



# FCC TEST REPORT

**REPORT NO.:** RF920617R04

**MODEL NO.:** Mio 558

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**APPLICANT:** MiTAC INTERNATIONAL CORP.

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0528  
ILAC MRA



Lab Code: 200102-0



## Table of Contents

1	CERTIFICATION.....	6
2	SUMMARY OF TEST RESULTS .....	7
3	GENERAL INFORMATION .....	9
3.1	GENERAL DESCRIPTION OF EUT.....	9
3.2	DESCRIPTION OF TEST MODES.....	10
3.3	GENERAL DESCRIPTION OF APPLIED STANDARDS .....	10
3.4	DESCRIPTION OF SUPPORT UNITS .....	11
4	TEST RESULTS (FOR WIRELESS LAN FUNCTION).....	12
4.1	CONDUCTED EMISSION MEASUREMENT .....	12
4.1.1	LIMITS OF CONDUCTED EMISSION MEASUREMENT.....	12
4.1.2	TEST INSTRUMENTS .....	12
4.1.3	TEST PROCEDURES .....	13
4.1.4	DEVIATION FROM TEST STANDARD .....	13
4.1.5	TEST SETUP .....	14
4.1.6	EUT OPERATING CONDITIONS .....	14
4.1.7	TEST RESULTS .....	15
4.2	RADIATED EMISSION MEASUREMENT .....	21
4.2.1	LIMITS OF RADIATED EMISSION MEASUREMENT .....	21
4.2.2	TEST PROCEDURES .....	23
4.2.3	DEVIATION FROM TEST STANDARD .....	23
4.2.4	TEST SETUP .....	24
4.2.5	EUT OPERATING CONDITIONS .....	24
4.2.6	TEST RESULTS .....	25
4.3	6dB BANDWIDTH MEASUREMENT .....	29
4.3.1	LIMITS OF 6dB BANDWIDTH MEASUREMENT .....	29
4.3.2	TEST INSTRUMENTS .....	29
4.3.3	TEST PROCEDURE .....	30
4.3.4	DEVIATION FROM TEST STANDARD .....	30
4.3.5	TEST SETUP .....	30
4.3.6	EUT OPERATING CONDITIONS .....	30
4.3.7	TEST RESULTS .....	31
4.4	MAXIMUM PEAK OUTPUT POWER .....	35
4.4.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT .....	35
4.4.2	TEST INSTRUMENTS .....	35
4.4.3	TEST PROCEDURES .....	36



4.4.4 TEST SETUP .....36

4.4.5 EUT OPERATING CONDITIONS .....36

4.4.1 TEST RESULTS .....37

4.5 POWER SPECTRAL DENSITY MEASUREMENT .....38

4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....38

4.5.2 TEST INSTRUMENTS .....38

4.5.3 TEST PROCEDURE .....39

4.5.4 DEVIATION FROM TEST STANDARD .....39

4.5.5 TEST SETUP .....39

4.5.6 EUT OPERATING CONDITIONS .....39

4.5.7 TEST RESULTS .....40

4.6 BAND EDGES MEASUREMENT .....44

4.6.1 LIMITS OF BAND EDGES MEASUREMENT .....44

4.6.2 TEST INSTRUMENTS .....44

4.6.3 TEST PROCEDURE .....44

4.6.4 DEVIATION FROM TEST STANDARD .....44

4.6.5 EUT OPERATING CONDITION .....45

4.6.6 TEST RESULTS .....45

4.7 ANTENNA REQUIREMENT .....48

4.7.1 STANDARD APPLICABLE .....48

4.7.2 ANTENNA CONNECTED CONSTRUCTION .....48

5 TEST RESULTS (FOR BLUETOOTH FUNCTION) .....49

5.1 CONDUCTED EMISSION MEASUREMENT .....49

5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT .....49

5.1.2 TEST INSTRUMENTS .....49

5.1.3 TEST PROCEDURES .....50

5.1.4 TEST SETUP .....50

5.2 NUMBER OF HOPPING FREQUENCY USED .....57

5.2.1 LIMIT OF HOPPING FREQUENCY USED .....57

5.2.2 TEST INSTRUMENTS .....57

5.2.3 TEST PROCEDURES .....58

5.2.4 TEST SETUP .....58

5.2.5 TEST RESULTS .....58

5.3 DWELL TIME ON EACH CHANNEL .....61

5.3.1 LIMIT OF DWELL TIME USED .....61



5.3.2	TEST PROCEDURES .....	62
5.3.3	TEST SETUP .....	62
5.3.4	TEST RESULTS .....	63
5.4	CHANNEL BANDWIDTH.....	70
5.4.1	LIMITS OF CHANNEL BANDWIDTH.....	70
5.4.2	TEST INSTRUMENTS .....	70
5.4.3	TEST PROCEDURE .....	71
5.4.4	DEVIATION FROM TEST STANDARD .....	71
5.4.5	TEST SETUP .....	71
5.4.6	EUT OPERATING CONDITION.....	71
5.4.7	TEST RESULTS .....	72
5.5	HOPPING CHANNEL SEPARATION .....	76
5.5.1	LIMIT OF HOPPING CHANNEL SEPARATION .....	76
5.5.2	TEST INSTRUMENTS .....	76
5.5.3	TEST PROCEDURES .....	76
5.5.4	DEVIATION FROM TEST STANDARD .....	76
5.5.5	TEST SETUP .....	77
5.5.6	TEST RESULTS .....	77
5.6	MAXIMUM PEAK OUTPUT POWER –USING SPECTRUM ANALYZER....	81
5.6.1	LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT .....	81
5.6.2	INSTRUMENTS .....	81
5.6.3	TEST PROCEDURES .....	81
5.6.4	DEVIATION FROM TEST STANDARD .....	81
5.6.5	TEST SETUP .....	82
5.6.6	EUT OPERATING CONDITION.....	82
5.6.7	TEST RESULTS .....	82
5.7	RADIATED EMISSION MEASUREMENT .....	86
5.7.1	LIMITS OF RADIATED EMISSION MEASUREMENT .....	86
5.7.2	TEST INSTRUMENTS .....	87
5.7.3	TEST PROCEDURES .....	88
5.7.4	DEVIATION FROM TEST STANDARD .....	88
5.7.5	TEST SETUP .....	89
5.7.6	TEST RESULTS .....	90
5.8	BAND EDGES MEASUREMENT .....	94
5.8.1	LIMITS OF BAND EDGES MEASUREMENT.....	94



5.8.2 TEST INSTRUMENTS ..... 94

5.8.3 TEST PROCEDURE ..... 94

5.8.4 DEVIATION FROM TEST STANDARD ..... 94

5.8.5 EUT OPERATING CONDITION ..... 95

5.8.6 TEST RESULTS ..... 95

PHOTOGRAPHS OF THE TEST CONFIGURATION ..... 98

PHOTOGRAPHS OF THE TEST CONFIGURATION ..... 98


6 INFORMATION ON THE TESTING LABORATORIES ..... 100



## 1 CERTIFICATION

**PRODUCT :** Pocket PC  
**BRAND NAME :** MiTAC  
**MODEL NO. :** Mio 558  
**APPLICANT :** MiTAC INTERANTIONAL CORP.  
**TEST ITEM :** ENGINEERING SAMPLE  
**STANDARDS :** 47 CFR Part 15, Subpart C (Section 15.247),  
ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from A June 18, 2003 to June 24, 2003. The test record, data evaluation and Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions herein specified.

**PREPARED BY:**  , **DATE:** July 02, 2003  
Stephanie Hung

**APPROVED BY:**  , **DATE:** July 02, 2003  
Dr. Alan Lane  
Manager



## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

For modulating type DSSS:

<b>APPLIED STANDARD: 47 CFR Part 15, Subpart C</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>REMARK</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -19.21dBuV at 0.935MHz
15.247(a)(2)	Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Limit: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Transmitter Radiated Emissions Limit: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -10.20dBuV at 7312.00MHz
15.247(d)	Power Spectral Density Limit: max. 8dBm	PASS	Meet the requirement of limit
15.247(c)	Band Edge Measurement Limit: 20 dB less than the peak value of fundamental frequency	PASS	Meet the requirement of limit



For modulating type FHSS:

<b>APPLIED STANDARD: 47 CFR Part 15, Subpart C</b>			
<b>Standard Section</b>	<b>Test Type and Limit</b>	<b>Result</b>	<b>REMARK</b>
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is -18.06dBuV at 0.154 MHz
15.247(a)(1)(I)-(ii)	Number of Hopping Frequency Used Spec.: At least 15 channels	PASS	Meet the requirement of limit
15.247(a)(1)(ii)	Dwell Time on Each Channel Spec.: Max. 0.4 second within 31.6 second	PASS	Meet the requirement of limit
15.247(a)(1)(I)-(ii)	Hopping Channel Separation Spec. : Min. 25 kHz or 20 dB bandwidth	PASS	Meet the requirement of limit
15.247(a)(2)	Spectrum Bandwidth of a Frequency Hopping Sequence Spread Spectrum System Spec.: Max. 1 MHz	PASS	Meet the requirement of limit
15.247(b)	Maximum Peak Output Power Spec.: max. 30dBm	PASS	Meet the requirement of limit
15.247(c)	Transmitter Radiated Emissions Spec.: Table 15.209	PASS	Meet the requirement of limit Minimum passing margin is -7.6dBuV at 360.10MHz
15.247(c)	Band Edge Measurement	PASS	Meet the requirement of limit





### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	Pocket PC
<b>MODEL NO.</b>	Mio 558
<b>POWER SUPPLY</b>	5.0VDC from AC adapter
<b>MODULATION TYPE</b>	DSSS: CCK, BPSK, QPSK FHSS: GFSK
<b>TRANSFER RATE</b>	DSSS: 1/2/5.5/11Mbps FHSS: 723Kbps
<b>FREQUENCY RANGE</b>	DSSS: 2412MHz ~ 2462MHz FHSS: 2402 ~ 2480MHz
<b>NUMBER OF CHANNEL</b>	DSSS: 11 FHSS: 79
<b>OUTPUT POWER</b>	DSSS: 13.04dBm FHSS: 0.5dBm
<b>ANTENNA TYPE</b>	Inverted-F antenna
<b>DATA CABLE</b>	NA
<b>I/O PORTS</b>	NA
<b>ASSOCIATED DEVICES</b>	NA

**NOTE:**

1. For more detailed features description, please refer to the manufacturer's specifications or User's Manual.
2. This EUT is a Pocket PC which consists of Bluetooth and wireless LAN function.
3. The EUT is operated with the following power adapter:

<b>BRAND:</b>	Delta
<b>MODEL NO.:</b>	ADP-10SB
<b>INPUT POWER :</b>	100-240Vac 50/60Hz 0.5A
<b>OUTPUT POWER :</b>	5.0V—2.0A 10W MAX



### 3.2 DESCRIPTION OF TEST MODES

For wireless LAN function:

Eleven channels are provided to this EUT.

Channel	Frequency	Channel	Frequency
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

**NOTE:**

1. Below 1 GHz, the channel 1, 6, and 11 were pre-tested in chamber. The channel 11, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 1, 6, and 11 were tested individually.

For Bluetooth function:

79 Channels are provided to this EUT.

1. For spurious emissions below 1GHz, the channel 78 was chosen for final test.
2. For spurious emissions above 1GHz, the channel 0, 39 and 78 were tested individually.

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Pocket PC. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 15, Subpart C. (15.247)**  
**ANSI C63.4 : 1992**

All tests have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	Dell	PP01L	TW-09C748-12800-1 9O-B220	FCC DoC Approved
2	PRINTER	EPSON	LQ-300+	DCGY017067	FCC DoC Approved
3	MODEM	ACEEX	1414	980020508	IFAXDM1414

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	NA
2	1.2m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core
3	1.2 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.

**NOTE:** All power cords of the above support units are non shielded (1.8m).



## 4 TEST RESULTS (FOR WIRELESS LAN FUNCTION)

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	838251/021	Jan. 20, 2004
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	100218	Dec. 18, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100219	Dec. 18, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	100220	Dec. 18, 2003
ROHDE & SCHWARZ 4-wire ISN	ENY41	837032/016	Nov. 29 2003
ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 29 2003
Software	Cond-V2M3	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C10.01	May. 01, 2004
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010770	Mar. 24, 2004
SUHNER Terminator (For ROHDE & SCHWARZ LISN)	65BNC-5001	E1-010773	Apr. 06, 2004

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. "\*\*\*": These equipment are used for conducted telecom port test only (if tested).
  3. The test was performed in ADT Shielded Room No. 10.
  4. The VCCI Site Registration No. is C-1312.



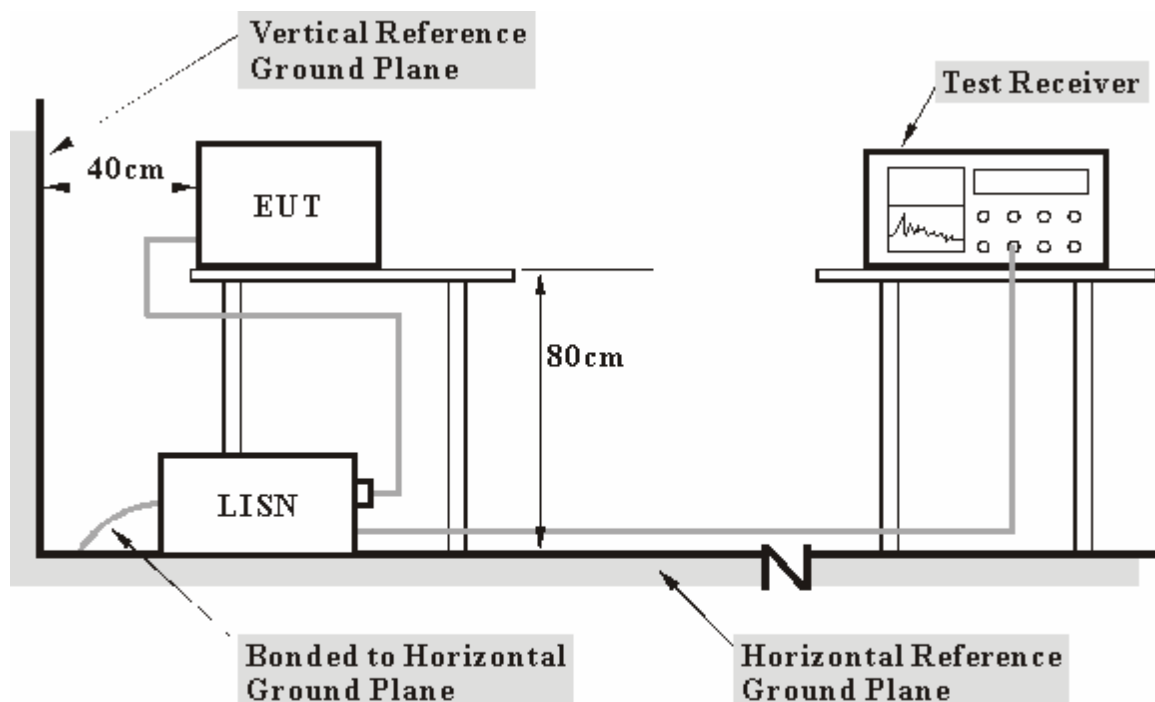
#### 4.1.3 TEST PROCEDURES

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.1.5 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

- a. Placed the EUT on the testing table.
- b. PC sent "H" messages to EUT and then displayed them on it's screen.
- c. The EUT run a test program to enable EUT under transmission/receiving condition continuously at specific channel frequency.
- d. PC sent message to modern.
- e. PC sent messages to printer, and then printed them on paper.



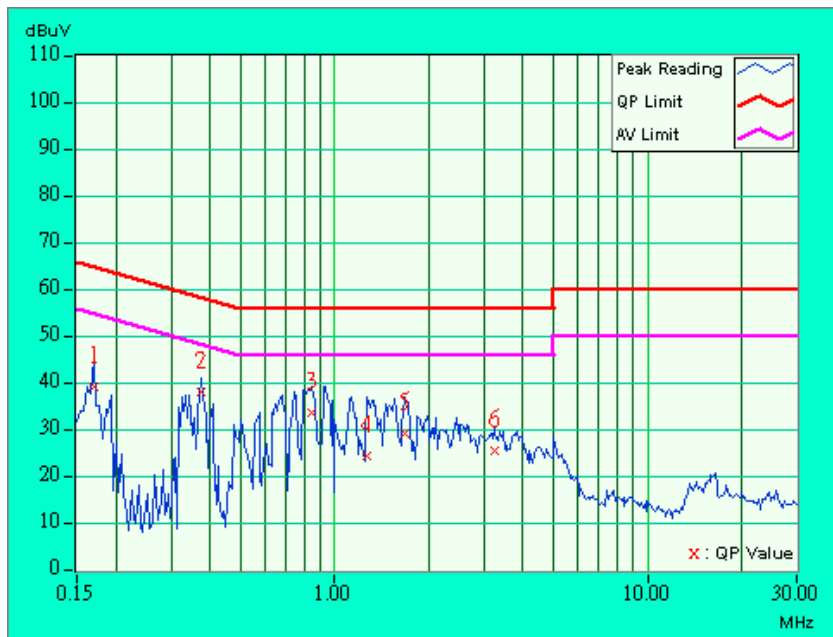
4.1.7 TEST RESULTS

<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.170	0.06	38.98	-	39.04	-	64.98	54.98	-25.95	-
2	0.377	0.06	37.86	-	37.92	-	58.35	48.35	-20.43	-
3	0.845	0.13	33.48	-	33.61	-	56.00	46.00	-22.39	-
4	1.270	0.17	24.40	-	24.57	-	56.00	46.00	-31.43	-
5	1.668	0.17	29.12	-	29.29	-	56.00	46.00	-26.71	-
6	3.234	0.20	25.50	-	25.70	-	56.00	46.00	-30.30	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



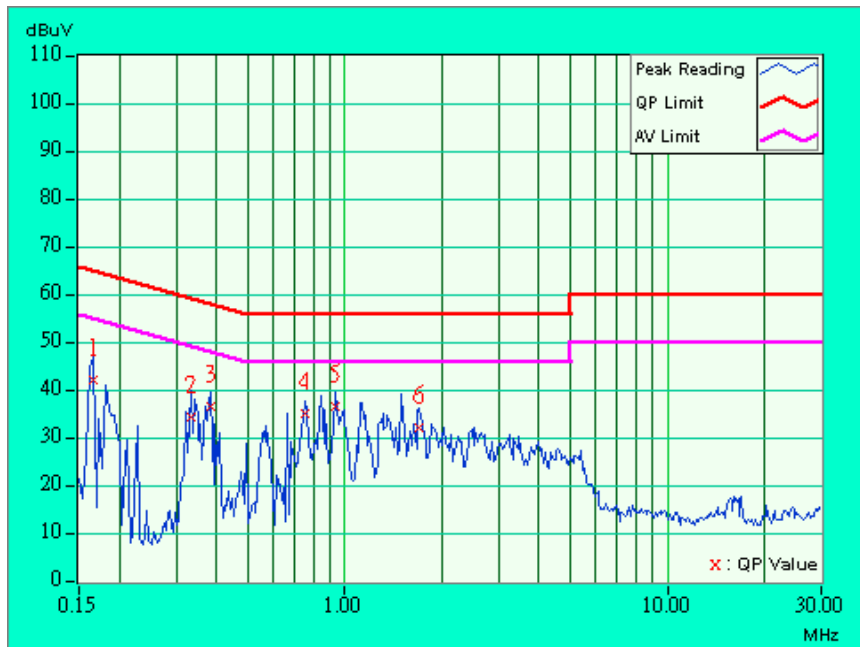


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 1	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.166	0.05	41.99	-	42.04	-	65.18	55.18	-23.14	-
2	0.334	0.05	34.18	-	34.23	-	59.36	49.36	-25.13	-
3	0.384	0.05	36.35	-	36.40	-	58.18	48.18	-21.78	-
4	0.752	0.11	34.92	-	35.03	-	56.00	46.00	-20.97	-
5	0.935	0.15	36.64	-	36.79	-	56.00	46.00	-19.21	-
6	1.699	0.17	32.03	-	32.20	-	56.00	46.00	-23.80	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value





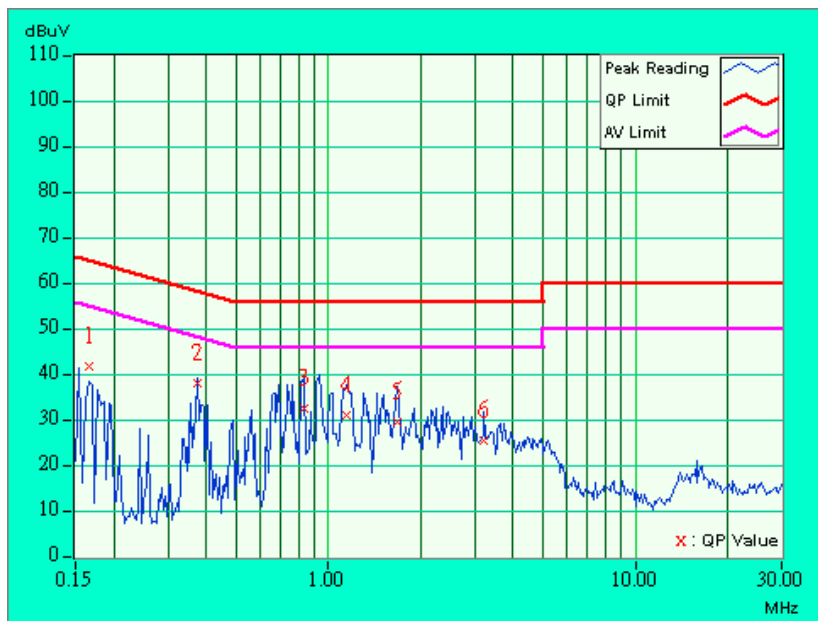


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.166	0.06	41.79	-	41.85	-	65.18	55.18	-23.33	-
2	0.373	0.06	38.00	-	38.06	-	58.44	48.44	-20.38	-
3	0.834	0.13	32.53	-	32.66	-	56.00	46.00	-23.34	-
4	1.141	0.16	30.87	-	31.03	-	56.00	46.00	-24.97	-
5	1.668	0.17	29.34	-	29.51	-	56.00	46.00	-26.49	-
6	3.211	0.20	25.38	-	25.58	-	56.00	46.00	-30.42	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value



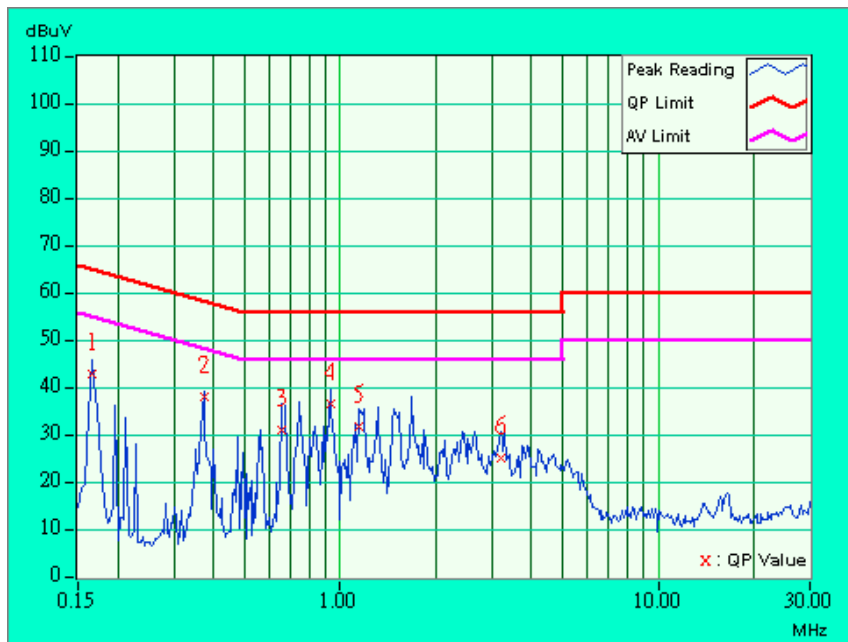


<b>EUT</b>	Pocket PC	<b>MODEL</b>	WUSB11 Ver.2.8
<b>MODE</b>	Channel 6	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (Uv)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.166	0.05	42.76	-	42.81	-	65.18	55.18	-22.37	-
2	0.373	0.05	37.84	-	37.89	-	58.44	48.44	-20.55	-
3	0.658	0.10	30.95	-	31.05	-	56.00	46.00	-24.95	-
4	0.931	0.15	36.54	-	36.69	-	56.00	46.00	-19.31	-
5	1.148	0.16	31.61	-	31.77	-	56.00	46.00	-24.23	-
6	3.191	0.20	25.05	-	25.25	-	56.00	46.00	-30.75	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value



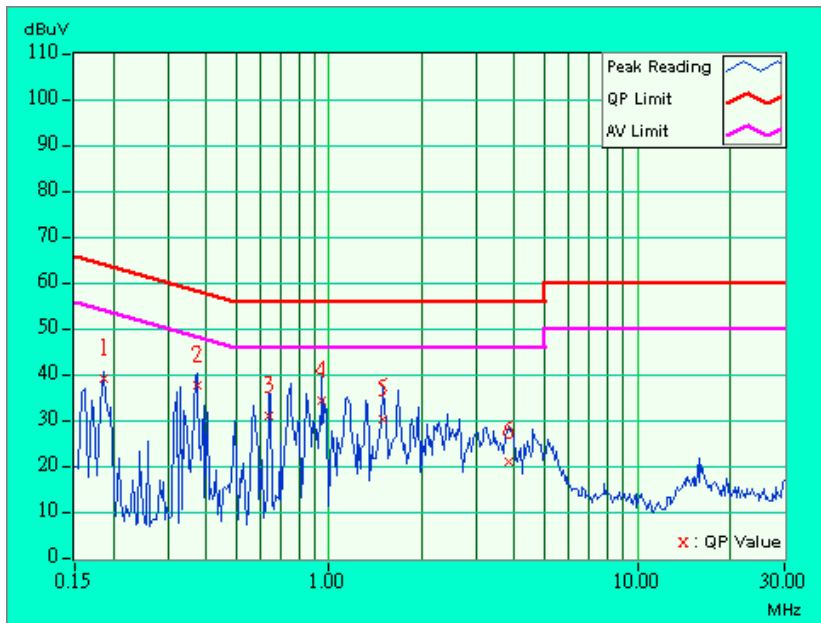


<b>EUT</b>	Pocket PC	<b>MODEL</b>	<b>EUT</b>
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	<b>MODE</b>
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	<b>INPUT POWER (SYSTEM)</b>
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.185	0.06	38.96	-	39.02	-	64.25	54.25	-25.23	-
2	0.373	0.06	37.57	-	37.63	-	58.44	48.44	-20.81	-
3	0.642	0.10	30.86	-	30.96	-	56.00	46.00	-25.04	-
4	0.951	0.15	34.16	-	34.31	-	56.00	46.00	-21.69	-
5	1.488	0.17	30.24	-	30.41	-	56.00	46.00	-25.59	-
6	3.852	0.22	20.91	-	21.13	-	56.00	46.00	-34.87	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value



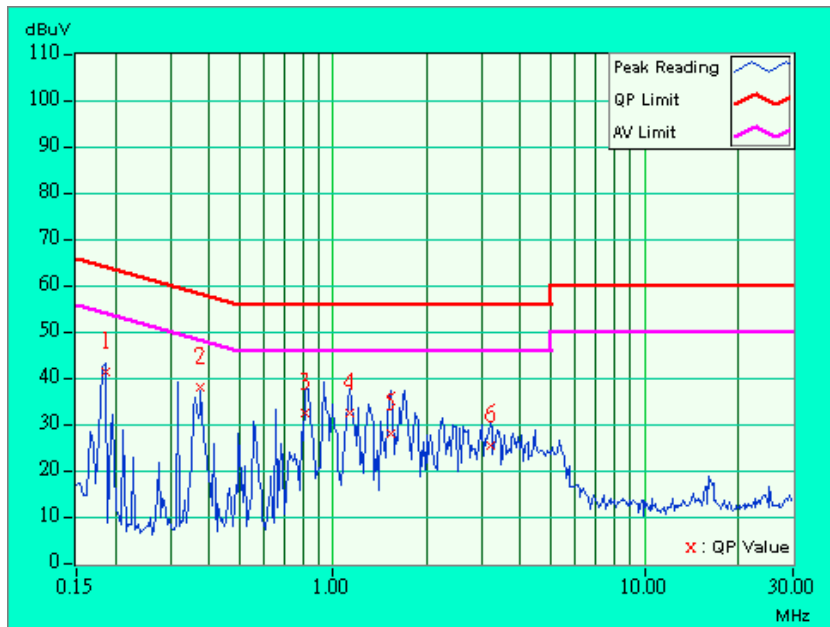


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 11	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.185	0.05	41.18	-	41.23	-	64.25	54.25	-23.02	-
2	0.372	0.05	37.94	-	37.99	-	58.45	48.45	-20.46	-
3	0.818	0.13	32.43	-	32.56	-	56.00	46.00	-23.44	-
4	1.133	0.16	32.36	-	32.52	-	56.00	46.00	-23.48	-
5	1.531	0.17	27.85	-	28.02	-	56.00	46.00	-27.98	-
6	3.191	0.20	25.42	-	25.62	-	56.00	46.00	-30.38	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value





## 4.2 Radiated Emission Measurement

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

#### NOTE

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8594E	3911A07465	July. 08, 2003
* HP Preamplifier	8447D	2944A10386	Aug. 15, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	836858/008	Dec.13, 2003
* SCHAFFNER BILOG Antenna	CBL6111C	2727	July. 17, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July. 03, 2003
* EMCO Horn Antenna	3115	9312-4192	March 24, 2004
* ADT. Turn Table	TT100	0201	NA
* ADT. Tower	AT100	0201	NA
* Software	ADT_Radiated_V5.06	NA	NA
* ANRITSU RF Switches	MP59B	6100237246	Oct. 30, 2003
* TIMES RF cable	LMR-600	CABLE-ST10-01	Oct. 30, 2003
* TIMES RF cable	LMR-600	CABLE-ST5-01	Jul. 11. 2003

- NOTE:**
1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
  2. "\*" = These equipment are used for the final measurement.
  3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
  4. The test was performed in ADT Open Site No. 5.
  5. The VCCI Site Registration No. is R-1039.



#### 4.2.2 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

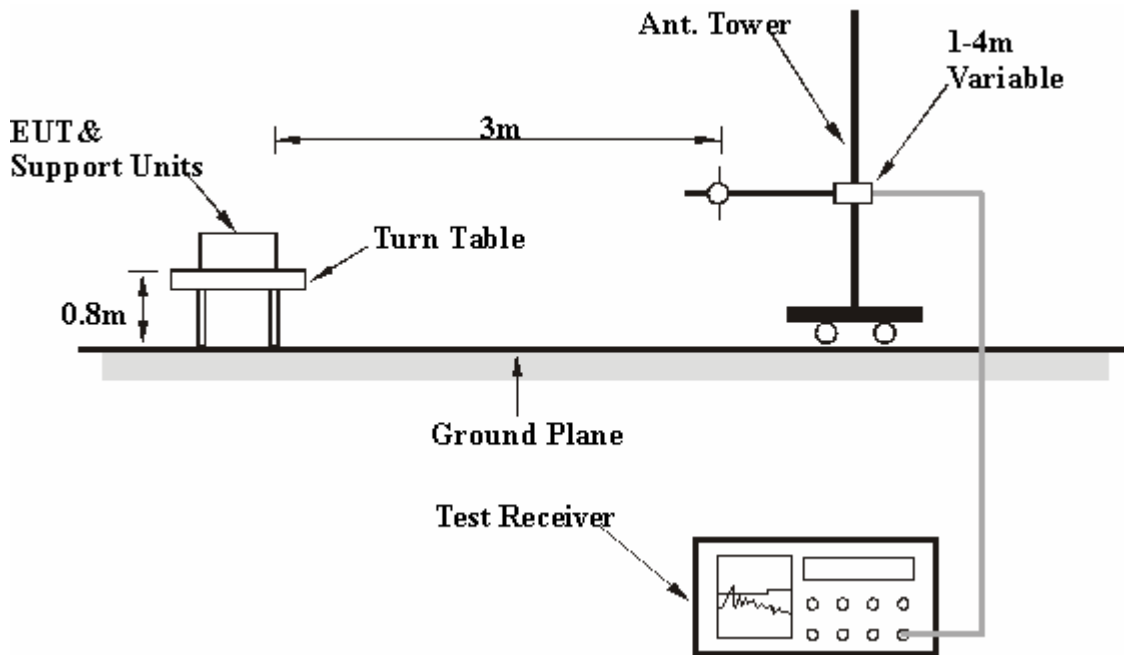
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.3 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.4 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.2.5 EUT OPERATING CONDITIONS

Same as 4.1.6





## 4.1.7 TEST RESULTS

<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	172.40	30.4 QP	43.5	-13.1	1.18 H	320	20.5	9.9
2	209.40	31.2 QP	43.5	-12.3	1.57 H	85	21.0	10.2
3	268.10	30.8 QP	46.0	-15.2	1.16 H	308	16.8	14.0
4	298.50	35.0 QP	46.0	-11.0	1.30 H	228	20.5	14.5
5	420.00	26.8 QP	46.0	-19.2	1.24 H	1	8.7	18.0
6	478.50	30.2 QP	46.0	-15.8	1.74 H	85	10.9	19.3
7	497.68	32.0 QP	46.0	-14.0	1.38 H	239	12.3	19.7
8	748.00	33.3 QP	46.0	-12.7	1.36 H	120	8.7	24.7

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	143.75	30.6 QP	43.5	-12.9	1.40 V	1	18.8	11.8
2	172.33	32.7 QP	43.5	-10.8	1.35 V	78	22.8	9.9
2	240.00	33.3 QP	46.0	-12.7	1.35 V	297	20.6	12.7
3	298.20	34.0 QP	46.0	-12.0	1.15 V	81	19.5	14.5
4	478.20	31.0 QP	46.0	-15.0	1.30 V	62	11.7	19.3
4	497.62	34.1 QP	46.0	-11.9	1.53 V	20	14.4	19.7

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.



<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 1	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991hPa	<b>TESTED BY:</b> Gary Chang	

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2038.00	43.4 PK	74.00	-30.60	1.15 H	38	12.00	31.40
2	*2412.00	97.7 PK			1.30 H	85	64.70	33.00
2	*2412.00	90.6 AV			1.30 H	85	57.60	31.40
3	4824.00	46.0 PK	74.00	-28.00	1.40 H	35	5.50	40.50
4	7236.00	52.6 PK	74.00	-21.40	1.04 H	88	7.60	45.00
4	7236.00	38.4 AV	54.00	-15.60	1.04 H	88	-6.60	33.00

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2038.00	46.4 PK	74.00	-27.60	1.15 V	30	15.00	31.40
2	*2412.00	96.4 PK			1.17 V	32	63.40	33.00
2	*2412.00	89.1 AV			1.17 V	32	56.10	31.40
3	4824.00	44.9 PK	74.00	-29.10	1.30 V	228	4.40	40.50
4	7236.00	53.3 PK	74.00	-20.70	1.17 V	85	8.30	45.00
4	7236.00	40.4 AV	54.00	-13.60	1.17 V	85	-4.60	33.00

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “ : Fundamental frequency



<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 6	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2063.00	45.5 PK	74.00	-28.50	1.32 H	95	17.10	28.40
2	*2437.00	102.6 PK			1.43 H	62	72.90	29.70
2	*2437.00	94.7 AV			1.43 H	62	65.00	28.40
3	4126.00	43.4 PK	74.00	-30.60	1.19 H	57	9.70	33.70
4	4874.00	45.9 PK	74.00	-28.10	1.46 H	252	10.70	35.20
5	7311.00	47.9 PK	74.00	-26.10	1.15 H	85	7.40	40.50

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2063.00	45.8 PK	74.00	-28.20	1.41 H	52	14.50	31.30
2	*2437.00	99.8 PK			1.17 H	85	66.80	33.00
2	*2437.00	91.0 AV			1.17 H	85	58.00	31.30
3	4874.00	46.0 PK	74.00	-28.00	1.04 H	227	5.40	40.60
4	7312.00	55.0 PK	74.00	-19.00	1.17 H	62	9.50	45.50
4	7312.00	43.8 AV	54.00	-10.20	1.17 H	62	-1.70	33.00

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “ : Fundamental frequency



<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2088.00	44.6 PK	74.00	-29.40	1.30 H	74	13.30	31.30
2	*2462.00	97.9 PK			1.13 H	52	64.80	33.10
2	*2462.00	90.0 AV			1.13 H	52	56.90	31.30
3	4924.00	46.5 PK	74.00	-27.50	1.52 H	30	5.90	40.60
4	7383.00	54.3 PK	74.00	-19.70	1.24 H	52	8.80	45.50
4	7383.00	38.9 AV	54.00	-15.10	1.24 H	52	-6.60	33.10

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2088.00	44.5 PK	74.00	-29.50	1.30 V	62	13.20	31.30
2	*2465.00	94.5 PK			1.52 V	88	61.40	33.10
2	*2465.00	86.6 AV			1.52 V	88	53.50	31.30
3	4924.00	46.1 PK	74.00	-27.90	1.18 V	335	5.50	40.60
4	7383.00	55.1 PK	74.00	-18.90	1.15 V	3	9.60	45.50
4	7383.00	41.7 AV	54.00	-12.30	1.15 V	3	-3.80	33.10

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. " \* " : Fundamental frequency



## 4.3 6DB BANDWIDTH MEASUREMENT

### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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

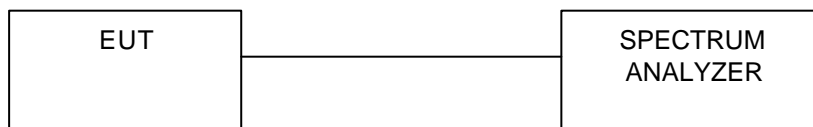
### 4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100 kHz RBW and 100 kHz VBW. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.3.5 TEST SETUP



### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



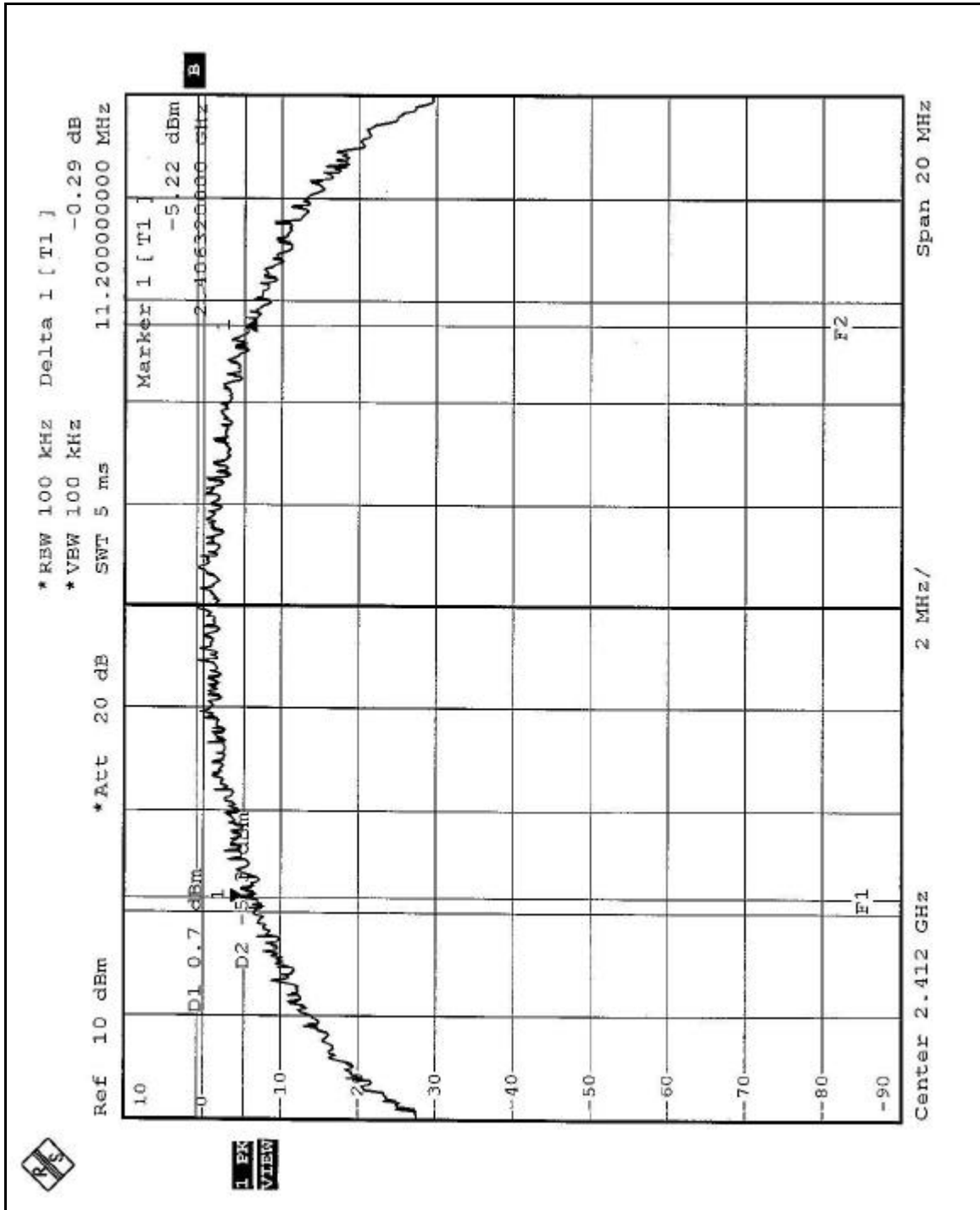
## 4.3.7 TEST RESULTS

<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	23deg. C, 59%RH, 991 hPa
<b>TESTED BY:</b> Cody Chang			

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>6dB BANDWIDTH (MHz)</b>	<b>MINIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
1	2412	11.20	0.5	PASS
6	2437	10.80	0.5	PASS
11	2462	10.64	0.5	PASS



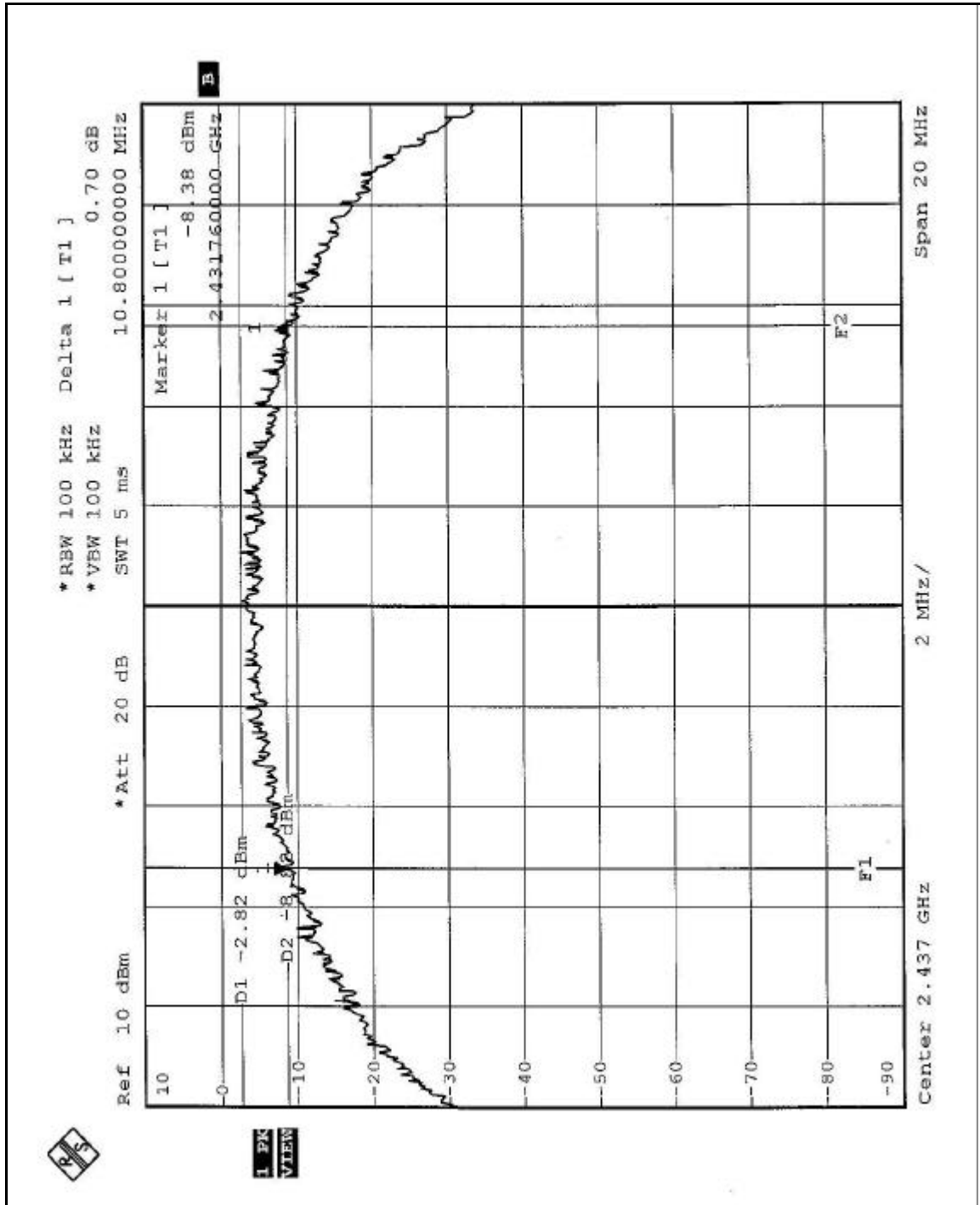
CH1





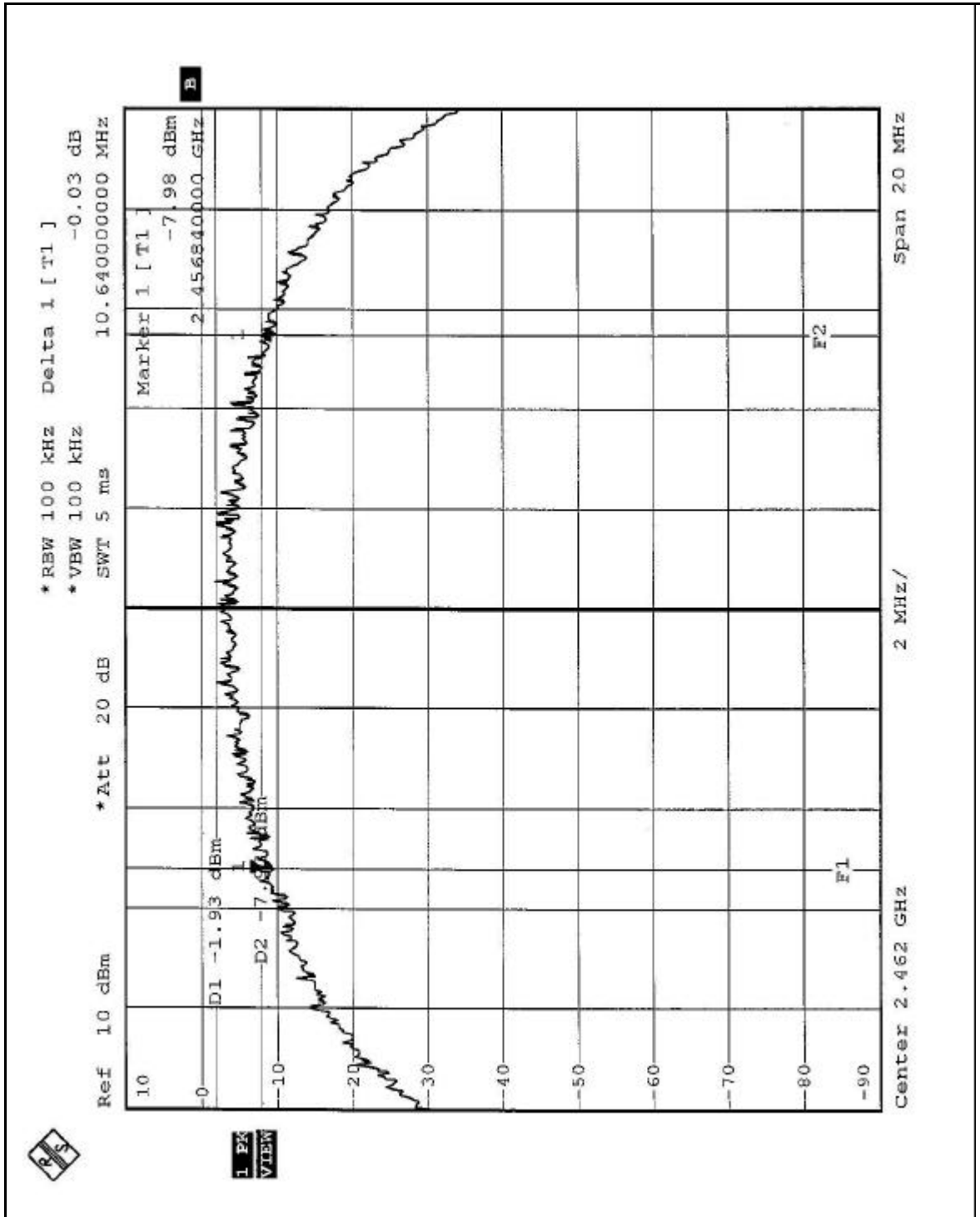


CH6





CH11





## 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	FSEK30	100049	Jul. 24, 2003
R&S SIGNAL GENERATOR	SMP04	100011	May 28, 2004
TEKTRONIX OSCILLOSCOPE	TDS 220	B048470	Mar. 05, 2004
NARDA DETECTOR	4503A	FSCM99899	NA

**NOTE:**

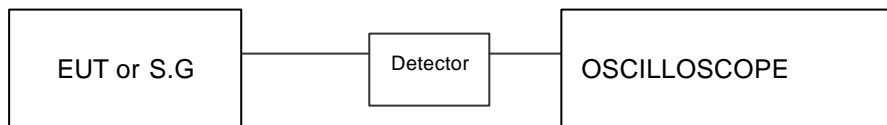
The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.



#### 4.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the 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 reading on oscilloscope. Record the power level.

#### 4.4.4 TEST SETUP



#### 4.4.5 EUT OPERATING CONDITIONS

Same as Item 4.3.5



4.4.1 TEST RESULTS

<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mis 558
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 64%RH, 991 hPa
<b>TESTED BY:</b> Steven Lu			

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>PEAK POWER OUTPUT (dBm)</b>	<b>PEAK POWER LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	13.02	30	PASS
6	2437	13.00	30	PASS
11	2462	13.04	30	PASS



## 4.2 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	FSEK30	100049	July 24, 2003

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

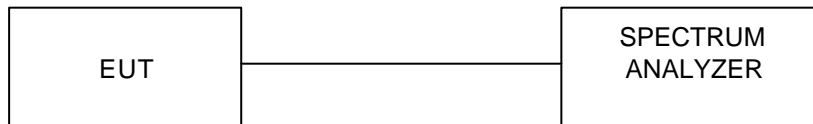
#### 4.5.3 TEST PROCEDURE

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 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 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

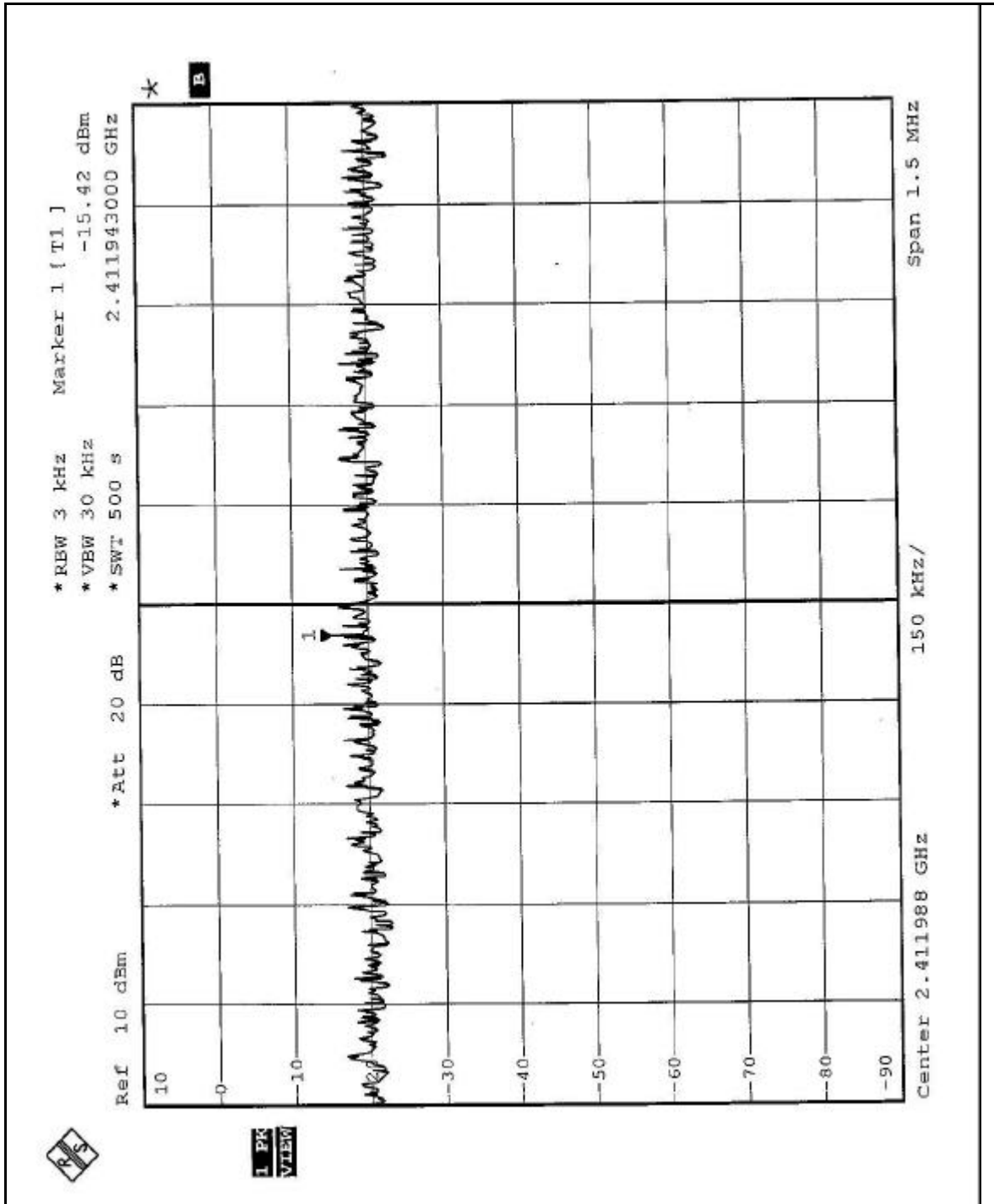
<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>ENVIRONMENTAL CONDITIONS</b>	27deg. C, 64%RH, 991 hPa
<b>TESTED BY:</b> Cody Chang			

<b>CHANNEL NUMBER</b>	<b>CHANNEL FREQUENCY (MHz )</b>	<b>RF POWER LEVEL IN 3 KHz BW (dBm)</b>	<b>MAXIMUM LIMIT (dBm)</b>	<b>PASS/FAIL</b>
1	2412	-15.42	8	PASS
6	2437	-16.31	8	PASS
11	2462	-16.45	8	PASS



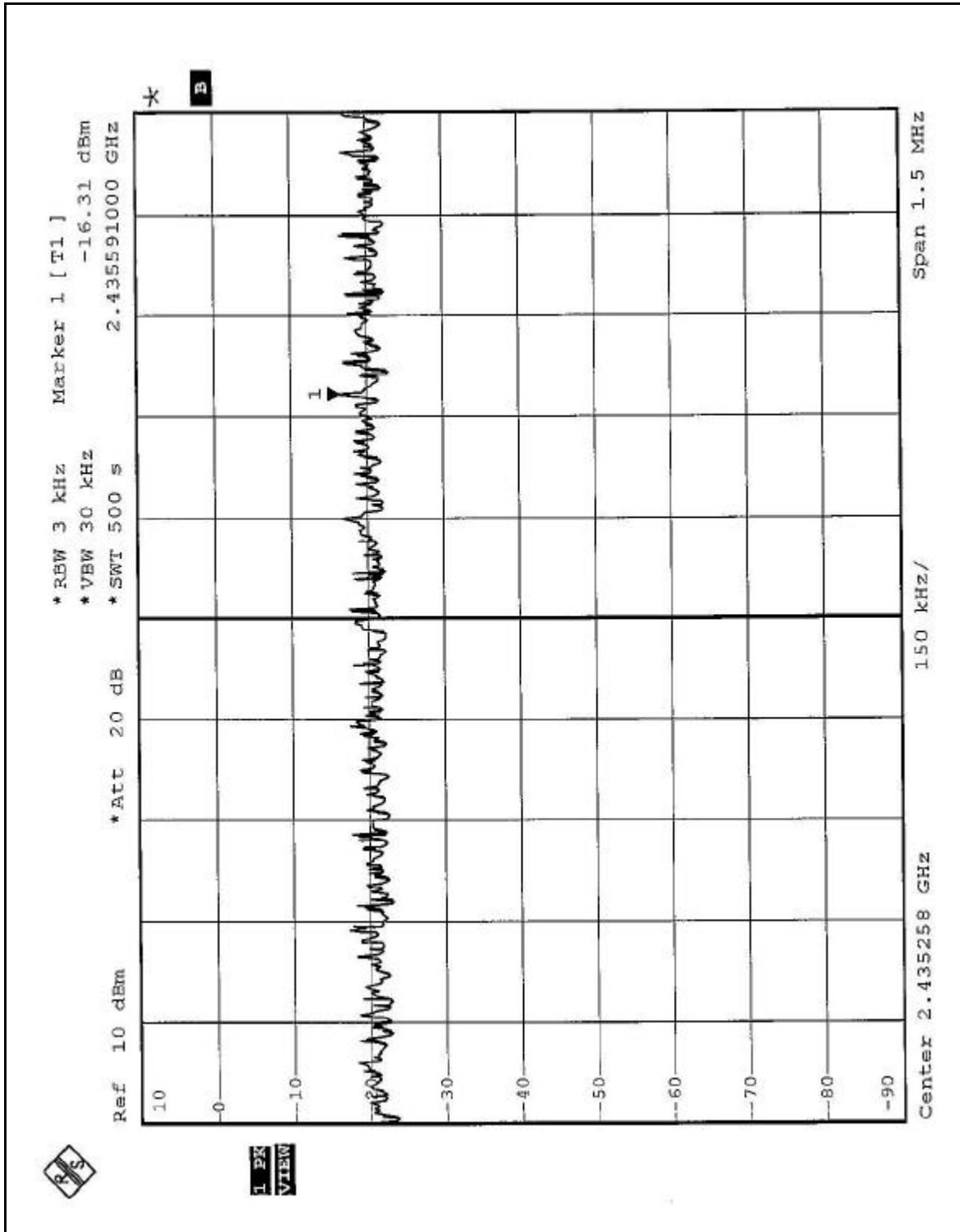


CH1



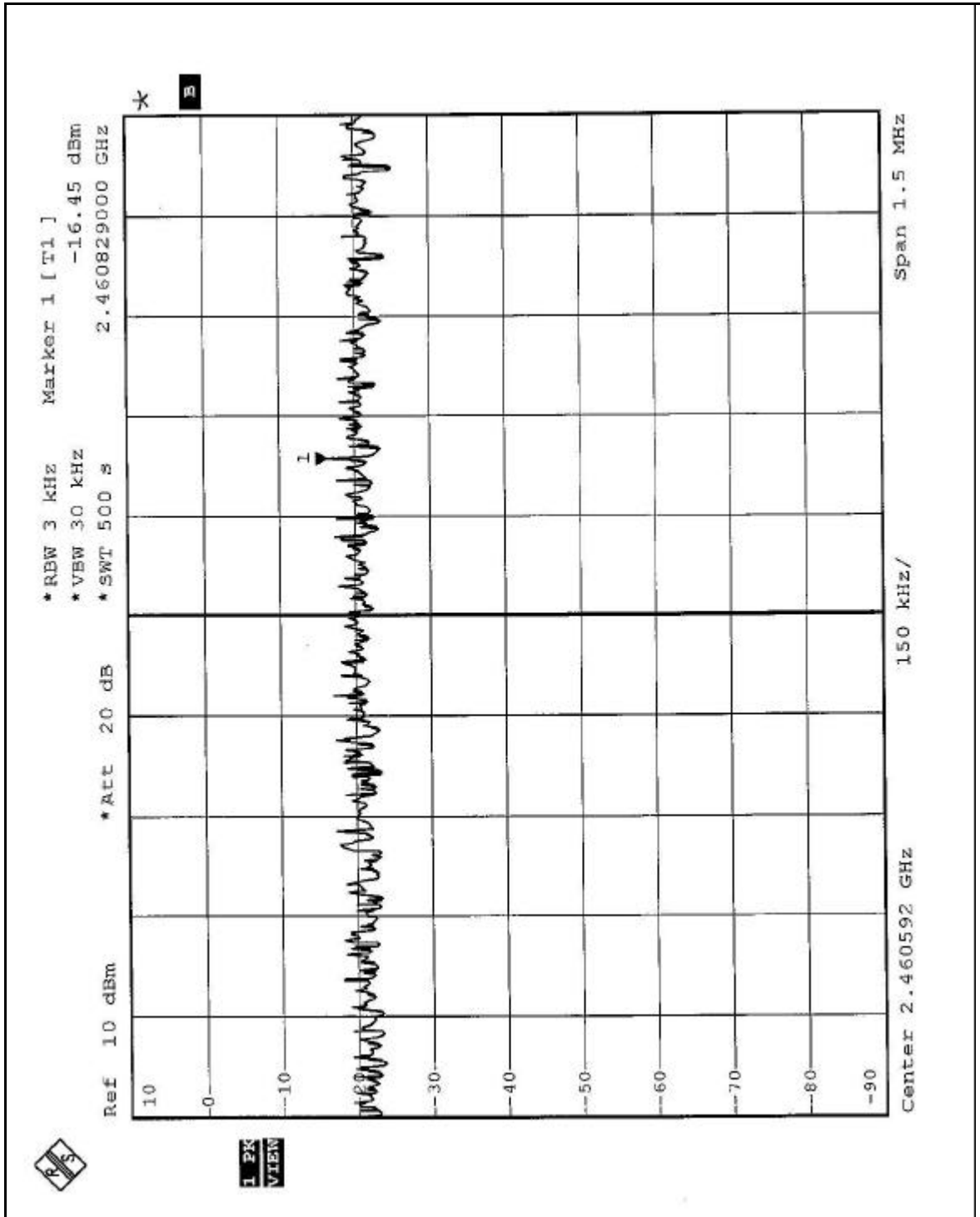


CH6





CH11





## 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	FSEK30	100049	July 24, 2003

**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 loss 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 DEVIATION FROM TEST STANDARD

No deviation



#### 4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 4.6.6 TEST RESULTS

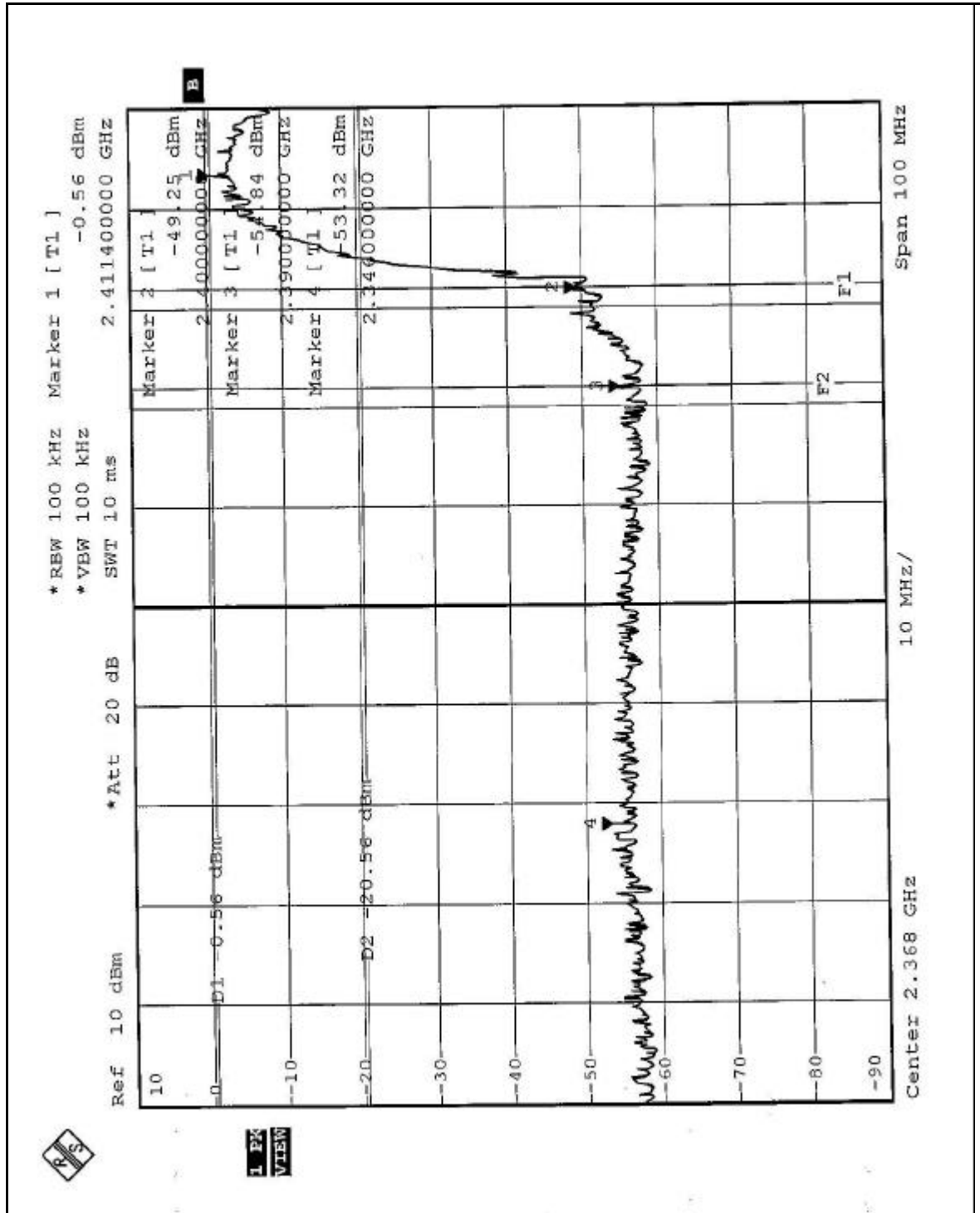
The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

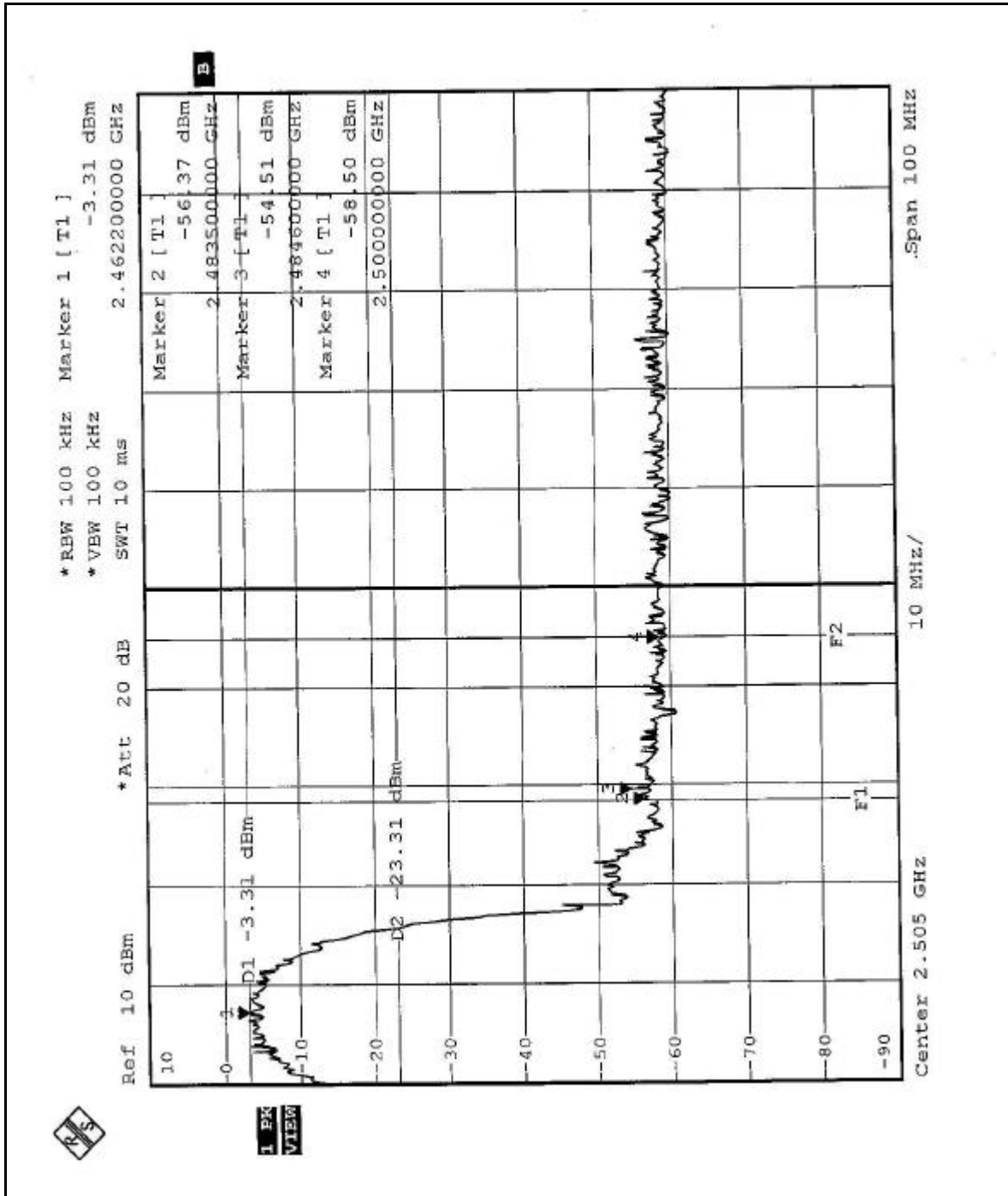
**NOTE1:**

The band edge emission plot on the following two pages shows 52.76dB delta between carrier maximum power and local maximum emission in restrict band (2.346GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 90.60dBuV/m, so the maximum field strength in restrict band is  $90.60 - 52.76 = 37.84$ dBuV/m which is under 54 dBuV/m limit.

**NOTE2:**

The band edge emission plot on the following two pages shows 51.20dB delta between carrier maximum power and local maximum emission in restrict band (2.485GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 90.00dBuV/m, so the maximum field strength in restrict band is  $90.00 - 51.20 = 38.80$ dBuV/m which is under 54 dBuV/m limit.







## **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 Inverted-F antenna with UFL antenna connector. And the maximum Gain of these antennas is 0dBi.





## 5 TEST RESULTS (FOR BLUETOOTH FUNCTION)

### 5.1 CONDUCTED EMISSION MEASUREMENT

#### 5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB $\mu$ V)	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 5.1.2 TEST INSTRUMENTS

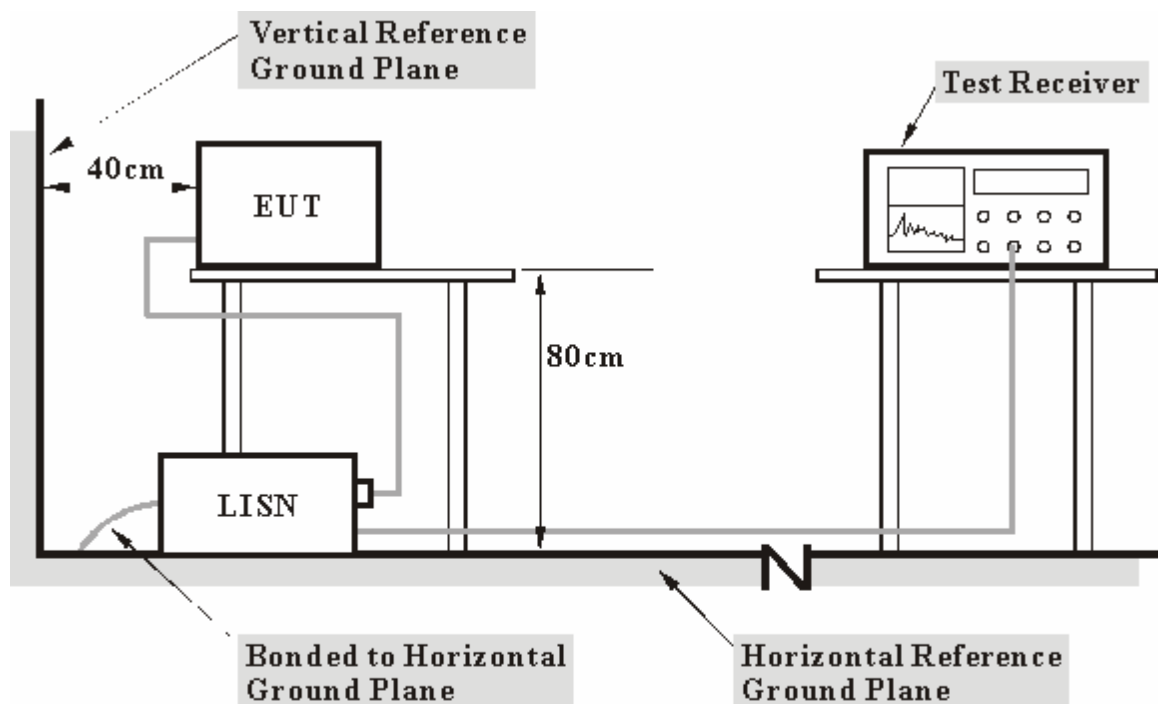
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS30	828109/007	July 03, 2003
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	839135/006	July 02, 2003
* ROHDE & SCHWARZ 4-wire ISN	ENY41	838119/028	Nov. 29, 2003
* ROHDE & SCHWARZ 2-wire ISN	ENY22	837497/016	Nov. 29, 2003
EMCO-L.I.S.N. (for peripheral)	3825/2	9204-1964	July 02, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYBAO)	5D-FB	Cable-C02.01	July 5, 2003
HP Terminator (For EMCO LISN)	11593A	E1-01-298	Feb. 23, 2004
HP Terminator (For EMCO LISN)	11593A	E1-01-299	Feb. 23, 2004
Shielded Room	Site 2	ADT-C02	NA
VCCI Site Registration No.	Site 2	C-240	NA

- NOTE:**
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
  2. “\*”: These equipment are used for conducted telecom port test only (if tested).
  3. The test was performed in ADT Shielded Room No. 2.
  4. The VCCI Site Registration No. is C-240.

### 5.1.3 TEST PROCEDURES

- d. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- e. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- f. The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 10dB under the prescribed limits could not be reported.

### 5.1.4 TEST SETUP



- Note:**
1. Support units were connected to second LISN.
  2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



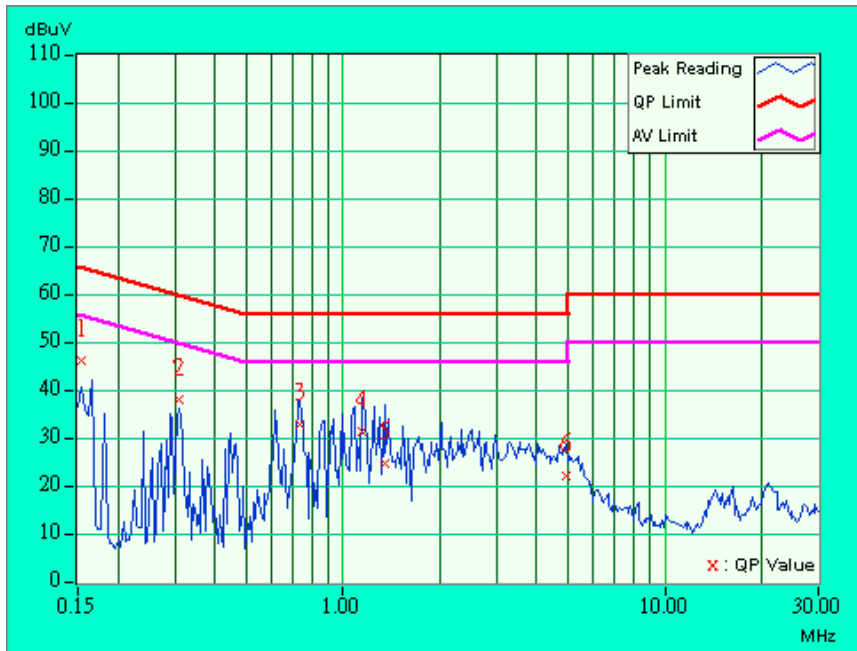
5.1.5 TEST RESULTS

<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 0	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.153	0.06	46.18	-	46.24	-	65.83	55.83	-19.59	-
2	0.310	0.06	37.85	-	37.91	-	59.97	49.97	-22.06	-
3	0.736	0.12	32.67	-	32.79	-	56.00	46.00	-23.21	-
4	1.145	0.16	31.14	-	31.30	-	56.00	46.00	-24.70	-
5	1.344	0.17	24.42	-	24.59	-	56.00	46.00	-31.41	-
6	4.949	0.25	21.84	-	22.09	-	56.00	46.00	-33.91	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



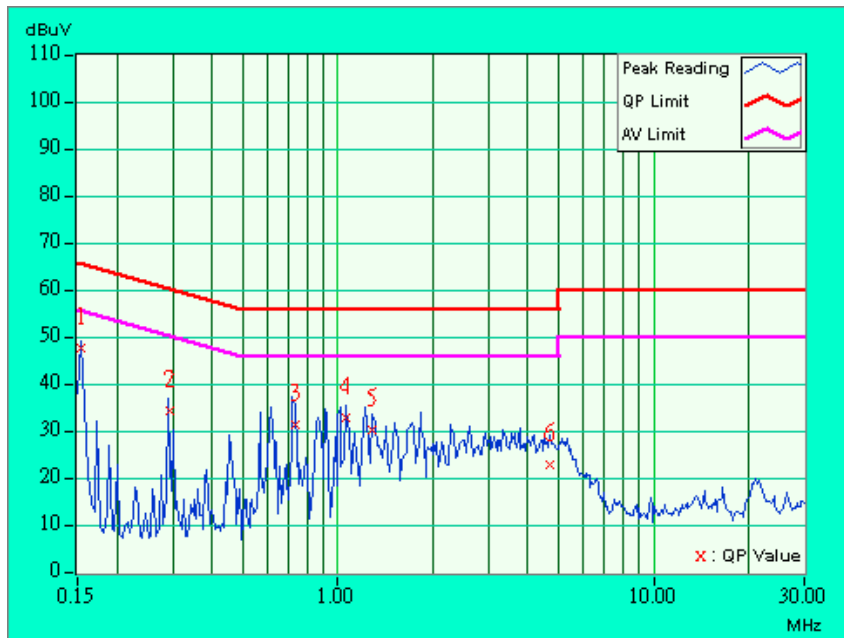


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 0	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.05	47.68	-	47.73	-	65.79	55.79	-18.06	-
2	0.295	0.05	34.30	-	34.35	-	60.40	50.40	-26.05	-
3	0.735	0.11	31.32	-	31.43	-	56.00	46.00	-24.57	-
4	1.063	0.16	32.56	-	32.72	-	56.00	46.00	-23.28	-
5	1.289	0.17	30.29	-	30.46	-	56.00	46.00	-25.54	-
6	4.664	0.23	22.91	-	23.14	-	56.00	46.00	-32.86	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.



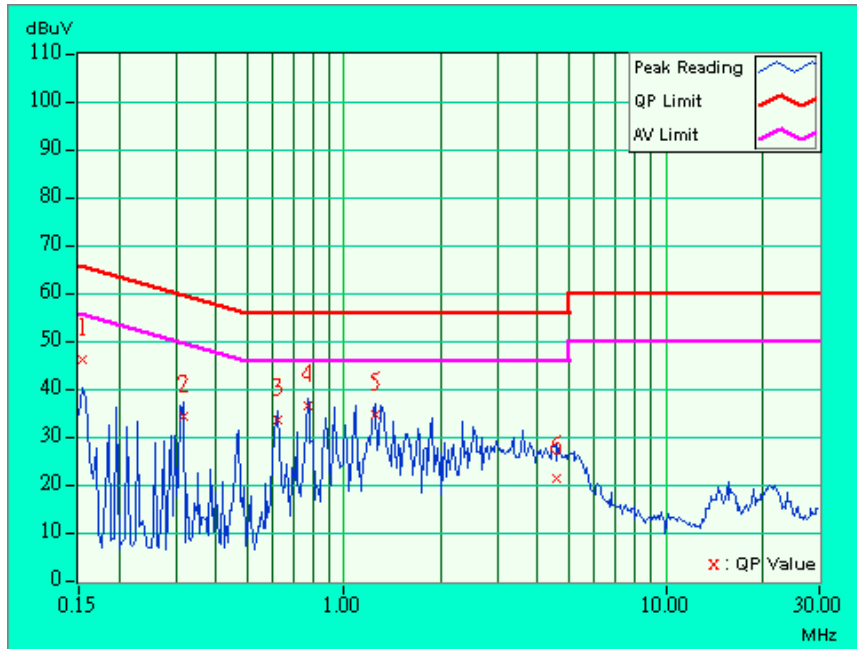


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 39	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.
1	0.154	0.06	45.89	-	45.95	-	65.79	55.79	-19.84	-
2	0.318	0.06	34.16	-	34.22	-	59.76	49.76	-25.54	-
3	0.619	0.10	33.62	-	33.72	-	56.00	46.00	-22.28	-
4	0.775	0.12	36.49	-	36.61	-	56.00	46.00	-19.39	-
5	1.246	0.16	34.54	-	34.70	-	56.00	46.00	-21.30	-
6	4.566	0.24	21.34	-	21.58	-	56.00	46.00	-34.42	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value



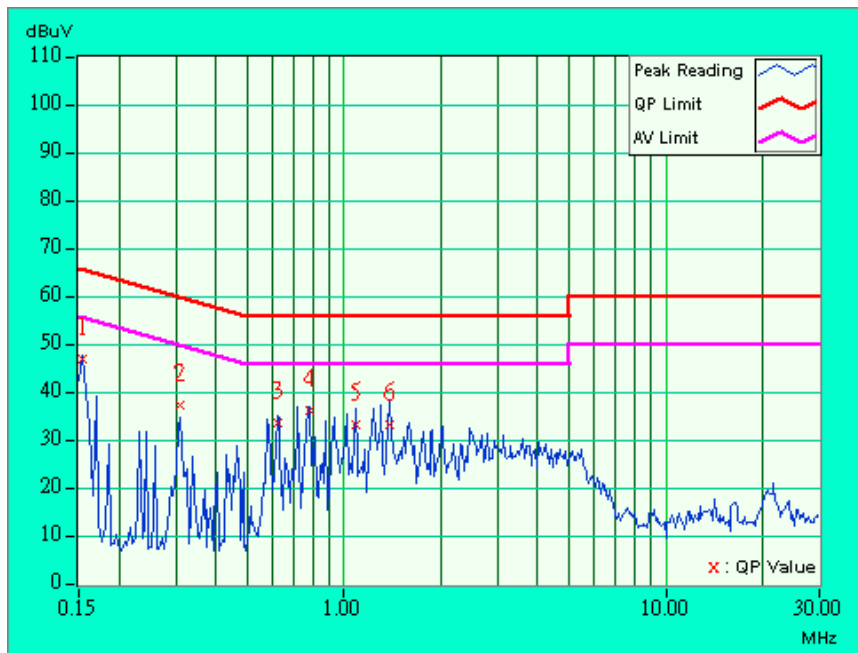


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 39	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (Uv)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.05	46.89	-	46.94	-	65.79	55.79	-18.85	-
2	0.310	0.05	37.32	-	37.37	-	59.97	49.97	-22.60	-
3	0.619	0.09	33.60	-	33.69	-	56.00	46.00	-22.31	-
4	0.779	0.12	36.02	-	36.14	-	56.00	46.00	-19.86	-
5	1.082	0.16	33.12	-	33.28	-	56.00	46.00	-22.72	-
6	1.395	0.17	33.05	-	33.22	-	56.00	46.00	-22.78	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value



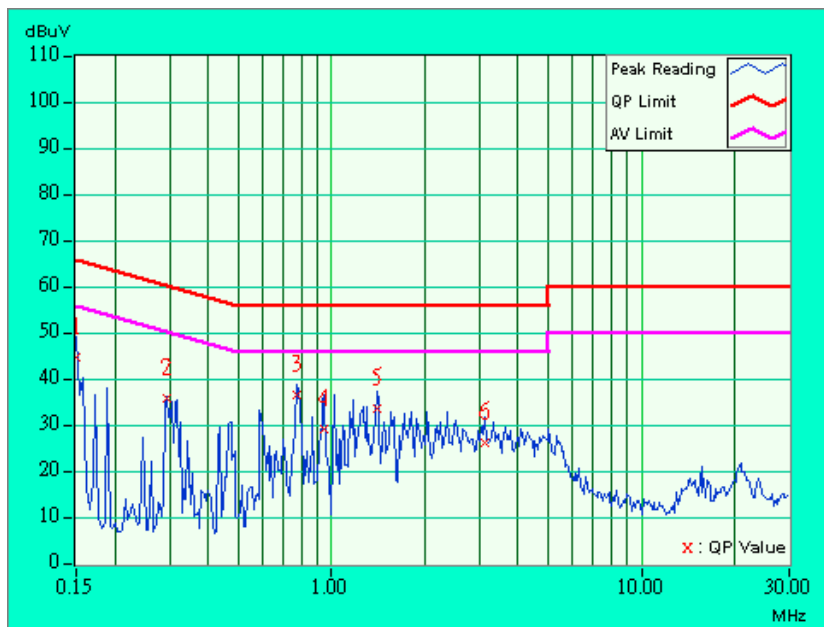


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 78	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Line (L)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.150	0.05	44.48	-	44.53	-	66.00	56.00	-21.47	-
2	0.295	0.06	35.83	-	35.89	-	60.40	50.40	-24.51	-
3	0.775	0.12	36.47	-	36.59	-	56.00	46.00	-19.41	-
4	0.947	0.15	28.95	-	29.10	-	56.00	46.00	-26.90	-
5	1.402	0.17	33.56	-	33.73	-	56.00	46.00	-22.27	-
6	3.145	0.20	25.93	-	26.13	-	56.00	46.00	-29.87	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value



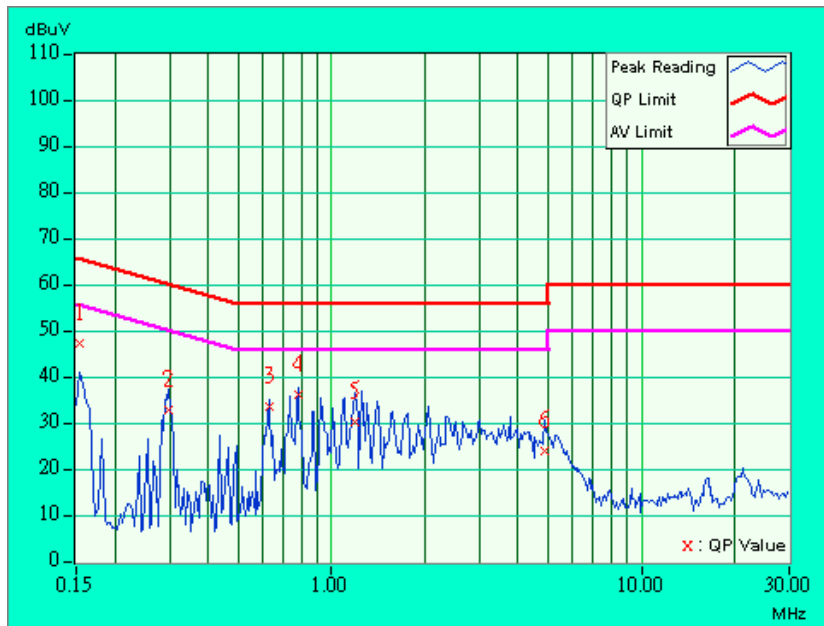


<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 78	<b>6dB BANDWIDTH</b>	9 kHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>PHASE</b>	Neutral (N)
<b>ENVIRONMENTAL CONDITIONS</b>	25deg. C, 60%RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

No	Freq.	Corr. Factor	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
	[MHz]		Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.154	0.05	47.07	-	47.12	-	65.79	55.79	-18.67	-
2	0.298	0.05	32.70	-	32.75	-	60.29	50.29	-27.54	-
3	0.627	0.09	33.59	-	33.68	-	56.00	46.00	-22.32	-
4	0.783	0.12	36.00	-	36.12	-	56.00	46.00	-19.88	-
5	1.191	0.16	30.17	-	30.33	-	56.00	46.00	-25.67	-
6	4.867	0.23	23.77	-	24.00	-	56.00	46.00	-32.00	-

**NOTE:**

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission level - Limit value
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading value







## 5.2 NUMBER OF HOPPING FREQUENCY USED

### 5.2.1 LIMIT OF HOPPING FREQUENCY USED

At least 15 hopping frequencies, and should be equally spaced.

### 5.2.2 TEST INSTRUMENTS

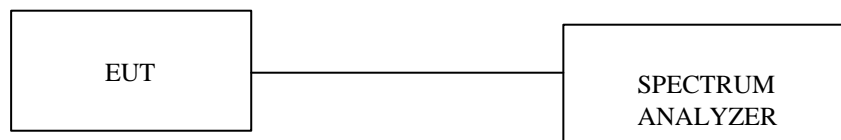
Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 17, 2003

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

### 5.2.3 TEST PROCEDURES

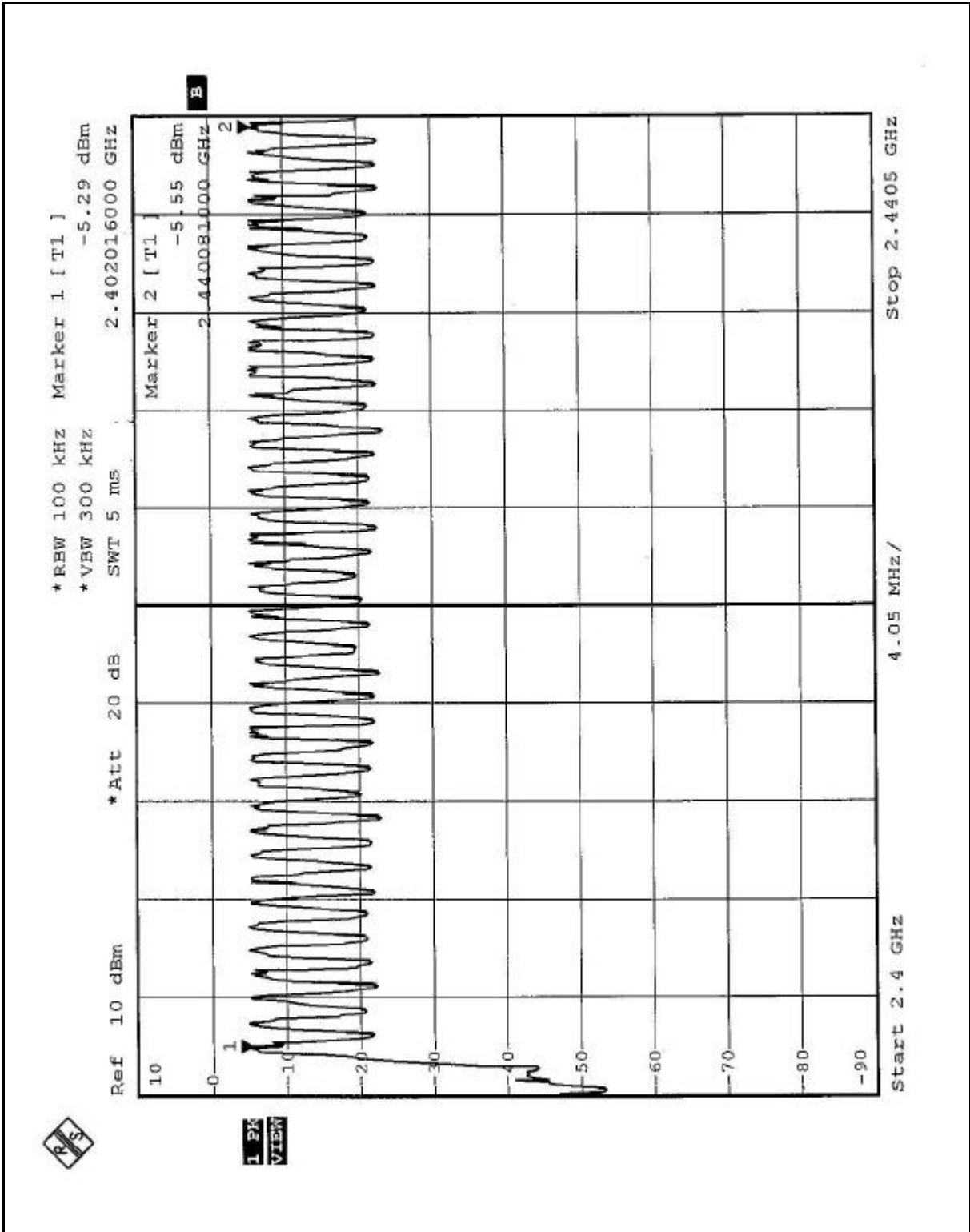
1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range.
3. Set the SA on MaxHold Mode, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been recorded.
4. Set the SA on View mode and then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

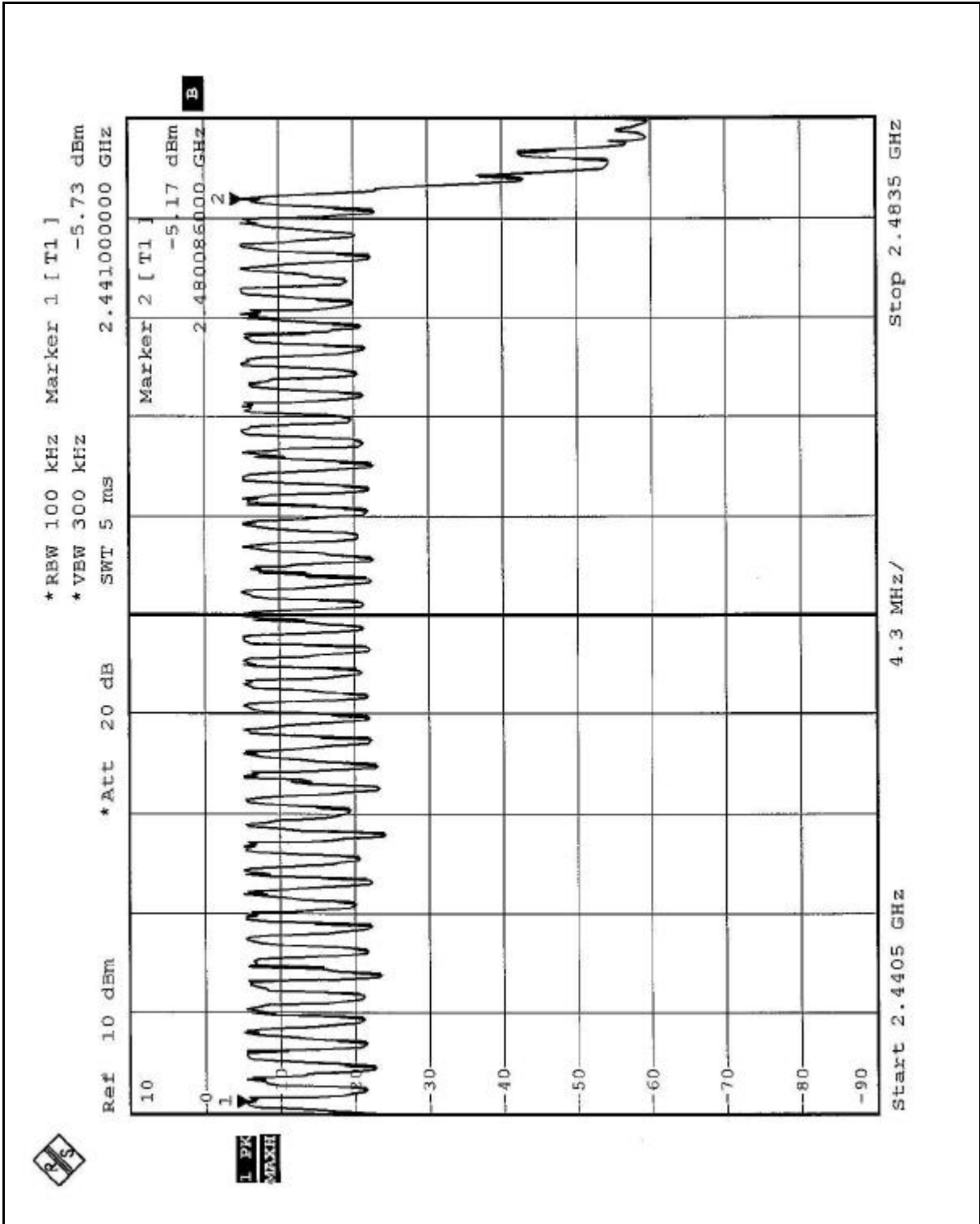
### 5.2.4 TEST SETUP



### 5.2.5 TEST RESULTS

There are 79 hopping frequencies in the hopping mode. Please refer to next two pages for the test result. On the plots, it shows that the hopping frequencies are equally spaced.







### 5.3 DWELL TIME ON EACH CHANNEL

#### 5.3.1 LIMIT OF DWELL TIME USED

For FHSS, the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 31.6 second period. For hybrid systems, the average time of occupancy on any frequency should not exceed 0.4 seconds within a time period in seconds equal to the number of hopping frequencies employed multiplied by 0.4.

#### 5.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 17, 2003

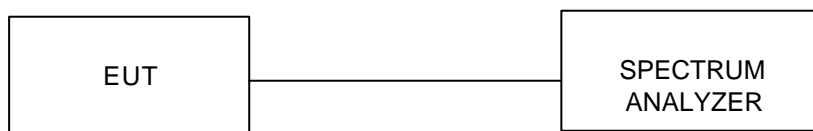
**NOTES:**

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

### 5.3.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument (SA) using either an internal calibrator or a known signal from an external generator..
2. Turn on the EUT and connect its antenna terminal to measurement via a low loss cable. Then set it to any one measured frequency within its operating range and make sure the instrument is operated in its linear range
3. Adjust the center frequency of SA on any frequency be measured and set SA to zero span mode. And then, set RBW and VBW of spectrum analyzer to proper value.
4. Measure the time duration of one transmission on the measured frequency. And then plot the result with time difference of this time duration.
5. Repeat above procedures until all frequencies measured were complete.

### 5.3.4 TEST SETUP





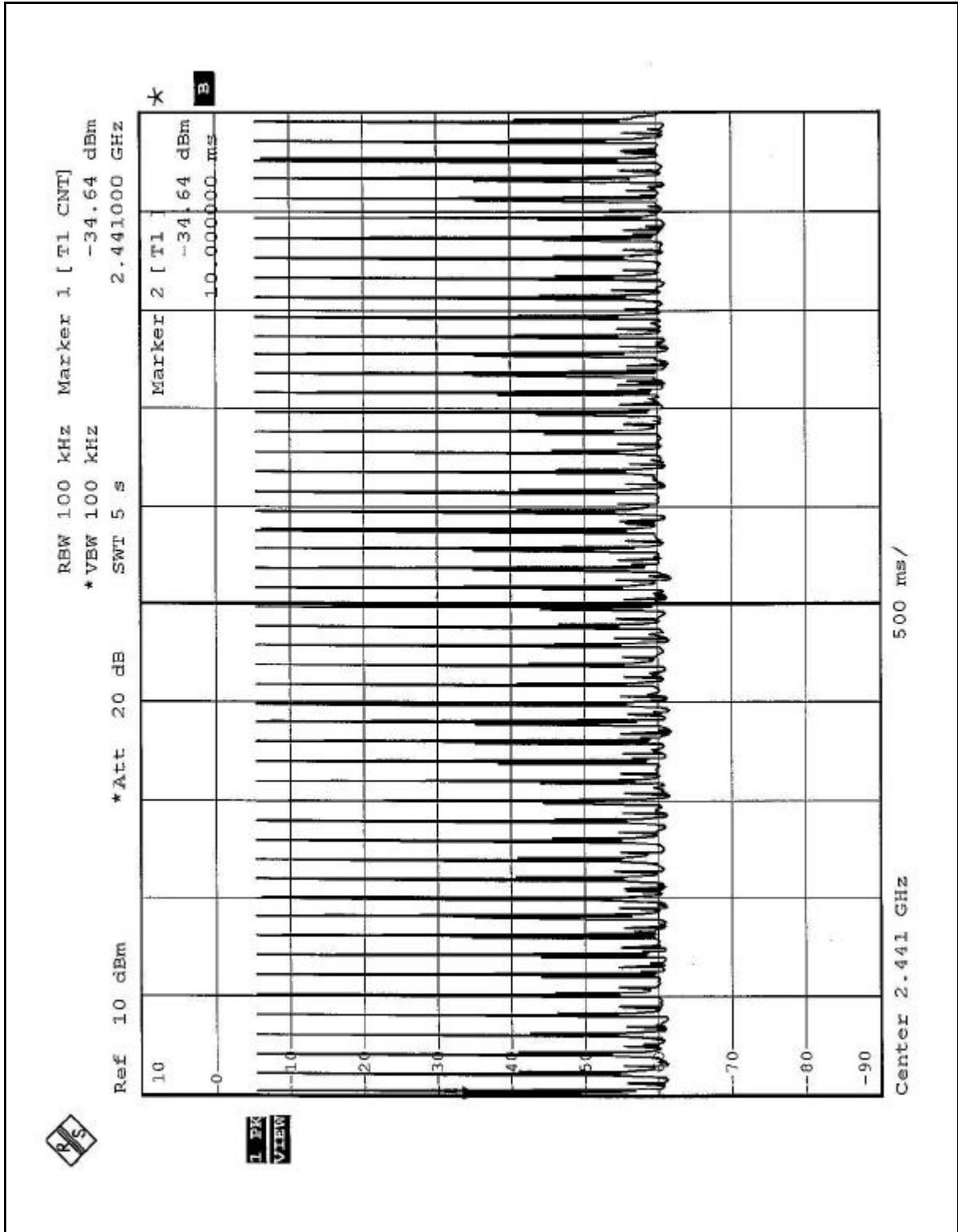
### 5.3.5 TEST RESULTS

Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	50 times / 5 sec *6.32=316.0 times	0.470	148.52	400
DH3	25 times / 5 sec *6.32= 158.0 times	1.730	273.34	400
DH5	17 times / 5 sec *6.32=101.2 times	2.980	321.84	400

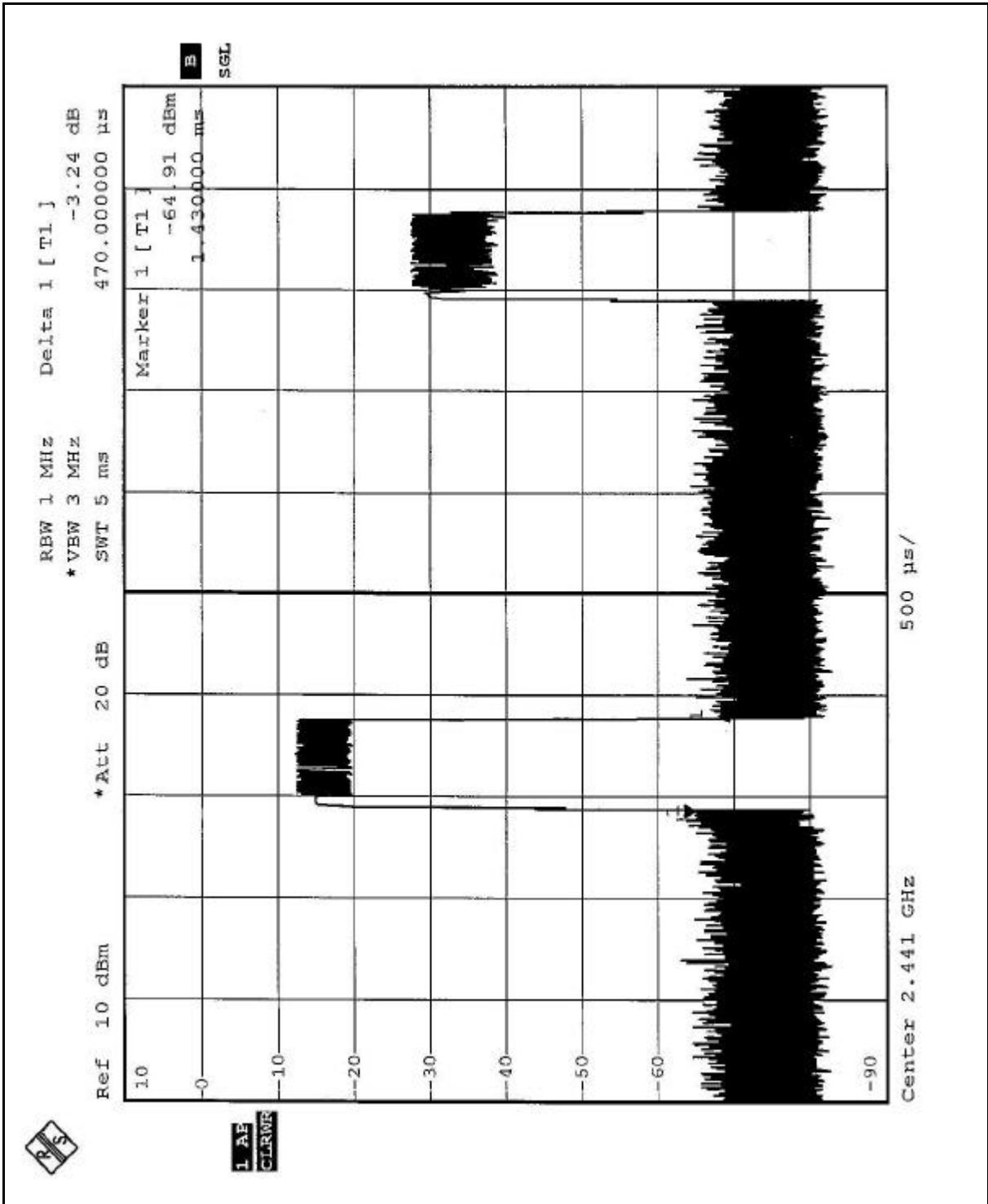
Test plots of the transmitting time slot are shown on next six pages.



DH 1

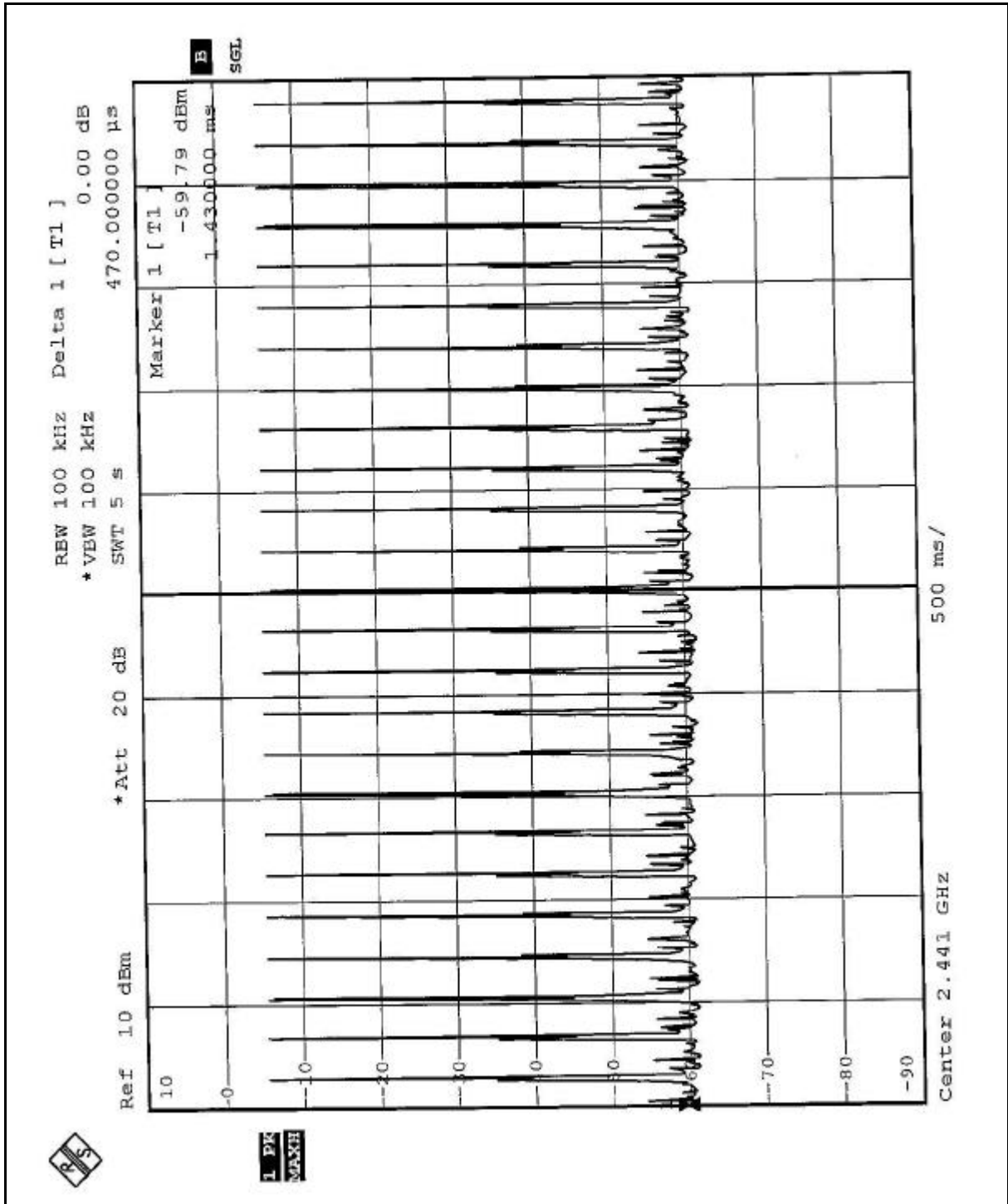


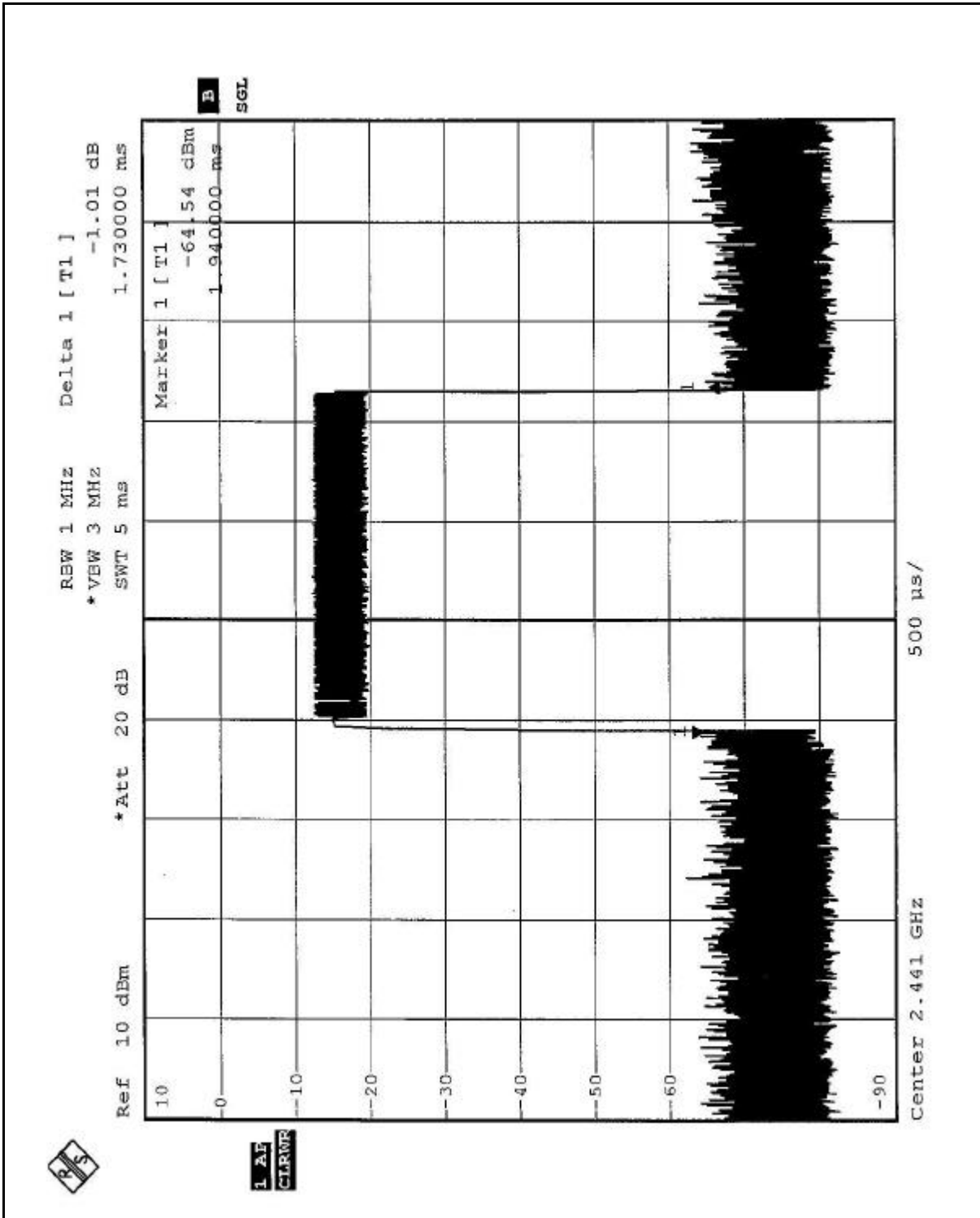






DH3











## 5.4 CHANNEL BANDWIDTH

### 5.4.1 LIMITS OF CHANNEL BANDWIDTH

For frequency hopping system operating in the 2400-2483.5 MHz and 5725-5850 MHz bands, the maximum 20 dB bandwidth of the hopping channel is 1 MHz.

### 5.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

#### NOTES:

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

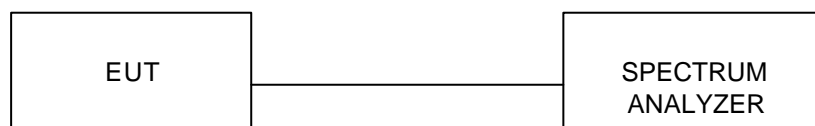
### 5.4.3 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
4. Repeat above procedures until all frequencies measured were complete.

### 5.4.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.4.5 TEST SETUP



### 5.4.6 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.



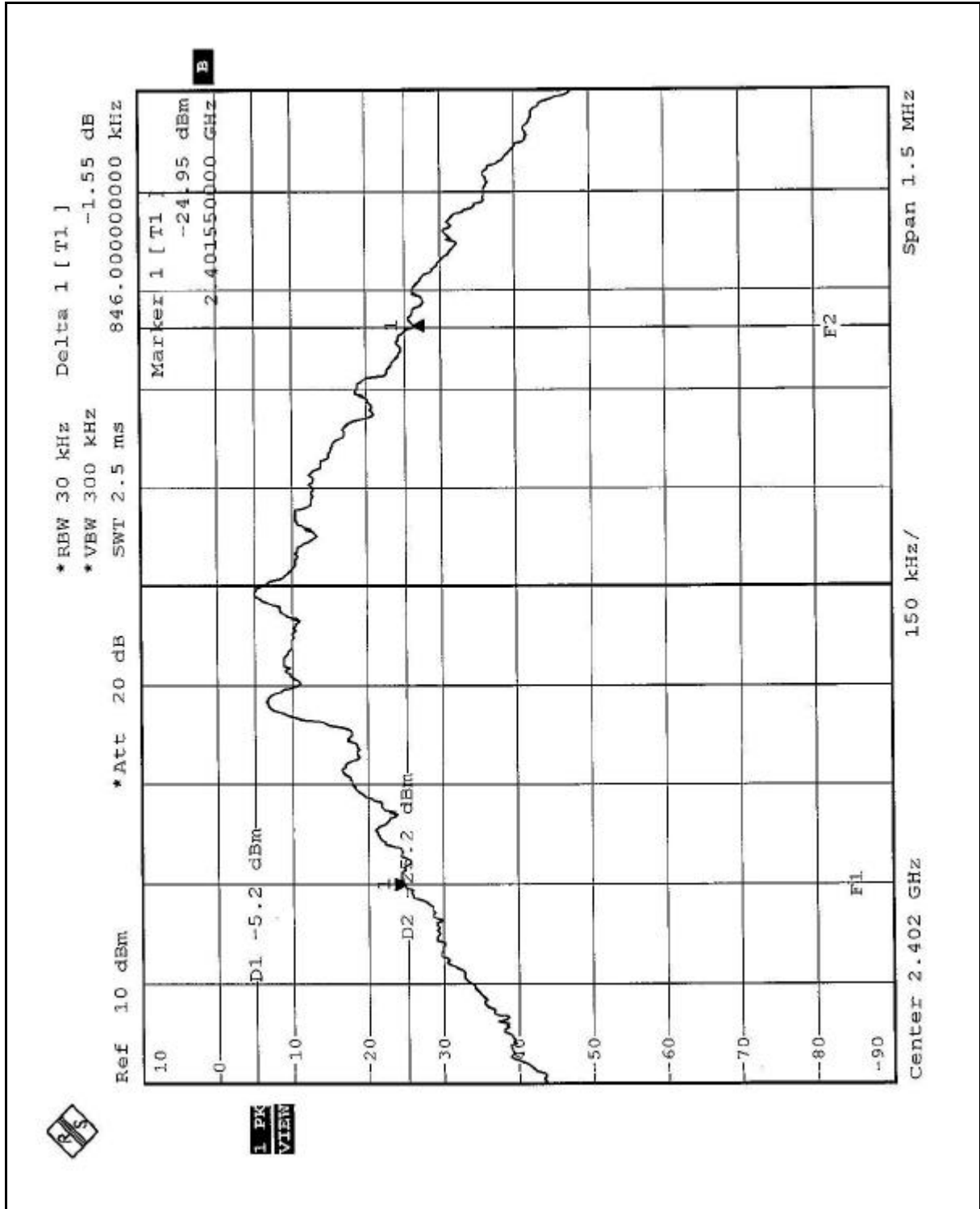
## 5.4.7 TEST RESULTS

<b>CHANNEL</b>	<b>CHANNEL FREQUENCY (MHz)</b>	<b>20dB BANDWIDTH (kHz)</b>	<b>MAXIMUM LIMIT (MHz)</b>	<b>PASS/FAIL</b>
0	2402	846	1	PASS
39	2441	837	1	PASS
78	2480	840	1	PASS



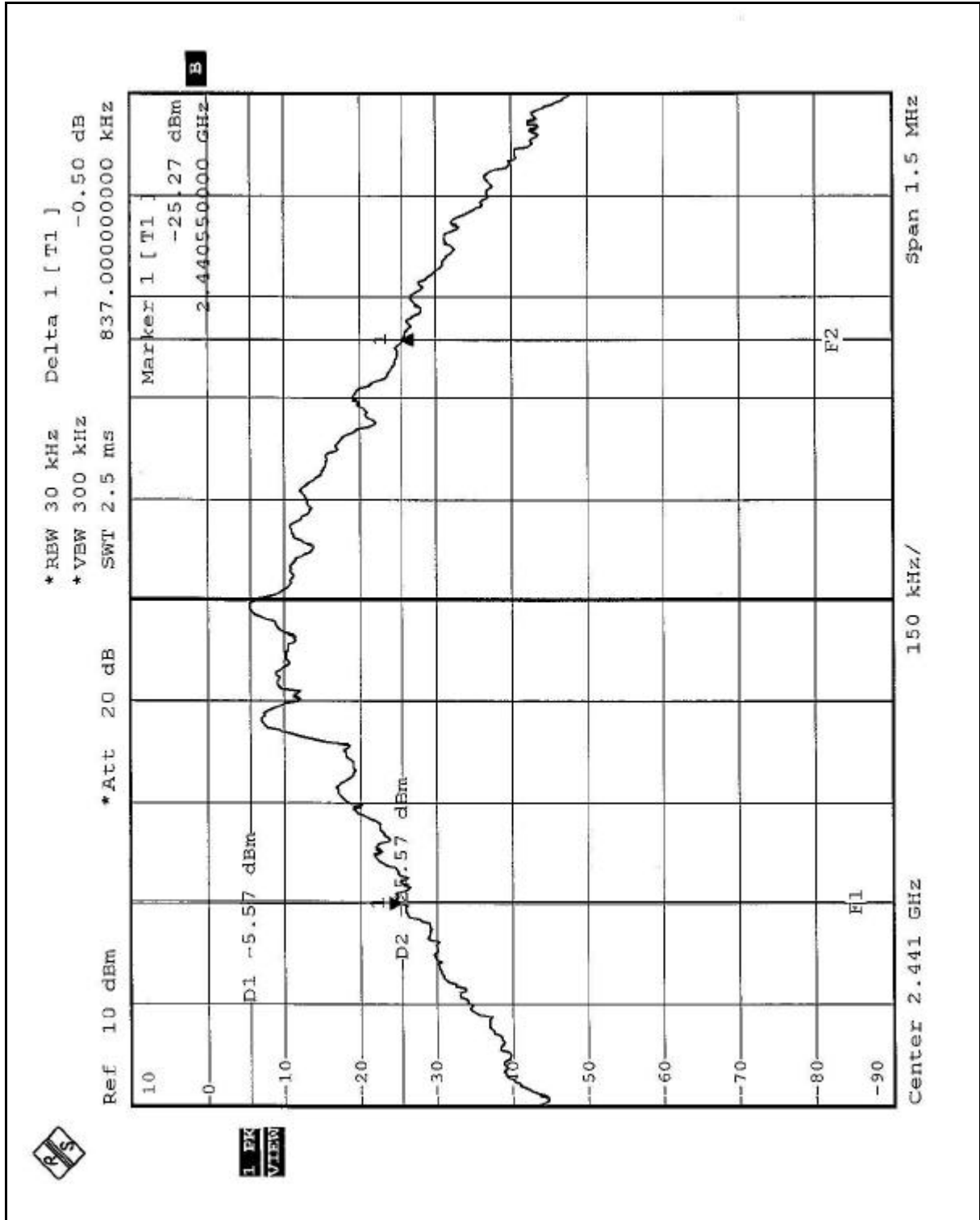


Channel 0



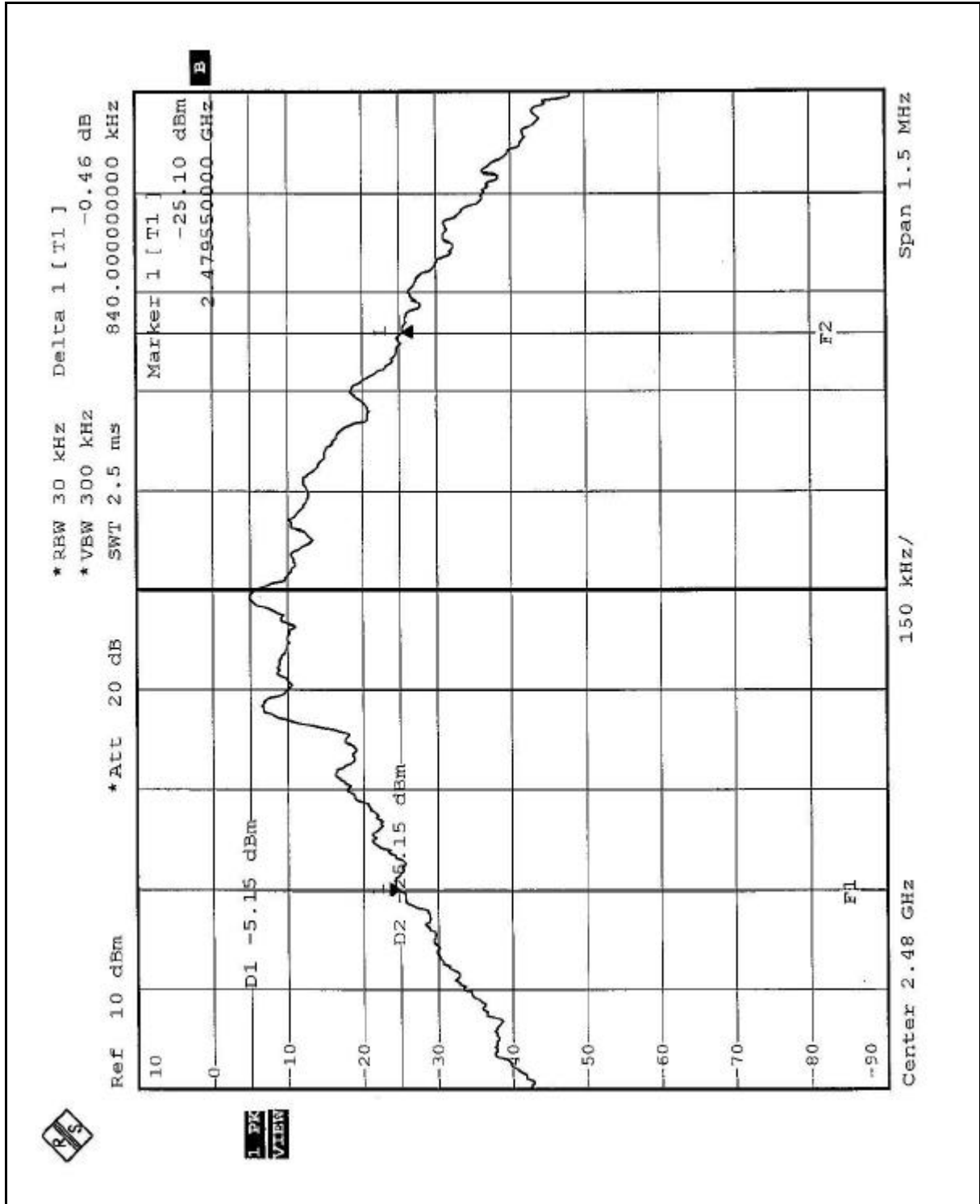


Channel 39





Channel 78





## 5.5 HOPPING CHANNEL SEPARATION

### 5.5.1 LIMIT OF HOPPING CHANNEL SEPARATION

At least 25KHz or 20dB bandwidth (whichever is greater).

### 5.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

#### NOTES:

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

### 5.5.3 TEST PROCEDURES

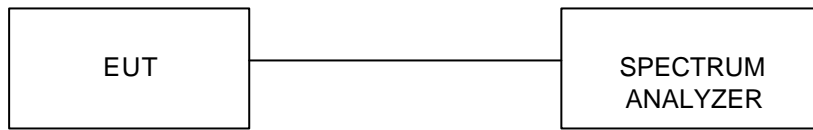
1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range.
3. By using the MaxHold function record the separation of two adjacent channels.
4. Measure the frequency difference of these two adjacent channels by SA MARK function. And then plot the result on SA screen.
5. Repeat above procedures until all frequencies measured were complete.

### 5.5.4 DEVIATION FROM TEST STANDARD

No deviation



5.5.5 TEST SETUP



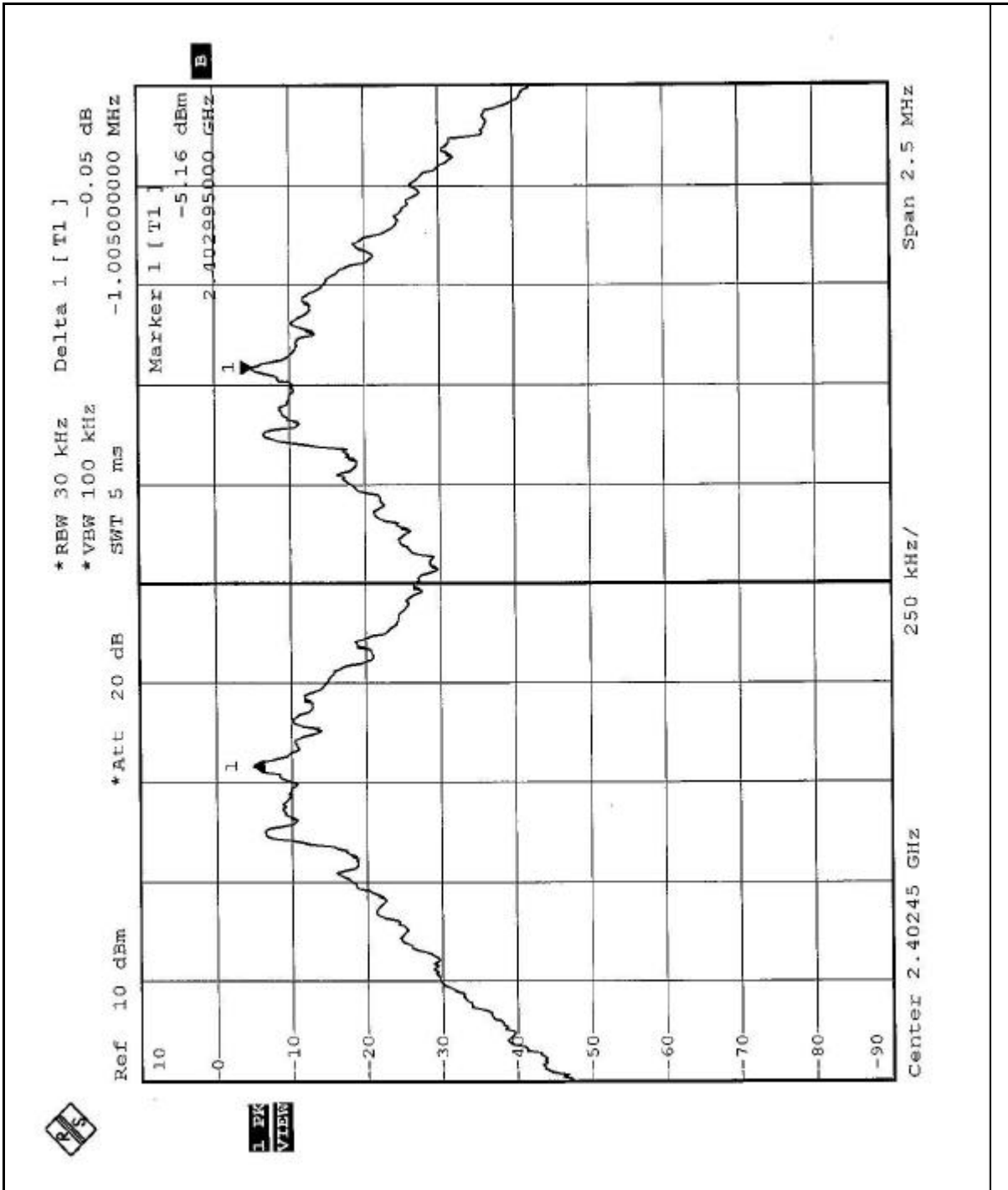
5.5.6 TEST RESULTS

Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	2402	1MHz	846	PASS
39	2441	1MHz	837	PASS
78	2480	1MHz	840	PASS

The minimum limit is 20dB bandwidth. Test results please refer to next three pages.

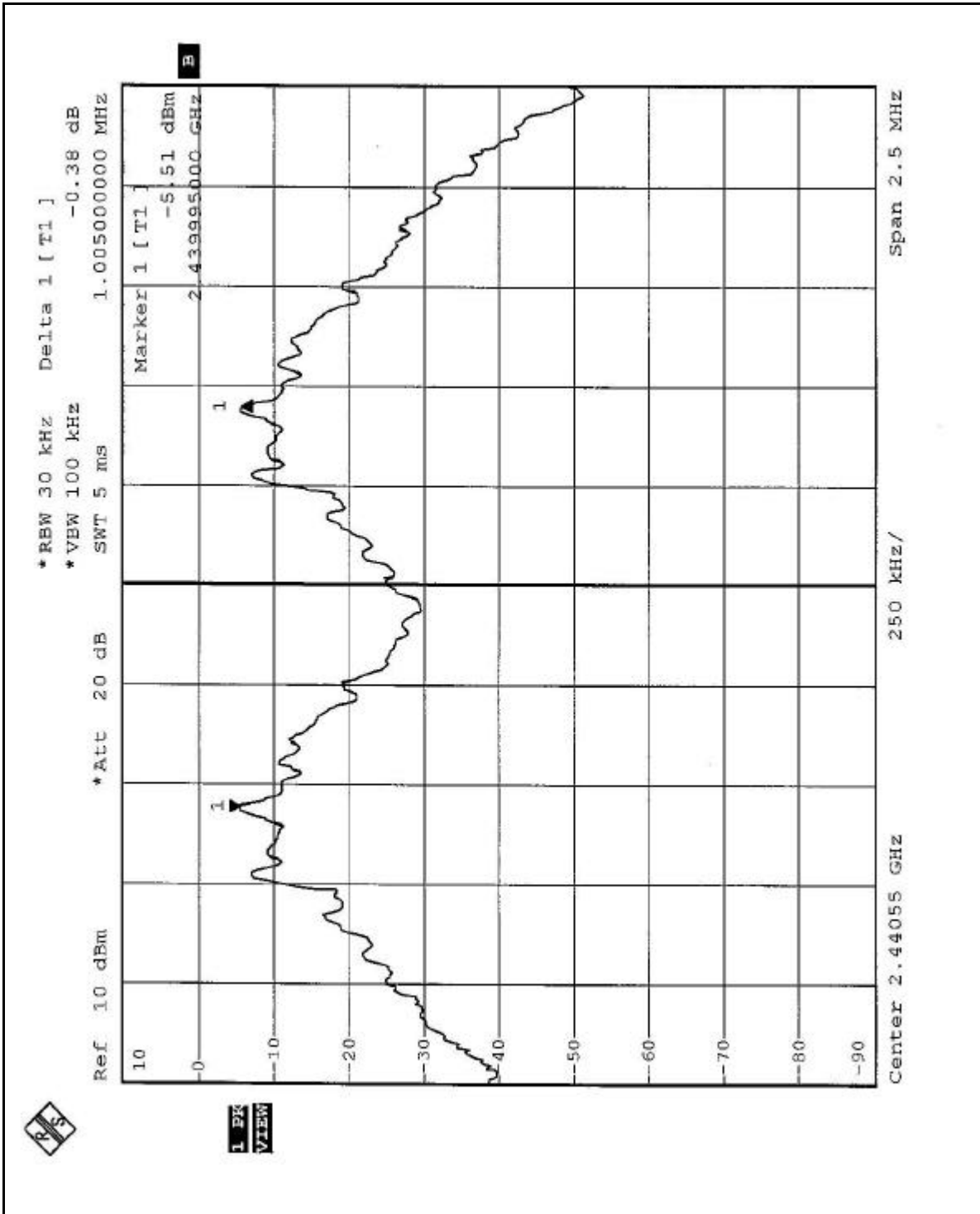


Channel 0



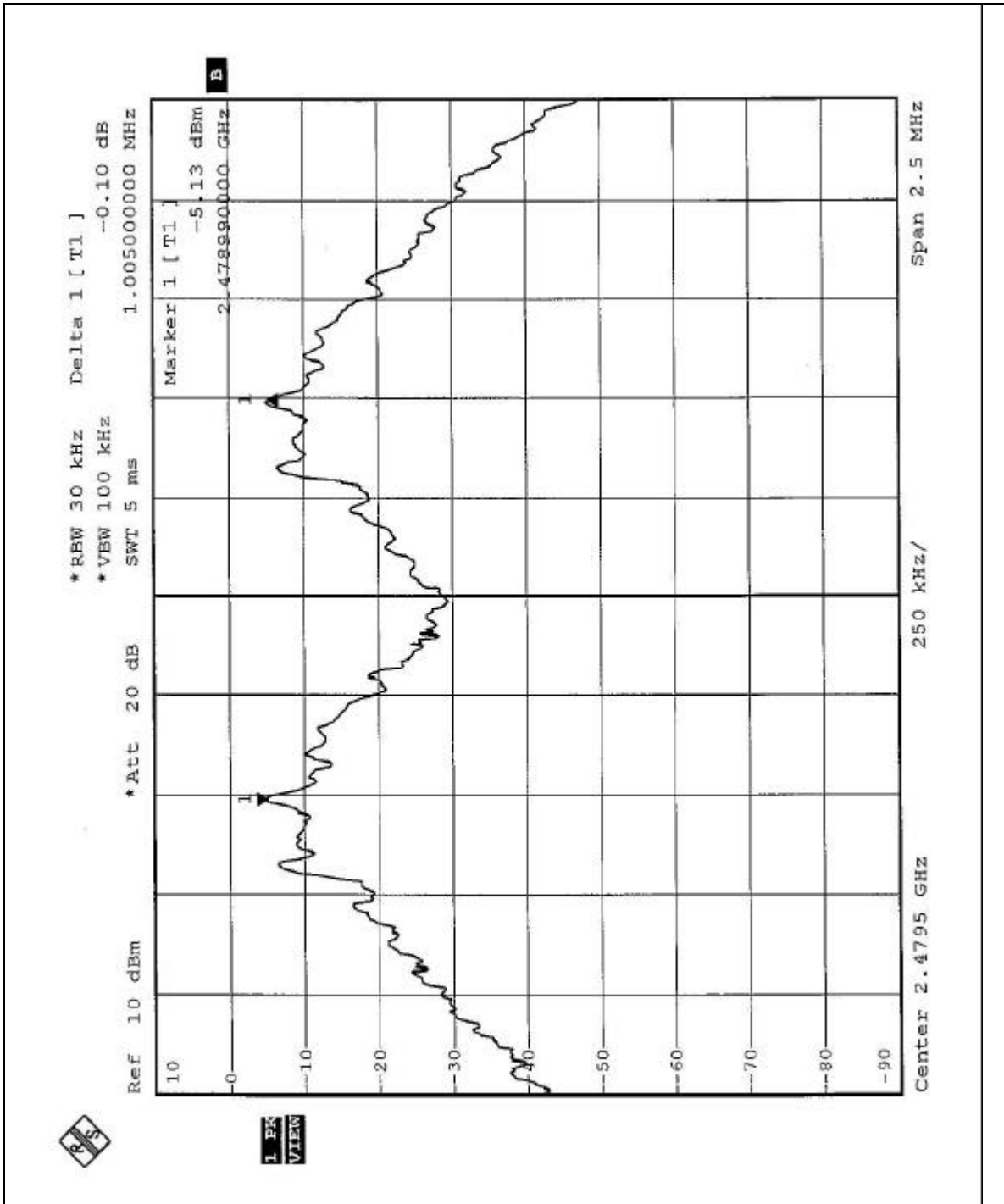


Channel 39





Channel 78







## 5.6 MAXIMUM PEAK OUTPUT POWER –USING SPECTRUM ANALYZER

### 5.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Limit of Maximum Peak Output Power Measurement is 30dBm.

### 5.6.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

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

### 5.6.3 TEST PROCEDURES

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.
3. The center frequency of the spectrum analyzer is set to the fundamental frequency and using 3 MHz RBW and 3 MHz VBW.
4. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
5. Repeat above procedures until all frequencies measured were complete.

### 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 5.6.5 TEST SETUP



For the actual test configuration, please refer to the related Item – Photographs of the Test Configuration.

### 5.6.6 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

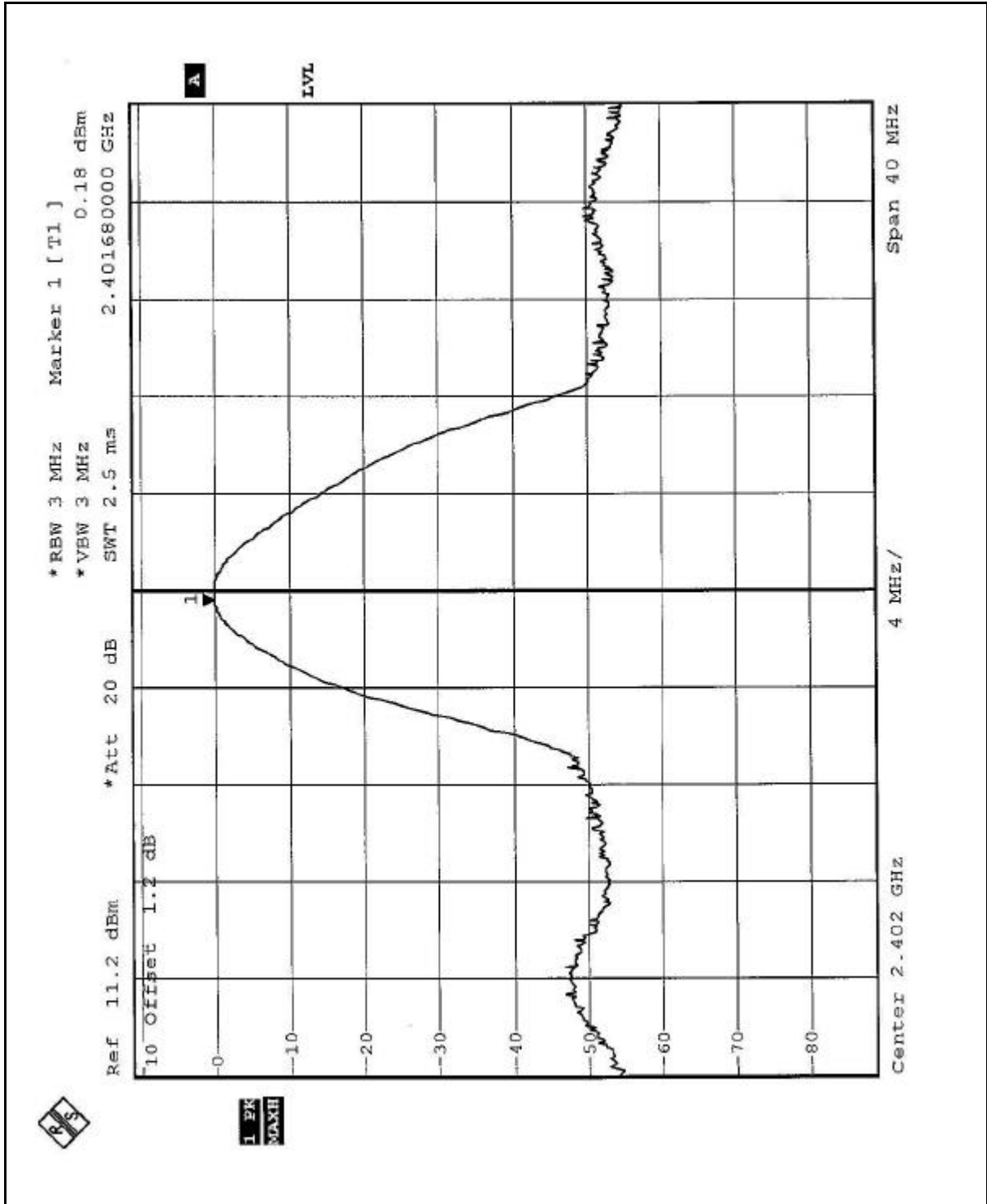
### 5.6.7 TEST RESULTS

Output Power to Antenna:

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	2402	0.18	30	PASS
39	2441	0.27	30	PASS
78	2480	0.50	30	PASS

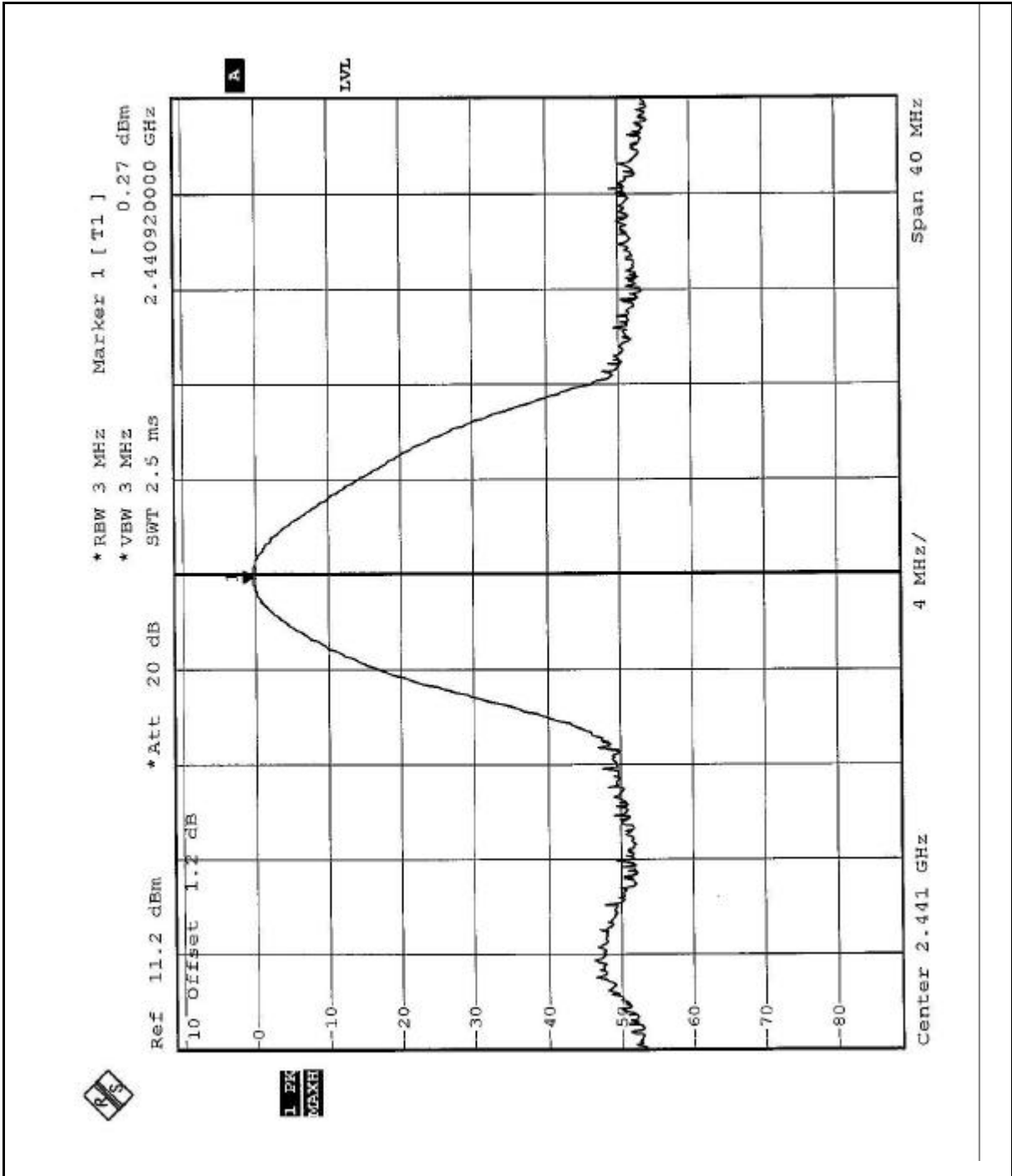


Channel 0



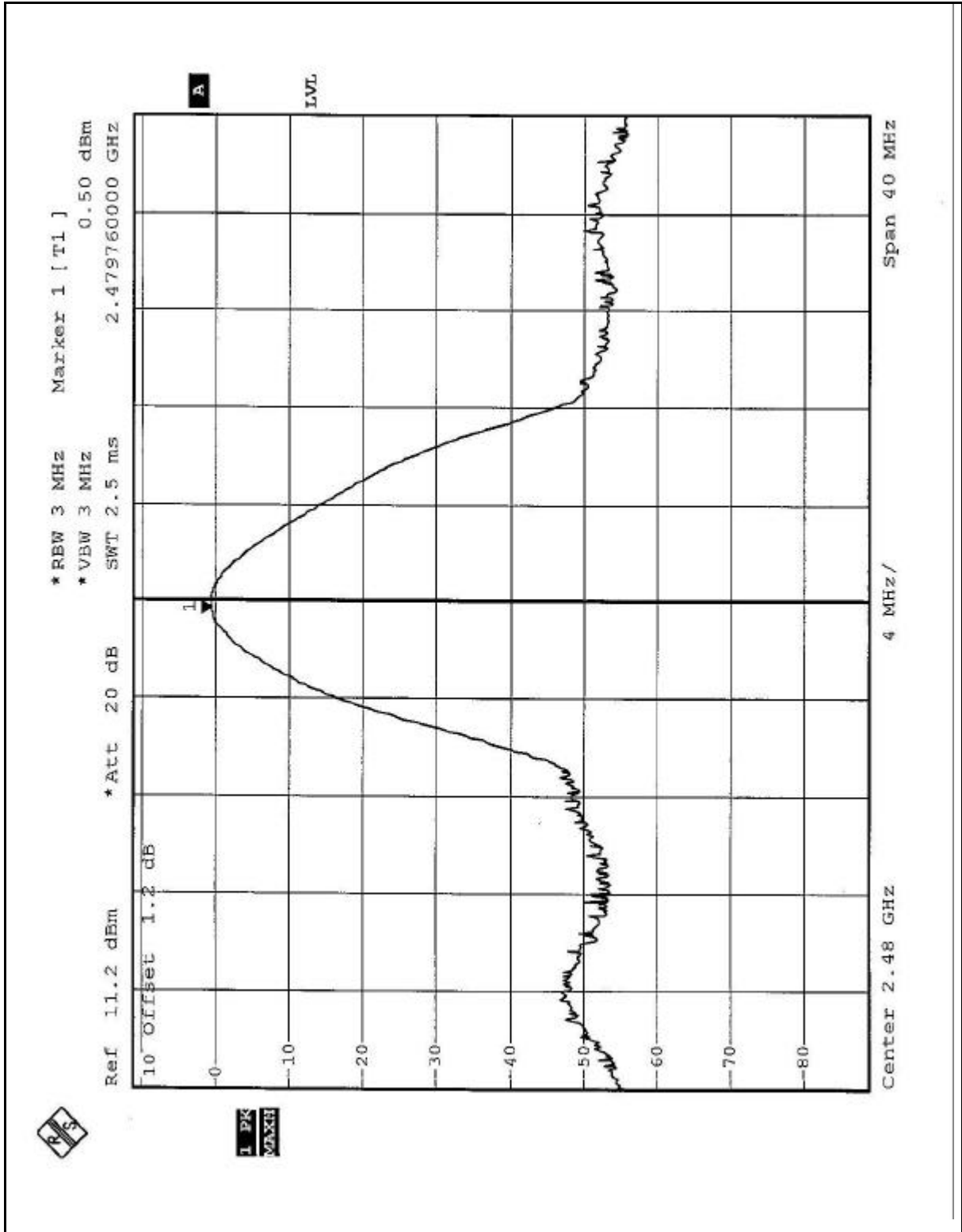


Channel 39





Channel 78





## 5.7 RADIATED EMISSION MEASUREMENT

### 5.7.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

Frequencies (MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.



## 5.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
HP Spectrum Analyzer	8594E	3911A07465	July. 08, 2003
HP Preamplifier	8447D	2944A10386	Aug. 15, 2003
* HP Preamplifier	8449B	3008A01201	Dec. 01, 2003
* HP Preamplifier	8449B	3008A01292	Aug. 07, 2003
SCHAFFNER Tunable Dipole Antenna	VHBA 9123	459	Nov. 22, 2003
SCHWARZBECK Tunable Dipole Antenna	UHA 9105	977	
ROHDE & SCHWARZ TEST RECEIVER	ESCS 30	836858/008	Dec.13, 2003
* SCHAFFNER BILOG Antenna	CBL6111C	2727	July. 17, 2003
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	July. 03, 2003
* EMCO Horn Antenna	3115	9312-4192	March 24, 2004
* ADT. Turn Table	TT100	0201	NA
* ADT. Tower	AT100	0201	NA
* Software	ADT_Radiate d_V5.06	NA	NA
* ANRITSU RF Switches	MP59B	6100237246	Oct. 30, 2003
* TIMES RF cable	LMR-600	CABLE-ST10-01	Oct. 30, 2003

- NOTE:** 1. The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. "\*" = These equipment are used for the final measurement.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The test was performed in ADT Open Site No. 5.
5. The VCCI Site Registration No. is R-1039.



### 5.7.3 TEST PROCEDURES

- g. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- h. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- i. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- j. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- k. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- l. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

**NOTE:**

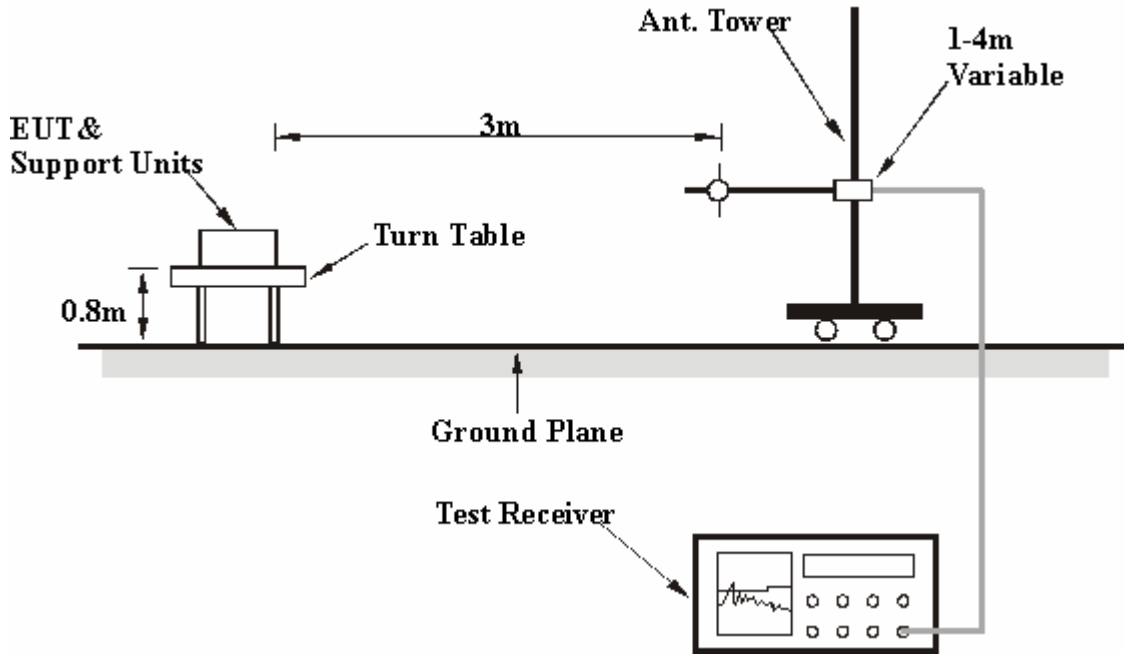
6. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
7. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz for Peak detection at frequency above 1GHz.
8. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 300 Hz for Average detection (AV) at frequency above 1GHz.

### 5.7.4 DEVIATION FROM TEST STANDARD

No deviation



5.7.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.



## 5.7.6 TEST RESULTS

<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 11	<b>FREQUENCY RANGE</b>	Below 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Quasi-Peak
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	172.09	33.4 QP	43.50	-10.10	1.20 H	20	23.40	9.90
2	210.00	33.5 QP	43.50	-10.00	1.13 H	1	23.30	10.20
3	240.10	33.7 QP	46.00	-12.30	1.57 H	84	21.00	12.70
4	270.00	31.2 QP	46.00	-14.80	2.41 H	110	17.30	13.90
5	298.30	33.5 QP	46.00	-12.50	1.95 H	332	19.00	14.50
6	400.48	35.0 QP	46.00	-11.00	1.34 H	21	17.40	17.50
7	497.61	33.1 QP	46.00	-12.90	1.74 H	0	13.50	19.70
8	360.10	38.4 QP	46.00	-7.60	1.10 H	23	20.40	18.00
9	396.00	32.3 QP	46.00	-13.70	1.22 H	126	13.30	19.00

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	172.20	30.8 QP	43.50	-12.70	1.52 V	74	20.90	9.90
2	208.90	30.7 QP	43.50	-12.80	1.18 V	20	20.50	10.10
3	240.00	32.6 QP	46.00	-13.40	1.08 V	1	19.90	12.70
4	298.50	32.8 QP	46.00	-13.20	1.16 V	325	18.30	14.50
5	400.46	28.1 QP	46.00	-17.90	1.04 V	246	10.60	17.50
6	497.59	29.9 QP	46.00	-16.10	1.18 V	1	10.20	19.70

- REMARKS:**
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
  2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.



<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 0	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991hPa	<b>TESTED BY:</b> Gary Chang	

<b>ANTENNA POLARITY &amp; TEST DISTANCE: HORIZONTAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1202.00	41.1 PK	74.00	-32.90	1.17 H	85	13.30	27.80
2	*2402.00	86.1 PK			1.52 H	74	53.10	33.00
2	*2402.00	56.1 AV			1.52 H	74	23.10	27.80
3	4804.00	46.6 PK	74.00	-27.40	1.15 H	28	6.20	40.40

<b>ANTENNA POLARITY &amp; TEST DISTANCE: VERTICAL AT 3 M</b>								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1202.00	41.9 PK	74.00	-32.10	1.20 V	41	14.10	27.80
2	*2402.00	87.9 PK			1.14 V	30	54.90	33.00
2	*2402.00	57.9 AV			1.14 V	30	24.90	27.80
3	4804.00	45.9 PK	74.00	-28.10	1.30 V	85	5.50	40.40

**REMARKS:**

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. “ \* “ : Fundamental frequency
5. The other emission levels were very low against the limit.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625\*5 per 247 ms per channel.  
Therefore, the duty cycle be equal to:  $20\log(3.125/100) = -30\text{dB}$
7. Average value = peak reading  $-20\log(\text{duty cycle})$



<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 39	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak (PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1219.50	42.3 PK	74.00	-31.70	1.04 H	32	14.40	27.90
2	*2441.00	85.4 PK			1.12 H	325	52.40	33.00
2	*2441.00	55.4 AV			1.12 H	325	22.40	27.90
3	4882.00	47.7 PK	74.00	-26.30	1.04 H	52	7.10	40.60
4	7323.00	50.8 PK	74.00	-23.20	1.30 H	65	5.30	45.50

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1219.50	37.4 PK	74.00	-36.60	1.18 V	57	9.50	27.90
2	*2441.00	89.1 PK			1.04 V	87	56.10	33.00
2	*2441.00	59.1 AV			1.04 V	87	26.10	27.90
3	4882.00	47.7 PK	74.00	-26.30	1.10 V	52	7.10	40.60

#### REMARKS:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
2. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
3. Margin value = Emission level - Limit value
4. " \* " : Fundamental frequency
5. The other emission levels were very low against the limit.
6. The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625\*5 per 247 ms per channel. Therefore, the duty cycle be equal to:  $20\log(3.125/100) = -30\text{dB}$
7. Average value = peak reading  $-20\log(\text{duty cycle})$



<b>EUT</b>	Pocket PC	<b>MODEL</b>	Mio 558
<b>MODE</b>	Channel 78	<b>FREQUENCY RANGE</b>	Above 1000 MHz
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>DETECTOR FUNCTION</b>	Peak(PK) Average (AV)
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 60 % RH, 991 hPa	<b>TESTED BY:</b> Gary Chang	

#### ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1239.00	38.2 PK	74.00	-35.80	1.17 H	85	10.30	27.90
2	*2480.00	87.5 PK			1.30 H	65	54.40	33.10
2	*2480.00	57.4 AV			1.30 H	65	24.40	27.90
3	4960.00	49.2 PK	74.00	-24.80	1.10 H	30	8.60	40.60

#### ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	1239.00	37.7 PK	74.00	-36.30	1.12 V	147	9.80	27.90
2	*2480.00	86.1 PK			1.30 V	74	53.00	33.10
2	*2480.00	56.8 AV			1.30 V	74	23.00	27.90
3	4960.00	48.4 PK	74.00	-25.60	1.30 V	74	7.80	40.60

#### REMARKS:

- Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB)
- Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB)
- Margin value = Emission level - Limit value
- “\*” : Fundamental frequency
- The other emission levels were very low against the limit.
- The DH5 packet was the worse case duty cycle for a transmit dwell time on a channel, based upon bluetooth theory the transmitter is on 0.625\*5 per 247 ms per channel. Therefore, the duty cycle be equal to:  $20\log(3.125/100) = -30\text{dB}$
- Average value = peak reading  $-20\log(\text{duty cycle})$



## 5.8 BAND EDGES MEASUREMENT

### 5.8.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100KHz RB).

### 5.8.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	July 24, 2003

#### NOTES:

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

### 5.8.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss 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.

### 5.8.4 DEVIATION FROM TEST STANDARD

No deviation



### 5.8.5 EUT OPERATING CONDITION

The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

### 5.8.6 TEST RESULTS

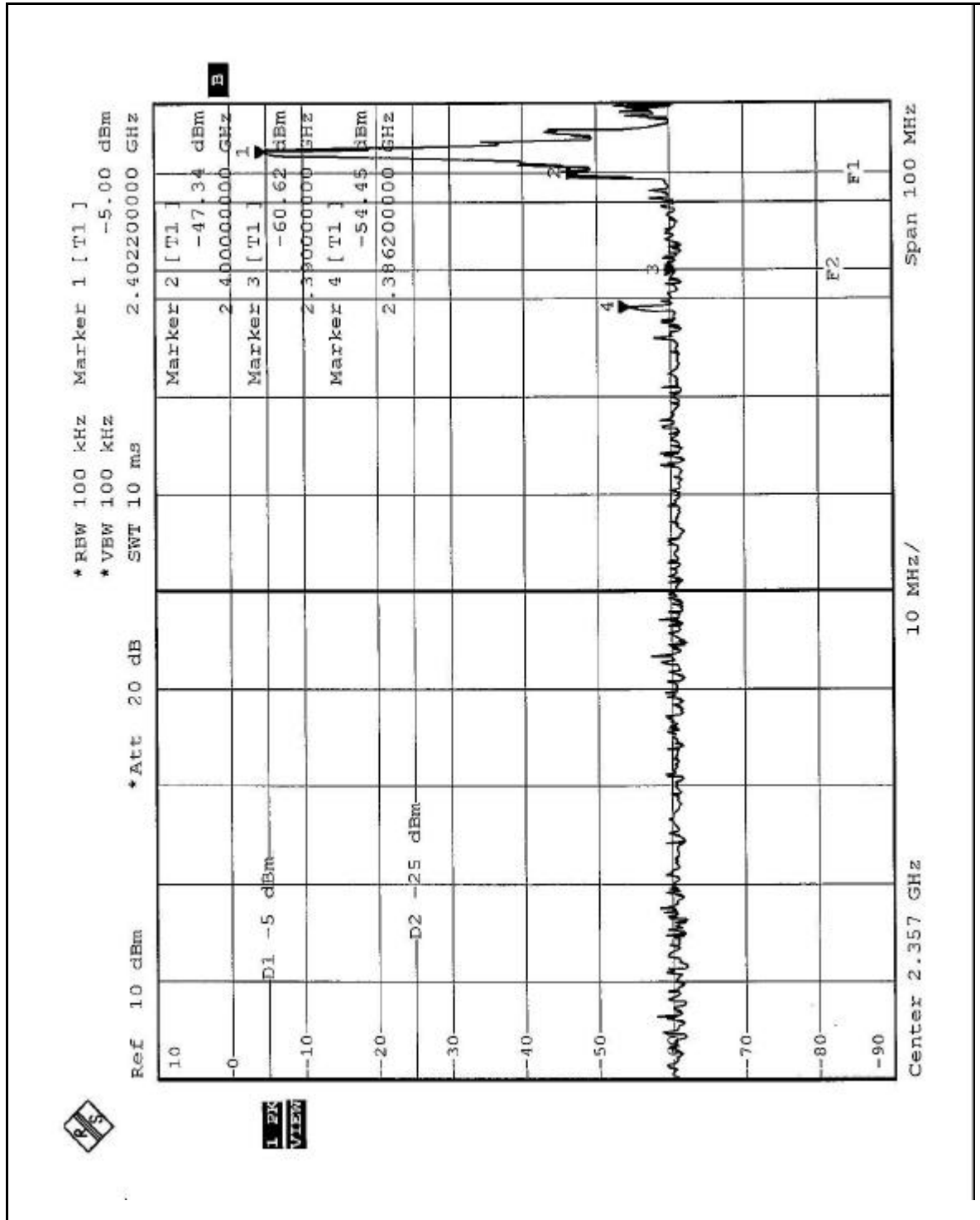
The spectrum plots are attached on the following 2 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

**NOTE 1:** The band edge emission plot on the following first page shows -49.45dB delta between carrier maximum power and local maximum emission in restrict band (2.386GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.7.7 is 57.90dBuV/m, so the maximum field strength in restrict band is  $57.90 - 49.45 = 8.45$  dBuV/m which is under 54 dBuV/m limit.

**NOTE:** The band edge emission plot on the following second page shows 48.55dB delta between carrier maximum power and local maximum emission in restrict band (2.4845GHz). The emission of carrier strength list in the test result of channel 78 at the item 4.7.7 is 57.50dBuV/m, so the maximum field strength in restrict band is  $57.50 - 48.55 = 8.95$  dBuV/m which is under 54 dBuV/m limit.



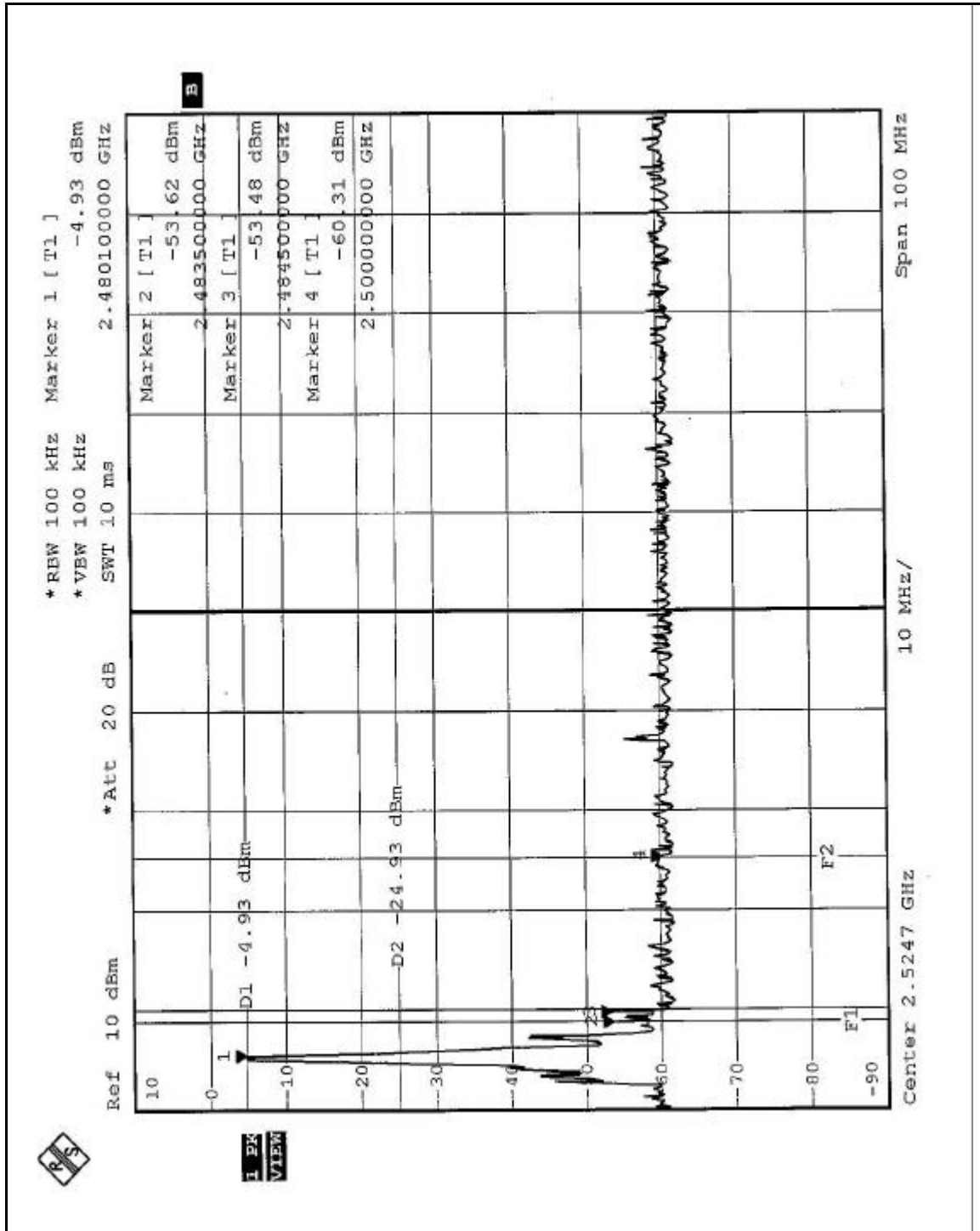
Channel 0







Channel 78

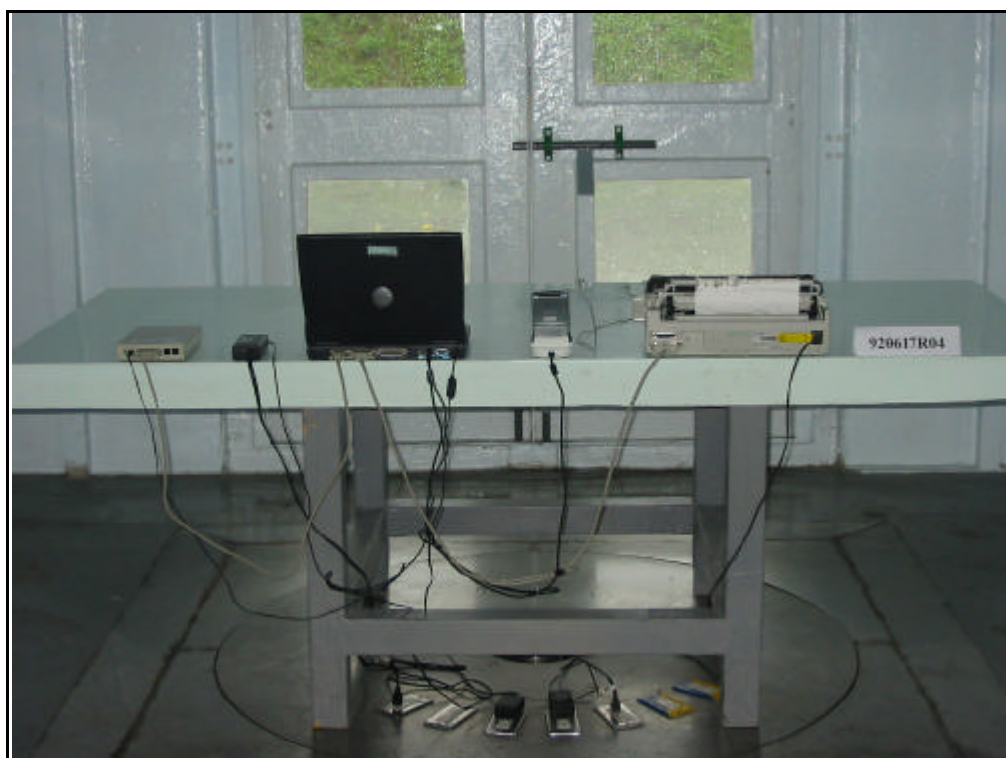


## PHOTOGRAPHS OF THE TEST CONFIGURATION

### CONDUCTED EMISSION TEST



### RADIATED EMISSION TEST





## 5 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:

<b>USA</b>	FCC, NVLAP
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>New Zealand</b>	MoC
<b>Norway</b>	NEMKO
<b>R.O.C.</b>	BSMI, DGT, CNLA

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](http://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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**Hsin Chu EMC Lab:**

Tel: 886-35-935343

Fax: 886-35-935342

**Lin Kou Safety Lab:**

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Fax: 886-2-26093184

**Lin Kou RF&Telecom Lab**

Tel: 886-3-3270910

Fax: 886-3-3270892

**Email:** [service@mail.adt.com.tw](mailto:service@mail.adt.com.tw)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

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