Nemko Test Report:	6L0207RUS1
Applicant:	Navini Networks 2240 Campbell Creek Blvd. Suite 110 Richardson, TX 75082
Equipment Under Test: (E.U.T.)	2.5-2.6 PMX
In Accordance With:	**FCC PART 27, Subpart C** Broadband Radio Service and Educational Broadband Service
Tested By:	Nemko USA Inc. 802 N. Kealy Lewisville, Texas 75057-3136
Authorized By:	 Kevin Rose Wireless Engineer
Date:	May 30, 2006

Table of Contents

Section 1. Summary of Test Results

Manufacturer: Navini Networks

Model No.: 2.5-2.6 PMX

Serial No.: FFFE4217

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 27, Subpart C.

☒ New Submission ☒ Production Unit

☐ Class II Permissive Change ☐ Pre-Production Unit

THIS TEST REPORT RELATES ONLY TO THE ITEM(S) TESTED.

THE FOLLOWING DEVIATIONS FROM, ADDITIONS TO, OR EXCLUSIONS FROM THE TEST SPECIFICATIONS HAVE BEEN MADE. NONE

Summary Of Test Data

NAME OF TEST	PARA. NO.	SPEC. LIMIT	RESULT
RF Power Output	27.50(h)(2)	2 Watts	Complies
Occupied Bandwidth	2.1049	Not specified	Complies
Spurious Emissions at Antenna Terminals	27.53	$43+10_{log}P$(Watts) (-13 dBm)	Complies
Field Strength of Spurious Radiation	27.53	$43+10_{log}P$(Watts) (-13 dBm)	Complies
Frequency Stability	27.54	Must remain within authorized bandwidth	Complies

Footnotes:

Section 2. General Equipment Specification

Power Supply	120 Vac
Frequency Range (See note below):	2500.75 to 2685.25 MHz
Type(s) of Modulation:	**F9W (CDMA)** ☒ **W7D (OFDM)** ☒
Emission Designator:	1M00F9W 800KW7D 1M6W7D
Output Impedance:	50 ohms
RF Power Output (Rated):	23 to 25 dBm Navini mode 23 to 25 dBm 800 kHz OFDM mode 22 to 24 dBm 1.6 MHz OFDM mode Refer to Section 3
Duty Cycle:	50% TDD
Selection Of Operating Frequency:	Not selectable by operator
Power Output Adjustment Capability:	Not selectable by operator

Description of EUT

Navini's Wireless Modem is a sleek end-user wireless terminal device used to give the user access to Navini's wireless broadband network. The Navini PMX modem operates in the 2.5 GHz band and can employ 1 MHz CDMA, 800 kHz OFDM or 1.6 MHz OFDM signals.

System Diagram

Refer to separate exhibit.

Section 3. RF Power Output

NAME OF TEST: RF Power Output	PARA. NO.: 2.1046
TESTED BY: David Light	DATE: 5/22/2006

Test Results: Complies

Measurement Data: See Tables.

Test Equipment Used: 1470-1472-2071-2072

Test Conditions: Temperature: 22 °C

Humidity: 41 %

Maximum RF Power Output – 1 MHz or more extra guard band from band edges.

Frequency (MHz)	Mode	Power (dBm)	Power (mW)
2501.75	Navini	25.11	324.3
2684.25	Navini	25.02	316.2
2501.75	800 kHz OFDM	25.06	320.6
2684.25	800 kHz OFDM	25.16	328.1
2502.15	1.6 MHz OFDM	24.13	258.8
2683.85	1.6 MHz OFDM	23.96	248.9

RF Power at band edges

Frequency (MHz)	Mode	Power (dBm)	Power (mW)
2500.75	Navini	23.01	200
2685.25	Navini	23.09	203.7
2500.75	800 kHz OFDM	23.02	200
2685.25	800 kHz OFDM	23.02	200
2501.15	1.6 MHz OFDM	22.13	163.3
2684.85	1.6 MHz OFDM	22.07	161.1

Note: Power is reduced 2 dB at band edges to comply with specification limit of –13 dBm.

Section 4. Occupied Bandwidth

NAME OF TEST: Occupied Bandwidth	PARA. NO.: 2.1049
TESTED BY: David Light	DATE: 3/22/2006

Test Results: Complies

Measurement Data: See attached plots.

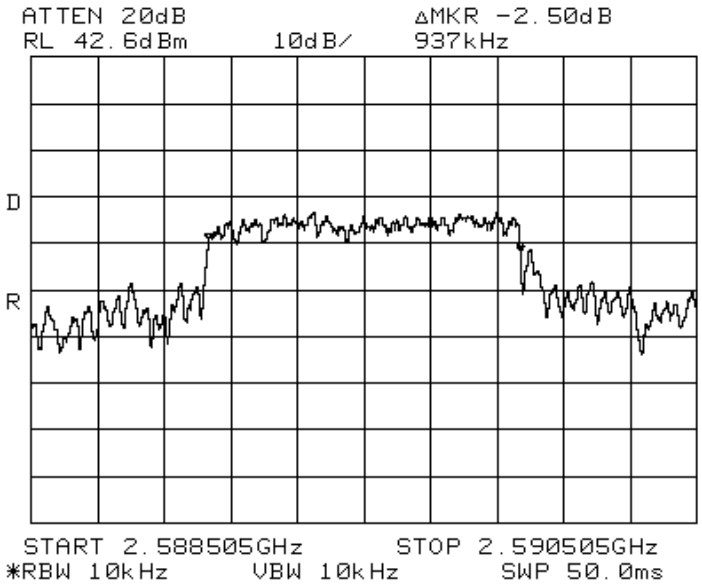
Test Equipment Used: 1470-1472-1464-1082

Test Conditions: Temperature: 22 °C

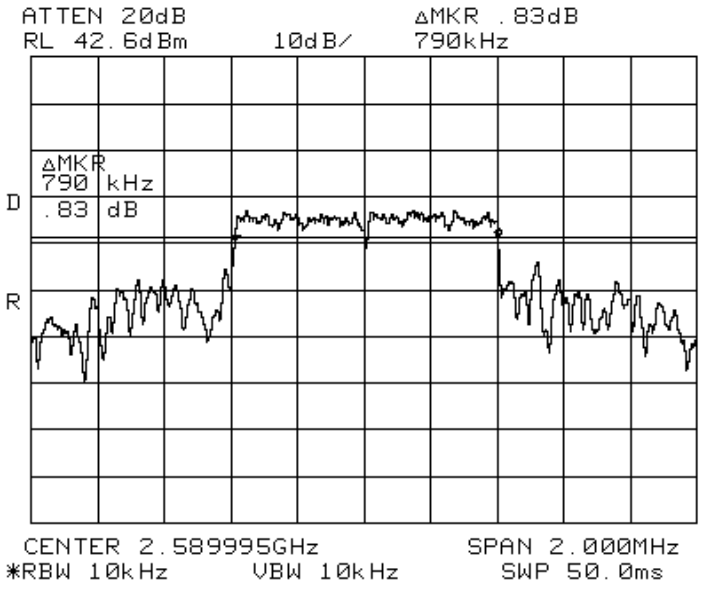
Humidity: 41 %

Test Data – Occupied Bandwidth

Navini Mode

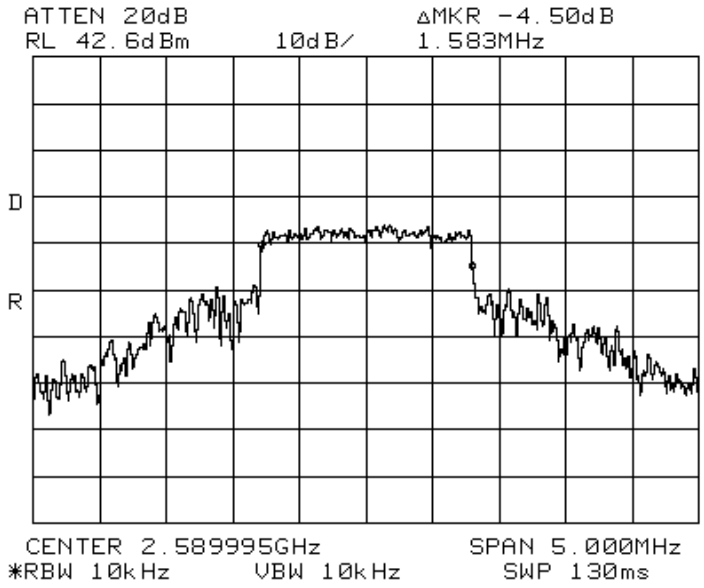


800 kHz OFDM



Test Data – Occupied Bandwidth (continued)

1.6MHz OFDM



Section 5. Spurious Emissions at Antenna Terminals

NAME OF TEST: Spurious Emissions at Antenna Terminals	PARA. NO.: 2.1051
TESTED BY: David Light	DATE: 5/22/2006

Test Results: Complies

Measurement Data: See attached plots.

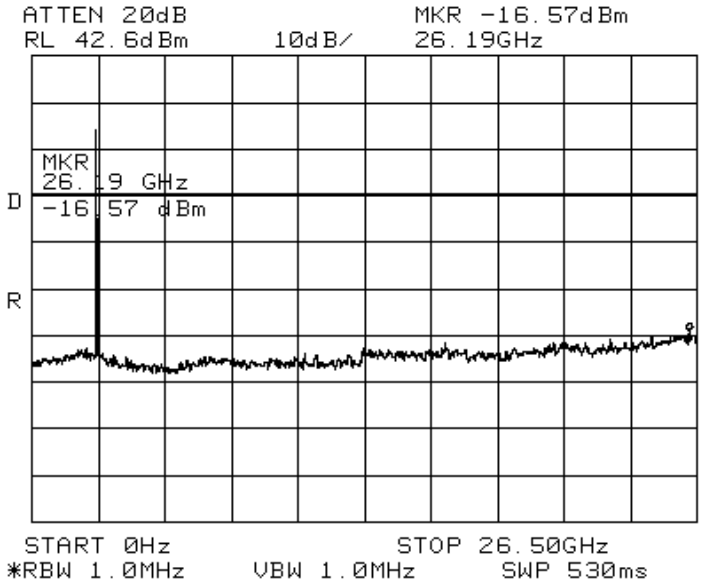
Test Equipment Used: 1470-1472-1082-1464-1659

Test Conditions: Temperature: 22 °C

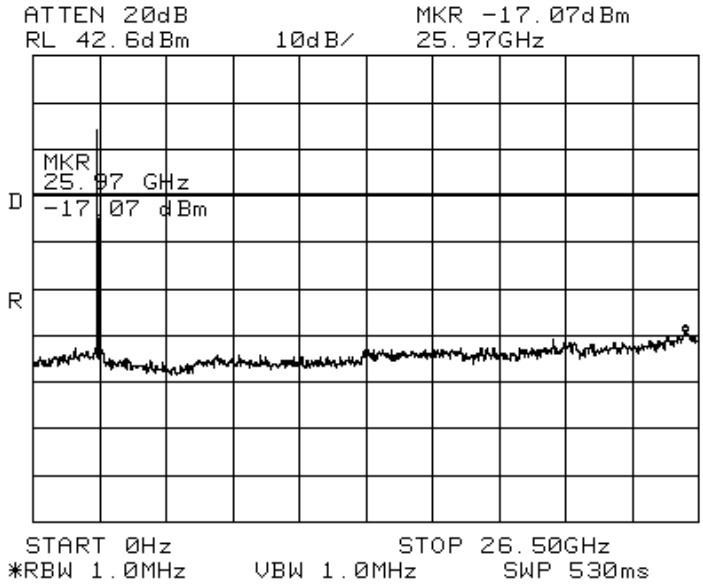
Humidity: 41 %

Test Data – Spurious Emissions at Antenna Terminals

Navini Mode

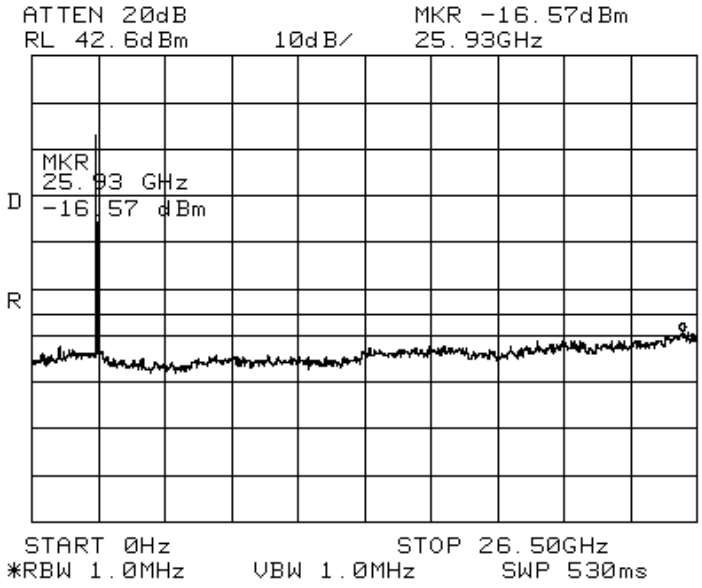


800 kHz OFDM



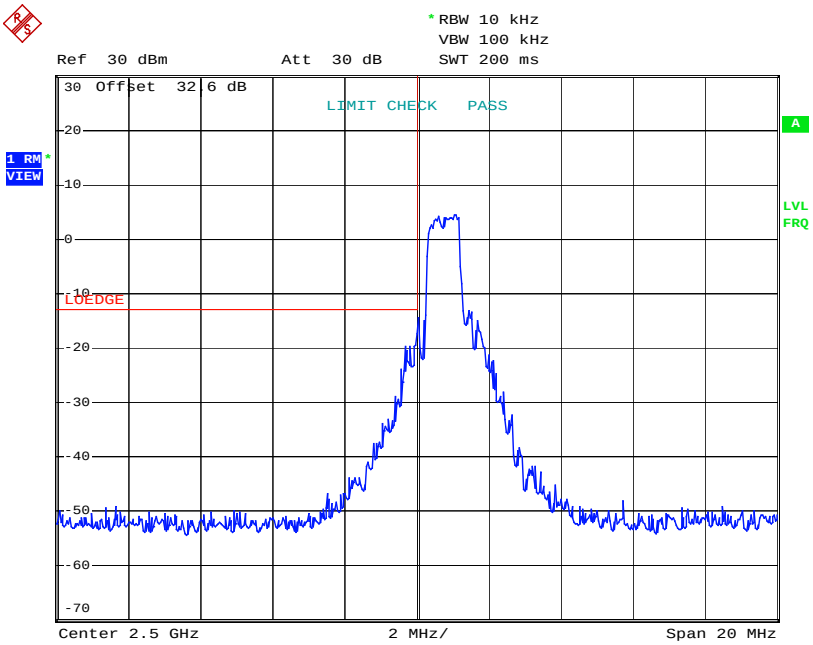
Test Data – Spurious Emissions at Antenna Terminals (continued)

1.6 MHz OFDM

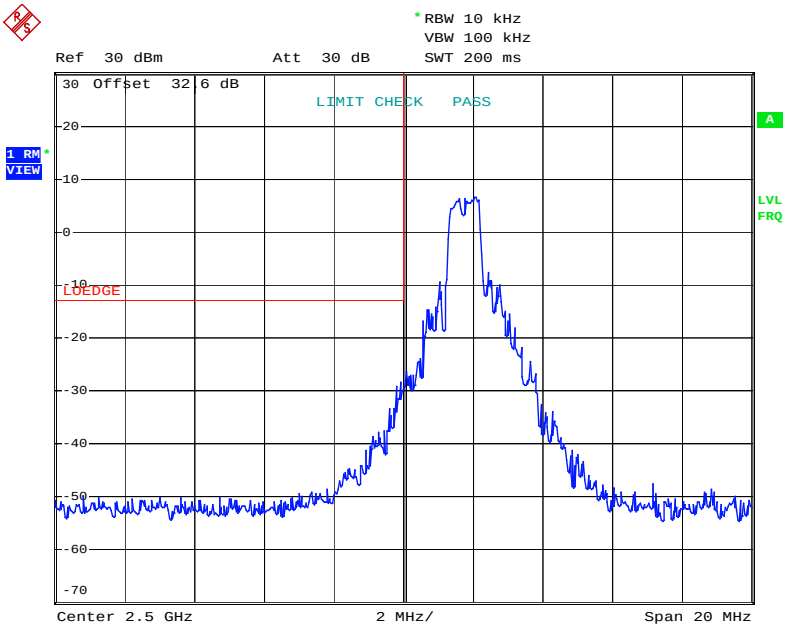


Test Data – Spurious Emissions at Antenna Terminals (continued)

Low bandedge – Navini mode
2500.75 MHz
23 dBm output

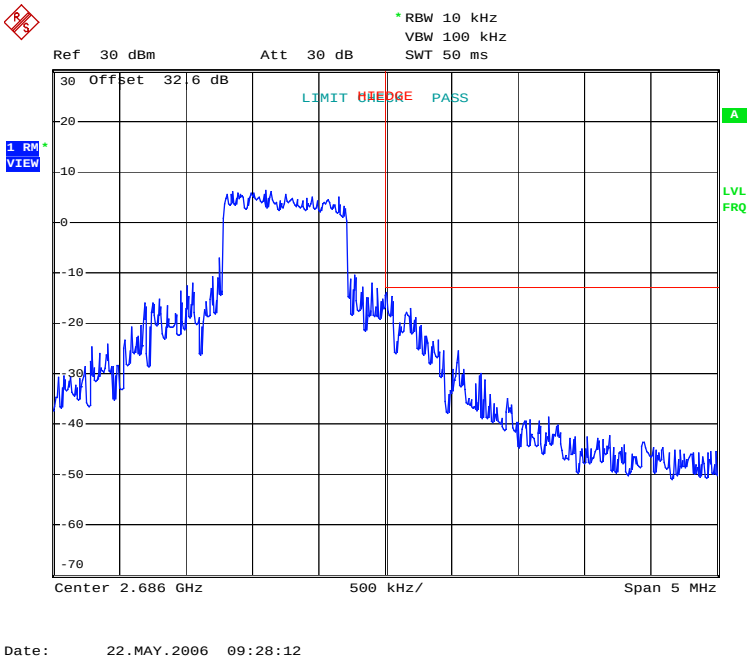


2501.75 MHz
25 dBm output

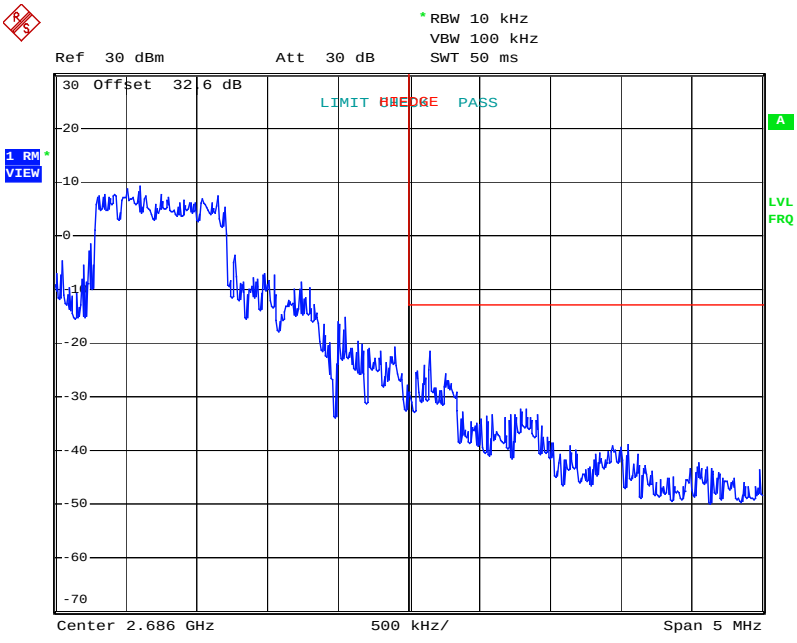


Test Data – Spurious Emissions at Antenna Terminals (continued)

