

TEST REPORT
On Behalf of
SHANGHAI UTT TECHNOLOGIES CO., LTD.

Router
Model No.: HiPER 811, HiPER 841, HiPER 2512NB, UTT 2512

Prepared for : SHANGHAI UTT TECHNOLOGIES CO., LTD.
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Report Number : E0908020F
Date of Test : August 06, 2009 to August 24, 2009
Date of Report : August 26, 2009

TABLE OF CONTENTS

Description	Page
1. GENERAL INFORMATION	4
1.1. Description of Device (EUT).....	4
1.2. Description of Support Device	5
1.3. Test Facility	6
1.4. Measurement Uncertainty	6
2. POWER LINE CONDUCTED MEASUREMENT	7
2.1. Test Equipment	7
2.2. Block Diagram of Test Setup.....	7
2.3. Power Line Conducted Emission Measurement Limits(Class B).....	7
2.4. Configuration of EUT on Measurement	8
2.5. Operating Condition of EUT	8
2.6. Test Procedure	8
2.7. Power Line Conducted Emission Measurement Results	8
3. RADIATED EMISSION MEASUREMENT.....	10
3.1. Test Equipment	10
3.2. Block Diagram of Test Setup.....	10
3.3. Radiated Emission Limit (Class B).....	11
3.4. EUT Configuration on Measurement.....	11
3.5. Operating Condition of EUT	11
3.6. Test Procedure	11
3.7. Radiated Emission Measurement Result.....	12
4. PHOTOGRAPH.....	14
4.1. Photos of Conducted Emission Measurement	14
4.2. Photo of Radiated Measurement.....	15

TEST REPORT DESCRIPTION

Applicant : SHANGHAI UTT TECHNOLOGIES CO., LTD.
Manufacturer SHANGHAI UTT TECHNOLOGIES CO., LTD.
EUT Router
Model No. : HiPER 811, HiPER 841, HiPER 2512NB, UTT 2512
Input Voltage : AC100-240V, 50-60Hz, 0.6A Max

Measurement Procedure Used:

FCC Rules and Regulations Part 15 Subpart B Class B August 2008 & FCC / ANSI C63.4-2003

The device described above is tested by SHENZHEN EMTEK CO., LTD. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart Class B limits both radiated and conducted emissions. The measurement results are contained in this test report and SHENZHEN EMTEK CO., LTD. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the Equipment Under Test (EUT) is to be technically compliant with the FCC requirements.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of SHENZHEN EMTEK CO., LTD.

Date of Test: August 06, 2009 to August 24, 2009

Prepared by:



(Engineer)

Reviewer:



(Quality Manager)

Approved & Authorized Signer:



(Manager)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT : Router

Model Number : HiPER 811, HiPER 841, HiPER 2512NB, UTT 2512
(Note: The samples are identical in circuitous, internal structure, functions and fabrication process; they are different in model number, surface color. We prepare HiPER 811 for test.)

Test Voltage AC 120V/60Hz

Trade Mark :  艾泰科技
UTT Technologies

Applicant : SHANGHAI UTT TECHNOLOGIES CO., LTD.

Address : Room 301, No.9 Building, No.518, Xinzhuan Rd., Songjiang District, Shanghai, China

Manufacturer : SHANGHAI UTT TECHNOLOGIES CO., LTD.

Address : Room 301, No.9 Building, No.518, Xinzhuan Rd., Songjiang District, Shanghai, China

Date of receiver : August 06, 2009

Date of Test : August 06, 2009 to August 24, 2009

1.2. Description of Support Device

PC	:	Manufacturer: HP M/N: Vectra VL420 MT S/N: CN15100363 CE, FCC: DOC
LCD Monitor		Manufacturer: BIGTIGE M/N: 1582SL S/N: CH52682S CE, FCC: DOC
Mouse	:	Manufacturer: HP M/N: M-S48a S/N: LZE14823966AW CE, FCC: DOC
Keyboard		Manufacturer: HP M/N: SK-2503C S/N: C0111141547 CE, FCC: DOC
Printer	:	Manufacturer: HP M/N: C89520 S/N: CN25S182N6 CE, FCC: DOC

1.3. Test Facility

Site Description

EMC Lab.

: Accredited by CNAS, 2005.11.02

The certificate is valid until 2010.11

The Laboratory has been assessed and proved to be in compliance with CNAS-CL01: 2006(identical to ISO/IEC17025:2005)

The Certificate Registration Number is L2291.

Accredited by TUV Rheinland Shenzhen, 2008.3

The Laboratory has been assessed according to the requirements ISO/IEC 17025

Accredited by FCC, March 18, 2008

The Certificate Registration Number is 709623.

