

EMC Test Report

Report No.: AGC01978180105EE01

PRODUCT DESIGNATION : Portfolio with wireless power bank
BRAND NAME : N/A
MODEL NAME : P773.871
MANUFACTURER : Xindao B.V.
DATE OF ISSUE : Mar. 14, 2018
STANDARD(S) : Draft EN 301 489-1 V2.2.0 (2017-03)
Final Draft EN 301 489-3 V2.1.1 (2017-03)
REPORT VERSION V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd

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Report Revise Record

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Mar. 14, 2018	Valid	Initial Release

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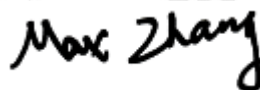
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1. TEST REPORT CERTIFICATION

Manufacturer	Xindao B.V.
Address	VERRIJN STUARTLAAN 1D 2288EK RIJSWIJK NETHERLANDS
Factory	
Address	
Product Designation	Portfolio with wireless power bank
Brand Name	N/A
Test Model	P773.871
Date of test	Mar. 12, 2018 to Mar. 14, 2018
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-EC-EMC

We, Attestation of Global Compliance (Shenzhen) Co., Ltd., hereby certify that the submitted samples of the above item, as detailed in chapter 2.1 of this report, has been tested in our facility. The test record, data evaluation and test configuration represented herein are true and accurate accounts of measurements of the sample's EMC characteristics under the conditions herein specified.

Tested by



Max Zhang(Zhang Yi)

Mar. 14, 2018

Reviewed by



Bart Xie(Xie Xiaobin))

Mar. 14, 2018

Approved By



Forrest Lei(Lei Yonggang)

Mar. 14, 2018

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2. GENERAL INFORMATION

2.1. DESCRIPTION OF EUT

The EUT is a short range, lower power, WPT device.

Details of technical specification refer to the description in follows:

Transmitter

Hardware Version	G006_A V1.1, G006B_A V1.1
Software Version	V1.0
Operation Frequency range	110-205KHz
Test Frequency	178KHz
Number of Channels	1 Channel
Antenna Type	Integral antenna
Power Supply	DC3.7V

2.2. OBJECTIVE

Perform Electro Magnetic Interference (EMI) and Electro Magnetic Susceptibility (EMS) tests for CE Marking.

2.3. TEST STANDARDS AND RESULTS

The EUT has been tested according to ETSI EN 301 489-1 V2.2.0 (2017-03) and ETSI EN 301 489-3 V2.1.1 (2017-03).

ETSI EN 301 489-1	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU and the essential requirements of article 6 of Directive 2014/30/EU
ETSI EN 301 489-3	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 246 GHz; Harmonised Standard covering the essential requirements of article 3.1(b) of Directive 2014/53/EU

2.4. ENVIRONMENTAL CONDITIONS

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

- Temperature: -20-55°C
- Humidity: 30-60 %
- Atmospheric pressure: 86-106 kPa

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3. TEST MODE DESCRIPTION

NO.	TEST MODE DESCRIPTION	WORST
1	Charging with adaptor & load	V
2	standby	--
Note: V means EMI worst mode		

I/O Port Information (☒ Applicable ☐ Not Applicable)

I/O Port of EUT			
I/O Port Type	Number	Cable Description	Tested With
USB	1	1m unshielded	1
Micro in	1	1m unshielded	1

Note:

1. "--" means no any support device during testing.

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4. MEASUREMENT UNCERTAINTY

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

- Uncertainty of Conducted Emission, $U_c = \pm 2.75\text{dB}$
- Uncertainty of Radiated Emission, $U_c = \pm 3.2\text{dB}$

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5. SUPPORT EQUIPMENT

Device Type	Manufacturer	Model Name	Serial No.	specification
Load	--	--	--	5W

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6. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	B112-B113, Building 12, Baoan Building Materials Center, No.1 of Xixiang Inner Ring Road, Baoan District, Shenzhen, Guangdong, P.R.China

