




Nemko Test Report: 16265RUS1

Applicant: Andrew Corporation
108 Rand Park Drive
Garner, NC 27529
USA

**Equipment Under Test:
(E.U.T.)** AF8527

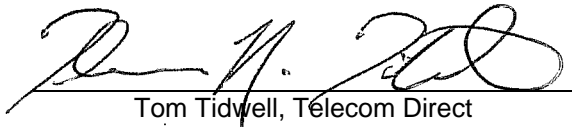
In Accordance With: **CFR 47, Part 22, Subpart H**
Cellular Band Repeaters

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

TESTED BY: 

David Light, Senior Wireless Engineer

DATE: 06 October 2008

APPROVED BY: 

Tom Tidwell, Telecom Direct

DATE: 08 October, 2008

Number of Pages: 83

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EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Section 1. Summary of Test Results

Manufacturer Andrew Corporation

Model No.: AF8527

Serial No.: 11

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.

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <input checked="" type="checkbox"/> | New Submission | <input checked="" type="checkbox"/> | Production Unit |
| <input type="checkbox"/> | Class II Permissive Change | <input type="checkbox"/> | 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: **AF8527**

PROJECT NO.: 16265RUS1

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:

- (1) Modulation characteristics were not tested since the E.U.T. processes but does not produce a modulated waveform.
- (2) The equipment under test uses a common oscillator to down-convert the rf input to an intermediate frequency and to up-convert the IF to rf output. The rf input and output frequency are the same.

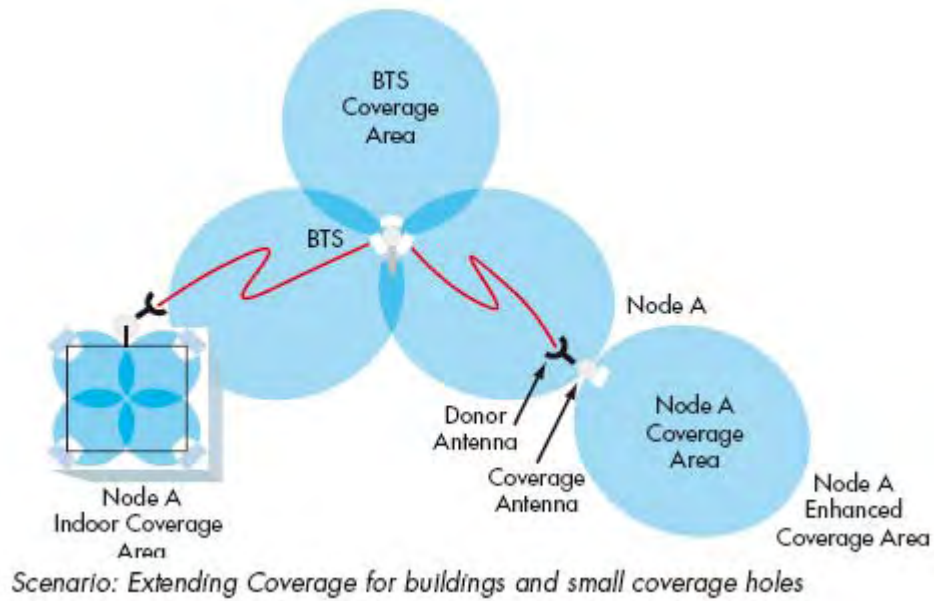
Section 2. General Equipment Specification

Supply Voltage Input:	120 Vac				
Frequency Range:	Downlink:	869-894 MHz			
Frequency Range:	Uplink:	824-849 Mhz			
Type of Modulation and Designator:	CDMA W-CDMA (F9W)	GSM (GXW)	TDMA (DXW)	EDGE (G7W)	Analog (F3E/F1D)
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Output Impedance:	50 ohms				
RF Output (Rated):	Downlink:	0.5 W 27 dBm			
	Uplink:	1.0 W 30 dBm			
Frequency Translation:	F1-F1	F1-F2	N/A		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Band Selection:	Software	Duplexer Change	Fullband Coverage		
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Description of EUT

The Node A is an RF enhancer which is capable of filtering and amplifying a multitude of distinct sub-bands up to 120 MHz in total anywhere within multiple frequency bands. It is designed to be part of the primary infrastructure

System Diagram



EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 22.913
TESTED BY: David Light	DATE: 03 October 2008

Test Results: Complies.

Test Data:

Direction	Modulation	Composite Power (dBm)	RF Power (W)
Downlink	CDMA	27	0.5
	GSM	27	0.5
	EDGE	27	0.5
	WCDMA	27	0.5
	TDMA	27	0.5
	Analog	27	0.5
Uplink	CDMA	30	1.0
	GSM	30	1.0
	EDGE	30	1.0
	WCDMA	30	1.0
	TDMA	30	1.0
	Analog	30	1.0

Equipment Used: 1065-1604-1082-1659

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 48 %

EQUIPMENT: **AF8527**

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Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 03 October 2008

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1065-1604-1082-1659

Measurement Uncertainty: 1X10⁻⁷ ppm

Temperature: 22 °C

Relative Humidity: 48 %

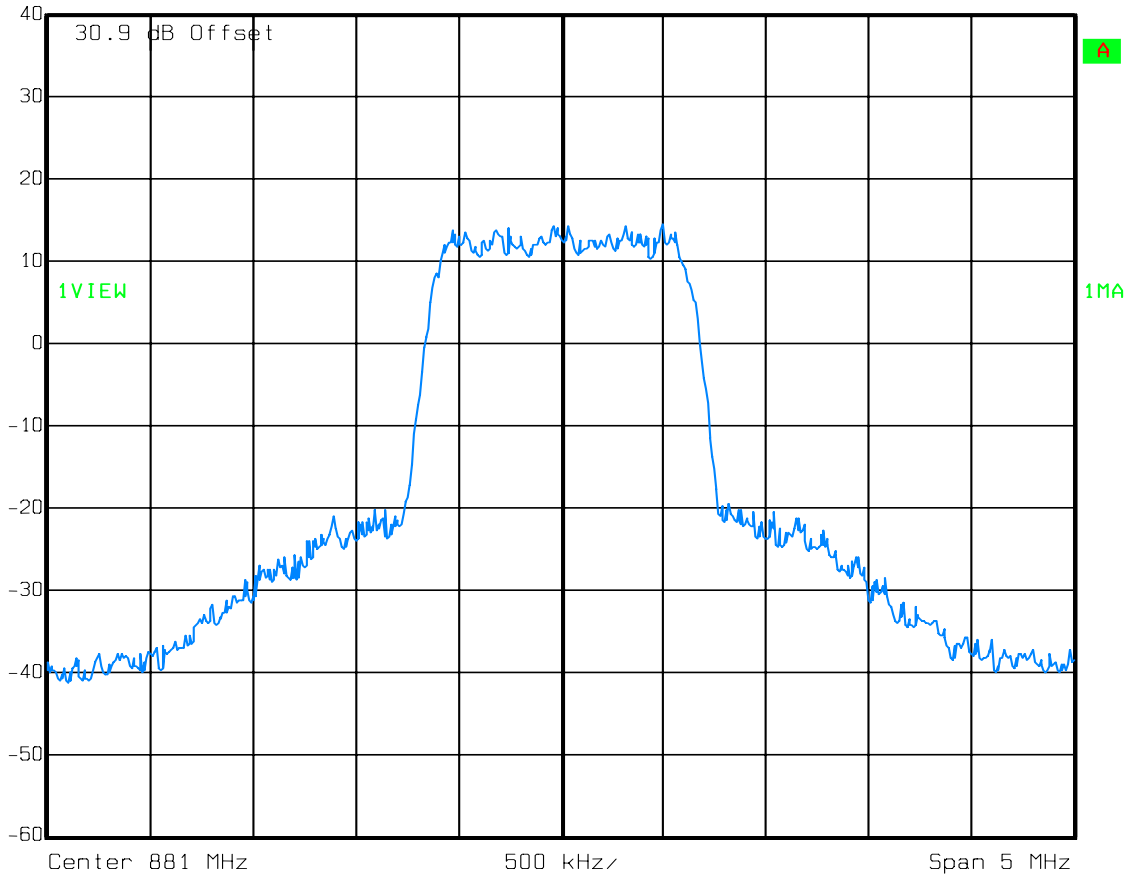
Test Data – Occupied Bandwidth

Downlink
CDMA – Output



Ref Lvl
40 dBm

RBW	30 kHz	RF Att	20 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 13:10:01

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

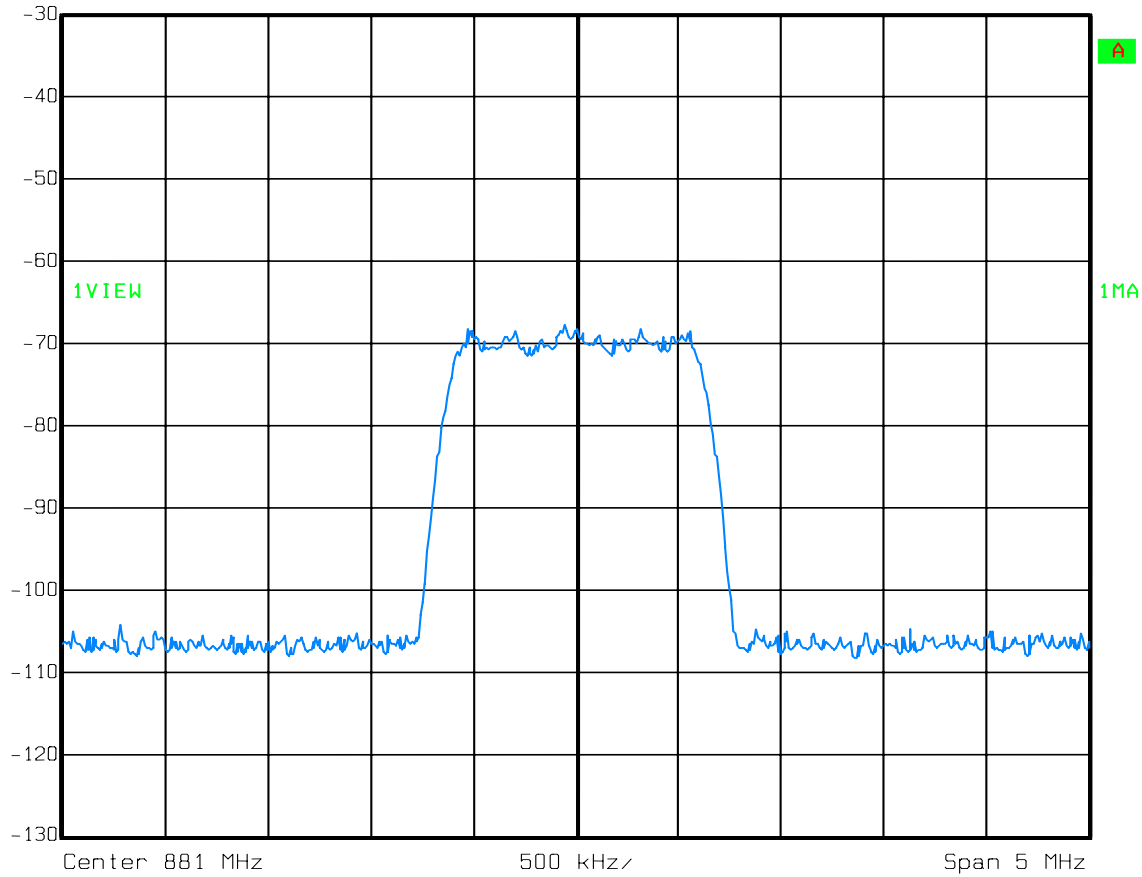
Test Data – Occupied Bandwidth

Downlink
CDMA – Input



Ref Lvl
-30 dBm

RBW	30 kHz	RF Att	0 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 13:10:59

