TEST REPORT

Application No.:	SZCR2307002427AT(KSCR2307001157AT)
Applicant:	Hangzhou Ezviz Software Co., Ltd.
Address of Applicant:	Room 302,Unit B,Building 2,399 Danfeng Road,Binjiang District,Hangzhou,Zhejiang
Manufacturer:	Hangzhou Ezviz Software Co., Ltd.
Address of Manufacturer:	Room 302,Unit B,Building 2,399 Danfeng Road,Binjiang District,Hangzhou,Zhejiang
Equipment Under Test (EUT):	
EUT Name:	Home Gateway
Model No.:	CS-A3
Trade Mark:	EZVIZ
Standard(s) :	EN 55032: 2015+A11:2020+A1:2020 EN 61000-3-3: 2013+ A1:2019+A2:2021 EN IEC 61000-3-2: 2019+A1:2021 EN 50130-4: 2011 +A1:2014
Date of Receipt:	2023-07-06
Date of Test:	2023-07-10 to 2023-07-17
Date of Issue:	2023-07-25
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Keny Xu
EMC Laboratory Manager

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Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
01		2023-07-25		Original

Authorized for issue by:				
		Bill Chen **Bill Chen /Project Engineer**		
		Eric Fu **Eric Fu/Reviewer**		

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2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Radiated Emissions (30MHz-1GHz)	EN 55032: 2015+A11:2020+A1:2020	EN 55032: 2015+A11:2020+A1:2020	Class B	Pass
Conducted Emissions at Mains Power Port (150kHz-30MHz)		EN 55032: 2015+A11:2020+A1:2020	Class B	Pass
Radiated Emissions (Above 1GHz)		EN 55032: 2015+A11:2020+A1:2020	Class B	Pass
Asymmetric Mode Conducted Emissions(150kHz-30MHz)		EN 55032: 2015+A11:2020+A1:2020	Class B	Pass
Voltage Fluctuations and Flicker	EN 61000-3-3: 2013+ A1:2019+A2:2021	EN 61000-3-3: 2013+ A1:2019+A2:2021	Clause 5	Pass
Harmonic Current Emission	EN IEC 61000-3-2: 2019+A1:2021	EN IEC 61000-3-2: 2019+A1:2021	N/A	N/A*

N/A*: Not applicable, please refer to Section 6.6 of this report for details.

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
Electrical Fast Transients & Burst at AC Power Port		EN 61000-4-4:2012	2kV, 5/50ns Tr/Td, 100kHz Repetition Frequency	Pass
Electrical Fast Transients & Burst at Signal Port		EN 61000-4-4:2012	1kV, 5/50ns Tr/Td, 100kHz Repetition Frequency	Pass
Surge at AC Power Port		EN 61000-4-5:2014 +A1:2017	1.2/50μs Tr/Td, 0.5,1kV Line to Line, 0.5,1,2kV Line to Ground	Pass
Surge at Signal Port		EN 61000-4-5:2014 +A1:2017	1.2/50μs Tr/Td, 0.5,1kV line-to-ground	Pass
Conducted Immunity at Power Port (150kHz-100MHz)		EN 61000-4-6:2014	10Vrms (emf),80%,1kHz sinusoidal Amp. Mod.	Pass

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Immunity Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Immunity at Signal Port (150kHz-100MHz)		EN 61000-4-6:2014	10Vrms (emf),80%,1kHz sinusoidal Amp. Mod	Pass
Mains Supply Voltage Variations		EN 50130-4:2011+A1:2014	Unom+10%, Unom-15%	Pass
Voltage Dips and Interruptions		EN IEC 61000-4-11:2020	80 % UT for 250per, 70 % UT for 25per, 40 % UT for 10per, 0 % UT for 250per	Pass

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3 Contents

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4 General Information

4.1 Details of E.U.T.

Power supply:	DC 5V,0.6A,3W
Test Voltage:	AC 230V/50Hz

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Mobile Phone	ZTE	Z11MAX	/
Notebook	LENOVO	K27	EB24537645
Router	NETGEAR	RAX50	/
Electronic lock	Ezviz	/	/
Adapter	Sichuan Jiuzhou Electronic Technology Co.,Ltd	DYS05100CP-E	/

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at Mains Power Port (150kHz-30MHz)	± 2.9dB
Radiated Emissions (30MHz-1GHz)	± 5.5dB
Voltage Fluctuations and Flicker	± 3.7%
Harmonic Current Emission	± 3.7%
Electrostatic Discharge	± 6%
Radiated Immunity (80MHz-1GHz,1800MHz,2600MHz,3500MHz,5000MHz)	± 2.1dB
Electrical Fast Transients & Burst at AC Power Port	± 5.5%
Surge at AC Power Port	± 5.5%
Conducted Immunity at AC Power Port (150kHz-80MHz)	± 1.5dB
Voltage Dips and Interruptions	± 3.7%

Remark:
The U_{lab} (lab Uncertainty) is less than $U_{cispr/ETSI}$ (CISPR/ETSI Uncertainty), so the test results
– 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 Co., Ltd., Shenzhen Branch

Address 1: No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Nanshan District, Shenzhen, Guangdong, China. 518057.

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. 3816.01)**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

- **VCCI (Member No. 1937)**

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

- **FCC –Designation Number: CN1336**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

- **Innovation, Science and Economic Development Canada**

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

None

4.6 Abnormalities from Standard Conditions

None

4.7 EMS Monitor

Visual: Work statues of EUT

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5 Equipment List

Conducted Emissions at Mains Power Port (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2022/5/14	2025/5/13
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2023/3/20	2024/3/19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2023/7/8	2024/7/7
LISN	Rohde&Schwarz	ENV216	SEM007-01	2022/9/20	2023/9/19
LISN	ETS-LINDGREN	3816/2	SEM007-02	2023/3/20	2024/3/19

Asymmetric Mode Conducted Emissions(150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2022/5/14	2025/5/13
EMI Test Receiver	Rohde&Schwarz	ESCI	SEM004-02	2023/3/20	2024/3/19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM024-01	2023/7/8	2024/7/7
Capacitive Voltage Probe	Schwarzbeck	CVP9222B	SEM009-11	2023/4/1	2024/3/31
Current Sensor Probe	TESEQ	CSP9160A	SEM009-12	2022/9/20	2023/9/19
Impedance Stabilisation Network	SCHWARZBECK MESS-ELEKTRONIK	ISN S8	SEM007-23	2023/3/31	2024/3/30
ISN T8-Cat6	Teseq	ISN T8-Cat6	SEM007-12	2023/3/20	2024/3/19
ISN T800	Teseq	ISN T800	SEM007-11	2023/3/20	2024/3/19

Radiated Emissions (30MHz-1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEM001-01	2020/7/19	2023/7/18
MXE EMI Receiver	Agilent Technologies	N9038A	SEM004-15	2022/10/20	2023/10/19
BiConiLog Antenna	ETS-LINDGREN	3142C	SEM003-01	2021/9/17	2023/9/16
Pre-Amplifier	Agilent Technologies	8447D	SEM005-01	2023/3/20	2024/3/19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM025-01	2023/7/8	2024/7/7

Radiated Emissions (Above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
3m Semi-Anechoic Chamber	AUDIX	N/A	SEM001-02	2022/4/2	2025/4/1
Signal Analyzer	Rohde & Schwarz	FSV40	SEM008-04	2023/3/20	2024/3/19
Horn Antenna	Rohde&Schwarz	HF907	SEM003-07	2022/7/24	2024/7/23
Pre-Amplifier	Compliance Directions Systems Inc.	LNA10180G45	SEM005-31	2023/3/20	2024/3/19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM026-01	2023/7/8	2024/7/7

Voltage Fluctuations and Flicker					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
AC Power Source	California Instruments	5001ix	SEM016-02	2022/10/20	2023/10/19
Power Analyzer	California Instruments	PACS-1	SEM016-01	2022/10/20	2023/10/19
Measurement Software	California Instruments	CTS 4.0 V4.29.0	N/A	N/A	N/A

Electrostatic Discharge					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
ESD Generator	TESEQ AG	NSG 437	SEM019-02	2023/3/22	2024/3/21

Radiated Immunity (80MHz-2.7GHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Fully-Anechoic Chamber 2	Chang Zhou Zhong Shuo	854	SEM001-05	2020/7/19	2023/7/18
Power Sensor	Rohde & Schwarz	NRP-Z91	SEM009-09	2023/3/21	2024/3/20
Stacked Log.-Per.-Broadband Antenna	Schwarzbeck	STLP 9129	SEM003-25	N/A	N/A
Signal Generator	Rohde & Schwarz	SMB100A	SEM006-11	2023/3/21	2024/3/20
Broadband Amplifier	Rohde & Schwarz	BBA150-BC250	SEM005-12	2022/9/21	2023/9/20
Broadband Amplifier	Rohde & Schwarz	BBA150-D110	SEM005-13	2023/3/21	2024/3/20
Broadband Amplifier	Rohde & Schwarz	BBA150-E60	SEM005-16	2023/3/21	2024/3/20
Measurement Software	Rohde & Schwarz	EMC32 V9.25.00	N/A	N/A	N/A

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Electrical Fast Transients & Burst at AC Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2023/3/20	2024/3/19

Surge at AC Power Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2023/3/20	2024/3/19

Conducted Immunity at AC Power Port (150kHz-80MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	TST PASS	N/A	SEM001-17	2021/11/22	2024/11/21
RF-Generator	SCHAFFNER	NSG 2070	SEM006-01	2022/10/20	2023/10/19
Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEM007-03	2023/3/31	2024/3/30

Voltage Dips and Interruptions					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2023/3/20	2024/3/19

Electrical Fast Transients & Burst at Signal Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2023/3/20	2024/3/19
Capacitive Coupling Clamp	EM Test	HFK	SEM018-03	2023/3/20	2024/3/19

Surge at Signal Port					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Ultra Compact Simulator	EM Test	UCS 500N7	SEM018-02	2023/3/20	2024/3/19
High Speed Coupling/Decoupling Network	EM Test	CNI 508N2	SEM018-05	2023/3/31	2024/3/30

Conducted Immunity at Signal Port (150kHz-100MHz)					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
Shielding Room	TST PASS	N/A	SEM001-17	2021/11/22	2024/11/21
RF-Generator	SCHAFFNER	NSG 2070	SEM006-01	2022/10/20	2023/10/19
Coupling/Decoupling Network	SCHAFFNER	CDN M016	SEM007-03	2023/3/31	2024/3/30
EM Clamp	SCHAFFNER	KEMZ 801	SEM013-01	2023/4/8	2024/4/7

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General used equipment					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Humidity/ Temperature Indicator	MINGGAO	TH607	SEM002-17	2022/9/4	2023/9/3
Humidity/ Temperature Indicator	MINGGAO	TH607	SEM002-18	2022/9/4	2023/9/3
Humidity/ Temperature Indicator	MINGGAO	TH607	SEM002-19	2022/9/4	2023/9/3
Humidity/ Temperature Indicator	MINGGAO	TH607	SEM002-20	2022/9/4	2023/9/3
Humidity/ Temperature Indicator	MINGGAO	TH607	SEM002-22	2022/9/4	2023/9/3
Humidity/ Temperature Indicator	MINGGAO	TH607	SEM002-23	2022/9/4	2023/9/3
Barometer	Shanghai Meteorological Industry Factory	DYM3	SEM002-24	2022/9/4	2023/9/3

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6 Emission Test Results

6.1 Radiated Emissions (30MHz-1GHz)

Test Requirement: EN 55032: 2015+A11:2020+A1:2020
Test Method: EN 55032: 2015+A11:2020+A1:2020

Limit:

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

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
Highest internal frequency (Fx):	Fx ≤ 108MHz
Highest measured frequency:	1GHz

6.1.1 E.U.T. Operation

Operating Environment:
Temperature: 22.8 °C Humidity: 73.1 % RH Atmospheric Pressure: 1010 mbar

6.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

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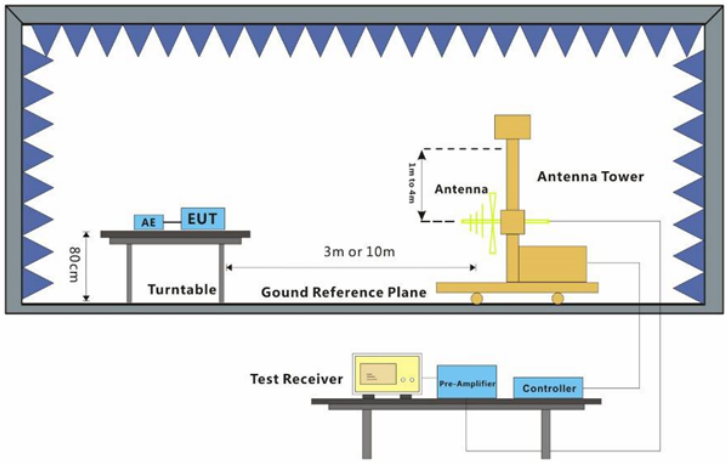
6.1.3 Test Setup Diagram