High Bandedge – Navini Mode
2685.25 MHz
23 dBm

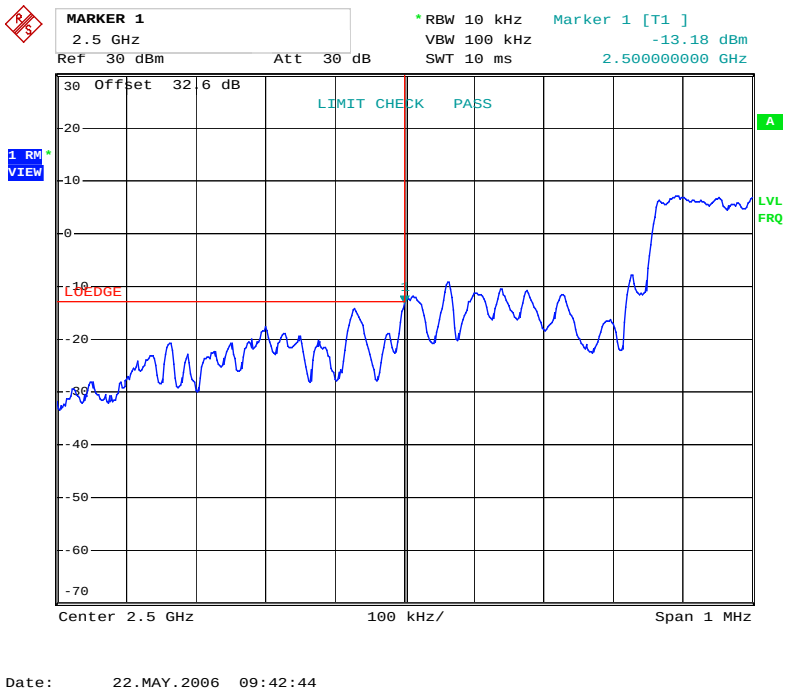


2684.25 MHz
25 dBm

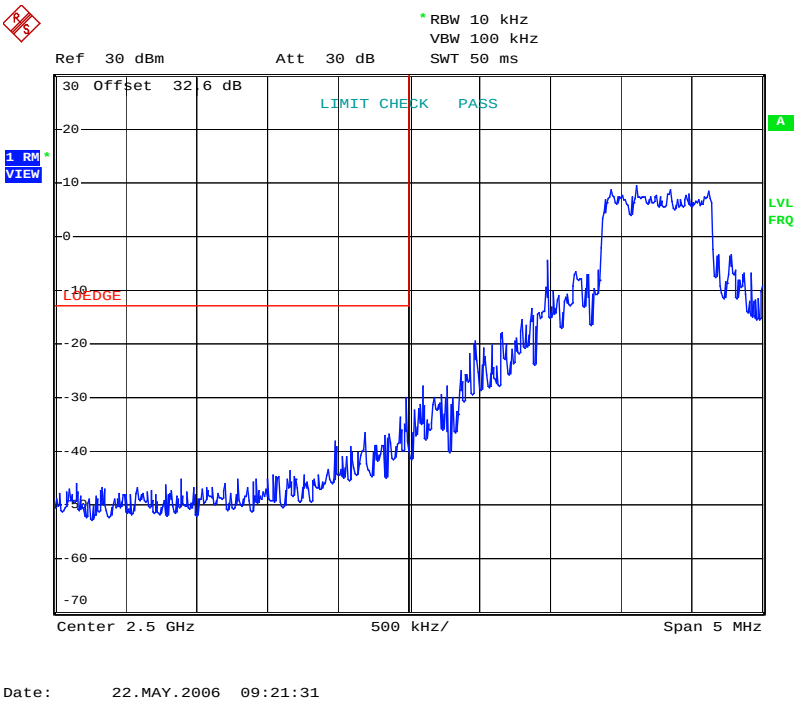


Test Data – Spurious Emissions at Antenna Terminals (continued)

Low bandedge – 0.8 MHz OFDM mode
2500.75 MHz
23 dBm output

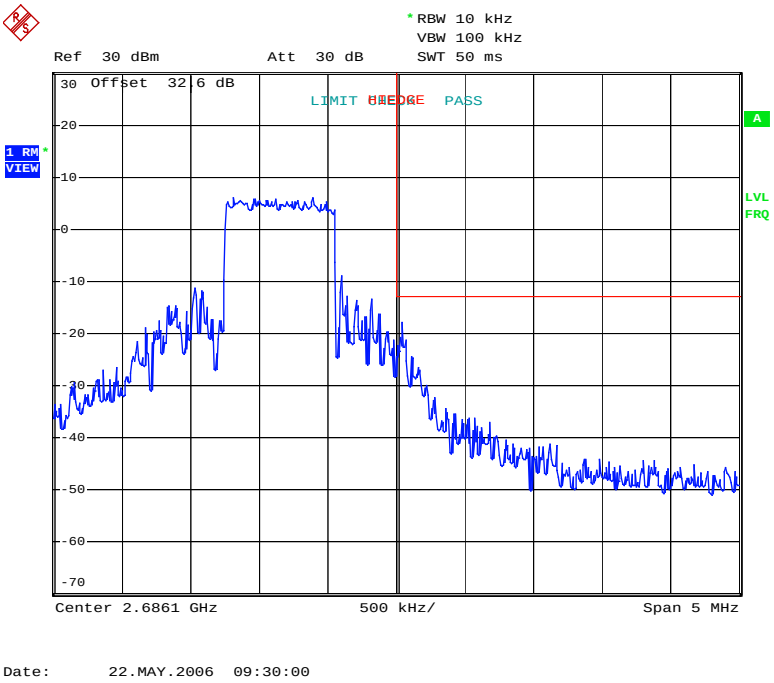


2501.75 MHz
25 dBm output

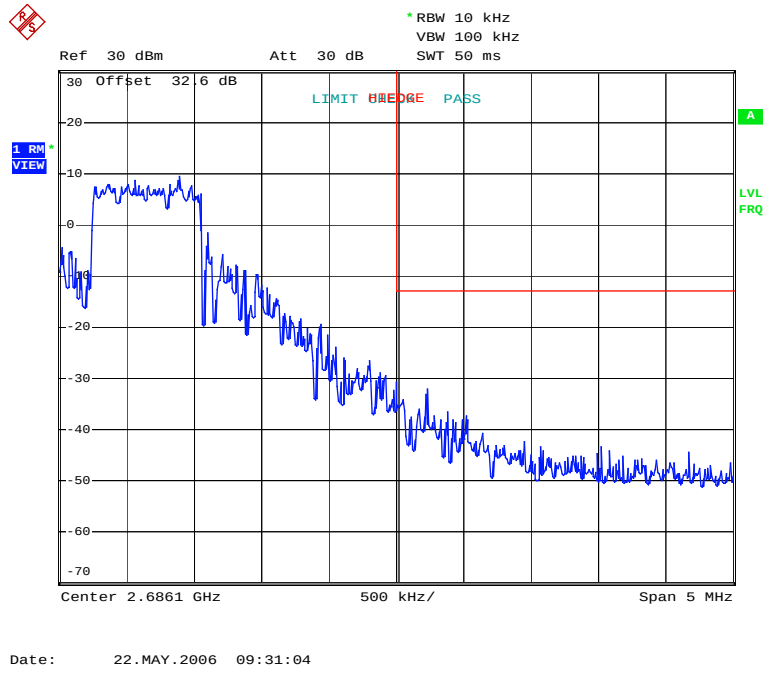


Test Data – Spurious Emissions at Antenna Terminals (continued)

High bandedge – 0.8 MHz OFDM
2685.25 MHz
23 dBm

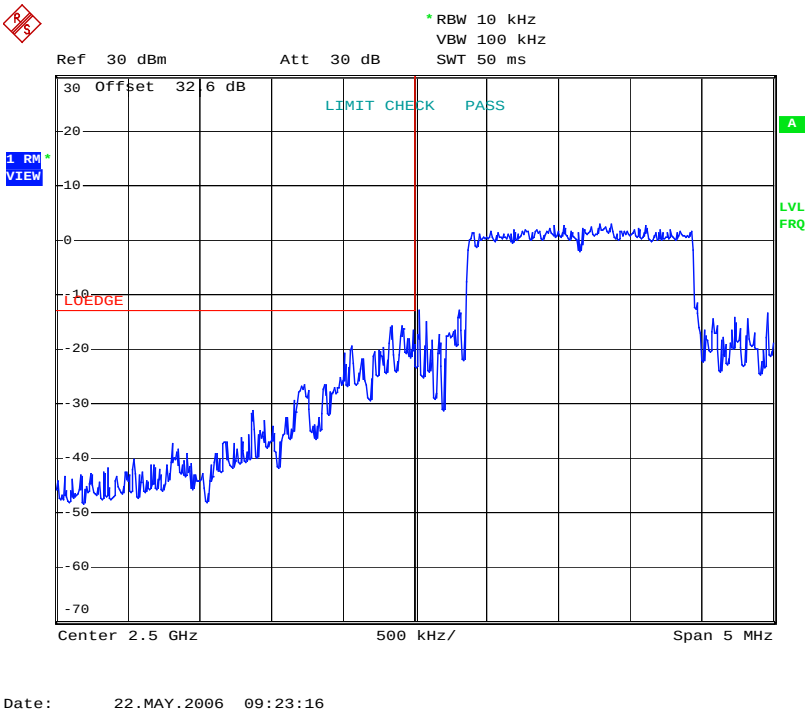


2684.25 MHz
25 dBm

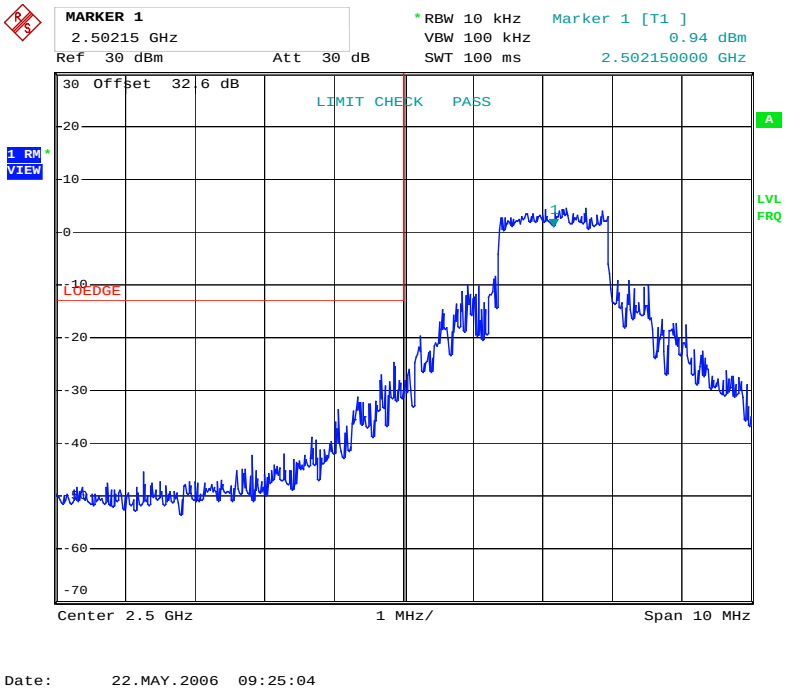


Test Data – Spurious Emissions at Antenna Terminals (continued)

Low bandedge – 1.6 MHz OFDM mode
2501.15 MHz
22 dBm output

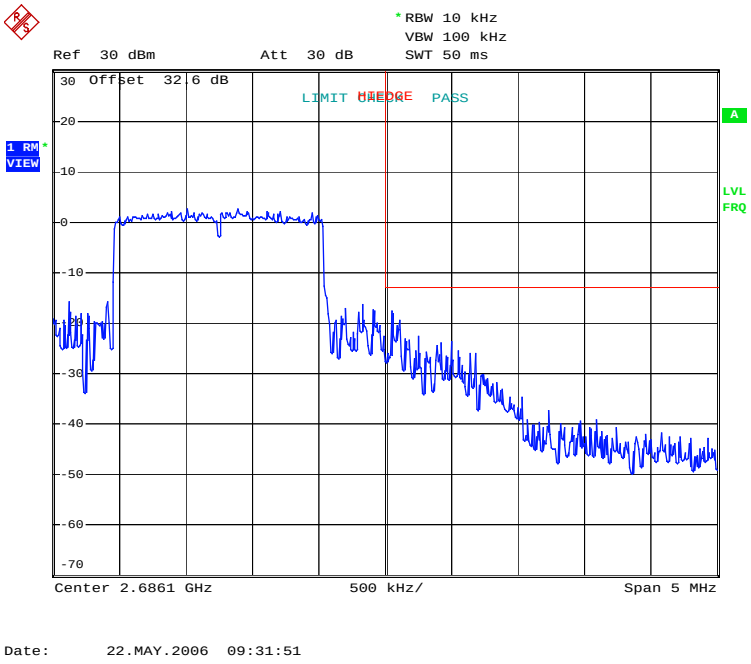


2502.15 MHz
24 dBm output

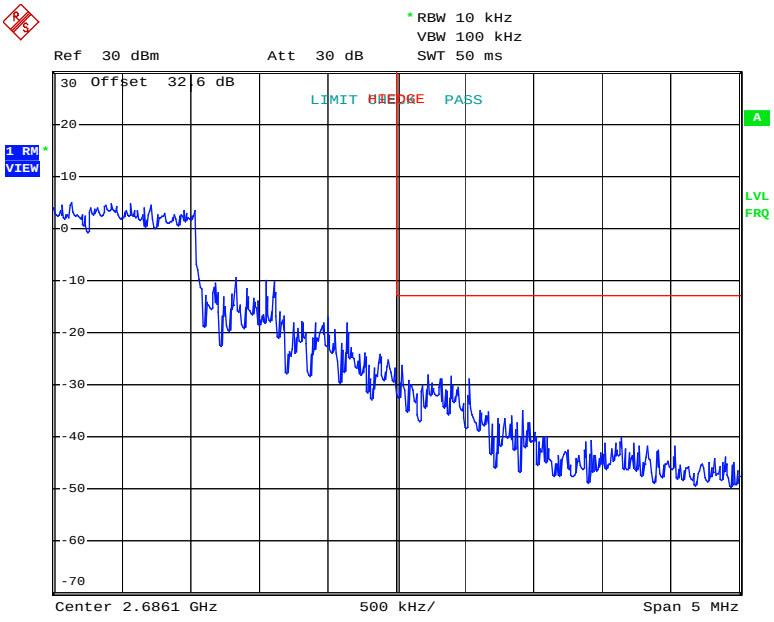


Test Data – Spurious Emissions at Antenna Terminals (continued)

High bandedge – 1.6 MHz OFDM
2684.85 MHz
22 dBm



2683.85 MHz
24 dBm



Test Data – Spurious Emissions at Antenna Terminals - Emissions Mask

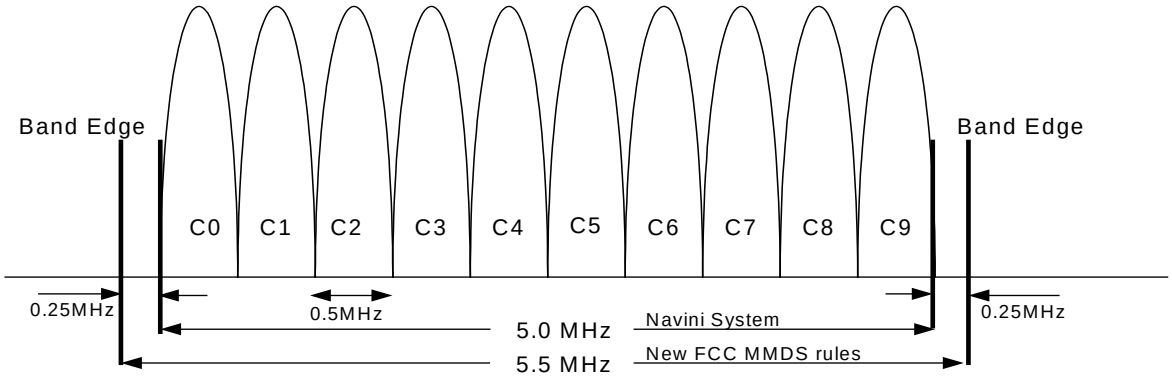
Explanation of Testing Method

In the Navini Mode:

The Navini Networks system is comprised of a BTS, which occupies 5MHz of spectrum. Since the channels are spacing 5.5MHz, that leaves 0.25MHz of guard bands on both the upper and lower edges of the channel for the BTS. Within the 5MHz spectrum which the BTS occupies, there are ten 500kHz carriers (please see figure below.) Of these ten carriers, the PMX will be assigned by the BTS to use two of the ten carriers.

When the PMX is assigned to transmit at carriers C0 & C1 or carriers C8 & C9, there is 0.25MHz guard band from band edge. With this guard band, the PMX is complied for 23dBm avg TX out at the antenna port.

When the PMX is assigned to transmit at carriers C2 & C3, or carriers C4 & C5, or carriers C6 & C7, there is at least 1.25MHz guard band from band edge. With this guard band, the PMX is complied for 25dBm avg TX out at the antenna port.



10-Carrier BTS Signal Operating in a 5 MHz Band

In the WiMax Mode:

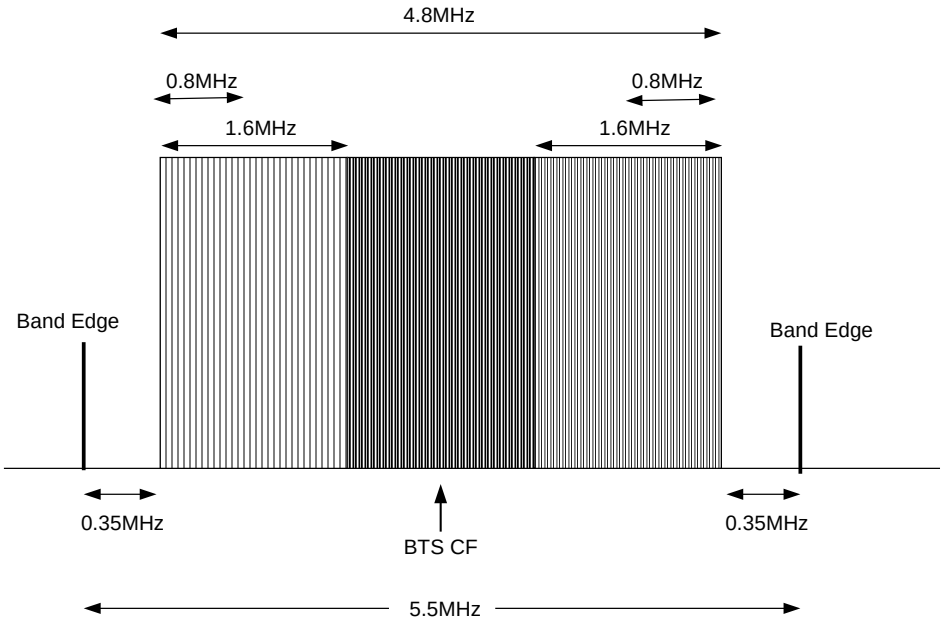
The Navini Networks WiMax system is comprised of a BTS, which occupies 4.8MHz of spectrum. Since the channels are spacing 5.5MHz, that leaves 0.35MHz of guard bands on both the upper and lower edges of the channel for the BTS. Within the 4.8MHz spectrum which the BTS occupies, there is OFDM signal which consists of many tones (please see figure below.) Of these 4.8MHz spectrum, the PMX will be assigned by the BTS to transmit either 800kHz OFDM signal or 1.6MHz OFDM signal any where in the 4.8MHz spectrum.

When the PMX is assigned to transmit an 800kHz OFDM at the edge of the 4.8MHz spectrum, there is 0.35MHz guard band from band edge. With this guard band, the PMX is complied for 23dBm avg TX out at the antenna port.

When the PMX is assigned to transmit a 1.6MHz OFDM at the edge of the 4.8MHz spectrum, there is 0.35MHz guard band from band edge. With this guard band, the PMX is complied for 22dBm avg TX out at the antenna port.

When the PMX is assigned to transmit an 800kHz OFDM at 1MHz or more away from the edge of the 4.8MHz spectrum, there is at least 1.35MHz guard band from band edge. With this guard band, the PMX is complied for 25dBm avg TX out at the antenna port.

When the PMX is assigned to transmit a 1.6MHz OFDM at 1MHz or more away from the edge of the 4.8MHz spectrum, there is at least 1.35MHz guard band from band edge. With this guard band, the PMX is complied for 24dBm avg TX out at the antenna port.



BTS with 4.8MHz OFDM Signal in the 5.5MHz MMDS Band

Section 6. Field Strength of Spurious

NAME OF TEST: Field Strength of Spurious Emissions	PARA. NO.: 2.1053
TESTED BY: David Light	DATE: 5/22/2006

Test Results: Complies

Measurement Data: See attached table.

Test Equipment Used: 1464-1484-1485-993-759-760-1016-791

Test Conditions: Temperature: 22 °C

Humidity: 41 %

Test Data – Field Strength of Spurious Emissions

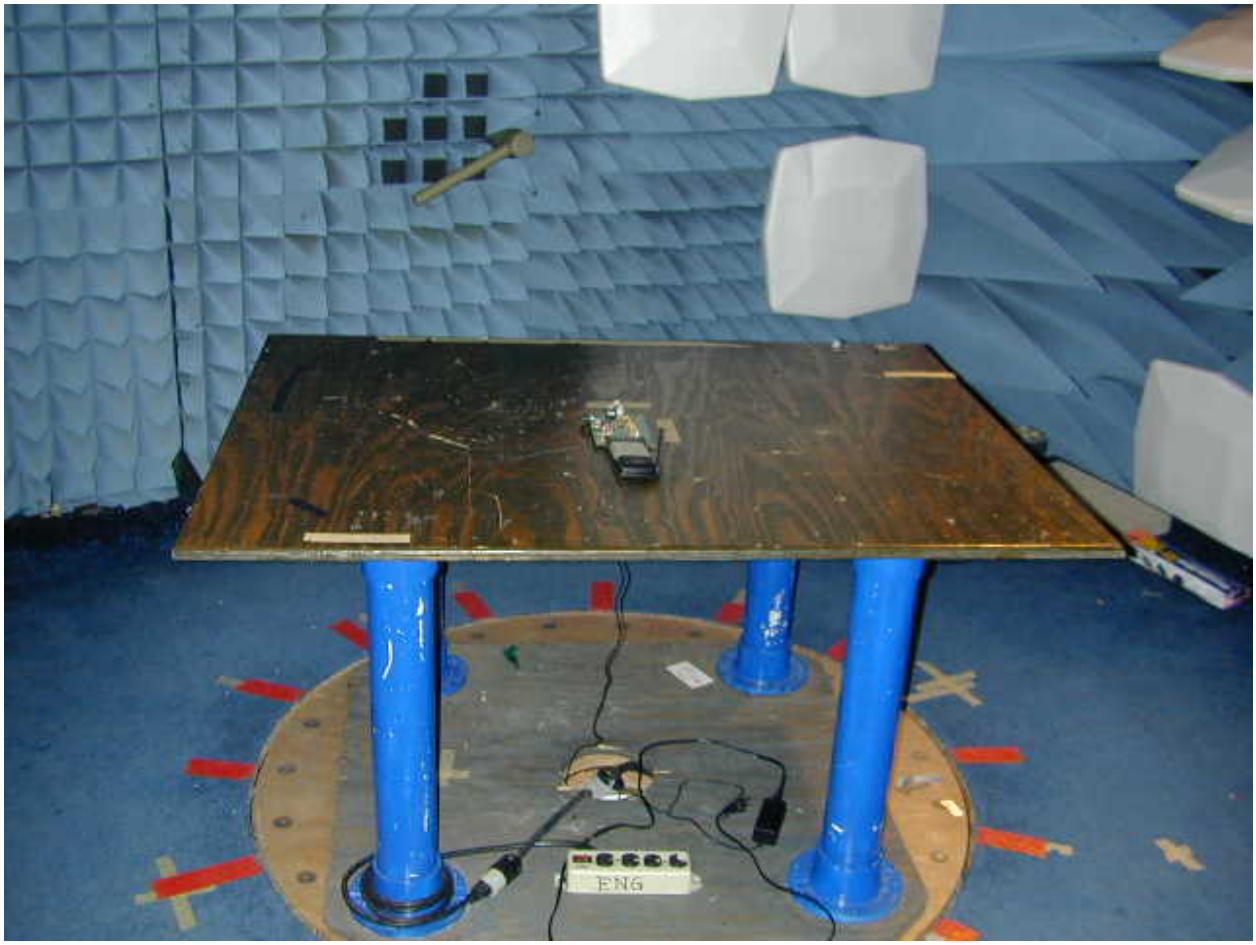
Frequency (MHz)	Meter Reading (dBm)	Correction Factor (dB)		Pre-Amp Gain (dB)	Substitution Antenna Gain (dBi)		EIRP (dBm)	EIRP (mW)	Polarity	Comments
										Tx 2584.5 MHz
										Navini Mode
5170	-60.2	42.0		32	10.7		-39.5	0.0001	V	
7755	-63.3	32.8		32.8	11.2		-52.1	0.0000	V	
10340	-59.3	41.9		36	11.7		-41.7	0.0001	V	
										0.8 MHz OFDM
5170	-60.5	42.0		32	10.7		-39.8	0.0001	V	
7755	-58.5	41.6		36	11.2		-41.7	0.0001	V	
12925	-62.1	44.2		33.3	13.2		-38.0	0.0002	V	
										1.6 MHz OFDM
5170	-61.3	42.0		32	10.7		-40.6	0.0001	V	
7755	-61.6	41.6		36	11.2		-44.8	0.0000	V	
12925	-63.3	44.2		33.3	13.2		-39.2	0.0001	V	

Notes:

The spectrum was searched from 30 MHz to the 10th harmonic of the carrier.

