

5.4 PEAK POWER EXCURSION MEASUREMENT

5.4.1 LIMITS OF PEAK POWER EXCURSION MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	13dB
5.25 – 5.35 GHz	13dB
5.725 – 5.825 GHz	13dB

5.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE&SCHWARZ SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

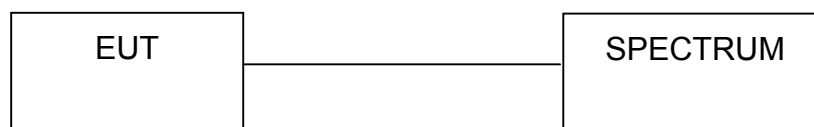
5.4.3 TEST PROCEDURE

1. The transmitter output was connected to the spectrum analyzer.
2. Set the spectrum bandwidth span to view the entire spectrum.
3. Using peak detector and Max-hold function for Trace 1 (RB=1MHz, VB=3MHz) and 2 (RB=1MHz, VB=300KHz).
4. The largest difference between Trace 1 and Trace 2 in any 1MHz band on any frequency was recorded.

5.4.4 DEVIATION FROM TEST STANDARD

No deviation

5.4.5 TEST SETUP



5.4.6 EUT OPERATING CONDITIONS

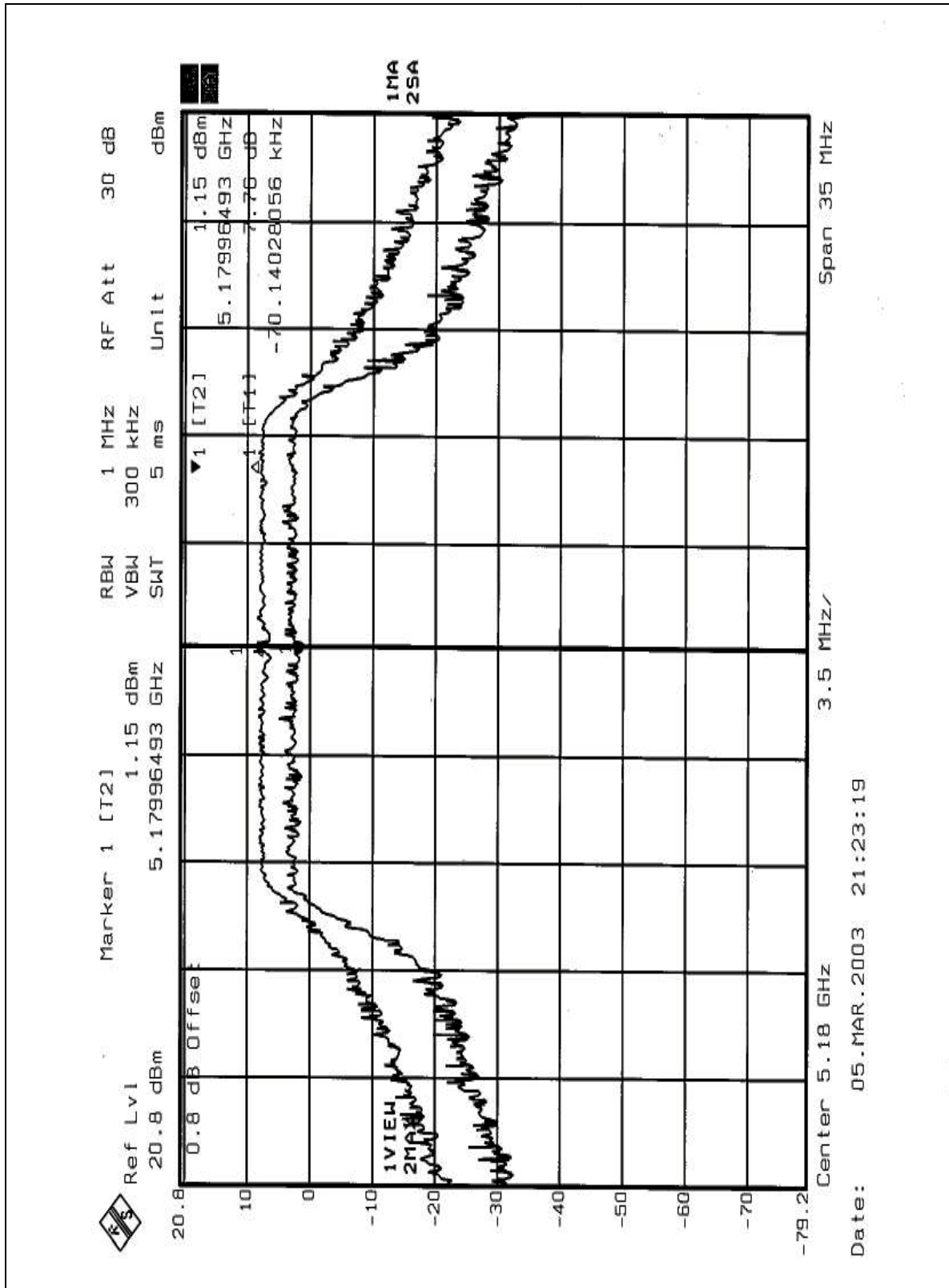
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

5.4.7 TEST RESULTS

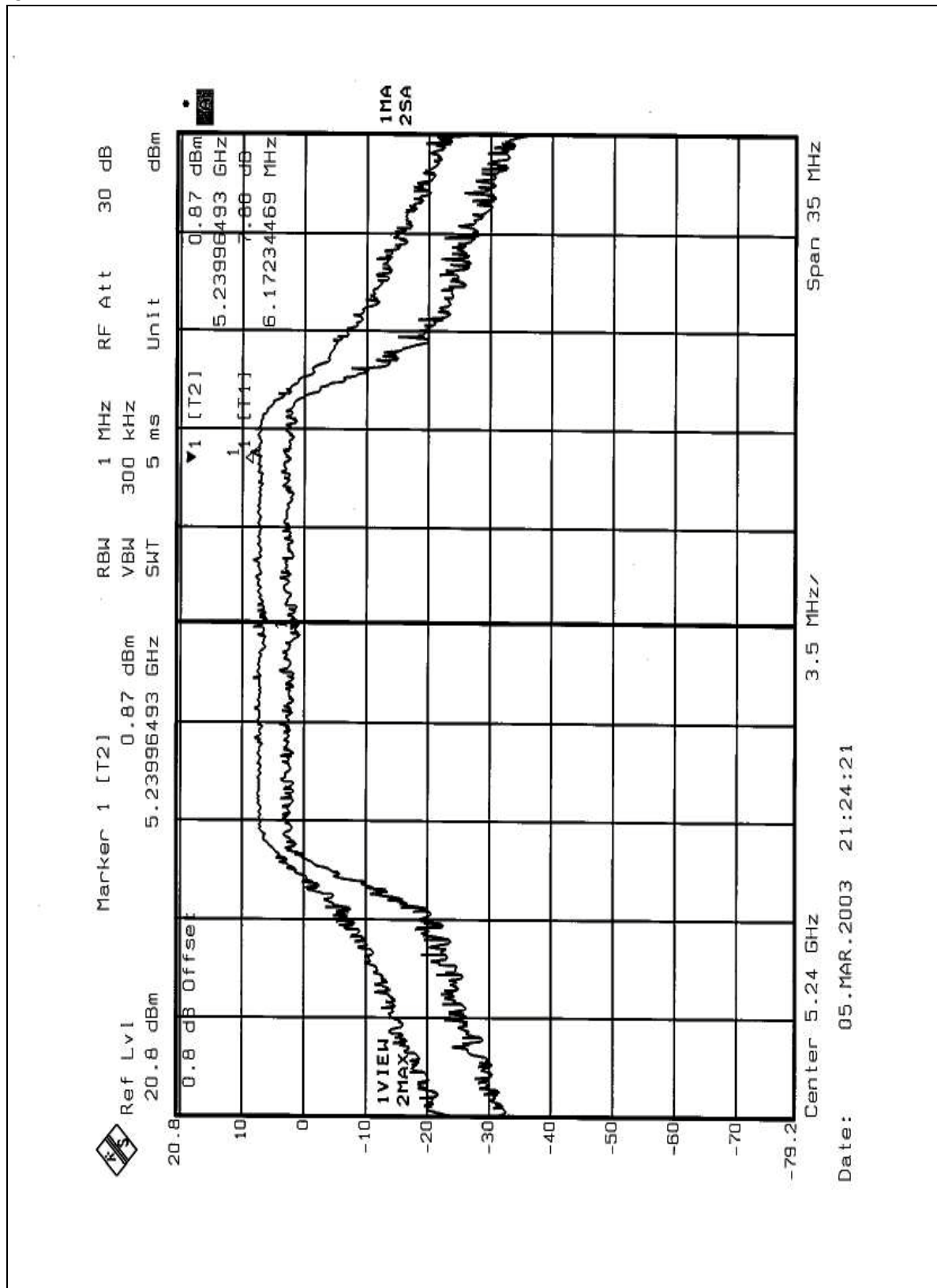
EUT	Wireless LAN 802.11a/b Dual Band Mini PCI Adapter	MODEL	802MABB
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	21deg. C, 68RH, 1005 hPa	TESTED BY	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.76	13	PASS
4	5240	7.80	13	PASS
5	5260	7.68	13	PASS
8	5320	8.12	13	PASS
9	5745	7.61	13	PASS
12	5805	7.47	13	PASS

