

Prüfbericht-Nr.: Test Report No.:	10048870 001	Auftrags-Nr.: Order No.:	114027237	Seite 1 von 23 Page 1 of 23
Kunden-Referenz-Nr.: Client Reference No.:	N/A	Auftragsdatum: Order date:	October 3, 2014	
Auftraggeber: Client:	HiTi Digital, Inc., 9F., No.225, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City, 231, Taiwan			
Prüfgegenstand: Test item:	Printer			
Bezeichnung / Typ-Nr.: Identification / Type No.:	P750L			
Auftrags-Inhalt: Order content:	FCC Part 15C Test report			
Prüfgrundlage: Test specification:	FCC 47CFR Part 15: Subpart C Section 15.225 RSS-210 (12-2010) A2.6 NCC Low-power Radio-frequency Devices Technical Regulations LP0002(2011)			
Wareneingangsdatum: Date of receipt:	11/05/2014			
Prüfmuster-Nr.: Test sample No.:	A000129025-001			
Prüfzeitraum: Testing period:	6-Nov-2014 - 10-Nov-2014			
Ort der Prüfung: Place of testing:	EMC/RF Laboratory Taipei			
Prüflaboratorium: Testing laboratory:	TUV Rheinland Taiwan Ltd.			
Prüfergebnis*: Test result*:	Pass			
geprüft von / tested by: 		kontrolliert von / reviewed by: 		
2014-11-26 Datum Date	Ryan W. T. Chen / Project Engineer Name / Stellung Name / Position	Unterschrift Signature	2014-11-26 Datum Date	Rene Charton / Senior Project Manager Name / Stellung Name / Position
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:		Prüfmuster vollständig und unbeschädigt Test item complete and undamaged		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

TEST SUMMARY

5.1.1 ANTENNA REQUIREMENT

RESULT: Passed

5.1.2 FIELD STRENGTH OF FUNDAMENTAL

RESULT: Passed

5.1.3 FREQUENCY STABILITY

RESULT: Passed

5.1.4 99% BANDWIDTH

RESULT: Passed

5.1.5 SPURIOUS EMISSION

RESULT: Passed

5.2.1 CONDUCTED EMISSIONS LINE AND NEUTRAL

RESULT: Passed

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1. General Remarks

1.1 Complementary Materials

All attachments are integral parts of this test report. This applies especially to the following appendix:

Appendix P: Photo Documentation

(File Name: 10048870APPENDIX P)

Appendix D: Test Result of Radiated Emissions

(File Name: 10048870APPENDIX D)

Test Specifications

The following standards were applied (in bold: product standards, otherwise: basic standards).

Table 1: Applied Standard and Test Levels

Radio
FCC CFR47 Part 15: Subpart C Section 15.225 ANSI C63.4 LP0002(2011)(100年6月28日)

2. Test Sites

2.1 Test Facilities

TUV Rheinland Taiwan Ltd.

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

FCC Registration No.: 365730
IC Canada Registration No.: 9465A-1
TAF Accredited NCC Test Lab. No.:0759
TAF ISO17025 Certification effective periods: 2013-Jul-1st to 2016-Jun-30th



Testing Laboratory
0759

2.2 List of Test and Measurement Instruments

Table 2: List of Test and Measurement Equipment

Kind of Equipment	Manufacturer	Type	S/N	Calibrated until	Used for test items
EMI Test Receiver	R&S	ESR7	101062	30-Aug-15	Spurious Emission and Frequency Band Edge
Bilog Antenna	TESEQ	CBL6111D	29802	4-Jul-15	Spurious Emission and Frequency Band Edge
Spectrum Analyzer	R&S	FSV 40	100921	9-Dec-14	6dB Bandwidth, Output Power, Power Density, Cond. Spurious Emissions, Rad. Spurious Emission
Spectrum Analyzer	Agilent	N9010A	MY53470241	19-Jan-15	6dB Bandwidth, Output Power, Power Density, Cond. Spurious Emissions, Rad. Spurious Emission
Horn Antenna	ETS-Lindgren	3117	138160	10-Jan-15	Spurious Emission and Frequency Band Edge
Horn Antenna (18GHz~40GHz)	COM-POWER	AH840	101031	29-Oct-15	Spurious Emission and Frequency Band Edge
Preamplifier (30MHz -1GHz)	HP	8447F	2805A03335	22-Aug-15	Spurious Emission and Frequency Band Edge
Preamplifier (18 GHz -40 GHz)	COM-POWER	PAM-840	461257	25-Aug-15	Spurious Emission and Frequency Band Edge
Pre-Amplifier (1GHz~18GHz)	EM Electronics	EM30180	60558	3-Nov-15	Spurious Emission and Frequency Band Edge
Loop Antenna	Schwarzbeck	FMZB 1513	1513-076	21-Oct-15	Spurious Emission and Frequency Band Edge
EMI Test Receiver	R&S	ESCI7	100797	23-Dec-14	Mains Spurious Emission
LISN (1 phase)	R&S	ENV216	101243	30-May-15	Mains Spurious Emission
LISN	Rolf Heine	NNB-2/16Z	99080	25-Aug-15	Mains Spurious Emission

