



# China CEPREI Laboratory

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Http://www.ceprei.biz

## Certificate of Conformity

Number: **E/EC4494181217119**

Date: **2018-12-17**

This Certificate of Conformity implies that the below sample(s) are in accordance with the following test standards under the Electromagnetic Compatibility Directive

### (EMC) 2014/30/EU

Product Description : USBCANFD Series CANFD Interface Card  
Model No. : USBCANFD-100U-mini  
Rating(s) : 5Vdc  
Trademark :   
Applicant : Guangzhou ZHIYUAN Electronics Co., LTD.  
2 floor, 7 Industrial Zone, Huangzhou Road, Tianhe District,  
Guangzhou  
Manufacture : Guangzhou ZHIYUAN Electronics Co., LTD.  
2 floor, 7 Industrial Zone, Huangzhou Road, Tianhe District,  
Guangzhou  
Factory : Guangzhou Zhiyuan Electronics Co., Ltd. manufacturing center  
Buildings of Guangzhou Light Industry Red Cotton Industrial Park,  
46 Xinye Road, Yonghe Economic Development Zone,  
Whampoa District, Guangzhou  
Test standards : EN55032:2015/AC:2016-07 EN55024:2010/A1:2015  
EN 61000-3-2:2014 EN61000-3-3:2013


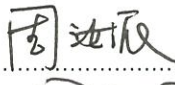


This Certificate of Conformity is only valid in conjunction with the test report(s) below.

Test report No. : E1808CE8888-00133



Yang Lin (杨林)  
Director



<b>TEST REPORT</b>	
<b>EMC of Information technology equipment</b>	
Report reference No .....	E1808CE8888-00133
Date of issue .....	Dec. 6th, 2018
Total number of pages .....	24
Applicant's Name .....	Guangzhou ZHIYUAN Electronics Co., LTD.
Address .....	2 floor, 7 Industrial Zone, Huangzhou Road, Tianhe District, Guangzhou
Manufacture's Name .....	Guangzhou ZHIYUAN Electronics Co., LTD.
Address .....	2 floor, 7 Industrial Zone, Huangzhou Road, Tianhe District, Guangzhou
Factory's Name .....	Guangzhou Zhiyuan Electronics Co., Ltd. manufacturing center
Address .....	Buildings of Guangzhou Light Industry Red Cotton Industrial Park, 46 Xinye Road, Yonghe Economic Development Zone, Whampoa District, Guangzhou
Testing Laboratory Name .....	China CEPREI Laboratory
Address .....	No.110 Dongguan Zhuang Rd., Tianhe District, Guangzhou, Guangdong, 510610, China
Testing location .....	China CEPREI Laboratory
Test specification	
Standard.....	EN55032:2015/AC:2016-07    EN55024:2010/A1:2015 EN 61000-3-2:2014            EN61000-3-3:2013
Test procedure .....	Entrusted Test
Procedure deviation .....	N/A
Non-standard test method .....	N/A
Test Report Form	
Test Report Form No. ....	EMC/CE-IT/10-10
TRF originator .....	CEPREI
Master TRF .....	Dated 2010-10
This report is based on a blank test report that was prepared by China CEPREI Laboratory using information obtained from the TRF originator (see below).	
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Test item description .....	USBCANFD Series CANFD Interface Card
Trademark .....	
Model and/or type reference .....	USBCANFD-100U-mini
Rating(s):	5Vdc
Test items particulars:	N/A
Tested by (printed name and signature) .....	Zhou Rupai (周汝派) 
Reviewed by (printed name and signature) .....	Yu Haitao (余海涛) 
Approved by (printed name and signature) .....	Chen Hui (陈辉) 

**Test case verdicts**

Test case does not apply to the test object..... : N/A  
Test item does meet the requirement..... : P(Pass)  
Test item does not meet the requirement..... : F(Fail)

**Testing**

Date of receipt of test item ..... : 2018.09.25  
Date(s) of performance of test..... : 2018.09.25-2018.10.10

**General remarks**

This report shall not be reproduced, except in full, without the written approval of the testing laboratory.  
The test results presented in this report relate only to the item(s) tested.  
Throughout this report a point is used as the decimal separator.

**Summary of Testing and Conclusions**

The sample(s) tested complies with the standards of EN55032:2015/AC:2016-07, EN55024:2010/A1:2015, EN 61000-3-2:2014, EN61000-3-3:2013.

**General product information:**

- (1) All EMC tests are carried on model USBCANFD-100U-mini.
- (2) According to the manufacturer's specification, EUT's DC power is fed on conductors included in a signal cable (USB cable is not only a DC power cable, but also a signal cable), so immunity tests of DC power port are not applied.
- (3) According to the manufacturer's specification, CAN cables support communication on cable lengths greater than 3m.
- (4) The maximum working frequency of EUT is above 108MHz.
- (5) EUT is class A equipment and is used in CAN-bus network diagnosis and testing, automotive electronics application, power communication network, industrial control equipment, high speed testing and large data volume communication.

**EMC Standards Compliance List / Test Summary:**

<b>Electromagnetic Emissions</b>			
<b>Test Item</b>	<b>Class</b>	<b>Standard</b>	<b>Result</b>
Conducted Emissions from the AC mains power ports	/	/	N/A
Asymmetric Mode Conducted Emissions	/	/	N/A
Conducted Differential Voltage Emissions	/	/	N/A
Radiated Emission at frequencies up to 1GHz	A	EN55032:2015/AC:2016-07	Pass
Radiated Emission at frequencies above 1GHz	A	EN55032:2015/AC:2016-07	Pass
Radiated Emission from FM receivers	/	/	N/A
Harmonic Current Emission	/	/	N/A
Voltage fluctuation and flicker	/	/	N/A

<b>Electromagnetic Immunity</b>				
<b>Test Item</b>	<b>Performance Criteria</b>	<b>Standard</b>	<b>Test Level</b>	<b>Result</b>
Electrostatic Discharge Immunity	B	EN55024:2010/A1:2015	4 kV (Contact Discharge) 8 kV (Air discharge)	Pass
Electrical Fast Transient/Burst Immunity	B	EN55024:2010/A1:2015	Signal port: 0.5 kV (peak) 5/50 Tr/Th ns 5kHz Repetition frequency	Pass
Radio-frequency Electromagnetic Fields Immunity	A	EN55024:2010/A1:2015	80-1000 MHz 3 V/m (unmodulated, r.m.s) 80 % AM (1kHz)	Pass
Radio-frequency Conducted Disturbance Immunity	A	EN55024:2010/A1:2015	Signal port: 0.15-80 MHz 3 V (unmodulated, r.m.s) 80% AM (1kHz)	Pass
Surge immunity	B	EN55024:2010/A1:2015	1.2/50 (8/20) Tr/Th $\mu$ s 0.5 kV line to earth(ground)	N/A
Voltage dips, short interruptions immunity	B/C	EN55024:2010/A1:2015	>95% reduction 0.5 periods 30% reduction 25 periods >95% reduction 250 periods	N/A
Power-frequency magnetic field immunity	A	EN55024:2010/A1:2015	50 Hz 1 A/m (r.m.s)	Pass

The test results of the EN55024 are classified into four groups:  
A----Normal performance within the specification limits;  
B----Temporary degradation or loss of function or performance which is self-recoverable;  
C----Temporary degradation or loss of function or performance which requires operator intervention or system reset;  
D----Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.

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## Section 1 General Information

### 1.1 Introduction

This report documents the emission and immunity test results for the USBCANFD Series CANFD Interface Card.

