



CE-EMC Test Report

Applicant: Shenzhen BCZW Technology Co.Ltd

Product Description: Industrial Switch

Tested Model: SP5220-8PGE2GE2GF

EN 55032:2015/AC:2016-07;

EN 61000-3-2: 2014 ;

EN 61000-3-3: 2013 ;

Test Standards: EN 55024: 2010+A1: 2015

Report No.: JQL190923806-1E

Date of Test: 2019-09-23 to 2019-09-27

Date of Issue: 2019-09-27

Tested By:



(Andy Yang / Test Engineer)

Reviewed By:

(RC Peng / Manager)

Prepared By:

Shenzhen Jalian Testing Consulting Co., Ltd.

5/F, 7 Building, XinYuan Industrial Park, Xili Town, NanShan District, ShenZhen City,
China

The test results in this report apply exclusively to the tested model / sample. Without written approval of Shenzhen Jalian Testing Consulting Co., Ltd., the test report shall not be reproduced except in full.

Tel.: +86-755-26994385

Fax.: +86-755-86108753

Website: www.test-jql.com



TABLE OF CONTENTS

1. GENERAL INFORMATION.....	4
1.1 PRODUCT DESCRIPTION FOR EQUIPMENT UNDER TEST (EUT).....	4
1.2 TEST STANDARDS.....	5
1.3 TEST METHODOLOGY.....	5
1.4 TEST FACILITY.....	5
1.5 EUT SETUP AND OPERATION MODE.....	6
1.6 PERFORMANCE CRITERIA FOR EMS.....	6
2. SUMMARY OF TEST RESULTS.....	7
3. CONDUCTED EMISSIONS.....	8
3.1 MEASUREMENT UNCERTAINTY.....	8
3.2 TEST EQUIPMENT LIST AND DETAILS.....	8
3.3 TEST PROCEDURE.....	8
3.4 BASIC TEST SETUP BLOCK DIAGRAM.....	8
3.5 ENVIRONMENTAL CONDITIONS.....	9
3.6 SUMMARY OF TEST RESULTS/PLOTS.....	9
4. RADIATED EMISSION.....	13
4.1 MEASUREMENT UNCERTAINTY.....	13
4.2 TEST EQUIPMENT LIST AND DETAILS.....	13
4.3 TEST PROCEDURE.....	13
4.4 CORRECTED AMPLITUDE & MARGIN CALCULATION.....	14
4.4 ENVIRONMENTAL CONDITIONS.....	14
4.5 SUMMARY OF TEST RESULTS/PLOTS.....	14
5. HARMONIC CURRENT EMISSIONS.....	17
5.1 TEST EQUIPMENT LIST AND DETAILS.....	17
5.2 TEST PROCEDURE.....	17
5.3 TEST STANDARDS.....	17
5.4 HARMONIC CURRENT EMISSIONS TEST DATA.....	17
6. VOLTAGE FLUCTUATION AND FLICKER.....	18
6.1 TEST EQUIPMENT LIST AND DETAILS.....	18
6.2 TEST PROCEDURE.....	18
6.3 TEST STANDARDS.....	18
6.4 VOLTAGE FLUCTUATION AND FLICKER TEST DATA.....	18
7. ELECTROSTATIC DISCHARGES (ESD).....	20
7.1 TEST EQUIPMENT LIST AND DETAILS.....	20
7.2 TEST PROCEDURE.....	20
7.3 ELECTROSTATIC DISCHARGE IMMUNITY TEST DATA.....	20
8. CONTINUOUS RADIATED DISTURBANCES (R/S).....	22
8.1 TEST EQUIPMENT LIST AND DETAILS.....	22
8.2 TEST PROCEDURE.....	22
8.3 CONTINUOUS RADIATED DISTURBANCES TEST DATA.....	22
9. ELECTRICAL FAST TRANSIENTS (EFT).....	23
9.1 TEST EQUIPMENT LIST AND DETAILS.....	23
9.2 TEST PROCEDURE.....	23
9.3 ELECTRICAL FAST TRANSIENTS TEST DATA.....	23
10. SURGES.....	24
10.1 TEST EQUIPMENT LIST AND DETAILS.....	24
10.2 TEST PROCEDURE.....	24
10.3 SURGE TEST DATA.....	24
11. CONTINUOUS CONDUCTED DISTURBANCES (C/S).....	25



11.1 TEST EQUIPMENT LIST AND DETAILS.....	25
11.2 TEST PROCEDURE.....	25
11.3 CONTINUOUS CONDUCTED DISTURBANCES TEST DATA.....	25
12. VOLTAGE DIPS AND INTERRUPTIONS.....	26
12.1 TEST EQUIPMENT LIST AND DETAILS.....	26
12.2 TEST PROCEDURE.....	26
12.3 VOLTAGE DIPS AND INTERRUPTIONS TEST DATA.....	26
EXHIBIT A - LABEL.....	27
EXHIBIT B - EUT PHOTOS.....	28



1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Shenzhen BCZW Technology Co.Ltd
Address of applicant: 3F, BlockA3.Silicon Valley Industrial Park.Guanlan, Longhua District, Shenzhen China

Manufacturer: Shenzhen BCZW Technology Co.Ltd
Address of manufacturer: 3F, BlockA3.Silicon Valley Industrial Park.Guanlan, Longhua District, Shenzhen China

