1701 E. Plano Parkway, Suite 150
Plano, Texas 75074
Phone: (972) 509-2566
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Certification Test Report

CFR 47 FCC Part 2 and Part 27, Subparts C and M

Model: 2.5-2.6-BTS3A-R1
2.5-2.6-BTS3T-R1
2.5-2.6-BTS3F-R1

FCC ID No.: PL6-2500-BTS3-R1

Project Code: W6398

Revision: 0

Prepared for:	Navini Networks 2240 Campbell Creek Blvd. Suite 110 Richardson, TX 75082
Author:	Tom Tidwell, Manager of Wireless Services
Issued:	29 November, 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	2.5-2.6-BTS3A-R1 2.5-2.6-BTS3T-R1 2.5-2.6-BTS3F-R1	Digital: revA RF: revC	Digital: 054502004 RF: 061302008

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	PASS	CFR 47, Part 2, Para. 2.1046 CFR 47, Part 27, Para. 27.50(h)
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(l)
D	Spurious Emissions at Antenna Terminals	No	No	No	PASS	CFR 47, Part 2, Para. 2.1051 CFR 47, Part 27, Para. 27.53(l)
E	Field Strength of Spurious Radiation	No	No	No	PASS	CFR 47, Part 2, Para. 2.1053 CFR 47, Part 27, Para. 27.53(l)
F	Frequency Stability	No	No	No	*NOT TESTED	CFR 47, Part 2, Para. 2.1055 CFR 47, Part 24, Para. 27.54

*Frequency stability was not re-tested since no 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

INTRODUCTION

1.1 PURPOSE

The purpose of this document is to describe the tests applied by NTS Plano to demonstrate that the 2.5-2.6-BTS3A-R1, 2.5-2.6-BTS3T-R1, and 2.5-2.6-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	2.5-2.6-BTS3A-R1 2.5-2.6-BTS3T-R1 2.5-2.6-BTS3F-R1	Digital: revA RF: revC	Digital: 054502004 RF: 061302008
RF Exposure Classification	Fixed Outdoor			
Channels/Frequency Range	2503 to 2683.5 MHz band			
Power	2 watts at antenna terminals			
Emission Designator:	5M00F9W 4M76W7D			
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

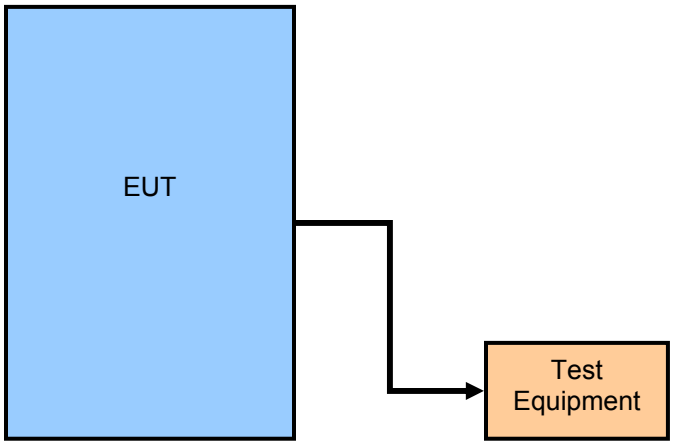
2.3 MODE OF OPERATION DURING TESTS

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



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

(h) The following power limits shall apply in the BRS and EBS:

(1) *Main, booster and base stations.* (i) The maximum EIRP of a main, booster or base station shall not exceed 33 dBW + 10log(X/Y) dBW, where X is the actual channel width in MHz and Y is either 6 MHz if prior to transition or the station is in the MBS following transition or 5.5 MHz if the station is in the LBS and UBS following transition, except as provided in paragraph (h)(1)(ii) of this section.

(ii) If a main or booster station sectorizes or otherwise uses one or more transmitting antennas with a non-omnidirectional horizontal plane radiation pattern, the maximum EIRP in dBW in a given direction shall be determined by the following formula: EIRP = 33 dBW + 10 log(X/Y) dBW + 10 log(360/beamwidth) dBW, where X is the actual channel width in MHz, Y is either (i) 6 MHz if prior to transition or the station is in the MBS following transition or (ii) 5.5 MHz if the station is in the LBS and UBS following transition, and beamwidth is the total horizontal plane beamwidth of the individual transmitting antenna for the station or any sector measured at the half-power points.

(2) *Mobile and other user stations.* Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

(i) Peak transmit power shall be measured over any interval of continuous transmission using instrumentation calibrated in terms of rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

Applicable RF Power Limit from Above: The EUT is rated at 2 watts peak power at the antenna terminals.

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

The EUT is in compliance with the limits as specified above. The maximum rf output power at the antenna terminals is

A.6. Operating Mode During Test

The transmitter was tested while in a continuous transmit mode. The EUT was tuned to a low, middle, and high channel.

A.7. Sample Calculation

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

A.8. Test Data

Navini Mode

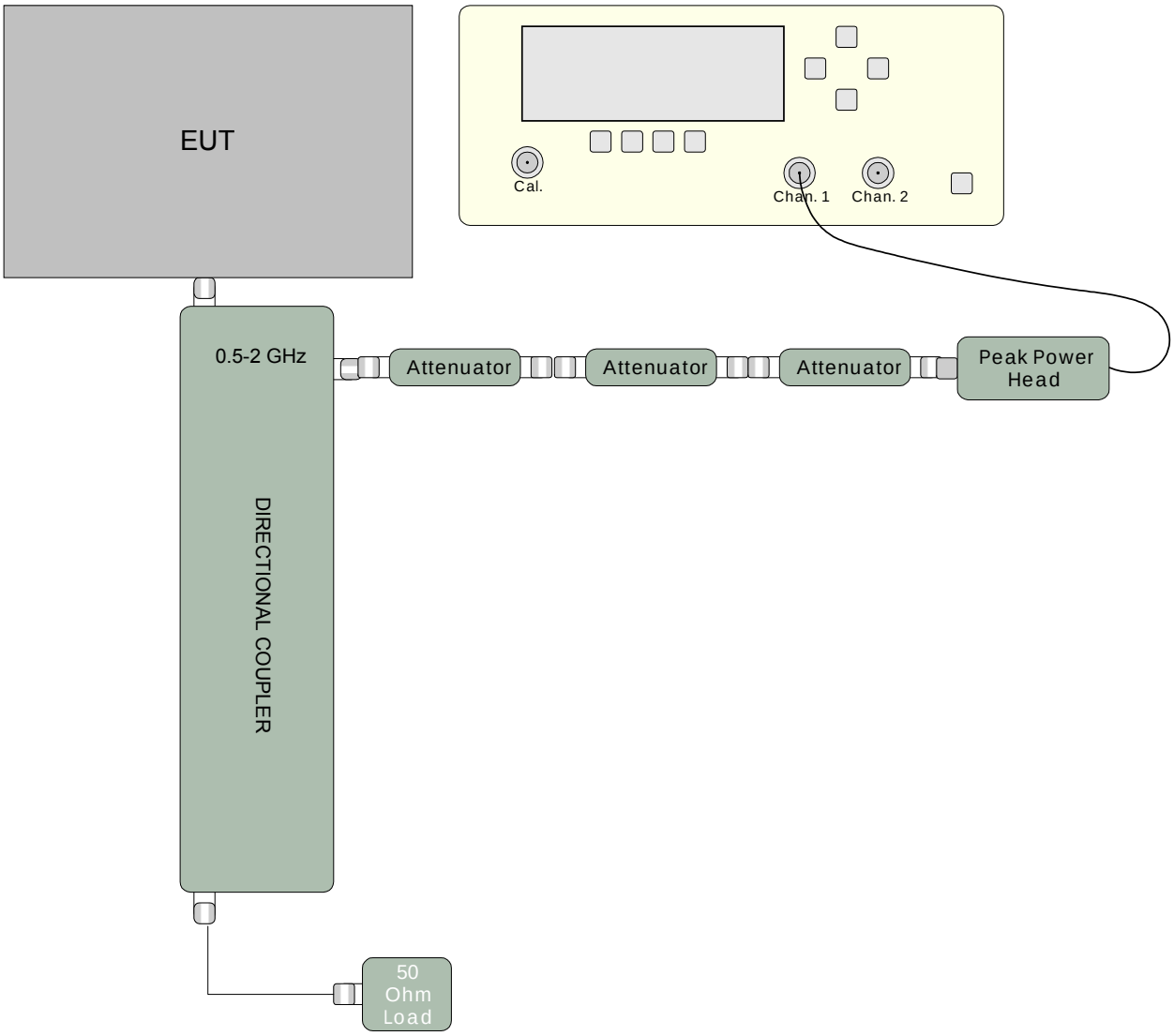
Frequency (MHz)	Power (dBm)	Power (watts)
2503	33.1	2
2590	33.0	2
2683.5	32.9	2

OFDM Mode

Frequency (MHz)	Power (dBm)	Power (watts)
2503	33.0	2
2590	33.0	2
2683.5	33.1	2

Test Date: November 9, 2006

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
4M76W7D 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(l)
(1) Prior to the transition, and thereafter, solely within the MBS, for analog operations with an EIRP in excess of −9 dBW, the signal shall be attenuated at the channel edges by at least 38 dB relative to the peak visual carrier, then linearly sloping from that level to at least 60 dB of attenuation at 1 MHz below the lower band edge and 0.5 MHz above the upper band edge, and attenuated at least 60 dB at all other frequencies.
(2) **For fixed and temporary fixed digital stations, the attenuation shall be not less than 43 + 10 log (P) dB**, unless a documented interference complaint is received from an adjacent channel licensee. Provided that the complaint cannot be mutually resolved between the parties, both licensees of existing and new systems shall reduce their out-of-band emissions by at least 67 + 10 log (P) dB measured at 3 MHz from their channel's edges for distances between stations exceeding 1.5 km. For stations separated by less than 1.5 km, the new licensee shall reduce attenuation at least 67 + 10 log (P) − 20 log(Dkm/1.5), or when colocated, limit the undesired signal level at the affected licensee's base station receiver(s) at the colocation site to no more than −107 dBm. Mobile Service Satellite licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
(3) Prior to transition and thereafter solely within the MBS, and notwithstanding paragraph (l)(2) of this section, the maximum out-of-band power of a digital transmitter operating on a single 6 MHz channel with an EIRP in excess of −9 dBW employing digital modulation for the primary purpose of transmitting video programming shall be attenuated at the 6 MHz channel edges at least 25 dB relative to the licensed average 6 MHz channel power level, then attenuated along a linear slope to at least 40 dB at 250 kHz beyond the nearest channel edge, then attenuated along a linear slope from that level to at least 60 dB at 3 MHz above the upper and below the lower licensed channel edges, and attenuated at least 60 dB at all other frequencies.
(4) For mobile digital stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge and 55 + 10 log (P) dB at 5.5 MHz from the channel edges. Mobile Service Satellite licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
(5) Notwithstanding the provisions of paragraphs (l)(2) and (l)(4) of this section, prior to transition, a licensee may continue to operate facilities deployed as of January 10, 2005 provided that such facilities operate in compliance with the emission mask applicable to those services prior to January 10, 2005.
(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two

points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

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(l)(6)

C.5. Test Results

Compliant.

C.6. Deviations from Normal Operating Mode During Test

None.

C.7. Sample Calculation

43 + 10 log(P)
43 + 10 log(2)
43 + 10 * 0.3
43 + 3 = 46 dB
33 dBm – 46 dB = -13 dBm

C.8. Test Data

See plots following.

