

# FCC TEST REPORT

**REPORT NO.:** RF940503H04

**MODEL NO.:** 5100MP

**RECEIVED:** May 3, 2005

**TESTED:** May 4 to 27, 2005

**ISSUED:** June 7, 2005

**APPLICANT:** Coretronic Corp.

**ADDRESS:** No. 11, Li Hsing Rd, Science-Based  
Industrial Park, Hsinchu, Taiwan.

**ISSUED BY:** Advance Data Technology Corporation

**LAB LOCATION:** No. 81-1, Lu Liao Keng, 9 Ling, Wu Lung  
Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien,  
Taiwan, R.O.C.

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0536  
ILAC MRA



No. 2177-01



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## 1 CERTIFICATION

**PRODUCT :** DLP Projector  
**BRAND NAME :** DELL  
**MODEL NO :** 5100MP  
**TESTED:** May 4 to 27, 2005  
**APPLICANT :** Coretronic Corp.  
**TEST ITEM:** ENGINEERING SAMPLE  
**STANDARDS :** 47 CFR Part 15, Subpart C (Section 15.249),  
ANSI C63.4-2003

The above equipment (Model: 5100MP) 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 :** Carol Liao , **DATE:** June 7, 2005  
( Carol Liao )

**TECHNICAL ACCEPTANCE :** Hank Chung , **DATE:** June 7, 2005  
Responsible for RF ( Hank Chung )

**APPROVED BY :** Eric Lin , **DATE:** June 7, 2005  
( Eric Lin, Manager )

## 2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

<b>APPLIED STANDARD: 47 CFR Part 15, Subpart C</b>			
<b>Standard Paragraph</b>	<b>Test Type</b>	<b>Result</b>	<b>Remark</b>
15.207	Conducted Emission Test	PASS	Minimum passing margin is -13.31 dB at 0.170 MHz
15.249	Radiated Emission Test	PASS	Minimum passing margin is -5.9dB at 699.25MHz
15.249	Band Edge Measurement	PASS	Meet the requirement of limit

### 3 GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

<b>PRODUCT</b>	DLP Projector
<b>MODEL NO.</b>	5100MP
<b>POWER SUPPLY</b>	Internal power switching
<b>MODULATION TYPE</b>	GFSK
<b>CARRIER FREQUENCY OF EACH CHANNEL</b>	2402MHz ~ 2479MHz
<b>BANDWIDTH OF EACH CHANNEL</b>	1 MHz
<b>NUMBER OF CHANNEL</b>	78
<b>ANTENNA TYPE</b>	Integrated antenna with -0.8dBi antenna gain
<b>DATA CABLE</b>	M1-DA to D-sub cable (1.8m) M1-A to HDTV/Component video cable (1.8m) S-Video cable (2.0m) RCA Composite video cable (1.8m) Audio cable x2 (2.0m)
<b>I/O PORTS</b>	Computer input (M1-DA x 1 for both analog and digital RGB signals) 2nd analog RGB Computer input (D-Sub 15-pin Female x1) 3rd analog RGB Computer input (BNC R/G/B/H/V x 1set). 3 HDTV/ Component video input ports (standard component RCA jack, D-Sub 15-pin female, M1-A) Composite Video input ( RCA jack x 1 ) S-Video input ( Mini DIN 4-pin x 1 ) One RJ45 connector for Networking One HDMI input Monitor Output (D-Sub 15-pin Female terminal x 1) One RS232 port for wired projector control One 12Volt DC relay for automatic screen control
<b>ASSOCIATED DEVICES</b>	Wireless Remote Controller

**NOTE:**

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

### 3.2 DESCRIPTION OF TEST MODES

Seventy-eight 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		
19	2421	39	2441	59	2461		

**NOTE:**

1. Below 1 GHz, the channel 0, 39, and 77 were pre-tested in chamber. The channel 77, worst case one, was chosen for final test.
2. Above 1 GHz, the channel 0, 39, and 77 were tested individually.



