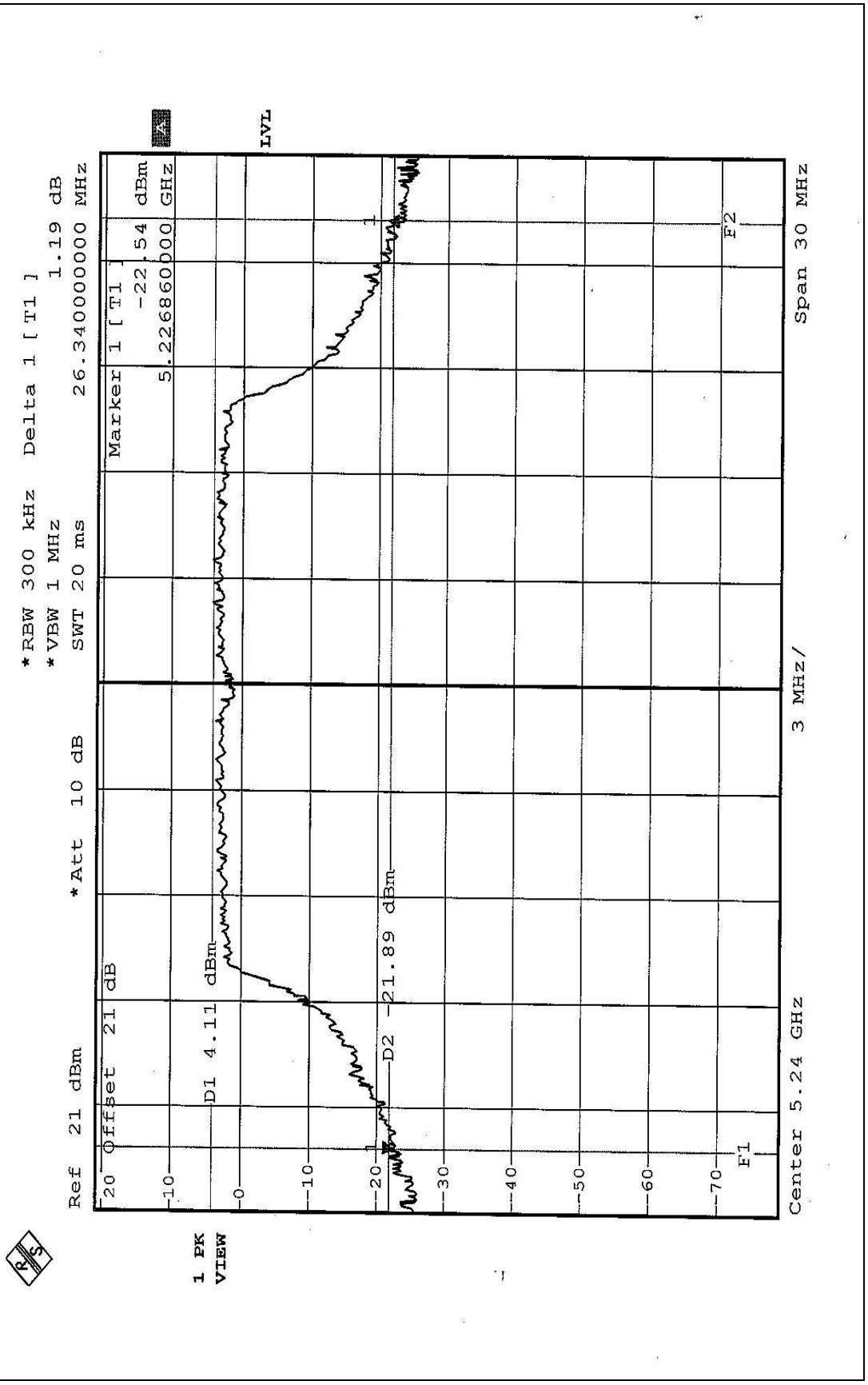
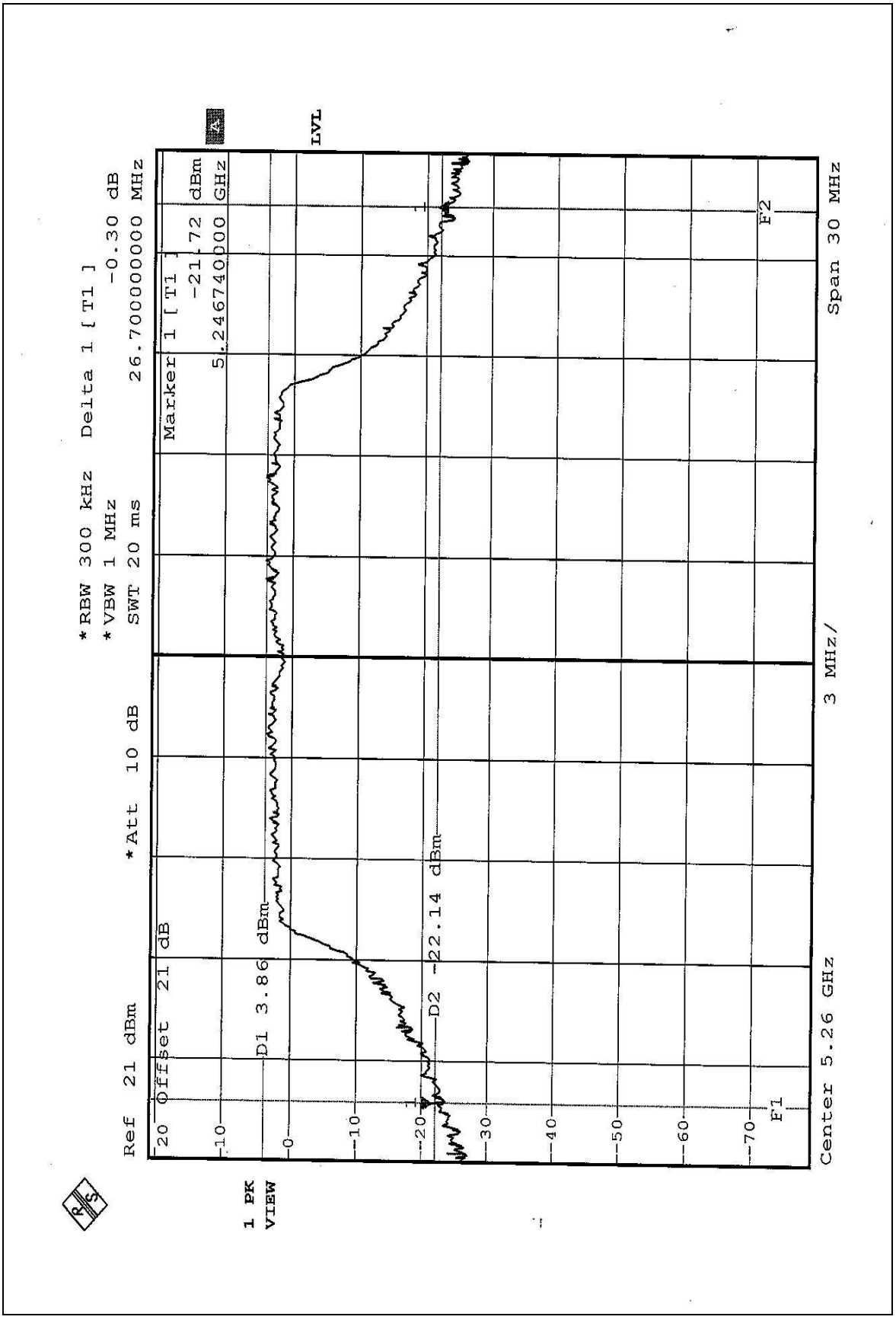
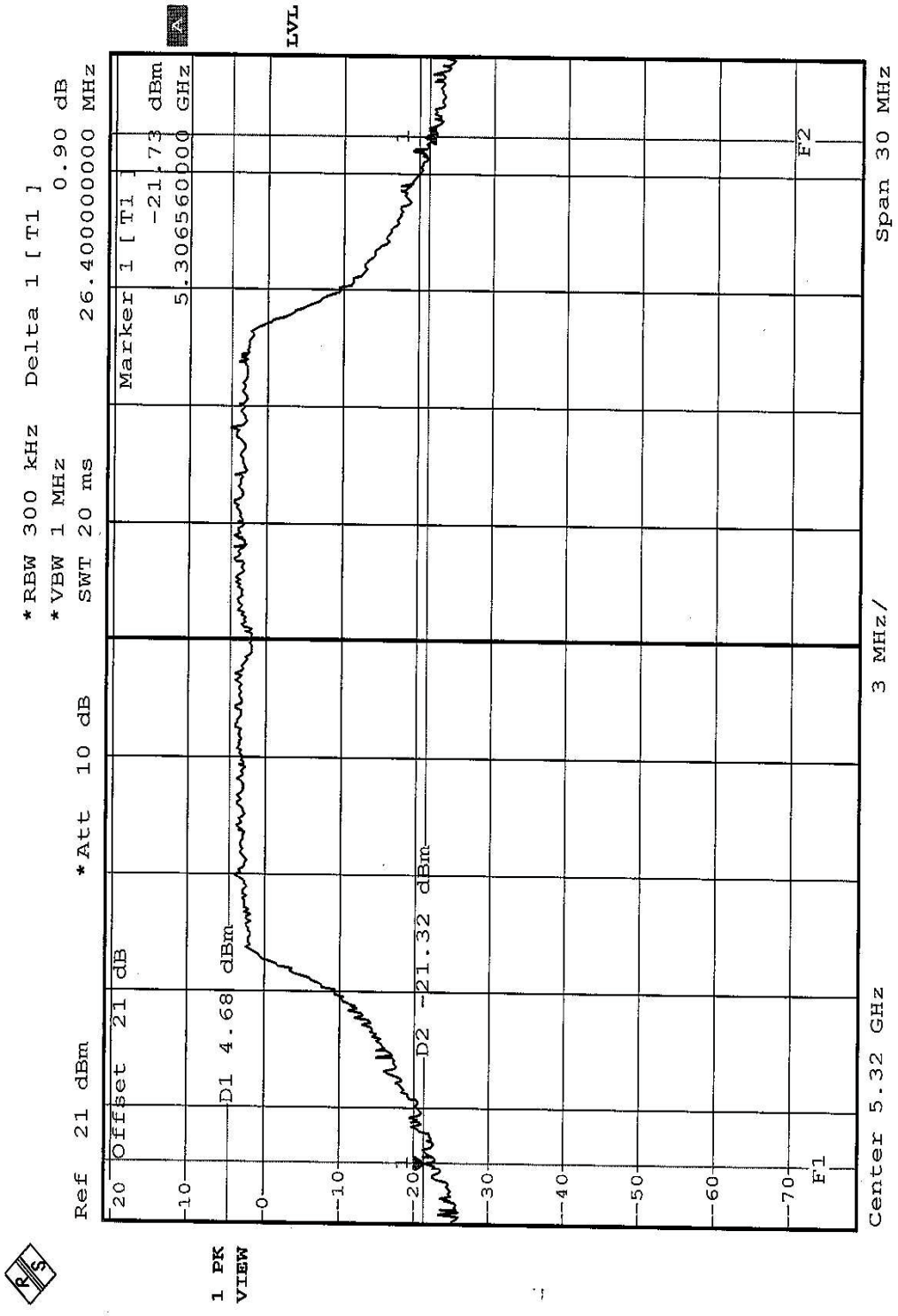
CH4


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
1.19 dB
26.340000000 MHz
Marker 1 [T1]
-22.54 dBm
5.226860000 GHz
D1 4.11 dBm
D2 -21.89 dBm
1 PK VIEW
Center 5.24 GHz
3 MHz/
Span 30 MHz
F1
F2

