



**Nemko Test Report:** 16266RUS1

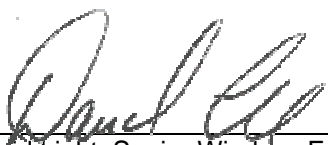
**Applicant:** Andrew Corporation  
108 Rand Park Drive  
Garner, NC 27529  
USA

**Equipment Under Test:  
(E.U.T.)** AF1937

**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:**

  
\_\_\_\_\_  
David Light, Senior Wireless Engineer

**DATE:** 20 October, 2008

**APPROVED BY:**

  
\_\_\_\_\_  
Tom Tidwell, Telecom Direct

**DATE:** 27 October, 2008

**Number of Pages: 60**

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EQUIPMENT: **AF1937**

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## Section 1. Summary of Test Results

Manufacturer Andrew Corporation

Model No.: AF1937

Serial No.: 13

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

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: AF1937**

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**Summary Of Test Data**

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	24.232	100W	Complies
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.	Complies
Frequency Stability	24.235		NA

**Footnotes:**

- (1) Modulation characteristics were not tested since the E.U.T. processes but does not produce a modulated waveform.
- (2) Frequency stability was not performed because the device under test uses a common oscillator for down-conversion of the signal to an intermediate frequency and up-conversion of the signal from IF to the transmit frequency. The output frequency is the same as the input frequency.

EQUIPMENT: **AF1937****Section 2. General Equipment Specification**

<b>Supply Voltage Input:</b>	120 Vac		
<b>Frequency Bands: Downlink:</b>	<input checked="" type="checkbox"/> Block A : 1930 – 1945 MHz <input checked="" type="checkbox"/> Block D : 1945 – 1950 MHz <input checked="" type="checkbox"/> Block B : 1950 – 1965 MHz <input checked="" type="checkbox"/> Block E : 1965 – 1970 MHz <input checked="" type="checkbox"/> Block F : 1970 – 1975 MHz <input checked="" type="checkbox"/> Block C : 1975 – 1990 MHz		
<b>Frequency Bands: Uplink:</b>	<input checked="" type="checkbox"/> Block A : 1850 – 1865 MHz <input checked="" type="checkbox"/> Block D : 1865 – 1870 MHz <input checked="" type="checkbox"/> Block B : 1870 – 1885 MHz <input checked="" type="checkbox"/> Block E : 1885 – 1890 MHz <input checked="" type="checkbox"/> Block F : 1890 – 1895 MHz <input checked="" type="checkbox"/> Block C : 1895 – 1910 MHz		
<b>Type of Modulation and Designator:</b>	<b>CDMA (F9W)</b> <input checked="" type="checkbox"/>	<b>GSM (GXW)</b> <input checked="" type="checkbox"/>	<b>W-CDMA (F9W)</b> <input checked="" type="checkbox"/>
			<b>EDGE (G7W)</b> <input checked="" type="checkbox"/>
<b>System Gain:</b>	94 dB		
<b>Output Impedance:</b>	50 ohms		
<b>RF Output (Rated): Uplink</b>	$\frac{5.0}{37} \text{ W dBm}$		
<b>RF Output (Rated): Downlink</b>	$\frac{0.50}{27} \text{ W dBm}$		
<b>Frequency Translation:</b>	<b>F1-F1</b> <input checked="" type="checkbox"/>	<b>F1-F2</b> <input type="checkbox"/>	<b>N/A</b> <input type="checkbox"/>
<b>Band Selection:</b>	<b>Software</b> <input checked="" type="checkbox"/>	<b>Duplexer</b> <input type="checkbox"/>	<b>Fullband</b> <input type="checkbox"/>

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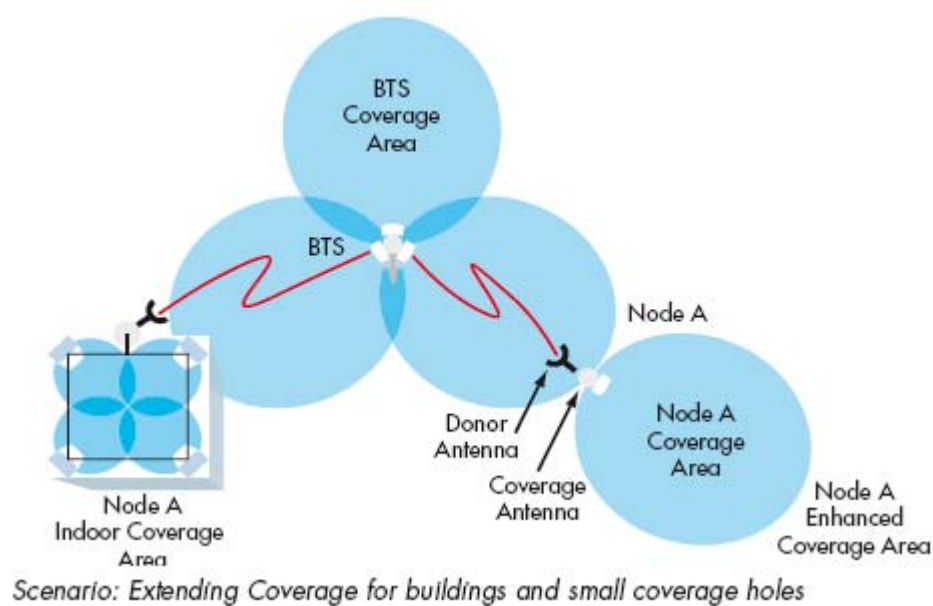
**EQUIPMENT: AF1937**

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## 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: AF1937****Section 3. RF Power Output**

NAME OF TEST: RF Power Output	PARA. NO.: 24.232
TESTED BY: David Light	DATE: 20 October 2008

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

Direction	Modulation	Composite Power (dBm)	RF Power (W)
Downlink	CDMA	37	5.0
	GSM	37	5.0
	EDGE	37	5.0
	WCDMA	37	5.0
Uplink	CDMA	30	1.0
	GSM	30	1.0
	EDGE	30	1.0
	WCDMA	30	1.0

**Equipment Used:** 1604-1064-1082-1659**Measurement Uncertainty:** +/- 1.7 dB**Temperature:** 22 °C**Relative Humidity:** 48 %

*EQUIPMENT:* **AF1937**

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**Section 4.        Occupied Bandwidth**

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 24.238
TESTED BY: David Light	DATE: 06 October 2008