All emissions detected are reported.

Photos – Radiated Emissions



Section 7. Frequency Stability

NAME OF TEST: Frequency Stability	PARA. NO.: 2.1055
TESTED BY: David Light	DATE: 5/23/2006

Test Results: Complies

Measurement Data: See attached plots.

Test Equipment Used: 1082-1659-283-619

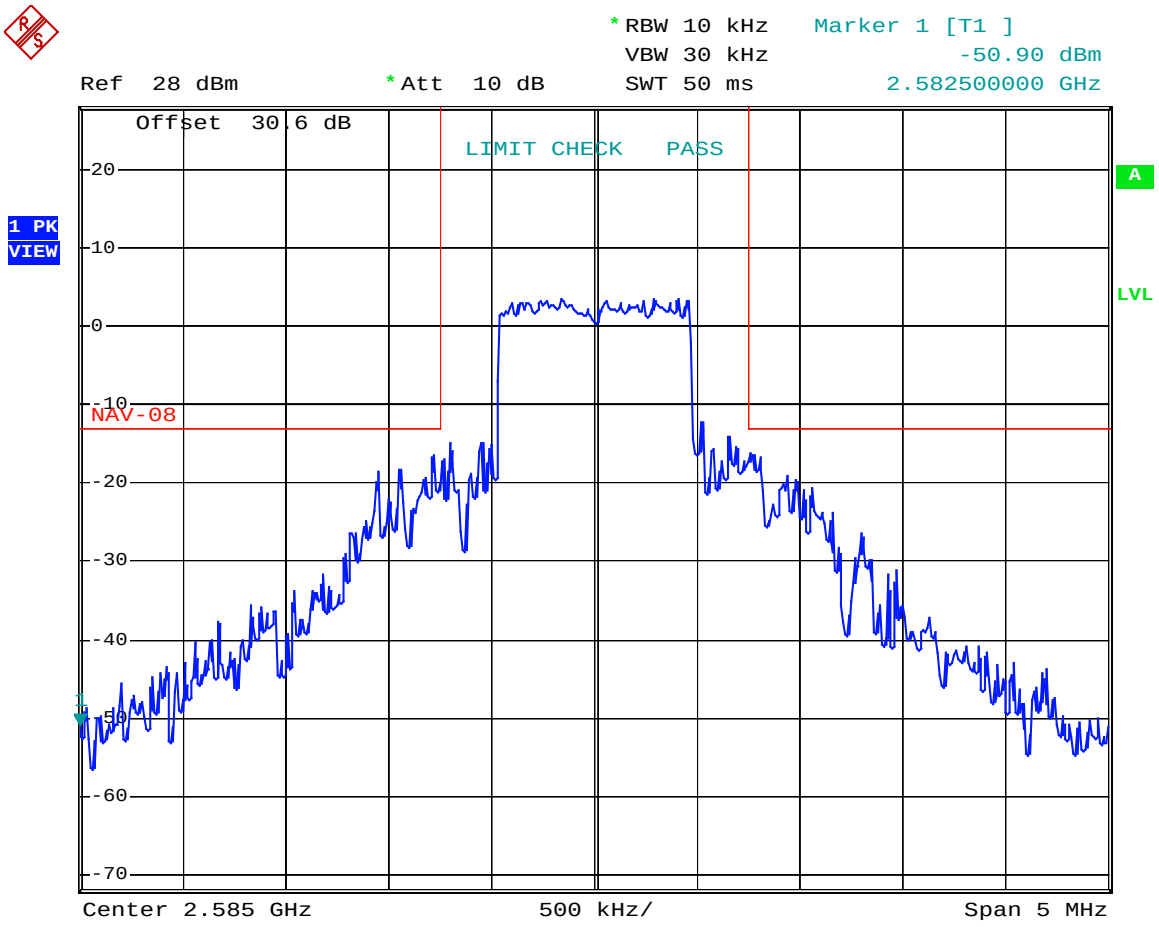
Test Conditions: Temperature: 22 °C

Humidity: 41 %

Standard Supply Voltage: 120 Vac

Test Data – Frequency Stability

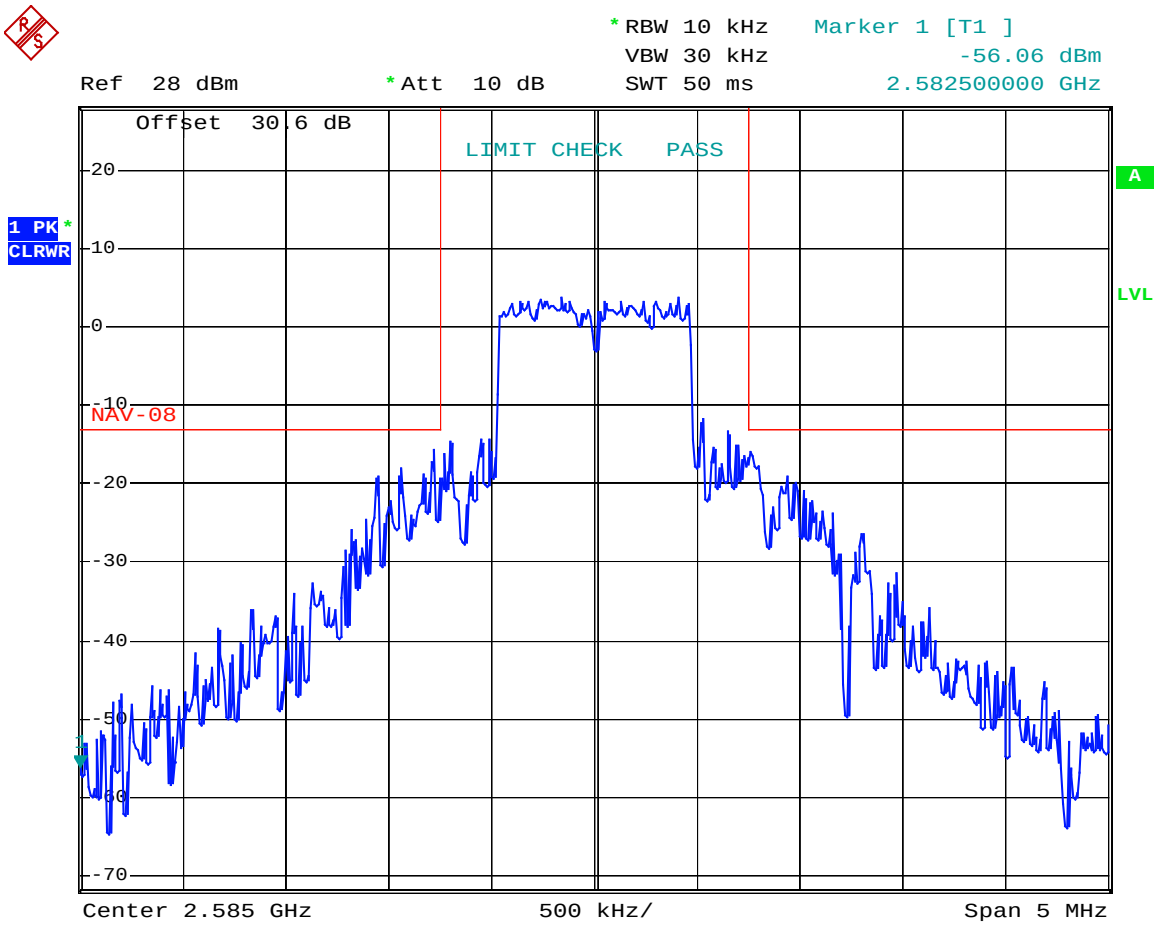
Navini Mode
+20 C / 102 Vac



Date: 23.MAY.2006 10:42:18

Test Data – Frequency Stability

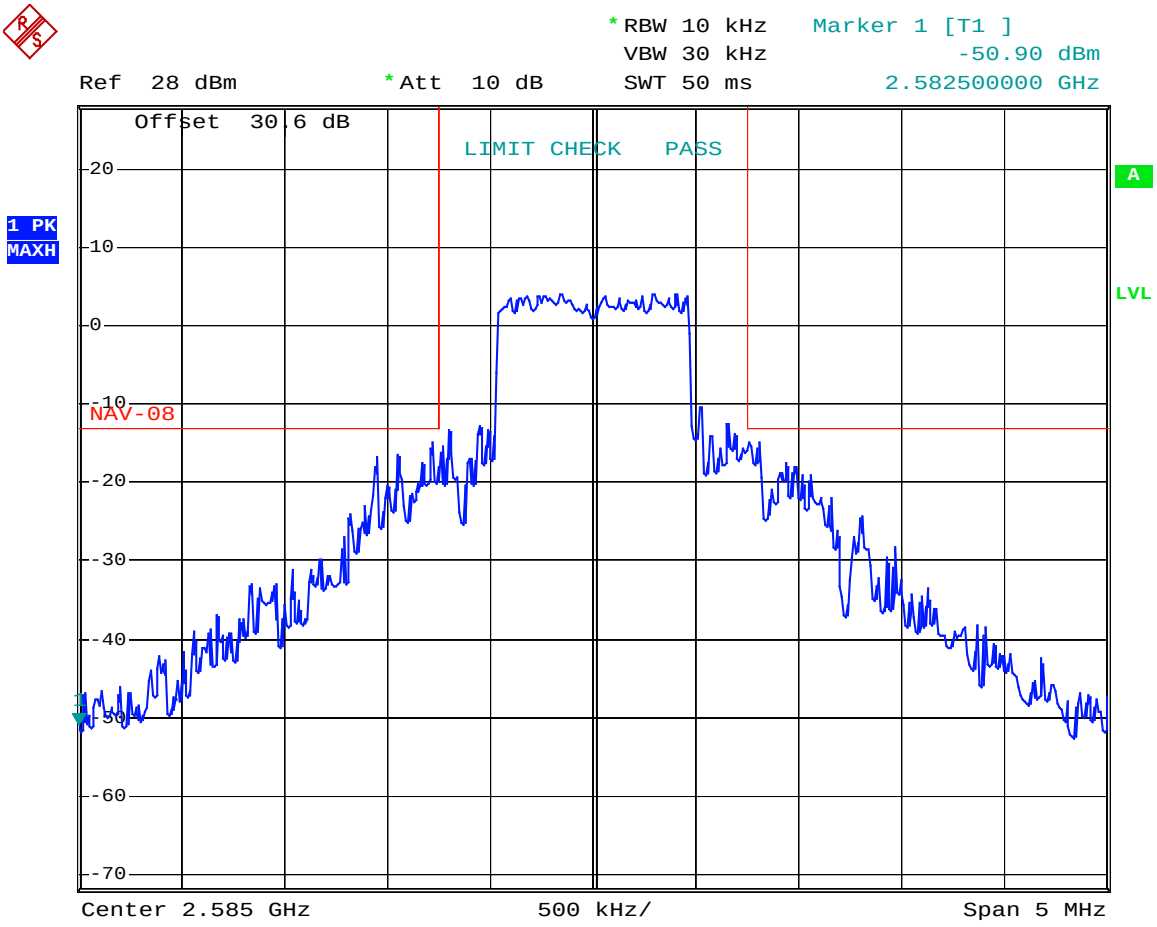
Navini Mode
+20 C/ 138 Vac



Date: 23.MAY.2006 10:38:31

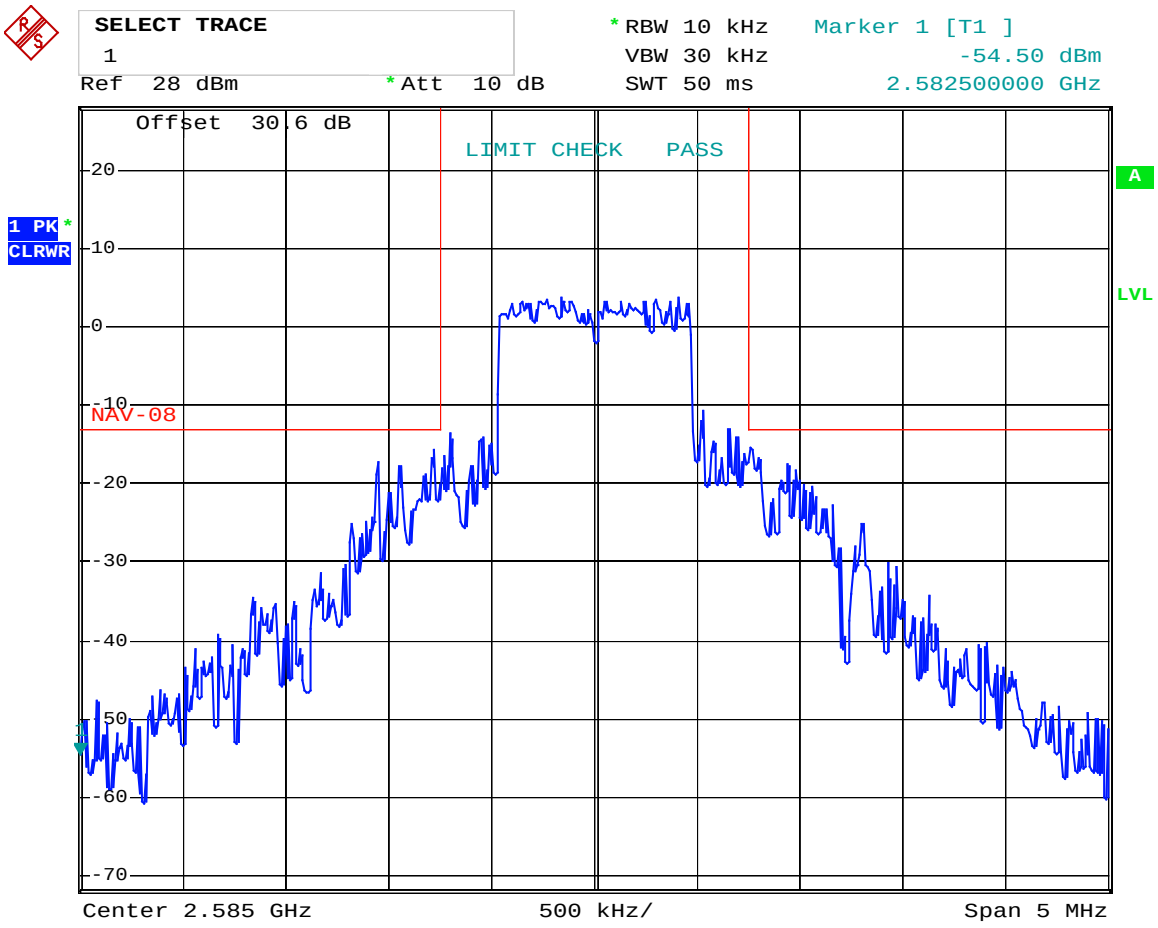
