588 West Jindu Road, Songjiang District, Shanghai, China

 Telephone:
 +86 (0) 21 6191 5666

 Fax:
 +86 (0) 21 6191 5655

 Tino.Pan@sgs.com

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EMC TEST REPORT

Application No.:	SHEMO10040039301			
Applicant:	Beijing StrongLink Technology Co.,Ltd.			
Equipment Under Te	est (EUT):			
NOTE: The following sam	nple(s) submitted was/were identified on behalf of the client as			
EUT Name:	Mifare Module			
Model No.:	SL025M			
Serial No.:	Not supplied by the client			
Standards:	EN 55022:2006+A1:2007			
	EN 55024:1998+A1:2001+A2:2003			
	EN 61000-3-2:2006			
	EN 61000-3-3:2008			
Date of Receipt:	Apr 12,2010			
Date of Test:	Apr 19,2010			
Date of Issue:	Apr 19,2010			
Test Result :	PASS			

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EC Declaration of Conformity and compliance with all relevant EC Directives.

Jim Xu E&E Section Head SGS-CSTC (Shanghai)Co., Ltd.

Bruce Zhan E&E Project Engineer SGS-CSTC (Shanghai)Co., Ltd.

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2 Test Summary

Test	Test Requirement	Test Method	Class / Severity	Result
Radiated Emission	EN 55022 :2006/A1:2007	EN 55022 :2006/A1:2007	Class B	PASS
Conducted Emission	EN 55022 :2006/A1:2007	EN 55022 :2006/A1:2007	Class B	N/A
Harmonic Current Emission on AC, up to 2kHz	EN 61000-3-2: 2006	EN 61000-3-2: 2006	Clause 7 of EN61000-3-2	N/A
Flicker on AC	EN 61000-3-3 :2008	EN 61000-3-3 :2008	Clause 5 of EN61000-3-3	N/A
ESD	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-2:2001	±4 kV Contact ±8 kV Air	PASS
Radiated Immunity (80MHz to 1GHz)	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-3:2008	3V/m, 80%, 1kHz, Amp. Mod.	PASS
Fast transients on DC ports	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-4:2004	±0.5kV	PASS
Surges	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-5 :2005	1kV Line to Line AC port 2kV Line to Earth AC port	N/A
Continuous conducted disturbances	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-6:2006	150KHz to 80MHz 3Vrms (emf), 80%, 1kHz, Amp. Mod.	PASS
Power frequency magnetic field	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-8:2001	1A/m, 50Hz	N/A
Voltage dips and interruptions on AC ports	EN 55024 :1998 / A1: 2001 /A2: 2003	IEC 61000-4-11 :2004	0 % U_T^* for 0.5 per 0 % U_T^* for 250 per 70 % U_T^* for 25 per	N/A

Note: Selected test(s) as requested by applicant

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4 General Information

4.1 Client Information

Applicant:	Beijing StrongLink Technology Co.,Ltd.
Address of Applicant:	RM 3-105, Building A, No.170 Beiyuan Road, Chaoyang District,
	Beijing 100101,China
Manufacturer:	Beijing StrongLink Technology Co.,Ltd.
Address of	RM 3-105, Building A, No.170 Beiyuan Road, Chaoyang District,
Manufacturer:	Beijing 100101,China

4.2 General Description of E.U.T.

EUT Name:	Mifare Module
Model No.:	SL025M

4.3 Details of E.U.T.

 $\sqrt{}$

Power Supply:	DC 4.4V-12V
Power Cord:	N/A

4.4 Description of Support Units

Name / Function	Model No.	Remark
DC Power	PMC35-3	Manufacturer:
		KIKUSUI

4.5 Standards Applicable for Testing

The customer requested EMC tests.

The standards used were EN 55022 :2006/A1:2007, EN 55024 :1998 / A1: 2001 /A2: 2003, EN 61000-3-2: 2006, EN 61000-3-3: 2008

Table 1 : Tests Carried Out Under EN 55022 :2006/A1:2007

Standard		
EN 55022 :2006/A1:2007	Radiated Electromagnetic Disturbance	\checkmark
EN 55022 :2006/A1:2007	Conducted Emissions	×
× Indicates that the tes	t is not applicable	

Indicates that the test is applicable

Table 2: Tests Carried Out Under EN 61000-3-2: 2006 & EN 61000-3-3: 2008

Standard	
EN 61000-3-2: 2006 Harmonic Current Emissions on AC	×
EN 61000-3-3:2008 Flicker on AC	×

