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Page 1 of 1

VERIFICATION OF EMC COMPLIANCE

Verification No.: GZEM1905012908ATV
Applicant: WuHan Sunon Electronics Co., Ltd
Address of Applicant: Yougang village Qianchuan Street, Huangpi district, WuHan,
Hubei Province
Manufacturer: The same as applicant
Address of Manufacturer: The same as applicant
Factory: The same as applicant
Address of Factory: The same as applicant
Product Description: quartz watch movement
Model No: PE90, PE11, SL68, AD988, SL39, SL25, SL28, PE39, PE21,
SL32, SL33, PE41, PE45, PE42, PE46, PE48, PE49, SP68, SP25,
SP28, PE10, PE25, PE26, PE27, PE28, PE50, PE60, PE70,
PE80, PE81, PE93
Trade Mark: SUNON
Sufficient samples of the product have been tested and found to be in conformity with
Test Standards: EN 61000-6-3:2007 +A1:2011
EN 61000-6-1:2007

As shown in the

Test Report Number(s): GZEM190501290801

This verification of EMC Compliance has been granted to the applicant based on the results of the tests, performed by laboratory of
SGS-CSTC Standards Technical Services Co., Ltd. on the sample of the above-mentioned product in accordance with the provisions of the
relevant specific standards under Directive 2014/30/EU.

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.



Kobe Jian
Lab Manager



Date: 2019-06-12



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Report No.: GZEM190501290801
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TEST REPORT

Application No.: GZEM1905012908AT
Applicant: WuHan Sunon Electronics Co., Ltd
Address of Applicant: Yougang village Qianchuan Street, Huangpi district, WuHan, Hubei Province
Manufacturer: The same as applicant
Address of Manufacturer: The same as applicant
Factory: The same as applicant
Address of Factory: The same as applicant
Equipment Under Test (EUT):
EUT Name: quartz watch movement
Model No.: PE90, PE11, SL68, AD988, SL39, SL25, SL28, PE39, PE21, SL32, SL33, PE41, PE45, PE42, PE46, PE48, PE49, SP68, SP25, SP28, PE10, PE25, PE26, PE27, PE28, PE50, PE60, PE70, PE80, PE81, PE93

☐ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.

Trade Mark: SUNON
Standard(s) : EN 61000-6-3:2007 +A1:2011
EN 61000-6-1:2007

Date of Receipt: 2019-05-18
Date of Test: 2019-05-22 to 2019-05-25
Date of Issue: 2019-06-12

Test Result:	Pass*
---------------------	--------------

* 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.



Kobe Jian
Lab 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.


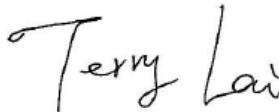


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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2019-06-12		Original

Authorized for issue by:			
Tested By			2019-05-22 to 2019-05-25
	Allen_Zhou /Project Engineer		Date
Checked By			2019-06-12
	Terry_Lai /Reviewer		Date



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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 61000-6-1:2007	EN 61000-4-2:2009	4kV Contact Discharge 8kV Air Discharge	Pass
Radiated Immunity (80MHz-2.7GHz)	EN 61000-6-1:2007	EN 61000-4-3:2006 +A1:2008+A2:2010	3V/m, 80%, 1kHz Amp. Mod. 3V/m, 80%, 1kHz Amp. Mod. 1V/m, 80%, 1kHz Amp. Mod.	Pass

■ Declaration of EUT Family Grouping:

Model No.:

PE90, PE11, SL68, AD988, SL39, SL25, SL28, PE39, PE21, SL32, SL33, PE41, PE45, PE42, PE46, PE48, PE49, SP68, SP25, SP28, PE10, PE25, PE26, PE27, PE28, PE50, PE60, PE70, PE80, PE81, PE93

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference on model number.

Therefore only one model PE90 was tested in this report.



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4 General Information

4.1 Details of E.U.T.

Power Supply: DC 1.5V with a size of "LR41" button cell
Cable: N/A

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 Disturbance Voltage at Mains Terminals	$\pm 3.63\text{dB}$ (9kHz to 150kHz)
		$\pm 3.22\text{dB}$ (150kHz to 30MHz)
2	Disturbance Power	$\pm 3.78\text{dB}$
3	Radiated Emissions	$\pm 5.0\text{dB}$ (30MHz-1GHz)
		$\pm 5.0\text{dB}$ (1GHz-6GHz)
4	Radiated Immunity	$\pm 2.18\text{dB}$ (80MHz-3GHz)
5	Conducted Immunity	$\pm 3.5\text{dB}$ (150kHz-230MHz)
6	Electrostatic Discharge	$\pm 6\%$
7	EFT (Electrical Fast Transients)	$\pm 4\%$
8	Surge Immunity	$\pm 6\%$
9	Voltage Dips and Interruptions	$\pm 4\%$
10	CISPR 20 Immunity	$\pm 1.5\text{dB}$
11	Temperature	$\pm 0.4^{\circ}\text{C}$
12	Humidity	$\pm 1.3\%$
13	DC power	$\pm 0.5\%$

