

# TEST REPORT

**Application No.:** SHEM2011009789MD  
**Applicant:** Changzhou Trotter Electricity Machinery Co., Ltd  
**Address of Applicant:** Building 5th, No.128 West Hanjiang Road ,New Area, Changzhou , Jiangsu  
**Manufacturer:** Changzhou Trotter Electricity Machinery Co., Ltd  
**Address of Manufacturer:** Building 5th, No.128 West Hanjiang Road ,New Area, Changzhou , Jiangsu  
**Factory:** Changzhou Trotter Electricity Machinery Co., Ltd  
**Address of Factory:** Building 5th, No.128 West Hanjiang Road ,New Area, Changzhou , Jiangsu  
**Equipment Under Test (EUT):**  
**EUT Name:** Motor  
**Model No.:** RM T010 250 V/ D, FM T010 250 V/D, RM T011 250 V/ D, FM T011 250 V/D, RM T012 250 V/ D, FM T012 250 V/D, RM T050 250 V/D, FM T020 250 V/D, RM T060 250 V/D, RM T030 250 V/D, FM T030 250 V, RM T201 250DC, RM T202 250DC, RM T230 250DC, RM T204 250DC, RM T205 250DC, RM T206 250DC, RM T207 250C, RM T208 250D, RMT209 250 D, RM T211 250VD, RM T212 250 VD, RM T213 250 D, RM T214 250 VD, RM T215 250 D, RM T216 250 D, RM T217 250 D, RM T218 250 D, RM T219 250 D, RM T220 250 D □  
 □ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.  
**Trade mark:** Trotter  
**Standard(s) :** EN 61000-6-3:2007 +A1:2011  
 EN IEC 61000-6-1:2019  
**Date of Receipt:** 2020-11-20  
**Date of Test:** 2020-11-23 to 2021-01-19  
**Date of Issue:** 2021-03-15

<b>Test Result:</b>	<b>Pass*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

The CE mark as shown below can be used, under the responsibility of the manufacturer, after completion of an EU Declaration of Conformity and compliance with all relevant EU Directives.

*Parlam Zhan*



Parlam Zhan  
E&E Section Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.





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Revision Record			
Version	Description	Date	Remark
00	Original	2021-02-08	/
01	Updated Power supply	2020-03-15	Amendment

Remark: The version 01 of the report had replaced the version 00 which was invalid.

Authorized for issue by:			
			
		<b>Andy Yang / Project Engineer</b>	
			
		<b>Bruce Tang / Reviewer</b>	



## 2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	EN 61000-6-3:2007 +A1:2011	CISPR 16-2-3	N/A	Pass

N/A: Not applicable

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN IEC 61000-6-1:2019	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-6GHz)	EN IEC 61000-6-1:2019	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod.	Pass

N/A: Not applicable

### Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report, and they are the similar in electrical and electronic characters. Only the model RM T010 250 V/ D was tested since their differences were the model number, trade name and appearance.



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 中国·上海·松江区金都西路588号 邮编: 201612

(86-21) 61915666 (86-21) 61915678 [www.sgs.com.cn](http://www.sgs.com.cn)  
 (86-21) 61915666 (86-21) 61915678 [sgs.china@sgs.com](mailto:sgs.china@sgs.com)

### 3 Contents

	Page
1 COVER PAGE .....	1
2 TEST SUMMARY .....	3
3 CONTENTS .....	4
4 GENERAL INFORMATION .....	5
4.1 DETAILS OF E.U.T. ....	5
4.2 DESCRIPTION OF SUPPORT UNITS.....	5
4.3 MEASUREMENT UNCERTAINTY .....	5
4.4 TEST LOCATION .....	6
4.5 TEST FACILITY .....	6
4.6 DEVIATION FROM STANDARDS .....	6
4.7 ABNORMALITIES FROM STANDARD CONDITIONS .....	6
4.8 MONITORING OF EUT FOR ALL IMMUNITY TEST .....	6
5 EQUIPMENT LIST .....	7
6 EMISSION TEST RESULTS .....	8
6.1 RADIATED EMISSIONS (30MHZ-1GHZ) .....	8
7 IMMUNITY TEST RESULTS.....	11
7.1 PERFORMANCE CRITERIA DESCRIPTION IN EN IEC 61000-6-1:2019 .....	11
7.2 ELECTROSTATIC DISCHARGE .....	12
7.3 RADIATED IMMUNITY (80MHZ-6GHZ) .....	13
8 PHOTOGRAPHS .....	14
8.1 RADIATED EMISSIONS (30MHZ-1GHZ) TEST SETUP.....	14
8.2 ELECTROSTATIC DISCHARGE TEST SETUP .....	14
8.3 RADIATED IMMUNITY (80MHZ-6GHZ) TEST SETUP.....	15
8.4 EUT CONSTRUCTIONAL DETAILS (EUT PHOTOS) .....	16