×

Indicates that the test is not applicable

Table 3: Tests carried out under EN 55024 :1998 / A1: 2001 /A2: 2003

	Standard	Status	
IEC 61000-4-2:2001	Electrostatic discharge test	\checkmark	
IEC 61000-4-3: 2008	Radiated, radio-frequency electromagnetic field electromagnetic field test	\checkmark	
IEC 61000-4-4: 2004	Electrical fast transients/burst test	\checkmark	
IEC 61000-4-5: 2005	Surges	×	
IEC 61000-4-6: 2006	Immunity to conducted disturbances, induced by radio-frequency fields	\checkmark	
IEC 61000-4-8: 2001	Power-frequency magnetic field test	×	
IEC 61000-4-11: 2004	Voltage dips, short interruptions and voltage variations tests	×	
× Indicates that the test is not applicable			

 $\sqrt{}$ Indicates that the test is applicable

4.6 Deviation from Standards

None.

4.7 Abnormalities from Standard Conditions None.

4.8 Monitoring of EUT for All Immunity Test

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4.9 Test Location

All the tests were performed at: SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. No.588 West Jindu Road, Songjiang District, Shanghai, China. 201612. Tel: +86 21 6191 5666 Fax: +86 21 6191 5655

4.10 Test Confident level

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2011-07-29.

• FCC – Registration No.: 402683

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2012-03-17.

• Industry Canada (IC) – IC Assigned Code: 8617A

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2011-09-29.

• VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: **R-3172** and **C-3514** respectively. Date of Registration: 2009-11-30. Date of Expiry: 2012-03-17.

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5 Equipments Used during Test

Radiated Emission

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	EMI test receiver	Rohde & Schwarz	ESU40	100109	2009-06-04	2010-06-03
2	Antenna	SCHWARZBECK	VULB9168	9168-313	2009-06-04	2010-06-03
3	CONTROLLER	INNCO	CO200	474	/	/

Electrostatic Discharge Test

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal. Due date
1	Electrostatic Discharge Simulator	KIKUSUI	KES4021	LL004261	2009-04-25	2010-4-24

	Radiated Immunity					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2009-10-9	2010-10-8
2	amplifier	AR	30W1000B	0327284		
3	amplifier	AR	30S1G3	0324978		
4	power meter	Rohde & Schwarz	NRP	101641	2009-05-05	2010-05-04
5	Single generator	Rohde & Schwarz	SMR40	100555	2009-06-04	2010-06-03

EFT Test Item **Test Equipment** Manufacturer Model No. Series No. Cal. Date Cal. Due date Ultra-compact UCS500M4 V0507100122 2009-06-11 2010-06-10 1 EM test simulator

Injected Currents test

Item	Test Equipment	Manufacturer	Model No.	Series No.	Cal. Date	Cal.Due date
1	AM/FM signal generator	AEROFLEX	2023A	202306/528	2009-04-22	2010-04-21
2	PAMP Conducted RF test system	HAEFFLY	PAMP250	151708	2009-04-23	2010-04-22
3	CDN impedance and K-factor	LUTHI	L-801 M2/M3	2117	/	/

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General	Equi	pment
---------	------	-------

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal.Due date
1	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY-2003P	/	2009-10-15	2010-10-14
2	CLAMP METER	FLUKE	316	86080010	2009-04-27	2010-04-26
3	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2009-10-21	2010-10-20

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6 Emission Test Results

6.1 Radiated Emission 30MHz to 1GHz

Test Requirement:	EN 55022 :2006/A1:2007
Test Method:	EN 55022 :2006/A1:2007
Test Date:	Apr 19,2010
Meaurement distance:	3m
Frequency Range:	30M Hz to 1GHz
	Quasi-Peak if maximised peak within 10dB of limit
Result:	PASS

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23.0 °C Humidity: 45 % RH Atmospheric Pressure: 1010 mbar EUT Operation: The EUT is in representative work mode.

6.1.2 Measurement Data

An initial pre-scan was performed in peak detection mode. Quasi-Peak was performed at the frequencies with maximized peak emission were detected.

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Final Result 1

Frequency (MHz)	QuasiPeak (dBµV/m)	Meas. Time (ms)	Bandwidth (kHz)	Antenna height (cm)	Polarity	Turntable position (deg)	Corr. (dB)	Margin (dB)
271.243840	32.7	1000.000	120.000	121.0	Н	214.0	-8.9	14.30

(continuation of the "Final Result 1" table from column 9 ...)

