4.4.7 TEST RESULTS

EUT	Wireless 802.11g MiniPCI Card	MODEL	WM1210
ENVIRONMENTAL CONDITIONS	20deg. C, 73%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODULATION MODE	CCK	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	18.04	30	PASS
6	2437	17.49	30	PASS
11	2462	17.00	30	PASS

EUT	Wireless 802.11g MiniPCI Card	MODEL	WM1210
ENVIRONMENTAL CONDITIONS	20deg. C, 73%RH, 991hPa	INPUT POWER (SYSTEM)	120Vac, 60Hz
MODULATION MODE	OFDM	TESTED BY	Steven Lu

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	13.01	30	PASS
6	2437	14.07	30	PASS
11	2462	13.02	30	PASS

4.5 POWER SPECTRAL DENSITY MEASUREMENT

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 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.

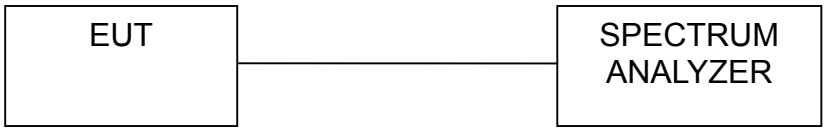
4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time=span/3kHz. The power spectral density was measured and recorded.
The sweep time is allowed to be longer than span/3KHz for a full response of the mixer in the spectrum analyzer.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



4.5.6 EUT OPERATING CONDITIONS

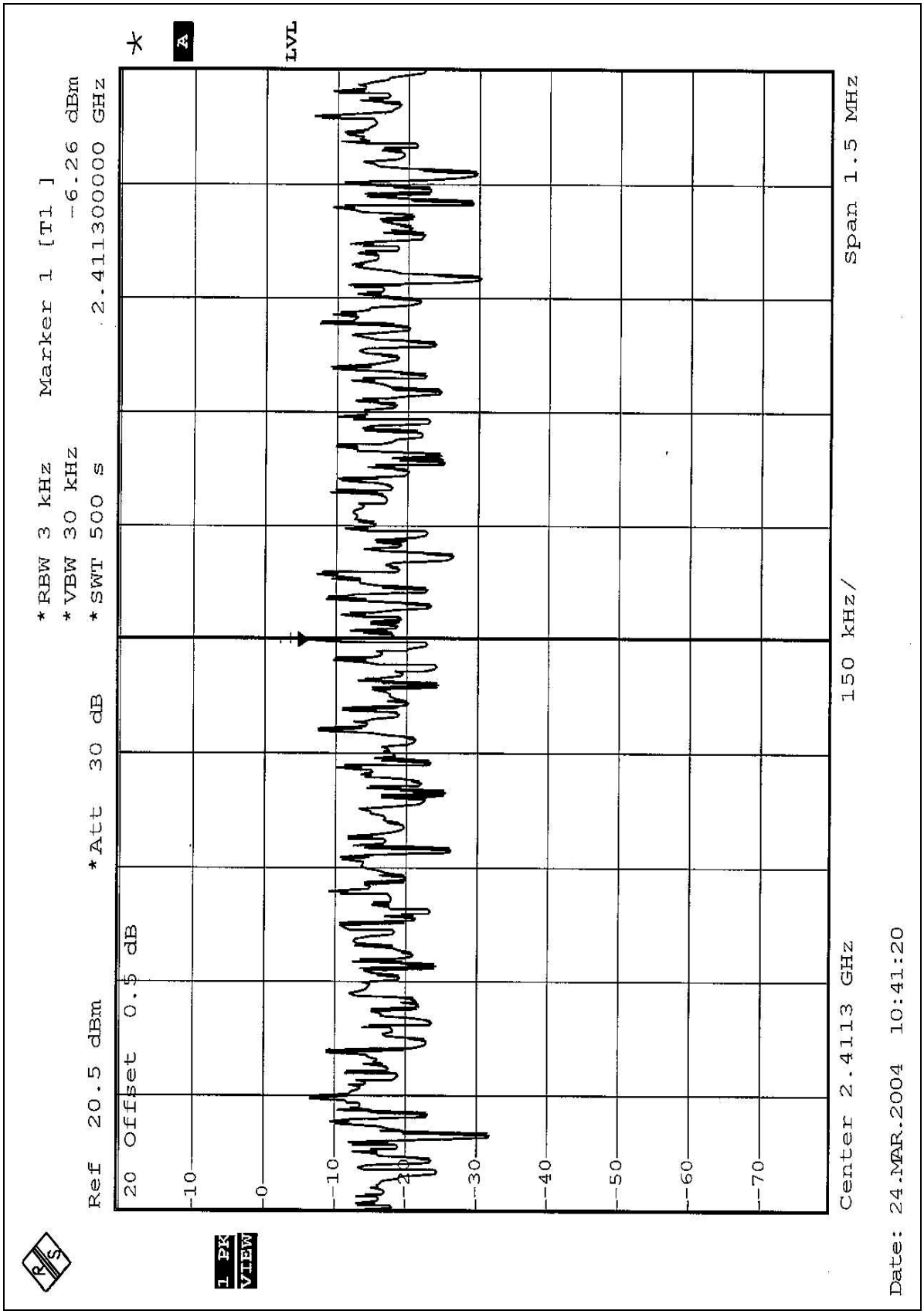
Same as 4.3.6

4.5.7 TEST RESULTS

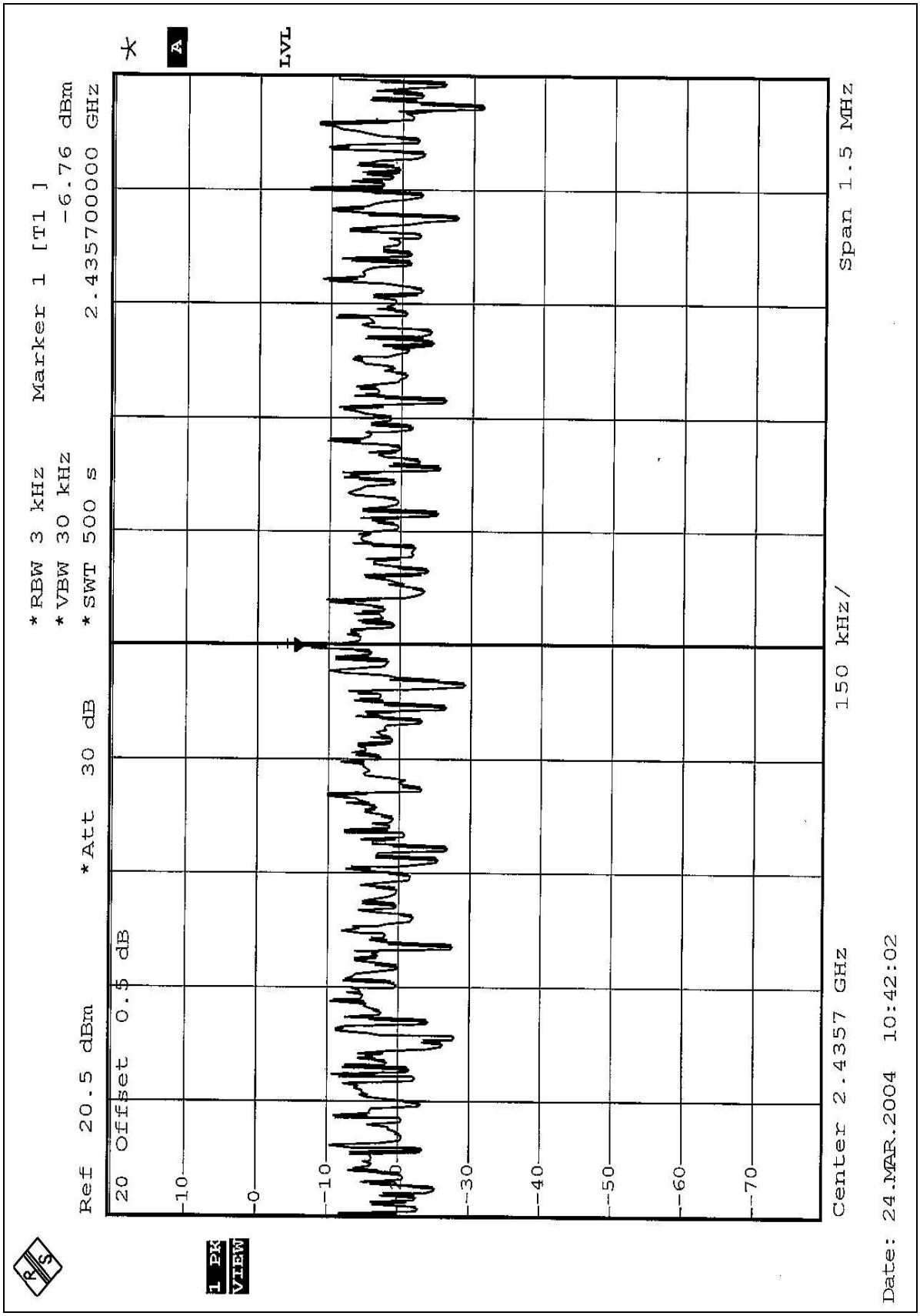
EUT	Wireless 802.11g MiniPCI Card	**MODEL**	WM1210
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 75%RH, 991hPa
MODULATION MODE	CCK	**TESTED BY**	Steven Lu