Accredited by Industry Canada, May 24, 2008

The Certificate Registration Number is 46405-4480.

Name of Firm

: SHENZHEN EMTEK CO., LTD

Site Location

: Bldg 69, Majialong Industry Zone,
Nanshan District, Shenzhen, Guangdong, China

1.4. Measurement Uncertainty

Conducted Emission Uncertainty : $\pm 2.8\text{dB}$

Radiated Emission Uncertainty : $\pm 3.3\text{dB}$

2. POWER LINE CONDUCTED MEASUREMENT

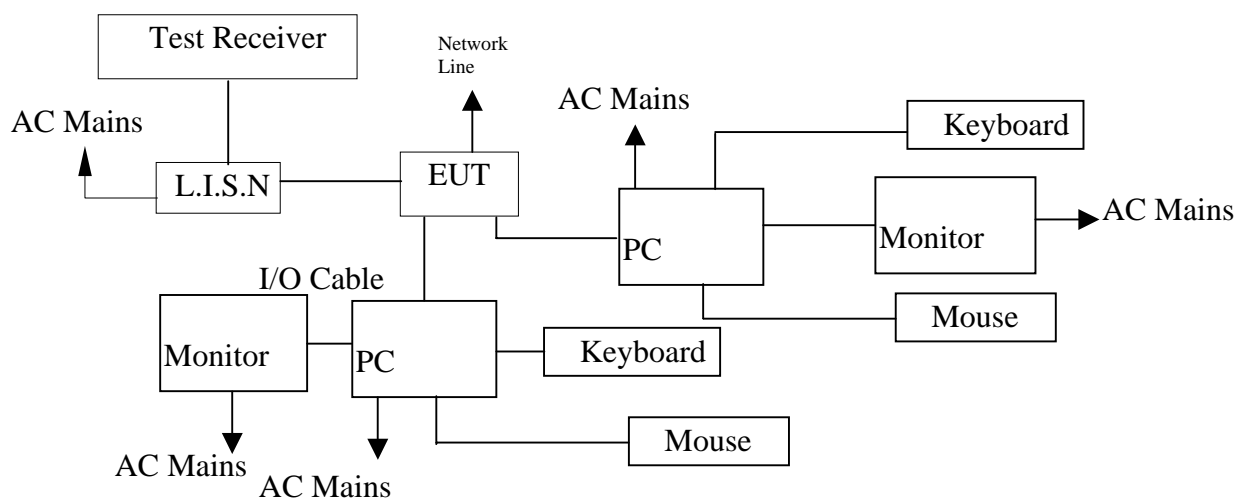
2.1. Test Equipment

The following test equipments are used during the power line conducted measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	8289851018	May 29, 2009	1 Year
2.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	834549/005	May 29, 2009	1 Year
3.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100006	May 29, 2009	1 Year
4.	RF Cable	FUJIKURA	RG-55/U	LISN Cable	May 29, 2009	1 Year

2.2. Block Diagram of Test Setup

2.2.1 Block diagram of test setup



(EUT: Router)

2.3. Power Line Conducted Emission Measurement Limits(Class B)

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

2.4.Configuration of EUT on Measurement

The following equipments are installed on Power Line Conducted Emission Measurement to meet the commission requirement and operating regulations in a manner which tends to maximize its emission characteristics in a normal application.

EUT : Router
Model Number : HiPER 811

2.5.Operating Condition of EUT

- 2.5.1. Setup the EUT and simulator as shown as Section 2.2.
- 2.5.2. Turn on the power of all equipment.
- 2.5.3. Let the EUT work in test mode (Ping(connect to PC)) and measure it.

2.6.Test Procedure

The EUT system is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to FCC/ANSI C63.4-2003 on Conducted Emission Measurement.

The bandwidth of test receiver (R & S ESCS30) is set at 9KHz.

The frequency range from 150KHz to 30MHz is checked.

The test result is reported on Section 2.7.

2.7.Power Line Conducted Emission Measurement Results

PASS.

The frequency range from 150KHz to 30 MHz is investigated. Please refer to the following page.

