

CERTIFICATE
Of Conformity
EC EMC Directive 2014/30/EU
Electromagnetic Compatibility

Report No.: MOCVEIDF15266024

Applicant : Guangxi Donglai New Energy Technology Co.,LTD
(South of Xingguang Hele City) Extension of Yingbin Avenue, Taocheng
Address : Town, Daxin County, Chongzuo City, Guangxi Zhuang Autonomous
Region
Sample Name : Cylindrical Li-ion Cell
Sample Model: : 18650-2600mAh, 18650-1800mAh, 18650-2000mAh, 18650-2200mAh,
18650-2500mAh
Standards : EN 61000-6-1: 2019
EN 61000-6-3: 2007+A1:2011+AC:2012

Remarks:

Based on the voluntary assessment of the product sample and technical file, we confirm that the above-mentioned product meets the requirements of the EC directive. The CE mark as show below can be used, under the responsibility of the manufacturer or the importer, after completion of an EC declaration of conformity and compliance with all relevant EC directives.



Approved By: He

Issued Date: 2020-08-03

The CE Marking may only be used if all relevant and effective EU Directives are complied with.





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Autonomous Region

The following sample(s) was/were submitted and identified on behalf of the client as:

Sample Name: Cylindrical Li-ion Cell
Sample Model: 18650-2600mAh(Listed Models: 18650-1800mAh, 18650-2000mAh,
18650-2200mAh, 18650-2500mAh)
Test voltage: DC 3.7V
Sample Received Date: 2020-07-21
Testing Period: 2020-07-21 to 2020-08-03
Testing Item: EMC
Reference Method: EN 61000-6-1: 2019
EN 61000-6-3: 2007+A1:2011+AC:2012
Result: Pass

Edited by: Huang Qinhong Checked by: Peng Yadong Approved by: He [Signature]



Pony Testing Group Shenzhen Co.,Ltd

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1. TEST STANDARDS

The tests were performed according to following standards:

EN 61000-6-1:2019 Electromagnetic Compatibility (EMC) - Part 6 - 1:Generic Standards- Immunity for resident, commercial and light- industrial environments.

EN 61000-6-3:2007+A1:2011+AC:2012 Electromagnetic Compatibility (EMC) - Part 6 - 3 : Generic Standards – Emission standard for residential, commercial and light – industrial environments.

2. SUMMARY

2.1. General Remarks:

Date of receipt of test sample : 2020-07-21
Sampling and Testing commenced on : 2020-07-31
Testing concluded on : 2020-08-03

2.2. Equipment Under Test

Power supply system utilised

Power supply voltage : 230V / 50 Hz 110V / 60Hz
 3.7 V DC 52 V DC
 Other (specified in blank below)

/

2.3. Description of test modes

The EUT were tested under the following modes, the final worst mode was marked in bold face and recorded in this report.

RADIATED EMISSION TEST:

Description of Test Mode	Test Voltage
Charging	DC 3.7V

IMMUNITY TESTS:

Description of Test Mode	Test Voltage
Charging	DC 3.7V

Emissions tests.....: According to EN61000-6-3, searching for the highest disturbance.

Immunity tests: According to EN61000-6-1, searching for the highest susceptibility.

Note:

For the test results, the EUT had been tested with all conditions. But only the worst case was showed in test report.

The tests are carried out with surge protective devices disconnected

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2.4. Short description of the Equipment Under Test (EUT)

The EUT is a Cylindrical Li-ion Cell

2.5. Description of Support units

The EUT has been tested as a dependent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

■ - supplied by the manufacturer

○ - supplied by the lab

2.6. Performance Criteria

Definition related to the performance level:

- based on the used product standard
- based on the declaration of the manufacturer, requestor or purchaser

Criterion A:

Definition: normal performance within limits specified by the manufacturer, requestor or purchaser.

The apparatus shall continue to operate as intended during the test. No degradation of performance or loss of function is allowed below a performance level (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. If the minimum performance level or the permissible performance loss is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Criterion B:

Definition: temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention:

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 (or permissible loss of performance) specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is allowed, however. 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, then either of these may be derived from the product description and documentation, and from what the user may reasonably expect from the apparatus if used as intended.

Criterion C:

Definition: temporary loss of function or degradation of performance, the correction of which requires operator intervention:

Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls, or by any operation specified in the instructions for use.