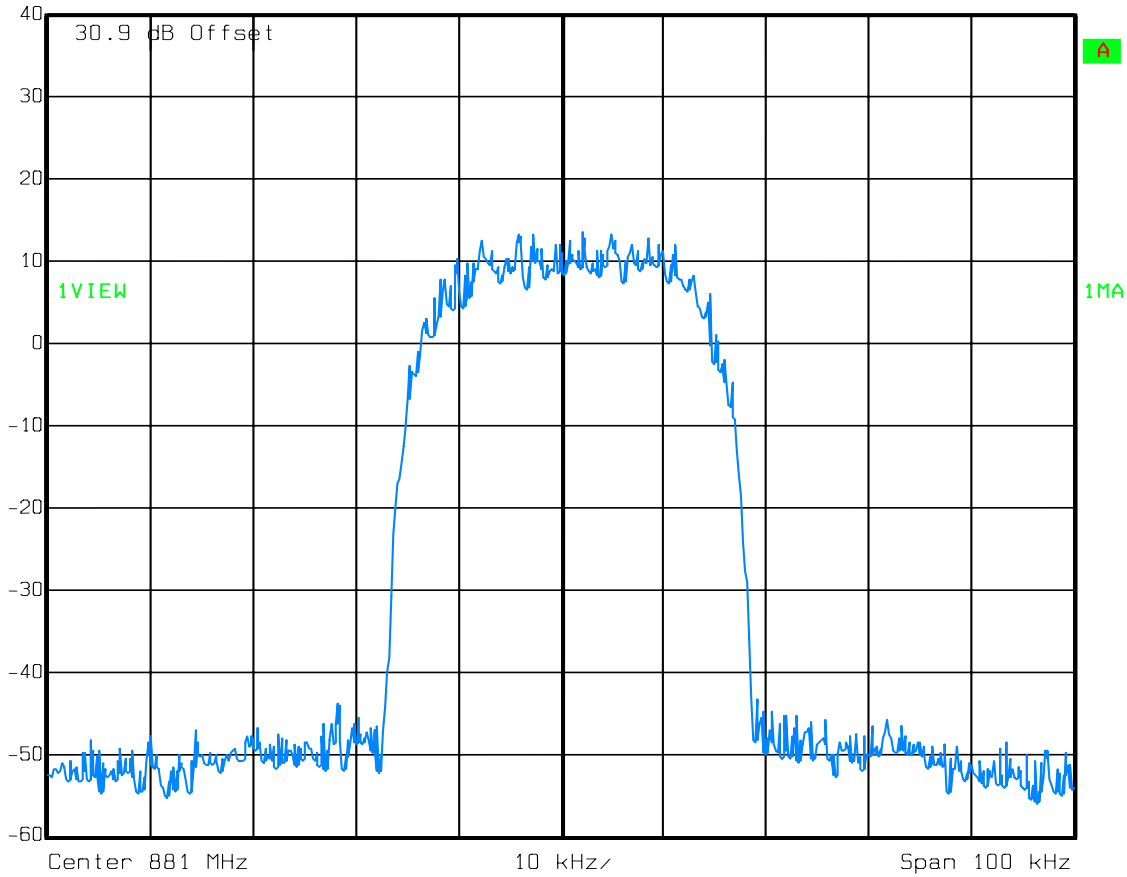
Test Data – Occupied Bandwidth

Downlink
TDMA - Output



Ref Lvl
40 dBm

RBW	300 Hz	RF Att	20 dB
VBW	300 Hz	Mixer	-10 dBm
SWT	5.6 s	Unit	dBm



Date: 03.OCT.2008 14:49:45

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

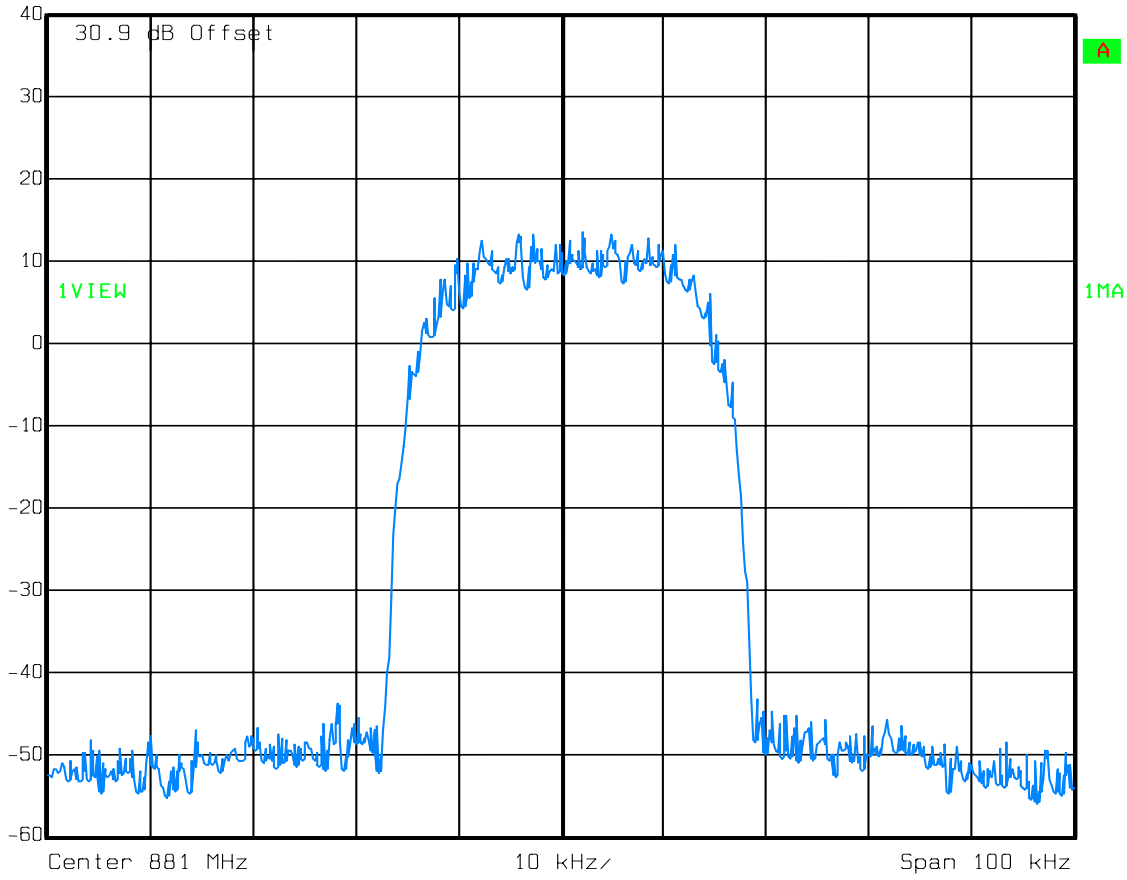
Test Data – Occupied Bandwidth

Downlink
TDMA – Input



Ref Lvl
40 dBm

RBW	300 Hz	RF Att	20 dB
VBW	300 Hz	Mixer	-10 dBm
SWT	5.6 s	Unit	dBm



Date: 03.OCT.2008 14:49:45

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

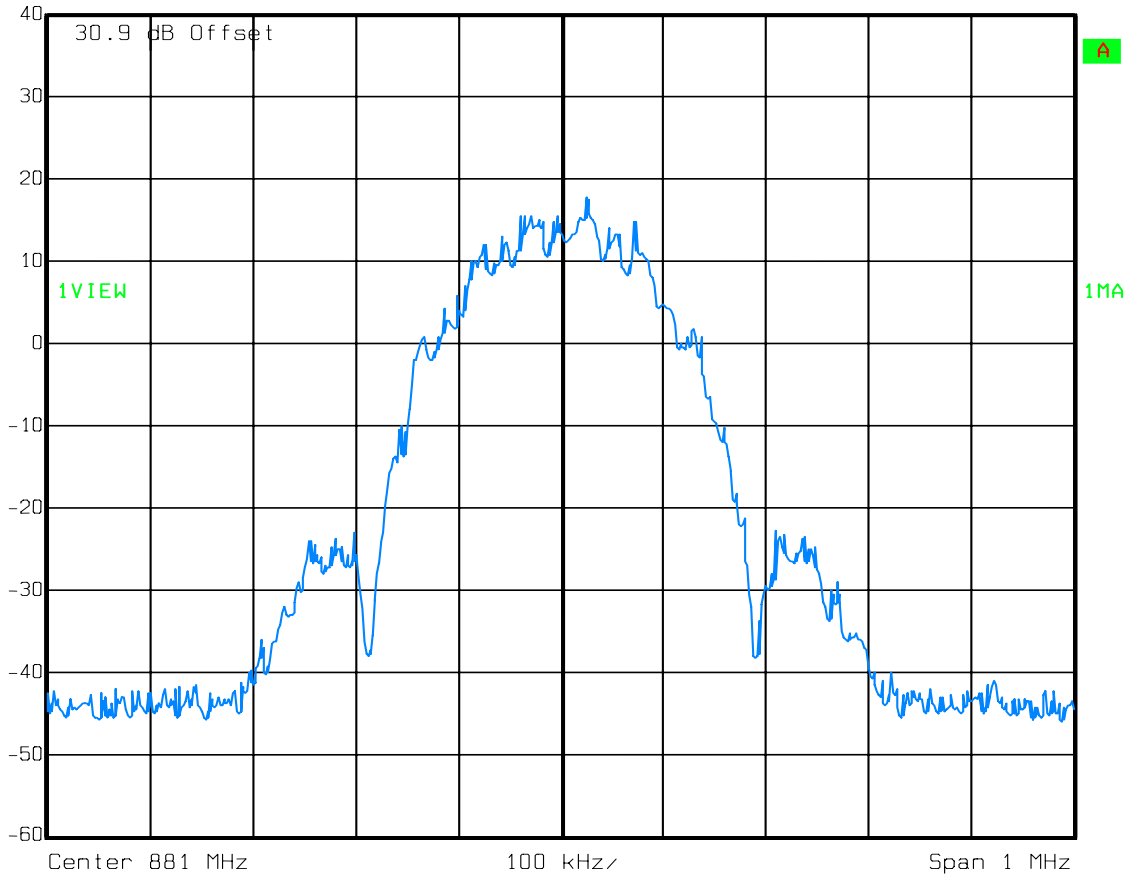
Test Data – Occupied Bandwidth

Downlink
EDGE – Output



Ref
40 dBm

RBW	3 kHz	RF Att	20 dB
VBW	3 kHz	Mixer	-10 dBm
SWT	280 ms	Unit	dBm



Date: 03.OCT.2008 13:25:42

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

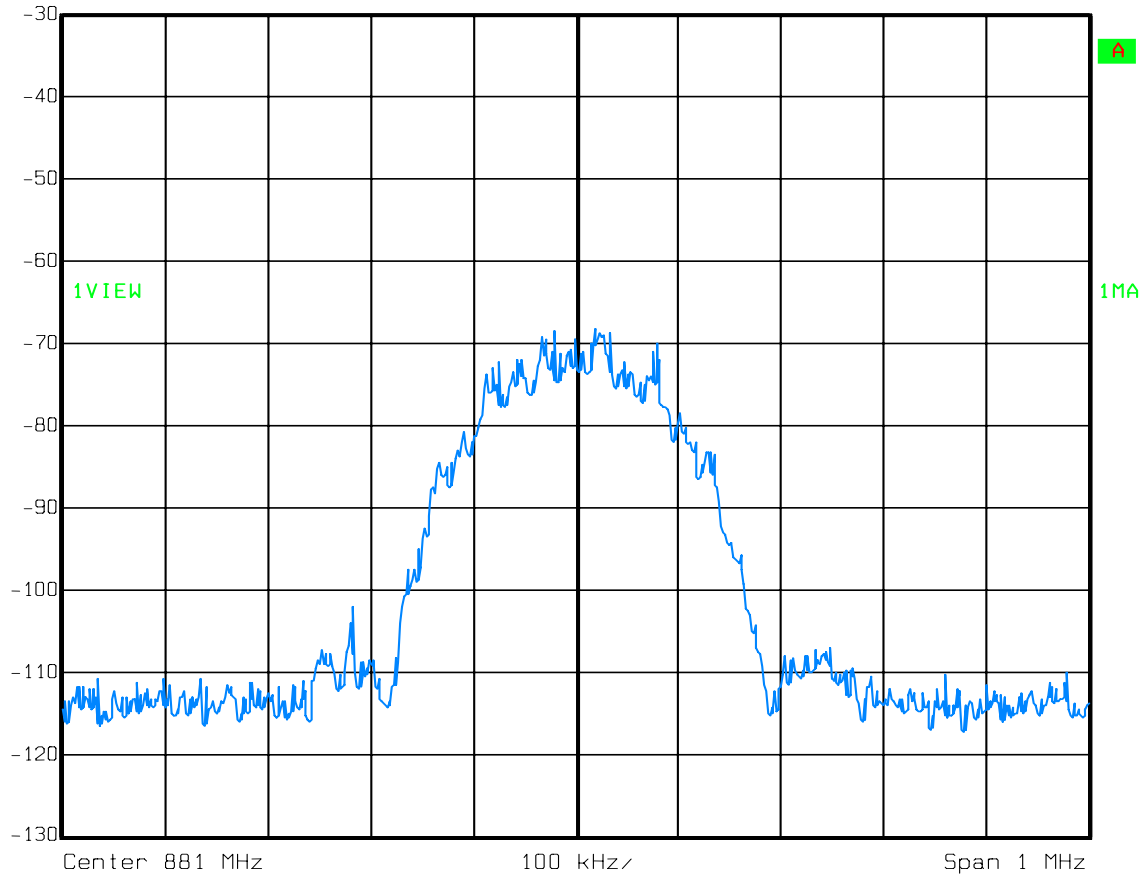
Test Data – Occupied Bandwidth

Downlink
EDGE – Input



Ref Lvl
-30 dBm

RBW	3 kHz	RF Att	0 dB
VBW	3 kHz	Mixer	-10 dBm
SWT	280 ms	Unit	dBm



Date: 03.OCT.2008 13:26:42

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

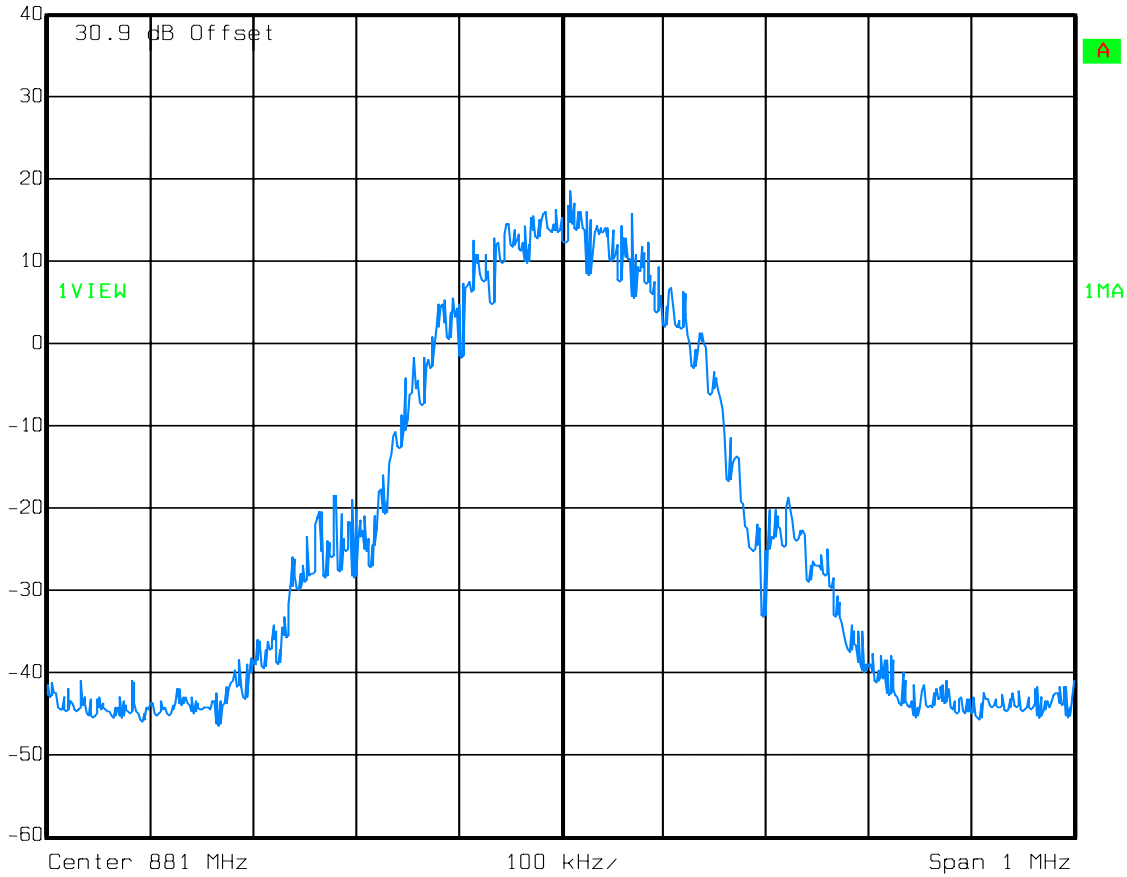
Test Data – Occupied Bandwidth

Downlink
GSM – Output



Ref Lvl
40 dBm

RBW	3 kHz	RF Att	20 dB
VBW	3 kHz	Mixer	-10 dBm
SWT	280 ms	Unit	dBm



Date: 03.OCT.2008 13:16:15

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

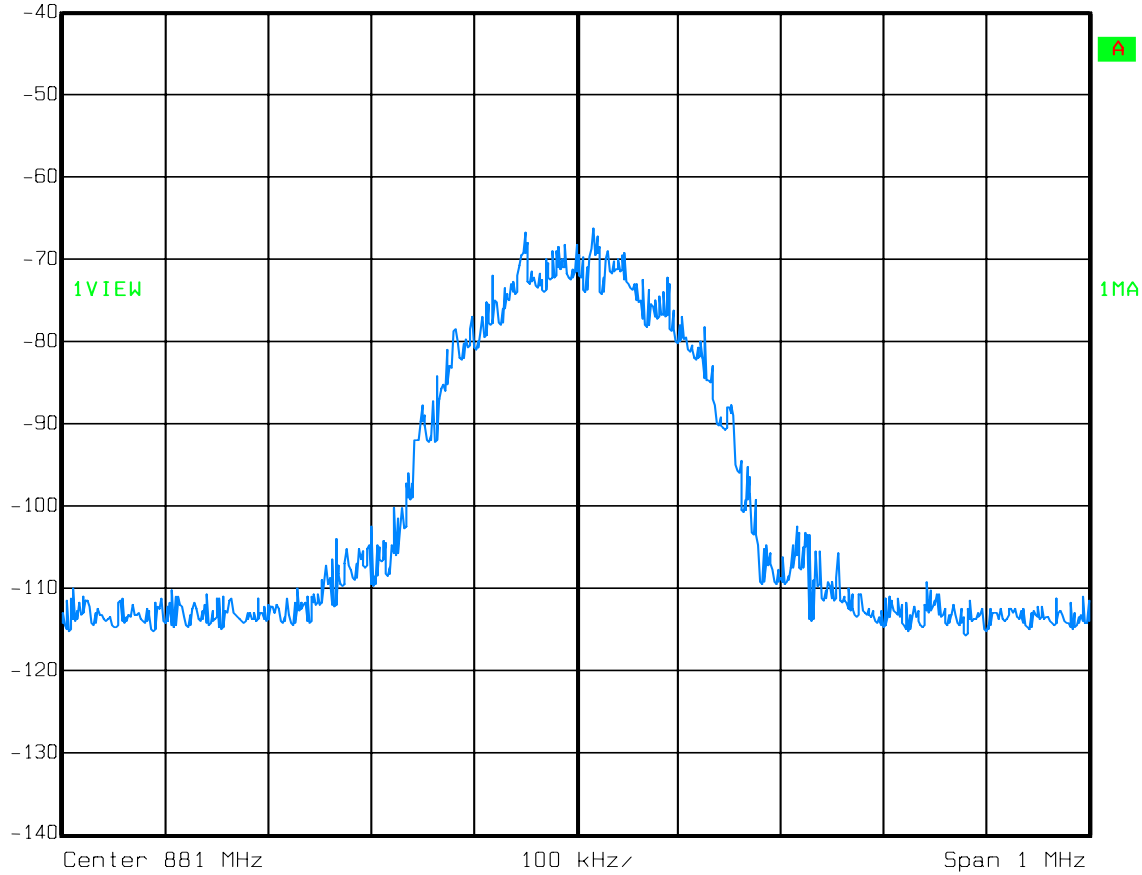
Test Data – Occupied Bandwidth

Downlink
GSM – Input



Re
-40 dBm

RBW	3 kHz	RF Att	0 dB
VBW	3 kHz	Mixer	-10 dBm
SWT	280 ms	Unit	dBm



Date: 03.OCT.2008 13:17:19

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

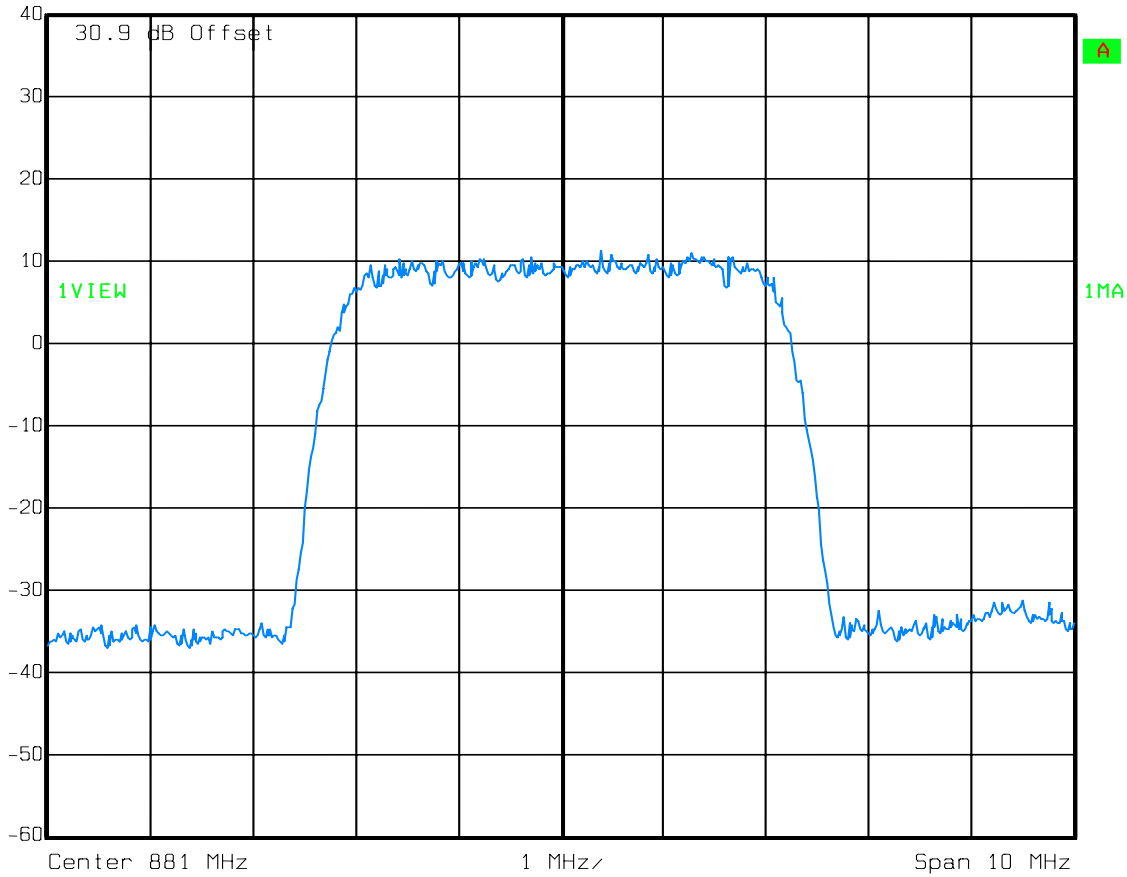
Test Data – Occupied Bandwidth

Downlink
W-CDMA - Output



Ref Lvl
40 dBm

RBW	50 kHz	RF Att	20 dB
VBW	50 kHz	Mixer	-10 dBm
SWT	10 ms	Unit	dBm



Date: 03.OCT.2008 13:31:06

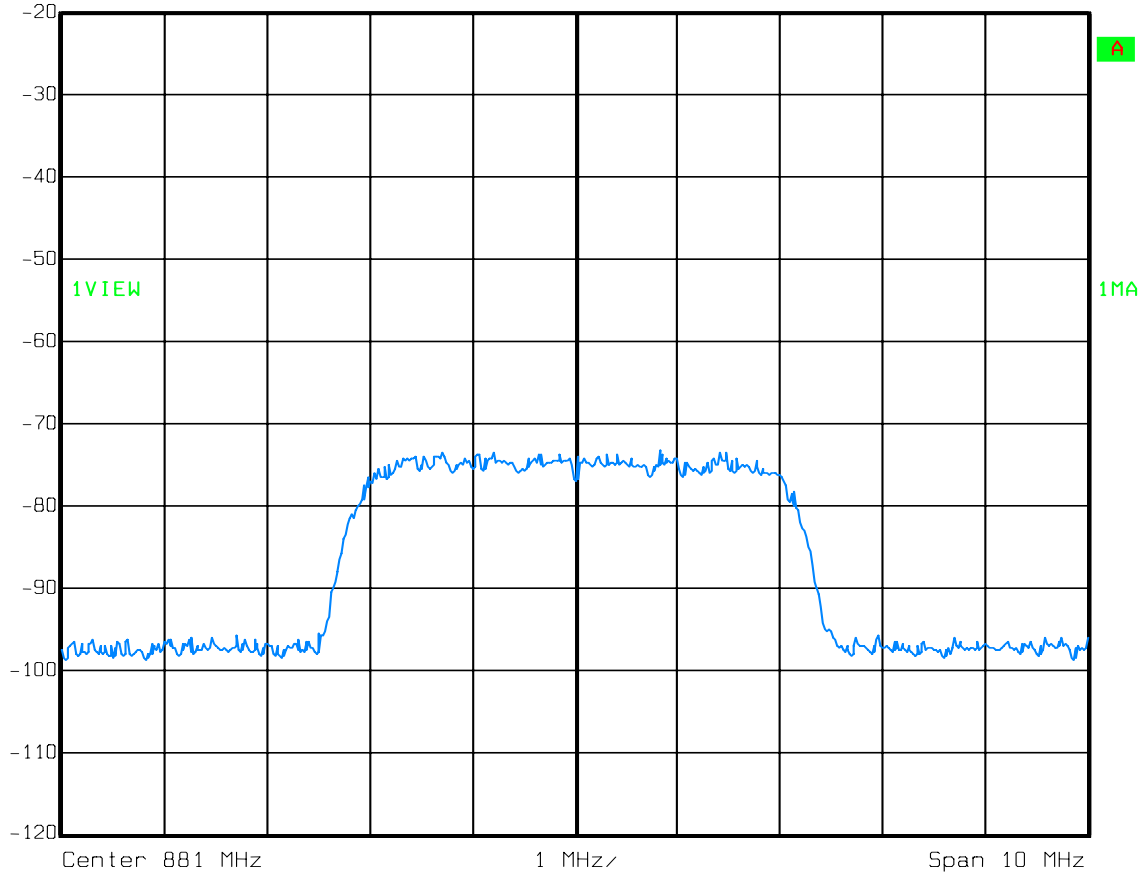
Test Data – Occupied Bandwidth

Downlink
W-CDMA - Input



Ref Lvl
-20 dBm

RBW	50 kHz	RF Att	0 dB
VBW	50 kHz	Mixer	-10 dBm
SWT	10 ms	Unit	dBm



Date: 03.OCT.2008 13:32:27

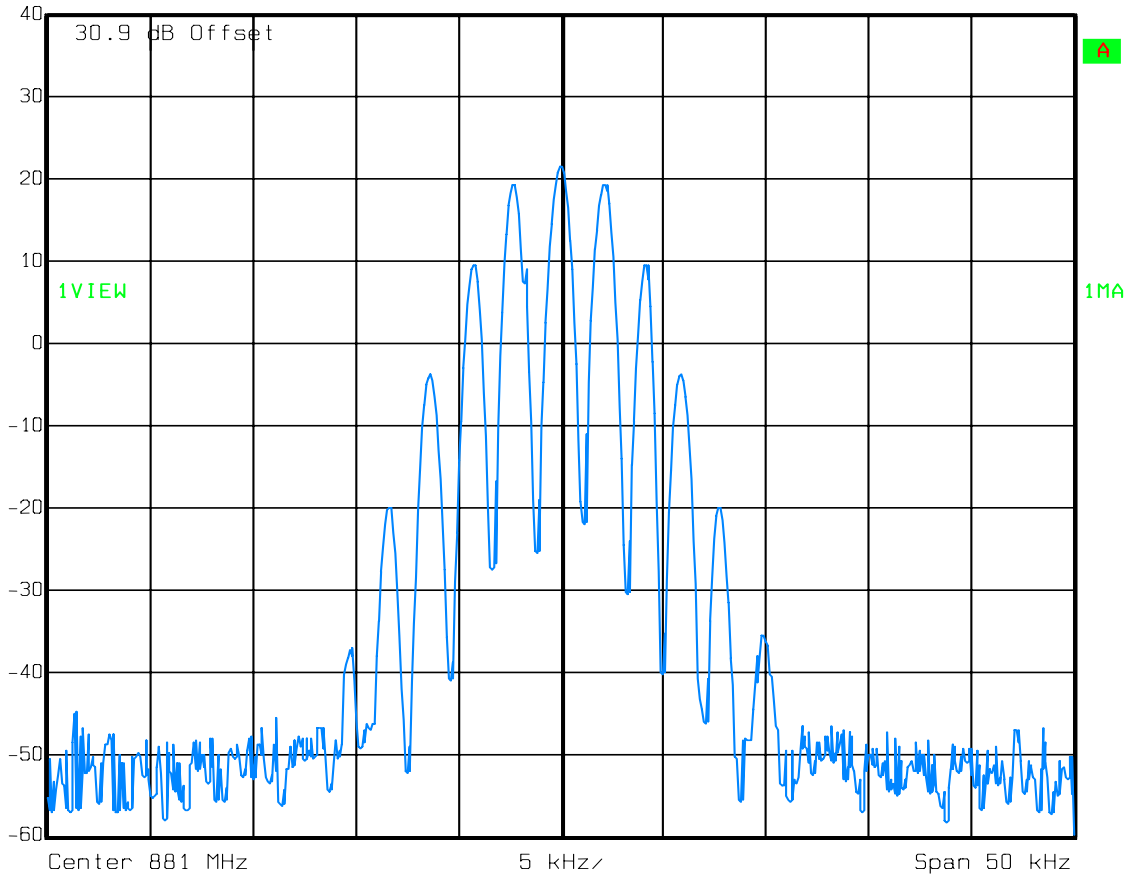
Test Data – Occupied Bandwidth

Downlink
Analog – Output



Ref Lvl
40 dBm

RBW	500 Hz	RF Att	20 dB
VBW	500 Hz	Mixer	-10 dBm
SWT	1 s	Unit	dBm



Date: 03.OCT.2008 14:59:14
2 kHz Tone / 2.5 kHz Deviation

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

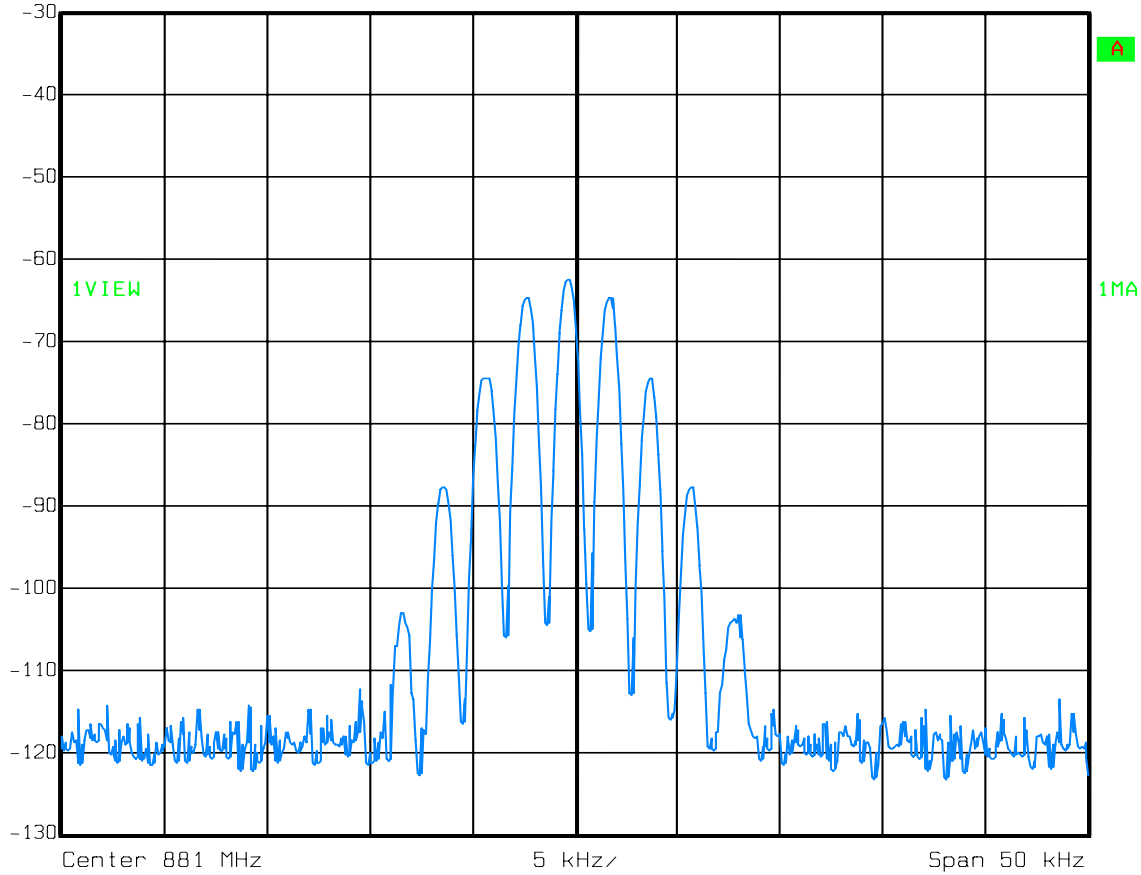
Test Data – Occupied Bandwidth

Downlink
Analog – Input



Ref Lvl
-30 dBm

RBW	500 Hz	RF Att	0 dB
VBW	500 Hz	Mixer	-10 dBm
SWT	1 s	Unit	dBm



Date: 03.OCT.2008 15:00:15

2 kHz Tone / 2.5 kHz Deviation

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

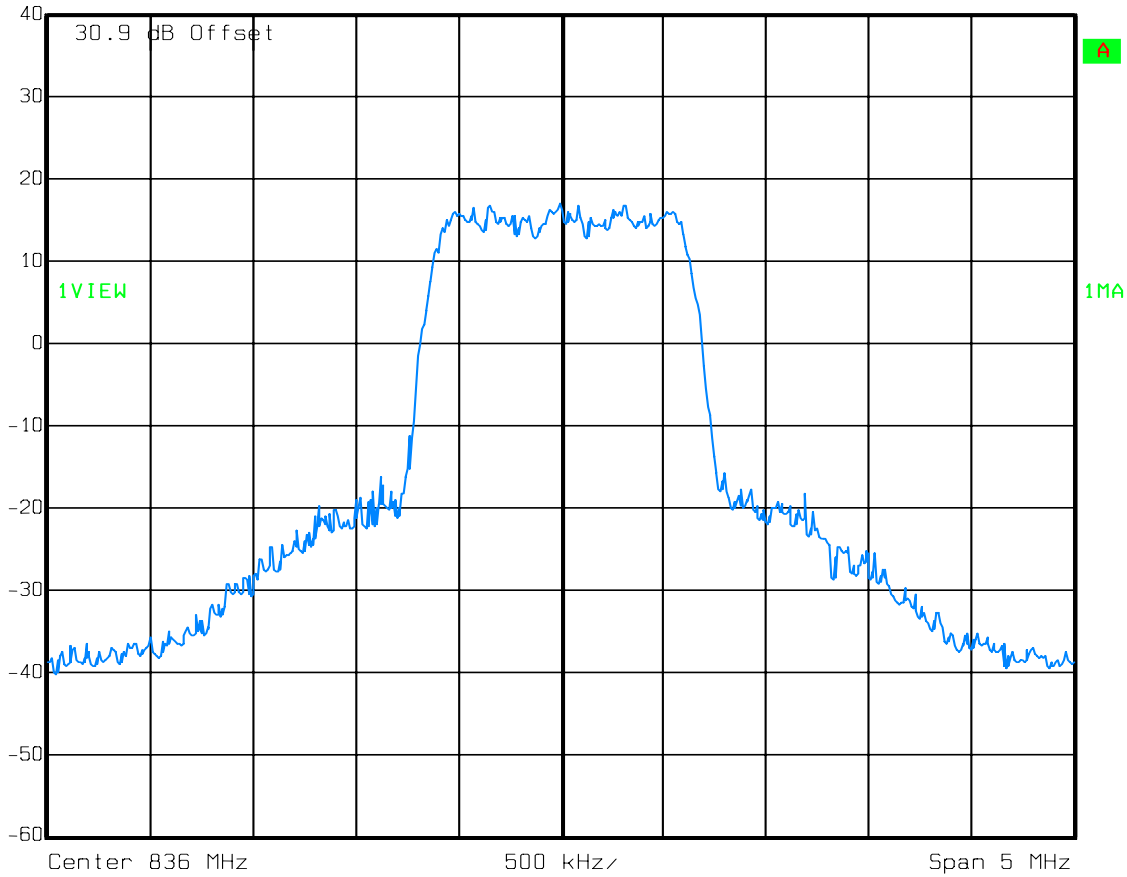
Test Data – Occupied Bandwidth

Uplink
CDMA – Output



Ref Lvl
40 dBm

RBW	30 kHz	RF Att	20 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 10:49:03

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

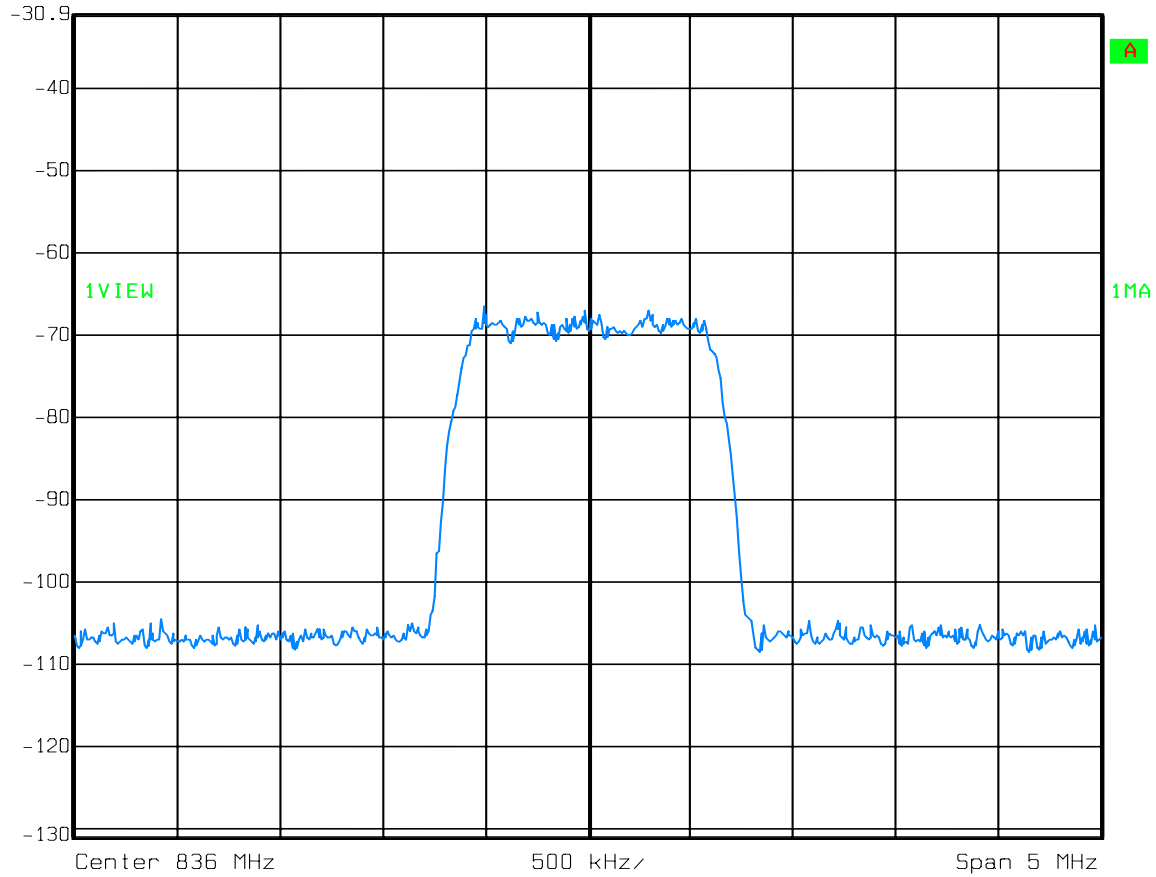
Test Data – Occupied Bandwidth

Uplink
CDMA – Input



Ref Lvl
-30.9 dBm

RBW	30 kHz	RF Att	0 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 10:50:45

