

# ***FCC TEST REPORT***

**FCC ID:** WAGACCEL-7450S

**Applicant:** KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD

**Address:** 18 Kongyue road, Jinguzhou Zone, Xinhui district, Jiangmen city, Guangdong Province, China.

**Equipment Under Test (EUT) :**

Product Name: Dot-matrix Printer

Model No.: Accel-7450, Accel-7450S

**Standards:** FCC Part 15 Subpart B:2009

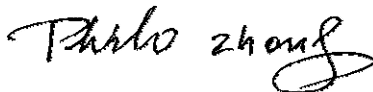
**Date of Test:** June 15, 2011 ~ June 17, 2011

**Date of Issue:** June 28, 2011

**Test Engineer:** Olic huang



**Reviewed By:** Philo zhong



<b>Test Result:</b>	<b>PASS</b>
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**Prepared By:**

**Waltek Services (Shenzhen) Co., Ltd.**

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- ✧ The sample detailed above has been tested to the requirements of Council Directives ANSI C63.4:2003. The test results have been reviewed against the Directives above and found to meet their essential requirements.

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Reference No.: WT11062762-D-E-F

## 2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission (30MHz to 1GHz)	FCC Part 15 Subpart B:2009	ANSI C63.4: 2003	Class B	PASS
Conducted Emission (150KHz to 30MHz)	FCC Part 15 Subpart B:2009	ANSI C63.4: 2003	Class B	PASS

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## **4 General Information**

### **4.1 Client Information**

**Applicant:** KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD

**Address of Applicant:** 18 Kongyue road, Jinguzhou Zone, Xinhui district, Jiangmen city,Guangdong Province, China.

**Manufacturer:** KONG YUE ELECTRONICS & INFORMATION INDUSTRY LTD

**Address of Manufacturer:** 18 Kongyue road, Jinguzhou Zone, Xinhui district, Jiangmen city,Guangdong Province, China.

### **4.2 General Description of E.U.T.**

**Product Name:** Dot-matrix Printer

**Model No.:** Accel-7450, Accel-7450S

**Model Difference:** The two models have the same circuit and appearance, they just have different Model Number.

**Communication Port:** Parallel interface, Serial interface, Ethernet interface, USB port

### **4.3 Details of E.U.T.**

**Technical Data:** 120VAC, 60Hz

### **4.4 Description of Support Units**

The EUT has been tested as an independent unit.All the test was performed in the condition of AC 120V/60Hz input.

### **4.5 Standards Applicable for Testing**

The customer requested FCC tests for a Dot-matrix Printer. The standards used were FCC Part 15 Subpart B:2009.

#### **4.6 Test Facility**

The test facility has a test site registered with the following organizations:

- **IC – Registration No.: 7760A**

Waltek Services(Shenzhen) Co., Ltd. has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files. Registration 7760A, Aug.03, 2010.

- **FCC – Registration No.: 880581**

Waltek Services(Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 880581, May 26, 2011.

#### **4.7 Test Location**

All the tests were performed at:

Waltek Services(Shenzhen) Co., Ltd. at 1/F, Fukangtai Building, West Baima Rd.,Songgang Street, Baoan District, Shenzhen, China

## 5 Equipment Used during Test

Equipment Name	Manufacturer Model	Equipment No	Internal No	Specification	Cal. Date	Due Date	Cert. No	Uncertainty
EMC Analyzer	Agilent/ E7405A	MY45114943	W2008001	9k-26.5GHz	Aug-2010	Aug-2011	Wws20081596	±1dB
Trilog Broadband Antenne 30-3000 MHz	SCHWARZBECK MESS-ELEKTROM/ VULB9163	336	W2008002	30-3000 MHz	Aug-2010	Aug-2011	-	±1dB
Broad-band Horn Antenna 1-18 GHz	SCHWARZBECK MESS-ELEKTROM/ BBHA9120D	667	W2008003	1-18GHz	Aug-2010	Aug-2011	-	f<10 GHz: ±1dB 10GHz<f<18 GHz: ±1.5dB
Broadband Preamplifier 0.5-18 GHz	SCHWARZBECK MESS-ELEKTROM/ BBV 9718	9718-148	W2008004	0.5-18GHz	Aug-2010	Aug-2011	-	±1.2dB
10m Coaxial Cable with N-male Connectors usable up to 18GHz,	SCHWARZBECK MESS-ELEKTROM/ AK 9515 H	-	-	-	Aug-2010	Aug-2011	-	-
10m 50 Ohm Coaxial Cable with N-plug, individual length, usable up to 3(5)GHz, Connector	SCHWARZBECK MESS-ELEKTROM/ AK 9513	-	-	-	Aug-2010	Aug-2011	-	-
Positioning Controller	C&C LAB/ CC-C-IF	-	-	-	N/A	N/A	-	-
Color Monitor	SUNSP0/ SP-14C	-	-	-	N/A	N/A	-	-
Test Receiver	ROHDE&SCHWARZ/ ESPI	101155	W2005001	9k-3GHz	Aug-2010	Aug-2011	Wws20080942	±1dB
EMI Receiver	Beijingkehuan	KH3931	-	9k-1GHz	Aug-2010	Aug-2011	-	-
Two-Line V-Network	ROHDE&SCHWARZ/ ENV216	100115	W2005002	50Ω/50μH	Aug-2010	Aug-2011	Wws20080941	±10%
V-LISN	SCHWARZBECK MESS-ELEKTRONIK	NSLK 8128	8128-259	9k-30MHz	Aug-2010	Aug-2011	-	-
PC	Lenovo	T2900D	-	-	Aug-2010	Aug-2011	-	-
Display	viewsonic	S27996-1W	-	-	Aug-2010	Aug-2011	-	±0.5dB
K/B	DELL	L100	-	-	Aug-2010	Aug-2011	-	±0.5dB
Mouse	acer	M-UVACR1	-	-	Aug-2010	Aug-2011	-	±0.5dB