### 1.2 EUT General and Technical Descriptions

EUT Name:	USBCANFD Series CANFD Interface Card
EUT Model:	USBCANFD-100U-mini
EUT Trademark:	
Input Voltage:	5Vdc
Input Frequency:	/
Input Current:	/
Power Cable Description:	/
Other Cables Description:	/
I/O Ports:	CAN port
Function(s) Description:	/
Accessories information:	/

### 1.3 Support Equipment(s) and Test Configuration

#### 1.3.1 Details of Support Equipment(s)

Description	Manufacturer	Model No.	Connection	Working state
Notebook PC	Acer	Aspire E1-410G	USB Port	Normal
Computer	Lenovo	M7300	USB Port	Normal
Power Adaptor	Nanlin	NLA050090W1C6	DC Input Port	Normal
CAN Interface Card	ZLG	USBCAN-8E-U	CAN Port	Normal

#### 1.3.2 Working State of EUT

1. Power Supply of EUT: 5Vdc 0.076A
2. EUT Status: Data Transmission

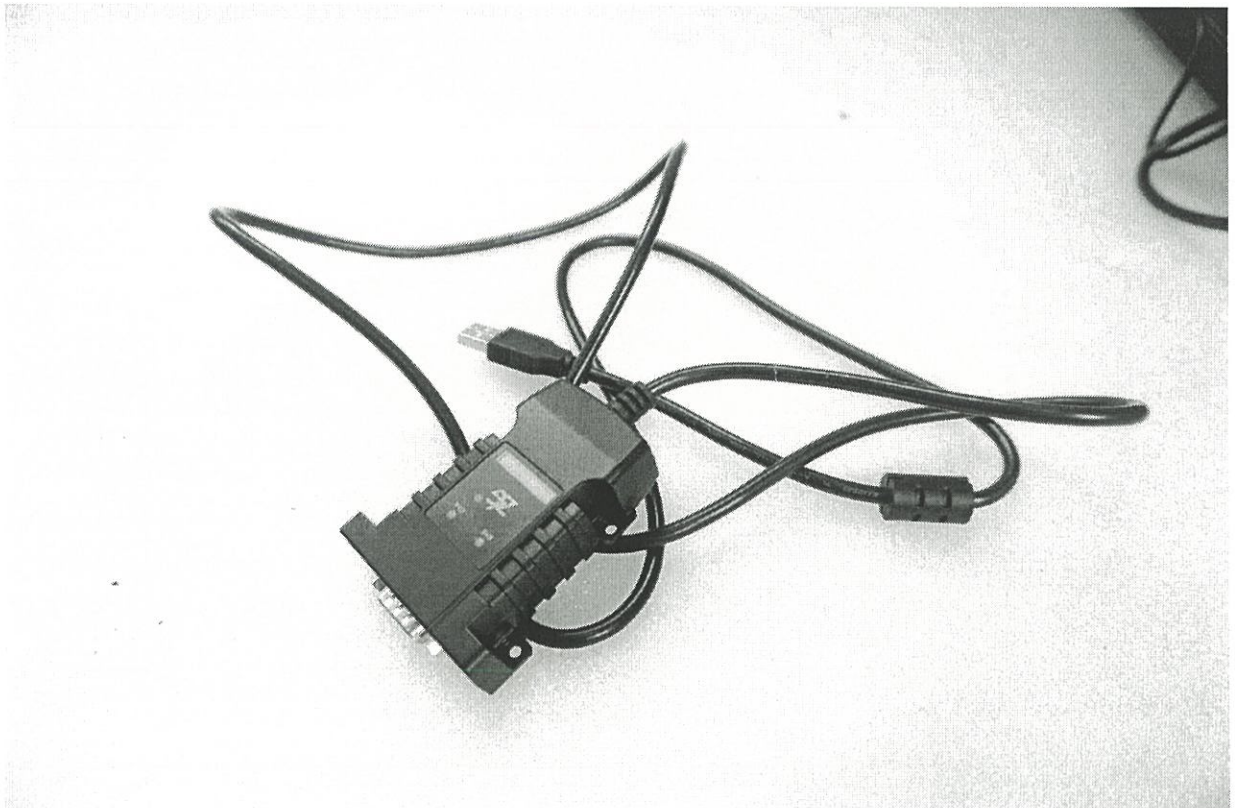
#### 1.3.3 Block Diagram of Test Configuration

/

## 1.4 EUT Photographs

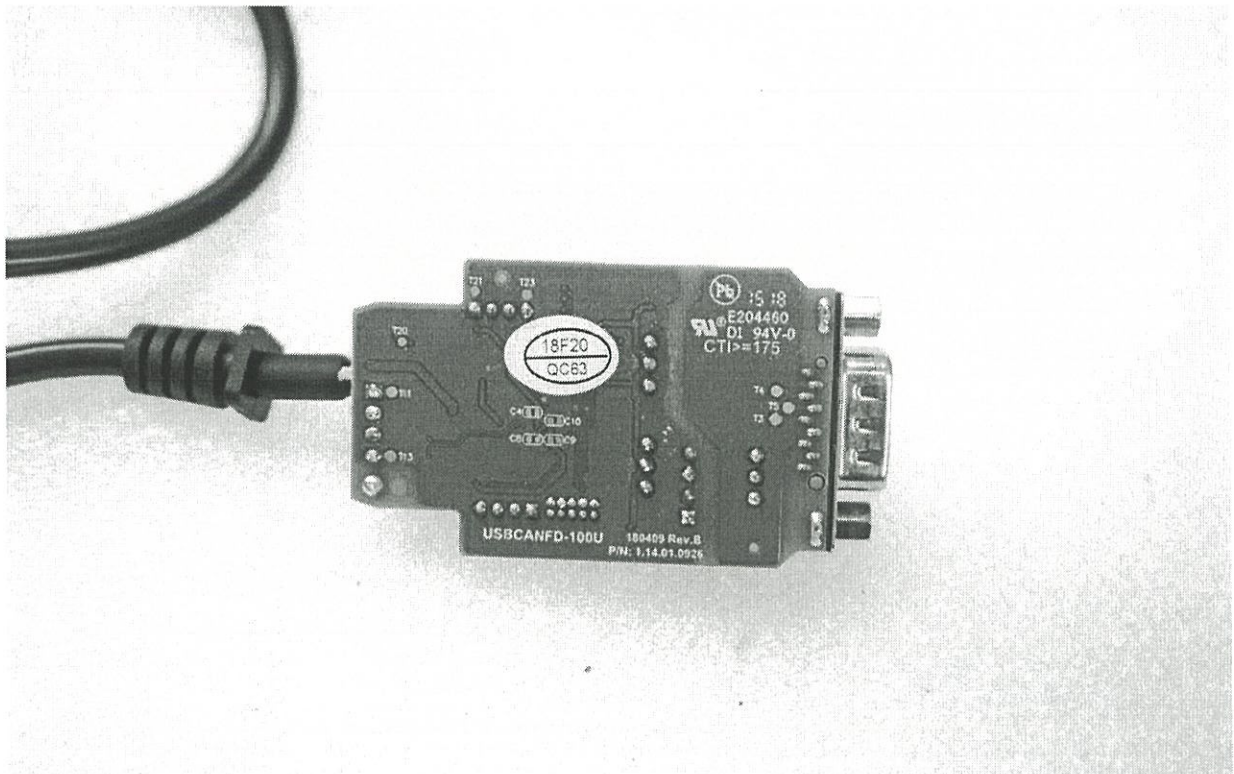
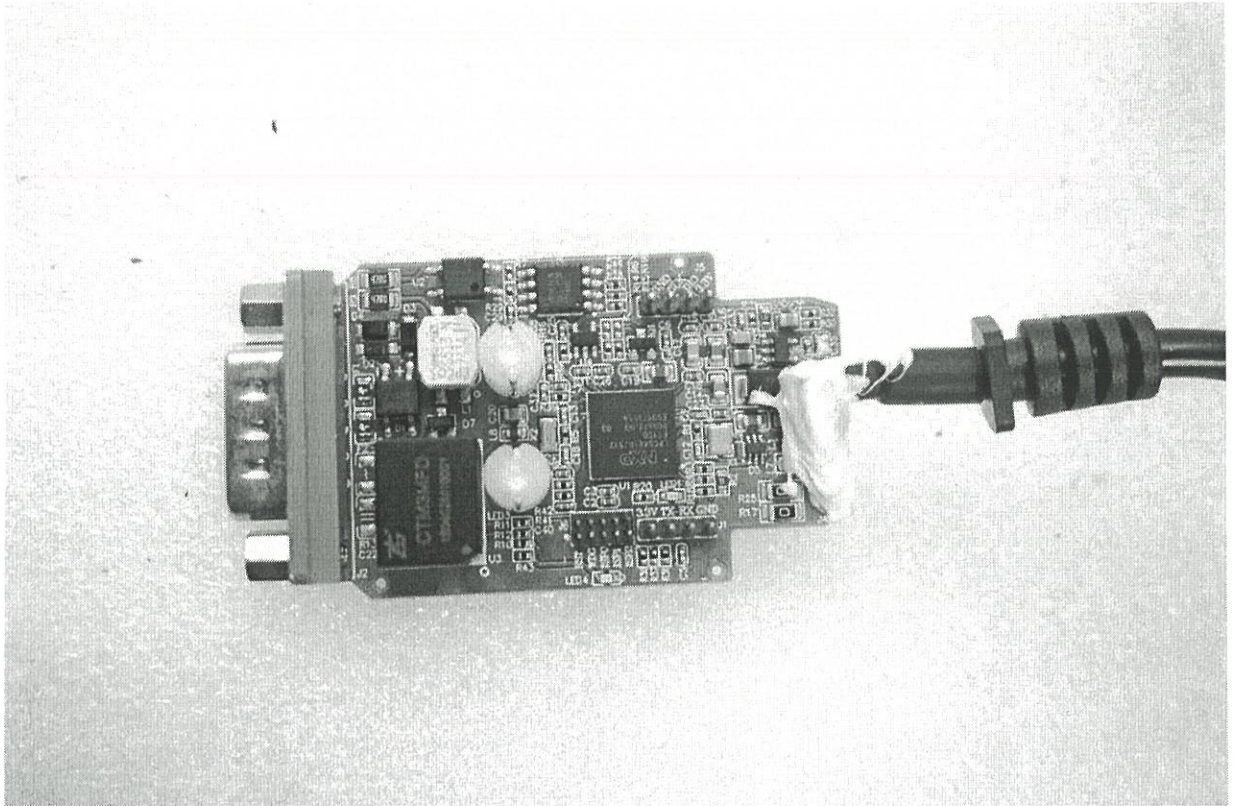
USBCANFD Series CANFD Interface Card  
CANFDCOM-100U-mini5Vdc  


