

Nemko Test Report: 24845RUS1

Applicant: Andrew Corporation
620 N. Greenfield Parkway
Garner, NC 27529
USA

**Equipment Under Test:
(E.U.T.)** MR8518

In Accordance With: **CFR 47, Part 22, Subpart H**
Cellular Band Repeaters

Tested By: Nemko USA Inc.
802 N. Kealy
Lewisville, TX
75057-3136

TESTED BY:

A handwritten signature in black ink, appearing to read 'David Light'.

David Light, Senior Wireless Engineer

DATE: 29 January, 2009

APPROVED BY:

A handwritten signature in black ink, appearing to read 'Tom Tidwell'.

Tom Tidwell, Telecom Direct

DATE: 4 February, 2009

Number of Pages: 77

Table of Contents

SECTION 1. SUMMARY OF TEST RESULTS	3
SECTION 2. GENERAL EQUIPMENT SPECIFICATION	5
SECTION 3. RF POWER OUTPUT	7
SECTION 4. OCCUPIED BANDWIDTH	8
SECTION 5. SPURIOUS EMISSIONS AT ANTENNA TERMINALS	33
SECTION 6. FIELD STRENGTH OF SPURIOUS	64
SECTION 7. TEST EQUIPMENT LIST	65
ANNEX A - TEST DETAILS	66
ANNEX B - TEST DIAGRAMS	72

EQUIPMENT: **MR8518**PROJECT NO.: 24845RUS1

Section 1. Summary of Test Results

Manufacturer: Andrew Corporation

Model No.: MR8018

Serial No.: 7564434

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 22, Subpart H.



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".



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EQUIPMENT: **MR8518**PROJECT NO.: 24845RUS1

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	22.913(a)	500W ERP	Complies
Occupied Bandwidth	Not defined	Input/Output	Complies
Spurious Emissions at Antenna Terminals	22.917	-13 dBm	Complies
Field Strength of Spurious Emissions	22.917	-13 dBm E.I.R.P.	Complies
Frequency Stability	22.355	1.5 ppm	NA

Footnotes: Frequency stability is not applicable because the device uses a common oscillator to down-convert and up-convert the rf signal.

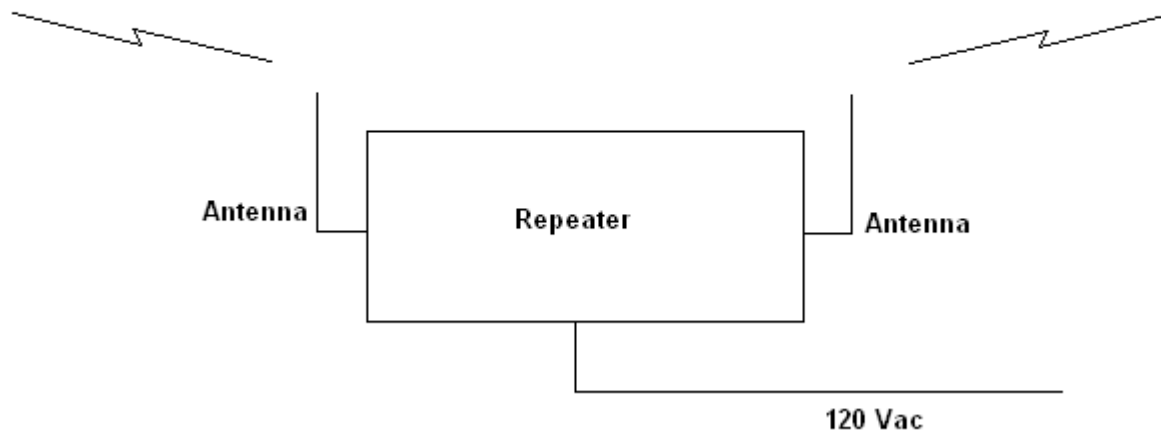
Section 2. General Equipment Specification

Supply Voltage Input:		120 Vac		
Frequency Range:	Downlink:	869 to 894 MHz		
Frequency Range:	Uplink:	824 to 849 MHz		
Type of Modulation and Designator:	CDMA (F9W)	GSM (GXW)	TDMA (DXW)	EDGE (G7W)
	☒	☒	☒	☒
Output Impedance:	50 ohms			
RF Output (Rated):	Downlink:	0.158 W 22 dBm		
	Uplink:	0.158 W 22 dBm		
Frequency Translation:	F1-F1	F1-F2	N/A	
	☒	☐	☐	
Band Selection:	Software	Duplexer Change	Fullband Coverage	
	☒	☐	☐	

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.

System Diagram



EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 22.913
TESTED BY: David Light	DATE: 30 January 2009

Test Results: Complies.**Test Data:**

Direction	Modulation	Output per Channel (dBm)	Composite Power (dBm)	Composite Power (W)
Uplink	CDMA	19	22	0.158
Downlink	CDMA	19	22	0.158
Uplink	TDMA	19	22	0.158
Downlink	TDMA	19	22	0.158
Uplink	EDGE	19	22	0.158
Downlink	EDGE	19	22	0.158
Uplink	GSM	19	22	0.158
Downlink	GSM	19	22	0.158
Uplink	W-CDMA	19	22	0.158
Downlink	W-CDMA	19	22	0.158
Uplink	Analog	19	22	0.158
Downlink	Analog	19	22	0.158

Equipment Used: 1659-1082-1472**Measurement Uncertainty:** +/- 1.7 dB**Temperature:** 22 °C**Relative Humidity:** 30 %

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 30 January 2009

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1659-1082-1472

Measurement Uncertainty: 1X10⁻⁷ ppm

Temperature: 22 °C

Relative Humidity: 30 %

EQUIPMENT: **MR8518**

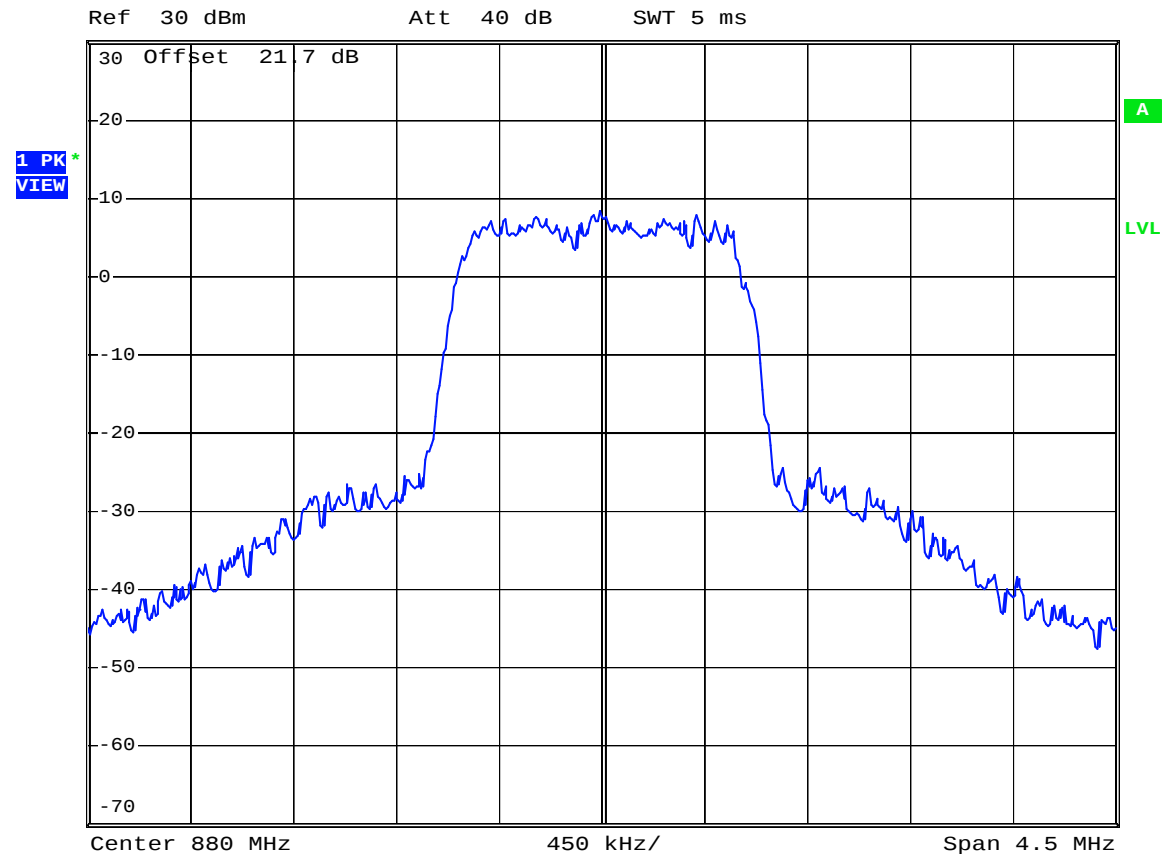
PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

CDMA - Output
Downlink



* RBW 30 kHz
VBW 100 kHz
SWT 5 ms



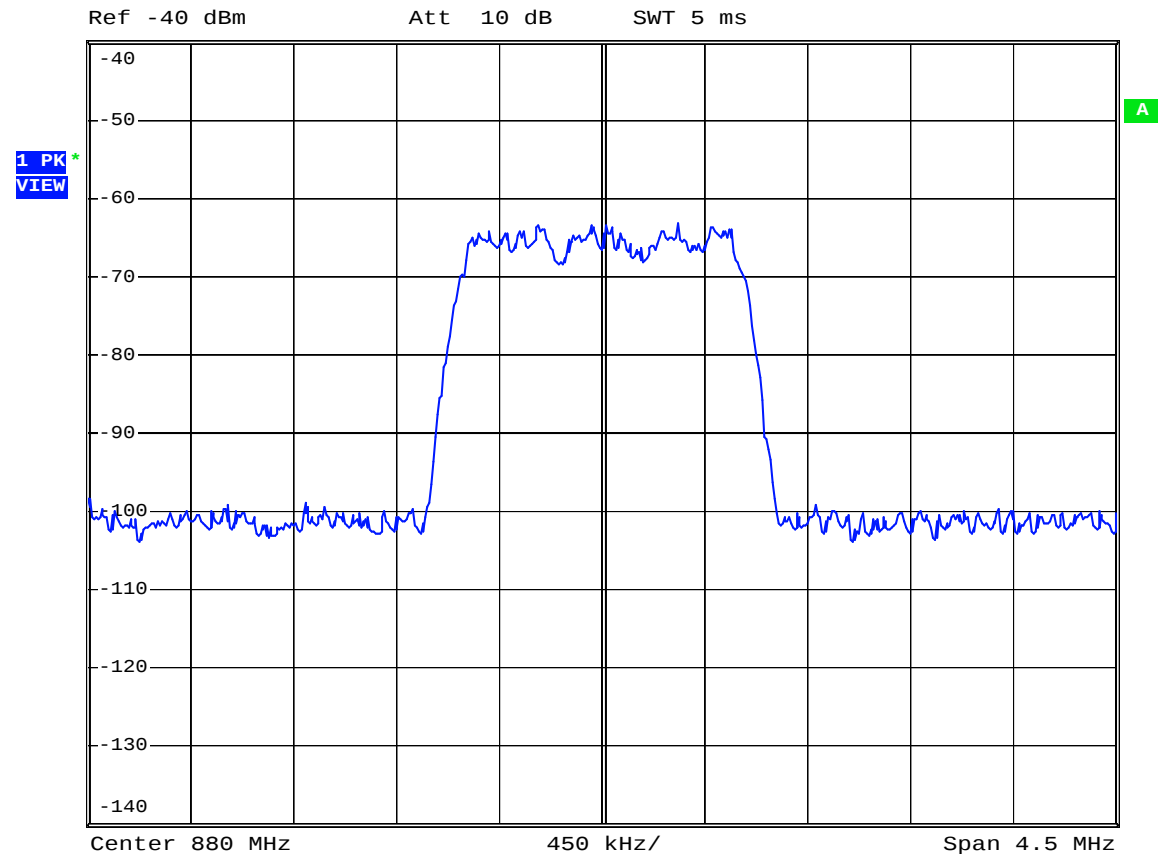
Date: 29.JAN.2009 15:28:03

Test Data – Occupied Bandwidth

CDMA - Input
Downlink



* RBW 30 kHz
VBW 100 kHz
SWT 5 ms



Date: 29.JAN.2009 15:38:22

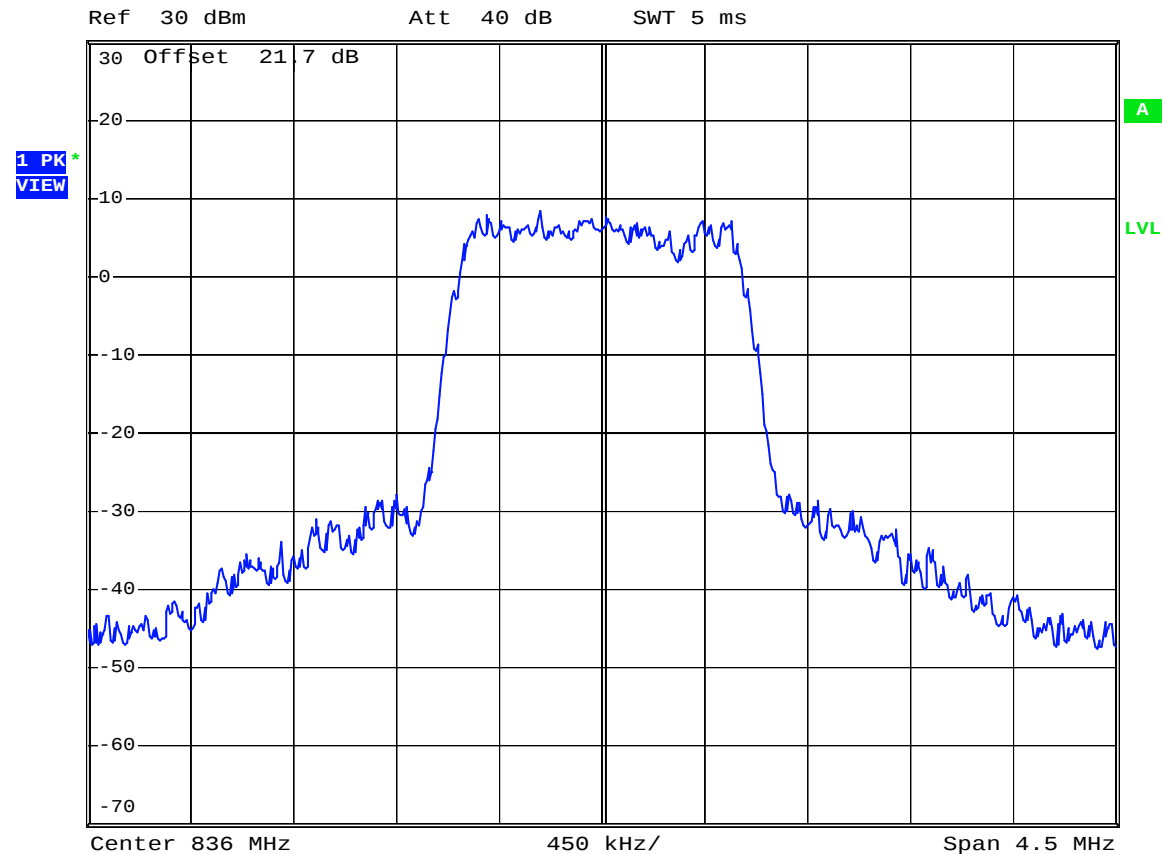
Test Data – Occupied Bandwidth

CDMA - Output

Uplink



* RBW 30 kHz
VBW 100 kHz
SWT 5 ms



Date: 30.JAN.2009 09:25:33

Test Data – Occupied Bandwidth

CDMA - Input
Uplink

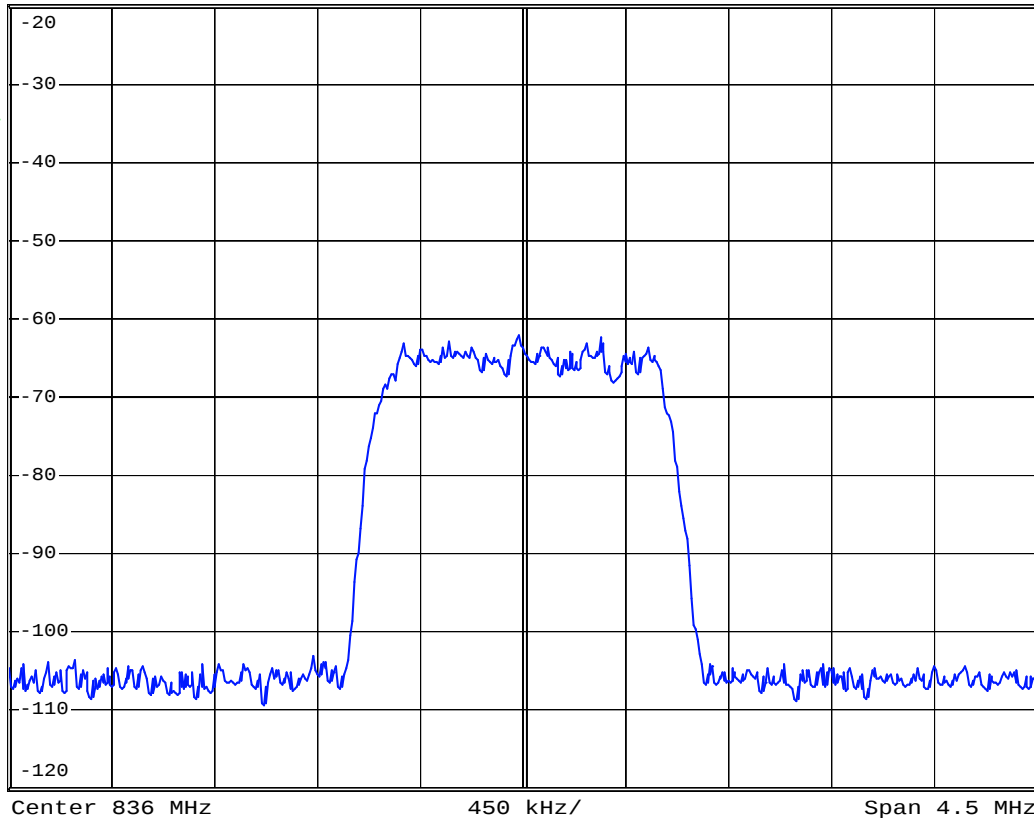


* RBW 30 kHz
VBW 100 kHz
SWT 5 ms

Ref -20 dBm

* Att 0 dB

1 PK
VIEW



Date: 30.JAN.2009 10:01:03

EQUIPMENT: **MR8518**

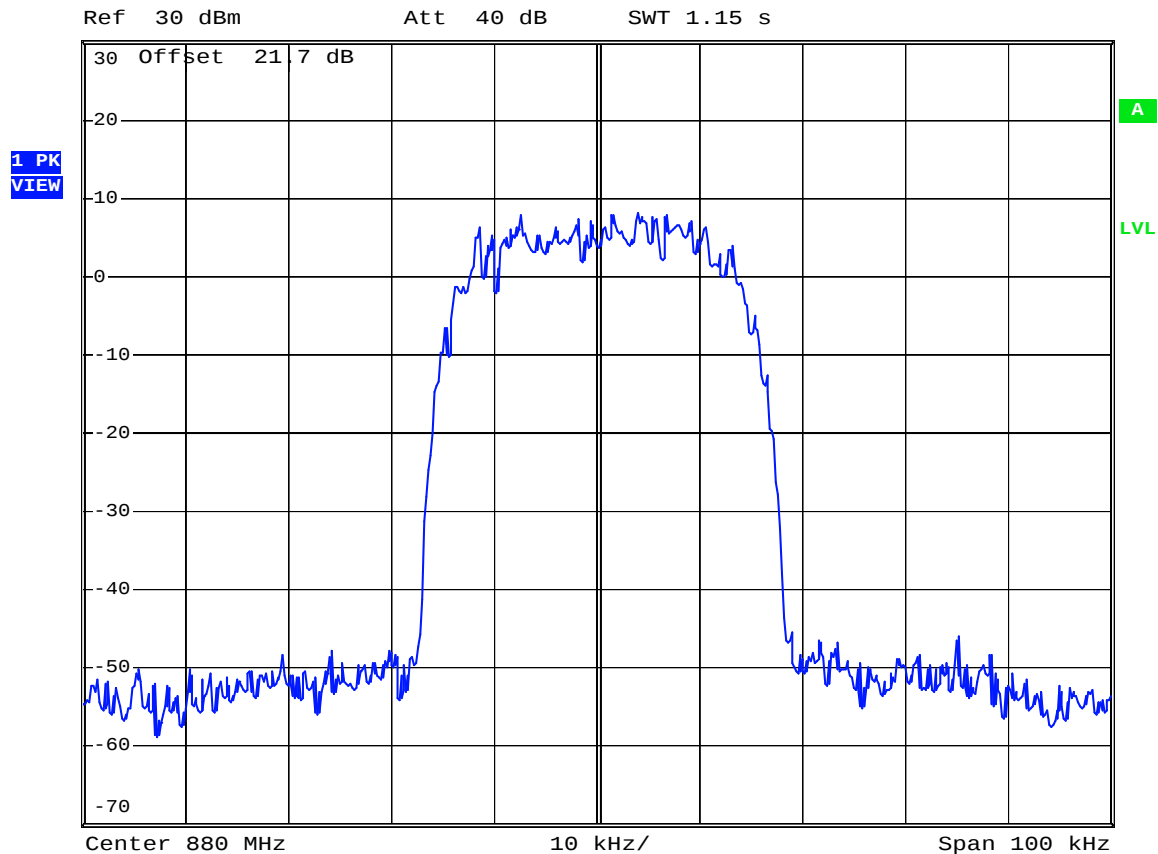
PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

