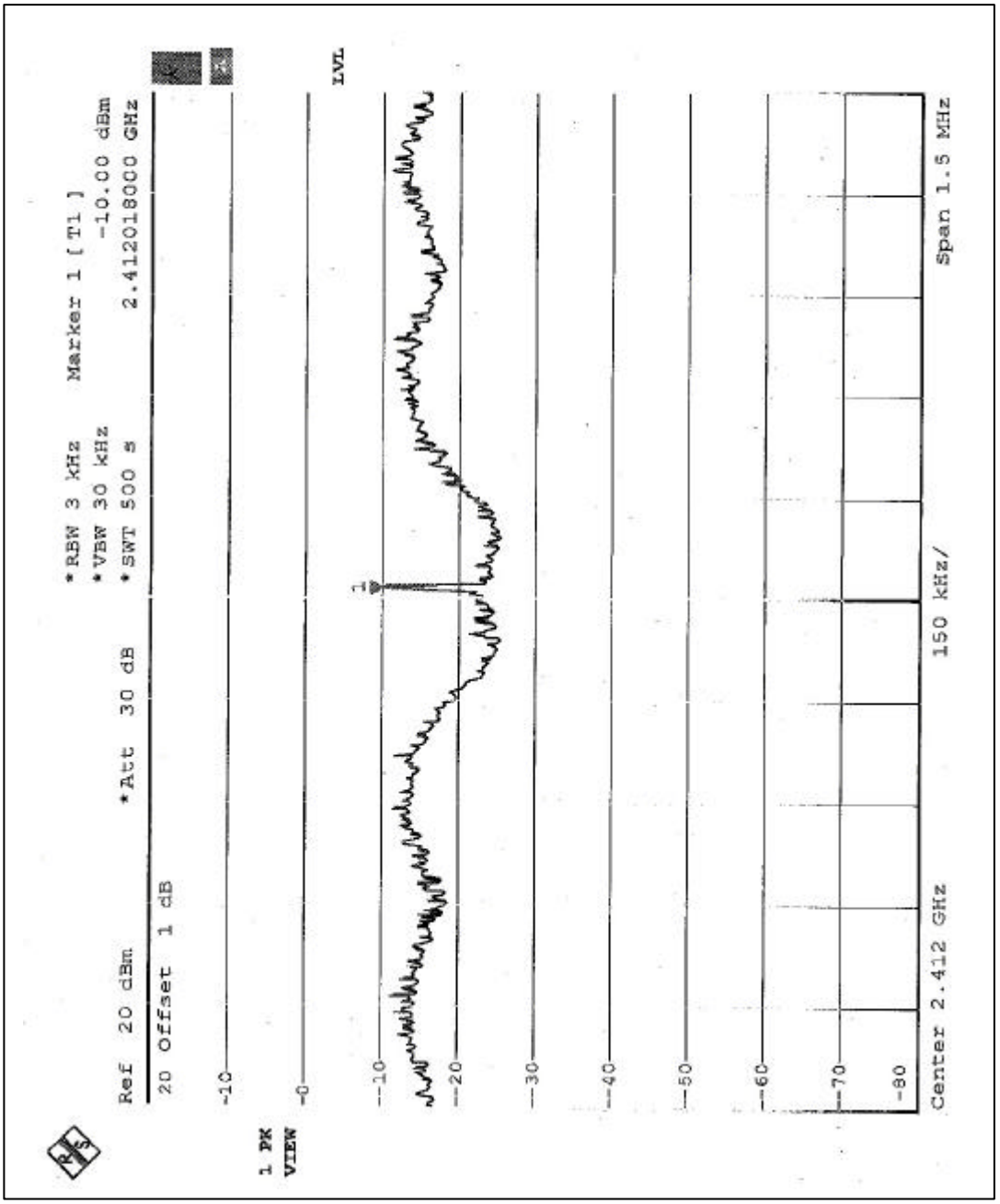
4.5.7 TEST RESULTS-OFDM

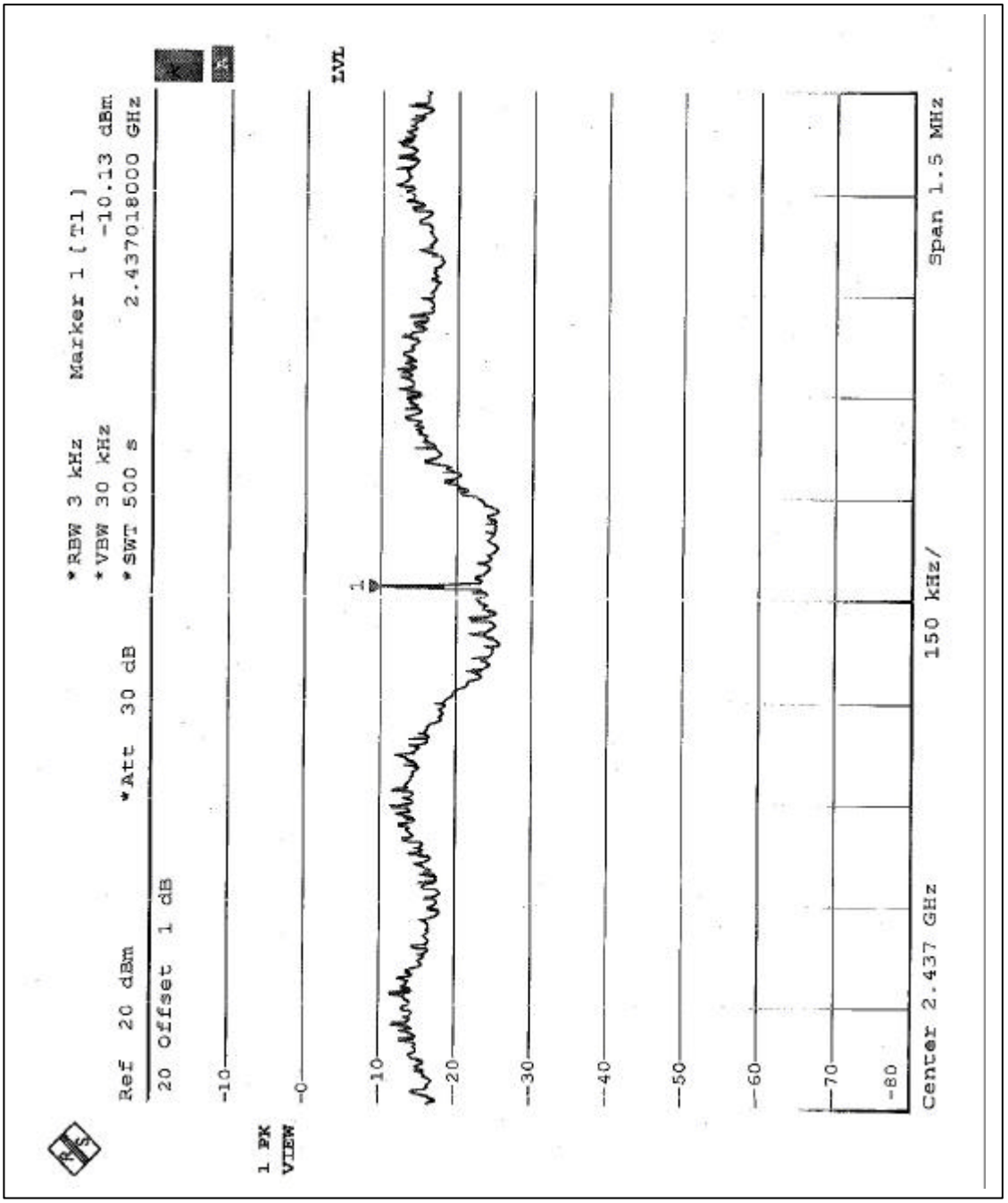
EUT	802.11b/g Cardbus	**MODEL**	G11FNF-PC
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	21 deg. C, 62 %RH, 979 hPa
TEST MODE	Antenna 1&3	**TESTED BY**	Hank Chung

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
1	2412	-10.00	8	PASS
6	2437	-10.13	8	PASS
11	2462	-10.58	8	PASS

