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ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

UN-INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART B REQUIREMENT

OF

Product Name:	**Mobile Printer**
Brand Name:	**Cino**
Model Name:	**MP3200**
Report No.:	**EM/2005/40063**
Issue Date:	**May 06, 2005**
FCC Rule Part:	**Part 15 B**
Prepared for	**PC Worth Int'l Co., Ltd.** **18F, No. 100, Hsin-Tai-Wu Rd., Sec.1, Hsi-Chih, Taipei, Taiwan, 22102, R.O.C.**
Prepared by	**SGS Taiwan Ltd.** **No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.**

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VERIFICATION OF COMPLIANCE

Applicant:	PC Worth Int'l Co., Ltd. 18F, No. 100, Hsin-Tai-Wu Rd., Sec.1, Hsi-Chih, Taipei, Taiwan, 22102, R.O.C.
Product Description:	Mobile Printer
Brand Name:	Cino
Model No.:	MP3200
Model Difference:	N/A
File Number:	EM/2005/40063
Date of test:	Apr. 23, 2005 ~ May 05, 2005
Date of EUT Receive:	Apr. 23, 2005

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 (2003) and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rules Part 15B.

The test results of this report relate only to the tested sample identified in this report.

Test By:	Sky Wang	***Date***	May 06, 2005
	Sky Wang		
Prepared By:	Elisa Chen	***Date***	May 06, 2005
	Elisa Chen		
Approved By:	Vincent Su	***Date***	May 06, 2005
	Vincent Su		

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Version

Version No.	Date
00	May 06, 2005
01	Jun. 10, 2005

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1. GENERAL INFORMATION

1.1 Product Description

The PC Worth Int'l Co., Ltd., Model: MP3200 (referred to as the EUT in this report) The EUT is a Mobile Printer.

A major technical descriptions of EUT is described as following:
A). Operation Frequency: 2402 - 2480 MHz.
B). Power Supply: 7.4V from Re-chargeable battery or 100-240 AC to 9Vdc Adaptor

1.2 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC Part15 Subpart B is authorized under a DoC procedure.

1.3 Test Methodology

Both conducted and radiated testing were performed according to the procedures in ANSI C63.4 (2003). Radiated testing was performed at an antenna to EUT distance 3 meters.

1.4 Test Facility

The open area test site and conducted measurement facility used to collect the radiated data is located on the address of SGS Taiwan Ltd. No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan. The Open Area Test Sites and the Line Conducted labs are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003 and CISPR 22/EN 55022 requirements. Site No. 1(3 &10 meters) Registration Number: 94644, Anechoic chamber (3 meters) Registration Number: 573967

1.5 Special Accessories

Not available for this EUT intended for grant.

1.6 Equipment Modifications

Not available for this EUT intended for grant.

2. System Test Configuration

2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2 EUT Exercise

The EUT was operated in the normal continuous tramsmitting.

2.3 Test Procedure

2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. According to the requirements in Section 7 of ANSI C63.4-2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

2.3.2 Radiated Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter(EUT) was rotated through three orthogonal axes according to the requirements in Section 8 of ANSI C63.4-2003.

2.4 Limitation

(1) Conducted Emission

According to section 15.107(a) Conducted Emission Limits is as following.

Frequency range MHz	Class B Limits dB (uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

(2) Radiated Emission

According to section 15.109(a) Radiated Emission Class B Limits is as following:

Frequency (MHz)	Field strength μV/m	Distance (m)	Field strength at 3m dBμV/m
30-88	100	3	40
88-216	150	3	43.5
216-960	200	3	46
Above 960	500	3	54

Remark: 1. Emission level in dBuV/m=20 log (uV/m)
2. Measurement was performed at an antenna to the closed point of EUT distance of 3 meters.

2.5 Configuration of Tested System

Fig. 2-1 Configuration of Tested System

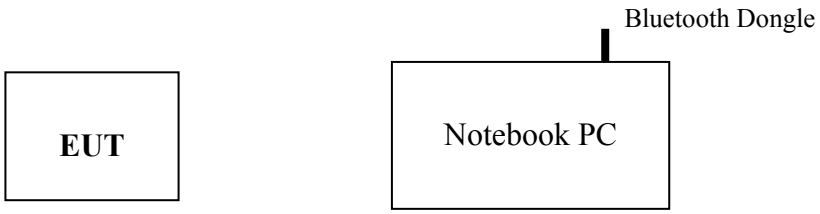

Table 2-1 Equipment Used in Tested System

Product	Manufacturer	Model No.	Serial No.
Notebook	Compaq	Presario 2100	CNF3450Q1R
Bluetooth Dongle	PCI	BT-01UD2	33DC10075

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3. Summary of Test Results

FCC Rules	Description Of Test	Result
§15.107	Conducted Emission Class B	Compliant
§15.109	Radiated Emission Class B	Compliant

4. Description of test modes

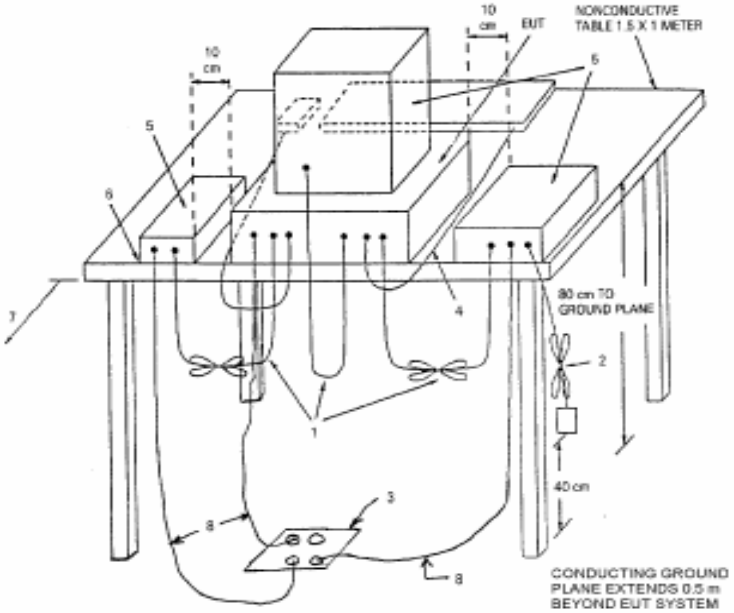
The EUT is stay in normal continuous transmitting mode.