6.1.4 Measurement Procedure and Data

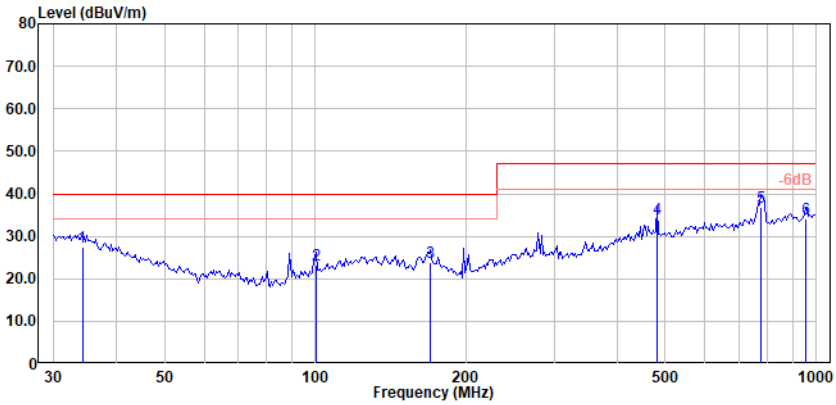
Frequency range: 30MHz-1GHz

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

Test Mode: 00; Polarity: Horizontal



Site : Chamber
Condition: Horizontal
Test Mode: 00

	Freq	Read Level	Cable Loss	Ant Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	34.276	2.54	0.29	24.54	27.37	40.00	-12.63	QP
2	100.229	6.18	0.77	16.34	23.29	40.00	-16.71	QP
3	169.599	6.87	1.12	15.87	23.86	40.00	-16.14	QP
4	482.216	8.76	2.02	23.22	34.00	47.00	-13.00	QP
5	776.878	8.50	2.30	25.97	36.77	47.00	-10.23	QP
6	952.094	4.53	2.62	26.82	33.97	47.00	-13.03	QP

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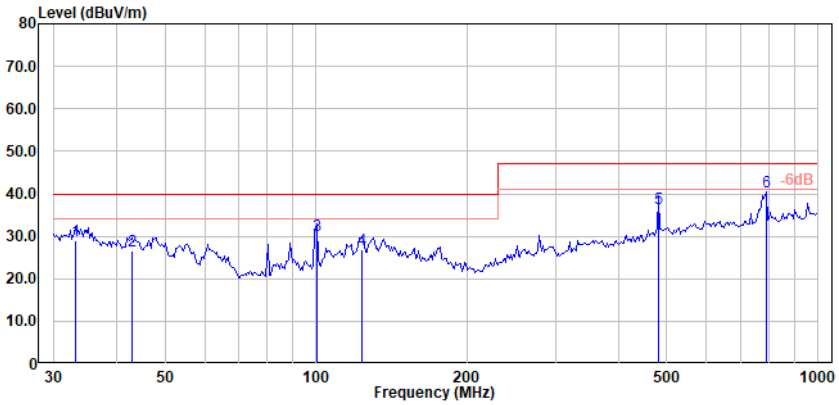
Test Mode: 00; Polarity: Vertical



Site : Chamber
Condition: Vertical
Test Mode: 00

	Freq	Read Level	Cable Loss	Ant Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	33.095	4.00	0.27	24.75	29.02	40.00	-10.98	QP
2	42.900	5.87	0.38	20.38	26.63	40.00	-13.37	QP
3	100.229	12.93	0.77	16.34	30.04	40.00	-9.96	QP
4	123.699	7.43	0.94	18.49	26.86	40.00	-13.14	QP
5	482.216	11.16	2.02	23.22	36.40	47.00	-10.60	QP
6	787.851	12.33	2.28	25.87	40.48	47.00	-6.52	QP

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6.2 Conducted Emissions at Mains Power Port (150kHz-30MHz)

Test Requirement: EN 55032: 2015+A11:2020+A1:2020
Test Method: EN 55032: 2015+A11:2020+A1:2020

Limit:

0.15MHz-0.5MHz	66dB(μV)-56dB(μV) quasi-peak, 56dB(μV)-46dB(μV) average
0.5MHz-5MHz	56dB(μV) quasi-peak, 46dB(μV) average
5MHz-30MHz	60dB(μV) quasi-peak, 50dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

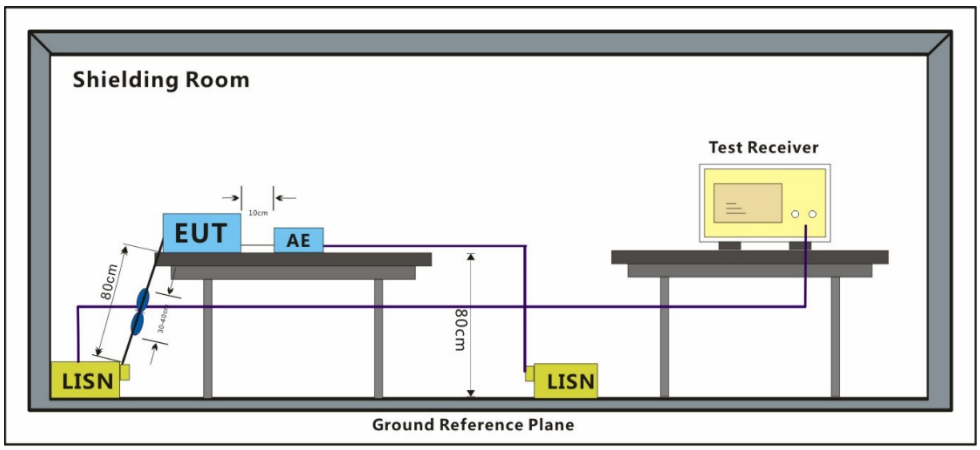
6.2.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

6.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

6.2.3 Test Setup Diagram

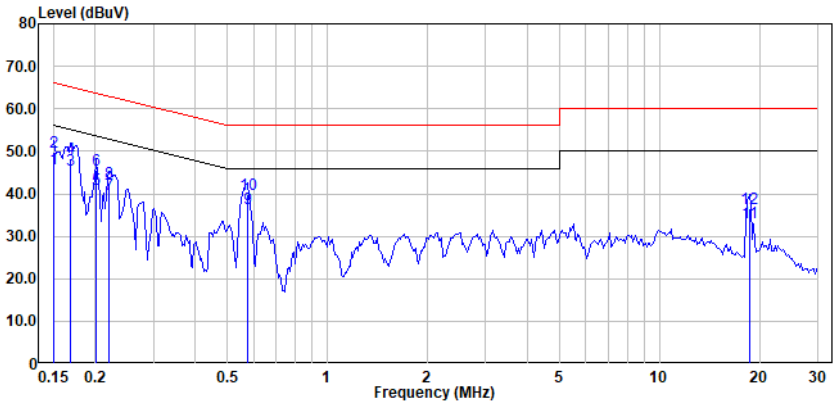


6.2.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Remark: Level= Read Level+ Cable Loss+ LISN Factor

Test Mode: 00; Line: Live line



Site : Chanmber
Condition: Line
Test Mode: 00

	Freq	Read Level	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.150	26.44	19.56	46.00	56.00	-10.00	Average
2	0.150	30.28	19.56	49.84	66.00	-16.16	QP
3	0.169	26.05	19.56	45.61	55.03	-9.42	Average
4	0.169	28.72	19.56	48.28	65.03	-16.75	QP
5	0.202	21.53	19.56	41.09	53.54	-12.45	Average
6	0.202	26.16	19.56	45.72	63.54	-17.82	QP
7	0.220	20.26	19.56	39.82	52.83	-13.01	Average
8	0.220	23.03	19.56	42.59	62.83	-20.24	QP
9	0.576	16.81	19.57	36.38	46.00	-9.62	Average
10	0.576	20.30	19.57	39.87	56.00	-16.13	QP
11	18.622	13.24	19.84	33.08	50.00	-16.92	Average
12	18.622	16.67	19.84	36.51	60.00	-23.49	QP

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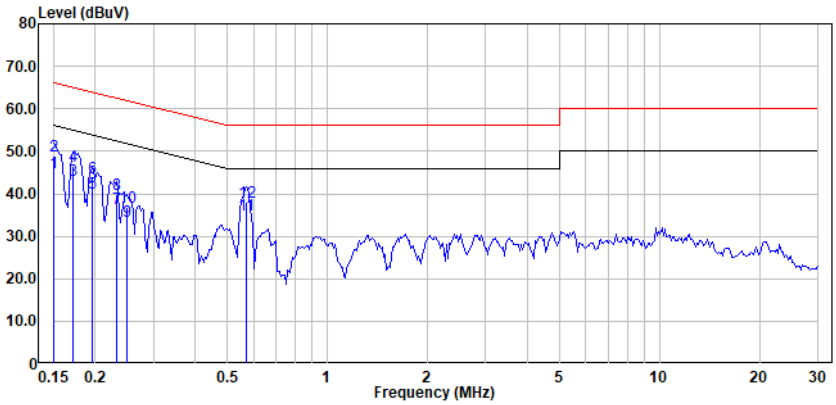
Test Mode: 00; Line: Neutral Line



Site : Chanmber
Condition: Neutral
Test Mode: 00

	Freq	Read Level	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.150	25.55	19.56	45.11	56.00	-10.89	Average
2	0.150	29.36	19.56	48.92	66.00	-17.08	QP
3	0.172	23.73	19.56	43.29	54.86	-11.57	Average
4	0.172	26.79	19.56	46.35	64.86	-18.51	QP
5	0.196	20.65	19.56	40.21	53.80	-13.59	Average
6	0.196	24.20	19.56	43.76	63.80	-20.04	QP
7	0.232	16.82	19.56	36.38	52.39	-16.01	Average
8	0.232	20.29	19.56	39.85	62.39	-22.54	QP
9	0.249	13.92	19.57	33.49	51.78	-18.29	Average
10	0.249	17.14	19.57	36.71	61.78	-25.07	QP
11	0.570	15.54	19.57	35.11	46.00	-10.89	Average
12	0.570	18.54	19.57	38.11	56.00	-17.89	QP

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6.3 Radiated Emissions (Above 1GHz)

Test Requirement: EN 55032: 2015+A11:2020+A1:2020
Test Method: EN 55032: 2015+A11:2020+A1:2020

Limit:

1000MHz-6000MHz:	74 dB(μV/m) peak; 54 dB(μV/m) average
Detector:	Peak for pre-scan (1000kHz resolution bandwidth) 1000MHz to 6000MHz

Highest internal frequency (Fx):	Highest measured frequency:
Fx ≤ 108MHz	1GHz
108MHz < Fx ≤ 500MHz	2GHz
500MHz < Fx ≤ 1GHz	5GHz
Fx > 1GHz	5 × *Fx* up to a maximum of 6GHz

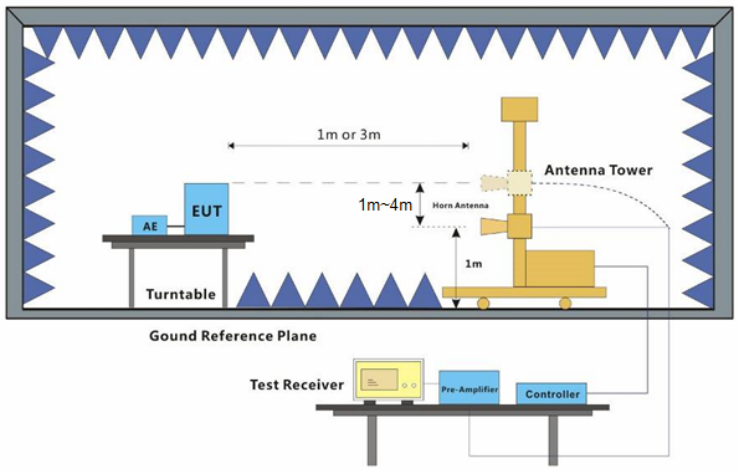
6.3.1 E.U.T. Operation

Operating Environment:
Temperature: 23.1 °C Humidity: 54.2 % RH Atmospheric Pressure: 1010 mbar

6.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

6.3.3 Test Setup Diagram



6.3.4 Measurement Procedure and Data

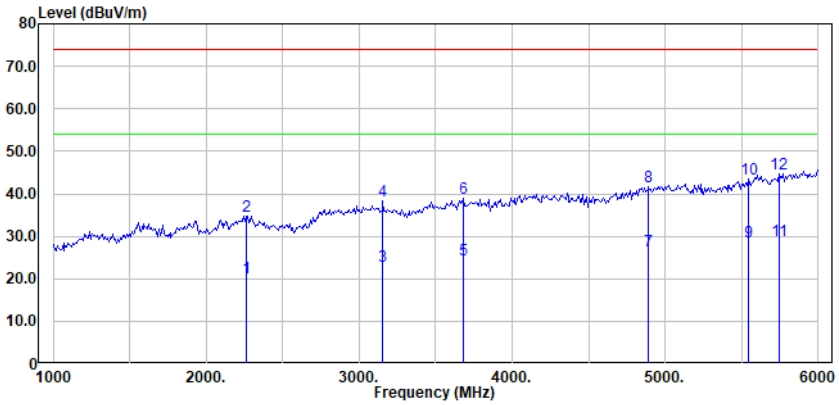
Frequency range: Above 1GHz

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Average measurements were conducted based on the peak sweep graph. The EUT was measured by Horn 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