Conduction Emission Data

Frequency MHz	Phase	Emission Level dB μ V/m		Limit 3m dB μ V/m		Margin dB	
		QP	AV	QP	AV	QP	AV
0.165	L1	60.01	51.41	65.21	55.21	-5.11	-3.80
0.245	L1	52.70	45.95	61.92	51.92	-9.22	-5.97
0.325	L1	45.79	37.44	59.58	49.58	-13.79	-12.14
0.490	L1	40.45	35.01	56.17	46.17	-15.72	-11.16
0.735	L1	38.41	36.41	56.00	46.00	-17.59	-9.59
2.530	L1	40.81	34.90	56.00	46.00	-15.19	-11.10
0.165	N	60.00	52.15	65.21	55.21	-5.21	-3.06
0.245	N	52.60	46.18	61.92	51.92	-9.32	-5.74
0.325	N	45.27	37.07	59.58	49.58	-14.31	-12.51
0.735	N	38.85	35.99	56.00	46.00	-17.15	-10.01
1.145	N	38.30	35.71	56.00	46.00	-17.70	-10.29
2.460	N	39.67	33.02	56.00	46.00	-16.33	-12.98

3. RADIATED EMISSION MEASUREMENT

3.1. Test Equipment

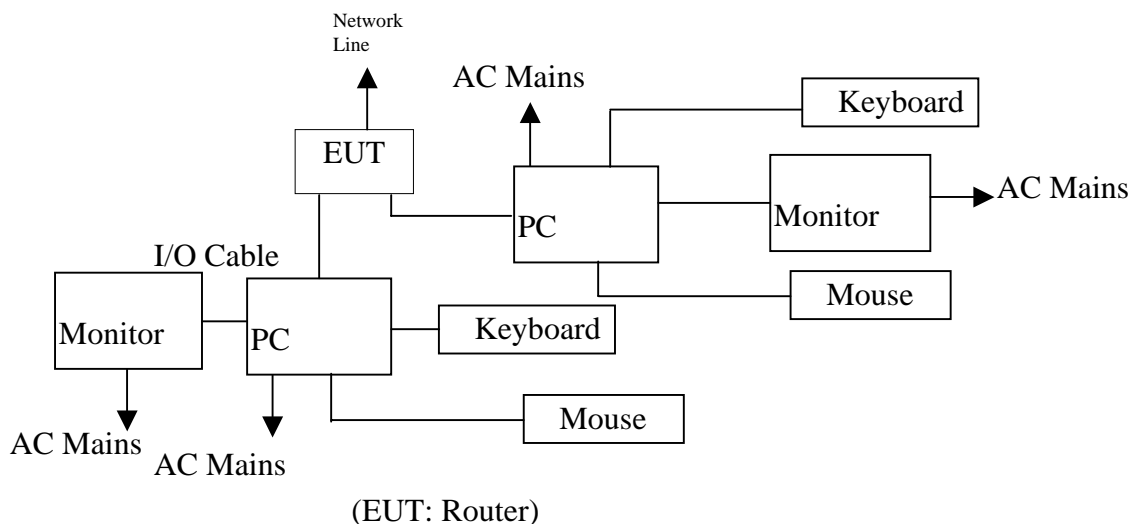
The following test equipments are used during the radiated emission measurement:

3.1.1. For Anechoic Chamber

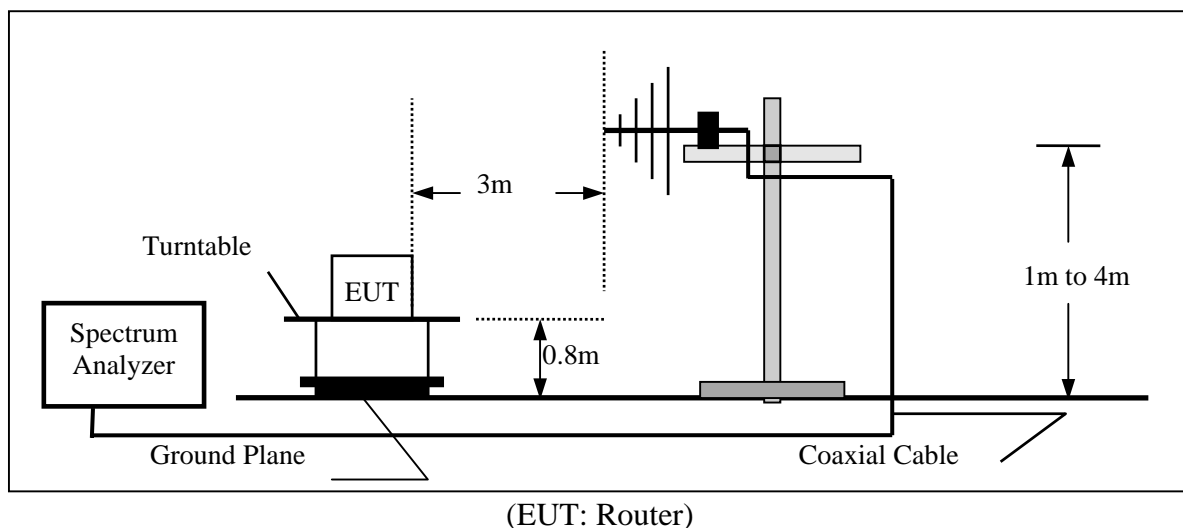
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	EMI Test Receiver	Rohde & Schwarz	ESU	1302.6005.26	May 29, 2009	1 Year
2	Pre-Amplifier	HP	8447D	2944A07999	May 29, 2009	1 Year
3	Bilog Antenna	Schwarz beck	VULB9163	142	May 29, 2009	1 Year
4	Loop Antenna	ARA	PLA-1030/B	1029	May 29, 2009	1 Year
5	Horn Antenna	Schwarzbeck	BBHA 9170	BBHA9170399	May 29, 2009	1 Year
6	Horn Antenna	Schwarzbeck	BBHA 9120	D143	May 29, 2009	1 Year