Figure 1 2.503 GHz Navini Mode

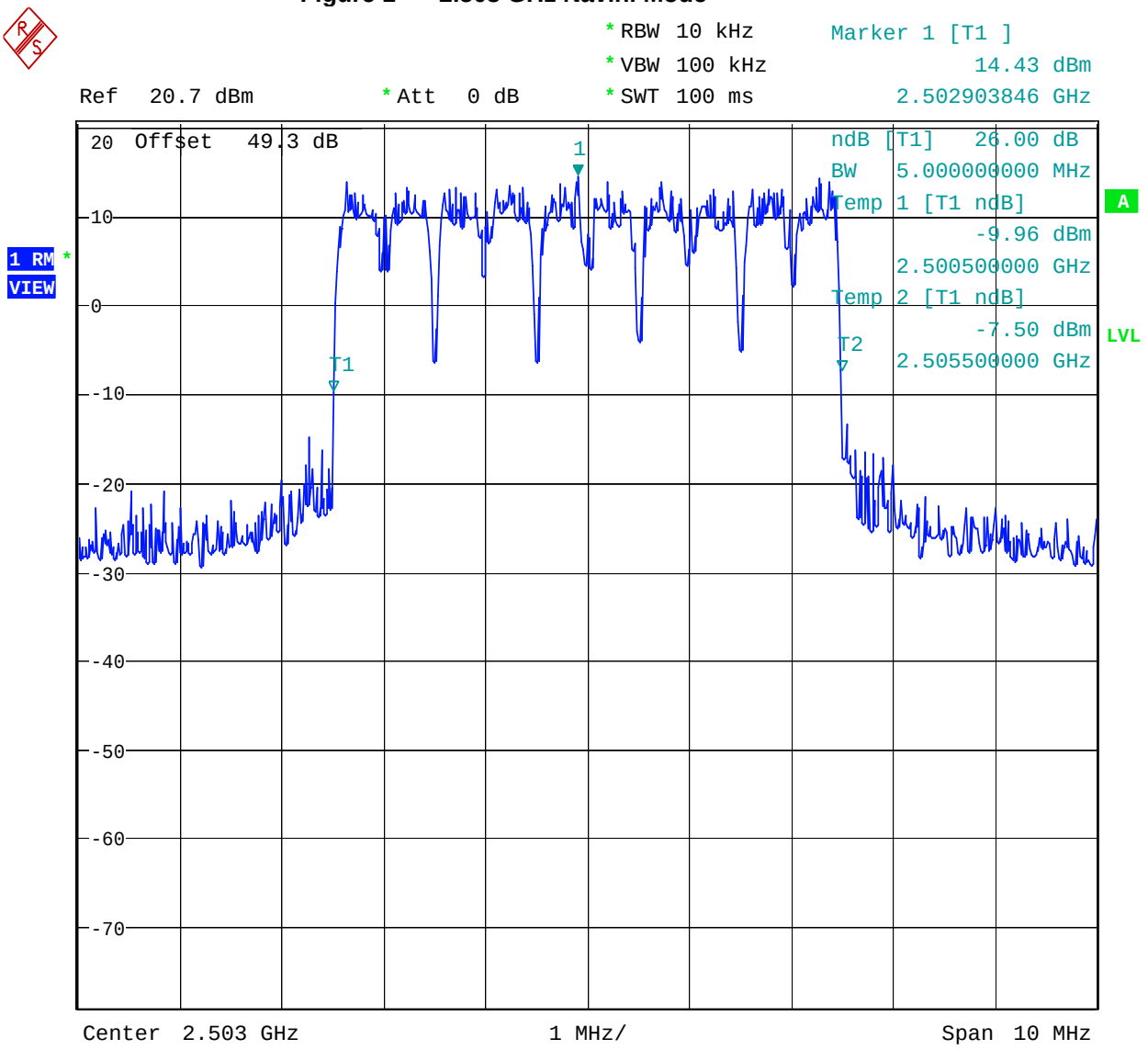


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Figure 2 2.590 GHz Navini Mode

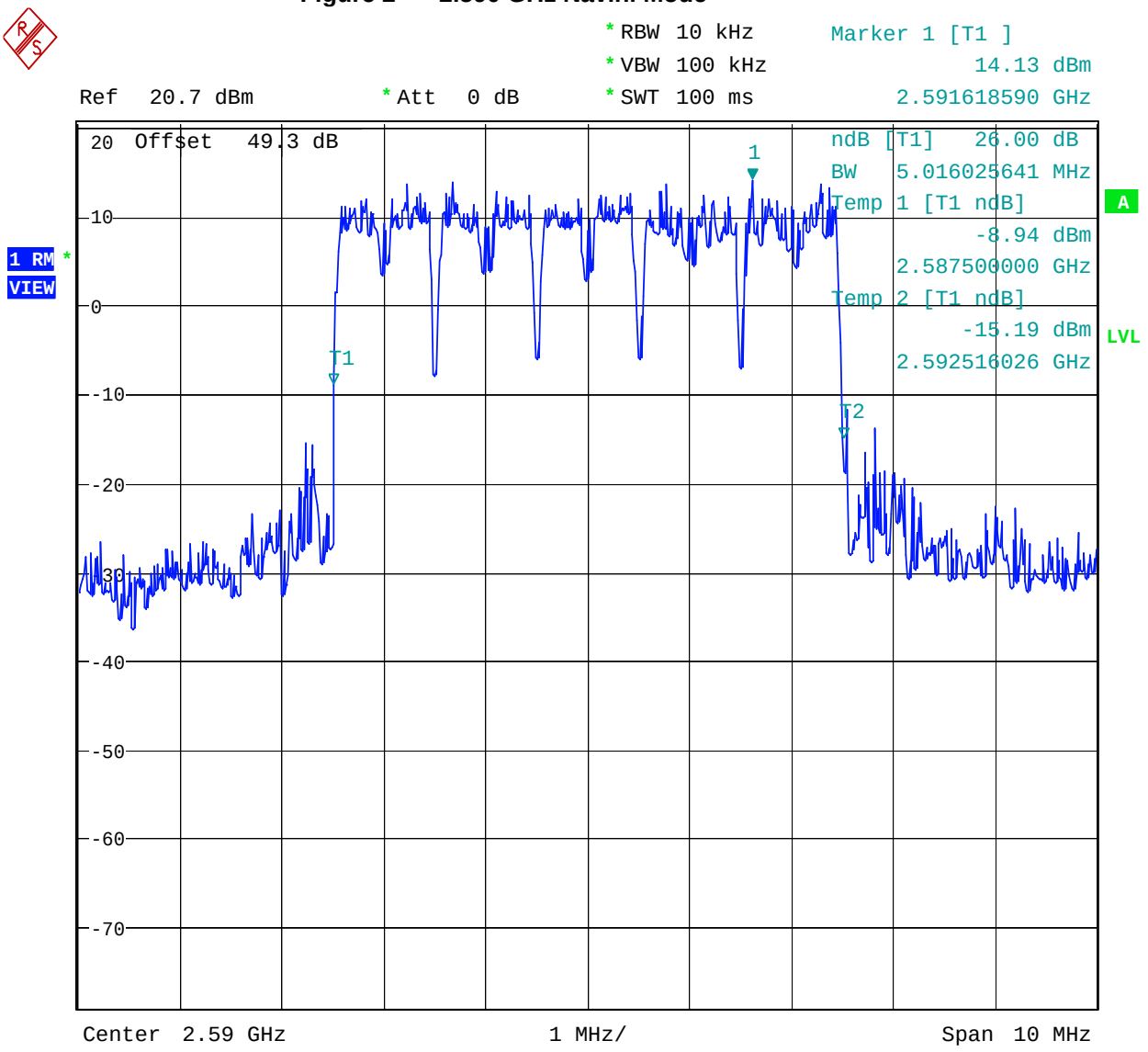

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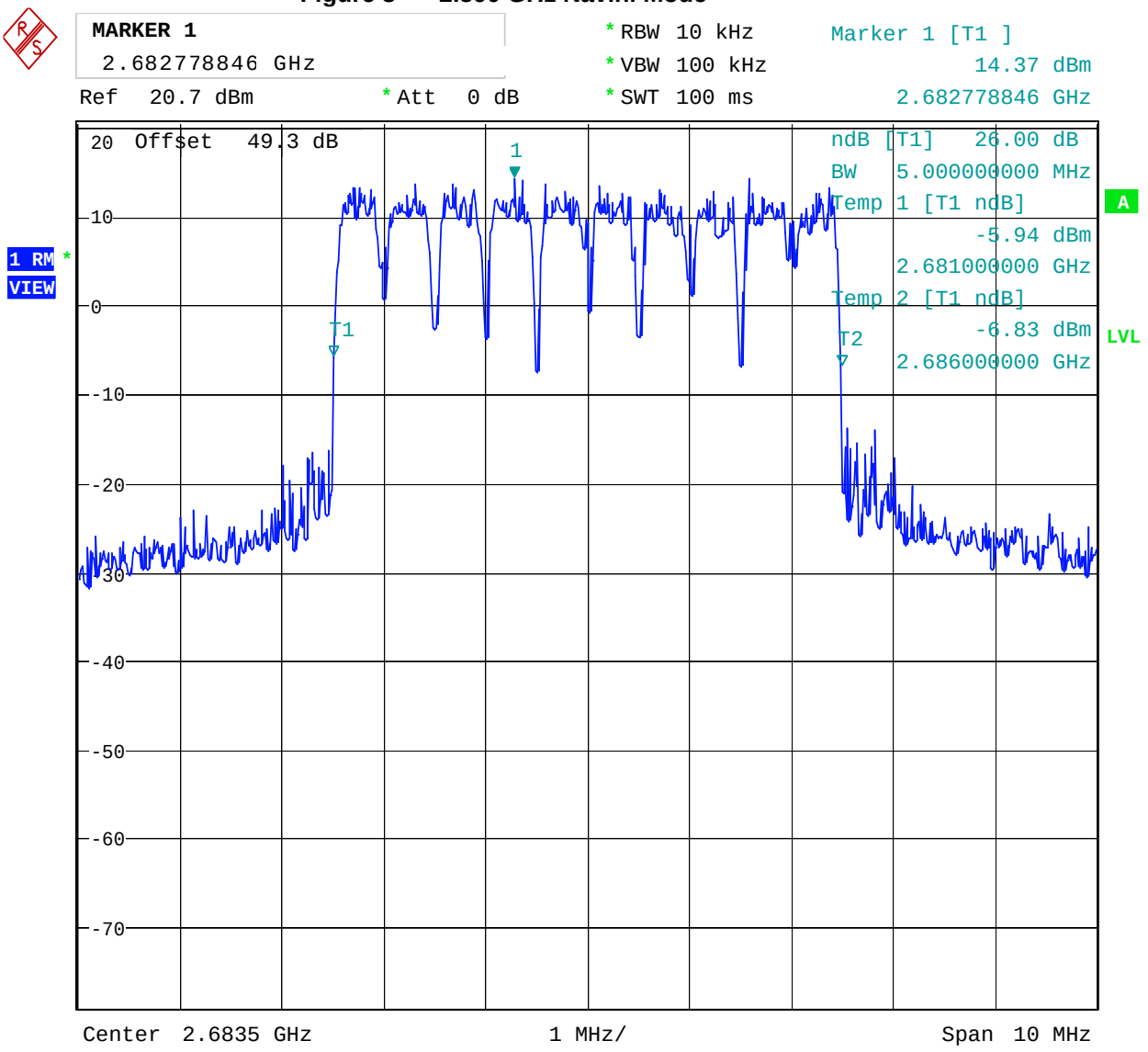
Figure 3 2.590 GHz Navini Mode



