

# CE/EMC TEST REPORT

For

Xuzhou Keyun Intelligent Technology Co., Ltd.

Product Name:	485More Master
Brand Name:	Keyun Intelligent
Model Number:	MZ485N3, MZ485GL3, MZ485ZQ
Prepared For:	Xuzhou Keyun Intelligent Technology Co., Ltd.
Address:	No. 2 Huangshan Road, Tongshan District, Xuzhou City, Jiangsu Province
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Report No.:	YB190527086XY-EMC-B1

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## TEST RESULT CERTIFICATION

Applicant : Xuzhou Keyun Intelligent Technology Co., Ltd.

Address : No. 2 Huangshan Road, Tongshan District, Xuzhou City, Jiangsu Province

Manufacturer : Xuzhou Keyun Intelligent Technology Co., Ltd.

Address : No. 2 Huangshan Road, Tongshan District, Xuzhou City, Jiangsu Province

EUT : 485More Master

Brand Name: : Keyun Intelligent

Model Number : MZ485N3, MZ485GL3, MZ485ZQ

Date of Receipt: : May 22, 2019

Test Date : May 23-24, 2019

Date of Report : May 27, 2019

**Test Result:** : The equipment under test was found to be compliance with the requirements of the standards applied.

Test Procedure Used:

EMI : EN 55032:2015  
EN 61000-3-2:2014, EN 61000-3-3:2013

EMS : EN 55035:2017  
EN 61000-4-2:2009, EN 61000-4-3: 2006+A1:2008+A2:2010  
EN 61000-4-4:2012, EN 61000-4-5:2014, EN 61000-4-6:2014  
EN 61000-4-8:2010, EN 61000-4-11:2004

Prepared by(Engineer): Jade Tang

Reviewer(Supervisor): Jack Li

Approved(Manager): Eric Sang



*This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen Youbest Testing Technology Co., Ltd.*

## 1. GENERAL INFORMATION

### 1.1 Description of Device (EUT)

EUT : 485More Master  
Brand Name : Keyun Intelligent  
Model Number : MZ485N3, MZ485GL3, MZ485ZQ  
Model Difference : Only model name and appearance are different  
Power Supply : DC 9-24V  
Working Frequency : Below 108MHz

Note: MZ485N3 was selected as the test model and the data's have been recorded in this report.

### 1.2 Tested System Details

None.

### 1.3 Test Uncertainty

Conducted Emission Uncertainty :  $\pm 2.57\text{dB}$

Radiated Emission Uncertainty :  $\pm 4.51\text{dB}$

## 2. TEST INSTRUMENT USED

For Conducted Emission at the mains terminals Test

Conducted Emission Test ( 854 --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	Aug. 25, 2018	Aug. 24, 2019
EMI Receiver	R&S	ESCI	101421	Aug. 27, 2018	Aug. 26, 2019
LISN	SCHWARZBECK	NSLK8127	812779	Sep. 07, 2018	Sep. 06, 2019

For Radiated Emission Test

Radiation Emission Test (966 chamber)					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
966 chamber	ChengYu	966 Room	966	Aug. 25, 2018	Aug. 24, 2019
Spectrum Analyzer	Agilent	E4407B	MY45109572	Aug. 27, 2018	Aug. 26, 2019
Amplifier	Schwarzbeck	BBV9743	9743-119	Aug. 25, 2018	Aug. 24, 2019
Amplifier	Schwarzbeck	BBV9718	9718-270	Aug. 25, 2018	Aug. 24, 2019
Log-periodic Antenna	Schwarzbeck	VULB9160	VULB9160-33 69	Sep. 07, 2018	Sep. 06, 2019
EMI Receiver	R&S	ESCI	101421	Aug. 27, 2018	Aug. 26, 2019
Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1275	Aug. 25, 2018	Aug. 24, 2019
966 Cable 1#	CHENGYU	966	004	Aug. 25, 2018	Aug. 24, 2019
966 Cable 2#	CHENGYU	966	003	Aug. 25, 2018	Aug. 24, 2019

For Harmonic & Flicker Test

For Harmonic / Flicker Test ( EMI --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Harmonic / Flicker Analyzer	KIKUSUI	KHA1000	VA002445	Sep. 07, 2018	Sep. 06, 2019
AC Power Supply	KIKUSUI	PCR4000M	UK001879	Sep. 07, 2018	Sep. 06, 2019
Line Impedance network	KIKUSUI	LIN1020JF	UL001611	Sep. 07, 2018	Sep. 06, 2019

## For Electrostatic Discharge Immunity Test

For Electrostatic Discharge Immunity Test ( EMS --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
ESD Tester	KIKISUI	KES4201A	UH002321	Aug. 28, 2018	Aug. 27, 2019

## For RF Field Strength Susceptibility Test(SMQ)

For RF Field Strength Susceptibility Test (SMQ --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Signal Generator	HP	8648A	3625U00573	Sep. 26, 2018	Sep. 26, 2019
Amplifier	A&R	500A100	17034	Sep. 26, 2018	Sep. 26, 2019
Amplifier	A&R	100W/1000M1	17028	Sep. 26, 2018	Sep. 26, 2019
Audio Analyzer (20Hz~1GHz)	Panasonic	2023B	202301/428	Sep. 26, 2018	Sep. 26, 2019
Isotropic Field Probe	A&R	FP2000	16755	Sep. 26, 2018	Sep. 26, 2019
Antenna	EMCO	3108	9507-2534	Sep. 26, 2018	Sep. 26, 2019
Log-periodic Antenna	A&R	AT1080	16812	Sep. 26, 2018	Sep. 26, 2019

## For Electrical Fast Transient /Burst Immunity Test

For Electrical Fast Transient/Burst Immunity Test ( EMS --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Burst Tester	Prima	EFT61004AG	PR14054467	Aug. 27, 2018	Aug. 26, 2019
Coupling Clamp	Prima	EFT61004AG	DL009E	Aug. 27, 2018	Aug. 26, 2019