3.2. Block Diagram of Test Setup

3.2.1. Block diagram of connection between the EUT and simulators



3.2.2. Anechoic Chamber Test Setup Diagram



3.3. Radiated Emission Limit (Class B)

FREQUENCY MHz	DISTANCE Meters	FIELD STRENGTHS LIMIT	
		$\mu\text{V/m}$	$\text{dB}(\mu\text{V})/\text{m}$
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
960 ~ 1000	3	500	54.0
Above 1GHz	3	74(Peak)	
Above 1GHz	3	54(Average)	

- Remark :
- (1) Emission level $(\text{dB})\mu\text{V} = 20 \log \text{Emission level } \mu\text{V/m}$
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

3.4. EUT Configuration on Measurement

The following equipment are installed on Radiated Emission Measurement to meet the commission requirements and operating regulations in a manner which tends to maximize its emission characteristics in normal application.

Router (EUT)

Model Number : HiPER 811
Serial Number : N/A

3.5. Operating Condition of EUT

1. Setup the EUT as shown in Section 3.2.
2. Let the EUT work in test mode (Ping(connect to PC)) and measure it.

3.6. Test Procedure

EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated bilog antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to FCC/ANSI C63.4-2003 on radiated emission measurement.

The bandwidth of the EMI test receiver (R&S ESCS30) is set at 120KHz.

The frequency range from 30MHz to 6000MHz is checked.

3.7. Radiated Emission Measurement Result

PASS.

The frequency range from 30MHz to 6000MHz is investigated.

Please reference to the following page.

Radiation Emission Data of 30MHz~1GHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dB μ V)	Limit 3m (dB μ V/m)	Margin (dB)	Note
42.44	V	35.74	40.00	-4.26	QP
75.08	V	31.81	40.00	-8.19	QP
266.28	V	29.76	46.00	-16.24	QP
399.97	V	28.04	46.00	-17.96	QP
499.46	V	28.67	46.00	-17.33	QP
699.98	V	31.05	46.00	-14.95	QP
75.08	H	27.63	40.00	-12.37	QP
230.53	H	29.17	46.00	-16.83	QP
266.28	H	33.11	46.00	-12.89	QP
432.61	H	29.86	46.00	-16.14	QP
499.46	H	29.45	46.00	-16.55	QP
699.98	H	31.80	46.00	-14.20	QP

Radiated Data of Above 1GHz

Frequency MHz	Ant.Pol. H/V	Emission Level dB μ V/m		Limit 3m dB μ V/m		Margin dB	
		Peak	AV	Peak	AV	Peak	AV
1053.89	H	47.37	38.28	74	54	-26.63	-15.72
1175.65	H	44.96	37.06	74	54	-29.04	-16.94
1306.72	H	45.80	37.71	74	54	-28.20	-16.29
1492.15	H	46.81	38.02	74	54	-27.19	-15.98
1620.37	H	43.15	35.83	74	54	-30.85	-18.17
1695.35	H	43.07	35.16	74	54	-30.93	-18.84
1053.27	V	46.85	38.26	74	54	-27.15	-15.74
1178.30	V	44.38	36.81	74	54	-29.62	-17.19
1310.55	V	45.03	37.2	74	54	-28.97	-16.8
1498.75	V	46.50	37.94	74	54	-27.50	-16.06
1617.58	V	44.02	36.17	74	54	-29.98	-17.83
1703.04	V	42.05	34.62	74	54	-31.95	-19.38

Note: Emission Level= Reading Level+ Probe Factor +Cable Loss

4. PHOTOGRAPH

4.1.Photos of Conducted Emission Measurement



4.2.Photo of Radiated Measurement

