

Test Report No.: TWR2305013 001 **Page 1 of 1**

Applicant: Shenzhen Atess Power Technology Co., Ltd.
2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan
Street, Baoan District, Shenzhen, Guangdong, P.R. China

Factory: Shenzhen Atess Power Technology Co., Ltd.

Order No.: Q062716 **Date of receipt:** 12th 05. 2023

Device under Test: LiFePO4 Lithium-ion Battery

Model No.: ESS-BM-76.8-100T, ESS-BM-38.4-200T

Serial No.: Engineering samples of ESS-BM-76.8-100T, ESS-BM-38.4-200T

Place of Testing: Dongguan BALUN Technology Co., Ltd.
Room 104, 204, 205, Building 1, No. 6, Industrial South Road,
Songshan Lake District, Dongguan, Guangdong Province, P.R. China
532808

Test Specification: EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019
IEC 61000-6-2:2016, IEC 61000-6-4:2018

Technical Administrator:

Evelyn Hu



Date: 17th 05. 2023

Signature:

Reviewer:

Christo Chi



Date: 17th 05. 2023

Signature

Remark notes:

- This report consists of 1 page of cover page, and 1 EMC reports from Dongguan BALUN Technology Co., Ltd. (Report No. BL- DG2320015-401)

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CNAS L14701

TEST REPORT

Applicant: Shenzhen Atess Power Technology Co., Ltd

Address: 2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen, Guangdong, P.R. China

EUT Name: LiFePO4 Lithium-ion Battery

Model Name: ESS-BM-76.8-100T, ESS-BM-38.4-200T

Brand Name:



Test Standard: EN IEC 61000-6-2:2019, EN IEC 61000-6-4:2019, IEC 61000-6-2:2016, IEC 61000-6-4:2018

Sample Arrival Date: Feb. 01, 2023

Test Date: Mar. 27, 2023 - Apr. 10, 2023

Date of Issue: May 11, 2023

ISSUED BY:

Dongguan BALUN Testing Technology Co., Ltd.

Tested by: Fuwei Liu

Fuwei Liu

Checked by: Tao Zheng

Tao Zheng

Approved by: Simon Qi

Simon Qi

Revision History

| Version | Issue Date | Revisions Content |
|----------------|---------------------|----------------------|
| <u>Rev. 01</u> | <u>May 11, 2023</u> | <u>Initial Issue</u> |

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1. GENERAL INFORMATION

1.1. Test Laboratory

| | |
|---------|---|
| Name | Dongguan BALUN Testing Technology Co., Ltd. |
| Address | Room 104, 204, 205, Building 1, No. 6, Industrial South Road, Songshan Lake District, Dongguan, Guangdong Province, P. R. China |

1.2. Test Location

| | |
|----------|---|
| Name | Dongguan BALUN Testing Technology Co., Ltd. |
| Location | Room 104, 204, 205, Building 1, No. 6, Industrial South Road, Songshan Lake District, Dongguan, Guangdong Province, P. R. China |

2. PRODUCT INFORMATION

2.1. Applicant Information

| | |
|-----------|---|
| Applicant | Shenzhen Atess Power Technology Co., Ltd |
| Address | 2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen, Guangdong, P.R. China |

2.2. Manufacturer Information

| | |
|--------------|---|
| Manufacturer | Shenzhen Atess Power Technology Co., Ltd |
| Address | 2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen, Guangdong, P.R. China |

2.3. Factory Information

| | |
|---------|---|
| Factory | Shenzhen Atess Power Technology Co., Ltd |
| Address | 2nd Floor, No.23 Zhulongtian Road, Shuitian Community, Shiyan Street, Baoan District, Shenzhen, Guangdong, P.R. China |

2.4. General Description for Equipment under Test (EUT)

| | |
|---|--|
| EUT Name | LiFePO4 Lithium-ion Battery |
| Model Name Under Test | ESS-BM-76.8-100T, ESS-BM-38.4-200T |
| Series Model Name | ESS-BM-76.8-100T, ESS-BM-38.4-200T |
| Description of Model name differentiation | The battery type ESS-BM-76.8-100T and ESS-BM-38.4-200T have the same BMS, PCB board, control software, monitoring software, structure size and key components. The only difference between the two series are the battery designation (ESS-BM-76.8-100T: 24S, ESS-BM-38.4-200T:2P12S), label and parameter settings. Dongguan BALUN Testing Technology Co., Ltd. is not responsible for the authenticity of the above statements. |
| Hardware Version | BCU: V3.20 (Model: ESS-BM-76.8-100T) BMU: V1.5 (Model: ESS-BM-76.8-100T) BCU: V3.20 (Model: ESS-BM-38.4-200T) BMU: V1.6 (Model: ESS-BM-38.4-200T) |
| Software Version | BCU: V6.1 BMU: V6.0 |

Parameter table:

| Product information | | LiFePO4 Lithium-ion Battery | |
|---|--|-----------------------------|--|
| Model | | ESS-BM-76.8-100T | |
| Nominal capacity | | 100Ah | |
| Nominal voltage | | 76.8V | |
| Nominal Charge Current | | 50A | |
| Maximum Charge Current | | 100A | |
| Nominal Discharge Current | | 50A | |
| Maximum Discharge Current | | 100A | |
| Maximum Charge Voltage | | 86.4V | |
| Cut-off Voltage | | 67.2V | |
| Upper charge temperature | | 45°C | |
| Lower charge temperature | | 0°C | |
| Upper discharge temperature | | 55°C | |
| Lower discharge temperature | | -20°C | |
| Storage temperature range | | -10°C~30°C | |
| Recommend charging method declared by the manufacturer | | Charge to 86.4V CCCV | |
| Recommend discharging method declared by the manufacturer | | 0.5C Discharge to 67.2V | |
| Nominal mass | | ≤79kg | |
| External dimensions (D*W*H) | | 660mm×360mm×285mm | |
| | | 660mmx360mmx285mm | |

| Product information | Lithium-ion cell |
|---|-------------------------|
| Model | TB_32173195AE_100Ah_LFP |
| Nominal capacity | 100Ah |
| Nominal voltage | 3.2V |
| Voltage Range | 2.5V~3.65V |
| Rated Charge current | ≤1.0C |
| Maximum Continuous Charge Current | 1.5C |
| Maximum pulse Charge Current | 2.0C |
| Rated Discharge current | ≤1.0C |
| Maximum Continuous Discharge Current | 1.5C |
| Maximum pulse Discharge Current | 2.0C |
| Charging Operating Temperature Range | 0~45°C |
| Discharging Operating Temperature Range | -20~55°C |
| Storage temperature range | -10°C~30°C |
| Internal Resistance | ≤0.6mΩ |
| Nominal mass | 2.2±0.05kg |
| External dimensions (W*H*T) | 173.5mm×195mm×33mm |

2.5. Ancillary Equipment

| | | |
|-----------------------|--------------|-------------|
| Ancillary Equipment 1 | USB CAN | |
| | Brand Name | SomeBus |
| | Model | USBCAN-II C |
| | Cable length | 1.5m |
| | Serial No. | GC222111764 |

2.6. Technical Information

| | | |
|-------------------------------|--------------|--|
| Interfaces present on the EUT | AC Ports | No AC ports. |
| | DC Ports | From DC power supply to EUT. |
| | Telecom Port | No Telecom Ports. |
| | Signal Ports | CAN, which cable length is less than 3m. |
| About the Product | | The equipment is LiFePO4 Lithium-ion Battery, the above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual. |

Labels:

| LiFePO4 Lithium-ion Battery | |
|---|------------------|
| Model type: | ESS-BM-76.8-100T |
| Date of manufacture: | 20230109 |
| Rated capacity: | 100Ah |
| Nominal voltage: | 76.8V |
| Watt-hour: | 7.68KWh |
| Cell designation: IFpP/33/174/196/[(12S)2S]E/-20+30/95 | |
| Recommended charge: 50A (0.5C) charge to 86.4V CC-CV | |
| Beware of fire hazard! Disposal acc. to local regulations! | |
| Shenzhen Atess Power Technology Co., Ltd | |

| LiFePO4 Lithium-ion Battery | |
|--|------------------|
| Model type: | ESS-BM-38.4-200T |
| Date of manufacture: | 20230109 |
| Rated capacity: | 200Ah |
| Nominal voltage: | 38.4V |
| Watt-hour: | 7.68KWh |
| Cell designation: IFpP/33/174/196/[(6S2P)2S]E/-20+30/95 | |
| Recommended charge: 100A (0.5C) charge to 43.2V CC-CV | |
| Beware of fire hazard! Disposal acc. to local regulations! | |
| Shenzhen Atess Power Technology Co., Ltd | |

3. SUMMARY OF TEST RESULTS

3.1. Test Standards

| No. | Identity | Document Title |
|-----|-----------------------|--|
| 1 | EN IEC 61000-6-2:2019 | Electromagnetic compatibility (EMC) --Part 6-2: Generic standards -- Immunity standard for industrial environments |
| 2 | IEC 61000-6-2:2016 | |
| 3 | EN IEC 61000-6-4:2019 | Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments |
| 4 | IEC 61000-6-4:2018 | |

3.2. Verdict

| No. | Base Standard | Description | | Test Verdict | Result | Remark |
|-----------------|--|---|---------------|--------------|-----------|--------|
| Emission | | | | | | |
| 1 | IEC 61000-6-4:2018. EN IEC 61000-6-4:2019 | Radiated Emission | Below 1 GHz | P | Annex A.1 | -- |
| | | | Above 1 GHz | N | | Note 1 |
| 2 | IEC 61000-6-4:2018, EN IEC 61000-6-4:2019 | Conducted Emission | AC Ports | N | Annex A.2 | Note 2 |
| | | | Telecom Ports | N | | Note 3 |
| Immunity | | | | | | |
| 3 | IEC 61000-4-2:2008 | Electrostatic Discharge Immunity | | P | Annex A.3 | -- |
| 4 | IEC 61000-4-3:2006 +A1:2007+A2:2010 | Radiated RF Electromagnetic Field Immunity | | P | Annex A.4 | -- |
| 5 | IEC 61000-4-4:2012 | Electrical Fast Transient/Burst Immunity | AC Ports | N | Annex A.5 | Note 2 |
| | | | DC Ports | P | | -- |
| | | | Signal Ports | N | | Note 4 |
| 6 | IEC 61000-4-5:2014 | Surge Immunity | AC Ports | N | Annex A.6 | Note 2 |
| | | | DC Ports | P | | -- |
| | | | Signal Ports | N | | Note 5 |
| 7 | IEC 61000-4-6:2013 | Immunity to Conducted Disturbances Induced by RF Fields | AC Ports | N | Annex A.7 | Note 2 |
| | | | DC Ports | P | | -- |
| | | | Signal Ports | N | | Note 4 |
| 8 | IEC 61000-4-8:2009 | Power-frequency magnetic field | | P | Annex A.8 | -- |
| 9 | IEC 61000-4-11:2004 | Voltage Dips and Short Interruptions Immunity | AC Ports | N | Annex A.9 | Note 2 |

Note 1: The highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall be made below 1 GHz.

Note 2: AC power port is a port at which a conductor or cable carrying the primary electrical power needed for the operation (functioning) of an apparatus or associated apparatus is connected to the apparatus. The EUT does not have AC port according to above definition.

Note 3: Telecommunications/network port is a point of connection for voice, data and signaling transfers intended to interconnect widely dispersed systems via such means as direct connection to multi-user telecommunications networks, local area networks and similar networks. A port generally intended for interconnection of components of an ITE system under test and used in accordance with its functional specifications, is not considered to be a telecommunication port. The EUT does not have telecommunication port according to above definition.

Note 4: Signal/control port is a port at which a conductor or cable intended to carry signals is connected to the equipment. Applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 3 m. The signal ports cable length of EUT is less than 2m.

Note 5: Signal/control port is a port at which a conductor or cable intended to carry signals is connected to

the equipment. Applicable only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 30 m. The signal ports cable length of EUT is less than 2m.

This report judges the test conclusions:

| | |
|---------------------------------------|---|
| —Not applicable for this test product | N |
| —Meet requirements | P |
| —Does not meet the requirements | F |

3.3. Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| Measurement | Value |
|-----------------------------------|---------|
| Radiated emissions (30 MHz-1 GHz) | 4.87 dB |

4. GENERAL TEST CONFIGURATIONS

4.1. Test Environments

| Model: ESS-BM-76.8-100T | | | | | | |
|---|-------------------|-------------|-------------------|------------------|---------------|---------------|
| Test items | Voltage | Temperature | Relative Humidity | Ambient Pressure | Test Date | Test Engineer |
| Radiated Emission | DC 67.2V~86.4V | 24.8°C | 53% | 101.7kPa | Mar. 27, 2023 | Fuwei Liu |
| Electrostatic Discharge Immunity | | 25.3°C | 52% | 102.0kPa | Apr. 10, 2023 | |
| Radiated RF Electromagnetic Field Immunity | | 24.9°C | 51% | 101.9kPa | Apr. 04, 2023 | |
| Electrical Fast Transient/Burst Immunity | | 25.6°C | 52% | 102.1kPa | Apr. 07, 2023 | |
| Surge Immunity | | 25.5°C | 55% | 102.0kPa | Apr. 10, 2023 | |
| Immunity to Conducted Disturbances Induced by RF Fields | | 25.2°C | 56% | 102.2kPa | Apr. 06, 2023 | |
| Power-frequency magnetic field | | 24.6°C | 54% | 101.9kPa | Apr. 07, 2023 | |

| Model: ESS-BM-38.4-200T | | | | | | |
|---|-------------------|-------------|-------------------|------------------|---------------|---------------|
| Test items | Voltage | Temperature | Relative Humidity | Ambient Pressure | Test Date | Test Engineer |
| Radiated Emission | DC 33.6V~43.2V | 24.8°C | 53% | 101.7kPa | Mar. 27, 2023 | Fuwei Liu |
| Electrical Fast Transient/Burst Immunity | | 25.6°C | 52% | 102.1kPa | Apr. 07, 2023 | |
| Surge Immunity | | 25.5°C | 55% | 102.0kPa | Apr. 10, 2023 | |
| Immunity to Conducted Disturbances Induced by RF Fields | | 25.2°C | 56% | 102.2kPa | Apr. 06, 2023 | |

4.2. Test Equipment List

| Radiated Emission Test For Frequency Below 1 GHz | | | | | | |
|--|-------------------|-----------------|------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| EMI Receiver | Keysight | N9038B | MY61380118 | 2022.06.17 | 2023.06.16 | ✓ |
| Test Antenna-Bi-Log | SCHWARZBECK | VULB 9163 | 9163-01202 | 2021.12.01 | 2024.11.30 | ✓ |
| Anechoic Chamber | YIHENG ELECTRONIC | 12.0m*7.0m*7.5m | YHEMC018 | 2022.02.14 | 2025.02.13 | ✓ |
| Description | Manufacturer | Name | | Version | | |
| Test Software | BALUN | BL410-E | | V19.319 | | |

| Electrostatic Discharge Immunity Test | | | | | | |
|---------------------------------------|--------------|------------|------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| ESD Test System | SCHLODER | SESD 30000 | 607339 | 2023.03.08 | 2024.03.07 | ✓ |

| Radiated RF Electromagnetic Field Immunity Test | | | | | | |
|---|-------------------|-----------------|------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| Anechoic Chamber | YIHENG ELECTRONIC | 12.0m*7.0m*7.5m | YHEMC018 | 2022.02.14 | 2025.02.13 | ✓ |
| Signal Generator | ROHDE&SCHWARZ | N5181A | MY50141978 | 2023.03.08 | 2024.03.07 | ✓ |
| Power Amplifier | rflight | NTWPA-00810200E | 18093198 | 2023.03.03 | 2024.03.02 | ✓ |
| Power Amplifier | rflight | NTWPA-1060100E | 18093195 | 2023.03.03 | 2024.03.02 | ✓ |
| Power Meter | Agilent | E4417A | GB41292042 | 2023.03.08 | 2024.03.07 | ✓ |
| Field Strength Meter | Narda | EP601 | 511WX51129 | 2023.03.08 | 2024.03.07 | ✓ |
| Test Antenna-Bi-Log | SCHWARZBECK | VULB 9163 | 9163-01202 | 2021.12.01 | 2024.11.30 | ✓ |
| Test Antenna-Horn | SCHWARZBECK | BBHA 9120D | 9120D-1986 | 2022.12.07 | 2025.12.06 | ✓ |
| Description | Manufacturer | Name | | Version | | |
| Test Software | BALUN | BL410-E | | V19.319 | | |

| Electrical Fast Transient/Burst Immunity Test | | | | | | |
|---|--------------|---------|------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| EFT Test System | HTEC | HEFT 51 | 1331011 | 2023.02.28 | 2024.03.01 | ✓ |
| EFT coupling network | HTEC | ECDN 51 | 150601 | 2022.09.08 | 2023.09.07 | ✓ |

| Transients and Surges Test | | | | | | |
|---|--------------|-----------|------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| SURGE Generator (AC/DC Ports) | HTEC | HCWG 70 | 151601 | 2022.06.29 | 2023.06.28 | ✓ |
| SURGE coupling network (AC/DC Ports) | HTEC | SCDN303P7 | 151602 | 2023.02.28 | 2024.03.01 | ✓ |

| Immunity to Conducted Disturbances Induced by RF Fields | | | | | | |
|---|---------------|-------------|---------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| Conducted Disturbances Test System | Schloder GmbH | CDG 6000 | 18901932-0101 | 2022.09.08 | 2023.09.07 | ✓ |
| CDN | SCHLODER | CDN M2+3-32 | 18901802-0110 | 2022.09.08 | 2023.09.07 | ✓ |

| Power Frequency Magnetic Fields Immunity | | | | | | |
|--|--------------|------------|------------|------------|------------|-----|
| Description | Manufacturer | Model | Serial No. | Cal. Date | Cal. Due | Use |
| Magnetic Field Tester | HEAFELY | HPFMF 1000 | 183102 | 2023.02.28 | 2024.03.01 | ✓ |

4.3. Test Enclosure list

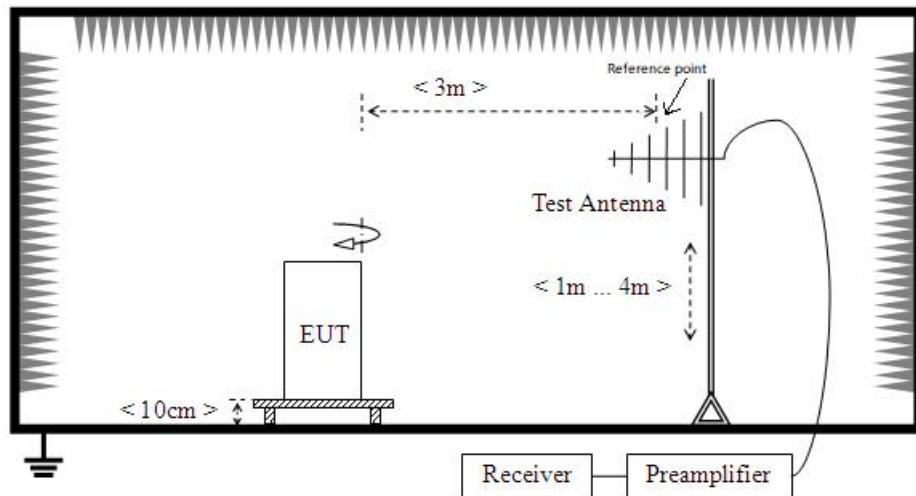
| Name | Manufacturer | Model | Serial No. | Length | Description |
|--------------------|--------------|------------|--------------------|--------|-------------|
| DC Source | WKDY | WPLA-150KW | W20180626011 | / | / |
| DC Electronic load | ITECH | IT8830B | 600243011716730002 | / | / |

4.4. Test Configurations

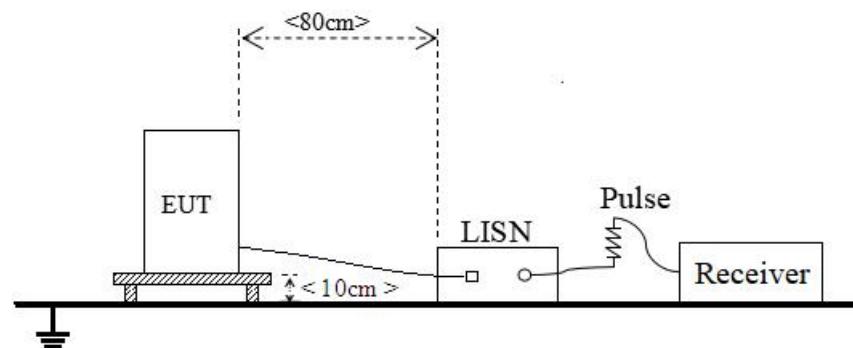
| Test Configurations (TC) No. | Description |
|------------------------------|---|
| TC01 | <u>Charging(100% Load)</u> EUT+DC Source+USB CAN |
| TC02 | <u>Charging(50% Load)</u> EUT+DC Source+USB CAN |
| TC03 | <u>Discharge(100% Load)</u> EUT+DC Electronic load+USB CAN |
| TC04 | <u>Discharge(50% Load)</u> EUT+DC Electronic load+USB CAN |
| TC05 | <u>Charging(10% Load)</u> EUT+DC Source+USB CAN |
| TC06 | <u>Discharge(10% Load)</u> EUT+DC Electronic load+USB CAN |
| TC07 | <u>Standby</u> EUT+USB CAN |

4.5. Description of Test Setup

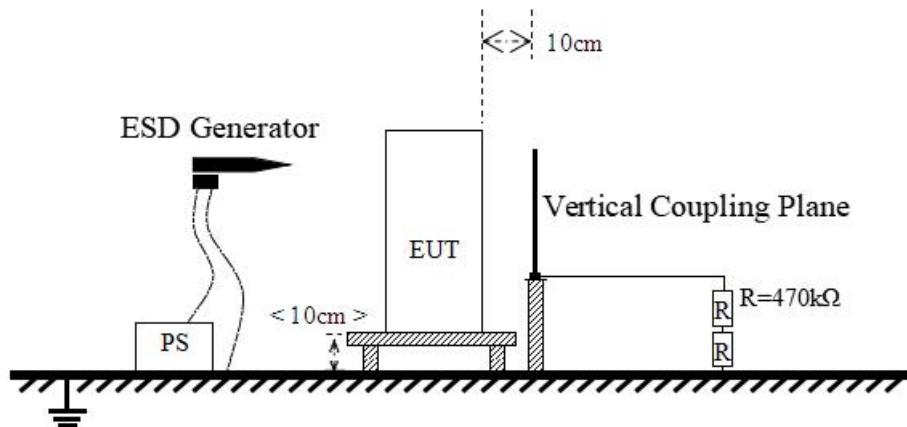
Test Setup 1 For Radiated Emission Test (30 MHz-1 GHz)

