

FCC TEST REPORT

REPORT NO.: RF930812L19

MODEL NO.: 5545URF

RECEIVED: Aug. 12, 2004

TESTED: Aug. 17 ~ Aug. 19, 2004

APPLICANT: BEHAVIOR TECH COMPUTER CORP.

ADDRESS: 2F, 51, Tung Hsing Rd., Taipei, Taiwan,
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 : Wireless Keyboard
BRAND NAME : BTC, EMPREX
MODEL NO. : 5545URF
APPLICANT : BEHAVIOR TECH COMPUTER CORP.
TESTED : Aug. 17 ~ Aug. 19, 2004
TEST ITEM : PROTOTYPE
STANDARDS : FCC Part 15, Subpart C (Section 15.249),
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 : Wendy Liao, **DATE:** Aug. 30, 2004
(Wendy Liao)

TECHNICAL
ACCEPTANCE : Gary Chang, **DATE:** Aug. 30, 2004
Responsible for RF (Gary Chang)

APPROVED BY : Cody Chang, **DATE:** Aug. 30, 2004
(Cody Chang / Deputy Manager)

2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart C			
STANDARD PARAGRAPH	TEST TYPE	RESULT	REMARK
15.207	Conducted Emission Test	N/A	Power supply is 3Vdc from batteries
15.209 15.249	Radiated Emission Test	PASS	Meet the requirement of limit Minimum passing margin is -9.80 dB at 4954.00 MHz
15.249 (d)	Band Edge Measurement	PASS	Meet the requirement of limit

2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4:

Measurement	Frequency	Uncertainty
Conducted emissions	9k~30MHz	2.44 dB
Radiated emissions	30MHz ~ 200MHz	3.63 dB
	200MHz ~1000MHz	3.65 dB
	1GHz ~ 18GHz	2.20 dB
	18GHz ~ 40GHz	1.88 dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	Wireless Keyboard
MODEL NO.	5545URF
POWER SUPPLY	3 Vdc from batteries
MODULATION TECHNOLOGY	GFSK
FREQUENCY RANGE	2402, 2417, 2427, 2442, 2452, 2467, 2477MHz
NUMBER OF CHANNEL	7
ANTENNA TYPE	PCB Antenna with –6 dBi gain
DATA CABLE	NA
I/O PORTS	NA

NOTE:

1. The models as below are identical to each other except for their brands due to marketing requirement.

Brand	Model
BTC	5545URF
EMPREX	5545URF

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.

2.2 DESCRIPTION OF TEST MODES

7 channels are provided to this EUT.

Keyboard	
Channel	Freq. (MHz)
1	2402
2	2417
3	2427
4	2442
5	2452
6	2467
7	2477

NOTE:

1. For radiated test, channel 1, 4 and 7 were tested individually.

2.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

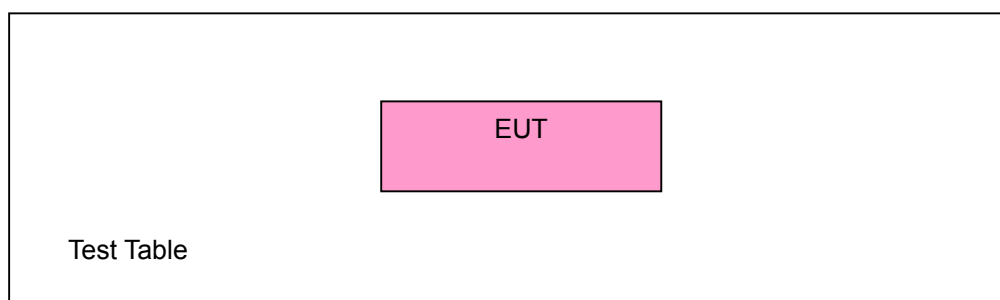
FCC Part 15, Subpart C. (15.249)
ANSI C63.4- 2001

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

2.4 DESCRIPTION OF SUPPORT UNITS

NA

2.5 CONFIGURATION OF SYSTEM UNDER TEST



3. TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

NA

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

The field strength of emission from fundamental frequency shall comply with the following:

Frequencies (MHz)	Field strength (dBuV/m)	
	Peak	Average
2400 ~ 2483.5	114	94

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.

3.2.2 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.



3.2.3 TEST PROCEDURES

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

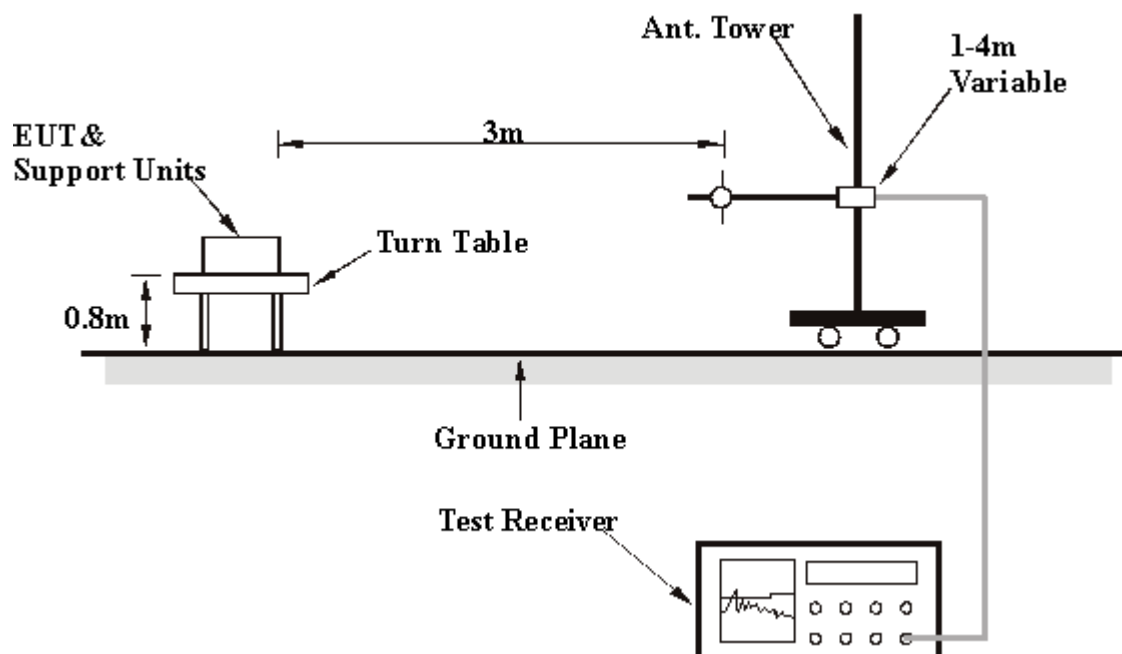
NOTE:

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.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

3.2.5 TEST SETUP



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

3.2.6 EUT OPERATING CONDITIONS

Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.