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## 6 Emissions Test Results

### 6.1 Conducted Emission Data

Test Requirement:	FCC Part 15.107
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	150kHz to 30MHz
Class:	Class B
Limit:	66-56 dB $\mu$ V between 0.15MHz & 0.5MHz 56 dB $\mu$ V between 0.5MHz & 5MHz 60 dB $\mu$ V between 5MHz & 30MHz
Detector:	Peak for pre-scan (9kHz Resolution Bandwidth) Quasi-Peak & Average if maximised peak within 6dB of Average Limit

#### 6.1.1 E.U.T. Operation

##### Operating Environment:

Temperature:	25.5 °C
Humidity:	51 % RH
Atmospheric Pressure:	1012 mbar

##### EUT Operation:

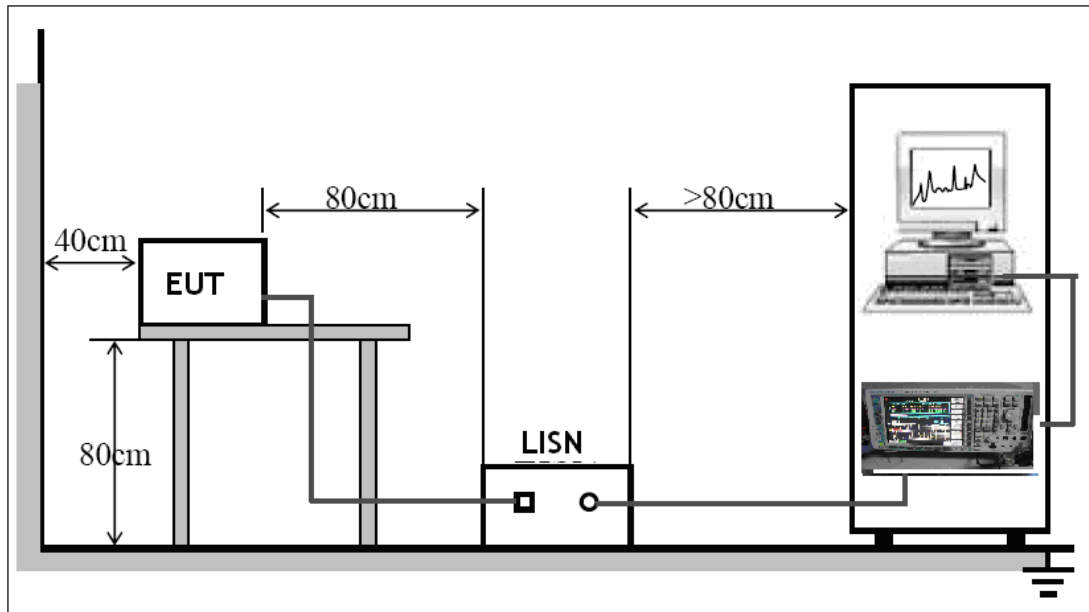
The EUT was pretested in Connect to PC via USB Cable and print mode, Connect to PC via Ethernet Cable and print mode, Connect to PC via Serial Cable and print mode, Connect to PC via Parallel Cable and print mode, and the worse case was Connect to PC via Ethernet Cable and print mode, so the data show was that mode only.

The EUT was tested according to ANSI C63.4:2003. The frequency spectrum from 150kHz to 30MHz was investigated.

