

# Certificate of Conformity

Issued date: 2023-04-07

**Certificate Holder:** Shenzhen DJS Tech Co., Ltd

**Address:** Floor 5, Building B4B, Yingzhan Industrial Zone, Longtian Community, Kengzi Street, Pingshan New District, Shenzhen

**Manufacturer:** Shenzhen DJS Tech Co., Ltd

**Address:** Floor 5, Building B4B, Yingzhan Industrial Zone, Longtian Community, Kengzi Street, Pingshan New District, Shenzhen

**Product Description:** LiFePO4 Battery Pack

**Model Number:** 12V200ah, 12V50ah, 12V60ah, 12V70ah, 12V80ah, 12V90ah, 12V100ah, 12V105ah, 12V120ah, 12V135ah, 12V160ah, 12V190ah

**Brand Name:** N/A

Test standards:	Report(s) Number	Issued By	Result
EN IEC 61000-6-3:2021 EN IEC 61000-6-1:2019	BTF230406E03101	BTF	Conform

The above products have been tested by us with listed standards and found in compliance with the council EMC 2014/30/EU. It is possible to use CE marking to demonstrate the compliance with this EMC.

The statement is based on a single evaluation of one sample of above mentioned products. It does not imply an assessment of the whole production and does not permit the use of the test lab logo.



Authorized by



Position: General Manager

BTF Testing Lab (Shenzhen) Co., Ltd.

F101,201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

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# EMC Test Report

For

**Applicant Name:** Shenzhen DJS Tech Co., Ltd  
**Address:** Floor 5, Building B4B, Yingzhan Industrial Zone, Longtian Community, Kengzi Street, Pingshan New District, Shenzhen  
**EUT Name:** LiFePO4 Battery Pack  
**Brand Name:** N/A  
**Model Number:** 12V200ah  
**Series Model Number:** Refer to section 2

**Issued By**

**Company Name:** BTF Testing Lab (Shenzhen) Co., Ltd.  
**Address:** F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China

**Report Number:** BTF230406E03101  
**Test Standards:** EN IEC 61000-6-3:2021  
EN IEC 61000-6-1:2019

**Test Conclusion:** Pass  
**Test Date:** 2023-03-16 to 2023-03-21  
**Date of Issue:** 2023-04-07

**Prepared By:**

*Handwritten signature: Gavin Cui*

Gavin.Cui / Project Engineer  
2023-04-07

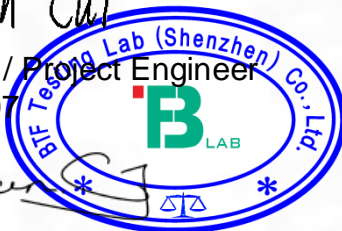
**Date:**

**Approved By:**

*Handwritten signature: Ryan.CJ*

Ryan.CJ / EMC Manager  
2023-04-07

**Date:**



*Note: All the test results in this report only related to the testing samples. Which can be duplicated completely for the legal use with approval of applicant; it shall not be reproduced except in full without the written approval of BTF Testing Lab (Shenzhen) Co., Ltd., All the objections should be raised within thirty days from the date of issue. To validate the report, you can contact us.*

**Revision History**

Version	Issue Date	Revisions Content
R_V0	2023-04-07	This report is based on the report No. BTF230316E02301, only change the Applicant Name, address, Manufacturer name and address.

*Note: Once the revision has been made, then previous versions reports are invalid.*

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# 1 Introduction

## 1.1 Identification of Testing Laboratory

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

## 1.2 Identification of the Responsible Testing Location

Company Name:	BTF Testing Lab (Shenzhen) Co., Ltd.
Address:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Phone Number:	+86-0755-23146130
Fax Number:	+86-0755-23146130

## 1.3 Announcement

- (1) The test report reference to the report template version v0.
- (2) The test report is invalid if not marked with the signatures of the persons responsible for preparing, reviewing and approving the test report.
- (3) The test report is invalid if there is any evidence and/or falsification.
- (4) This document may not be altered or revised in any way unless done so by BTF and all revisions are duly noted in the revisions section.
- (5) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.
- (6) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