4.4 Test Location

All tests were performed at:

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198 Kezhu Road, Sciencetech Park, Guangzhou Economic & Technology Development District,
Guangzhou, China 510663

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No tests were sub-contracted.



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4.5 Test Facility

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

● NVLAP (Lab Code: 200611-0)

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 200611-0.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

● ACMA

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian C-Tick mark as a result of our NVLAP accreditation.

● SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

● CNAS (Lab Code: L0167)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been assessed and in compliance with CNAS-CL01:2006 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

● FCC Recognized 2.948 Listed Test Firm(Registration No.: 282399)

SGS-CSTC Standards Technical Services 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 282399, May 31, 2002.

● FCC Recognized Accredited Test Firm(Registration No.: 486818)

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818, Jul 13, 2017.

● Industry Canada (Registration No.: 4620B, CAB identifier: CN0052)

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

● VCCI (Registration No.: R-12460, C-12584, G-10449 and T-11179)

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-10449 and T-11179 respectively.

● CBTL (Lab Code: TL129)

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2005, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.



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4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

4.8 Monitoring of EUT for All Immunity Test

Visual: N/A

Audio: N/A

Other: point rotating



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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	ESIB26	EMC0522	2019-01-20	2020-01-19
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC0056	2019-01-20	2020-01-19
Chamber cable	HangTianXing	N/A	EMC0542	2017-06-30	2019-06-30
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9160	EMC2025	2016-09-08	2019-09-07
Trilog Broadband Antenna 30MHz-1GHz	SCHWARZBECKME SS-ELEKTRONIK	VULB 9168	SEM003-18	2016-06-29	2019-06-28
Bi-log Type Antenna	Schaffner -Chase	CBL6112B	EMC0524	2016-09-08	2019-09-07
Bi-log Type Antenna	Schaffner -Chase	CBL6143	EMC0519	2017-05-04	2020-05-03
Horn Antenna 1GHz-18GHz	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2016-09-09	2019-09-08
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2019-01-11	2020-01-10
Amplifier	HP	8447F	EMC2065	2018-06-01	2019-05-31
Pre-Amplifier MH648A	ANRITSU CORP	MH648A	EMC2086	2018-11-19	2019-11-18
Active Loop Antenna	EMCO	6502	EMC0523	2018-03-05	2020-03-04
High Pass Filter(915MHz)	FSY MICROWAVE	HM1465-9SS	EMC2079	2019-01-11	2020-01-10
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2019-01-11	2020-01-10
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2017-06-18	2019-06-18
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2017-12-19	2019-12-18
MXE EMI Receiver	Keysight	N9038A	EMC2139	2018-11-19	2019-11-18
EXA Signal Analyzer	Keysight	N9010A	EMC2138	2018-11-19	2019-11-18
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A



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Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
ESD Simulator	TESEQ AG	NSG 435	EMC2071	2019-03-07	2020-03-06
ESD Ground Plane	SGS	3m x 3m	EMC0804	N/A	N/A
Temperature & Humidity	Shanghai Meteorological Instrument Factory Co., Ltd.	ZJ1-2B	EMC0078	2018-07-05	2019-07-04