Marking plate label





Continued



## Section 2 Electromagnetic Emissions

### 2.1 Radiated Emission at frequencies up to 1GHz

#### 2.1.1 Test Information

<b>Temperature:</b>	23°C	<b>Humidity:</b>	62% RH
<b>ATM Pressure:</b>	101.3kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc	<b>Classification:</b>	CLASS A
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.09.25
<b>Test Reference:</b>	EN55032:2015/AC:2016-07		
<b>Results:</b>	PASS		

#### 2.1.2 Measurement Equipments

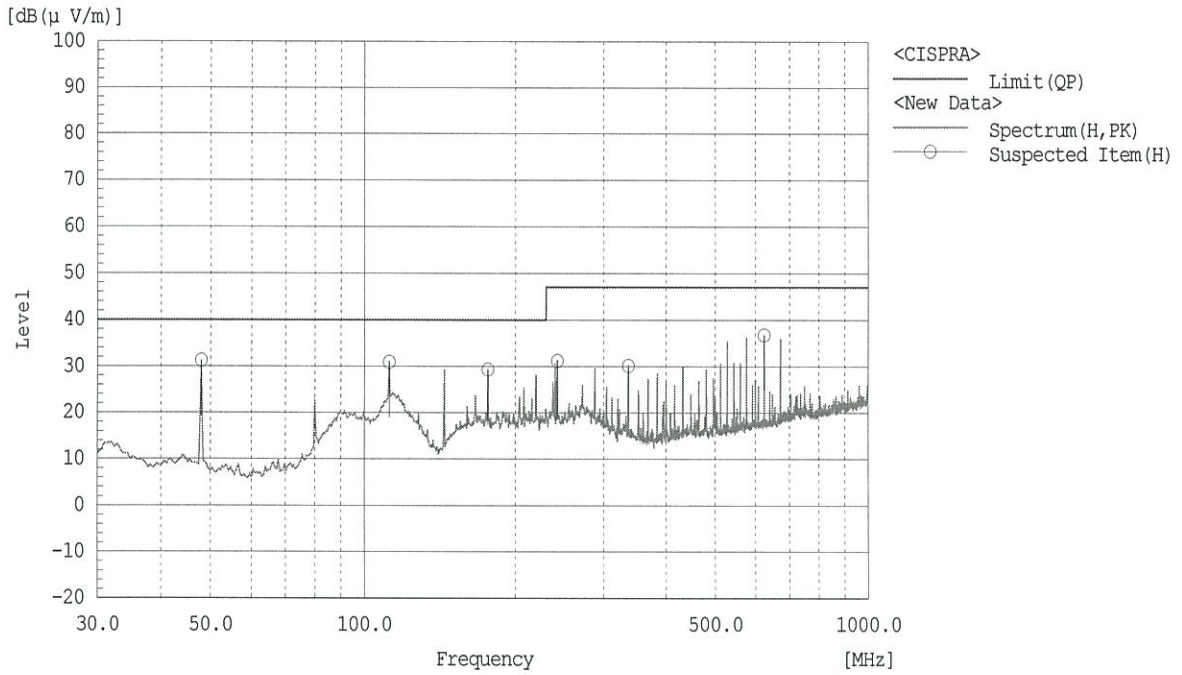
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Anechoic Chamber	EMCT	EMCT-10	7561990029	2018.06.08	2019.06.07
Wideband Receiving Antenna	TDK	HLP-2006C	130884	2018.06.08	2019.06.07
EMI Test Receiver	R&S	ESCI	101020	2018.06.08	2019.06.07
Dual DC Power Supply	CEPREI	6139B	1501LH05	2018.06.08	2019.06.07

#### 2.1.3 Test Data

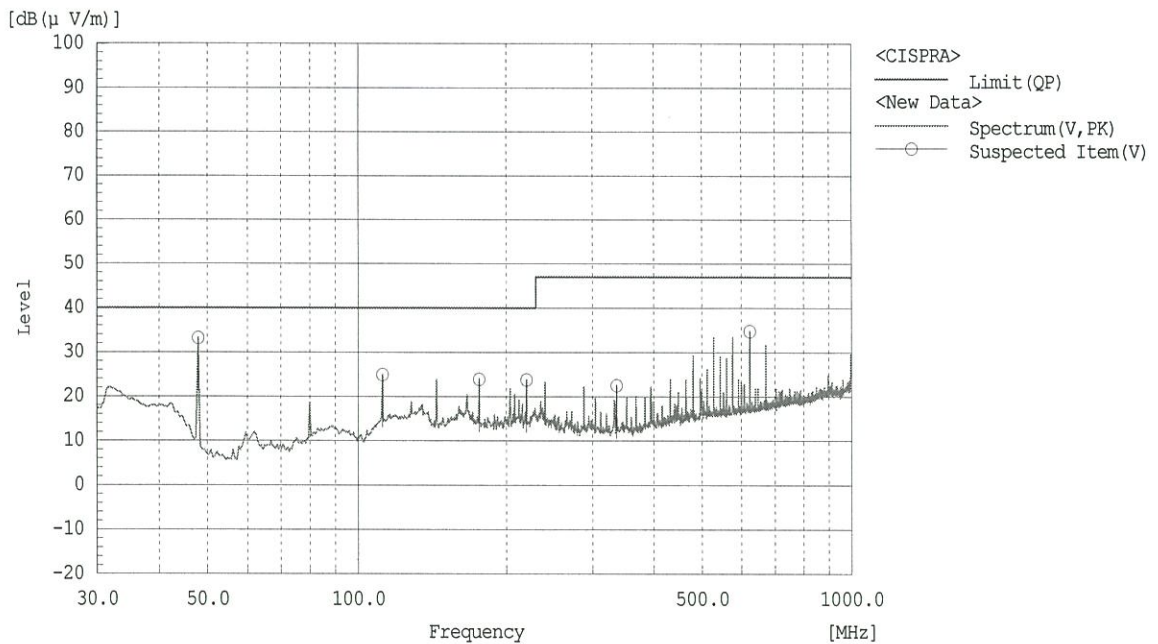
Horizontal					
No.	Frequency (MHz)	Corrected QP Level Db ( $\mu\text{V}/\text{m}$ )	10 Meter Limits Db ( $\mu\text{V}/\text{m}$ )	Angle of Turner (degree)	Height of Tower (cm)
1	47.9	31.3	40	240	400
2	111.9	30.9	40	240	400
3	175.9	29.4	40	231	400
4	242.4	31.2	47	240	200
5	336.0	30.1	47	86	300
6	624.1	36.8	47	138	100
Vertical					
No.	Frequency (MHz)	Corrected QP Level Db( $\mu\text{V}/\text{m}$ )	10 Meter Limits Db ( $\mu\text{V}/\text{m}$ )	Angle of Turner (degree)	Height of Tower (cm)
1	47.9	33.2	40	100	300
2	111.9	24.9	40	175	400
3	175.9	23.9	40	184	400
4	220.1	23.8	40	329	400
5	336.0	22.5	47	189	100
6	624.1	34.7	47	282	300