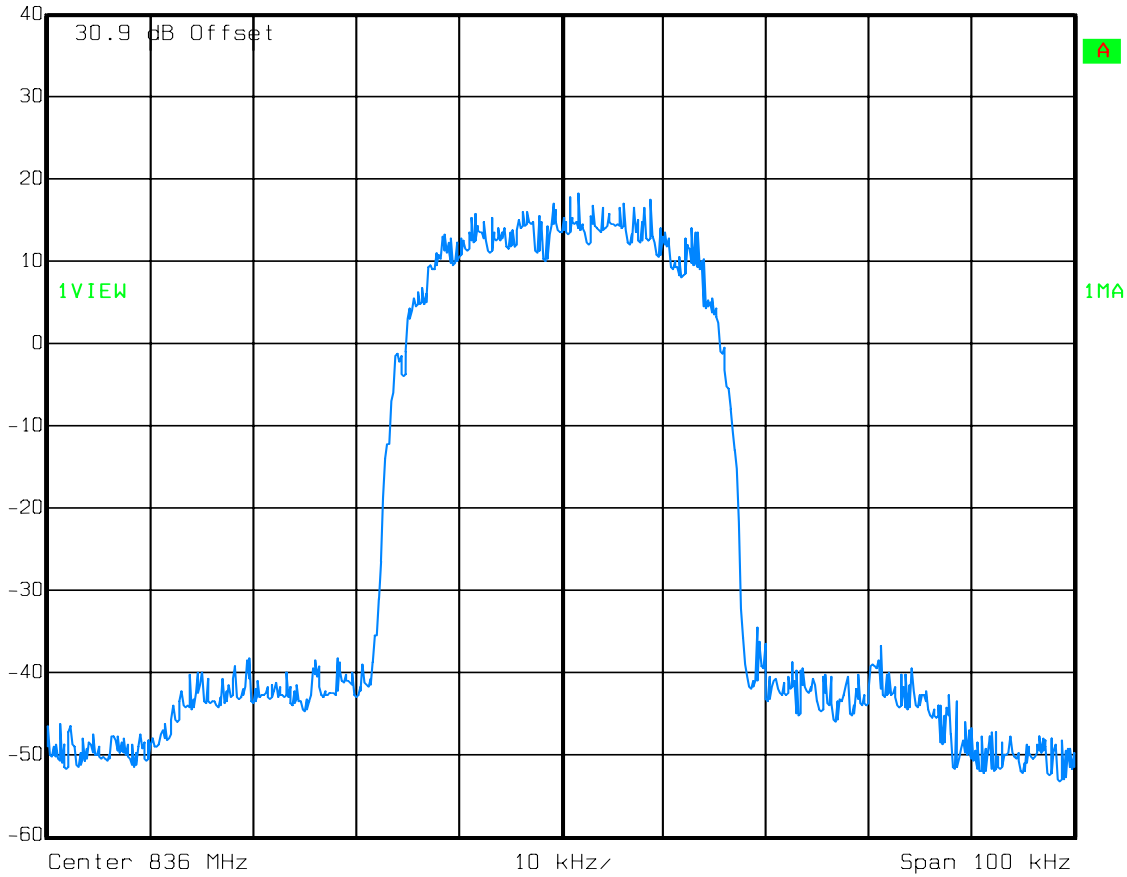
Test Data – Occupied Bandwidth

Uplink
TDMA - Output



Ref Lvl
40 dBm

RBW	300 Hz	RF Att	20 dB
VBW	300 Hz	Mixer	-10 dBm
SWT	5.6 s	Unit	dBm



Date: 03.OCT.2008 15:19:41

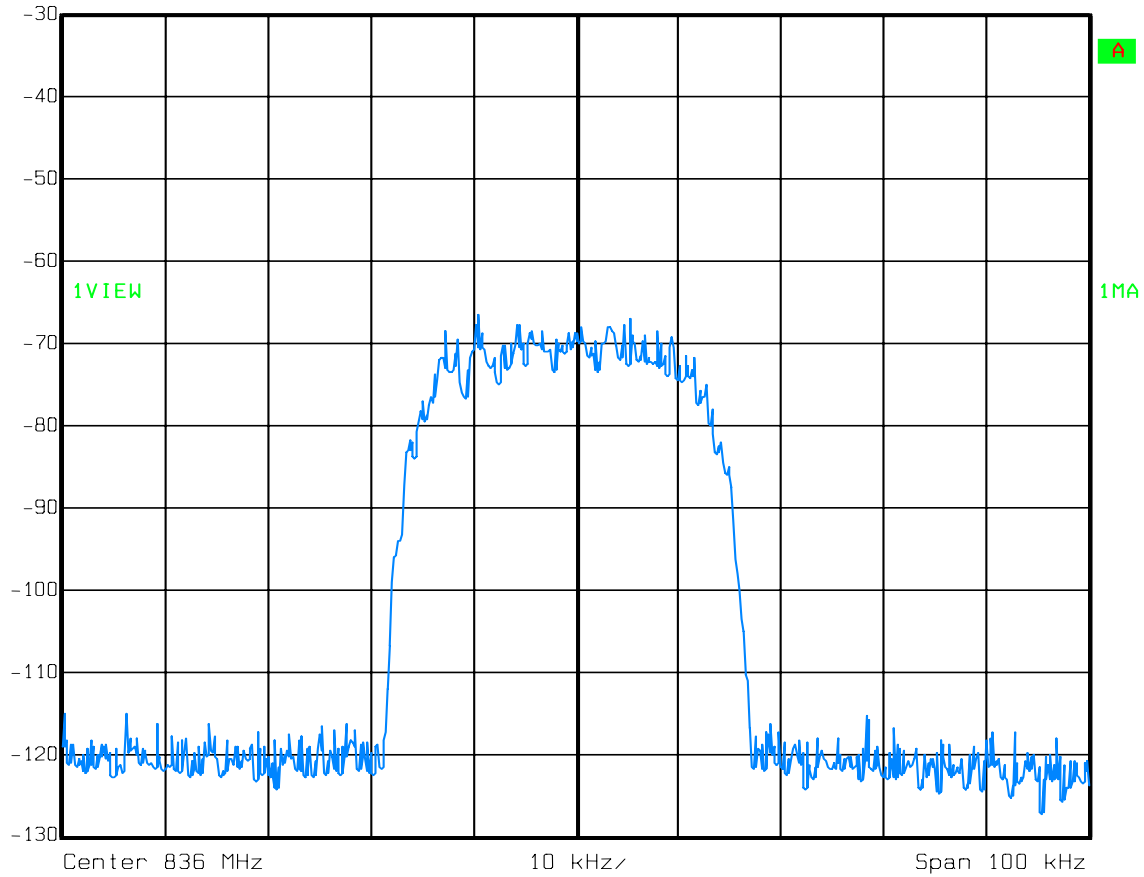
Test Data – Occupied Bandwidth

Uplink
TDMA – Input



Ref Lvl
-30 dBm

RBW	300 Hz	RF Att	0 dB
VBW	300 Hz	Mixer	-10 dBm
SWT	5.6 s	Unit	dBm



Date: 03.OCT.2008 15:16:43

Test Data – Occupied Bandwidth

Uplink
EDGE – Output



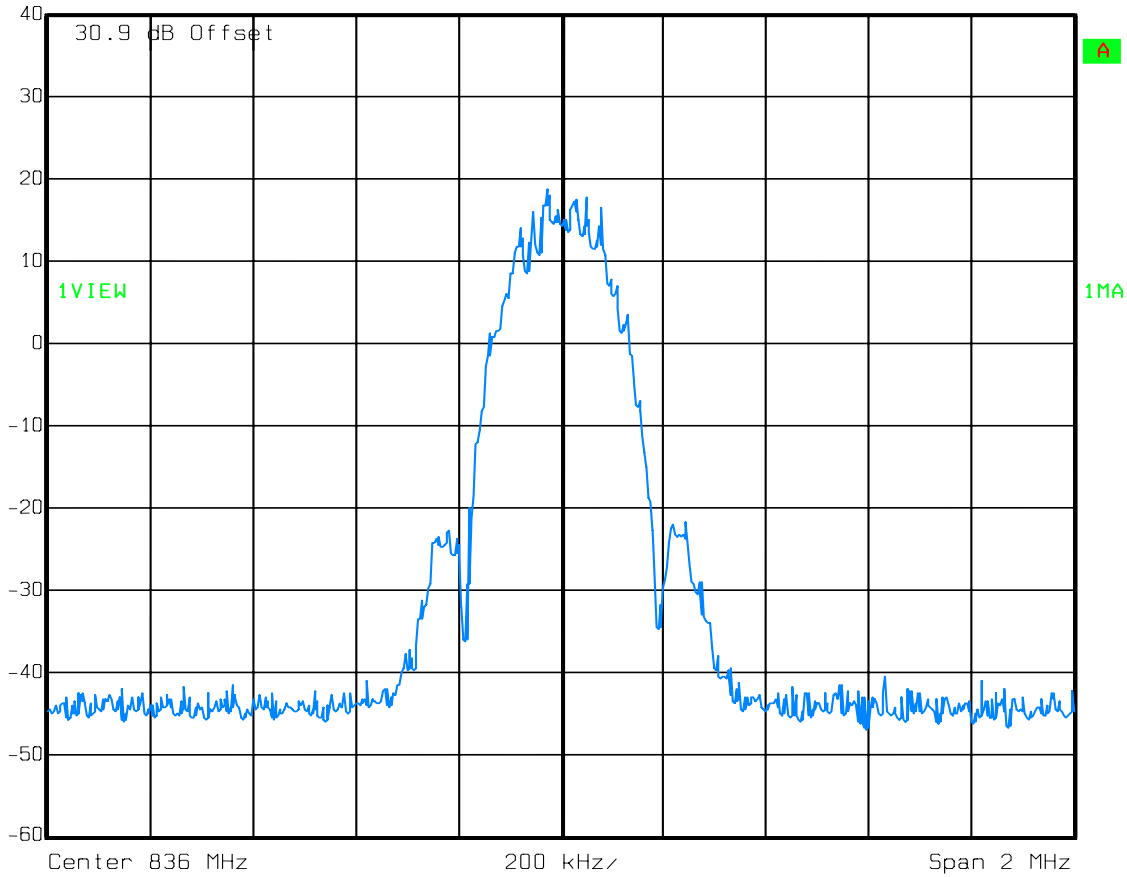
Ref

40 dBm

RBW 3 kHz RF Att 20 dB

VBW 3 kHz

SWT 560 ms Unit dBm



Date: 03.OCT.2008 12:38:40

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

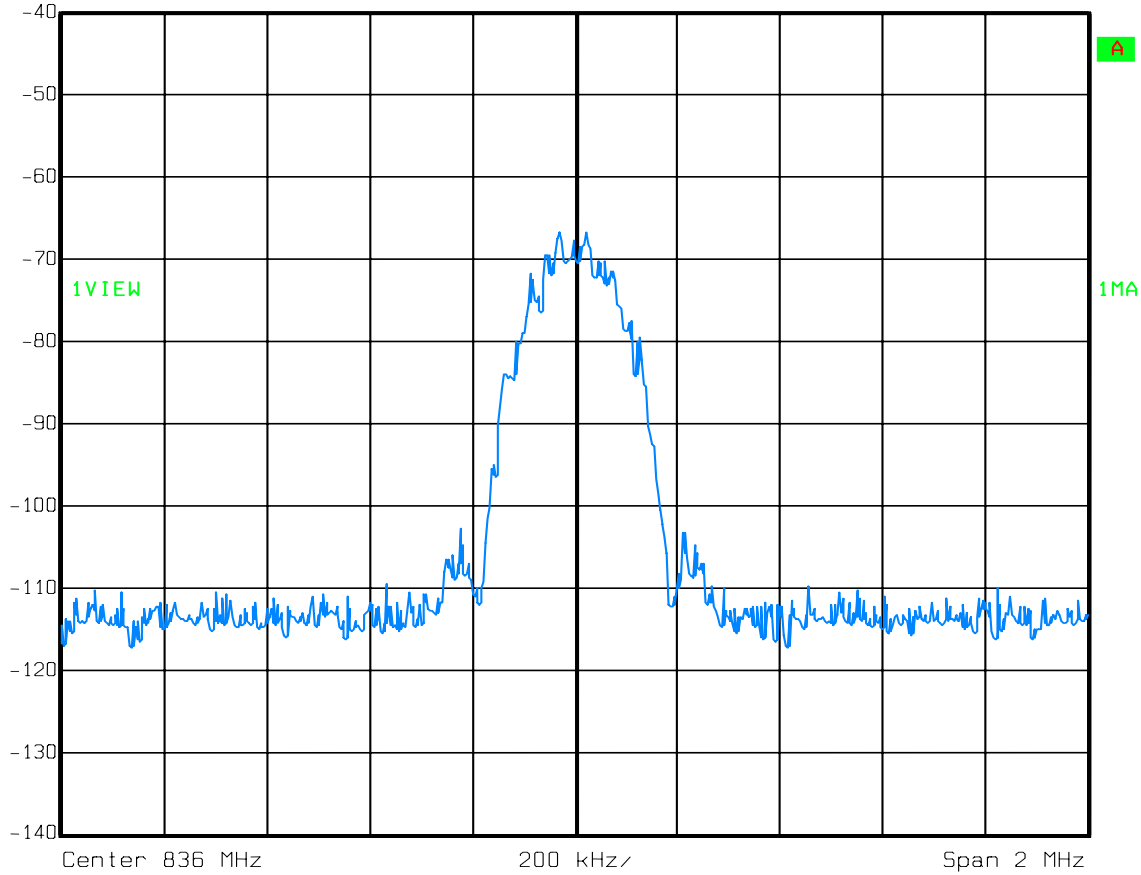
Test Data – Occupied Bandwidth

Uplink
EDGE – Input



Ref Lvl
-40 dBm

RBW	3 kHz	RF Att	0 dB
VBW	3 kHz		
SWT	560 ms	Unit	dBm



Date: 03.OCT.2008 12:39:46

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

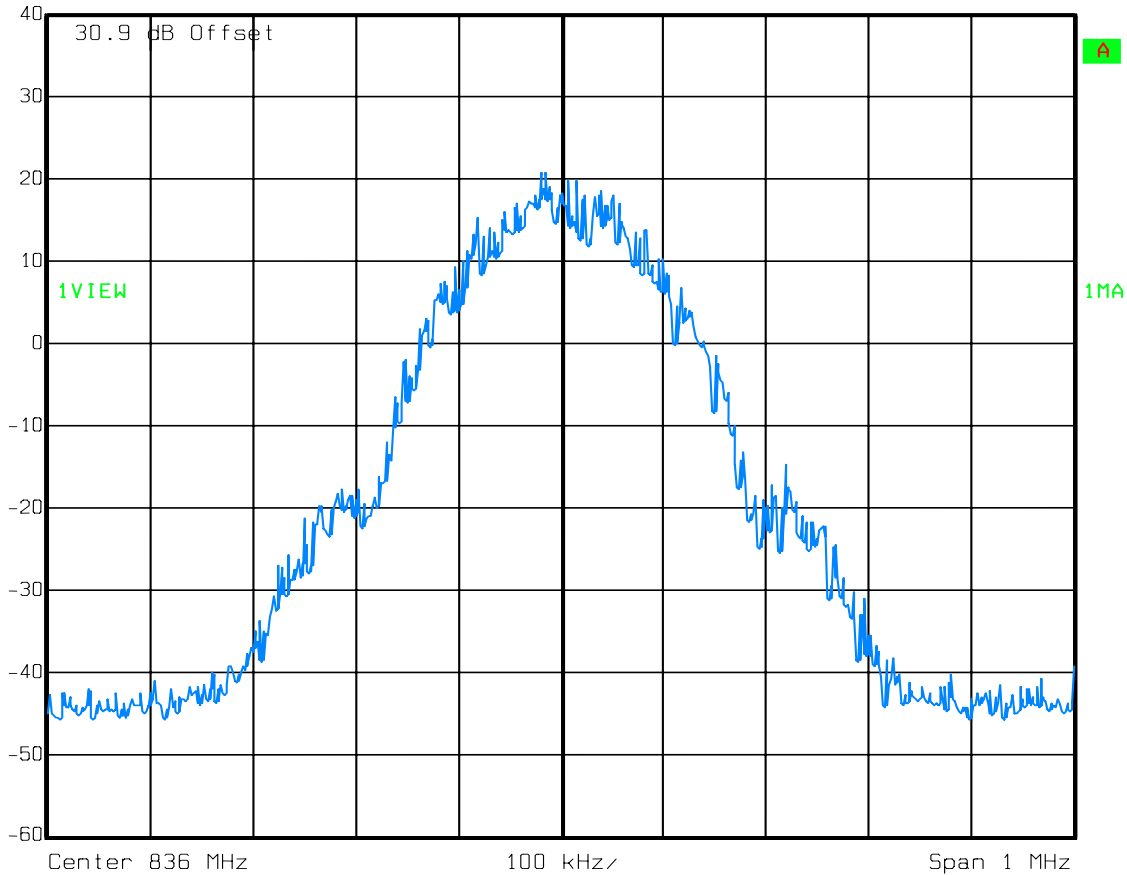
Test Data – Occupied Bandwidth

Uplink
GSM – Output



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz
SWT 280 ms Unit dBm



Date: 03.OCT.2008 11:04:01

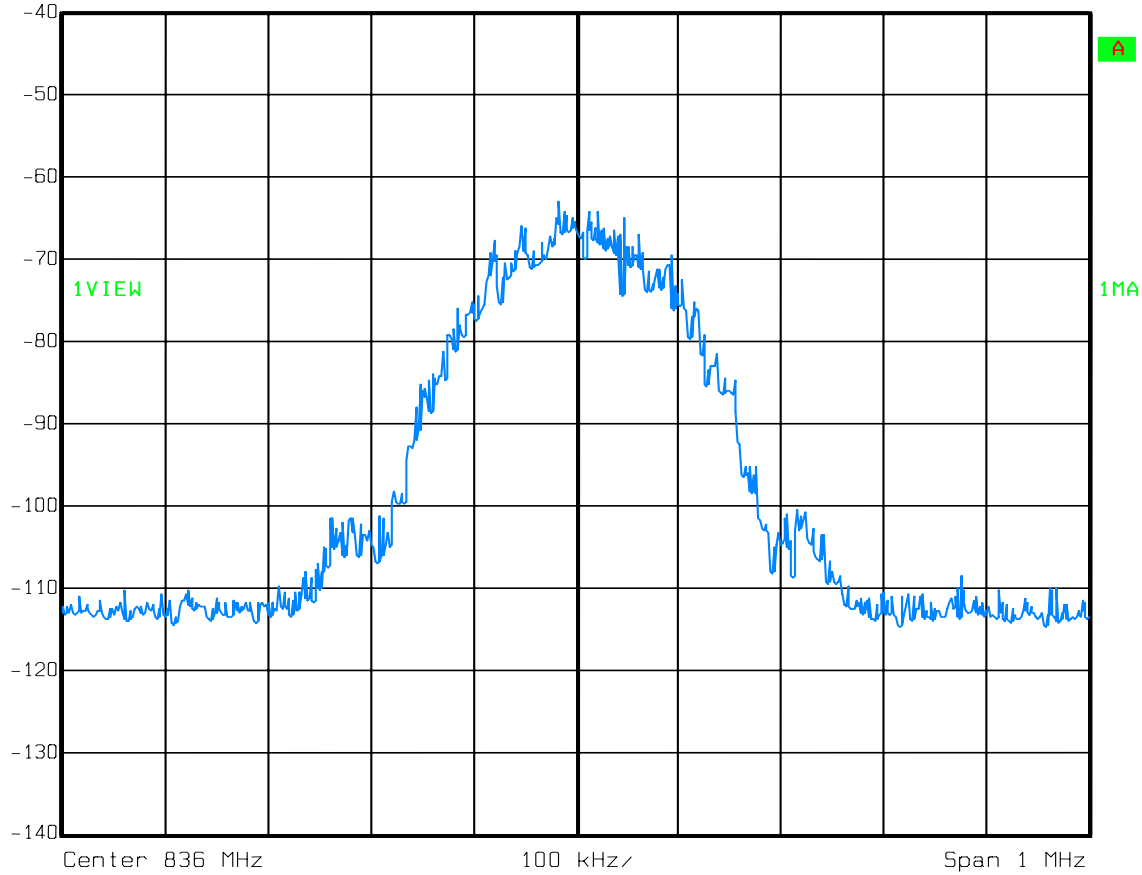
Test Data – Occupied Bandwidth

Uplink
GSM – Input



Re
-40 dBm

RBW 3 kHz RF Att 0 dB
VBW 3 kHz
SWT 280 ms Unit dBm



Date: 03.OCT.2008 11:02:55

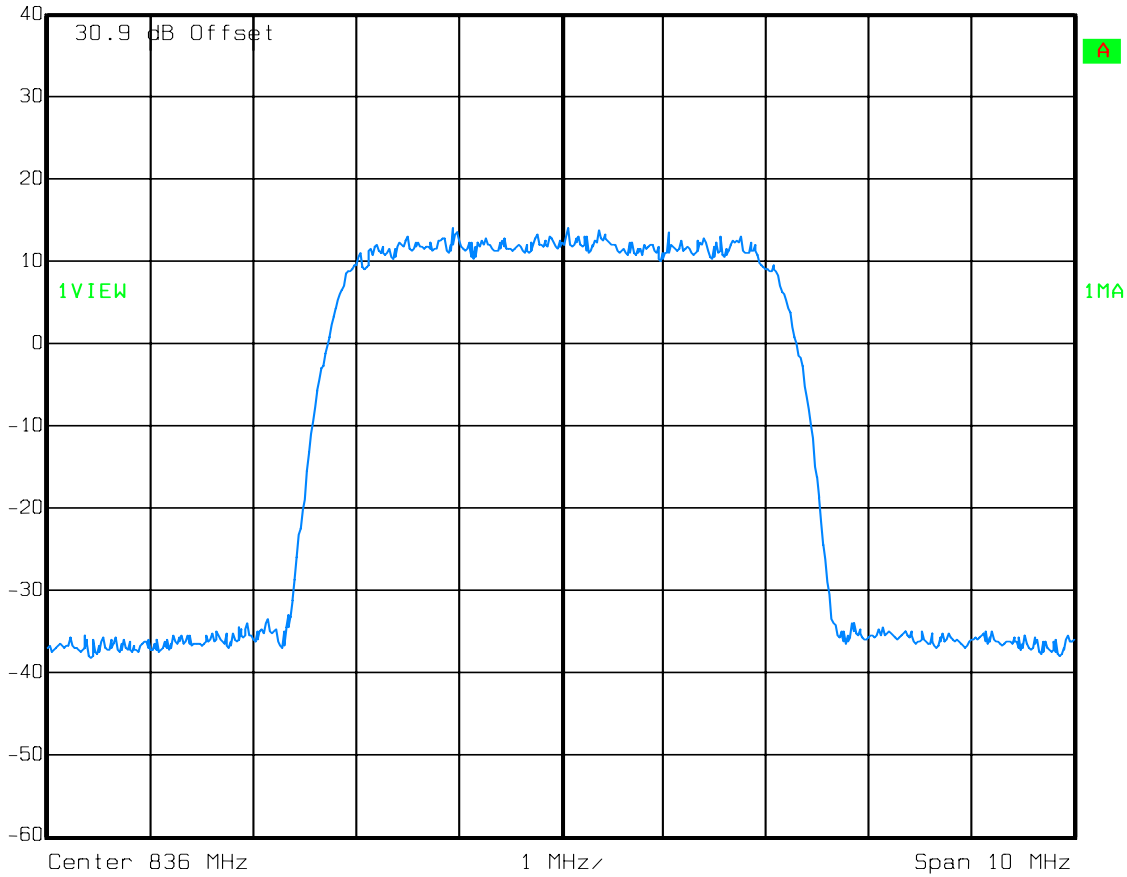
Test Data – Occupied Bandwidth

Uplink
W-CDMA - Output



Ref Lvl
40 dBm

RBW 50 kHz RF Att 20 dB
VBW 50 kHz
SWT 10 ms Unit dBm



Date: 03.OCT.2008 12:47:08

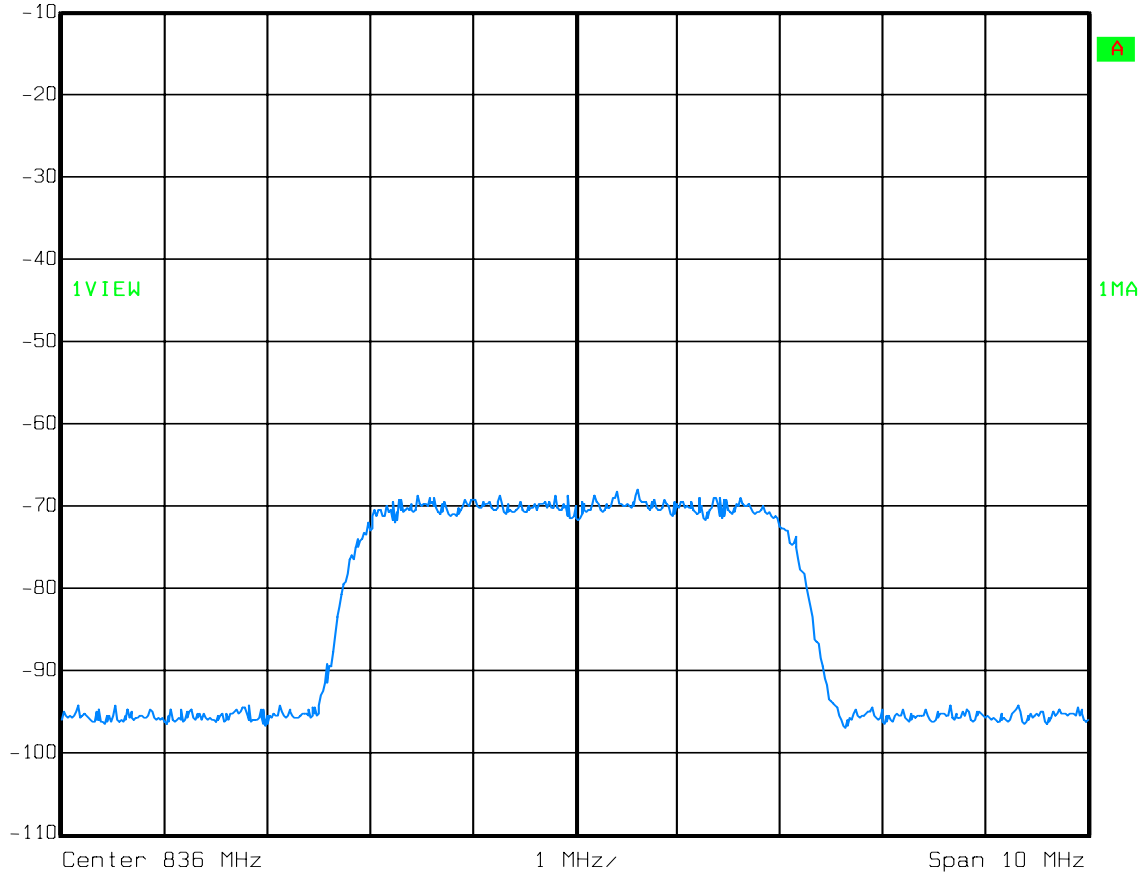
Test Data – Occupied Bandwidth

Uplink
W-CDMA - Input



Ref Lvl
-10 dBm

RBW	50 kHz	RF Att	0 dB
VBW	50 kHz		
SWT	10 ms	Unit	dBm



Date: 03.OCT.2008 12:48:37

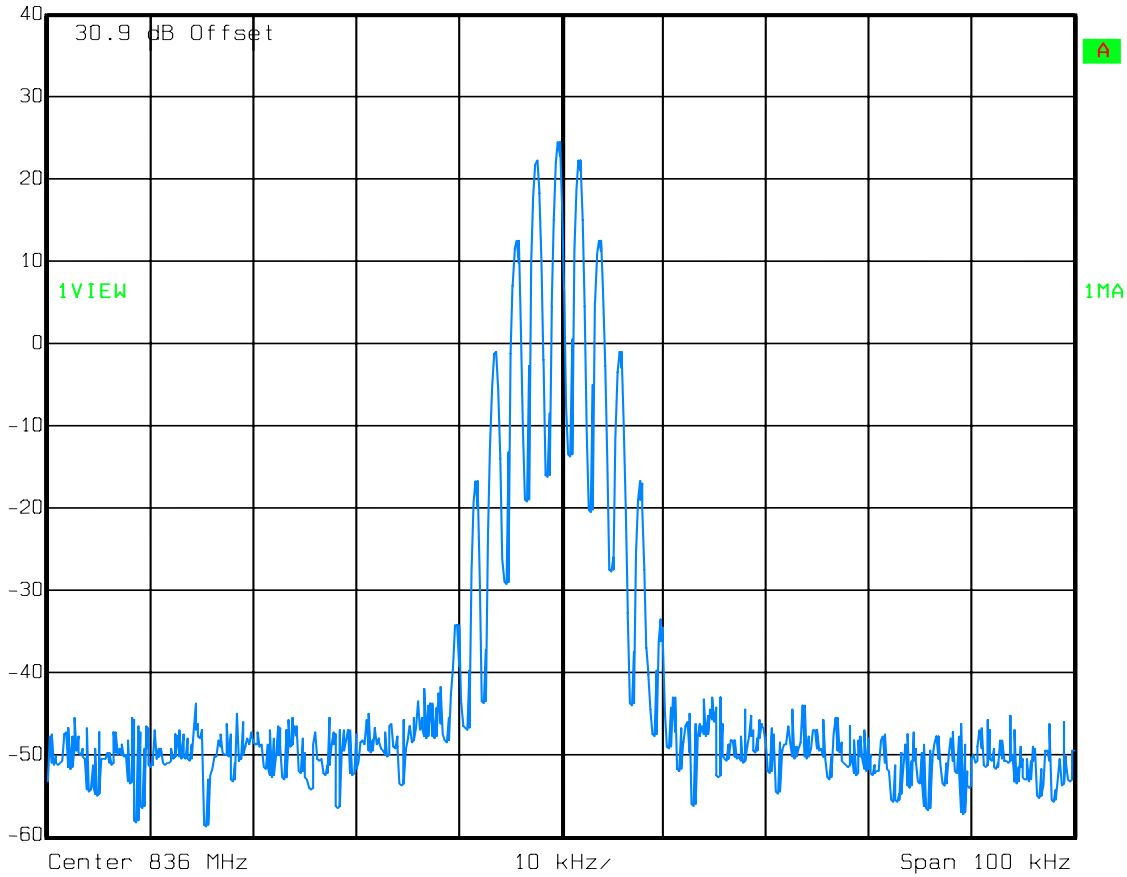
Test Data – Occupied Bandwidth

Uplink
Analog – Output



Ref Lvl
40 dBm

RBW	500 Hz	RF Att	20 dB
VBW	500 Hz	Mixer	-10 dBm
SWT	2 s	Unit	dBm



Date: 03.OCT.2008 15:14:06

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

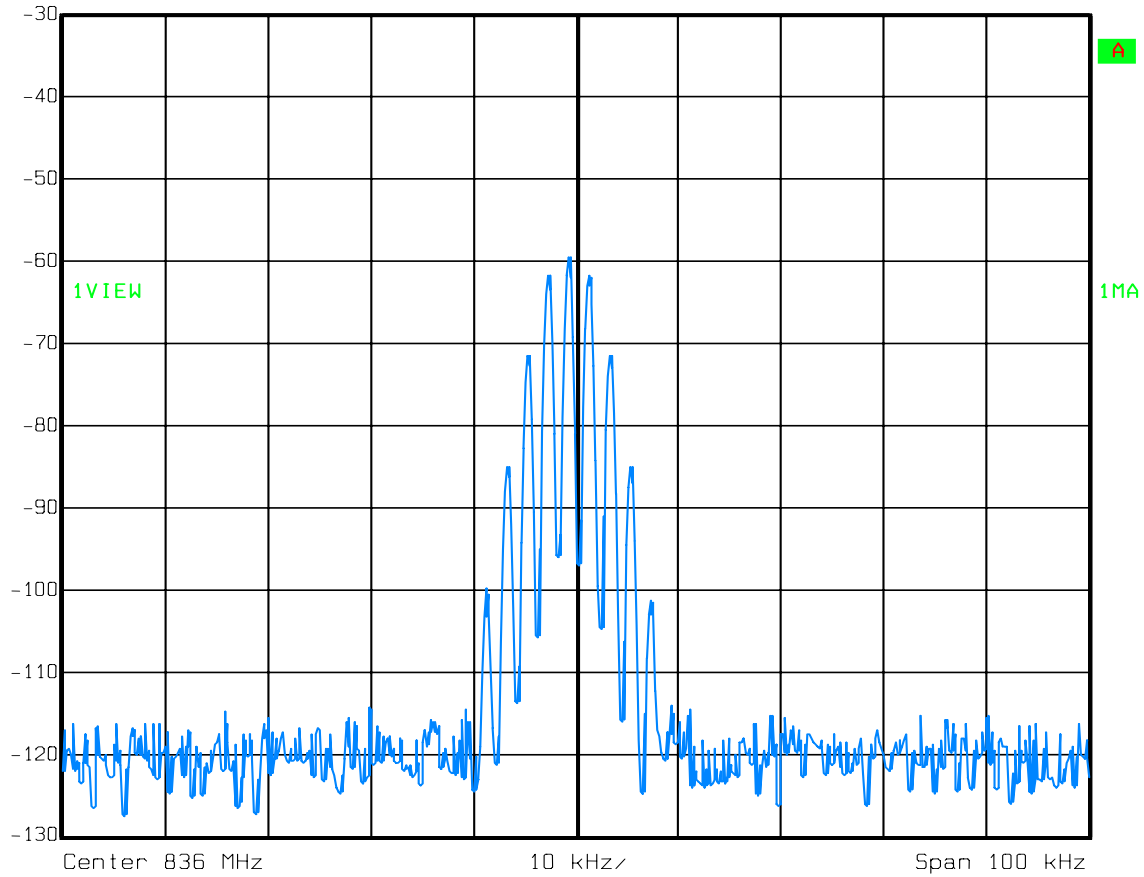
Test Data – Occupied Bandwidth

Uplink
Analog – Input



Ref Lvl
-30 dBm

RBW	500 Hz	RF Att	0 dB
VBW	500 Hz	Mixer	-10 dBm
SWT	2 s	Unit	dBm



Date: 03.OCT.2008 15:15:15

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 22.917
TESTED BY: David Light	DATE: 03 October 2008

