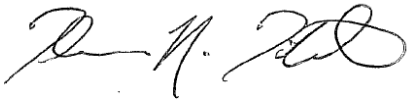
Nemko Test Report:	41238RUS1
Applicant:	Andrew Corporation 620 N. Greenfield Parkway Garner, NC 27529 USA
Equipment Under Test: (E.U.T.)	MR1718
FCC Identifier:	BCR-MR1718
In Accordance With:	**CFR 47, Part 27, Subpart C** Miscellaneous Wireless Communication Services
Tested By:	Nemko USA, Inc. 802 N. Kealy Lewisville, TX 75057-3136

TESTED BY: _____ **DATE:** **27 January 2010**
David Light, Senior Wireless Engineer



APPROVED BY: _____ **DATE:** **29 January 2010**
Tom Tidwell, Telecom Direct

Number of Pages: 34

Table of Contents

Section 1. Summary of Test Results

Manufacturer Andrew Corporation

Model No.: MR1718

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 27, Subpart C.

☐	New Submission	☒	Production Unit
☒	Class II Permissive Change	☐	Pre-Production Unit

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".

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 in the performance of the device.

NVLAP Lab Code 100426-0

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	27.50(d)	1640 Watts	Not tested
Occupied Bandwidth	2.1049	Input/Output	Complies
Spurious Emissions at Antenna Terminals	27.53(g)	-13 dBm	Complies
Field Strength of Spurious Emissions	27.53(g)	-13 dBm E.I.R.P.	Not tested
Frequency Stability	27.54	Must stay in band	NA

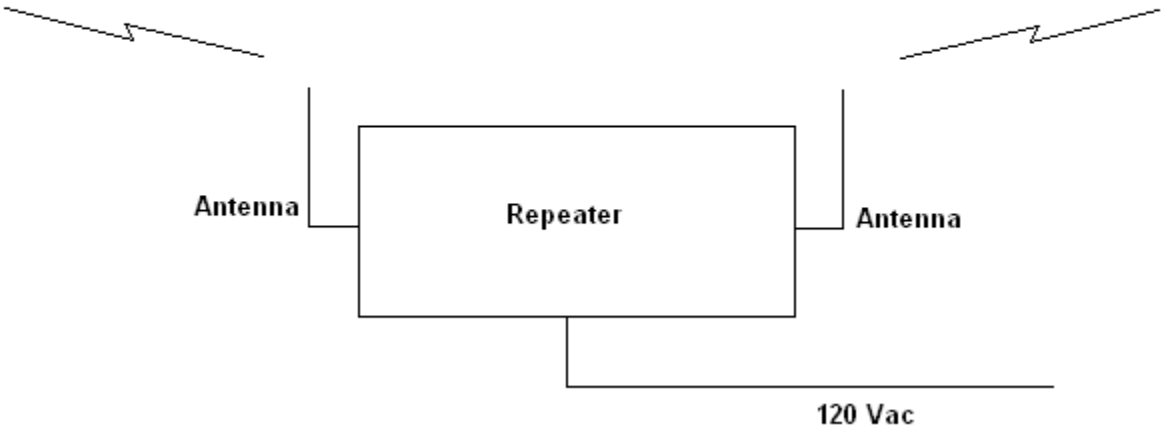
Section 2. General Equipment Specification

Supply Voltage Input:		120 Vac
Frequency Bands:	**Downlink:**	2110 to 2155 MHz
Frequency Bands:	**Uplink:**	1710 to 1755 MHz
Type of Modulation and Designator:		**CDMA (F9W)** ☒ **GSM (GXW)** ☐ **NADC (DXW)** ☐ **W-CDMA (F9W)** ☒ **EDGE (G7W)** ☐
System Gain:		78 dB
Output Impedance:		50 ohms
RF Output (Rated):	**Downlink**	0.158 W 22 dBm
RF Output (Rated):	**Uplink**	0.158 W 22 dBm
Frequency Translation:		**F1-F1** ☒ **F1-F2** ☐ **N/A** ☐
Band Selection:		**Software** ☒ **Duplexer** ☐ **Fullband** ☐

Description of EUT

The miniRepeaters are bi-directional amplifiers used to enhance signals between a mobile and a base station in a wireless network. They have been designed to increase signal strength in small and medium sized areas such as offices, shops, basements and manufacturing facilities. This system employs a variable 25 MHz bandwidth filter.

System Diagram



Section 3. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 27 January 2010

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1082-1472

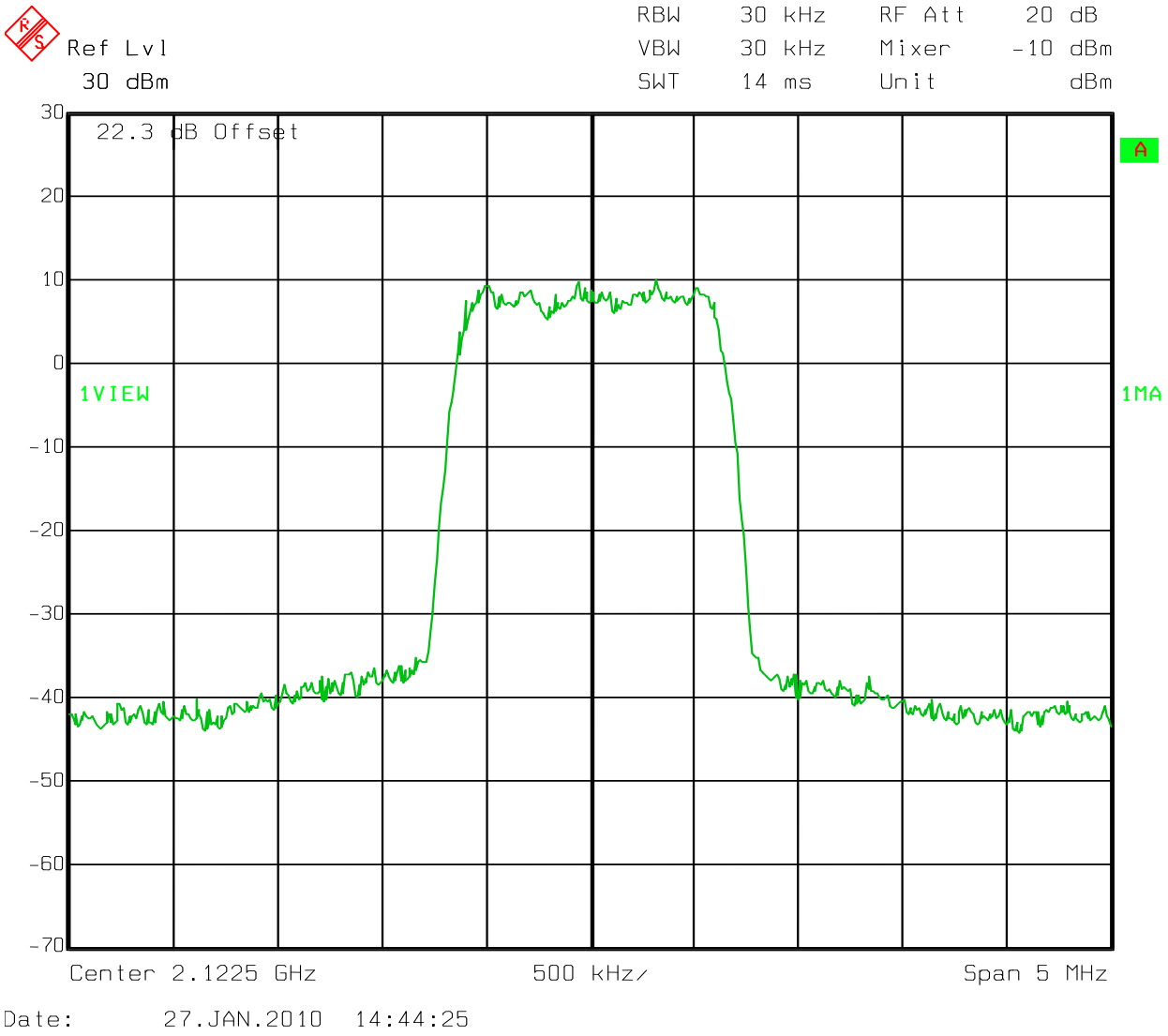
Measurement Uncertainty: $1X10^{-7}$ ppm