TDMA - Output
Downlink



* RBW 300 Hz
VBW 1 kHz
SWT 1.15 s



Date: 29.JAN.2009 14:45:54

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

TDMA - Input
Downlink



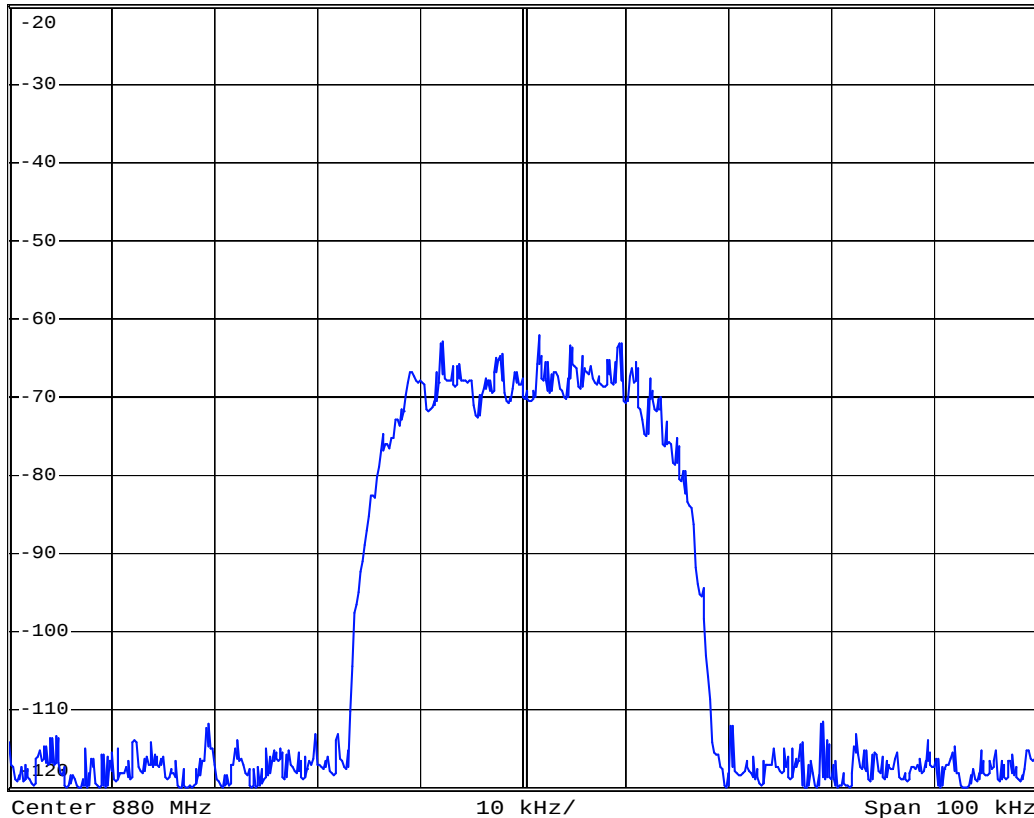
* RBW 300 Hz
VBW 1 kHz
SWT 1.15 s

Ref -20 dBm

Att 10 dB

SWT 1.15 s

1 PK
VIEW



Date: 29.JAN.2009 15:34:57

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

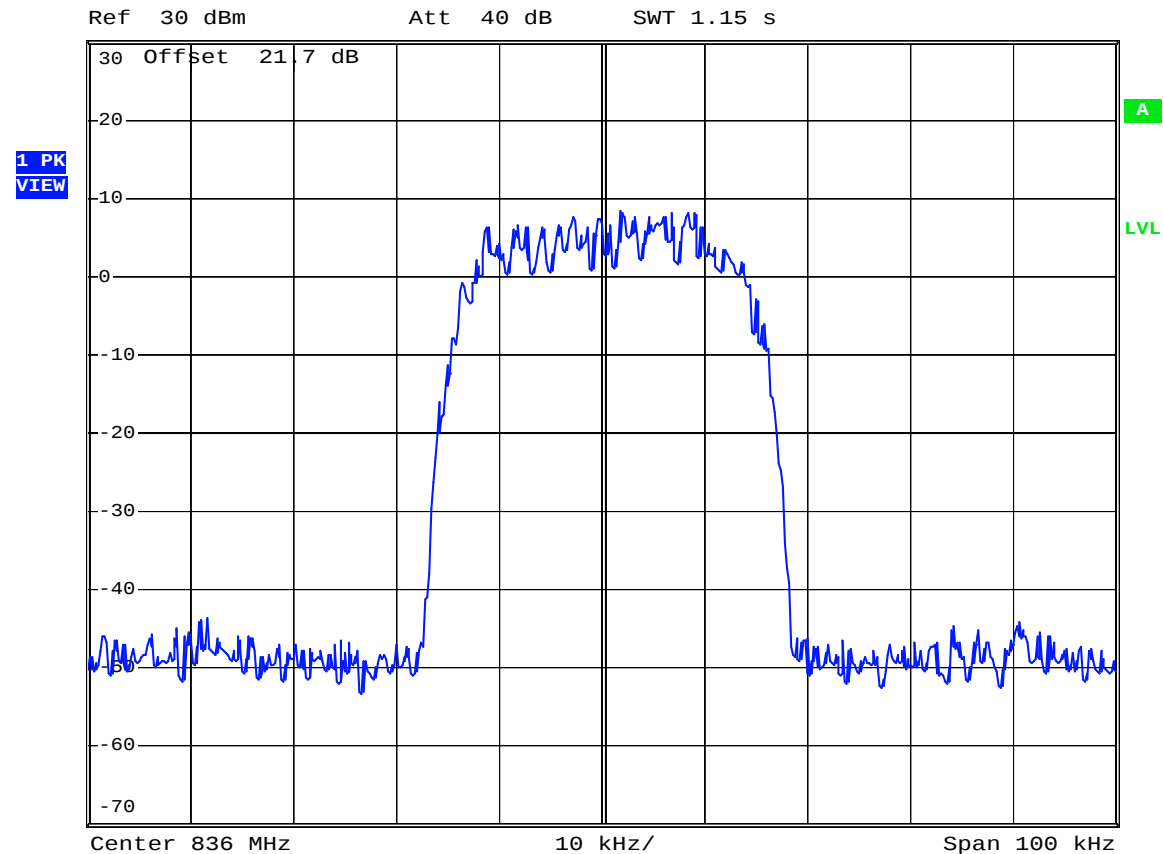
Test Data – Occupied Bandwidth

TDMA - Output

Uplink



* RBW 300 Hz
VBW 1 kHz
SWT 1.15 s



Date: 30.JAN.2009 09:17:44

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

TDMA - Input

Uplink

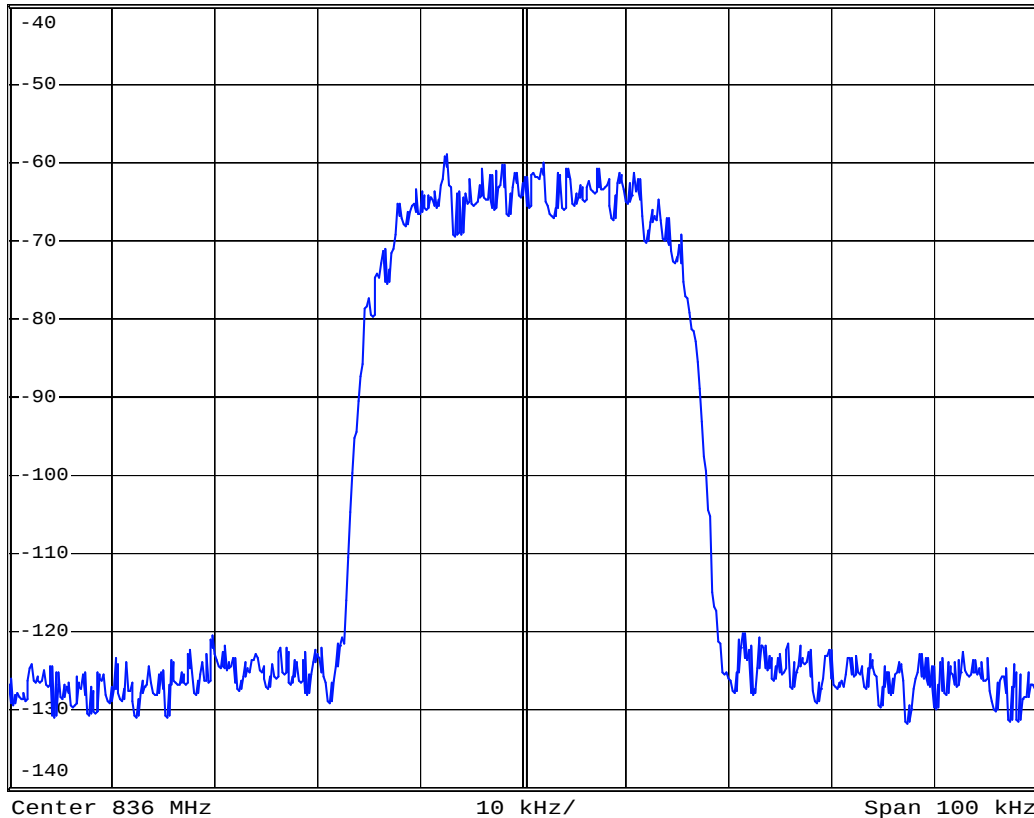


* RBW 300 Hz
VBW 1 kHz
SWT 1.15 s

Ref -40 dBm

* Att 0 dB

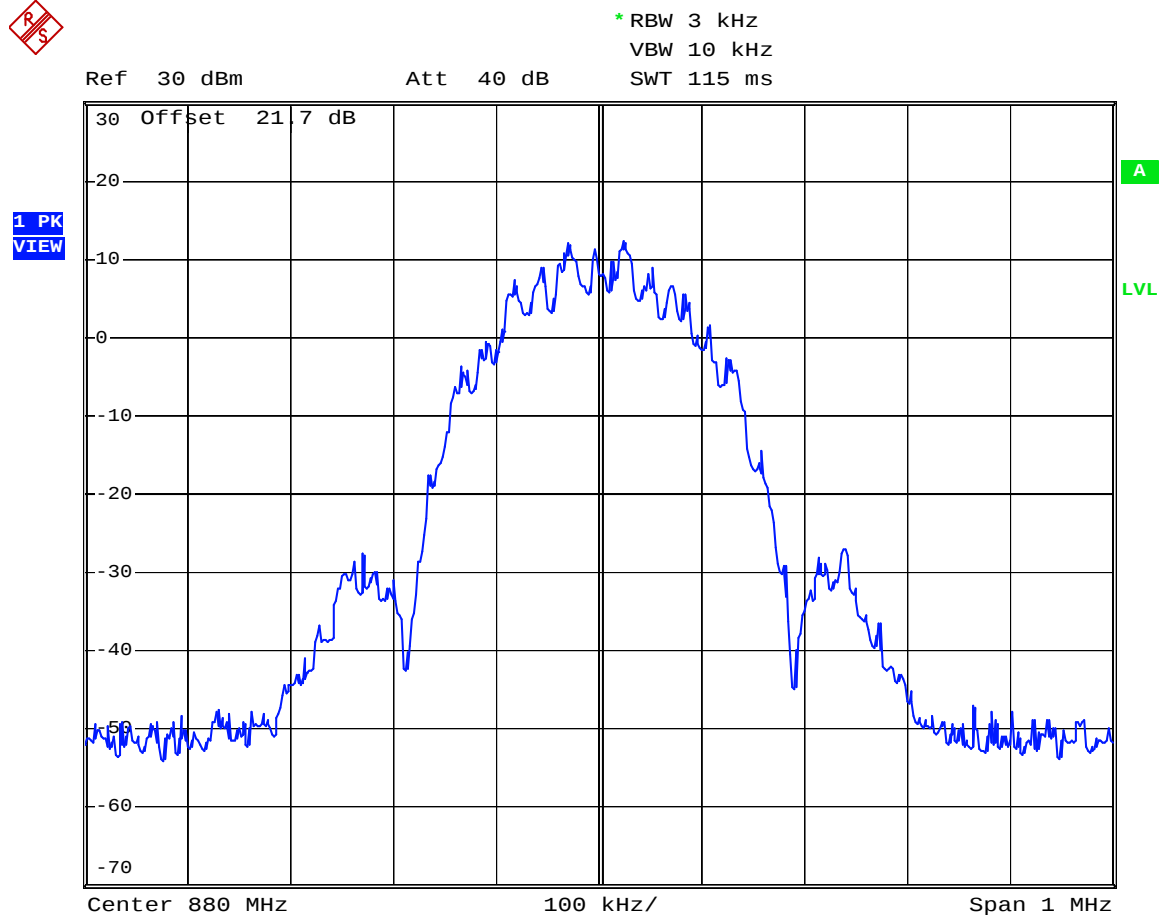
1 PK
VIEW



Date: 30.JAN.2009 10:05:25

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied BandwidthEDGE - Output
Downlink

Date: 29.JAN.2009 15:21:47

EQUIPMENT: **MR8518**

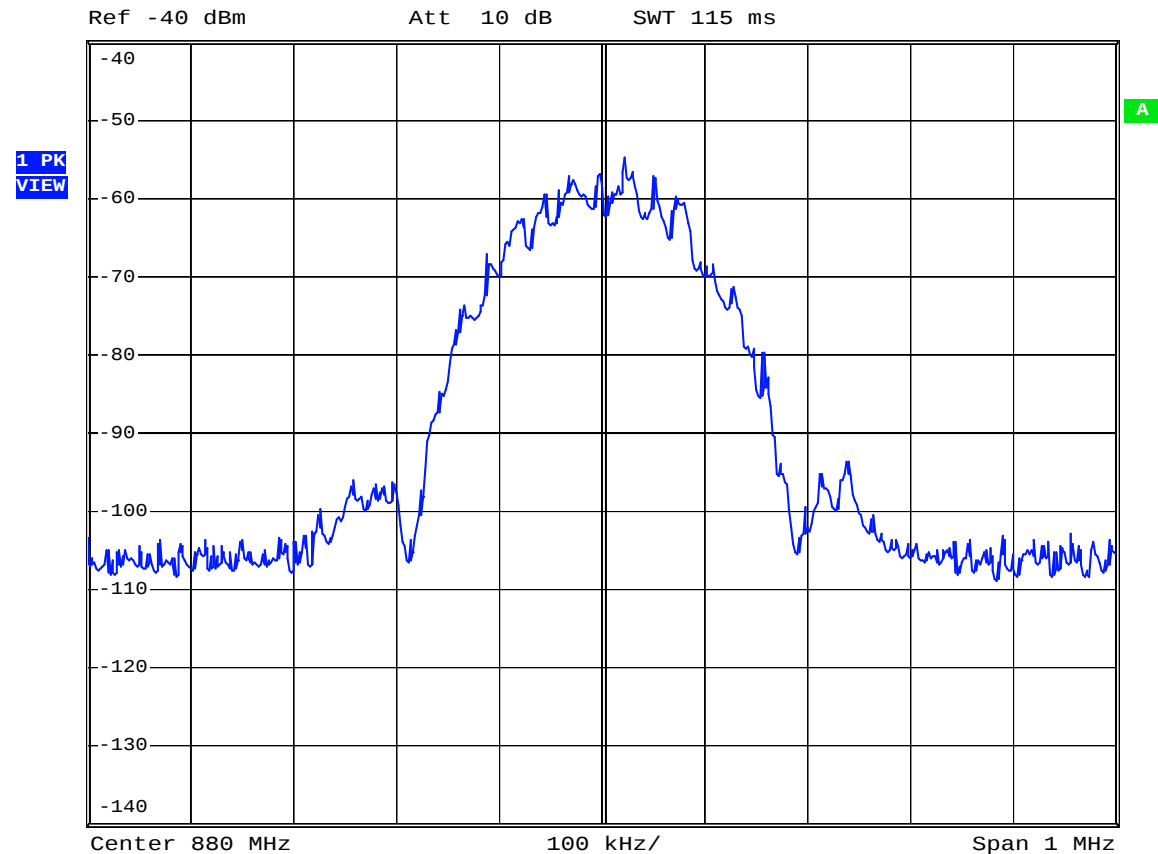
PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

EDGE - Input
Downlink



* RBW 3 kHz
VBW 10 kHz
SWT 115 ms



Date: 29.JAN.2009 15:39:40

Test Data – Occupied Bandwidth

EDGE - Output

Uplink



* RBW 3 kHz
VBW 10 kHz
SWT 115 ms



Date: 30.JAN.2009 09:50:17

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

EDGE - Input

Uplink

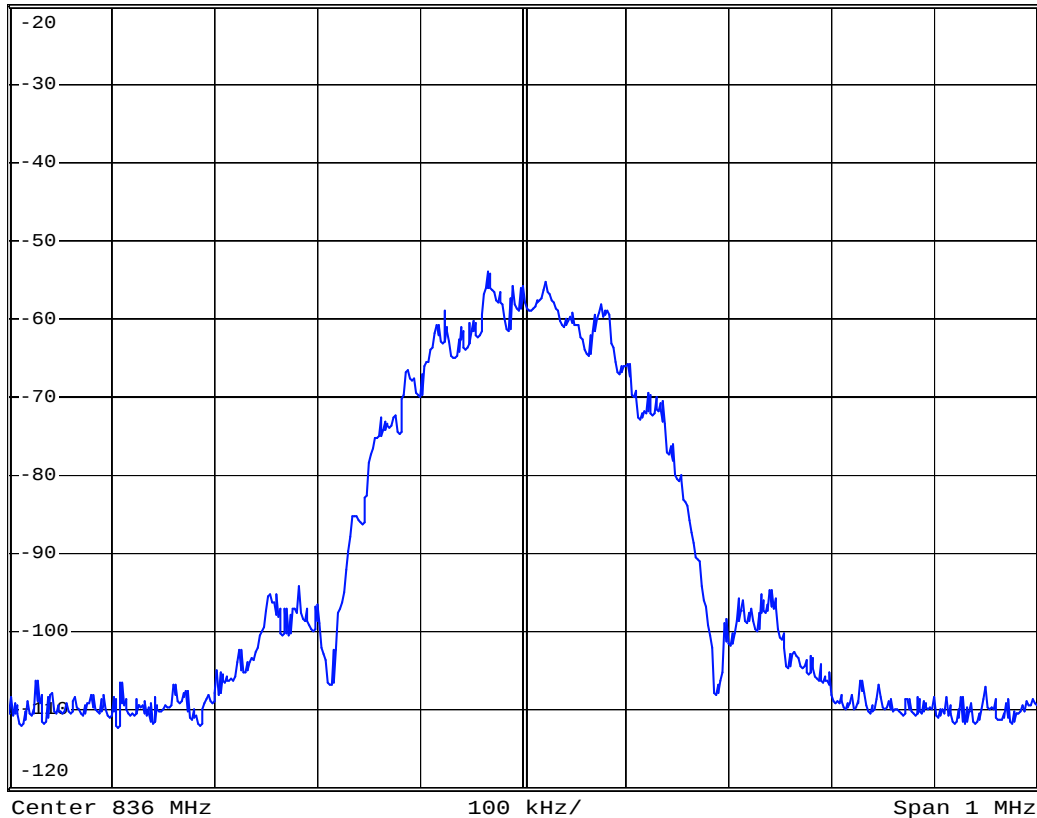


* RBW 3 kHz
VBW 10 kHz
SWT 115 ms

Ref -20 dBm

* Att 0 dB

1 PK
VIEW



Date: 30.JAN.2009 09:59:53

EQUIPMENT: **MR8518**

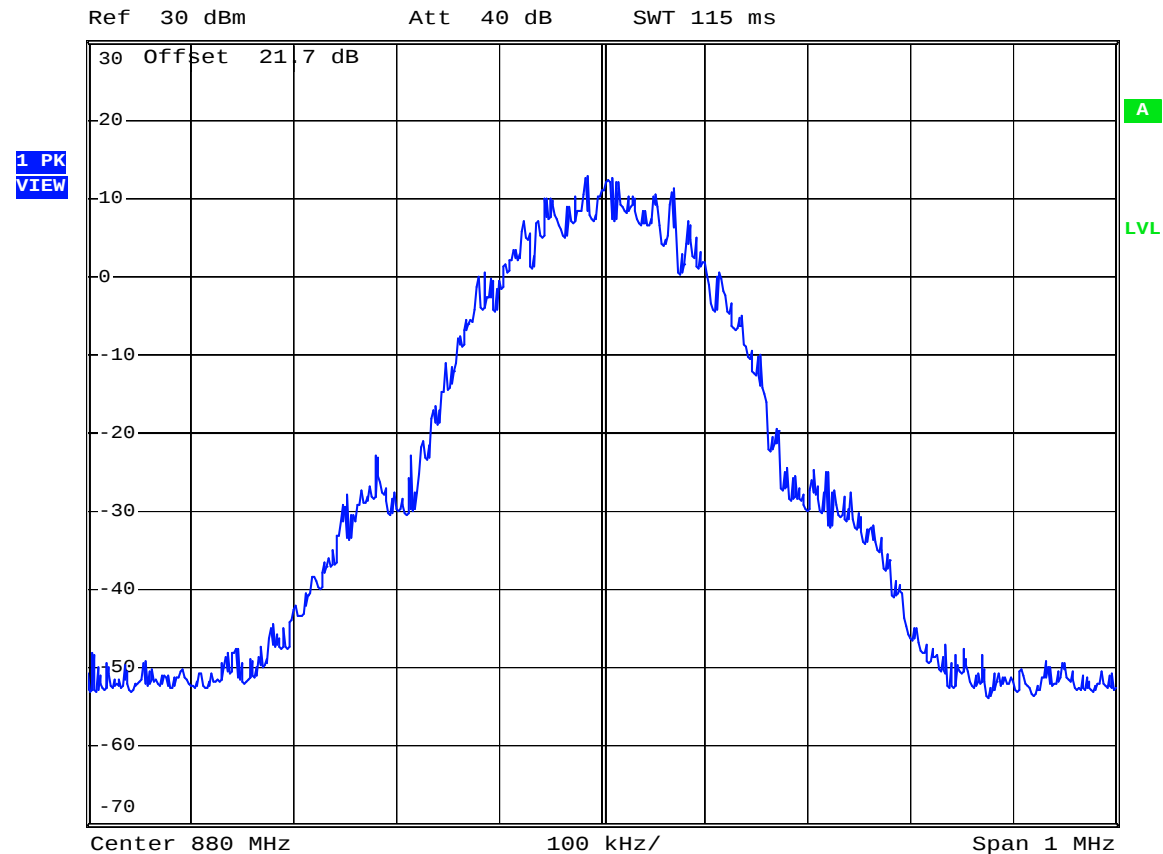
PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

GSM - Output
Downlink



* RBW 3 kHz
VBW 10 kHz
SWT 115 ms



Date: 29.JAN.2009 14:57:22

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied BandwidthGSM - Input
Downlink* RBW 3 kHz
VBW 10 kHz
SWT 115 ms