### **3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS**

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

**47 CFR Part 15, Subpart C (Section 15.249)**

**ANSI C63.4: 2003**

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

### 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.

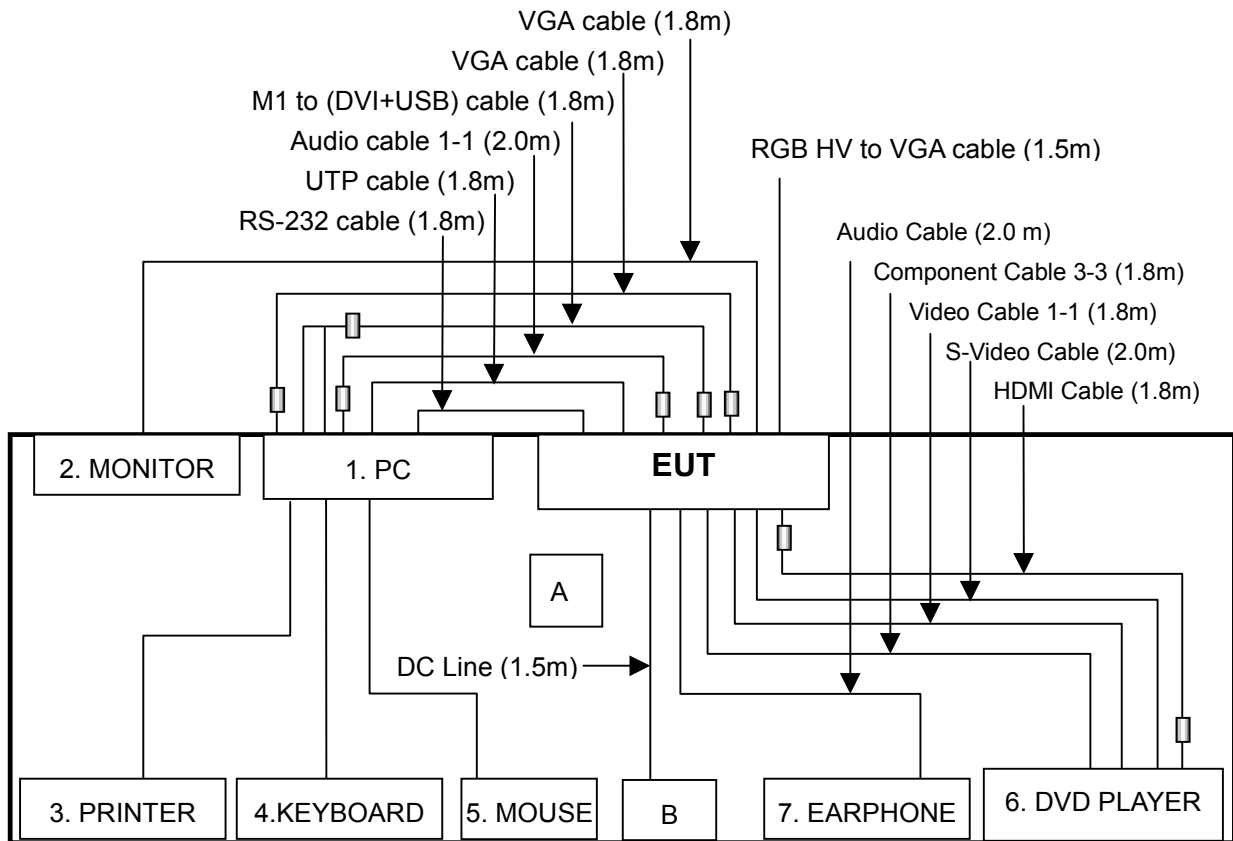
No.	Product	Brand	Model No.	Serial No.	FCC ID
1	PERSONAL COMPUTER	DELL	4600	00043-517-542-487	FCC DoC
2	MONITOR	ADI	CM100	026058T1020632 A	FCC DoC
3	PRINTER	EPSON	LQ-300+	DCGY017082	FCC DoC
4	KEYBOARD	BTC	KB-5200T	F24800057	E5XKB5122WTH0110
5	MOUSE	BTC	M851	G00347024432	NA
6	DVD PLAYER	Pioneer	DV-969AVi	DJMP003171LW	NA
7	EARPHONE	PHILIPS	SBC HL145	8710895759472	NA

No.	Signal cable description
1	NA
2	1.8 m braid shielded wire, terminated with VGA connector via metallic frame, w/o core
3	1.8 m braid shielded wire, terminated with DB25 and Centronics connector via metallic frame, w/o core.
4	1.7 m foil shielded wire, terminated with PS/2 connector via metallic frame, w/o core.
5	1.5 m foil shielded wire, terminated with PS2 connector via drain wire, w/o core.
6	NA
7	1.2 m wrapped shielded wire, terminated with 3.5mm phone plug via drain wire, w/o core.

Note: The power cords of the above support units were unshielded (1.8m).



### 3.5 CONFIGURATION OF SYSTEM UNDER TEST



- NOTE:**
1. Item A is the remote control of EUT.
  2. Item B is the voltage meter.
  3. Please refer to the photos of test configuration in Item 6 also.

## 4 TEST PROCEDURES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

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

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. All emanations from a class 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

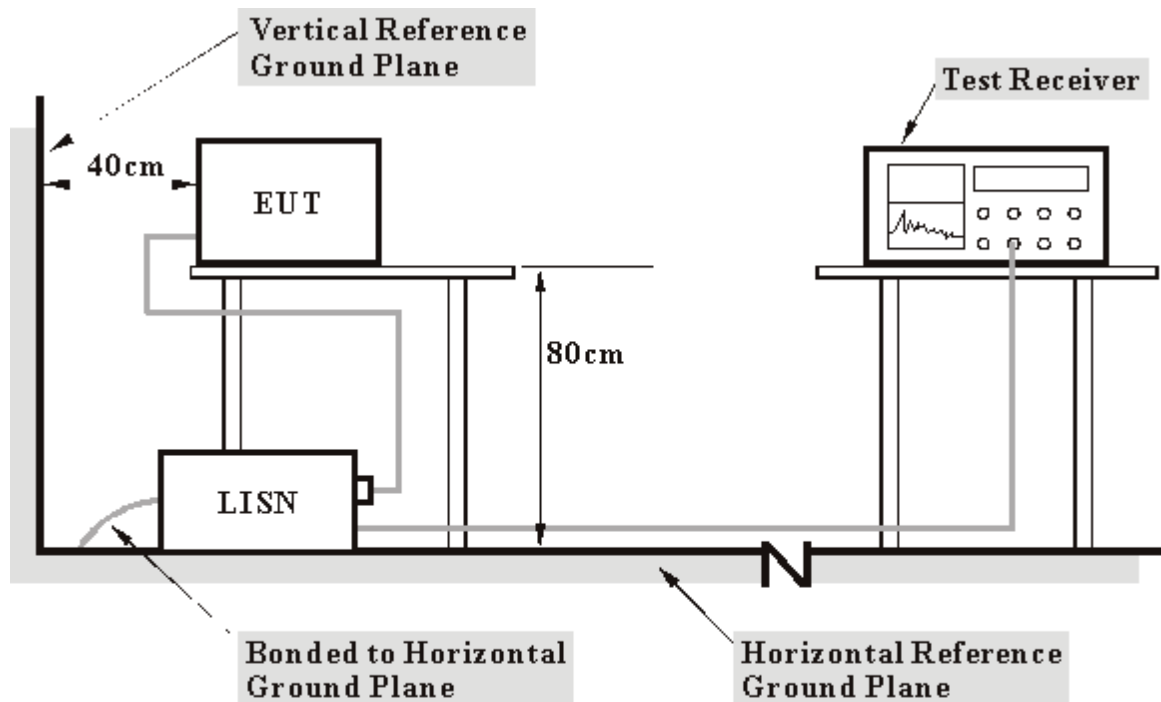
DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ROHDE & SCHWARZ Test Receiver	ESCS 30	847124/029	Dec. 07, 2005
ROHDE & SCHWARZ LISN (for EUT)	ESHS-Z5	848773/004	Nov. 08, 2005
KYORITSU LISN (for peripheral)	KNW-407	8/1395/12	Jul. 23, 2005
RF Cable (JETBAO)	RG233/U	Cable_CA_01	Jul. 02, 2005
Terminator(for KYORITSU)	50	3	Oct. 12, 2005
Software	Cond-V2e	NA	NA

