EMC TEST REPORT
for
NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD

Patch Panel
Model No.: SWUTP-CAT6-PP48, SWUTP-CAT5E-PP24, SWUTP-CAT6-PP24, SWUTP-CAT6A-PP24, SWUTP-CAT5E-PP48, SWUTP-CAT6A-PP48

Prepared for	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD
Address	:	55-1, QIXIN ROAD, JIANGDONG, NINGBO, CHINA
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Report No.	:	ATE20140126
Date of Test	:	Feb. 19-20, 2014
Date of Report	:	Feb. 21, 2014

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TEST REPORT

Applicant	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD
Manufacturer	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD
Product	:	Patch Panel
Model No.	:	SWUTP-CAT6-PP48, SWUTP-CAT5E-PP24, SWUTP-CAT6-PP24, SWUTP-CAT6A-PP24, SWUTP-CAT5E-PP48, SWUTP-CAT6A-PP48

Measurement Procedure Used:

EN55022: 2010
EN55024: 2010

The device described above is tested by Accurate TECHNOLOGY 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 measurement results are contained in this test report and Accurate TECHNOLOGY Co., LTD. is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with the EN55022 and EN55024 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of Accurate TECHNOLOGY Co., LTD.

Date of Test : Feb. 19-20, 2014

Prepared by : Ting Lv
(Ting Lü, Engineer)

Approved & Authorized Signer : Sean Liu
(Sean Liu, Manager)

1. TEST RESULTS SUMMARY

Test Items	Test Standard	Test Results
Conducted Emission	EN55022: 2010	Pass
Radiated Emission	EN55022: 2010	Pass
Electrostatic Discharge Immunity	EN55024: 2010 (IEC 61000-4-2: 2008)	Pass
Radiated Electromagnetic Fields Immunity	EN55024: 2010 (IEC 61000-4-3: 2010)	Pass
Electrical Fast Transient /Burst Immunity	EN55024: 2010 (IEC 61000-4-4: 2012)	Pass
Surge Immunity	EN55024: 2010 (IEC 61000-4-5:2005)	Pass
Injected Current Susceptibility	EN55024: 2010 (IEC 61000-4-6:2008)	Pass
Magnetic Field Susceptibility	EN55024: 2010 (IEC 61000-4-8:2009)	Pass
Voltage dips and interruptions Immunity	EN55024: 2010 (IEC 61000-4-11:2004)	N/A

Remark: “N/A” Means Not Applicable

2. GENERAL INFORMATION

2.1.Description of Device (EUT)

Product	:	Patch Panel
Model No.	:	SWUTP-CAT6-PP48, SWUTP-CAT5E-PP24, SWUTP-CAT6-PP24, SWUTP-CAT6A-PP24, SWUTP-CAT5E-PP48, SWUTP-CAT6A-PP48 (Note: These samples are same except their appearance is different. So we prepare SWUTP-CAT6-PP48 for test only.)
Rating	:	DC 5V (Powered by PC)
Applicant	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD
Address	:	55-1, QIXIN ROAD, JIANGDONG, NINGBO, CHINA
Manufacturer	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD
Address	:	55-1, QIXIN ROAD, JIANGDONG, NINGBO, CHINA
Date of sample received	:	Feb. 18, 2014
Date of Test	:	Feb. 19-20, 2014

2.2.Accessory and Auxiliary Equipment

Notebook PC	:	Manufacturer: LENOVO M/N: 4290-RT8 S/N: R9-FW93G 11/08

2.3.Description of Test Facility

EMC Lab	:	Accredited by TUV Rheinland Shenzhen Listed by FCC The Registration Number is 253065 Listed by FCC The Registration Number is 752051 Listed by Industry Canada The Registration Number is 5077A-1 Listed by Industry Canada The Registration Number is 5077A-2 Accredited by China National Accreditation Committee for Laboratories The Certificate Registration Number is L3193
Name of Firm	:	Accurate TECHNOLOGY Co., LTD.
Site Location	:	F1, Bldg. A, Changyuan New Material Port, Keyuan Rd. Science & Industry Park, Nanshan, Shenzhen, Guangdong P.R. China
Subcontracted Items	:	RF Field Strength Susceptibility Test
Subcontractor	:	Shenzhen Academy of Metrology and Quality Inspection
Site Location	:	Bldg. of Shenzhen Academy of Metrology and Quality Inspection, Longzhu Road, Nanshan, Shenzhen, China

2.4.Measurement Uncertainty

Conducted emission expanded uncertainty	:	U=2.23dB, k=2
Power disturbance expanded uncertainty	:	U=2.92dB, k=2
Radiated emission expanded uncertainty (9kHz-30MHz)	:	U=3.08dB, k=2
Radiated emission expanded uncertainty (30MHz-1000MHz)	:	U=4.42dB, k=2
Radiated emission expanded uncertainty (Above 1GHz)	:	U=4.06dB, k=2

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1.The Equipment Used to Measure Conducted Disturbance (L.I.S.N)

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Test Receiver	Rohde & Schwarz	ESCS30	100307	Jan. 11, 2014	1 Year
2.	Test Receiver	Rohde & Schwarz	ESPI3	100396/003	Jan. 11, 2014	1 Year
3.	Test Receiver	Rohde & Schwarz	ESPI3	101526/003	Jan. 11, 2014	1 Year
4.	L.I.S.N.	Schwarzbeck	NLSK8126	8126431	Jan. 11, 2014	1 Year
5.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100305	Jan. 11, 2014	1 Year
6.	L.I.S.N.	Rohde & Schwarz	ESH3-Z5	100310	Jan. 11, 2014	1 Year
7.	L.I.S.N.	Rohde & Schwarz	ESH3-Z6	100132	Jan. 11, 2014	1 Year
8.	L.I.S.N.	Rohde & Schwarz	ESH3-Z6	100979	Jan. 11, 2014	1 Year
9.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100305	Jan. 11, 2014	1 Year
10.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100312	Jan. 11, 2014	1 Year
11.	Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100815	Jan. 11, 2014	1 Year
12.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283936	Jan. 11, 2014	1 Year
13.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200283933	Jan. 11, 2014	1 Year
14.	50Ω Coaxial Switch	Anritsu Corp	MP59B	6200506474	Jan. 11, 2014	1 Year
15.	VOLTAGE PROBE	Schwarzbeck	TK9416	N/A	Jan. 11, 2014	1 Year
16.	RF CURRENT PROBE	Rohde & Schwarz	EZ-17	100048	Jan. 11, 2014	1 Year
17.	8-Wire Impedance Stabilisation Network	Schwarzbeck	CAT5 8158	8158-0035	Jan. 11, 2014	1 Year
18.	RF Coaxial Cable	SUHNER	N-2m	No.2	Jan. 11, 2014	1 Year
19.	RF Coaxial Cable	SUHNER	N-2m	No.3	Jan. 11, 2014	1 Year
20.	RF Coaxial Cable	SUHNER	N-2m	No.14	Jan. 11, 2014	1 Year

3.2.The Equipment Used to Measure Radiated Disturbance

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	Agilent	E7405A	MY45115511	Jan. 11, 2014	1 Year
2.	Spectrum Analyzer	Rohde&Schwarz	FSV40	101495	Jan. 11, 2014	1 Year
3.	Test Receiver	Rohde&Schwarz	ESCS30	100307	Jan. 11, 2014	1 Year
4.	Test Receiver	Rohde& Schwarz	ESPI3	100396/003	Jan. 11, 2014	1 Year
5.	Test Receiver	Rohde& Schwarz	ESPI3	101526/003	Jan. 11, 2014	1 Year
6.	Bilog Antenna	Schwarzbeck	VULB9163	9163-194	Jan. 15, 2014	1 Year
7.	Bilog Antenna	Schwarzbeck	VULB9163	9163-323	Jan. 15, 2014	1 Year
8.	Log.-Per.Antenna	Schwarzbeck	VUSLP 9111B	9111B-074	Jan. 15, 2014	1 Year
9.	Biconical Broad Band Antenna	Schwarzbeck	VHBB 9124+BBA 9106	9124-617	Jan. 15, 2014	1 Year
10.	Loop Antenna	Schwarzbeck	FMZB1516	1516131	Jan. 15, 2014	1 Year
11.	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-655	Jan. 15, 2014	1 Year
12.	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1067	Jan. 15, 2014	1 Year
13.	Vertical Active Monopole Antenna	Schwarzbeck	VAMP 9243	9243-370	Jan. 15, 2014	1 Year
14.	RF Switching Unit+PreAMP	Compliance Direction	RSU-M2	38322	Jan. 11, 2014	1 Year
15.	Pre-Amplifier	Agilent	8447D	294A10619	Jan. 11, 2014	1 Year
16.	Pre-Amplifier	Rohde&Schwarz	CBLU11835 40-01	3791	Jan. 11, 2014	1 Year
17.	50 Coaxial Switch	Anritsu Corp	MP59B	6200237248	Jan. 11, 2014	1 Year
18.	50 Coaxial Switch	Anritsu Corp	MP59B	6200506474	Jan. 11, 2014	1 Year
19.	RF Coaxial Cable	Schwarzbeck	N-5m	No.1	Jan. 11, 2014	1 Year
20.	RF Coaxial Cable	Schwarzbeck	N-1m	No.6	Jan. 11, 2014	1 Year
21.	RF Coaxial Cable	Schwarzbeck	N-1m	No.7	Jan. 11, 2014	1 Year
22.	RF Coaxial Cable	SUHNER	N-3m	No.8	Jan. 11, 2014	1 Year
23.	RF Coaxial Cable	RESENBERGER	N-3.5m	No.9	Jan. 11, 2014	1 Year
24.	RF Coaxial Cable	SUHNER	N-6m	No.10	Jan. 11, 2014	1 Year
25.	RF Coaxial Cable	RESENBERGER	N-12m	No.11	Jan. 11, 2014	1 Year
26.	RF Coaxial Cable	RESENBERGER	N-0.5m	No.12	Jan. 11, 2014	1 Year
27.	RF Coaxial Cable	SUHNER	N-2m	No.13	Jan. 11, 2014	1 Year
28.	RF Coaxial Cable	SUHNER	N-0.5m	No.15	Jan. 11, 2014	1 Year
29.	RF Coaxial Cable	SUHNER	N-2m	No.16	Jan. 11, 2014	1 Year
30.	RF Coaxial Cable	RESENBERGER	N-6m	No.17	Jan. 11, 2014	1 Year