**Test Results:**                Complies.

**Test Data:**                 See attached plot(s).

**Equipment Used:**        1064-1604-1082-1659

**Measurement Uncertainty:**   1X10<sup>-7</sup> ppm

**Temperature:**            22 °C

**Relative Humidity:**    48 %



EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

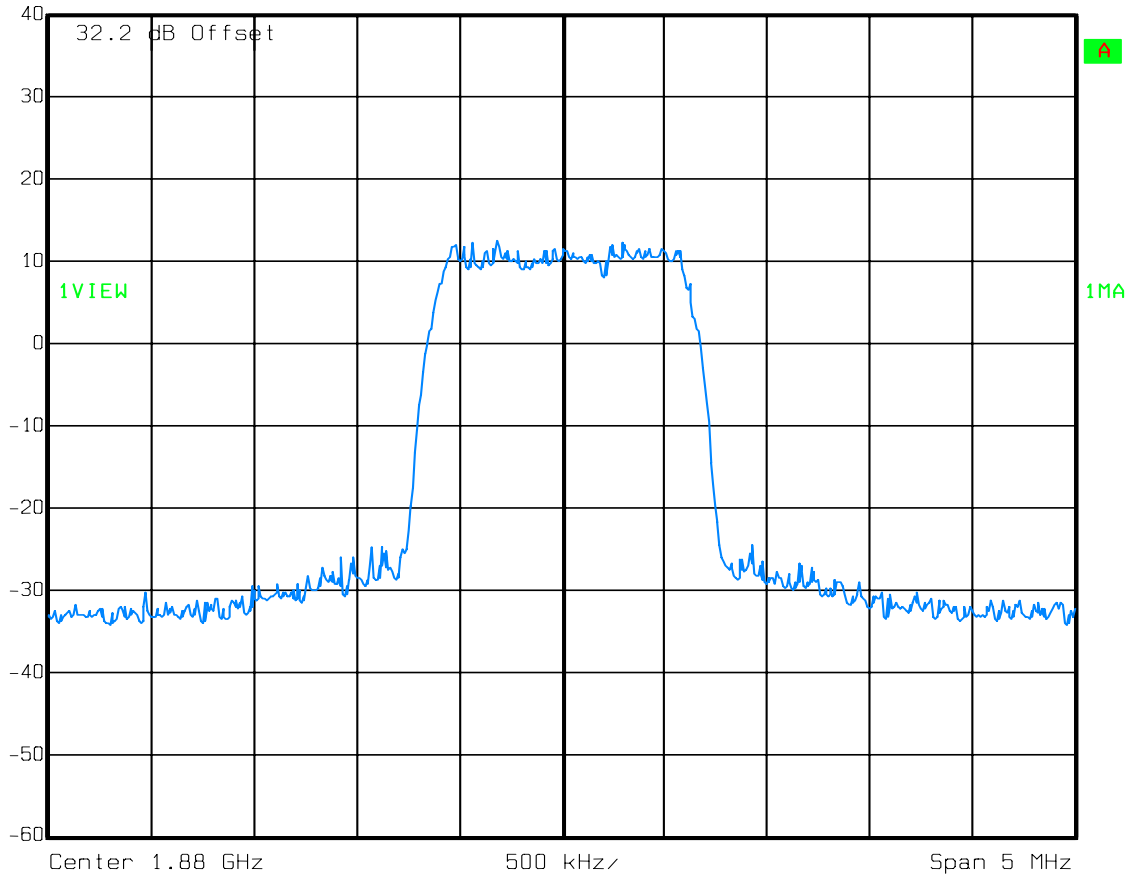
Output – Uplink

CDMA / EVDO



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 12:53:42

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

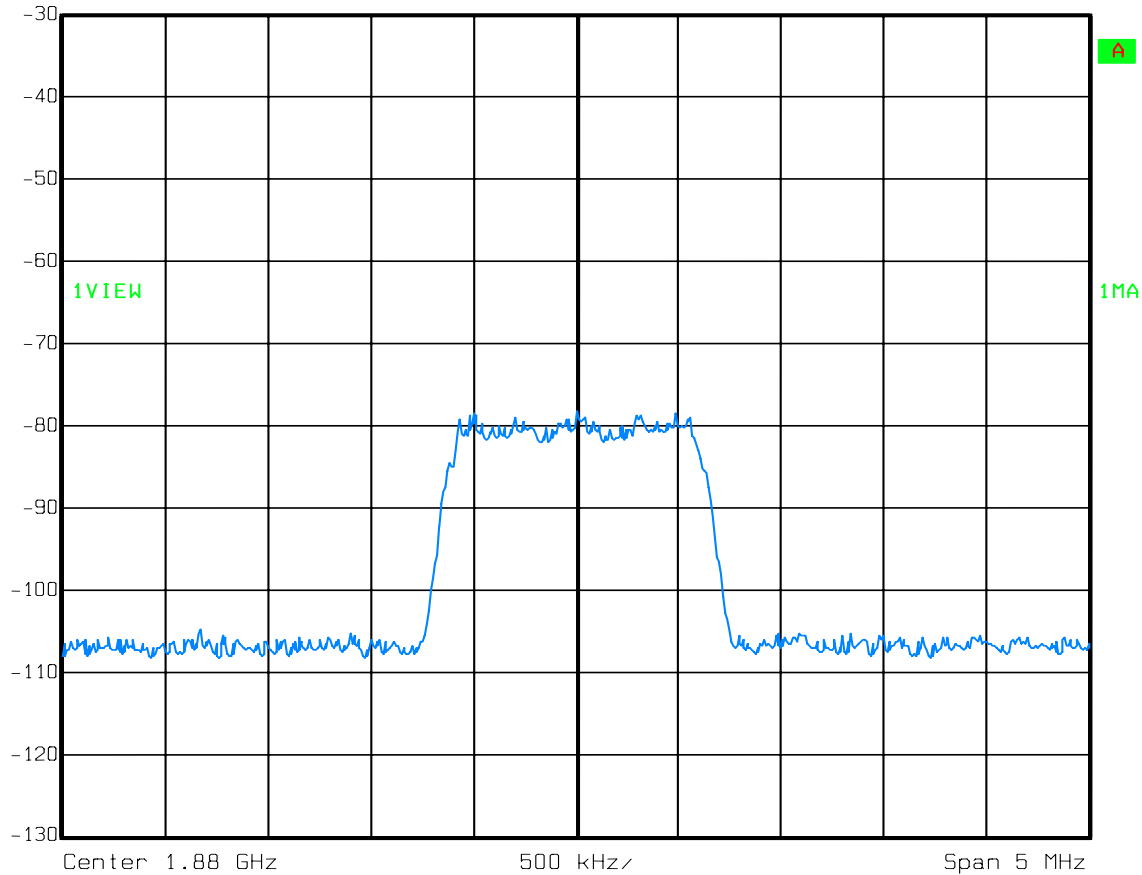
Input – Uplink

CDMA / EVDO



Ref Lvl  
-30 dBm

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



Date: 06.OCT.2008 12:55:11

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

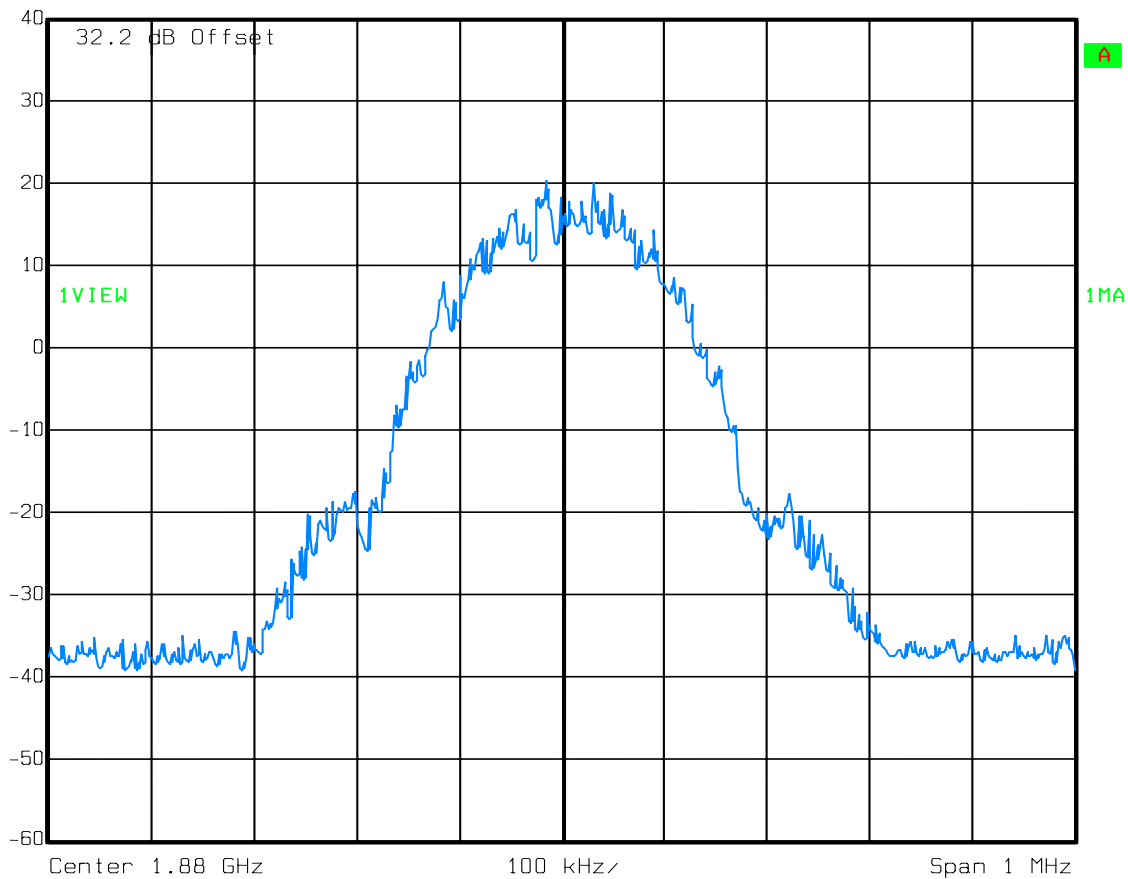
GSM

Output - Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 12:59:06

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

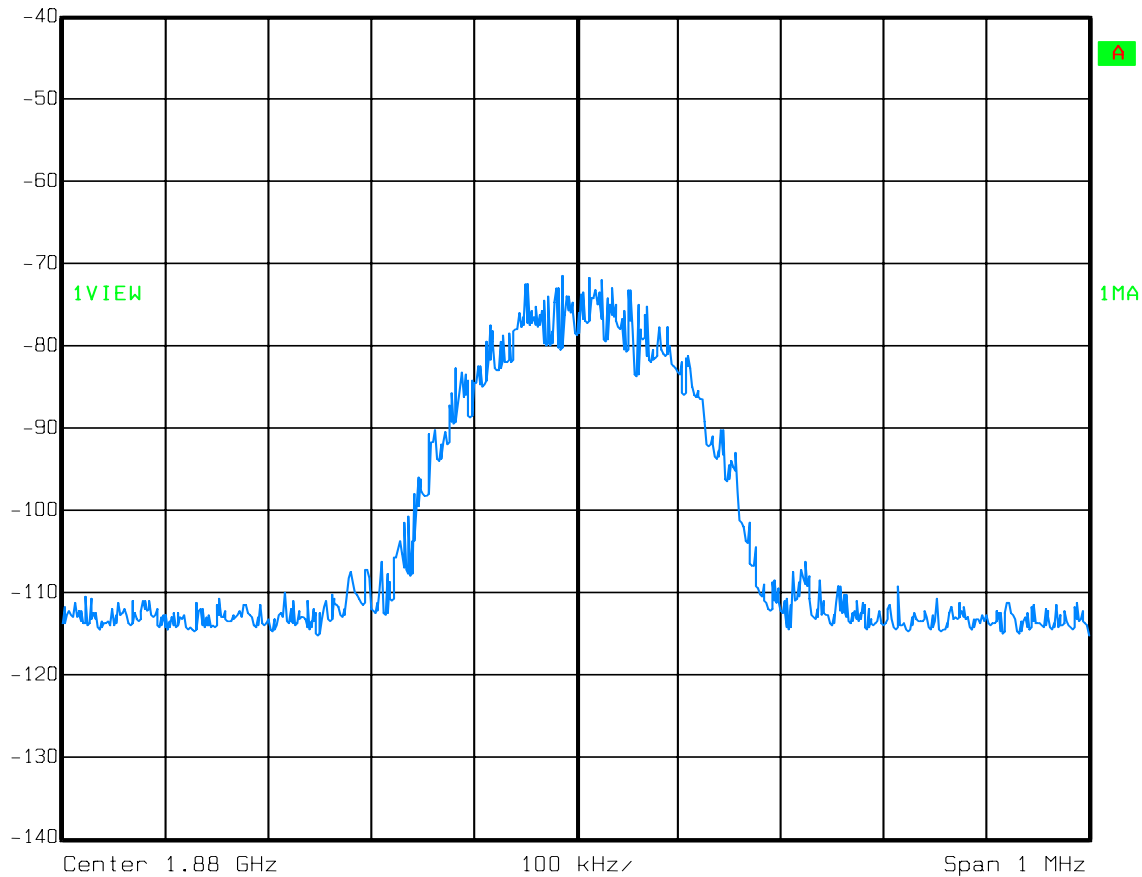
GSM

Input - Uplink



Ref Lvl  
-40 dBm

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



Date: 06.OCT.2008 13:00:28

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

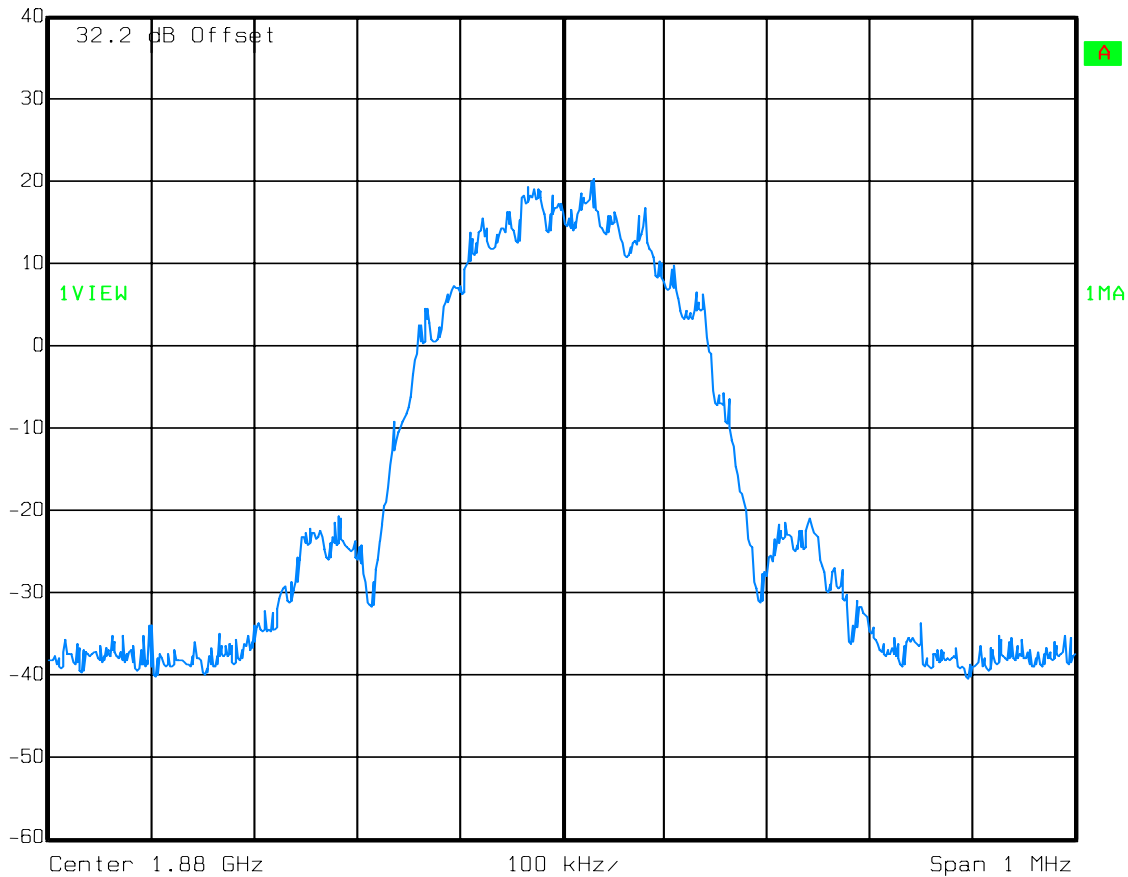
EDGE

Output - Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:11:29

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

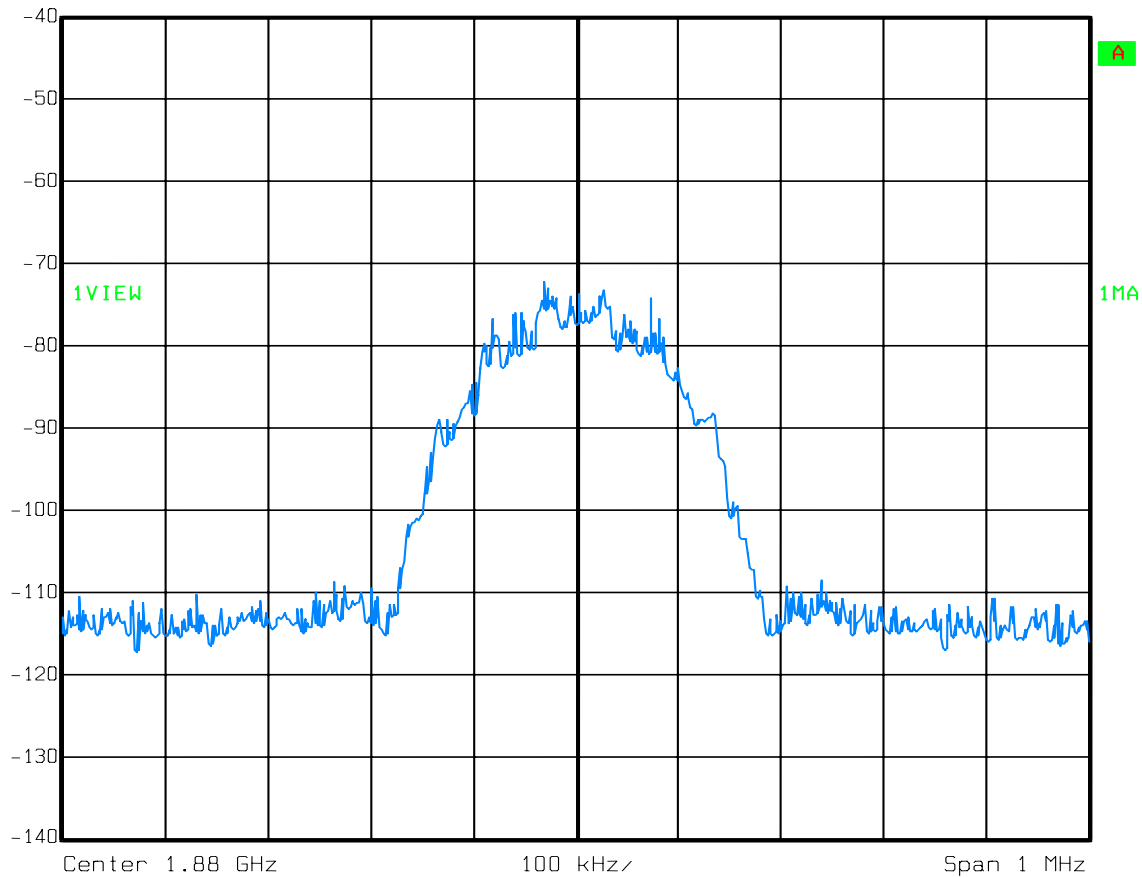
EDGE

Input - Uplink



Ref Lvl  
-40 dBm

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



Date: 06.OCT.2008 13:12:33

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

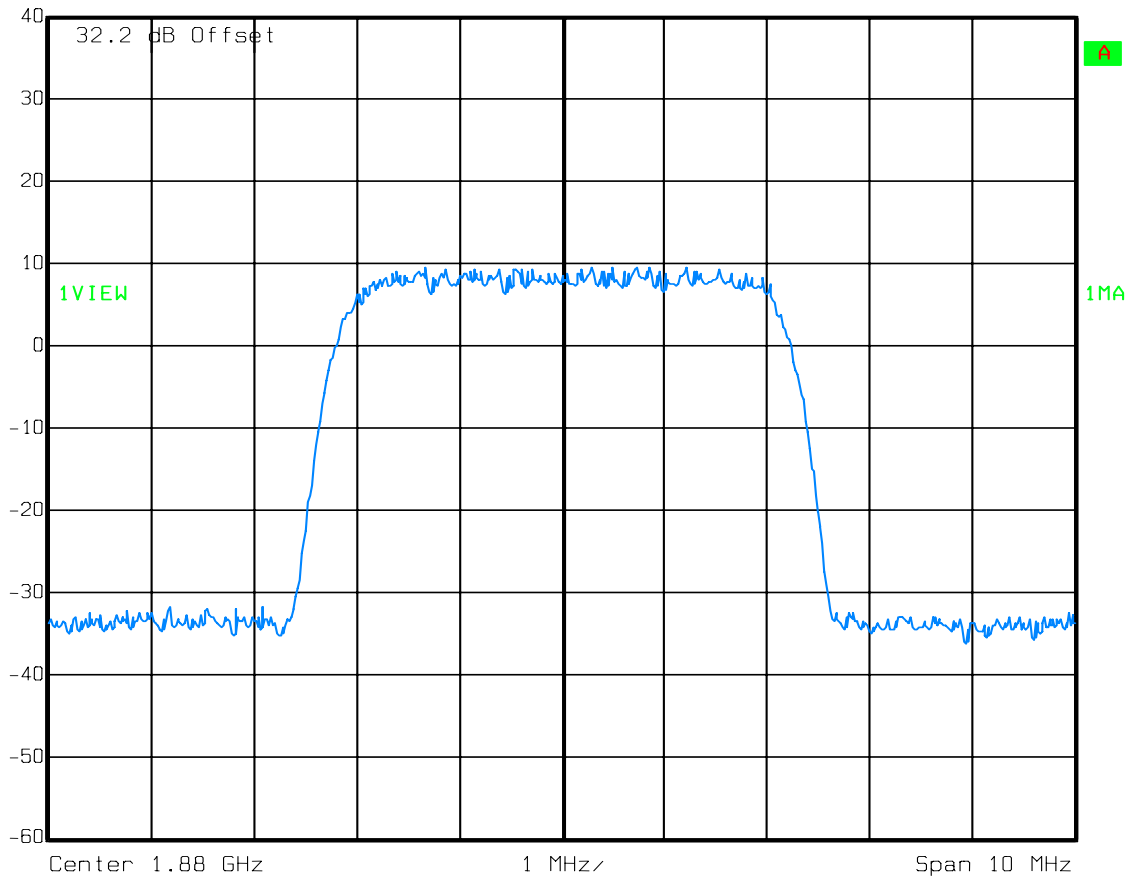
W-CDMA

Out put - Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:17:32

EQUIPMENT: **AF1937**

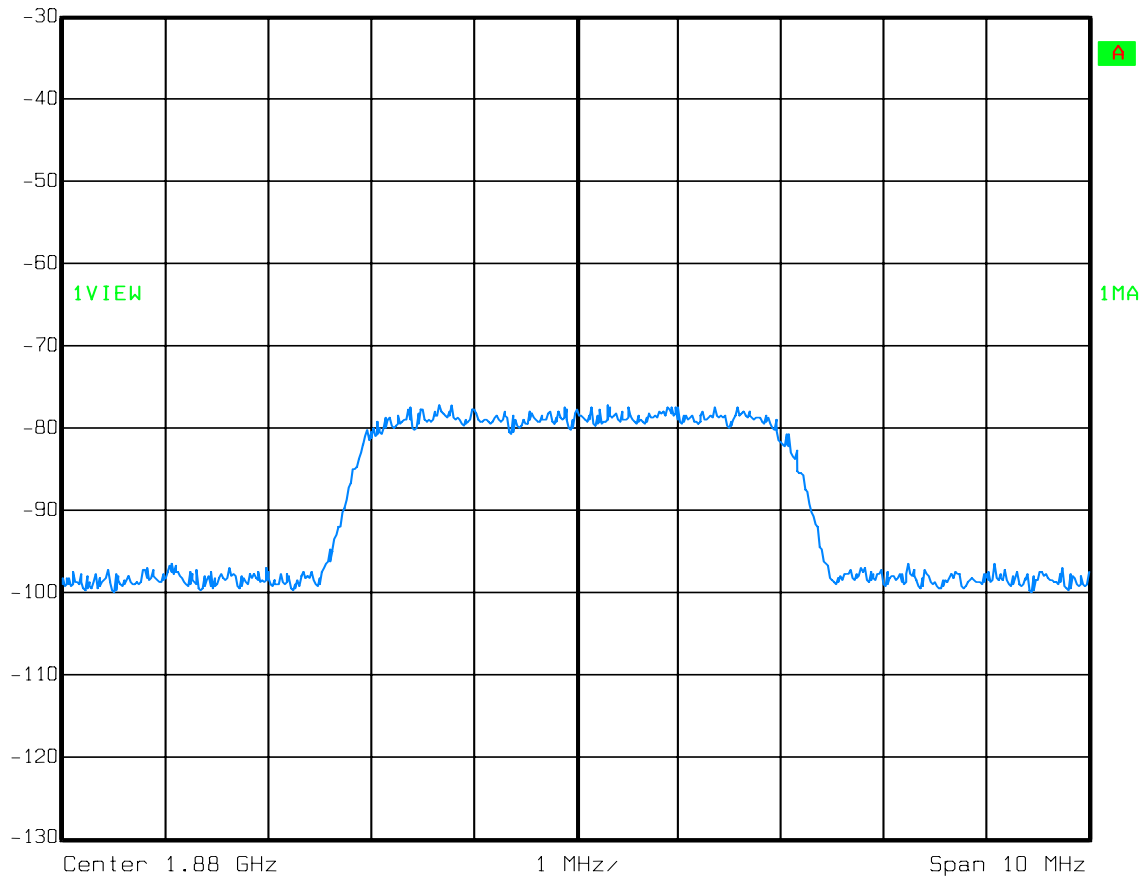
**Test Data – Occupied Bandwidth**

W-CDMA  
Input - Uplink



Ref Lvl  
-30 dBm

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



Date: 06.OCT.2008 13:18:42



EQUIPMENT: **AF1937**

