FCC TEST REPORT

REPORT NO.: RF930628L20
MODEL NO.: BT-0002M-5
RECEIVED: June 26, 2004
TESTED: July 01, 2004

APPLICANT: CC&C Technologies Inc.

ADDRESS: 8F, 150, Jian Yi Road, Chung Ho City, Taipei County, Taiwan 235, R.O.C.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: No. 19, Hwa Ya 2nd Rd., Kueishan, Taoyuan, Taiwan, R.O.C.

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1 CERTIFICATION

PRODUCT :	Bluetooth USB Dongle
BRAND NAME :	CC&C
MODEL NO. :	BT-0002M-5
APPLICANT :	CC&C Technologies Inc.
TESTED DATE:	July 01, 2004
TEST ITEM :	Engineering Sample
STANDARDS :	FCC Part 15, Subpart C (Section 15.247), ANSI C63.4-2001

The above equipment has been tested by **Advance Data Technology Corporation**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

PREPARED BY: Windy Chou , **DATE:** July 6, 2004

Windy Chou

APPROVED BY: Cody Chang , **DATE:** July 6, 2004

Cody Chang / Supervisor

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
Standard Section	**Test Type and Limit**	**Result**	**REMARK**
15.207	AC Power Conducted Emission	PASS	Meet the requirement of limit Minimum passing margin is –18.14dB at 0.228 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, which ever is greater	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 –3.36dB at 4960.00MHz
15.247(c)	Band Edge Measurement	PASS	Meet the requirement of limit

Note: The information of measurement uncertainty is available upon the customer's request.

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Bluetooth USB Dongle
MODEL NO.	BT-0002M-5
POWER SUPPLY	5.0Vdc from host equipment
MODULATION TYPE	FHSS
MODULATION TECHNOLOGY	GFSK
FREQUENCY RANGE	2402MHz ~ 2480MHz
NUMBER OF CHANNEL	79
OUTPUT POWER	3.78dBm
ANTENNA TYPE	Printed Antenna with 2.0dBi Antenna gain
DATA CABLE	NA
I/O PORTS	USB
ASSOCIATED DEVICES	NA

NOTE:

1. Bluetooth technology is used for the EUT.
2. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

Seventy-nine channels are provided to this EUT.

Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)	Channel	Freq. (MHz)
0	2402	20	2422	40	2442	60	2462
1	2403	21	2423	41	2443	61	2463
2	2404	22	2424	42	2444	62	2464
3	2405	23	2425	43	2445	63	2465
4	2406	24	2426	44	2446	64	2466
5	2407	25	2427	45	2447	65	2467
6	2408	26	2428	46	2448	66	2468
7	2409	27	2429	47	2449	67	2469
8	2410	28	2430	48	2450	68	2470
9	2411	29	2431	49	2451	69	2471
10	2412	30	2431	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	78	2480
19	2421	39	2441	59	2461		

NOTE:

1. Below 1 GHz, the channel 0, 39, and 78 were pre-tested in chamber. The channel 78, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 0, 39, and 78 were tested individually.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

FCC Part 15, Subpart C. (15.247)
ANSI C63.4 : 2001

All test items 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.

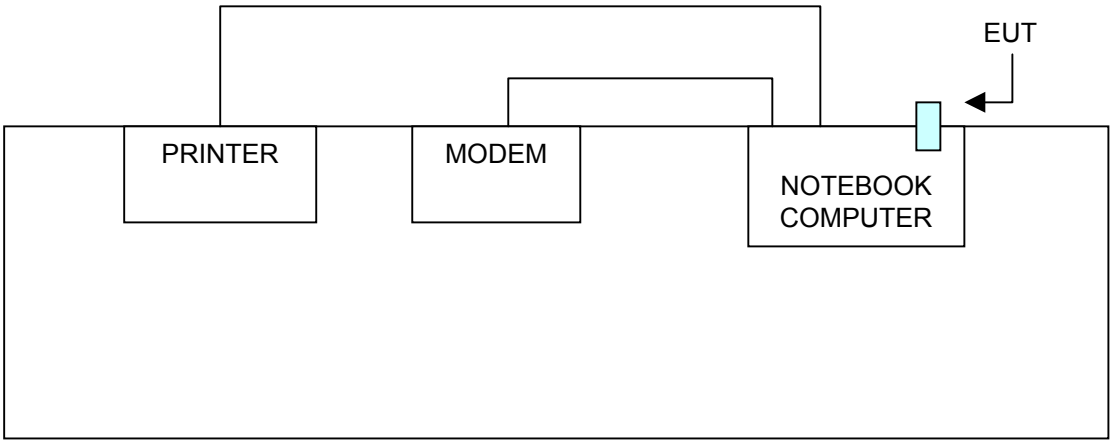
3.4 DESCRIPTION OF SUPPORT UNITS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK COMPUTER	DELL	PP05L	12130898320	E2K24CLNS
2	PRINTER	EPSON	LQ-300+	DCGY047265	FCC DoC Approved
3	MODEM	ACEEX	1414V/3	0401008248	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 w/o core.

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

3.5 CONFIGURATION OF SYSTEM UNDER TEST



4 TEST PROCEDURES AND RESULTS

4.1 CONDUCTED EMISSION MEASUREMENT

4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

Notes:

1. The lower limit shall apply at the transition frequencies.
2. 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
Test Receiver ROHDE & SCHWARZ	ESCS30	100288	Dec. 11, 2004
RF signal cable Woken	5D-FB	Cable-HyC02-01	Mar. 07, 2005
LISN ROHDE & SCHWARZ	ESH2-Z5	100100	Mar. 10, 2005
LISN ROHDE & SCHWARZ	ESH3-Z5	100311	Mar. 04, 2005
Software ADT	ADT_Cond_V3	NA	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. The test was performed in HwaYa Shielded Room 2.

3. The VCCI Site Registration No. is C-2047.

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.

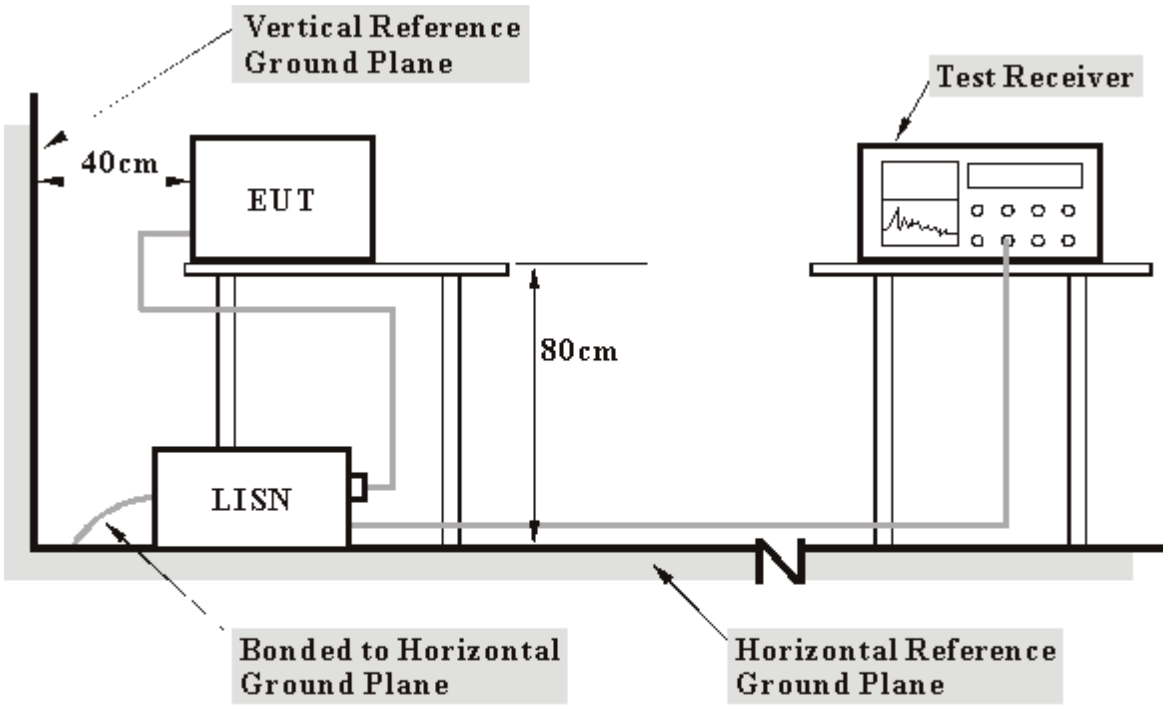
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under Limit - 20dB was not recorded.

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. Plug the EUT into the Notebook system placed on a testing table.

b. The Notebook system ran a test program (provided by manufacturer) to enable EUT under transmission/receiving condition continuously at specific channel frequency.

c. The computer system sent "H" messages to its screen.

d. The computer system sent “H” messages to modem.

e. The computer system sent "H" messages to printer, and the printer printed them on paper.

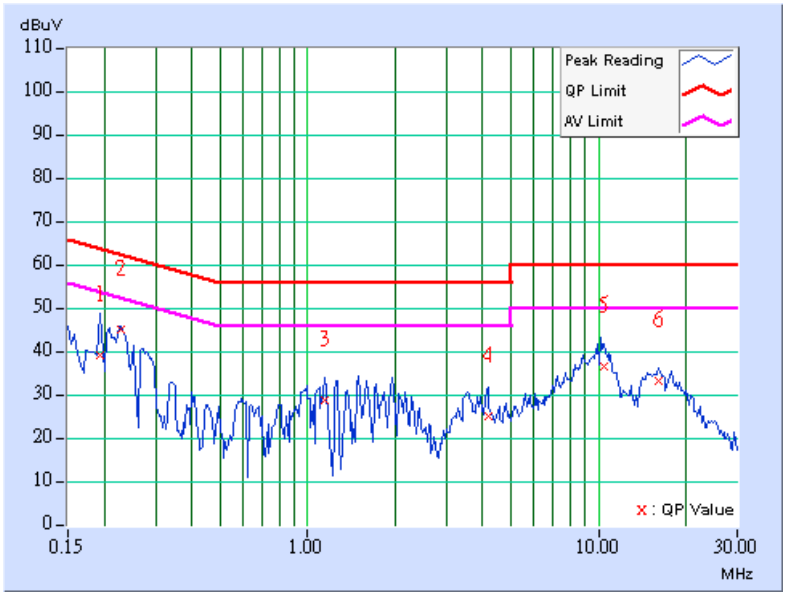
f. Steps c ~ e were repeated.

4.1.7 TEST RESULTS

EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	0	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	**TESTED BY**: 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.	AV.
1	0.193	0.10	38.51	-	38.61	-	63.91	53.91	-25.30	-
2	**0.228**	**0.10**	**44.28**	**-**	**44.38**	**-**	**62.52**	**52.52**	**-18.14**	**-**
3	1.141	0.25	28.08	-	28.33	-	56.00	46.00	-27.67	-
4	4.160	0.32	24.35	-	24.67	-	56.00	46.00	-31.33	-
5	10.500	0.55	35.98	-	36.53	-	60.00	50.00	-23.47	-
6	16.168	0.75	32.70	-	33.45	-	60.00	50.00	-26.55	-

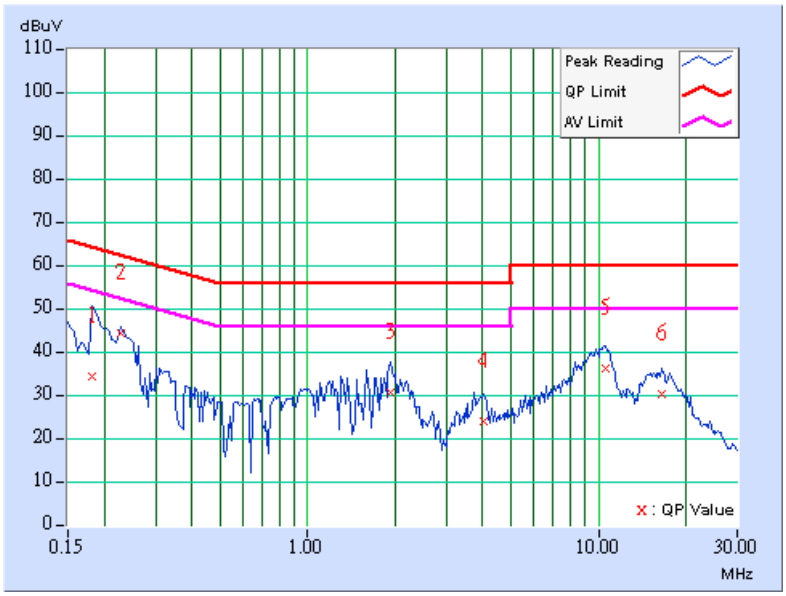
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth USB Dongle	MODEL	BT-0002M-5
CHANNEL	0	6dB BANDWIDTH	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	PHASE	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	TESTED BY: 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.	AV.
1	0.181	0.10	33.92	-	34.02	-	64.43	54.43	-30.41	-
2	0.228	0.10	43.88	-	43.98	-	62.52	52.52	-18.54	-
3	1.918	0.25	30.00	-	30.25	-	56.00	46.00	-25.75	-
4	4.016	0.30	23.34	-	23.64	-	56.00	46.00	-32.36	-
5	10.594	0.50	35.70	-	36.20	-	60.00	50.00	-23.80	-
6	16.570	0.59	29.62	-	30.21	-	60.00	50.00	-29.79	-

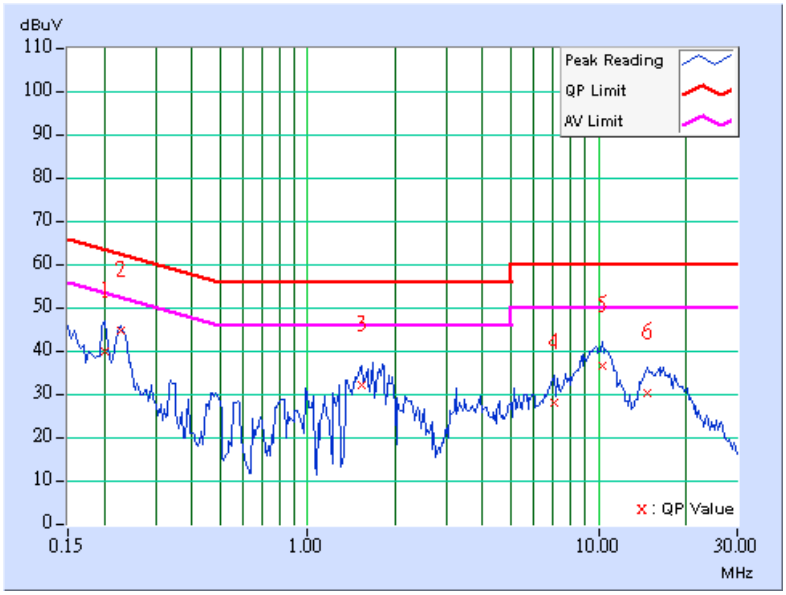
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	39	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	**TESTED BY**: 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.	AV.
1	0.201	0.10	39.32	-	39.42	-	63.58	53.58	-24.16	-
2	0.228	0.10	44.22	-	44.32	-	62.52	52.52	-18.20	-
3	1.527	0.26	31.65	-	31.91	-	56.00	46.00	-24.09	-
4	7.055	0.44	27.54	-	27.98	-	60.00	50.00	-32.02	-
5	10.379	0.54	35.86	-	36.40	-	60.00	50.00	-23.60	-
6	14.707	0.69	29.62	-	30.31	-	60.00	50.00	-29.69	-