## 2 Product Information

### 2.1 Application Information

Company Name:	Shenzhen DJS Tech Co., Ltd
Address:	Floor 5, Building B4B, Yingzhan Industrial Zone, Longtian Community, Kengzi Street, Pingshan New District, Shenzhen

### 2.2 Manufacturer Information

Company Name:	Shenzhen DJS Tech Co., Ltd
Address:	Floor 5, Building B4B, Yingzhan Industrial Zone, Longtian Community, Kengzi Street, Pingshan New District, Shenzhen

### 2.3 General Description of Equipment under Test (EUT)

EUT Name:	LiFePO4 Battery Pack
Test Model Number:	12V200ah
Series Model Number:	12V50ah, 12V60ah, 12V70ah, 12V80ah, 12V90ah, 12V100ah, 12V105ah, 12V120ah, 12V135ah, 12V160ah, 12V190ah
Description of Model name differentiation:	Only the battery capacity is different, others are the same

### 2.4 Technical Information

Rating:	Charge voltage: 14.6V Over charge protective voltage: 14.6V Nominal voltage: 12.8V Nominal capacity: 200Ah (at 0.5C rate discharge after standard charge) Specific Energy: 2560Wh Standard Charge current: 40A Max. charge current: 100A Charge mode: CC-CV Discharge Cut-off voltage: 10V Discharge current: 150A(continuous discharge current), 200A(Max discharge current, ≤5s)
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### 3 Summary of Test Results

#### 3.1 Test Standards

The tests were performed according to following standards:

**EN IEC 61000-6-3:2021:** Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for equipment in residential environments

**EN IEC 61000-6-1:2019:** Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments

#### 3.2 Uncertainty of Test

Item	Measurement Uncertainty
All emissions, radiated (<1GHz)	±4.12dB
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.	

#### 3.3 Summary of Test Result

Item	Standard	Requirement	Result
Radiation disturbance (30MHz-1GHz)	EN IEC 61000-6-3:2021	Table 3	Pass
Electrostatic discharge	EN IEC 61000-6-1:2019	Table 1.4	Pass
Radio-frequency electromagnetic field	EN IEC 61000-6-1:2019	Table 1.2 & 1.3	Pass

## 4 Test Configuration

### 4.1 Test Equipment List

Radiation disturbance (30MHz-1GHz)					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2022-03-26	2023-03-25
Preamplifier	SCHWARZBECK	BBV9744	00246	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMASMAM-10m	21101566	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-10m	21101570	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF1-SMASMAM-1m	21101568	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-1m	21101576	2022-11-24	2023-11-23
RE Cable	REBES Talent	UF2-NMNM-2.5m	21101573	2022-11-24	2023-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Horn Antenna	SCHWARZBECK	BBHA9170	01157	2021-11-28	2023-11-27
EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI7	101032	2022-11-24	2023-11-23
SIGNAL ANALYZER	ROHDE&SCHWARZ	FSQ40	100010	2022-11-24	2023-11-23
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Broadband Preamplifier	SCHWARZBECK	BBV9718D	00008	2022-03-26	2023-03-25
Horn Antenna	SCHWARZBECK	BBHA9120D	2597	2022-05-22	2024-05-21
EZ EMC	Frad	FA-03A2 RE+	/	/	/
POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2021-11-28	2023-11-27

Electrostatic discharge					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
ESD Generator	Prima	PESD6030	PR210823683	2022-11-24	2023-11-23

Radio-frequency electromagnetic field					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
Field Probe	Narda	EP-601	811ZX01057	2022-07-06	2023-07-05
Antenna	SKET	STLP9129_Plus	/	/	/
Amplifier	SKET	HAP_03G06G-80W	202004044	2022-07-04	2023-07-03
Amplifier	SKET	HAP_01G03G-75W	202104180	2022-07-04	2023-07-03
Amplifier	SKET	HAP_80M01G-250W	/	2023-02-24	2024-02-23
USB Power Sensor	Agilent	U2001A	MZ54330012	2023-02-24	2024-02-23
USB Power sensor	Agilent	U2000A	MY53410013	2023-02-24	2024-02-23
Signal Generator	Agilent	N5181A	MY50141997	2022-12-06	2023-12-05



## 4.2 Test Auxiliary Equipment

The EUT was tested as an independent device.

