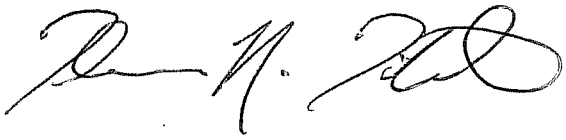
Nemko Test Report:	41239RUS1
Applicant:	Andrew Corporation 620 N. Greenfield Parkway Garner, NC 27529 USA
Equipment Under Test: (E.U.T.)	MR1918
FCC Identifier:	BCR-MR1918
In Accordance With:	**CFR 47, Part 24, Subpart E** Broadband PCS Repeaters
Tested By:	Nemko USA, Inc. 802 N. Kealy Lewisville, TX 75057-3136

TESTED BY: _____ **DATE:** **28 January 2010**

David Light, Senior Wireless Engineer



APPROVED BY: _____ **DATE:** **29 January 2010**

Tom Tidwell, Telecom Direct

Number of Pages: 54

Table of Contents

Section 1. Summary of Test Results

Manufacturer: Andrew Corporation

Model No.: MR1918

Serial No.: 10

General: **All measurements are traceable to national standards.**

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with CFR 47, Part 24, Subpart E.

☐ New Submission ☒ Production Unit

☒ Class II Permissive Change ☐ Pre-Production Unit

Reason for Class II change: Gain has been increased from 70 dB to 78 dB. Output power remains at 22 dBm. The gain of the amplifier is increased by the removal of attenuation in the system. There was no degradation of the characteristics of the device.

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE.
See " Summary of Test Data".

NVLAP Lab Code 100426-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	24.232	100W	Not tested
Occupied Bandwidth	2.1049	Input/Output	Complies
Spurious Emissions at Antenna Terminals	24.238(a)	-13 dBm	Complies
Field Strength of Spurious Emissions	24.238(a)	-13 dBm E.I.R.P.	Not tested
Frequency Stability	24.235		NA

Footnotes:

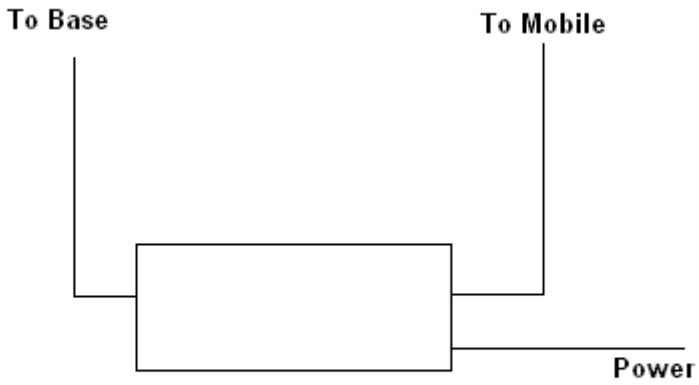
Section 2. General Equipment Specification

Supply Voltage Input:		120 Vac			
Frequency Range:	**Downlink:**	1930 to 1990 MHz			
Frequency Range:	**Uplink:**	1850 to 1910 MHz			
Type of Modulation and Designator:		CDMA (G7W)	GSM (GXW)	EDGE (G7W)	W-CDMA (G7W)
Output Impedance:		50 ohms			
RF Output (Rated):	**Downlink**	22 dBm (158 mW)			
RF Output (Rated):	**Uplink**	22 dBm (158 mW)			
Frequency Translation:		**F1-F1** ☒	**F1-F2** ☐	**N/A** ☐	
Band Selection:		**Software** ☒	**Duplexer Change** ☐	**Fullband Coverage** ☐	

Description of EUT

The MR1918 is a bi-directional amplifier used to enhance signals between a mobile and a base station in a wireless network. It has been designed to increase signal strength in small and medium sized areas such as offices, shops, basements and manufacturing facilities.

System Diagram



Section 3. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 24.238
TESTED BY: David Light	DATE: 28 January 2010

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1472-1082

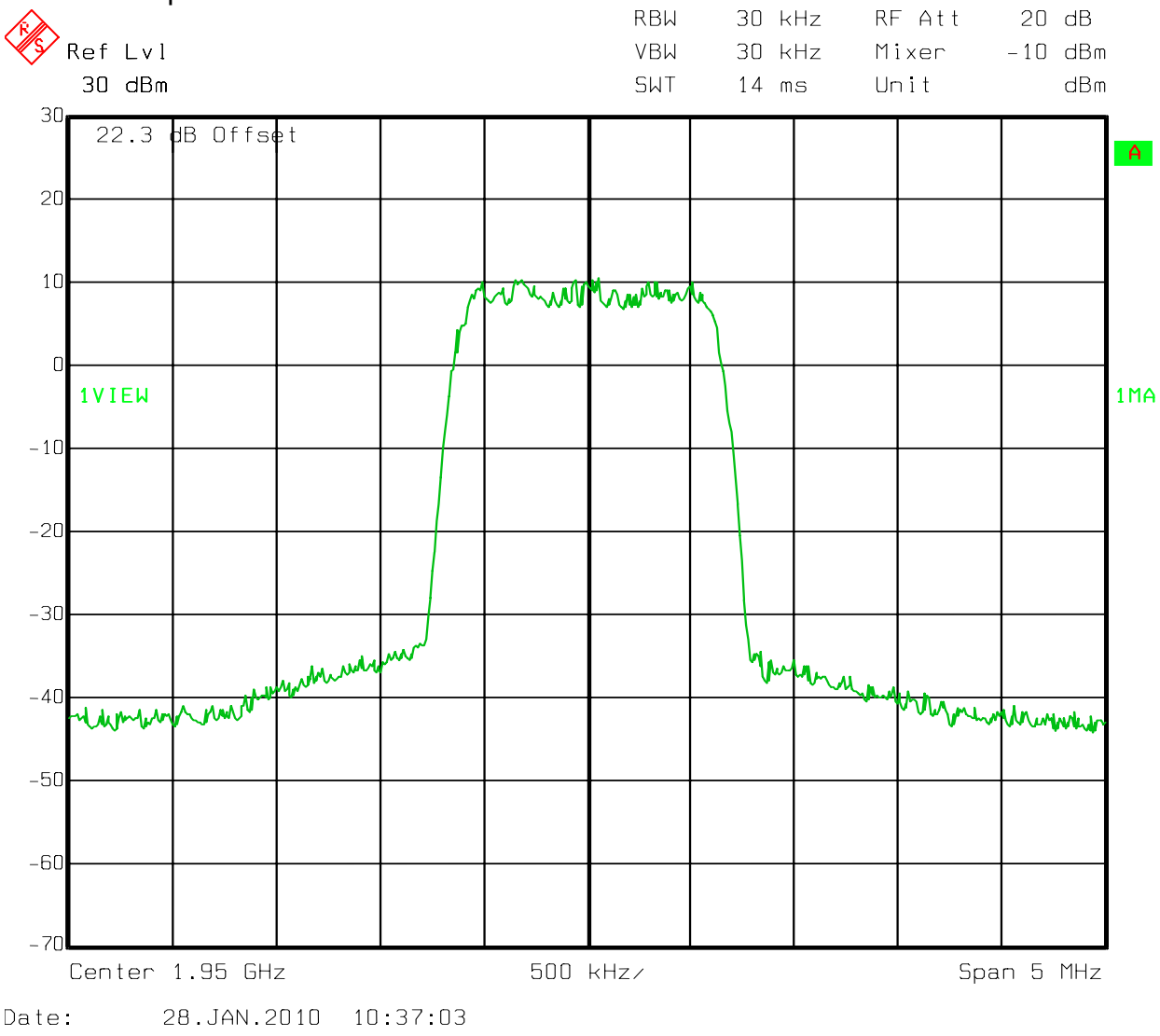
Measurement Uncertainty: $1X10^{-7}$ ppm