General Description of EUT	
Product Name:	Industrial Switch
Trade Name:	BCZW
Model No.:	SP5220-8PGE2GE2GF
Adding Model(s):	SP5200-4PFE2FE, SP5200-8PFE2FE, SP5200-4PGE1GE1GF, SP5200-8PFE2GE, SP5220-8PFE2GE1GF, SP5220-16PFE2GE2GF, SP5220-24PFE2GE2GF, SP5220-16PGE4GC, SP5220-24PGE4GC, S5220-48GE4GF, SP5220-48PGE4GF, IS3210-4GE2GF-DC, IS3210-8GE2GF-DC, IS3210-8GE4GF-DC, ISP3210-4PGE2GF-DC, ISP3210-8PGE2GF-DC, ISP3210-8PGE4GF-DC, IS7210-5FE-DC, IS7210-8FE-DC, IS7210-16FE-DC, IS7210-2FE1FX-DC, IS7210-4FE1FX-DC, IS7210-6FE2FX-DC, IS7210-8FE2GC-I-DC, IS7210-8FE2GF-L-DC, IS7210-8GE-DC, IS7210-2GE1GF-DC, IS7210-5GE1GF-DC, IS7210-4GE2GF-DC, IS7210-8GE2GF-DC, IS7510-4GE2GF-DC, IS7510-8GE3GF-DC, IS7510-8GE4GF-DC, IS7510-16GE4GF-DC, IS7510-8GE8GF-DC, IS7220-16FE1GE1GF-AC, IS7220-16FE4GC-AC, IS7220-24FE4GC-AC, IS7520-20GE4GC2GF-AC, IS7520-12GE12GF-AC, ISP7210-8PFE2GC-DC, ISP7210-8PFE2GF-L-DC, ISP7210-4PGE1GE1GF-DC, ISP7210-4PGE2GF-DC, ISP7210-4PGE2GF-BT-DC, ISP7210-8PGE2GF-DC, ISP7510-4PGE2GF-DC, ISP7510-4PGE2GF-BT-DC, ISP7510-8PGE4GF-DC, ISP7220-8PFE2GC-AC, ISP7220-16PFE4GC-AC, ISP7220-24PFE4GC-AC, ISP7520-20PGE4GC2GF-AC
<i>Note: The test data is gathered from a production sample, provided by the manufacturer.</i>	

Technical Characteristics of EUT	
Rated Voltage:	Input: AC100-240 50/60Hz
Rated Power:	--
Classification of ITE:	Class A



1.2 Test Standards

The following report is prepared on behalf of the Shenzhen BCZW Technology Co.Ltd in accordance with EN55032, Electromagnetic compatibility of multimedia equipment - Emission requirements, and EN61000-3-2, Electromagnetic compatibility (EMC) -- Part 3-2: Limits - Limits for harmonic current emissions (equipment input current up to and including 16 A per phase), and EN61000-3-3, 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 \leq 16 A per phase and not subject to conditional connection, and EN55024, Immunity characteristics Limits and methods of measurement.

The objective of the manufacturer is to demonstrate compliance with the standards EN55032, EN61000-3-2, EN61000-3-3, and EN55024 for multimedia equipment.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with the standards EN55032, EN61000-3-2, EN61000-3-3, and EN55024 for Information Technology Equipment, and all related testing and measurement techniques intentional standards.

1.4 Test Facility

CNAS Registration No.: L0579

Shenzhen Academy of Metrology and Quality Inspection is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L0579. All measurement facilities used to collect the measurement data are located at Metrology and Quality Inspection Building,Central Section of LongZhu Road, Nanshan District, Shenzhen (518055)



1.5 EUT Setup and Operation Mode

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted according to the operation manual for use, more detailed description as follows:

Test Mode List:

Test Mode	Description	Remark
TM1	Operating	AC input and with all auxiliary

Note: The adapter of the product is Measurement at two nominal voltages of 230V and 110V, using a frequency of 50Hz or 60Hz. This report is display the worst case with 230V/50Hz data.

EUT Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
--	--	--	--

Auxiliary Equipment List and Details

Description	Manufacturer	Model	Serial Number
--	--	--	--

Special Cable List and Details

Cable Description	Length (M)	Shielded/Unshielded	With Core/Without Core
--	--	--	--

1.6 Performance Criteria for EMS

All the test data has been collected, reduced, and analyzed within this report in accordance with Immunity requires the following as specific performance criteria:

- A. The apparatus shall continue to operate as intended during and after the test. The manufacturer specifies some minimum performance level. The performance level may be specified by the manufacturer as a permissible loss of performance.
- B. The apparatus shall continue to operate as intended after the test. This indicates that the EUT does not need to function at normal performance levels during the test, but must recover. Again some minimal performance is defined by the manufacturer. No change in operating state or loss or data is permitted.
- C. Temporary loss of function is allowed. Operation of the EUT may stop as long as it is either automatically reset or can be manually restored by operation of the controls.



2. SUMMARY OF TEST RESULTS

Standards	Description of Test Item	Result
EN55032	Conducted Disturbance	Passed
	Radiated Disturbance	Passed
EN61000-3-2	Harmonic Current Emission	Passed
EN61000-3-3	Voltage Fluctuation and Flicker	Passed
EN55024	Electrostatic Discharge Immunity in accordance with IEC 61000-4-2	Passed
	Continuous Radiated Disturbances Immunity in accordance with IEC 61000-4-3	Passed
	Electrical Fast Transient/Burst Immunity in accordance with IEC 61000-4-4	Passed
	Surges Immunity in accordance with IEC 61000-4-5	Passed
	Continuous Conducted Disturbances Immunity in accordance with IEC 61000-4-6	Passed
	Voltage Dips/Interruptions Immunity in accordance with IEC 61000-4-11	Passed
N/A: not applicable		



3. CONDUCTED EMISSIONS

3.1 Measurement Uncertainty

Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any conducted emissions measurement is ± 2.88 dB.