# Test Data – Occupied Bandwidth

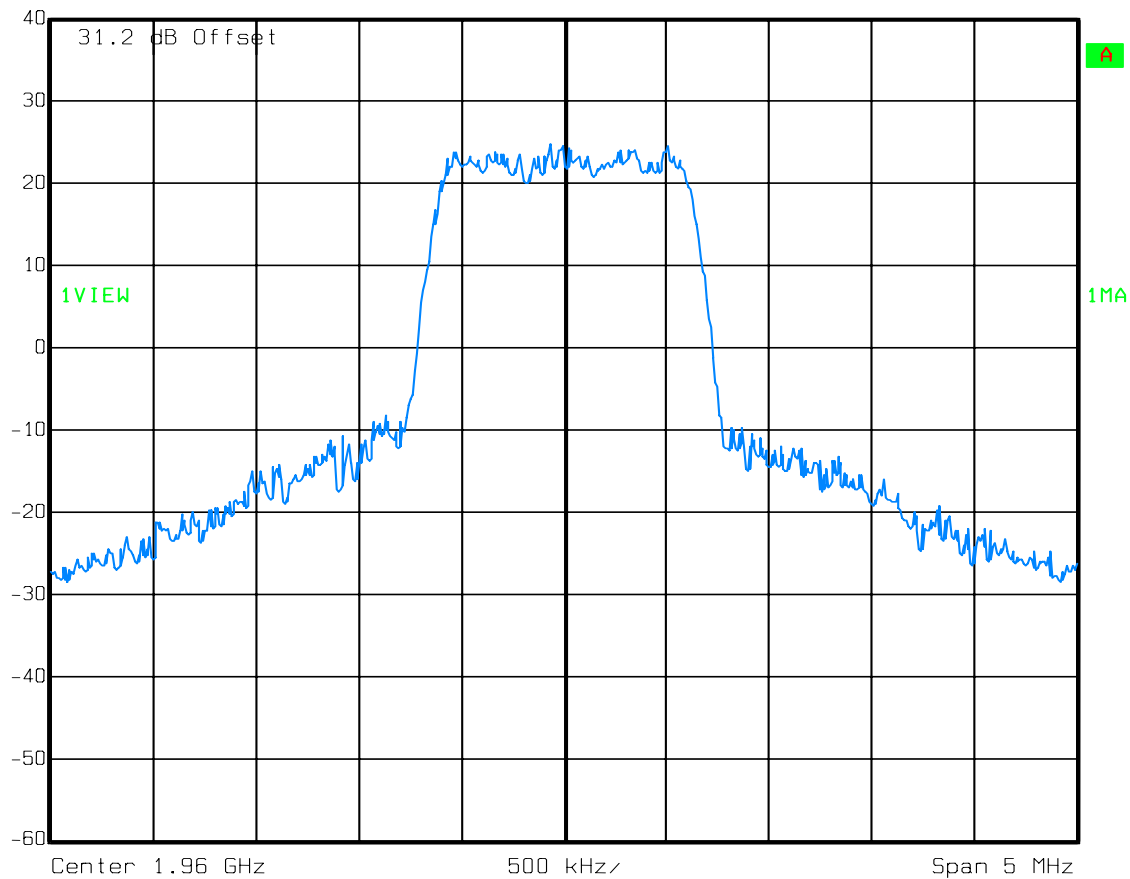
CDMA

Output - Downlink



Ref Lvl  
40 dBm

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



Date: 20.OCT.2008 13:42:44

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

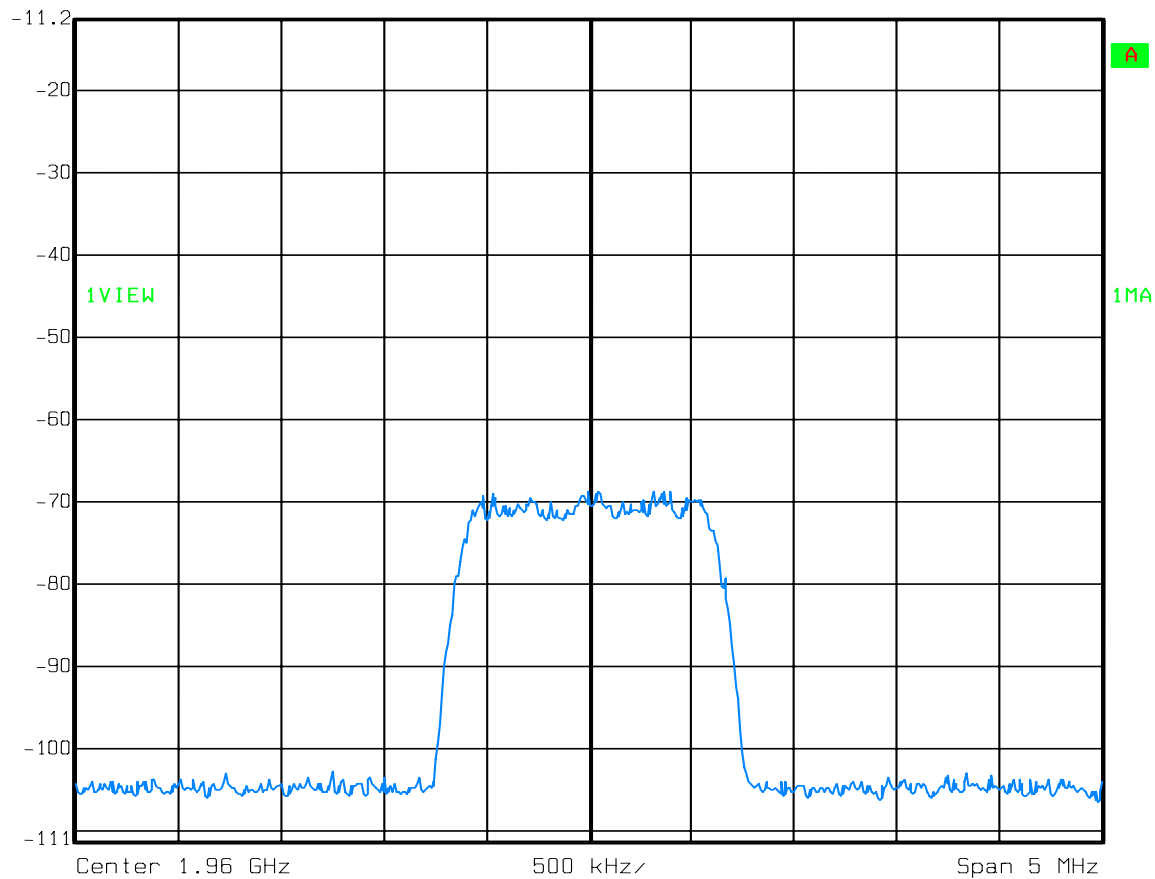
CDMA

Input - Downlink



Ref Lvl  
-11.2 dBm

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



Date: 20.OCT.2008 13:43:53

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

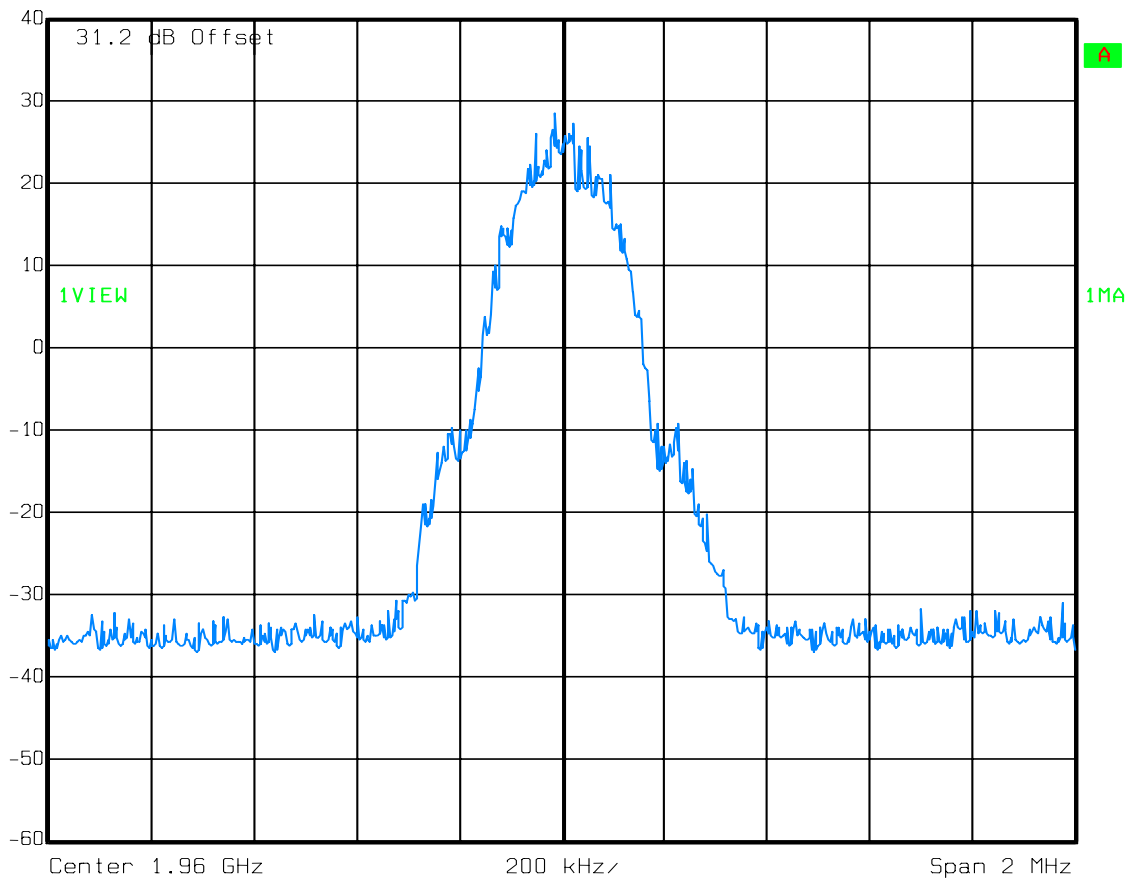
GSM

Output - Downlink



Ref Lvl  
40 dBm

RBW 3 kHz RF Att 30 dB  
VBW 3 kHz  
SWT 560 ms Unit dBm



Date: 20.OCT.2008 13:50:25

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

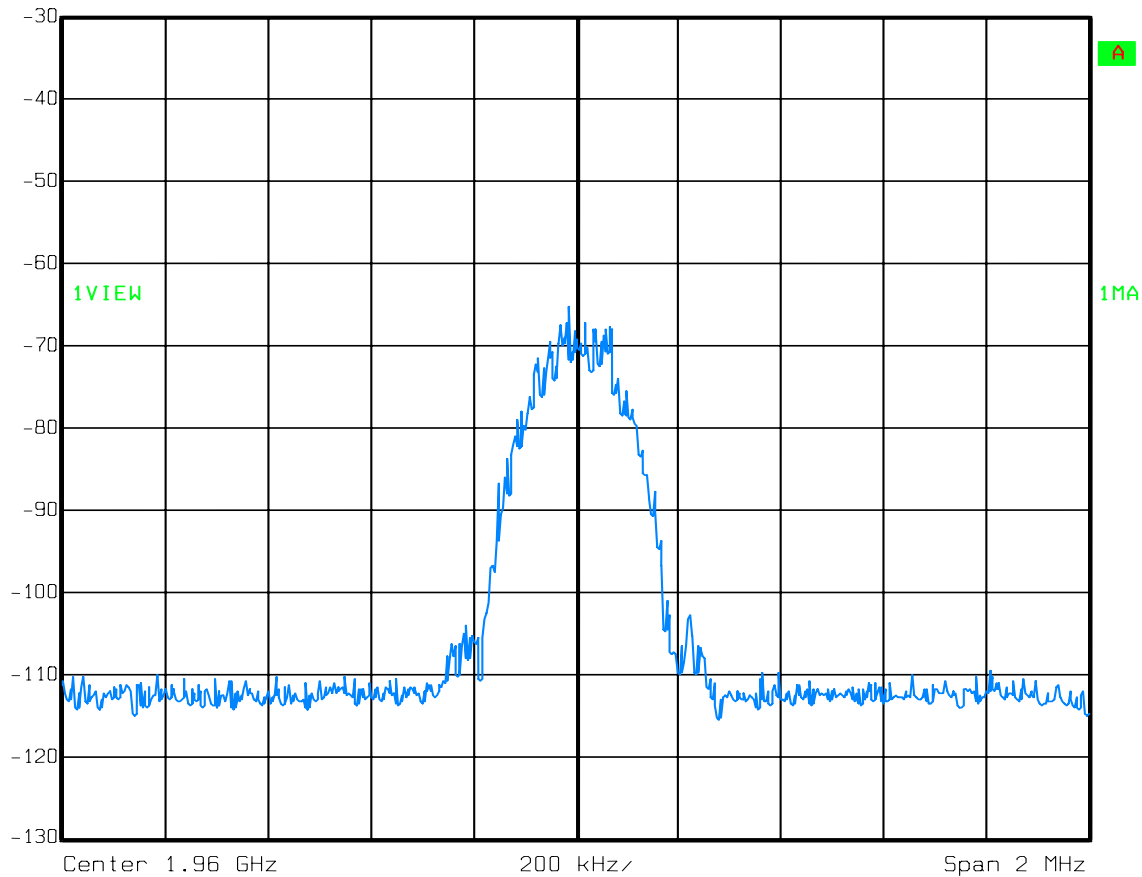
GSM

Input - Downlink



Ref Lvl  
-30 dBm

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



Date: 20.OCT.2008 13:51:25

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

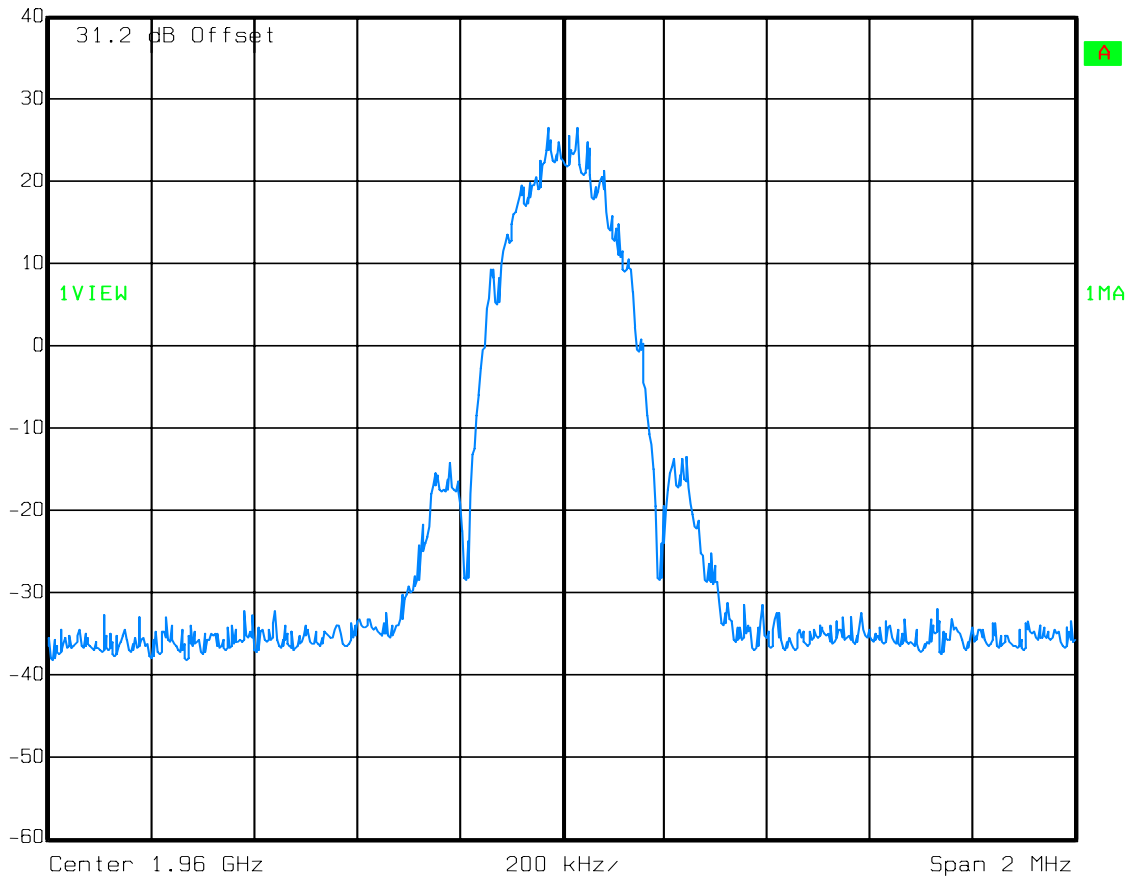
EDGE

Output - Downlink



Ref Lvl  
40 dBm

RBW	3 kHz	RF Att	30 dB
VBW	3 kHz		
SWT	560 ms	Unit	dBm



Date: 20.OCT.2008 14:01:18

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

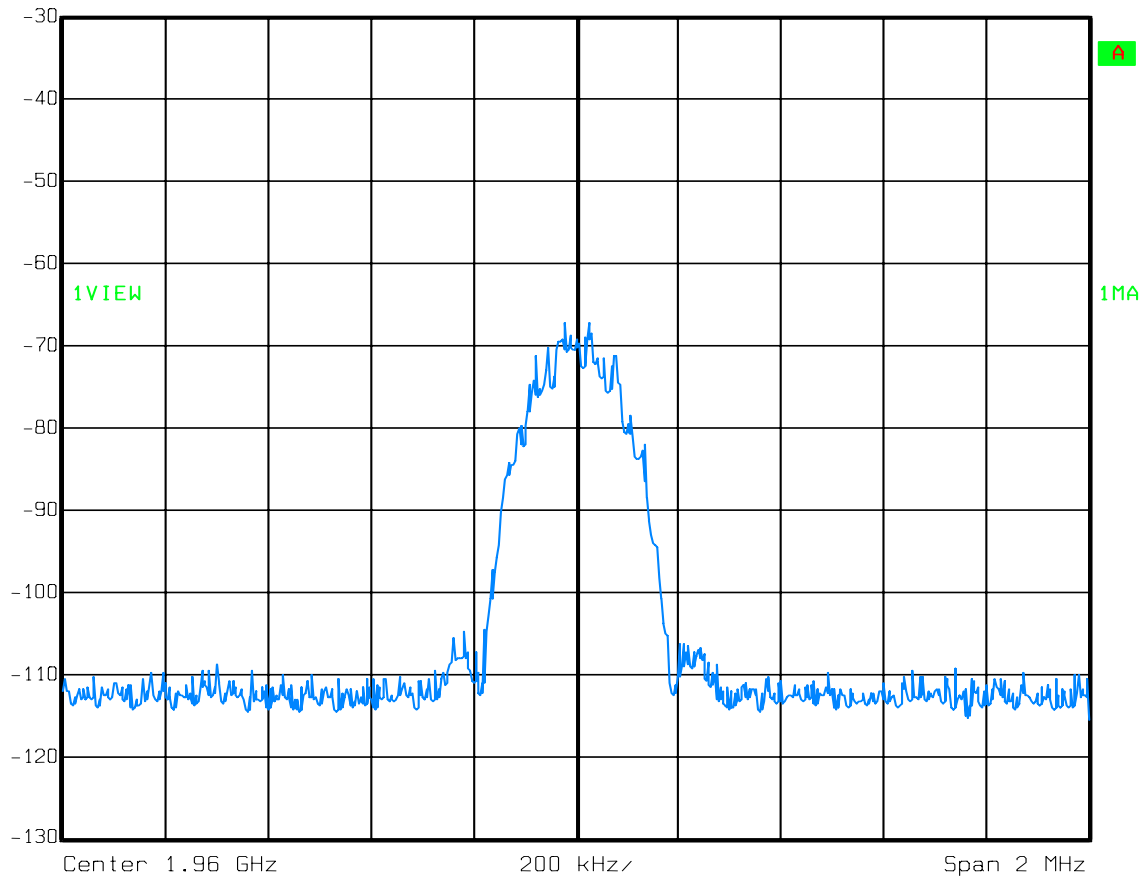
EDGE

Input - Downlink



Ref Lvl  
-30 dBm

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



Date: 20.OCT.2008 14:02:19

EQUIPMENT: **AF1937**

# Test Data – Occupied Bandwidth

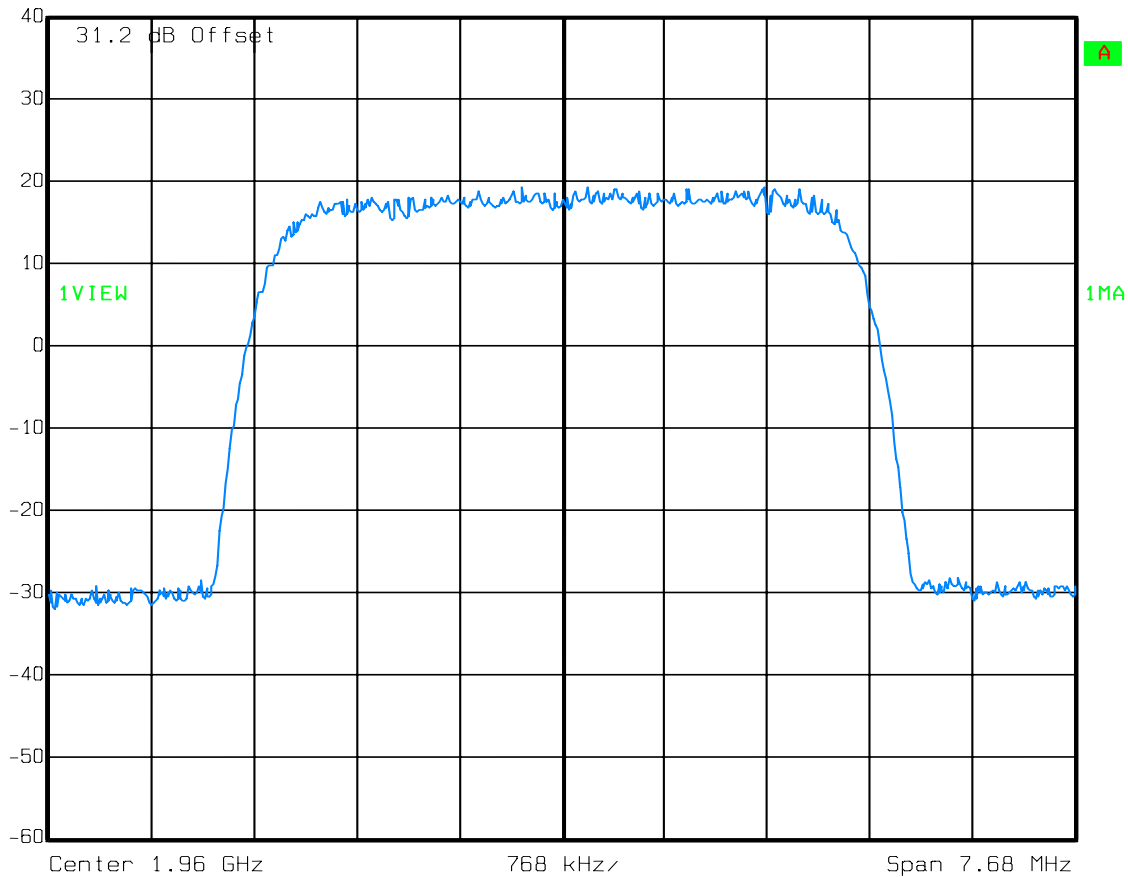
W-CDMA

Output - Downlink



Ref Lvl  
40 dBm

RBW	30 kHz	RF Att	30 dB
VBW	30 kHz		
SWT	21.5 ms	Unit	dBm



Date: 20.OCT.2008 14:05:41

EQUIPMENT: **AF1937**

**Test Data – Occupied Bandwidth**

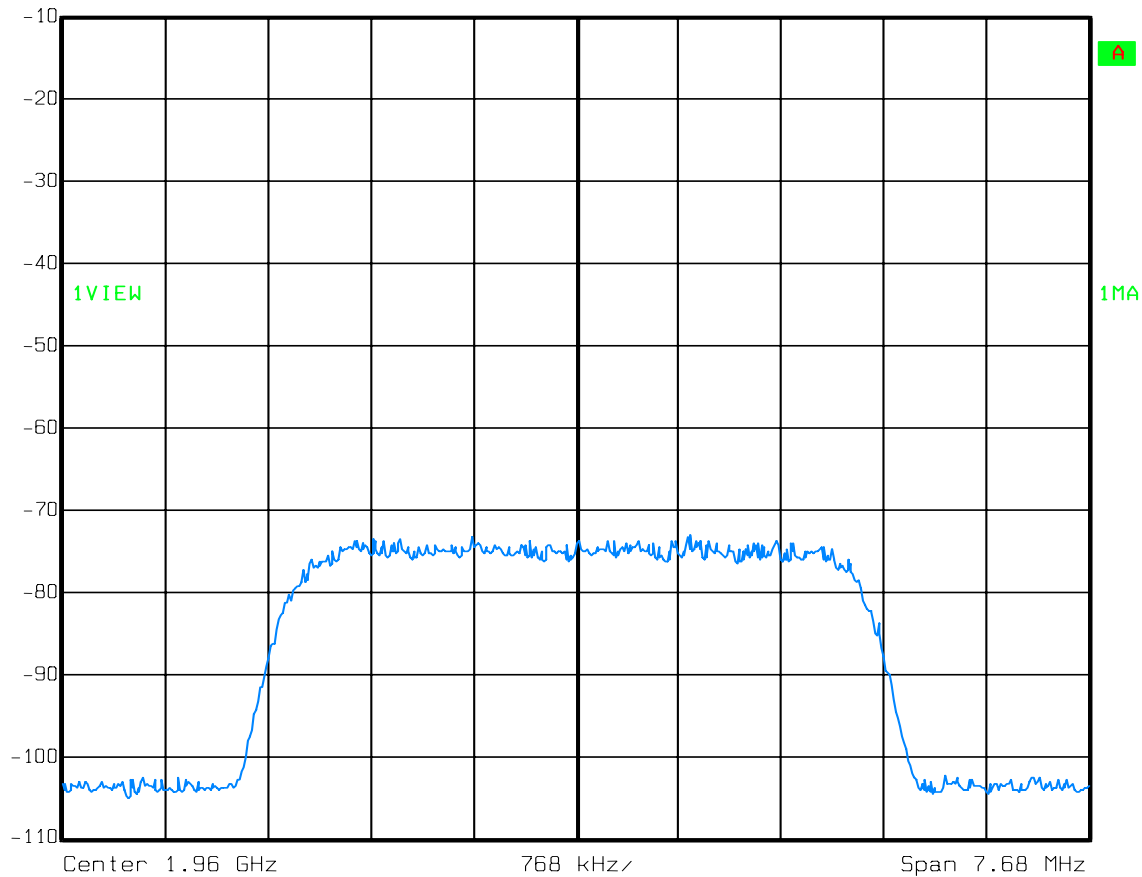
W-CDMA

Input - Downlink



Ref Lvl  
-10 dBm

RBW	30 kHz	RF Att	0 dB
VBW	30 kHz		
SWT	21.5 ms	Unit	dBm



Date: 20.OCT.2008 14:06:38



*EQUIPMENT:* **AF1937**

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## **Section 5. Spurious Emissions at Antenna Terminals**

