FCC Test Report

Applicant:	Shenzhen BCZW Technology Co.Ltd
Product Description:	Industrial Switch
Tested Model:	SP5220-8PGE2GE2GF
FCC Rules:	FCC Part 15 Subpart B
Report No.:	JQL190923806-3F
Date of Test:	2019-09-25 to 2019-09-26
Date of Issue:	2019-09-25
Tested By:	(Andy Yang / Test Engineer)
Reviewed By:	(RC Peng / Manager)

Prepared By:

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TABLE OF CONTENTS

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
Note: The test data is gathered from a production sample, provided by the manufacturer.	

Technical Characteristics of EUT	
Rated Voltage:	Input: AC100-240V, 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 Part 2, Subpart J, and Part 15, Subparts A and B of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart B, and section 15.205, 15.107, and 15.109 rules.

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

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

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	With Ethernet Connector data transmission

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
/	/	/	/

2. SUMMARY OF TEST RESULTS

Description of Test	Result
§15.107 (a) Conducted Emission	Passed
§15.109(a) Radiated Emission	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.

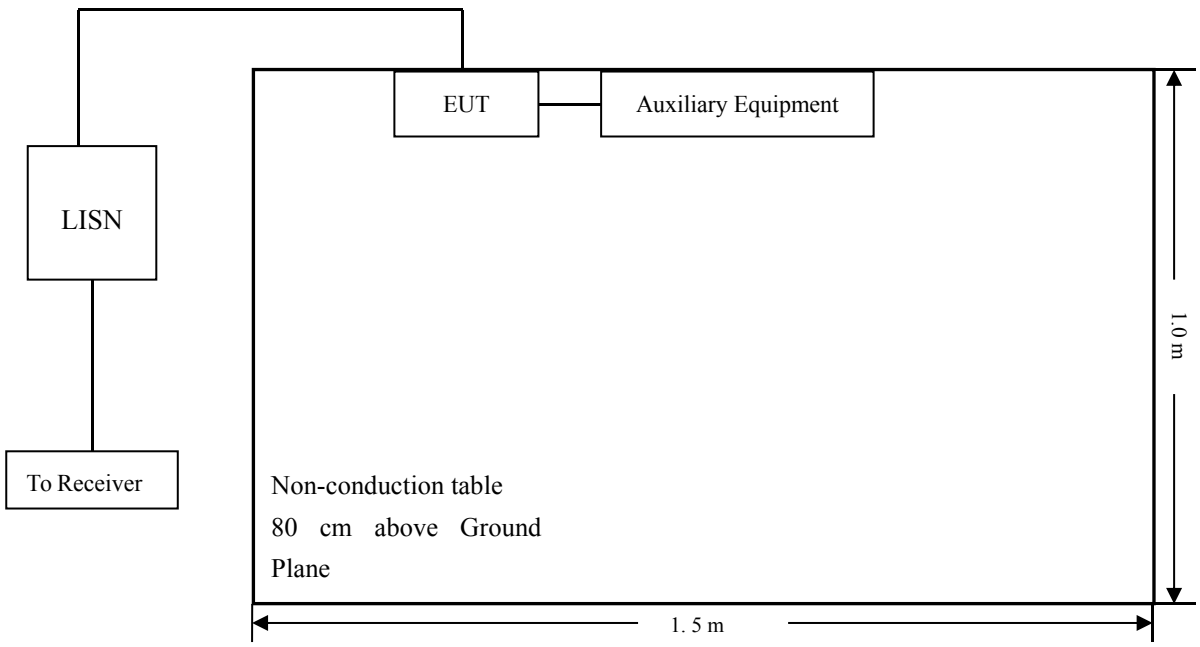
3.2 Test Equipment List and Details

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

3.3 Test Procedure

Test is conducting under the description of ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

3.4 Basic Test Setup Block Diagram



3.5 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	52%
ATM Pressure:	1011 mbar