## 4.3 Test Modes

No.	Test Modes
TM1	discharging

## 5 Emission Test Results (EMI)

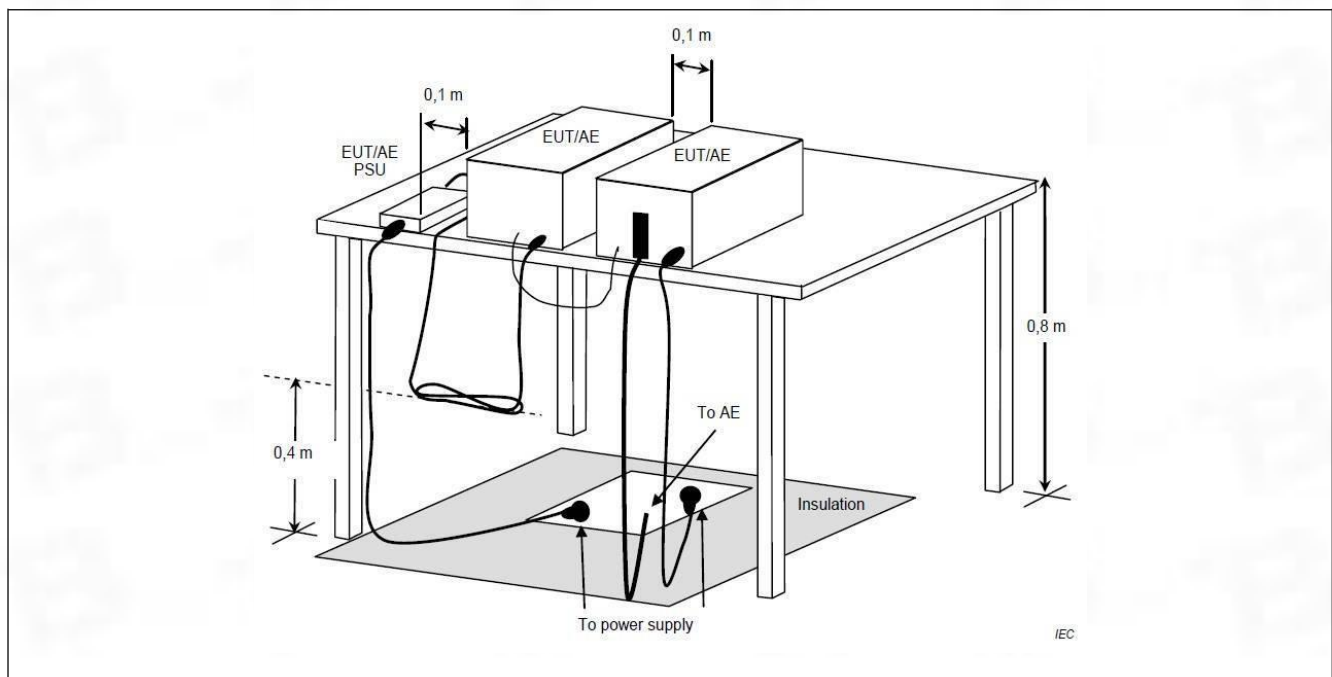
### 5.1 Radiation disturbance (30MHz-1GHz)

Test Requirement:	Table 3		
Test Method:	CISPR 16-2-3 Clause 7.3		
Test Limit:	Frequency range	Limits at 10m	Limits at 3m
	30 MHz to 230 MHz	30 dB(uV/m) quasi-peak	40 dB(uV/m) quasi-peak
	230 MHz to 1 000MHz	37 dB(uV/m) quasi-peak	47 dB(uV/m) quasi-peak
	At transitional frequencies the lower limit applies.		
Procedure:	An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities. Level=Read Level + Antenna Factor + Cable Loss - Preamp Factor		