- NOTE: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The test was performed in ADT Shielded Room No. A.  
 3. The VCCI Con A Registration No. is C-817.

#### 4.1.3 TEST PROCEDURES

- The EUT/HOST was placed 0.4 meters from the conducting wall of the shielded room with EUT/HOST 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.
- Both lines of the power mains connected to the EUT/HOST were checked for maximum conducted interference.
- 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 TEST SETUP



- Note:**
- Support units were connected to second LISN.
  - 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.



#### 4.1.5 EUT OPERATING CONDITIONS

- a. Turn on the power of all equipment.
- b. PC sends "H" messages to DLP projector (EUT). These messages were projected on the wall.
- c. PC sends "H" messages to printer, and the printer prints them on paper.
- d. Support unit 6(DVD) sends audio messages to the EUT.
- e. EUT sends audio messages to the Support unit 7(EARPHONE).
- f. Repeat steps b-f.

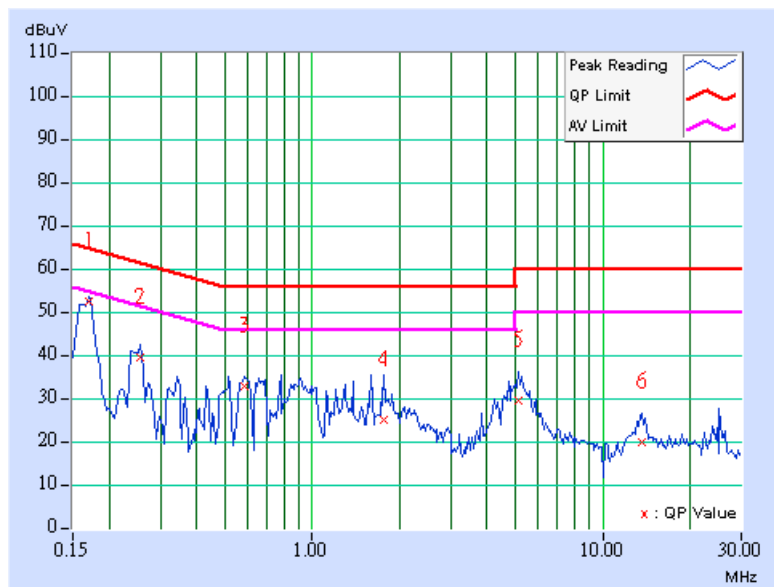


4.1.6 TEST RESULTS

<b>EUT</b>	DLP Projector		
<b>MODE</b>	Channel 77	<b>MODEL</b>	5100MP
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>6dB BANDWIDTH</b>	9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 65 %RH, 967 hPa	<b>PHASE</b>	Line (L)
<b>TESTED BY</b>	Jay Chen		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.170	0.14	51.51	-	51.65	-	64.96
2	0.255	0.16	38.86	-	39.02	-	61.58	51.58	-22.56	-
3	0.588	0.18	31.87	-	32.05	-	56.00	46.00	-23.95	-
4	1.771	0.24	24.36	-	24.60	-	56.00	46.00	-31.40	-
5	5.102	0.51	28.70	-	29.21	-	60.00	50.00	-30.79	-
6	13.691	0.93	18.99	-	19.92	-	60.00	50.00	-40.08	-

- 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.