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 24.238
TESTED BY: David Light	DATE: 06 October 2008

**Test Results:** Complies.

**Test Data:** See attached plot(s).

**Equipment Used:** 1064-1604-1082-1659

**Measurement Uncertainty:** +/- 1.7 dB

**Temperature:** 22 °C

**Relative Humidity:** 48 %

EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

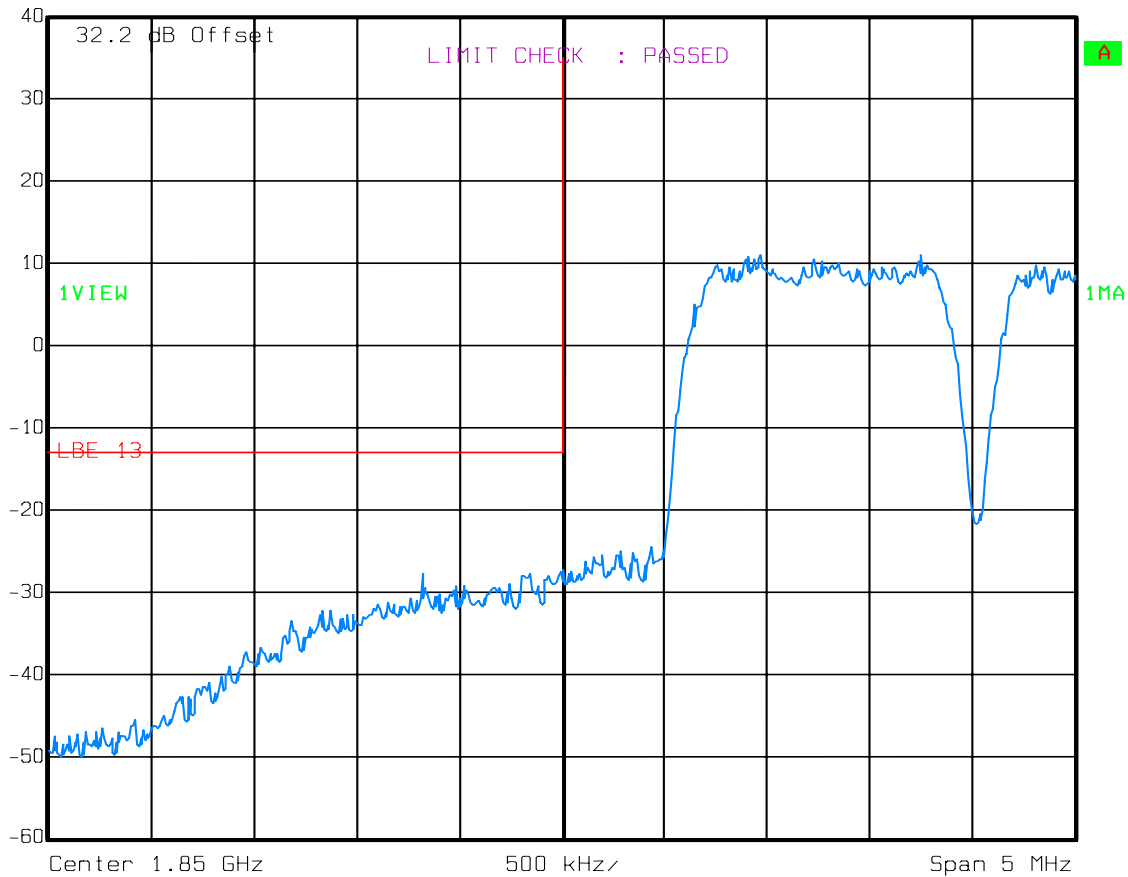
CDMA/EV-DO

LOW BANDEDGE INTERMOD

Uplink

Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 12:50:54

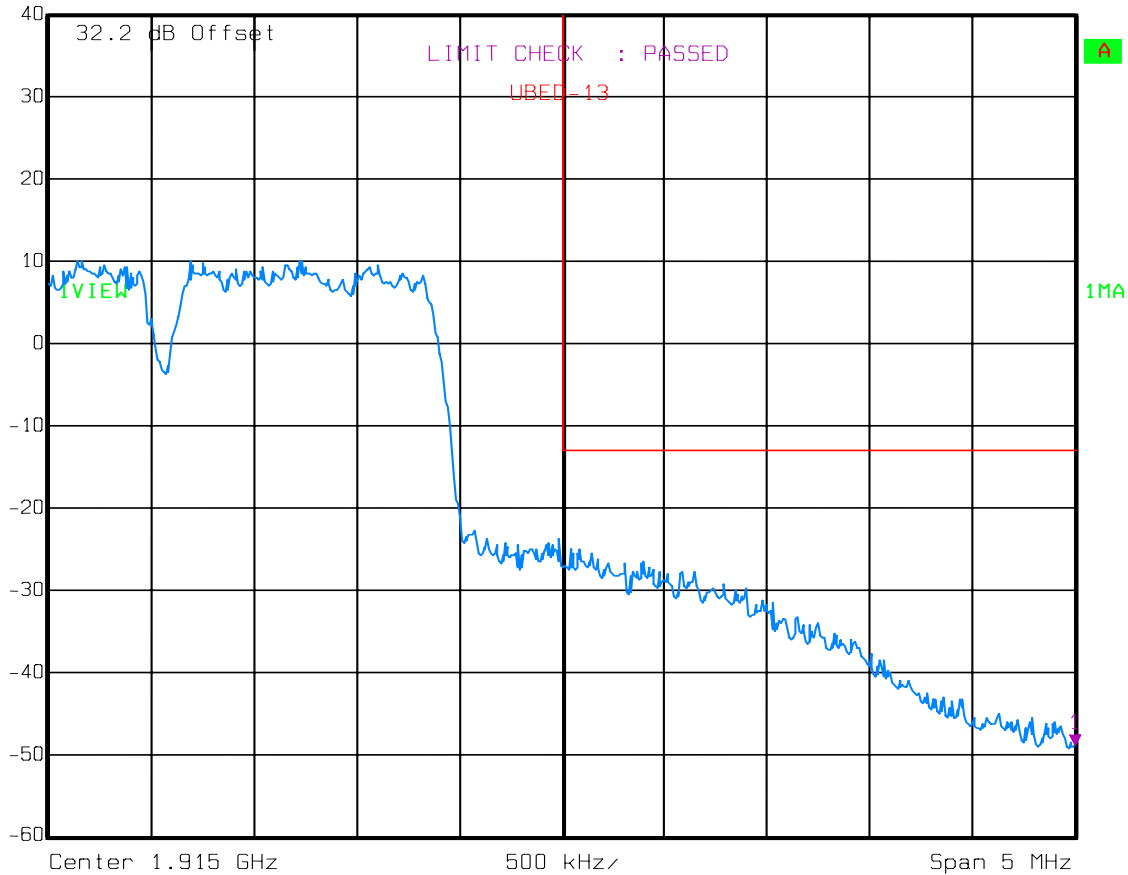
EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

CDMA/EV-DO  
HIGH BAND EDGE  
Uplink



Ref Lvl	Marker 1 [T1]	RBW	30 kHz	RF Att	20 dB
40 dBm	-48.92 dBm	VBW	30 kHz	Mixer	-10 dBm
	1.91750000 GHz	SWT	14 ms	Unit	dBm