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Radiated Immunity (80MHz-2.7GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Compact 3m Semi-Anechoic Chamber	ChangZhou ZhongYu	N/A	EMC0525	2016-12-04	2019-12-03
Laser Probe Interface	RF Microwave Instrumentation	FI7000	EMC2089	N/A	N/A
Open Switch And Control Unit	R&S	OSP130	EMC2090	N/A	N/A
Broadband Amplifier(80MHz~1GHz/250W)	R&S	BBA150	EMC2091	2019-01-11	2020-01-10
Broadband Amplifier(800MHz~3GHz/110W)	R&S	BBA150	EMC2092	2019-01-11	2020-01-10
Signal Generator	R&S	SMB100A	EMC2093	2019-01-11	2020-01-10
Laser Probe	RF Microwave Instrumentation	FL7006	EMC2094	2019-02-25	2020-02-24
NRP-Z91 PowerSensor 6GHz	R&S	NPR-Z91	EMC2095	2019-01-11	2020-01-10
NRP-Z91 PowerSensor 6GHz	R&S	NPR-Z91	EMC2096	2019-01-11	2020-01-10
High-Gain Log-preiodicAntenna	R&S	HL046E	EMC2097	2019-02-15	2022-02-14
Stacked Logarithmic-Periodic BroadbandAntenna(0.7~	SCHWARZBECK MESS - ELEKTRONIK	STLP 9149	SEM003-21	2018-09-18	2021-09-17
Broadband Amplifier (2.5~6GHZ/30W)	R&S	BBA150	EMC2105	2018-10-18	2019-10-17
RI Cable	R&S	7m	EMC2098	2018-05-23	2019-05-22
Oscilloscope	Tektronix	TDS3052C	EMC2055	2019-01-07	2020-01-08
Monitor System	Mitsubish Corp.	M-0552AB	EMC0909	N/A	N/A
Test Software EMC32	Rohde & Schwarz	Ver. 9.26.00	GZE100-63	N/A	N/A

General used equipment

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2018-07-20	2019-07-19
DMM	Fluke	73	EMC0007	2018-07-19	2019-07-18



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6 Emission Test Results

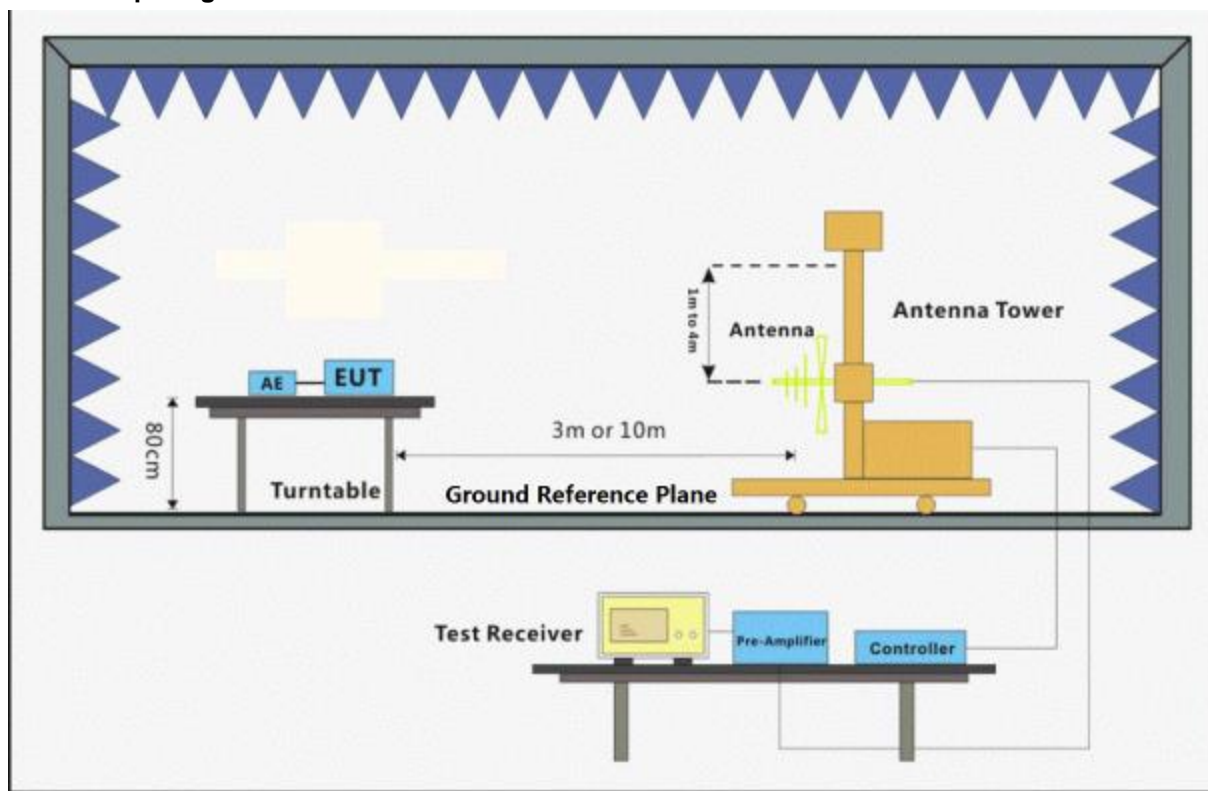
6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 61000-6-3:2007 +A1:2011
Test Method: CISPR 16-2-3
Frequency Range: 30MHz to 1GHz
Measurement Distance: 10m
Limit:
30MHz-230MHz 30 dB(μ V/m) quasi-peak
230MHz-1GHz 37 dB(μ V/m) quasi-peak
Detector: Peak for pre-scan (120kHz resolution bandwidth) 30M to 1000MHz

6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 23 °C Humidity: 54 % RH Atmospheric Pressure: 1020 mbar
Test mode a: Test the EUT in clock mode.