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (Dbm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-6.26	8	PASS
6	2437	-6.76	8	PASS
11	2462	-6.88	8	PASS

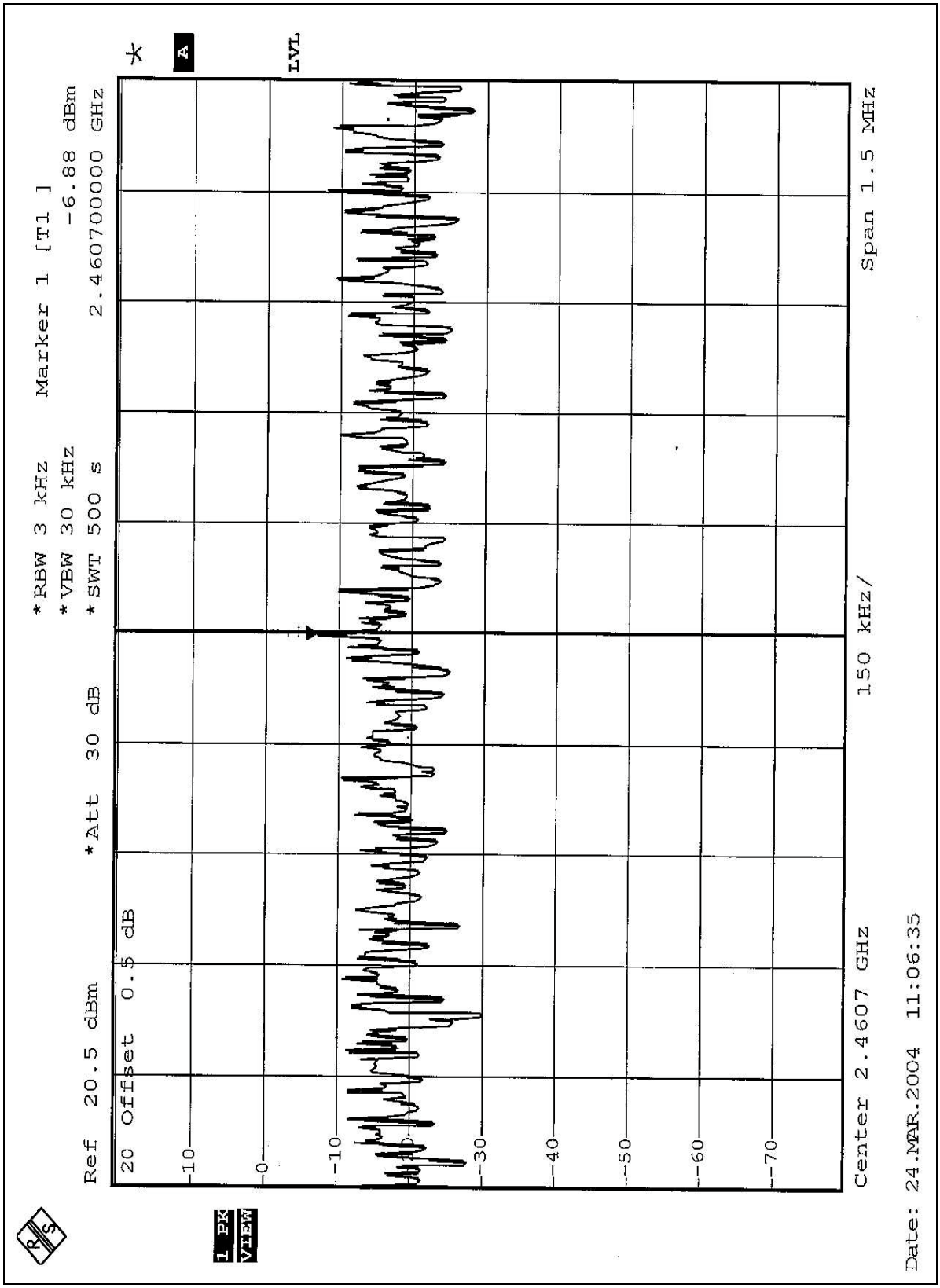
CH1


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-6.26 dBm
2.411300000 GHz
LVL
Center 2.4113 GHz
150 kHz/
Span 1.5 MHz
Date: 24.MAR.2004 10:41:20
1 PK
VIEW

CH6


Marker 1 [T1]
-6.76 dBm
2.435700000 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 30 dB
Ref 20.5 dBm
20 Offset 0.5 dB
1 PK VIEW
Center 2.4357 GHz
150 kHz/
Span 1.5 MHz
Date: 24.MAR.2004 10:42:02

