4.4.8 TEST RESULTS (B)

EUT	2.4GHz Wireless Mini PCI Card	**MODEL**	DPR2325 SERIES CABLE MODEM P/N: XXXXXXX
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	18 deg. C, 64% RH, 991 hPa
TESTED BY: Ansen Lei			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	15.04	30	PASS
6	2437	15.08	30	PASS
11	2462	15.00	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

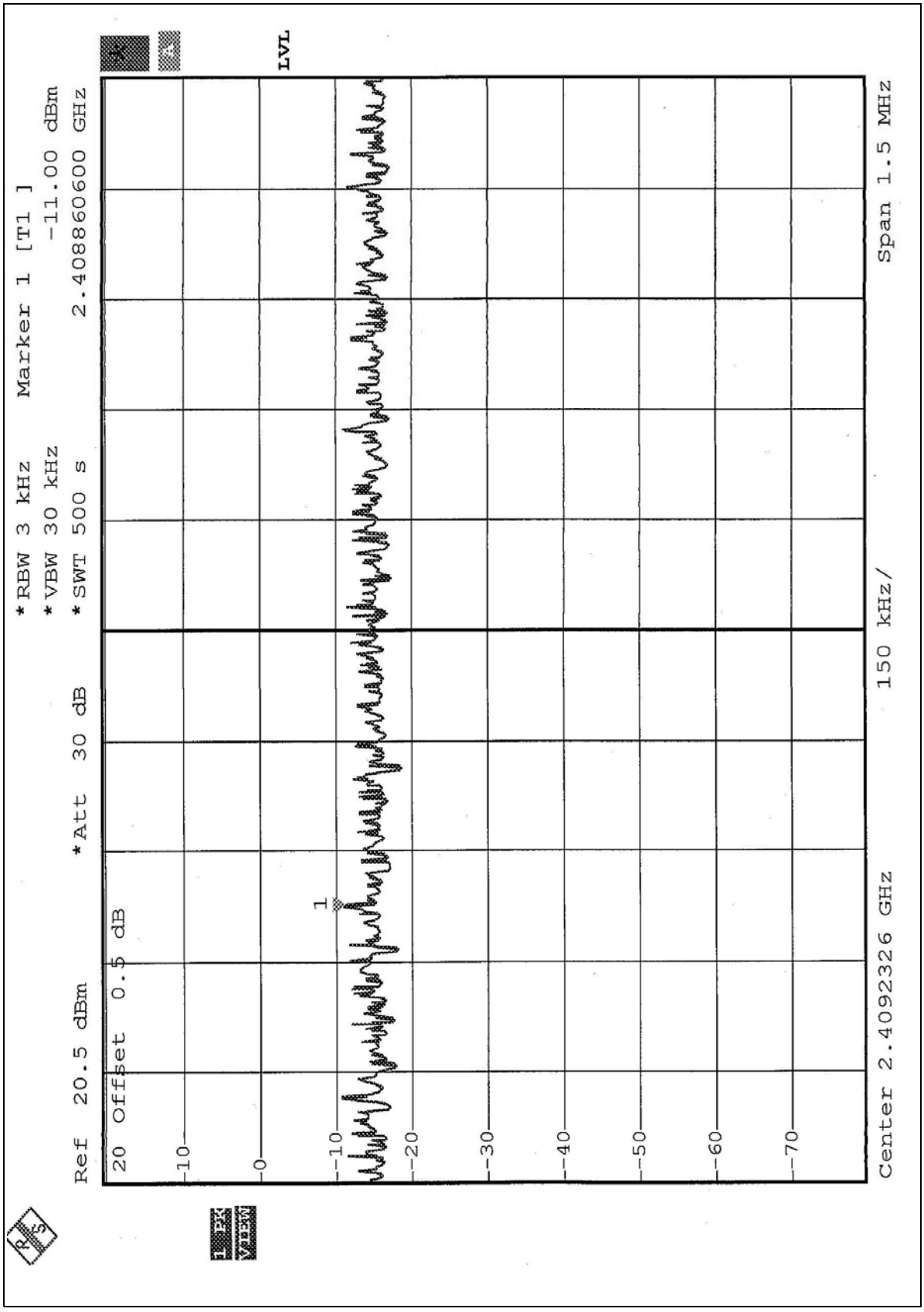
Same as 4.3.6

4.5.7 TEST RESULTS (A)

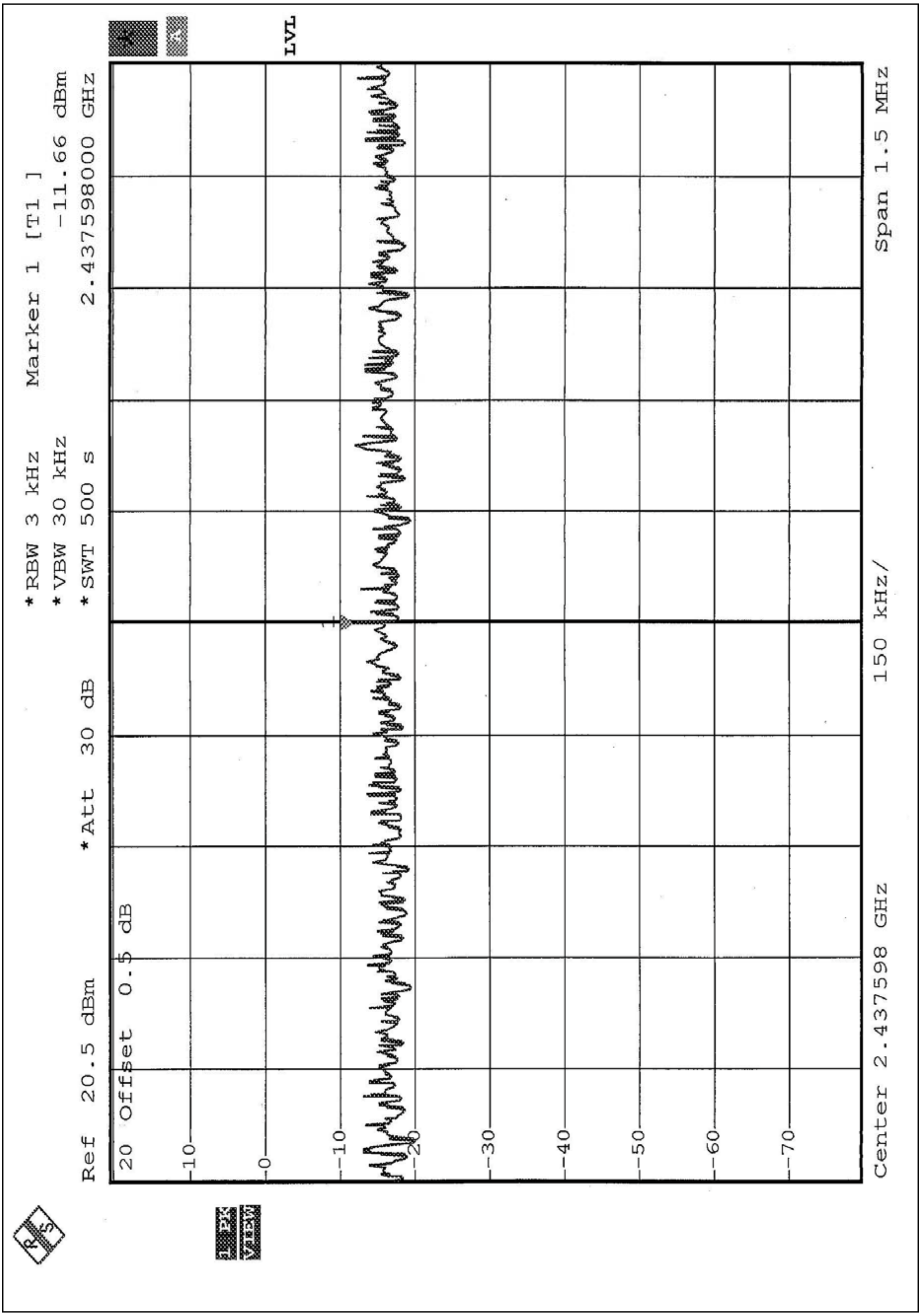
EUT	2.4GHz Wireless Mini PCI Card	**MODEL**	DPR2325 SERIES CABLE MODEM P/N: XXXXXXX
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	18 deg. C, 64% RH, 991 hPa
TESTED BY: Ansen Lei			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-11.00	8	PASS
6	2437	-11.66	8	PASS
11	2462	-11.27	8	PASS