6.1.2 Test Setup Diagram

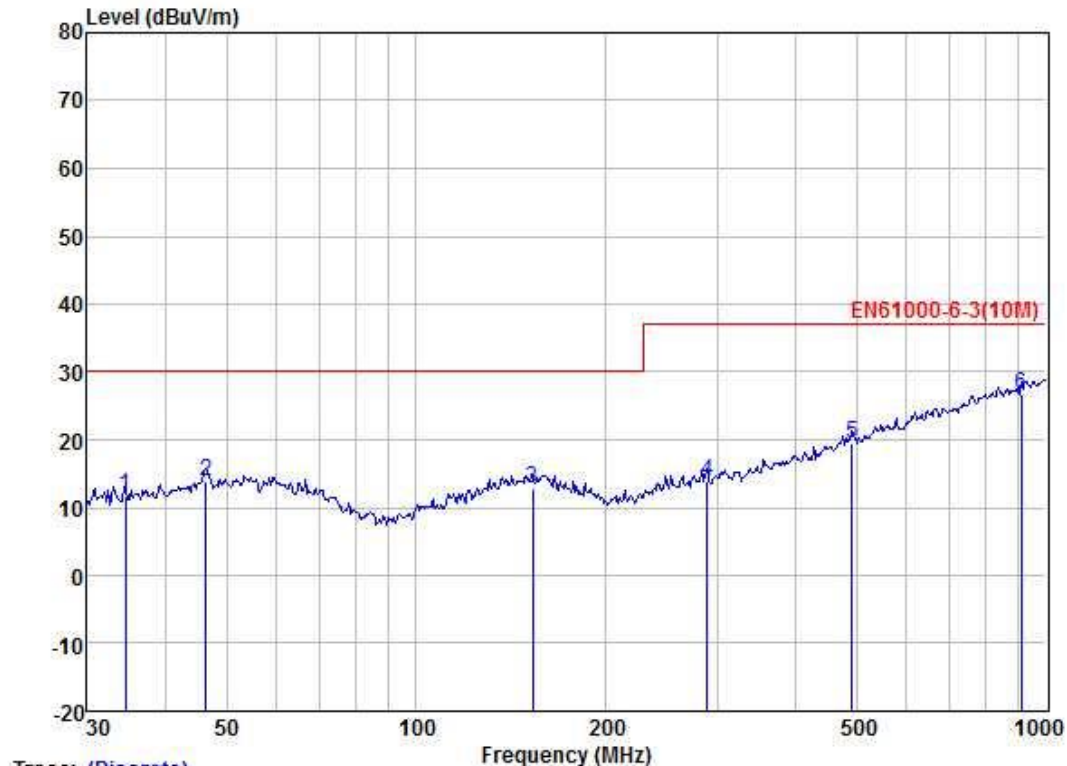


6.1.3 Measurement Data

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.

Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor

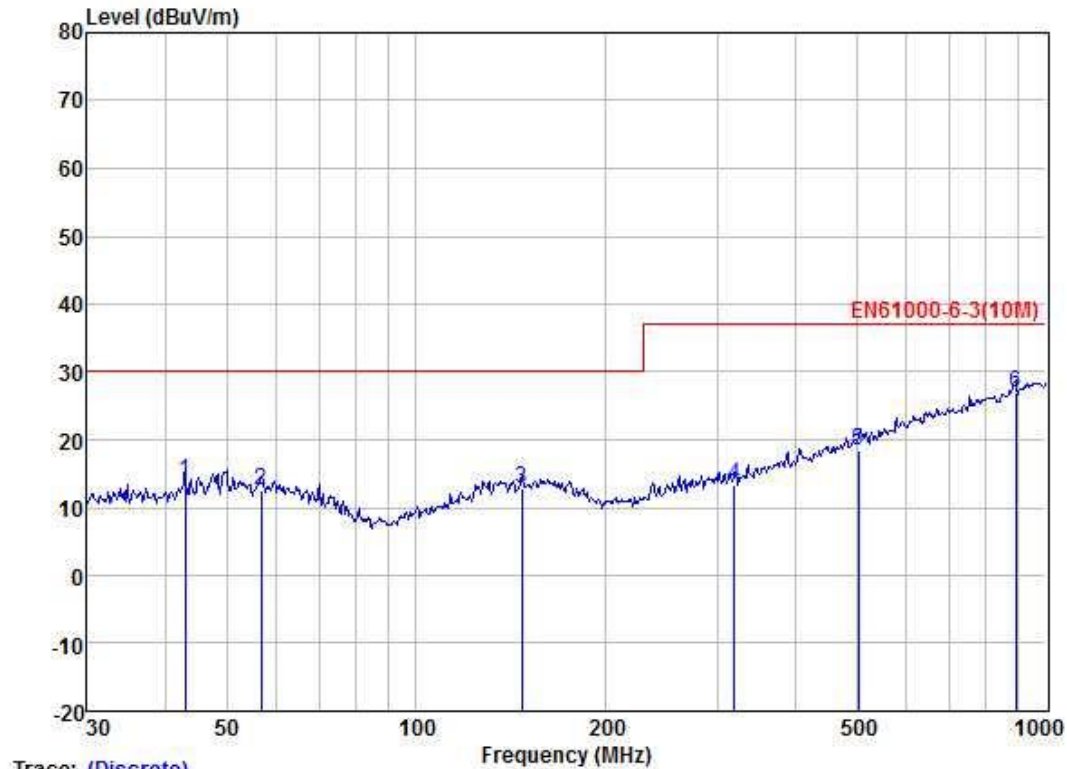
Mode:a; Polarization:Horizontal



Trace: (Discrete)

	Read	Antenna	Cable	Preamp	Limit	Over		
Freq	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	34.517	24.99	12.59	0.60	26.53	11.65	30.00	-18.35 HORIZONTAL QP
2	46.340	25.91	13.69	0.70	26.50	13.80	30.00	-16.20 HORIZONTAL QP
3	153.200	24.73	13.22	1.31	26.44	12.82	30.00	-17.18 HORIZONTAL QP
4	290.017	25.68	13.15	1.76	26.73	13.86	37.00	-23.14 HORIZONTAL QP
5	492.469	27.01	17.52	2.39	27.46	19.46	37.00	-17.54 HORIZONTAL QP
6	912.862	27.33	23.10	3.13	26.99	26.57	37.00	-10.43 HORIZONTAL QP

Mode:a; Polarization:Vertical



Trace: (Discrete)

	ReadAntenna	Cable	Preamp	Limit	Over				
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	42.900	26.56	13.07	0.66	26.51	13.78	30.00	-16.22	VERTICAL QP
2	56.792	24.57	13.69	0.80	26.49	12.57	30.00	-17.43	VERTICAL QP
3	146.888	25.08	12.92	1.29	26.43	12.86	30.00	-17.14	VERTICAL QP
4	319.937	24.79	13.58	1.87	27.01	13.23	37.00	-23.77	VERTICAL QP
5	502.940	25.74	17.64	2.40	27.47	18.31	37.00	-18.69	VERTICAL QP
6	893.857	27.82	22.97	3.10	27.08	26.81	37.00	-10.19	VERTICAL QP



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7 Immunity Test Results

7.1 Performance Criteria Description in EN 61000-6-1:2007

- Criterion A** The apparatus 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 apparatus 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, either of these may be derived from the product description and documentation and what the user may reasonably expect from the apparatus if used as intended.
- Criterion B** The apparatus 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 apparatus is used as intended. The performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed. 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 apparatus if used as intended.
- Criterion C** Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.