Test Data – Frequency Stability

Navini Mode
+20 C / 120 Vac



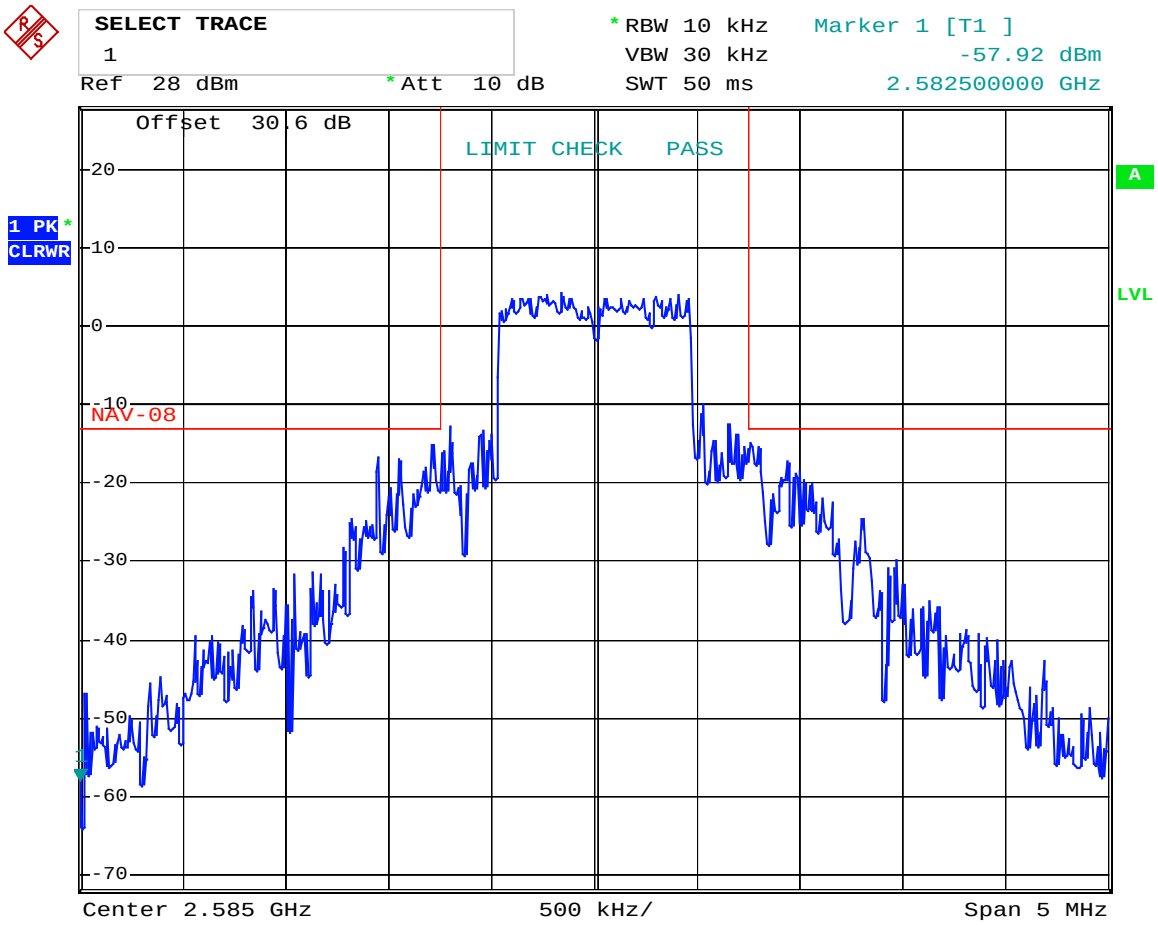
Date: 23.MAY.2006 10:33:59

Test Data – Frequency Stability
Navini Mode
+50 C



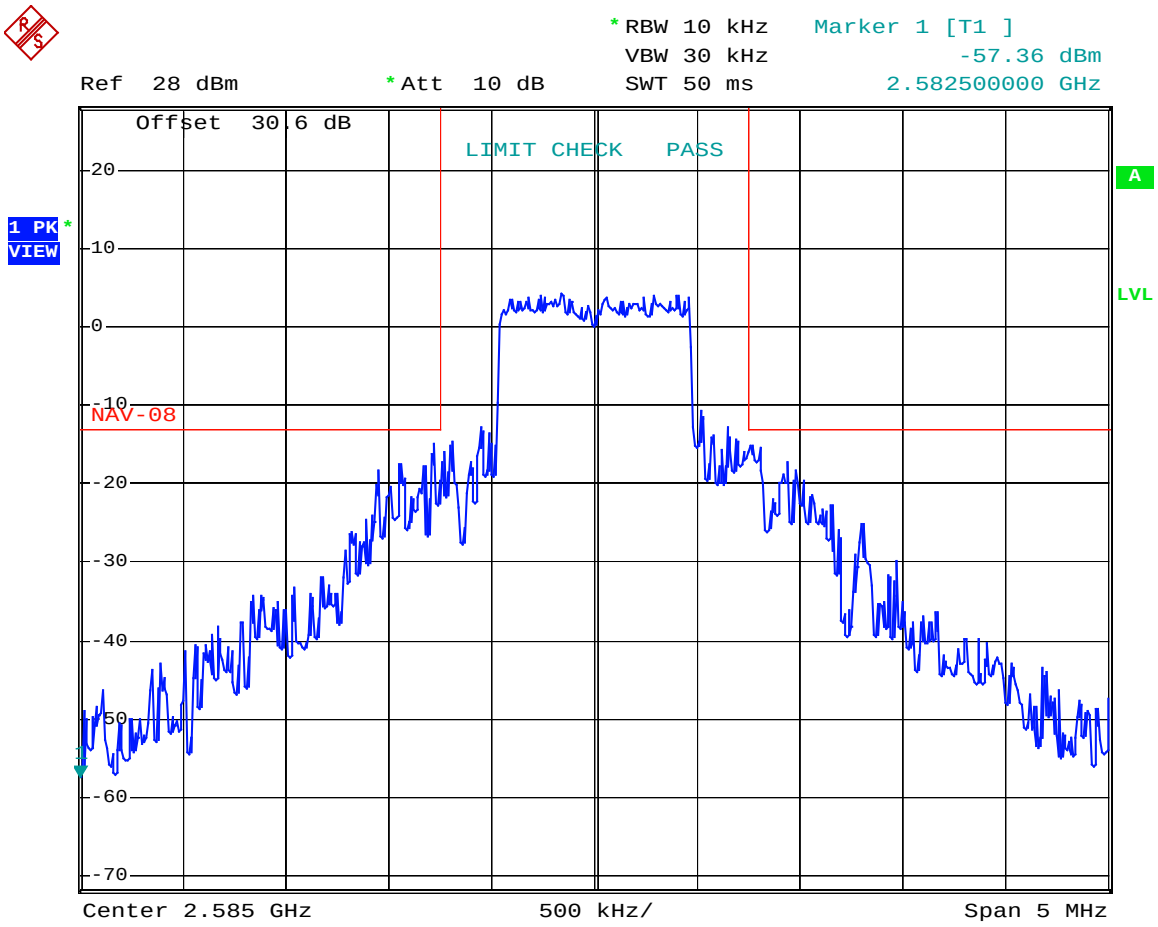
Test Data – Frequency Stability

Navini Mode
+40 C



Test Data – Frequency Stability

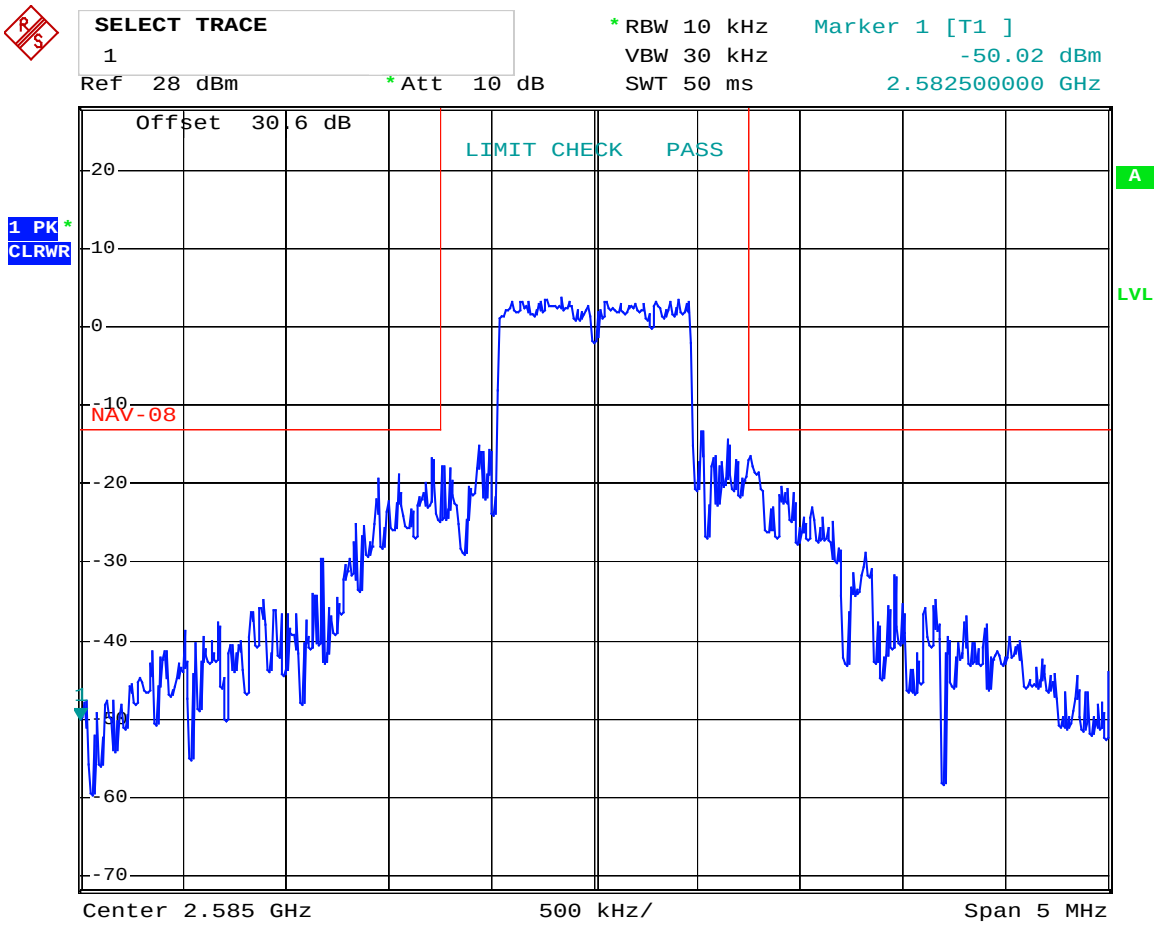
Navini Mode
+30 C



Date: 23.MAY.2006 12:19:33

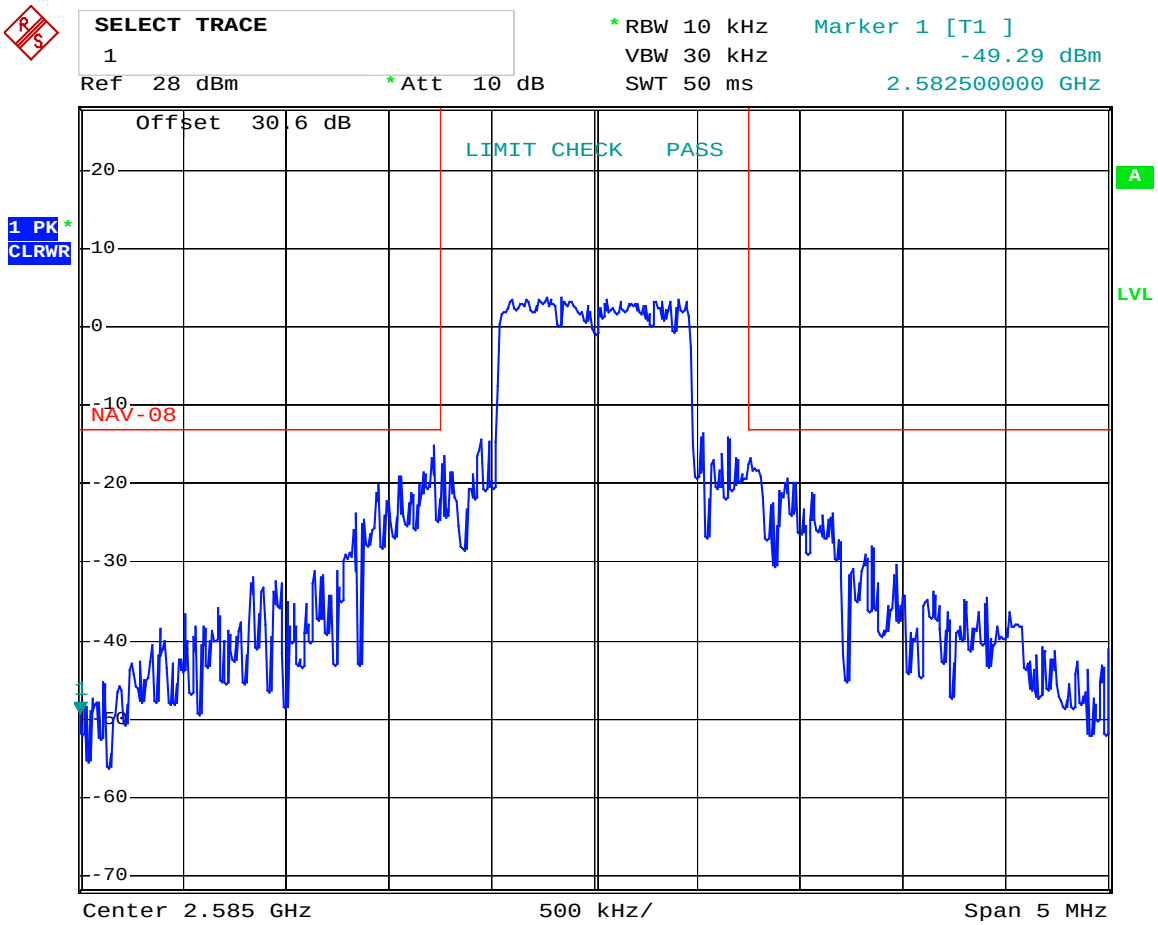
Test Data – Frequency Stability

Navini Mode
+10 C



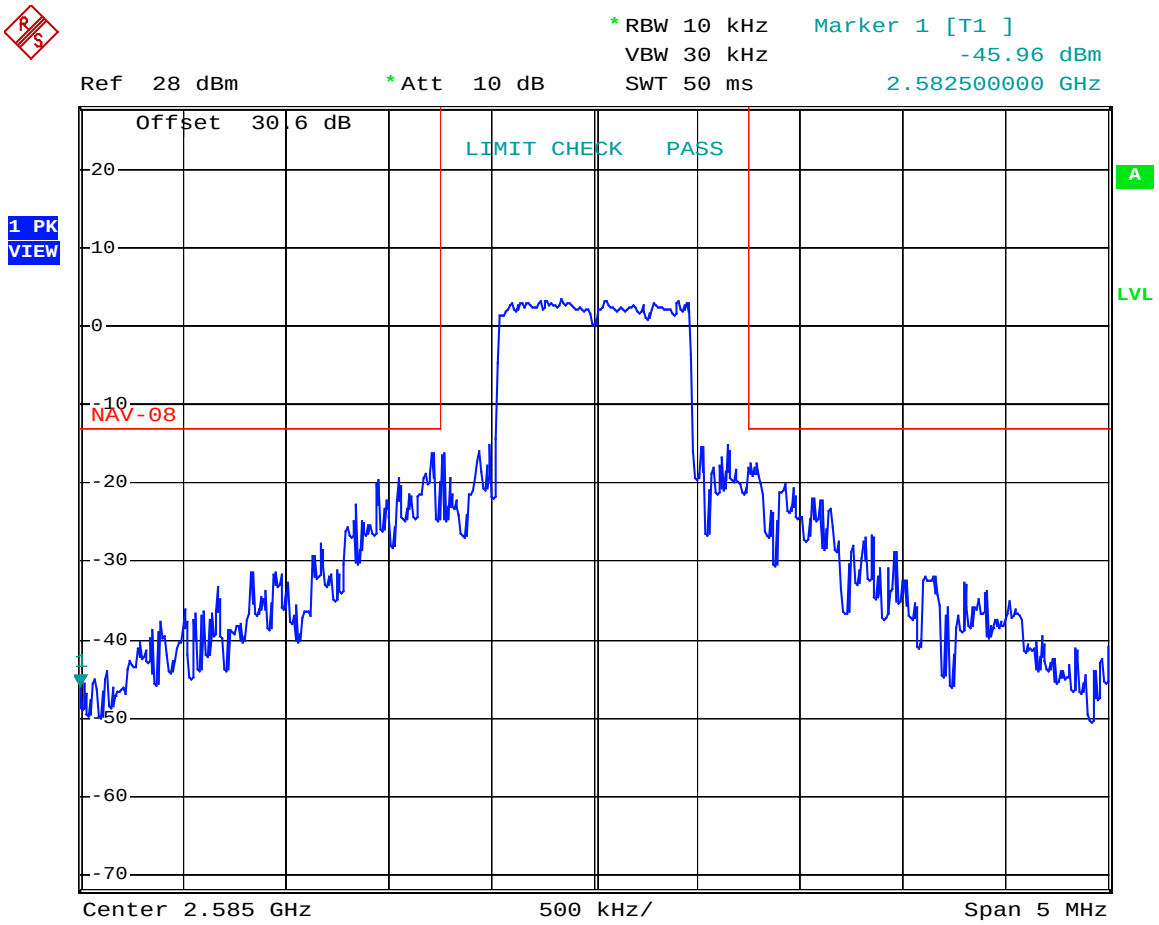
Test Data – Frequency Stability

Navini Mode
0 C



Test Data – Frequency Stability

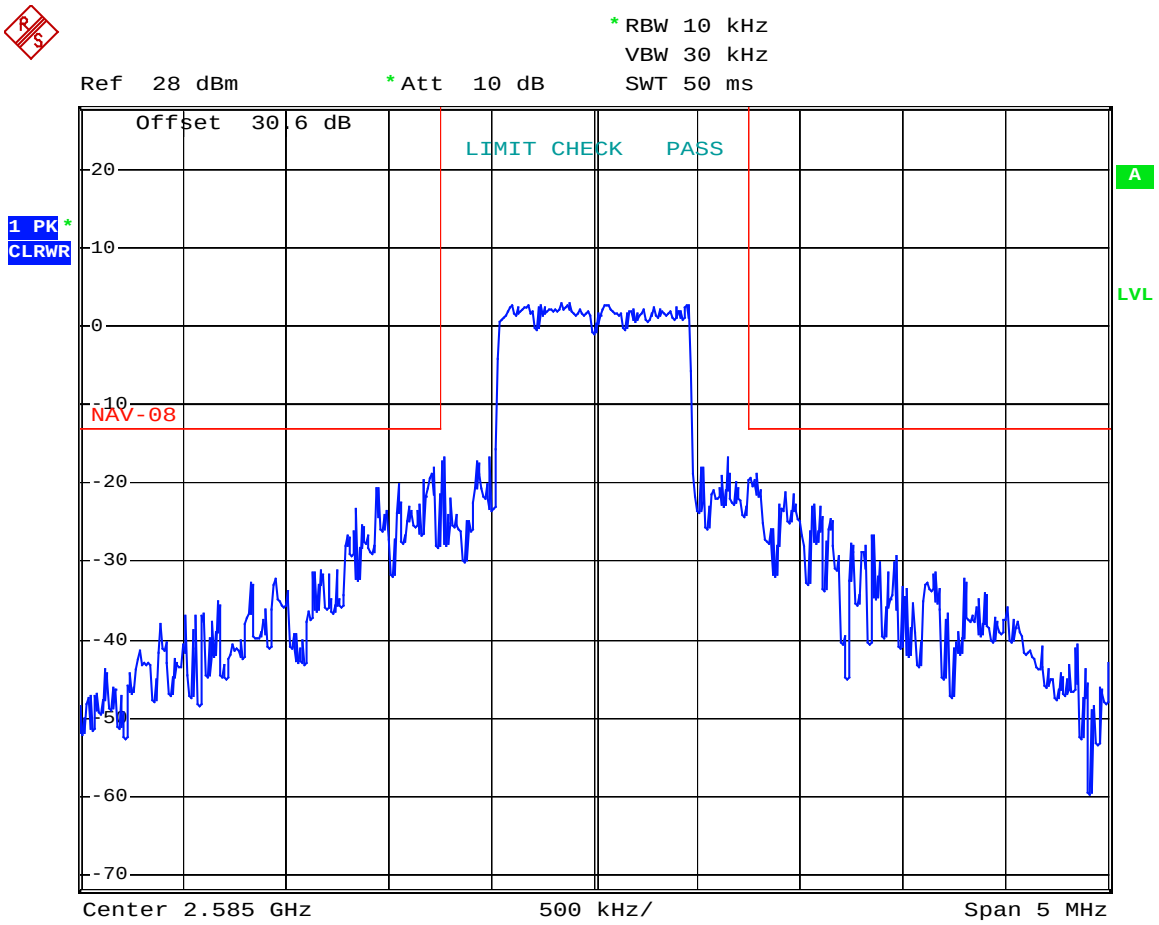
Navini Mode
-10 C



Date: 23.MAY.2006 14:00:30