Temperature: 22 °C

Relative Humidity: 48 %

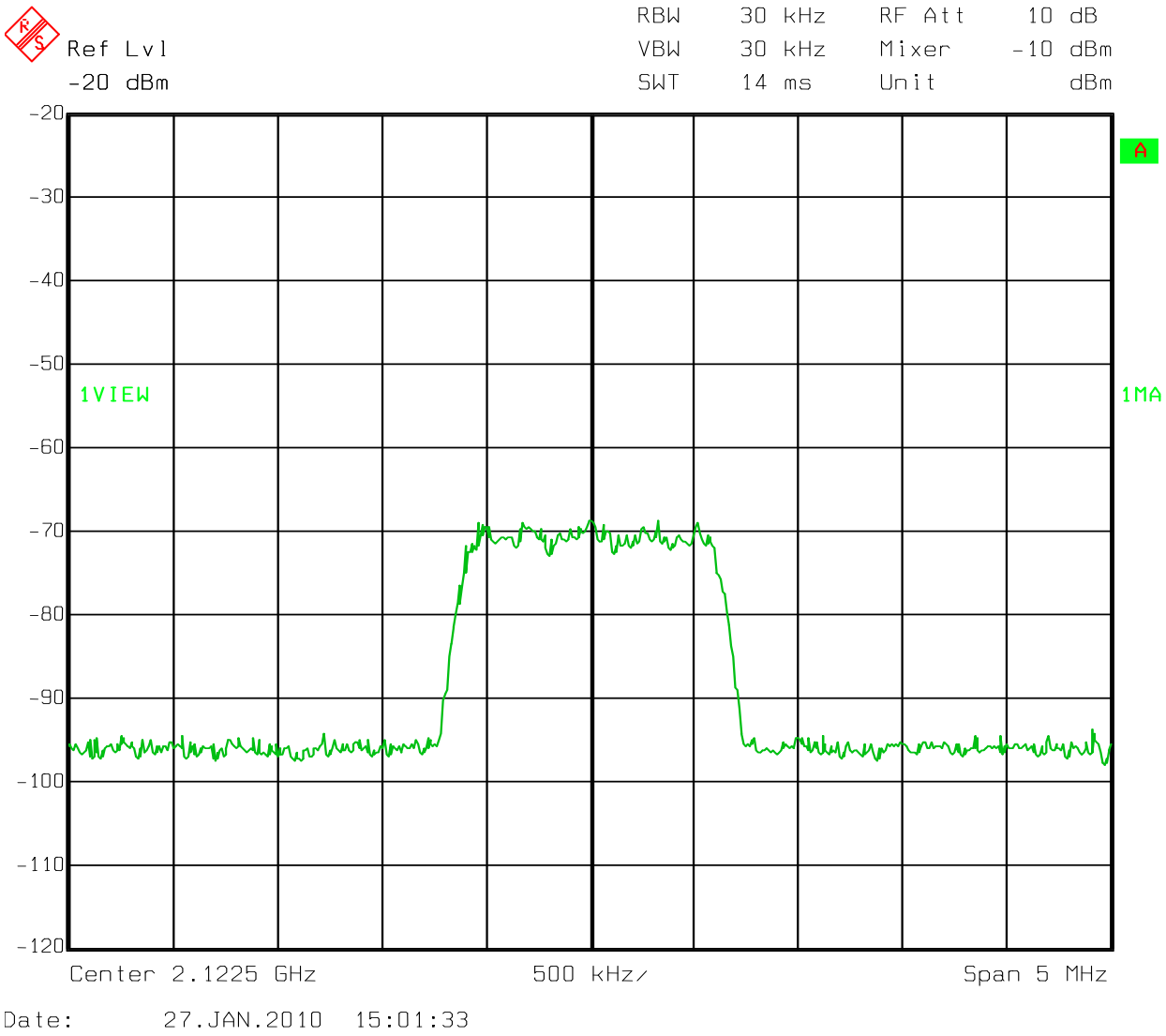
Test Data – Occupied Bandwidth

CDMA/EV-DO
Output
Downlink



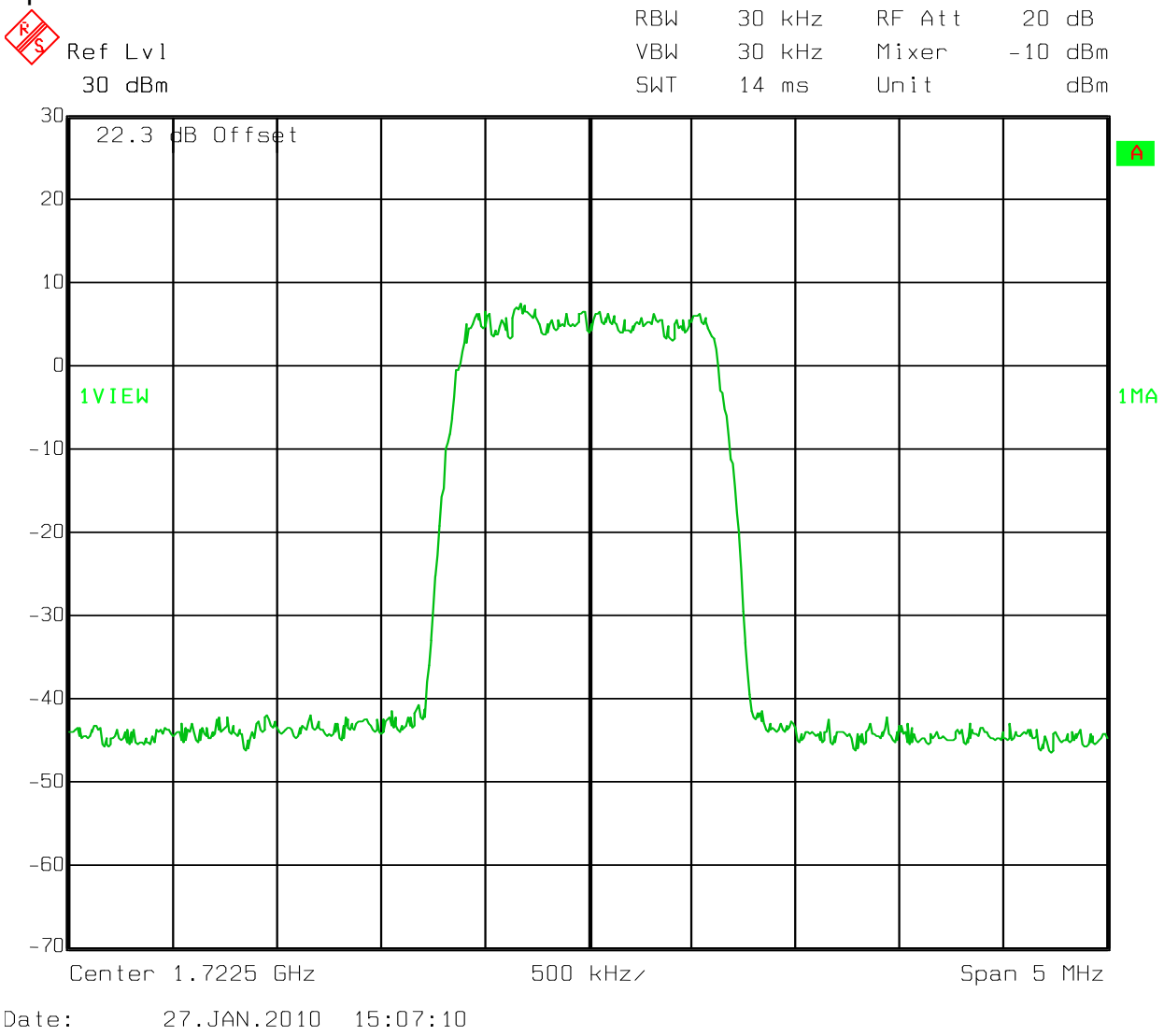
Test Data – Occupied Bandwidth

CDMA/EV-DO
Input
Downlink



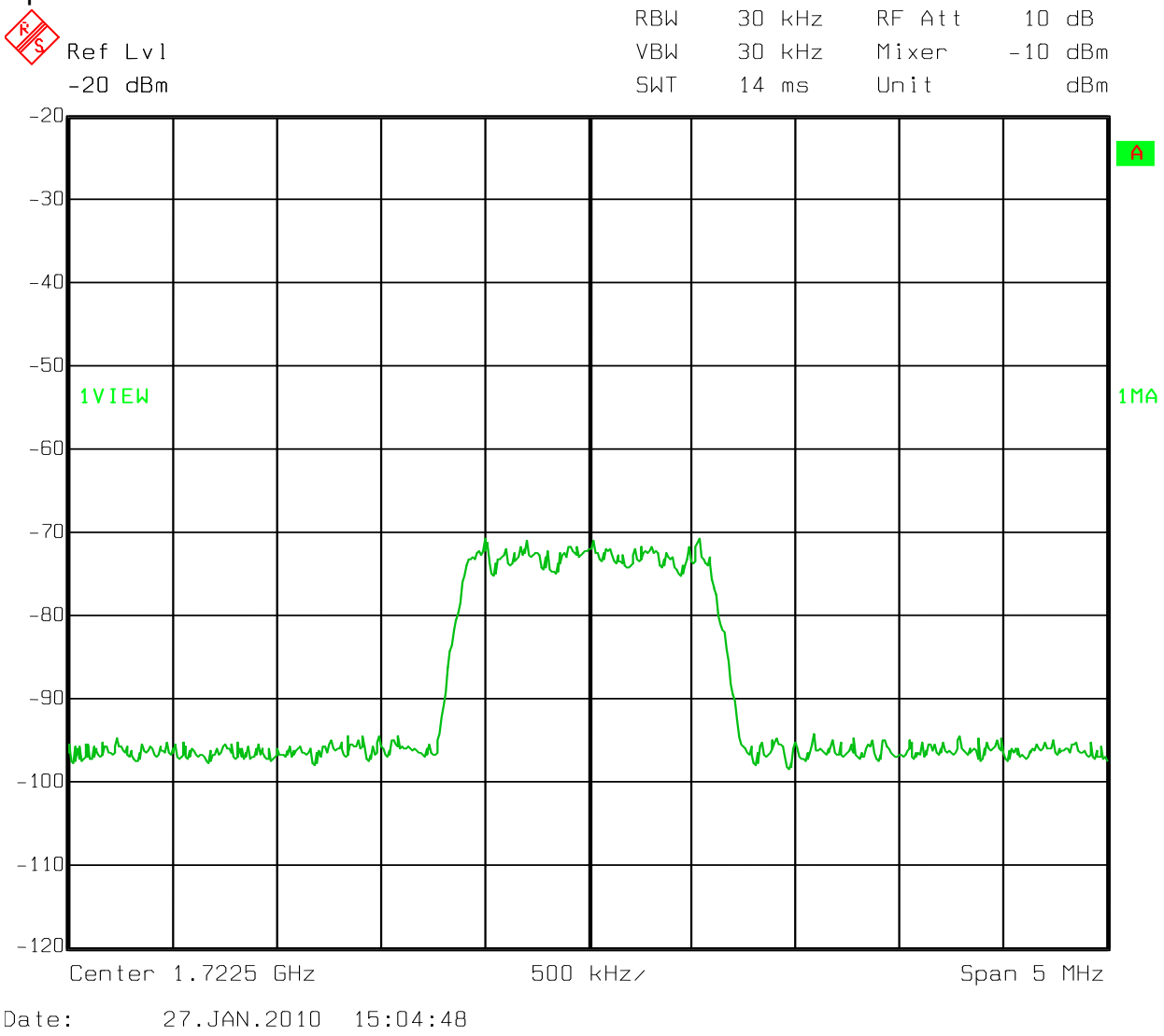
Test Data – Occupied Bandwidth

CDMA/EV-DO
Output
Uplink



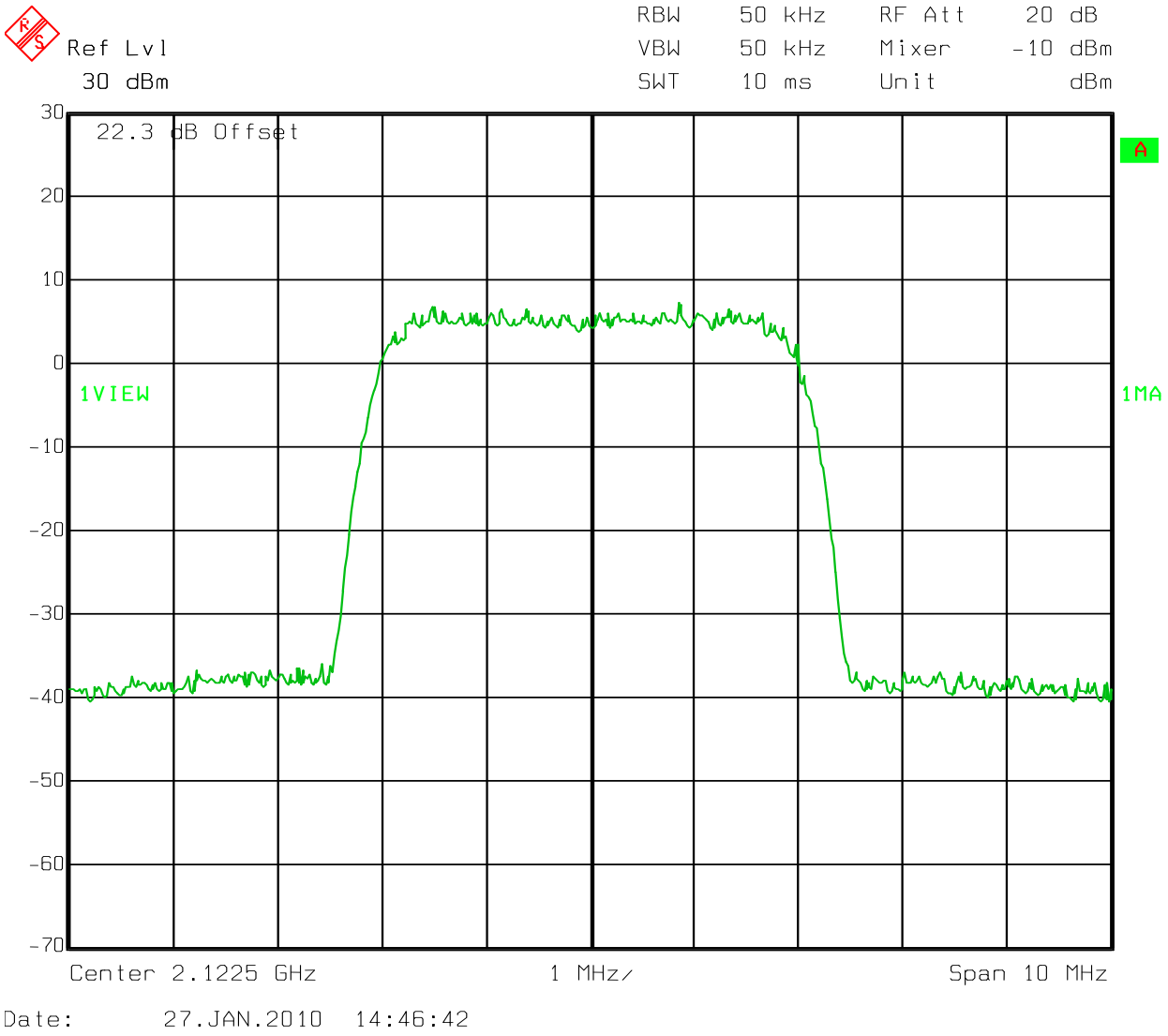