3.3.For Electrostatic Discharge Immunity Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ESD Tester	HAEFELY	PESD1610	H4001552	Jan. 15, 2014	1 Year

3.4.The Equipment Used to Measure RF Immunity, Keyed Carrier

Item	Equipment	Manufacturer	Model No.	Eqpt No.	Last Cal.	Cal. Interval
1.	Signal Generator	Rohde&Schwarz	SMB100A	SB9422/02	Aug. 21, 2013	1 Year
2.	Signal Generator	Rohde&Schwarz	SMF100A	SB8501/03	May 14, 2013	1 Year
3.	Voltage Meter	Rohde&Schwarz	URV5-Z2	SB9422/03	Aug. 21, 2013	1 Year
4.	Voltage Meter	Rohde&Schwarz	URV5-Z2	SB9422/04	Aug. 21, 2013	1 Year
5.	Power Probe	Rohde&Schwarz	NRP-Z81	SB9422/06	Aug. 21, 2013	1 Year
6.	Power Probe	Rohde&Schwarz	NRP-Z81	SB9422/07	Aug. 21, 2013	1 Year
7.	Power Meter	Rohde&Schwarz	NRP	SB9422/05	Aug. 21, 2013	1 Year
8.	Power Amplifier	PRANA	MT310A	SB9422/08	Aug. 21, 2013	1 Year
9.	Broadband Antenna	Rohde&Schwarz	HL046E	SB9422/13	Aug. 21, 2013	1 Year
10.	Horn Antenna	AR	ATH800M5GA	SB9422/15	Aug. 21, 2013	1 Year
11.	Power Amplifier	MILMEGA	A-001	SB9422/10	Aug. 21, 2013	1 Year
12.	Power Meter	Rohde&Schwarz	NRVD	SB3437	Aug. 21, 2013	1 Year

3.5.The Equipment Used to Measure EFT/Bursts Immunity

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	Jan. 11, 2014	1Year
2.	CAPACITIVE CLAMP	EM TEST	HFK	0509-34	Jan. 15, 2014	1Year
3.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Jan. 11, 2014	1Year

3.6.The Equipment Used to Measure Surge Immunity

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	Jan. 11, 2014	1Year
2.	EMCPRO SYSTEM (IMMUNITY TESTER)	THERMO	EMC PRO Plus-BASE	1108237	Jan. 11, 2014	1Year
3.	COUPLER DECOUPLER FOR TELECOM LINES	THERMO	CM-TEL-CD	0403273	Jan. 11, 2014	1Year

3.7.For Injected Current Susceptibility Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Conducted Immunity Test System	FRANKONIA	CIT-10	126B1121	Jan. 11, 2014	1Year
2.	CDN	FRANKONIA	CDN-M2/3	A3027020	Jan. 11, 2014	1Year
3.	EM Injection Clamp	FCC	F-203I-23mm	091824	Jan. 11, 2014	1Year
5.	6dB Attenuator	Weinschel	WA59-6-33	A329	Jan. 11, 2014	1Year

3.8.For Magnetic Field Immunity Test

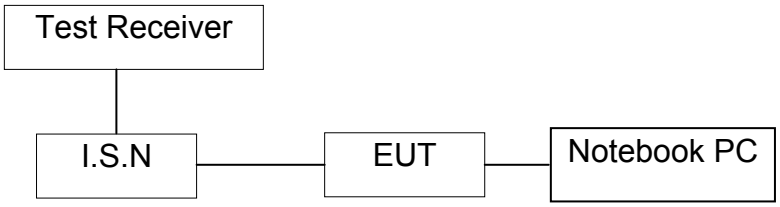
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Magnetic Field Tester	HAEFELY	MAG100	150577	Jan. 11, 2014	1 Year

3.9.For Voltage Dips and Interruptions Test

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	Jan. 11, 2014	1Year

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1.Block Diagram of Test Setup



(EUT: Patch Panel)

4.2.Measuring Standard

EN 55022: 2010

4.3.Telecommunication ports Conducted Emission Limits (Class B)

Frequency (MHz)	Voltage Limit dB(μV)		Current Limit dB(μA)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 - 0.50	84.0 - 74.0 *	74.0 - 64.0 *	40.0 - 30.0 *	30.0 - 20.0 *
0.50 - 30.00	74.0	64.0	30.0	20.0
NOTE 1 - The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz. NOTE 2 – The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN), which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test (conversion factor is $20\log_{10}^{150/1}$ = 44 dB).				

4.4.EUT Configuration on Measurement

The equipments are installed on Conducted Emission Measurement to meet EN55022 requirements and operating in a manner, which tends to maximize its emission characteristics in a normal application.

4.4.1.Patch Panel (EUT)

Model Number : SWUTP-CAT6-PP48
Manufacturer : NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown on Section 4.1.

4.5.2. Turn on the power of all equipments.

4.5.3. Let the EUT work in measuring mode measure it.

4.6. Test Procedure

The EUT is put on the plane 0.4m high above the ground by insulating support and connected to the signal port through an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to the telecommunication port under test. Meanwhile the current measurement uses the current probe which the distance to the ISN is 10cm during test.

The bandwidth of the field strength meter (R&S Test Receiver ESCS30) is set at 9kHz in 150kHz-30MHz and 200Hz in 9kHz-150kHz.

The frequency range from 150kHz to 30MHz is investigated for AC mains.

4.7.Measuring Results

PASS.

The frequency range from 150kHz to 30MHz is investigated

Test Mode: LAN Port

MEASUREMENT RESULT: "QP-0219-01_fin"

2014-2-19 9:41

Frequency MHz	Level dBuv	Transd dB	Limit dBuv	Margin dB	Detector	Line	PE
5.235978	54.00	22.1	74	20.0	QP	L1	GND
10.242520	56.20	22.0	74	17.8	QP	L1	GND
12.746030	57.80	22.0	74	16.2	QP	L1	GND

MEASUREMENT RESULT: "QP-0219-01_fin2"

2014-2-19 9:41

Frequency MHz	Level dBuv	Transd dB	Limit dBuv	Margin dB	Detector	Line	PE
5.235978	51.40	22.1	64	12.6	AV	L1	GND
10.060075	53.80	22.0	64	10.2	AV	L1	GND
12.746030	55.50	22.0	64	8.5	AV	L1	GND

Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are shown in the following pages.