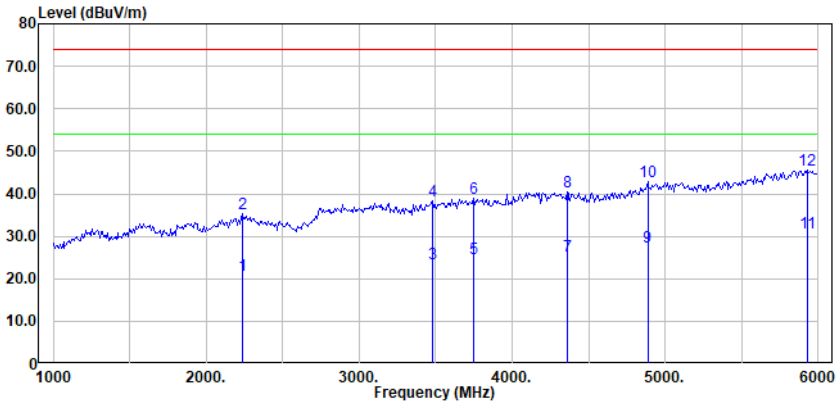
Test Mode: 00; Polarity: Horizontal



Site : Chamber
Condition: Horizontal
Test Mode: 00

	Freq	Read Level	Cable Loss	Preamp Factor	Ant Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB/m	dBuV/m	dBuV/m	dB	
1	2258.01	38.64	6.34	51.15	26.32	20.15	54.00	-33.85	Average
2	2258.01	53.21	6.34	51.15	26.32	34.72	74.00	-39.28	Peak
3	3155.45	38.53	7.32	50.95	28.12	23.02	54.00	-30.98	Average
4	3155.45	53.76	7.32	50.95	28.12	38.25	74.00	-35.75	Peak
5	3684.30	38.97	7.79	50.79	28.54	24.51	54.00	-29.49	Average
6	3684.30	53.27	7.79	50.79	28.54	38.81	74.00	-35.19	Peak
7	4894.23	37.38	8.91	50.97	31.23	26.55	54.00	-27.45	Average
8	4894.23	52.41	8.91	50.97	31.23	41.58	74.00	-32.42	Peak
9	5543.27	37.37	10.45	50.95	31.88	28.75	54.00	-25.25	Average
10	5543.27	52.15	10.45	50.95	31.88	43.53	74.00	-30.47	Peak
11	5743.59	36.91	10.98	50.93	32.15	29.11	54.00	-24.89	Average
12	5743.59	52.50	10.98	50.93	32.15	44.70	74.00	-29.30	Peak

Test Mode: 00; Polarity: Vertical



Site : Chamber
Condition: Vertical
Test Mode: 00

	Freq	Read Level	Cable Loss	Preamp Factor	Ant Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dB	dB/m	dBuV/m	dBuV/m	dB	
1	2233.97	39.55	6.32	51.15	26.23	20.95	54.00	-33.05	Average
2	2233.97	54.02	6.32	51.15	26.23	35.42	74.00	-38.58	Peak
3	3475.96	38.56	7.60	50.86	28.16	23.46	54.00	-30.54	Average
4	3475.96	53.29	7.60	50.86	28.16	38.19	74.00	-35.81	Peak
5	3748.40	38.89	7.84	50.78	28.67	24.62	54.00	-29.38	Average
6	3748.40	53.09	7.84	50.78	28.67	38.82	74.00	-35.18	Peak
7	4357.37	37.86	8.40	50.81	30.02	25.47	54.00	-28.53	Average
8	4357.37	52.95	8.40	50.81	30.02	40.56	74.00	-33.44	Peak
9	4886.22	38.47	8.90	50.97	31.22	27.62	54.00	-26.38	Average
10	4886.22	53.79	8.90	50.97	31.22	42.94	74.00	-31.06	Peak
11	5927.89	37.77	11.46	50.91	32.41	30.73	54.00	-23.27	Average
12	5927.89	52.64	11.46	50.91	32.41	45.60	74.00	-28.40	Peak

6.4 Asymmetric Mode Conducted Emissions(150kHz-30MHz)

Test Requirement: EN 55032: 2015+A11:2020+A1:2020
Test Method: EN 55032: 2015+A11:2020+A1:2020

Limit:

0.15 MHz -0.5MHz	84dB(μV)-74dB(μV) quasi-peak, 74dB(μV)-64dB(μV) average
0.5 MHz -30MHz	74dB(μV) quasi-peak, 64dB(μV) average
Detector:	Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz

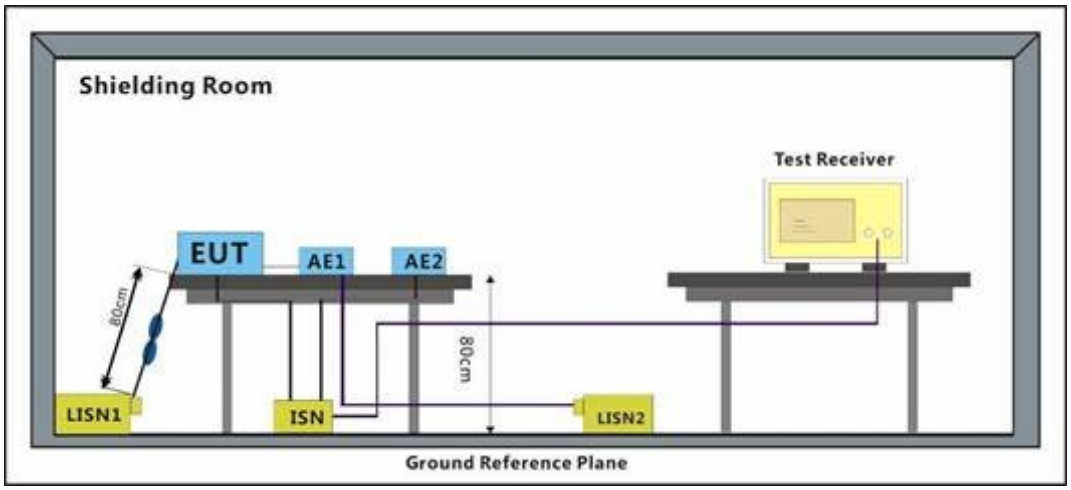
6.4.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

6.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

6.4.3 Test Setup Diagram

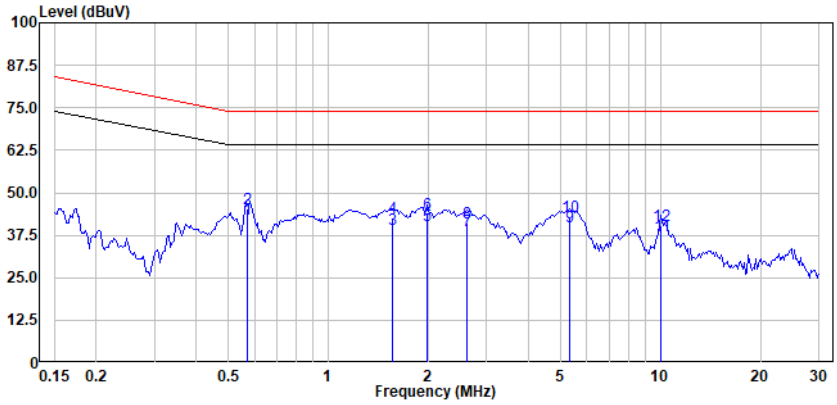


6.4.4 Measurement Procedure and Data

An initial pre-scan was performed with peak detector.Quasi-Peak or Average measurement were performed at the frequencies with maximized peak emission were detected.

Remark: Level= Read Level+ Cable Loss+ LISN Factor

Test Mode: 00;



Site : Chamber
Condition: LAN
Test Mode: 00

	Freq	Read Level	LISN Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	
1	0.570	32.56	9.55	42.11	64.00	-21.89	Average
2	0.570	35.56	9.55	45.11	74.00	-28.89	QP
3	1.560	29.96	9.42	39.38	64.00	-24.62	Average
4	1.560	33.41	9.42	42.83	74.00	-31.17	QP
5	1.991	30.87	9.39	40.26	64.00	-23.74	Average
6	1.991	34.49	9.39	43.88	74.00	-30.12	QP
7	2.622	29.31	9.40	38.71	64.00	-25.29	Average
8	2.622	31.88	9.40	41.28	74.00	-32.72	QP
9	5.333	30.52	9.45	39.97	64.00	-24.03	Average
10	5.333	33.54	9.45	42.99	74.00	-31.01	QP
11	10.072	27.78	9.50	37.28	64.00	-26.72	Average
12	10.072	31.01	9.50	40.51	74.00	-33.49	QP

6.5 Voltage Fluctuations and Flicker

Test Requirement: EN 61000-3-3: 2013+ A1:2019+A2:2021
Test Method: EN 61000-3-3: 2013+ A1:2019+A2:2021

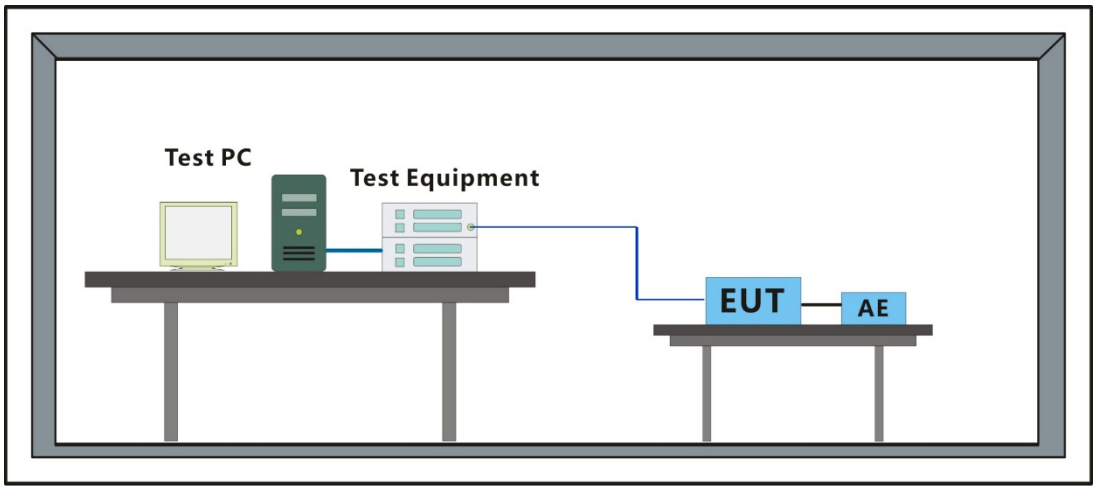
6.5.1 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

6.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

6.5.3 Test Setup Diagram



6.5.4 Measurement Procedure and Data

Test Mode: 00;

Parameter values recorded during the test:				
Vrms at the end of test (Volt):	230.15			
Highest dt (%):		Test limit (%):		
T-max (mS):	0	Test limit (mS):	500.0	Pass
Highest dc (%):	0.00	Test limit (%):	3.30	Pass
Highest dmax (%):	0.00	Test limit (%):	4.00	Pass
Highest Pst (10 min. period):	0.261	Test limit:	1.000	Pass
Highest Plt (2 hr. period):	0.114	Test limit:	0.650	Pass

6.6 Harmonic Current Emission

Test Requirement: EN IEC 61000-3-2: 2019+A1:2021

Test Method: EN IEC 61000-3-2: 2019+A1:2021

There is no need for Harmonics test to be performed on this product (rated power is less than 75W) in accordance with EN IEC 61000-3-2: 2019+A1:2021.

For further details, please refer to Clause 7 of EN IEC 61000-3-2: 2019+A1:2021 which states:

"For the following categories of equipment, limits are not specified in this standard.- equipment with a rated power of 75W or less, other than lighting equipment."

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7 Immunity Test Results

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

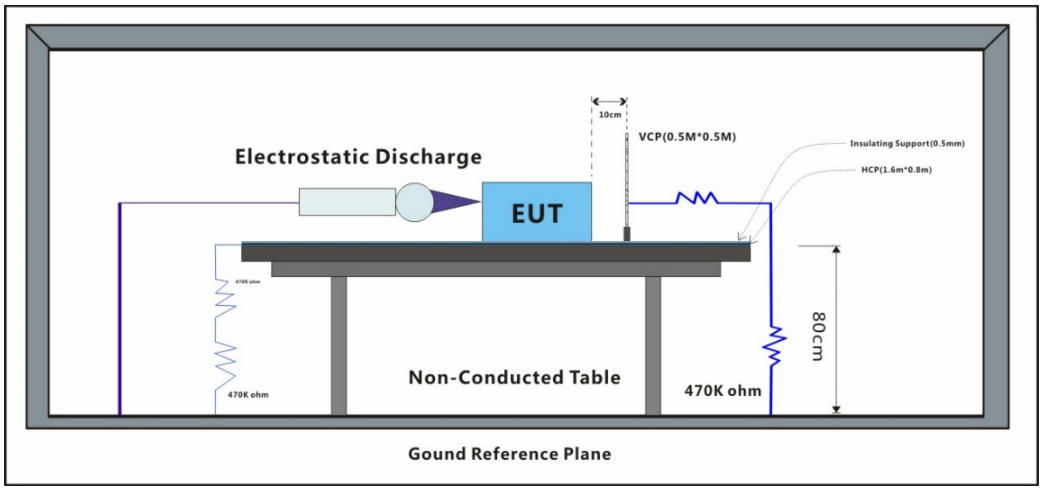
There shall be no damage, malfunction or change of status due to the conditioning. Flickering of an indicator during the application of the discharges is permissible, providing that there is no residual change in the EUT or any change in outputs, which could be interpreted by associated equipment as 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: 25 °C Humidity: 55 % RH Atmospheric Pressure: 1010 mbar

7.1.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

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.

