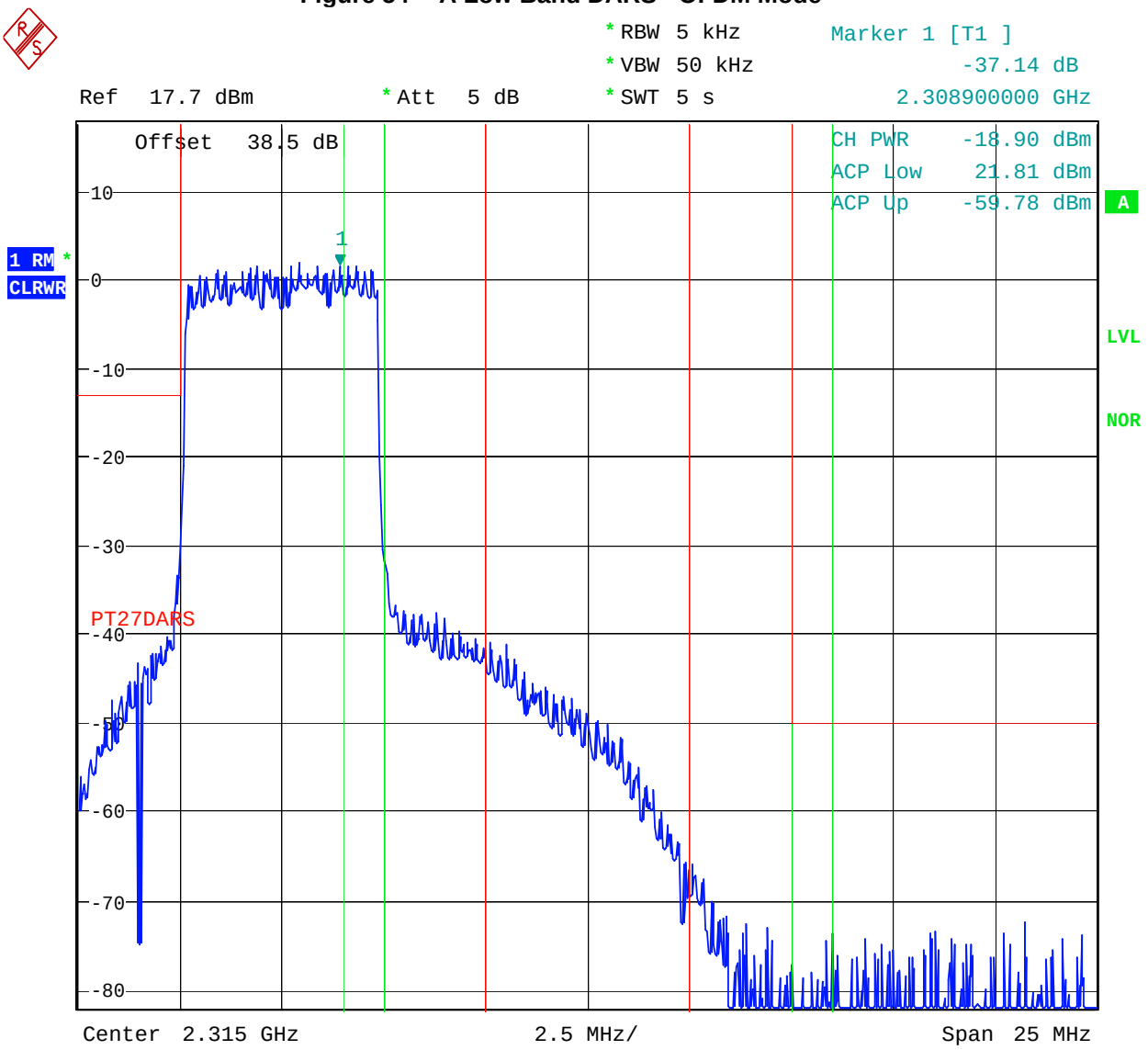
Date: 13.NOV.2006 20:43:34

Figure 53 B Low Band Edge - OFDM Mode



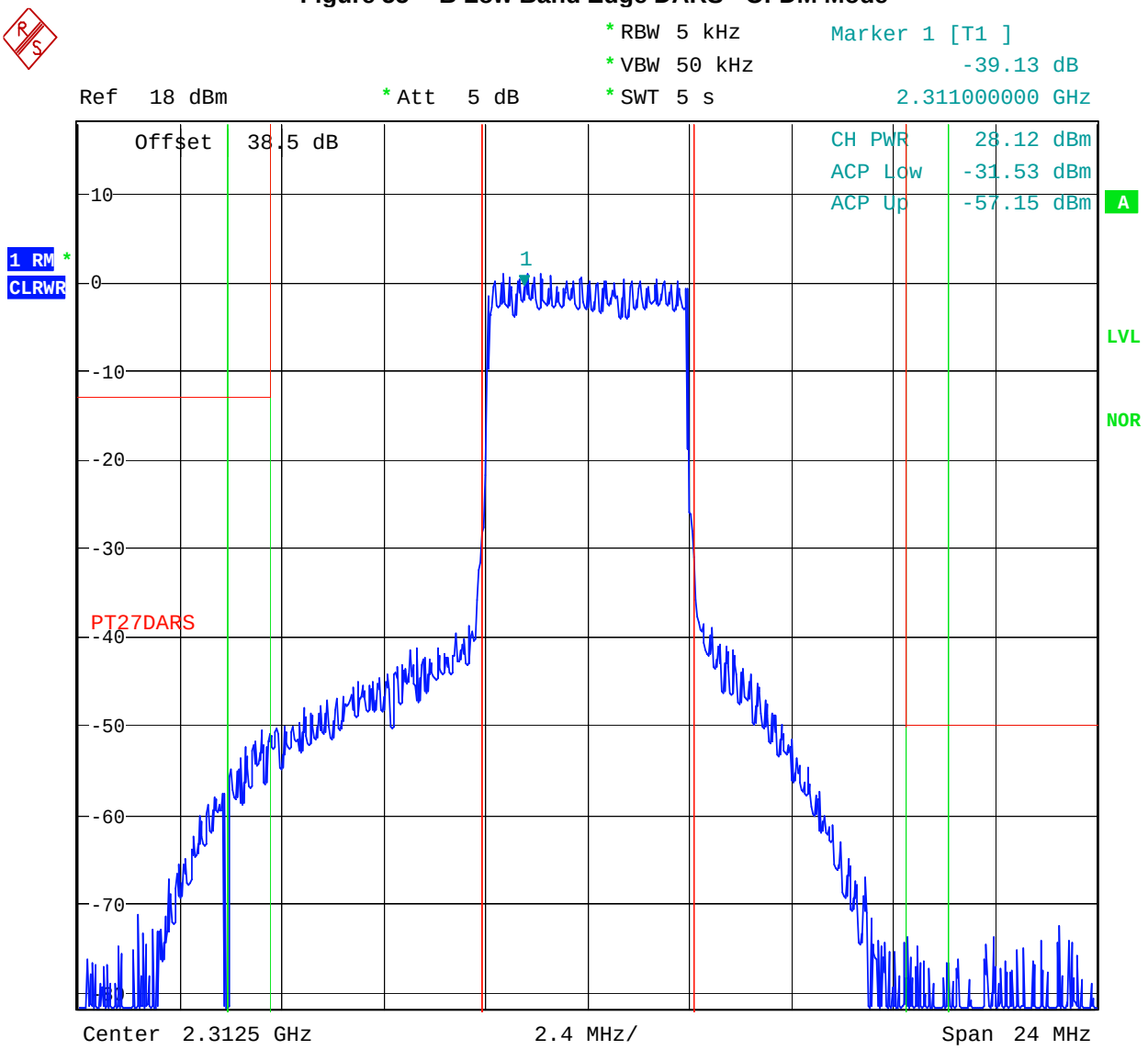
Date: 14.NOV.2006 22:35:30

Figure 54 A Low Band DARS - OFDM Mode



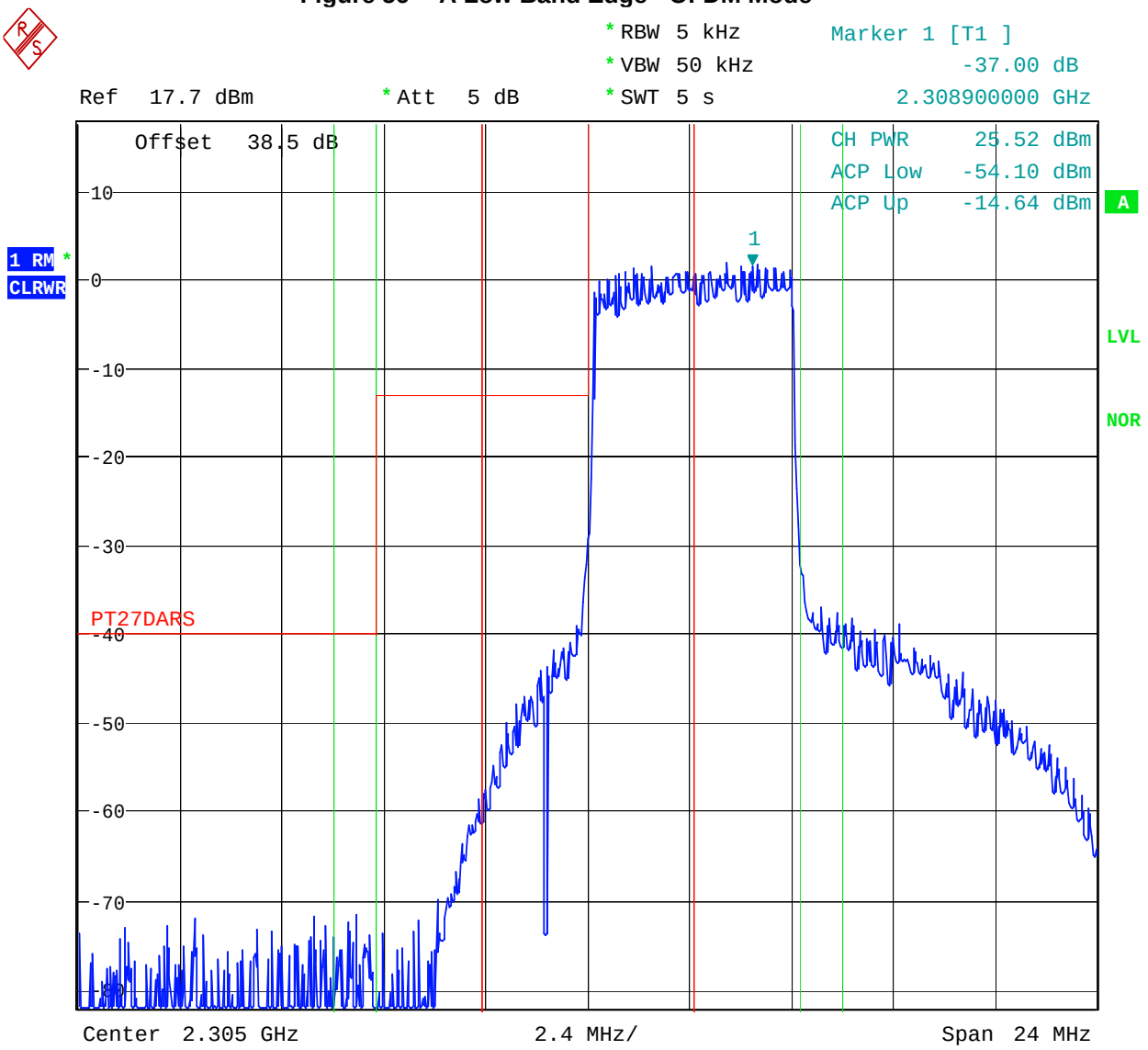
Date: 13.NOV.2006 21:58:39

Figure 55 B Low Band Edge DARS - OFDM Mode



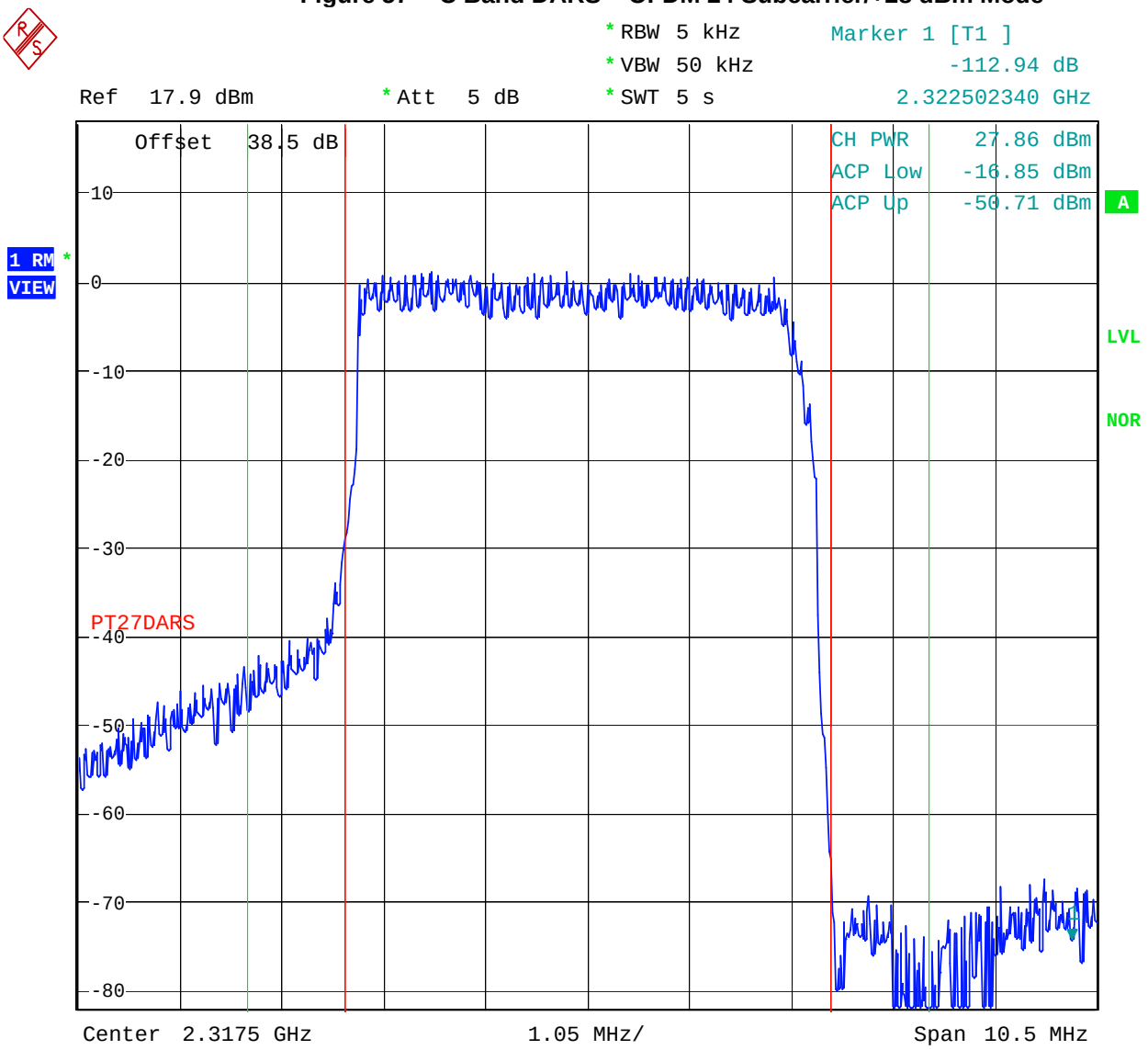
Date: 14.NOV.2006 22:34:05

Figure 56 A Low Band Edge - OFDM Mode



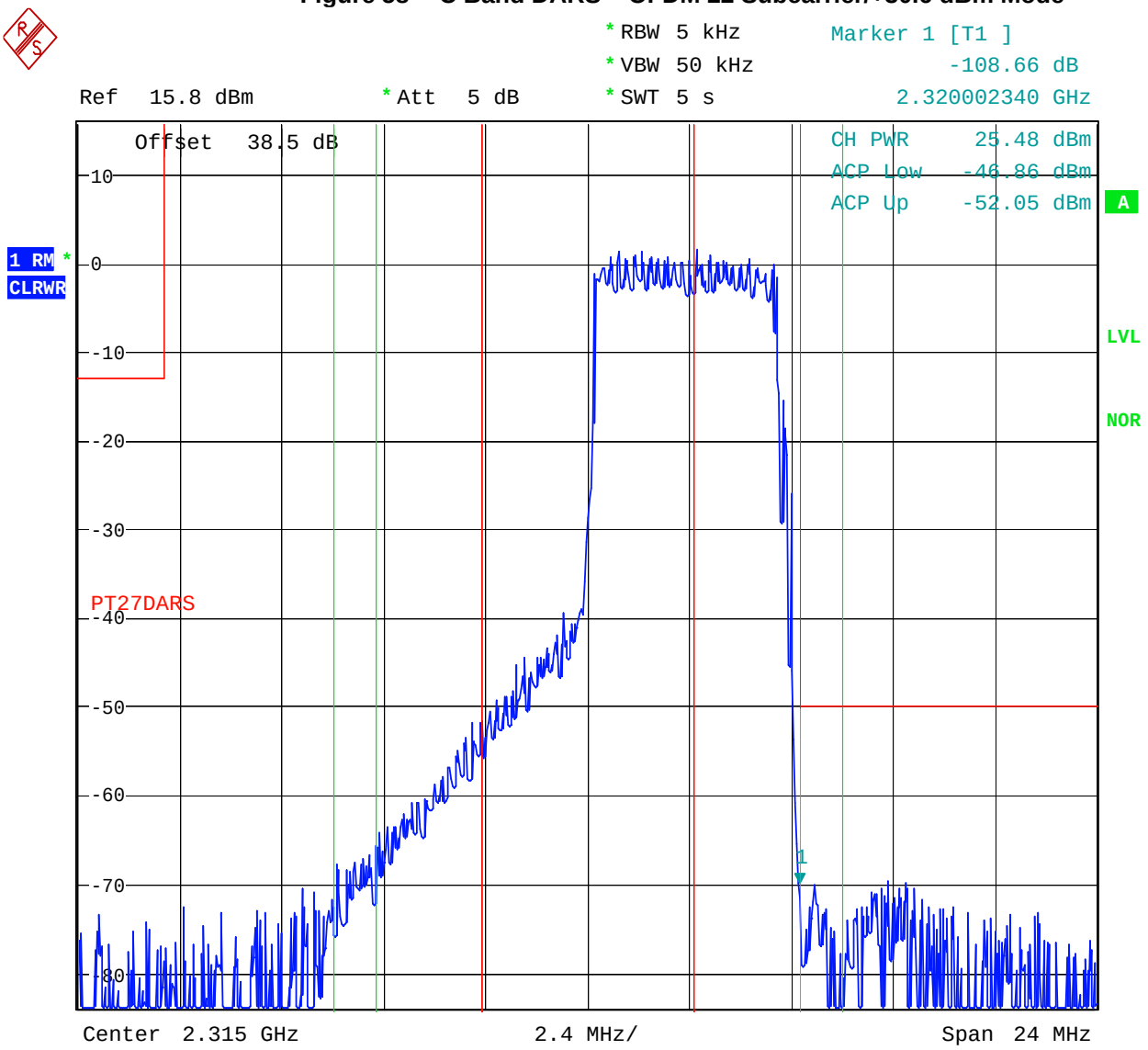
Date: 13.NOV.2006 21:57:15