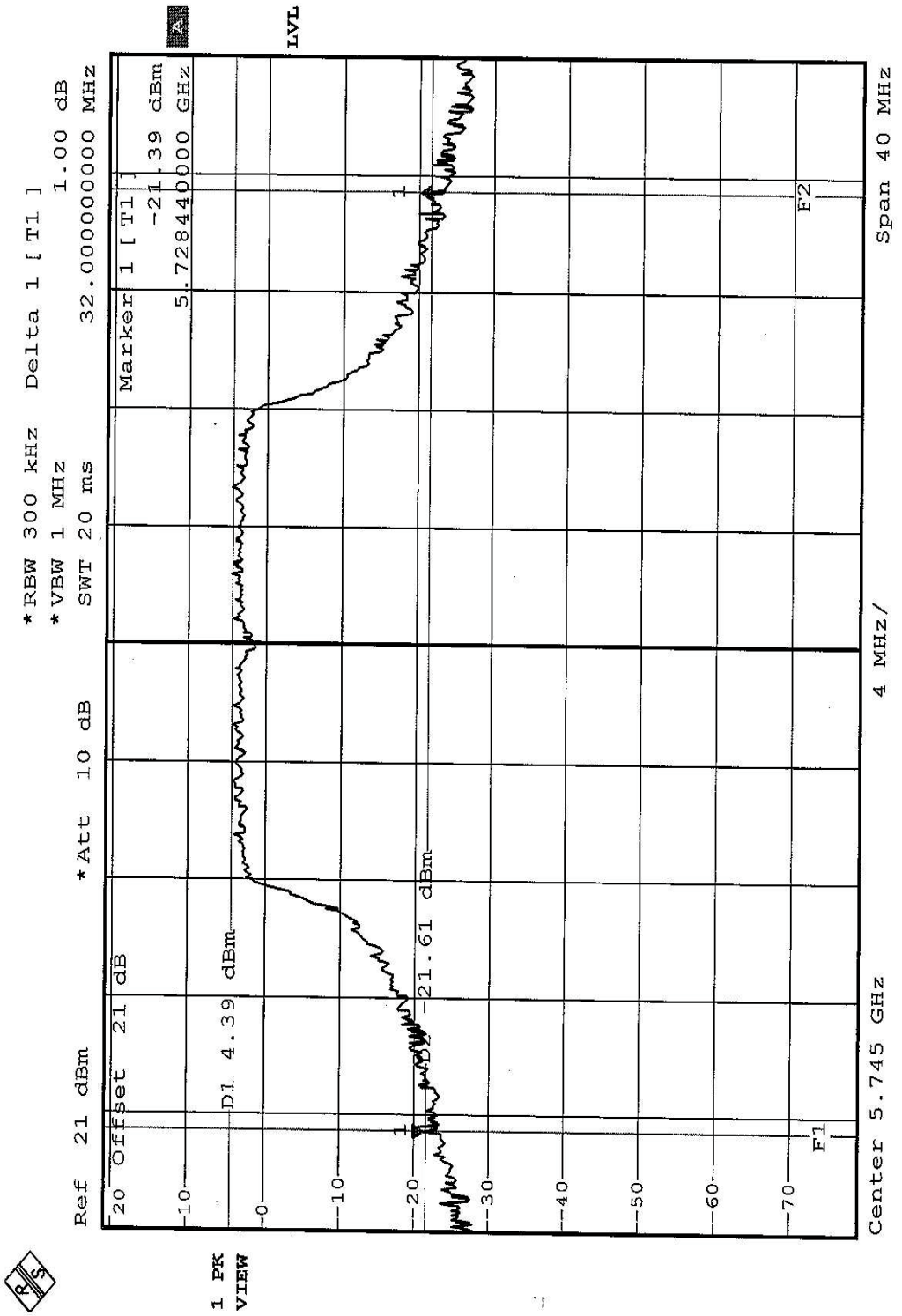
CH5


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-0.30 dB
26.700000000 MHz
Marker 1 [T1]
-21.72 dBm
5.246740000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
D1 3.86 dBm
D2 -22.14 dBm
Center 5.26 GHz
3 MHz/
Span 30 MHz
F1
F2
1 PK
VIEW

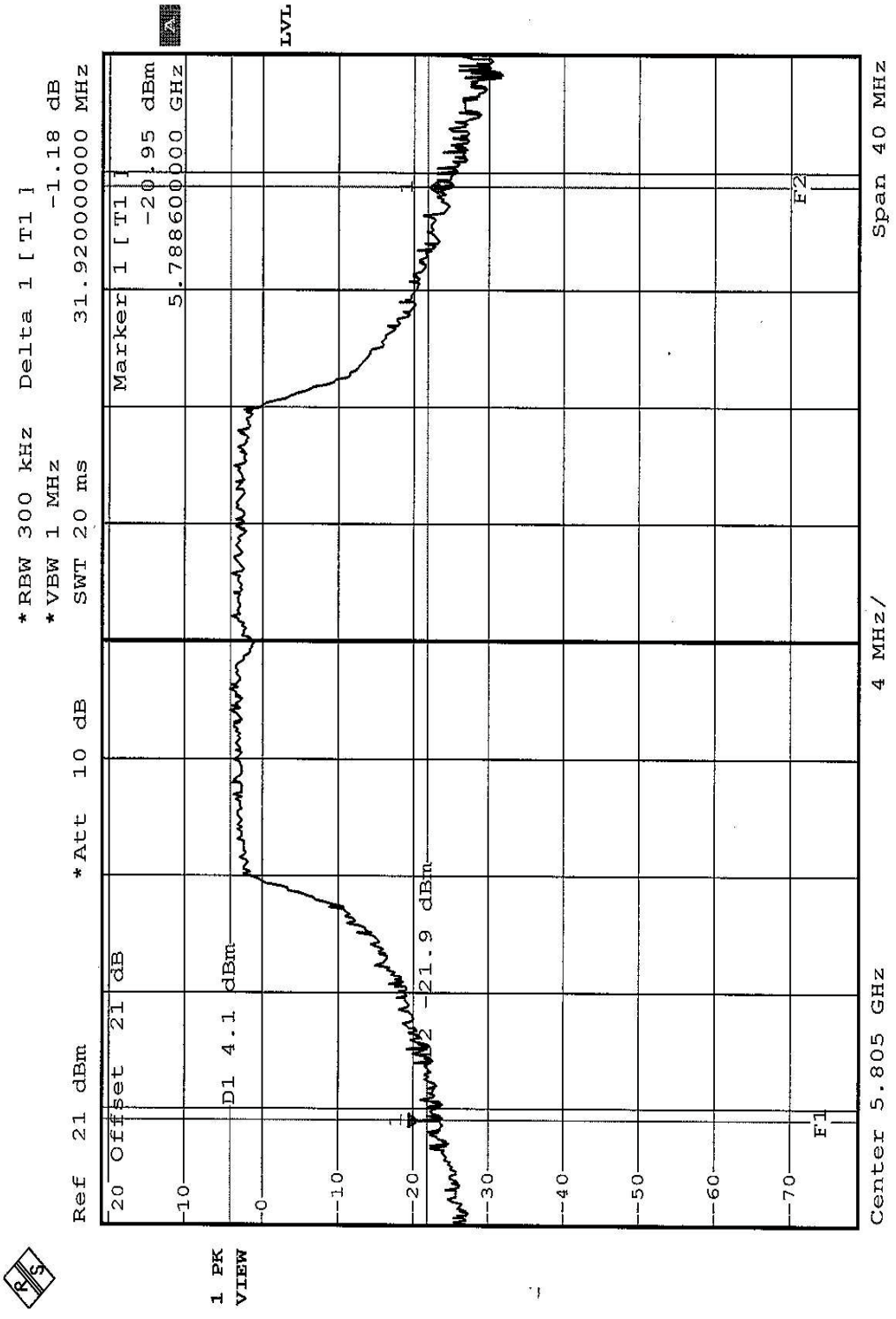
CH8


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 300 kHz
*VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
0.90 dB
26.400000000 MHz
Marker 1 [T1]
-21.73 dBm
5.306560000 GHz
LVL
D1 4.68 dBm
D2 -21.32 dBm
F1
F2
1 PK
VIEW
Center 5.32 GHz
3 MHz/
Span 30 MHz

CH9


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
1.00 dB
32.000000000 MHz
Marker 1 [T1]
-21.39 dBm
5.728440000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
D1 4.39 dBm
-21.61 dBm
Center 5.745 GHz
4 MHz/
Span 40 MHz
1 PK
VIEW

CH12


RBW 300 kHz
VBW 1 MHz
SWT 20 ms
Delta 1 [T1]
-1.18 dB
31.920000000 MHz
Marker 1 [T1]
-20.95 dBm
5.788600000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
D1 4.1 dBm
-21.9 dBm
Center 5.805 GHz
4 MHz/
Span 40 MHz
1 PK
VIEW

4.4 PEAK POWER EXCURSION MEASUREMENT

4.4.1 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

4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	August 12, 2004

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

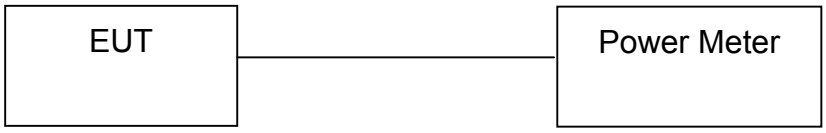
4.4.3 TEST PROCEDURE

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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP



4.4.6 EUT OPERATING CONDITIONS

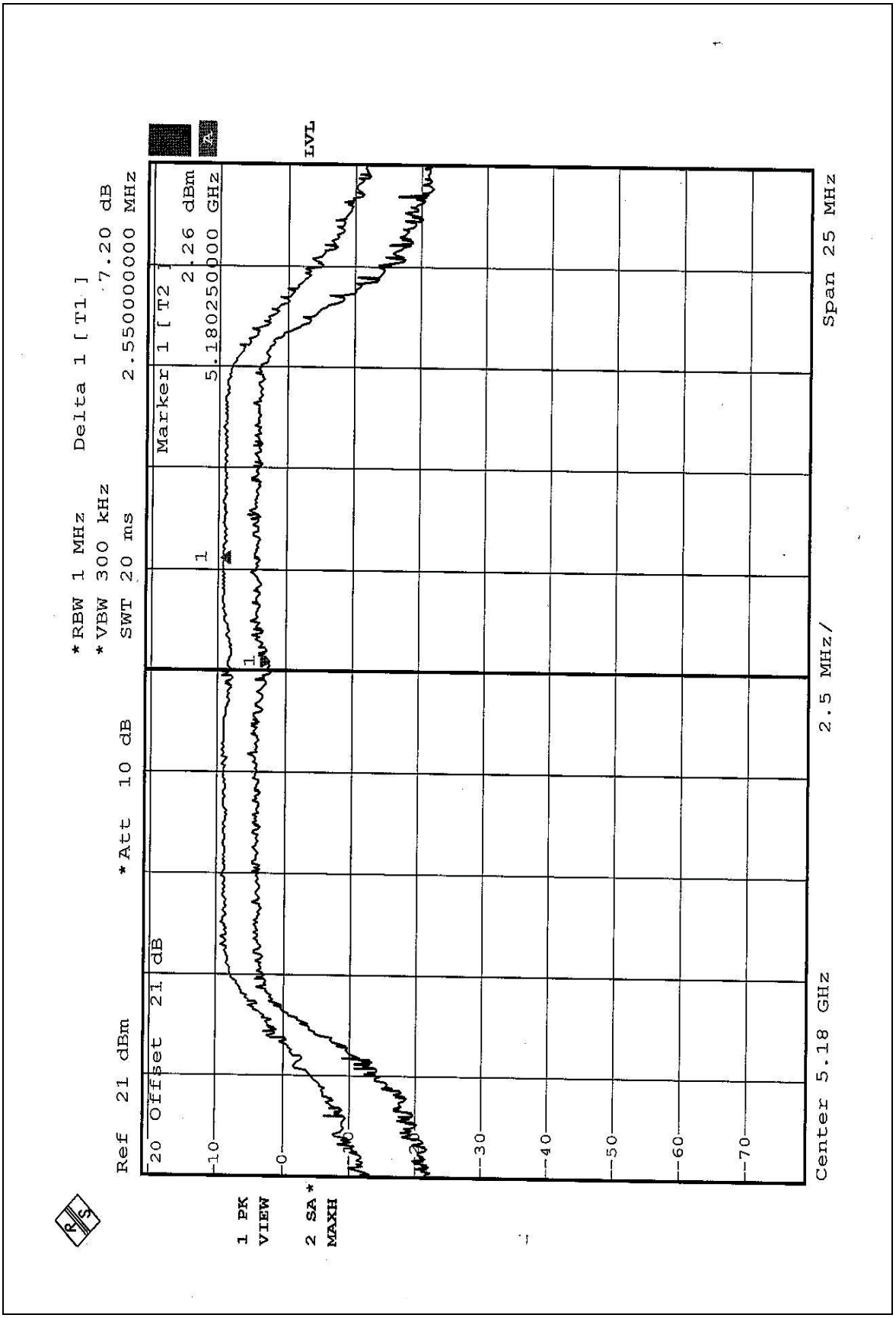
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.4.7 TEST RESULTS