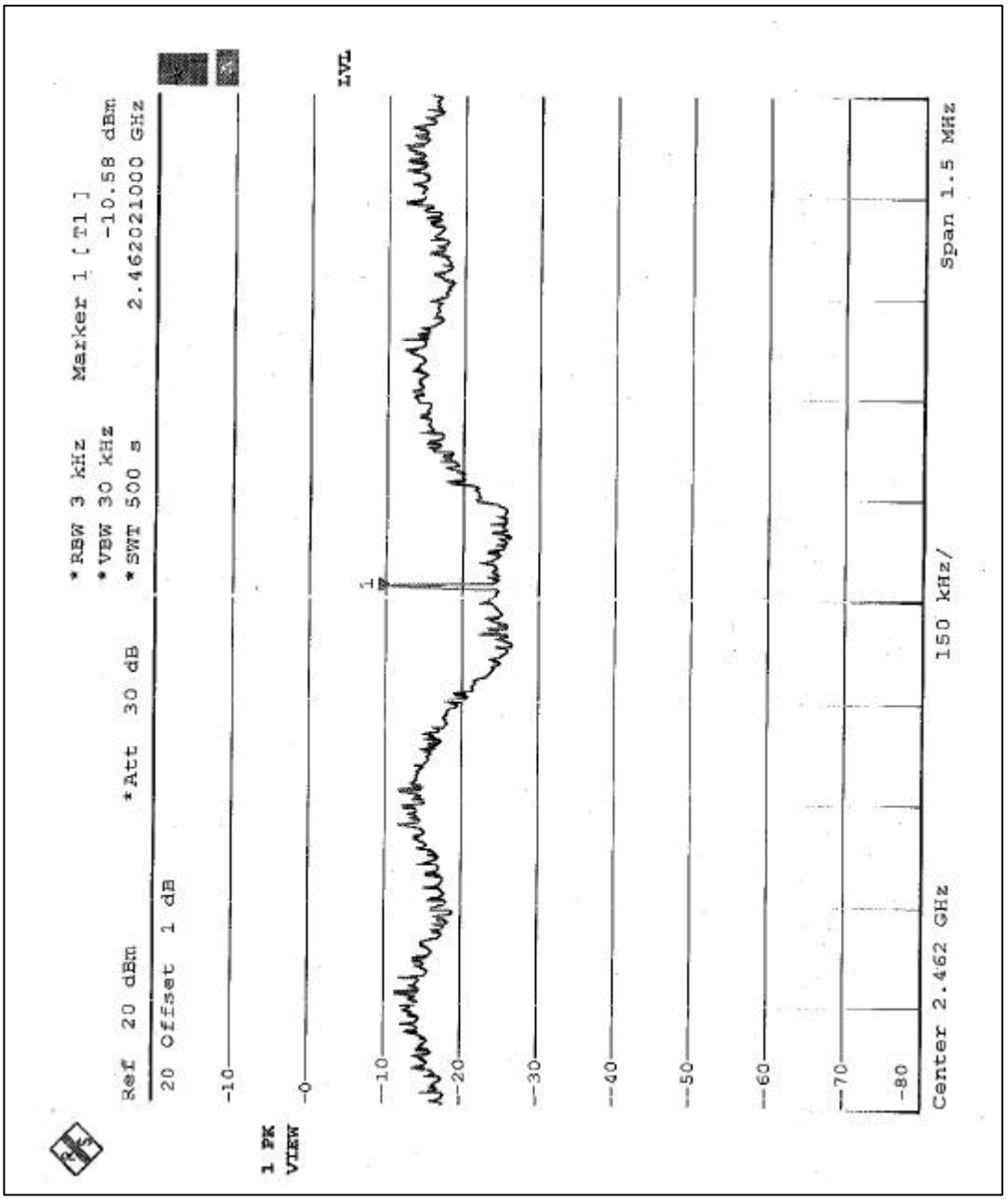
CH1


Ref 20 dBm
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.00 dBm
2.412018000 GHz
20 Offset 1 dB
1 PK
VIEW
LVL
Center 2.412 GHz
150 kHz/
Span 1.5 MHz

CH6


Ref 20 dBm
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.13 dBm
2.437018000 GHz
20 Offset 1 dB
1 PK
VIEW
LVL
Center 2.437 GHz
150 kHz/
Span 1.5 MHz

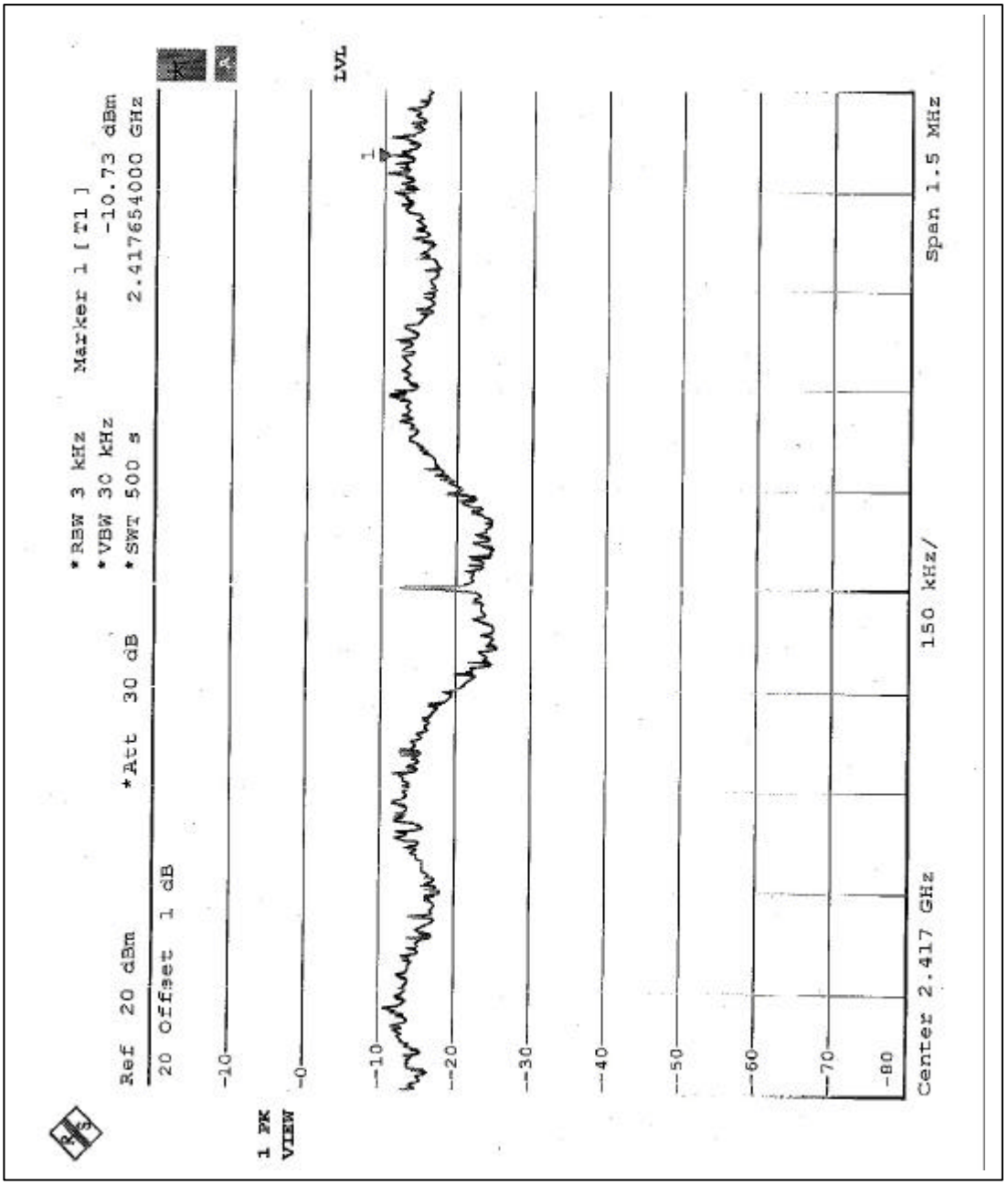
CH11


Ref 20 dBm
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.58 dBm
2.462021000 GHz
20 Offset 1 dB
1 PK
VIEW
LVL
Center 2.462 GHz
150 kHz/
Span 1.5 MHz