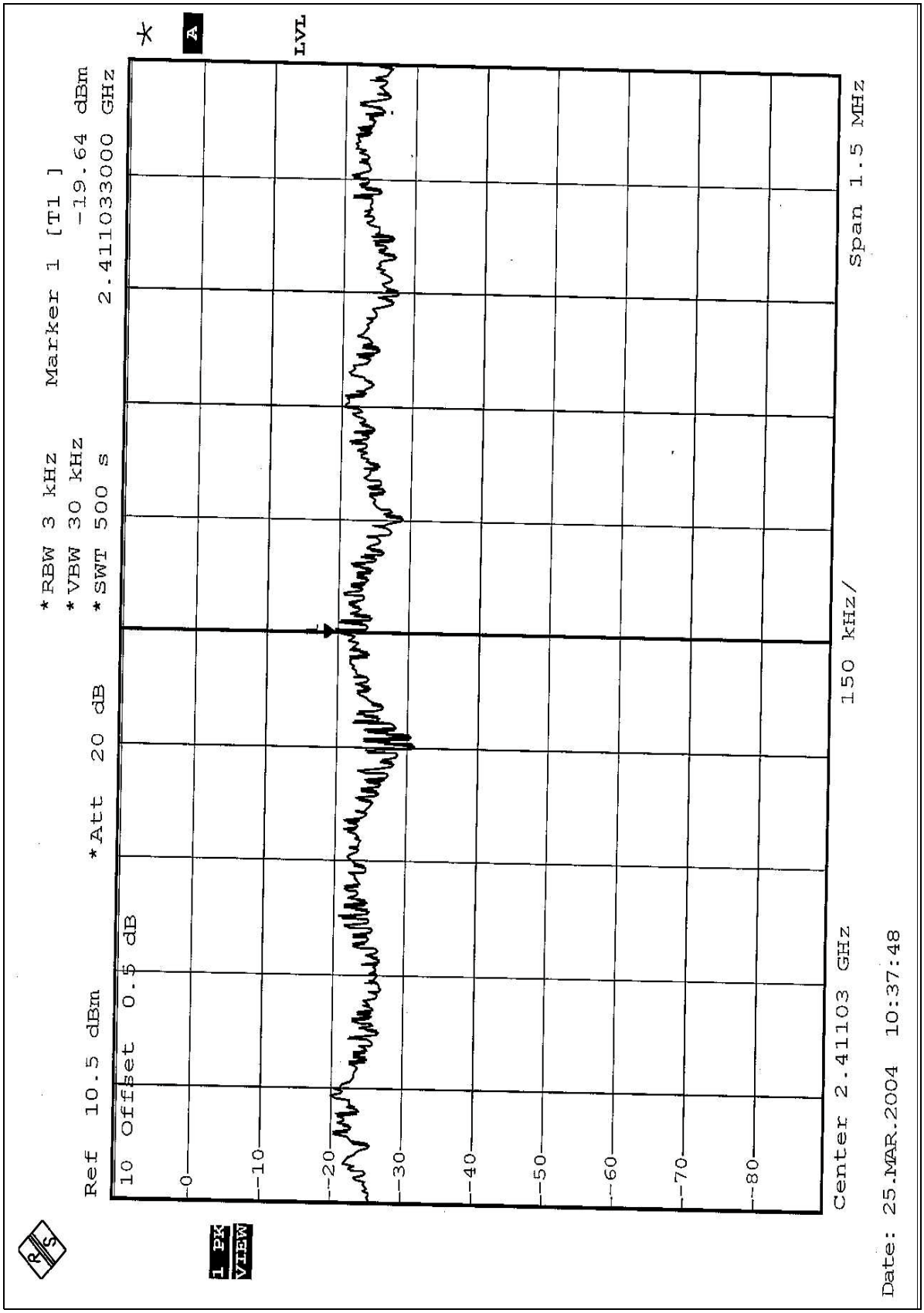
CH11


A
LVL
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-6.88 dBm
2.460700000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
Span 1.5 MHz
150 kHz/
Center 2.4607 GHz
Date: 24.MAR.2004 11:06:35
1 PK
VIEW

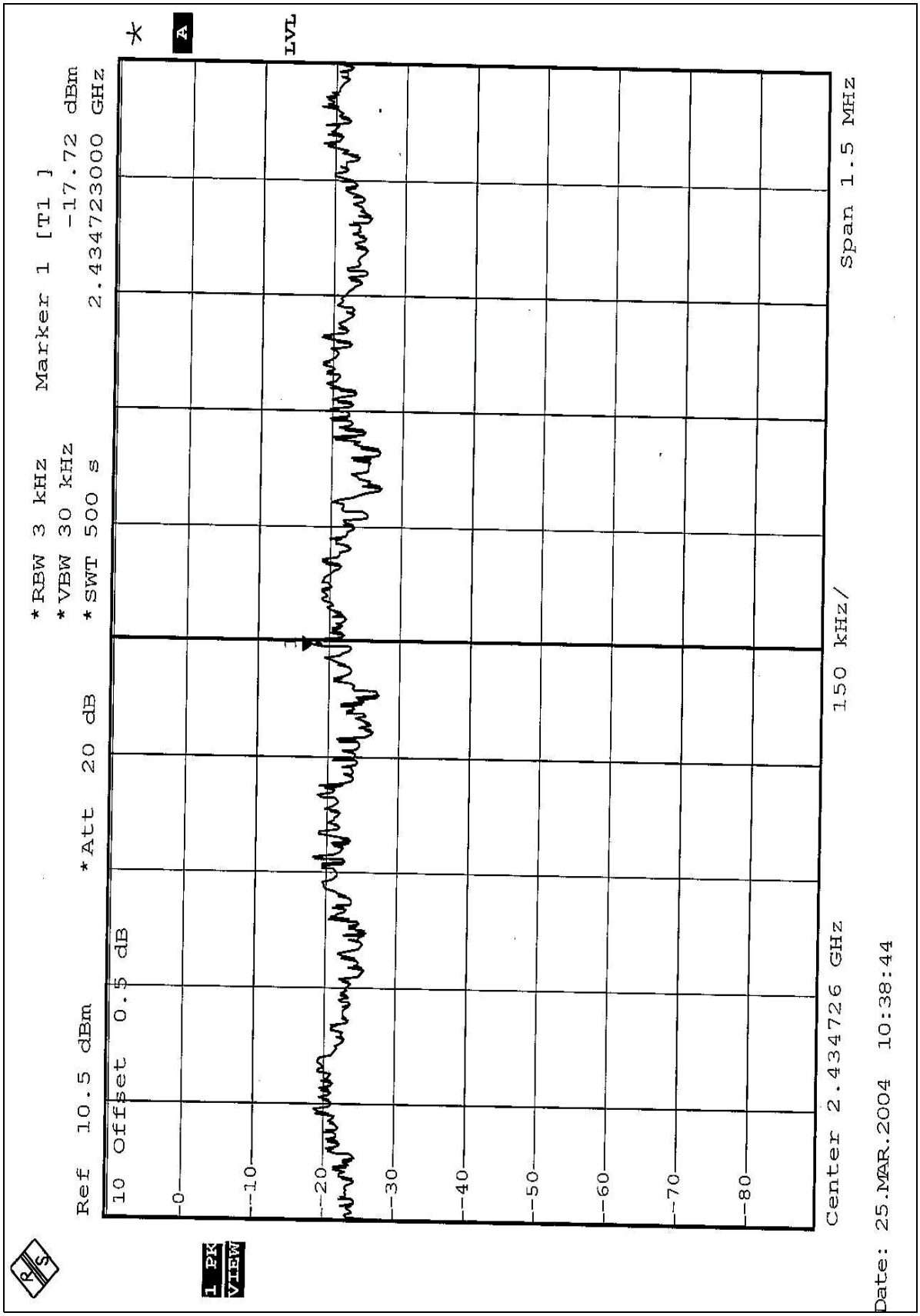
EUT	Wireless 802.11g MiniPCI Card	**MODEL**	WM1210
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	20deg. C, 73%RH, 991hPa
MODULATION MODE	OFDM	**TESTED BY**	Steven Lu

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-19.64	8	PASS
6	2437	-17.72	8	PASS
11	2462	-18.89	8	PASS