Date: 06.OCT.2008 12:52:55

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

EDGE

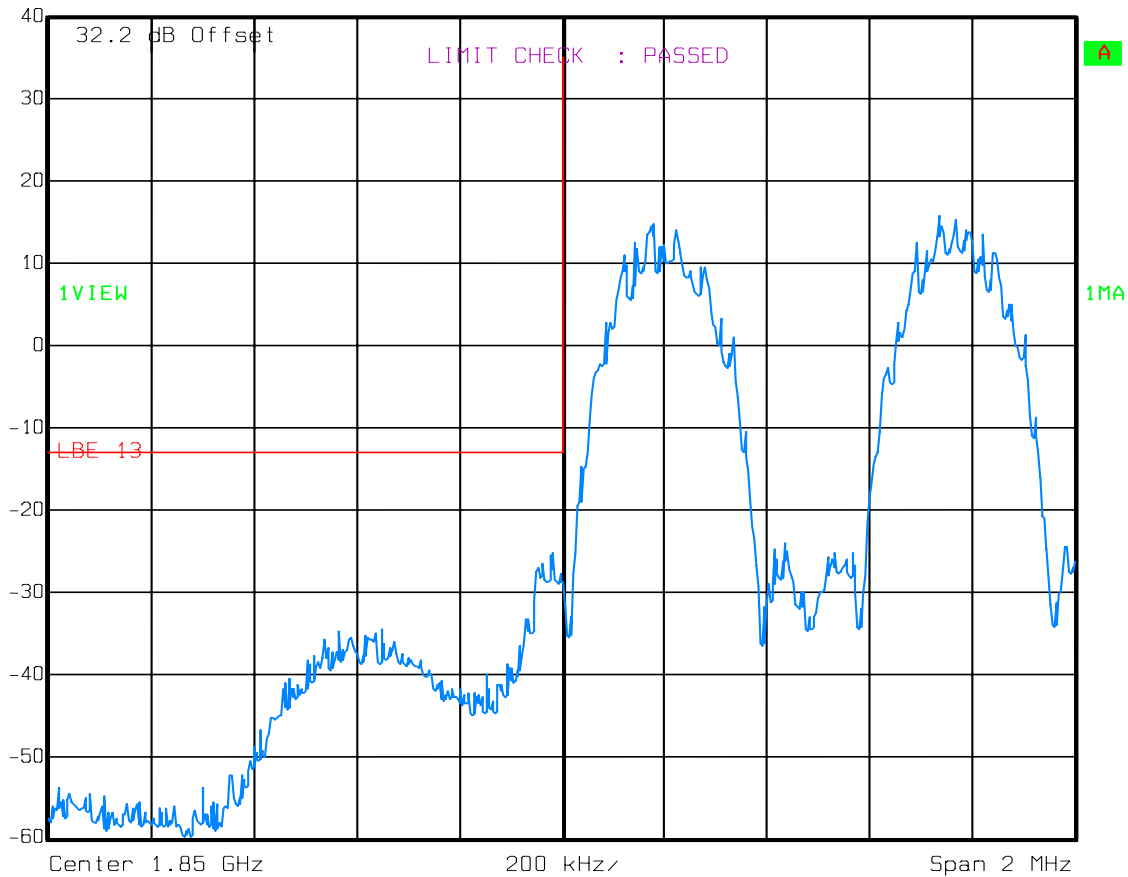
LOW BANDEDGE INTERMOD

Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:08:26

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

EDGE

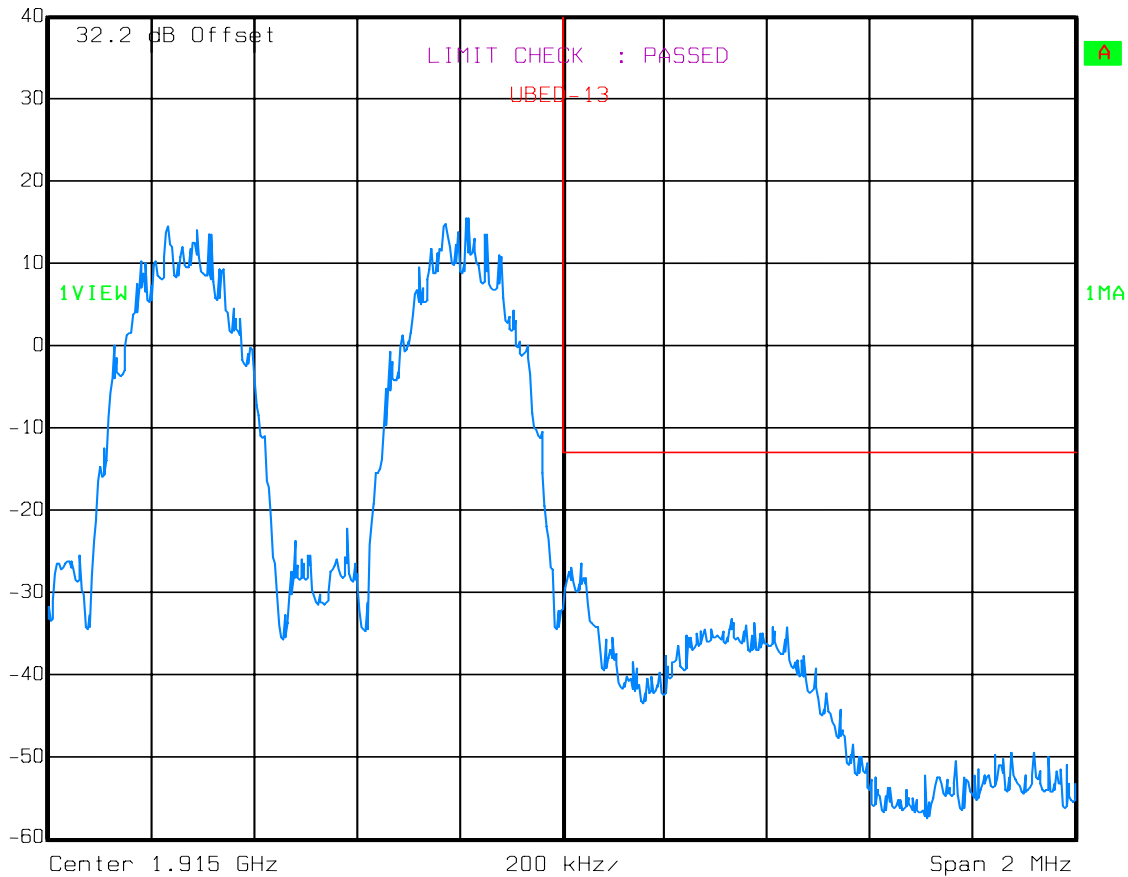
HIGH BAND EDGE

Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:09:25

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

GSM

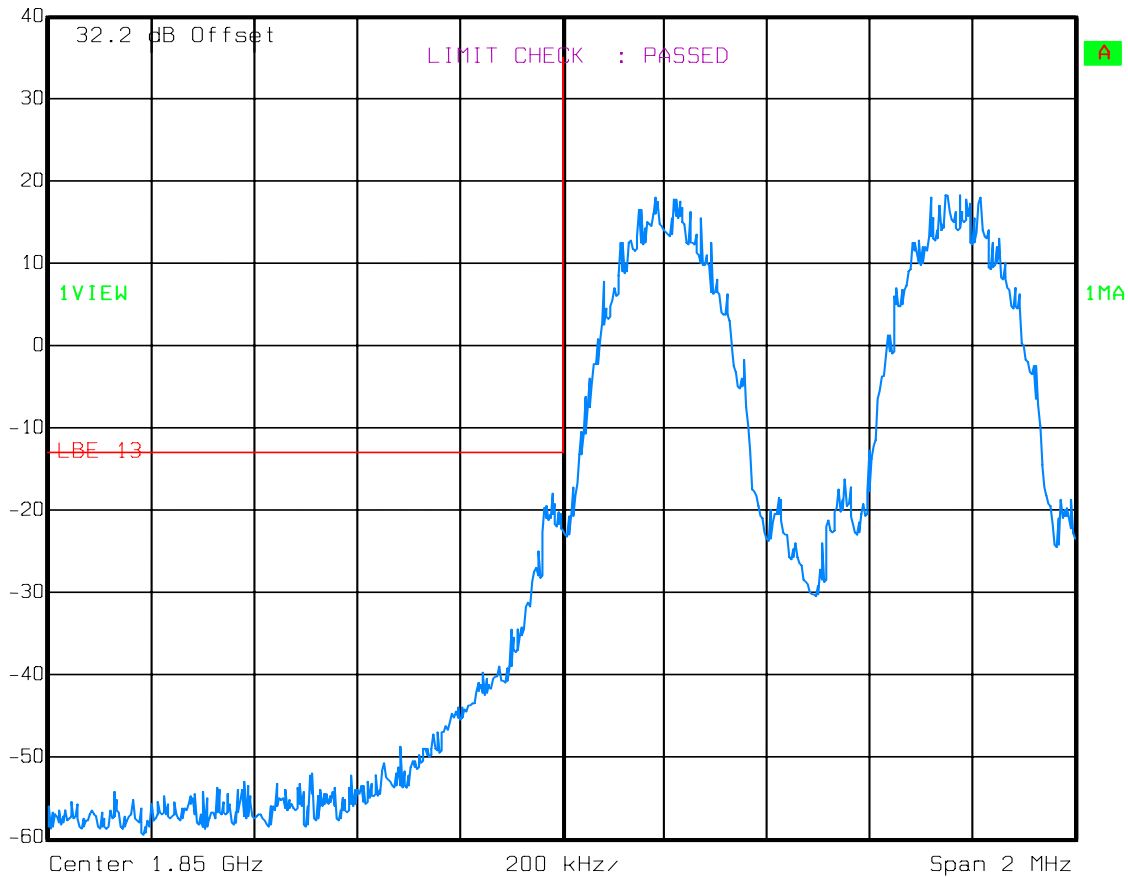
LOW BANDEDGE INTERMOD

Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:05:54

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

GSM

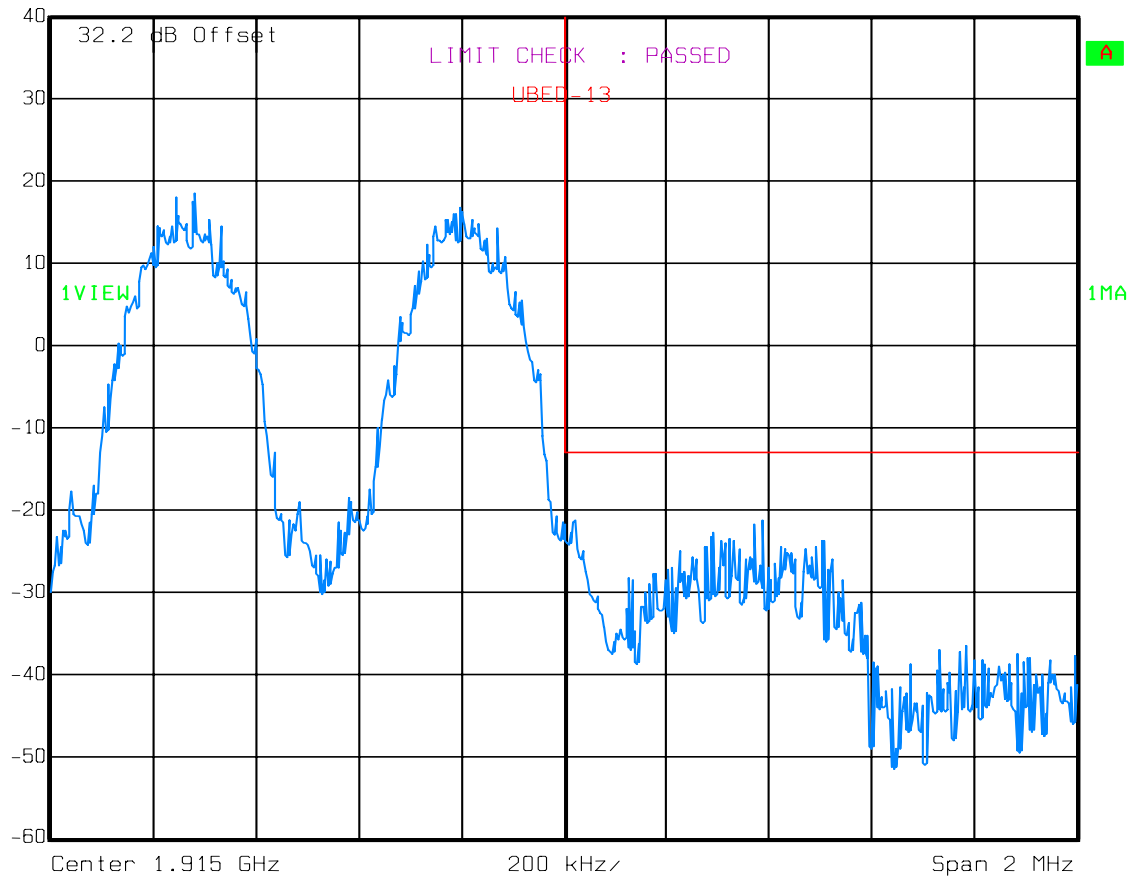
HIGH BAND EDGE

Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:04:33

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

WCDMA/HSDPA

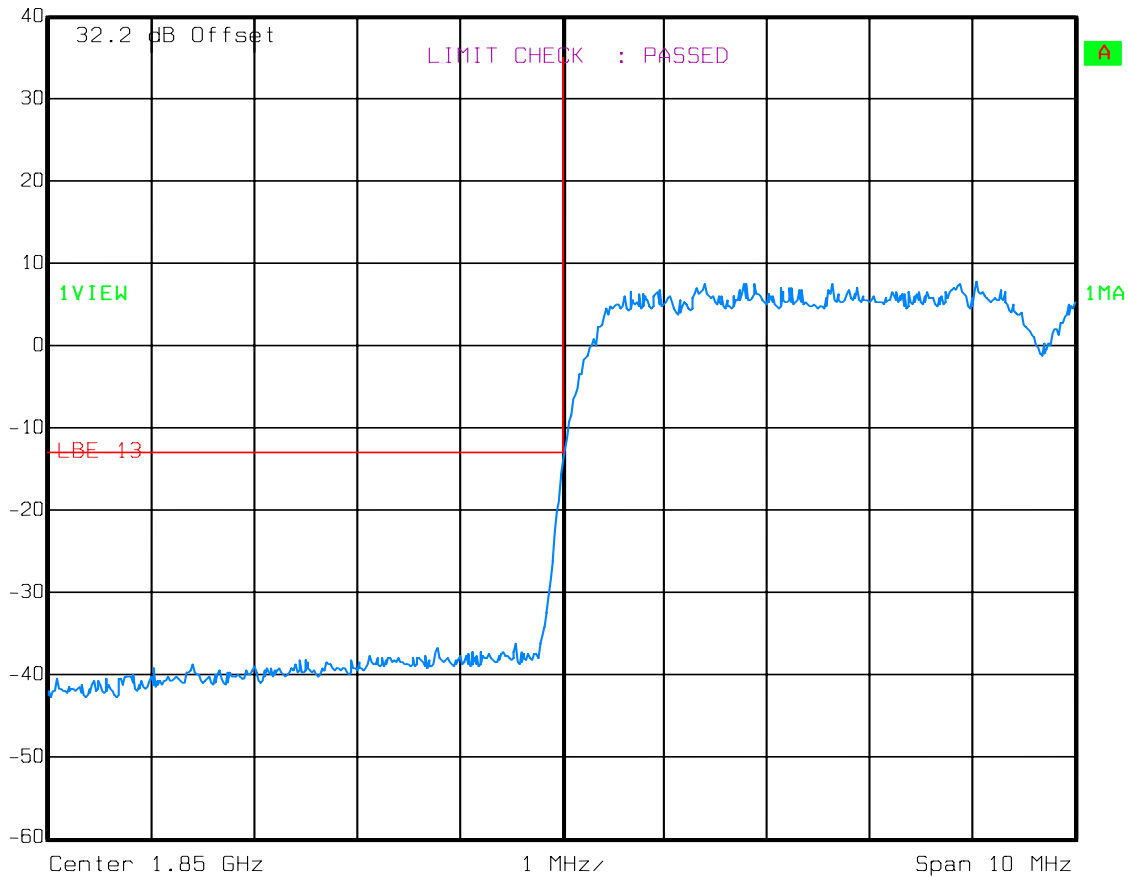
LOW BANDEDGE INTERMOD

Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:26:04



EQUIPMENT: **AF1937**

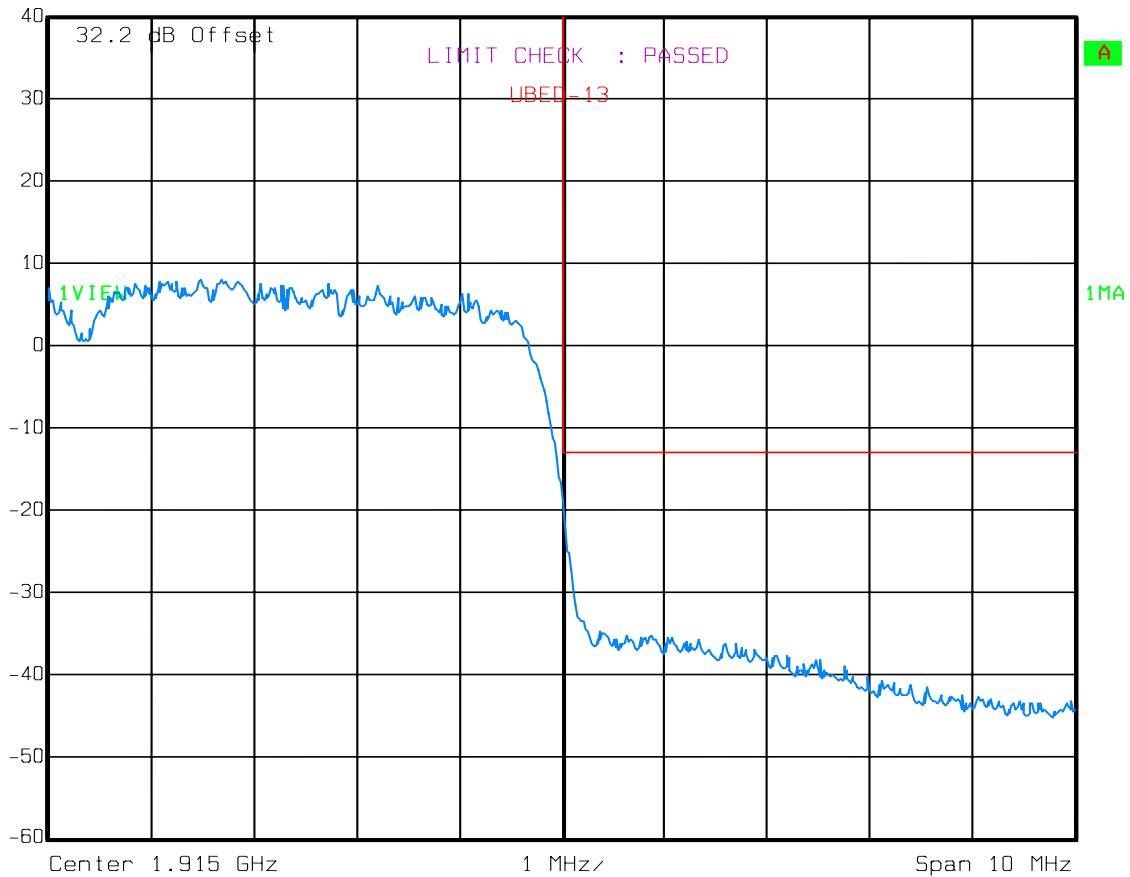
**Test Data – Spurious Emissions at Antenna Terminals**

WCDMA/HSDPA  
HIGH BAND EDGE  
Uplink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:23:51

EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

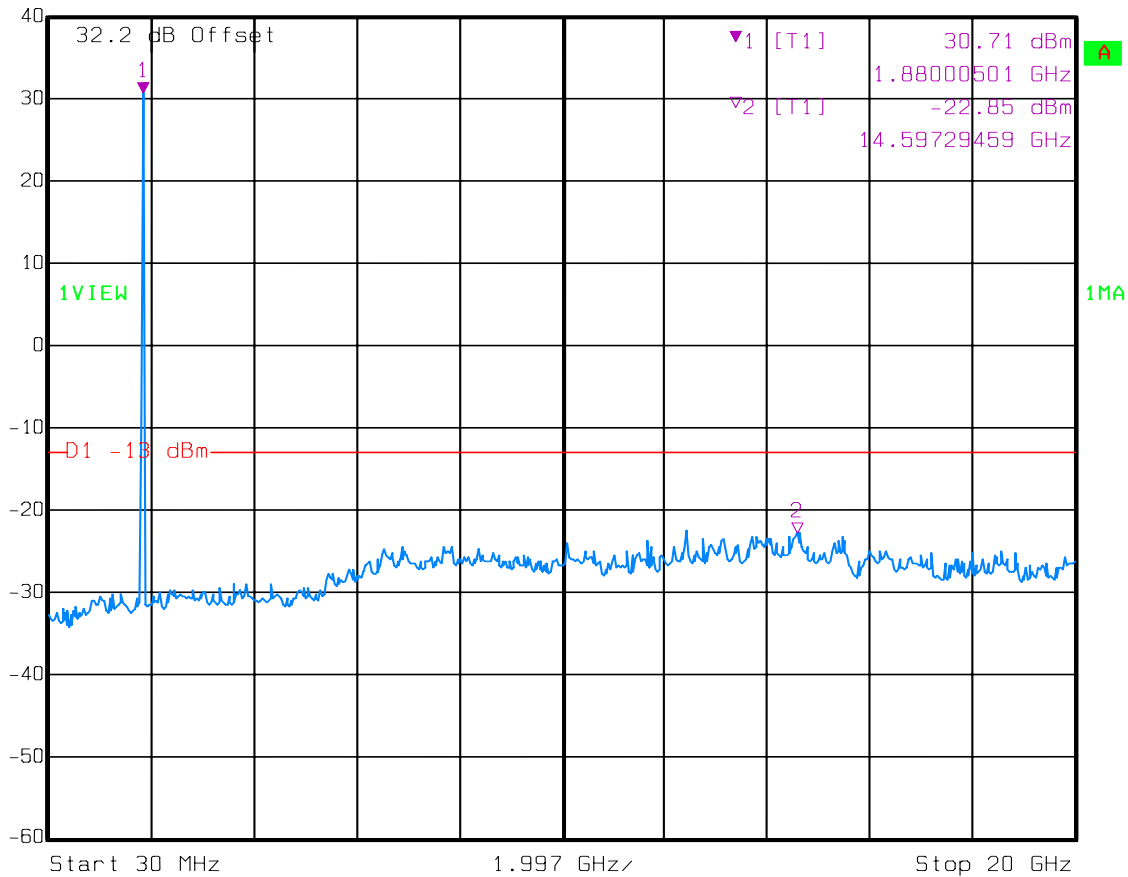
CDMA/EV-DO

SPURS

Uplink



Marker 1 [T1] RBW 1 MHz RF Att 20 dB  
Ref Lvl 30.71 dBm VBW 1 MHz  
40 dBm 1.88000501 GHz SWT 200 ms Unit dBm



Date: 06.OCT.2008 12:57:30

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

EDGE  
SPURS  
Uplink



Marker 1 [T1]