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1065-1604-1082-1659

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 35 %

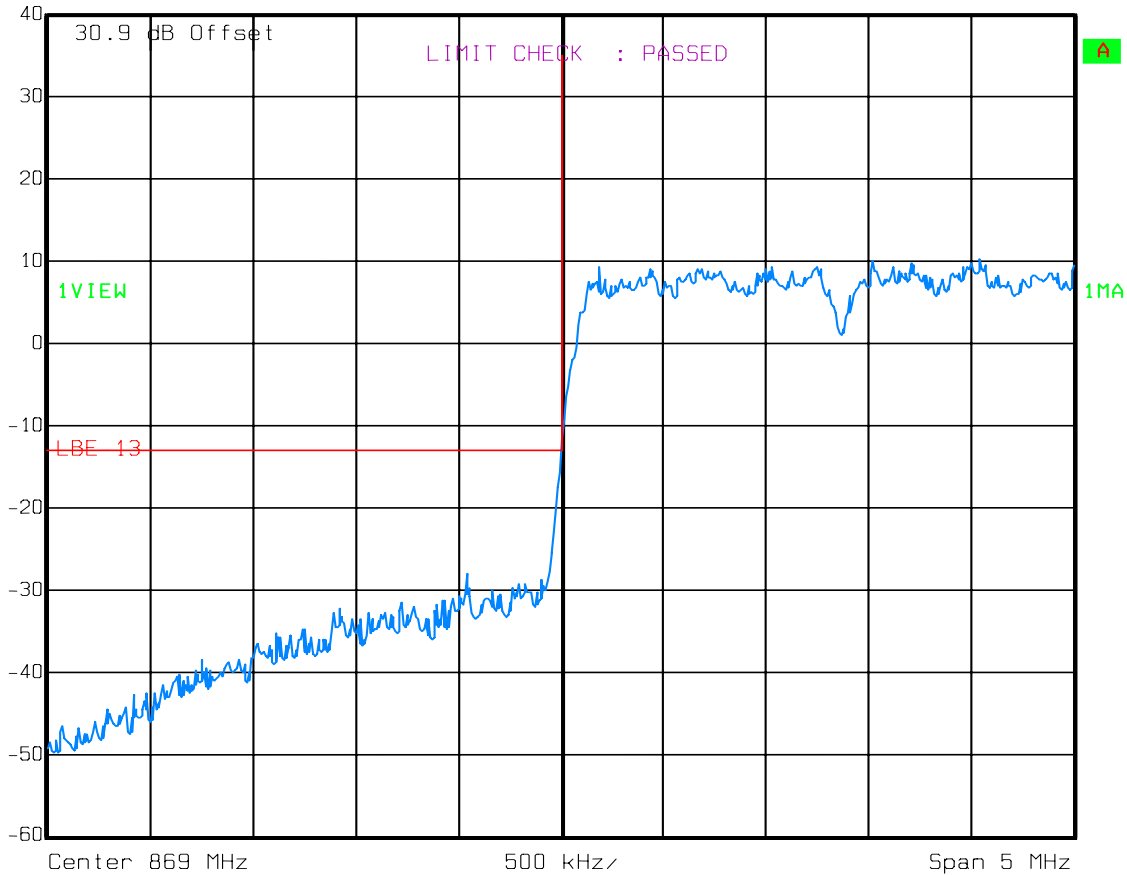
Test Data – Spurious Emissions at Antenna Terminals

Downlink - Lower Bandedge Intermodulation
CDMA



Ref Lvl
40 dBm

RBW	30 kHz	RF Att	20 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 13:06:38

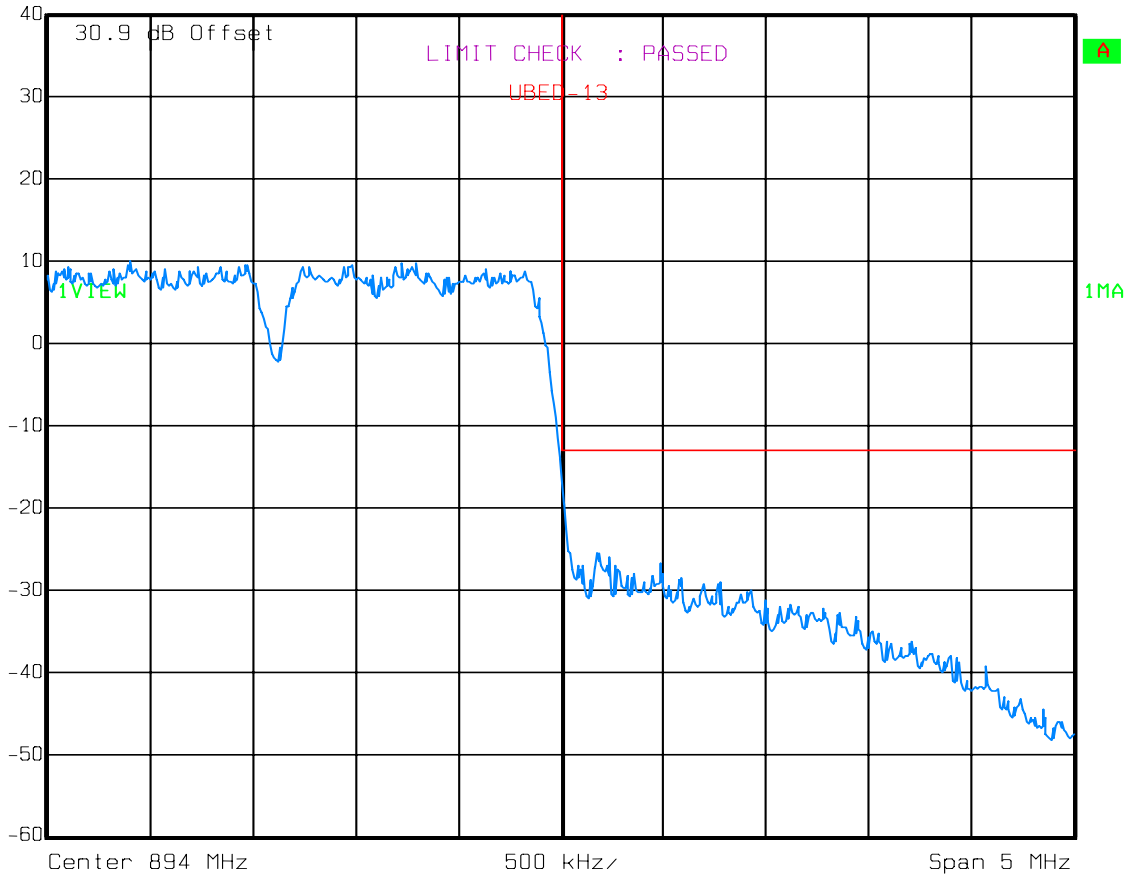
Test Data – Spurious Emissions at Antenna Terminals

Downlink - Upper Bandedge Intermodulation
CDMA



Ref Lvl
40 dBm

RBW	30 kHz	RF Att	20 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 13:08:56

EQUIPMENT: **AF8527**

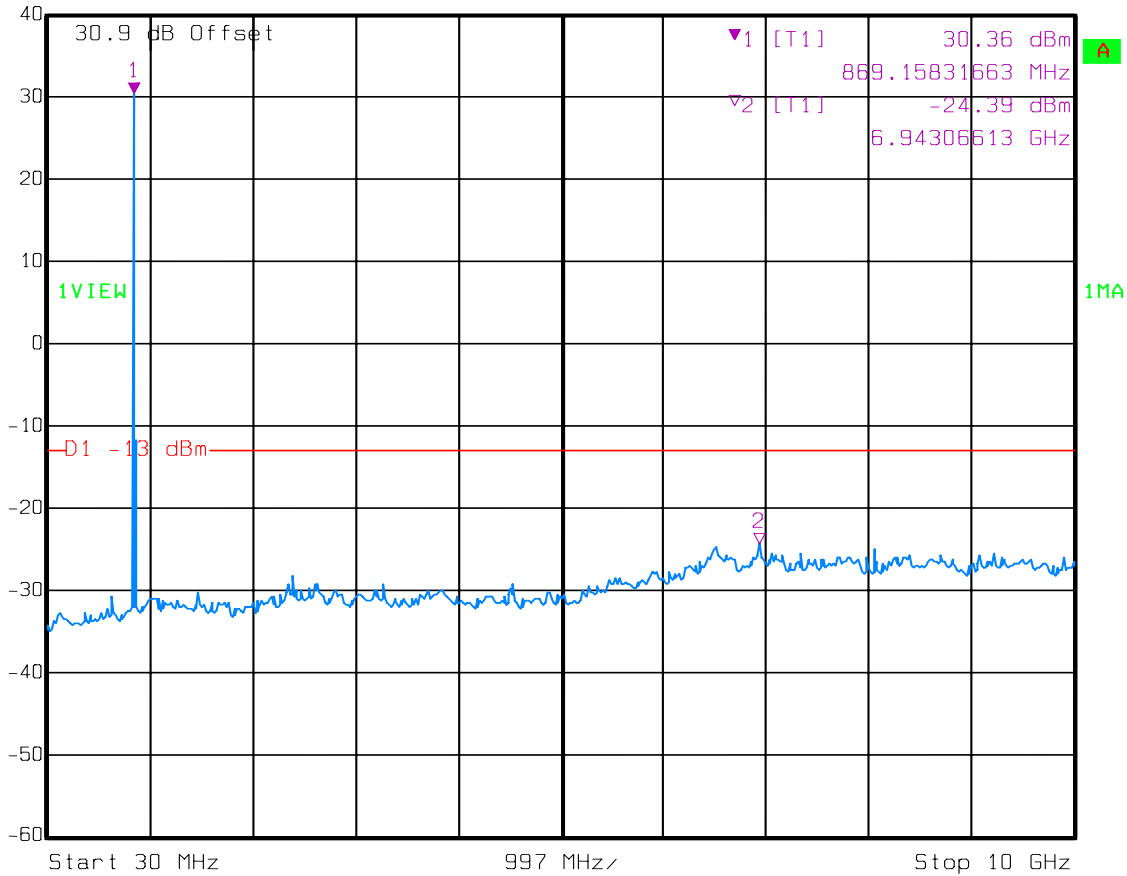
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – CDMA - Downlink



Ref Lvl 40 dBm
Marker 1 [T1] 30.36 dBm
869.15831663 MHz
RBW 1 MHz RF Att 20 dB
VBW 1 MHz Mixer -10 dBm
SWT 100 ms Unit dBm



Date: 03.OCT.2008 13:12:52

Test Data – Spurious Emissions at Antenna Terminals

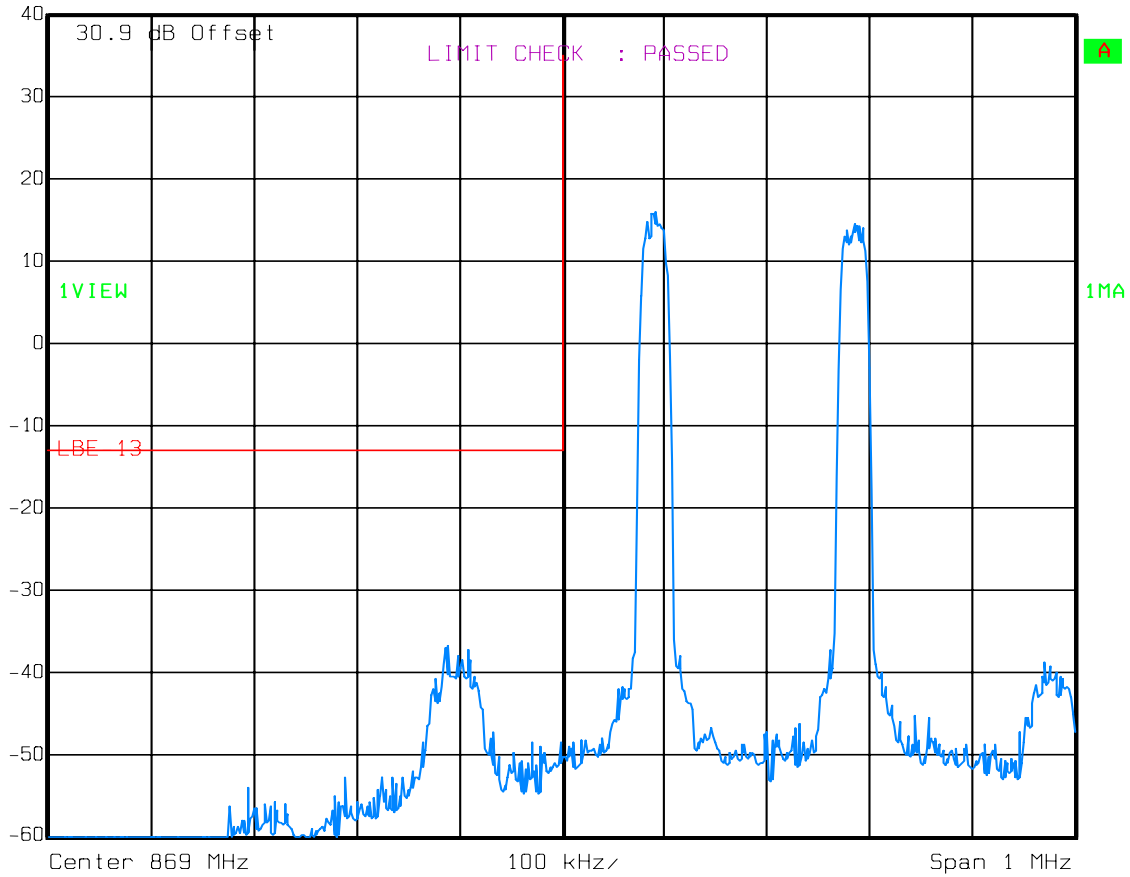
Downlink - Lower Bandedge Intermodulation

TDMA



Ref Lvl
40 dBm

RBW	1 kHz	RF Att	20 dB
VBW	1 kHz	Mixer	-10 dBm
SWT	2.5 s	Unit	dBm



Date: 03.OCT.2008 14:47:10

Test Data – Spurious Emissions at Antenna Terminals

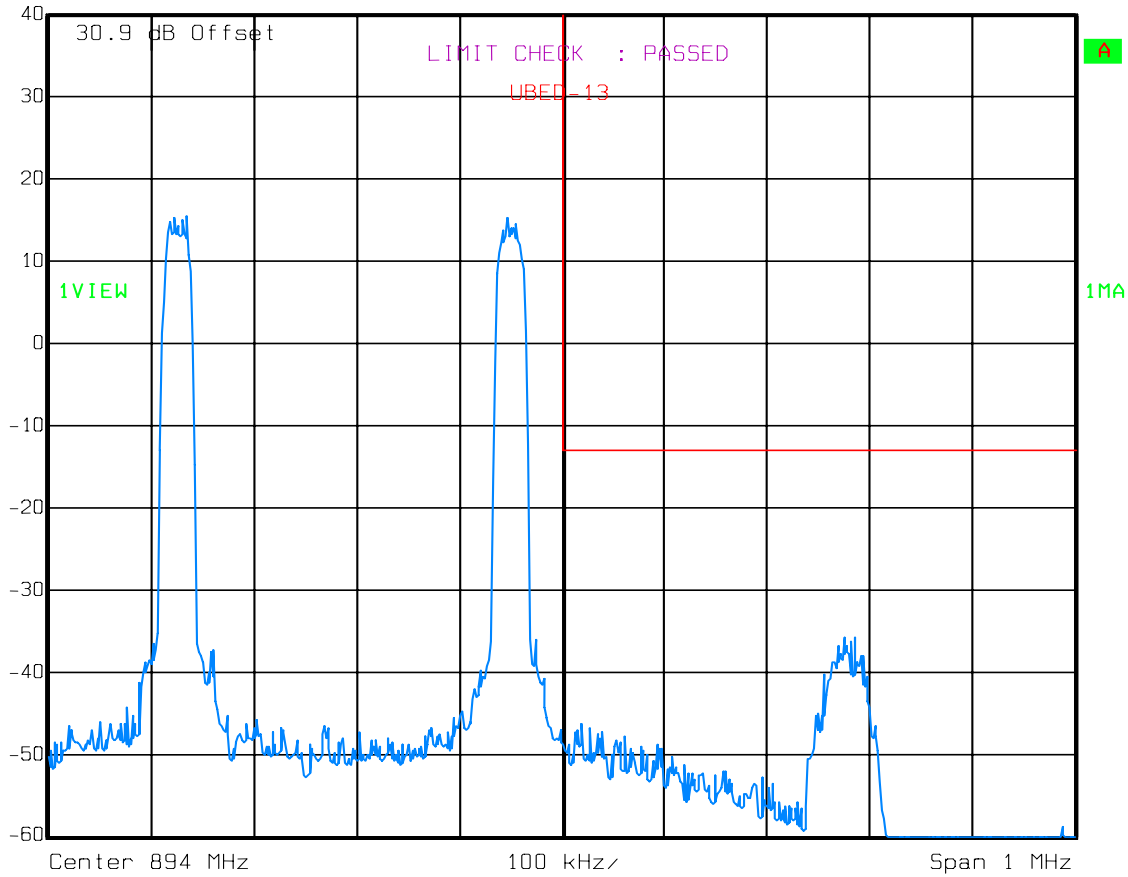
Downlink - Upper Bandedge Intermodulation

TDMA



Ref Lvl
40 dBm

RBW	1 kHz	RF Att	20 dB
VBW	1 kHz	Mixer	-10 dBm
SWT	2.5 s	Unit	dBm



Date: 03.OCT.2008 14:48:31

EQUIPMENT: **AF8527**

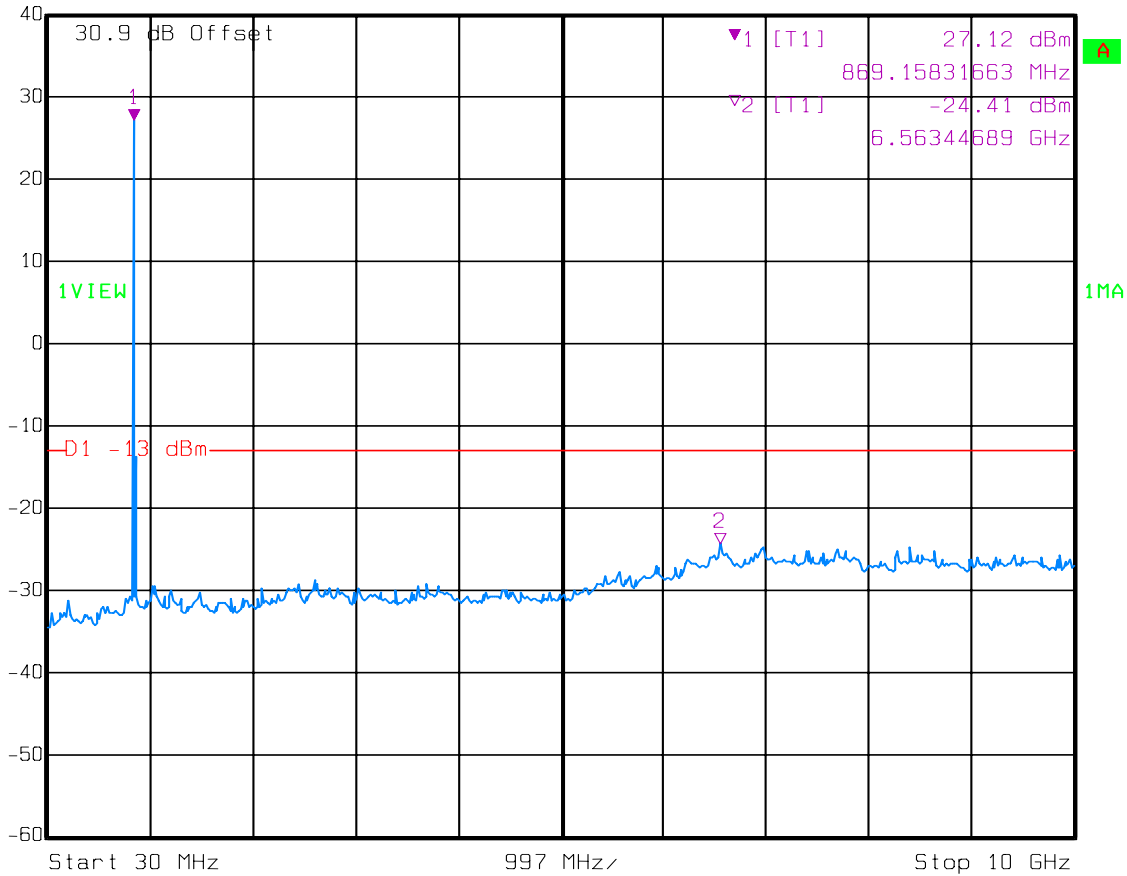
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – TDMA – Downlink



Marker 1 [T1] RBW 1 MHz RF Att 20 dB
Re 27.12 dBm VBW 1 MHz Mixer -10 dBm
4U dBm 869.15831663 MHz SWT 100 ms Unit dBm



Date: 03.OCT.2008 14:52:29

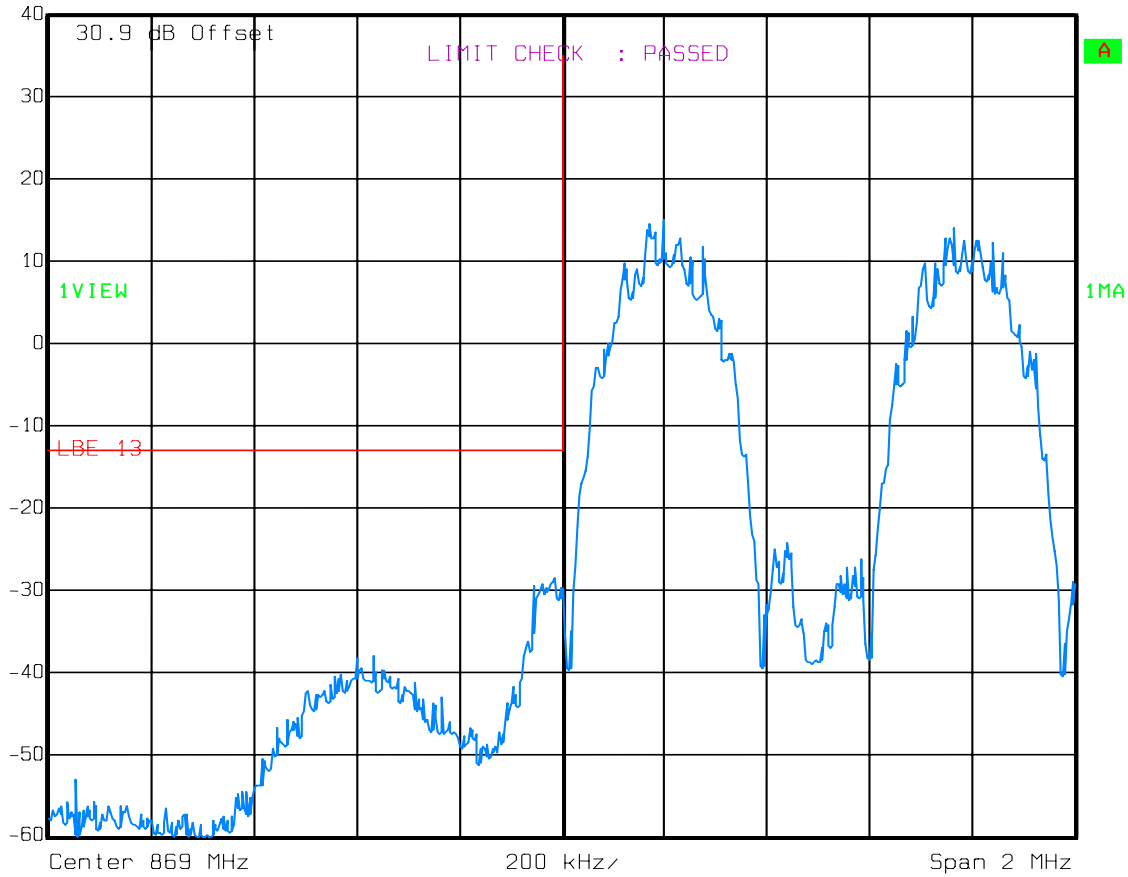
Test Data – Spurious Emissions at Antenna Terminals

Downlink - Lower Bandedge Intermodulation
EDGE



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz Mixer -10 dBm
SWT 560 ms Unit dBm



