EMC Test Report

Applicant	:	**Nemo Power Tools Limited**
Address	:	**21st Floor, CMA Building 64 Connaught Road Central Hong Kong**
Product Name	:	**GRABO Li-ion Battery**
Report Date	:	**Jan. 02, 2024**

Shenzhen Anbotek Compliance Laboratory Limited

Contents

TEST REPORT

Applicant	:	Nemo Power Tools Limited
Manufacturer	:	Nemo Power Tools(HuiZhou) Co.,Ltd.
Product Name	:	GRABO Li-ion Battery
Test Model No.	:	TB05000
Reference Model No.	:	N/A
Trade Mark	:	N/A
Rating(s)	:	DC 14.8V 2600mAh
Test Standard(s)	:	**EN IEC 61000-6-3:2021** **EN IEC 61000-6-1:2019**

The device described above is tested by Shenzhen Anbotek Compliance Laboratory Limited to determine the maximum emission levels emanating from the device and the severe levels of the device can endure and its performance criterion. The measurement results are contained in this test report and Shenzhen Anbotek Compliance Laboratory Limited is assumed full of responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT (Equipment Under Test) is technically compliant with above listed standard(s) requirements.
This report applies to above tested sample only and shall not be reproduced in part without written approval of Shenzhen Anbotek Compliance Laboratory Limited.

Date of Receipt: Dec. 12, 2023

Date of Test: Dec. 12, 2023 to Dec. 19, 2023

Prepared By: (Yee Huang)

Approved & Authorized Signer: (KingKong Jin)

1. General Information

1.1. Client Information

Applicant	:	Nemo Power Tools Limited
Address	:	21st Floor, CMA Building 64 Connaught Road Central Hong Kong
Manufacturer	:	Nemo Power Tools(HuiZhou) Co.,Ltd.
Address	:	2/F, 4th Industrial Area, Luokeng Village, Xiaotie Zone, Xiaojinkou Town,Huicheng District, Huizhou City, Guangdong Province, China
Factory	:	Shenzhen Unitek Energy Technology Co.,Ltd. Dongguan Branch
Address	:	Room 408, No.8 Xinbao 3rd Street, Dalang Town, Dongguan City, Guangdong Province

1.2. Description of Device (EUT)

Product Name	:	GRABO Li-ion Battery
Test Model No.	:	TB05000
Reference Model No.	:	N/A
Trade Mark	:	N/A
Test Power Supply	:	DC 14.8V
Test Sample No.	:	1-1-1
Adapter	:	N/A
Remark: (1) For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.		

1.3. Auxiliary Equipment Used During Test

Title	Manufacturer	Model No.	Serial No.
/	/	/	/

1.4. Description of Test Modes

Pretest Modes	Descriptions
TM1	on mode

For Mode 1 Block Diagram of Test Setup

1.5. Measurement Uncertainty

Parameter	Uncertainty
Radiated emissions (30MHz~1000MHz)	Horizontal: 3.92dB; Vertical: 4.52dB
This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.	

1.6. Test Summary

Test Items	Test Modes	Status
Radiation disturbance (30MHz-1GHz)	Mode1	P
Electrostatic discharge	Mode1	P
Radio-frequency electromagnetic field	Mode1	P
Note: P: Pass N: N/A, not applicable		

1.7. Description of Test Facility

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

FCC-Registration No.:434132
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No. 434132.

ISED-Registration No.: 8058A
Shenzhen Anbotek Compliance Laboratory Limited, EMC Laboratory has been registered and fully described in a report filed with the (ISED) Innovation, Science and Economic Development Canada. The acceptance letter from the ISED is maintained in our files. Registration 8058A.

Test Location
Shenzhen Anbotek Compliance Laboratory Limited.
1/F, Building D, Sogood Science and Technology Park, Sanwei community, Hangcheng Street, Bao'an District, Shenzhen, Guangdong, China.

1.8. EMS Performance Criteria

Performance criteria 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 criteria 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 criteria 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.

1.9. Test Equipment List

Radiation disturbance (30MHz-1GHz)						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	EMI Test Receiver	Rohde & Schwarz	ESR26	101481	2023-10-12	2024-10-11
2	Pre-amplifier	SONOMA	310N	186860	2023-10-12	2024-10-11
3	Bilog Broadband Antenna	Schwarzbeck	VULB9163	345	2022-10-23	2025-10-22
4	Software Name EZ-EMC	Farad Technology	ANB-03A	N/A	/	/

Electrostatic discharge						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	ESD Simulators	emtest	ESD NX30.1	11936	2023-03-17	2024-03-16