RBW 1 MHz RF Att 20 dB

Ref Lvl 30.05 dBm

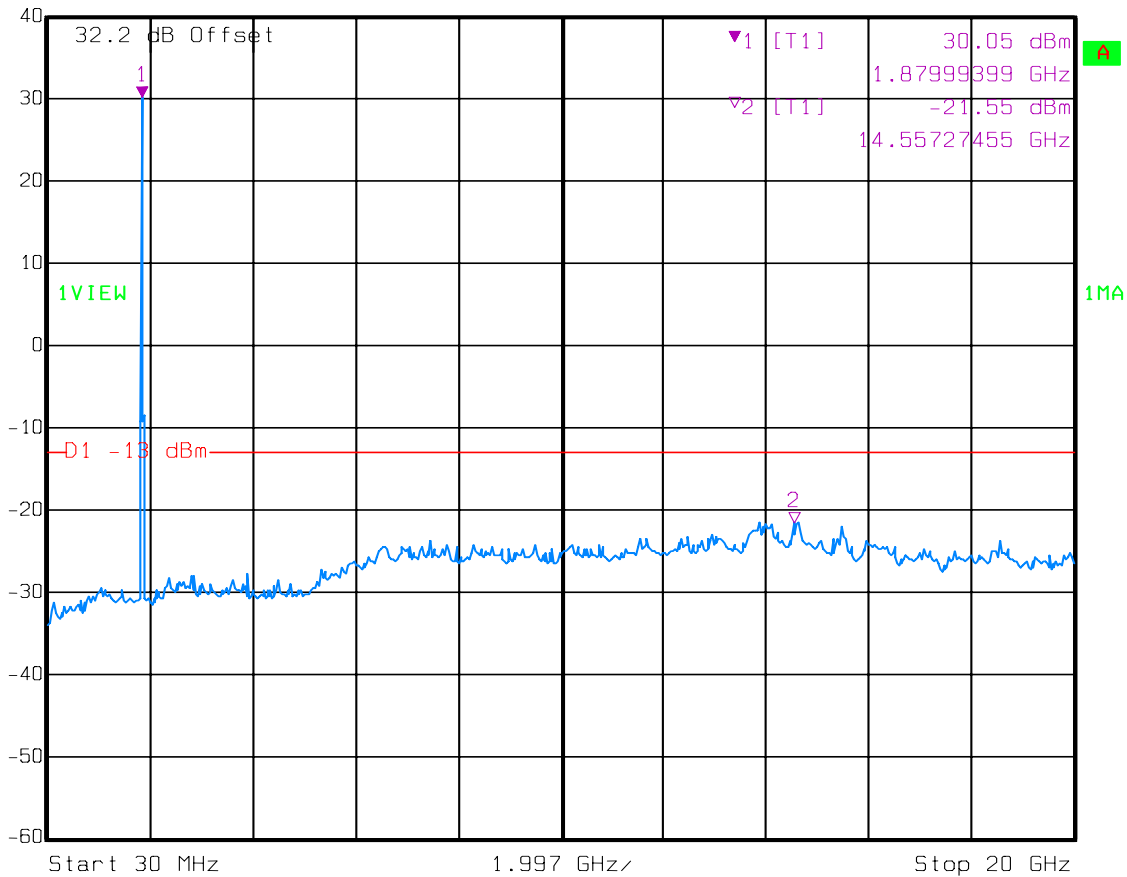
VBW 1 MHz

40 dBm

1.87999399 GHz

SWT 200 ms

Unit dBm

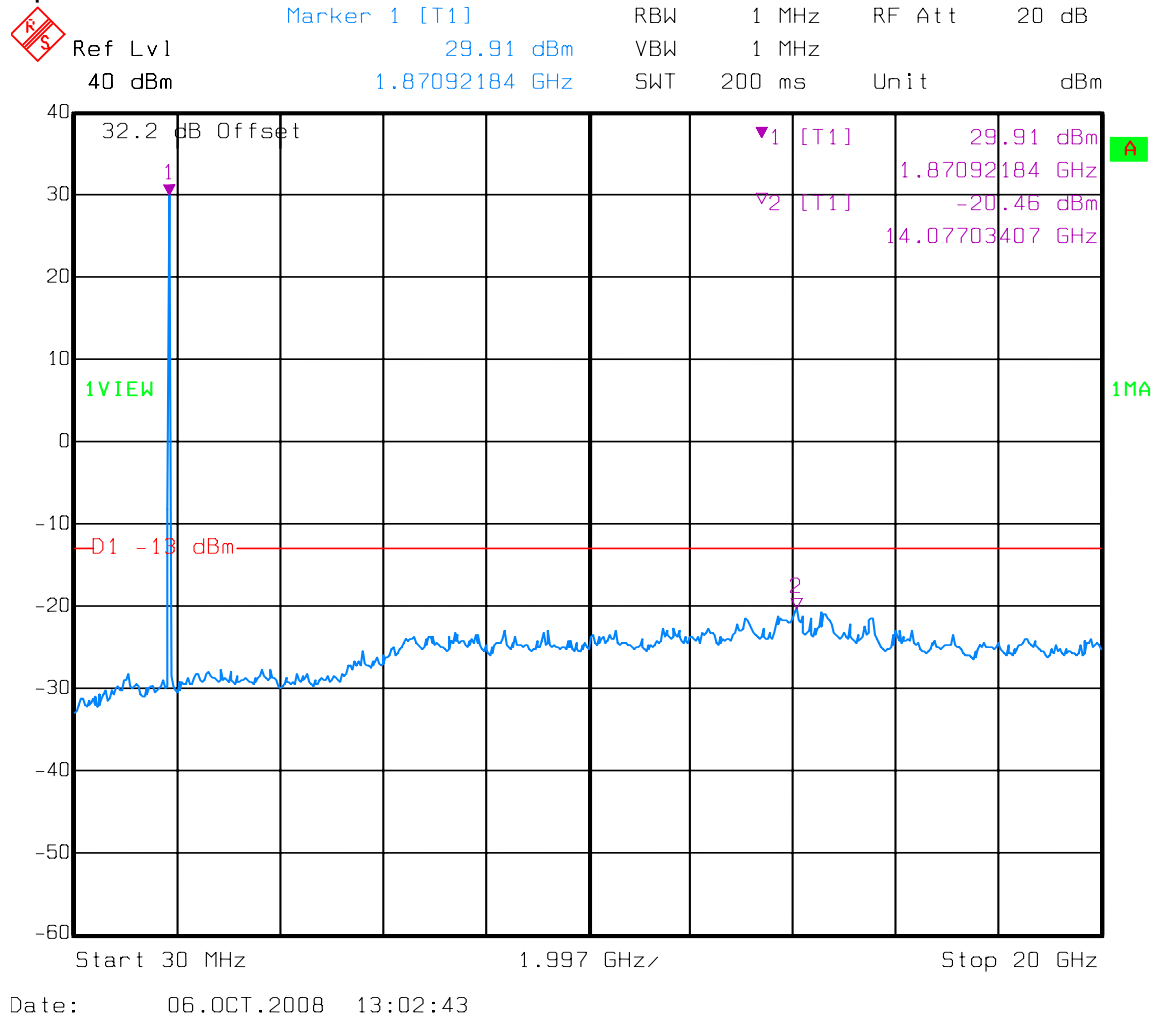


Date: 06.OCT.2008 13:10:45

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

GSM  
SPURS  
Uplink



EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

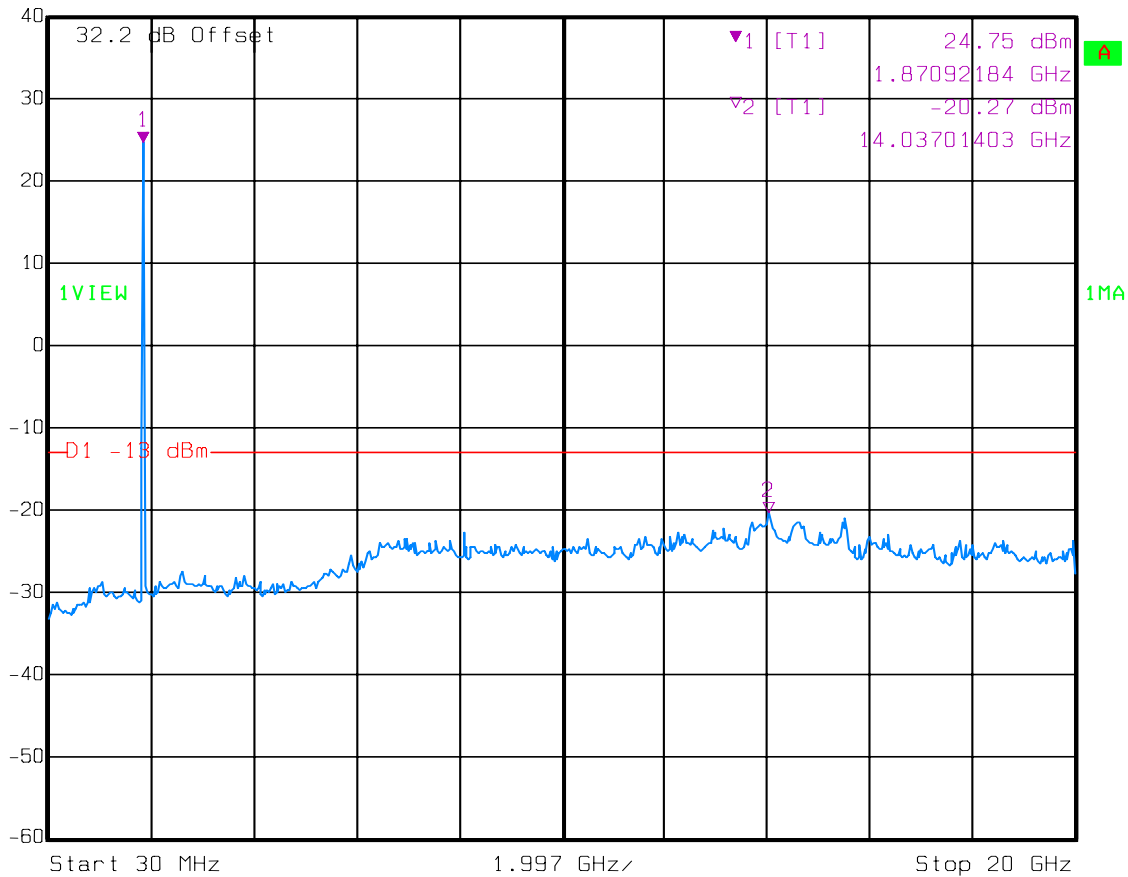
WCDMA/HSDPA

SPURS

Uplink



Marker 1 [T1] RBW 1 MHz RF Att 20 dB  
Ref Lvl 24.75 dBm VBW 1 MHz  
40 dBm 1.87092184 GHz SWT 200 ms Unit dBm



Date: 06.OCT.2008 13:16:30

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

CDMA/EV-DO

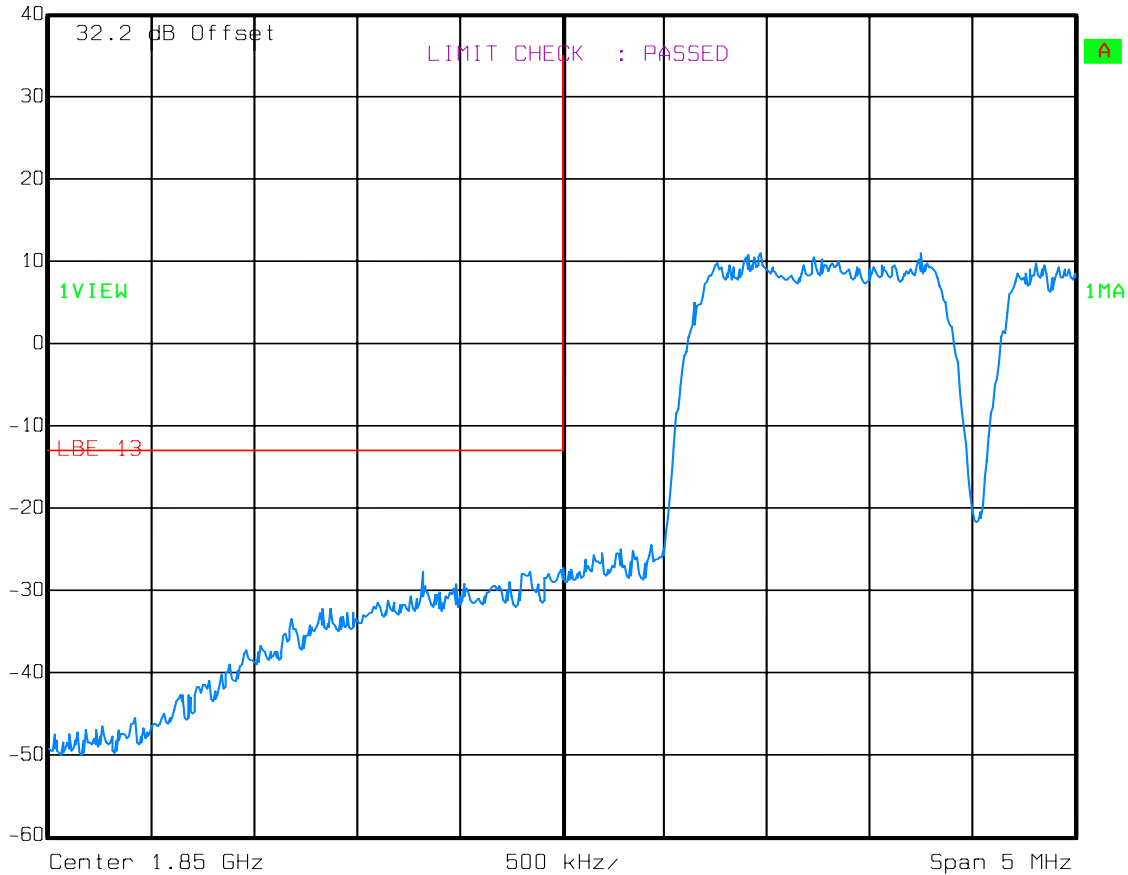
LOW BANDEDGE INTERMOD

Downlink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 12:50:54

EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

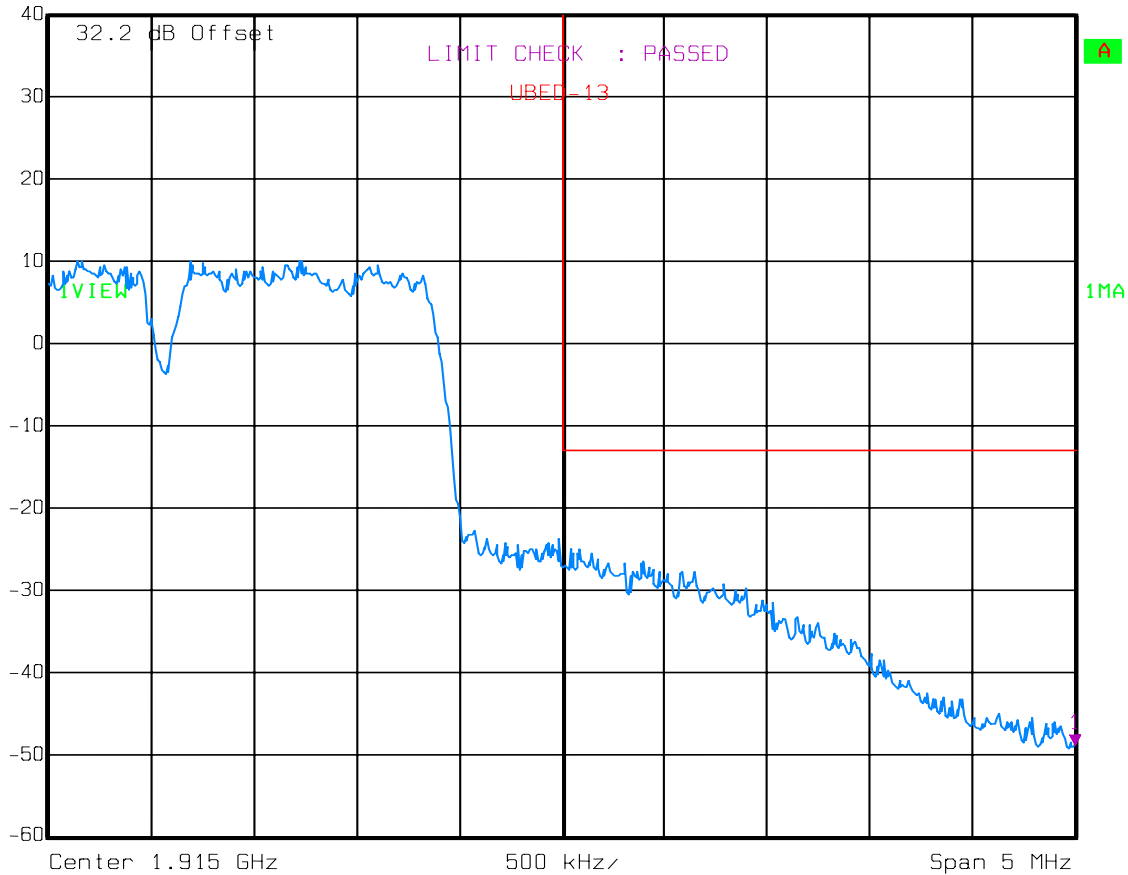
CDMA/EV-DO

HIGH BAND EDGE

Downlink



Ref Lvl	Marker 1 [T1]	RBW	30 kHz	RF Att	20 dB
40 dBm	-48.92 dBm	VBW	30 kHz	Mixer	-10 dBm
	1.91750000 GHz	SWT	14 ms	Unit	dBm



Date: 06.OCT.2008 12:52:55

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

EDGE

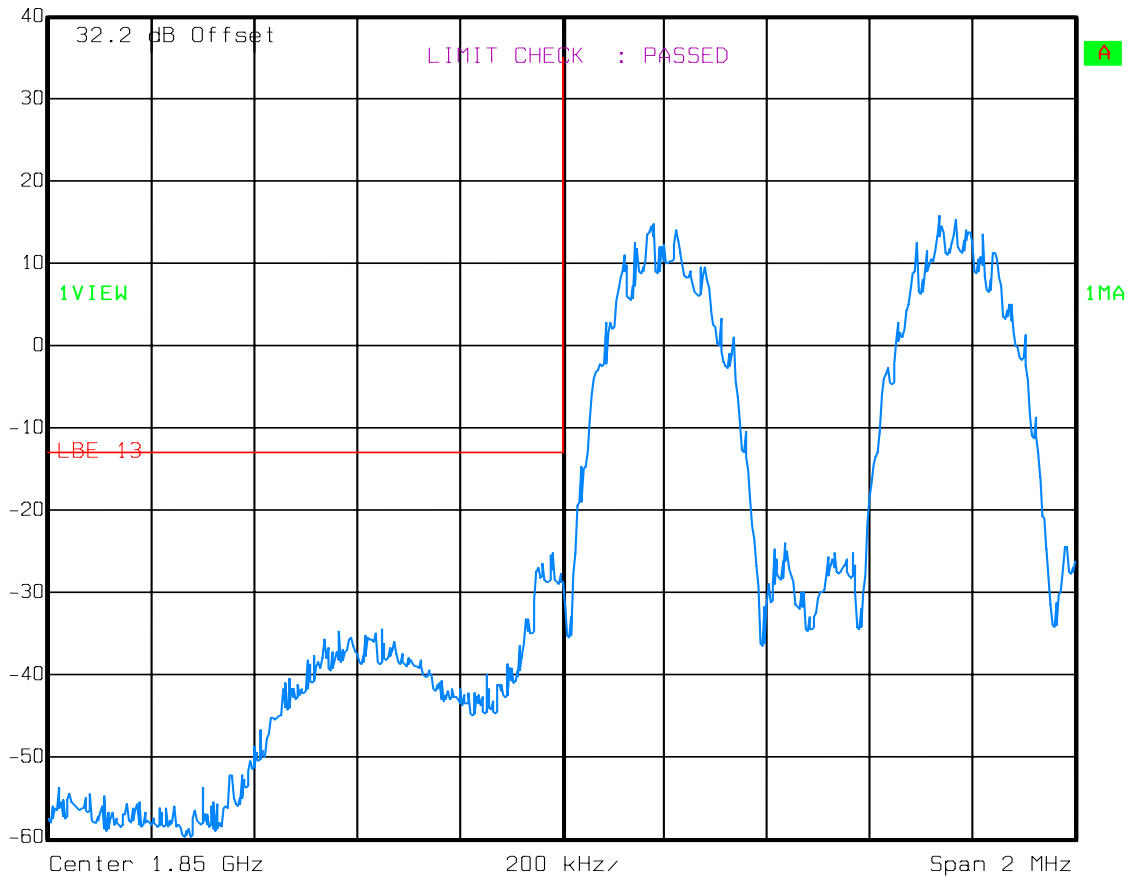
LOW BANDEDGE INTERMOD

Downlink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:08:26



EQUIPMENT: **AF1937**

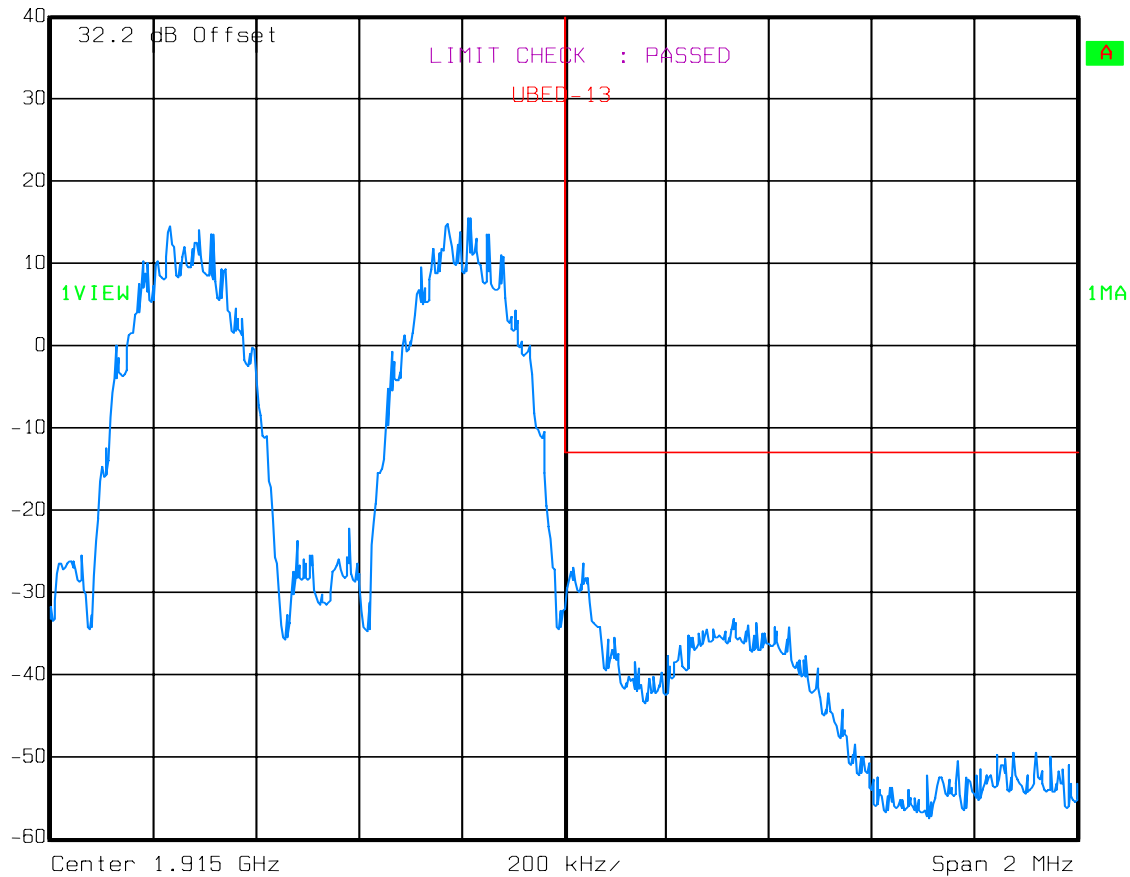
**Test Data – Spurious Emissions at Antenna Terminals**

