FCC TEST REPORT

REPORT NO.: RF920220R01
MODEL NO.: HA-1217
RECEIVED: Feb. 20, 2003
TESTED: Feb. 24 ~ 25, 2003

APPLICANT: Hitachi Asahi Electronics Co., Ltd.

ADDRESS: 1, Ikegami, Haruoka-cho, Owariasahi-shi, Aichi-ken, Japan

ISSUED BY: Advance Data Technology Corporation

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

0528
ILAC MRA

Lab Code: 200102-0

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1 CERTIFICATION

PRODUCT :	Bluetooth Profile Unit
BRAND NAME :	Hitachi Asahi Electronics Co., Ltd.
MODEL NO. :	HA-1217
APPLICANT :	Hitachi Asahi Electronics Co., Ltd.
STANDARDS :	47 CFR Part 15, Subpart C (Section 15.247), ANSI C63.4-1992

We, **Advance Data Technology Corporation**, hereby certify that one sample of the designation has been tested in our facility from Feb. 24, 2003 to Feb. 25, 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.

CHECKED BY : Emily Lu , **DATE** : Mar. 3, 2003
Emily Lu

APPROVED BY : for , **DATE** : Mar. 3, 2003
Dr. Alan Lane, 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 –0.41dBuV at 0.675MHz
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 –5.90dBuV at 480.30MHz
15.247(c)	Band Edge Measurement	PASS	Meet the requirement of limit

3 GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Bluetooth Profile Unit
MODEL NO.	HA-1217
POWER SUPPLY	3.3 ~ 5.0VDC from host equipment
MODULATION TYPE	FHSS (GFSK)
FREQUENCY RANGE	2402MHz ~ 2480MHz
NUMBER OF CHANNEL	79
OUTPUT POWER	4.16dBm
ANTENNA TYPE	SMD
DATA CABLE	NA
I/O PORTS	NA
ASSOCIATED DEVICES	NA

NOTE:

For more detailed features description, please refer to the manufacturer's specifications or User's Manual.

3.2 DESCRIPTION OF TEST MODES

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

3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

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

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

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

3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit.

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

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

4.1.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESHS 30	838765/002	July 25, 2003
ROHDE & SCHWARZ Artificial Mains Network (for EUT)	ESH3-Z5	835239/001	May 09, 2003
ROHDE & SCHWARZ 4-wire ISN	ENY41	935154/007	May 10, 2003
ROHDE & SCHWARZ 2-wire ISN	ENY22	833823/026	May 10, 2003
ROHDE & SCHWARZ Artificial Mains Network (for peripherals)	ESH3-Z5	835239/002	May 09, 2003
Software	Cond-V2M1	NA	NA
RF cable (JYEBAO)	5D-FB	Cable-C09.01	June 10, 2003
JYEBAO Terminator (For ROHDE & SCHWARZ LISN)	BNC 3950-0000	E1-01-379	June 11, 2003

NOTE:
1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. "*": These equipment are used for conducted telecom port test only (if tested).
3. The test was performed in ADT Shielded Room No. 9.
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.

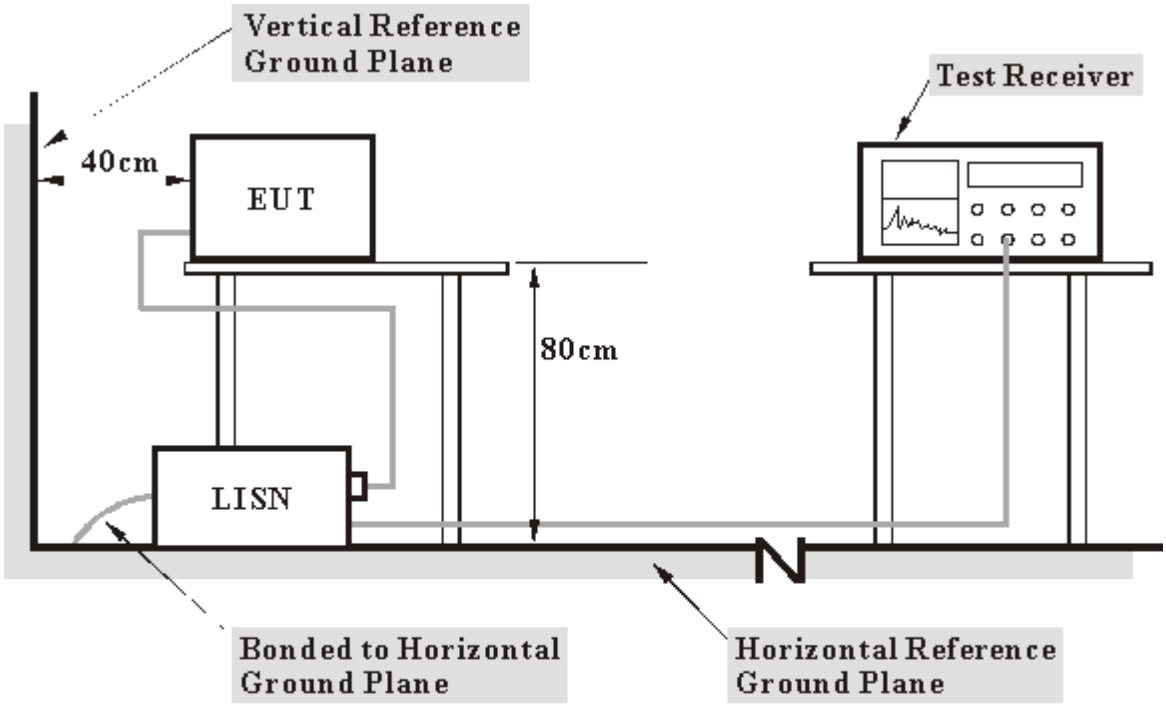
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

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

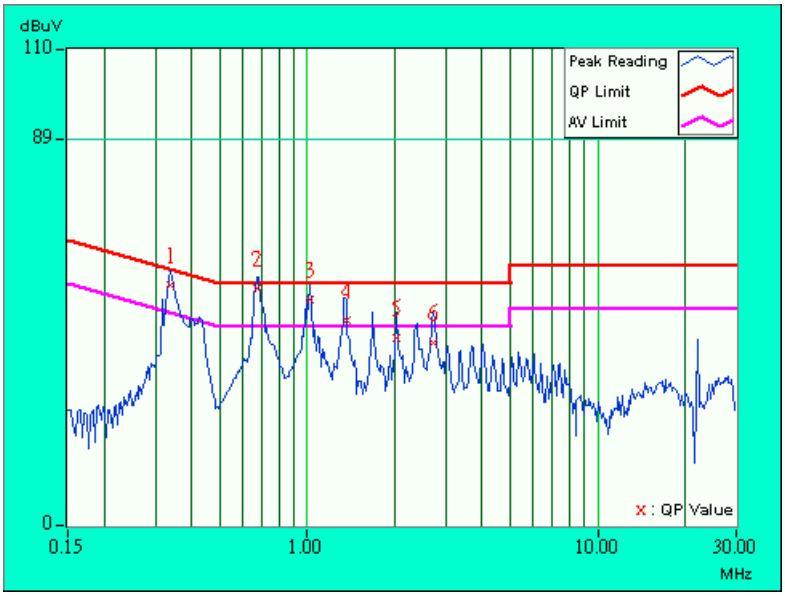
The computer system ran a test program to enable EUT under transmission / receiving condition continuously at specific channel frequency.