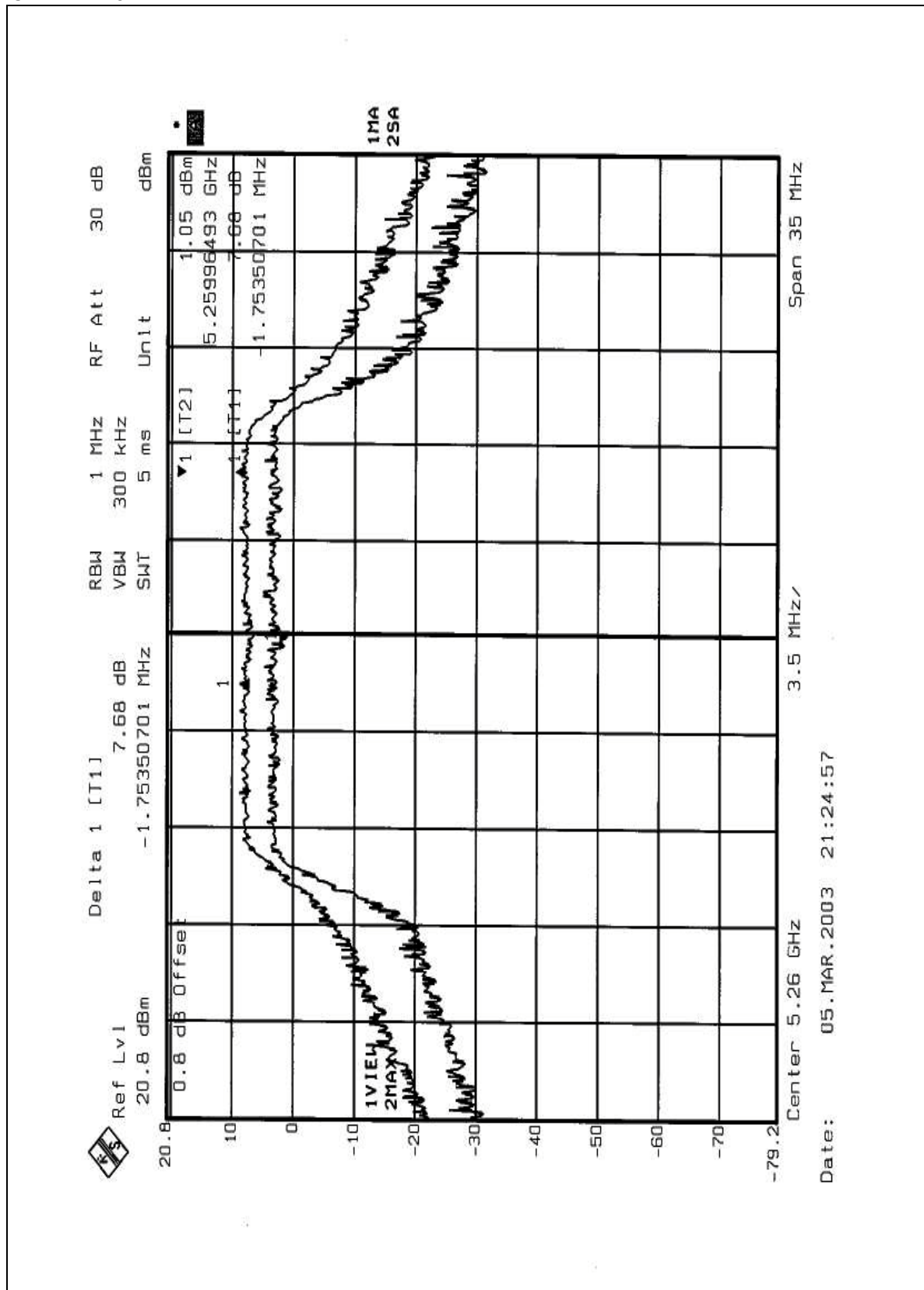
CHANNEL 1



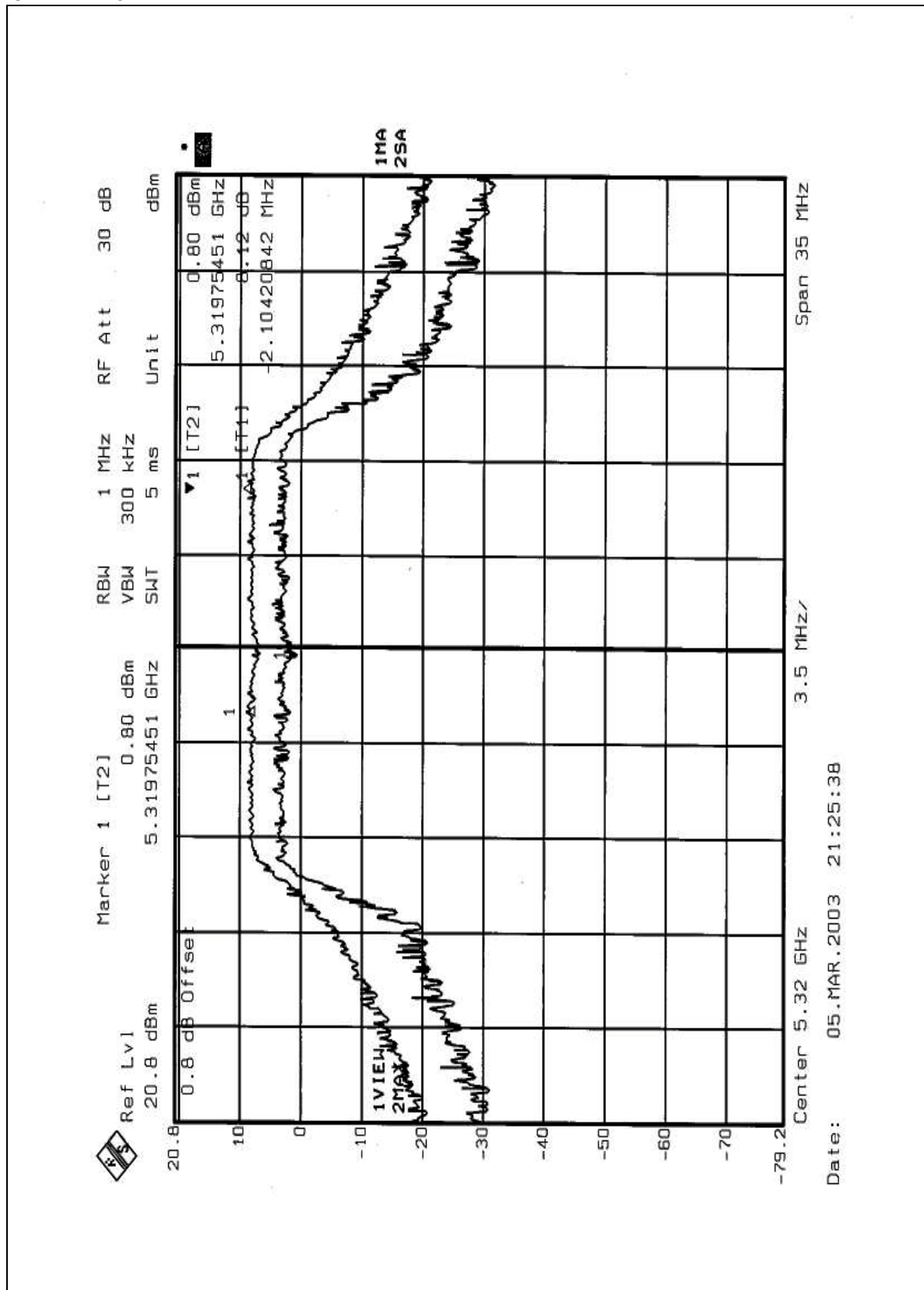
CHANNEL 4



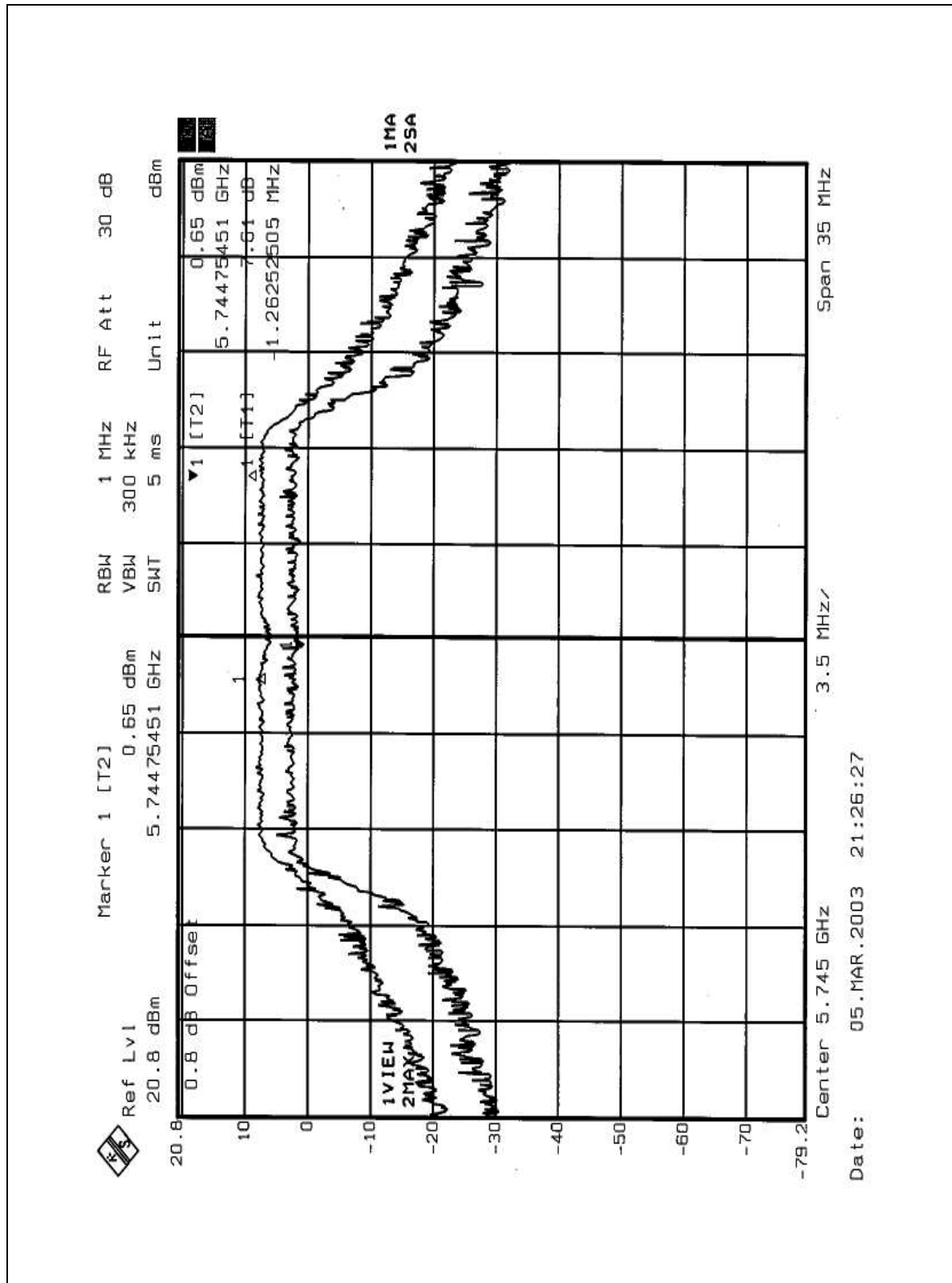
CHANNEL 5



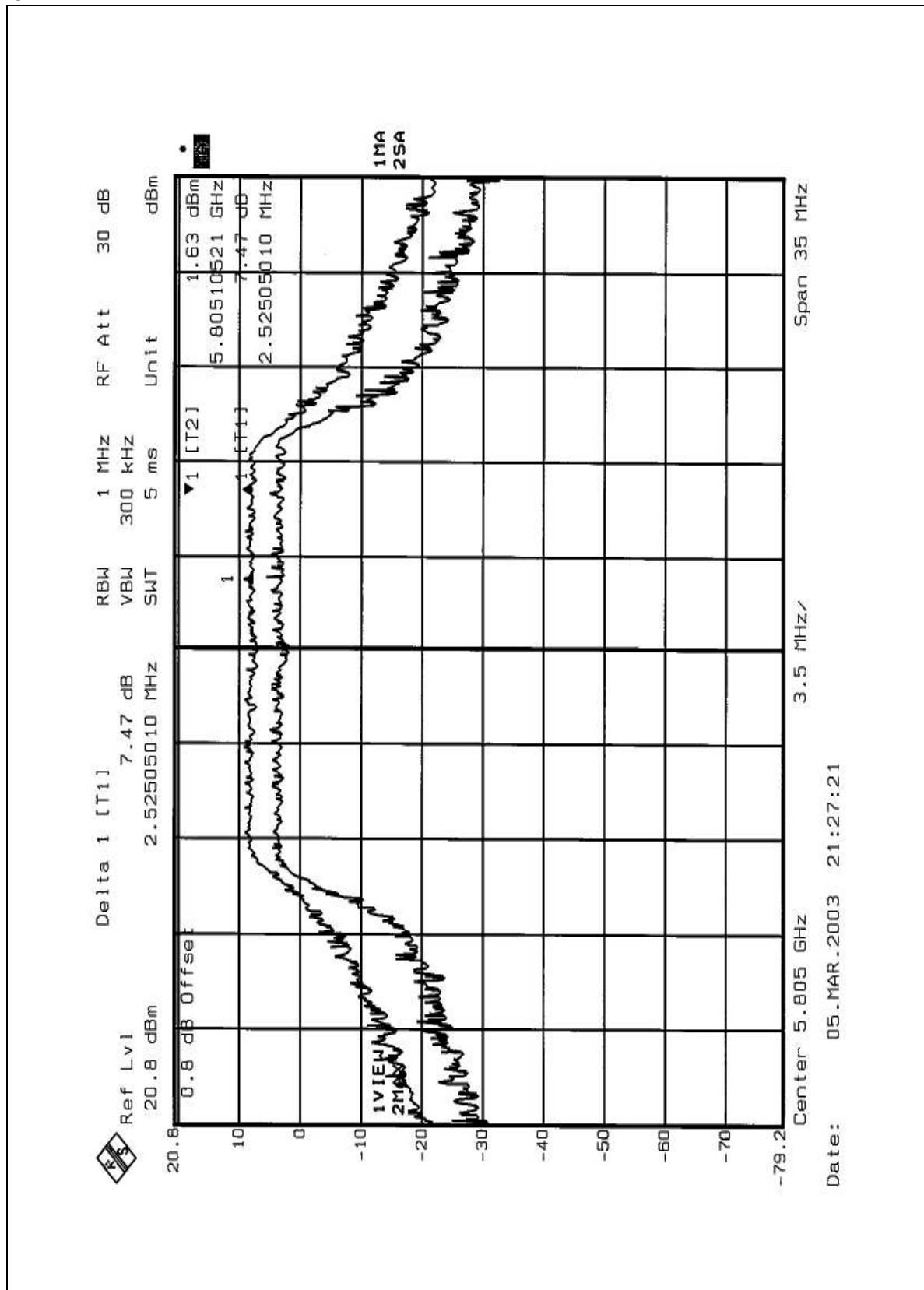
CHANNEL 8



CHANNEL 9



CHANNEL 12

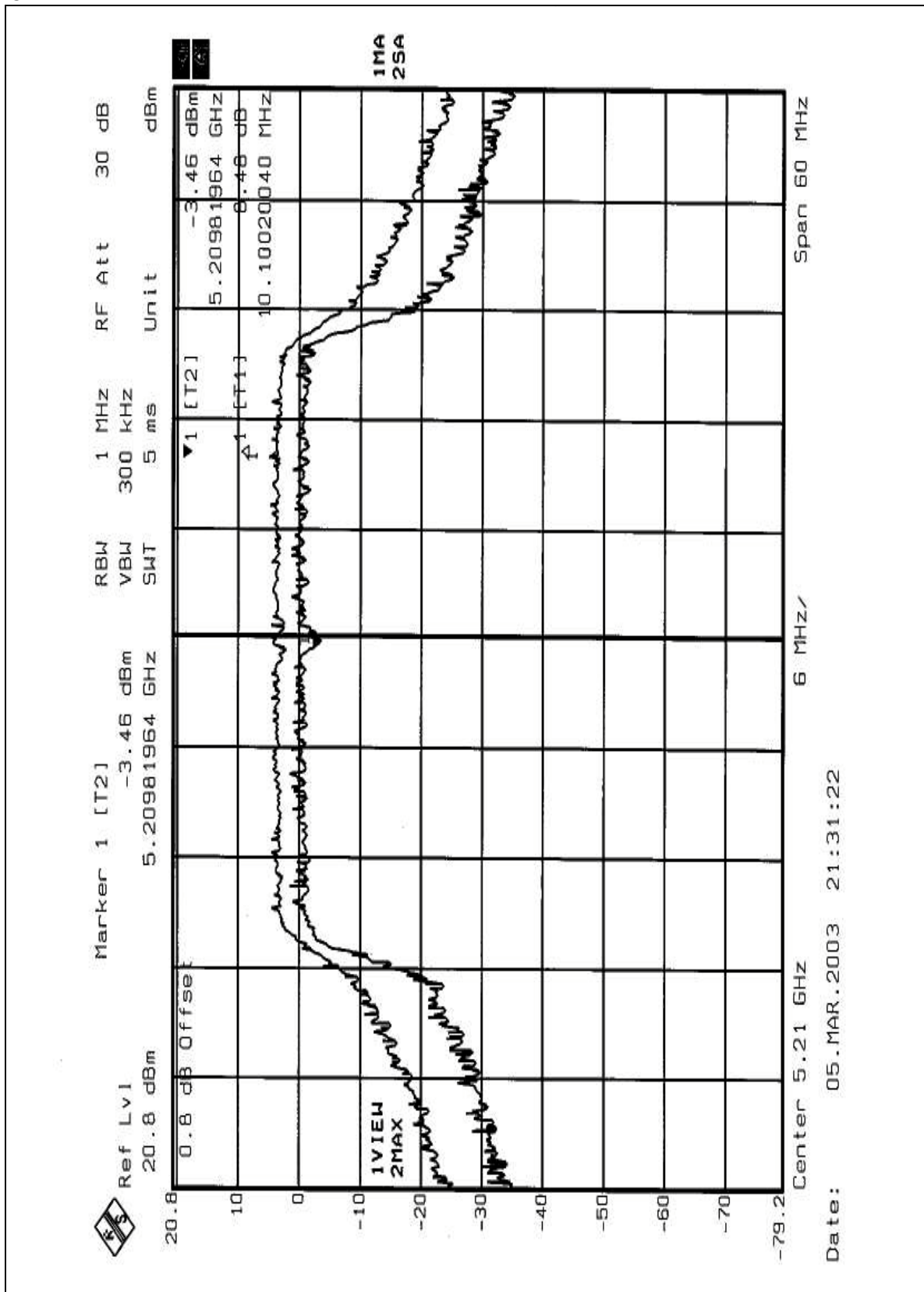




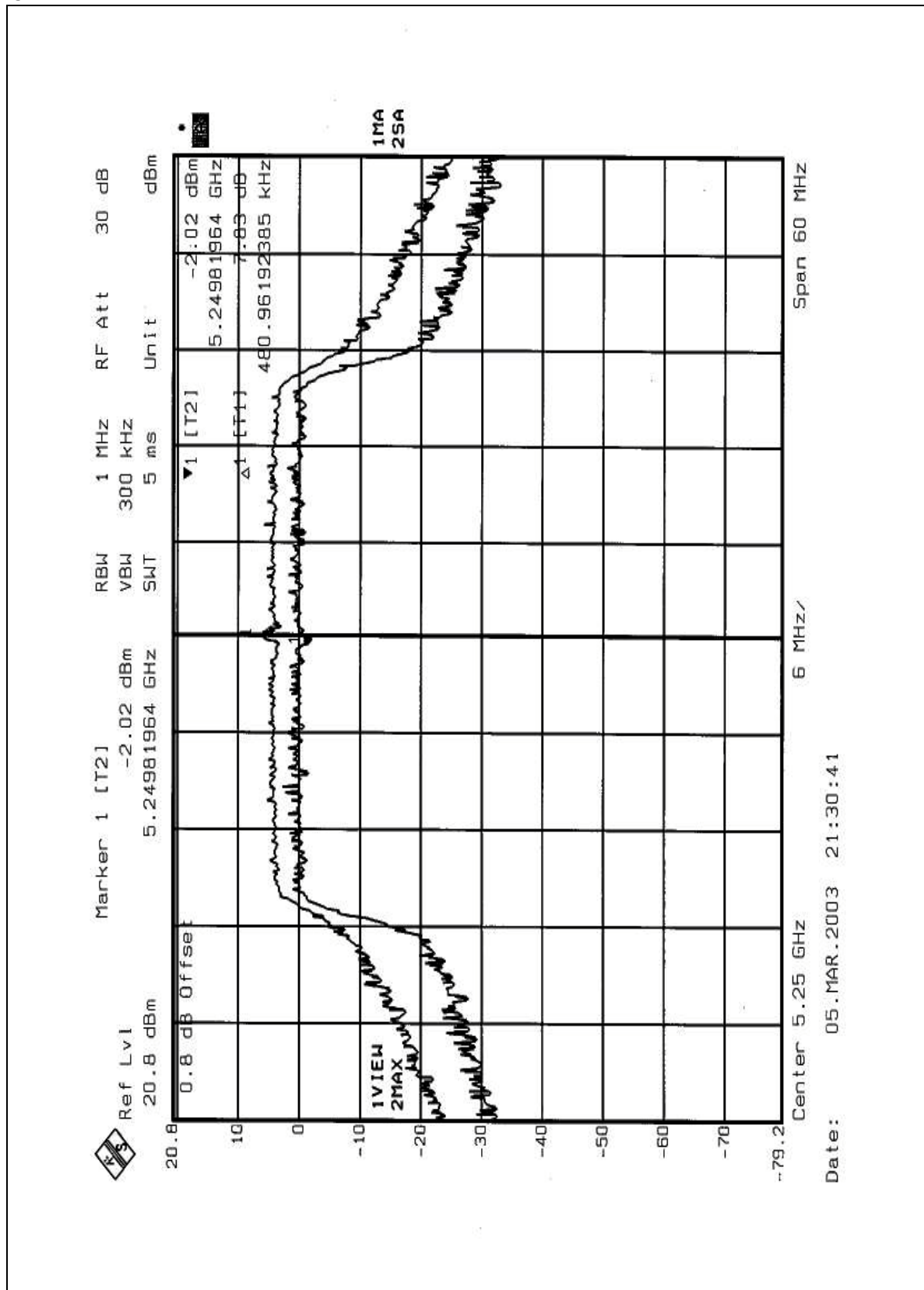
EUT	Wireless LAN 802.11a/b Dual Band Mini PCI Adapter	MODEL	802MABB
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	21deg. C, 68RH, 1005 hPa	TESTED BY	Ansen Lei