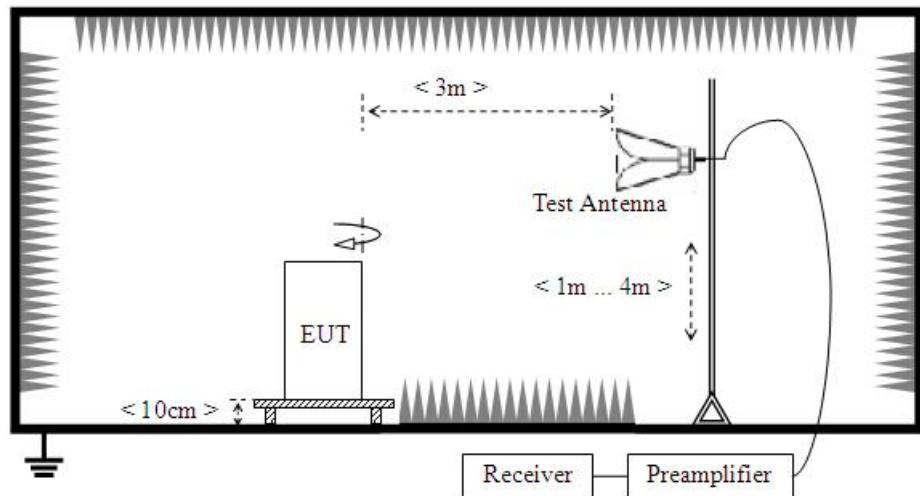
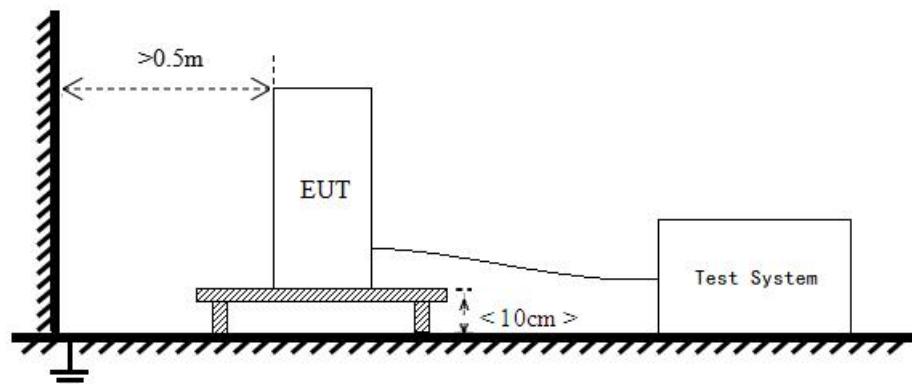
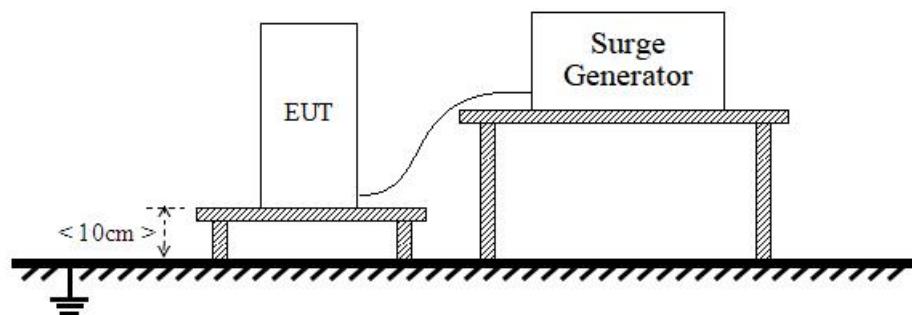


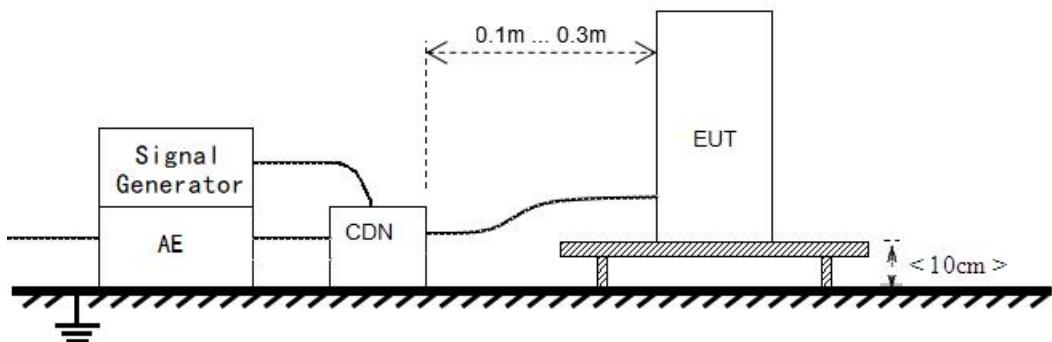
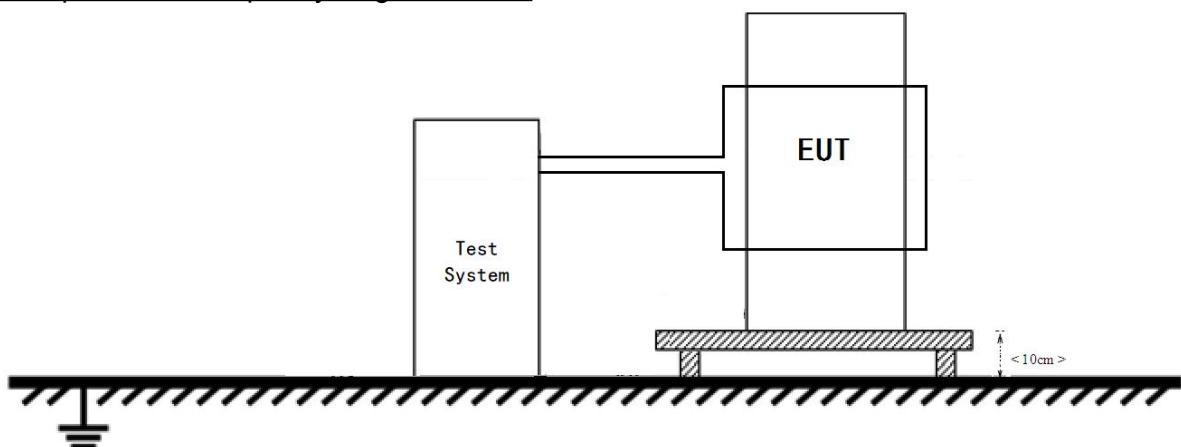
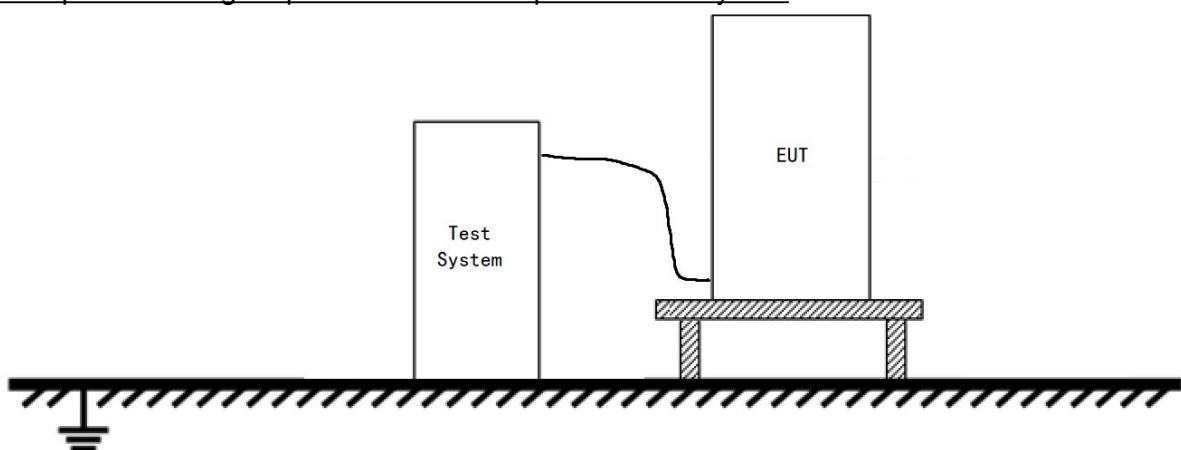
Test Setup 2 For Conducted disturbance voltage at mains terminals Test



Test Setup 3 For Electrostatic Discharge Immunity Test



Test Setup 4 For Radiated Immunity TestTest Setup 5 For Electrical Fast Transient / Burst Immunity TestTest Setup 6 For Surge Immunity Test

Test Setup 7 For Immunity to Conducted Disturbances Induced By RF Fields Test

Test Setup 8 Power Frequency Magnetic Fields

Test Setup 9 For Voltage Dips and Short Interruptions Immunity Test


4.6. Test Conditions

| Test Case | Test Conditions | |
|--|--------------------|---------------------------------------|
| Radiated Emission | Model | ESS-BM-76.8-100T, ESS-BM-38.4-200T |
| | Test Setup | Test Setup 1 |
| | Test Configuration | TC01, TC02, TC03, TC04, TC07 |
| Electrostatic Discharge Immunity | Model | ESS-BM-76.8-100T |
| | Test Setup | Test Setup 3 |
| | Test Configuration | TC05, TC06 |
| Radiated RF Electromagnetic Field Immunity | Model | ESS-BM-76.8-100T |
| | Test Setup | Test Setup 4 |
| | Test Configuration | TC05, TC06 |
| Electrical Fast Transient/Burst Immunity | Model | ESS-BM-76.8-100T, ESS-BM-38.4-200T |
| | Test Setup | Test Setup 5 |
| | Test Configuration | TC05, TC06 |
| Surge Immunity | Model | ESS-BM-76.8-100T, ESS-BM-38.4-200T |
| | Test Setup | Test Setup 6 |
| | Test Configuration | TC05, TC06 |
| Immunity to Conducted Disturbances Induced by RF Fields | Model | ESS-BM-76.8-100T, ESS-BM-38.4-200T |
| | Test Setup | Test Setup 7 |
| | Test Configuration | TC05, TC06 |
| Power-frequency magnetic field | Model | ESS-BM-76.8-100T |
| | Test Setup | Test Setup 8 |
| | Test Configuration | TC05, TC06 |
| Note: Based on client request, all normal using modes of the normal function were tested but only the worst test data of the worst mode is reported by this report. The Charging(50% Load) is the worst test mode of ESS-BM-76.8-100T, the Charging(100% Load) is the worst test mode of ESS-BM-38.4-200T. | | |

5. TEST ITEMS

5.1. Emission Tests

5.1.1. Radiated Emission

5.1.1.1. Limit

| Frequency range (MHz) | Distance (at 3 m) | Distance (at 10 m) |
|--------------------------|---------------------------------|---------------------------------|
| | Quasi-Peak Limit (dB μ V/m) | Quasi-Peak Limit (dB μ V/m) |
| 30 - 230 | 50 | 40 |
| 230 - 1000 | 57 | 47 |

| Frequency range (MHz) | Distance (at 3 m) | |
|--------------------------|---------------------------|------------------------------|
| | Peak Limit (dB μ V/m) | Average Limit (dB μ V/m) |
| 1000-3000 | 76 | 56 |
| 3000-6000 | 80 | 60 |

NOTE:

- 1) If the highest internal frequency of the EUT is less than 108MHz, the measurement shall only be made up to 1GHz; If the highest internal frequency of the EUT is between 108MHz and 500MHz, the measurement shall only be made up to 2GHz; If the highest internal frequency of the EUT is between 500MHz and 1GHz, the measurement shall only be made up to 5GHz; If the highest internal frequency of the EUT is above 1GHz, the measurement shall be made up to 6GHz; Where the highest internal frequency is not known, tests shall be performed up to 6GHz.
- 2) At transitional frequencies the lower limit applies.

5.1.1.2. Test Procedure

All Radiated Emission tests were performed in the azimuth plane. And test data and plots are recorded in this test report.

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

5.1.2. Conducted Emission

5.1.2.1. Test Limit

AC Port

| Frequency range (MHz) | Quasi-peak (dBuV) | Average (dBuV) |
|-----------------------|-------------------|----------------|
| 0.15 - 0.50 | 79 | 66 |
| 0.50 - 30 | 73 | 60 |

NOTE:

- 1) The lower limit shall apply at the band edges.

Telecom Port

| Frequency range (MHz) | Quasi-peak (dBuV) | Average (dBuV) |
|-----------------------|-------------------|----------------|
| 0.15 - 0.50 | 97-87 | 84-74 |
| 0.50 - 30 | 87 | 74 |

NOTE:

- 1) The lower limit shall apply at the band edges.
- 2) The limit decreases linearly with the logarithm of the frequency in the range 0.15 - 0.50 MHz.
- 3) The current and voltage disturbance limits are derived for use with an impedance stabilization network (ISN) which presents a common mode (asymmetric mode) impedance of 150 Ω to telecommunication port under test.

Discontinuous disturbances

The click limit Lq is calculated by increasing the relevant quasi-peak limit L for continuous disturbances (as given in AC Port quasi-peak limit) by:

| Frequency (MHz) | Click rate N | |
|-----------------|--------------------------------|--|
| | Click limit Lq (dB) N < 0,2 | Click limit Lq (dB) 0,2 ≤ N < 30 |
| 0.15 - 30 | AC Port quasi-peak limit + 44 | AC Port quasi-peak limit + 20 lg (30/N) |

5.1.2.2. Test Procedure

The EUT is connected to the power mains through a LISN which provides 50 Ω/50 µH or 150 Ω of coupling impedance for the measuring instrument. The test frequency range is from 150 kHz to 30 MHz. The maximum conducted interference is searched using Peak (PK), Quasi-peak (QP) and Average (AV) detectors; the emission levels that are more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Telecommunication port was checked to find out the maximum conducted emission.

5.2. Immunity Tests

5.2.1. Test Performance Criteria for Immunity Test

5.2.1.1. General Performance Criteria

| Type | Description |
|-------------|---|
| 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. |

5.2.2. Electrostatic Discharge Immunity

5.2.2.1. Test Specification

| Specification | Value |
|---------------------|--|
| Basic Standard | IEC 61000-4-2:2008 |
| Discharge Impedance | 330 Ohm / 150 pF |
| Discharge Voltage | Air Discharge: 2 kV; 4 kV; 8 kV; Contact Discharge: 2 kV; 4 kV |
| Polarity | Positive / Negative |
| Number of Discharge | Minimum 20 times at each test point |
| Discharge Mode | Single discharge |
| Discharge Period | 1 second minimum |

5.2.2.2. Test Procedure

1. Electrostatic discharges are applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
2. The test is performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
3. The time interval between two successive single discharges is at least 1 second.
4. The ESD generator is held perpendicularly to the surface to which the discharge is applied and the return cable is at least 0.2 meters from the EUT.
5. Contact discharges are applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
6. Air discharges are applied with the round discharge tip of the discharge electrode approaching the EUT as fast as possible (without causing mechanical damage) to touch the EUT. After each discharge, the ESD generator is removed from the EUT and re-triggered for a new single discharge. The test is repeated until all discharges were completed.
7. At least ten single discharges (in the most sensitive polarity) are applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator is positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
8. At least ten single discharges (in the most sensitive polarity) are applied to the center of one vertical edge of the Vertical Coupling Plane in sufficiently different positions that the four faces of the EUT were completely illuminated. The VCP (dimensions 0.5 m*0.5 m) is placed vertically to and 0.1 meters from the EUT.

5.2.3. Radio Frequency Electromagnetic Field Immunity

5.2.3.1. Test Specification

| Specification | Value | |
|---------------------|-------------------------------------|----------------------------|
| Basic Standard | IEC 61000-4-3:2006+A1:2007+A2:2010 | |
| Frequency Range | 80 MHz to 1000 MHz | 1.4 GHz to 6.0 GHz |
| Field Strength | 10 V/m (unmodulated, r.m.s) | 3 V/m (unmodulated, r.m.s) |
| Modulation | 1 kHz sine wave, 80%, AM modulation | |
| Frequency Step | 1% of fundamental | |
| Polarity of Antenna | Horizontal and Vertical | |
| Test Distance | 3 m | |
| Antenna Height | 1.5 m | |
| Dwell Time | 3 seconds | |

5.2.3.2. Test Procedure

1. The testing is performed in a fully anechoic chamber. The transmit antenna is located at a distance of 3 meters from the EUT.
2. The test signal is 80% amplitude modulated with a 1 kHz sine wave.
3. The frequency range is swept from 80 MHz to 1000 MHz and 1400 MHz to 6000 MHz with the exception of the exclusion band for transmitters, receivers and duplex transceivers. The rate of sweep does not exceed 1.5×10^{-3} decade/s. Where the frequency range is swept incrementally, the step size is 1% of fundamental.
4. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
5. The field strength level is 10 V/m for 80 MHz to 1000MHz, 3 V/m for 1400 MHz to 6000 MHz.
6. The test is performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides, but only the worst side data is reported in this report.

5.2.4. Electrical Fast Transient / Burst Immunity

5.2.4.1. Test Specification

| Specification | Value | |
|--------------------|----------------------|---------|
| Basic Standard | IEC 61000-4-4:2012 | |
| Test Voltage | AC Power Port: 2 kV. | |
| | DC Power Port: 1 kV. | |
| | Signal Port: 1 kV. | |
| Polarity | Positive / Negative | |
| Impulse Frequency | 5 kHz | 100 kHz |
| Impulse Wave Shape | 5/50 ns | |
| Burst Duration | 15 ms | 0.75 ms |
| Burst Period | 300 ms | |
| Test Duration | > 1 min | |

NOTE:

- 1) The signal ports tests apply only to ports interfacing with cables whose total length according to the manufacturer's functional specification may exceed 3 m.
- 2) The DC ports test not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging.
- 3) The EUT with a DC power input port intended for use with an AC-DC power adaptor shall be tested on the AC power input of the AC-DC power adaptor specified by the manufacturer or where none is so specified, using a typical AC-DC power adaptor.
- 4) The test applicable to DC power input ports and signal ports intended to be connected permanently to cables longer than 3 m.

5.2.4.2. Test Procedure

1. The EUT is tested with 2000 V discharges to the AC power input leads, 1000 V for signal port and DC port.
2. Both positive and negative polarity discharges are applied.
3. The length of the "hot wire" from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 1 m.
4. The duration time of each test sequential is 1min.
5. The transient / burst waveform is in accordance with IEC 61000-4-4:2012, 5/50 ns.

5.2.5. Surge Immunity

5.2.5.1. Test Specification

| Specification | | Value | | | | |
|-----------------|----------------|--|---------------|--------------|--|--|
| Ports class | | AC Power Port | DC Power Port | Signal Port | | |
| Basic Standard | | IEC 61000-4-5:2014 | | | | |
| Waveform | | Voltage: 1.2/50 μ s; Current: 8/20 μ s | | | | |
| Test Voltage | line to ground | 0.5 kV, 1 kV, 2 kV; | 0.5 kV, 1 kV | 0.5 kV, 1 kV | | |
| | line to line | 0.5 kV, 1 kV | 0.5 kV | / | | |
| Polarity | | Positive / Negative | | | | |
| Phase Angle | | 0°, 90°, 180°, 270° | N/A | | | |
| Repetition Rate | | 60 seconds | | | | |
| Times | | 5 times per condition | | | | |

NOTE:

- 1) The Signal ports test not applicable to ports interfacing with long distance lines which inside a building is longer than 30 m, or which leaves the building (including a line installed outdoors).
- 2) Signal ports directly connected to AC power network shall be treated as AC power ports.
- 3) The DC ports test not applicable to input ports intended for connection to a battery or a rechargeable battery which must be removed or disconnected from the apparatus for recharging.
- 4) The EUT with a DC power input port intended for use with an AC-DC power adaptor shall be tested on the AC power input of the AC-DC power adaptor specified by the manufacturer or where none is so specified, using a typical AC-DC power adaptor.

5.2.5.2. Test Procedure

The EUT and the auxiliary equipment are placed on a table of 0.8 m heights above a metal ground reference plane. The size of ground plane is greater than 1 m*1 m and project beyond the EUT by at least 0.1 m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT is less than 2 meters (provided by the manufacturer).

The EUT is connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise is applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).

The surges are applied line to line and line(s) to earth. When testing line to earth the test voltage is applied successively between each of the lines and earth. Set up to the test level specified increased the test voltage. All lower levels including the selected test level are tested. The polarity of each surge level included positive and negative test pulses.

5.2.6. Immunity to Conducted Disturbances Induced by RF Fields

5.2.6.1. Test Specification

| Specification | Value | | |
|-----------------|----------------------------------|---------------|-------------|
| Basic Standard | IEC 61000-4-6:2013 | | |
| Frequency Range | 0.15 MHz – 80 MHz | | |
| Test Voltage | 10 V (unmodulated, r.m.s) | | |
| Modulation | 1 kHz sine wave, 80% AM | | |
| Frequency Step | 1% of fundamental | | |
| Coupled Cable | AC Power Line | DC Power Line | Signal Line |
| Coupling Device | CDN-M1/2/3/4/5, Capacitive clamp | | |

NOTE:

- 1) The DC port and Signal port only apply to ports interfacing with cables whose total length according to the manufacturers functional specification may exceed 3 m.
- 2) The test level can also be defined as the equivalent current into a 150 Ω load at signal ports.

5.2.6.2. Test Procedure

The EUT shall be tested within its intended operating and climatic conditions.

The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 150 Ohm load resistor.

The test signal is 80% amplitude modulated with a 1 kHz sine wave.

The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The sweep rate shall not exceed 1.5×10^{-3} decades/s. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.

The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.

Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

5.2.7. Power Frequency Magnetic Fields Immunity

5.2.7.1. Test Specification

| Specification | Value |
|-----------------|-------------------------|
| Basic Standard | IEC 61000-4-8:2009 |
| Field Frequency | 50/60 Hz |
| Test Level | 30 A/m |
| Polarity | Horizontal and Vertical |
| Test Duration | 5 min |

NOTE:

- 1) The test shall be carried out at the frequencies appropriate to the power supply frequency. Equipment intended for use in areas supplied only at one of these frequencies need only be tested at that frequency.
- 2) Applicable only to apparatus containing devices susceptible to magnetic fields.

5.2.7.2. Test Procedure

The EUT shall be subjected to the test magnetic field by using the induction coil of standard dimensions (1 m*1 m) and shown in Section 15.1. The induction coil shall then be rotated by 90° in order to expose the EUT to the test field with different orientations.

