



Nemko Test Report No.: 6L0346RUS1 rev2

Applicant: Communication Components, Inc.
89 Leuning Street
Second Floor
Hackensack, NJ 07606

Equipment Under Test: CE-1819-125MC

In Accordance With: FCC Part 24, Subpart E

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

TESTED BY:

Kevin Rose, Wireless Engineer

DATE: Feb 1, 2007

APPROVED BY:

David Light, Senior Wireless Engineer

DATE: Feb 1, 2007

Total Number of Pages: 32

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	11
SECTION 6.	FIELD STRENGTH OF SPURIOUS	20
SECTION 7.	TEST EQUIPMENT LIST	22
ANNEX A - TEST DETAILS		23
ANNEX B - TEST DIAGRAMS		29

Section 1. Summary of Test Results

Manufacturer Communication Components, Inc.
:
Model No.: CE-1819-125MC
Serial No.: None

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 FCC Part 24, Subpart E.

- | | | | |
|-------------------------------------|----------------------------|-------------------------------------|---------------------|
| <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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Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC.	RESULT
RF Power Output	24.232	125W	Complies
Occupied Bandwidth	Not defined	Input/Output	Complies
Spurious Emissions at Antenna Terminals	24.238(a)	-13 dBm	Complies
Field Strength of Spurious Emissions	24.238(a)	-13 dBm	Complies
Frequency Stability	24.235	N/A	N/A

Footnotes:

(1) Modulation characteristics were not tested since the E.U.T. amplifies but does not produce a modulated waveform.

Measurement uncertainty for each test configuration is expressed to 95% probability.

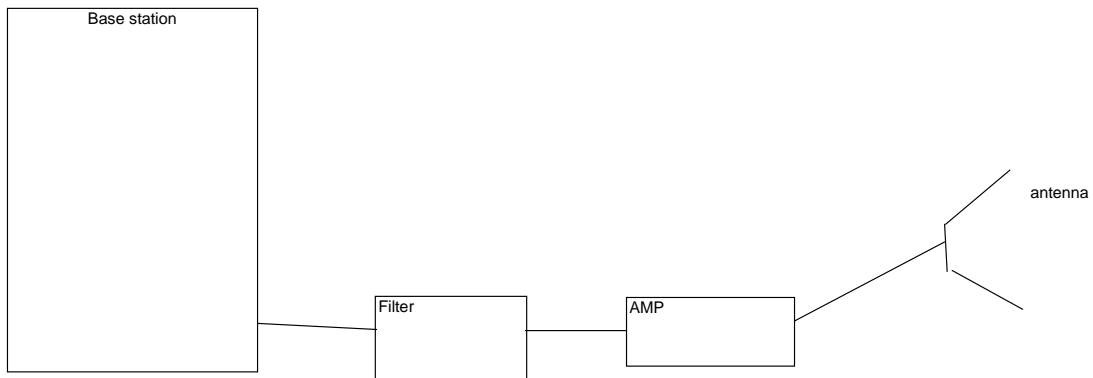
Section 2. General Equipment Specification

Supply Voltage Input:	28 Vdc		
Frequency Bands: Downlink:	<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
Operating Frequency of Test Sample:	1931.25 to 1988.75 MHz		
Frequency Bands: Uplink:	<input type="checkbox"/>	Block A :	1850 – 1865 MHz
	<input type="checkbox"/>	Block B :	1865 – 1870 MHz
	<input type="checkbox"/>	Block C :	1870 – 1885 MHz
	<input type="checkbox"/>	Block D :	1885 – 1890 MHz
	<input type="checkbox"/>	Block E :	1890 – 1895 MHz
	<input type="checkbox"/>	Block F :	1895 – 1910 MHz
Type of Modulation and Designator:	CDMA (F9W) <input checked="" type="checkbox"/>	GSM (GXW) <input type="checkbox"/>	EDGE (G7W) <input type="checkbox"/>
Output Impedance:	50 ohms		
RF Output (Rated): Uplink	Per channel:	NA	W
	Total:	NA	W
RF Output (Rated): Downlink	Per channel:	62.5	W
	Total:	125	W
Frequency Translation:	F1-F1 <input checked="" type="checkbox"/>	F1-F2 <input type="checkbox"/>	N/A <input type="checkbox"/>
Band Selection:	Software <input type="checkbox"/>	Duplexer <input checked="" type="checkbox"/>	Fullband <input type="checkbox"/>
Note – This amplifier was tested using PCS block filters that must be used when installed to achieve compliance for spurious emissions.			

Description of Operation

The device is a 125-Watt base station amplifier operating in the PCS band used with CDMA signals.

System Diagram



Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: Kevin Rose	DATE: 12/06/2006

Test Results: Complies.

Measurement Data:

	Modulation Type	Single Channel Output Power (dBm)	Two channel Output Power (dBm)	Composite Output Power (dBm)
Uplink	CDMA	N/A	N/A	N/A
Downlink	CDMA	51	48dBm/ Carrier	51

This device was tested at +/- 15% input power with no variation in output power.

Analyzer Settings: RBW=VBW=3 MHz – Peak detector

Equipment Used: 1036-1529-1185-1054-1058

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 40 %

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: Kevin Rose	DATE: 12/06/2006