4.1.7 TEST RESULTS

EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
CHANNEL	0	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005hPa	**TESTED BY**: Bunny Yao	

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.339	0.10	55.48	46.17	55.58	46.27	59.23	49.23	-3.65	-2.96
2	0.675	0.15	54.75	45.44	54.90	45.59	56.00	46.00	-1.10	-0.41
3	1.018	0.20	51.90	42.41	52.10	42.61	56.00	46.00	-3.90	-3.39
4	1.360	0.20	47.24	36.69	47.44	36.89	56.00	46.00	-8.56	-9.11
5	2.020	0.20	42.96	-	43.16	-	56.00	46.00	-12.84	-
6	2.719	0.24	42.11	-	42.35	-	56.00	46.00	-13.65	-

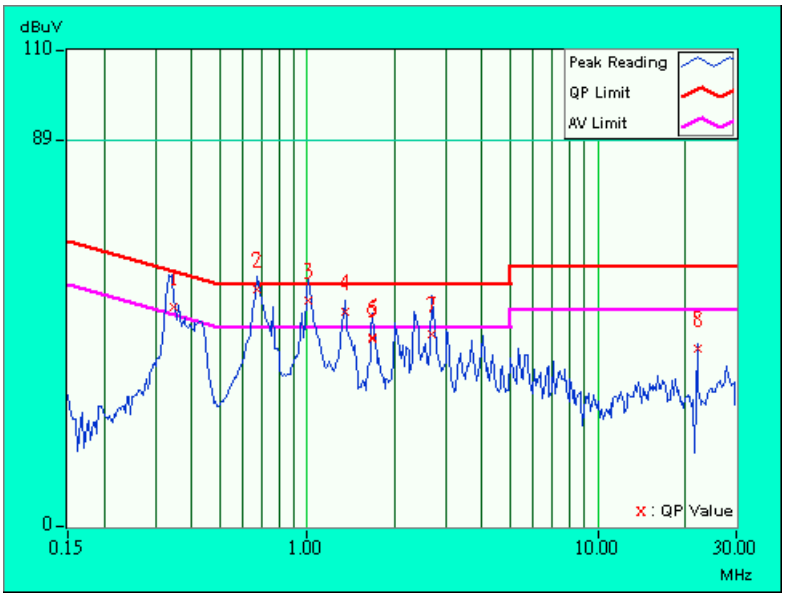
REMARKS : 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
MODE	Channel 0	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005hPa	**TESTED BY**: Bunny Yao	

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.348	0.10	50.05	40.92	50.15	41.02	59.01	49.01	-8.86	-7.99
2	0.669	0.14	54.18	44.51	54.32	44.65	56.00	46.00	-1.68	-1.35
3	1.015	0.20	51.59	42.10	51.79	42.30	56.00	46.00	-4.21	-3.70
4	1.351	0.24	48.77	38.83	49.01	39.07	56.00	46.00	-6.99	-6.93
5	1.678	0.27	42.65	-	42.92	-	56.00	46.00	-13.08	-
6	1.678	0.27	42.83	-	43.10	-	56.00	46.00	-12.90	-
7	2.686	0.30	43.80	-	44.10	-	56.00	46.00	-11.90	-
8	22.121	0.74	40.55	-	41.29	-	60.00	50.00	-18.71	-

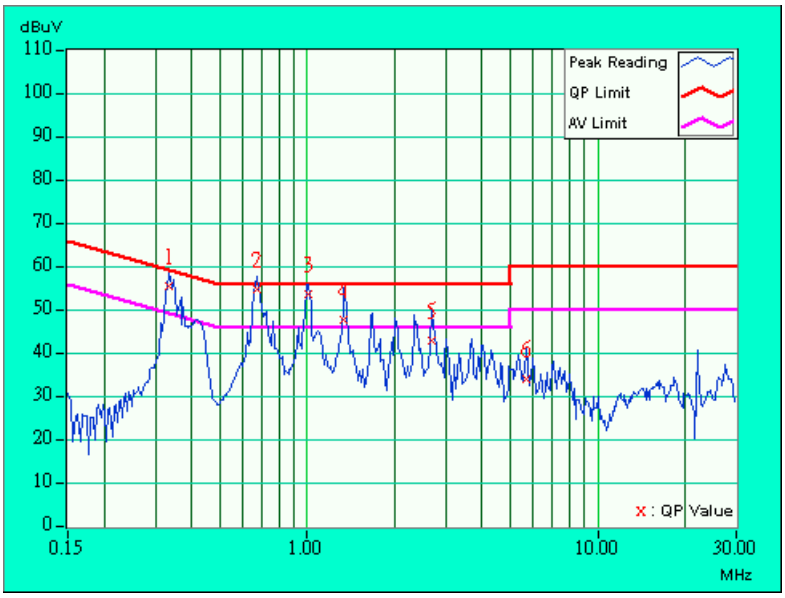
REMARKS : 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
MODE	Channel 39	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005hPa	**TESTED BY**: Bunny Yao	

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.336	0.10	55.26	45.83	55.36	45.93	59.30	49.30	-3.94	-3.37
2	0.669	0.14	54.35	44.53	54.49	44.67	56.00	46.00	-1.51	-1.33
3	1.003	0.20	53.20	43.23	53.40	43.43	56.00	46.00	-2.60	-2.57
4	1.327	0.20	47.26	35.65	47.46	35.85	56.00	46.00	-8.54	-10.15
5	2.668	0.23	42.69	-	42.92	-	56.00	46.00	-13.08	-
6	5.645	0.38	33.77	-	34.15	-	60.00	50.00	-25.85	-

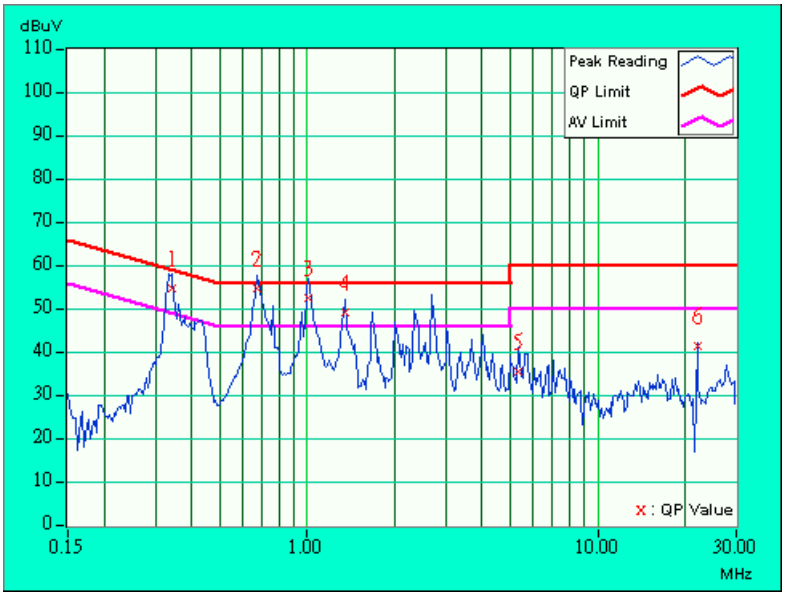
REMARKS : 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
MODE	Channel 39	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005hPa	**TESTED BY**: Bunny Yao	

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.342	0.10	53.94	45.67	54.04	45.77	59.15	49.15	-5.11	-3.38
2	0.669	0.14	54.24	44.43	54.38	44.57	56.00	46.00	-1.62	-1.43
3	1.015	0.20	51.98	42.43	52.18	42.63	56.00	46.00	-3.82	-3.37
4	1.351	0.24	48.35	38.53	48.59	38.77	56.00	46.00	-7.41	-7.23
5	5.339	0.34	34.81	-	35.15	-	60.00	50.00	-24.85	-
6	22.121	0.74	40.57	-	41.31	-	60.00	50.00	-18.69	-

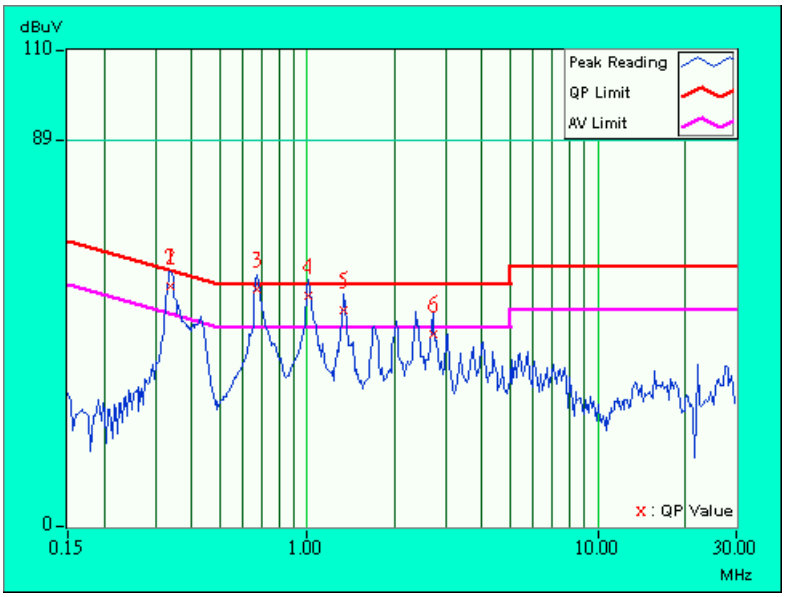
REMARKS : 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
MODE	Channel 78	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Line (L)
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005hPa	**TESTED BY**: Bunny Yao	

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.337	0.10	55.38	45.85	55.48	45.95	59.28	49.28	-3.80	-3.33
2	0.339	0.10	55.44	46.17	55.54	46.27	59.23	49.23	-3.69	-2.96
3	0.675	0.15	54.73	45.30	54.88	45.45	56.00	46.00	-1.12	-0.55
4	1.012	0.20	53.11	43.58	53.31	43.78	56.00	46.00	-2.69	-2.22
5	1.342	0.20	49.72	39.75	49.92	39.95	56.00	46.00	-6.08	-6.05
6	2.707	0.24	44.08	-	44.32	-	56.00	46.00	-11.68	-