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

### 6.1.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 B 15.107 limits.



The EUT was placed on the test table in shielding room

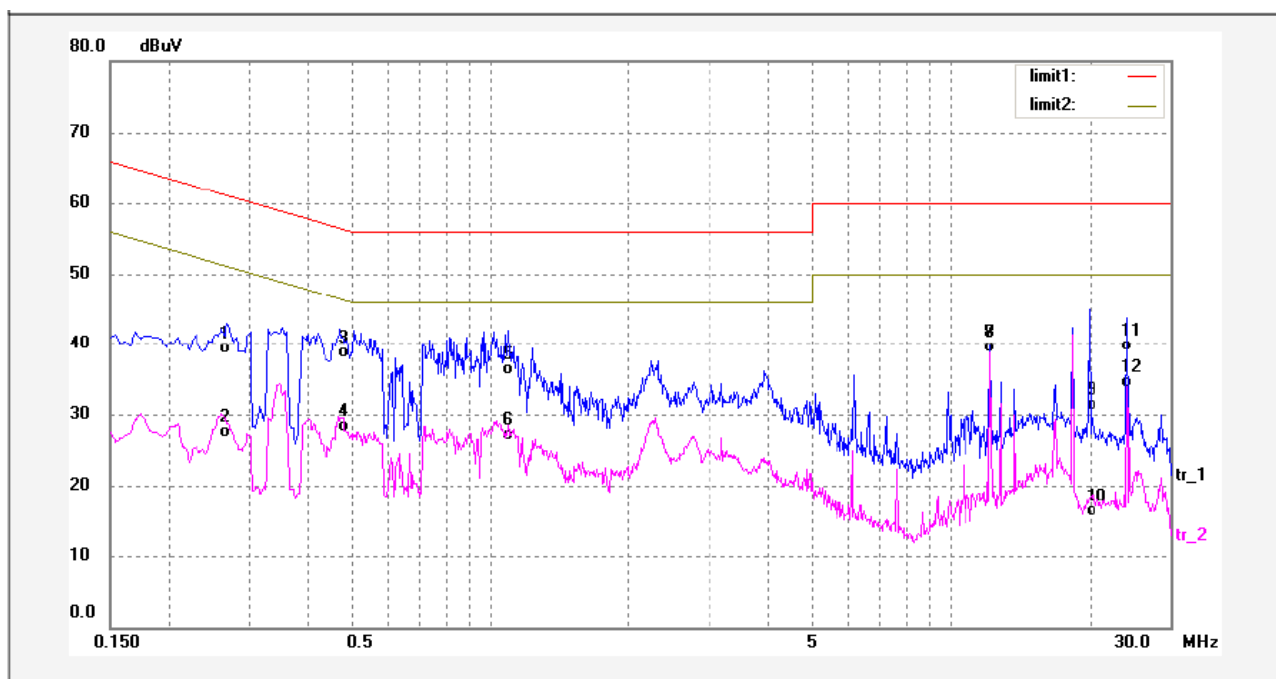
### 6.1.3 Conducted Emission Test Result

An initial pre-scan was performed on the live and neutral lines.



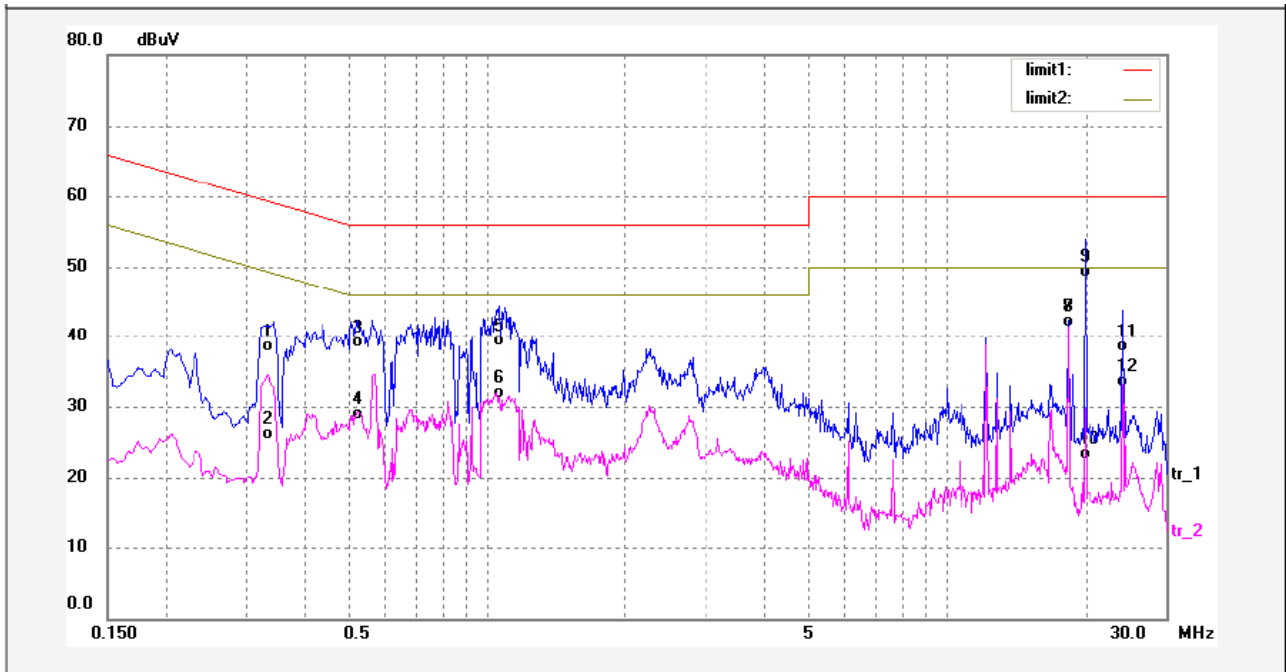
Test Mode: Connect to PC via Ethernet Cable and print