Test Data – Frequency Stability

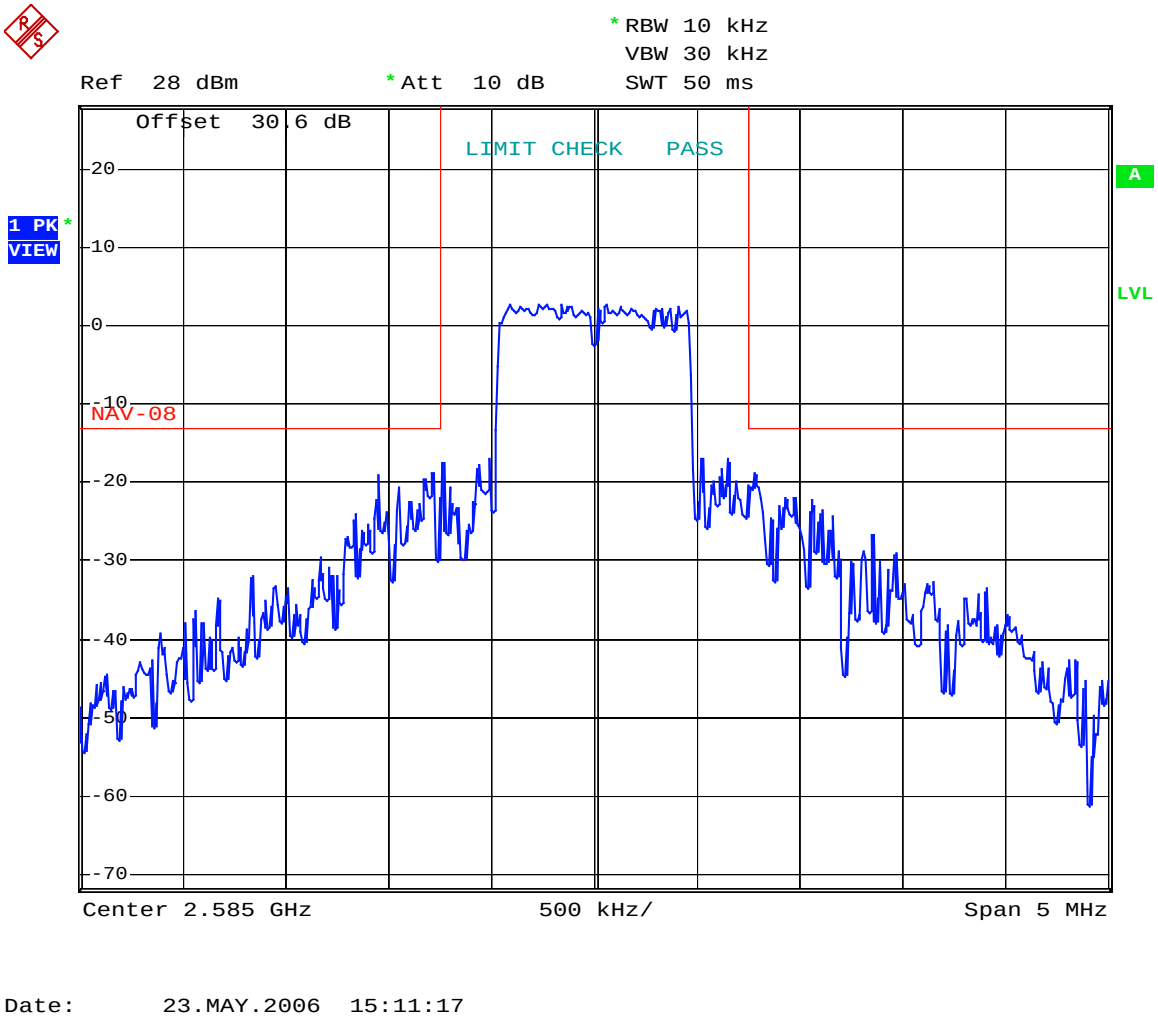
Navini Mode
-20 C



Date: 23.MAY.2006 14:33:02

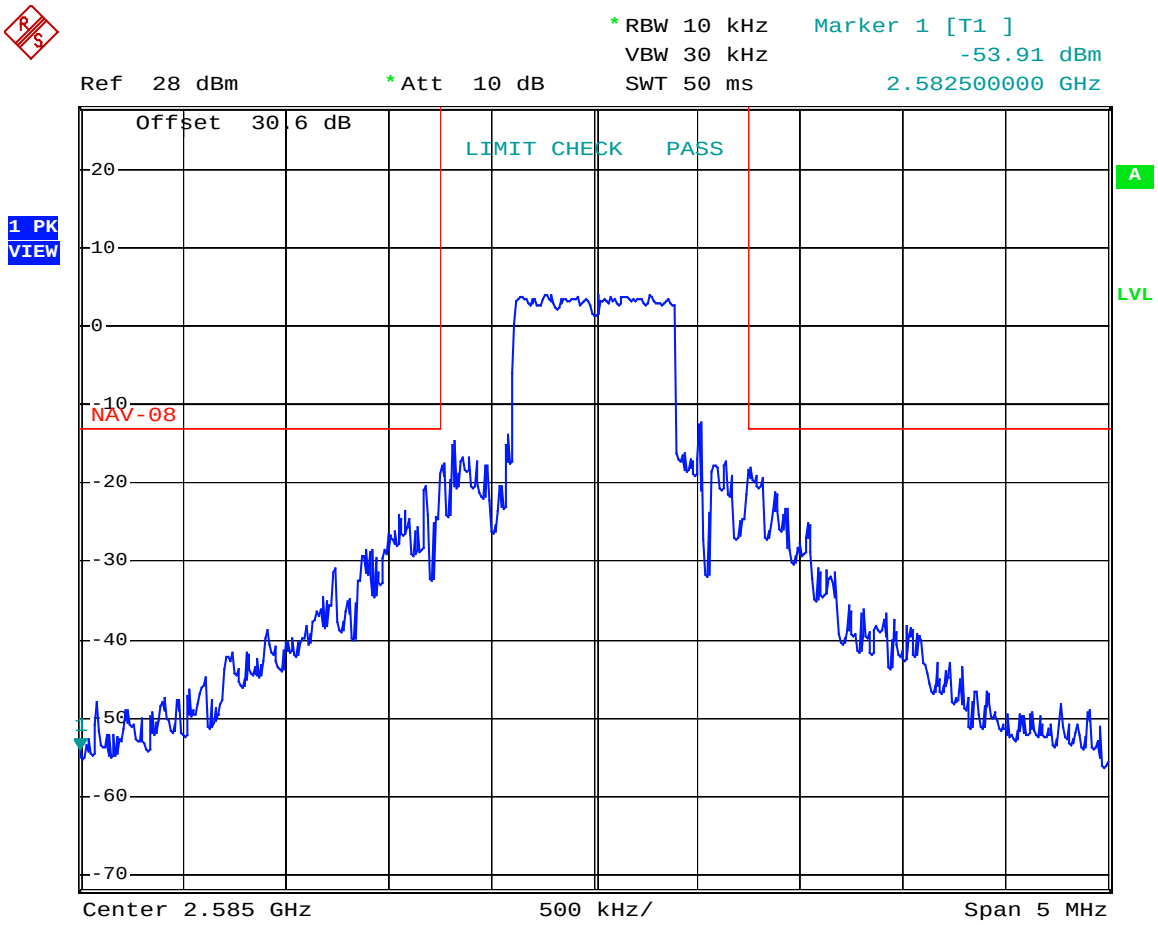
Test Data – Frequency Stability

Navini Mode
-30 C



Test Data – Frequency Stability

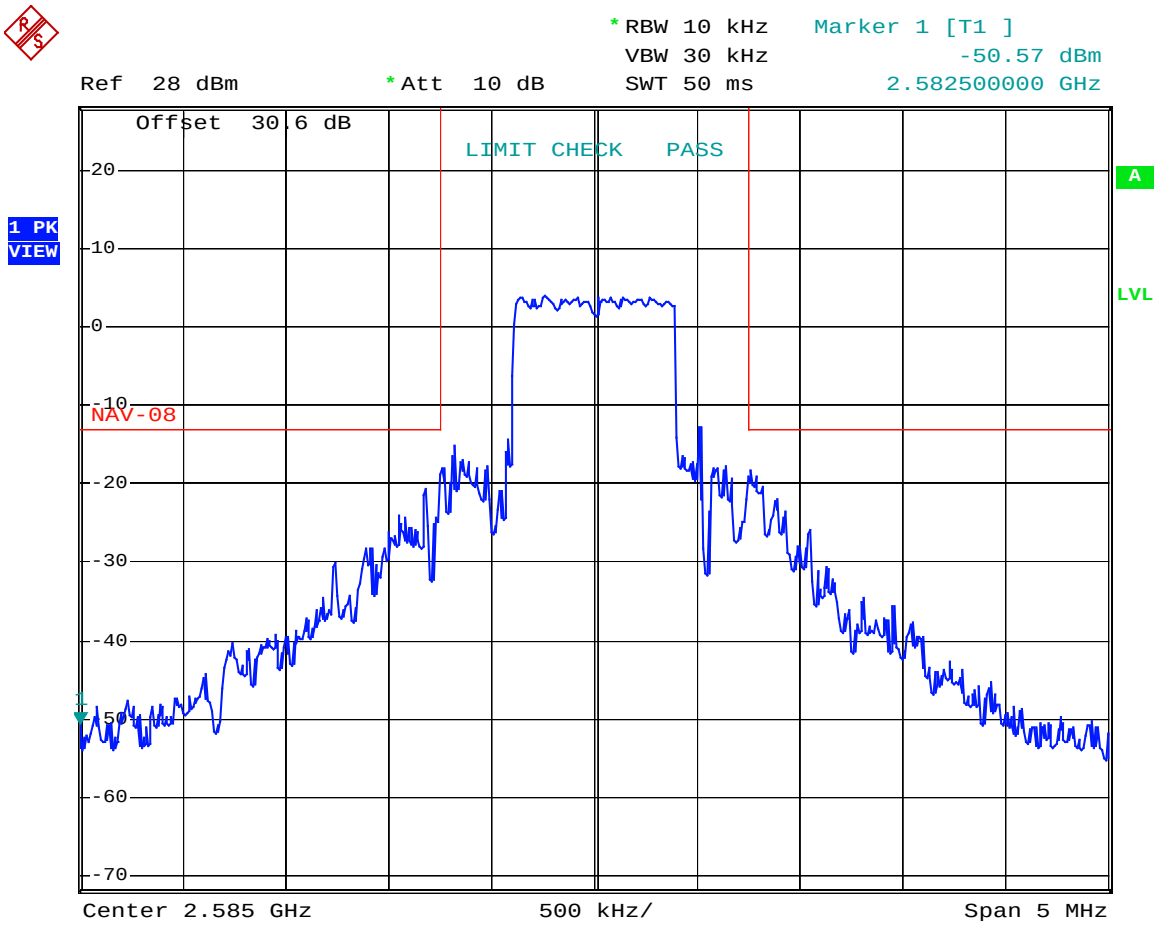
800 kHz OFDM Mode
+20 C / 102 Vac



Date: 23.MAY.2006 10:39:13

Test Data – Frequency Stability

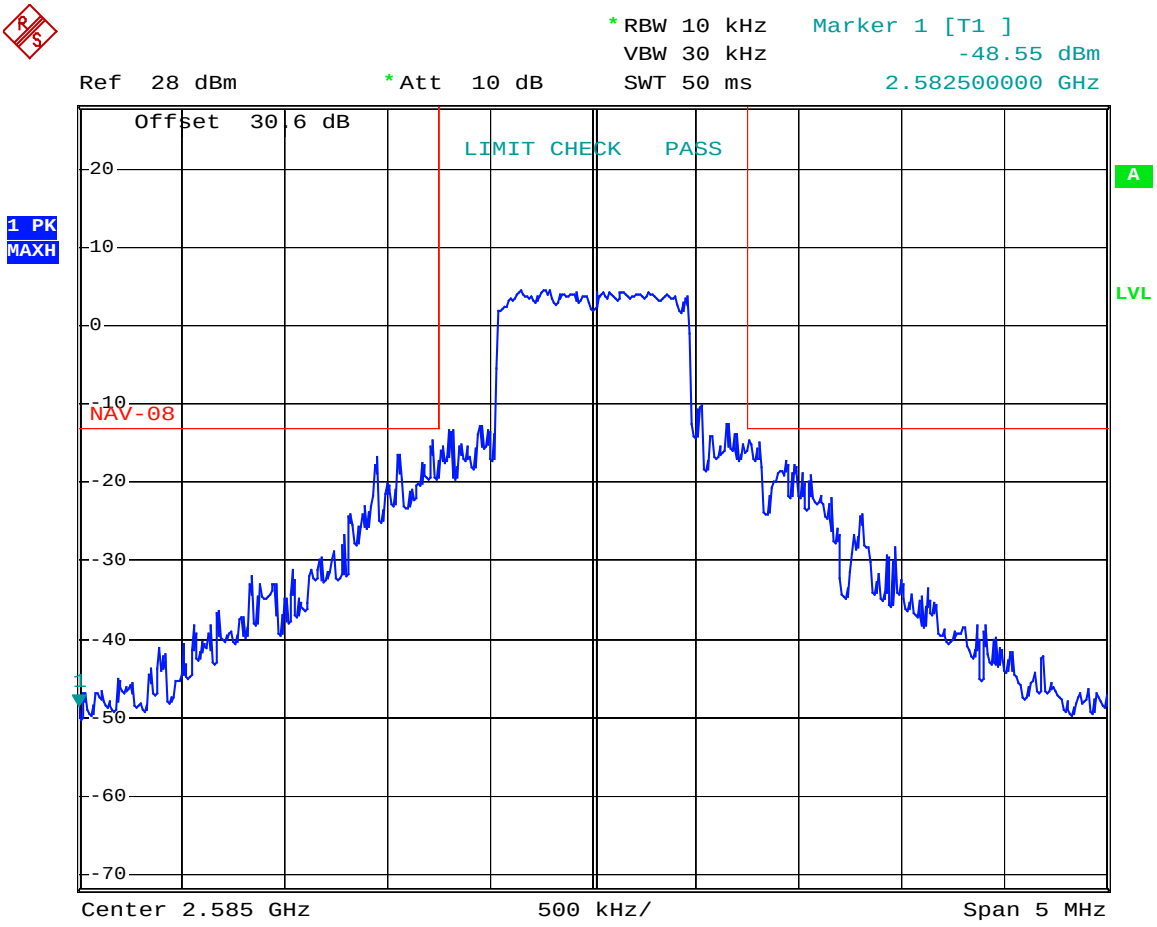
800 kHz OFDM Mode
+20 C/ 138 Vac



Date: 23.MAY.2006 10:42:37

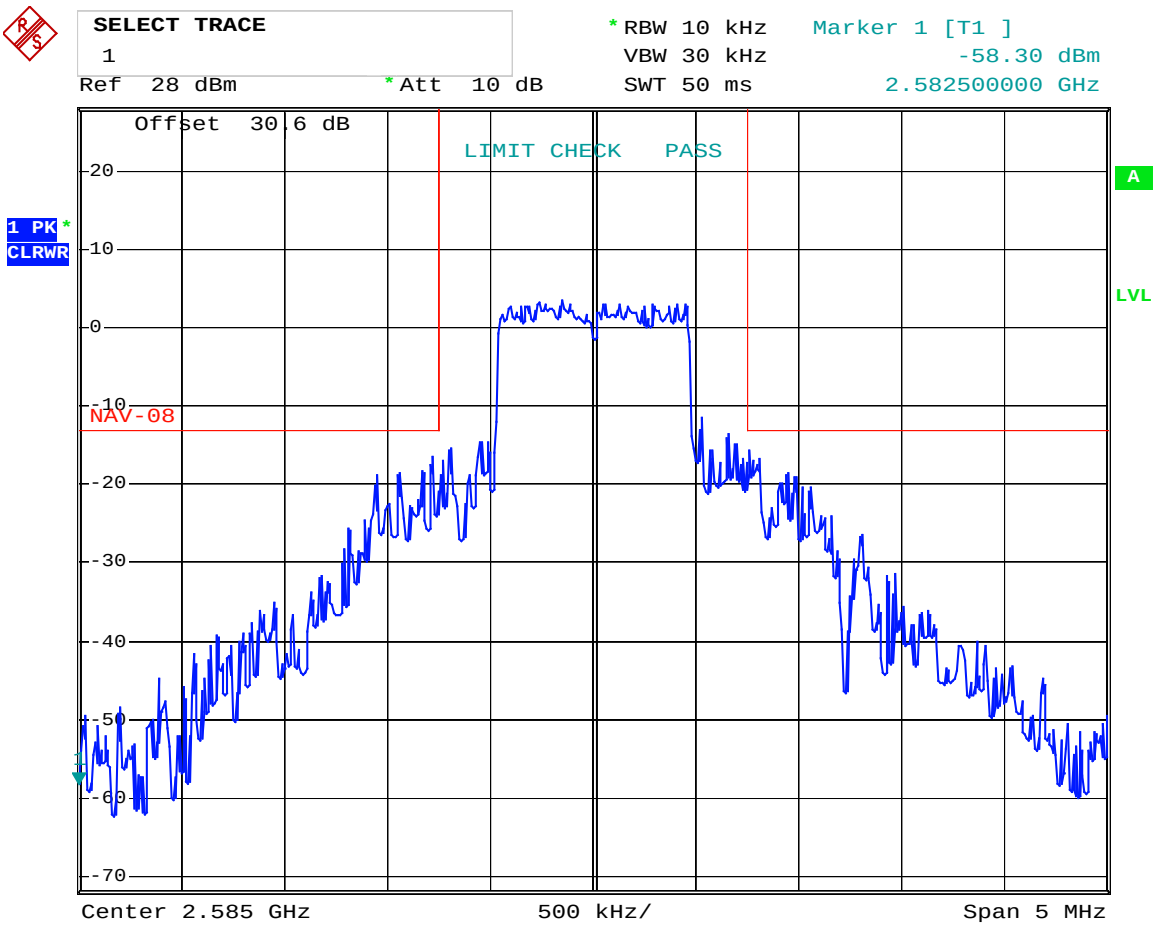
Test Data – Frequency Stability

800 kHz OFDM Mode
+20 C / 120 Vac



Date: 23.MAY.2006 10:34:38

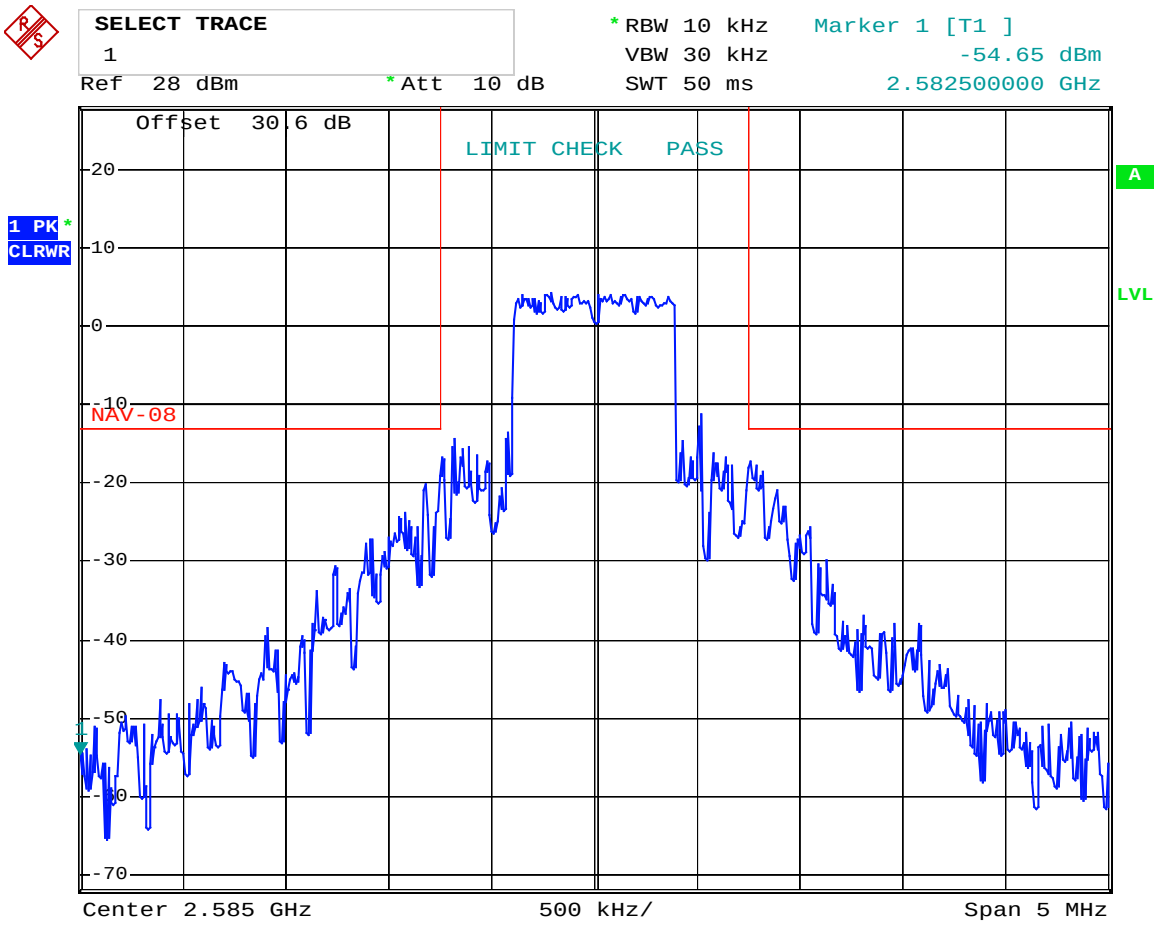
Test Data – Frequency Stability
800 kHz OFDM Mode
+50 C