EDGE  
HIGH BAND EDGE  
Downlink



Ref Lvl  
40 dBm

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



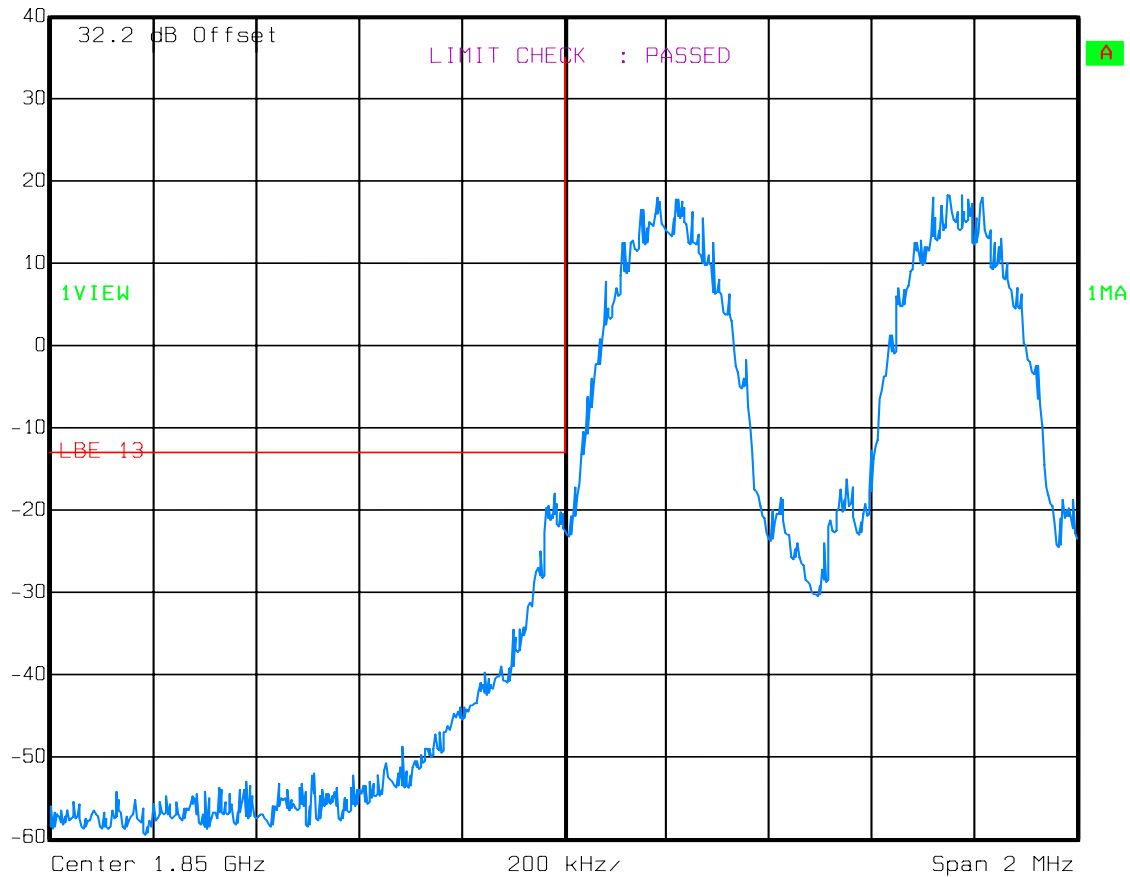
Date: 06.OCT.2008 13:09:25

EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

GSM

LOW BANDEDGE INTERMOD

Downlink

Ref Lvl  
40 dBmRBW 3 kHz RF Att 20 dB  
VBW 3 kHz  
SWT 560 ms Unit dBm

Date: 06.OCT.2008 13:05:54

EQUIPMENT: **AF1937**

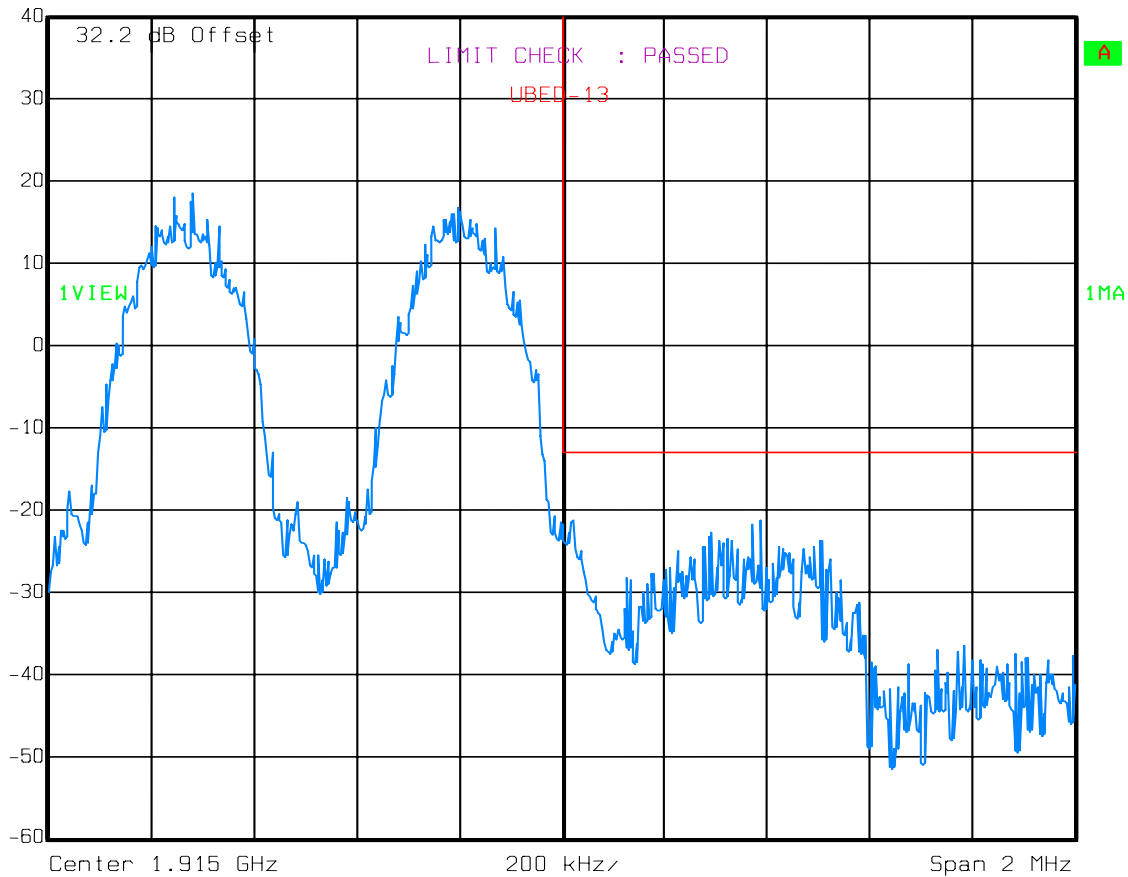
**Test Data – Spurious Emissions at Antenna Terminals**

GSM  
HIGH BAND EDGE  
Downlink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:04:33

EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

WCDMA/HSDPA

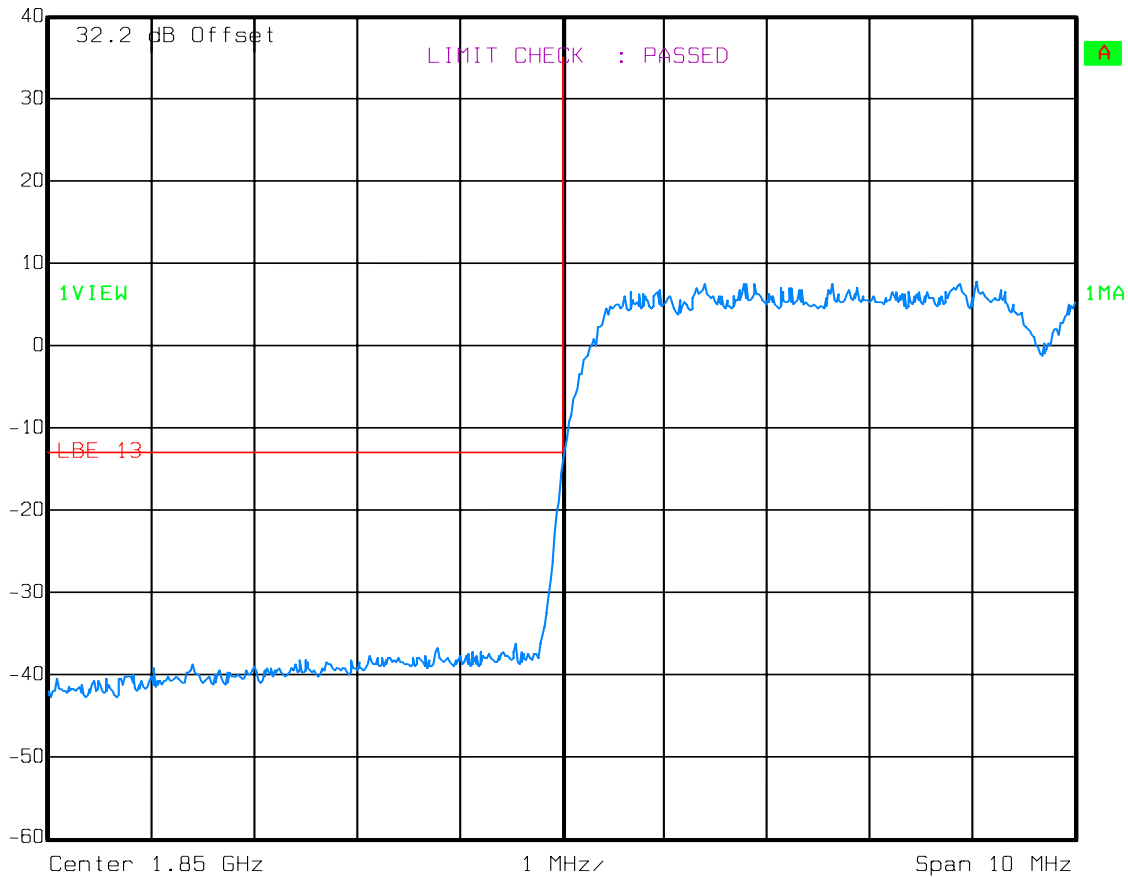
LOW BANDEDGE INTERMOD

Downlink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:26:04

EQUIPMENT: **AF1937**

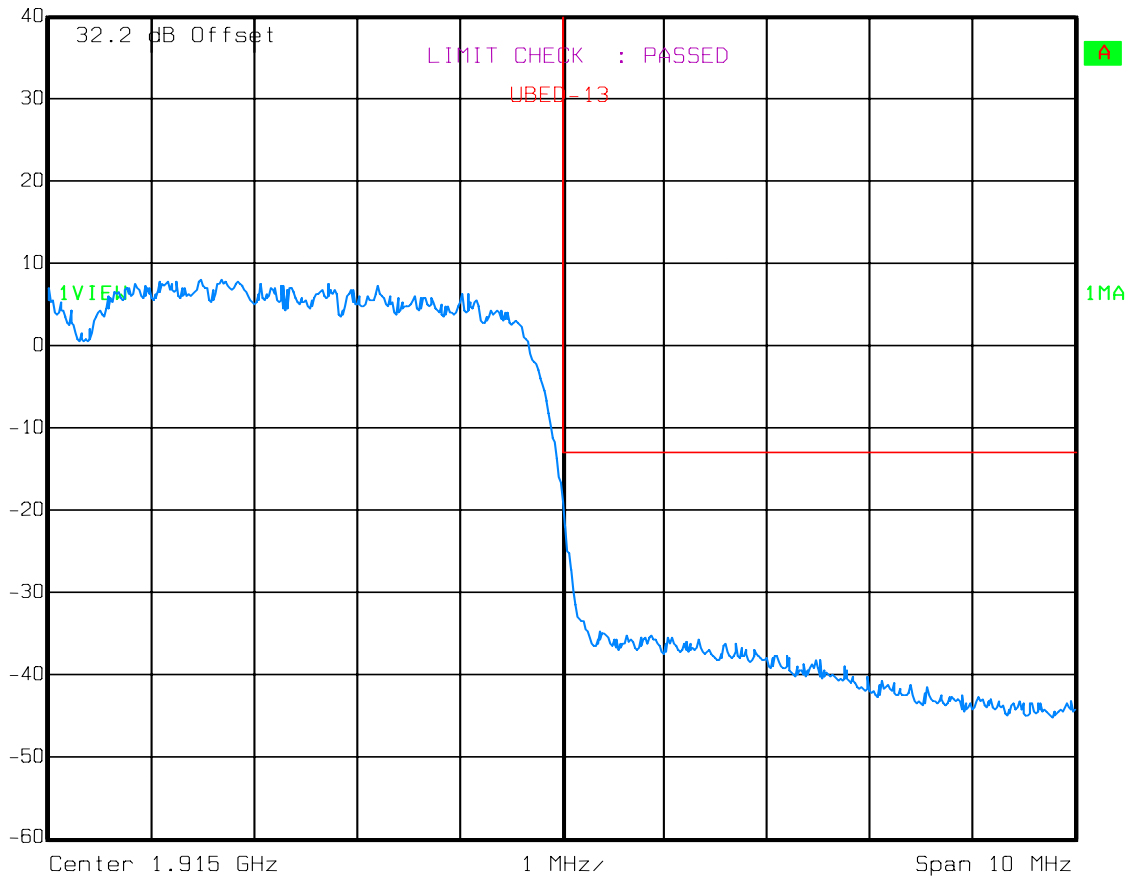
**Test Data – Spurious Emissions at Antenna Terminals**

WCDMA/HSDPA  
HIGH BAND EDGE  
Downlink



Ref Lvl  
40 dBm

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



Date: 06.OCT.2008 13:23:51

EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

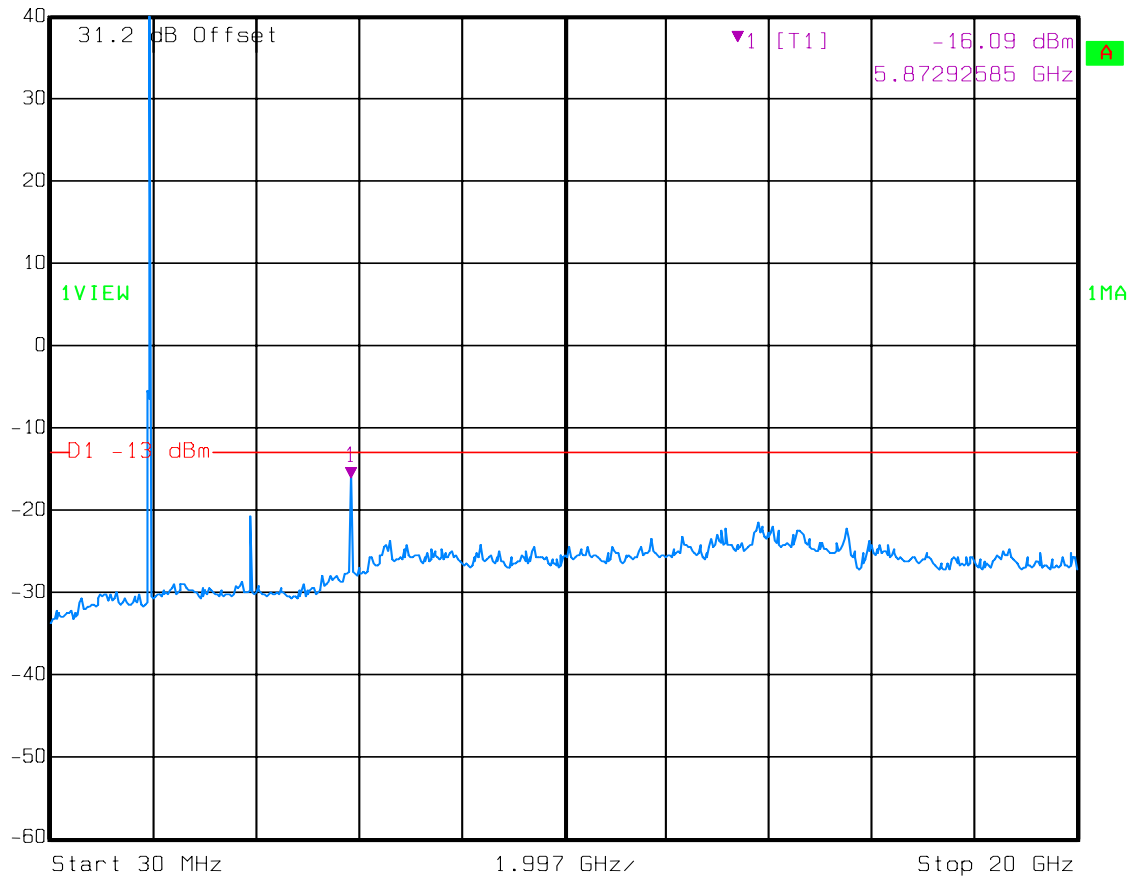
CDMA/EV-DO

SPURS

Downlink



Ref Lvl	Marker 1 [T1]	RBW	1 MHz	RF Att	20 dB
40 dBm	-16.09 dBm	VBW	1 MHz	Mixer	-10 dBm
	5.87292585 GHz	SWT	200 ms	Unit	dBm



Date: 20.OCT.2008 13:41:54

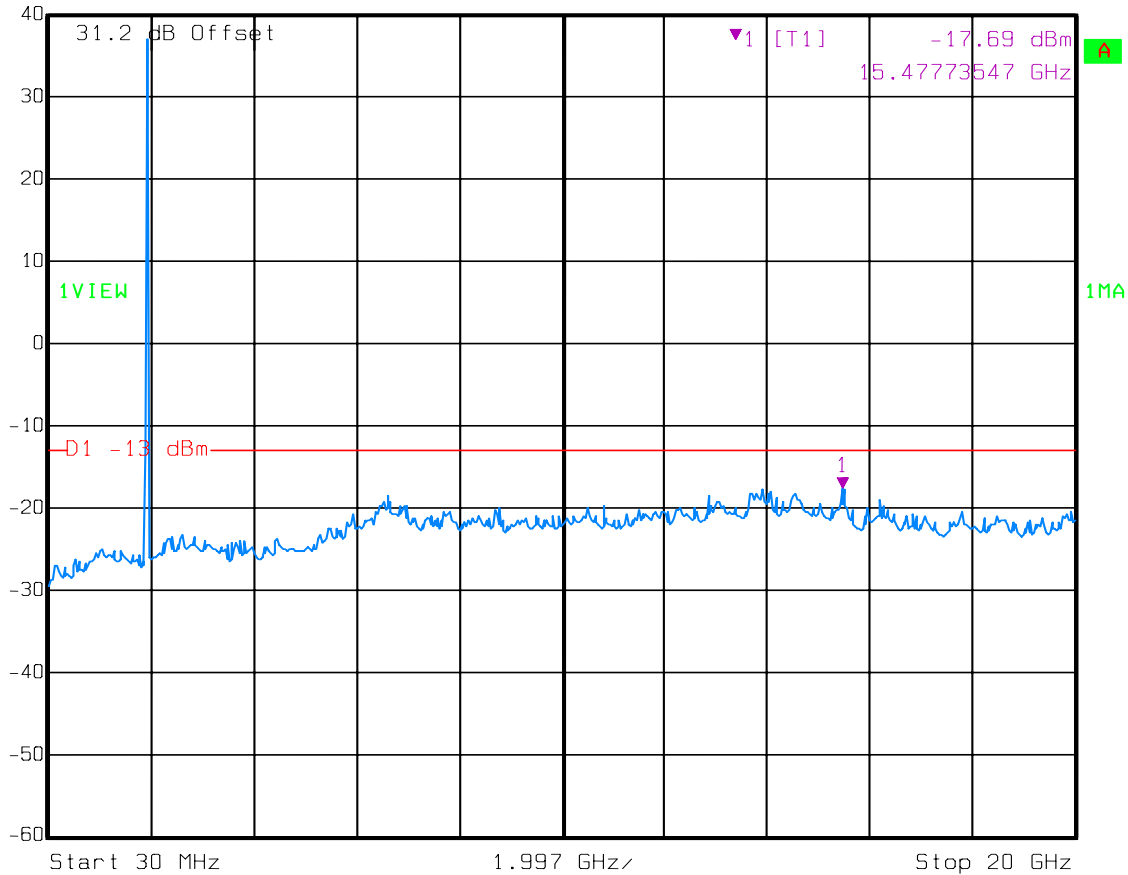
EQUIPMENT: **AF1937**

**Test Data – Spurious Emissions at Antenna Terminals**

EDGE  
SPURS  
Downlink



Marker 1 [T1] RBW 300 kHz RF Att 30 dB  
-17.69 dBm VBW 300 kHz  
15.47773547 GHz SWT 560 ms Unit dBm  
Ref Lvl 40 dBm