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5210	8.48	13	PASS
2	5250	7.83	13	PASS
3	5290	8.07	13	PASS
4	5760	8.36	13	PASS
5	5800	7.60	13	PASS

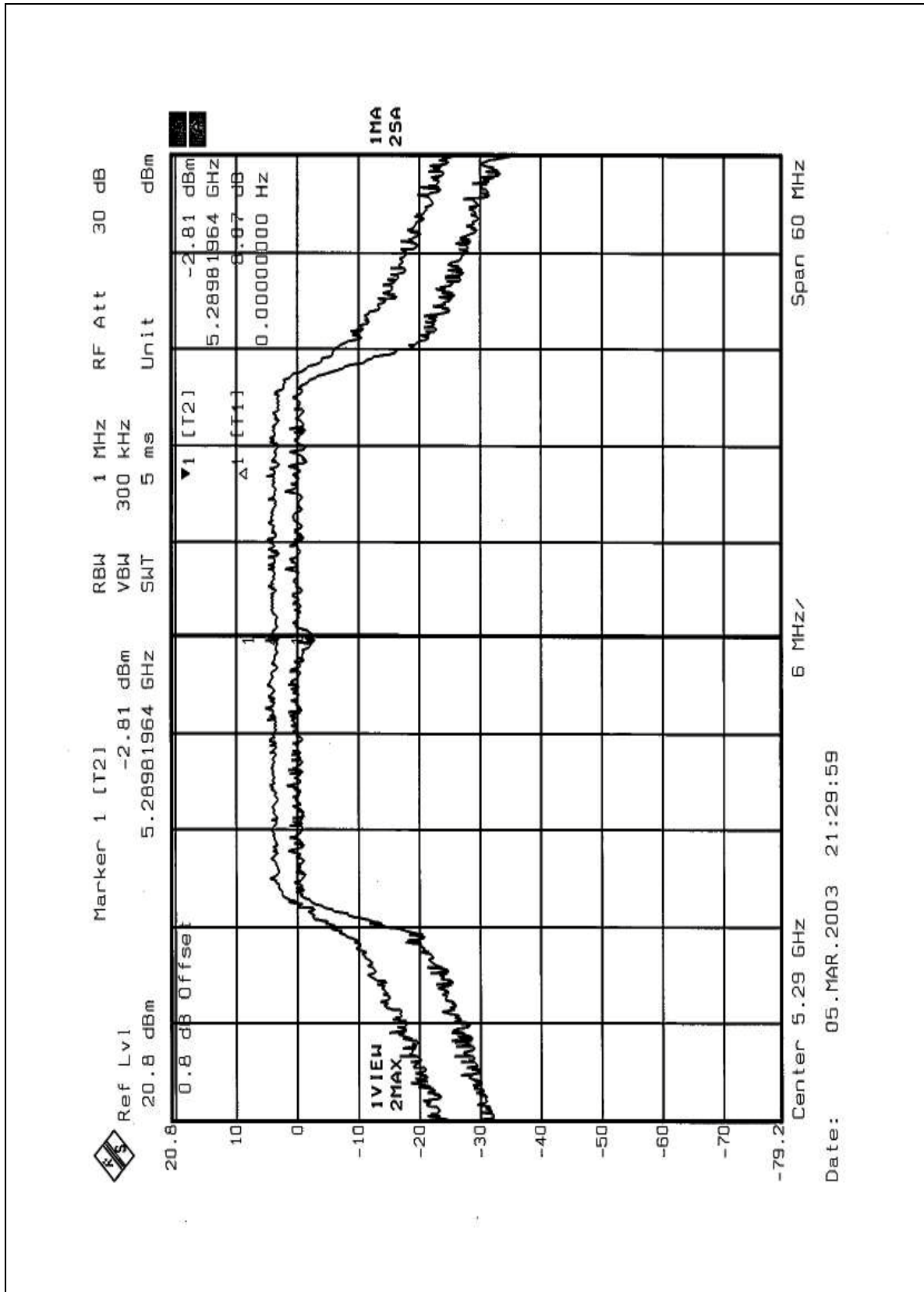
CHANNEL 1



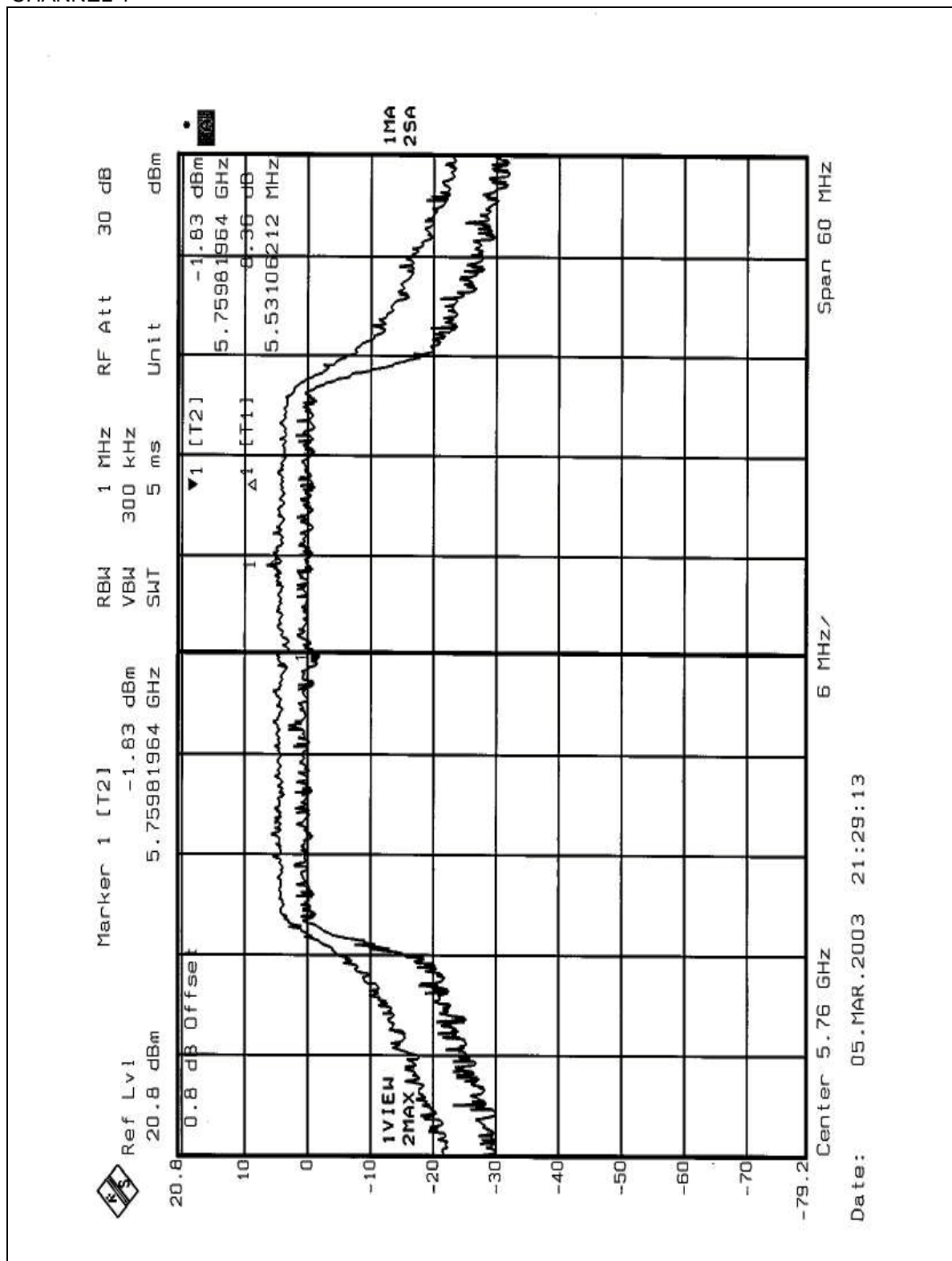
CHANNEL 2



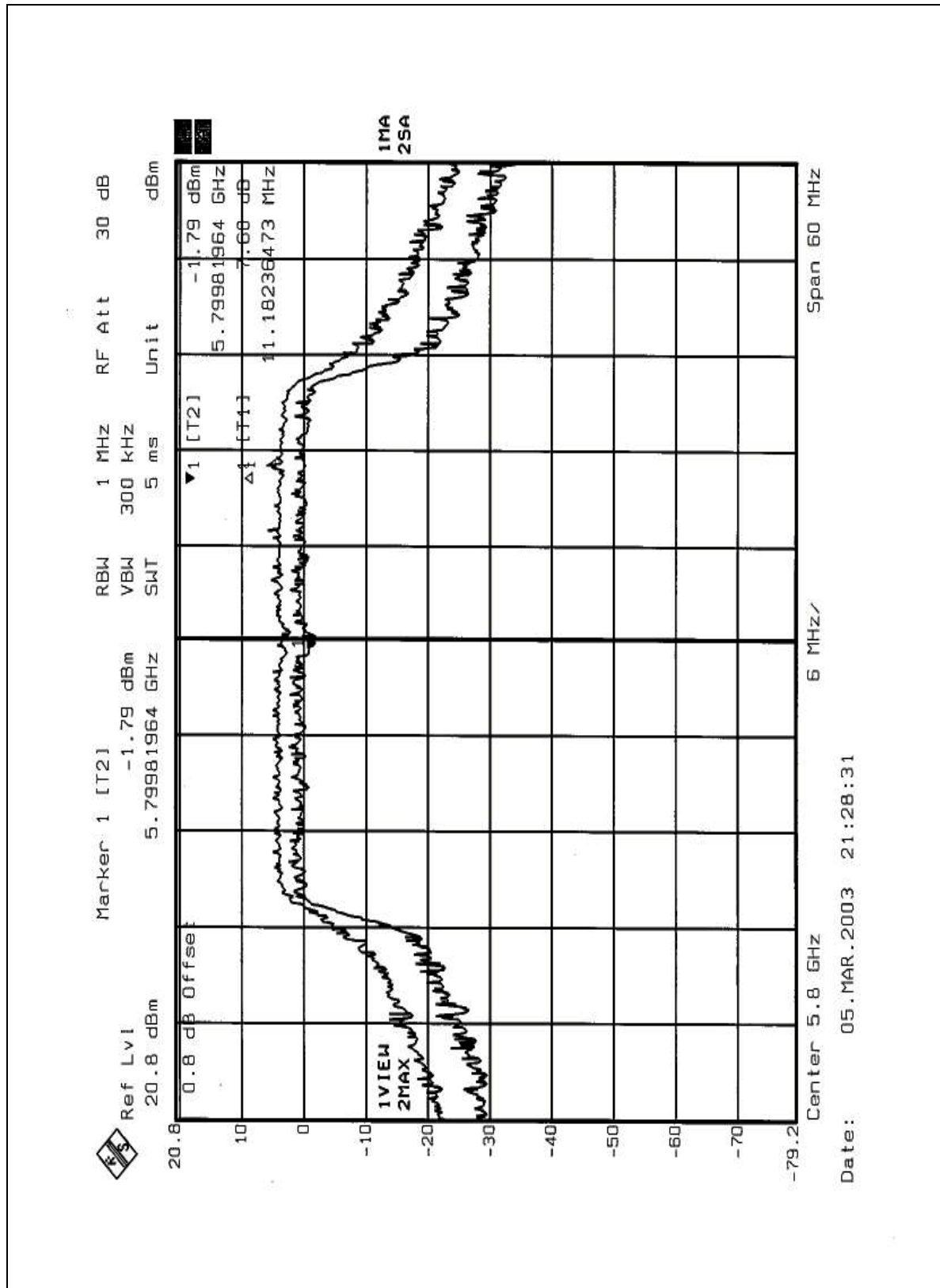
CHANNEL 3



CHANNEL 4



CHANNEL 5



5.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

5.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

Frequency Band	Limit
5.15 – 5.25 GHz	4dBm
5.25 – 5.35 GHz	11dBm
5.725 – 5.825 GHz	17dBm

5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ROHDE&SCHWARZ SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.5.3 TEST PROCEDURES

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW=1MHz, VBW=3MHz. The PPSD is the highest level found across the emission in any 1MHz band.