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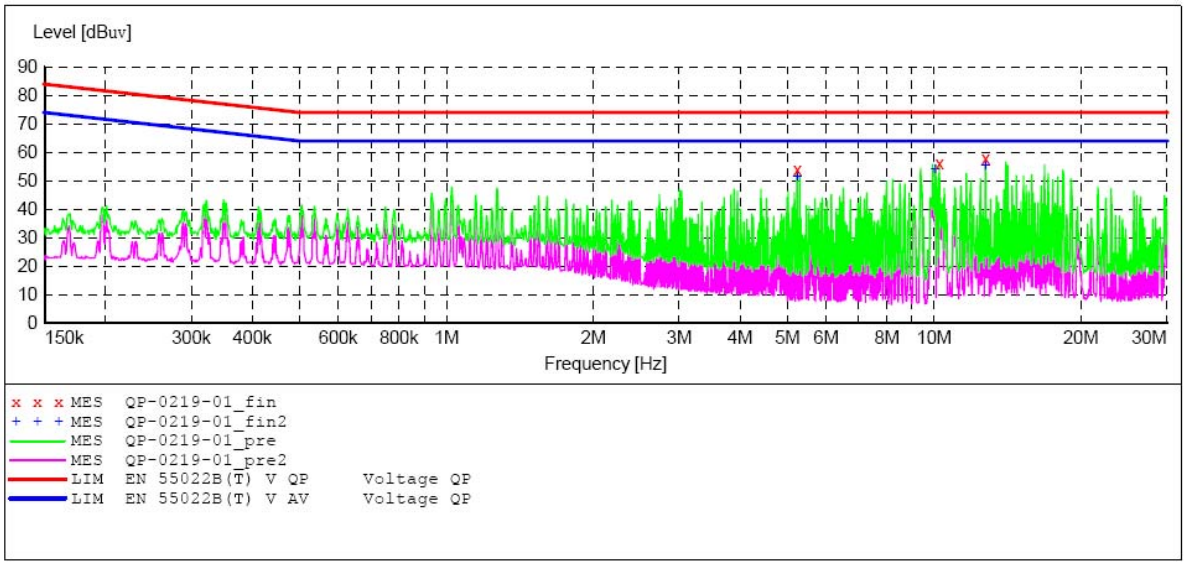
CONDUCTED EMISSION STANDARD EN55022B

EUT: Patch panel M/N:SWUTP-CAT6-PP48
Manufacturer: Excellent
Operating Condition: PING
Test Site: 2#Shielding Room
Operator: STAR
Test Specification: AC 230V/50Hz
Comment: LAN PORT
Report NO.:ATE20140126

SCAN TABLE: "V (T) Fin"

Short Description: _SUB_STD_VTERM2 1.70

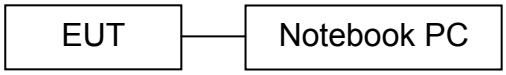
Start Frequency	Stop Frequency	Step Width	Detector	Meas. Time	IF Bandw.	Transducer
150.0 kHz	30.0 MHz	4.5 kHz	QuasiPeak Average	1.0 s	9 kHz	ISN ENY22



5. RADIATED EMISSION MEASUREMENT

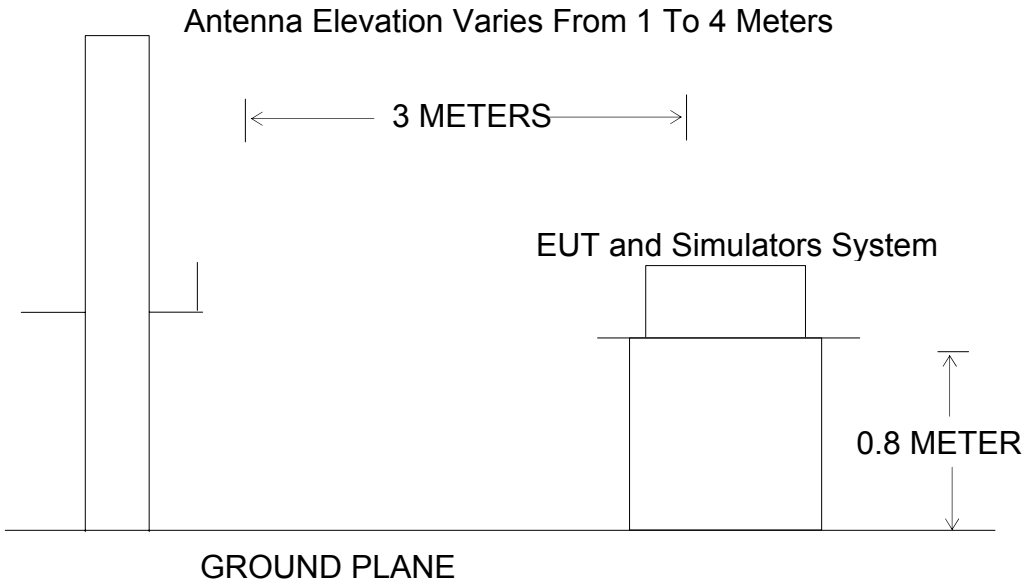
5.1.Block Diagram of Test

5.1.1.Block diagram of connection between the EUT and simulators



(EUT: Patch Panel)

5.1.2.Block diagram of test setup (In chamber)



5.2.Measuring Standard

EN55022: 2010

5.3.Radiated Emission Limits(Class B)

5.3.1. Limits below 1GHz

Frequency (MHz)	Quasi-peak limits dB(μV/m)
30 – 230	40
230 - 1000	47
Note *: According to Clause 10.3.1 of EN 55022: 2010, if the field-strength measurement at 10 m cannot be made because of high ambient noise levels, or for other reasons, measurement of class B EUTs may be made at a closer distance, for example 3 m. An inverse proportionality factor of 20 dB per decade should be used to normalize the measured data to the specified distance for determining compliance.	

5.3.2. Limits above 1GHz

Frequency (GHz)	Average Limit dB(μV/m)	Peak Limit dB(μV/m)
1 – 3	50	70
3 - 6	54	74
Note: The lower limit applies at the transition frequency.		

5.4.Conditional Testing Procedure

If the highest frequency of the internal sources of the EUT is less than 108MHz, the measurement shall only be made up to 1GHz.

If the highest frequency of the internal sources of the EUT is between 108MHz and 500MHz, the measurement shall only be made up to 2GHz.

If the highest frequency of the internal sources of the EUT is between 500MHz and 1GHz, the measurement shall only be made up to 5GHz.

If the highest frequency of the internal sources of the EUT is above 1GHz, the measurement shall only be made up to 5 times the highest frequency or 6GHz, whichever is less.

5.5.EUT Configuration on Test

The configuration of EUT is listed in Section 4.4.

5.6.Operating Condition of EUT

5.6.1.Turn on the power.

5.6.2.After that, let the EUT work in test mode measure it.

5.7.Test Procedure

The EUT is placed on a turntable, which is 0.8 meter high above the ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down from 1 to 4 meters to find out the maximum emission level. Bilog antenna (calibrated by Dipole Antenna) is used as a receiving antenna. Both horizontal and vertical polarizations of the antenna are set on test.

The bandwidth of the Receiver (ESCS30) is set at 120kHz.

5.8.Measuring Results

PASS.

The frequency range from 30MHz to 1000MHz is investigated.

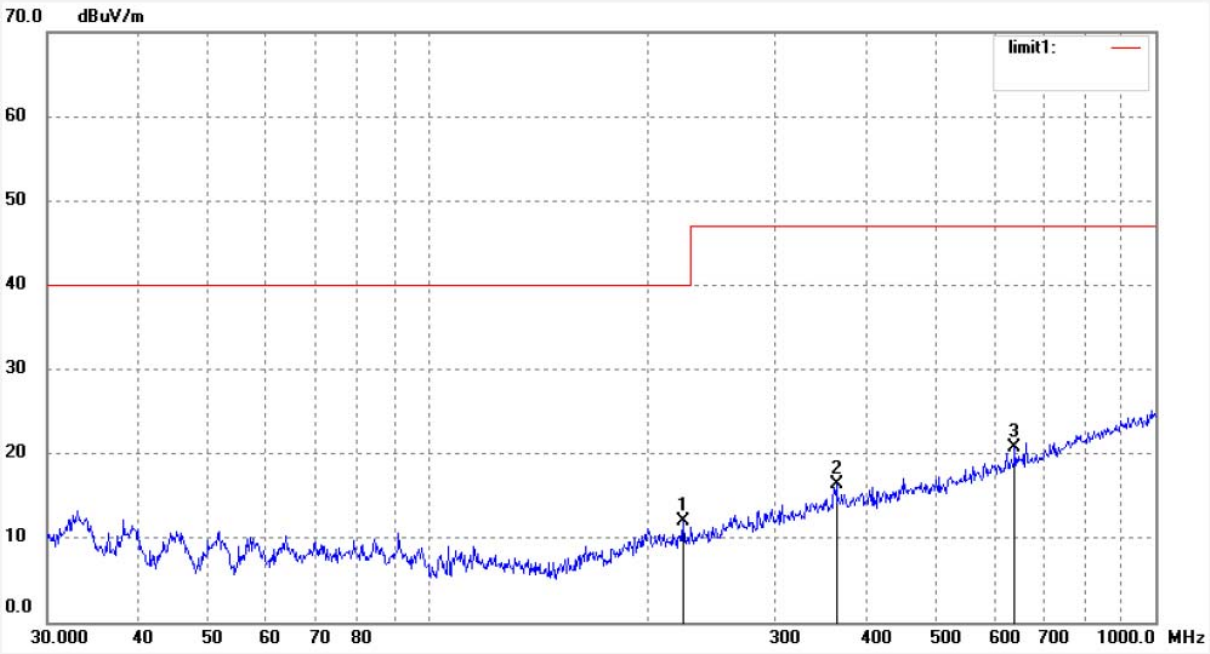
Emissions attenuated more than 20 dB below the permissible value are not reported.