Date: 03.OCT.2008 13:22:48

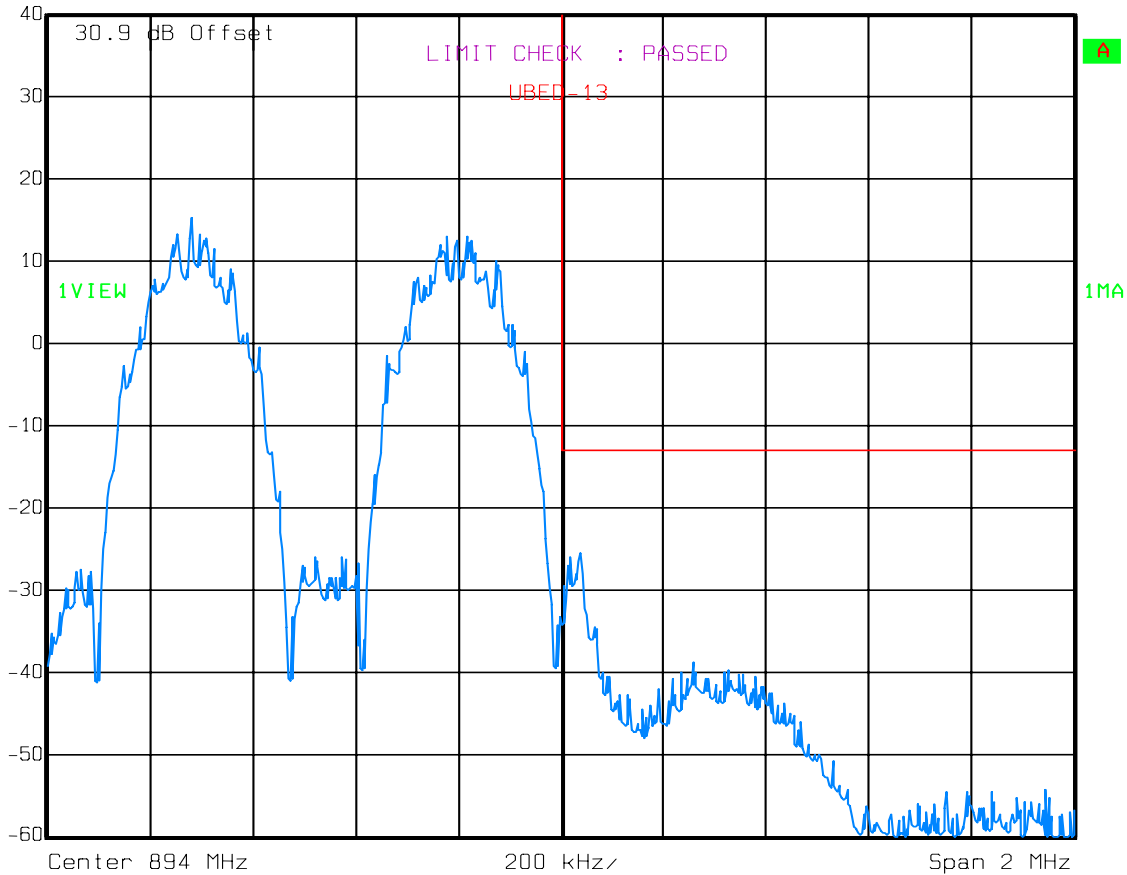
Test Data – Spurious Emissions at Antenna Terminals

Downlink - Upper Bandedge Intermodulation
EDGE



Ref Lvl
40 dBm

RBW	3 kHz	RF Att	20 dB
VBW	3 kHz	Mixer	-10 dBm
SWT	560 ms	Unit	dBm



Date: 03.OCT.2008 13:23:44

EQUIPMENT: **AF8527**

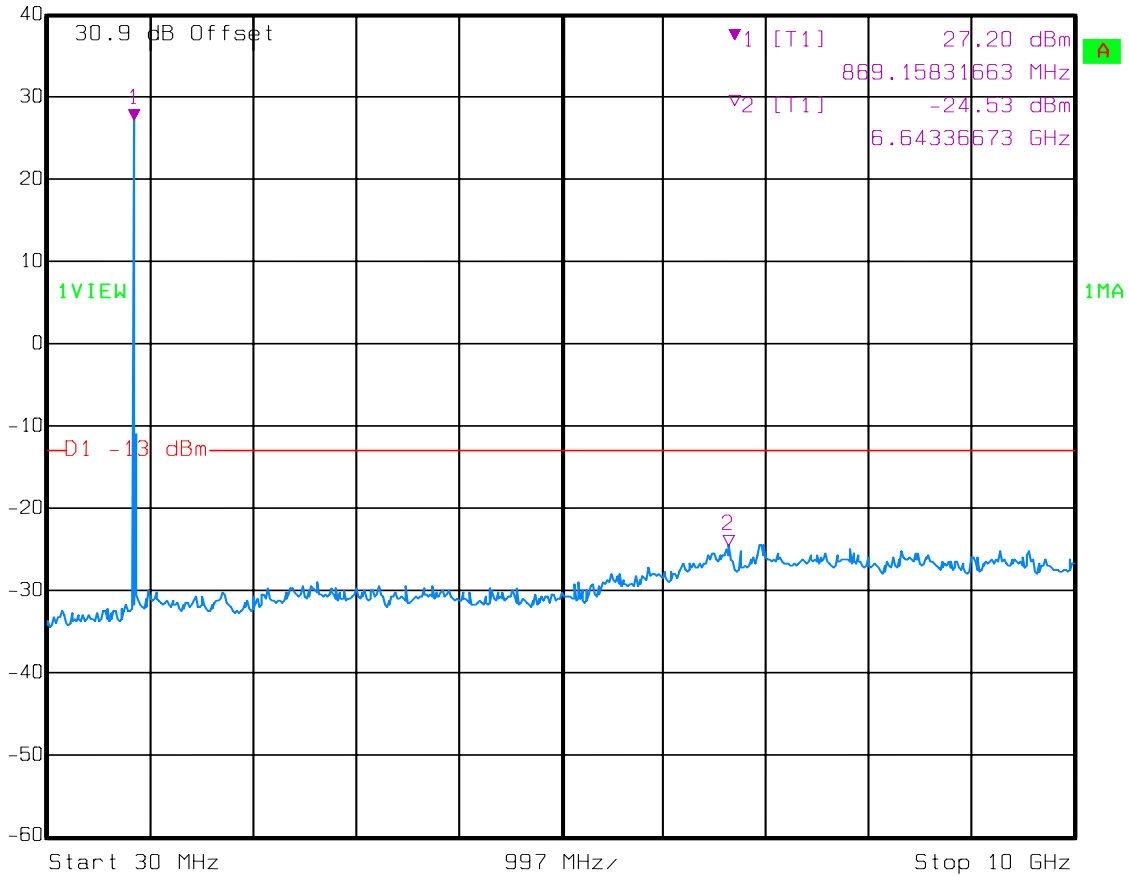
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – EDGE – Downlink



Ref 40 dBm
 Marker 1 [T1] 27.20 dBm
 869.15831663 MHz
 RBW 1 MHz RF Att 20 dB
 VBW 1 MHz Mixer -10 dBm
 SWT 100 ms Unit dBm



Date: 03.OCT.2008 13:25:06

Test Data – Spurious Emissions at Antenna Terminals

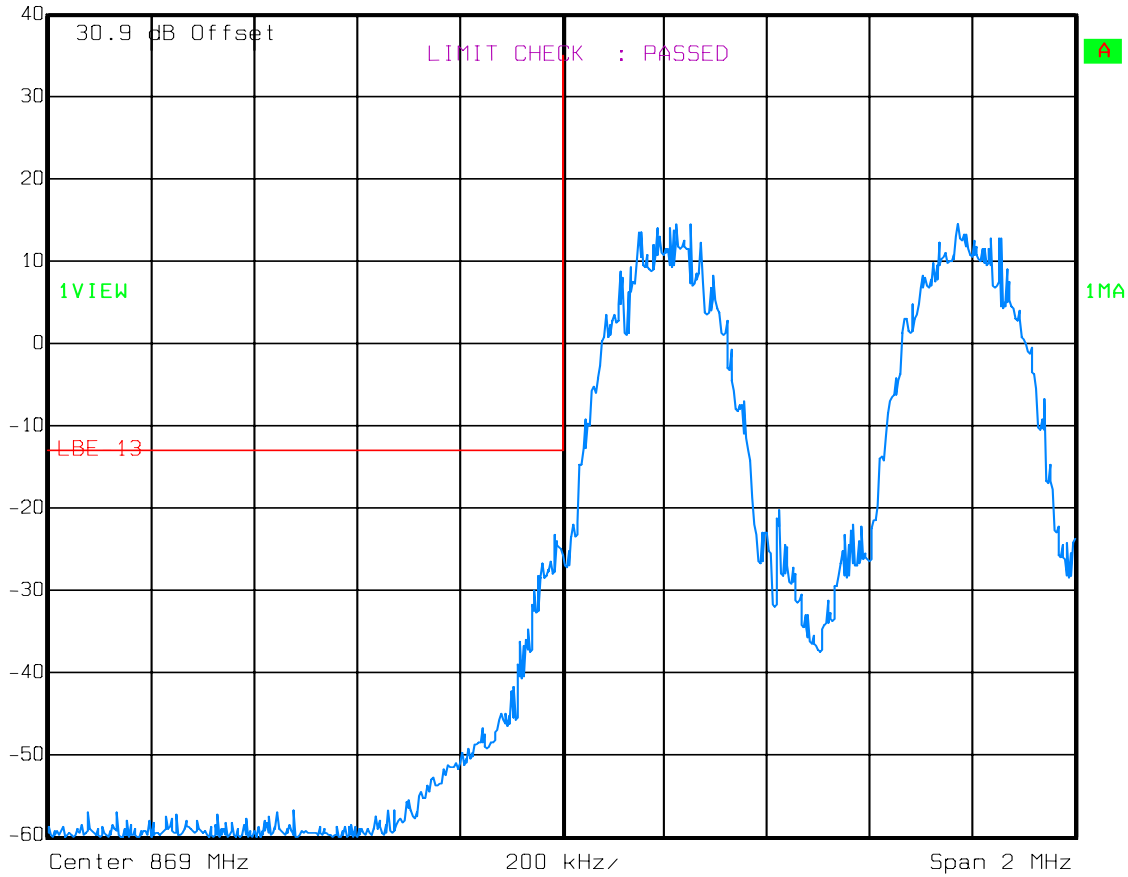
Downlink - Lower Bandedge Intermodulation

GSM



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz Mixer -10 dBm
SWT 560 ms Unit dBm



Date: 03.OCT.2008 13:20:49

Test Data – Spurious Emissions at Antenna Terminals

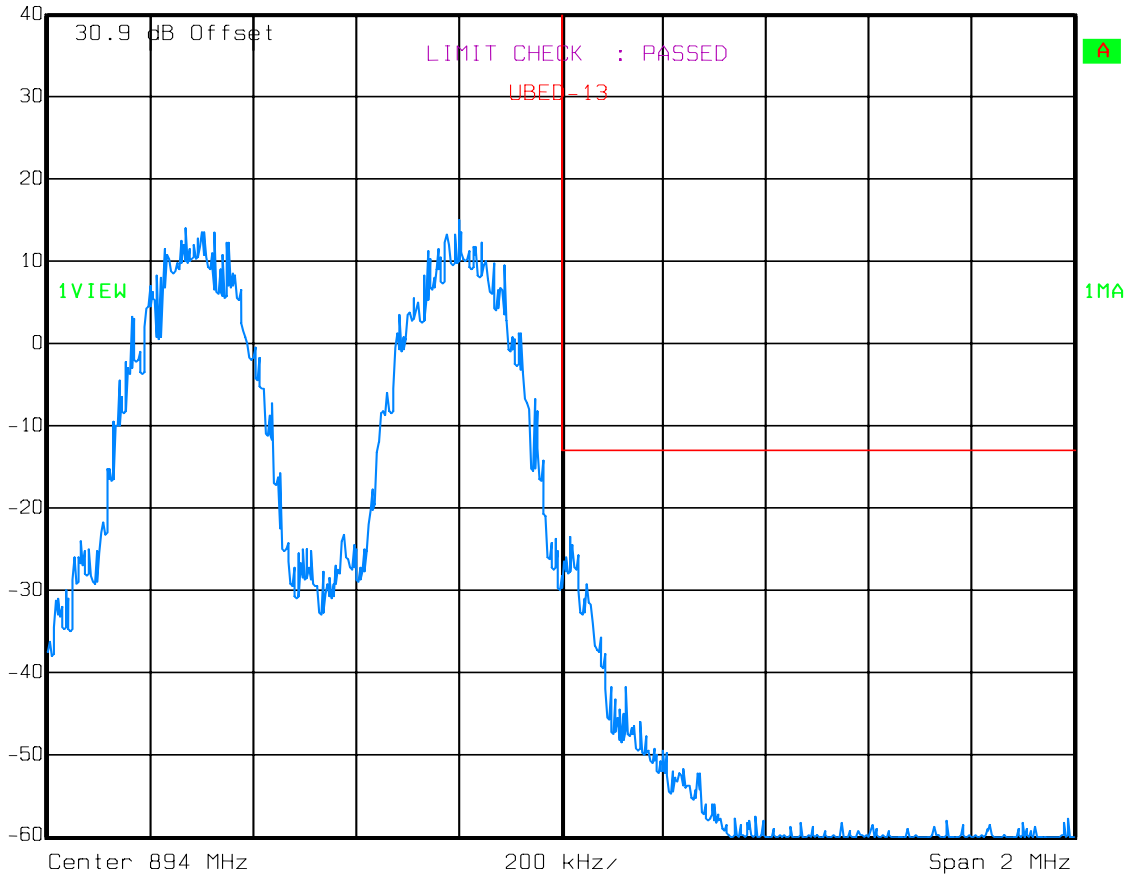
Downlink - Upper Bandedge Intermodulation

GSM



Ref Lvl
40 dBm

RBW	3 kHz	RF Att	20 dB
VBW	3 kHz	Mixer	-10 dBm
SWT	560 ms	Unit	dBm



Date: 03.OCT.2008 13:19:36

EQUIPMENT: **AF8527**

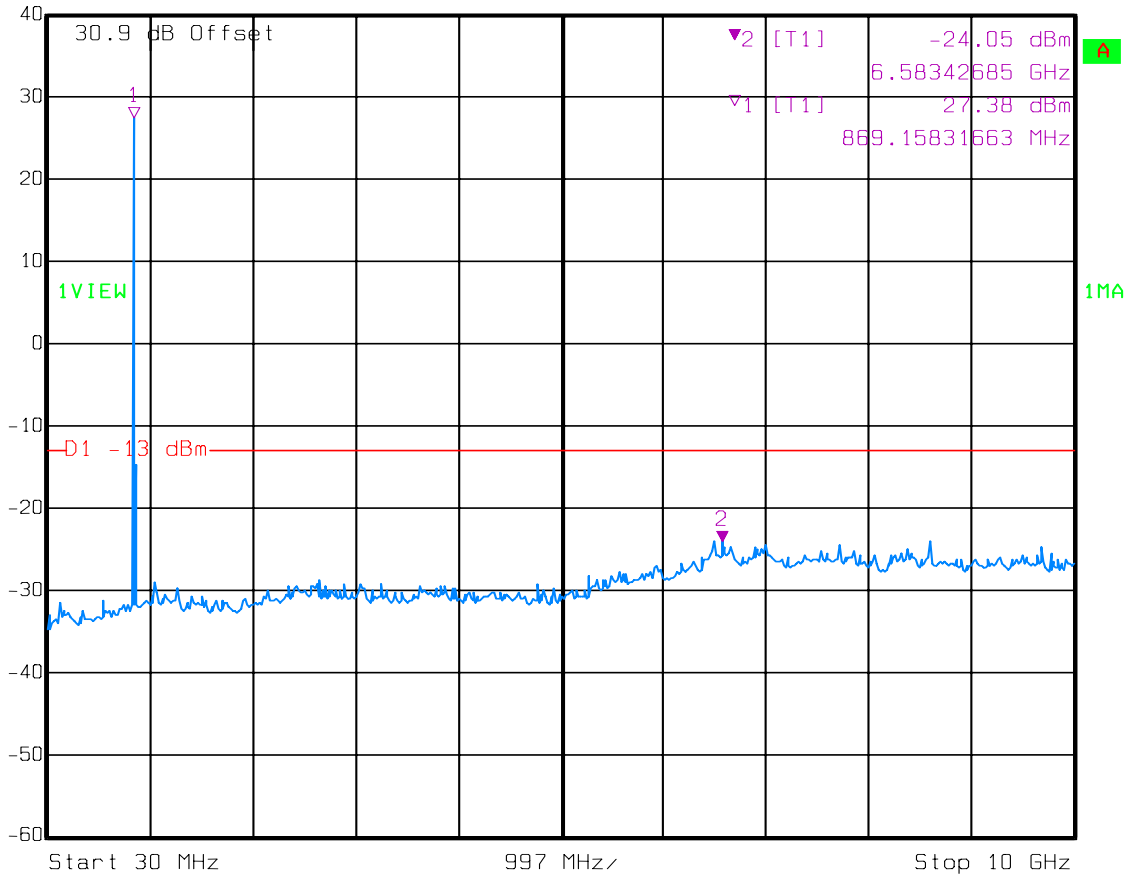
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – GSM – Downlink



Ref 40 dBm
 Marker 2 [T1] -24.05 dBm
 6.58342685 GHz
 RBW 1 MHz RF Att 20 dB
 VBW 1 MHz Mixer -10 dBm
 SWT 100 ms Unit dBm



Date: 03.OCT.2008 13:15:29

Test Data – Spurious Emissions at Antenna Terminals

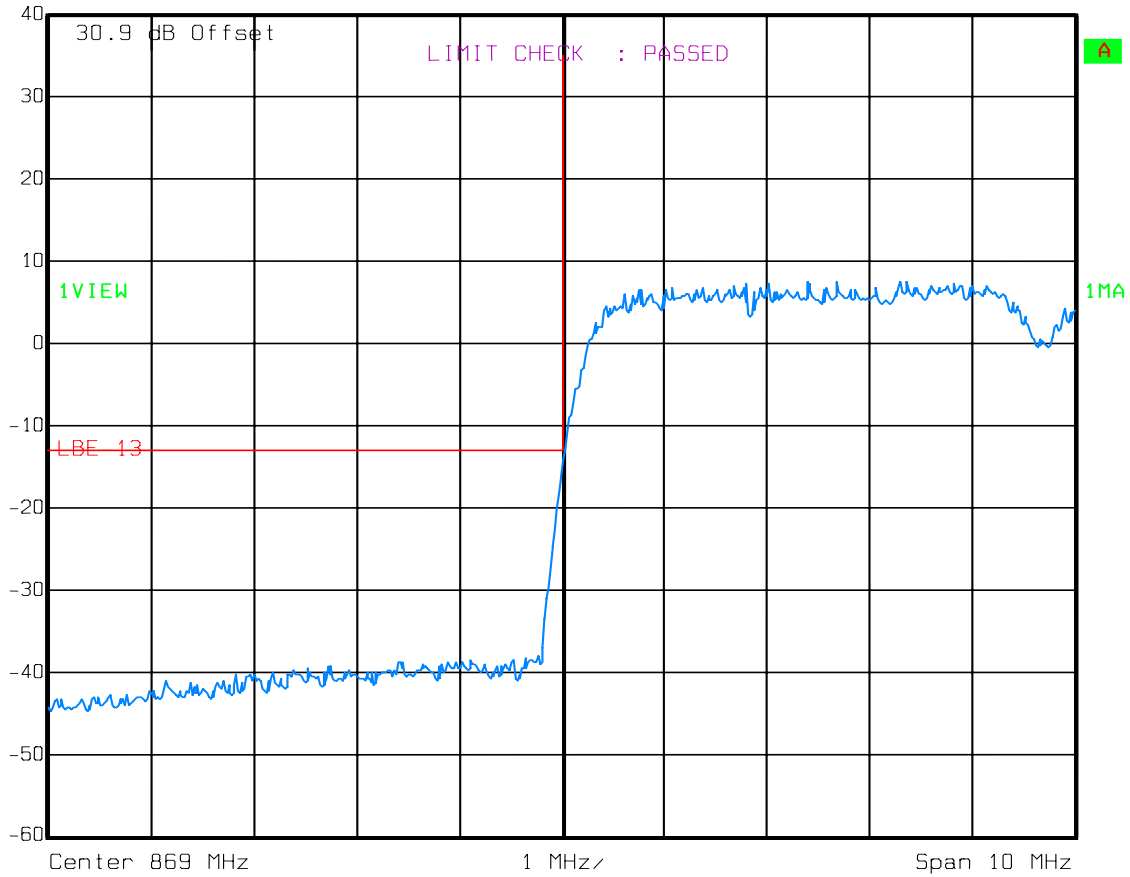
Downlink - Lower Bandedge Intermodulation

W-CDMA



Ref Lvl
40 dBm

RBW	50 kHz	RF Att	20 dB
VBW	50 kHz	Mixer	-10 dBm
SWT	10 ms	Unit	dBm



Date: 03.OCT.2008 13:38:11

Test Data – Spurious Emissions at Antenna Terminals

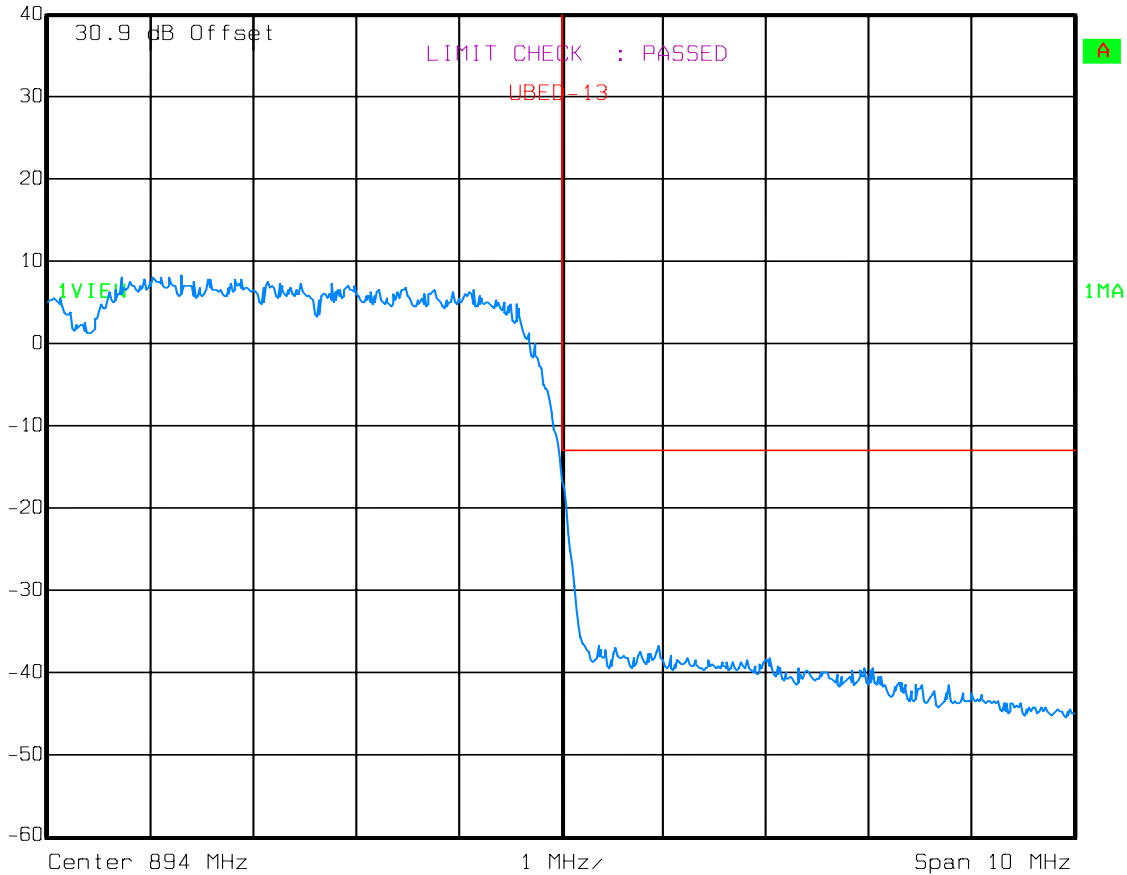
Downlink - Upper Bandedge Intermodulation

W-CDMA



Ref Lvl
40 dBm

RBW	50 kHz	RF Att	20 dB
VBW	50 kHz	Mixer	-10 dBm
SWT	10 ms	Unit	dBm



Date: 03.OCT.2008 13:36:31

EQUIPMENT: **AF8527**

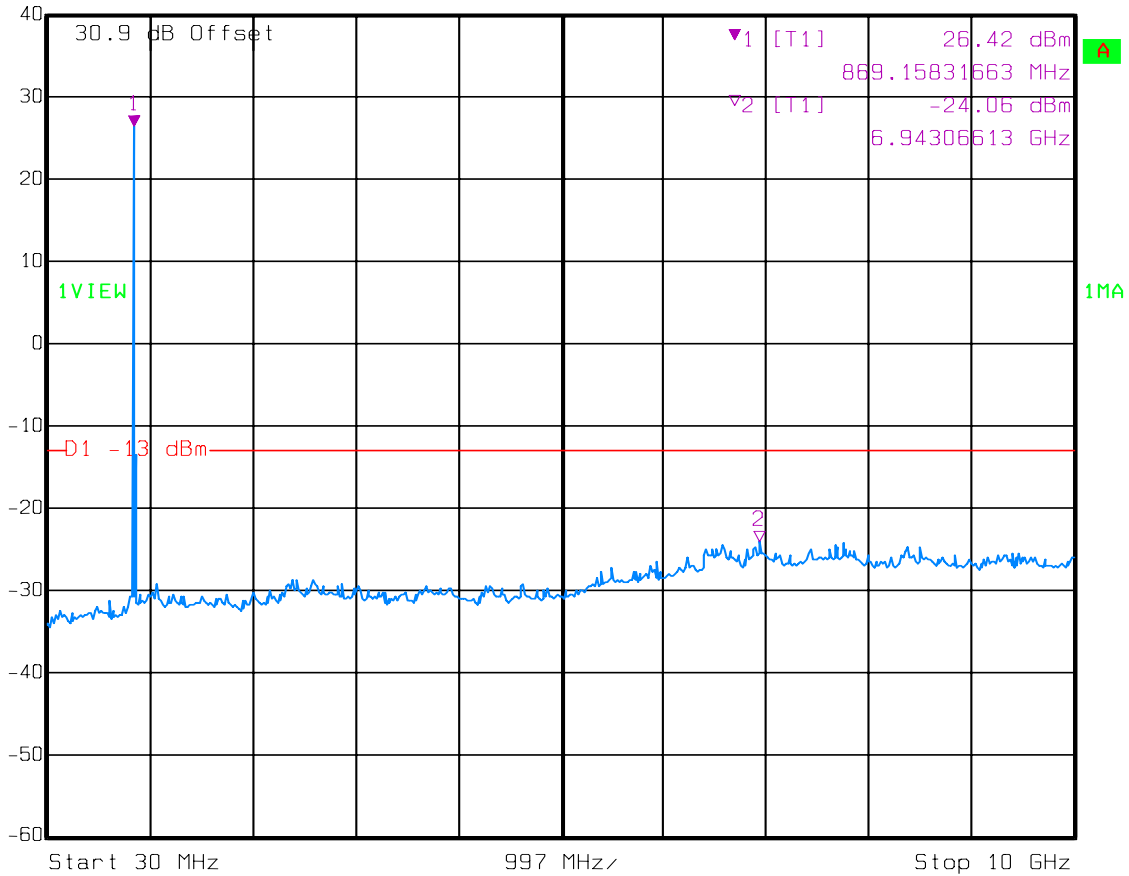
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – W-CDMA - Downlink



Ref Lvl 40 dBm
Marker 1 [T1] 26.42 dBm
869.15831663 MHz
RBW 1 MHz RF Att 20 dB
VBW 1 MHz Mixer -10 dBm
SWT 100 ms Unit dBm