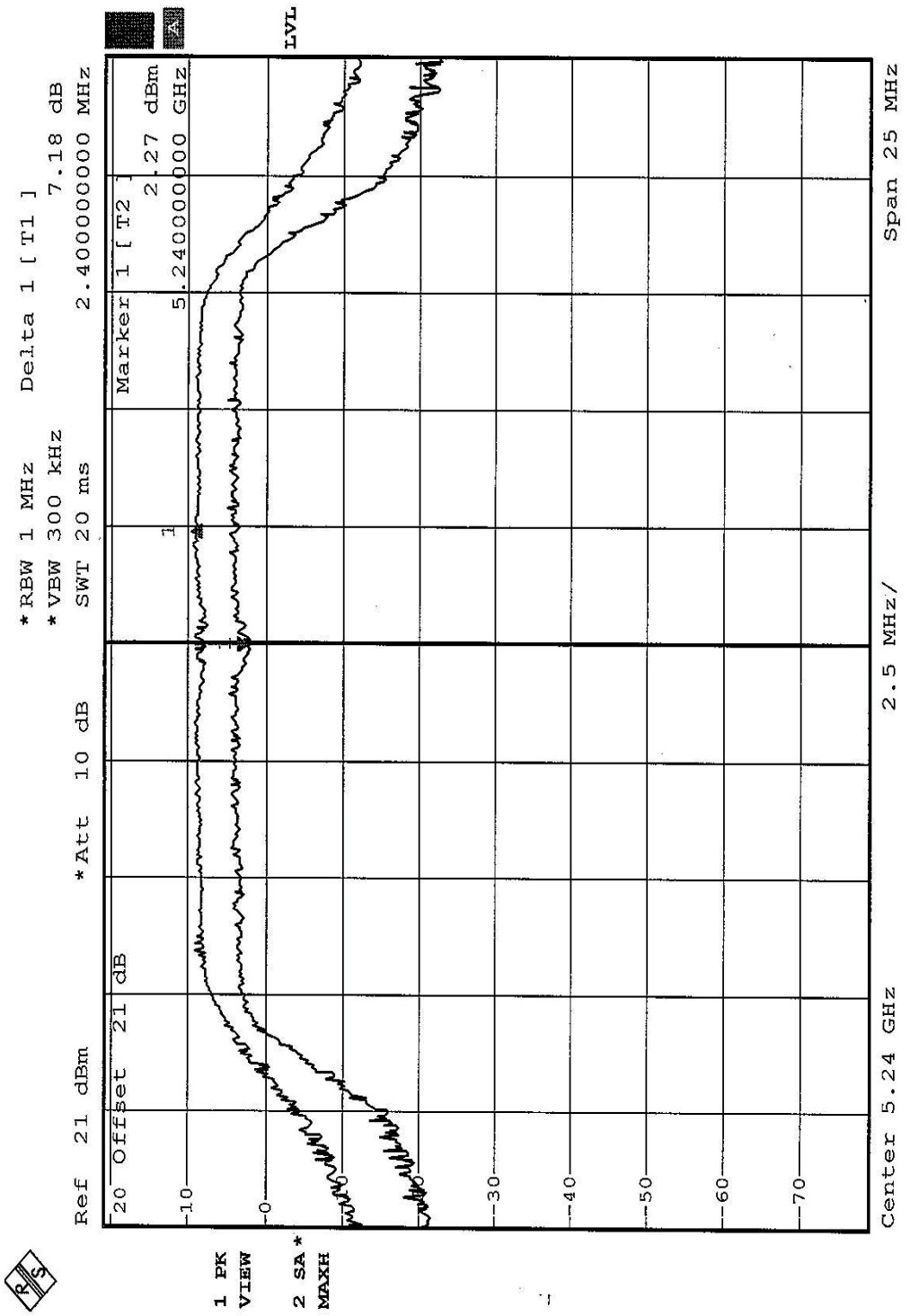
EUT	High-Speed 5GHz WLAN Mini PCI Card	**MODEL**	WMP-A13V
ENVIRONMENTAL CONDITIONS	20deg. C, 63%RH, 991hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY	Ansen Lei		

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER EXCURSION (dB)	PEAK to AVERAGE EXCURSION LIMIT (dB)	PASS/FAIL
1	5180	7.20	13	PASS
4	5240	7.18	13	PASS
5	5260	7.23	13	PASS
8	5320	8.57	13	PASS
9	5745	6.47	13	PASS
12	5805	8.08	13	PASS

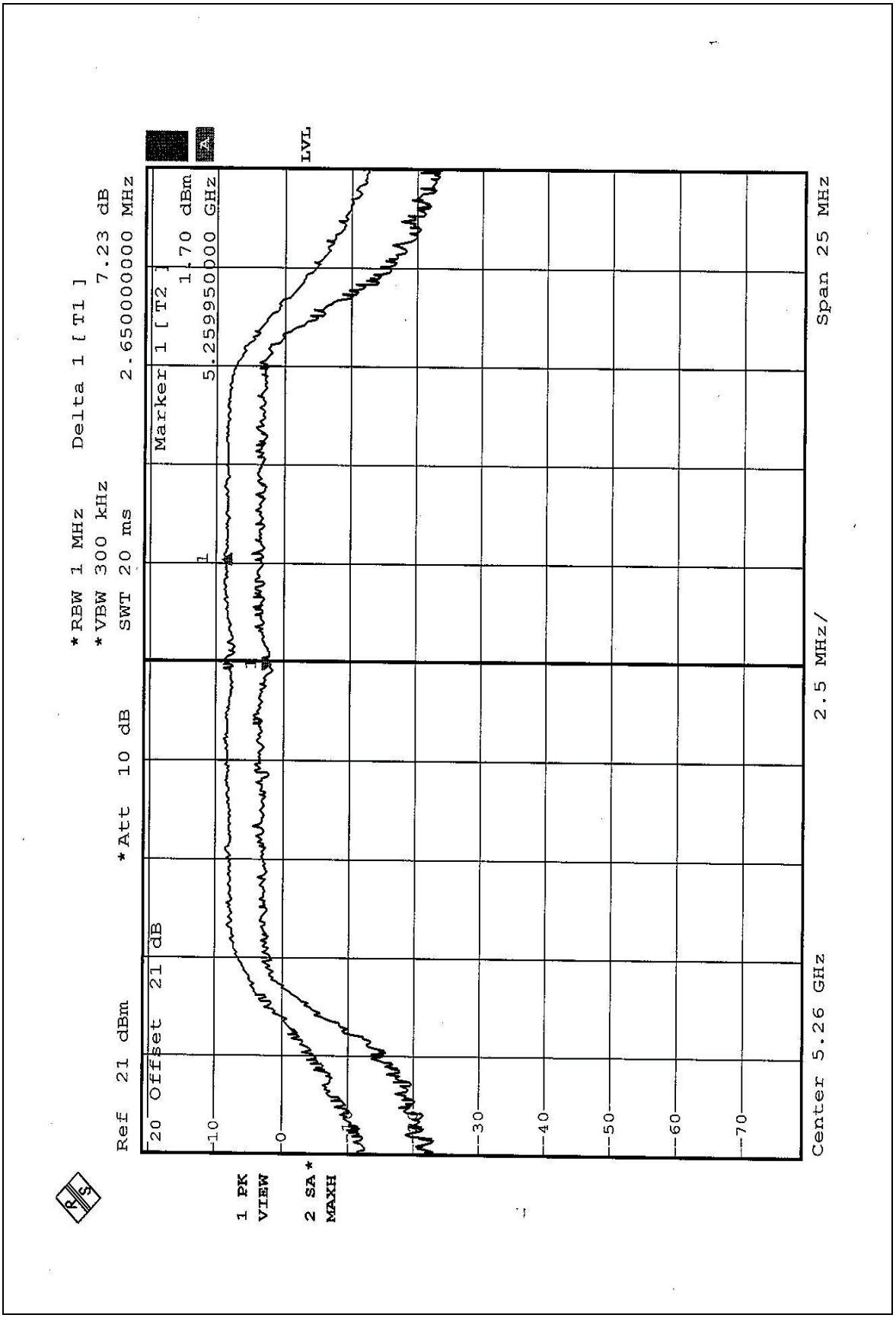
CH1


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.20 dB
2.55000000 MHz
Marker 1 [T2]
2.26 dBm
5.18250000 GHz
LVL
Center 5.18 GHz
2.5 MHz/
Span 25 MHz
1 PK
VIEW
2 SA *
MAXH

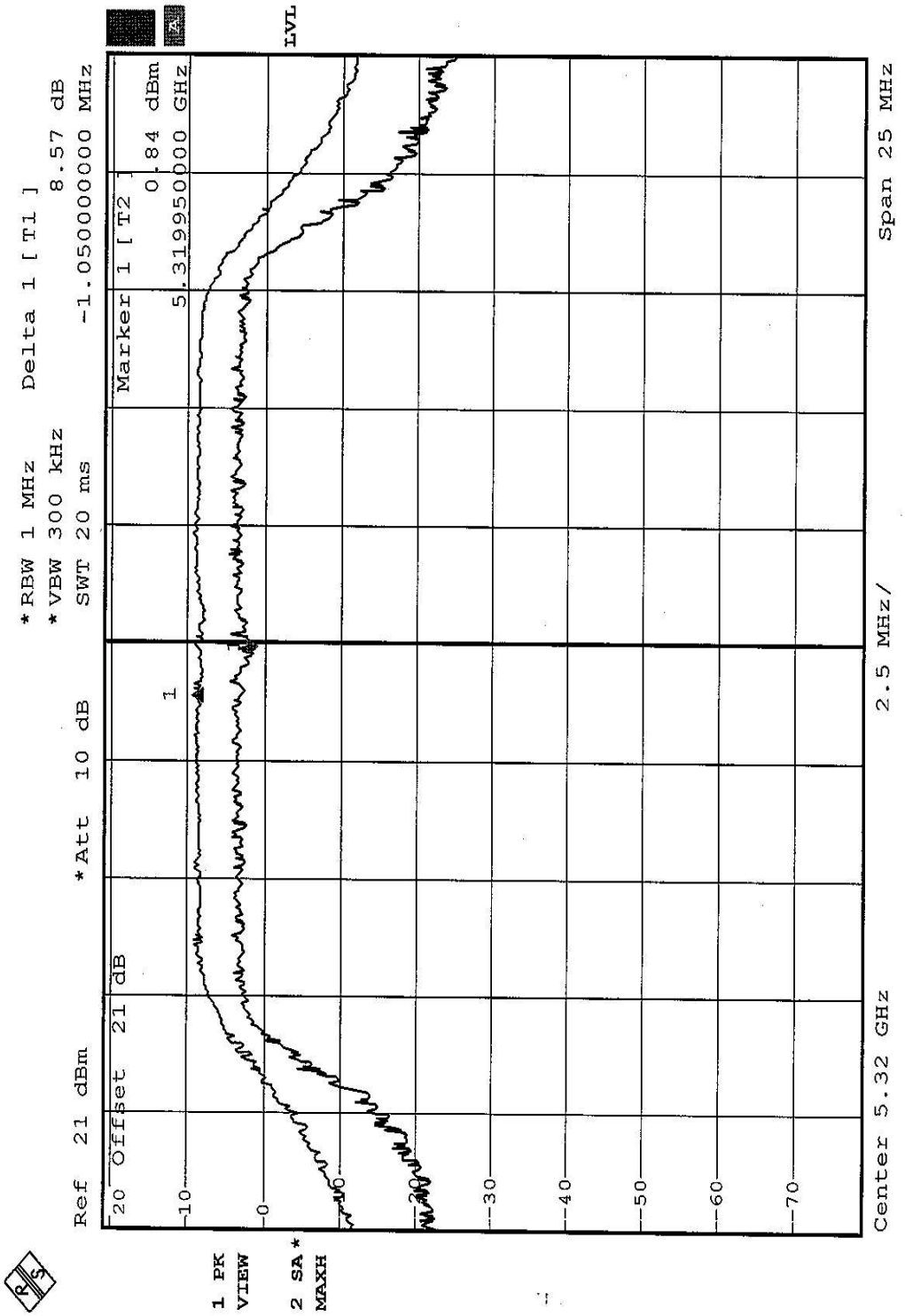
CH4


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.18 dB
2.400000000 MHz
Marker 1 [T2]
2.27 dBm
5.240000000 GHz
LVL
Center 5.24 GHz
2.5 MHz/
Span 25 MHz
1 PK VIEW
2 SA* MAXH