5.5.4 DEVIATION FROM TEST STANDARD

No deviation

5.5.5 TEST SETUP



5.5.6 EUT OPERATING CONDITIONS

Same as 5.3.6

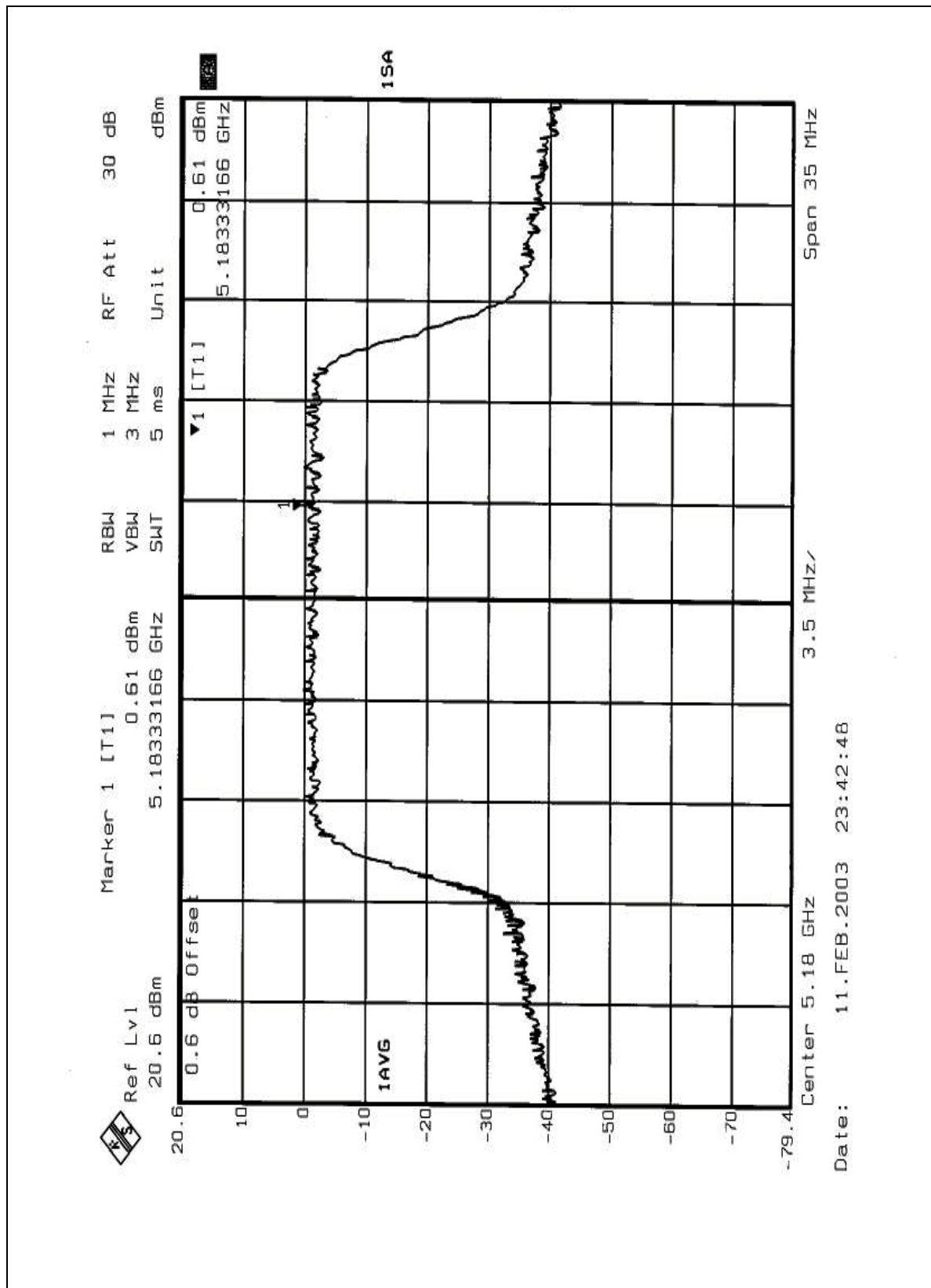


5.5.7 TEST RESULTS

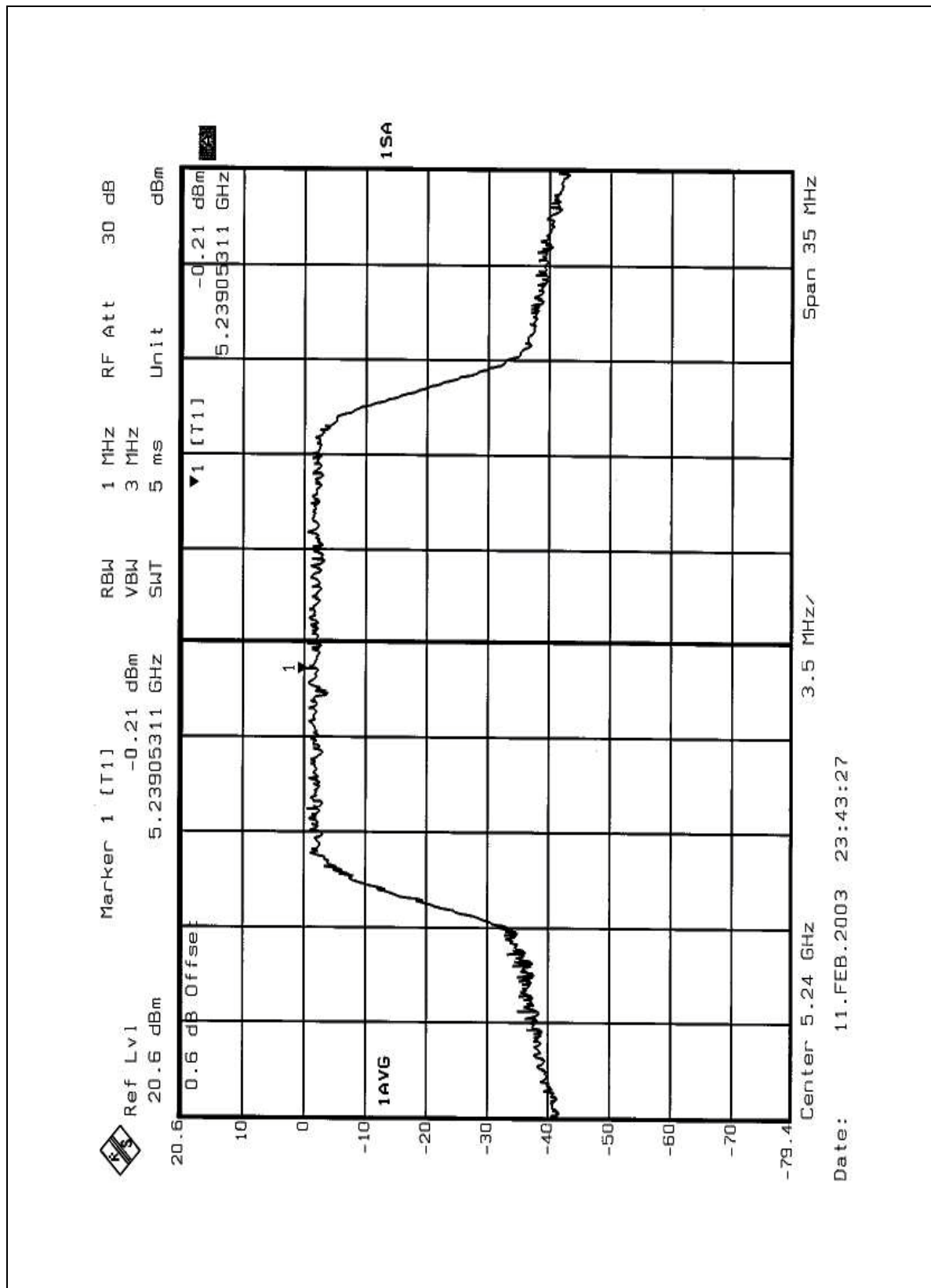
EUT	Wireless LAN 802.11a/b Dual Band Mini PCI Adapter	MODEL	802MABB
MODE	Normal	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	21deg. C, 68RH, 1005 hPa	TESTED BY	Ansen Lei

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	0.61	4	PASS
4	5240	-0.21	4	PASS
5	5260	0.54	11	PASS
8	5320	0.46	11	PASS
9	5745	-0.89	17	PASS
12	5805	0.06	17	PASS