Live line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.2700	27.96	10.62	38.58	61.12	-22.54	QP	
2	0.2700	16.13	10.62	26.75	51.12	-24.37	AVG	
3	0.4740	26.54	11.28	37.82	56.44	-18.62	QP	
4	0.4740	16.26	11.28	27.54	46.44	-18.90	AVG	
5	1.0940	23.31	12.19	35.50	56.00	-20.50	QP	
6	1.0940	14.18	12.19	26.37	46.00	-19.63	AVG	
7	12.2460	26.59	12.15	38.74	60.00	-21.26	QP	
8	12.2460	26.52	12.15	38.67	50.00	-11.33	AVG	
9	19.9900	18.20	12.28	30.48	60.00	-29.52	QP	
10	19.9900	3.15	12.28	15.43	50.00	-34.57	AVG	
11	24.2099	26.34	12.53	38.87	60.00	-21.13	QP	
12	24.2099	21.23	12.53	33.76	50.00	-16.24	AVG	

Neutral line:



No.	Freq. (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit dBuV	Margin (dB)	Detector	Remark
1	0.3300	27.09	10.69	37.78	59.45	-21.67	QP	
2	0.3300	14.64	10.69	25.33	49.45	-24.12	AVG	
3	0.5260	26.74	11.66	38.40	56.00	-17.60	QP	
4	0.5260	16.43	11.66	28.09	46.00	-17.91	AVG	
5	1.0660	26.26	12.19	38.45	56.00	-17.55	QP	
6	1.0660	18.83	12.19	31.02	46.00	-14.98	AVG	
7	18.3700	29.00	12.29	41.29	60.00	-18.71	QP	
8	18.3700	29.02	12.29	41.31	50.00	-8.69	AVG	
9	20.0020	36.29	12.28	48.57	60.00	-11.43	QP	
10	20.0020	10.18	12.28	22.46	50.00	-27.54	AVG	
11	24.2099	25.25	12.53	37.78	60.00	-22.22	QP	
12	24.2099	20.25	12.53	32.78	50.00	-17.22	AVG	

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#### 6.1.4 Photograph – Conducted Emission Test Setup

Front View



Back View



## 6.2 Radiation Emission Data

Test Requirement:	FCC Part15.109
Test Method:	ANSI C63.4:2003
Test Result:	PASS
Frequency Range:	30MHz to 1GHz
Measurement Distance:	3m
Class:	Class B
Limit:	40.0 dB $\mu$ V/m between 30MHz & 88MHz 43.5 dB $\mu$ V/m between 88MHz & 216MHz 46.0 dB $\mu$ V/m between 216MHz & 960MHz 54.0 dB $\mu$ V/m above 960MHz
Detector:	Peak for pre-scan (120kHz resolution bandwidth) Quasi-Peak if maximised peak within 6dB of limit

### EUT Operation :

The EUT was pretested in Connect to PC via USB Cable and print mode, Connect to PC via Ethernet Cable and print mode, Connect to PC via Serial Cable and print mode, Connect to PC via Parallel Cable and print mode, and the worse case was Connect to PC via Ethernet Cable and print mode, so the data show was that mode only.

