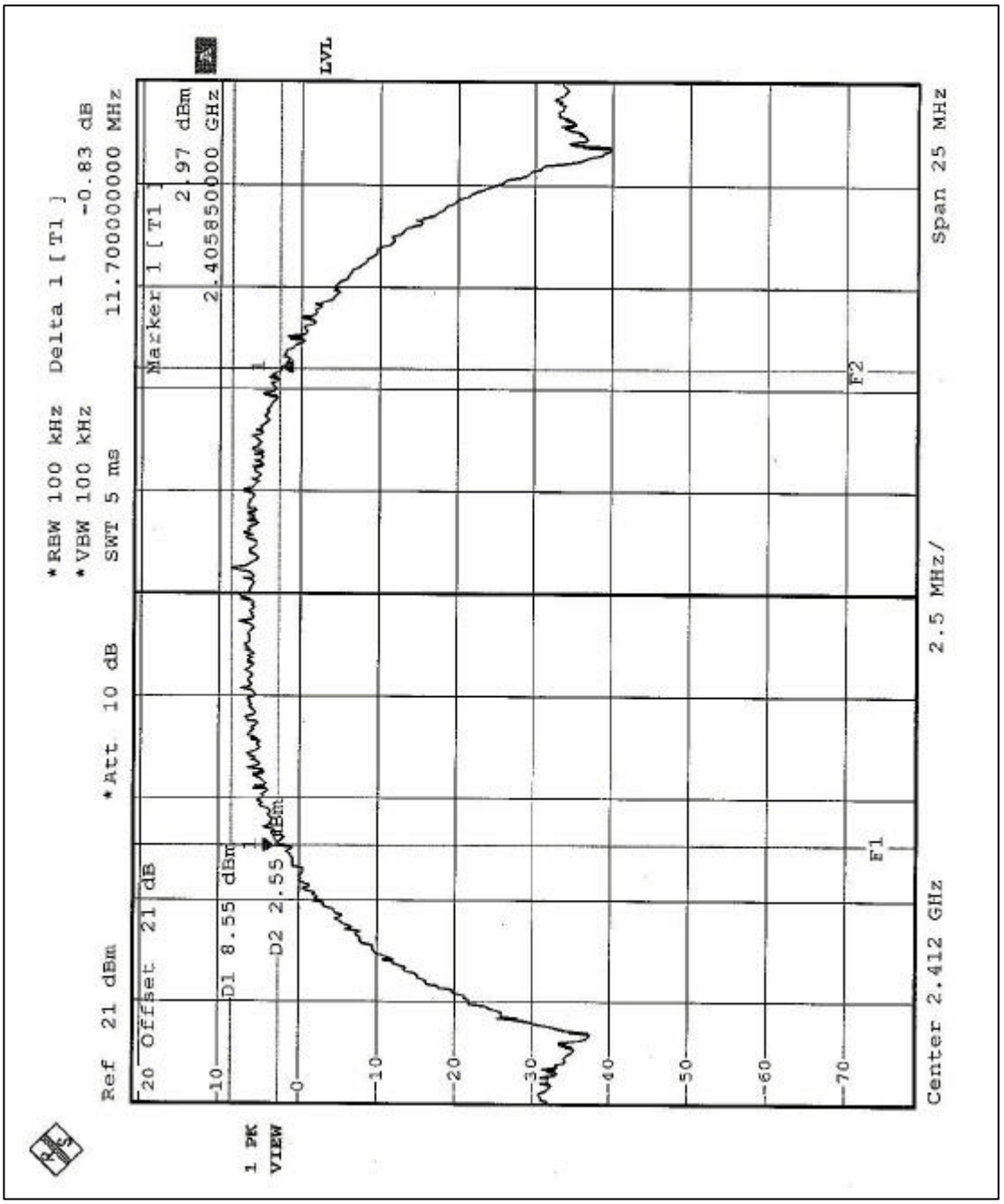
4.3.6 TEST RESULTS-DSSS

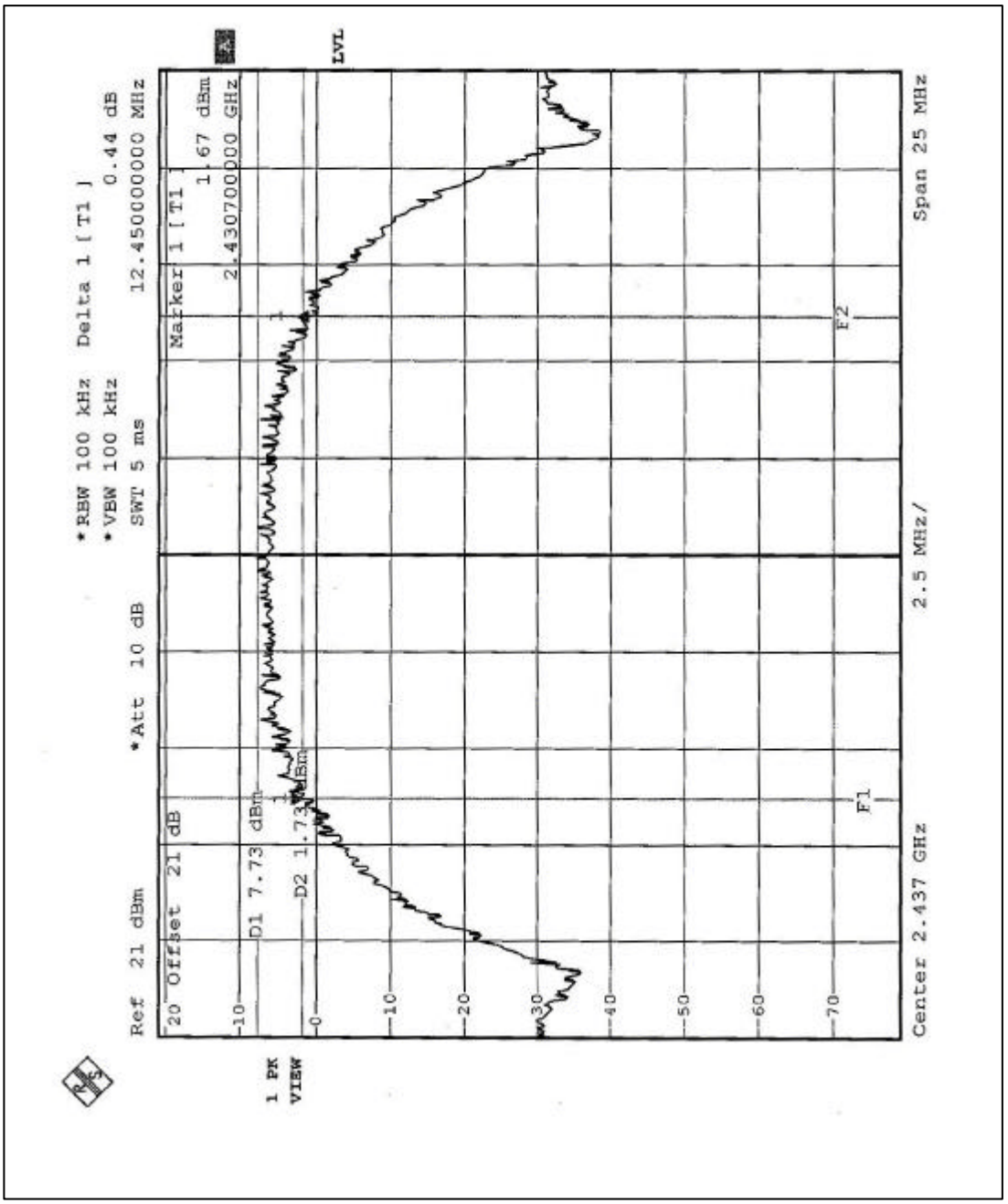
EUT	802.11b/g Cardbus		
MODEL	G11FNW-PC	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 59%RH, 981 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Tony Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	11.70	0.5	PASS
6	2437	12.45	0.5	PASS
11	2462	11.20	0.5	PASS

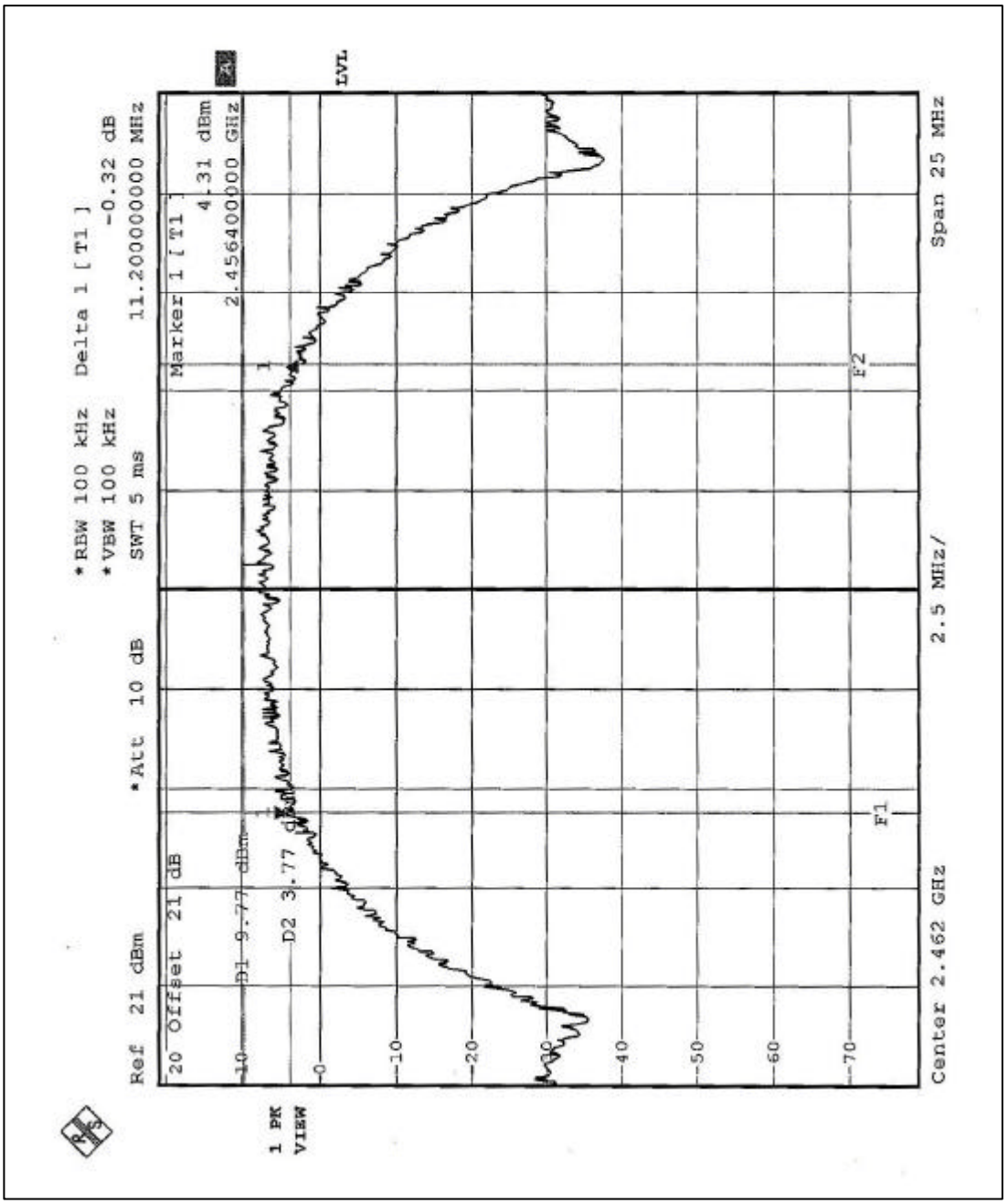
CH1


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.83 dB
11.700000000 MHz
Marker 1 [T1]
2.97 dBm
2.405850000 GHz
D1 8.55 dBm
D2 2.55 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.412 GHz
2.5 MHz/
Span 25 MHz