5. Conducted Emissions Test

5.1 Measurement Procedure:

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

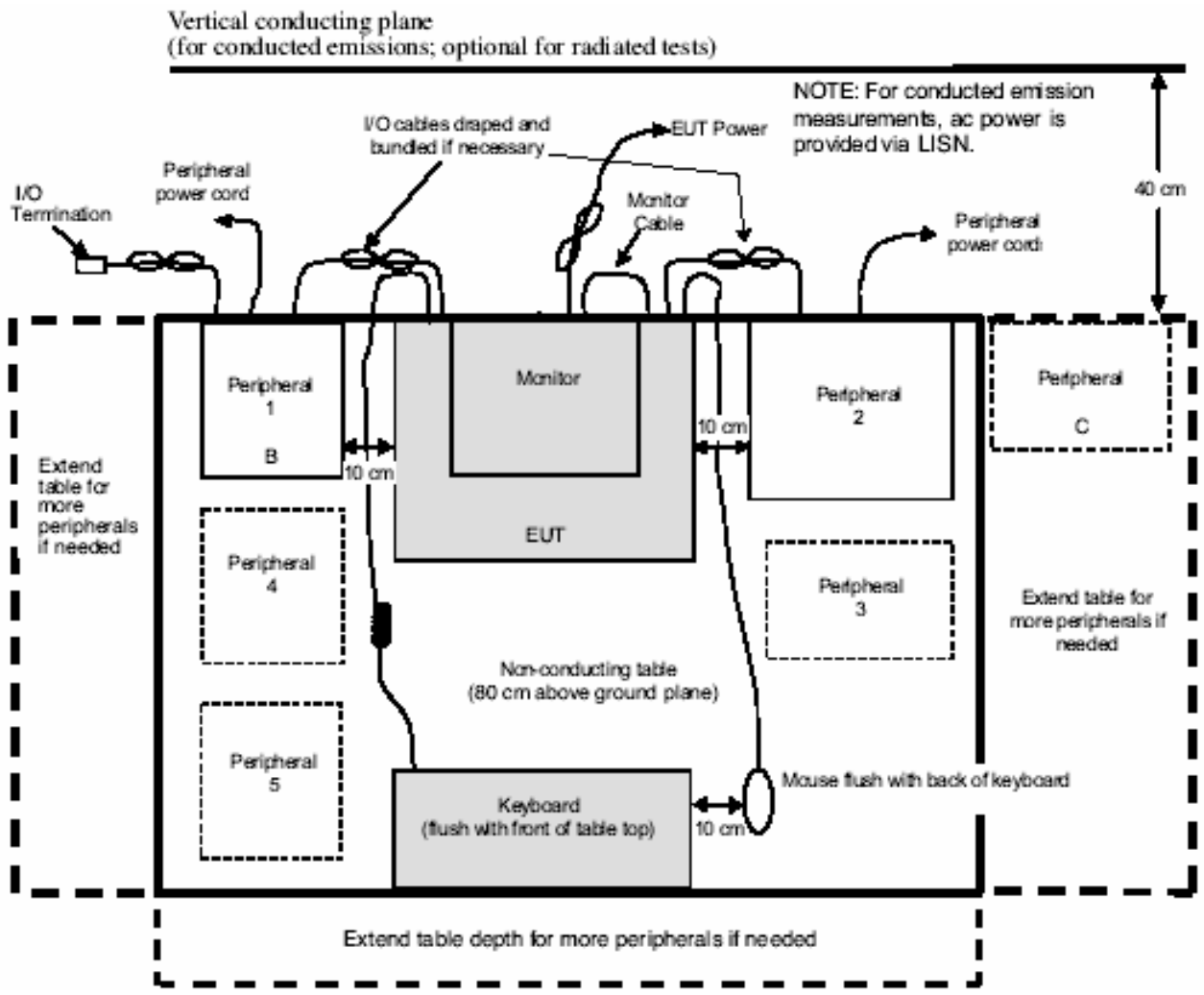
5.2 Test SET-UP (Block Diagram of Configuration)



LEGEND:

1) Interconnecting cables that hang closer than 40 cm to the groundplane shall be folded back and forth in the center, forming a bundle 30 to 40 cm long (see 6.1.4 and 11.2.4).
2) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated if required using the correct terminating impedance. The total length shall not exceed 1 m (see 6.1.4).
3) If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the groundplane with the receptacle flush with the groundplane (see 6.1.4).
4) Cables of hand-operated devices, such as keyboards, mice, etc., shall be placed as for normal use (see 6.2.1.3 and 11.2.4).
5) Non-EUT components of EUT system being tested (see also Figure 13).
6) Rear of EUT, including peripherals, shall all be aligned and flush with rear of tabletop (see 6.2.1.1 and 6.2.1.2).
7) No vertical conducting plane used (see 5.2.2).
8) Power cords drape to the floor and are routed over to receptacle (see 6.1.4).

Figure 11a—Test arrangement for radiated emissions tabletop equipment



5.3 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMC Analyzer	HP	8594EM	3624A00203	12/31/2004	12/30/2005
EMI Test Receiver	R&S	ESCS30	828985/004	01/15/2005	01/14/2006
LISN	Rolf-Heine	NNB-2/16Z	99012	12/30/2004	12/29/2005
LISN	Rolf-Heine	NNB-2/16Z	99013	11/06/2004	11/05/2005

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5.4 Measurement Result:

AC POWER LINE CONDUCTED EMISSION TEST DATA

Operation Mode:	Operation Mode			Test Date :	May 02, 2005
Temperature:	24 ℃	Humidity:	60%	Test By:	Sky

FREQ MHz	Q.P. Raw dBuV	AVG Raw dBuV	Q.P. Limit dBuV	AVG Limit dBuV	Q.P. Margin dB	AVG Margin dB	NOTE
0.181	59.80	51.50	64.43	54.43	-4.63	-2.93	L1
0.275	47.37	38.76	60.97	50.97	-13.60	-12.21	L1
0.732	38.06	---	56.00	46.00	-17.94	---	L1
1.201	38.13	---	56.00	46.00	-17.87	---	L1
2.493	44.55	39.04	56.00	46.00	-11.45	-6.96	L1
3.564	35.29	---	56.00	46.00	-20.71	---	L1
0.181	59.11	50.78	64.43	54.43	-5.32	-3.65	L2
0.275	46.50	38.43	60.97	50.97	-14.47	-12.54	L2
0.822	38.34	---	56.00	46.00	-17.66	---	L2
1.095	39.89	37.45	56.00	46.00	-16.11	-8.55	L2
2.490	44.85	40.03	56.00	46.00	-11.15	-5.97	L2
4.017	35.40	---	56.00	46.00	-20.60	---	L2

Remark：

(1) Measuring frequencies from 0.15 MHz to 30MHz。
(2) The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Qusia-Peak detector and Average detector.
(3) "---" denotes the emission level was or more than 2dB below the Average limit, so no re-check anymore.
(4) The IF bandwidth of SPA between 0.15MHz to 30MHz was 10KHz;
The IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9KHz;
(5) L1 = Line One (Hot side) / L2 = Line Two (Neutral side)