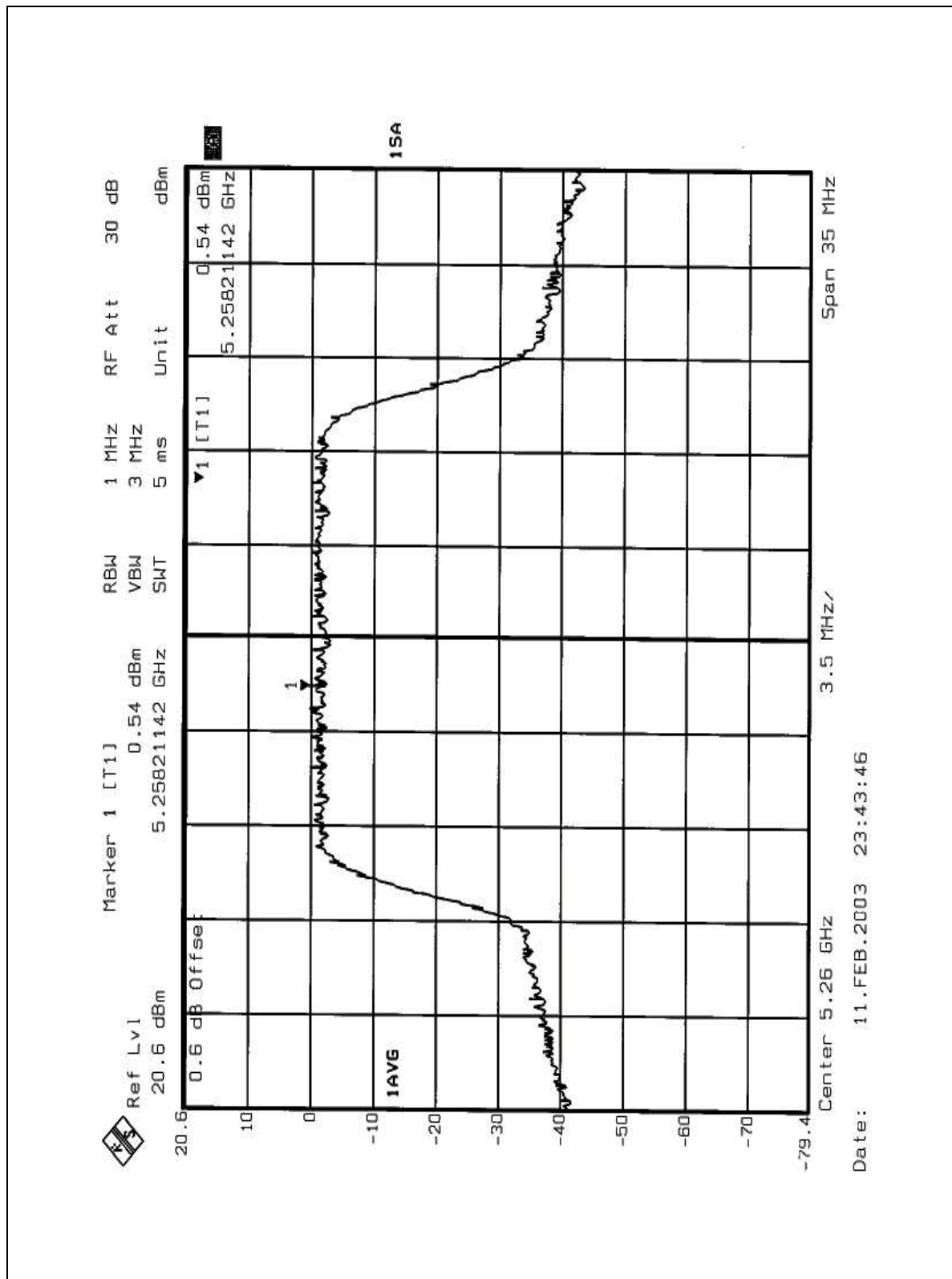
CHANNEL 1



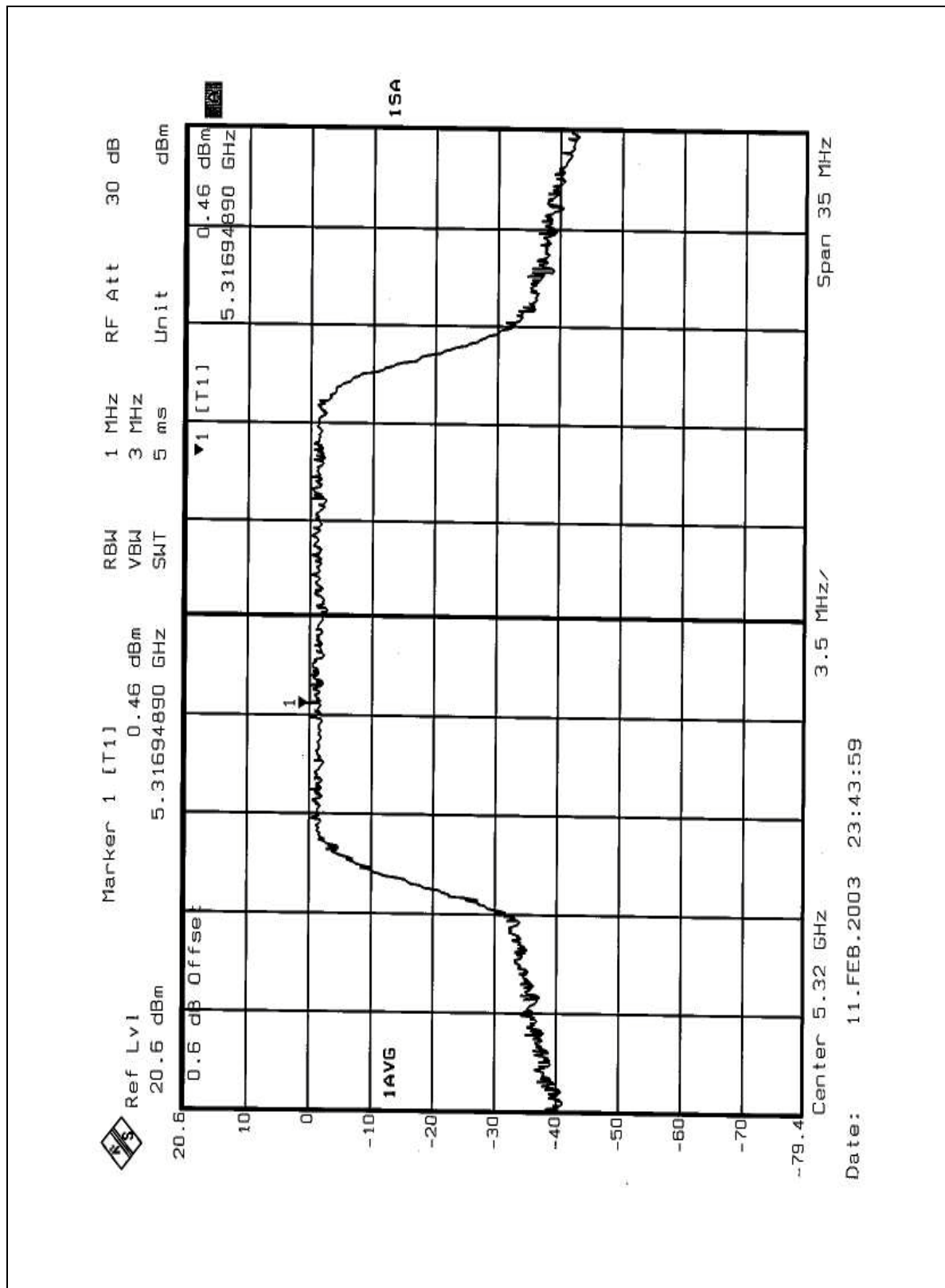
CHANNEL 4



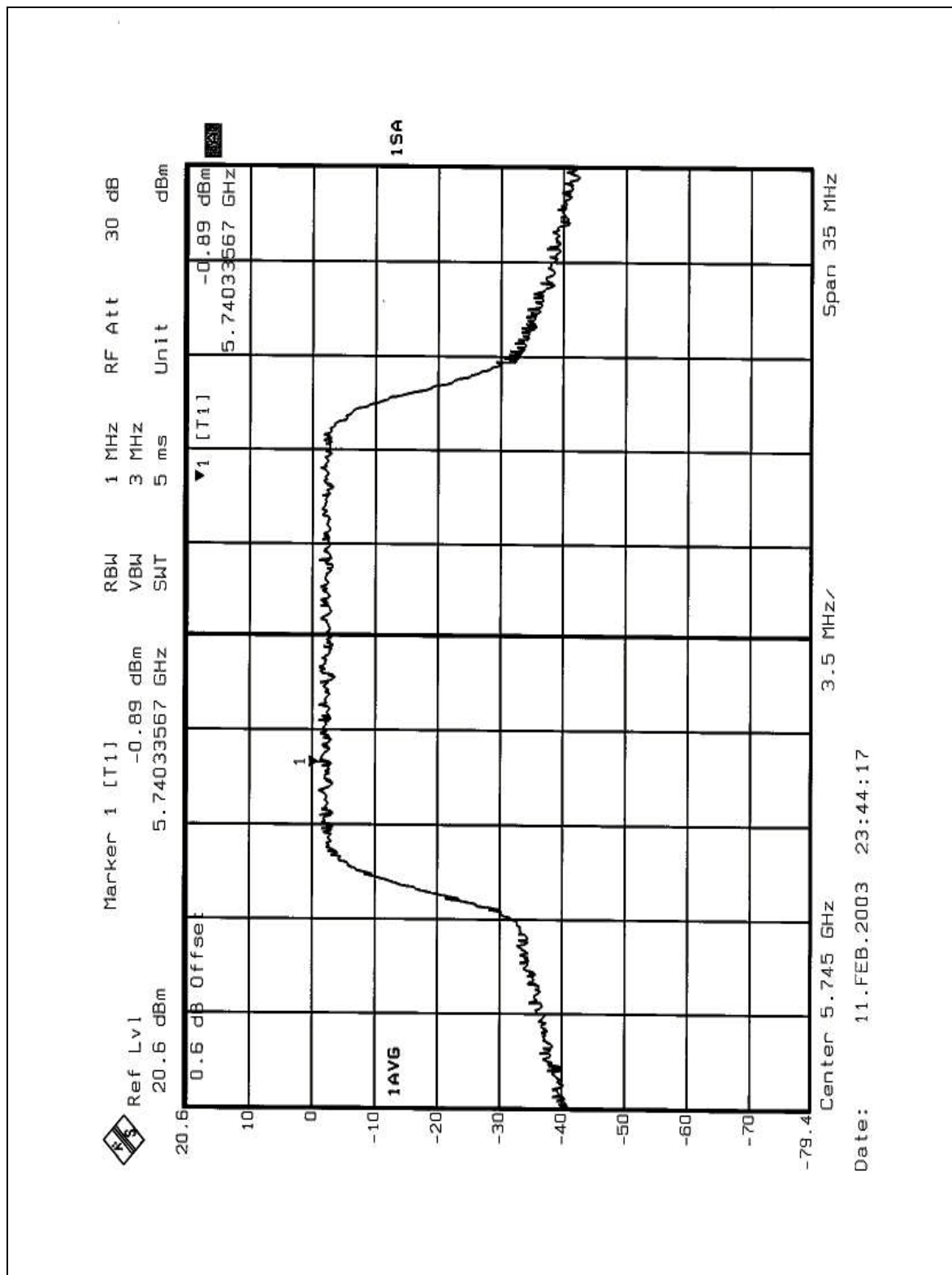
CHANNEL 5



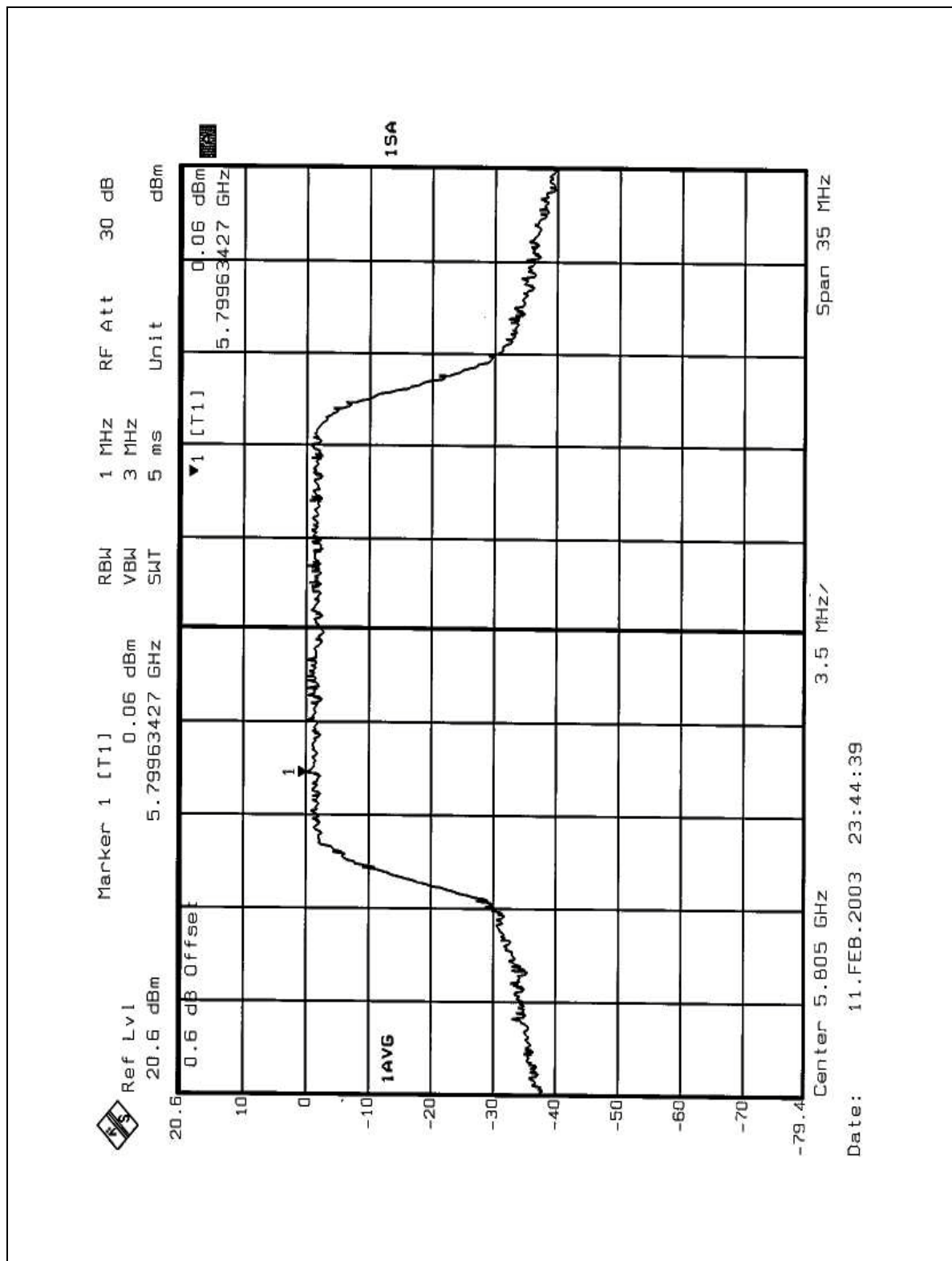
CHANNEL 8



CHANNEL9



CHANNEL 12

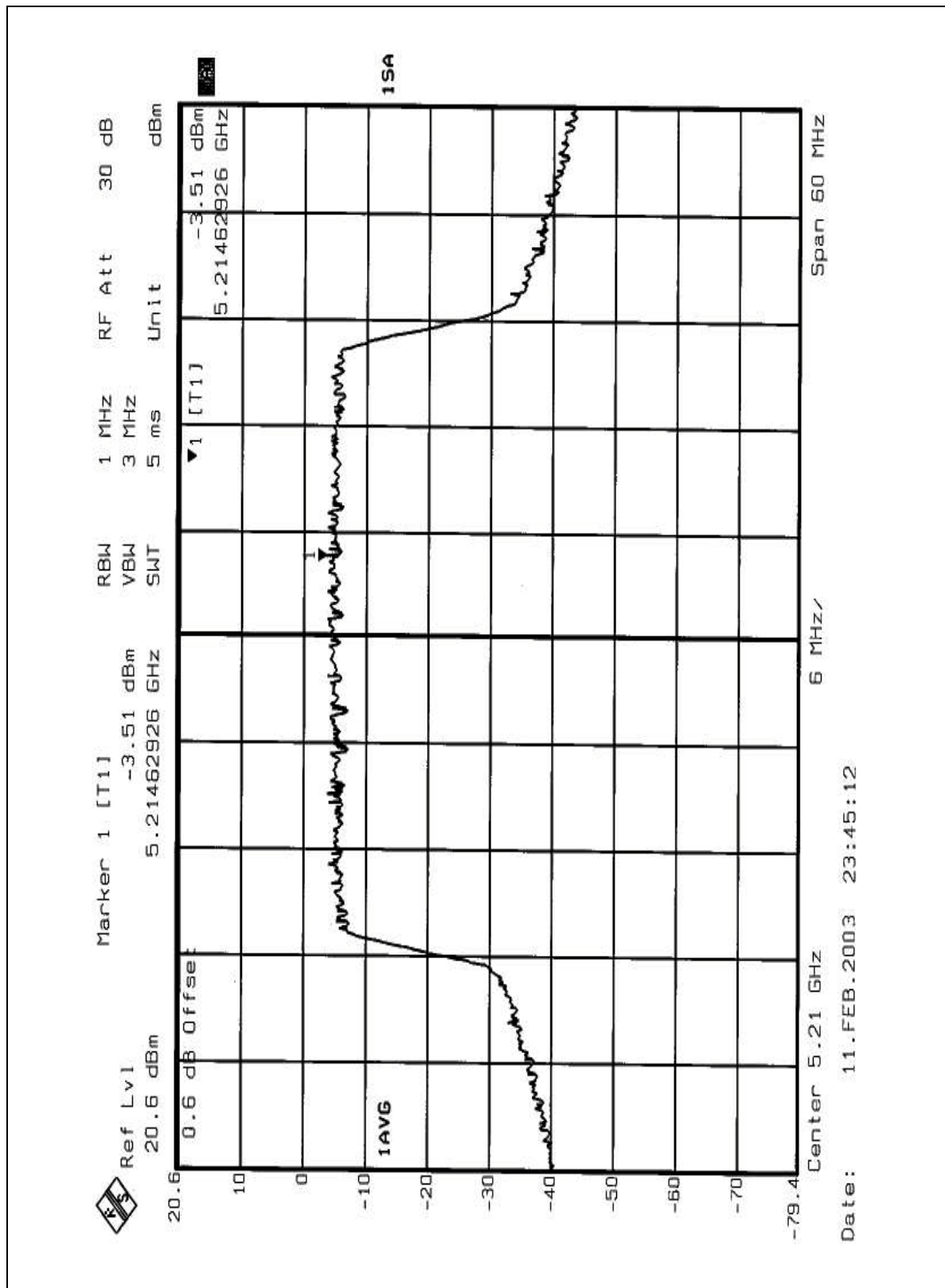




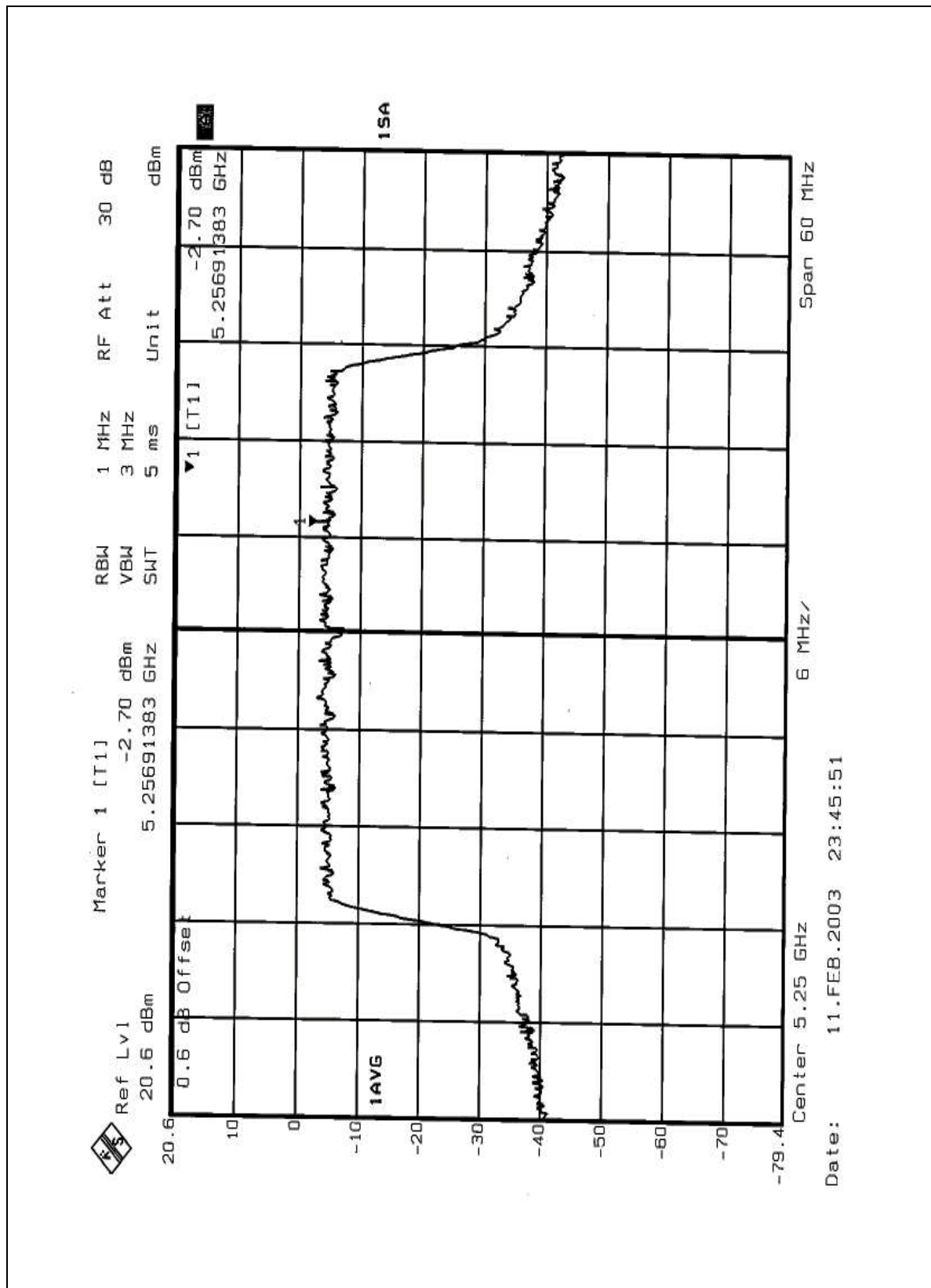
EUT	Wireless LAN 802.11a/b Dual Band Mini PCI Adapter	MODEL	802MABB
MODE	Turbo	INPUT POWER (SYSTEM)	120Vac, 60 Hz
ENVIRONMENTAL CONDITIONS	21deg. C, 68RH, 1005 hPa	TESTED BY	Ansen Lei

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1 MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5210	-3.51	4	PASS
2	5250	-2.70	4	PASS
3	5290	-3.09	11	PASS
4	5760	-2.90	17	PASS
5	5800	-3.02	17	PASS

