TEST REPORT

Applicant : SHENLE CORPORATION LTD.

Address : No.666 East Jiaotong Rd.,Wu'niu,Yongjia,Zhejiang,China

Equipment Under Test (EUT):

Name	:	RELAY
Model	:	See Appendix II /Model List

In Accordance with : EN 61000-6-4:2007+A1:2011, EN 61000-6-2:2005
EN 61000-3-2:2014, EN 61000-3-3:2013

Report No : 18PT1012004E 01

Date of Test : October 13, 2018 to October 18, 2018

Date of Issue : October 23, 2018

Test Result : PASS

In the configuration tested, the EUT complied with the standards specified above

Authorized Signature

(Frank)
Engineer

(Bill Liang)
Manager

The device described above is tested by NINGBO PALTEK 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 NINGBO PALTEK 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 EN61000-6-4 and EN 61000-6-2 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of NINGBO PALTEK CO.,LTD

TABLE OF CONTENT

TEST REPORT DESCRITION **PAGE**

Modified History

Version	Report No.	Revision date	Summary
Ver.1.0	18PT1012004E 01	\	Original Report

1. SUMMARY OF TEST RESULT

EMISSION			
Description of Test Item	Standard	Limits	Results
Conducted Disturbance at Mains Terminals	EN 61000-6-4:2007+A1:2011	Table 2	N/A
Radiated Disturbance	EN 61000-6-4:2007+A1:2011	Table 1	Pass
Harmonics*	EN 61000-3-2:2014	Table 3	N/A
Voltage fluctuation and flicker*	EN 61000-3-3:2013	Section 5	N/A
IMMUNITY (EN 61000-6-2:2005)			
Description of Test Item	Basic Standard	Performance Criteria	Results
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008	B	N/A
Radio-Frequency, Continuous Radiated Disturbance*	IEC 61000-4-3:2006+ A1:2007+A2:2010	A	N/A
EFT/B Immunity	IEC 61000-4-4:2012	B	N/A
Surge Immunity	IEC 61000-4-5:2014	B	N/A
Conducted RF Immunity	IEC 61000-4-6:2013	A	N/A
Power Frequency Magnetic Field*	IEC 61000-4-8:2009	A	N/A
Voltage dips	IEC 61000-4-11:2004	B&C	N/A
Voltage interruptions		C	N/A
Note: 1. N/A is an abbreviation for Not Applicable..			

2. GENERAL INFORMATION

2.1. Description of Device (EUT)

EUT	:	RELAY
Model Number	:	See APPENDIX II /Model List (Note: All models have the same construction except sizes of appearance. We prepared RKE, and RFT for EMC test.)
Test voltage	:	DC 24V
Trade Mark		Shenler
Applicant	:	SHENLE CORPORATION LTD.
Address	:	No.666 East Jiaotong Rd.,Wu'niu,Yongjia,Zhejiang,China
Manufacturer	:	SHENLE CORPORATION LTD.
Address	:	No.666 East Jiaotong Rd.,Wu'niu,Yongjia,Zhejiang,China

2.2. Description of Test Facility

Laboratory : Dongguan Precise Testing & Certification Corp., Ltd.
Building D, Baoding Technology Park, Guangming Road 2, Guangming Community, Dongcheng District, Dongguan, Guangdong, China

The used test equipment is in accordance with CISPR 16-1 series standards for measurement of radio interference.

2.3. Description of Support Device

:

2.4. Measurement Uncertainty

Radiated Emission Uncertainty (3m Chamber)	:	3.44 (Polarize: H) 3.78 (Polarize: V)

3. MEASURING DEVICE AND TEST EQUIPMENT

3.1. For Radiated Emission Measurement

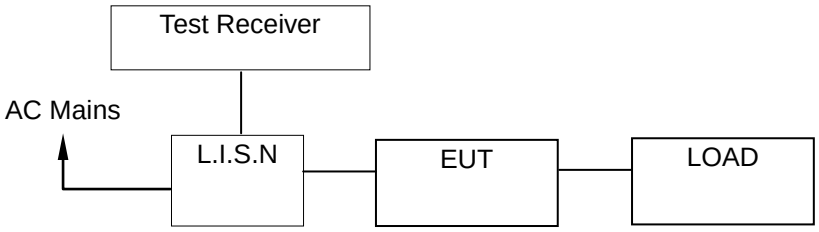
Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	Spectrum Analyzer	Rohde & Schwarz	ESCI	101108	Valid
2.	EMI Test Receiver	Rohde & Schwarz	ESCI	101107	Valid
3.	Pre-Amplifier	CD	PAP-0203	22015	Valid
4.	Bilog Antenna	Schwarzbeck	VULB9163	9163-467	Valid
5.	Cable	Huber + Suhner	CBL3-NN-0.5M	101216-21405 00-2	Valid
6.	Cable	Huber + Suhner	CBL3-NN-3.0M	101216-21430 00-2	Valid
7.	Cable	Huber + Suhner	CBL3-NN-9.0M	101216-21490 00	Valid

3.2. For Power Line Conducted Emission Measurement

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibration Status
1.	Test Receiver	Rohde & Schwarz	ESCI	101178	Valid
2.	L.I.S.N	Rohde & Schwarz	ENV216	101215	Valid
3.	L.I.S.N	Schwarzbeck	NSLK 8126	8128-289	Valid
4.	Cable	HUBER+SUHNER	CBL2-NN-3M	2230300	Valid
5.	Switch	ESE	RSU/M2	---	Valid