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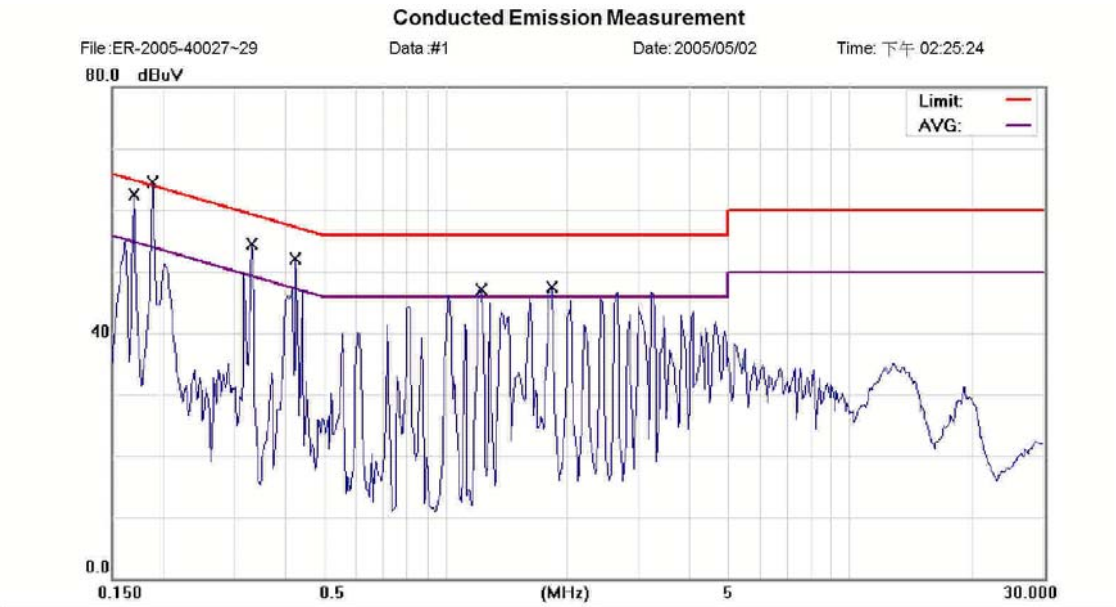
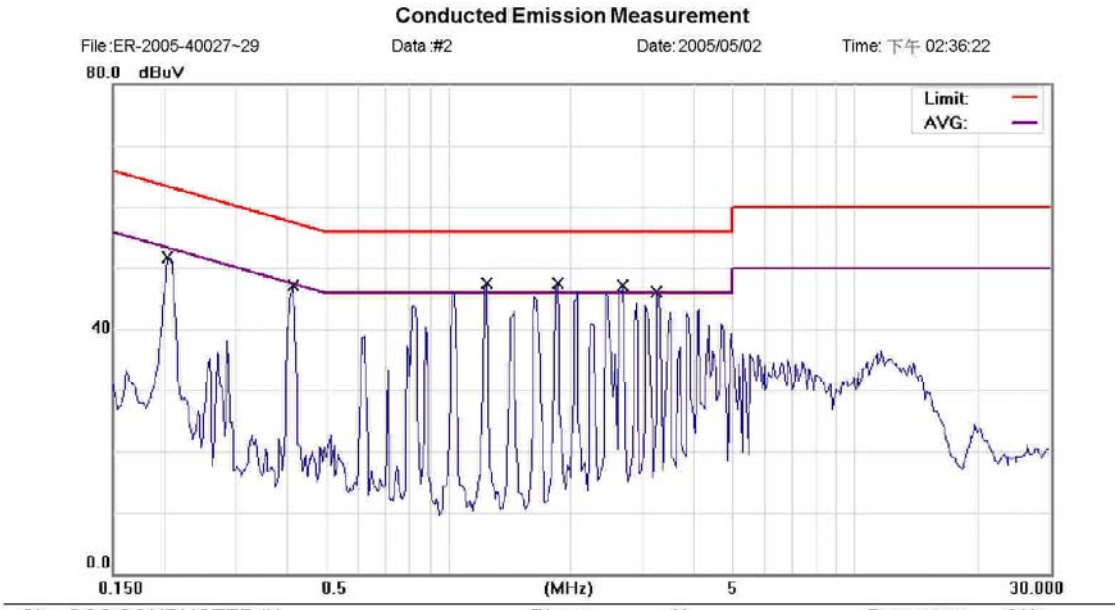
Conducted Emission Test Plot



Site SGS CONDUCTED#1	Phase: L1	Temperature: 24 ℃
Limit: EN55022 Class B Conduction(QP)	Power: AC 110V/60Hz	Humidity: 60 %
EUT: MOBILE PRINTER	Distance:	Air Pressure: hpa
M/N: MP-3200		
Note: OPERATION		



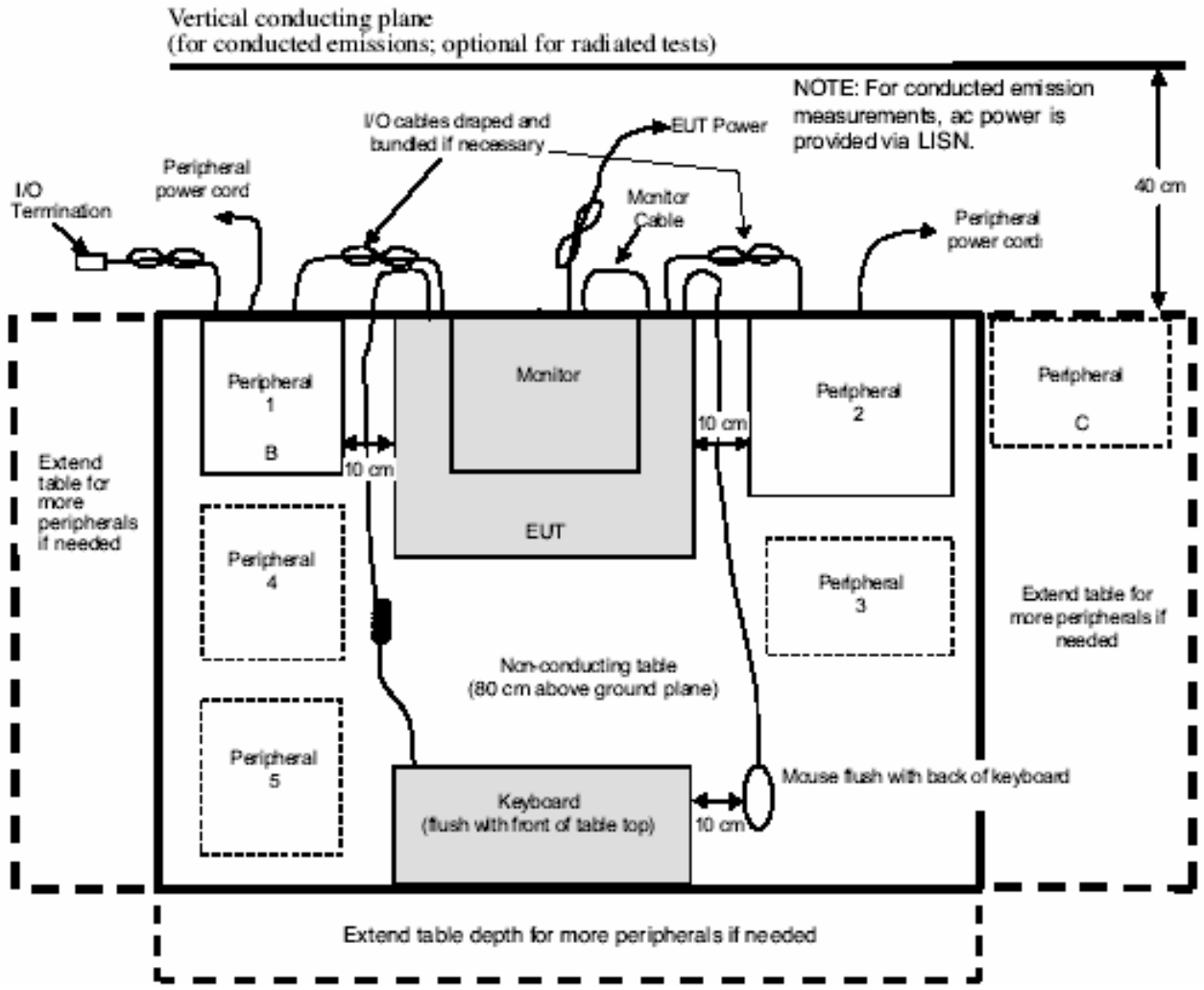
Site SGS CONDUCTED#1	Phase: N	Temperature: 24 ℃
Limit: EN55022 Class B Conduction(QP)	Power: AC 110V/60Hz	Humidity: 60 %
EUT: MOBILE PRINTER	Distance:	Air Pressure: hpa
M/N: MP-3200		
Note: OPERATION		