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
0.44 dB
12.45000000 MHz
Att 10 dB
Marker 1 [T1]
1.67 dBm
2.43070000 GHz
Ref 21 dBm
Offset 21 dB
D1 7.73 dBm
D2 1.73 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

CH11

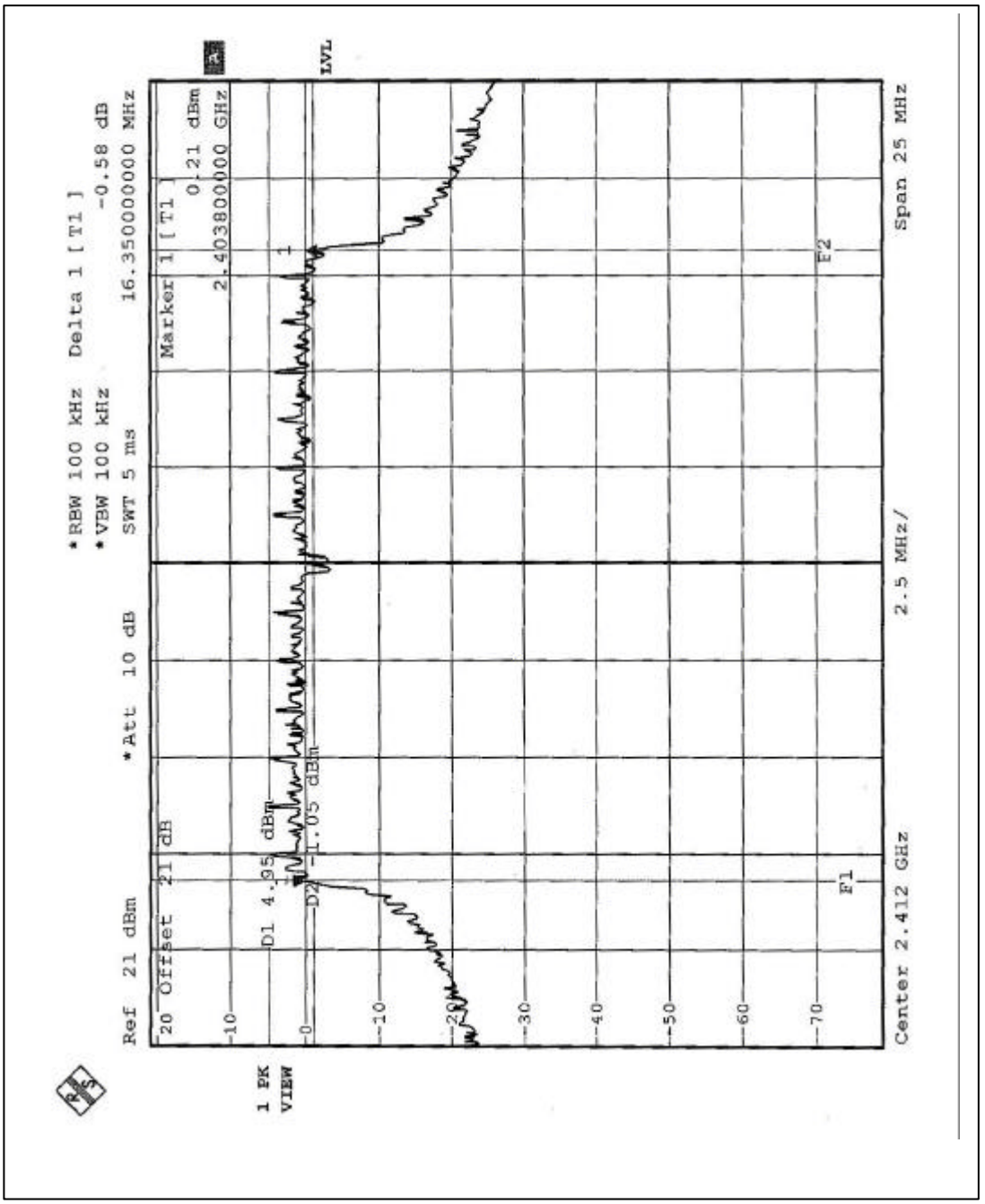

Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.32 dB
11.200000000 MHz
Marker 1 [T1]
4.31 dBm
2.456400000 GHz
D1 9.77 dBm
D2 3.77 dB
1 PK
VIEW
LVL
Center 2.462 GHz
2.5 MHz/
Span 25 MHz
F1
F2

4.3.7 TEST RESULTS-OFDM

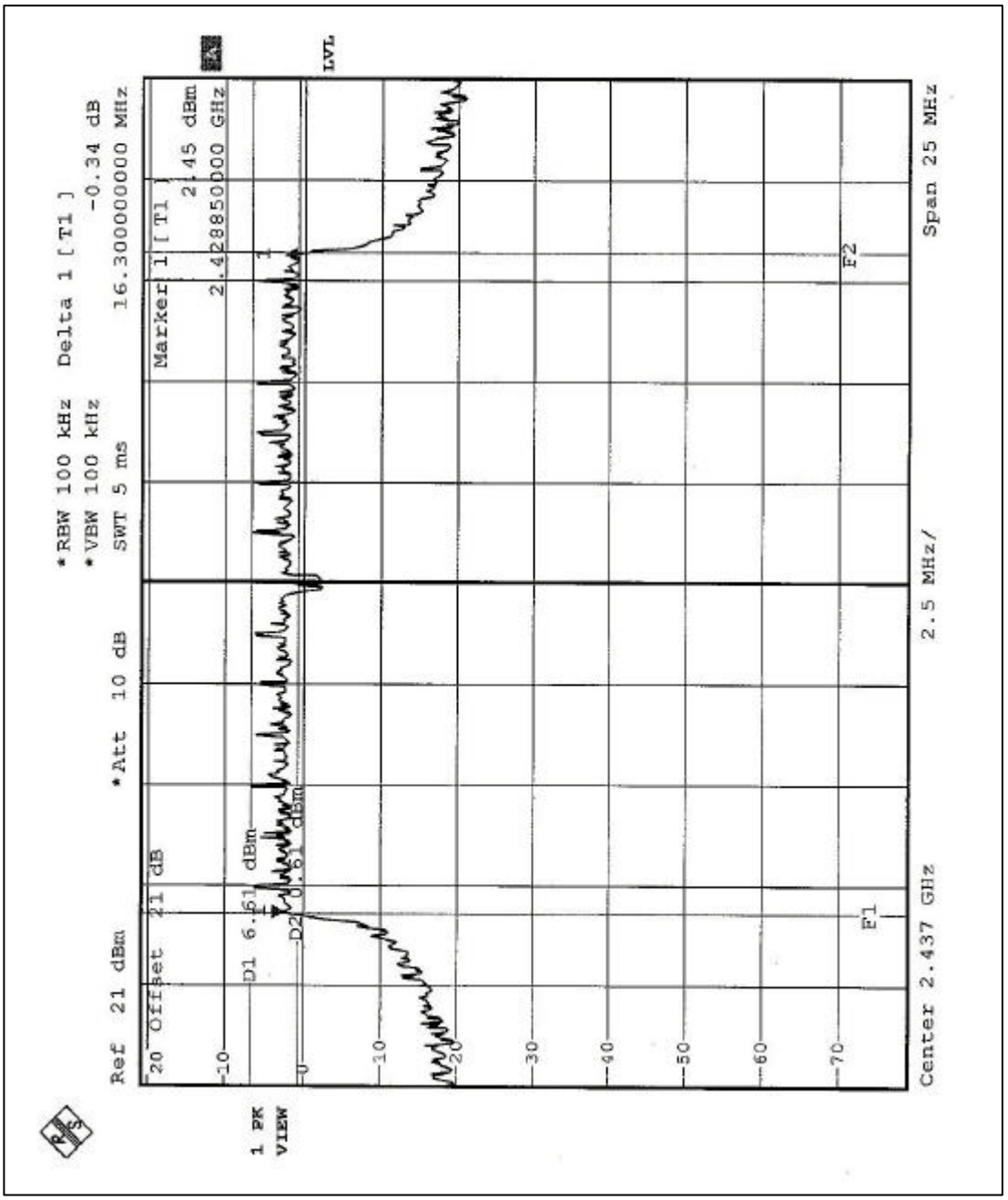
EUT	802.11b/g Cardbus		
MODEL	G11FNW-PC	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 59%RH, 981 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Tony Chen

CHANNEL	CHANNEL FREQUENCY (MHz)	6 dB BANDWIDTH (MHz)	MINIMUM LIMIT (MHz)	PASS/FAIL
1	2412	16.35	0.5	PASS
6	2437	16.30	0.5	PASS
11	2462	16.40	0.5	PASS