Temperature: 22 °C

Relative Humidity: 32 %

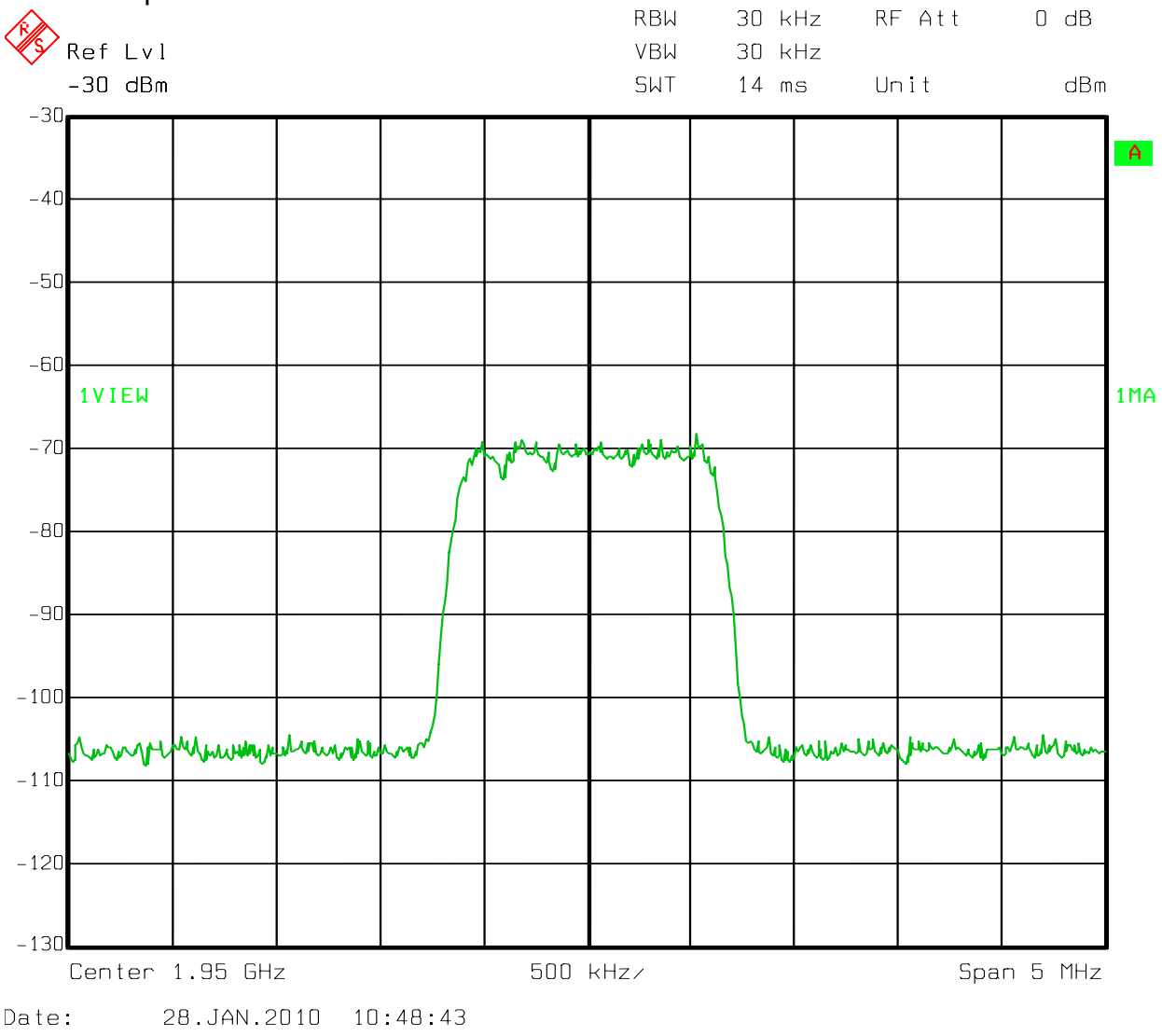
Test Data – Occupied Bandwidth

Downlink
CDMA - Output



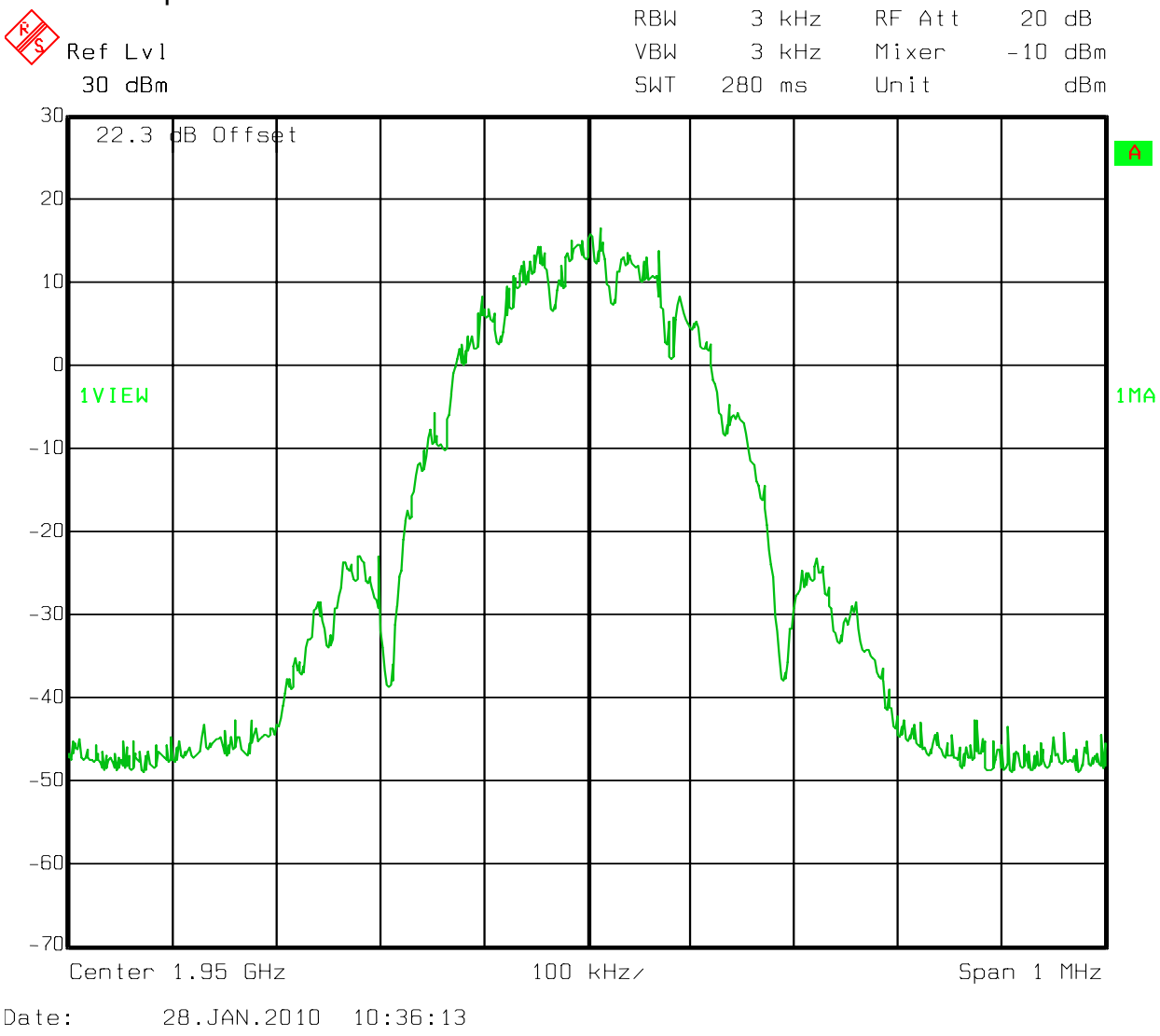
Test Data – Occupied Bandwidth

Downlink
CDMA - Input



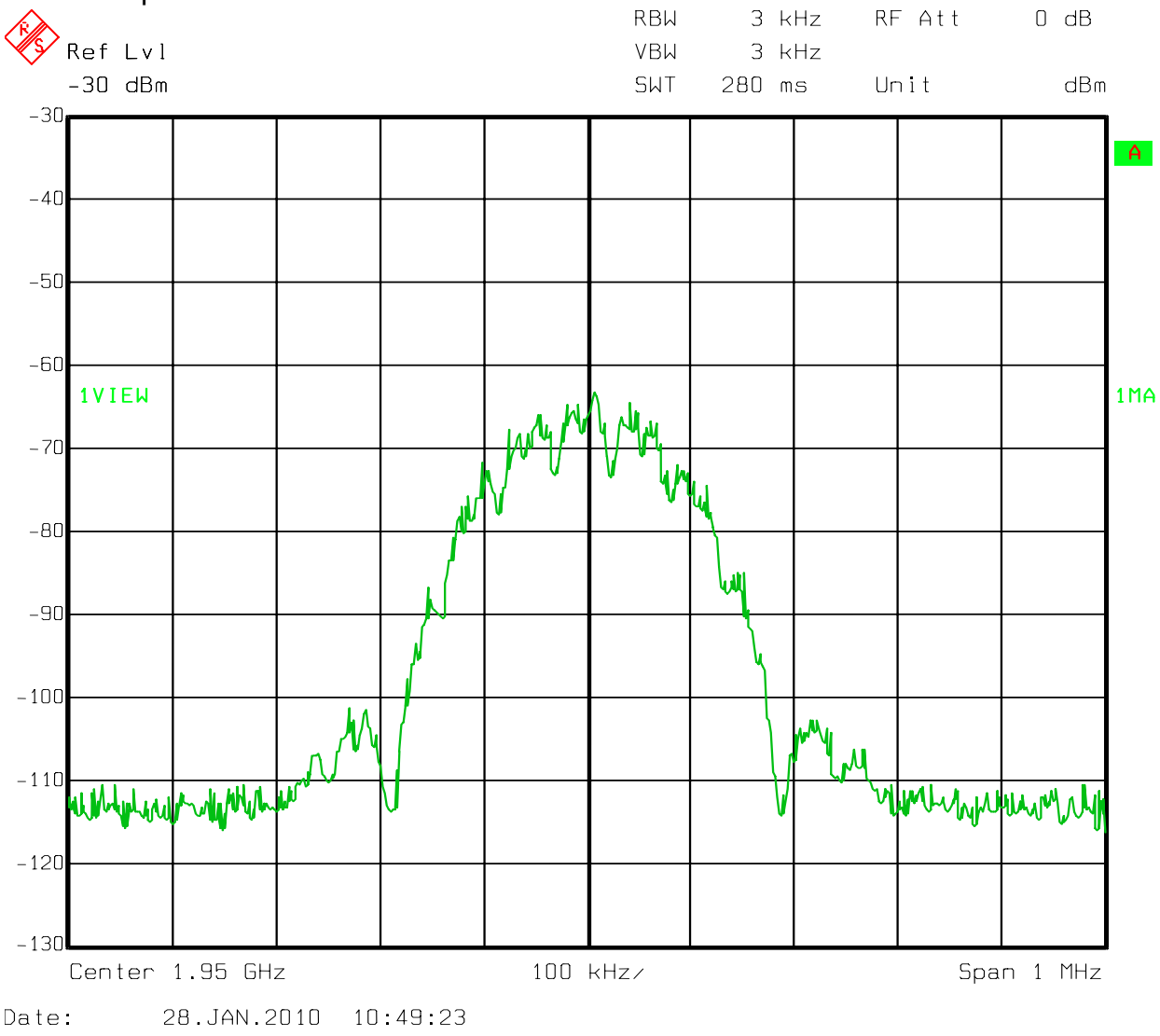
Test Data – Occupied Bandwidth

Downlink
EDGE - Output



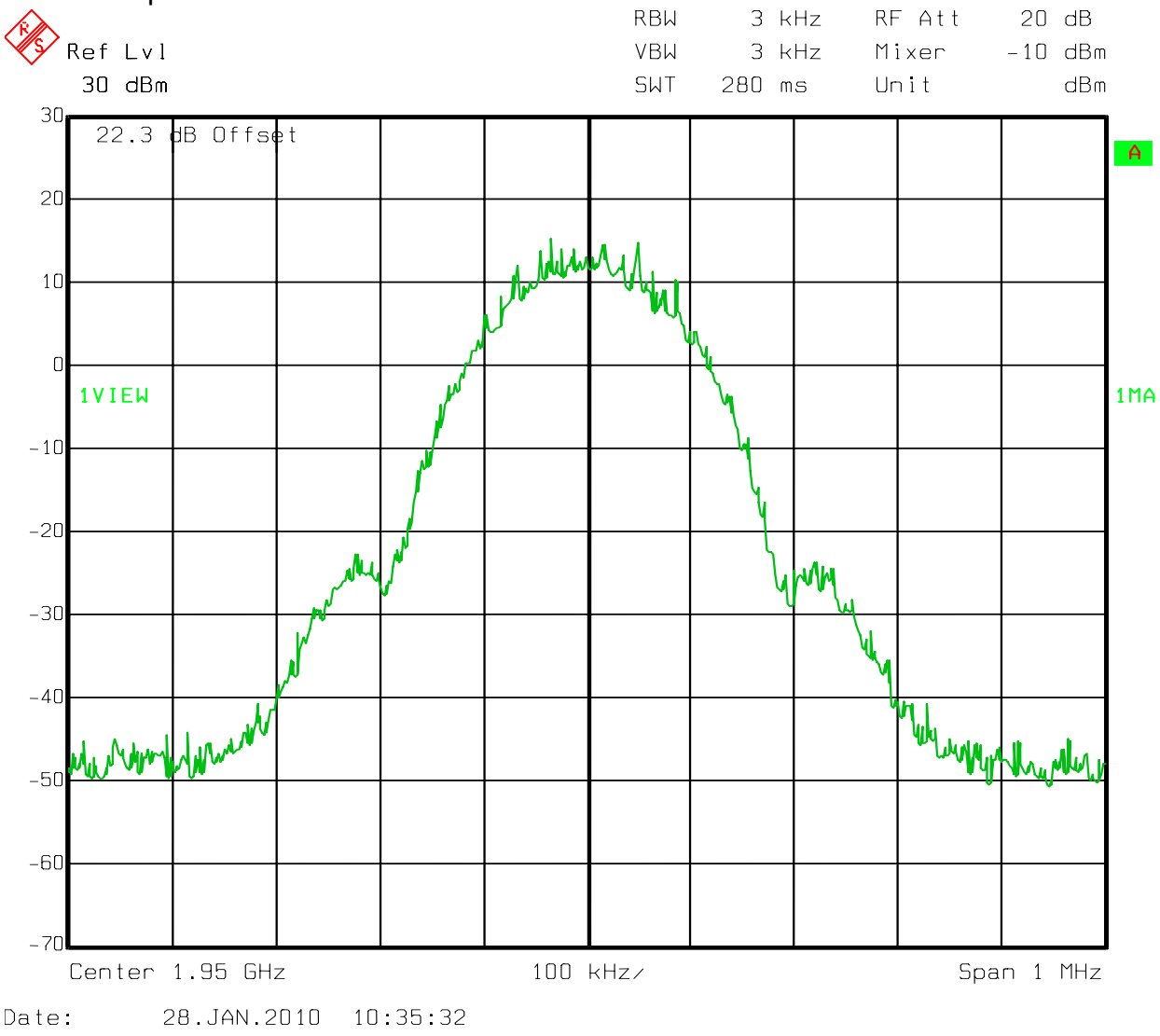
Test Data – Occupied Bandwidth

Downlink
EDGE - Input



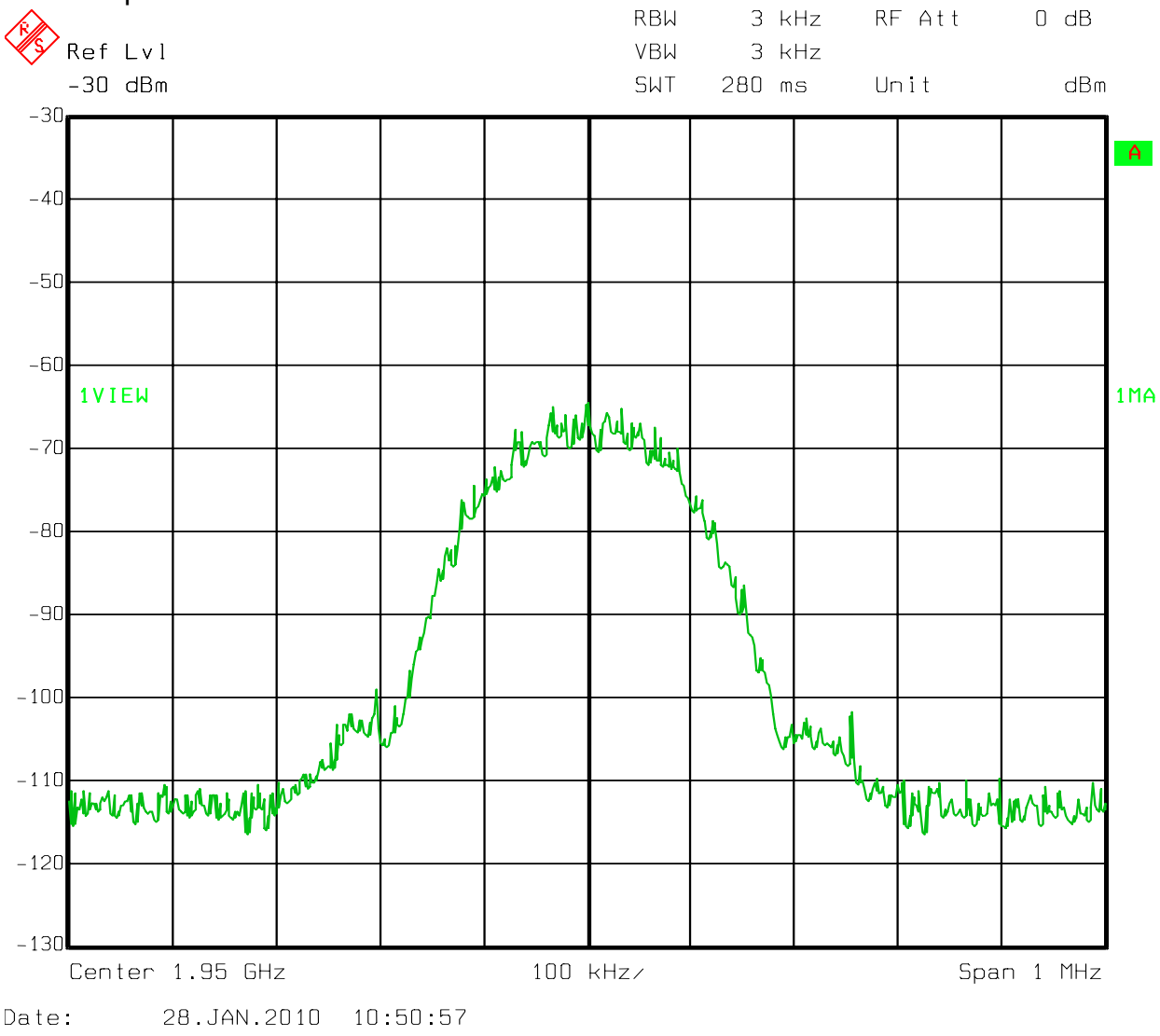
Test Data – Occupied Bandwidth

Downlink
GSM - Output



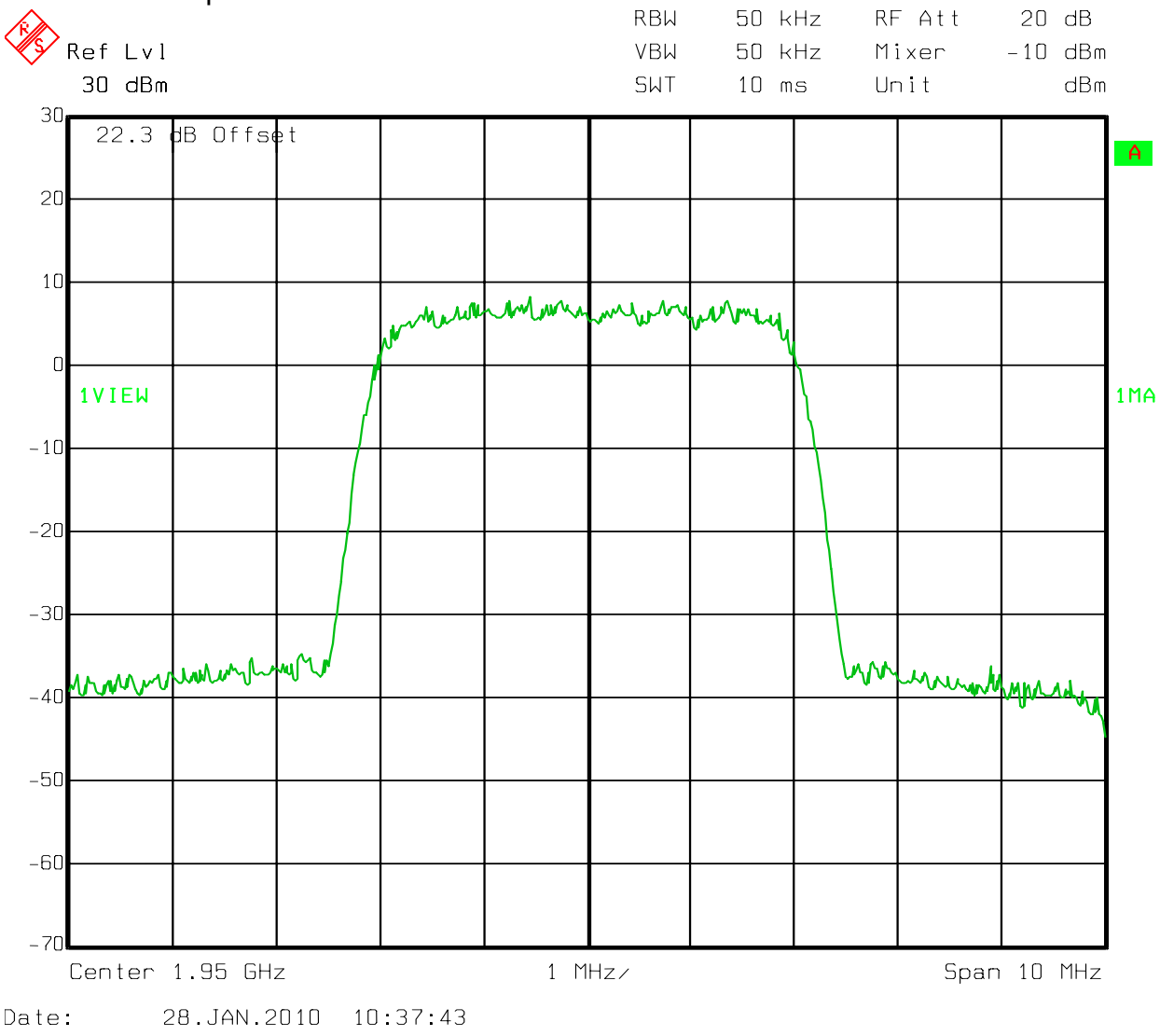
Test Data – Occupied Bandwidth

Downlink
GSM - Input



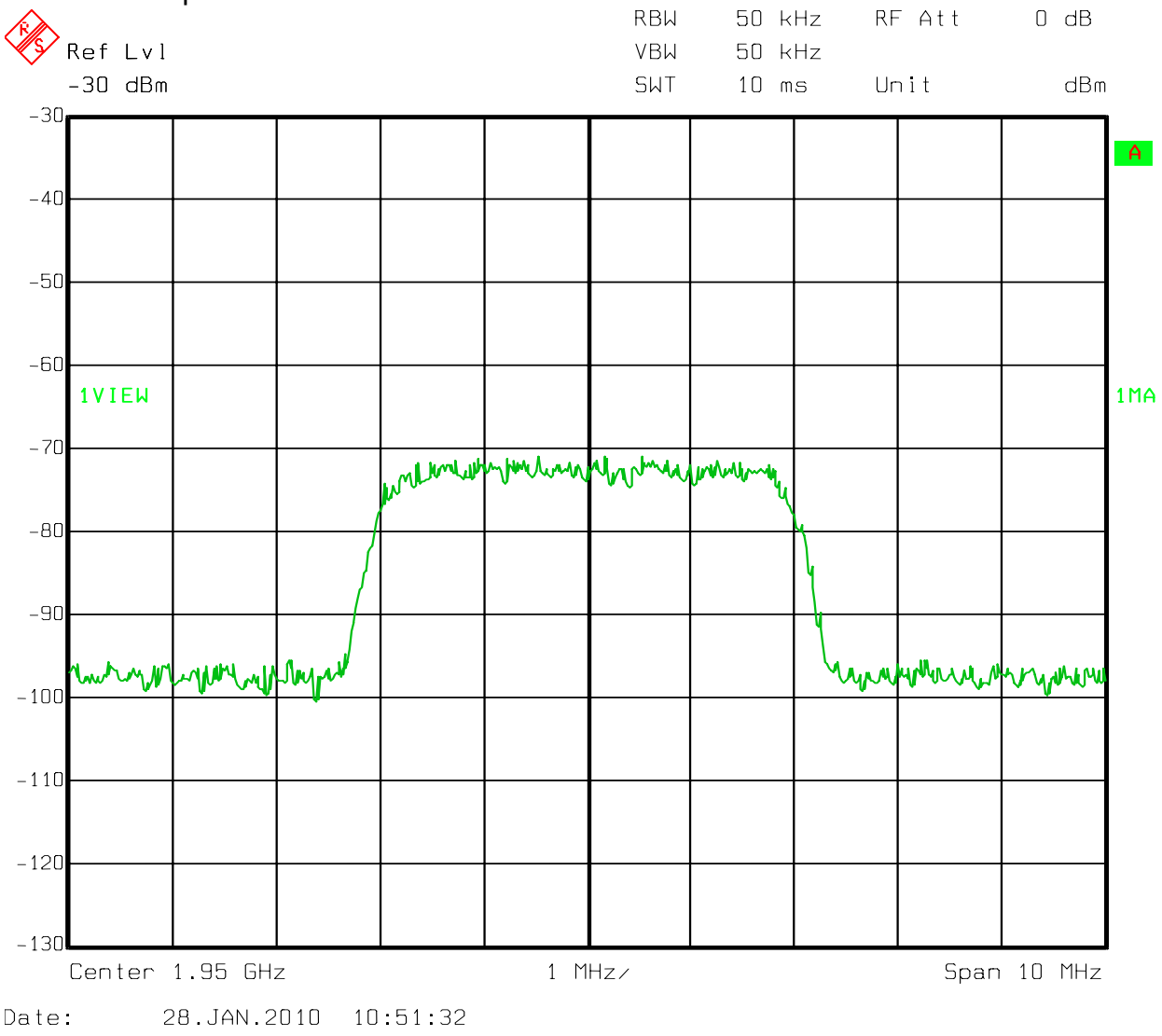
Test Data – Occupied Bandwidth