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
TEST RECEIVER	R&S	ESPI	101206	July 02, 2017	July 01, 2018
ANTENNA	SCHWARZBECK	VULB9168	494	Mar 01, 2018	Feb 28, 2019
Double-Ridged Waveguide Horn	ETS LINDGREN	3117	00034609	Mar. 01, 2018	Feb. 28, 2019

TEST EQUIPMENT OF ESD TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Simulator	TESEQ	NSG 438	1509	Jun.04, 2017	Jun.03, 2018

TEST EQUIPMENT OF RS IMMUNITY TEST

Description	Manufacturer	Model	Identifier	Cal. Date	Cal. Due
SIGNAL GENERATOR	R&S	E4421B	102525	July 02, 2017	July 01, 2018
ANTENNA	SCHWARZBECK	VULB9168	494	Mar 01, 2018	Feb 28, 2019
POWER SENSOR	R&S	URV5-Z4	100124	July 02, 2017	July 01, 2018
POWER METER	R&S	NRVD	832378/027	July 02, 2017	July 01, 2018
POWER AMPLIFIER	KALMUS	7100C	N/A	July 02, 2017	July 01, 2018
RF AMPLIFIER	Milmega	AS01004-55	1004793	July 02, 2017	July 01, 2018
HORN ANTENNA	ETS LINDGREN	3117	N/A	Mar 01, 2018	Feb 28, 2019

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7. EMISSION TEST

7.1. RADIATED DISTURBANCE MEASUREMENT

7.1.1. LIMITS OF RADIATED DISTURBANCES

Limits for radiated disturbance 30M to1 GHz at a measurement distance of 3 m

Frequency range (MHz)	Quasi peak limits(dBuV/m), for Class B ITE, at 3m measurement distance
30 - 230	40
230 - 1000	47

Limits for radiated disturbance above 1 GHz at a measurement distance of 3 m

Frequency range (MHz)	Limits (dBuV/m), Class B ITE	
	Peak	Average
1000-3000MHz	70	50
3000-6000MHz	74	54

Notes:

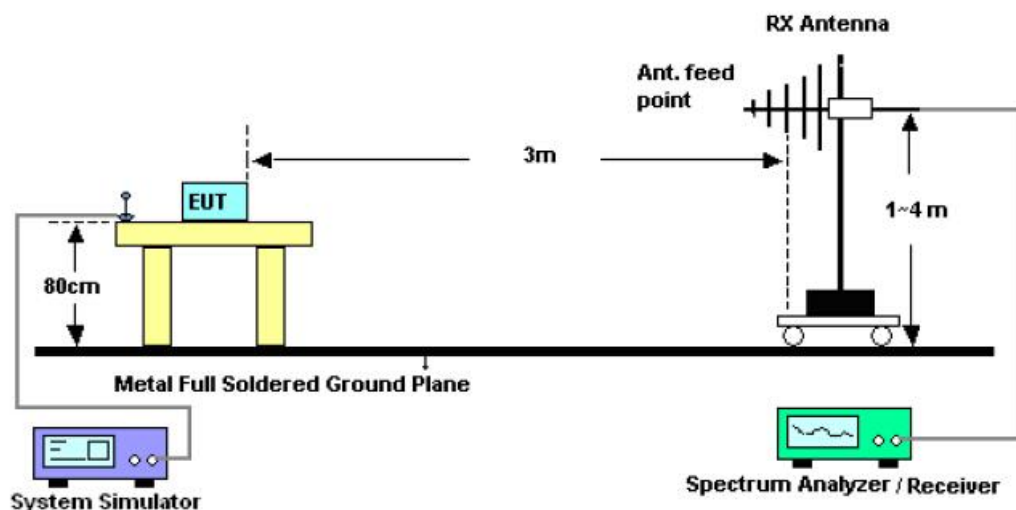
1. The lower limit shall apply at the transition frequency.
2. Additional provisions may be required for cases where interference occurs.