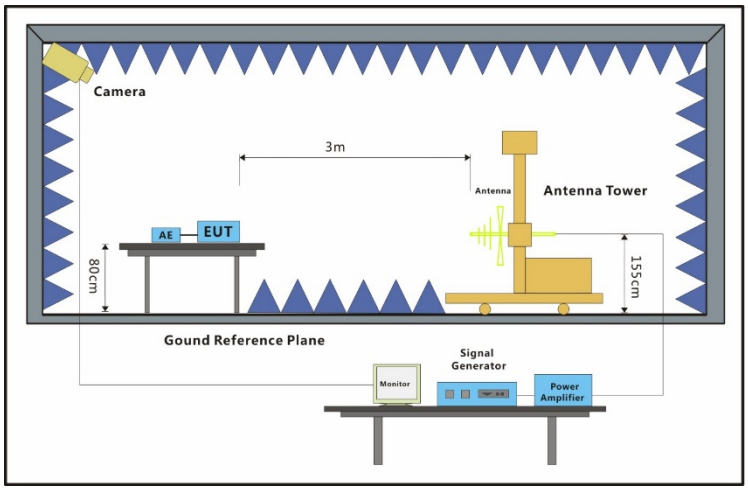
Test Point 3: All sides.

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

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: 23.1 °C Humidity: 43.9 % RH Atmospheric Pressure: 1010 mbar

7.2.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

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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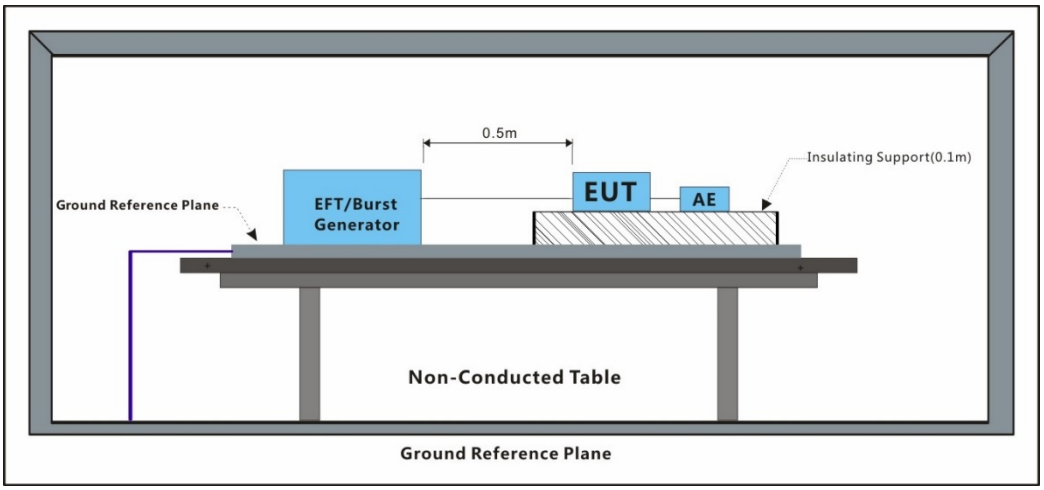
7.3 Electrical Fast Transients & Burst at AC Power Port

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN 61000-4-4:2012

7.3.1 Test Setup Diagram



7.3.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.3.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.3.4 Test Condition and Results:

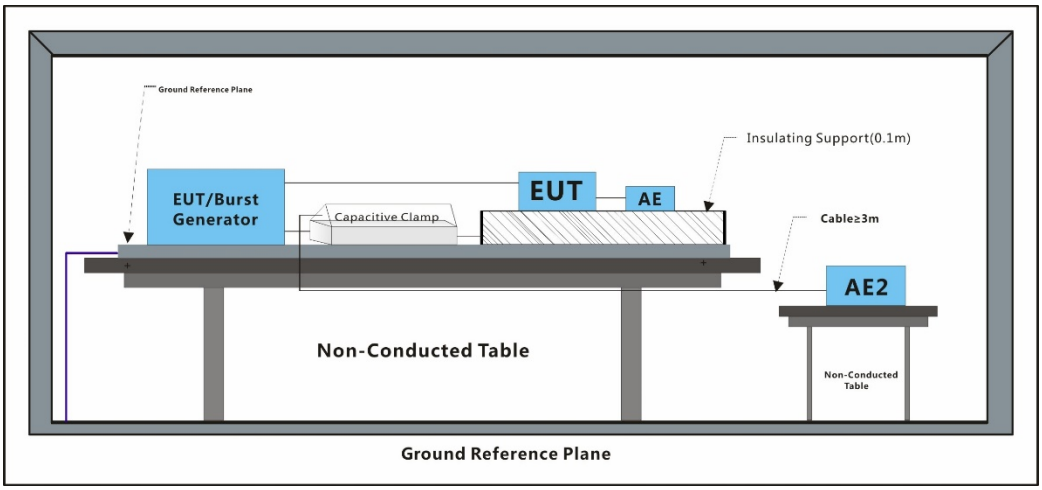
Repetition Frequency: 100kHz
Burst Period: 300ms
Test Duration: 1 minute per level & polarity

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
AC power port	2	+	CDN	A
AC power port	2	-	CDN	A
A: No degradation in the performance of the EUT was observed				

7.4 Electrical Fast Transients & Burst at Signal Port

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN 61000-4-4:2012

7.4.1 Test Setup Diagram



7.4.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.4.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.4.4 Test Condition and Results:

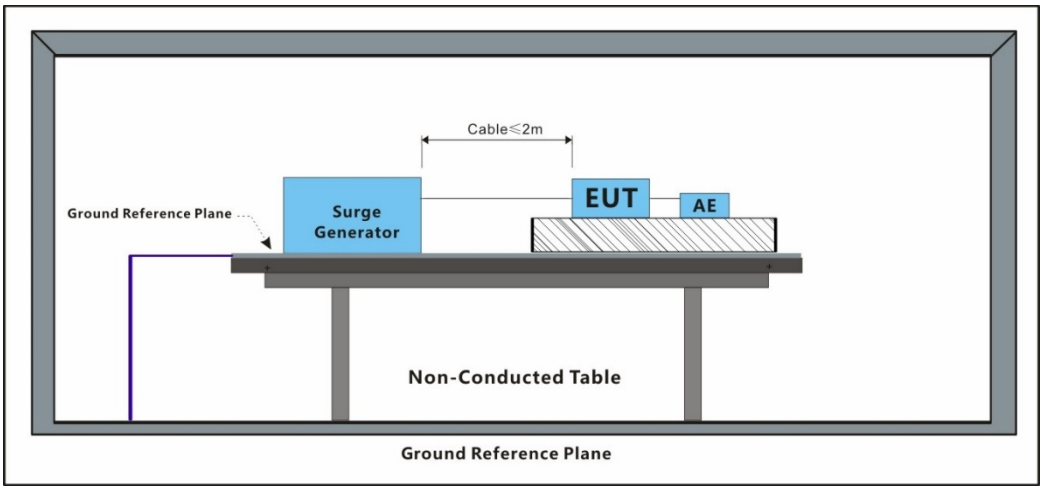
Repetition Frequency: 100kHz
Burst Period: 300ms
Test Duration: 1 minute per level & polarity

Test Line	Level (kV)	Polarity	CDN/Clamp	Result / Observations
Signal Port	1	+	Clamp	A
Signal Port	1	-	Clamp	A
A: No degradation in the performance of the EUT was observed				

7.5 Surge at AC Power Port

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN 61000-4-5:2014 +A1:2017

7.5.1 Test Setup Diagram



7.5.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.5.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.5.4 Test Condition and Results:

Interval: 60s between each surge
No. of surges: 5 positive, 5 negative

Test Line	Level (kV)	Polarity	Phase (deg)	Result / Observations
L-N	0.5,1	+	0°	A
L-N	0.5,1	-	0°	A
L-N	0.5,1	+	90°	A

L-N	0.5,1	-	90°	A
L-N	0.5,1	+	180°	A
L-N	0.5,1	-	180°	A
L-N	0.5,1	+	270°	A
L-N	0.5,1	-	270°	A
A: No degradation in the performance of the EUT was observed				

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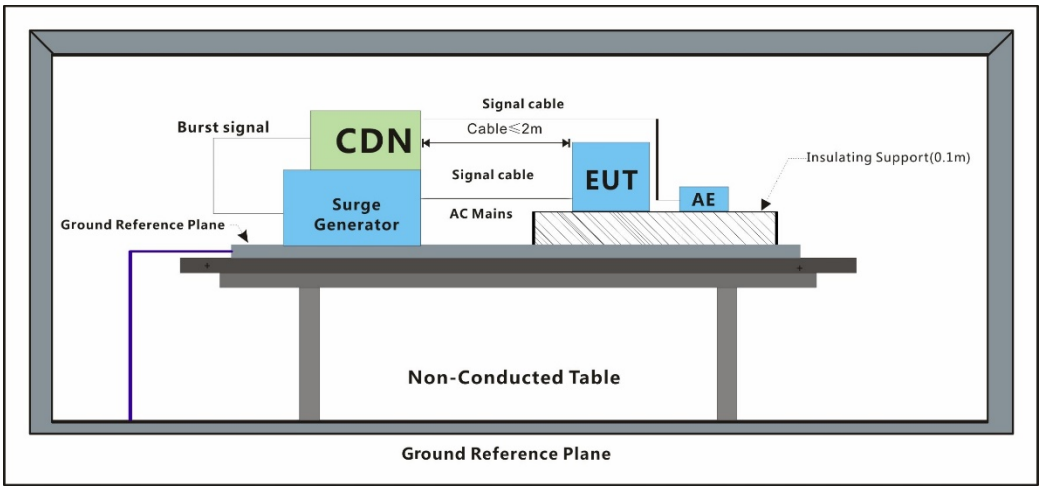
7.6 Surge at Signal Port

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN 61000-4-5:2014 +A1:2017

7.6.1 Test Setup Diagram



7.6.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.6.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.6.4 Test Condition and Results:

Interval: 60s between each surge
No. of surges: 5 positive, 5 negative.

Port	Line	Level (kV)	Polarity	Result / Observations
Signal port	Line-Ground	0.5	+	A
Signal port	Line-Ground	0.5	-	A
Signal port	Line-Ground	1	+	A

Signal port	Line-Ground	1	-	A
A: No degradation in the performance of the EUT was observed				

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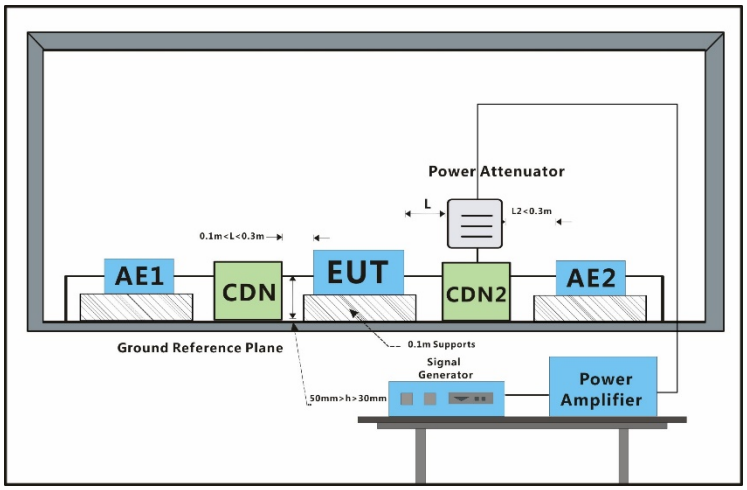
7.7 Conducted Immunity at Power Port (150kHz-100MHz)

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN 61000-4-6:2014

7.7.1 Test Setup Diagram



7.7.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.7.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.7.4 Test Condition and Results:

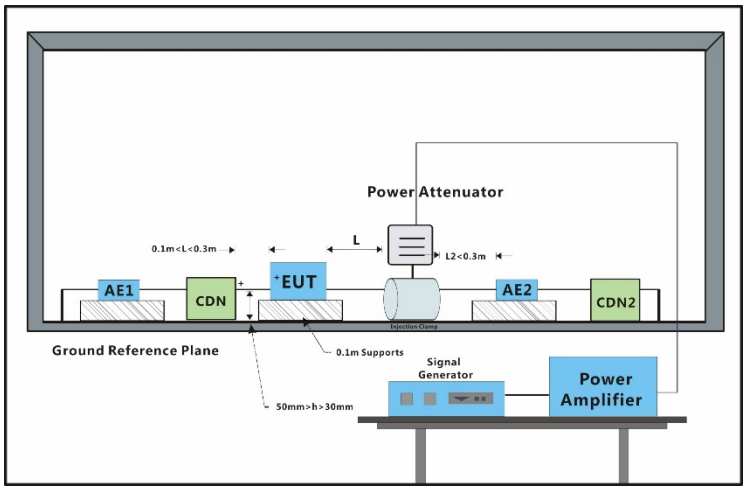
Modulation: 80%, 1 kHz Amplitude Modulation & 0.5s ON 0.5s OFF Pulse Modulation

Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
AC power port	10	CDN	3s	A
A: No degradation in the performance of the EUT was observed				

7.8 Conducted Immunity at Signal Port (150kHz-100MHz)

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN 61000-4-6:2014

7.8.1 Test Setup Diagram



7.8.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.8.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.8.4 Test Condition and Results:

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

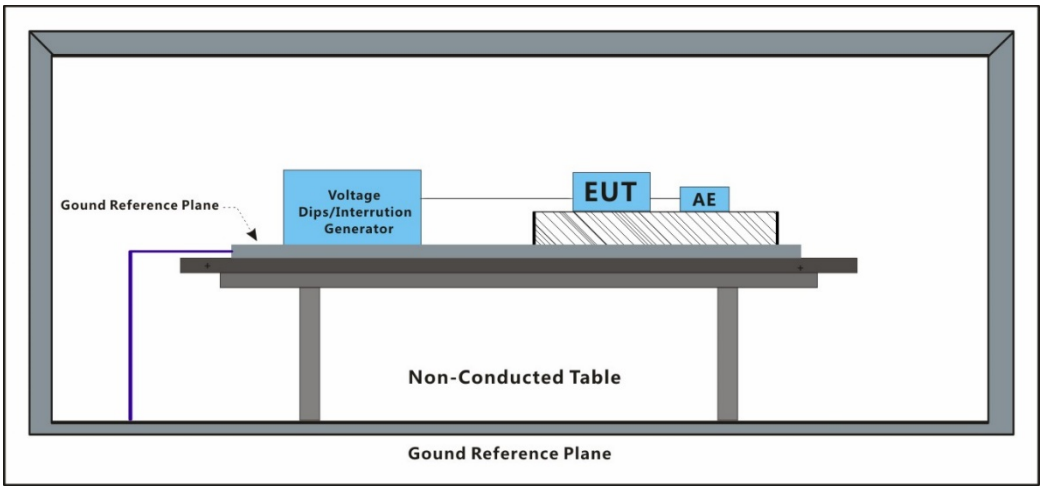
Cable port	Level (Vrms)	CDN/Clamp	Dwell time	Result / Observations
Signal or Control port	10	CDN	3s	A
A: No degradation in the performance of the EUT was observed				

7.9 Mains Supply Voltage Variations

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

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

7.9.1 Test Setup Diagram



7.9.2 E.U.T. Operation

Operating Environment:

Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.9.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.9.4 Test Condition and Results:

Voltage max.: AC 264V (Umax: Unom + 10%)

Voltage min.: AC 85V (Umin: Unom - 15%)

Unom Voltage: AC 100-240V

Test phenomenon description for the EUT:

1. The EUT working normal, before the conditioning.
2. Monitor the EUT during the conditioning period and detected no any changes in states, during the conditioning.
3. No degradation in the performance of the EUT was observed, after the conditioning.