3. TEST ENVIRONMENT

3.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

Temperature:	<u>22-25 ° C</u>
Humidity:	<u>40-54 %</u>
Atmospheric pressure:	<u>950-1050mbar</u>

3.2. Test Description

Emission Measurement		
Radiated Emission	EN 61000-6-3:2007+A1:2011+AC:2012	PASS
Immunity Measurement		
Electrostatic Discharge	EN 61000-6-1:2019 IEC 61000-4-2: 2008	PASS
RF Field Strength Susceptibility	EN 61000-6-1:2019 IEC 61000-4-3: 2010	PASS
Power Frequency Magnetic Field Susceptibility Test	EN 61000-6-1:2019 IEC 61000-4-8: 2009	PASS

Remark:

1. The test result PASS and /or FAIL has no relationship with the measurement uncertainty.

3.3. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 „Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar

to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for laboratory is reported:

Test	Range	Measurement Uncertainty	Notes
Radiated Emission(chamber 1)	30~1000MHz	±3.20dB	(1)
Radiated Emission(chamber 2)	30~1000MHz	±3.53dB	(1)
Radiated Emission	Above 1GHz	±4.32dB	(1)
Conducted Emission	0.15~30MHz	±2.66dB	(1)
Disturbance Power	30~300MHz	±2.90dB	(1)

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

3.4. Equipments Used during the Test

Radiated Emission(chamber 1)						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ULTRA-BROADBAND ANTENNA	Sunol Sciences Corp.	JB1	A061713	2020/04/08	2023/04/07
2	EMI Test Receiver	ROHDE & SCHWARZ	ESCI	1166.5950.03	2020/05/18	2021/05/17
3	Horn Antenna	Sunol Sciences Corp	DRH-118	A062013	2020/05/23	2021/05/22
Software:						
Name of Software:				Version:		
ES-K1(Below 1GHz)				V1.71		
e3(Above 1GHz)				6.111221a		

Electrostatic Discharge						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	ESD Simulator	TESEQ AG	NSG 437	1058	2019/09/24	2020/09/23

Power Frequency Magnetic Field Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	Ultra Compact Simulator	HTEC Instruments Ltd.	HPFMF	154402	2020/06/30	2021/06/29

RF Field Strength Susceptibility						
Item	Test Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Cal.Due
1	SIGNAL GENERATOR	Agilent	N5182A	MY50142850	2020/05/15	2021/05/14
2	Power Amplifier	AR	150W1000M3	117	2019/09/23	2020/09/22
3	Power Amplifier	MicoTop	MPA-1000-6000-100	MPA1906286	2019/09/23	2020/09/22
4	Power Meter	Agilent	E4419B	GB43317877	2019/09/23	2020/09/22
5	Directional Coupler	AR	DC6180A	N/A	2019/09/23	2020/09/22
6	Test Antenna-Bi-Log	Schwarzbeck	VULB 9118 E	N/A	2019/09/26	2020/09/25
7	Horn Antenna	Sunol Sciences Corp	DRH-118	A062013	2020/05/23	2021/05/22
8	Power transmitter	HP	8481A	2349A43969	2019/09/23	2020/09/22
9	Power transmitter	Agilent	E9301A	MQ/2217182-2	2019/09/23	2020/09/22
Software:						
Name of Software:				Version:		
EM 3				V1.1.7		

4. TEST CONDITIONS AND RESULTS

4.1. Radiated Emission

For test instruments and accessories used see section 3.4.

4.1.1. Description of the test location

Test location: Radiation Lab

4.1.2. Limits of disturbance

Frequency (MHz)	Distance (Meters)	Field Strengths Limits (dB μ V/m)
30 ~ 230	3	40
230 ~ 1000	3	47

Note: (1) The tighter limit shall apply at the edge between two frequency bands.

(2) Distance refers to the distance in meters between the test instrument antenna and the closest point of any part of the E.U.T.

