

TEST REPORT

Application No.: SHEM2304001953HS

Applicant:

Address of Applicant:

Manufacturer:

Address of Manufacturer:

Factory:

Address of Factory:

Equipment Under Test (EUT):

EUT Name: Household smoke alarm

Model No.: KD-127D, KD-127A, KD-127B, KD-127C, KD-127E ♣

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

Standard(s) : EN IEC 61000-6-3: 2021
EN 50130-4: 2011 +A1:2014

Date of Receipt: 2023-04-07

Date of Test: 2023-04-10 to 2023-04-12

Date of Issue: 2023-04-12

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan


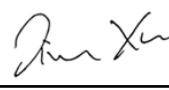
Parlam Zhan
Laboratory Manager



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Revision Record			
Version	Description	Date	Remark
00	Original	2023-04-12	/

Authorized for issue by:			
			
		Leo Xu/Project Engineer	
			
		Jim Xu/Reviewer	



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2 Test Summary

Emission Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions (30MHz-1GHz)	EN IEC 61000-6-3: 2021	CISPR 16-2-3	Table 3.1	Pass

Immunity Part				
Item	Standard	Method	Requirement	Result
Electrostatic Discharge	EN 50130-4: 2011 +A1:2014	EN 61000-4-2:2009	6kV Contact Discharge, 2,4,8kV Air Discharge	Pass
Radiated Immunity(80MHz- 2.7GHz)		EN IEC 61000-4-3: 2020	10V/m, 80%, 1kHz sinusoidal Amp. Mod.	Pass

Note: There are series models mentioned in this report and they are the similar in electrical and electronic characters. Only the model KD-127D was tested since their differences were model number and appearance.



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4 General Information

4.1 Details of E.U.T.

Power supply:	DC9V
Maximum Clock Frequency:	<108MHz

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
--	--	--	--

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty & Decision Rule

Measurement Uncertainty:

No.	Item	Measurement Uncertainty (U_{Lab})	U_{CISPR}
1	Conducted Emission at mains port using AMN	3.4dB (9kHz to 150kHz)	3.8dB (9kHz to 150kHz)
		2.9dB (150kHz to 30MHz)	3.4dB (150kHz to 30MHz)
2	Conducted Emission at mains port using VP	2.2dB (9kHz to 30MHz)	2.9dB (9kHz to 30MHz)
3	Conducted Emission at telecommunication port using AAN	4.6dB (150kHz to 30MHz)	5.0dB (150kHz to 30MHz)
4	Radiated Power	3.4dB (30MHz to 300MHz)	4.5dB (30MHz to 300MHz)
5	Radiated emission	5.7dB (30MHz-1GHz)	6.3dB (30MHz-1GHz)
		4.8dB (1GHz-6GHz)	5.2dB (1GHz-6GHz)
		5.0dB (6GHz-18GHz)	5.5dB (6GHz-18GHz)
6	Radiated disturbance (disturbance current in a LLAS)	2.6dB (9kHz to 30MHz)	3.3dB (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.

Decision Rule:

- CISPR 16-4-2 for emission measurements is as below described.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

U_{LAB} less than U_{CISPR} , therefore:

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g. max. clock frequency, highest internal frequency, antenna gain, cable loss, etc) is provided by the applicant. (if applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (if applicable).

4.5 Test Facility

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

• **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• **FCC (Designation Number: CN1301)**

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



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	2022/12/20	2023/12/19
EMI test receiver	Rohde & Schwarz	ESR7	SHEM201-1	2022/8/02	2023/8/01
CONTROLLER	INNCO	CO2000	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	2021/9/21	2023/9/20
Broadband UHF-VHF ANTENNA	SCHWARZBECK	VULB9168	SHEM202-1	2021/5/7	2023/5/6
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020/5/25	2023/5/24
Pre-amplifier	HP	8447D	SHEM236-1	2022/8/02	2023/8/01
Pre-amplifier	HP	8447D	SHEM143-1	2022/12/20	2023/12/19
RE test Cable	/	/	SHEM173-1&SHEM174-1	2023/1/7	2024/1/6
Test Software	ESE	e3	Version: 6.111221a	N/A	N/A

