AUDIX Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Road, Shenzhen Science & Technology Park,
Nanshan District, Shenzhen, Guangdong, China

Tel : 0755-26639495~6-7
Fax : 0755-26632877

Technical Compliance

No. ACS-E12307-1

The following product has been tested by us with the listed standards and found in compliance with the council EMC directive 2014/30/EU. It is demonstrative for the compliance with this EMC Directive.

Submitter : TP-LINK TECHNOLOGIES CO., LTD.

Building 24 (floors 1, 3, 4, 5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Model Number	EUT
TG-3468	Gigabit PCI Express Network Adapter

Test Standards :		
EN 55022: 2010+AC:2011 (Class B)	Limits and methods of measurement of radio disturbance characteristics of information technology equipment	
EN 61000-3-2:2014	Electromagnetic Compatibility(EMC) Part 3-2:Limits-Limits for harmonic current emissions(equipment input current ≦16A per phase)	
EN 61000-3-3:2013	Electromagnetic Compatibility(EMC) Part 3-3:Limits-Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≦16A per phase and not subject to conditional connection	
EN 55024: 2010+A1:2015	Information technology equipment-Immunity characteristics limits and methods of measurement	
	IEC 61000-4-2: 2008	Electrostatic discharge
	IEC 61000-4-3: 2010	RF Field Strength susceptibility
	IEC 61000-4-4: 2012	Electrical Fast transients
	IEC 61000-4-5: 2014	Surge
	IEC 61000-4-6: 2013	Conducted Susceptibility
	IEC 61000-4-8: 2009	Magnetic field immunity
	IEC 61000-4-11: 2004	Dips / Voltage Interruption Variation

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Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
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Signature: David Jin

CE

David Jin
Manager
Date：Aug.09,2016

The technical compliance is based on a single evaluation of one sample of above mentioned product. It does not imply an assessment of the whole production and does not permit the use of the test lab. Logo

EMC TEST REPORT

For

TP-LINK TECHNOLOGIES CO., LTD.

Model Number	EUT
TG-3468	Gigabit PCI Express Network Adapter

Prepared for :TP-LINK TECHNOLOGIES CO., LTD.
Building 24 (floors 1, 3 ,4 ,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Prepared By :Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Road,
Shenzhen Science & Industrial Park,
Nanshan District, Shenzhen, Guangdong, China

Tel: (0755) 26639496

Report Number : ACS-E12307
Date of Test : May.15~24, 2012&Jul.26, 2016
Date of Report : May.30, 2012&Jul.23, 2016

TABLE OF CONTENT

TEST REPORT DECLARATION

Applicant : TP-LINK TECHNOLOGIES CO., LTD.

Manufacturer : TP-LINK TECHNOLOGIES CO., LTD.

(A) EUT & Model No. :

Model Number	EUT
TG-3468	Gigabit PCI Express Network Adapter

(B) Serial No. : N/A

(C) Power Supply : DC 3.3V

(D) Test Voltage : DC 3.3V Via PC Input AC 230V/50Hz

Test Procedure Used:

EN 55022: 2010+AC:2011 (Class B),
EN 61000-3-2:2014, EN 61000-3-3:2013,
EN 55024: 2010+A1:2015,
(IEC 61000-4-2: 2008, IEC 61000-4-3: 2010,
IEC 61000-4-4: 2012, IEC 61000-4-5: 2014,
IEC 61000-4-6: 2013, IEC 61000-4-8: 2009, IEC 61000-4-11: 2004)

The device described above is tested by Audix Technology (Shenzhen) Co., Ltd. to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The test results are contained in this test report and Audix Technology (Shenzhen) Co., Ltd. is assumed full responsibility for the accuracy and completeness of test. Also, this report shows that the EUT is technically compliant with the requirements of EN 55022, EN 61000-3-2, EN 61000-3-3 and EN 55024.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Audix Technology (Shenzhen) Co., Ltd.

This report replace of the original report ACS-E12307.

Date of Test : May.15~24, 2012 &Jul.26,2016 Report of date: Aug.09,2016

Prepared by : April Tseng / Assistant Reviewed by : Sworddance Wu /Assistant Manager

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Audix Technology (Shenzhen) Co., Ltd.
EMC 部門報告專用章
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Approved & Authorized Signer : Signature: David Jin / Manager

1. SUMMARY OF STANDARDS AND RESULTS

1.1. Description of Standards and Results

The EUT has been tested according to the applicable standards as referenced below.

EMISSION			
Description of Test Item	**Standard**	**Results**	**Remark**
Conducted disturbance at mains terminals	EN 55022: 2010+AC:2011	PASS	Meets Class B Minimum passing margin is 6.08dB at 9.223MHz
Conducted disturbance at telecommunication port	EN 55022: 2010+AC:2011	PASS	Meets Class B Minimum passing margin is 21.13dB at 15.635MHz
Radiated disturbance (30-1000MHz)	EN 55022: 2010+AC:2011	PASS	Meets Class B Minimum passing margin is 6.24dB at 377.260MHz
Radiated disturbance (1-6GHz)	EN 55022: 2010+AC:2011	N/A	N/A
Harmonic current emissions	EN 61000-3-2:2014	PASS	Meets the Class D requirement
Voltage fluctuations & flicker	EN 61000-3-3:2013	PASS	Meets the requirement

IMMUNITY (EN 55024: 2010+A1:2015)				
Description of Test Item	**Basic Standard**	**Performance Criteria**	**Results**	**Results**
Electrostatic discharge (ESD)	IEC 61000-4-2: 2008	PASS	B	A&B
Radio-frequency, Continuous radiated disturbance	IEC 61000-4-3:2010	PASS	A	A
Electrical fast transient (EFT)	IEC 61000-4-4:2012	PASS	B	B
Surge (Input ac. power ports)	IEC 61000-4-5: 2014	PASS	B	A
Surge(Telecommunication port)		PASS	B	A
Radio-frequency, Continuous conducted disturbance	IEC 61000-4-6: 2013	PASS	A	A
Power frequency magnetic field	IEC 61000-4-8: 2009	PASS	A	A
Voltage dips, >95% reduction	IEC 61000-4-11: 2004	PASS	B	A
Voltage dips, 30% reduction		PASS	C	A
Voltage interruptions		PASS	C	B
N/A is an abbreviation for Not Applicable.				

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

Model Number & EUT :

Model Number	EUT
TG-3468	Gigabit PCI Express Network Adapter

Applicant : TP-LINK TECHNOLOGIES CO., LTD.
Building 24 (floors 1, 3 ,4 ,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Manufacturer : TP-LINK TECHNOLOGIES CO., LTD.
Building 24 (floors 1, 3 ,4 ,5) and 28 (floors1-4) Central Science and Technology Park, Shennan Rd, Nanshan, Shenzhen, China

Max. Work Frequency 100MHz

Date of Test : May.15~24, 2012& Jul.26, 2016

Date of Receipt : May.14, 2012& Jul.23, 2016

Sample Type : Prototype production

2.2. Tested Supporting System Details

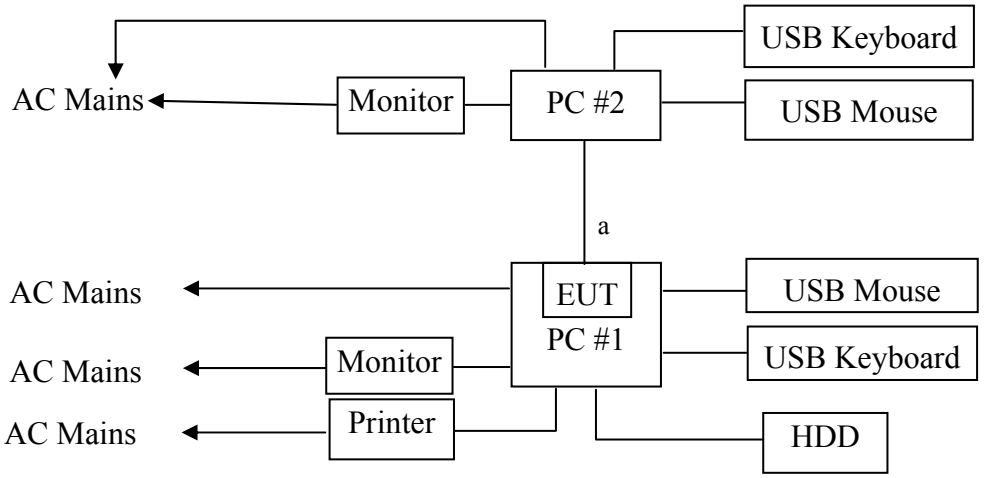
No.	Description	ACS No.	Manufacturer	Model	Serial Number
1	Personal Computer	Test PC M	DELL	Studio 540	224XK2X
		Power Cord: Unshielded, Detachable, 1.8m Display Card: HD3450 (DVI+VGA+HDMI)			
2.	Monitor	ACS-EMC-LM05R	DELL	2407WFPb	CN-0YY528-46633-764-1TCS
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m (with two cores) DVI Cable: Shielded, Detachable, 2.0m (with two cores)			
3	USB Keyboard	ACS-EMC- K01R	DELL	SK-8115	CN-ODJ313-71616-711-0J73
		USB Cable: shielded, Undetectable, 2.0m			
4	Printer	ACS-EMC-PT04	HP	C9079A	N/A
		USB Cable: Shielded, Detachable, 1.8m Power Cord: Unshielded, Detachable, 1.8m			
5	USB Mouse	ACS-EMC-M01R	DELL	M056UO	512022645
		USB Cable: shielded, Undetectable, 1.8m			
6	HDD	ACS-EMC-HDD01	Terasys	F12-UF	A0100215-5390031
		USB Cable: Shielded, Detachable, 1.8m			
7	LAN Cable	(a) Unshielded, Detachable 15m			

【PC system which transmitting #1】

No.	Description	ACS No.	Manufacturer	Model	Serial Number
1	Personal Computer	Test PC E	HP	HP Pavilion W1000	THT504101L
		Power Cord: Unshielded, Detachable, 1.8m			
2	USB Keyboard	ACS-EMC- K02R	DELL	SK-8115	CN-ORH656-65 890-686-007J
		USB Cable: shielded, Undetectable, 2.0m			
3	USB Mouse	ACS-EMC-M09R	FUJITSU	M-U0002-FSC1	S26381-K426-V 102
		USB Cable: shielded, Undetectable, 2.0m			
4	Monitor	ACS-EMC-LM02R	DELL	1907FPt	CN-009759-716 18-6CG-BDWW
		Power Cord: Unshielded, Detachable, 1.8m VGA Cable: Shielded, Detachable, 2.0m (with two cores)			

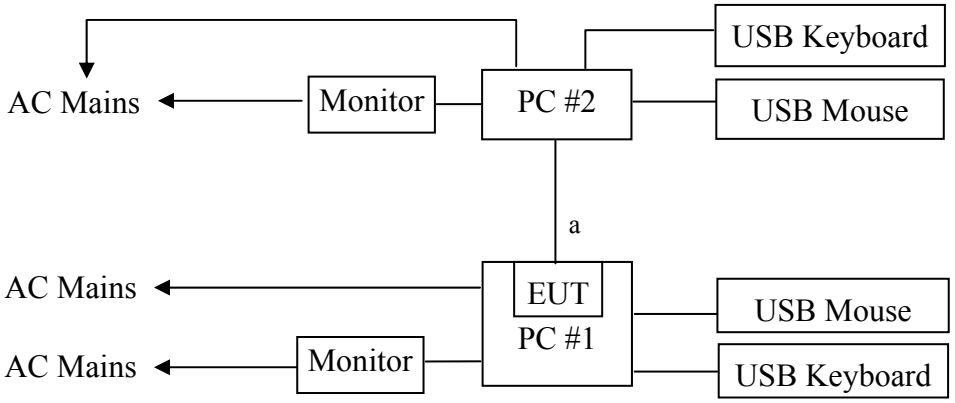
2.3. Block Diagram of Test Setup

For EMI Tests



a: LAN Cable 15m

For EMS Tests



a: LAN Cable 15m

(EUT: Gigabit PCI Express Network Adapter)

2.4. Test Facility

Site Description

Name of Firm : Audix Technology (Shenzhen) Co., Ltd.
No. 6, Ke Feng Road., Shenzhen Science & Technology Park,Nanshan District, Shenzhen, Guangdong, China

3m Anechoic Chamber : Certificated by FCC, USA
Registration No: 90454
Valid Date: Jul.12, 2017

3m & 10m Anechoic Chamber : Certificated by FCC, USA
Registration No: 794232
Valid Date: Jul.12, 2017

EMC Lab. : Accredited by DAKKS, Germany
Registration No: D-PL-12151-01-01
Valid Date: Dec.15, 2016

Accredited by NVLAP, USA
NVLAP Code: 200372-0
Valid Date: Mar.31, 2017

2.5. Measurement Uncertainty（95% confidence levels, k=2）

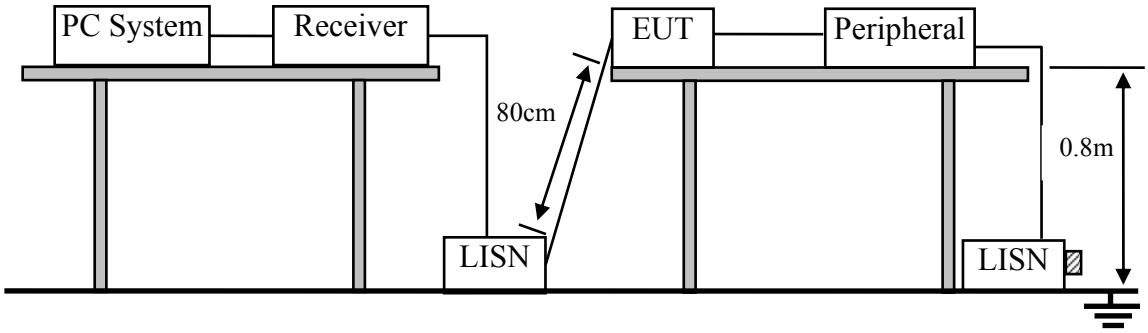
Test Item	Uncertainty
Uncertainty for Conduction emission test in No. 1 Conduction	3.2dB
Uncertainty for Radiation Emission test in 10m chamber (Distance: 10m)	3.6 dB (30~200MHz, Polarization: H)
	3.8dB (30~200MHz, Polarization: V)
	3.8dB (200M~1GHz, Polarization: H)
	3.8dB (200M~1GHz, Polarization: V)
Uncertainty for Flicker test	0.06%
Uncertainty for Harmonic test	1.8%
Uncertainty for C/S Test	1.36dB (Using CDN test)
	3.20 (Using EM clamp test)
Uncertainty for R/S Test	1.64 dB (80MHz~200MHz)
	1.66 dB(200MHz~1000MHz)
Uncertainty for test site temperature and humidity	0.6℃
	3%