5.2.8. Voltage Dips and Short Interruptions Immunity

5.2.8.1. Test Specification

AC Ports

| Specification | Value |
|-----------------------|---|
| Basic Standard | IEC 61000-4-34:2005+A1:2009 |
| Frequency | 50/60Hz |
| Voltage Dips | 100% reduction: 20 ms 60% reduction: 200/240 ms 30% reduction: 500/600 ms |
| Voltage Interruptions | 100% reduction: 5000/6000 ms |
| Voltage Phase Angle | 0° |

NOTE:

- 1) Applicable only to AC input ports.

5.2.8.2. Test Procedure

The power cord is used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.

The EUT is tested for a) 100% voltage dip of supplied voltage with duration of 20 ms; b) 60% voltage dip of supplied voltage with duration of 200 or 240 ms; c) 30% voltage dip of supplied voltage and duration 500 or 600 ms. Both of the dip tests are carried out for a sequence of three voltage dips with intervals of 10 seconds.

100% voltage interruption of supplied voltage with duration of 5000 or 6000 ms is followed, which is a sequence of three voltage interruptions with intervals of 10 seconds.

Voltage reductions occur at 0 degrees crossover point of the voltage waveform. The performance of the EUT is checked after the voltage dip or interruption.

ANNEX A TEST RESULTS

A.1 Radiated Emission

Note 1: The symbol of “--” in the table which means not application.

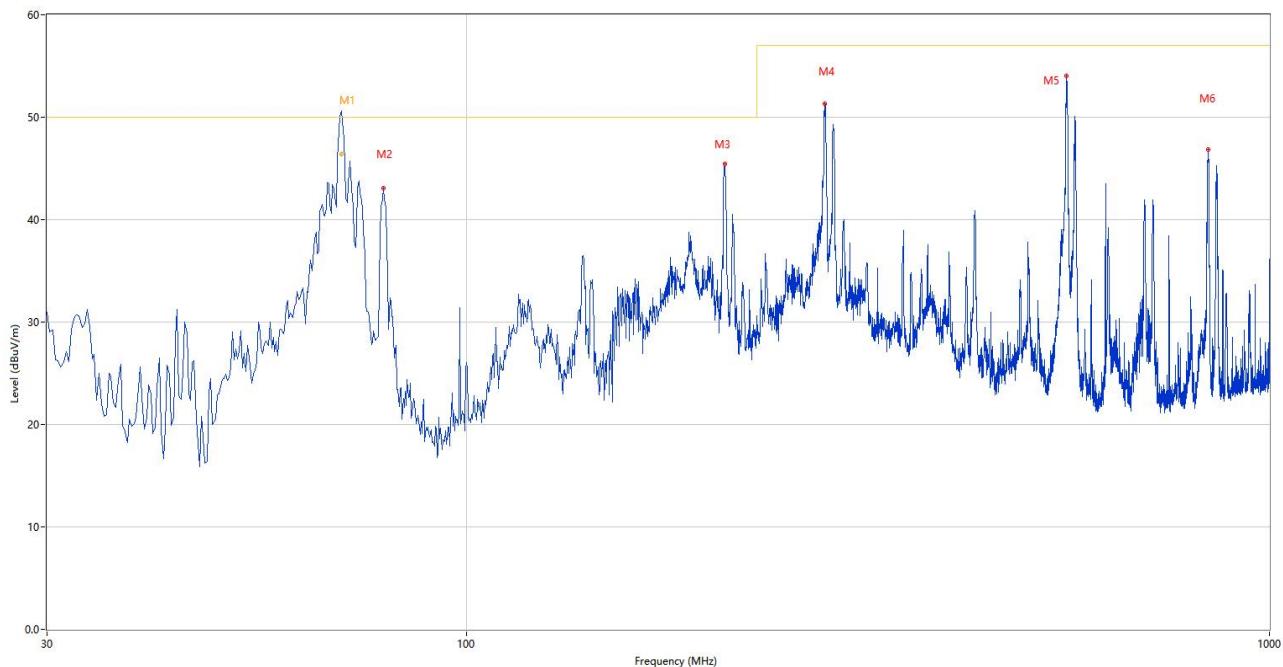
Note 2: Measurements shall be made with a quasi-peak measuring receiver in the frequency range 30 MHz to 1000 MHz. To reduce the testing time, a peak measuring receiver may be used instead of a quasi-peak measuring receiver. In case of dispute, measurement with a quasi-peak measuring receiver will take precedence.

Test Data and Plots- (Below 1 GHz)

Model: ESS-BM-76.8-100T

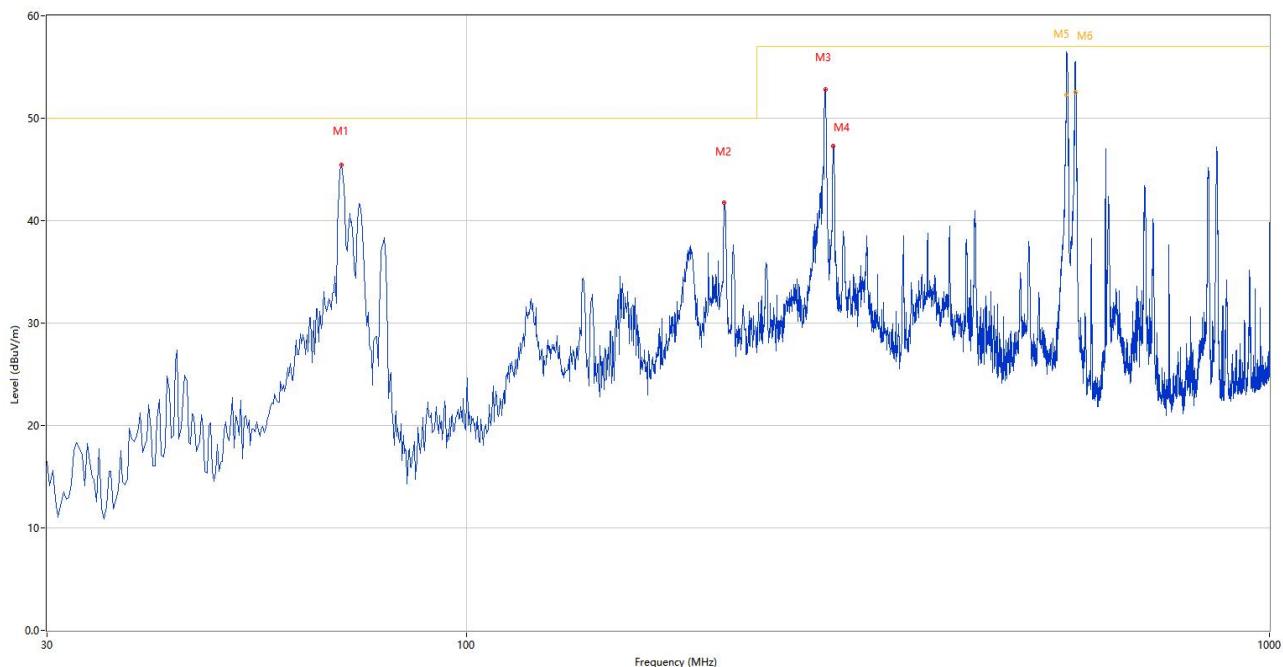
The worst test mode: Charging(50% Load)

A.1.1 Test Antenna Vertical, 30 MHz – 1 GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|----------|---------|
| 1* | 69.770 | 46.39 | -29.73 | 50.0 | -3.61 | QP | 232.00 | 224 | Vertical | P |
| 2 | 78.743 | 43.08 | -31.65 | 50.0 | -6.92 | Peak | 153.00 | 100 | Vertical | P |
| 3 | 209.693 | 45.41 | -27.46 | 50.0 | -4.59 | Peak | 153.00 | 100 | Vertical | P |
| 4 | 279.290 | 51.31 | -24.99 | 57.0 | -5.69 | Peak | 121.00 | 100 | Vertical | P |
| 5 | 558.650 | 53.85 | -18.51 | 57.0 | -3.15 | Peak | 153.00 | 100 | Vertical | P |
| 6 | 838.737 | 46.85 | -12.78 | 57.0 | -10.15 | Peak | 104.00 | 100 | Vertical | P |

A.1.2 Test Antenna Horizontal, 30 MHz – 1 GHz

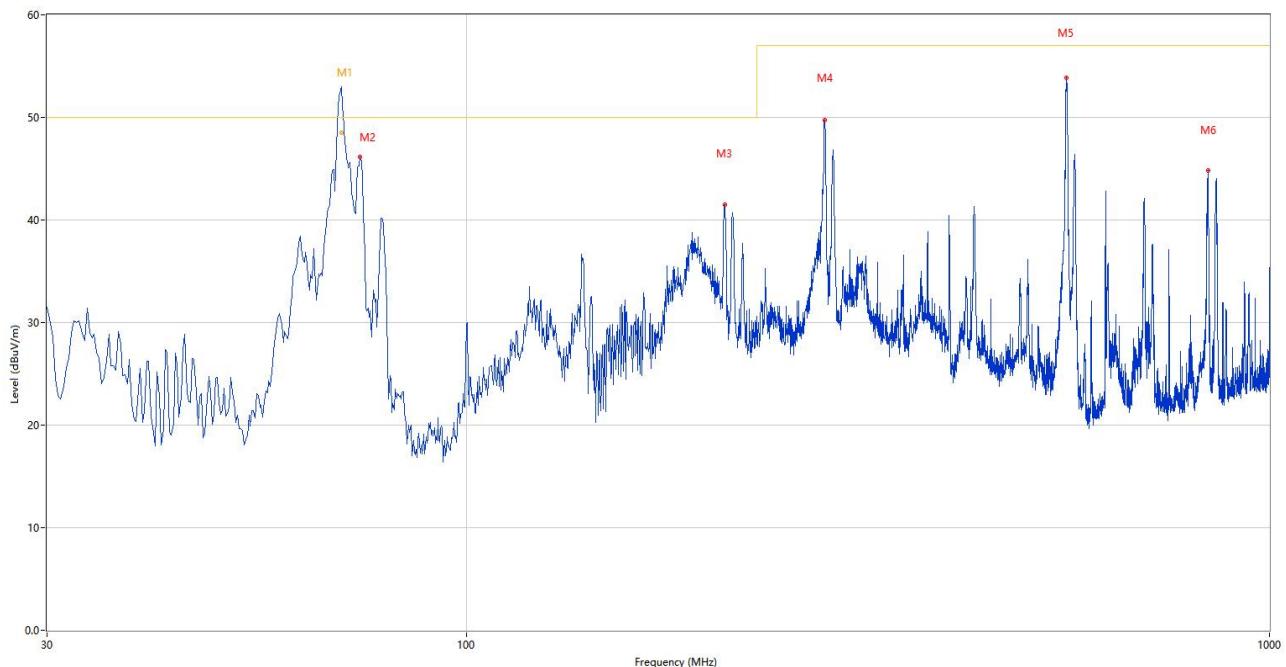


| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|------------|---------|
| 1 | 69.770 | 45.47 | -29.73 | 50.0 | -4.53 | Peak | 318.00 | 300 | Horizontal | P |
| 2 | 209.450 | 41.71 | -27.45 | 50.0 | -8.29 | Peak | 142.00 | 300 | Horizontal | P |
| 3 | 279.775 | 52.78 | -24.97 | 57.0 | -4.22 | Peak | 120.00 | 200 | Horizontal | P |
| 4 | 286.322 | 47.32 | -24.76 | 57.0 | -9.68 | Peak | 321.00 | 200 | Horizontal | P |
| 5* | 559.135 | 52.27 | -18.51 | 57.0 | -4.73 | QP | 54.00 | 152 | Horizontal | P |
| 6* | 572.958 | 52.41 | -18.05 | 57.0 | -4.59 | QP | 54.00 | 166 | Horizontal | P |

Model: ESS-BM-38.4-200T

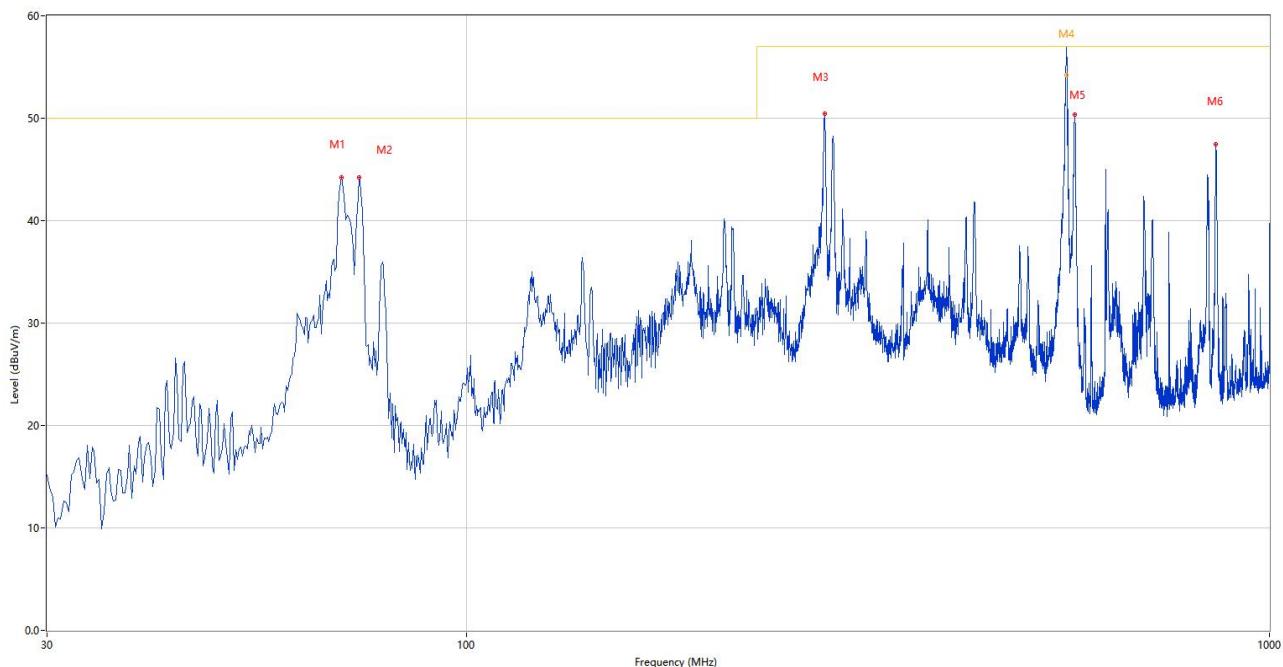
The worst test mode: Charging(100% Load)

A.1.3 Test Antenna Vertical, 30 MHz – 1 GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|----------|---------|
| 1* | 69.770 | 48.51 | -29.73 | 50.0 | -1.49 | QP | 360.00 | 114 | Vertical | P |
| 2 | 73.650 | 46.10 | -31.11 | 50.0 | -3.90 | Peak | 255.00 | 100 | Vertical | P |
| 3 | 209.935 | 41.53 | -27.47 | 50.0 | -8.47 | Peak | 174.00 | 100 | Vertical | P |
| 4 | 279.047 | 49.77 | -24.99 | 57.0 | -7.23 | Peak | 206.00 | 100 | Vertical | P |
| 5 | 558.893 | 53.87 | -18.51 | 57.0 | -3.13 | Peak | 238.00 | 100 | Vertical | P |
| 6 | 838.495 | 44.79 | -12.78 | 57.0 | -12.21 | Peak | 142.00 | 100 | Vertical | P |

A.1.4 Test Antenna Horizontal, 30 MHz – 1 GHz



| No. | Frequency (MHz) | Results (dBuV/m) | Factor (dB) | Limit (dBuV/m) | Over Limit (dB) | Detector | Table (Degree) | Height (cm) | Antenna | Verdict |
|-----|-----------------|------------------|-------------|----------------|-----------------|----------|----------------|-------------|------------|---------|
| 1 | 69.770 | 44.18 | -29.73 | 50.0 | -5.82 | Peak | 135.00 | 300 | Horizontal | P |
| 2 | 73.408 | 44.24 | -31.05 | 50.0 | -5.76 | Peak | 184.00 | 300 | Horizontal | P |
| 3 | 279.047 | 50.40 | -24.99 | 57.0 | -6.60 | Peak | 318.00 | 200 | Horizontal | P |
| 4* | 558.650 | 54.24 | -18.51 | 57.0 | -2.76 | QP | 96.00 | 108 | Horizontal | P |
| 5 | 571.987 | 50.39 | -18.07 | 57.0 | -6.61 | Peak | 56.00 | 100 | Horizontal | P |
| 6 | 857.895 | 47.46 | -12.35 | 57.0 | -9.54 | Peak | 305.00 | 100 | Horizontal | P |

A.2 Conducted Emission

Note: Not applicable.

A.3 Electrostatic Discharge Immunity

| Test Points | Discharge Level (kV) | Discharge Mode | Number of Discharge | Met Criteria | Required Criteria | Verdict |
|-----------------|----------------------|-------------------|---------------------|--------------|-------------------|---------|
| VCP | ±2, ±4 | Connect discharge | 100 | A | B | P |
| ①Metal screw | ±2, ±4 | Connect discharge | 1220 | A | B | P |
| ②Metal handle | ±2, ±4 | Connect discharge | 80 | A | B | P |
| ③RJ45 interface | ±2, ±4 | Connect discharge | 40 | A | B | P |
| ④Led light | ±2, ±4, ±8 | Air discharge | 120 | A | B | P |
| ⑤Breaker | ±2, ±4, ±8 | Air discharge | 20 | A | B | P |
| ⑥Screen | ±2, ±4, ±8 | Air discharge | 20 | A | B | P |

A.4 Radio Frequency Electromagnetic Field Immunity

| Antenna Polarity | Frequency (MHz) | Side | Field Strength (V/m) | Met Criteria | Required Criteria | Verdict |
|------------------|-----------------|--------------------------|----------------------|--------------|-------------------|---------|
| Vertical | 80 - 1000 | Front, Back, Left, Right | 10 | A | A | P |
| Horizontal | 80 - 1000 | Front, Back, Left, Right | 10 | A | A | P |
| Vertical | 1400 - 6000 | Front, Back, Left, Right | 3 | A | A | P |
| Horizontal | 1400 - 6000 | Front, Back, Left, Right | 3 | A | A | P |

A.5 Electrical Fast Transient/Burst Immunity

Test Data (DC Power Port)

| Burst Parameters | 5/50ns | Pulse Frequency | 5kHz | Pulse group action time | 15ms | | Burst interval | 300ms | |
|------------------|---------------|-----------------|--------|-------------------------|-----------------|--------------|-------------------|---------|--|
| | | | 100kHz | | 0.75ms | | | | |
| Test Port | Coupling Line | | | Polarity | Test Level (kV) | Met Criteria | Required Criteria | Verdict | |
| DC Port | P+ & P- & PE | | + / - | 0.5, 1 | | A | B | P | |

A.6 Surge Immunity

Test Data (DC Power Port)

| Times | 5 times for positive and negative | | Time interval | | 60s | | |
|-----------|-----------------------------------|----------|-----------------|---------------|--------------|-------------------|---------|
| Test Port | Coupling Line | Polarity | Test Level (kV) | Test Waveform | Met Criteria | Required Criteria | Verdict |
| DC Port | P+ to P- | + / - | 0.5 | 1.2/50us | A | B | P |
| DC Port | P+ to PE, P- to PE | + / - | 0.5, 1 | 1.2/50us | A | B | P |

A.7 Immunity to Conducted Disturbances Induced by RF Fields

Test Data (DC Power Port)

| Test Port | Frequency (MHz) | Test Level (V) | Met Criteria | Required Criteria | Verdict |
|-----------|-----------------|----------------|--------------|-------------------|---------|
| DC Port | 0.15 - 80 | 10 | A | A | P |

A.8 Power Frequency Magnetic Fields Immunity

| Test direction | Test Level (A/m) | Met Criteria | Required Criteria | Verdict |
|----------------|------------------|--------------|-------------------|---------|
| X, Y, Z | 30 | A | A | P |

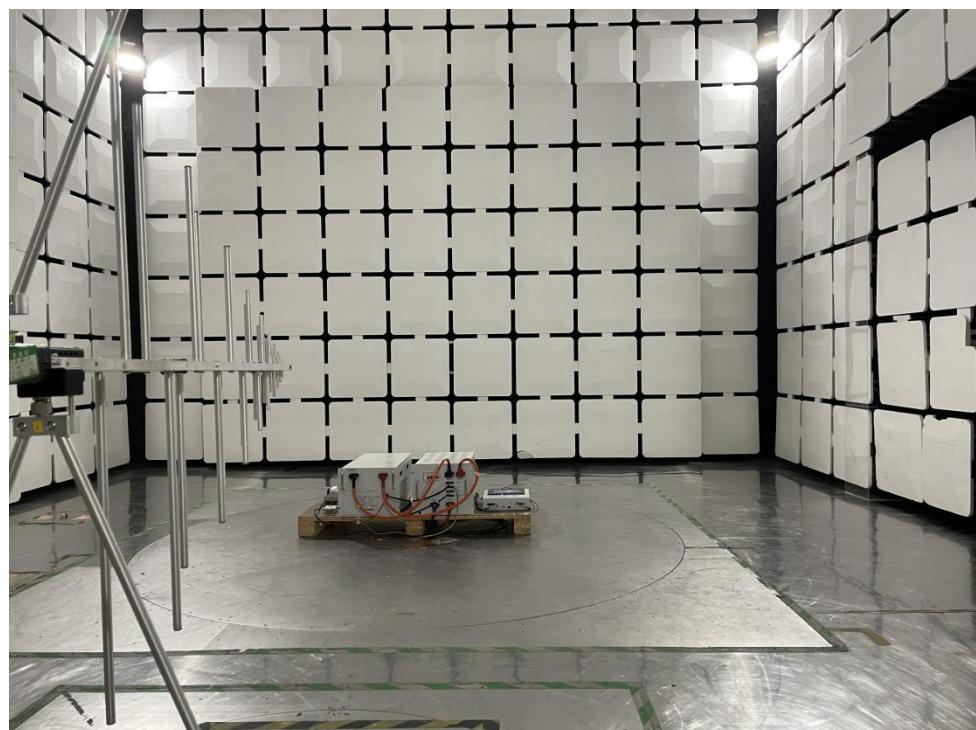
A.9 Voltage Dips and Short Interruptions Immunity

Note: Not applicable.