Test Data – Occupied Bandwidth

CDMA/EV-DO
Input
Uplink



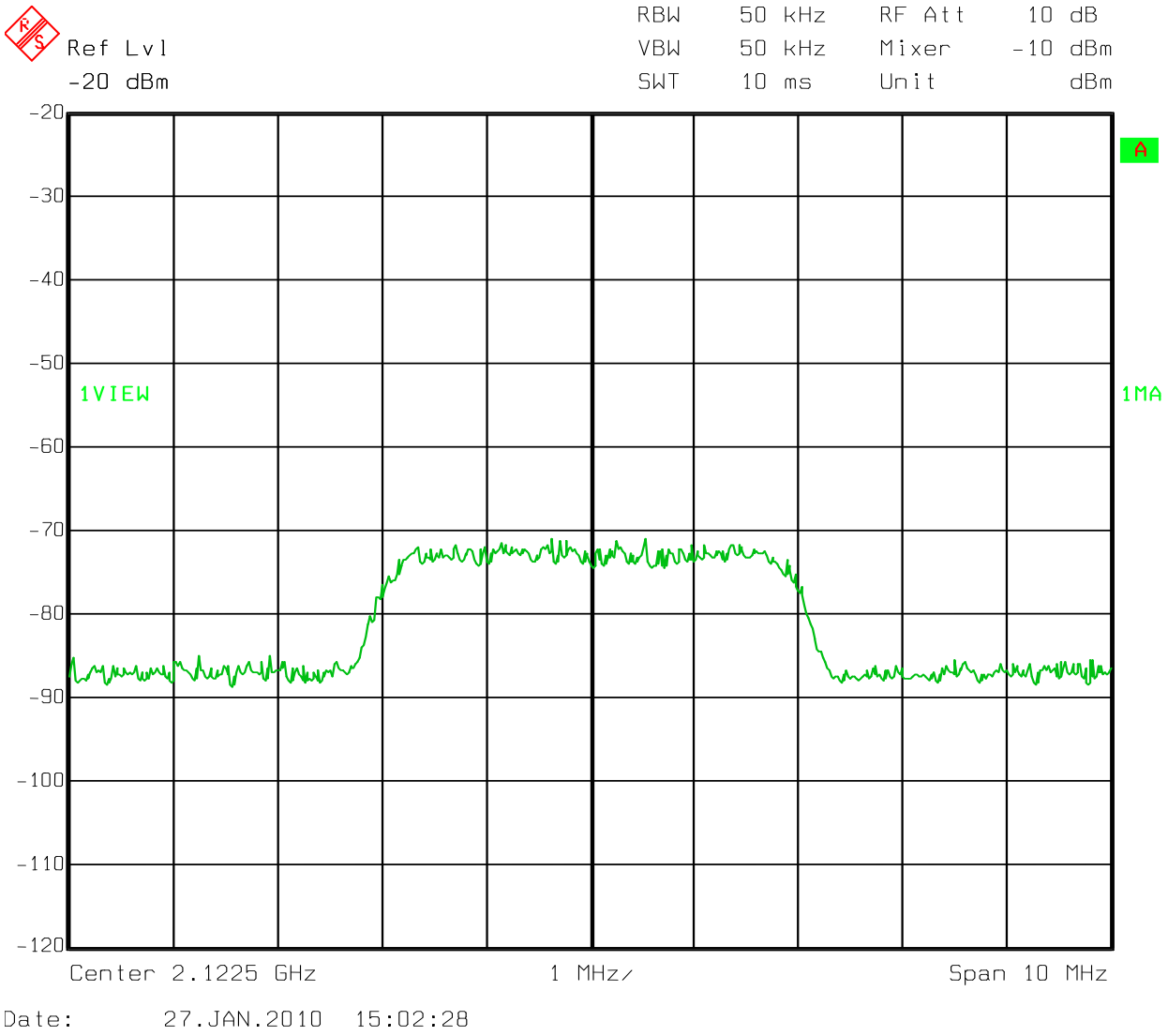
Test Data – Occupied Bandwidth

WCDMA/UMTS
OUTPUT
Downlink



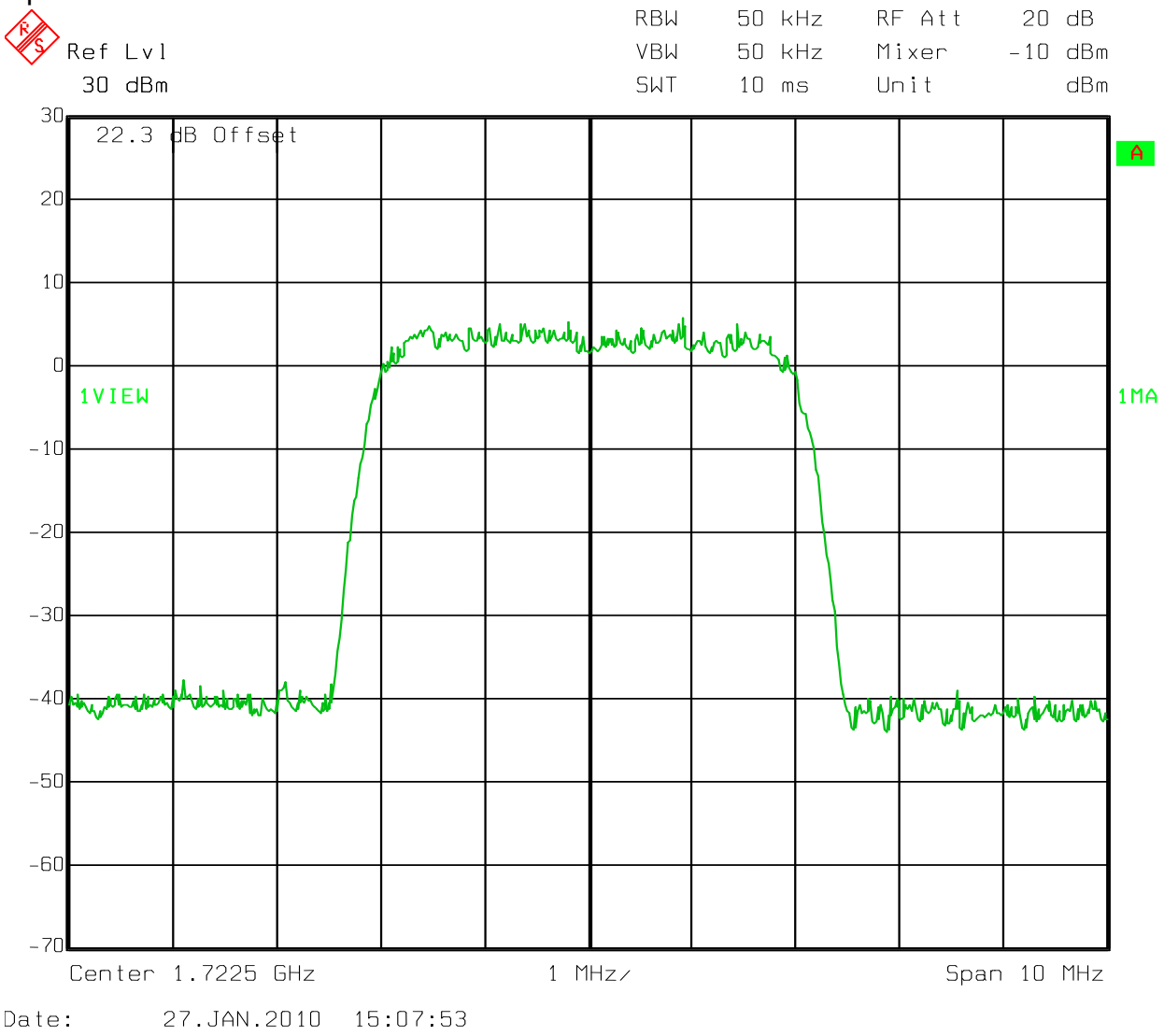
Test Data – Occupied Bandwidth

WCDMA/UMTS
INPUT
Downlink



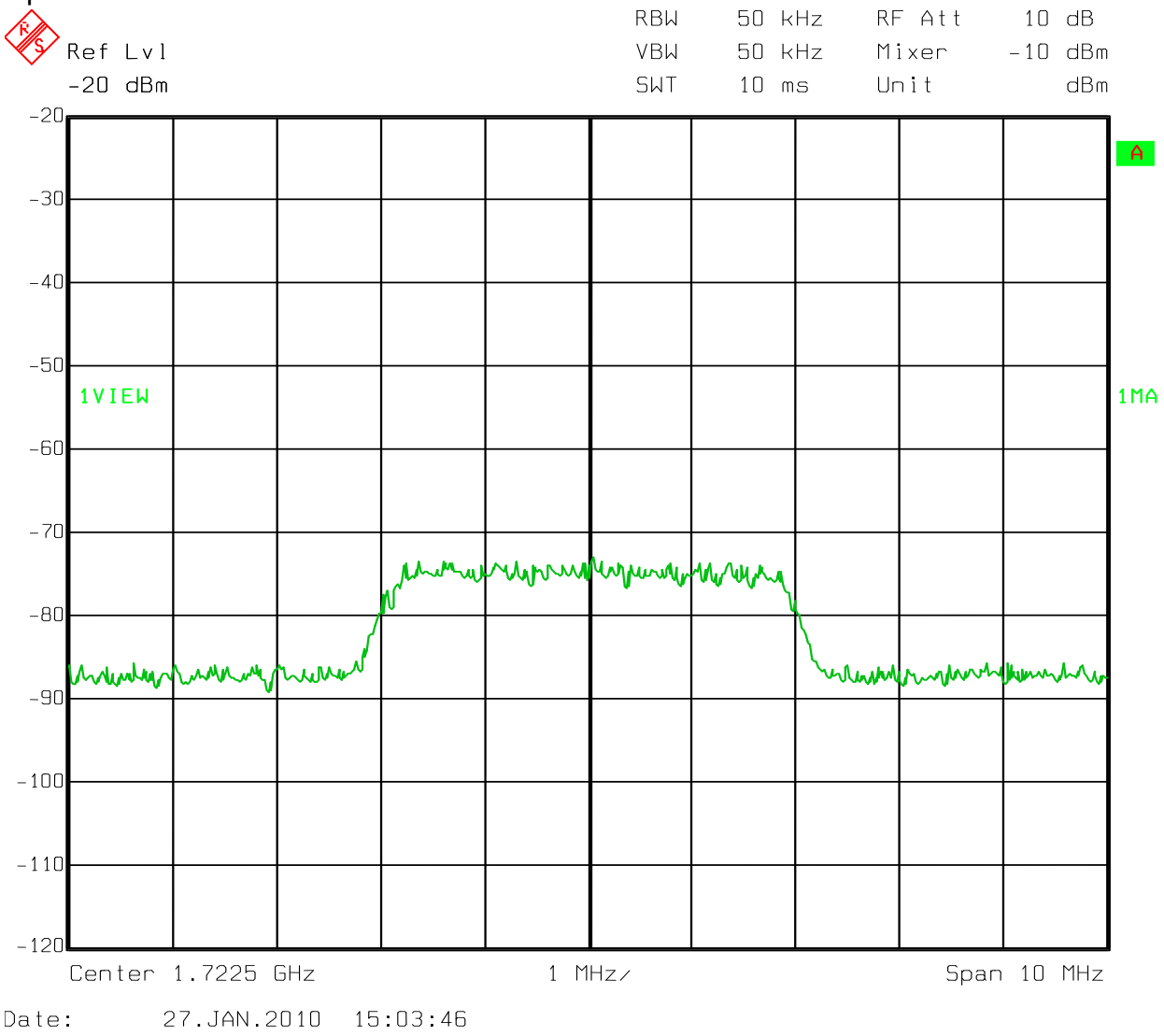
Test Data – Occupied Bandwidth

WCDMA/UMTS
OUTPUT
Uplink



Test Data – Occupied Bandwidth