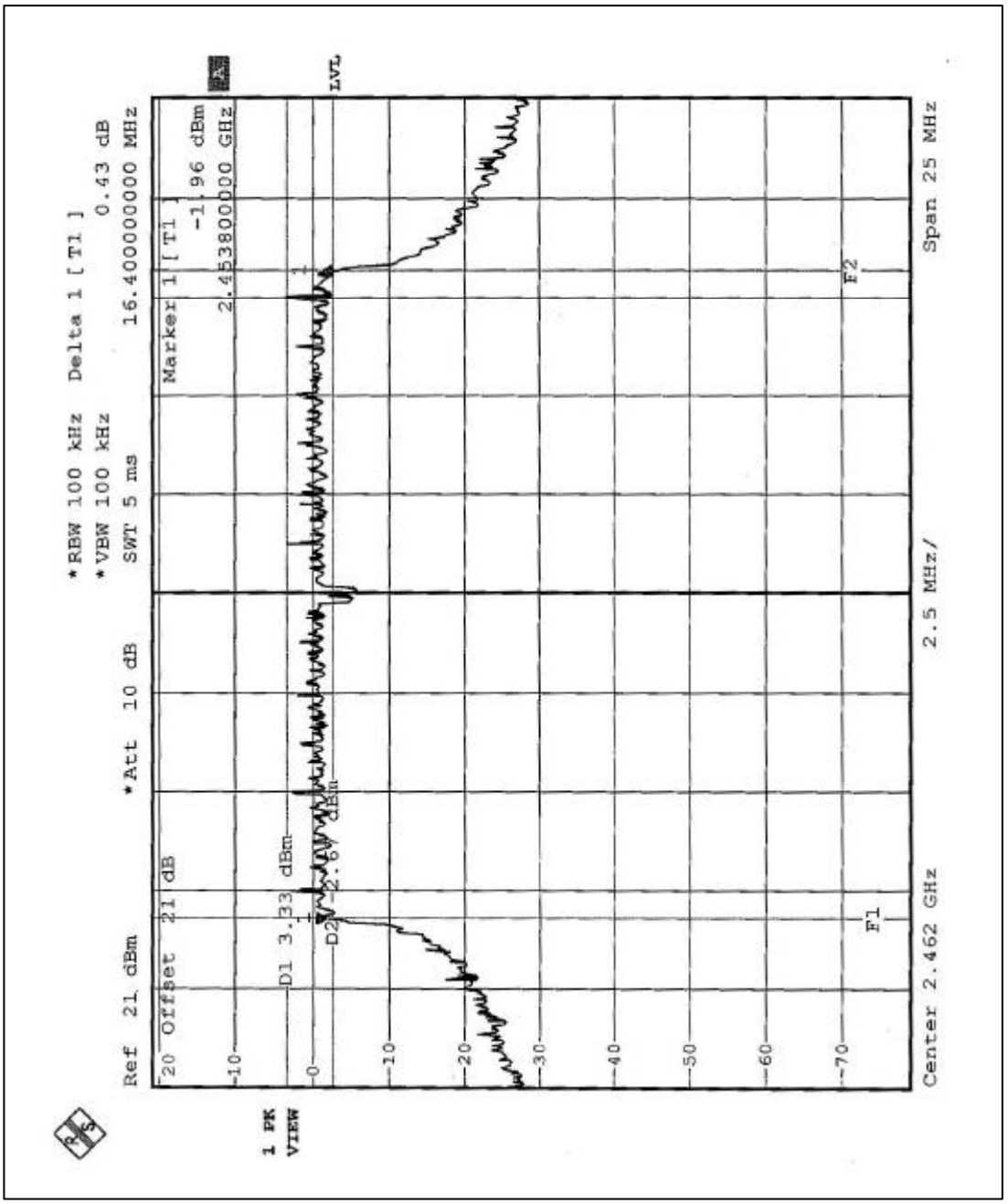
CH1


*RBW 100 kHz
*VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.58 dB
16.350000000 MHz
Marker 1 [T1]
0.21 dBm
2.403800000 GHz
Ref 21 dBm
Offset 21 dB
*Att 10 dB
D1 4.95 dBm
D2 -1.05 dBm
1 PK
VIEW
Center 2.412 GHz
2.5 MHz/
Span 25 MHz
F1
F2

CH6


RBW 100 kHz
VBW 100 kHz
SWT 5 ms
Delta 1 [T1]
-0.34 dB
16.300000000 MHz
Marker 1 [T1]
2.45 dBm
2.428850000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
D1 6.61 dBm
D2 0.61 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.437 GHz
2.5 MHz/
Span 25 MHz

CH11


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*VBW 100 kHz
SWT 5 ms
*RBW 100 kHz
Delta 1 [T1]
0.43 dB
16.400000000 MHz
Marker 1 [T1]
-1.96 dBm
2.453800000 GHz
D1 3.33 dBm
D2 -2.6 dBm
F1
F2
1 PK
VIEW
Center 2.462 GHz
2.5 MHz/
Span 25 MHz

4.4 MAXIMUM PEAK OUTPUT POWER

4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.4.2 TEST INSTRUMENTS

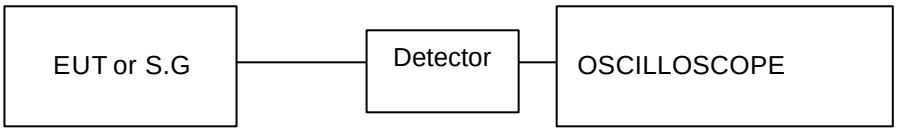
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP30	100019	Dec. 19, 2004
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B048470	Mar. 05, 2004
NARDA DETECTOR	4503A	FSCM99899	NA

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 PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the peak response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same peak reading on oscilloscope. Record the power level.

4.4.4 TEST SETUP



4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5

4.4.6 TEST RESULTS- DSSS

EUT	802.11b/g Cardbus		
MODEL	G11FNW-PC	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 59%RH, 981 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Tony Chen

Antenna 1 (Gain 2 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.35	30	PASS
6	2437	19.50	30	PASS
11	2462	20.10	30	PASS

Antenna 2 (Gain 2.5 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.35	30	PASS
6	2437	19.50	30	PASS
11	2462	20.10	30	PASS

Antenna 3 (Gain 3 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.35	30	PASS
6	2437	19.50	30	PASS
11	2462	20.10	30	PASS

4.4.7 TEST RESULTS- OFDM

EUT	802.11b/g Cardbus		
MODEL	G11FNW-PC	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 59%RH, 981 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Tony Chen

Antenna 1 (Gain 2 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	20.89	30	PASS
6	2437	22.48	30	PASS
11	2462	19.71	30	PASS

Antenna 2 (Gain 2.5 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.95	30	PASS
6	2437	22.48	30	PASS
11	2462	19.71	30	PASS

Antenna 3 (Gain 3 dBi)

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
1	2412	19.95	30	PASS
6	2437	22.48	30	PASS
11	2462	19.71	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
R&S SPECTRUM ANALYZER	FSP	1093.4495.30	Dec. 19, 2004

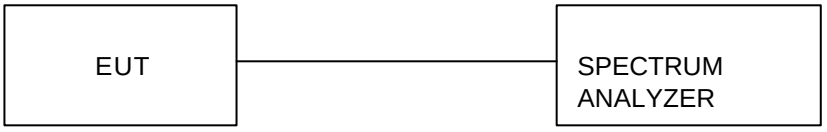
NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. 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 3 kHz RBW and 30 kHz 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 TEST SETUP