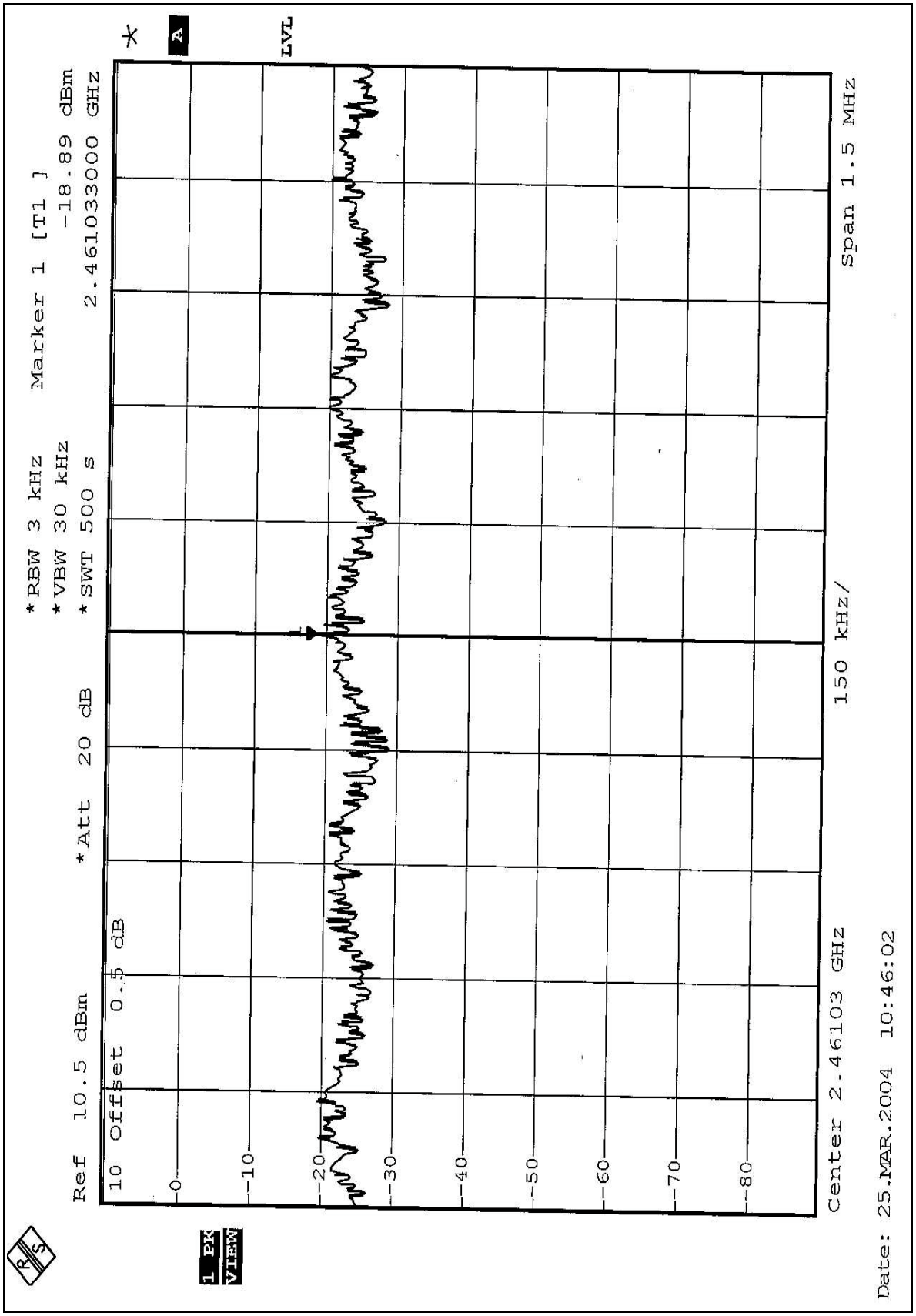
CH1


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-19.64 dBm
2.411033000 GHz
LVL
Span 1.5 MHz
150 kHz/
Center 2.41103 GHz
Date: 25.MAR.2004 10:37:48
1 PK VIEW

CH6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-17.72 dBm
2.434723000 GHz
Ref 10.5 dBm
Offset 0.5 dB
Att 20 dB
Span 1.5 MHz
150 kHz/
Center 2.434726 GHz
Date: 25.MAR.2004 10:38:44
LVL
1 PK
MAXH

CH11


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-18.89 dBm
2.46103300 GHz
Center 2.46103 GHz
150 kHz/
Span 1.5 MHz
Date: 25.MAR.2004 10:46:02
1 PK
VIEW
A
LVL

4.6 BAND EDGES MEASUREMENT

4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

4.6.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 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.