Electrostatic Discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Electrostatic Discharge Simulator	TESEQ	NSG 437	SHEM041-2	2022/8/02	2023/8/01
Electrostatic Discharge Simulator	3CTEST	EDS20H	SHEM199-1	2022/12/20	2023/12/19



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Radiated Immunity(80MHz-2.7GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Signal generator	Rohde & Schwarz	SMB100A	SHEM194-1	2022/12/20	2023/12/19
Power Meter	Rohde & Schwarz	NRP	SHEM057-1	2022/8/02	2023/8/01
Power meter sensor	Rohde & Schwarz	NRP-Z91	SHEM057-2	2022/8/02	2023/8/01
Antenna	SCHWARZBECK	STLP9128D	SHEM130-1	N/A	N/A
Antenna	SCHWARZBECK	STLP9149	SHEM131-1	N/A	N/A
Amplifier	MILMEGA	AS0840-55-55	SHEM133-1	2022/12/20	2023/12/19
Amplifier	MILMEGA	80RF1000-250	SHEM132-1	2022/12/20	2023/12/19
Amplifier	Rohde & Schwarz	BBA150-E60	SHEM171-1	2022/12/20	2023/12/19
Power meter sensor	Rohde & Schwarz	NRP-Z22	SHEM136-1	2022/8/02	2023/8/01
ElectroMagnetic Field Probe	ETS-Lindgren	HI-6105	SHEM134-1	2022/7/15	2023/7/14
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020/5/25	2023/5/24
Test Software	Rohde & Schwarz	EMC32	Version: 10.20.01	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Digital pressure meter	YONGZHI	DYM3-01	SHEM082-1	2021-01-22	2024-01-21
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-9~10	2022-12-31	2023-12-30
Temperature&humidity recorder	ShangHai weather meter work	ZJ 1-2B	SHEM042-5	2022-08-01	2023-07-31
Digital Temperature& humidity recorder	Jianda Renke	RS-WS-N01-6J	SHEM247-1~8	2023-01-13	2024-01-12
Digital Multimeter	FLUKE	17B+	SHEM271-1	2022-08-26	2023-08-25
Autoformer regulator	Guangzhou bao de	TDGC2-5KVA	SHEM150-1	N/A	N/A
Multi-purpose tong tester	FLUKE	317	SHEM001-2	2022-11-14	2023-11-13



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6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN IEC 61000-6-3: 2021

Test Method: CISPR 16-2-3

Limit:

Test Distance: 10m

30MHz-230MHz 30 dB(μV/m) quasi-peak

230MHz-1GHz 37 dB(μV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to 1000MHz

Test Distance: 3m

30MHz-230MHz 40 dB(μV/m) quasi-peak

230MHz-1GHz 47 dB(μV/m) quasi-peak

Detector: Peak for pre-scan (120kHz resolution bandwidth) 30MHz to 1000MHz

6.1.1 E.U.T. Operation

Operating Environment:

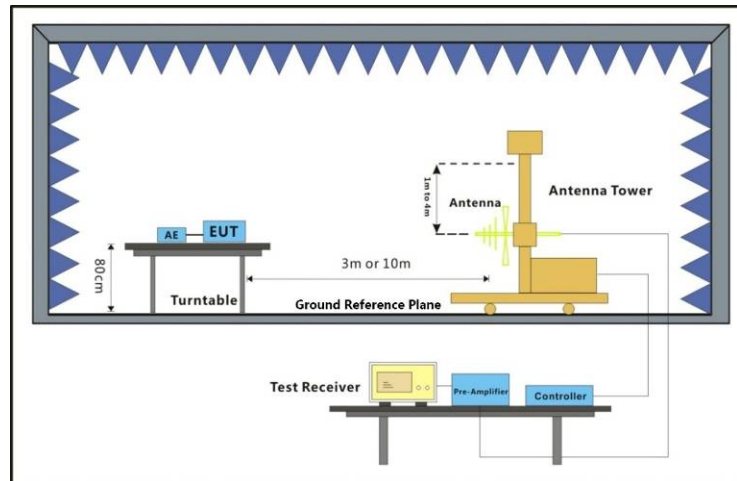
Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT alarming,
Final test	01	Keep EUT standby.