7.1.2. TEST PROCEDURE

- (1). The EUT was placed on the top of an insulating table 0.8 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- (2). The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- (3).The antenna is a broadband antenna, and its height is varied from 1 to 4 meter above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- (4). For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to the heights from 1 to 4 meters and the ratable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- (5).The test-receiver system was set to Peak Detector Function and Specified Bandwidth with Maximum Hold Mode. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emission that did not have 10dB margin would be retested one by one using the quasi-peak method.

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7.1.3. BLOCK DIAGRAM OF TEST SETUP



For the actual test configuration, please refer to the related item-Photographs of the Test Configuration.

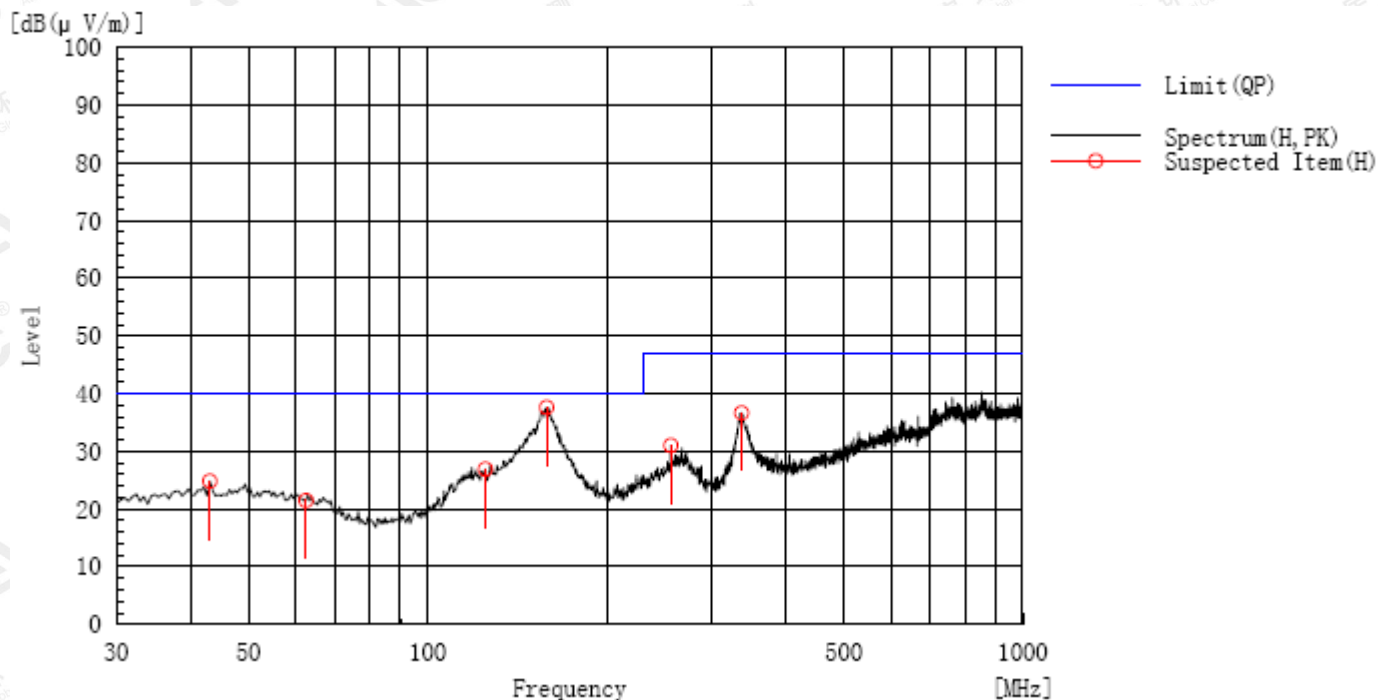
7.1.4 TEST RESULT

The test modes were carried out for all modes.