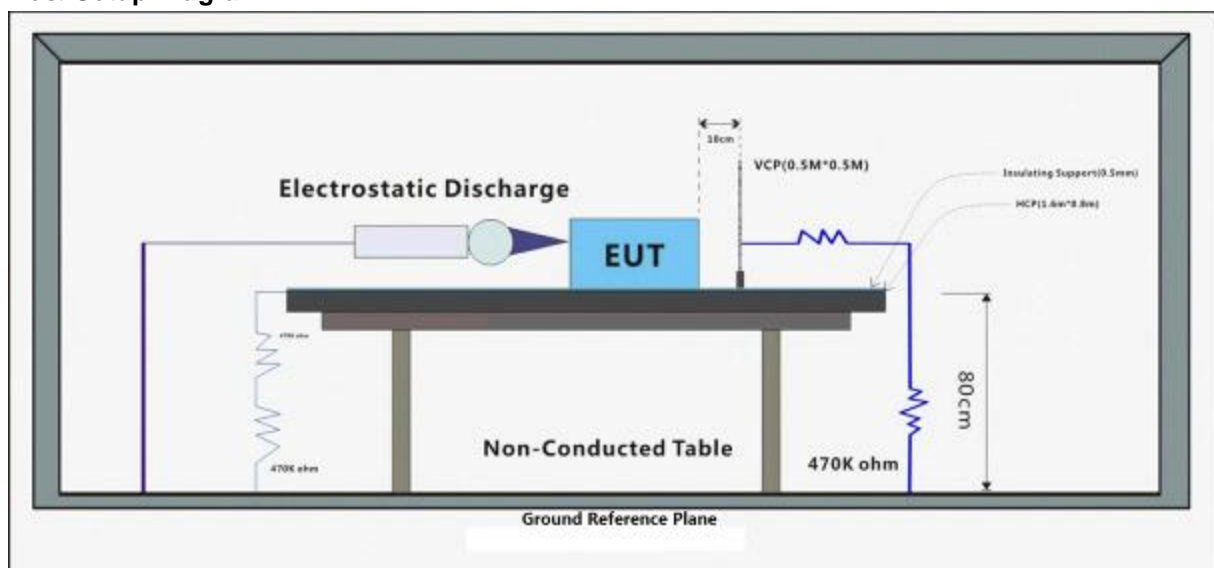
7.2 Electrostatic Discharge

Test Requirement: EN 61000-6-1:2007
 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 E.U.T. Operation

Operating Environment:
 Temperature: 25.6 °C Humidity: 53.3 % RH Atmospheric Pressure: 1020 mbar
 Test Mode: a: Test the EUT in clock mode.

7.2.2 Test Setup Diagram





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7.2.3 Test Results

- Test Point:
- Observations:
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.



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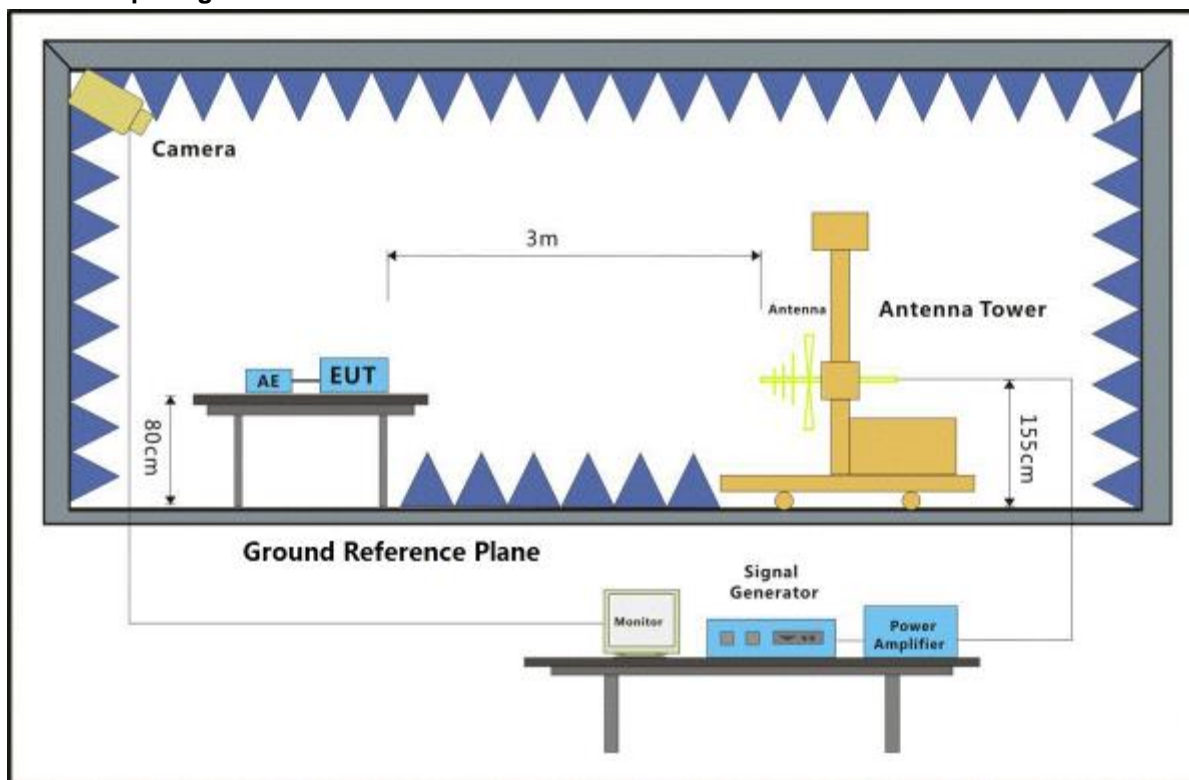
7.3 Radiated Immunity (80MHz-2.7GHz)