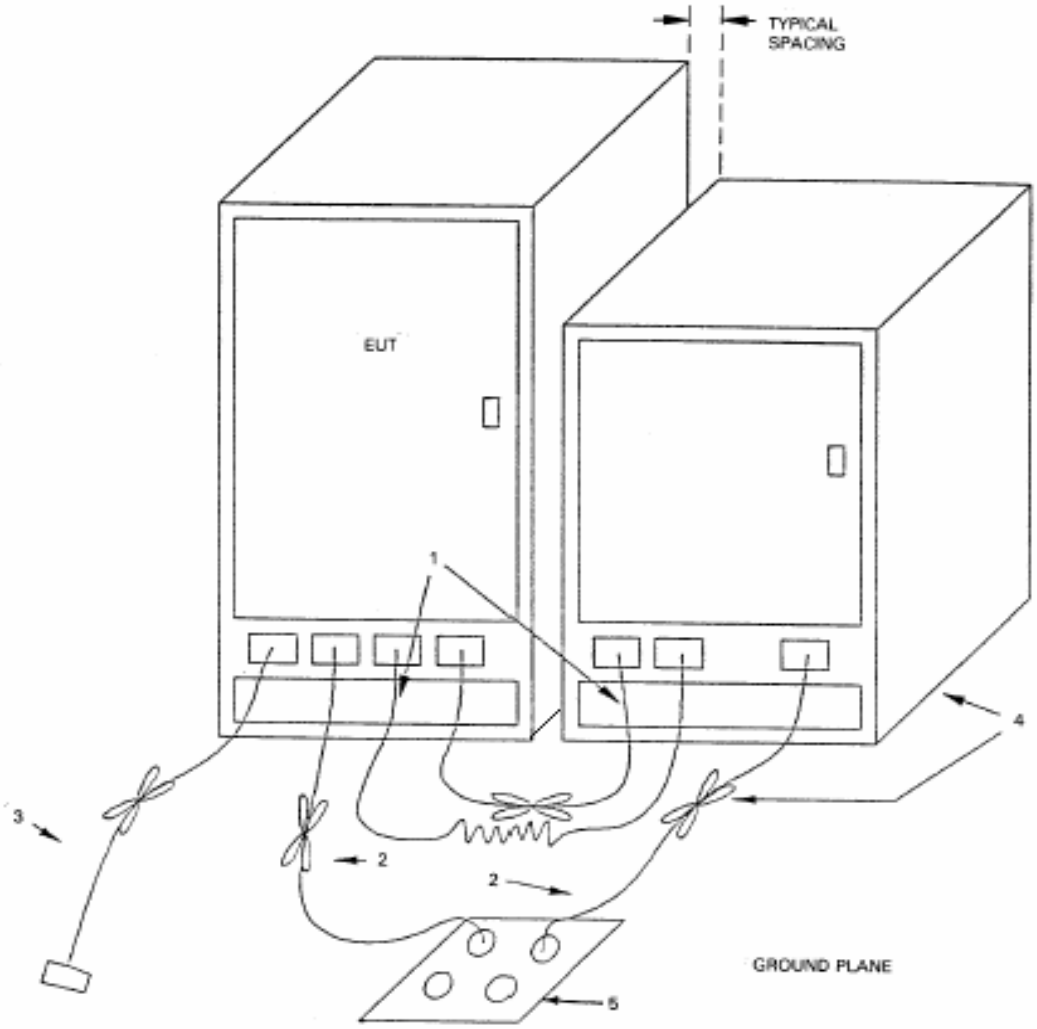
6. Radiated Emission Test

6.1 Measurement Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
4. Repeat above procedures until all frequency measured were complete.

6.2 Test SET-UP (Block Diagram of Configuration)





LEGEND:

1) Excess I/O cables shall be bundled in center. If bundling is not possible, the cables shall be arranged in serpentine fashion. Bundling not to exceed 40 cm in length (see 6.1.4).
2) Excess power cords shall be bundled in the center or shortened to appropriate length (see 7.2.1).
3) I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. If bundling is not possible, the cable shall be arranged in a serpentine fashion (see 6.1.4).
4) EUT and all cables shall be insulated, if required, from the groundplane by up to 12 mm of insulating material (see 6.1.4 and 6.2.2).
5) If LISNs are kept in the test setup for radiated emissions, it is preferred that they be installed under the groundplane with the receptacle flush with the ground plane (see 5.2.3 and 8.1).