Date: 9.NOV.2006 18:19:11

Figure 4 2.503 GHz OFDM Mode

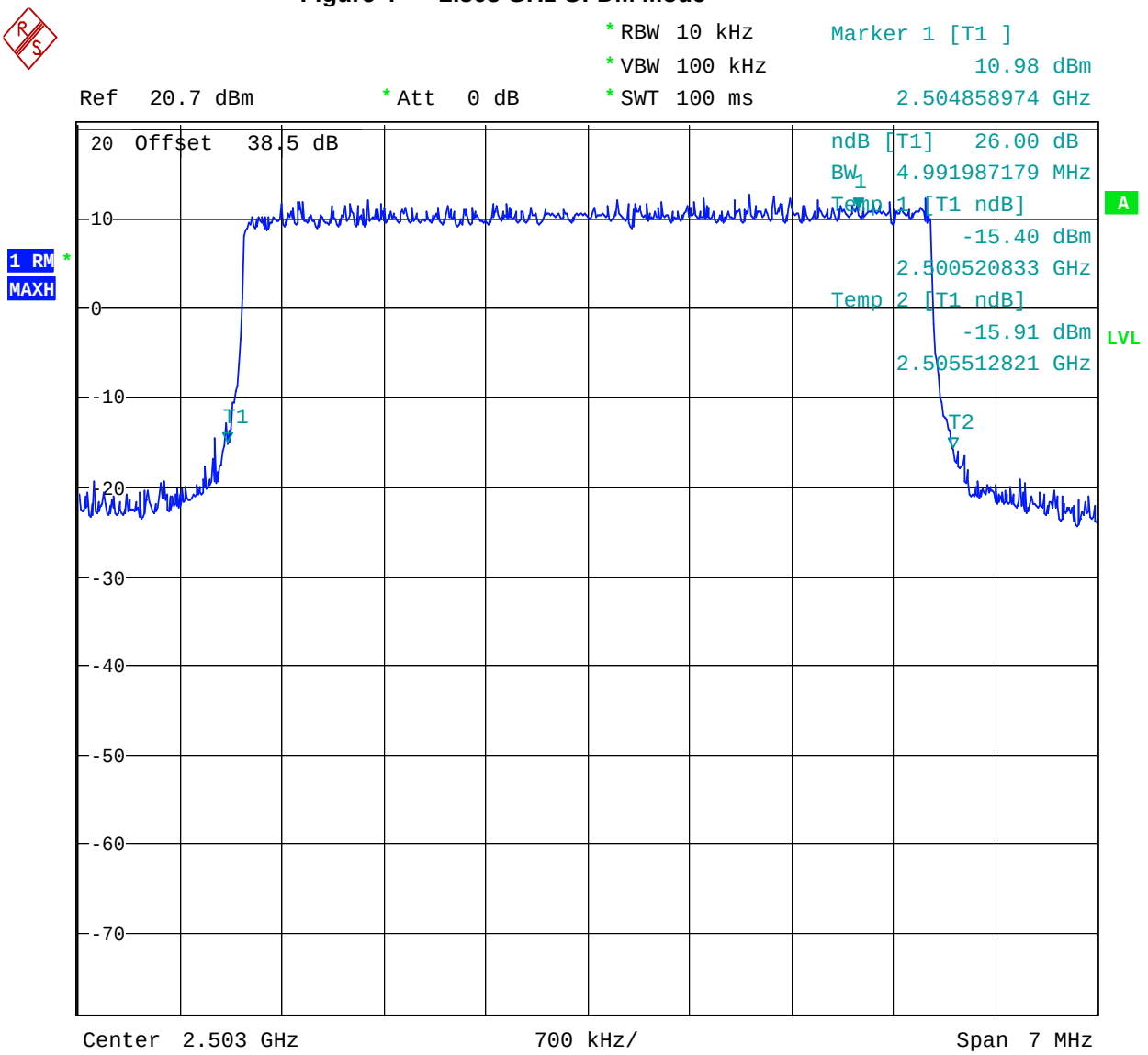


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Figure 5 2.590 GHz OFDM Mode