## For Surge Test

For Electrical Fast Transient/Burst Immunity Test ( EMS --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Burst Tester	Prima	EFT61004AG	PR14054467	Aug. 27, 2018	Aug. 26, 2019

### For Injected Currents Susceptibility Test

For Injected Currents Susceptibility Test ( EMS --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
C/S Test System	SCHLODER	CDG600	126B1281	Aug. 27, 2018	Aug. 26, 2019
CDN	SCHLODER	CDN-M2+3	A2210320/20 15	Aug. 27, 2018	Aug. 26, 2019
Injection Clamp	SCHLOBER	EMCL-20	132A1214/20 15	Aug. 27, 2018	Aug. 26, 2019

### For Magnetic Field Immunity Test

For Injected Currents Susceptibility Test ( EMS --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Magnetic field generator	HTEC	HPFMF	15701	Aug. 27, 2018	Aug. 26, 2019

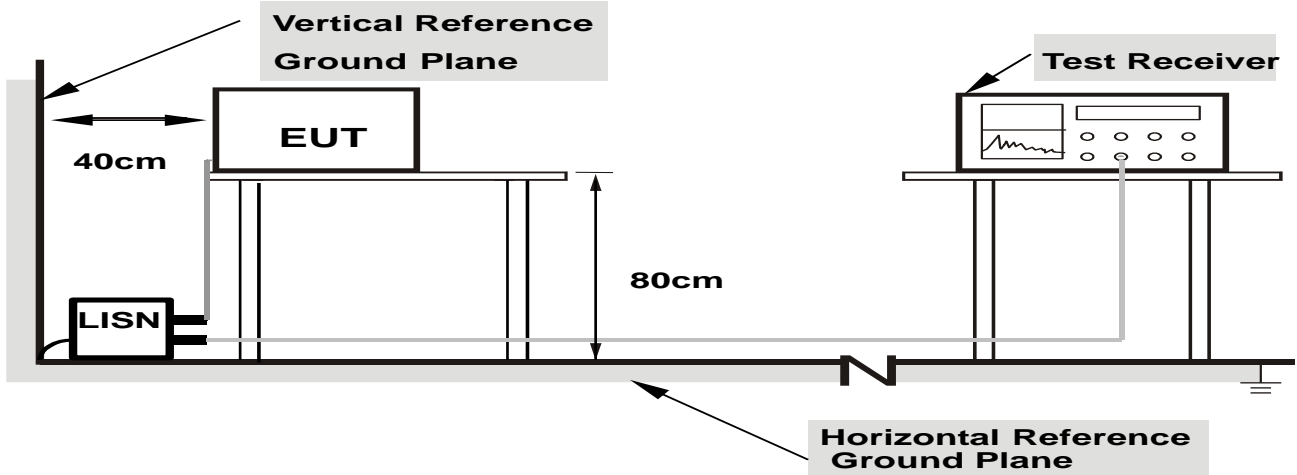
### For Voltage Dips Interruptions Test

For Voltage Dips Interruptions Test ( EMS --- site )					
Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
Dips Tester	Prima	DRP61011A G	PR14086284	Aug. 27, 2018	Aug. 26, 2019



### 3. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

#### 3.1 Block Diagram Of Test Setup



**Note: 1.**Support units were connected to second LISN.

**2.**Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

#### 3.2 Test Standard

EN 55032

#### 3.3 Power Line Conducted Emission Limit

Frequency MHz	Limits dB( $\mu$ V)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	59 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. \*Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

### 3.4 EUT Configuration on Test

The following equipment's are installed on conducted emission test to meet EN 55032 requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

### 3.5 Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.

3.5.2 Turn on the power of all equipments.

3.5.3 Let the EUT work in test modes and test it.

### 3.6 Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **EN 55032** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

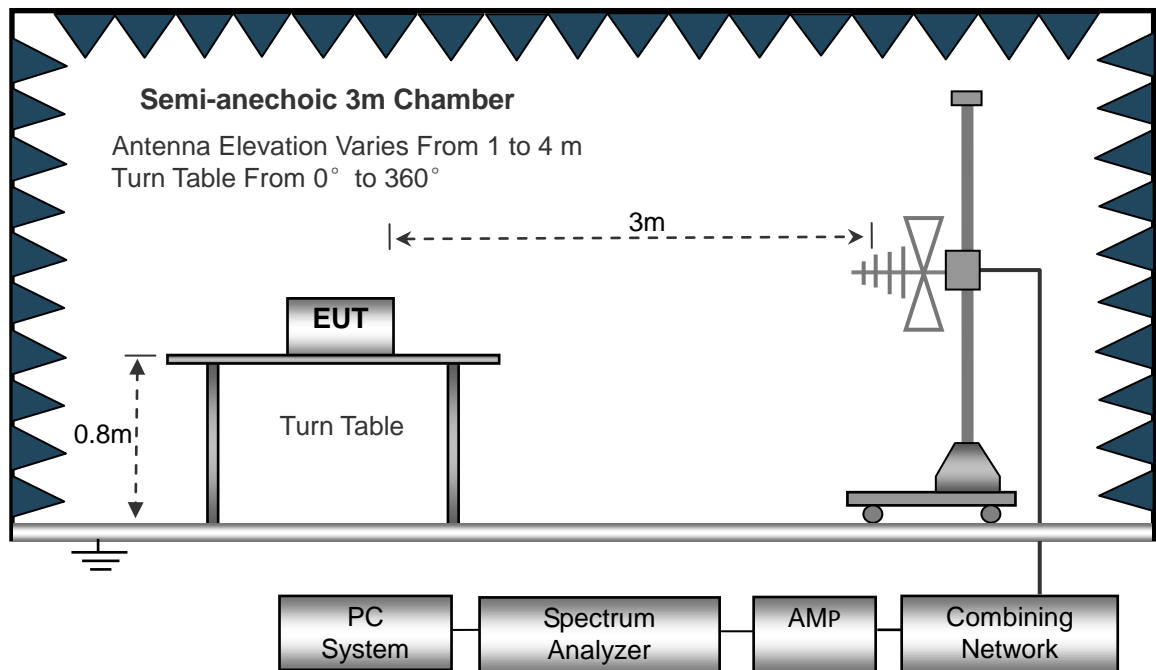
The frequency range from 150 KHz to 30 MHz is investigated.