The spectral diagrams are shown in the following pages.

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: CARRY #869	Polarization: Horizontal
Standard: EN55022 ClassB Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 14/02/20/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17/36/29
EUT: Patch panel	Engineer Signature: Carry
Mode: LAN Port	Distance: 3m
Model: SWUTP-CAT6-PP48	
Manufacturer: Excellent	

Note: Report NO.:ATE20140126

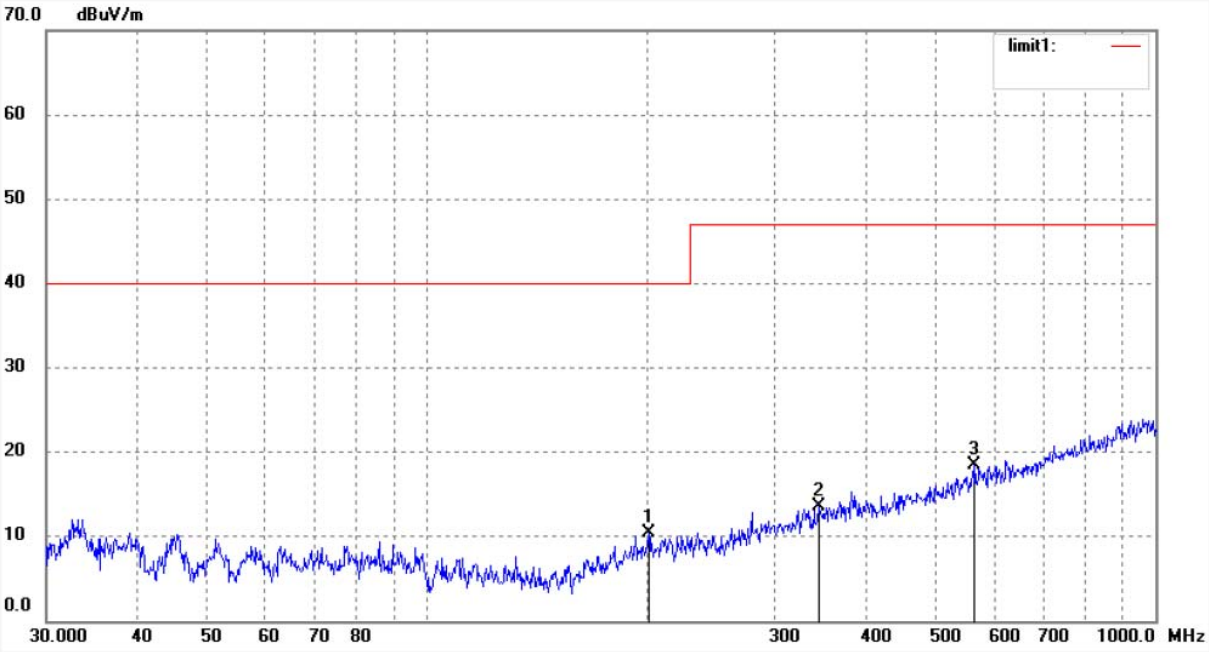


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	224.5193	31.85	-19.90	11.95	40.00	-28.05	peak			
2	364.2595	32.29	-15.88	16.41	47.00	-30.59	peak			
3	640.6110	31.48	-10.82	20.66	47.00	-26.34	peak			

ACCURATE TECHNOLOGY CO., LTD.
F1,Bldg,A,Changyuan New Material Port Keyuan Rd,
Science & Industry Park,Nanshan Shenzhen,P.R.China
Site: 1# Chamber
Tel:+86-0755-26503290
Fax:+86-0755-26503396

Job No.: CARRY #870	Polarization: Vertical
Standard: EN55022 ClassB Radiated	Power Source: DC 5V
Test item: Radiation Test	Date: 14/02/20/
Temp.(C)/Hum.(%) 25 C / 55 %	Time: 17/36/56
EUT: Patch panel	Engineer Signature: Carry
Mode: LAN Port	Distance: 3m
Model: SWUTP-CAT6-PP48	
Manufacturer: Excellent	

Note: Report NO.:ATE20140126

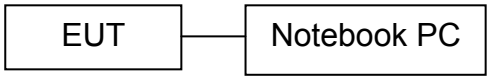


No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	201.3930	30.63	-20.19	10.44	40.00	-29.56	peak			
2	344.3855	29.92	-16.44	13.48	47.00	-33.52	peak			
3	564.6389	30.92	-12.51	18.41	47.00	-28.59	peak			

6. ELECTROSTATIC DISCHARGE IMMUNITY TEST

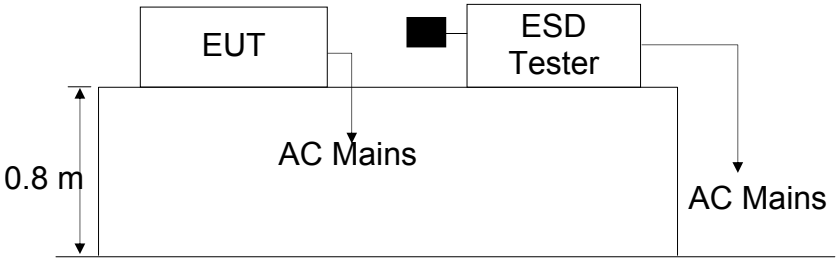
6.1.Block Diagram of Test Setup

6.1.1.Block diagram of connection between the EUT and Load



(EUT: Patch Panel)

6.1.2.Block diagram of ESD test setup



6.2.Test Standard

EN55024: 2010
(IEC61000-4-2: 2008, Severity Level: 3 / Air Discharge: ±8KV, Level: 2 / Contact Discharge: ±4KV)
Testing shall also be satisfied at the lower levels

6.3.Severity Levels and Performance Criterion

6.3.1.Severity level

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	±2	±2
2.	±4	±4
3.	±6	±8
4.	±8	±15
X	Special	Special

6.3.2.Performance Criterion: **B**

6.4.Operating Condition of EUT

Same as conducted emission measurement, which is listed in Section 4.4 except the test set up replaced by Section 6.1.

6.5.Test Procedure

6.5.1.Contact discharges to the conductive surfaces and to coupling planes:

The EUT shall be exposed to at lease 200 discharges, 100 each at negative and positive polarity, at a minimum of four test points (a minimum of 50 discharges at each point). One of the test points shall be subjected to at least 50 indirect discharges (contact) to the centre of the front edge of the horizontal coupling plane. The remaining three test points shall each receive at least 50 direct contact discharges. If no direct contact test points are available, then at least 200 indirect discharges shall be applied in the indirect mode [see IEC 61000-4-2 for use of the Vertical Conducting Plane (VCP)]. Tests shall be performed at a maximum repetition rate of one discharge per second.

6.5.2.Air discharge at slots and apertures, and insulating surfaces:

On those parts of the EUT where it is not possible to perform contact discharge testing, the equipment should be investigated to identify user accessible points where breakdown may occur; examples are openings at edges of keys, or in the cover of keyboards and telephone handsets. Such points are tested using the air discharge method. See also IEC 61000-4-2 regarding painted surfaces. This investigation should be restricted to those areas normally handled by the user. A minimum of 10 single air discharges shall be applied to the selected test point for each such area.

6.6.Test Results

PASS

Please refer to the following page.

Electrostatic Discharge Test Results

Accurate TECHNOLOGY Co., LTD.

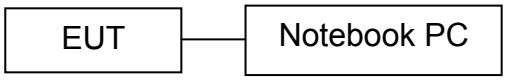
Applicant	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD	Test Date	:	Feb. 19-20, 2014
EUT	:	Patch Panel	Temperature	:	25℃
M/N	:	SWUTP-CAT6-PP48	Humidity	:	49%
Air discharge	:	± 2kV; ± 4kV; ± 8kV	Test Mode	:	LAN Port
Contact discharge:		± 2kV; ± 4kV	Criterion	:	B

Location	**Kind** A-Air Discharge C-Contact Discharge	**Result**
All non-conducted enclosure & Seam	A	PASS
All conducted enclosure & Seam	B	PASS
HCP	B	PASS
VCP of front	B	PASS
VCP of rear	B	PASS
VCP of left	B	PASS
VCP of right	B	PASS
Remark :	Test Equipment : ESD Simulator (HAEFELY, PESD1610)	