2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically by the manufacturer or according to manufacturer's specifications. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

The estimated combined standard uncertainty for radiated emissions and conducted emissions measurements are $\pm 3\text{dB}$.

Table 3: Emission Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	$\pm 1 \times 10^{-7}$
RF power, conducted	$\pm 1.5 \text{ dB}$
Adjacent channel power	$\pm 3 \text{ dB}$
Radiated emission of transmitter, valid up to 26 GHz	$\pm 6 \text{ dB}$
Radiated emission of receiver, valid up to 26 GHz	$\pm 6 \text{ dB}$
Temperature	$\pm 2 \text{ }^{\circ}\text{C}$
Humidity	$\pm 10 \text{ \%}$

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a Thermo transfer printer. It contains an RFID sensor to detect what kind of ink tape is loaded into the Printer
For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 Ratings and System Details

Table 4: Basic Information of EUT

Item	EUT information
Kind of Equipment	Printer
Type Designation	P750L
FCC ID	W5388D2335000T

Table 5: Technical Specification of EUT

Technical Specification	Value
Operating Frequency	13.56 MHz
Operation Voltage	115V
Extreme Voltage Range	97V~133V V
Modulation	CW

3.3 Independent Operation Modes

Basic operation modes are:

- A. Transmitting

3.4 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.5 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum emission level. The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Setup for testing: Test samples are provided with an USB interface which makes it possible to control them through a test software installed on a notebook computer.

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

Kind of Equipment	Manufacturer	Model Name	S/N
Laptop	HP	HSTNN-Q78C-3	CNF0339QBM

4.4 Countermeasures to achieve EMC Compliance

The test sample which has been tested contained the noise suppression parts as described in the Constructional Data Form or the Technical Construction File. No additional measures were employed to achieve compliance.

4.5 Test Setup Diagram

Diagram of Measurement Configuration for Radiation Test

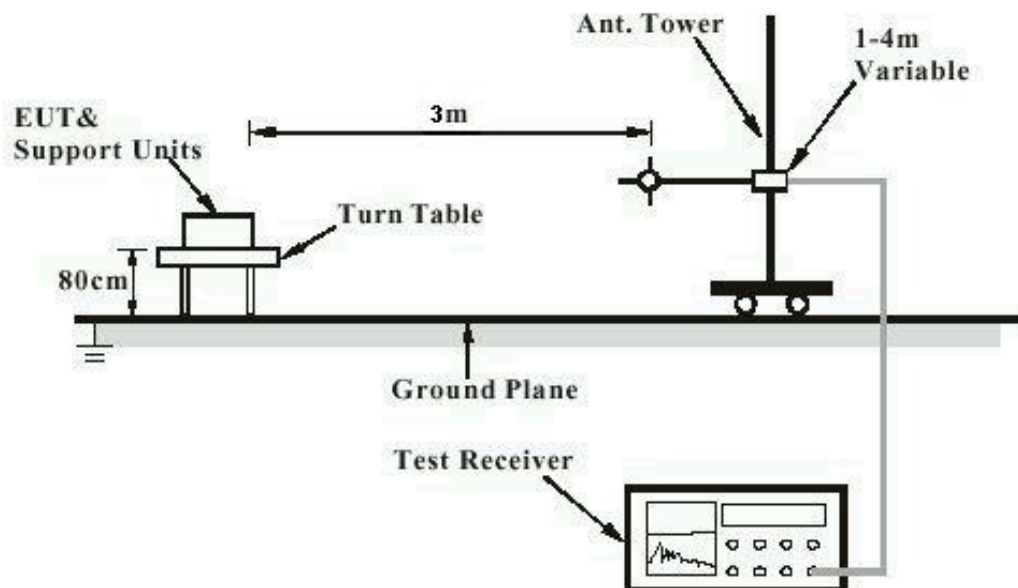
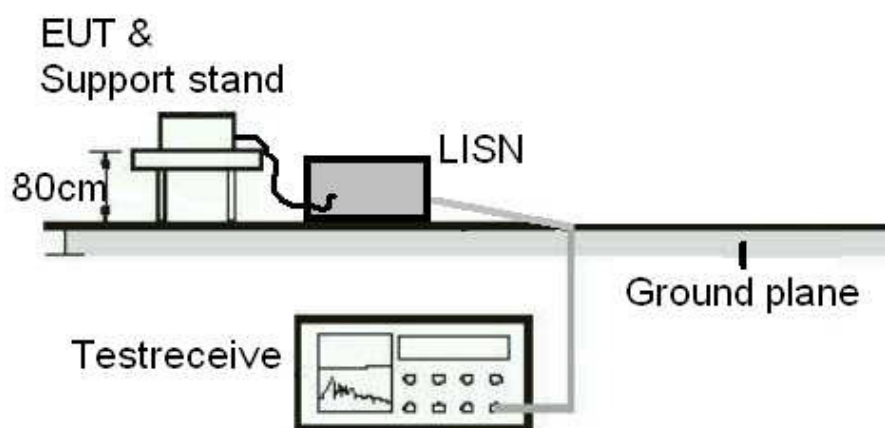