### 3.7 Test Result

The EUT is powered by DC 9-24V , no requirements for this item.

## 4. RADIATION EMISSION TEST

### 4.1 Block Diagram of Test Setup



### 4.2 Test Standard

EN 55032

### 4.3 Radiation Limit

Frequency MHz	Distance (Meters)	Field Strengths Limits dB( $\mu$ V)/m
30 ~ 230	3	40.0
230 ~ 1000	3	47.0

Remark:

- (1) Emission level (dB( $\mu$ V)/m) = 20 log Emission level ( $\mu$ V/m)
- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

#### 4.4 EUT Configuration on Test

The EN 55032 regulations test method must be used to find the maximum emission during radiated emission test.

The configuration of EUT is the same as used in conducted emission test.

Please refer to Section 2.2.

#### 4.5 Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

#### 4.6 Test Procedure

1) The radiated emissions test was conducted in a semi-anechoic chamber.

2) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

3) Before final measurements of radiated emissions, a pre-scan was performed in the spectrum mode with the peak detector to find out the maximum emissions spectrum plots of the EUT.

4) The frequencies of maximum emission were determined in the final radiated emissions measurement. At each frequency, the EUT was rotated 360°, and the antenna was raised and lowered from 1 to 4 meters in order to determine the maximum disturbance. Measurements were performed for both horizontal and vertical antenna polarization.

5) The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz.

6) The frequency range from 30MHz to 1000MHz is checked.

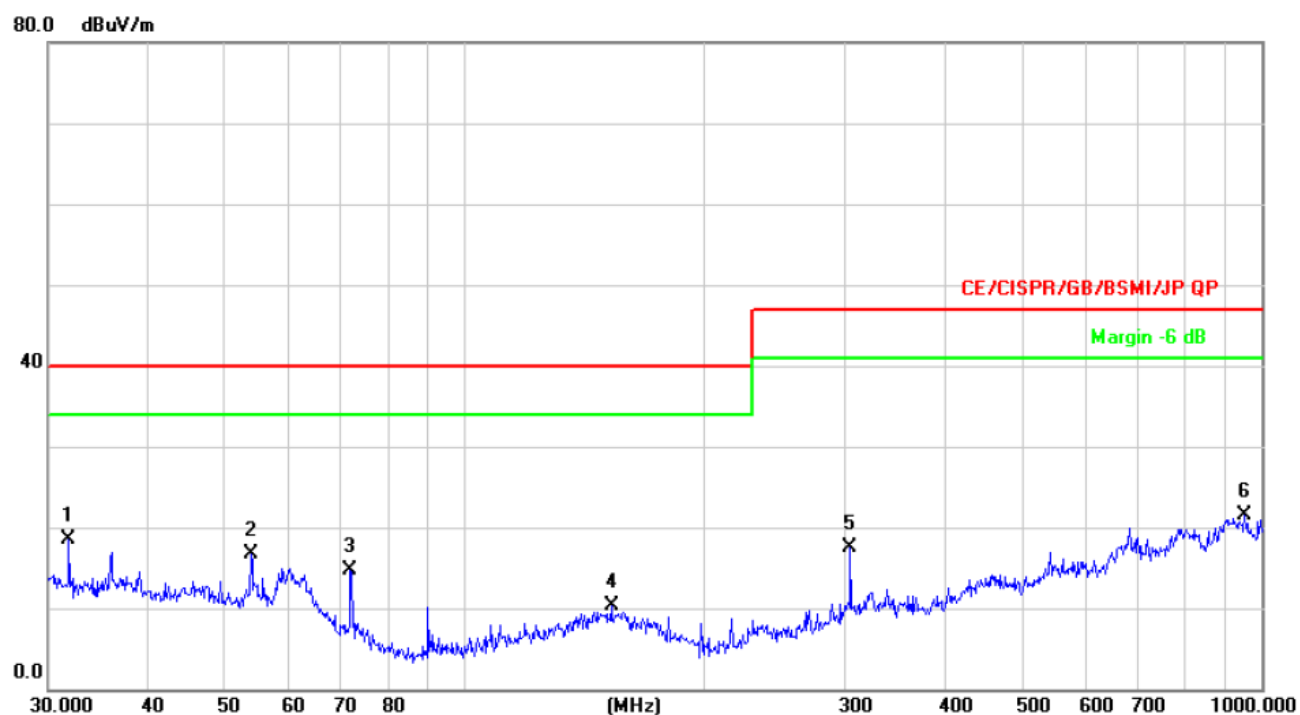
#### 4.7 Test Result

PASS

Please refer to the following page.