Note: The Corrected QP Level included The Cable attenuation and The Antenna Factor.

### 2.1.4 Test Curves



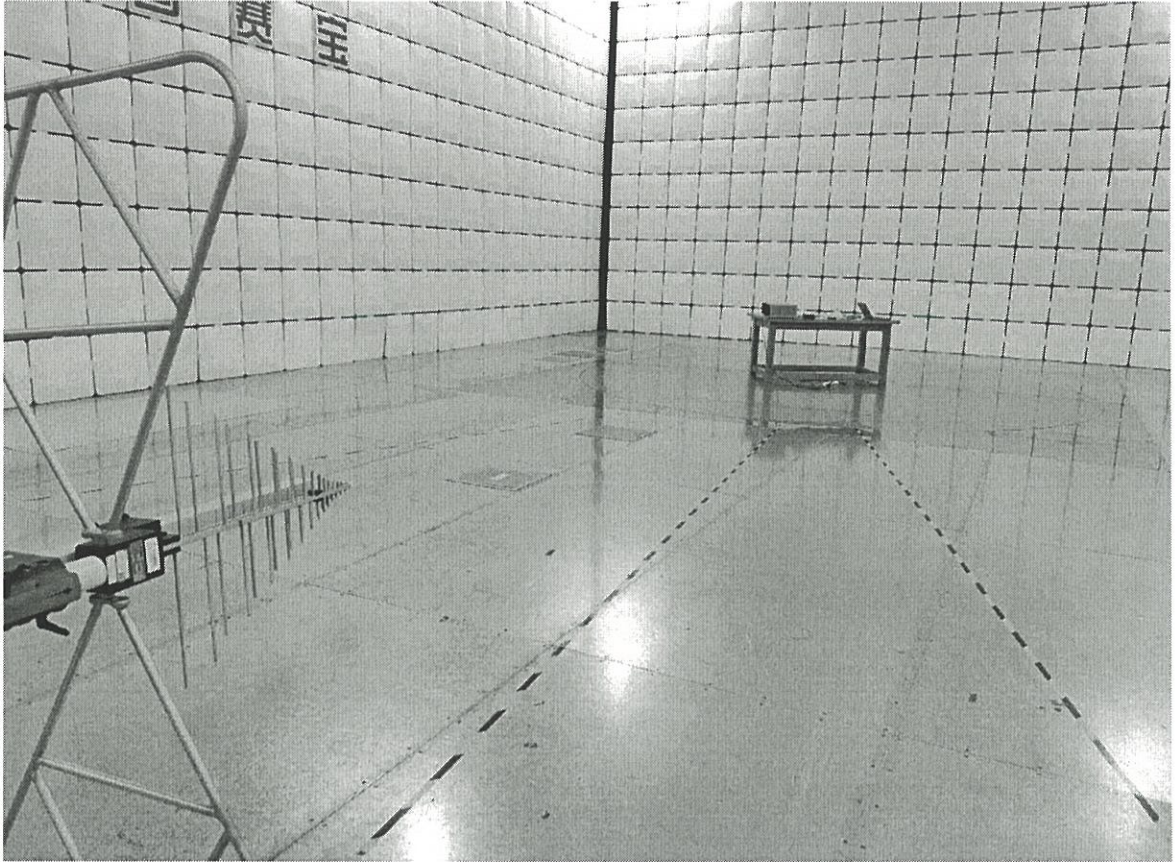
**Horizontal Radiated Emission Plot (Peak, Max Hold Mode)**



**Vertical Radiated Emission Plot (Peak, Max Hold Mode)**

Note: The Curves included The Cable attenuation and The Antenna Factor.

### 2.1.5 Test Setup



**Radiated Emission at frequencies up to 1GHz Test Set-Up – Front View**

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## 2.2 Radiated Emission ( 1-6GHz )

### 2.2.1 Radiated Emission Test Information

<b>Temperature:</b>	23°C	<b>Humidity:</b>	60% RH
<b>ATM Pressure:</b>	101.0kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc	<b>Classification:</b>	CLASS A
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.10.10
<b>Test Reference:</b>	EN55032:2015/AC:2016-07		
<b>Results:</b>	PASS		

### 2.2.2 Measurement Equipments Used for Radiated Emission

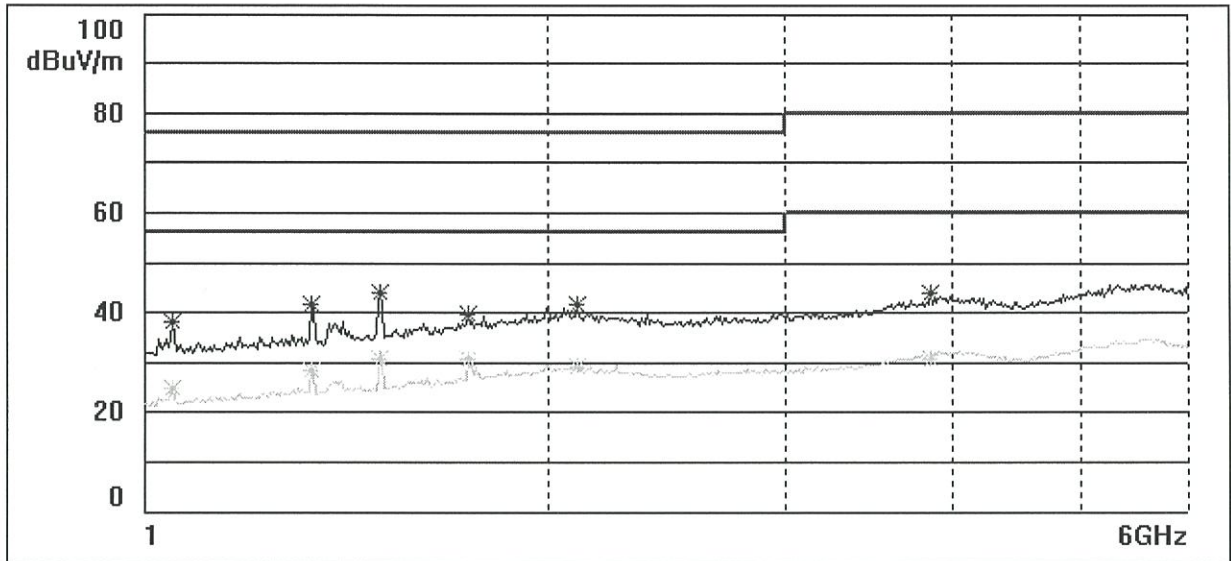
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
EMI Test Receiver	R&S	ESU	100515	2018.06.08	2019.06.07
Microwave Antenna	EMCO	3115	0004-6124	2018.06.08	2019.06.07
Anechoic Chamber	Lindgren	FACT-4	4515	2018.06.08	2019.06.07
18G RF preamplifier	MITEQ	AFS44	1381096	2018.06.08	2019.06.07