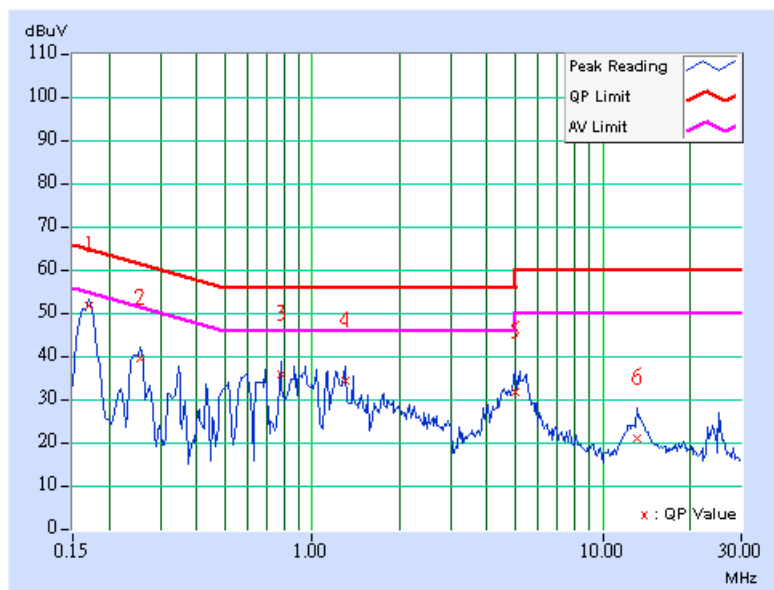




<b>EUT</b>	DLP Projector		
<b>MODE</b>	Channel 77	<b>MODEL</b>	5100MP
<b>INPUT POWER (SYSTEM)</b>	120Vac, 60 Hz	<b>6dB BANDWIDTH</b>	9 kHz
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 65 %RH, 967 hPa	<b>PHASE</b>	Neutral (N)
<b>TESTED BY</b>	Jay Chen		

No	Freq. [MHz]	Corr. Factor (dB)	Reading Value [dB (uV)]		Emission Level [dB (uV)]		Limit [dB (uV)]		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
			1	0.170	0.14	50.94	-	51.08	-	64.98
2	0.255	0.16	38.99	-	39.15	-	61.58	51.58	-22.43	-
3	0.779	0.19	35.10	-	35.29	-	56.00	46.00	-20.71	-
4	1.298	0.21	33.50	-	33.71	-	56.00	46.00	-22.29	-
5	5.023	0.48	30.95	-	31.43	-	60.00	50.00	-28.57	-
6	13.063	0.80	20.38	-	21.18	-	60.00	50.00	-38.82	-

- 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 RADIATED EMISSION MEASUREMENT**

**4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT**

According to 15.249 the field strength of emissions from intentional radiators operated under these frequencies bands shall not exceed the following:

Fundamental Frequency (MHz)	Field Strength of Fundamental (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

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.

## 4.2.2 TEST INSTRUMENTS

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED UNTIL
ADVANTEST Spectrum Analyzer	R3271A	85060311	Jun. 29, 2005
HP Pre_Amplifier	8449B	3008A01922	Oct. 13, 2005
ROHDE & SCHWARZ Test Receiver	ESCS30	100287	Dec. 08, 2005
CHASE Broadband Antenna	VULB9168	138	Dec. 21, 2005
Schwarzbeck Horn_Antenna	BBHA9120	D124	Jun. 16, 2005
Schwarzbeck Horn_Antenna	BBHA 9170	BBHA9170153	Jan. 30, 2006
SCHWARZBECK Biconical Antenna	VHBA9123	459	Jun. 26, 2006
SCHWARZBECK Periodic Antenna	UPA6108	1148	Jun. 26, 2006
RF Switches (ARNITSU)	CS-201	1565157	Jul. 15, 2005
RF CABLE (Chaintek) 1GHz-20GHz	SF102	22054-2	Nov. 15, 2005
RF Cable(RICHTEC)	9913-30M	STCCAB-30M- 1GHz-021	Jul. 15, 2005
Software	ADT_Radiated_V 5.14	NA	NA
CHANCE MOST Antenna Tower	AT-100	0203	NA
CHANCE MOST Turn Table	TT-100	0203	NA

- Note: 1. The calibration interval of the above test instruments is 12 months (36 months for Periodic Antenna) and the calibrations are traceable to NML/ROC and NIST/USA.  
 2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.  
 3. The test was performed in ADT Open Site No. C.  
 4. The FCC Site Registration No. is 656396.  
 5. The VCCI Site Registration No. is R-1626.  
 6. The CANADA Site Registration No. is IC 4824-3.  
 7. The following table is for the measurement uncertainty, which is calculated as per the document CISPR 16-4.

Measurement	Value
Radiated emissions (30MHz-1GHz)	2.98 dB
Radiated emissions (1GHz ~18GHz)	2.21 dB
Radiated emissions (18GHz ~20GHz)	1.88 dB