4.6.3 TEST PROCEDURE

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

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

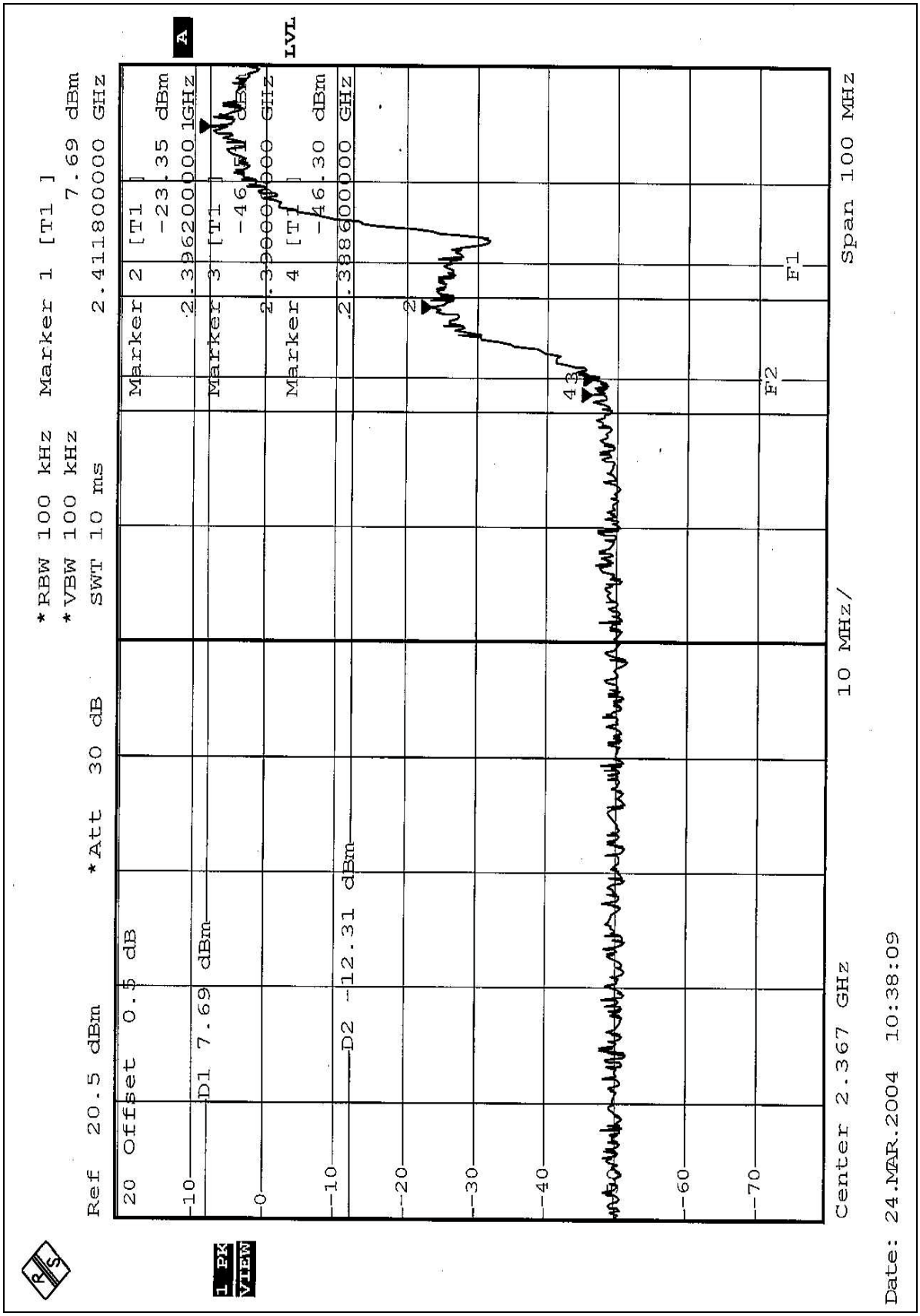
4.6.6 TEST RESULTS

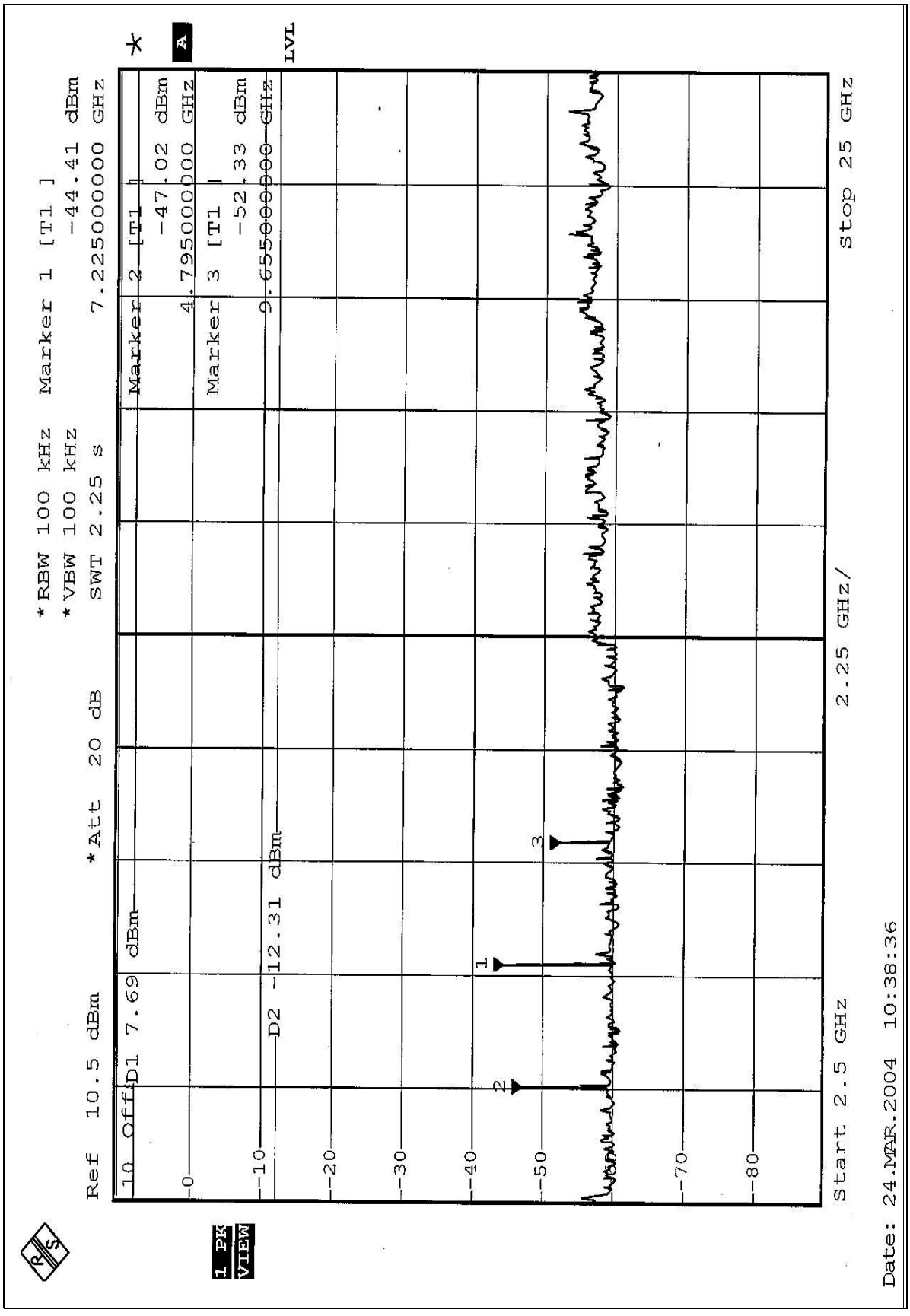
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level and D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