#### 5.1.1 E.U.T. Operation:

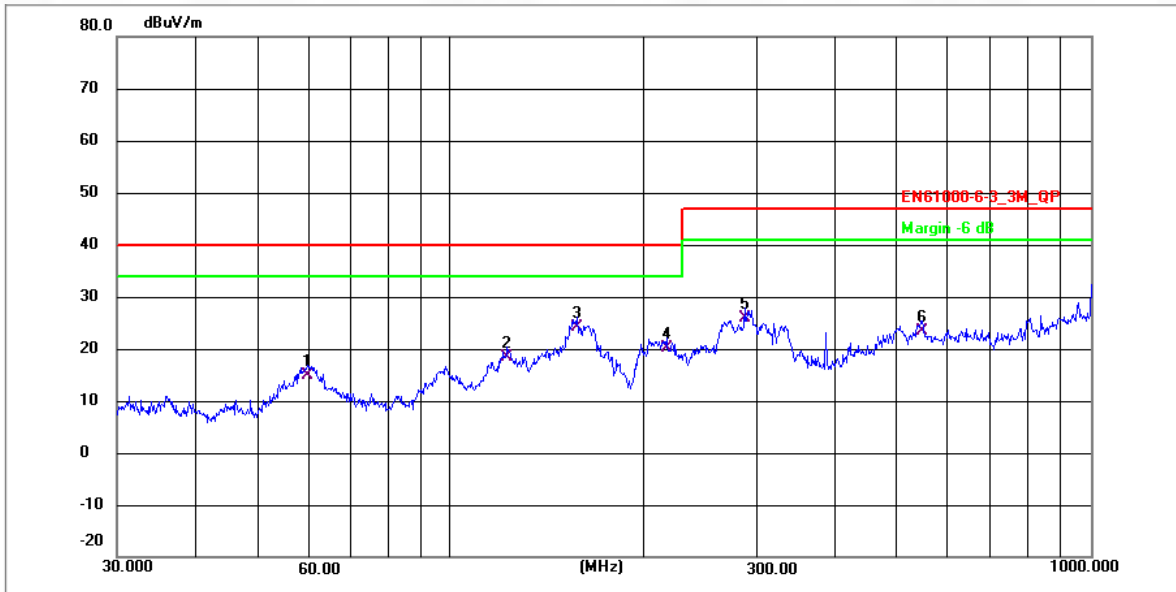
Operating Environment:	
Temperature:	25.1 °C
Humidity:	53.9 %
Atmospheric Pressure:	1010 mbar

#### 5.1.2 Test Setup Diagram:



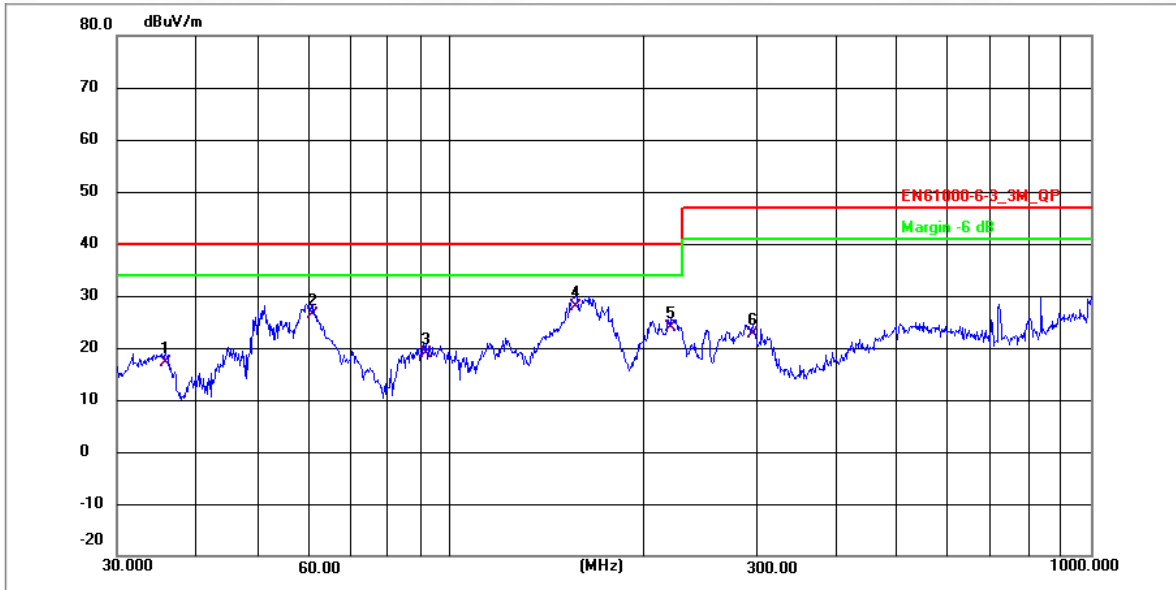
### 5.1.3 Test Data:

TM1 / Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	59.5448	32.99	-18.19	14.80	40.00	-25.20	QP	P
2	122.8340	46.50	-28.02	18.48	40.00	-21.52	QP	P
3 *	157.2829	51.74	-27.72	24.02	40.00	-15.98	QP	P
4	216.7828	46.75	-26.59	20.16	40.00	-19.84	QP	P
5	287.9904	51.51	-25.53	25.98	47.00	-21.02	QP	P
6	546.1393	44.92	-21.62	23.30	47.00	-23.70	QP	P

TM1 / Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F
1	35.7490	37.63	-20.62	17.01	40.00	-22.99	QP	P
2	60.7044	46.47	-20.14	26.33	40.00	-13.67	QP	P
3	91.8163	48.44	-29.58	18.86	40.00	-21.14	QP	P
4 *	156.7323	55.69	-27.72	27.97	40.00	-12.03	QP	P
5	221.0043	50.38	-26.41	23.97	40.00	-16.03	QP	P
6	296.1836	48.13	-25.47	22.66	47.00	-24.34	QP	P

## **6 Immunity Test Results (EMS)**

### **Performance Criteria Description in EN IEC 61000-6-1 Performance Criteria**

#### **Performance Criterion A**

The EUT shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the EUT is used as intended. If the performance level is not specified by the manufacturer, this may be derived from the product description and documentation and what the user may reasonably expect from the equipment if used as intended.

#### **Performance Criterion B**

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

#### **Performance Criterion C**

Temporary loss of function is allowed during the test, provided the function is self-recoverable or can be restored by the operation of the controls.

