

CTS (NINGBO) TESTING SERVICE TECHNOLOGY INTERNATIONAL

**OPERATE ACCORDING TO ISO/IEC 17025** 

# **EMC TEST REPORT**

## TEST REPORT NUMBER : CGZ3160623-01025-E-D



CE

**CTS (Ningbo) Testing Service Technology Co., Ltd.** 2/F., South Tower, Huoju Building, No.181, Canghai Road, Jiangdong Science and Technology Park, Ningbo, Zhejiang, China

#### **CENTRE OF TESTING SERVICE**





	TEST REPORT EN 61000-6-3:2007+A1:2011+AC:2012 EMC) —Part 6-3: Generic standards — ommercial and light-industrial environme	Emission standard for residential,	
Electromagnetic compatibility (E	<b>EN 61000-6-1:2007</b> MC) —Part 6-1: Generic standards — In and light-industrial environments	nmunity for residential, commercial	
Report Reference No	CGZ3160623-01025-E-D		
Date of issue	02 July 2016		
Testing Laboratory Name	CTS (Ningbo) Testing Service Tecl	hnology Co., Ltd.	
	GZ test site: A101, No.65, Zhuji Road Guangzhou, Guangdong, China.		
Testing location/ procedure	Full application of Harmonised stand Partial application of Harmonised sta Other standard testing method	ards ■ Indards □	
Applicant's name			
Address	37 BUILDING, B ZONE, PUSHANG INDUSTRIAL DISTRICT, FUZHOU,	PARK, JINSHAN FUJIAN PROVINCE, CHINA	
Test specification:			
Standard	EN 61000-6-3:2007+A1:2011+AC:2	012, EN 61000-6-1:2007	
Test Report Form No	CTSEMC-1.0		
TRF Originator	CTS (Ningbo) Testing Service Technology Co., Ltd.		
Master TRF	Dated 2009-01		
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Test item description	ELECTRONIC SCALE		
Trade Mark	FURI		
Manufacturer	FUZHOU FURI ELECTRONICS CO.	, LTD.	
Model/Type reference	FRH		
Ratings	Battery 1.5V*6		
Result	PASSED		
Compiled by:	Supervised by:	Approved by:	

Kate zhang / File administrators

Supervised by:

Duke yang / Technique principal

Approved by:

Vincent yao / Manager



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Report No.: CGZ3160623-01025-E-D





# EMC -- TEST REPORT

Test Report No. :	CGZ3160623-01025-E-D <u>02 July 2016</u> Date of issue	
-		
Type / Model	FRH	
EUT	ELECTRONIC SCALE	
Applicant	GKI FUZHOU	
Address	37 BUILDING, B ZONE, PUSHANG PA INDUSTRIAL DISTRICT, FUZHOU, FU	
Telephone	+86-591-83050561	
Fax	+86-591-83050562	
Contact	QIFU ZHOU	
Manufacturer	FUZHOU FURI ELECTRONICS CO., L	
Address	37 BUILDING, B ZONE, PUSHANG PA INDUSTRIAL DISTRICT, FUZHOU, FU	
Telephone	+86-591-83050561	
Fax	+86-591-83050562	
Contact	QIFU ZHOU	
Factory	FUZHOU FURI ELECTRONICS CO., L	
-	37 BUILDING, B ZONE, PUSHANG PA	
Address	INDUSTRIAL DISTRICT, FUZHOU, FU	
Telephone	+86-591-83050561	
Fax	+86-591-83050562	
Contact	QIFU ZHOU	

### Special description:

This is an additional test report which is based on the original report **CGZ3160623-01024-E**. There are no any difference among the models except for the applicant and displace following identical model(s). After review, no additional test should be carried out.

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.