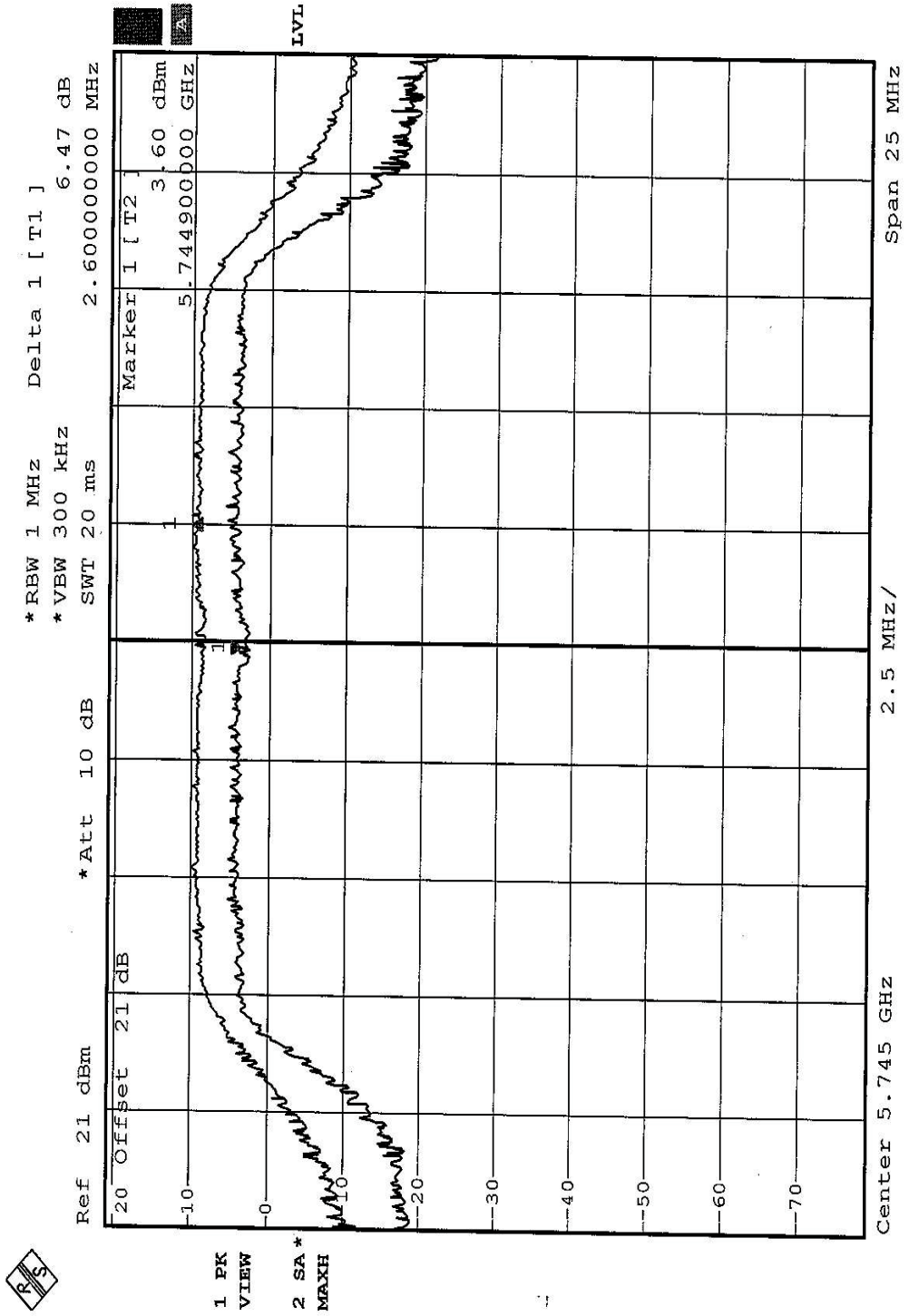
CH 5


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
7.23 dB
2.650000000 MHz
Marker 1 [T2]
1.70 dBm
5.259950000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Center 5.26 GHz
2.5 MHz/
Span 25 MHz
1 PK VIEW
2 SA * MAXH
LVL

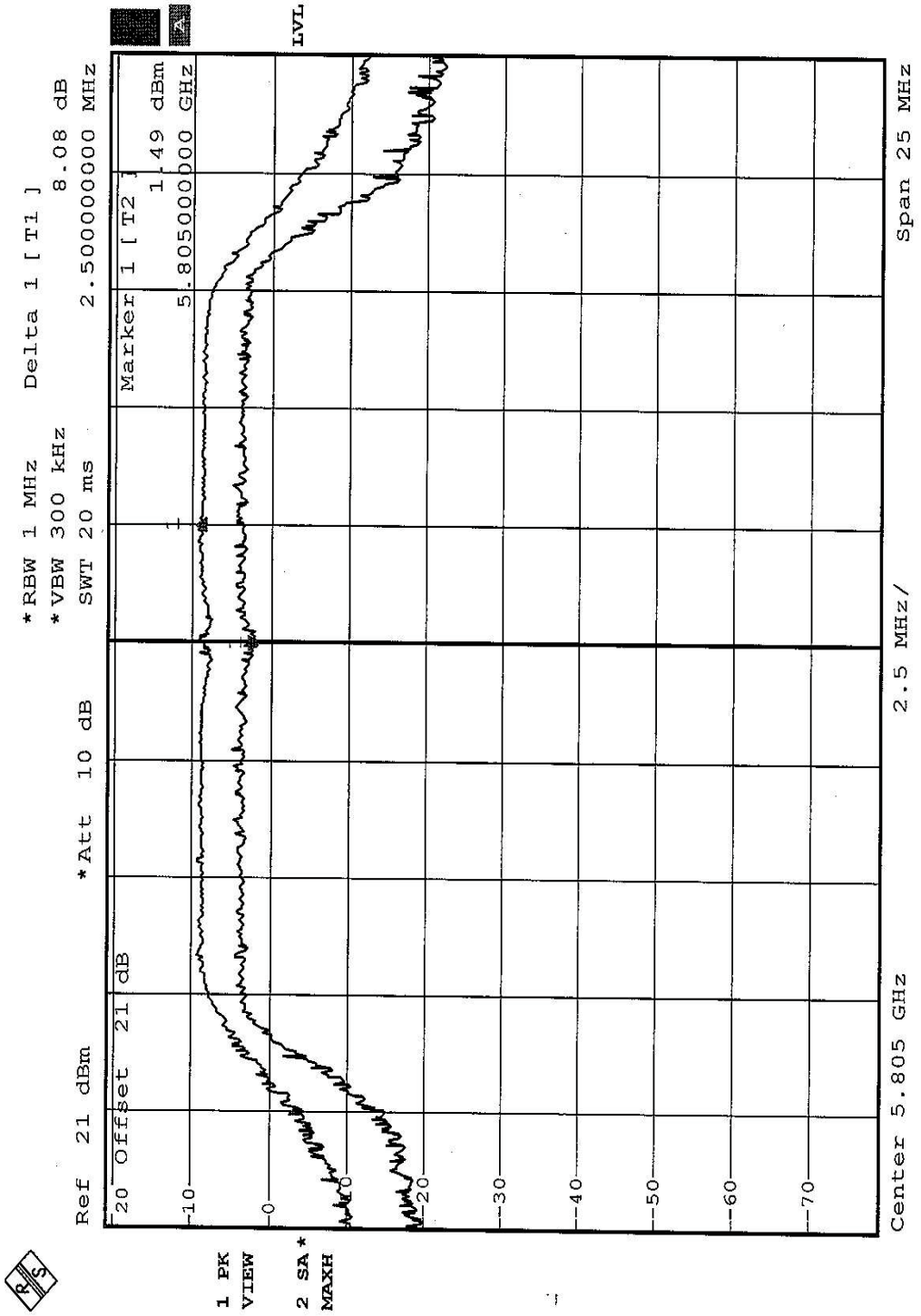
CH 8


RBW 1 MHz
VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
8.57 dB
-1.05000000 MHz
Marker 1 [T2]
0.84 dBm
5.31950000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Center 5.32 GHz
2.5 MHz/
Span 25 MHz
1 PK VIEW
2 SA * MAXH

CH 9


LVL
Ref 21 dBm
20 Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 1 [T1]
6.47 dB
2.600000000 MHz
Marker 1 [T2]
3.60 dBm
5.744900000 GHz
Center 5.745 GHz
2.5 MHz/
Span 25 MHz
1 PK
VIEW
2 SA *
MAXH

CH 12


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 kHz
SWT 20 ms
Delta 1 [T1] 8.08 dB
2.500000000 MHz
Marker 1 [T2]
1.49 dBm
5.805000000 GHz
LVL
Center 5.805 GHz
2.5 MHz/
Span 25 MHz
1 PK VIEW
2 SA * MAXH

4.5 PEAK POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF PEAK POWER SPECTRAL DENSITY MEASUREMENT

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

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	August 12, 2004
SPECTRUM ANALYZER	8564EC	4208A00660	Nov. 19, 2004

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

4.5.3 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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP

4.5.6 EUT OPERATING CONDITIONS

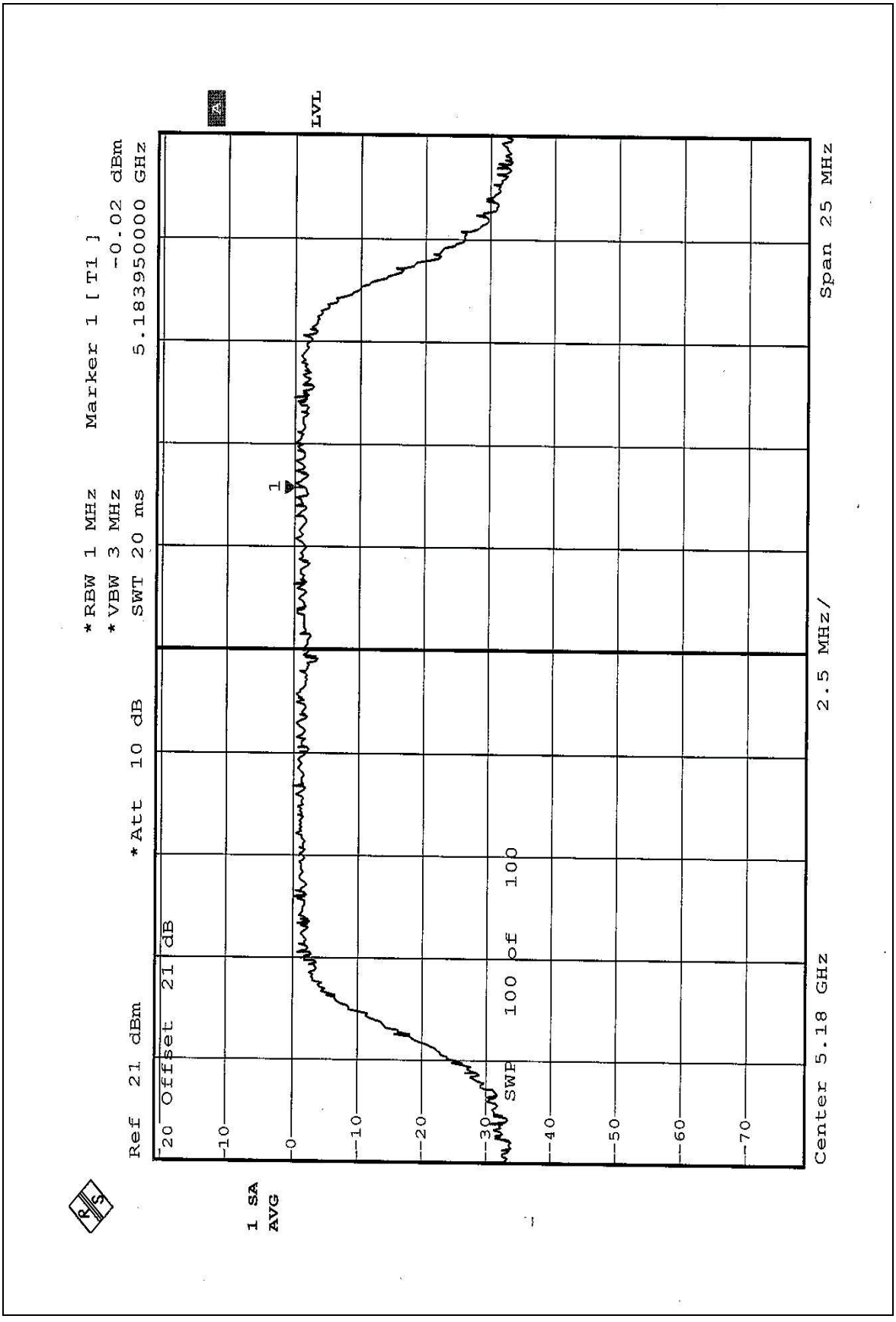
The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