3.2.7 TEST RESULTS

EUT	Wireless Keyboard	MODEL	5545URF
CHANNEL	1	FREQUENCY RANGE	Below 1 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	28deg. C, 58% RH, 991 hPa	TESTED BY	Rush Kao

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	37.78	24.11 QP	40.00	-15.89	3.00 H	124	9.15	14.96
2	86.37	26.97 QP	40.00	-13.03	2.00 H	97	16.96	10.01
3	238.00	27.32 QP	46.00	-18.68	1.25 H	211	14.48	12.84
4	830.88	24.53 QP	46.00	-21.47	1.00 H	283	0.79	23.74
5	902.81	25.76 QP	46.00	-20.24	3.00 H	187	0.92	24.84
6	959.18	26.49 QP	46.00	-19.51	1.50 H	40	1.13	25.36

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	31.94	28.46 QP	40.00	-11.54	1.00 V	76	14.45	14.01
2	82.48	22.31 QP	40.00	-17.69	3.00 V	169	12.39	9.92
3	861.98	24.34 QP	46.00	-21.66	2.50 V	217	0.22	24.13
4	893.09	25.06 QP	46.00	-20.94	1.25 V	91	0.38	24.69
5	924.19	24.81 QP	46.00	-21.19	3.00 V	4	-0.25	25.06
6	955.29	26.68 QP	46.00	-19.32	2.00 V	346	1.33	25.35

- 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	Wireless Keyboard	MODEL	5545URF
CHANNEL	4	FREQUENCY RANGE	Below 1 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	28deg. C, 58% RH, 991 hPa	TESTED BY	Rush Kao

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	37.78	25.22 QP	40.00	-14.78	2.50 H	313	10.26	14.96
2	82.48	25.00 QP	40.00	-15.00	2.00 H	274	15.07	9.92
3	238.00	28.56 QP	46.00	-17.44	1.50 H	184	15.72	12.84
4	823.11	24.55 QP	46.00	-21.45	1.25 H	142	0.88	23.67
5	895.03	25.69 QP	46.00	-20.31	2.50 H	280	0.97	24.72
6	951.40	26.12 QP	46.00	-19.88	2.50 H	340	0.79	25.33

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	31.94	29.31 QP	40.00	-10.69	1.00 V	175	15.30	14.01
2	82.48	19.98 QP	40.00	-20.02	2.00 V	142	10.05	9.92
3	722.02	24.01 QP	46.00	-21.99	1.25 V	328	1.46	22.55
4	844.49	24.71 QP	46.00	-21.29	2.00 V	106	0.84	23.86
5	898.92	24.68 QP	46.00	-21.32	2.00 V	349	-0.11	24.79
6	949.46	25.79 QP	46.00	-20.21	1.00 V	184	0.46	25.32

- 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	Wireless Keyboard	MODEL	5545URF
CHANNEL	7	FREQUENCY RANGE	Below 1 GHz
INPUT POWER (SYSTEM)	120 Vac, 60 Hz	DETECTOR FUNCTION	Quasi-Peak
ENVIRONMENTAL CONDITIONS	28 deg. C, 58 % RH, 991 hPa	TESTED BY	Rush Kao

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	37.78	24.11 QP	40.00	-15.89	2.00 H	25	9.15	14.96
2	82.48	24.58 QP	40.00	-15.42	1.00 H	166	14.65	9.92
3	236.05	28.91 QP	46.00	-17.09	1.25 H	181	16.19	12.72
4	257.43	28.72 QP	46.00	-17.28	1.25 H	340	15.50	13.21
5	832.83	24.16 QP	46.00	-21.84	1.50 H	91	0.40	23.76
6	902.81	25.38 QP	46.00	-20.62	1.75 H	112	0.54	24.84
7	947.52	25.79 QP	46.00	-20.21	1.75 H	61	0.48	25.30

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	31.94	30.02 QP	40.00	-9.98	1.00 V	160	16.02	14.01
2	66.93	19.66 QP	40.00	-20.34	2.50 V	88	6.84	12.83
3	825.05	24.43 QP	46.00	-21.57	1.25 V	124	0.74	23.69
4	879.48	25.26 QP	46.00	-20.74	1.25 V	253	0.82	24.44
5	914.47	25.25 QP	46.00	-20.75	1.00 V	145	0.29	24.96
6	957.23	25.51 QP	46.00	-20.49	2.00 V	13	0.16	25.35

- 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	Wireless Keyboard	MODEL	5545URF
CHANNEL	Channel 1	FREQUENCY RANGE	1 ~25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY: Rush Kao			

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	2386.00	37.00 PK	74.00	-37.00	1.58 H	253	5.40	31.60
1	2386.00	13.35 AV	54.00	-40.65	1.58 H	253	-18.25	31.60
2	*2402.00	87.46 PK	114.00	-26.54	1.58 H	253	55.82	31.64
2	*2402.00	55.23 AV	94.00	-38.77	1.58 H	253	-23.59	31.64
3	4804.00	59.45 PK	74.00	-14.55	1.59 H	221	21.90	37.55
3	4804.00	27.22 AV	54.00	-26.78	1.59 H	221	-10.33	37.55
4	7206.00	61.25 PK	74.00	-12.75	1.43 H	149	17.19	44.06
4	7206.00	29.02 AV	54.00	-24.98	1.43 H	149	-15.04	44.06

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	2386.00	45.46 PK	74.00	-28.54	1.72 V	170	13.86	31.60
1	2386.00	13.23 AV	54.00	-40.77	1.72 V	170	-18.37	31.60
2	*2402.00	87.34 PK	114.00	-26.66	1.72 V	170	55.70	31.64
2	*2402.00	55.11 AV	94.00	-38.89	1.72 V	170	23.47	31.64
3	4804.00	59.95 PK	74.00	-14.05	1.71 V	170	22.40	37.55
3	4804.00	27.72 AV	54.00	-26.28	1.71 V	170	-9.83	37.55
4	7206.00	60.80 PK	74.00	-13.20	1.51 V	164	16.74	44.06
4	7206.00	28.27 AV	54.00	-25.43	1.51 V	164	-15.49	44.06

NOTE:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB) = Antenna Factor (dB) + 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 average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{2.08\text{ms}}{85\text{ms}} = -32.23\text{dB}$$

please see page 17 ~ 19 for plotted duty

EUT	Wireless Keyboard	MODEL	5545URF
CHANNEL	Channel 4	FREQUENCY RANGE	1 ~25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY: Rush Kao			