7. RF FIELD STRENGTH SUSCEPTIBILITY TEST

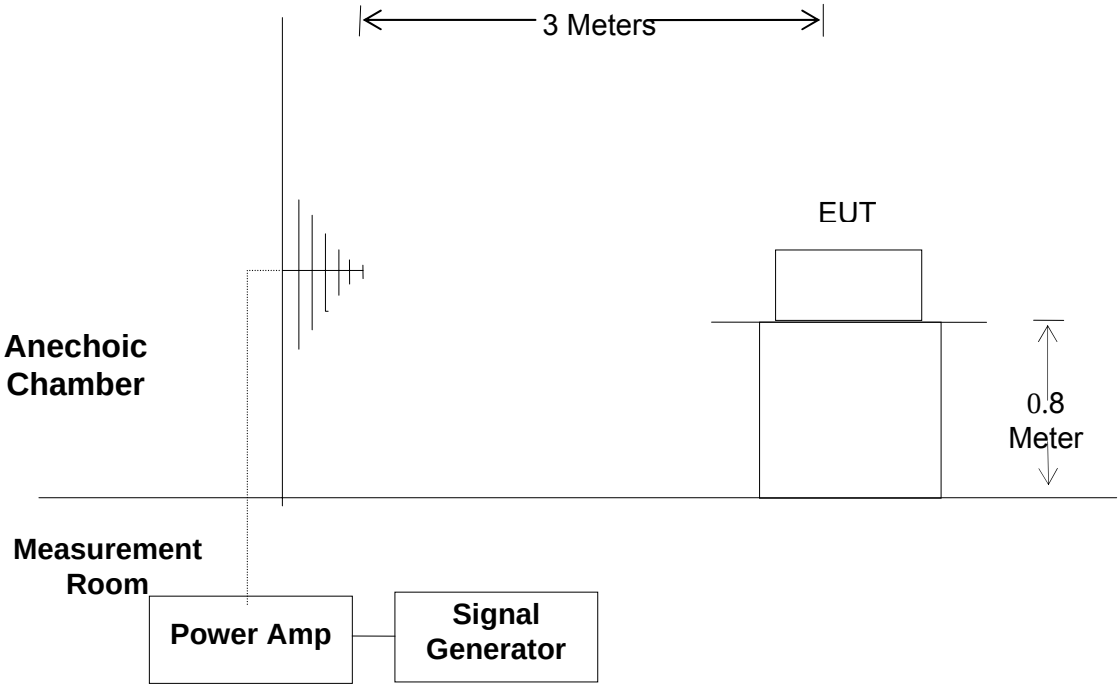
7.1.Block Diagram of Test

7.1.1.Block diagram of connection between the EUT and Load



(EUT: Patch Panel)

7.1.2.Block diagram of R/S test setup



7.2.Test Standard

EN55024: 2010
(IEC61000-4-3: 2010, Severity Level: 2, 3V / m)

7.3.Severity Levels and Performance Criterion

7.3.1.Severity Levels

Level	Field Strength V/m
1.	1
2.	3
3.	10
X	Special

7.3.2.Performance Criterion : **A**

7.4.EUT Configuration on Test

The configuration of EUT is listed in Section 4.4.

7.5.Operating Condition of EUT

Same as radiated emission measurement, which is listed in Section 4.5 except the test setup replaced as Section 7.1.

7.6.Test Procedure

The EUT are placed on a table, which is 0.8 meter high above the ground. The EUT is set 3 meters away from the transmitting antenna, which is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of the EUT must be faced this transmitting antenna and measured individually.
In order to judge the EUT performance, a CCD camera is used to monitor its screen.
All the scanning conditions are as following:

Condition of Test	Remark
1. Fielded Strength	3V/m (Severity Level 2)
2. Radiated Signal	Unmodulated
3. Scanning Frequency	80-1000MHz
4. Sweep time of radiated	0.0015 Decade/s
5. Dwell Time	1 Sec.

7.7.Test Results

PASS.

Please refer to the following page.

RF Field Strength Susceptibility Test Results

Accurate TECHNOLOGY Co., LTD.

Applicant	:	NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD	Test Date	:	Feb. 19-20, 2014
EUT	:	Patch Panel	Temperature	:	25℃
M/N	:	SWUTP-CAT6-PP48	Humidity	:	50%
Field Strength:		3 V/m	Criterion	:	A
Test Mode:		LAN Port	Frequency Range:		80MHz to1000MHz
Test Engineer:		Carry			

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

	Frequency Range 1:80 - 1000MHz		Frequency Range 2:	
Steps	# / %		# / %	
	Horizontal	Vertical	Horizontal	Vertical
Front	PASS	PASS		
Right	PASS	PASS		
Rear	PASS	PASS		
Left	PASS	PASS		

Test Equipment **:**

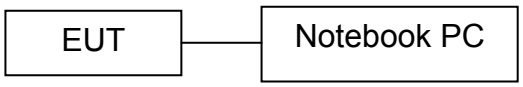
1. Signal Generator : SMT03 (Rohde & Schwarz)
2. Power Amplifier : 250W1000A (A&R)
3. Bilog Antenna : AT1080 (AR)

Note:

8. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

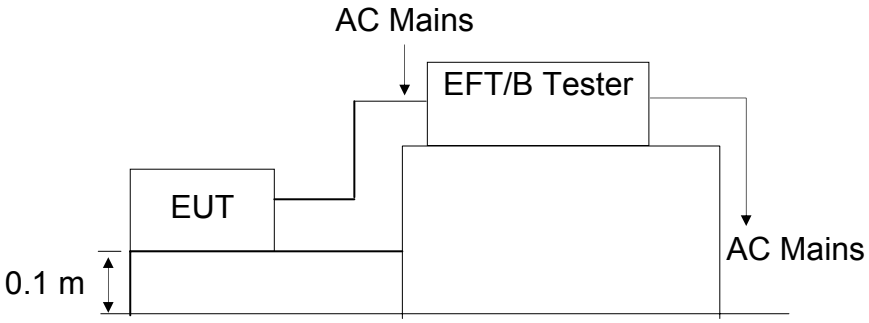
8.1.Block Diagram of Test Setup

8.1.1.Block Diagram of the EUT



(EUT: Patch Panel)

8.1.2.Block Diagram of the AC Mains



8.2.Test Standard

EN55024: 2010
(IEC61000-4-4: 2012 Severity Level, Level 2**:** 1kV & 0.5kV)

8.3.Severity Levels and Performance Criterion

8.3.1.Severity level

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

8.3.2.Performance Criterion : **B**

8.4.EUT Configuration

The configuration of EUT is listed in Section 4.4.

8.5.Operating Condition of EUT

8.5.1.Setup the EUT as shown in Section 8.1.

8.5.2.Turn on the power of all equipments.

8.5.3.Let the EUT work in test mode (LAN Port) and measure it.

8.6.Test Procedure

The EUT is put on the table, which is 0.1 meter high above the ground. This reference ground plane shall 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 beneath the EUT, shall be more than 0.5m.

8.7.Test Result

PASS.

Please refer to the following page.

Electrical Fast Transient/Burst Test Results

Accurate TECHNOLOGY Co., LTD.

Standard	IEC 61000-4-4: 2012	Result : ☑ PASS / ☐ FAIL

Applicant : NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD

EUT : Patch Panel

M/N : SWUTP-CAT6-PP48

Criterion : B

Ambient Condition : 25 ℃ 49% RH

Operation Mode: LAN Port

Line : ☐ AC Mains	Line : ☐ Signal line ☐ DC output line
Coupling : ☑ Direct	Coupling : ☑ Capacitive
Test Time : 120s	

Line	Test Voltage	Result(+)	Result(-)
L			
N			
PE			
L、N			
L、PE			
N、PE			
L、N、PE			
Signal line			
Phone Line			
LAN Port Line	0.5kV	PASS	PASS

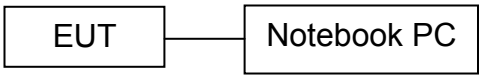
Note :

Test Equipment	Burst Tester Model : ULTRA COMPACT SIMULATOR: UCS 500 N5(EM TEST EM TEST) CAPACITIVE CLAMP: HFK (EM TEST)

9. SURGE IMMUNITY TEST

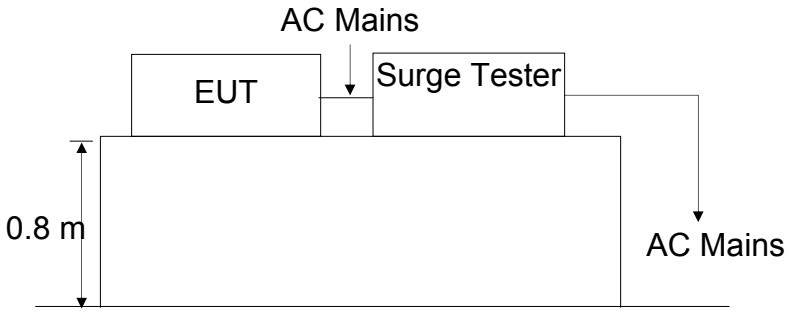
9.1.Block Diagram of Test Setup

9.1.1.Block Diagram of the EUT



(EUT: Patch Panel)

9.1.2.Surge Test Setup



9.2.Test Standard

EN55024: 2010
(IEC61000-4-5: 2005, Severity Level**:** Level 2, 1.0kV)
Testing shall also be satisfied at the lower levels

9.3.Severity Levels and Performance Criterion

9.3.1.Severity level

Severity Level	Open-Circuit Test Voltage KV
1	0.5
2	1.0
3	2.0
4	4.0
*	Special

11.3.2.Performance Criterion **: B**

9.4.EUT Configuration

The configuration of EUT is listed in Section 4.4.