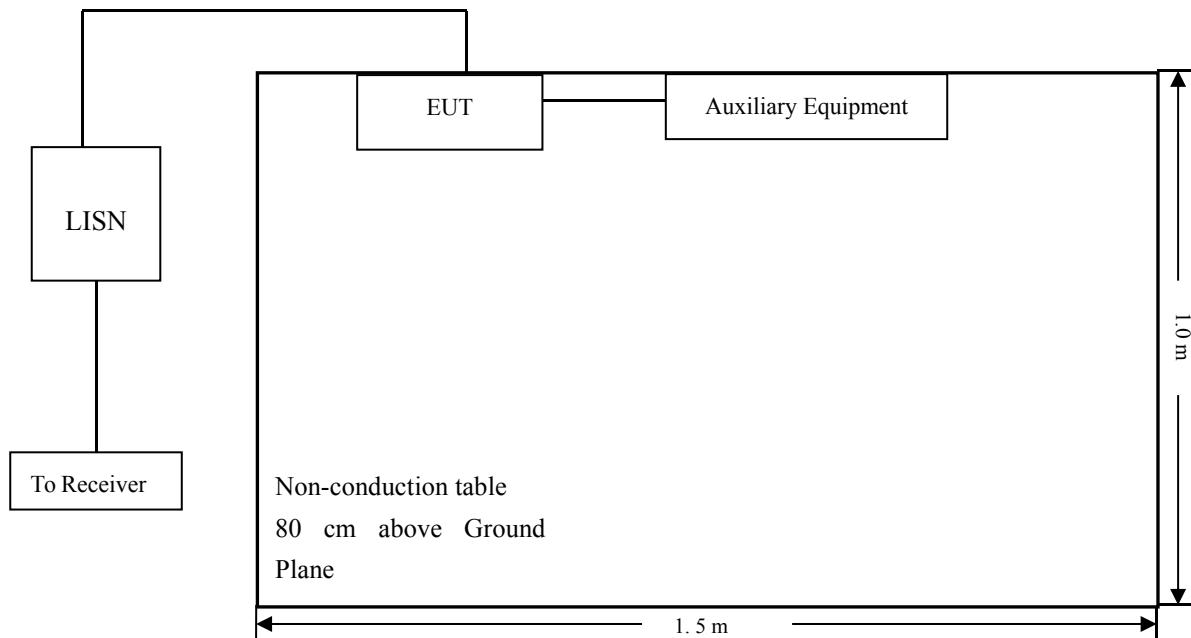
3.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
EMI Test Receiver	Rohde & Schwarz	ESPI	101611	2019-07-01	2020-06-30
L.I.S.N	Schwarz beck	NSLK8126	8126-224	2019-07-01	2020-06-30
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	100911	2019-07-01	2020-06-30
8-WIRE LISN	Schwarz beck	8158	CAT3-8158-0059	2019-07-01	2020-06-30
8-WIRE LISN	Schwarz beck	8158	CAT5-8158-0117	2019-07-01	2020-06-30

3.3 Test Procedure

Test is conducting under the description of EN55032 Electromagnetic compatibility of multimedia equipment - Emission requirements.

3.4 Basic Test Setup Block Diagram





3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

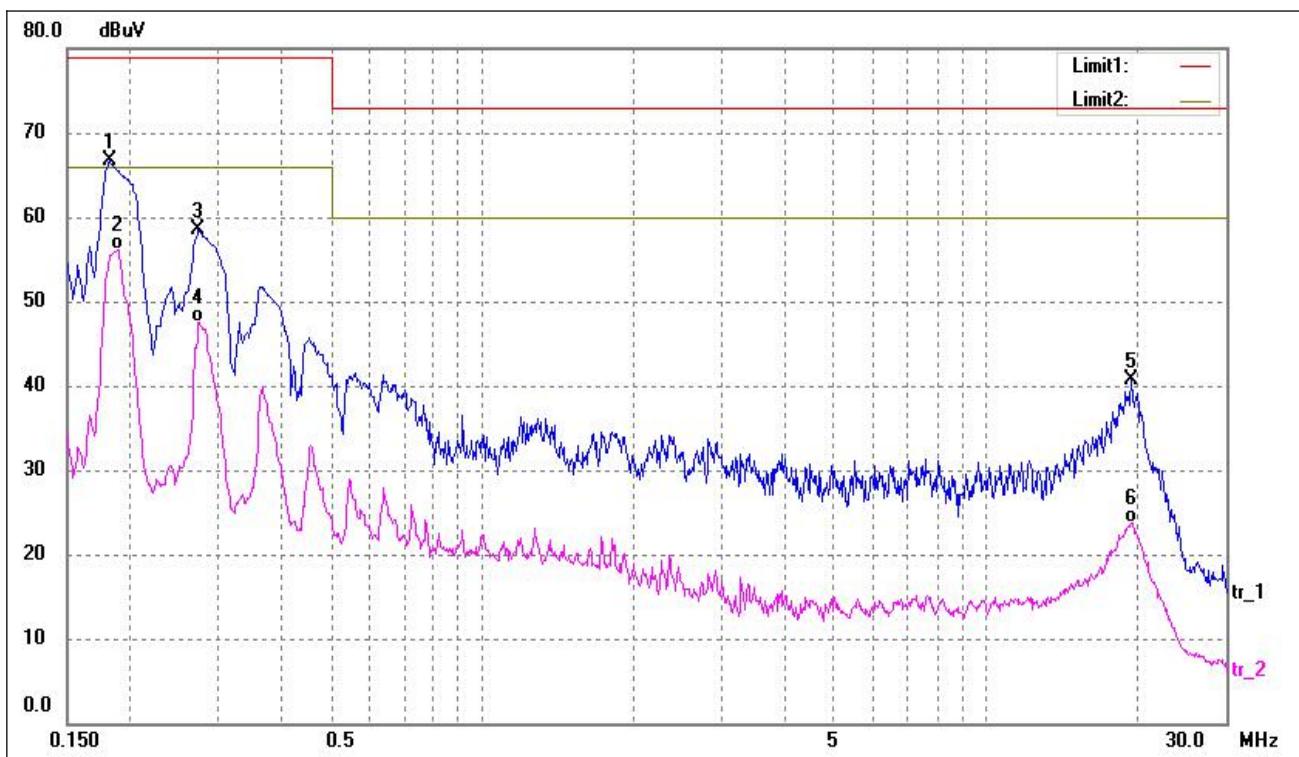
3.6 Summary of Test Results/Plots

According to the data in section 3.7, the EUT complied with the EN55032 Conducted margin for a Class A device.