Date: 29.JAN.2009 15:37:33

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

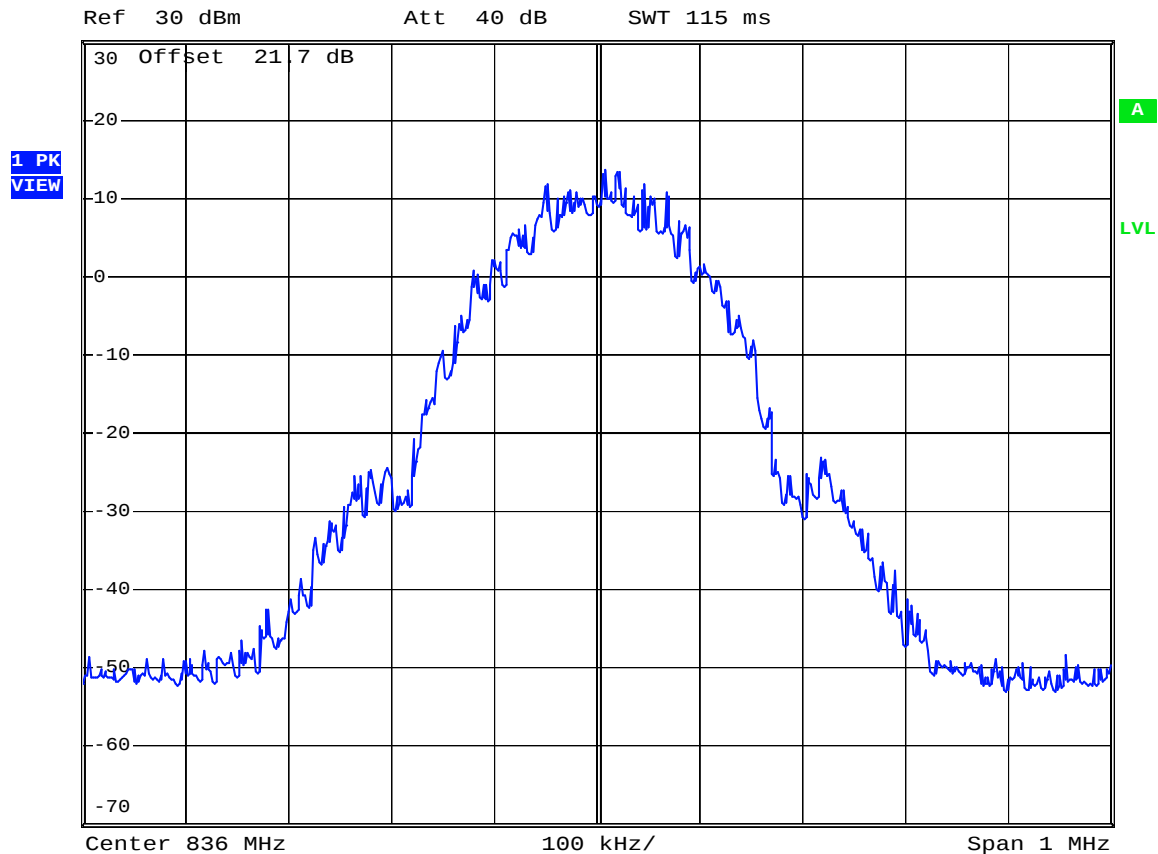
Test Data – Occupied Bandwidth

GSM - Output

Uplink



* RBW 3 kHz
VBW 10 kHz
SWT 115 ms



Date: 30.JAN.2009 09:44:23

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

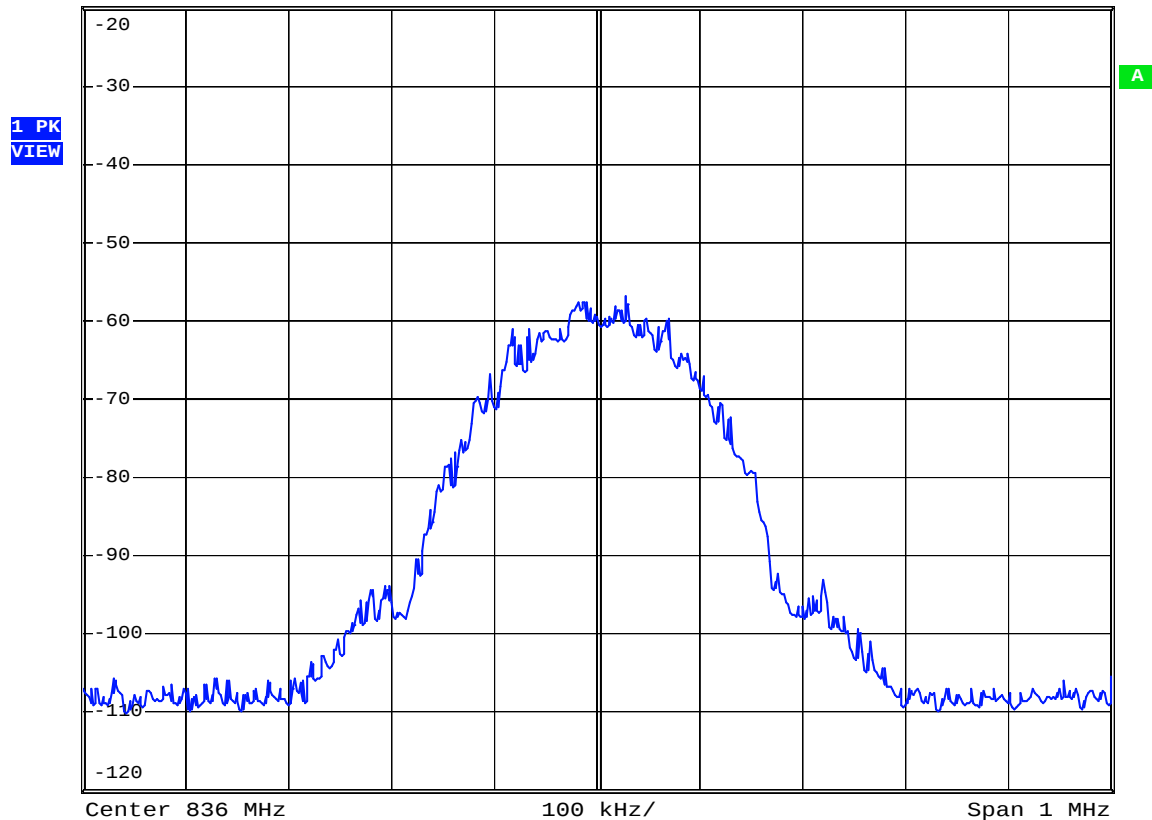
Test Data – Occupied Bandwidth

GSM - Input

Uplink



* RBW 3 kHz
VBW 10 kHz
SWT 115 ms
Ref -20 dBm
* Att 0 dB



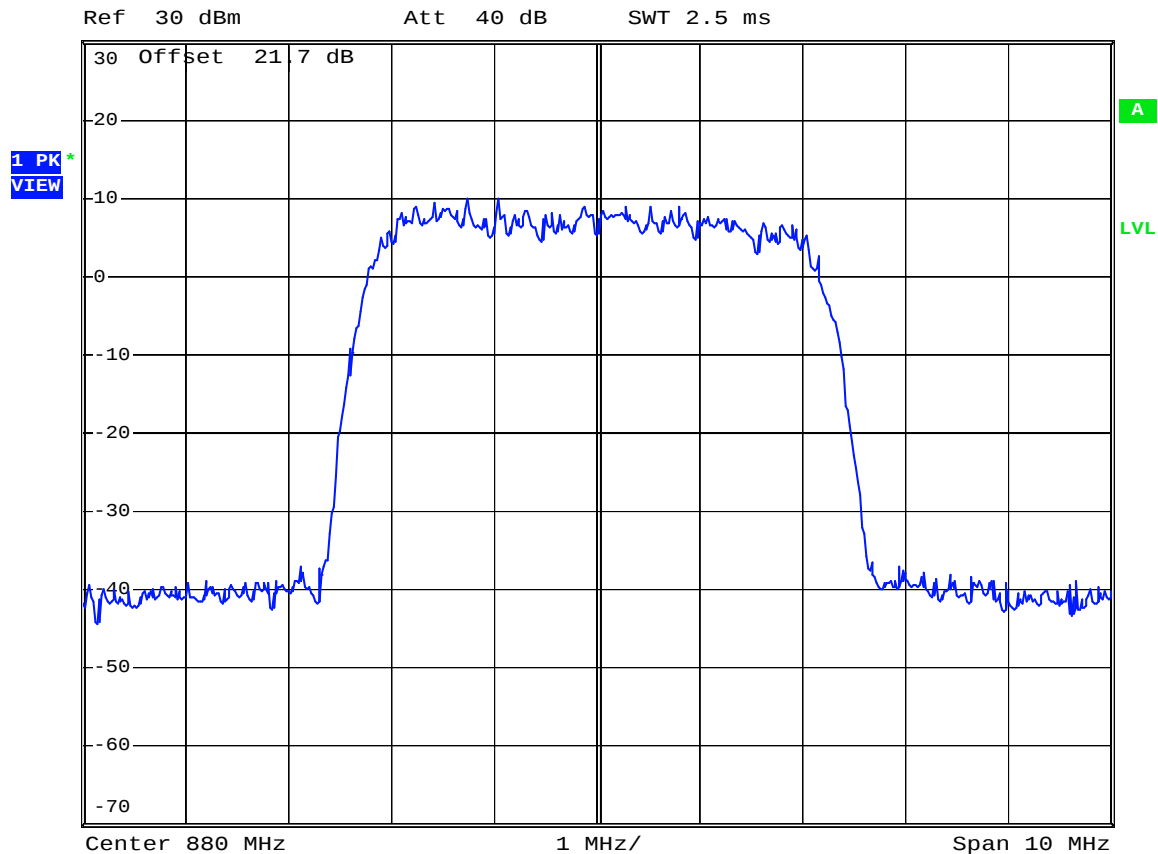
Date: 30.JAN.2009 10:02:42

Test Data – Occupied Bandwidth

WCDMA - Output
Downlink



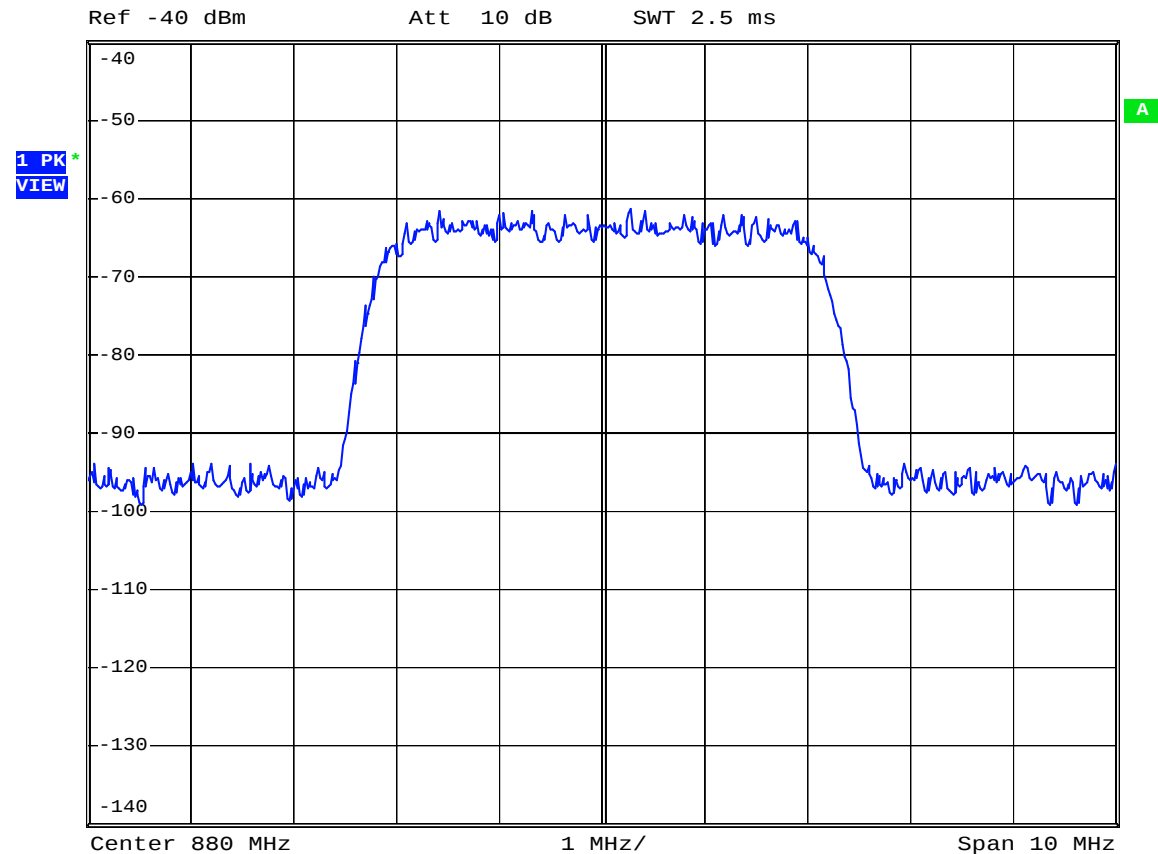
* RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms



Date: 29.JAN.2009 15:16:23

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied BandwidthWCDMA - Input
Downlink* RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms

Date: 29.JAN.2009 15:40:40

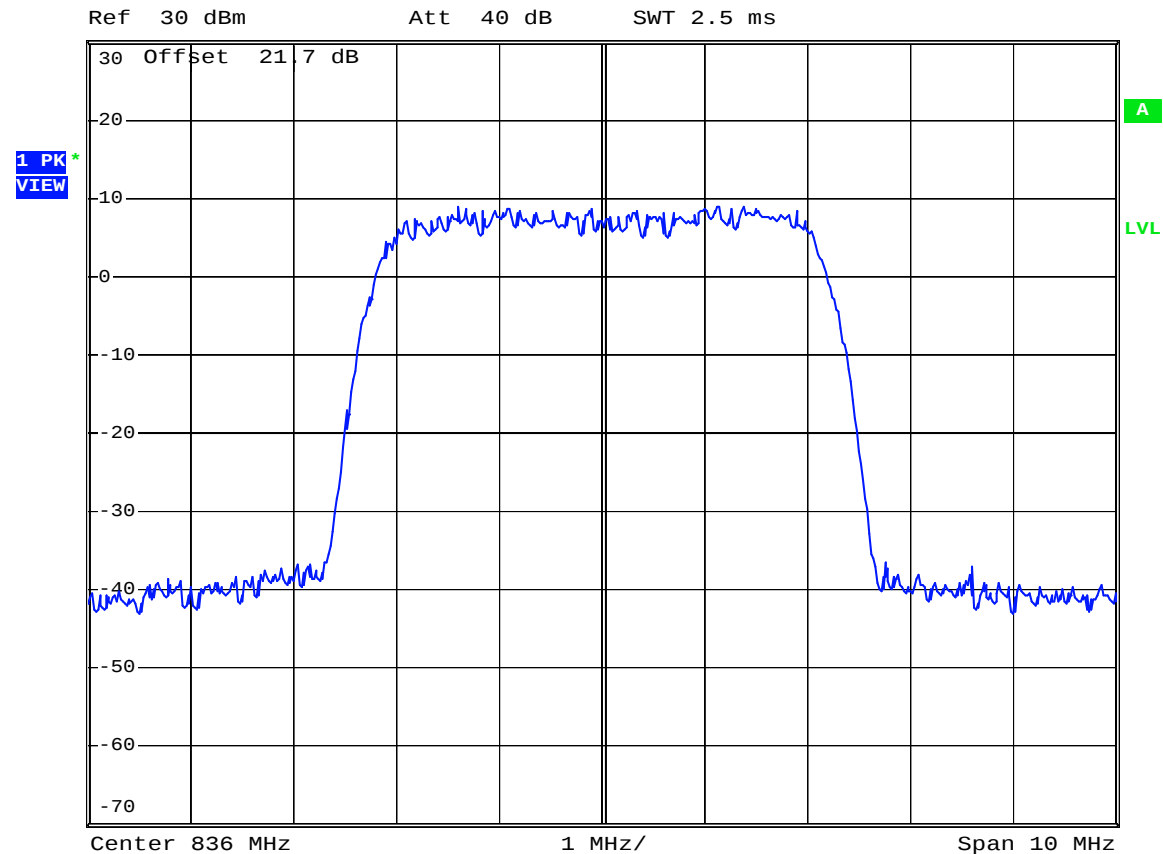
Test Data – Occupied Bandwidth

WCDMA - Output

Uplink



* RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms



Date: 30.JAN.2009 09:52:33

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

WCDMA - Input

Uplink

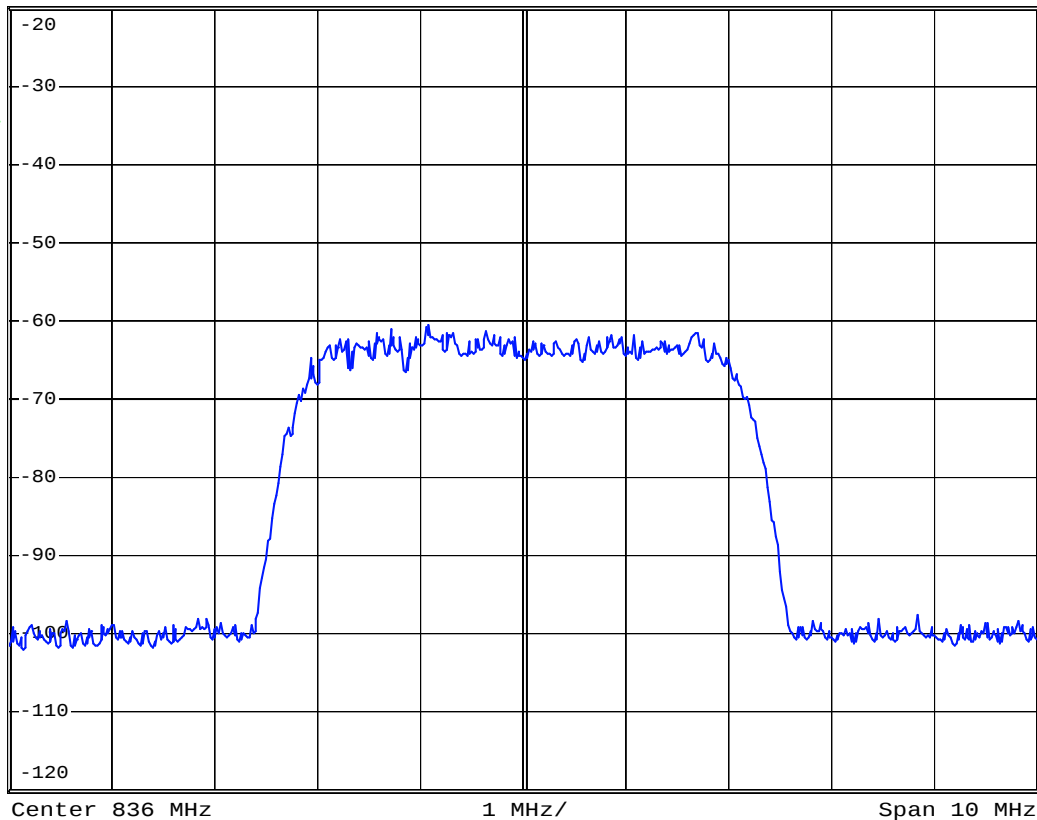


* RBW 100 kHz
VBW 300 kHz
SWT 2.5 ms

Ref -20 dBm

* Att 0 dB

1 PK *
VIEW



Date: 30.JAN.2009 09:58:54

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

Analog - Output

Downlink

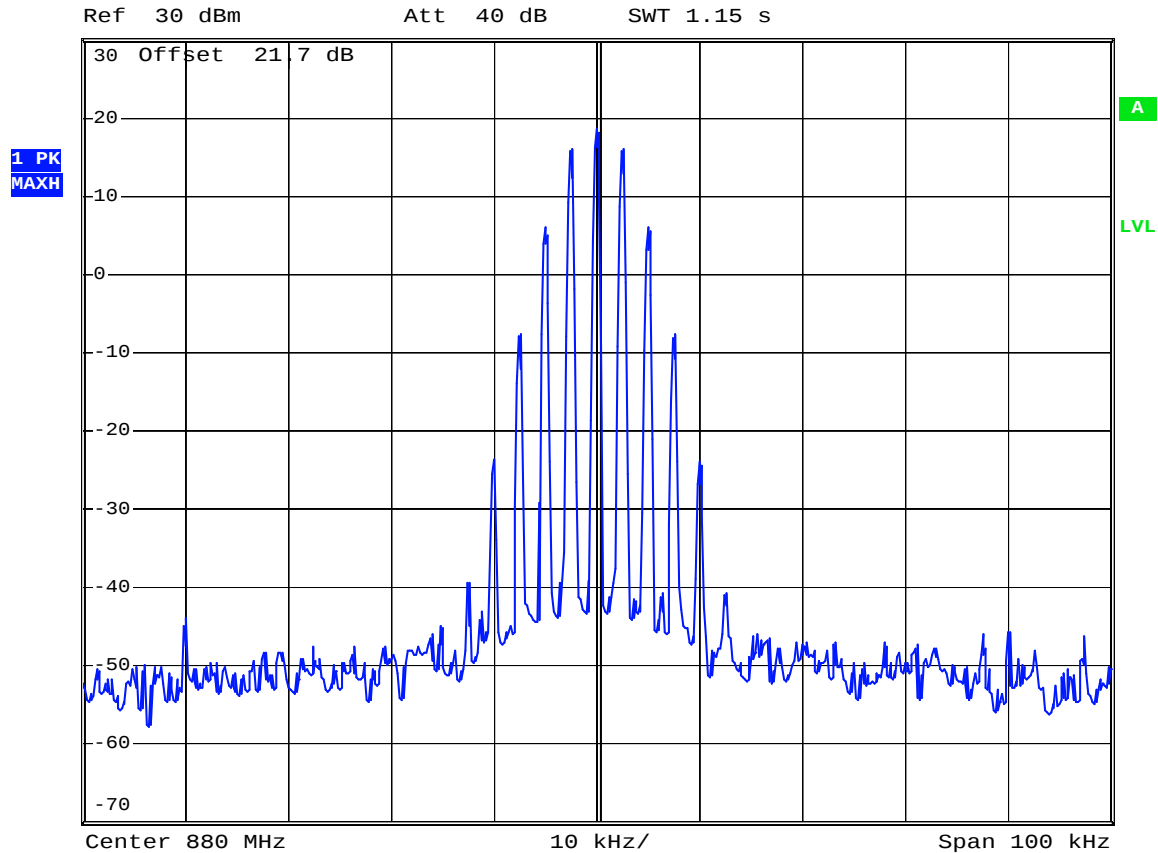
2.5 kHz Tone / 3 kHz Deviation



* RBW 300 Hz

VBW 1 kHz

SWT 1.15 s



Date: 29.JAN.2009 14:55:34

EQUIPMENT: **MR8518**

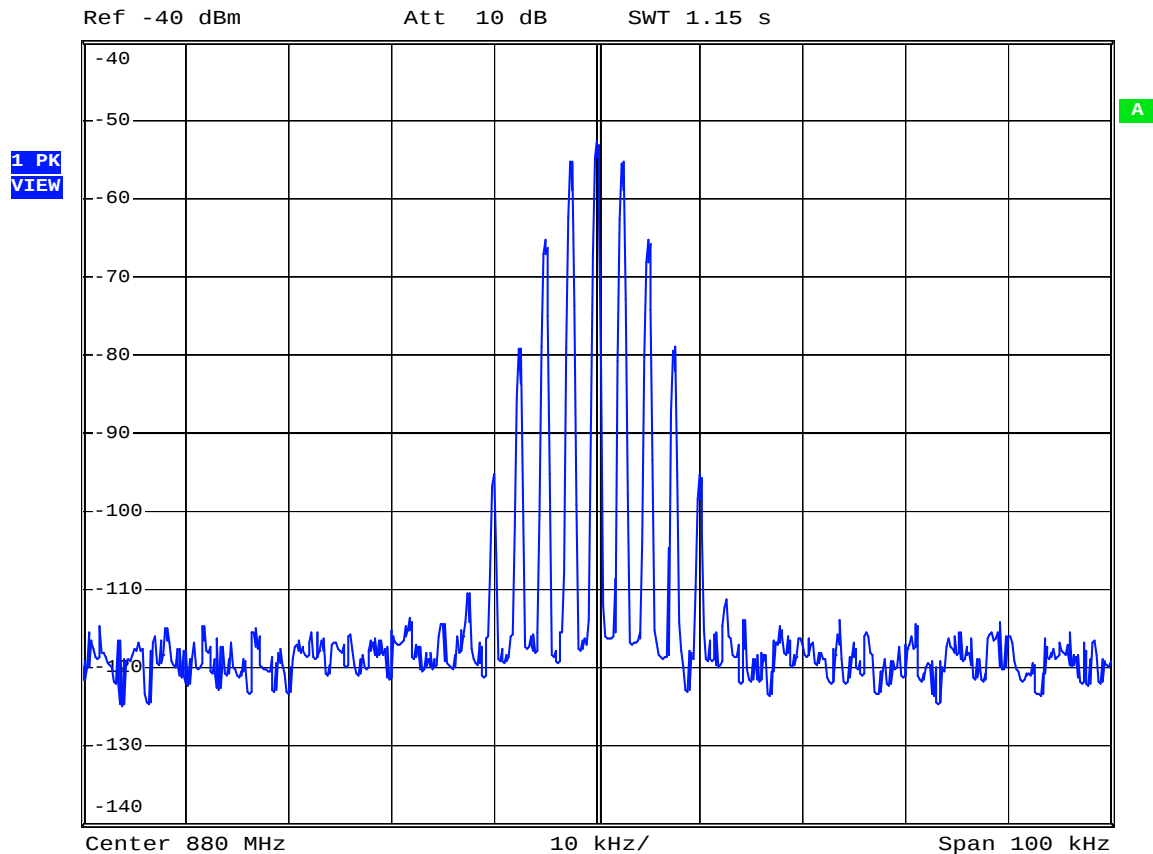
PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