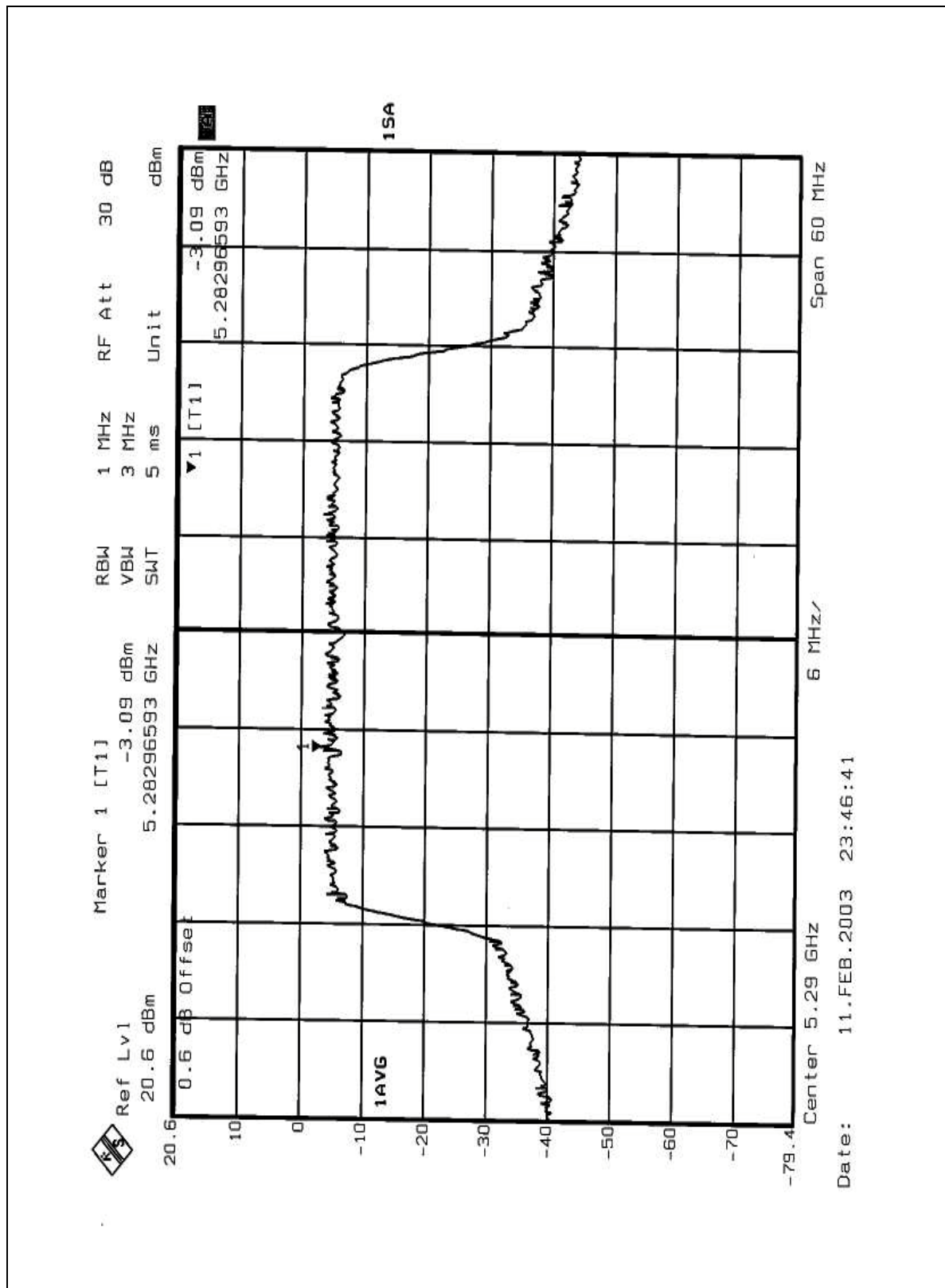
CHANNEL 1



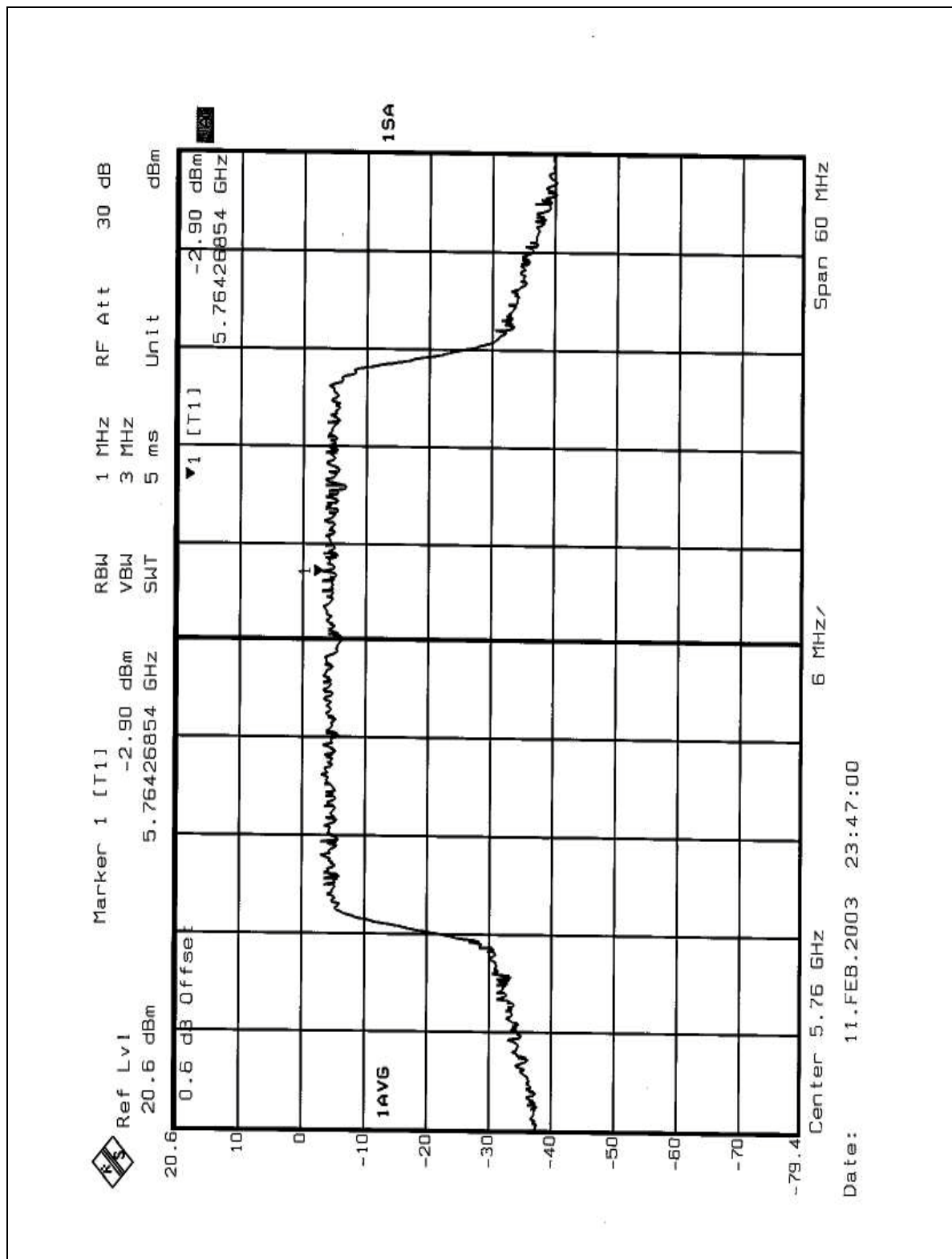
CHANNEL 2



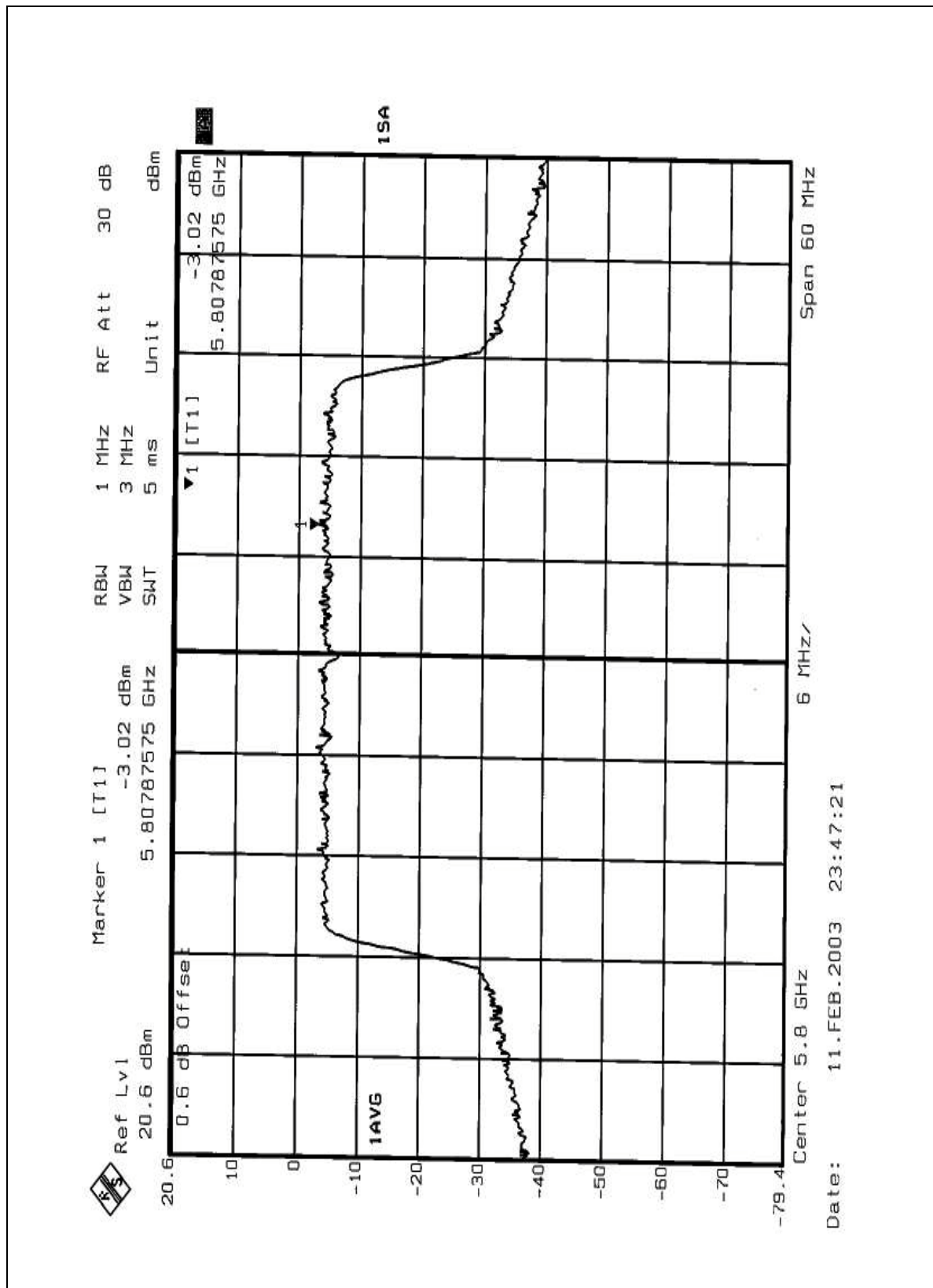
CHANNEL 3



CHANNEL 4



CHANNEL 5



5.6 FREQUENCY STABILITY

5.6.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

The frequency tolerance of the carrier signal shall be maintained within +/- 0.02% of the operating frequency over a temperature variation of -30 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

5.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Mar. 15, 2003
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W901030	Jun. 24, 2003

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

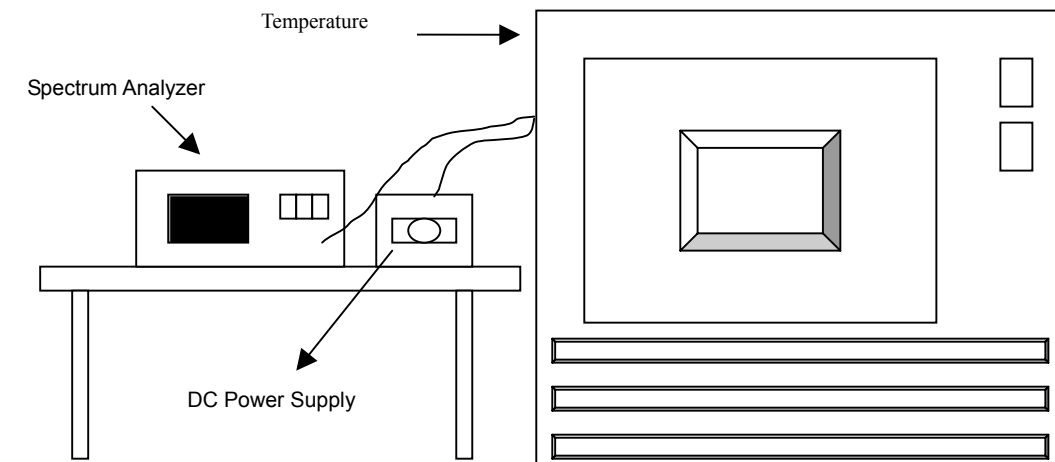
5.6.3 TEST PROCEDURE

1. The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
2. Turn the EUT on and couple its output to a spectrum analyzer.
3. Turn the EUT off and set the chamber to the highest temperature specified.
4. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
5. Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
6. The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

5.6.4 DEVIATION FROM TEST STANDARD

No deviation

5.6.5 TEST SETUP



5.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

5.6.7 TEST RESULTS

Operating frequency: 5180MHz				Limit : $\pm 0.02\%$			
Temp. (°C)	Power supply (VDC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	126.5	5319.9755	-0.0004605	5319.9762	-0.0004474	5319.9756	-0.0004586
	110.0	5319.9753	-0.0004643	5319.9760	-0.0004511	5319.9757	-0.0004568
	93.5	5319.9753	-0.0004643	5319.9766	-0.0004398	5319.9759	-0.0004530
40	126.5	5319.9670	-0.0006203	5319.9681	-0.0005996	5319.9670	-0.0006203
	110.0	5319.9673	-0.0006147	5319.9683	-0.0005959	5319.9677	-0.0006071
	93.5	5319.9673	-0.0006147	5319.9684	-0.0005940	5319.9672	-0.0006165
30	126.5	5319.9642	-0.0006729	5319.9662	-0.0006353	5319.9666	-0.0006278
	110.0	5319.9645	-0.0006673	5319.9660	-0.0006391	5319.9663	-0.0006335
	93.5	5319.9645	-0.0006673	5319.9665	-0.0006297	5319.9668	-0.0006241
20	126.5	5319.9665	-0.0006297	5319.9663	-0.0006335	5319.9663	-0.0006335
	110.0	5319.9675	-0.0006109	5319.9665	-0.0006297	5319.9662	-0.0006353
	93.5	5319.9674	-0.0006128	5319.9668	-0.0006241	5319.9665	-0.0006297
10	126.5	5319.9652	-0.0006541	5319.9673	-0.0006147	5319.9653	-0.0006523
	110.0	5319.9647	-0.0006635	5319.9673	-0.0006147	5319.9657	-0.0006447
	93.5	5319.9647	-0.0006635	5319.9675	-0.0006109	5319.9657	-0.0006447
0	126.5	5319.9672	-0.0006165	5319.9660	-0.0006391	5319.9671	-0.0006184
	110.0	5319.9672	-0.0006165	5319.9663	-0.0006335	5319.9670	-0.0006203
	93.5	5319.9676	-0.0006090	5319.9665	-0.0006297	5319.9676	-0.0006090
-10	126.5	5319.9803	-0.0003703	5319.9802	-0.0003722	5319.9802	-0.0003722
	110.0	5319.9803	-0.0003703	5319.9808	-0.0003609	5319.9797	-0.0003816
	93.5	5319.9806	-0.0003647	5319.9808	-0.0003609	5319.9806	-0.0003647
-20	126.5	5319.9812	-0.0003534	5319.9820	-0.0003383	5319.9821	-0.0003365
	110.0	5319.9813	-0.0003515	5319.9817	-0.0003440	5319.9820	-0.0003383
	93.5	5319.9813	-0.0003515	5319.9819	-0.0003402	5319.9820	-0.0003383
-30	126.5	5319.9862	-0.0002594	5319.9862	-0.0002594	5319.9872	-0.0002406
	110.0	5319.9863	-0.0002575	5319.9860	-0.0002632	5319.9873	-0.0002387
	93.5	5319.9865	-0.0002538	5319.9860	-0.0002632	5319.9876	-0.0002331

5.7 BAND EDGES MEASUREMENT

5.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

NOTE:

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

5.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 1MHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges were measured and recorded.

5.7.3 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.