4. POWER LINE CONDUCTED EMISSION MEASUREMENT

4.1. Block Diagram of Test Setup



(EUT: RELAY)

4.2. Measurement Standard

EN 61000-6-4:2007+A1:2011

4.3. Measurement Limits

Frequency	At mains terminals (dBμV)	
	Quasi-peak Level	Average Level
150KHz ~ 0.5MHz	79*	66*
0.5MHz ~ 30MHz	73	60

1. At the transition frequency the lower limit applies.
2. * Decreasing linearly with logarithm of the frequency.

4.4. EUT Configuration on Measurement

The following equipments are installed on Conducted Emission Measurement to meet EN55015 requirements and operating in a manner which tends to maximize its emission characteristics in a normal application.

EUT	:	RELAY
Model Number	:	RKE,RFT

4.5. Operating Condition of EUT

4.5.1. Turn on the power.

4.5.2. After that, let the EUT work in test mode (ON) and measure it.

4.6. Test Procedure

The EUT is put on the table, which is 0.8 meter high above the ground and connected to the AC mains through a Line Impedance Stabilization Network (L.I.S.N.). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission according to the EN 61000-6-4 regulations during conducted emission measurement. And the voltage probe had been used for the load terminals measurement according to the EN 61000-6-4 standard.

The bandwidth of the test receiver (ESCI) is set at 9KHz in 150K~30MHz range.

The frequency range from 150KHz to 30MHz is investigated.

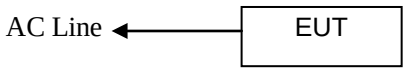
4.7. Measurement Results

N/A.

5. RADIATED EMISSION MEASUREMENT

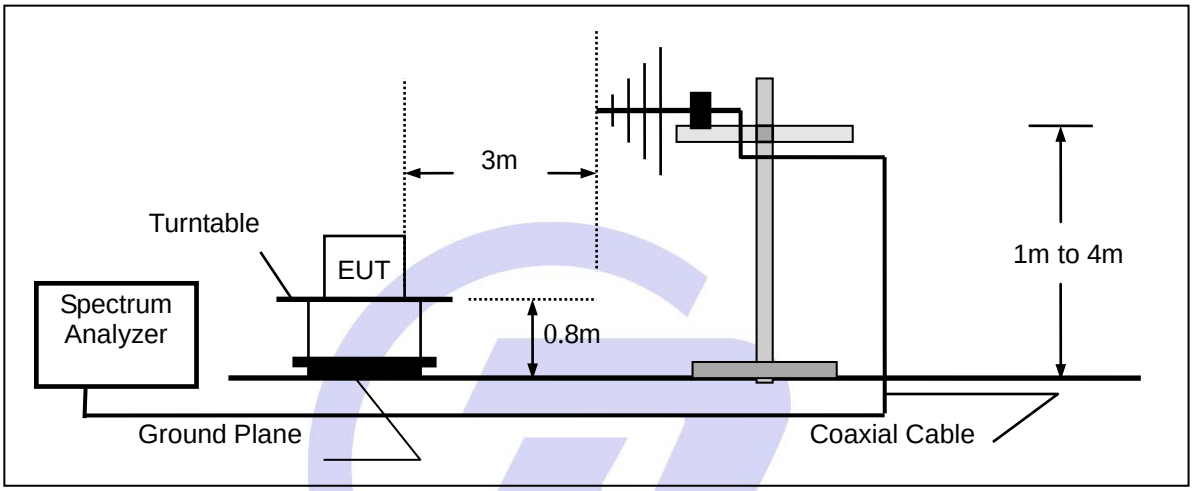
5.1. Block Diagram of Test Setup

5.1.1. Block diagram of connection between the EUT and simulators



(EUT: RELAY)

5.1.2. Block diagram of test setup (In chamber)



(EUT: RELAY)

5.2. Measuring Standard

EN 61000-6-4:2007+A1:2011

5.3. Radiated Emission Limits

All emanations from devices or system shall not exceed the level of field strengths specified below:

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT (dBμV/m)
30 ~ 230	3	50
230 ~ 1000	3	57

FREQUENCY (GHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMIT	
		Average (dBμV/m)	Peak (dBμV/m)
1~3	3	56	76
3~6	3	60	80

Note: (1) The smaller limit shall apply at the combination point between two frequency bands.
(2) Distance refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the EUT.

5.4. EUT Configuration on Test

The EN 61000-6-4 regulations test method must be used to find the maximum emission during radiated emission measurement.

5.5. Operating Condition of EUT

5.5.1. Turn on the power.

5.5.2. After that, let the EUT work in test mode (AUTO, REV) and measure it.

5.6. 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 that 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 polarization of the antenna is set on test.