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Complaint line: +86-20-85533471 E-	-mail: cts@cts-lab.com.cn	See Reverse For Terms And Conditions of Service



## 1 TEST STANDARDS

The tests were performed according to following standards:

EN 61000-6-3:2007+A1:2011+AC:2012 Electromagnetic compatibility (EMC) —Part 6-3: Generic standards — Emission standard for residential, commercial and light-industrial environments

EN 61000-6-1:2007 Electromagnetic compatibility (EMC) —Part 6-1: Generic standards — Immunity for residential, commercial and light-industrial environments

## 2 SUMMARY

### 2.1 GENERAL REMARKS

Date of receipt of test sample	23 June 2016
Testing commenced on	23 ~ 24 June 2016
Testing concluded on	02 July 2016

### 2.2 FINAL ASSESSMENT

The EMC requirements pertaining to the technical standards and tested operation modes are

- fulfilled.
- □ **not** fulfilled.

The equipment under test

- - fulfils the EMC requirements cited on page 1.
- **does not** fulfil the EMC requirements cited on page 1.

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## **3 EQUIPMENT UNDER TEST**

#### 3.1 Power supply system utilised

Power supply voltage:

Battery 1.5V\*6Other (Specified blank below)

## 3.2 Short description of the Equipment under Test (EUT)

1

Number of tested samples: Serial number: Prototype

#### 3.3 EUT operation mode

The equipment under test was operated during the measurement under the following conditions:

- Normal

Operating Mode:	Normal	
Emissions tests	: According to EN 61000-6-3, searching for the highest disturbance.	

Immunity tests .....: According to EN 61000-6-1, searching for the highest susceptivity.

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### 3.4 EUT configuration

(The CDF filled by the applicant can be viewed at the test laboratory.)

The following peripheral devices and interface cables were connected during the measurement:

Not Applicable

#### 3.5 Performance level

The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance level defined by its manufacturer or the requestor of the test, or agreed between the manufacturer and the purchaser of the product.

#### 3.6 Definition related to the performance level

based on the used product standard
 based on the declaration of the manufacturer, requestor or purchaser

#### Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor or purchaser:

#### Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

#### Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

#### Criterion D:

Definition: loss of function or degradation of performance, which is not recoverable, owing to damage to hardware or software, or loss of data:

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#### TEST ENVIRONMENT 4

#### 4.1 Address of the test laboratory

GZ test site: A101, No.65, Zhuji Road, Tianhe District, Guangzhou, Guangdong, China

Tel: +86-20-85543113 (32 lines)

Fax: +86-20-38780406

#### 4.2 Test facility

The test facility is recognized, certified, or accredited by the following organizations:

#### CNAS-Lab Code: L3394

CTS (Ningbo) Testing Service Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01: 2006 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

### IC-Registration No.: 8374A

The 3m Alternate Test Site of CTS (Ningbo) Testing Service Technology Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for the performance of radiated measurements with Registration No. 8374A on May 22, 2014.

### FCC-Registration No.: 971995

CTS (Ningbo) Testing Service Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files. Registration No.971995, July 13, 2012.

#### 4.3 Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	15~35 ° C
Humidity:	25~75 %
Atmospheric pressure:	86~106 kPa

#### 4.4 Definitions of symbols used in this test report

- The black square indicates that the listed condition, standard or equipment is applicable for this report.
- □ The empty square indicates that the listed condition,

standard or equipment is not applicable for this report.

#### 4.5 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 CTS 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.

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### 4.6 Measurement Uncertainty

Test Item	Frequency Range	Uncertainty	Note
Conduction disturbance	150kHz~30MHz	±1.22dB	(1)
Power disturbance	30MHz~300MHz	±1.38dB	(1)
Dediction emission (2m)	30MHz~300MHz	±3.14dB	(1)
Radiation emission (3m)	300MHz~1000MHz	±3.18dB	(1)

(1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

(2) The actual EUT tested items in this test report, only applies to this "measurement uncertainty" in part / all of the corresponding data.