#### 4.2.3 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.

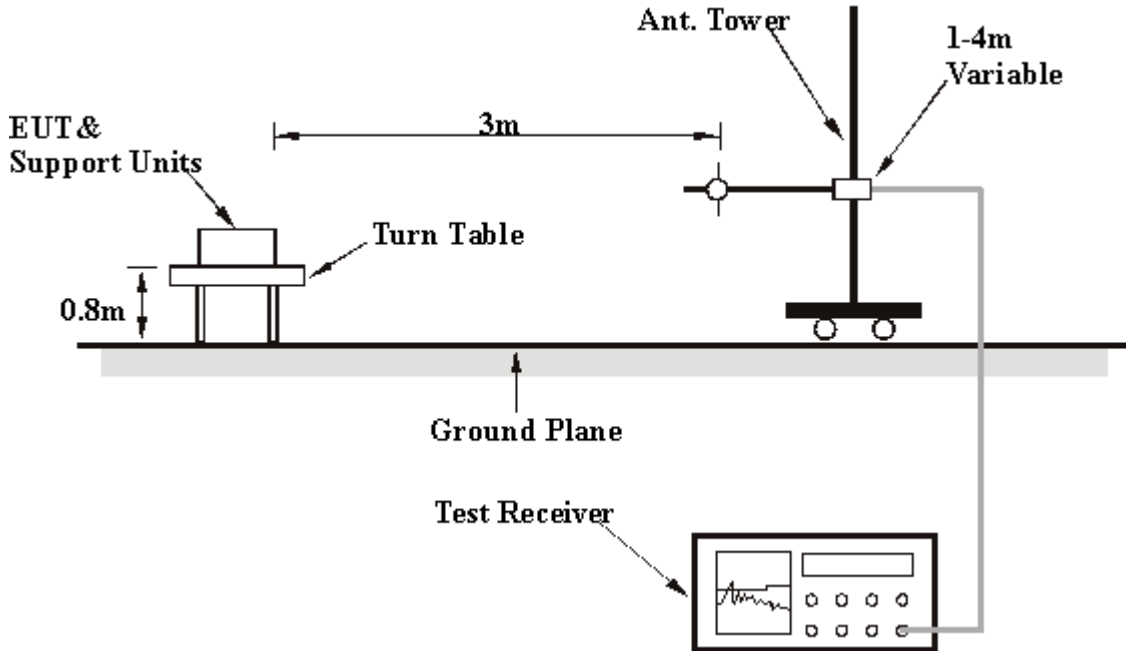
**NOTE:**

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.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.5 TEST SETUP



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

#### 4.2.6 EUT OPERATING CONDITIONS

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



4.2.7 TEST RESULTS

<b>EUT</b>	DLP Projector	<b>MODEL</b>	5100MP
<b>MODE</b>	Channel 77	<b>FREQUENCY RANGE</b>	30 ~1000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	22 deg. C, 70 %RH, 967 hPa	<b>DETECTOR FUNCTION &amp; BANDWIDTH</b>	Quasi-Peak, 120kHz
<b>TESTED BY</b>	Wen Yu		

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	147.46	22.30 QP	43.50	-21.20	1.17 H	38	9.00	13.30
2	345.26	21.30 QP	46.00	-24.70	1.31 H	128	4.60	16.80
3	456.02	33.10 QP	46.00	-12.90	1.00 H	283	13.30	19.80
4	627.25	31.10 QP	46.00	-14.90	1.00 H	91	7.30	23.80
5	651.25	30.10 QP	46.00	-15.90	1.01 H	82	6.10	24.00
6	675.24	28.20 QP	46.00	-17.80	1.00 H	34	3.70	24.50
7	699.25	39.80 QP	46.00	-6.20	1.27 H	20	14.90	24.90
8	752.91	30.20 QP	46.00	-15.80	1.00 H	37	3.80	26.40
9	924.98	31.50 QP	46.00	-14.50	1.00 H	0	3.20	28.40
10	974.98	32.50 QP	54.00	-21.50	1.00 H	358	3.60	28.90

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	147.46	24.80 QP	43.50	-18.70	1.00 V	200	11.50	13.30
2	345.26	26.00 QP	46.00	-20.00	1.64 V	0	9.20	16.80
3	456.02	36.10 QP	46.00	-9.90	1.16 V	352	16.30	19.80
4	627.25	33.10 QP	46.00	-12.90	1.00 V	248	9.40	23.80
5	651.25	30.10 QP	46.00	-15.90	1.10 V	311	6.10	24.00
6	675.25	25.80 QP	46.00	-20.20	1.19 V	103	1.30	24.50
7	<b>699.25</b>	<b>40.10 QP</b>	<b>46.00</b>	<b>-5.90</b>	<b>1.39 V</b>	<b>299</b>	<b>15.20</b>	<b>24.90</b>
8	752.81	37.20 QP	46.00	-8.80	1.28 V	121	10.80	26.40
9	924.98	36.60 QP	46.00	-9.40	1.48 V	280	8.30	28.40
10	974.98	36.10 QP	54.00	-17.90	1.11 V	77	7.20	28.90

- 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.



<b>EUT</b>	DLP Projector	<b>MODEL</b>	5100MP
<b>MODE</b>	Channel 0	<b>FREQUENCY RANGE</b>	1000~25000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 70 %RH, 967 hPa	<b>DETECTOR FUNCTION &amp; BANDWIDTH</b>	Peak (PK) Average (AV) 1 MHz
<b>TESTED BY</b>	Rex Huang		

**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	2390.00	32.60 PK	74.00	-41.40	1.06 H	46	-1.10	33.70
1	2390.00	31.50 AV	54.00	-22.50	1.06 H	46	-2.20	33.70
2	*2402.00	81.50 PK	114.00	-32.50	1.63 H	5	51.70	29.80
2	*2402.00	80.40 AV	94.00	-13.60	1.63 H	5	50.60	29.80
3	4804.00	41.10 PK	74.00	-32.90	1.69 H	39	6.10	35.00
3	4804.00	29.30 AV	54.00	-24.70	1.69 H	39	-5.70	35.00
4	7206.00	46.90 PK	74.00	-27.10	1.65 H	18	6.50	40.40
4	7206.00	35.70 AV	54.00	-18.30	1.65 H	18	-4.70	40.40
5	9608.00	48.90 PK	74.00	-25.10	1.00 H	337	5.00	43.90
5	9608.00	37.50 AV	54.00	-16.50	1.00 H	337	-6.40	43.90

**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	2390.00	32.50 PK	74.00	-41.50	1.06 V	46	-1.20	33.70
1	2390.00	31.20 AV	54.00	-22.80	1.06 V	46	-2.50	33.70
2	*2402.00	81.40 PK	114.00	-32.60	1.06 V	46	51.60	29.80
2	*2402.00	80.10 AV	94.00	-13.90	1.06 V	46	50.30	29.80
3	4804.00	41.60 PK	74.00	-32.40	1.38 V	5	6.60	35.00
3	4804.00	29.60 AV	54.00	-24.40	1.38 V	5	-5.40	35.00
4	7206.00	46.60 PK	74.00	-27.40	1.47 V	343	6.20	40.40
4	7206.00	35.10 AV	54.00	-18.90	1.47 V	343	-5.30	40.40
5	9608.00	48.80 PK	74.00	-25.20	1.64 V	18	4.90	43.90
5	9608.00	37.30 AV	54.00	-16.70	1.64 V	18	-6.60	43.90

**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. Margin value = Emission level - Limit value
4. " \* " : Fundamental frequency
5. The other emission levels were very low against the limit.