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

5.7. Measuring Results

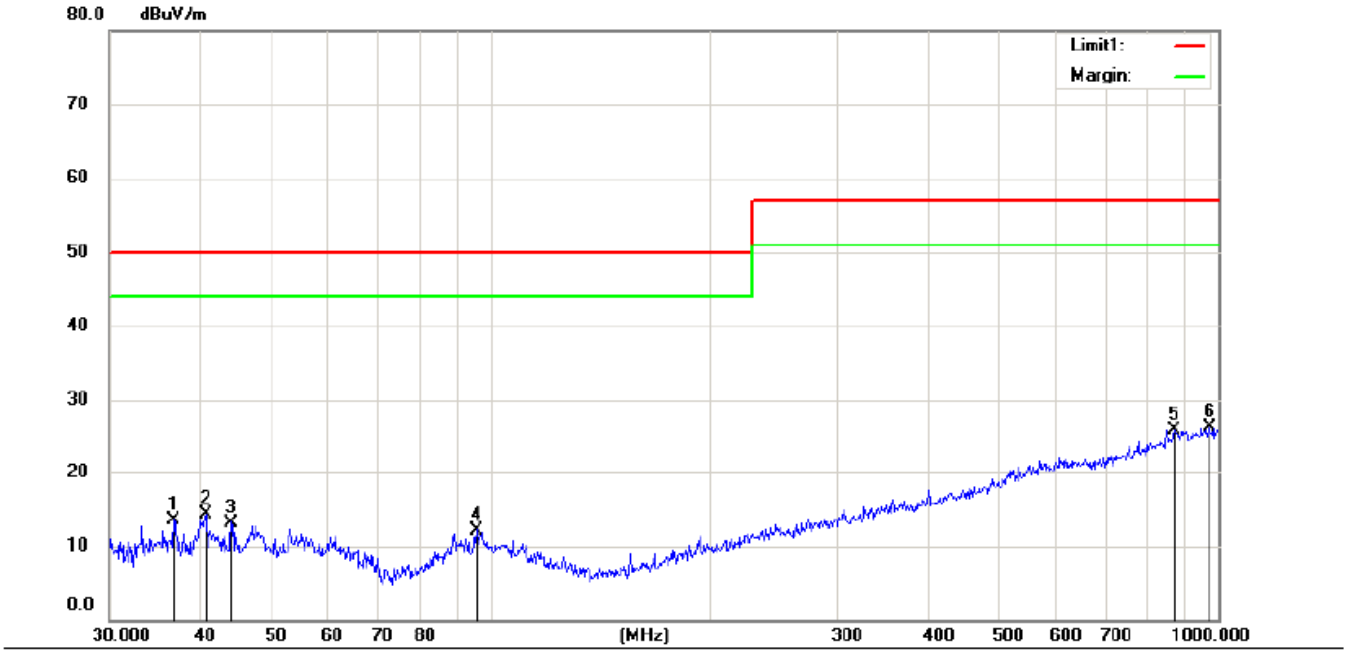
PASS.

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

Please see the attached pages.

Test data:

RKE



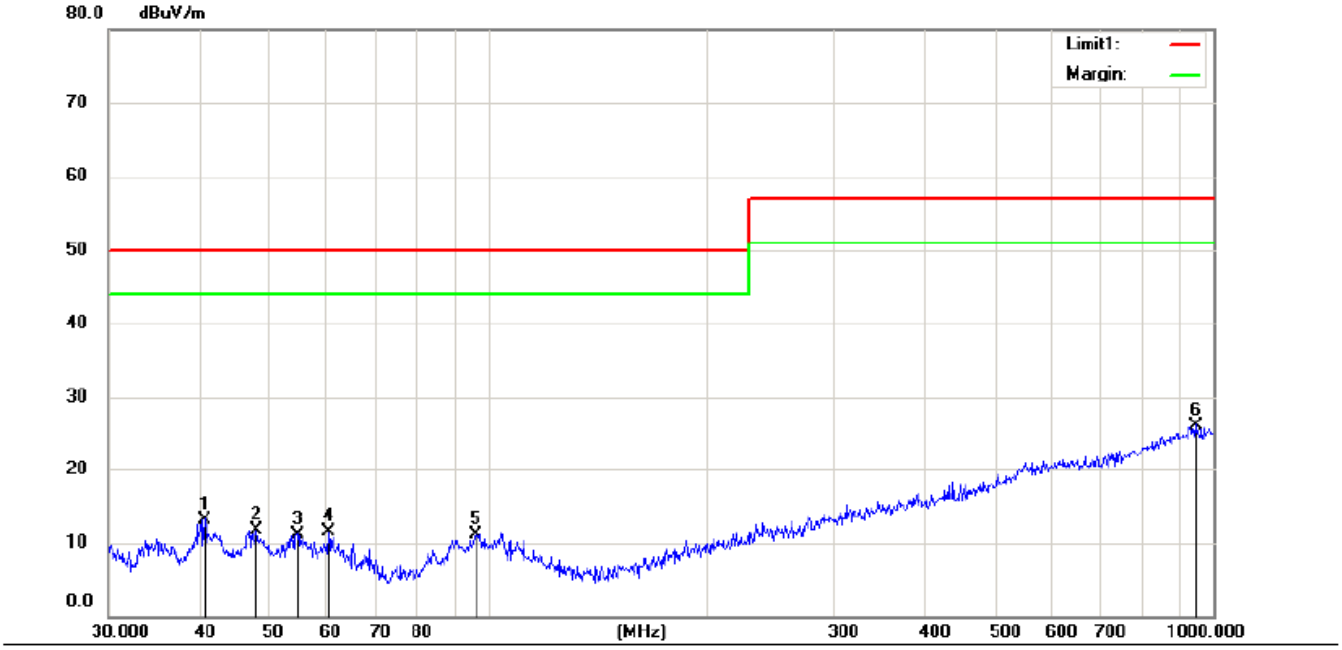
Site site #1 Polarization: *Vertical* Temperature: 23 C