4.5.7 TEST RESULTS

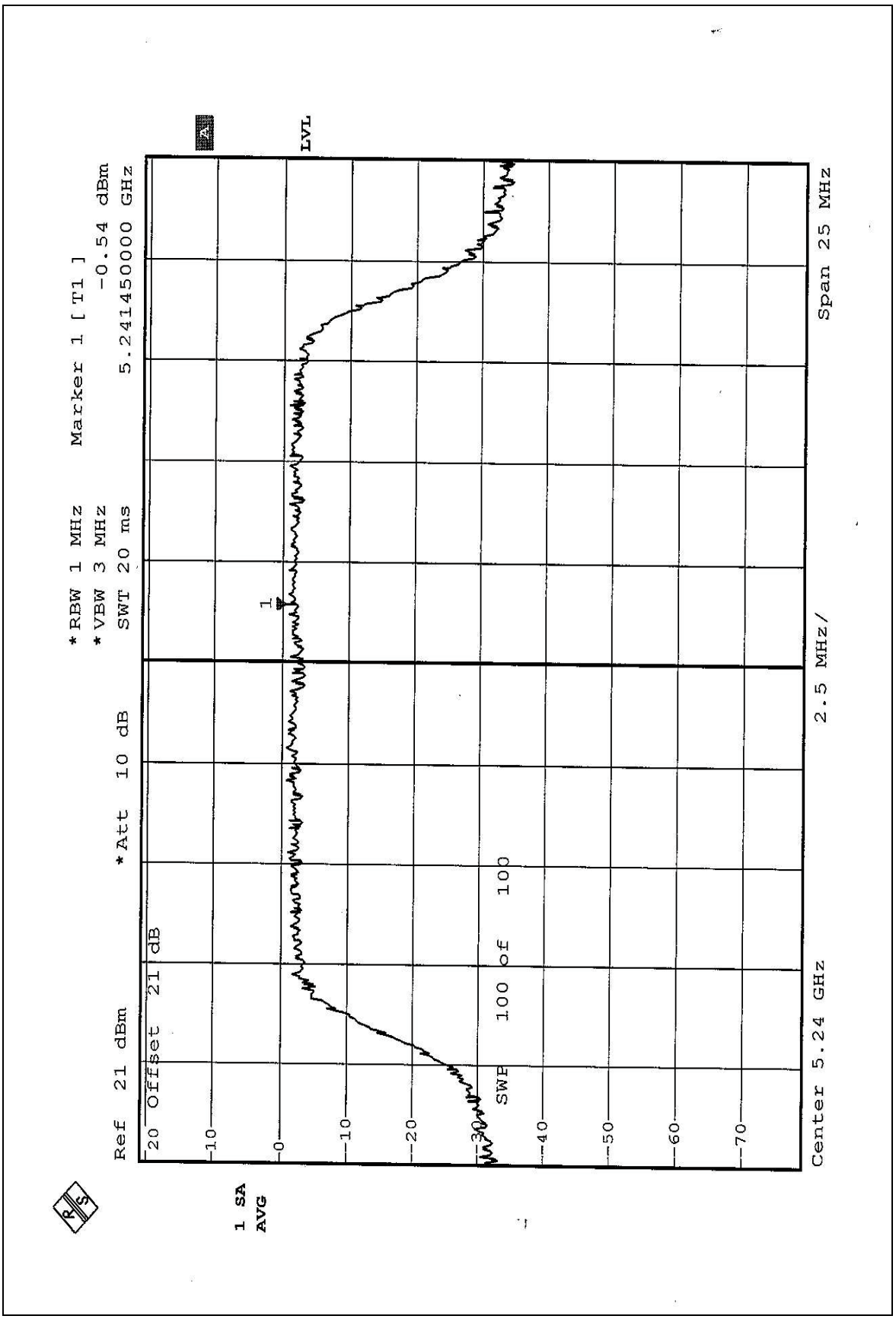
EUT	High-Speed 5GHz WLAN Mini PCI Card	MODEL	WMP-A13V
ENVIRONMENTAL CONDITIONS	20deg. C, 63%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60 Hz
TESTED BY	Ansen Lei		

CHANNEL	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 1MHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	5180	-0.02	4	PASS
4	5240	-0.54	4	PASS
5	5260	-1.20	11	PASS
8	5320	-1.34	11	PASS
9	5745	0.21	17	PASS
12	5805	-1.60	17	PASS

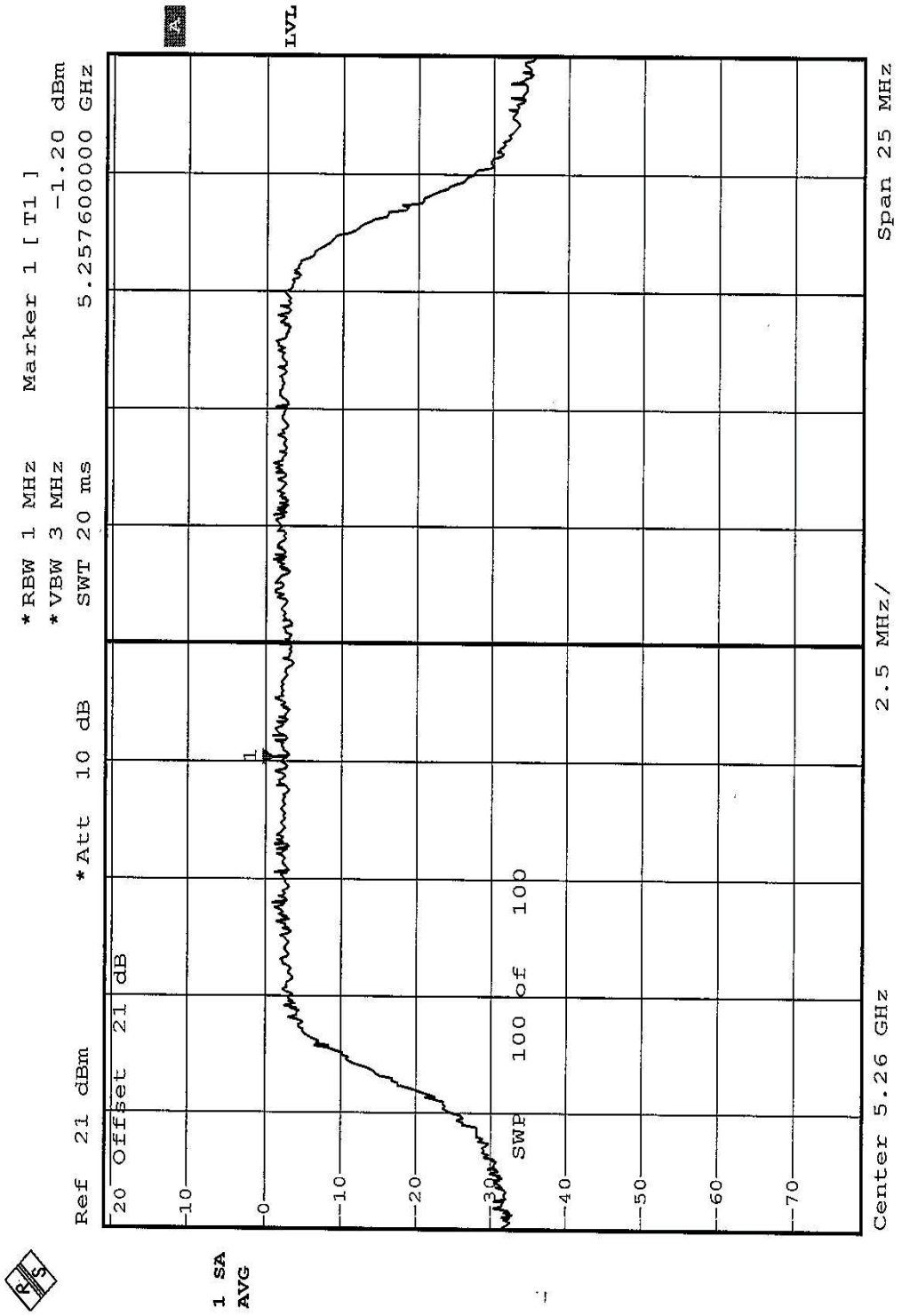
CH 1


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-0.02 dBm
5.183950000 GHz
LVL
SWP 100 of 100
Center 5.18 GHz
2.5 MHz/
Span 25 MHz
1 SA
AVG

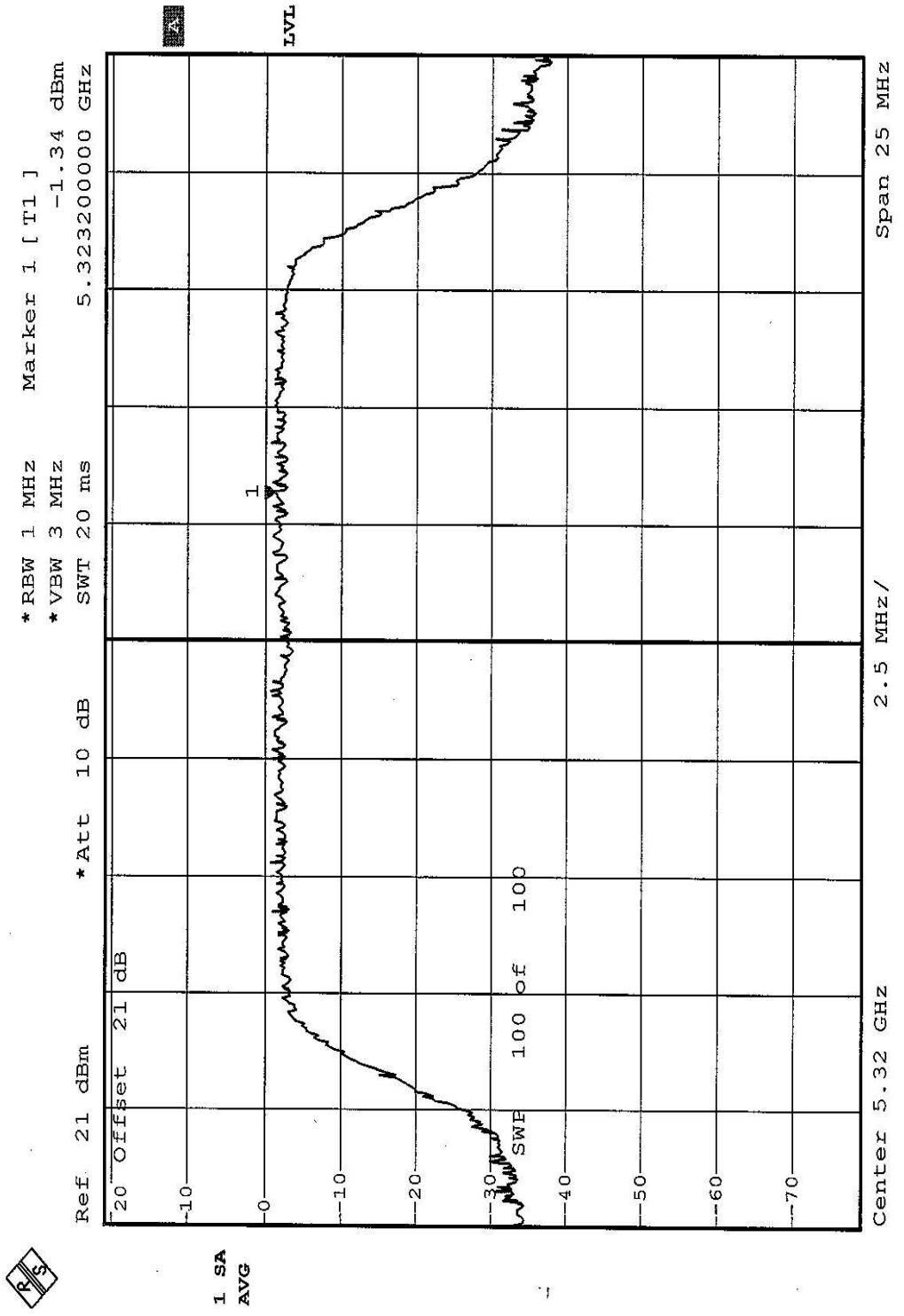
CH 4


Ref 21 dBm
20 Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-0.54 dBm
5.241450000 GHz
LVL
Center 5.24 GHz
2.5 MHz/
Span 25 MHz
SWP 100 of 100
1 SA
AVG