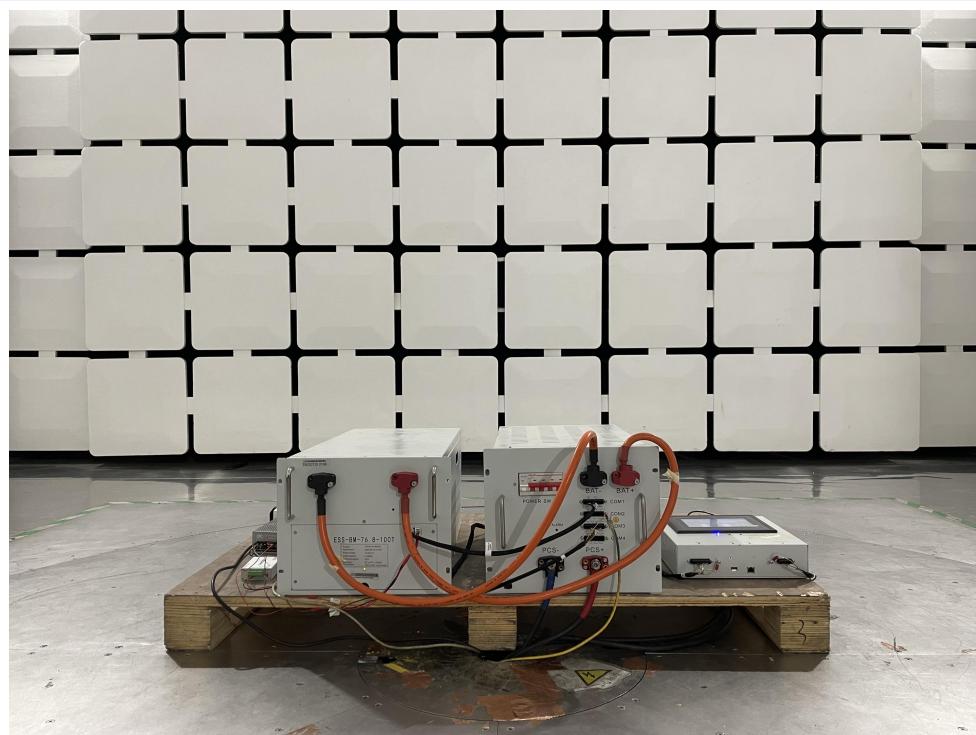
ANNEX B TEST SETUP PHOTOS

B.1 Radiated Emission

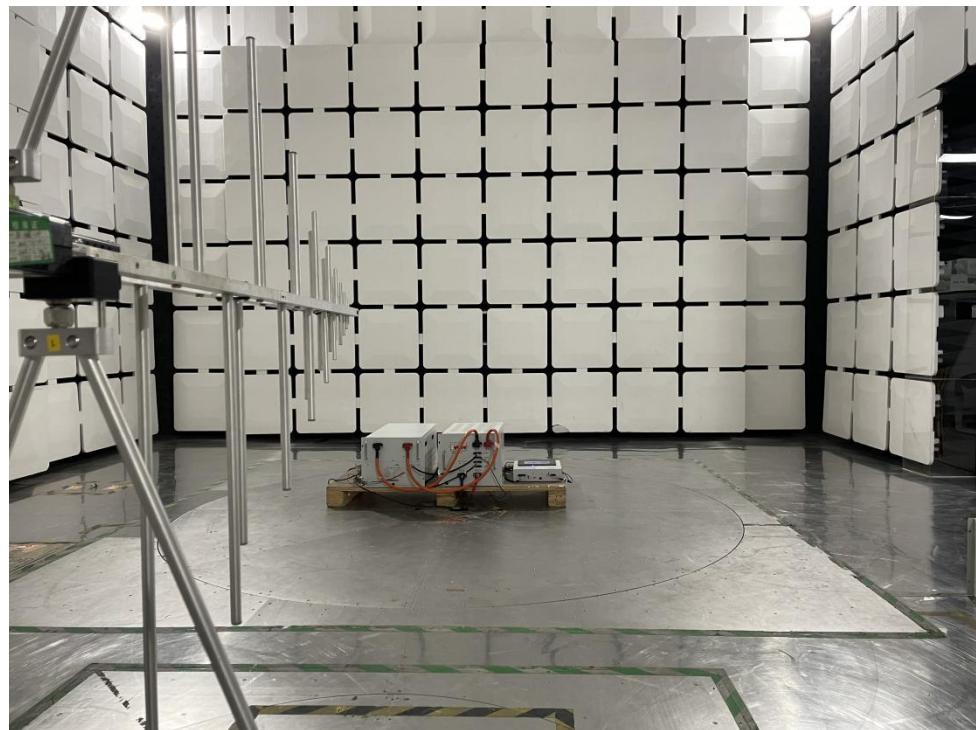
30MHz~1000MHz (Model: ESS-BM-76.8-100T)



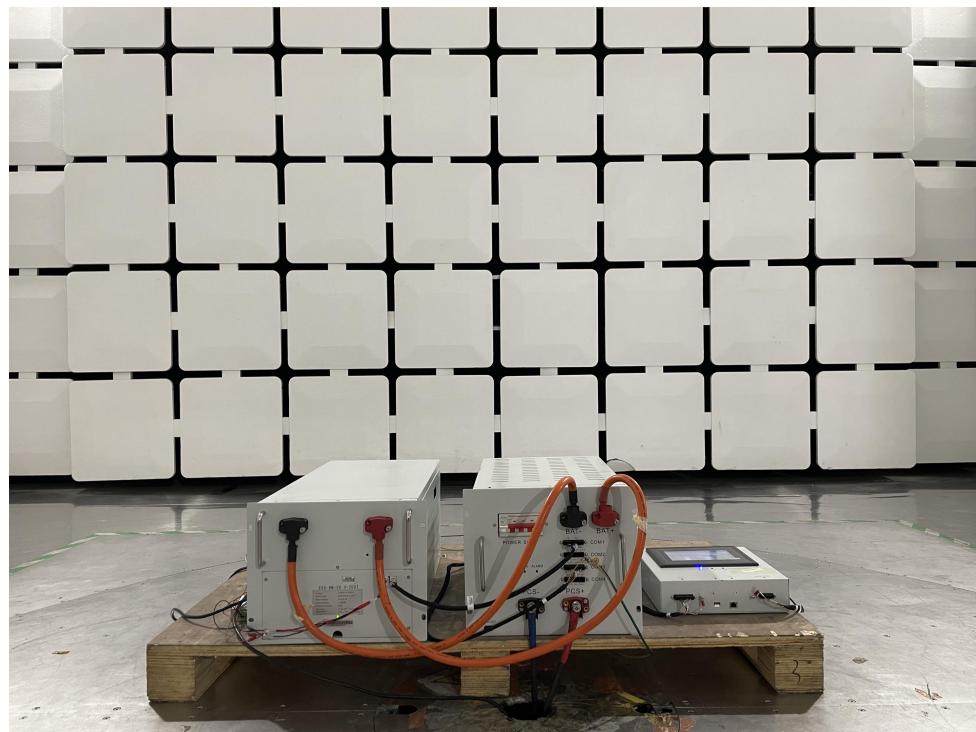
Close-up photo (Model: ESS-BM-76.8-100T)



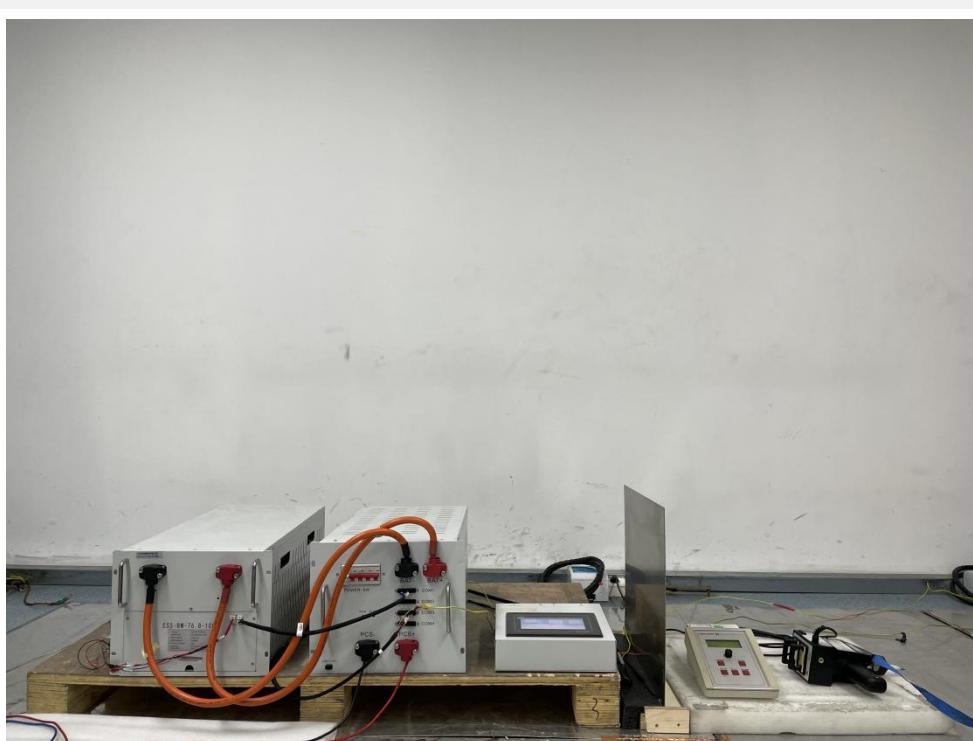
30MHz~1000MHz (Model: ESS-BM-38.4-200T)

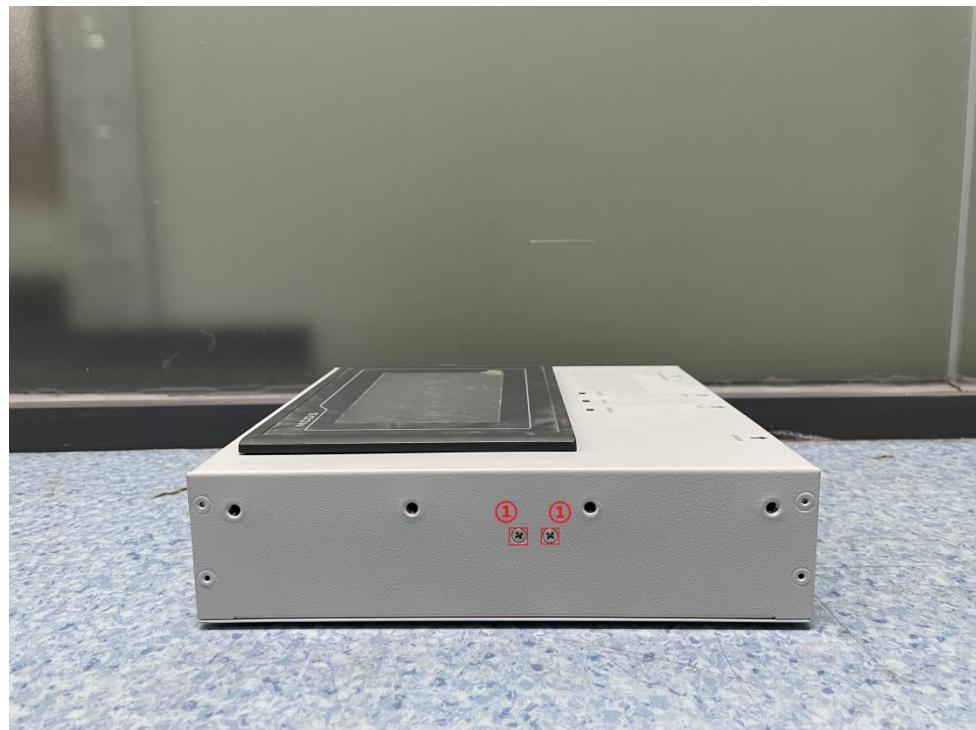


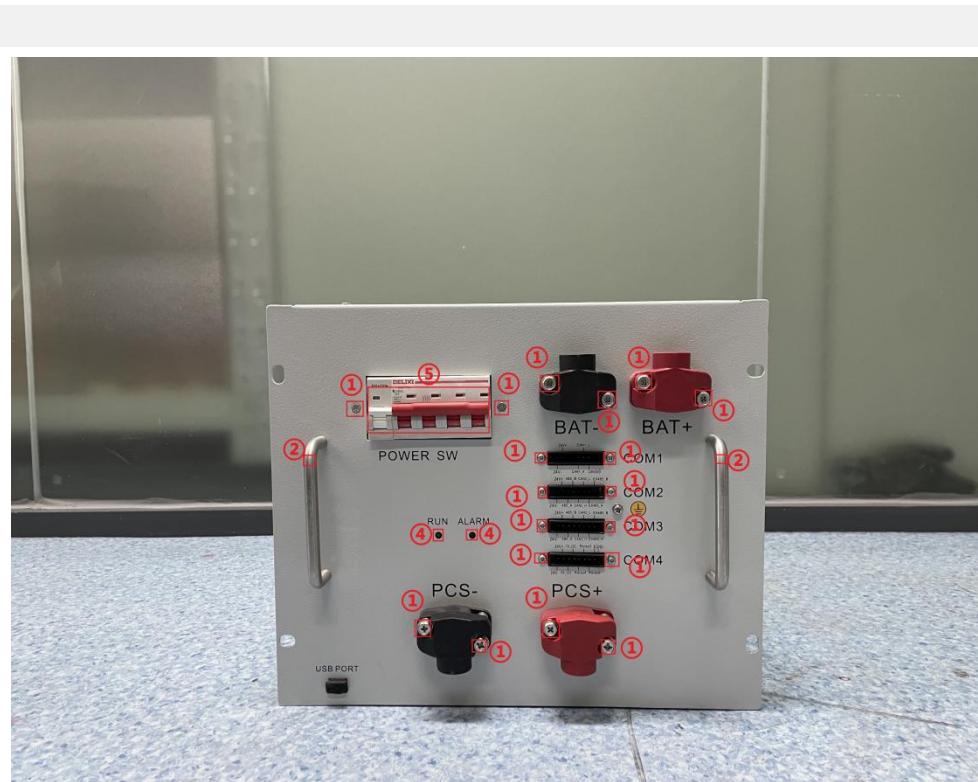
Close-up photo (Model: ESS-BM-38.4-200T)

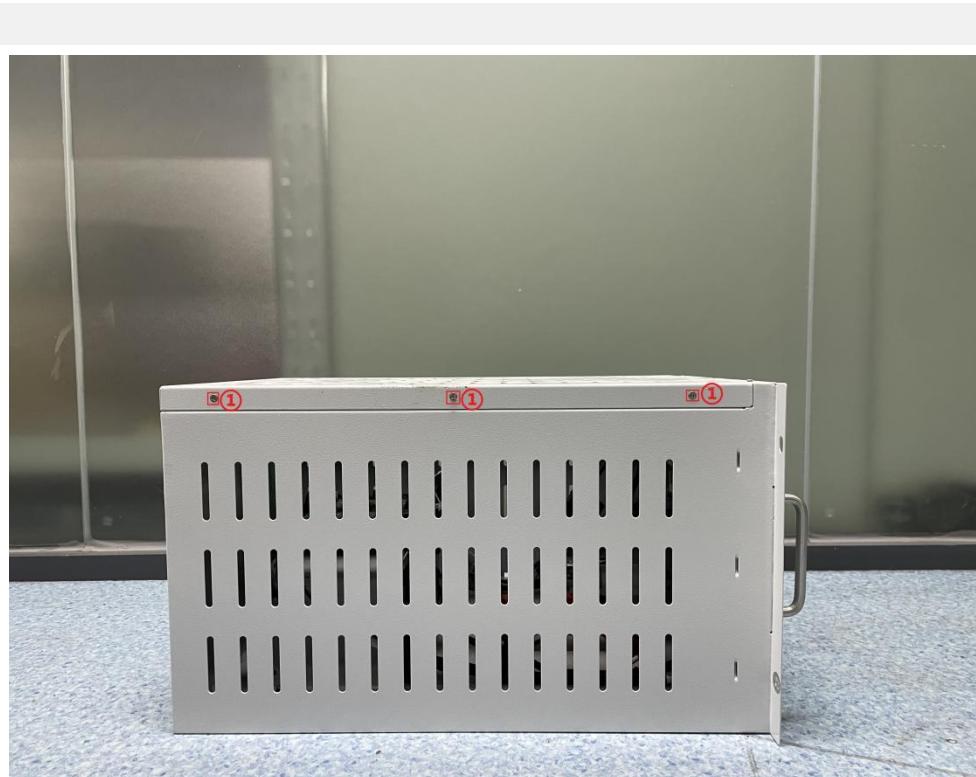
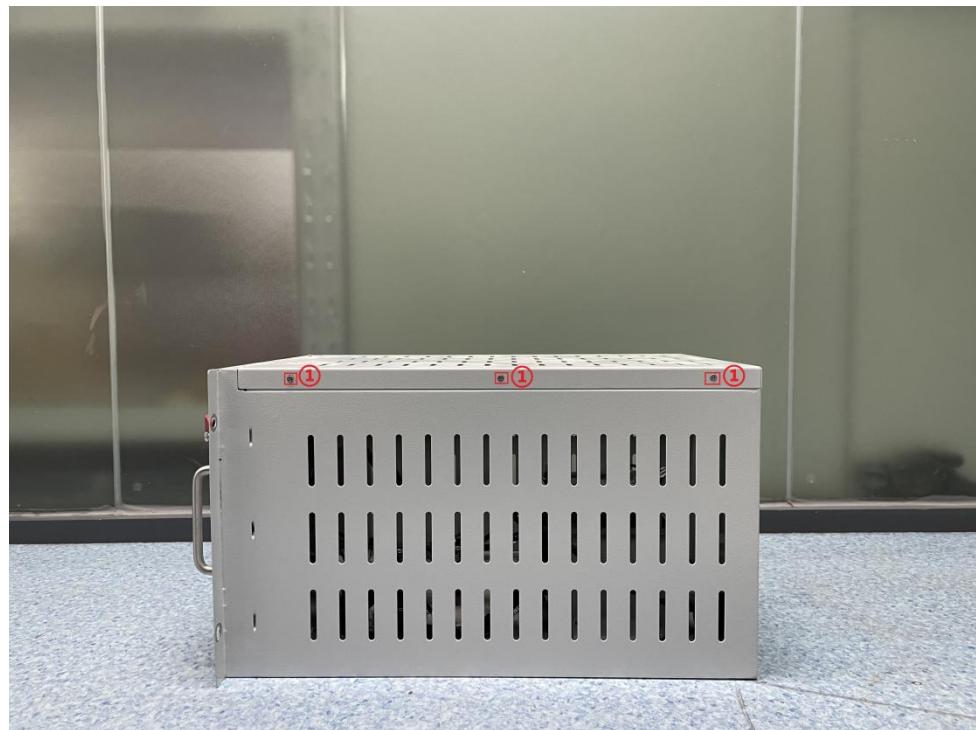


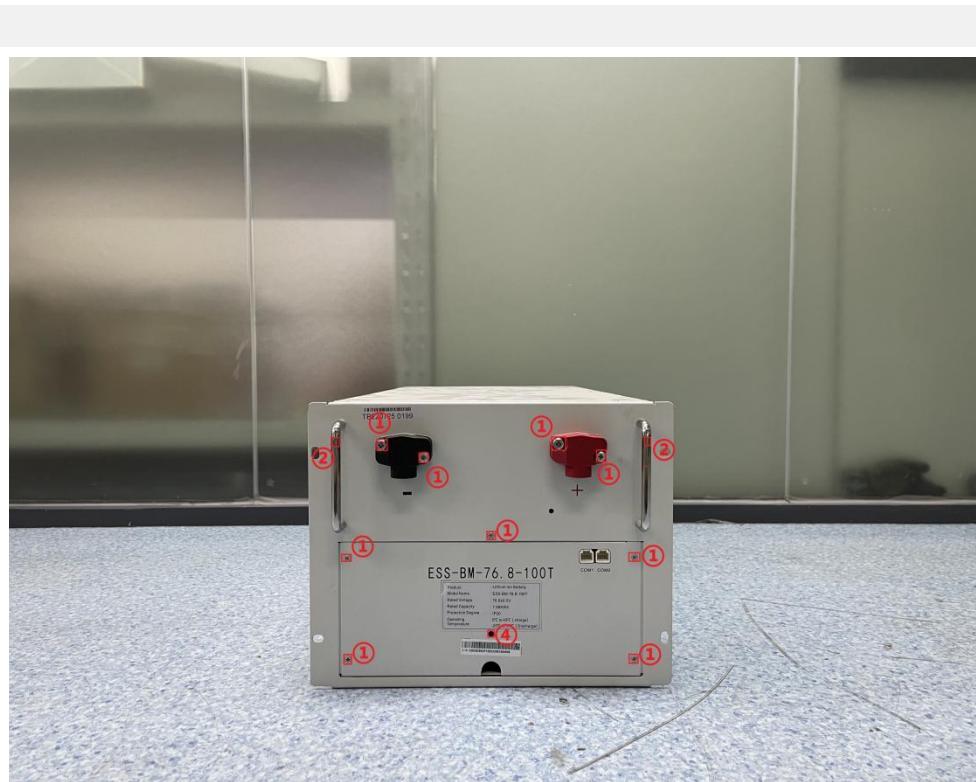
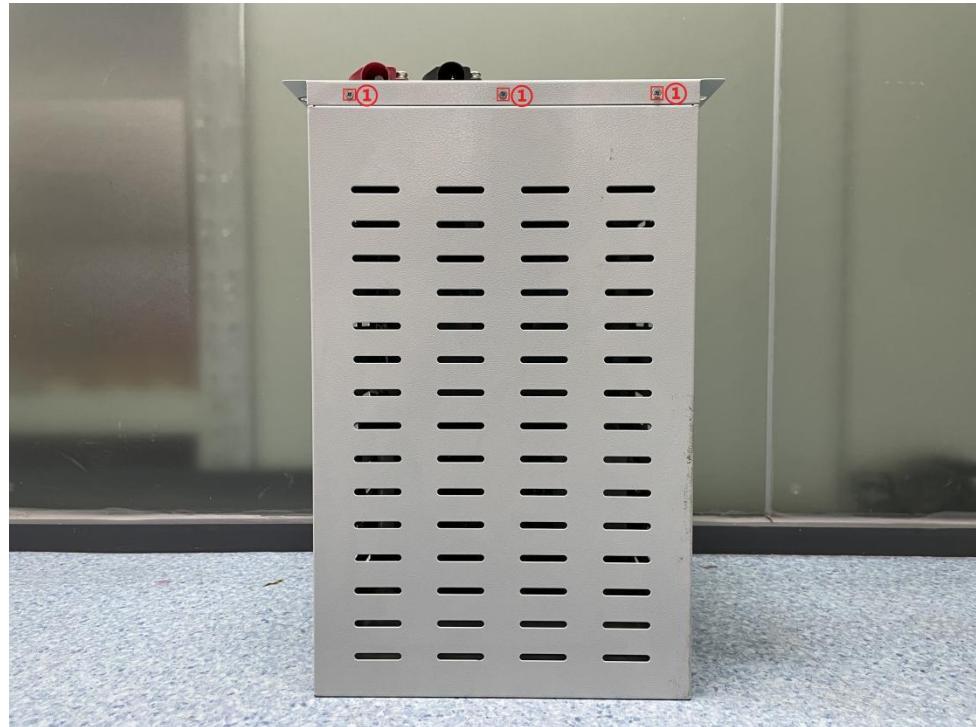
B.2 Electrostatic Discharge Immunity