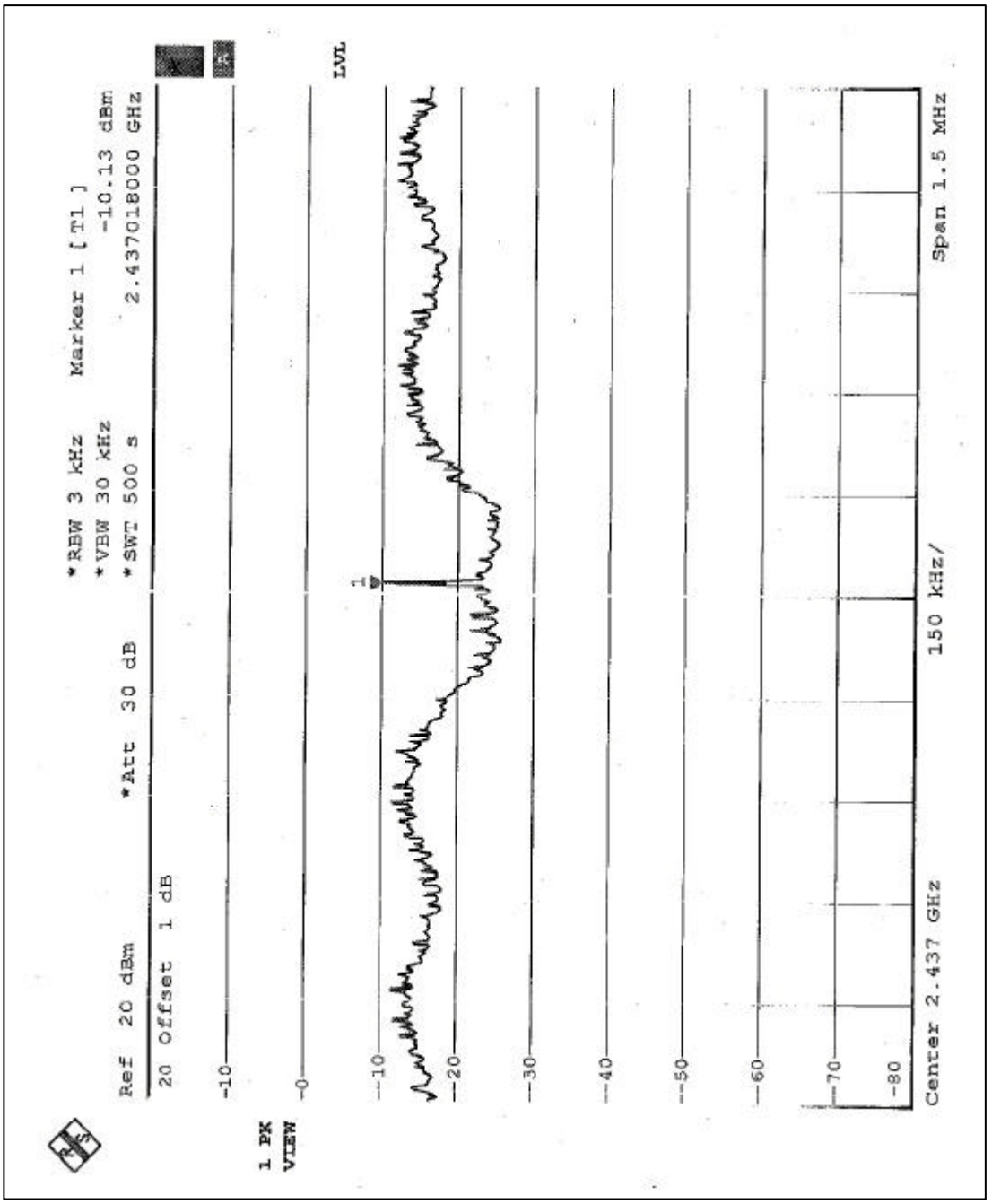
EUT	802.11b/g Cardbus	**MODEL**	G11FNF-PC
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**ENVIRONMENTAL CONDITIONS**	21 deg. C, 62 %RH, 979 hPa
TEST MODE	Antenna 2	**TESTED BY**	Hank Chung

CHANNEL NUMBER	CHANNEL FREQUENCY (MHz)	RF POWER LEVEL IN 3 KHz BW (dBm)	MAXIMUM LIMIT (dBm)	PASS/FAIL
2	2417	-10.73	8	PASS
6	2437	-10.13	8	PASS
10	2457	-10.83	8	PASS

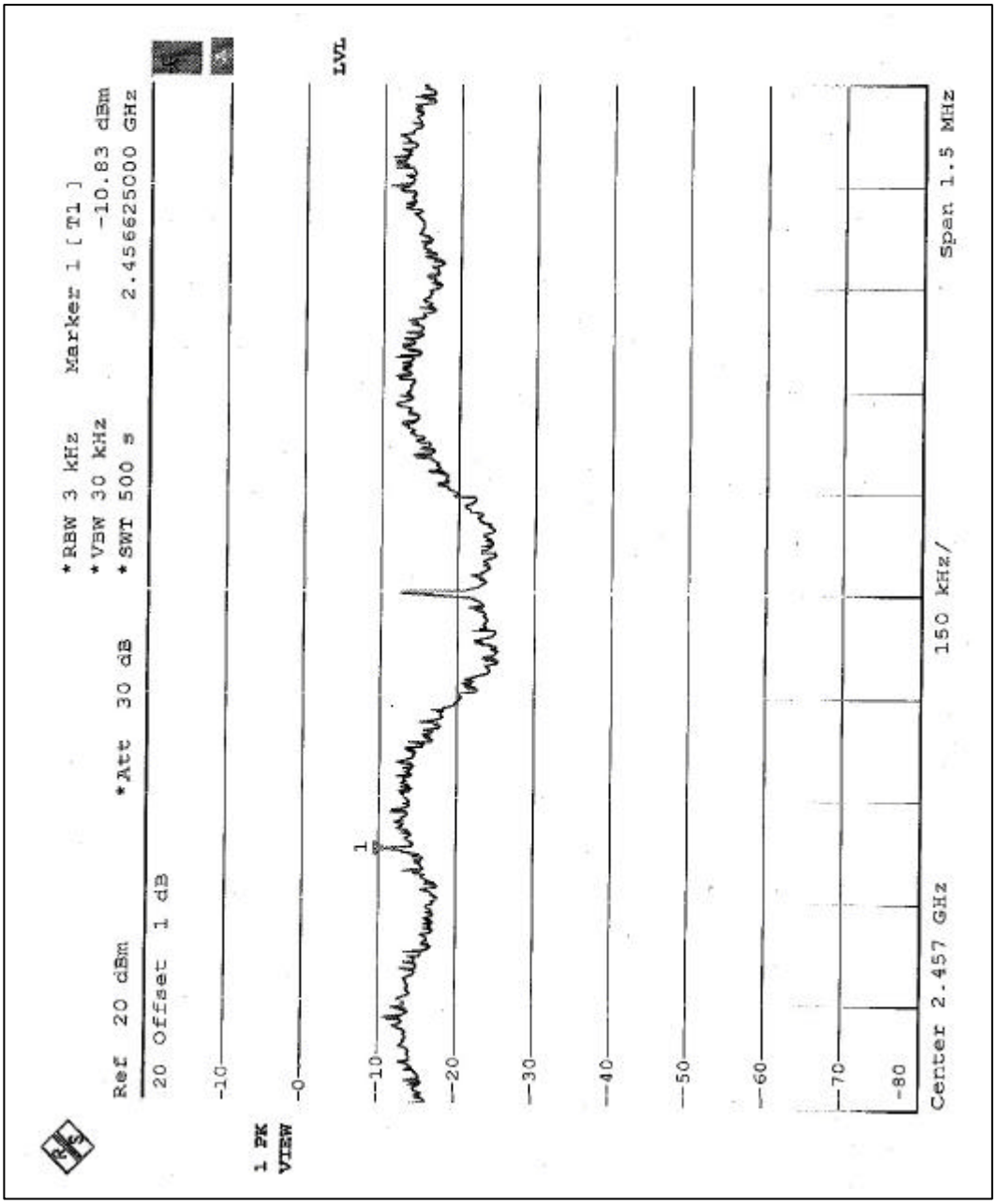
CH2


Ref 20 dBm
Att 30 dB
RBW 3 kHz
VBW 30 kHz
SWT 500 s
Marker 1 [T1]
-10.73 dBm
2.417654000 GHz
20 Offset 1 dB
1 PK
VIEW
LVL
Center 2.417 GHz
150 kHz/
Span 1.5 MHz

CH6


Ref 20 dBm
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.13 dBm
2.437018000 GHz
20 Offset 1 dB
1 PK
VIEW
LVL
Center 2.437 GHz
150 kHz/
Span 1.5 MHz

CH10


Ref 20 dBm
20 Offset 1 dB
*Att 30 dB
*RBW 3 kHz
*VBW 30 kHz
*SWT 500 s
Marker 1 [T1]
-10.83 dBm
2.456625000 GHz
1 PK
VIEW
LVL
Center 2.457 GHz
150 kHz/
Span 1.5 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, 2003

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

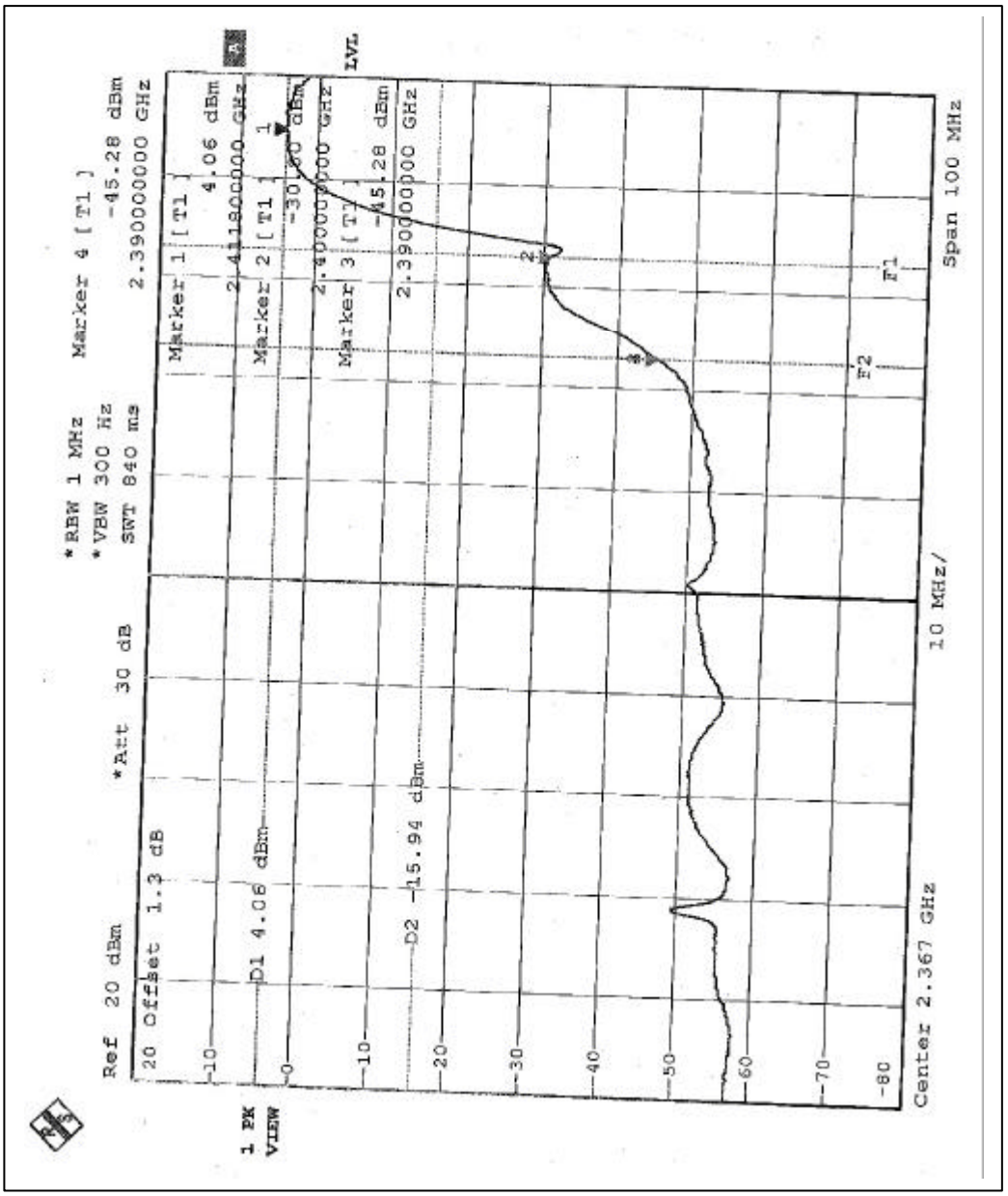
4.6.5 TEST RESULTS - DSSS

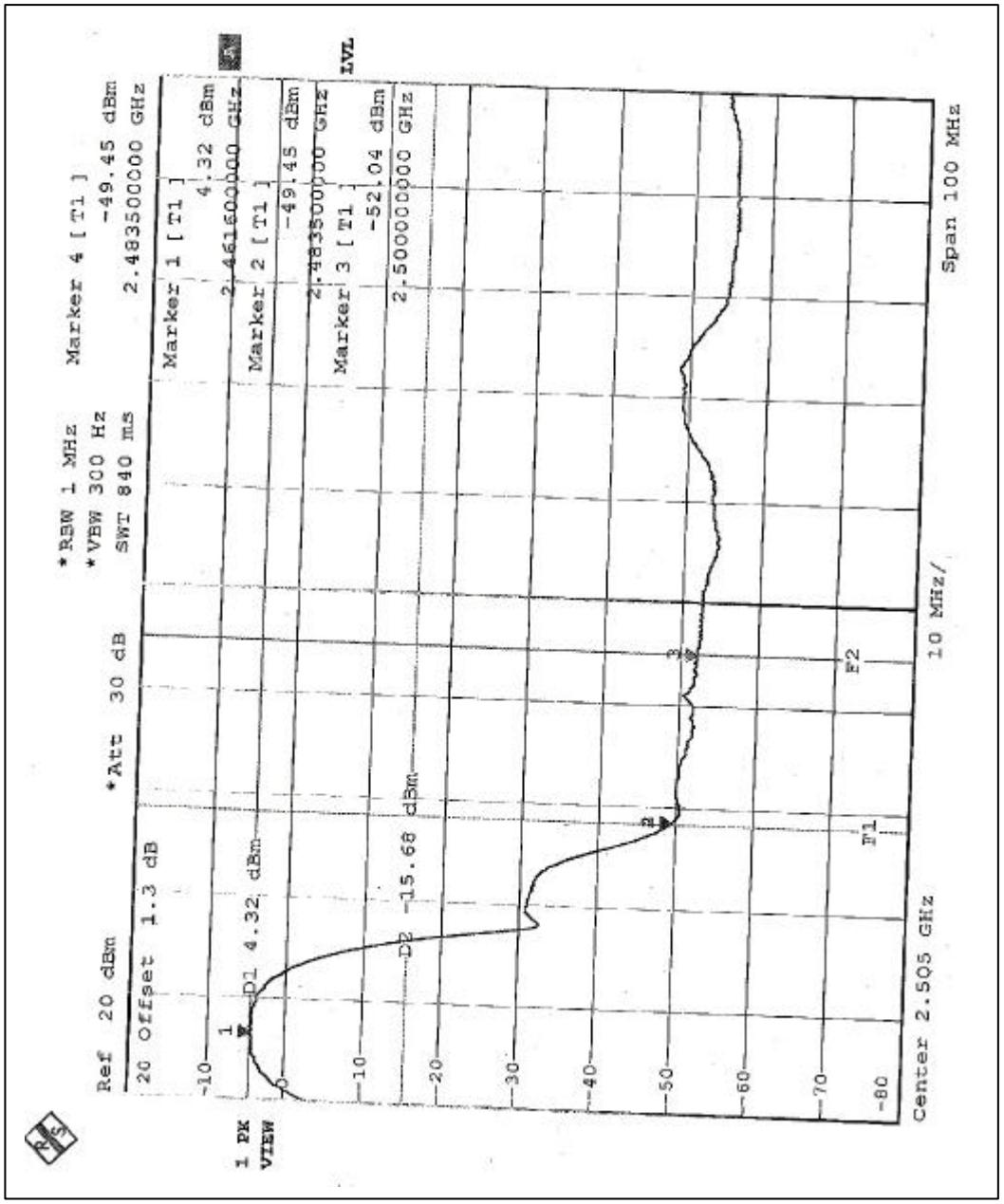
◆ TEST MODE: Antenna 1&3

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 49.34dB delta between carrier maximum power and local maximum emission in restrict band (2.390GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.8dBuV/m, so the maximum field strength in restrict band is 95.8-49.34=46.46dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 53.77dB 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 97.0dBuV/m, so the maximum field strength in restrict band is 97.0-53.77=43.23dBuV/m which is under 54 dBuV/m limit.


Ref 20 dBm
Att 30 dB
RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-45.28 dBm
2.390000000 GHz
Offset 1.3 dB
D1 4.06 dBm
D2 -15.94 dBm
Marker 1 [T1]
4.06 dBm
2.411800000 GHz
Marker 2 [T1]
-30.00 dBm
2.400000000 GHz
Marker 3 [T1]
-45.28 dBm
2.390000000 GHz
1 PK
VIEW
Center 2.367 GHz
10 MHz/
Span 100 MHz
F1
F2

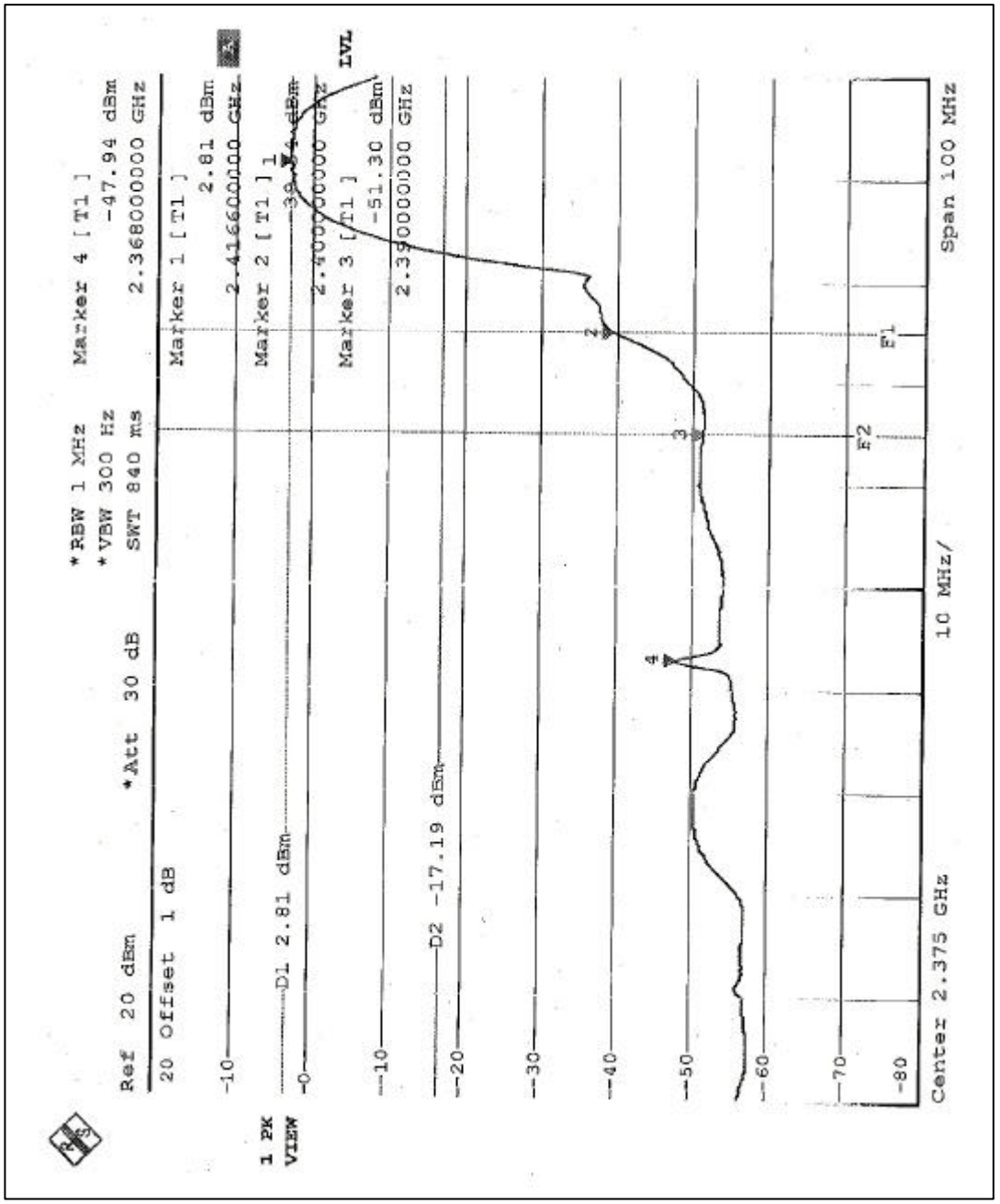

Ref 20 dBm
Att 30 dB
RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-49.45 dBm
2.483500000 GHz
Marker 1 [T1]
4.32 dBm
2.461600000 GHz
Marker 2 [T1]
-49.45 dBm
2.483500000 GHz
Marker 3 [T1]
-52.04 dBm
2.500000000 GHz
20 Offset 1.3 dB
D1 4.32 dBm
D2 -15.68 dBm
1 PK VIEW
Center 2.505 GHz
10 MHz/
Span 100 MHz

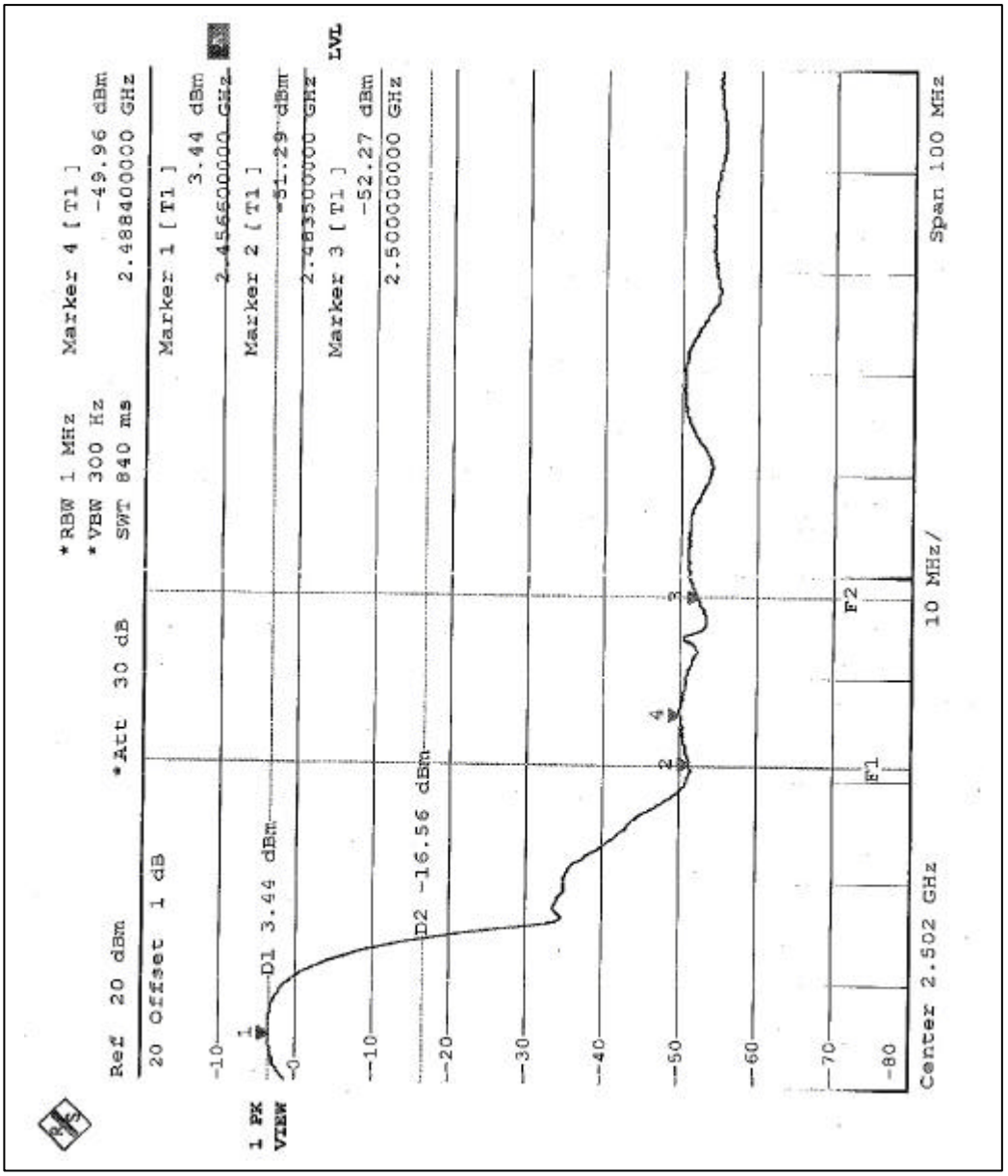
◆ TEST MODE: Antenna 2

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 50.75dB delta between carrier maximum power and local maximum emission in restrict band (2.2.368GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 99.8dBuV/m, so the maximum field strength in restrict band is 99.8-50.75=49.05dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 53.40dB delta between carrier maximum power and local maximum emission in restrict band (2.2.4884GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 99.8dBuV/m, so the maximum field strength in restrict band is 99.8-53.40=46.4dBuV/m which is under 54 dBuV/m limit.


Ref 20 dBm
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-47.94 dBm
2.368000000 GHz
Marker 1 [T1]
2.81 dBm
2.416600000 GHz
Marker 2 [T1]
2.400000000 GHz
Marker 3 [T1]
-51.30 dBm
2.390000000 GHz
20 Offset 1 dB
D1 2.81 dBm
D2 -17.19 dBm
1 PK
VIEW
Center 2.375 GHz
10 MHz/
Span 100 MHz


Ref 20 dBm
20 Offset 1 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-49.96 dBm
2.48840000 GHz
Marker 1 [T1]
3.44 dBm
2.45600000 GHz
Marker 2 [T1]
-51.29 dBm
2.48350000 GHz
Marker 3 [T1]
-52.27 dBm
2.50000000 GHz
1 PK
VIEW
D1 3.44 dBm
D2 -16.56 dBm
LVL
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz

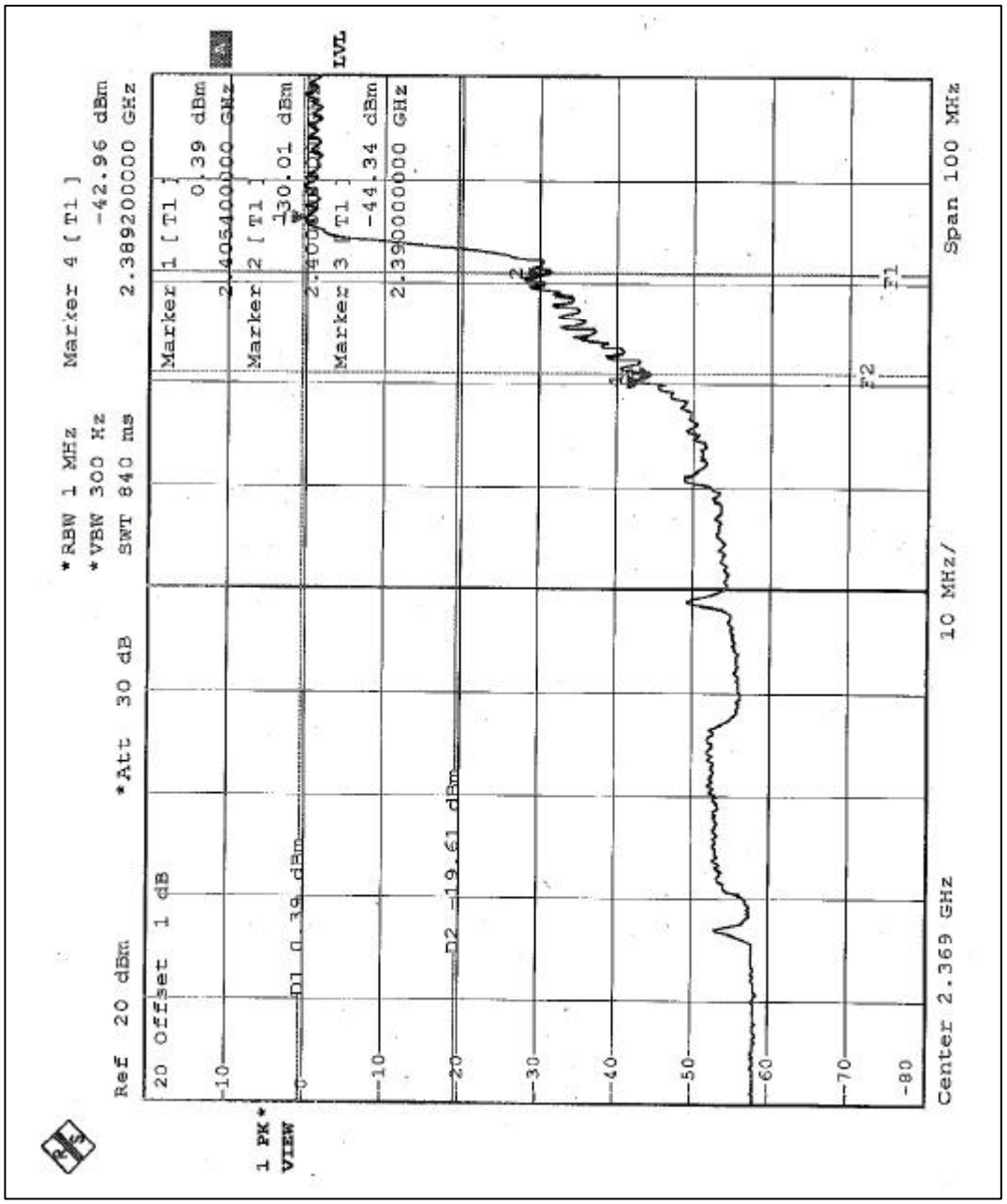
4.6.6 TEST RESULTS-OFDM

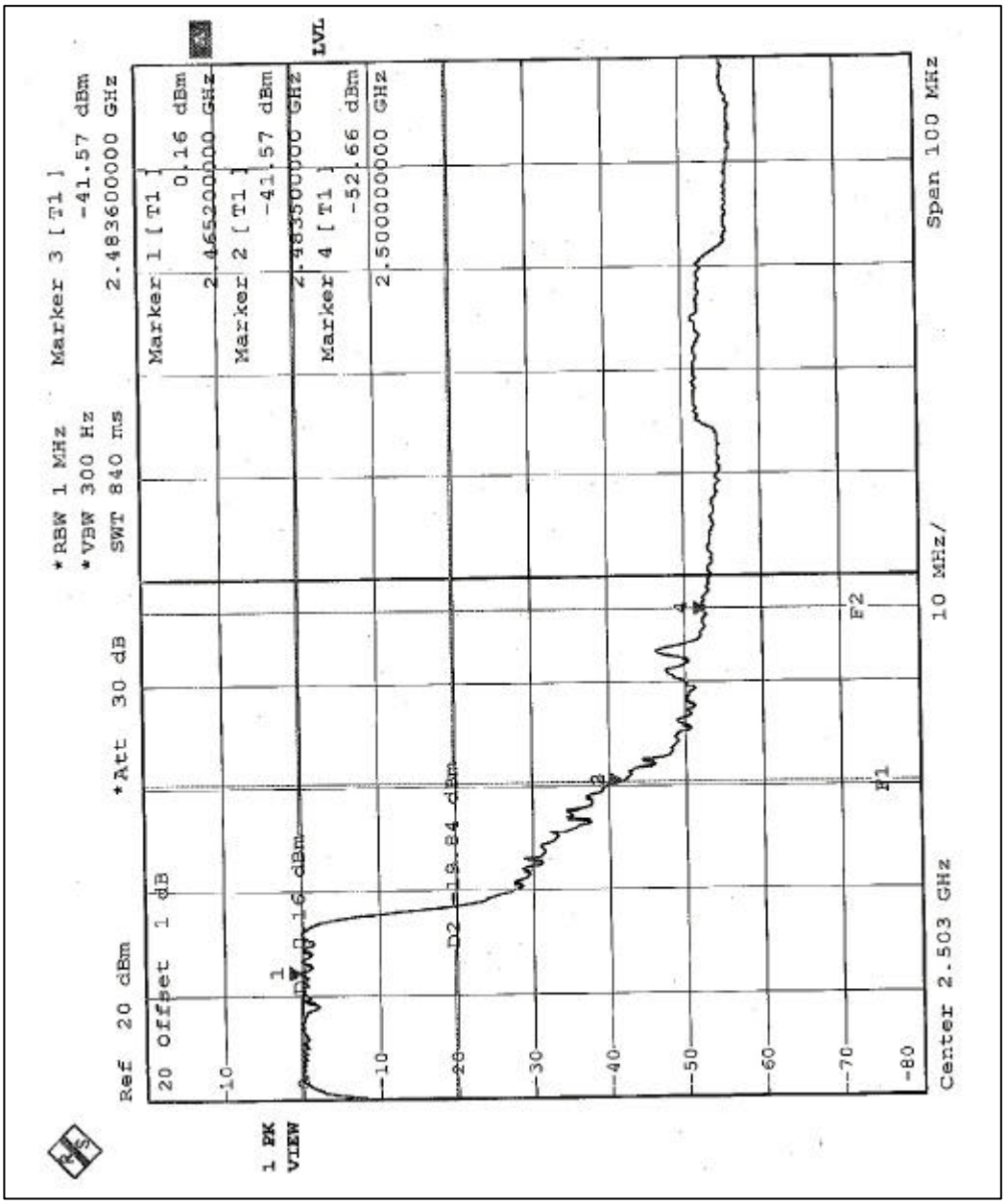
◆ TEST MODE: Antenna 1&3

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 43.35dB delta between carrier maximum power and local maximum emission in restrict band (2.3892GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 93.8dBuV/m, so the maximum field strength in restrict band is 93.8-43.35=50.45dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 41.73dB delta between carrier maximum power and local maximum emission in restrict band (2.4836GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 93.3dBuV/m, so the maximum field strength in restrict band is 93.3-41.73=51.57dBuV/m which is under 54 dBuV/m limit.


Ref 20 dBm
Att 30 dB
RBW 1 MHz
VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-42.96 dBm
2.389200000 GHz
Marker 1 [T1]
0.39 dBm
2.405400000 GHz
Marker 2 [T1]
-30.01 dBm
2.400000000 GHz
Marker 3 [T1]
-44.34 dBm
2.390000000 GHz
D1 0.39 dBm
D2 -19.61 dBm
Center 2.369 GHz
10 MHz/
Span 100 MHz

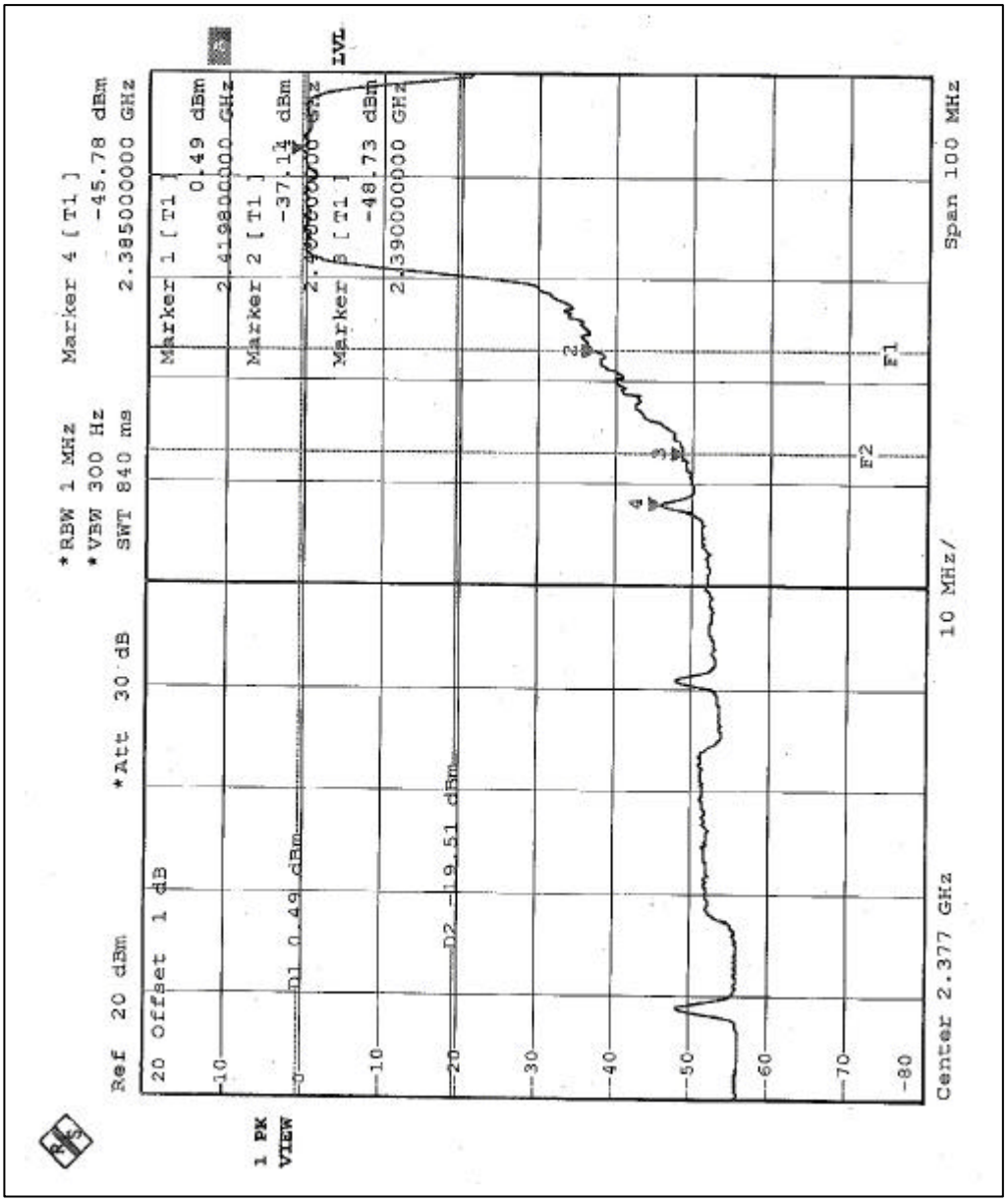

Ref 20 dBm
20 Offset 1 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 3 [T1]
-41.57 dBm
2.483600000 GHz
Marker 1 [T1]
0.16 dBm
2.465200000 GHz
Marker 2 [T1]
-41.57 dBm
2.483500000 GHz
Marker 4 [T1]
-52.66 dBm
2.500000000 GHz
1 PK
VIEW
D1 0.16 dBm
D2 -19.84 dBm
LVL
Center 2.503 GHz
10 MHz/
Span 100 MHz

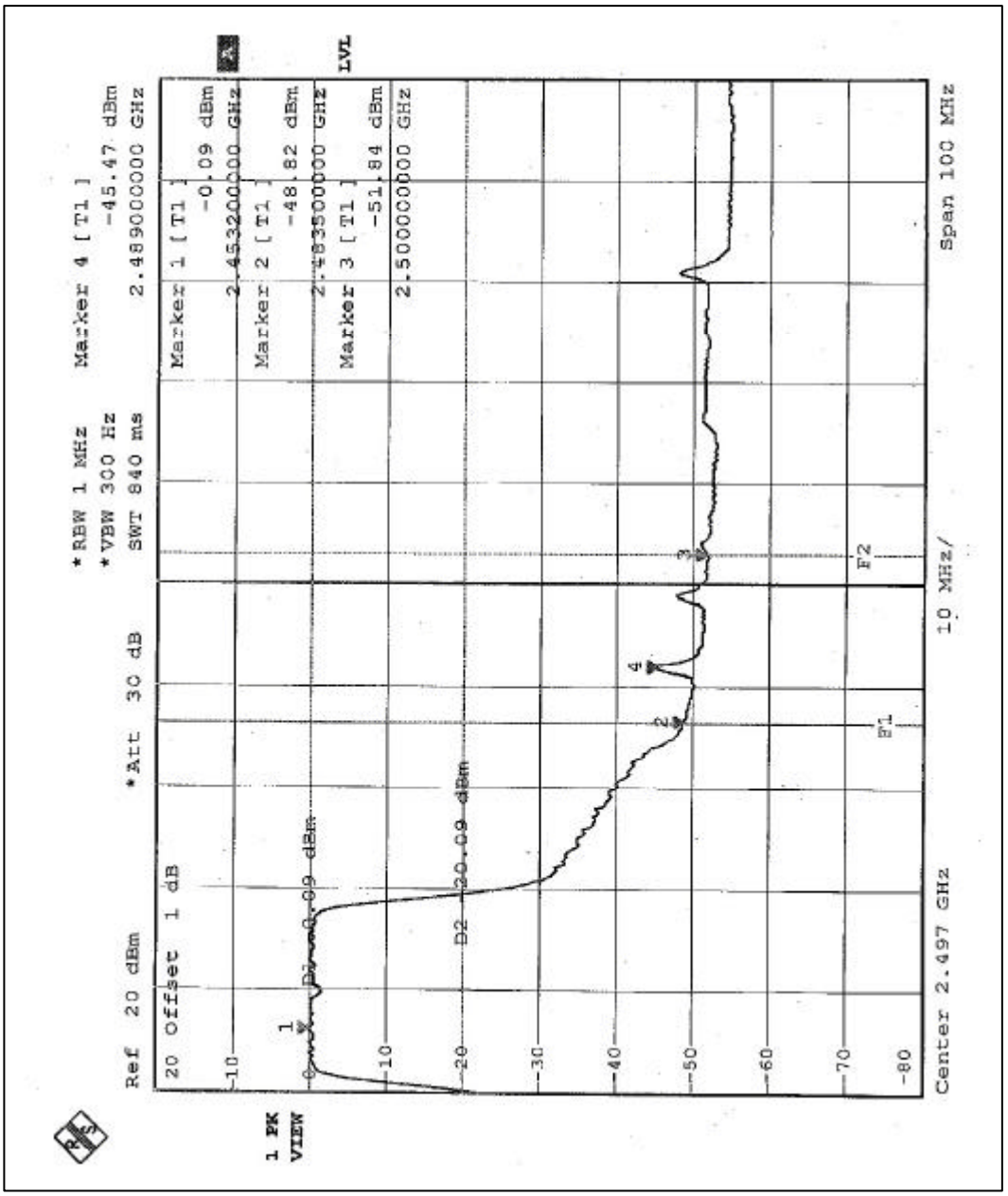
◆ TEST MODE: Antenna 2

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 46.27dB delta between carrier maximum power and local maximum emission in restrict band (2.385GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.8 is 95.8dBuV/m, so the maximum field strength in restrict band is 95.8-46.27=49.53dBuV/m which is under 54 dBuV/m limit.

NOTE (2): The band edge emission plot on the following second page shows 45.38dB delta between carrier maximum power and local maximum emission in restrict band (2.489GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.8 is 96.9dBuV/m, so the maximum field strength in restrict band is 96.9-45.38=51.52dBuV/m which is under 54 dBuV/m limit.


Ref 20 dBm
20 Offset 1 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-45.78 dBm
2.38500000 GHz
Marker 1 [T1]
0.49 dBm
2.41800000 GHz
Marker 2 [T1]
-37.14 dBm
2.39000000 GHz
Marker 3 [T1]
-48.73 dBm
2.39000000 GHz
1 PK
VIEW
D1 0.49 dBm
D2 -19.51 dBm
F1
F2
Center 2.377 GHz
10 MHz/
Span 100 MHz


Ref 20 dBm
20 Offset 1 dB
*Att 30 dB
*RBW 1 MHz
*VBW 300 Hz
SWT 840 ms
Marker 4 [T1]
-45.47 dBm
2.489000000 GHz
Marker 1 [T1]
-0.09 dBm
2.453200000 GHz
Marker 2 [T1]
-48.82 dBm
2.483500000 GHz
Marker 3 [T1]
-51.84 dBm
2.500000000 GHz
1 PK
VIEW
D1 -0.09 dBm
D2 -20.09 dBm
F1
F2
Center 2.497 GHz
10 MHz/
Span 100 MHz

4.7 ANTENNA REQUIREMENT

4.7.1 STANDARD APPLICABLE

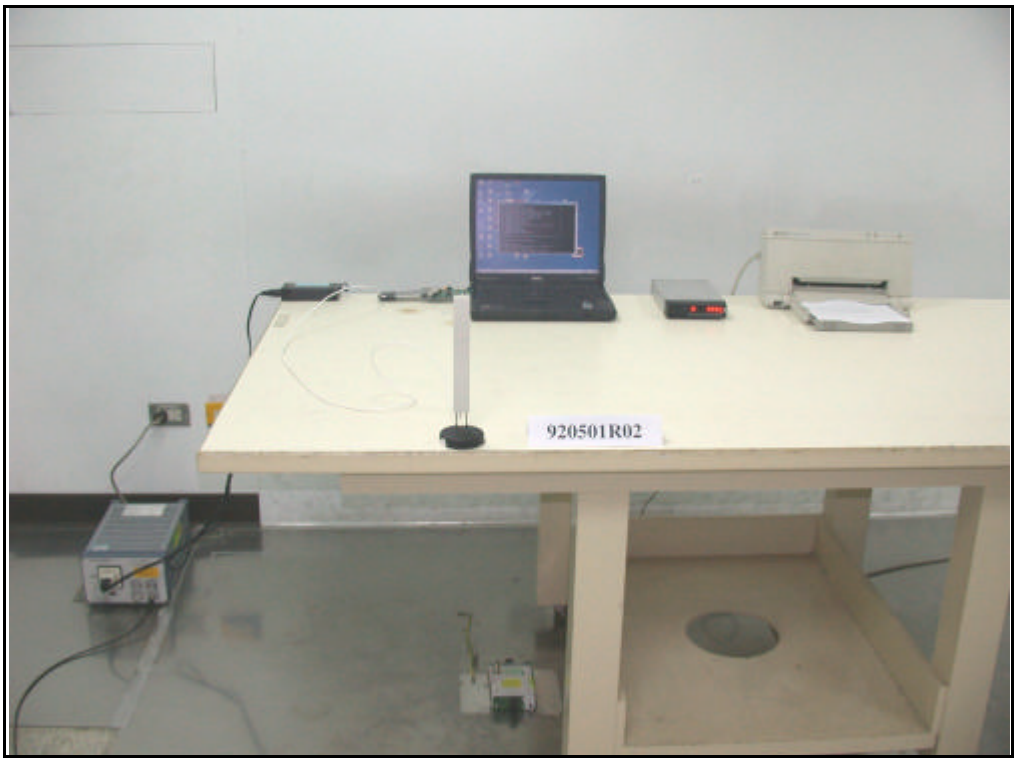
For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.
And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional 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.

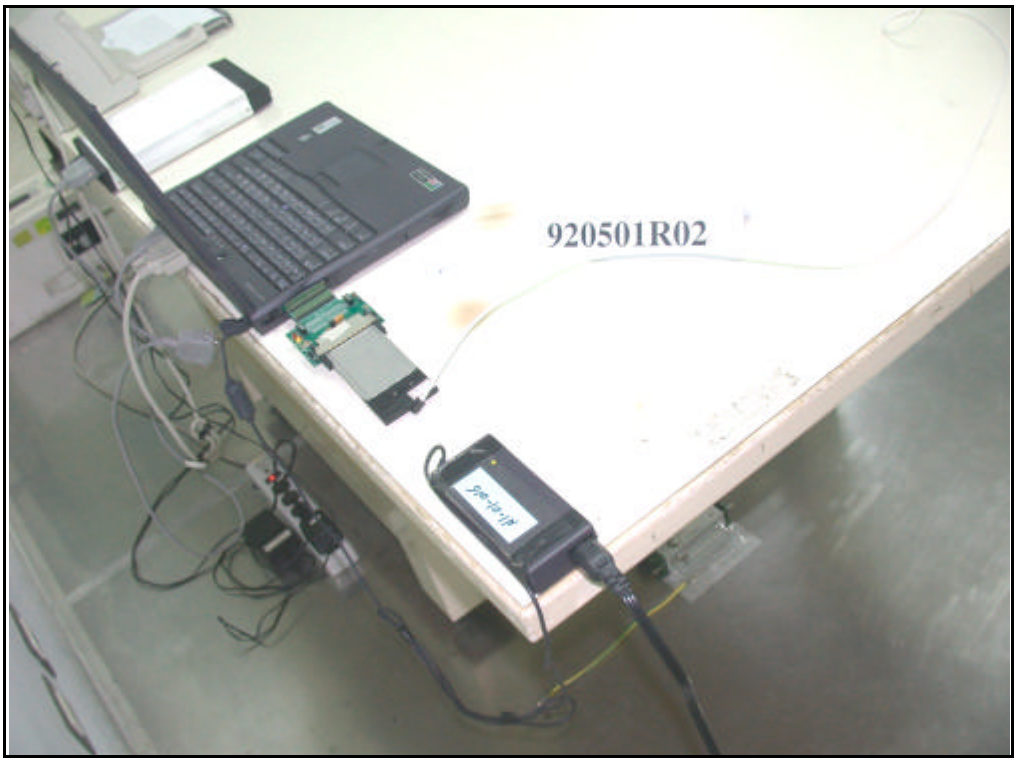
4.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna types used in this product are Integral antenna, Omni directional (mono-pole) Antenna and Omni directional (dipole) Antenna with MMCX connector. And the maximum Gain of this antenna is only 5dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST





920501R02
920501R02

RADIATED EMISSION TEST

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:

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Fax: 886-2-26052943

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Tel: 886-35-935343
Fax: 886-35-935342

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Tel: 886-3-3270910
Fax: 886-3-3270892

Email: service@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.