Test Requirement: EN 61000-6-1:2007
Test Method: EN 61000-4-3:2006 +A1:2008+A2:2010
Performance Criterion: A
Frequency Range: 80MHz to 1GHz, 1.4GHz to 2GHz, 2GHz to 2.7GHz
Antenna Polarisation: Vertical and Horizontal
Modulation: 1kHz,80% Amp. Mod,1% increment

7.3.1 E.U.T. Operation

Operating Environment:
Temperature: 23 °C Humidity: 52 % RH Atmospheric Pressure: 1020 mbar
Test Mode: a: Test the EUT in clock mode.

7.3.2 Test Setup Diagram





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7.3.3 Test Results

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Underside	2s	A
1.4GHz-2GHz	3	Front	2s	A
1.4GHz-2GHz	3	Back	2s	A
1.4GHz-2GHz	3	Left	2s	A
1.4GHz-2GHz	3	Right	2s	A
1.4GHz-2GHz	3	Top	2s	A
1.4GHz-2GHz	3	Underside	2s	A
2GHz-2.7GHz	1	Front	2s	A
2GHz-2.7GHz	1	Back	2s	A
2GHz-2.7GHz	1	Left	2s	A
2GHz-2.7GHz	1	Right	2s	A
2GHz-2.7GHz	1	Top	2s	A
2GHz-2.7GHz	1	Underside	2s	A

Results:

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



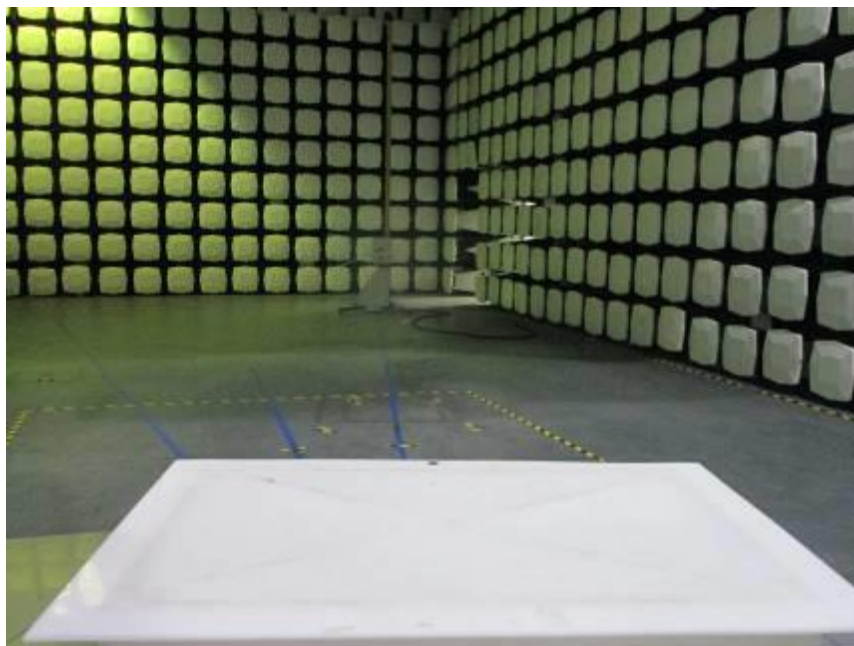
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8 Photographs