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## 4 General Information

### 4.1 Details of E.U.T.

Power supply: DC 36V 15A RM T010 250 DC  
 Test voltage: DC 36V  
 Cable: DC cable 80cm

### 4.2 Description of Support Units

The EUT has been tested as an independent unit.

### 4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Conducted Emission at mains port using AMN	2.6dB (9kHz to 150kHz)
		2.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	1.8 dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.2 dB (150kHz to 30MHz)
4	Radiated Power	3.2dB
5	Radiated Emission	4.5dB (30MHz-1GHz)
		5.1dB (1GHz-6GHz)
		5.4dB (6GHz-18GHz)
6	Radiated Disturbance (disturbance current in a LLAS)	2.4dB (9kHz to 30MHz)

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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 (86-21) 61915666 (86-21) 61915678 e.sgs.china@sgs.com

#### 4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

No tests were sub-contracted.

#### 4.5 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **NVLAP (LAB CODE: 201034-0)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

- **FCC (Designation Number: CN5033)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

#### 4.6 Deviation from Standards

None

#### 4.7 Abnormalities from Standard Conditions

None

#### 4.8 Monitoring of EUT for All Immunity Test

Visual: Working status of EUT.



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## 5 Equipment List

Radiated Emissions (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
EMI test receiver	Rohde & Schwarz	ESU40	SHEM051-1	2020-12-20	2021-12-19
CONTROLLER	INNCO	CO200	SHEM047-1	N/A	N/A
ANTENNA MAST	INNCO	MA400-EP	SHEM047-2	N/A	N/A
TURN DEVICE	INNCO	DE 3600-RH	SHEM047-3	N/A	N/A
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM048-1	2019-10-14	2021-10-13
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
Low Amplifier	CLAVIIO	BDLNA-0001-412010	SHEM164-1	2020-08-13	2021-08-12

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-2	2020-08-13	2021-08-12

Radiated Immunity (80MHz-6GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMJ100A	SHEM141-1	2020-08-13	2021-08-12
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2020-04-15	2021-04-14
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2020-04-15	2021-04-14
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	2020-12-20	2021-12-19
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2020-04-15	2021-04-14
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6105	SHEM134-1	2020-08-13	2021-08-12

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2018-01-25	2021-01-24
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-1~6	2020-09-11	2021-09-10
Digital Multimeter	FLUKE	17B	SHEM043-3	2020-09-09	2021-09-08
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	316	SHEM001-1	2020-12-20	2021-12-19



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## 6 Emission Test Results

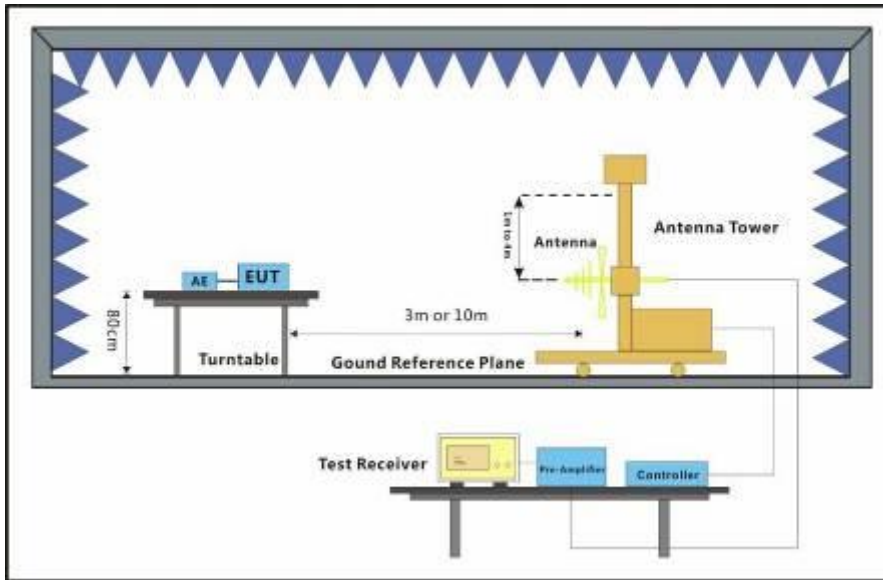
### 6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 61000-6-3:2007 +A1:2011  
 Test Method: CISPR 16-2-3  
 Frequency Range: 30MHz to 1GHz  
 Measurement Distance: 3m  
 Limit:  
 30MHz-230MHz 40 dB(μV/m) quasi-peak  
 230MHz-1GHz 47 dB(μV/m) quasi-peak  
 Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHZ

#### 6.1.1 E.U.T. Operation

Operating Environment:  
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar  
 Test mode a: Running mode: Keep EUT running continuously.