#### 4.7 Test Description

#### 4.7.1 Description of Standards and Results

EMISSION (EN 61000-6-3:2007+A1:2011+AC:2012)				
Description of Test Item		Standard	Limits	Results
Conducted disturbance at mains terminals	EN 61000-6-3:2007+A1:2011+AC:2012		)12	N/A
Conducted disturbance at telecommunication port	EN 61000-6-3:2007+A1:2011+AC:2012		)12	N/A
Radiated disturbance	EN 610	00-6-3:2007+A1:2011+AC:20	)12	PASS
Harmonic current emissions		EN 61000-3-2:2014	Class A	N/A
Voltage fluctuations & flicker		EN 61000-3-3:2013		N/A
	IM	MUNITY (EN 61000-6-1:2007	7)	
Description of Test Ite	em	Basic Standard	Performance Criteria	Results
Electrostatic discharge (ESD)		IEC 61000-4-2: 2008	В	PASS
Radio-frequency, Continuous radiated disturbance		IEC 61000-4-3:2006 +A1:2007+A2:2010	A	PASS
Electrical fast transient (EFT)		IEC 61000-4-4:2012	В	N/A
Surge (Input a.c. power ports)		IEC 61000-4-5: 2014	В	N/A
Radio-frequency, Continuous conducted disturbance		IEC 61000-4-6: 2013	A	N/A
Power frequency magnetic field		IEC 61000-4-8: 2009	A	PASS
Voltage dips, >95% reduction			В	N/A
Voltage dips, 30% reduction		IEC 61000-4-11: 2004	В	N/A
Voltage interruptions			С	N/A
N/A is an abbreviation for Not	Applicat	ble.		

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## **5 TEST CONDITIONS AND RESULTS**

### 5.1 Radiated disturbance (electric field)

For test instruments and accessories used see section 6 part 6.1.

#### 5.1.1 Description of the test location

Test location : Semi-Anechoic chamber

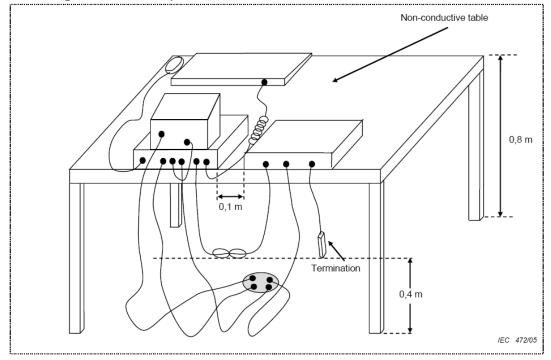
Test disturbance: 3 Meter

#### 5.1.2 Description of the test set-up

5.1.2.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.1.2.2 Block Diagram of Test Setup



#### 5.1.3 Limits of disturbance

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dBµV/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.
(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

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#### 5.1.4 Test result

The requirements are	Fulfilled
Band width	120kHz
Frequency range	30 MHz - 1000 MHz
Min. limit margin	>0.72 dB at 30 - 1000 MHz

**Remarks:** The limits are kept. For detailed results, please see the following page(s).

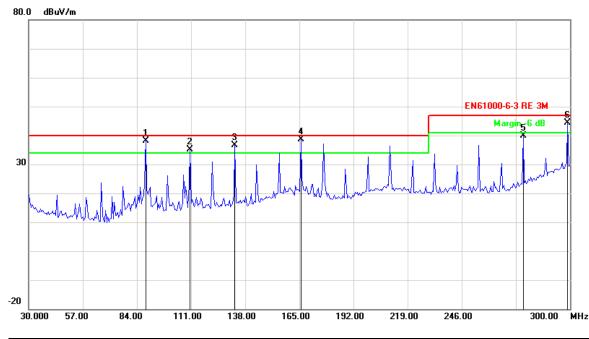
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#### 5.1.5 Test protocol