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	*2442.00	90.78 PK	114.00	-23.22	1.31 H	7	59.73	31.05
1	*2442.00	58.55 AV	94.00	-35.45	1.31 H	7	27.50	31.05
2	4884.00	57.74 PK	74.00	-16.26	1.11 H	116	20.07	37.67
2	4884.00	25.51 AV	54.00	-28.49	1.11 H	116	-12.16	37.67
3	7326.00	62.26 PK	74.00	-11.74	1.62 H	135	17.88	44.38
3	7326.00	30.03 AV	54.00	-23.97	1.62 H	135	-14.35	44.38

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	*2442.00	88.09 PK	114.00	-24.91	1.09 V	354	56.21	31.88
1	*2442.00	55.86 AV	94.00	-38.14	1.09 V	354	23.98	31.88
2	4884.00	63.35 PK	74.00	-10.65	1.43 V	331	25.68	37.67
2	4884.00	31.12 AV	54.00	-22.88	1.43 V	331	-6.55	37.67
3	7326.00	61.83 PK	74.00	-12.17	1.50 V	334	17.45	44.38
3	7326.00	29.60 AV	54.00	-24.40	1.50 V	334	-14.78	44.38

NOTE:

1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB) = Antenna Factor (dB) + 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 average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{2.08\text{ms}}{85\text{ms}} = -32.23\text{dB}$$

please see page 17 ~ 19 for plotted duty

EUT	Wireless Keyboard	MODEL	5545URF
CHANNEL	Channel 7	FREQUENCY RANGE	1 ~25GHz
INPUT POWER (SYSTEM)	120Vac, 60 Hz		
ENVIRONMENTAL CONDITIONS	23deg. C, 65%RH, 991hPa	DETECTOR FUNCTION	Peak (PK) Average (AV)
TESTED BY: Rush Kao			

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	*2477.00	91.00 PK	114.00	-23.00	1.30 H	30	58.91	32.09
1	*2477.00	58.77 AV	94.00	-35.23	1.30 H	30	26.68	32.09
2	4884.00	57.74 PK	74.00	-16.26	1.11 H	116	20.07	37.67
2	4884.00	25.51 AV	54.00	-28.49	1.11 H	116	-12.16	37.67
3	4954.00	59.89 PK	74.00	-14.11	1.17 H	343	22.09	37.80
3	4954.00	27.68 AV	54.00	-26.34	1.17 H	343	-10.14	37.80
4	7431.00	62.77 PK	74.00	-11.23	1.63 H	115	18.14	44.63
4	7431.00	30.54 AV	54.00	-23.46	1.63 H	115	-14.09	44.63

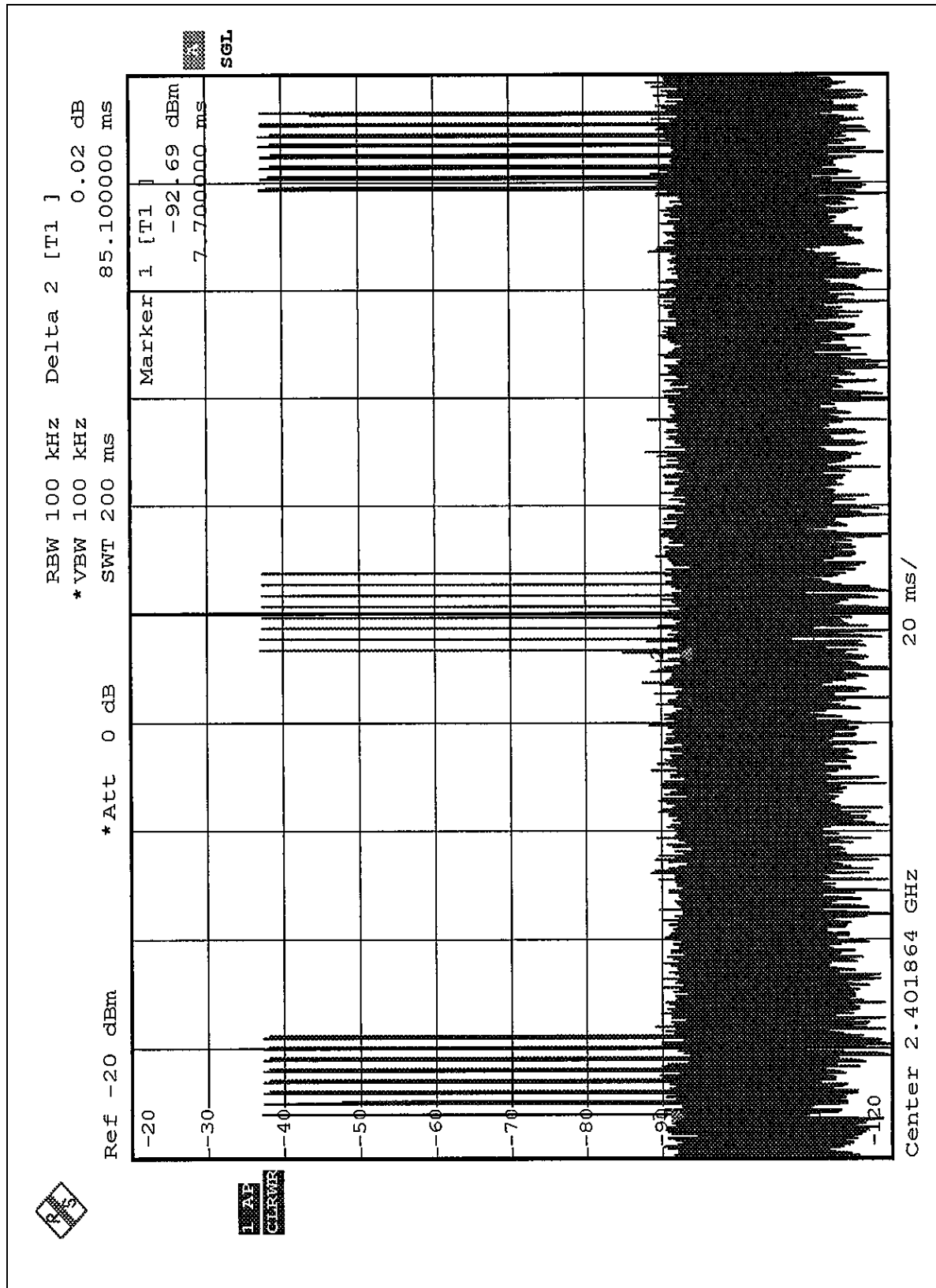
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2477.00	87.01 PK	114.00	-26.99	1.30 V	350	54.92	32.09
1	*2477.00	54.78 AV	94.00	-39.22	1.30 V	350	22.69	32.09
2	4884.00	63.35 PK	74.00	-10.65	1.43 V	331	25.68	37.67
2	4884.00	31.12 AV	54.00	-22.88	1.43 V	331	-6.55	37.67
3	4954.00	64.20 PK	74.00	-9.80	1.26 V	328	26.40	37.80
3	4954.00	31.97 AV	54.00	-22.03	1.26 V	328	-5.83	37.80
4	7431.00	60.85 PK	74.00	-13.15	1.74 V	185	16.22	44.63
4	7431.00	28.62 AV	54.00	-25.38	1.74 V	185	-16.01	44.63