Date: 03.OCT.2008 13:30:29

Test Data – Spurious Emissions at Antenna Terminals

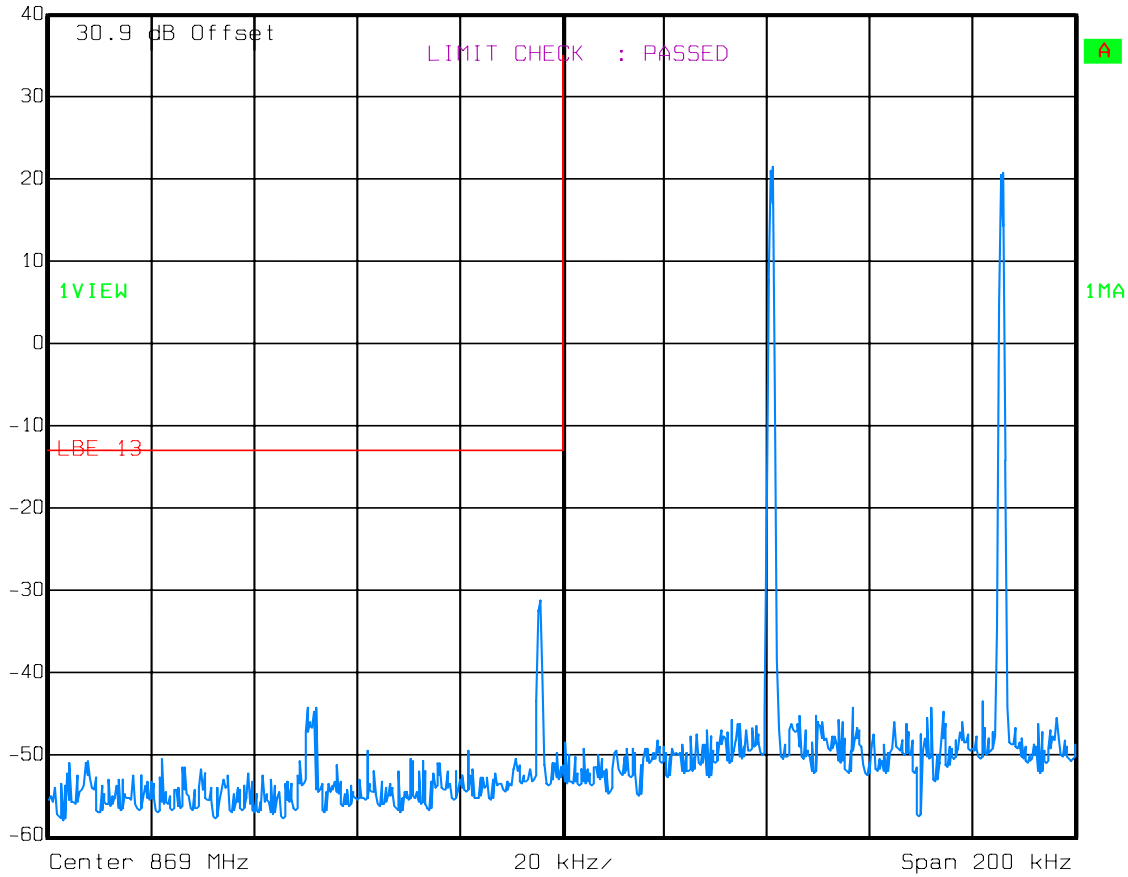
Downlink - Lower Bandedge Intermodulation

Analog



Ref Lvl
40 dBm

RBW	500 Hz	RF Att	20 dB
VBW	500 Hz	Mixer	-10 dBm
SWT	4 s	Unit	dBm



Date: 03.OCT.2008 15:05:10

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

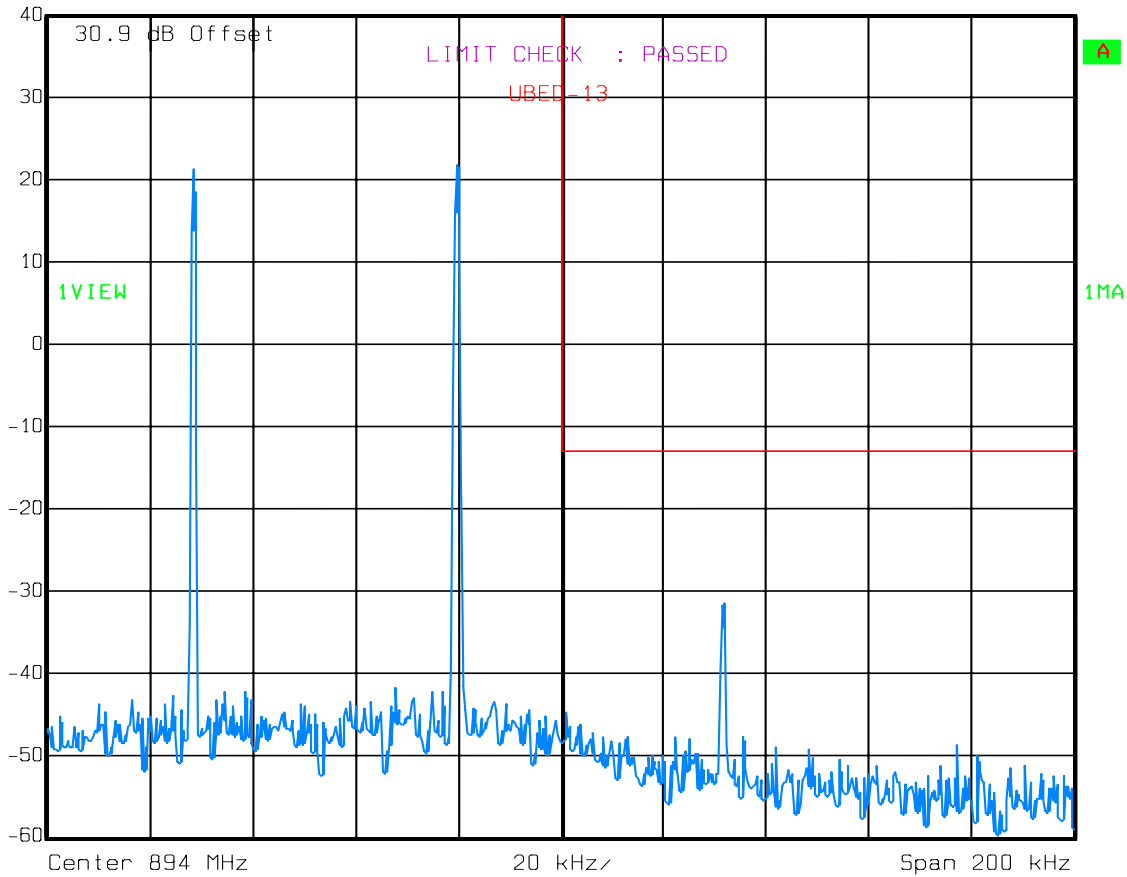
Test Data – Spurious Emissions at Antenna Terminals

Downlink - Upper Bandedge Intermodulation
Analog



Ref Lvl
40 dBm

RBW	500 Hz	RF Att	20 dB
VBW	500 Hz	Mixer	-10 dBm
SWT	4 s	Unit	dBm



Date: 03.OCT.2008 15:03:36

EQUIPMENT: **AF8527**

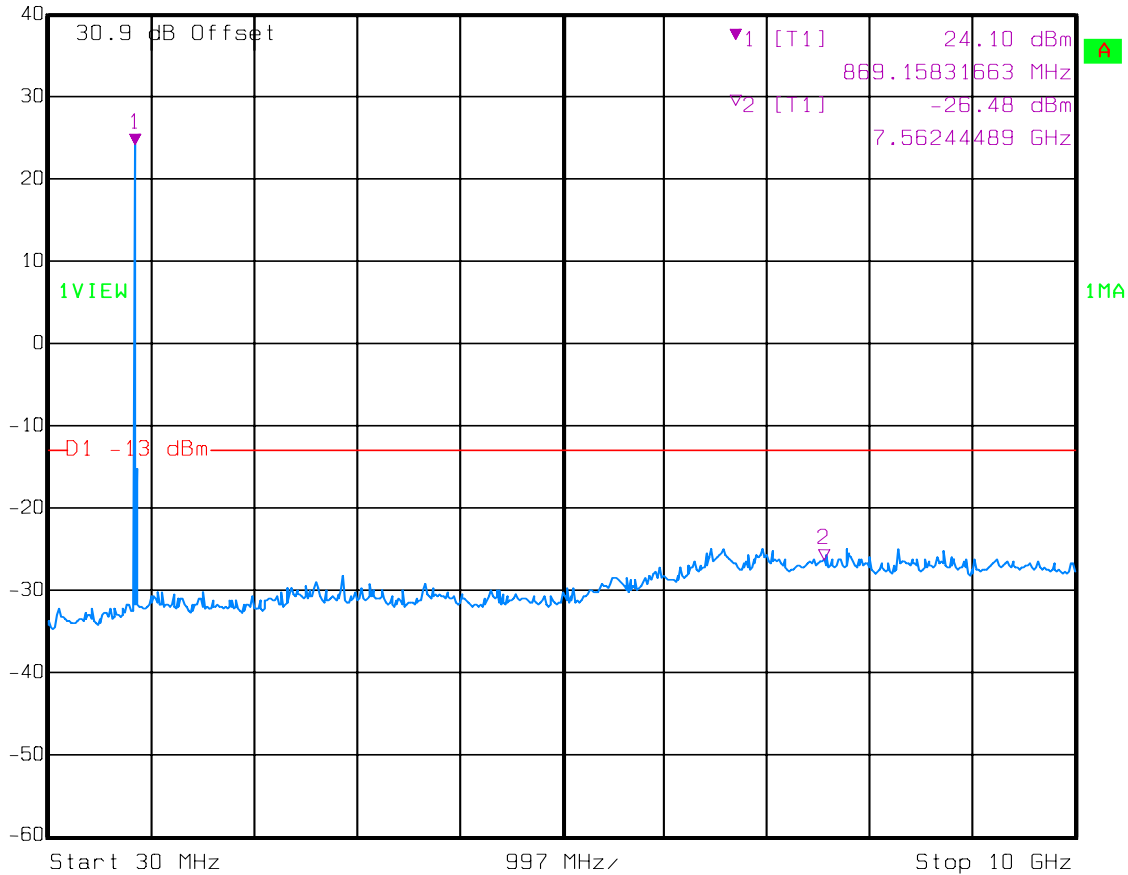
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – Analog – Downlink



Ref Lvl 40 dBm
Marker 1 [T1] 24.10 dBm
869.15831663 MHz
RBW 1 MHz
RF Att 20 dB
VBW 1 MHz
Mixer -10 dBm
SWT 100 ms
Unit dBm



Date: 03.OCT.2008 14:53:33

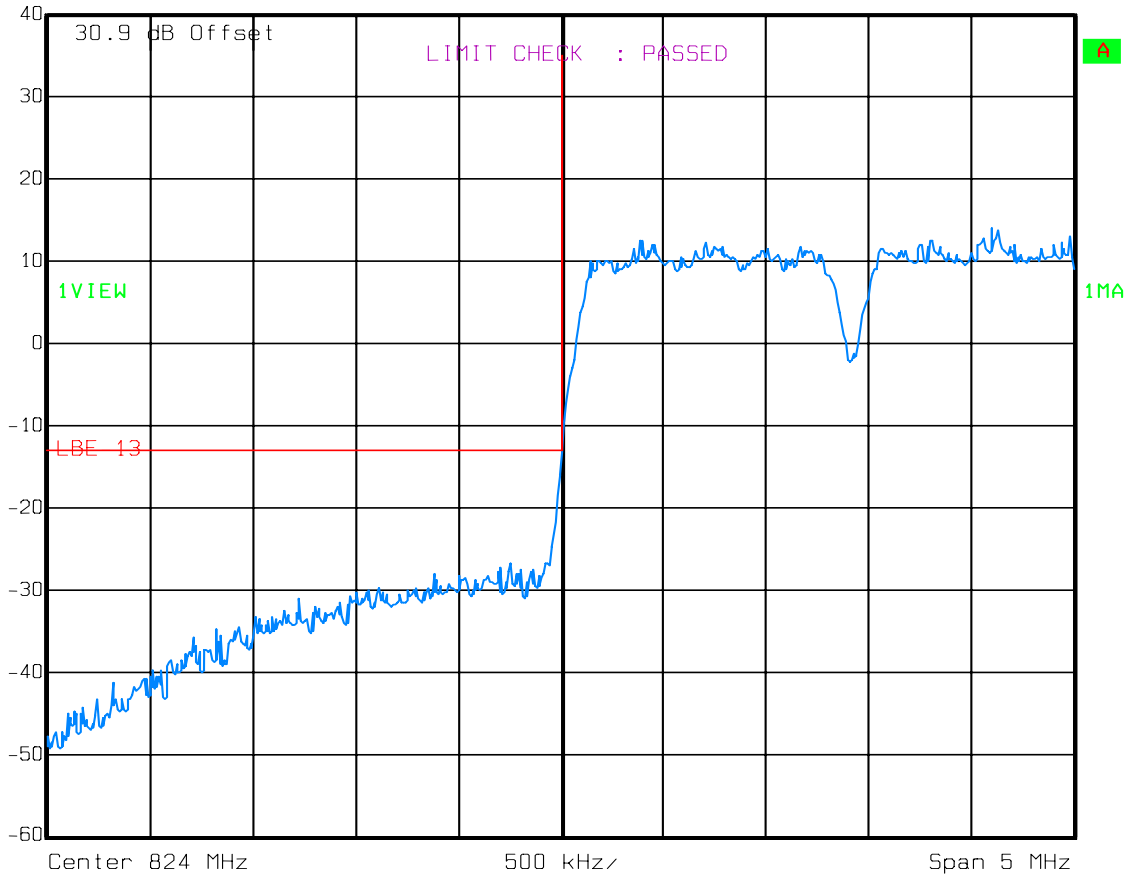
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Lower Bandedge Intermodulation
CDMA



Ref Lvl
40 dBm

RBW	30 kHz	RF Att	20 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 10:42:09

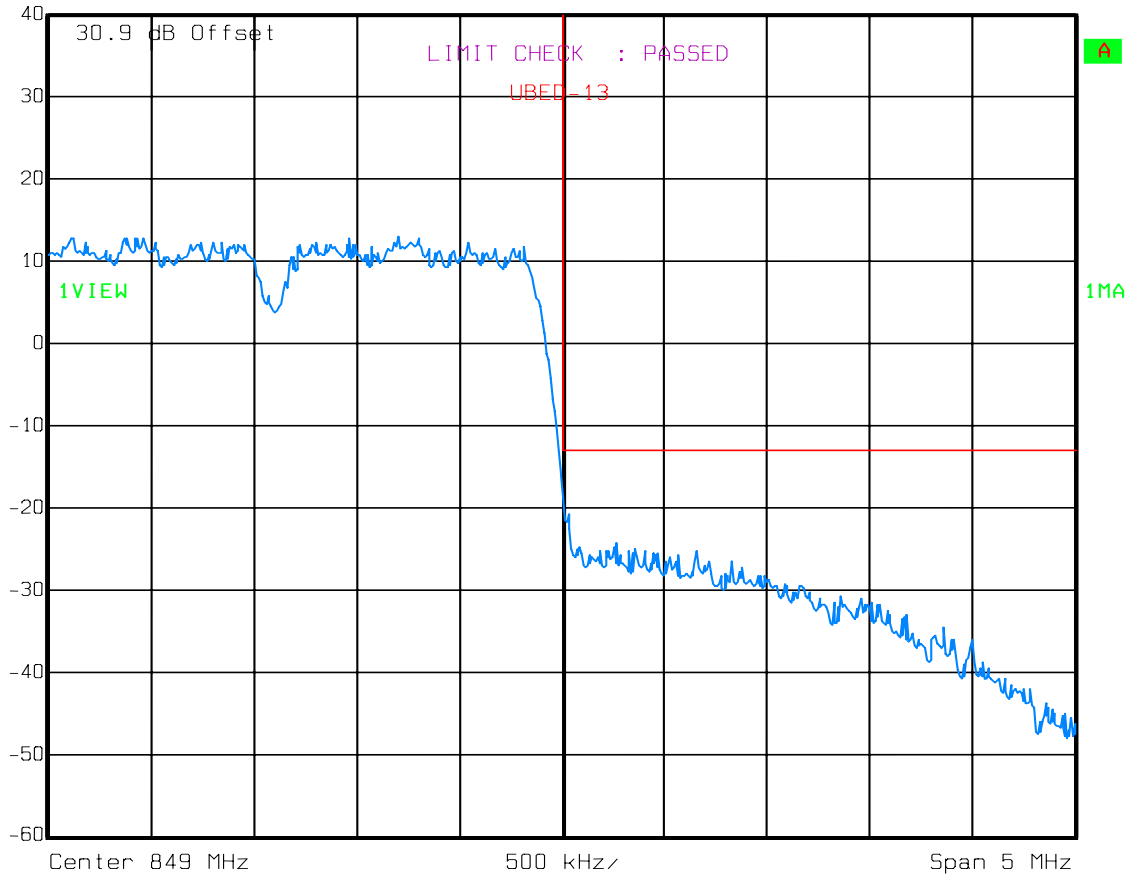
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Upper Bandedge Intermodulation
CDMA



Ref Lvl
40 dBm

RBW	30 kHz	RF Att	20 dB
VBW	30 kHz	Mixer	-10 dBm
SWT	14 ms	Unit	dBm



Date: 03.OCT.2008 10:44:59

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

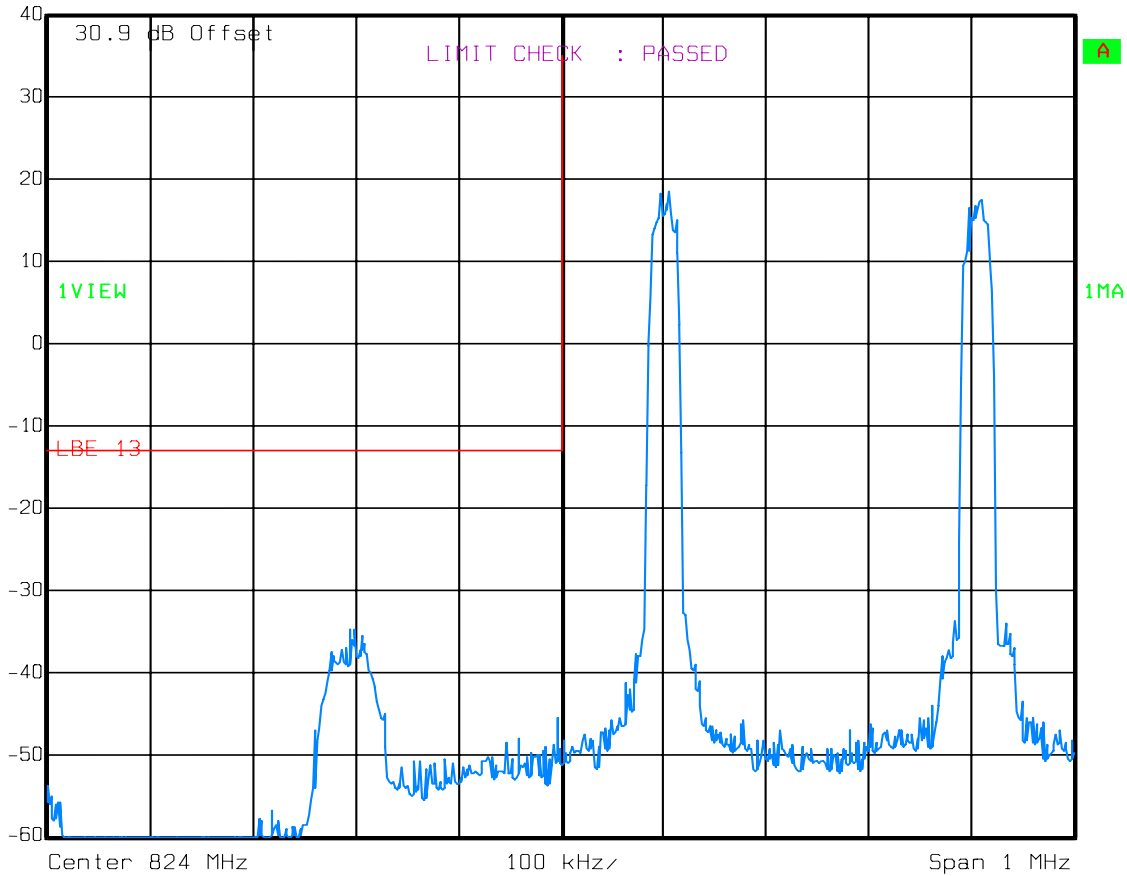
Test Data – Spurious Emissions at Antenna Terminals

Spurs – CDMA - Uplink



Ref Lvl
40 dBm

RBW	1 kHz	RF Att	20 dB
VBW	1 kHz	Mixer	-10 dBm
SWT	2.5 s	Unit	dBm



Date: 03.OCT.2008 15:24:35

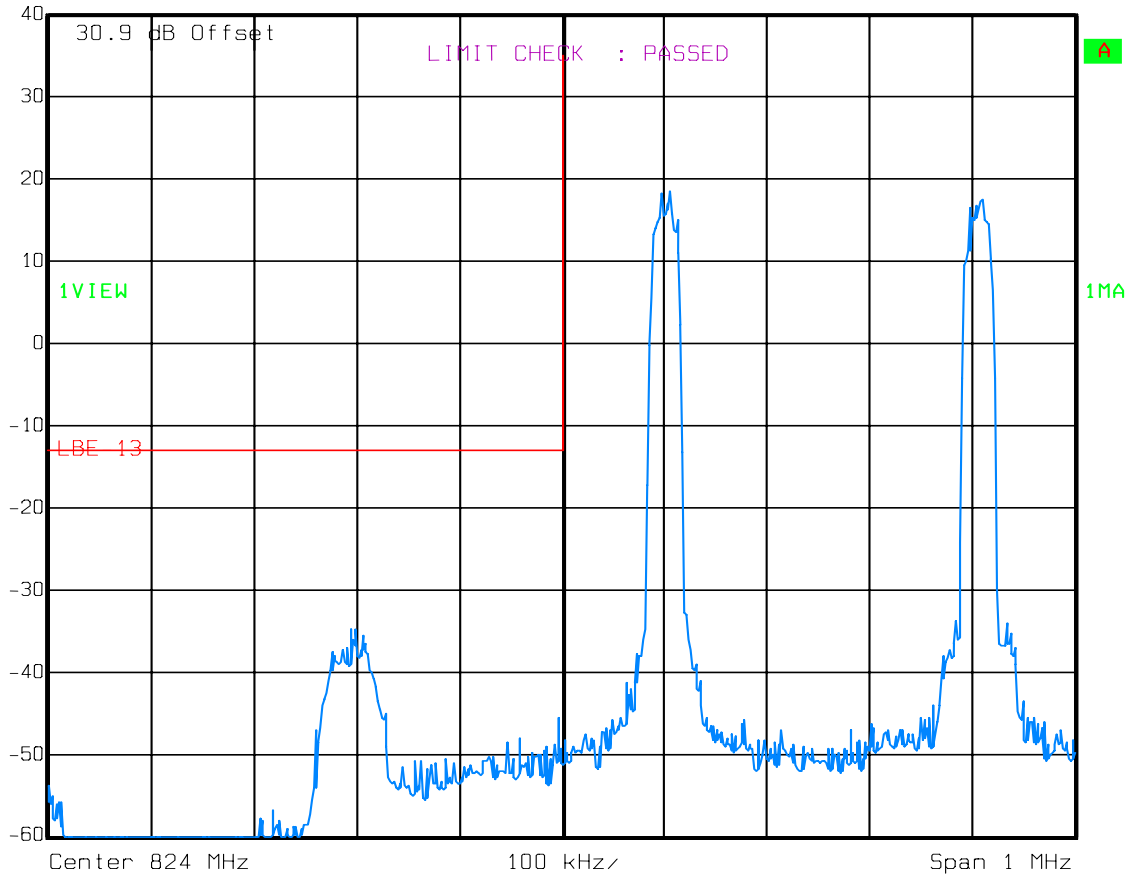
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Lower Bandedge Intermodulation
TDMA



Ref Lvl
40 dBm

RBW	1 kHz	RF Att	20 dB
VBW	1 kHz	Mixer	-10 dBm
SWT	2.5 s	Unit	dBm



Date: 03.OCT.2008 15:24:35

Test Data – Spurious Emissions at Antenna Terminals

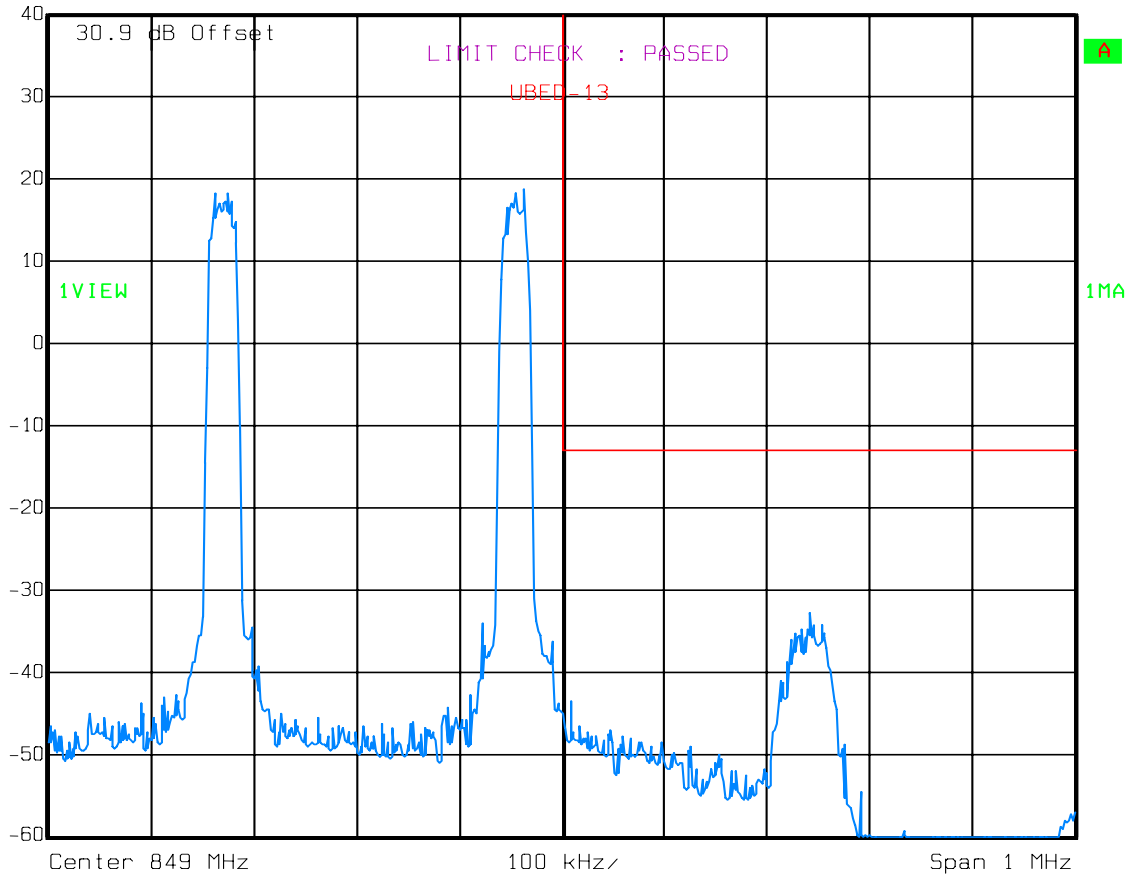
Uplink - Upper Bandedge Intermodulation

TDMA



Ref Lvl
40 dBm

RBW	1 kHz	RF Att	20 dB
VBW	1 kHz	Mixer	-10 dBm
SWT	2.5 s	Unit	dBm



Date: 03.OCT.2008 15:23:12

EQUIPMENT: **AF8527**

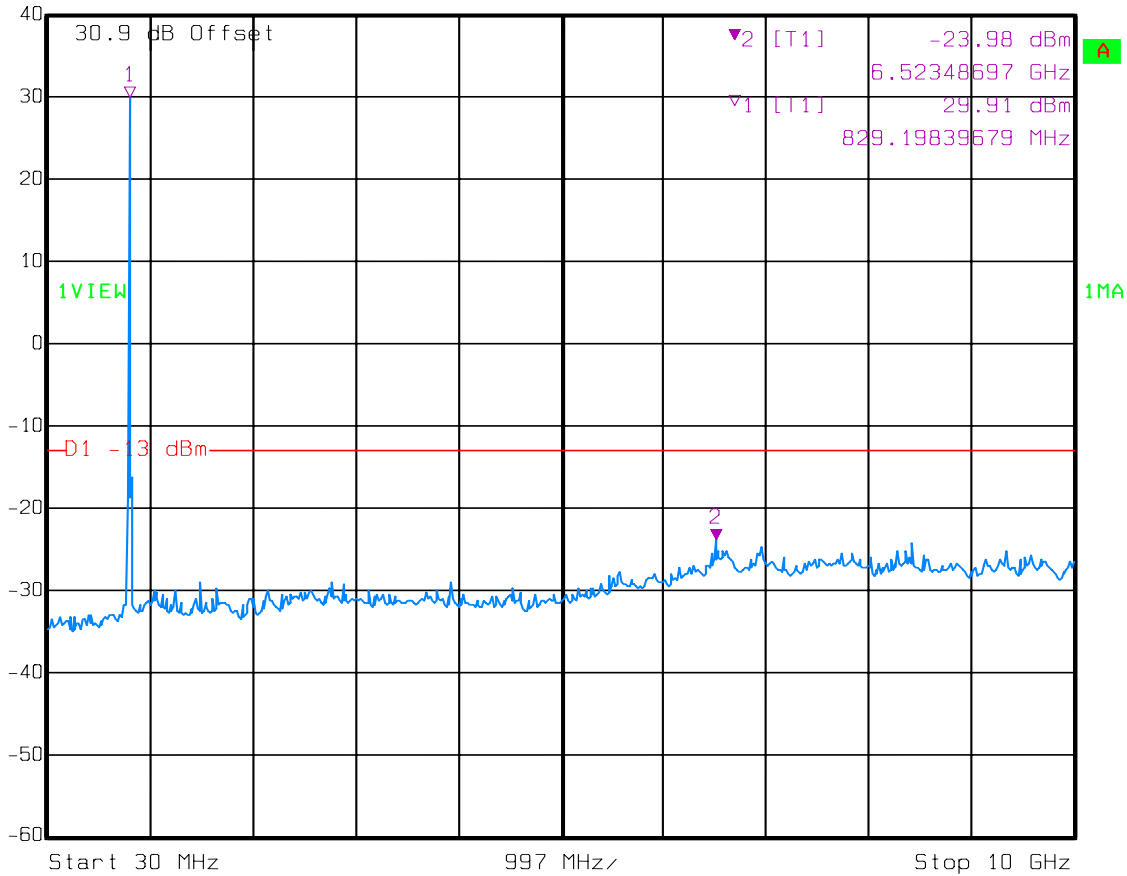
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – TDMA – Uplink