Date: 23.MAY.2006 11:22:32

Test Data – Frequency Stability

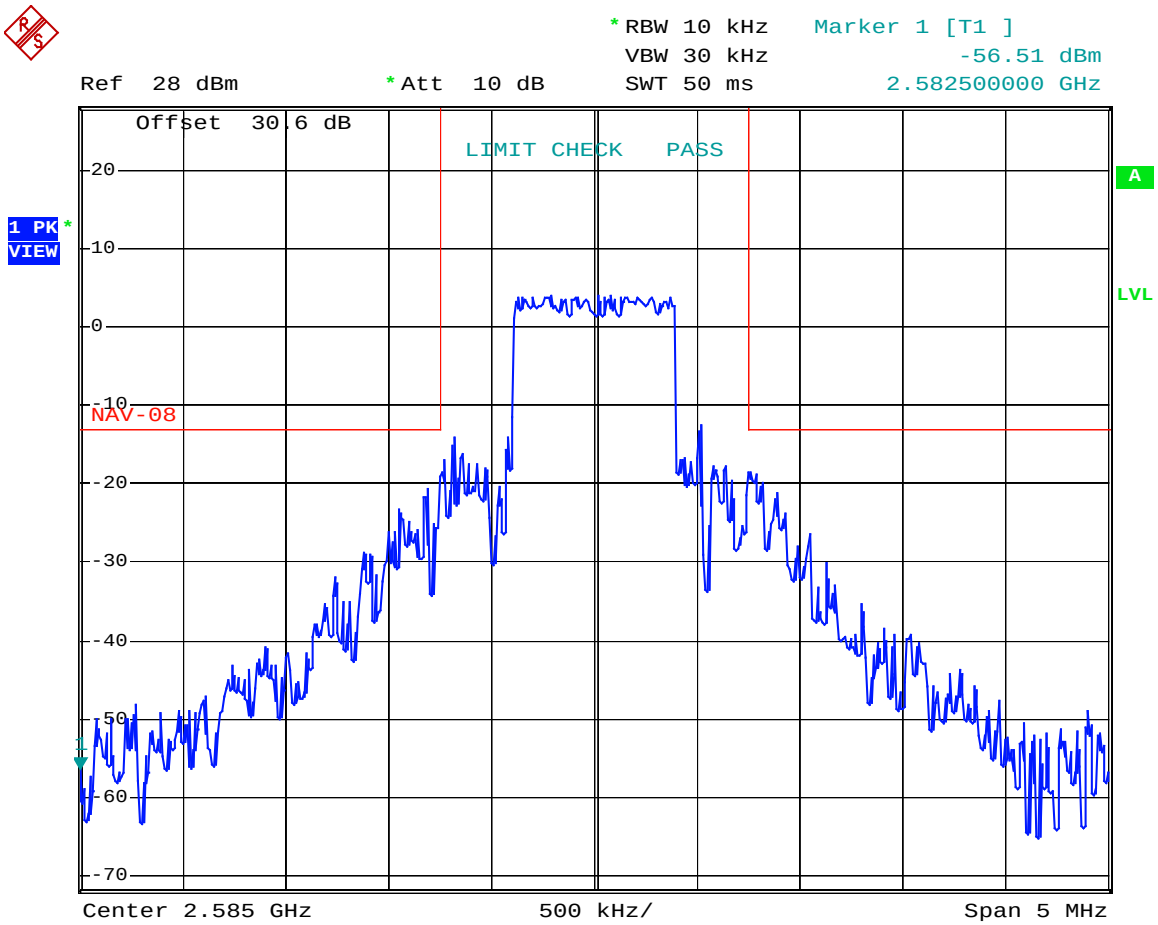
800 kHz OFDM Mode
+40 C



Date: 23.MAY.2006 12:00:58

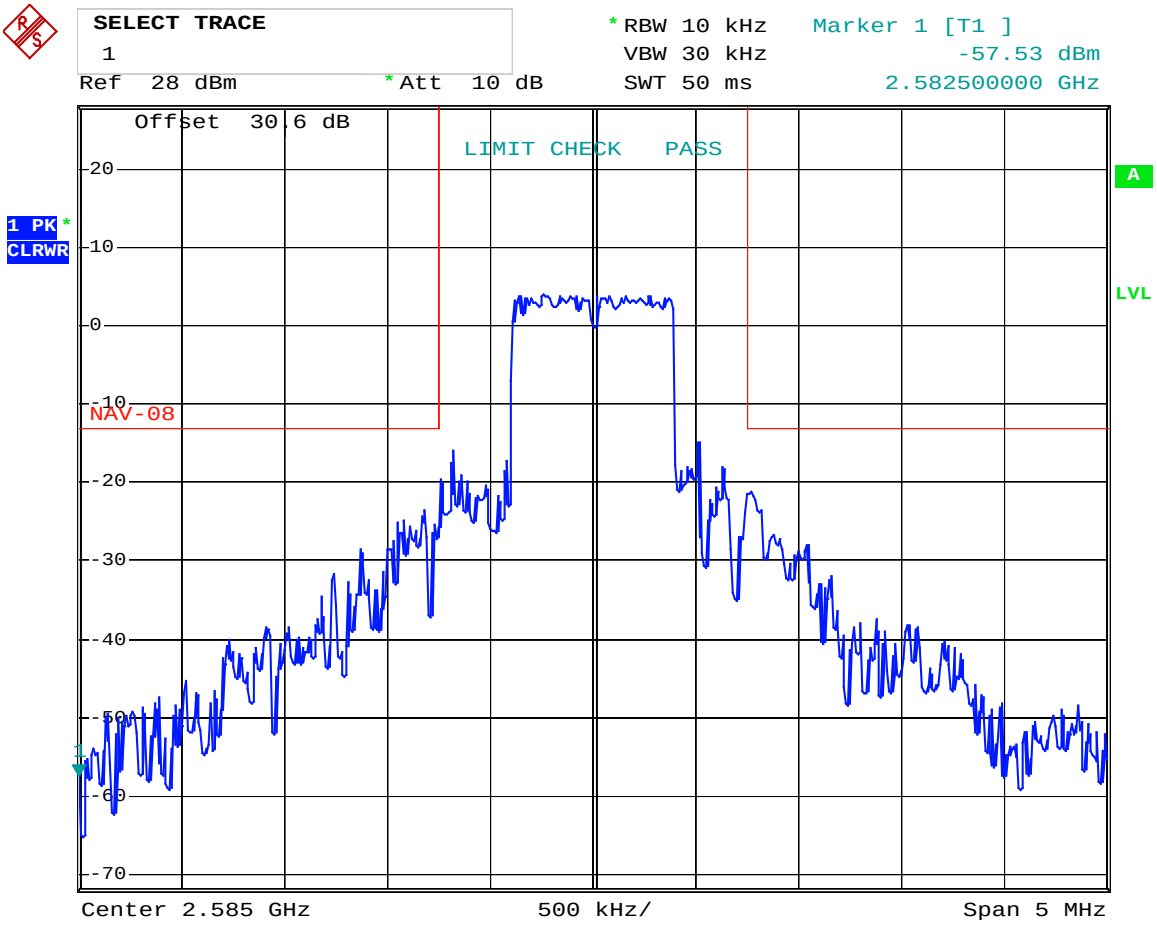
Test Data – Frequency Stability

800 kHz OFDM Mode
+30 C



Test Data – Frequency Stability

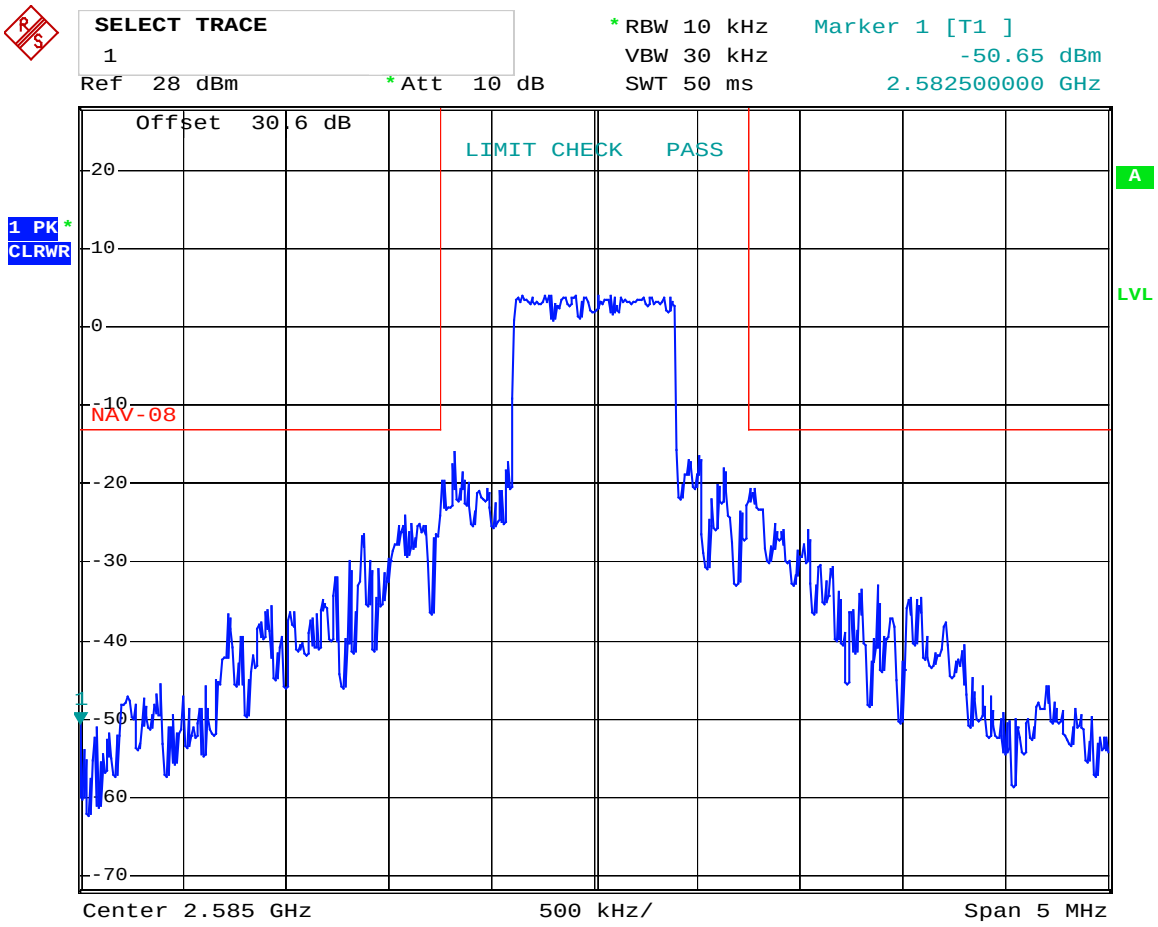
800 kHz OFDM Mode
+10 C



Date: 23.MAY.2006 13:09:22

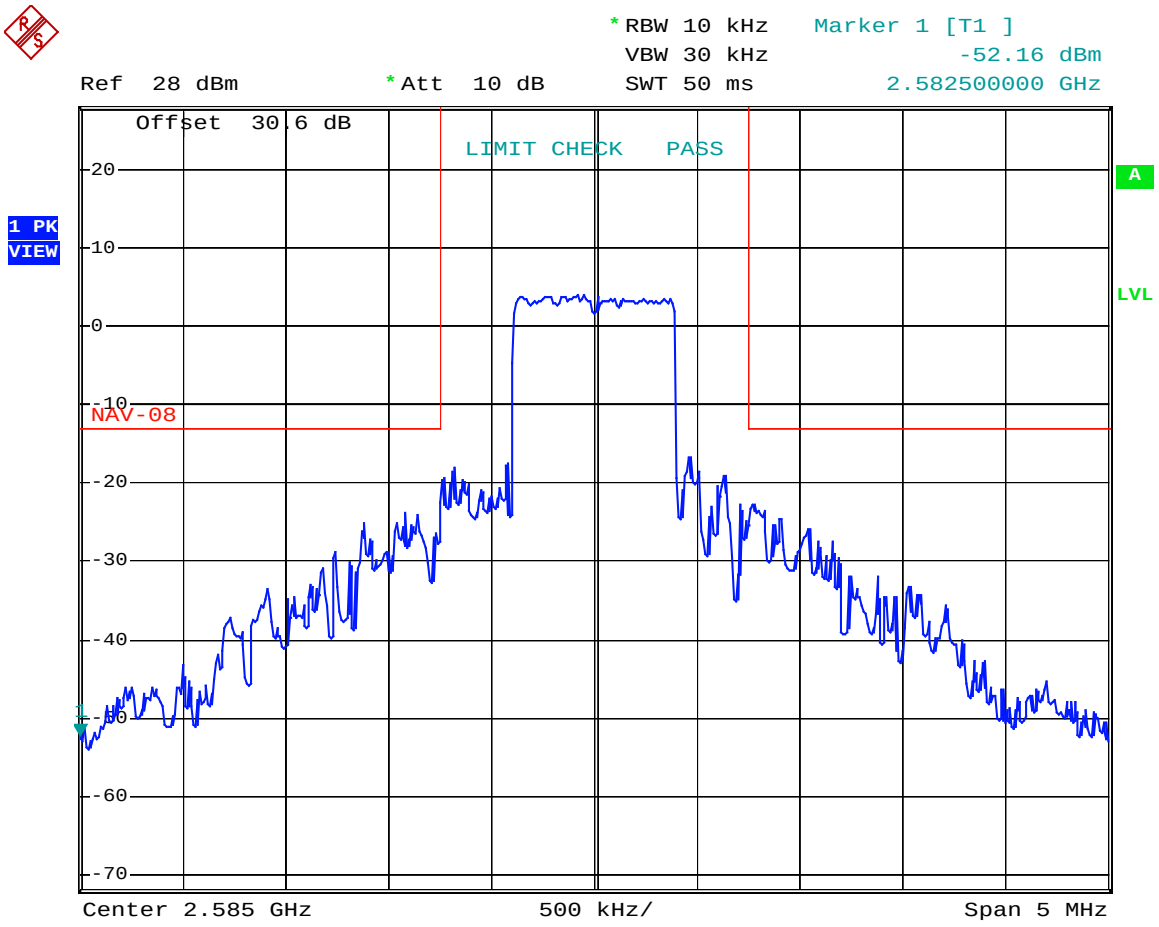
Test Data – Frequency Stability

800 kHz OFDM Mode
0 C



Test Data – Frequency Stability

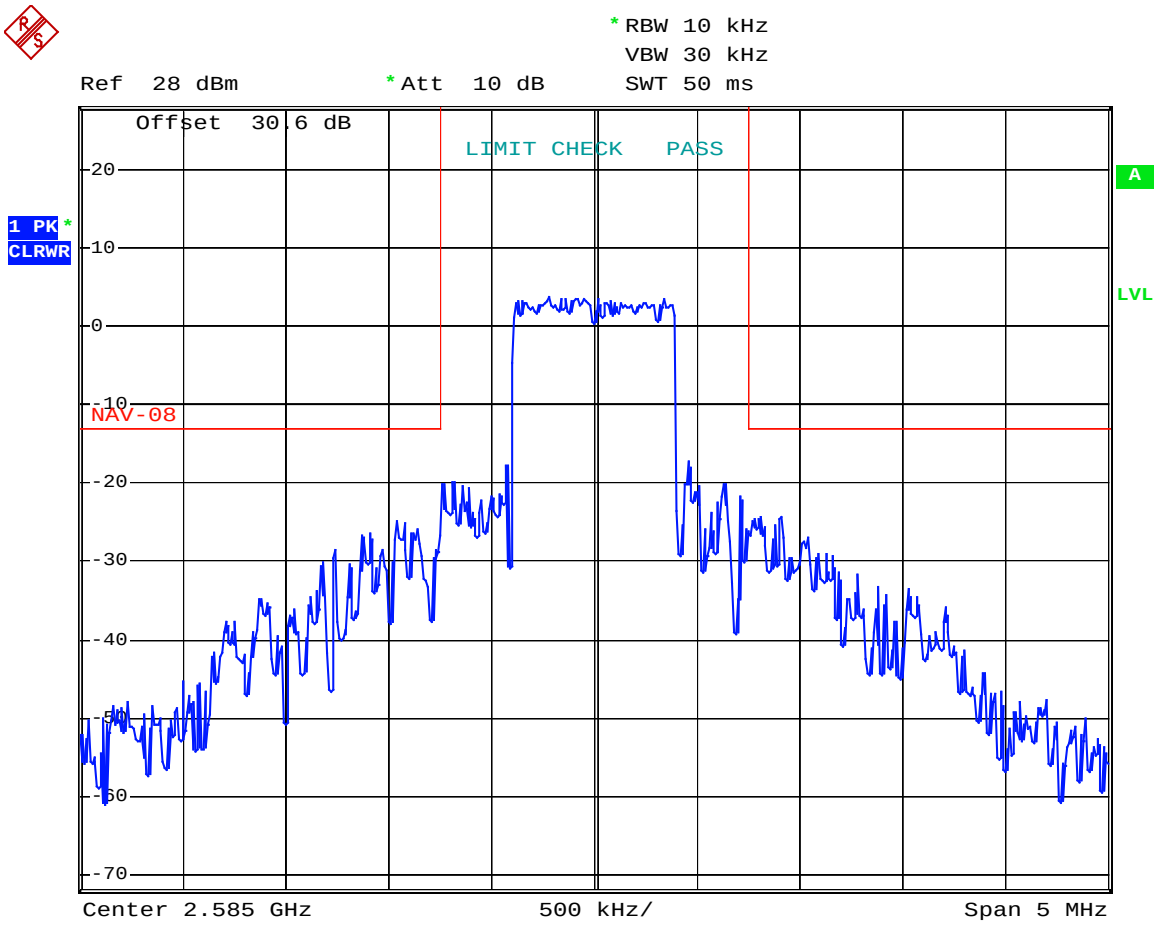
800 kHz OFDM Mode
-10 C



Date: 23.MAY.2006 14:01:20

Test Data – Frequency Stability