**Plot of Conducted Emissions Test Data**

EUT: Industrial Switch
Tested Model: SP5220-8PGE2GE2GF
Operating Condition: TM1
Comment: Adapter AC 230V 50Hz

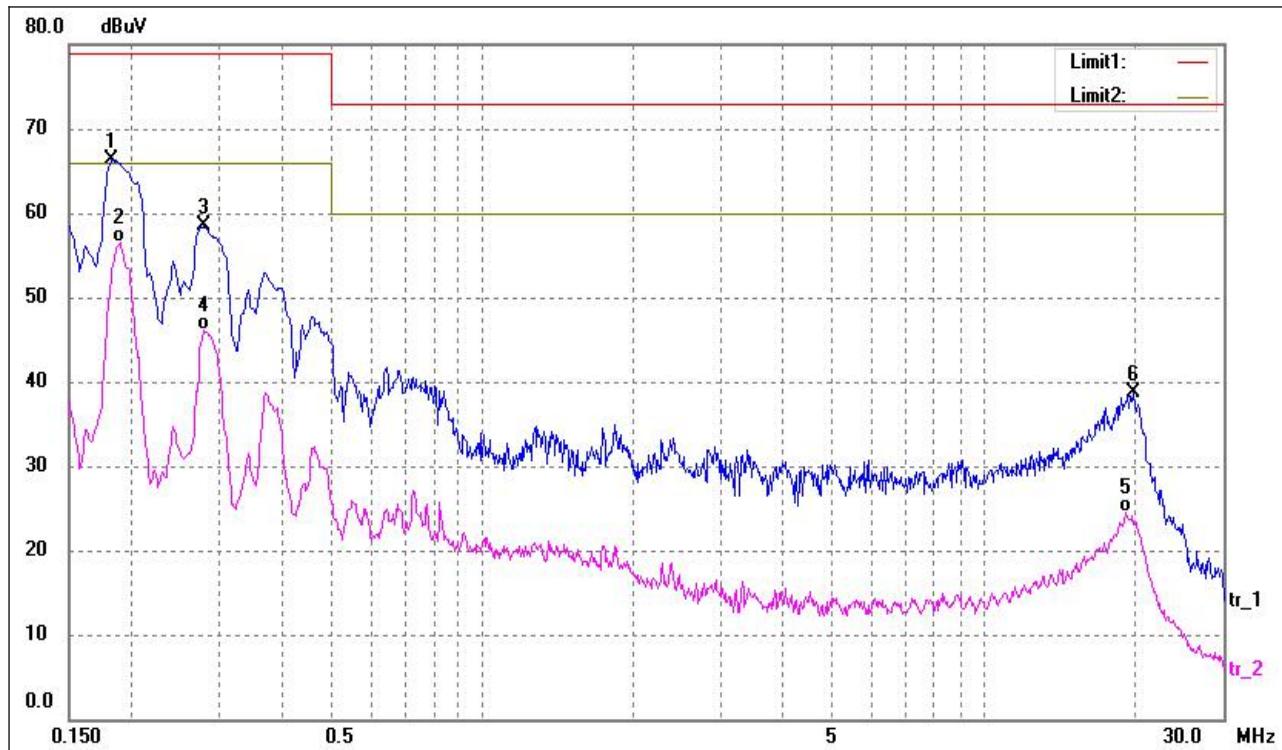
Test Specification: Neutral



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1820	56.90	9.82	66.72	79.00	-12.28	peak
2*	0.1900	46.36	9.81	56.17	66.00	-9.83	AVG
3	0.2740	48.70	9.80	58.50	79.00	-20.50	peak
4	0.2740	37.69	9.80	47.49	66.00	-18.51	AVG
5	19.4660	31.03	9.67	40.70	73.00	-32.30	peak
6	19.4660	13.97	9.67	23.64	60.00	-36.36	AVG