### 2.2.3 Test Data

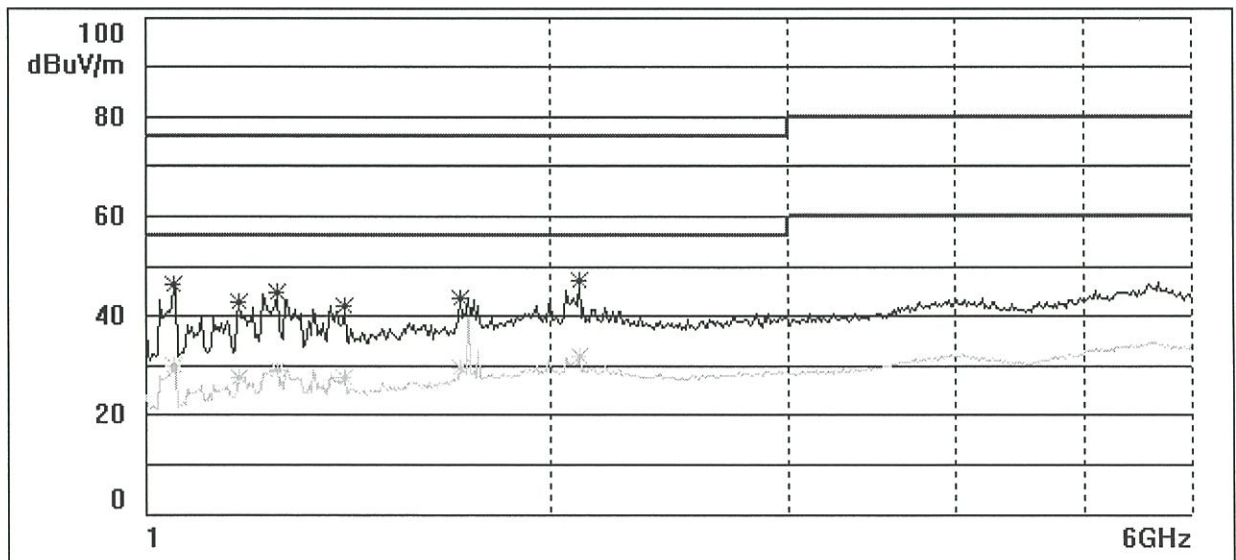
Horizontal					
No.	Frequency (GHz)	Corrected PK Level (Db $\mu$ V/m)	Limits PK (Db $\mu$ V/m)	Corrected AVE Level (Db $\mu$ V/m)	Limits AVE (Db $\mu$ V/m)
1	1.051	38.2	76	24.6	56
2	1.331	41.4	76	28.4	56
3	1.494	44.1	76	30.8	56
4	1.740	39.5	76	30.6	56
5	2.103	41.7	76	28.9	56
6	3.848	43.9	80	30.6	60
Vertical					
No.	Frequency (MHz)	Corrected PK Level (Db $\mu$ V/m)	Limits PK (Db $\mu$ V/m)	Corrected AVE Level (Db $\mu$ V/m)	Limits AVE (Db $\mu$ V/m)
1	1.051	46.2	76	29.7	56
2	1.172	42.6	76	27.4	56
3	1.252	44.7	76	29.1	56
4	1.402	41.9	76	27.7	56
5	1.710	43.6	76	29.3	56
6	2.103	47.2	76	32.0	56

Note: The Corrected QP Level included The Cable attenuation and The Antenna Factor.

### 2.2.4 Test Curves



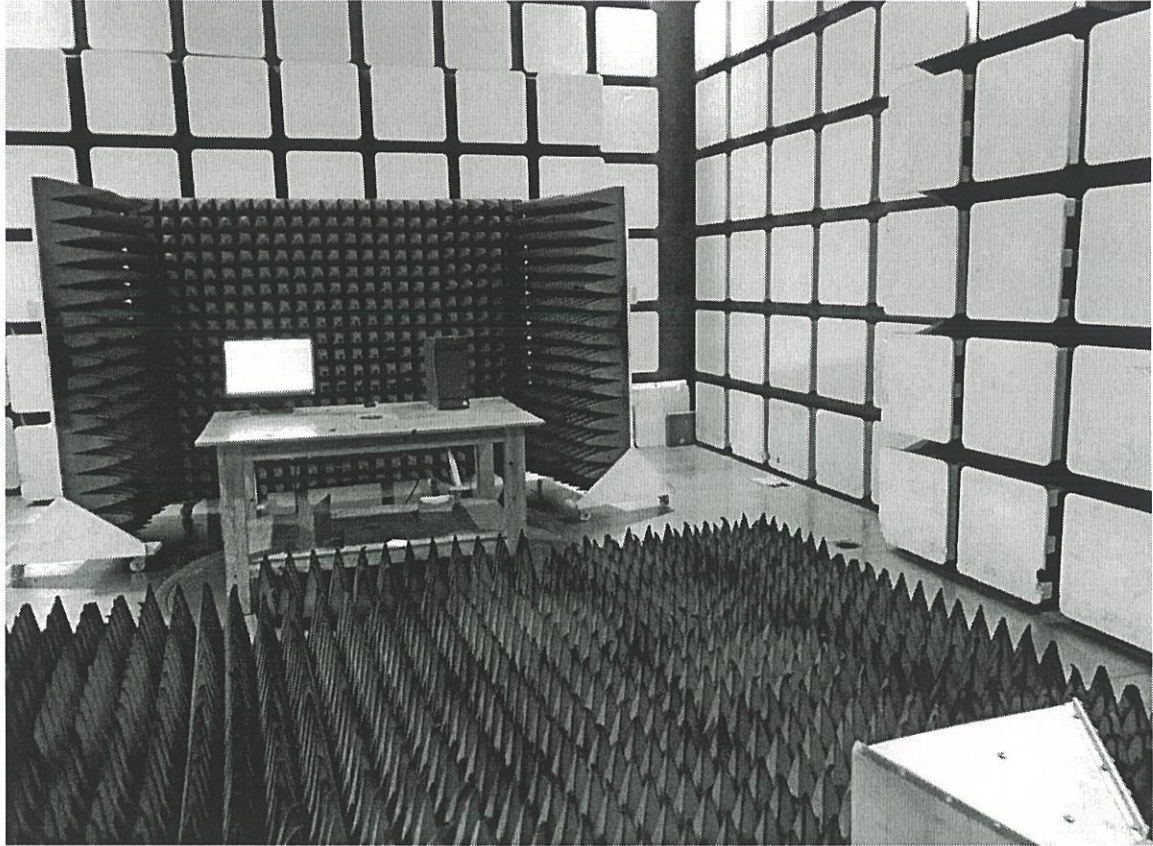
**Horizontal Radiated Emission Plot (Peak, AV Max Hold Mode)**



**Vertical Radiated Emission Plot (Peak, AV Max Hold Mode)**

Note: The Curves included The Cable attenuation and The Antenna Factor.