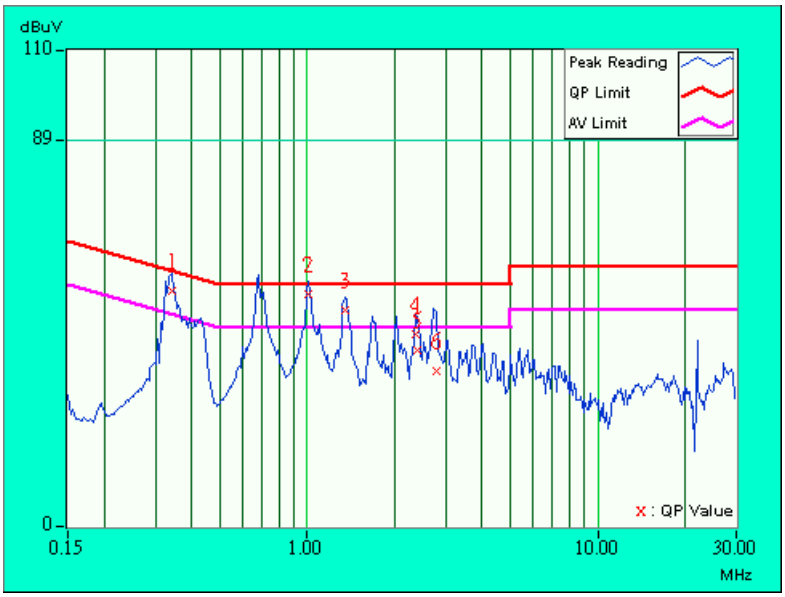
REMARKS : 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
MODE	Channel 78	**6dB BANDWIDTH**	9kHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz	**PHASE**	Neutral (N)
ENVIRONMENTAL CONDITIONS	24deg. C, 63%RH, 1005hPa	**TESTED BY**: Bunny Yao	

No	Freq.	Corr. Factor	Reading Value		Emission Level		Limit		Margin	
			[dB (uV)]		[dB (uV)]		[dB (uV)]		(dB)	
	[MHz]	(dB)	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.342	0.10	54.28	46.05	54.38	46.15	59.15	49.15	-4.77	-3.00
2	1.012	0.20	53.32	43.57	53.52	43.77	56.00	46.00	-2.48	-2.23
3	1.348	0.23	49.84	39.58	50.07	39.81	56.00	46.00	-5.93	-6.19
4	2.356	0.30	44.31	-	44.61	-	56.00	46.00	-11.39	-
5	2.401	0.30	40.34	-	40.64	-	56.00	46.00	-15.36	-
6	2.779	0.30	35.49	-	35.79	-	56.00	46.00	-20.21	-

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.



4.2 NUMBER OF HOPPING FREQUENCY USED

4.2.1 LIMIT OF HOPPING FREQUENCY USED

At least 75 hopping frequencies, and should be equally spaced.

4.2.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	8564EC	4208A00660	Nov. 20, 2003

