

## AUSTRALIA TEST REPORT

For

Guangzhou Automation Technology Co., Ltd.

Relay modules

Test Model: VLC-6CH-5A

Additional Model No.: Please Refer To Page 8

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Date of receipt of test sample : May 06, 2020  
Number of tested samples : 1  
Serial number : Prototype  
Date of Test : May 06, 2020 ~ May 12, 2020  
Date of Report : May 13, 2020

## AUSTRALIA TEST REPORT AS/NZS CISPR 32: 2015

Electromagnetic compatibility of multimedia equipment-Emission requirements

**Report Reference No. ....: LCS200428058AE**

**Date Of Issue .....: May 13, 2020**

**Testing Laboratory Name....: Shenzhen LCS Compliance Testing Laboratory Ltd.**

**Address.....: Room 101, 201, Building A and Room 301, Building C, Juji Industrial Park, Yabianxueziwei, Shajing Street, Bao' an District, Shenzhen, Guangdong, China**

**Testing Location/ Procedure ..: Full application of Harmonised standards ☒**  
**Partial application of Harmonised standards ☐**  
**Other standard testing method ☐**

**Applicant's Name.....: Guangzhou Automation Technology Co., Ltd.**

**Address.....: R201, 2nd Building, 10th Heping Road, Huijiang, Dashi Street, Panyu District, Guangzhou City, Guangdong Province, China**

**Test Specification:**

**Standard .....: AS/NZS CISPR 32: 2015**

**Test Report Form No. ....: LCSEMC-1.0**

**TRF Originator .....: Shenzhen LCS Compliance Testing Laboratory Ltd.**

**Master TRF .....: Dated 2011-03**

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**Test Item Description. ....: Relay modules**

**Trade Mark.....: TIS**

**Test Model .....: VLC-6CH-5A**

**Ratings.....: DC 24V, 200mA, 5W**

**Result .....: Positive**

**Compiled by:**

*Rita Huang*

**Supervised by:**

*Jason Deng*

**Approved by:**



Rita Huang/ File administrators

Jason Deng/ Technique principal

Gavin Tang/ Manager

**AUSTRALIA -- TEST REPORT****Test Report No. : LCS200428058AE**May 13, 2020  
Date of issue

Test Model..... : VLC-6CH-5A

EUT..... : Relay modules

**Applicant**..... : Guangzhou Automation Technology Co., Ltd.  
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Street, Panyu District, Guangzhou City, Guangdong  
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**Telephone**..... : /  
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**Test Result** according to the standards on page 6:**Positive**

The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## Revision History

Revision	Issue Date	Revisions	Revised By
000	May 13, 2020	Initial Issue	Leo Lee

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## **1. TEST STANDARDS**

**The tests were performed according to following standards:**

AS/NZS CISPR 32: 2015 Electromagnetic compatibility of multimedia equipment-Emission requirements

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## 2. SUMMARY OF STANDARDS AND RESULTS

### 2.1. Description of Standards and Results

The EUT have been tested according to the applicable standards as referenced below.

EMISSION (AS/NZS CISPR 32: 2015)			
Description of Test Item	Standard	Limits	Results
Conducted disturbance at mains terminals	AS/NZS CISPR 32: 2015	Class B	N/A
Radiated disturbance	AS/NZS CISPR 32: 2015	Class B	PASS
N/A is an abbreviation for Not Applicable.			

<b>Test mode:</b>		
Mode 1	Working	Record

### 3. GENERAL INFORMATION

#### 3.1. Description of Device (EUT)

EUT : Relay modules

Trade Mark : **TIS**

Test Model : VLC-6CH-5A

Additional Model No : HVAC-5A-T, IP-COM-PORT, RLY-4CH-10A, RLY-6CH-0-10V, VLC-12CH-10A, RLY-8CH-16A, RCU-8OUT-8IN, RCU-20R20Z-IP, RCU-24R20Z

Model declaration : PCB board, structure and internal of these model(s) are the same, So no additional models were tested.

Power Supply : DC 24V, 200mA, 5W

EUT Clock Frequency :  $\leq 108\text{MHz}$

#### 3.2. Description of Test Facility

Site Description  
EMC Lab. : FCC Registration Number is 254912.  
Industry Canada Registration Number is 9642A-1.  
ESMD Registration Number is ARCB0108.  
UL Registration Number is 100571-492.  
TUV SUD Registration Number is SCN1081.  
TUV RH Registration Number is UA 50296516-001.  
NVLAP Registration Code is 600167-0.

#### 3.3. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 “Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements” and is documented in the LCS quality system acc. To DIN EN ISO/IEC 17025.

Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.



### 3.4.Measurement Uncertainty

Test	Parameters	Expanded uncertainty (U <sub>lab</sub> )	Expanded uncertainty (U <sub>cispr</sub> )
Conducted Emission	Level accuracy (9kHz to 150kHz) (150kHz to 30MHz)	$\pm 2.63$ dB $\pm 2.35$ dB	$\pm 3.8$ dB $\pm 3.4$ dB
Radiated Emission	Level accuracy (30MHz to 1000MHz)	$\pm 3.48$ dB	$\pm 5.3$ dB
Radiated Emission	Level accuracy (above 1000MHz)	$\pm 3.90$ dB	$\pm 5.2$ dB

(1) Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus.