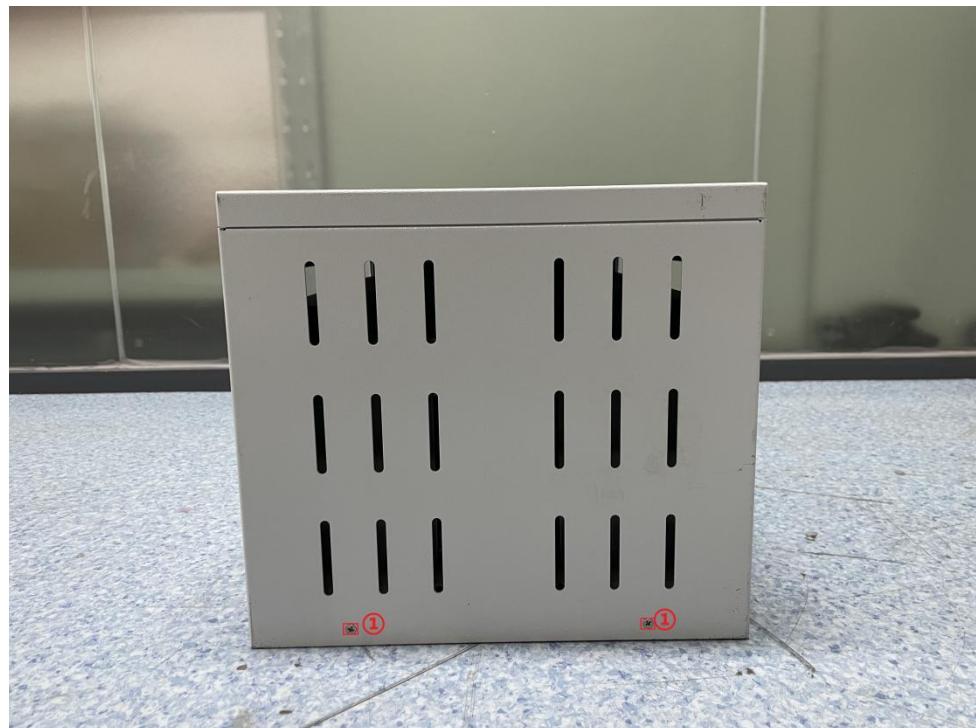


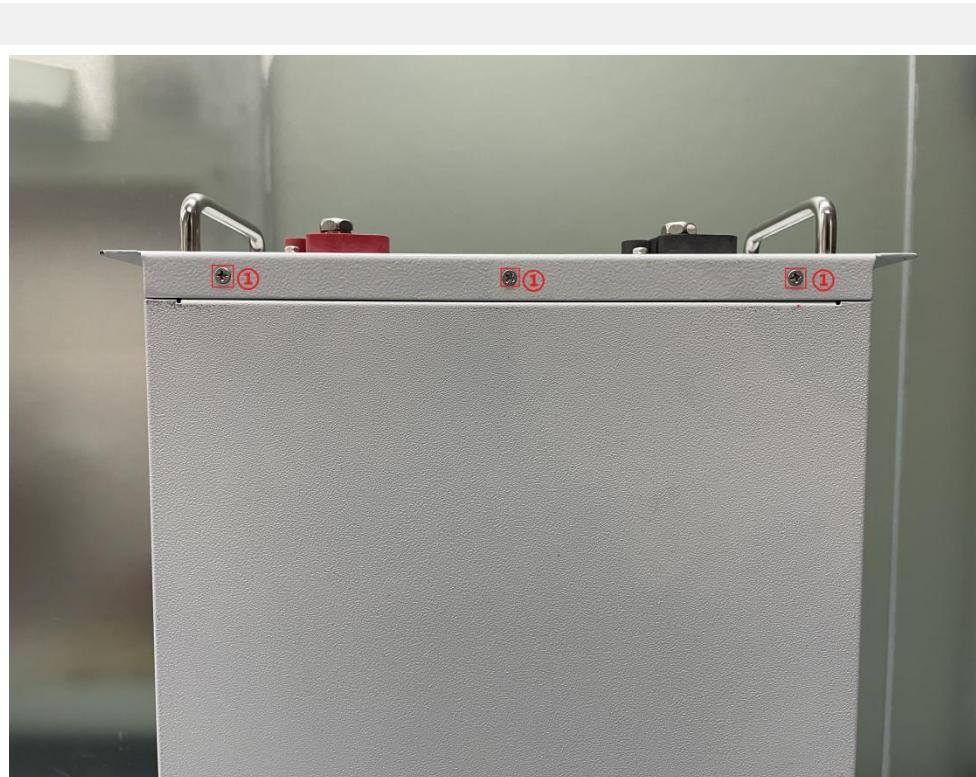
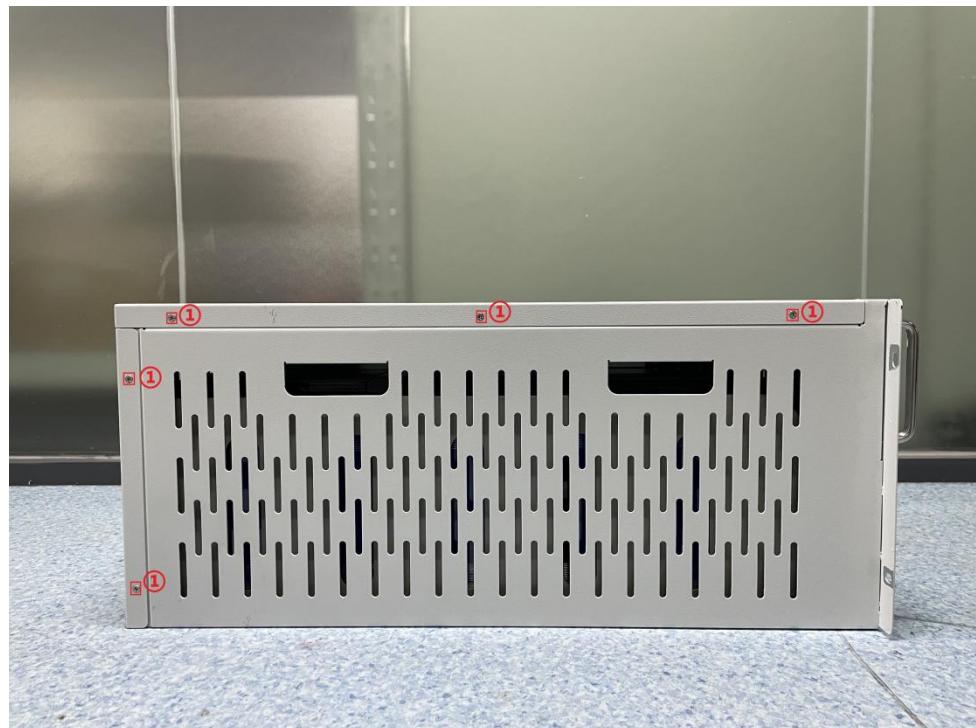






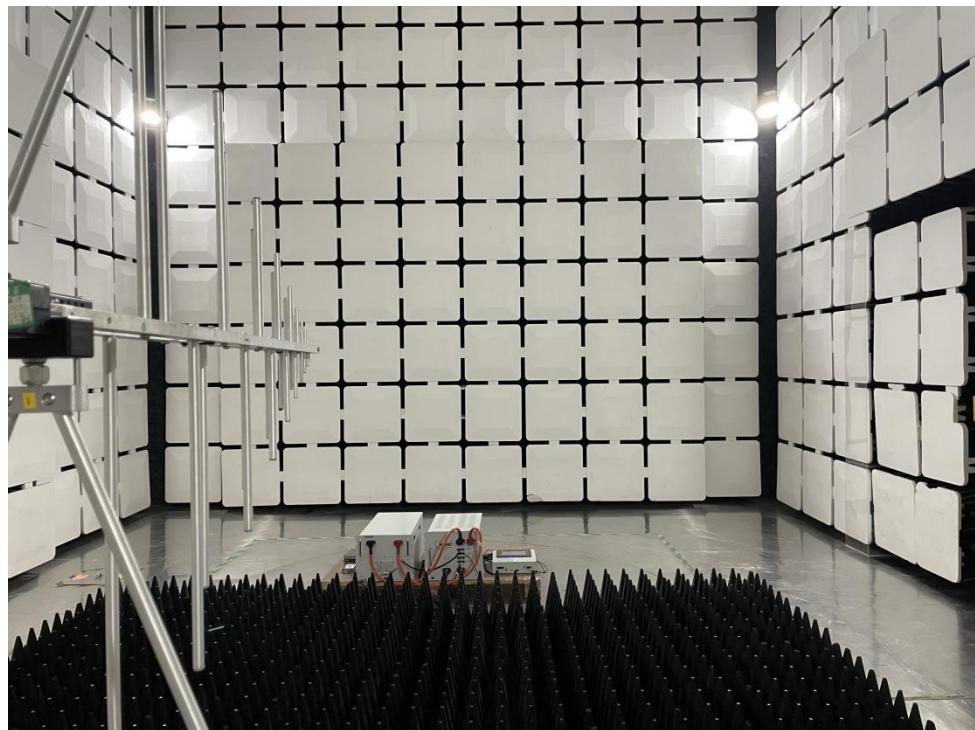




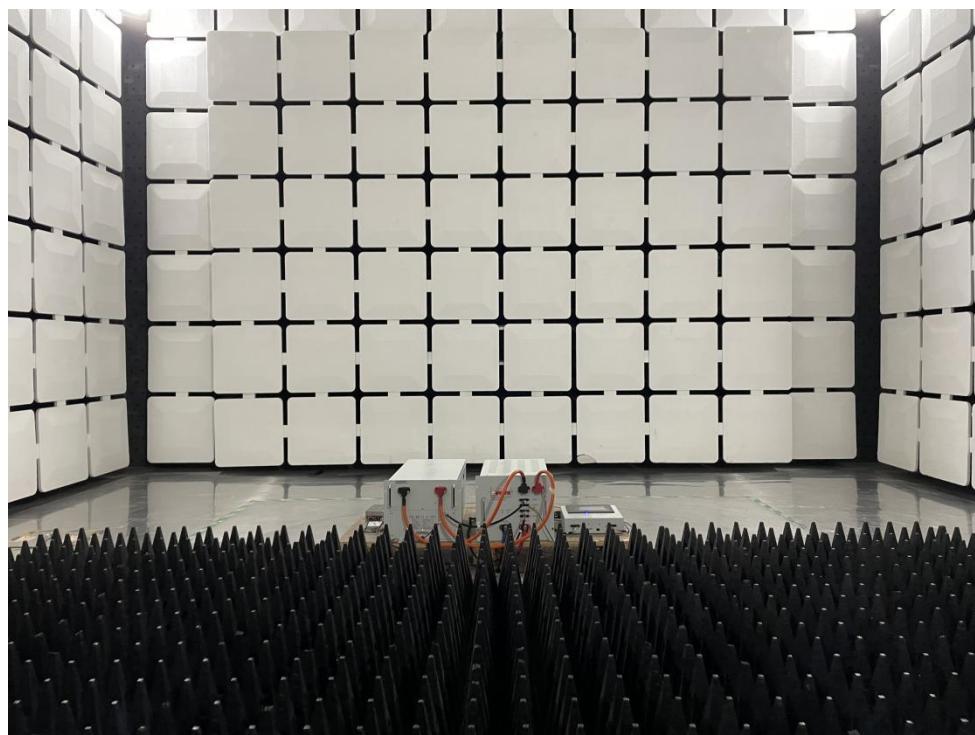


B.3 Radio Frequency Electromagnetic Field Immunity

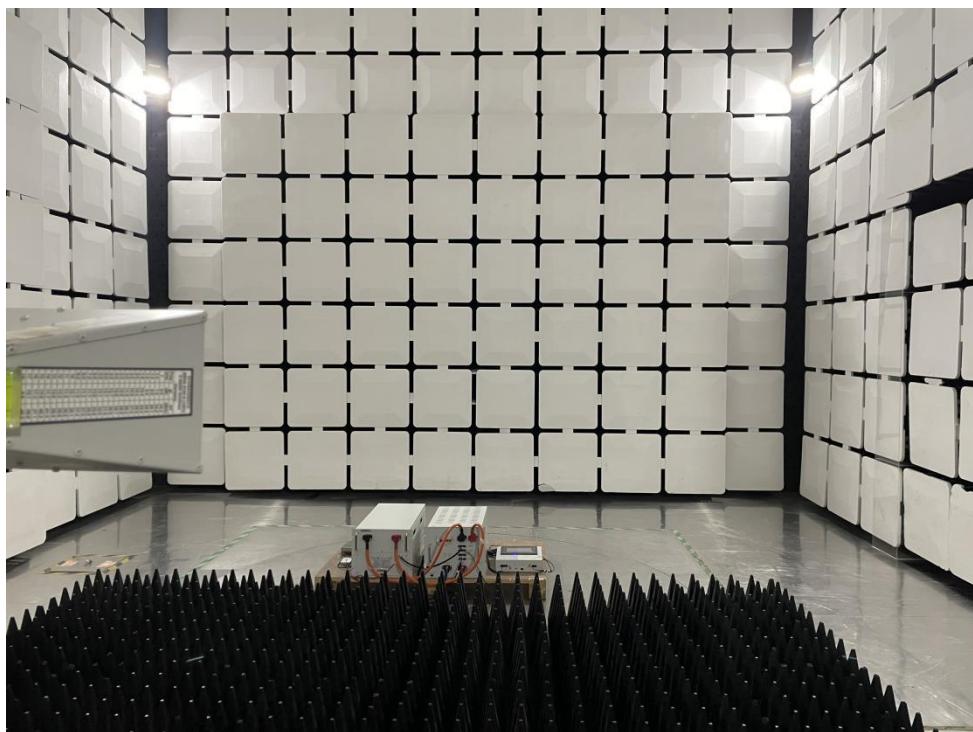
RS_Below 1GHz



Close-up photo

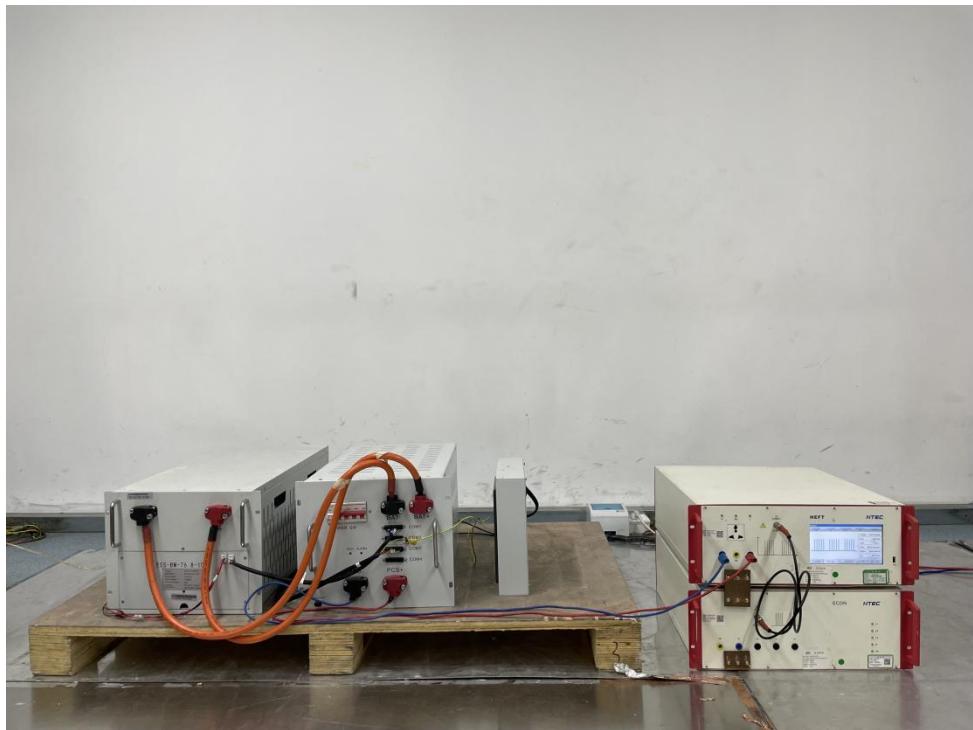


RS_Above 1GHz

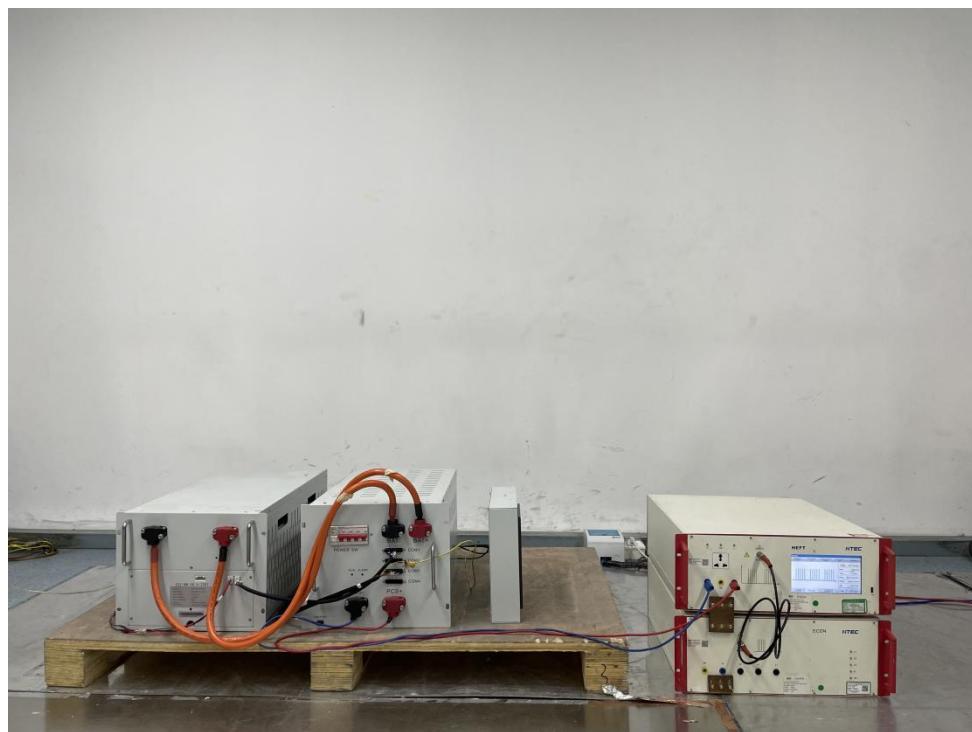


B.4 Electrical Fast Transient/Burst Immunity

DC Port (Model: ESS-BM-76.8-100T)



DC Port (Model: ESS-BM-38.4-200T)



B.5 Surge Immunity

DC Port (Model: ESS-BM-76.8-100T)

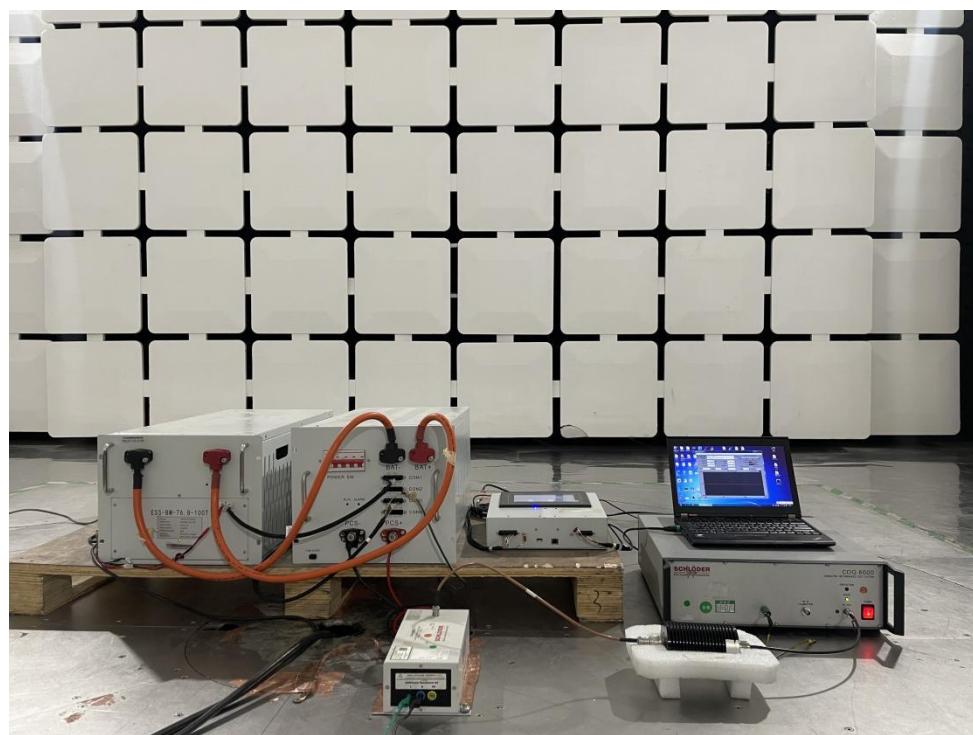


DC Port (Model: ESS-BM-38.4-200T)