Limit: (RE) EN 61000-6-4 Power: DC 24V Humidity: 52 %

Mode:ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		36.7661	34.97	-21.37	13.60	50.00	-36.40	QP			
2		40.7016	34.96	-20.66	14.30	50.00	-35.70	QP			
3		44.1202	33.93	-20.73	13.20	50.00	-36.80	QP			
4		95.7622	33.09	-20.89	12.20	50.00	-37.80	QP			
5		872.1832	31.86	-5.96	25.90	57.00	-31.10	QP			
6	*	972.3373	31.46	-5.16	26.30	57.00	-30.70	QP			



Site site #1 Polarization: *Horizontal* Temperature: 23 C

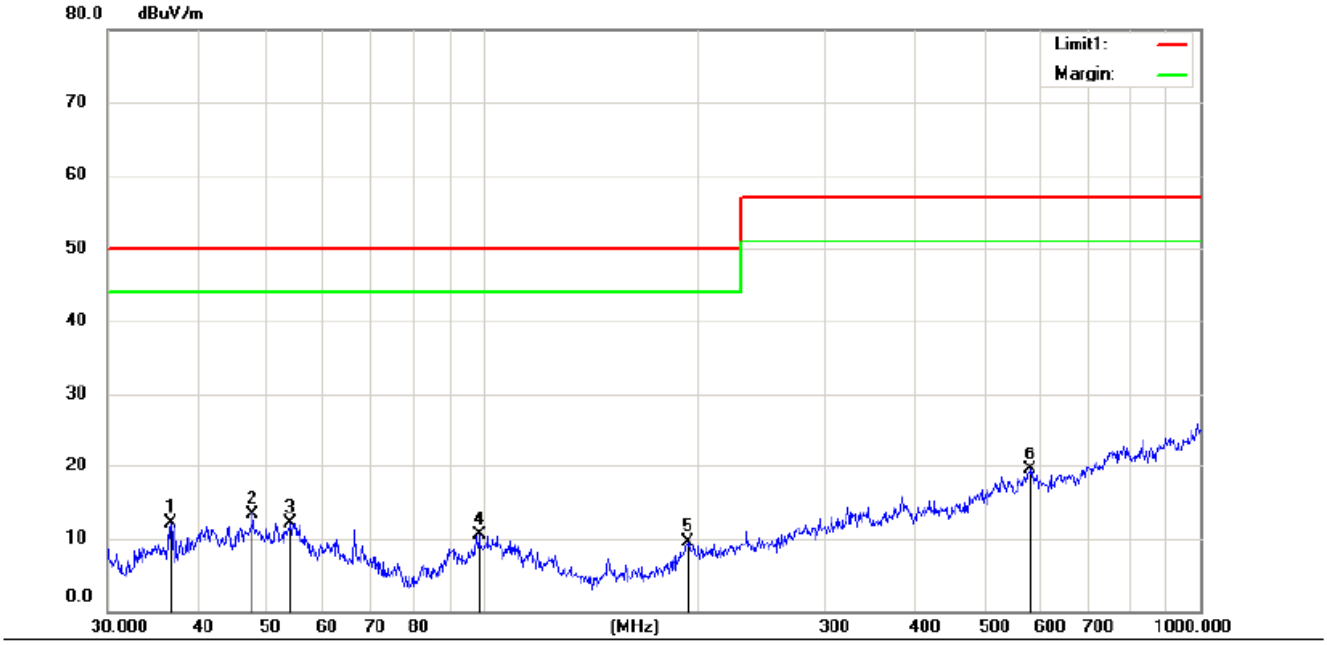
Limit: (RE) EN 61000-6-4 Power: DC 24V Humidity: 52 %

Mode:ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		40.7014	33.86	-20.66	13.20	50.00	-36.80	QP			
2		47.9940	32.66	-20.96	11.70	50.00	-38.30	QP			
3		54.6428	32.44	-21.24	11.20	50.00	-38.80	QP			
4		60.2801	33.08	-21.58	11.50	50.00	-38.50	QP			
5		96.0985	31.98	-20.88	11.10	50.00	-38.90	QP			
6	*	945.4400	31.48	-5.28	26.20	57.00	-30.80	QP			