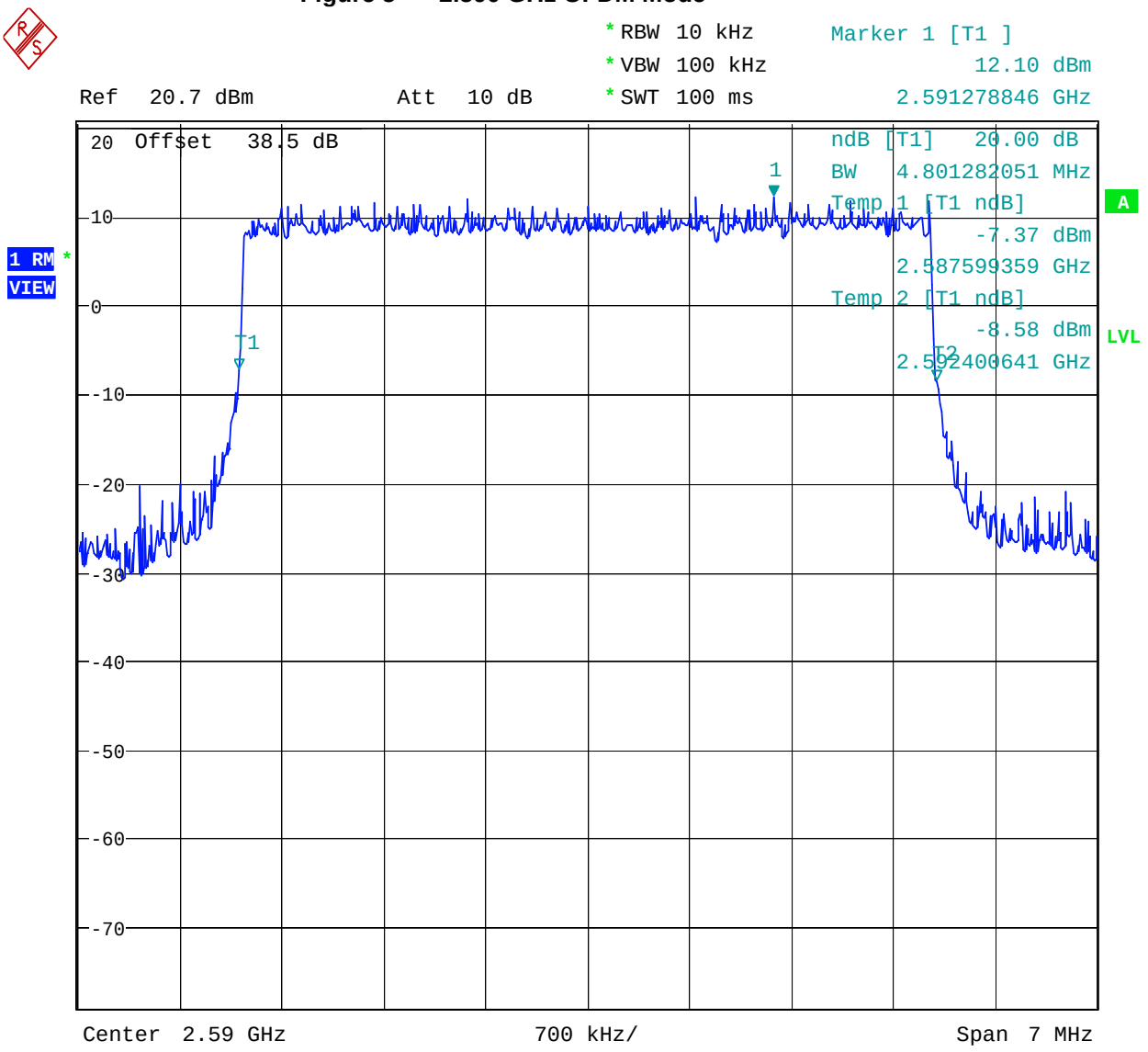

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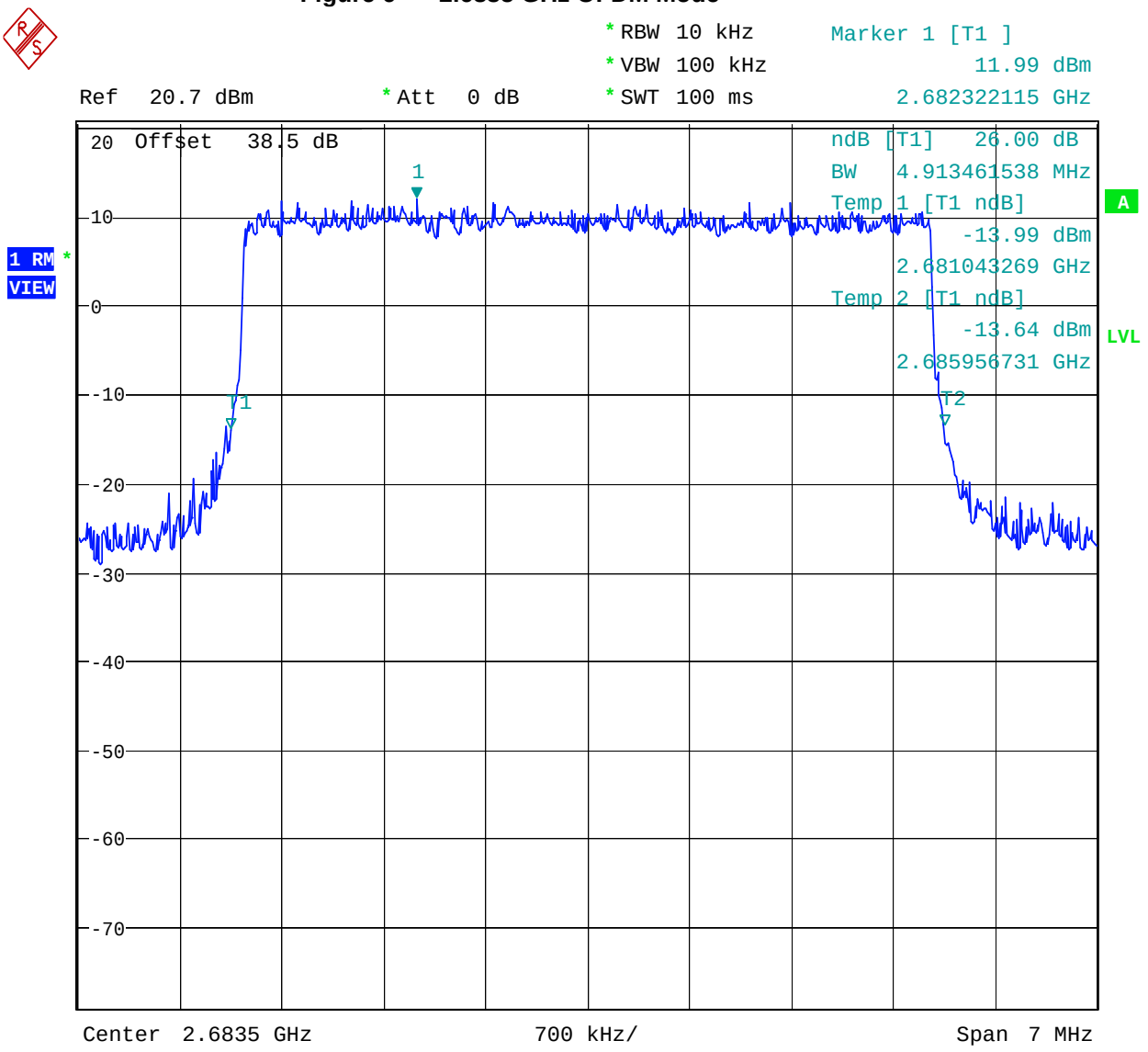
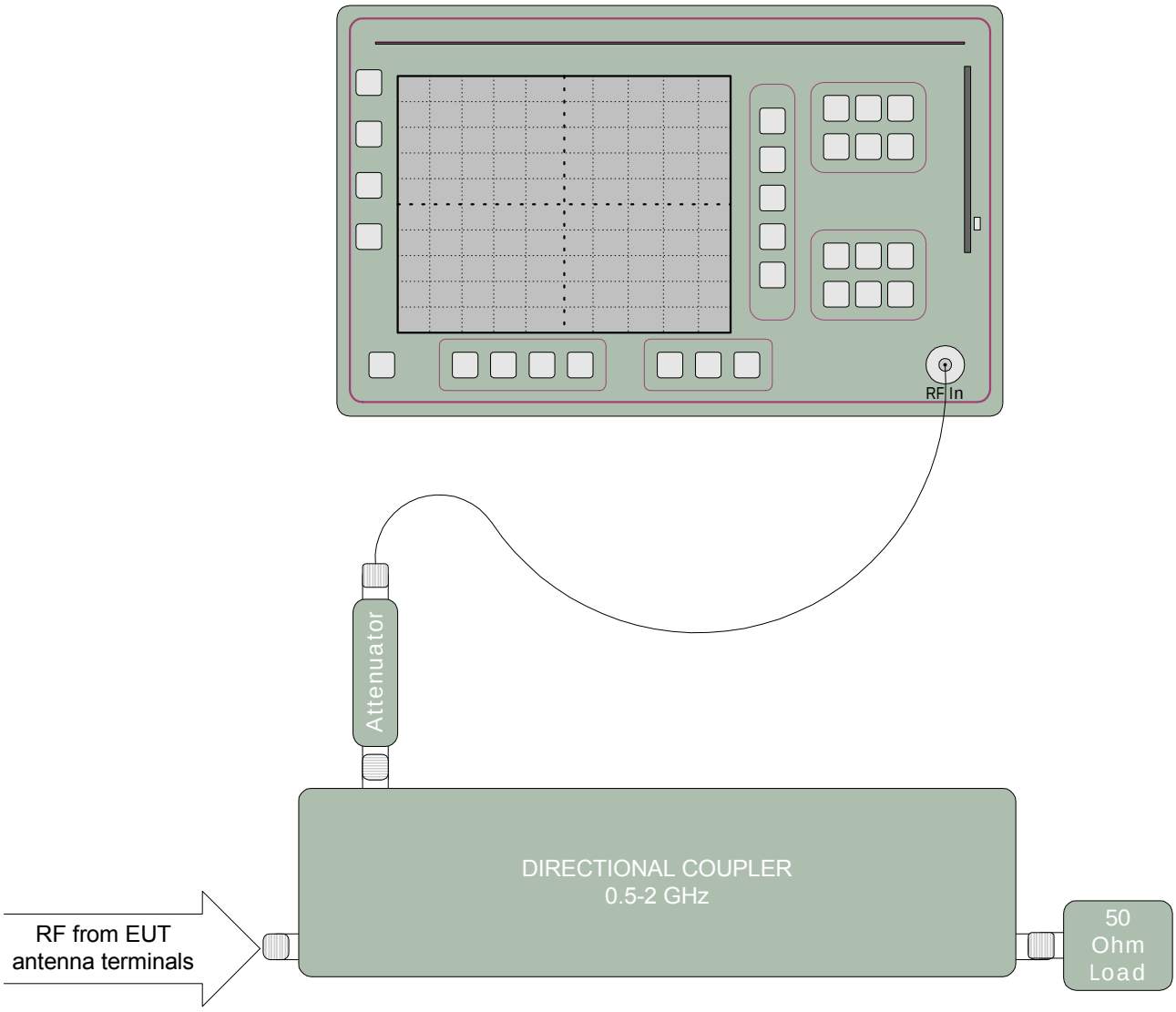
Figure 6 2.6835 GHz OFDM Mode



Date: 9.NOV.2006 21:41:55

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(l)
(1) Prior to the transition, and thereafter, solely within the MBS, for analog operations with an EIRP in excess of −9 dBW, the signal shall be attenuated at the channel edges by at least 38 dB relative to the peak visual carrier, then linearly sloping from that level to at least 60 dB of attenuation at 1 MHz below the lower band edge and 0.5 MHz above the upper band edge, and attenuated at least 60 dB at all other frequencies.
(2) **For fixed and temporary fixed digital stations, the attenuation shall be not less than 43 + 10 log (P) dB**, unless a documented interference complaint is received from an adjacent channel licensee. Provided that the complaint cannot be mutually resolved between the parties, both licensees of existing and new systems shall reduce their out-of-band emissions by at least 67 + 10 log (P) dB measured at 3 MHz from their channel's edges for distances between stations exceeding 1.5 km. For stations separated by less than 1.5 km, the new licensee shall reduce attenuation at least 67 + 10 log (P) − 20 log(Dkm/1.5), or when colocated, limit the undesired signal level at the affected licensee's base station receiver(s) at the colocation site to no more than −107 dBm. Mobile Service Satellite licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
(3) Prior to transition and thereafter solely within the MBS, and notwithstanding paragraph (l)(2) of this section, the maximum out-of-band power of a digital transmitter operating on a single 6 MHz channel with an EIRP in excess of −9 dBW employing digital modulation for the primary purpose of transmitting video programming shall be attenuated at the 6 MHz channel edges at least 25 dB relative to the licensed average 6 MHz channel power level, then attenuated along a linear slope to at least 40 dB at 250 kHz beyond the nearest channel edge, then attenuated along a linear slope from that level to at least 60 dB at 3 MHz above the upper and below the lower licensed channel edges, and attenuated at least 60 dB at all other frequencies.
(4) For mobile digital stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge and 55 + 10 log (P) dB at 5.5 MHz from the channel edges. Mobile Service Satellite licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
(5) Notwithstanding the provisions of paragraphs (l)(2) and (l)(4) of this section, prior to transition, a licensee may continue to operate facilities deployed as of January 10, 2005 provided that such facilities operate in compliance with the emission mask applicable to those services prior to January 10, 2005.
(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured

power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). **The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.** With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

D.3. Measurement Uncertainty

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

D.4. Deviations

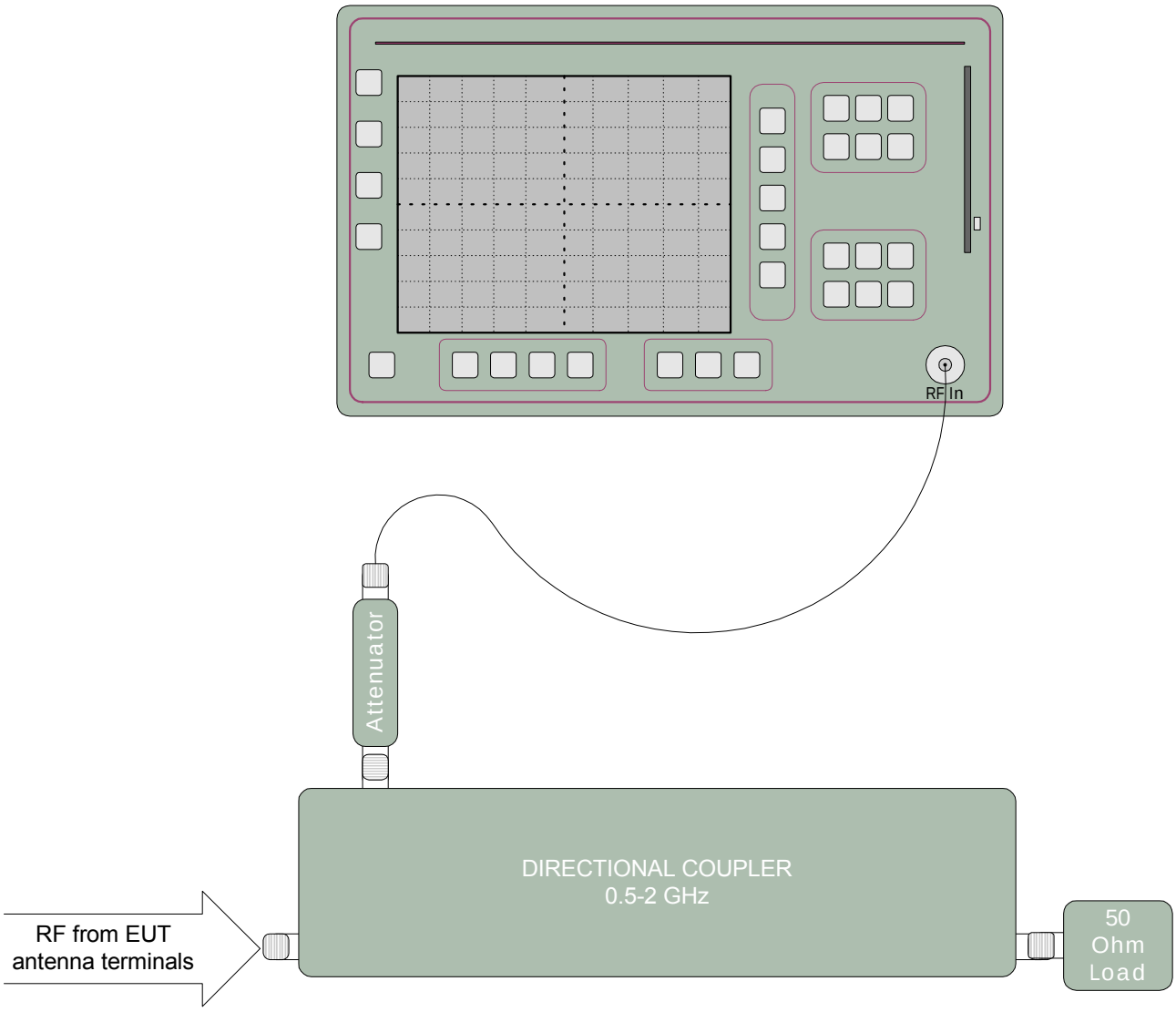
Deviation Number	Time & Date	Description and Justification of Deviation	Deviation Reference			Approval
			Base Standard	Test Basis	NTS Procedure	
none						

D.5. Test Results

Complies. All emissions meet the out of band limits.

Out-of-Band Emissions limit is 43 + 10 log(P) which relates to -13 dBm absolute power.

D.6. Test Diagram



D.7. Test Data

See following pages.

