EMC TEST REPORT

Sample： bamboo digital bathroom scale

Trade Name： N/A

Main Model： MO6348

Additional Model： N/A

Report No.： UNIA21102101ER-11

Prepared for

Mid Ocean Brands B.V.

7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Prepared by

Shenzhen United Testing Technology Co., Ltd.

2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

TEST RESULT CERTIFICATION

Applicant	Mid Ocean Brands B.V.
Address	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	Mid Ocean Brands B.V.
Address	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong

Product description

Product	bamboo digital bathroom scale
Trade Name	N/A
Model Name	MO6348
Standards	EN 55014-1:2017/A11:2020 EN 55014-2:2015

Date of Test	
Date (s) of performance of tests	Oct. 21, 2021 ~ Oct. 28, 2021
Date of Issue	Nov. 08, 2021
Test Result	Pass

Prepared by: kahn.yang

Kahn yang/Editor

Reviewer: Sky dong

Sky dong/Supervisor

Approved & Authorized Signer: liuze

Liuze/Manager

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1 TEST SUMMARY

1.1 TEST RESULTS

Test procedures according to the technical standards:

EMC Emission				
Standard	Test Item	Limit	Judgment	Remark
EN 55014-1:2017/A11:2020	Conducted Emission	Class B	N/A	
	Disturbance Power(30-300MHz)	——	N/A	
	Radiated Emission 30MHz to 1000MHz	Class B	PASS	
EN IEC 61000-3-2:2019	Harmonic Current Emission	Class A	N/A	
EN 61000-3-3:2013/A1:2019	Voltage Fluctuations & Flicker	——	N/A	
EMC Immunity				
Section EN 55014-2:2015	Test Item	Performance Criteria	Judgment	Remark
EN 61000-4-2:2009	Electrostatic Discharge	B	PASS	
EN 61000-4-3:2006 +A1:2008+A2:2010	RF Electromagnetic Field	A	PASS	
EN 61000-4-4:2012	Fast Transients	B	N/A	
EN 61000-4-5:2014 /A1:2017	Surges	B	N/A	
EN 61000-4-6:2014 /AC:2015	Injected Current	A	N/A	
EN IEC 61000-4-11:2020/AC:2020-06	Volt. Dips	C / C / C	N/A	NOTE (1)

Note:
(1) Voltage Dip: 100% reduction – Performance Criteria C
Voltage Dip: 30% reduction – Performance Criteria C
Voltage Dip: 60% reduction – Performance Criteria C
(2) For client's request and manual description, the test will not be executed.
(3) "N/A" denotes test is not applicable in this Test Report

1.2 TEST LOCATION

Test Laboratory : Shenzhen United Testing Technology Co., Ltd.

Address : 2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

1.3 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k = 2, providing a level of confidence of approximately 95%.

A. Conducted Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
UNI	ANSI	9kHz ~ 150kHz	2.96	
		150kHz ~ 30MHz	2.44	

B. Radiated Measurement:

Test Site	Method	Measurement Frequency Range	U, (dB)	NOTE
UNI	ANSI	9kHz ~ 30MHz	2.50	
		30MHz ~ 1000MHz	4.80	
		1000MHz ~ 6000MHz	4.13	

2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

The following information of EUT submitted and identified by applicant:

Product:	bamboo digital bathroom scale
Trade Name:	N/A
Main Model:	MO6348
Additional Model:	N/A
Model Difference:	N/A
Power Source:	DC 3.0V by battery
Product Description:	The EUT is a bamboo digital bathroom scale. Based on the application, features, or specification exhibited in User's Manual, more details of EUT technical specification, please refer to the User's Manual.

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

I/O Port Type	Number
DC	1

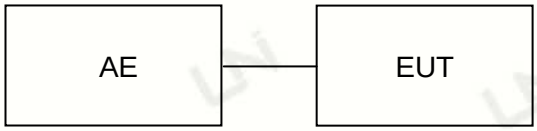
2.2 DESCRIPTION OF THE TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

No.	TEST MODE DESCRIPTION
Mode 1	Running

Note: The test modes were carried out for all operation modes (include link and idle).

2.3 DESCRIPTION OF TEST SETUP



Note: The EUT tested system was configured as upper figure, unless otherwise a special operating condition is specified in the following during the testing.

2.4 DESCRIPTION TEST PERIPHERAL AND EUT PERIPHERAL

The EUT has been tested as an independent 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.