Figure 57 C Band DARS – OFDM 24 Subcarrier/+28 dBm Mode



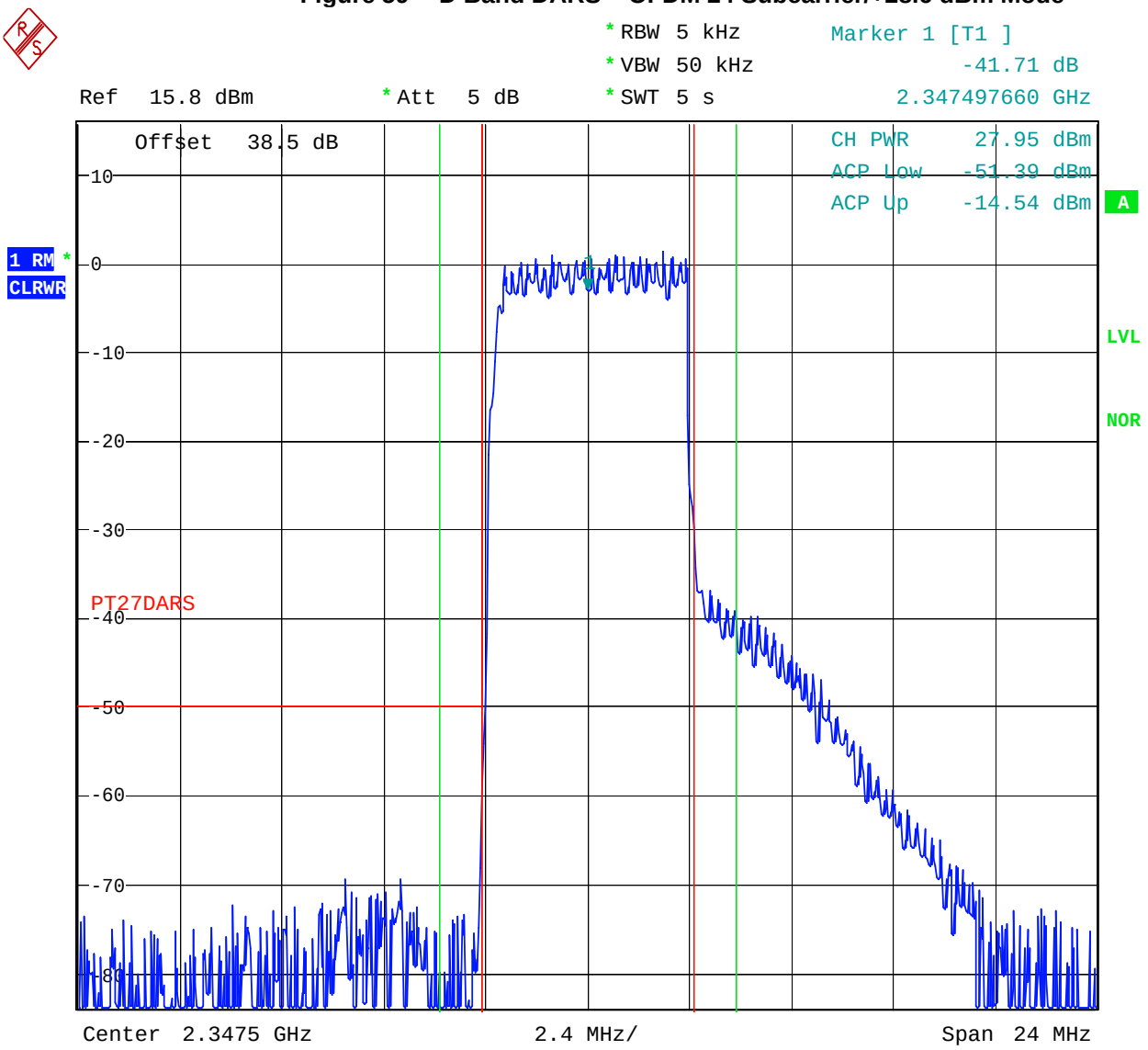
Date: 13.NOV.2006 21:27:13

Figure 58 C Band DARS – OFDM 22 Subcarrier/+30.6 dBm Mode



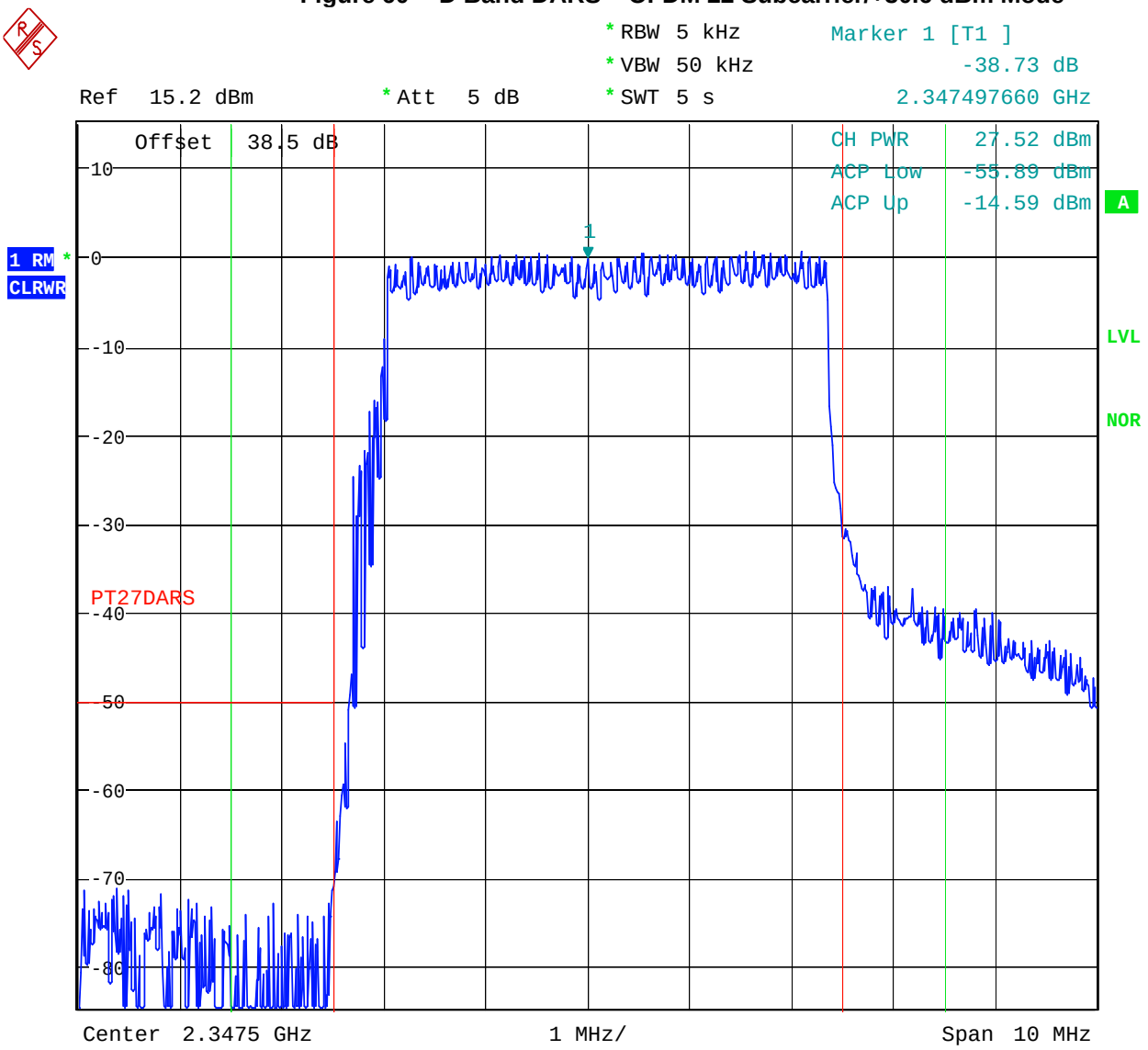
Date: 15.NOV.2006 17:15:47

Figure 59 D Band DARS – OFDM 24 Subcarrier/+28.6 dBm Mode



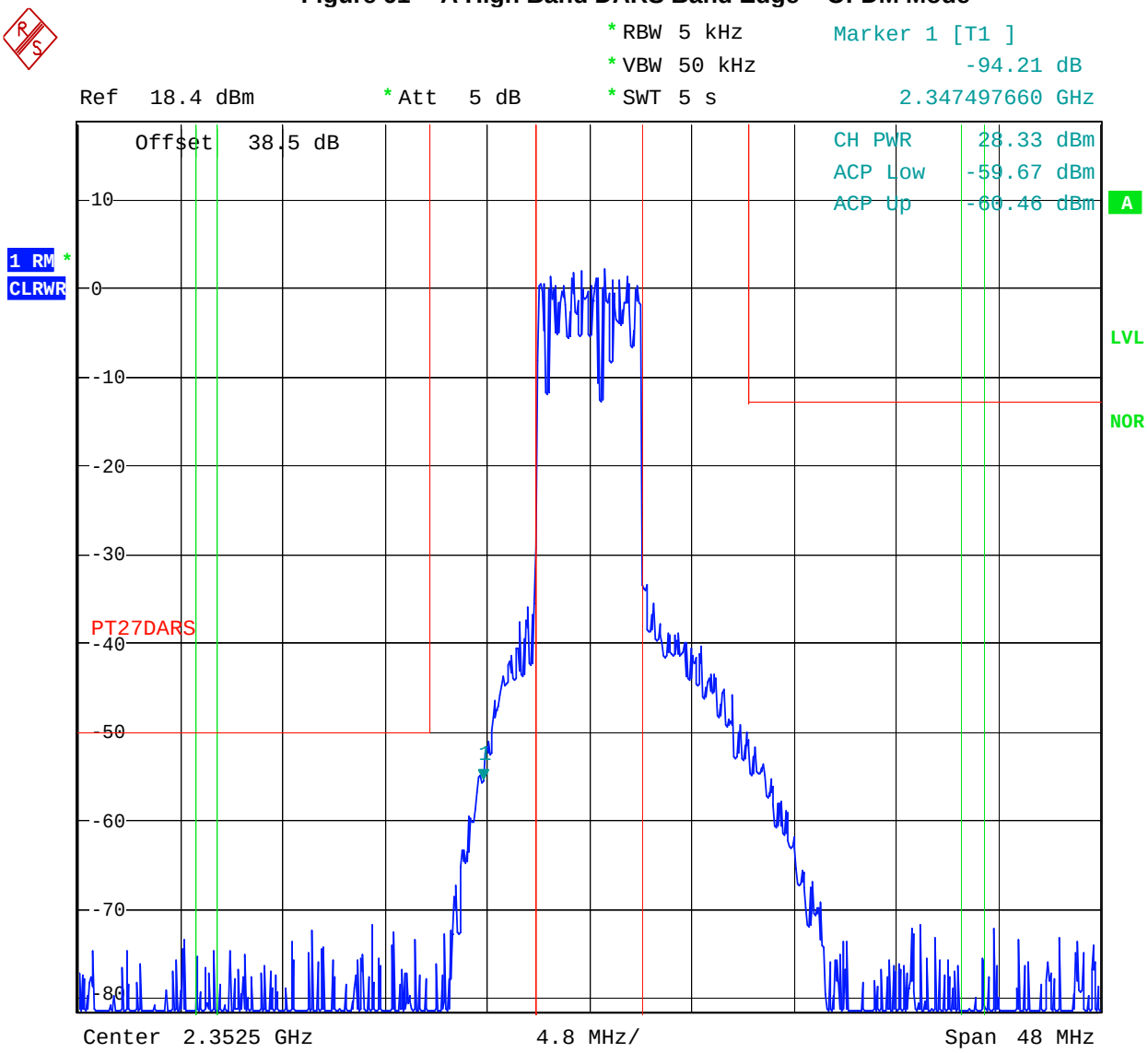
Date: 13.NOV.2006 21:16:36

Figure 60 D Band DARS – OFDM 22 Subcarrier/+30.6 dBm Mode



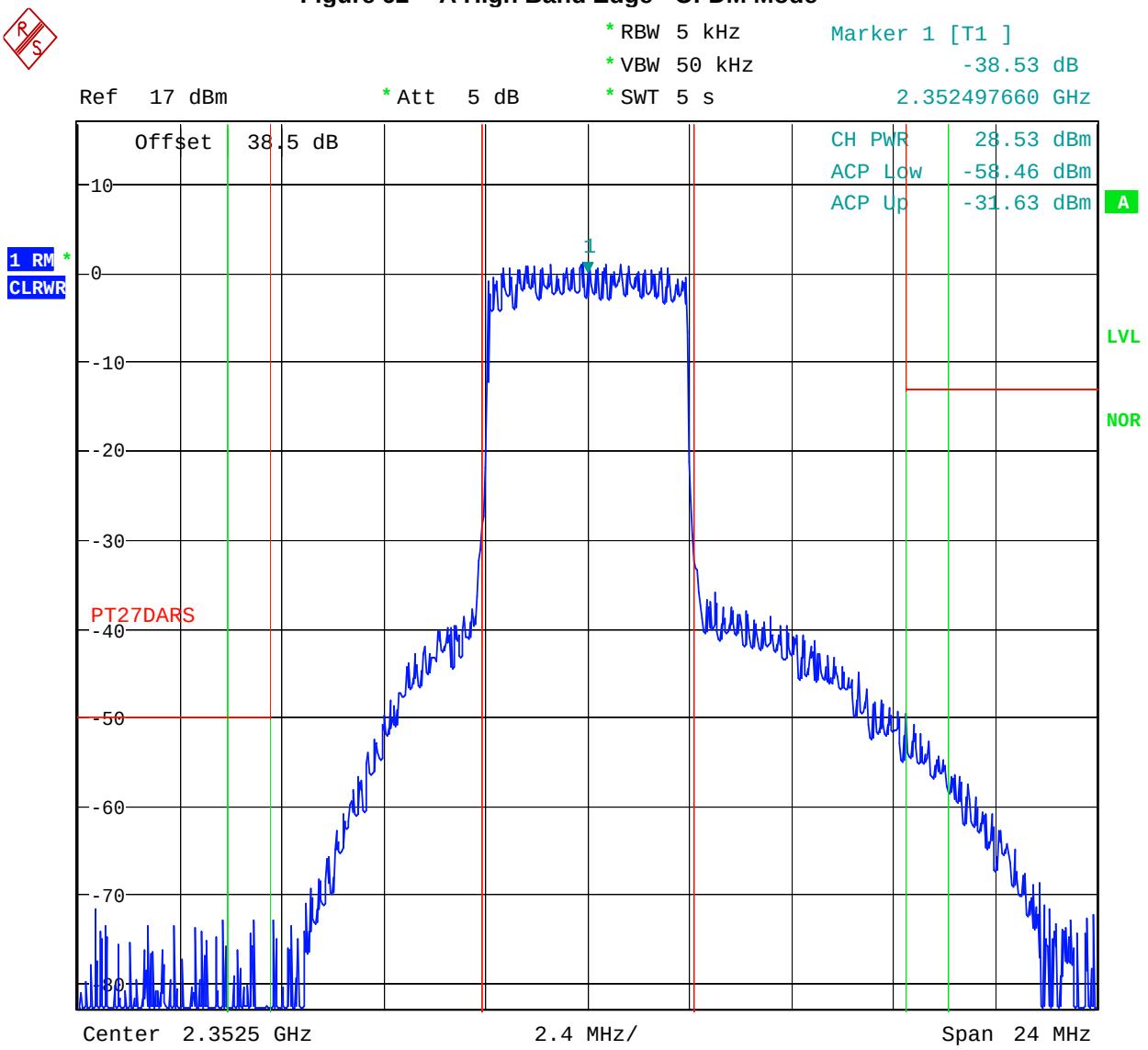
Date: 15.NOV.2006 17:36:19