Analog - Input
Downlink



* RBW 300 Hz
VBW 1 kHz
SWT 1.15 s



Date: 29.JAN.2009 15:36:17

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

Analog - Output

Uplink



* RBW 300 Hz

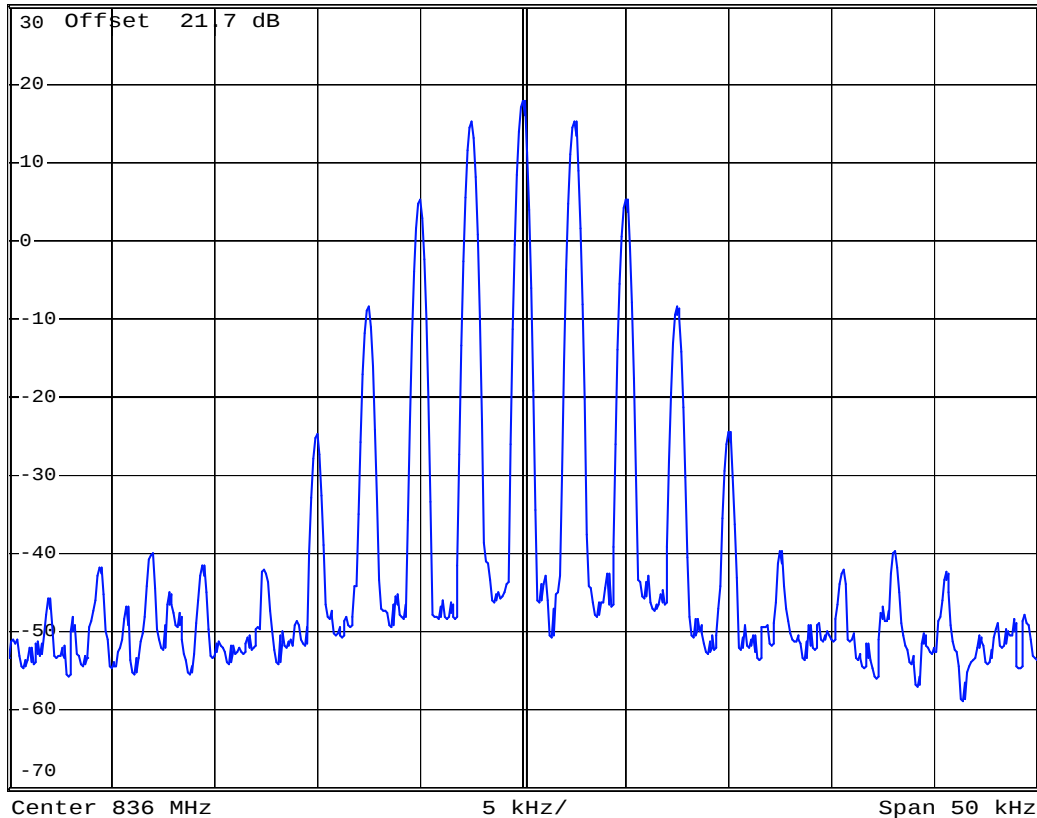
VBW 1 kHz

SWT 560 ms

Ref 30 dBm

Att 40 dB

1 PK
VIEW



Date: 30.JAN.2009 09:42:15

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

Test Data – Occupied Bandwidth

Analog - Input

Uplink

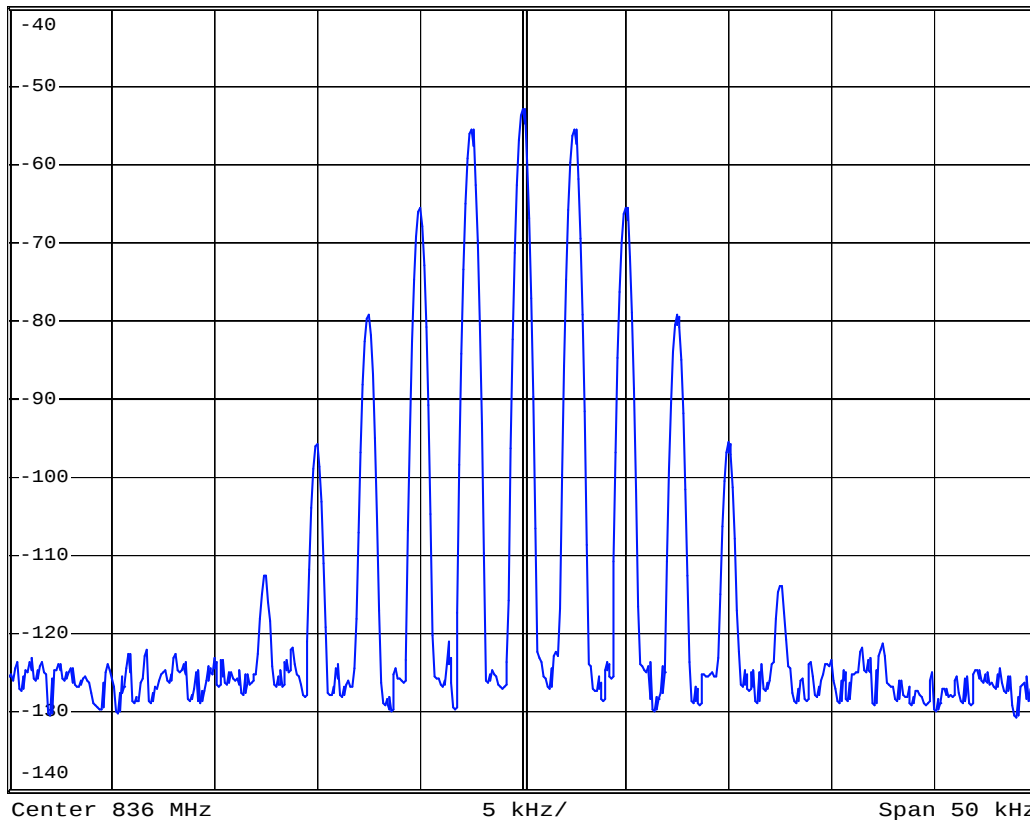


* RBW 300 Hz
VBW 1 kHz
SWT 560 ms

Ref -40 dBm

* Att 0 dB

1 PK
VIEW



Date: 30.JAN.2009 10:04:26

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 22.917
TESTED BY: David Light	DATE: 30 January 09

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1659-1472-1082-1464

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 35 %

EQUIPMENT: **MR8518**

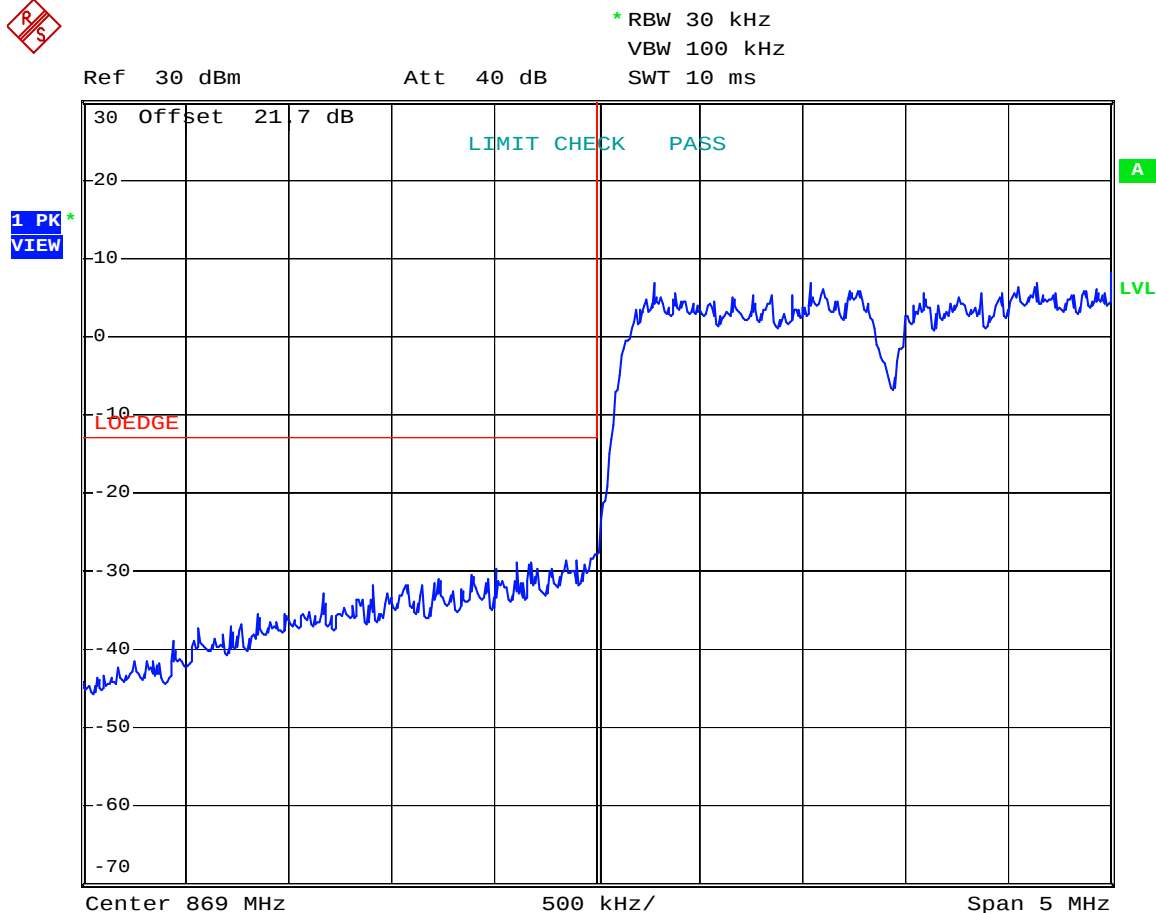
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

CDMA

Downlink



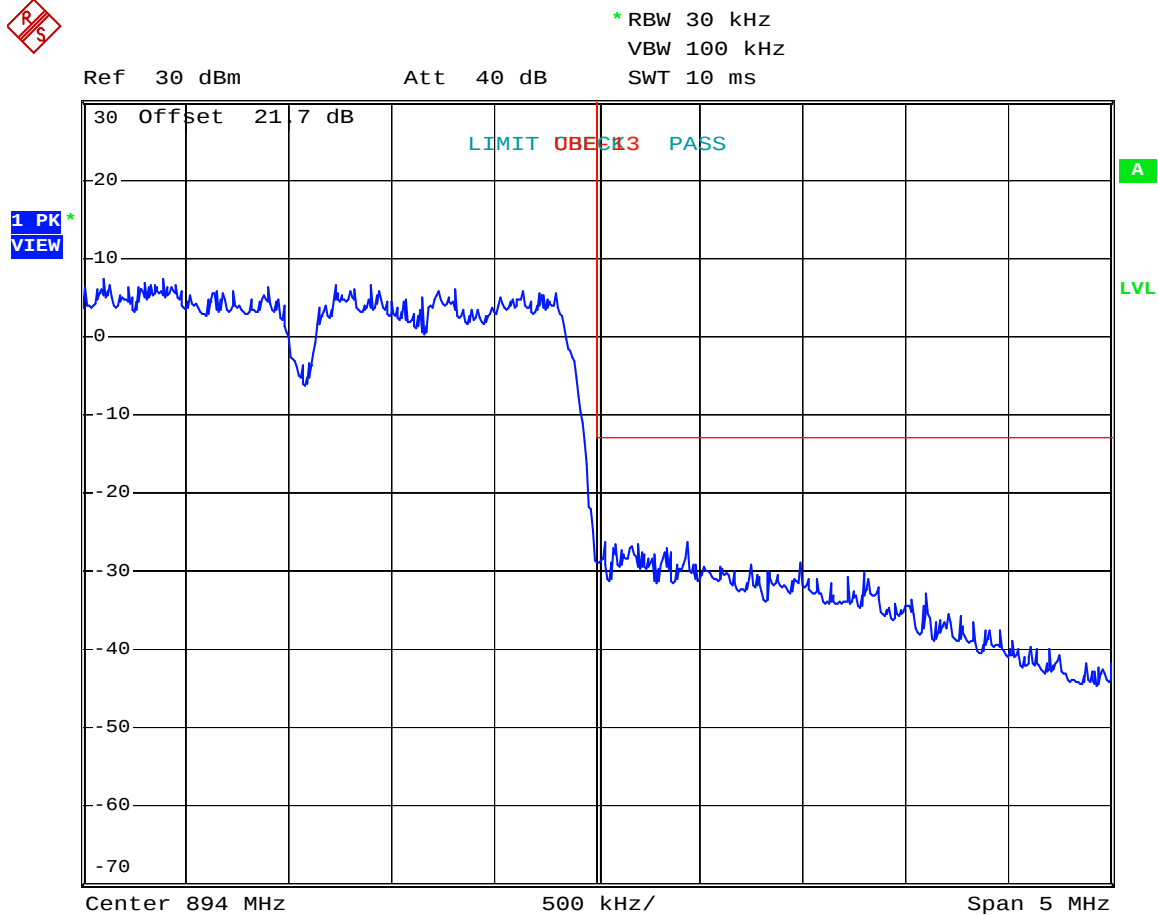
Date: 29.JAN.2009 15:31:56

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

CDMA

Downlink



Date: 29.JAN.2009 15:30:26

EQUIPMENT: **MR8518**

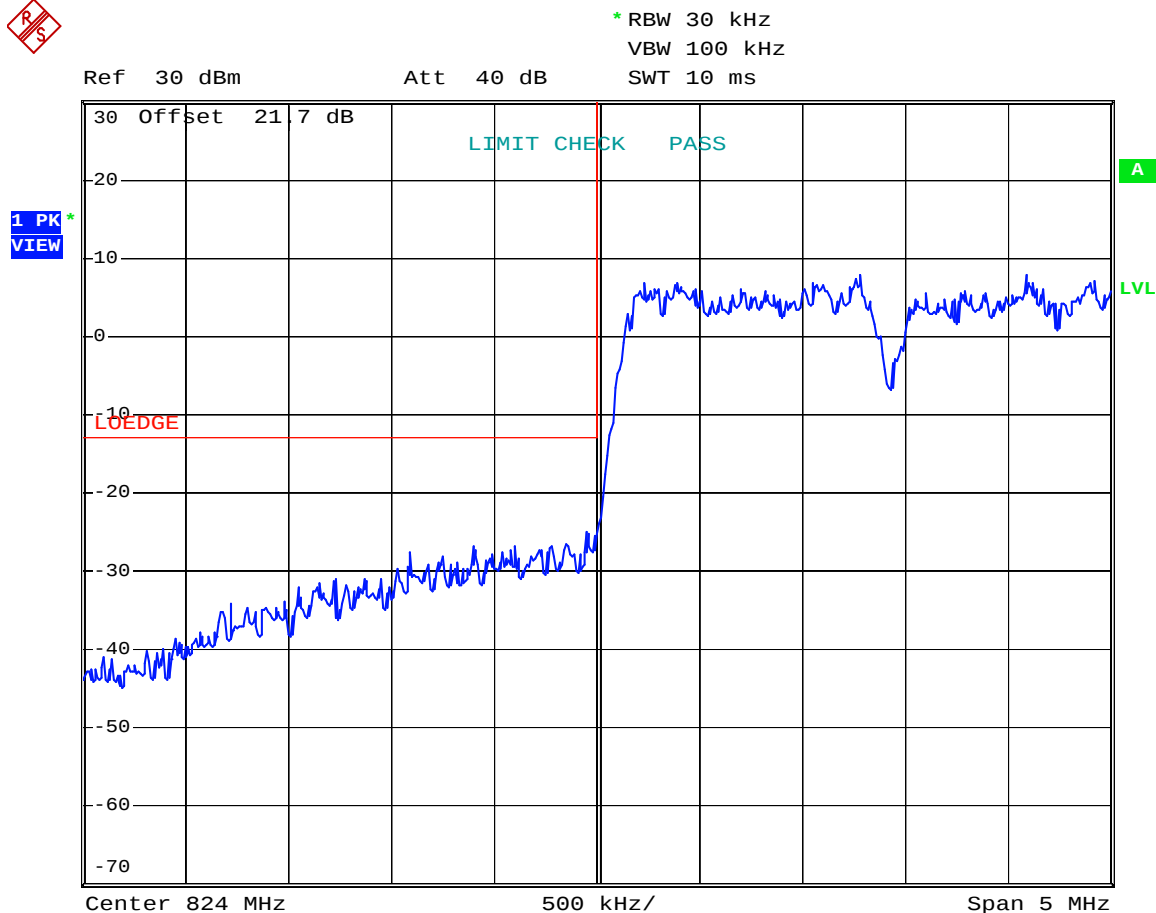
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

CDMA

Uplink



Date: 30.JAN.2009 09:36:03

EQUIPMENT: **MR8518**

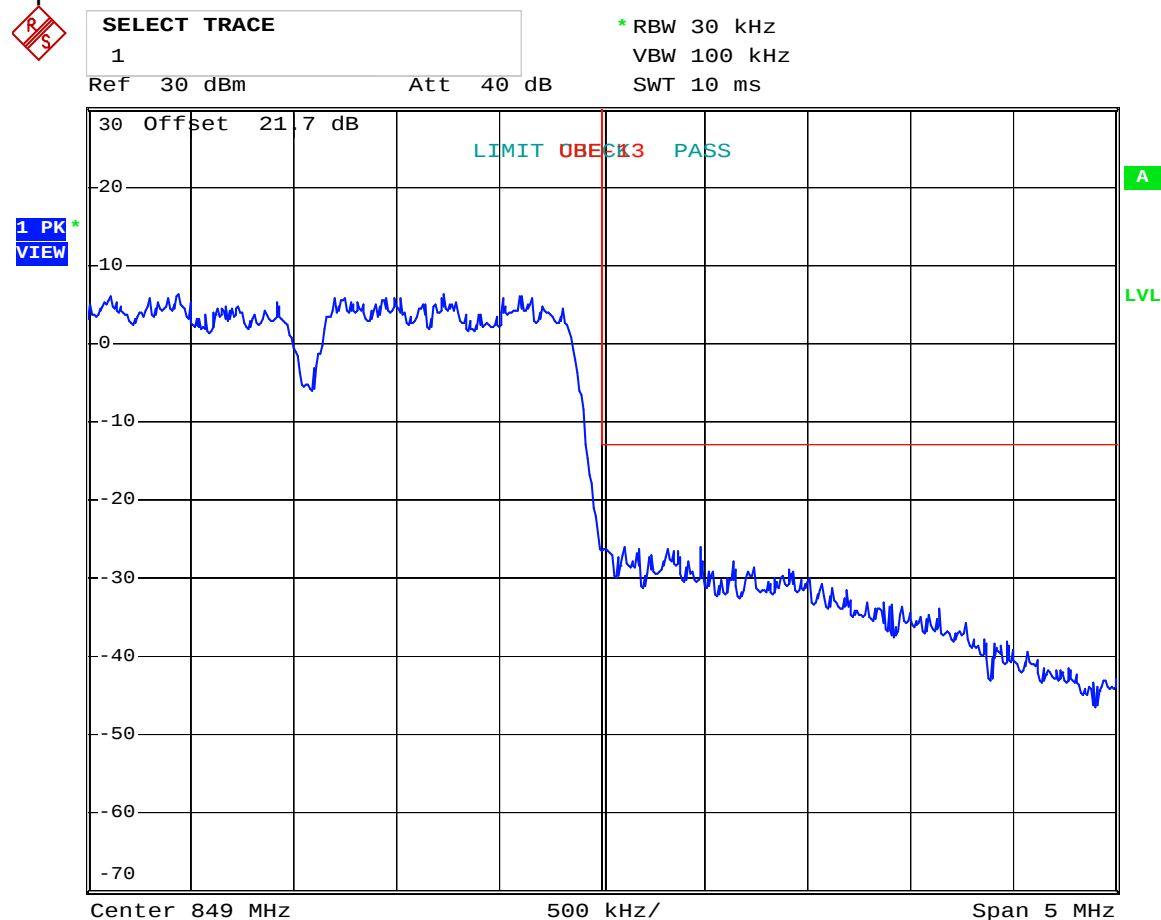
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

CDMA

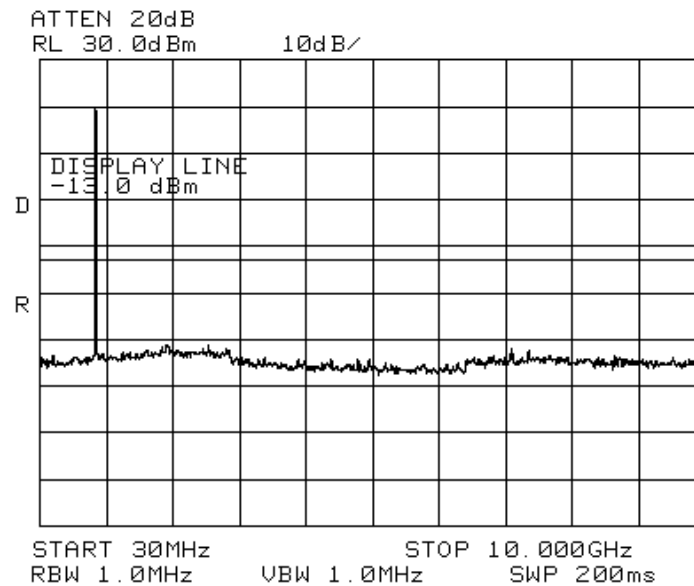
Uplink



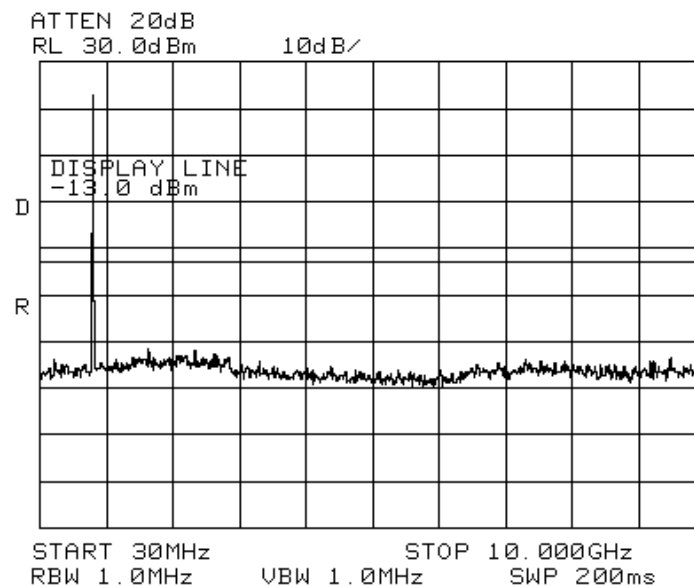
Date: 30.JAN.2009 09:35:07

Test Data – Spurious Emissions at Antenna Terminals

Spurs – CDMA - Downlink



Spurs – CDMA - Uplink



EQUIPMENT: **MR8518**

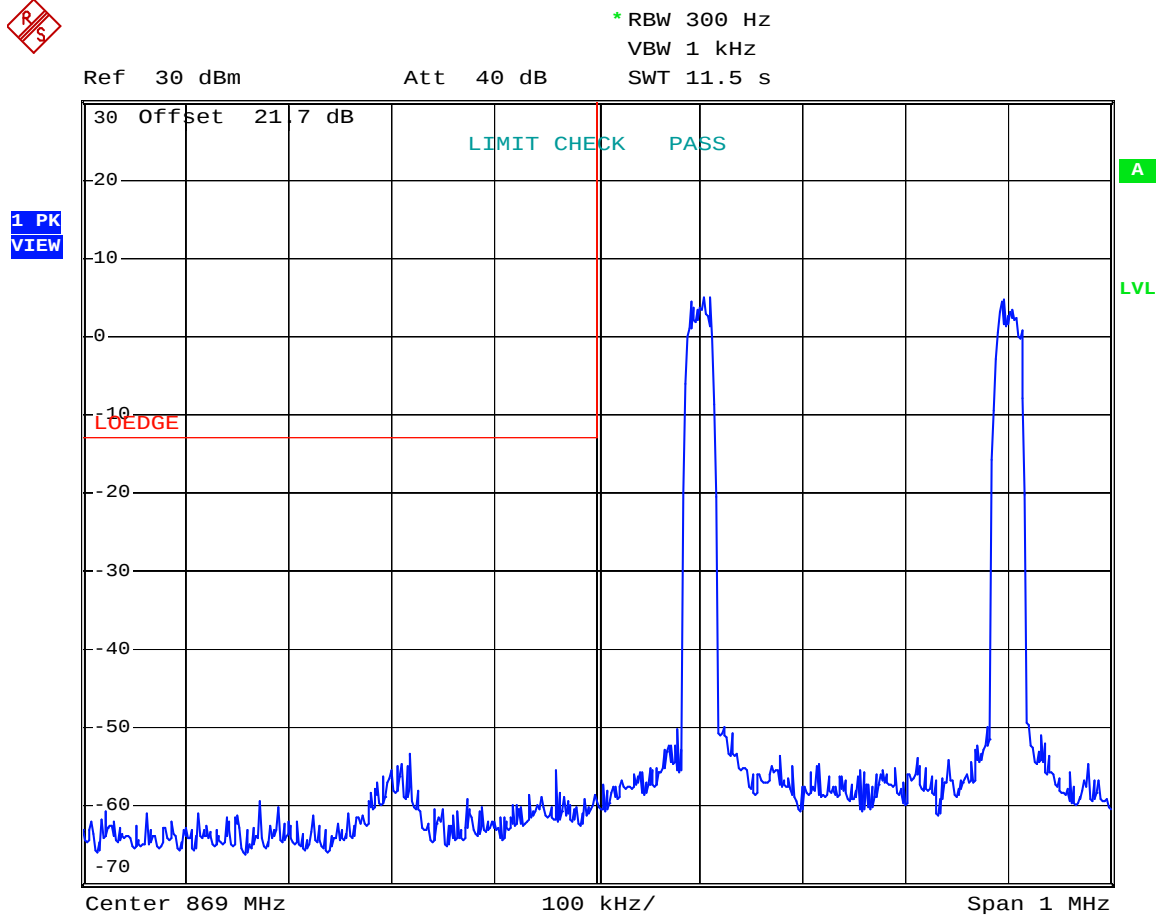
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