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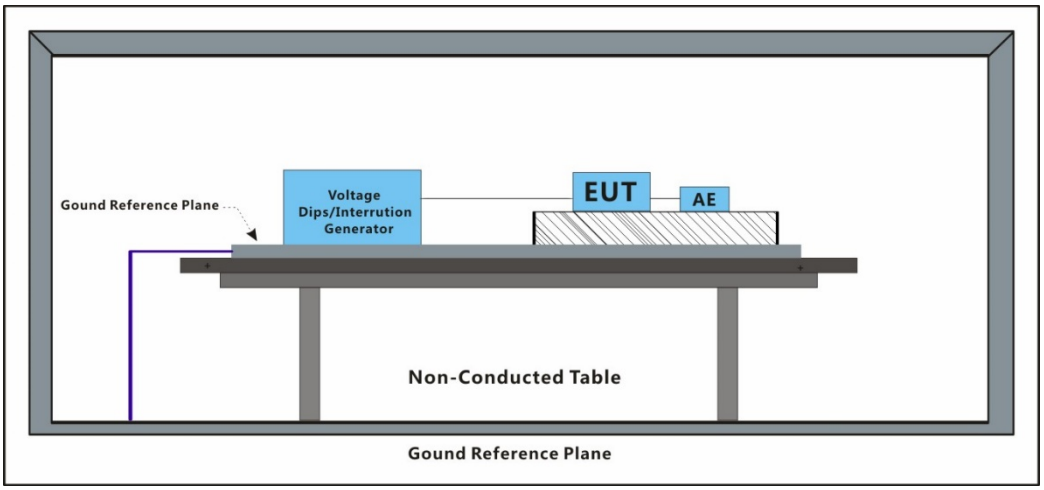
7.10 Voltage Dips and Interruptions

Test Requirement: EN 50130-4: 2011 +A1:2014
Test Method: EN IEC 61000-4-11:2020

7.10.1 Test Setup Diagram



7.10.2 E.U.T. Operation

Operating Environment:
Temperature: 25 °C Humidity: 49 % RH Atmospheric Pressure: 1010 mbar

7.10.3 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Normal working : Power on by adapter and The EUT and computer are connected to the AP through a network port, and the mobile phone is connected and controls the electronic lock through the hotspot signal sent by the EUT

7.10.4 Test Condition and Results:

Performance Criterion:
0% of UT (Supply Voltage) for 250 Periods;
40% of UT for 10 Periods;
70% of UT for 25 Periods; 80% of UT for 250 Periods;
No. of Dips / Interruptions: 3 per Level
Time between dropout 10s

Level % UT	Phase (deg)	Duration	No. of Dips /	Result /

			Interruptions	Observations
80	0°	250 Cycles	3	B
80	180°	250 Cycles	3	B
70	0°	25 Cycles	3	A
70	180°	25 Cycles	3	A
40	0°	10 Cycles	3	A
40	180°	10 Cycles	3	A
0	0°	250 Cycles	3	B
0	180°	250 Cycles	3	B

A: No degradation in the performance of the EUT was observed
B: During the test,the EUT working abnormally.
After the test,the EUT automatically recovering working normally.

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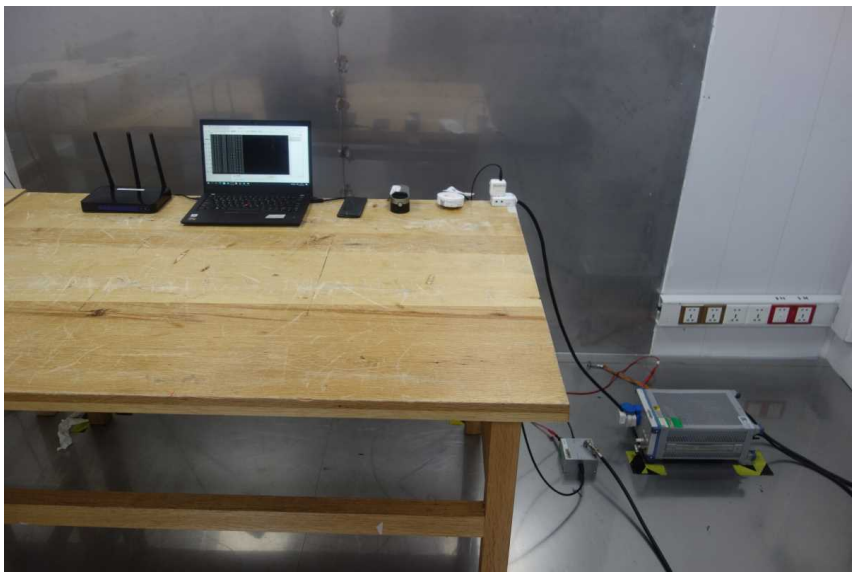
8 Test Setup Photo

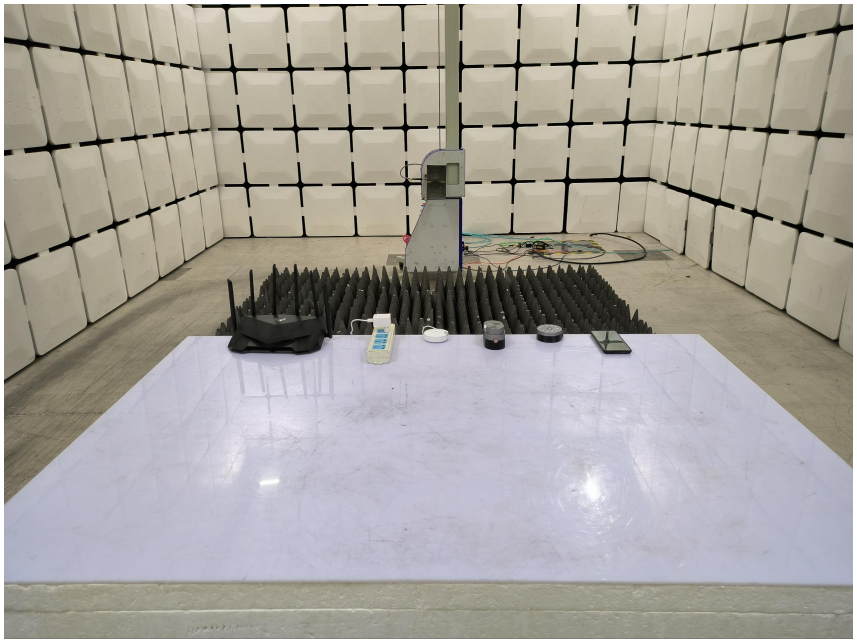
Conducted Emissions at Mains Power Port (150kHz-30MHz)

Asymmetric Mode Conducted Emissions(150kHz-30MHz)



Radiated Emissions (30MHz-1GHz)

Radiated Emissions (Above 1GHz)



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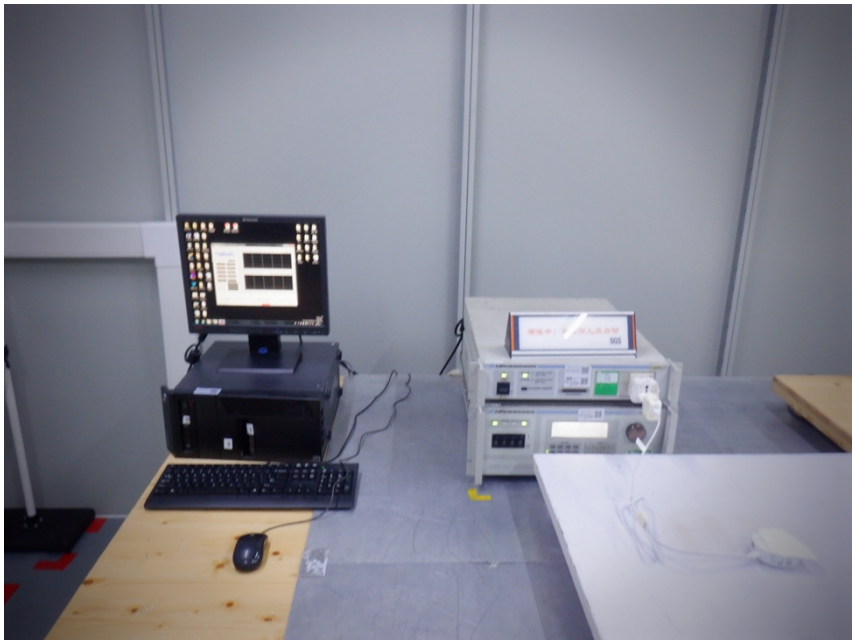
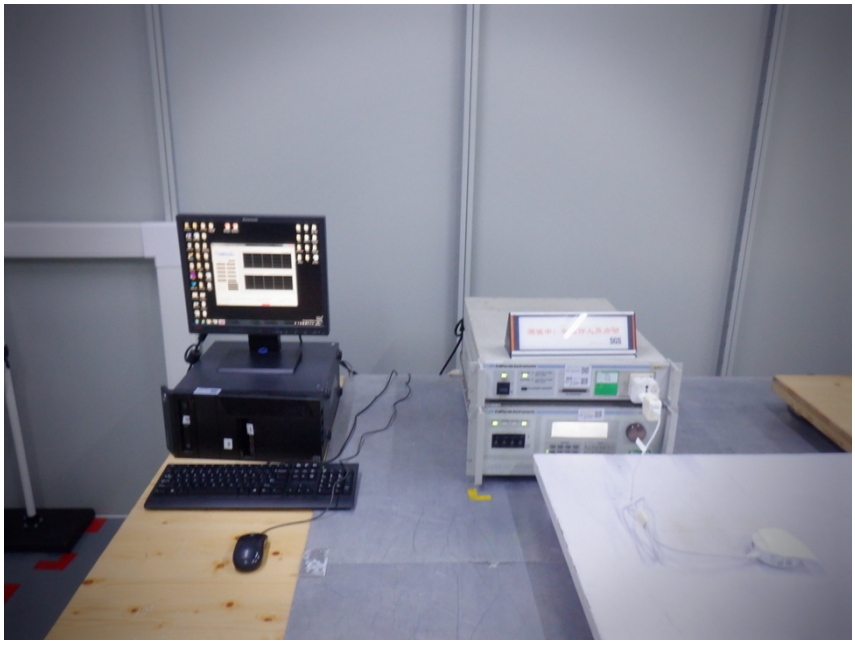
Voltage Fluctuations and Flicker