3. POWER LINE CONDUCTED EMISSION TEST

3.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Oct.31, 11	1 Year
2.	L.I.S.N.#1	Rohde & Schwarz	ESH2-Z5	834066/011	Oct.31, 11	1 Year
3.	L.I.S.N.#3	Kyoritsu	KNW-242C	8-1920-1	May.08, 12	1 Year
4.	Terminator	Hubersuhner	50Ω	No. 1	May.08, 12	1 Year
5.	Terminator	Hubersuhner	50Ω	No. 2	May.08, 12	1 Year
6.	RF Cable	Fujikura	3D-2W	No.1	May.08, 12	1Year
7.	Coaxial Switch	Anritsu	MP59B	M50564	May.08, 12	1 Year
8.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 12	1 Year

3.2.Block Diagram of Test Setup



3.3. Test Standard

EN 55022: 2010+AC:2011 (Class B)

3.4. Power Line Conducted Emission Limit

Frequency	Maximum RF Line Voltage	
	Quasi-Peak Level dB(μV)	Average Level dB(μV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
500kHz ~ 5MHz	56	46
5MHz ~ 30MHz	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.5. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet EN 55022 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5.1.Gigabit PCI Express Network Adapter (EUT);

Model Number ：TG-3468
Serial Number ：N/A

3.5.2. Support Equipment **:** As Tested Supporting System Detail, in Section 2.2.

3.6. Operating Condition of EUT

3.6.1. Setup the EUT and simulator as shown as Section 3.2.

3.6.2. Turned on the power of all equipment.

3.6.3. Let the EUT worked in test mode (Running) and tested it.

3.7. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#3). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to EN 55022 Class B on conducted Disturbance test.

The bandwidth of the test receiver (R&S ESHS10) is set at 10kHz.

The frequency range from 150 kHz to 30 MHz is investigated. The test data and the scanning waveform are listed in Section 3.8.

3.8. Conducted Disturbance at Mains Terminals Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

The EUT with the following test mode was tested and selected (mode 1) to read Q.P values and average value, all the test results are listed in next pages.

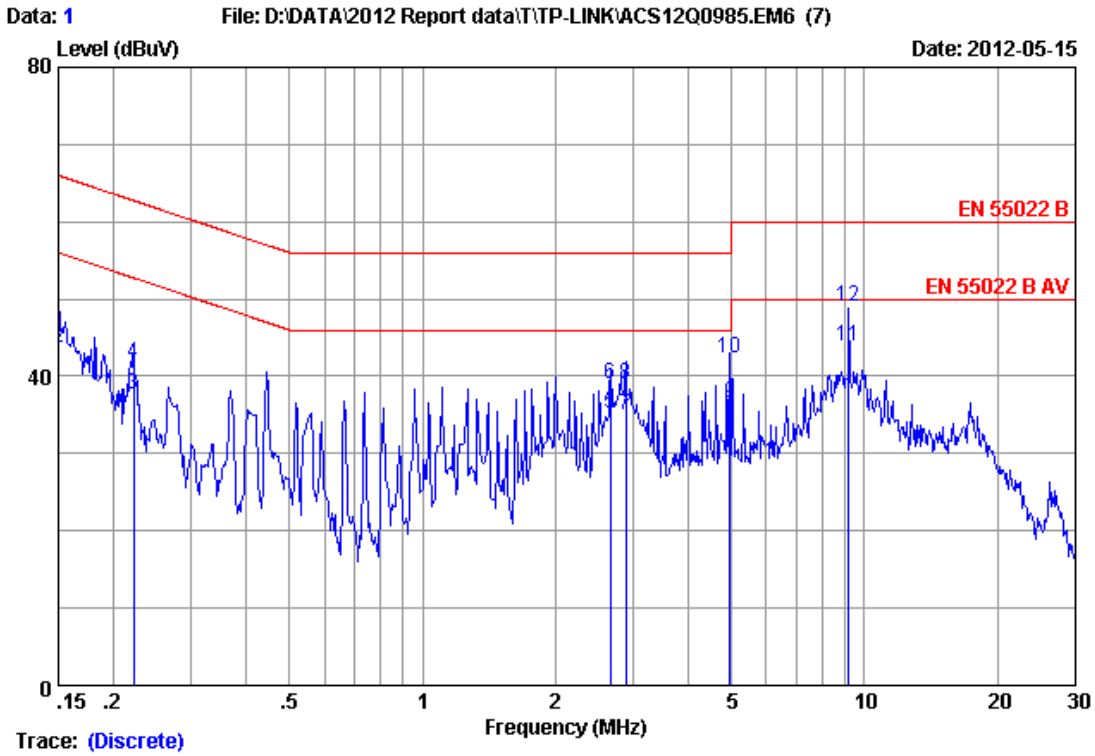
EUT: Gigabit PCI Express Network Adapter Model No: TG-3468

Test Date: May.15, 2012 Temperature:25.3℃ Humidity: 57%

The details of test mode are as follows：

No.	Test Mode	Reference Test Data No.	
		Line	Neutral
1※.	Running	#1	#2

(※ Worst test mode)

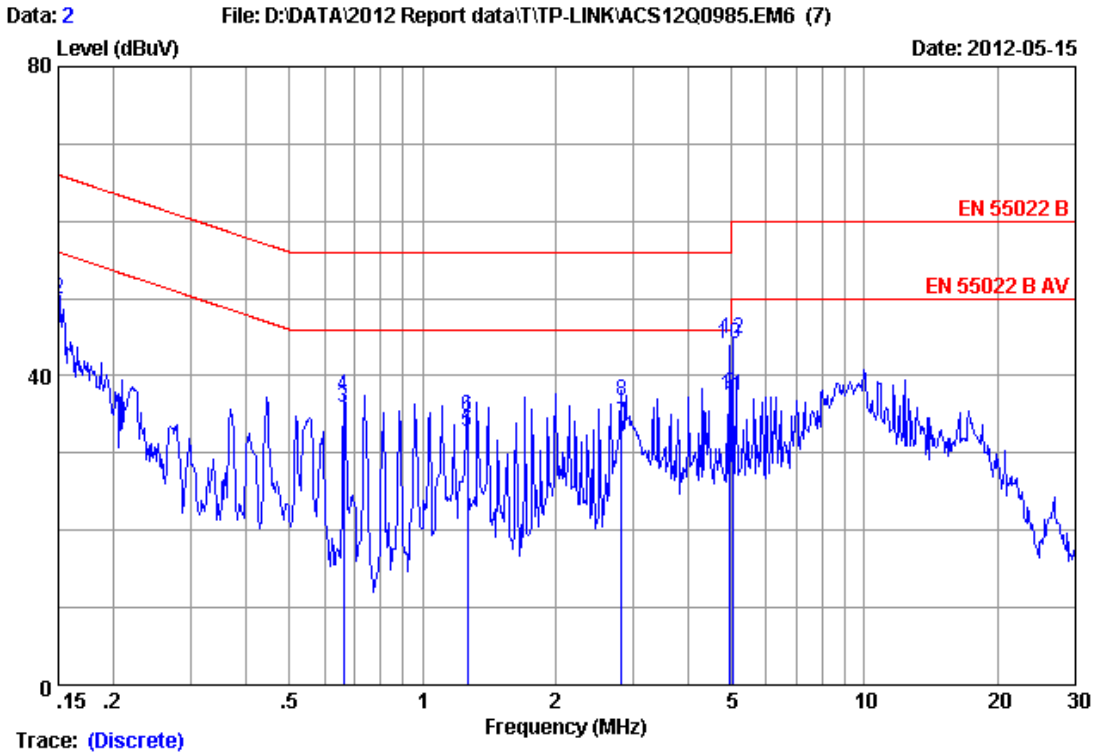


Trace: (Discrete)

Site no :1#conduction Data No :1
Dis./Ant. :** 2011 ESH2-Z5 LINE
Limit :EN 55022 B
Env./Ins. :25.3*C/57% Engineer :Jolly_Xu
EUT :Gigabit PCI Express Network Adapter
Power Rating :DC 3.3V via PC Input AC 230V/50Hz
Test Mode :Running
:M/N:TG-3468

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.16	9.98	30.61	40.75	56.00	15.25	Average
2	0.15000	0.16	9.98	33.51	43.65	66.00	22.35	QP
3	0.22200	0.15	9.98	27.60	37.73	52.74	15.01	Average
4	0.22200	0.15	9.98	31.50	41.63	62.74	21.11	QP
5	2.664	0.21	9.96	25.10	35.27	46.00	10.73	Average
6	2.664	0.21	9.96	28.90	39.07	56.00	16.93	QP
7	2.886	0.22	9.96	24.70	34.88	46.00	11.12	Average
8	2.886	0.22	9.96	28.90	39.08	56.00	16.92	QP
9	4.961	0.25	9.93	26.30	36.48	46.00	9.52	Average
10	4.961	0.25	9.93	32.20	42.38	56.00	13.62	QP
11	9.223	0.31	9.91	33.70	43.92	50.00	6.08	Average
12	9.223	0.31	9.91	38.90	49.12	60.00	10.88	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Site no :1#conduction Data No :2
Dis./Ant. :** 2011 ESH2-Z5 NEUTRAL
Limit :EN 55022 B
Env./Ins. :25.3*C/57% Engineer :Jolly_Xu
EUT :Gigabit PCI Express Network Adapter
Power Rating :DC 3.3V via PC Input AC 230V/50Hz
Test Mode :Running
:M/N:TG-3468

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.15000	0.14	9.98	36.11	46.23	56.00	9.77	Average
2	0.15000	0.14	9.98	39.91	50.03	66.00	15.97	QP
3	0.66400	0.16	9.97	25.80	35.93	46.00	10.07	Average
4	0.66400	0.16	9.97	27.30	37.43	56.00	18.57	QP
5	1.262	0.18	9.98	22.50	32.66	46.00	13.34	Average
6	1.262	0.18	9.98	24.60	34.76	56.00	21.24	QP
7	2.814	0.21	9.96	23.71	33.88	46.00	12.12	Average
8	2.814	0.21	9.96	26.71	36.88	56.00	19.12	QP
9	4.962	0.25	9.93	27.50	37.68	46.00	8.32	Average
10	4.962	0.25	9.93	33.90	44.08	56.00	11.92	QP
11	5.036	0.25	9.93	27.30	37.48	50.00	12.52	Average
12	5.036	0.25	9.93	34.70	44.88	60.00	15.12	QP

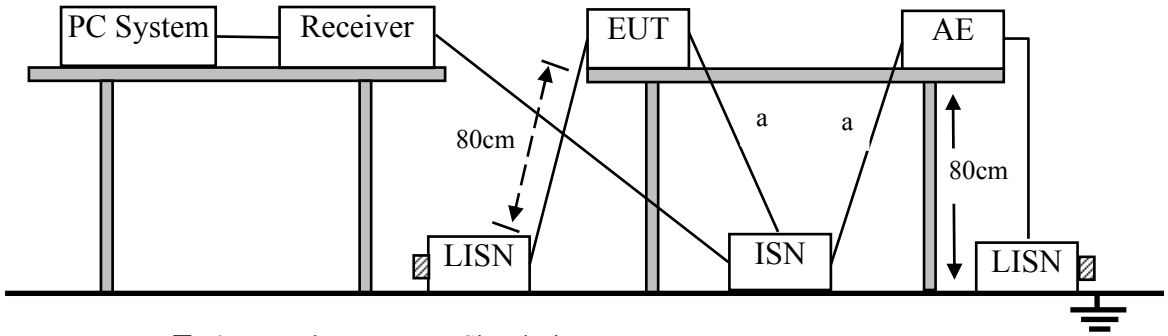
Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

4. CONDUCTED DISTURBANCE AT TELECOMMUNICATION PORTS TEST

4.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESHS10	838693/001	Oct.31,11	1 Year
2.	L.I.S.N.	Rohde & Schwarz	ESH2-Z5	834066/011	Oct.31,11	1 Year
3.	L.I.S.N.	Kyoritsu	KNW-242C	8-1920-1	May.08, 12	1 Year
4.	Terminator	EMCO	50Ω	No. 1	May.08, 12	1 Year
5.	Terminator	EMCO	50Ω	No. 2	May.08, 12	1 Year
6.	RF Cable	Fujikura	3D-2W	No. 1	May.08, 12	1Year
7.	Current Probe	Rohde & Schwarz	EZ-17	833335/009	Nov.05,11	1 Year
8.	Single Balanced Telecom Pair ISN	FCC	FCC-TLISN -T2-02	20534	Oct.31,11	1 Year
9.	Two Balanced Telecom Pairs ISN	FCC	FCC-TLISN -T4-02	20535	Oct.31,11	1Year
10.	Four Balanced Telecom Pairs ISN	FCC	FCC-TLISN -T8-02	20412	May.08, 12	1Year
11.	Coaxial Switch	Anritsu	MP59B	M50564	May.08, 12	1Year
12.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100341	May.08, 12	1 Year

4.2. Block Diagram of Test Setup



:50Ω Terminator; a: Signal Line

4.3. Test Standard

EN 55022: 2010+AC:2011 (Class B)

4.4. Conducted Disturbance at Telecommunication Ports Limit

Frequency	Voltage Limits, dB (μV)	
	Quasi-Peak Level	Average Level
0.15MHz ~ 0.5MHz	84 ~ 74 dBμV	74 ~ 64 dBμV
0.5MHz ~ 30MHz	74 dBμV	64 dBμV

Notes: 1. * Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

4.5. EUT Configuration on Test

The following equipments are installed on Conducted Emission Test to meet EN 55022 Class B requirement and operating in a manner that tends to maximize its emission characteristics in a normal application. The configuration of EUT and its simulators were the same as those used in conducted test. Please refer to Section 3.5.