Item	Equipment	Mfr/Brand	Model/Type No.	Note
E-1	bamboo digital bathroom scale	N/A	MO6348	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

1. The support equipment was authorized by Declaration of Confirmation.
2. For detachable type I/O cable should be specified the length in cm in『Length』column.
3. “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.5 MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Conduction Emissions Measurement					
1	Conducted Emission Test Software	EZ-EMC	Ver.CCS-3A1-CE	N/A	N/A
2	AMN	Schwarzbeck	NNLK8121	8121370	2022.09.22
3	AAN	TESEQ	T8-Cat6	38888	2022.09.22
4	Pulse Limiter	CYBRTEK	EM5010	E115010056	2022.05.17
5	EMI Test Receiver	Rohde&Schwarz	ESCI	101210	2022.09.22
Radiated Emissions Measurement					
1	Radiated Emission Test Software	EZ-EMC	Ver.CCS-03A1	N/A	N/A
2	Horn Antenna	Sunol	DRH-118	A101415	2023.09.27
3	Broadband Hybrid Antenna	Sunol	JB1	A090215	2022.03.01
4	PREAMP	HP	8449B	3008A00160	2022.09.22
5	PREAMP	HP	8447D	2944A07999	2022.05.17
6	EMI Test Receiver	Rohde&Schwarz	ESR3	101891	2022.09.22
7	MXA Signal Analyzer	Keysight	N9020A	MY51110104	2022.09.22
8	Active Loop Antenna	Com-Power	AL-310R	10160009	2022.07.25
9	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2022.05.23
10	Horn Antenna	A-INFOMW	LB-180400-KF	J211060660	2022.09.27
11	Loop Antenna	Beijing daze Technology	ZN30401	13015	2022.09.22
12	EM Clamp	Schwarzbeck	MDS21	03350	2022.09.27
Harmonic / Flicker Measurement					
1	Power Analyzer	California Instrumnets	PACS-1	X71719	2021.11.11
2	AC Power Source	California Instrumnets	5001ix	HK53570	2022.09.22
Electrostatic Discharge Test					
1	ESD Generator	EVERFINE	EMS61000-2A	P185811CA8371121	2022.09.23
RS Test					
1	Power Meter	Agilent	E4419B	QB4331226	2022.10.10
2	Power Sensor	Agilent	8481A	MY41092622	2022.10.10
3	Power Sensor	Agilent	8481A	US37296783	2022.10.10
4	Signal Generator	Agilent	N5182A	MY46240556	2022.10.10
5	Power Amplifier	MICOTOP	MPA-80-1000-250	1711489	2022.10.10
6	Power Amplifier	MICOTOP	MPA-1000-3000-75	1711488	2022.10.10
7	Power Amplifier	MICOTOP	MPA-3000-6000-50	MPA1706275	2022.10.10
8	Bilog Antenna	TESEQ	CBL6111D	34678	2022.10.10
9	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2022.05.23

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
Electrical Fast Transient / Burst Immunity Test					
1	EMS Test Control System	Shanghai Lioncel	SCU-614AS	SCU614S0160601	N/A
2	EFT/B Generator	Shanghai Lioncel	EFT-404S	EFT404S0160601	2022.09.22
Surge Test					
1	EMS Test Control System	Shanghai Lioncel	SCU-614AS	SCU614S0160601	N/A
2	Surge Generator	Shanghai Lioncel	LSG-506S	LSG506S0160601	2022.09.22
3	CDN	Shanghai Lioncel	CDN-532S	CDN532S0160601	2022.09.22
CS Test					
1	CS	SCHLODER	CDG-6000-25	126A1280/2014	2022.10.10
2	CDN	SCHLODER	CDN-M2+3	A2210275/2014	2022.10.10
3	EM Clamp	SCHLODER	EMCL-20	132A1283	2022.10.10
4	Attenuator	Nemtest	ATT-6DB-100	A100W224	2022.10.10
5	Audio Analyzer	R&S	UPL	100419	2022.10.10
6	Universal Radio Communication Tester	R&S	CMW500	117239	2022.10.10
7	Universal Radio Communication Tester	R&S	CMU200	111764	2022.10.10
8	Audio Analyzer	R&S	UPL	100689	2022.10.10
9	Audio Breakthrough Shielding Box	SKET	SB_ABT/C35	N/A	2022.10.10
10	Ear Simulator	SKET	AE_ABT/C35	N/A	2022.10.10
11	Mouth Simulator	SKET	AM_ABT/C35	N/A	2022.10.10
12	1KHz Standard Source	SKET	MSC_ABT/C35	N/A	2022.10.10
Power-frequency magnetic fields Test					
1	Magnetic Field Test System	Shanghai Lioncel	PMF801C-T	PMF801C-T0160701	2021.11.11
Voltage dips and interruptions Test					
1	Voltage SAG Simulator	Shanghai Lioncel	VDS-1101	VDS11010160601	2022.09.22
2	Adjustable Power Supply	Shanghai Lioncel	RGL-210	RGL2100151001	N/A