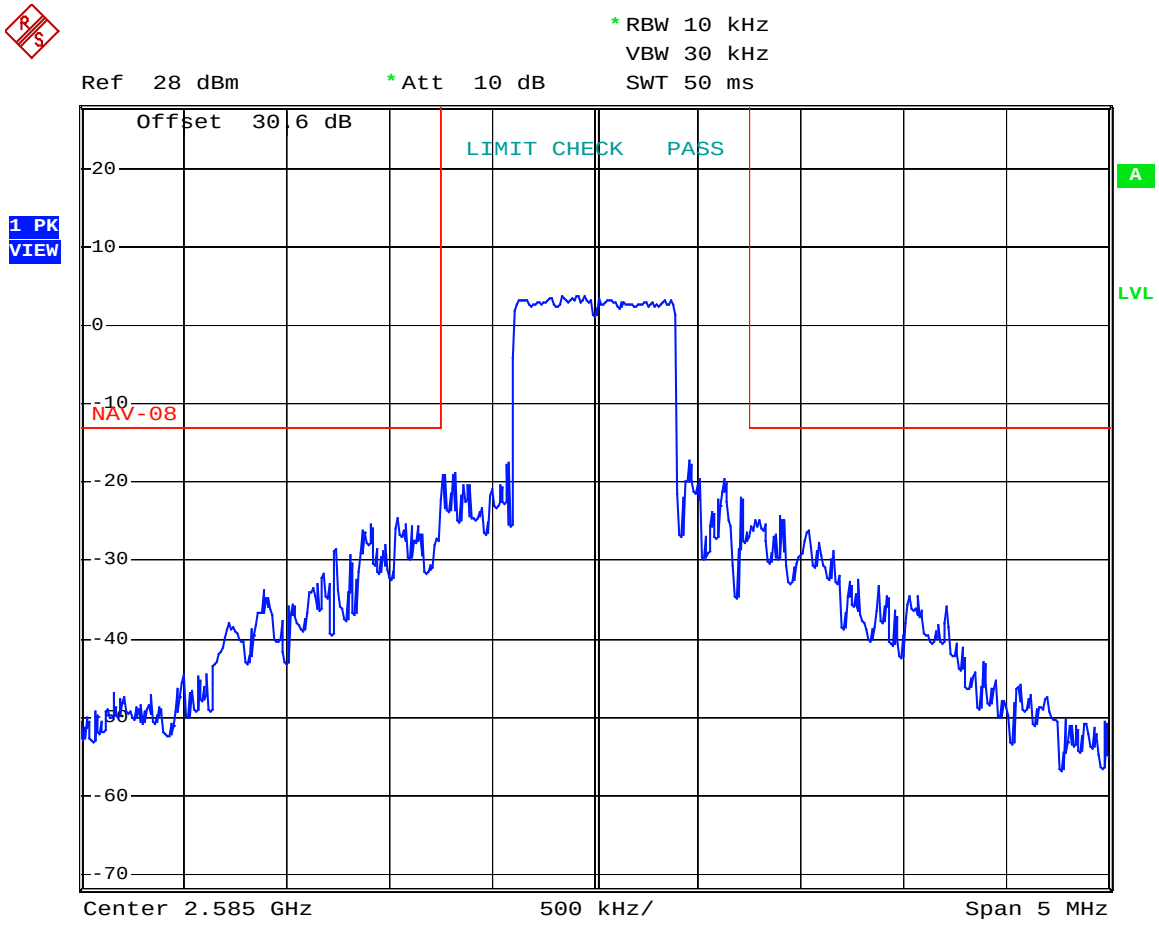
800 kHz OFDM Mode
-20 C



Date: 23.MAY.2006 14:33:24

Test Data – Frequency Stability

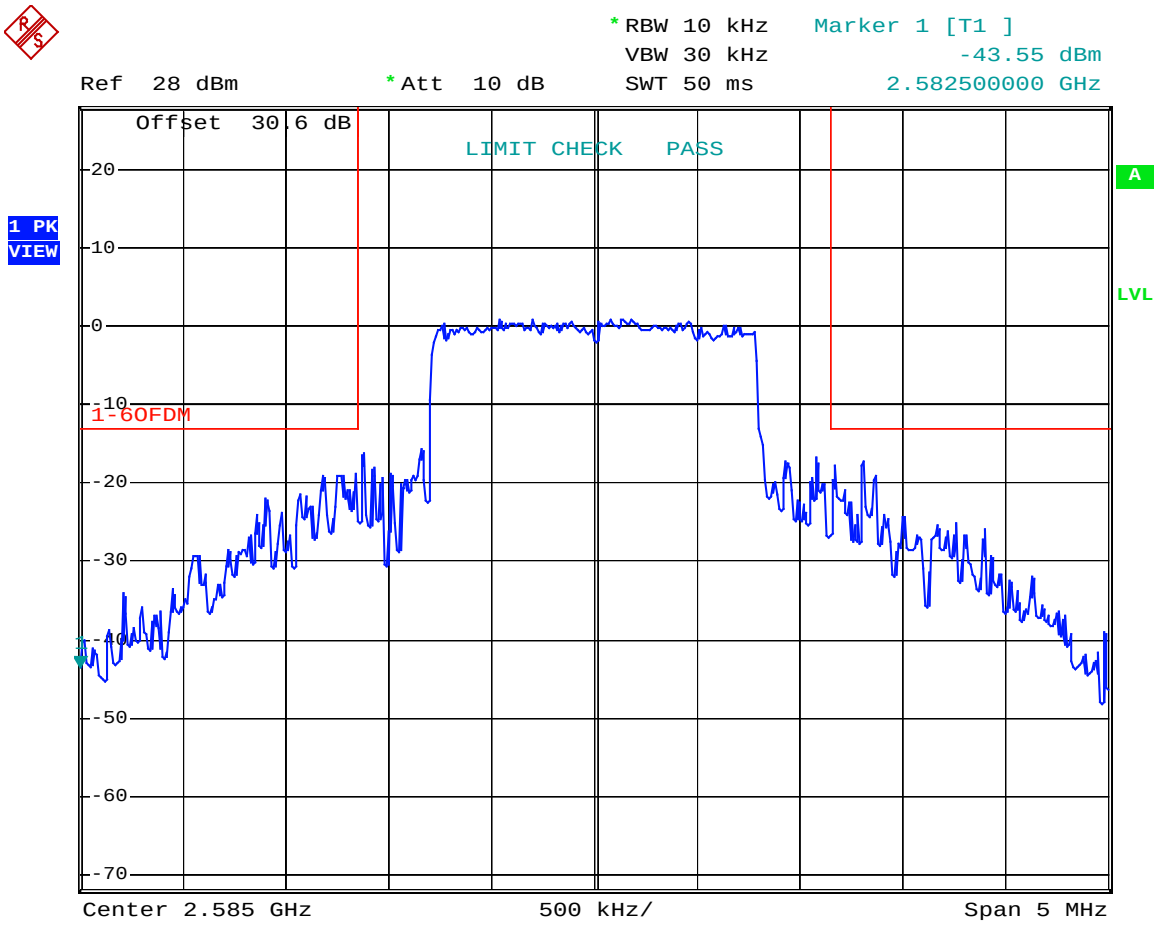
800 kHz OFDM Mode



-30 C

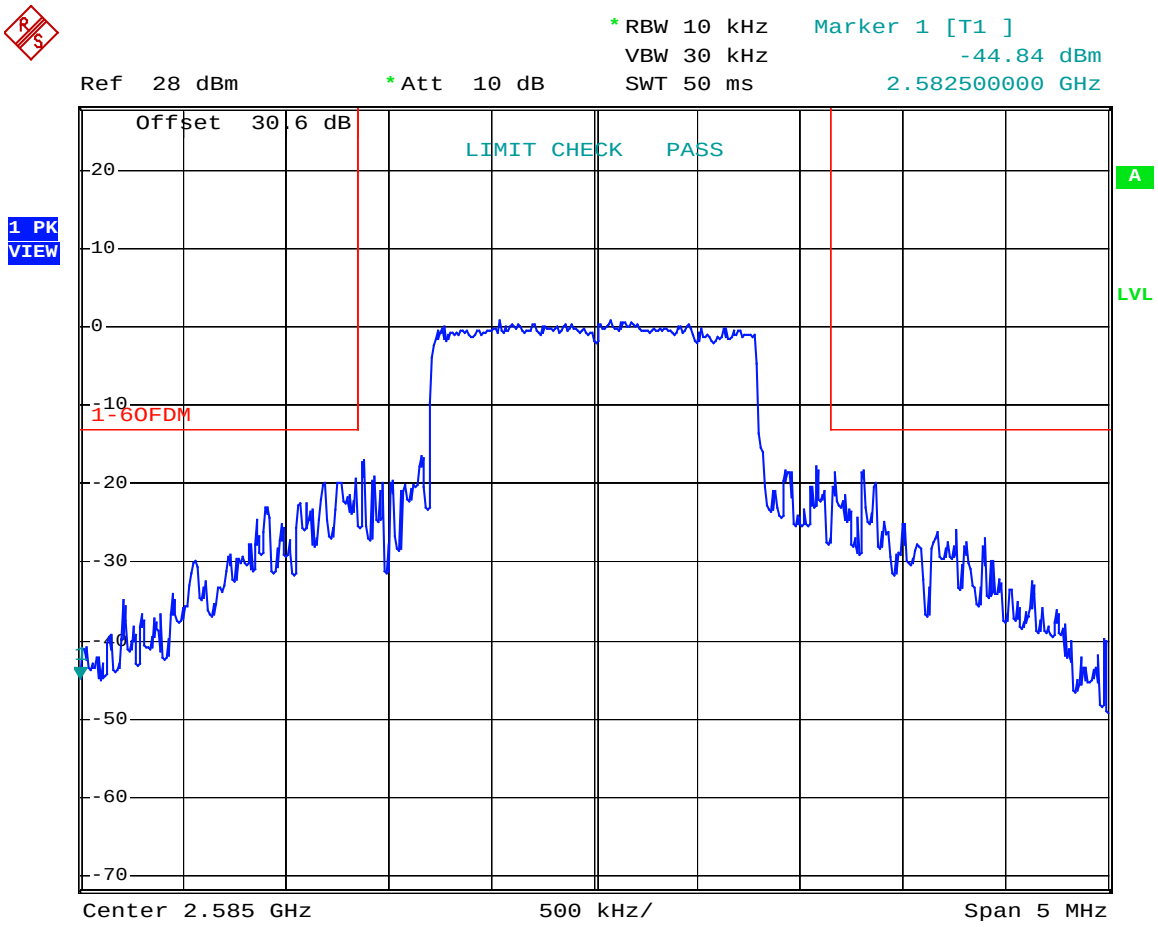
Test Data – Frequency Stability

1.6 MHz OFDM Mode
+20 C / 102 Vac



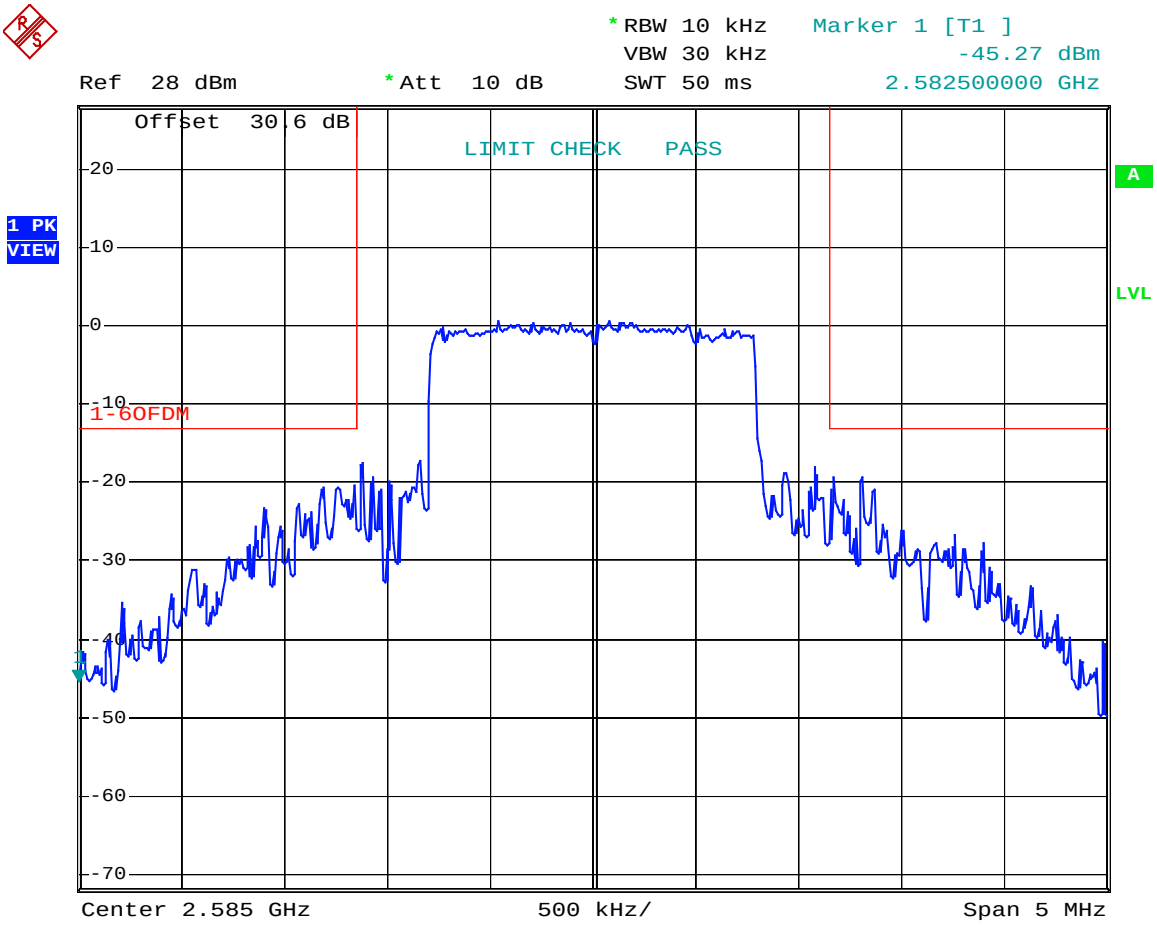
Test Data – Frequency Stability

1.6 MHz OFDM Mode
+20 C/ 138 Vac



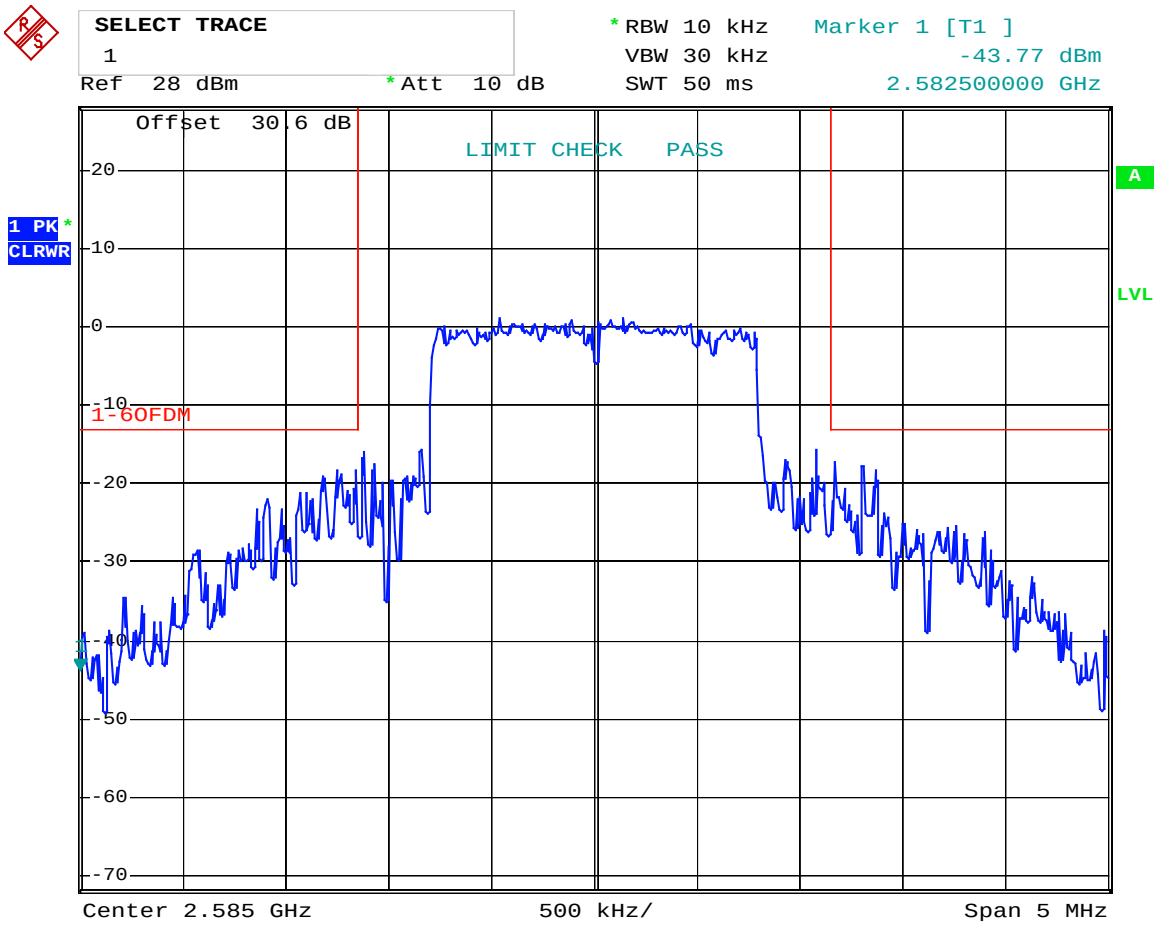
Test Data – Frequency Stability

1.6 MHz OFDM Mode
+20 C / 120 Vac



Date: 23.MAY.2006 10:35:44

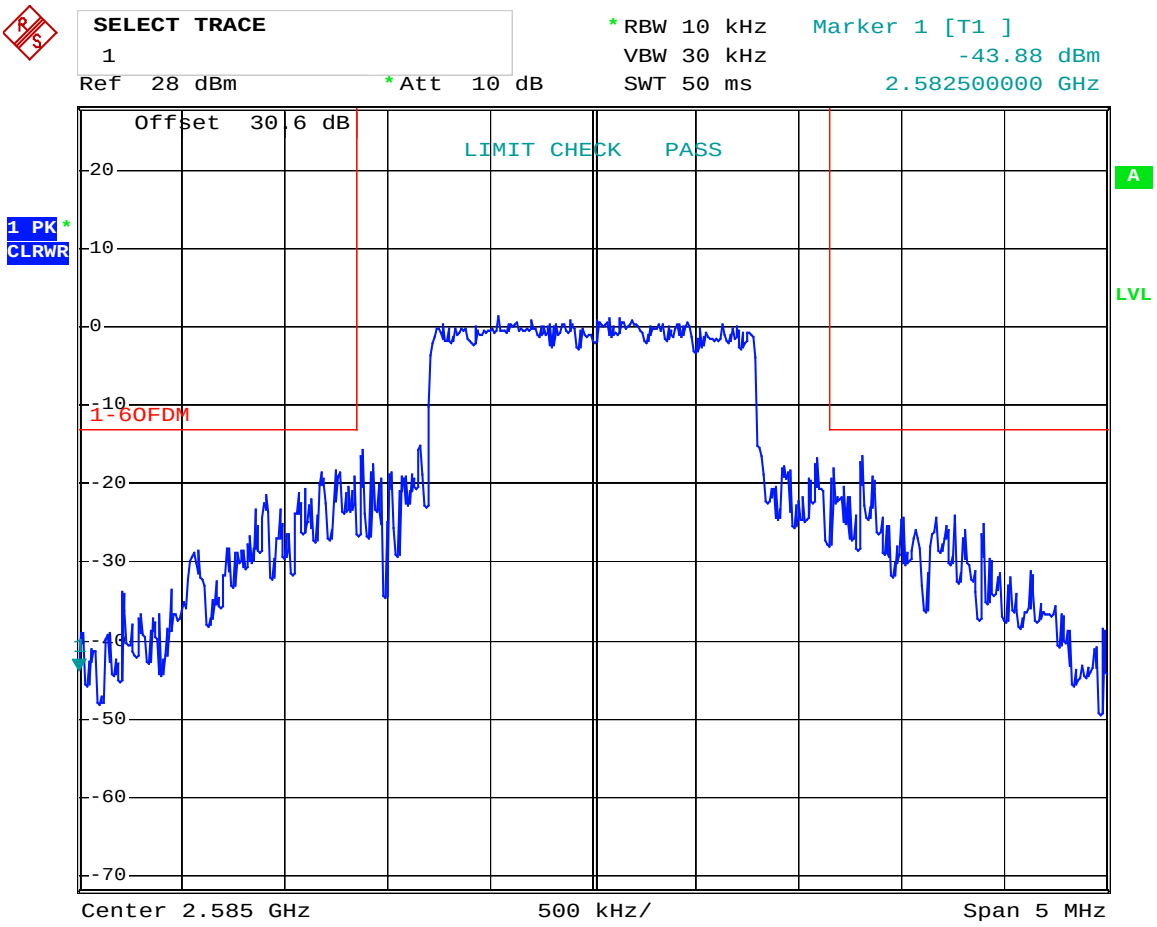
Test Data – Frequency Stability
1.6 MHz OFDM Mode
+50 C