WCDMA/UMTS
INPUT
Uplink



Section 4. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 27.53
TESTED BY: David Light	DATE: 27 January 2010

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1082-1472

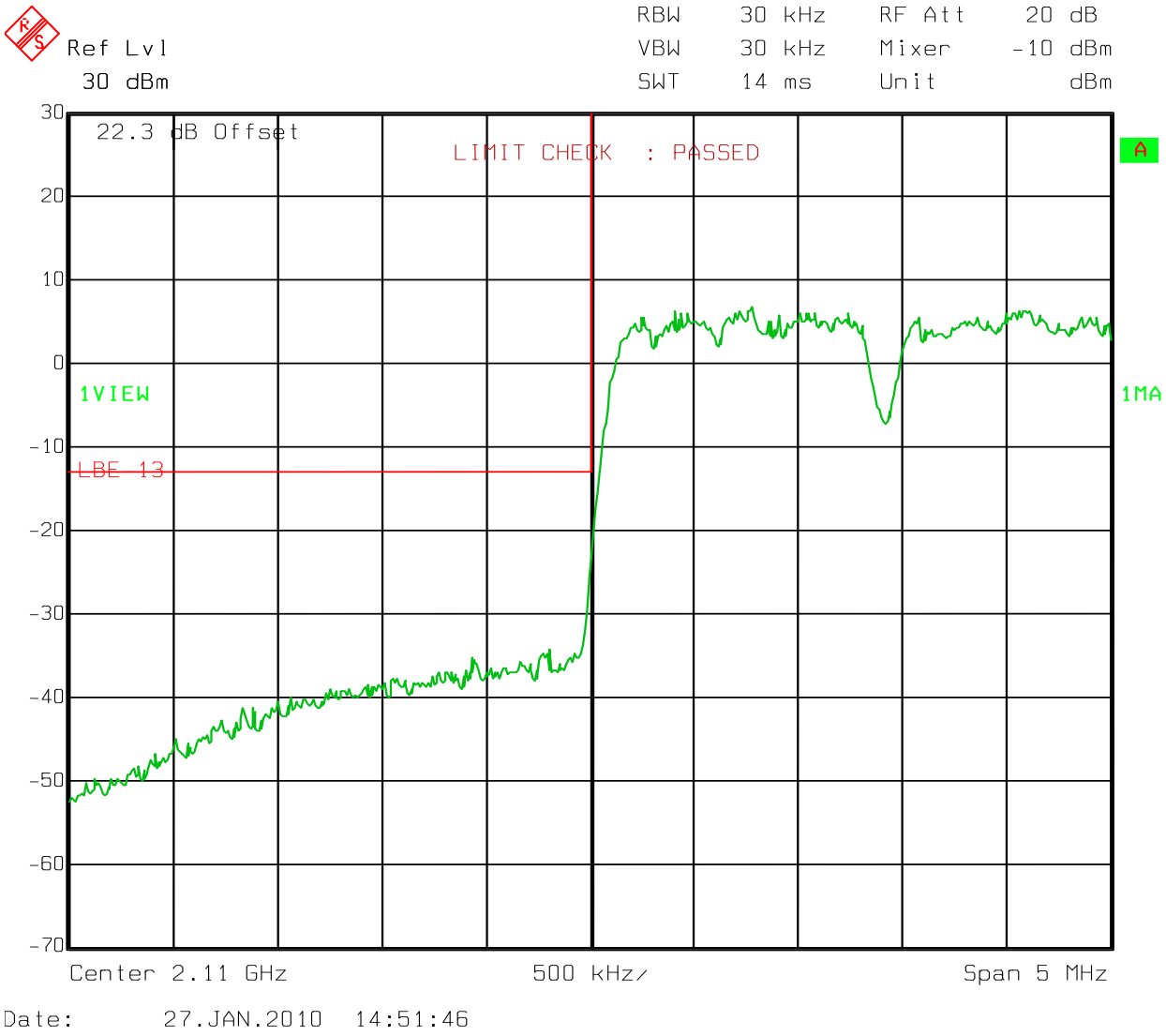
Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 48 %

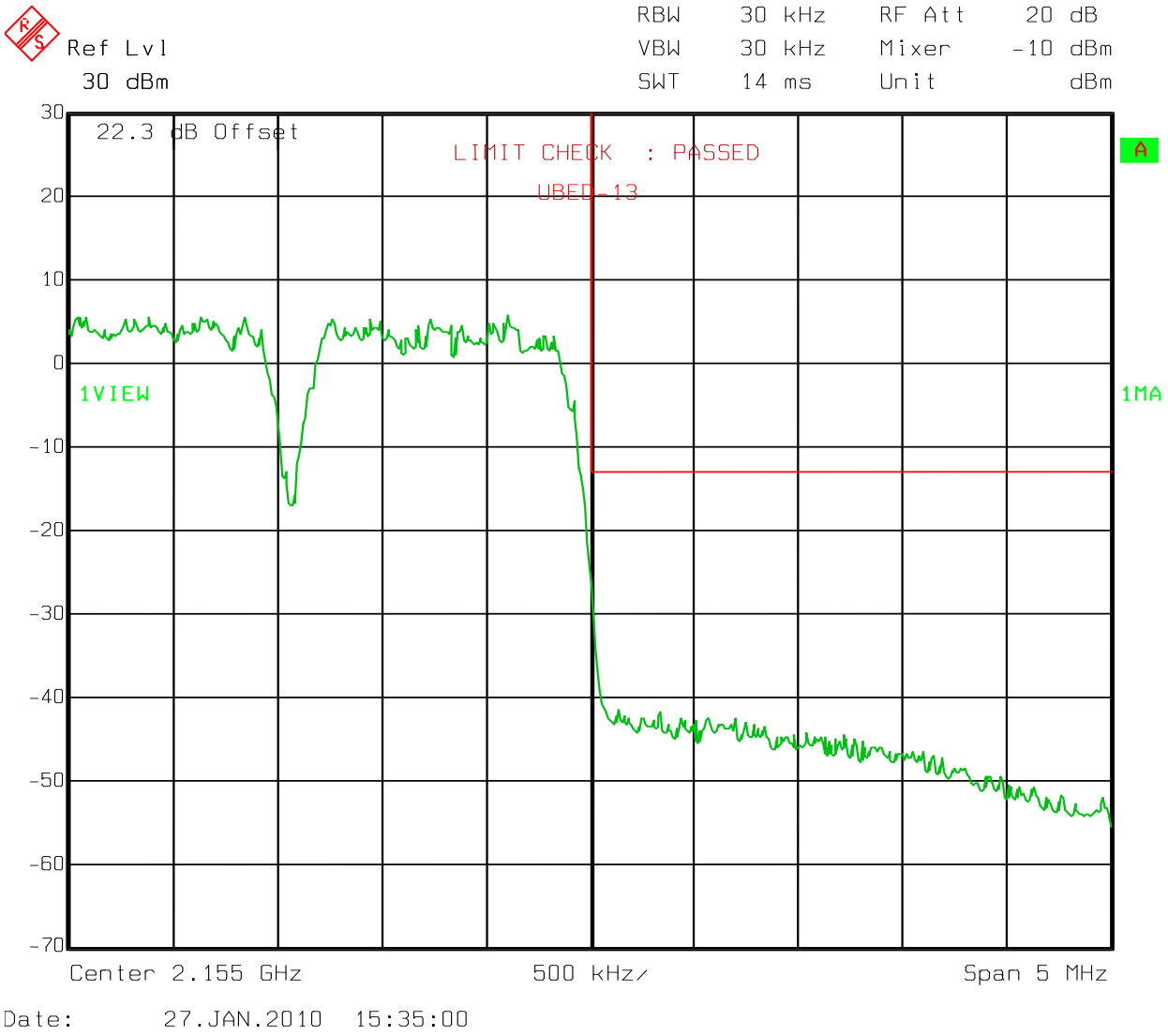
Test Data – Spurious Emissions at Antenna Terminals