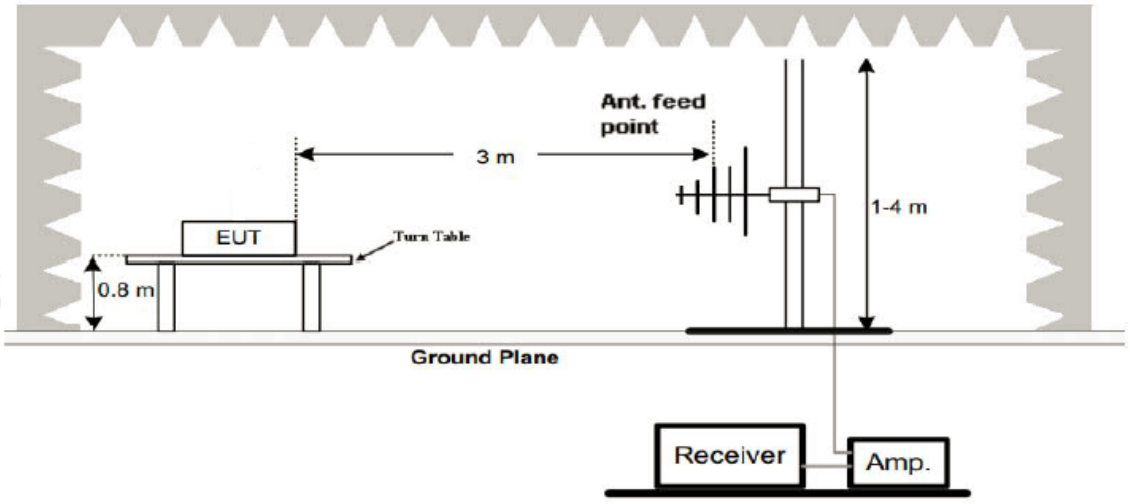
3 RADIATED EMISSIONS MEASUREMENT

3.1 RADIATED EMISSION LIMIT

Frequency (MHz)	10m	3m
	dBuV/m	dBuV/m
30~230	30	40
230~1000	37	47

Note:
1. The limit for radiated test was performed according to as following: CISPR 14.
2. The tighter limit applies at the band edges.
3. Emission level (dBuV/m)=20log Emission level (uV/m).

3.2 TEST SETUP



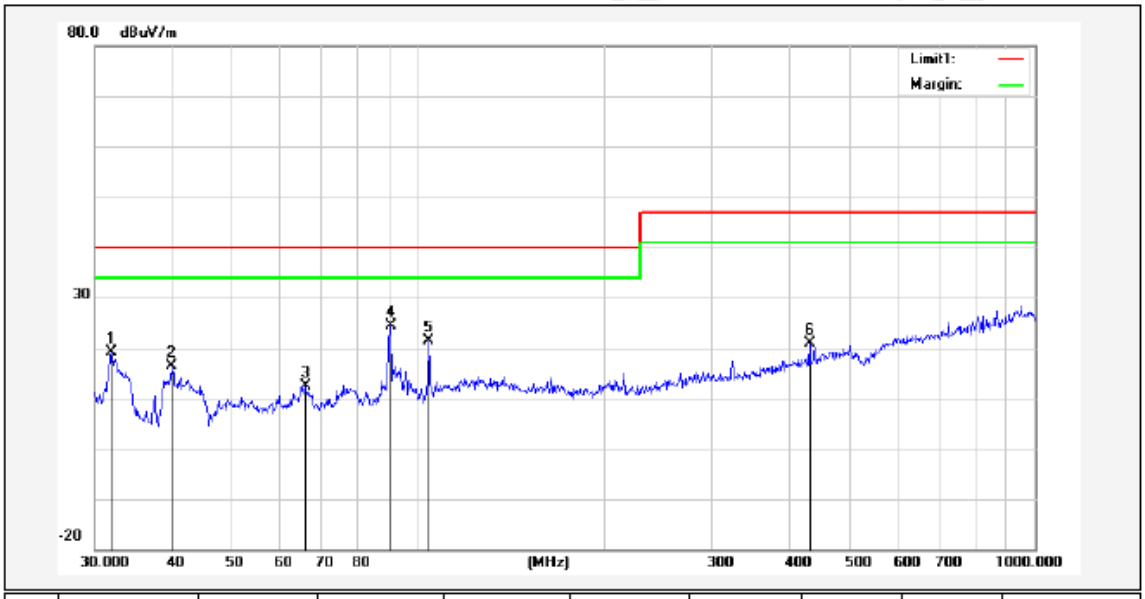
3.4 TEST PROCEDURE

1. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
2. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
3. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
4. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured, above 1G Average detector mode will be instead.
5. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP(AV) Limits and then no additional QP Mode measurement performed.
6. For the actual test configuration, please refer to the related Item EUT Test Photos.