<b>EUT</b>	DLP Projector	<b>MODEL</b>	5100MP
<b>MODE</b>	Channel 39	<b>FREQUENCY RANGE</b>	1000~25000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 70 %RH, 967 hPa	<b>DETECTOR FUNCTION &amp; BANDWIDTH</b>	Peak (PK) Average (AV) 1 MHz
<b>TESTED BY</b>	Rex Huang		

**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	*2441.00	79.70 PK	114.00	-34.30	1.63 H	5	49.80	29.90
1	*2441.00	78.60 AV	94.00	-15.40	1.63 H	5	48.70	29.90
2	4882.00	41.20 PK	74.00	-32.80	1.68 H	43	5.90	35.30
2	4882.00	29.70 AV	54.00	-24.30	1.68 H	43	-5.60	35.30
3	7323.00	47.10 PK	74.00	-26.90	1.62 H	26	6.40	40.70
3	7323.00	35.70 AV	54.00	-18.30	1.62 H	26	-5.00	40.70
4	9764.00	49.00 PK	74.00	-25.00	1.64 H	332	5.40	43.60
4	9764.00	37.40 AV	54.00	-16.60	1.64 H	332	-6.20	43.60

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

No.	Freq. (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2441.00	79.40 PK	114.00	-34.60	1.09 V	18	49.50	29.90
1	*2441.00	78.40 AV	94.00	-15.60	1.09 V	18	48.50	29.90
2	4882.00	40.90 PK	74.00	-33.10	1.43 V	6	5.60	35.30
2	4882.00	29.50 AV	54.00	-24.50	1.43 V	6	-5.80	35.30
3	7323.00	46.70 PK	74.00	-27.30	1.52 V	336	6.00	40.70
3	7323.00	35.30 AV	54.00	-18.70	1.52 V	336	-5.40	40.70
4	9764.00	48.80 PK	74.00	-25.20	1.67 V	34	5.20	43.60
4	9764.00	37.30 AV	54.00	-16.70	1.67 V	34	-6.30	43.60

**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. Margin value = Emission level - Limit value
4. “ \* “ : Fundamental frequency
5. The other emission levels were very low against the limit.



<b>EUT</b>	DLP Projector	<b>MODEL</b>	5100MP
<b>MODE</b>	Channel 77	<b>FREQUENCY RANGE</b>	1000~25000 MHz
<b>ENVIRONMENTAL CONDITIONS</b>	25 deg. C, 70 %RH, 967 hPa	<b>DETECTOR FUNCTION &amp; BANDWIDTH</b>	Peak (PK) Average (AV) 1 MHz
<b>TESTED BY</b>	Rex Huang		

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	*2479.00	78.60 PK	114.00	-35.40	1.59 H	2	48.50	30.10
1	*2479.00	77.40 AV	94.00	-16.60	1.59 H	2	47.30	30.10
2	2483.50	30.30 PK	74.00	-43.70	1.59 H	2	0.20	30.10
2	2483.50	29.10 AV	54.00	-24.90	1.59 H	2	-1.00	30.10
3	4958.00	41.20 PK	74.00	-32.80	1.67 H	46	5.60	35.70
3	4958.00	29.70 AV	54.00	-24.30	1.67 H	46	-5.90	35.70
4	7437.00	47.20 PK	74.00	-26.80	1.64 H	24	6.20	40.90
4	7437.00	35.50 AV	54.00	-18.50	1.64 H	24	-5.50	40.90
5	9916.00	49.10 PK	74.00	-24.90	1.60 H	324	5.80	43.30
5	9916.00	37.90 AV	54.00	-16.10	1.60 H	324	-5.40	43.30

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	*2479.00	78.50 PK	114.00	-35.50	1.03 V	5	48.40	30.10
1	*2479.00	77.20 AV	94.00	-16.80	1.03 V	5	47.10	30.10
2	2483.50	30.20 PK	74.00	-43.80	1.03 V	5	0.10	30.10
2	2483.50	28.90 AV	54.00	-25.10	1.03 V	5	-1.20	30.10
3	4958.00	41.30 PK	74.00	-32.70	1.42 V	8	5.70	35.70
3	4958.00	29.90 AV	54.00	-24.10	1.42 V	8	-5.70	35.70
4	7437.00	47.00 PK	74.00	-27.00	1.51 V	339	6.00	40.90
4	7437.00	35.40 AV	54.00	-18.60	1.51 V	339	-5.60	40.90
5	9916.00	49.00 PK	74.00	-25.00	1.61 V	342	5.70	43.30
5	9916.00	37.60 AV	54.00	-16.40	1.61 V	342	-5.70	43.30

**REMARKS:**

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

### 4.3 BAND EDGES MEASUREMENT

#### 4.3.1 LIMITS OF BAND EDGES MEASUREMENT

Below  $-50\text{dB}$  of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

#### 4.3.2 TEST INSTRUMENTS

Description & Manufacturer	Model No.	Serial No.	Calibrated Until
R&S SPECTRUM ANALYZER	FSP40	100036	Nov. 23, 2005

**NOTE:**

- 1.The measurement uncertainty is less than  $\pm 2.6\text{dB}$ , which is calculated as per the NAMAS document NIS81.
- 2.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer 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.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 EUT OPERATING CONDITION