## Radiation Emission Test Data

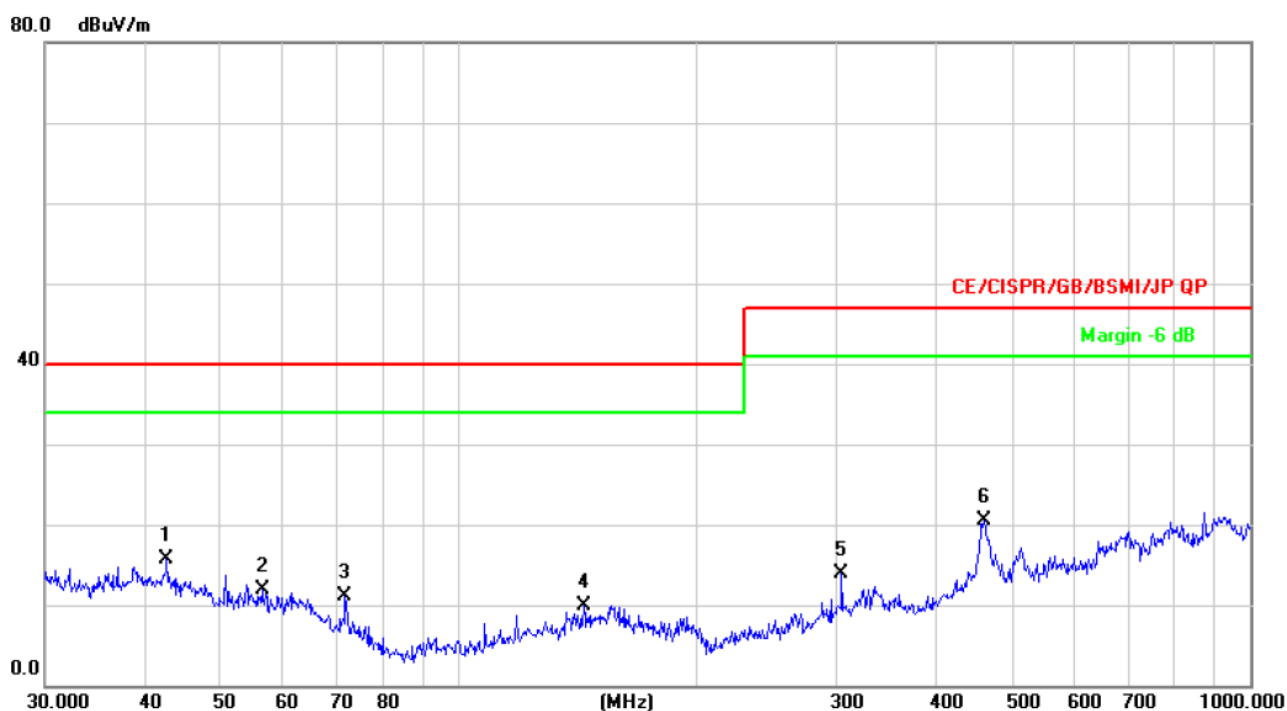
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	DC 24V	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	31.8427	26.84	-8.27	18.57	40.00	-21.43	QP
2		53.8818	27.63	-10.93	16.70	40.00	-23.30	QP
3		71.8320	29.82	-15.19	14.63	40.00	-25.37	QP
4		152.6641	23.22	-12.85	10.37	40.00	-29.63	QP
5		304.6099	29.99	-12.47	17.52	47.00	-29.48	QP
6		952.0937	22.02	-0.46	21.56	47.00	-25.44	QP

## Radiation Emission Test Data

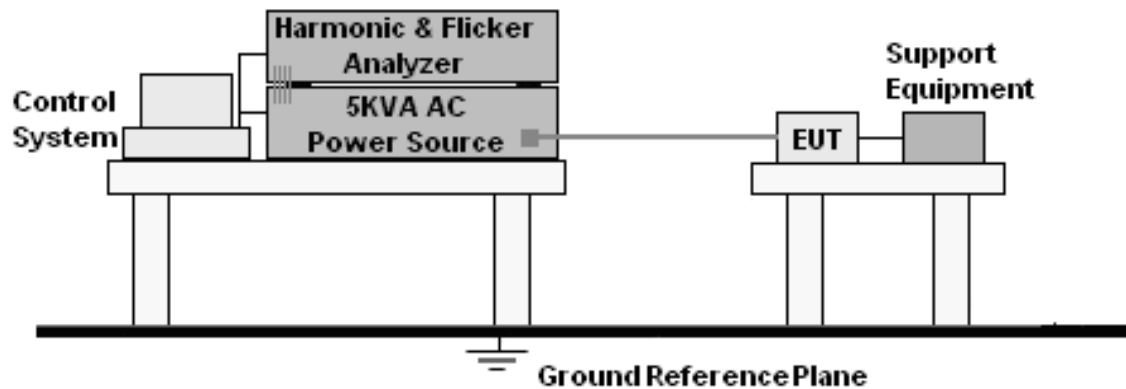
Temperature:	24.5 °C	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	DC 24V	Test Mode:	ON Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector
1	*	42.7496	24.91	-9.18	15.73	40.00	-24.27	QP
2		56.3948	23.21	-11.24	11.97	40.00	-28.03	QP
3		71.8320	26.28	-15.19	11.09	40.00	-28.91	QP
4		143.8295	23.03	-13.18	9.85	40.00	-30.15	QP
5		304.6099	26.29	-12.47	13.82	47.00	-33.18	QP
6		460.7271	29.35	-8.83	20.52	47.00	-26.48	QP

## 5. HARMONIC CURRENT EMISSION TEST

### 5.1 Block Diagram of Test Setup



### 5.2 Test Standard

EN 61000-3-2

### 5.3 Operating Condition of EUT

Setup the EUT as shown in Section 5.1.  
Turn on the power of all equipments.  
Let the EUT work in test mode and test it.

### 5.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

### 5.5 Test Results

The EUT is powered by DC 9-24V , no requirements for this item.

## 6. VOLTAGE FLUCTUATIONS & FLICKER TEST

### 6.1 Block Diagram of Test Setup

Same as Section 5.1.

### 6.2 Test Standard

EN 61000-3-3

### 6.3 Operating Condition of EUT

Same as Section 5.3.. The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

Flicker Test Limit

Test items	Limits
Pst	1.0
dc	3.3%
Tmax	4.0%
dt	Not exceed 3.3% for 500ms

### 6.4 Test Procedure

The power cord of the EUT is connected to the output of the test system. Turn on the power of the EUT and use the test system to test the harmonic current level.

### 6.5 Test Results

The EUT is powered by DC 9-24V , no requirements for this item.



## 7. IMMUNITY TEST OF GENERAL THE PERFORMANCE CRITERIA

Product Standard	EN 55035
CRITERION A	<p>The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state 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.</p>
CRITERION B	<p>During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test.</p> <p>After the test, 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.</p> <p>If the minimum performance level (or the permissible performance loss), or recovery time, 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.</p>
CRITERION C	<p>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. A reboot or re-start operation is allowed.</p> <p>Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.</p>



- d. The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the Product.
- e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- f. Air discharges were applied with the round discharge tip of the discharge electrode approaching the Product as fast as possible (without causing mechanical damage) to touch the Product. After each discharge, the ESD generator was removed from the Product and re-triggered for a new single discharge. The test was repeated until all discharges were complete.
- g. At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the Product. The ESD generator was positioned vertically at a distance of 0.1 meters from the Product with the discharge electrode touching the HCP.
- h. At least ten single discharges (in the most sensitive polarity) were applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the Product were completely illuminated. The VCP (dimensions 0.5m x 0.5m) was placed vertically to and 0.1 meters from the Product.