4.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 4.2.

4.7. Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. #1). The other peripheral devices power cord connected to the power mains through a line impedance stabilization network (L.I.S.N.#2). This provided a 50-ohm coupling impedance for the EUT (Please refer to the block diagram of the test setup and photographs). Both sides of power line were checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to EN 55022: 2010+AC:2011 on Conducted Disturbance test. And connected to the telecommunication ports through ISN. Both sides of telecommunication line are investigated to find out the maximum conducted emission according to EN 55022 regulations during conducted disturbance test.

The bandwidth of the test receiver (R&S ESHS10) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked. The test result are reported on Section 4.8.

4.8. Conducted Disturbance at Telecommunication Ports Test Results

PASS.

The EUT with the following test modes were tested and selected (mode 1~3) to read Q.P values, all the test results are listed in next pages.

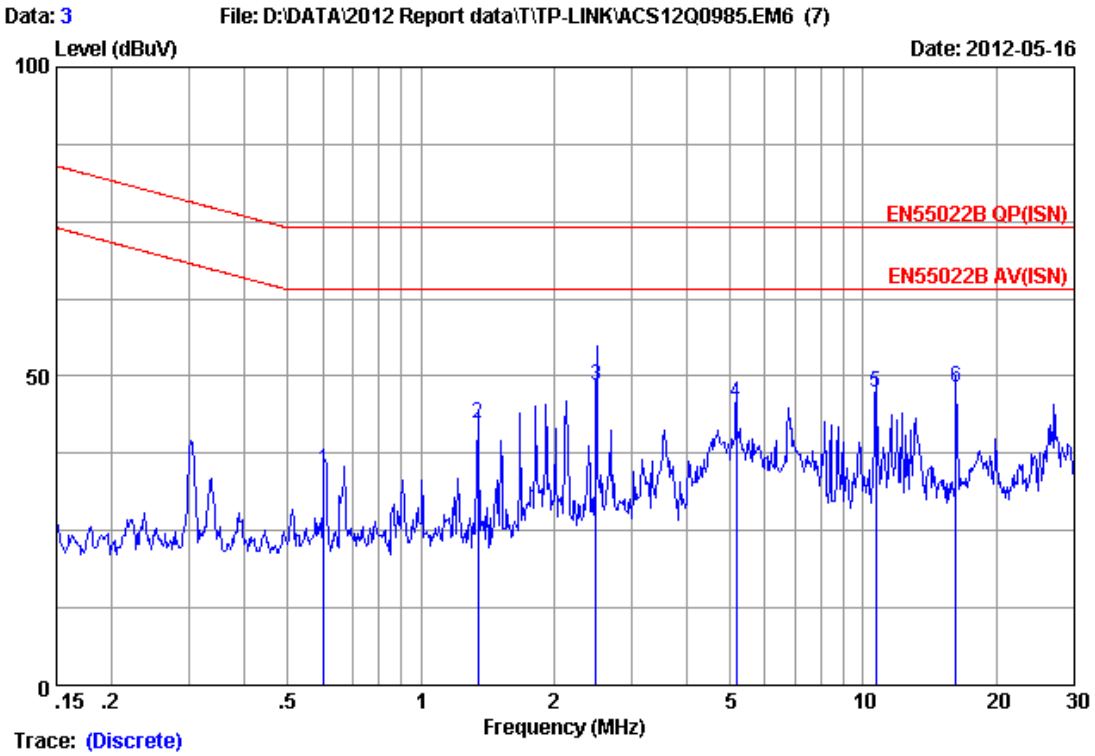
EUT: Gigabit PCI Express Network Adapter Model No: TG-3468

Test Date: May.16, 2012 Temperature:25.3℃ Humidity: 57%

The details of test modes are as follows：

No.	Test Mode	Reference Test Data No.
1.	10Mbps	#3
2.※	**100Mbps**	**#4**
3.	1000Mbps	#5

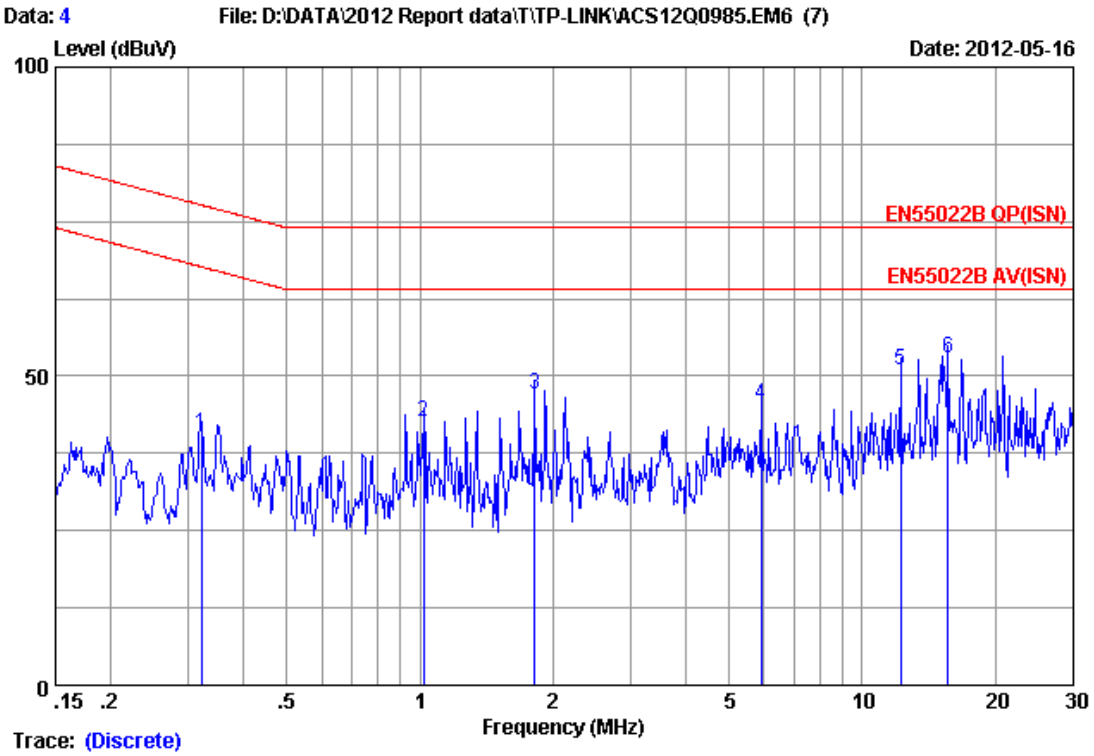
(※ Worst test mode)



Site no :1#conduction Data No :3
Dis./Ant. :** 2011 ISN T8
Limit :EN55022B QP(ISN)
Env./Ins. :25.3*C/57% Engineer :Jolly_Xu
EUT :Gigabit PCI Express Network Adapter
Power Rating :DC 3.3V via PC Input AC 230V/50Hz
Test Mode :ISN 10Mbps
:M/N:TG-3468

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.60431	9.53	9.98	15.33	34.84	74.00	39.16	QP
2	1.345	9.50	9.98	22.94	42.42	74.00	31.58	QP
3	2.490	9.48	9.96	29.00	48.44	74.00	25.56	QP
4	5.166	9.41	9.93	26.24	45.58	74.00	28.42	QP
5	10.676	9.33	9.90	28.25	47.48	74.00	26.52	QP
6	16.226	9.32	9.94	29.01	48.27	74.00	25.73	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

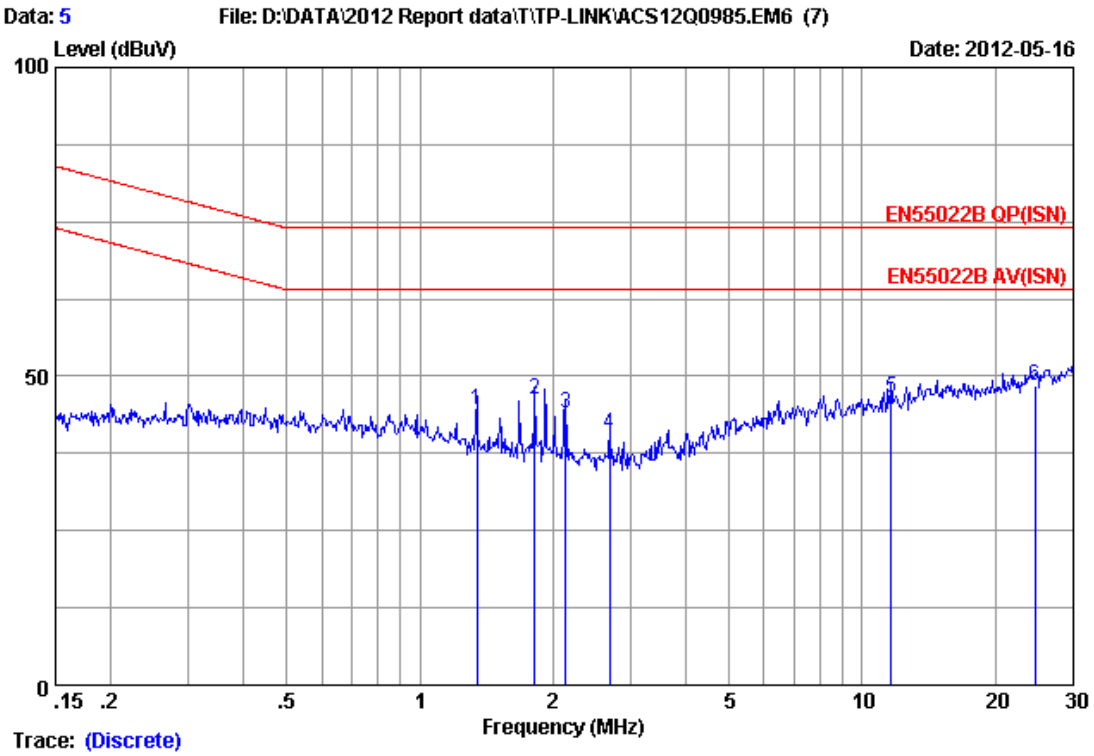


Trace: (Discrete)

Site no :1#conduction Data No :4
Dis./Ant. :** 2011 ISN T8
Limit :EN55022B QP(ISN)
Env./Ins. :25.3*C/57% Engineer :Jolly_Xu
EUT :Gigabit PCI Express Network Adapter
Power Rating :DC 3.3V via PC Input AC 230V/50Hz
Test Mode :ISN 100Mbps
:M/N:TG-3468

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	0.31999	9.58	9.98	21.06	40.62	77.71	37.09	QP
2	1.021	9.50	9.98	23.05	42.53	74.00	31.47	QP
3	1.819	9.49	9.97	27.48	46.94	74.00	27.06	QP
4	5.898	9.39	9.93	25.95	45.27	74.00	28.73	QP
5	12.188	9.33	9.91	31.69	50.93	74.00	23.07	QP
6	15.635	9.32	9.93	33.62	52.87	74.00	21.13	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.



Trace: (Discrete)

Site no :1#conduction Data No :5
Dis./Ant. :** 2011 ISN T8
Limit :EN55022B QP(ISN)
Env./Ins. :25.3*C/57% Engineer :Jolly_Xu
EUT :Gigabit PCI Express Network Adapter
Power Rating :DC 3.3V via PC Input AC 230V/50Hz
Test Mode :ISN 1000Mbps
:M/N:TG-3468

No	Freq (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV)	Limits (dBuV)	Margin (dB)	Remark
1	1.345	9.50	9.98	25.21	44.69	74.00	29.31	QP
2	1.819	9.49	9.97	26.69	46.15	74.00	27.85	QP
3	2.133	9.49	9.97	24.65	44.11	74.00	29.89	QP
4	2.678	9.47	9.96	21.21	40.64	74.00	33.36	QP
5	11.621	9.33	9.91	27.41	46.65	74.00	27.35	QP
6	24.529	9.33	10.07	29.07	48.47	74.00	25.53	QP

Remarks: 1.Emission Level=LISN Factor+Cable Loss(Include 10dB pulse limit)
+Reading.
2.If the average limit is met when useing a quasi-peak detector.
the EUT shall be deemed to meet both limits and measurement
with average detector is unnecessary.