4.5.5 EUT OPERATING CONDITIONS

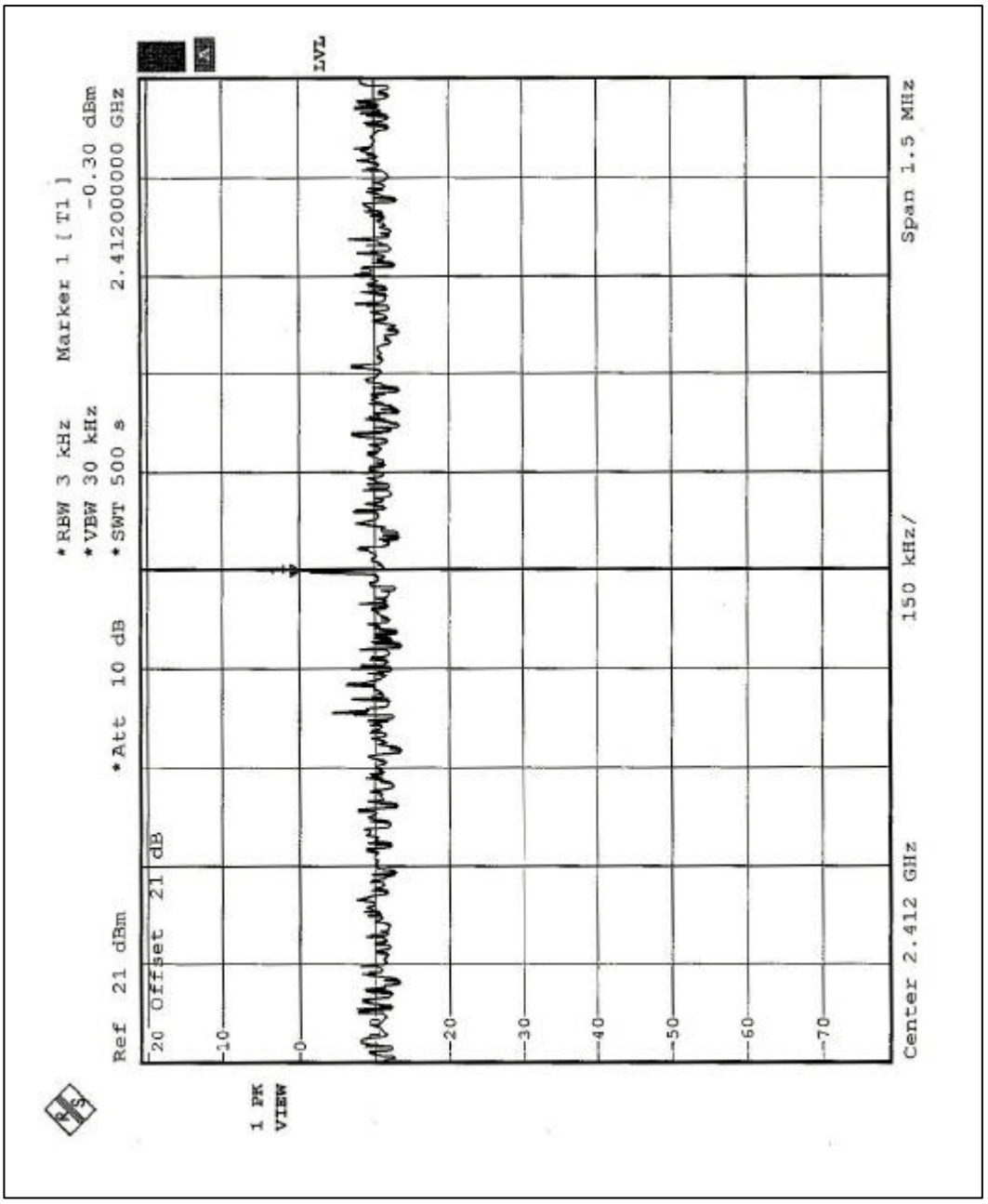
Same as 4.3.5

4.5.6 TEST RESULTS-DSSS

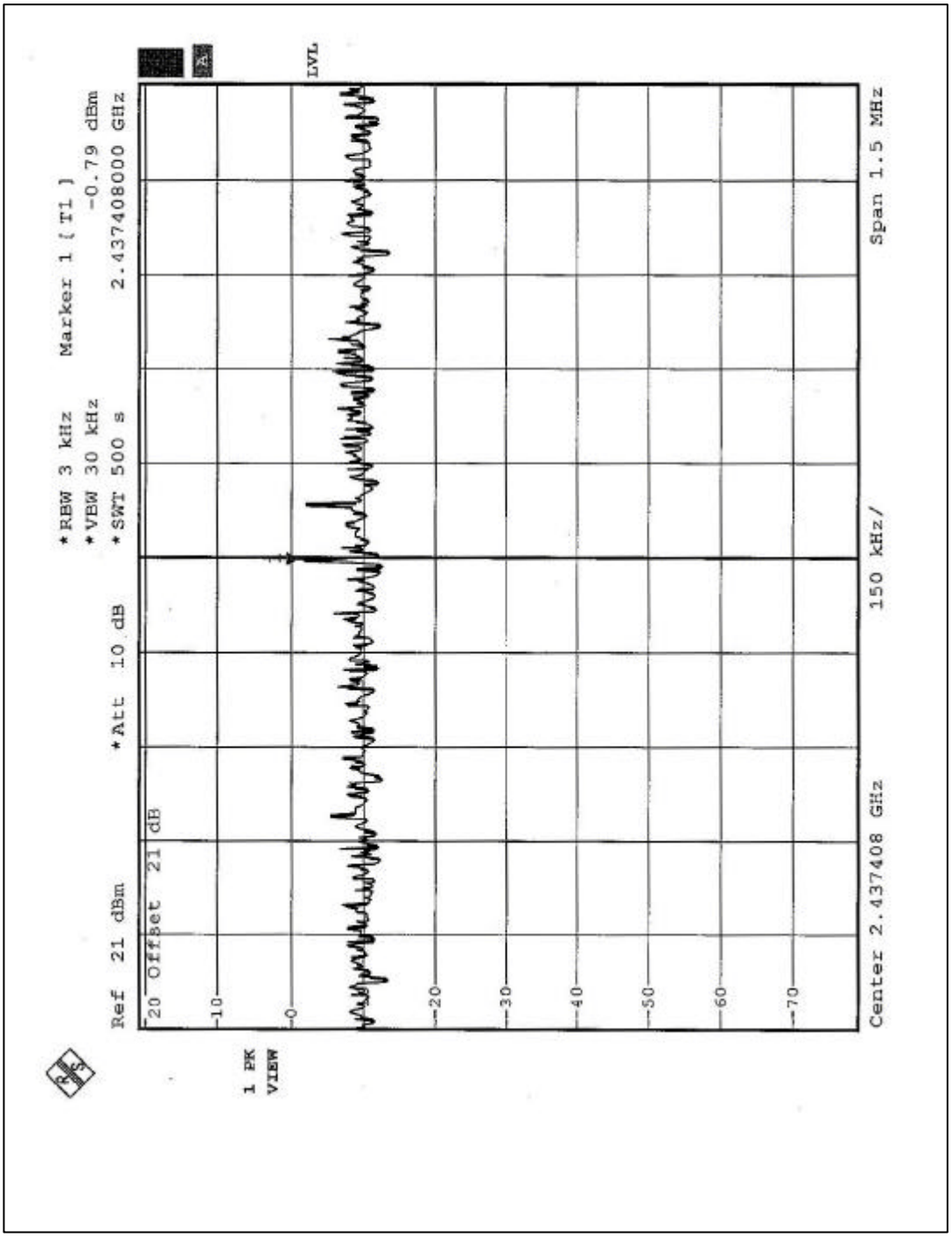
EUT	802.11b/g Cardbus		
MODEL	G11FNW-PC	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 59%RH, 981 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Tony Chen

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-0.30	8	PASS
6	2437	-0.79	8	PASS
11	2462	-2.93	8	PASS

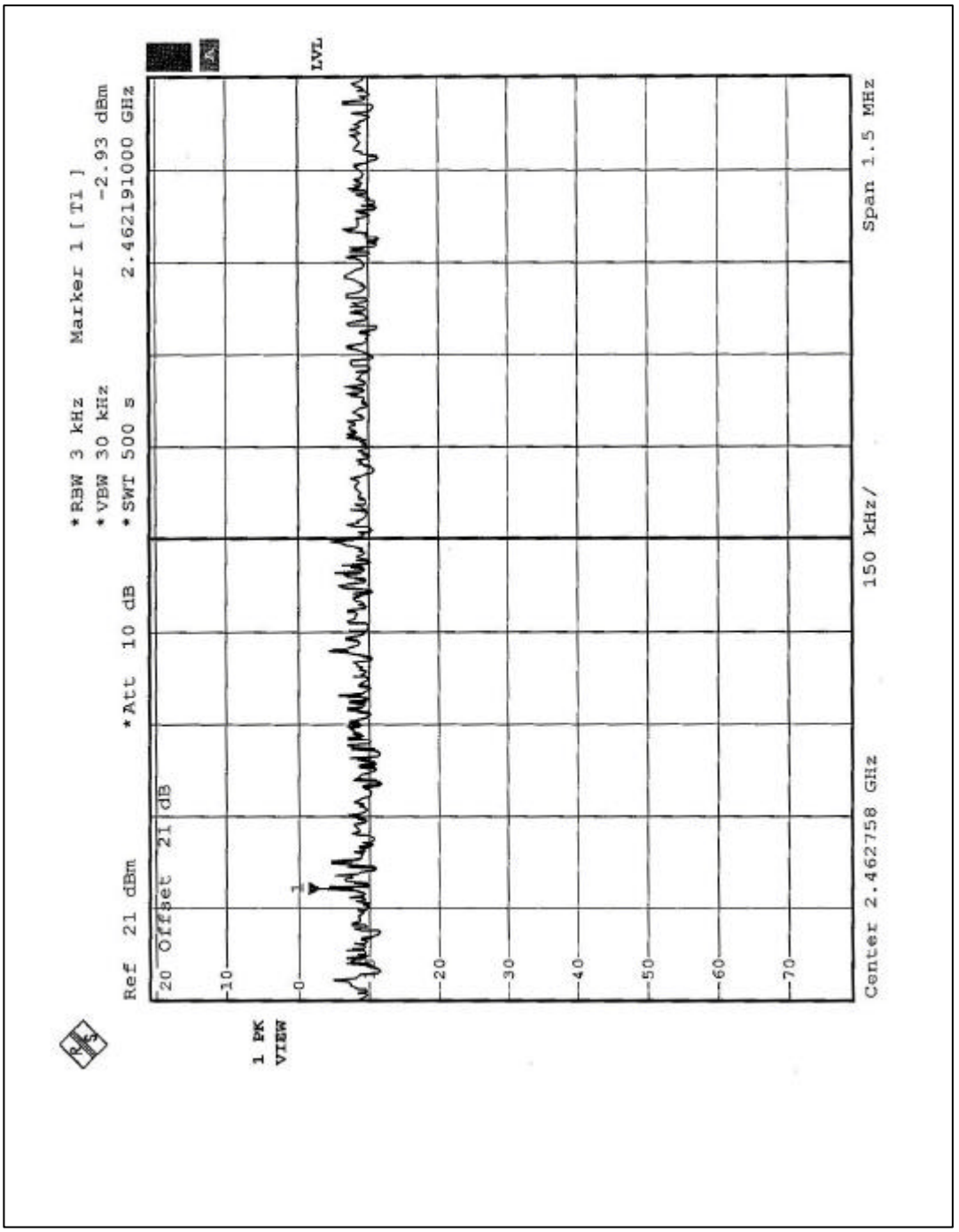
CH1


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-0.30 dBm
2.412000000 GHz
1 PK
VIEW
Center 2.412 GHz
150 kHz/
Span 1.5 MHz

CH6


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-0.79 dBm
2.437408000 GHz
LVL
1 PK
VIEW
Center 2.437408 GHz
150 kHz/
Span 1.5 MHz

CH11

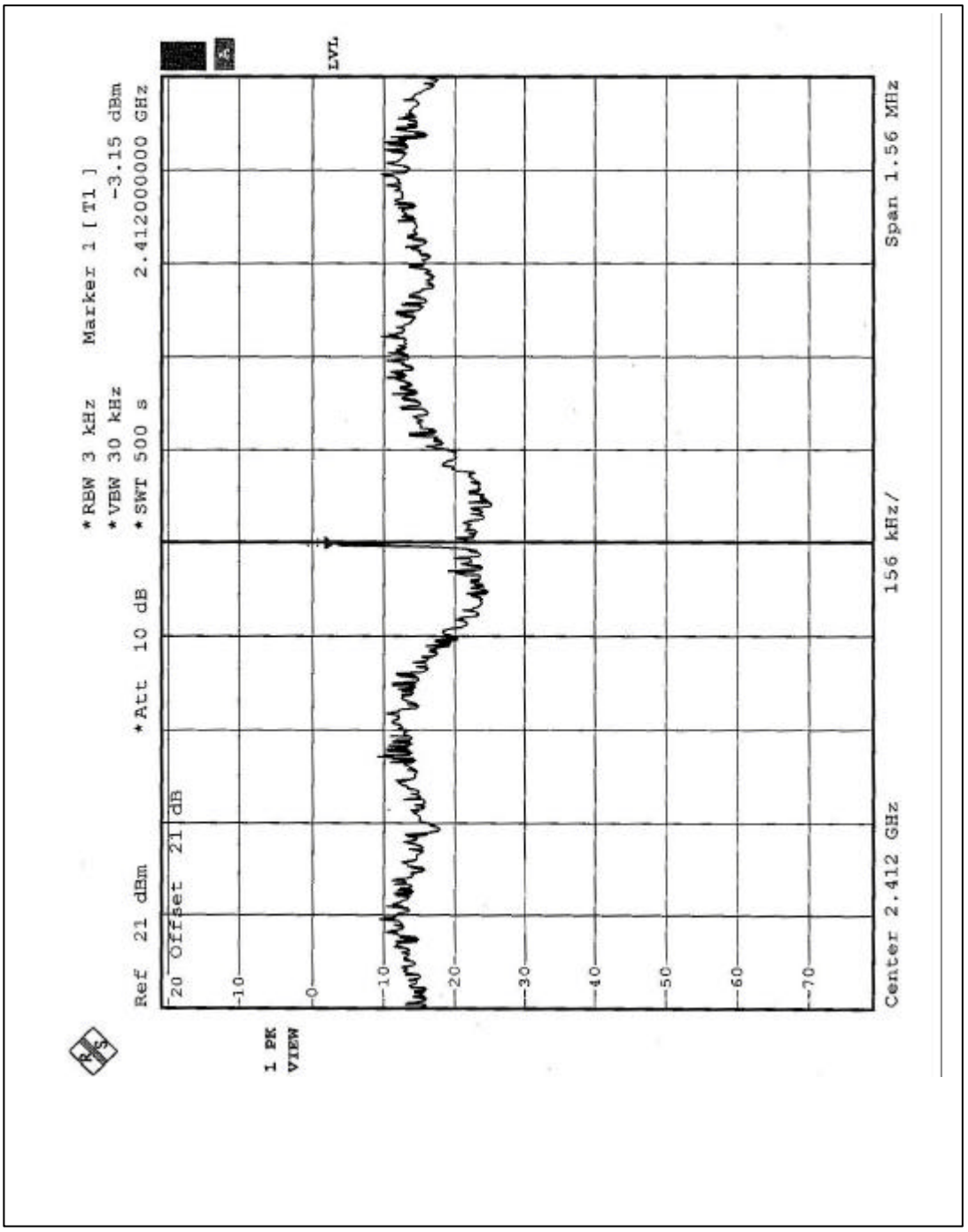

Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-2.93 dBm
2.462191000 GHz
1 PK
VIEW
Center 2.462758 GHz
150 kHz/
Span 1.5 MHz