### 2.2.5 Test Setup



**Radiated Emission ( 1-6GHz ) Test Set-Up – Front View**

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### Section 3 Electromagnetic Immunity

#### 3.1 Electrostatic Discharge Immunity

##### 3.1.1 Electrostatic Discharge Immunity Test Information

<b>Temperature:</b>	24°C	<b>Humidity:</b>	52%
<b>ATM Pressure:</b>	101.0 kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc		
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.09.27
<b>Test Reference:</b>	EN55024:2010/A1:2015		
<b>Results:</b>	Pass		

##### 3.1.2 Measurement Equipment Used for Electrostatic Discharge Immunity

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
ESD Generator	SCHAFFNER	NSG 438	338	2018.03.08	2019.03.07
Dual DC Power Supply	CEPREI	6139B	1501LH05	2018.06.08	2019.06.07

##### 3.1.3 Test Data

Test Point	Test Voltage ( Kv )				Discharge type	Repetition Rate Hz	Number Of Discharge at each polarity	EUT performance comply to criteria	Result
	2 +/-	4 +/-	8 +/-	15 +/-					
HCP	P/P	P/P	/	/	Contact discharge	1Hz	10	A	Pass
VCP	P/P	P/P	/	/	Contact discharge	1Hz	10	A	Pass
Metal port	P/P	P/P	/	/	Contact discharge	1Hz	10	A	Pass
Indicator light	P/P	P/P	P/P	/	Air discharge	1Hz	10	A	Pass
Non-metallic shell	P/P	P/P	P/P	/	Air discharge	1Hz	10	A	Pass

The performance criteria are classified into four groups:

A ---- Normal performance within the specification limits;

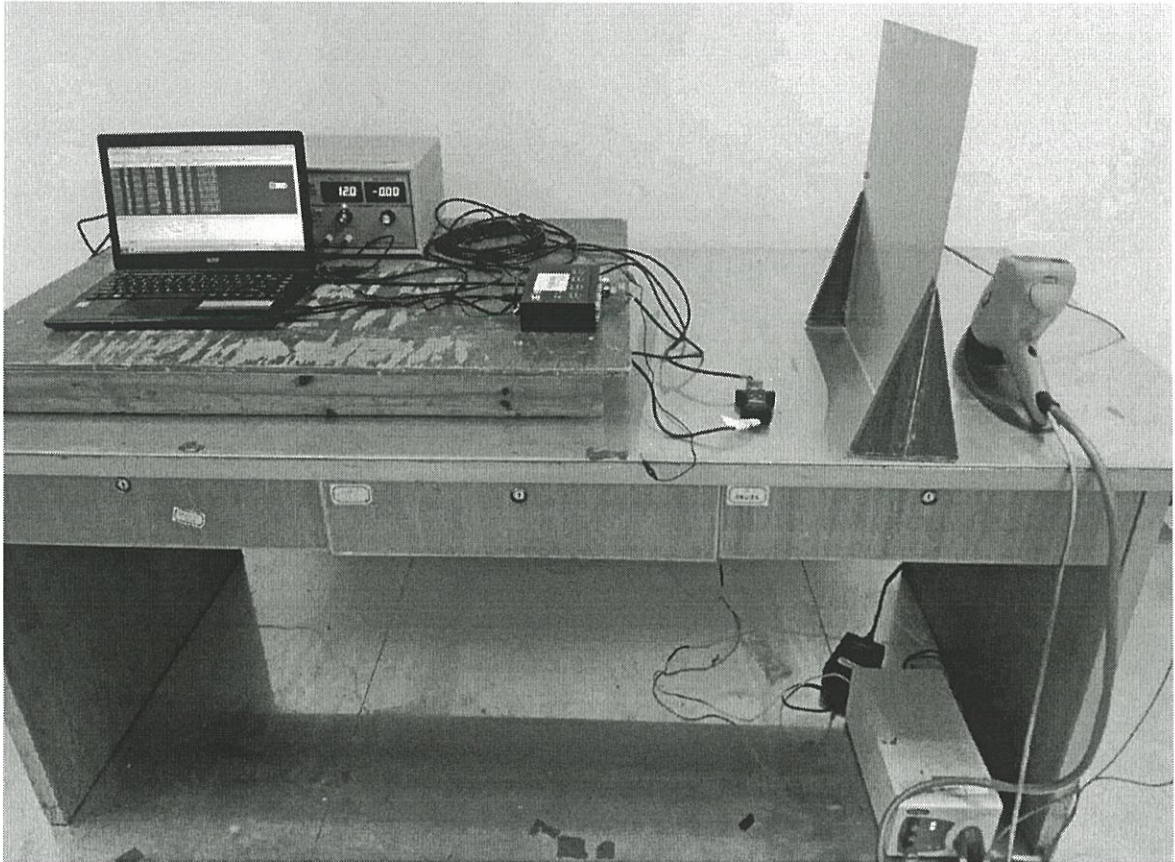
B ---- Temporary degradation or loss of function or performance which is self-recoverable;

C ---- Temporary degradation or loss of function or performance which requires operator intervention or system reset;

D ---- Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.



### 3.1.4 Test Setup



**Electrostatic Discharge Immunity Test Set-Up –Front View**

/

### 3.2 Electrical Fast Transient/Burst Immunity

#### 3.2.1 Electrical Fast Transient/Burst Immunity Test Information

<b>Temperature:</b>	24°C	<b>Humidity:</b>	52%
<b>ATM Pressure:</b>	101.0 kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc		
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.09.27
<b>Test Reference:</b>	EN55024:2010/A1:2015		
<b>Results:</b>	Pass		

#### 3.2.2 Measurement Equipment Used for Electrical Fast Transient/Burst Immunity test

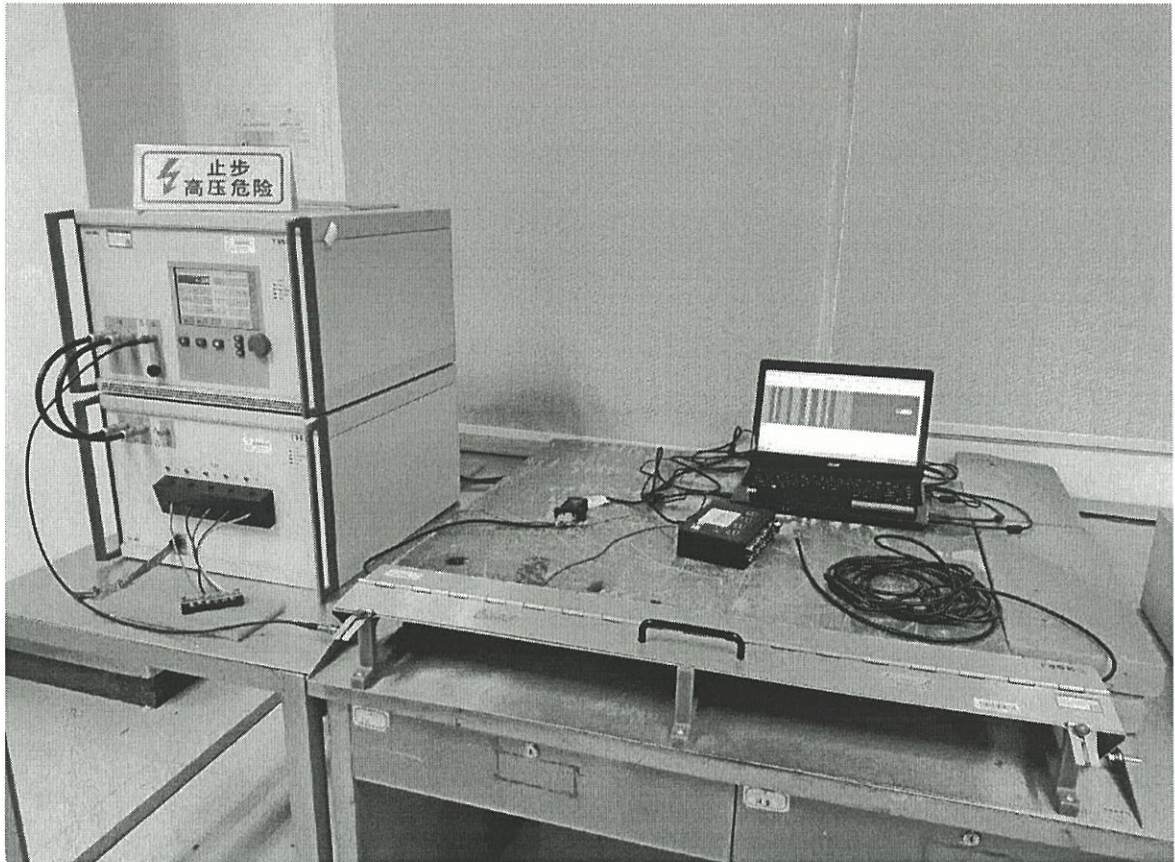
Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Comprehensive immunity test instrument	TESEQ	NSG3060	2112	2018.06.08	2019.06.07
Dual DC Power Supply	CEPREI	6139B	1501LH05	2018.06.08	2019.06.07
EFT Coupling Clamp	TESEQ	CDN3425	1847	2018.06.08	2019.06.07

#### 3.2.3 Test Data

Injected position	Waveform (ns )	Voltage peak (Kv) Power port PE				Repetition rate (kHz)	Test time at each polarity (s)	EUT performance comply to criteria	Result
		0.5	1	2	4				
		+/-	+/-	+/-	+/-				
CAN Port	5/50	P/P	/	/	/	5	60+60	A	Pass

The performance criteria are classified into four groups:  
 A ---- Normal performance within the specification limits;  
 B ---- Temporary degradation or loss of function or performance which is self-recoverable;  
 C ---- Temporary degradation or loss of function or performance which requires operator intervention or system reset;  
 D ---- Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.