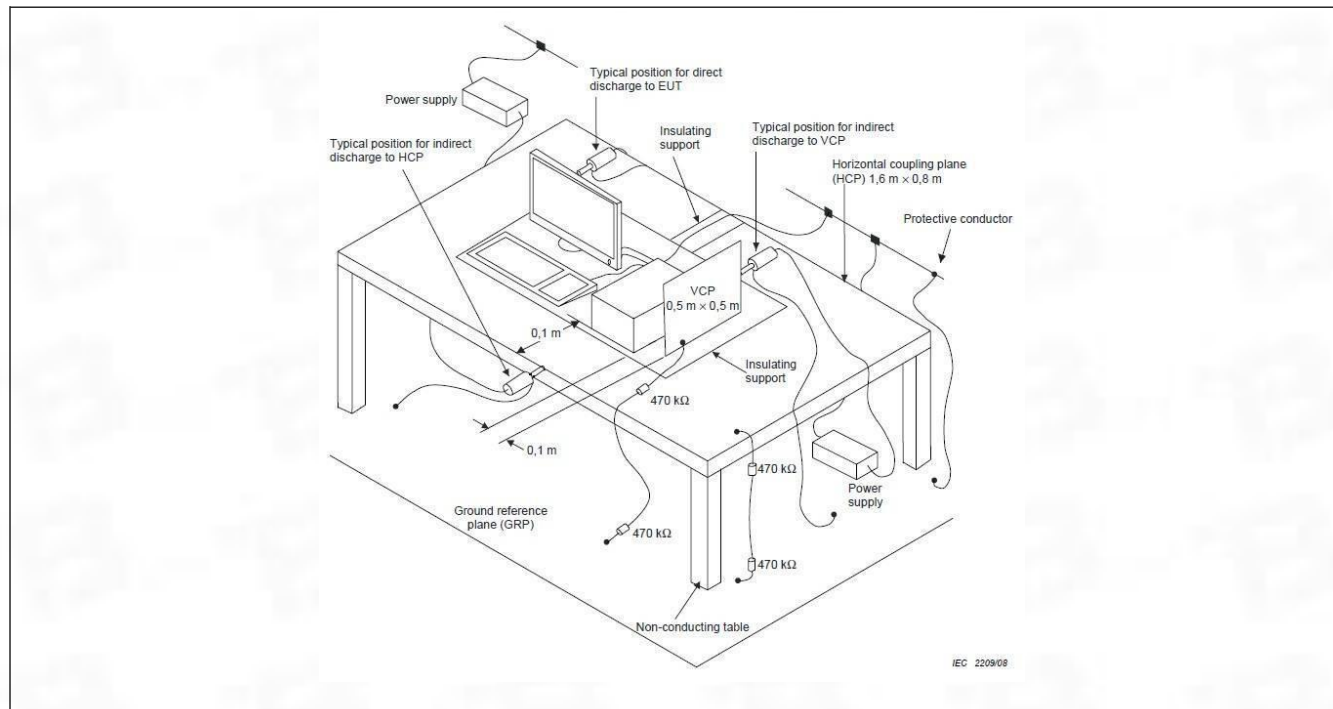
## 6.1 Electrostatic discharge

Test Requirement:	Table 1.4
Test Method:	EN 61000-4-2: 2009
Test Limit:	Performance criterion B
Procedure:	Discharge Impedance: 330 $\Omega$ / 150 pF Discharge Voltage: Air Discharge: 8 kV; Contact Discharge: 4 kV; VCP/HCP: 4 kV. Polarity: Positive & Negative Number of Discharge: Minimum 10 times at each test point Discharge Mode: Single Discharge Discharge Period: 1 second minimum
Performance Criteria:	B

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

Operating Environment:	
Temperature:	25.1 $^{\circ}\text{C}$
Humidity:	53.9 %
Atmospheric Pressure:	1010 mbar

### 6.1.2 Test Setup Diagram:



### 6.1.3 Test Data:

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

Note1:

Test Points:

Air discharge: Red Arrow

Contact discharge: Yellow Arrow

Horizontal / Vertical Coupling: All sides

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



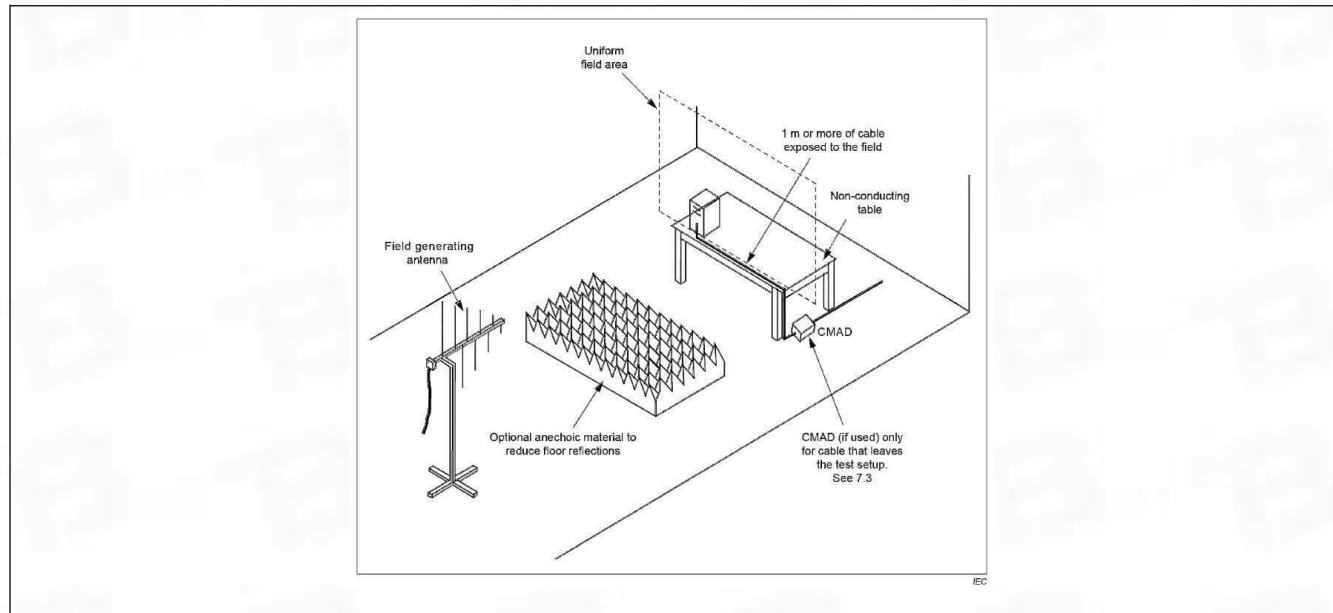
## 6.2 Radio-frequency electromagnetic field