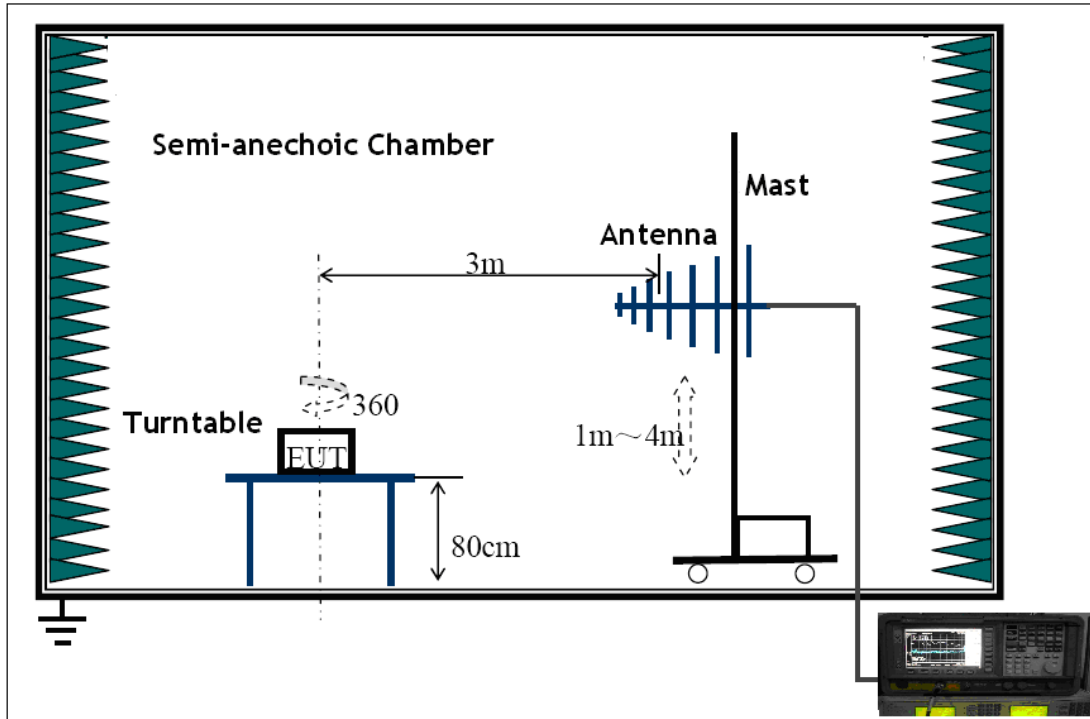
### 6.2.1 Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in the field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Waltek EMC Lab is  $\pm 5.03$ dB.

### 6.2.2 EUT Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site, using the setup accordance with the ANSI C63.4:2003, The specification used in this report was the FCC Part15 B limits.



The EUT was placed on the test table in shielding room.

### 6.2.3 Test Procedure

The radiated emissions test.

Maximizing procedure was performed on the six (6) highest emissions to ensure EUT is compliant with all installation combinations.

All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dBμV of specification limits), and are distinguished with a "**Qp**" in the data table.

The EUT was under normal mode during the final qualification test and the configuration was used to represent the worst case results.

### 6.2.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dBμV means the emission is 7dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

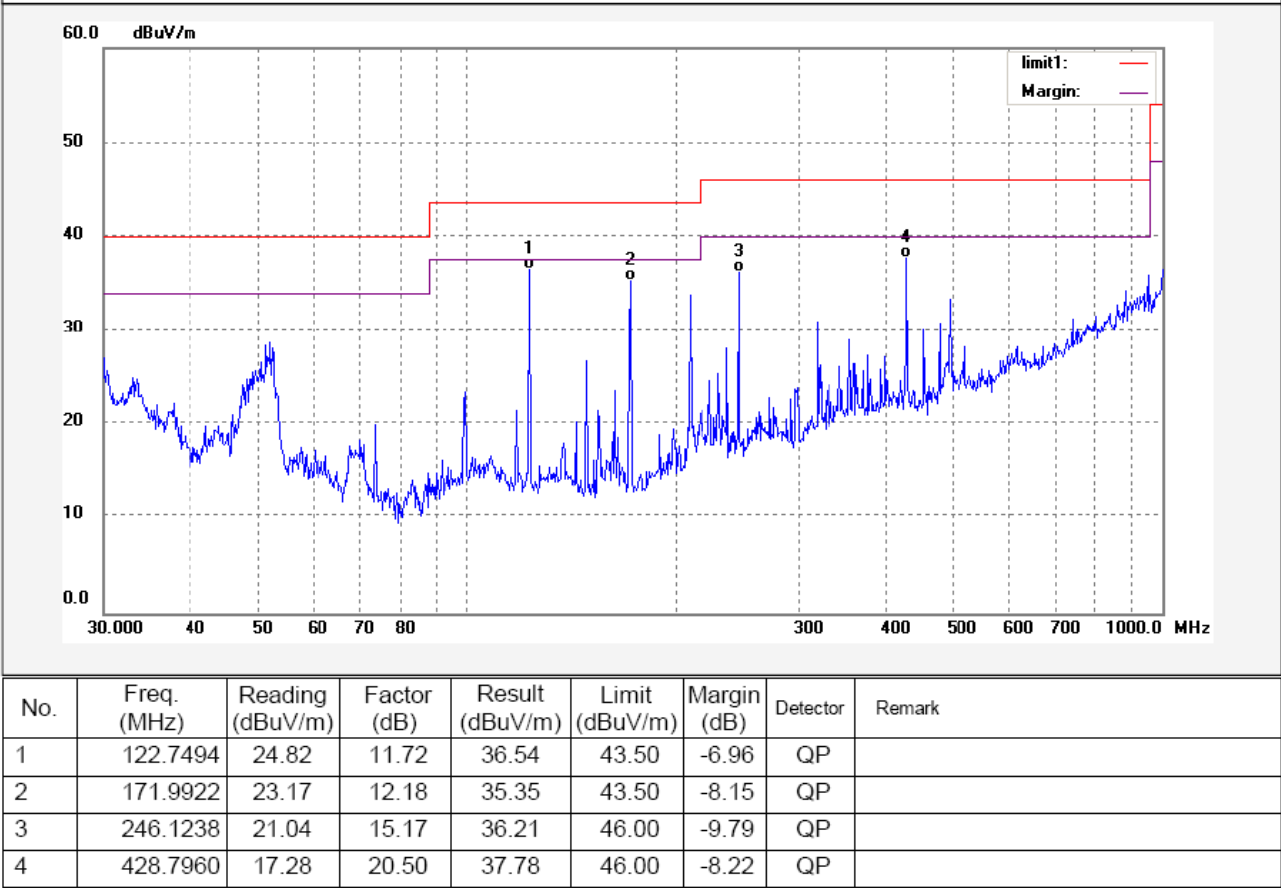
$$\text{Margin} = \text{Corr. Ampl.} - \text{Class B Limit}$$