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

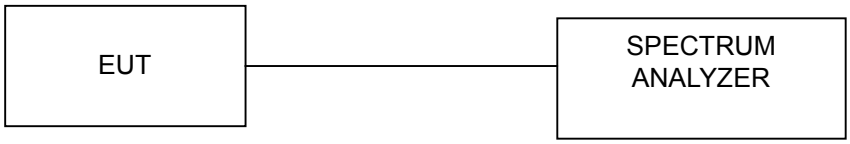
4.2.3 TEST PROCEDURES

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

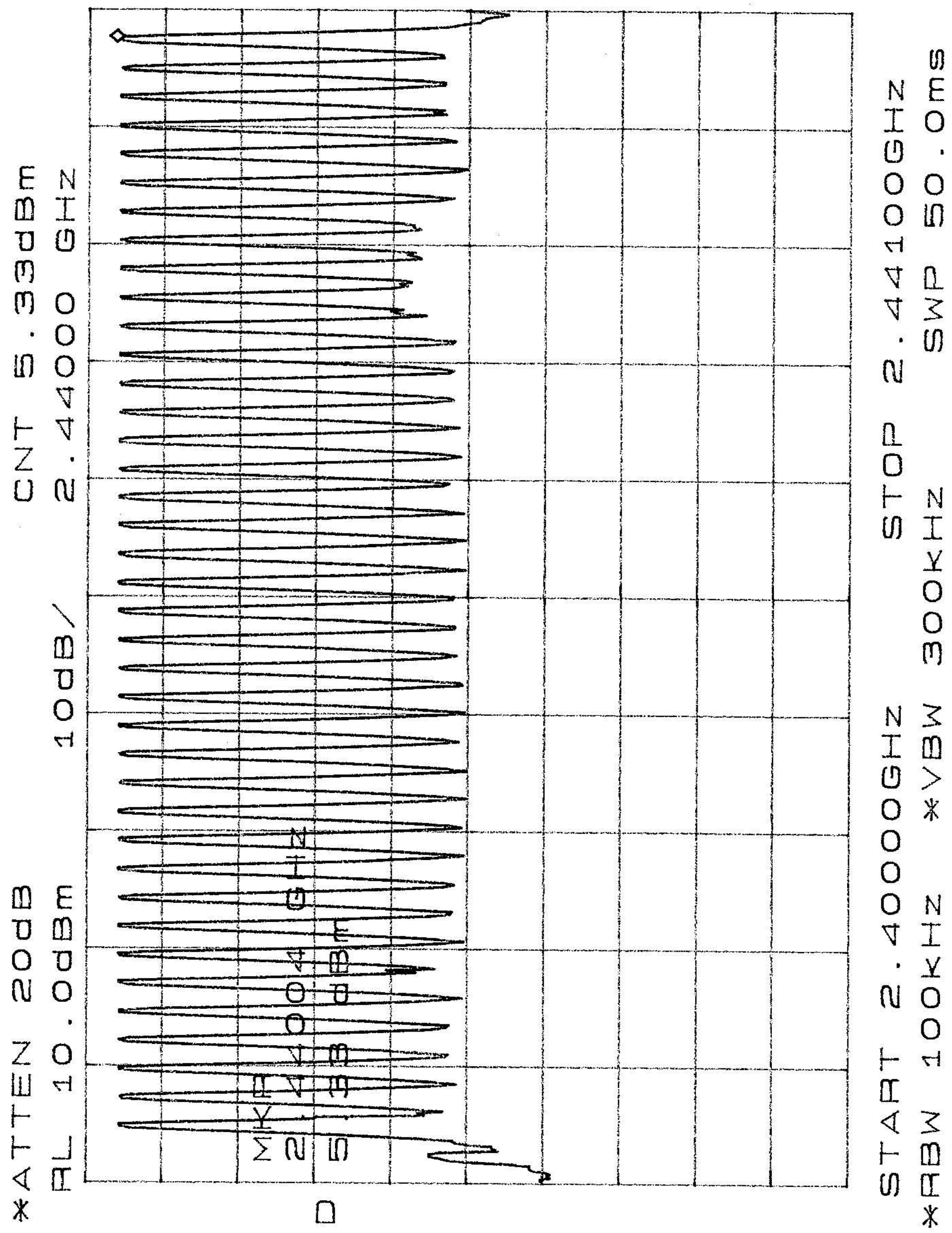
No deviation

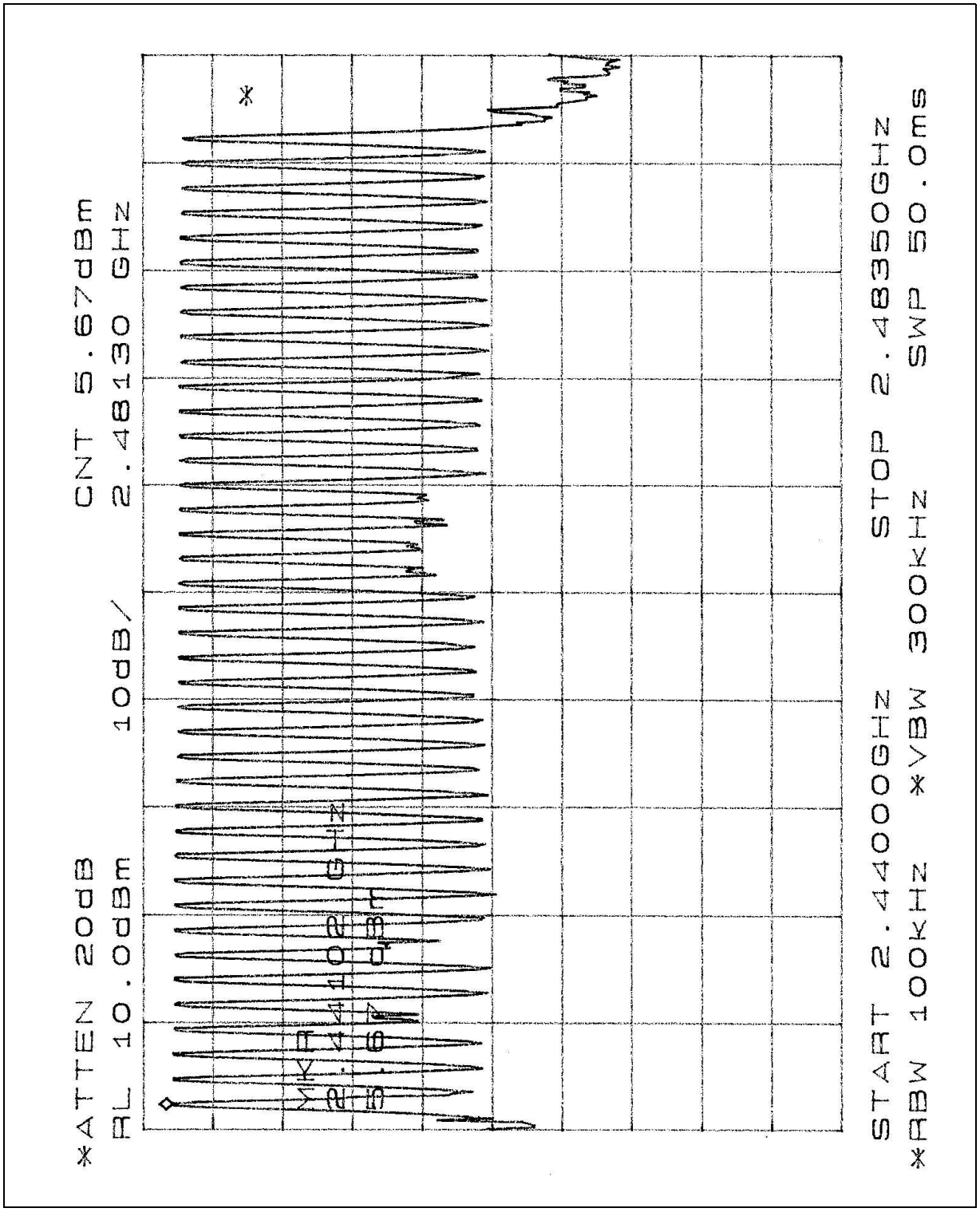
4.2.5 TEST SETUP



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.


*ATTEN 20dB
RL 10.0dBm
10dB/
CNT 5.33dBm
2.44000 GHz
MKR 2.40004 GHz
5.33 dBm
D
START 2.40000GHz
STOP 2.44100GHz
*RBW 100kHz
*VBW 300kHz
SWP 50.0ms


*ATTEN 20dB
RL 10.00dBm
10dB/
CNT 5.67dBm
2.488130 GHz
START 2.400000GHz
*RBW 100KHz
*VBW 300KHz
STOP 2.483500GHz
SWP 50.0ms

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 30 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	8564EC	4208A00660	Nov. 20, 2003

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

4.3.3 TEST 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

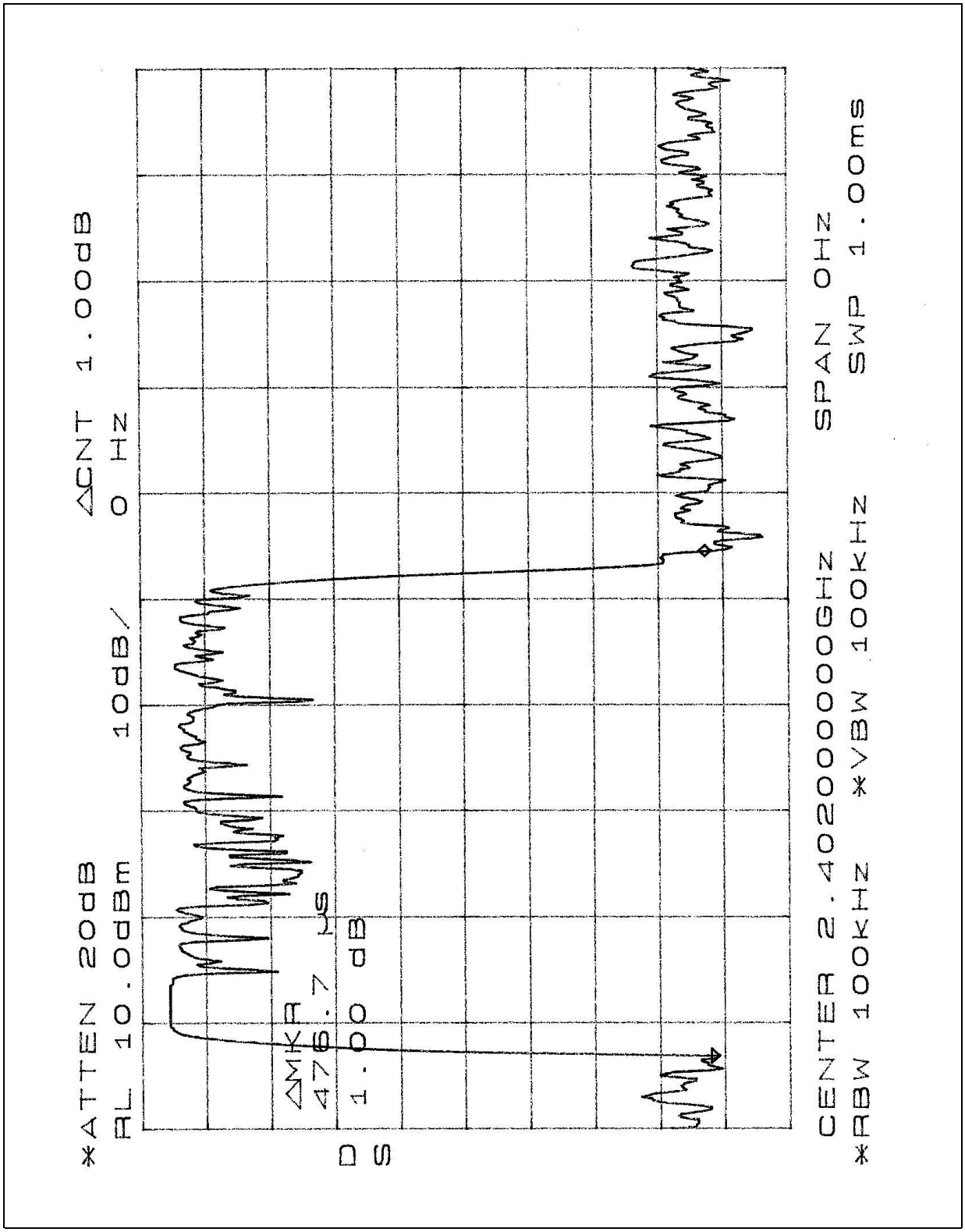
CHANNEL	DWELL TIME
0	289.64ms
39	286.60ms
78	285.57ms

NOTE: This product is averagely hopped on 79 frequencies. The maximum hopping rate is 1600 hops/sec. The longest pulse duration is 460.92μsec.