CDMA/EV-DO
LOW BANDEDGE
Downlink



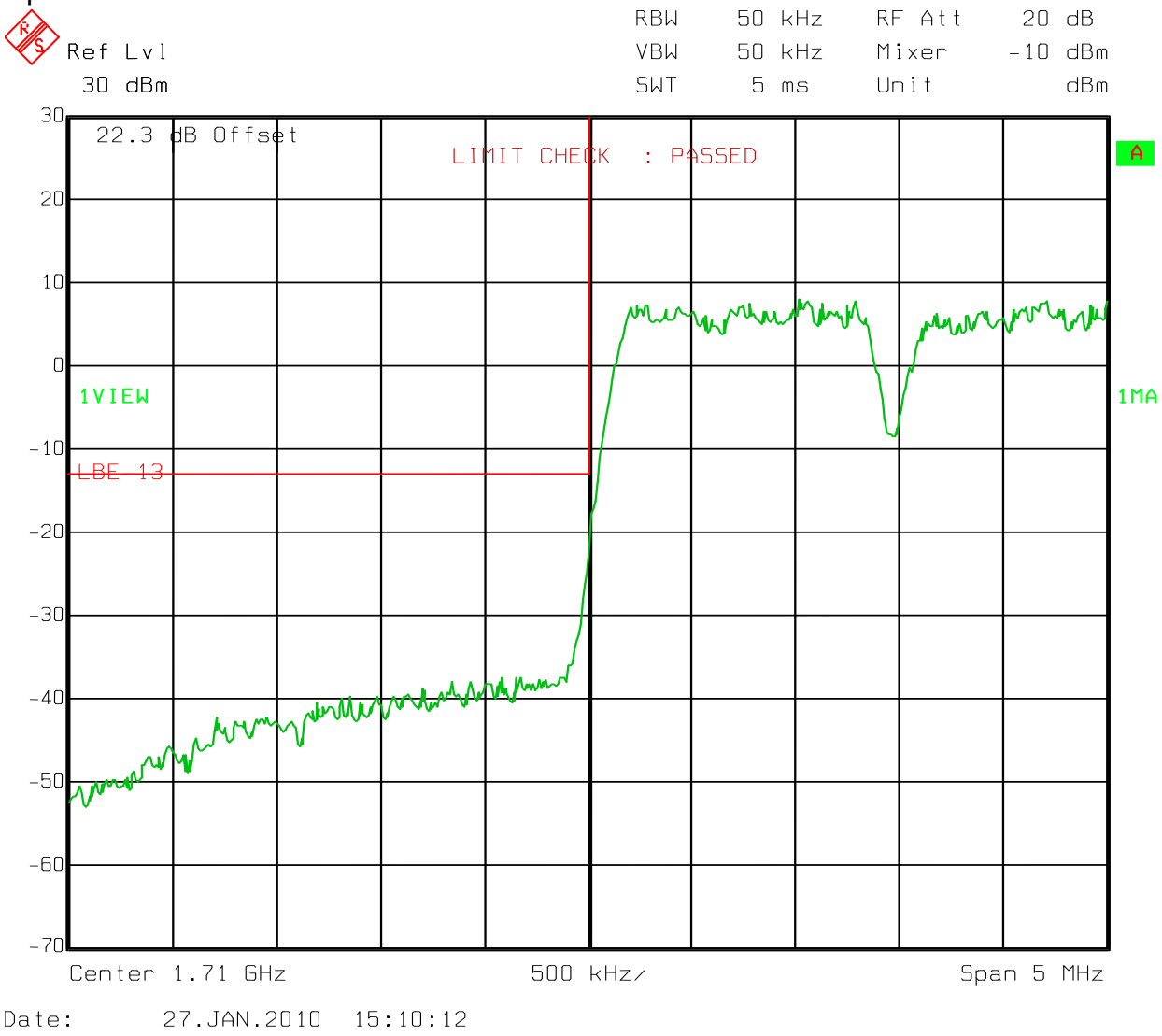
Test Data – Spurious Emissions at Antenna Terminals

CDMA/EV-DO
HIGH BAND EDGE
Downlink



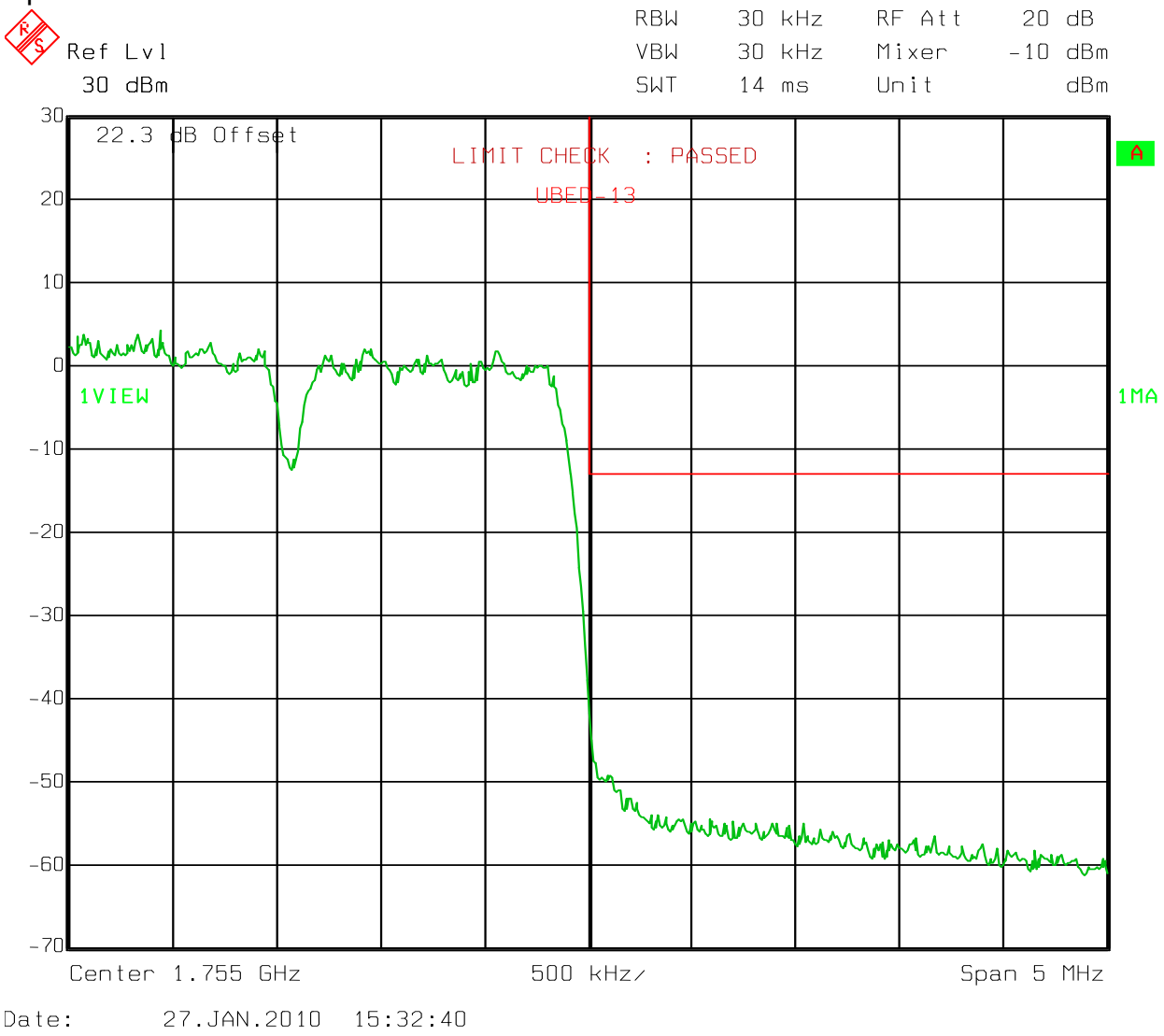
Test Data – Spurious Emissions at Antenna Terminals