### 6.2.5 Summary of Test Results

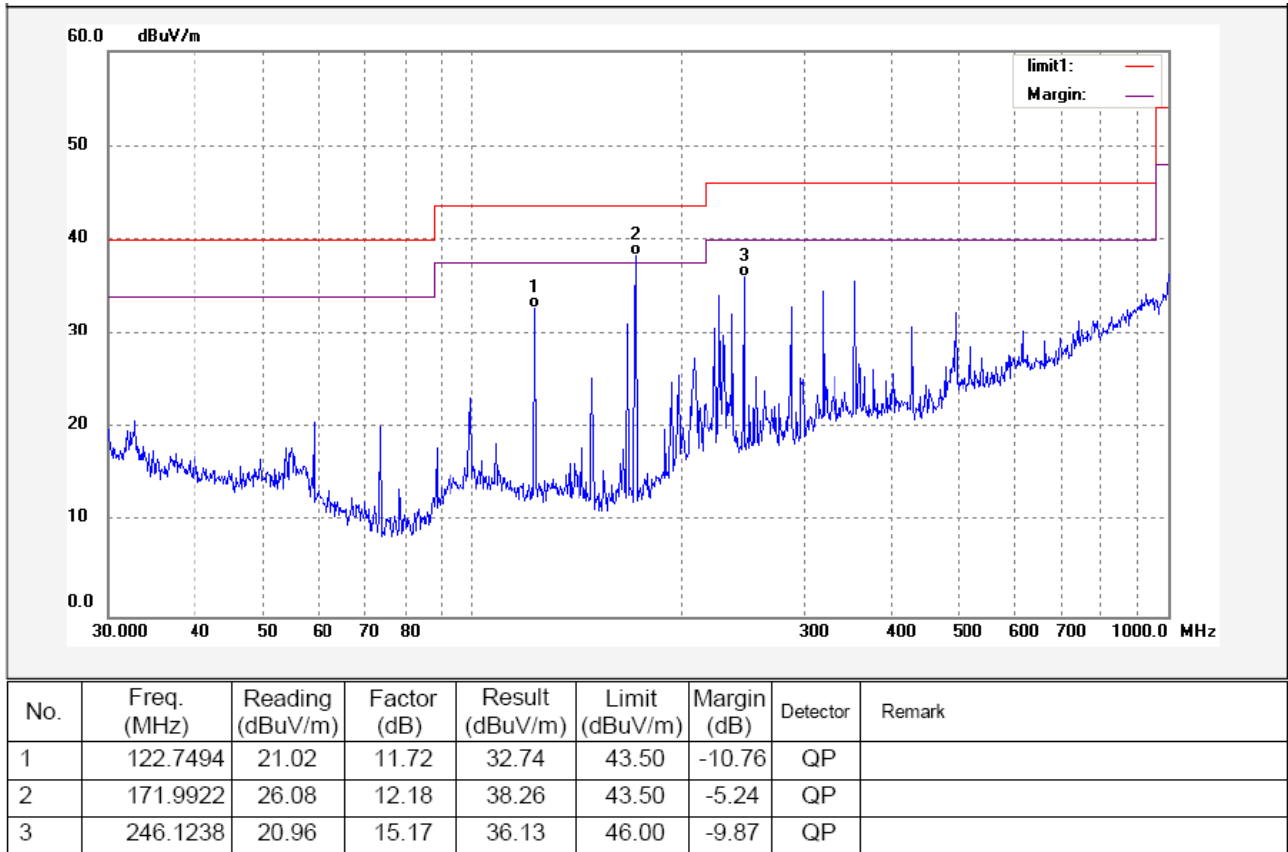
According to the data in this section, the EUT complied with the FCC Part15 B standards.