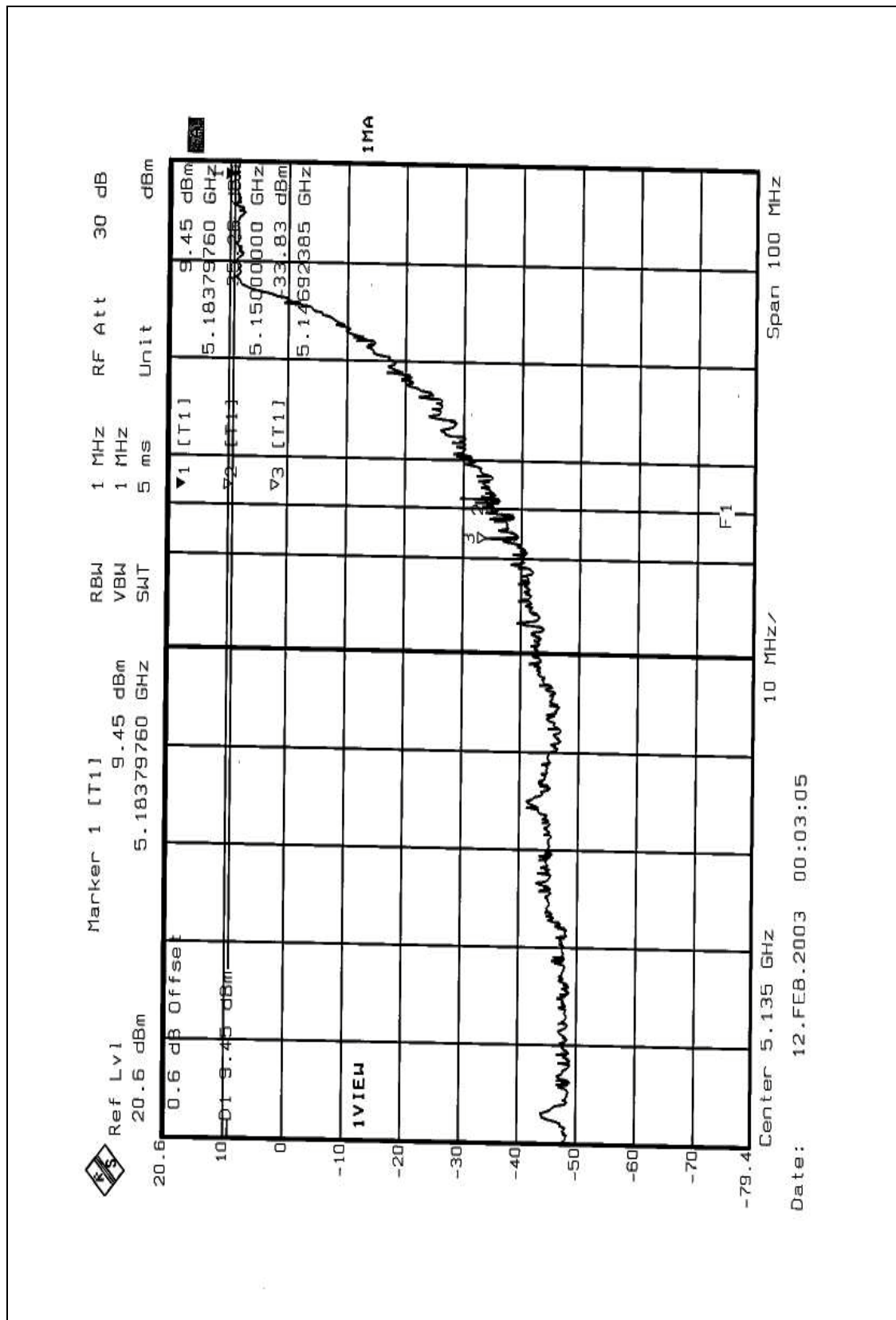
5.7.4 TEST RESULTS

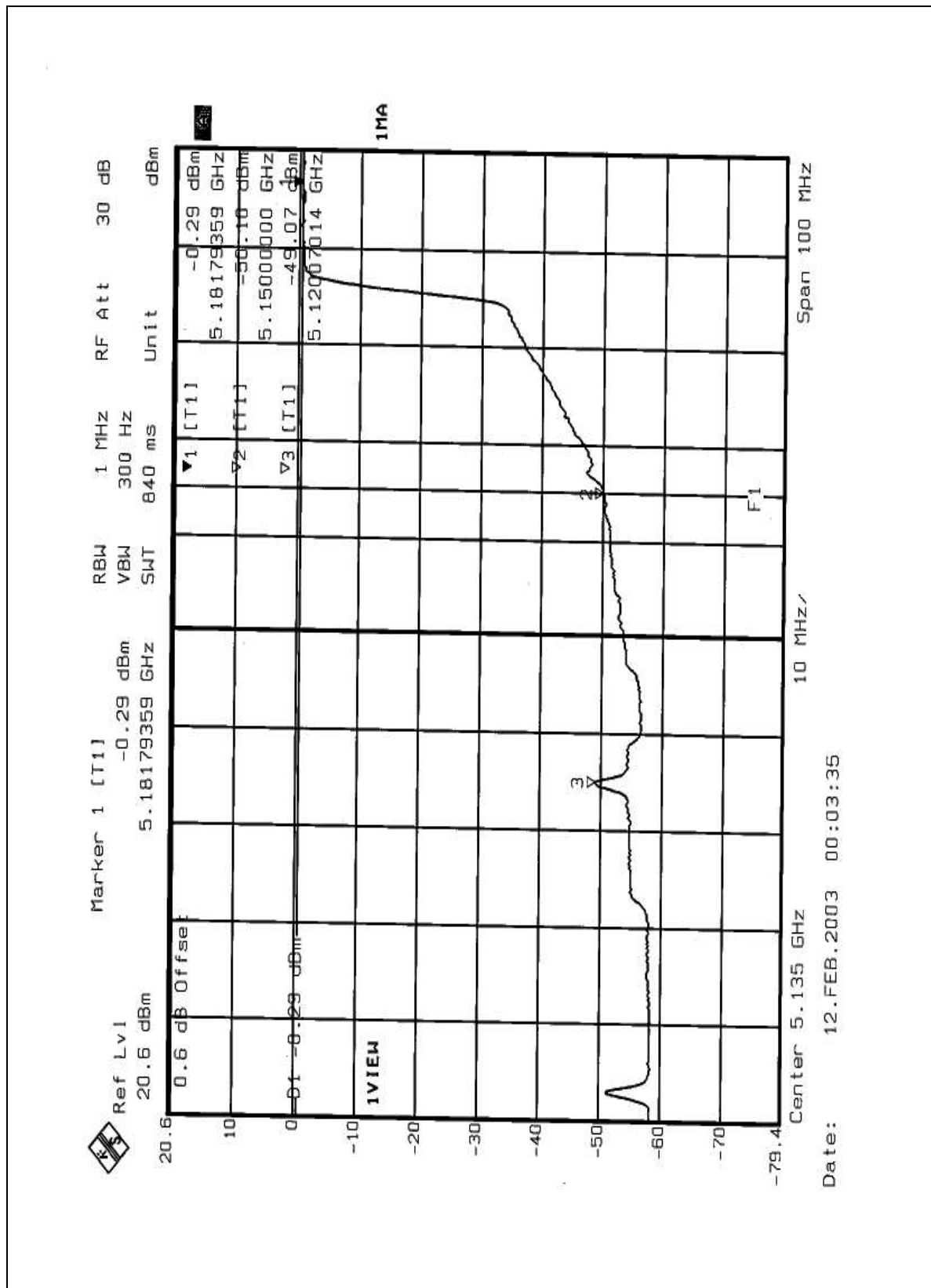
For signals in the restricted bands above and below the 5.15 to 5.35 GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak field strength of the intentional signal made on the OATS to calculate the field strength of the unintentional signals.

The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=300Hz) are attached on the following 8 pages.

Normal Mode: Channel 1 (5180 MHz)

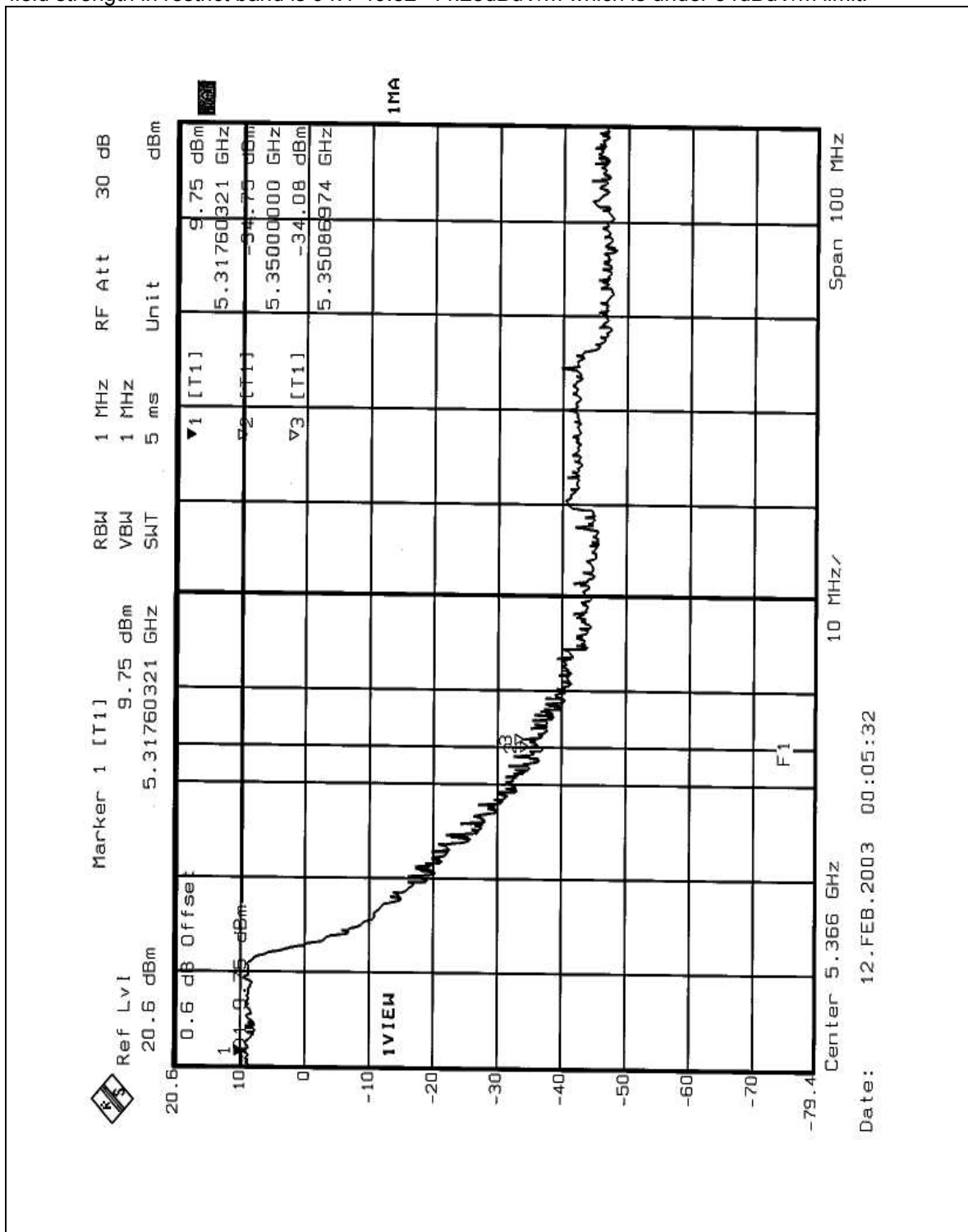
The band edge emission plot on the following 2 pages shows 43.28dBc (Peak) / 48.78dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (normal mode) is 93.9dBuV/m, so the maximum field strength in restrict band is $93.9 - 48.78 = 45.12$ dBuV/m which is under 54dBuV/m limit.

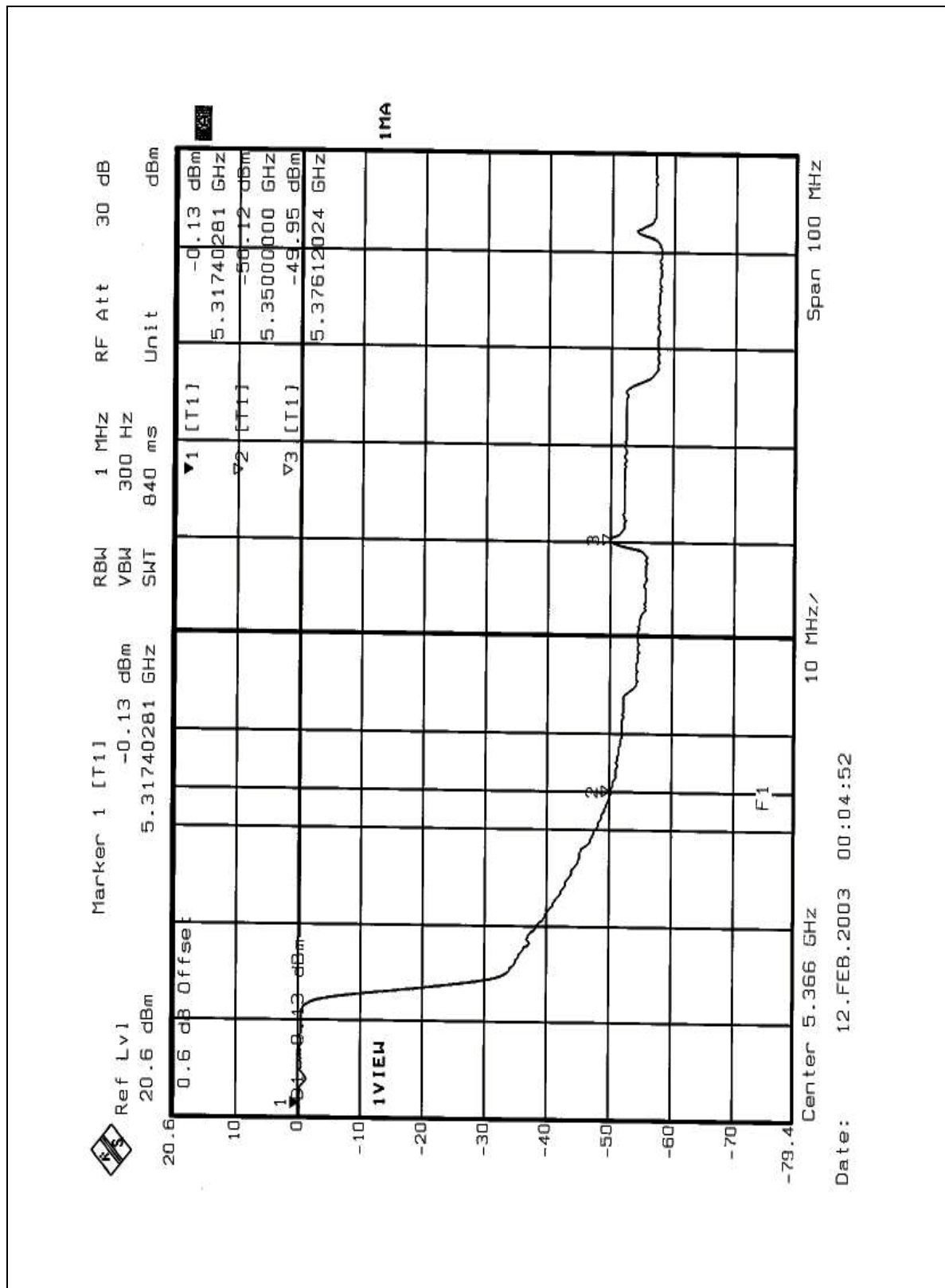




Normal Mode: Channel 8 (5320 MHz)