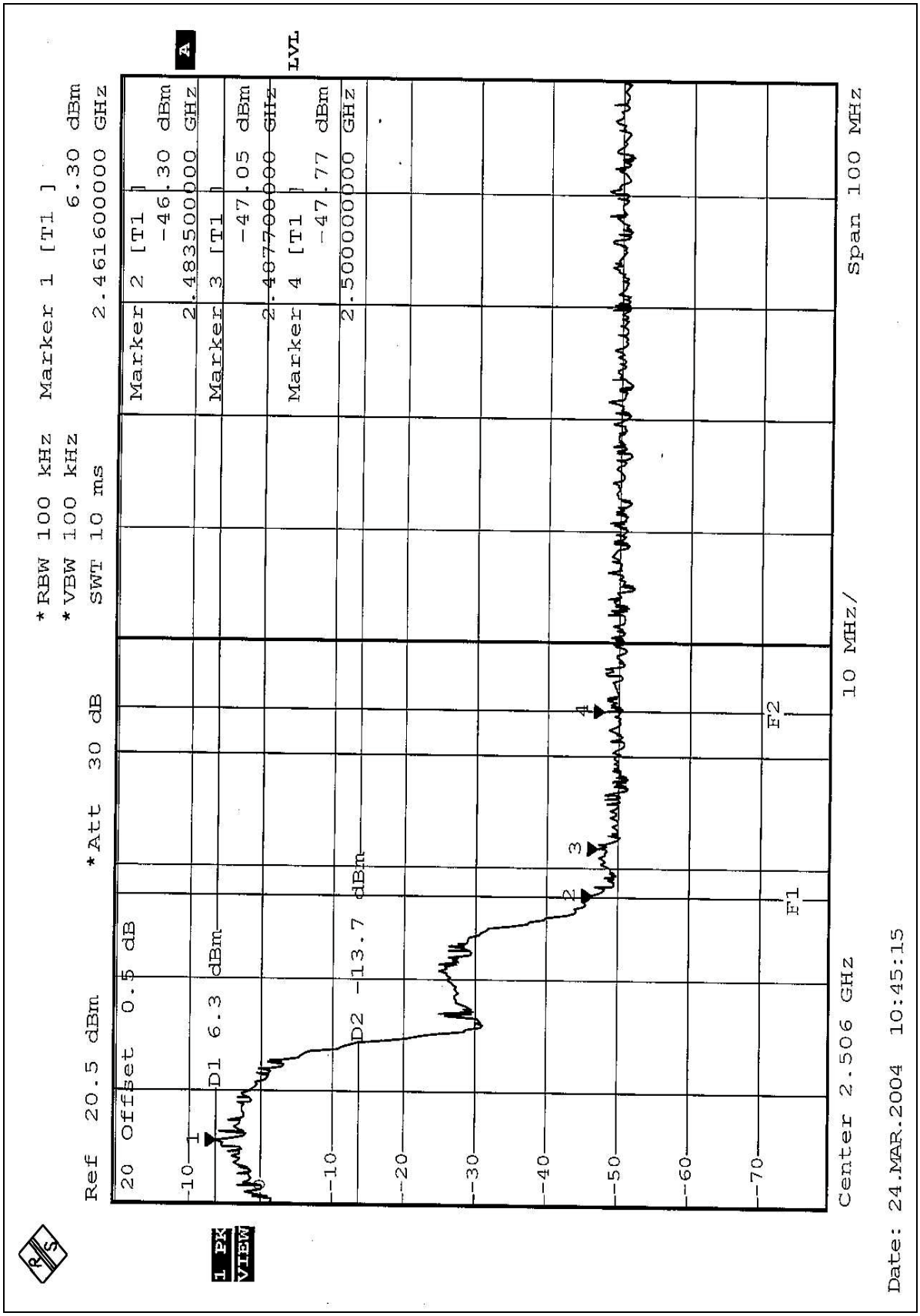
MODULATION MODE: CCK

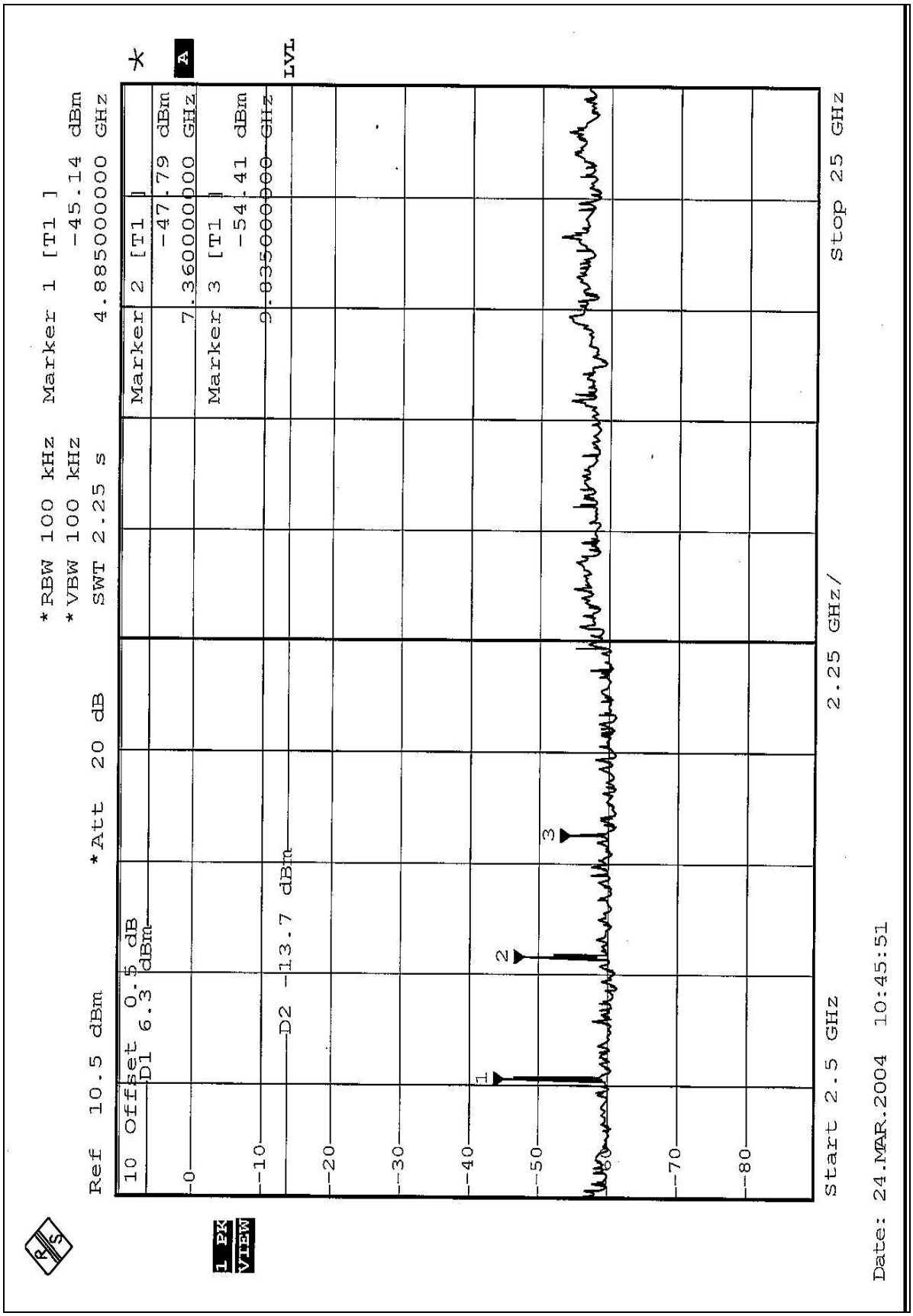
NOTE 1: The band edge emission plot of CCK technique on the following 1~2 pages show 53.99dB delta between carrier maximum power and local maximum emission in restrict band (2.3886GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.54dBuV/m, so the maximum field strength in restrict band is 104.54–53.99=50.55dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot of CCK technique on the following 3~4 pages show 52.60dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 104.23dBuV/m, so the maximum field strength in restrict band is 104.23–52.60=51.63dBuV/m which is under 54dBuV/m limit.


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
7.69 dBm
2.411800000 GHz
Marker 2 [T1]
-23.35 dBm
2.396200000 1GHz
Marker 3 [T1]
-46
2.390000000 GHz
Marker 4 [T1]
-46.30 dBm
2.388600000 GHz
D1 7.69 dBm
D2 -12.31 dBm
Center 2.367 GHz
10 MHz/
Span 100 MHz
F1
F2
1 PK
MAXH
Date: 24.MAR.2004 10:38:09


Ref 10.5 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-44.41 dBm
7.225000000 GHz
Marker 2 [T1]
-47.02 dBm
4.795000000 GHz
Marker 3 [T1]
-52.33 dBm
9.655000000 GHz
10 Off D1 7.69 dBm
D2 -12.31 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
Date: 24.MAR.2004 10:38:36
1 PK VIEW
A
LVL

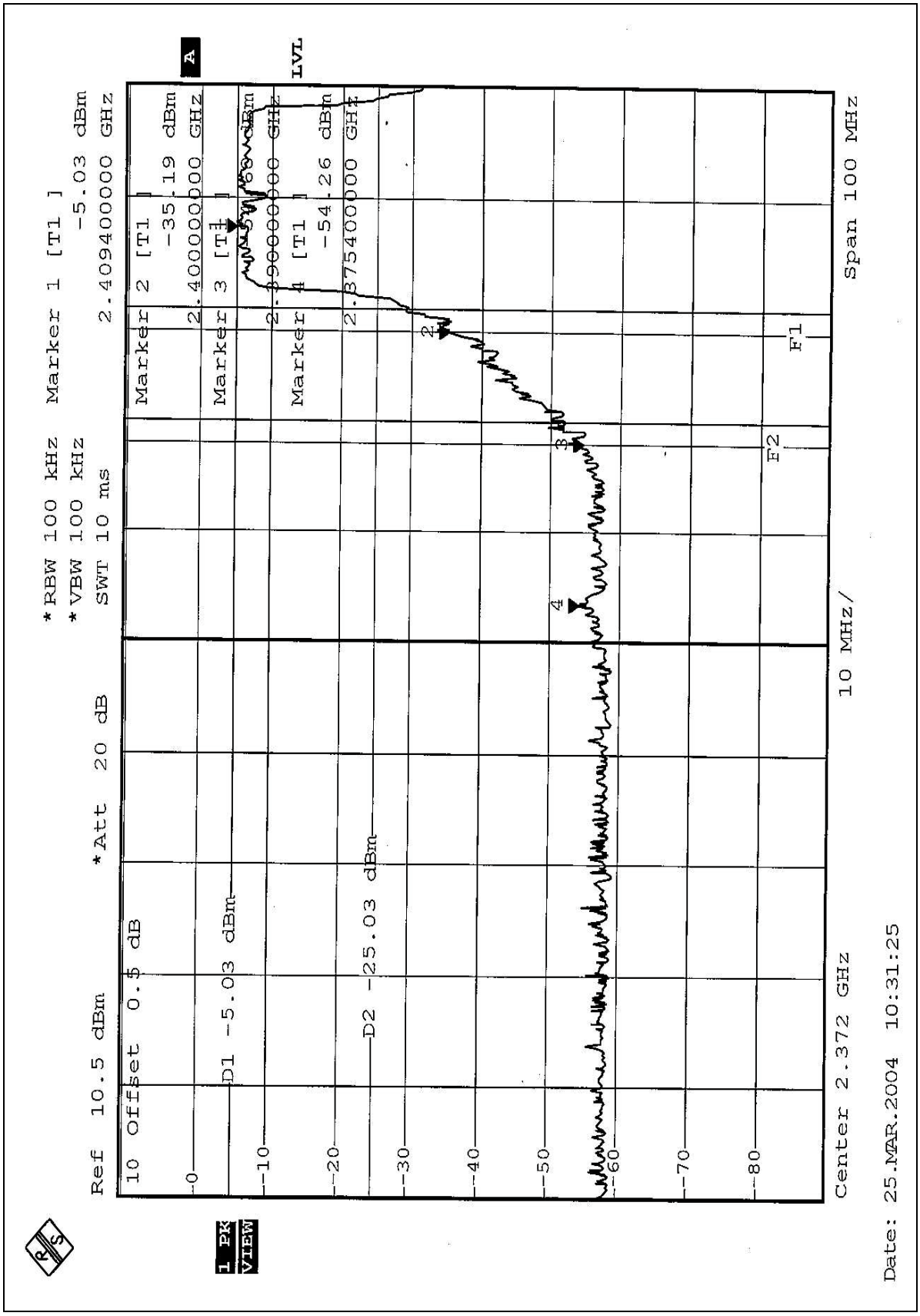

Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
6.30 dBm
2.461600000 GHz
Marker 2 [T1]
-46.30 dBm
2.483500000 GHz
Marker 3 [T1]
-47.05 dBm
2.487700000 GHz
Marker 4 [T1]
-47.77 dBm
2.500000000 GHz
D1 6.3 dBm
D2 -13.7 dBm
F1
F2
1 PK
VIEW
A
LVL
Center 2.506 GHz
10 MHz/
Span 100 MHz
Date: 24.MAR.2004 10:45:15