Test Mode: Connect to PC via Ethernet Cable

Antenna polarization: Vertical



Antenna polarization: Horizontal



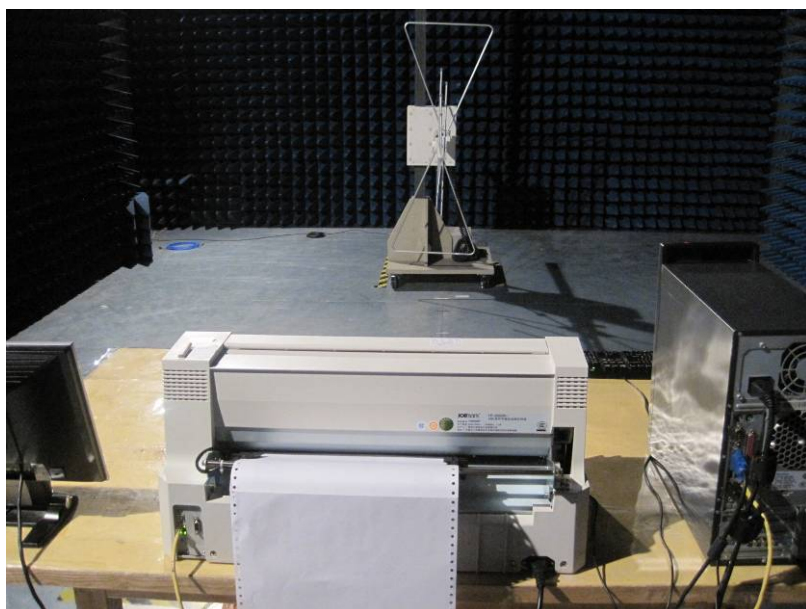


## 6.2.6 Photograph – Radiation Emission Test Setup

**Front View**



**Back View**



## 7 Photographs - Constructional Details

### 7.1 EUT – Front View



### 7.2 EUT – Back View



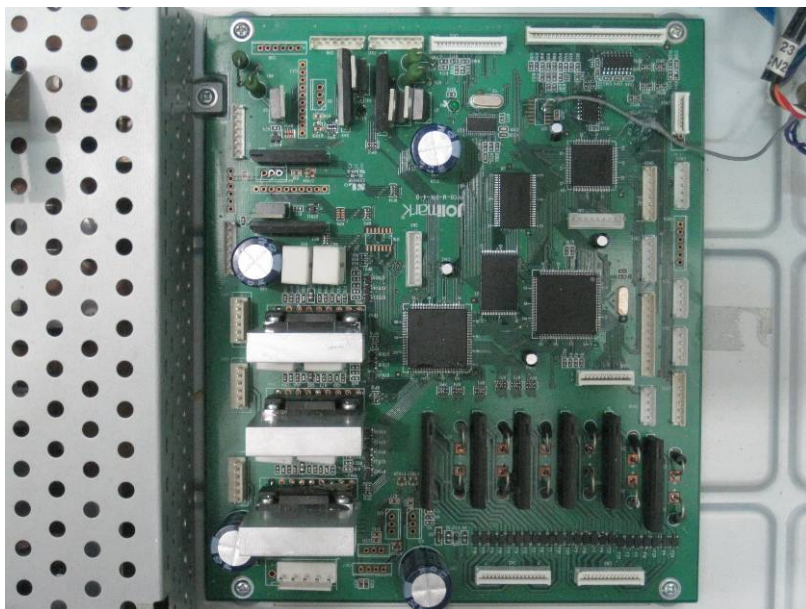
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### 7.3 EUT – Open View