RFT



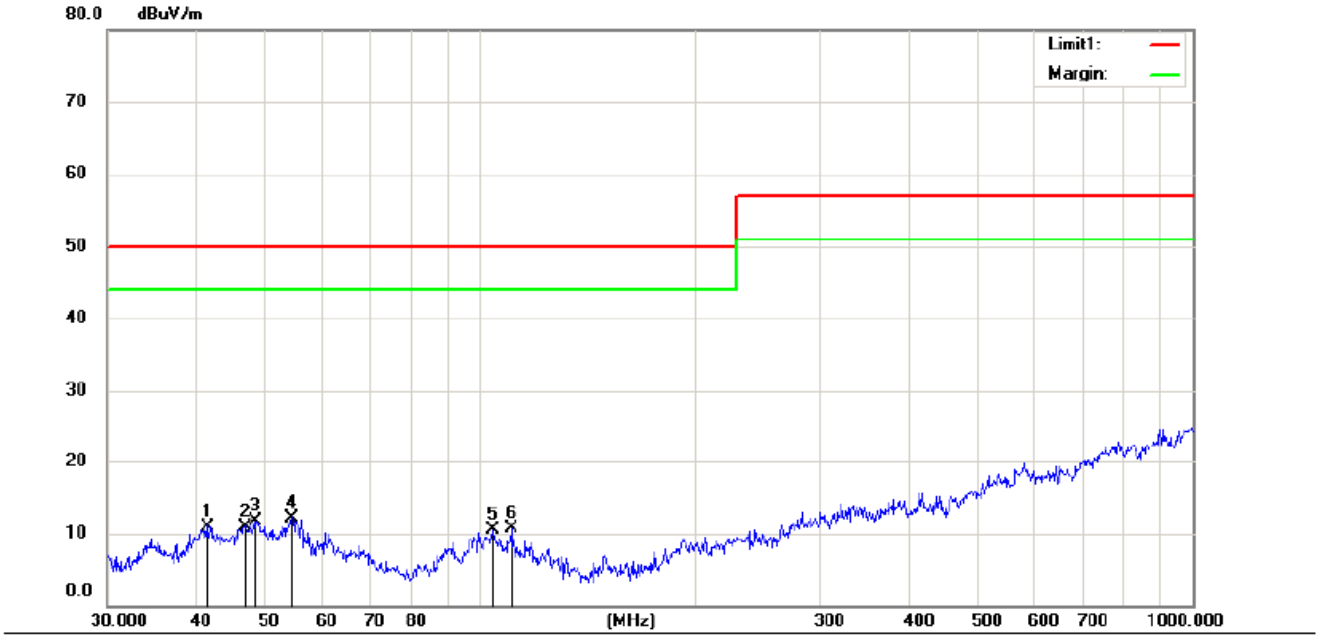
Site site #1 Polarization: *Vertical* Temperature: 20 C

Limit: (RE) EN 61000-6-4 Power: DC 24V Humidity: 52 %

Mode:ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		36.7661	34.22	-22.12	12.10	50.00	-37.90	QP			
2	*	47.8260	33.26	-19.86	13.40	50.00	-36.60	QP			
3		53.8817	31.65	-19.55	12.10	50.00	-37.90	QP			
4		98.8324	31.94	-21.44	10.50	50.00	-39.50	QP			
5		193.0944	31.38	-21.88	9.50	50.00	-40.50	QP			
6		580.7024	30.99	-11.49	19.50	57.00	-37.50	QP			



Site site #1 Polarization: ***Horizontal*** Temperature: 20 C

Limit: (RE) EN 61000-6-4 Power: DC 24V Humidity: 52 %

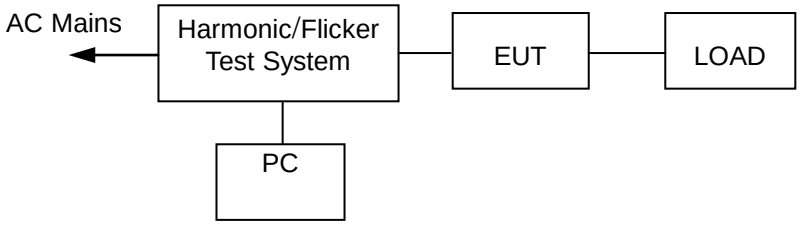
Mode:ON

Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		41.4215	31.38	-20.38	11.00	50.00	-39.00	QP			
2		46.8303	30.62	-19.62	11.00	50.00	-39.00	QP			
3		48.3318	31.50	-19.80	11.70	50.00	-38.30	QP			
4	*	54.4516	31.86	-19.66	12.20	50.00	-37.80	QP			
5		104.1701	31.70	-21.20	10.50	50.00	-39.50	QP			
6		110.5687	32.64	-21.94	10.70	50.00	-39.30	QP			

6. HARMONIC CURRENT EMISSION MEASUREMENT

6.1.Block Diagram of Test Setup



(EUT: RELAY)

6.2.Measuring Standard

EN 61000-3-2:2014, CLASS A

6.3.Operation Condition of EUT

6.3.1.Turn on the power.

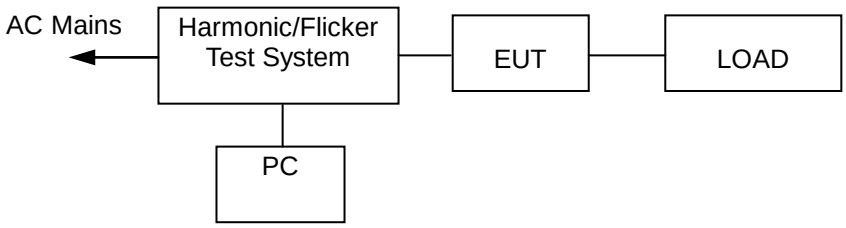
6.3.2.Let the EUT work in test mode (ON) and measure it.