Harmonic Current Emission



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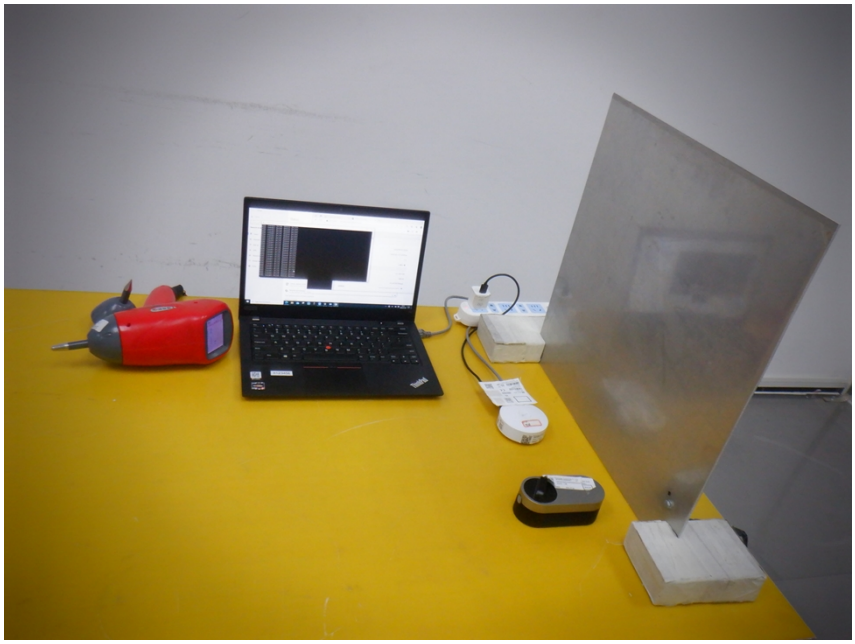
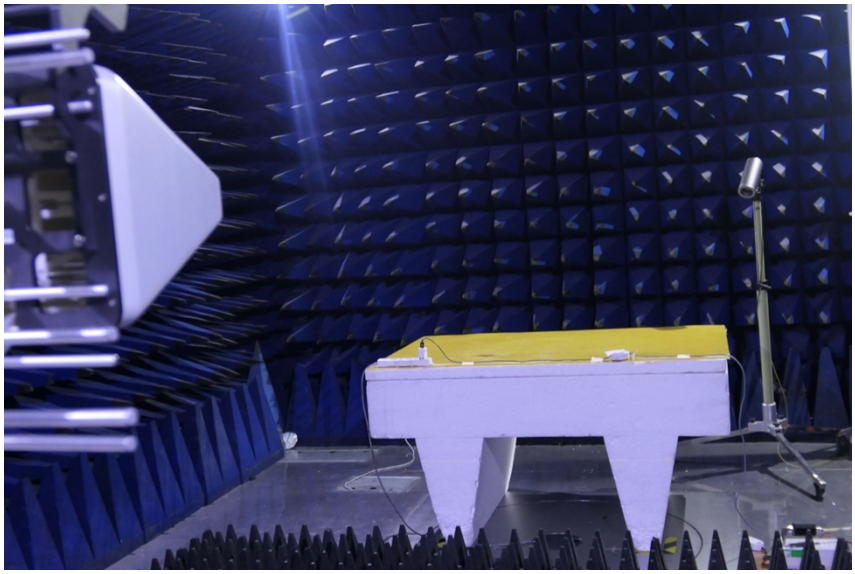
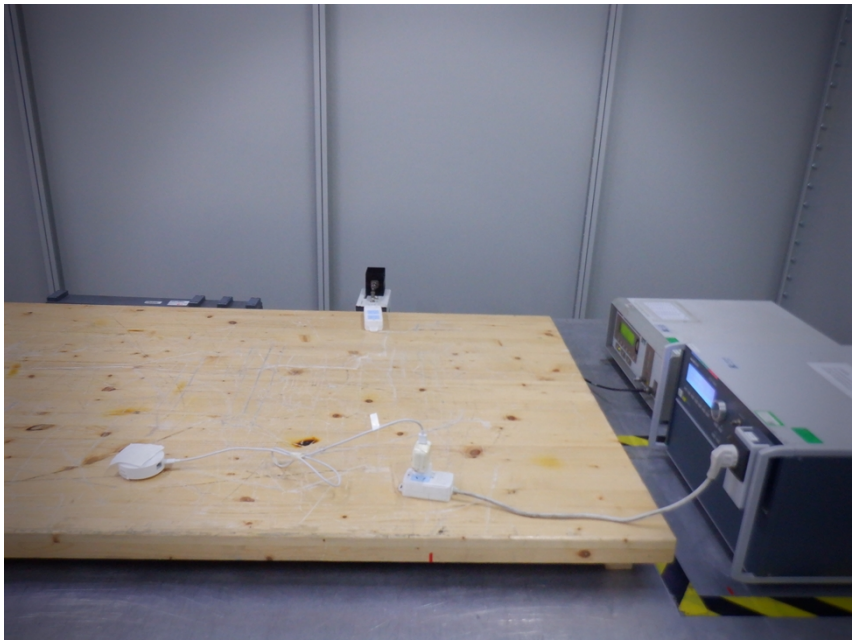
Electrostatic Discharge



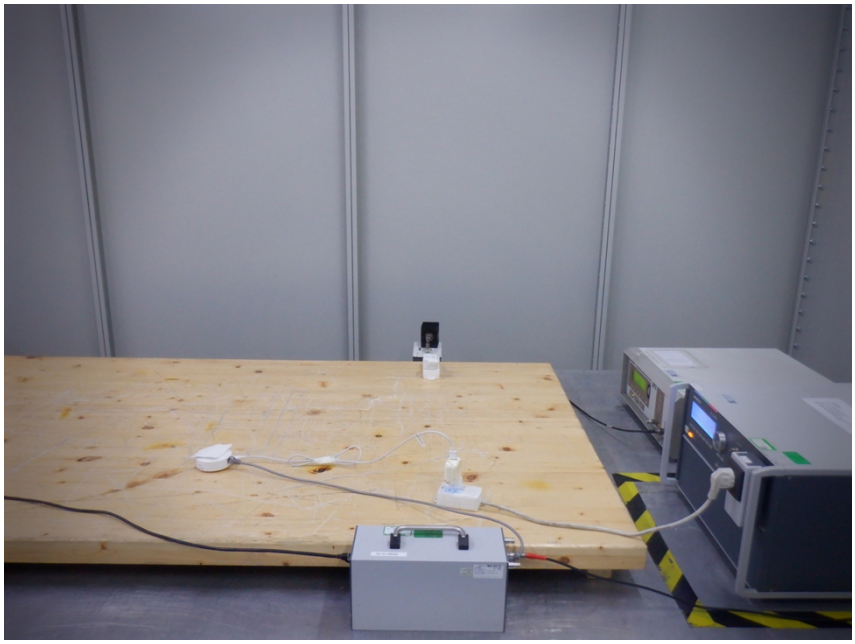
Radiated Immunity(80MHz-2.7GHz)



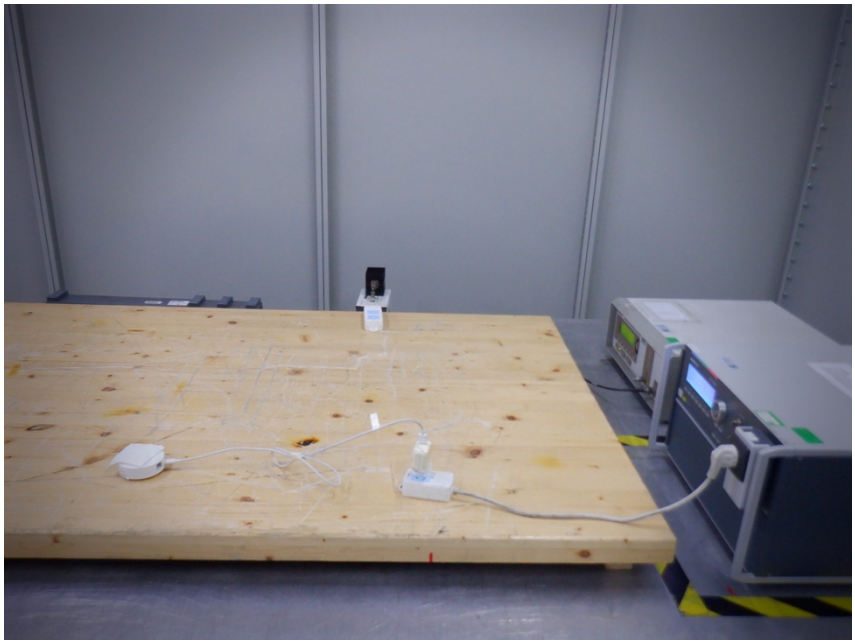
Electrical Fast Transients & Burst at AC Power Port



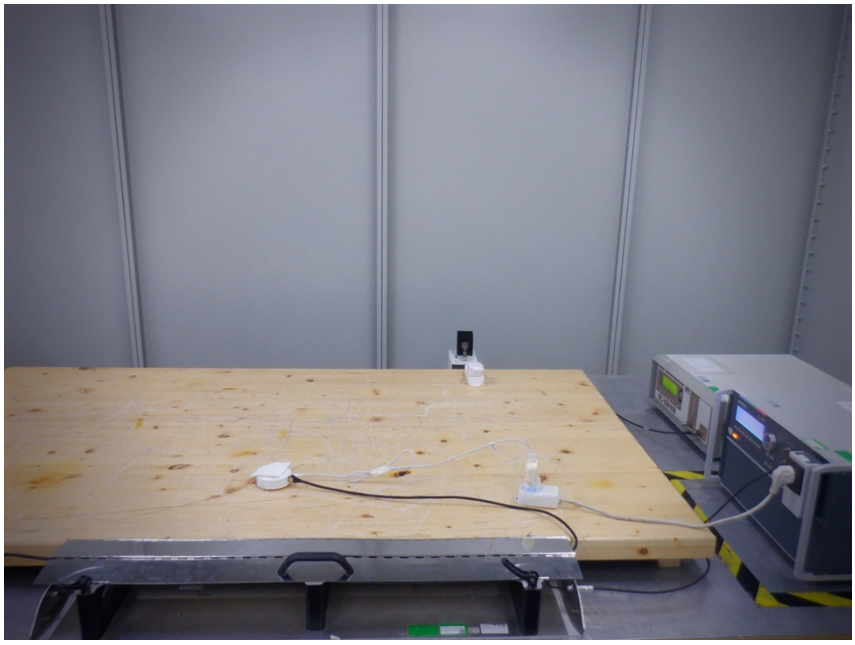
Electrical Fast Transients & Burst at Signal Port



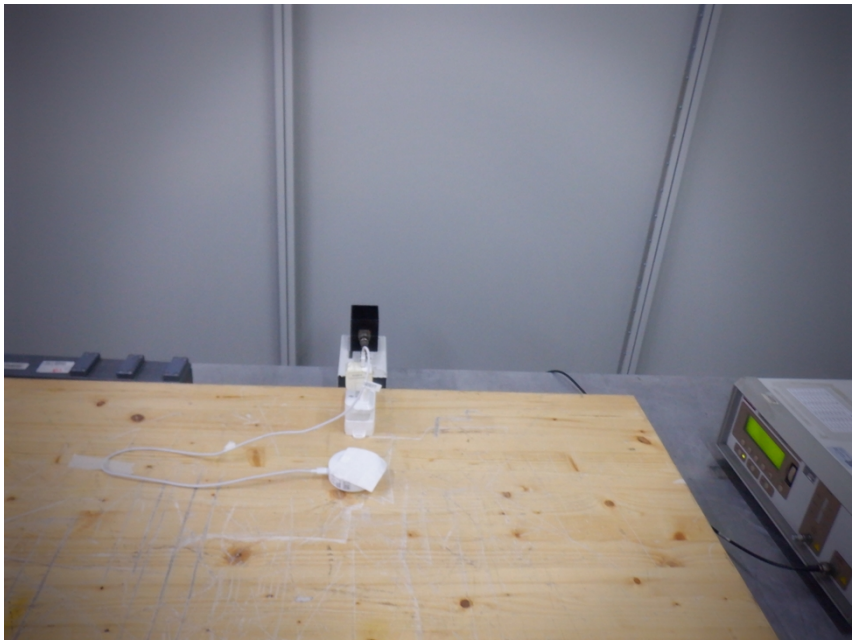
Surge at AC Power Port



Surge at Signal Port



Conducted Immunity at Power Port (150kHz-100MHz)



Conducted Immunity at Signal Port (150kHz-100MHz)

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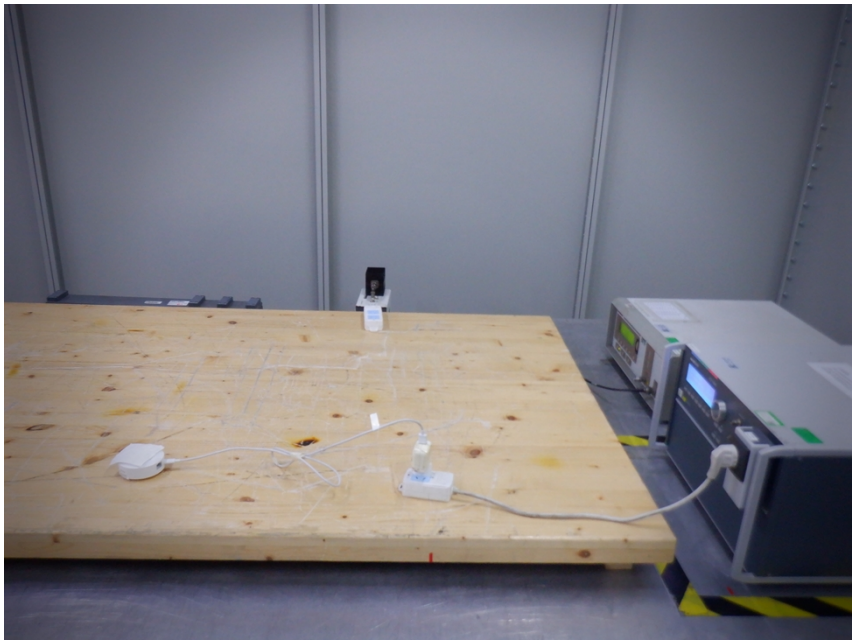
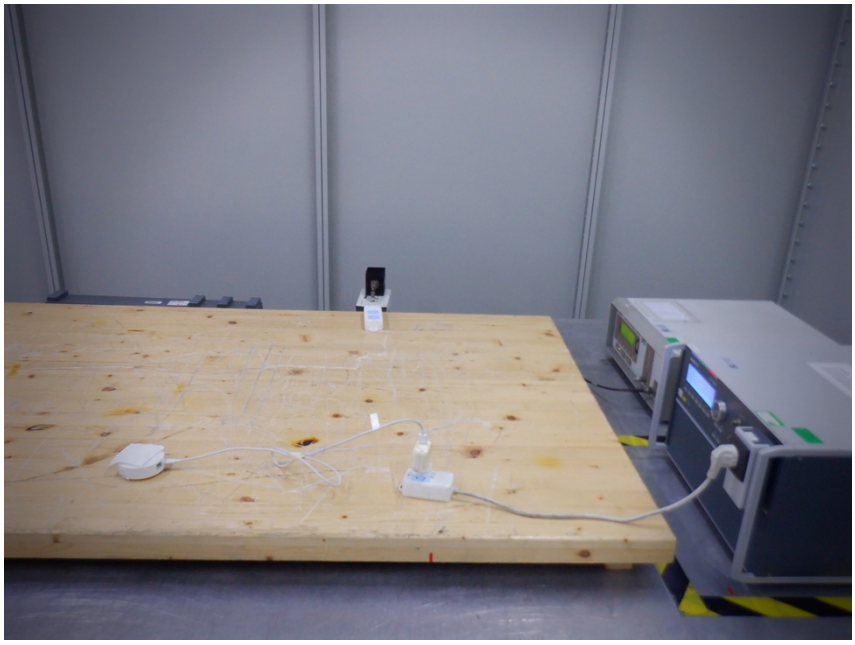
Mains Supply Voltage Variations