Figure 61 A High Band DARS Band Edge – OFDM Mode



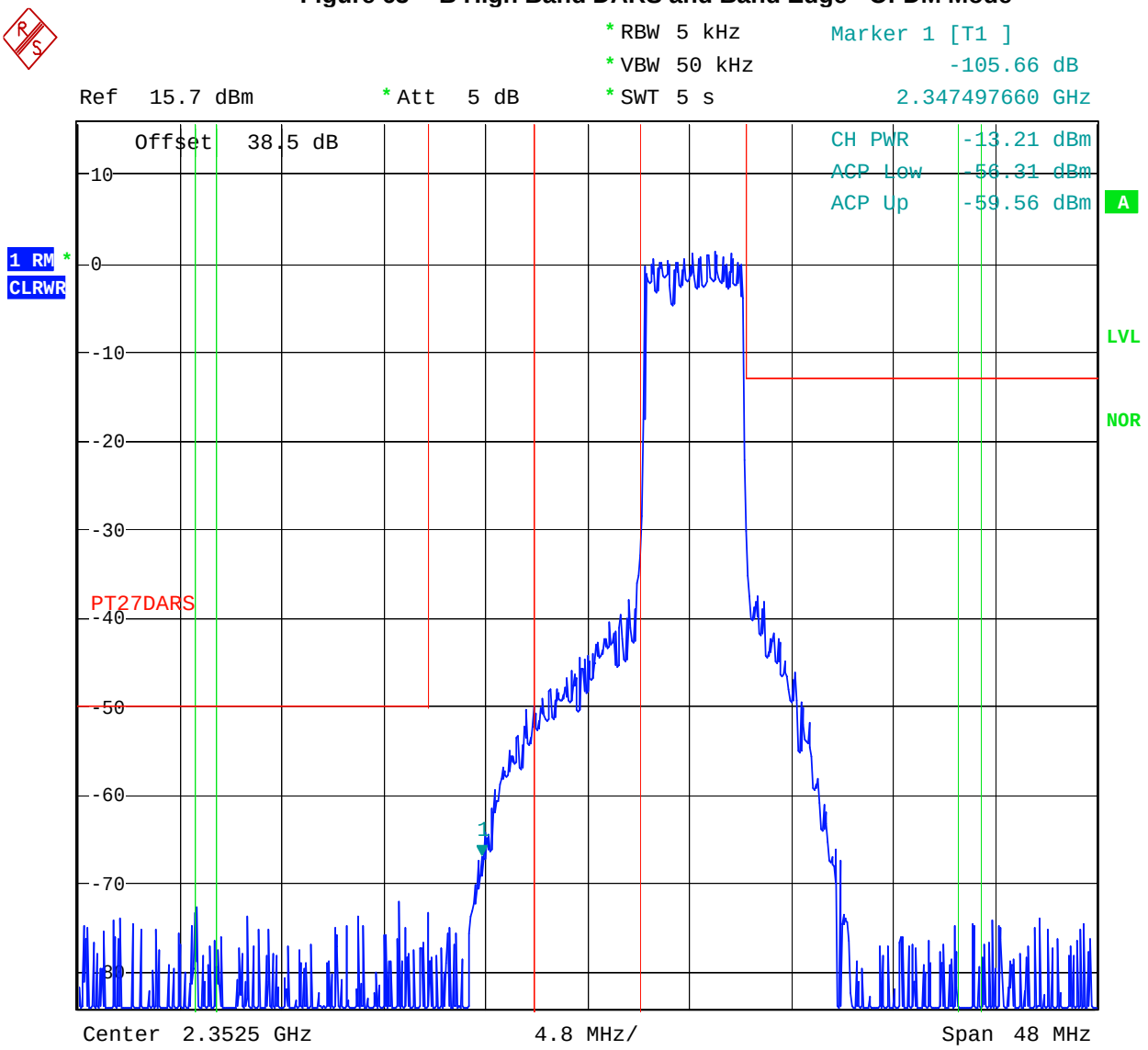
Date: 13.NOV.2006 20:28:43

Figure 62 A High Band Edge - OFDM Mode



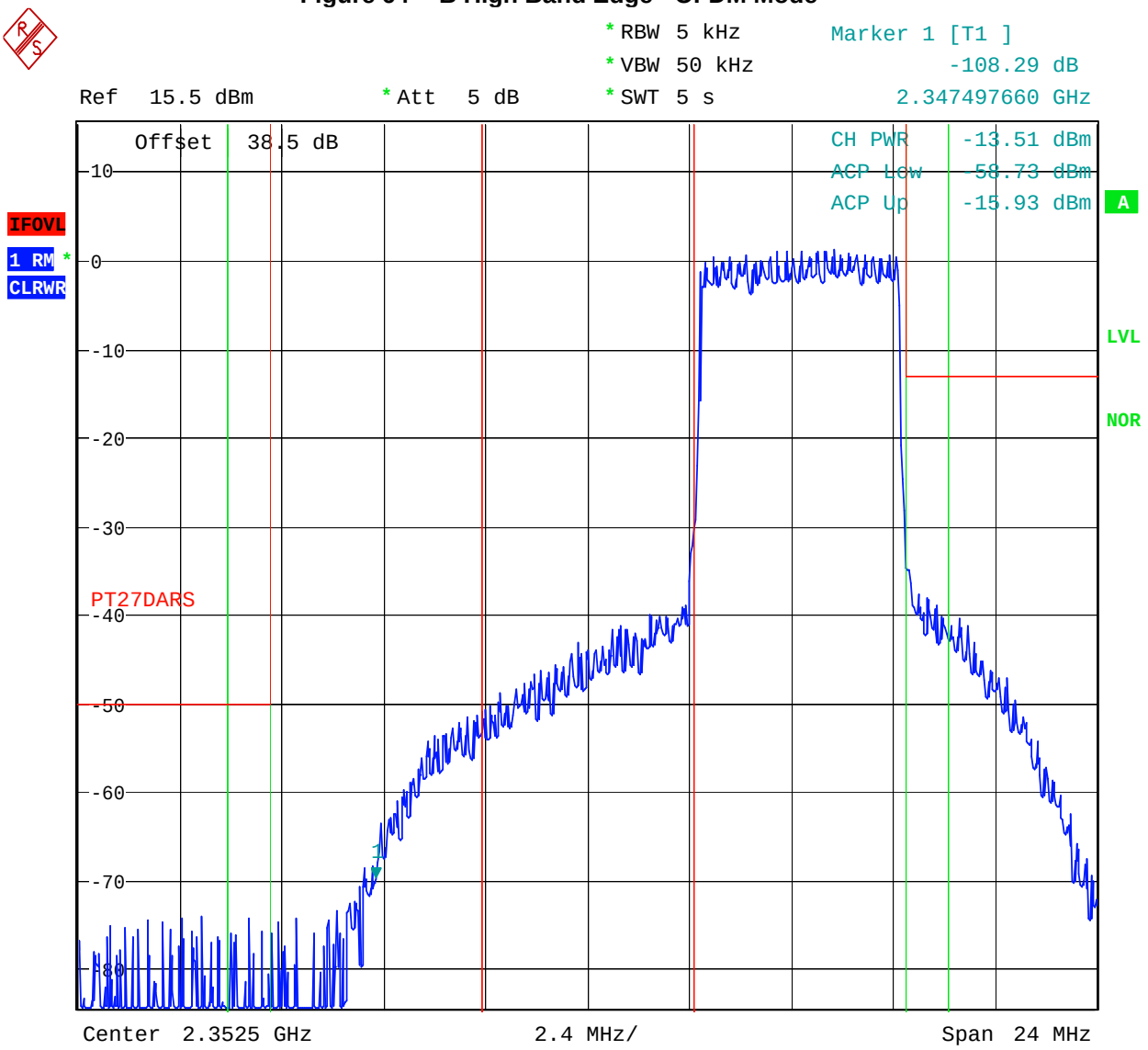
Date: 13.NOV.2006 21:41:02

Figure 63 B High Band DARS and Band Edge - OFDM Mode



Date: 13.NOV.2006 21:48:41

Figure 64 B High Band Edge - OFDM Mode



Date: 13.NOV.2006 21:50:45

D.8. Tested By

Name: Tom Tidwell,
Function: Manager of Wireless Services

APPENDIX E: 2.1053 FIELD STRENGTH OF SPURIOUS RADIATION

E.1. Base Standard & Test Basis