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1529-1185-1054-1058

Measurement Uncertainty: +/- 1×10^{-7} ppm

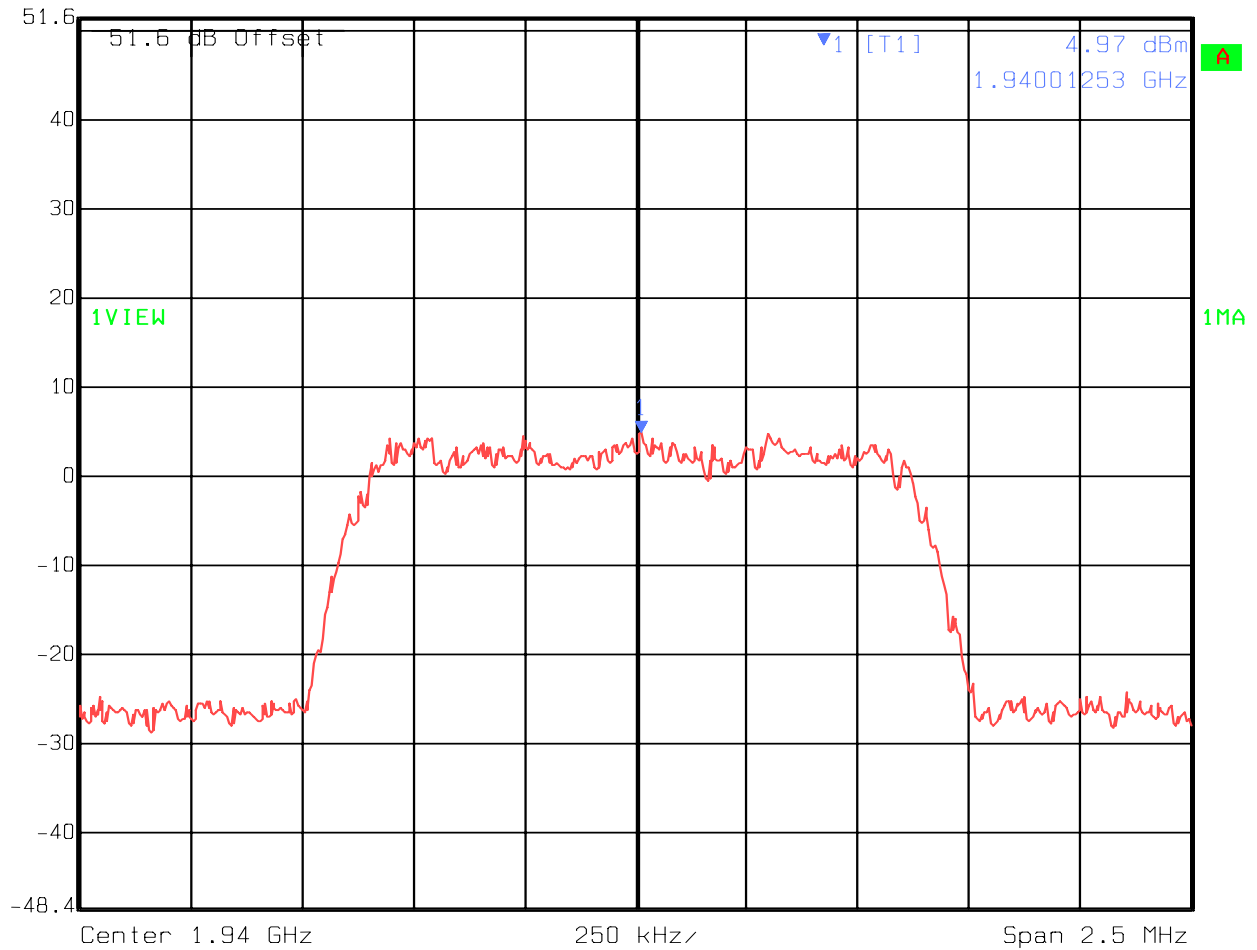
Temperature: 22 °C

Relative Humidity: 40 %

Test Data – Occupied Bandwidth

Input

Ref Lvl	Marker 1 [T1]	RBW	30 kHz	RF Att	30 dB
51.6 dBm	4.97 dBm	VBW	30 kHz		
	1.94001253 GHz	SWT	7 ms	Unit	dBm

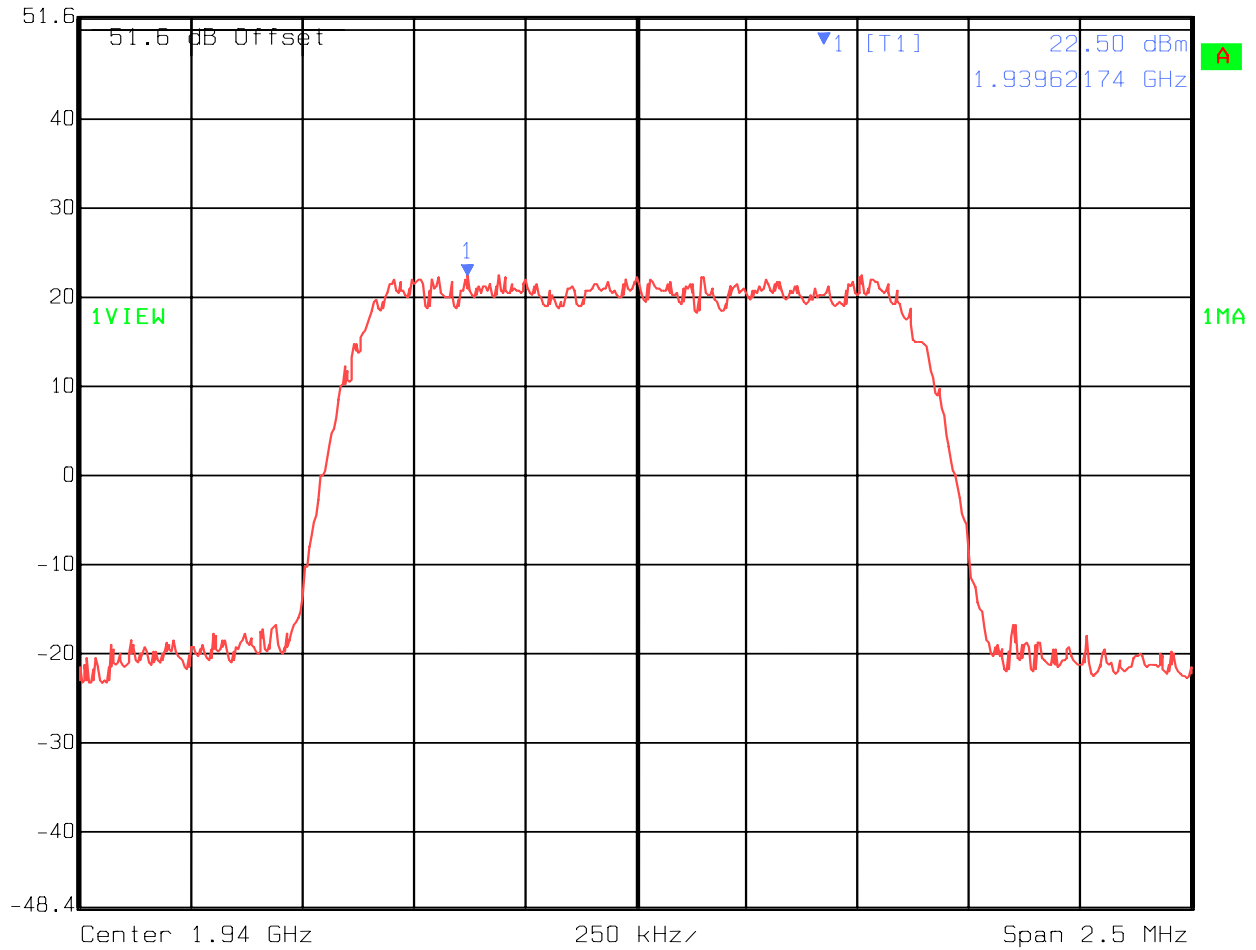


Date: 26.OCT.2006 15:49:53

Test Data – Occupied Bandwidth

Output

Marker 1 [T1] RBW 30 kHz RF Att 30 dB
Ref Lvl 22.50 dBm VBW 30 kHz
51.6 dBm 1.93962174 GHz SWT 7 ms Unit dBm



Date: 26.OCT.2006 15:47:45

Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions @ Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: Kevin Rose	DATE: 10/26/2006

Test Results: Complies.

Test Data: See attached plot(s).