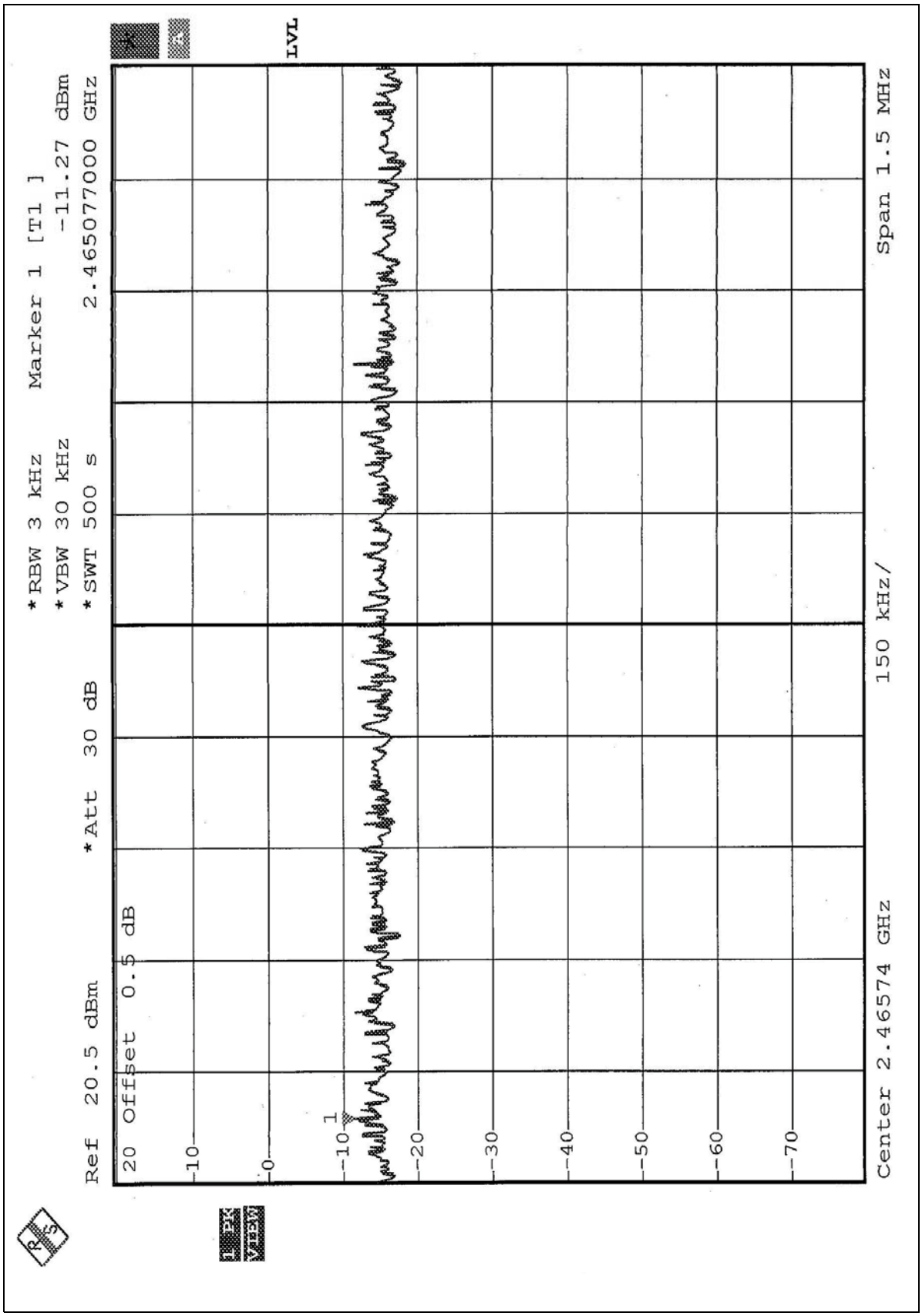
CH1


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-11.00 dBm
2.40886600 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
LVL
Center 2.4092326 GHz
150 kHz/
Span 1.5 MHz

CH6


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-11.66 dBm
2.43759800 GHz
Ref 20.5 dBm
*Att 30 dB
Offset 0.5 dB
LVL
Center 2.437598 GHz
150 kHz/
Span 1.5 MHz

CH11

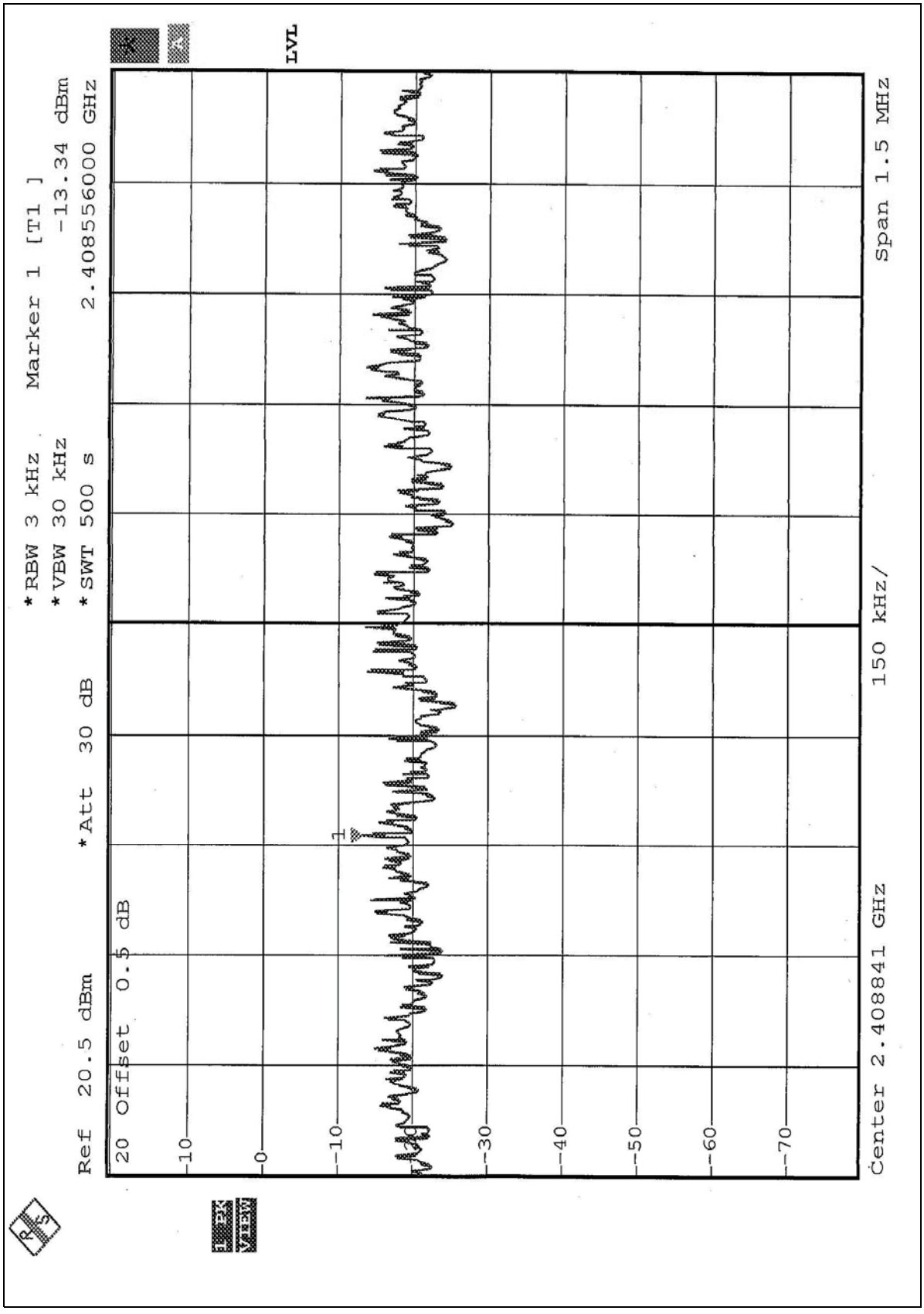

Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-11.27 dBm
2.465077000 GHz
LVL
Center 2.46574 GHz
150 kHz/
Span 1.5 MHz
1 PK
VIEW