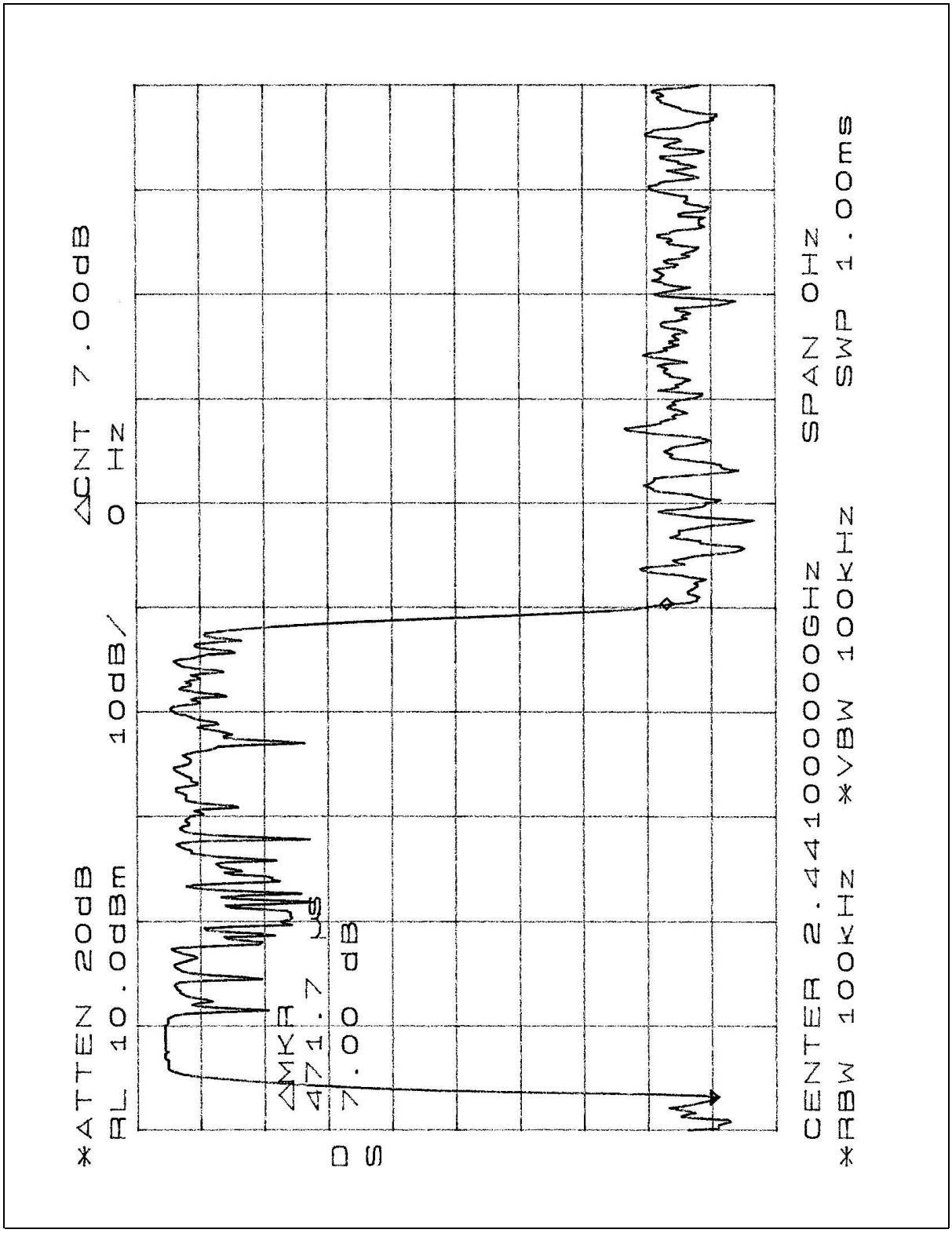
So, the longest Dwell Time = 476.7 μsec x 1600 ÷ 79 x 30 = 289.64msec., which is smaller than 0.4sec.

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

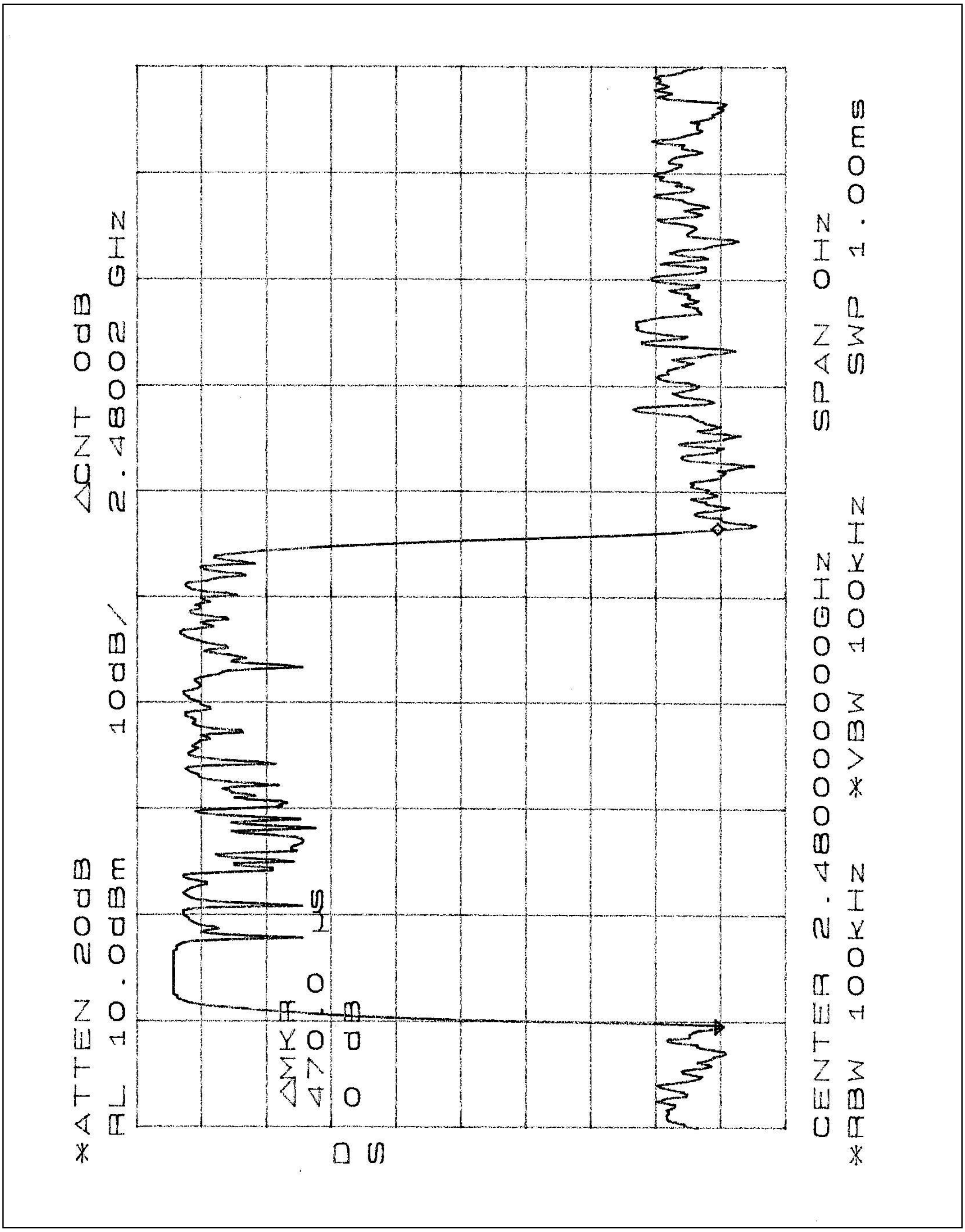
Channel 0


*ATTEN 20dB
RL 10.00dBm
ΔCNT 1.00dB
0 Hz
10dB/
ΔMKR 47.7 µs
1.00 dB
D S
CENTER 2.402000000GHz
SPAN 0Hz
*RBW 100kHz
*VBW 100kHz
SWP 1.00ms

Channel 39


*ATTEN 20dB
RL 10.0dBm
ΔCNT 7.00dB
10dB/
0 Hz
ΔMKR 47.7 µs
7.00 dB
D S
CENTER 2.441000000GHz
*RBW 100kHz
*VBW 100kHz
SPAN 0Hz
SWP 1.00ms

Channel 78


*ATTEN 20dB
RL 10.0dBm
10dB/
ΔCNT 0dB
2.48002 GHz
ΔMKR 470.0 µs
0 dB
CENTER 2.480000000GHz
SPAN 0Hz
*RBW 100kHz
*VBW 100kHz
SWP 1.00ms