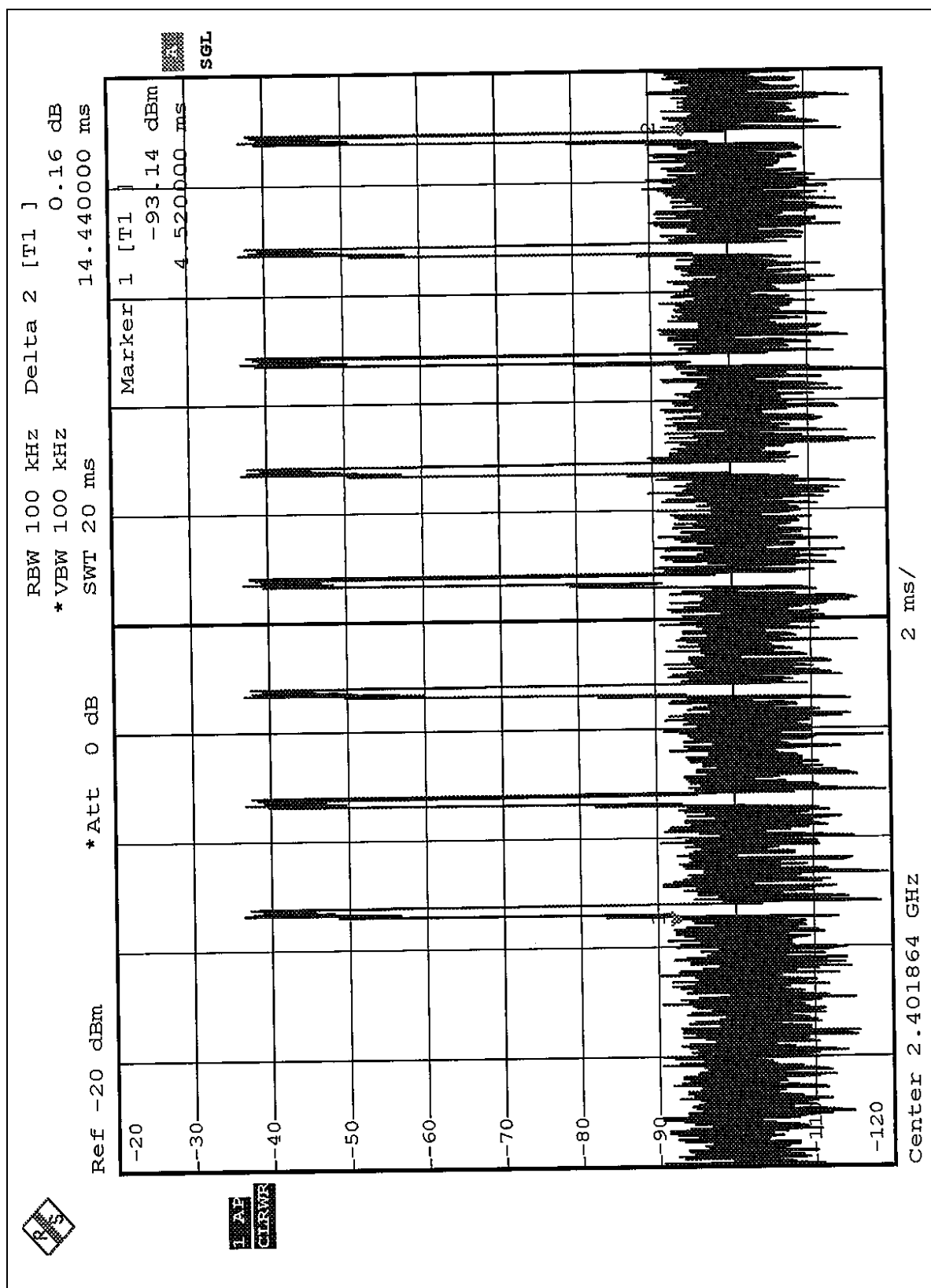
NOTE:

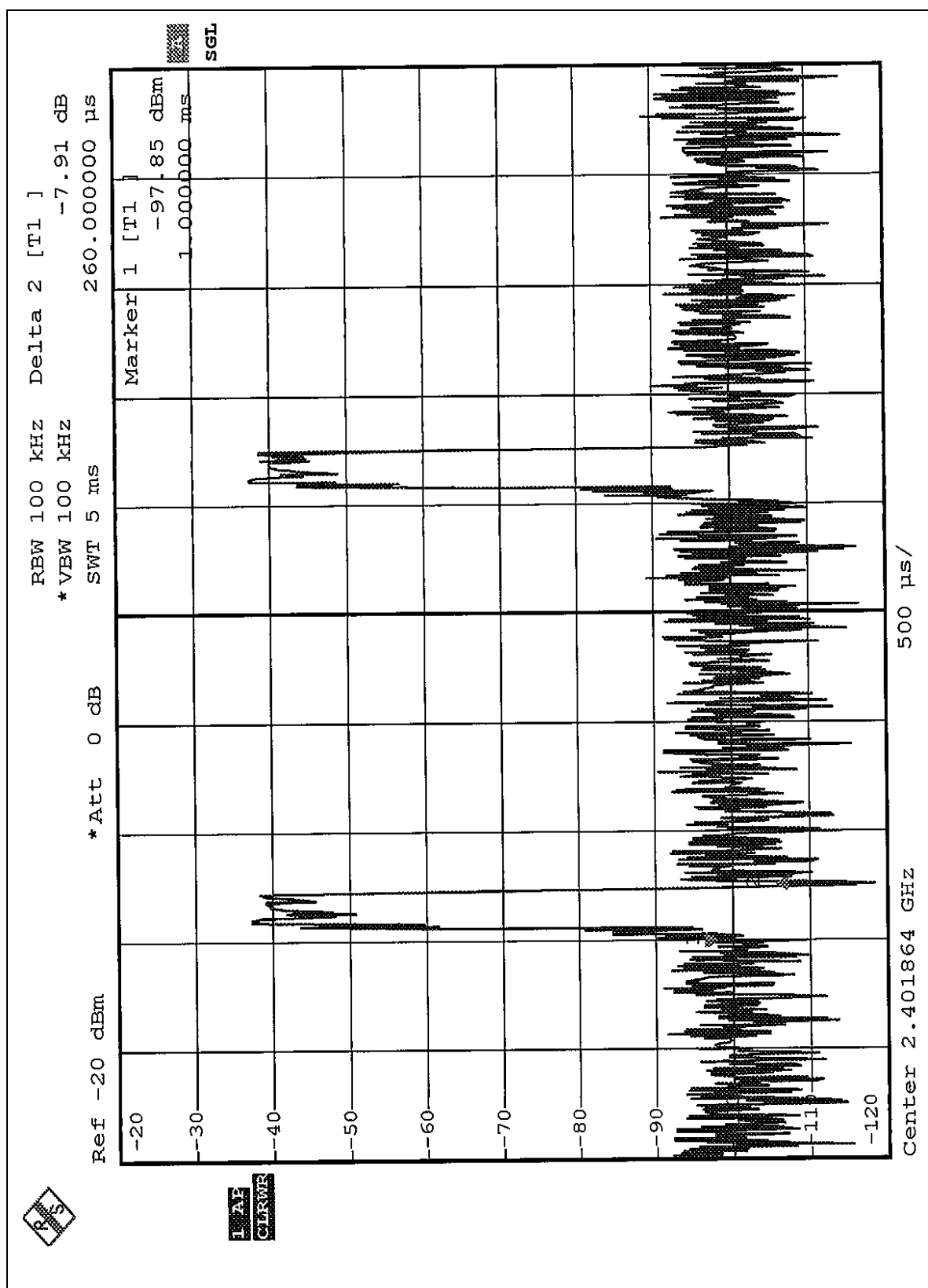
1. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB) = Antenna Factor (dB) + Cable Factor (dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.
5. “*” = Fundamental frequency
6. The average value of fundamental frequency is: Average = Peak value + 20log(Duty cycle)
Where the duty factor is calculated from following formula:

$$20\log(\text{Duty cycle}) = 20\log \frac{2.08\text{ms}}{85\text{ms}} = -32.23\text{dB}$$

please see page 17 ~ 19 for plotted duty







3.3 BAND EDGES MEASUREMENT

3.3.1 LIMITS OF BAND EDGES MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
SPECTRUM ANALYZER	FSEK30	100049	Aug. 12, 2005

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

3.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW=VBW=100kHz; Average RBW=1MHz, VBW=1Hz) are attached on the following pages.

3.3.4 DEVIATION FROM TEST STANDARD

No deviation

3.3.5 EUT OPERATING CONDITION

Same as Item 4.3.6



3.3.6 TEST RESULTS

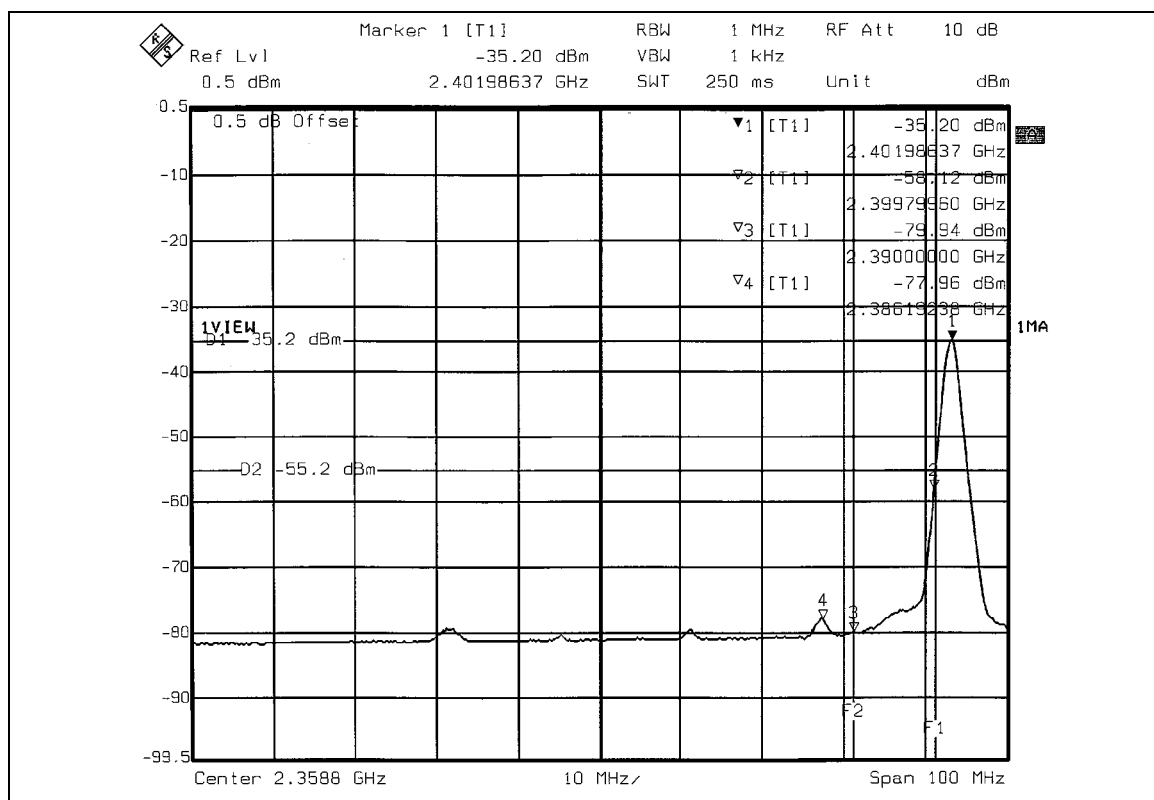
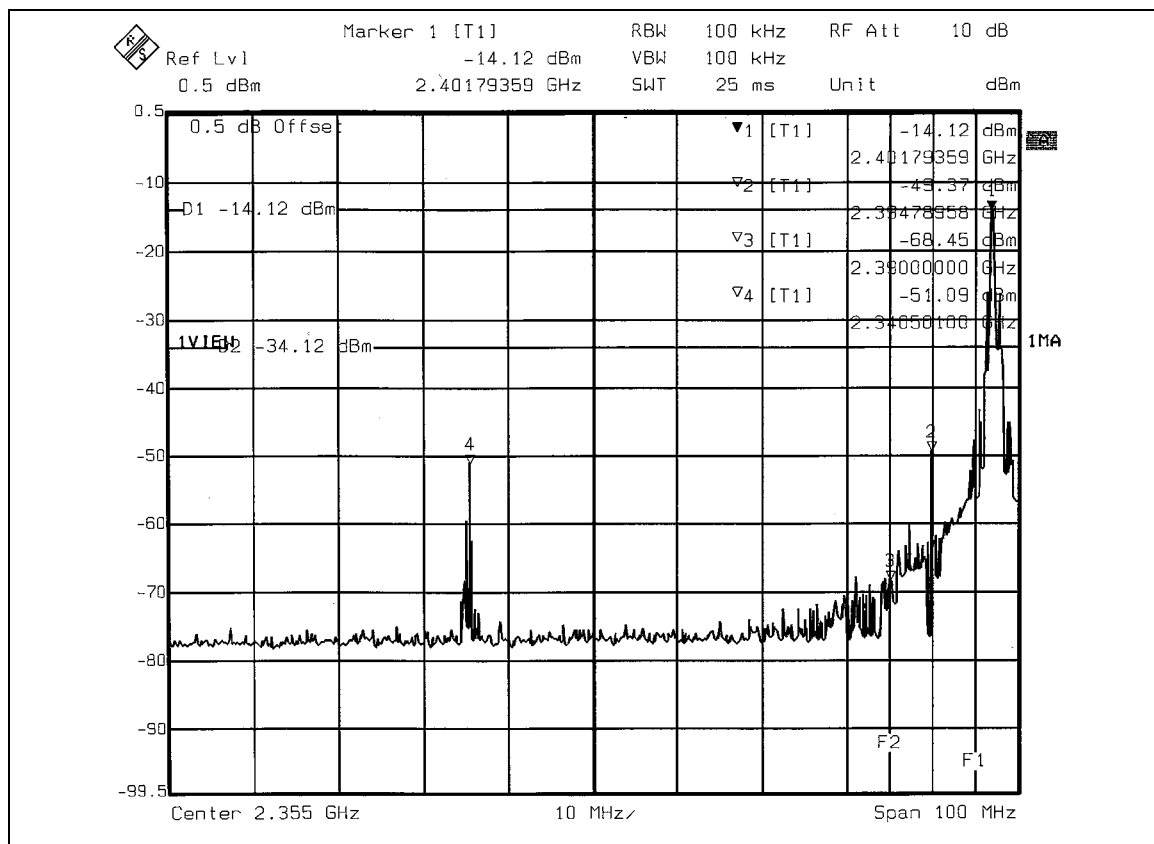
The spectrum plots are attached on the following 4 pages. D2 line indicates the highest level, D1 line indicates the 20dB offset below D2. It shows compliance with the requirement in part 15.249.