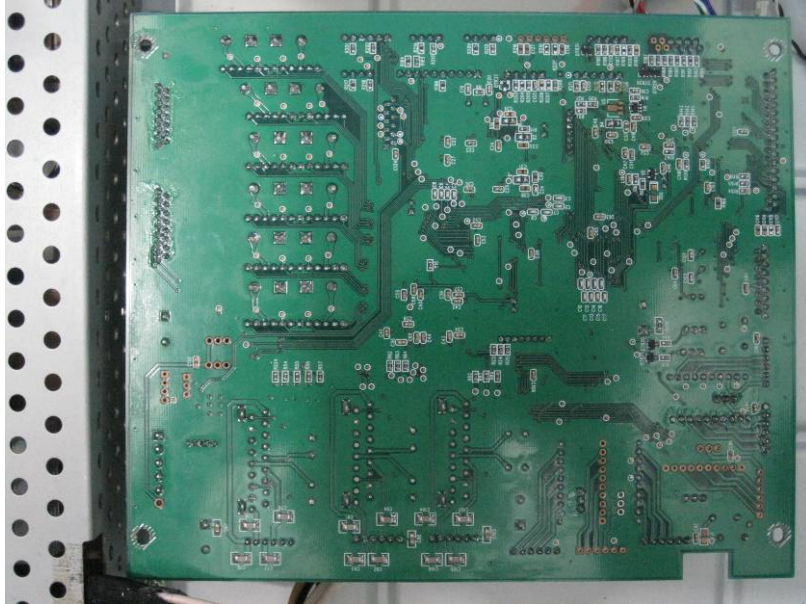


### 7.4 PCB of Mainboard – Front View

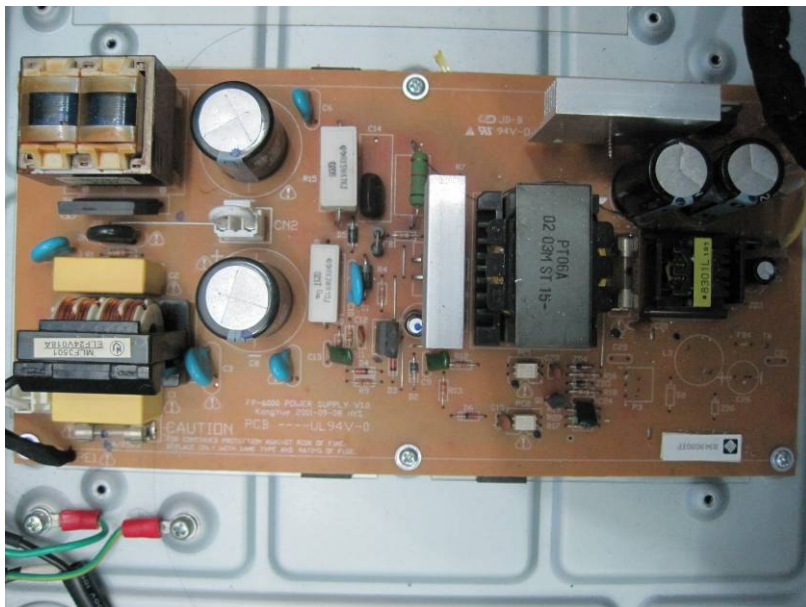




## 7.5 PCB of Mainboard – Back View



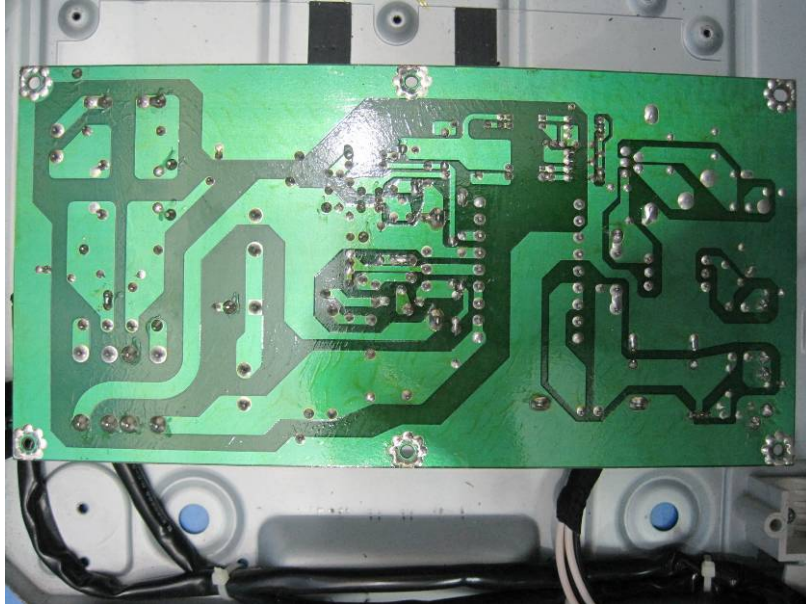
## 7.6 PCB of Power – Front View



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## 7.7 PCB of Power – Back View



## 8 FCC Label

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

The Label must not be a stick-on paper. The Label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