3.5 TEST RESULT

PASS

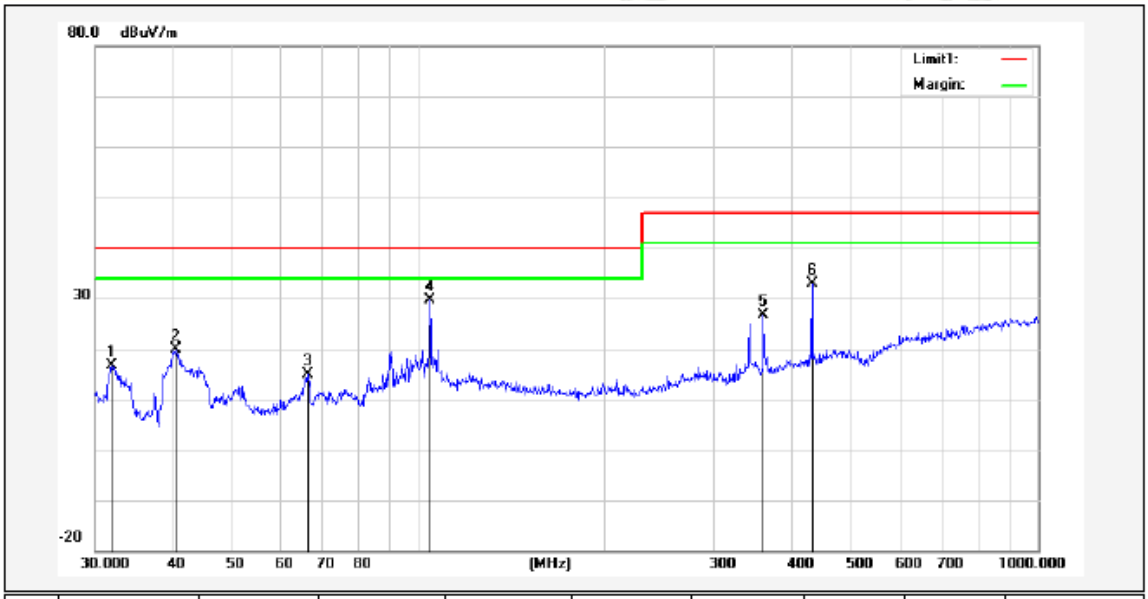
Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	DC 3.0V	Pressure:	1010hPa
Test Mode:	Mode 1	Polarization:	Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	31.9546	27.64	-8.58	19.06	40.00	-20.94			peak
2	39.9942	31.42	-15.04	16.38	40.00	-23.62			peak
3	65.8031	33.61	-21.19	12.42	40.00	-27.58			peak
4*	90.5374	45.08	-20.66	24.42	40.00	-15.58			peak
5	104.1701	39.74	-18.37	21.37	40.00	-18.63			peak
6	431.0316	33.66	-12.67	20.99	47.00	-26.01			peak

Remark: Absolute Level = Reading Level + Factor, Margin = Absolute Level – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

Temperature:	24℃	Relative Humidity:	48%
Test Voltage:	DC3.0V	Pressure:	1010hPa
Test Mode:	Mode 1	Polarization:	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	31.9546	25.17	-8.58	16.59	40.00	-23.41			peak
2	40.5591	35.32	-15.39	19.93	40.00	-20.07			peak
3	66.2662	35.99	-21.13	14.86	40.00	-25.14			peak
4*	104.1701	48.05	-18.37	29.68	40.00	-10.32			peak
5	360.4476	40.49	-13.92	26.57	47.00	-20.43			peak
6	431.0316	45.58	-12.67	32.91	47.00	-14.09			peak

Remark: Absolute Level = Reading Level + Factor, Margin = Absolute Level – Limit
Factor = Ant. Factor + Cable Loss – Pre-amplifier

4 EMC IMMUNITY TEST

4.1 STANDARD COMPLIANCE/SERVRITY LEVEL/CRITERIA

Tests Standard No.	TEST SPECIFICATION	Test Mode Test Ports	Perform Criteria
ESD EN 61000-4-2	8kV air discharge 4kV contact discharge	Direct Mode	B
	4kV HCP discharge 4kV VCP discharge	Indirect Mode	B
RS EN 61000-4-3	80 MHz to 1000 MHz, 1000Hz, 80%, AM modulated	Enclosure	A