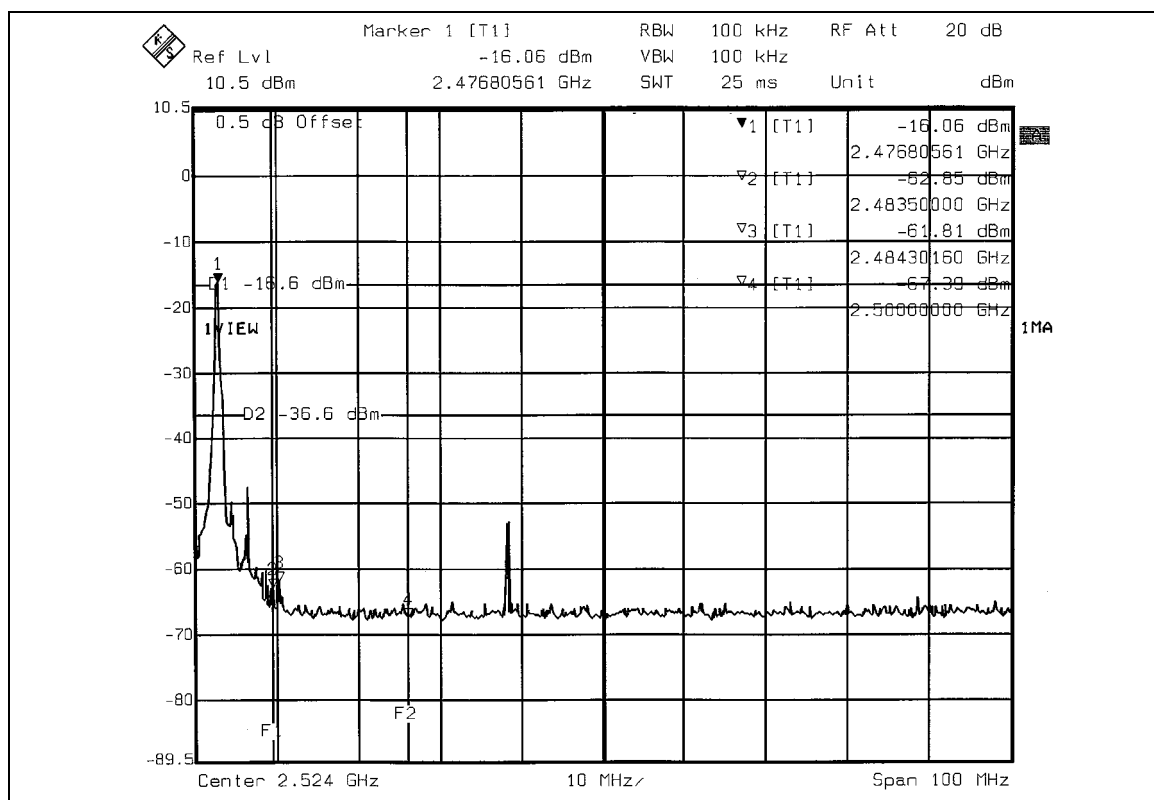
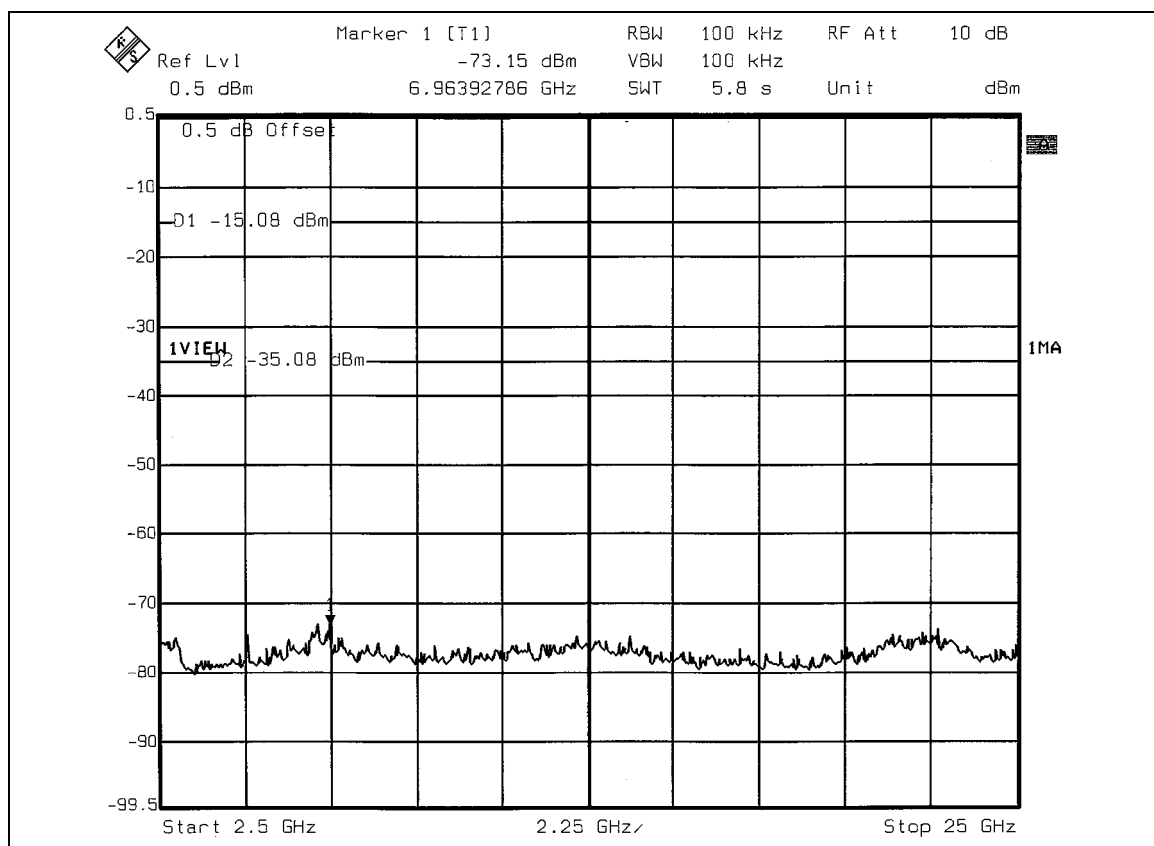
NOTE 1: The band edge emission plot of DSSS technique on page 22 shows 36.97dB between carrier maximum power and local maximum emission in restrict band (2.3405GHz). The emission of carrier strength list in the test result of channel 1 at the item 3.2.7 is 87.46dBuV/m (Peak), so the maximum field strength in restrict band is $87.46 - 36.97 = 50.49$ dBuV/m which is under 74dBuV/m limit.