4.5.7 TEST RESULTS-OFDM

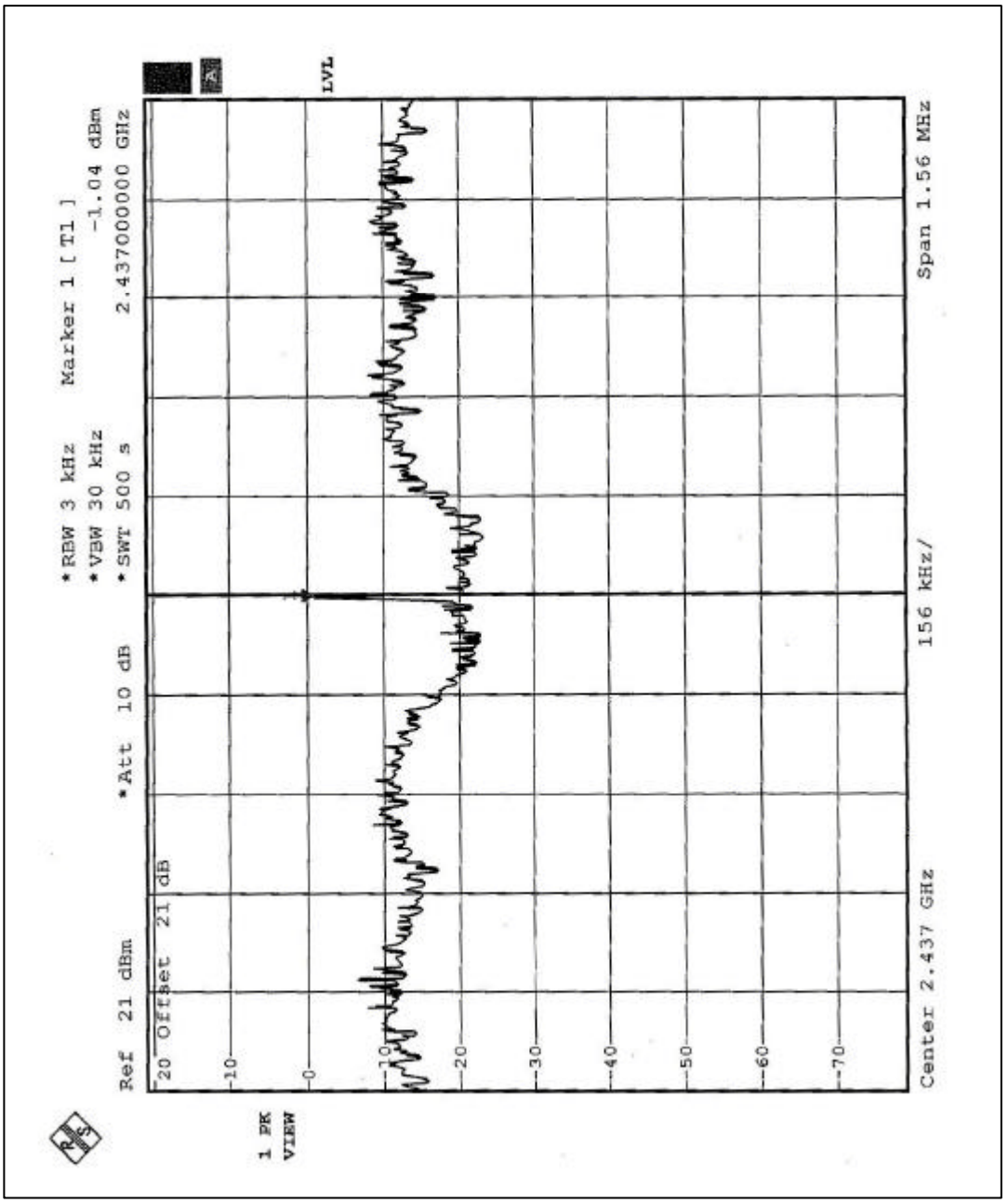
EUT	802.11b/g Cardbus		
MODEL	G11FNW-PC	**ENVIRONMENTAL CONDITIONS**	26 deg. C, 59%RH, 981 hPa
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**TESTED BY**	Tony Chen

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-3.15	8	PASS
6	2437	-1.04	8	PASS
11	2462	-4.71	8	PASS

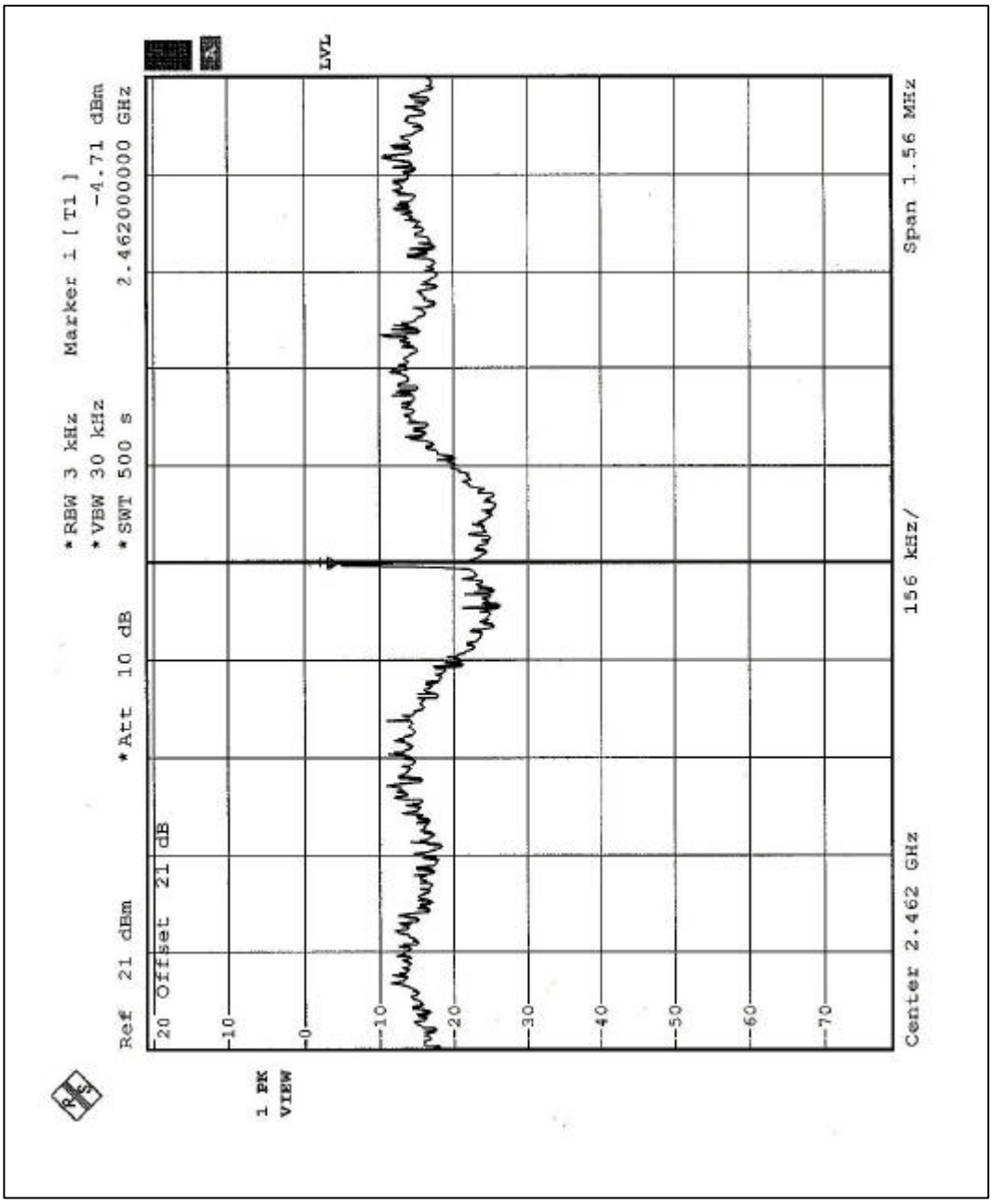
CH1


*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-3.15 dBm
2.41200000 GHz
*Att 10 dB
Ref 21 dBm
Offset 21 dB
1 PK
VIEW
Center 2.412 GHz
156 kHz/
Span 1.56 MHz

CH6


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-1.04 dBm
2.437000000 GHz
LVL
1 PK
VIEW
Center 2.437 GHz
156 kHz/
Span 1.56 MHz

CH11


Ref 21 dBm
Offset 21 dB
Att 10 dB
RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-4.71 dBm
2.462000000 GHz
LVL
1 PK
VIEW
Center 2.462 GHz
156 kHz/
Span 1.56 MHz

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
R&S SPECTRUM ANALYZER	FSP	1093.4495.30	Dec. 19, 2004

NOTE:

1. The measurement uncertainty is less than +/- 2.6dB, which is calculated as per the NAMAS document NIS81.
2. 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 100 kHz with suitable frequency span including 100 kHz bandwidth from band edge. The band edges was measured and recorded.