5. RADIATED EMISSION TEST

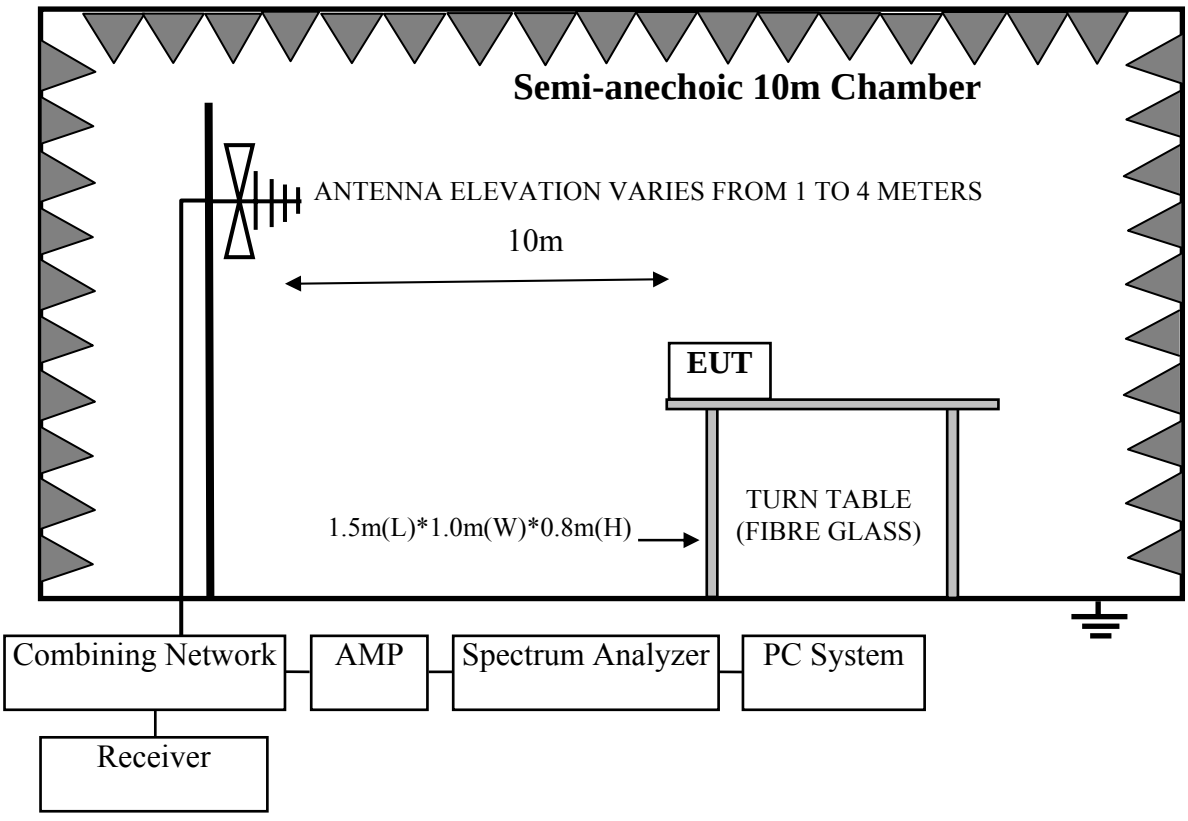
5.1. Test Equipments

5.1.1. For frequency range 30MHz~1000MHz (In Anechoic Chamber)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	10m Chamber	AUDIX	N/A	N/A	Nov.28,11	1 Year
2	EMC Analyzer	Agilent	E7405A	MY42000131	Oct.31, 11	1 Year
3	EMC Analyzer	Agilent	E7405A	MY45116588	Oct.31, 11	1 Year
4	Test Receiver	Rohde & Schwarz	ESCI	100842	May.08, 12	1 Year
5	Amplifier	Agilent	8447D	2944A10684	May.08, 12	1Year
6	Amplifier	Agilent	8447D	2944A11140	May.08, 12	1 Year
7	Bilog Antenna	Schaffner	CBL6112D	25238	June.30, 11	1 Year
8	Bilog Antenna	Schaffner	CBL6112D	25237	Aug.28, 11	1 Year
9	RF Cable	MIYAZAKI	CFD400-NL	10m Chamber No.1	Dec.06, 11	0.5Year
10	RF Cable	MIYAZAKI	CFD400-NL	10m Chamber No.2	Dec.06, 11	0.5Year
11	Coaxial Switch	Anritsu	MP59B	M73989	May.08, 12	1 Year
12	Coaxial Switch	Anritsu	MP59B	6200766905	May.08, 12	1 Year
13	Coaxial Switch	Anritsu	MP59B	6200313662	May.08, 12	1 Year

5.2.Block Diagram of Test Setup

5.2.1. In 10mAnechoic Chamber Test Setup Diagram for 30MHz~1000MHz



5.3. Test Standard

EN 55022: 2010+AC:2011 (Class B)

5.4. Radiated Emission Limit

All emanations from a Class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 230	10	30
230 ~ 1000	10	37
1000~3000	3	70(Peak) 50(Average)
3000~6000	3	74(Peak) 54(Average)

Note: (1) Emission level = Antenna Factor + Cable Loss + Reading
(2) The lower limit shall apply at the transition frequencies.
(3) Distance refers to the distance in meters between the test instrument antenna and the closed point of any part of the E.U.T.

5.5. EUT Configuration on Test

The EN 55022 Class B regulations test method must be used to find the maximum emission during Radiated Emission test.

The configuration of EUT is same as used in Conducted Emission test. Please refer to Section 3.5.

5.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test set up replaced by Section 5.2.

5.7. Test Procedure

The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. An antenna was located 10&3m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT were rotated and the antenna height was varied between 1m and 4m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. In order to find the maximum emission, the relative positions of equipments and all of the interface cables were changed according to EN 55022 Class B on Radiated Disturbance test.

The bandwidth setting on the test receiver (R&S ESCI) is 120 kHz.

The resolution bandwidth of the Agilent Spectrum Analyzer E7405A was set at 1MHz. (For above 1GHz)

The frequency range from 30MHz to 1000MHz was pre-scanned with a peak detector and all final readings of measurement from Test Receiver are Quasi-Peak values.

Finally, selected operating situations at Anechoic Chamber measurement, all the test results are listed in section 5.8.

5.8. Radiated Disturbance Test Results

PASS. (All emissions not reported below are too low against the prescribed limits.)

For frequency range 30MHz~1000MHz
The EUT with the following test mode was tested and selected (mode 1) to read Q.P values, all the test results are listed in next pages.

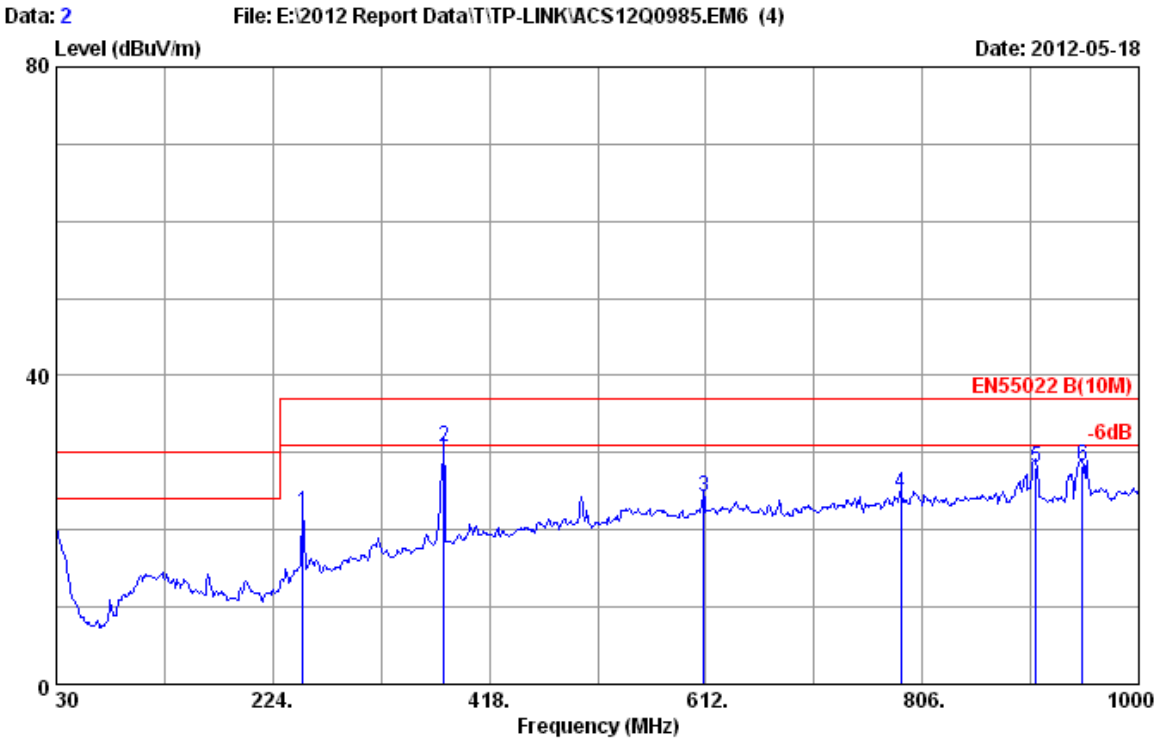
EUT: Gigabit PCI Express Network Adapter Model No: TG-3468

Test Date: May.18, 2012 Temperature:24℃ Humidity: 56%

The details of test mode are as follows：

No.	Test Mode	Reference Test Data No.	
		Horizontal	Vertical
1.※	Running	**#2**	**#1**

(※ Worst test mode)



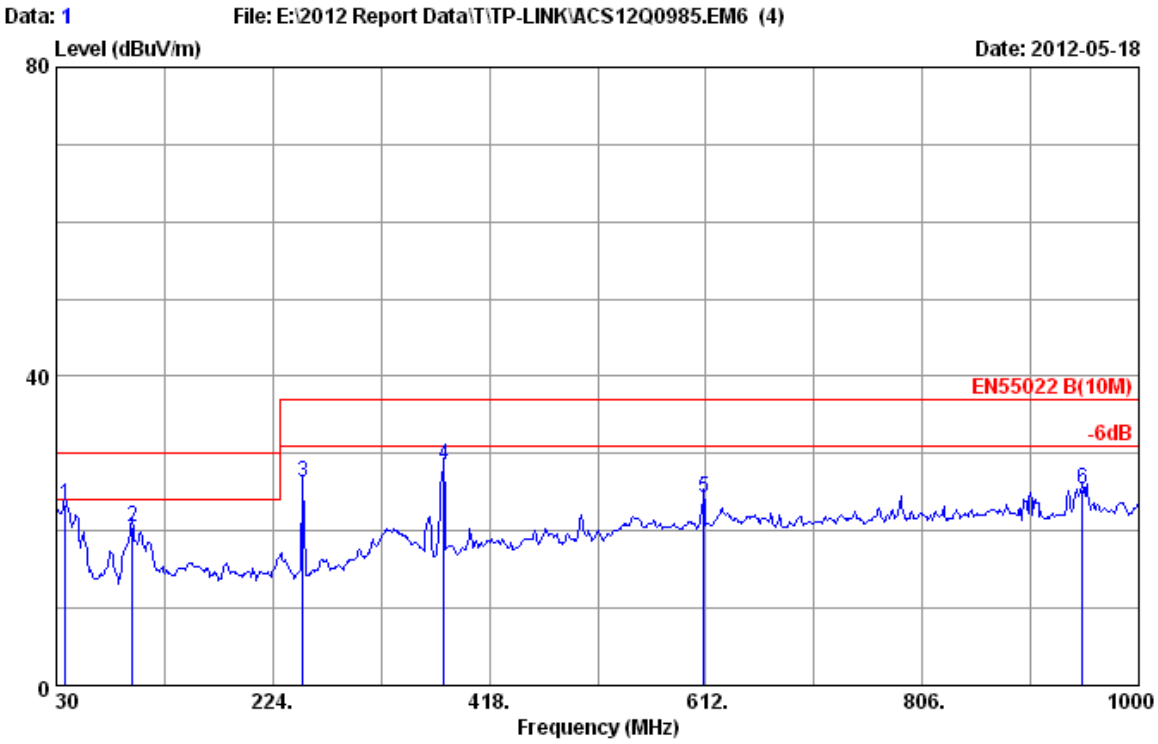
Site no. : 10m Chamber Data no. : 2
Dis. / Ant. : 10m 11 CBL6112D 25238 Ant. pol. : HORIZONTAL
Limit : EN55022 B(10M)
Env. / Ins. : 24*C/56% Engineer : Rock_Su
EUT : Gigabit PCI Express Network Adapter
Power rating : DC 3.3V Via PC Input AC 230V/50Hz
Test Mode : Running

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	251.160	12.44	1.27	8.68	22.39	37.00	14.61	QP
2	377.260	14.98	1.62	14.16	30.76	37.00	6.24	QP
3	610.060	18.50	2.03	3.68	24.21	37.00	12.79	QP
4	786.600	19.87	2.34	2.44	24.65	37.00	12.35	QP
5	907.850	20.14	2.54	5.49	28.17	37.00	8.83	QP
6	949.560	20.98	2.54	4.76	28.28	37.00	8.72	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 377.260MHz with corrected signal level of 30.76dBμV/m (Limit is 37.00dBμV/m) when the antenna was at horizontal polarization and at 2.0m high and the turn table was at 330°.

4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.



Site no. : 10m Chamber Data no. : 1
Dis. / Ant. : 10m 11 CBL6112D 25237 Ant. pol. : VERTICAL
Limit : EN55022 B(10M)
Env. / Ins. : 24*C/56% Engineer : Rock_Su
EUT : Gigabit PCI Express Network Adapter
Power rating : DC 3.3V Via PC Input AC 230V/50Hz
Test Mode : Running

No.	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	37.760	14.90	0.59	7.81	23.30	30.00	6.70	QP
2	97.900	11.40	0.94	8.20	20.54	30.00	9.46	QP
3	251.160	12.44	1.53	12.26	26.23	37.00	10.77	QP
4	377.260	15.04	1.96	11.41	28.41	37.00	8.59	QP
5	610.060	18.90	2.57	2.85	24.32	37.00	12.68	QP
6	949.560	21.50	3.13	0.73	25.36	37.00	11.64	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.
2. The emission levels that are 20dB below the official limit are not reported.

3. The worst emission was detected at 37.760MHz with corrected signal level of 23.30dBμV/m (Limit is 30.00dBμV/m) when the antenna was at vertical polarization and at 1.0m high and the turn table was at 225°.