Base Standard	FCC 2.1053
Test Basis	FCC 2.1053 Field Strength of Spurious Radiation
Test Method	TIA 603-C, 2004 Substitution Antenna Method

E.2. Limits

27.53

(a) For operations in the bands 2305–2320 MHz and 2345–2360 MHz, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by the following amounts:

(1) *For fixed, land, and radiolocation land stations:* By a factor not less than 80 + 10 log (p) dB on all frequencies between 2320 and 2345 MHz;

(2) *For mobile and radiolocation mobile stations:* By a factor not less than 110 + 10 log (p) dB on all frequencies between 2320 and 2345 MHz;

(3) *For fixed, land, mobile, radiolocation land and radiolocation mobile stations:* By a factor not less than 70 + 10 log (p) dB on all frequencies below 2300 MHz and on all frequencies above 2370 MHz; and not less than 43 + 10 log (p) dB on all frequencies between 2300 and 2320 MHz and on all frequencies between 2345 and 2370 MHz that are outside the licensed bands of operation;

(4) Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or less, but at least one percent of the emission bandwidth of the fundamental emission of the transmitter, provided the measured energy is integrated over a 1 MHz bandwidth;

(5) In complying with the requirements in §27.53(a)(1) and §27.53(a)(2), WCS equipment that uses opposite sense circular polarization from that used by Satellite DARS systems in the 2320–2345 MHz band shall be permitted an allowance of 10 dB;

(6) When measuring the emission limits, the nominal carrier frequency shall be adjusted as close to the edges, both upper and lower, of the licensee's bands of operation as the design permits;

(7) The measurements of emission power can be expressed in peak or average values, provided they are expressed in the same parameters as the transmitter power;

E.3. Test Results

Compliant. The worst-case spurious emission level was -52.6 dBm at 4615 MHz. This level is 12.6 dB below the specification limit of -40 dBm. The spectrum was searched from 30 MHz up to 26.5 GHz.

E.4. Deviations from Normal Operating Mode During Test

None.