Figure 11b—Test arrangement for radiated emissions floor-standing equipment

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6.3 Measurement Equipment Used:

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EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	R&S	FSP 40	100034	05/27/2004	05/26/2005
Spectrum Analyzer	Agilent	E7405A	US41160416	08/27/2004	08/27/2005
Loop Antenna	Messtec	FLA30	03/10086	03/06/2005	03/05/2006
Bilog Antenna	SCHWAZBECK	VULB9163	152	06/03/2004	06/02/2005
Bilog Antenna	SCHWAZBECK	VULB9160		06/03/2004	06/02/2005
Pre-Amplifier	HP	8447D	2944A09469	07/19/2004	07/18/2005
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	10/09/2004	10/08/2005
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2004	10/08/2005
Site NSA	SGS	966 chamber	N/A	11/17/2004	11/16/2005
Site NSA	SGS	10m Open-Site	N/A	10/02/2004	10/01/2005

6.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where	FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
	RA = Reading Amplitude	AG = Amplifier Gain
	AF = Antenna Factor	

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6.5 Measurement Result

Test Mode: Normal Operating
Detector Function: Quasi-Peak/Peak
Frequency Range: 30MHz-1000MHz

Test Date : Apr. 27, 2005
Test By: Sky
Temperature : 25 ℃ Humidity : 65 %

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit3m (dBuV/m)	Safe Margin (dB)
58.13	V	Peak	45.87	-14.85	31.02	40.00	-8.98
96.93	V	Peak	48.80	-17.45	31.35	43.50	-12.15
300.63	V	Peak	44.96	-13.37	31.59	46.00	-14.41
352.04	V	Peak	41.82	-11.91	29.91	46.00	-16.09
417.03	V	Peak	40.19	-10.29	29.90	46.00	-16.10
943.74	V	Peak	35.63	-1.82	33.81	46.00	-12.19
96.93	H	Peak	50.44	-17.45	32.99	43.50	-10.51
300.63	H	Peak	50.36	-13.37	36.99	46.00	-9.01
352.04	H	Peak	47.76	-11.91	35.85	46.00	-10.15
417.03	H	Peak	42.11	-10.29	31.82	46.00	-14.18
601.33	H	Peak	39.32	-7.60	31.72	46.00	-14.28
720.64	H	Peak	37.34	-5.01	32.33	46.00	-13.67

Remark：

(1) Measuring frequencies from 30 MHz to the 1GHz。
(2) Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
(3) Data of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(4) The IF bandwidth of SPA 30MHz to 1GHz was 100KHz.

Measurement Result

Test Mode: Normal Operating
Detector Function: Peak
Frequency Range: 1000MHz-13GHz

Test Date : Apr. 27, 2005
Test By: Sky
Temperature : 25 ℃ Humidity : 65 %

Freq. (MHz)	Ant.Pol. H/V	Detector Mode (PK/AV/QP)	Reading (dBuV)	Factor (dB)	Actual FS (dBuV/m)	Limit@3m (dBuV/m)	Safe Margin (dB)
1221.00	V	Peak	42.86	-8.44	34.42	54.00	-19.58
4880.50	V	Peak	47.35	-3.18	44.17	54.00	-9.83
7318.00	V	Peak	42.25	9.47	51.72	54.00	-2.28
1221.00	H	Peak	46.35	-8.44	37.91	54.00	-16.09
4880.50	H	Peak	43.02	3.18	46.20	54.00	-7.80
7318.00	H	Peak	37.28	9.47	46.75	54.00	-7.25

Remark：

(1) Measuring frequencies from 1GHz to the 10th harmonic of highest fundamental frequency。
(2) Datas of measurement within this frequency range shown " - " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(3) Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column。
(4) Spectrum Peak Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 3MHz, Sweep time= 200 ms.
(5) Spectrum AV Setting : 1GHz- 26GHz, RBW= 1MHz, VBW= 10Hz, Sweep time= 200 ms.

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APPENDIX 1

PHOTOGRPHS OF SET UP

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Radiated Emission Test Setup Photo

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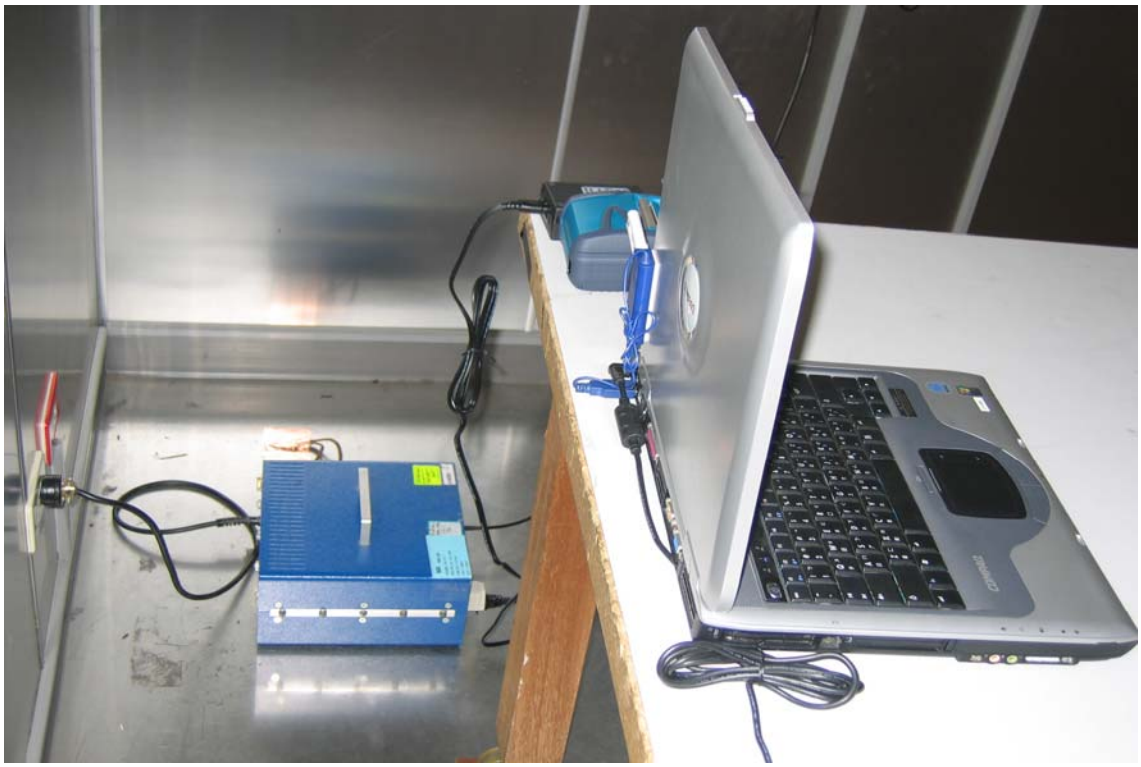
Conducted Emission Test Setup Photo