The worst test mode of the EUT was Mode 1, and its test data was showed as the follow:

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RADIATED EMISSION BELOW 1GHZ- HORIZONTAL

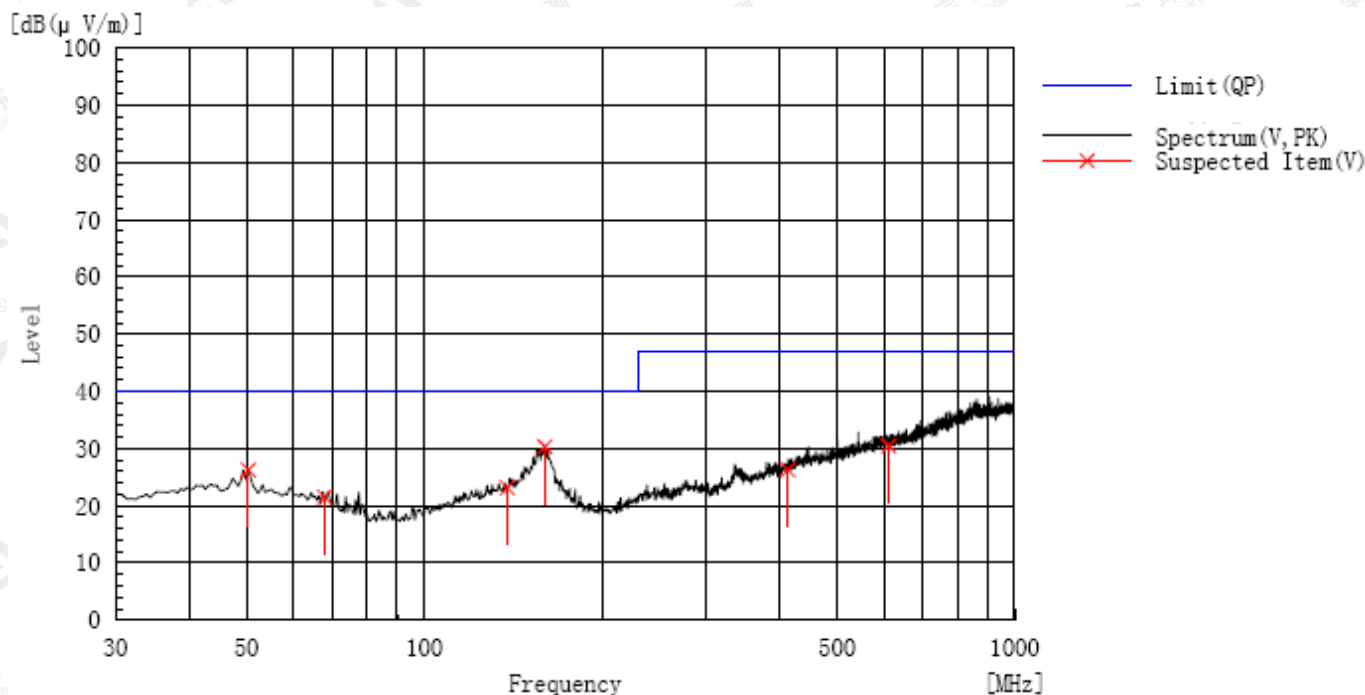


Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
43.095	H	7.2	17.6	24.8	40.0	15.2	Pass	150.0	329.4
62.495	H	5.2	16.2	21.4	40.0	18.6	Pass	100.0	76.6
125.060	H	10.5	16.4	26.9	40.0	13.1	Pass	150.0	118.8
158.525	H	20.3	17.3	37.6	40.0	2.4	Pass	200.0	92.7
256.495	H	14.3	16.7	31.0	47.0	16.0	Pass	100.0	2.2
337.005	H	17.8	18.8	36.6	47.0	10.4	Pass	100.0	129.9

RESULT: PASS

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RADIATED EMISSION BELOW 1GHZ- VERTICAL