4.2 GENERAL PERFORMANCE CRITERIA

According to EN 55014-2 standard, the general performance criteria as following:

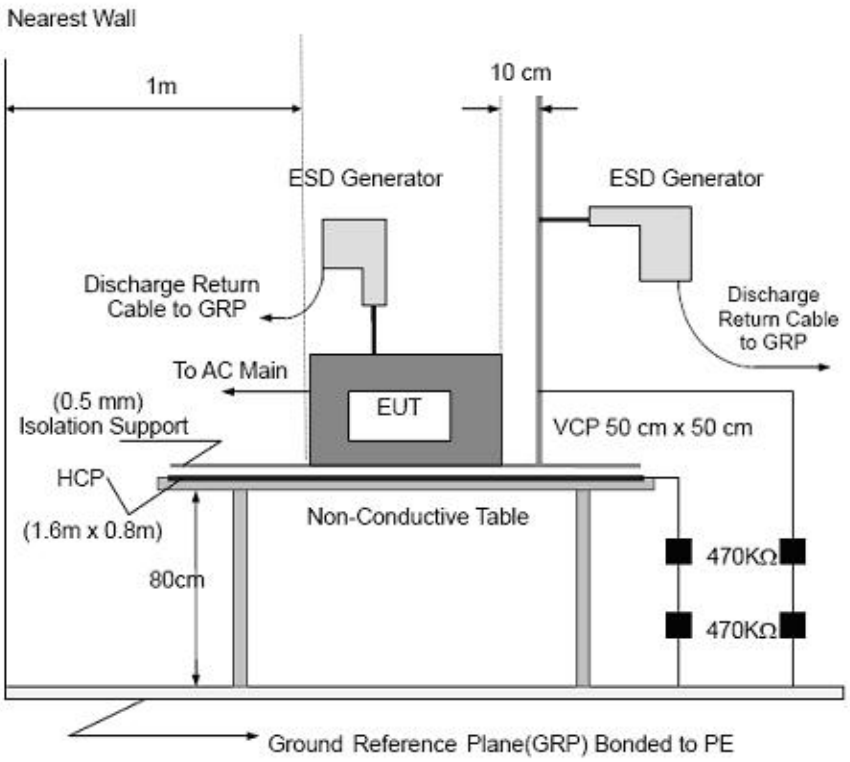
Criterion A	The equipment shall continue to operate as intended without operator intervention. No degradation of performance, loss of function or change of operating state is allowed below a performance level specified by the manufacturer when the equipment is used as intended. The performance level 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, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion B	During the application of the disturbance, degradation of performance is allowed. However, no unintended change of actual operating state or stored data is allowed to persist after the test. After the test, the equipment shall continue to operate as intended without operator intervention; no degradation of performance or loss of function is allowed, below a performance level specified by the manufacturer, when the equipment 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), or recovery time, is not specified by the manufacturer, then either of these may be derived from the product description and documentation, and by what the user may reasonably expect from the equipment if used as intended.
Criterion C	Loss of function is allowed, provided the function is self-recoverable, or can be restored by the operation of the controls by the user in accordance with the manufacturer's instructions. A reboot or re-start operation is allowed.Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

5 ELECTROSTATIC DISCHARGE IMMUNITY TEST (ESD)

5.1 TEST SPECIFICATION

Basic Standard:	EN 61000-4-2
Discharge Impedance:	330 ohm / 150 pF
Required Performance:	B
Discharge Voltage:	Air Discharge：2kV/4kV/8kV (Direct) Contact Discharge：2kV/4kV (Direct/Indirect)
Polarity:	Positive & Negative
Number of Discharge:	Air Discharge: min. 20 times at each test point Contact Discharge: min. 20 times at each test point
Discharge Mode:	Single Discharge
Discharge Period:	1 second minimum

5.2 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The configuration consisted of a wooden table 0.8 meters high standing on the Ground Reference Plane. The GRP consisted of a sheet of aluminum at least 0.25mm thick. A Horizontal Coupling Plane (1.6m x 0.8m) was placed on the table and attached to the GRP by means of a cable with 940kΩ total impedance. The equipment under test, was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were placed on the HCP and isolated by an insulating support of 0.5mm thickness. A distance of0.8-meter minimum was provided between the EUT and the walls of the laboratory and any other metallic structure.