CDMA/EV-DO
LOW BANDEDGE
Uplink



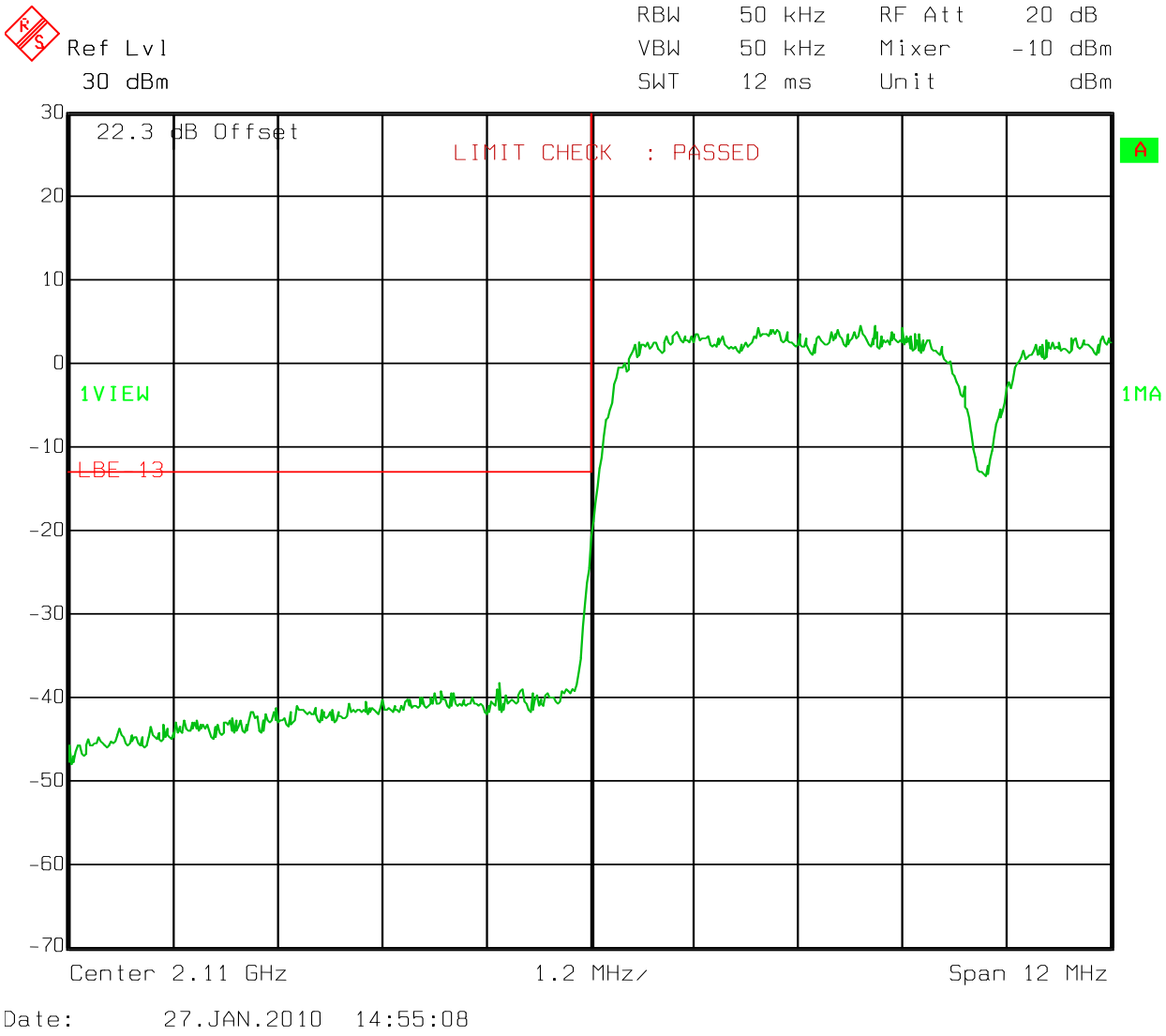
Test Data – Spurious Emissions at Antenna Terminals

CDMA/EV-DO
HIGH BAND EDGE
Uplink



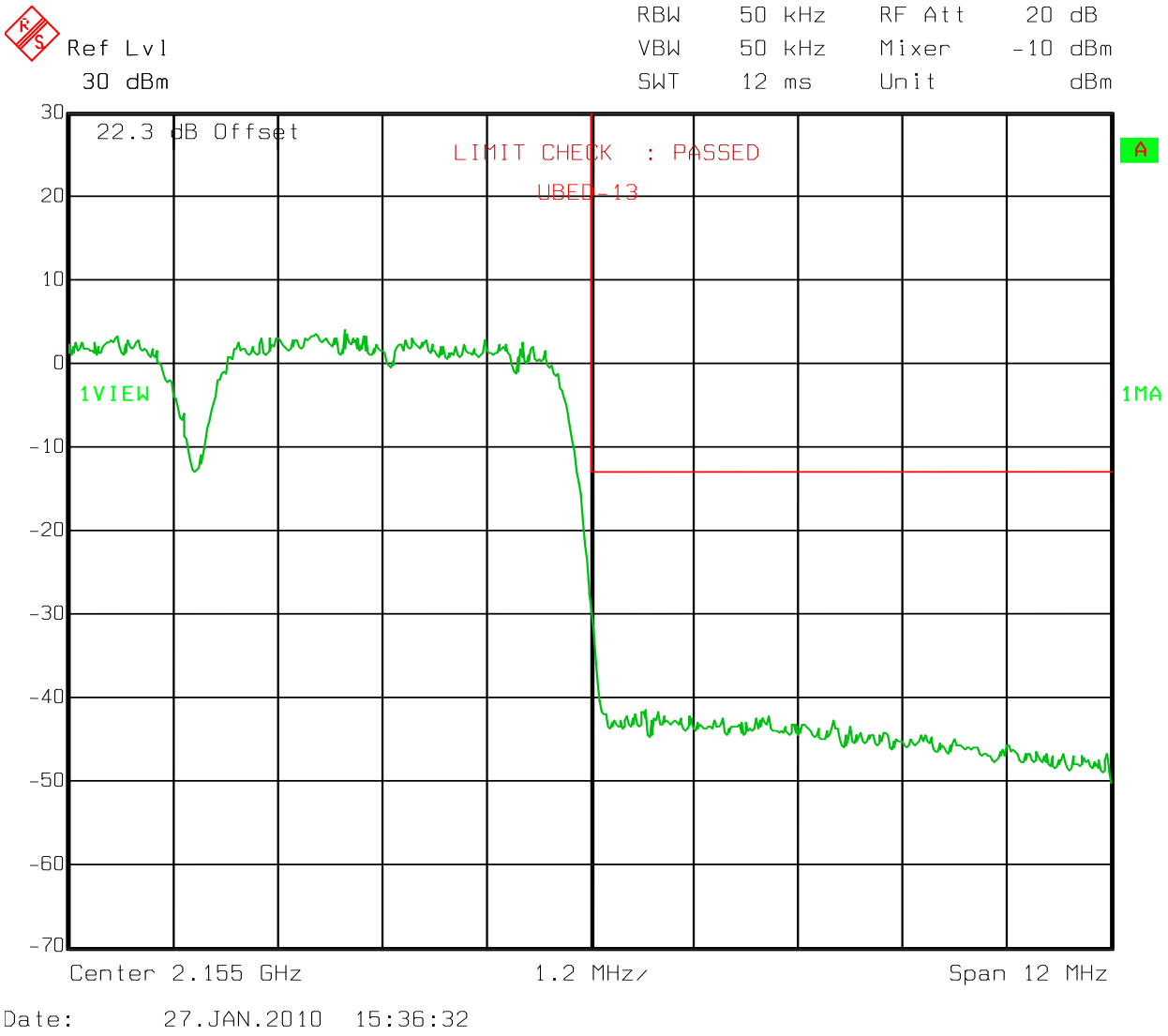
Test Data – Spurious Emissions at Antenna Terminals

WCDMA/UMTS
LOW BANDEDGE
Downlink



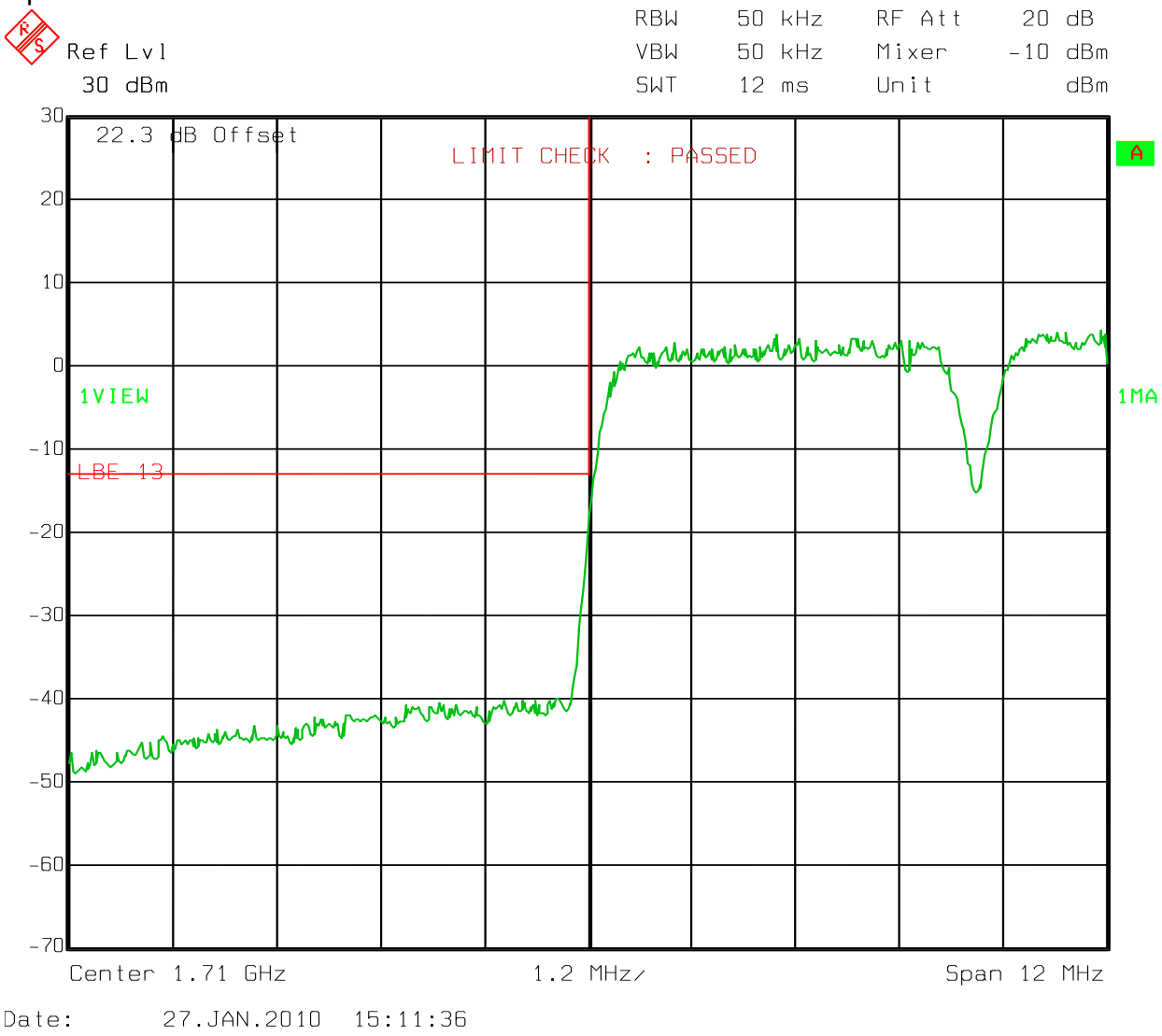
Test Data – Spurious Emissions at Antenna Terminals