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APPENDIX 2

PHOTOGRPHS OF EUT

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All View of EUT

Front View of EUT

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Back View of EUT

Bottom View of EUT

Right View of EUT

Left View of EUT

Inside View of EUT

Open View of EUT

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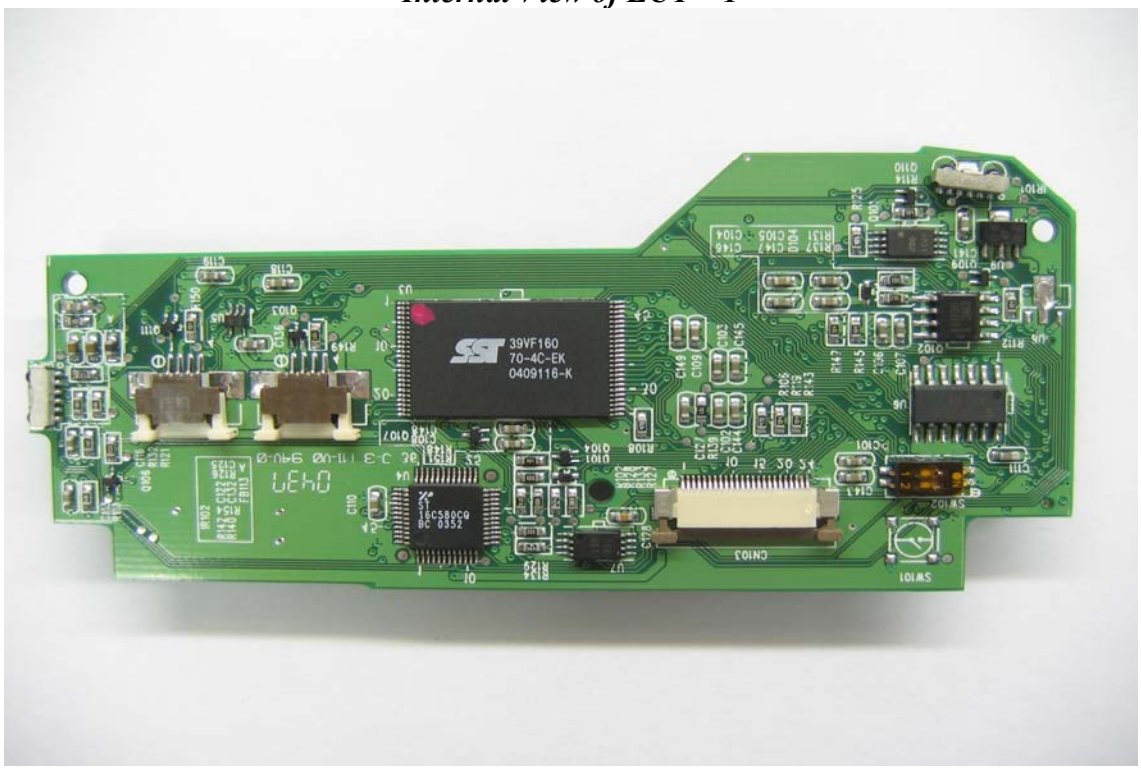
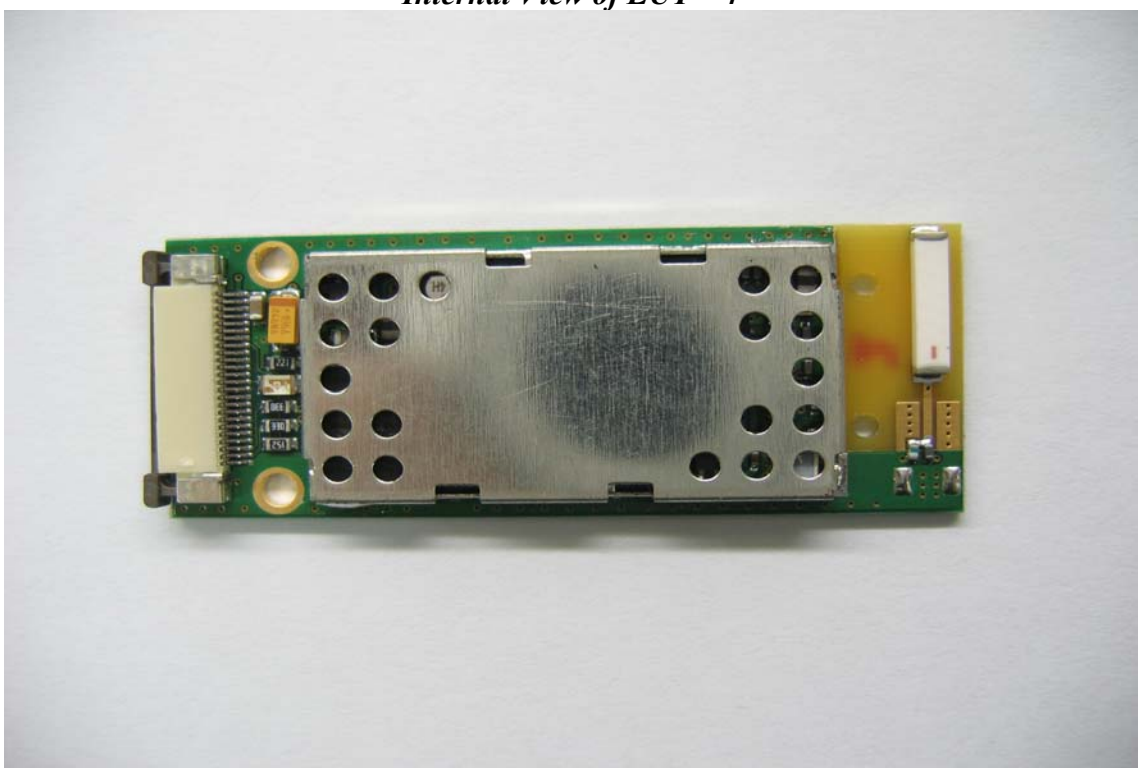
Internal View of EUT – 1