#### 6.1.2 Test Setup Diagram



#### 6.1.3 Measurement Data

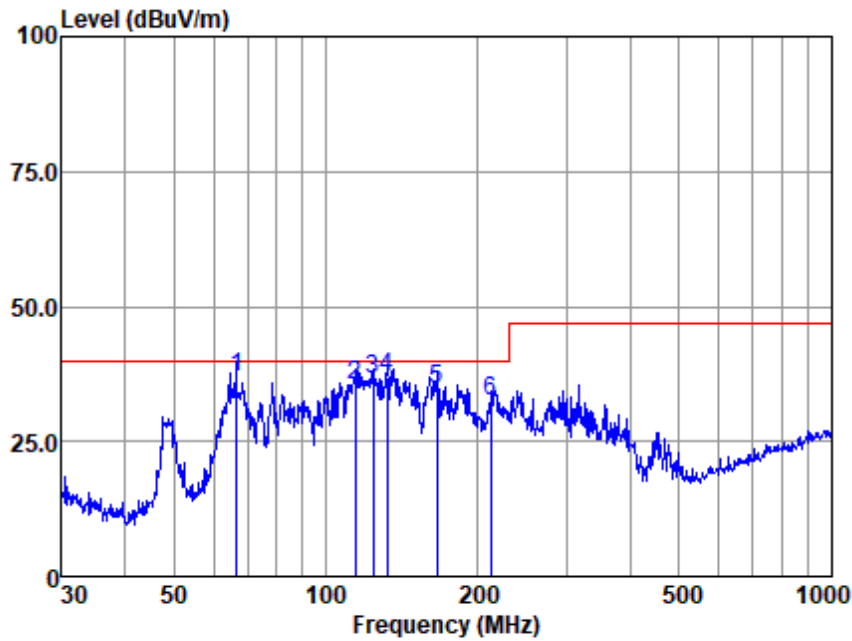
An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.



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Mode:a; Polarization:Horizontal



Antenna Polarity :HORIZONTAL  
 EUT/Project :9789MD  
 Test mode :a

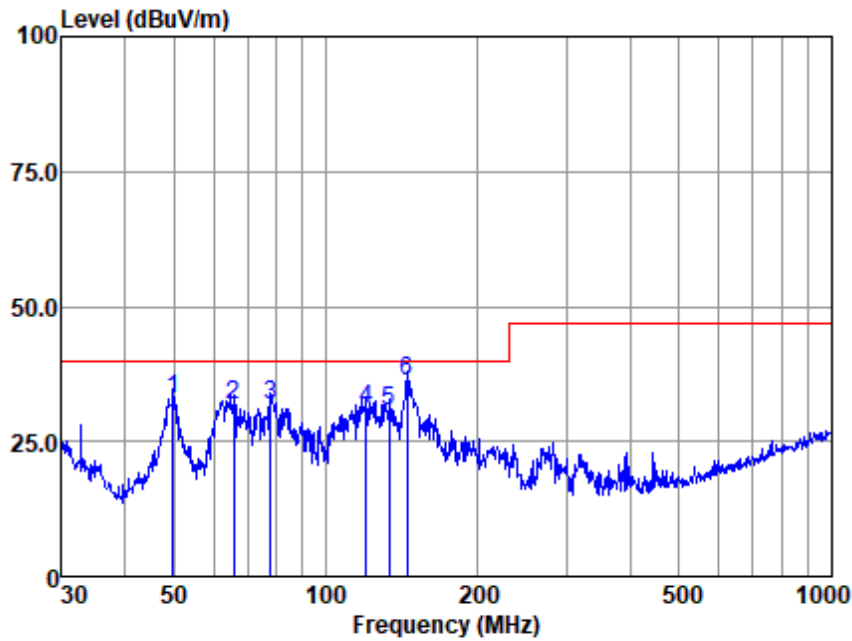
	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	66.499	65.94	12.18	1.18	42.30	37.00	40.00	-3.00 QP
2	114.515	65.68	10.51	1.60	42.27	35.52	40.00	-4.48 QP
3	124.133	65.72	11.35	1.68	42.25	36.50	40.00	-3.50 QP
4	132.221	65.32	11.97	1.73	42.23	36.79	40.00	-3.21 QP
5	166.068	62.03	12.96	1.96	42.20	34.75	40.00	-5.25 QP
6	212.270	62.45	9.75	2.33	42.17	32.36	40.00	-7.64 QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Mode:a; Polarization:Vertical