9.5.Operating Condition of EUT

9.5.1.Setup the EUT as shown in Section 9.1.

9.5.2.Turn on the power of all equipments.

9.5.3.Let the EUT work in test mode (LAN Port) and measure it.

9.6.Test Procedure

The EUT is put on the table, which is 0.1 meter high above the ground. This reference ground plane shall 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 beneath the EUT, shall be more than 0.5m.

9.7.Test Result

PASS.

Please refer to the following page.

Surge Immunity Test Results

Accurate TECHNOLOGY Co., LTD.

Applicant : NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD	Test Date : Feb. 19-20, 2014
EUT : Patch Panel	Temperature : 25℃
M/N : SWUTP-CAT6-PP48	Humidity : 49%
Test Engineer : Carry	Test Mode : LAN Port
	Criterion : B

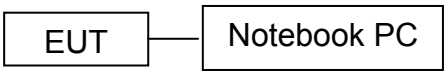
Location	Polarity	Phase Angle	Number of Pulse	Pulse Voltage (KV)	Result
L_1-Ground	+	0^o	5	0.5&1.0	PASS
	-	0^o	5	0.5&1.0	PASS
L_2-Ground	+	0^o	5	0.5&1.0	PASS
	-	0^o	5	0.5&1.0	PASS

Remark:	Test Equipment : ULTRA COMPACT SIMULATOR: UCS 500 N5(EM TEST EM TEST)

10.INJECTED CURRENTS SUSCEPTIBILITY TEST

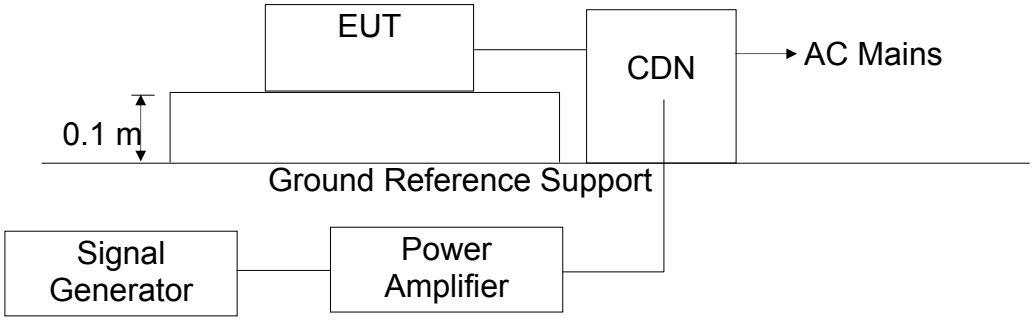
10.1.Block Diagram of Test Setup

10.1.1.Block Diagram of the EUT



(EUT: Patch Panel)

10.1.2.Block Diagram of Test Setup



10.2.Test Standard

EN55024: 2010
(IEC61000-4-6: 2008, Severity Level 2**:** 3V (rms), 0.15MHz-80MHz)

10.3.Severity Levels and Performance Criterion

10.3.1.Severity level

Level	Field Strength V(rms)
1.	1
2.	3
3.	10
X	Special

10.3.2.Performance Criterion: **A**

10.4.EUT Configuration

The configuration of EUT is listed in Section 4.4.

10.5.Operating Condition of EUT

10.5.1.Setup the EUT as shown in Section 10.1.

10.5.2.Turn on the power of all equipments.

10.5.3.Let the EUT work in test mode (LAN Port) and measure it.

10.6.Test Procedure

1) Set up the EUT, CDN and test generators as shown on Section 10.1.
2) Let the EUT work in test mode and measure 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 150kHz 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 $1.5*10^{-3}$decades/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.

10.7.Test Results

PASS.

Please refer to the following page.

Injected Currents Susceptibility Test Results

Accurate TECHNOLOGY Co., LTD.

Applicant: NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD	Test Date : Feb. 19-20, 2014
EUT : Patch Panel	Temperature : 24℃
M/N : SWUTP-CAT6-PP48	Humidity : 47%
Test Mode : LAN Port	Test Engineer : Carry

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result
0.15 - 80	LAN Port Line	3V	A	PASS

Test Mode :

Frequency Range (MHz)	Injected Position	Strength (Unmodulated)	Criterion	Result

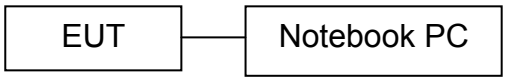
Remark : 1. Modulation Signal:1KHz 80% AM
Measurement Equipment :
Conducted Immunity Test System: CIT-10 (FRANKONIA)
CDN : CDN-M2/3 (FRANKONIA)
EM Injection Clamp: F-203I-23mm (FCC)
Calibration Fixture: F-203I-23mm-CF (FCC)

Note:

11.MAGNETIC FIELD SUSCEPTIBILITY TEST

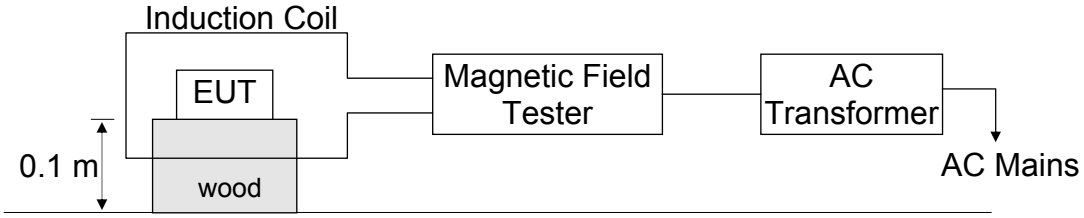
11.1.Block Diagram of Test

11.1.1.Block diagram of test setup



(EUT: Patch Panel)

11.1.2.Magnetic field test setup



GROUND REFERENCE SUPPORT

11.2.Test Standard

EN55024: 2010
(IEC61000-4-8: 2009, Severity Level: Level 1, 1A/m)

11.3.Severity Levels and Performance Criterion

11.3.1.Severity Levels

Level	Field Strength A/m
1	1
2	3
3	10
4	30
5	100
X	Special

11.3.2.Performance Criterion : **A**

11.4.EUT Configuration on Test

The configuration of the EUT is same as Section 4.4.

11.5.Test Procedure

The EUT is placed in the middle of an induction coil (1*1m), under which is a 1*1*0.1m (high) table, this small table is also placed on a larger table, 0.8 m above the ground. Both horizontal and vertical polarizations of the induction coil are set on test, so that each side of the EUT is affected by the magnetic field. Also can reach the same aim by change the position of the EUT.

11.6.Test Results

PASS.

Please refer to the following page.

Magnetic Field Immunity Test Result

Accurate TECHNOLOGY Co., LTD.

Applicant : NINGBO EXCELLENT ELECTRONIC SECURITY PRODUCT CO., LTD	Test Date : Feb. 19-20, 2014
EUT : Patch Panel	Temperature : 25 ºC
M/N : SWUTP-CAT6-PP48	Humidity : 45%

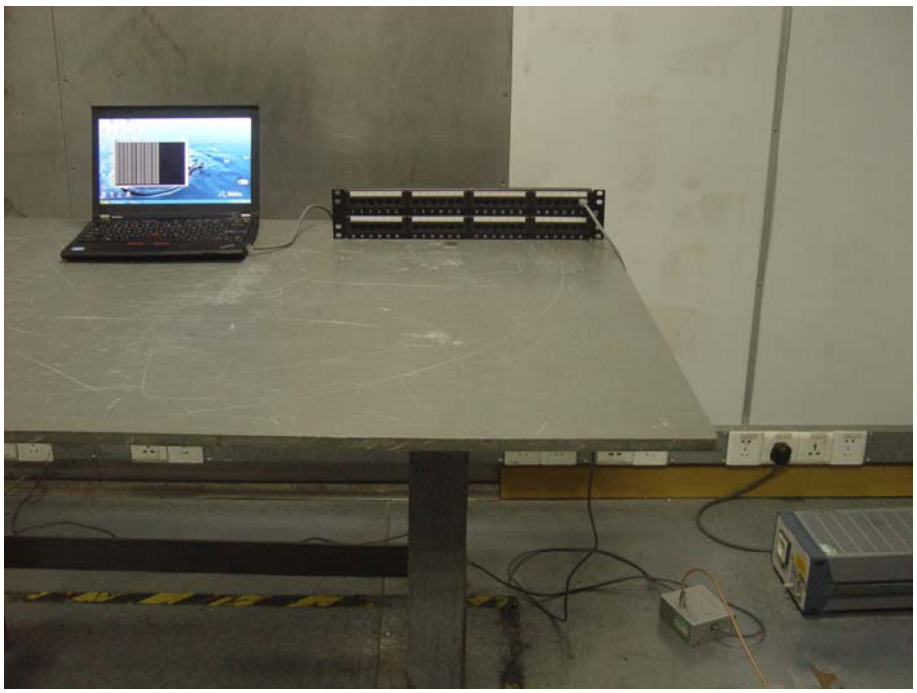
Test Mode: LAN Port

Test Level	Testing Duration	Coil Orientation	Criterion	Result
1A/M	5 mins	Horizontal	A	PASS
1A/M	5 mins	Vertical	A	PASS