## 8.5 Test Results

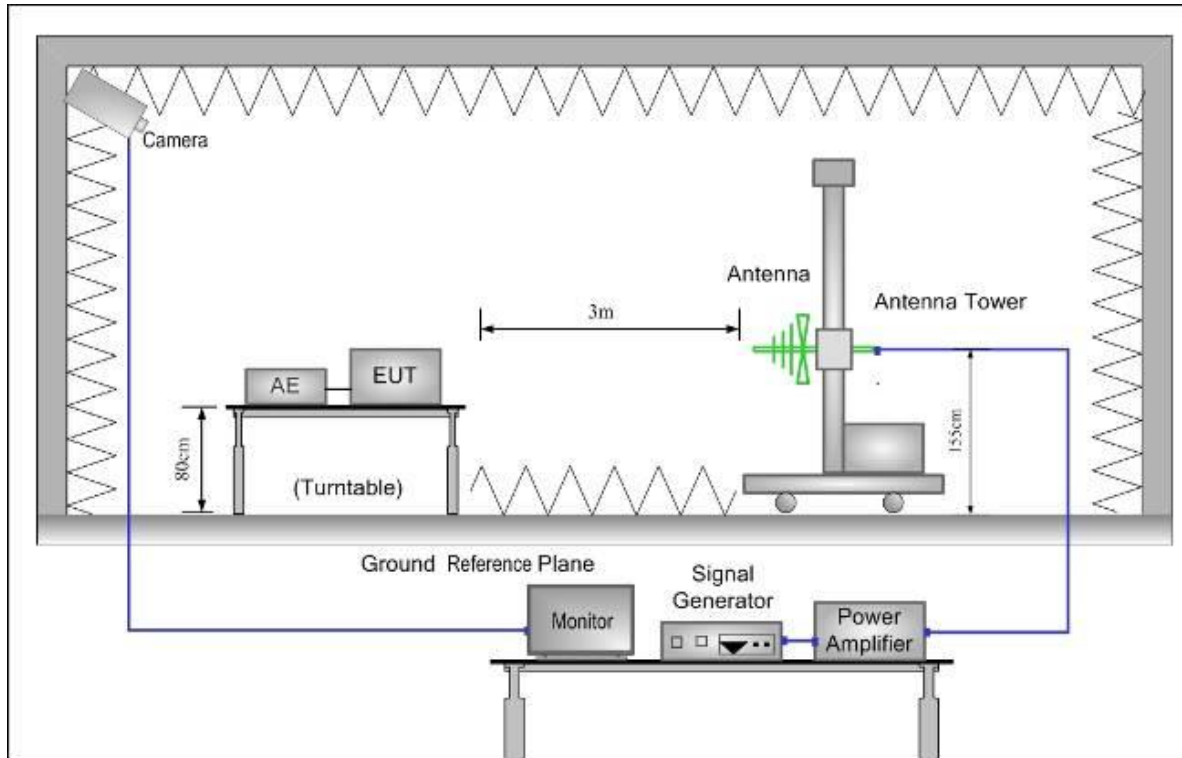
PASS

Please refer to the following page.

Electrostatic Discharge Test Data					
Temperature:	25.1 °C	Humidity:	55 %		
Power Supply :	DC 24V	Test Mode:	ON Mode		
Discharge Method	Discharge Position	Voltage (±kV)	Min. No. of Discharge per polarity (Each Point)	Required Level	Result
Contact Discharge	Conductive Surfaces	4	10	B	Pass
	Indirect Discharge HCP	4	10	B	Pass
	Indirect Discharge VCP	4	10	B	Pass
Air Discharge	Slots, Apertures, and Insulating Surfaces	8	10	B	Pass
Note: N/A					

## 10. RF FIELD STRENGTH SUSCEPTIBILITY TEST

### 9.1 Block Diagram of Test Setup



### 9.2 Test Standard

EN 55035, EN 61000-4-3  
Severity Level 2, 3V / m

### 9.3 Severity Levels and Performance Criterion

Severity level

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

## 9.4 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. EUT is set 3 meter away from the transmitting antenna which is mounted on an antenna tower. Both horizontal and vertical polarization of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually.

All the scanning conditions are as follows :

Condition of Test	Remarks
Fielded Strength	3 V/m (Severity Level 2)
Radiated Signal	Modulated
Scanning Frequency	80 – 1000 MHz
Dwell time of radiated	0.0015 decade/s
Waiting Time	1 Sec.

## 9.5 Test Results

**PASS**

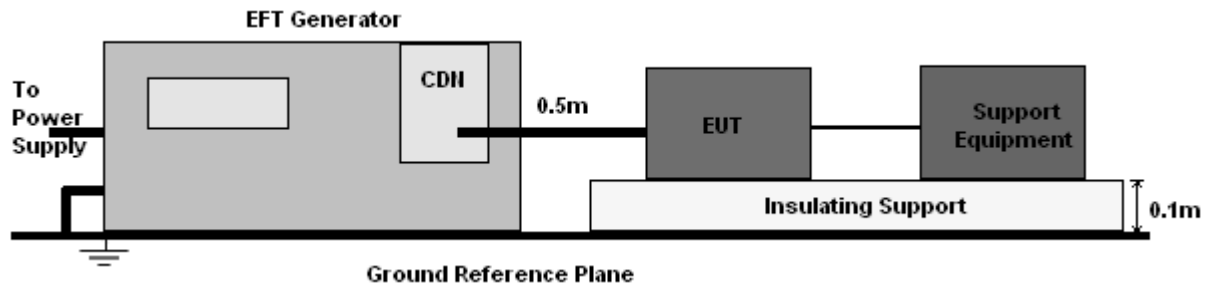
Please refer to the following page.