(2) The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor of  $k=2$ , which for a normal distribution corresponds to a coverage probability of approximately 95%.

## 4. TEST RESULTS

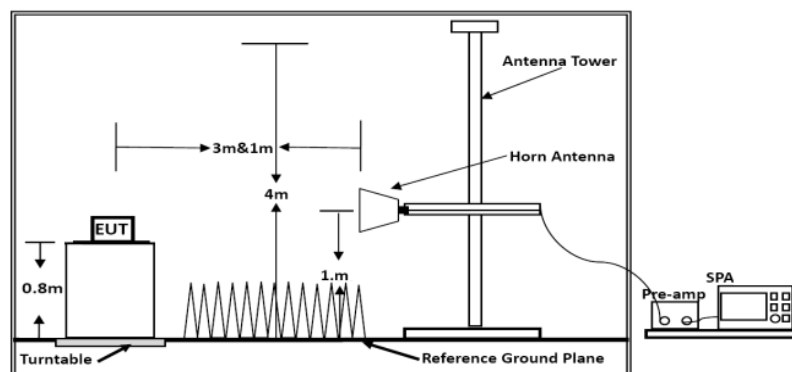
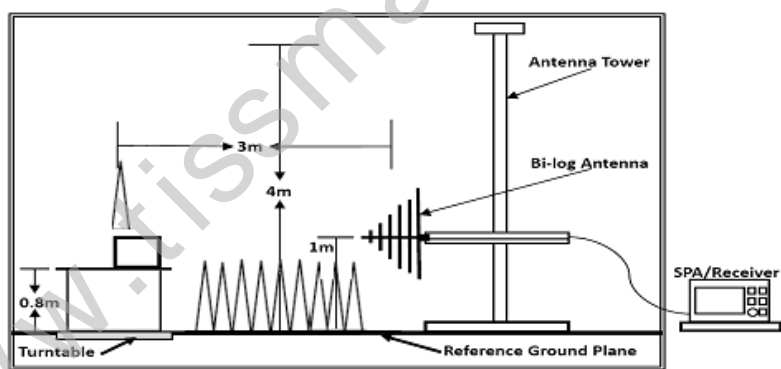
### 4.1. Radiated Emission Measurement

#### 4.1.1. Test Equipment

The following test equipments are used during the radiated emission measurement:

Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	EMI Test Software	EZ	EZ-EMC	/	N/A
2	3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	N/A
3	Positioning Controller	MF	MF-7082	/	2019-06-12
4	By-log Antenna	SCHWARZBECK	VULB9163	9163-470	2019-06-12
5	Horn Antenna	SCHWARZBECK	BBHA 9120D	9120D-1925	2019-07-25
6	EMI Test Receiver	R&S	ESR 7	101181	2019-07-01
7	RS SPECTRUM ANALYZER	R&S	FSP40	100503	2019-06-12
8	AMPLIFIER	QuieTek	QTK	CHM/080906 5	2019-11-14
9	RF Cable-R03m	Jye Bao	RG142	CB021	2019-07-01
10	RF Cable-HIGH	SUHNER	SUCOFLE X 106	03CH03-HY	2019-06-12

#### 4.1.2. Block Diagram of Test Setup



## 4.1.3. Test Standard

AS/NZS CISPR 32: 2015

## 4.1.4. Radiated Emission Limits

All emanations from a class B device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

Limits for Radiated Emission Below 1GHz			
Frequency (MHz)	Distance (Meters)	Field Strengths Limit (dB $\mu$ V/m)	
30 ~ 230	3	40	
230 ~ 1000	3	47	
***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.			
Limits for Radiated Emission Above 1GHz			
Frequency (MHz)	Distance (Meters)	Peak Limit (dB $\mu$ V/m)	Average Limit (dB $\mu$ V/m)
1000 ~ 3000	3	70	50
3000 ~ 6000	3	74	54
***Note: The lower limit applies at the transition frequency.			

## 4.1.5. EUT Configuration on Test

The AS/NZS CISPR 32: 2015 regulations test method must be used to find the maximum emission during radiated emission measurement.

## 4.1.6. Operating Condition of EUT

4.1.6.1 Turn on the power.

4.1.6.2 After that, let the EUT work in test Mode 1 and measure it.

## 4.1.7. 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. By-log 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 is set at RBW/VNW 120KHz/300KHz.

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

The bandwidth of the Receiver is set at RBW/VNW 1MHz/3MHz.

The frequency range from 1000MHz to 6000MHz is investigated.