Marker 2 [T1] RBW 1 MHz RF Att 20 dB
Re -23.98 dBm VBW 1 MHz Mixer -10 dBm
40 dBm 6.52348697 GHz SWT 100 ms Unit dBm



Date: 03.OCT.2008 15:18:26

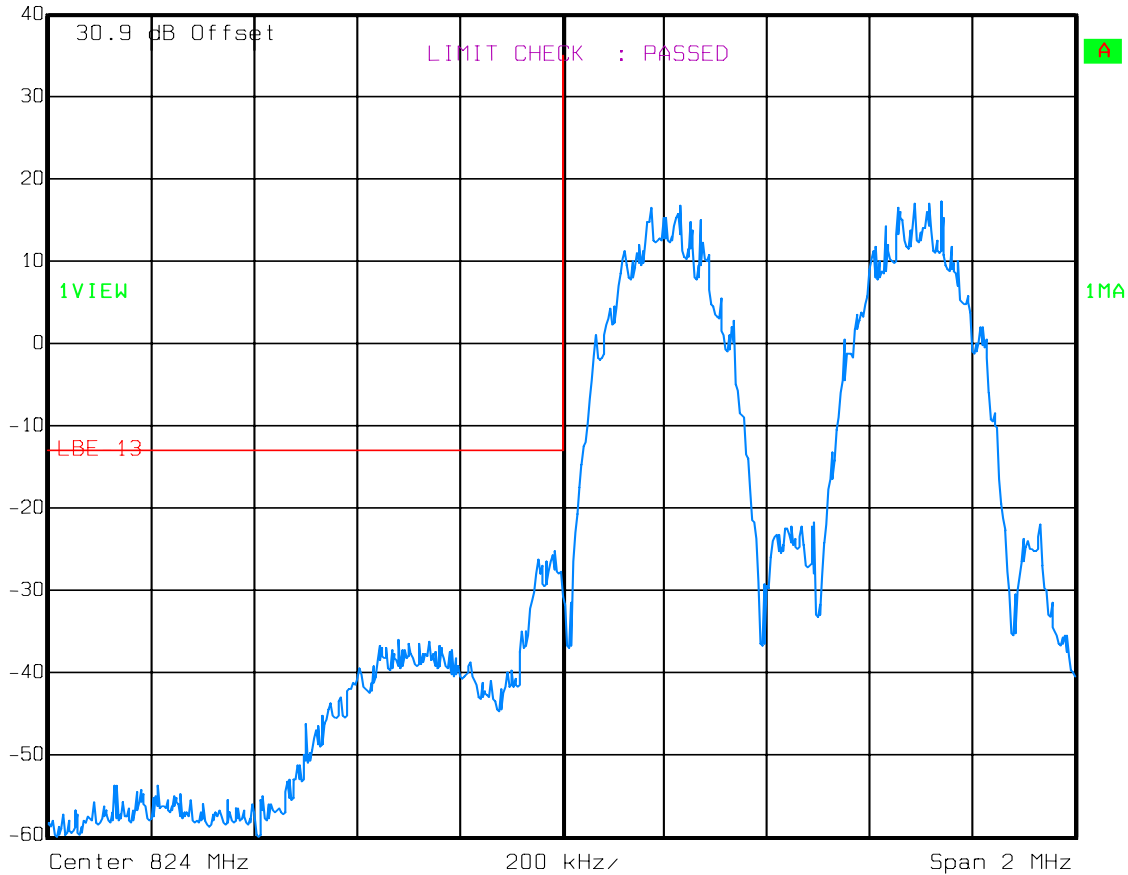
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Lower Bandedge Intermodulation
EDGE



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz
SWT 560 ms Unit dBm



Date: 03.OCT.2008 12:36:20

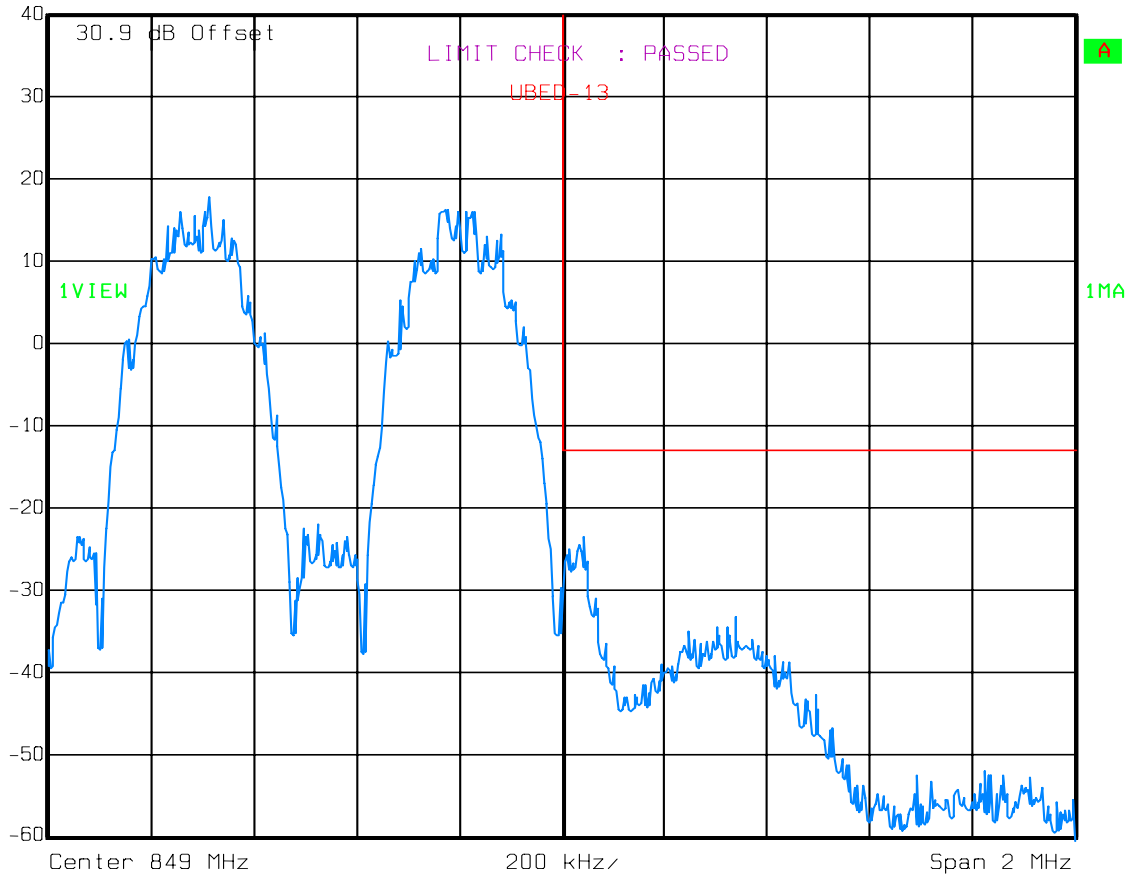
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Upper Bandedge Intermodulation
EDGE



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz
SWT 560 ms Unit dBm



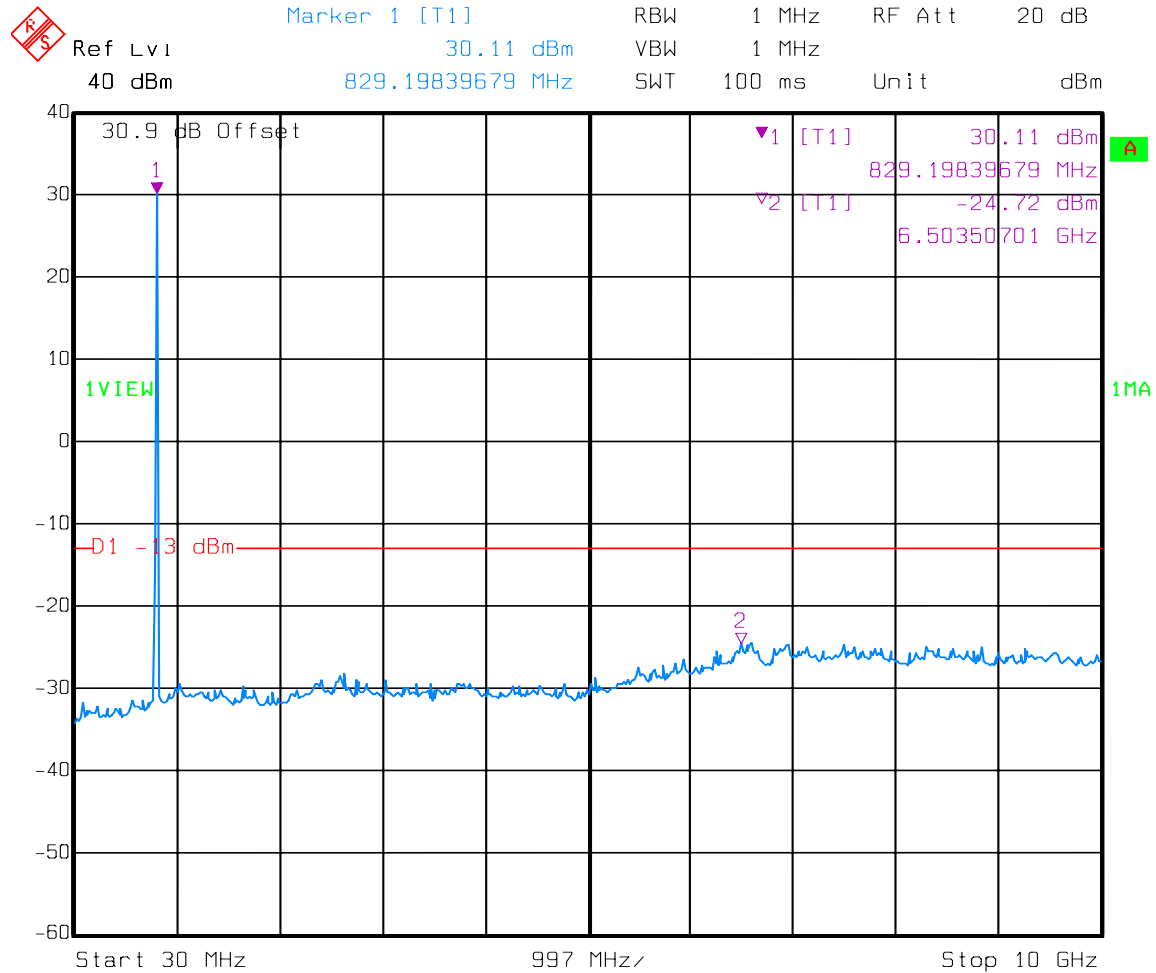
Date: 03.OCT.2008 12:37:49

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – EDGE – Uplink



Date: 03.OCT.2008 12:42:03

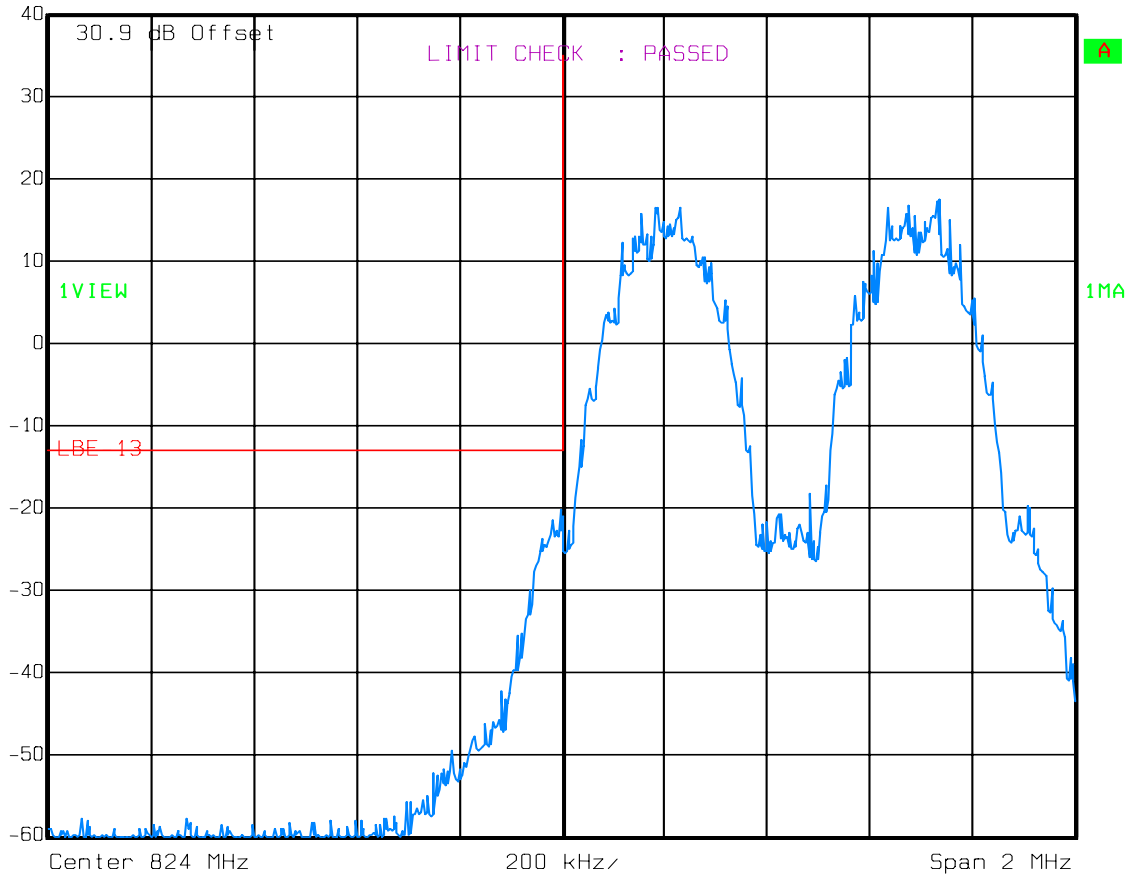
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Lower Bandedge Intermodulation
GSM



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz
SWT 560 ms Unit dBm



Date: 03.OCT.2008 11:07:40

Test Data – Spurious Emissions at Antenna Terminals

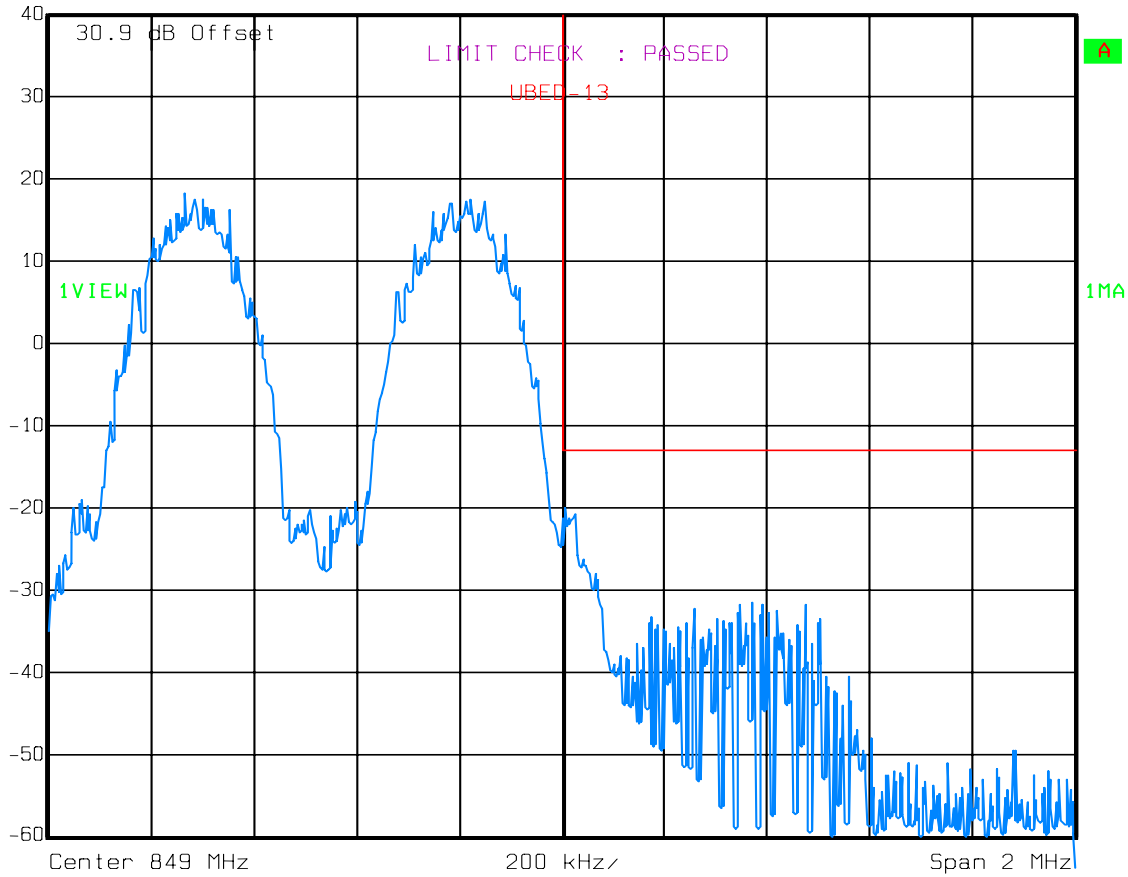
Uplink - Upper Bandedge Intermodulation

GSM



Ref Lvl
40 dBm

RBW 3 kHz RF Att 20 dB
VBW 3 kHz
SWT 560 ms Unit dBm



Date: 03.OCT.2008 11:06:37

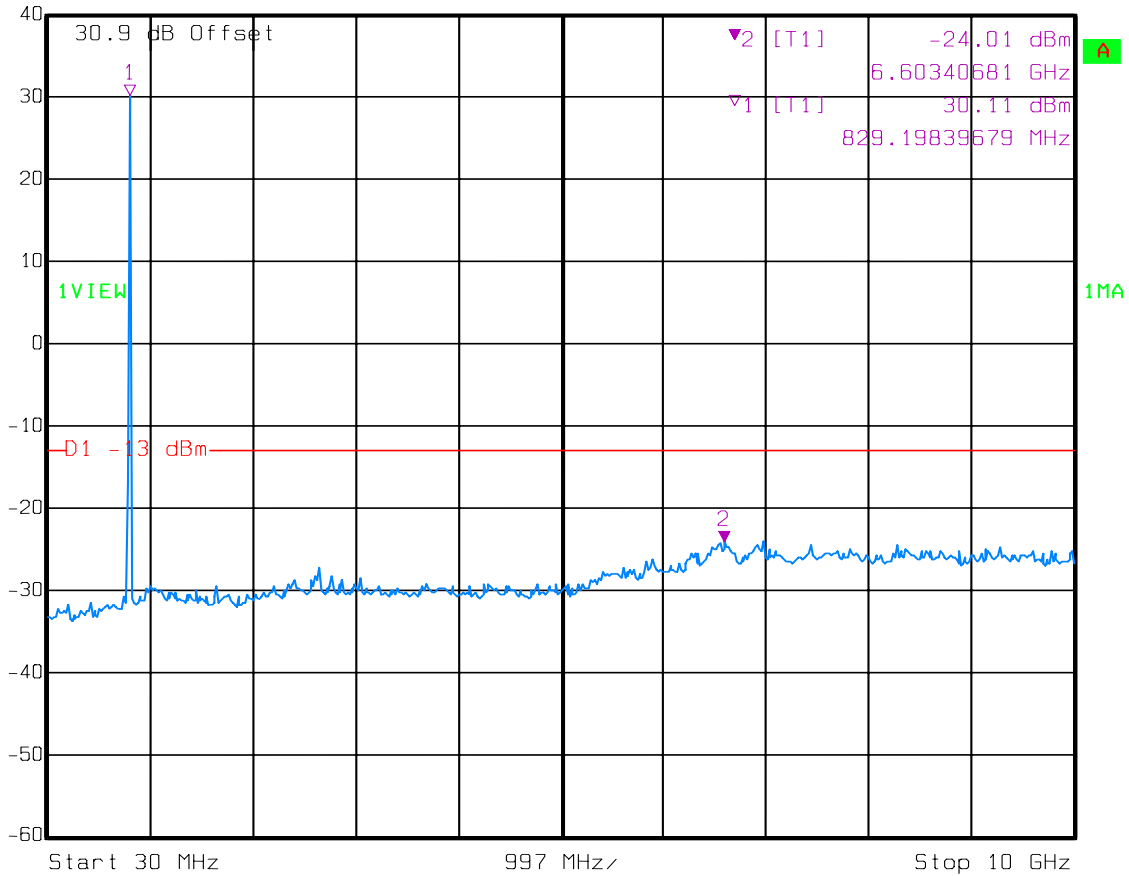
EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – GSM – Uplink

 Ref 40 dBm Marker 2 [T1] RBW 1 MHz RF Att 20 dB
-24.01 dBm VBW 1 MHz
6.60340681 GHz SWT 100 ms Unit dBm



Date: 03.OCT.2008 11:01:07

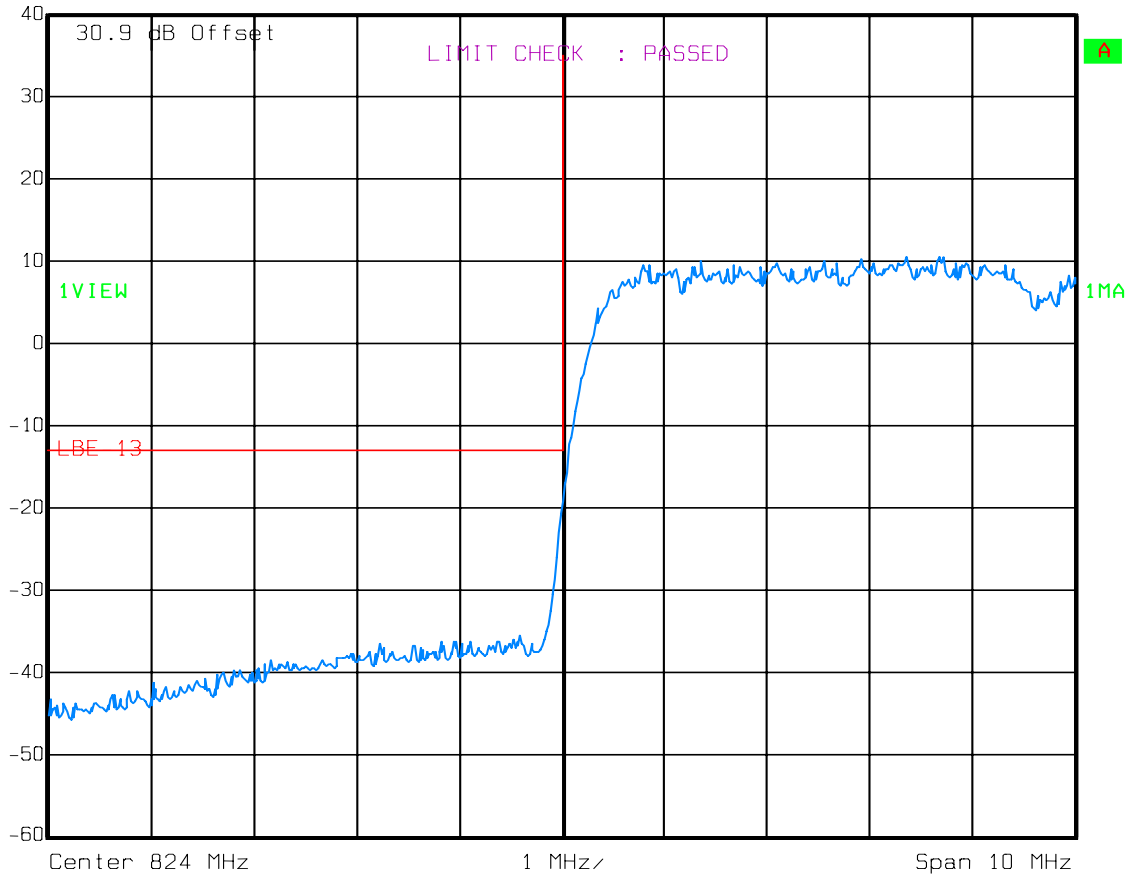
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Lower Bandedge Intermodulation
W-CDMA



Ref Lvl
40 dBm

RBW 50 kHz RF Att 20 dB
VBW 50 kHz
SWT 10 ms Unit dBm



Date: 03.OCT.2008 12:57:57

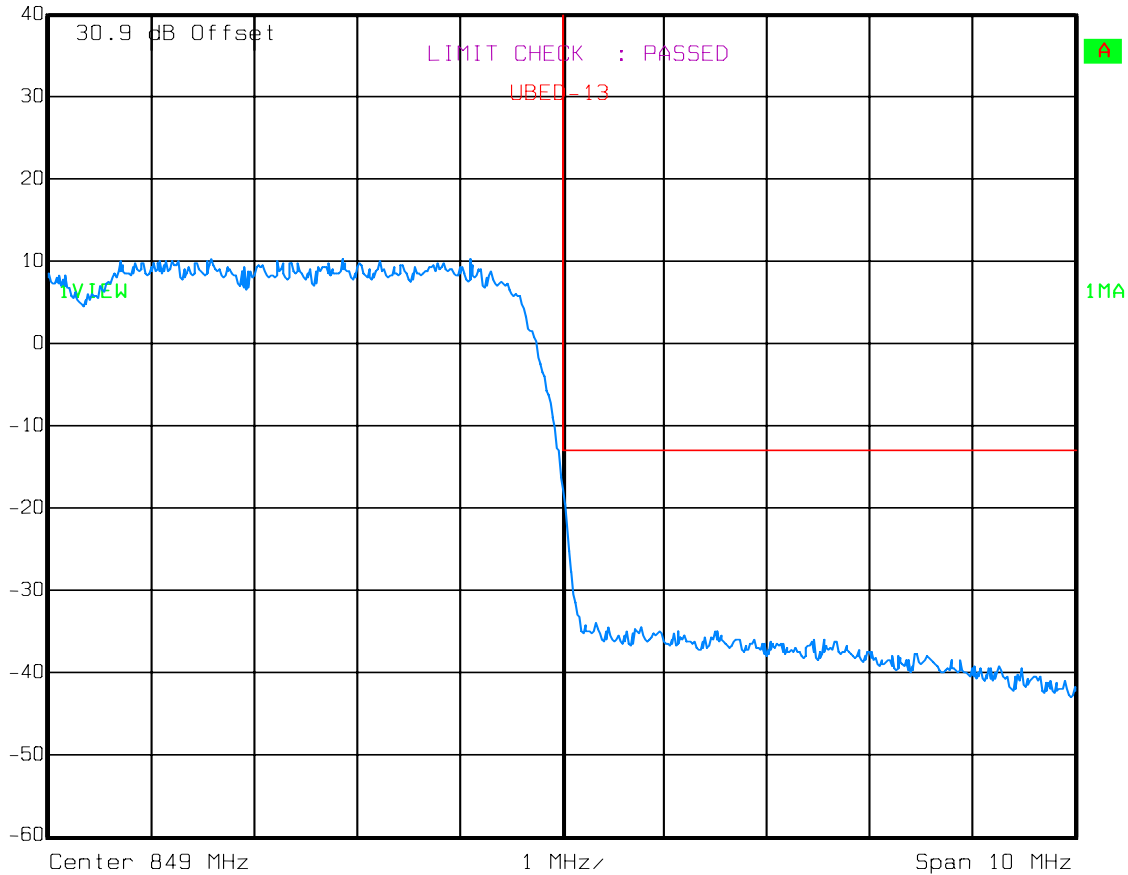
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Upper Bandedge Intermodulation
W-CDMA