4.6.4 EUT OPERATING CONDITION

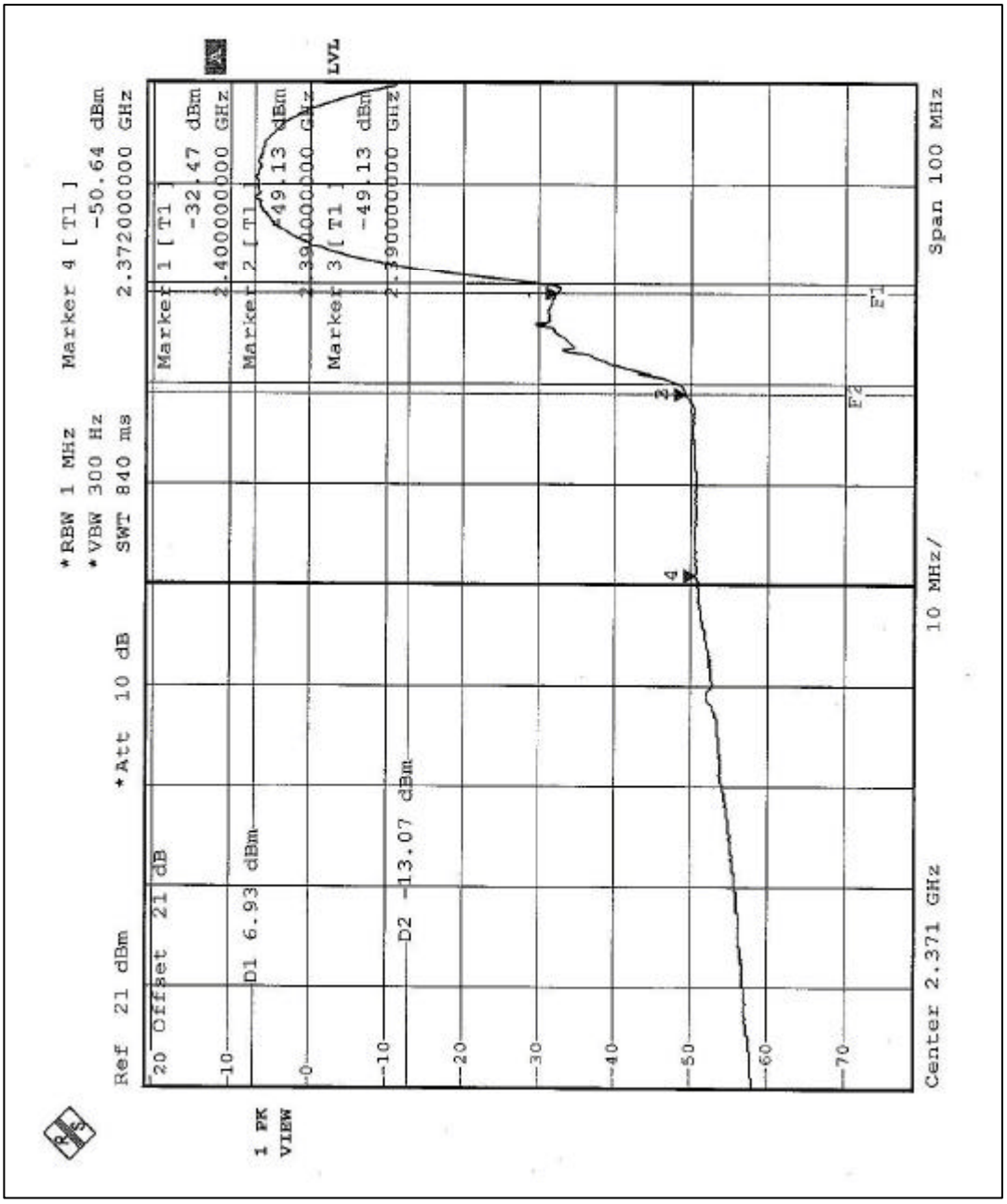
Same as Item 4.3.5

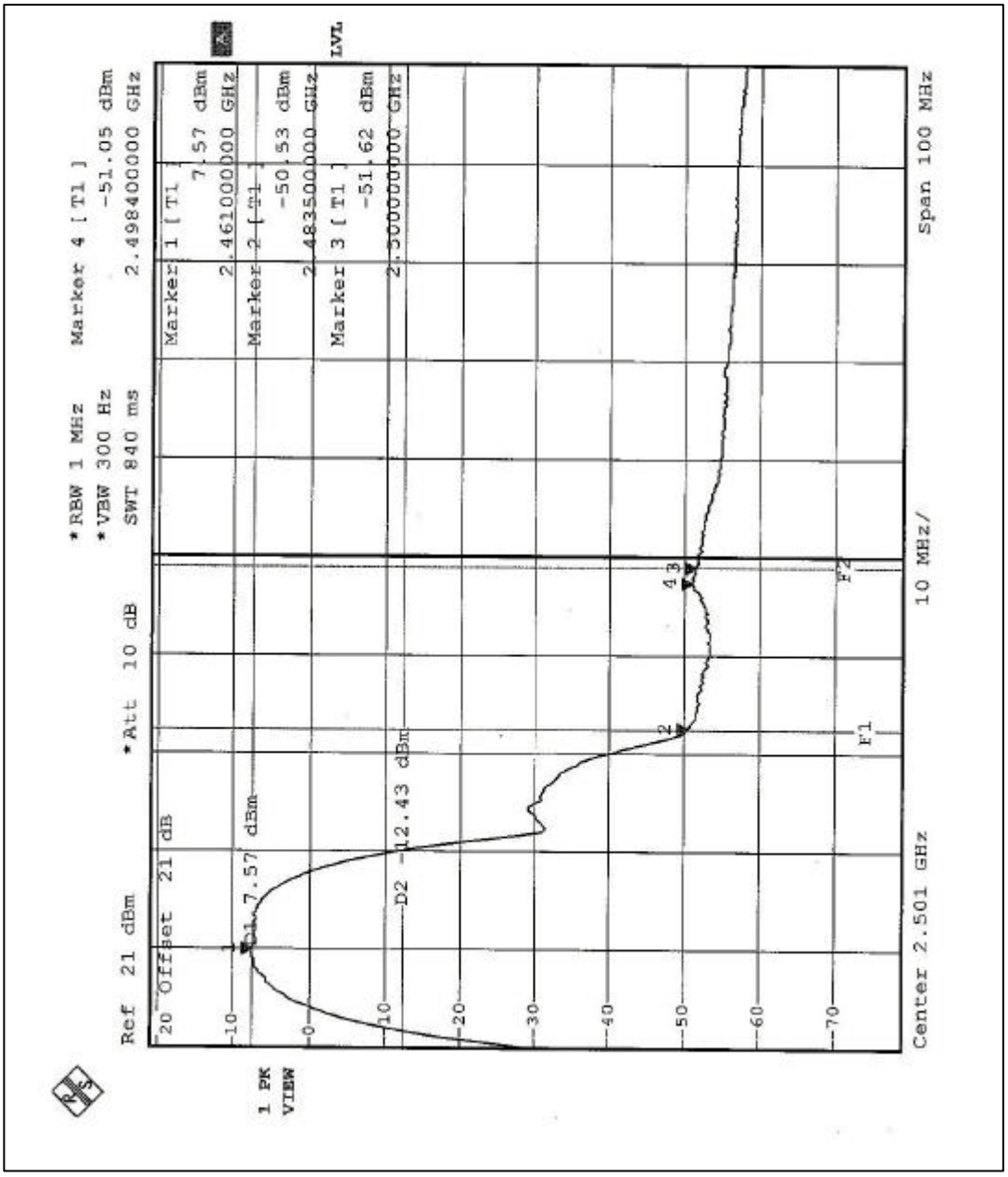
4.6.5 TEST RESULTS – DSSS (Antenna 1,2 and 3)

The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

NOTE (1): The band edge emission plot on the following first page shows 56.06dB 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 4.2.7 is 102.9dBuV/m, so the maximum field strength in restrict band is 102.9-56.06=46.84dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 58.10dB 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 103.6dBuV/m, so the maximum field strength in restrict band is 103.6-58.10=45.50dBuV/m which is under 54 dBuV/m limit.


Ref 21 dBm
20 Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-50.64 dBm
2.372000000 GHz
Marker 1 [T1]
-32.47 dBm
2.400000000 GHz
Marker 2 [T1]
-49.13 dBm
2.390000000 GHz
Marker 3 [T1]
-49.13 dBm
2.390000000 GHz
LVL
D1 6.93 dBm
D2 -13.07 dBm
1 PK
VIEW
Center 2.371 GHz
10 MHz/
Span 100 MHz

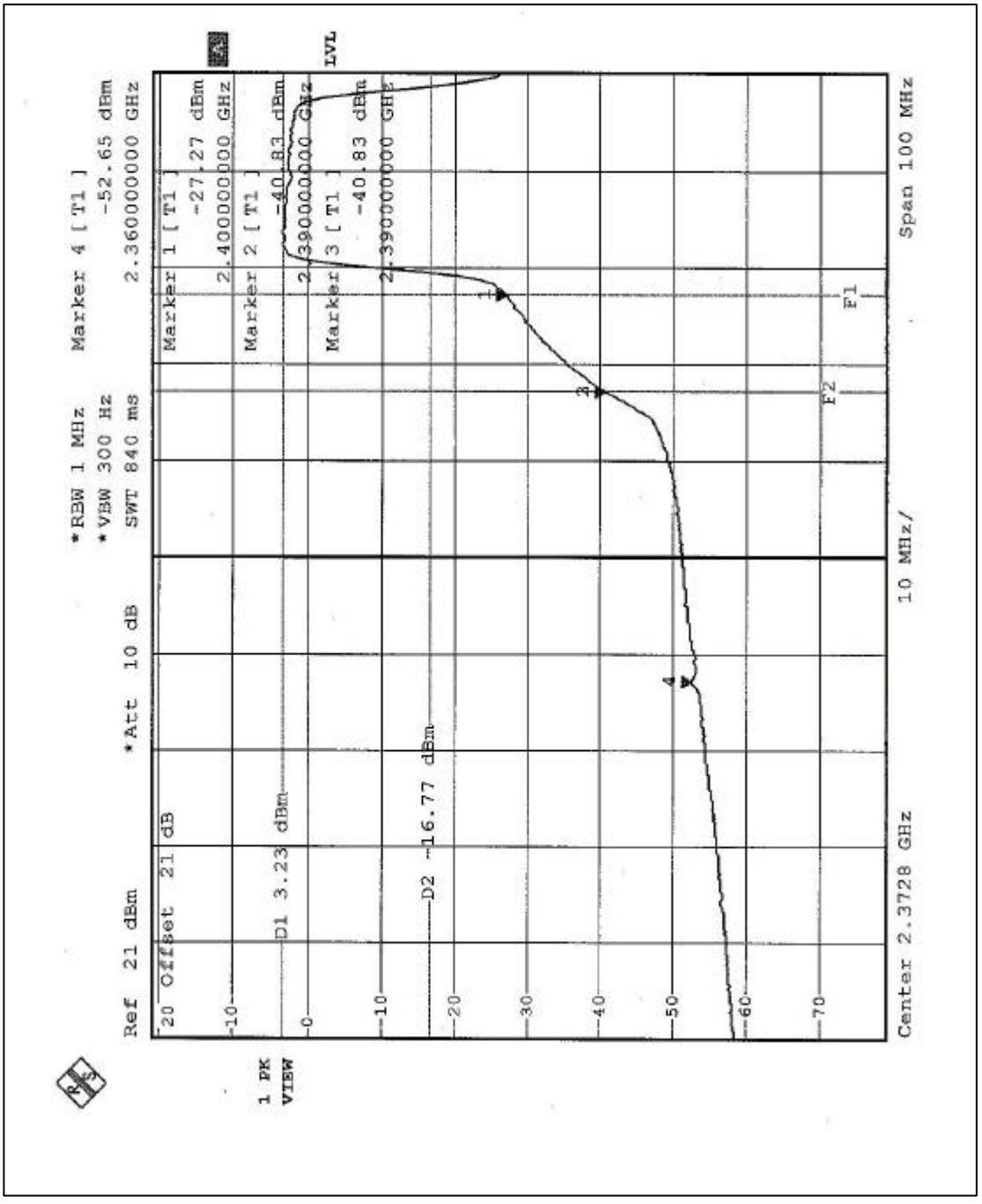

RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-51.05 dBm
2.498400000 GHz
Ref 21 dBm
Offset 21 dB
Att 10 dB
Marker 1 [T1]
7.57 dBm
2.461000000 GHz
Marker 2 [T1]
-50.53 dBm
2.483500000 GHz
Marker 3 [T1]
-51.62 dBm
2.500000000 GHz
D1 7.57 dBm
D2 -12.43 dBm
1 PK
VIEW
Center 2.501 GHz
10 MHz/
Span 100 MHz