6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

Frequency range: 30MHz-1GHz

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. The red line show in graphic is the limit in standard used in this section.

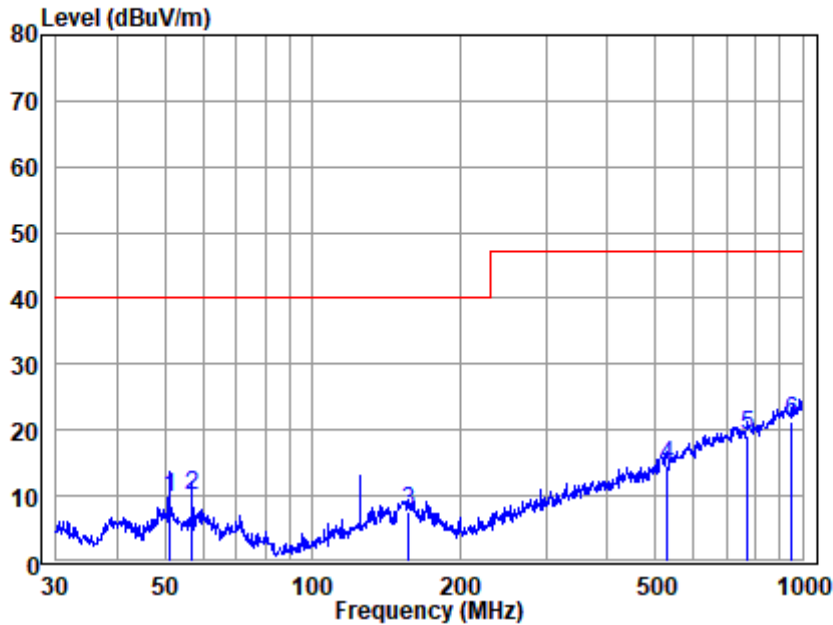
Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor



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Test Mode: 00; Polarity: Horizontal



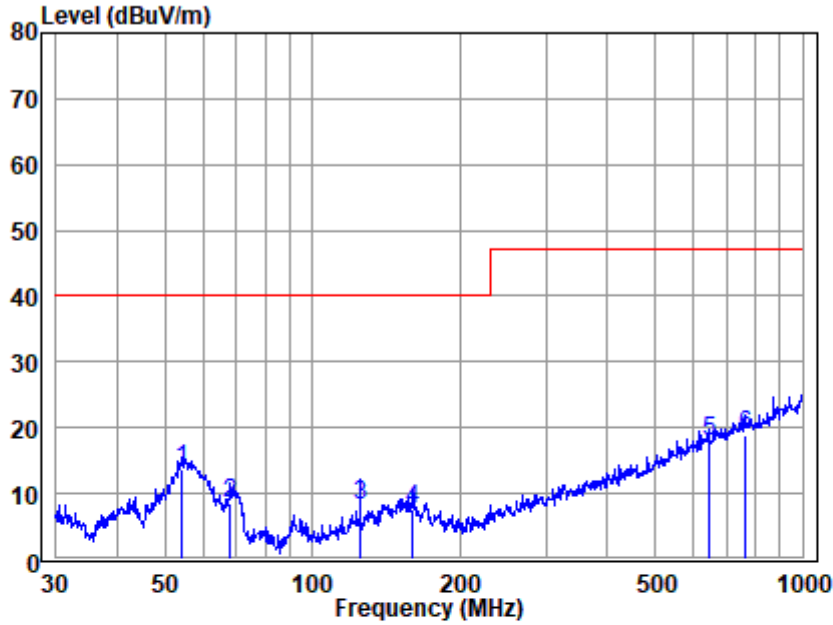
Antenna Polarity :Horizontal
EUT/Project :1953HS
Test mode :00