4.5.8 TEST RESULTS (B)

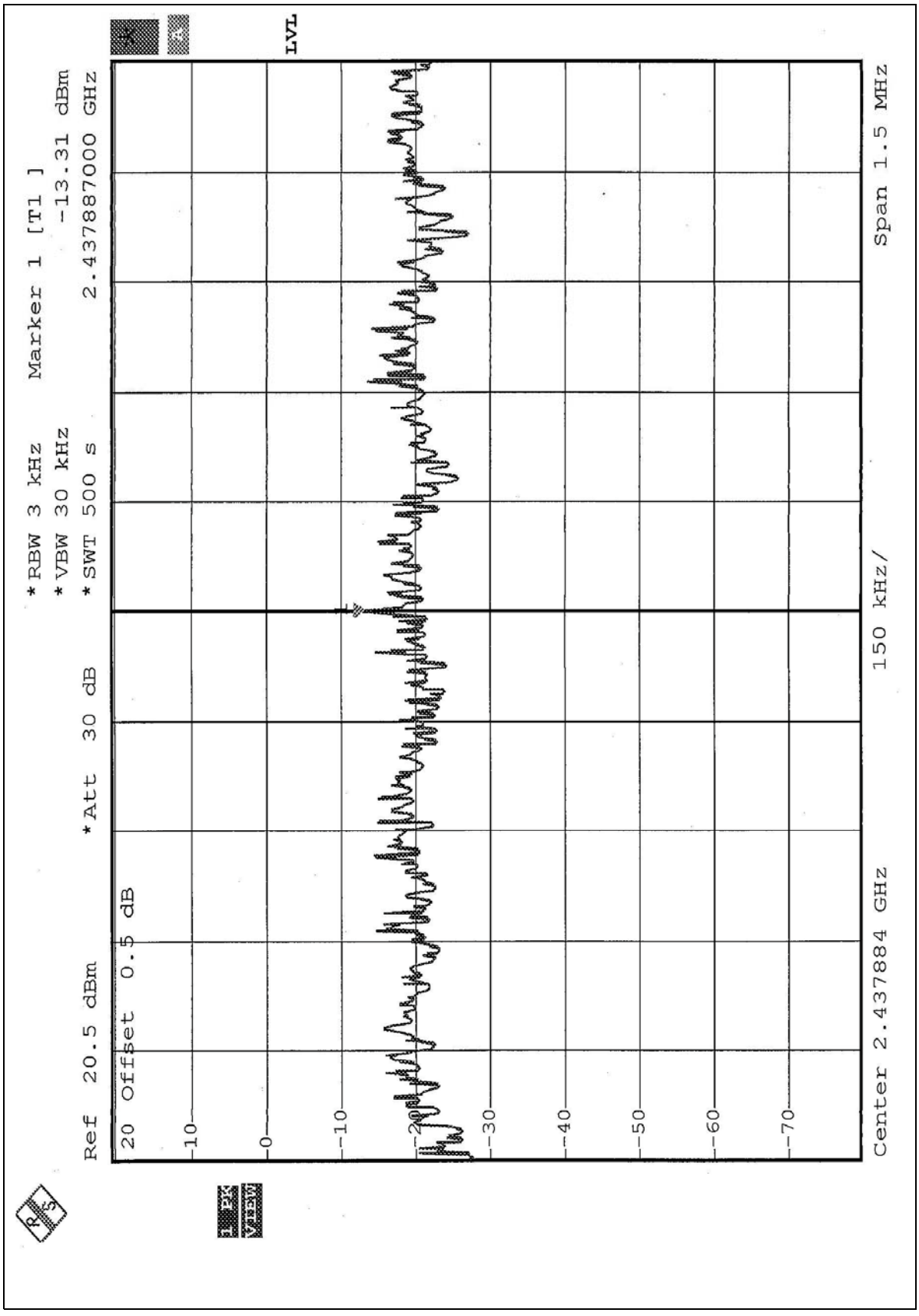
EUT	2.4GHz Wireless Mini PCI Card	**MODEL**	DPR2325 SERIES CABLE MODEM P/N: XXXXXXX
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	18 deg. C, 64% RH, 991 hPa
TESTED BY: Ansen Lei			

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-13.34	8	PASS
6	2437	-13.31	8	PASS
11	2462	-14.88	8	PASS

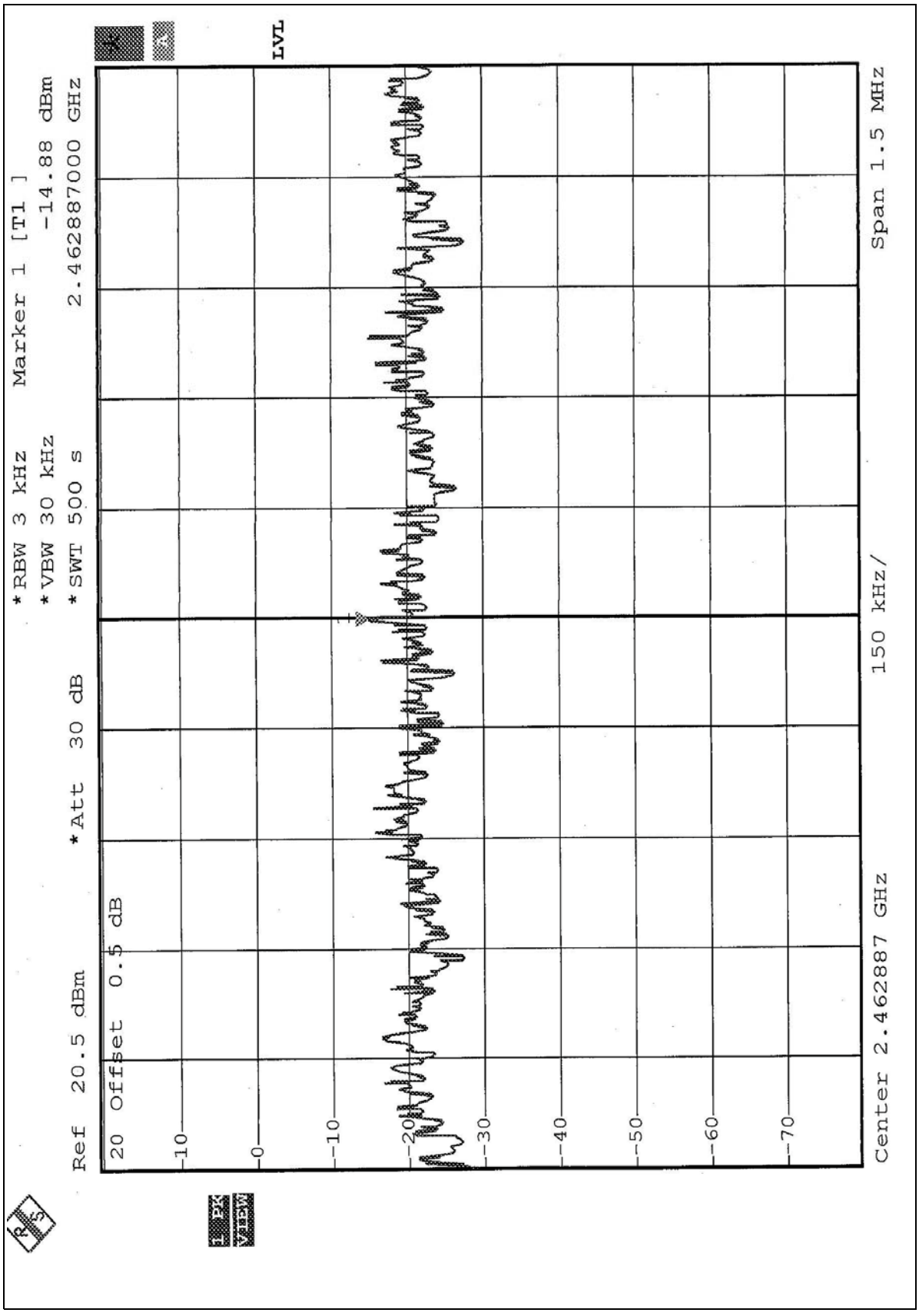
CH1


RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-13.34 dBm
2.408556000 GHz
Ref 20.5 dBm
Offset 0.5 dB
Att 30 dB
LVL
Center 2.408841 GHz
150 kHz/
Span 1.5 MHz
PK
VIEW

CH6


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-13.31 dBm
2.437887000 GHz
Center 2.437884 GHz
150 kHz/
Span 1.5 MHz
LVL
10
0
-10
-20
-30
-40
-50
-60
-70

CH11


Marker 1 [T1]
-14.88 dBm
2.462887000 GHz
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
*Att 30 dB
Ref 20.5 dBm
20 Offset 0.5 dB
LVL
Span 1.5 MHz
150 kHz/
Center 2.462887 GHz

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 and VBW of spectrum analyzer to 1MHz and 1kHz 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 (A)

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

Mode A

NOTE:

The band edge emission plot on the following 1 ~ 2 pages show 54.17dB delta between carrier maximum power and local maximum emission in restrict band (2.3866GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 103.74dBuV/m, so the maximum field strength in restrict band is 103.74 – 54.17 = 49.57dBuV/m which is under 54 dBuV/m limit.