TDMA

Downlink



Date: 29.JAN.2009 14:49:09

EQUIPMENT: **MR8518**

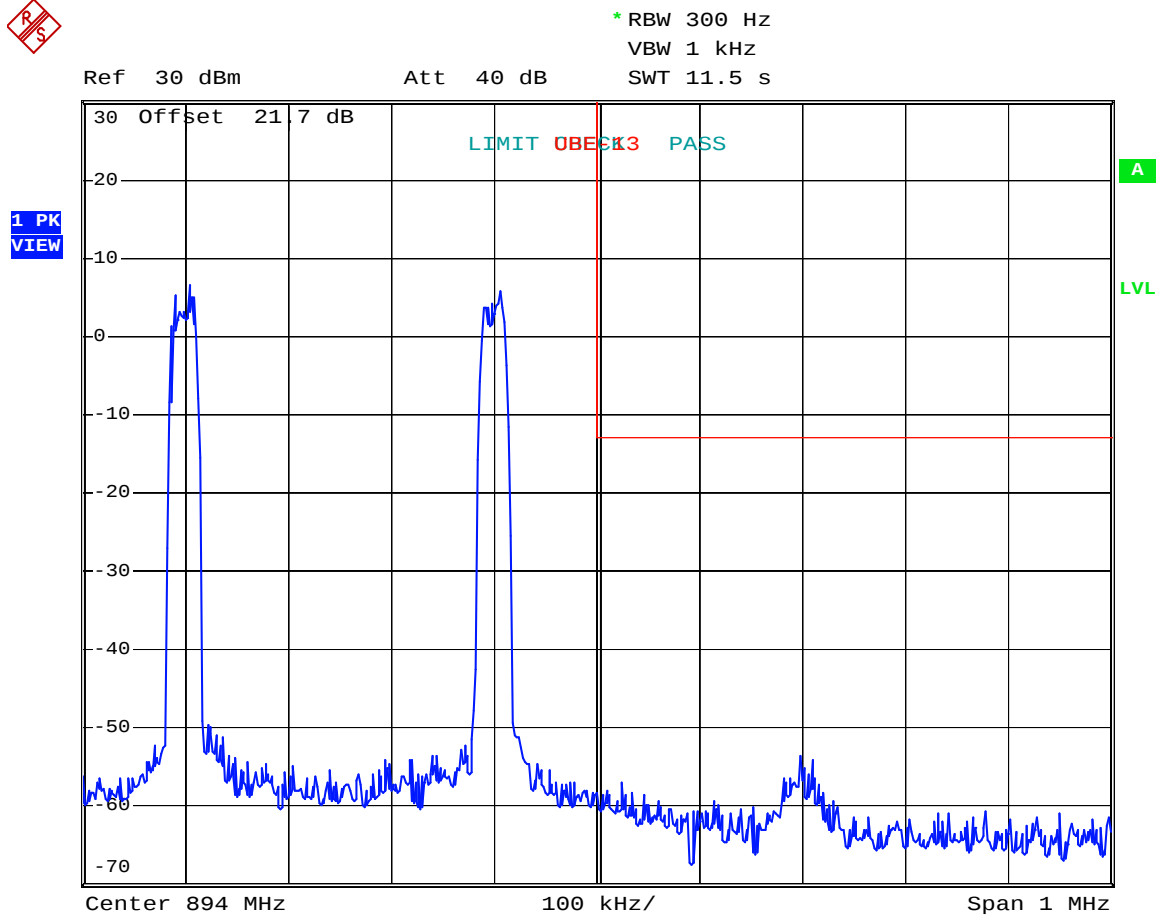
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

TDMA

Downlink



Date: 29.JAN.2009 14:50:20

EQUIPMENT: **MR8518**

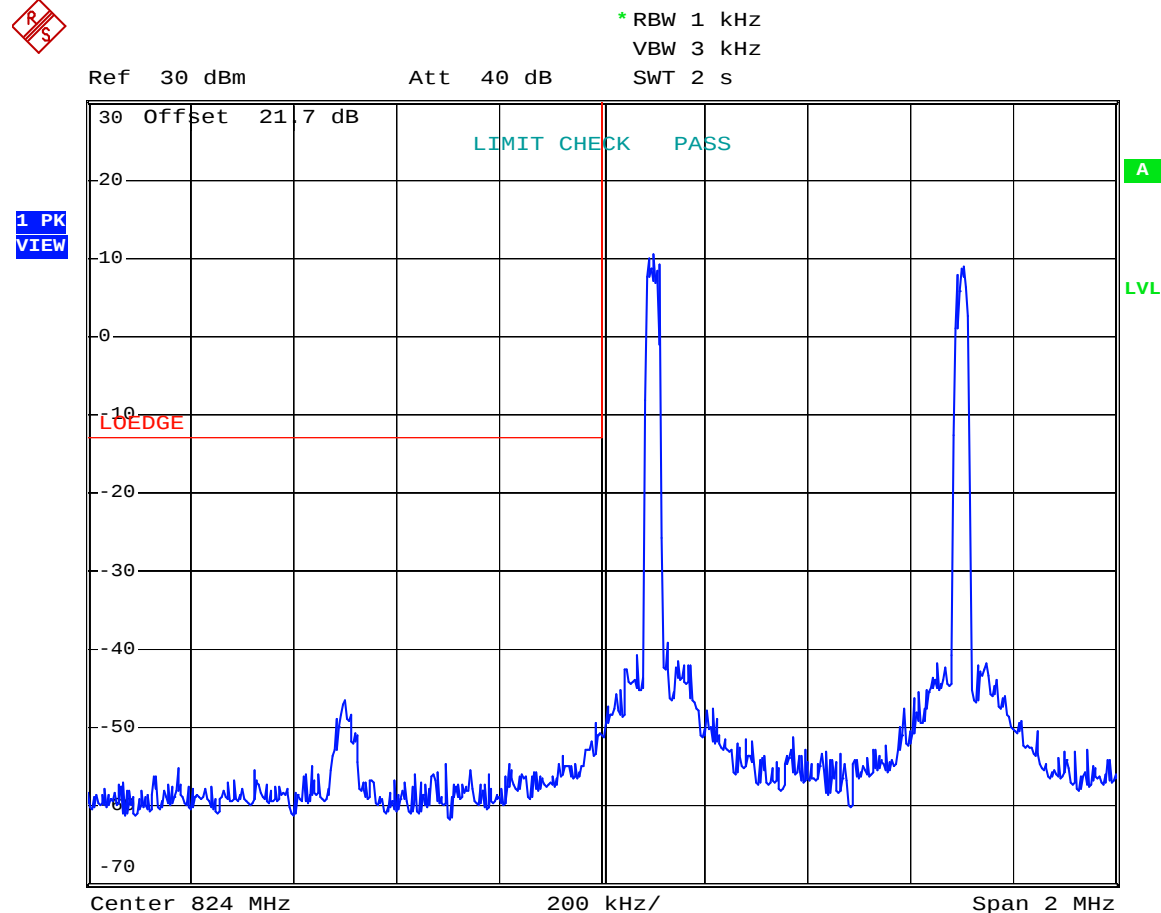
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

TDMA

Uplink



Date: 30.JAN.2009 09:15:30

EQUIPMENT: **MR8518**

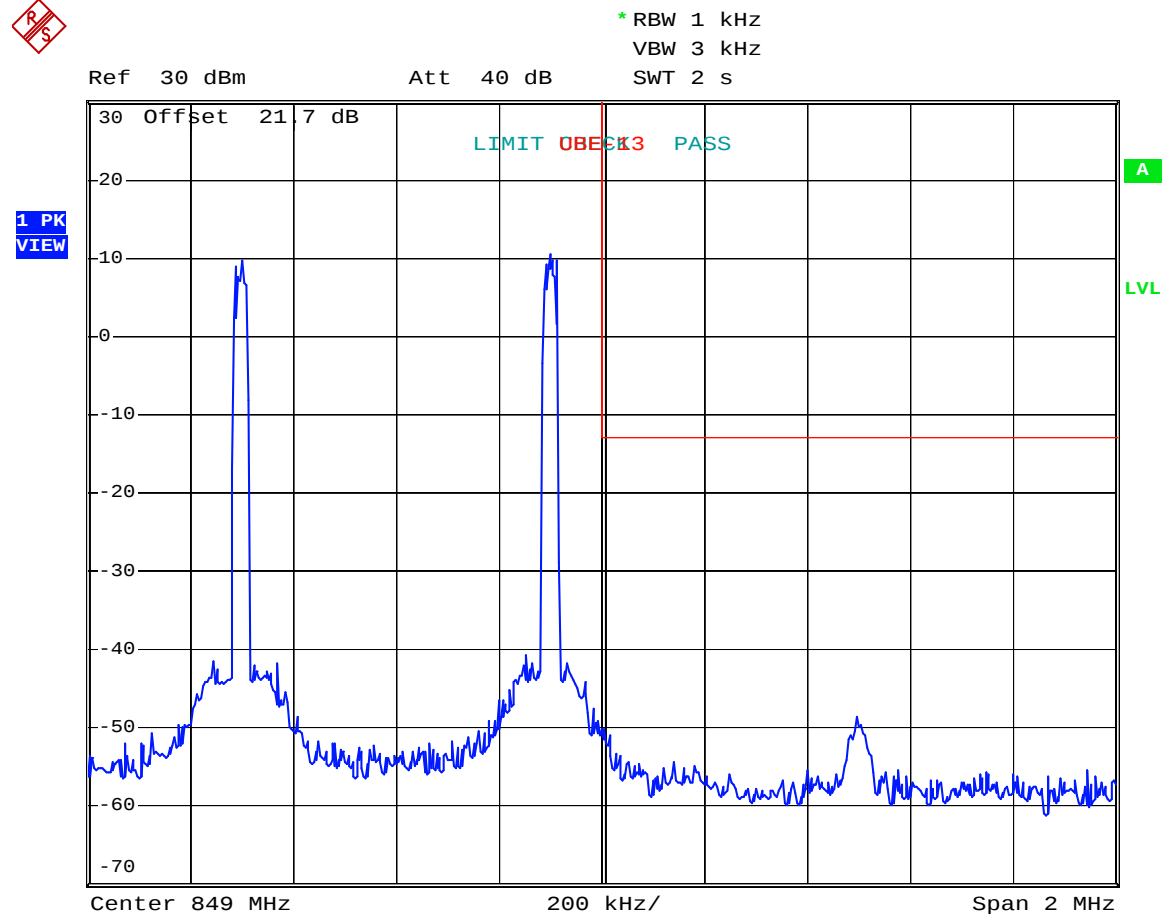
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

TDMA

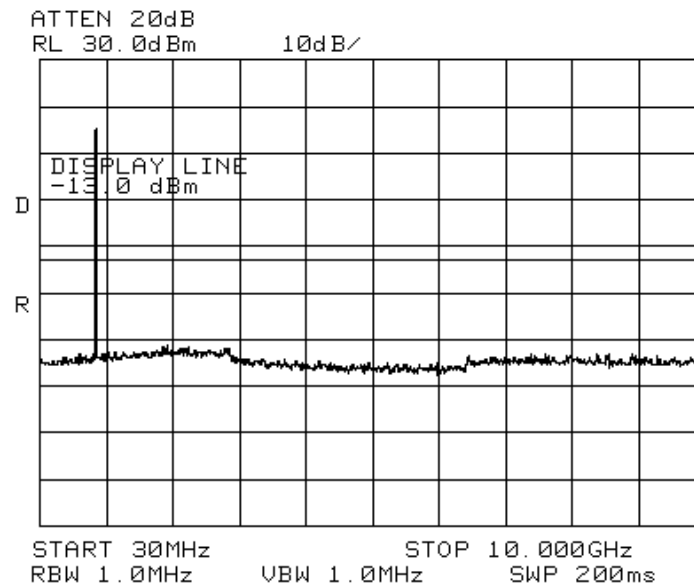
Uplink



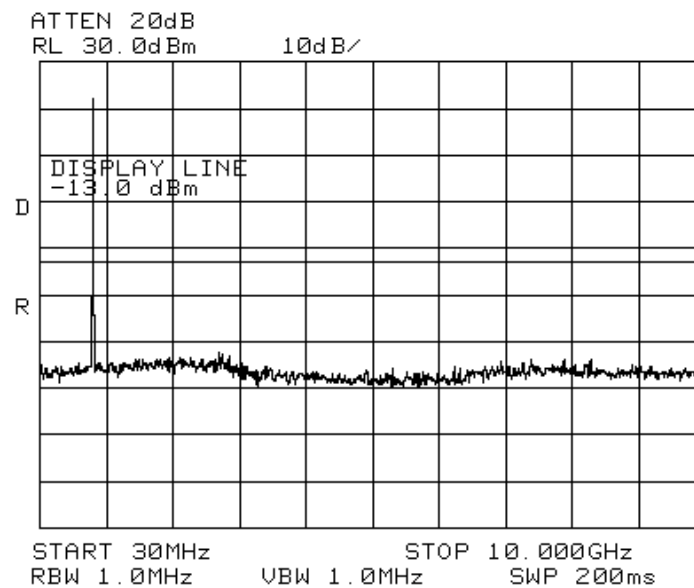
Date: 30.JAN.2009 09:16:40

Test Data – Spurious Emissions at Antenna Terminals

Spurs – TDMA - Downlink



Spurs – TDMA - Uplink



EQUIPMENT: **MR8518**

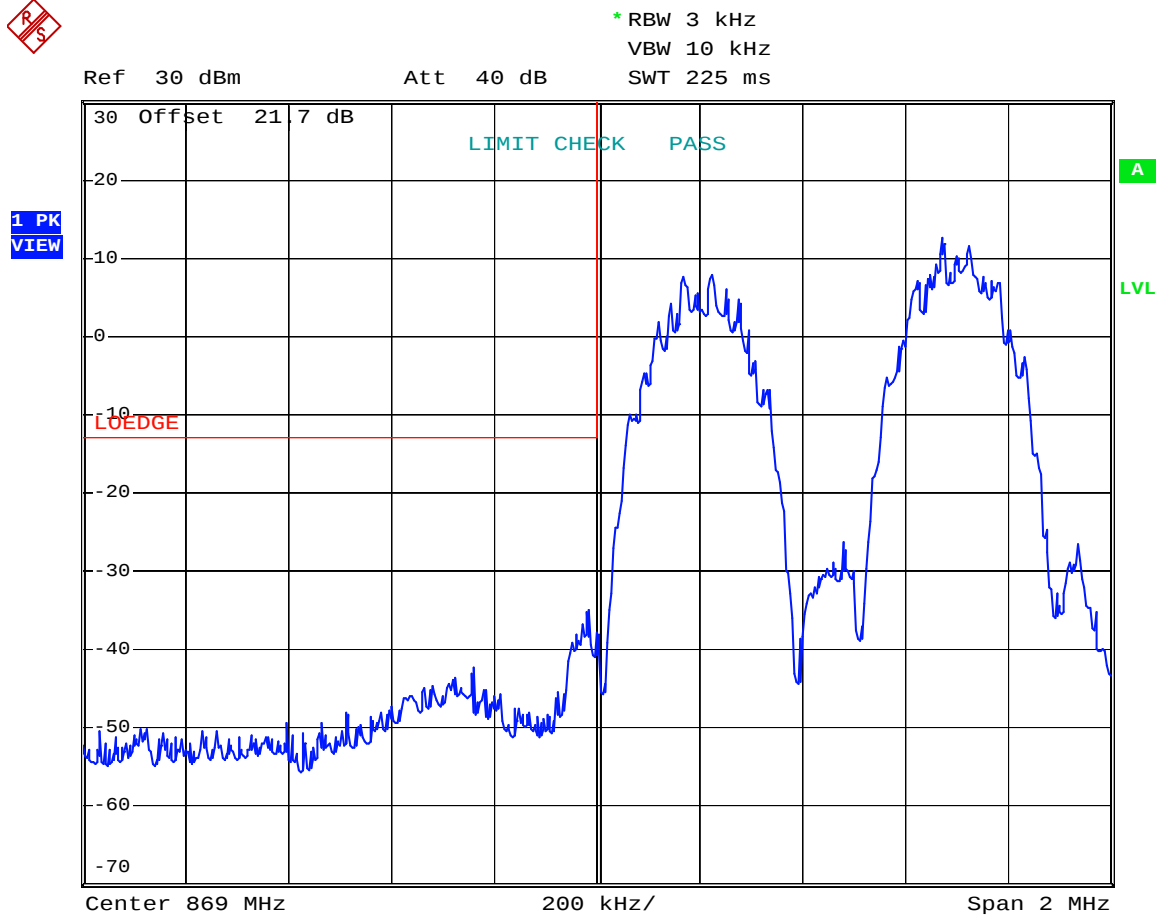
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

EDGE

Downlink



Date: 29.JAN.2009 15:24:01

EQUIPMENT: **MR8518**

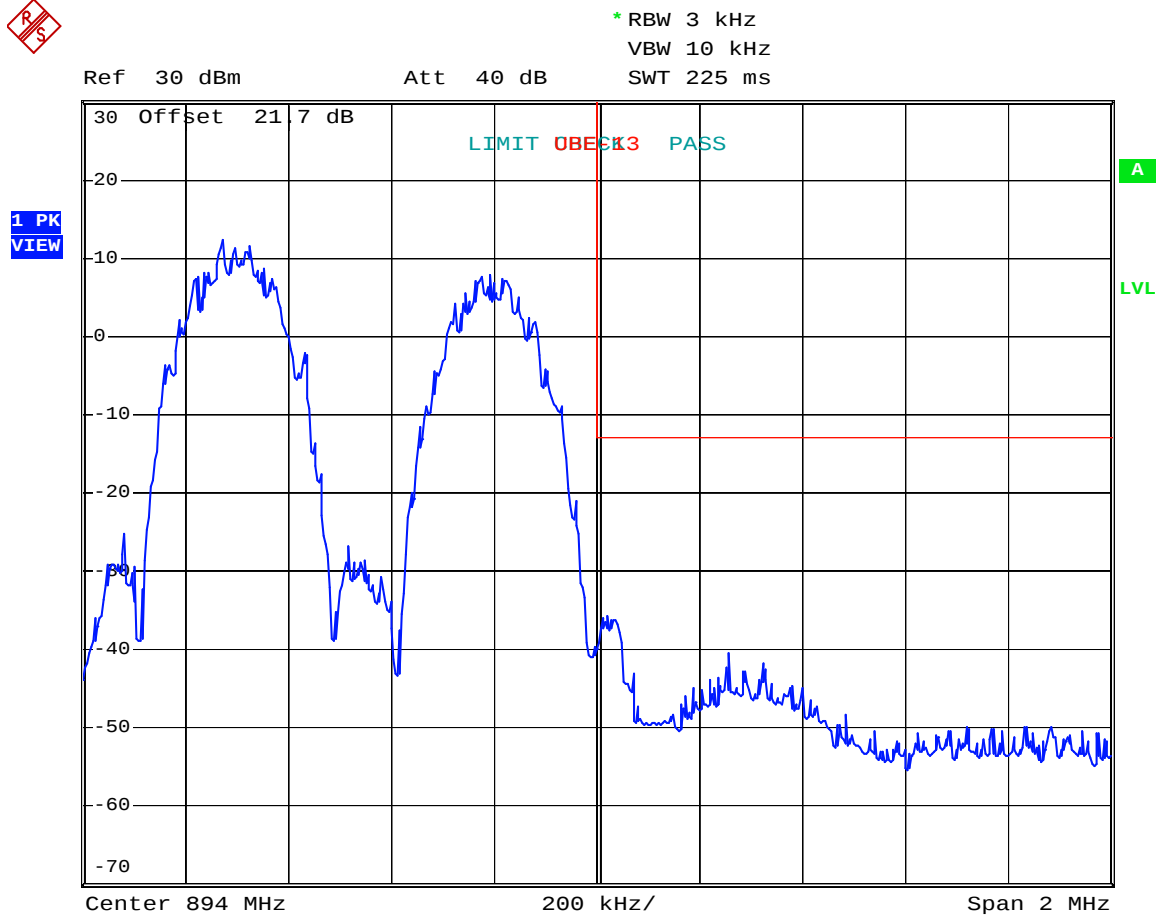
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

EDGE

Downlink



Date: 29.JAN.2009 15:25:35

EQUIPMENT: **MR8518**

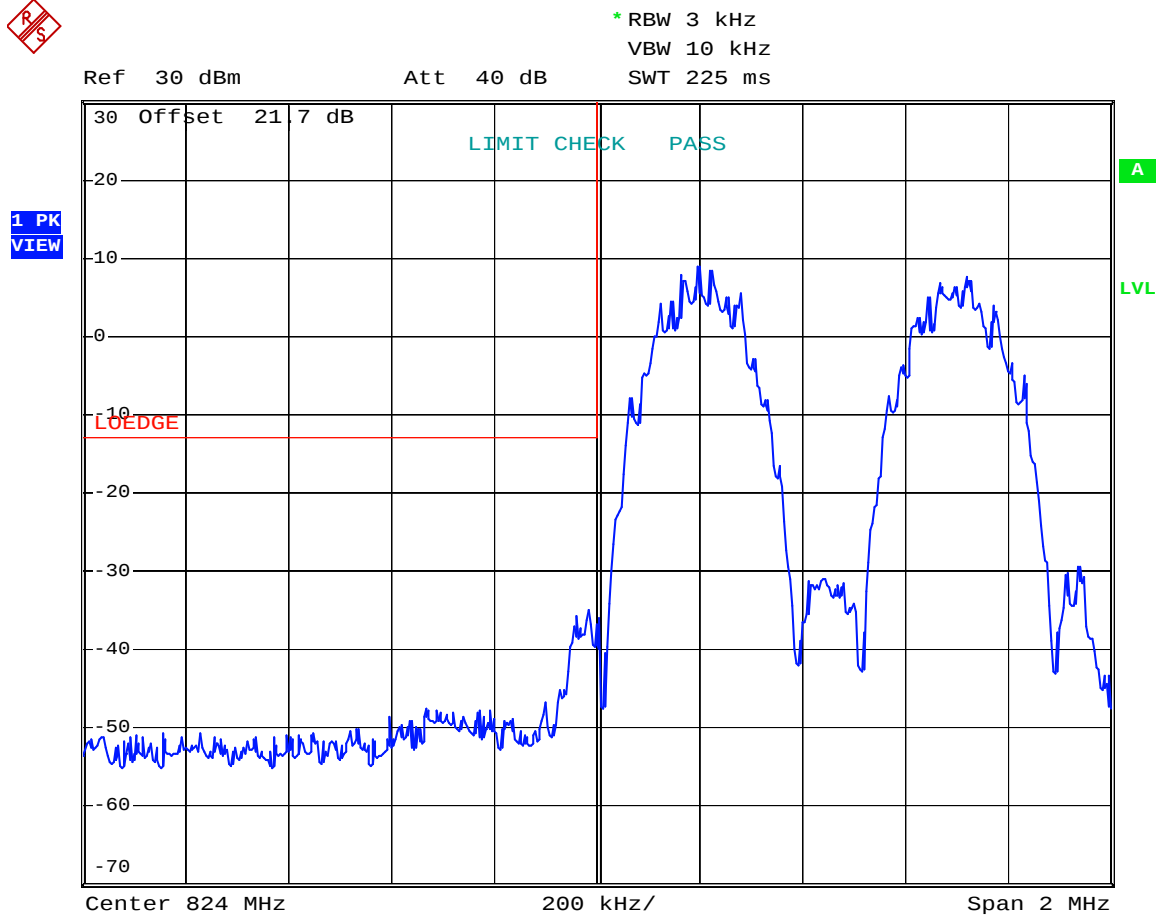
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