Voltage Dips and Interruptions



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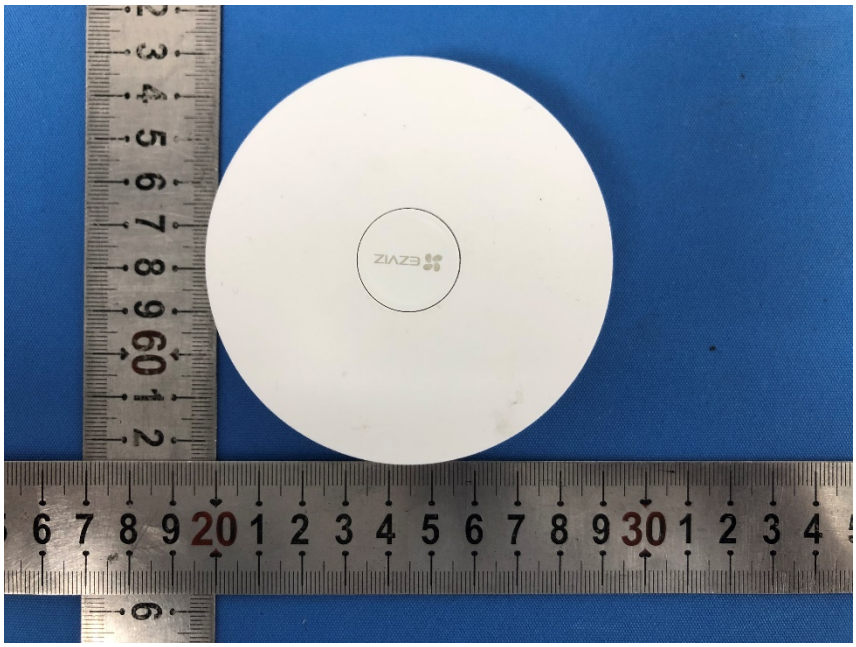
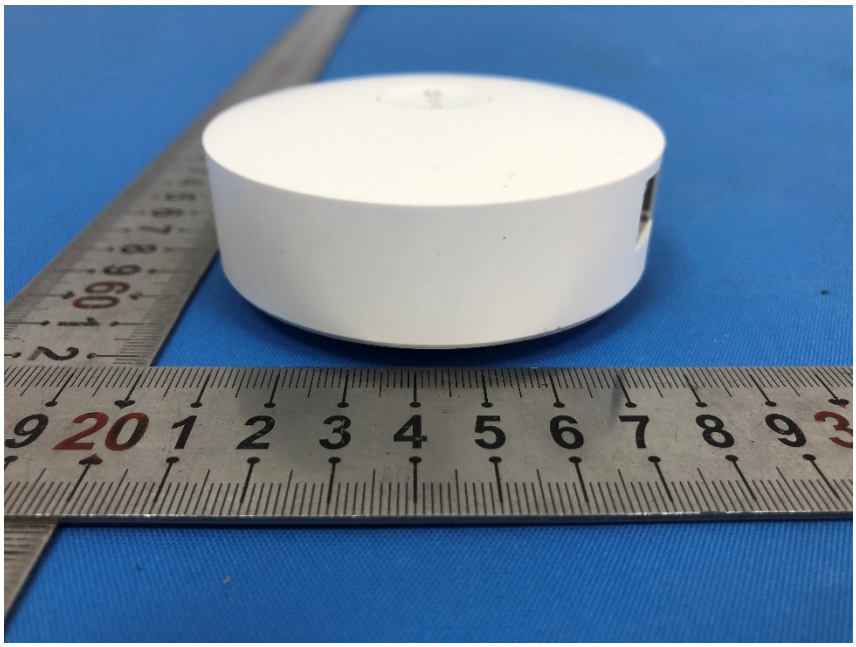
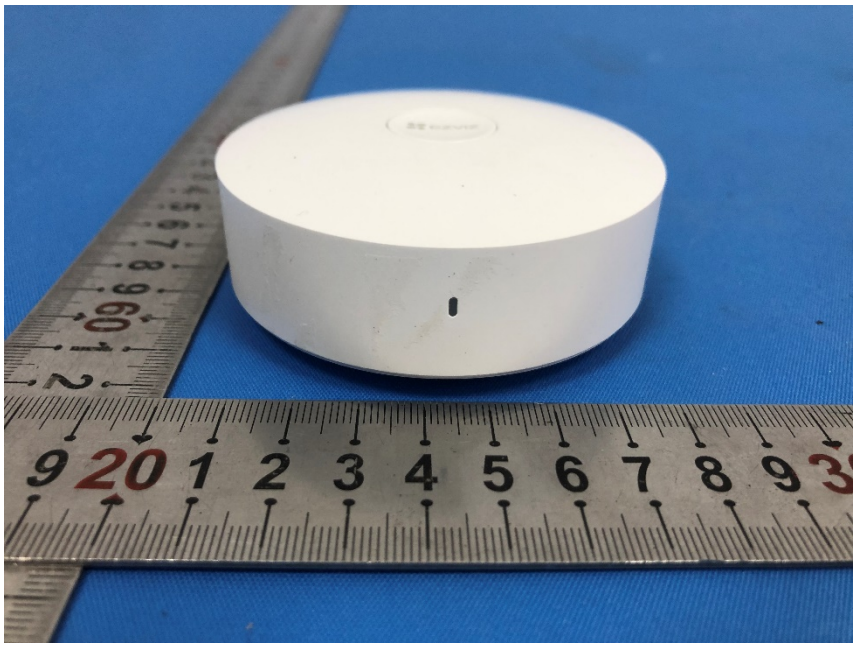
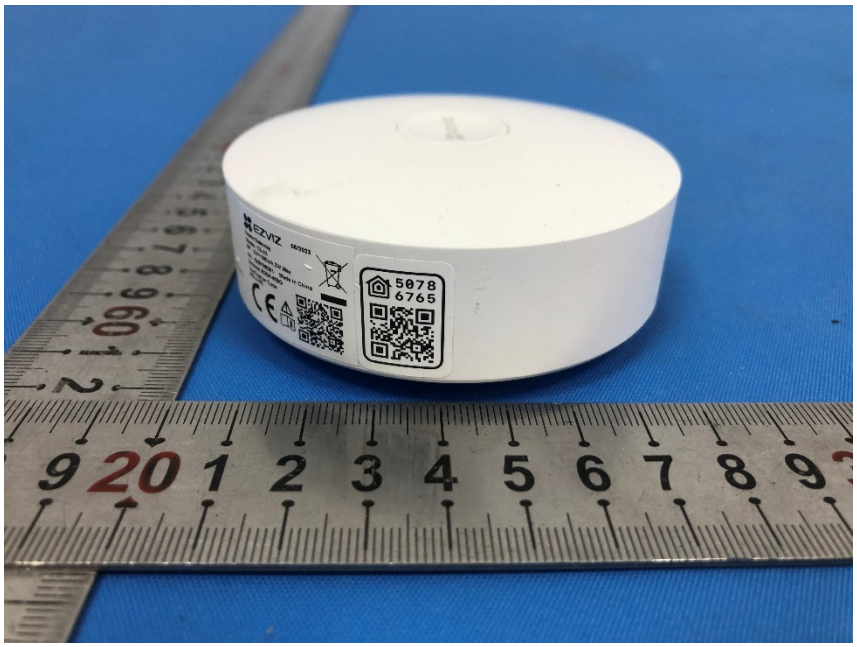
9 EUT Constructional Details (EUT Photos)









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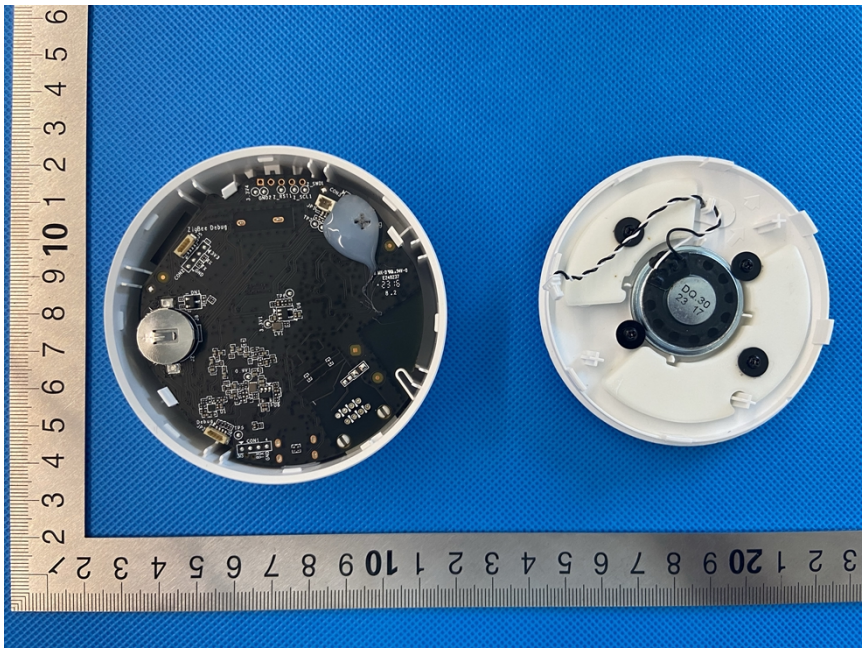

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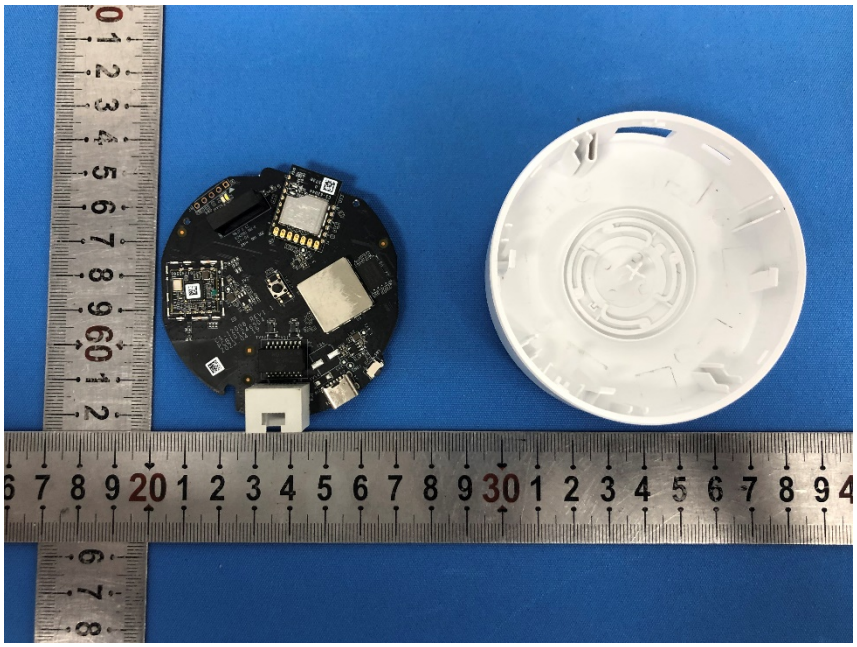