NOTE:

The band edge emission plot on the following 3 ~ 4 pages show 49.58dB delta between carrier maximum power and local maximum emission in restrict band (2.4838GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 102.76dBuV/m, so the maximum field strength in restrict band is 102.76 – 49.58 = 53.18dBuV/m which is under 54 dBuV/m limit.

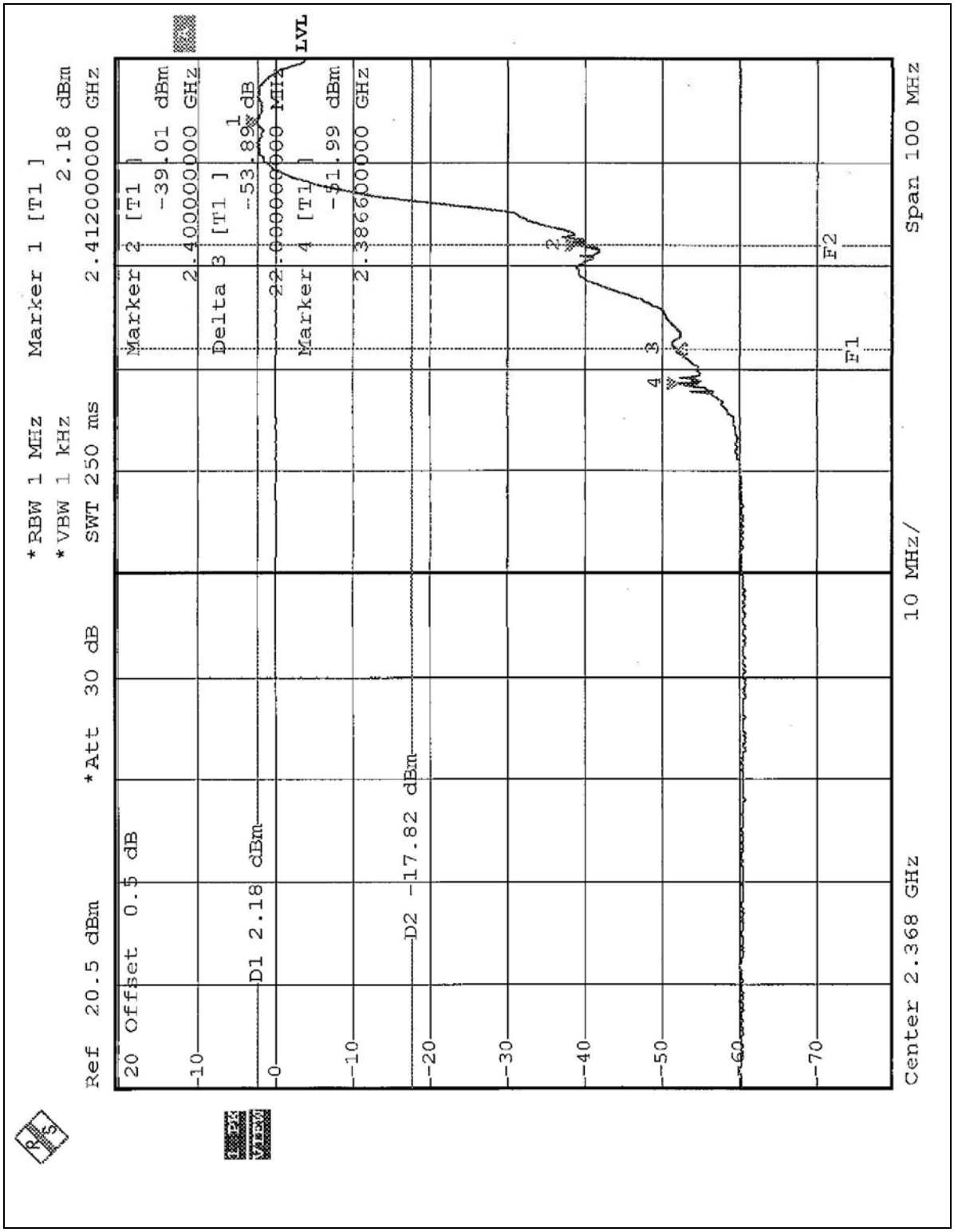
Mode B

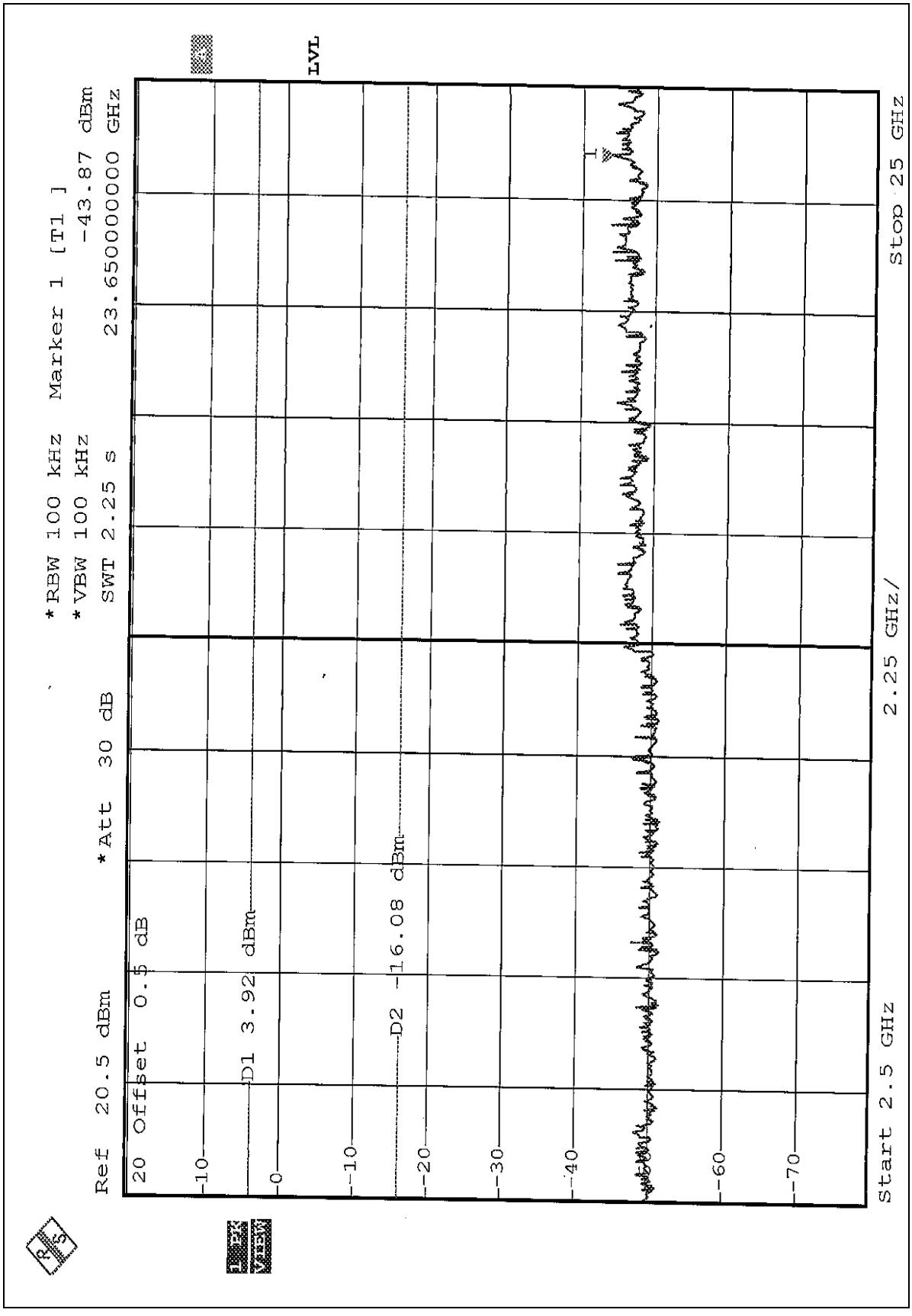
NOTE:

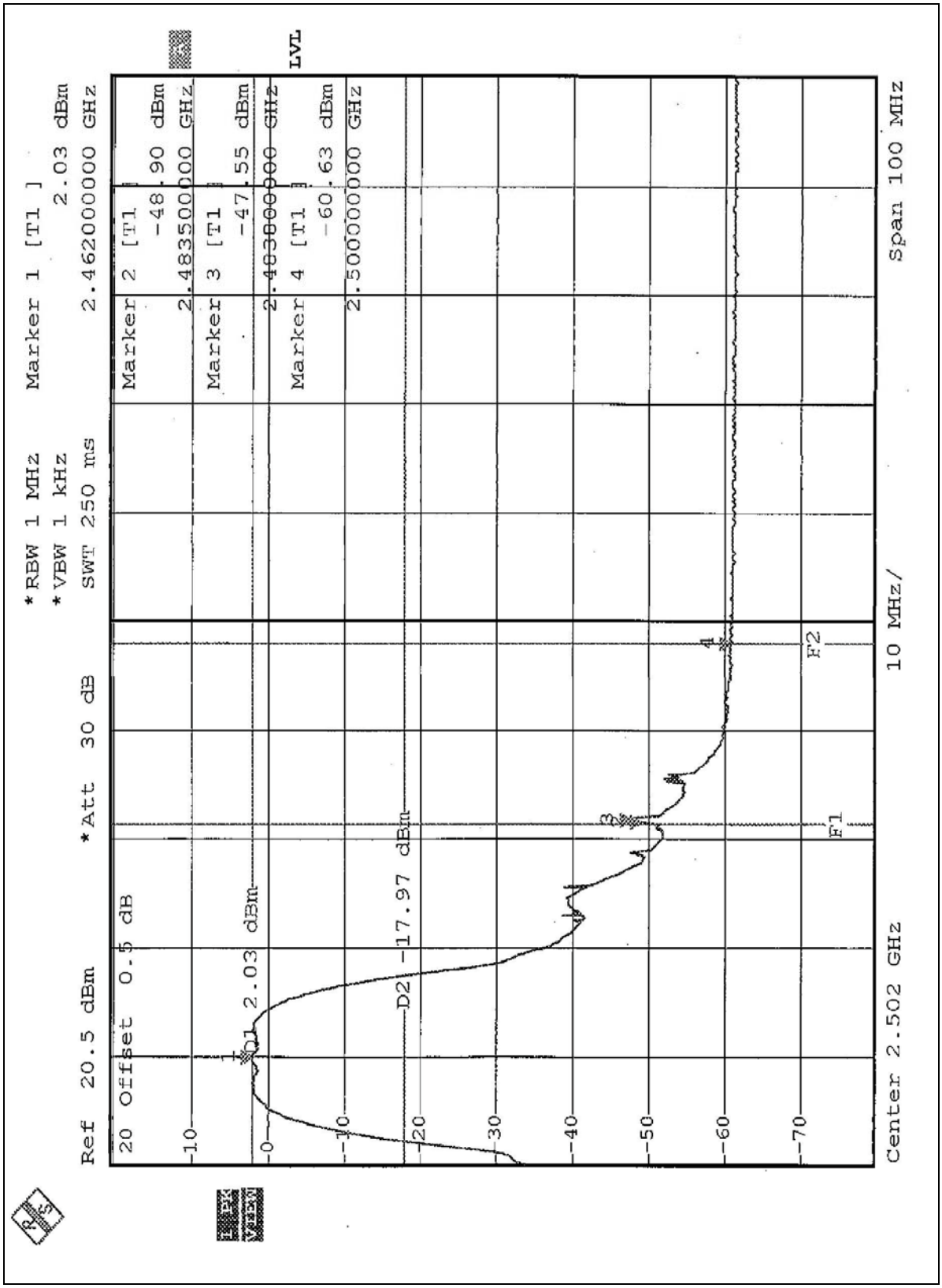
The band edge emission plot on the following 1 ~ 2 pages show 54.17dB delta between carrier maximum power and local maximum emission in restrict band (2.3866GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 103.44dBuV/m, so the maximum field strength in restrict band is 103.44 – 54.17 = 49.27dBuV/m which is under 54 dBuV/m limit.

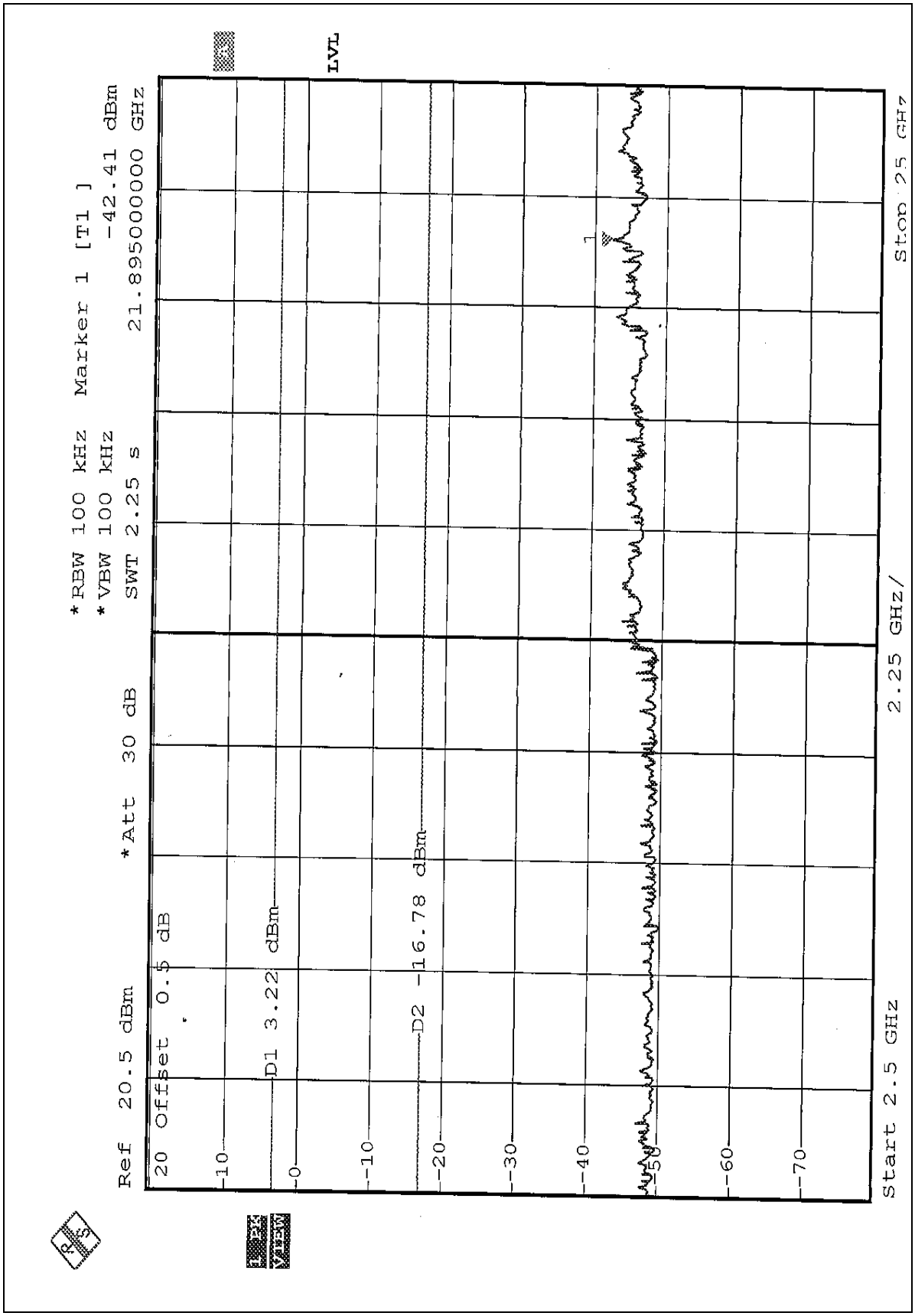
NOTE:

The band edge emission plot on the following 3 ~ 4 pages show 49.58dB delta between carrier maximum power and local maximum emission in restrict band (2.4838GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 100.72dBuV/m, so the maximum field strength in restrict band is 100.72 – 49.58 = 51.14dBuV/m which is under 54 dBuV/m limit.