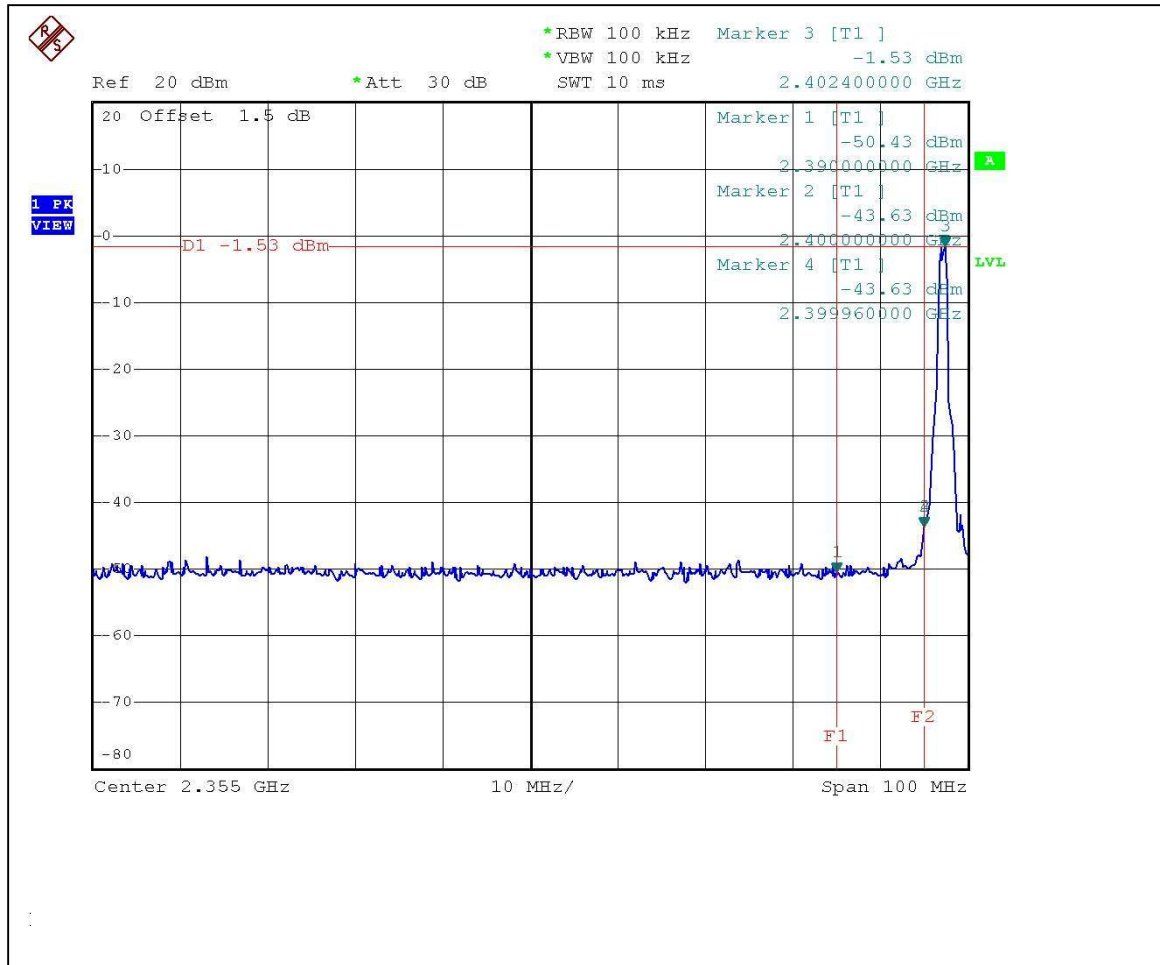
The software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel frequencies individually.



### 4.3.6 TEST RESULTS

Emissions radiated outside of the specified frequency bands, please refer pages form 8 to 15 for met the requirement of the general radiated emission limits in § 15.209.