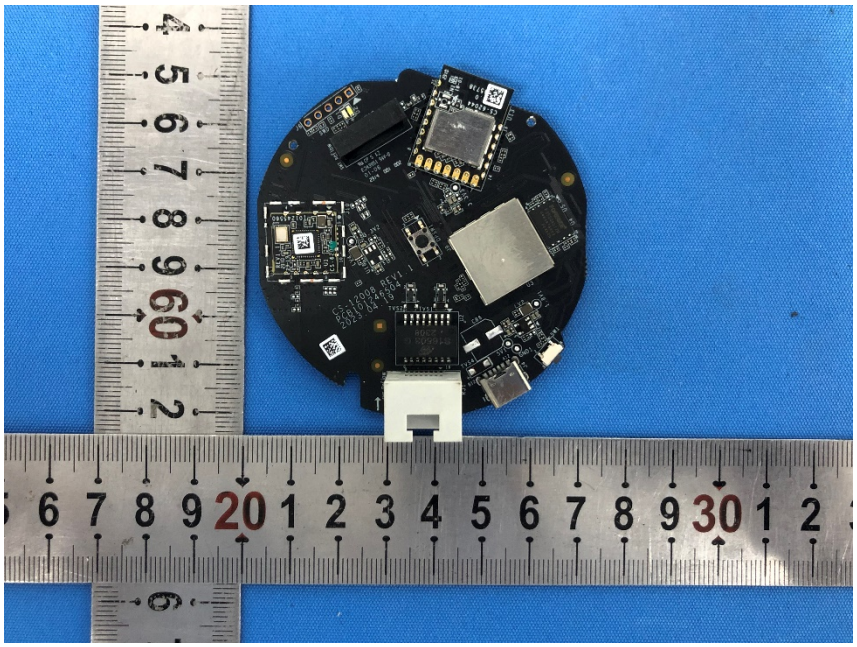

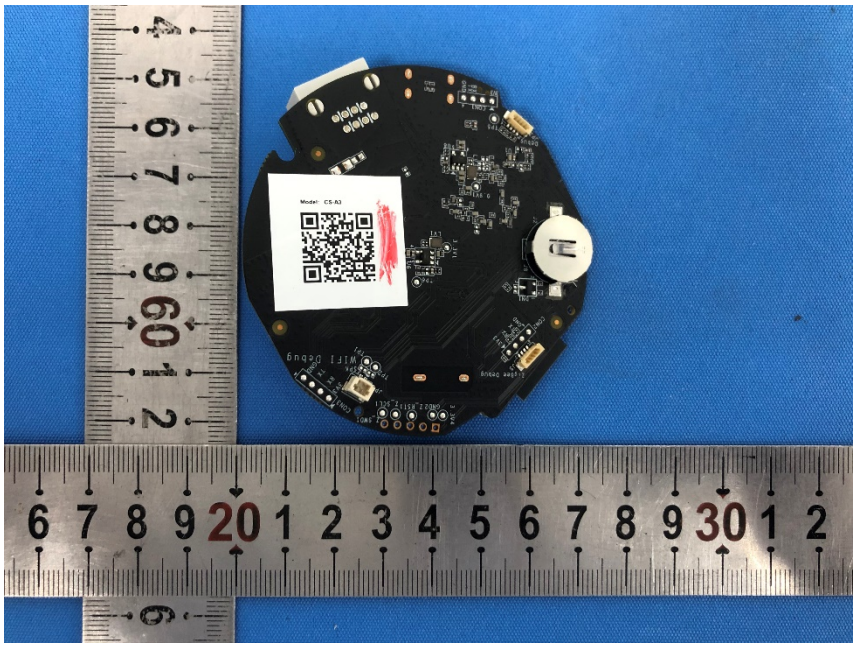

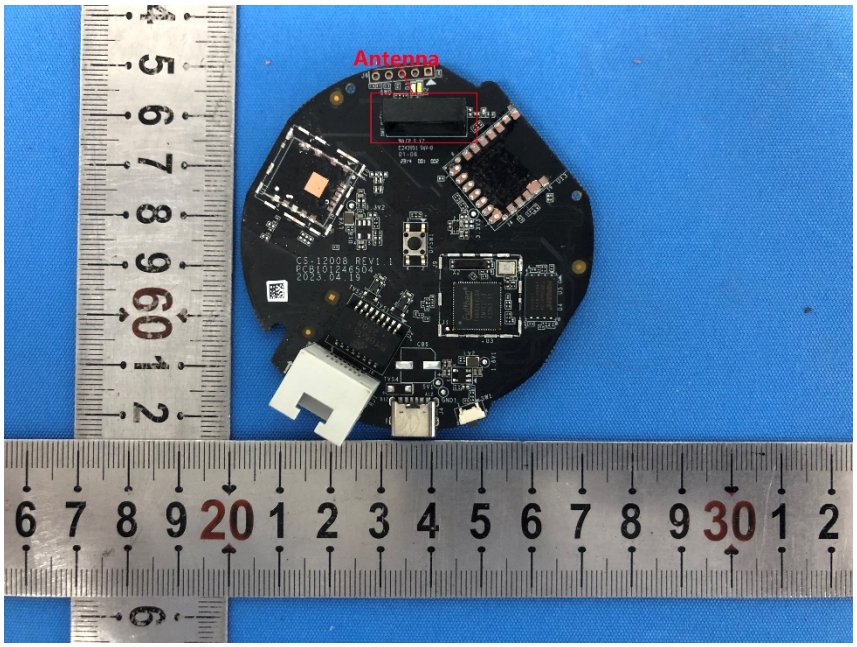

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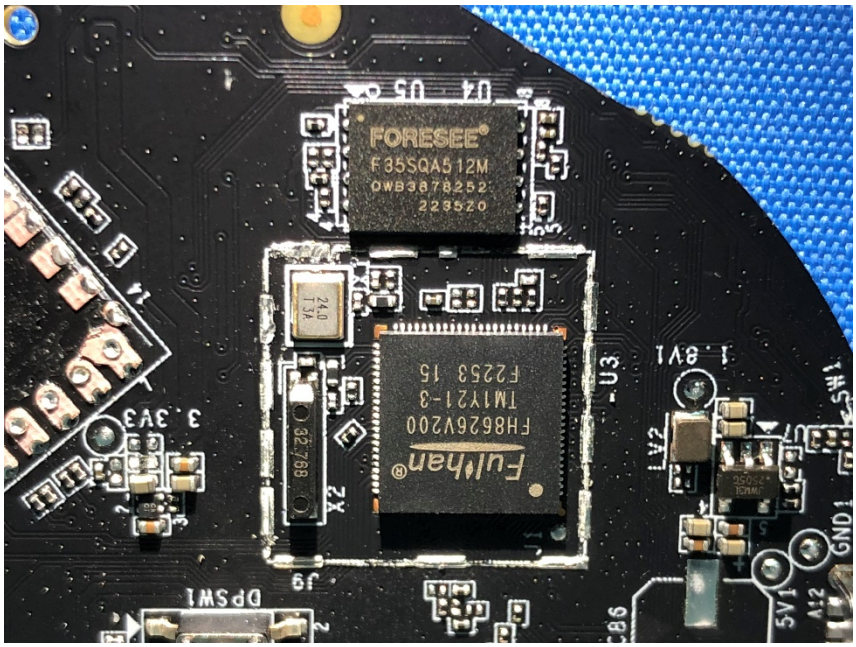

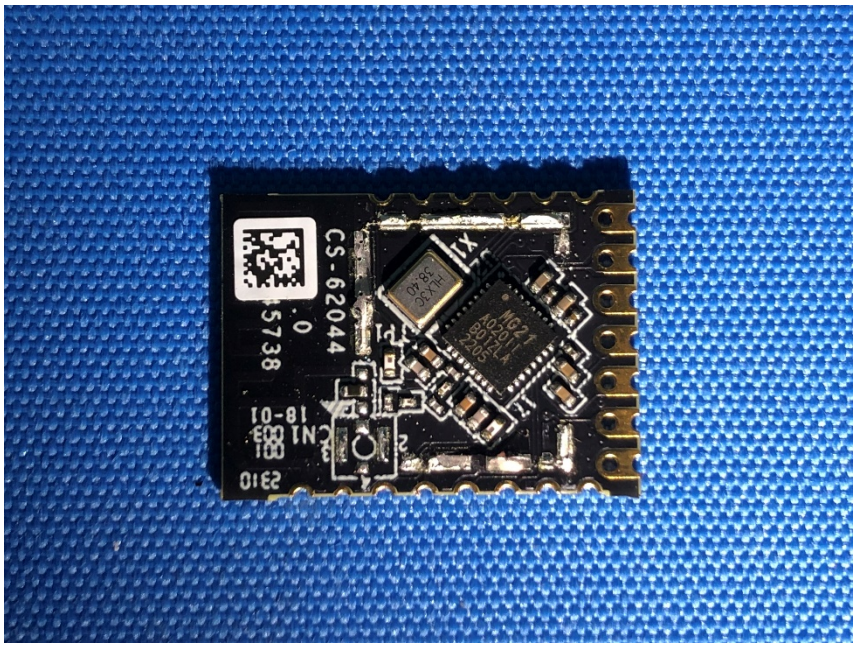

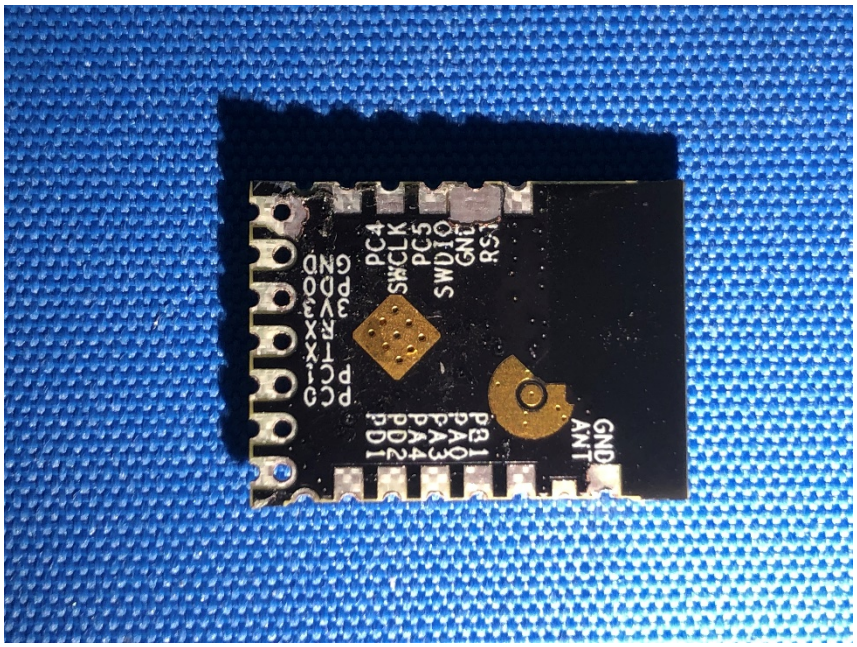

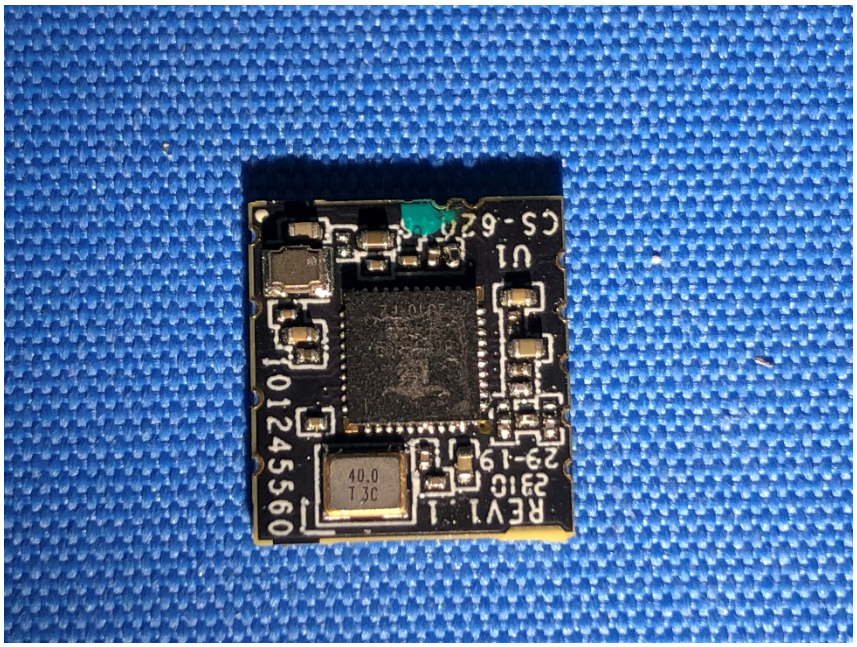

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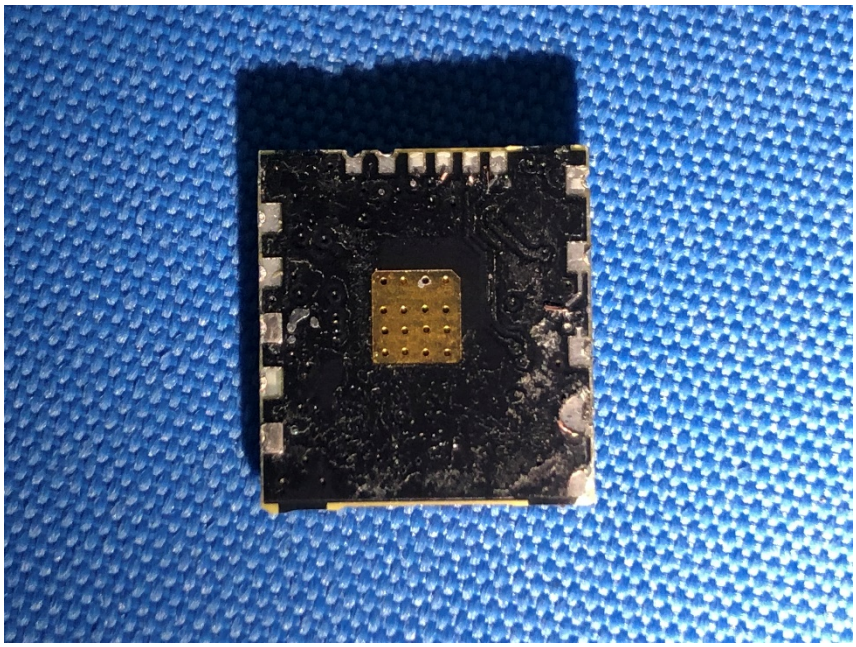

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