Test Specification: Line

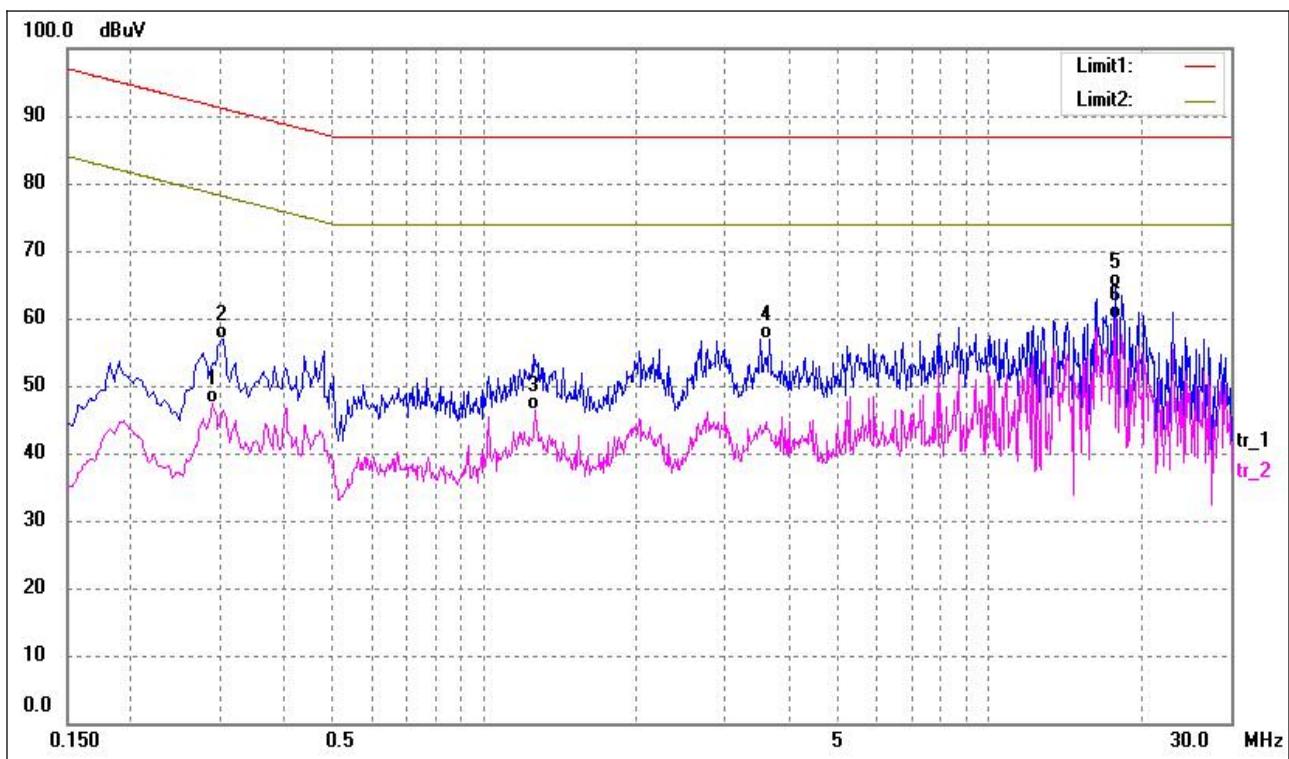


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.1820	56.46	9.82	66.28	79.00	-12.72	peak
2*	0.1900	46.69	9.81	56.50	66.00	-9.50	AVG
3	0.2780	48.62	9.80	58.42	79.00	-20.58	peak
4	0.2780	36.38	9.80	46.18	66.00	-19.82	AVG
5	19.1460	14.77	9.67	24.44	60.00	-35.56	AVG
6	19.8780	28.93	9.68	38.61	73.00	-34.39	peak

**Plot of Conducted Emissions Test Data**

EUT: Industrial Switch
Tested Model: SP5220-8PGE2GE2GF
Operating Condition: TM1
Comment: Ethernet Port

Test Specification: Ethernet Port



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.2900	27.44	19.89	47.33	78.52	-31.19	AVG
2	0.3020	37.02	19.88	56.90	91.19	-34.29	QP
3	1.2660	26.61	19.78	46.39	74.00	-27.61	AVG
4	3.6700	37.18	19.75	56.93	87.00	-30.07	QP
5	17.6939	44.91	19.63	64.54	87.00	-22.46	QP
6*	17.6939	40.23	19.63	59.86	74.00	-14.14	AVG

4. RADIATED EMISSION

4.1 Measurement Uncertainty

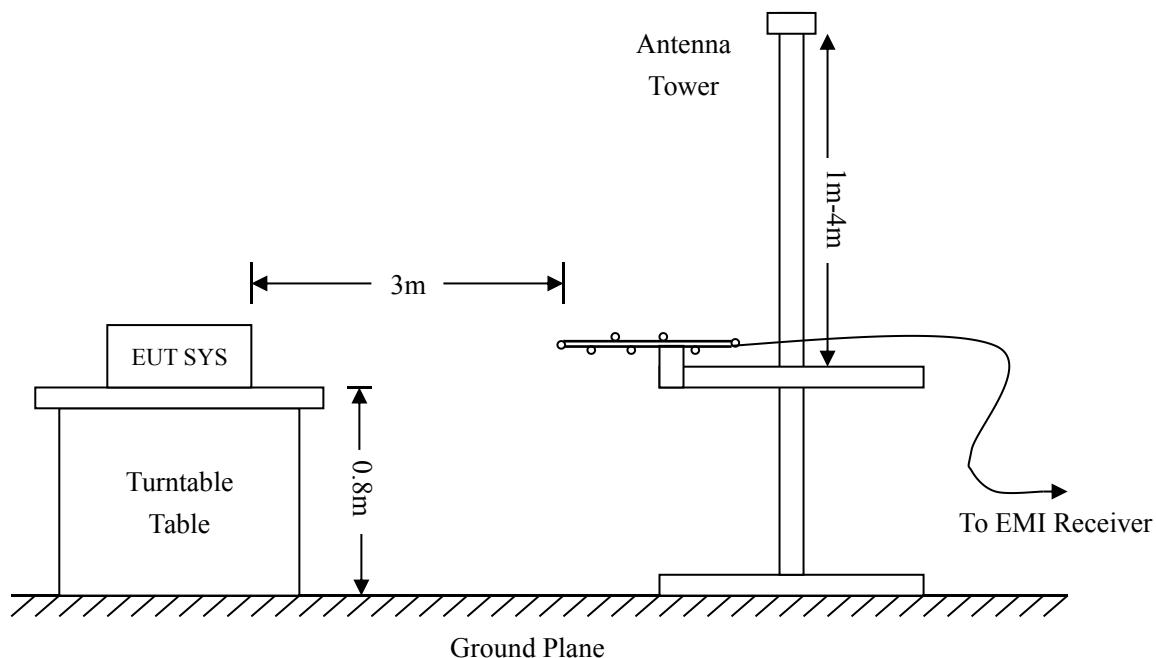
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

4.2 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Spectrum Analyzer	R&S	FSP	836079/035	2019-07-01	2020-06-30
EMI Test Receiver	R&S	ESVB	825471/005	2019-07-01	2020-06-30
Pre-amplifier	Agilent	8447F	3113A06717	2019-07-01	2020-06-30
Pre-amplifier	Compliance Direction	PAP-0118	24002	2019-07-01	2020-06-30
Trilog Broadband Antenna	SCHWARZBECK	VULB9163	9163-333	2019-07-01	2020-06-30

4.3 Test Procedure

Test is conducting under the description of EN55032 Electromagnetic compatibility of multimedia equipment - Emission requirements.





4.4 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Antenna Factor} + \text{Cable Factor} - \text{Amplifier Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dB μ V means the emission is 6dB μ V below the maximum limit for Class A device. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{EN55032 Class A Limit}$$