Ref Lvl
40 dBm

RBW 50 kHz RF Att 20 dB
VBW 50 kHz
SWT 10 ms Unit dBm



Date: 03.OCT.2008 12:55:01

EQUIPMENT: **AF8527**

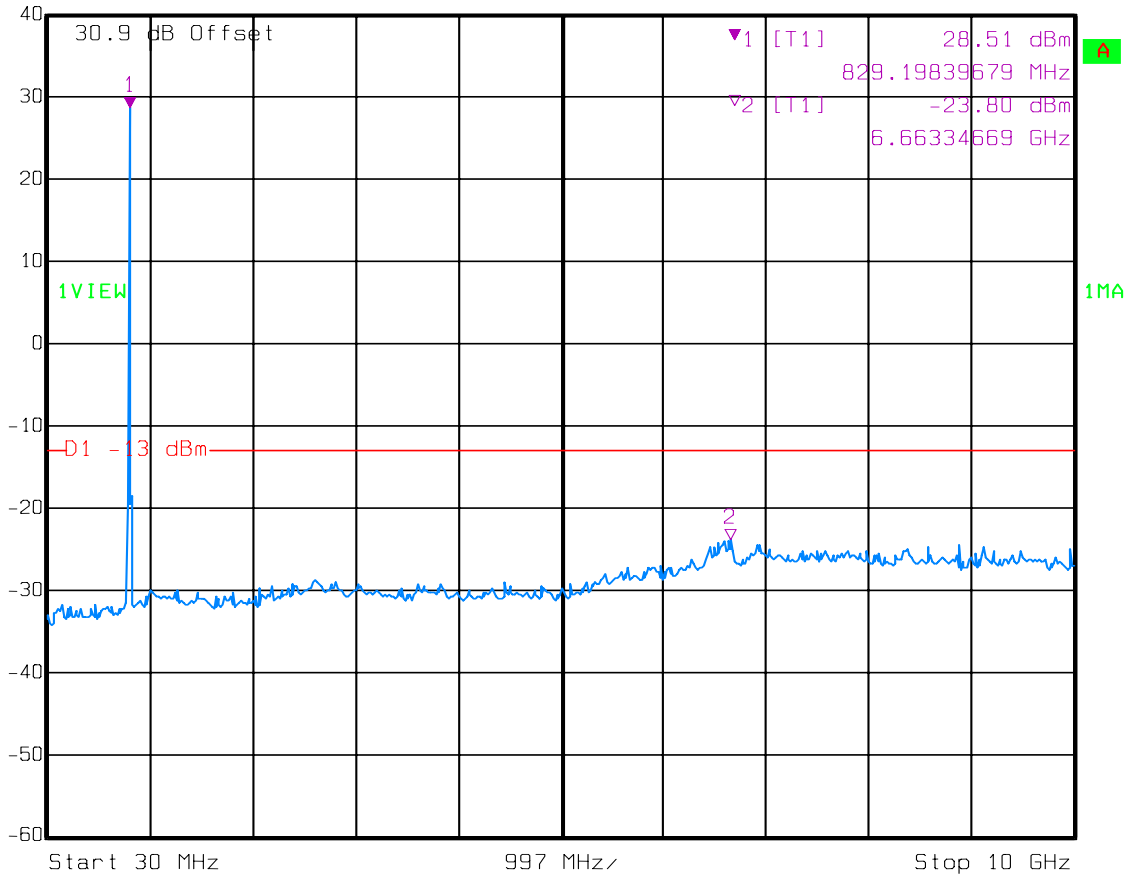
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – W-CDMA - Uplink



Ref Lvl 40 dBm
Marker 1 [T1] 28.51 dBm
829.19839679 MHz
RBW 1 MHz RF Att 20 dB
VBW 1 MHz
SWT 100 ms Unit dBm



Date: 03.OCT.2008 12:50:22

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

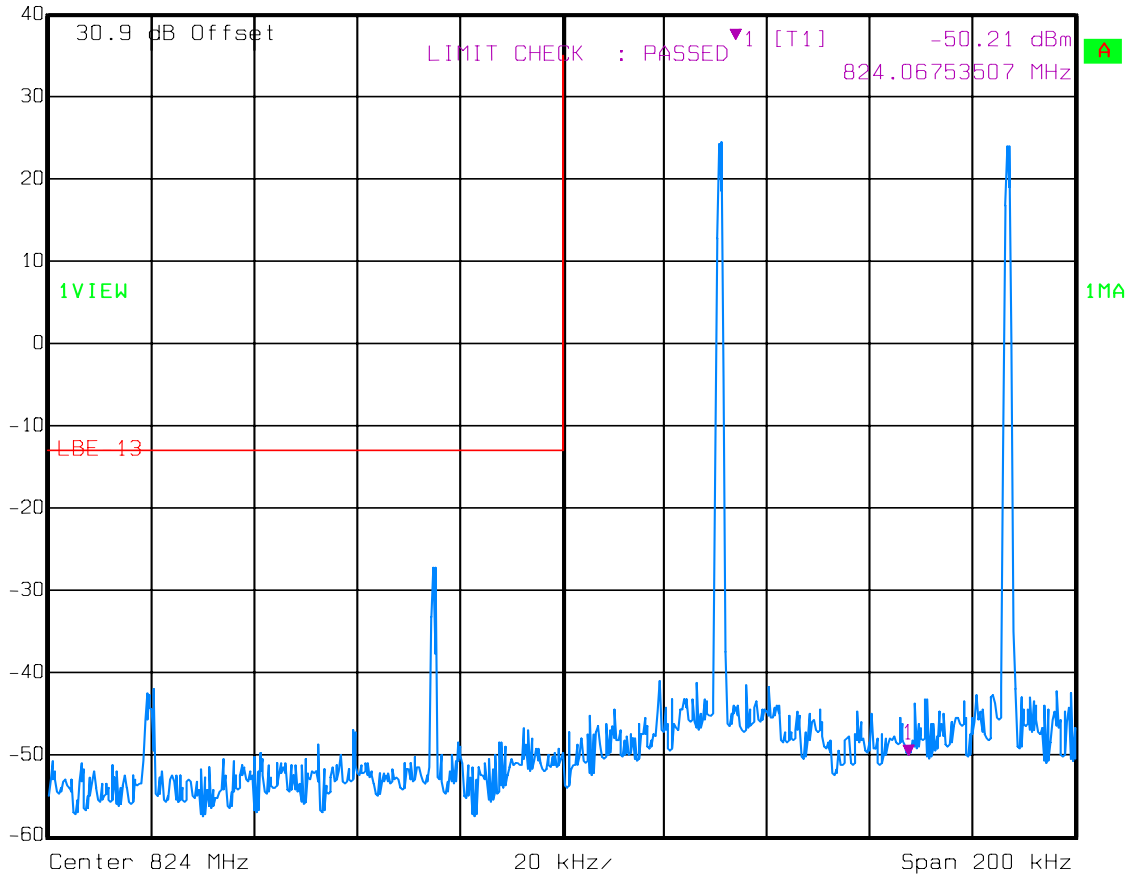
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Lower Bandedge Intermodulation

Analog



Ref Lvl	Marker 1 [T1]	RBW	500 Hz	RF Att	20 dB
40 dBm	-50.21 dBm	VBW	500 Hz	Mixer	-10 dBm
	824.06753507 MHz	SWT	4 s	Unit	dBm



Date: 03.OCT.2008 15:08:27

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

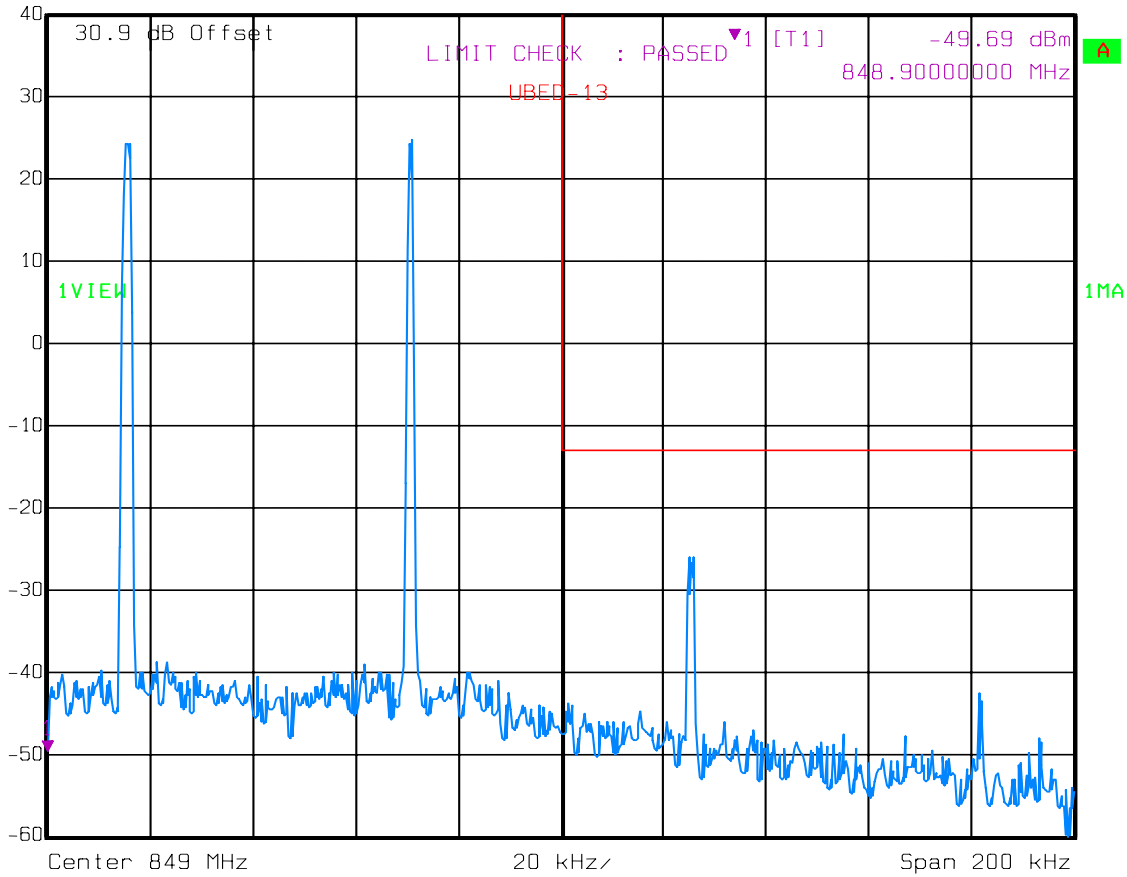
Test Data – Spurious Emissions at Antenna Terminals

Uplink - Upper Bandedge Intermodulation

Analog



Ref Lvl	Marker 1 [T1]	RBW	500 Hz	RF Att	20 dB
40 dBm	-49.69 dBm	VBW	500 Hz	Mixer	-10 dBm
	848.90000000 MHz	SWT	4 s	Unit	dBm



Date: 03.OCT.2008 15:10:35

EQUIPMENT: **AF8527**

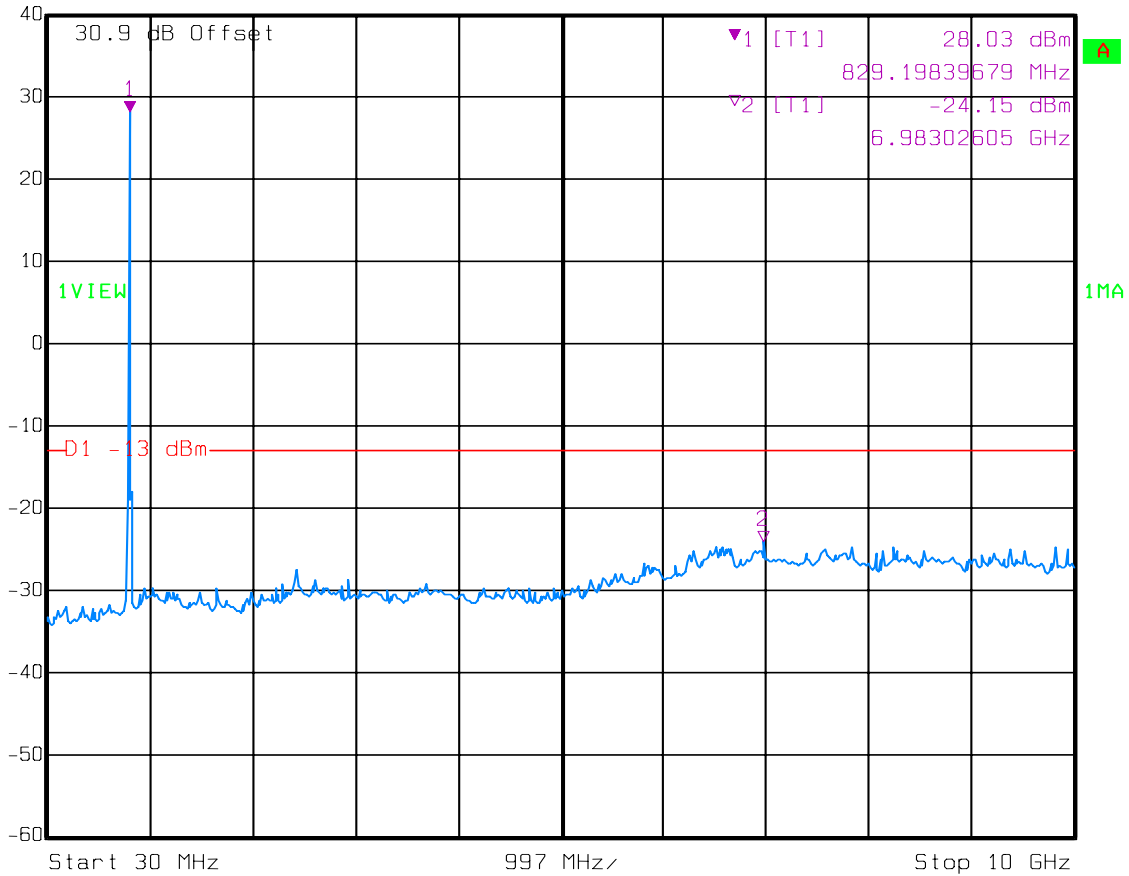
PROJECT NO.: 16265RUS1

Test Data – Spurious Emissions at Antenna Terminals

Spurs – Analog – Uplink



Ref Lvl 40 dBm
Marker 1 [T1] 28.03 dBm
829.19839679 MHz
RBW 1 MHz RF Att 20 dB
VBW 1 MHz Mixer -10 dBm
SWT 100 ms Unit dBm



Date: 03.OCT.2008 15:12:36

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious	PARA. NO.: 22.917
TESTED BY: David Light	DATE: 03 October 2008

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.

Analyzer Settings: RBW = VBW = 1 MHz / Peak detector

Equipment Used: 1464-1484-1485-1016-993-791-1763

Measurement Uncertainty: +/-1.7 dB

Temperature: 22 °C

Relative Humidity: 48 %

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1065	ATTENUATOR	NARDA 776B-10	NONE	CBU	N/A
1604	ATTENUATOR	NARDA 776B-20	NONE	N/A	N/A
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	01/24/07	01/24/09
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/24/07	01/24/09
1484	Cable	Storm PR90-010-072	N/A	05/07/08	05/07/09
1485	Cable	Storm PR90-010-216	N/A	05/07/08	05/07/09
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	05/07/08	05/07/09
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/31/07	08/30/09
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	05/07/08	05/07/09
1763	Bilog Antenna	Schaffner CBL 6111D	22926	10/21/07	10/20/08

ANNEX A - TEST DETAILS

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: **AF8527**

PROJECT NO.: 16265RUS1

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

**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

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

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

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

EQUIPMENT: **AF8527**

PROJECT NO.: 16265RUS1

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.

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:

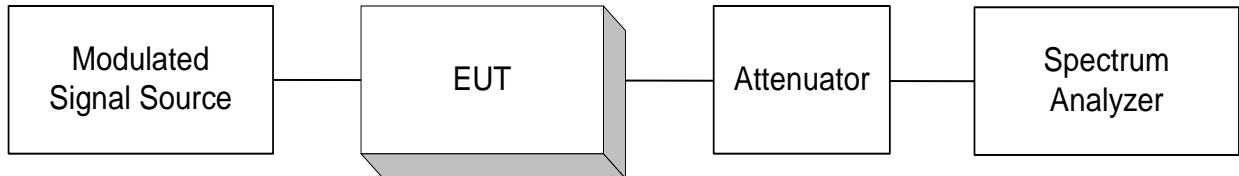
The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. The frequency counter and signal generator are phase locked with the same 10 MHz reference frequency by connecting the 10 MHz ref. out of the counter to the 10 MHz ref, in of the 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:

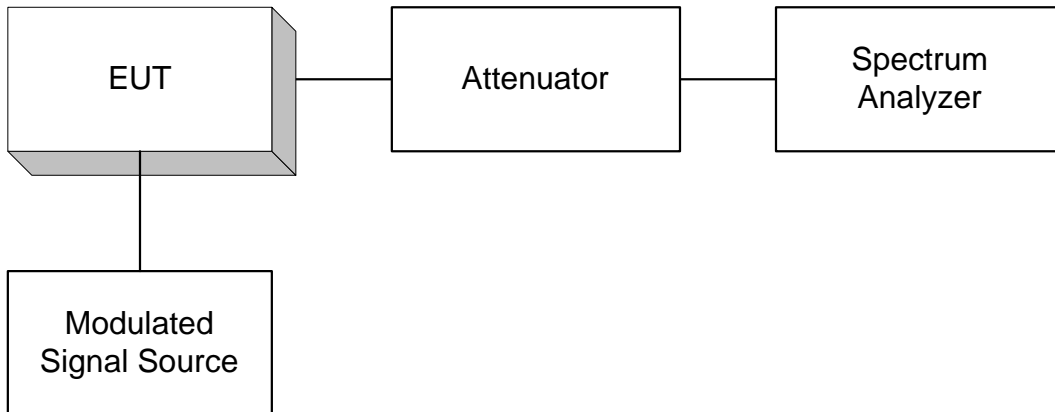
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30 second intervals for a period of 5 minutes.

ANNEX B - TEST DIAGRAMS

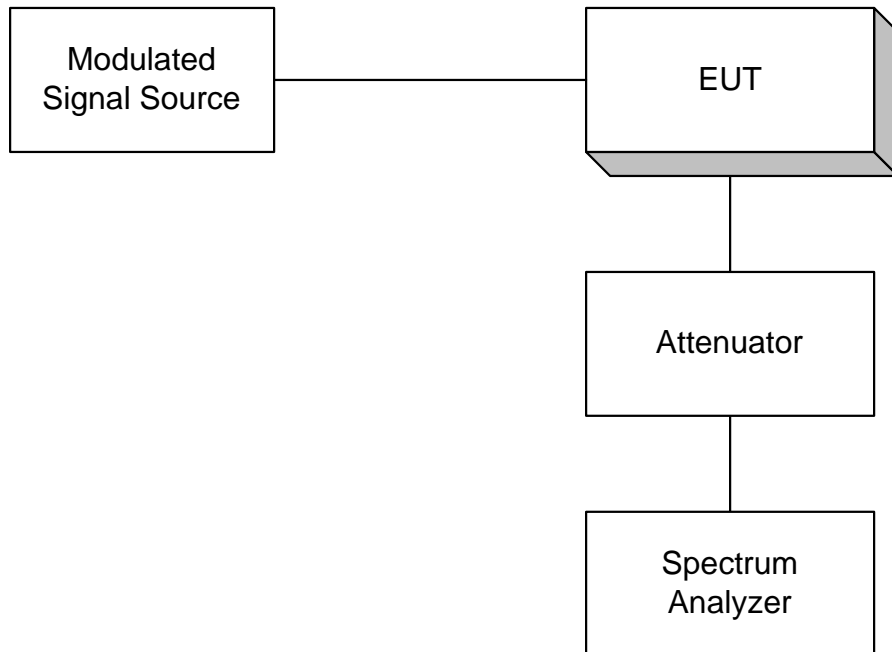
Para. No. 2.1046 - R.F. Power Output



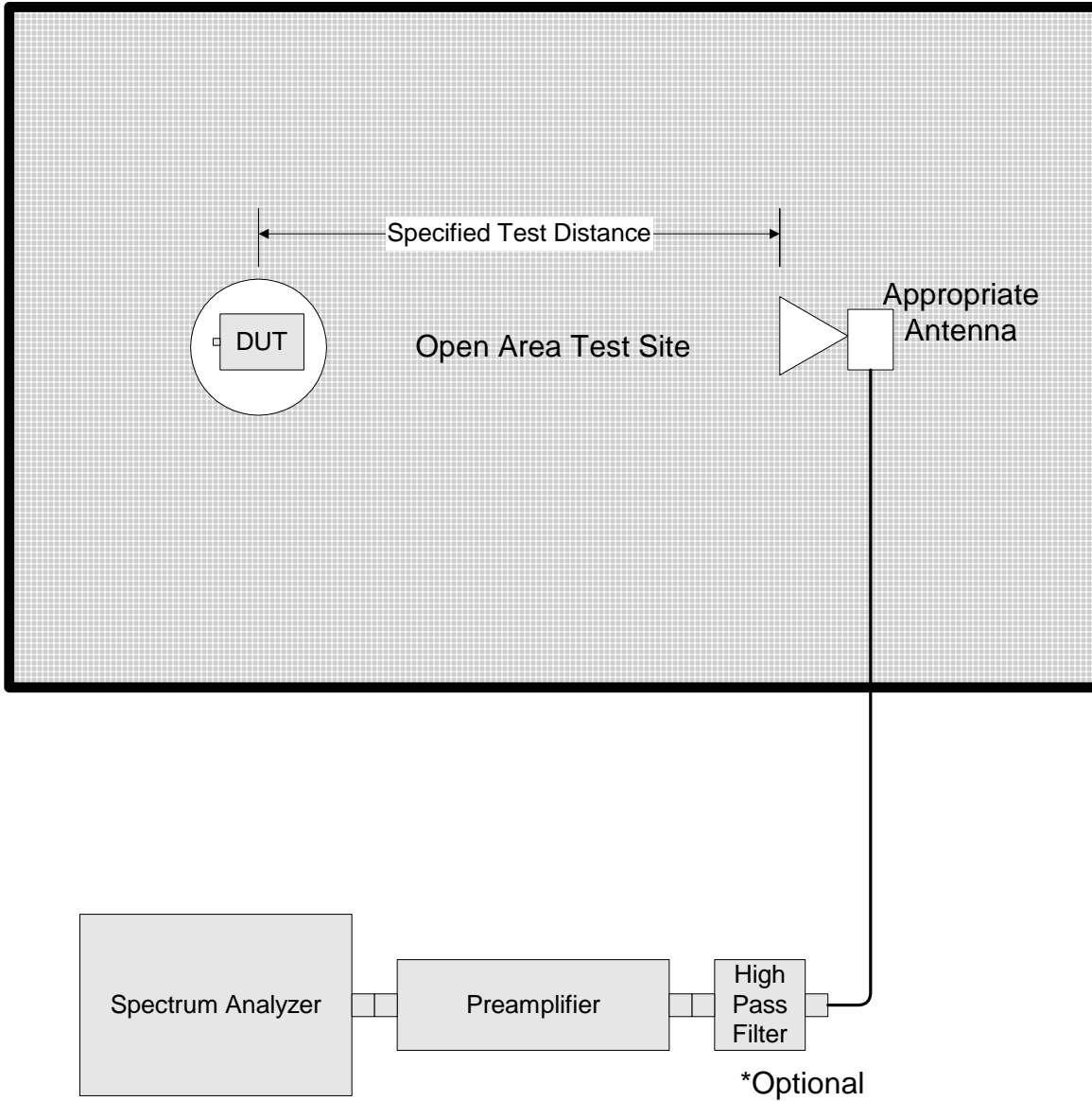
Para. No. 2.1049 - Occupied Bandwidth

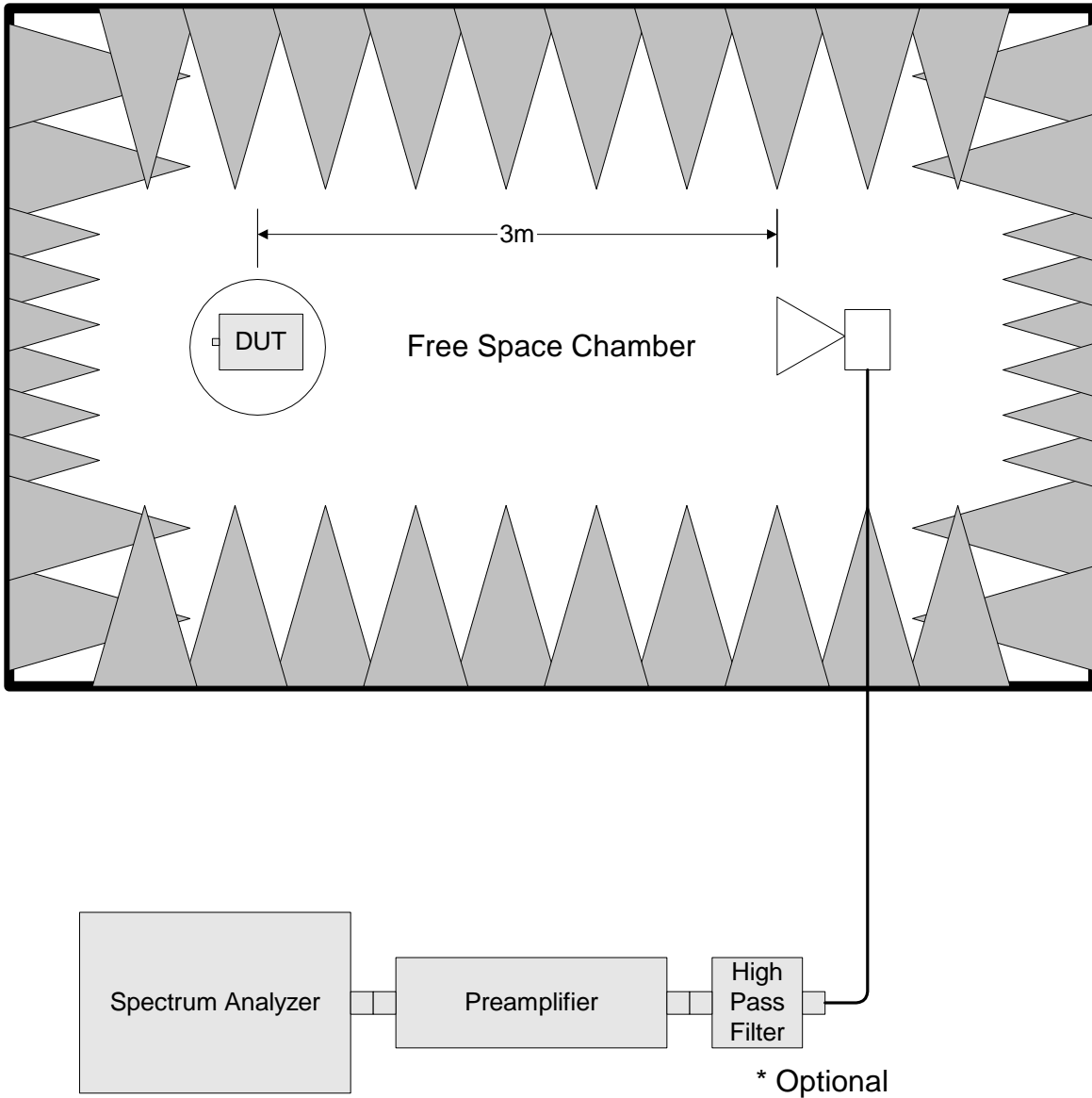


Para. No. 2.1051 Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Spurious Radiation





Para. No. 2.1055 - Frequency Stability