Antenna Polarity :VERTICAL  
 EUT/Project :9789MD  
 Test mode :a

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
Mhz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	49.707	60.34	13.69	1.00	42.30	32.73	40.00	-7.27 QP
2	65.803	60.49	12.27	1.17	42.30	31.63	40.00	-8.37 QP
3	77.593	63.07	9.79	1.29	42.30	31.85	40.00	-8.15 QP
4	120.277	60.53	11.03	1.65	42.25	30.96	40.00	-9.04 QP
5	133.619	59.20	12.07	1.75	42.23	30.79	40.00	-9.21 QP
6	144.842	63.76	12.70	1.83	42.21	36.08	40.00	-3.92 QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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## 7 Immunity Test Results

### 7.1 Performance Criteria Description in EN IEC 61000-6-1:2019

- Criterion A** The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- Criterion B** The EUT shall continue to operate as intended after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. The performance level may be replaced by a permissible loss of performance. However, during the test degradation of performance is allowed but no change of actual operating state or stored data is allowed. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, either of these may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.
- Criterion C** Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.



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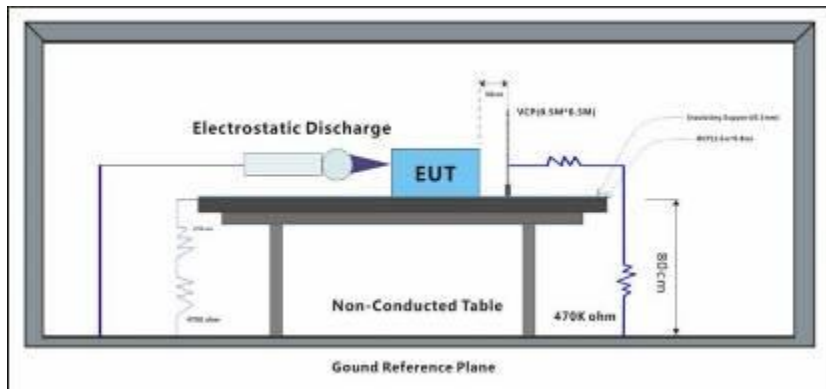
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## 7.2 Electrostatic Discharge

Test Requirement: EN IEC 61000-6-1:2019  
 Test Method: EN 61000-4-2:2009  
 Performance Criterion: B  
 Discharge Impedance: 330Ω/150pF  
 Number of Discharge: Minimum 10 times at each test point  
 Discharge Mode: Single Discharge  
 Discharge Period: 1 second minimum

### 7.2.1 Test Setup Diagram



### 7.2.2 E.U.T. Operation

Operating Environment:  
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar  
 Test mode: a: Running mode: Keep EUT running continuously.

### 7.2.3 Test Results:

Observations: Test Point:  
 1. All insulated enclosure and seams.  
 2. All accessible metal parts of the enclosure.  
 3. All side

Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Contact Discharge	4	+	2	A
Contact Discharge	4	-	2	A
Horizontal Coupling	4	+	3	A
Horizontal Coupling	4	-	3	A
Vertical Coupling	4	+	3	A
Vertical Coupling	4	-	3	A