Downlink
W-CDMA - Output



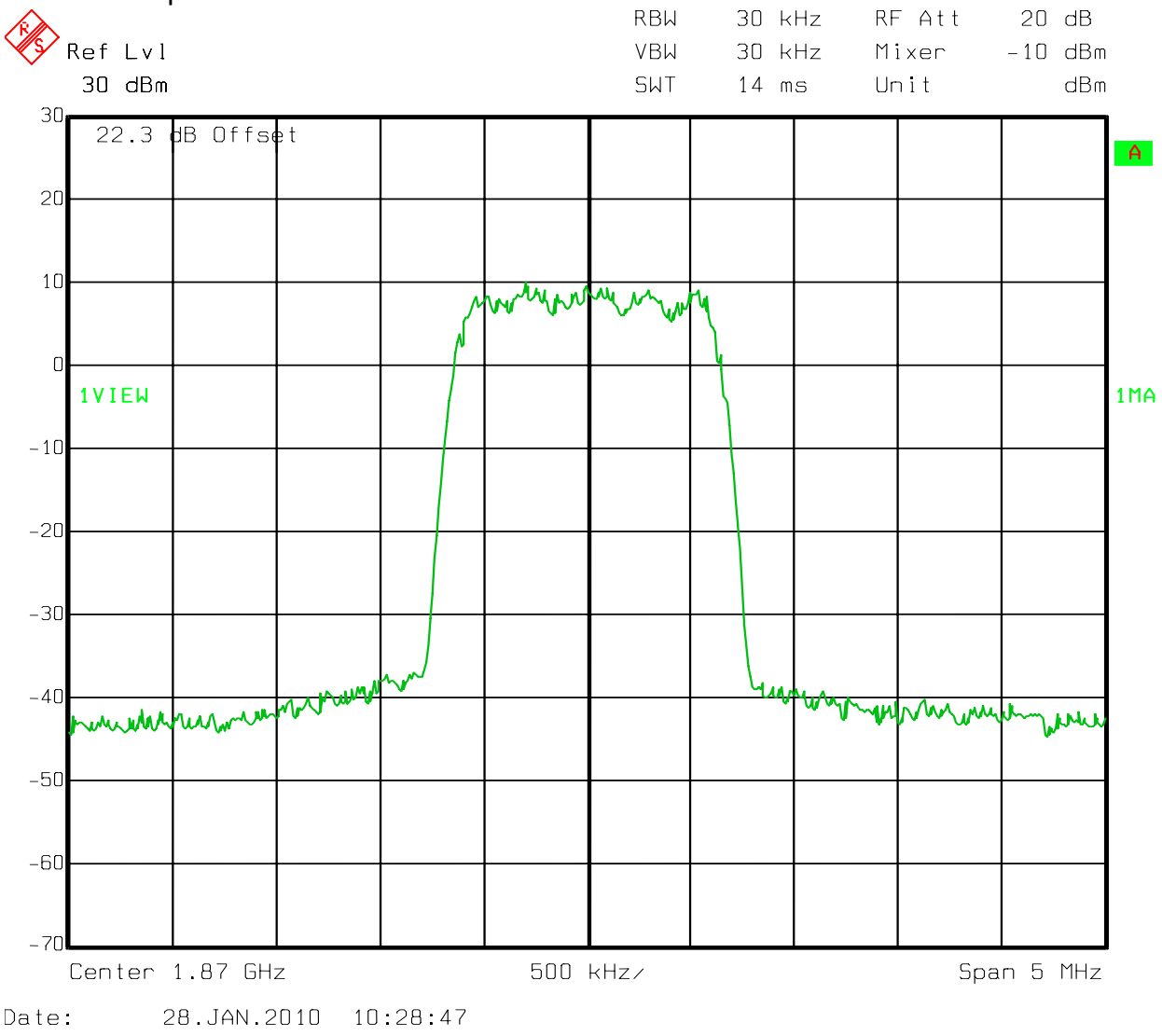
Test Data – Occupied Bandwidth

Downlink
W-CDMA - Input



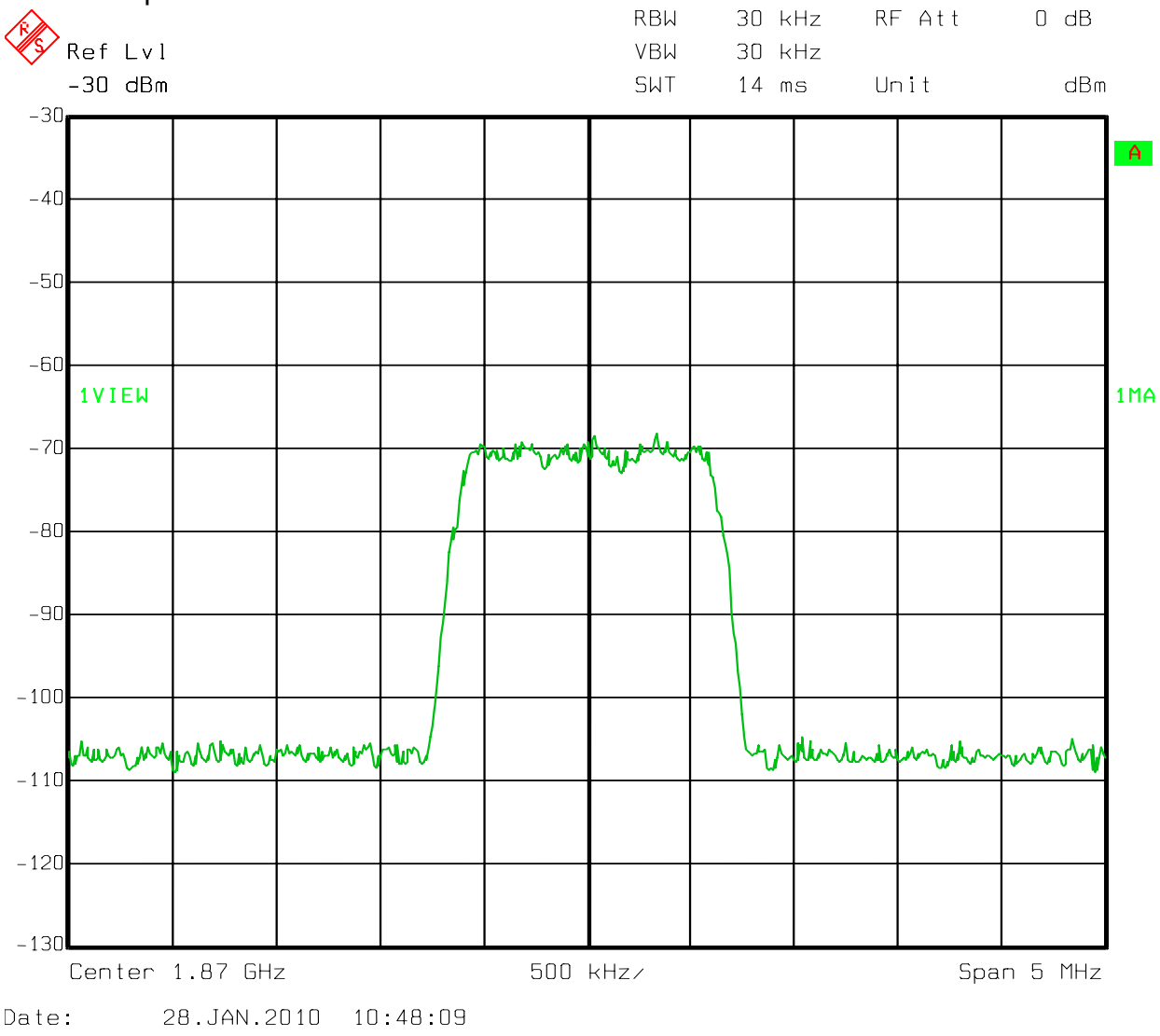
Test Data – Occupied Bandwidth

Uplink
CDMA - Output



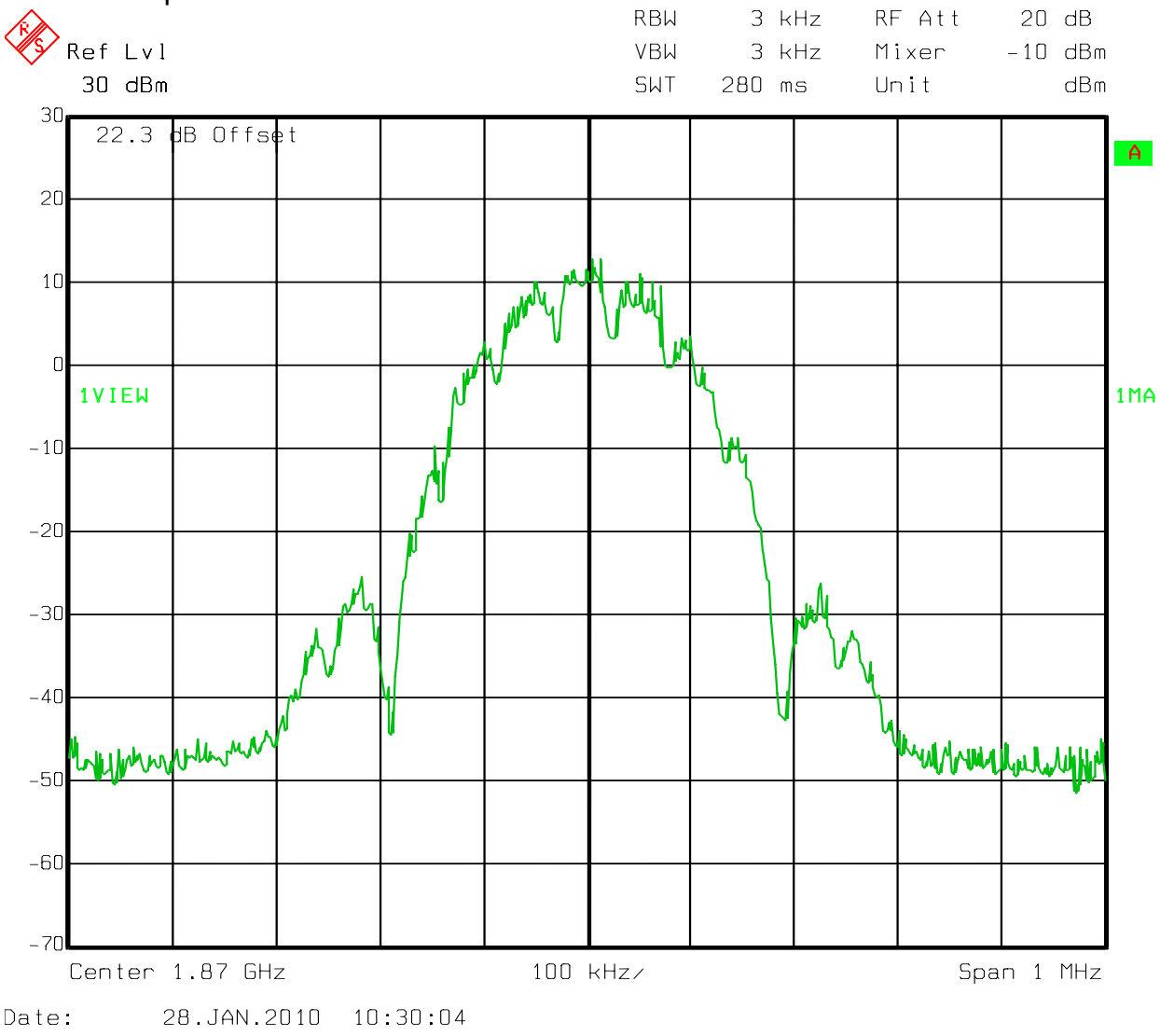
Test Data – Occupied Bandwidth

Uplink
CDMA - Input



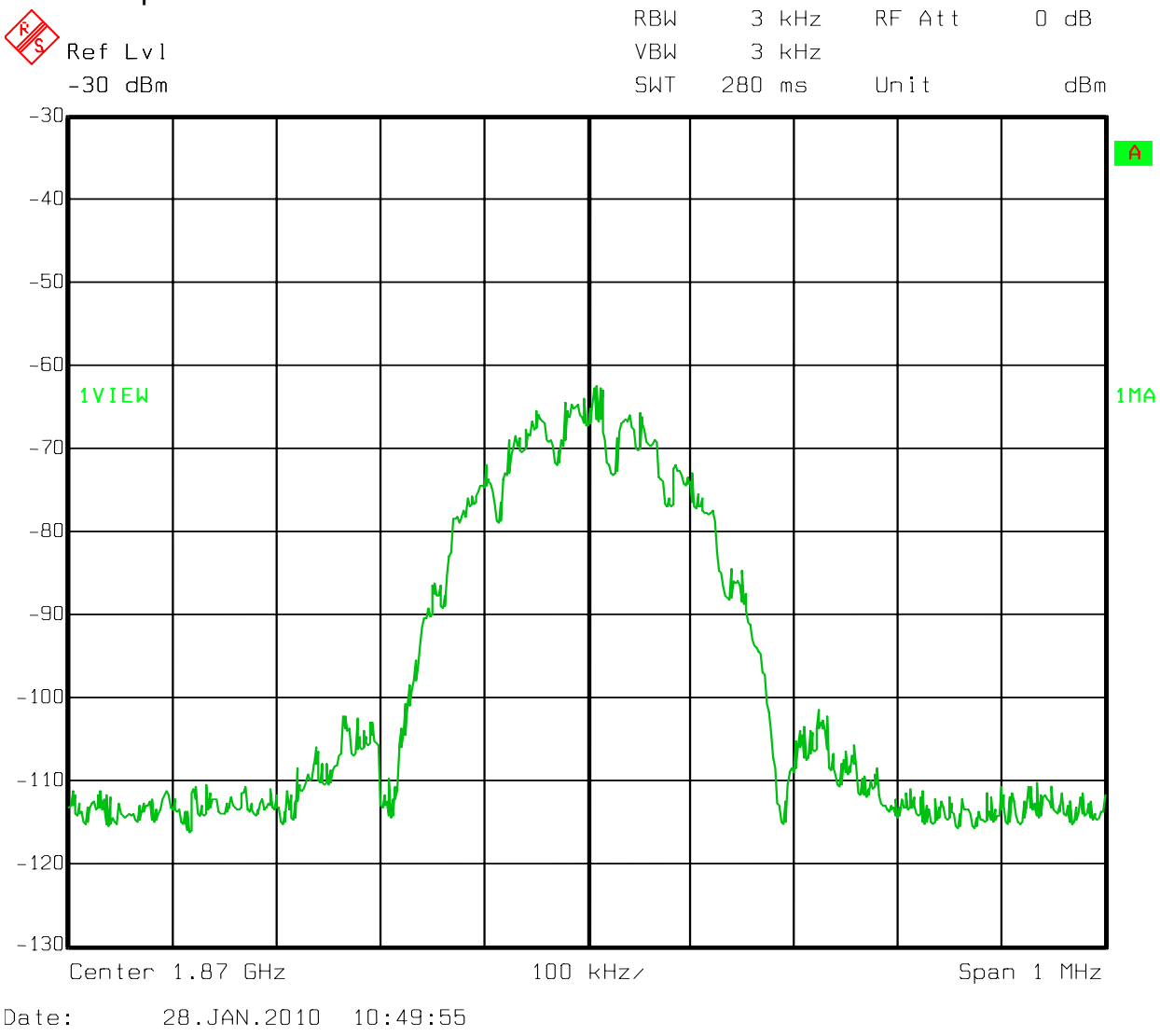
Test Data – Occupied Bandwidth

Uplink
EDGE - Output



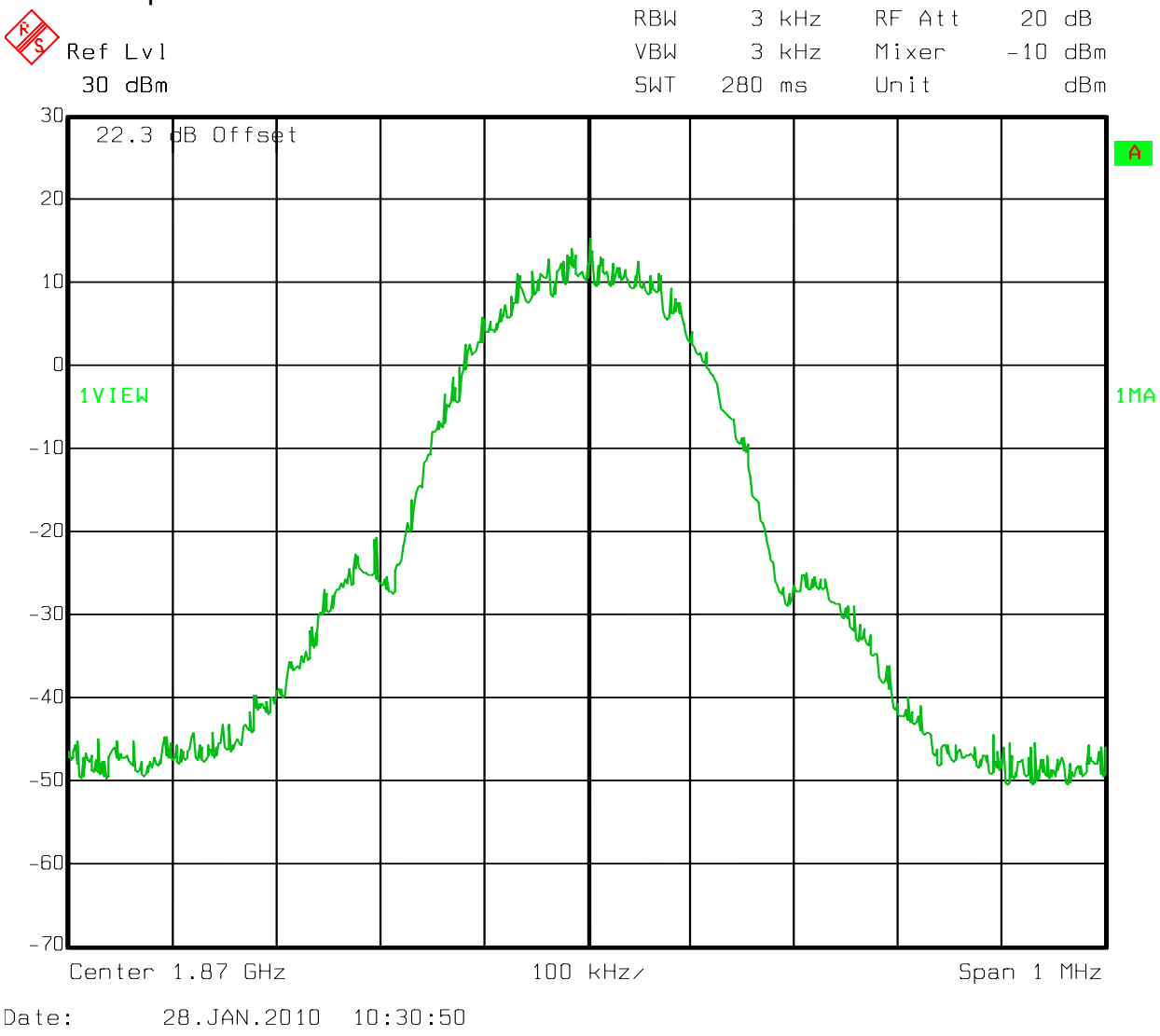
Test Data – Occupied Bandwidth

Uplink
EDGE - Input



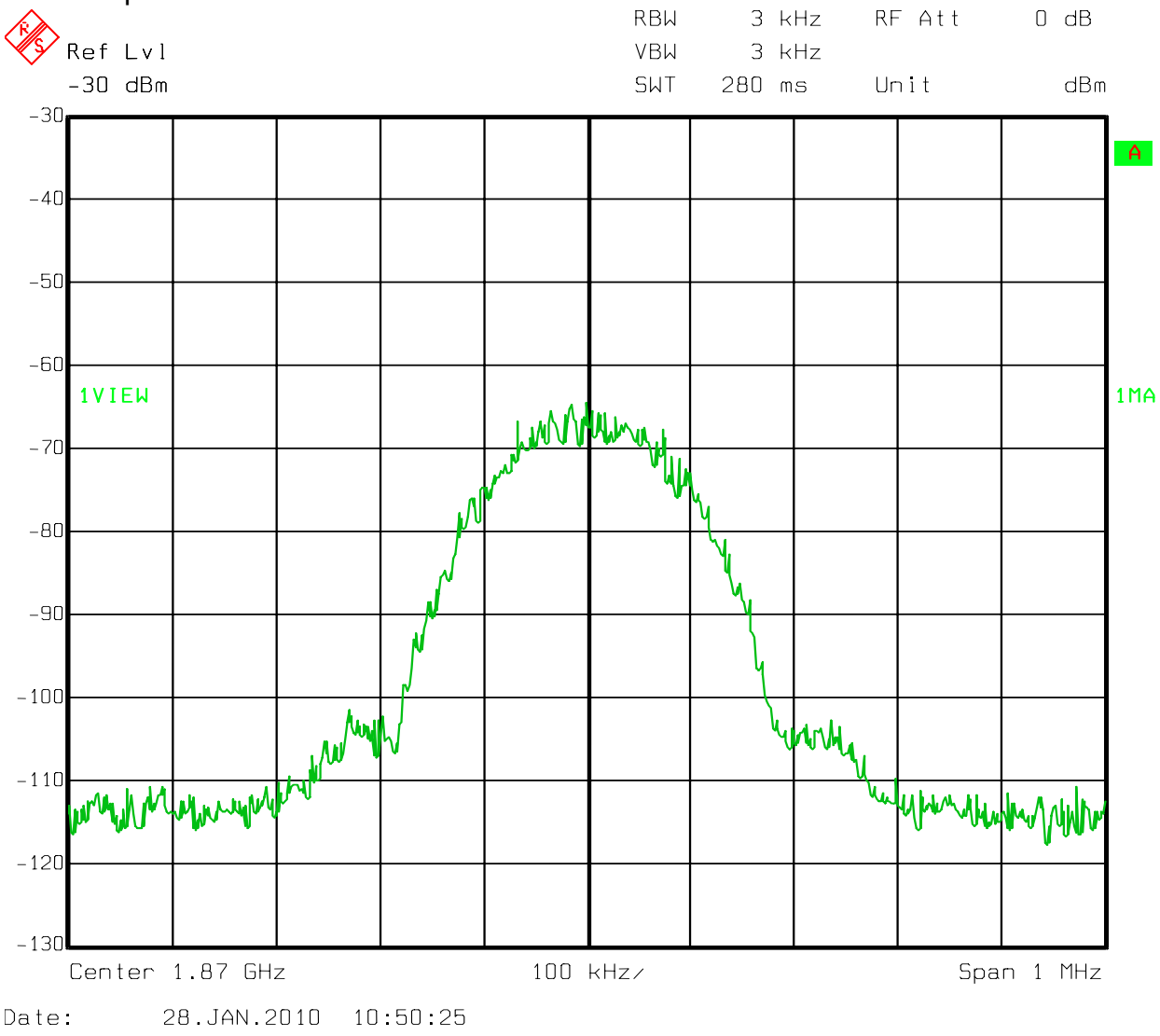
Test Data – Occupied Bandwidth

Uplink
GSM - Output



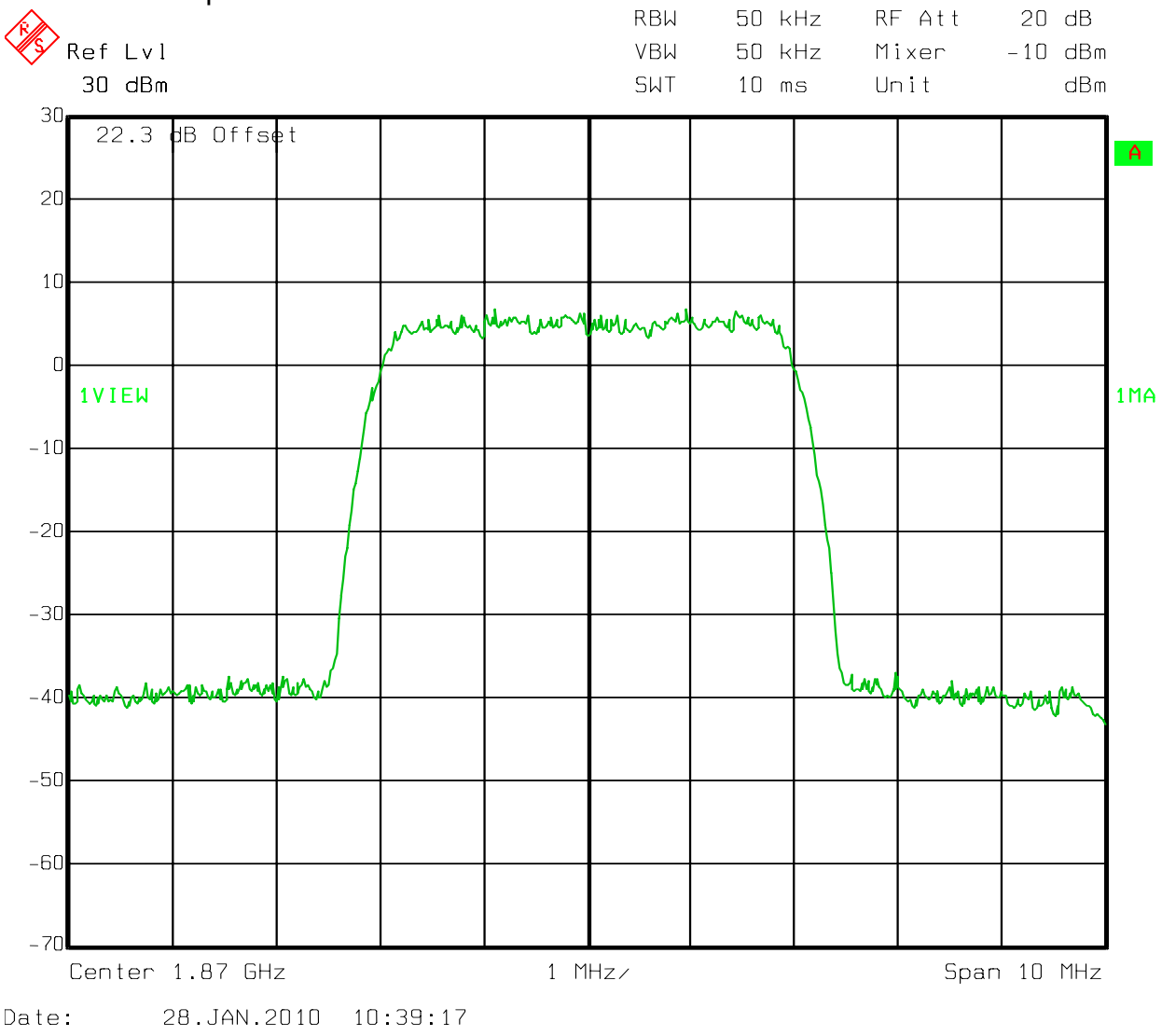
Test Data – Occupied Bandwidth

Uplink
GSM - Input