	Read Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	50.94	28.64	13.81	1.04	33.69	9.80	40.00	-30.20	QP
2	56.79	29.19	13.39	1.15	33.63	10.10	40.00	-29.90	QP
3	156.46	25.07	13.41	2.47	33.47	7.48	40.00	-32.52	QP
4	528.25	24.03	18.25	5.33	33.00	14.61	47.00	-32.39	QP
5	771.45	23.02	22.43	6.36	32.61	19.20	47.00	-27.80	QP
6	948.76	22.46	23.71	7.25	32.00	21.42	47.00	-25.58	QP

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



Test Mode: 00; Polarity: Vertical



Antenna Polarity :Vertical
EUT/Project :1953HS
Test mode :00

	Read Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	54.26	32.52	13.58	1.10	33.66	13.54	40.00	-26.46	QP
2	67.91	29.00	11.86	1.39	33.60	8.65	40.00	-31.35	QP
3	125.01	28.18	11.50	2.15	33.55	8.28	40.00	-31.72	QP
4	160.35	25.12	13.36	2.49	33.46	7.51	40.00	-32.49	QP
5	645.12	24.13	20.65	5.93	32.91	17.80	47.00	-29.20	QP
6	766.06	22.69	22.40	6.37	32.64	18.82	47.00	-28.18	QP

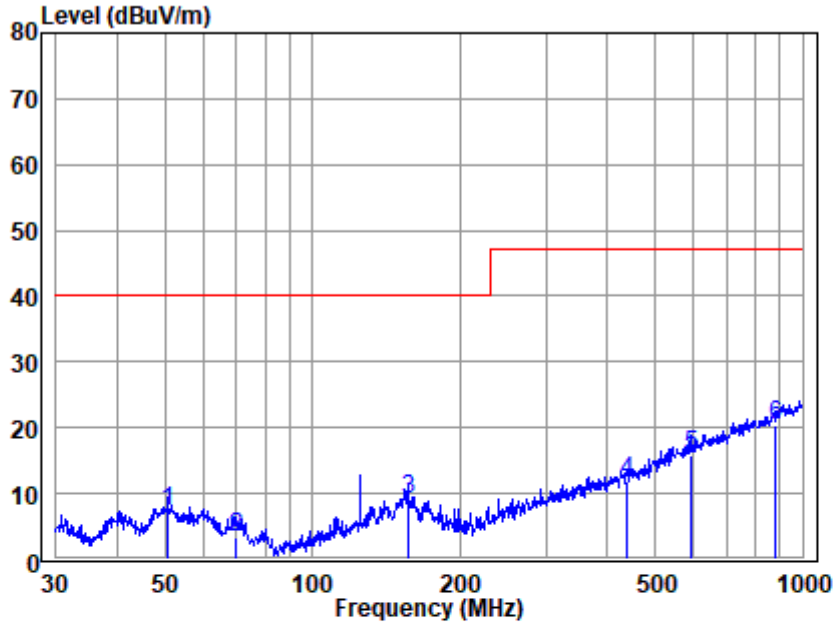
Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Test Mode: 01; Polarity: Horizontal