Test point: Operation mode Remarks:	n mode Normal		Result:	<ul> <li>passed</li> <li>not passed</li> </ul>
EUT		ELECTRONIC SCALE		
Operating Condition Battery 1.5V*6				
Test Condition	Test Condition Ambient Temperatu		4°C Humidity: 5	6%
Operator		Clark		
MODEL NO. FRH				



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	88.4368	-19.27	57.50	38.23	40.00	-1.77	QP
2	110.6212	-17.26	52.33	35.07	40.00	-4.93	QP
3	132.8056	-16.11	52.66	36.55	40.00	-3.45	QP
4	165.8116	-15.98	54.55	38.57	40.00	-1.43	QP
5	276.7335	-8.10	47.86	39.76	47.00	-7.24	QP
6	298.9178	-1.71	46.20	44.49	47.00	-2.51	QP

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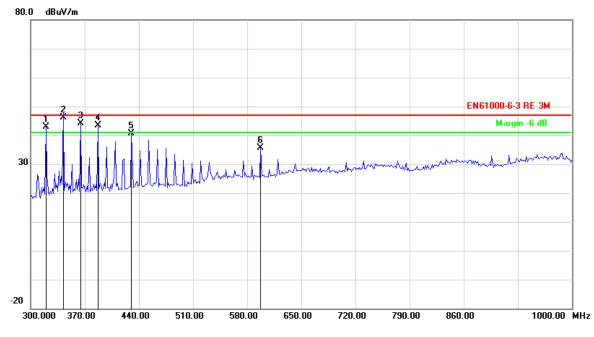
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	319.6392	-12.73	55.51	42.78	47.00	-4.22	QP
2	342.0842	-11.71	57.84	46.13	47.00	-0.87	QP
3	364.5290	-11.11	55.20	44.09	47.00	-2.91	QP
4	386.9739	-10.73	54.12	43.39	47.00	-3.61	QP
5	430.4609	-9.26	49.97	40.71	47.00	-6.29	QP
6	597.3947	-5.56	41.29	35.73	47.00	-11.27	QP

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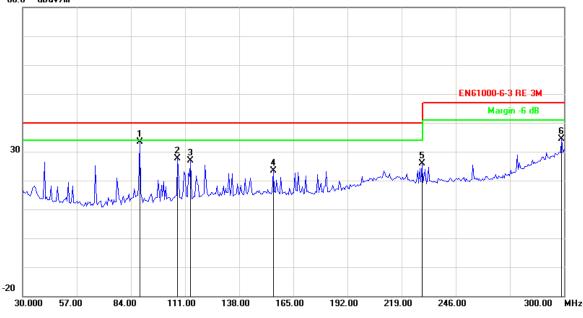




Test point:	Vertical	Result:	- passed
Operation mode	Normal		□ - not passed
Remarks:			

Operator	Clark	
Test Condition	Ambient Temperature: 24°C Humidity: 56%	
Operating Condition	Battery 1.5V*6	
MODEL NO.	FRH	
EUT	ELECTRONIC SCALE	

80.0 dBuV/m



No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	88.4369	-19.27	52.56	33.29	40.00	-6.71	QP
2	107.3747	-17.54	45.06	27.52	40.00	-12.48	QP
3	113.8677	-17.08	44.00	26.92	40.00	-13.08	QP
4	154.9900	-15.96	39.28	23.32	40.00	-16.68	QP
5	229.1182	-11.59	37.36	25.77	40.00	-14.23	QP
6	298.9178	-1.71	36.15	34.44	47.00	-12.56	QP