Date: 23.MAY.2006 11:23:11

Test Data – Frequency Stability

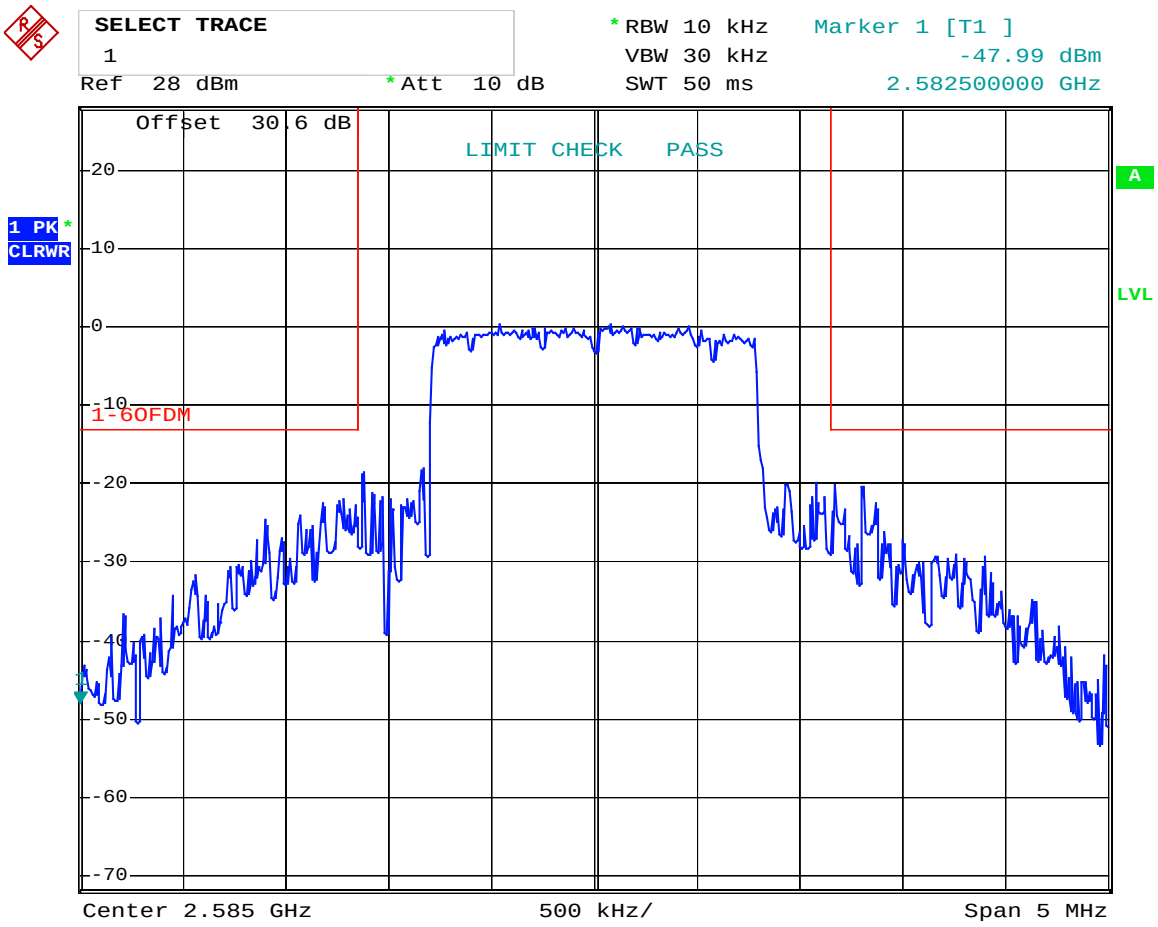
1.6 MHz OFDM Mode
+40 C



Date: 23.MAY.2006 12:01:45

Test Data – Frequency Stability

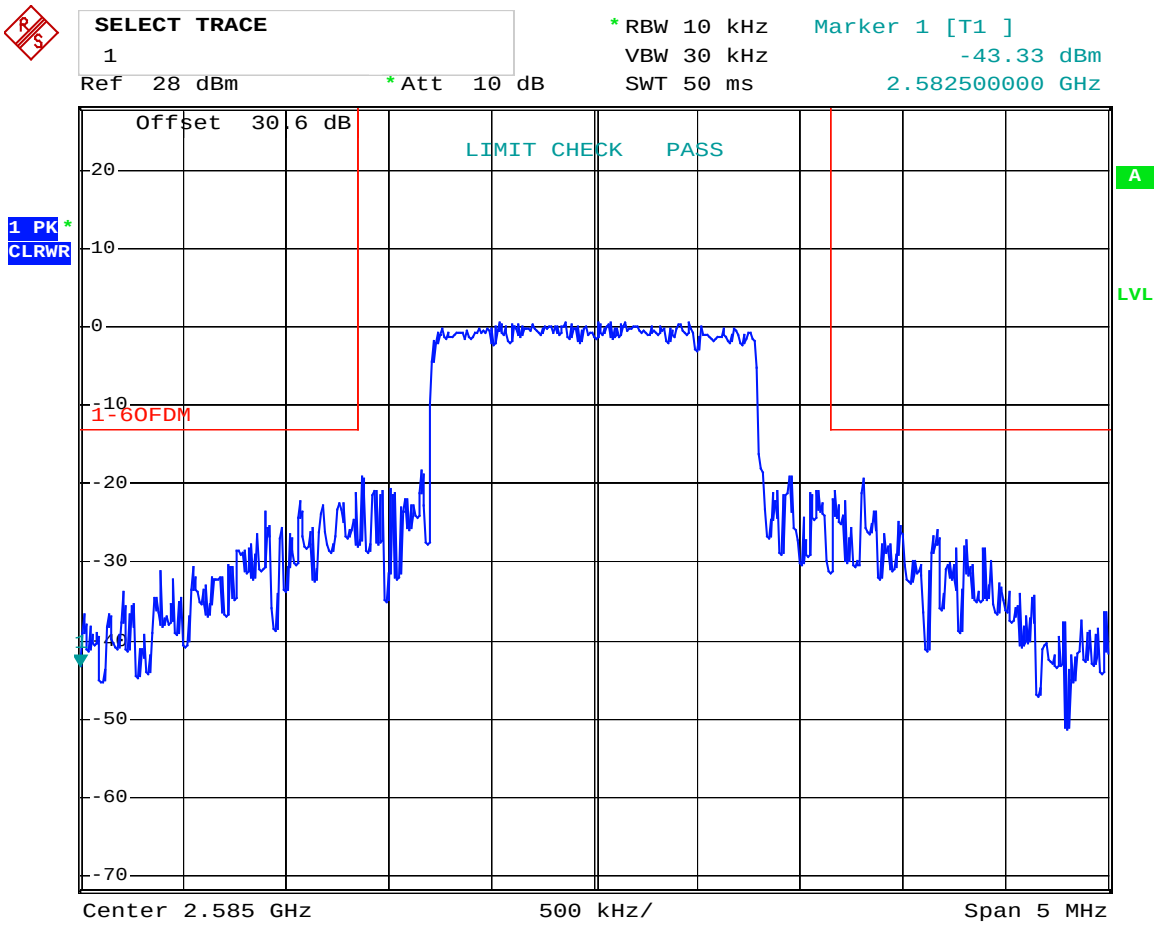
1.6 MHz OFDM Mode
+30 C



Date: 23.MAY.2006 12:21:51

Test Data – Frequency Stability

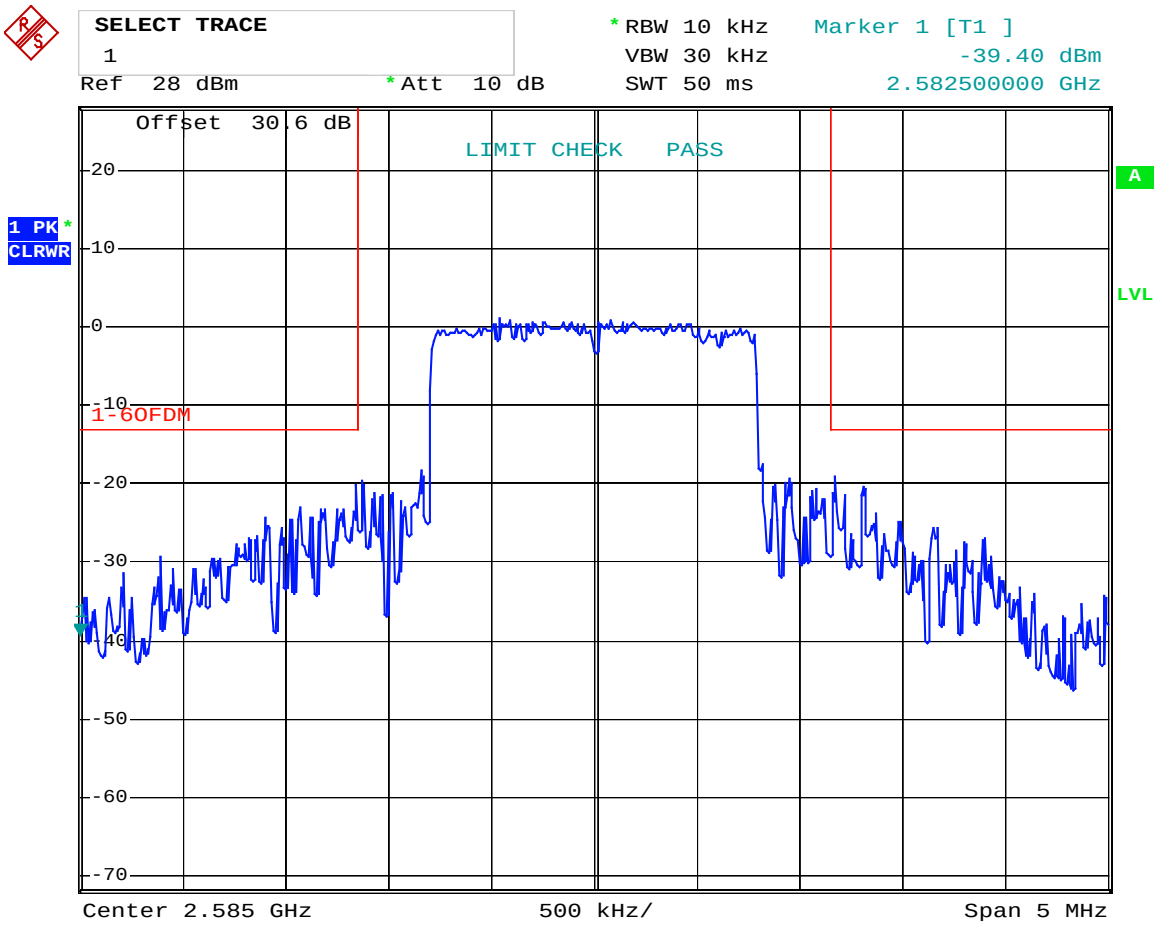
1.6 MHz OFDM Mode
+10 C



Date: 23.MAY.2006 13:09:57

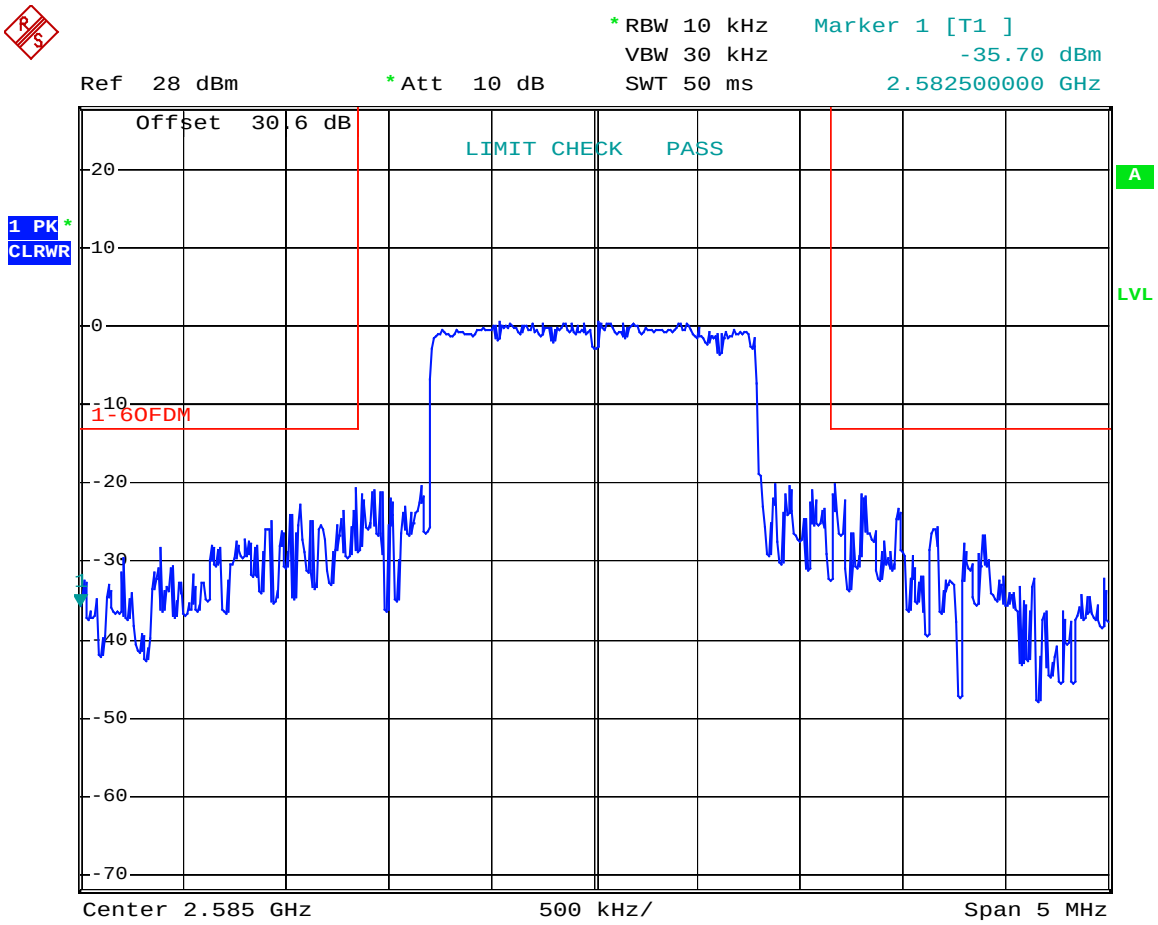
Test Data – Frequency Stability

1.6 MHz OFDM Mode
0 C



Test Data – Frequency Stability

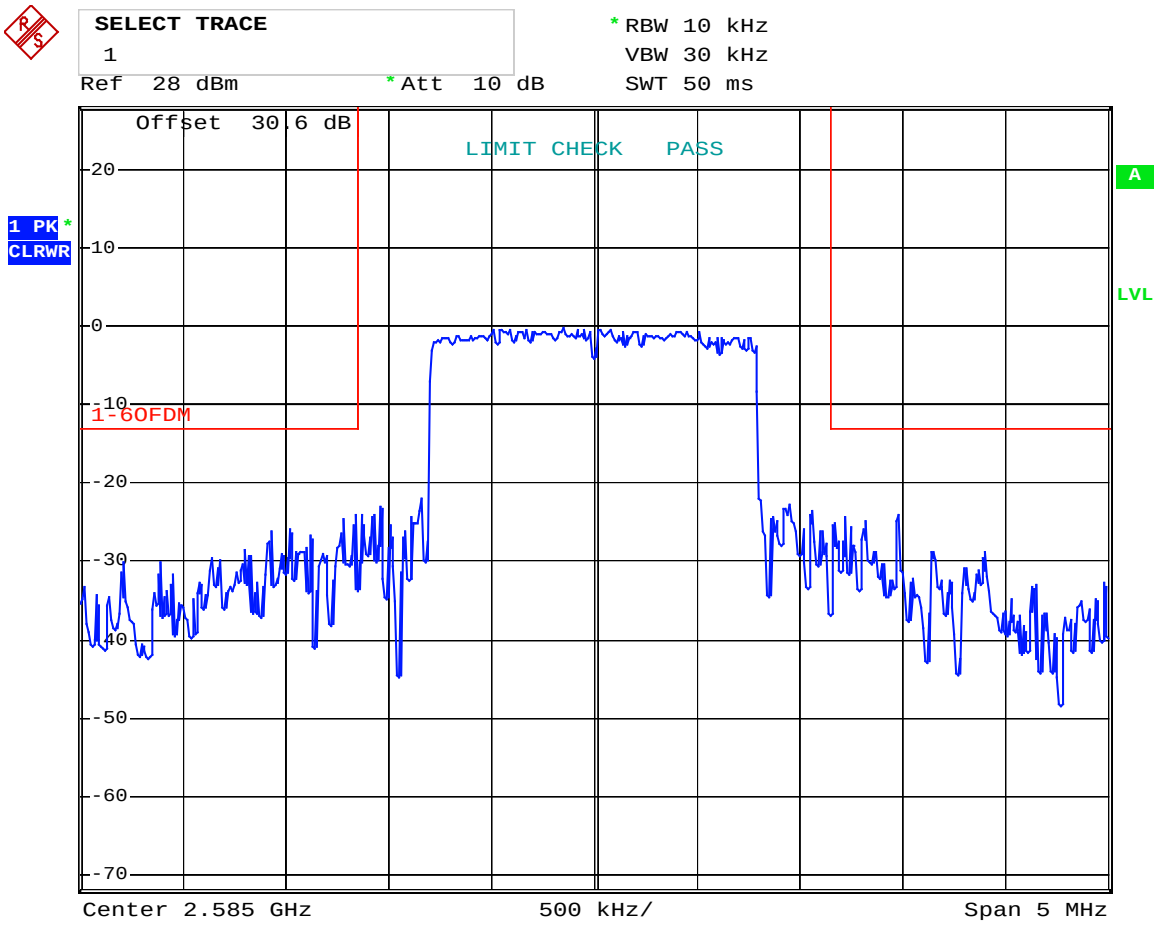
1.6 MHz OFDM Mode
-10 C



Date: 23.MAY.2006 14:01:58

Test Data – Frequency Stability

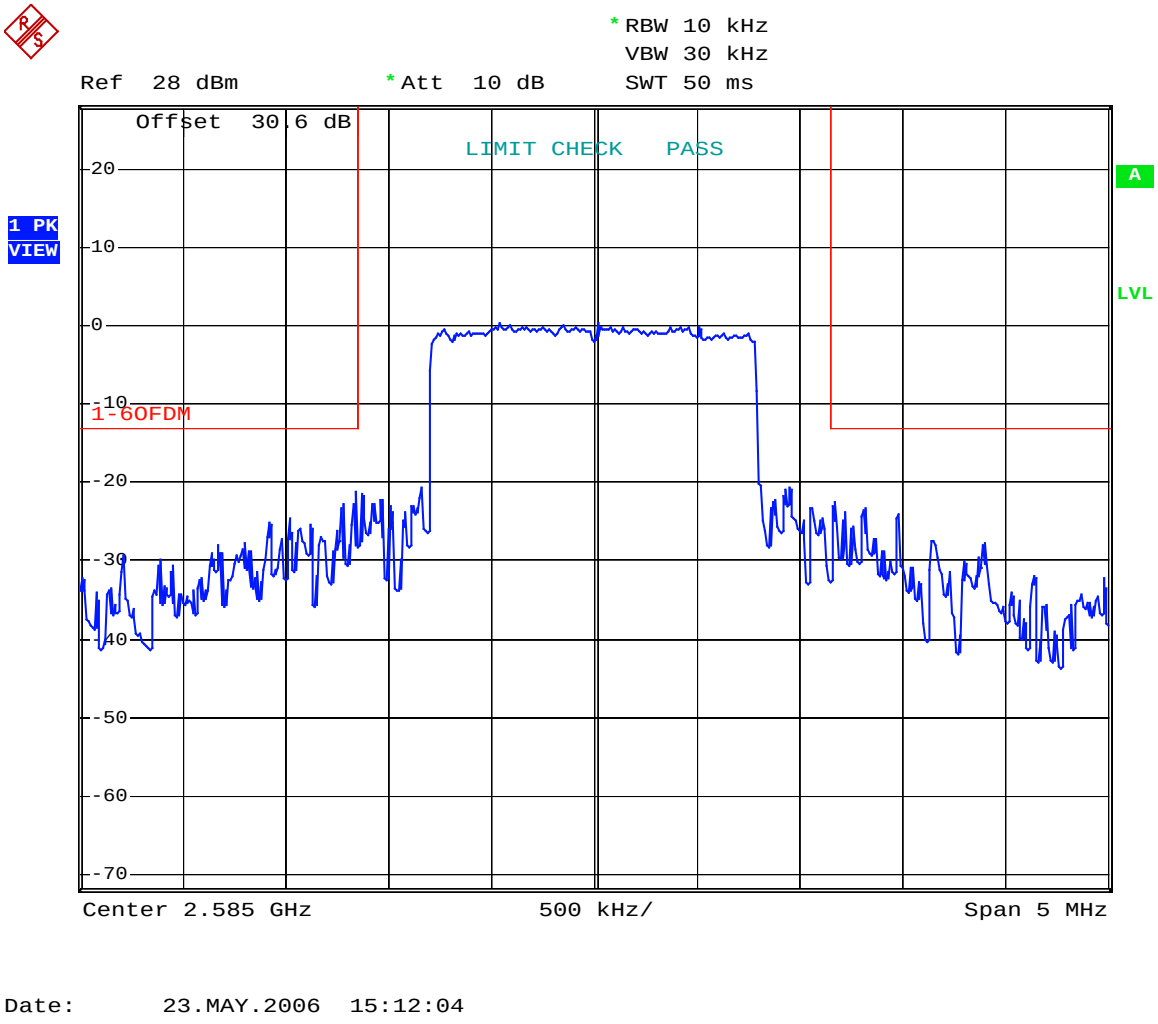
1.6 MHz OFDM Mode
-20 C



Test Data – Frequency Stability

1.6 MHz OFDM Mode

-30 C



Section 8. Test Equipment List

Nemko ID	Description	Manufacturer Model Number	Serial Number	Calibration Date	Calibration Due
1470	10 db Attenuator	MCL Inc. BW-S10W2 10db-2WDC	NONE	CBU	N/A
1472	20db Attenuator	Omni Spectra 20600-20db	NONE	CBU	N/A
2071	Power Sensor	Agilent E9304A	MY41495174	09/30/05	09/30/06
2072	Power Meter	HP E4418B	GB39401848	09/30/05	09/30/06
1464	Spectrum analyzer	Hewlett Packard 8563E	3551A04428	01/14/05	01/15/07
1082	CABLE 2m	Astrolab 32027-2-29094-72TC	N/A	CBU	N/A
1659	Spectrum Analyzer	Rhode & Schwarz FSP	973353	01/10/06	01/10/07
1484	Cable 2.0-18.0 Ghz	Storm PR90-010-072	N/A	08/26/05	08/26/06
1485	Cable 2.0-18.0 Ghz	Storm PR90-010-216	N/A	08/26/05	08/26/06
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
760	Antenna biconical	Electro Metrics MFC-25	477	08/04/05	08/04/06
1016	Pre-Amp	HEWLETT PACKARD 8449A	2749A00159	04/20/06	04/20/07
791	PREAMP, 25dB	Nemko USA, Inc. LNA25	398	04/20/06	04/20/07
283	Environmental Chamber with controller # 1189006	ENVIROTRONICS SH27 & 2030-22844	129010083	CNR	CNR
619	THERMOMETER	FLUKE 51	4520028	09/26/05	09/26/06

ANNEX A - TEST DETAILS

NAME OF TEST: RF Power Output	**PARA. NO.: 2.1046**

Method Of Measurement:

Antenna Conducted:
The peak power at antenna terminals is measured using a Spectrum Analyzer or Power Meter. Power output is measured with the maximum rated input level.

E.I.R.P.:

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 an isoptropic radiator. 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 eirp is the signal level fed to the reference antenna corrected for gain referenced to an isoptropic radiator.

NAME OF TEST: Occupied Bandwidth	**PARA. NO.: 2.1049**

Method Of Measurement:

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of at least 1% of the bandwidth of the transmitted signal. The resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform.

The appropriate bandwidth mask is applied to the output waveform to verify compliance.

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

Antenna Conducted:

A portion of the transmitted signal is coupled to a Spectrum Analyzer with a resolution bandwidth of 1 MHz for emissions above 1 GHz. Below 1 GHz the resolution bandwidth is chosen so as not to reduce the peak level of the measured waveform.

The appropriate limit line is applied to the output waveform to verify compliance.

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

Test Method: TIA/EIA-603-1992

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 an isotropic.. 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 eirp is the signal level fed to the reference antenna corrected for gain referenced to an isotropic.

NAME OF TEST: Frequency Stability 2.1055

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.

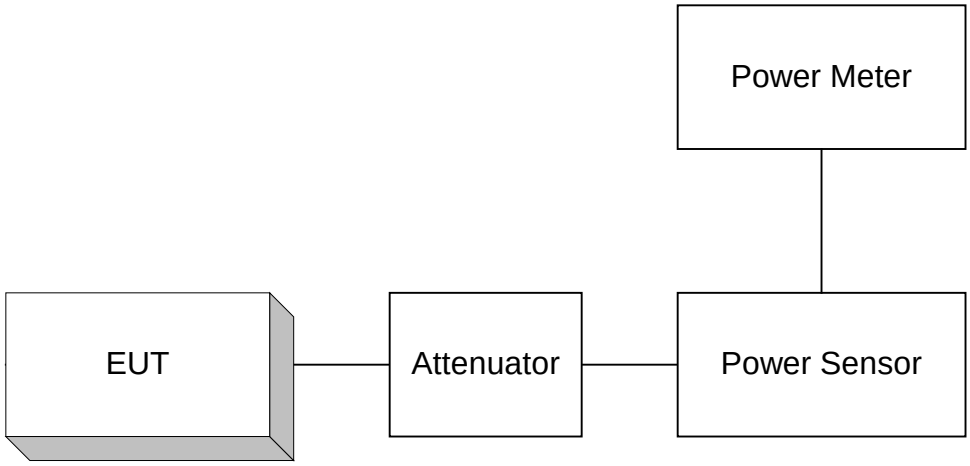
Frequency Stability With Temperature Variation:

The E.U.T. is placed in an environmental chamber and allowed to stabilize at +20 degrees Celsius for at least 15 minutes. 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.

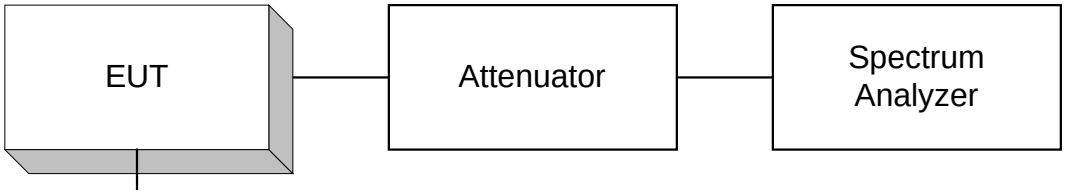
Frequency Stability With Temperature Variation:
The input voltage to the E.U.T. is set to S.T.V. and the temperature of the environmental chamber is varied in 10 degree steps from -30 degrees C to +50 degrees C. The E.U.T. is allowed to stabilize at each temperature and the frequency is measured in 30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

ANNEX B - TEST DIAGRAMS

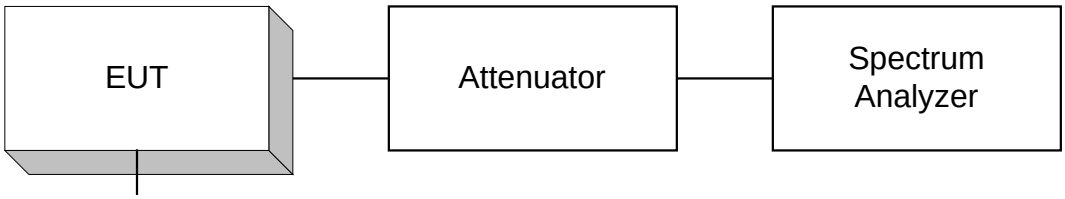
Para. No. 2.1046 - R.F. Power Output



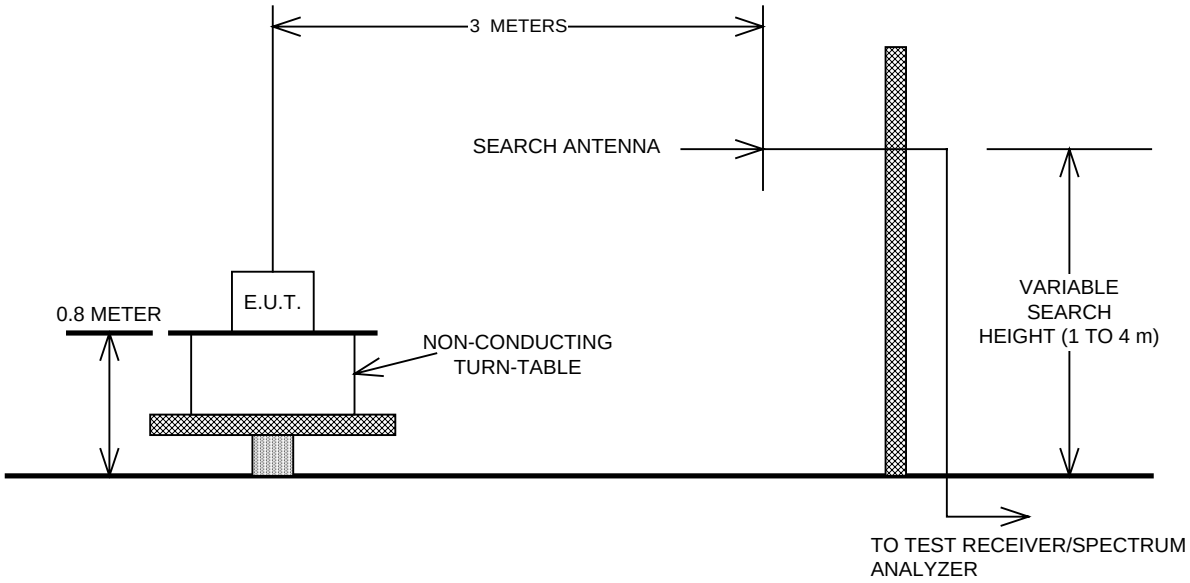
Para. No. 2.1049 - Occupied Bandwidth



Para. No. 2.1051 - Spurious Emissions at Antenna Terminals



Para. No. 2.1053 - Field Strength of Radiation



Para. No. 2.1055 - Frequency Stability