### Results:

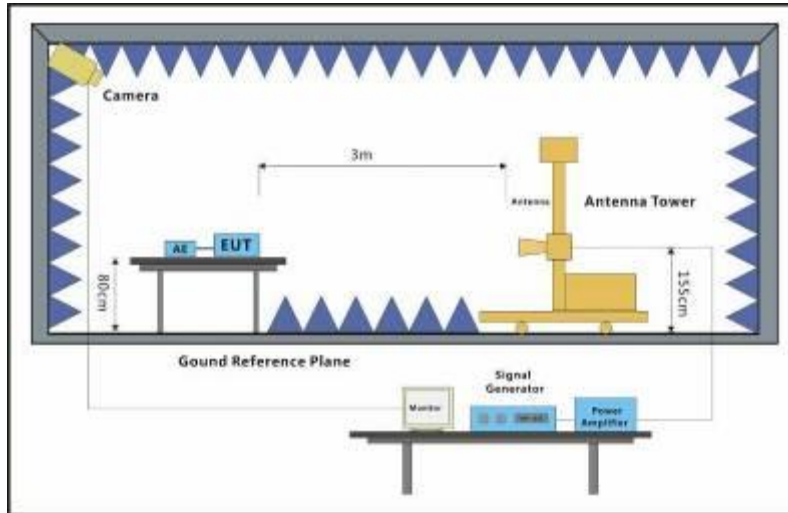
A: No degradation in the performance of the EUT was observed.



### 7.3 Radiated Immunity (80MHz-6GHz)

Test Requirement: EN IEC 61000-6-1:2019  
 Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010  
 Performance Criterion: A  
 Frequency Range: 80MHz to 1GHz, 1.4GHz to 6GHz  
 Antenna Polarisation: Vertical and Horizontal  
 Modulation: 1kHz,80% Amp. Mod,1% increment

#### 7.3.1 Test Setup Diagram



#### 7.3.2 E.U.T. Operation

Operating Environment:  
 Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1020 mbar  
 Test mode: a: Running mode: Keep EUT running continuously.

#### 7.3.3 Test Results:

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	3s	A
80MHz-1GHz	3	Back	3s	A
80MHz-1GHz	3	Left	3s	A
80MHz-1GHz	3	Right	3s	A
80MHz-1GHz	3	Top	3s	A
80MHz-1GHz	3	Underside	3s	A
1.4GHz-6GHz	3	Front	3s	A
1.4GHz-6GHz	3	Back	3s	A
1.4GHz-6GHz	3	Left	3s	A
1.4GHz-6GHz	3	Right	3s	A
1.4GHz-6GHz	3	Top	3s	A
1.4GHz-6GHz	3	Underside	3s	A

#### Results:

A: No degradation in the performance of the EUT was observed.



## 8 Photographs

### 8.1 Radiated Emissions (30MHz-1GHz) Test Setup



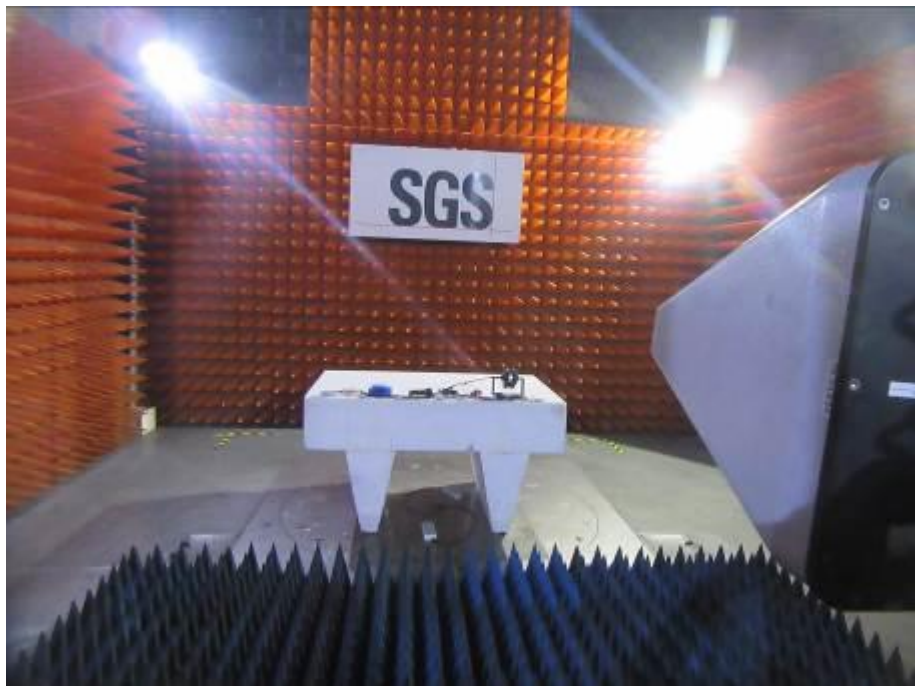
### 8.2 Electrostatic Discharge Test Setup



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### 8.3 Radiated Immunity (80MHz-6GHz) Test Setup



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### 8.4 EUT Constructional Details (EUT Photos)



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- End of the Report -



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