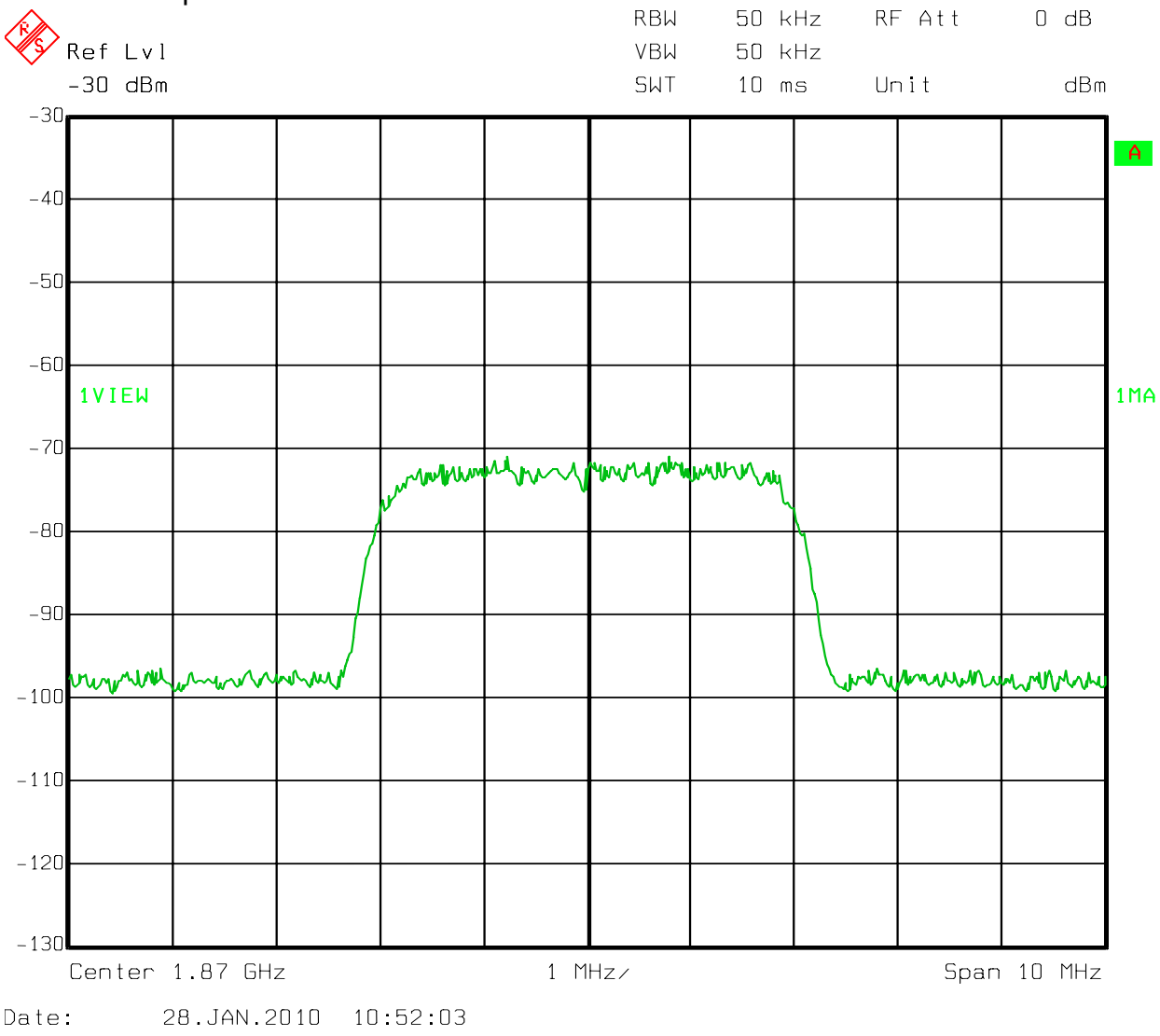
Test Data – Occupied Bandwidth

Uplink
W-CDMA - Output



Test Data – Occupied Bandwidth

Uplink
W-CDMA - Input



Section 4. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 24.238
TESTED BY: David Light	DATE: 28 January 2010

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1472-1082

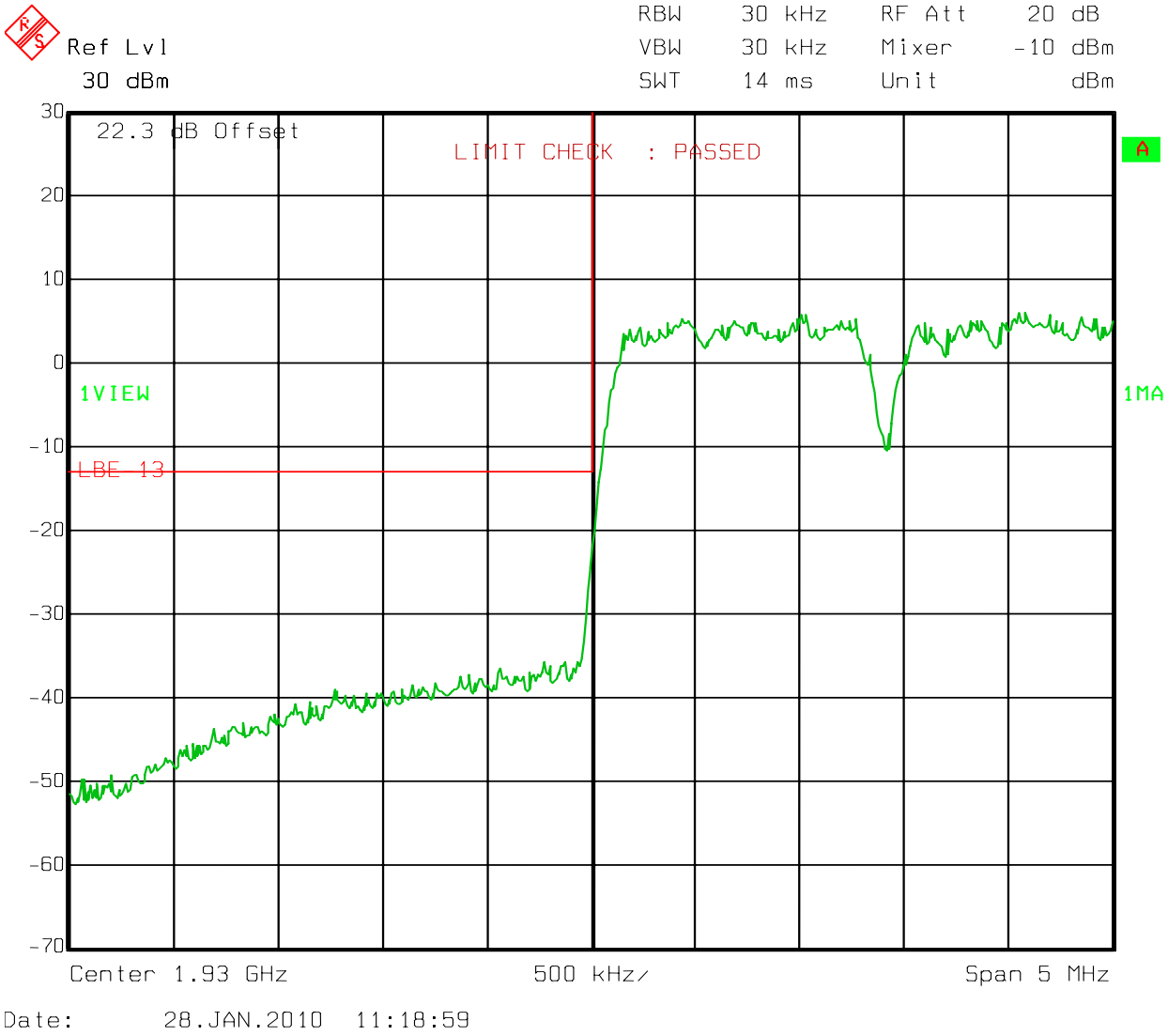
Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 32 %

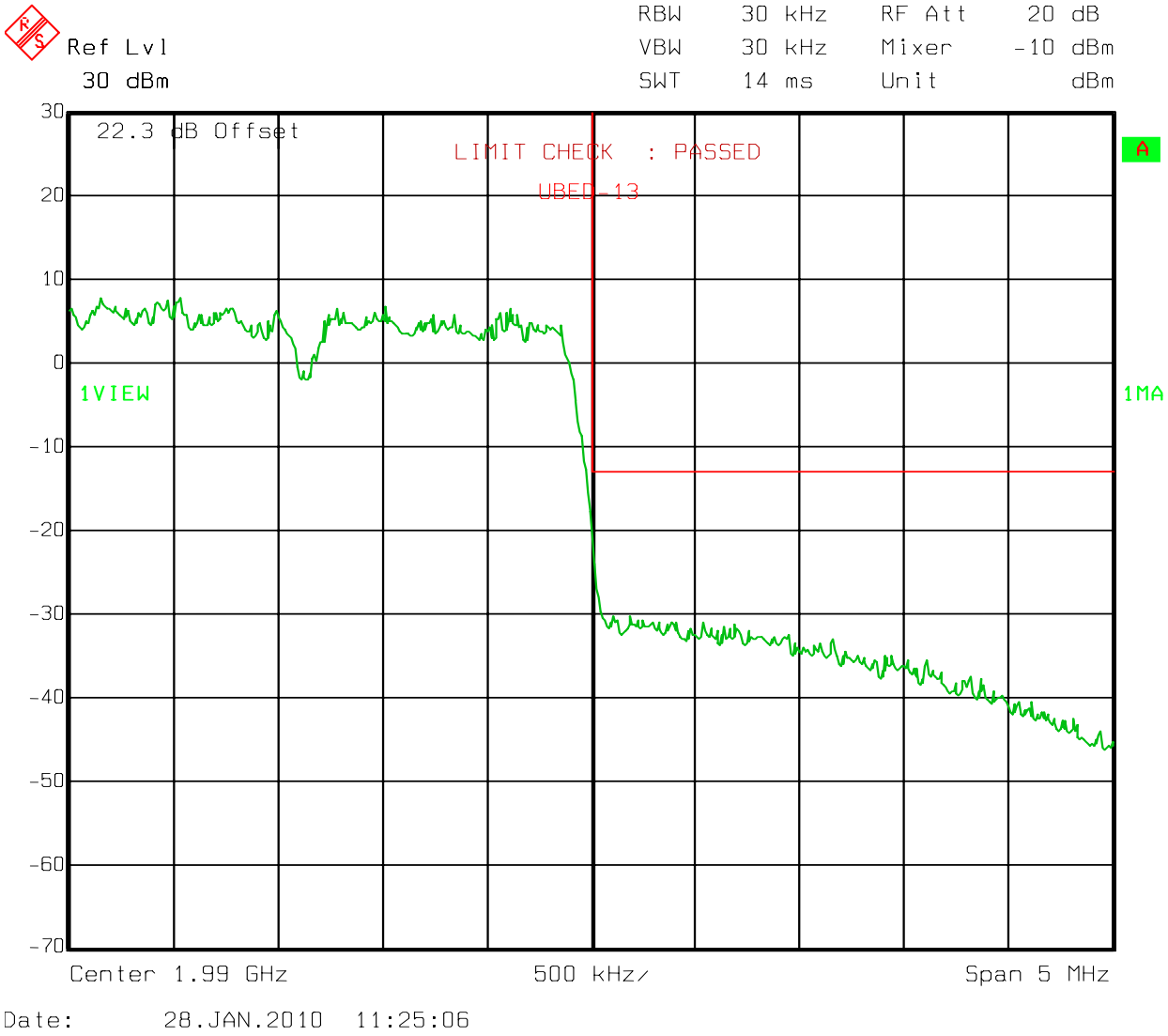
Test Data – Spurious Emissions at Antenna Terminals

Downlink
Lower Bandedge Intermodulation
CDMA



Test Data – Spurious Emissions at Antenna Terminals

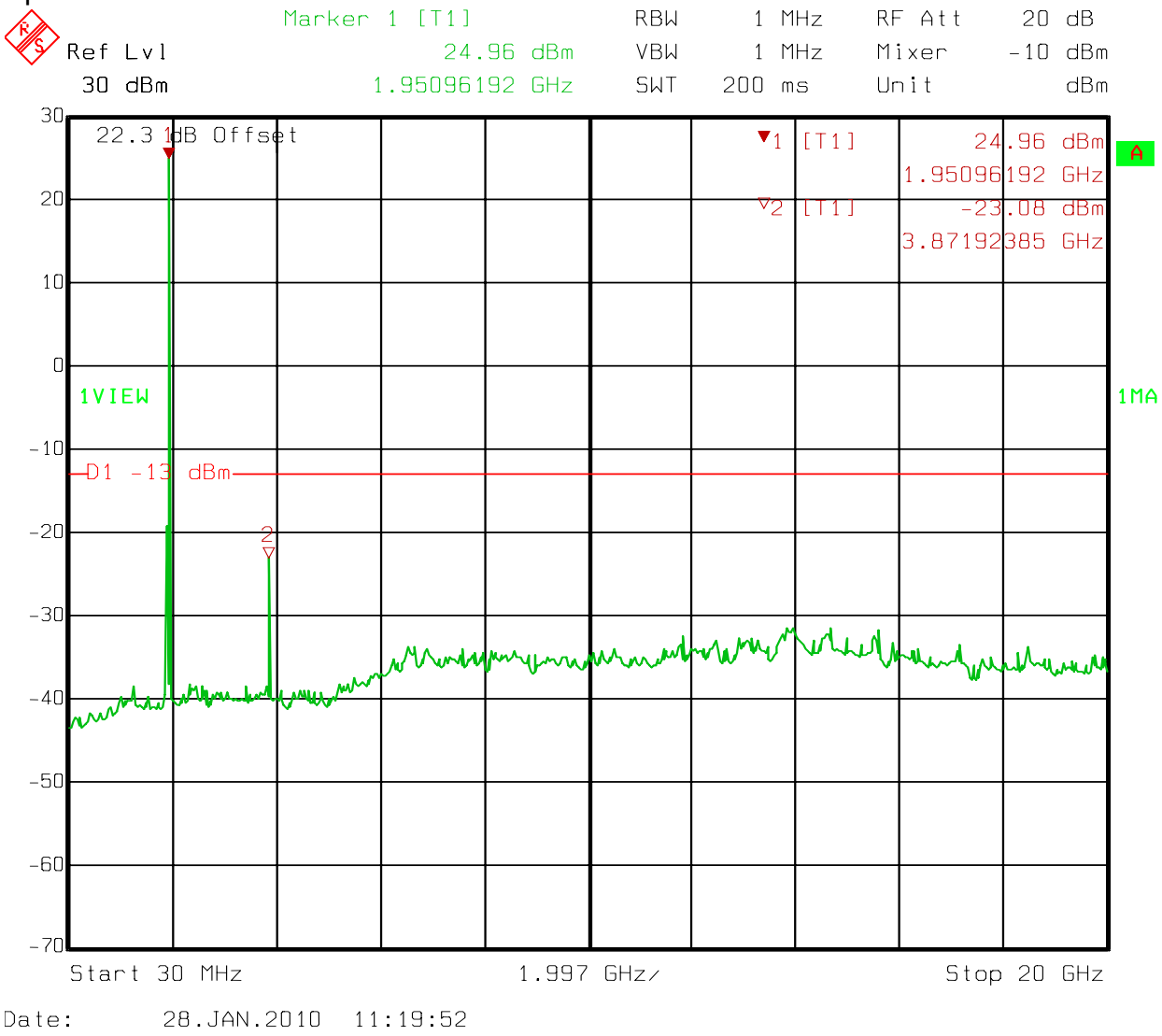
Downlink
Upper Bandedge Intermodulation
CDMA