Equipment Used: 1036-1529-1185-1054-1058

Measurement Uncertainty: +/- 1.7 dB

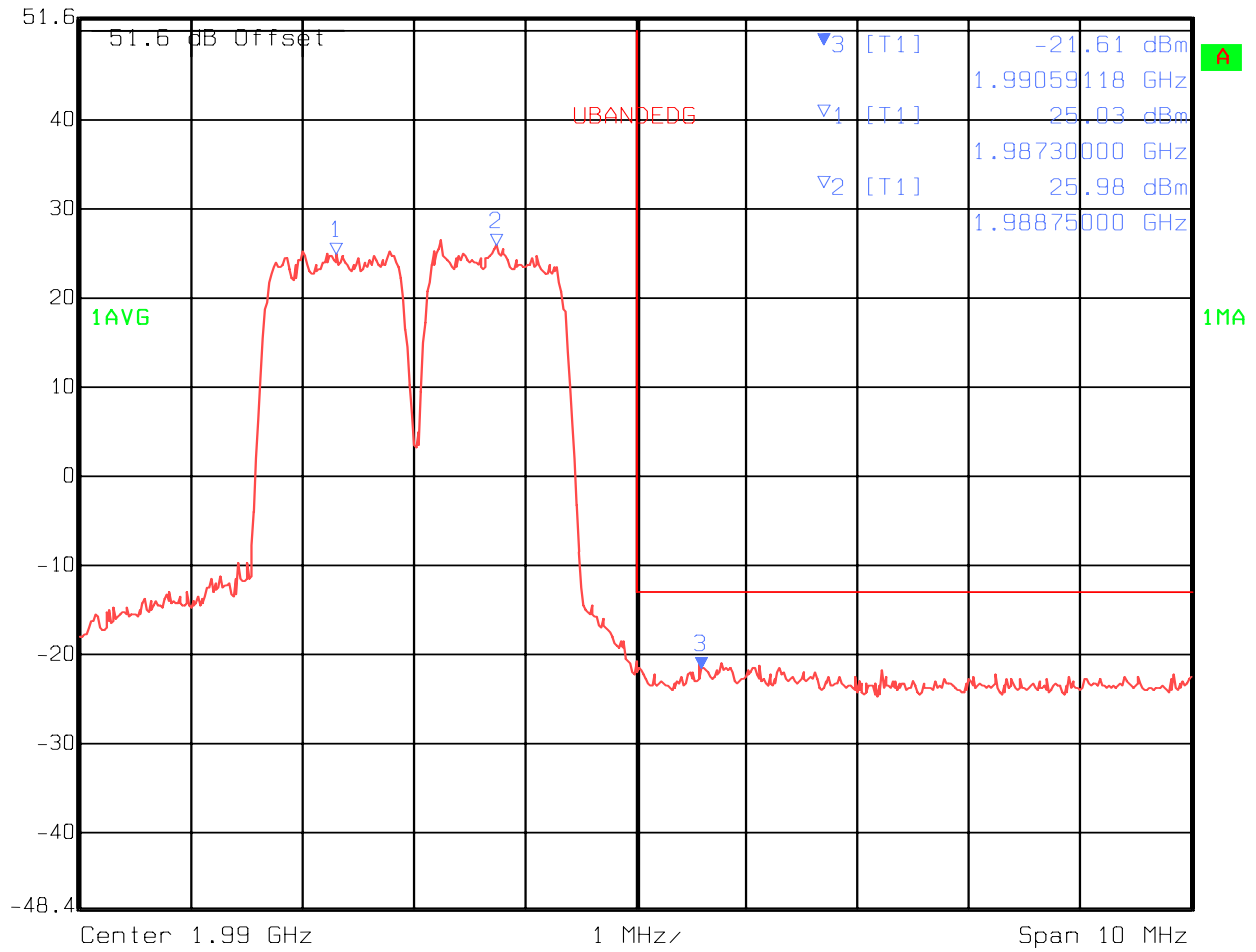
Temperature: 22 °C

Relative Humidity: 40 %

Test Data – Spurious Emissions at Antenna Terminals

Upperband edge and inter modulation

Marker 3 [T1] RBW 30 kHz RF Att 30 dB
 Ref Lvl -21.61 dBm VBW 30 kHz
 51.6 dBm 1.99059118 GHz SWT 28 ms Unit dBm



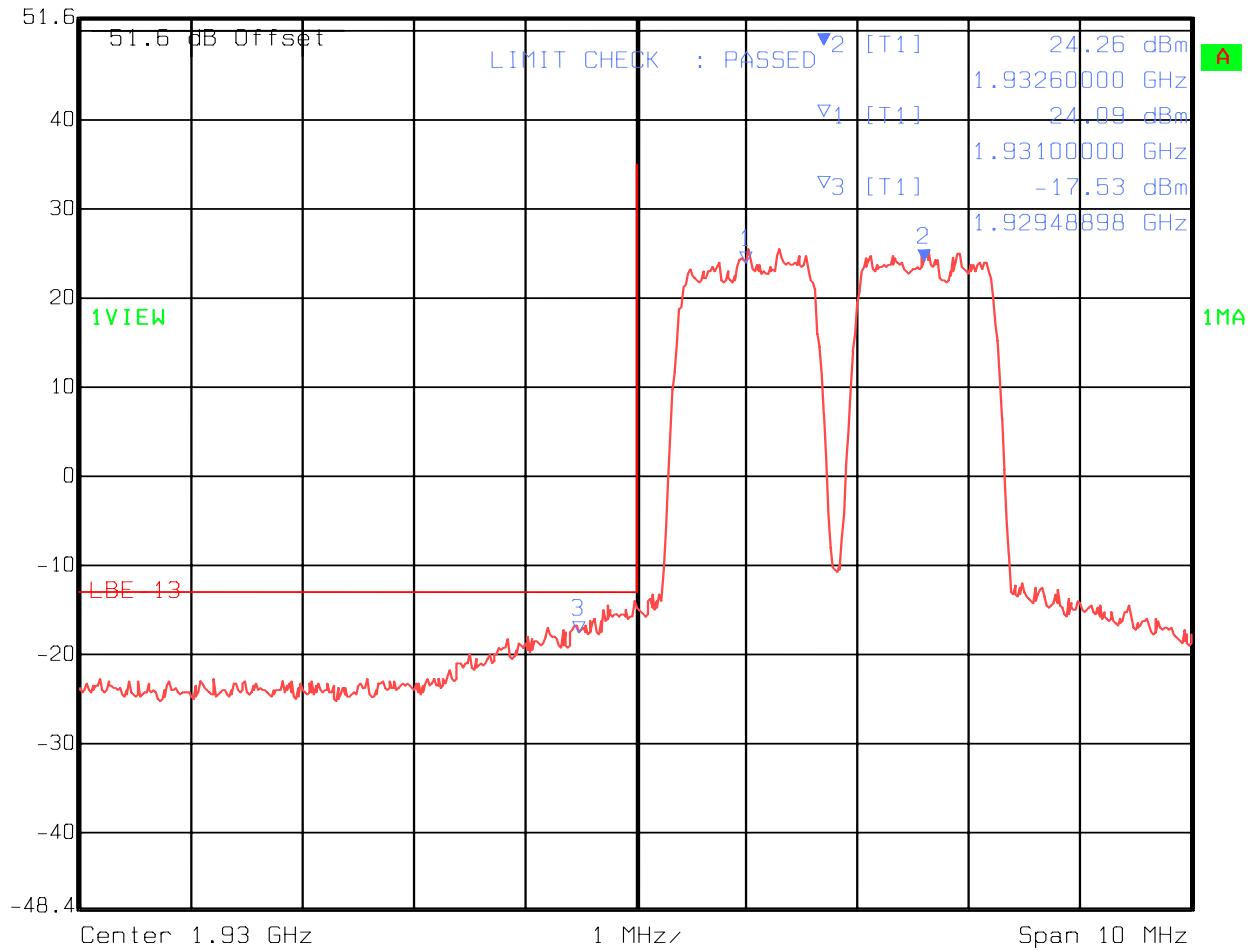
Date: 26.OCT.2006 14:43:20

48 dBm per carrier

Test Data – Spurious Emissions at Antenna Terminals

Lower band edge and inter modulation

Marker 2 [T1] RBW 30 kHz RF Att 30 dB
Ref Lvl 24.26 dBm VBW 30 kHz
51.6 dBm 1.93260000 GHz SWT 28 ms Unit dBm