Figure 7 Lower Band Edge OFDM mode

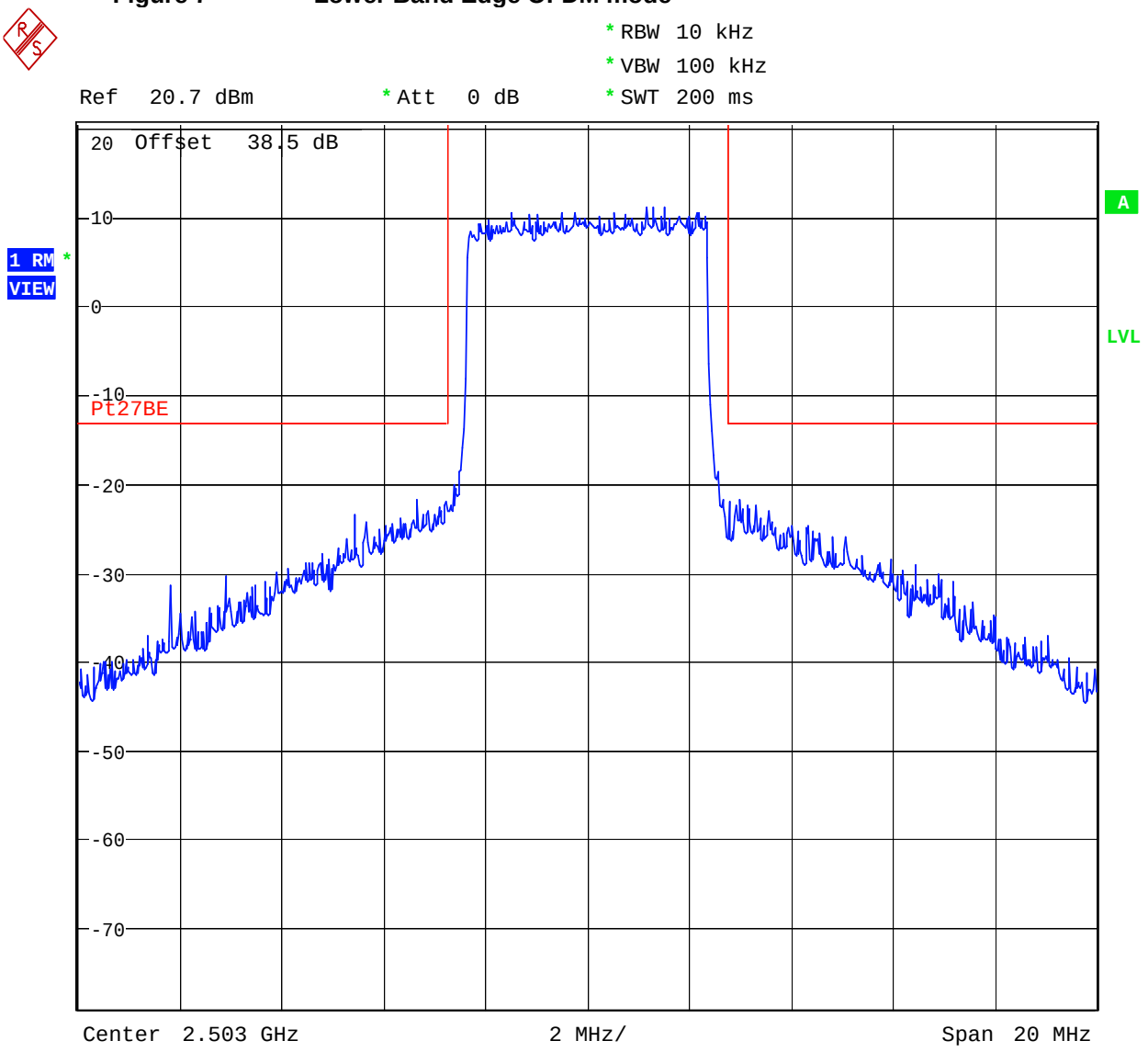


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Figure 8 Upper Band Edge OFDM mode

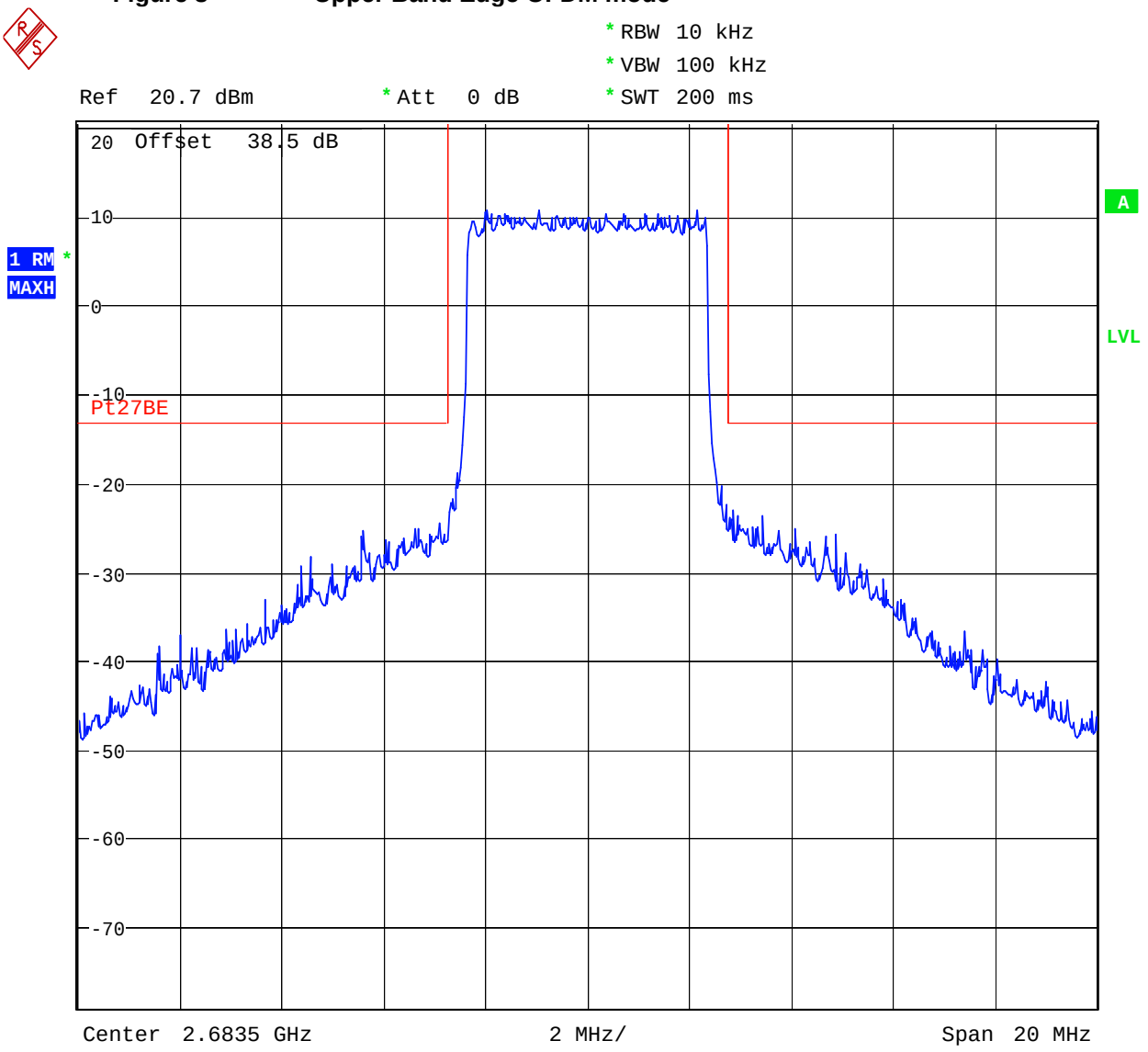

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Figure 9 Lower Band Edge Navini mode