4.4 Environmental Conditions

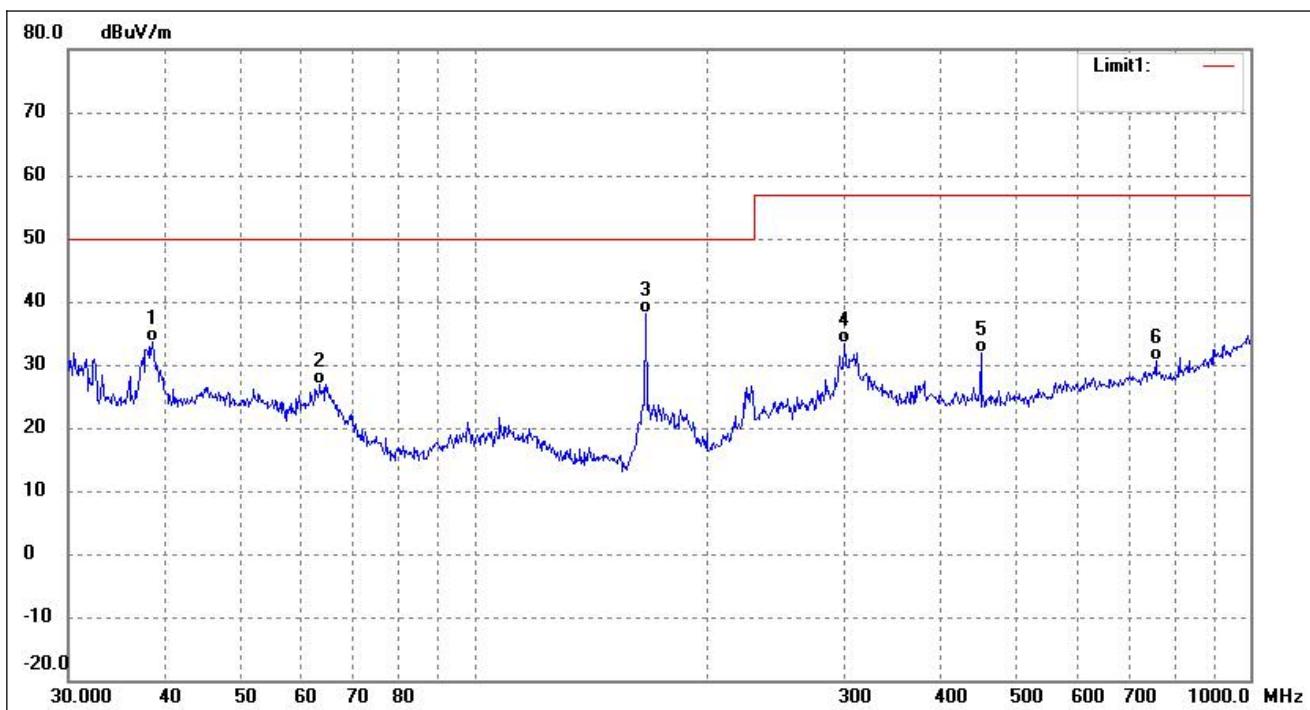
Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1010 mbar

4.5 Summary of Test Results/Plots

According to the data in section 4.7, the EUT complied with the EN55032 Class A standards.

**Plot of Radiated Emissions Test Data (30MHz to 1GHz)**

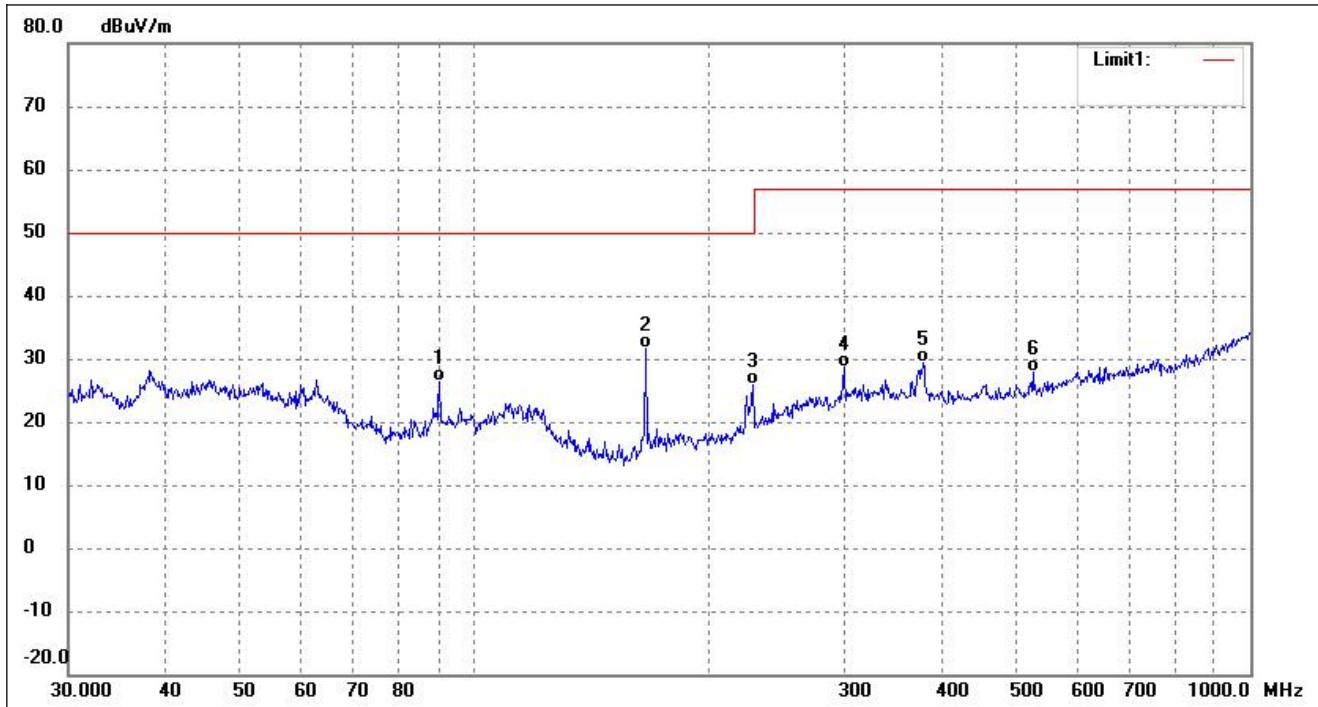
EUT: Industrial Switch
Tested Model: SP5220-8PGE2GE2GF
Operating Condition: TM1
Comment:
Test Specification: Horizontal



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	38.4809	42.27	-8.71	33.56	50.00	-16.44	52	100	QP
2	63.3132	38.72	-11.79	26.93	50.00	-23.07	269	100	QP
3	166.6514	54.55	-16.32	38.23	50.00	-11.77	50	100	QP
4	300.3672	42.68	-9.40	33.28	57.00	-23.72	159	100	QP
5	449.5558	38.79	-6.97	31.82	57.00	-25.18	346	100	QP
6	755.3873	32.25	-1.66	30.59	57.00	-26.41	297	100	QP