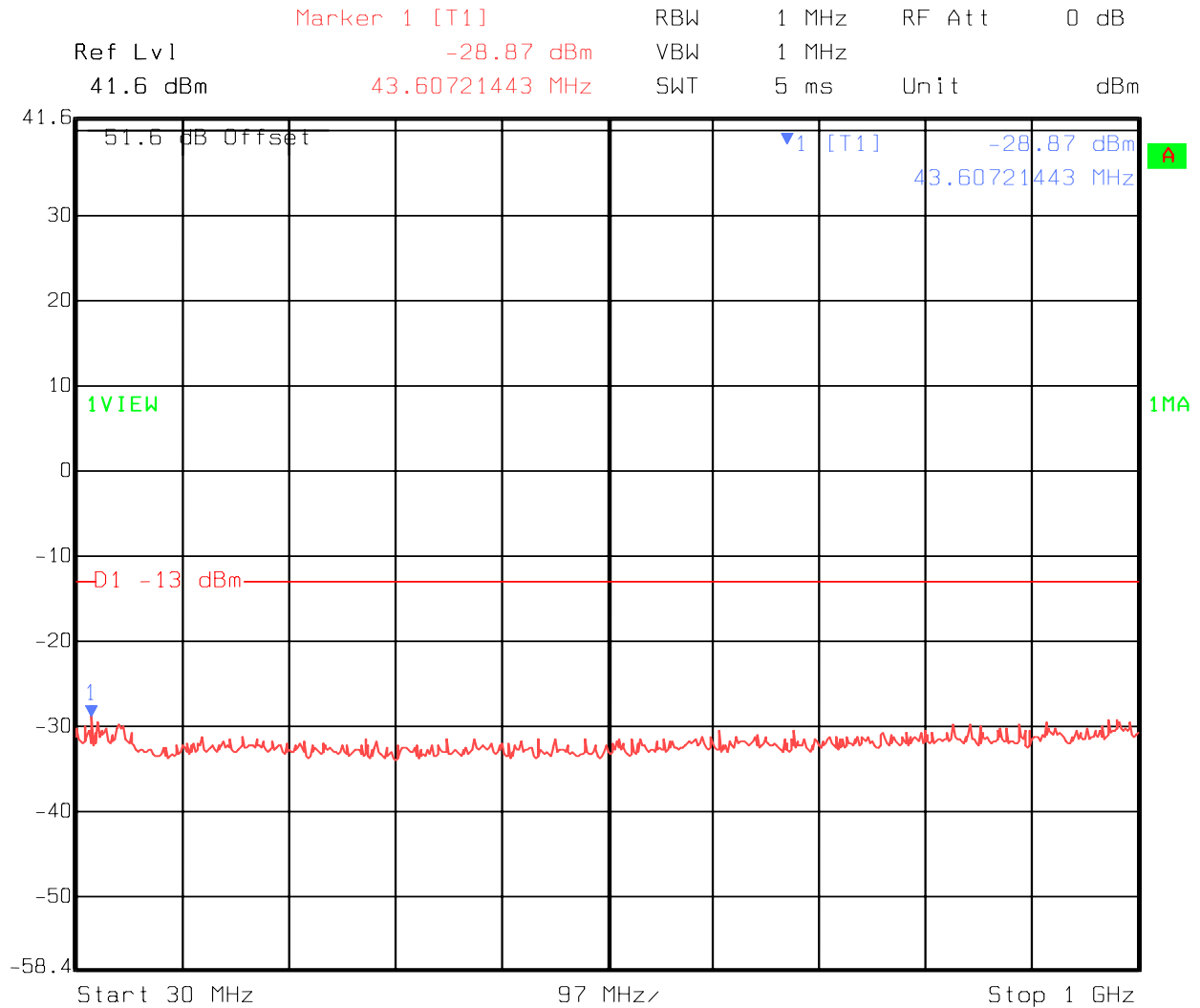


Date: 26.OCT.2006 15:39:58

48 dBm per carrier

Test Data – Spurious Emissions at Antenna Terminals

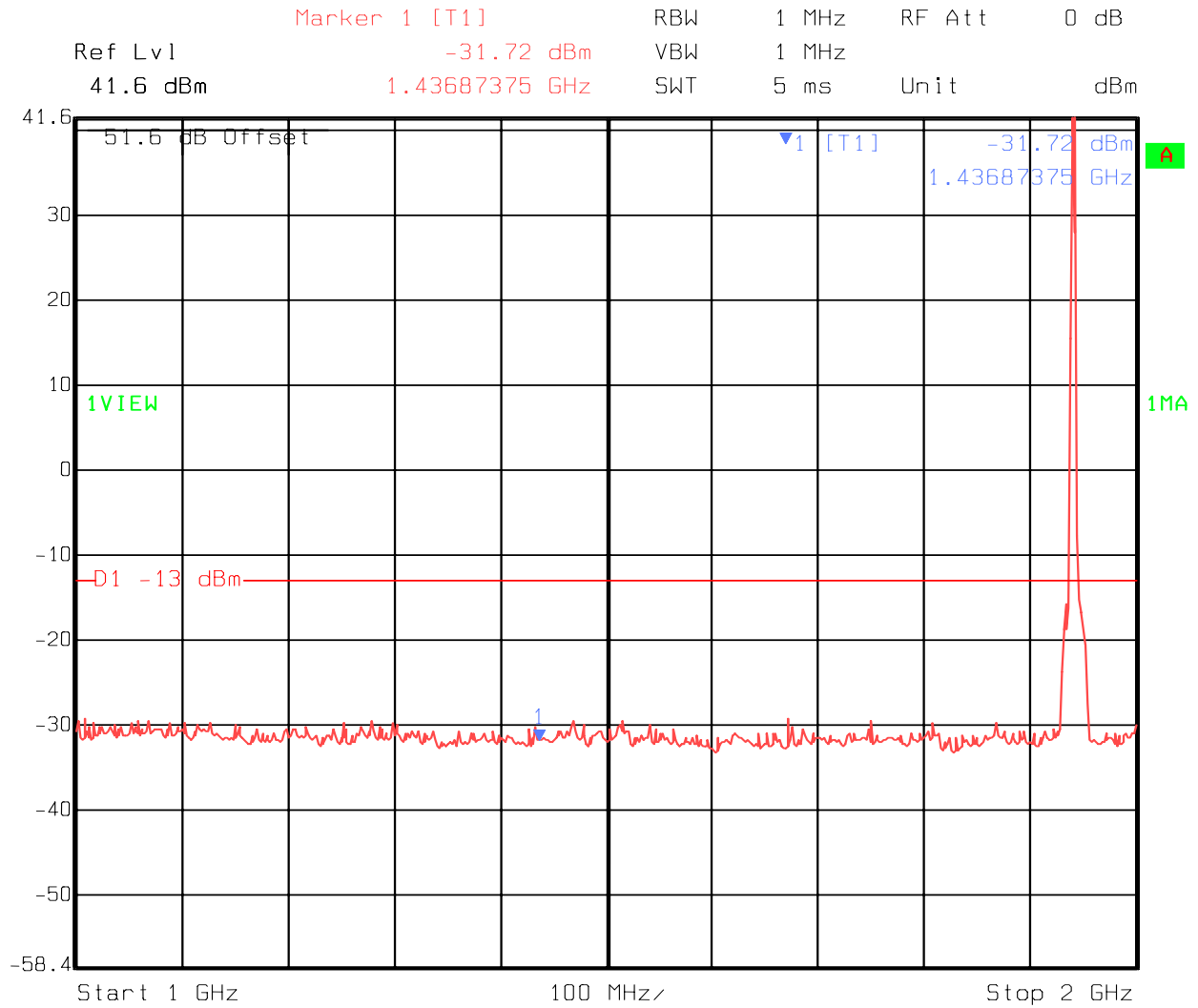
Single carrier at 51 dBm



Date: 26.OCT.2006 16:01:47

Test Data – Spurious Emissions at Antenna Terminals

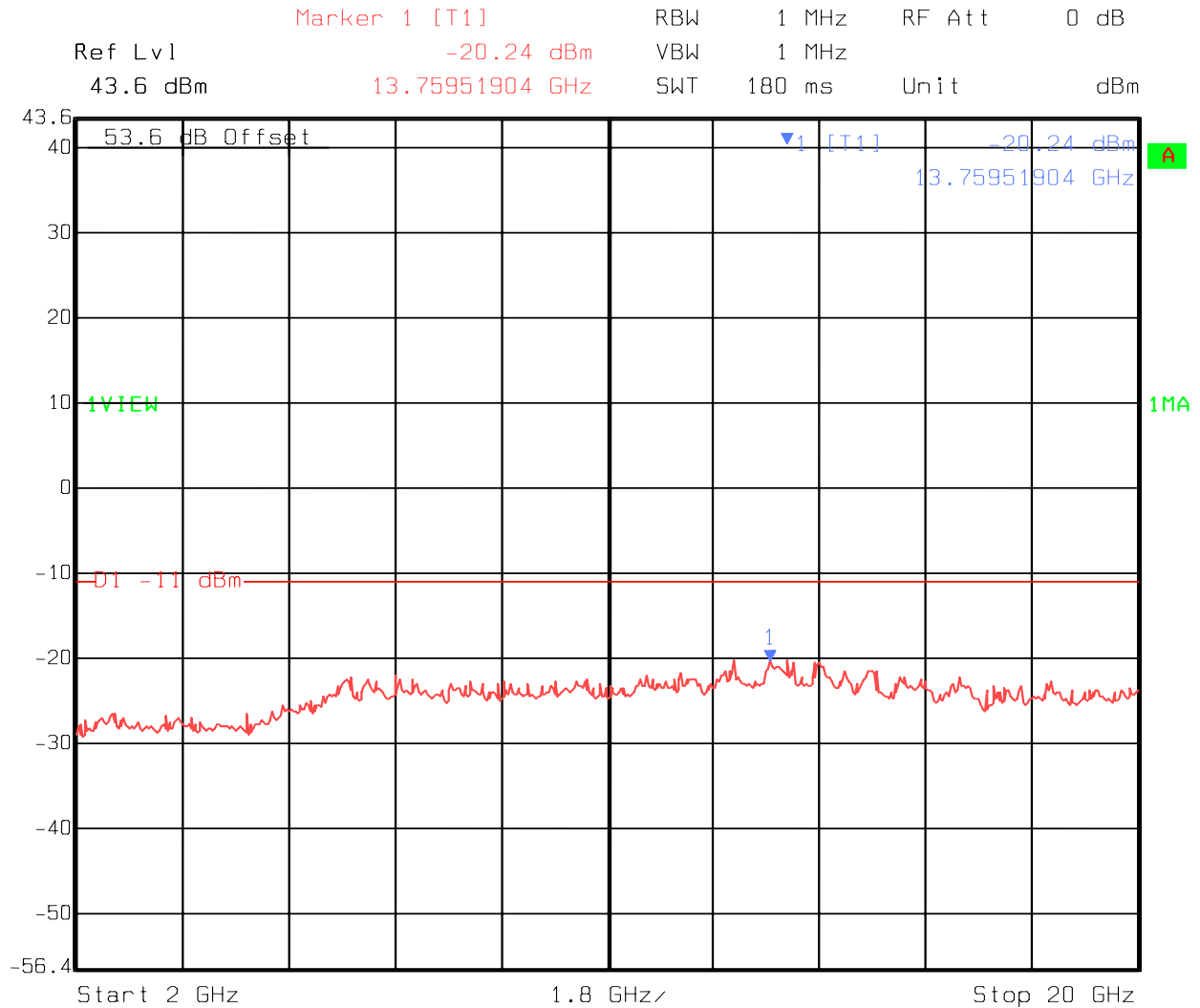