Remark:	Test Equipment: Magnetic Field Tester: MAG100 AC Transformer: TDGC2J-5

12.PHOTOGRAPHS

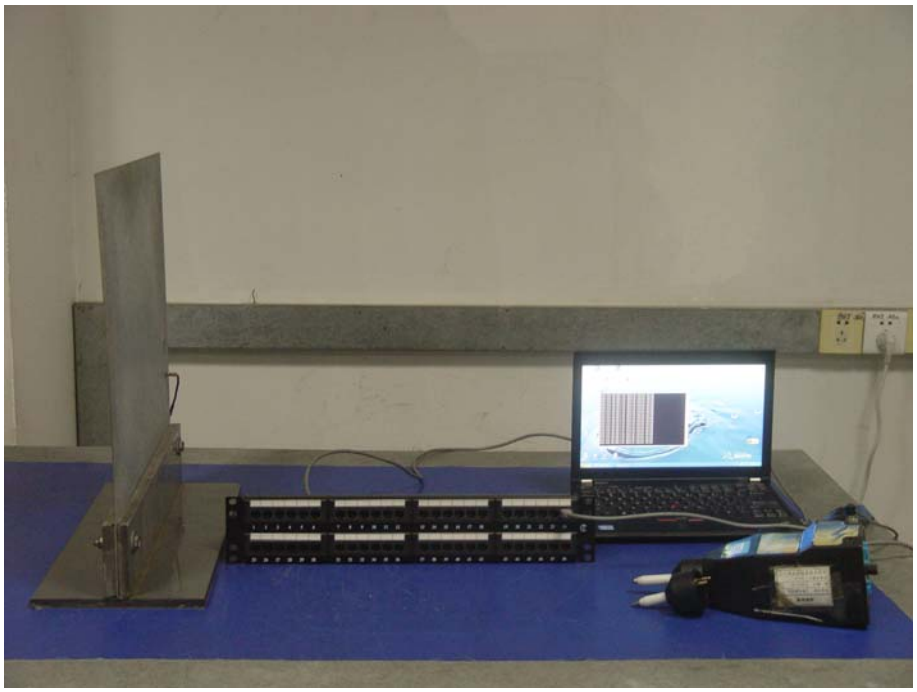
12.1.Photo of Conducted Emission Measurement



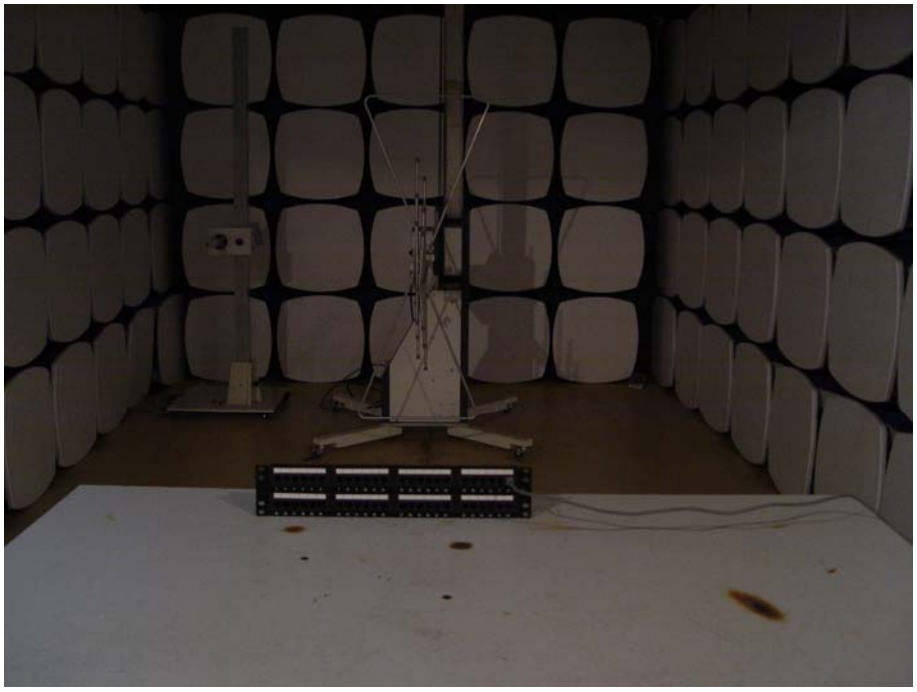
12.2.Photo of Radiation Emission Measurement



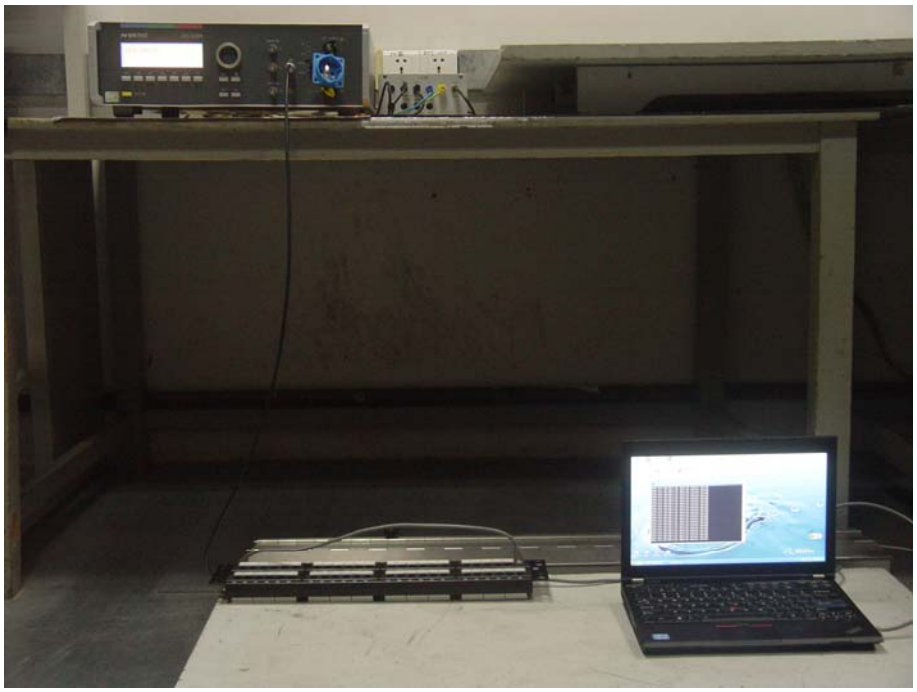
12.3.Photo of Electrostatic Discharge Immunity Measurement



12.4.Photos of RF Field Strength Susceptibility Test



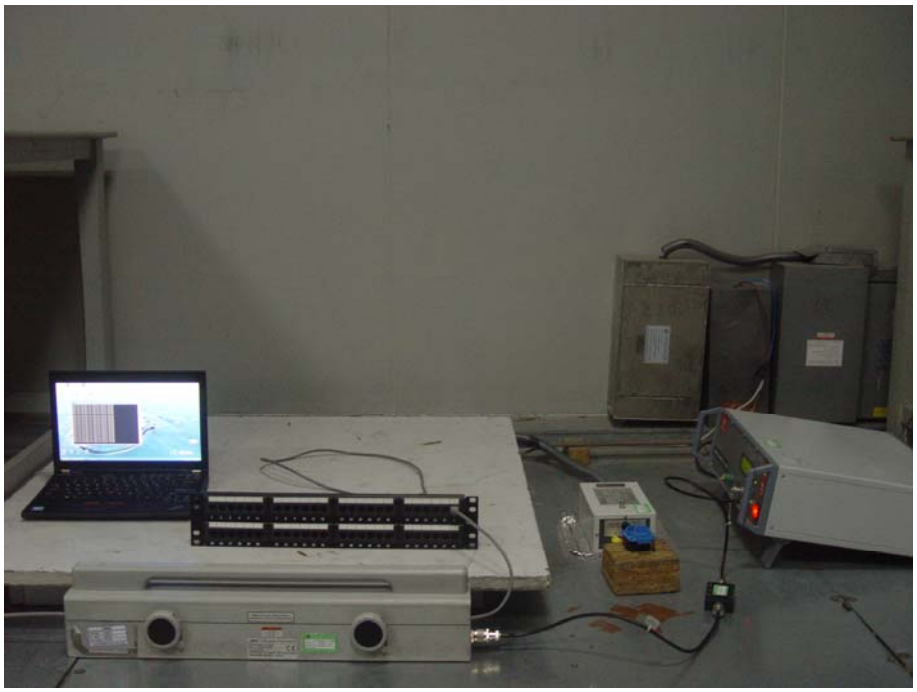
12.5.Photo of Electrical Fast Transient /Burst Test