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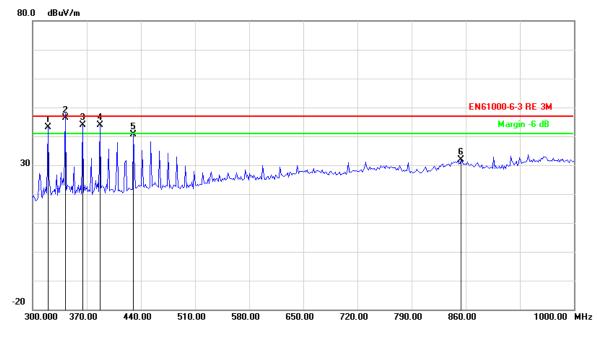
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No.	Frequency (MHz)	Factor (dB/m)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Det.
1	319.6392	-12.73	55.80	43.07	47.00	-3.93	QP
2	342.0841	-11.71	57.99	46.28	47.00	-0.72	QP
3	364.5290	-11.11	55.02	43.91	47.00	-3.09	QP
4	386.9738	-10.73	54.55	43.82	47.00	-3.18	QP
5	430.4609	-9.26	49.99	40.73	47.00	-6.27	QP
6	854.1082	-0.41	32.37	31.96	47.00	-15.04	QP

Note:Level=Reading+Factor. Margin= Limit-Level

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E-mail: cts@cts-lab.com.cn



#### 5.2 Electrostatic discharge

For test instruments and accessories used see section 6 part 6.2.

#### 5.2.1 Description of the test location

Test location :	Test location no. 2
Power supply:	Battery 1.5V*6
Test condition:	Ambient Temperature: 24°C, Humidity:56%
Date of test :	23 ~ 24 June 2016
Operator :	Clark

#### 5.2.2 Severity of levels electrostatic discharge

#### 5.2.2.1 Severity level: Contact discharge at $\pm$ 4KV air discharge at $\pm$ 8KV

Level	Test Voltage Contact Discharge (kV)	Test Voltage Air Discharge (kV)
1	2	2
2	4	4
3	6	8
4	8	15
Х	Special	Special

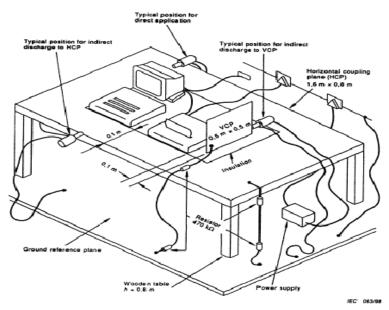
5.2.2.2 Performance criterion: B

#### 5.2.3 Description of the test set-up

5.2.3.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.2.3.2 Block Diagram of Test Setup



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#### 5.2.4 Test specification:

Contact discharge voltage:	■ 2 kV ■ 4	- kV
Air discharge voltage:	■ 2 kV ■ 4	kV ■ 8 kV
Discharge impedance:	330 Ω / 150 pF	
	p	
Discharge factor:	■ ≥ 1 sec.	
Number of discharges:	■ ≥10	
Number of discharges.		
Type of discharge:	Direct discharge	
Type of discharge:	Direct discharge	Air discharge
	1	Contact discharge
	Indirect discharge	Contact discharge
Polarity:	Positive	Negative
Discharge location:	see photo documer	ntation of the test set-up
	■all external location	s accessible by hand
	■horizontal plate (HC)	וסי
	■vertical coupling pla	

#### 5.2.5 Test result

The requirements are Fulfilled

Performance Criterion: B

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

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### 5.3 Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 6 part 6.3.

#### 5.3.1 Description of the test location

Test location :	Test location no. 2
Power supply:	Battery 1.5V*6
Test condition:	Ambient Temperature: 24 °C, Humidity:56%
Date of test :	23 ~ 24 June 2016
Operator :	Clark