R/S Test Data				
Temperature:	25.1 °C	Humidity:	55 %	
Power Supply :	DC24V	Test Mode:	ON Mode	
Criterion:	A	Steps	1 %	
Frequency (MHz)	Position	Field Strength (V/m)	Required Level	Result
80 – 1000 1800 2600 3500 5000	Front, Right, Back, Left	3	A	Pass
Note: N/A				

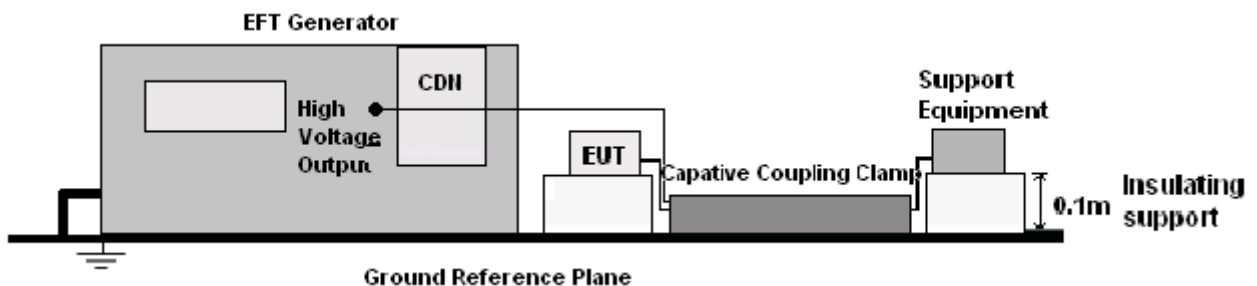
## 11. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

### 10.1 Block Diagram of EUT Test Setup

For input a.c. / d.c. power port:



For signal lines and control lines:



### 10.2 Test Standard

EN 55035, EN 61000-4-4

### 10.3 Severity Levels and Performance Criterion

Severity Level 2 at 1KV, Pulse Rise time & Duration: 5 nS / 50 nS

Severity Level:

Open Circuit Output Test Voltage $\pm 10\%$		
Level	On power ports	On I/O(Input/Output) Signal data and control ports
1.	0.5KV	0.25KV
2.	1KV	0.5KV
3.	2KV	1KV
4.	4KV	2KV
X.	Special	Special

Performance criterion: B

### 10.4 Test Procedure

EUT shall be placed 0.8m high above the ground reference plane which is a

min.1m\*1m metallic sheet with 0.65mm minimum thickness. This reference ground plane shall project beyond the EUT by at least 0.1m on all sides and the minimum distance between EUT and all other conductive structure, except the ground plane beneath the EUT, shall be more than 0.5m

For input and output AC power ports:

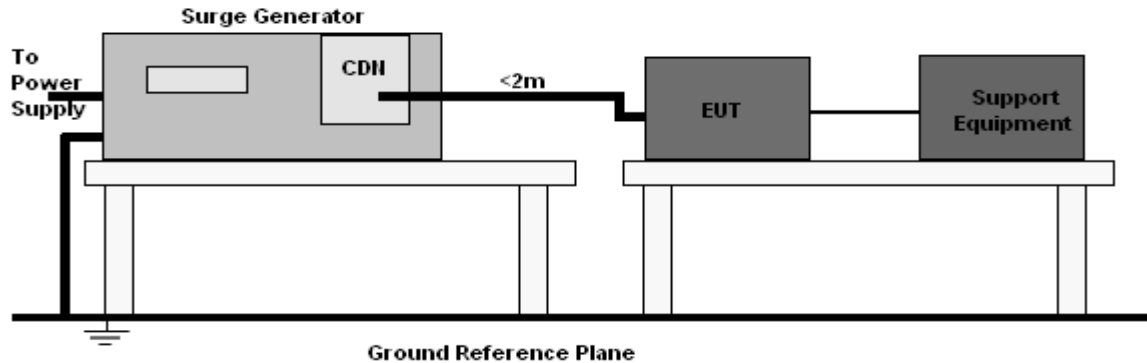
The EUT is connected to the power mains by using a coupling device which couples the EFT interference signal to AC power lines. Both polarities of the test voltage should be applied during compliance test and the duration of the test is 2 minutes.

## 10.5 Test Results

The EUT is powered by DC 9-24V , no requirements for this item.

## 12. SURGE TEST

### 11.1 Block Diagram of EUT Test Setup



### 11.2 Test Standard

EN 55035, EN61000-4-5

### 11.3 Severity Levels and Performance Criterion

Severity Level: Line to Line, Level 2 at 1KV;  
Severity Level: Line to Earth, Level 3 at 2KV.

Severity Level	Open-Circuit Test Voltage (KV)
1.	0.5
2.	1.0
3.	2.0
4.	4.0
X.	Special

Performance criterion: B

### 11.4 Test Procedure

- 1) Set up the EUT and test generator as shown on section 10.1
- 2) For line to line coupling mode, provide a 1KV 1.2/50us voltage surge (at open-circuit condition) and 8/20us current surge to EUT selected points.
- 3) At least 5 positive and 5 negative (polarity) tests with a maximum 1/min repetition rate are conducted during test.
- 4) Different phase angles are done individually.
- 5) Repeat procedure 2) to 4) except the open-circuit test voltage change from 1KV to 2KV for line to earth coupling mode test.
- 6) Record the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

### 11.5 Test Result

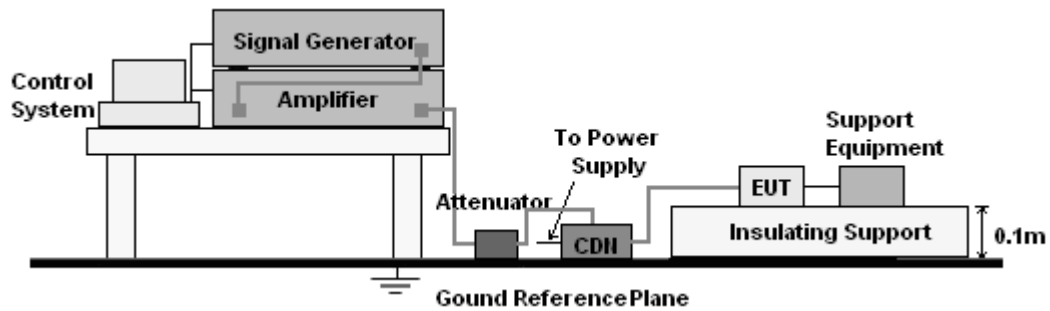
The EUT is powered by DC 9-24V , no requirements for this item.