E.5. Sample Calculation

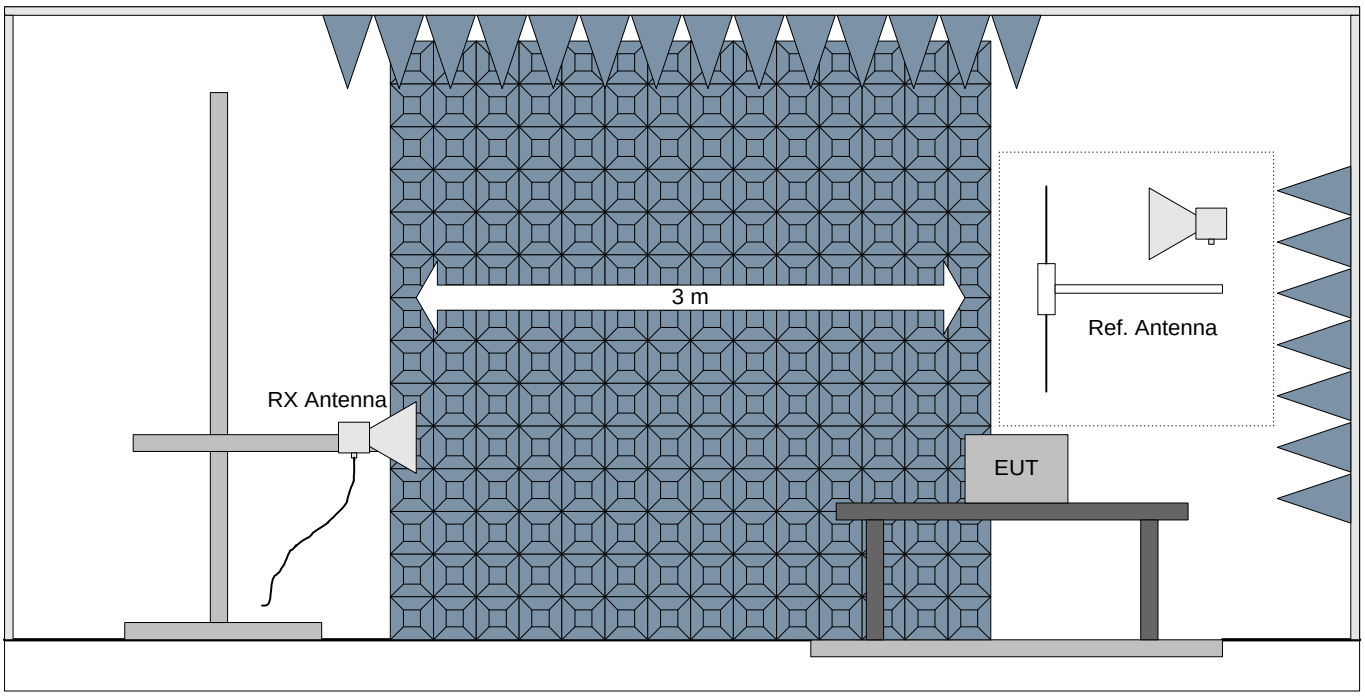
Final measured value (dBm) = Substitution level (dBm) + Antenna Gain (dBd)

Minimum attenuation limit (dB) = 70 + 10 log(P) where P = Peak power of the carrier in watts.

Min. Atten. Limit dB) = 70 + 10 * log(2 watts)
= 70 + 10 * 0.3
= 70 + 3
= 73 dB

33 dBm – 73 dB = -40 dBm

E.6. Test Diagram



Note: The EUT is set to repeat a signal at maximum rf output power into a coaxial load for this testing.

E.7. Test Data

Project No:	Navini Networks W6398
Model:	2.3-BTSA-R1
Comments:	Transmit at full rf output power (2 watts average, 20 watts pk.)
Date:	11/15/2006

Distance:	3 m	Standard:	CFR 47, Part 2.1043	RBW: (unless noted)	< 1 GHz = 120 kHz > 1 GHz = 1 MHz
				VBW: (unless noted)	Peak = RBW Avg. = 10Hz

Antenna	Polarization	Frequency	Measured	Substitution Level	Substitution Antenna Gain	Final Measured Value		Peak Carrier Power		Minimum Attenuation Limit	Margin
	(V/H)	(MHz)	(dBm)	(dBm)	(dBi)	(dBm)	(watts)	(dBm)	(watts)	(dBc)	(dB)
Ref. E1019	V	4615	-134.7	-61.34	8.73	-52.6	5.49E-09	33	2	73	12.6
Ref. E1019	H	4615	-134.7	-61.34	8.73	-52.6	5.49E-09	33	2	73	12.6
Ref. E1019	V	6923	-140.5	-69.01	9.94	-59.1	1.24E-09	33	2	73	19.1
Ref. E1019	H	6923	-140.5	-69.01	9.94	-59.1	1.24E-09	33	2	73	19.1
Ref. E1019	V	9230	-138	-68.16	9.49	-58.7	1.36E-09	33	2	73	18.7
Ref. E1019	H	9230	-138	-68.16	9.49	-58.7	1.36E-09	33	2	73	18.7
Ref. E1019	V	11538	-137.2	-69.06	10.59	-58.5	1.42E-09	33	2	73	18.5
Ref. E1019	H	11538	-137.2	-69.06	10.59	-58.5	1.42E-09	33	2	73	18.5
Ref. E1019	V	13845	-137.3	-71.28	10.09	-61.2	7.61E-10	33	2	73	21.2
Ref. E1019	H	13845	-137.3	-71.28	10.09	-61.2	7.61E-10	33	2	73	21.2
Ref. E1019	V	18460.00	-134.2	-70.65	5.7	-65.0	3.20E-10	33	2	73	25.0
Ref. E1019	H	18460.00	-134.2	-70.65	5.7	-65.0	3.20E-10	33	2	73	25.0

Notes:
(1) A positive margin indicates a passing result
(2) Spurious emissions were measured with average detection and compared to the maximum average fundamental power of 2 watts.
(3) The minimum threshold of sensitivity was sufficient to detect signals within 10 dB of the -40 dBm limit over the frequency range 30 MHz - 26 GHz.

NOTE:

E.8. Test Photo

E.9. Tested By

Name: Tom Tidwell,
Function: Manager of Wireless Services

APPENDIX F: 2.1055 FREQUENCY STABILITY

F.1. Base Standard & Test Basis

Base Standard	FCC 2.1055
Test Method	TIA 603-C, 2004

Specifications

27.54 Frequency Stability

The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

F.2. Deviations

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

F.3. Test Results

NOT TESTED

F.4. Observations

None

F.5. Deviations from Normal Operating Mode During Test

None.

F.6. Sample Calculation

Frequency drift (ppm) = Frequency Drift (Hz)/Authorized frequency (MHz)

F.7. Test Data

None

F.8. Test Diagram

None

F.9. Tested By

.
Name: Tom Tidwell,
Function: Manager of Wireless Services

APPENDIX G: TEST EQUIPMENT LIST

G.1. Field Strength of Spurious Emissions 30 MHz – 26.5 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
Ref. Horn Antenna	ETS	3115	12 Months	11/1/07	E1019P
RX Horn Antenna	ETS	3115	12 Months		E1022P
High Frequency - Cable 1	MegaPhase	TM26-3135-144	12 Months	8/23/07	W1010P
Reference Antenna	ETS	3121 Dipole Set	12 months	8/8/07	S/N. 274
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	5/4/07	E1010P

G.2. Antenna Conducted Emissions Measurement Equipment

Instrument	Manufacturer	Model	Calibration Frequency	Calibration Due
ANTENNA CONDUCTED EMISSIONS				
Spectrum Analyzer	Rohde & Schwarz	FSQ 26	12 Months	9/21/07
High Frequency - Cable 1	MegaPhase	TM26-3135-144	12 Months	8/23/07
Directional Coupler	Narda	3020A	12 Months	8/28/07
Directional Coupler	Narda	4242-10	12 Months	8/28/07
50 ohm loads	Amphenol	50R	12 Months	8/28/07
20 dB attenuator	INMET	26A-20	12 Months	9/29/07
20 dB attenuator	INMET	26A-20	12 Months	9/29/07
10 dB attenuator	INMET	26A-10	12 Months	9/29/07

*This device was not used for calibrated measurements.

END OF DOCUMENT