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	July 24, 2003

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

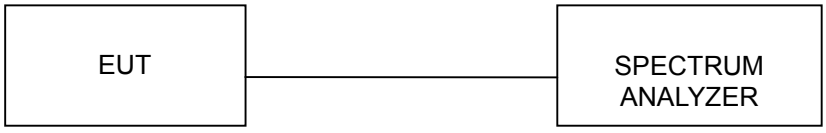
4.4.3 TEST PROCEDURE

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

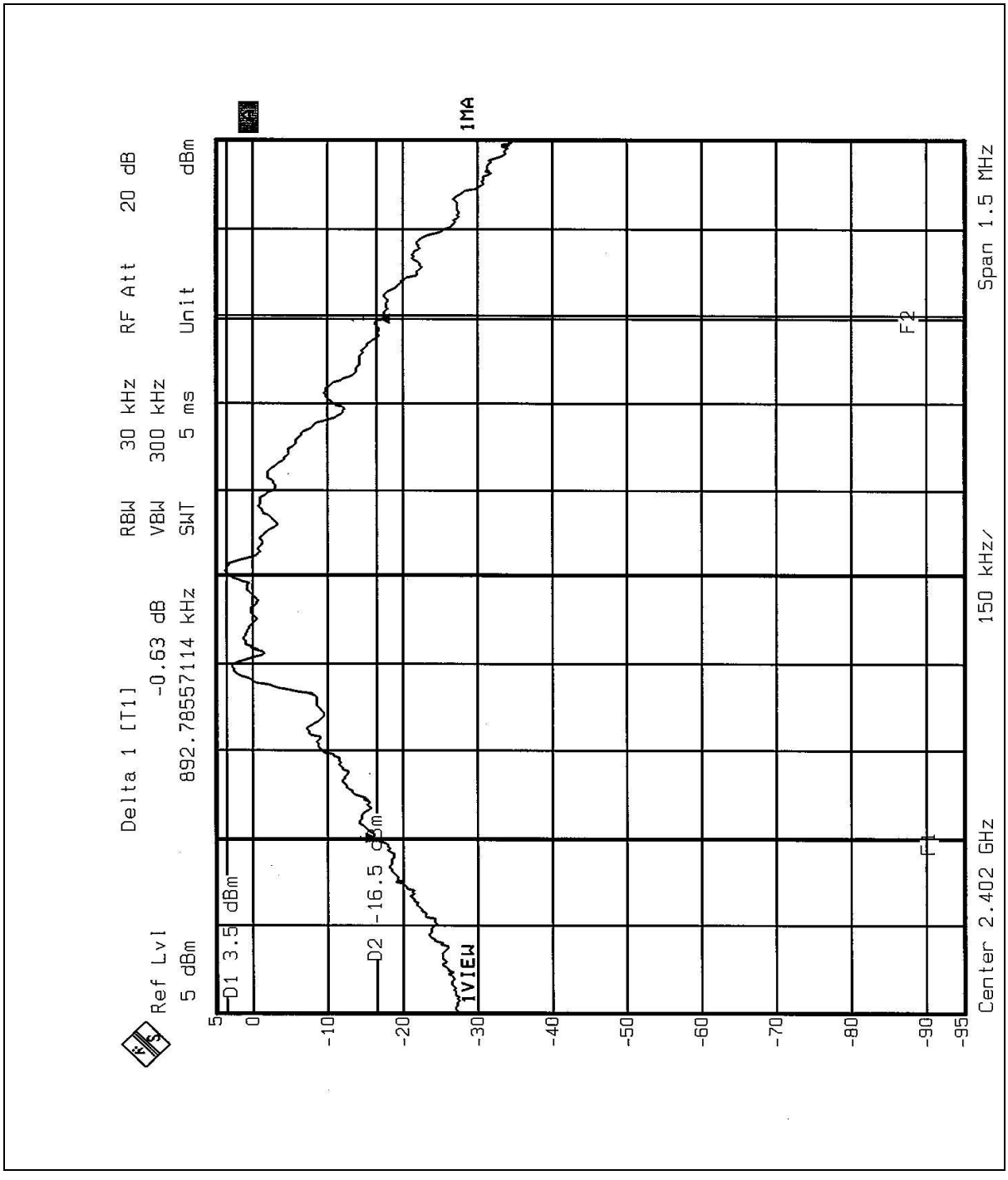
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.

4.4.7 TEST RESULTS

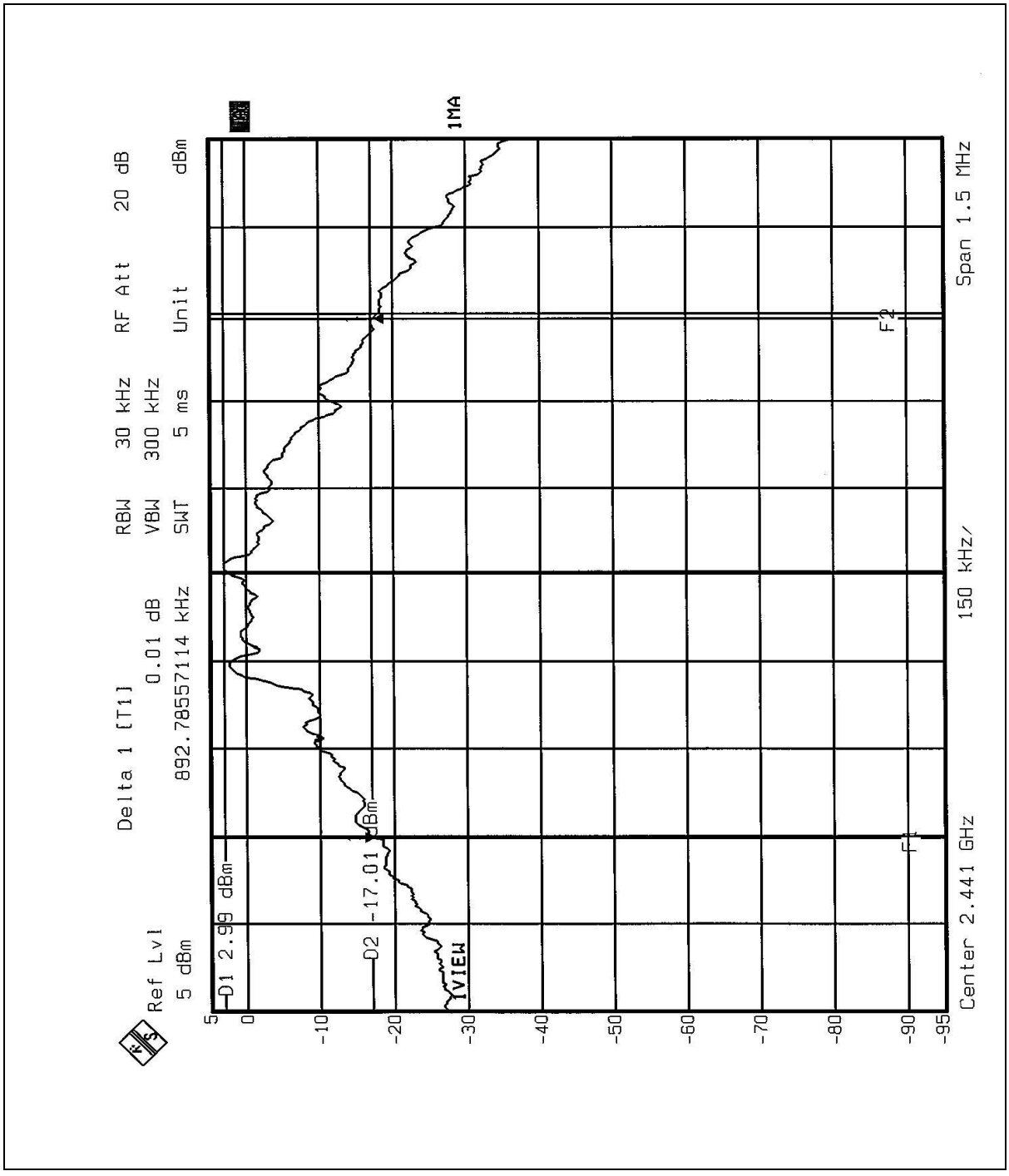
EUT	Bluetooth Profile Unit	MODEL	HA-1217
INPUT POWER (SYSTEM)	120Vac, 60Hz	ENVIRONMENTAL CONDITIONS	23deg.C, 64%RH, 1005hPa
TESTED BY: Steven Lu			

CHANNEL	CHANNEL FREQUENCY (MHz)	20dB BANDWIDTH (kHz)	MAXIMUM LIMIT (MHz)	PASS/FAIL
0	2402	892.79	1	PASS
39	2441	892.79	1	PASS
78	2480	886.77	1	PASS