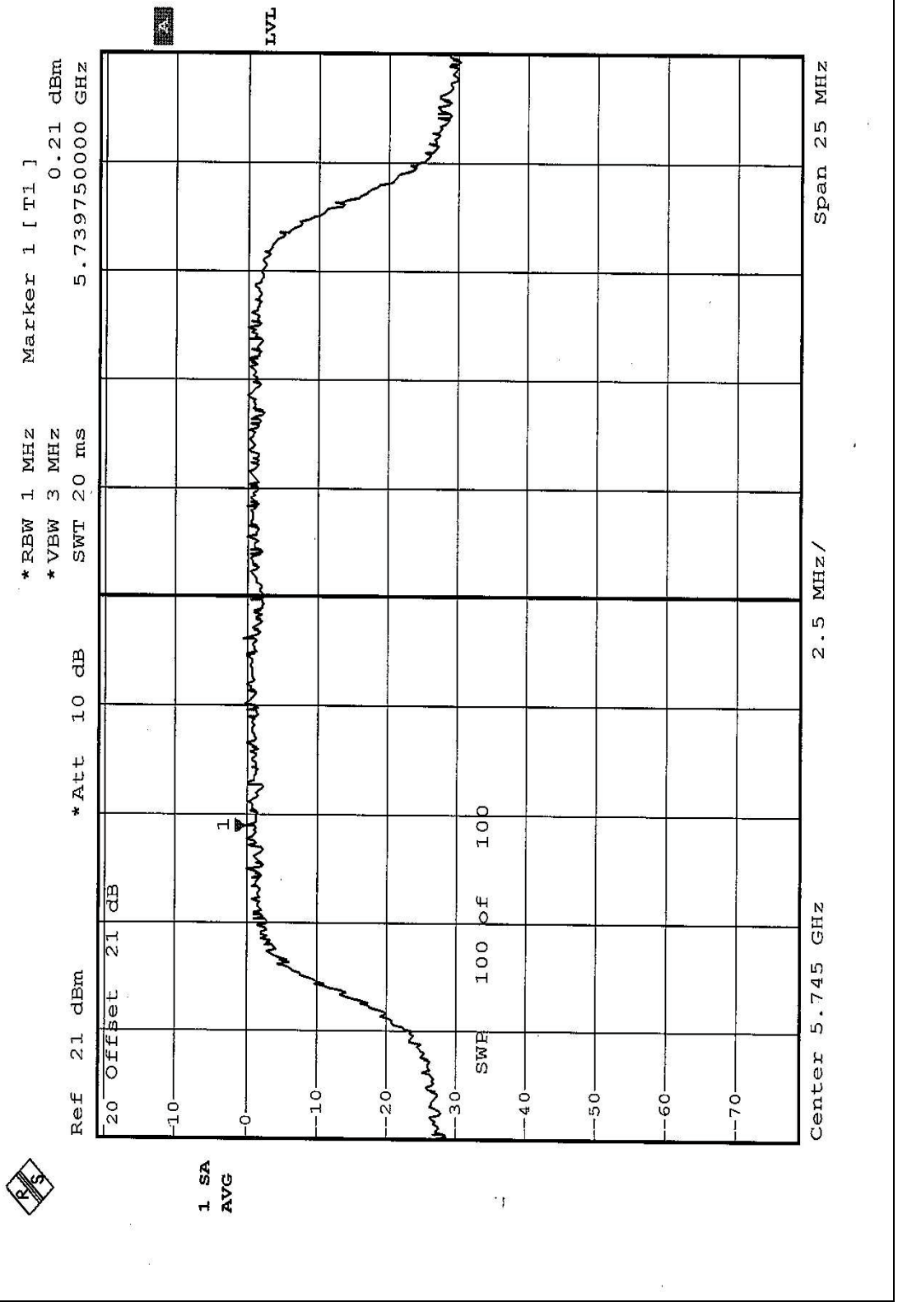
CH 5


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-1.20 dBm
5.257600000 GHz
Center 5.26 GHz
2.5 MHz/
Span 25 MHz
SWP 100 of 100
1 SA
AVG

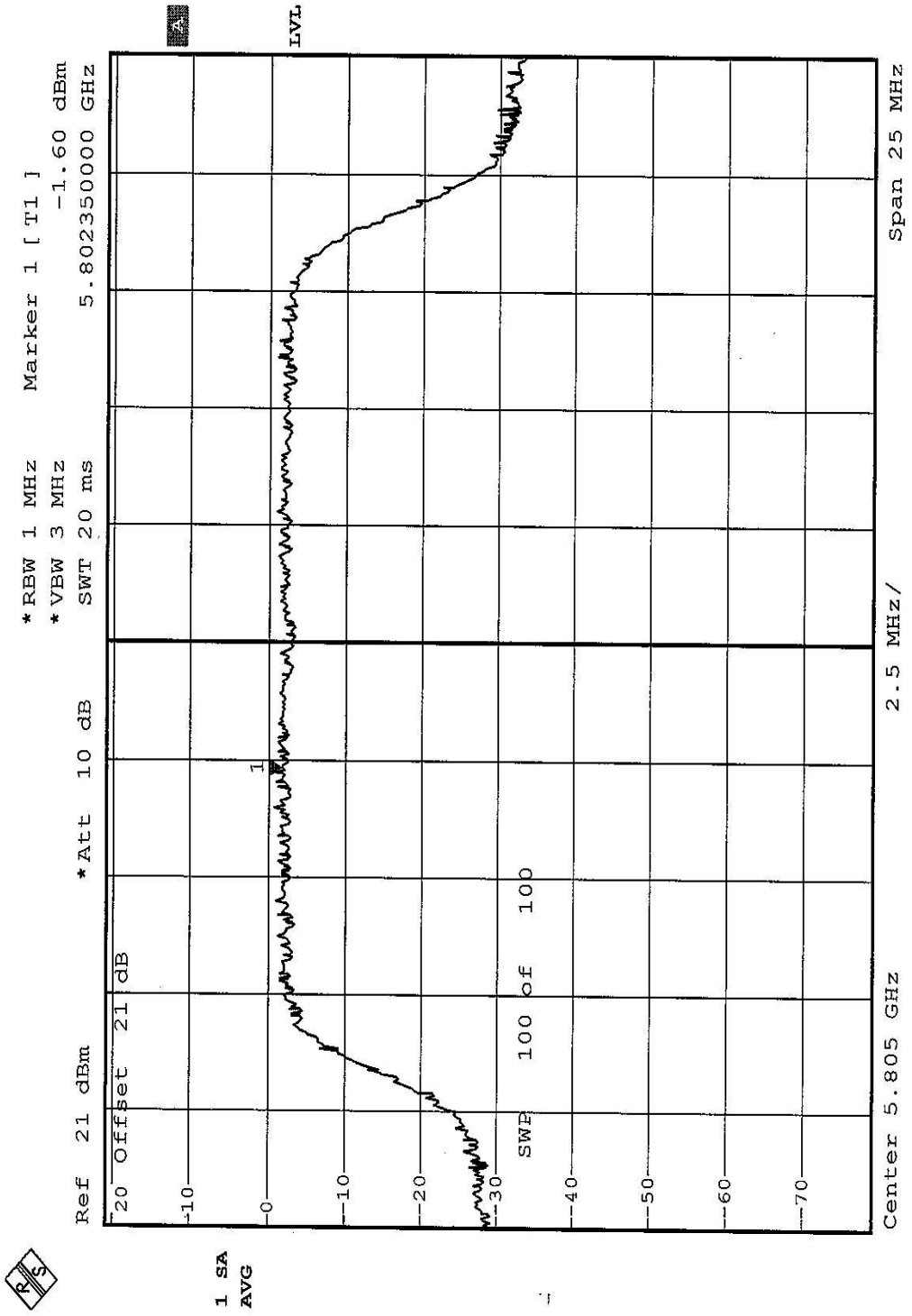
CH 8


Ref 21 dBm
20 Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-1.34 dBm
5.32320000 GHz
1 SA
AVG
SWP 100 of 100
Center 5.32 GHz
2.5 MHz/
Span 25 MHz

CH 9


Marker 1 [T1]
0.21 dBm
5.739750000 GHz
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
*Att 10 dB
Ref 21 dBm
Offset 21 dB
SWP 100 of 100
Center 5.745 GHz
2.5 MHz/
Span 25 MHz
1 SA
AVG

CH12


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 3 MHz
SWT 20 ms
Marker 1 [T1]
-1.60 dBm
5.802350000 GHz
Center 5.805 GHz
2.5 MHz/
Span 25 MHz
SWP 100 of 100
1 SA
AVG

4.6 FREQUENCY STABILITY

4.6.1 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.

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
ANRITSU SPECTRUM ANALYZER	MS2667C	M10281	Aug. 12, 2004
WIT STANDARD TEMPERATURE AND HUMIDITY CHAMBER	TH-4S-C	W981030	July 17, 2004

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

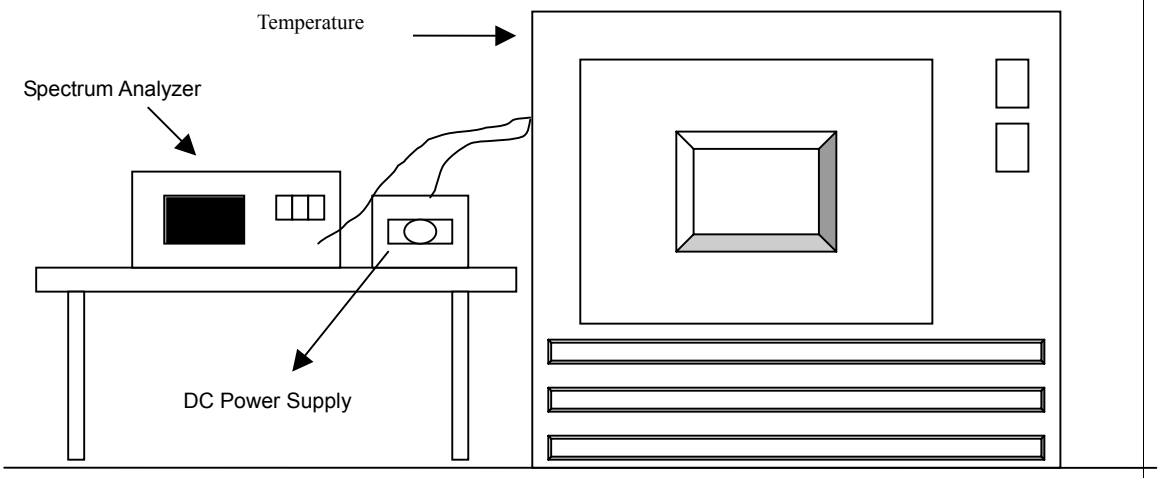
4.6.3 TEST PROCEDURE

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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