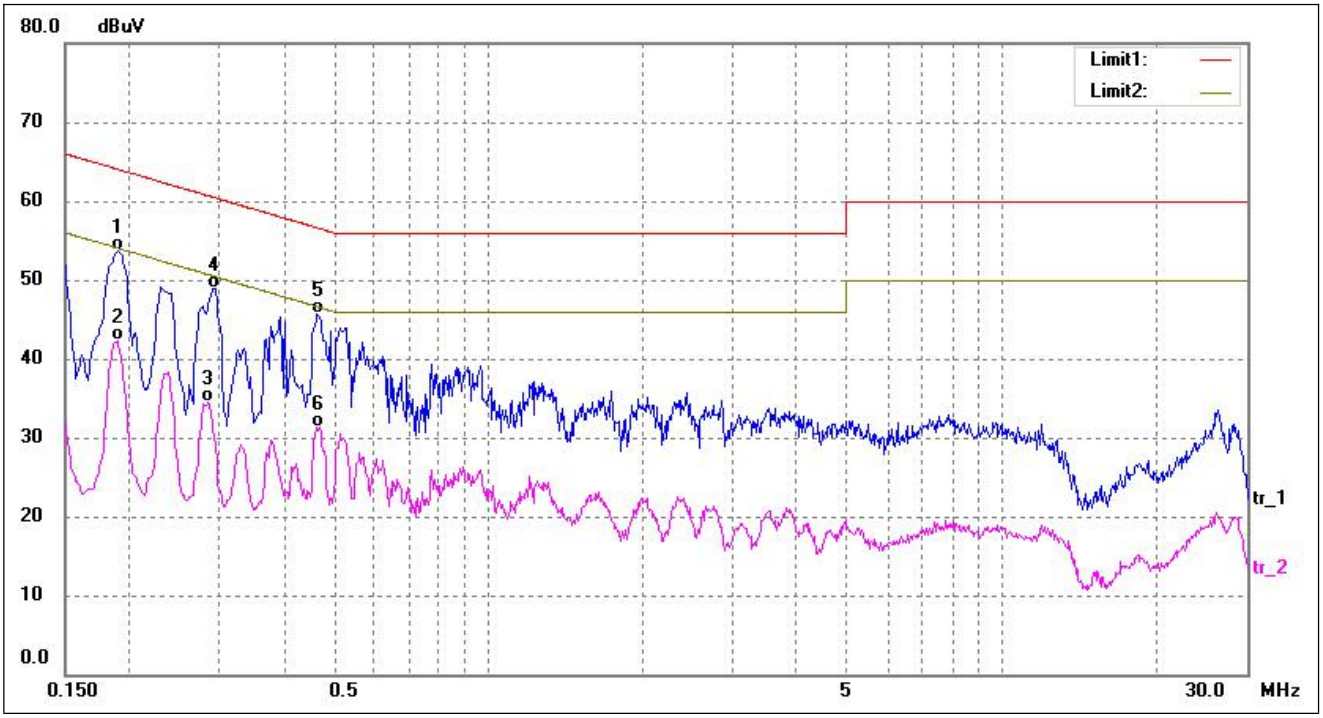
3.6 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.107(a) Conducted margin for a Class B device, with the *worst* margin case of:

Plot of Conducted Emissions Test Data

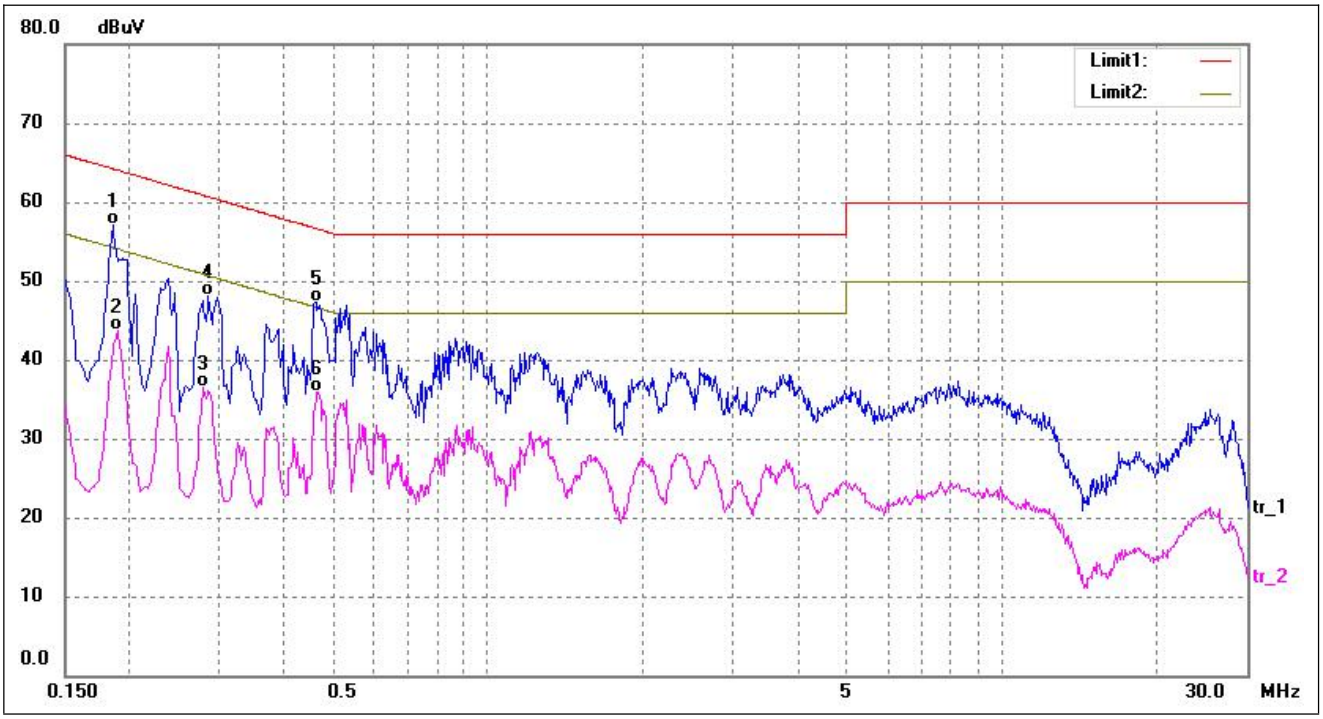
EUT: *Industrial Switch*
Tested Model: *SP5220-8PGE2GE2GF*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Neutral*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1900	43.99	9.81	53.80	64.03	-10.23	QP
2	0.1900	32.50	9.81	42.31	54.03	-11.72	AVG
3	0.2860	24.71	9.80	34.51	50.64	-16.13	AVG
4	0.2940	39.18	9.80	48.98	60.41	-11.43	QP
5	0.4660	35.97	9.80	45.77	56.58	-10.81	QP
6	0.4700	21.57	9.80	31.37	46.51	-15.14	AVG

Test Specification: *Line*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Detector
	(MHz)	(dBuV)	(dB/m)	(dBuV)	(dBuV)	(dB)	
1*	0.1860	47.38	9.81	57.19	64.21	-7.02	QP
2	0.1900	33.92	9.81	43.73	54.03	-10.30	AVG
3	0.2779	26.66	9.80	36.46	50.88	-14.42	AVG
4	0.2860	38.25	9.80	48.05	60.64	-12.59	QP
5	0.4620	37.47	9.80	47.27	56.66	-9.39	QP
6	0.4660	26.04	9.80	35.84	46.58	-10.74	AVG