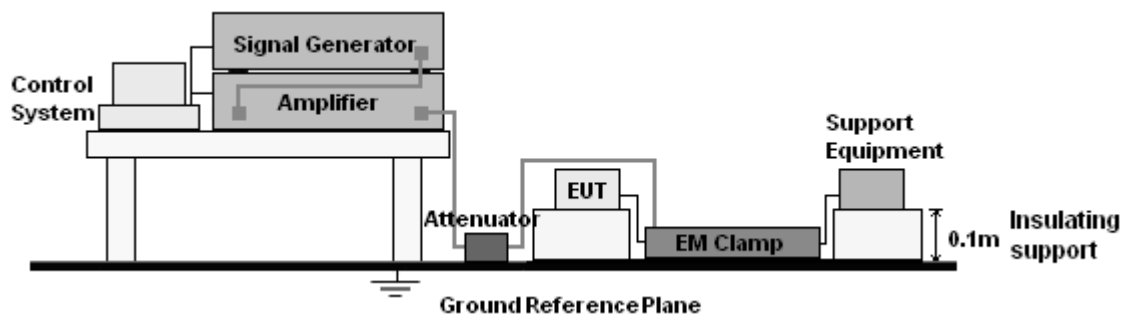
## 13. INJECTED CURRENTS SUSCEPTIBILITY TEST

### 12.1 Block Diagram of EUT Test Setup

For input a.c. / d.c. power port:



For signal lines and control lines:



### 12.2 Test Standard

EN 55035, EN61000-4-6

### 12.3 Severity Levels and Performance Criterion

Severity Level 2: 3V( rms ), 150KHz ~ 80MHz

Severity Level:

Level	Field Strength V
1.	1
2.	3
3.	10
X.	Special

Performance criterion: A

## 12.4 Test Procedure

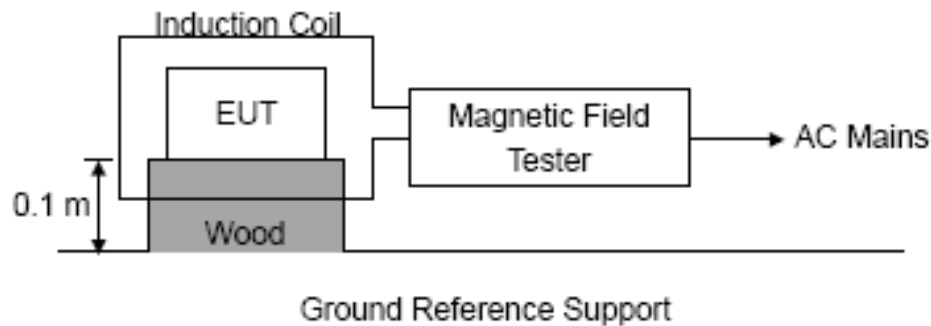
- 1) Set up the EUT, CDN and test generator as shown on section 12.1
- 2) Let EUT work in test mode and measure.
- 3) The EUT and supporting equipments are placed on an insulating support 0.1m high above a ground reference plane. CDN (coupling and decoupling device) is placed on the ground plane at above 0.1-0.3m from EUT. Cables between CDN and EUT are as short as possible, and their height above the ground reference plane shall be between 30 and 50 mm (where possible).
- 4) The disturbance signal described below is injected to EUT through CDN.
- 5) The EUT operates within its operational mode(s) under intended climatic conditions after power on.
- 6) The frequency range is swept from 150KHz to 80MHz using 3V signal level, and with the disturbance signal 80% amplitude modulated with a 1KHz sine wave
- 7) The rate of sweep shall not exceed  $1.5 \times 10^{-3}$  decades/s. Where the frequency is swept incrementally, the step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value.
- 8) Recording the EUT operating situation during compliance test and decide the EUT immunity criterion for above each test.

## 12.5 Test Result

The EUT is powered by DC 9-24V , no requirements for this item.

## 14. MAGNETIC FIELD IMMUNITY TEST

### 13.1 Block Diagram of EUT Test Setup



### 13.2 Test Standard

EN 55035, EN61000-4-8

### 13.3 Severity Levels and Performance Criterion

Severity level

Level	Magnetic Field Strength A/m
1.	1
2.	3
3.	10
4.	30
5.	100
X.	Special

Performance criterion: B

### 13.4 Test Procedure

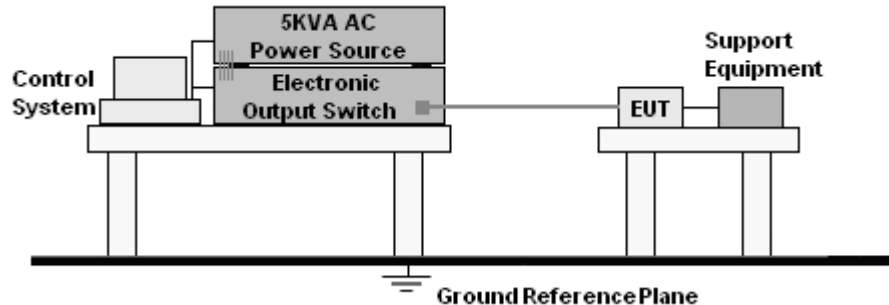
The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1m\*1m) and shown in Section 10.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

### 13.5 Test Result

The EUT is powered by DC 9-24V , no requirements for this item.

## 15. VOLTAGE DIPS AND INTERRUPTIONS TEST

### 14.1 Block Diagram of EUT Test Setup



### 14.2 Test Standard

EN 55035, EN61000-4-11

### 14.3 Severity Levels and Performance Criterion

Severity Level:  
Input and Output AC Power Ports.