Radio-frequency electromagnetic field						
Item	Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due Date
1	Signal Generator	Agilent	N5181A	MY50143107	2023-04-20	2024-04-19
2	Power Meter	Agilent	E4417A	MY45101384	2023-04-20	2024-04-19
3	Amplifier	Micotop	MPA-80-1000-600	MPA2110318	2023-04-20	2024-04-19
4	Amplifier	Micotop	MPA-1000-6000-100	MPA2110327	2023-04-20	2024-04-19
5	Log.-Per.-Antenna	Schwarzbeck	VULP 9118E	01012	/	/
6	Microwave Log.-Per. Antenna	Schwarzbeck	STLP 9149	00788	/	/
7	Power Sensor	KEYSIGHT	E9323A	US40410647	2023-04-20	2024-04-19
8	Power Sensor	KEYSIGHT	E9323A	MY53100007	2023-04-20	2024-04-19
9	Electric field Probe	Narda S.T.S /PMM	EP 601	811ZX10351	2023-04-20	2024-04-19
10	Software	EMtrace	EM 3	/	/	/

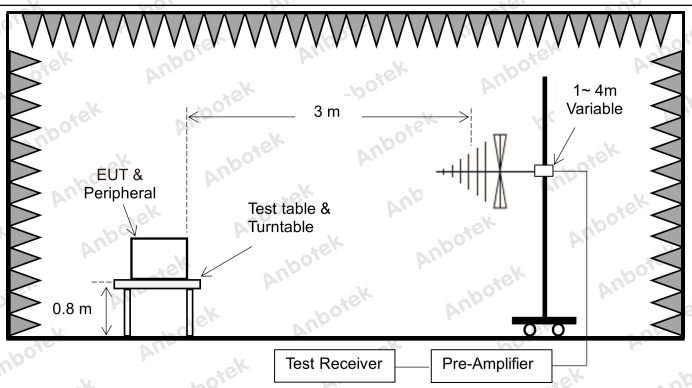
2. Radiation disturbance (30MHz-1GHz)

Test Requirement:	Table 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 1 000 MHz / 37 dB(uV/m) quasi-peak / 47 dB(uV/m) quasi-peak At transitional frequencies the lower limit applies.
Test Method:	CISPR 16-2-3 Clause 7.3
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