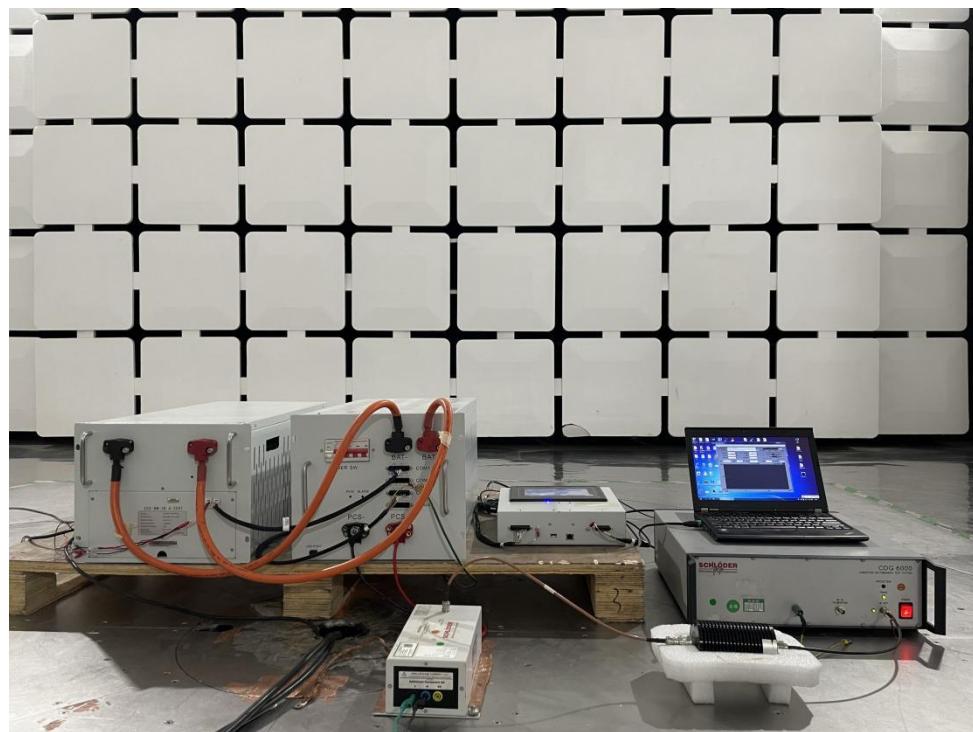


B.6 Immunity to Conducted Disturbances Induced by RF Fields

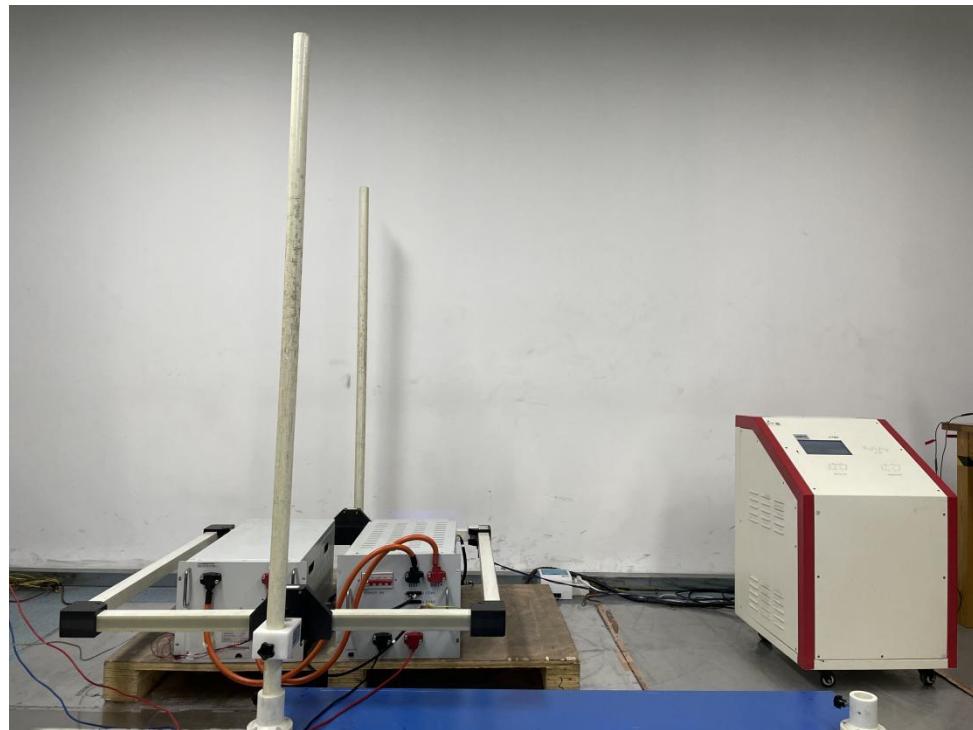
DC Port (Model: ESS-BM-76.8-100T)



DC Port (Model: ESS-BM-38.4-200T)

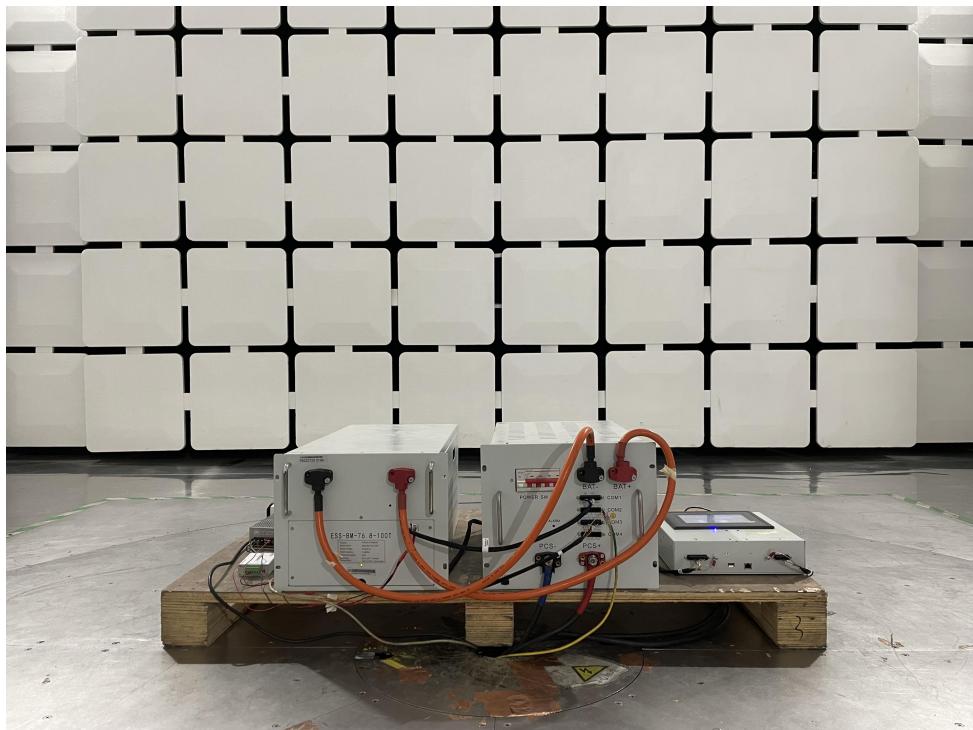


B.7 Power Frequency Magnetic Fields Immunity

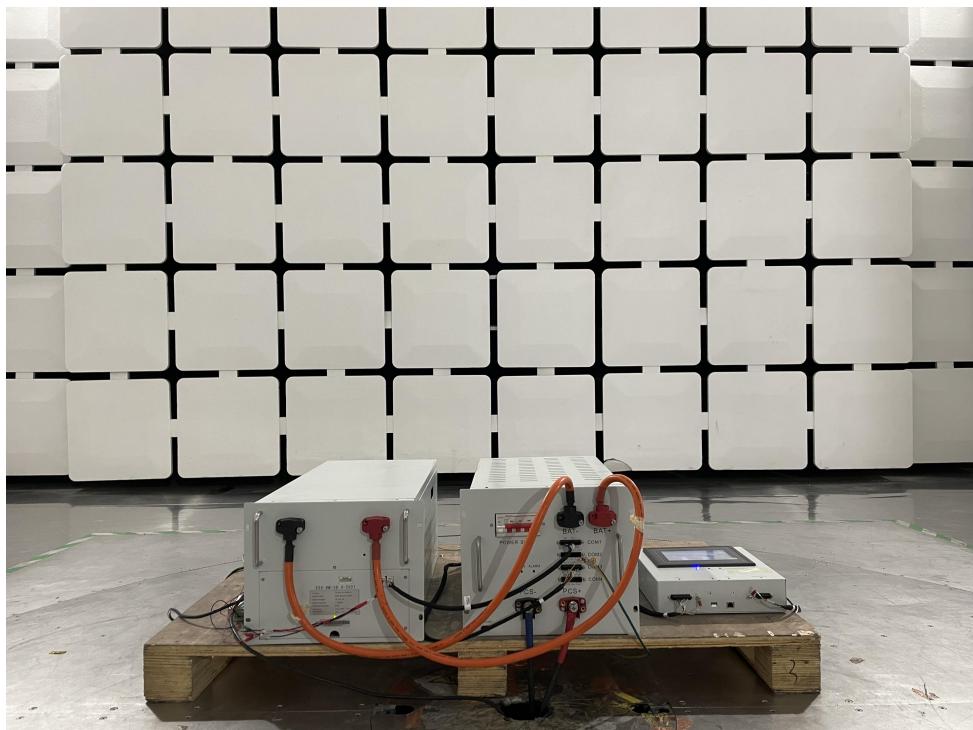


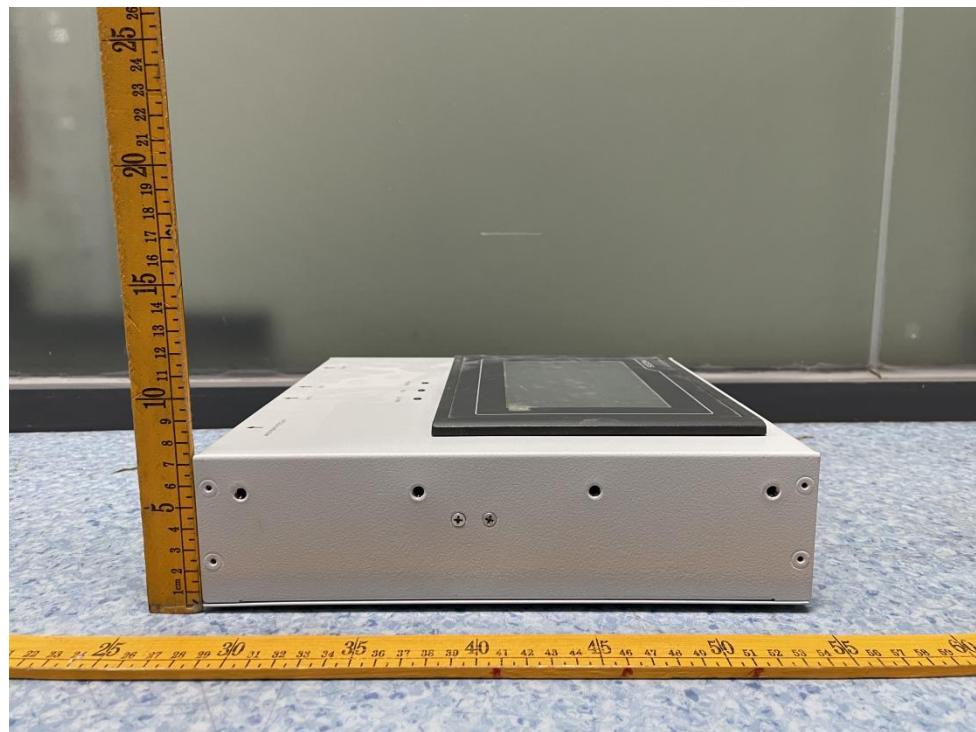
ANNEX C EUT EXTERNAL PHOTOS

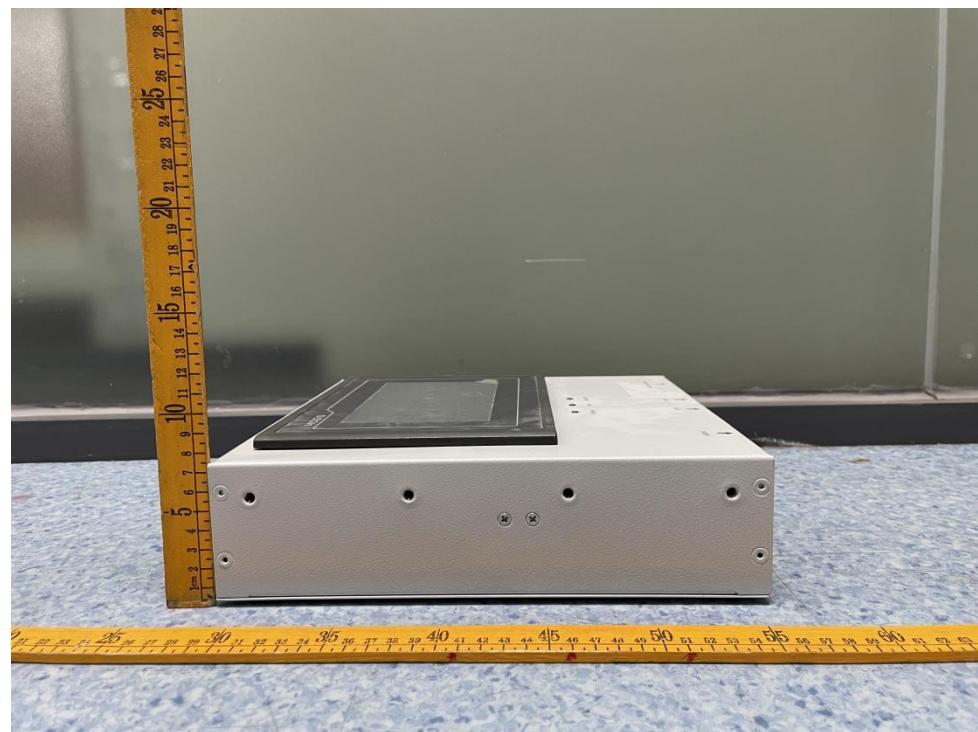
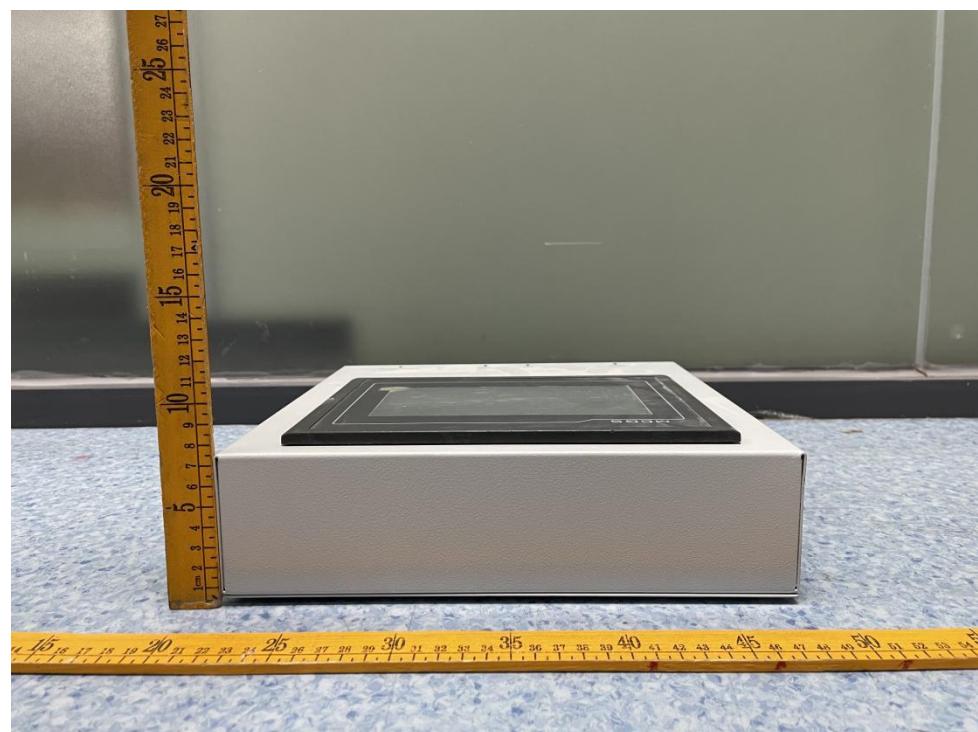
Front (Model:ESS-BM-76.8-100T)



Front (Model: ESS-BM-38.4-200T)



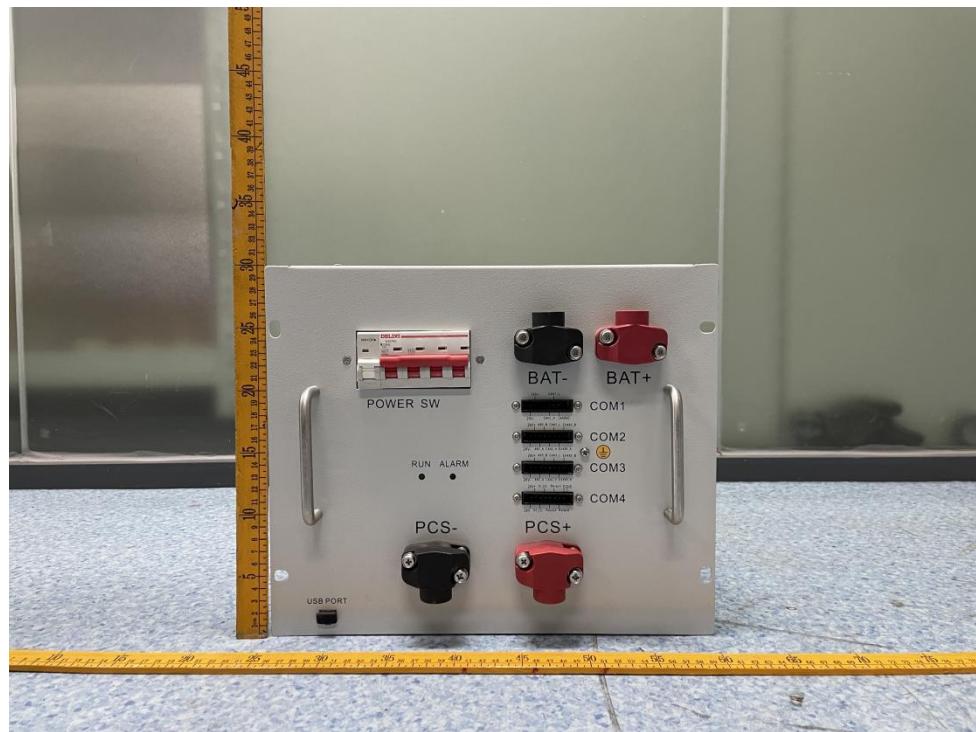
Front (Display)**Left (Display)**

Right (Display)**Top (Display)**

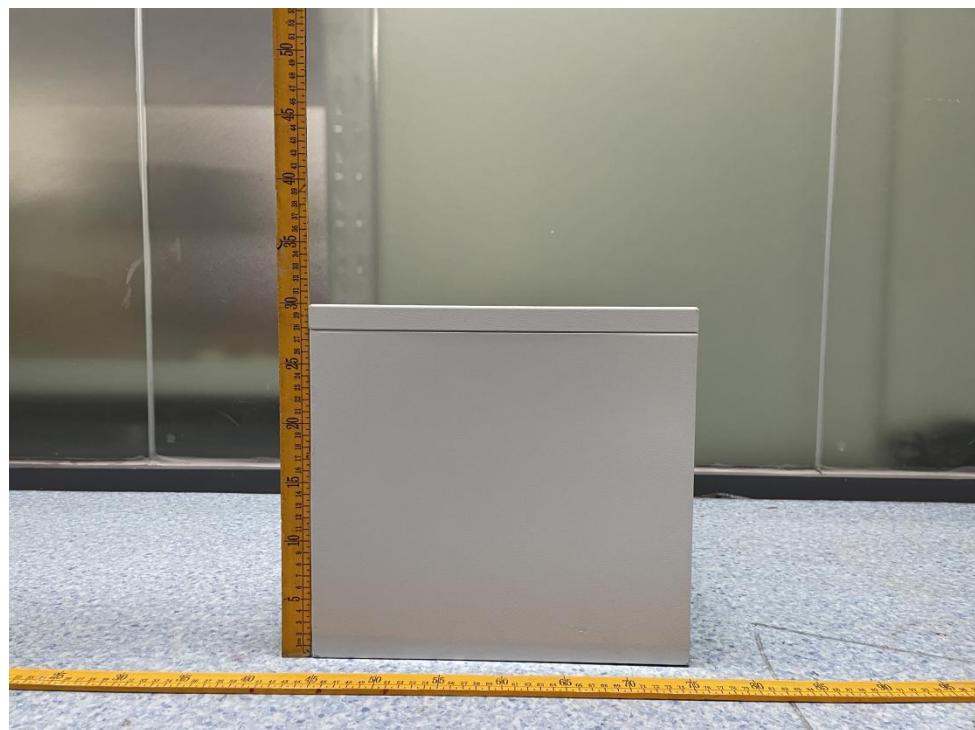
Bottom (Display)



Front (High Voltage Box)



Back (High Voltage Box)



Left (High Voltage Box)



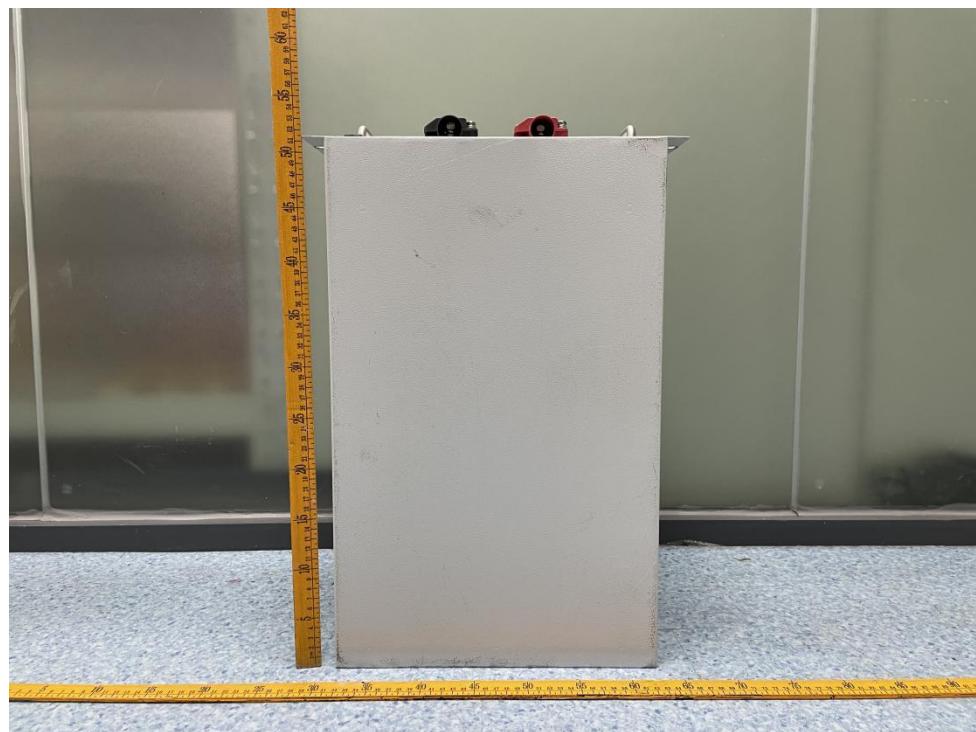
Right (High Voltage Box)