6.4.Measuring Results

N/A

7. VOLTAGE FLUCTUATION AND FLICKER MEASUREMENT

7.1.Block Diagram of Test Setup



(EUT: RELAY)

7.2.Measuring Standard

EN 61000-3-3:2013

7.3.Operation Condition of EUT

7.3.1.Turn on the power.

7.3.2.After that, let the EUT work in test mode (ON) and measure it.

7.4.Measuring Results

N/A.

8. IMMUNITY PERFORMANCE CRITERIA DESCRIPTION

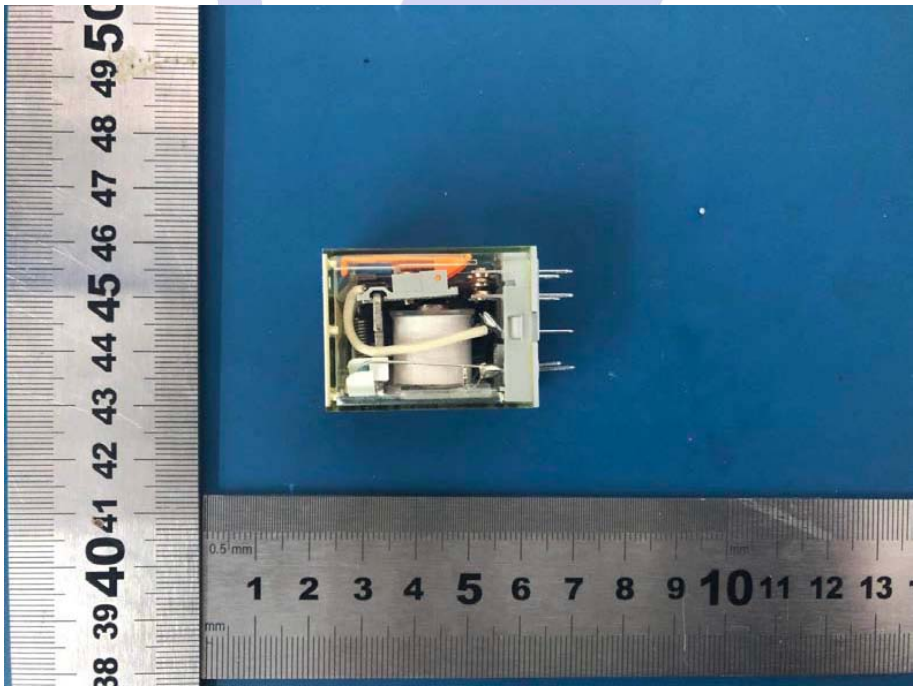
According to the electrical characteristics of the EUT, the product contains no electronic control circuitry and active component. Therefore, the EUT is deemed to fulfill the related requirements of EN 61000-6-2:2005 without actual testing.