#### 5.3.2 Severity levels of radiated, Radio-frequency, electromagnetic field

5321	Severity	level.	3\//m	and	1\//m
J.J.Z. I	Sevency	10,001	3 1/11	anu	1 V/111

Level	Field strenght(V/m)
1	1
2	3
3	10
Х	Special

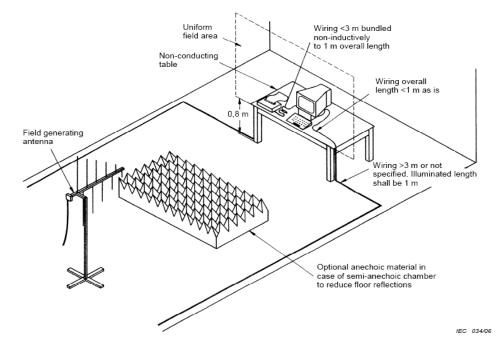
5.3.2.2 Performance criterion: A

#### 5.3.3 Description of the test set-up

5.3.3.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

#### 5.3.3.2 Block Diagram of Test Setup



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#### 5.3.4 Test specification:

Frequency range:	80 MHz to 1000 MHz
Field strength:	■ 3 V/m
EUT - antenna separation:	■ 3 m
Modulation:	AM: 80 % sinusoidal 1000Hz
Frequency step:	1 % with 3 s dwell time
Antenna polarisation:	horizontal vertical
Frequency range:	1400 MHz to 2000 MHz
Field strength:	3 V/m
EUT - antenna separation:	<b>3</b> m
Modulation:	AM: 80 % sinusoidal 1000Hz
Frequency step:	1 % with 3 s dwell time
Antenna polarisation:	horizontal vertical
Frequency range:	2000 MHz to 2700 MHz
Field strength:	■ 1 V/m
EUT - antenna separation:	3 m
Modulation:	AM: 80 % sinusoidal 1000Hz
Frequency step:	1 % with 3 s dwell time
Antenna polarisation:	horizontal vertical

#### 5.3.5 Test result

The requirements are **Fulfilled** 

Performance Criterion: A

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

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### 5.4 Power frequency magnetic field

For test instruments and accessories used see section 6 part 6.4.

#### 5.4.1 Description of the test location

Test location :	Test location no. 2
Power supply:	Battery 1.5V*6
Test condition:	Ambient Temperature: 24°C, Humidity:56%
Date of test :	23 ~ 24 June 2016
Operator :	Clark

#### 5.4.2 Severity levels of magnetic field immunity

5.4.2.1 Severity Level: 3A/m

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

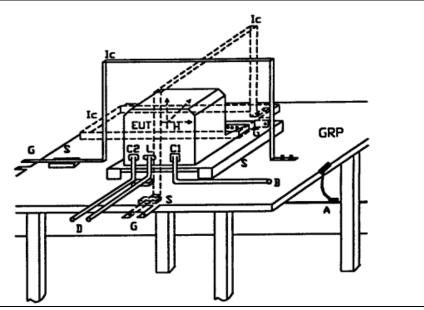
5.4.2.2 Performance Criterion: A

#### 5.4.3 Description of the test set-up

5.4.3.1 Operating Condition

The EUT is normal during the test, and the results of the maximum emanation are recorded

5.4.3.2 Block Diagram of Test Setup



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#### 5.4.4 Test specification:

Test frequency:	■ 50 Hz
Continuous field:	■ 3 A/m
Duration (Continuous field):	■ 60 s each Axis
Short duration (1-3s):	■ 3 S
Axis:	■ x-axis ■ y-axis ■ z-axis

#### 5.4.5 Test result

The requirements are **Fulfilled** 

Performance Criterion: A

**Remarks:** During the test no deviation was detected to the selected operation mode(s).

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## **6 USED TEST EQUIPMENT**

	6.1				
Radia	ted Emission(Electric fie	eld)			
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal analyzer	ROHDE & SCHWARZ	FSIQ26	100311	2016/03/24
2	EMI Test Receiver	ROHDE & SCHWARZ	ESVS 10	842885/001	2015/10/30
3	Biconical Antenna	ROHDE & SCHWARZ	HK116	100221	2016/03/26
4	Log per Antenna	ROHDE & SCHWARZ	HL223	100226	2016/03/26
5	Log per Antenna	ROHDE & SCHWARZ	HL050	100186	2016/03/26
6	Pre-Amplifier	EMC	EMC330	980113	2016/03/24
7	Pre-Amplifier	EMC	EMC012645	980114	2016/03/24
8	EMI Test Software	Farad	EZ-EMC	N/A	N/A