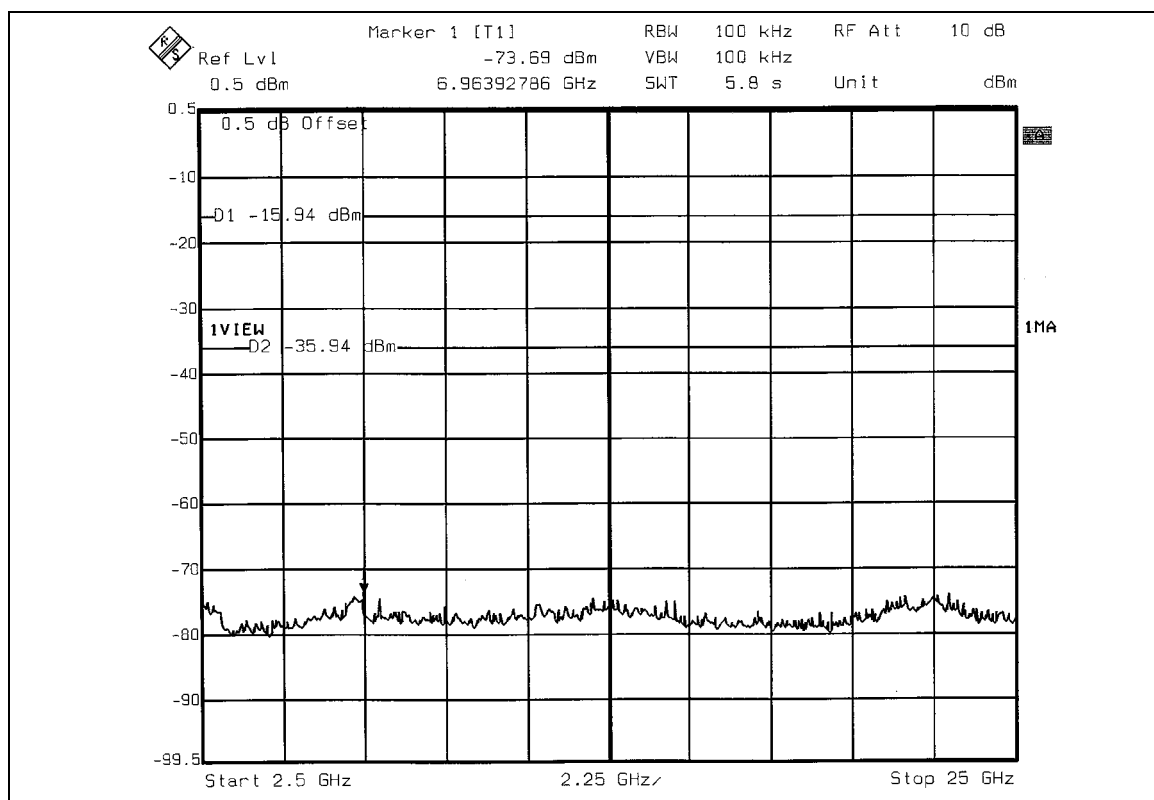
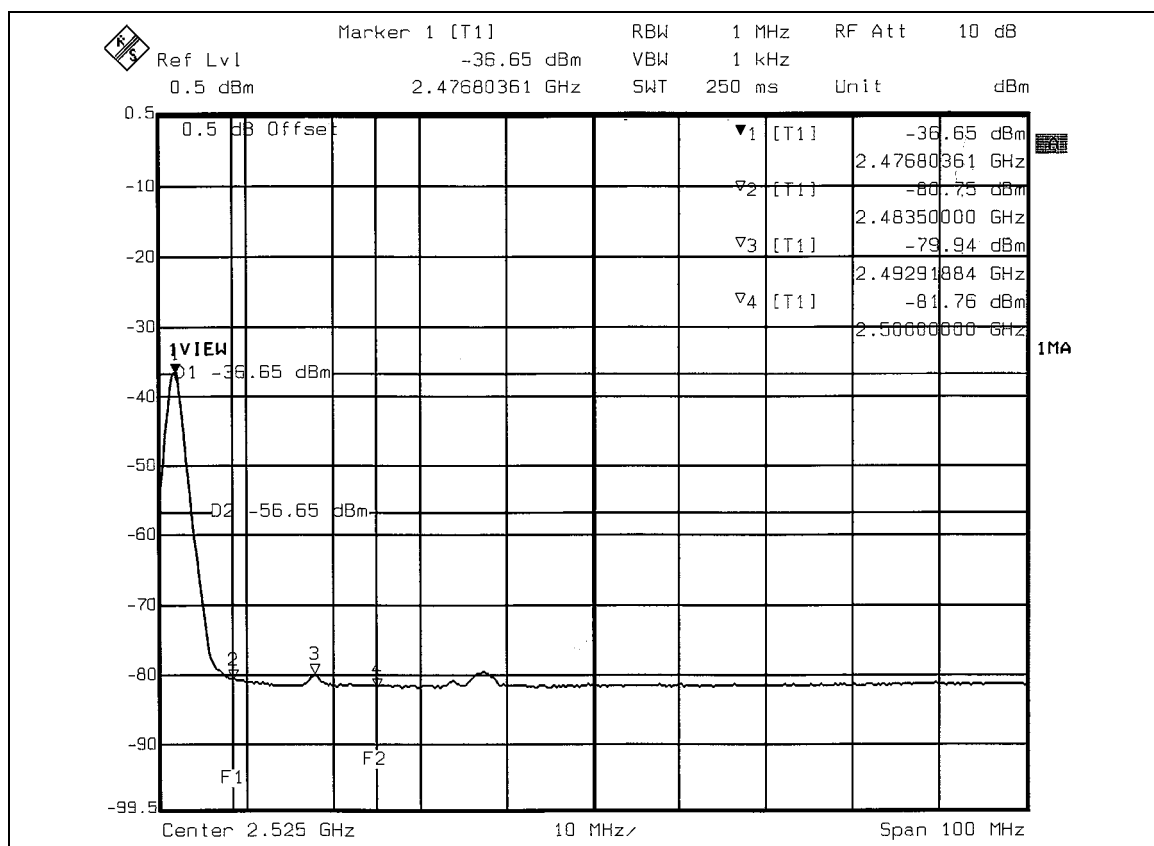
The band edge emission plot of DSSS technique on page 22 shows 42.76dB between carrier maximum power and local maximum emission in restrict band (2.3862GHz). The emission of carrier strength list in the test result of channel 1 at the item 3.2.7 is 55.23dBuV/m (Average), so the maximum field strength in restrict band is $55.23 - 42.76 = 12.47$ dBuV/m which is under 54dBuV/m limit.