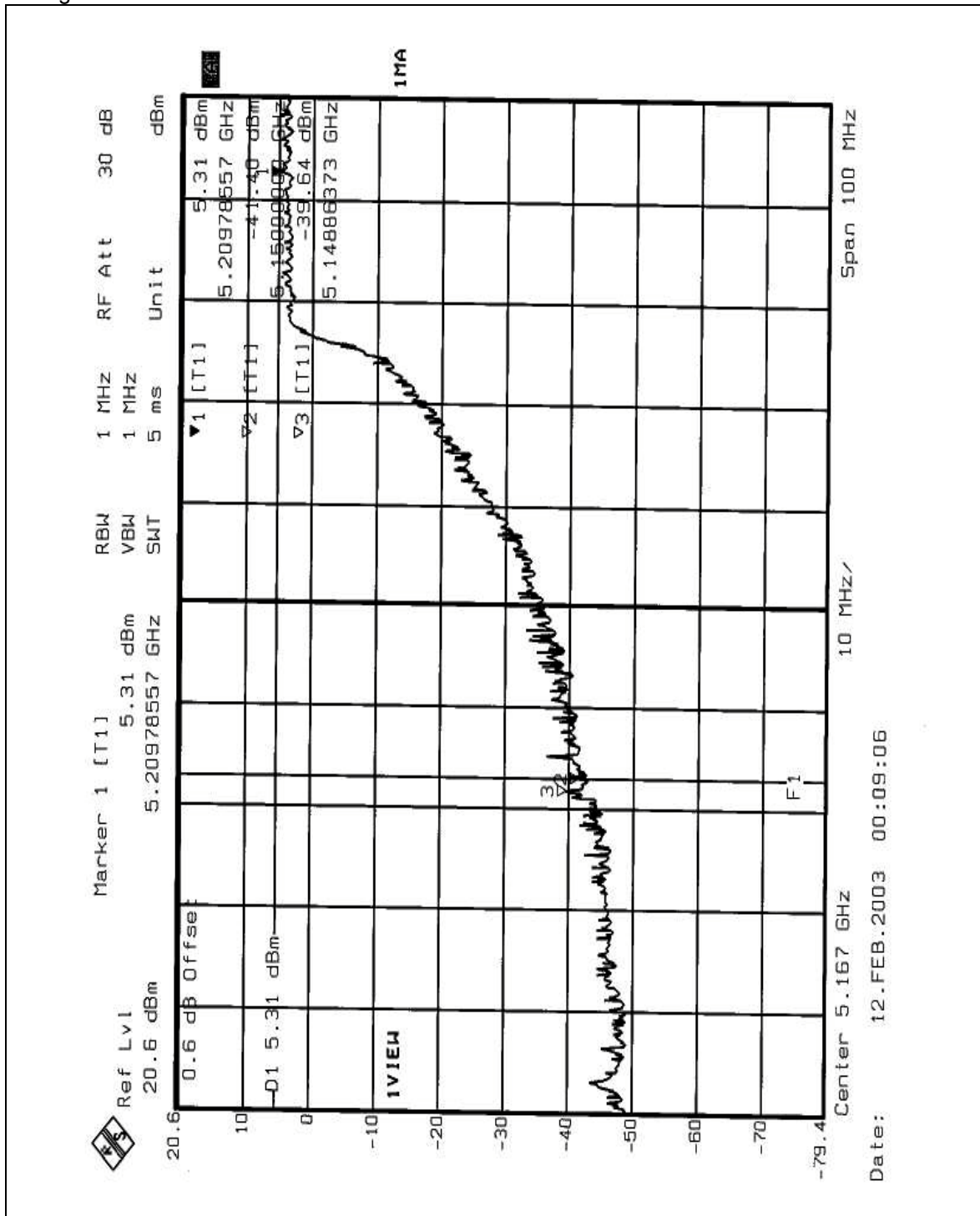
The band edge emission plot on the following 2 pages shows 43.83dBc (Peak) / 49.82dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 (normal mode) is 94.1dBuV/m, so the maximum field strength in restrict band is $94.1 - 49.82 = 44.28$ dBuV/m which is under 54dBuV/m limit.

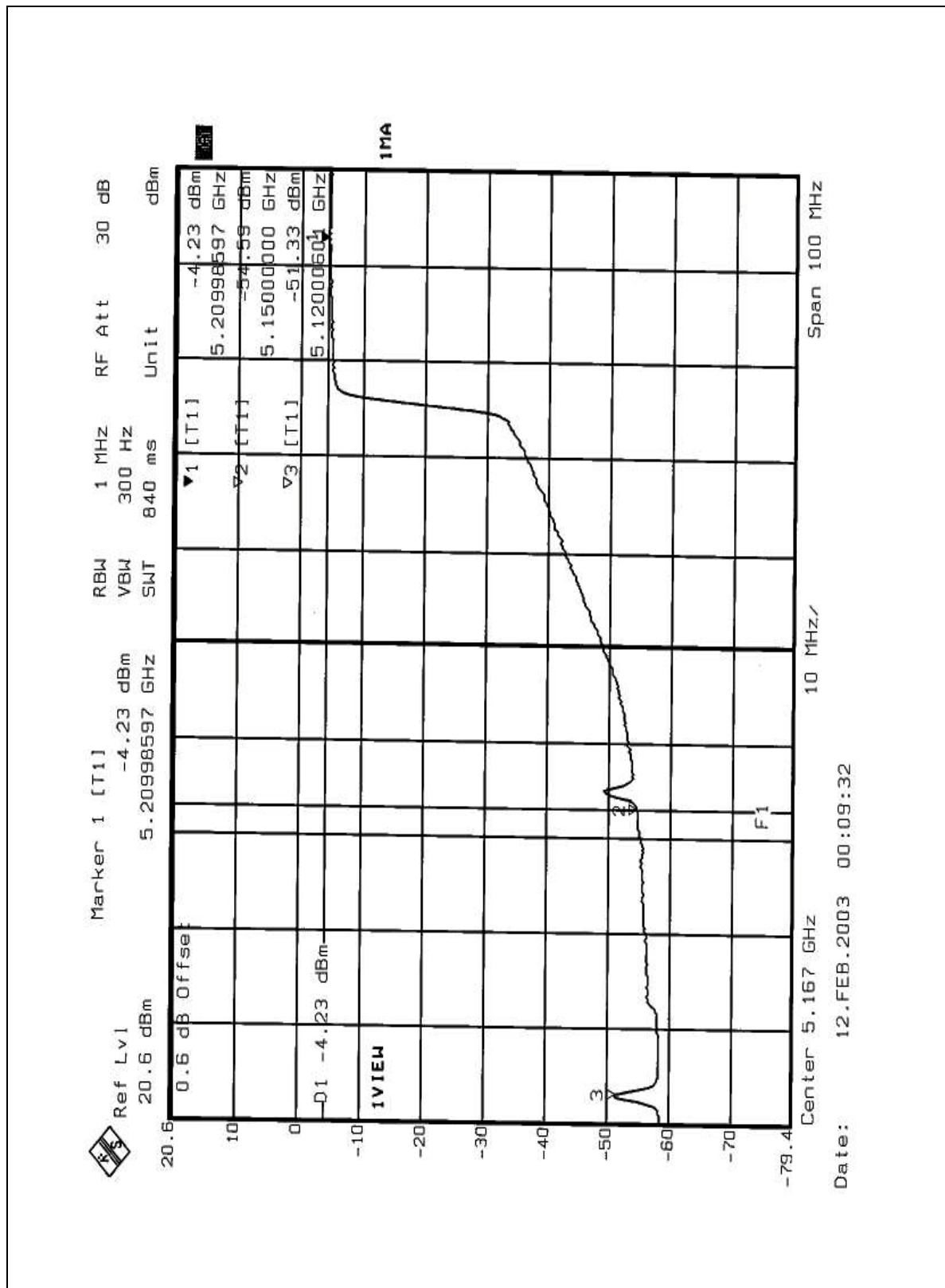




Turbo Mode: Channel 1 (5210 MHz)

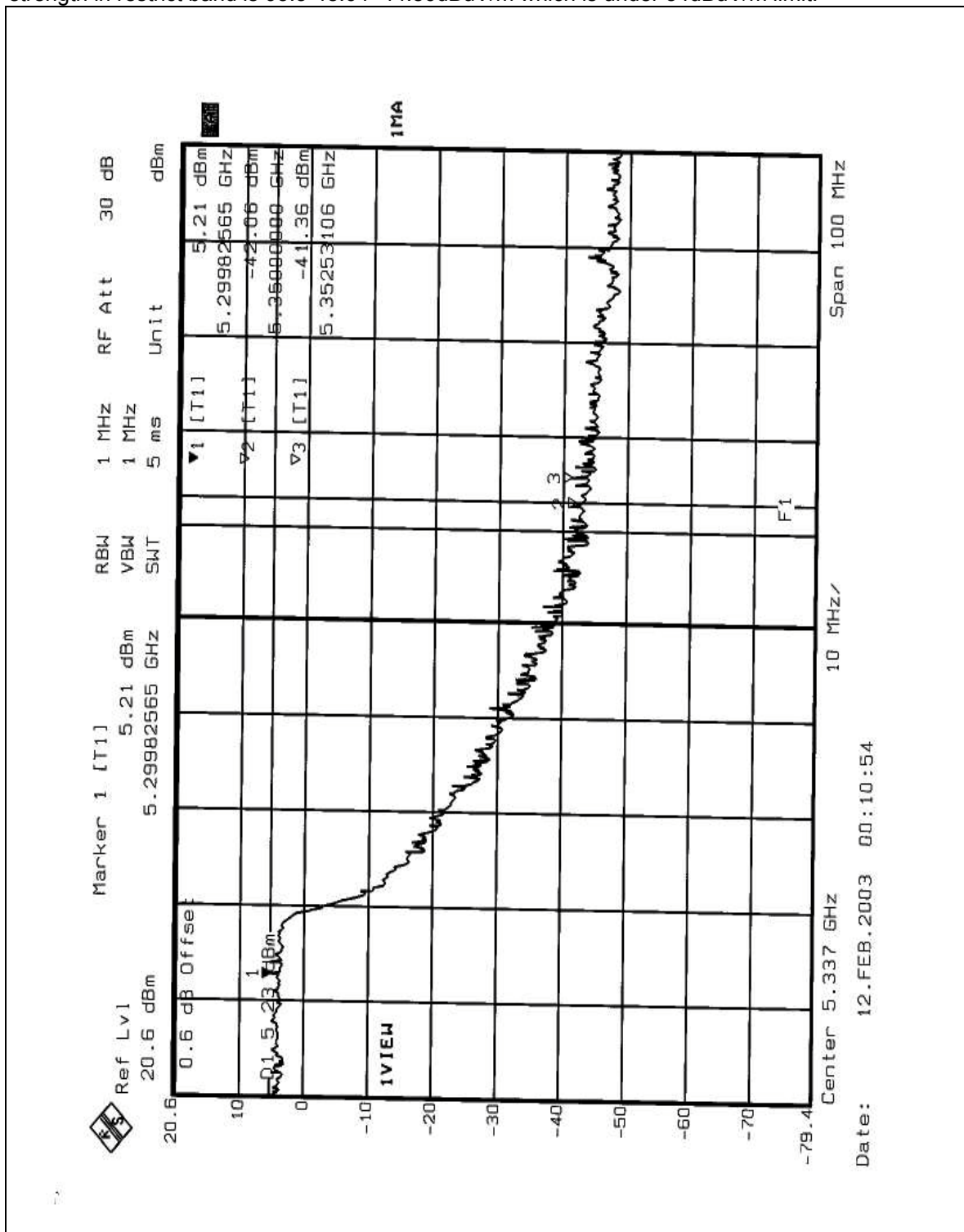
The band edge emission plot on the following 2 pages shows 44.95dBc (Peak) / 47.1dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 (turbo mode) is 92.3dBuV/m, so the maximum field strength in restrict band is $92.3 - 47.1 = 45.2$ dBuV/m which is under 54dBuV/m limit.

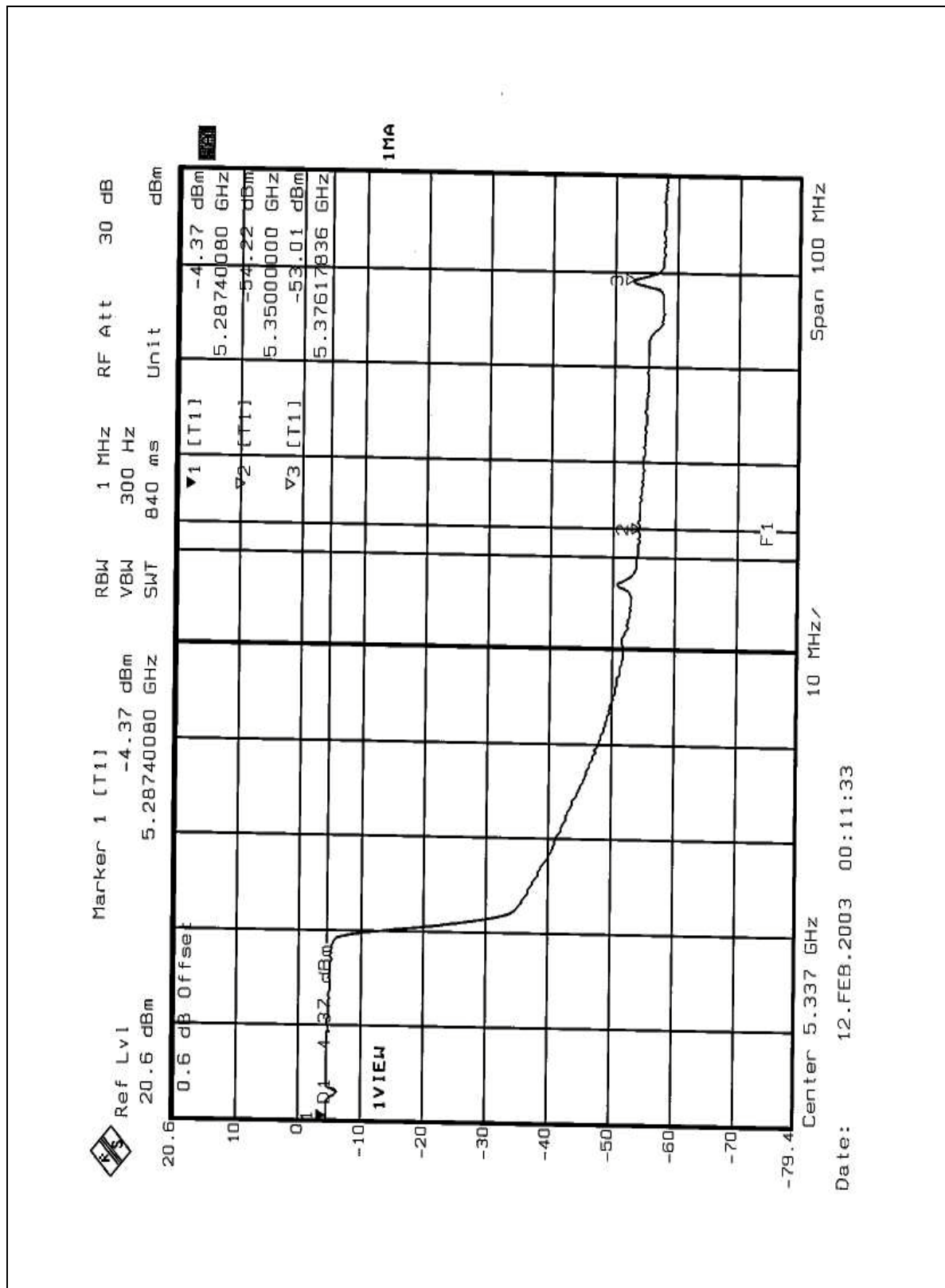




Turbo Mode: Channel 3 (5290 MHz)

The band edge emission plot on the following 2 pages shows 46.57dBc (Peak) / 48.64dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 8 (turbo mode) is 93.5dBuV/m, so the maximum field strength in restrict band is $93.5 - 48.64 = 44.86$ dBuV/m which is under 54dBuV/m limit.







5.8 ANTENNA REQUIREMENT

5.8.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.407(a), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

5.8.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is Inverted F antenna with UFL connector. The maximum Gain of the antenna is 2.15dBi

6. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	BSMI, DGT, CNLA

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

www.adt.com.tw/index.5/phtml.

If you have any comments, please feel free to contact us at the following:

Lin Kou EMC Lab:

Tel: 886-2-26052180

Fax: 886-2-26052943

Hsin Chu EMC Lab:

Tel: 886-35-935343

Fax: 886-35-935342

Lin Kou Safety Lab:

Tel: 886-2-26093195

Fax: 886-2-26093184

Lin Kou RF&Telecom Lab

Tel: 886-3-3270910

Fax: 886-3-3270892

Email: service@mail.adt.com.tw

Web Site: www.adt.com.tw

The address and road map of all our labs can be found in our web site also.