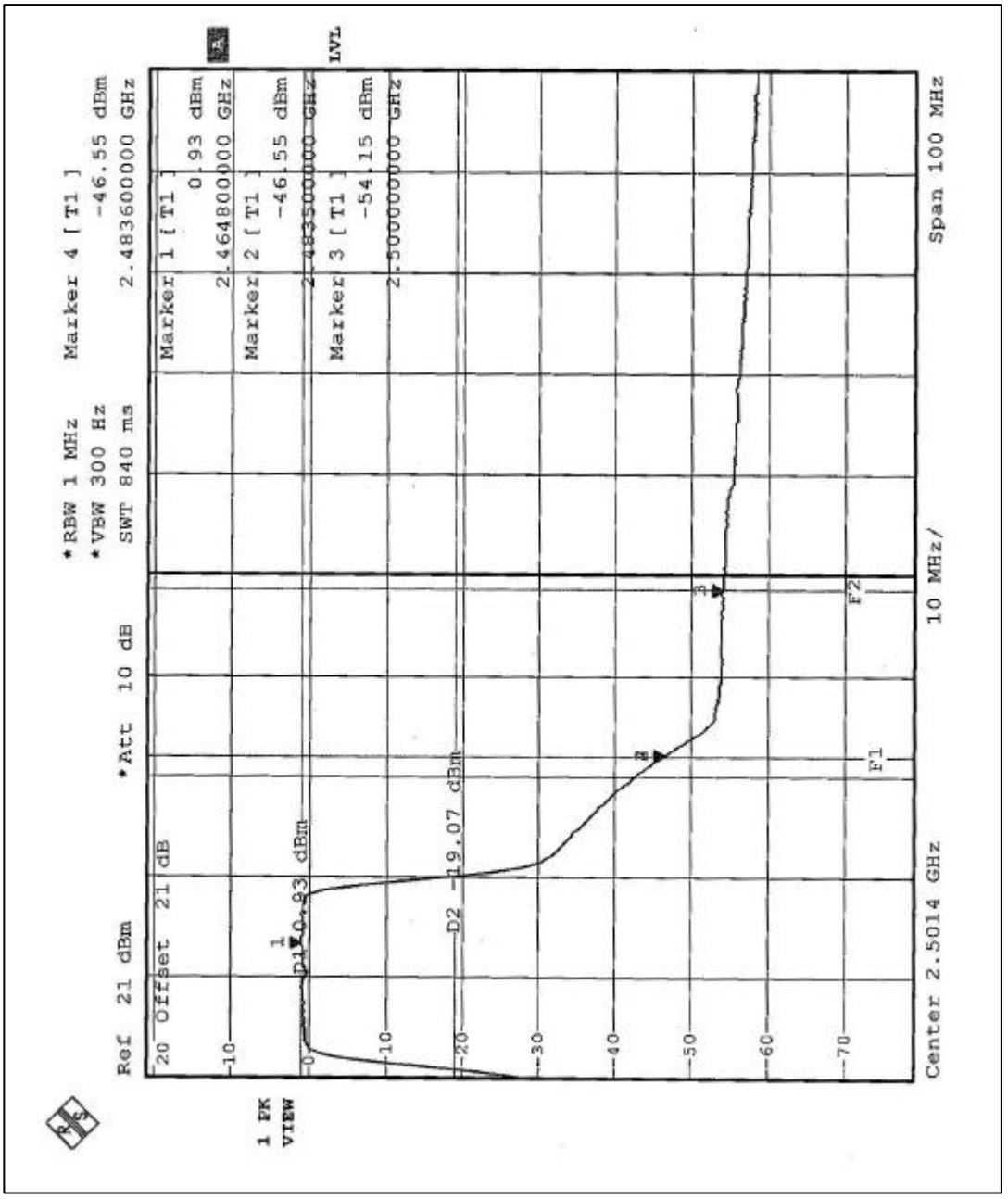
4.6.6 TEST RESULTS-OFDM (Antenna 1)

The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

NOTE (1): The band edge emission plot on the following first page shows 44.06dB 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 4.2.8 is 97.4dBuV/m, so the maximum field strength in restrict band is 97.4-44.06=53.34dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 47.48dB 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 4.2.8 is 99.4dBuV/m, so the maximum field strength in restrict band is 99.4-47.48=51.92dBuV/m which is under 54 dBuV/m limit.


RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-52.65 dBm
2.36000000 GHz
Att 10 dB
Ref 21 dBm
Offset 21 dB
Marker 1 [T1]
-27.27 dBm
2.40000000 GHz
Marker 2 [T1]
-40.83 dBm
2.39000000 GHz
Marker 3 [T1]
-40.83 dBm
2.39000000 GHz
D1 3.23 dBm
D2 -16.77 dBm
1 PK
VIEW
Center 2.3728 GHz
10 MHz/
Span 100 MHz
F1
F2

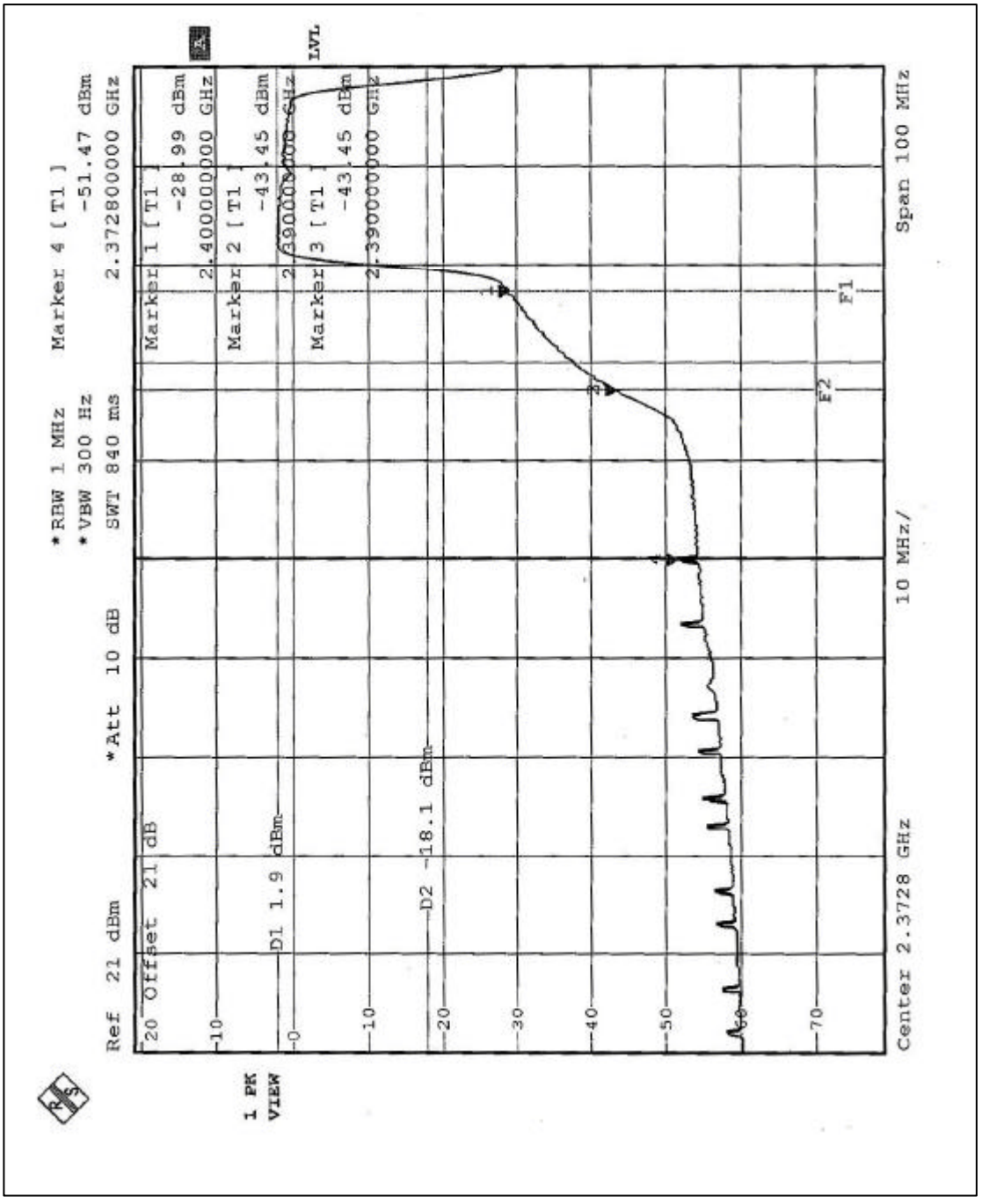

RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-46.55 dBm
2.483600000 GHz
Att 10 dB
Offset 21 dB
Ref 21 dBm
Marker 1 [T1]
0.93 dBm
2.464800000 GHz
Marker 2 [T1]
-46.55 dBm
2.483500000 GHz
Marker 3 [T1]
-54.15 dBm
2.500000000 GHz
D1 0.93 dBm
D2 -19.07 dBm
F1
F2
1 PK
VIEW
LVL
Center 2.5014 GHz
10 MHz/
Span 100 MHz