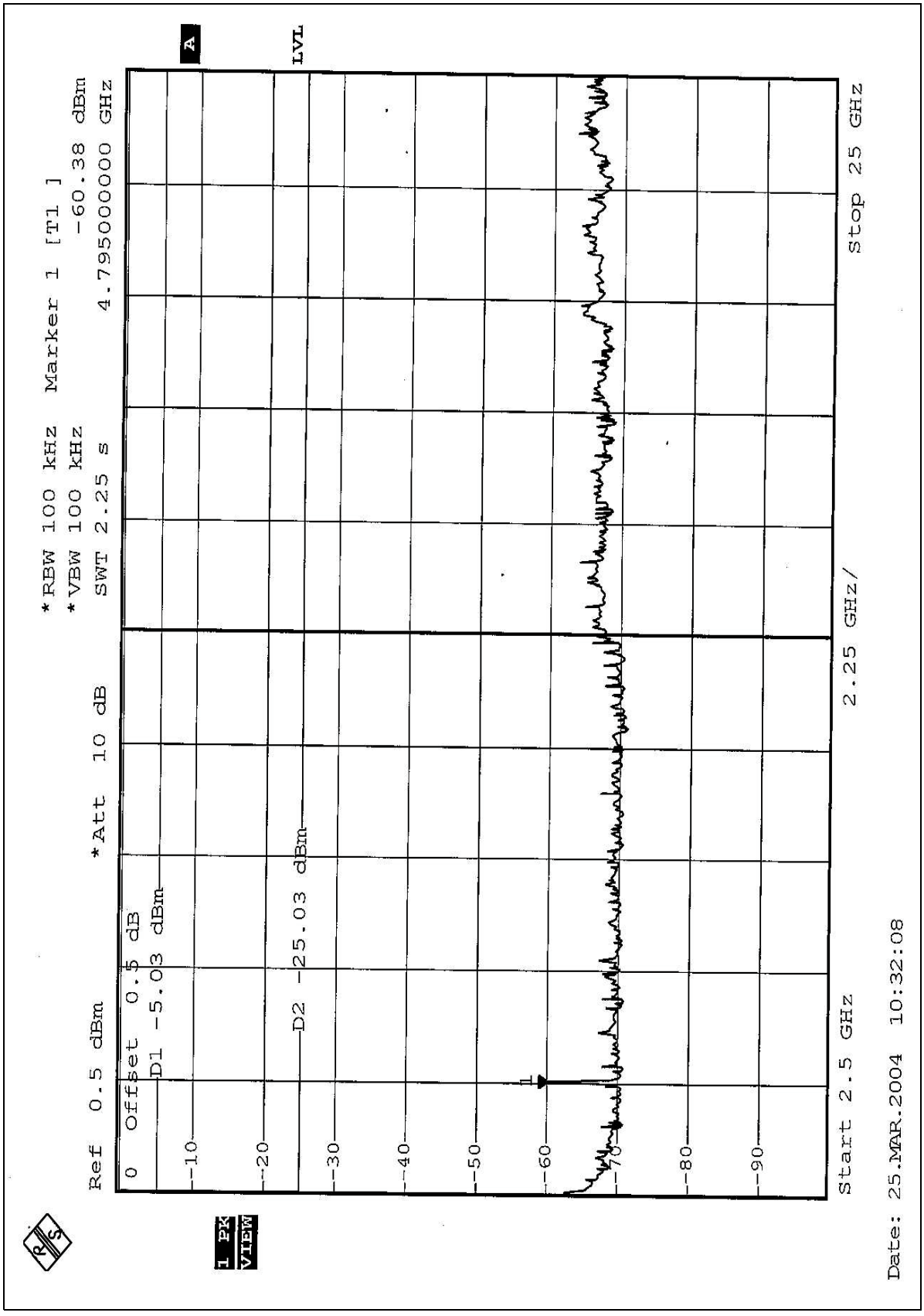

Ref 10.5 dBm
10 Offset 0.5 dB
D1 6.3 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-45.14 dBm
4.885000000 GHz
Marker 2 [T1]
-47.79 dBm
7.360000000 GHz
Marker 3 [T1]
-54.41 dBm
9.835000000 GHz
D2 -13.7 dBm
1 PK VIEW
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
Date: 24.MAR.2004 10:45:51