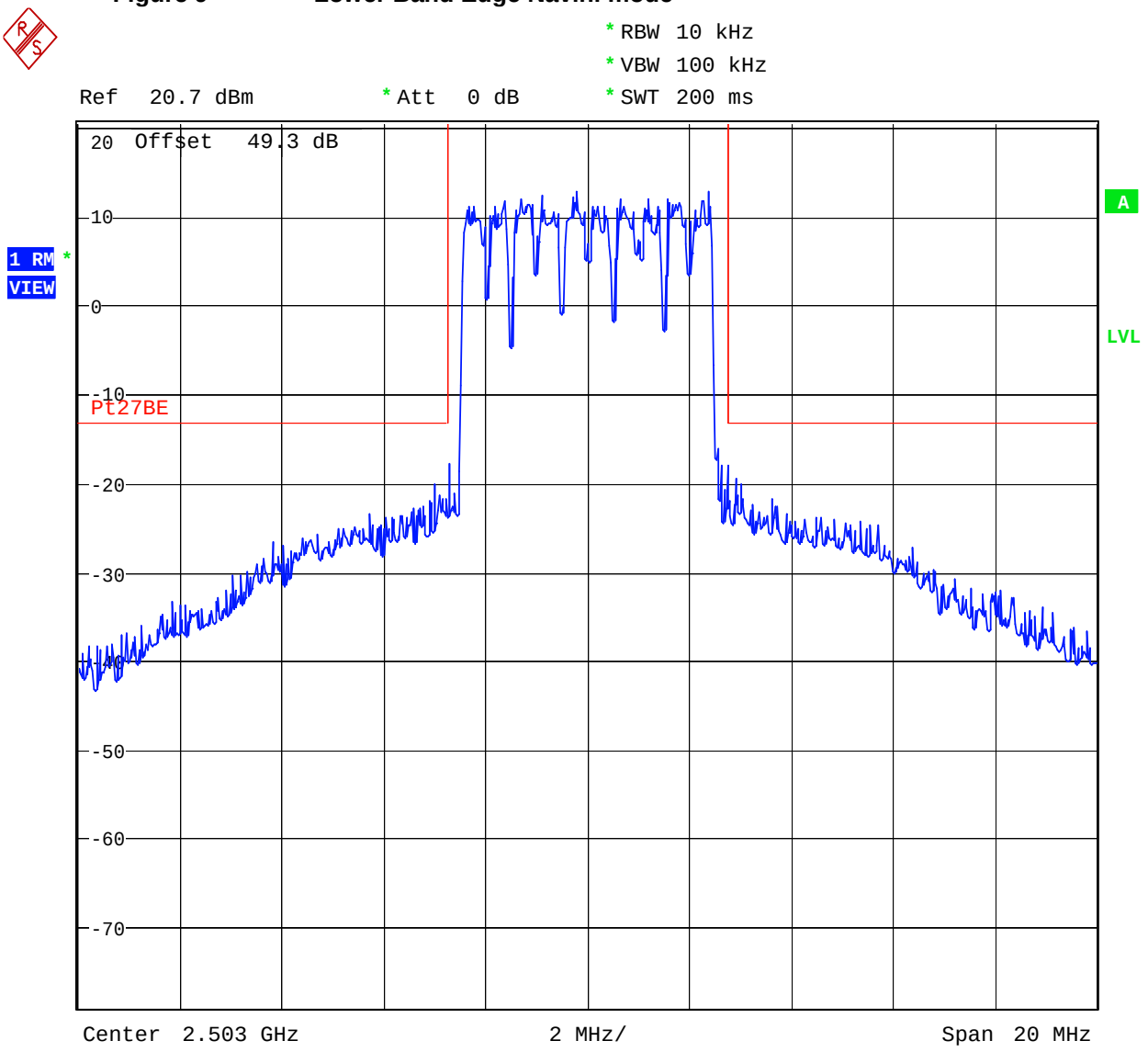

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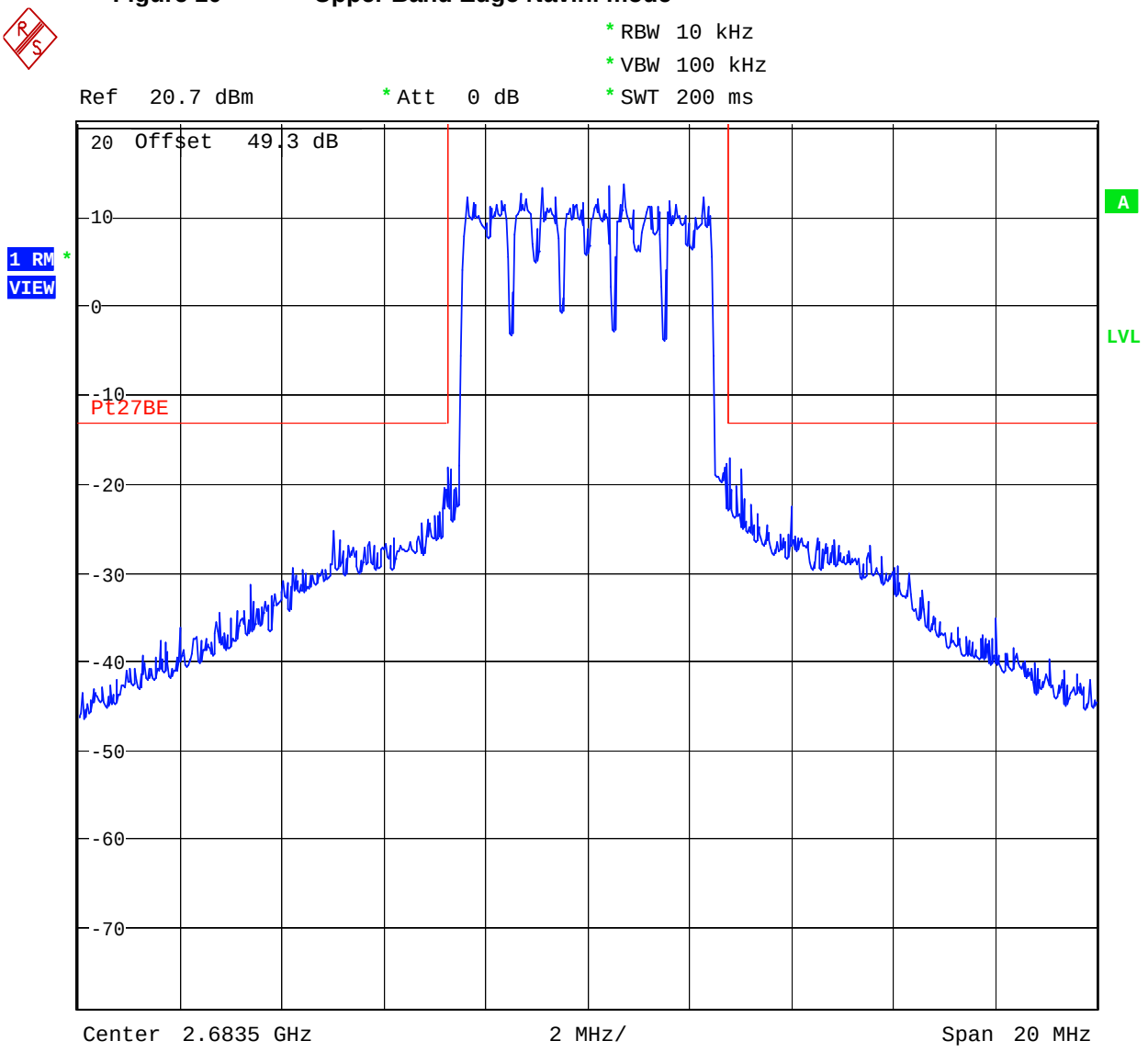
Figure 10 Upper Band Edge Navini mode



Date: 9.NOV.2006 18:52:56

Figure 11 Antenna Conducted Spurious – Navini mode – 2.59 GHz

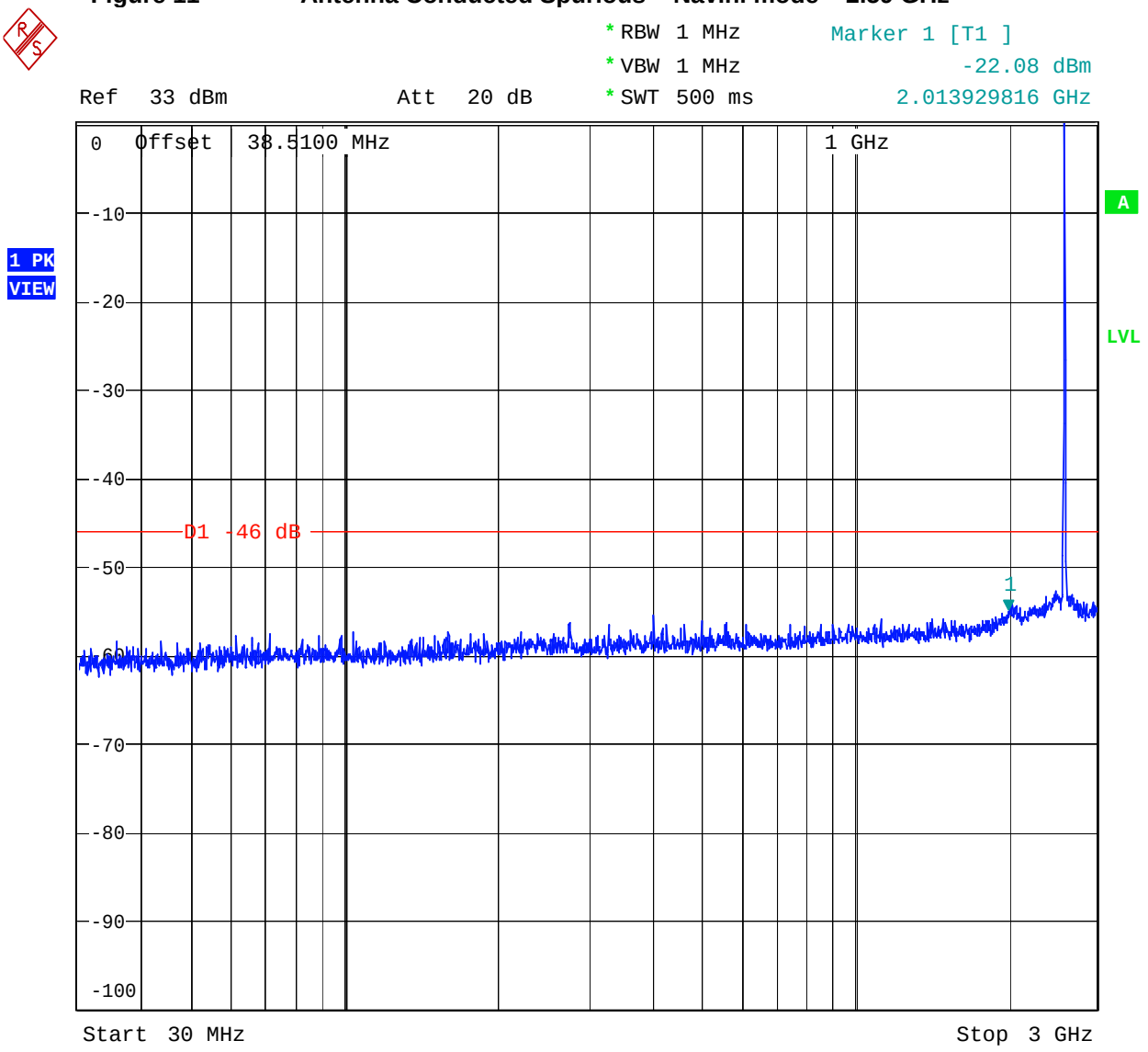


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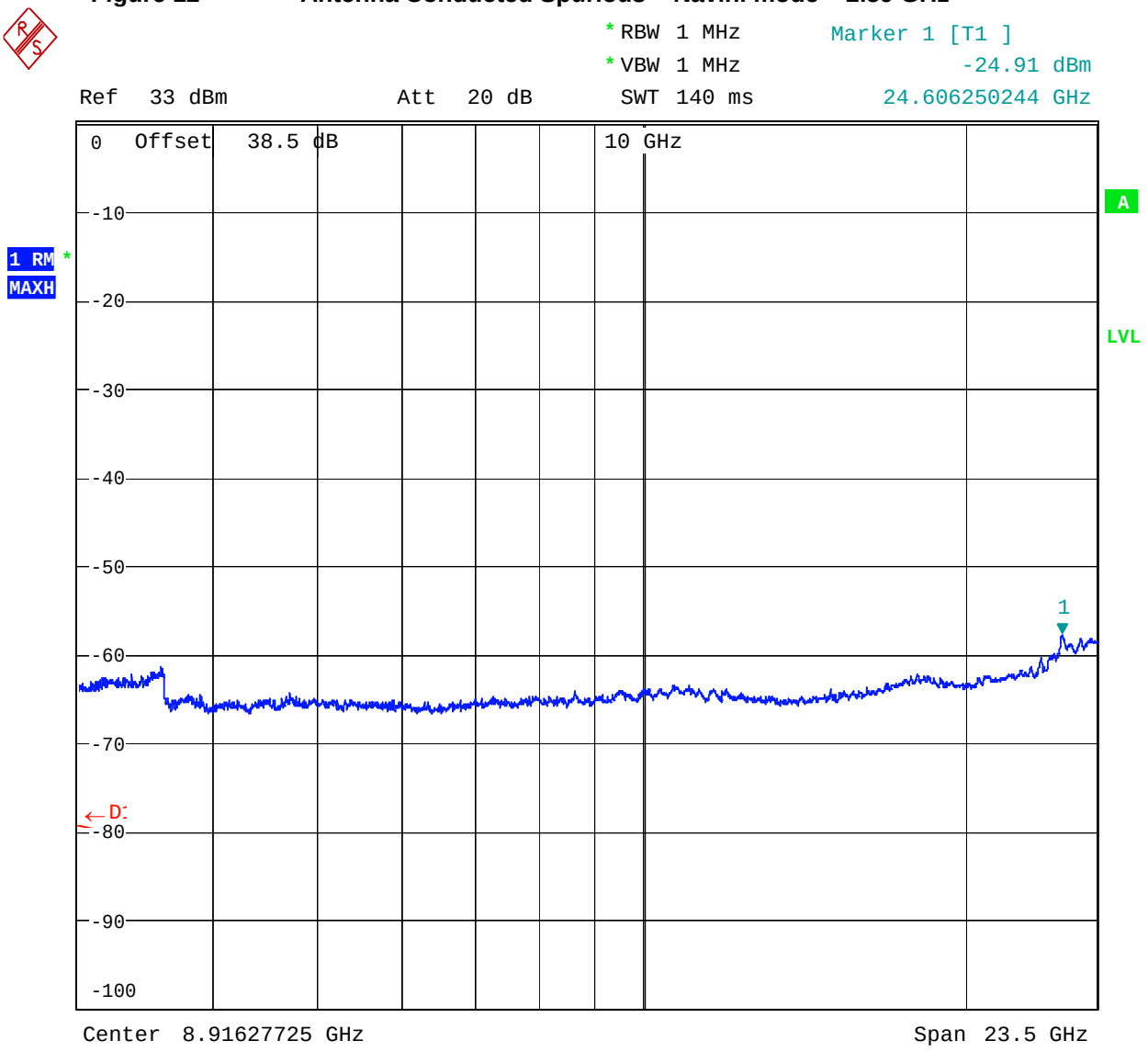
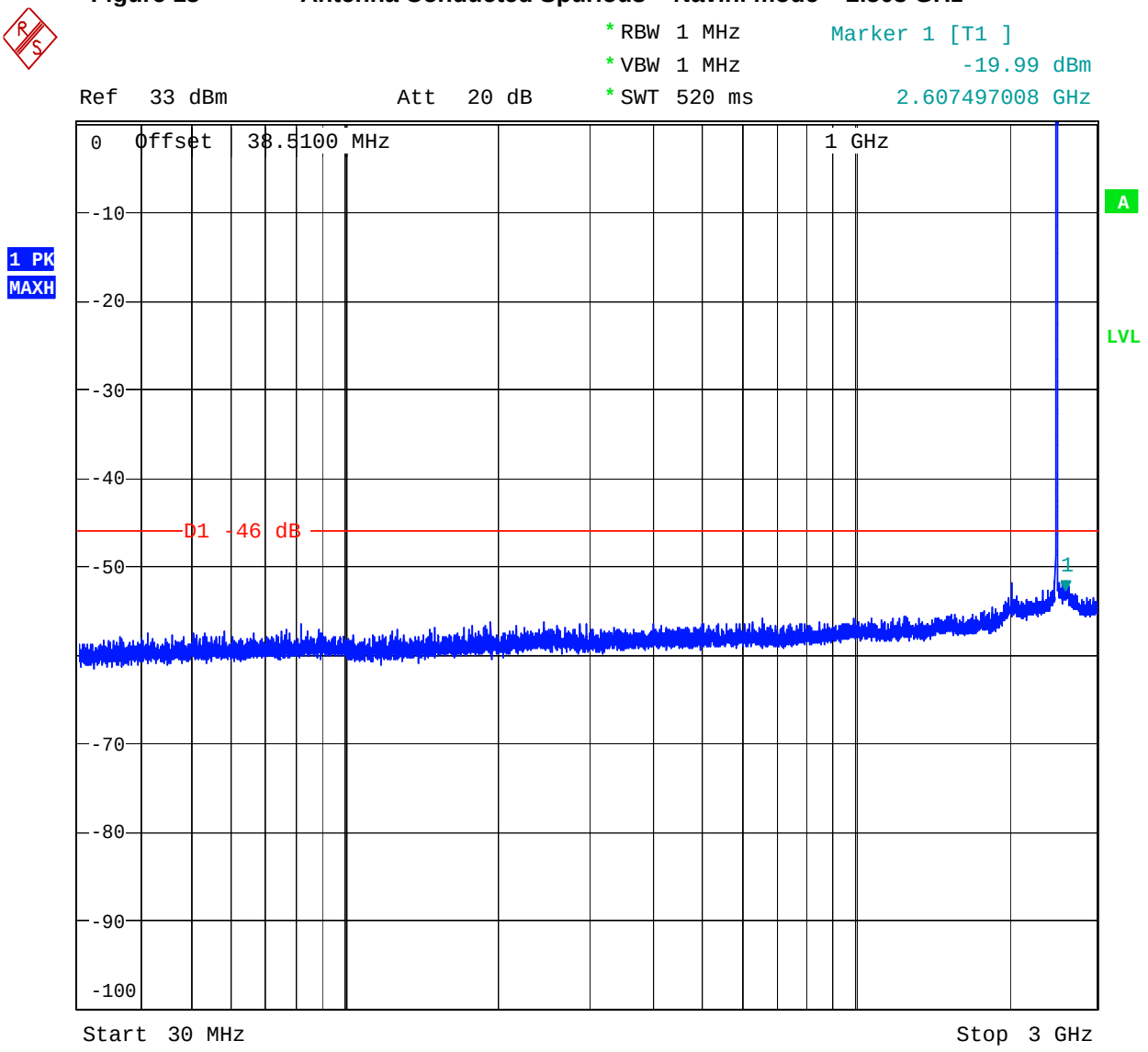
Figure 12 Antenna Conducted Spurious – Navini mode – 2.59 GHz