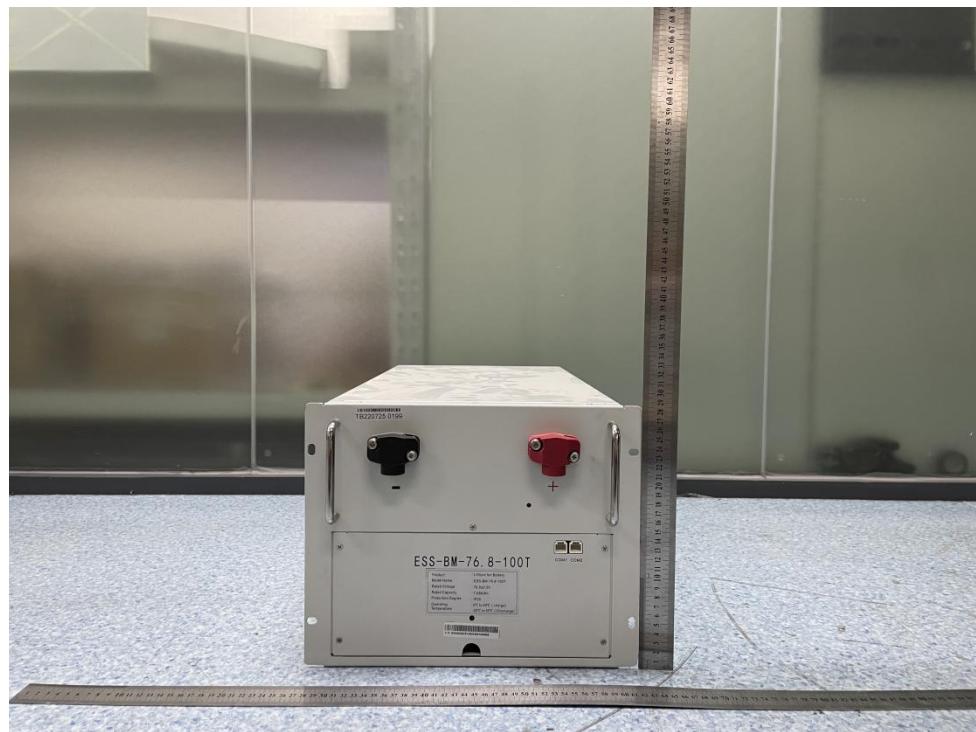
Top (High Voltage Box)



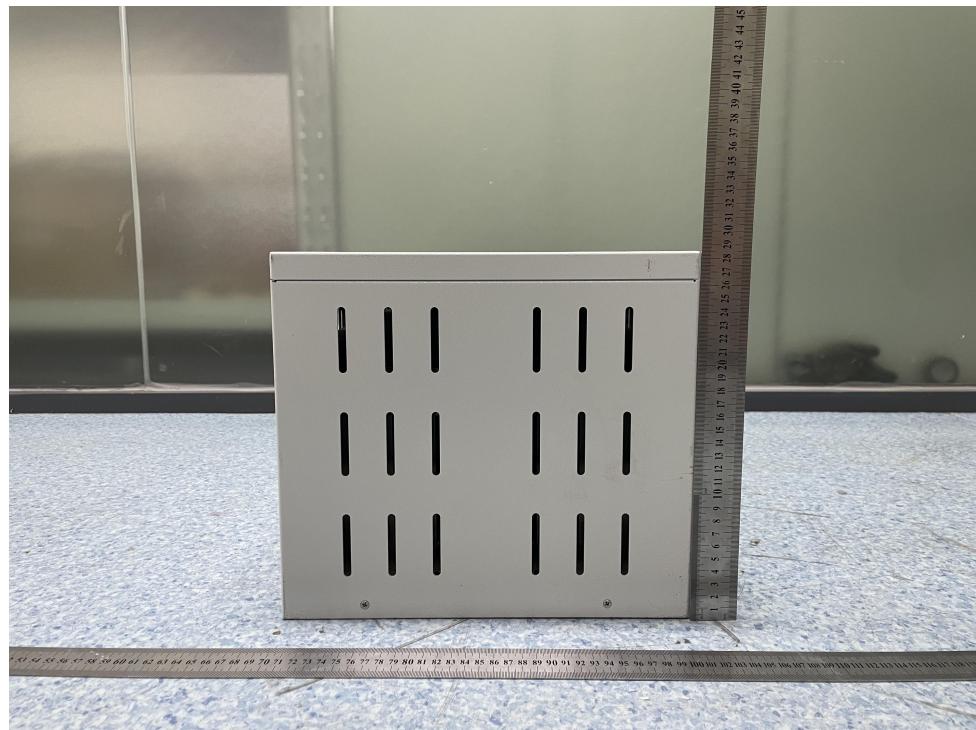
Bottom (High Voltage Box)



Front (Model: ESS-BM-76.8-100T)



Back (Model: ESS-BM-76.8-100T)



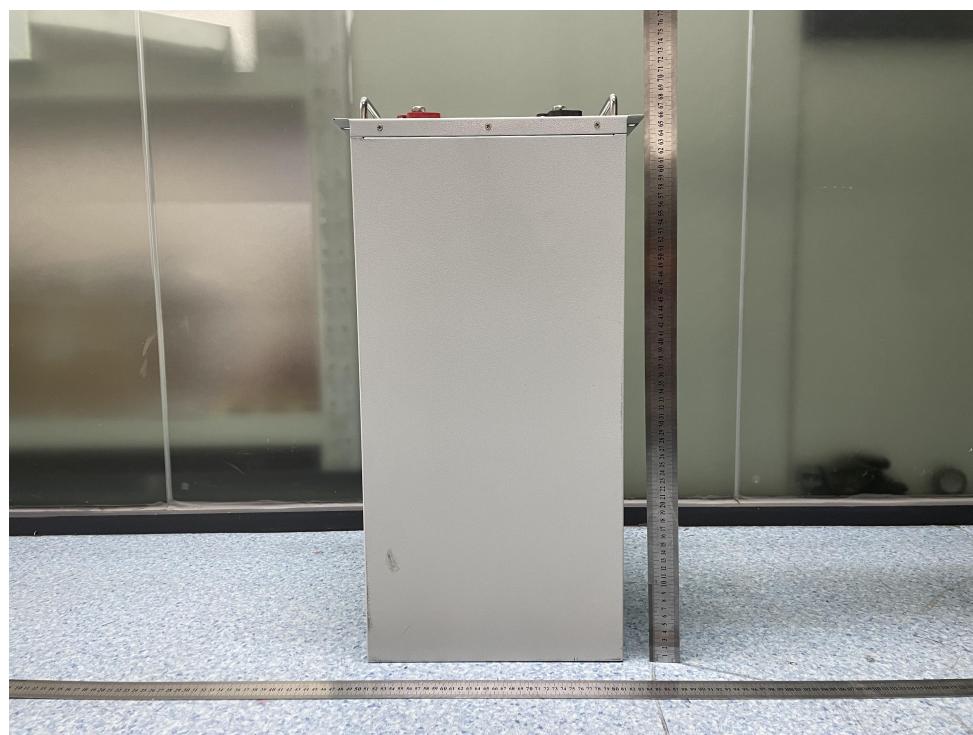
Left (Model: ESS-BM-76.8-100T)



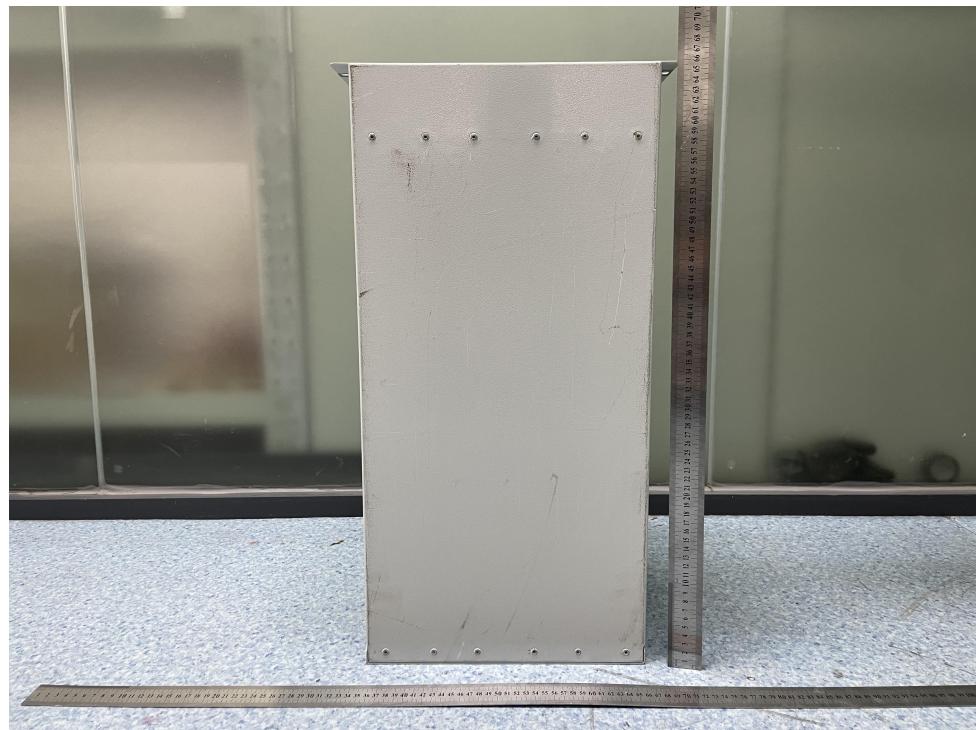
Right (Model: ESS-BM-76.8-100T)



Top (Model: ESS-BM-76.8-100T)



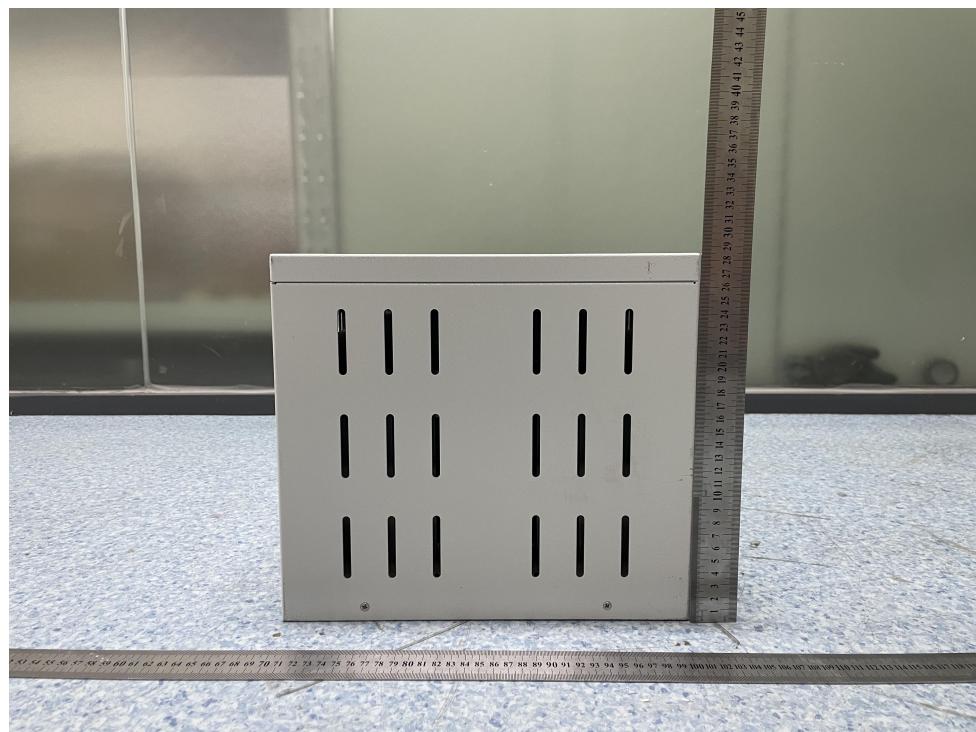
Bottom (Model: ESS-BM-76.8-100T)



Front (Model: ESS-BM-38.4-200T)



Back (Model: ESS-BM-38.4-200T)



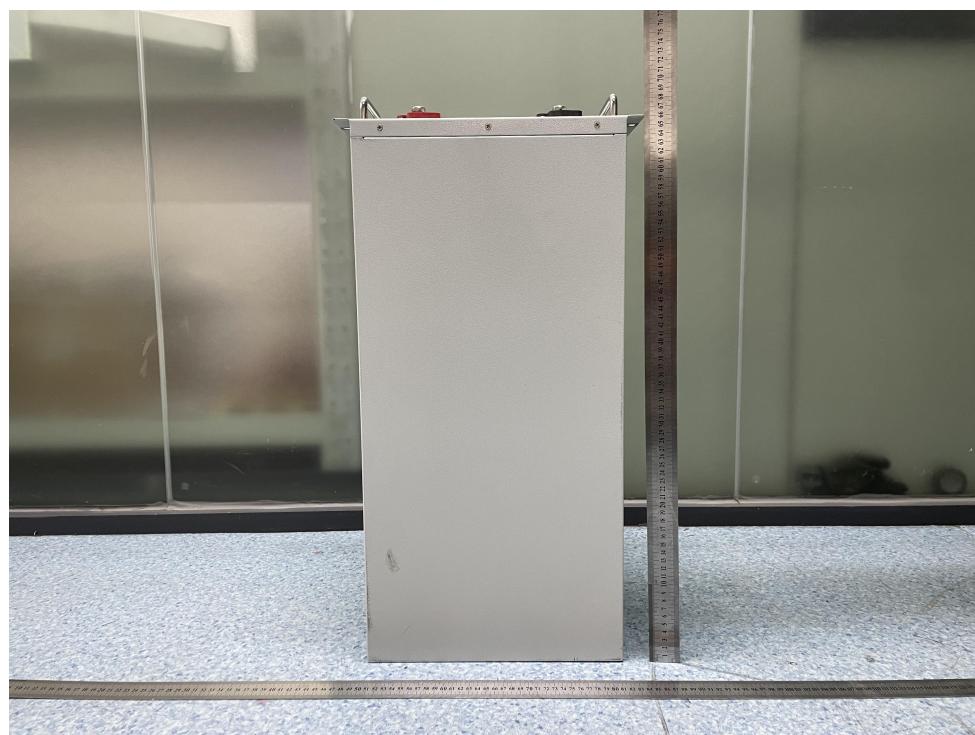
Left (Model: ESS-BM-38.4-200T)



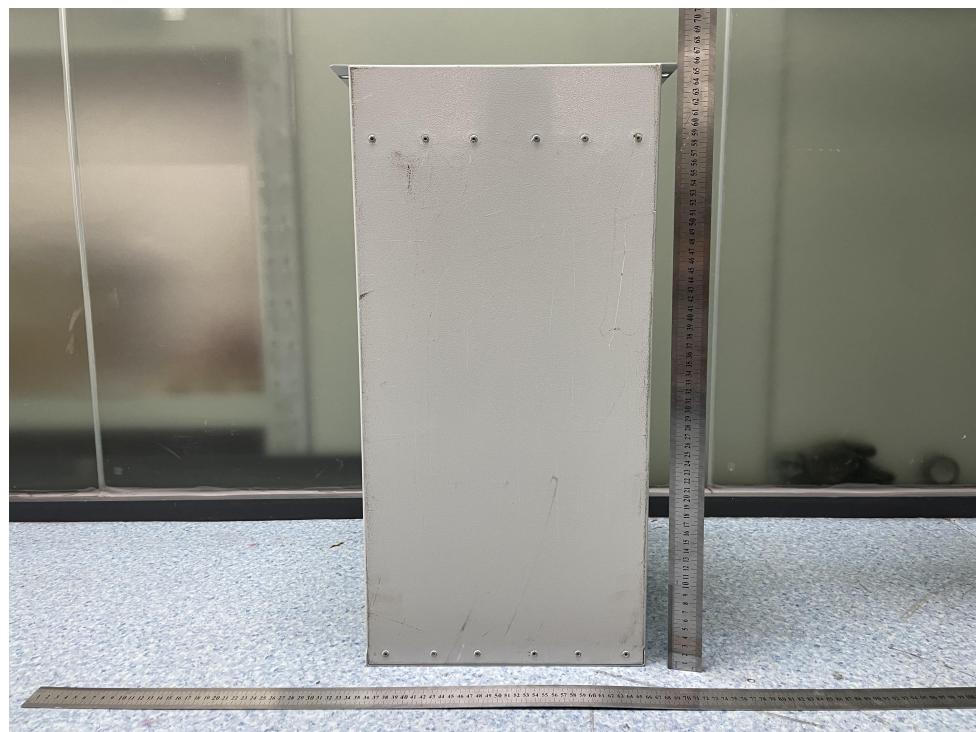
Right (Model: ESS-BM-38.4-200T)



Top (Model: ESS-BM-38.4-200T)

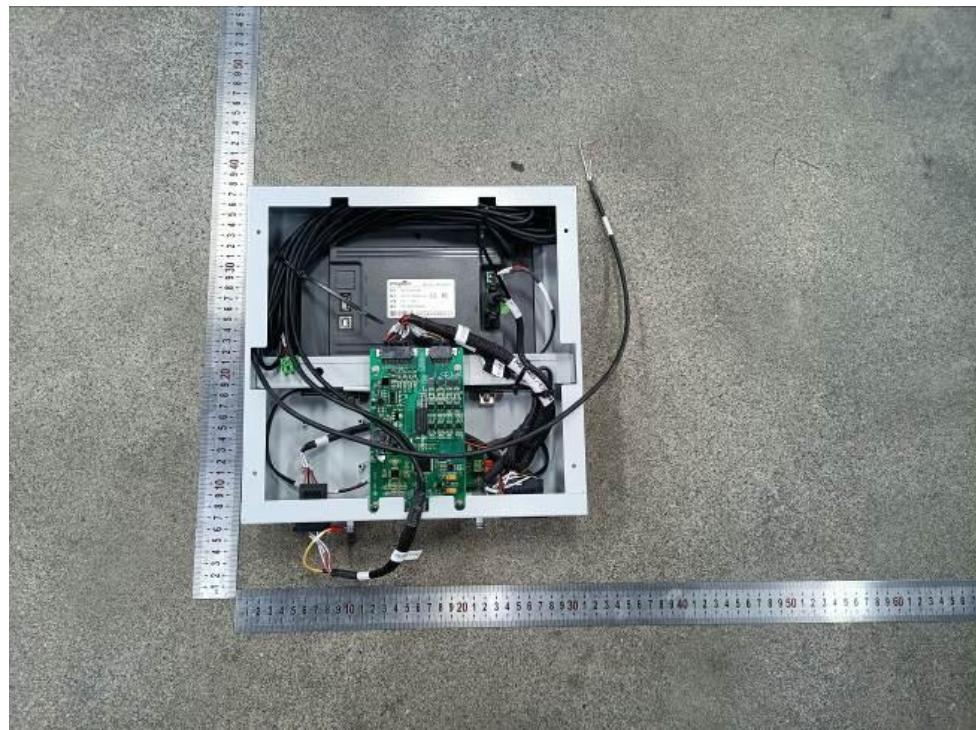


Bottom (Model: ESS-BM-38.4-200T)

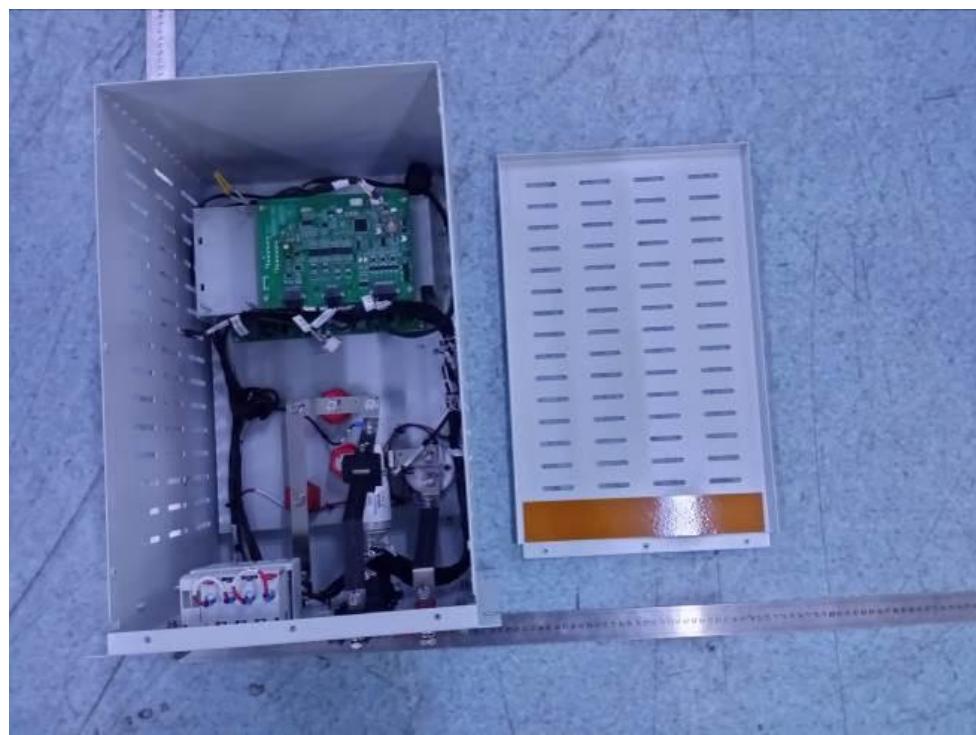


ANNEX D EUT INTERNAL PHOTOS

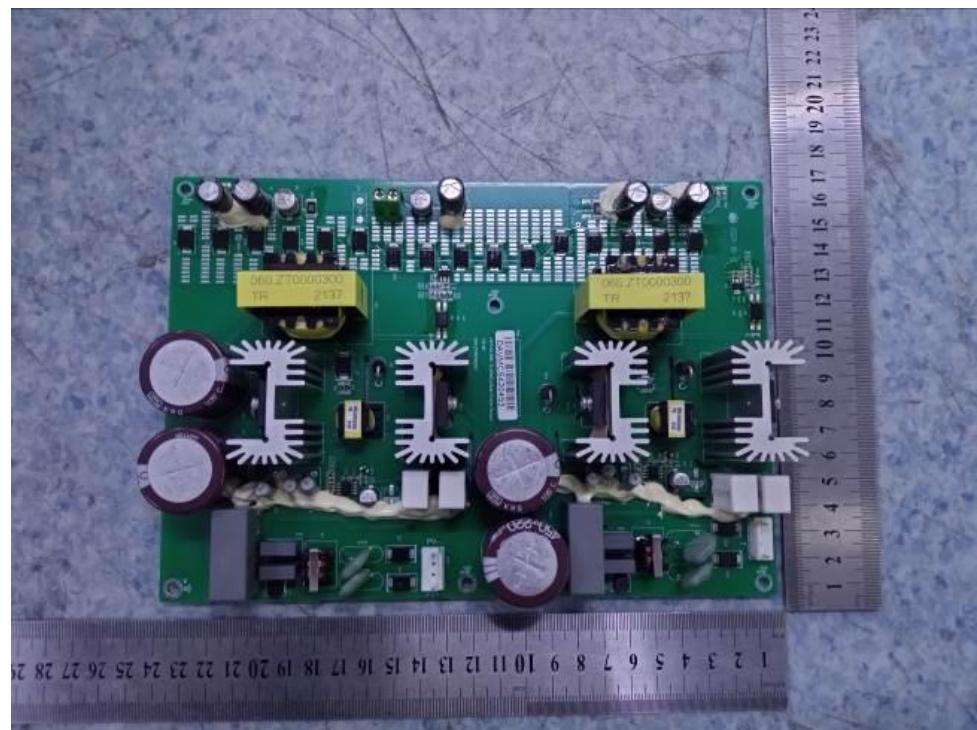
Internal (Display)