Frequency MHz	Polarization	Reading dB(uV)	Factor dB (1/m)	Level dB(uV/m) PK	Limit dB(uV/m) QP	Margin dB	Pass/Fail	Height cm	Angle deg
50.370	V	9.0	17.3	26.3	40.0	13.7	Pass	100.0	35.4
67.830	V	6.1	15.4	21.5	40.0	18.5	Pass	100.0	12.8
138.155	V	5.9	17.2	23.1	40.0	16.9	Pass	200.0	158.6
159.980	V	13.1	17.3	30.4	40.0	9.6	Pass	150.0	193.5
412.665	V	4.2	22.1	26.3	47.0	20.7	Pass	150.0	141.7
611.515	V	4.4	26.1	30.5	47.0	16.5	Pass	150.0	135.4

RESULT: PASS

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8. IMMUNITY TEST

8.1. EUT SETUP AND OPERATING CONDITIONS

The battery was in full voltage and the charger was connected to the EUT to keep the voltage constant during the tests.

Each immunity test was performed according to the requirements of the standard.

8.2. GENERAL PERFORMANCE CRITERIA

1. Performance criteria for Continuous phenomena applied to Transmitter (CT)

For equipment of type II or type III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence.

Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

2. Performance criteria for Transient phenomena applied to Transmitter (TT)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transmitter, tests shall be repeated with the EUT in standby mode to ensure that any unintentional transmission does not occur.

3. Performance criteria for Continuous phenomena applied to Receiver (CR)

For equipment of type II or III that requires a communication link that is maintained during the test, it shall be verified by appropriate means supplied by the manufacturer that the communication link is maintained during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

4. Performance criteria for Transient phenomena applied to Receiver (TR)

For equipment of type II or type III that requires a communication link that is maintained during the test, this shall be verified by appropriate means supplied by the manufacturer during each individual exposure in the test sequence. Where the EUT is a transceiver, under no circumstances shall the transmitter operate unintentionally during the test.

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5. Performance Table

Performance criteria		
Criteria	During Test	After Test
A	Shall operate as intended. May show degradation of performance. Shall be no loss of function. Shall be no unintentional transmissions.	Shall operate as intended. Shall be no degradation of performance. Shall be no loss of function. Shall be no loss of stored data or user programmable functions.
B	May show loss of function (one or more). May show degradation of performance. No unintentional transmissions.	Functions shall be self-recoverable. Shall operate as intended after recovering. Shall be no degradation of performance. Shall be no loss of stored data or user programmable functions.
C	May be loss of function (one or more).	Functions shall be recoverable by the operator. Shall operate as intended after recovering. Shall be no degradation of performance.

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8.3. ELECTROSTATIC DISCHARGE IMMUNITY TEST

8.3.1 TEST SPECIFICATION

Basic Standard	EN 61000-4-2
Discharge Impedance	330Ω / 150 pF
Discharge Voltage	Air Discharge:8 kV , Contact Discharge:4 kV
Polarity	Positive / Negative
Number of Discharge	Minimum 20 times at each test point
Discharge Mode	Single discharge
Discharge Period	1-second minimum