Test Data – Spurious Emissions at Antenna Terminals

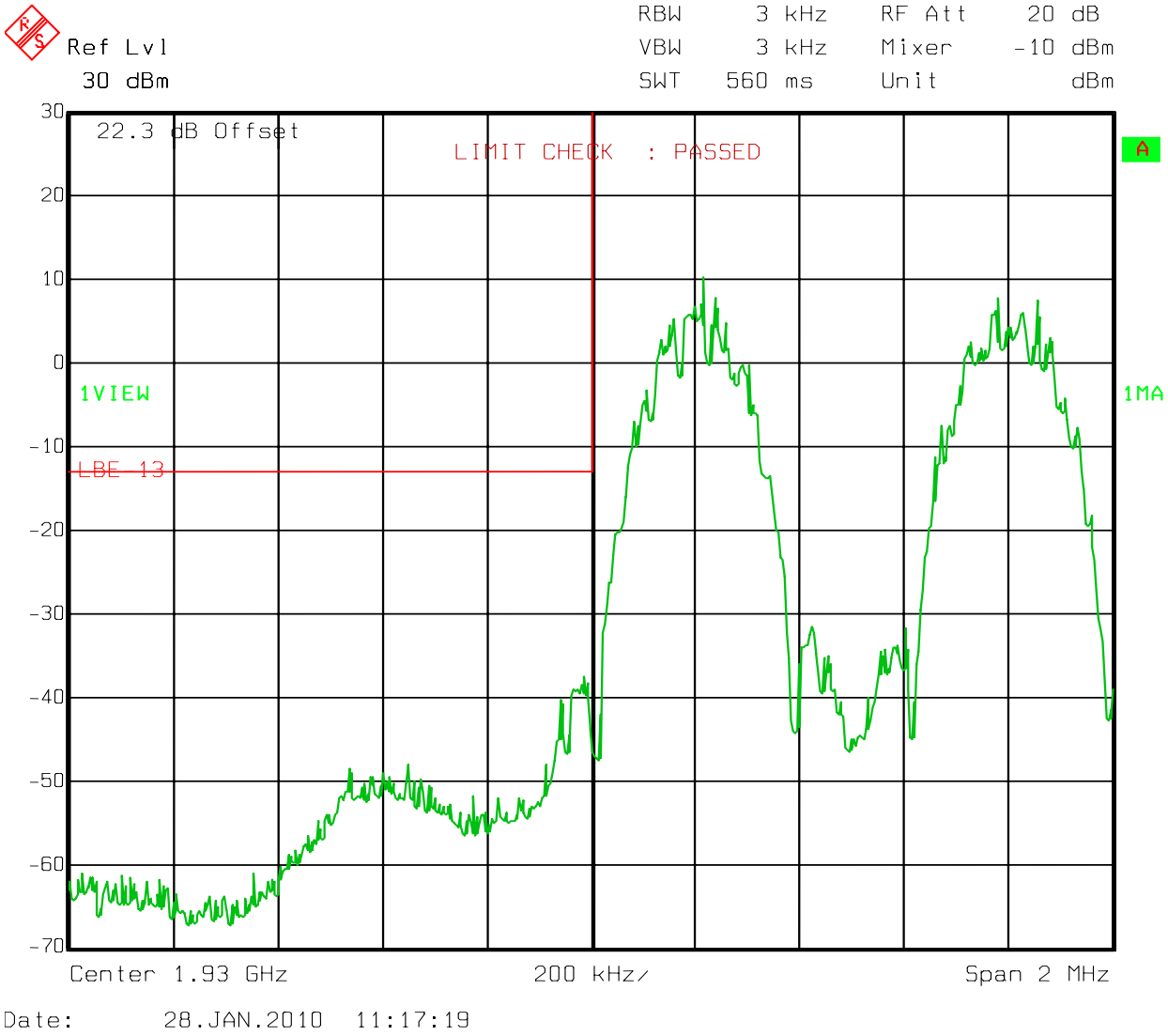
Downlink

Spurs – CDMA



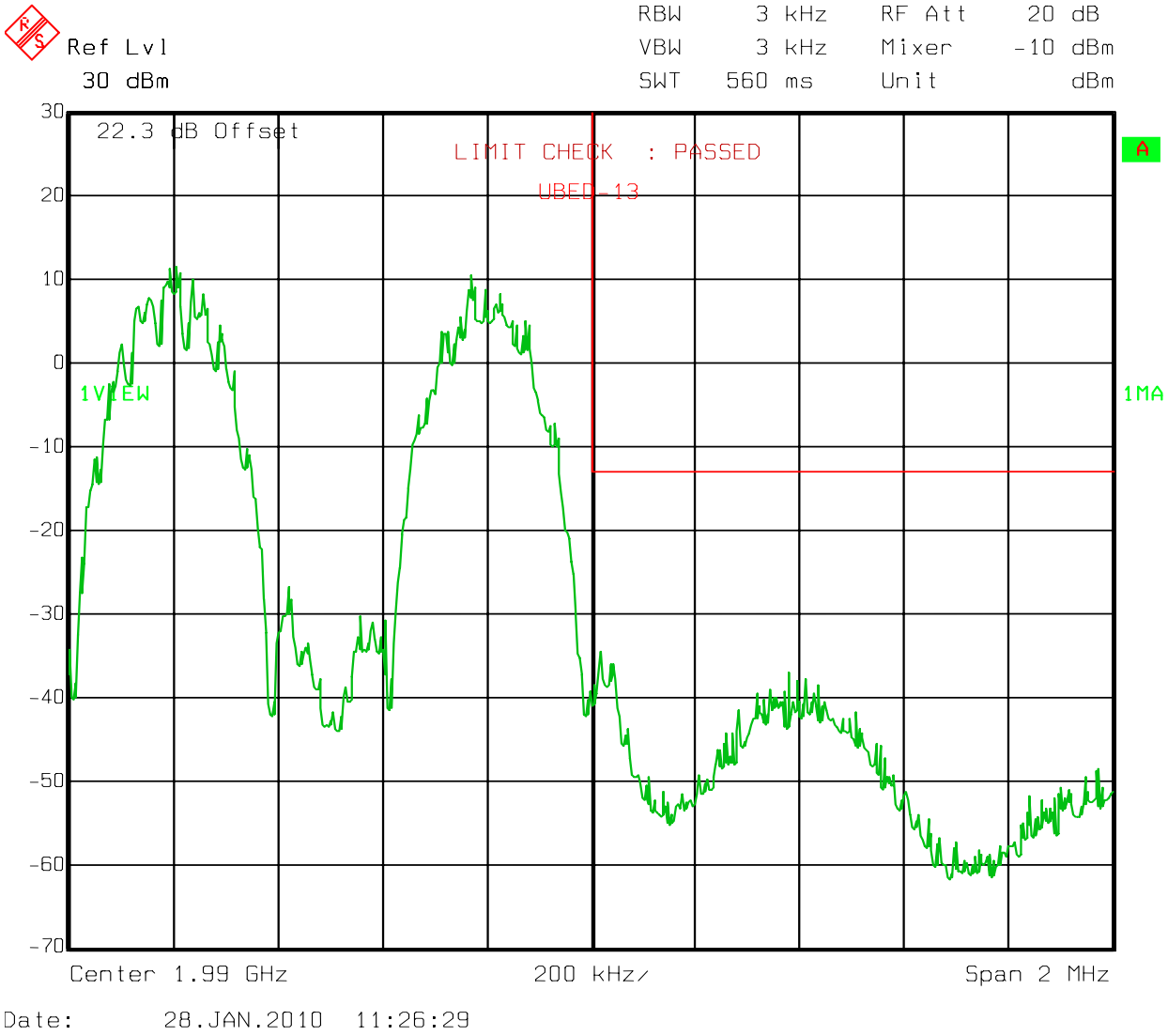
Test Data – Spurious Emissions at Antenna Terminals

Downlink
Lower Bandedge Intermodulation
EDGE



Test Data – Spurious Emissions at Antenna Terminals

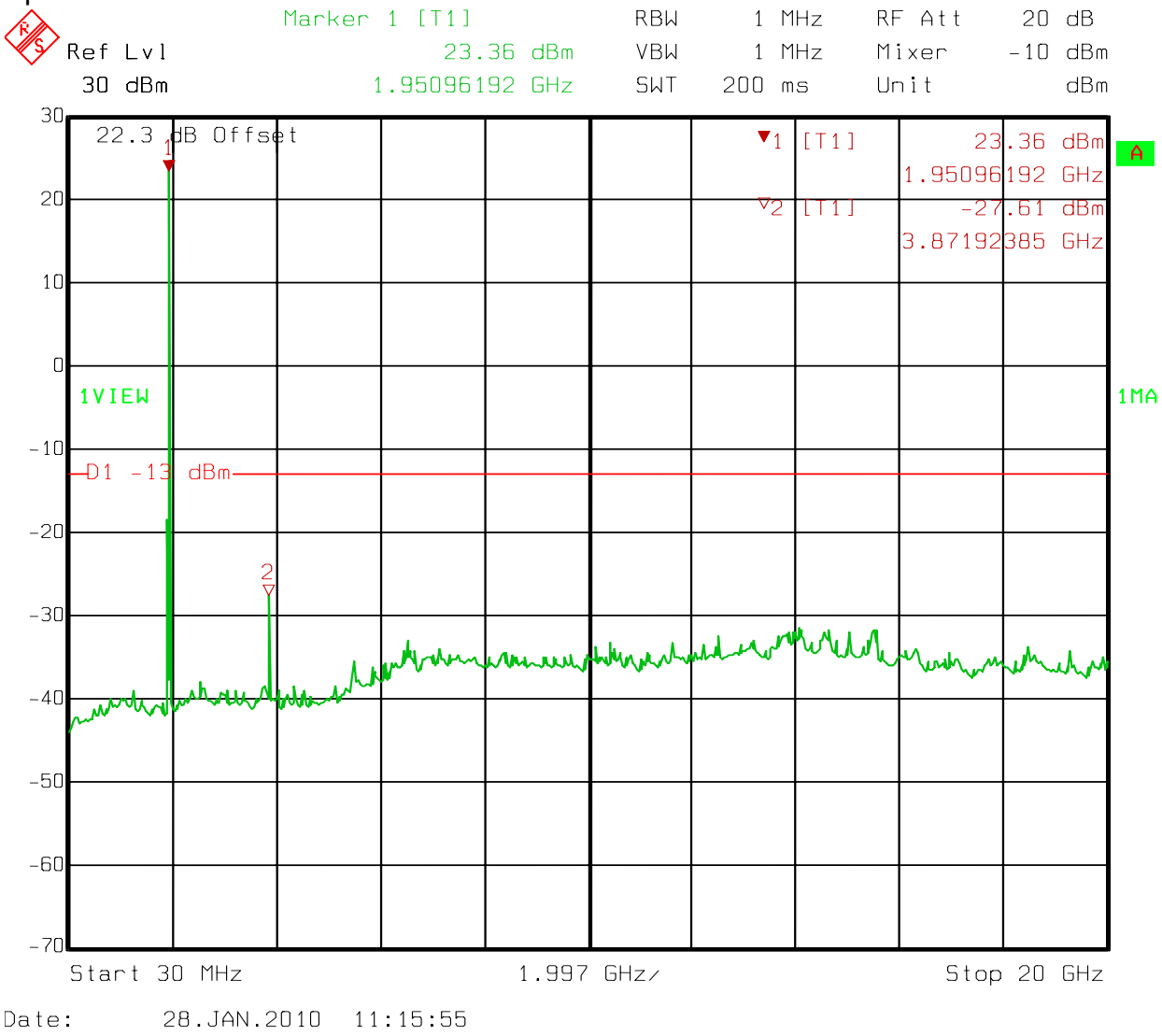
Downlink
Upper Bandedge Intermodulation
EDGE



Test Data – Spurious Emissions at Antenna Terminals

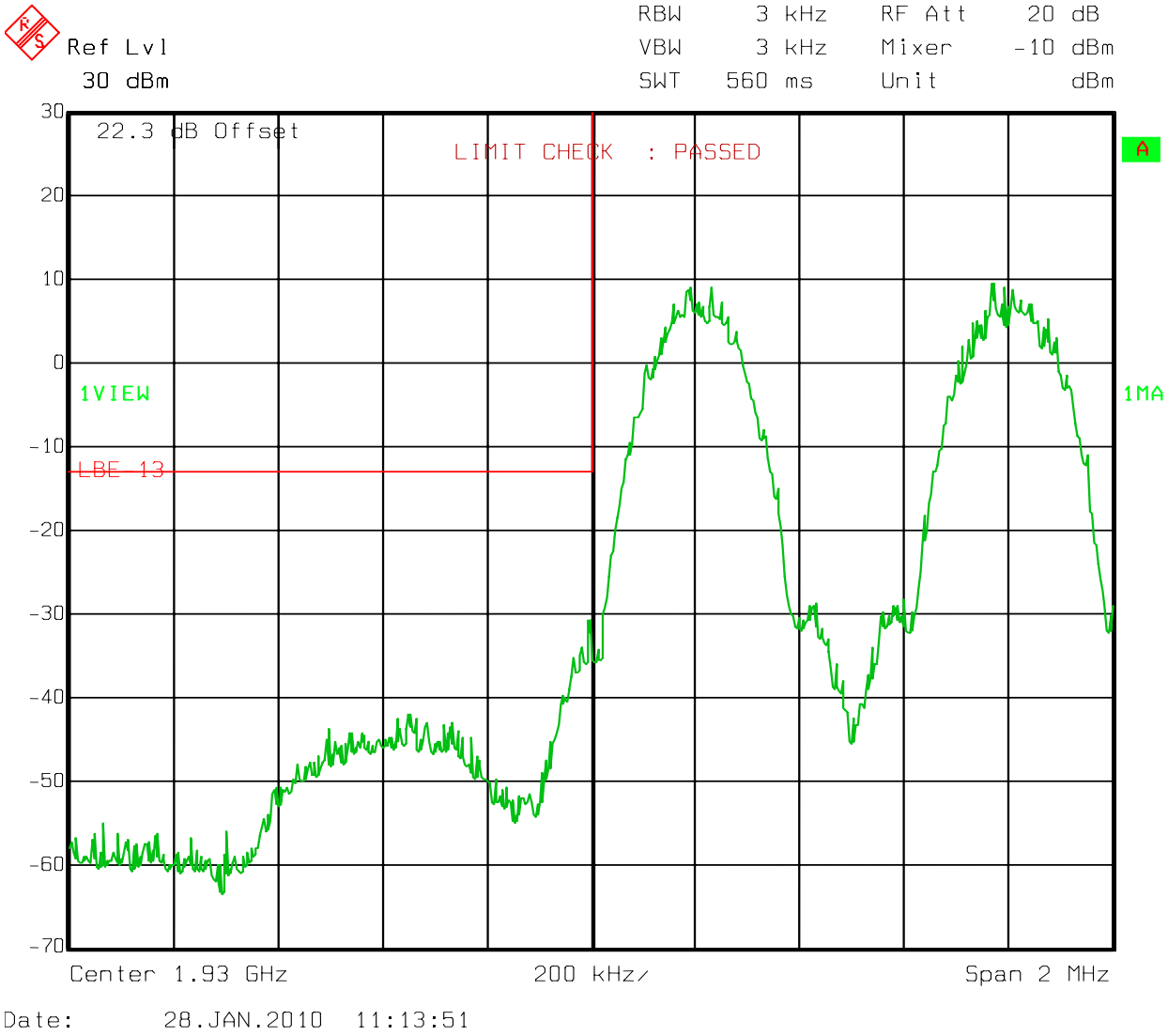
Downlink

Spurs – EDGE



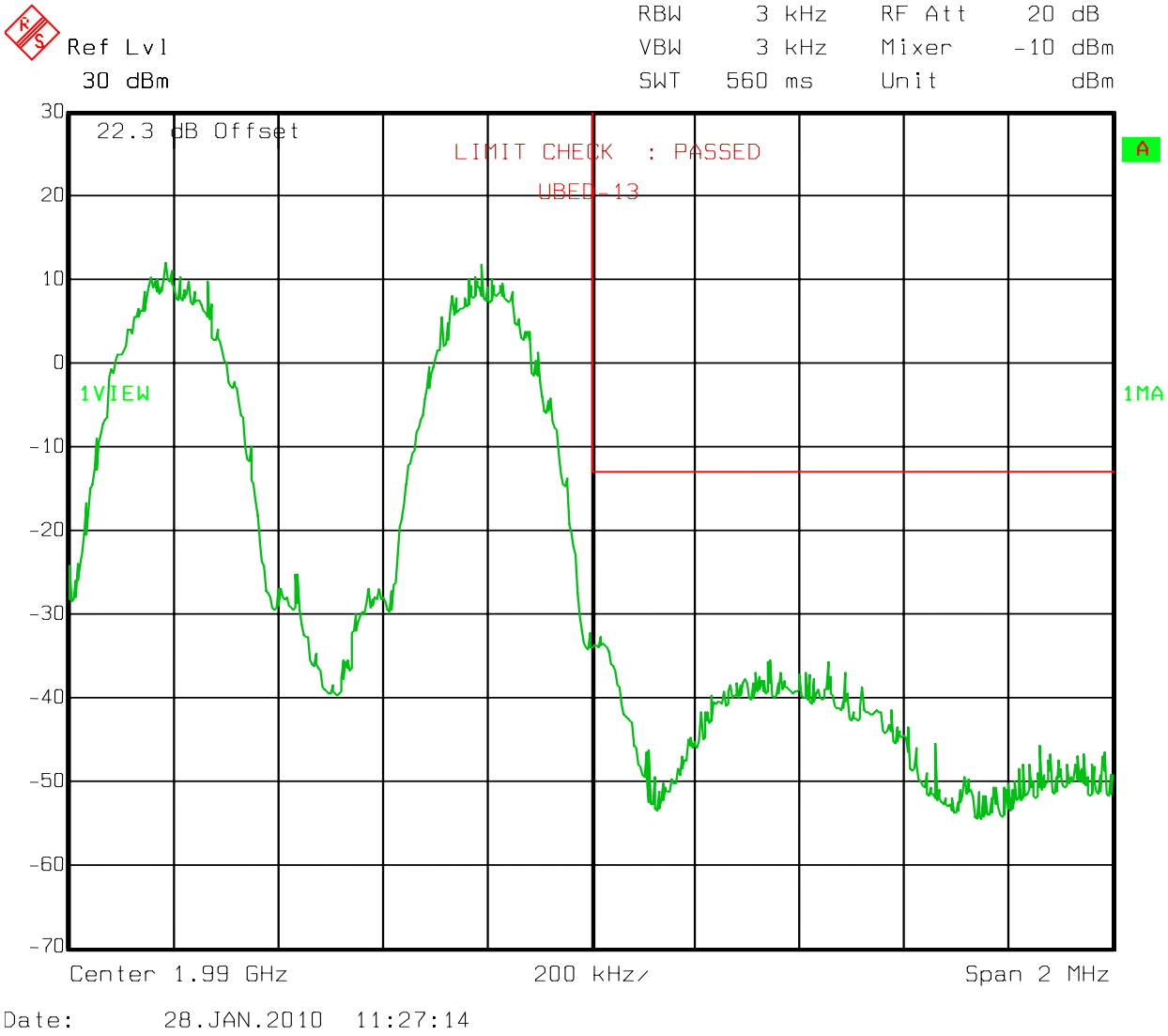
Test Data – Spurious Emissions at Antenna Terminals

Downlink
Lower Bandedge Intermodulation
GSM



Test Data – Spurious Emissions at Antenna Terminals

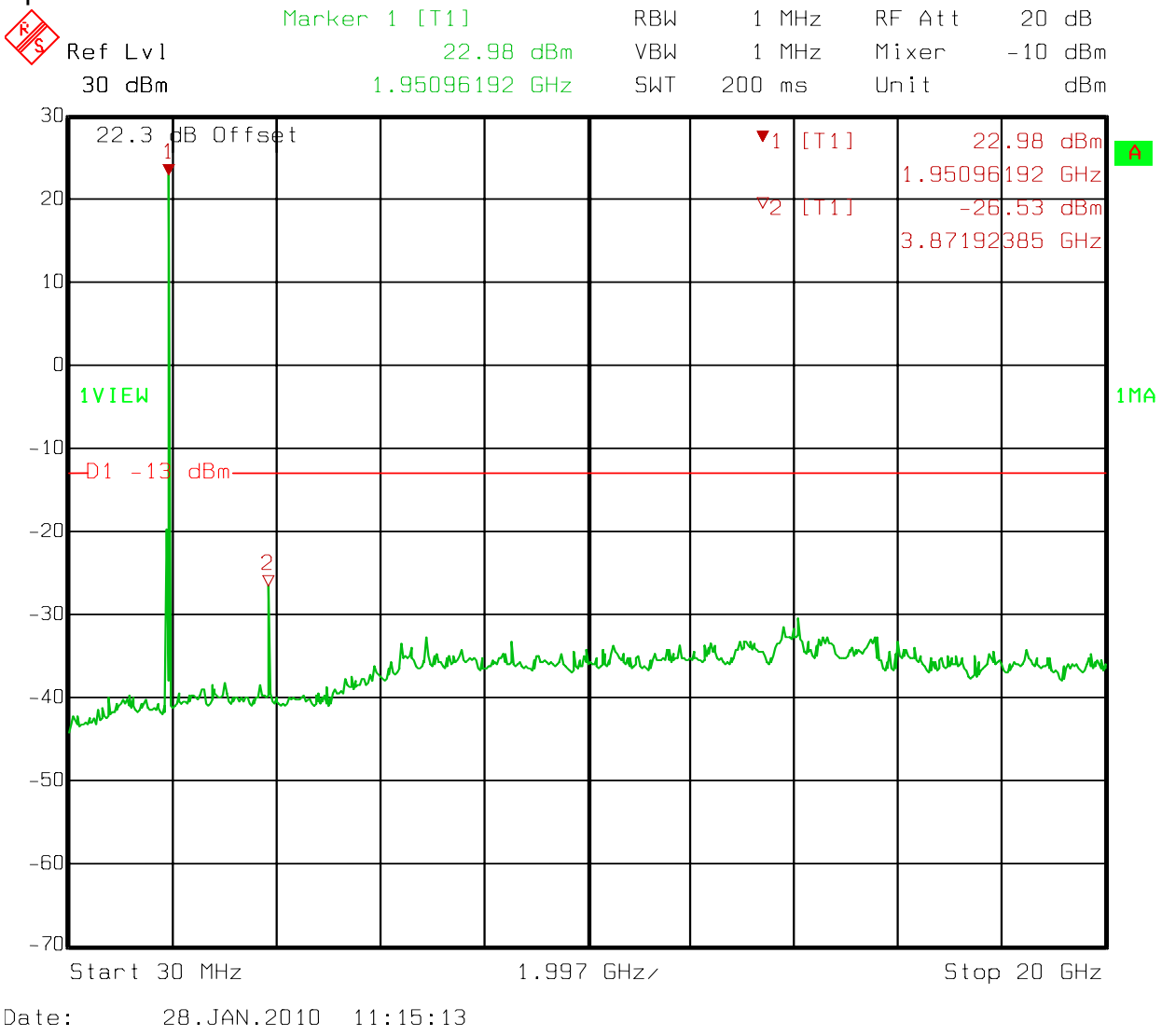
Downlink
Upper Bandedge Intermodulation
GSM