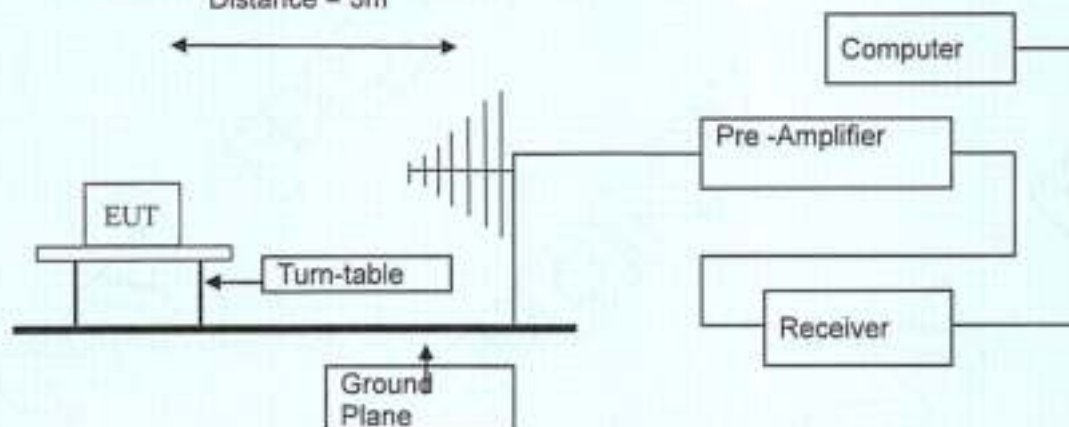
4.1.3. Description of the test set-up

4.1.3.1. Operating Condition

The EUT is set to work shall be carried out with full load mode during the test, and the maximum emanating results are recorded.

4.1.3.2. Configuration of test setup

Distance = 3m



4.1.4. Test result

The requirements are **Fulfilled**

Band Width: 120KHz

Frequency Range: 30MHz to 1000MHz

Remarks: The limits are kept. For detailed results, please see the following page(s).

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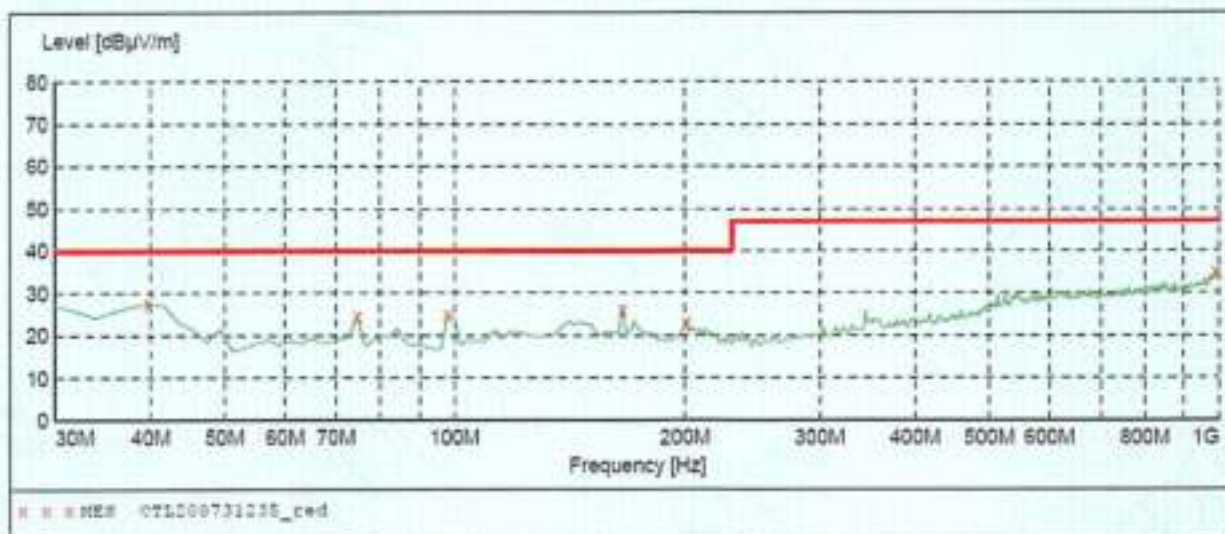
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Radiation Emission Test EN 61000-6-3

EUT: 18650-2600mAh
 Operating Condition: DISCHARGING
 Test Site: 3m Chamber1
 Operator: DC
 Test Specification: DC 3.7V
 Comment: /
 Start of Test: 31/07/2020 / 20:43:40

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength			
Start	Stop	Detector	Meas. Time	IF Bandw.	Transducer
Frequency	Frequency	MaxPeak	300.0 ms	100 kHz	JB1
30.0 MHz	1.0 GHz				