Antenna Polarity :Horizontal
EUT/Project :1953HS
Test mode :01

	Read Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	50.59	26.14	13.81	1.03	33.69	7.29	40.00	-32.71	QP
2	70.09	24.15	11.44	1.45	33.60	3.44	40.00	-36.56	QP
3	156.46	26.75	13.41	2.47	33.47	9.16	40.00	-30.84	QP
4	438.66	23.40	16.87	4.46	32.98	11.75	47.00	-35.25	QP
5	593.05	23.58	19.69	5.66	33.00	15.93	47.00	-31.07	QP
6	878.32	22.55	23.27	6.92	32.23	20.51	47.00	-26.49	QP

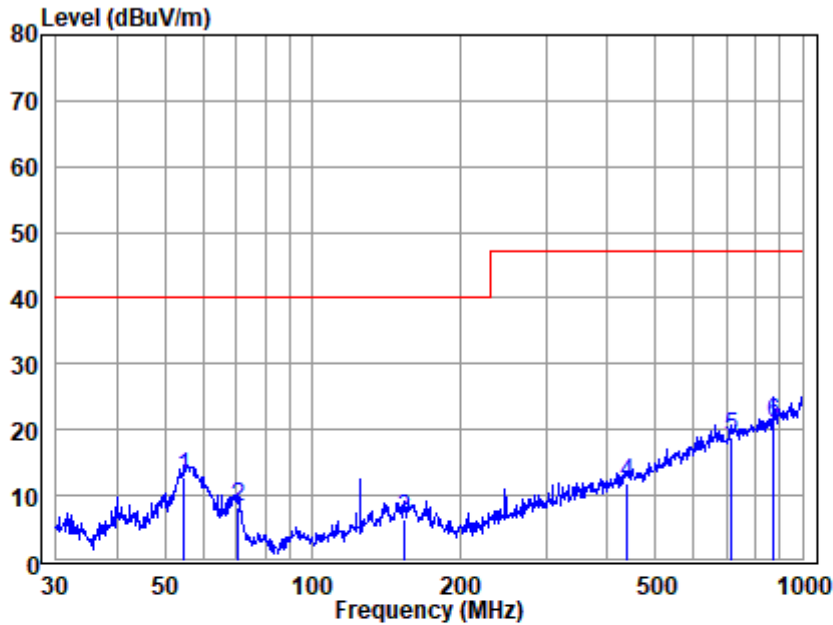
Note: Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Test Mode: 01; Polarity: Vertical



Antenna Polarity :Vertical
EUT/Project :1953HS
Test mode :01

	Read Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dB	dBuv/m	dBuv/m	dB	
1	54.64	31.66	13.56	1.10	33.65	12.67	40.00	-27.33	QP
2	70.58	28.86	11.37	1.47	33.59	8.11	40.00	-31.89	QP
3	154.28	23.83	13.43	2.46	33.48	6.24	40.00	-33.76	QP
4	440.20	23.40	16.91	4.46	32.98	11.79	47.00	-35.21	QP
5	716.68	23.70	21.34	6.52	32.77	18.79	47.00	-28.21	QP
6	875.25	23.03	23.19	6.90	32.25	20.87	47.00	-26.13	QP

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



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7 Immunity Test Results

Performance Criteria Description in EN 50130-4:2011 +A1:2014

There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as a change.

For further details, please refer to Clause 7.4, 8.4, 9.4, 10.4, 11.4, 12.4 and 13.4, of EN 50130-4.