Test Data – Spurious Emissions at Antenna Terminals

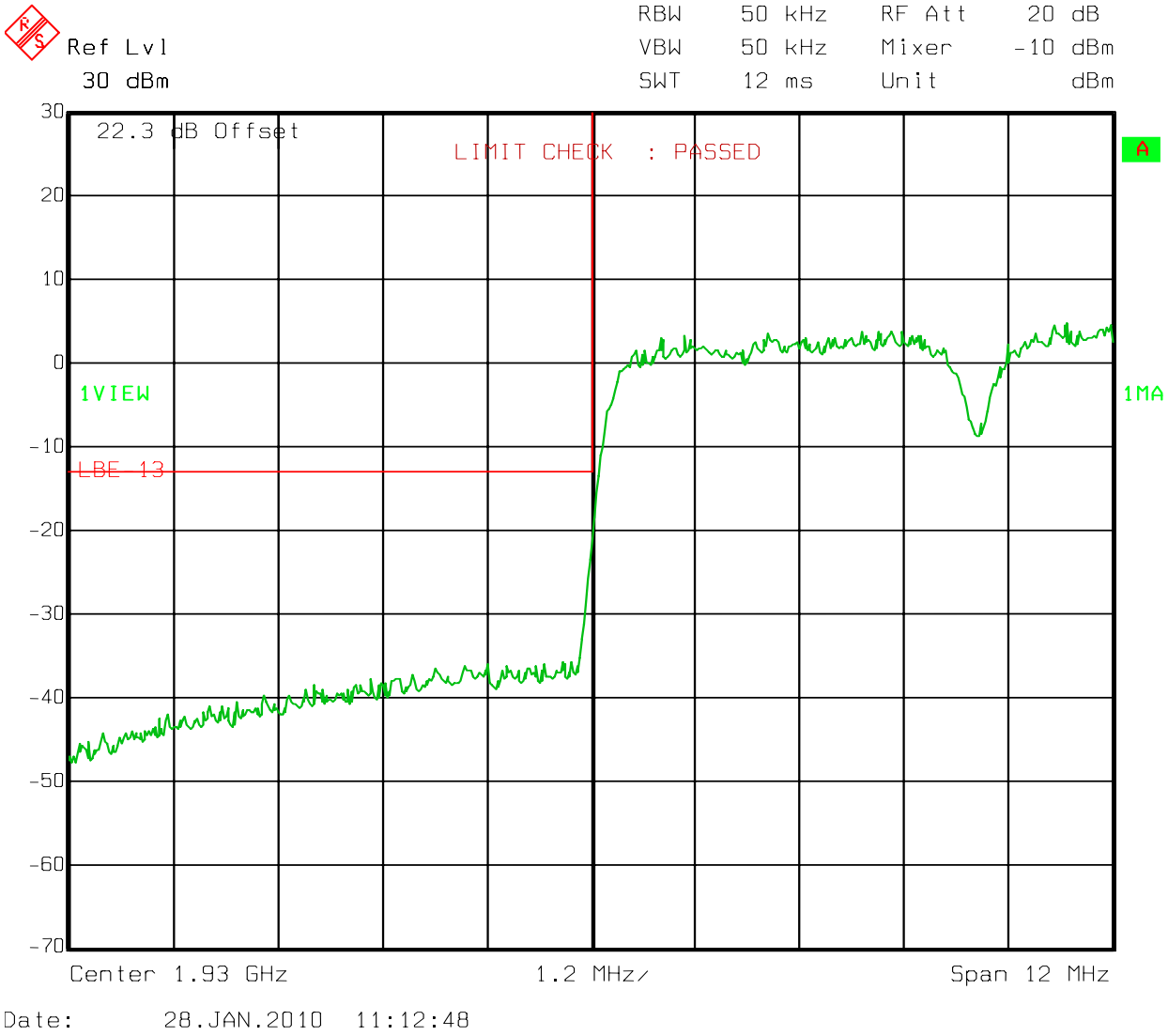
Downlink

Spurs – GSM



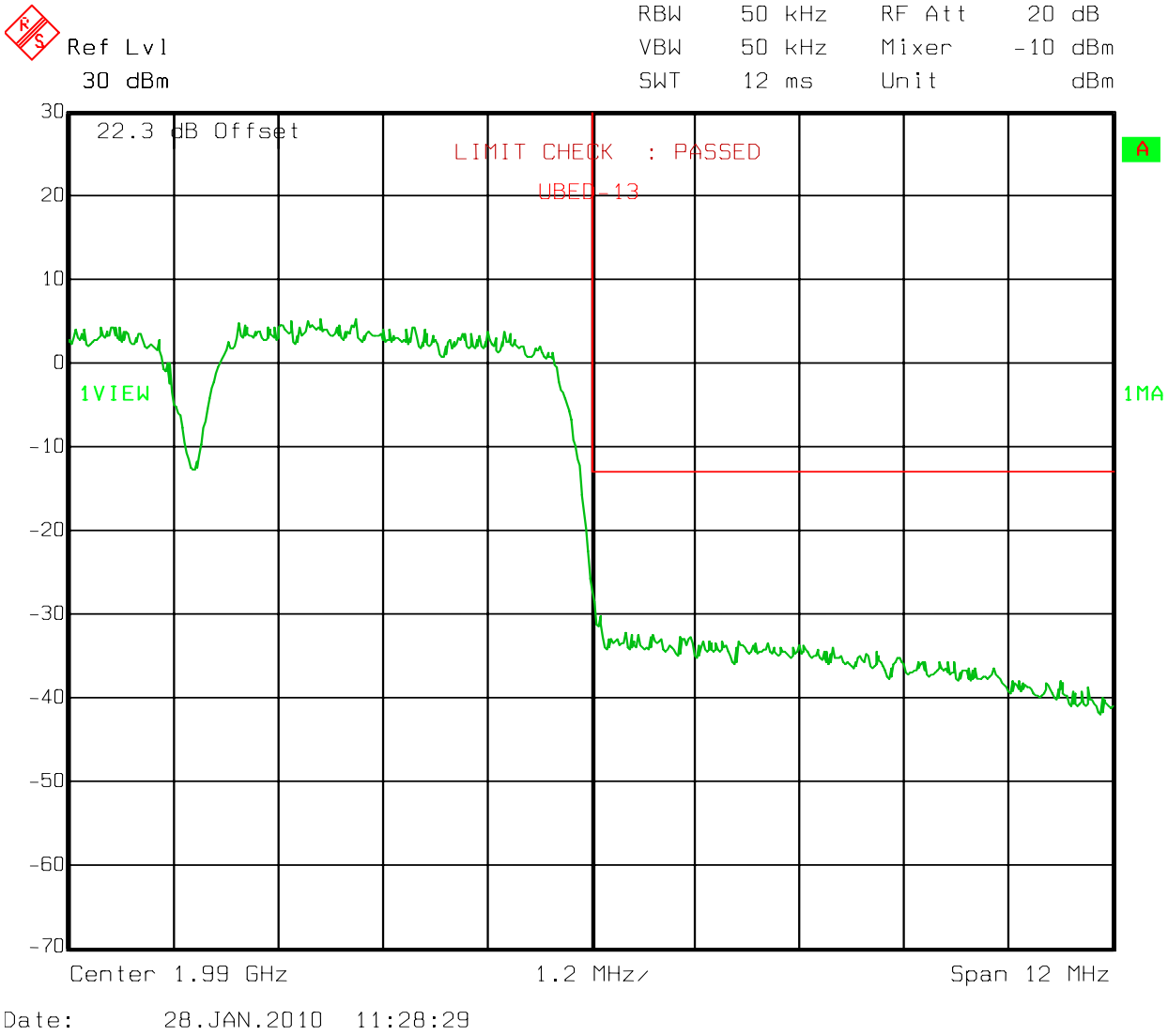
Test Data – Spurious Emissions at Antenna Terminals

Downlink
Lower Bandedge Intermodulation
W-CDMA



Test Data – Spurious Emissions at Antenna Terminals

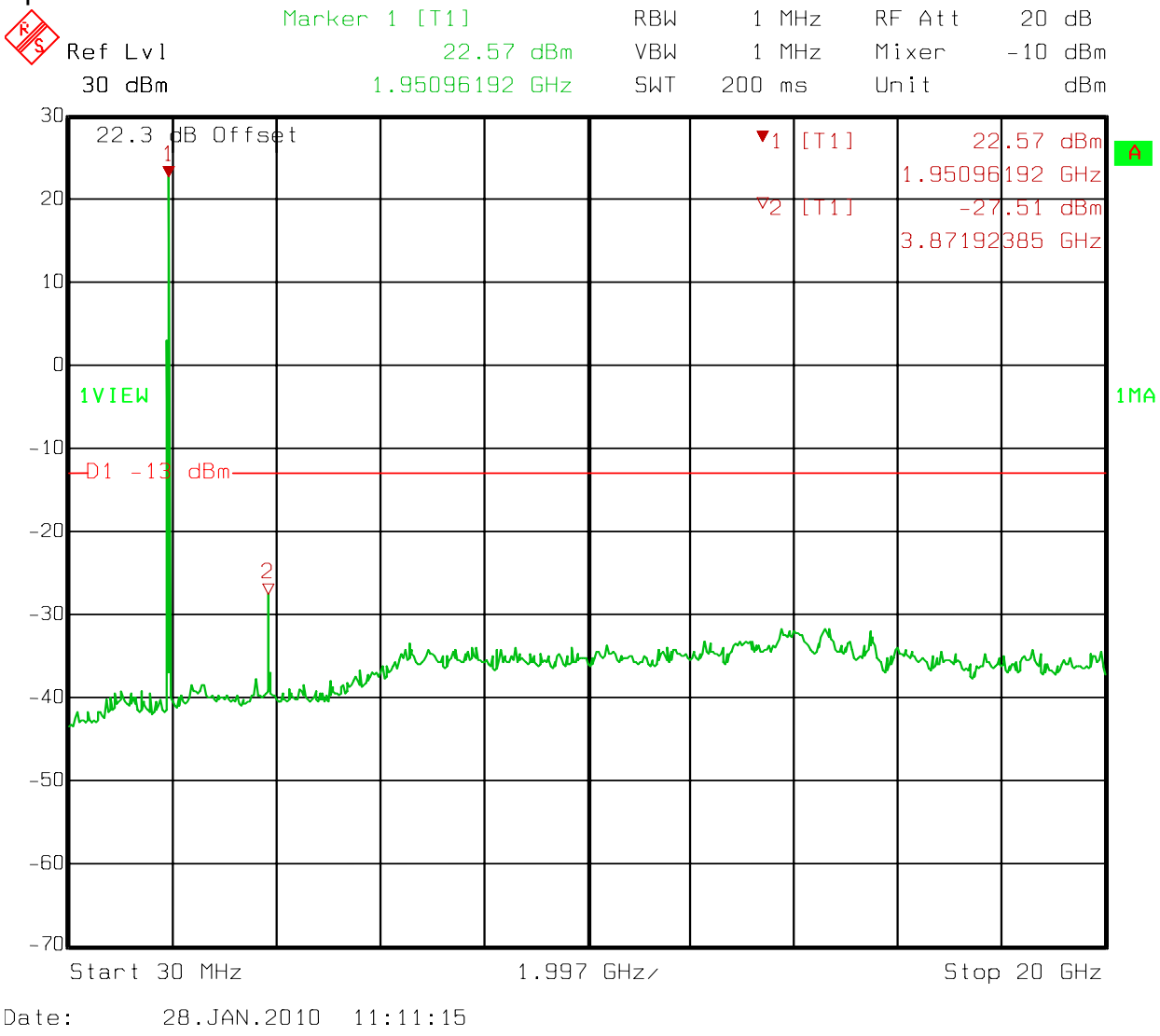
Downlink
Upper Bandedge Intermodulation
W-CDMA



Test Data – Spurious Emissions at Antenna Terminals

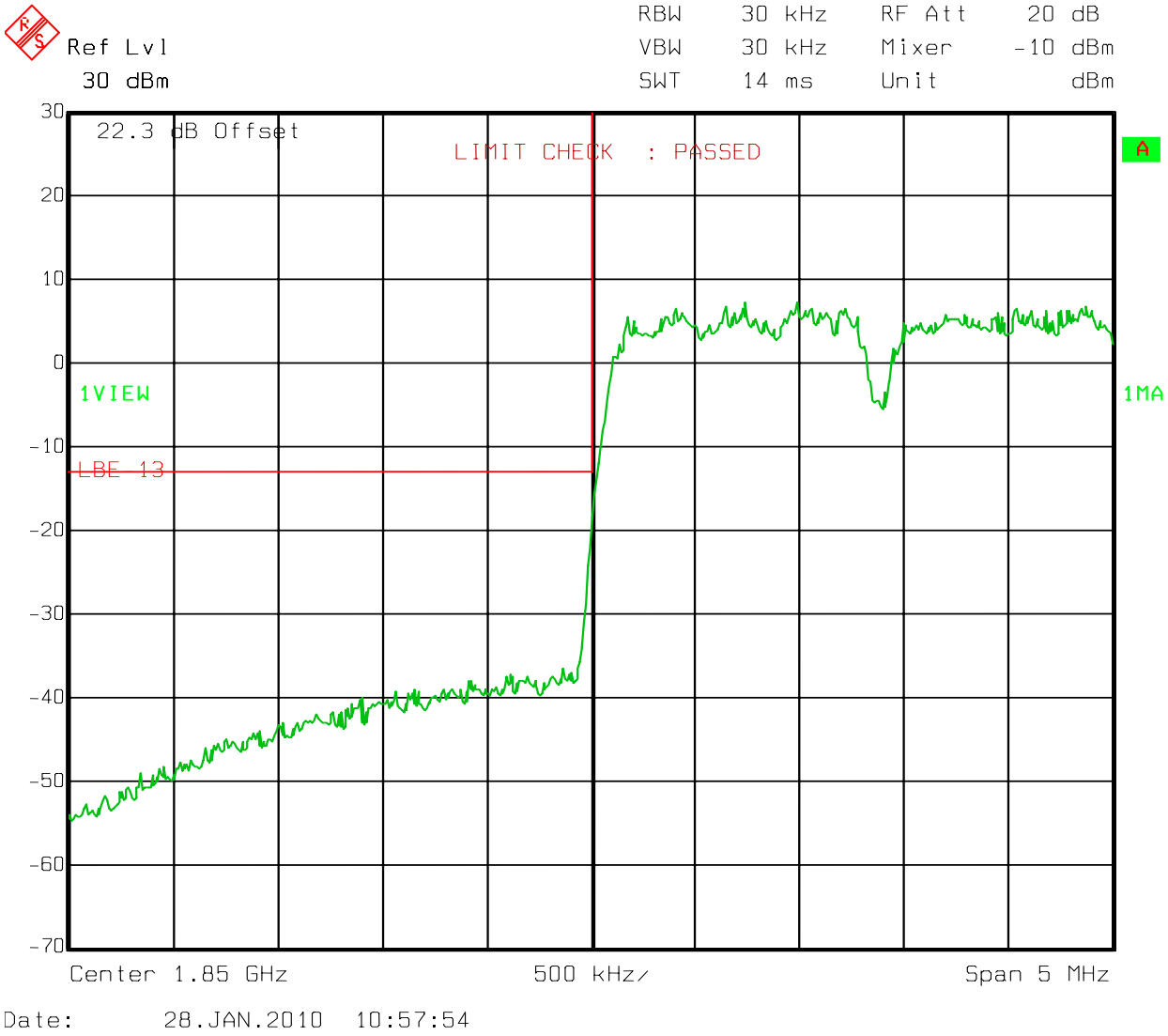
Downlink

Spurs – W-CDMA -



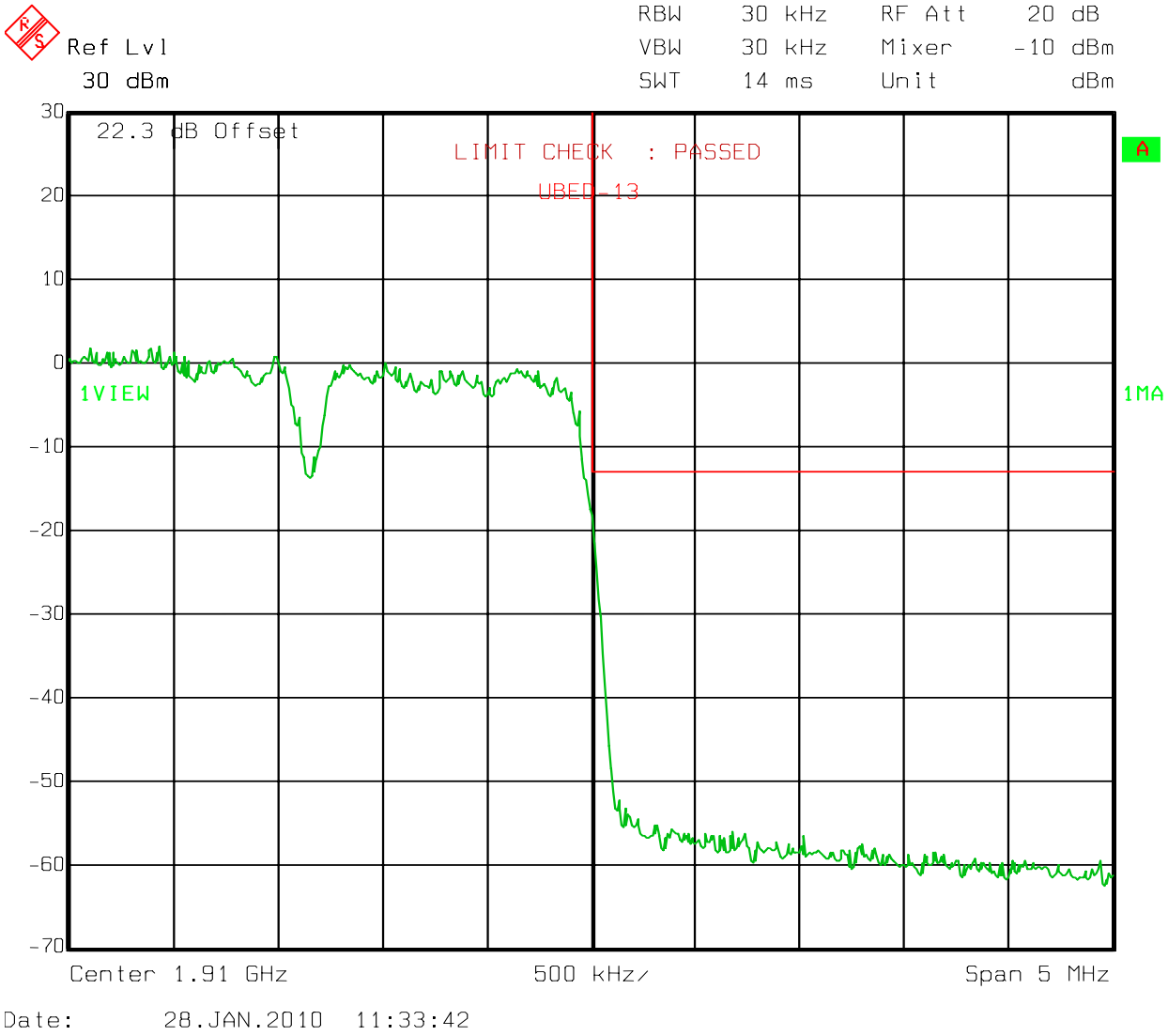
Test Data – Spurious Emissions at Antenna Terminals