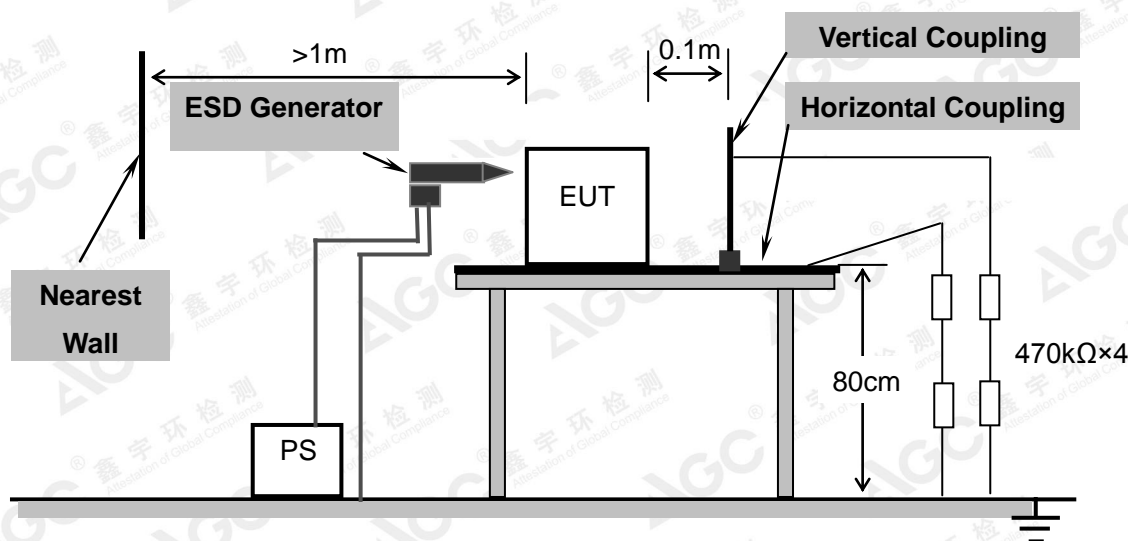
8.3.2 TEST PROCEDURE

The test procedure was in accordance with EN 61000-4-2:

- Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
- The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- The time interval between two successive single discharges was at least 1 second.
- The ESD generator was held perpendicularly to the surface to which the discharge was applied and the return cable was at least 0.2 meters from the EUT.
- Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- Air discharges were 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 was removed from the EUT and re-triggered for a new single discharge. The test was repeated until all discharges were completed.
- At least ten single discharges (in the most sensitive polarity) were applied to the Horizontal Coupling Plane at points on each side of the EUT. The ESD generator was positioned vertically at a distance of 0.1 meters from the EUT with the discharge electrode touching the HCP.
- At least ten single discharges (in the most sensitive polarity) were 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 0.5m×0.5m) was placed vertically to and 0.1 meters from the EUT.

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8.3.3 TEST SETUP



For the actual test configuration, please refer to Appendix II : Photographs of the Test Configuration.

8.3.4 TEST RESULT

TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.3.2 and EN 61000-4-2 for the measurement methods.

☒ **MODE 1** ☒ **MODE 2**

Amount of Discharges	Voltage	Coupling	Observation	Result (Criteria meet)
Mini 20 / Point	±2kV;±4kV	contact discharge	TR, TT	A
Mini 20 / Point	±2kV;±4kV;±8kV	Air Discharge	TR, TT	A
Mini 20 / Point	±4kV	Indirect Discharge HCP	TR, TT	A
Mini 20 / Point	±4kV	Indirect Discharge VCP	TR, TT	A

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8.4. RADIATED, RADIO FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST

8.4.1 TEST SPECIFICATION

Basic Standard	EN 61000-4-3
Frequency Range	80 MHz – 6000MHz
Field Strength	3V/m
Modulation	1 kHz sine wave, 80%, AM modulation
Frequency Step	1% of fundamental
Polarity of Antenna	Horizontal and Vertical
Test Distance	3m
Antenna Height	1.55m
Dwell Time	3 seconds