12.6.Photo of Surge and Interruption Immunity Test



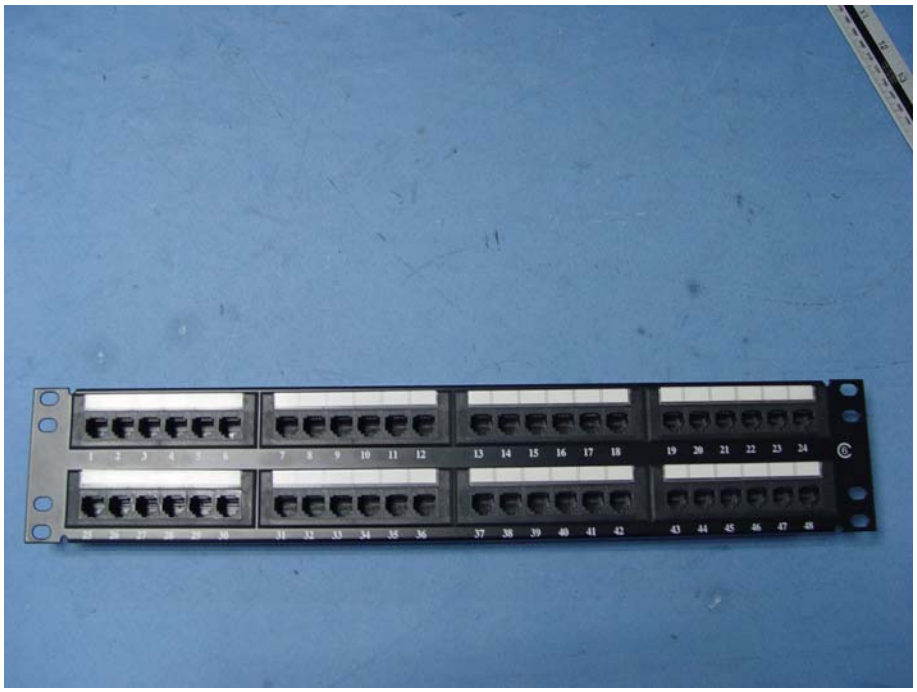
12.7.Photo of Injected Current Susceptibility Test

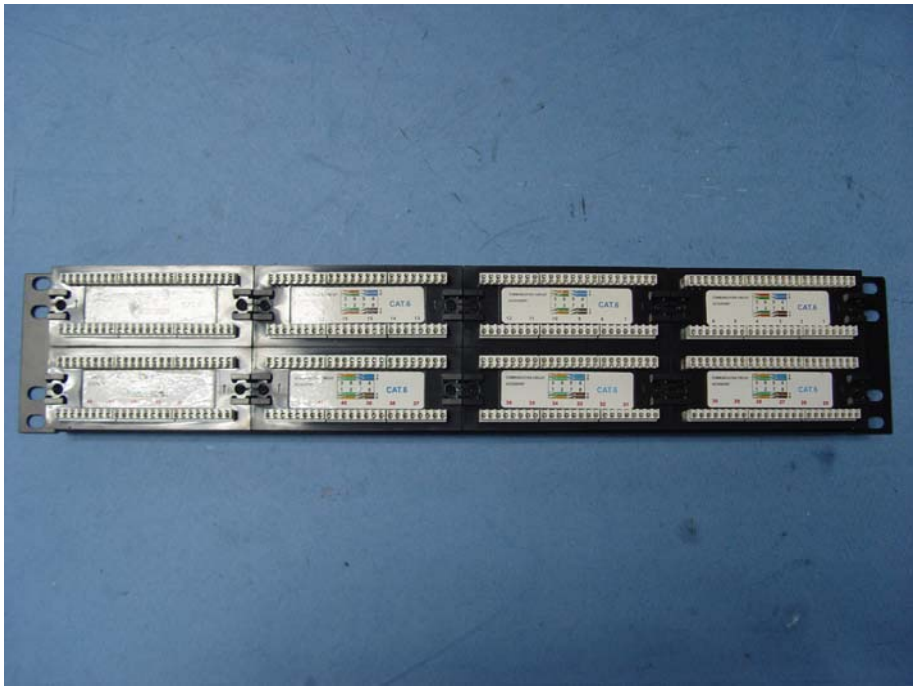


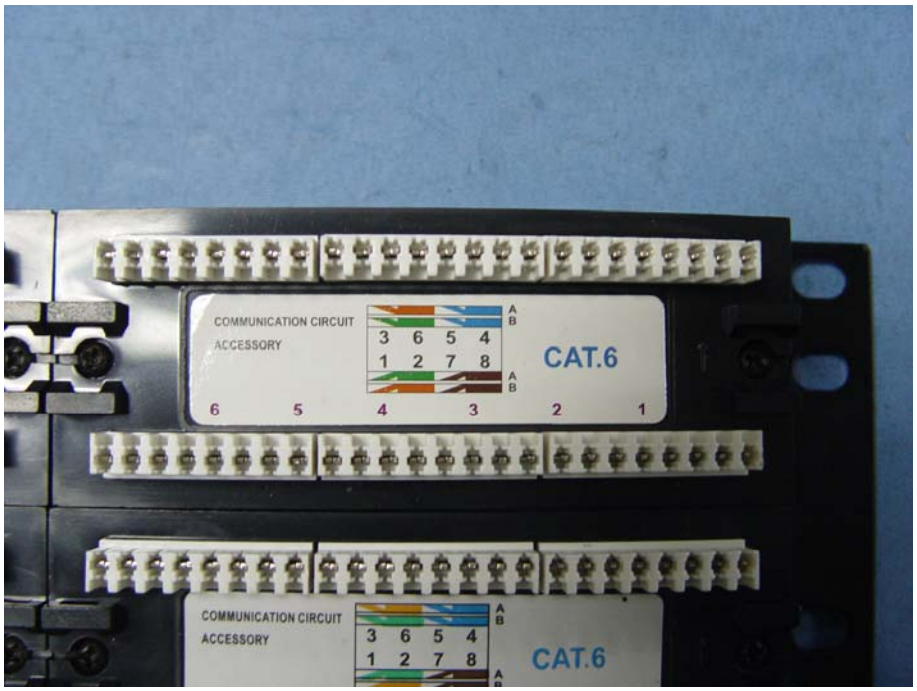
12.8.Photo of Magnetic Field Immunity Test

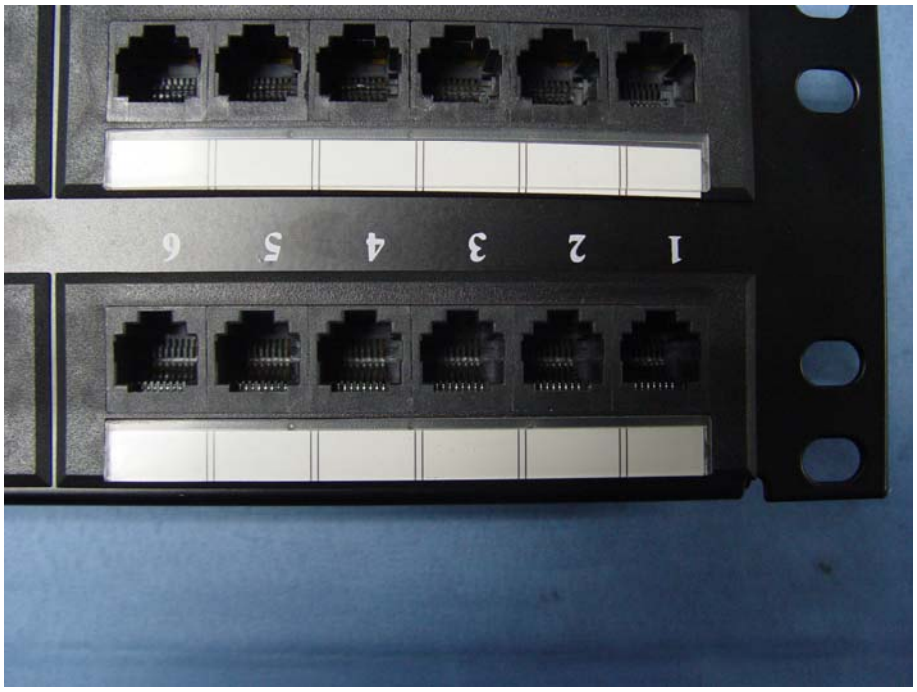


12.9.Photo of EUT






COMMUNICATION CIRCUIT
ACCESSORY
3 6 5 4
1 2 7 8
CAT.6
6 5 4 3 2 1
COMMUNICATION CIRCUIT
ACCESSORY
3 6 5 4
1 2 7 8
CAT.6


6 5 4 3 2 1