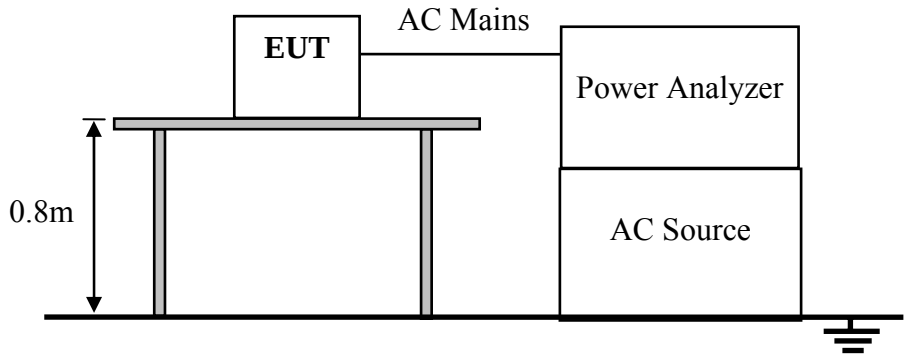
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.

6. HARMONIC CURRENT EMISSION TEST

6.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Compliance Test System	California Instruments	5001ix	58481	Nov.05, 11	1 Year
2.	Compliance Test System	California Instruments	PACS-1	72627	Nov.05, 11	1 Year

6.2. Block Diagram of Test Setup



6.3. Test Standard

EN 61000-3-2: 2014, Class-D

6.4. Limits of Harmonic Current

Limits for Class A equipment	
Harmonic order **n**	**Maximum permissible Harmonic current** **A**
Odd harmonics	
3 5 7 9 11 13 15≤n≤39	2,30 1,14 0,77 0,40 0,33 0,21 $0{,}15\ \frac{15}{n}$
Even harmonics	
2 4 6 8≤n≤40	1,08 0,43 0,30 $0{,}23\ \frac{8}{n}$

Remark: if the EUT Power level is below 75 Watts and therefore has no defined limits.

6.5. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

6.6. Operating Condition of EUT

Same as Conducted Emission test that is listed in Section 3.6. except the test setup replaced by Section 6.2.

6.7. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the necessary for the EUT to be exercised.

6.8. Test Results

PASS.

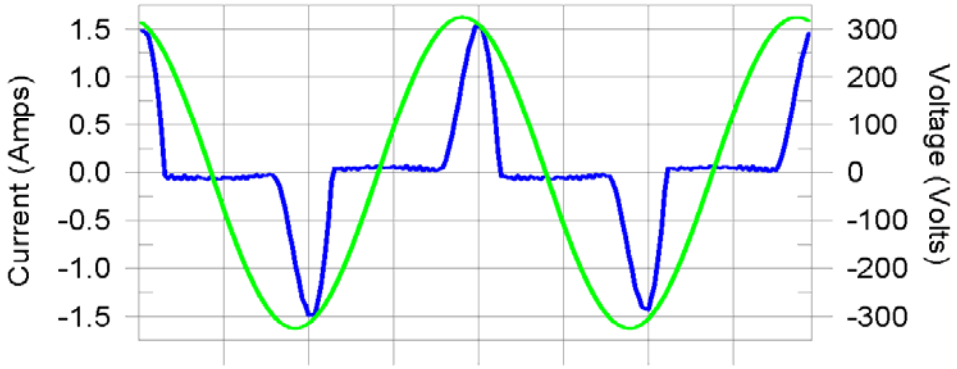
The EUT was tested and all the test results are listed in next pages.

Harmonics – Class-D per Ed. 3.2 (2009)(Run time)

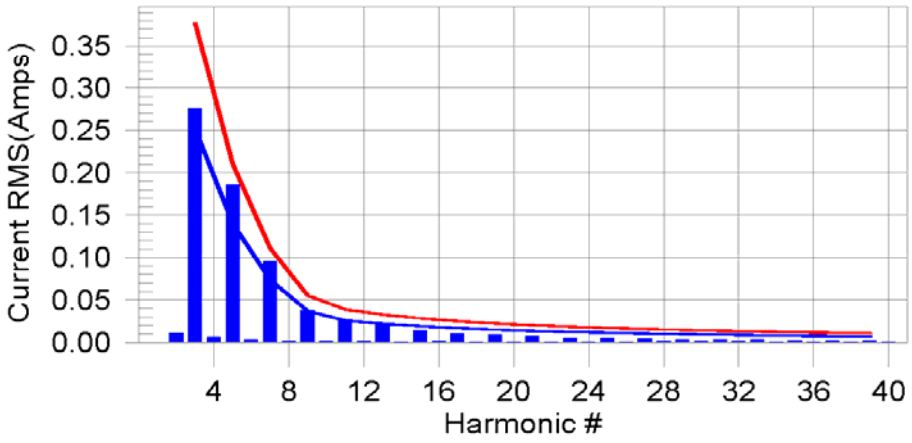
EUT: Gigabit PCI Express Netword Adapter M/N:TG-3468 **Tested by: Leeyi**
Test category: Class-D per Ed. 3.2 (2009) (European limits) **Test Margin: 100**
Test date: 2012-5-16 **Start time: 19:17:29** **End time: 19:20:21**
Test duration (min): 2.5 **Data file name: H-010160.cts_data**
Comment: Running
Customer: TP-LINK

Test Result: N/L **Source qualification: Normal**

Current & voltage waveforms



Harmonics and Class D limit line **European Limits**



Test result: N/L Worst harmonic was #0 with 0.00% of the limit.

Current Test Result Summary (Run time)

EUT: Gigabit PCI Express Netword Adapter M/N:TG-3468 Tested by: Leeyi
Test category: Class-D per Ed. 3.2 (2009) (European limits) Test Margin: 100
Test date: 2012-5-16 Start time: 19:17:29 End time: 19:20:21
Test duration (min): 2.5 Data file name: H-010160.cts_data
Comment: Running
Customer: TP-LINK

Test Result: N/L Source qualification: Normal
THC(A): 0.00 I-THD(%): 0.00 POHC(A): 0.000 POHC Limit(A): 0.000
Highest parameter values during test:

V_RMS (Volts):	230.02	Frequency(Hz):	50.00
I_Peak (Amps):	1.556	I_RMS (Amps):	0.563
I_Fund (Amps):	0.324	Crest Factor:	3.336
Power (Watts):	74.0	Power Factor:	0.686

Harm#	Harms(avg)	100%Limit	%of Limit	Harms(max)	150%Limit	%of Limit	Status
2	0.011						
3	0.246	0.252	0.0	0.276	0.377	0.00	N/L
4	0.007						
5	0.171	0.141	0.0	0.186	0.211	0.00	N/L
6	0.003						
7	0.093	0.074	0.0	0.096	0.111	0.00	N/L
8	0.002						
9	0.038	0.037	0.0	0.038	0.056	0.00	N/L
10	0.002						
11	0.023	0.026	0.0	0.026	0.039	0.00	N/L
12	0.001						
13	0.022	0.022	0.0	0.022	0.033	0.00	N/L
14	0.001						
15	0.014	0.019	0.0	0.014	0.028	0.00	N/L
16	0.001						
17	0.009	0.017	0.0	0.010	0.025	0.00	N/L
18	0.001						
19	0.009	0.015	0.0	0.010	0.022	0.00	N/L
20	0.001						
21	0.007	0.014	0.0	0.007	0.020	0.00	N/L
22	0.001						
23	0.005	0.012	0.0	0.006	0.019	0.00	N/L
24	0.001						
25	0.005	0.011	0.0	0.006	0.017	0.00	N/L
26	0.001						
27	0.004	0.011	0.0	0.005	0.016	0.00	N/L
28	0.002						
29	0.003	0.010	0.0	0.004	0.015	0.00	N/L
30	0.001						
31	0.003	0.009	0.0	0.004	0.014	0.00	N/L
32	0.002						
33	0.003	0.009	0.0	0.003	0.013	0.00	N/L
34	0.001						
35	0.002	0.008	0.0	0.003	0.012	0.00	N/L
36	0.001						
37	0.002	0.008	0.0	0.002	0.012	0.00	N/L
38	0.001						
39	0.002	0.007	0.0	0.002	0.011	0.00	N/L
40	0.001						

Note: The EUT power level is below 75.0 Watts and therefore has no defined limits

Voltage Source Verification Data (Run time)

EUT: Gigabit PCI Express Netword Adapter M/N:TG-3468 Tested by: Leeyi
Test category: Class-D per Ed. 3.2 (2009) (European limits) Test Margin: 100
Test date: 2012-5-16 Start time: 19:17:29 End time: 19:20:21
Test duration (min): 2.5 Data file name: H-010160.cts_data
Comment: Running
Customer: TP-LINK

Test Result: N/L Source qualification: Normal

Highest parameter values during test:

Voltage (Vrms):	230.02	Frequency(Hz):	50.00
I_Peak (Amps):	1.556	I_RMS (Amps):	0.563
I_Fund (Amps):	0.324	Crest Factor:	3.336
Power (Watts):	74.0	Power Factor:	0.686

Harm#	Harmonics V-rms	Limit V-rms	% of Limit	Status
2	0.085	0.460	18.38	OK
3	0.464	2.070	22.43	OK
4	0.047	0.460	10.25	OK
5	0.034	0.920	3.70	OK
6	0.024	0.460	5.22	OK
7	0.051	0.690	7.33	OK
8	0.016	0.460	3.38	OK
9	0.022	0.460	4.72	OK
10	0.005	0.460	1.16	OK
11	0.014	0.230	6.18	OK
12	0.009	0.230	4.07	OK
13	0.021	0.230	9.15	OK
14	0.006	0.230	2.71	OK
15	0.012	0.230	5.08	OK
16	0.007	0.230	3.20	OK
17	0.011	0.230	4.61	OK
18	0.009	0.230	3.73	OK
19	0.010	0.230	4.45	OK
20	0.006	0.230	2.64	OK
21	0.012	0.230	5.09	OK
22	0.003	0.230	1.40	OK
23	0.008	0.230	3.61	OK
24	0.002	0.230	1.01	OK
25	0.007	0.230	3.16	OK
26	0.003	0.230	1.19	OK
27	0.010	0.230	4.45	OK
28	0.002	0.230	0.88	OK
29	0.008	0.230	3.41	OK
30	0.002	0.230	0.89	OK
31	0.007	0.230	2.91	OK
32	0.002	0.230	0.86	OK
33	0.006	0.230	2.44	OK
34	0.002	0.230	1.04	OK
35	0.004	0.230	1.75	OK
36	0.002	0.230	0.88	OK
37	0.006	0.230	2.41	OK
38	0.002	0.230	0.87	OK
39	0.005	0.230	2.33	OK
40	0.003	0.230	1.27	OK

7. VOLTAGE FLUCTUATIONS & FLICKER TEST

7.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	AC Source	California Instruments	5001ix	58481	Oct.17,15	1 Year
2.	Impedance Network	California Instruments	OMNI 1-18i	1247A02235	Oct.17,15	1 Year
3.	Power Analyzer	California Instruments	PACS-1	72627	Oct.17,15	1 Year
4.	Test Software	California Instruments	CTS 4.0	V 4.2.12	N/A	N/A
Note: N/A means Not applicable.						

7.2. Block Diagram of Test Setup

Same as Section 6.2.

7.3. Test Standard

EN 61000-3-3:2008

7.4. Limits of Voltage Fluctuation and Flick

Test Item	Limit	Note
P_{st}	1.0	P_{st} means Short-term flicker indicator
P_{lt}	0.65	P_{lt} means long-term flicker indicator
T_{max}	0.2	T_{max} means maximum time that d(t) exceeds 3%
d_{max}(%)	4%	d_{max} means maximum relative voltage change.
d_c(%)	3.3%	d_c means relative steady-state voltage change.

7.5. EUT Configuration on Test

The configurations of EUT are listed in Section 3.5.

7.6. Operating Condition of EUT

Same as Section 6.6.

7.7. Test Procedure

The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal conditions During the flick measurement, the measure time shall include that part of whole operation changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

7.8. Test Results

PASS.

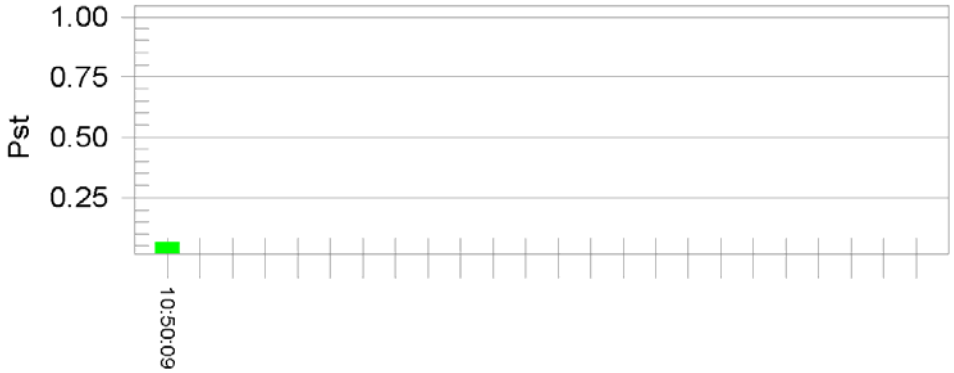
Please refer to the following page.

Flicker Test Summary per EN/IEC61000-3-3 (Run time)

M/N: TG-3468 Tested by: Aaron
Test category: All parameters (European limits) Test Margin: 100
Test date: 2016-07-26 Start time: 10:39:39 End time: 10:50:10
Test duration (min): 10 Data file name: F-000045.cts_data
Comment: Running
Customer: TP- LINK

Test Result: Pass Status: Test Completed

Pst and limit line European Limits



Plt and limit line

Parameter values recorded during the test:

Vrms at the end of test (Volt):	229.93			
Highest dt (%):	0.00	Test limit (%):	N/A	N/A
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.064	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.028	Test limit:	0.650	Pass

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8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

Performance Level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level by its manufacturer or the requestor of the test, or the agreed between the manufacturer and the purchaser of the product.