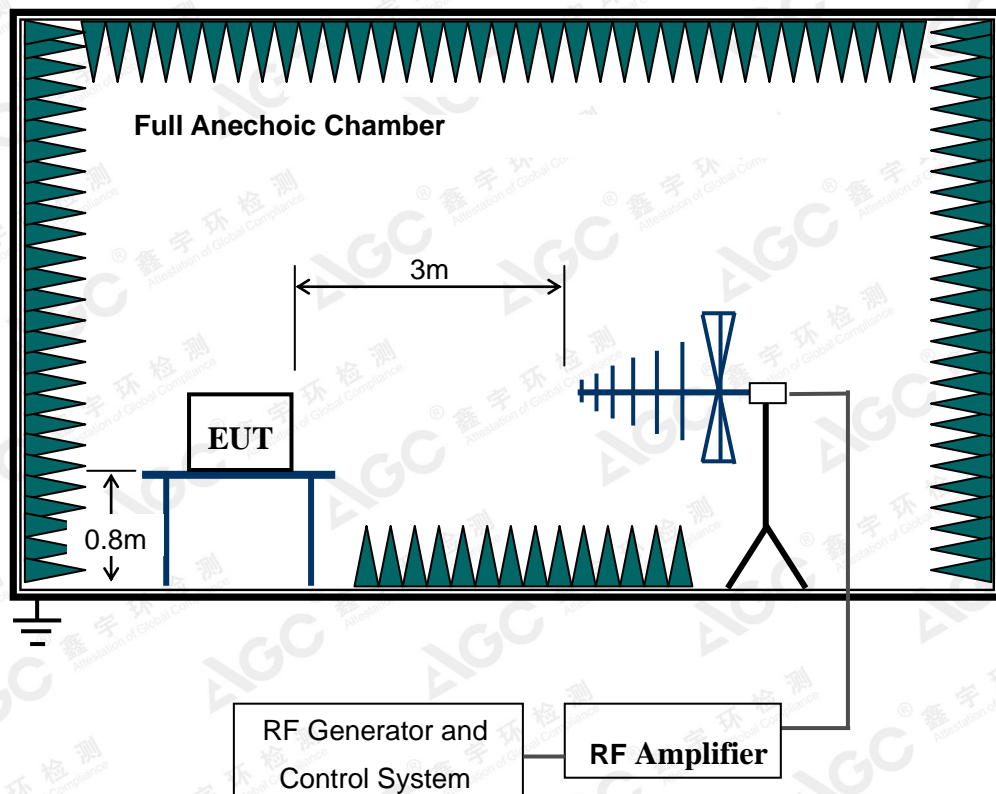
8.4.2 TEST PROCEDURE

The test procedure was in accordance with EN 61000-4-3.

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

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8.4.3 TEST SETUP



For the actual test configuration, please refer to Appendix II : Photographs of the Test Configuration.

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8.4.4 TEST RESULT

TEST PROCEDURE

Please refer to ETSI EN 301 489-1 Clause 9.2.2, ETSI EN 301 489-3 and EN 61000-4-3 for the measurement methods.