Test Requirement:	Table 1.2 & 1.3
Test Method:	EN IEC 61000-4-3:2020
Test Limit:	Performance criterion A
Procedure:	Antenna Polarisation: Vertical and Horizontal Modulation: 1kHz,80% Amp. Mod,1% increment Frequency Range: 80MHz to 1GHz, 1.4GHz to 6GHz
Performance Criteria:	A

### 6.2.1 E.U.T. Operation:

Operating Environment:	
Temperature:	25.1 °C
Humidity:	53.9 %
Atmospheric Pressure:	1010 mbar

### 6.2.2 Test Setup Diagram:



### 6.2.3 Test Data:

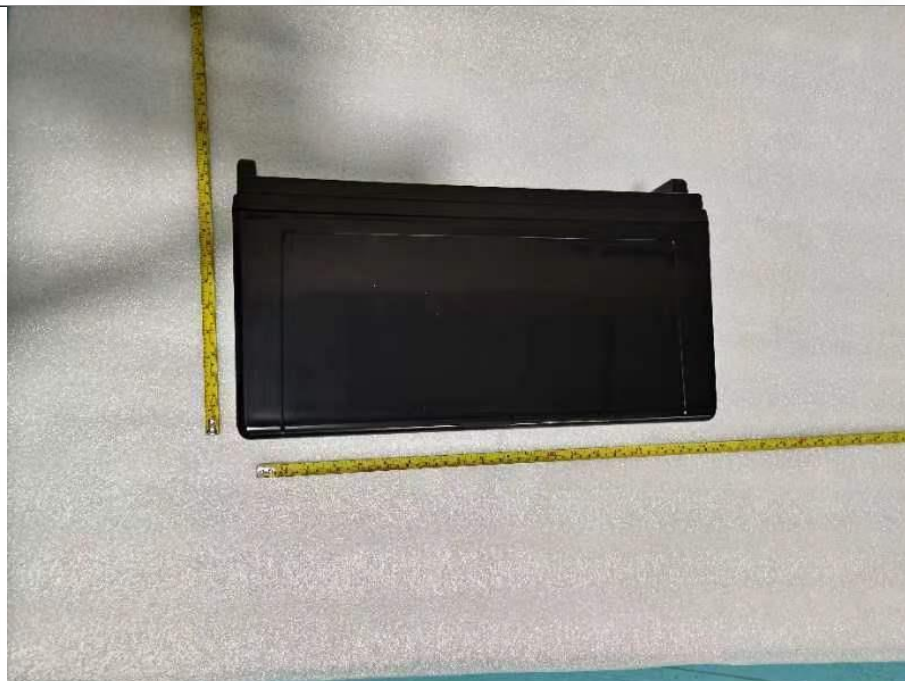
Frequency	Field Strength (V/m)	EUT face	Dwell time	Result/ Observations
80MHz-1GHz	3	Front	2s	A
80MHz-1GHz	3	Back	2s	A
80MHz-1GHz	3	Left	2s	A
80MHz-1GHz	3	Right	2s	A
80MHz-1GHz	3	Top	2s	A
80MHz-1GHz	3	Bottom	2s	A
1.4GHz-6GHz	3	Front	2s	A
1.4GHz-6GHz	3	Back	2s	A
1.4GHz-6GHz	3	Left	2s	A
1.4GHz-6GHz	3	Right	2s	A
1.4GHz-6GHz	3	Top	2s	A
1.4GHz-6GHz	3	Bottom	2s	A

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



## 7 EUT Constructional Details (EUT Photos)

External





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**-- END OF REPORT --**