4. RADIATED EMISSION

4.1 Measurement Uncertainty

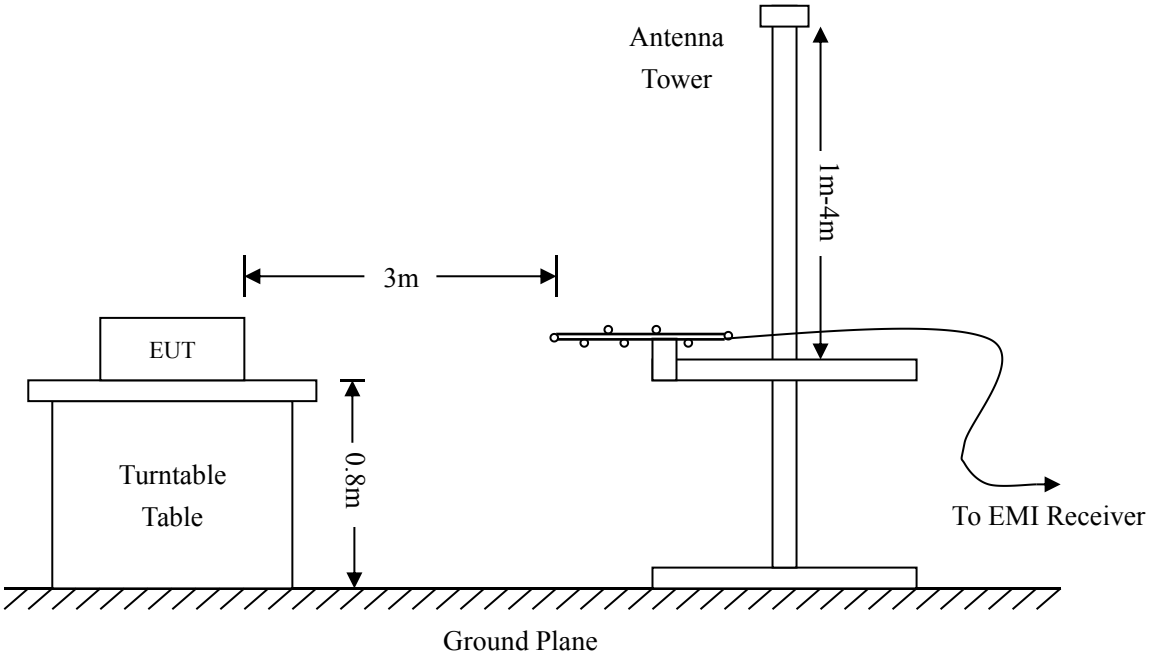
Base on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of any radiation emissions measurement is ± 5.10 dB.

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
Horn Antenna	ETS	3117	00086197	2019-07-01	2020-06-30

4.3 Test Procedure

The setup of EUT is according with per ANSI C63.4-2014 measurement procedure. The specification used was with the FCC Part 15.109 Limit.
The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.
The spacing between the peripherals was 10 cm.



4.4 Test Receiver Setup

During the radiated emission test for above 1GHz, the test receiver was set with the following configurations:

For peak detector:
RBW = 1000kHz, VBW = 3000kHz, Sweep Time = Auto

For average detector:
RBW = 1000kHz, VBW = 10Hz, Sweep Time = Auto

4.5 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:

Corr. Ampl. = Indicated Reading – Corr. Factor

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for a Class B device. The equation for margin calculation is as follows:

Margin = Corr. Ampl. – FCC Part 15.109(a) Limit

4.6 Environmental Conditions

Temperature:	23 °C
Relative Humidity:	55 %
ATM Pressure:	1011 mbar

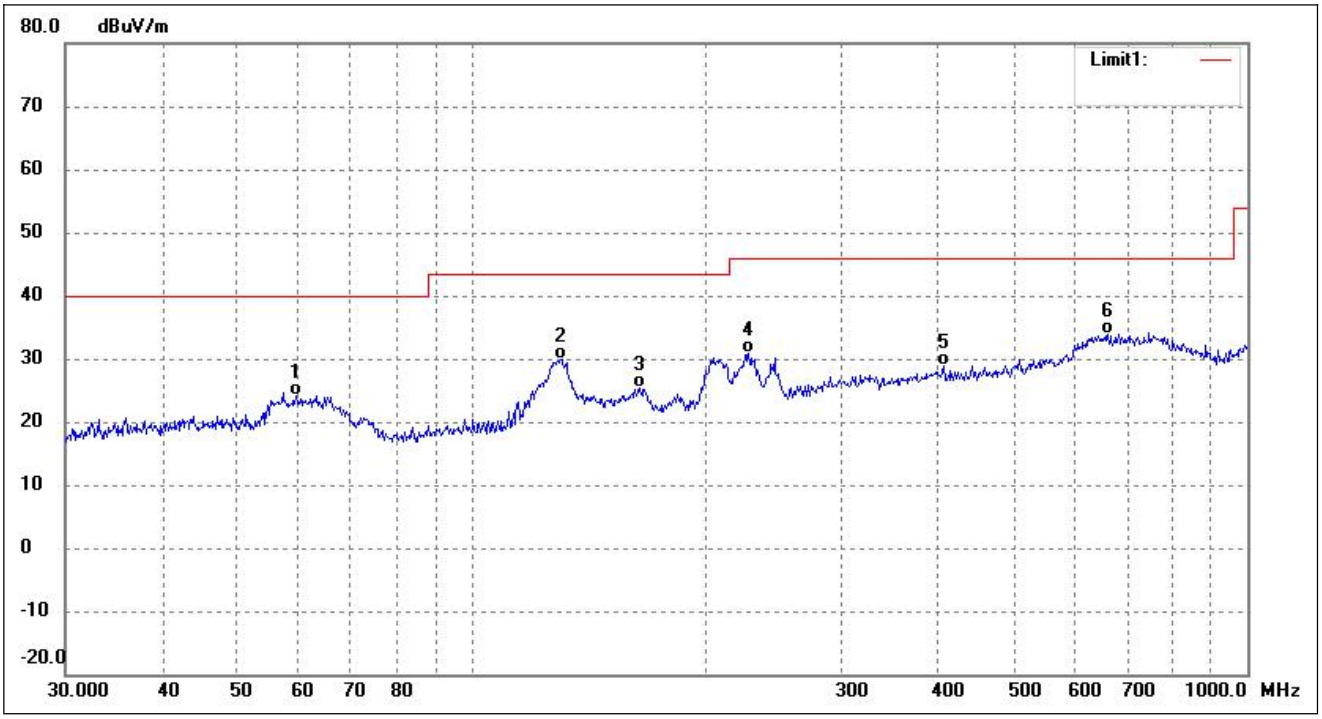
4.7 Summary of Test Results/Plots

According to the data, the EUT complied with the FCC Part 15.109(a) rule, and had the worst case of:

Plot of Radiated Emissions Test Data

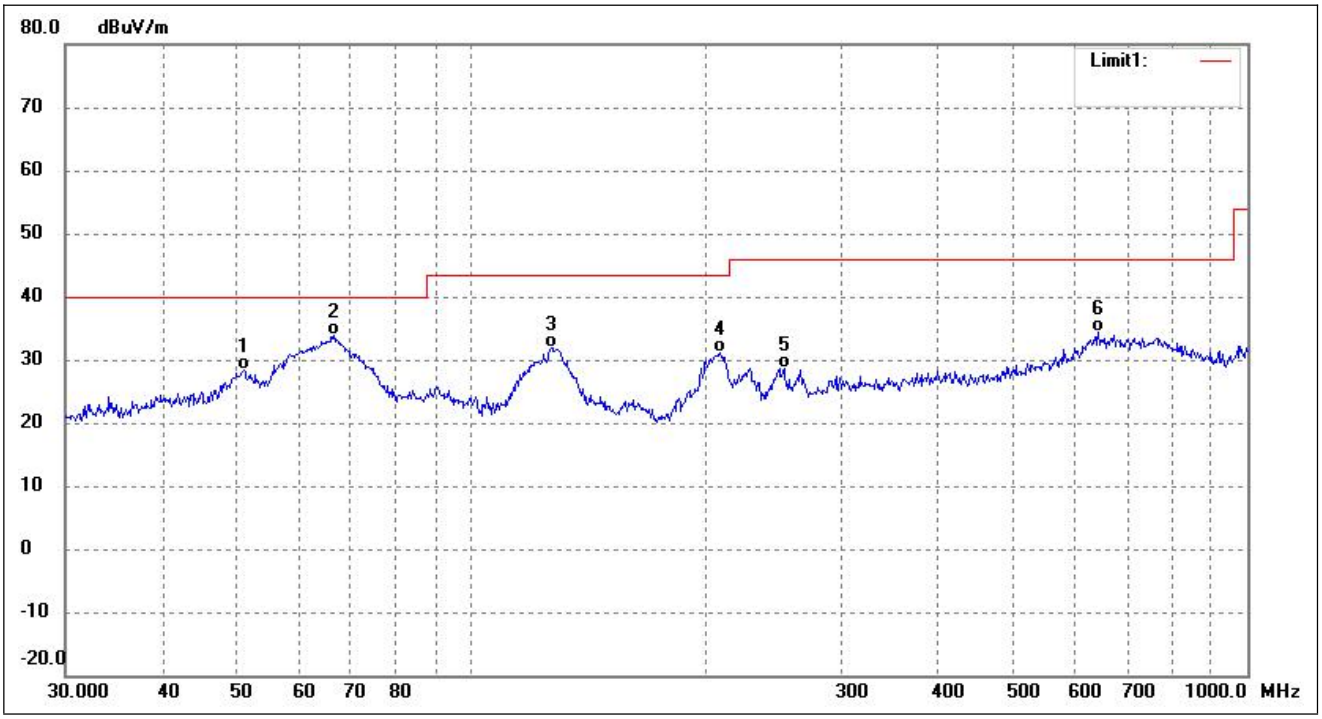
EUT: *Industrial Switch*
Tested Model: *SP5220-8PGE2GE2GF*
Operating Condition: *TM1*
Comment: *AC 120V/60Hz*

Test Specification: *Horizontal*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	59.4405	19.22	5.02	24.24	40.00	-15.76	166	100	QP
2	130.3789	25.97	3.95	29.92	43.50	-13.58	98	100	QP
3	164.9075	23.03	2.44	25.47	43.50	-18.03	61	100	QP
4	227.6906	22.71	8.14	30.85	46.00	-15.15	117	100	QP
5	406.0880	16.41	12.45	28.86	46.00	-17.14	174	100	QP
6	661.1505	16.29	17.64	33.93	46.00	-12.07	106	100	QP

Test Specification: *Vertical*



No.	Frequency	Reading	Correct	Result	Limit	Margin	Degree	Height	Remark
	(MHz)	(dBuV/m)	dB/m	(dBuV/m)	(dBuV/m)	(dB)	( )	(cm)	
1	50.9420	23.30	5.01	28.31	40.00	-11.69	309	100	QP
2	66.4989	30.22	3.66	33.88	40.00	-6.12	235	100	QP
3	126.7723	27.65	4.26	31.91	43.50	-11.59	50	100	QP
4	209.3129	25.84	5.38	31.22	43.50	-12.28	265	100	QP
5	252.9482	19.25	9.42	28.67	46.00	-17.33	334	100	QP
6	642.8613	16.44	18.00	34.44	46.00	-11.56	131	100	QP

Note: Testing is carried out with frequency rang 9kHz to the 5GHz, which above 1GHz is close to the noise base even antenna close up to 1meter distance according the measurement of ANSI C63.4.

EXHIBIT A - LABEL

Label Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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. Where the EUT is constructed in two or more sections connected by wires and marketed together, the above statement is required to be affixed only to the main control unit. When the EUT is so small or for such use that it is not practicable to place the statement on it, the above information shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed.