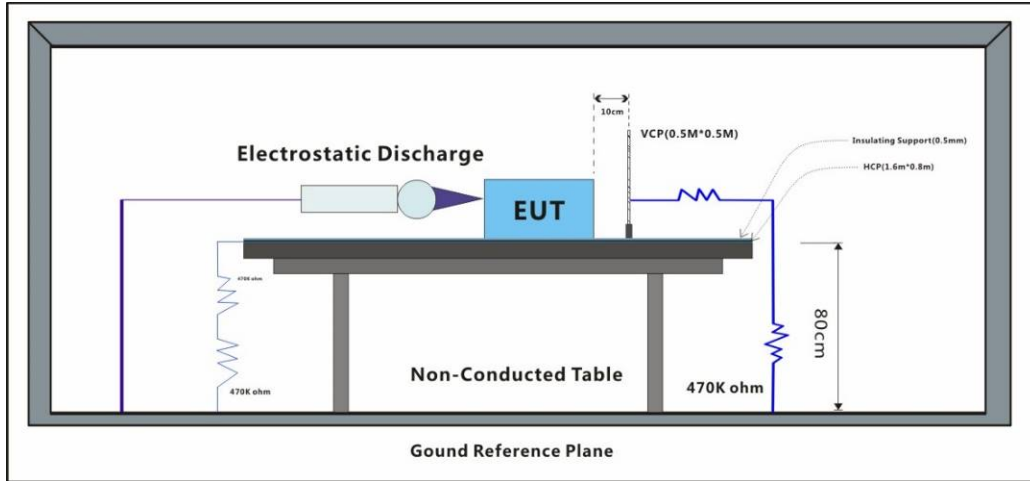


7.1 Electrostatic Discharge

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN 61000-4-2:2009

7.1.1 Test Setup Diagram



7.1.2 E.U.T. Operation

Operating Environment:

Temperature: 22 °C Humidity: 50 % RH Atmospheric Pressure: 1010 mbar

7.1.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT alarming,
Final test	01	Keep EUT standby.

7.1.4 Test Condition and Results:

Number of Discharge: Minimum 10 times at each test point for Air Discharge; Minimum 50 times at each test point for Contact or VCP & HCP Discharge

Discharge Mode: Single Discharge

Discharge Period: 1 second minimum

Test Point 1: All insulated enclosure & seams.

Test Point 2: All accessible metal parts of the enclosure.

Test Point 3: All sides.



Discharge type	Level (kV)	Polarity	Test Point	Result / Observations
Air Discharge	2,4,8	+	1	A
Air Discharge	2,4,8	-	1	A
Horizontal Coupling	6	+	3	A
Horizontal Coupling	6	-	3	A
Vertical Coupling	6	+	3	A
Vertical Coupling	6	-	3	A

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



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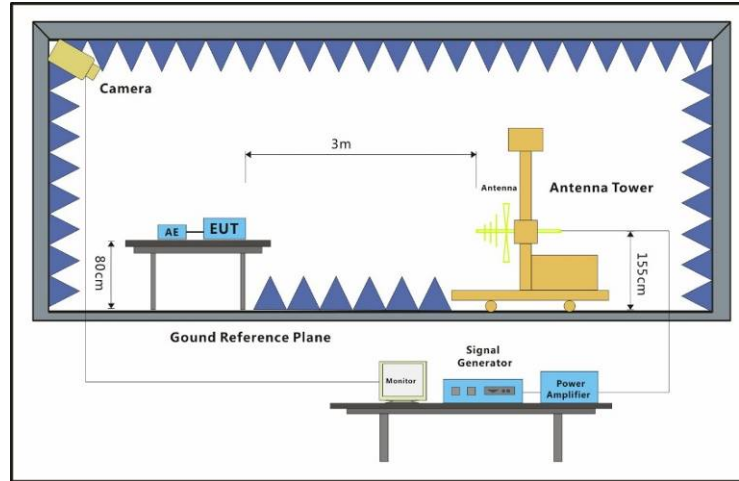
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7.2 Radiated Immunity(80MHz-2.7GHz)

Test Requirement: EN 50130-4: 2011 +A1:2014

Test Method: EN IEC 61000-4-3: 2020

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

7.2.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Keep EUT alarming,
Final test	01	Keep EUT standby.