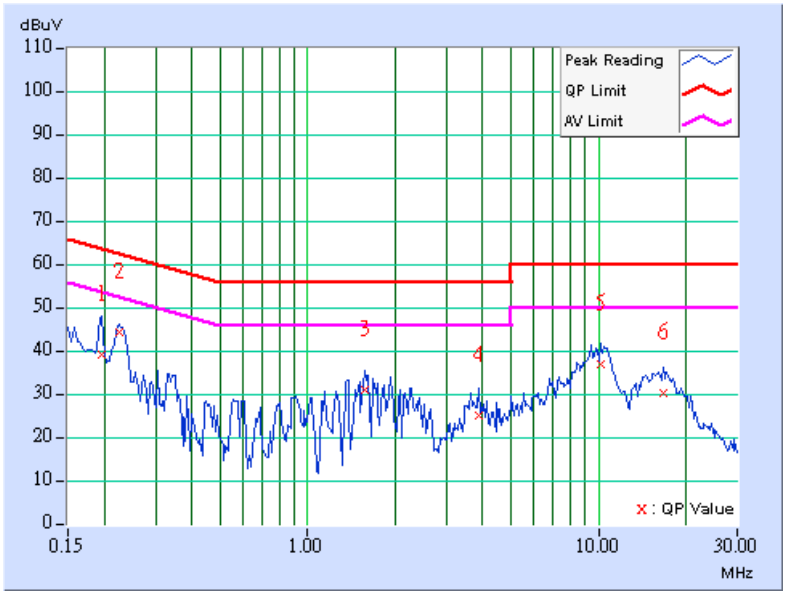
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	39	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	**TESTED BY**: 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.	AV.
1	0.197	0.10	38.85	-	38.95	-	63.74	53.74	-24.79	-
2	0.224	0.10	43.94	-	44.04	-	62.66	52.66	-18.62	-
3	1.574	0.25	30.68	-	30.93	-	56.00	46.00	-25.07	-
4	3.883	0.30	24.52	-	24.82	-	56.00	46.00	-31.18	-
5	10.234	0.49	36.43	-	36.92	-	60.00	50.00	-23.08	-
6	16.629	0.59	29.76	-	30.35	-	60.00	50.00	-29.65	-

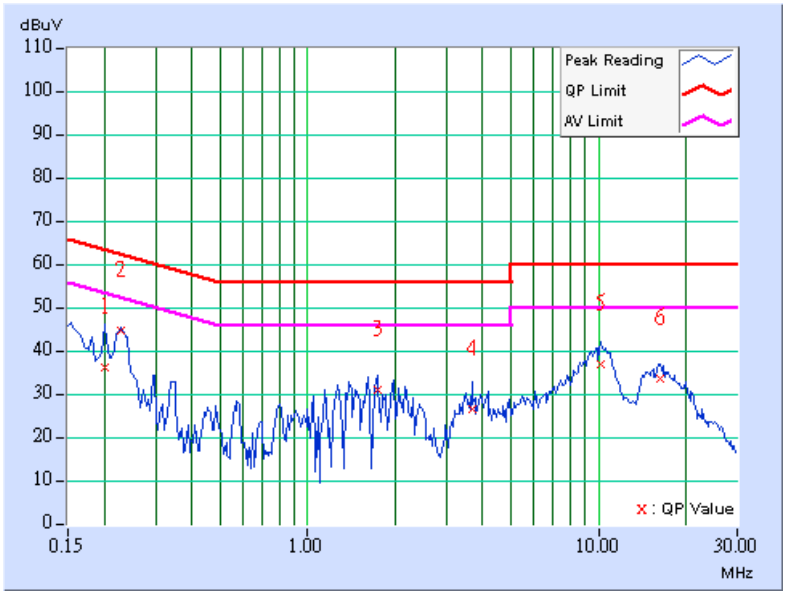
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	78	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	**TESTED BY**: 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.	AV.
1	0.201	0.10	35.58	-	35.68	-	63.58	53.58	-27.90	-
2	0.228	0.10	44.24	-	44.34	-	62.52	52.52	-18.18	-
3	1.734	0.26	30.39	-	30.65	-	56.00	46.00	-25.35	-
4	3.680	0.30	25.77	-	26.07	-	56.00	46.00	-29.93	-
5	10.184	0.54	36.27	-	36.81	-	60.00	50.00	-23.19	-
6	16.227	0.75	33.08	-	33.83	-	60.00	50.00	-26.17	-

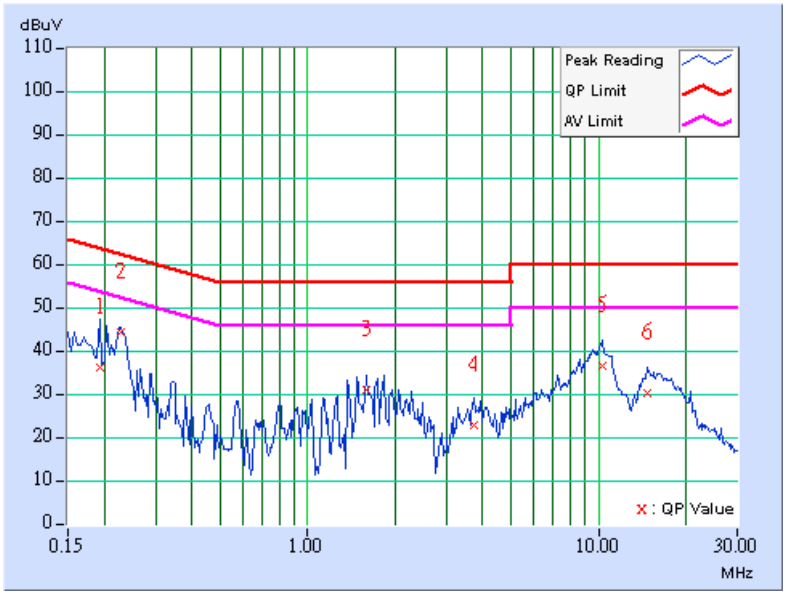
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	78	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neurral (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	**TESTED BY**: 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.	AV.
1	0.193	0.10	35.76	-	35.86	-	63.91	53.91	-28.05	-
2	0.228	0.10	43.94	-	44.04	-	62.52	52.52	-18.48	-
3	1.598	0.25	30.37	-	30.62	-	56.00	46.00	-25.38	-
4	3.742	0.30	22.35	-	22.65	-	56.00	46.00	-33.35	-
5	10.352	0.49	36.03	-	36.52	-	60.00	50.00	-23.48	-
6	14.723	0.56	29.72	-	30.28	-	60.00	50.00	-29.72	-

REMARKS: 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 NUMBER OF HOPPING FREQUENCY USED

4.2.1 LIMIT OF HOPPING FREQUENCY USED

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

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

NOTE:

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

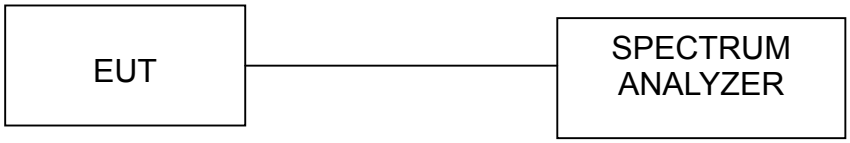
4.2.3 TEST PROCEDURES

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.

4.2.4 DEVIATION FROM TEST STANDARD

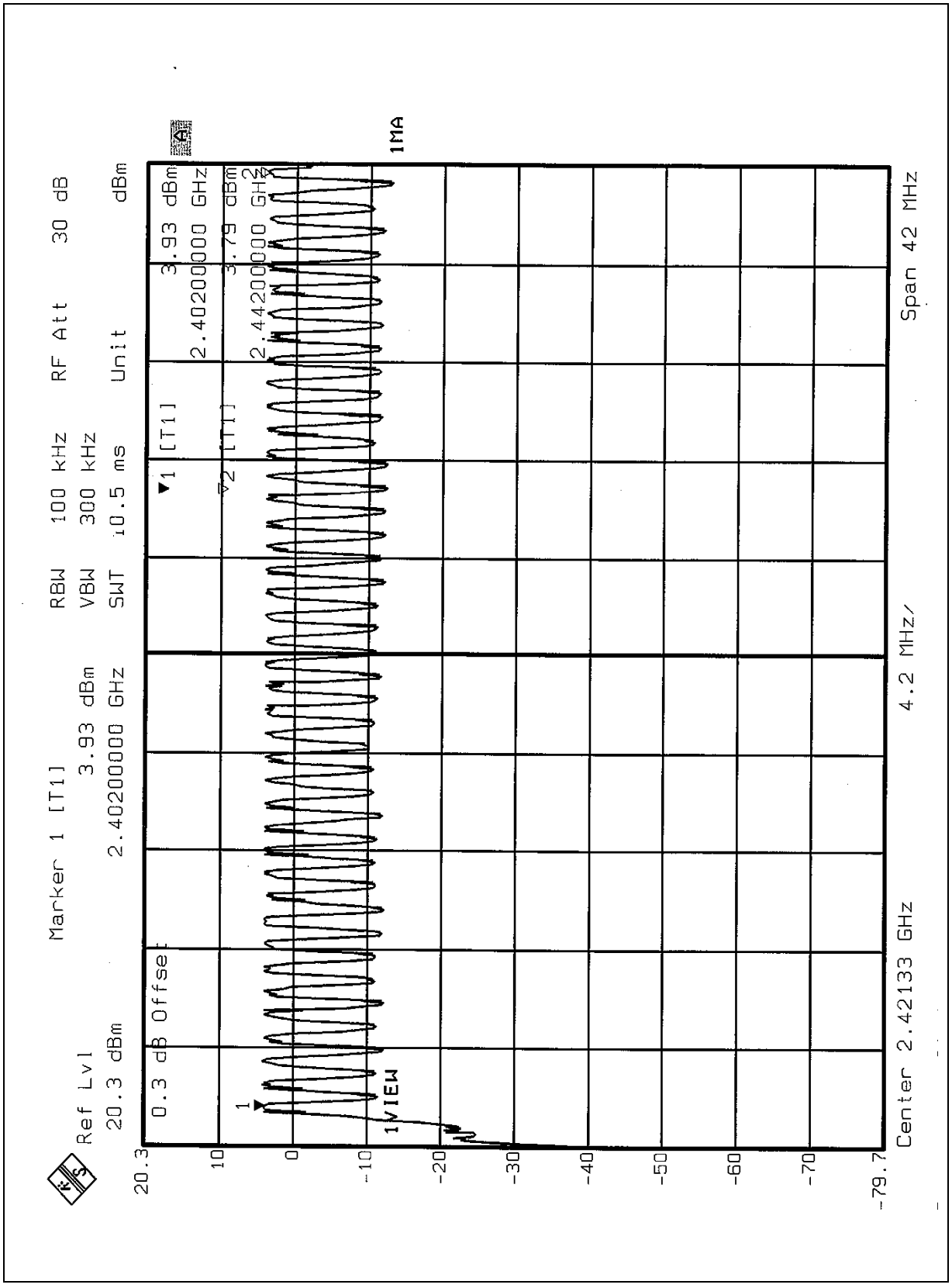
No deviation

4.2.5 TEST SETUP



4.2.6 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.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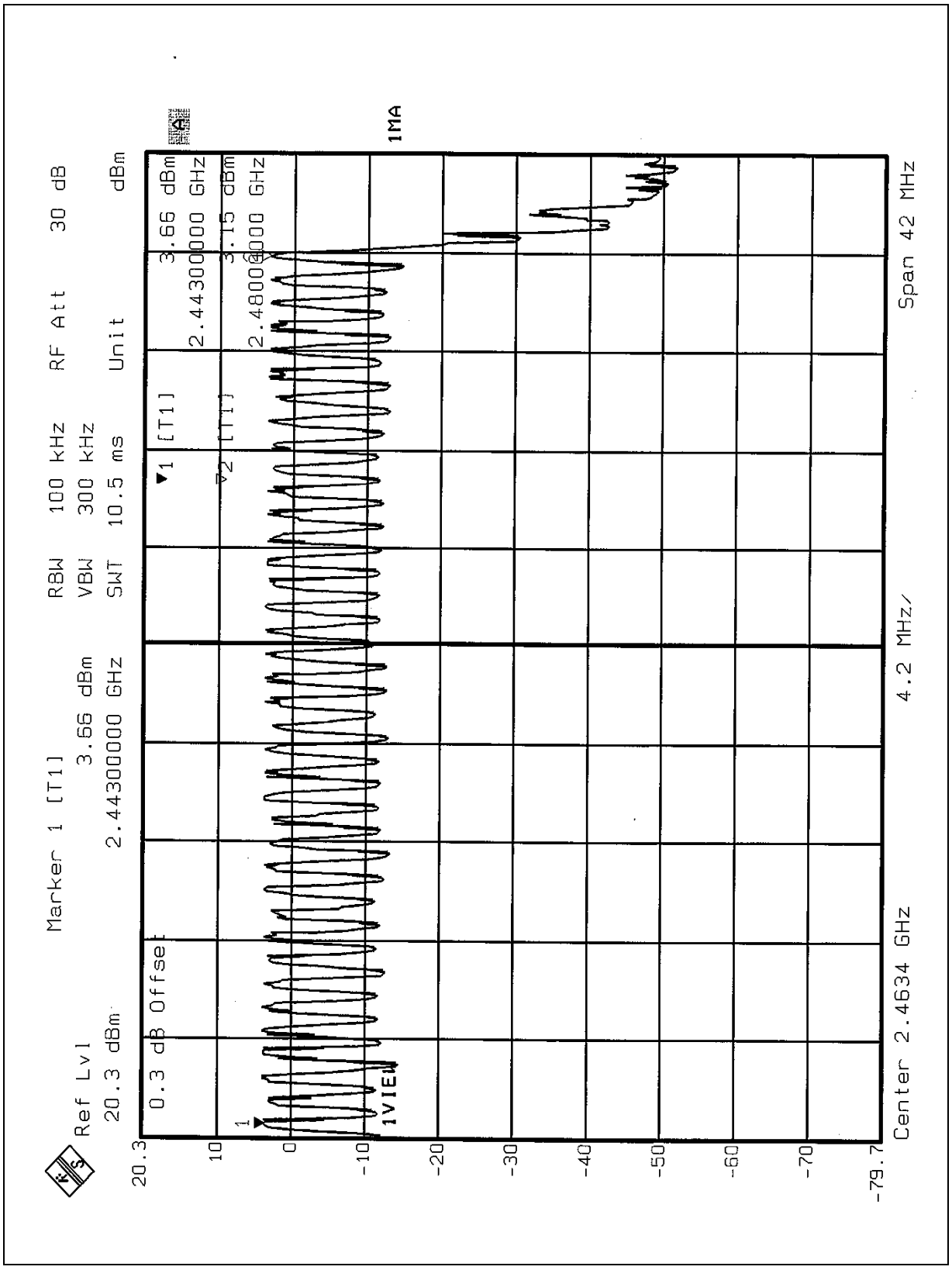
3.93 dBm
2.40200000 GHz
Ref Lvl
20.3 dBm
0.3 dB Offset
RBW 100 kHz
VBW 300 kHz
SWT 10.5 ms
RF Att 30 dB
Unit dBm
1MA
1VIEW
Center 2.42133 GHz
4.2 MHz/
Span 42 MHz


Marker 1 [T1]
3.66 dBm
2.44300000 GHz
RBW 100 kHz
VBW 300 kHz
SWT 10.5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.3 dBm
0.3 dB Offset
1MA
1VIEW
1 [T1] 3.66 dBm 2.44300000 GHz
2 [T1] 3.15 dBm 2.48000000 GHz
Center 2.4634 GHz
4.2 MHz/
Span 42 MHz
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7

4.3 DWELL TIME ON EACH CHANNEL

4.3.1 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.

4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

NOTES:

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

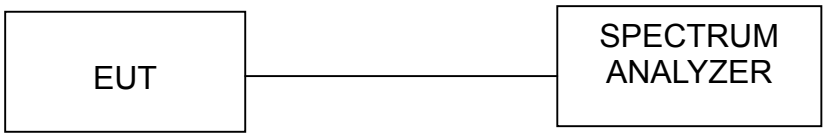
4.3.3 TEST PROCEDURES

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.

4.3.4 DEVIATION FROM TEST STANDARD

No deviation

4.3.5 TEST SETUP

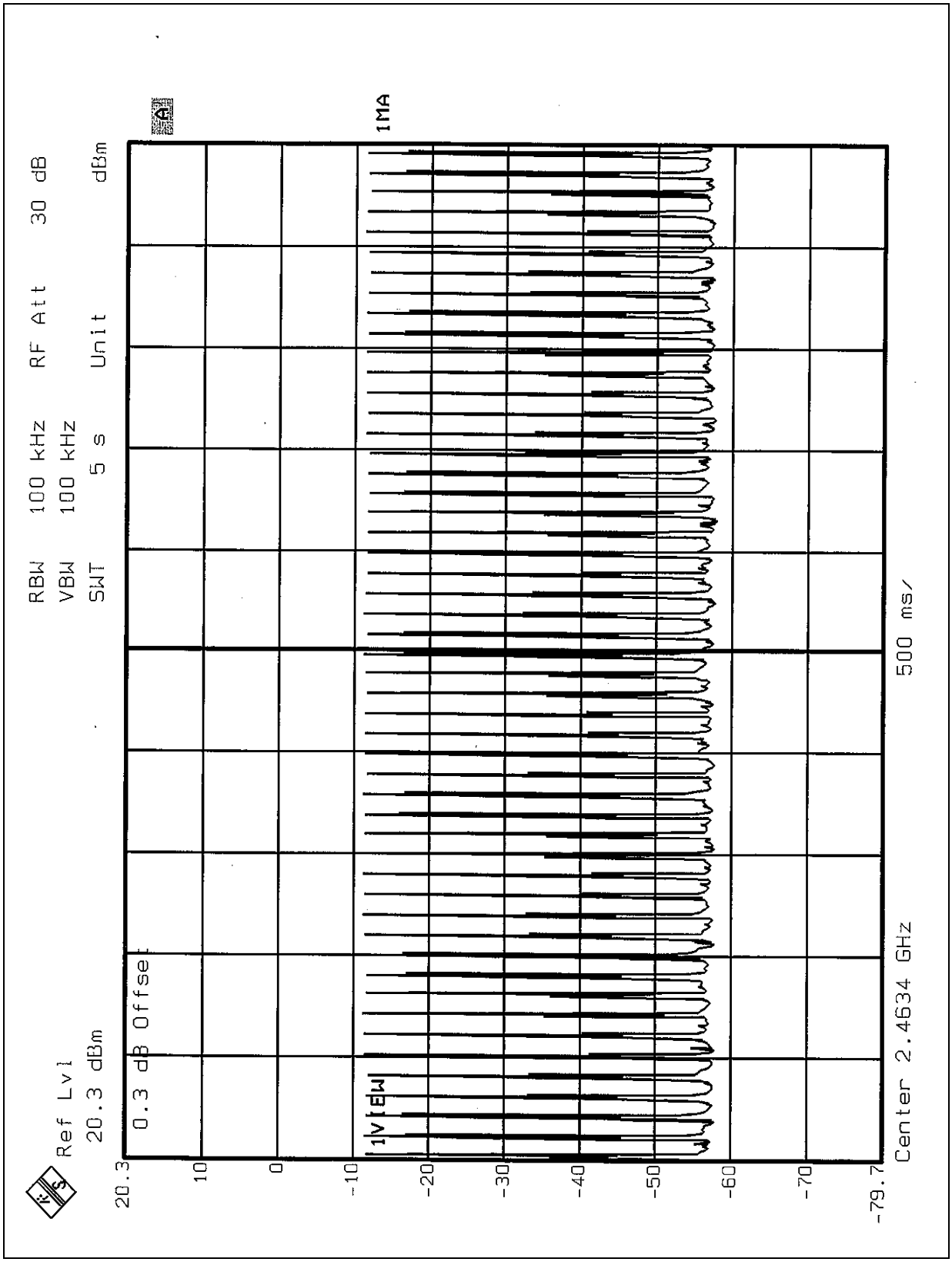


4.3.6 TEST RESULTS

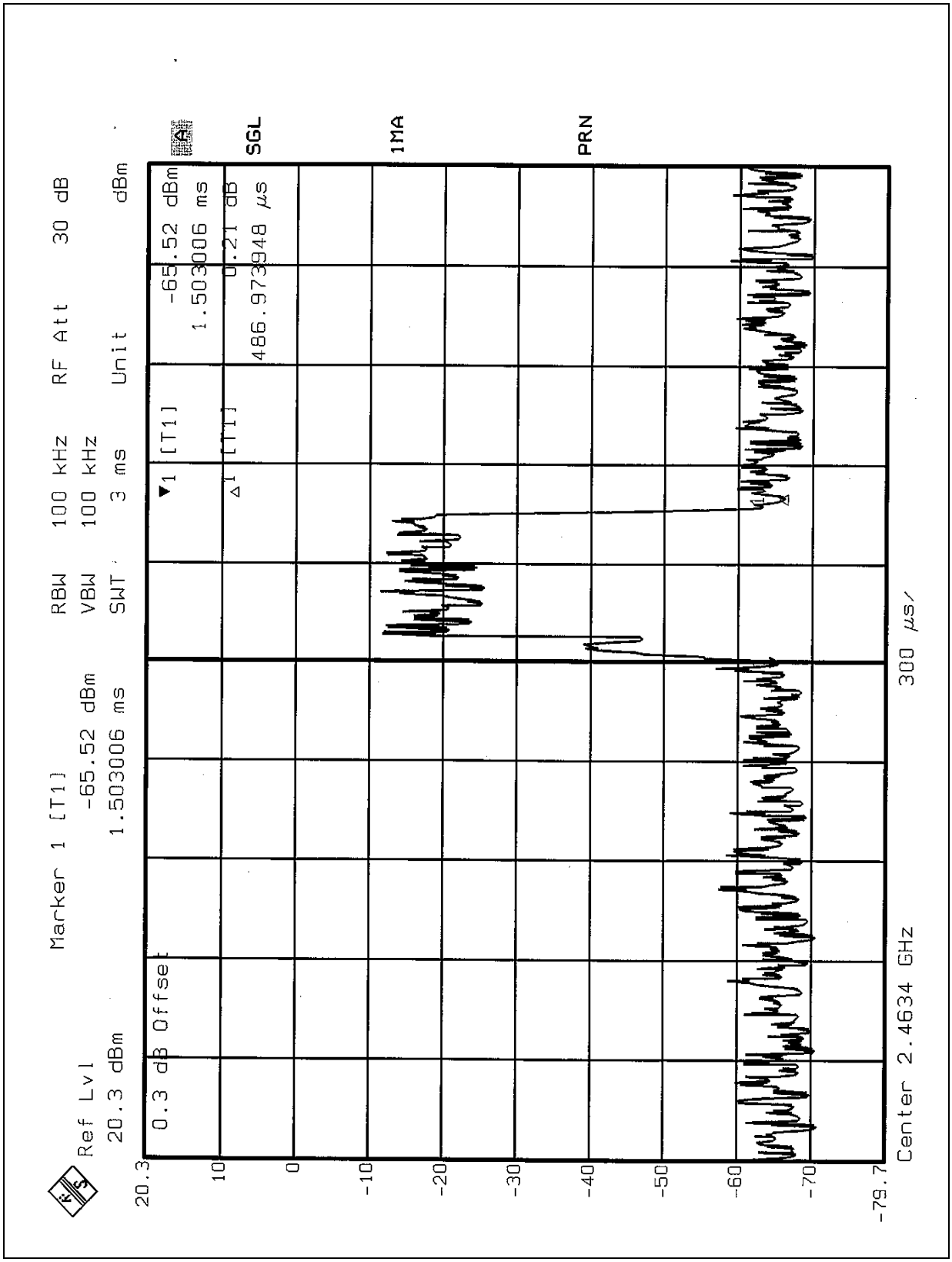
Mode	Number of transmission in a 31.6 (79Hopping*0.4)	Length of transmission time (msec)	Result (msec)	Limit (msec)
DH1	51 (times / 5 sec) *6.32=322.32 times	0.487	156.97	400
DH3	25 (times / 5 sec) *6.32=158.00 times	1.733	273.81	400
DH5	17 (times / 5 sec) *6.32=107.44 times	3.006	322.96	400

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

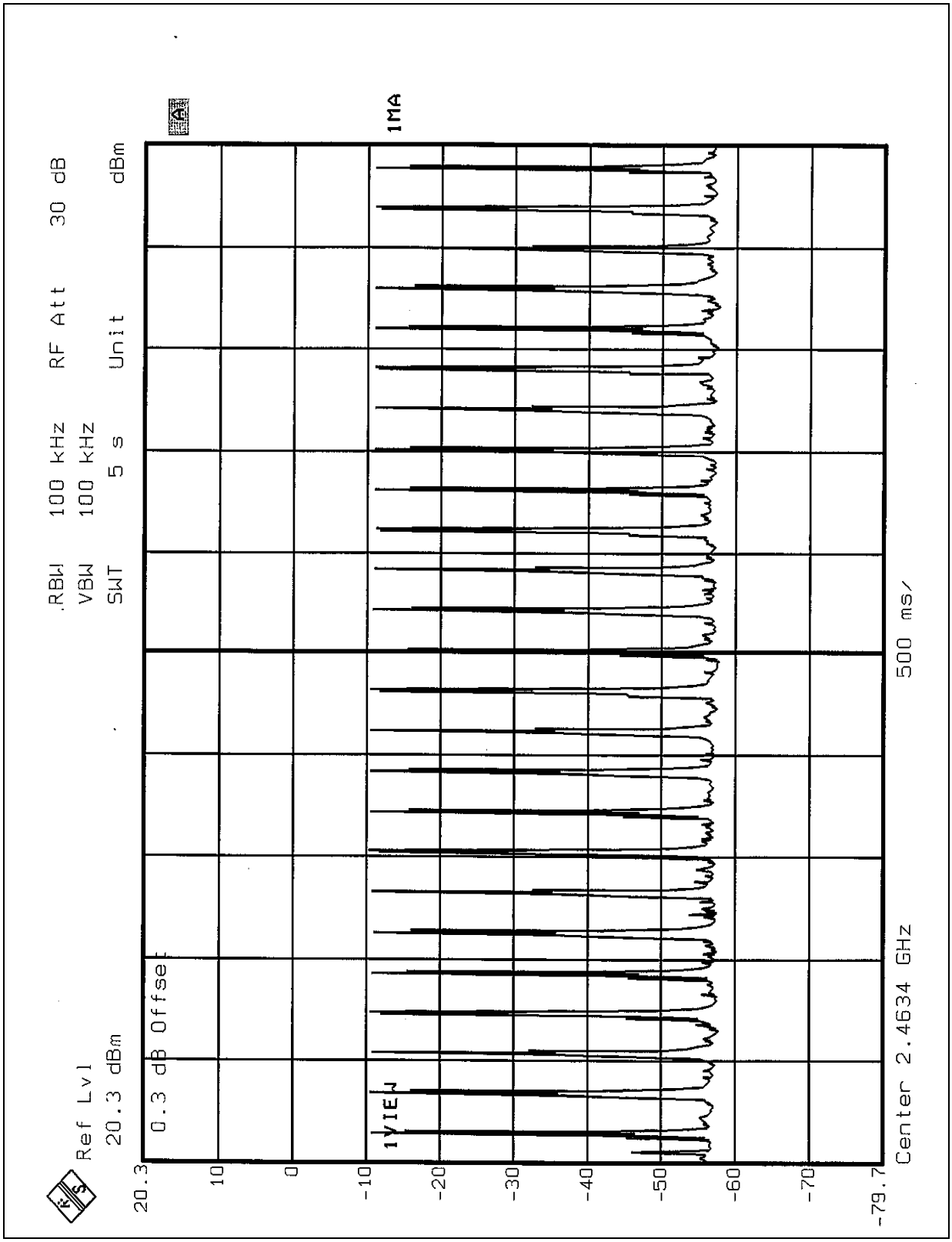
DH1


RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 30 dB
Unit dBm
1MA
Ref Lvl
20.3 dBm
0.3 dB Offset
1VIEW
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7
Center 2.4634 GHz
500 ms/

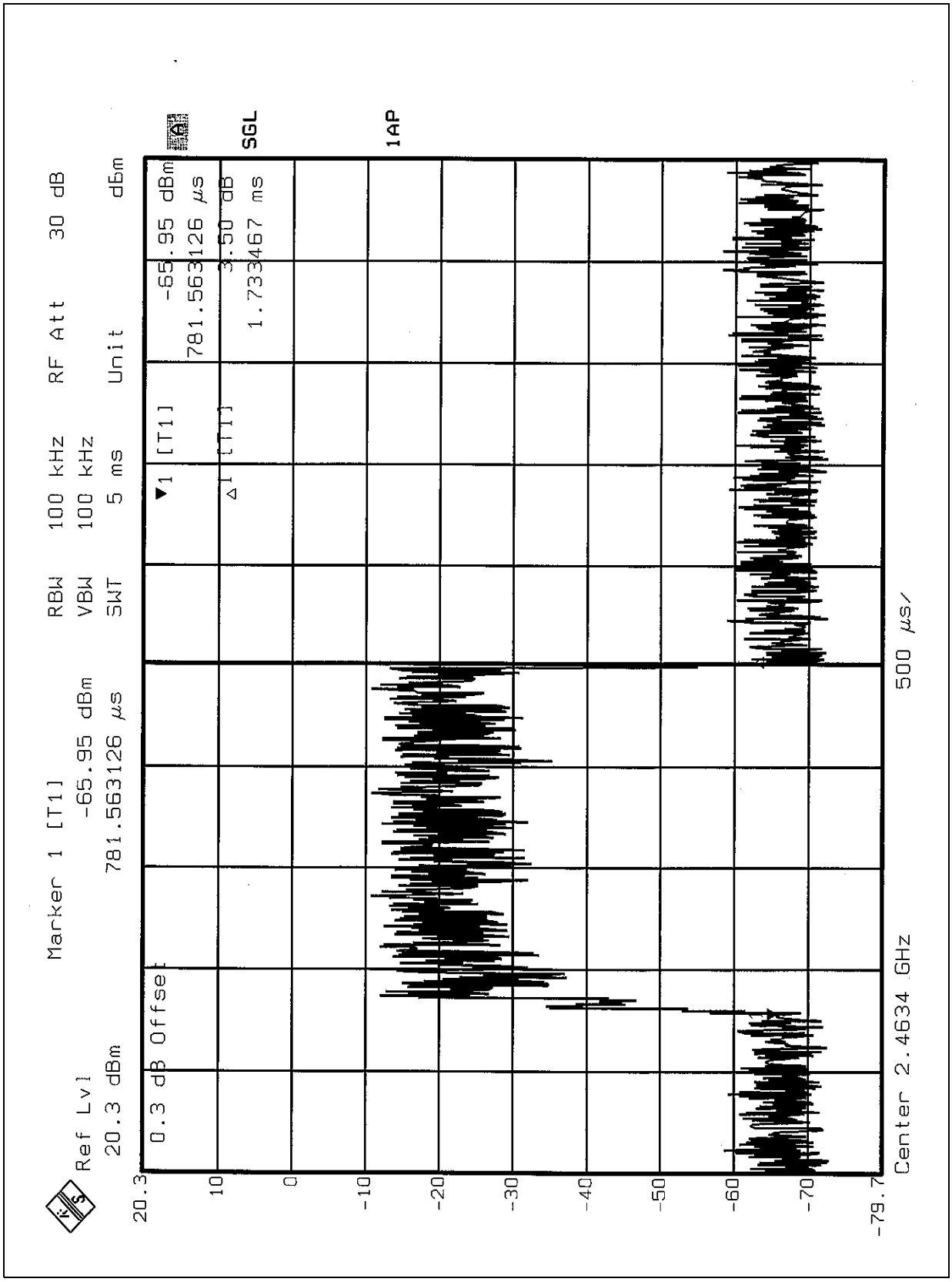
DH1


Marker 1 [T1]
-65.52 dBm
1.503006 ms
RBW 100 kHz
VBW 100 kHz
SWT 3 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.3 dBm
0.3 dB Offset
SGL
1MA
PRN
Center 2.4634 GHz
300 µs/
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7

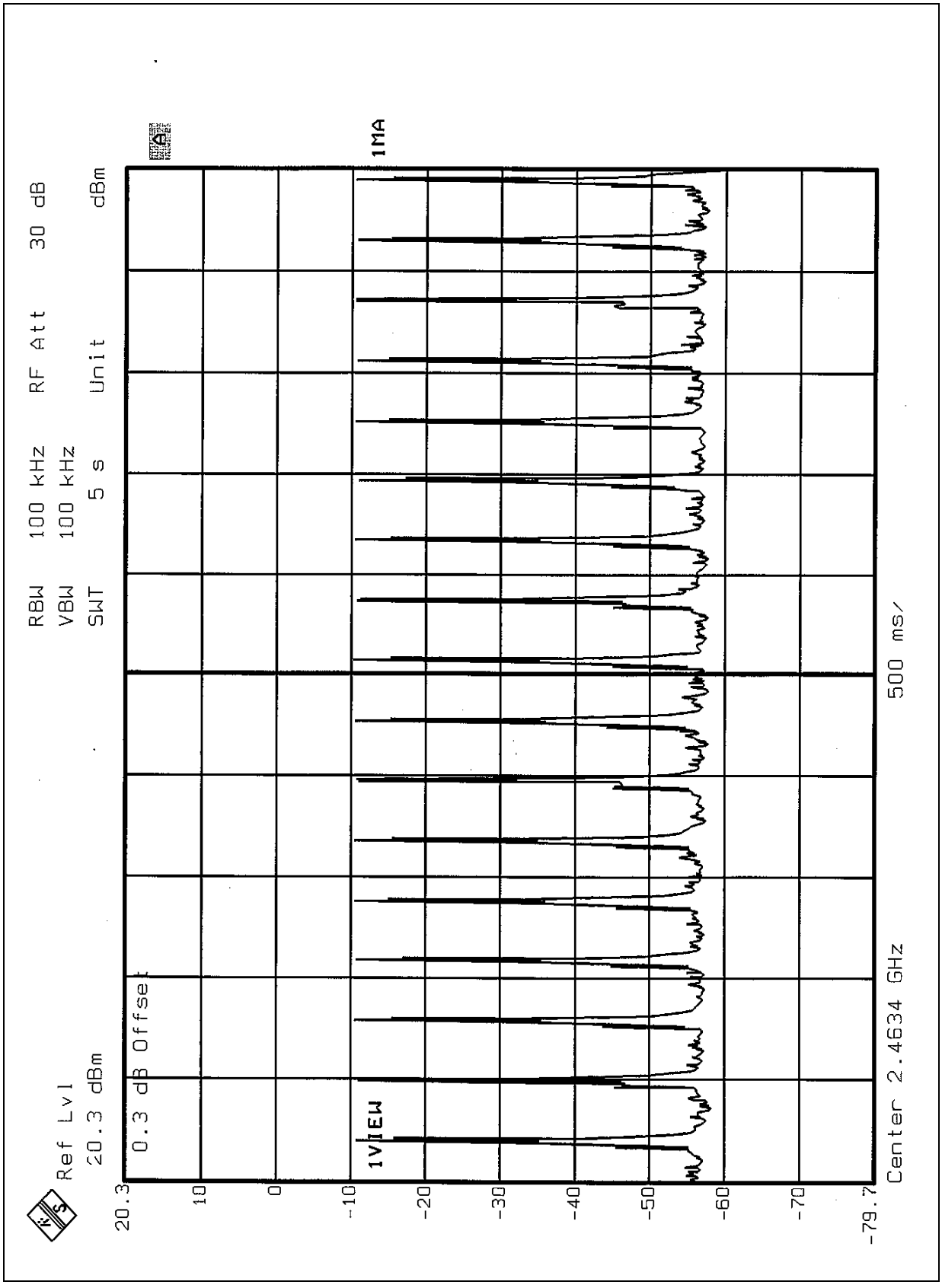
DH3


RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 30 dB
Unit dBm
1MA
1VIEW
Ref Lvl
20.3 dBm
0.3 dB Offset
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7
Center 2.4634 GHz
500 ms/

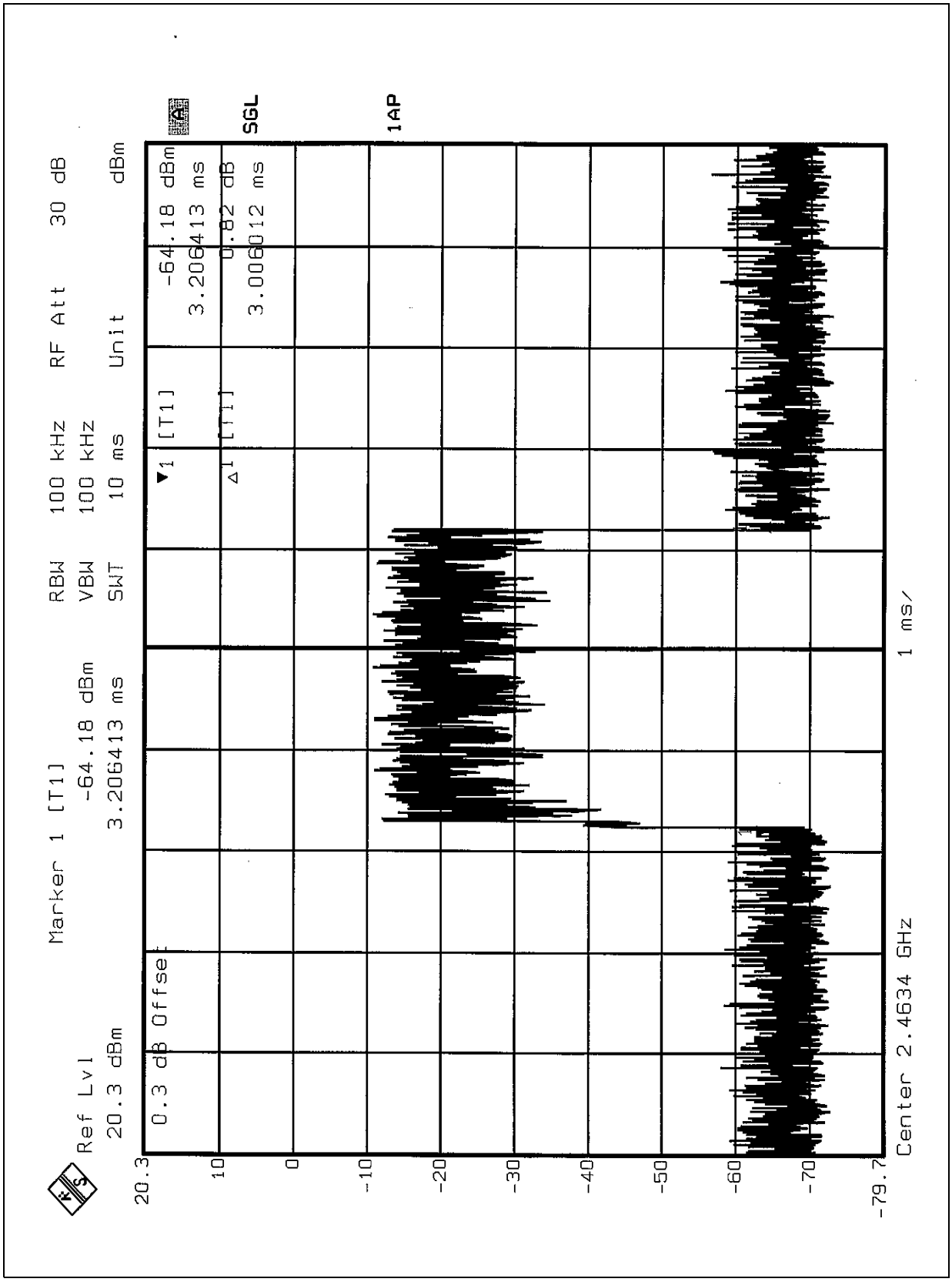
DH3


Marker 1 [T1]
-65.95 dBm
781.563126 µs
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.3 dBm
0.3 dB Offset
SGL
1AP
▼1 [T1]
-65.95 dBm
781.563126 µs
Δ1 [T1]
3.50 dB
1.733467 ms
Center 2.4634 GHz
500 µs/
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7

DH5


RBW 100 kHz
VBW 100 kHz
SWT 5 s
RF Att 30 dB
Unit dBm
1MA
Ref Lvl
20.3 dBm
0.3 dB Offset
1VIEW
Center 2.4634 GHz
500 ms/
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7

DH5


Marker 1 [T1]
-64.18 dBm
3.206413 ms
RBW 100 kHz
VBW 100 kHz
SWT 10 ms
RF Att 30 dB
Unit dBm
Ref Lvl
20.3 dBm
0.3 dB Offset
SGL
1AP
1 [T1] -64.18 dBm
3.206413 ms
Δ1 [T1] 0.82 dB
3.006012 ms
20.3
10
0
-10
-20
-30
-40
-50
-60
-70
-79.7
Center 2.4634 GHz
1 ms/

4.4 CHANNEL BANDWIDTH

4.4.1 LIMITS OF CHANNEL BANDWIDTH

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

4.4.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

NOTES:

1.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 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.

4.4.4 DEVIATION FROM TEST STANDARD

No deviation

4.4.5 TEST SETUP

4.4.6 EUT OPERATING CONDITION

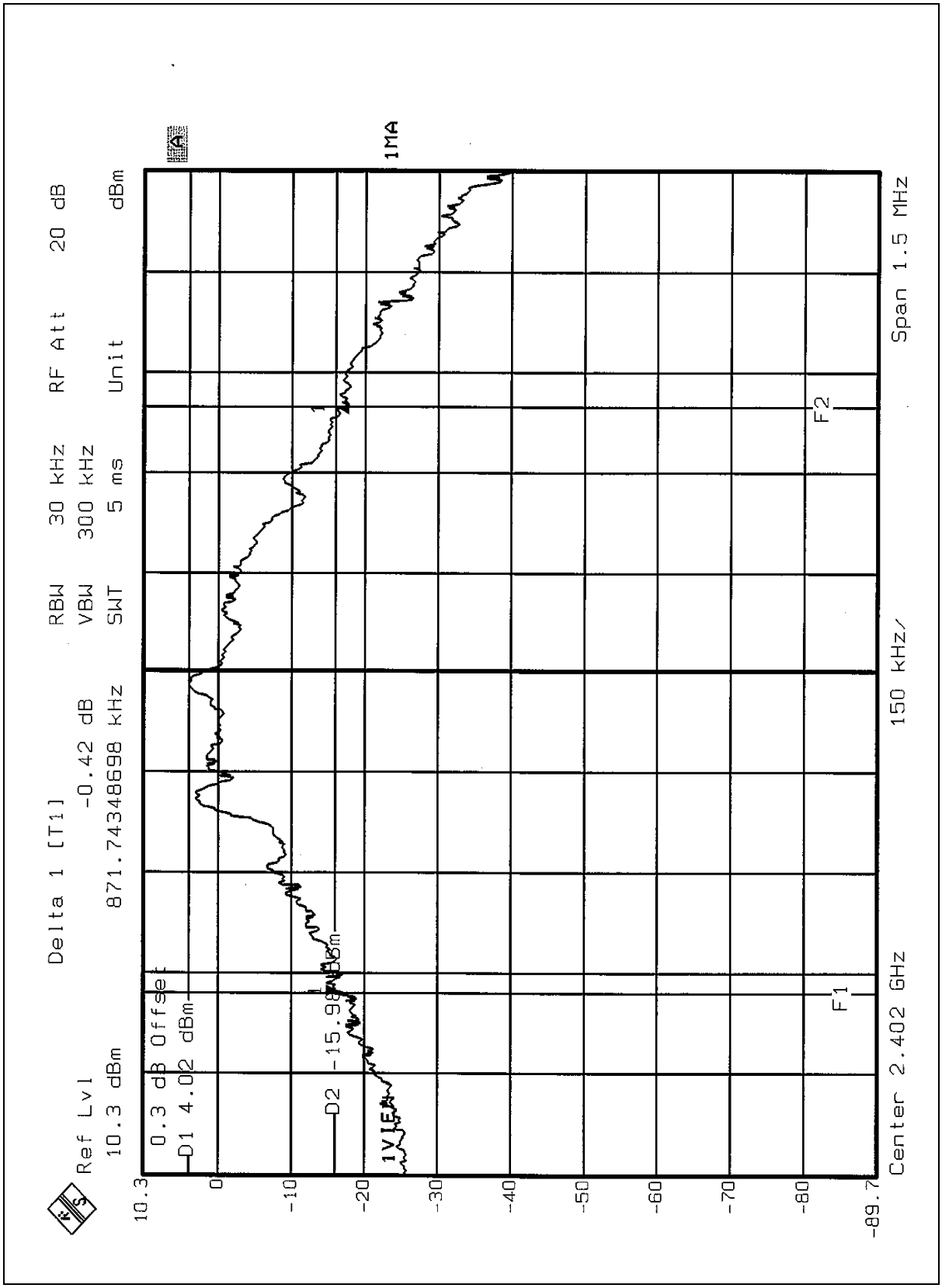
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.4.7 TEST RESULTS

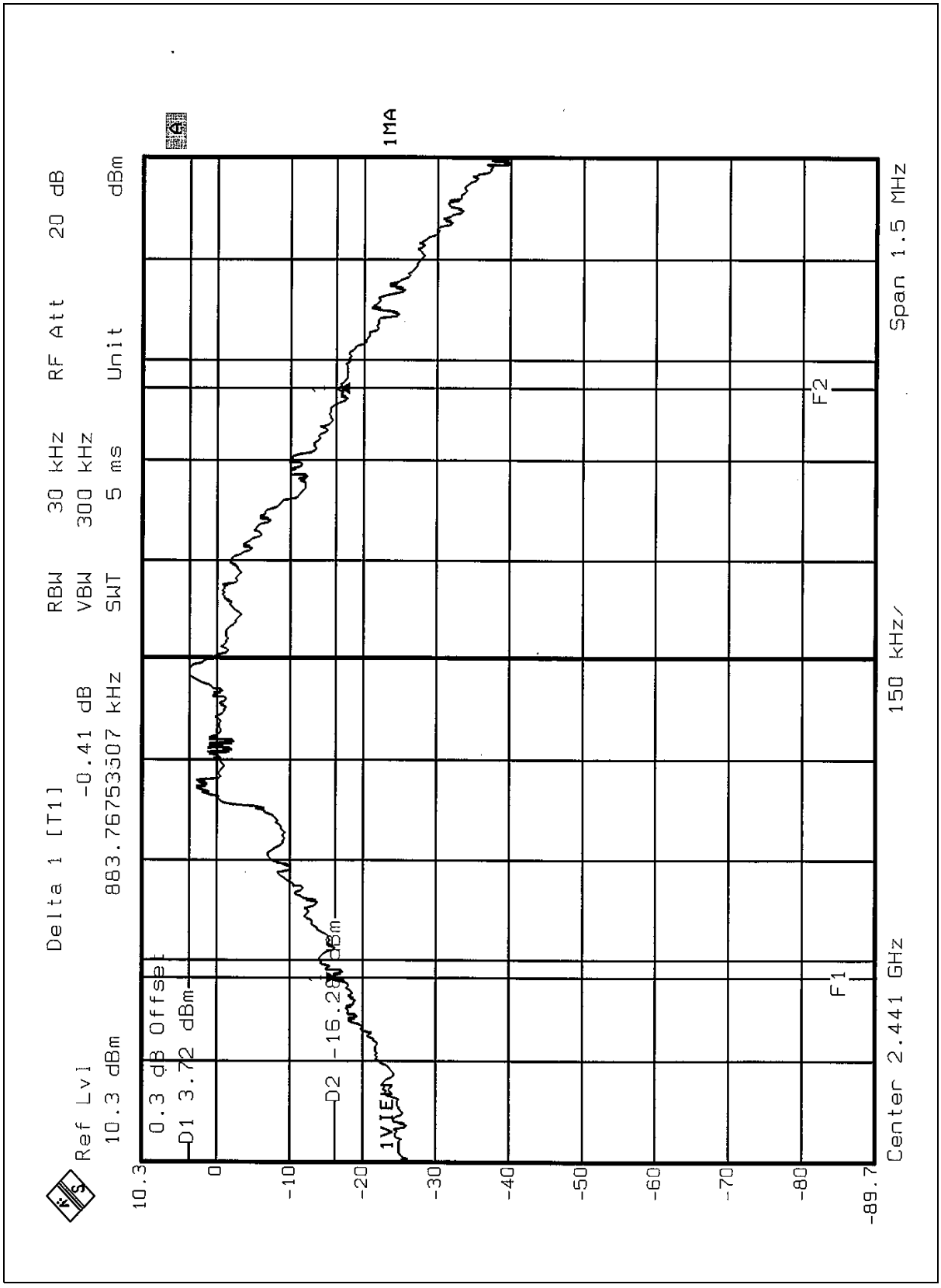
EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
ENVIRONMENTAL CONDITIONS	30deg. C, 70%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY: Allen Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (kHz)	MAXIMUM LIMIT (MHz)	PASS/FAIL
0	2402	871.743	1	PASS
39	2441	883.768	1	PASS
78	2480	868.737	1	PASS

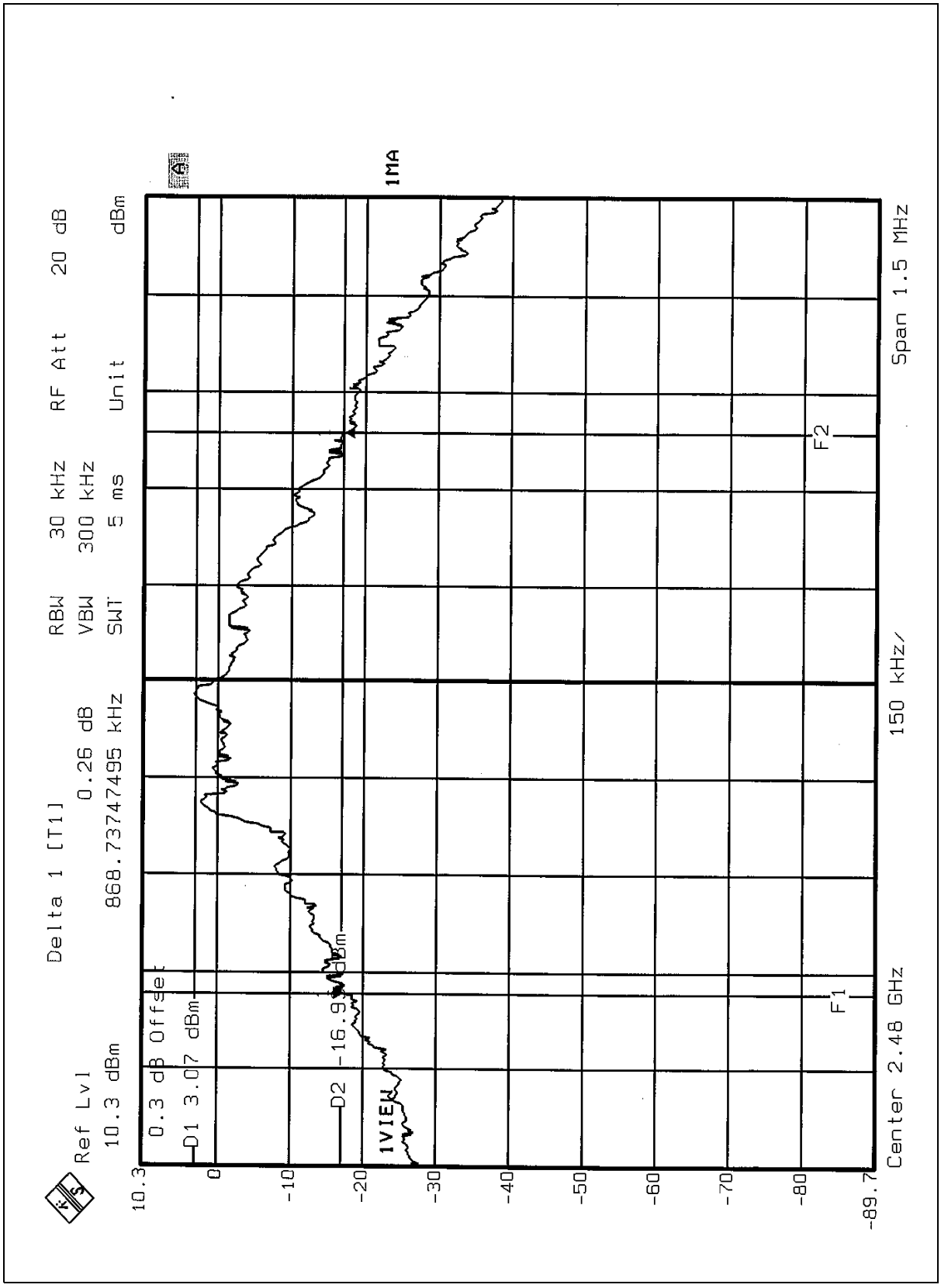
Channel 0


Ref Lvl
10.3 dBm
Delta 1 [T1]
-0.42 dB
871.74348698 kHz
RBW 30 kHz
VBW 300 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
0.3 dB Offset
D1 4.02 dBm
D2 -15.98 dBm
1VIEW
1MA
F1
F2
Center 2.402 GHz
150 kHz/
Span 1.5 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

Channel 39


Ref Lvl
10.3 dBm
Delta 1 [T1]
-0.41 dB
883.76753307 kHz
RBW 30 kHz
VBW 300 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
1MA
0.3 dB Offset
D1 3.72 dBm
D2 -15.28 dBm
1VIEW
F1
F2
Center 2.441 GHz
150 kHz/
Span 1.5 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

Channel 78


Delta 1 [T1]
0.26 dB
868.7374495 kHz
Ref Lvl
10.3 dBm
0.3 dB Offset
D1 3.07 dBm
D2 -16.9 dBm
1VIEW
1MA
RBW 30 kHz
VBW 300 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
Center 2.48 GHz
150 kHz/
Span 1.5 MHz
F1
F2
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

4.5 HOPPING CHANNEL SEPARATION

4.5.1 LIMIT OF HOPPING CHANNEL SEPARATION

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

4.5.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

NOTES:

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

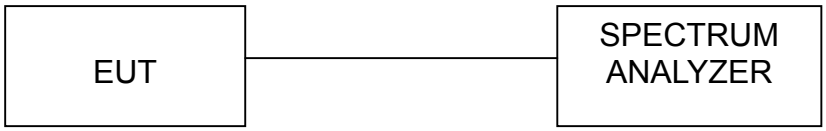
4.5.3 TEST PROCEDURES

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.

4.5.4 DEVIATION FROM TEST STANDARD

No deviation

4.5.5 TEST SETUP



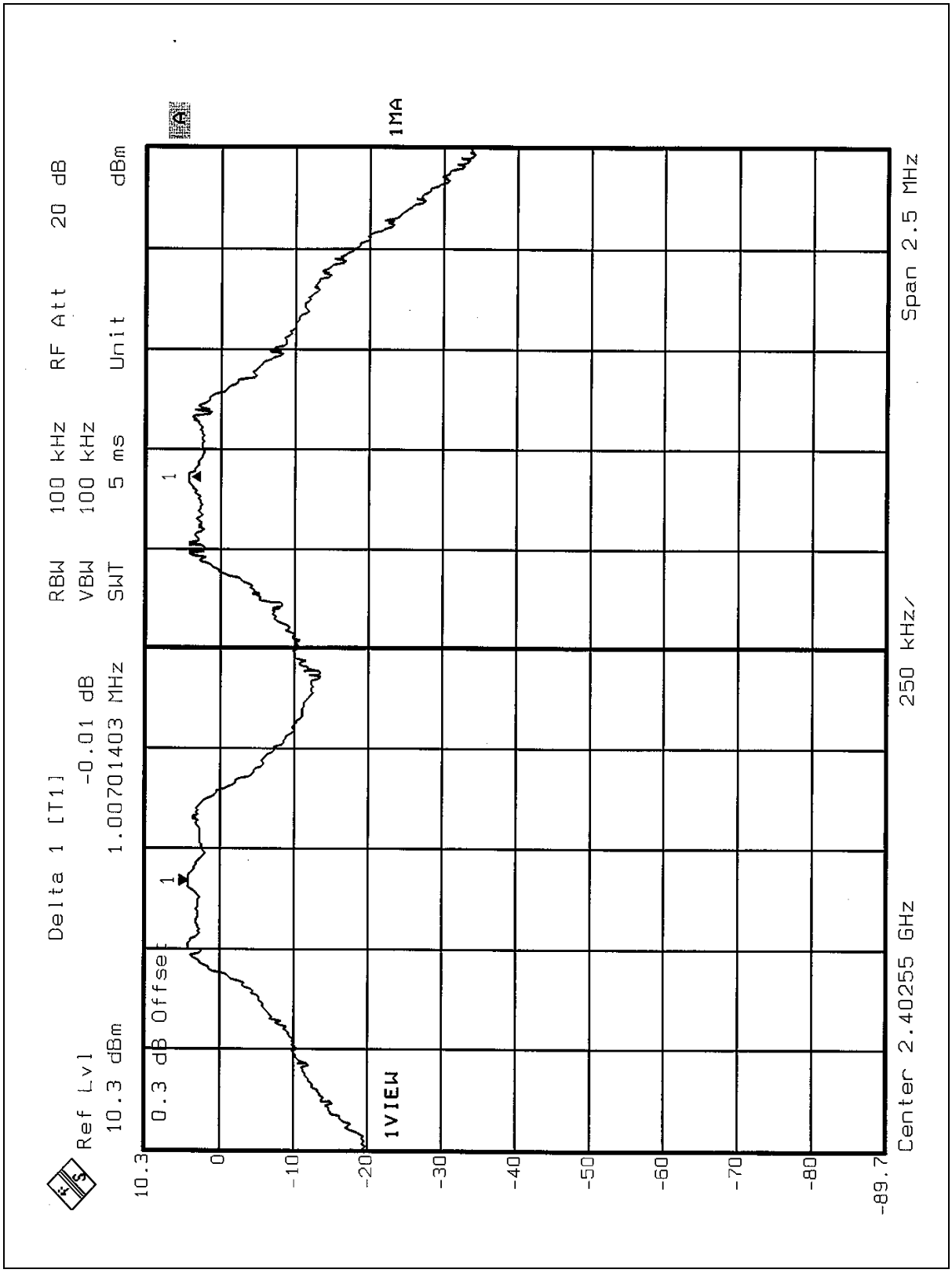
4.5.6 TEST RESULTS

EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY: Allen Chang			

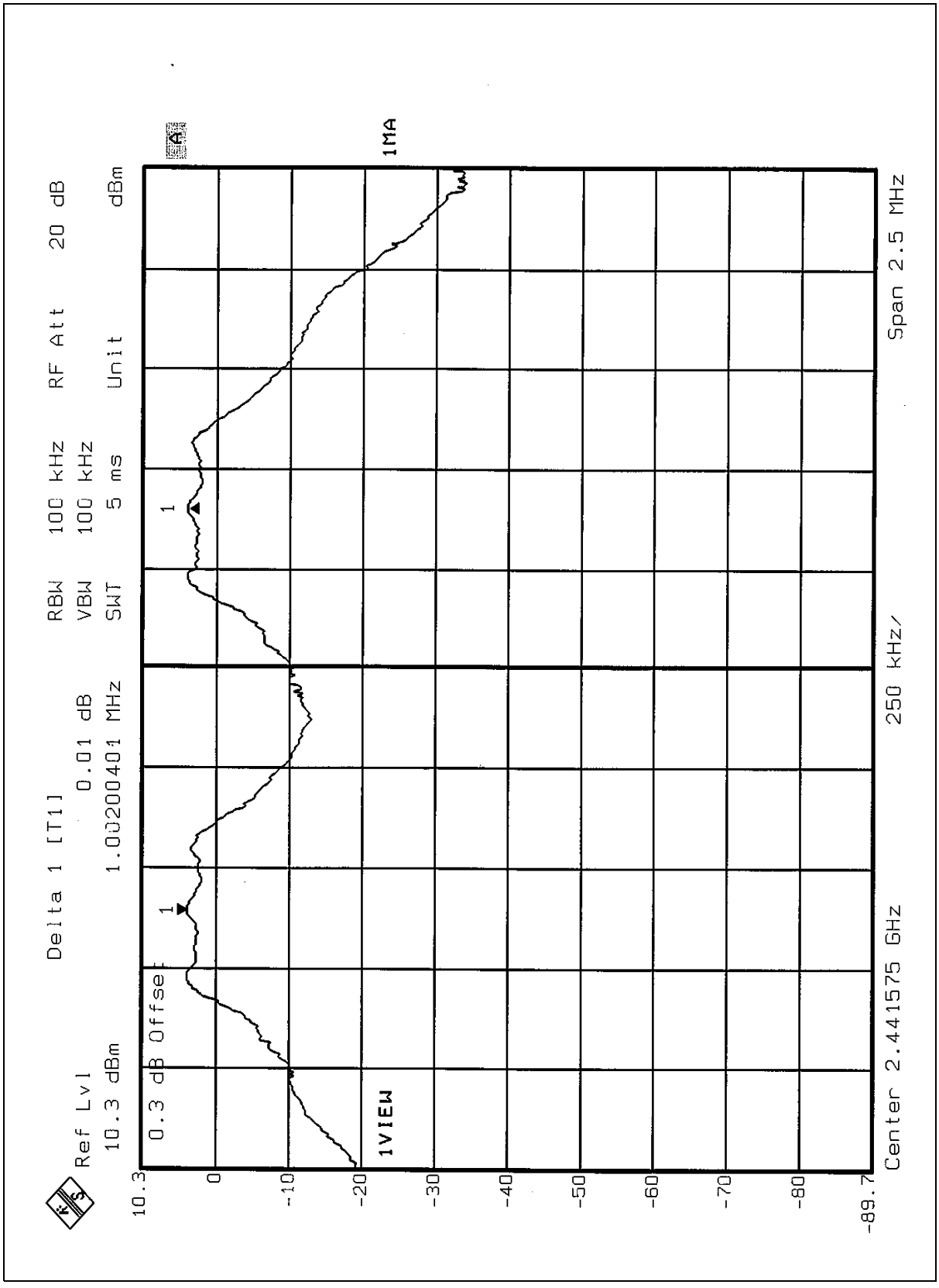
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	2402	1.007MHz	871.743	PASS
39	2441	1.002MHz	883.768	PASS
78	2480	1.012MHz	868.737	PASS

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

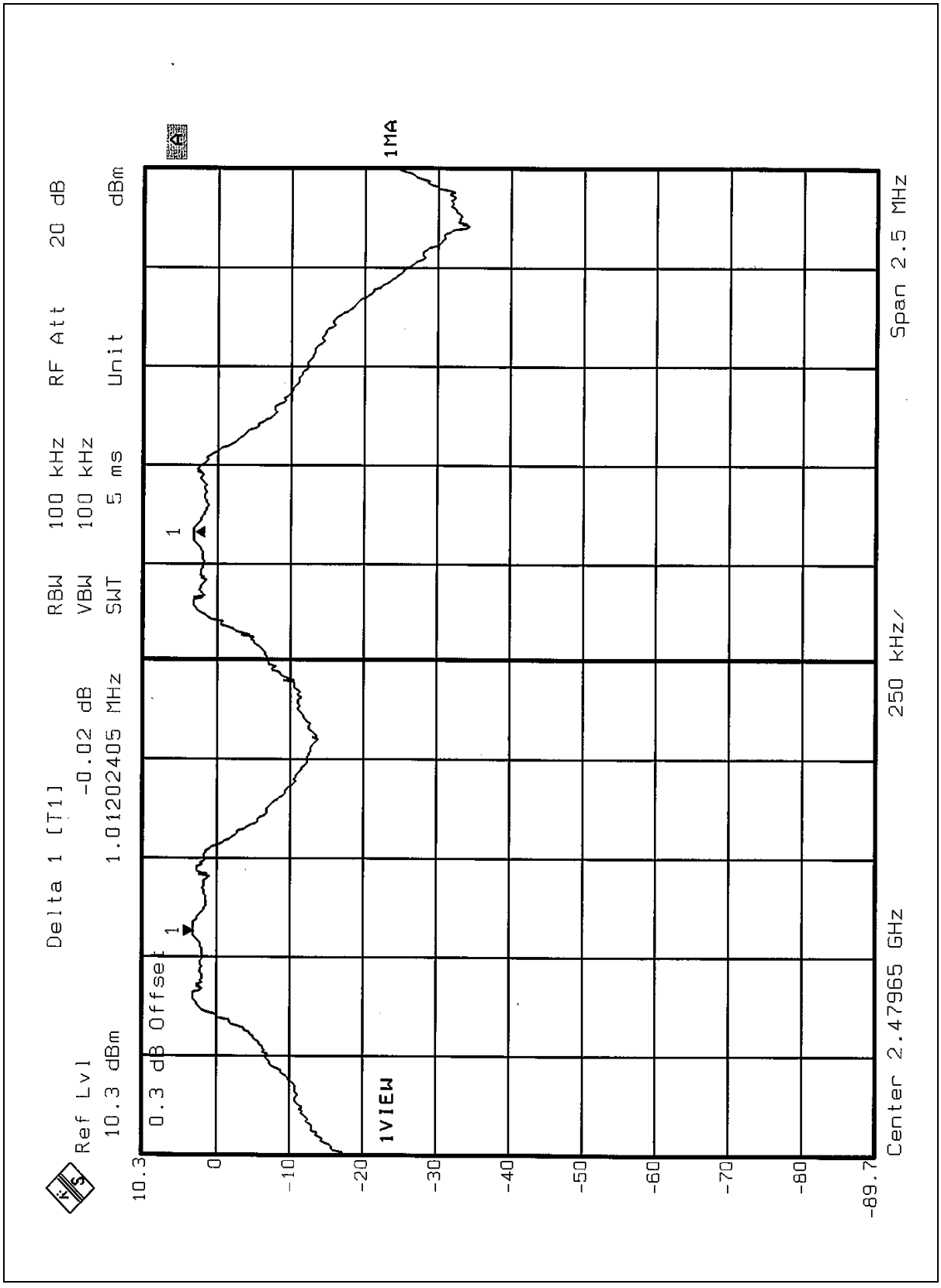
Channel 0


Delta 1 [T1]
-0.01 dB
1.00701403 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
Ref Lvl
10.3 dBm
0.3 dB Offset
1VIEW
1MA
Center 2.40255 GHz
250 kHz/
Span 2.5 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

Channel 39


Ref Lvl
10.3 dBm
0.3 dB Offset
Delta 1 [T1]
0.01 dB
1.00200401 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
1MA
1VIEW
Center 2.441575 GHz
250 kHz/
Span 2.5 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

Channel 78


Delta 1 [T1]
-0.02 dB
1.01202405 MHz
RBW 100 kHz
VBW 100 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
Ref Lvl
10.3 dBm
0.3 dB Offset
1VIEW
1MA
Center 2.47965 GHz
250 kHz/
Span 2.5 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

4.6.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYEER	FSEK30	100049	Aug. 12, 2004

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

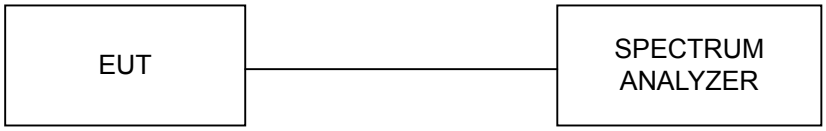
4.6.3 TEST PROCEDURES

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 1 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.

4.6.4 DEVIATION FROM TEST STANDARD

No deviation

4.6.5 TEST SETUP



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

4.6.6 EUT OPERATING CONDITION

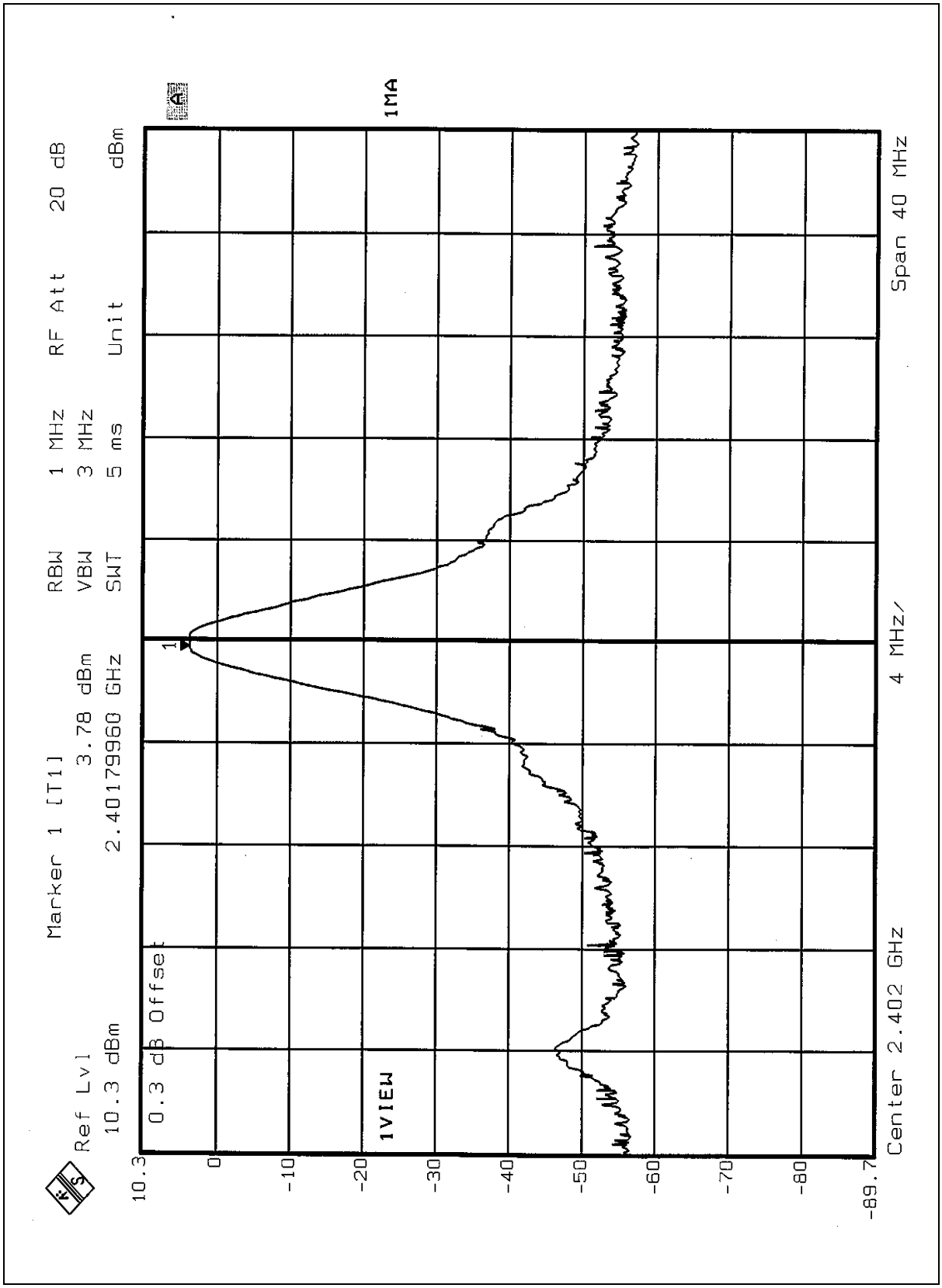
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.6.7 TEST RESULTS

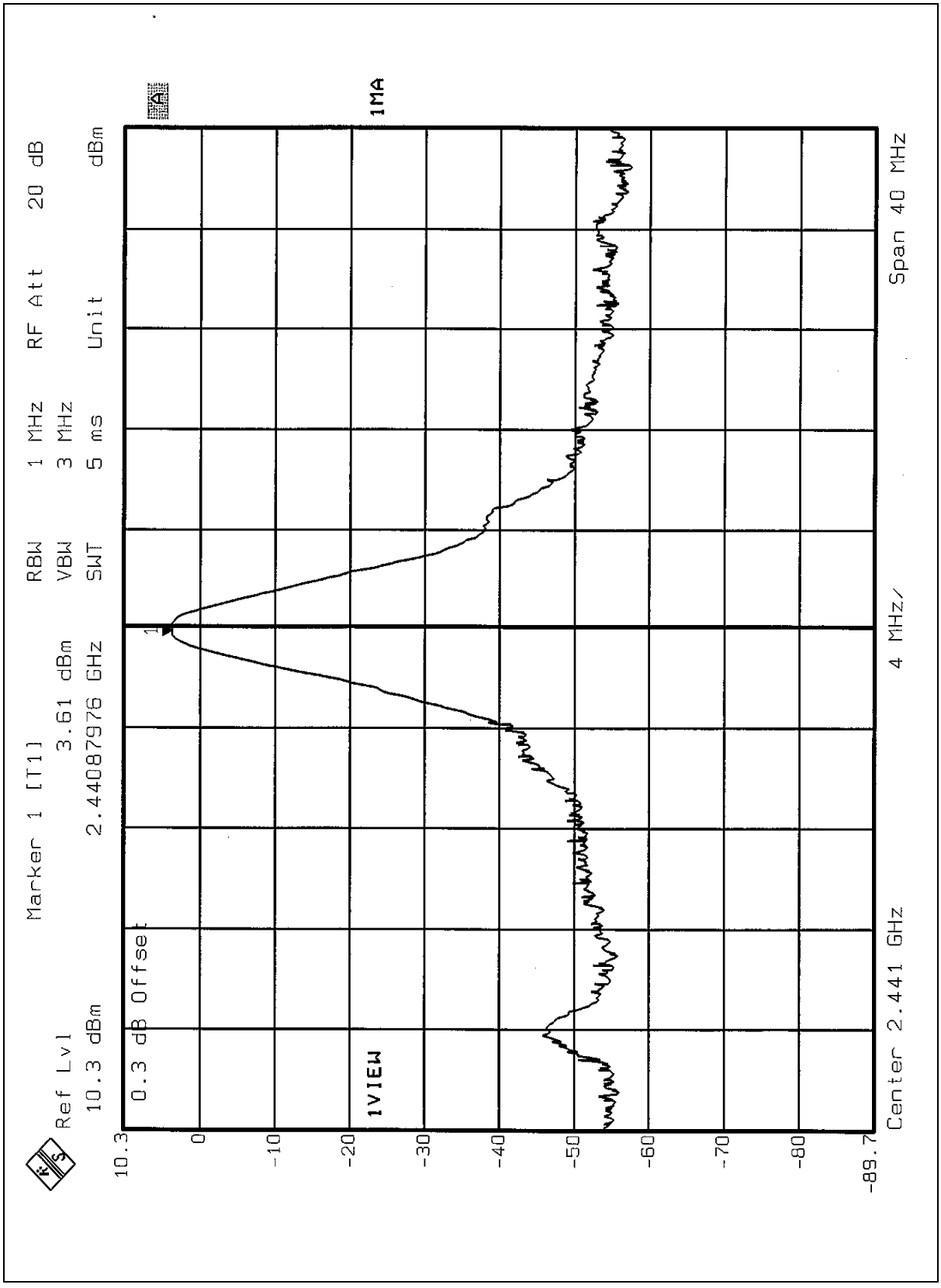
EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
ENVIRONMENTAL CONDITIONS	30 deg. C, 70%RH, 991 hPa	**INPUT POWER (SYSTEM)**	120Vac, 60 Hz
TESTED BY: Allen Chang			

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	2402	3.78	30	PASS
39	2441	3.61	30	PASS
78	2480	2.82	30	PASS

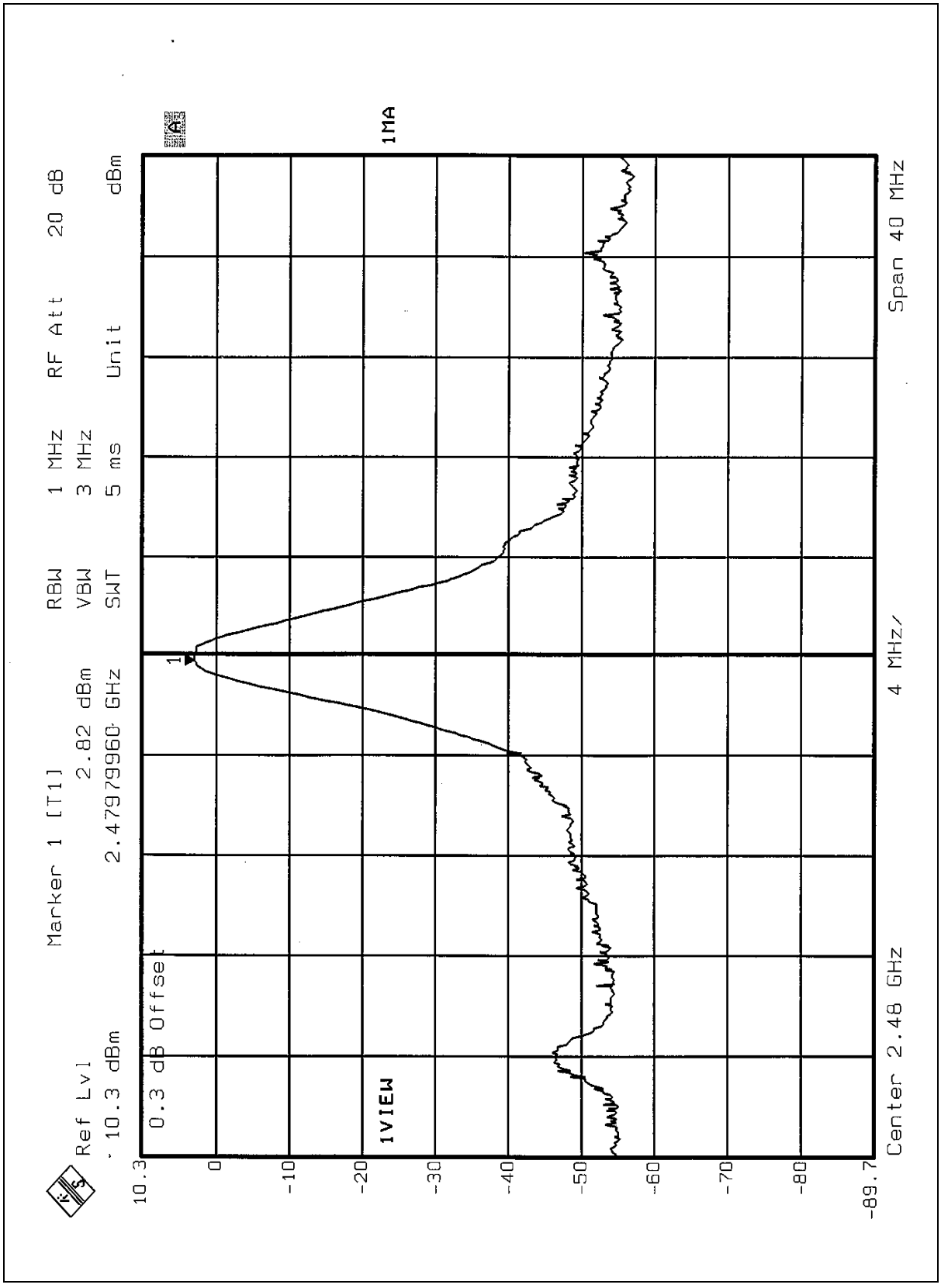
Channel 0


Ref Lvl
10.3 dBm
0.3 dB Offset
Marker 1 [T1]
3.78 dBm
2.40179960 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 20 dB
Unit dBm
1MA
1VIEW
Center 2.402 GHz
4 MHz/
Span 40 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

Channel 39


Marker 1 [T1]
3.61 dBm
2.44087976 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 20 dB
Unit dBm
Ref Lvl
10.3 dBm
0.3 dB Offset
1VIEW
1MA
Span 40 MHz
4 MHz/
Center 2.441 GHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

Channel 78


Ref Lvl
10.3 dBm
0.3 dB Offset
Marker 1 [T1]
2.82 dBm
2.47979960 GHz
RBW 1 MHz
VBW 3 MHz
SWT 5 ms
RF Att 20 dB
Unit dBm
1MA
1VIEW
Center 2.48 GHz
4 MHz/
Span 40 MHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7

4.7 RADIATED EMISSION MEASUREMENT

4.7.1 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.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
Test Receiver ROHDE & SCHWARZ	ESI7	838496/016	Feb. 09, 2005
Spectrum Analyzer ROHDE & SCHWARZ	FSP40	100041	Dec. 15, 2004
BILOG Antenna SCHWARZBECK	VULB9168	9168-155	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9120D	9120D-404	Feb. 03, 2005
HORN Antenna SCHWARZBECK	BBHA 9170	BBHA 9170242	Feb. 23, 2005
Preamplifier Agilent	8447D	2944A10631	Jan. 15, 2005
Preamplifier Agilent	8449B	3008A01960	Jan. 22, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219272/4	Mar. 04, 2005
RF signal cable HUBER+SUHNNER	SUCOFLEX 104	219275/4	Mar. 04, 2005
Software ADT.	ADT_Radiated_V5.14	NA	NA
Antenna Tower inn-co GmbH	MA 4000	010303	NA
Antenna Tower Controller inn-co GmbH	CO2000	019303	NA
Turn Table ADT.	TT100.	TT93021704	NA
Turn Table Controller ADT.	SC100.	SC93021704	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. The test was performed in HwaYa Chamber 3.
3. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
4. The IC Site Registration No. is IC4924-4.

4.7.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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.

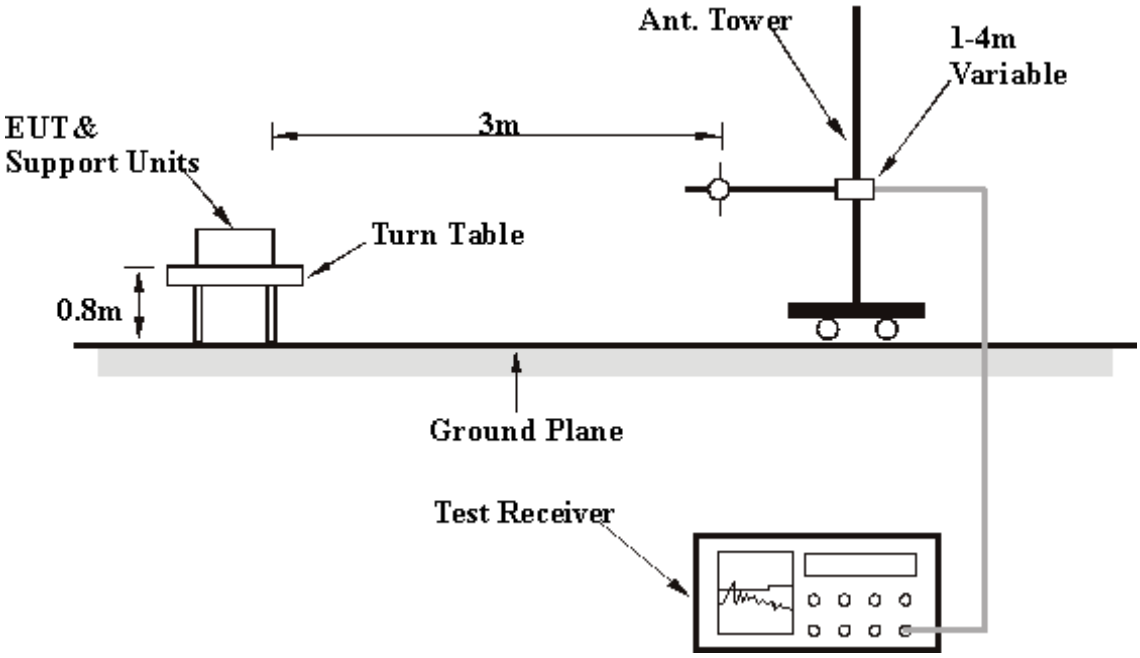
NOTE:

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 10 Hz for Average detection (AV) at frequency above 1GHz.

4.7.4 DEVIATION FROM TEST STANDARD

No deviation

4.7.5 TEST SETUP



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

4.7.6 TEST RESULTS

EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	78	**FREQUENCY RANGE**	Below 1GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Quasi-Peak
ENVIRONMENTAL CONDITIONS	30 deg. C, 70 % RH, 991hPa	**TESTED BY**	Allen 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	53.33	25.71 QP	40.00	-14.29	2.00 H	280	11.43	14.27
2	115.53	32.25 QP	43.50	-11.25	2.00 H	106	19.83	12.42
3	168.02	36.73 QP	43.50	-6.77	1.50 H	118	22.61	14.12
4	397.39	28.55 QP	46.00	-17.45	1.00 H	313	11.88	16.67
5	465.43	27.00 QP	46.00	-19.00	2.00 H	292	8.82	18.18
6	665.65	29.06 QP	46.00	-16.94	1.00 H	280	7.42	21.64
7	733.69	29.82 QP	46.00	-16.18	1.00 H	100	6.98	22.84
8	832.83	28.24 QP	46.00	-17.76	1.00 H	214	4.49	23.76
9	914.47	34.75 QP	46.00	-11.25	2.00 H	325	9.79	24.96

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	37.78	29.82 QP	40.00	-10.18	1.00 V	34	14.86	14.96
2	72.77	25.79 QP	40.00	-14.21	1.00 V	40	14.03	11.76
3	129.14	31.72 QP	43.50	-11.78	1.00 V	133	18.14	13.58
4	168.02	37.15 QP	43.50	-6.35	1.00 V	100	23.03	14.12
5	391.56	30.00 QP	46.00	-16.00	1.00 V	25	13.47	16.53
6	465.43	26.89 QP	46.00	-19.11	1.00 V	181	8.71	18.18
7	599.56	26.68 QP	46.00	-19.32	1.00 V	133	5.86	20.82
8	935.85	29.00 QP	46.00	-17.00	1.00 V	97	3.82	25.18

REMARKS: 1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
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.

EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	Channel 0	**FREQUENCY RANGE**	1 ~25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70 % RH, 991hPa	**TESTED BY**	Allen 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	1202.00	46.08 PK	74.00	-27.92	1.19 H	212	16.63	29.45
1	1202.00	41.51 AV	54.00	-12.49	1.19 H	212	12.06	29.45
2	2370.00	47.66 PK	74.00	-26.34	1.09 H	209	13.93	33.73
2	2370.00	39.39 AV	54.00	-14.61	1.09 H	209	5.66	33.73
3	2386.00	46.19 PK	74.00	-27.81	1.04 H	210	12.38	33.81
3	2386.00	16.19 AV	54.00	-37.81	1.04 H	210	-17.62	33.81
4	*2402.00	97.98 PK			1.04 H	210	64.10	33.88
4	*2402.00	67.98 AV			1.04 H	210	34.10	33.88
5	4804.00	57.73 PK	74.00	-16.27	1.03 H	342	17.08	40.64
5	4804.00	27.73 AV	54.00	-26.27	1.03 H	342	-12.91	40.64
6	7206.00	55.50 PK	74.00	-18.50	1.05 H	85	7.74	47.76
6	7206.00	25.50 AV	54.00	-28.50	1.05 H	85	-22.26	47.76

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	1202.00	44.32 PK	74.00	-29.68	1.24 V	163	14.87	29.45
1	1202.00	38.08 AV	54.00	-15.18	1.24 V	163	9.37	29.45
2	2370.00	48.07 PK	74.00	-25.93	1.00 V	117	14.34	33.73
2	2370.00	38.08 AV	54.00	-15.92	1.00 V	117	4.35	33.73
3	2386.00	45.31 PK	74.00	-28.69	1.00 V	118	11.50	33.81
3	2386.00	15.31 AV	54.00	-38.69	1.00 V	118	-18.50	33.81
4	*2402.00	97.10 PK			1.00 V	118	63.22	33.88
4	*2402.00	67.10 AV			1.00 V	118	33.22	33.88
5	4804.00	55.32 PK	74.00	-18.68	1.21 V	98	14.67	40.64
5	4804.00	25.32 AV	54.00	-28.68	1.21 V	98	-15.32	40.64
6	7206.00	52.50 PK	74.00	-21.50	1.13 V	122	4.74	47.76
6	7206.00	22.50 AV	54.00	-31.50	1.13 V	122	-25.26	47.76

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
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: 20log(3.125/100)= -30dB
7. Average value = peak reading –20log(duty cycle)

EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	Channel 39	**FREQUENCY RANGE**	1 ~25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70 % RH, 991hPa	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

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	1221.00	47.04 PK	74.00	-26.96	1.22 H	62	17.45	29.58
1	1221.00	42.82 AV	54.00	-11.18	1.22 H	62	13.23	29.58
2	*2441.00	99.36 PK			1.05 H	211	65.30	34.06
2	*2441.00	69.36 AV			1.05 H	211	35.30	34.06
3	4882.00	57.07 PK	74.00	-16.93	1.00 H	344	16.37	40.70
3	4882.00	27.07 AV	54.00	-26.93	1.00 H	344	-13.63	40.70
4	7323.00	54.80 PK	74.00	-19.20	1.41 H	34	6.74	48.06
4	7323.00	24.80 AV	54.00	-29.20	1.41 H	34	-23.26	48.06

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

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	1221.00	44.44 PK	74.00	-29.56	1.07 V	125	14.85	29.58
1	1221.00	38.18 AV	54.00	-15.82	1.07 V	125	8.59	29.58
2	*2441.00	97.68 PK			1.00 V	118	63.62	34.06
2	*2441.00	67.68 AV			1.00 V	118	33.62	34.06
3	4882.00	56.71 PK	74.00	-17.29	1.03 V	296	16.01	40.70
3	4882.00	26.71 AV	54.00	-27.29	1.03 V	296	-13.99	40.70
4	7323.00	51.40 PK	74.00	-22.60	1.04 V	274	3.34	48.06
4	7323.00	21.40 AV	54.00	-32.60	1.04 V	274	-26.66	48.06

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
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: 20log(3.125/100)= -30dB
7. Average value = peak reading –20log(duty cycle)

EUT	Bluetooth USB Dongle	**MODEL**	BT-0002M-5
CHANNEL	Channel 78	**FREQUENCY RANGE**	1 ~25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	30 deg. C, 70 % RH, 991hPa	**TESTED BY**	Allen Chang

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3M

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	1240.00	46.25 PK	74.00	-27.75	1.15 H	62	16.53	29.72
1	1240.00	41.61 AV	54.00	-12.39	1.15 H	62	11.89	29.72
2	*2480.00	100.57 PK			1.03 H	211	66.33	34.24
2	*2480.00	70.57 AV			1.03 H	211	36.33	34.24
3	2484.40	55.04 PK	74.00	-18.96	1.03 H	211	20.78	34.26
3	2484.40	25.04 AV	54.00	-28.96	1.03 H	211	-9.22	34.26
4	4960.00	57.12 PK	74.00	-16.88	1.00 H	355	16.03	41.09
4	4960.00	27.12 AV	54.00	-26.88	1.00 H	355	-13.97	41.09
5	7440.00	54.80 PK	74.00	-19.20	1.13 H	328	6.40	48.40
5	7440.00	24.80 AV	54.00	-29.20	1.13 H	328	-23.60	48.40

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3M

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	1240.00	43.02 PK	74.00	-30.98	1.00 V	57	13.30	29.72
1	1240.00	35.21 AV	54.00	-18.79	1.00 V	57	5.49	29.72
2	*2480.00	95.22 PK			1.04 V	207	60.98	34.24
2	*2480.00	65.22 AV			1.04 V	207	30.98	34.24
3	2484.40	46.69 PK	74.00	-27.31	1.04 V	207	12.43	34.26
3	2484.40	19.69 AV	54.00	-34.31	1.04 V	207	-14.57	34.26
4	4960.00	58.25 PK	74.00	-15.75	1.47 V	244	17.16	41.09
4	**4960.00**	**28.25 AV**	**54.00**	**-25.75**	**1.47 V**	**244**	**-12.84**	**41.09**
5	7440.00	56.40 PK	74.00	-17.60	1.74 V	52	8.00	48.40
5	7440.00	26.40 AV	54.00	-27.60	1.74 V	52	-22.00	48.40

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. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. " * " : Fundamental frequency
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: 20log(3.125/100)= -30dB
7. Average value = peak reading –20log(duty cycle)

4.8 BAND EDGES MEASUREMENT

4.8.1 LIMITS OF BAND EDGES MEASUREMENT

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

4.8.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2004

NOTES:

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

4.8.3 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 MHz bandwidth from band edge. The band edges was measured and recorded.

4.8.4 DEVIATION FROM TEST STANDARD

No deviation

4.8.5 EUT OPERATING CONDITION

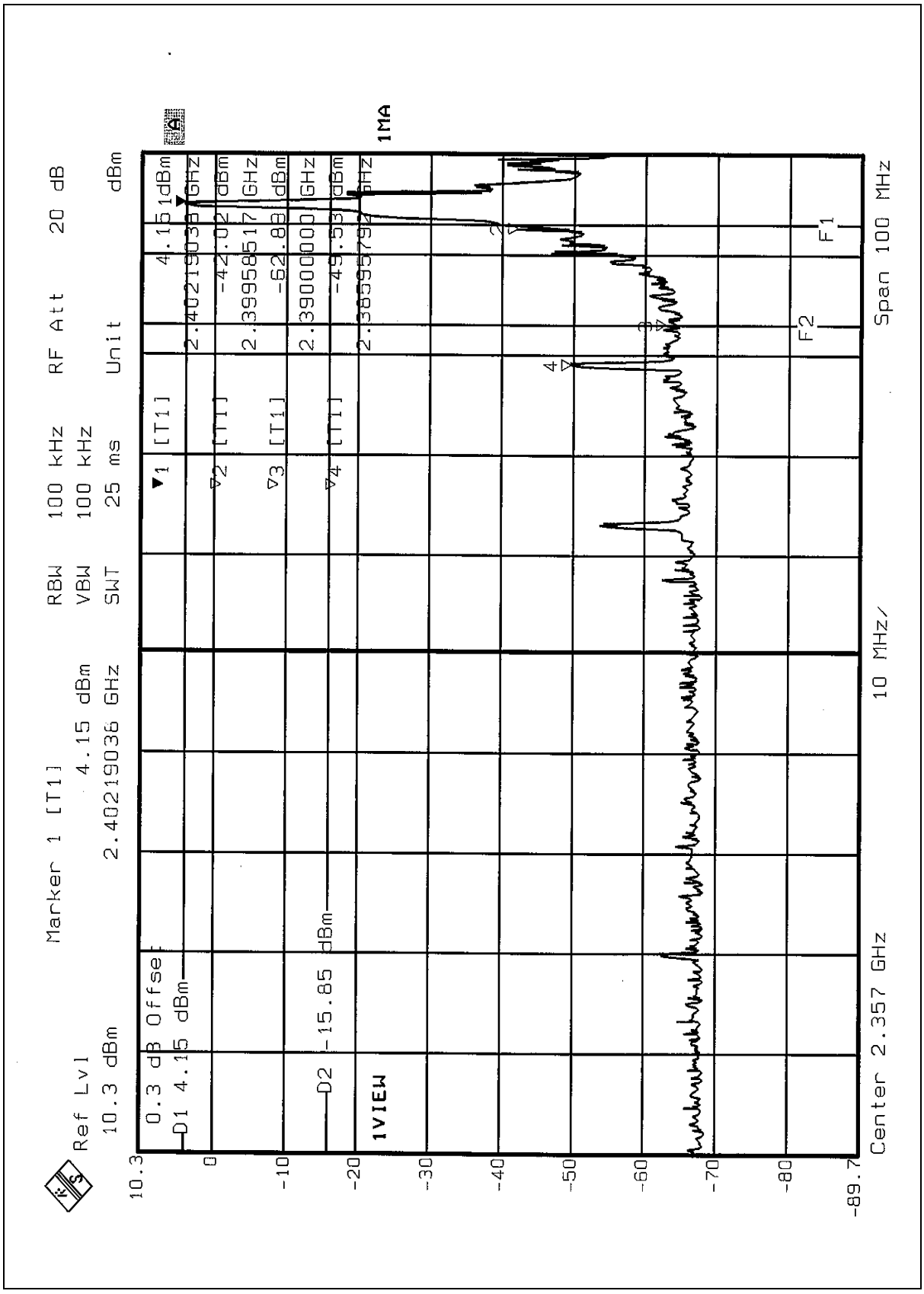
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

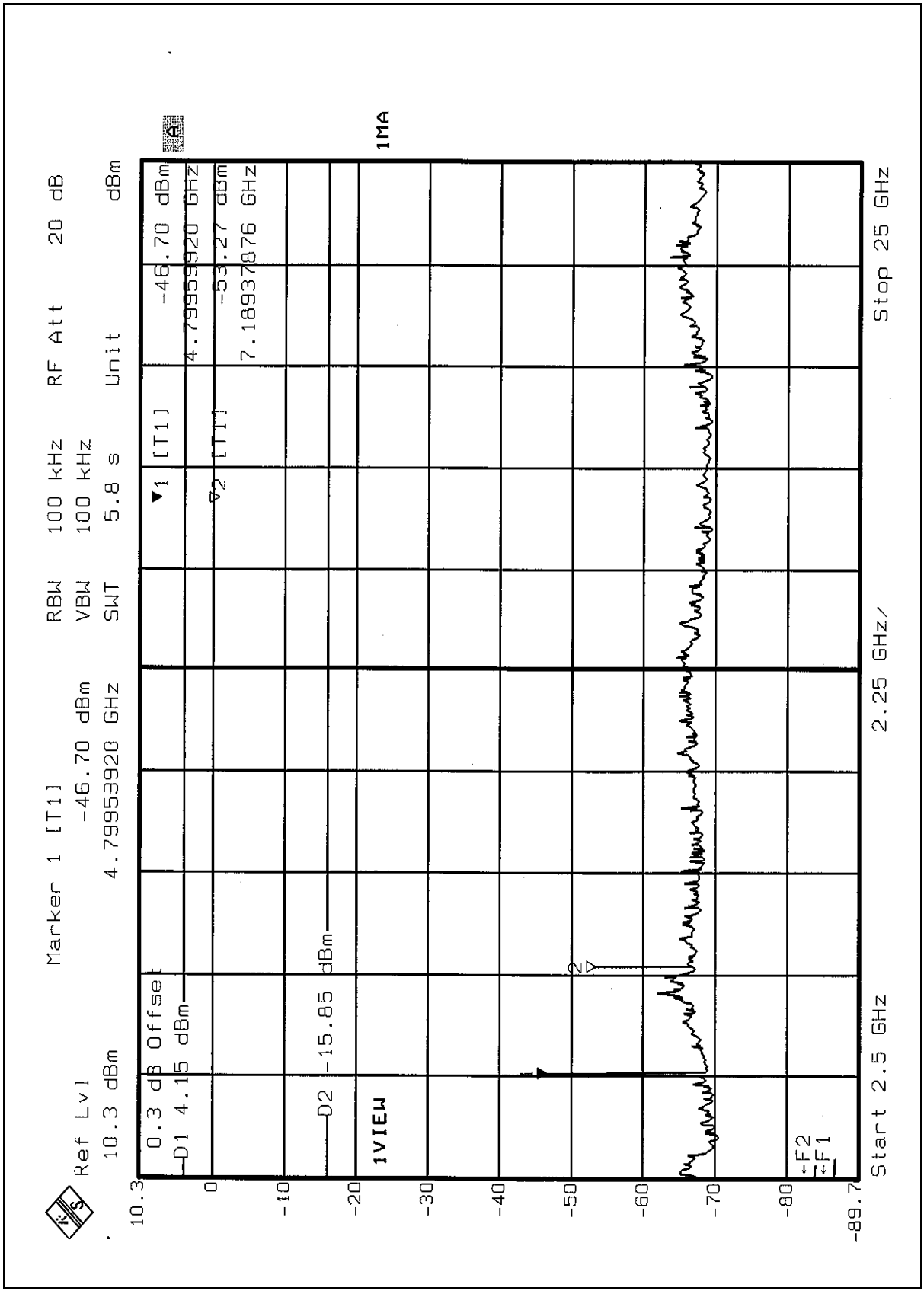
4.8.6 TEST RESULTS

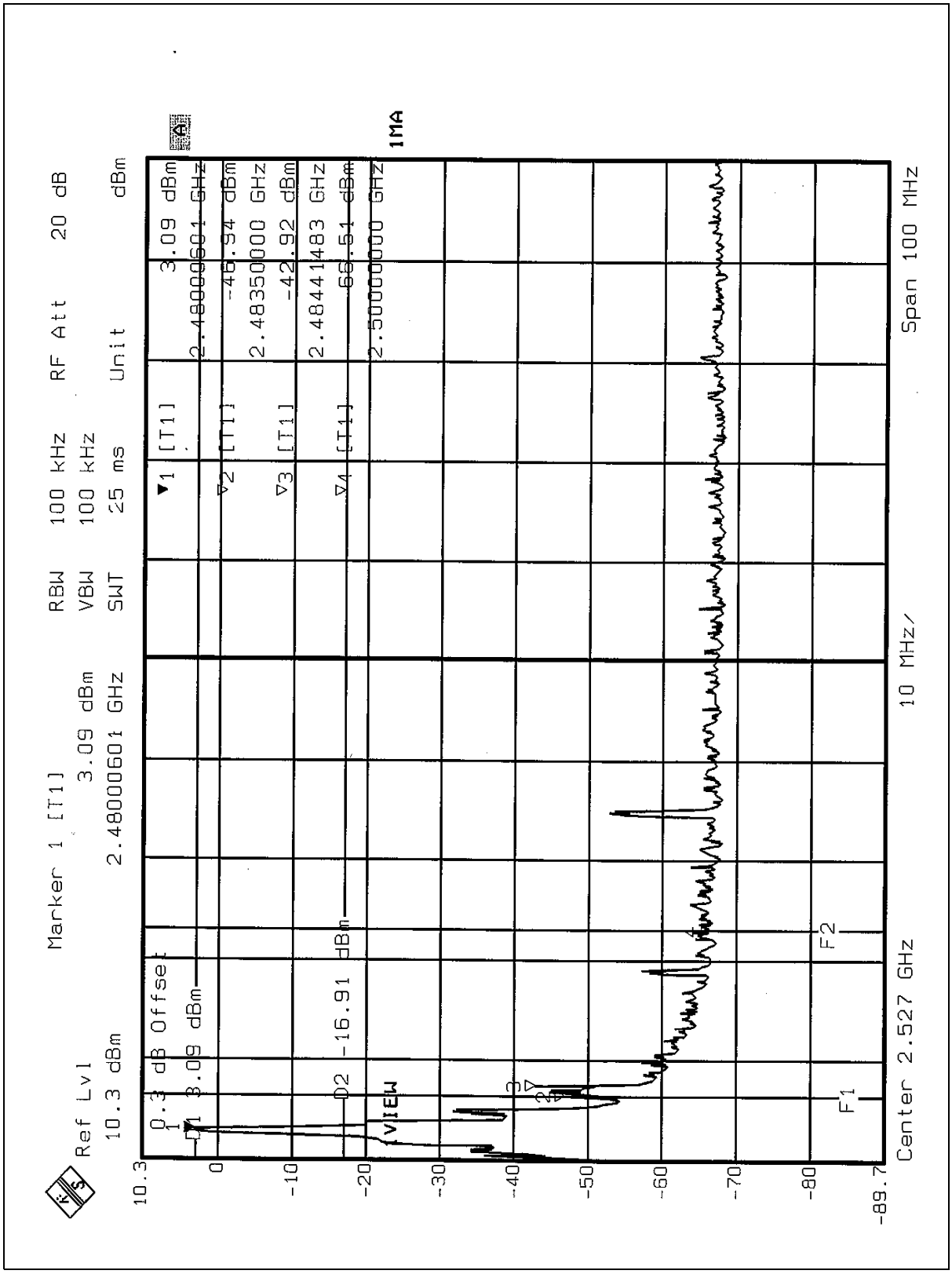
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.247(C).

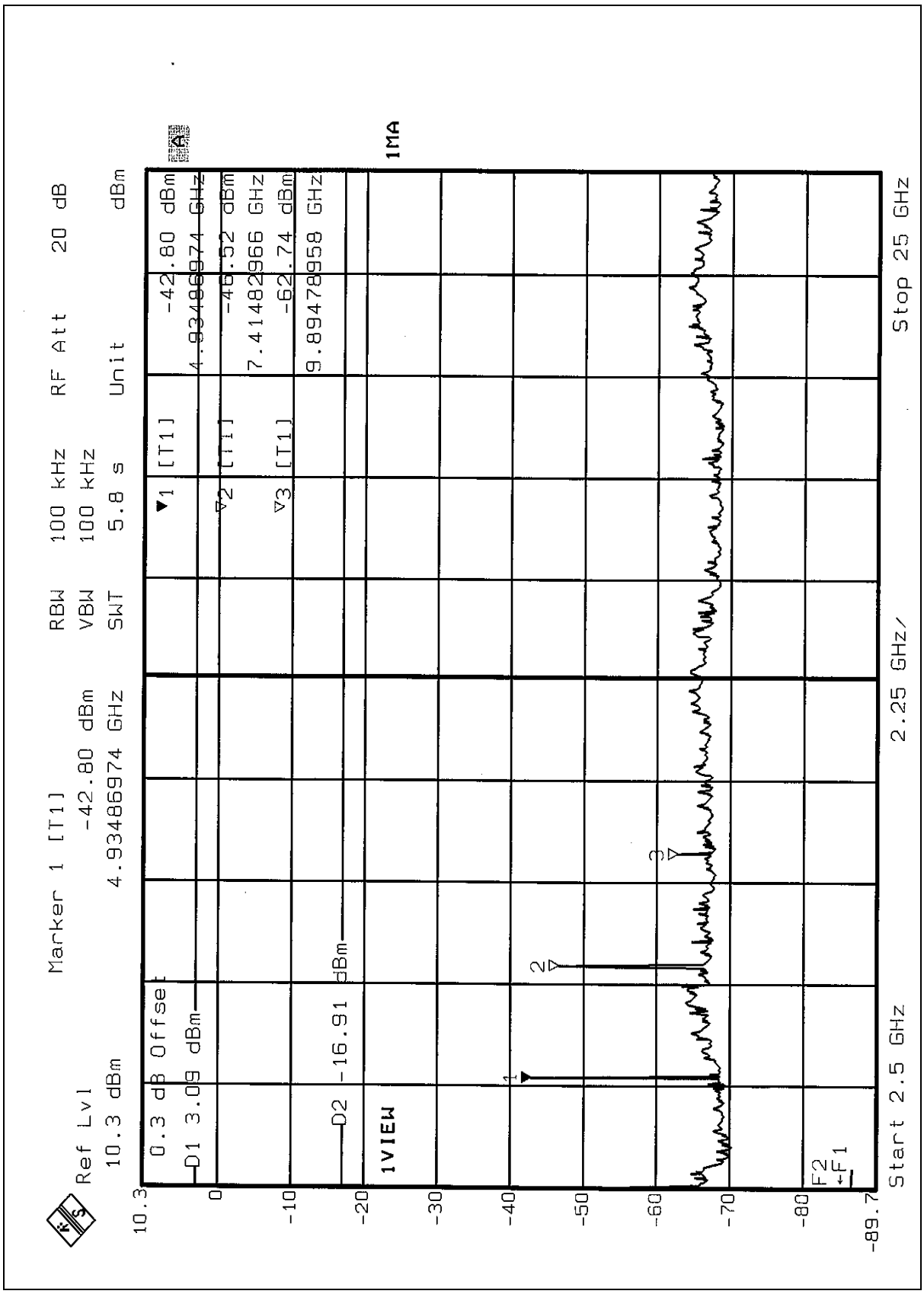
NOTE1: The band edge emission plot on the following 1 ~ 2 page shows 53.68dB delta between carrier maximum power and local maximum emission in restrict band (2.3860GHz). The emission of carrier strength list in the test result of channel 0 at the item 4.7.9 is 67.98dBuV/m, so the maximum field strength in restrict band is 67.98-53.68=14.30dBuV/m which is under 54 dBuV/m limit.

NOTE2: The band edge emission plot on the following 3 ~ 4 page shows 46.01dB delta between carrier maximum power and local maximum emission in restrict band (2.4959GHz). The emission of carrier strength list in the test result of channel 78 at the item 4.7.9 is 70.57dBuV/m, so the maximum field strength in restrict band is 70.57-46.01=24.56dBuV/m which is under 54 dBuV/m limit.


Marker 1 [T1]
4.15 dBm
2.40219036 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 20 dB
Unit dBm
Ref Lvl
10.3 dBm
0.3 dB Offset
D1 4.15 dBm
D2 -15.85 dBm
1VIEW
1MA
F1
F2
Center 2.357 GHz
10 MHz/
Span 100 MHz


Ref Lvl
10.3 dBm
Marker 1 [T1]
-46.70 dBm
4.79953920 GHz
RBW 100 kHz
VBW 100 kHz
SWT 5.8 s
RF Att 20 dB
Unit dBm
1MA
1VIEW
D1 4.15 dBm
0.3 dB Offset
D2 -15.85 dBm
1 [T1] -46.70 dBm 4.79953920 GHz
D2 [T1] -53.27 dBm 7.18937876 GHz
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
10.3
0
-10
-20
-30
-40
-50
-60
-70
-80
-89.7
F2
F1


Marker 1 [T1]
3.09 dBm
2.48000601 GHz
RBW 100 kHz
VBW 100 kHz
SWT 25 ms
RF Att 20 dB
Unit dBm
Ref Lvl
10.3 dBm
0.3 dB Offset
D1 3.09 dBm
D2 -16.91 dBm
VIEW
1MA
Center 2.527 GHz
10 MHz/
Span 100 MHz
F1
F2


Marker 1 [T1]
-42.80 dBm
4.93486974 GHz
RBW 100 kHz
VBW 100 kHz
SWT 5.8 s
RF Att 20 dB
Unit dBm
Ref Lvl
10.3 dBm
0.3 dB Offset
D1 3.09 dBm
D2 -16.91 dBm
1VIEW
1MA
1 [T1] -42.80 dBm 4.93486974 GHz
2 [T1] -46.52 dBm 7.41482966 GHz
3 [T1] -62.74 dBm 9.89478958 GHz
Start 2.5 GHz
2.25 GHz/
Stop 25 GHz
F2
F1

4.9 ANTENNA REQUIREMENT

4.9.1 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 6 dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

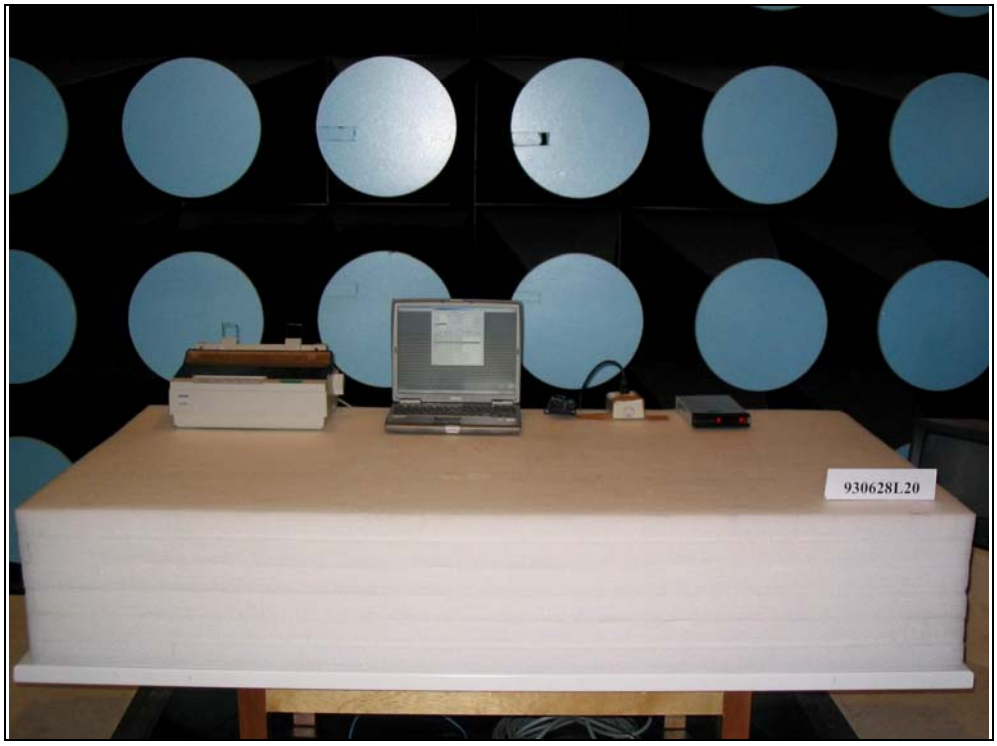
4.9.2 ANTENNA CONNECTED CONSTRUCTION

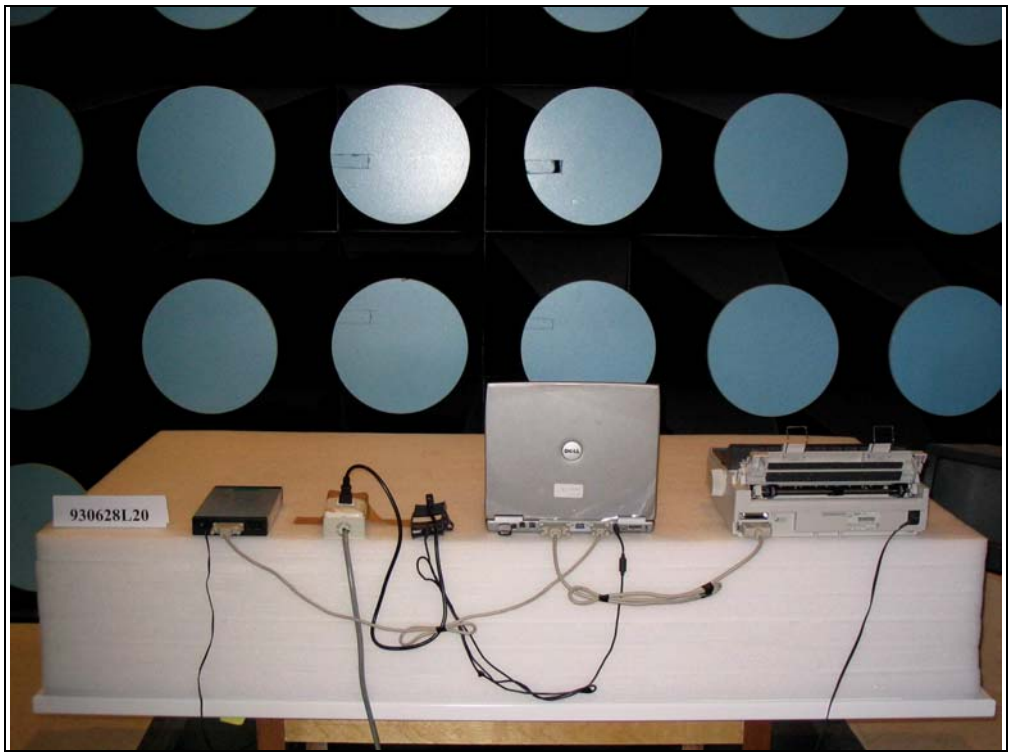
The antenna used in this product is Printed Antenna without antenna connector. The maximum Gain of this antenna is only 2.0dBi.

5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST

RADIATED EMISSION TEST





6 INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025, Guide 25 or EN 45001:

USA	FCC, NVLAP, UL
Germany	TUV Rheinland
Japan	VCCI
Norway	NEMKO
Canada	INDUSTRY CANADA , CSA
R.O.C.	CNLA, BSMI, DGT
Netherlands	Telefication
Singapore	PSB , GOST-ASIA(MOU)
Russia	CERTIS(MOU)

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: www.adt.com.tw/index.5/phtml.
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The address and road map of all our labs can be found in our web site also.

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