Diagram of Measurement Equipment Configuration for Mains Conduction Measurement (if applicable)

5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

RESULT:**Passed**

Standard	:	LP0002(2011): 2.2 Part 15.203 and RSS-Gen 7.1.4
Requirement	:	use of approved antennas only

The antenna is a printed PCB trace with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

Refer to EUT photo for details.

5.1.2 Field strength of fundamental

RESULT:

Passed

Test standard : LP0002(2011) 3.2
 FCC Part 15.225
 RSS-210 A2.6

Basic standard : ANSI C63.10:2009

Test setup

Test Frequency : 13.56 MHz
 Operation Mode : A

The Emission Mask for NCC LP0002 is more strict than the emission mask for FCC Part 15. 225 and RSS-210 A2.6. The device can fulfil the NCC LP0002 requirements, therefore only the emission mask for NCC LP0002 is shown in the table below.

Table 6: Test result of Field strength of fundamental and modulation sidebands

Frequency (MHz)	Test Result	Detector	Limits		Pass/Fail
	$\text{dB}\mu\text{V/m}$ @1.2m		$\text{dB}\mu\text{V/m}$ @1.2m	$\text{dB}\mu\text{V/m}$ @30m	
< 13.553	< 80	QP	85.44	29.54	Pass
13.560	< 53.94	QP	135.9	80	Pass
> 13.567	< 80	QP	85.44	29.54	Pass

Show booth FCC and NCC plot in appendix

For details refer to Appendix D.

5.1.3 Frequency Stability

RESULT:
Passed

Test standard : LP0002(2011) 3.2.1(3)
 FCC Part 15. 225(e)
 RSS-210 A2.6

Basic standard : ANSI C63.10:2009
 Kind of test site : Shielded room

Test setup

Test Frequency : 13.56 MHz
 Operation Mode : A

Relative humidity : 50-65 %
 Atmospheric pressure : 100-103 kPa

Table 7: Test result of Frequency Stability

Fundamental frequency (MHz)	Temperature (°C)	Voltage	Measurement frequency (MHz)	Frequency Error (ppm)	Limit ±0.01%
13.56	-20	Normal	13.559795	-15.12	±100ppm
	-10	Normal	13.559823	-13.05	
	0	Normal	13.559831	-12.46	
	10	Normal	13.559824	-12.98	
	20	85%	13.559789	-15.56	
	20	Normal	13.559799	-14.82	
	20	115%	13.559792	-15.34	
	30	Normal	13.559766	-17.26	
	40	Normal	13.559740	-19.17	
	50	Normal	13.559714	-21.09	

5.1.4 Spurious Emission

RESULT:**Passed**

Test standard : LP0002(2011) 3.2.1(2)
FCC part 15.209
FCC part 15.225
RSS-210 A2.6

Basic standard : ANSI C63.10: 2009
Limits : The field strength of any emissions appearing outside
of the 13.110–14.010 MHz band shall not exceed the
general radiated emission limits in § 15.209.
RSS-210:
30 microvolts/m (29.5 dB μ V/m) at 30 m, outside the
band 13.110-14.010 MHz.