7.2.4 Test Condition and Results:

Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

Frequency	Level (V/m)	EUT Face	Dwell time	Result / Observations
80MHz-2.7GHz	10	Front	3s	A
80MHz-2.7GHz	10	Back	3s	A
80MHz-2.7GHz	10	Left	3s	A
80MHz-2.7GHz	10	Right	3s	A
80MHz-2.7GHz	10	Top	3s	A
80MHz-2.7GHz	10	Underside	3s	A

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



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
EEC EMC Lab

NO.588 West Jindu Road, Songjiang District, Shanghai China 201612
中国·上海·松江区金都西路588号 邮编: 201612

t (86-21) 61915666

f (86-21) 61915678

www.sgs.com.cn
sgs.china@sgs.com

8 Test Setup Photo

Electrostatic Discharge



Radiated Immunity(80MHz-2.7GHz)



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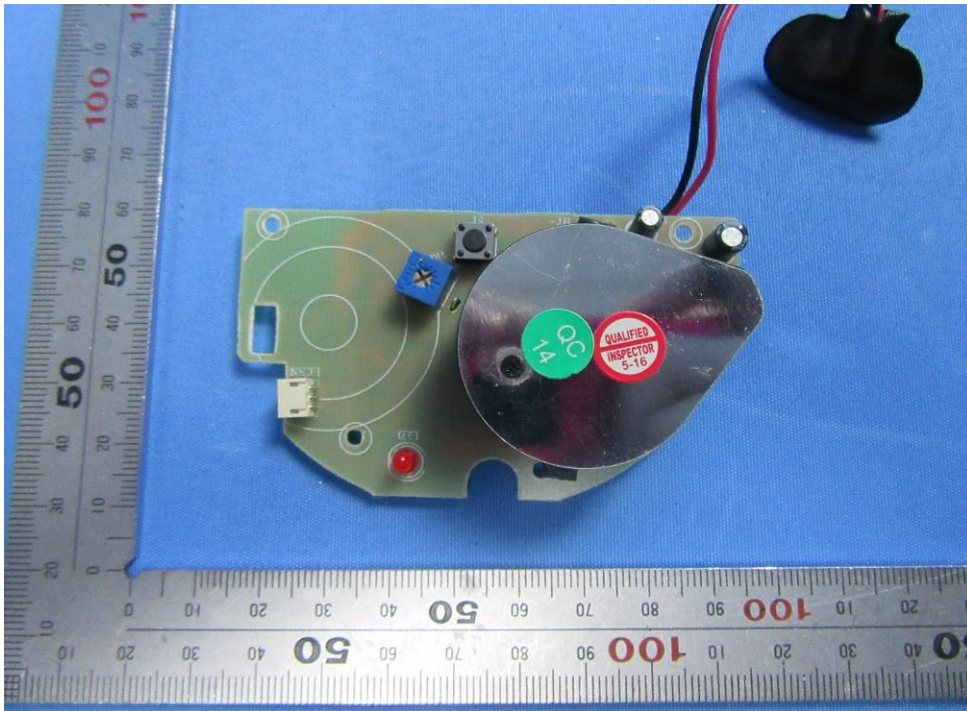
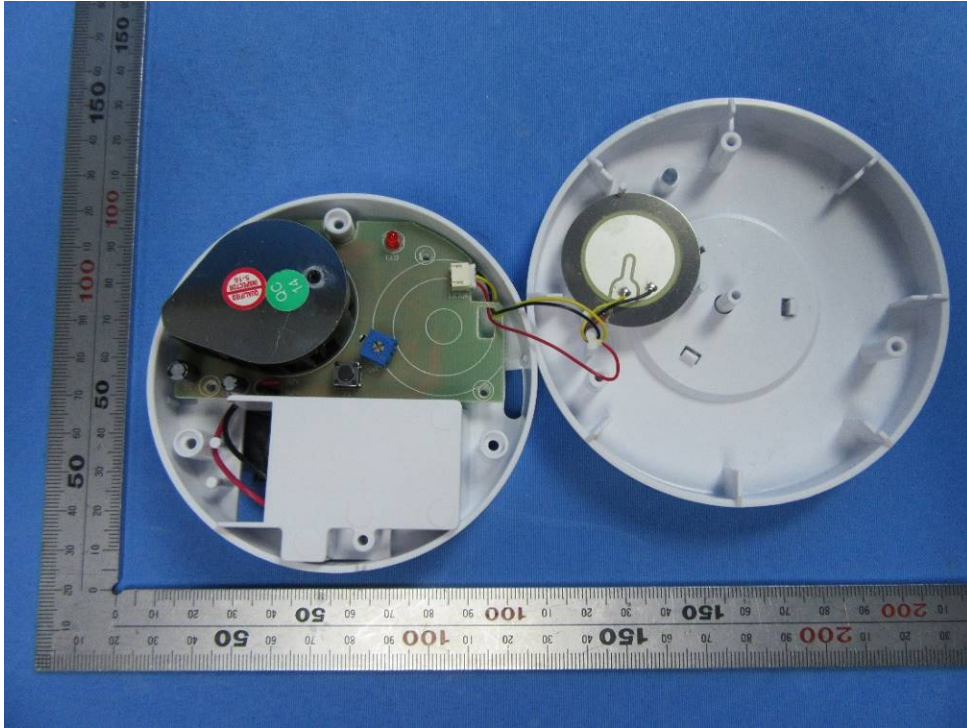
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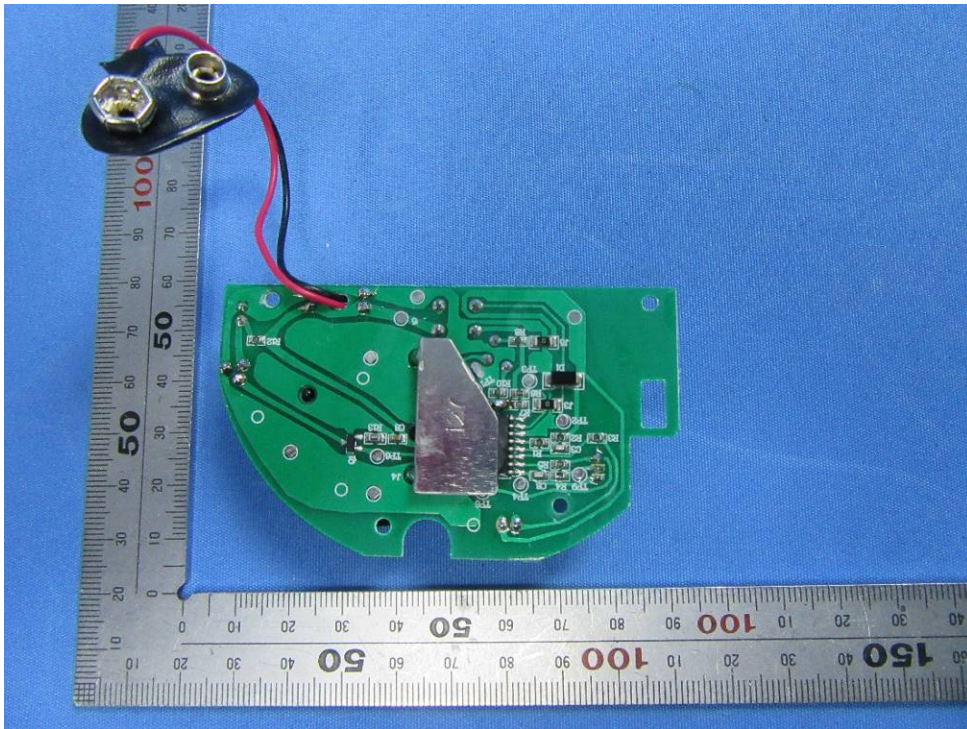
Radiated Emissions (30MHz-1GHz)



9 EUT Constructional Details (EUT Photos)







-- End of the Report --



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