2.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: on mode

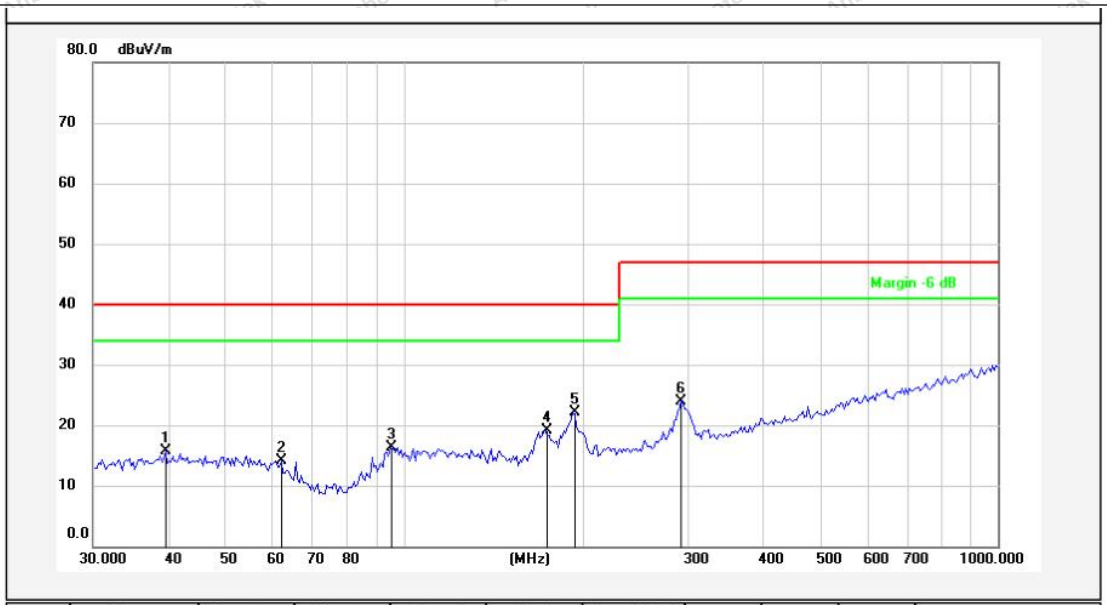
2.2. Test Setup



2.3. Test Data

Temperature:	24.7 °C	Humidity:	49.7 %	Atmospheric Pressure:	102 kPa

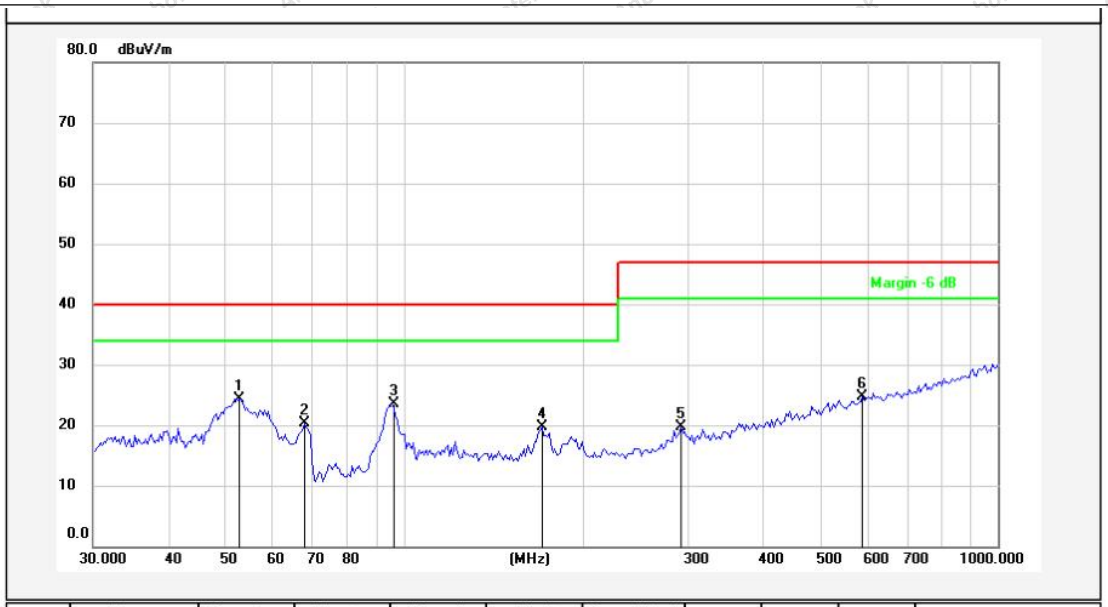
TM1 / Polarization: Horizontal



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	39.7146	32.61	-16.92	15.69	40.00	-24.31	QP			
2	62.2128	32.67	-18.58	14.09	40.00	-25.91	QP			
3	94.7601	34.06	-17.67	16.39	40.00	-23.61	QP			
4	173.2051	38.90	-19.76	19.14	40.00	-20.86	QP			
5	192.4186	40.79	-18.63	22.16	40.00	-17.84	QP			
6	293.0842	39.01	-15.01	24.00	47.00	-23.00	QP			

Temperature:	24.7 °C	Humidity:	49.7 %	Atmospheric Pressure:	102 kPa

TM1 / Polarization: Vertical



No.	Freq. (MHz)	Reading (dBuV)	Factor ()	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Height (cm)	degree (deg)	Remark
1	52.9453	41.72	-17.33	24.39	40.00	-15.61	QP			
2	68.1514	41.32	-20.92	20.40	40.00	-19.60	QP			
3	95.4270	40.98	-17.57	23.41	40.00	-16.59	QP			
4	170.7926	39.53	-19.90	19.63	40.00	-20.37	QP			
5	293.0842	34.71	-15.01	19.70	47.00	-27.30	QP			
6	590.9737	33.17	-8.46	24.71	47.00	-22.29	QP			

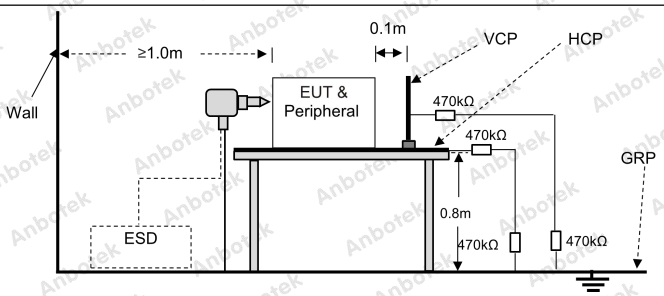
3. Electrostatic discharge

Test Requirement:	Table 1.4
Test Method:	EN 61000-4-2: 2009
Procedure:	Discharge Impedance: 330 Ω / 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

3.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: on mode

3.2. Test Setup



3.3. Test Data

Temperature:	24.7 °C	Humidity:	49.7 %	Atmospheric Pressure:	102 kPa

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

Test Point: 1. All insulated enclosure and seams.
2. All accessible metal parts of the enclosure.
3. All side.
A: No degradation in the performance of the EUT was observed.