Definition related to the performance level:
1. Based on the used product standard
2. Based on the declaration of the manufacturer, requestor or purchaser

For EN 55024

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor and purchaser.

The equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention.

After the test, the equipment shall continue to operate as intended without operator intervention. No degradation of performance or loss of function is allowed, after the application of the phenomena below a performance level specified by the manufacturer, when the equipment is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is allowed. However, no change of operating state or stored data is allowed to persist after the test. If the minimum performance level (or the permissible performance loss) is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect form the equipment if used as intended.

Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention.

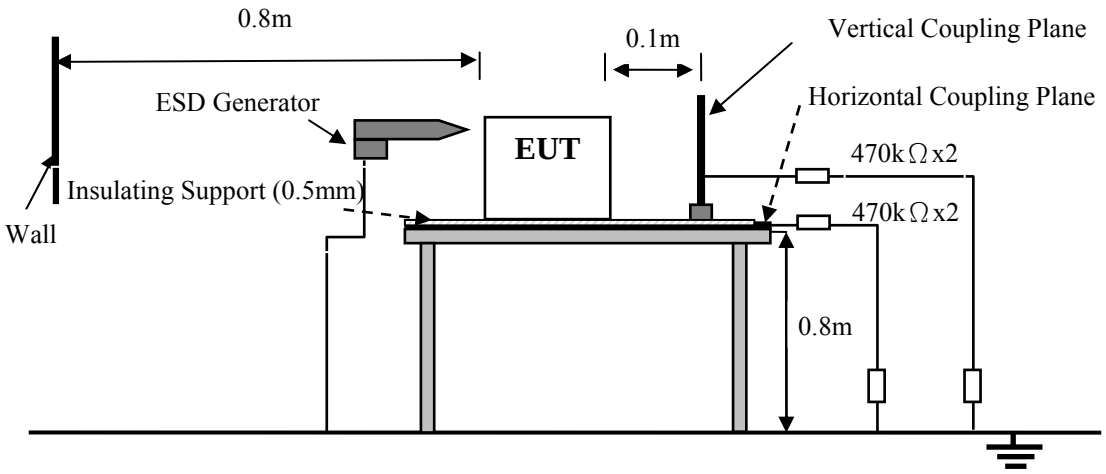
Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. Functions, and/or information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

9. ELECTROSTATIC DISCHARGE IMMUNITY TEST

9.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	EM Test	Dito	V0503100053	Dec.03,11	1 Year

9.2. Block Diagram of Test Setup



9.3. Test Standard

EN 55024: 2010+A1:2015 (IEC 61000-4-2: 2008)
(Severity Level 1&2&3 for Air Discharge at 2kV&4kV8kV,
Severity Level 1&2 for Contact Discharge at 2kV&4kV)

9.4. Severity Levels and Performance Criterion

Severity Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)	Performance criterion
1.	2	2	B
2.	4	4	
3.	6	8	
4.	8	15	
X	Special	Special	

9.5. EUT Configuration

The configuration of EUT are listed in Section 3.5.

9.6. Operating Condition of EUT

Same as Conducted test which is listed in Section 3.6. except the test set up replaced by Section 9.2.

9.7. Test Procedure

9.7.1. Air Discharge:

The test was applied on non-conductive surfaces of EUT. The round discharge tip of the discharge electrode was approached as fast as possible to touch the EUT. After each discharge, the discharge electrode was removed from the EUT. The generator was re-triggered for a new single discharge and repeated 20 times for each pre-selected test point. This procedure was repeated until all the air discharge completed

9.7.2. Contact Discharge:

All the procedure was same as Section 9.7.1. except that the generator was re-triggered for a new single discharge and repeated 50 times for each pre-selected test point. the tip of the discharge electrode was touch the EUT before the discharge switch was operated.

9.7.3. Indirect discharge for horizontal coupling plane

At least 25 single discharges were applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode positions vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

9.7.4. Indirect discharge for vertical coupling plane

At least 25 single discharge were applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, was placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges were applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

9.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Electrostatic Discharge Test Results

Audix Technology (Shenzhen) Co., Ltd.

Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.	Test Date	:	May.16, 2012
EUT	:	Gigabit PCI Express Network Adapter	Temperature	:	23℃
M/N	:	TG-3468	Humidity	:	46%
Test Voltage	:	DC 3.3V Via PC Input AC 230V/50Hz	Test Mode	:	Running
Test Engineer	:	Tim	Pressure	:	101KPa
Required Performance	:	**B**	Actual Performance	:	**A&B***

Air Discharge: ±2kV ±4kV ±8kV # For Air Discharge each Point Positive 10 times and negative 10 times discharge.

Contact Discharge: ±2kV ±4kV # For Contact Discharge each point positive 25 times and negative 25 times discharge

For the time interval between successive single discharges an initial value of one second.

Discharge Voltage (kV)	Type of discharge	Dischargeable Points	Performance		Result
			Required	Observatio	(Pass/Fail
±2	Contact	1.2	B	A	**Pass**
±4	Contact	1.2	B	B*	**Pass**
±2	Air	3	B	A	**Pass**
±4	Air	3	B	A	**Pass**
±8	Air	3	B	B*	**Pass**
±2	HCP-Bottom	Edge of the HCP	B	A	**Pass**
±2	VCP-Front	Center of the VCP	B	A	**Pass**
±2	VCP-Left	Center of the VCP	B	A	**Pass**
±2	VCP-Back	Center of the VCP	B	A	**Pass**
±2	VCP-Right	Center of the VCP	B	A	**Pass**
±4	HCP-Bottom	Edge of the HCP	B	A	**Pass**
±4	VCP-Front	Center of the VCP	B	A	**Pass**
±4	VCP-Left	Center of the VCP	B	A	**Pass**
±4	VCP-Back	Center of the VCP	B	A	**Pass**
±4	VCP-Right	Center of the VCP	B	A	**Pass**

Discharge Points Description

1	LAN Port	5	
2	Metal	6	
3	LED	7	
4		8	

Remark: "B*" means request time out, but can it can be self recover.

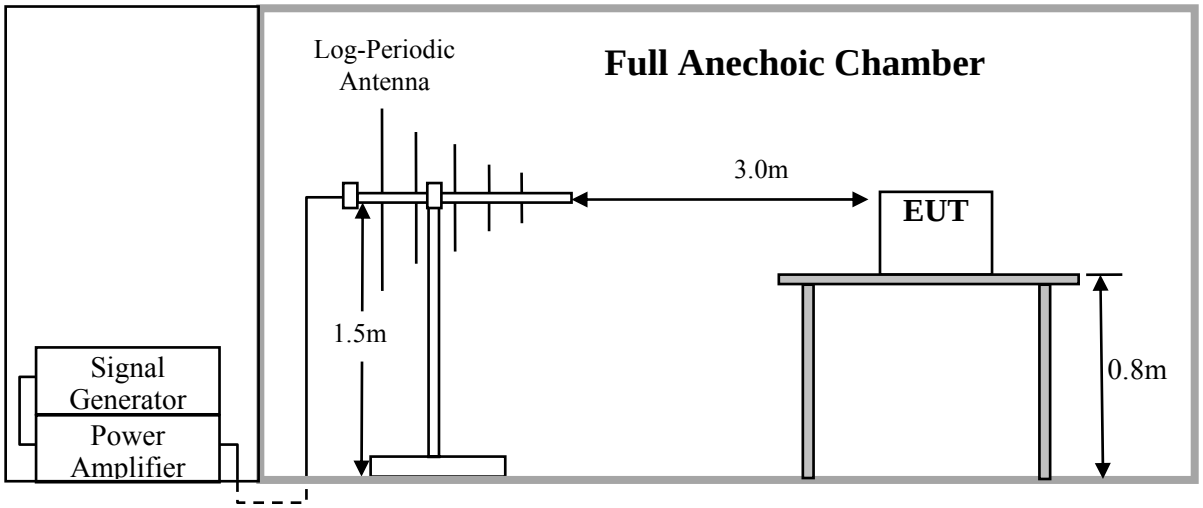
After discharge to the ungrounded part of EUT, it needs the bleeder resistor remove the charge prior to next ESD pulse.
Discharge was considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).

10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

10.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	2#Chamber	AUDIX	N/A	N/A	Apr.20.12	1Year
2.	Signal Generator	Agilent	N5181A	MY49061013	Nov.05,11	1Year
3	Amplifier	A&R	100W/1000M1	17028	NCR	NCR
4.	Power Meter	Anritsu	ML2487A	6K00002472	May.08, 12	1Year
5.	Power Sensor	Anritsu	MA2491A	032516	May.08, 12	1Year
6.	Log-periodic Antenna	A&R	AT1080	16512	NCR	NCR

10.2. Block Diagram of Test Setup



10.3. Test Standard

EN 55024: 2010+A1:2015 (IEC 61000-4-3: 2010)

(Severity Level: 2 at 3V / m)

10.4. Severity Levels and Performance Criterion

Severity Level	Test Field Strength V/m	Performance Criteria
1.	1	**A**
2.	3	
3.	10	
X.	Special	

10.5. EUT Configuration

The configuration of EUT are listed in Section 3.5.

10.6. Operating Condition of EUT

Same as Conducted test which is listed in Section 3.6. except the test set up replaced by Section 10.2.

10.7. Test Procedure

Testing was performed in a Fully anechoic chamber as recommended by IEC 61000-4-3. The EUT was placed on an 80 cm high non-conductive table located in the area of field uniformity. The radiating antenna was placed 3m in front of the EUT and Support system, and dwell time of the radiated interference was controlled by an automated, computer-controlled system. The signal source was stepped through the applicable frequency range at a rate no faster than 1% of the fundamental. The signal was amplitude modulated 80% over the frequency range 80 MHz to 1GHz at a level of 3 V/m. The dwell time was set at 3.0 s. Field presence was monitored during testing via a field probe placed in close proximity to the EUT. Throughout testing, the EUT was closely monitored for signs of susceptibility. The test was performed with the antennae oriented in both a horizontal and vertical polarization.

All the scanning conditions are as follows **:**

Test conditions	
Frequency	80MHz-1GHz
Frequency increments step	1% of momentary used
Test level	3V/m (unmodulated)
Dwell time	3s
Test signal	80% amplitude modulated by 1kHz sinusoidal audio signal

10.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

RF Field Strength Susceptibility Test Results

Audix Technology(Shenzhen) Co.,Ltd.

Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.	Test Date	:	May.22, 2012
EUT	:	Gigabit PCI Express Network Adapter	Temperature	:	23℃
M/N	:	TG-3468	Humidity	:	51%
Test Voltage	:	DC 3.3V Via PC Input AC 230V/50Hz	Test Mode	:	Running
Test Engineer	:	Rock	Pressure	:	101KPa
Required Performance	:	**A**	Actual Performance	:	**A**
Frequency Range	:	80 MHz -1000MHz	Field Strength	:	3V/m

Modulation: ☑ AM ☐ Pulse ☐ none 1 kHz 80%

	Frequency Range 1: 80 MHz -1000MHz				
Steps	1%				
	Horizontal		Vertical		Result
	Required	Observation	Required	Observ	(Pass / Fail)
Front	A	A	A	A	Pass
Right	A	A	A	A	Pass
Rear	A	A	A	A	Pass
Left	A	A	A	A	Pass

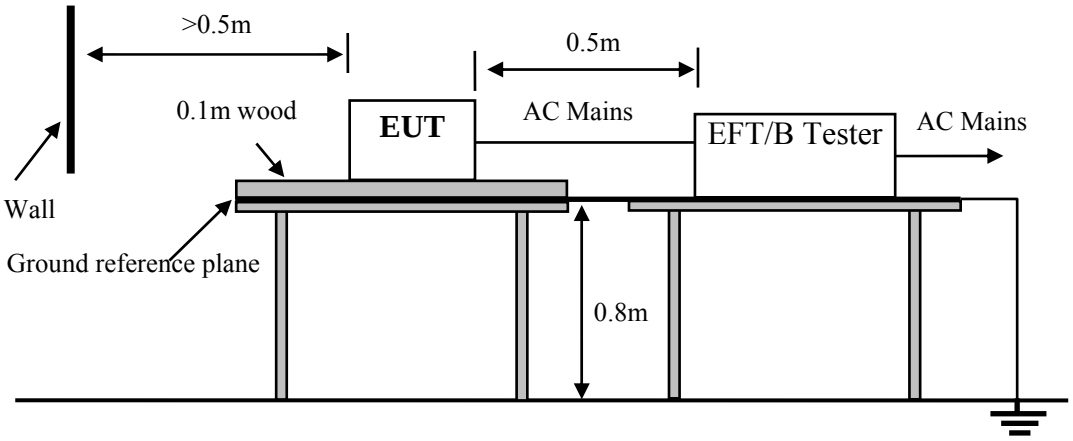
Remark:

11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

11.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1	Burst Tester	TESEQ	NSG3025	28017	Aug.01, 11	1 Year

11.2. Block Diagram of Test Setup



11.3. Test Standard

EN 55024: 2010+A1:2015
(IEC 61000-4-4:2012)
(Severity Level 2 at 1kV, Severity Level 2 at 0.5kV)

11.4. Severity Levels and Performance Criterion

Open Circuit Output Test Voltage ±10%			
Severity Level	On Power Supply Lines	On I/O (Input/output) Signal data and control lines	Performance criterion
1.	0.5 kV	0.25 kV	B
2.	1 kV	0.5 kV	
3.	2 kV	1 kV	
4.	4 kV	2 kV	
X	Special	Special	

11.5. EUT Configuration

The configuration of EUT are listed in Section 3.5.