Date: 9.NOV.2006 21:06:56

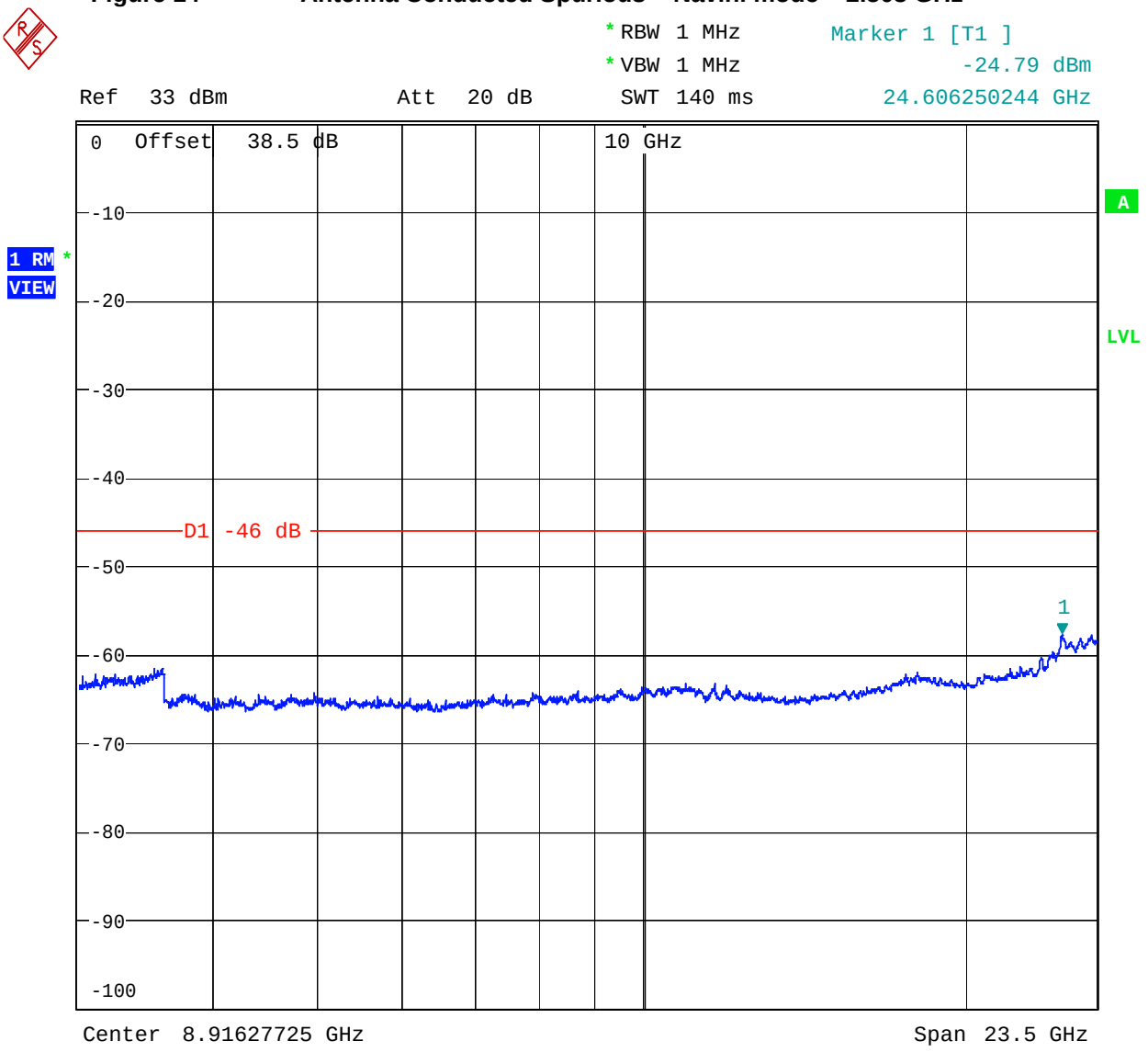
3 GHz – 26.5 GHz

Figure 13 Antenna Conducted Spurious – Navini mode – 2.503 GHz



Date: 9.NOV.2006 20:52:26

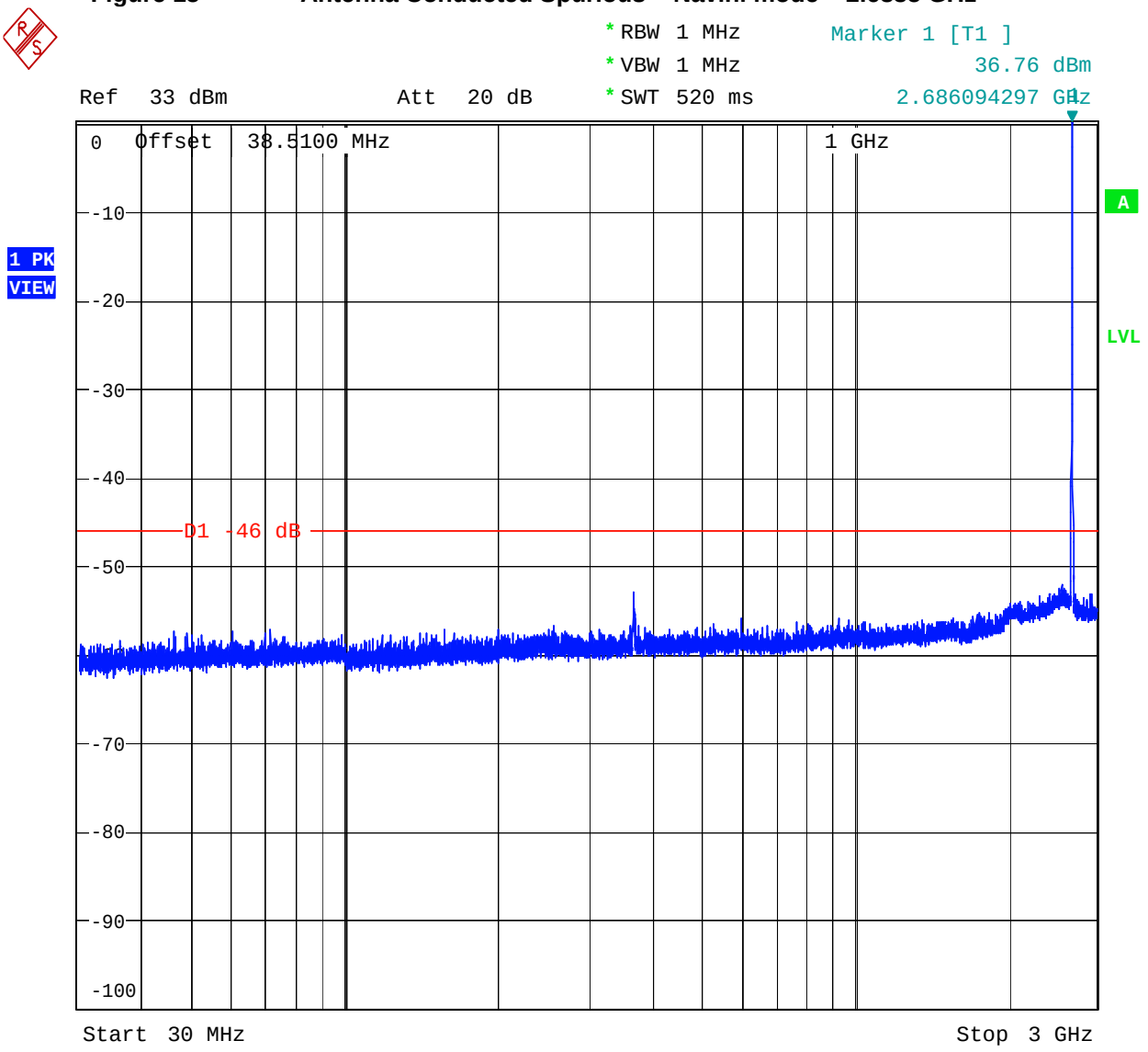
Figure 14 Antenna Conducted Spurious – Navini mode – 2.503 GHz