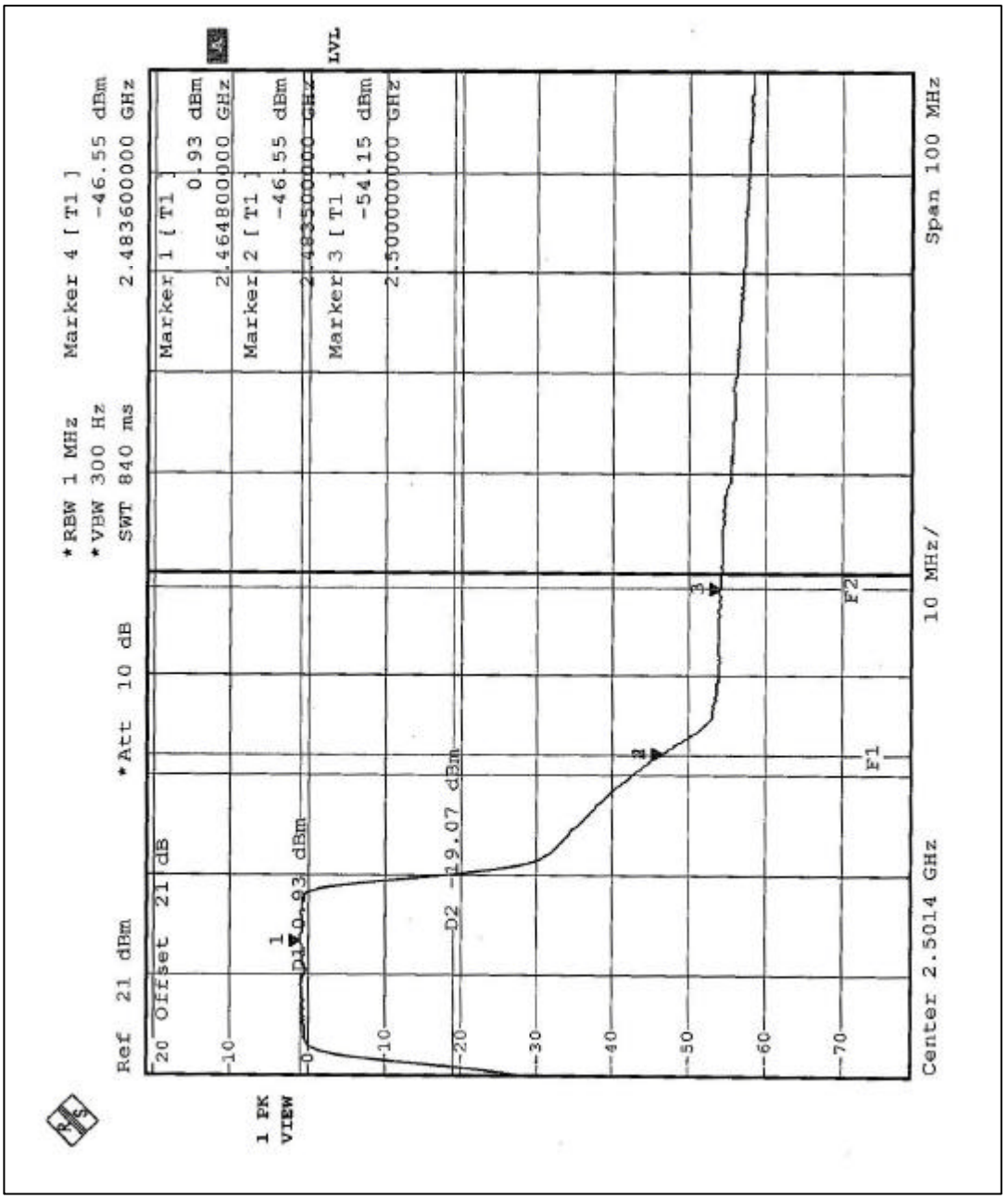
4.6.7 TEST RESULTS-OFDM (Antenna 2 and 3)

The spectrum plots are attached on the following 2 pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(C).

NOTE (1): The band edge emission plot on the following first page shows 45.35dB 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 4.2.8 is 98.4dBuV/m, so the maximum field strength in restrict band is 98.4-45.35=53.05dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 47.48dB 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 4.2.8 is 99.4dBuV/m, so the maximum field strength in restrict band is 99.4-47.48=51.92dBuV/m which is under 54 dBuV/m limit.


*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-51.47 dBm
2.372800000 GHz
Ref 21 dBm
Offset 21 dB
*Att 10 dB
Marker 1 [T1]
-28.99 dBm
2.400000000 GHz
Marker 2 [T1]
-43.45 dBm
2.390000000 GHz
Marker 3 [T1]
-43.45 dBm
2.390000000 GHz
D1 1.9 dBm
D2 -18.1 dBm
1 PK
VIEW
LVL
F1
F2
Center 2.3728 GHz
10 MHz/
Span 100 MHz


Ref 21 dBm
Offset 21 dB
*Att 10 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-46.55 dBm
2.483600000 GHz
Marker 1 [T1]
0.93 dBm
2.464800000 GHz
Marker 2 [T1]
-46.55 dBm
2.483500000 GHz
Marker 3 [T1]
-54.15 dBm
2.500000000 GHz
D1 0.93 dBm
D2 -19.07 dBm
F1
F2
1 PK
VIEW
LVL
Center 2.5014 GHz
10 MHz/
Span 100 MHz

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

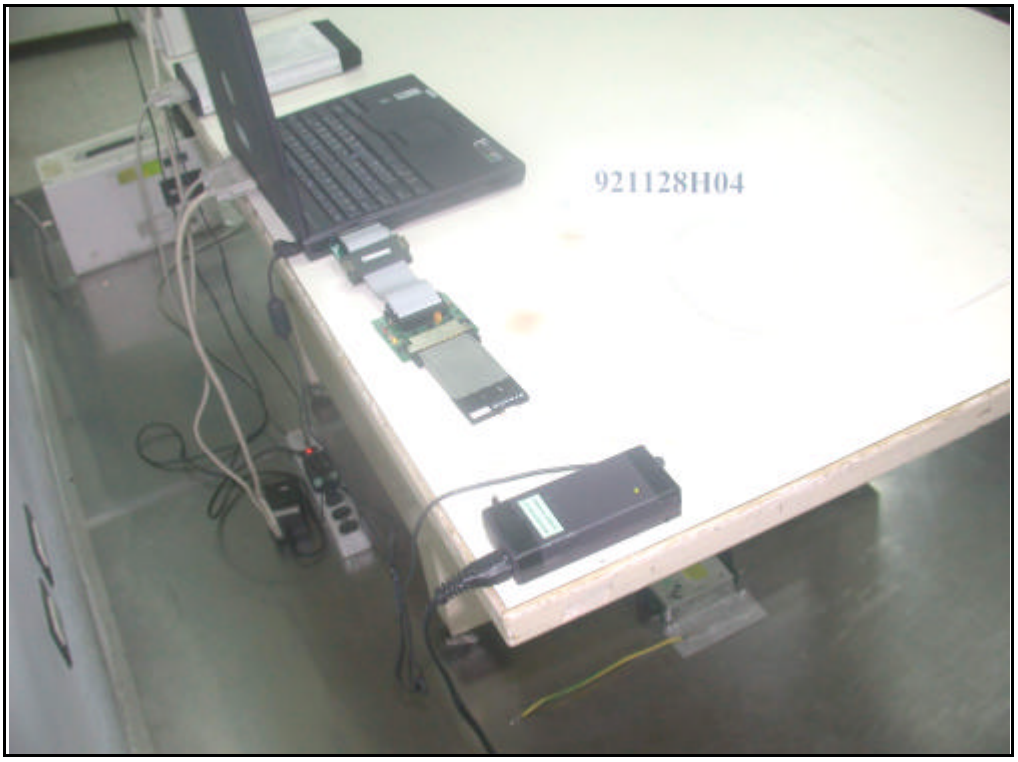
The antennas used in this product are integral antenna without connector, Dual-Band Omni Dirctional antenna with Aliner 23-401A R/A plug connector and Ranger Extender antenna with WaveLAN II Specail, Snap-on type connector.

Antenna 1: The maximum Gain of the antenna is 2.0dBi.
Antenna 2: The maximum Gain of the antenna is 2.5dBi.
Antenna 3: The maximum Gain of the antenna is 3.0dBi.

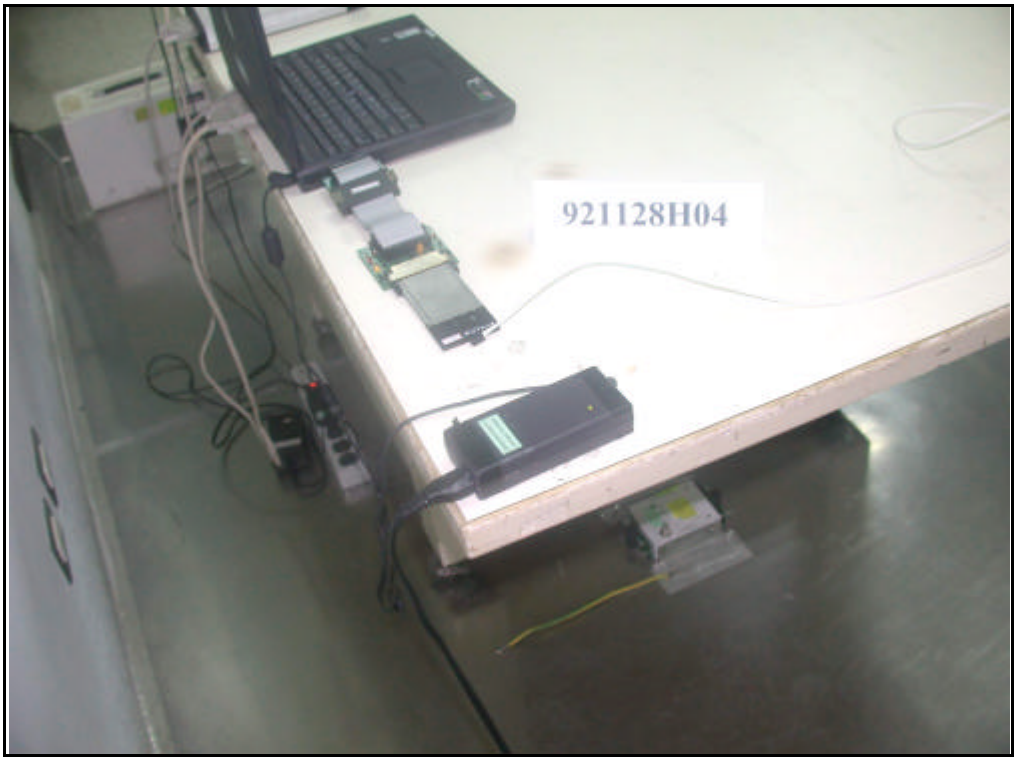
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST (Antenna 1)

CONDUCTED EMISSION TEST (Antenna 2)



CONDUCTED EMISSION TEST (Antenna 3)



RADIATED EMISSION TEST (Antenna 1)

RADIATED EMISSION TEST (Antenna 2)

RADIATED EMISSION TEST (Antenna 3)

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.

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