MEASUREMENT RESULT: "CTL200731235_red"

31/07/2020 20:45

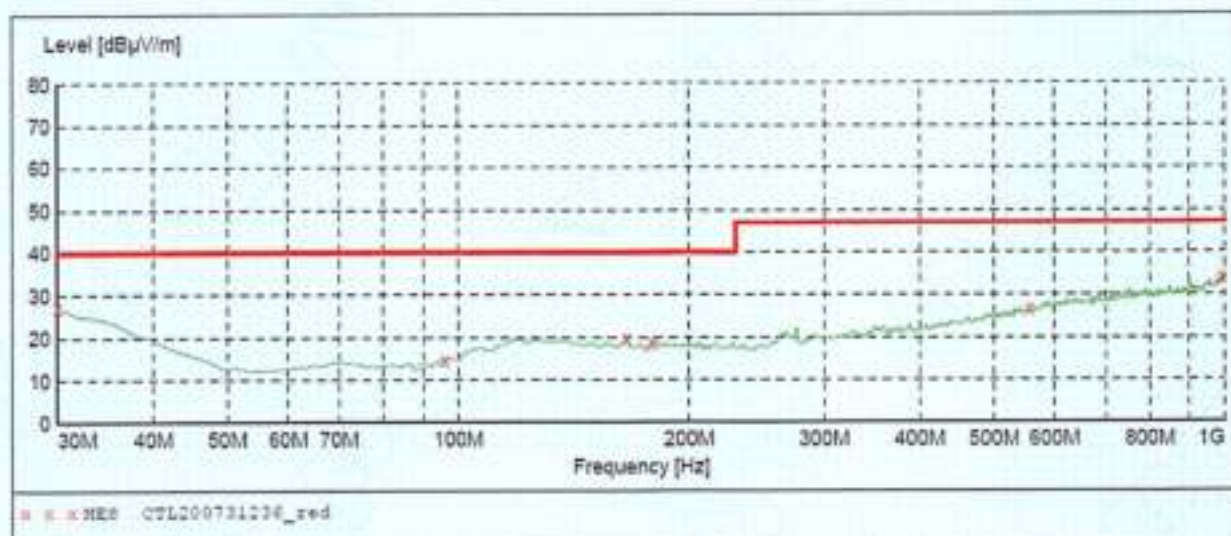
Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
39.700000	27.50	15.7	40.0	12.5	---	0.0	0.00	VERTICAL
74.620000	24.40	9.8	40.0	15.6	---	0.0	0.00	VERTICAL
97.990000	24.60	11.7	40.0	15.4	---	0.0	0.00	VERTICAL
165.800000	26.20	15.0	40.0	13.8	---	0.0	0.00	VERTICAL
200.720000	22.90	15.1	40.0	17.1	---	0.0	0.00	VERTICAL
992.240000	35.00	28.7	47.0	12.0	---	0.0	0.00	VERTICAL

Radiation Emission Test EN 61000-6-3

EUT: 18650-2600mAh
 Operating Condition: DISCHARGING
 Test Site: 3m Chamber1
 Operator: DC
 Test Specification: DC 3.7V
 Comment: /
 Start of Test: 31/07/2020 / 20:46:00

SWEEP TABLE: "test (30M-1G)"

Short Description:		Field Strength				Transducer
Start	Stop	Detector	Meas. Time	IF Bandw.		
Frequency	Frequency					
30.0 MHz	1.0 GHz	MaxPeak	300.0 ms	100 kHz		JBI



MEASUREMENT RESULT: "CTL200731236_red"

31/07/2020 20:47

Frequency MHz	Level dBµV/m	Transd dB	Limit dBµV/m	Margin dB	Det.	Height cm	Azimuth deg	Polarization
30.000000	27.10	22.6	40.0	12.9	---	0.0	0.00	HORIZONTAL
95.960000	14.50	11.2	40.0	25.5	---	0.0	0.00	HORIZONTAL
165.800000	19.70	15.0	40.0	20.3	---	0.0	0.00	HORIZONTAL
179.380000	18.80	15.0	40.0	21.2	---	0.0	0.00	HORIZONTAL
555.740000	26.70	22.5	47.0	20.3	---	0.0	0.00	HORIZONTAL
992.240000	34.00	28.7	47.0	13.0	---	0.0	0.00	HORIZONTAL

4.2. Electrostatic discharge

For test instruments and accessories used see section 3.4.