EDGE

Uplink



Date: 30.JAN.2009 09:48:36

Test Data – Spurious Emissions at Antenna Terminals

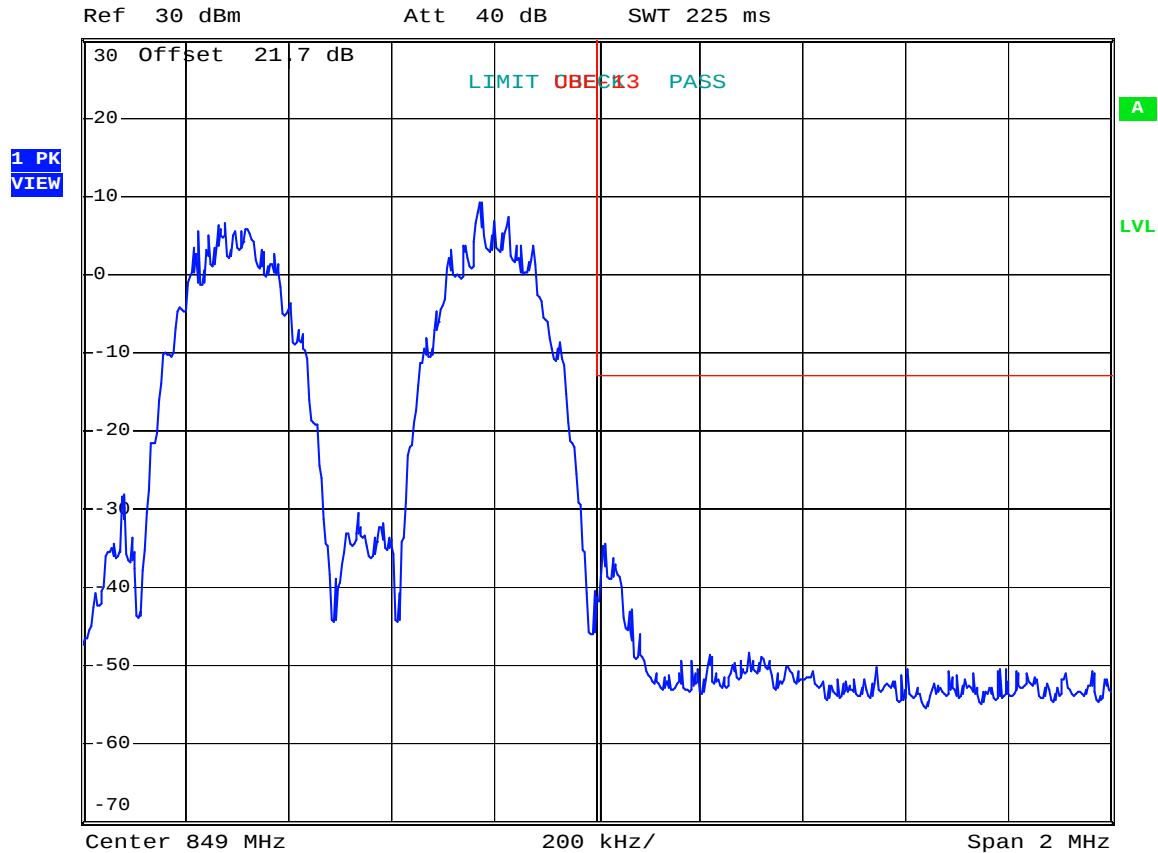
Upper Bandedge Intermodulation

EDGE

Uplink



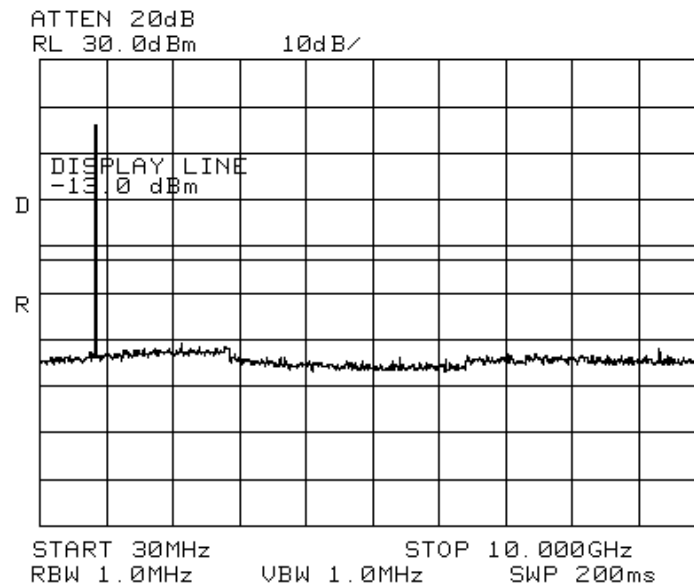
* RBW 3 kHz
VBW 10 kHz
SWT 225 ms



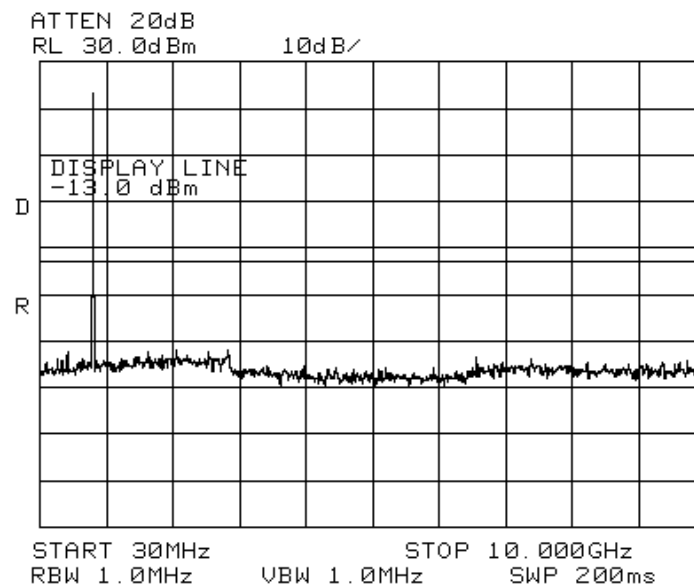
Date: 30.JAN.2009 09:49:16

Test Data – Spurious Emissions at Antenna Terminals

Spurs – EDGE - Downlink



Spurs – EDGE - Uplink



EQUIPMENT: **MR8518**

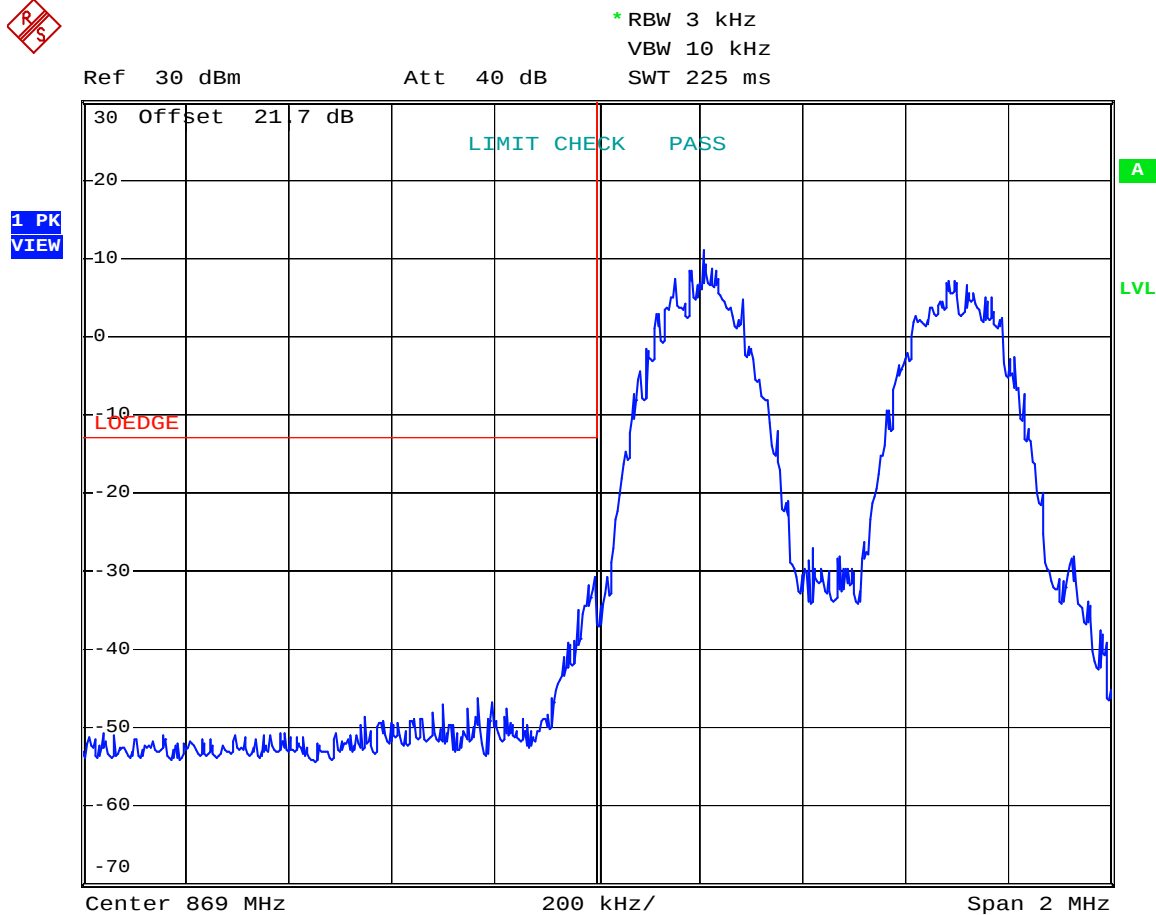
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

GSM

Downlink



Date: 29.JAN.2009 14:59:54

EQUIPMENT: **MR8518**

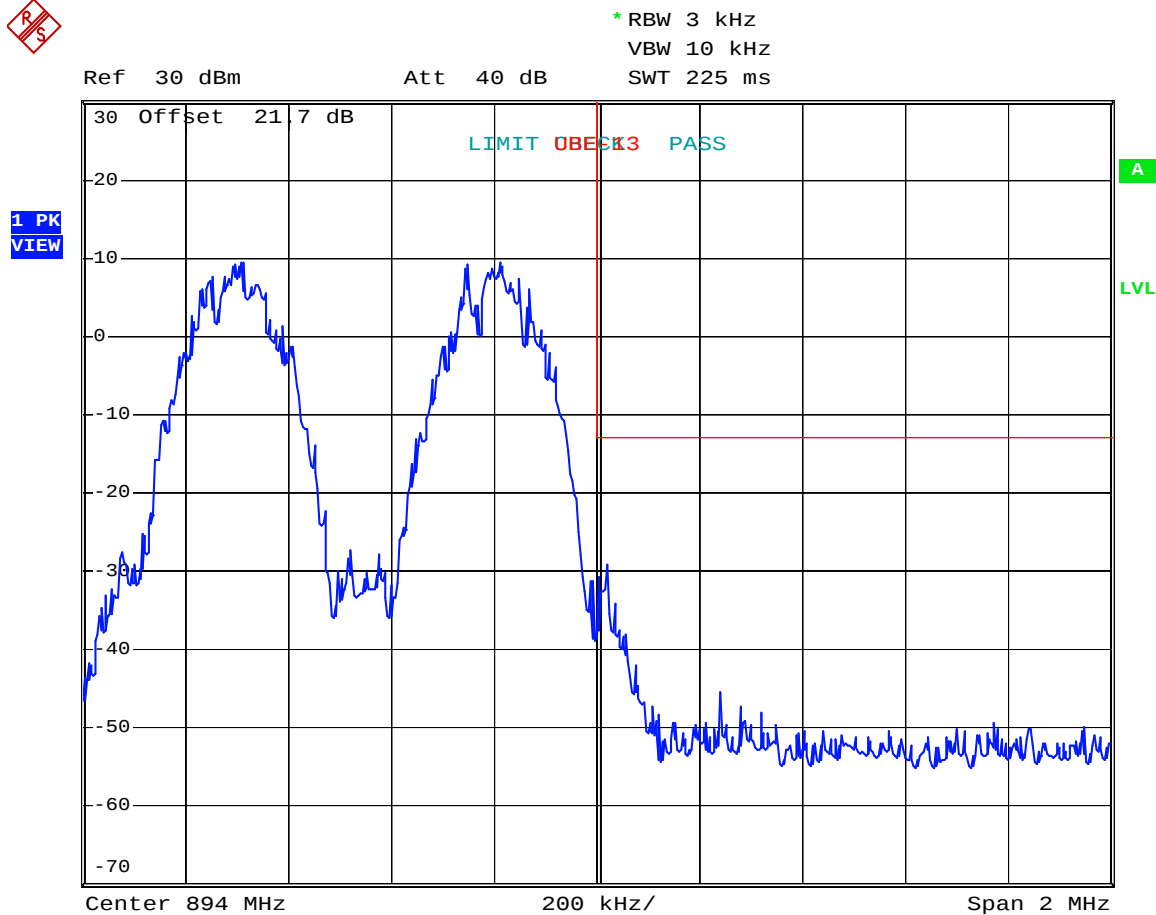
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

GSM

Downlink



Date: 29.JAN.2009 15:00:49

EQUIPMENT: **MR8518**

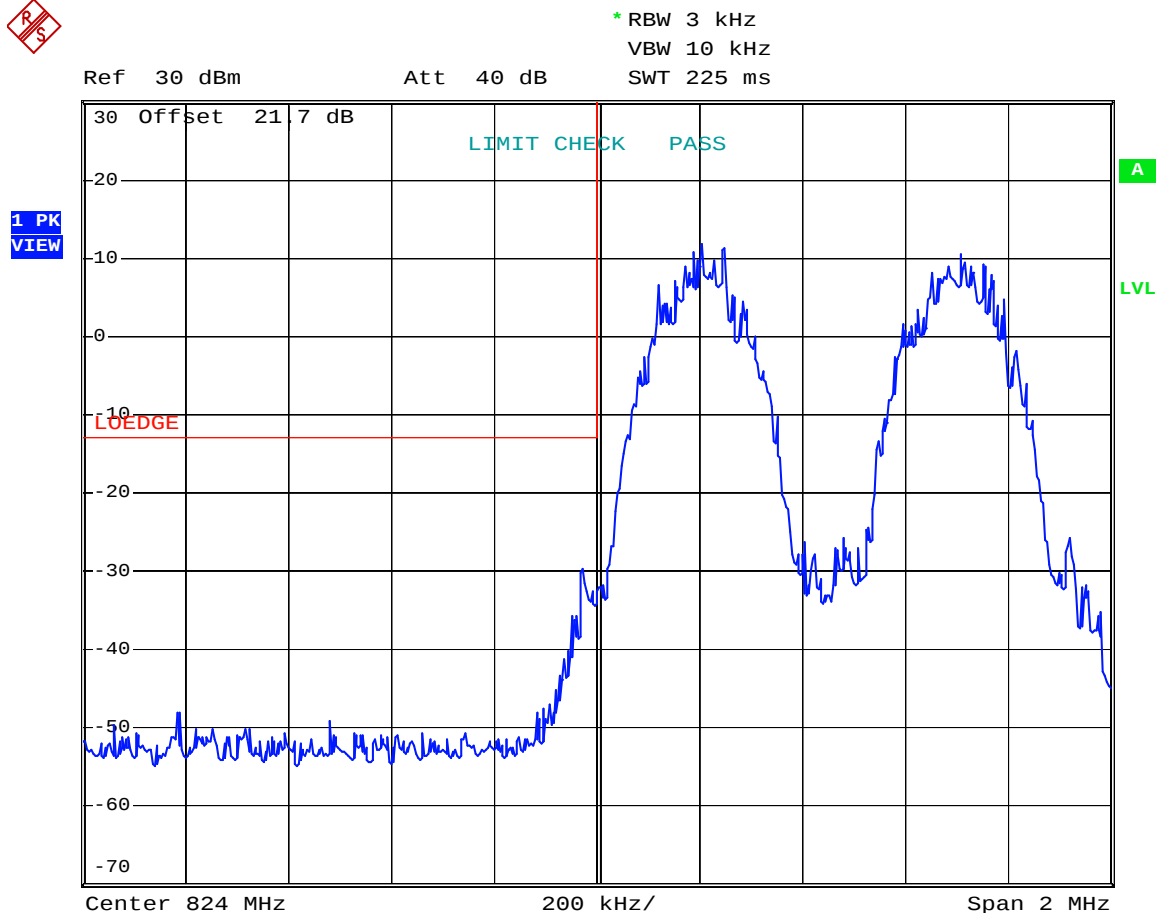
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

GSM

Uplink



Date: 30.JAN.2009 09:46:49

EQUIPMENT: **MR8518**

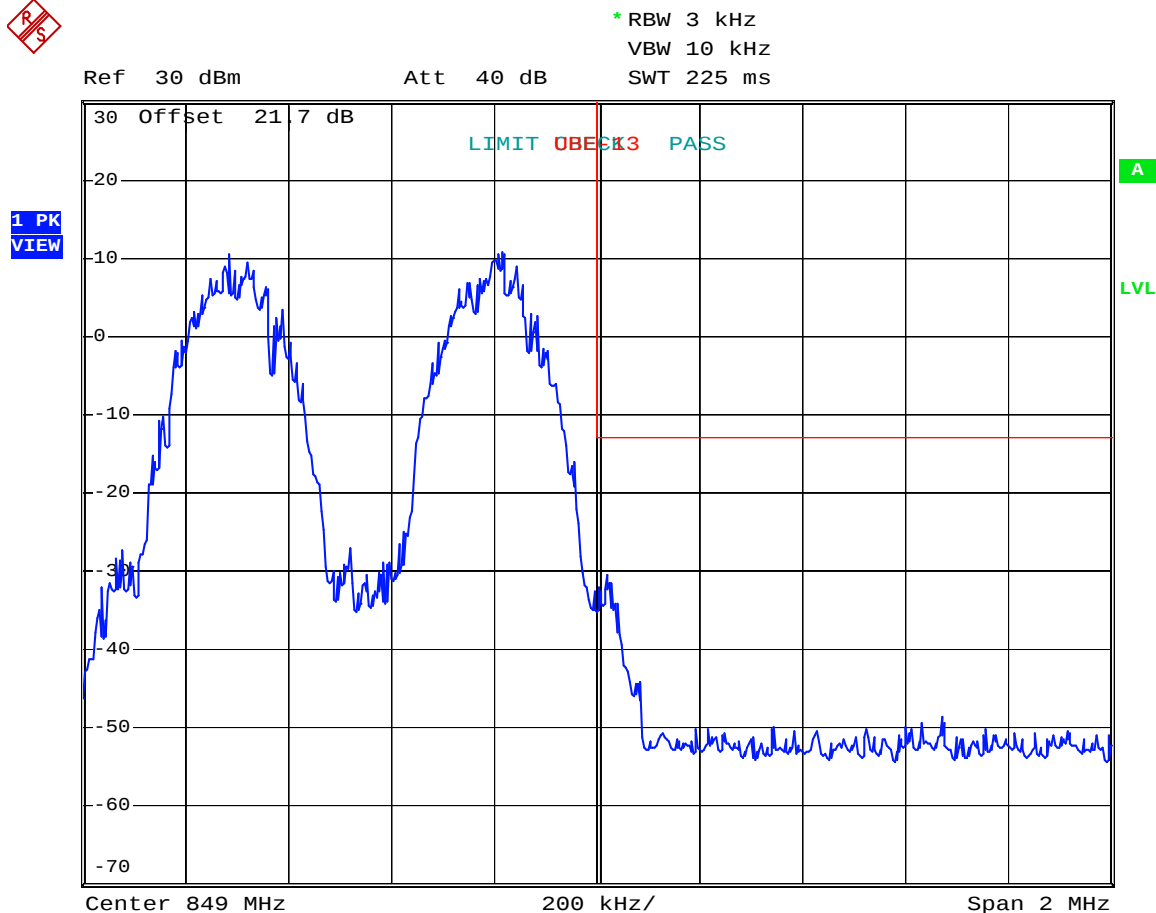
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

GSM

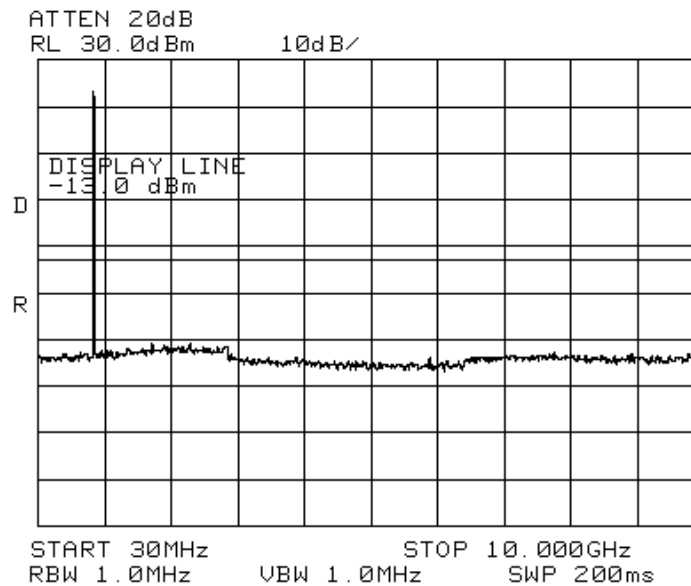
Uplink



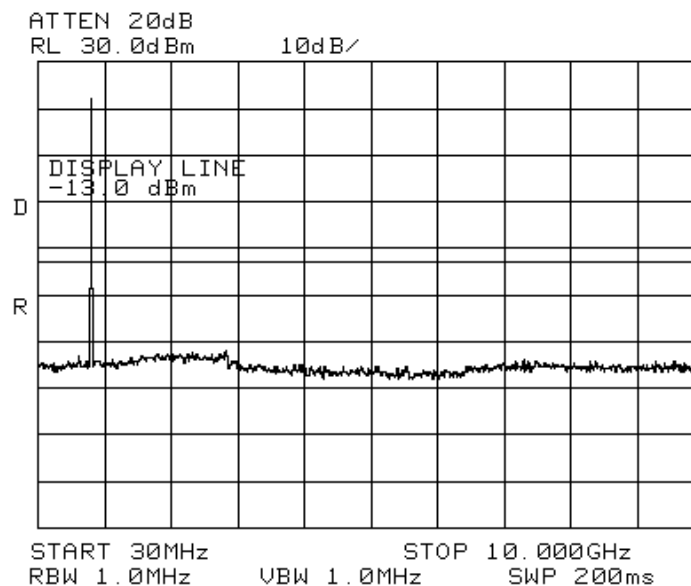
Date: 30.JAN.2009 09:46:07

Test Data – Spurious Emissions at Antenna Terminals

Spurs – GSM - Downlink



Spurs – GSM - Uplink



EQUIPMENT: **MR8518**

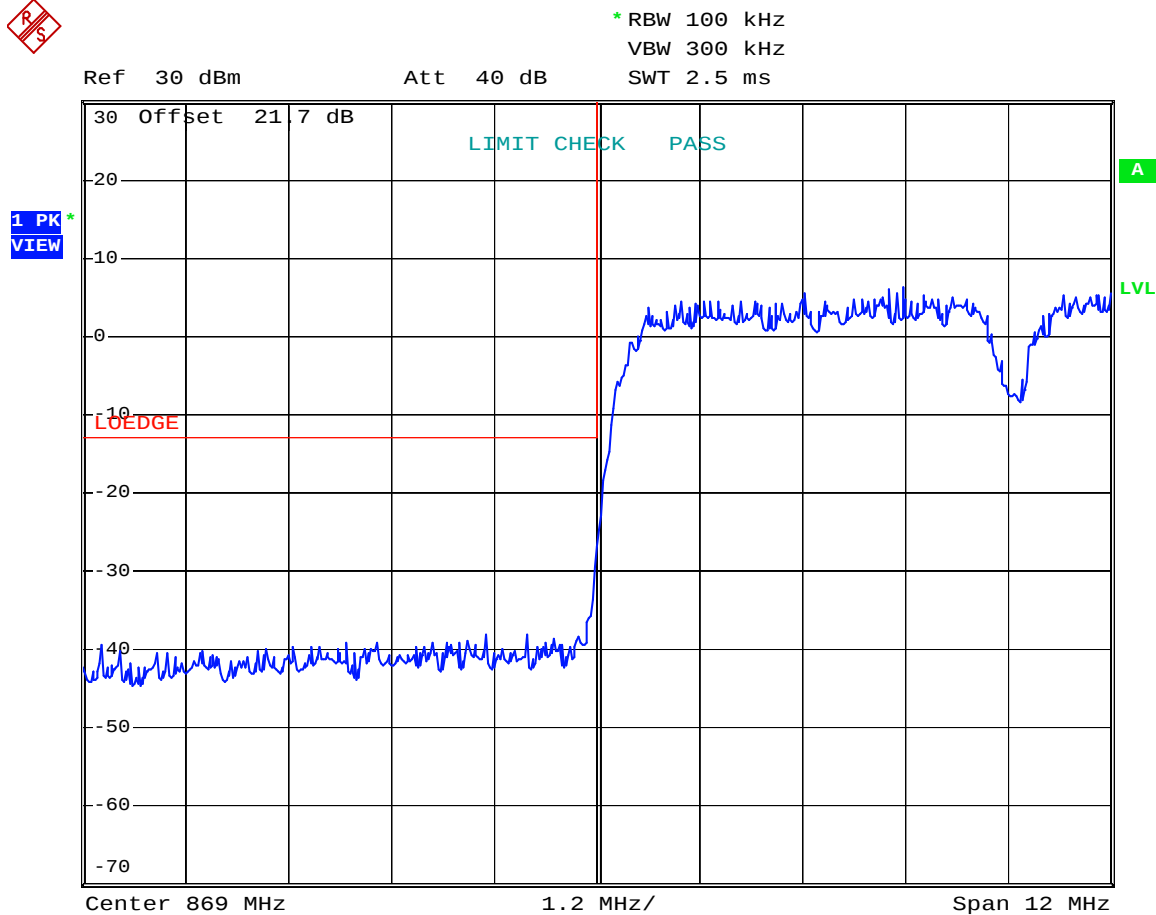
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