NOTE 2: The band edge emission plot of DSSS technique on page 23 shows 45.75dB between carrier maximum power and local maximum emission in restrict band (2.4843GHz). The emission of carrier strength list in the test result of channel 7 at the item 3.2.7 is 101.85dBuV/m (Peak), so the maximum field strength in restrict band is $91.00 - 45.75 = 45.25$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on page 24 shows 43.29dB between carrier maximum power and local maximum emission in restrict band (2.4929GHz). The emission of carrier strength list in the test result of channel 7 at the item 3.2.7 is 58.77dBuV/m (Average), so the maximum field strength in restrict band is $58.77 - 43.29 = 15.48$ dBuV/m which is under 54dBuV/m limit.

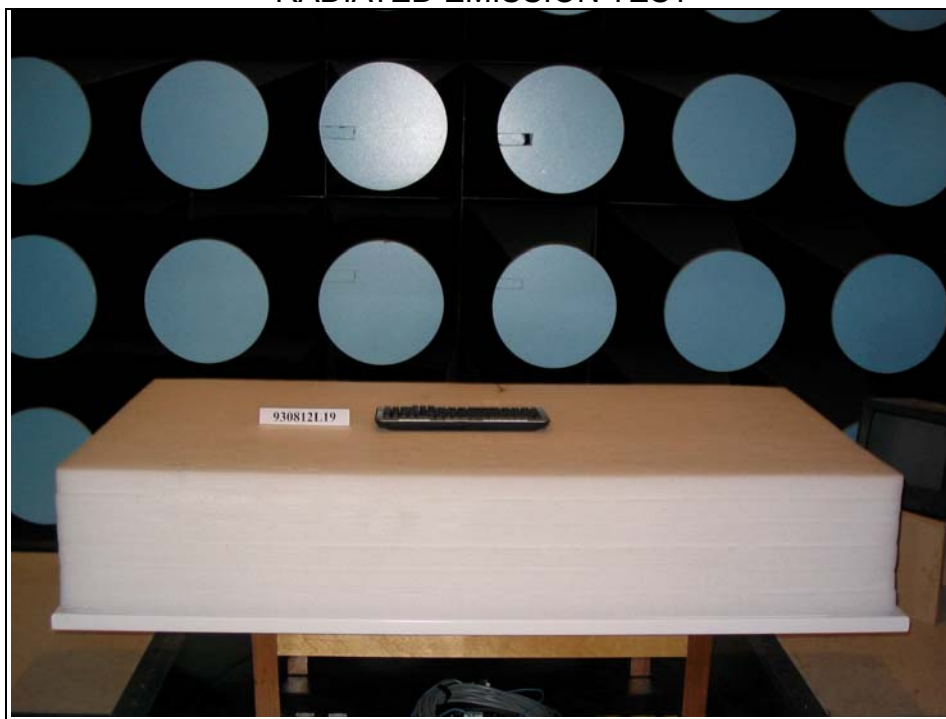






4. PHOTOGRAPHS OF THE TEST CONFIGURATION

RADIATED EMISSION TEST



5. 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 , A2LA
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. If you have any comments, please feel free to contact us at the following:

Linko EMC/RF Lab:
Tel: 886-2-26052180
Fax: 886-2-26052943

Hsin Chu EMC/RF Lab:
Tel: 886-3-5935343
Fax: 886-3-5935342

Hwa Ya EMC/RF/Safety Lab:
Tel: 886-3-3183232
Fax: 886-3-3185050

Linko RF & Telecom Lab.
Tel: 886-3-3270910
Fax: 886-3-3270892

Email: service@mail.adt.com.tw
Web Site: www.adt.com.tw

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

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