11.6. Operating Condition of EUT

Same as Conducted Emission test which is listed in Section 3.6. except the test set up replaced by Section 11.2.

11.7. Test Procedure

The EUT and its simulators were placed on the ground reference plane and were insulated from it by an wood support 0.1m ± 0.01m thick. The ground reference plane was 1m*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane was project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane was more than 0.5m. All cables to the EUT was placed on the wood support, cables not subject to EFT/B was routed as far as possible from the cable under test to minimize the coupling between the cables.

11.7.1.For input and AC power ports**:**

The EUT was connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both positive transients and negative transients of test voltage was applied during compliance test and the duration of the test can't less than 1min.

11.7.2.For signal lines and control lines ports**:**

Ports which are intended to be connected to telecommunication networks (e.g. public switched telecommunication networks, integrated services digital networks, local area networks and similar networks.)

11.7.3.For DC input and DC output power ports**:**

It's unnecessary to test.

11.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Electrical Fast Transient/Burst Test Results

Audix Technology (Shenzhen)Co., Ltd.

Applicant	: TP-LINK TECHNOLOGIES CO., LTD.	Test Date	: May.16, 2012
EUT	: Gigabit PCI Express Network Adapter	Temperature	: 23℃
M/N	: TG-3468	Humidity	: 44.1%
Test Voltage	: DC 3.3V Via PC Input AC 230V/50Hz	Test Mode	: Running
Test Engineer	: Tim	Pressure	: 100.7KPa
Required Performance	: **B**	Actual Performance	: **B***

Repetition Frequency : 5 kHz Burst Duration : 15ms Burst Period: 300ms

Inject Time(s): 120s Inject Method: Direct

Inject Line: ☑ AC Mains ☐ DC Supply ☑ Signal

Line	Test Voltage	Performance			Result
		Required	Observation(+)	Observation(-)	(Pass/Fail)
L	0.5kV / 1kV	B	B**	B*	Pass
N	0.5kV / 1kV	B	B*	B*	Pass
L-N	0.5kV / 1kV	B	B*	B*	Pass
Signal Line	0.5kV	B	B*	B*	Pass

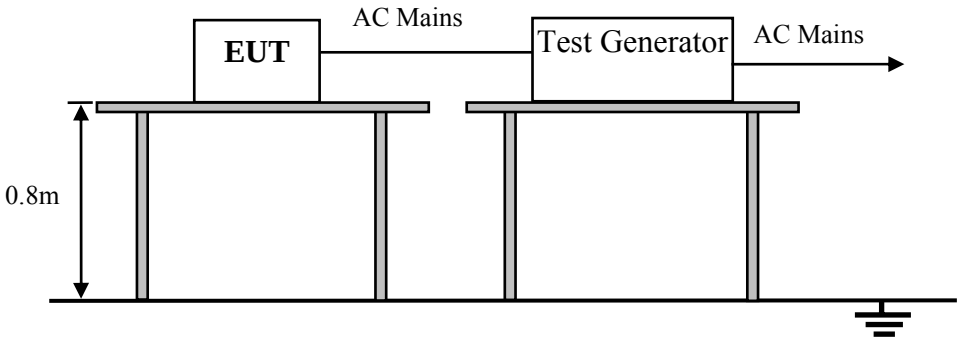
Remark: “B*” means request time out, but can it can be self recover.

12. SURGE TEST

12.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Surge Tester	HAEFELY	PSURGE4.1	083519-12	May.08, 12	1 Year

12.2. Block Diagram of Test Setup



12.3. Test Standard

EN 55024: 2010+A1:2015 (IEC 61000-4-5: 2014)
(Severity Level **:** Line to Line was Level 2 at 1kV & Level 3 at 2kV)

12.4. Severity Levels and Performance Criterion

Severity Level	Open-Circuit Test Voltage kV	Performance criterion
1	0.5	B
2	1.0	
3	2.0	
4	4.0	
*	Special	

12.5. EUT Configuration

The configuration of EUT are listed in Section 3.5.

12.6. Operating Condition of EUT

Same as Conducted Emission test which is listed in Section 3.6. except the test set up replaced by Section 12.2.

12.7. Test Procedure

1) Set up the EUT and test generator as shown on Section 12.2.
2) For line to line coupling mode, provide a 1kV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points, and for active line / neutral line to ground are same except test level is 2kV.
3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are applied during test.
4) Different phase angles are done individually.
5) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

12.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Surge Immunity Test Results

Audix Technology (Shenzhen) Co., Ltd.

Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.	Test Date	:	May.16, 2012
EUT	:	Gigabit PCI Express Network Adapter	Temperature	:	23℃
M/N	:	TG-3468	Humidity	:	44.2%
Power Supply	:	DC 3.3V Via PC Input AC 230V/50Hz	Test Mode	:	Running
Test Engineer	:	Tim	Pressure	:	100.7KPa
Required Performance	:	**B**	Actual Performance	:	**A**

No.of pluse: ±5

Line : ☑ AC Mains ☐ DC Supply ☑ Signal

Location	Volt	500V			1kV			2kV			Result
	Phase	Performance			Performance			Performance			(Pass/Fail)
		Required	+	-	Required	+	-	Required	+	-	
L-N	0°	B	A	A	B	A	A	---	---	---	Pass
	90°	B	A	A	B	A	A	---	---	---	Pass
	180°	B	A	A	B	A	A	---	---	---	Pass
	270°	B	A	A	B	A	AA	---	---	---	Pass
L-PE	0°	B	A	A	B	A	A	B	A	A	Pass
	90°	B	A	A	B	A	A	B	A	A	Pass
	180°	B	A	A	B	A	A	B	A	A	Pass
	270°	B	A	A	B	A	A	B	A	A	Pass
N-PE	0°	B	A	A	B	A	A	B	A	A	Pass
	90°	B	A	A	B	A	A	B	A	A	Pass
	180°	B	A	A	B	A	A	B	A	A	Pass
	270°	B	A	A	B	A	A	B	A	A	Pass
Signal Line	LAN	B	A	A	B	A	A	---	---	---	Pass

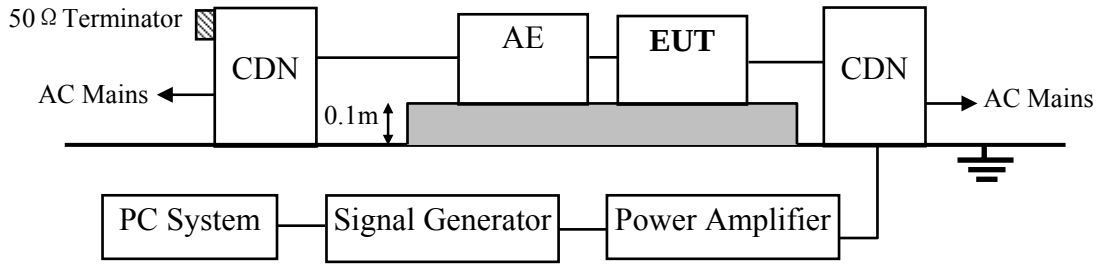
Remark:

13. INJECTED CURRENTS SUSCEPTIBILITY TEST

13.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Signal Generator	Agilent	N5181A	MY49061013	Nov.05,11	1 Year
2.	Amplifier	AR	25A250A	19152	NCR	NCR
3.	Amplifier	AR	100A250	19368	NCR	NCR
4.	Power meter	HP	436A	2016A07891	May.08, 12	1Year
5.	Power sensor	Agilent	8482B	MY41090514	Nov.26, 11	1Year
6.	CDN	FCC	FCC-801-M2-25	47	May.08, 12	1 Year
7.	CDN	FCC	FCC-801-M3-25	107	May.08, 12	1 Year
8.	CDN	FCC	FCC-801-M2-25	07035	May.08, 12	1 Year
9.	CDN	FCC	FCC-801-M3-25	07045	May.08, 12	1 Year
10.	PC	N/A	N/A	N/A	N/A	N/A
11.	Attenuator	Weinschel	40-6-34	LJ092	May.08, 12	1 Year
12.	EM Injection Clamp	FCC	F-203I-23mm	403	May.08, 12	1 Year
13.	RF Cable	MICABLE	A04-07-07-2M	09111340	NCR	NCR
14.	RF Cable	STORM	MFR-57500	90-195-2MTR	NCR	NCR

13.2. Block Diagram of Test Setup



13.3. Test Standard

EN 55024: 2010+A1:2015 (IEC 61000-4-6: 2013)
(Severity Level 2 at 3V (r.m.f.) and frequency is from 0.15MHz to 80MHz)

13.4. Severity Levels and Performance Criterion

Severity Level	Voltage Level (e.m.f.) V	Performance criterion
1	1	A
2	3	
3	10	
X	Special	

13.5. EUT Configuration

The configuration of EUT are listed in Section 3.5.

13.6. Operating Condition of EUT

Same as Conducted Emission test which is listed in Section 3.6. except the test set up replaced by Section 13.2.

13.7. Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 13.2.
2) Let the EUT work in test mode and test it.
3) The EUT are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane about 0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
4) The disturbance signal described below is injected to EUT through CDN.
5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
6) The frequency range is swept from 0.150MHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1kHz sine wave.
7) The rate of sweep shall not exceed 1.5*10-3decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
8) Recording the EUT operating situation during compliance testing and decide the EUT immunity criterion.

13.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Injected Currents Susceptibility Test Results

Audix Technology (Shenzhen)Co.,Ltd.

Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.	Test Date	:	May.24, 2012
EUT	:	Gigabit PCI Express Network Adapter	Temperature	:	23℃
M/N	:	TG-3468	Humidity	:	50%
Power Supply	:	DC 3.3V Via PC Input AC 230V/50Hz	Test Mode	:	Running
Test Engineer	:	Rock	Pressure	:	101KPa
Required Performance	:	**A**	Actual Performance	:	**A**

Frequency Range (MHz)	Injected Position	Voltage Level (e.m.f.)	Required	Observation	Result (Pass / Fail)
0.15 ~ 20	AC Mains	3V	A	A	PASS
20 ~ 80	AC Mains	3V	A	A	PASS
0.15 ~ 20	Signal Line	3V	A	A	PASS
20 ~ 80	Signal Line	3V	A	A	PASS

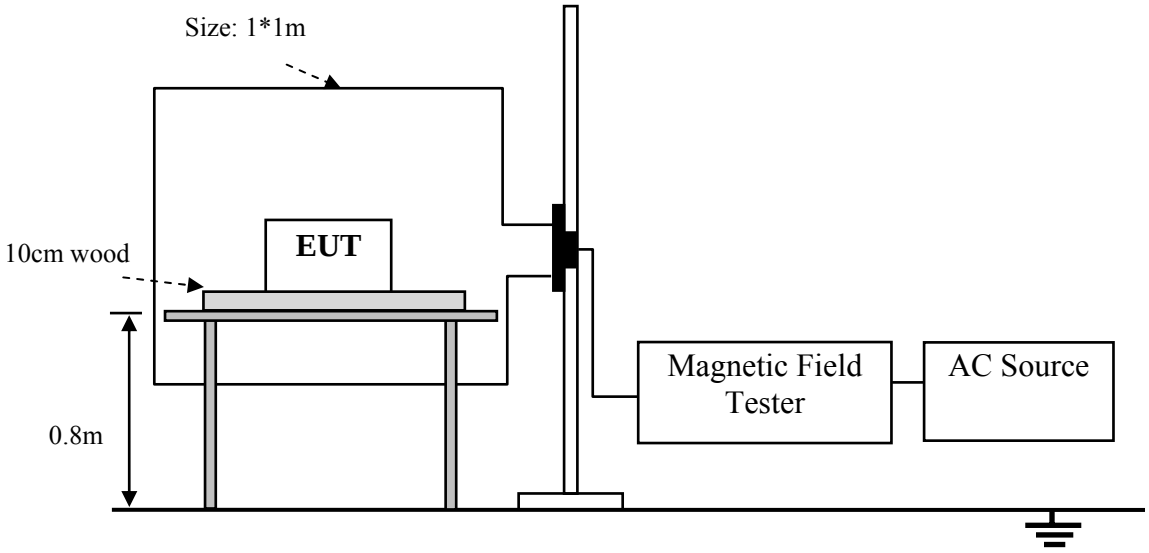
Remark:

14. MAGNETIC FIELD IMMUNITY TEST

14.1. Test Equipments

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100.1	083858-10	May.08, 12	1 Year

14.2. Block Diagram of Test Setup



14.3. Test Standard

EN 55024: 2010+A1:2015 (IEC 61000-4-8: 2009)
(Severity Level 1 at 1A/m)

14.4. Severity Levels and Performance Criterion

Severity Level	Magnetic Field Strength A/m	Performance criterion
1.	1	A
2.	3	
3.	10	
4.	30	
5.	100	
X.	Special	

14.5. EUT Configuration on Test

The configuration of EUT are listed in Section 3.5.

14.6. Operating Condition of EUT

Same as Conducted Emission test which is listed in Section 3.6. except the test set up replaced by Section 14.2.

14.7. Test Procedure

The EUT was subjected to the test magnetic field by using the induction coil of standard dimensions (1m*1m) and shown in Section 14.2. The induction coil was then rotated by 90° in order to expose the EUT to the test field with different orientations.

14.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Magnetic Field Immunity Test Results

Audix Technology (Shenzhen) Co., Ltd.