Single carrier at 51 dBm



Date: 26.OCT.2006 15:59:47

Test Data – Spurious Emissions at Antenna Terminals

Single carrier at 51 dBm

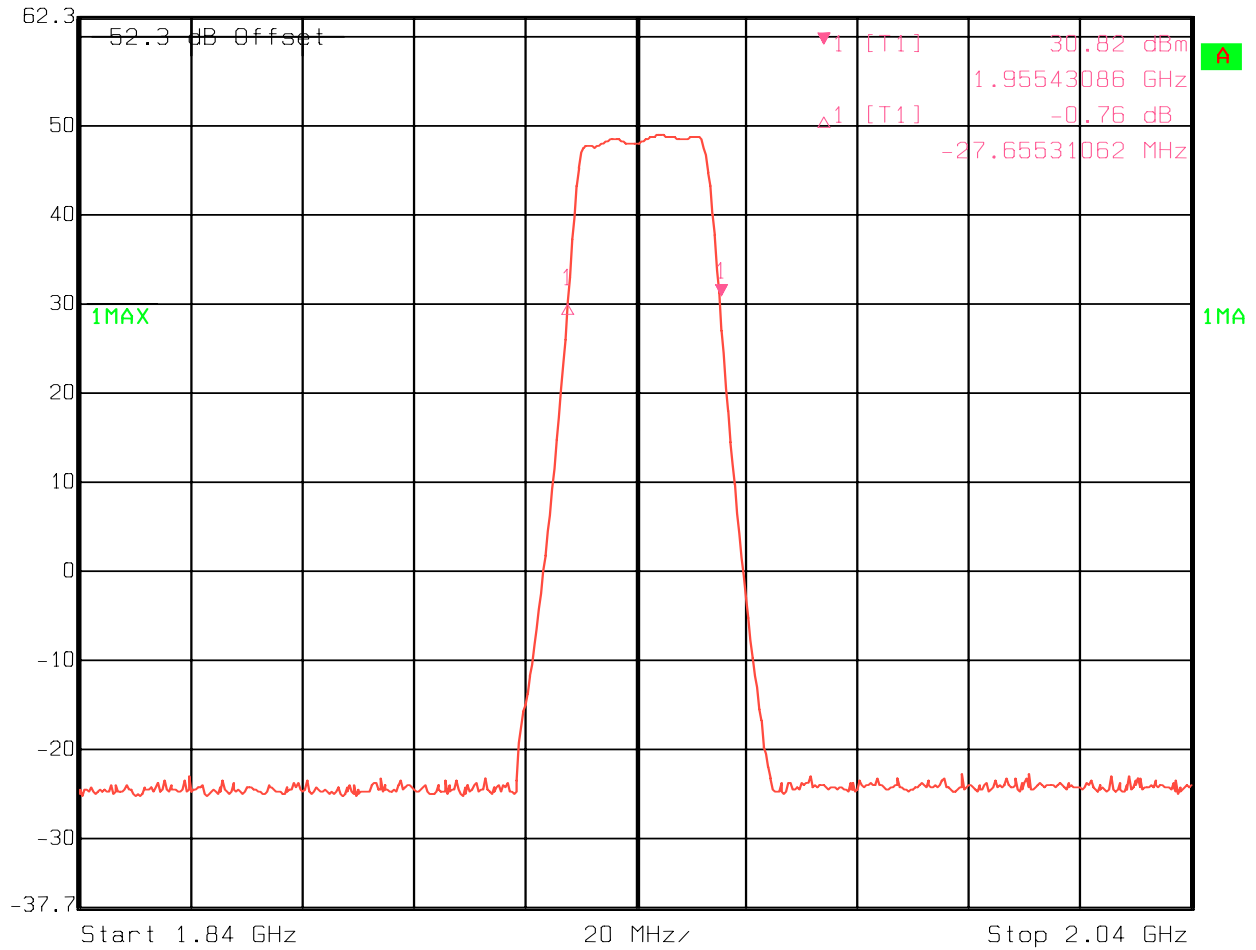


Date: 26.OCT.2006 16:04:37

Filter Response

A/D Blocks

Marker 1 [T1] RBW 30 kHz RF Att 20 dB
Ref Lvl 30.82 dBm VBW 30 kHz
62.3 dBm 1.95543086 GHz SWT 560 ms Unit dBm