WCDMA/UMTS
HIGH BAND EDGE
Downlink



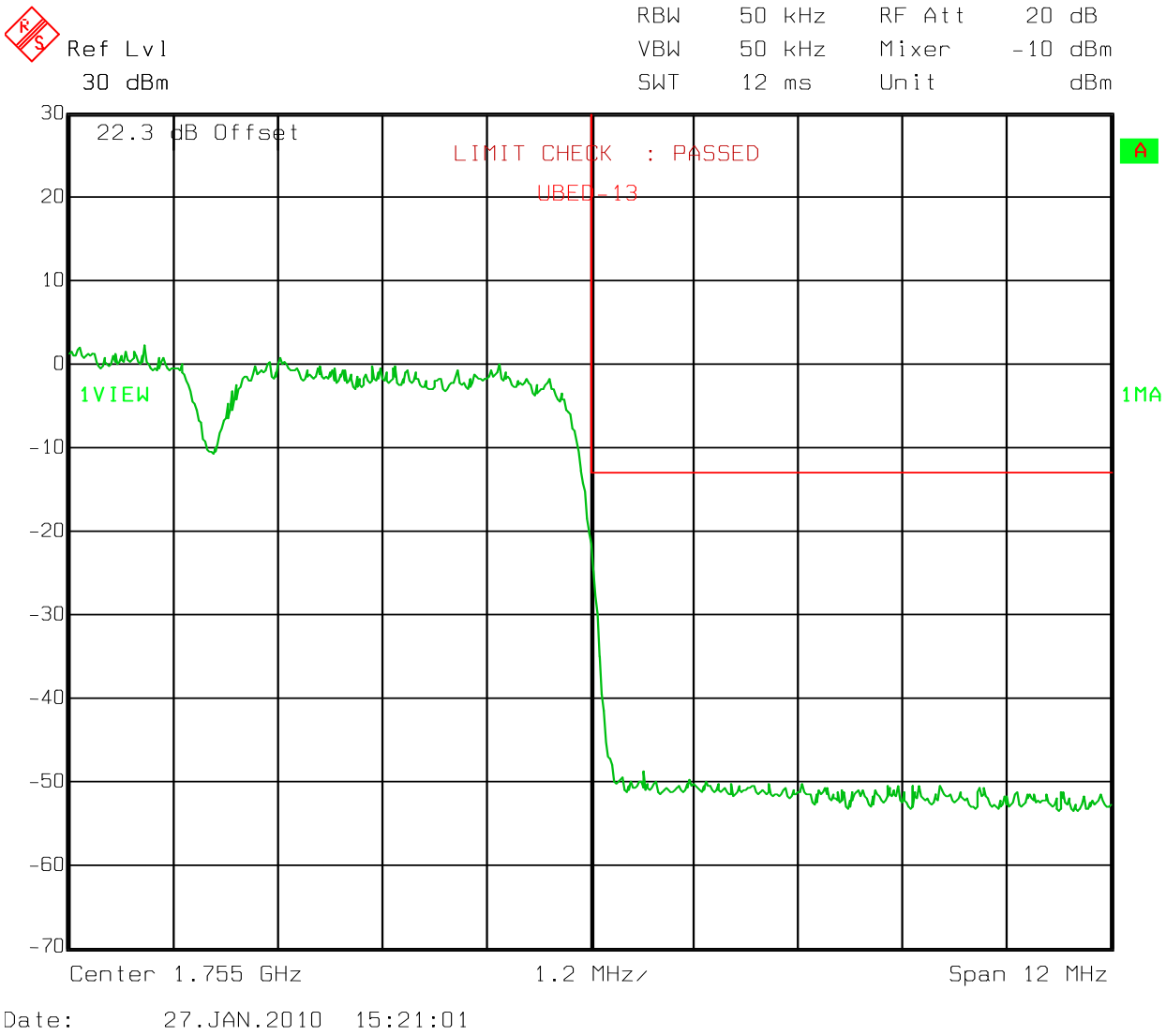
Test Data – Spurious Emissions at Antenna Terminals

WCDMA/UMTS
LOW BANDEDGE
Uplink



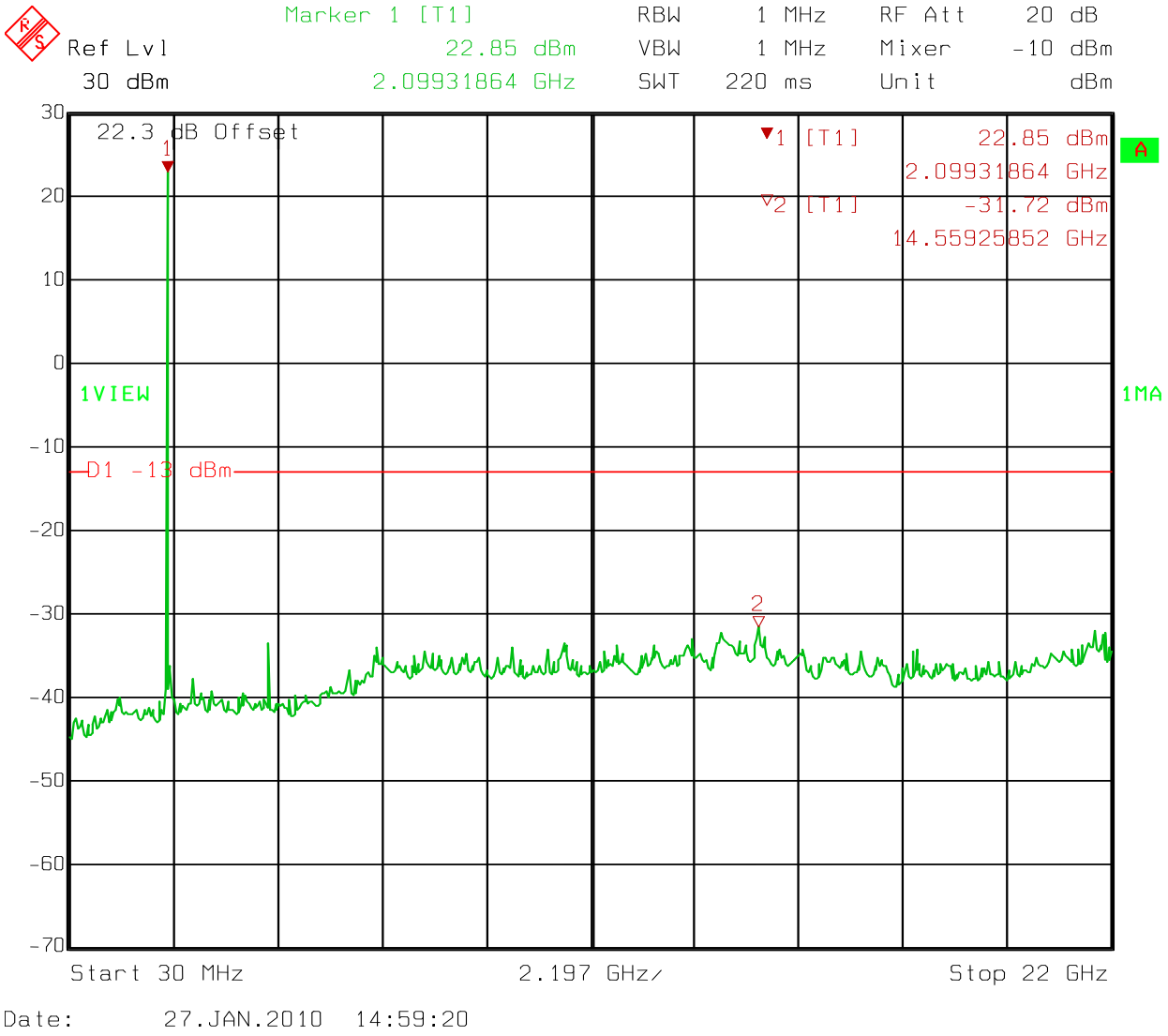
Test Data – Spurious Emissions at Antenna Terminals

WCDMA/UMTS
HIGH BAND EDGE
Uplink



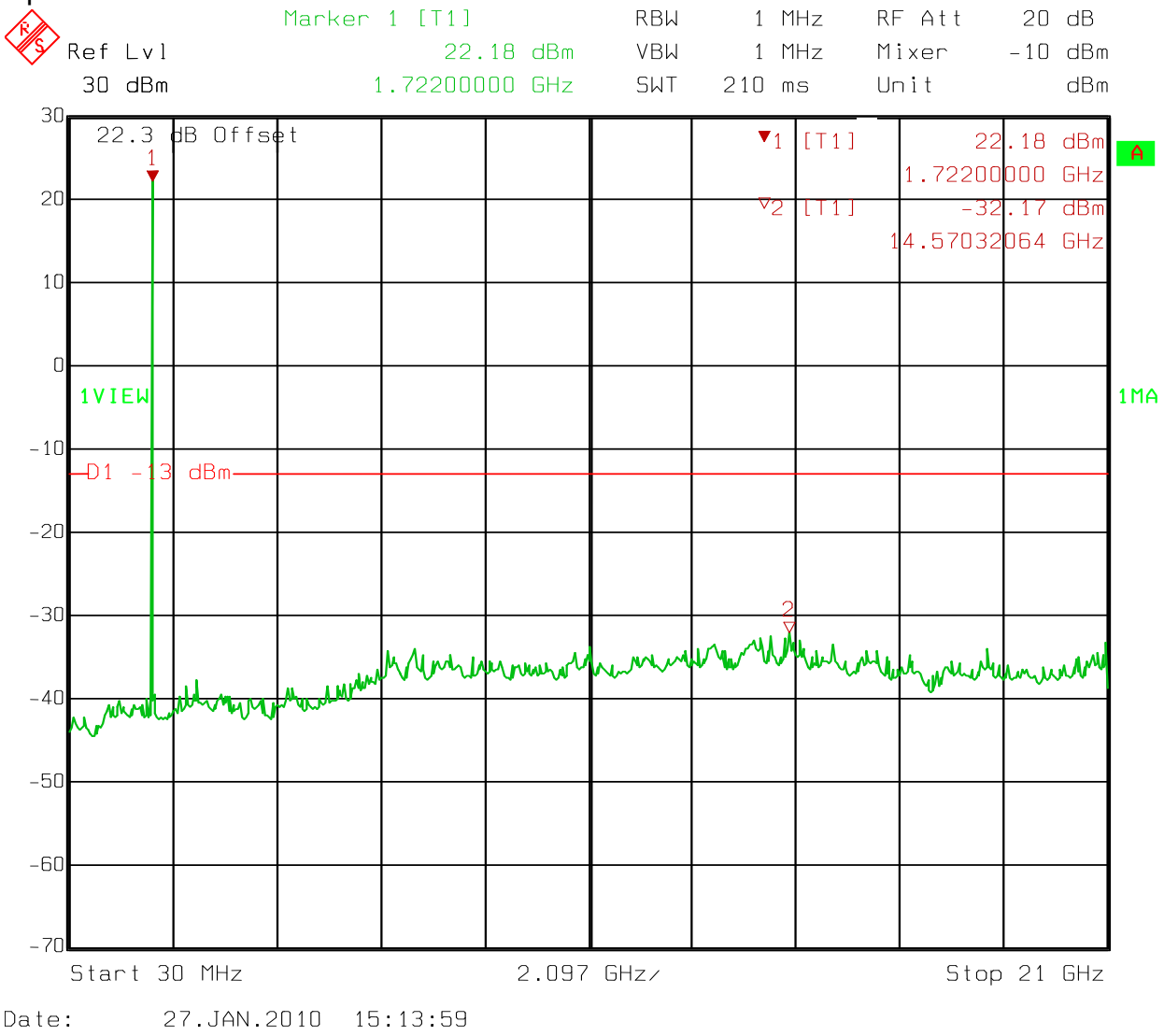
Test Data – Spurious Emissions at Antenna Terminals