Kind of test site : 3m Semi-Anechoic Chamber

Test setup

Operation mode : A

Remark: Testing was carried out within frequency range 30MHz to the tenth harmonic.

For details refer to Appendix D.

5.2 Mains Conducted Emissions

5.2.1 Conducted Emissions Line and Neutral

RESULT:**Passed**

Test standard	:	LP0002: 2.3 FCC Part 15.207 FCC Part 15.107 RSS-Gen
Limits	:	Mains Conducted emissions as defined in LP0002: 2.3 , must comply with the mains conducted emission limits specified in LP0002: 2.3
Kind of test site	:	Shielded Room

Test setup

Operation mode : A

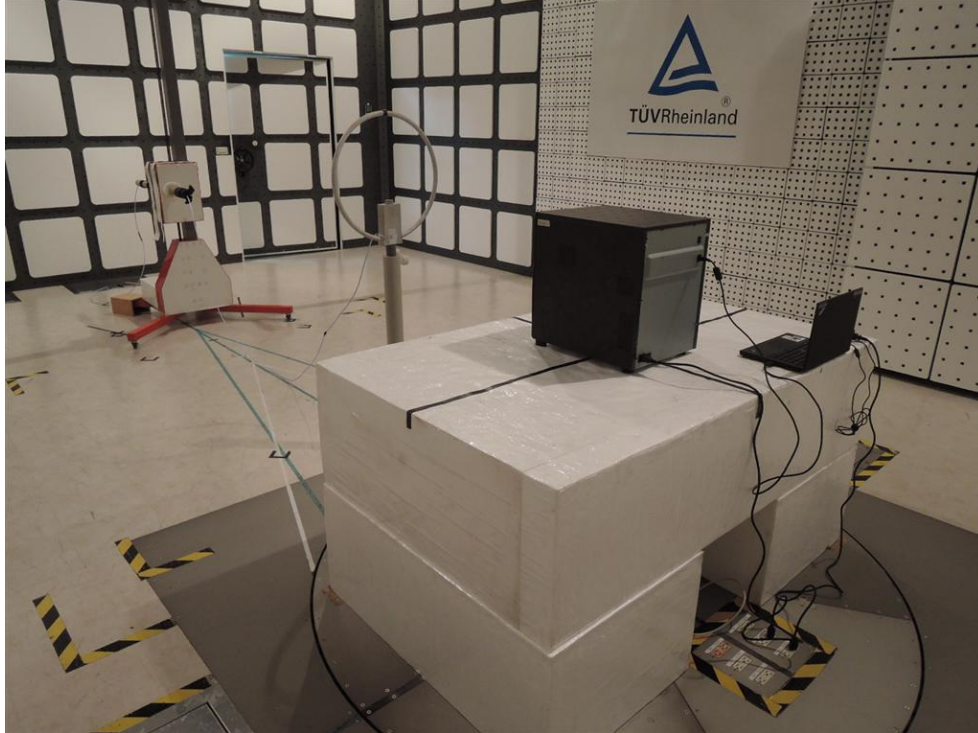
Remark: For details refer to Appendix D.