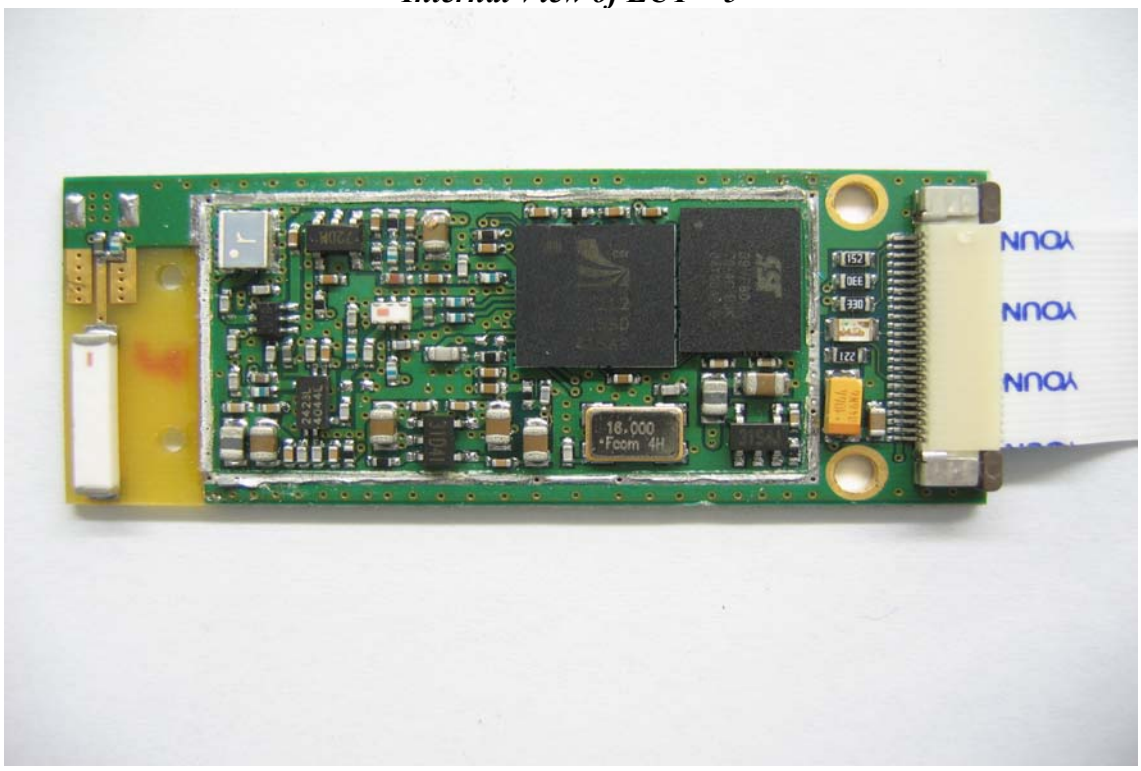
Internal View of EUT – 2

Internal View of EUT – 3

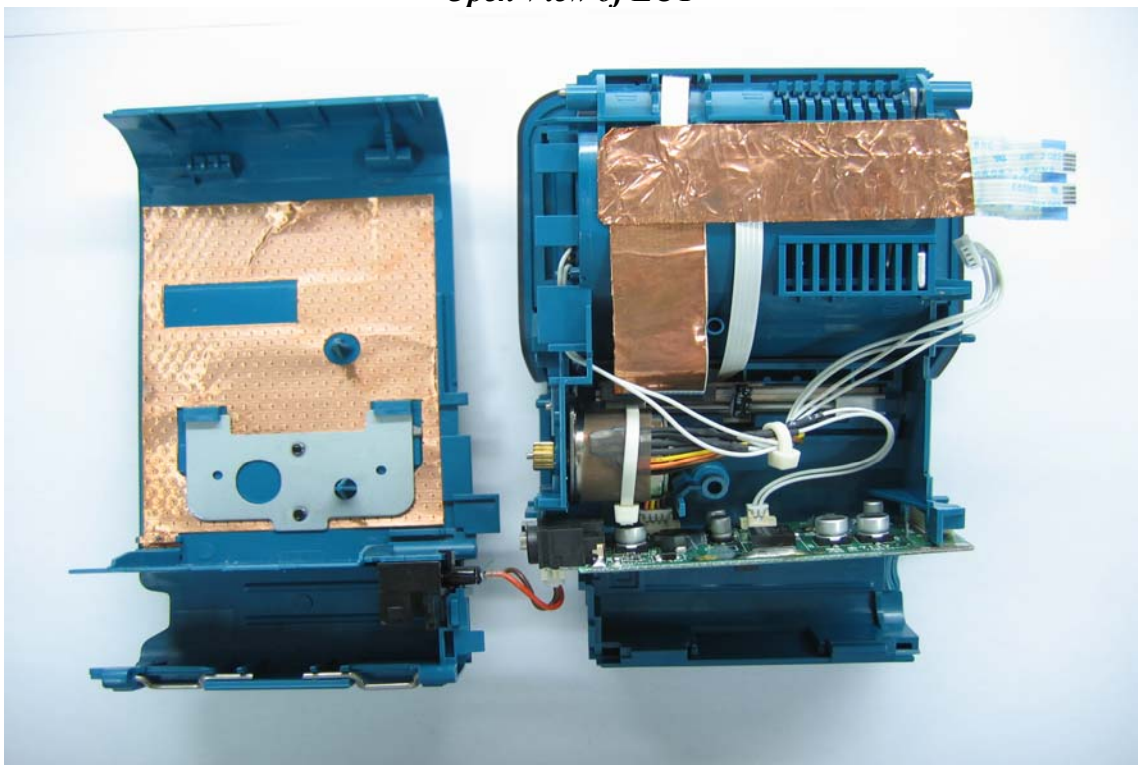
Internal View of EUT – 4



Internal View of EUT – 5



Open View of EUT



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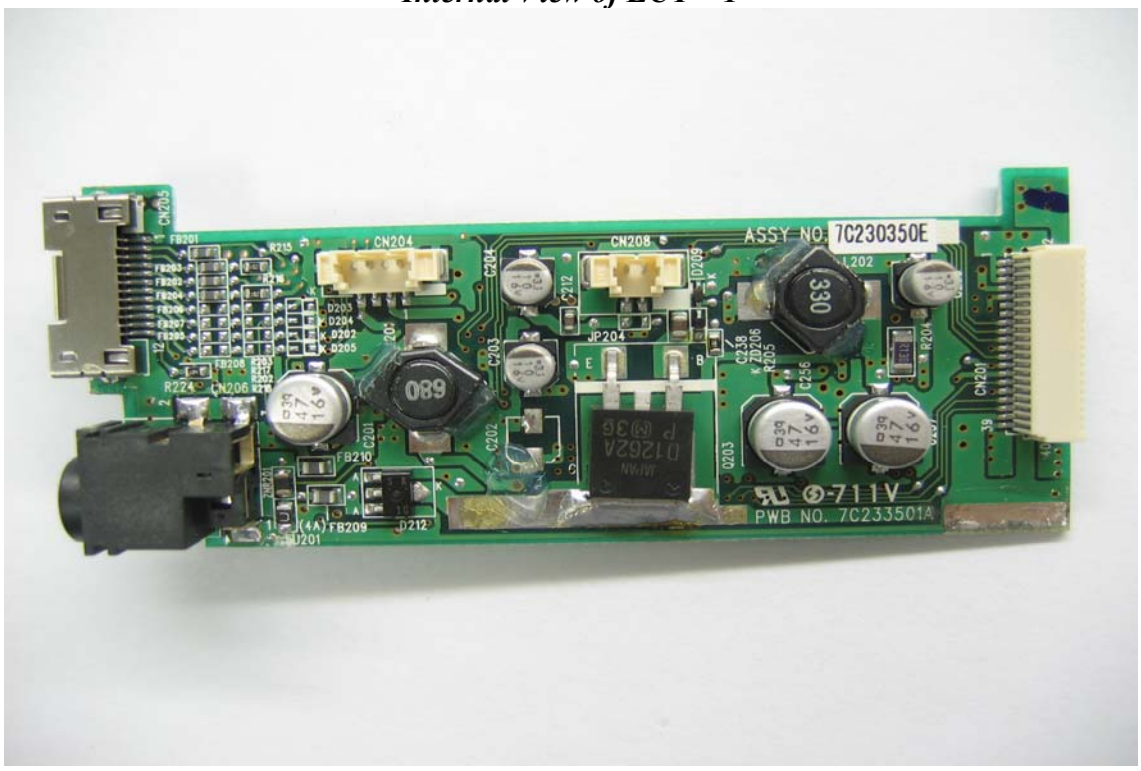
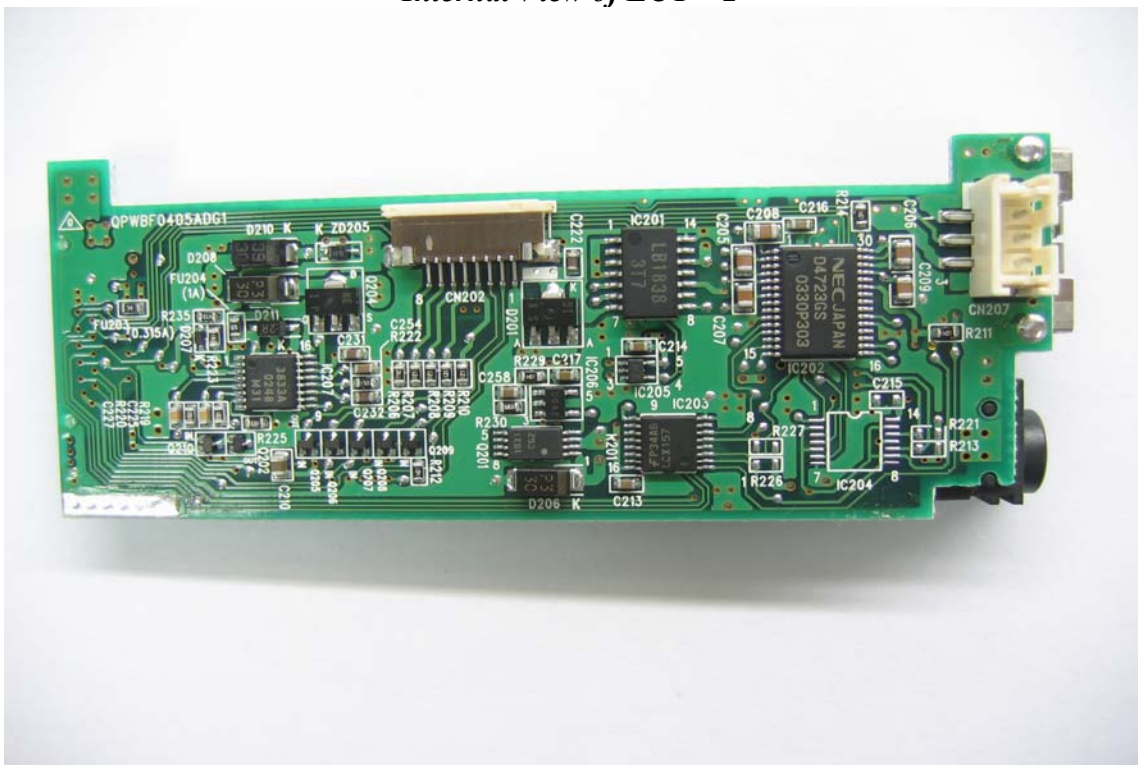
Internal View of EUT – 1



Internal View of EUT – 2



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APPENDIX 3

LABELING REQUIREMENTS

§15.19 Labeling requirements.

(a) In addition to the requirements in part 2of this chapter, a device subject to certification, or verification, or verification shall be labeled as follows:

(1) Receivers associated with the operation of a licensed radio service, e.g., FM broadcast under part 73 of this chapter, land mobile operation under part 90,etc., shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

(2) A stand-alone cable input selector switch, shall bear the following statement in a conspicuous location on the device:

This device is verified to comply with the part15of the FCC Rules for use with cable television service.

(3) All other devices shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:(1) This device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

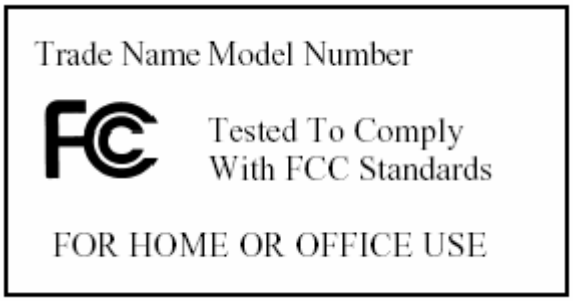
(4) Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified under paragraph (a) of this section is required to be affixed only to the main control unit.

(5) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (a) of this section on it , the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed. However, the FCC identifier or the unique identifier, as appropriate, must be displayed on the device.

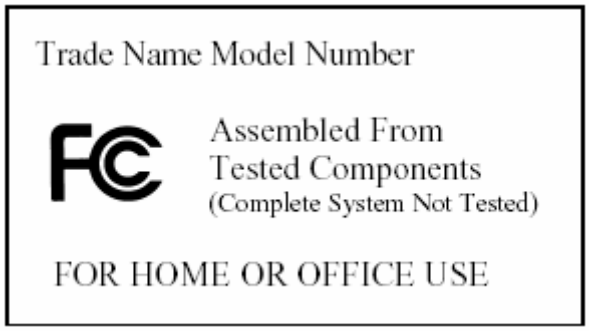
(b) Products subject to authorization under a Declaration of Conformity shall be labeled as follows:

(1) The label shall be located in a conspicuous location on the device and shall contain the unique identification described in §2.1074of this chapter and the following logo:

(i) If the product is authorized based on testing of the product or system; or



(ii) If a personal computer is authorized based on assembly using separately authorized components, in accordance with §15.101(c) (2)or (c)(3),and the resulting product is not separately tested:



(2) Label text information should be in a size of type large enough to be readily legible, consistent with the dimensions of the equipment and the label. However, the type size for the text is not required to be larger than eight points.

(3) When the device is so small or for such use that it is not practicable to place the statement specified under paragraph (b)(1) of this section on it, such as for a CPU board or a plug-in circuit board peripheral device, the text associated with the logo may be placed in a prominent location in the instruction manual or pamphlet supplied to the user. However, the unique identification (trade name and model number) and the logo must be displayed on the device.

(4) The label shall not be a stick-on , paper label. The label on these products shall be permanently affixed to the product and shall be readily visible to the purchaser at the time of purchase, as, described in §2.925(d)of this chapter. ”Permanently affixed” means that the label is etched, engraved, stamped, silk screen, indelibly printed, or otherwise permanently marked on a permanently attached part of the equipment or on a nameplate of metal, plastic, or other material fastened to the equipment by welding, riveting, or a permanent adhesive. The label must be designed to last the expected lifetime of the equipment in the environment in which the equipment may be operated and must not be readily detachable.