CDMA/EV-DO
SPURS
Downlink



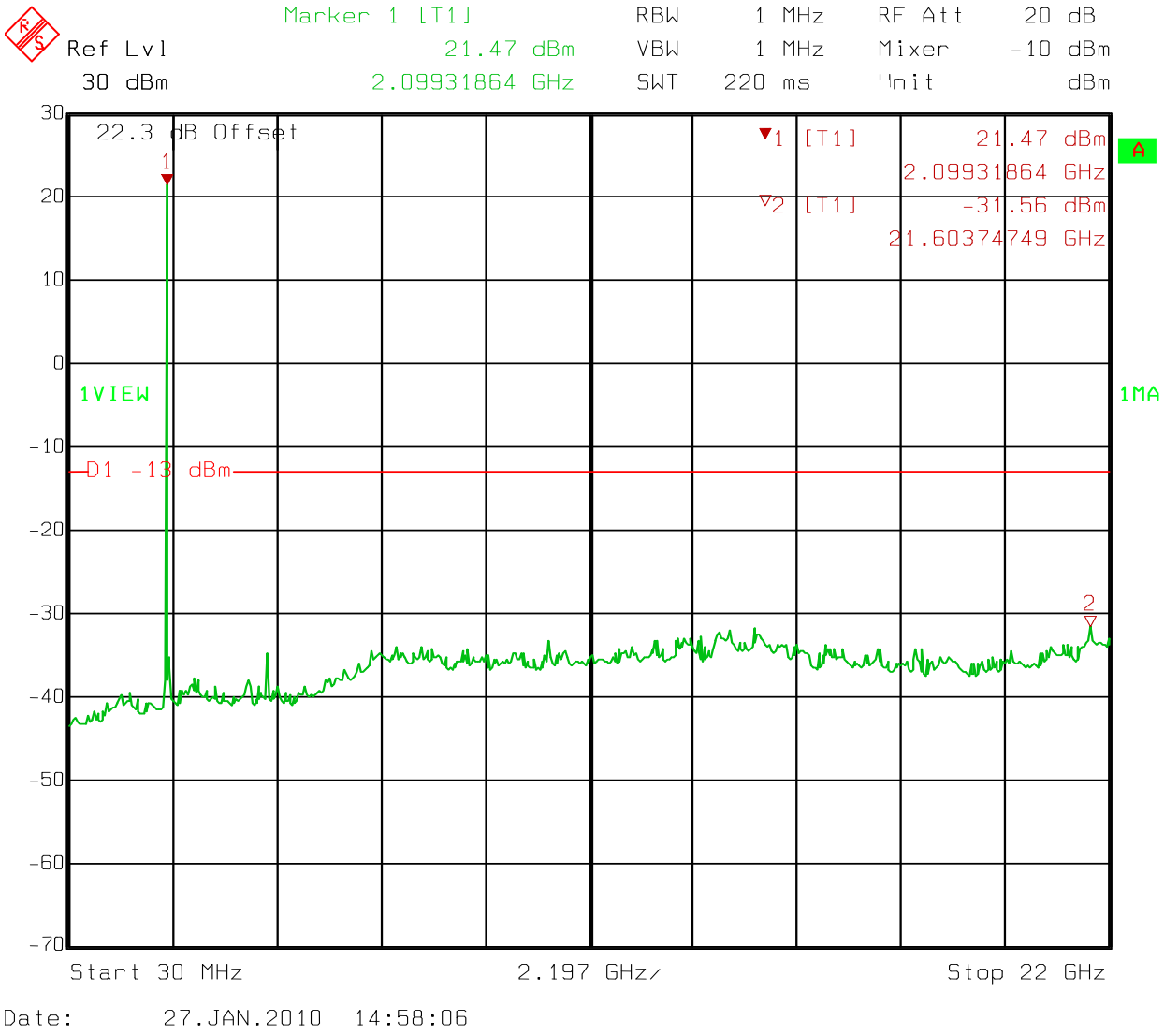
Test Data – Spurious Emissions at Antenna Terminals

CDMA/EV-DO
SPURS
Uplink



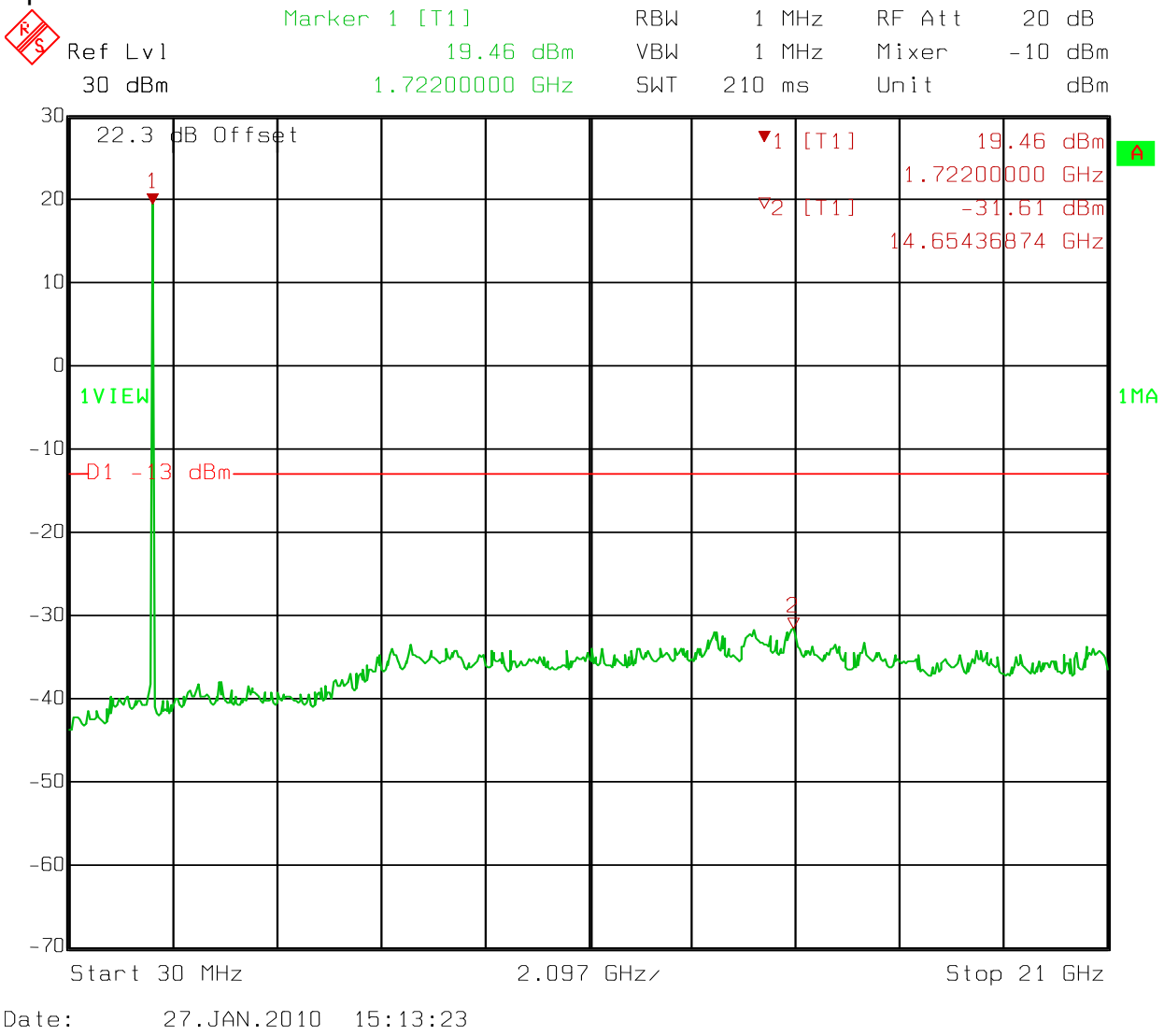
Test Data – Spurious Emissions at Antenna Terminals

WCDMA/UMTS
SPURS
Downlink



Test Data – Spurious Emissions at Antenna Terminals

WCDMA/UMTS
SPURS
Uplink



Section 5. Test Equipment List

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

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= 50 kHz
Span: 10 MHz
Sweep: Auto

NAME OF TEST: Spurious Emission at Antenna Terminals PARA. NO.: 27.53

Minimum Standard: Para. No.27.53(g) For operations in the 1710-1755 MHz and 2110-2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10 (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

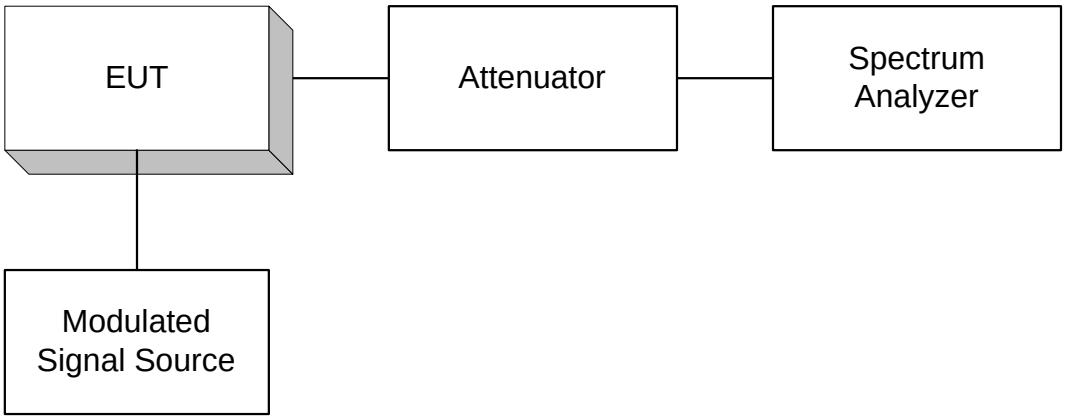
W-CDMA

RBW: 1 MHz (> 1 MHz from Band Edge)
RBW: 50 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