6. Photographs of the Test Set-Up

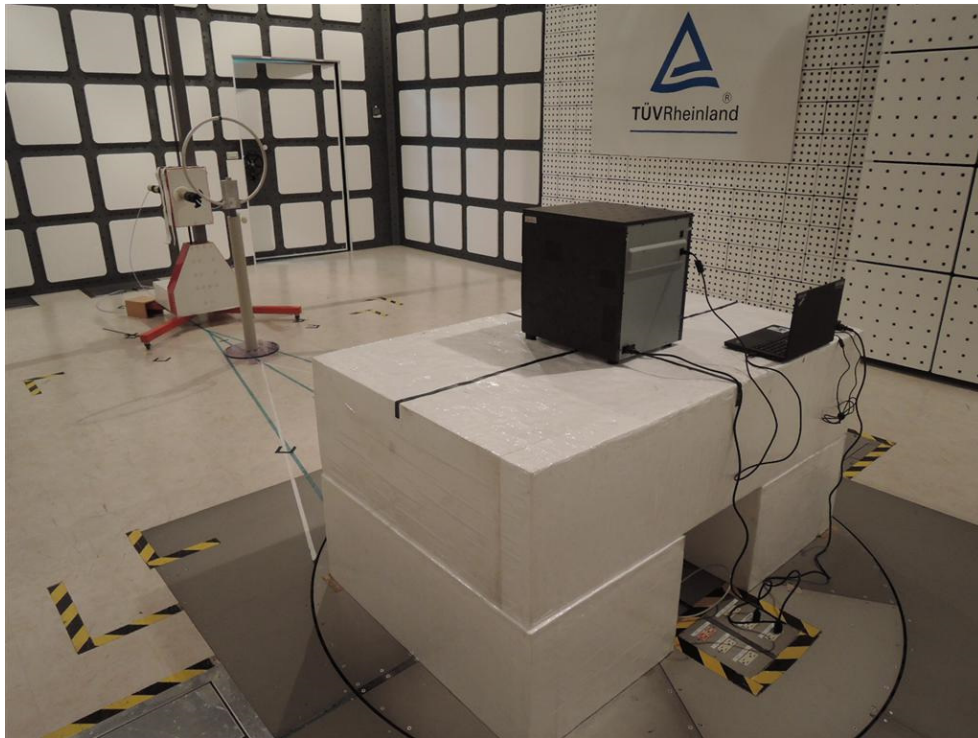
Photograph 1: Set-up for Radiated Emissions (Front View)



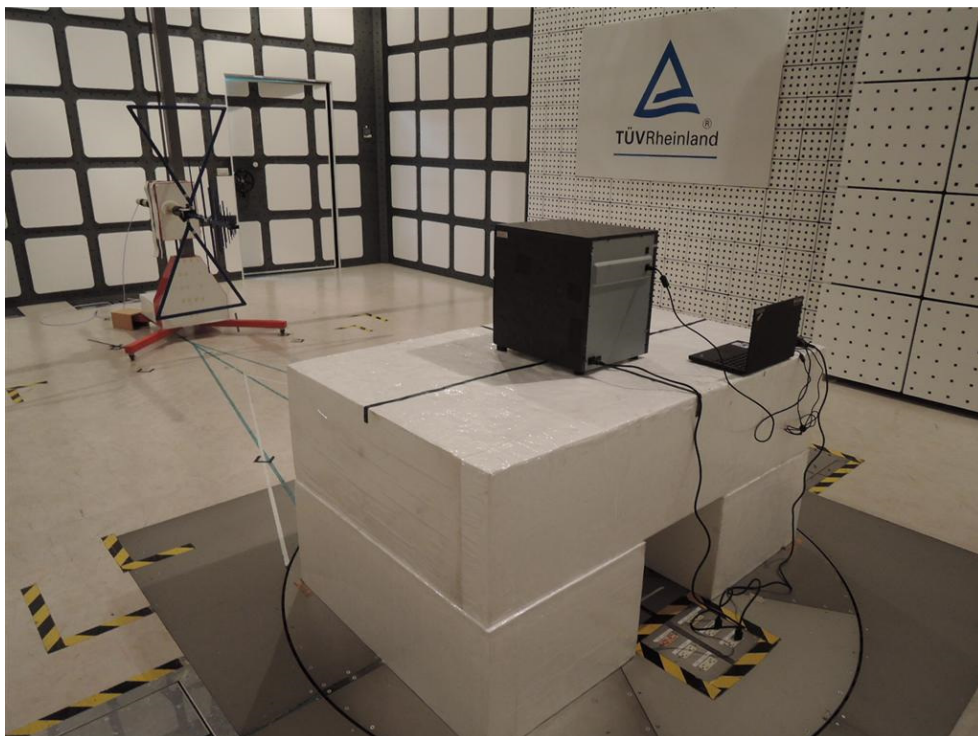
Photograph 2: Set-up for Fundamental Emissions (Back View)



Photograph 3: Set-up for Spurious Emissions (Back View 1)



Photograph 4: Set-up for Spurious Emissions (Back View 2)



Photograph 5: Set-up for for Mains Conducted testing Back



Photograph 6: Set-up for for Mains Conducted testing Front



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