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



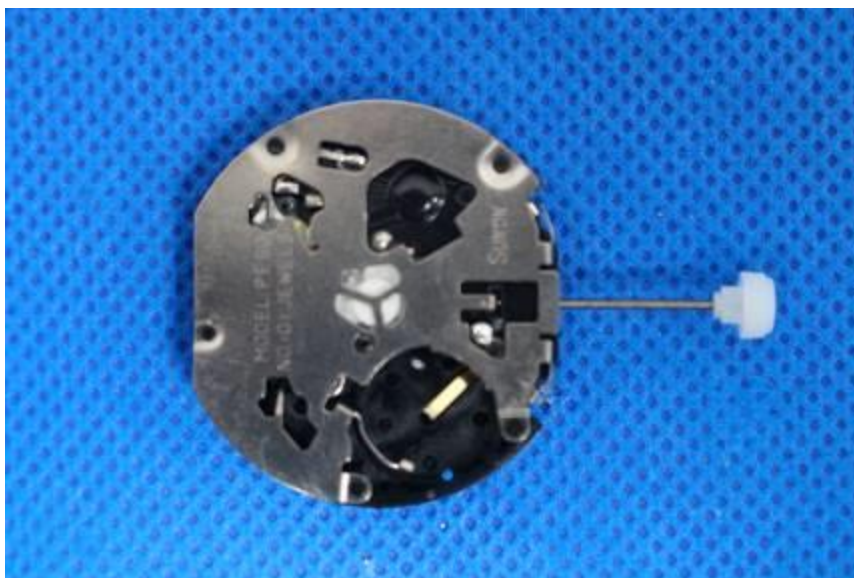
8.2 Electrostatic Discharge Test Setup



8.3 Radiated Immunity (80MHz-2.7GHz) Test Setup



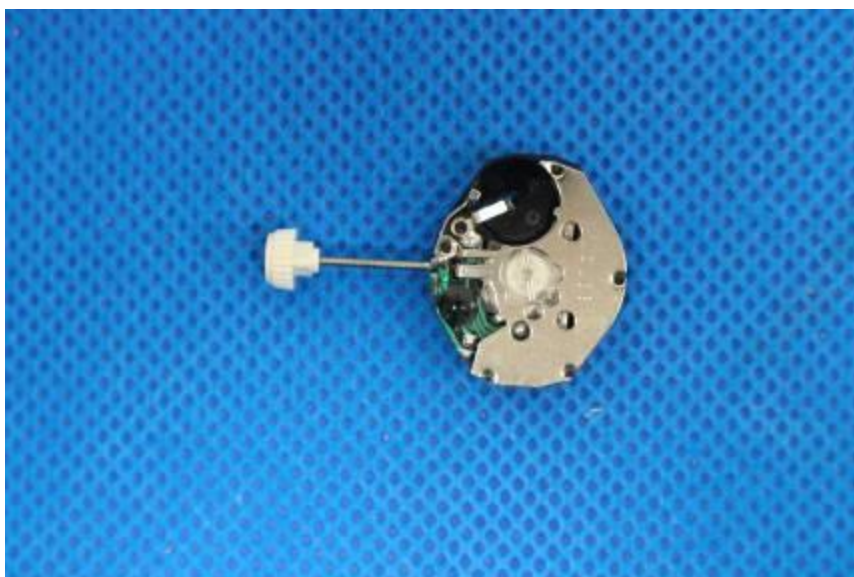
8.4 EUT Constructional Details

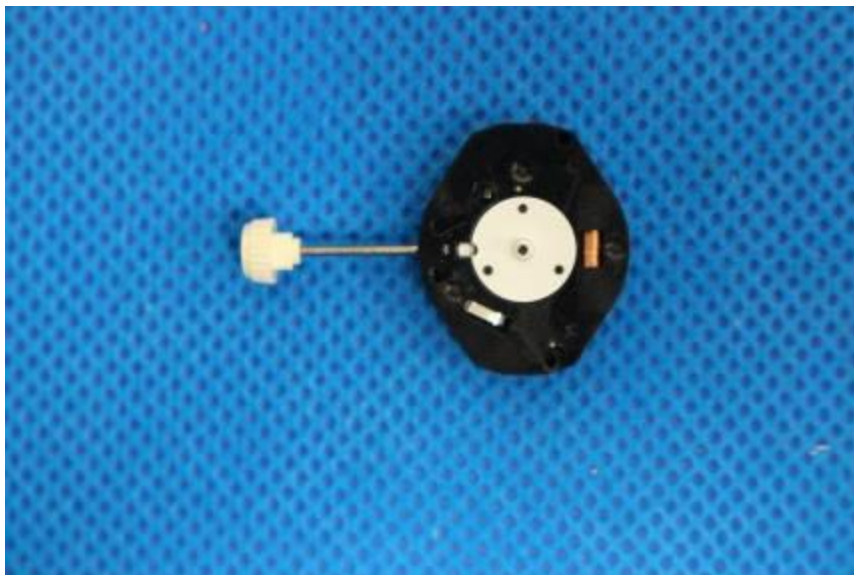






For model SL68





--End of Report--