Applicant	:	TP-LINK TECHNOLOGIES CO., LTD.	Test Date	:	May.22, 2012
EUT	:	Gigabit PCI Express Network Adapter	Temperature	:	23℃
M/N	:	TG-3468	Humidity	:	51%
Test Voltage	:	DC 3.3V Via PC Input AC 230V/50Hz	Test Mode	:	Running
Test Engineer	:	Rock	Pressure	:	101KPa
Required Performance	:	**A**	Actual Performance	:	**A**

Test Level	Testing Duration	Coil Orientation	Required	Observation	Result (Pass/Fail)
1A/m	5 min / coil	X	A	A	PASS
1A/m	5 min / coil	Y	A	A	PASS
1A/m	5 min / coil	Z	A	A	PASS

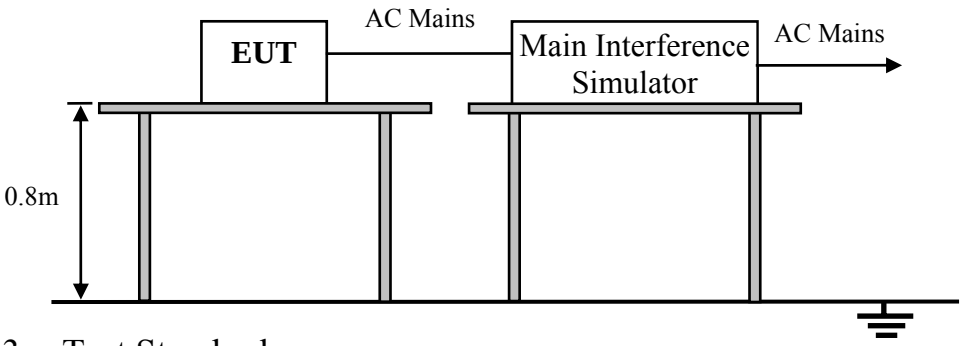
Remark:

15. VOLTAGE DIPS AND INTERRUPTIONS TEST

15.1. Test Equipment

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Main Interference Simulator	HAEFELY	PLINE 1610	083690-05	May.08, 12	1 Year

15.2. Block Diagram of Test Setup



15.3. Test Standard

EN 55024: 2010+A1:2015 (IEC 61000-4-11: 2004)

15.4. Severity Levels and Performance Criterion

Test Level %U_T	Voltage dip and short interruptions %U_T	Duration (in period)	Performance Criterion
0	100	250	C
0	100	0.5	B
70	30	25	C

15.5. EUT Configuration

The configuration of EUT are listed in Section 3.5.

15.6. Operating Condition of EUT

Same as Conducted Emission test which is listed in Section 3.6. except the test set up replaced by Section 15.2.

15.7. Test Procedure

1) Set up the EUT and test generator as shown on Section 15.2.
2) The interruptions is introduced at selected phase angles with specified duration.
3) Record any degradation of performance.

15.8. Test Results

PASS.

The EUT was tested and all the test results are listed in next page.

Voltage Dips And Interruptions Test Results

Audix Technology (Shenzhen) Co., Ltd.

Applicant	: TP-LINK TECHNOLOGIES CO., LTD.	Test Date	: May.17, 2012
EUT	: Gigabit PCI Express Network Adapter	Temperature	: 23℃
M/N	: TG-3468	Humidity	: 51%
Power Supply	: DC 9V Adapter Input AC 230V/50Hz DC 9V Adapter Input AC 100V/50Hz	Test Mode	: Running
Test Engineer	: Mark	Pressure	: 101KPa
Required Performance	: **B & C**	Actual Performance	: **A & B***

Test Level % U_T	Voltage Dips & Short Interruptions % U_T	Duration (in period)	Phase Angle	Required	Observation	Result (Pass / Fail)
0	100	0.5P	0°-360°	B	A	PASS
70	30	25P	0°-360°	C	A	PASS
0	100	250P	0°-360°	C	B*	PASS

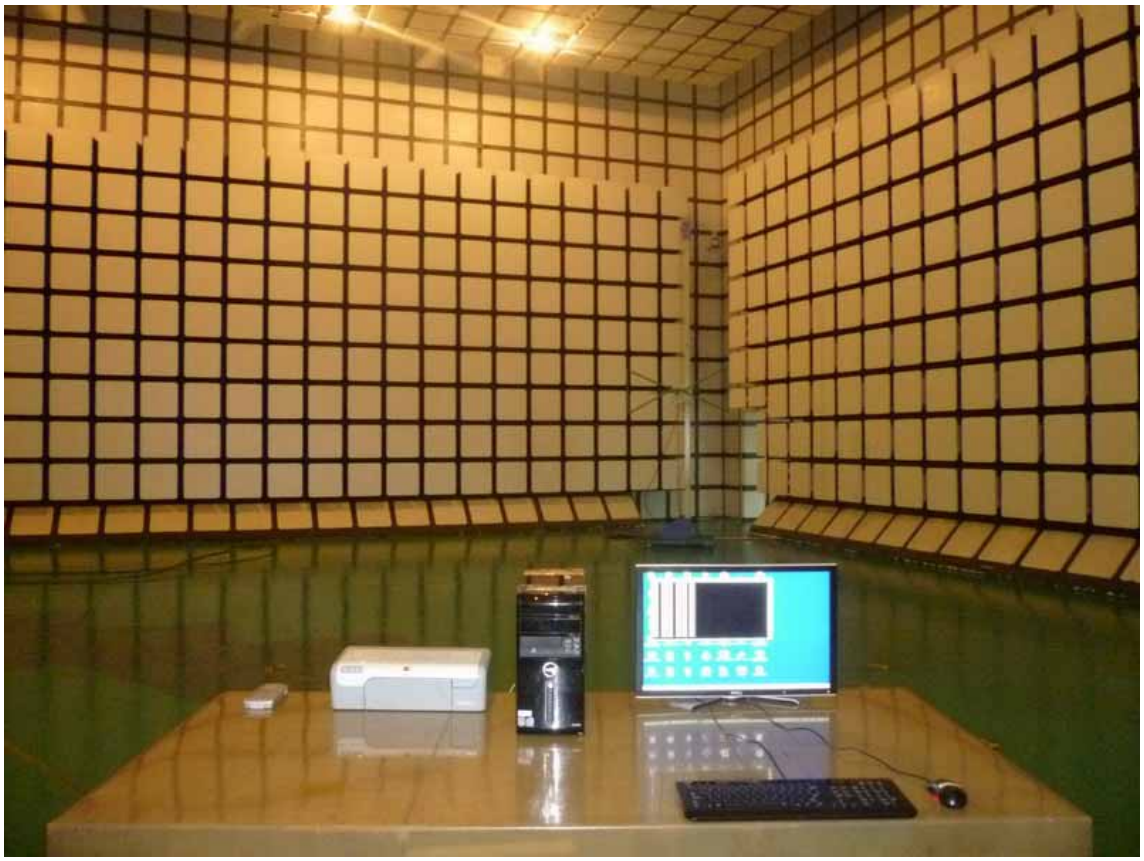
Remark: U_T is the rated voltage for the equipment.
"B*" means request time out, but can it can be self recover.

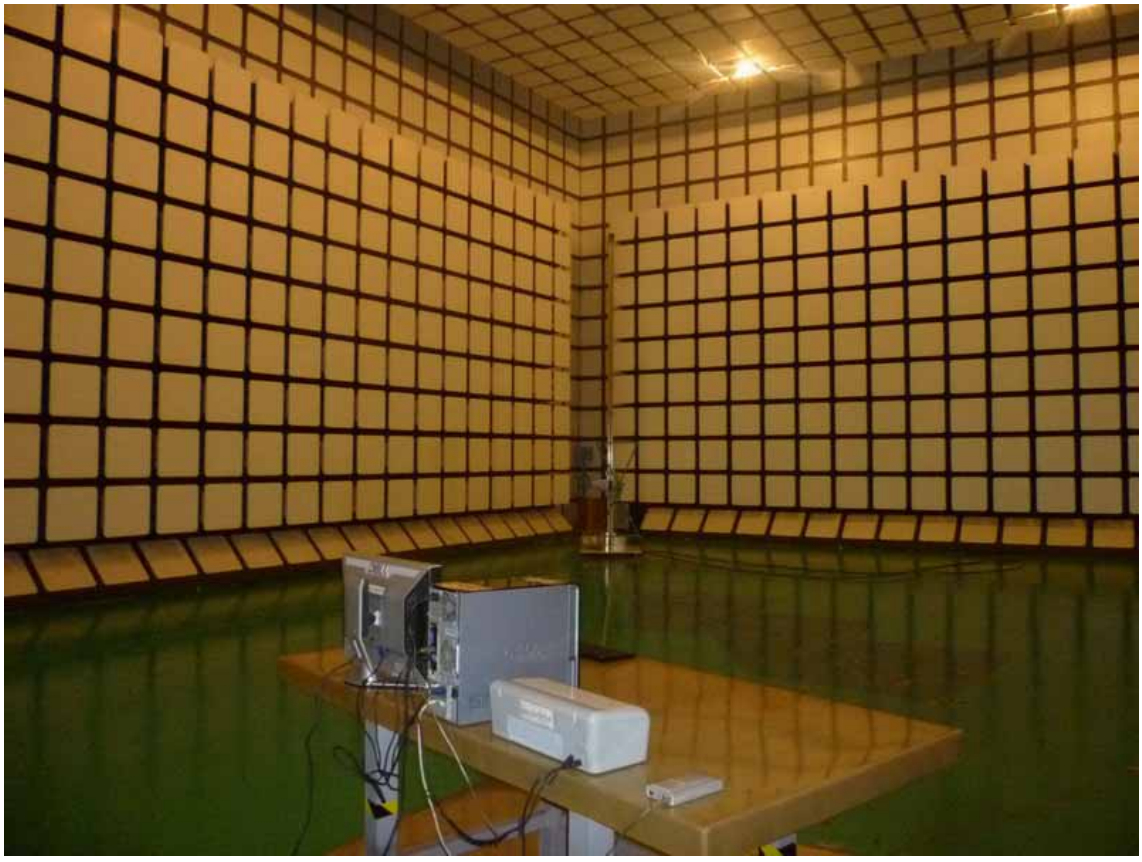
16. PHOTOGRAPH

16.1. Photos of Conducted Disturbance at Mains Terminals Test

16.2. Photos of Conducted Disturbance at Telecommunication Ports Test

16.3. Photos of Radiated Disturbance Test (In 10m Anechoic Chamber)





16.4. Photo of Harmonic / Flicker Test

16.5. Photos of Electrostatic Discharge Immunity Test

16.6. Photo of RF Strength Susceptibility Test

16.7. Photo of Electrical Fast Transient/Burst Immunity Test

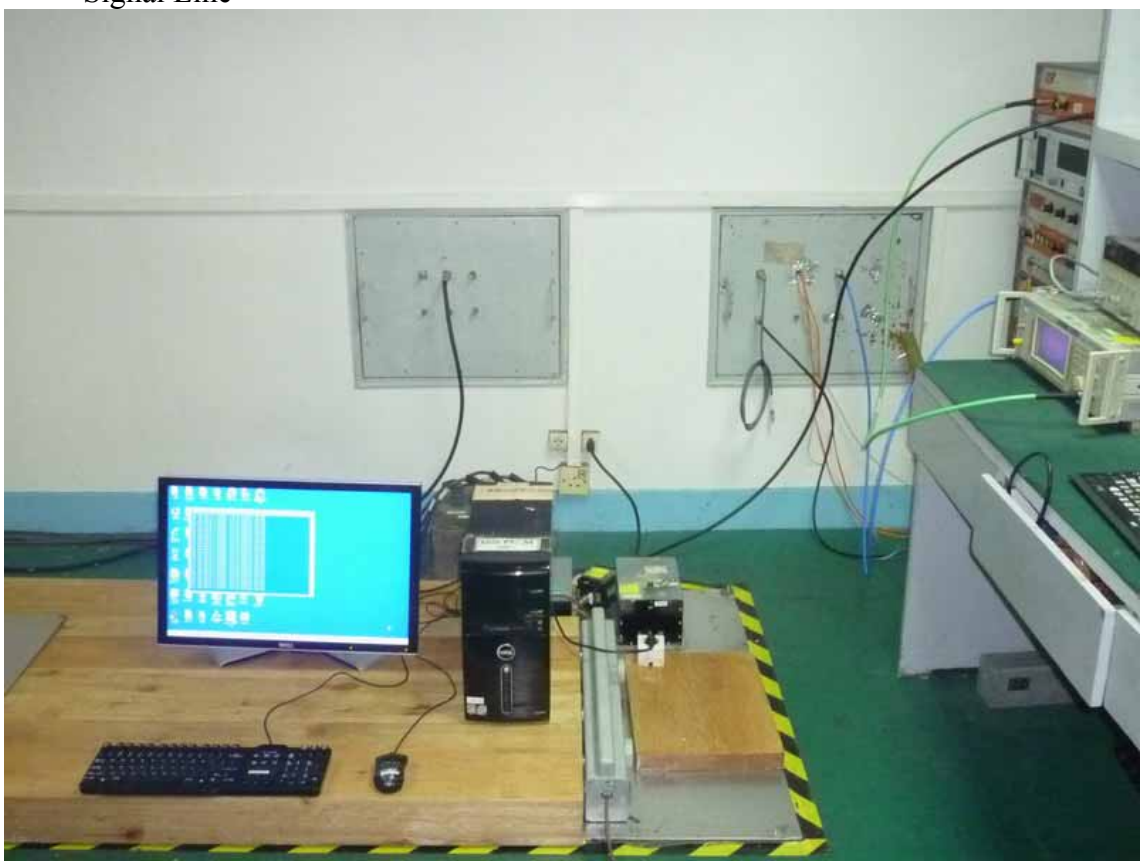
Signal Line

16.8. Photo of Surge Test

Signal Line

16.9. Photo of Injected Currents Susceptibility Test

Signal Line



16.10. Photo of Magnetic Field Test

16.11. Photo of Voltage Dips and interruptions test

16.12. Partner PC system photos

17. PHOTOS OF THE EUT

Figure 1
General Appearance of the EUT

Figure 2
General Appearance of the EUT

Figure 3
General Appearance of the EUT

Figure 4
General Appearance of the EUT