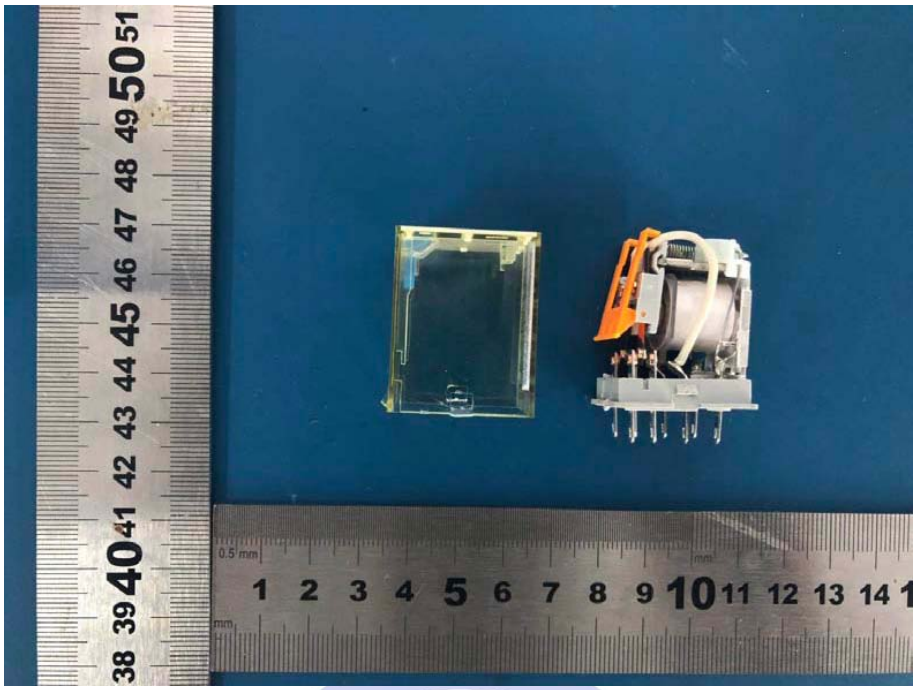
9. PHOTOGRAPH

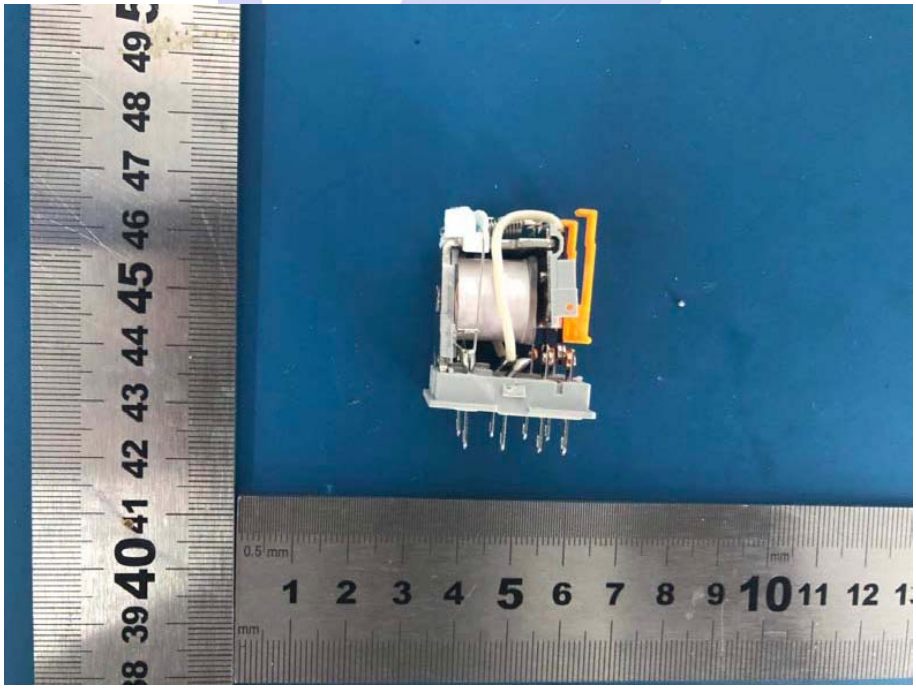
9.1. Photo of Radiation Emission Measurement

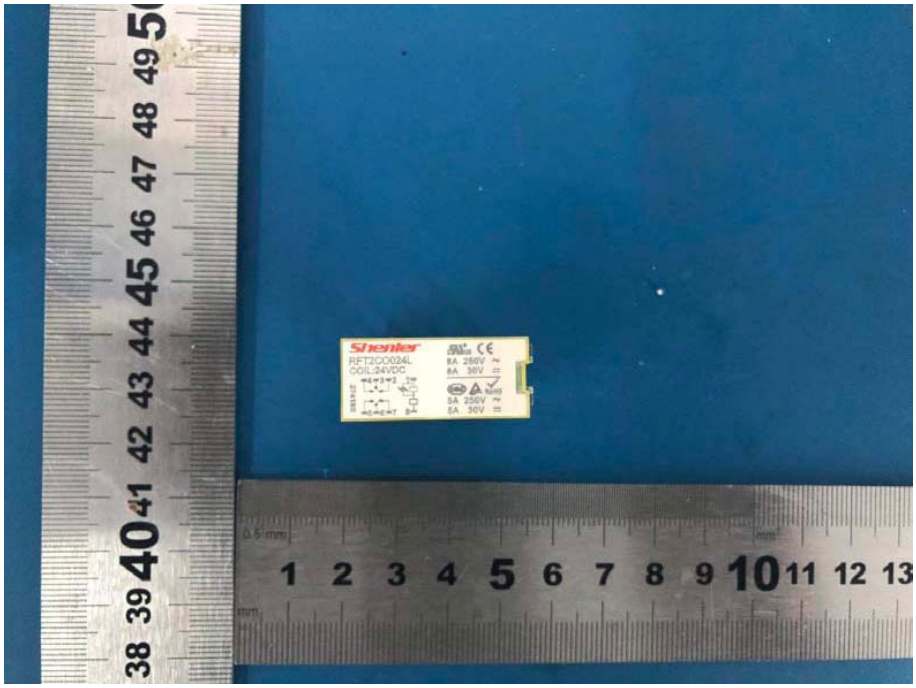
APPENDIX I
(Photo of EUT)