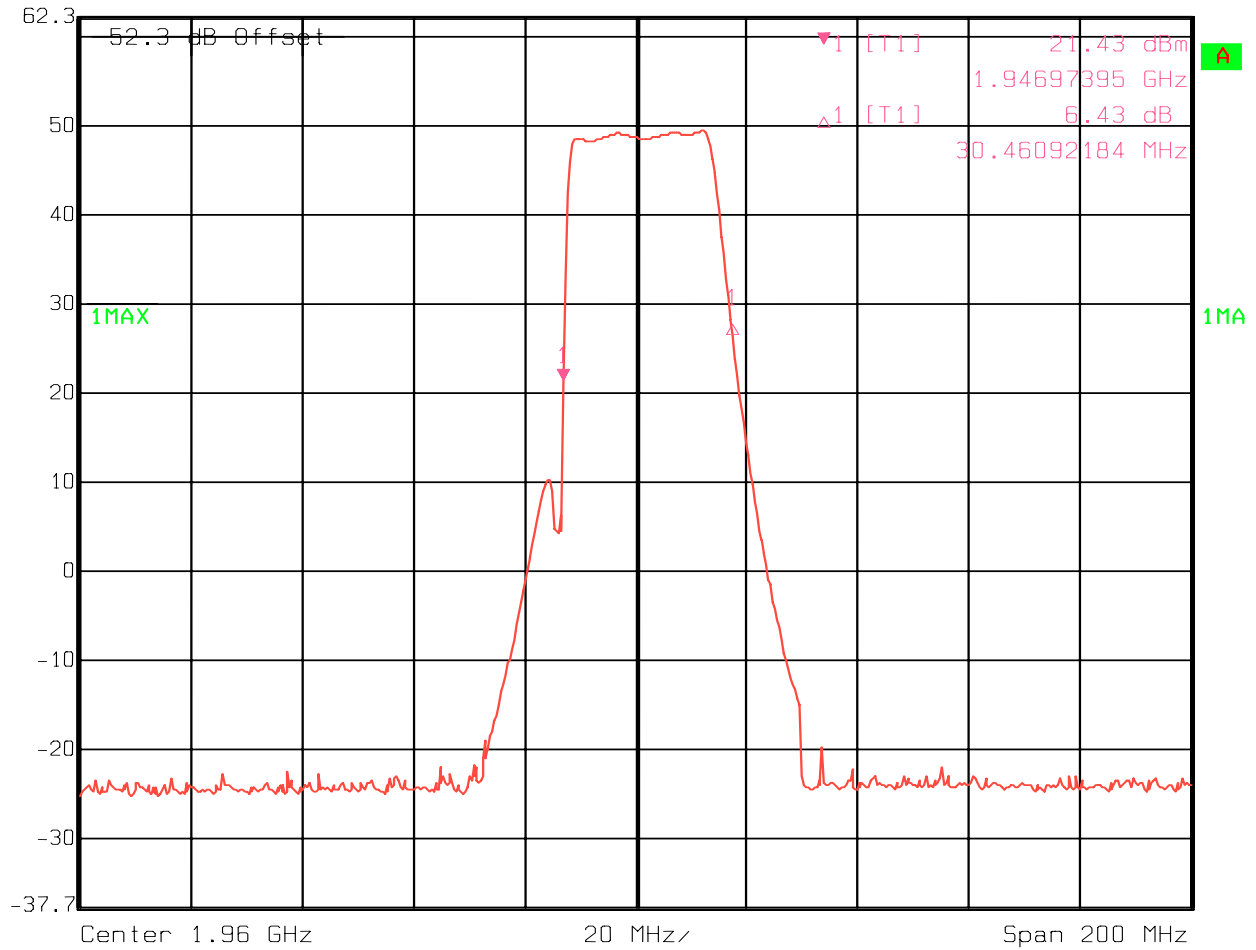


Date: 15.DEC.2006 16:07:37

Filter Response

B/E Blocks

Ref Lvl	62.3 dBm	Marker 1 [T1]	21.43 dBm	RBW	30 kHz	RF Att	20 dB
			1.94697395 GHz	VBW	30 kHz		
				SWT	560 ms	Unit	dBm

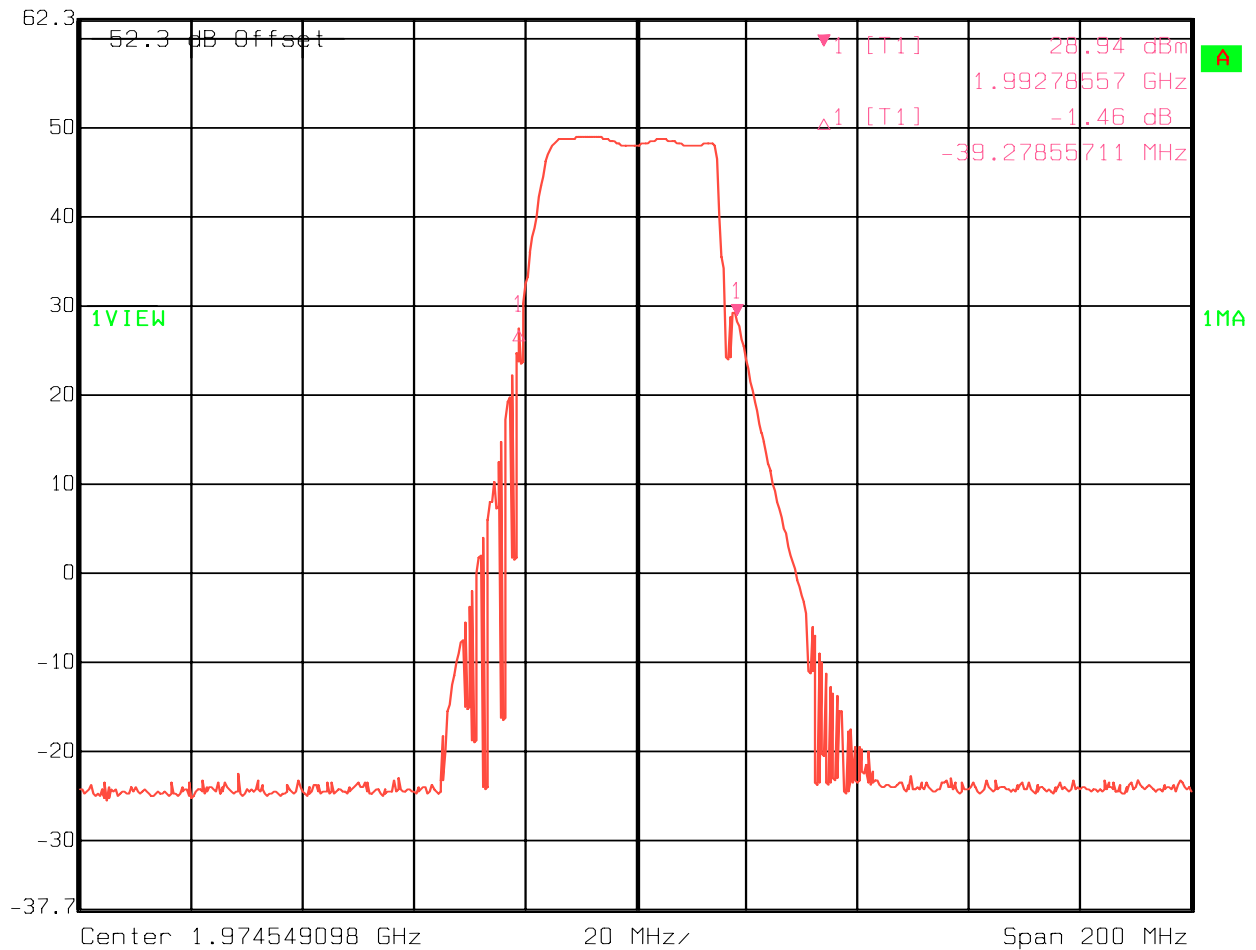


Date: 15.DEC.2006 16:19:50

Filter Response

C/F Blocks

Marker 1 [T1] RBW 30 kHz RF Att 20 dB
Ref Lvl 28.94 dBm VBW 30 kHz
62.3 dBm 1.99278557 GHz SWT 560 ms Unit dBm



Date: 15.DEC.2006 15:53:26

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1051
TESTED BY: Kevin Rose	DATE: 12/26/2006

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.