Frequency (MHz)	Limit (dBµV/m)	Comment
271.243840	47.00	



""" means the emission level is 6dB lower than the relevant limit.

7 Immunity Test Results

7.1 Performance Criteria Description in Clause 7 of EN 55024: 1998/A1:2001/A2: 2003

- Criterion A: 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: 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 from the equipment if used as intended.
- Criterion C: 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.

7.2 ESD

Test Requirement:	EN 55024: 1998/A1:2001/A2:	2003
Test Method:	IEC 61000-4-2: 2001	
Test Date:	Apr 19,2010	
Discharge Impedance:	330 Ω / 150 pF	
Discharge Voltage:	Air Discharge:	±8 kV
	Contact Discharge:	±4 kV
	HCP:	±4 kV
	VCP:	±4 kV
Polarity:	Positive & Negative	
Number of Discharge:	Minimum 50 times at each Discharge;	test point for Contact and VCP
	Minimum 10 times at each test	point for Air Discharge
Discharge Mode:	Single Discharge	
Discharge Period:	1 second minimum	
Result:	PASS	

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7.2.1 E.U.T. Operation

Operating Environment:

Temperature:	24.0°C	Humidity:	48% RH	Atmospheric Pressure:	1008	mbar
EUT Operation:	The EUT is i	n representa	tive work mode.			

7.2.2 Direct Application Test Results

Observations: Test Point:

1. All insulated enclosure & seams around EUT.

2. All touchable metal material of EUT

Direct Application			Test	Results
Discharge Level (kV)	Polarity (+/-)	Test Points	Contact Discharge	Air Discharge
8	+/-	1	N/A	А
4	+/-	2	А	N/A

Indirect Application Test Results

Observations:

Test Point: 1. All sides.

Indirec	t Application	Test	Results	
Discharge Level (kV)	Polarity (+/-)	Test Point	Horizontal Coupling	Vertical Coupling
4	+/-	1	А	А

Results:

N/A: Not applicable (not required in the standard or floor mounted the EUT)

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7.3 Radiated Immunity

Test Requirement:	EN 55024: 1998/A1:2001/A2: 2003
Test Method:	IEC 61000-4-3:2008
Test Date:	Apr 19,2010
Frequency Range:	80MHz-1GHz
Test level:	3V/m on enclosure
Modulation:	80%, 1kHz Amplitude Modulation
Criteria:	Performance criteria A
Result:	PASS

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C Humidity: 45% RH Atmospheric Pressure: 1011 mbar EUT Operation: The EUT is in representative work mode.

7.3.2 Test Results

Pass

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7.4 Electrical Fast Transients (EFT)

Test Requirement:	EN 55024: 1998/A1:2001/A2: 2003
Test Method:	IEC 61000-4-4:2004
Test Date:	Apr 19,2010
Test Level:	±0.5kV on DC
Polarity:	Positive & Negative
Repetition Frequency:	5kHz
Burst Period:	300ms
Test Duration:	2 minute per level & polarity

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 45% RH Atmospheric Pressure: 1011 mbar EUT Operation: The EUT is in representative work mode.

7.4.2 Test Results On AC Supply:

Lead under Test	Level	Coupling	EUT operating	Observations
	(±kV)	Direct/Clamp	mode	(Performance Criterion)
Positive line,Negative Line	± 0.5	Direct	On mode	Criterion A

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7.5 Conducted Immunity 0.15MHz to 80MHz

Test Requirement:	EN 55024: 1998/A1:2001/A2: 2003
Test Method:	IEC 61000-4-6:2006
Test Date:	Apr 19,2010
Frequency Range:	0.15MHz to 80MHz
Test level:	3V rms on DC Ports (unmodulated emf into 150 Ω)
Modulation:	80%, 1kHz Amplitude Modulation

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 45 % RH Atmospheric Pressure: 1011 mbar EUT Operation: The EUT is in representative work mode.

7.5.2 Test Results:

Frequency	Line	Test Level	Modulation	Step Size	Dwell Time	Observation (Performance Criterion)
150kHz to 80MHz	DC Supply Cable	3Vrms	80%, 1kHz Amp. Mod.	1%	38	Criterion A

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8 Photographs

8.1 Radiated Emission Test Setup



8.2 ESD Test Setup



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8.3 Radiated Immunity Test Setup



8.4 EFT Test Setup



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8.5 Conducted Immunity Test Setup



8.6 EUT Constructional Details



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The end of report