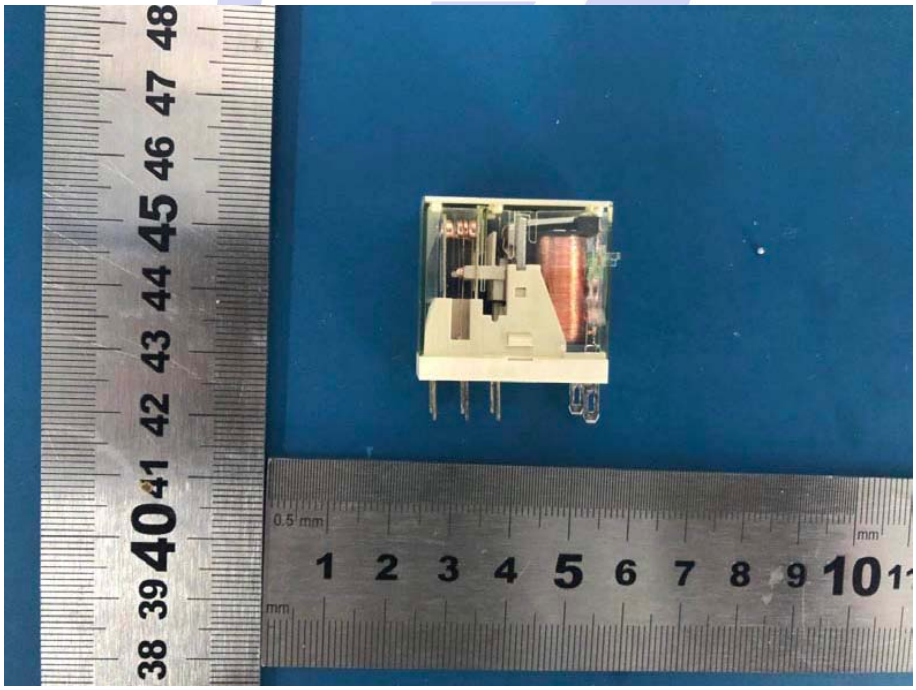
RKE

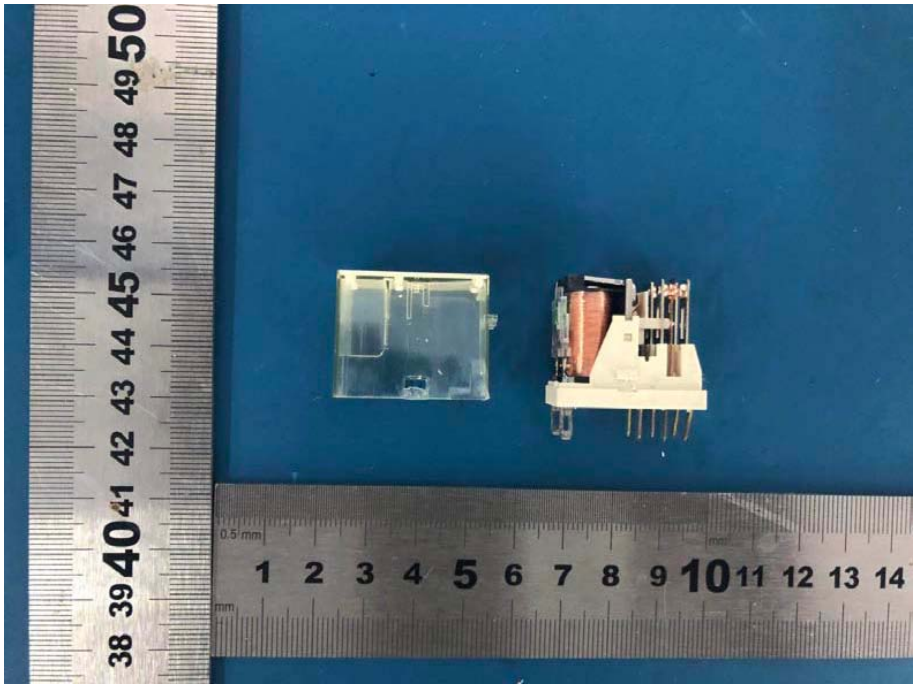


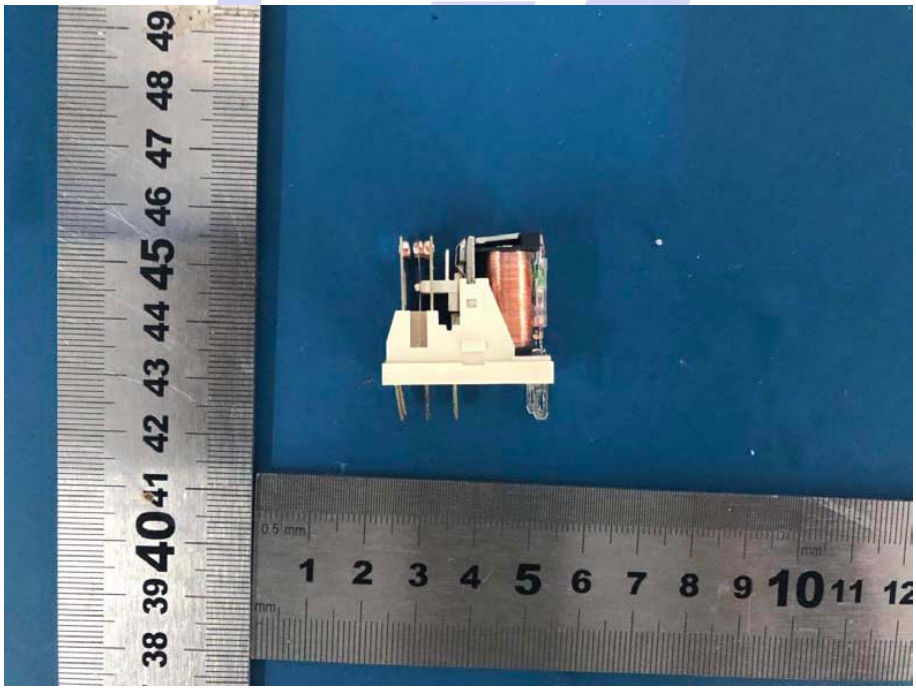





Sheller
RFT2CO024L
COIL:24VDC
8A 250V ~
8A 30V ⎓
5A 250V ~
5A 30V ⎓







APPENDIX II
(Model List)

RKF	R2G	RKM	R5B	RFT	RFC
RKE	R2C	RKL	R5V	RNC	RTF
RUB	TKB	REH	TCN	RGF	TCR
MRF	TMC7				

---The End---