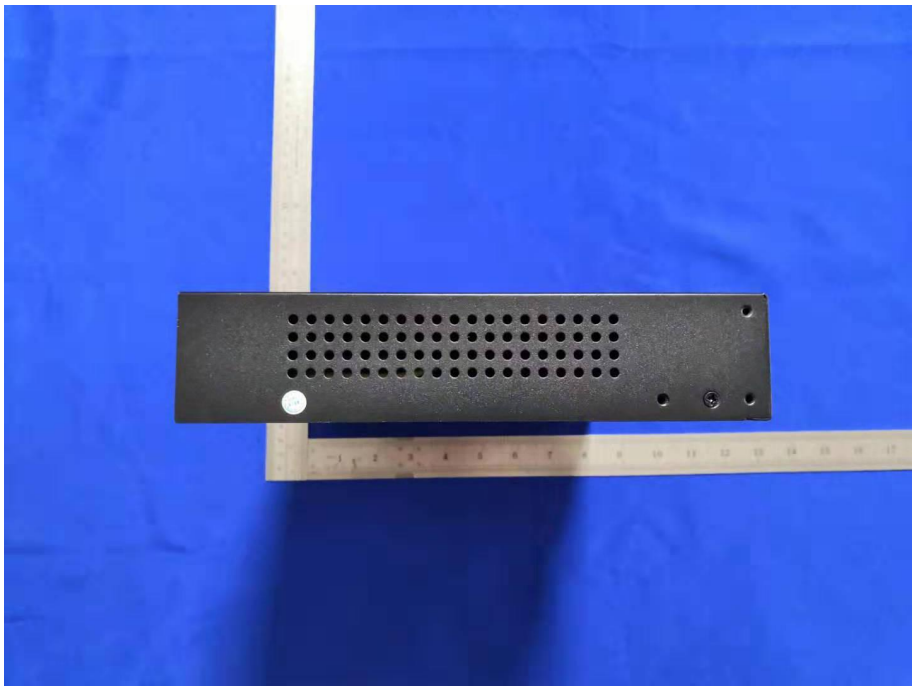
EXHIBIT B - EUT PHOTOS

EUT View 1

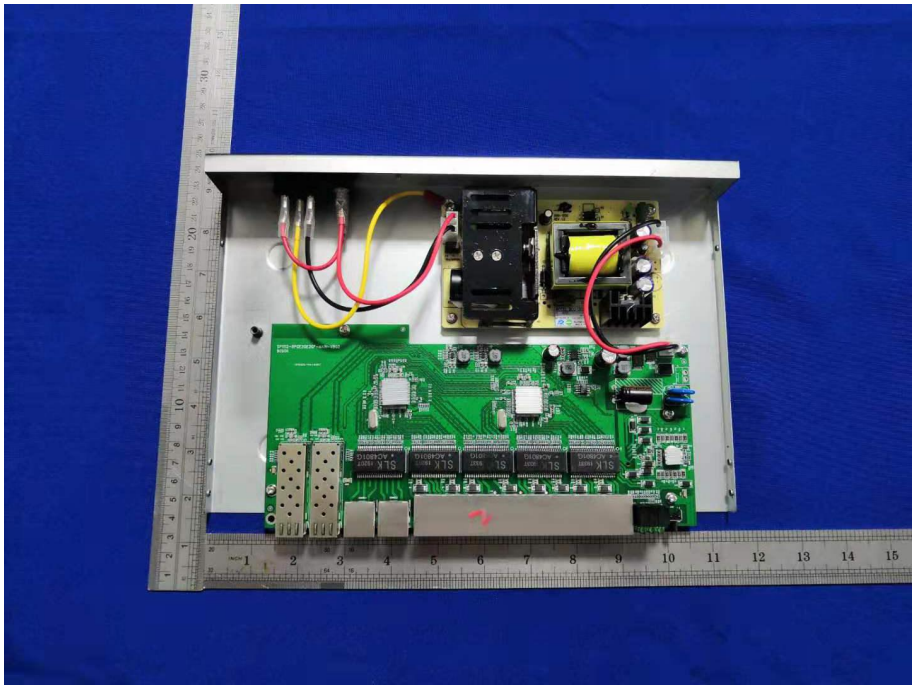
EUT View 2

EUT View 3

EUT View 4



EUT View 5



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