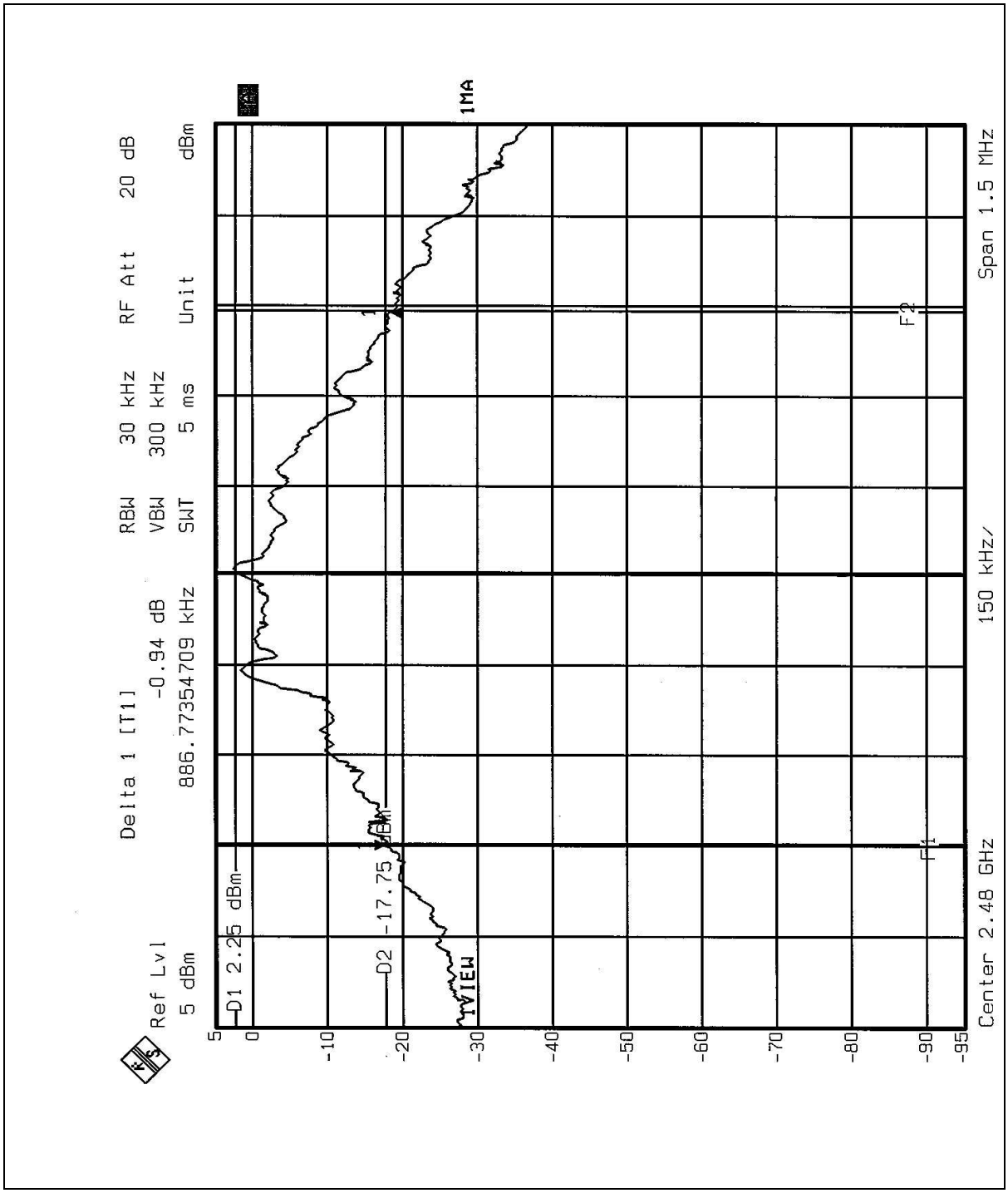
Channel 0


Delta 1 [T1]
-0.63 dB
892.78557114 kHz
RBW 30 kHz
VBW 300 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
Ref Lvl
5 dBm
D1 3.5 dBm
D2 -16.5 dBm
1VIEW
1MA
F1
F2
Center 2.402 GHz
150 kHz/
Span 1.5 MHz
5
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-95

Channel 39


1MA
Ref Lvl
5 dBm
RBW 30 kHz
VBW 300 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
Delta 1 [T1]
0.01 dB
892.78557114 kHz
D1 2.99 dBm
D2 -17.01 dBm
VIEW
F1
F2
Center 2.441 GHz
150 kHz/
Span 1.5 MHz
5
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-95

Channel 78


Ref Lvl
5 dBm
D1 2.25 dBm
Delta 1 [T1]
-0.94 dB
886.77354709 kHz
D2 -17.75 dBm
RBW 30 kHz
VBW 300 kHz
SWT 5 ms
RF Att 20 dB
Unit dBm
1MA
1VIEW
F2
F1
Center 2.48 GHz
150 kHz/
Span 1.5 MHz
5
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-95

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	8564EC	4208A00660	Nov. 20, 2003

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

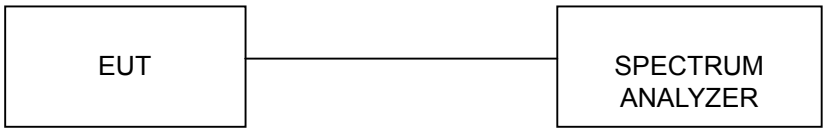
4.5.3 TEST PROCEDURES

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

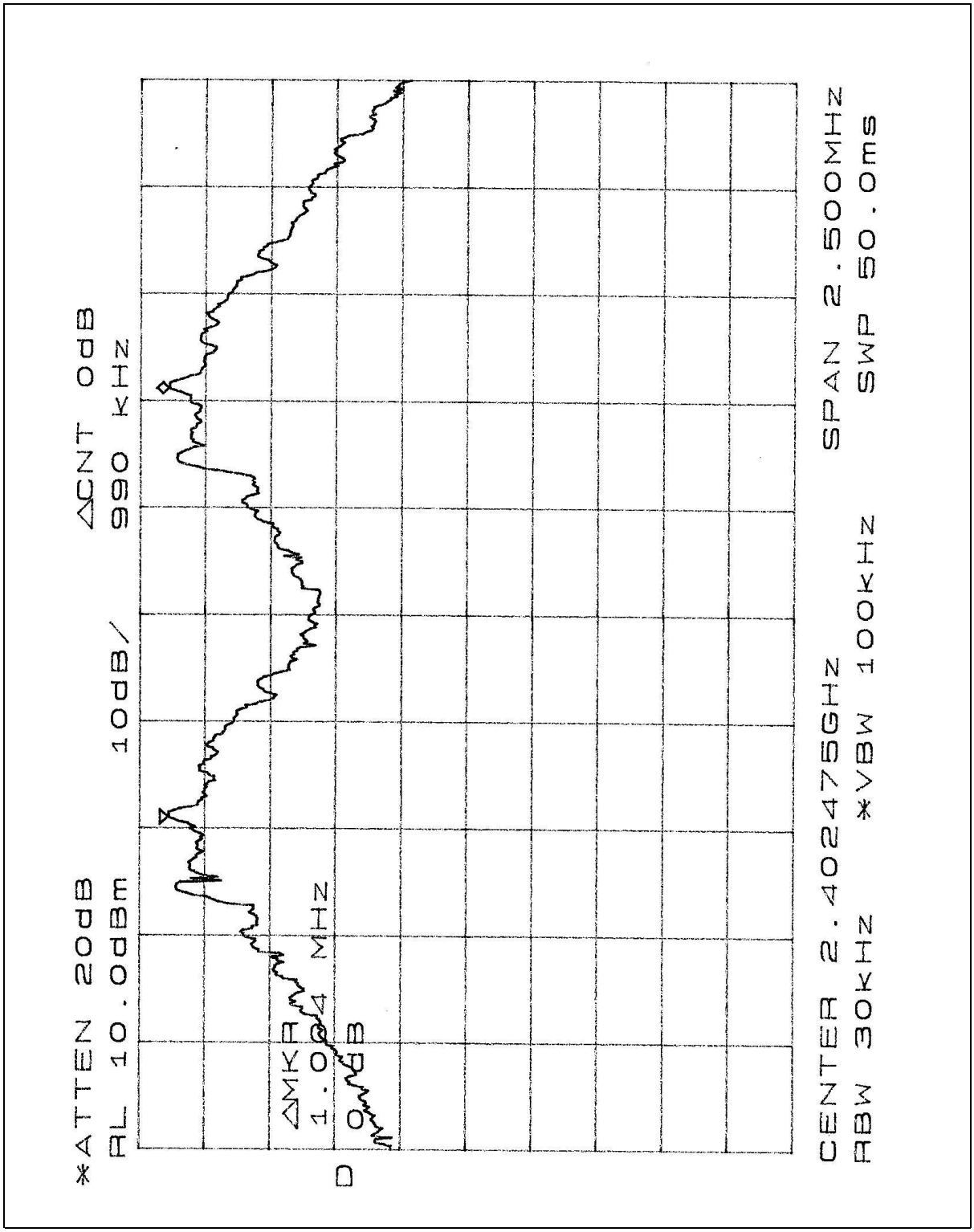
Data Mode:

EUT	Bluetooth Profile Unit	**MODEL**	HA-1217
INPUT POWER (SYSTEM)	120Vac, 60Hz	**ENVIRONMENTAL CONDITIONS**	23deg.C, 64%RH, 1005hPa
TESTED BY: Steven Lu			