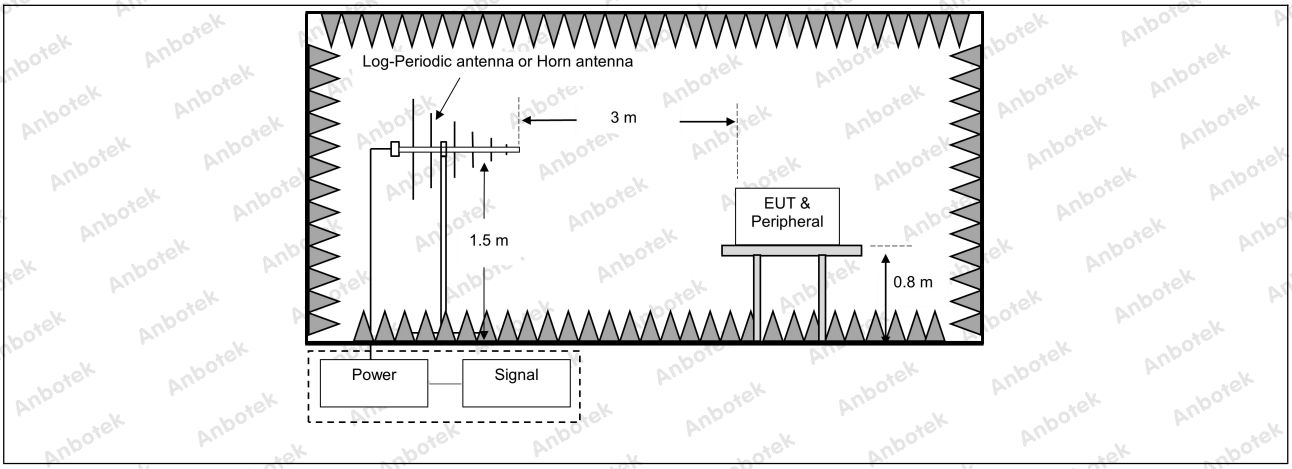
4. Radio-frequency electromagnetic field

Test Requirement:	Table 1.2 & 1.3
Test Method:	EN IEC 61000-4-3:2020
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

4.1. EUT Operation

Operating Environment:	
Test mode:	1: TM1: on mode

4.2. Test Setup



4.3. Test Data

Temperature:	24.7 °C	Humidity:	49.7 %	Atmospheric Pressure:	102 kPa

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

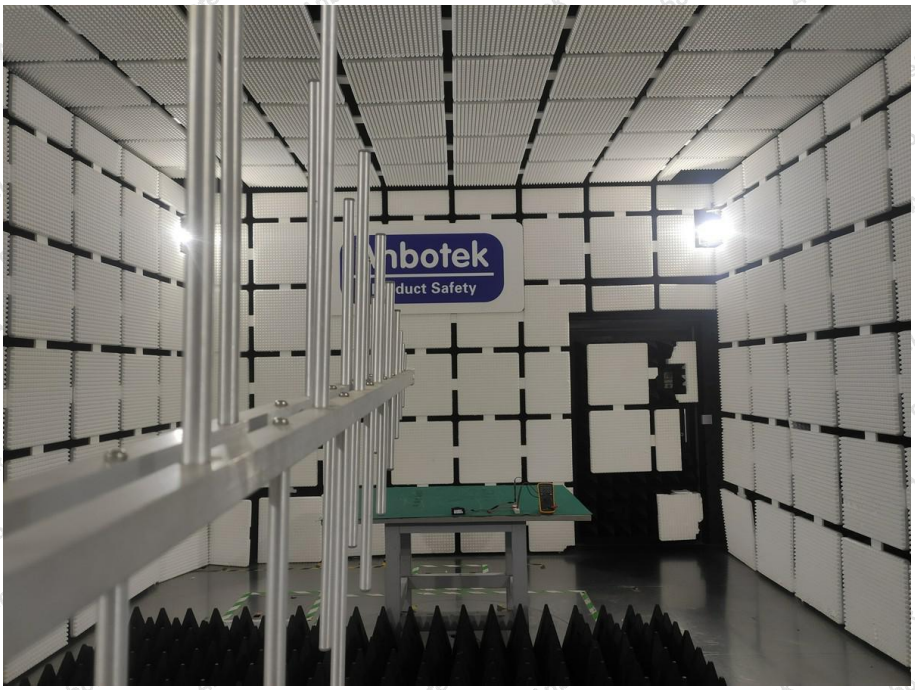
A: No degradation in the performance of the EUT was observed.

APPENDIX I -- TEST SETUP PHOTOGRAPH

Radiation disturbance (30MHz-1GHz)

Electrostatic discharge

Radio-frequency electromagnetic field



APPENDIX II -- Photo documentation

CE Label

1. The CE conformity marking must consist of the initials 'CE' taking the following form:
   If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
2. The CE marking must have a height of at least 5 mm except where this is not possible on account of the nature of the apparatus.
3. The CE marking must be affixed to the product or to its data plate. Additionally it must be affixed to the packaging, if any, and to the accompanying documents.
4. The CE marking must be affixed visibly, legibly and indelibly.
   It must have the same height as the initials 'CE'.

---------- End of Report ----------