Test Specification: Vertical



No.	Frequency (MHz)	Reading (dBuV/m)	Correct dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree ()	Height (cm)	Remark
1	90.2205	42.15	-15.75	26.40	40.00	-23.60	97	100	QP
2	166.6514	47.85	-16.32	31.53	40.00	-18.47	147	100	QP
3	228.4904	38.02	-12.13	25.89	40.00	-24.11	51	100	QP
4	299.3158	38.02	-9.41	28.61	47.00	-28.39	277	100	QP
5	378.5843	37.15	-7.83	29.32	47.00	-27.68	189	100	QP
6	524.5541	33.59	-5.68	27.91	47.00	-29.09	233	100	QP

Emissions above 1GHz is closing to the base and it doesn't list above



5. Harmonic Current Emissions

5.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Digital Power Analyzer	California Instrument	CTS	72831	2019-07-01	2020-06-30
Power Source	California Instrument	5001IX-CTS-400	60077	2019-07-01	2020-06-30

5.2 Test Procedure

Test is conducting under the description of EN61000-3-2.

5.3 Test Standards

EN61000-3-2, Clause 7.1 Limits for Class A equipment.

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	48%
ATM Pressure:	1010 mbar

5.4 Harmonic Current Emissions Test Data

Test Result: Pass



6. Voltage Fluctuation and Flicker

6.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Digital Power Analyzer	California Instrument	CTS	72831	2019-07-01	2020-06-30
Power Source	California Instrument	5001IX-CTS-400	60077	2019-07-01	2020-06-30

6.2 Test Procedure

Test is conducting under the description of EN61000-3-3.

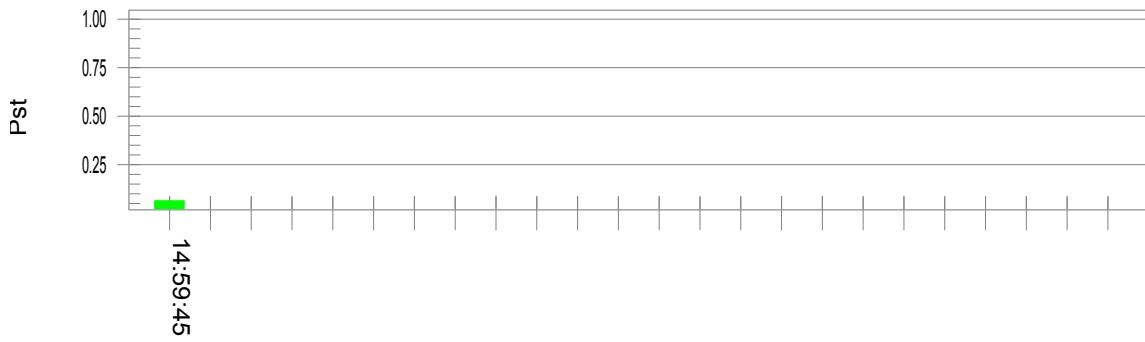
6.3 Test Standards

EN61000-3-3, Limit: Clause 5.

Environmental Conditions

Temperature:	22°C
Relative Humidity:	48%
ATM Pressure:	1010 mbar

6.4 Voltage Fluctuation and Flicker Test Data

**Flicker Test Summary per EN/IEC61000-3-3 (Run time)****EUT: Industrial Switch (SP5220-8PGE2GE2GF) Tested by: Andy****Test category: All parameters (European limits) Test Margin: 100****Test date: 2019-09-26 Start time: 14: 49: 36 PM End time: 14:59:45 PM****Test duration (min): 10 Data file name: F-001131.cts_data****Comment: TM1****Customer: Shenzhen BCZW Technology Co.Ltd****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): 230.07**

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



7. Electrostatic Discharges (ESD)

7.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
ESD Generator	TESQ AG	NSG 437	161	2019-07-01	2020-06-30

7.2 Test Procedure

Test is conducting under the description of IEC61000-4-2.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	55%
ATM Pressure:	1010 mbar

7.3 Electrostatic Discharge Immunity Test Data

Table 1: Electrostatic Discharge Immunity (Air Discharge)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Switch	A	A	A	A	A	A	A	A		

Table 2: Electrostatic Discharge Immunity (Direct Contact)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Screws	A	A	A	A						
Metal Part	A	A	A	A						
I/O Port	A	A	A	A						
Slots	A	A	A	A						



Table 3: Electrostatic Discharge Immunity (Indirect Contact HCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Table 4: Electrostatic Discharge Immunity (Indirect Contact VCP)

EN 61000-4-2 Test Points	Test Levels (kV)									
	-2	+2	-4	+4	-6	+6	-8	+8	-15	+15
Front Side	A	A	A	A						
Top Side	A	A	A	A						
Back Side	A	A	A	A						
Left Side	A	A	A	A						
Right Side	A	A	A	A						

Test Result: Pass



8. Continuous Radiated Disturbances (R/S)

8.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Signal Generator	Rohde & Schwarz	SMT03	100059	2019-07-01	2020-06-30
Voltage Probe	Rohde & Schwarz	URV5-Z2	100013	2019-07-01	2020-06-30
Power Amplifier	AR	150W1000	300999	2019-07-01	2020-06-30
Power Amplifier	AR	25S1G4AM1	305993	2019-07-01	2020-06-30
Trilog Antenna	SCHWARZBECK	VULB9163	9163-333	2019-07-01	2020-06-30
Anechoic chamber	Albatross Projects	MCDC	----	2019-07-01	2020-06-30

8.2 Test Procedure

Test is conducting under the description of IEC61000-4-3.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	52%
ATM Pressure:	1010 mbar

8.3 Continuous Radiated Disturbances Test Data

Frequency step: 1% of fundamental

Dwell time: 1 second

Modulation: AM by 1kHz sine wave with 80% modulation depth

Frequency Range(MHz)	Field (V/m)	Front		Rear		Left Side		Right Side	
		VERT	HORI	VERT	HORI	VERT	HORI	VERT	HORI
80-1000	3	A	A	A	A	A	A	A	A