Spectrum Analyzer Settings: RBW=VBW=1 MHz

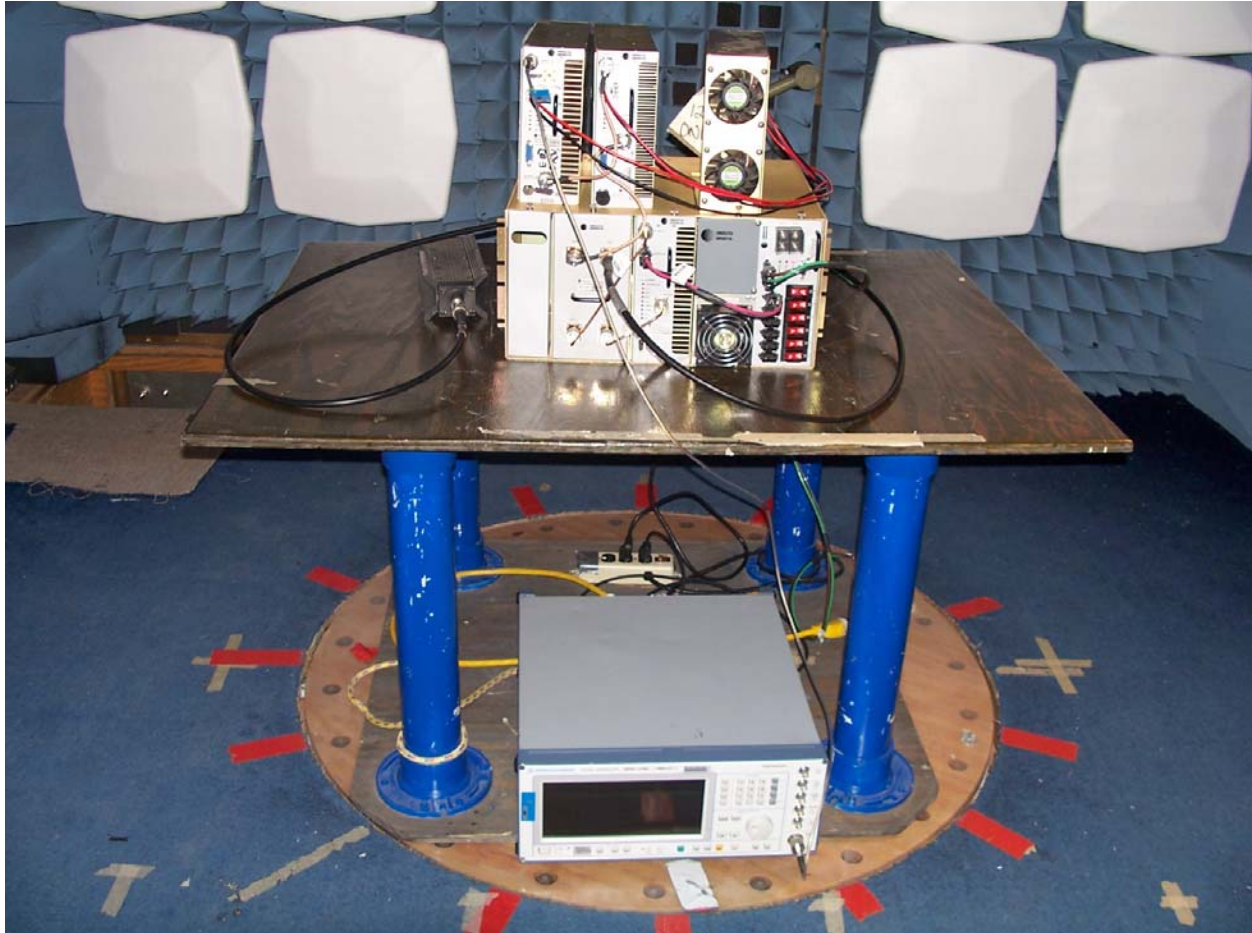
Equipment Used: 1036-1529-1185-1054-1058-1464
 1016-1484-1485-993-759-1195-791

Measurement Uncertainty: +/- 1.7 dB

Temperature: 22 °C

Relative Humidity: 40 %

Photographs of Test Setup



Section 7. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1036	SPECTRUM ANALYZER	ROHDE & SCHWARZ FSEK30	830844/006	05/26/06	05/26/08
1529	CABLE 4M 2.0-18.0 Ghz	Storm PR90-010-144	00-07-002	CBU	CNR
1185	COAXIAL DIRETIONAL COUPLER	NARDA 3002 20	171	CBU	N/A
1054	DUAL DIRECTIONAL COUPLER	NARDA 3020A	34366	Cal Not Req	N/A
1058	DUAL DIRECTIONAL COUPLER	HEWLETT PACKARD 11692D	1212A03366	Cal Not Req	N/A
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/14/05	01/15/07
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	04/20/06	04/20/07
1484	Cable	Storm PR90-010-072	N/A	10/02/06	10/02/07
1485	Cable	Storm PR90-010-216	N/A	10/02/06	10/02/07
993	Horn antenna	A.H. Systems SAS-200/571	XXX	08/01/05	08/02/07
759	ANTENNA, LOG PERIODIC	A.H. SYSTEMS SAS-200/510	556	02/13/06	02/13/07
1195	ANTENNA,BICONICAL	A.H. SYSTEMS SAS-200/542	235	02/10/06	02/10/07
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	04/20/06	04/20/07

Nemko USA Inc.

FCC PART 24, SUBPART E
BROADBAND PCS REPEATERS

EQUIPMENT: **CE-1819-125MC** **Test Report Number 6L0346RUS1 rev 2**

ANNEX A - TEST DETAILS

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
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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 1000 watts.

Method Of Measurement:

Detachable Antenna:

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

Integral Antenna:

TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was 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: Occupied Bandwidth	PARA. NO.: 2.1047
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Minimum Standard: Para. No. 24.238(b). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB.

Method Of Measurement:

CDMA

Spectrum analyzer settings:

RBW: 30 kHz

VBW: \geq RBW

Span: 5 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

GSM

RBW: 3 kHz

VBW: \geq RBW

Span: 2 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

NADC

RBW: 1 kHz

VBW: \geq RBW

Span: 1 MHz

Sweep: Auto

Mask: Set markers to -26 dB from peak of CW.

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

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

Method Of Measurement:

Spectrum analyzer settings:

CDMA

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

GSM

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

NADC

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

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.

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

Test Method: TIA/EIA-603-1992, Section 2.2.12

The antenna substitution method was used to determine the equivalent radiated power at spurious frequencies. The spurious emissions were measured at a distance of 3 meters. The EUT was then replaced with a reference substitution antenna with a known gain referenced to a dipole. This antenna was fed with a signal at the spurious frequency. The level of the signal was 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
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Minimum Standard: Para. No. 24.235. The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

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.

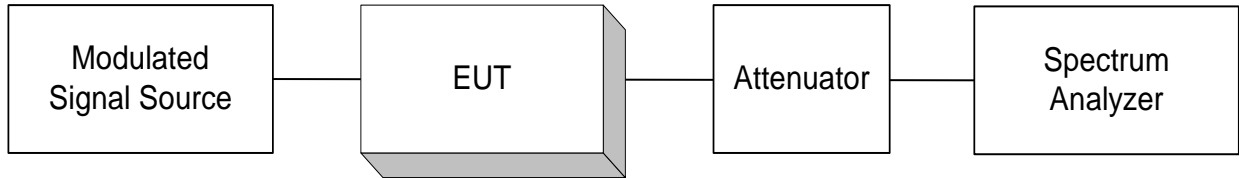
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BROADBAND PCS REPEATERS