FLOOR-STANDING EQUIPMENT

The equipment under test was installed in a representative system as described in section 7 of EN 61000-4-2, and its cables were isolated from the Ground Reference Plane by an insulating support of 0.1 meter thickness. The GRP was consisted of a sheet of aluminum that is at least 0.25mm thick, and extended at least 0.5 meters from the EUT on all sides.

5.3 TEST PROCEDURE

The test generator necessary to perform direct and indirect application of discharges to the EUT in the following manners:

1. 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 complete.
   Vertical Coupling Plane (VCP):
   The coupling plane, of dimensions 0.5m x 0.5m, is placed parallel to, and positioned at a distance 0.1m from, the EUT, with the Discharge Electrode touching the coupling plane.
   The four faces of the EUT will be performed with electrostatic discharge.
   Horizontal Coupling Plane (HCP):
   The coupling plane is placed under to the EUT. The generator shall be positioned vertically at a distance of 0.1m from the EUT, with the Discharge Electrode touching the coupling plane.
   The four faces of the EUT will be performed with electrostatic discharge.
2. Air discharges at insulation surfaces of the EUT.
   It was at least ten single discharges with positive and negative at the same selected point.

5.4 TEST RESULT

Temperature:	22℃	Relative Humidity:	48%
Test Voltage:	DC 3.0V	Pressure:	1010hPa
Test Mode:	Mode 1		

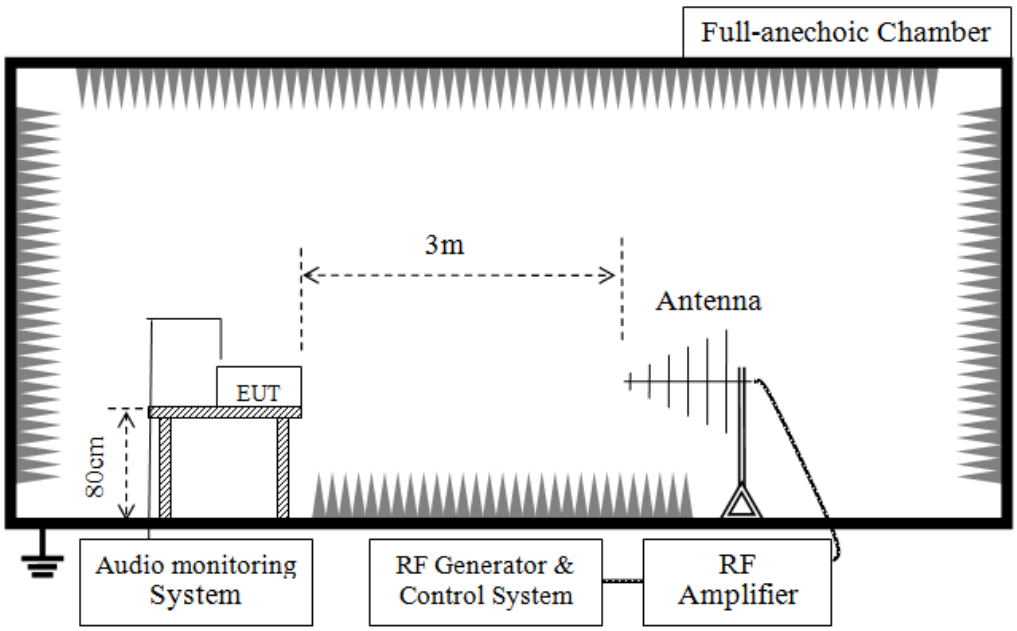
Voltage	Coupling	Test Performance	Result
±4kV	Contact Discharge	No function loss	B
±4kV	Indirect Discharge HCP (Front)	No function loss	B
±4kV	Indirect Discharge HCP (Left)	No function loss	B
±4kV	Indirect Discharge HCP (Back)	No function loss	B
±4kV	Indirect Discharge HCP (Right)	No function loss	B
±4kV	Indirect Discharge VCP (Front)	No function loss	B
±4kV	Indirect Discharge VCP (Left)	No function loss	B
±4kV	Indirect Discharge VCP (Back)	No function loss	B
±4kV	Indirect Discharge VCP (Right)	No function loss	B
±8kV	Air Discharge	No function loss	B

6 RADIATED, RADIO-FREQUENCY, ELECTROMAGNETIC FIELD IMMUNITY TEST (RS)

6.1 TEST SPECIFICATION

Basic Standard:	EN 61000-4-3
Required Performance:	A
Frequency Range:	80~1000MHz
Field Strength:	3 V/m
Modulation:	1kHz 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:	at least 3 seconds

6.2 TEST SETUP



Note:

TABLE-TOP EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive table 0.8 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

FLOOR-STANDING EQUIPMENT

The EUT installed in a representative system as described in section 7 of EN 61000-4-3 was placed on a non-conductive wood support 0.1 meters in height. The system under test was connected to the power and signal wire according to relevant installation instructions.