Test Result: Pass



9. Electrical Fast Transients (EFT)

9.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2019-07-01	2020-06-30
Couple Clamp	EMC PARTNER	CN-EFT1000	513	2019-07-01	2020-06-30

9.2 Test Procedure

Test is conducting under the description of IEC61000-4-4.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	22 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

9.3 Electrical Fast Transients Test Data

EN 61000-4-4 Test Points		Test Levels (kV)							
		+0.5	-0.5	+1.0	-1.0	+2.0	-2.0	+4.0	-4.0
Power Supply Power Port of EUT	L1	A	A	A	A	/	/	/	/
	N1	A	A	A	A	/	/	/	/
	PE	A	A	A	A	/	/	/	/
	L1+N1	A	A	A	A	/	/	/	/
	L1 + PE	A	A	A	A	/	/	/	/
	NI + PE	A	A	A	A	/	/	/	/
	L1+N1+PE	A	A	A	A	/	/	/	/
Signal ports	Ethernet	A	A	/	/	/	/	/	/

Test Result: Pass



10. Surges

10.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2019-07-01	2020-06-30

10.2 Test Procedure

Test is conducting under the description of IEC 61000-4-5.

Test Performance

Performance Criterion: B

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	53%
ATM Pressure:	1011 mbar

10.3 Surge Test Data

Level	Voltage	Poll	Path	Pass	Port
1	0.5kV	±	L-N	A	(Power Port)
2	1kV	±	L-N	A	(Power Port)
3	2kV	±	L-PE/N-PE	A	(Power Port)
4	0.5kV	±	Line-Ground	A	(Ethernet Port)

Test Result: Pass



11. Continuous Conducted Disturbances (C/S)

11.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
CS Immunity Tester	EMTEST	CWS500	0900-03	2019-07-01	2020-06-30
Attenuator	EMTEST	MA-500	1009	2019-07-01	2020-06-30
CDN	Luthi	L-801M2/M3	2665	2019-07-01	2020-06-30

11.2 Test Procedure

Test is conducting under the description of IEC 61000-4-6.

Test Performance

Performance Criterion: A

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

11.3 Continuous Conducted Disturbances Test Data

Sweep frequency range: 150kHz~80MHz

Frequency step: 1% of fundamental

Dwell time: 1 second

Level	Voltage Level (e.m.f.) U_0	Modulation:	Pass	Port
1	1	AM 80%, 1kHz sinewave	/	/
2	3	AM 80%, 1kHz sinewave	A	(Power Port)
3	3	AM 80%, 1kHz sinewave	A	(Ethernet Port)

Test Result: Pass



12. Voltage Dips and Interruptions

12.1 Test Equipment List and Details

Description	Manufacturer	Model	Serial Number	Cal. Date	Due. Date
Transient 2000	EMC PARTNER	TRA2000	863	2019-07-01	2020-06-30

12.2 Test Procedure

Test is conducting under the description of IEC 61000-4-11.

Test Performance

Performance Criterion: B/C

Environmental Conditions

Temperature:	25 °C
Relative Humidity:	55%
ATM Pressure:	1011 mbar

12.3 Voltage Dips And Interruptions Test Data

U: Voltage dips in % U_T (U_T is rated voltage for the EUT)

T: Test duration

Level	U	T	Phase Angle	N	Pass	Fail
1	100%	10ms	0/90/180/270	3	A	/
2	30%	500ms	0/90/180/270	3	B	/
3	100%	5000ms	0/90/180/270	3	C	/

Test Result: Pass



EXHIBIT A - LABEL

Label Information



Remark: Text is Black in color and is justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT. The 'CE' marking must be affixed to the EUT or to its data plate. Where this is not possible or not warranted on account of the nature of the apparatus, it must be affixed to the packaging, if any, and to the accompanying documents. The 'CE' marking must have a height of at least 5 mm. If the 'CE' marking is reduced or enlarged the proportions given in the above graduated drawing must be respected.



Report No.: JQL190923806-1E

EXHIBIT B - EUT PHOTOS

EUT View 1



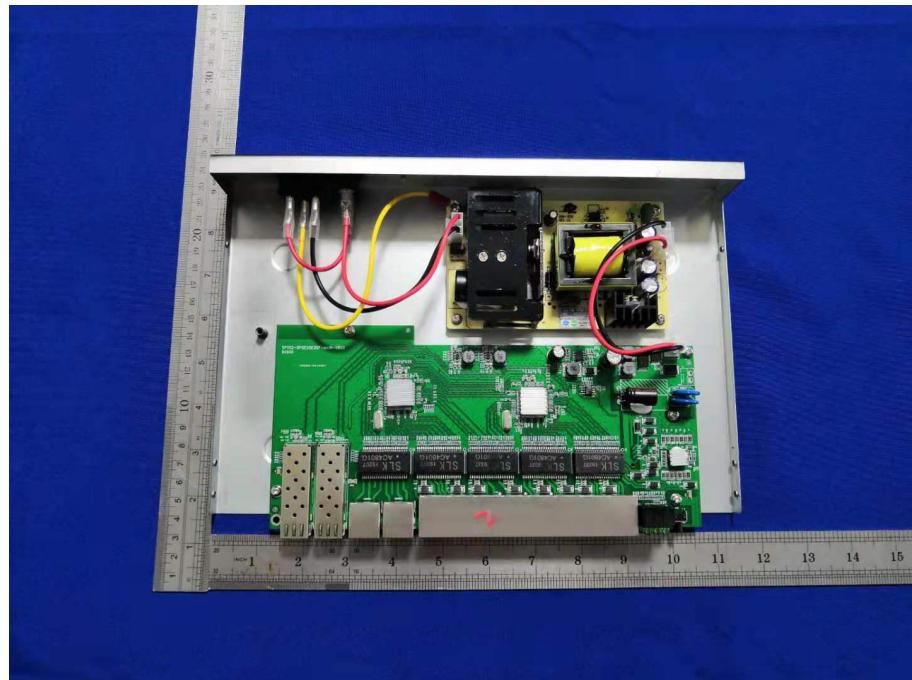
EUT View 2



EUT View 3**EUT View 4**



EUT View 5



***** END OF REPORT *****