- ☒ Voltage Dips.
- ☒ Voltage Interruptions.

Environmental Phenomena	Test Specification	Units	Performance Criterion
Voltage Dips	>95 0.5	% Reduction period	B
	30 25	% Reduction period	C
Voltage Interruptions	>95 250	% Reduction period	C

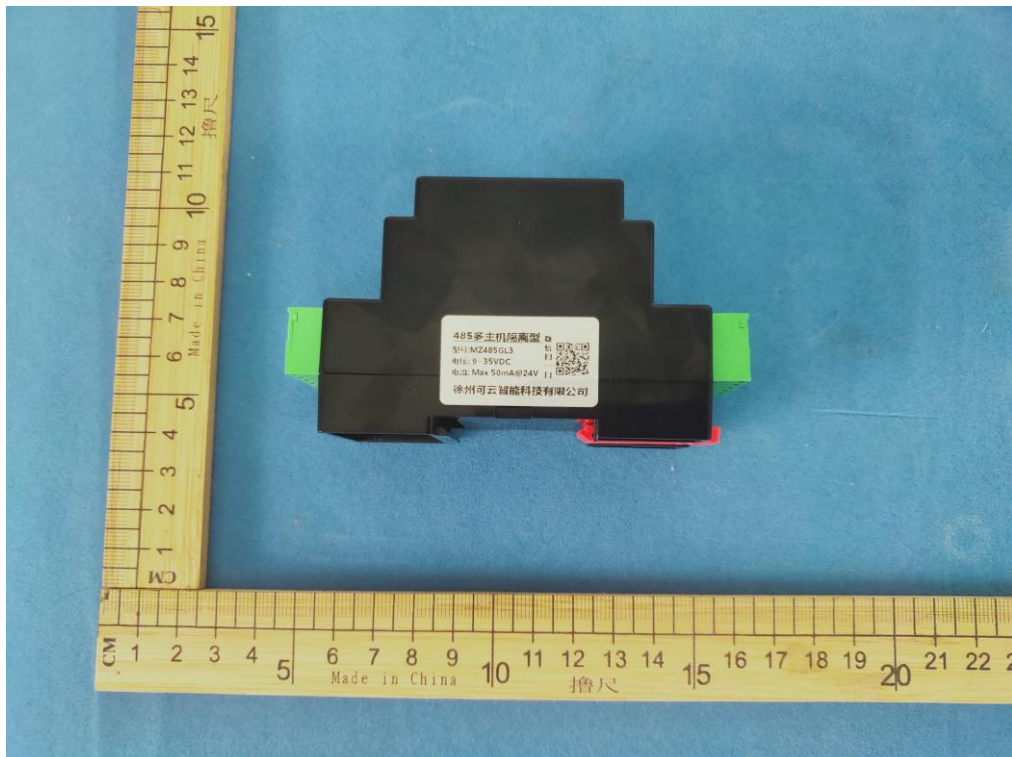
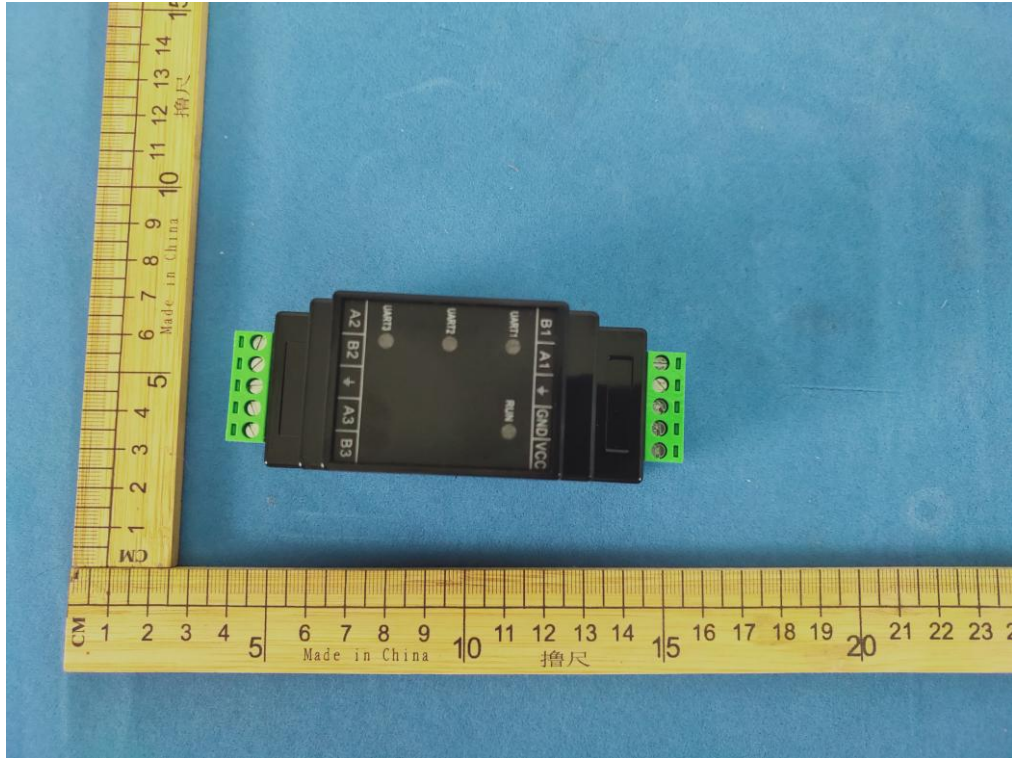
### 14.4 Test Procedure

Set up the EUT and test generator as shown on section 13.1  
The interruption is introduced at selected phase angles with specified duration.  
There is a 3mins minimum interval between each test event.  
After each test a full functional check is performed before the next test.  
Repeat procedures 2 & 3 for voltage dips, only the level and duration is changed.  
Record any degradation of performance.

### 14.5 Test Result

The EUT is powered by DC 9-24V , no requirements for this item.

## 15 EUT PHOTOGRAPHS



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