W-CDMA

Downlink



Date: 29.JAN.2009 15:20:04

EQUIPMENT: **MR8518**

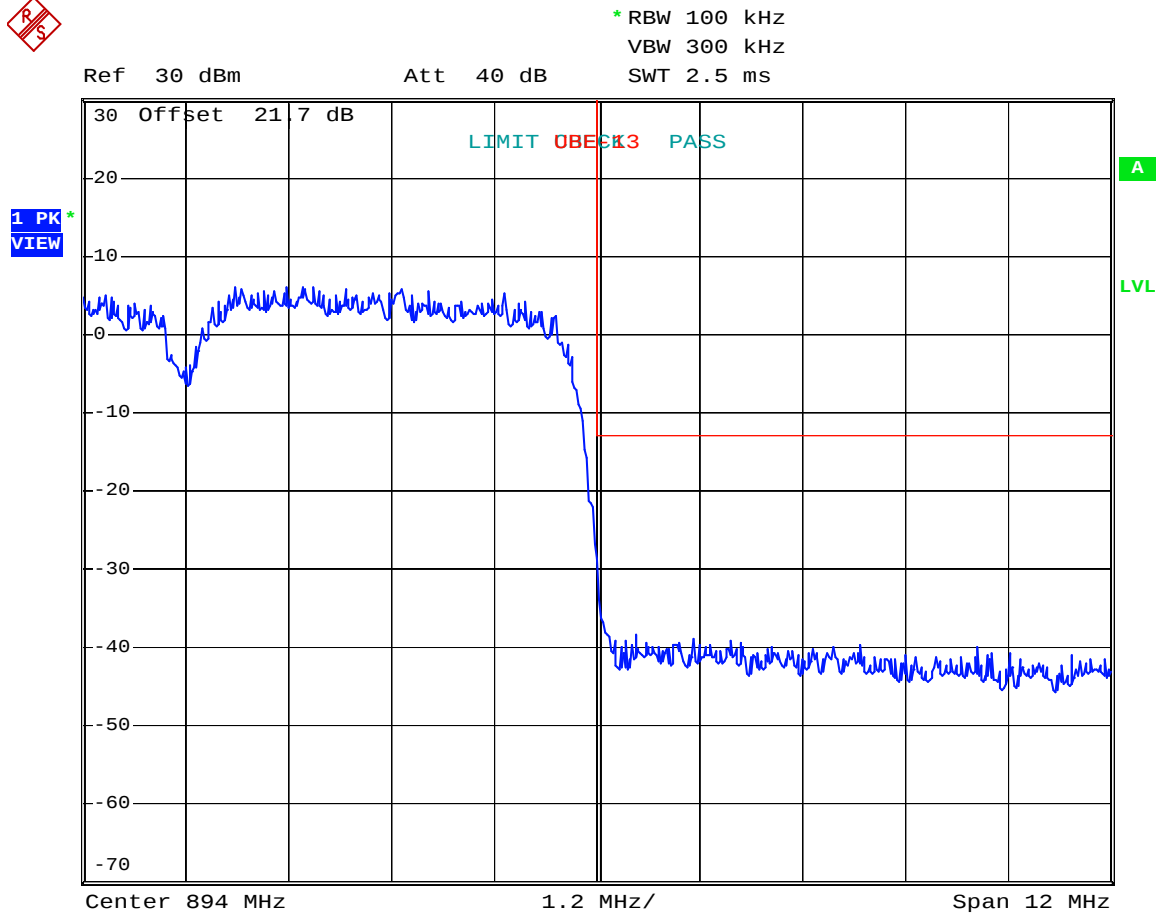
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

W-CDMA

Downlink



Date: 29.JAN.2009 15:19:04

EQUIPMENT: **MR8518**

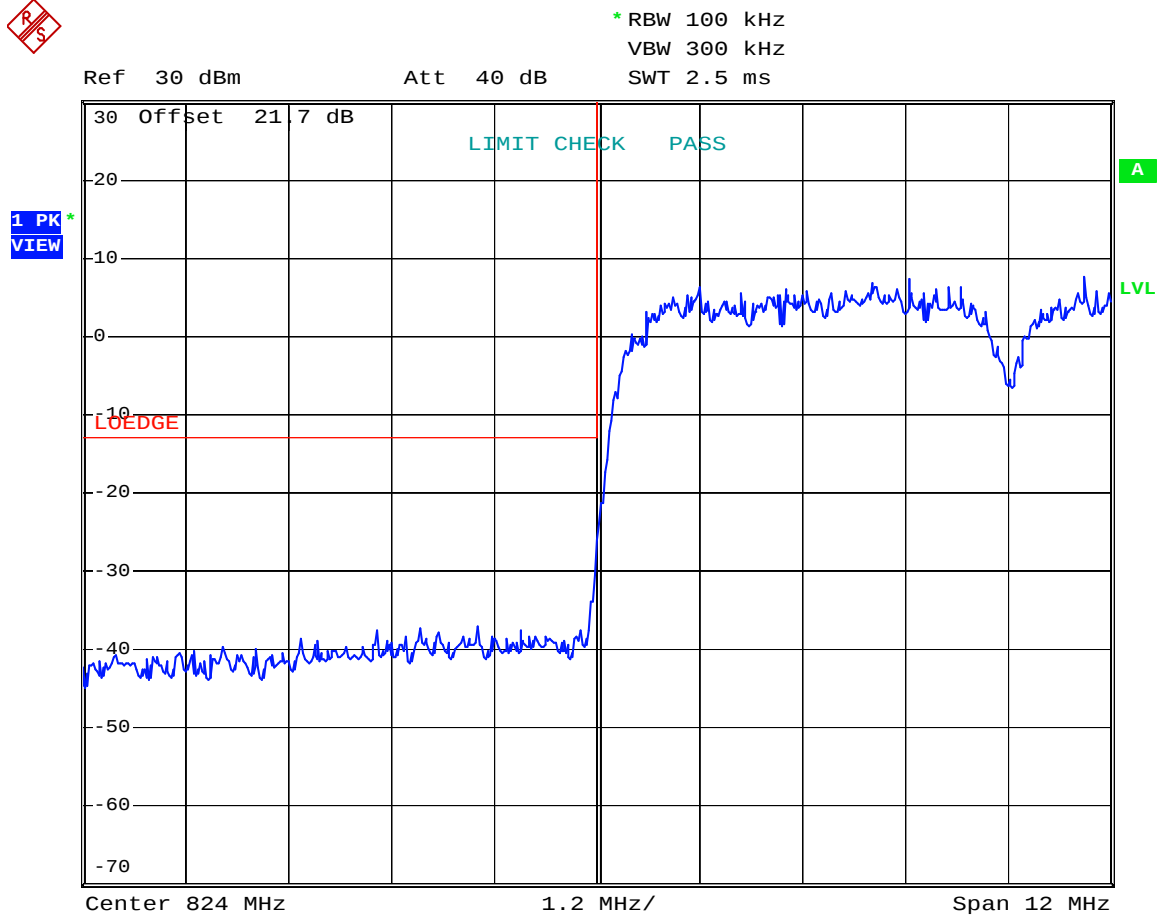
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

W-CDMA

Uplink



Date: 30.JAN.2009 09:56:03

EQUIPMENT: **MR8518**

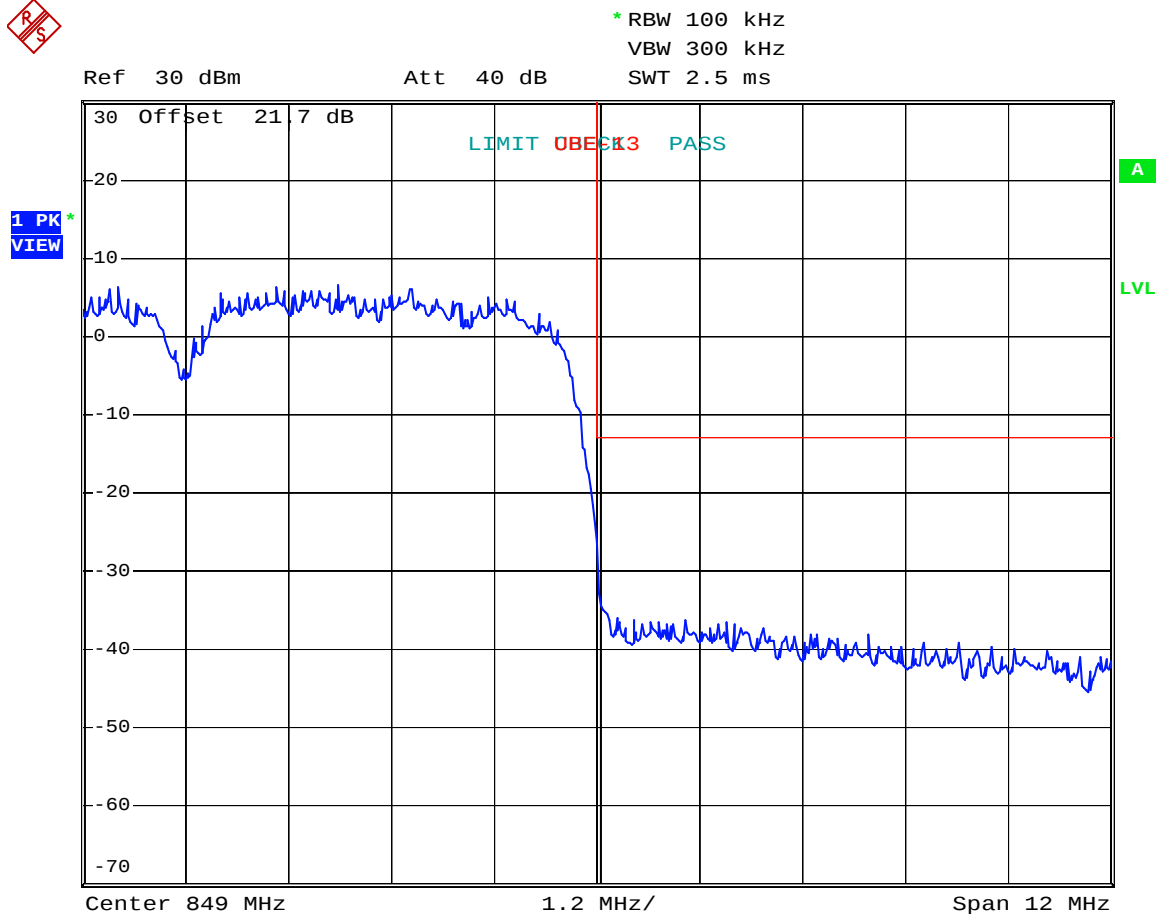
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

W-CDMA

Uplink



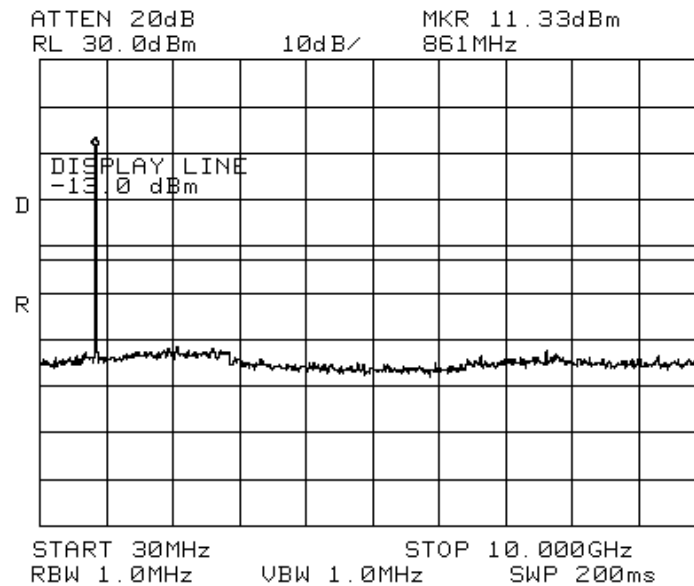
Date: 30.JAN.2009 09:55:00

EQUIPMENT: **MR8518**

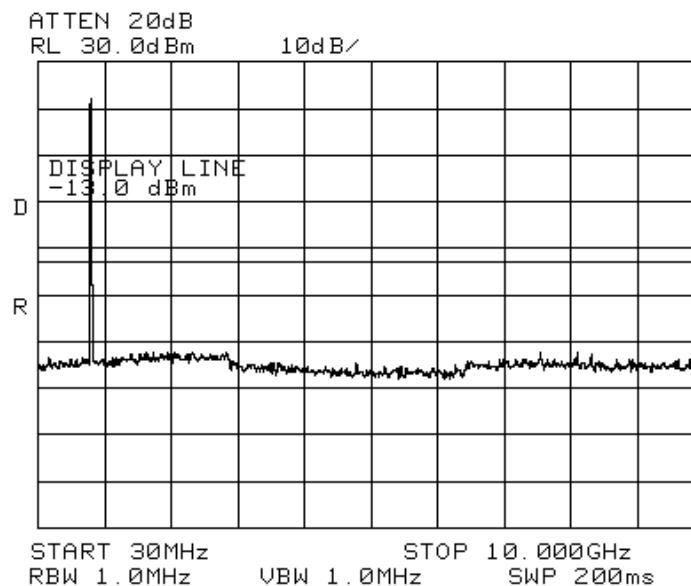
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – W-CDMA - Downlink



Spurs – W-CDMA - Uplink



EQUIPMENT: **MR8518**

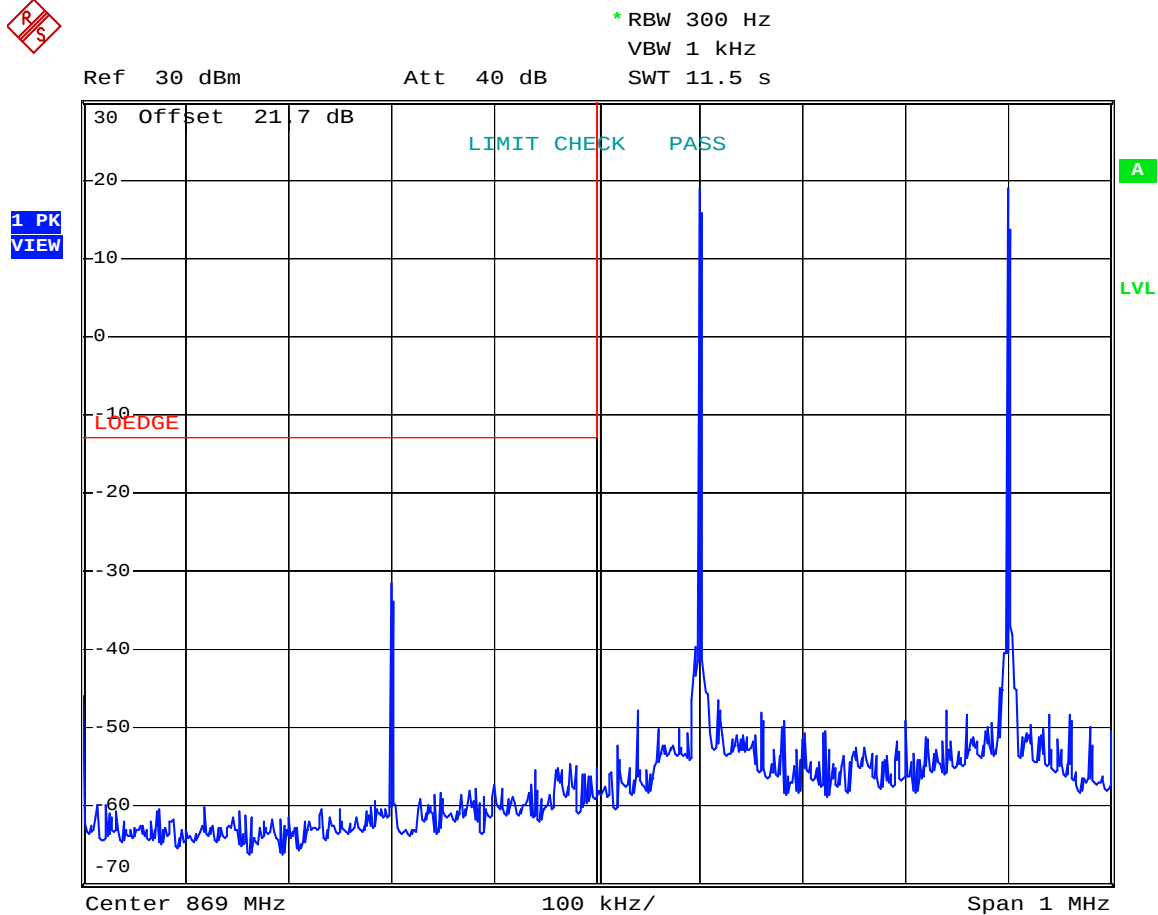
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

Analog

Downlink



Date: 29.JAN.2009 14:53:44

EQUIPMENT: **MR8518**

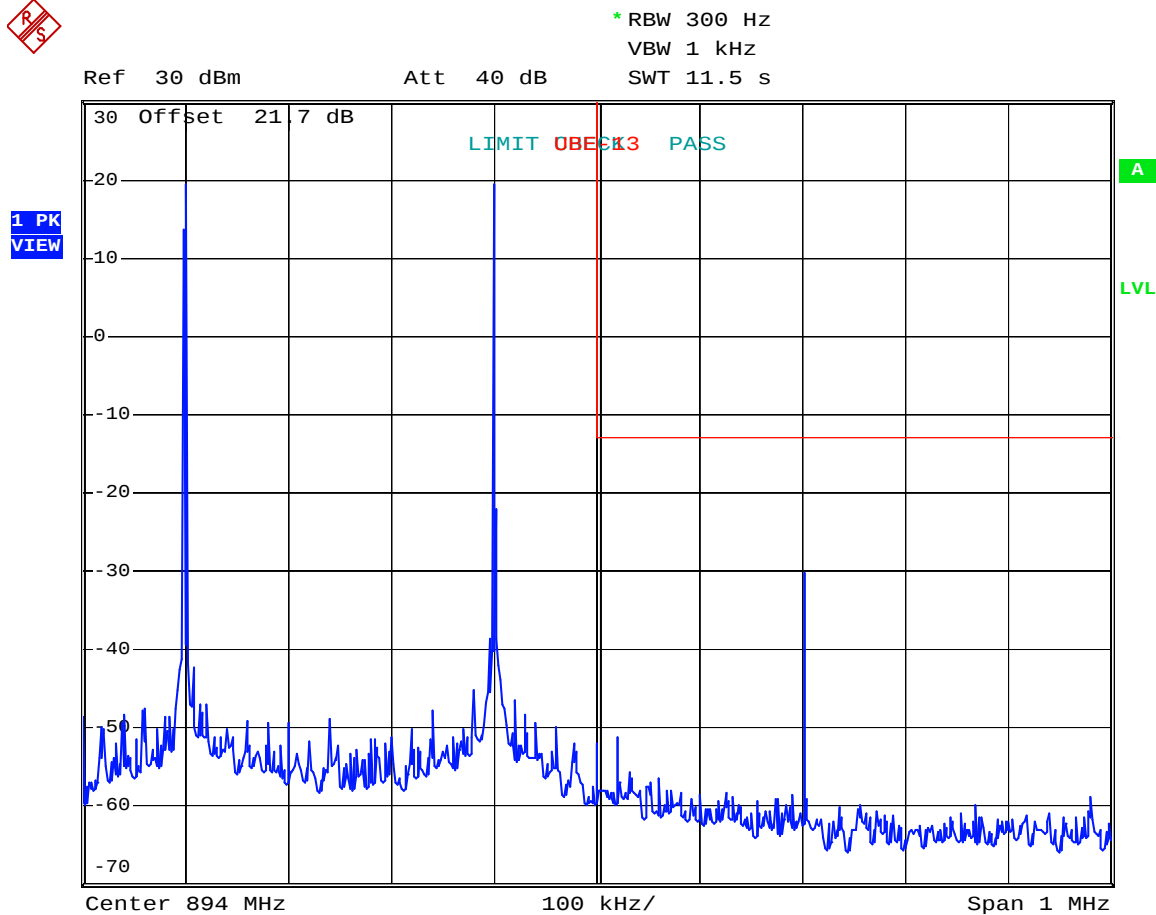
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Upper Bandedge Intermodulation