### 3.2.4 Test Setup



**Electrical Fast Transient/Burst Immunity Test Signal Port Set-Up –Front View**

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### 3.3 Radio-frequency Electromagnetic Fields Immunity

#### 3.3.1 Radio-frequency Electromagnetic Fields Immunity Test Information

<b>Temperature:</b>	24°C	<b>Humidity:</b>	52%
<b>ATM Pressure:</b>	101.0 kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc	<b>Tested Range:</b>	80MHz to 1000MHz
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.09.27
<b>Test Reference:</b>	EN55024:2010/A1:2015		
<b>Results:</b>	Pass		

#### 3.3.2 Measurement Equipment Used for Radio-frequency Electromagnetic Fields Immunity Test

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Signal Generator	R&S	SMB 100A	102984	2018.06.08	2019.06.07
RF power Amplifier	AR	500W1000A	326103	2018.06.08	2019.06.07
Anechoic Chamber	EMCT	EMCT-3	7561990030	2018.06.08	2019.06.07
Wideband Receiving Antenna	R&S	HL562	100644	2018.06.08	2019.06.07
AC and DC Power Supply	KIKUSUI	PCR500M	TC001153	2018.06.08	2019.06.07
Electric Field Probe	HOLADAY	HI-6153	82913	2018.06.08	2019.06.07

#### 3.3.3 Test Data

Frequency Range (MHz)	Strength (V/m)	1kHz AM Mod. %	EUT Tuned degree	EUT performance comply to criteria	Result
80~1000	3	80	0°	A	Pass
80~1000	3	80	90°	A	Pass
80~1000	3	80	180°	A	Pass
80~1000	3	80	270°	A	Pass

Note:

The performance criteria are classified into four groups:

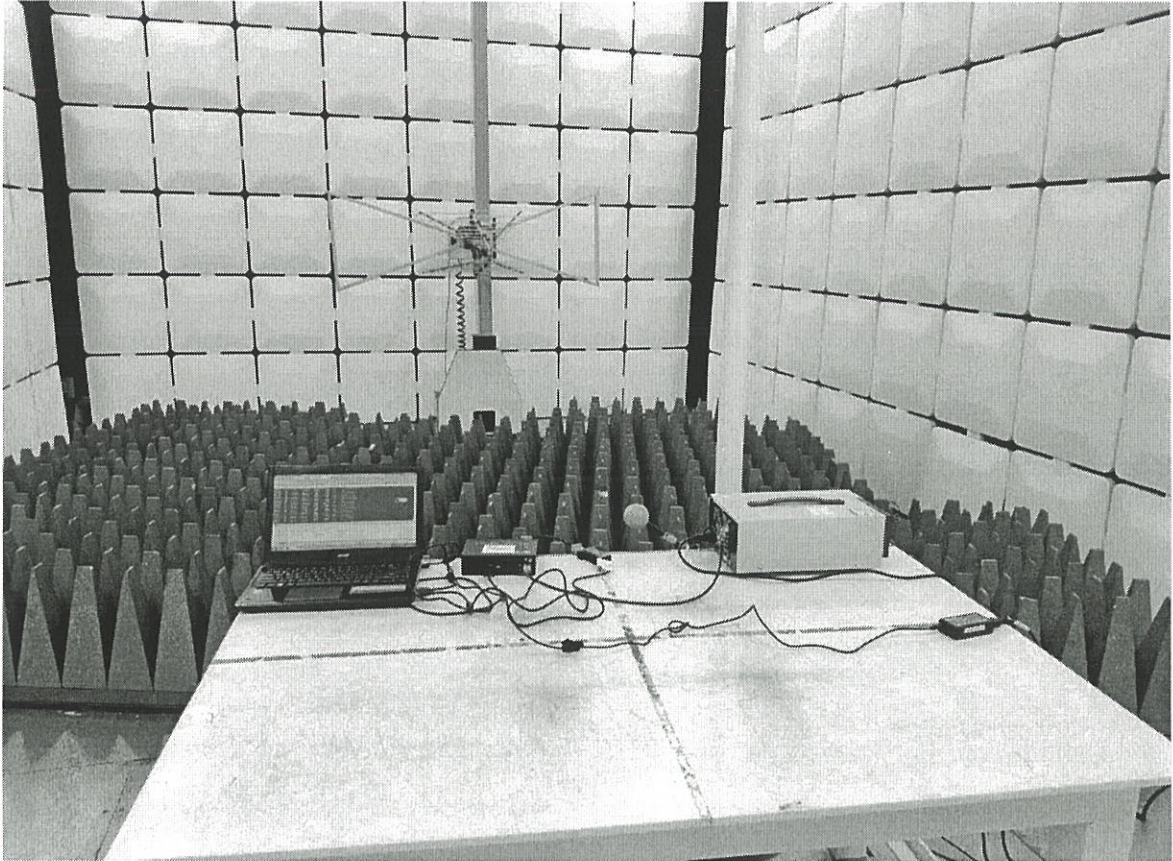
A ---- Normal performance within the specification limits;

B ---- Temporary degradation or loss of function or performance which is self-recoverable;

C ---- Temporary degradation or loss of function or performance which requires operator intervention or system reset;

D ---- Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.

### 3.3.4 Test Setup



**Radio-frequency Electromagnetic Fields Immunity Test Set-Up –Front View**

/

### 3.4 Radio-frequency Conducted Disturbance Immunity

#### 3.4.1 Radio-frequency Conducted Disturbance Immunity test information

<b>Temperature:</b>	24°C	<b>Humidity:</b>	52%
<b>ATM Pressure:</b>	101.0 kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc	<b>Tested Range:</b>	0.15MHz to 80MHz
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.09.27
<b>Test Reference:</b>	EN55024:2010/A1:2015		
<b>Results:</b>	Pass		

#### 3.4.2 Measurement Equipment Used for Radio-frequency Conducted Disturbance Immunity test

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
EM TEST	EM	CWS 500C	0202-04	2018.06.08	2019.06.07
EM TEST CDN	EM	M3	030203	2018.06.08	2019.06.07
Dual DC Power Supply	CEPREI	6139B	1501LH05	2018.06.08	2019.06.07
Conduction Immunity Electromagnetic Injection Clamp	Liithi	EM101	35607	2018.06.08	2019.06.07

#### 3.4.3 Test Data

Injected position	Frequency Range (MHz)	Strength (r m s) (unmodulated)	1kHz AM Mod. %	EUT performance comply to criteria	Result
CAN Port	0.15~80	3V	80	A	Pass

Note:

The performance criteria are classified into four groups:

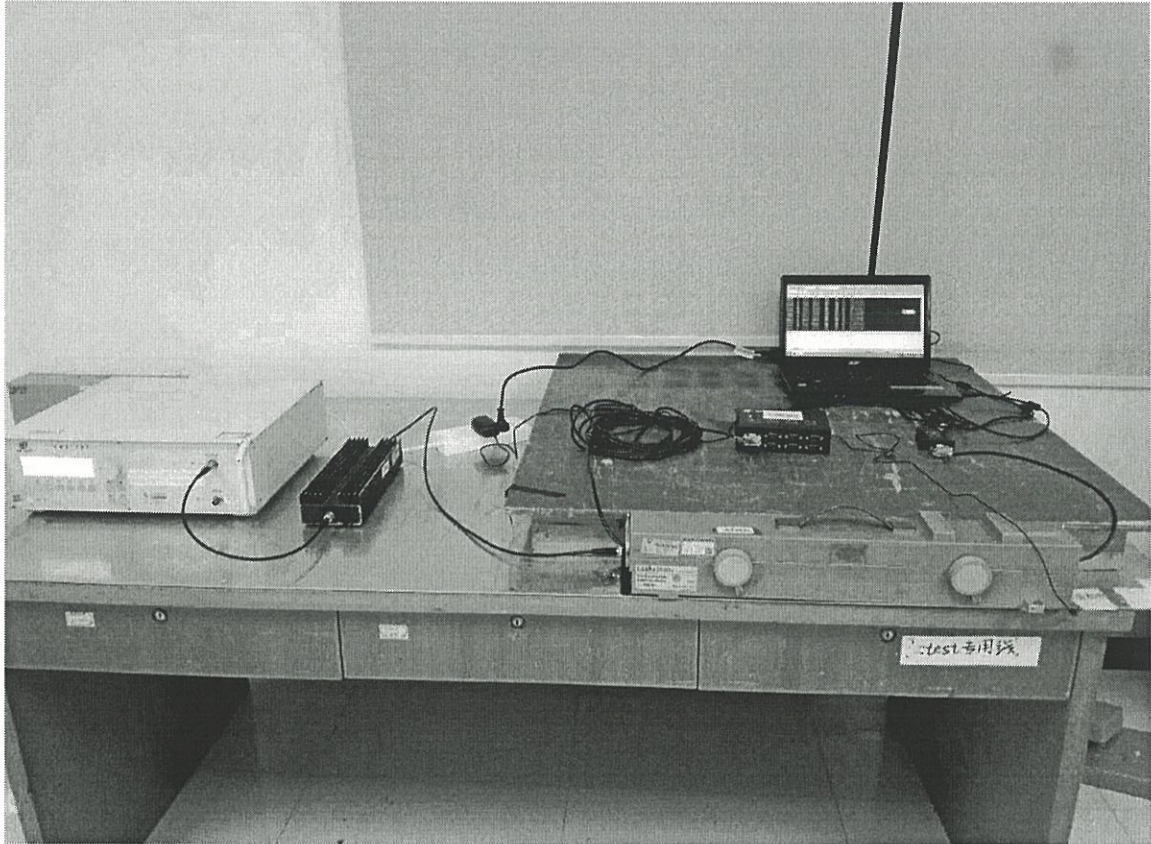
A ---- Normal performance within the specification limits;

B ---- Temporary degradation or loss of function or performance which is self-recoverable;

C ---- Temporary degradation or loss of function or performance which requires operator intervention or system reset;

D ---- Degradation or loss of function which is not recoverable due to damage of equipment (components) or software, or loss of data.

### 3.4.4 Test Setup



**Radio-frequency Conducted Disturbance Immunity Test Signal Port Set-Up –Front View**

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3.5 Power-frequency Magnetic Fields Immunity

3.5.1 Magnetic Fields Test Information

<b>Temperature:</b>	23°C	<b>Humidity:</b>	55%
<b>ATM Pressure:</b>	101.0 kPa	<b>Grounding:</b>	/
<b>Test Voltage:</b>	5Vdc		
<b>Tested by:</b>	Zhou Rupai	<b>Date of test:</b>	2018.09.26
<b>Test Reference:</b>	EN55024:2010/A1:2015		
<b>Results:</b>	PASS		

3.5.2 Measurement Equipment Used for Magnetic Fields test

Test Equipment	Manufacturer	Model	Serial No.	Last Cal.	Cal. Due
Helmholtz coils	Guofangkeji	CW701-H3	701-7	2018.06.08	2019.06.07
AC and DC Power Supply	KIKUSUI	PCR500M	TC001153	2018.06.08	2019.06.07
Magnetic field probe	NARDA	ELT-400	G-0009/G-0006	2018.06.08	2019.06.07
Dual DC Power Supply	CEPREI	6139B	1501LH05	2018.06.08	2019.06.07

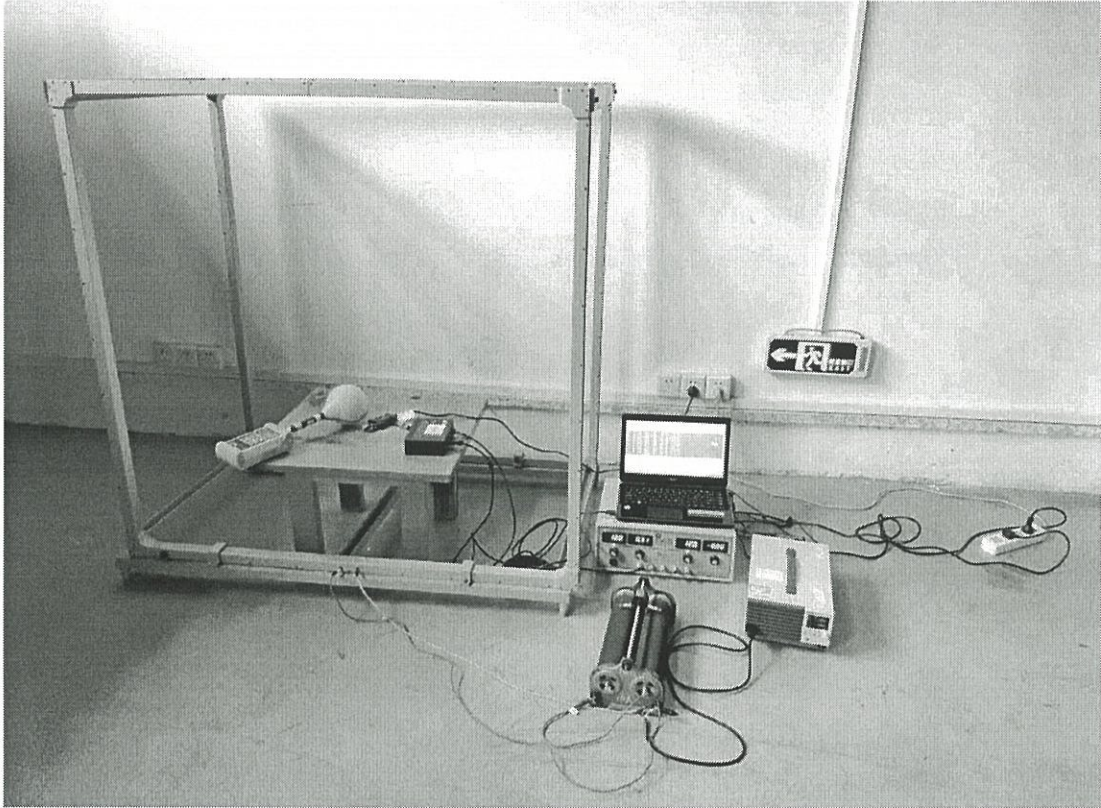
3.5.3 Test Data

Frequency Range (Hz)	Strength (A/m)	EUT Tuned degree	Result	Criterion	Verdict
50	1	/	A	A	PASS

Note:  
 The test results of the Radio Frequency Electromagnetic Fields Immunity are classified into four groups:  
 A ---- Normal performance within the specification limits;  
 B----The apparatus shall continue to operate as intended after the test;  
 C----Temporary loss of function is allowed, provided that normal function is automatically restored when the test stimulus is removed, or can be restored by operation of the controls.



### 3.5.4 Test Setup



**Magnetic Fields Test Set-Up –Front View**

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END OF THE TEST REPORT