Date: 9.NOV.2006 21:03:41

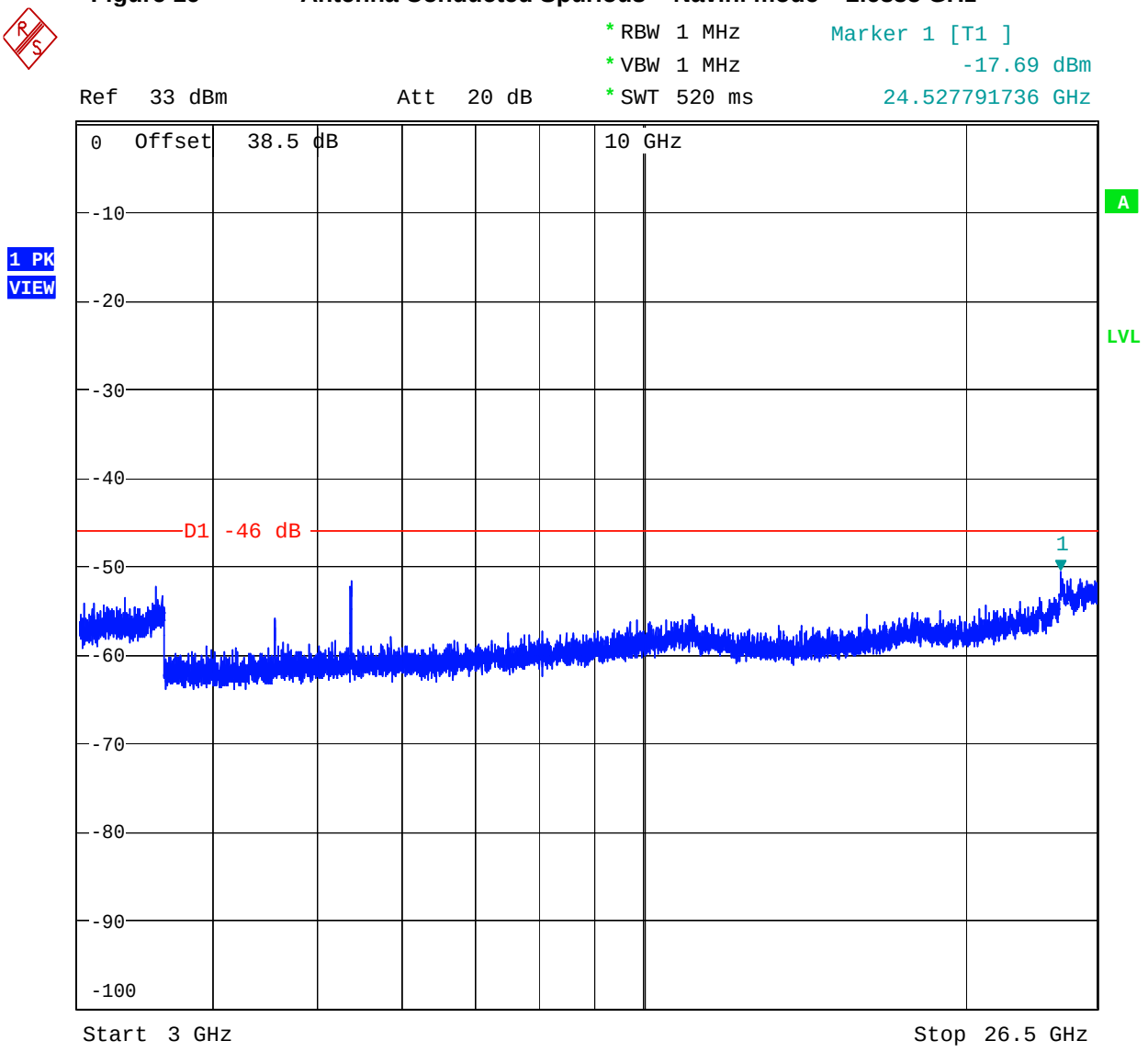
3 GHz – 26.5 GHz

Figure 15 Antenna Conducted Spurious – Navini mode – 2.6835 GHz



Date: 9.NOV.2006 20:34:17

Figure 16 Antenna Conducted Spurious – Navini mode – 2.6835 GHz



Date: 9.NOV.2006 20:44:30

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(l)
(1) Prior to the transition, and thereafter, solely within the MBS, for analog operations with an EIRP in excess of −9 dBW, the signal shall be attenuated at the channel edges by at least 38 dB relative to the peak visual carrier, then linearly sloping from that level to at least 60 dB of attenuation at 1 MHz below the lower band edge and 0.5 MHz above the upper band edge, and attenuated at least 60 dB at all other frequencies.
(2) **For fixed and temporary fixed digital stations, the attenuation shall be not less than 43 + 10 log (P) dB**, unless a documented interference complaint is received from an adjacent channel licensee. Provided that the complaint cannot be mutually resolved between the parties, both licensees of existing and new systems shall reduce their out-of-band emissions by at least 67 + 10 log (P) dB measured at 3 MHz from their channel's edges for distances between stations exceeding 1.5 km. For stations separated by less than 1.5 km, the new licensee shall reduce attenuation at least 67 + 10 log (P) − 20 log(Dkm/1.5), or when colocated, limit the undesired signal level at the affected licensee's base station receiver(s) at the colocation site to no more than −107 dBm. Mobile Service Satellite licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
(3) Prior to transition and thereafter solely within the MBS, and notwithstanding paragraph (l)(2) of this section, the maximum out-of-band power of a digital transmitter operating on a single 6 MHz channel with an EIRP in excess of −9 dBW employing digital modulation for the primary purpose of transmitting video programming shall be attenuated at the 6 MHz channel edges at least 25 dB relative to the licensed average 6 MHz channel power level, then attenuated along a linear slope to at least 40 dB at 250 kHz beyond the nearest channel edge, then attenuated along a linear slope from that level to at least 60 dB at 3 MHz above the upper and below the lower licensed channel edges, and attenuated at least 60 dB at all other frequencies.
(4) For mobile digital stations, the attenuation factor shall be not less than 43 + 10 log (P) dB at the channel edge and 55 + 10 log (P) dB at 5.5 MHz from the channel edges. Mobile Service Satellite licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS1 on the same terms and conditions as adjacent channel BRS or EBS licensees.
(5) Notwithstanding the provisions of paragraphs (l)(2) and (l)(4) of this section, prior to transition, a licensee may continue to operate facilities deployed as of January 10, 2005 provided that such facilities operate in compliance with the emission mask applicable to those services prior to January 10, 2005.
(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be

employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (*i.e.* 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

E.3. Test Results

Compliant. The worst-case spurious emission level was -44.3 dBm at 5180 MHz. This level is 22.7 dB below the specification limit of -13 dBm. The spectrum was searched up to 26.5 GHz.

E.4. Deviations from Normal Operating Mode During Test

None.

E.5. Sample Calculation

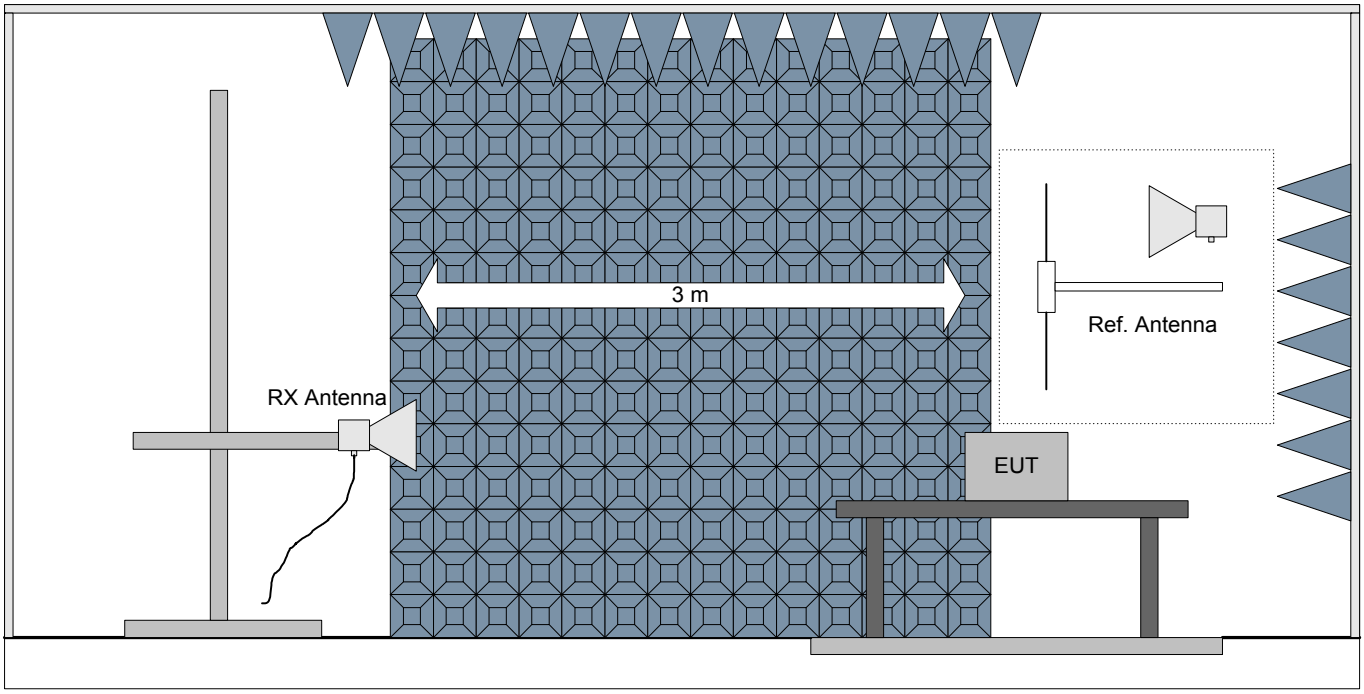
Final measured value (dBm) = Substitution level (dBm) + Antenna Gain (dBd)

Minimum attenuation limit (dB) = 43 + 10 log(P) where P = Peak power of the carrier in watts.

Min. Atten. Limit dB) = 43 + 10 * log(2 watts)
= 43 + 10 * 0.3
= 43 + 3
= 46 dB

33 dBm – 46 dB = -13 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:	2.5-2.6-BTS-3A-R1
Comments:	Transmit at full rf output power (2 watts)
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	5180	-117.1	-44.25	8.59	-35.7	2.72E-07	43	20	56	22.7
Ref. E1019	H	5180	-117.1	-44.25	8.59	-35.7	2.72E-07	43	20	56	22.7
Ref. E1019	V	7770	-116.3	-45.47	9.15	-36.3	2.33E-07	43	20	56	23.3
Ref. E1019	H	7770	-116.3	-45.47	9.15	-36.3	2.33E-07	43	20	56	23.3
Ref. E1019	V	10360	-116.5	-47.65	9.92	-37.7	1.69E-07	43	20	56	24.7
Ref. E1019	H	10360	-116.5	-47.65	9.92	-37.7	1.69E-07	43	20	56	24.7
Ref. E1019	V	12950	-120.0	-52.92	11.31	-41.6	6.90E-08	43	20	56	28.6
Ref. E1019	H	12950	-120.0	-52.92	11.31	-41.6	6.90E-08	43	20	56	28.6
Ref. E1019	V	15540	-118.0	-53.54	14.16	-39.4	1.15E-07	43	20	56	26.4
Ref. E1019	H	15540	-118.0	-53.54	14.16	-39.4	1.15E-07	43	20	56	26.4
Ref. E1019	V	18130.00	-120.0	-56.45	5.7	-50.8	8.41E-09	43	20	56	37.8
Ref. E1019	H	18130.00	-120.0	-56.45	5.7	-50.8	8.41E-09	43	20	56	37.8

Notes:
(1) A positive margin indicates a passing result
(2) If duty cycle correction is indicated, plots are included in the test report to validate the factor used.
(3) The minimum threshold of sensitivity was sufficient to detect signals within 20 dB of the -13 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