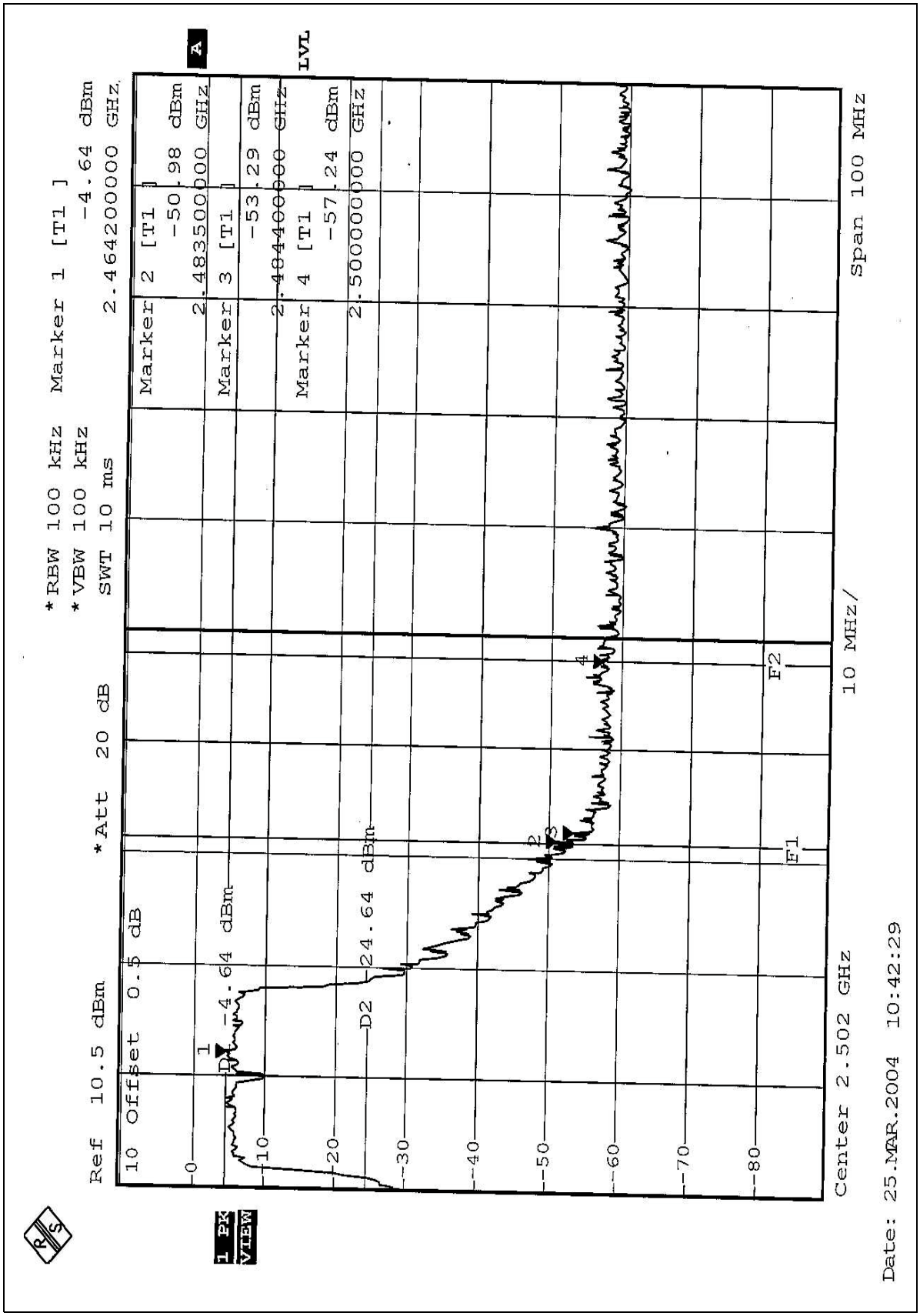
MODULATION MODE: OFDM

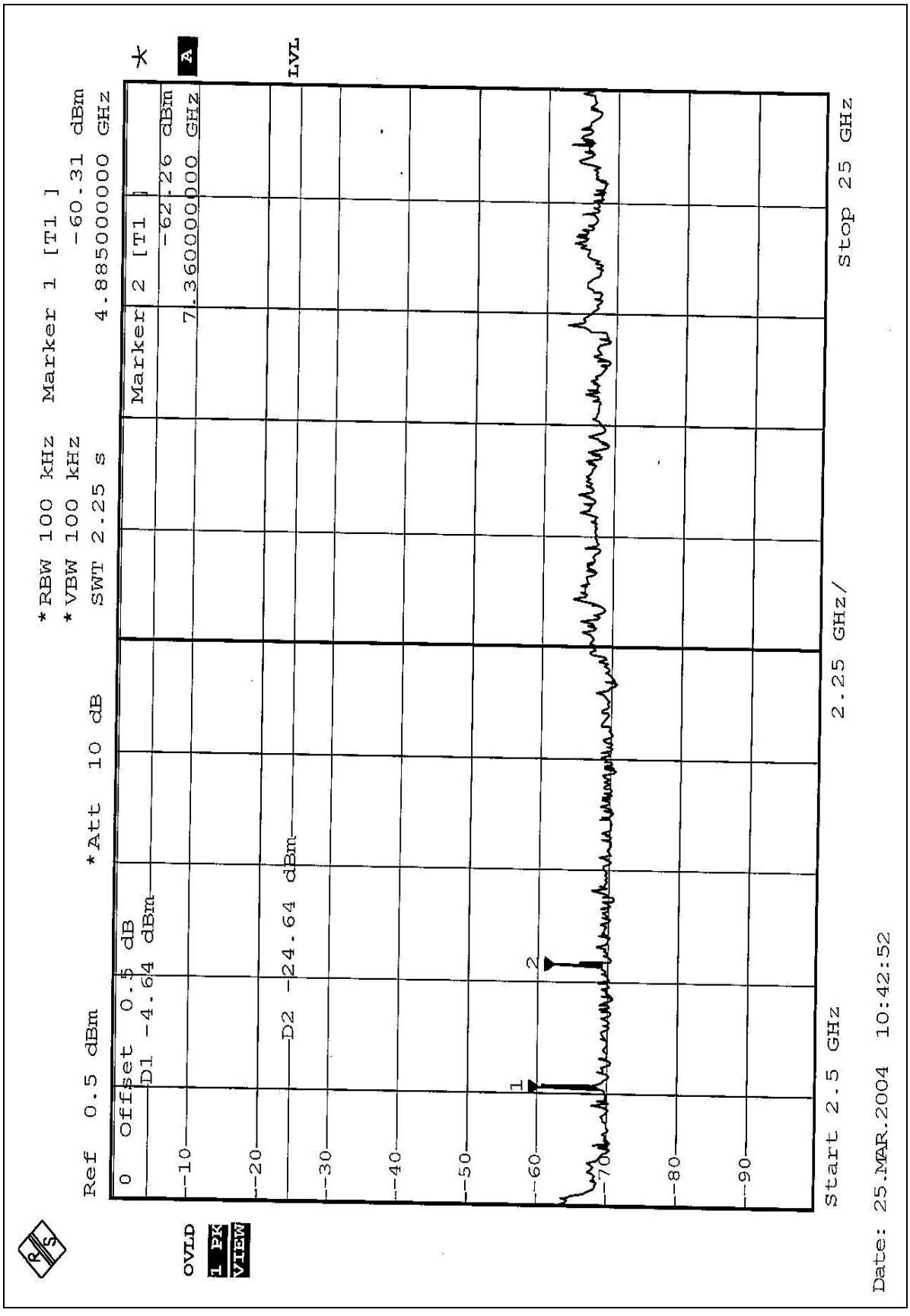
NOTE 1: The band edge emission plot of OFDM technique on the following 1~2 pages show 49.23dB delta between carrier maximum power and local maximum emission in restrict band (2.3754GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 97.70dBuV/m, so the maximum field strength in restrict band is 97.70–49.23=48.47dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot of OFDM technique on the following 3~4 pages show 46.34dB delta between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 96.35dBuV/m, so the maximum field strength in restrict band is 96.35-46.34=50.01dBuV/m which is under 54dBuV/m limit.


Ref 10.5 dBm
10 Offset 0.5 dB
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-5.03 dBm
2.409400000 GHz
Marker 2 [T1]
-35.19 dBm
2.400000000 GHz
Marker 3 [T1]
-5.03 dBm
2.390000000 GHz
Marker 4 [T1]
-54.26 dBm
2.375400000 GHz
D1 -5.03 dBm
D2 -25.03 dBm
Center 2.372 GHz
10 MHz/
Span 100 MHz
Date: 25.MAR.2004 10:31:25
1 PK
VIEW
A
LVL
F1
F2


Ref 0.5 dBm
*Att 10 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-60.38 dBm
4.795000000 GHz
A
LVL
0 Offset 0.5 dB
D1 -5.03 dBm
D2 -25.03 dBm
-10
-20
-30
-40
-50
-60
-70
-80
-90
1 PK VIEW
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
Date: 25.MAR.2004 10:32:08


Ref 10.5 dBm
10 Offset 0.5 dB
* Att 20 dB
* RBW 100 kHz
* VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-4.64 dBm
2.464200000 GHz
Marker 2 [T1]
-50.98 dBm
2.483500000 GHz
Marker 3 [T1]
-53.29 dBm
2.484400000 GHz
Marker 4 [T1]
-57.24 dBm
2.500000000 GHz
LVL
A
1 PK VIEW
D1 -4.64 dBm
D2 -24.64 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Date: 25.MAR.2004 10:42:29


Ref 0.5 dBm
*Att 10 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-60.31 dBm
4.885000000 GHz
Marker 2 [T1]
-62.26 dBm
7.360000000 GHz
LVL
0 Offset 0.5 dB
D1 -4.64 dBm
D2 -24.64 dBm
-10
-20
-30
-40
-50
-60
-70
-80
-90
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
Date: 25.MAR.2004 10:42:52
OVLD
1 PK
VIEW

4.7 ANTENNA REQUIREMENT

4.7.1 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 15.247 (b), 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.

4.7.2 ANTENNA CONNECTED CONSTRUCTION

The maximum Gain antennas used in this product is dipole antenna with UFL antenna connector. And the maximum Gain of these antennas is 2dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST


930309R01

RADIATED EMISSION TEST


930309R01

6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom 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
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

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:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety/Telecom Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Linko RF 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.