6.3 TEST PROCEDURE

The EUT and support equipment, which are placed on a table that is 0.8 meter above ground and the testing was performed in a fully-anechoic chamber.
The testing distance from antenna to the EUT was 3 meters.
The other condition need as following manners:

1. The frequency range is swept from 80 MHz to 1000 MHz, with the signal 80% amplitude modulated with a 1kHz sine wave. The rate of sweep did not exceed 1.5x 10^{-3} decade/s. Where the frequency range is swept incrementally, the step size was 1% of fundamental.
2. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
3. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.

6.4 TEST RESULT

Temperature:	22℃	Relative Humidity:	48%
Test Voltage:	DC 3.0V	Pressure:	1010hPa
Test Mode:	Mode 1		

Frequency Range (MHz)	RF Field Position	R.F. Field Strength	Azimuth	Perform Criteria	Result
80~1000	H / V	3 V/m (rms) AM Modulated 1000Hz, 80%	Front	A	PASS
			Rear		
			Left		
			Right		

7 PHOTO OF EUT

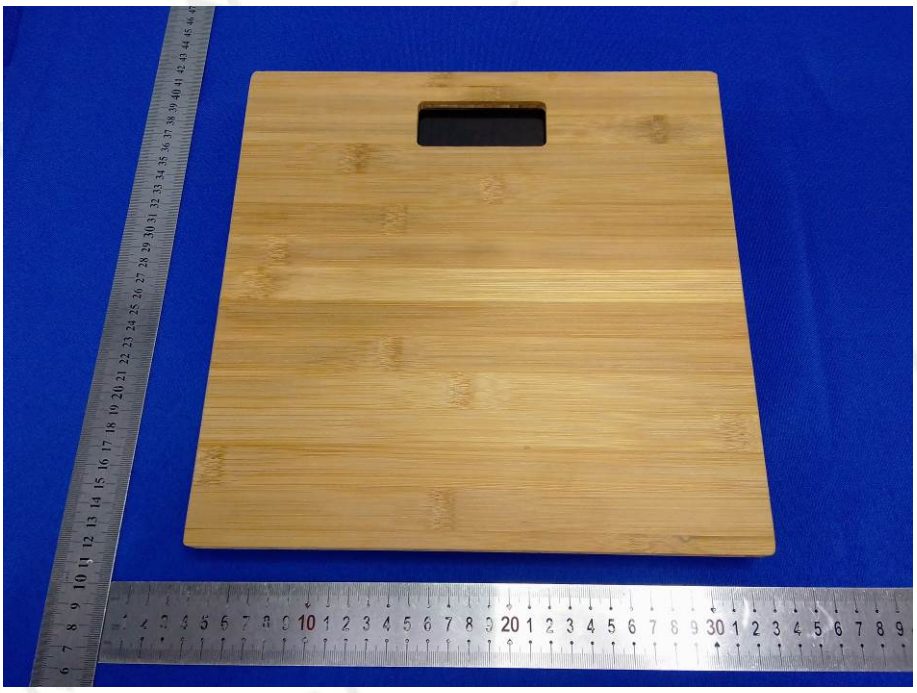


PHOTO 01

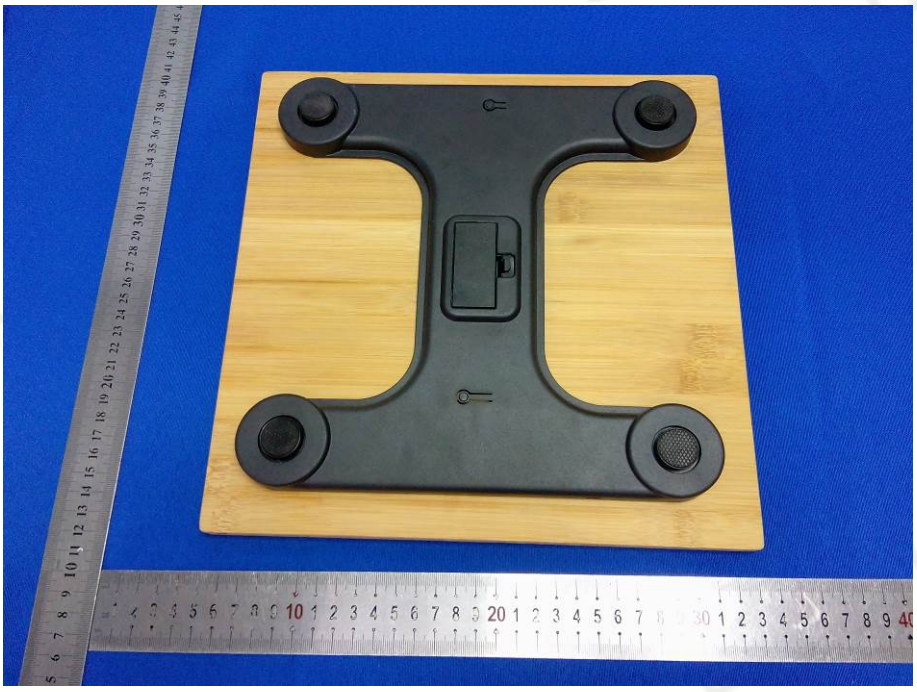


PHOTO 02

PHOTO 03

PHOTO 04

PHOTO 05

8 PHOTO OF TEST

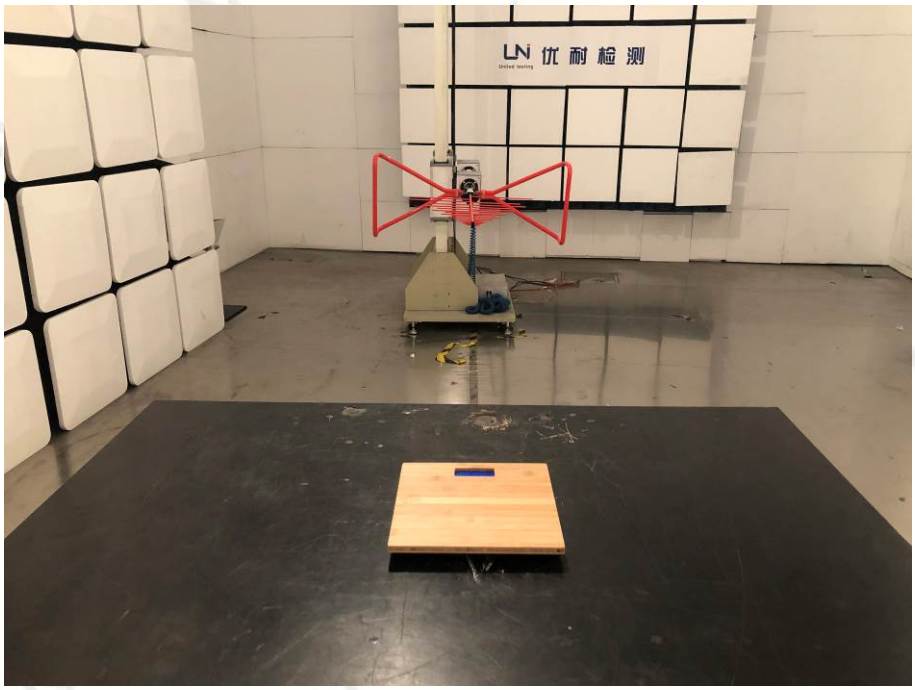


PHOTO 01

PHOTO 02

End of Report

Statement

1.This report must have the signature of the authorized signatory and the special seal of the report, otherwise it will be considered invalid. If there is no anti-counterfeiting electronic seal of the laboratory in the report in PDF format or it is displayed as "×", the report is invalid.

2.This report shall not be modified, added or deleted without authorization.

3.The results of this report are only valid for the EUT provided by Applicant to our laboratory for inspection (That is,EUT received by our laboratory.Without special explanation, it refers to the samples presented in the report " PHOTO OF EUT ").

4.If there is any objection to the test data and conclusions of this report, please submit it in writing within 10 working days after the date of issuance of the report.

5.Without the written consent of the laboratory, this report shall not be copied (except for full copy), nor shall it be used as publicity materials or advertising.

6.The cover of the report is for decoration only, not included in the body of the report.

7.The paper report issued by our laboratory has the same effect as the electronic report. In case of any difference between the two, the electronic report shall prevail.

8.The Chinese and English reports issued by our laboratory have the same effect. In case of any difference in understanding, the Chinese version shall prevail.

9.Please provide the complete report documents issued by our laboratory when inquiring the report.

10.For cases where compliance is determined based on test values, when relevant specifications, standards, documents, and customers have no relevant requirements and no other special instructions, the test report issued by this laboratory is carried out in full value and adopts ILAC-G8:09 /2019 "Simple Acceptance Rule" for judgment.

11.In the People's Republic of China, when there is no CMA Accredited Symbol in this report, the report is only for scientific research, teaching or internal quality control activities.