6.2

Electrostatic Discharge					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	ESD Simulator	Schlöder	SESD 200	0302016	2016/03/28

6.3

RF Field Strength Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Signal Generator	ROHDE & SCHWARZ	SMY 01	843215/014	2015/10/30
2	Signal Generator	ROHDE & SCHWARZ	SML03	102986	2015/10/30
3	Amplifier	KALMUS	713FC	7385-1	2015/10/30
4	Power Meter	ROHDE & SCHWARZ	NRVS	842856/049	2015/10/30
5	Field Probe	ETS	HI-6005	00075047	2015/11/10
6	RS Test Software	Farad	EZ-RS	N/A	N/A

6.4

Power Frequency Magnetic Field Susceptibility					
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.
1	Power frequency mag-field generator System	EM TEST	EMS61000-8K	409001	2015/10/30

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## 7 TEST PHOTOGRAPHS

7.1. Photo of radiated emission measurement (R.E. Electric field)



7.2. Photo of electrostatic discharge Immunity measurement (E.S.D.)



7.3. Photo of RF field strength Immunity measurement (R.S.)



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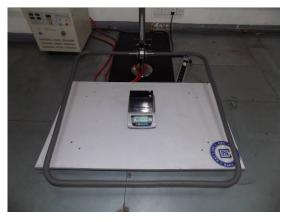
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#### 7.4. Photo of PFM field immunity measurement (P.F.M.F.)



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## 8 EXTERNAL AND INTERNAL PHOTOS OF THE EUT



**External view 1** 



**External view 2** 



**External view 3** 

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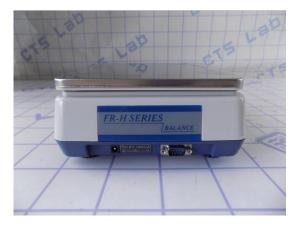
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External view 4



**External view 5** 



**External view 6** 

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Internal view 1



**Internal view 2** 



PCB view 1.1

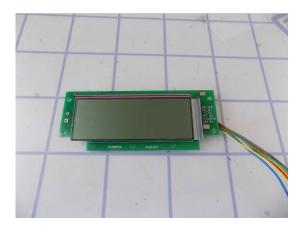
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PCB view 1.2



PCB view 2.1



PCB view 2.2

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PCB view 3.1



PCB view 3.2

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## 9 Manufacturer/ Approval holder Declaration

The following identical model(s):

TRITON T2-120, JS-150, JS-1000, JS-50XV, JS-200XV, PT-150, VHD-3, MX-500, 500ZH, AXE-300, AXE-600, FSX125, TRITON T3-330, i201, i2500, i5000H, CJ600, BCS-80, ULTRA-75, PD 750	TRITON T2-300, JS-300, Titan, JS-100XV, JSVG-20, PT-500, PT-500, PT-1000, MX-500H, SWITCH 100, Gempro-300, AXE2-300, FSX400, TRITON T3-660, i500, i2600, i5500, CJ-4000, ULTRA-35, MBCS-55, UD 450	TRITON T2-550, JS-700, CTS-600, JS-110XV, JSVG-40, Profreight-332, MX-300, 440Z, SWITCH 600, TB, AXE2-600, TRITON T3-200, i101, i1200, i5000, CJ-300, BCS-40, ULTRA-55, MASTERSHIP-55,
•	•	•
PD-750,	HD-150,	HD-300,
VHD-300,	HDCS-60,	HDCS-150,
MD-500,	MSW300	

Belong to the tested device:

Product description: ELECTRONIC SCALE Model name: FRH

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