Uplink
Lower Bandedge Intermodulation
CDMA



Test Data – Spurious Emissions at Antenna Terminals

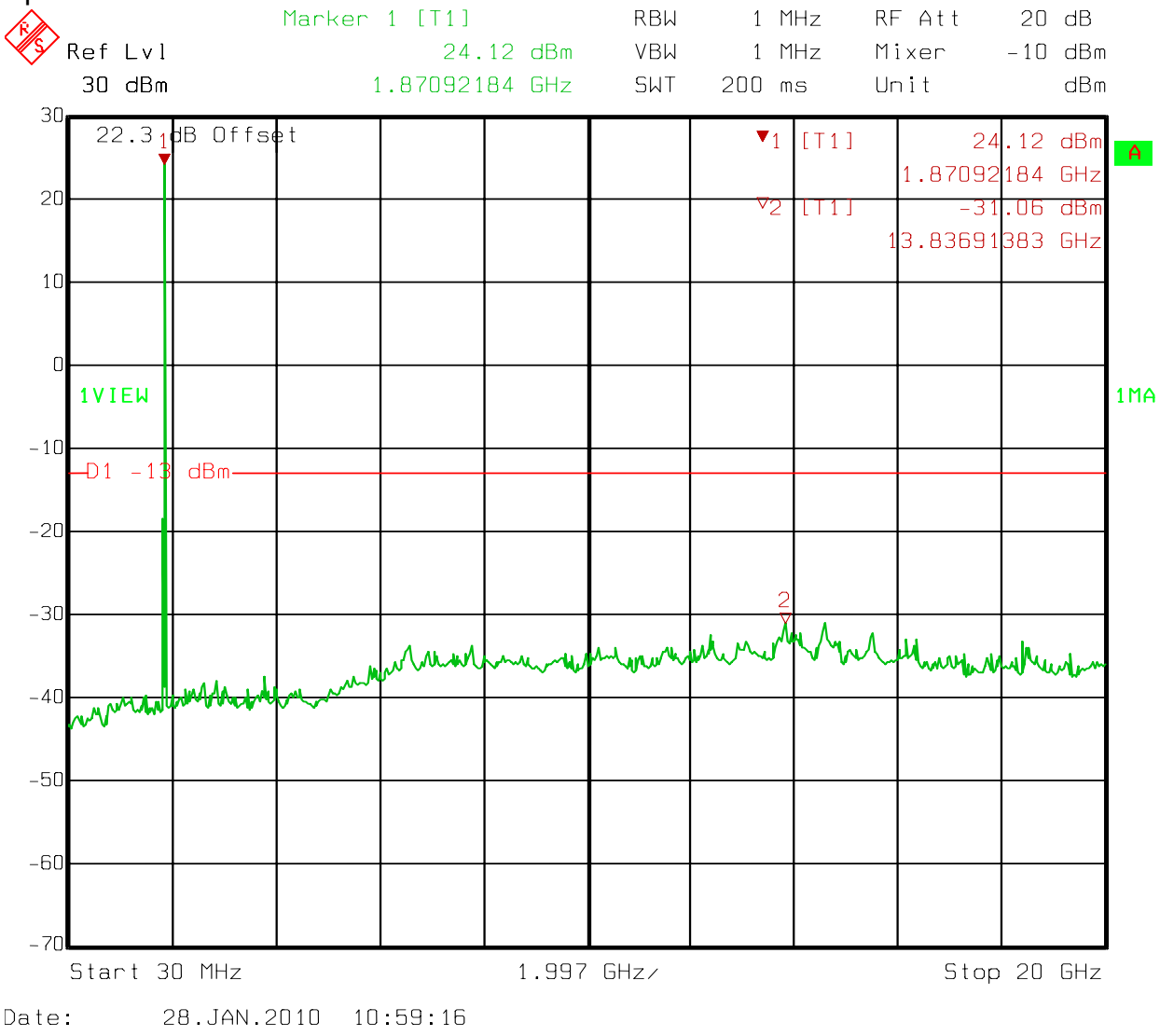
Uplink
Upper Bandedge Intermodulation
CDMA



Test Data – Spurious Emissions at Antenna Terminals

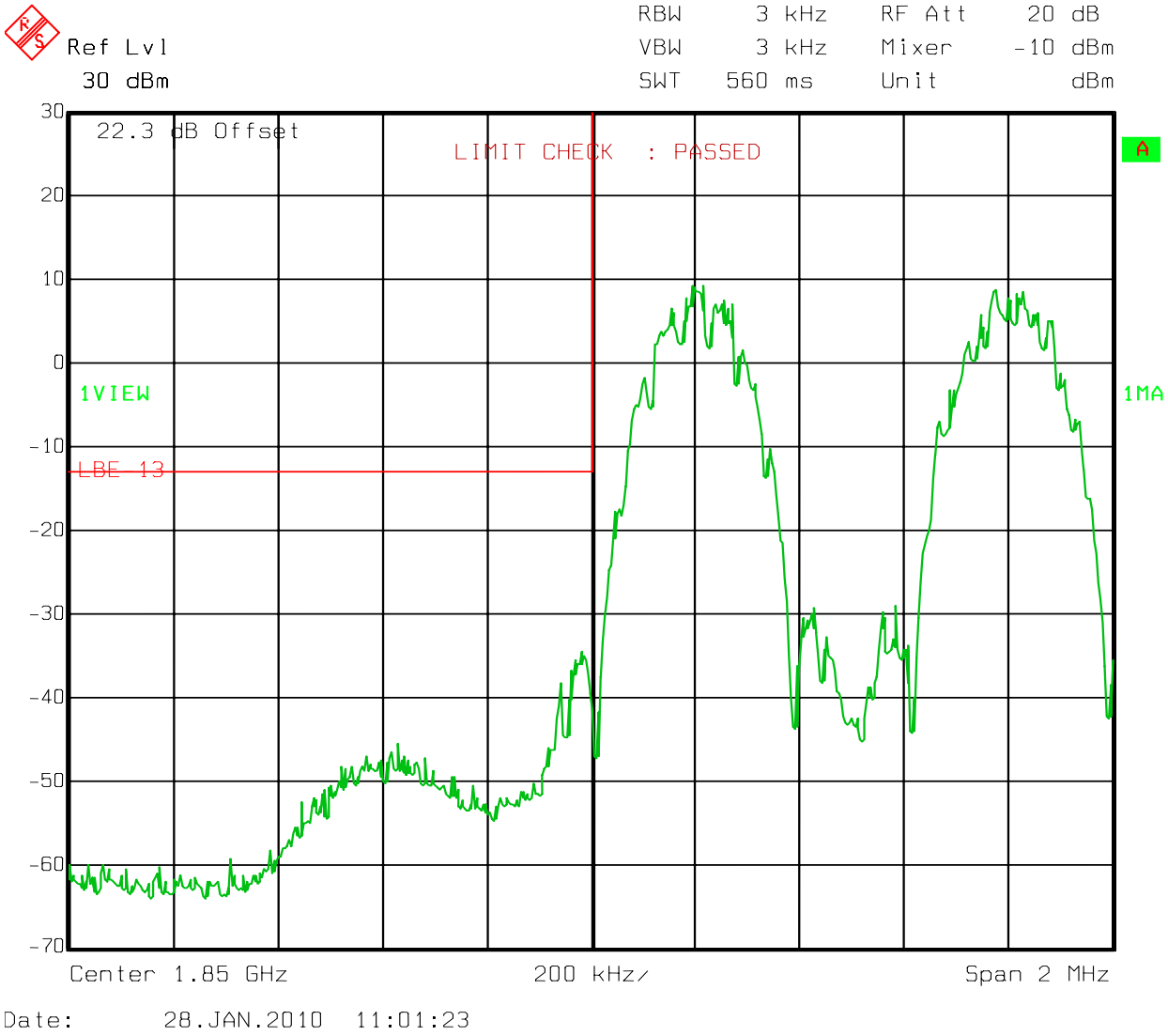
Uplink

Spurs – CDMA



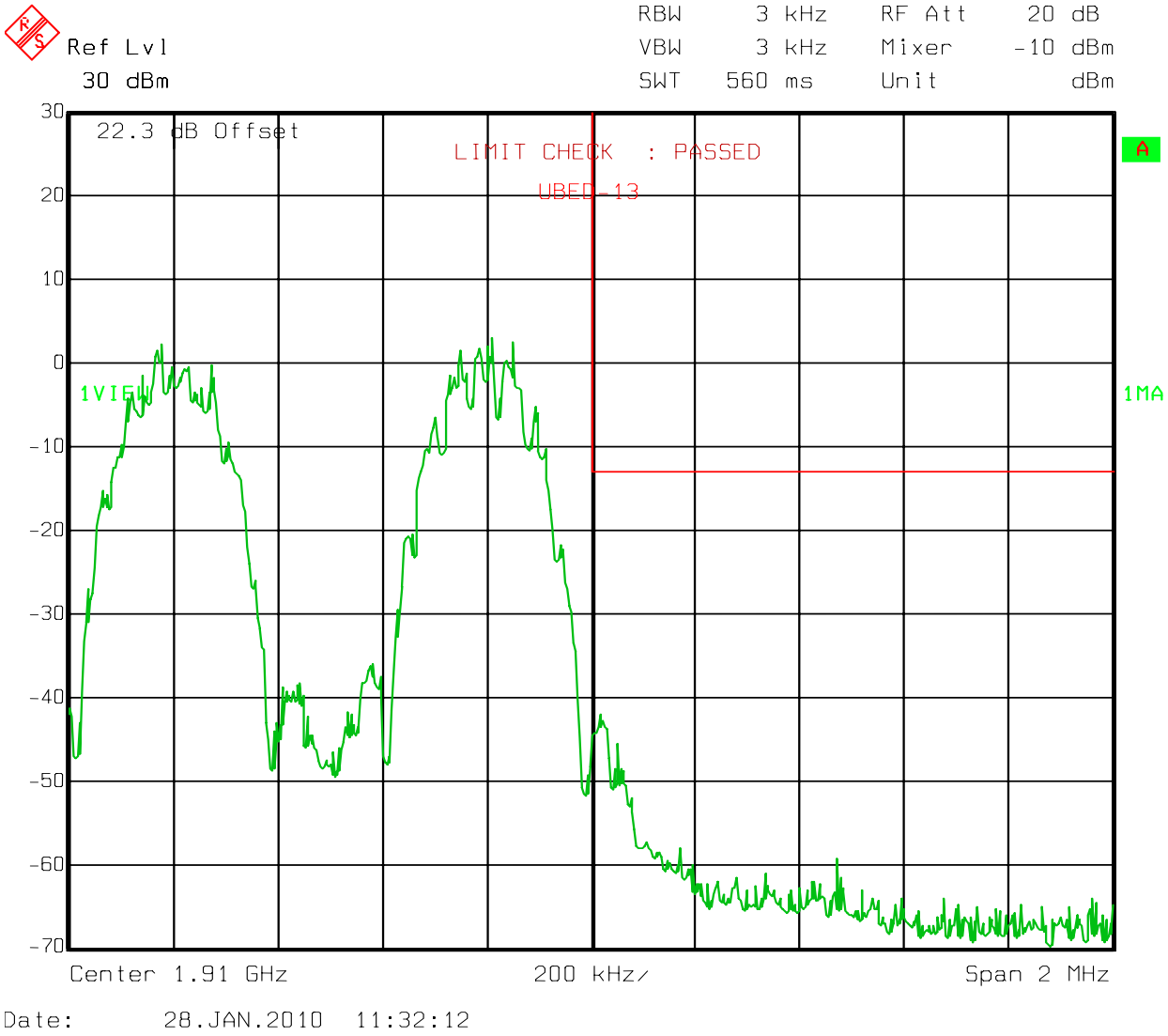
Test Data – Spurious Emissions at Antenna Terminals

Uplink
Lower Bandedge Intermodulation
EDGE



Test Data – Spurious Emissions at Antenna Terminals

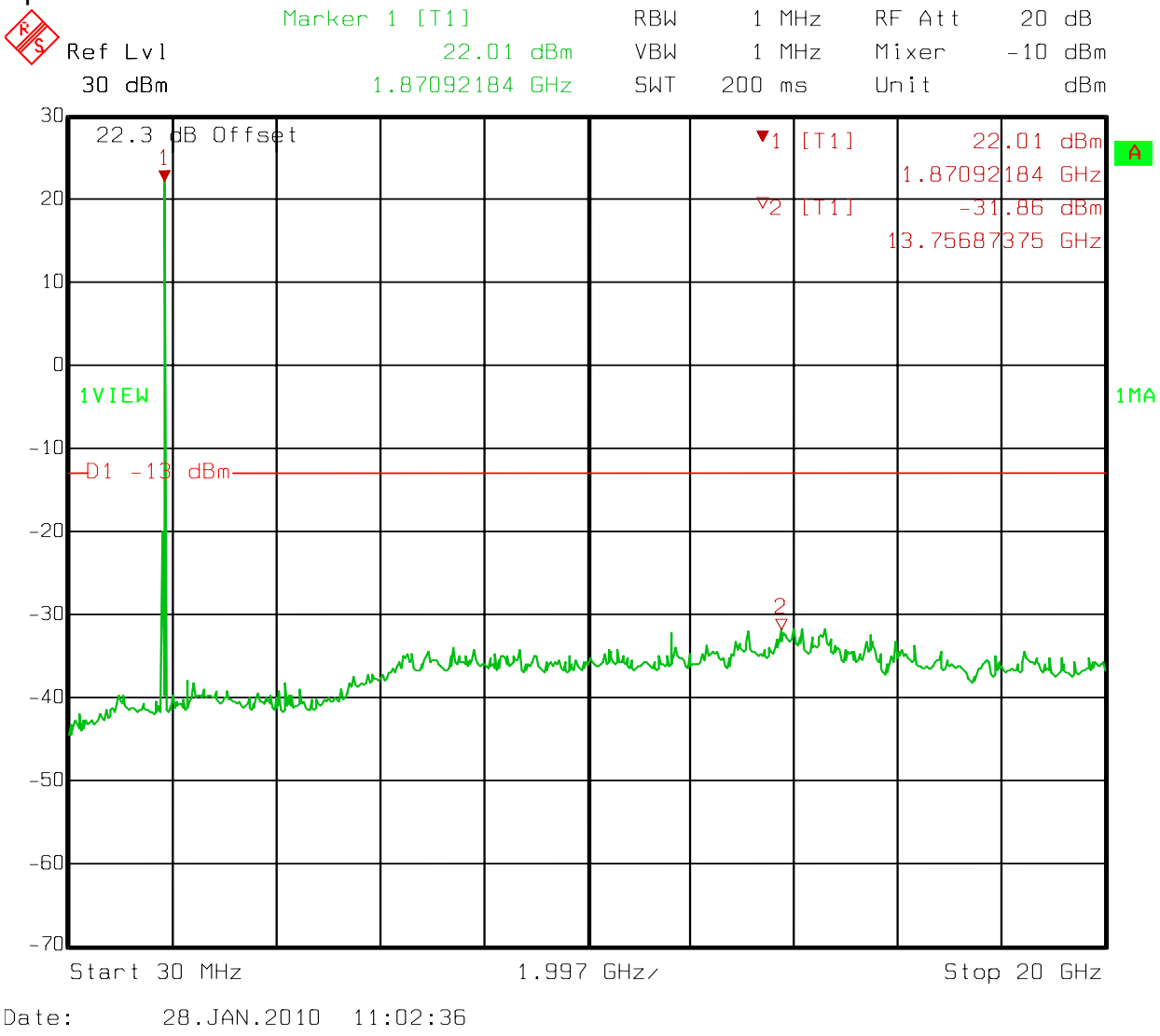
Uplink
Upper Bandedge Intermodulation
EDGE



Test Data – Spurious Emissions at Antenna Terminals

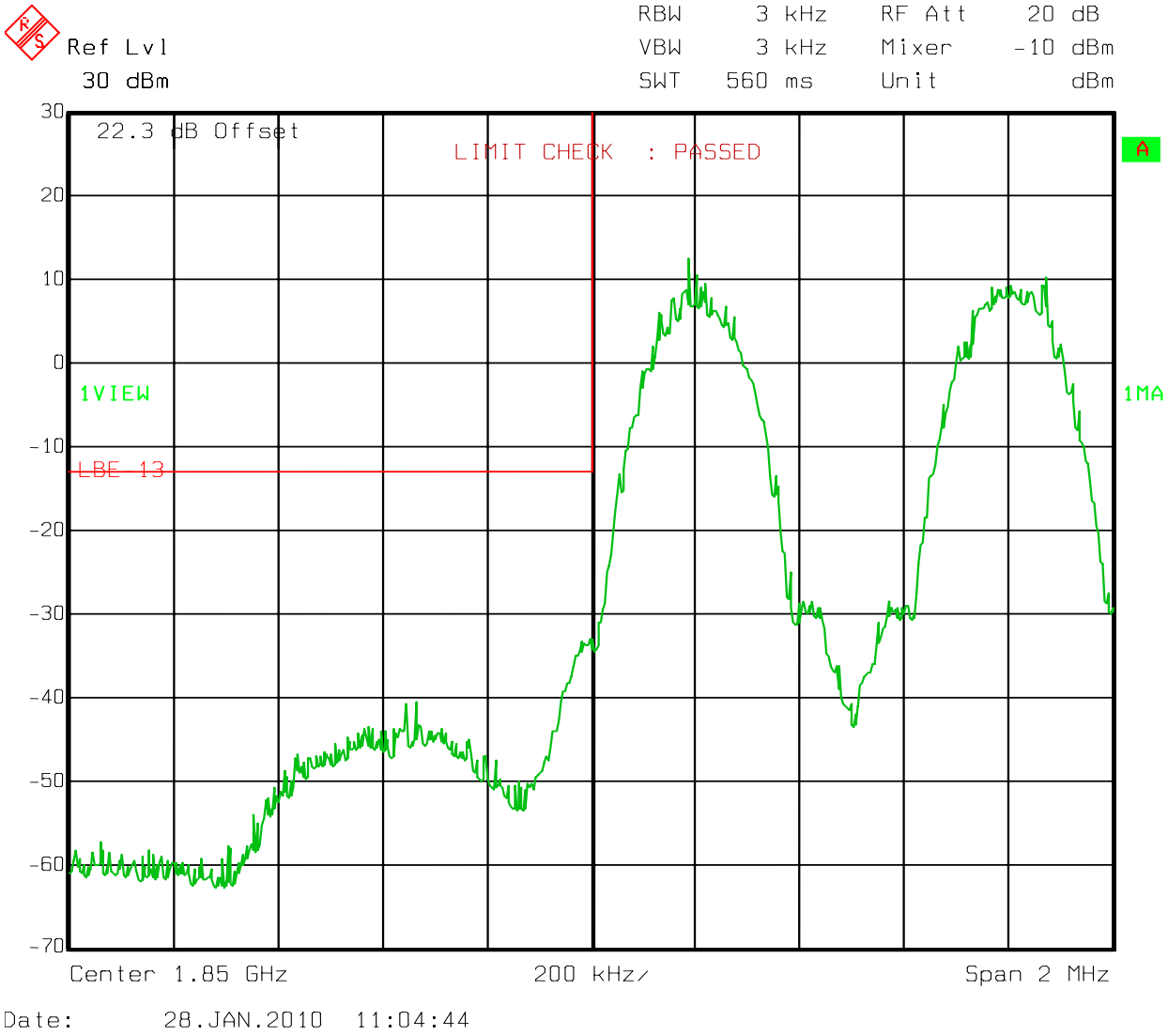
Uplink

Spurs – EDGE



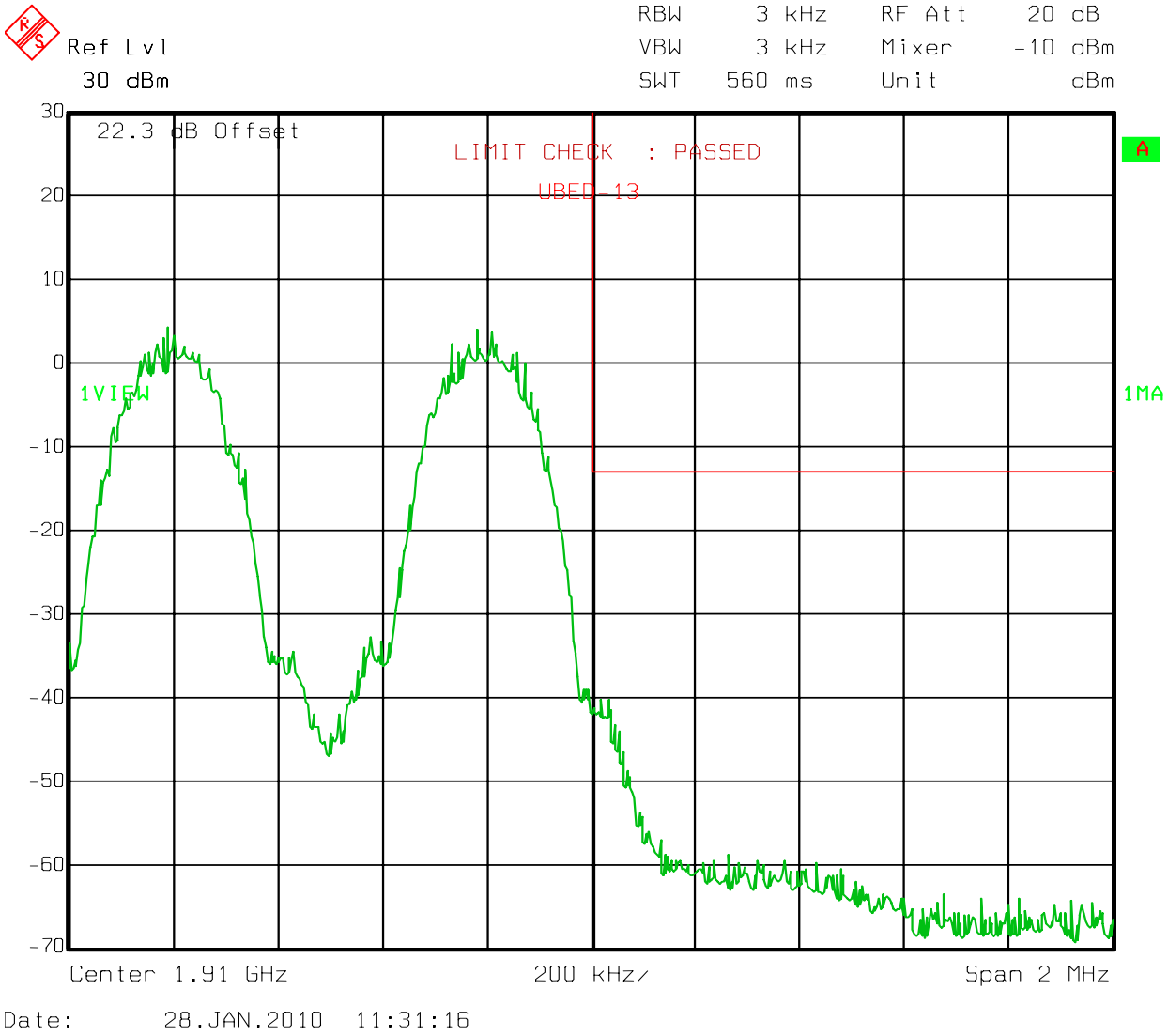
Test Data – Spurious Emissions at Antenna Terminals