4.6.6 EUT OPERATING CONDITION

Same as Item 4.1.6

4.6.7 TEST RESULTS

Operating frequency: 5320MHz						Limit : ± 0.01%	
Temp. (℃)	Power supply (VDC)	2 minute		5 minute		10 minute	
		(MHz)	(%)	(MHz)	(%)	(MHz)	(%)
50	102.0	5319.9908	-0.0001729	5319.9908	-0.0001729	5319.9910	-0.0001692
	120.0	5319.9906	-0.0001767	5319.9908	-0.0001729	5319.9910	-0.0001692
	138.5	5319.9908	-0.0001729	5319.9908	-0.0001729	5319.9912	-0.0001654
40	93.5	5319.9914	-0.0001617	5319.9914	-0.0001617	5319.9916	-0.0001579
	110.0	5319.9914	-0.0001617	5319.9916	-0.0001579	5319.9918	-0.0001541
	126.5	5319.9916	-0.0001579	5319.9916	-0.0001579	5319.9918	-0.0001541
30	93.5	5319.9930	-0.0001316	5319.9938	-0.0001165	5319.9938	-0.0001165
	110.0	5319.9930	-0.0001316	5319.9936	-0.0001203	5319.9938	-0.0001165
	126.5	5319.9932	-0.0001278	5319.9938	-0.0001165	5319.9938	-0.0001165
20	93.5	5319.9950	-0.0000940	5319.9954	-0.0000865	5319.9954	-0.0000865
	110.0	5319.9950	-0.0000940	5319.9954	-0.0000865	5319.9956	-0.0000827
	126.5	5319.9954	-0.0000865	5319.9956	-0.0000827	5319.9956	-0.0000827
10	93.5	5319.9968	-0.0000602	5319.9972	-0.0000526	5319.9976	-0.0000451
	110.0	5319.9968	-0.0000602	5319.9972	-0.0000526	5319.9976	-0.0000451
	126.5	5319.9972	-0.0000526	5319.9972	-0.0000526	5319.9976	-0.0000451
0	93.5	5320.0022	0.0000414	5320.0032	0.0000602	5320.0038	0.0000714
	110.0	5320.0022	0.0000414	5320.0032	0.0000602	5320.0038	0.0000714
	126.5	5320.0026	0.0000489	5320.0032	0.0000602	5320.0038	0.0000714
-10	93.5	5320.0134	0.0002519	5320.0144	0.0002707	5320.0152	0.0002857
	110.0	5320.0134	0.0002519	5320.0138	0.0002594	5320.0148	0.0002782
	126.5	5320.0136	0.0002556	5320.0144	0.0002707	5320.0152	0.0002857
-20	93.5	5320.0220	0.0004135	5320.0230	0.0004323	5320.0234	0.0004398
	110.0	5320.0224	0.0004211	5320.0230	0.0004323	5320.0234	0.0004398
	126.5	5320.0224	0.0004211	5320.0230	0.0004323	5320.0234	0.0004398
-30	93.5	5320.0234	0.0004398	5320.0238	0.0004474	5320.0244	0.0004586
	110.0	5320.0232	0.0004361	5320.0238	0.0004474	5320.0240	0.0004511
	126.5	5320.0234	0.0004398	5320.0240	0.0004511	5320.0244	0.0004586

4.7 BAND EDGES MEASUREMENT

4.7.1 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	August 12, 2004

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

4.7.2 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low lose 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 was measured and recorded.

4.7.3 EUT OPERATING CONDITION

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

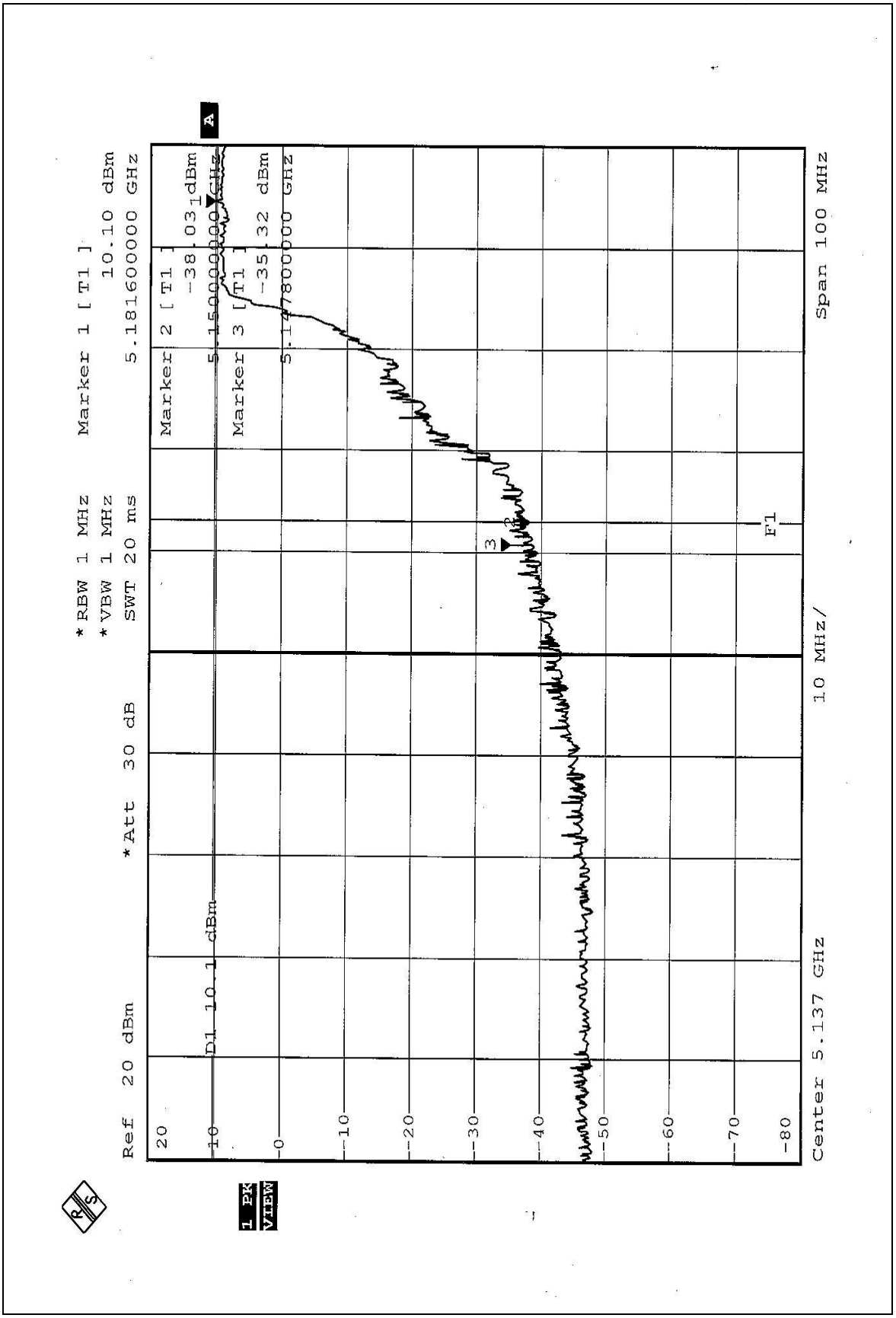
4.7.4 TEST RESULTS

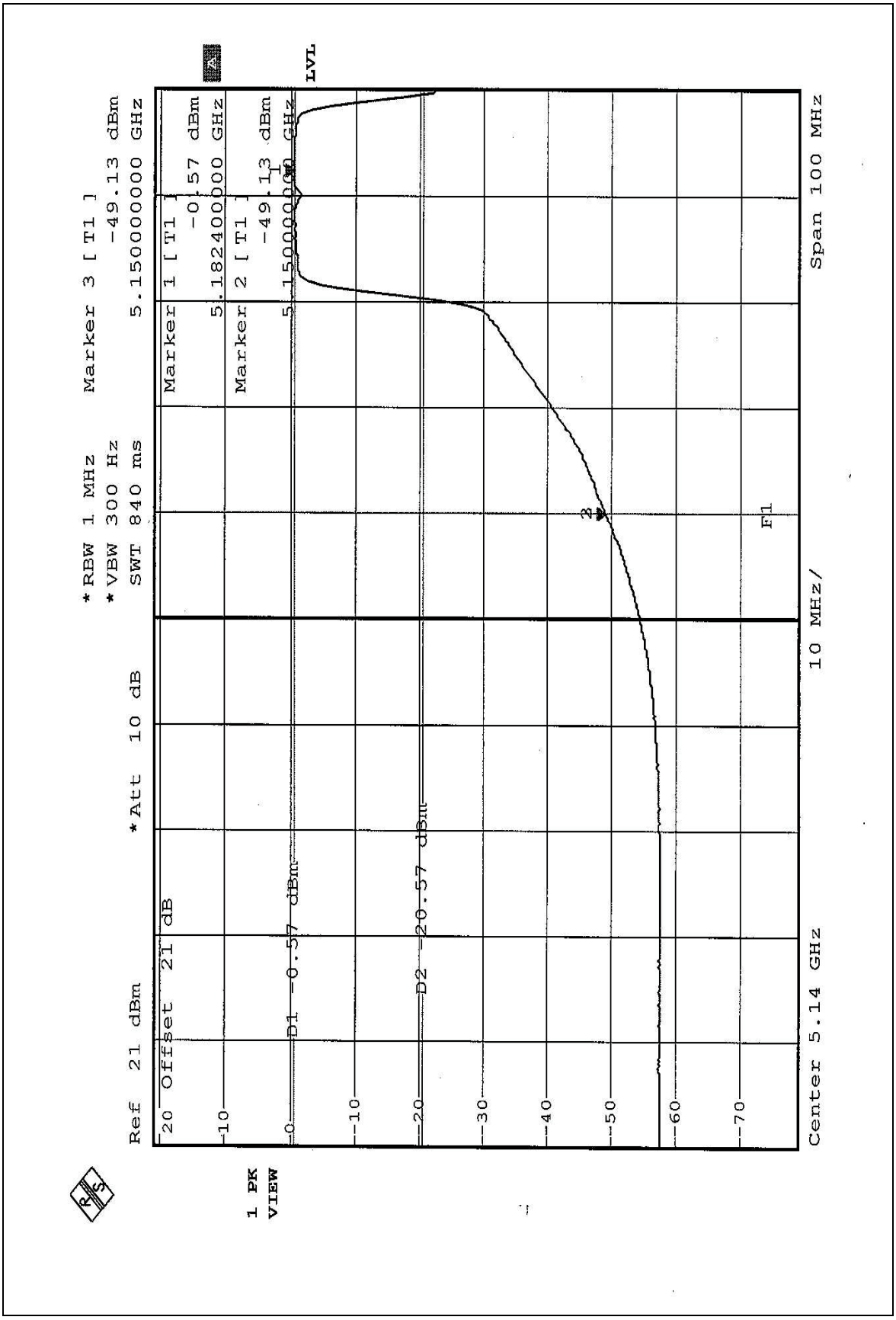
For signals in the restricted bands above and below the 5.15 to 5.35GHz allocated band a measurement was made of the amplitude of the spurious emissions with respect to the intentional signals. The relative amplitude, in dBc, was applied to the average and peak filed strength of the intentional signal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