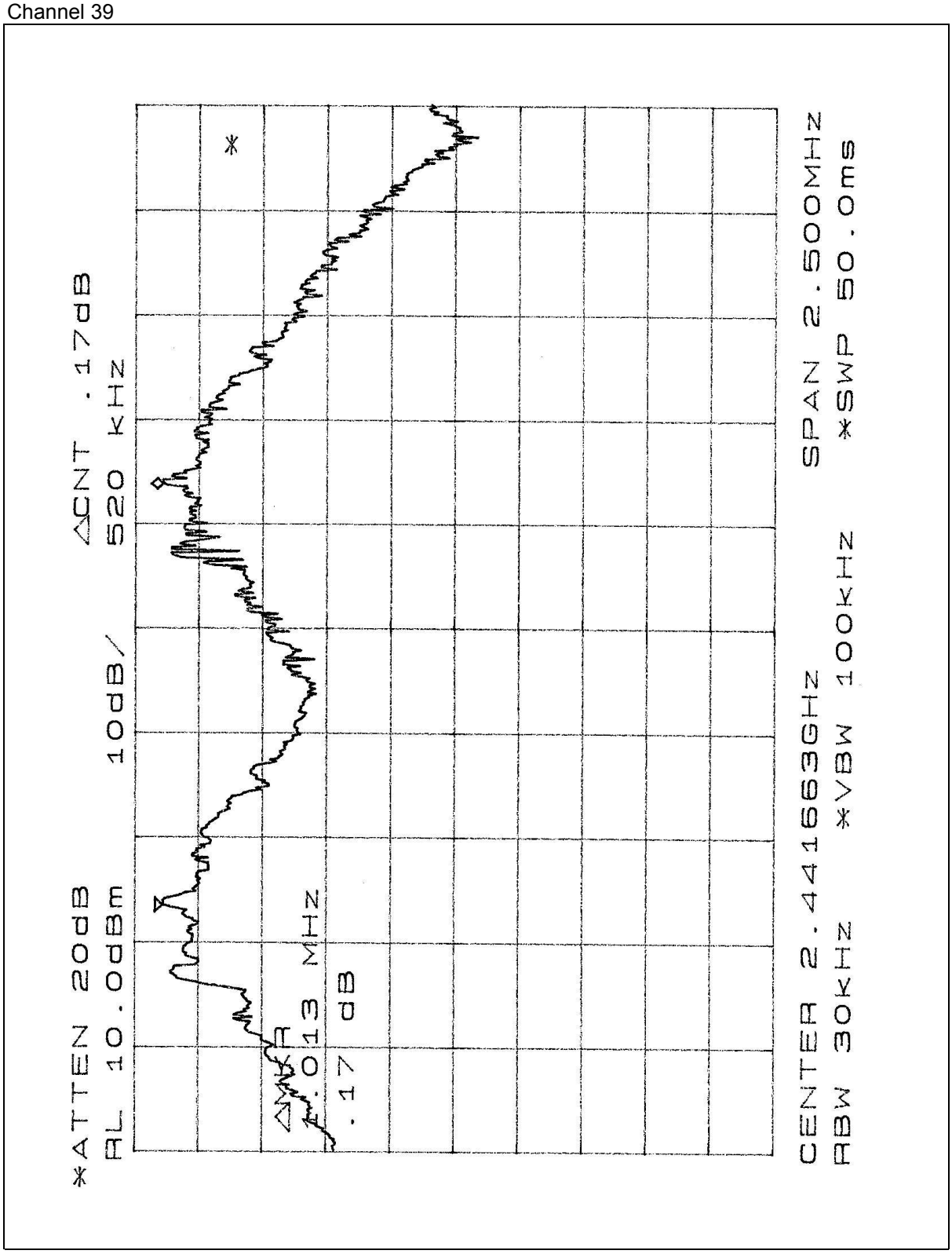
Channel	Frequency (MHz)	Adjacent Channel Separation	Minimum Limit (kHz)	Pass / Fail
0	2402	1MHz	892.79	PASS
39	2441	1MHz	892.79	PASS
78	2480	1MHz	886.77	PASS

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

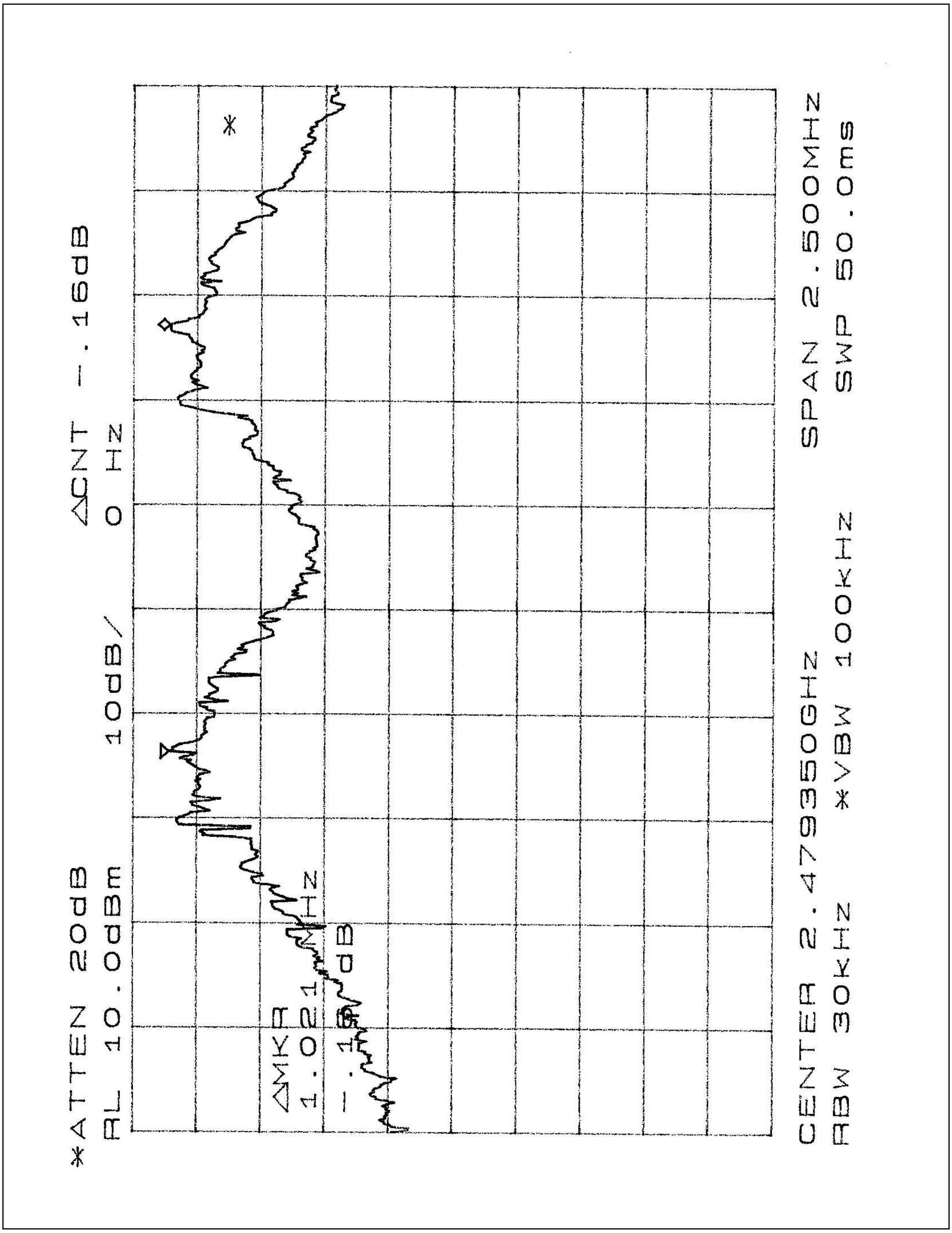
Channel 0


*ATTEN 20dB
RL 10.0dBm
10dB/
ΔCNT 0dB
990 KHz
ΔMKR 0
1.04 MHz
0.0 dB
CENTER 2.402475GHz
RBW 30KHz
*VBW 100KHz
SPAN 2.500MHz
SWP 50.0ms

Channel 39


*ATTEN 20dB
RL 10.00dBm
10dB/
ΔCNT .17dB
520 kHz
ΔMKR 0.13 MHz
.17 dB
CENTER 2.441663GHz
RBW 30kHz
*VBW 100kHz
SPAN 2.500MHz
*SWP 50.0ms

Channel 78


*ATTEN 20dB
RL 10.0dBm
10dB/
ΔCNT -.16dB
0 Hz
ΔMKR
1.021MHz
CENTER 2.479350GHz
SPAN 2.500MHz
RBW 30kHz
*VBW 100kHz
SWP 50.0ms