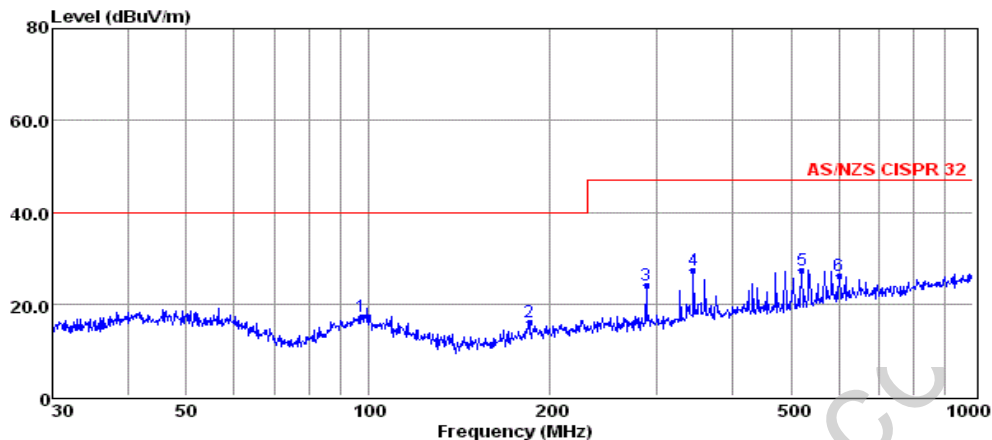
#### 4.1.8. Test Results

**PASS.**

All the scanning waveform is in next page.

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<b>Test Model</b>	VLC-6CH-5A	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	22.0°C, 53.0% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Vertical	<b>Distance</b>	3m
<b>Test Engineer</b>	Xp Rao	<b>Test Voltage</b>	DC 24V



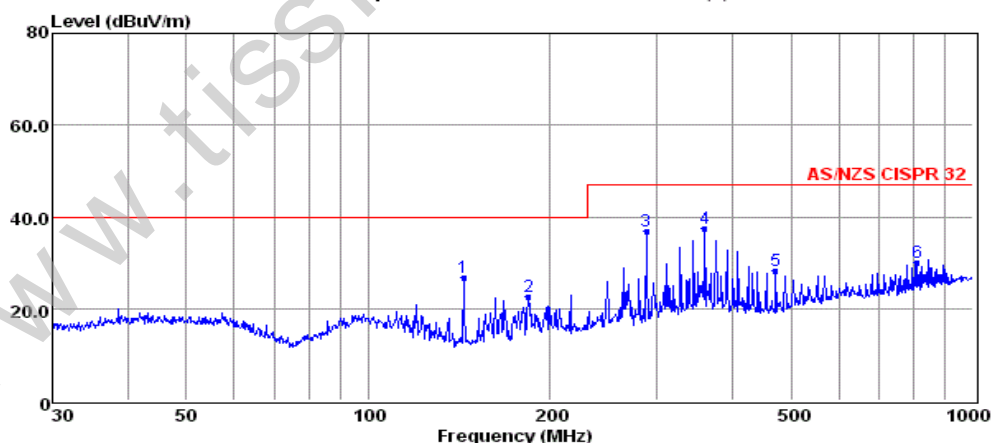
	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	97.46	3.54	0.61	13.00	17.15	40.00	-22.85	QP
2	184.49	5.16	0.70	10.08	15.94	40.00	-24.06	QP
3	287.99	10.36	1.05	12.83	24.24	47.00	-22.76	QP
4	344.39	12.01	1.13	14.19	27.33	47.00	-19.67	QP
5	520.89	8.80	1.47	16.97	27.24	47.00	-19.76	QP
6	601.43	6.17	1.43	18.46	26.06	47.00	-20.94	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

<b>Test Model</b>	VLC-6CH-5A	<b>Test Mode</b>	Mode 1
<b>Environmental Conditions</b>	22.0°C, 53.0% RH	<b>Detector Function</b>	Quasi-peak
<b>Pol</b>	Horizontal	<b>Distance</b>	3m
<b>Test Engineer</b>	Xp Rao	<b>Test Voltage</b>	DC 24V



	Freq	Reading	CabLos	Antfac	Measured	Limit	Over	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	143.83	17.96	0.71	8.22	26.89	40.00	-13.11	QP
2	183.84	11.90	0.70	10.02	22.62	40.00	-17.38	QP
3	287.99	22.85	1.05	12.83	36.73	47.00	-10.27	QP
4	360.45	22.00	1.18	14.43	37.61	47.00	-9.39	QP
5	472.18	10.91	1.38	15.88	28.17	47.00	-18.83	QP
6	810.27	8.30	1.71	20.17	30.18	47.00	-16.82	QP

Note: 1. All readings are Quasi-peak values.

2. Measured= Reading + Antenna Factor + Cable Loss

3. The emission that are 20db below the official limit are not reported

## 5. PHOTOGRAPHS OF TEST SETUP



Test Setup Photo of Radiated Measurement (Below 1GHz)

## 6. EXTERNAL AND INTERNAL PHOTOS OF THE EUT



Fig. 1



Fig. 2





Fig. 3



Fig. 4





Fig. 5



Fig. 6