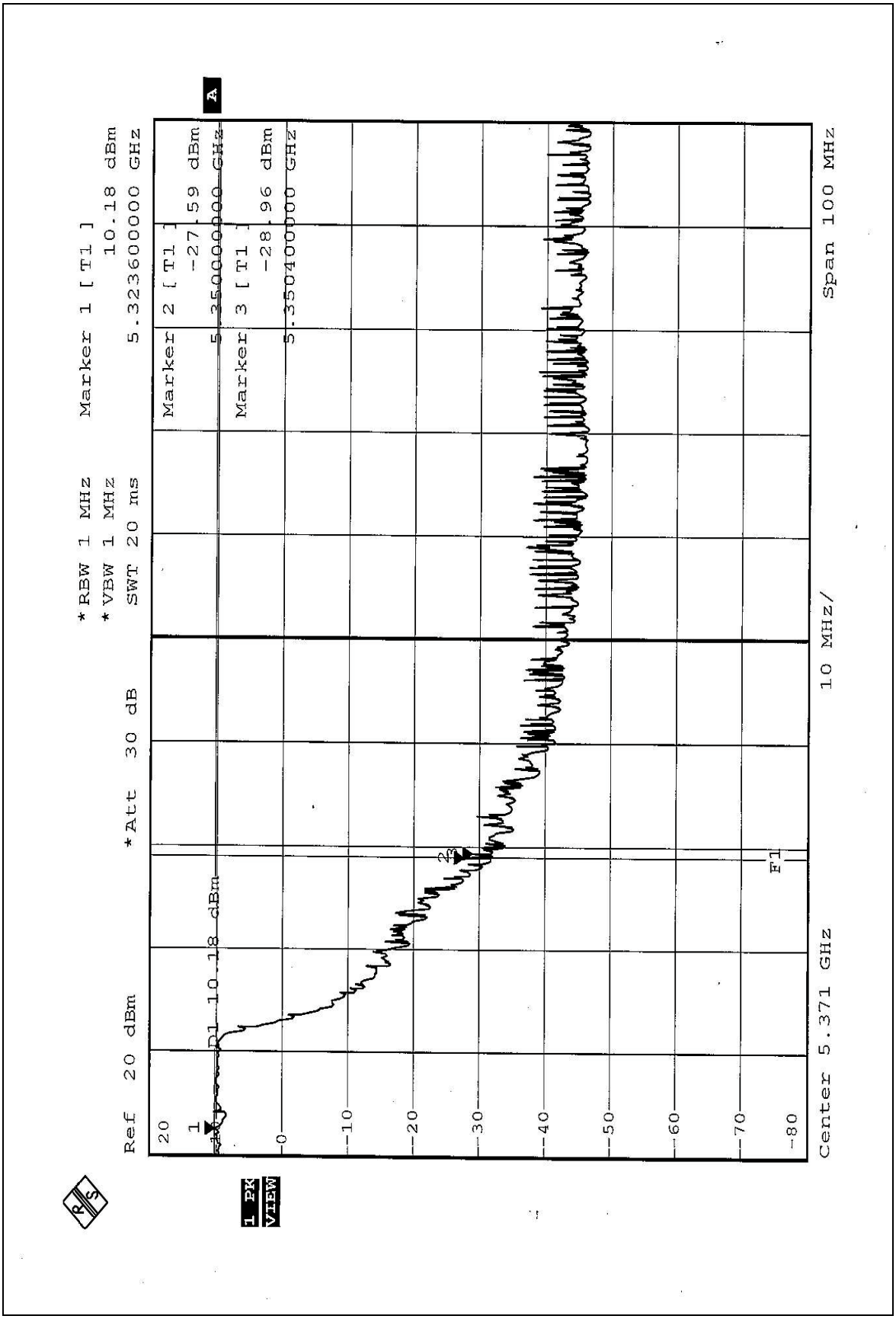
The spectrum plots (Peak RBW=VBW=1MHz; Average RBW=1MHz, VBW=300Hz) are attached on the following pages.

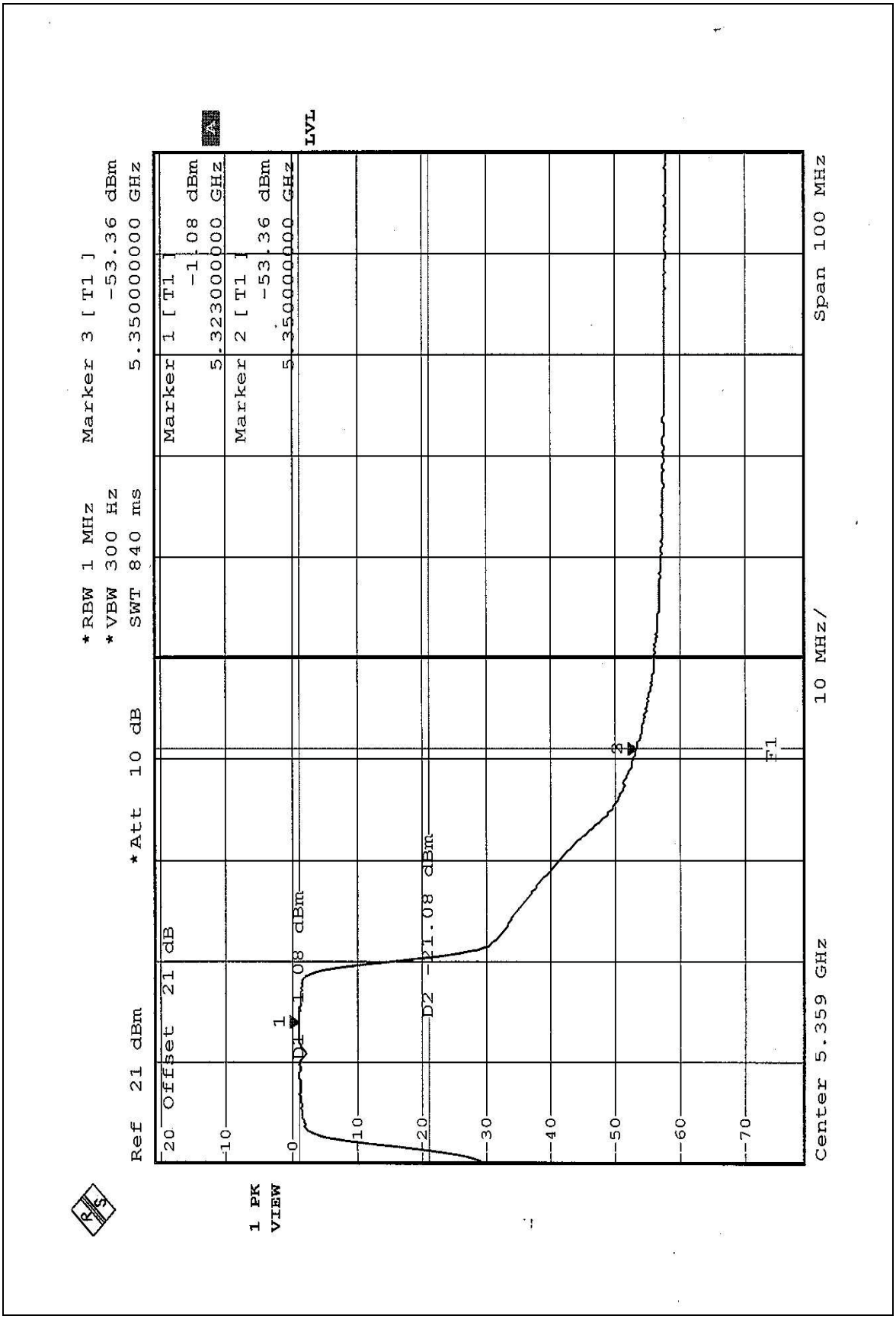
Channel 1 (5180 MHz)
The band edge emission plot on the following first and second page shows 45.42dBc (Peak) / 48.56dBc (Average) between carrier maximum power and local maximum emission in restrict band. The emission of carrier strength list in the test result of channel 1 is 101.20dBuV/m, so the maximum field strength in restrict band is 101.20-48.56=52.64dBuV/m which is under 54dBuV/m limit.

Channel 8 (5320 MHz)
The band edge emission plot on the following third and forth page shows 37.77dBc (Peak) / 52.28dBc (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 is 100.20dBuV/m, so the maximum field strength in restrict band is 100.20-52.28=47.92dBuV/m which is under 54dBuV/m limit.


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 1 MHz
SWT 20 ms
Marker 1 [T1]
10.10 dBm
5.181600000 GHz
Marker 2 [T1]
-38.03 dBm
5.150000000 GHz
Marker 3 [T1]
-35.32 dBm
5.147800000 GHz
D1 10.1 dBm
Center 5.137 GHz
10 MHz/
Span 100 MHz
1 PK VIEW


RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 3 [T1]
-49.13 dBm
5.150000000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Marker 1 [T1]
-0.57 dBm
5.182400000 GHz
Marker 2 [T1]
-49.13 dBm
5.150000000 GHz
LVL
D1 -0.57 dBm
D2 -20.57 dBm
1 PK VIEW
Center 5.14 GHz
10 MHz/
Span 100 MHz


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 1 MHz
SWT 20 ms
Marker 1 [T1]
10.18 dBm
5.323600000 GHz
Marker 2 [T1]
-27.59 dBm
5.350000000 GHz
Marker 3 [T1]
-28.96 dBm
5.354000000 GHz
D1 10.18 dBm
Center 5.371 GHz
10 MHz/
Span 100 MHz
1 PK
MAXA


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 3 [T1]
-53.36 dBm
5.350000000 GHz
Marker 1 [T1]
-1.08 dBm
5.323000000 GHz
Marker 2 [T1]
-53.36 dBm
5.350000000 GHz
LVL
1 PK
VIEW
D1 -1.08 dBm
D2 -21.08 dBm
Center 5.359 GHz
10 MHz/
Span 100 MHz

4.8 ANTENNA REQUIREMENT

4.8.1 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.

4.8.2 ANTENNA CONNECTED CONSTRUCTION

The antennas used in this product are PIFA antenna and Dipole antenna with UFL connector. The maximum Gain of the antennas are 2dBi and 5dBi respectively. There are three ways to install the antenna. 1. With two PIFA antenna. 2. With two Dipole antenna. 3. One PIFA antenna and one dipole antenna.

5. PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST (Test Mode: PIFA Antenna)


930112R01

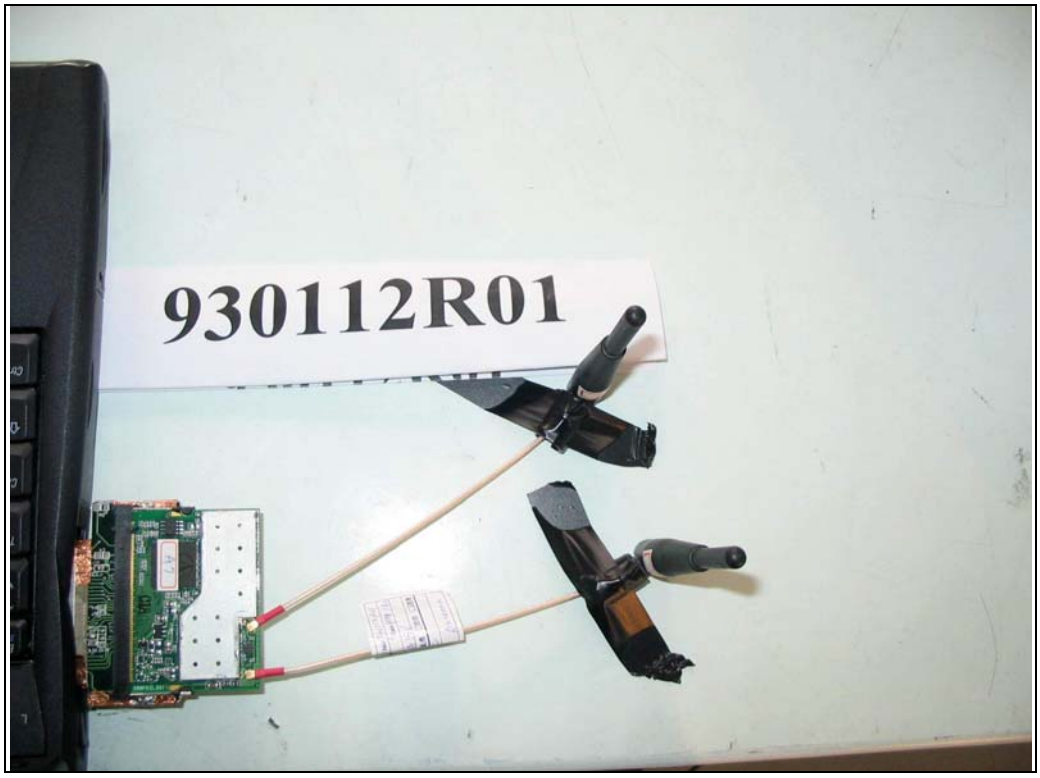
CONDUCTED EMISSION TEST (Test Mode: Dipole Antenna)


930112R01

RADIATED EMISSION TEST (Test Mode: PIFA Antenna)


930112R01

RADIATED EMISSION TEST (Test Mode: Dipole Antenna)


930112R01

6. 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
Canada	INDUSTRY CANADA
R.O.C.	CNLA, BSMI

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:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
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Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:
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The address and road map of all our labs can be found in our web site also.