4.2.1. Description of the test location and date

Test location: 1# EMC Test Room
Date of test: 2020-07-31
Operator: Pan

4.2.2. Severity levels of electrostatic discharge

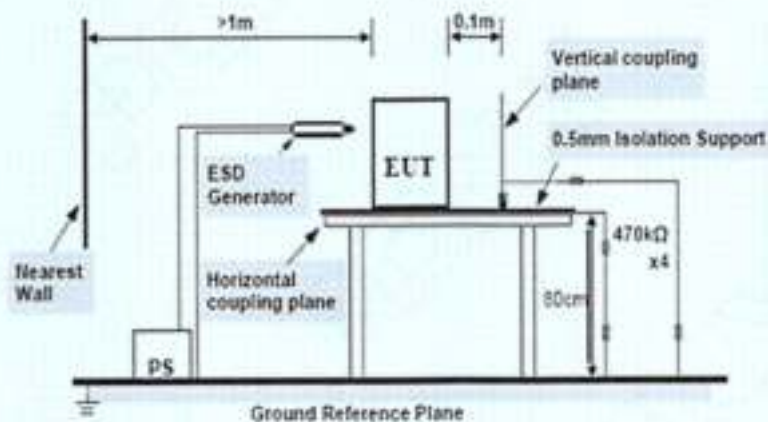
Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1	2	2
2	4	4
3	6	8
4	8	15
X	Special	Special

4.2.3. Description of the test set-up

4.2.3.1. Operating Condition

The EUT is set to work shall be carried out with normal working mode during the test, and the maximum emanating results are recorded.

4.2.3.2. Configuration of test setup



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4.2.4. Test specification:

Contact discharge voltage:

2 kV 4 kV

Air discharge voltage:

2 kV 4 kV 8 kV

Number of discharges:

≥ 10 ≥ 25

Type of discharge:

Direct discharge Air discharge
 Contact discharge
Indirect discharge Contact discharge

Polarity:

Positive Negative

Discharge location:

see photo documentation of the test set-up
 all external locations accessible by hand
 horizontal plate (HCP)
 vertical coupling plate (VCP)

4.2.5. Test result

The requirements are **Fulfilled**

Performance Criterion: **B**

Remarks: During the test no deviation was detected to the selected operation mode(s).

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4.3. Radiated, radio-frequency, electromagnetic field

For test instruments and accessories used see section 3.4.

4.3.1. Description of the test location and date

Test location: Chamber 2
Date of test: 2020-07-31
Operator: Pan

4.3.2. Severity levels of radiated, radio-frequency, electromagnetic field

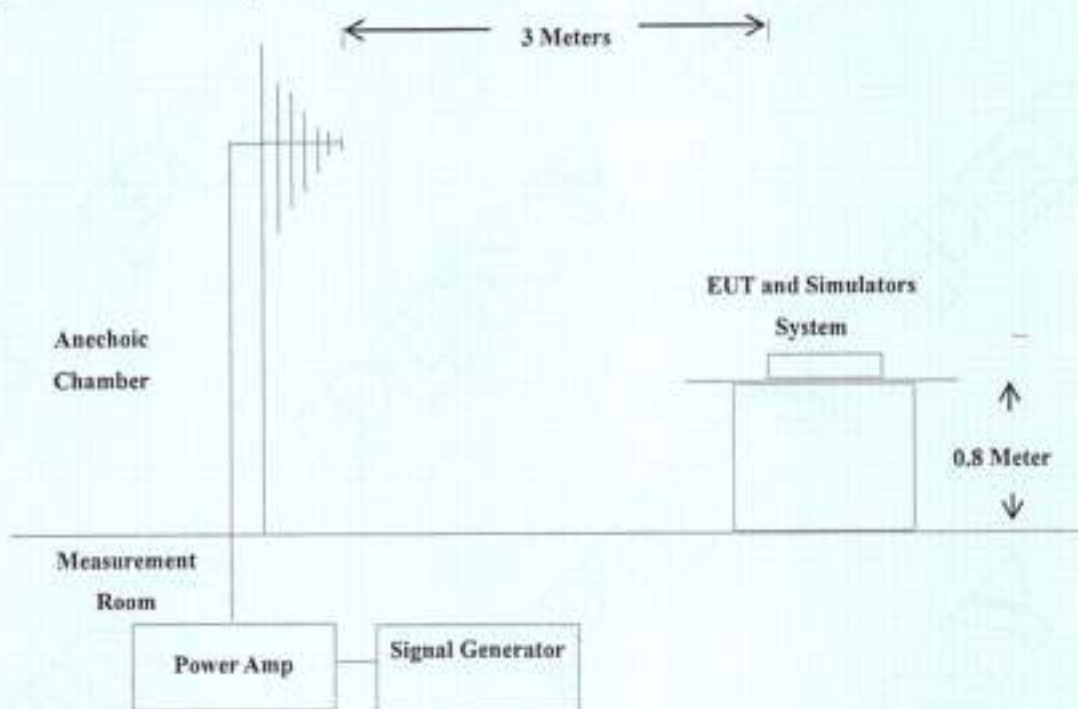
Level	Field Strength (V/m)
1.	1
2.	3
3.	10
X	Special