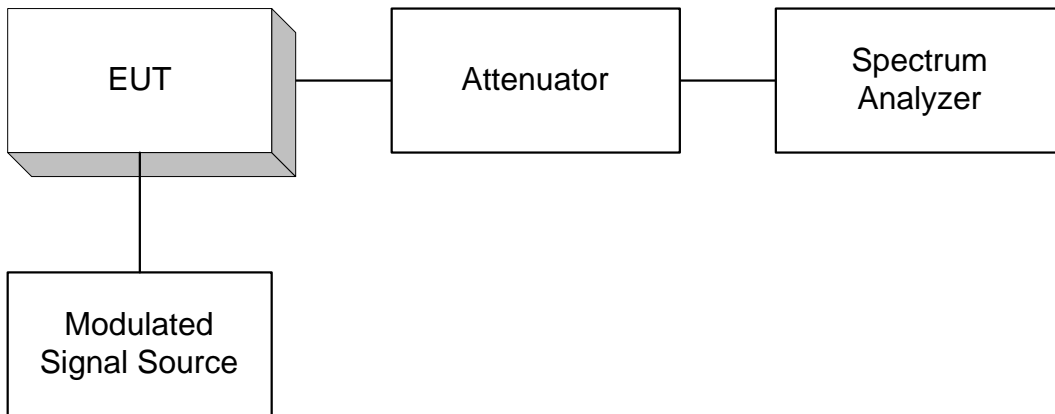
EQUIPMENT: **CE-1819-125MC** **Test Report Number 6L0346RUS1 rev 2**

ANNEX B - TEST DIAGRAMS

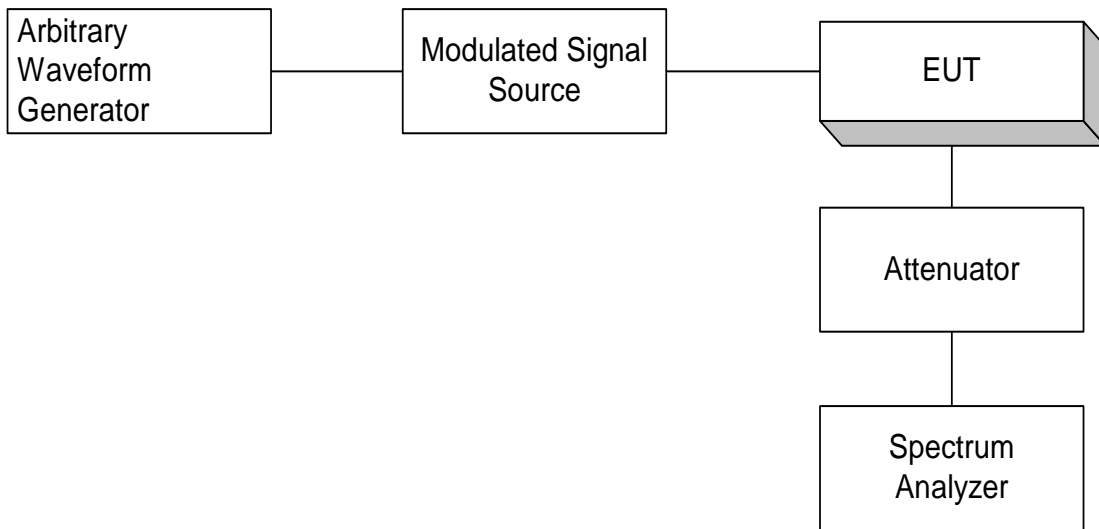
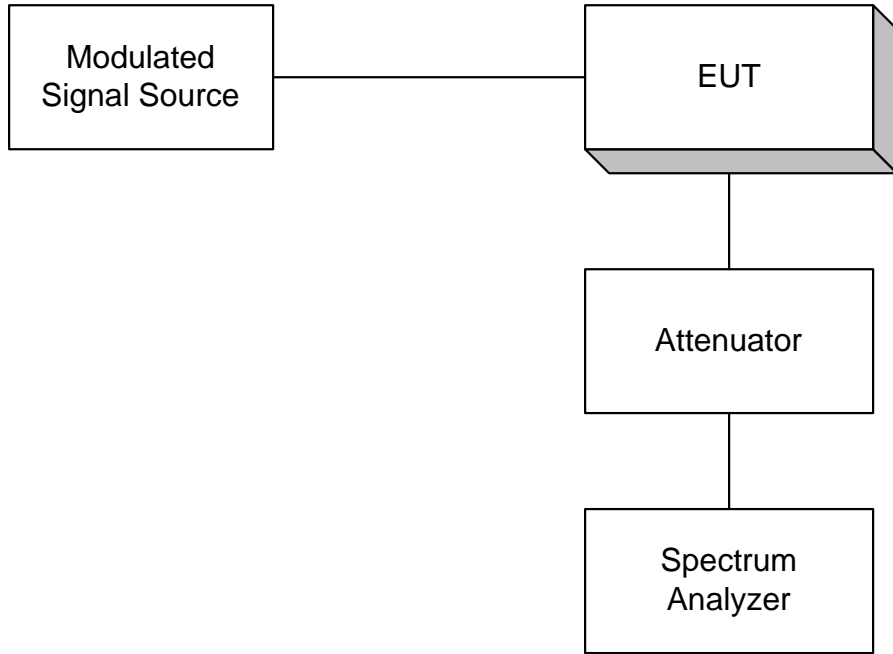
Para. No. 2.985 - R.F. Power Output



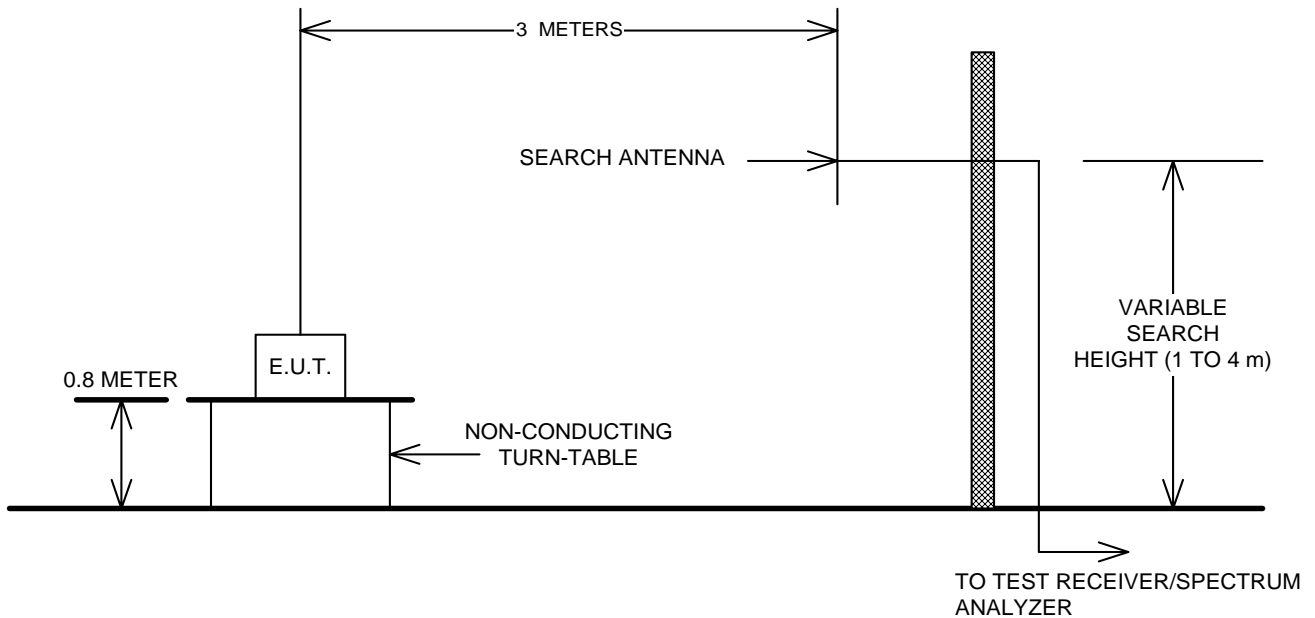
Para. No. 2.989 - Occupied Bandwidth



Para. No. 2.991 Spurious Emissions at Antenna Terminals



Para. No. 2.993 - Field Strength of Spurious Radiation



Para. No. 2.995 - Frequency Stability