*RBW 1 MHz
*VBW 1 kHz
SWT 250 ms
Marker 1 [T1]
2.18 dBm
2.412000000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
Marker 2 [T1]
-39.01 dBm
2.400000000 GHz
Delta 3 [T1]
-53.89 dB
22.000000000 MHz
Marker 4 [T1]
-51.99 dBm
2.386600000 GHz
D1 2.18 dBm
D2 -17.82 dBm
LVL
F1
F2
Center 2.368 GHz
10 MHz/
Span 100 MHz


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-43.87 dBm
23.650000000 GHz
D1 3.92 dBm
D2 -16.08 dBm
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
LVL
RBW
VBW


Ref 20.5 dBm
20 Offset 0.5 dB
*RBW 1 MHz
*VBW 1 kHz
*Att 30 dB
SWT 250 ms
Marker 1 [T1]
2.03 dBm
2.462000000 GHz
Marker 2 [T1
-48.90 dBm
2.483500000 GHz
Marker 3 [T1
-47.55 dBm
2.483800000 GHz
Marker 4 [T1
-60.63 dBm
2.500000000 GHz
LVL
D1 2.03 dBm
D2 -17.97 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.25 s
Marker 1 [T1]
-42.41 dBm
21.895000000 GHz
D1 3.22 dBm
D2 -16.78 dBm
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

4.6.7 TEST RESULTS (B)

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

Mode A

NOTE:

The band edge emission plot on the following 1 ~ 2 pages show 48.58dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 101.08dBuV/m, so the maximum field strength in restrict band is 101.08 – 48.58 = 52.50dBuV/m which is under 54 dBuV/m limit.

NOTE:

The band edge emission plot on the following 3 ~ 4 pages show 48.63dB 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 4.2.9 is 101.92dBuV/m, so the maximum field strength in restrict band is 101.92 – 48.63 = 53.29dBuV/m which is under 54 dBuV/m limit.

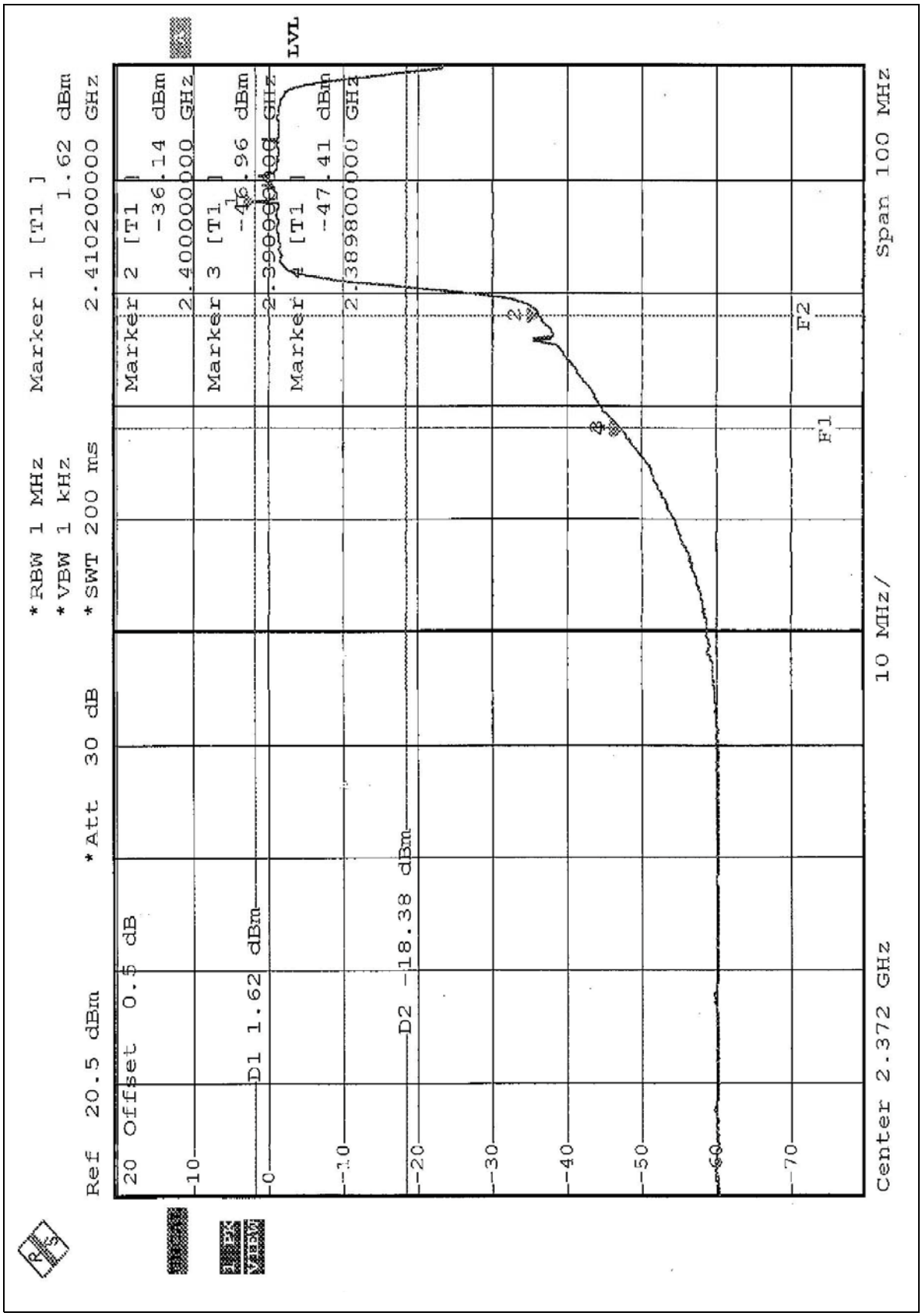
Mode B

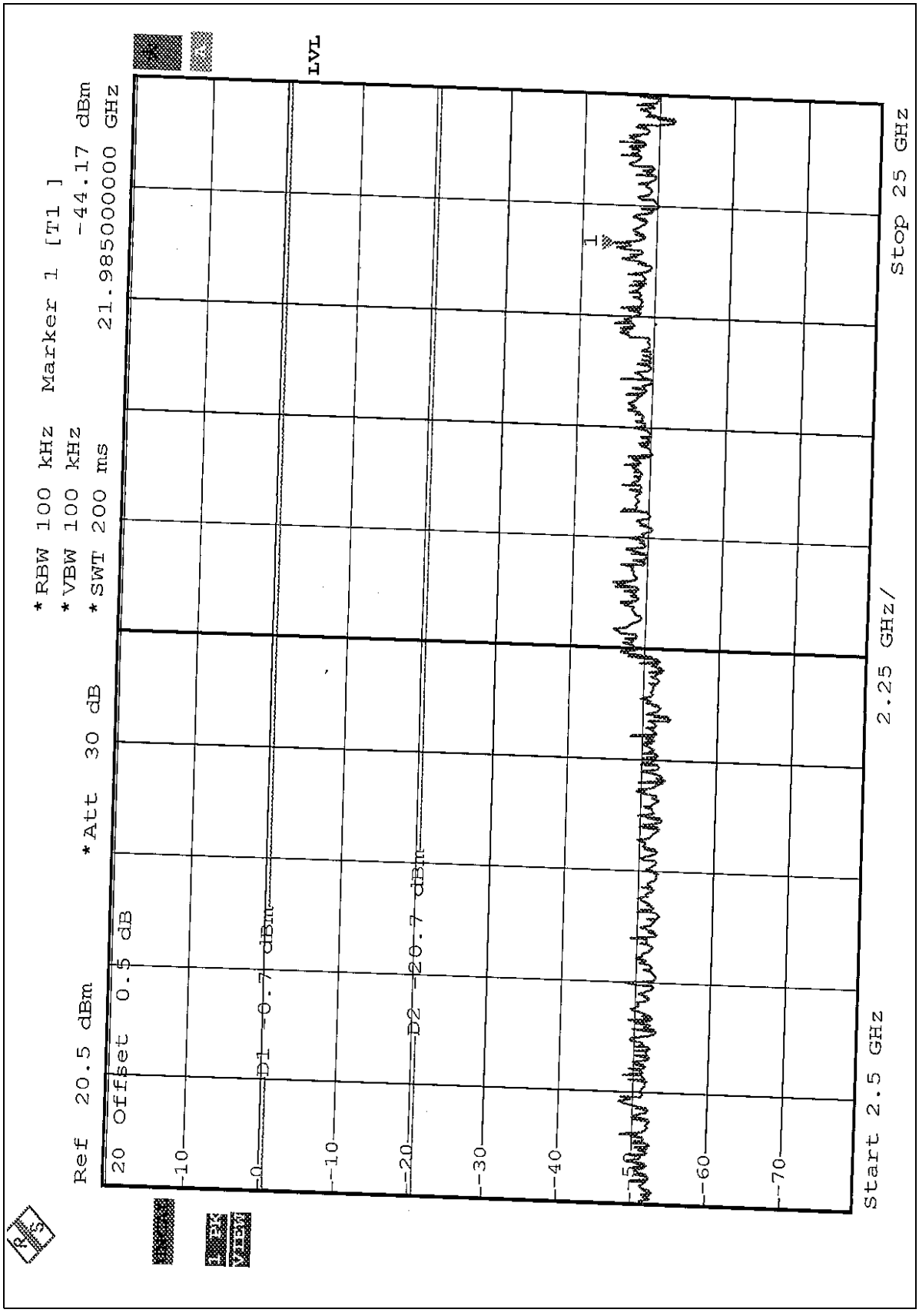
NOTE:

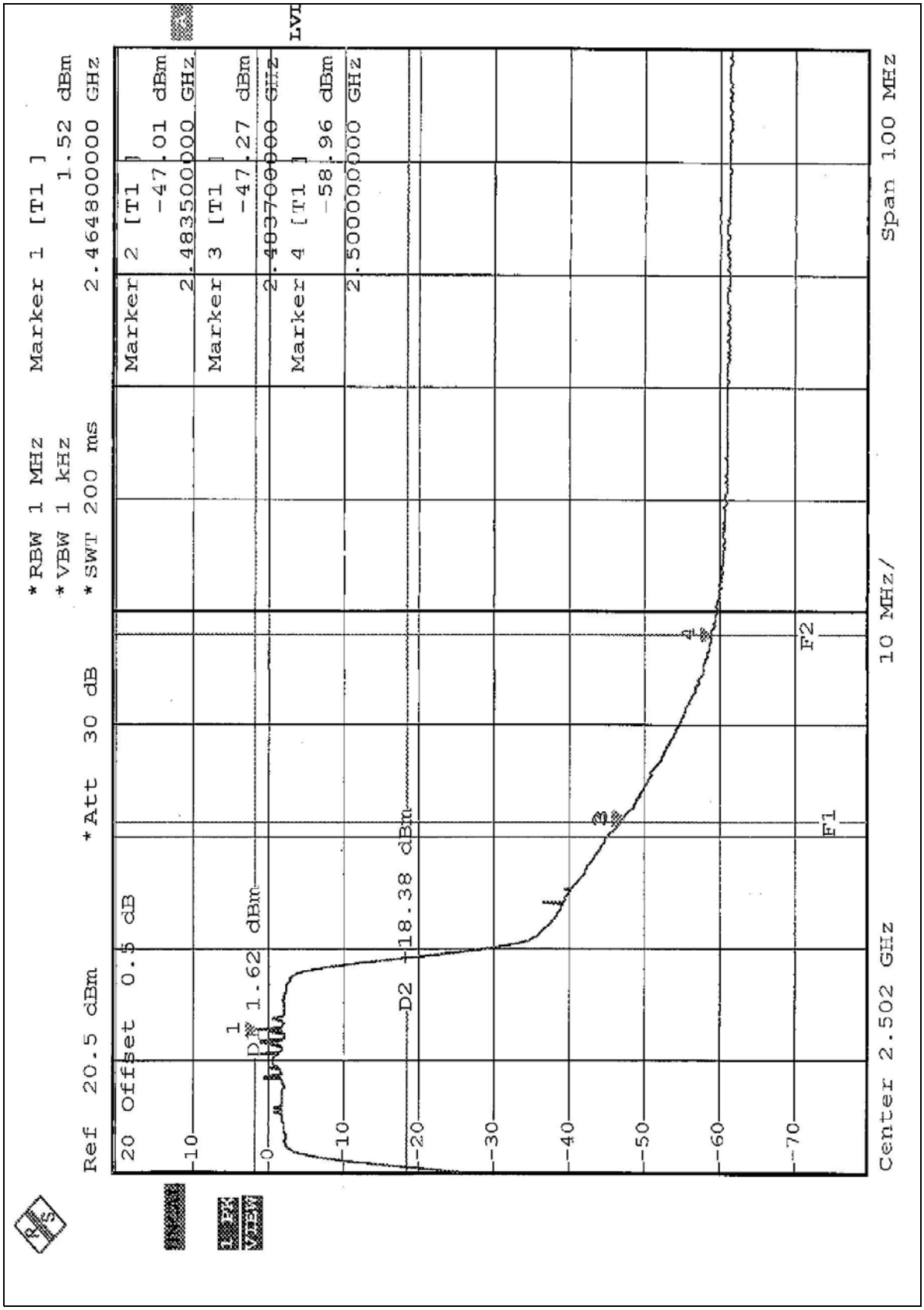
The band edge emission plot on the following 1 ~ 2 pages show 48.58dB delta between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.9 is 100.20dBuV/m, so the maximum field strength in restrict band is 100.20 – 48.58 = 51.62dBuV/m which is under 54 dBuV/m limit.

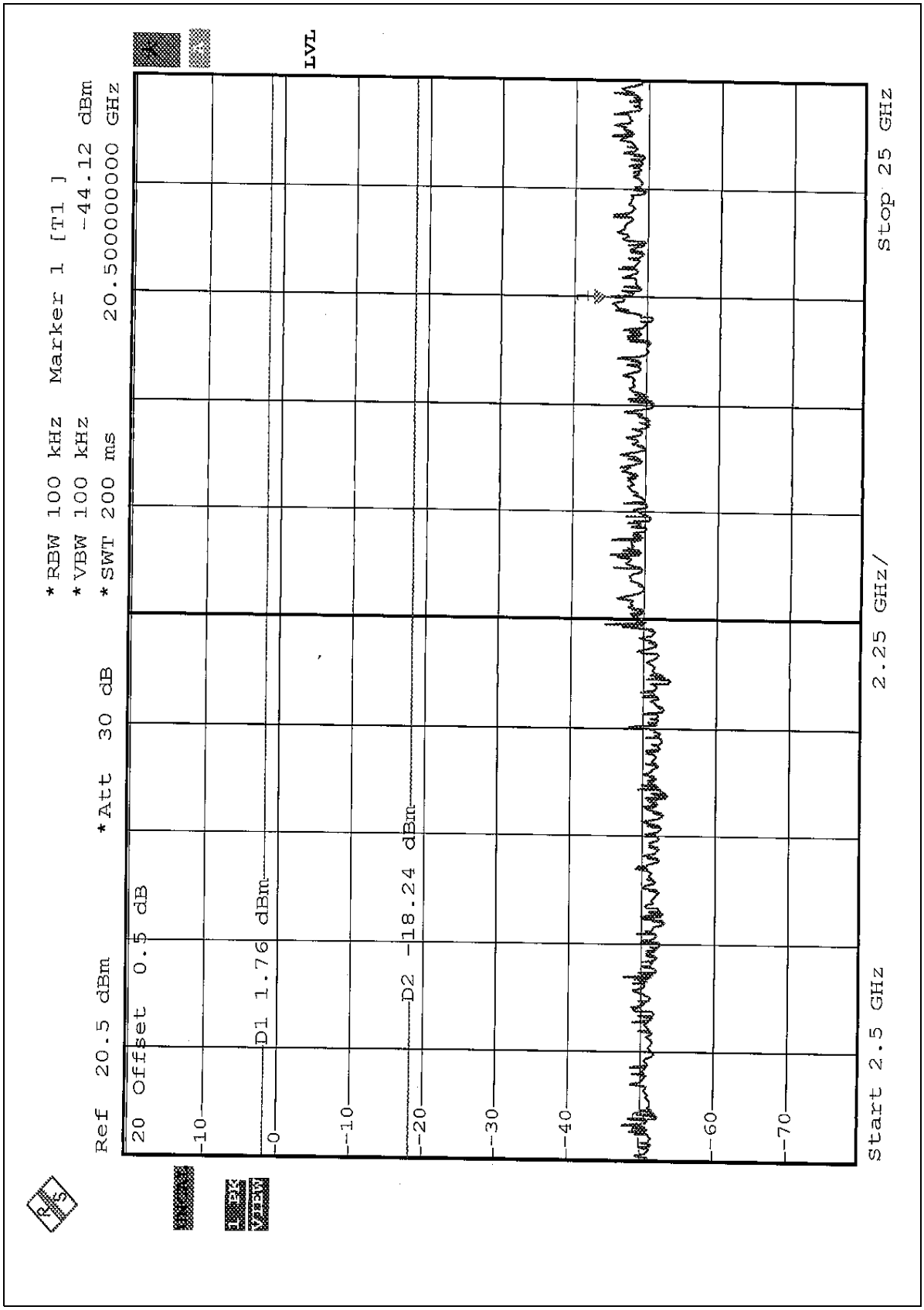
NOTE:

The band edge emission plot on the following 3 ~ 4 pages show 48.63dB 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 4.2.9 is 98.03dBuV/m, so the maximum field strength in restrict band is 98.03 – 48.63 = 49.40dBuV/m which is under 54 dBuV/m limit.


Ref 20.5 dBm
20 Offset 0.5 dB
*RBW 1 MHz
*VBW 1 kHz
*Att 30 dB
*SWT 200 ms
Marker 1 [T1]
1.62 dBm
2.410200000 GHz
D1 1.62 dBm
D2 -18.38 dBm
Marker 2 [T1]
-36.14 dBm
2.400000000 GHz
Marker 3 [T1]
-46.96 dBm
2.390000000 GHz
Marker 4 [T1]
-47.41 dBm
2.389800000 GHz
LVL
F1
F2
Center 2.372 GHz
10 MHz/
Span 100 MHz


Ref 20.5 dBm
Offset 0.5 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
D1 -0.7 dBm
D2 -20.7 dBm
* Att 30 dB
* RBW 100 kHz
* VBW 100 kHz
* SWT 200 ms
Marker 1 [T1]
-44.17 dBm
21.98500000 GHz
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz


*RBW 1 MHz
*VBW 1 kHz
*SWT 200 ms
*Att 30 dB
Marker 1 [T1]
1.52 dBm
2.464800000 GHz
Marker 2 [T1]
-47.01 dBm
2.483500000 GHz
Marker 3 [T1]
-47.27 dBm
2.483700000 GHz
Marker 4 [T1]
-58.96 dBm
2.500000000 GHz
Ref 20.5 dBm
20 Offset 0.5 dB
D1 1.62 dBm
D2 +18.38 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


Ref 20.5 dBm
20 Offset 0.5 dB
*Att 30 dB
*RBW 100 kHz
*VBW 100 kHz
*SWT 200 ms
Marker 1 [T1]
-44.12 dBm
20.500000000 GHz
D1 1.76 dBm
D2 -18.24 dBm
LVL
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz

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.

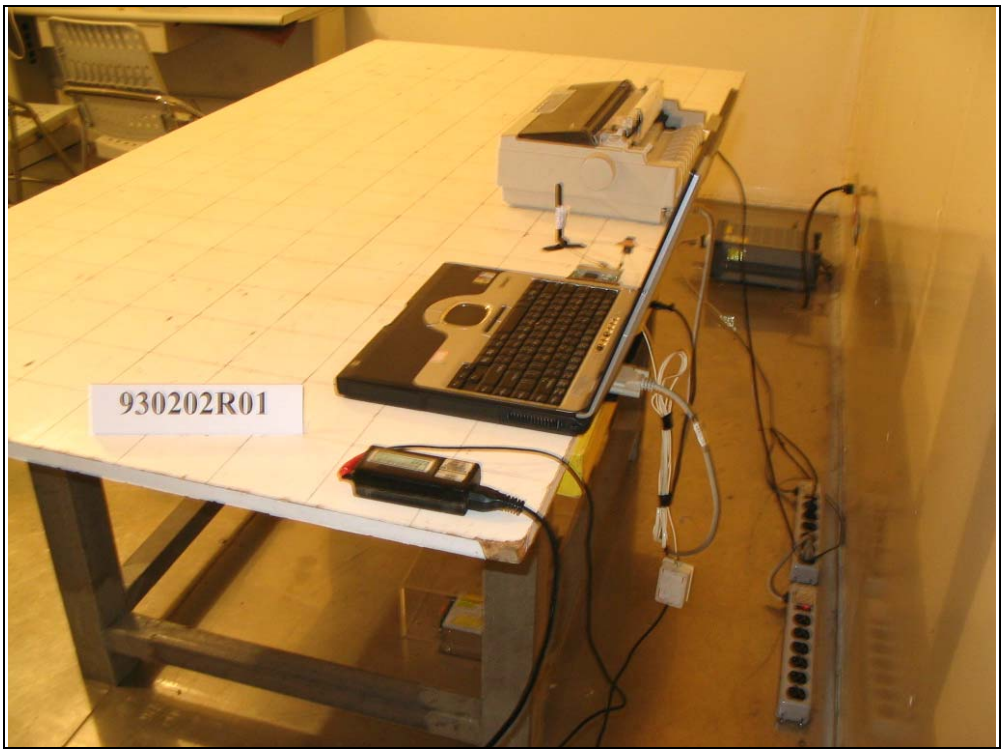
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

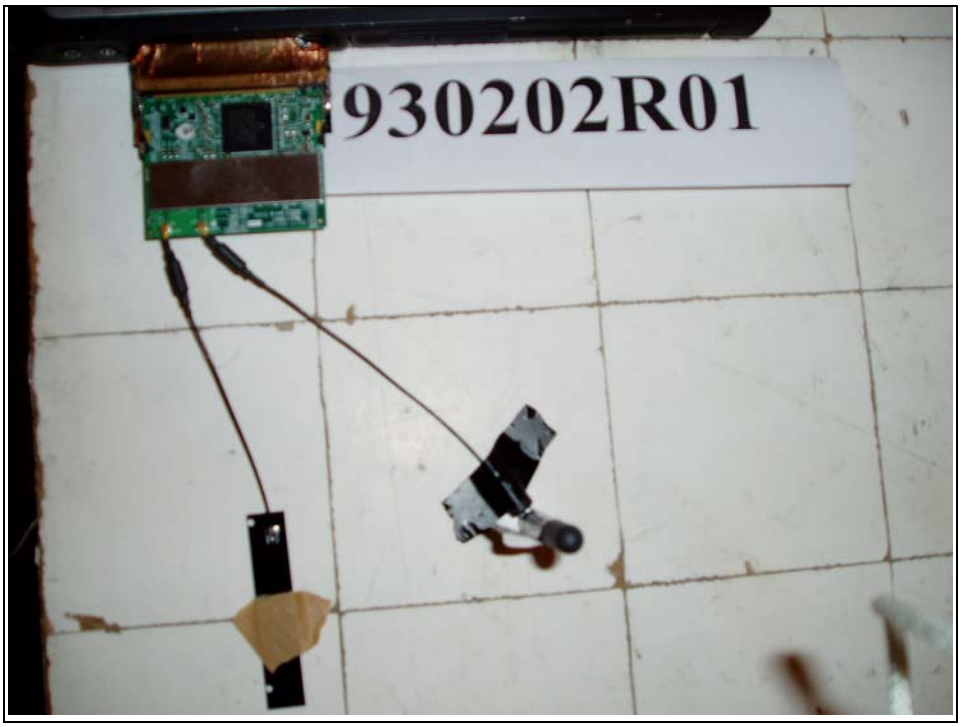
4.7.2 ANTENNA CONNECTED CONSTRUCTION

The maximum Gain antenna used in this product is PCB antenna and Dipole antenna with UFL antenna connector. And the maximum Gain of these antennas is 3dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST




930202R01

RADIATED EMISSION TEST


930202R01

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.

Report Format Version 1.1