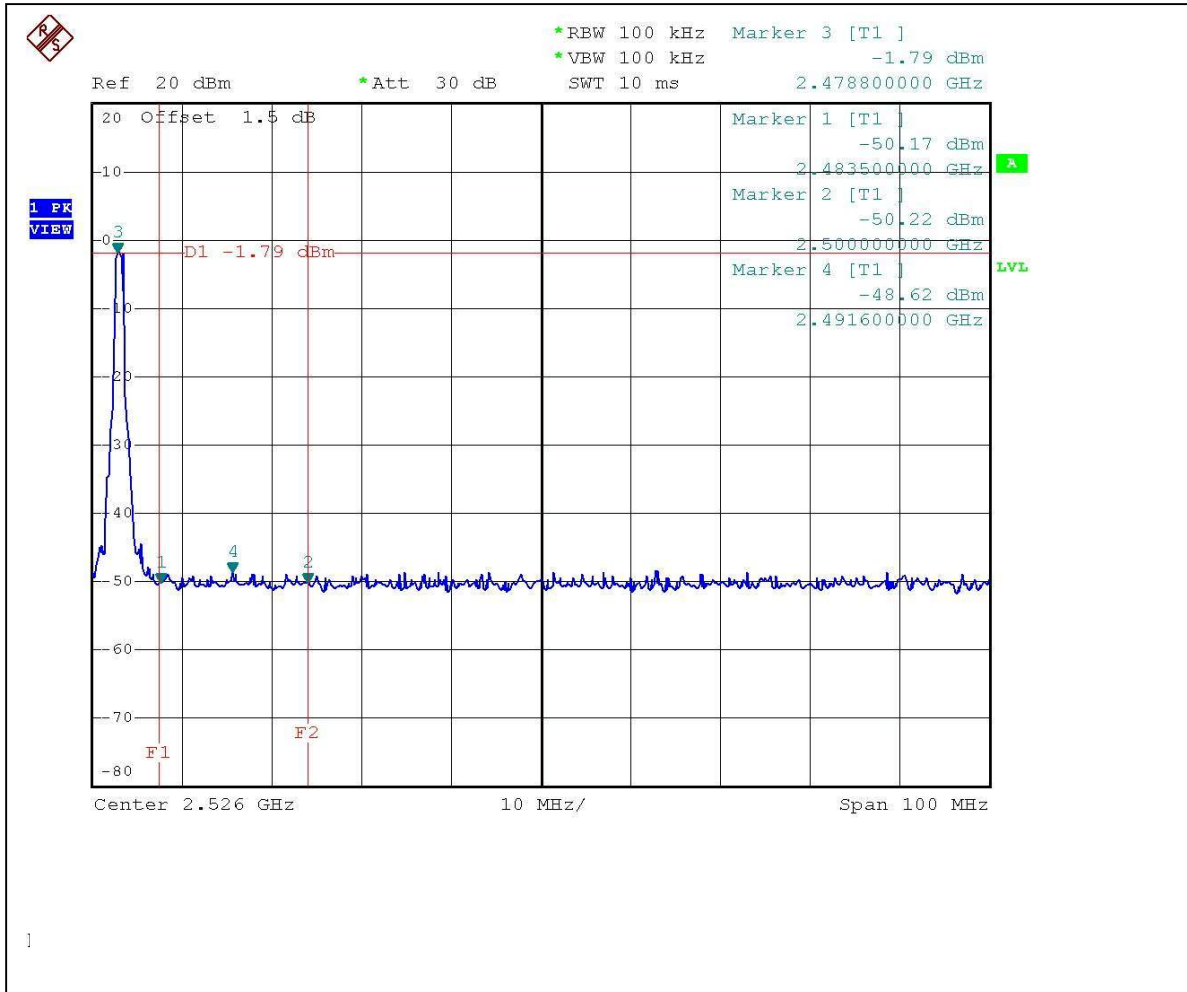
#### CH 0







CH 77

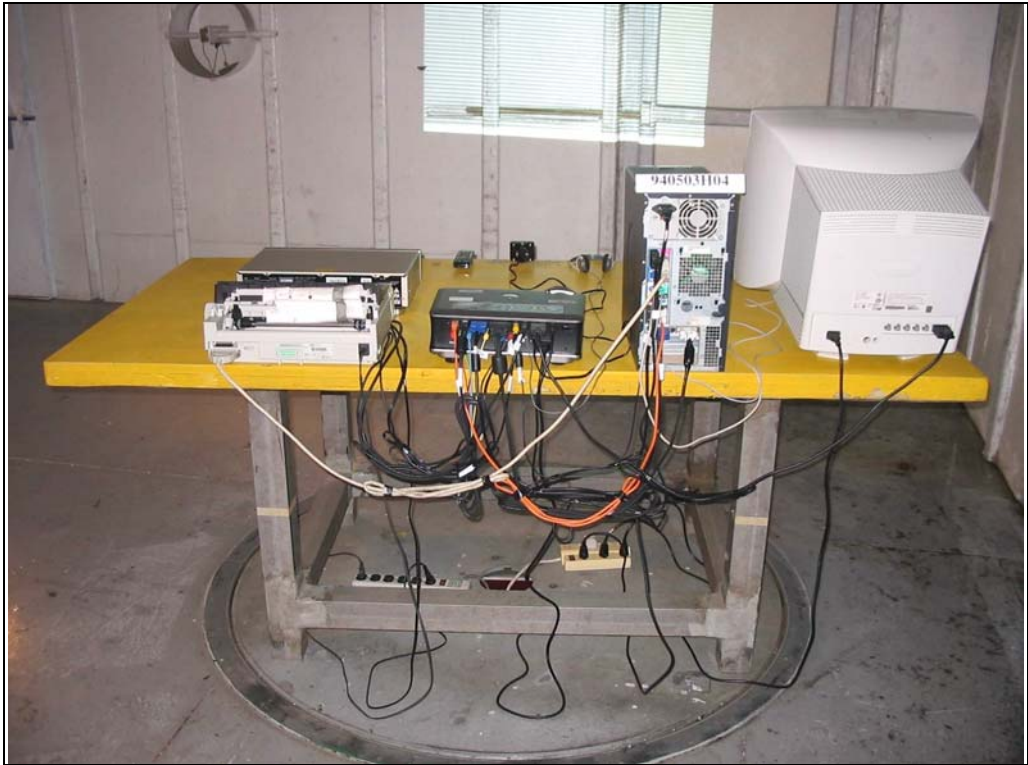


## 5 PHOTOGRAPHS OF THE TEST CONFIGURATION

### CONDUCTED EMISSION TEST



RADIATED EMISSION TEST





## 6 INFORMATION ON THE TESTING LABORATORIES

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

<b>USA</b>	FCC, NVLAP, UL, A2LA
<b>Germany</b>	TUV Rheinland
<b>Japan</b>	VCCI
<b>Norway</b>	NEMKO
<b>Canada</b>	INDUSTRY CANADA, CSA
<b>R.O.C.</b>	CNLA, BSMI, DGT
<b>Netherlands</b>	Telefication
<b>Singapore</b>	PSB, GOST-ASIA (MOU)
<b>Russia</b>	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](http://www.adt.com.tw/index.5/phtml).

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

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

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

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