Analog

Downlink



Date: 29.JAN.2009 14:52:21

EQUIPMENT: **MR8518**

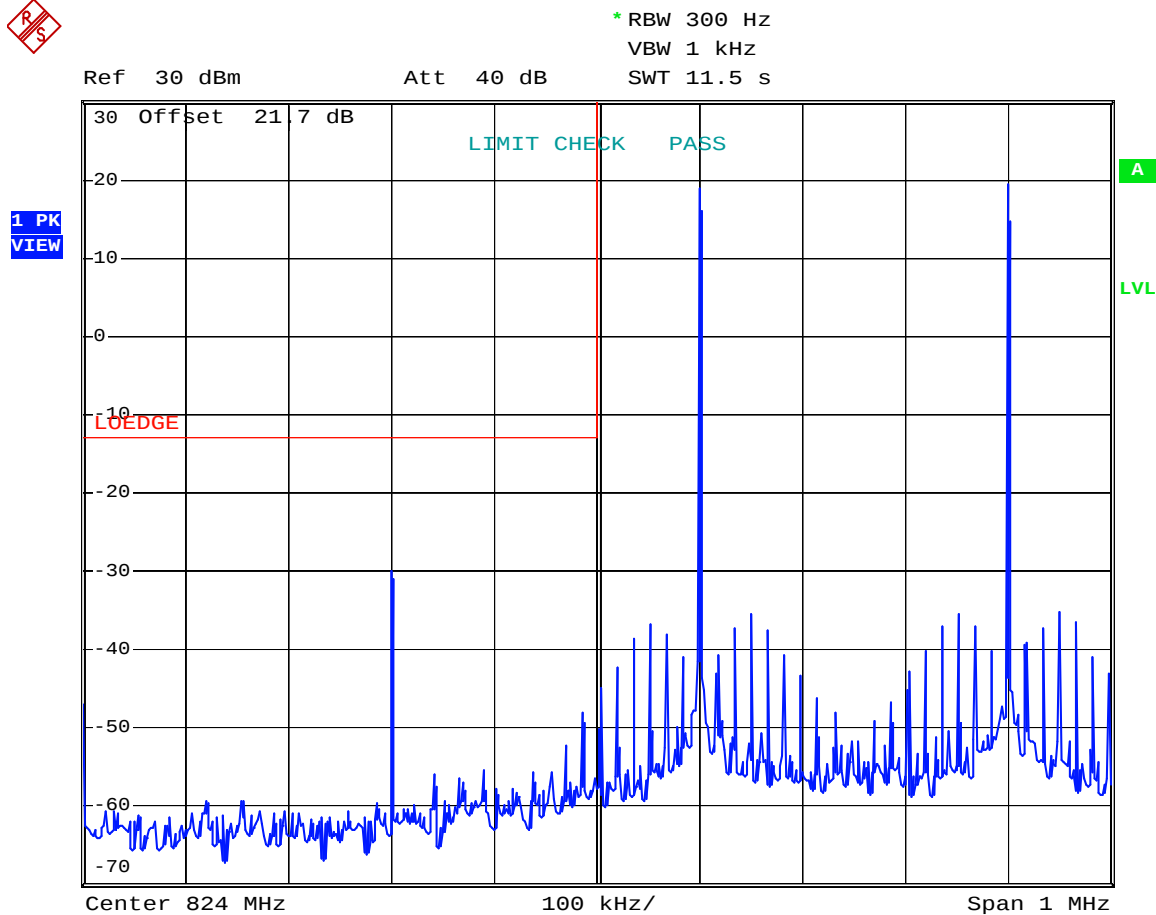
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

Lower Bandedge Intermodulation

Analog

Uplink



Date: 30.JAN.2009 09:38:33

EQUIPMENT: **MR8518**

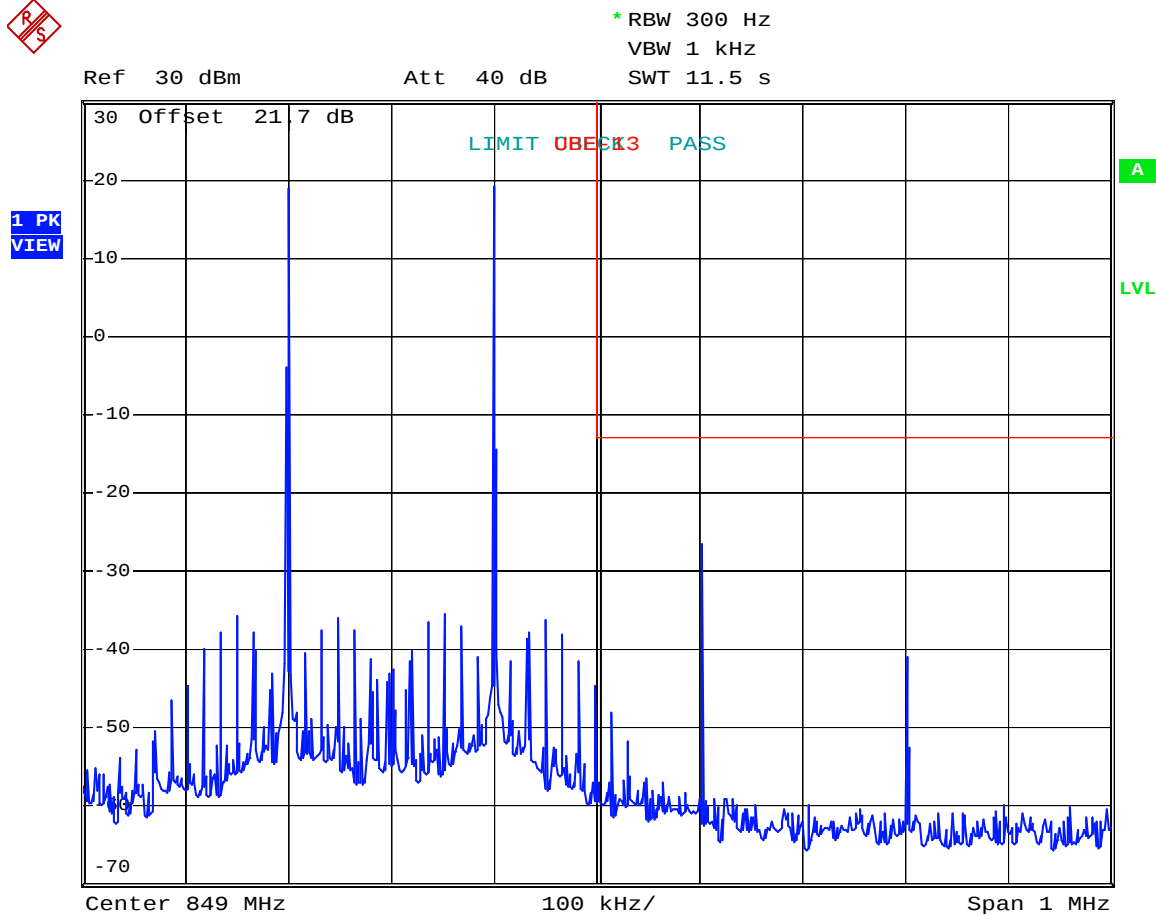
PROJECT NO.: 24845RUS1

Test Data – Spurious Emissions at Antenna Terminals

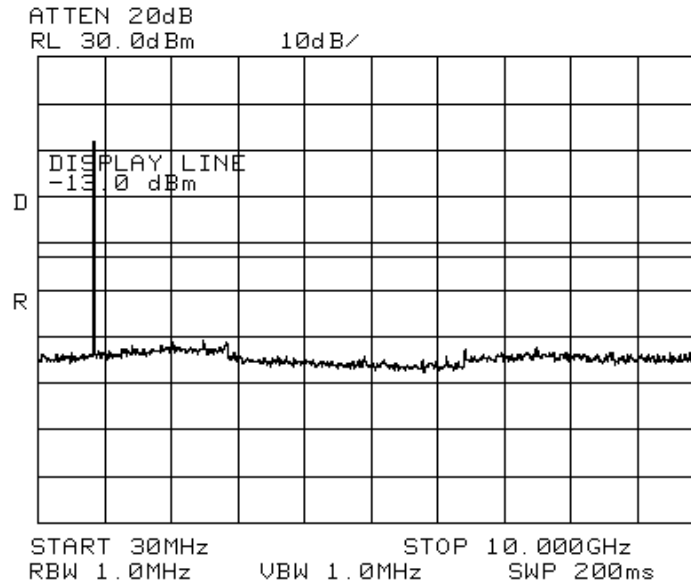
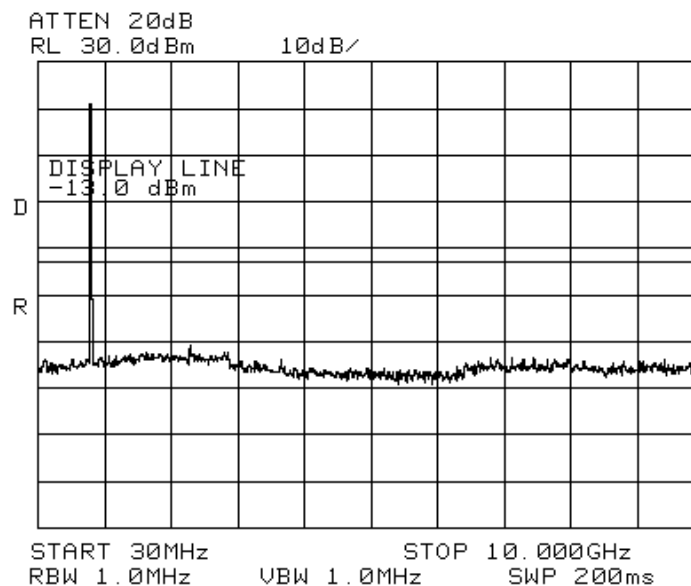
Upper Bandedge Intermodulation

Analog

Uplink



Date: 30.JAN.2009 09:40:56

Test Data – Spurious Emissions at Antenna Terminals**Spurs – Analog - Downlink****Spurs – Analog - Uplink**

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 22.917
TESTED BY: David Light	DATE: 30 January 2009

Test Results: Complies.

Test Data: The spectrum was searched from 30 MHz to the tenth harmonic of the carrier. There were no emissions detected above the noise floor, which was at least 20 dB below the specification limit of -20 dBm.

Equipment Used: 1464-1484-1485-1016-993-791-1763**Measurement Uncertainty:** +/-1.7 dB**Temperature:** 22 °C**Relative Humidity:** 30 %

EQUIPMENT: **MR8518**PROJECT NO.: 24845RUS1

Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	01/24/07	01/24/09
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/30/07	01/30/09
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
1484	Cable	Storm PR90-010-072	N/A	05/07/08	05/07/09
1484	Cable	Storm PR90-010-072	N/A	05/07/08	05/07/09
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/31/07	08/30/08
1763	Bilog Antenna	Schaffner CBL 6111D	22926	11/04/08	11/04/09
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/07/08	05/07/09
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	05/07/08	05/07/09

ANNEX A - TEST DETAILS

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

NAME OF TEST: RF Power Output

PARA. NO.: 2.1046

Minimum Standard: Para. No. 22.913(a). The maximum effective radiated power (ERP) of base transmitters and cellular repeaters must not exceed 500 watts.

Method Of Measurement:

Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter. Power output is measured with the maximum rated input level.

Integral Antenna:

The antenna substitution method is used to determine the equivalent radiated power at spurious frequencies. The spurious emissions are measured at a distance of 3 meters. The EUT is then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna is fed with a signal at the spurious frequency. The level of the signal is adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

NAME OF TEST: Occupied Bandwidth

PARA. NO.: 2.1049

Minimum Standard: Not defined (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

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

**NAME OF TEST: Spurious Emission at Antenna
Terminals****PARA. NO.: 2.1051****Minimum Standard:**

Para. No. 22.917(e). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least $43 + 10 \log P$. This is equivalent to -13 dBm absolute power.

Method Of Measurement:**Method Of Measurement:**

Spectrum analyzer settings:

CDMA

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

TDMA

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

GSM / EDGE

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

W-CDMA

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

NAME OF TEST: Field Strength of Spurious Radiation	PARA. NO.: 2.1053
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Minimum Standard:

Para. No. 22.917(e). The mean power of emissions must be attenuated below the mean power of the unmodulated carrier on any frequency twice or more than twice the fundamental emission by at least $43 + 10 \log P$. This is equivalent to -13 dBm absolute power.

Method of Measurement

TIA/EIA-603-1992

The antenna substitution method is used to determine the equivalent radiated power at spurious frequencies. The spurious emissions are measured at a distance of 3 meters. The EUT is then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna is fed with a signal at the spurious frequency. The level of the signal is adjusted to repeat the previously measured level. The resulting erp is the signal level fed to the reference antenna corrected for gain referenced to a dipole.

EQUIPMENT: **MR8518**

PROJECT NO.: 24845RUS1

NAME OF TEST: Frequency Stability**PARA. NO.: 2.1055****Minimum Standard:**

Para. No. 22.355. The transmitter carrier frequency shall remain within the tolerances given in Table C-1.

Table C-1

Freq. Range (MHz)	Base, fixed	Mobile > 3 W	Mobile ≤ 3 W
821 to 896	1.5	2.5	2.5

Method Of Measurement:Frequency Stability With Voltage Variation:

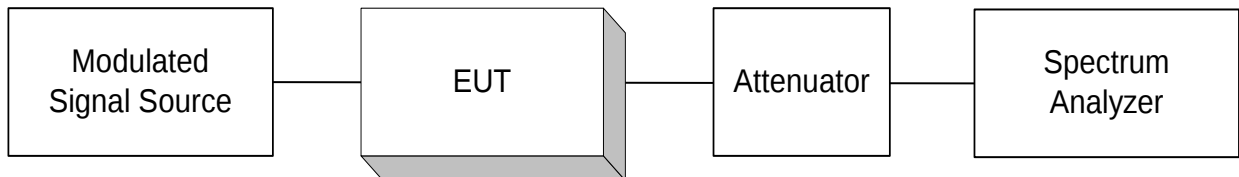
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the signal generator. With the voltage input to the E.U.T. set to 85% S.T.V., the frequency is measured in 30 second intervals for a period of 5 minutes. This procedure is repeated at 100% S.T.V. and 115% S.T.V.

Frequency Stability With Temperature Variation:

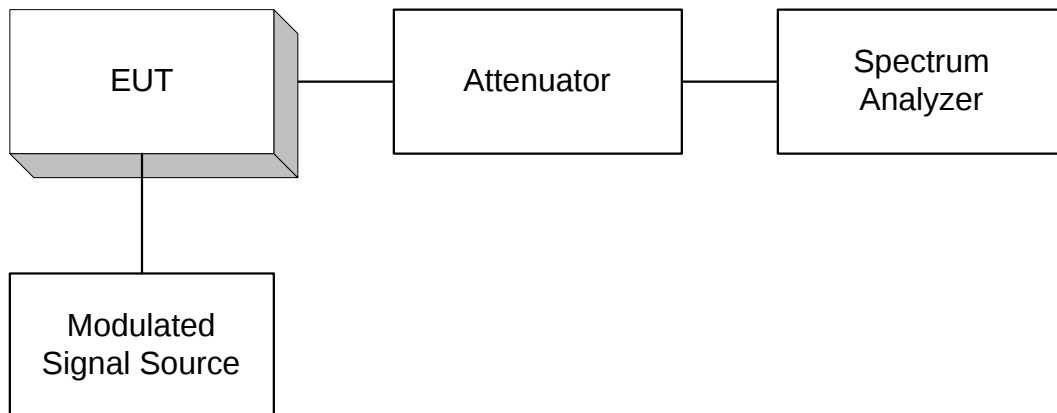
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

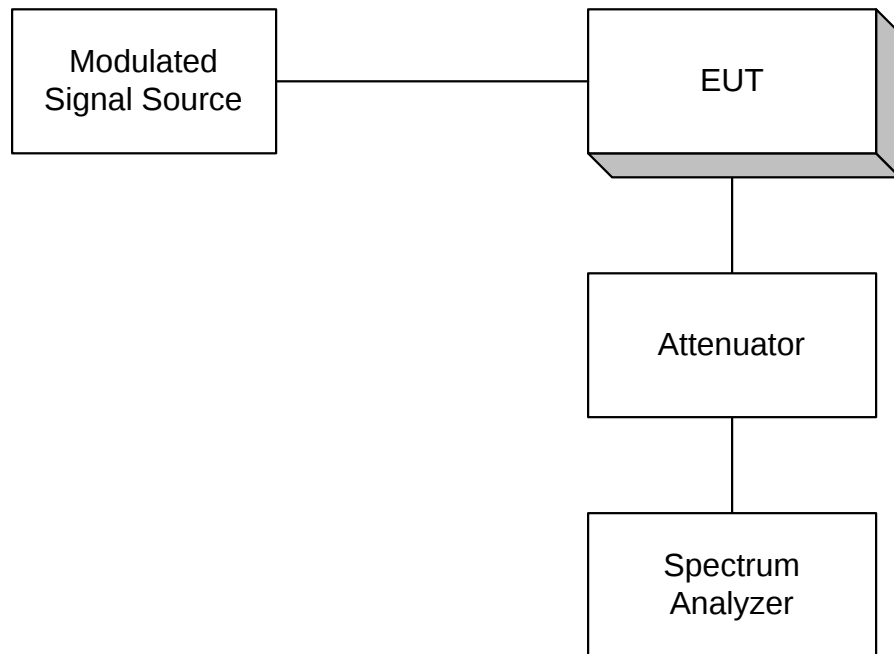
Para. No. 2.1046 - R.F. Power Output



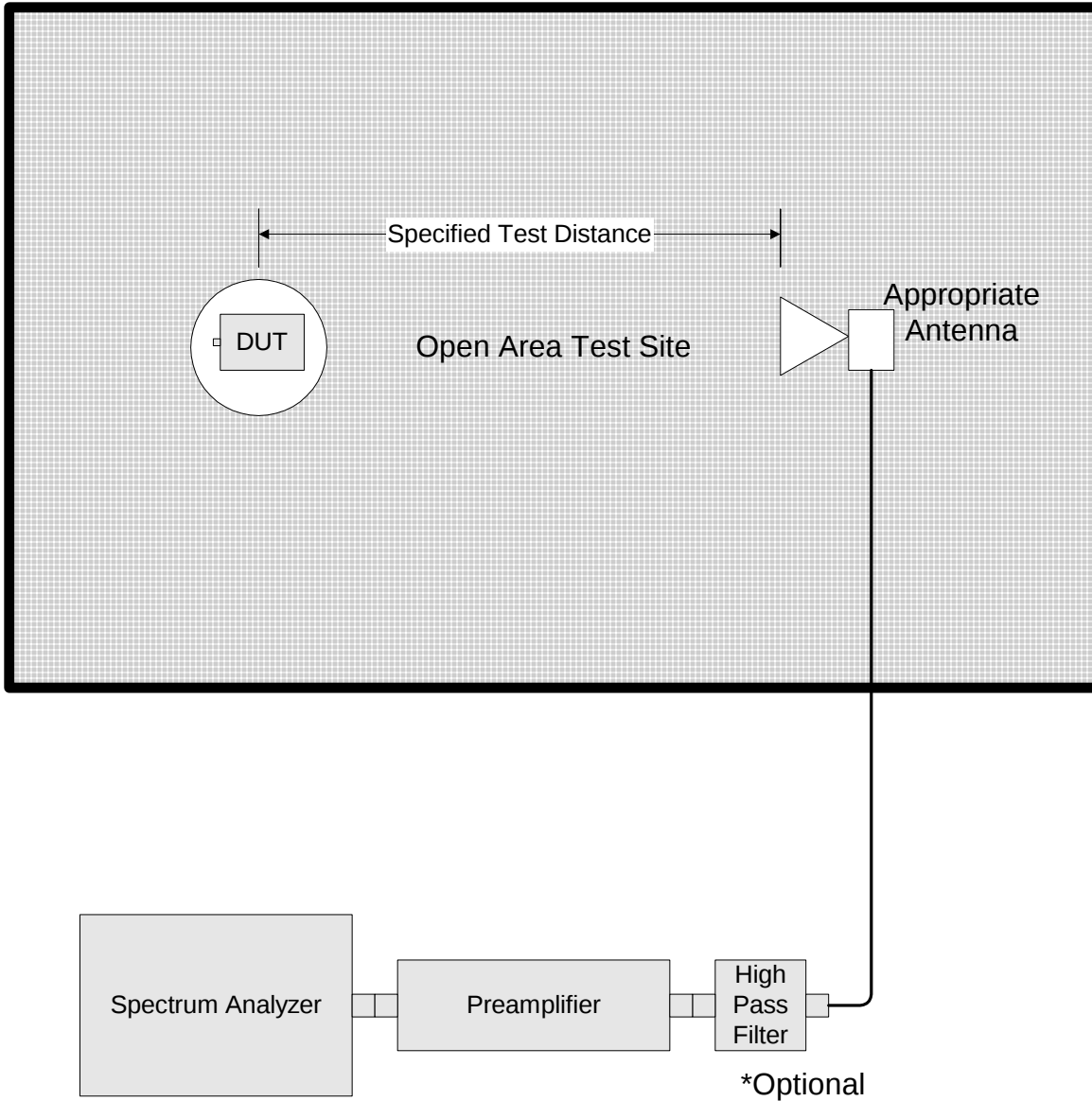
Para. No. 2.1049 - Occupied Bandwidth

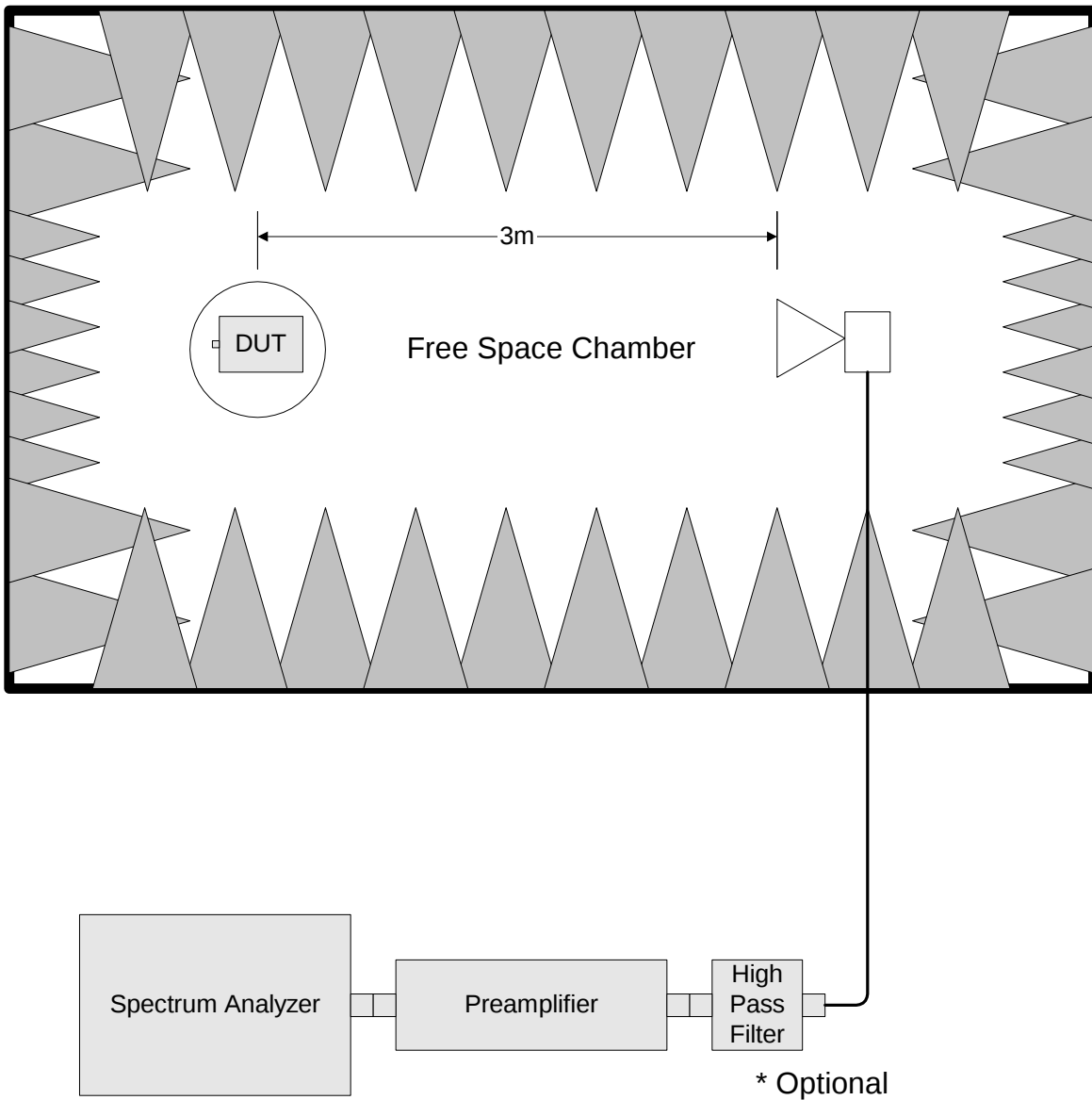


Para. No. 2.1051 Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation





Para. No. 2.1055 - Frequency Stability