Uplink
Lower Bandedge Intermodulation
GSM



Test Data – Spurious Emissions at Antenna Terminals

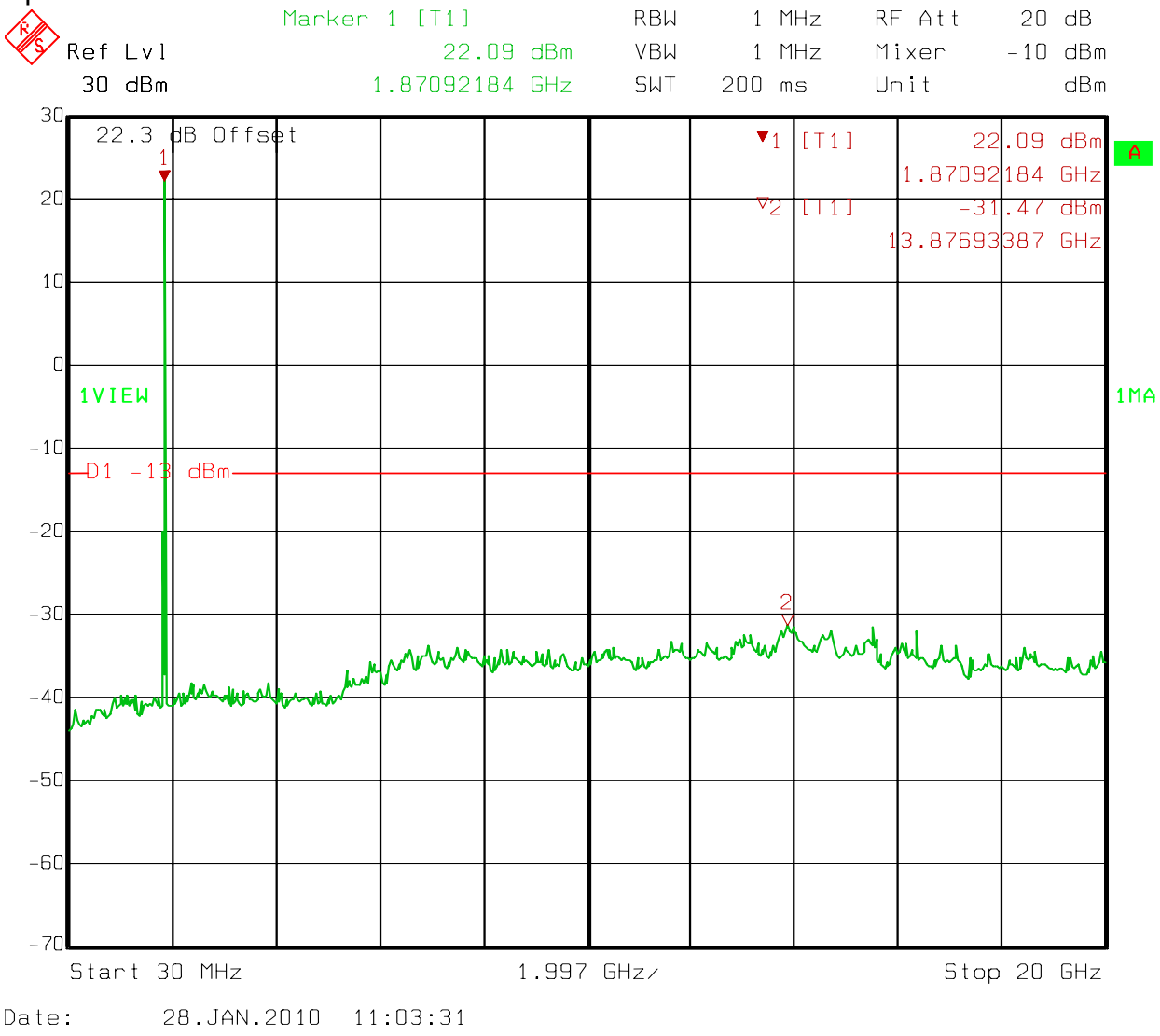
Uplink
Upper Bandedge Intermodulation
GSM



Test Data – Spurious Emissions at Antenna Terminals

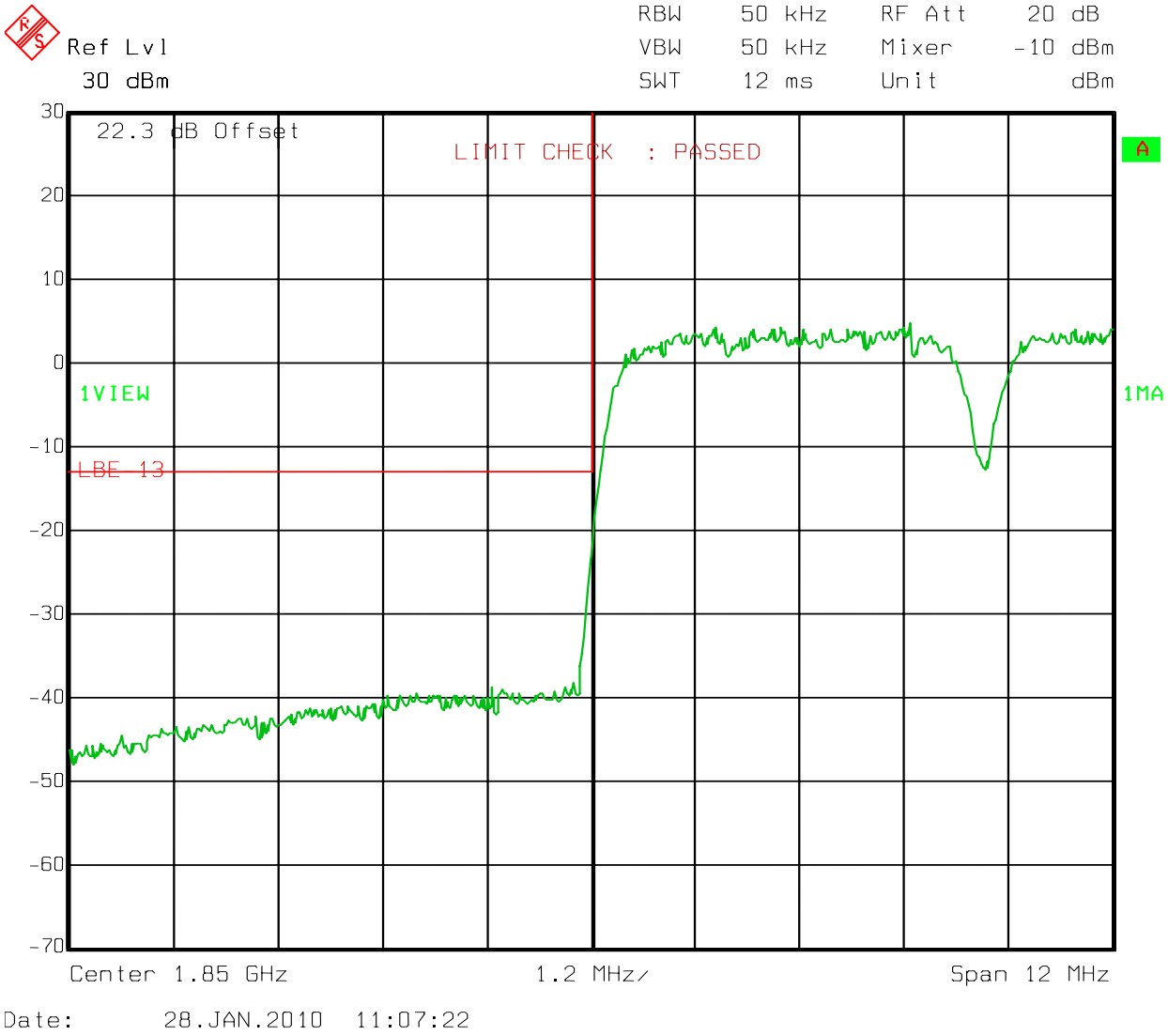
Uplink

Spurs – GSM



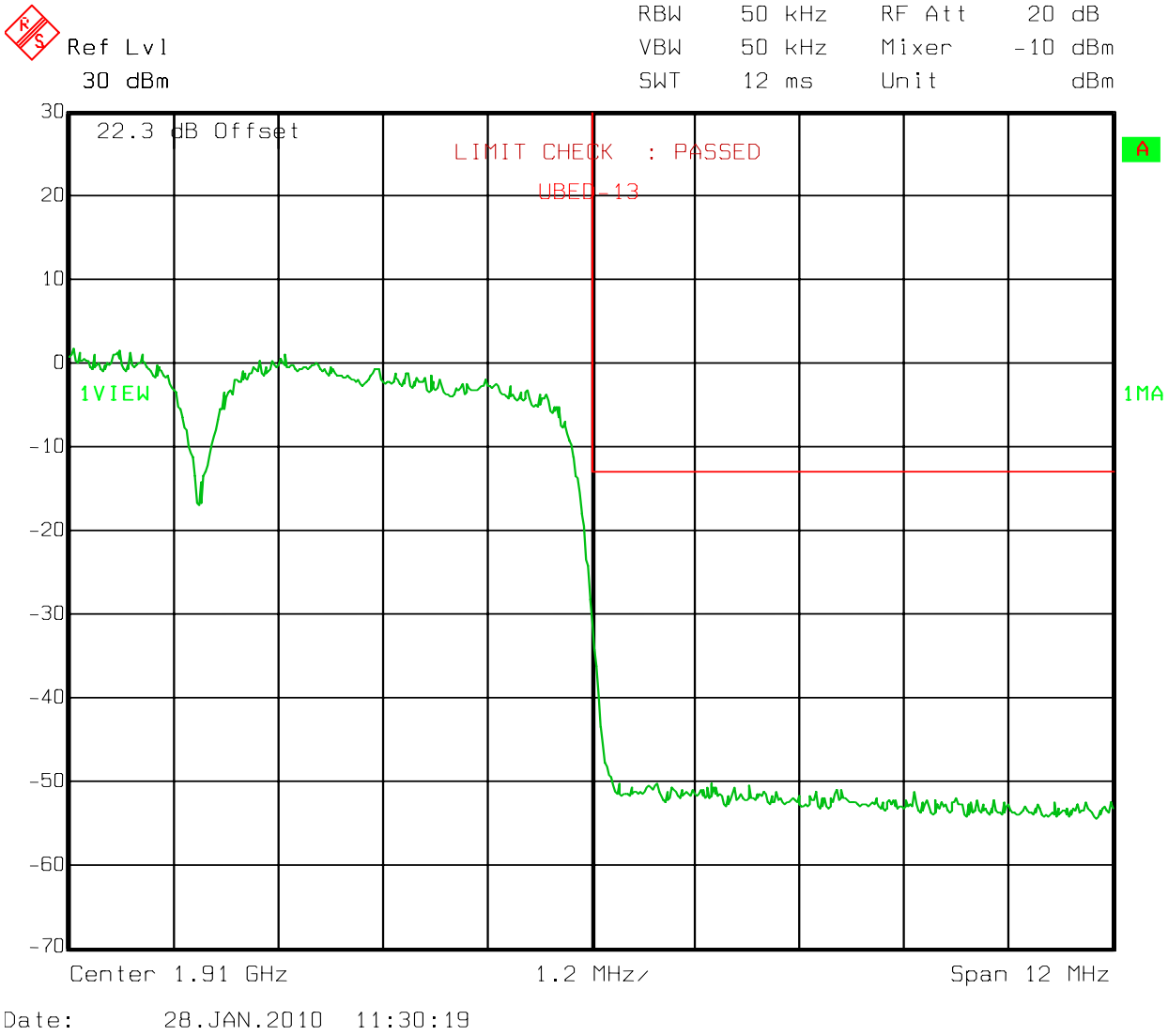
Test Data – Spurious Emissions at Antenna Terminals

Uplink
Lower Bandedge Intermodulation
W-CDMA



Test Data – Spurious Emissions at Antenna Terminals

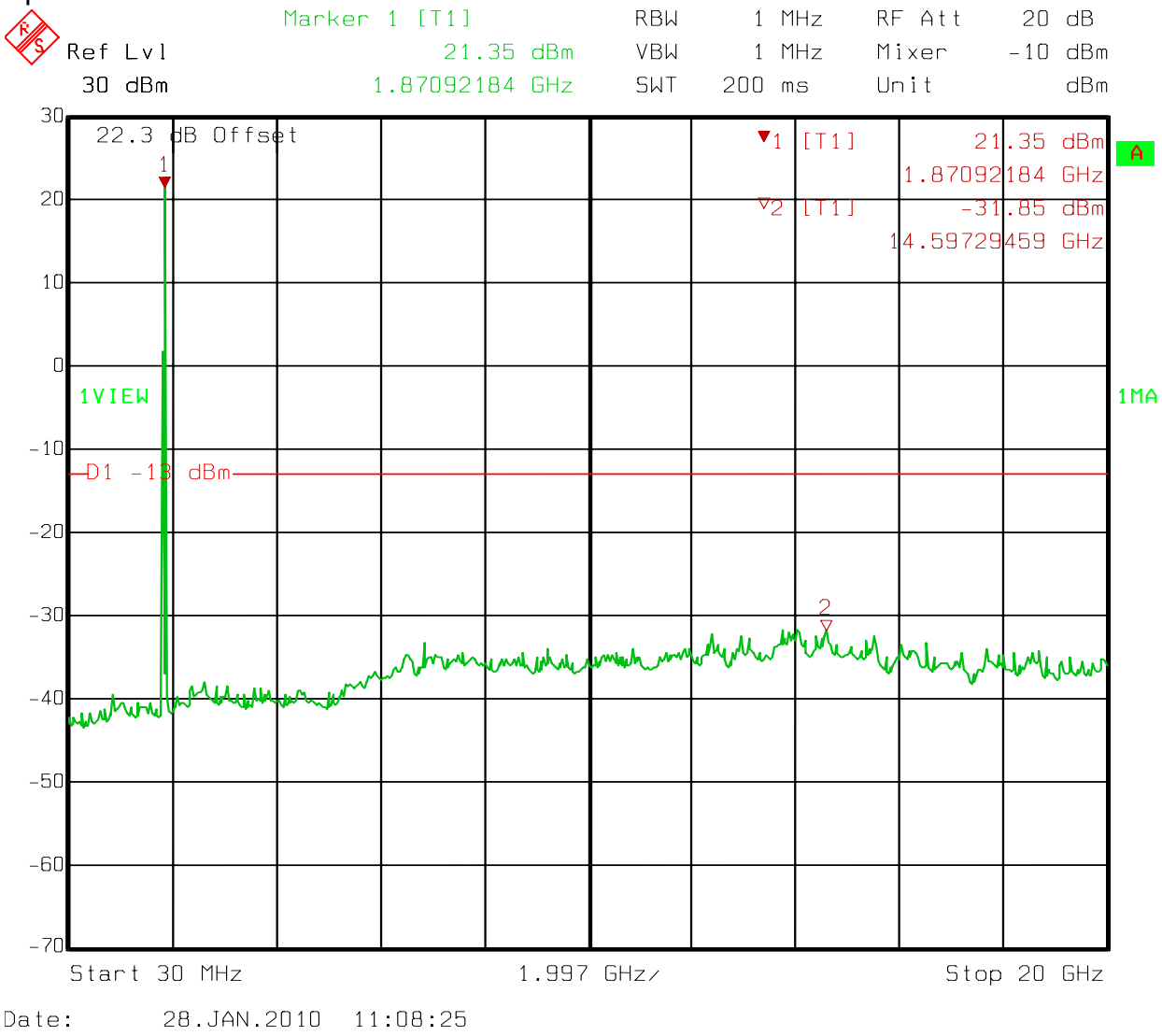
Uplink
Upper Bandedge Intermodulation
W-CDMA



Test Data – Spurious Emissions at Antenna Terminals

Uplink

Spurs – W-CDMA -



Section 5. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	01/19/09	01/20/11
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
1472	20db Attenuator DC 18 Ghz	Omni Spectra 20600-20db	NONE	CBU	N/A

ANNEX A - TEST DETAILS

NAME OF TEST: Occupied Bandwidth PARA. NO.: 2.1049

Minimum Standard: Input/Output

Method Of Measurement:

CDMA

Spectrum analyzer settings:
RBW=VBW=30 kHz
Span: 5 MHz
Sweep: Auto

GSM / EDGE

RBW=VBW= 3 kHz
Span: 1 MHz
Sweep: Auto

TDMA

RBW=VBW= 1 kHz
Span: 1 MHz
Sweep: Auto

W-CDMA

RBW=VBW= 100 kHz
Span: 10 MHz
Sweep: Auto

NAME OF TEST: Spurious Emission at Antenna Terminals PARA. NO.: 24.238

Minimum Standard: Para. No.24.238(a). On any frequency outside a licensee's frequency block, the power of any emission shall be attenuated below the transmitter power by at least 43 + 10 log (P) dB.

Method Of Measurement:

Spectrum analyzer settings:

CDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 30 kHz (< 1MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: 6 Sweeps

GSM / EDGE

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: Disabled

TDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 3 kHz (< 1 MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: Disabled

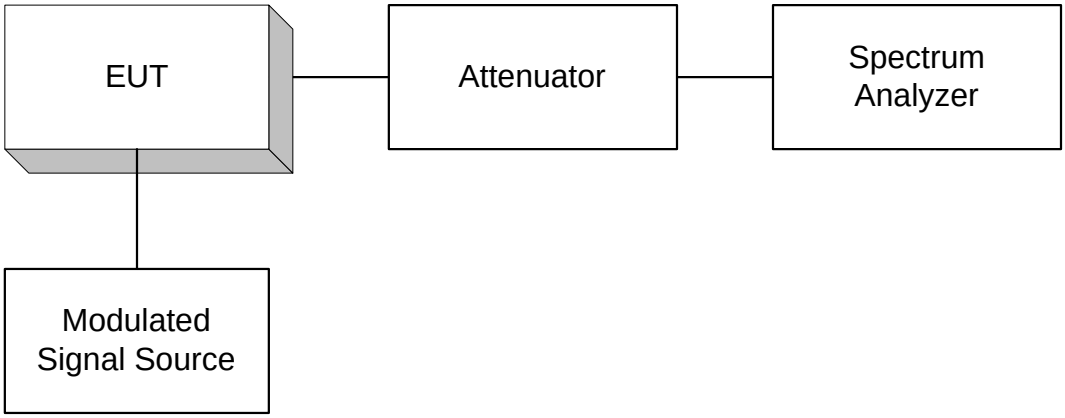
W-CDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 100 kHz (< 1MHz from Band Edge)
VBW: ≥ RBW
Sweep: Auto
Video Avg: 6 Sweeps

To demonstrate compliance at band edges the frequency of the input signal is set to the lowest and highest assigned channel and the center frequency of the spectrum analyzer is set to the upper and lower edges of the appropriate frequency block.

ANNEX B - TEST DIAGRAMS

Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals