FCC TEST REPORT

REPORT NO.: RF921020R01
MODEL NO.: FROKBT0001
RECEIVED: Oct. 20, 2003
TESTED: Nov. 18 ~ Nov. 21, 2003

APPLICANT: Mega store Co., Ltd.

ADDRESS: 12/90 Room 2-365, 2nd floor, Seri Center Building, Srinakarin road, Nongbon, Provet, Bangkok 10260.

ISSUED BY: Advance Data Technology Corporation

LAB LOCATION: 47 14th Lin, Chiapau Tsun, Linko, Taipei, Taiwan, R.O.C.

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Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT :	Class 2 Bluetooth Headset
BRAND NAME :	FROK
MODEL NO. :	FROKBT0001
TEST ITEM:	ENGINEERING SAMPLE
APPLICANT :	Mega store Co., Ltd.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), ANSI C63.4-2001

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Nov. 18 ~ Nov. 21, 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: Windy Chou , **DATE:** Nov. 24, 2003

Windy Chou

APPROVED BY: Ellis Wu , **DATE:** Nov. 24, 2003

Ellis Wu, Manager

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: 47 CFR 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 –12.56dB at 0.603 MHz
15.247(a)(1)(I)-(ii)	Number of Hopping Frequency Used Spec.:At least 75 channels	PASS	Meet the requirement of limit
15.247(a)(1)(ii)	Dwell Time on Each Channel Spec. : Max. 0.4 second within 30 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 –6.44dB at 55.87MHz
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	Class 2 Bluetooth Headset
MODEL NO.	FROKBT0001
POWER SUPPLY	3.7VDC from internal Battery 5.0VDC from external Adapter
MODULATION TYPE	GFSK
MODULATION TECHNOLGY	FHSS
FREQUENCY RANGE	2402MHz ~ 2480MHz
NUMBER OF CHANNEL	79
OUTPUT POWER	-0.65dBm
ANTENNA TYPE	Chip Antenna with 4dBi gain
USB CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

1. The EUT was powered by following adapter:

Model:	4701SD-5018-UL
Input:	90~264Vac 50/60Hz
Output:	5.0V, 180mA

2. Bluetooth technology is used for the EUT.
3. For more detailed feature description of the EUT, please refer to 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. For spurious emission test below 1GHz, there were two test modes provided to the EUT, MODE 1 is EUT powered by the adapter for charger and transferring data, MODE 2 is the EUT powered by batteries.

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a Class 2 Bluetooth Headset. 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 : 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

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 form a representative test configuration during the tests.

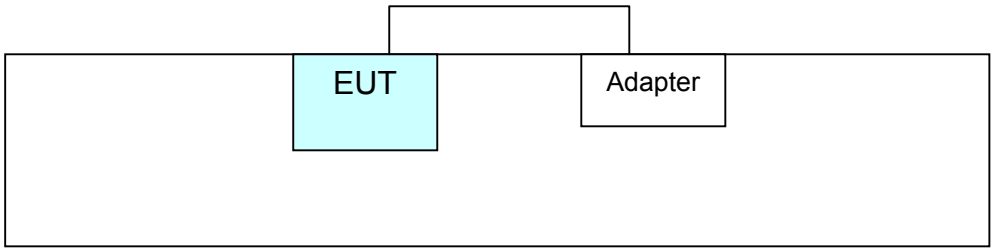
NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	NOTEBOOK	DELL	PP01L	TW-0791UH-12800-123-5423	FCC DOC APPROVED
2	PRINTER	EPSON	LQ-300+	DCGY017070	FCC DOC APPROVED

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.

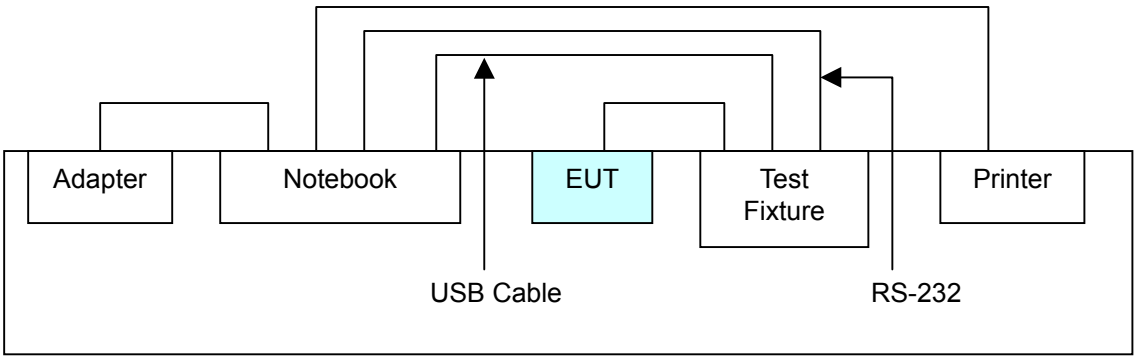
NOTE: All power cords of the above support units are non shielded (1.8m).

3.5 CONFIGURATION OF SYSTEM UNDER TEST

For TEST MODE 1



For TEST MODE 2



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	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Notes:

1. The lower limit shall apply at the transition frequencies.
1. 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.

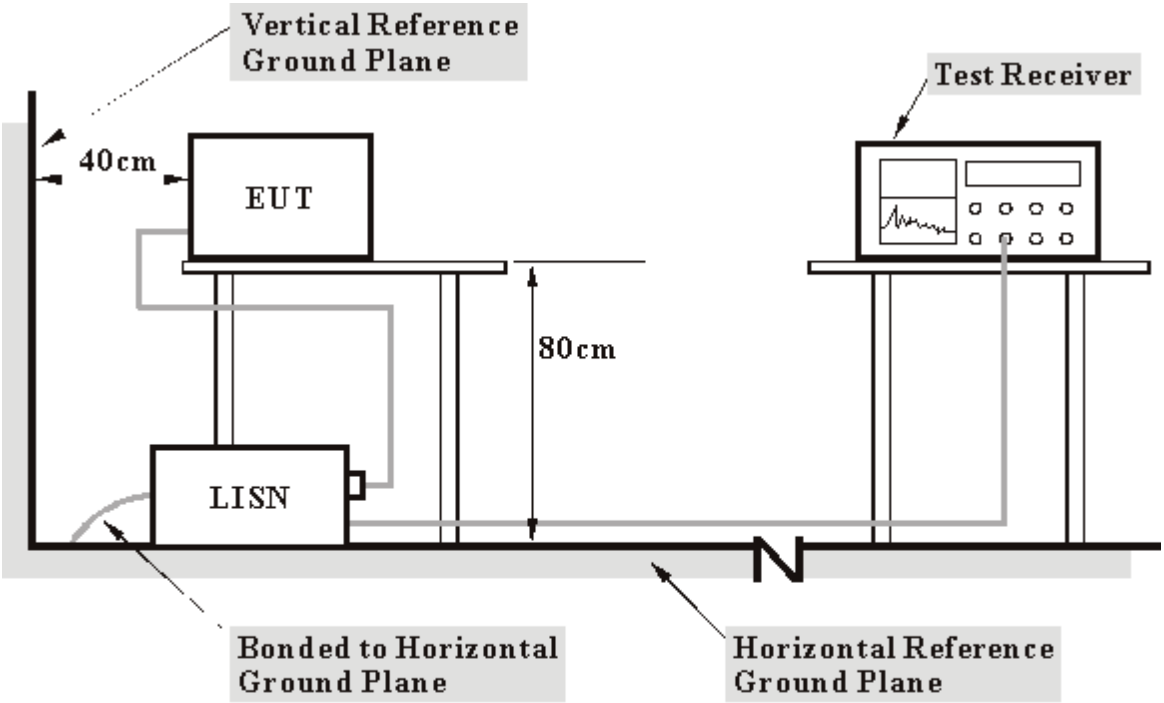
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

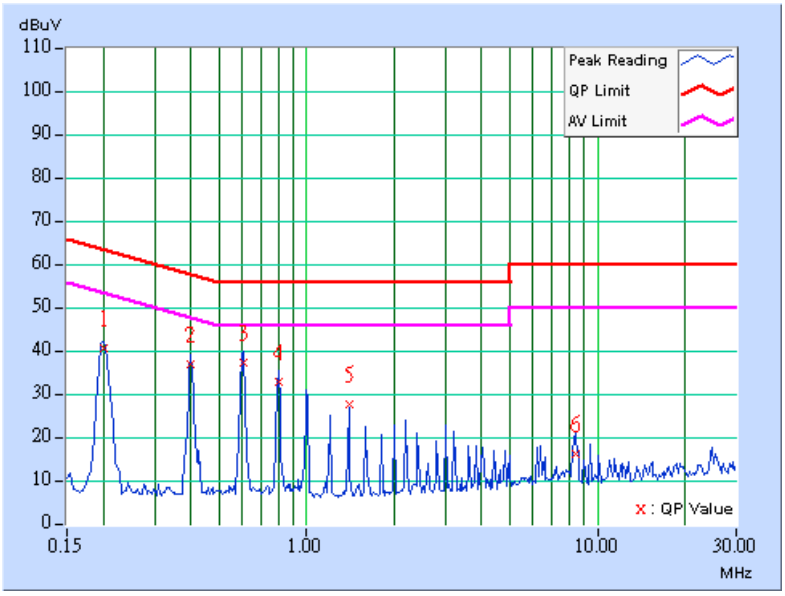
a. Placed the EUT on the testing table.
b. Test program was provided to enable EUT under transmission/receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
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**: Martin Lee	

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	0.06	40.56	-	40.62	-	63.58	53.58	-22.96	-
2	0.400	0.06	36.56	-	36.62	-	57.85	47.85	-21.23	-
3	0.603	0.09	37.03	-	37.12	-	56.00	46.00	-18.88	-
4	0.802	0.13	32.47	-	32.60	-	56.00	46.00	-23.40	-
5	1.404	0.17	27.55	-	27.72	-	56.00	46.00	-28.28	-
6	8.412	0.36	16.12	-	16.48	-	60.00	50.00	-43.52	-

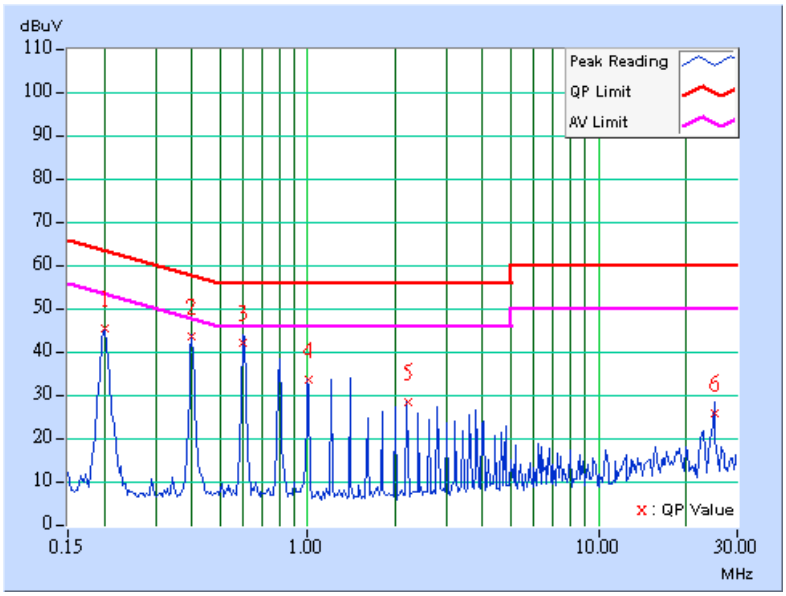
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
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**: Martin Lee	

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	0.05	44.74	-	44.79	-	63.58	53.58	-18.79	-
2	0.400	0.05	42.93	-	42.98	-	57.85	47.85	-14.87	-
3	0.599	0.09	41.58	-	41.67	-	56.00	46.00	-14.33	-
4	1.003	0.16	32.97	-	33.13	-	56.00	46.00	-22.87	-
5	2.207	0.18	27.69	-	27.87	-	56.00	46.00	-28.13	-
6	24.973	0.73	25.06	-	25.79	-	60.00	50.00	-34.21	-

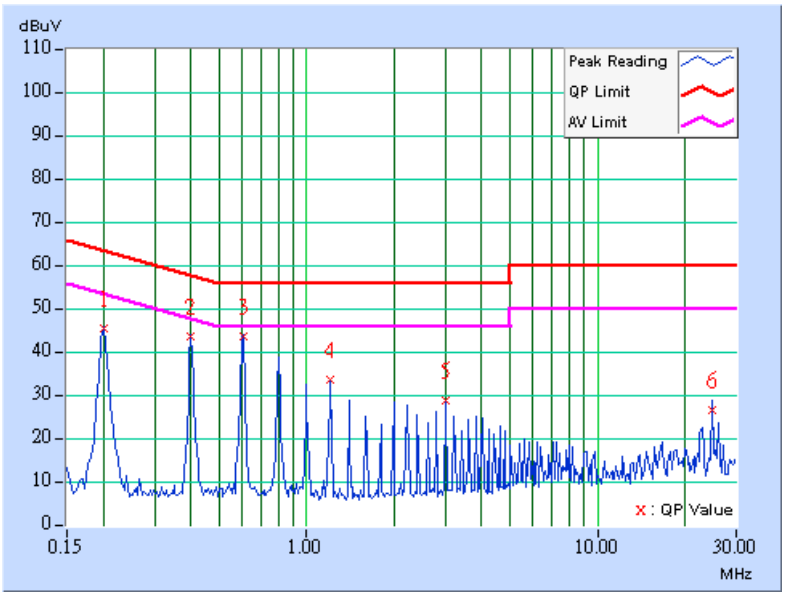
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
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**: Martin Lee	

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	0.06	44.66	-	44.72	-	63.58	53.58	-18.86	-
2	0.400	0.06	42.95	-	43.01	-	57.85	47.85	-14.84	-
3	0.603	0.09	42.93	-	43.02	-	56.00	46.00	-12.98	-
4	1.203	0.16	32.96	-	33.12	-	56.00	46.00	-22.88	-
5	3.005	0.20	27.86	-	28.06	-	56.00	46.00	-27.94	-
6	24.914	0.89	25.87	-	26.76	-	60.00	50.00	-33.24	-

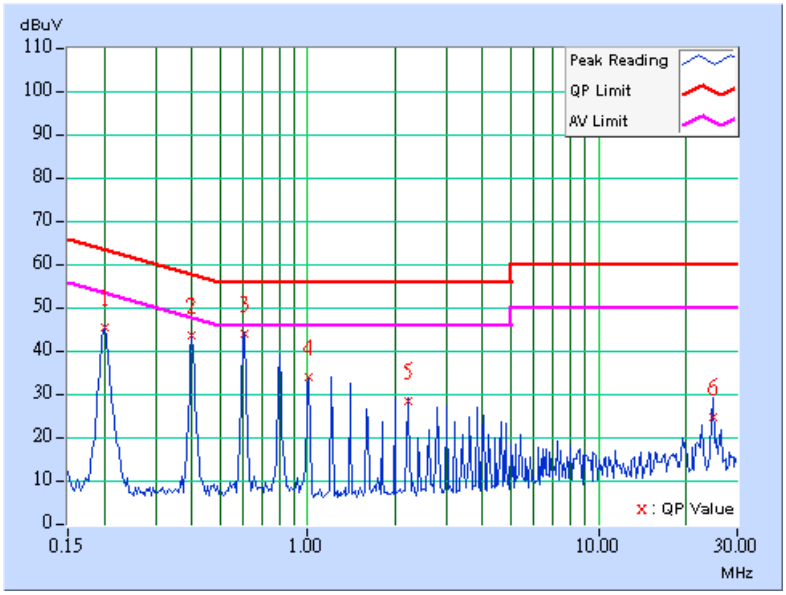
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
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**: Martin Lee	

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	0.05	44.78	-	44.83	-	63.58	53.58	-18.75	-
2	0.400	0.05	42.89	-	42.94	-	57.85	47.85	-14.91	-
3	**0.603**	**0.09**	**43.35**	**-**	**43.44**	**-**	**56.00**	**46.00**	**-12.56**	**-**
4	1.004	0.16	33.22	-	33.38	-	56.00	46.00	-22.62	-
5	2.207	0.18	27.63	-	27.81	-	56.00	46.00	-28.19	-
6	24.855	0.72	23.93	-	24.65	-	60.00	50.00	-35.35	-

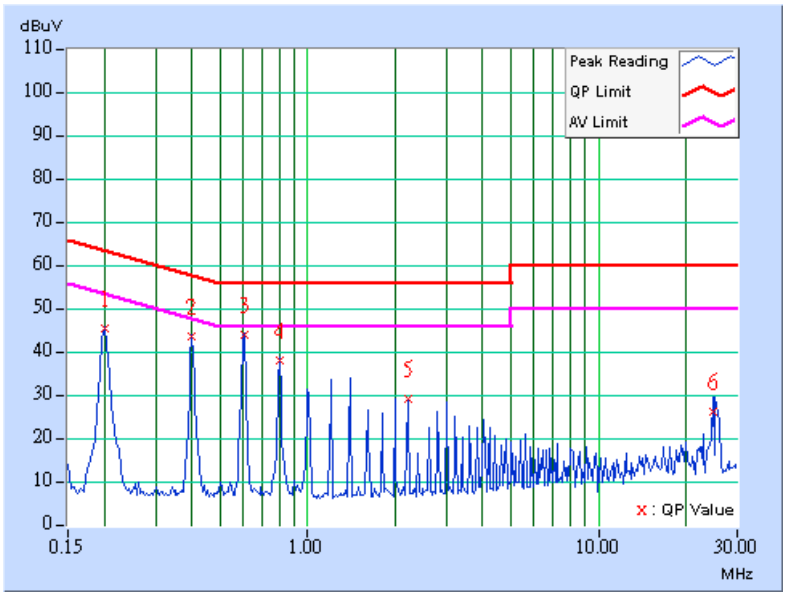
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
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**: Martin Lee	

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	0.06	44.74	-	44.80	-	63.58	53.58	-18.78	-
2	0.400	0.06	42.95	-	43.01	-	57.85	47.85	-14.84	-
3	0.603	0.09	43.23	-	43.32	-	56.00	46.00	-12.68	-
4	0.802	0.13	37.36	-	37.49	-	56.00	46.00	-18.51	-
5	2.207	0.18	28.41	-	28.59	-	56.00	46.00	-27.41	-
6	24.852	0.88	25.29	-	26.17	-	60.00	50.00	-33.83	-

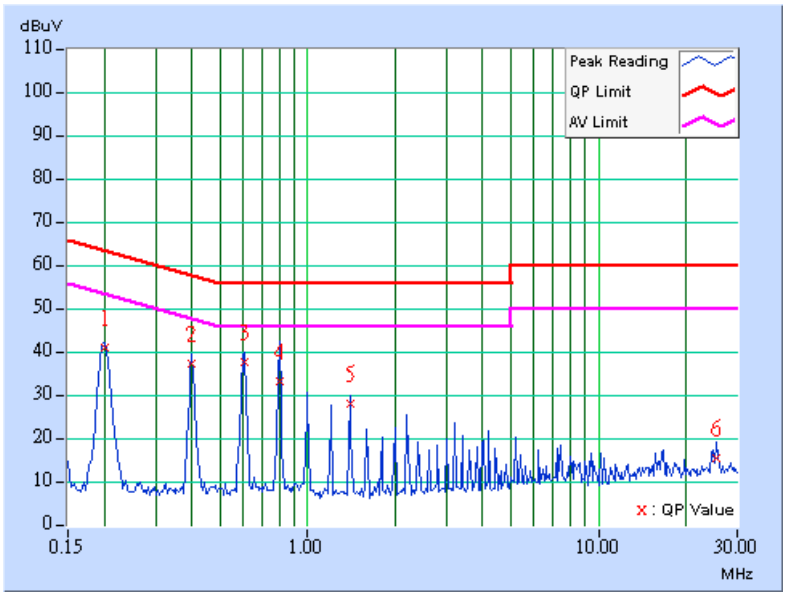
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
CHANNEL	78	**6dB BANDWIDTH**	9 kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Netural (N)
ENVIRONMENTAL CONDITIONS	25 deg. C, 60%RH, 991 hPa	**TESTED BY**: Martin Lee	

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	0.05	40.50	-	40.55	-	63.58	53.58	-23.03	-
2	0.400	0.05	36.56	-	36.61	-	57.85	47.85	-21.24	-
3	0.603	0.09	37.11	-	37.20	-	56.00	46.00	-18.80	-
4	0.802	0.12	32.63	-	32.75	-	56.00	46.00	-23.25	-
5	1.406	0.17	27.30	-	27.47	-	56.00	46.00	-28.53	-
6	25.273	0.73	15.00	-	15.73	-	60.00	50.00	-44.27	-

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.

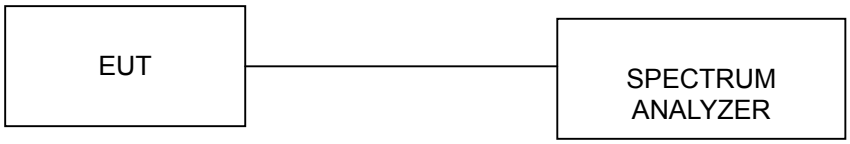
4.2.3 TEST PROCEDURES

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

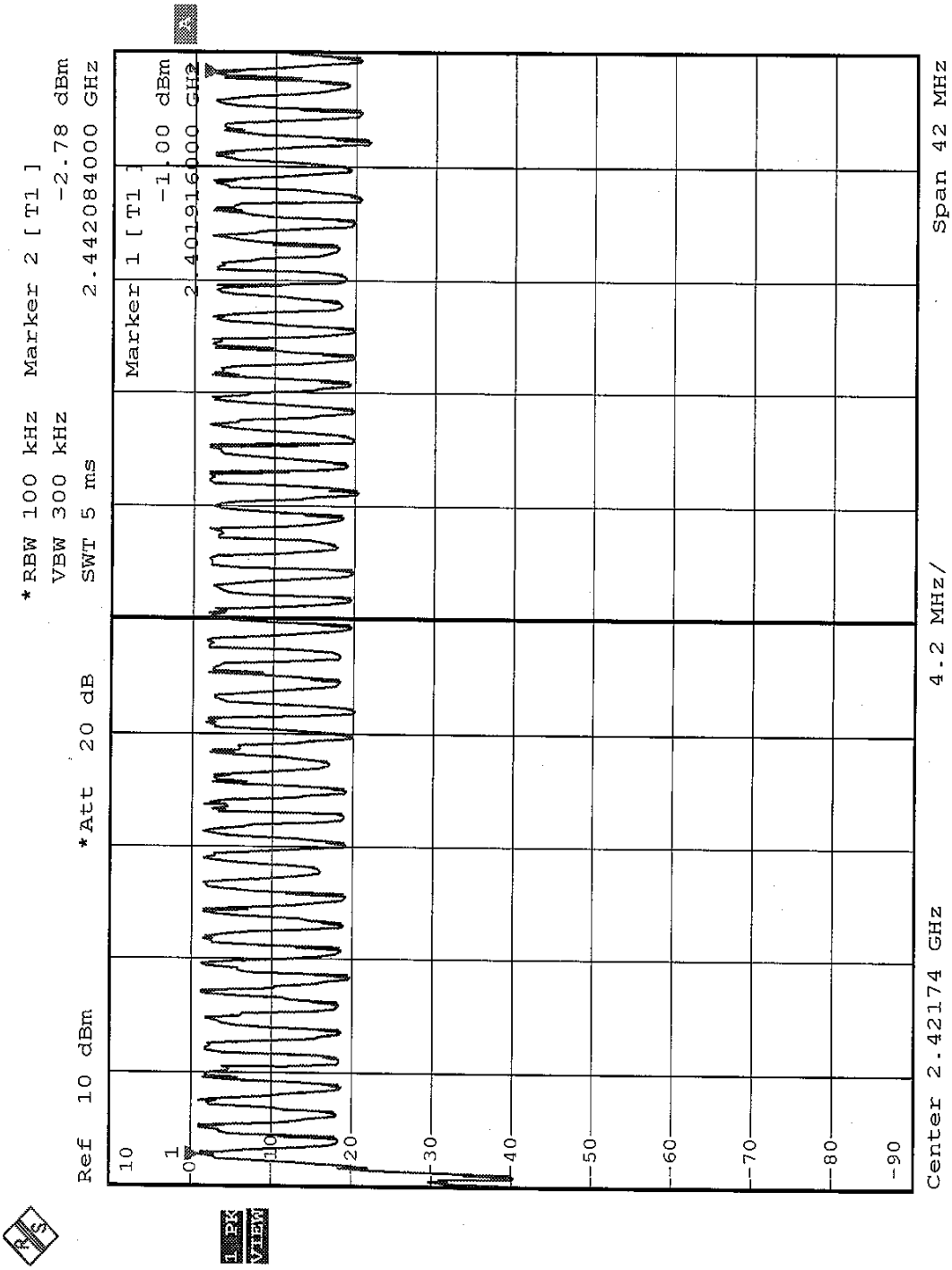
No deviation

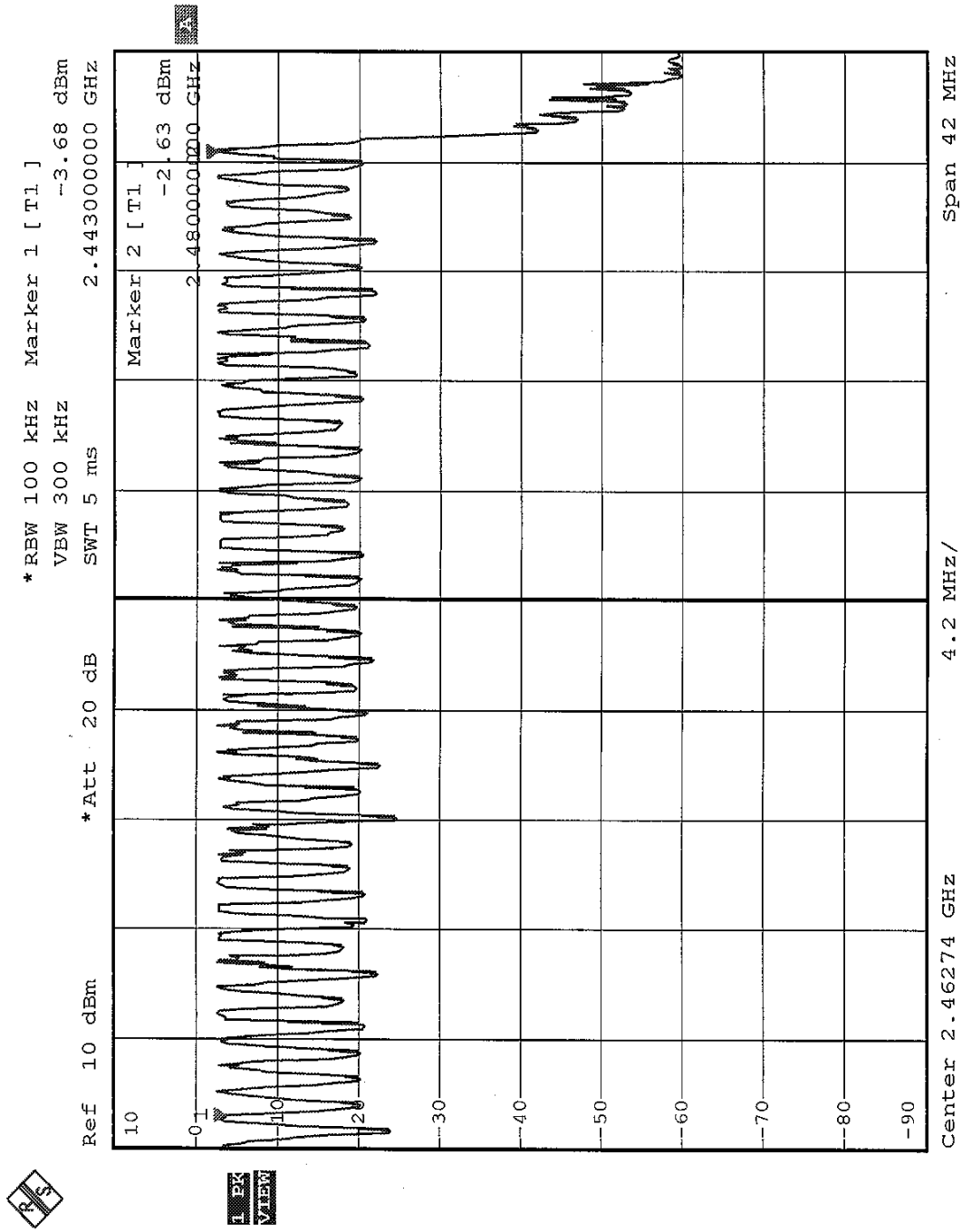
4.2.5 TEST SETUP



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.


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Marker 2 [T1]
-2.78 dBm
2.442084000 GHz
Marker 1 [T1]
-1.00 dBm
2.401916000 GHz
Center 2.42174 GHz
4.2 MHz/
Span 42 MHz
1 PK
VBW


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
VBW 300 kHz
SWT 5 ms
Marker 1 [T1]
-3.68 dBm
2.443000000 GHz
Marker 2 [T1]
-2.63 dBm
2.480000000 GHz
1 PK
VIEW
Center 2.46274 GHz
4.2 MHz/
Span 42 MHz

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

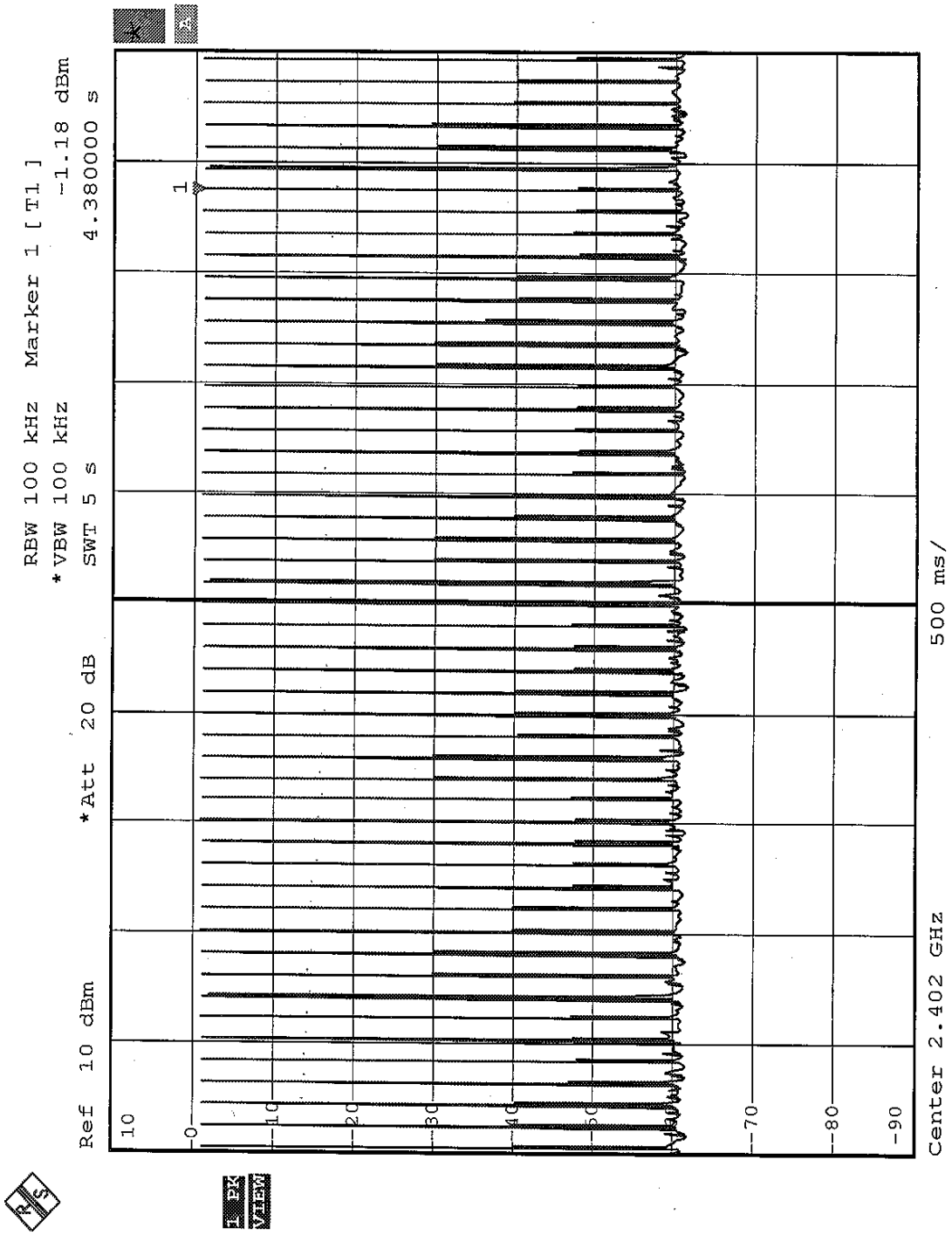
4.3.5 TEST SETUP

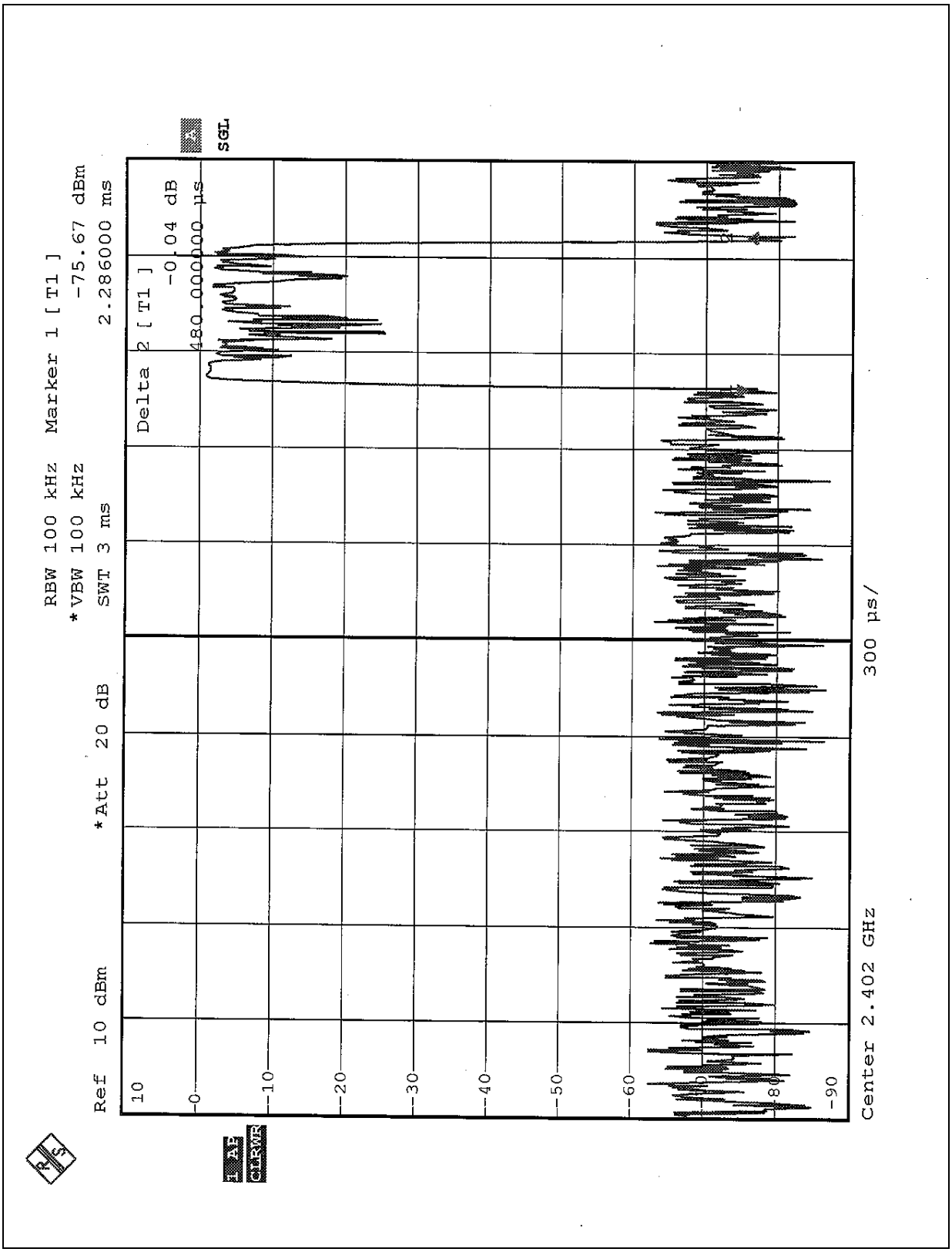
4.3.6 TEST RESULTS

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	0.48	154.71	400
DH3	25 times / 5 sec *6.32=158.00 times	1.76	278.08	400
DH5	17 times / 5 sec *6.32= 107.44 times	3.02	324.47	400

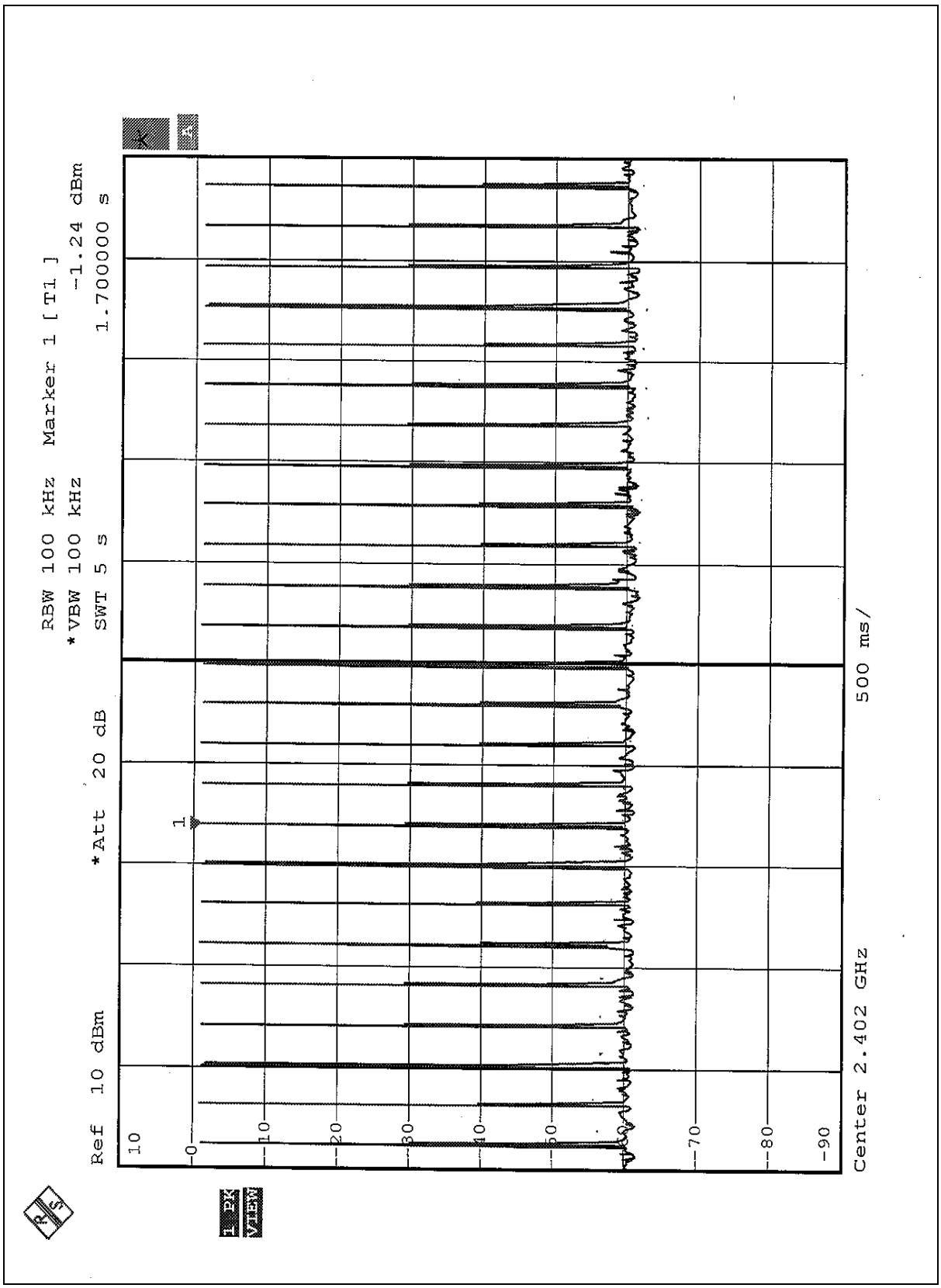
Test plots of the transmitting time slot are shown on next six pages.

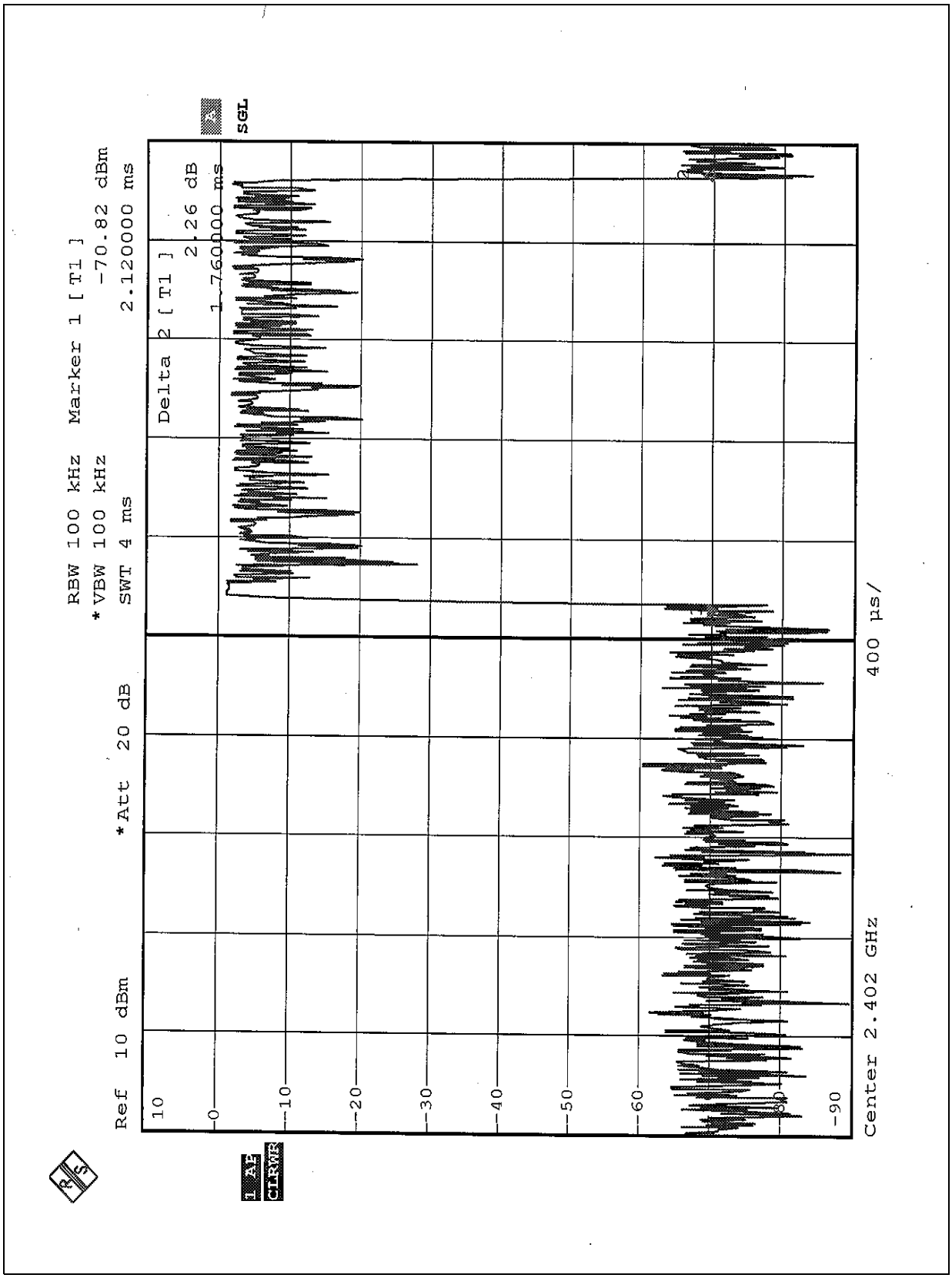
DH1


Ref 10 dBm
*Att 20 dB
RBW 100 kHz
*VBW 100 kHz
SWT 5 s
Marker 1 [T1]
-1.18 dBm
4.380000 s
Center 2.402 GHz
500 ms/

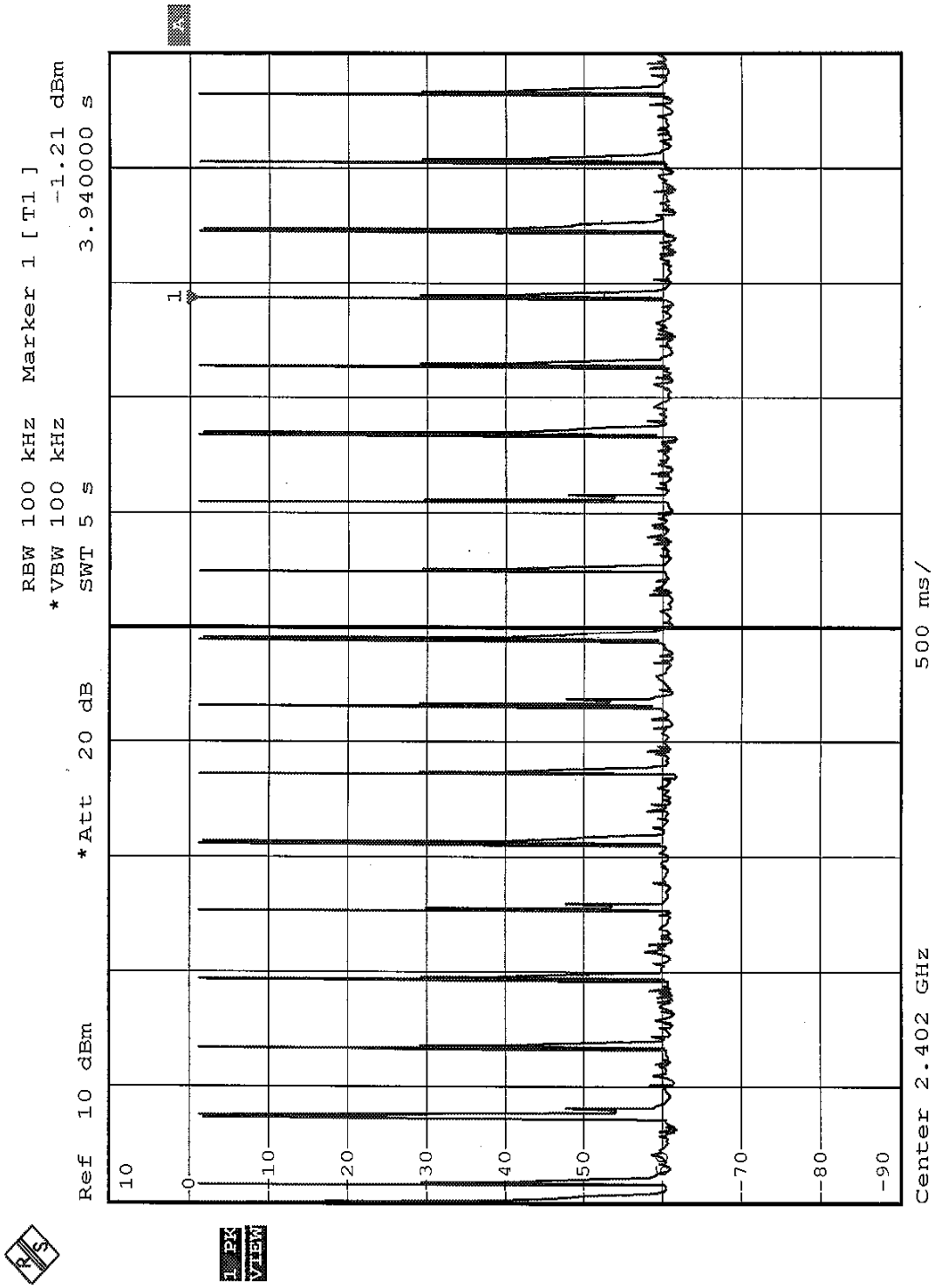

Ref 10 dBm
*Att 20 dB
RBW 100 kHz
*VBW 100 kHz
SWT 3 ms
Marker 1 [T1]
-75.67 dBm
2.286000 ms
Delta 2 [T1]
-0.04 dB
480.000000 µs
SGL
10
0
-10
-20
-30
-40
-50
-60
-80
-90
Center 2.402 GHz
300 µs/

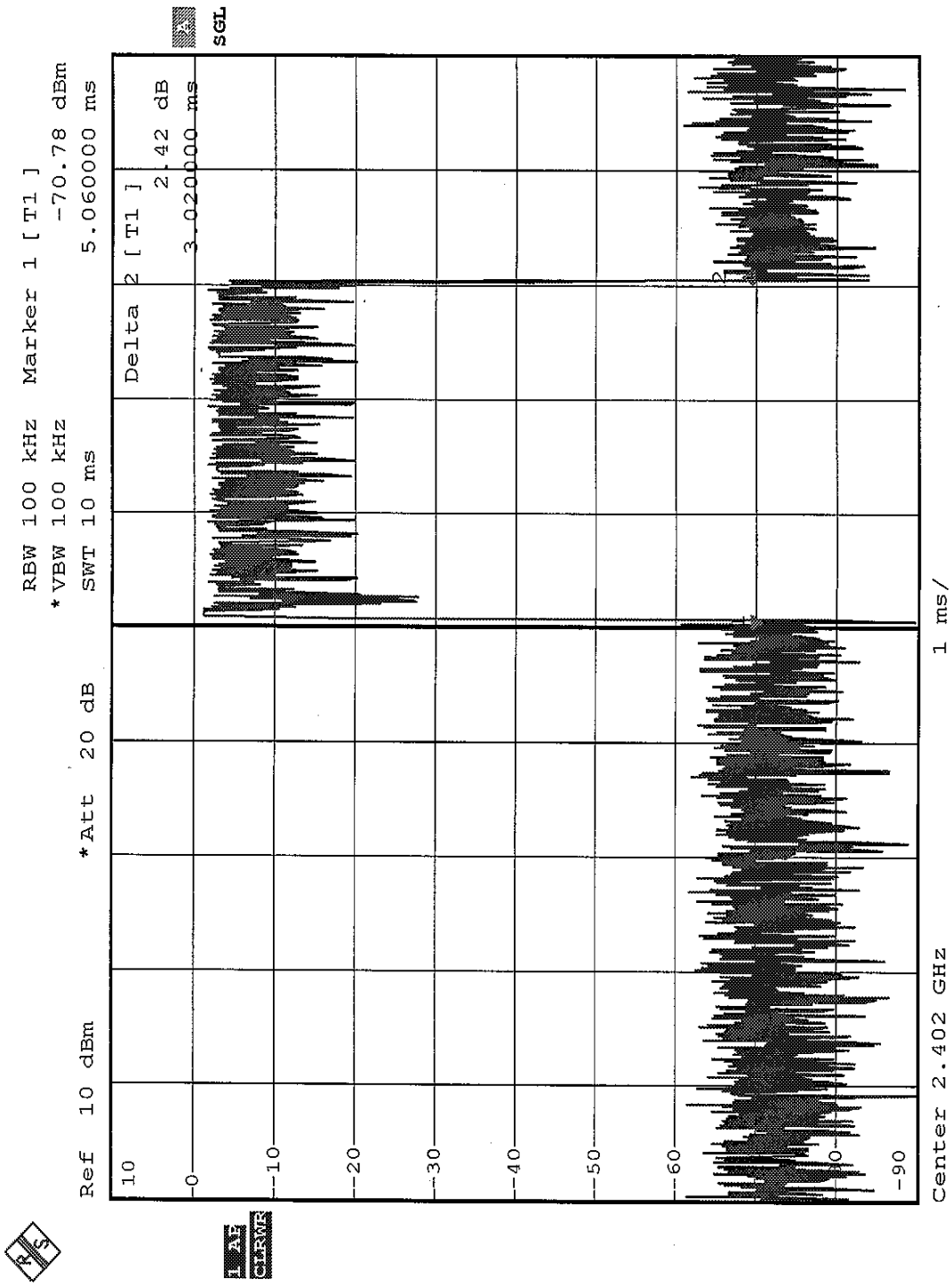
DH3


Ref 10 dBm
*Att 20 dB
RBW 100 kHz
*VBW 100 kHz
SWT 5 s
Marker 1 [T1]
-1.24 dBm
1.700000 s
1 PK
VIEW
Center 2.402 GHz
500 ms/


Ref 10 dBm
*Att 20 dB
RBW 100 kHz
*VBW 100 kHz
SWT 4 ms
Marker 1 [T1]
-70.82 dBm
2.120000 ms
Delta 2 [T1]
2.26 dB
1.760000 ms
SGL
1 AP
CLRWR
10
0
-10
-20
-30
-40
-50
-60
-90
Center 2.402 GHz
400 µs/

DH5


Ref 10 dBm
*Att 20 dB
RBW 100 kHz
*VBW 100 kHz
SWT 5 s
Marker 1 [T1]
-1.21 dBm
3.940000 s
1 PK
VIEW
Center 2.402 GHz
500 ms/


Ref 10 dBm
*Att 20 dB
RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-70.78 dBm
5.060000 ms
Delta 2 [T1]
2.42 dB
3.020000 ms
SGL
10
0
-10
-20
-30
-40
-50
-60
-90
1 AP
CLRWR
Center 2.402 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 20 dB 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:
The calibration interval of the above test instruments is 12 months. And the calibrations are traceable to NML/ROC and NIST/USA.

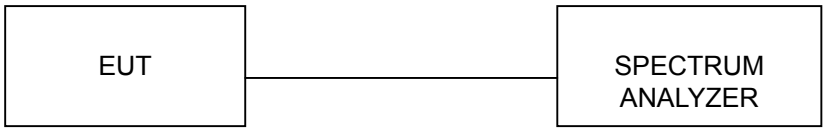
4.4.3 TEST PROCEDURE

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



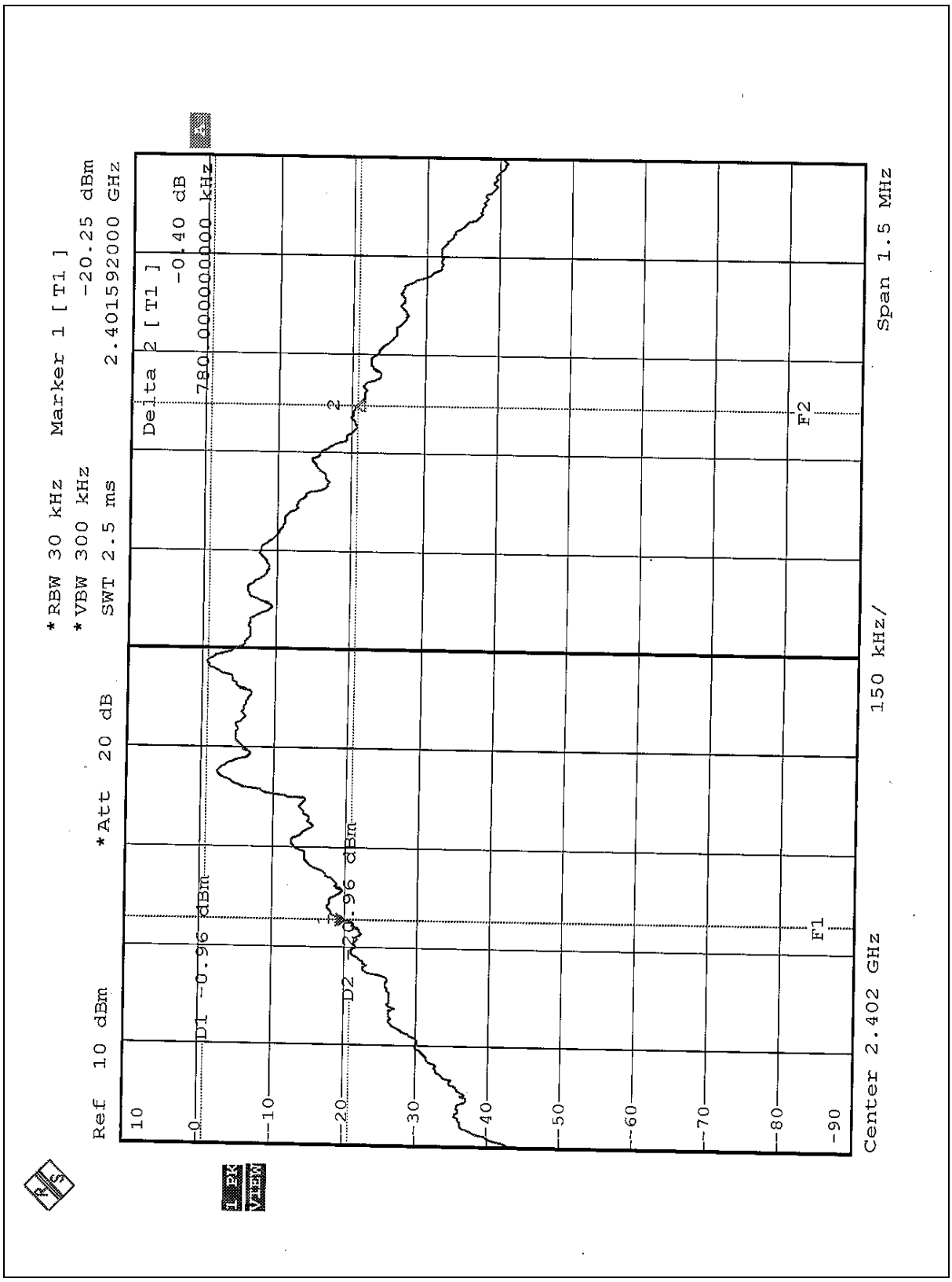
4.4.6 EUT OPERATING CONDITION

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

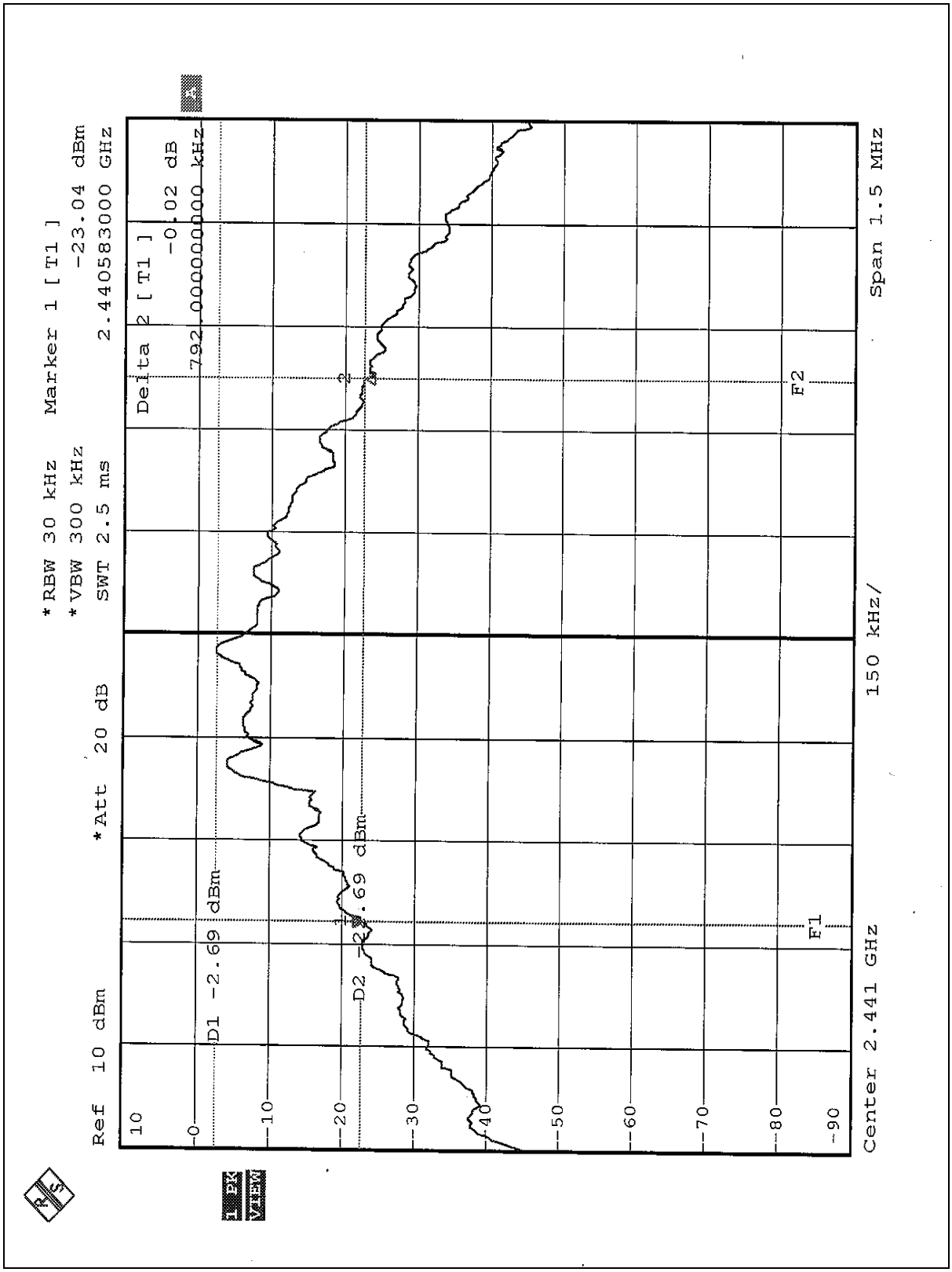
4.4.7 TEST RESULTS

CHANNEL	CHANNEL FREQUENCY (MHz)	20 dB BANDWIDTH (kHz)	MINMUM LIMIT (MHz)	PASS/FAIL
0	2402	780	0.5	PASS
39	2441	792	0.5	PASS
78	2480	789	0.5	PASS

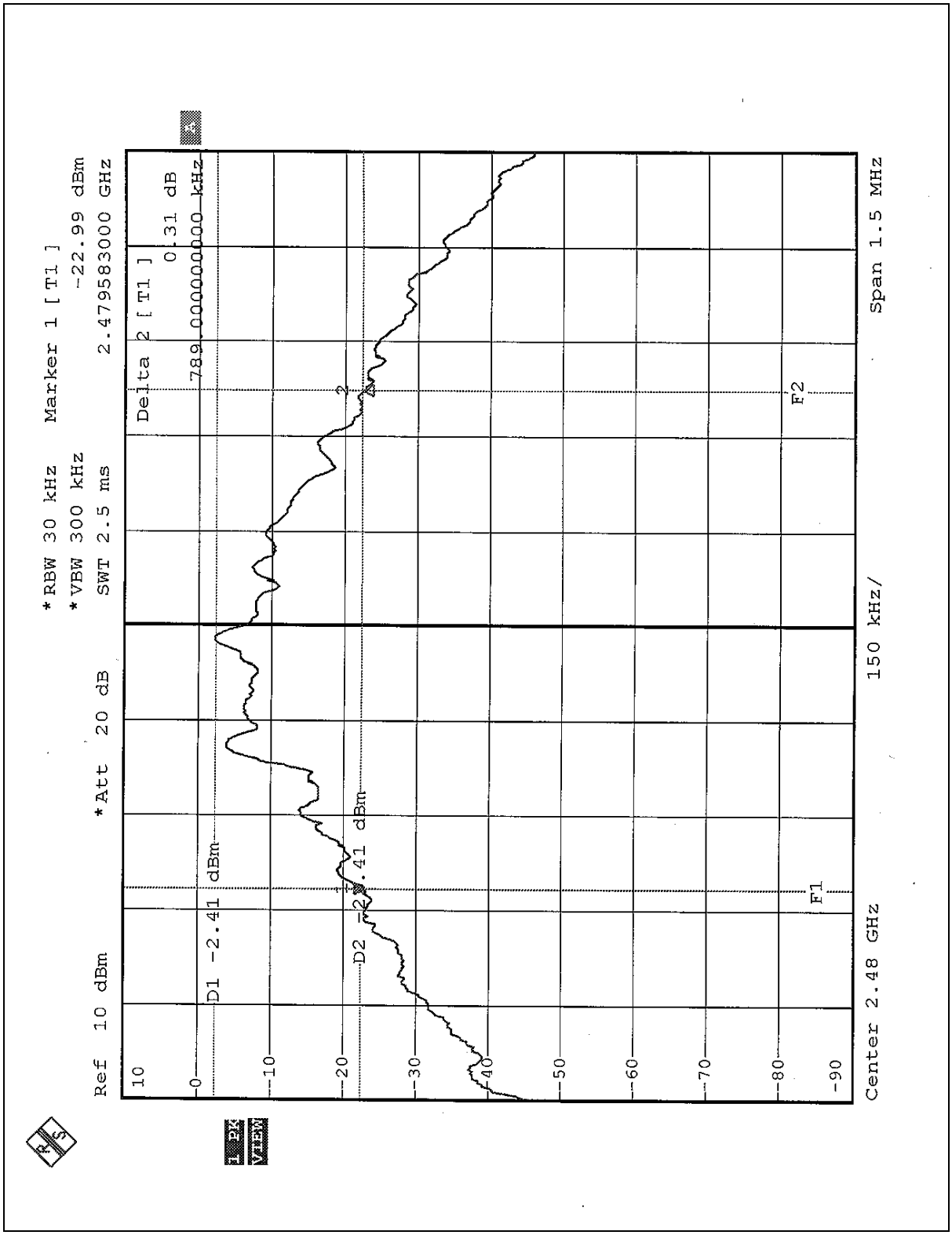
Channel 0


Ref 10 dBm
*Att 20 dB
*RBW 30 kHz
*VBW 300 kHz
SWT 2.5 ms
Marker 1 [T1]
-20.25 dBm
2.401592000 GHz
Delta 2 [T1]
-0.40 dB
780.000000000 kHz
D1 -0.96 dBm
D2 -20.96 dBm
F1
F2
Center 2.402 GHz
150 kHz/
Span 1.5 MHz

Channel 39


Ref 10 dBm
*Att 20 dB
*RBW 30 kHz
*VBW 300 kHz
SWT 2.5 ms
Marker 1 [T1]
-23.04 dBm
2.440583000 GHz
Delta 2 [T1]
-0.02 dB
792.00000000 kHz
D1 -2.69 dBm
D2 -2.69 dBm
F1
F2
Center 2.441 GHz
150 kHz/
Span 1.5 MHz

Channel 78


Ref 10 dBm
*Att 20 dB
*RBW 30 kHz
*VBW 300 kHz
SWT 2.5 ms
Marker 1 [T1]
-22.99 dBm
2.479583000 GHz
Delta 2 [T1]
0.31 dB
789.000000000 kHz
D1 -2.41 dBm
D2 -2.41 dBm
F1
F2
Center 2.48 GHz
150 kHz/
Span 1.5 MHz

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

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

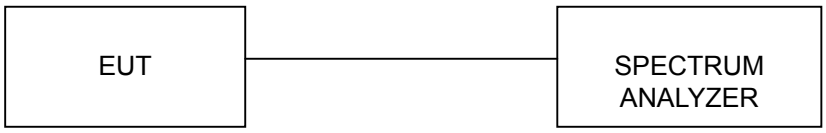
4.5.3 TEST PROCEDURES

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

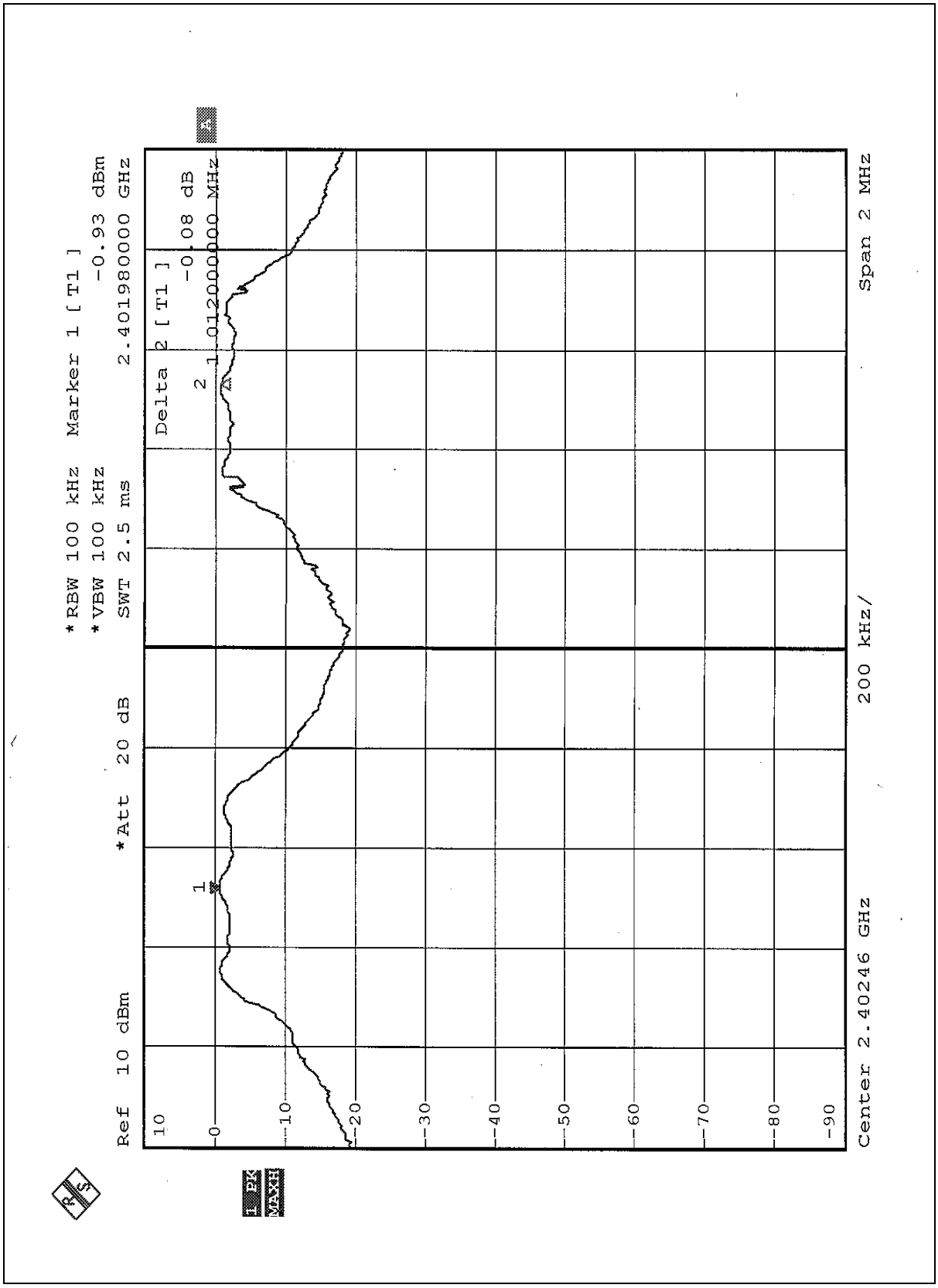


4.5.6 TEST RESULTS

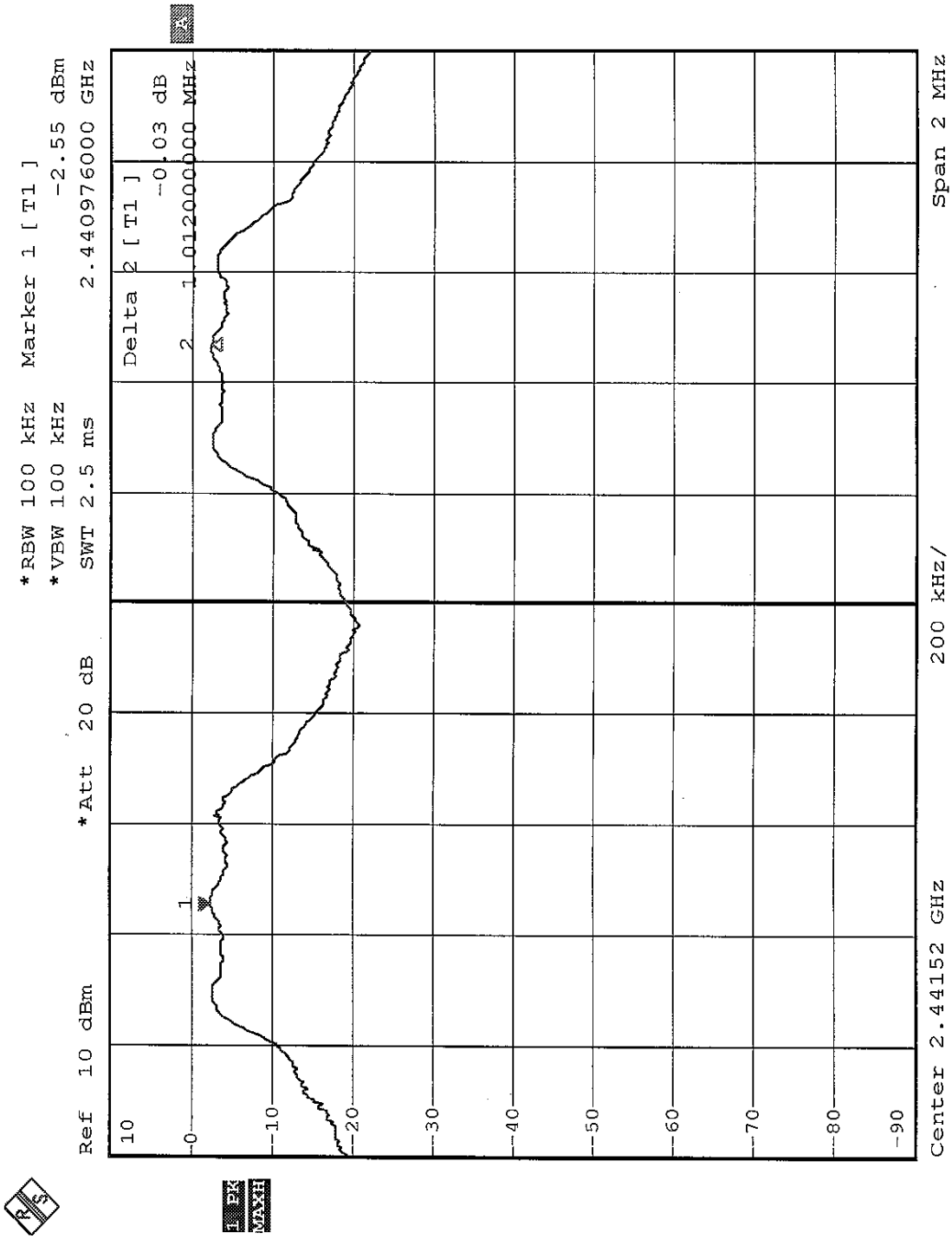
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	2402	1MHz	780.00	PASS
39	2441	1MHz	792.00	PASS
78	2480	1MHz	789.00	PASS

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

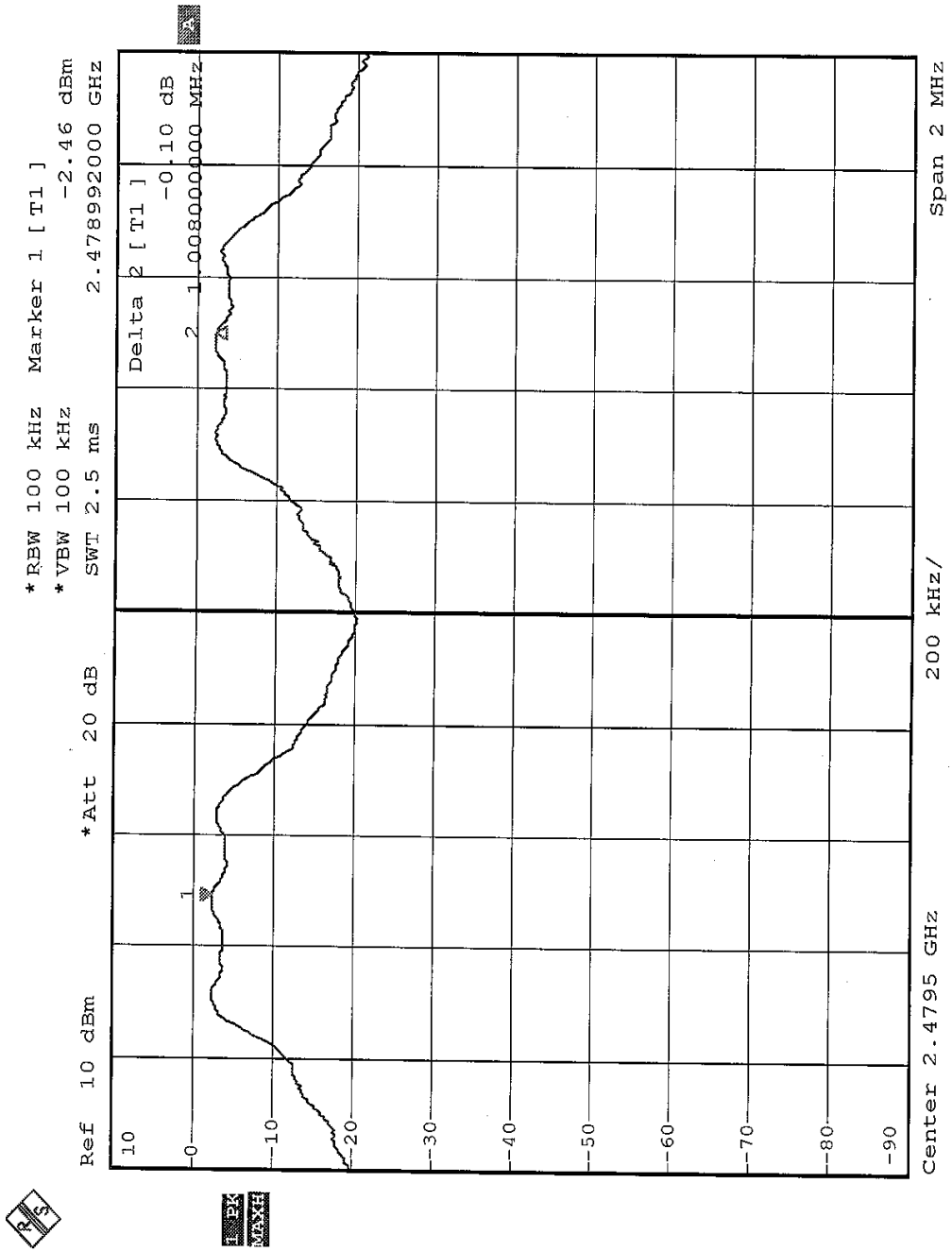
Channel 0


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 ms
Marker 1 [T1]
-0.93 dBm
2.401980000 GHz
Delta 2 [T1]
-0.08 dB
1.012000000 MHz
Center 2.40246 GHz
200 kHz/
Span 2 MHz

Channel 39


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 ms
Marker 1 [T1]
-2.55 dBm
2.440976000 GHz
Delta 2 [T1]
-0.03 dB
1.012000000 MHz
Center 2.44152 GHz
200 kHz/
Span 2 MHz

Channel 78


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 2.5 ms
Marker 1 [T1]
-2.46 dBm
2.478992000 GHz
Delta 2 [T1]
-0.10 dB
1.008000000 MHz
Center 2.4795 GHz
200 kHz/
Span 2 MHz

4.6 MAXIMUM PEAK OUTPUT POWER

4.6.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

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

4.6.2 INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
PK PWR MTR SINGLE	E4416A	GB41291763	July 24, 2004
PEAK AND AVERAGE POWER SENSOR	E9327A	US40441181	June 4, 2004

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

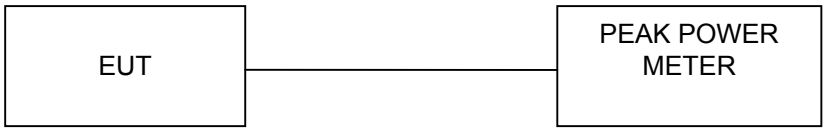
4.6.3 TEST PROCEDURES

The EUT was connected to the peak power meter, and measured the output power.

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

CHANNEL	CHANNEL FREQUENCY (MHz)	PEAK POWER OUTPUT (dBm)	PEAK POWER LIMIT (dBm)	PASS/FAIL
0	2402	-0.65	30	PASS
39	2441	-2.26	30	PASS
78	2480	-2.12	30	PASS

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

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.

4.7.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
* HP Spectrum Analyzer	8594E	3911A07465	July 07, 2004
* HP Preamplifier	8447D	2432A03504	June 10, 2004
HP Preamplifier	8449B	3008A01201	Dec. 11, 2004
* HP Preamplifier	8449B	3008A01292	Aug. 11, 2004
SCHAFFNER Tunable Dipole Antenna SCHWARZBECK Tunable Dipole Antenna	VHBA 9123 UHA 9105	459 977	Jun. 26, 2004
* ROHDE & SCHWARZ TEST RECEIVER	ESMI	839013/007 839379/002	Feb. 13, 2004
*Schwarzbeck Antenna	VULB9168	137	Apr. 03, 2004
* SCHWARZBECK Horn Antenna	BBHA9120-D1	D130	June 30, 2004
* EMCO Horn Antenna	3115	9312-4192	Mar. 23, 2004
*ADT. Turn Table	TT100	0306	NA
*ADT. Tower	AT100	0306	NA
*Software	ADT_Radiated_V5.14	NA	NA
*TIMES RF cable	LL142	CABLE-CH6-01	Apr. 30, 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 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 Chamber No. 6.

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 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.

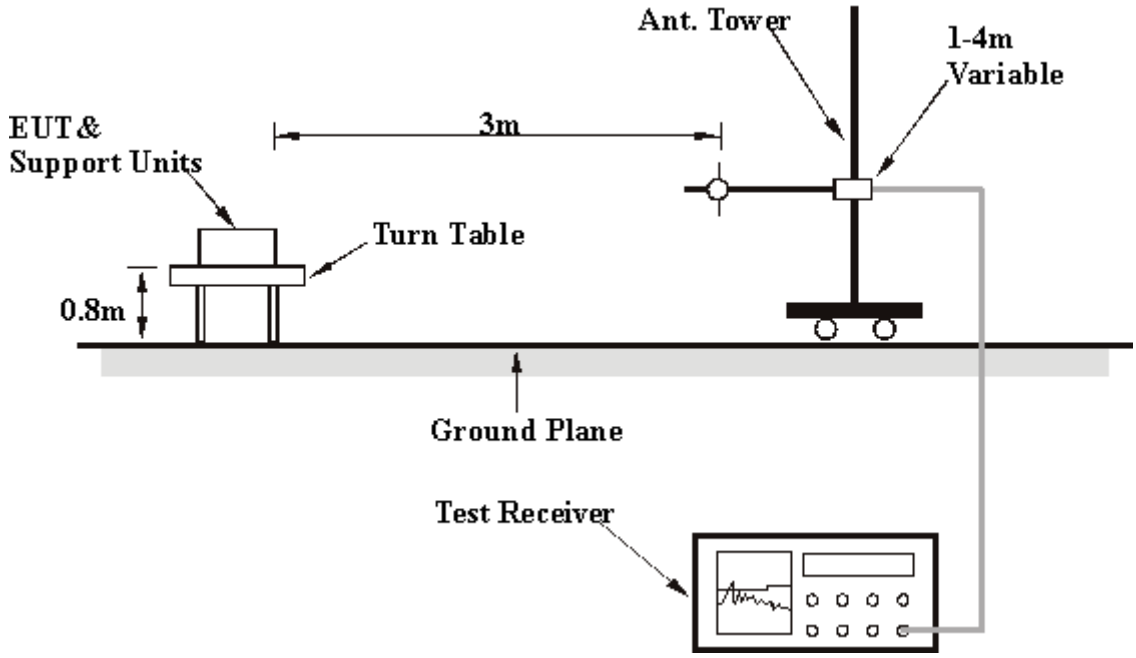
NOTE:

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 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	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**FREQUENCY RANGE**	Below1000 MHz
ENVIRONMENTAL CONDITIONS	23 deg. C, 62%RH, 991 hPa	**DETECTOR FUNCTION**	Quasi-Peak
		TEST MODE	2
TESTED BY: Steven Lu			

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	213.22	32.03 QP	43.50	-11.47	2.00 H	70	20.19	11.85
2	261.72	37.78 QP	46.00	-8.22	1.00 H	46	24.07	13.71
3	301.60	35.04 QP	46.00	-10.96	1.00 H	352	19.91	15.13
4	327.47	34.76 QP	46.00	-11.24	1.00 H	280	18.94	15.82
5	337.17	33.70 QP	46.00	-12.30	1.00 H	226	17.62	16.08
6	394.29	30.38 QP	46.00	-15.62	1.00 H	172	12.82	17.56
7	529.01	30.38 QP	46.00	-15.62	1.50 H	304	9.72	20.65
8	541.94	29.83 QP	46.00	-16.17	1.50 H	262	8.89	20.94
9	577.51	32.09 QP	46.00	-13.91	1.50 H	46	10.16	21.93
10	751.03	33.61 QP	46.00	-12.39	1.00 H	34	8.25	25.36
11	816.78	31.99 QP	46.00	-14.01	1.00 H	262	6.19	25.79

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	**55.87**	**33.56 QP**	**40.00**	**-6.44**	**2.00 V**	**82**	**20.06**	**13.50**
2	261.72	37.75 QP	46.00	-8.25	1.50 V	352	24.05	13.71
3	283.28	35.58 QP	46.00	-10.42	2.00 V	184	20.87	14.71
4	327.47	36.67 QP	46.00	-9.33	1.50 V	10	20.85	15.82
5	359.80	32.21 QP	46.00	-13.79	1.50 V	28	15.54	16.67
6	541.94	30.28 QP	46.00	-15.72	1.50 V	160	9.34	20.94
7	557.03	31.99 QP	46.00	-14.01	1.50 V	166	10.66	21.33
8	577.51	34.25 QP	46.00	-11.75	1.00 V	46	12.31	21.93
9	816.78	31.91 QP	46.00	-14.09	1.00 V	112	6.12	25.79
10	913.78	33.11 QP	46.00	-12.89	2.00 V	40	5.81	27.30

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
3. Margin value = Emission level - Limit value
4. The other emission levels were very low against the limit.

EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
MODE	CHANNEL 0	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 62%RH, 991 hPa	**TESTED BY**: Steven Lu	

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	1200.00	53.91 PK	74.00	-20.09	1.16 H	32	24.95	28.96
1	1200.00	22.91 AV	54.00	-30.09	1.16 H	32	-5.05	28.96
2	*2402.00	84.72 PK			1.00 H	360	53.23	31.49
2	*2402.00	54.72 AV			1.00 H	360	23.23	31.49
3	4804.00	53.55 PK	74.00	-20.45	1.03 H	312	15.73	37.83
3	4804.00	23.55 AV	54.00	-30.45	1.03 H	312	-14.28	37.83

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	1200.00	51.39 PK	74.00	-22.61	1.06 V	50	22.43	28.96
1	1200.00	21.39 AV	54.00	-32.61	1.06 V	50	-7.57	28.96
2	*2402.00	90.81 PK			1.26 V	8	59.32	31.49
2	*2402.00	60.81 AV			1.26 V	8	29.32	31.49
3	4804.00	54.24 PK	74.00	-19.76	1.06 V	332	16.42	37.83
3	4804.00	24.24 AV	54.00	-29.76	1.06 V	332	-13.59	37.83

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
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: 20log(3.125/100)= -30dB
7. Average value = peak reading –20log(duty cycle)

EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
MODE	Channel 39	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 62%RH, 991 hPa	**TESTED BY**: Steven Lu	

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	1219.95	52.94 PK	74.00	-21.06	1.12 H	30	24.01	28.93
1	1219.95	22.94 AV	54.00	-31.96	1.12 H	30	-6.02	28.93
2	*2441.00	81.49 PK			1.13 H	335	49.95	31.54
2	*2441.00	51.49 AV			1.13 H	335	19.95	31.54
3	4882.00	54.20 PK	74.00	-19.80	1.00 H	44	16.25	37.95
3	4882.00	24.20 AV	54.00	-29.80	1.00 H	44	-13.75	37.95

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	1219.90	50.95 PK	74.00	-23.05	1.13 V	97	22.02	28.93
2	*2441.00	85.27 PK			1.08 V	34	53.73	31.54
2	*2441.00	55.27 AV			1.08 V	34	23.73	31.54
3	4882.00	54.18 PK	74.00	-19.82	1.00 V	300	16.23	37.95
3	4882.00	24.18 AV	54.00	-29.80	1.00 V	300	-13.77	37.95

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
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: 20log(3.125/100)= -30dB
7. Average value = peak reading –20log(duty cycle)

EUT	Class 2 Bluetooth Headset	**MODEL**	FROKBT0001
MODE	Channel 78	**FREQUENCY RANGE**	Above 1000 MHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**DETECTOR FUNCTION**	Peak(PK) Average (AV)
ENVIRONMENTAL CONDITIONS	23 deg. C, 62%RH, 991 hPa	**TESTED BY**: Steven Lu	

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	1239.51	54.22 PK	74.00	-19.78	1.08 H	28	25.32	28.90
1	1239.51	24.22 AV	54.00	-29.78	1.08 H	28	-4.68	28.90
2	*2480.00	78.37 PK			1.27 H	11	46.78	31.59
2	*2480.00	48.37 AV			1.27 H	11	16.78	31.59
3	4960.00	54.16 PK	74.00	-19.84	1.14 H	313	16.08	38.08
3	4960.00	24.16 AV	54.00	-29.84	1.14 H	313	-13.92	38.08

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	1239.50	50.69 PK	74.00	-23.31	1.22 V	103	21.79	28.90
2	*2480.00	83.65 PK			1.10 V	56	52.06	31.59
2	*2480.00	53.65 AV			1.10 V	56	22.06	31.59
3	4960.00	54.66 PK	74.00	-19.34	1.32 V	316	16.58	38.08
3	4960.00	24.66 AV	54.00	-29.34	1.32 V	316	-13.42	38.08

NOTE:

1. Emission level = Raw value + Correction Factor
2. Correction Factor = Ant. Factor + Cable loss
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: 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 RB).

4.8.2 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.

4.8.3 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

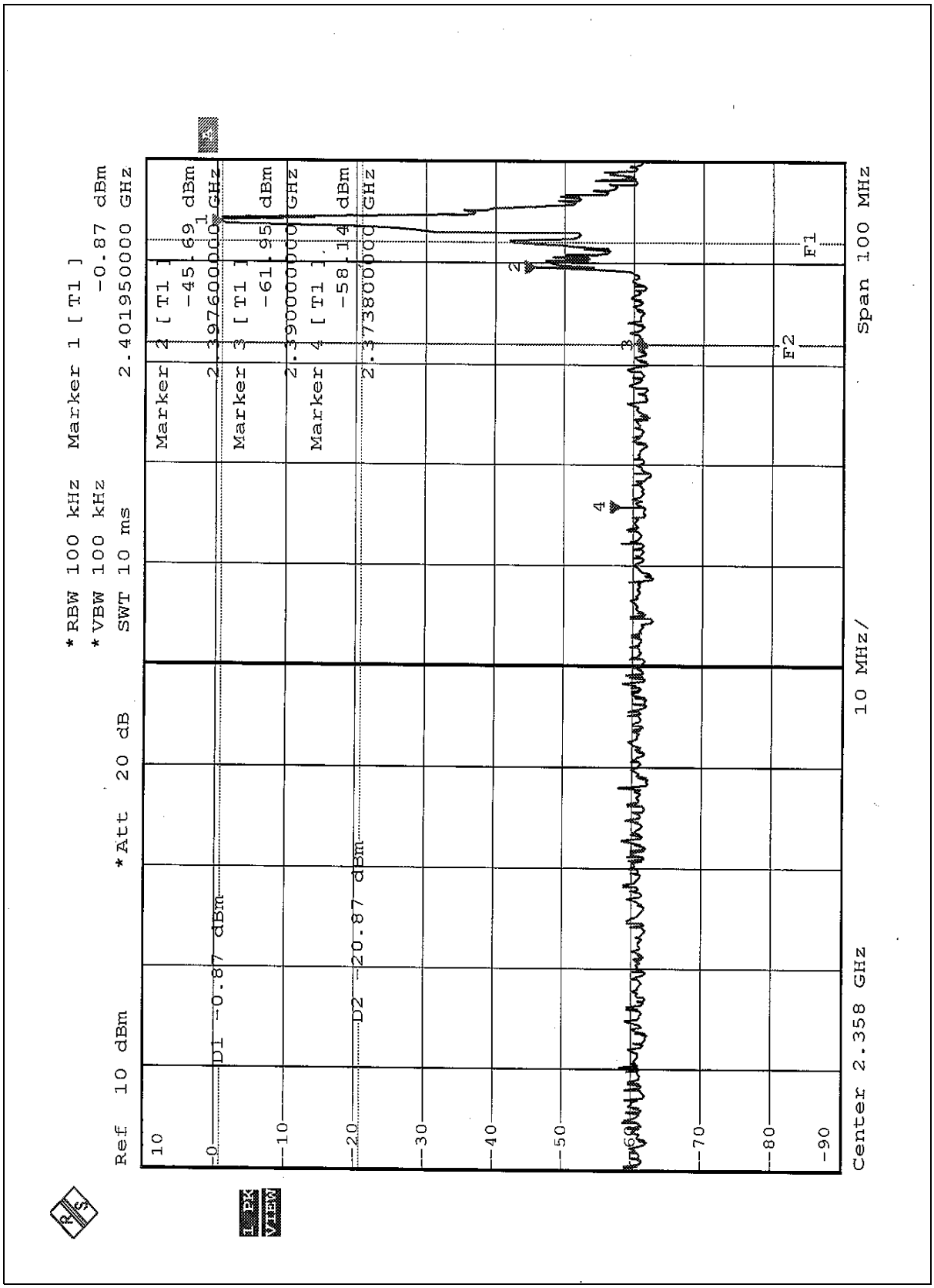
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

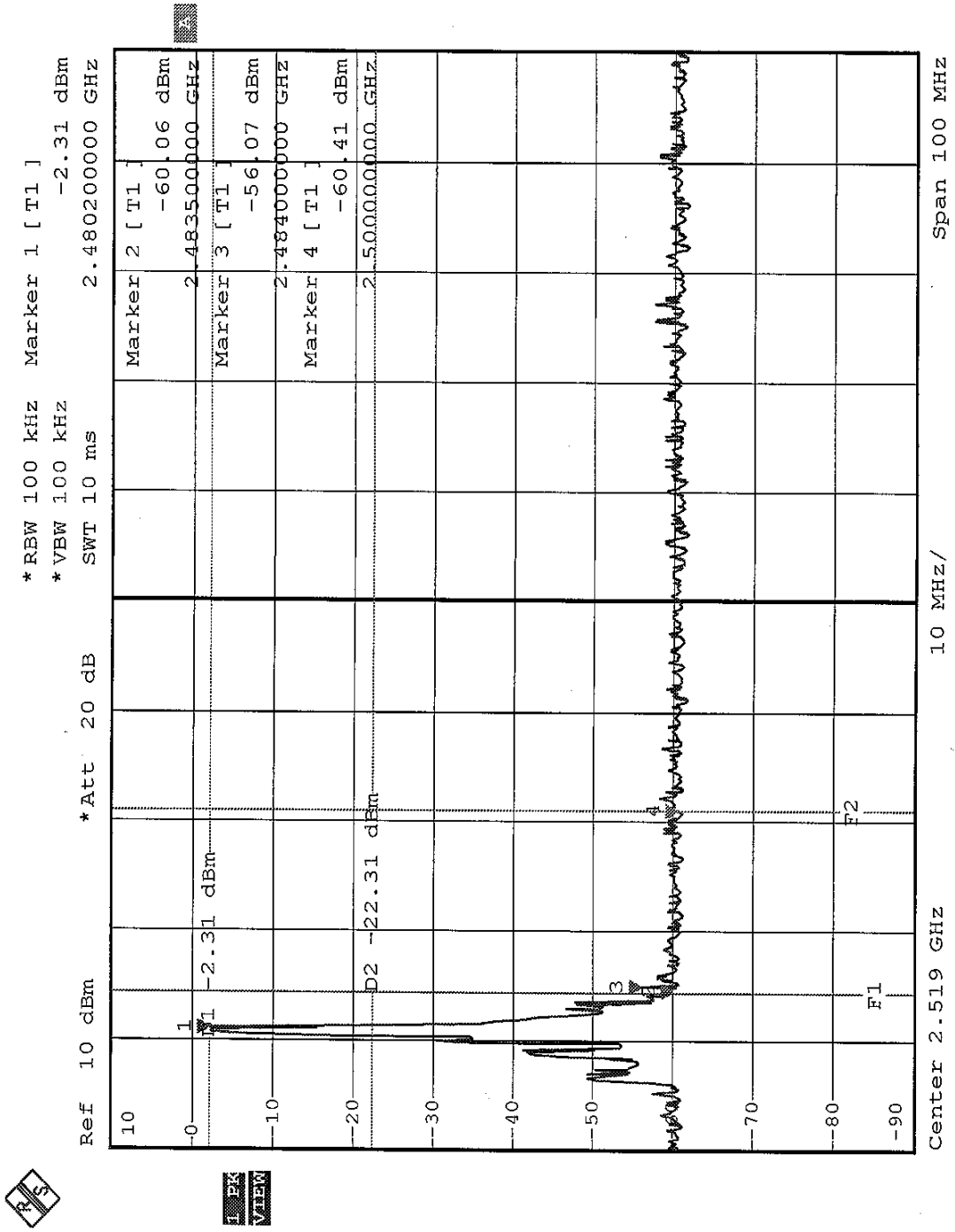
4.8.6 TEST RESULTS

The spectrum plots are attached on the following 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 first page shows 57.27dB delta between carrier maximum power and local maximum emission in restrict band (2.3738Hz). The emission of carrier strength list in the test result of channel 0 at the item 4.7.6 is 60.81dBuV/m, so the maximum field strength in restrict band is 60.81-57.27=3.54dBuV/m which is under 54 dBuV/m limit.

NOTE2: The band edge emission plot on the following second page shows 53.76dB delta between carrier maximum power and local maximum emission in restrict band (2.4840GHz). The emission of carrier strength list in the test result of channel 78 at the item 4.7.6 is 53.65dBuV/m, so the maximum field strength in restrict band is 53.65-53.76=-0.11dBuV/m which is under 54 dBuV/m limit.


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-0.87 dBm
2.401950000 GHz
D1 -0.87 dBm
D2 -20.87 dBm
Marker 2 [T1]
-45.69 dBm
2.397600000 GHz
Marker 3 [T1]
-61.95 dBm
2.390000000 GHz
Marker 4 [T1]
-58.14 dBm
2.373800000 GHz
Center 2.358 GHz
10 MHz/
Span 100 MHz
F1
F2
1 PK
VIEW


Ref 10 dBm
*Att 20 dB
*RBW 100 kHz
*VBW 100 kHz
SWT 10 ms
Marker 1 [T1]
-2.31 dBm
2.480200000 GHz
Marker 2 [T1]
-60.06 dBm
2.483500000 GHz
Marker 3 [T1]
-56.07 dBm
2.484000000 GHz
Marker 4 [T1]
-60.41 dBm
2.500000000 GHz
D1 -2.31 dBm
D2 -22.31 dBm
F1
F2
Center 2.519 GHz
10 MHz/
Span 100 MHz

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

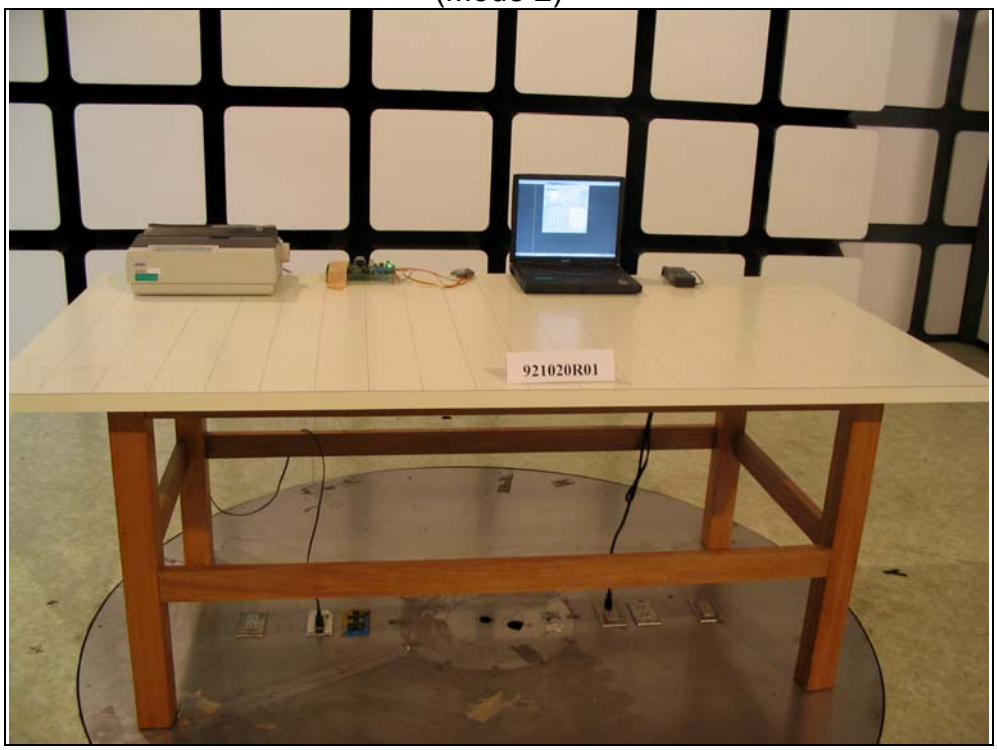
The antenna used in this product is Chip Antenna. There is no Antenna connector. The maximum Gain of this antenna is only 4.0dBi.

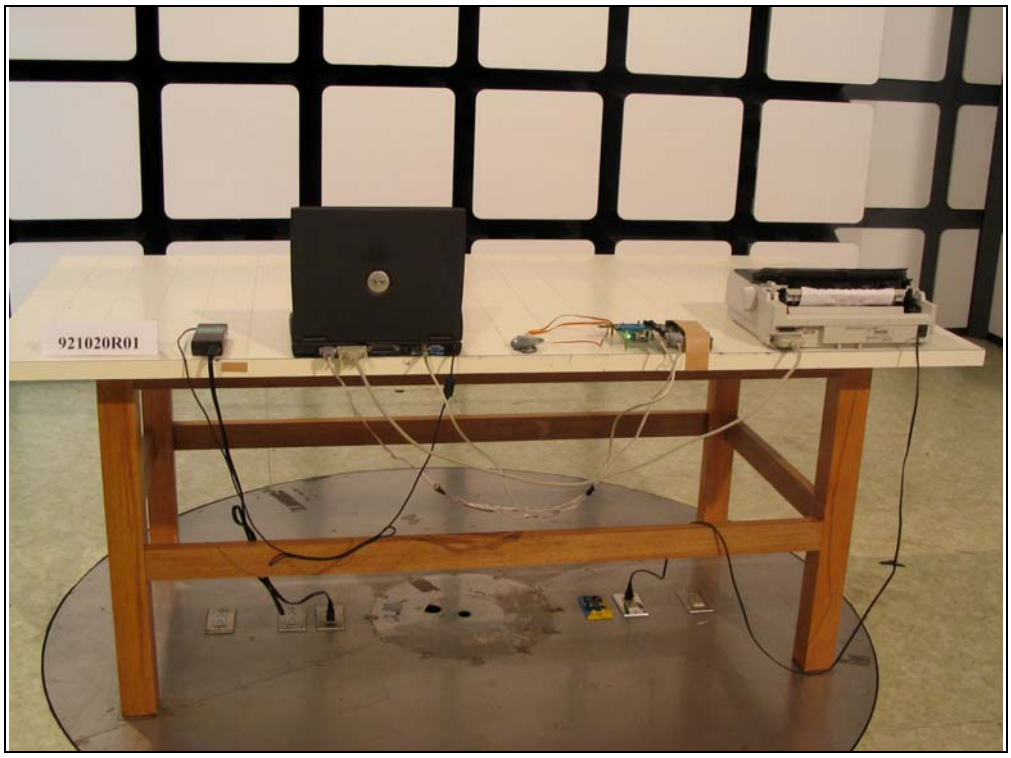
5 PHOTOGRAPHS OF THE TEST CONFIGURATION

CONDUCTED EMISSION TEST
(Mode 1)

RADIATED EMISSION TEST
(Mode 1)

(Mode 2)





6 INFORMATION ON THE TESTING LABORATORIES

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

USA	FCC, NVLAP
Germany	TUV Rheinland
Japan	VCCI
New Zealand	MoC
Norway	NEMKO
R.O.C.	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.

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