Date: 20.OCT.2008 14:00:41

EQUIPMENT: **AF1937****Test Data – Spurious Emissions at Antenna Terminals**

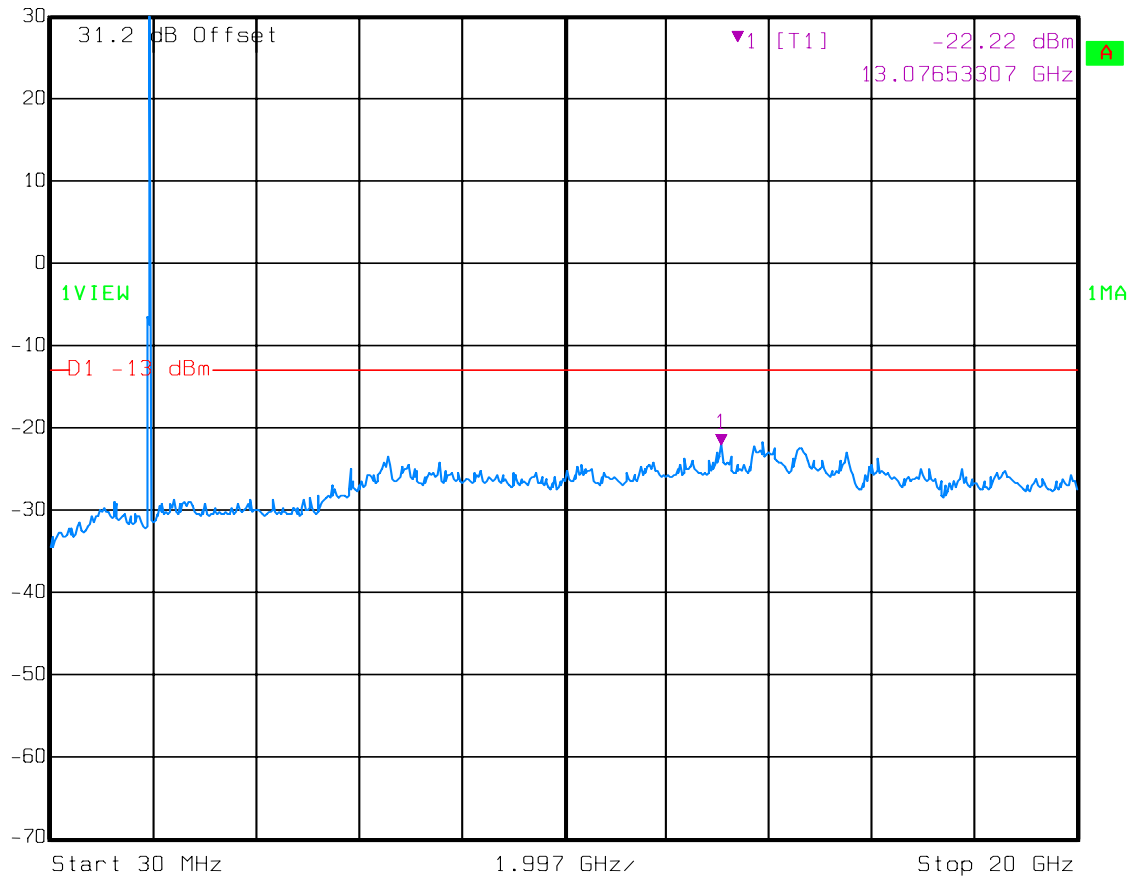
GSM

SPURS

Downlink



Marker 1 [T1] RBW 1 MHz RF Att 20 dB  
Ref Lvl -22.22 dBm VBW 1 MHz  
30 dBm 13.07653307 GHz SWT 200 ms Unit dBm



Date: 20.OCT.2008 13:49:21

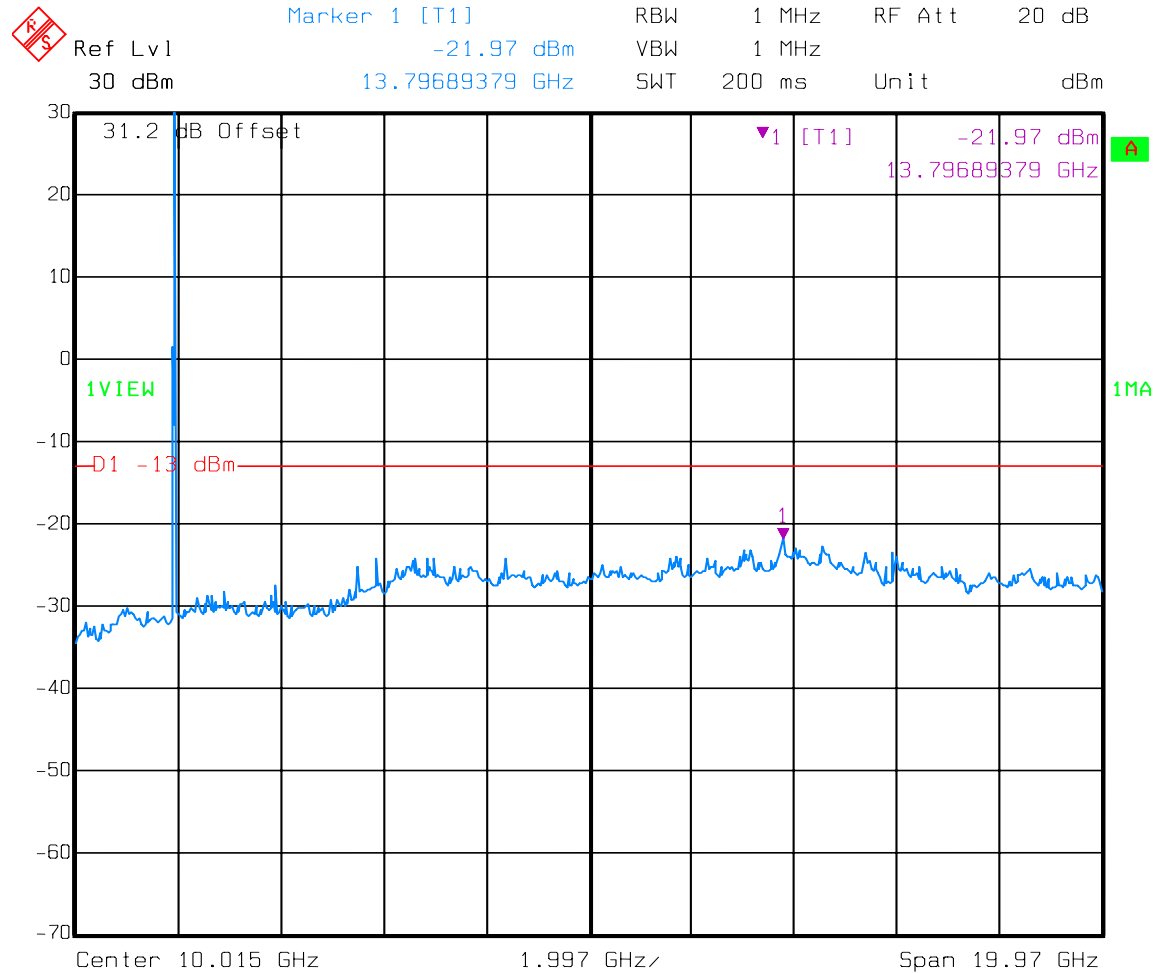


## Test Data – Spurious Emissions at Antenna Terminals

## WCDMA/HSDPA

SPURS

Downlink



Date: 20.OCT.2008 14:07:58

**EQUIPMENT: AF1937****Section 6. Field Strength of Spurious**

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 24.238
TESTED BY: David Light	DATE: 06 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:* **AF1937****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**

*EQUIPMENT:* **AF1937**

**NAME OF TEST: RF Power Output**

**PARA. NO.: 2.1046**

**Minimum Standard:** Para. No.24.232. Base stations are limited to 1640 watts peak E.I.R.P. with an antenna height up to 300 meters HAAT. In no case may the peak output power of a base station transmitter exceed 100 watts.

**Method Of Measurement:**

Detachable Antenna:

The peak power at antenna terminals is measured using an in-line peak power meter or spectrum analyzer. 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 an isotropic radiator. 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 eirp is the signal level fed to the reference antenna corrected for gain referenced to an isotropic radiator.

*EQUIPMENT:* **AF1937**

**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

*EQUIPMENT:* **AF1937****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:  $\geq$  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

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.

*EQUIPMENT:* **AF1937****NAME OF TEST: Field Strength of Spurious Radiation      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**      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 an isotropic radiator. 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 eirp is the signal level fed to the reference antenna corrected for gain referenced to an isotropic radiator.

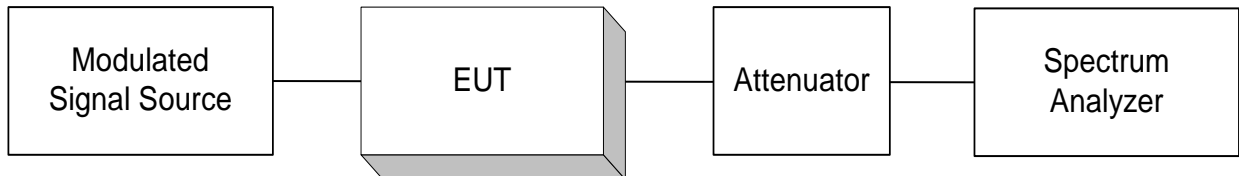


## **ANNEX B - TEST DIAGRAMS**

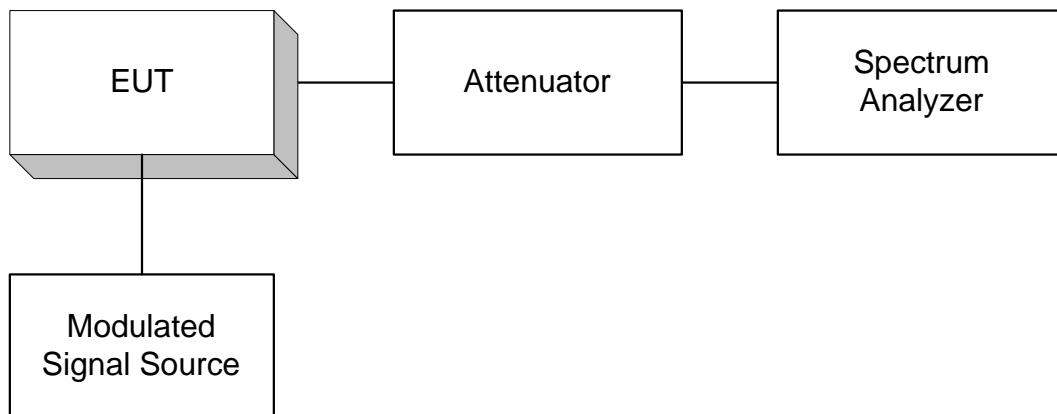
*EQUIPMENT:* **AF1937**

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**Para. No. 2.985 - R.F. Power Output**

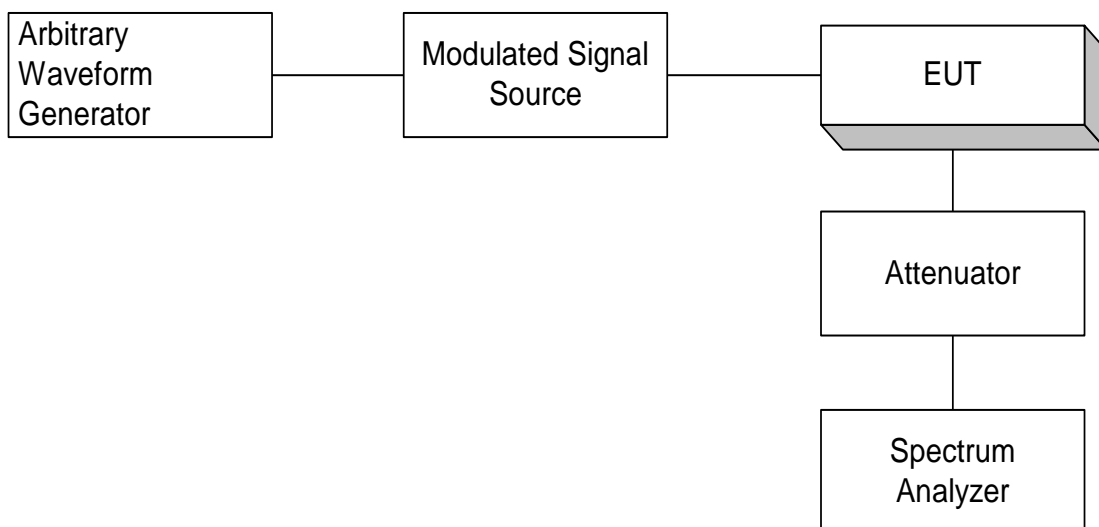
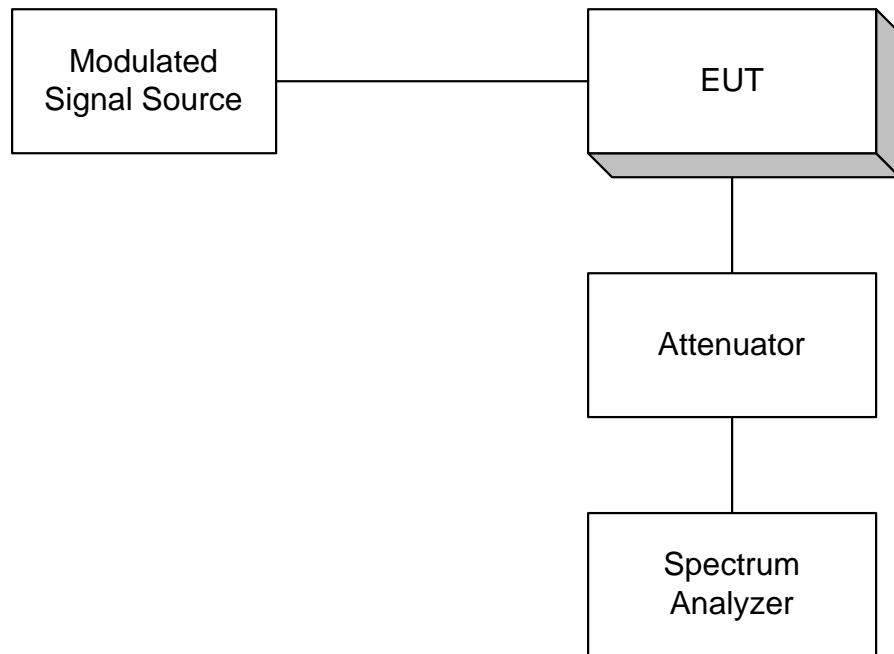


**Para. No. 2.989 - Occupied Bandwidth**



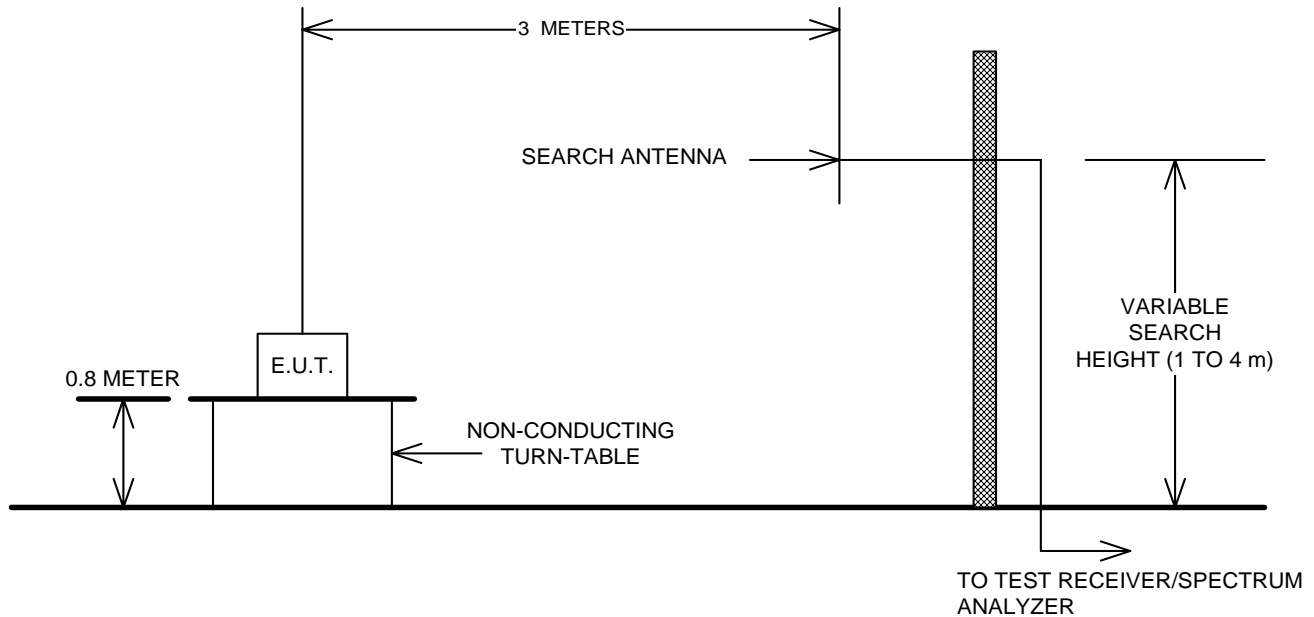
EQUIPMENT: **AF1937**

**Para. No. 2.991 Spurious Emissions at Antenna Terminals**



EQUIPMENT: **AF1937**

**Para. No. 2.993 - Field Strength of Spurious Radiation**



**Para. No. 2.995 - Frequency Stability**