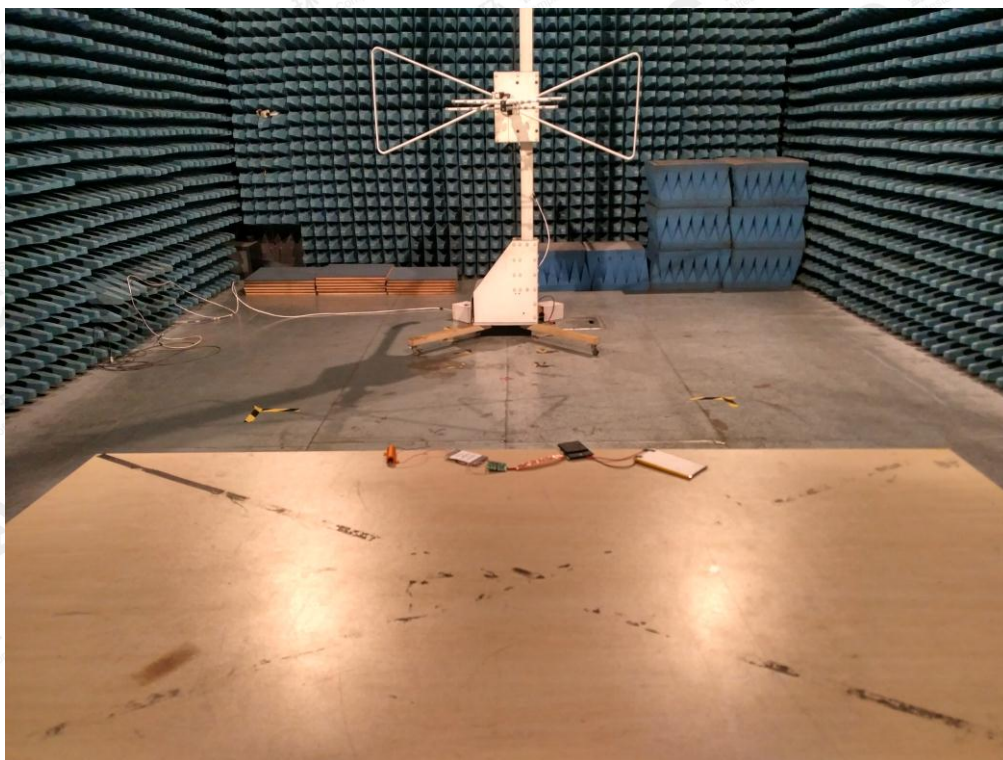
☒ **MODE 1** ☒ **MODE 2**

Freq. Range (MHz)	Field	Modulation	Polarity	Position	Observation	Result (Criteria meet)
80-6000	3V/m	Yes	H	Front	CR, CT	A
80-6000	3V/m	Yes	H	Back	CR, CT	A
80-6000	3V/m	Yes	H	Left	CR, CT	A
80-6000	3V/m	Yes	H	Right	CR, CT	A
80-6000	3V/m	Yes	V	Front	CR, CT	A
80-6000	3V/m	Yes	V	Back	CR, CT	A
80-6000	3V/m	Yes	V	Left	CR, CT	A
80-6000	3V/m	Yes	V	Right	CR, CT	A

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APPENDIX A: PHOTOGRAPHS OF TEST SETUP

RADIATED EMISSION TEST SETUP

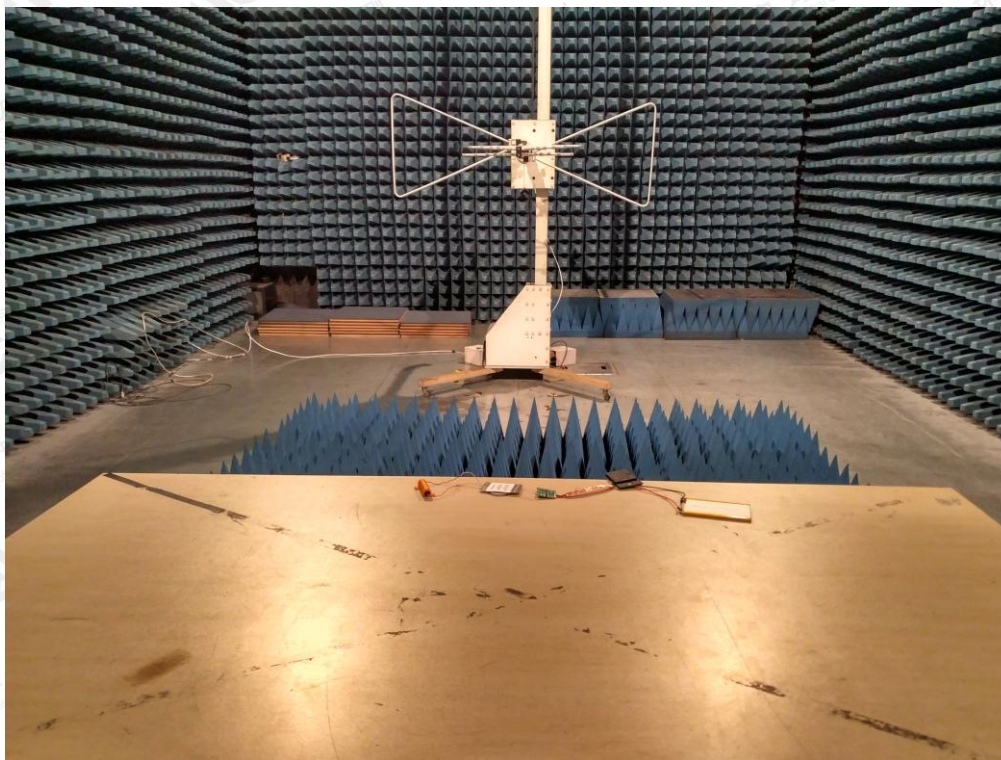


EN 61000-4-2 ESD TEST SETUP



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EN 61000-4-3 RS TEST SETUP



----END OF REPORT----

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