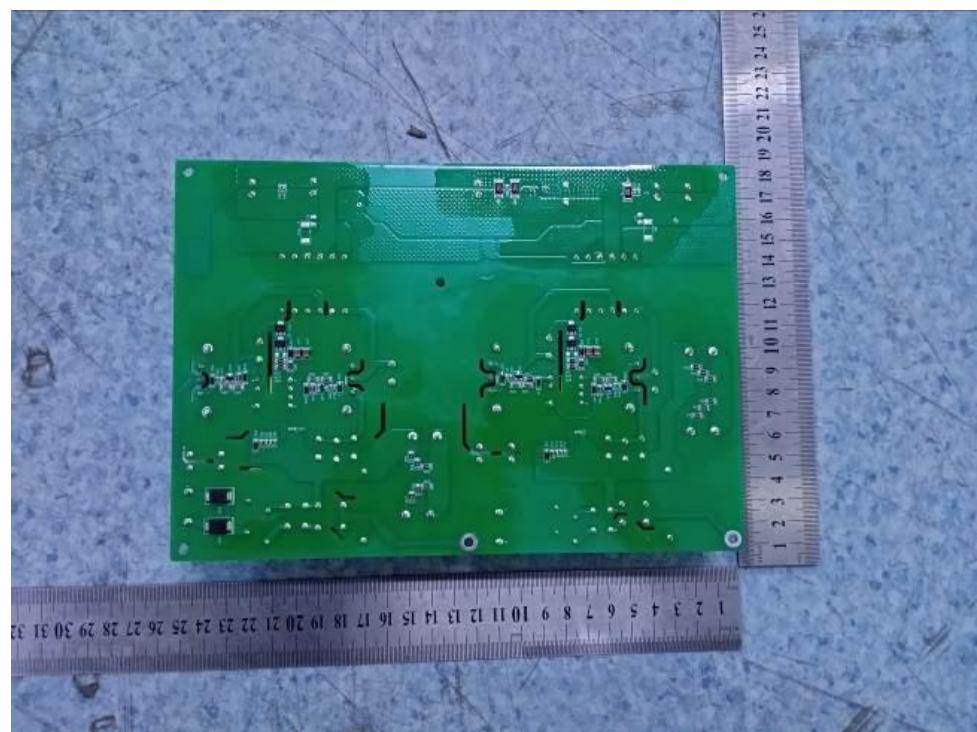
Internal (High Voltage Box)



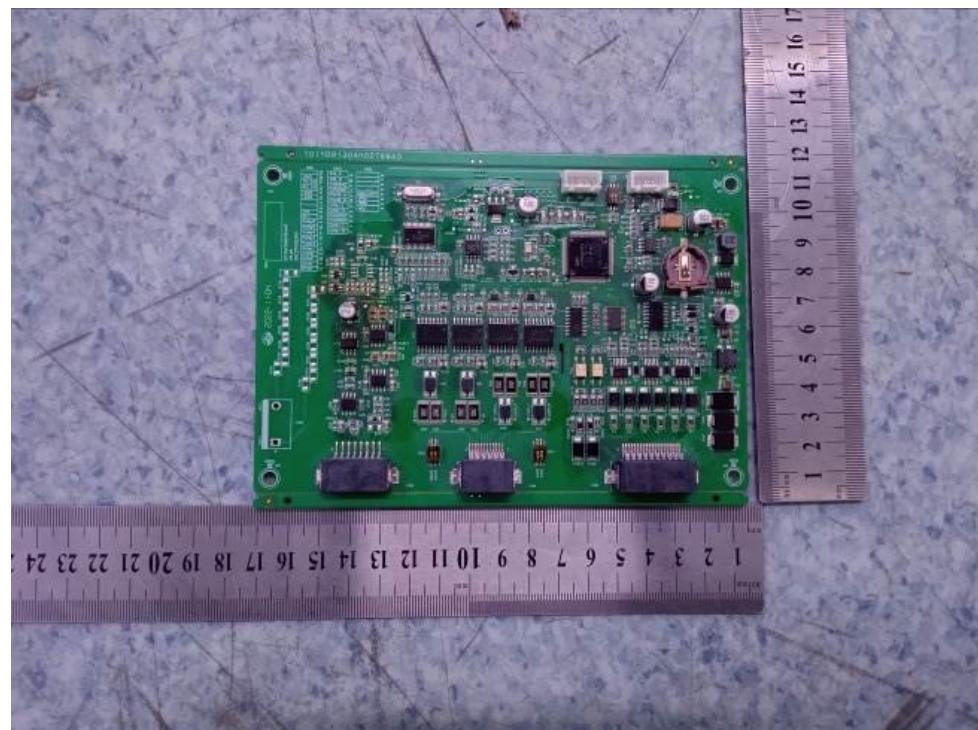
The front view of the mainboard 1 (High Voltage Box)



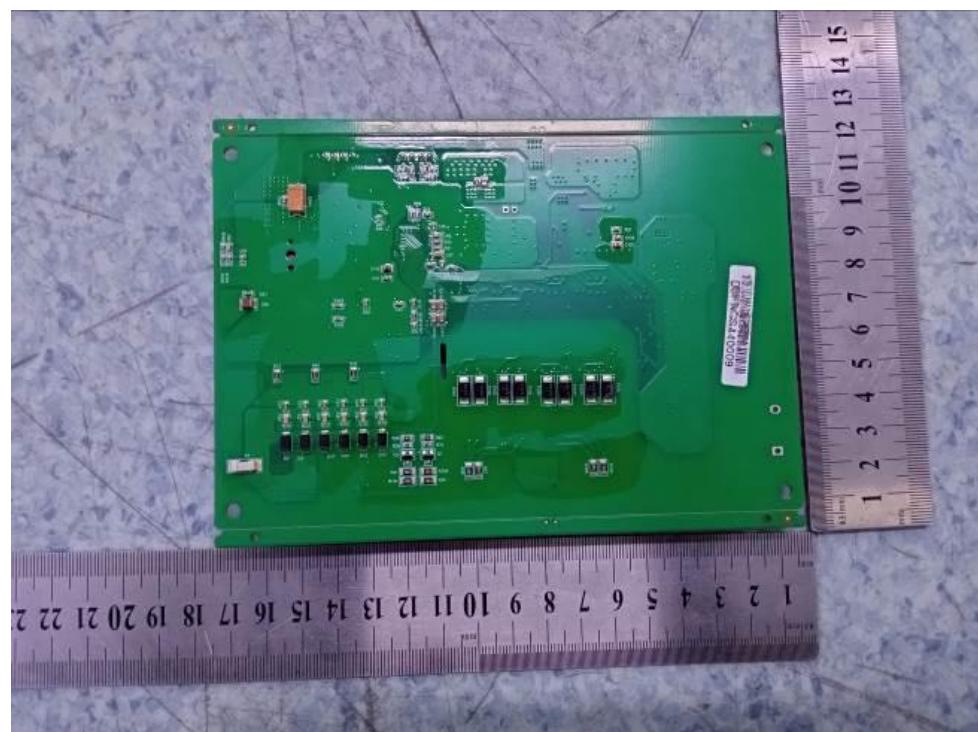
The back view of the mainboard 1 (High Voltage Box)



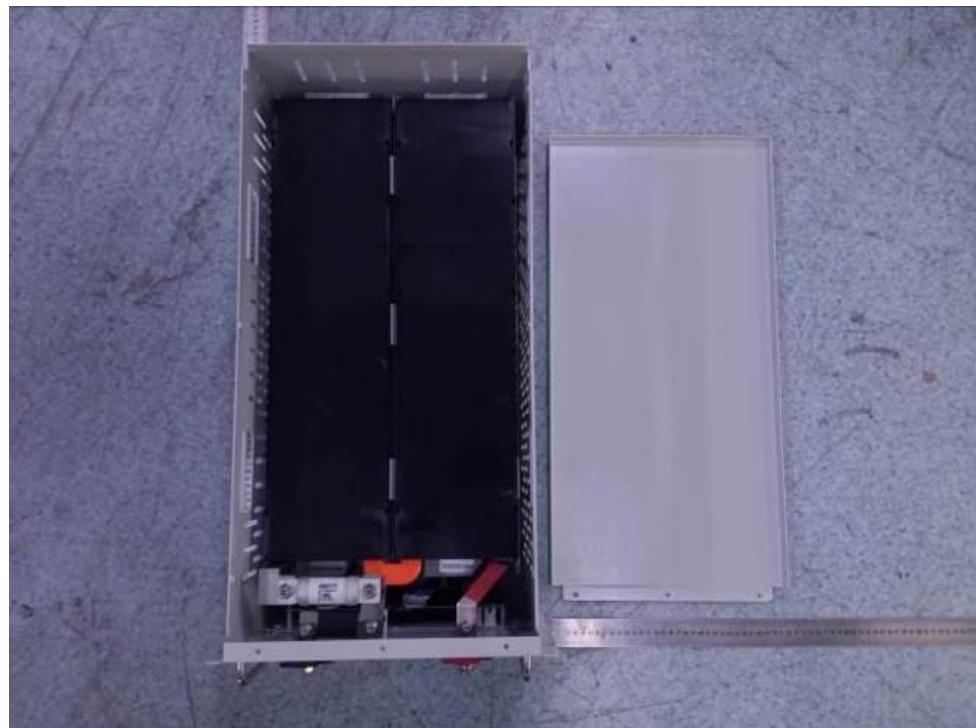
The front view of the mainboard 2 (High Voltage Box)



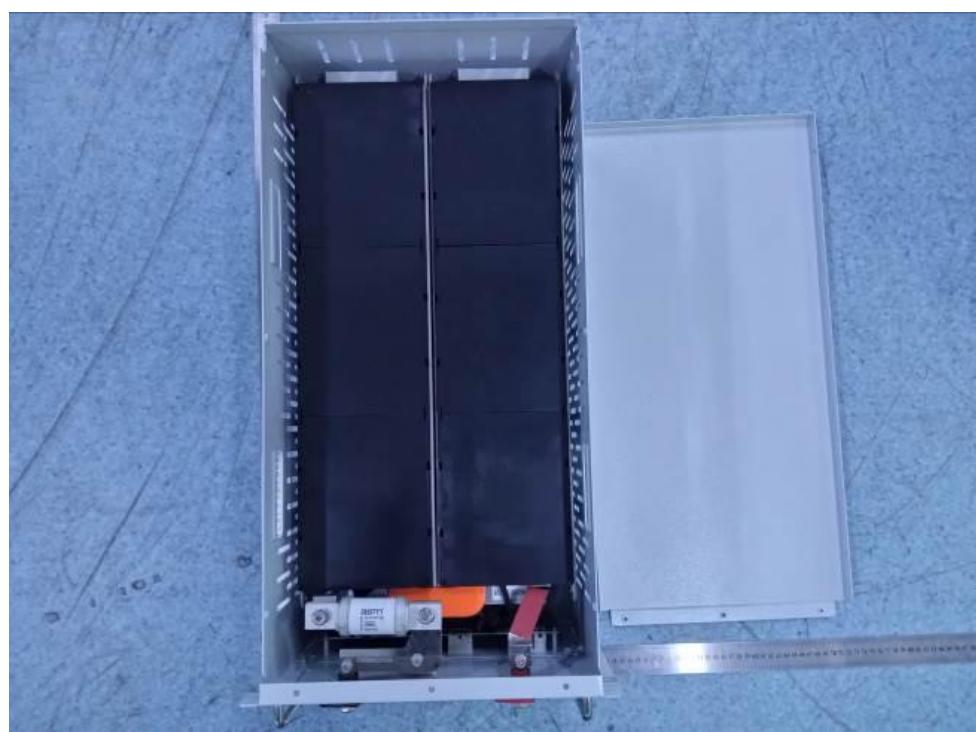
The back view of the mainboard 2 (High Voltage Box)



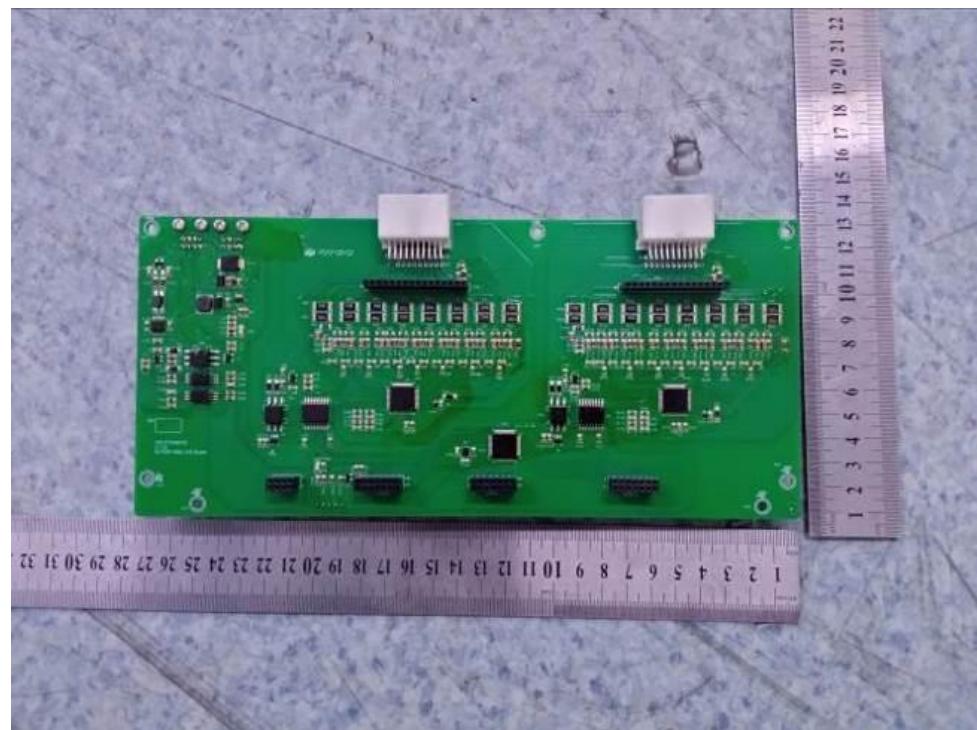
Internal (Model: ESS-BM-76.8-100T)



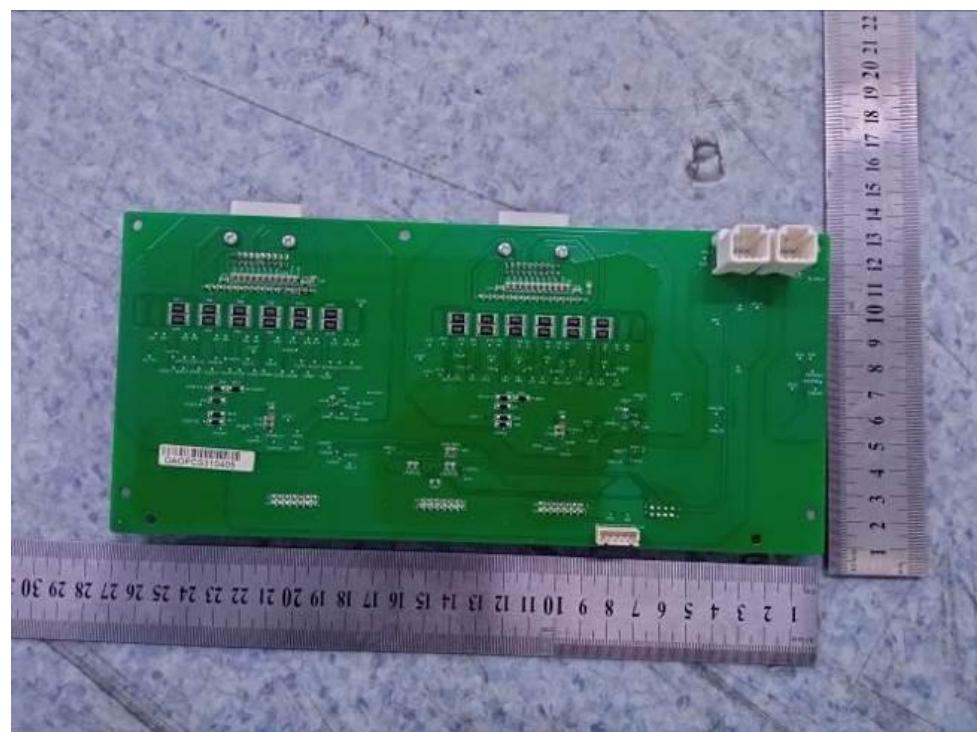
Internal (Model: ESS-BM-38.4-200T)



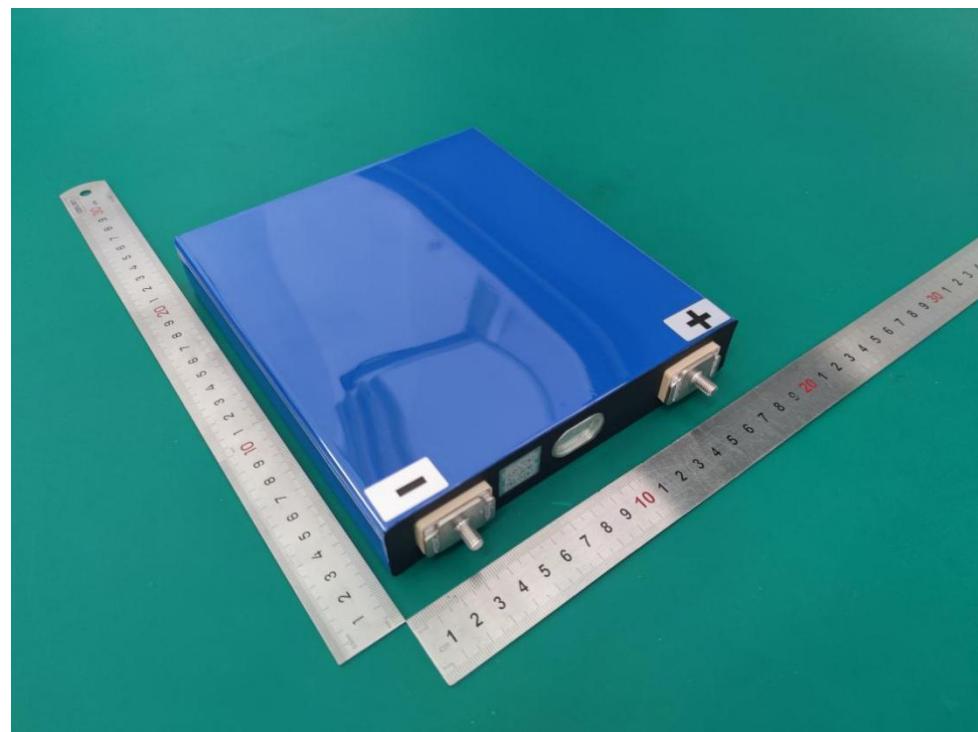
The front view of the mainboard



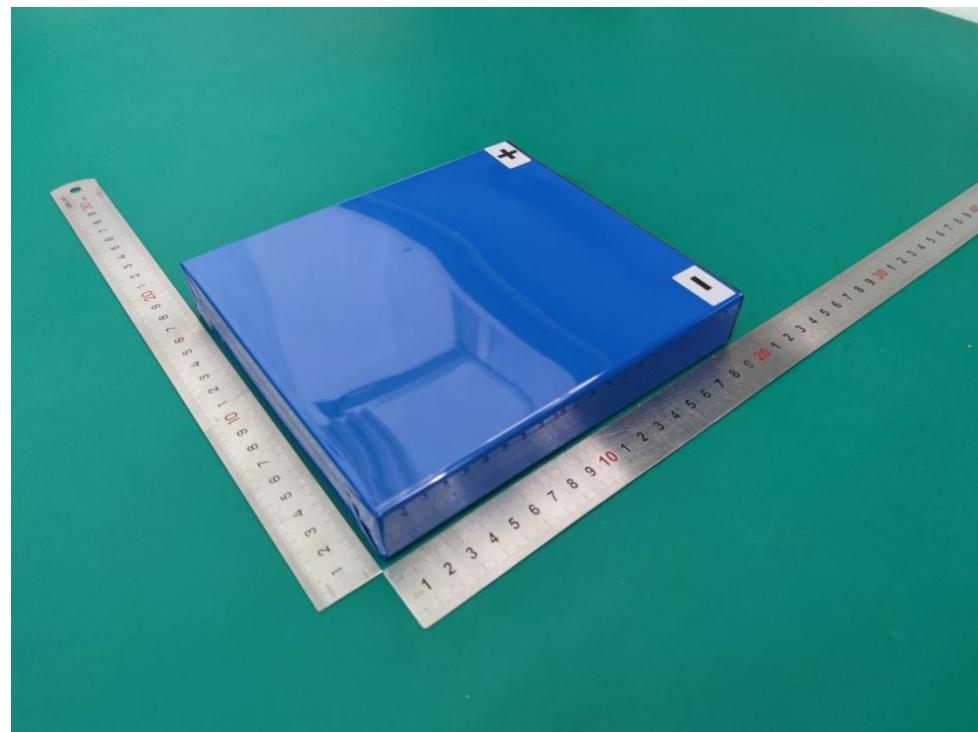
The back view of the mainboard



Lithium-ion cell



Lithium-ion cell



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--END OF REPORT--