4.3.3. Description of the test set-up

4.3.3.1. Operating Condition

The EUT is set to work shall be carried out normal working mode during the test, and the maximum emanating results are recorded.

4.3.3.2. Configuration of test setup



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4.3.4. Test specification:

Frequency range: ■ 80 MHz to 1000 MHz

Field strength: ■ 3 V/m

EUT - antenna separation: ■ 3 m

Modulation: ■ AM: 80 %
■ sinusoidal 1000Hz

Frequency step: ■ 1 % with 3 s dwell time

Antenna polarisation: ■ horizontal ■ vertical

4.3.5. Test result

The requirements are **Fulfilled**

Performance Criterion: **A**

Remarks: During the test no deviation was detected to the selected operation mode(s).

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4.4. Magnetic Field Immunity

For test instruments and accessories used see section 3.4.

4.4.1. Description of the test location

Test location: 2# EMC Test Room
Date of test: 2020-07-31
Operator: Pan

4.4.2. Severity levels of magnetic field immunity

Level	Magnetic Field Strength (A/m)
1	1
2	3
3	10
4	30
5	100
X.	Special

4.4.3. Description of the test set-up

4.4.3.1. Operating Condition

The EUT is set to work shall be carried out normal working mode during the test, and the maximum emanating results are recorded.

4.4.4. Test specification:

Test frequency: ■ 50 Hz
Continuous field: ■ 1 A/m
Test duration: ■ 5 m
Antenna factor: 0.917 A/m
Axis: ■ x-axis ■ y-axis ■ z-axis

4.4.5. Test result

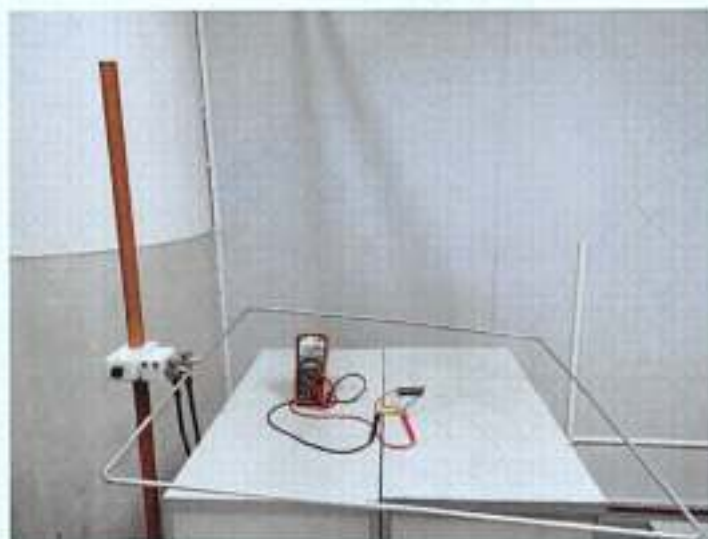
The requirements are **Fulfilled**

Performance Criterion: **A**

Remarks: During the test no deviation was detected to the selected operation mode(s).

5. TEST SETUP PHOTOGRAPH





6. External and Internal Photos of the EUT





Authenticate the photo on original report only

*** End of Report***

