

EMC Test Report

Report No.: AGC05443240615ER01

PRODUCT DESIGNATION : Bamboo weather station

BRAND NAME : N/A

MODEL NAME : M06665

APPLICANT MID OCEAN BRANDS B.V.

DATE OF ISSUE : Jun. 25, 2024

ETSI EN 301 489-1 V2.2.3 (2019-11) STANDARD(S) ETSI EN 301489-3 V2.3.2 (2023-01)

REPORT VERSION : V1.0





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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Jun. 25, 2024	Valid	Initial Release

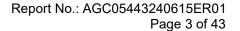


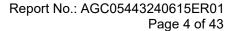


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1. TEST REPORT CERTIFICATION

Applicant	MID OCEAN BRANDS B.V.	
Address	Unit 201 2/F,. Laford Centre,838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hongkong	
Manufacturer	MID OCEAN BRANDS B.V.	
Address	Unit 201 2/F,. Laford Centre,838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hongkong	
Factory	MID OCEAN BRANDS B.V.	
Address	Unit 201 2/F,. Laford Centre,838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hongkong	
Product Designation	Bamboo weather station	
Brand Name	N/A	
Test Model	MO6665	
Series Model(s)	N/A	
Difference Description	N/A	
Date of receipt of test item	Jun. 18, 2024	
Date of test	Jun. 18, 2024 to Jun. 25, 2024	
Deviation	None	
Condition of Test Sample	Normal	
Test Result	Pass	
Report Template	AGCRT-EC-EMC	

Note: The test results of this report relate only to the tested sample identified in this report.

Prepared By	Jack bai	
	Jack Gui (Project Engineer)	Jun. 25, 2024
Reviewed By	Calin Lin	
	Calvin Liu (Reviewer)	Jun. 25, 2024
Approved By	Max Zhang	
	Max Zhang (Authorized Officer)	Jun. 25, 2024



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2. GENERAL INFORMATION

2.1. DESCRIPTION OF EUT

Details of technical specification refer to the description in follows:

Solding of tooliffical opening along foliation accomplish in foliation.		
Operating Frequency	110kHz-205kHz	
Hardware Version	V1.0	
Software Version	V1.0	
Antenna Type	Coil Antenna	
Wireless Charging Input Rating	DC 5V/2A, DC 9.0V/1.67A	
Wireless Charging Output Power	5W/10W	

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 V2.2.3 (2019-11) and ETSI EN 301489-3 V2.3.2 (2023-01).

	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part	
ETSI EN 301 489-1	1: Common technical requirements; Harmonised Standard for ElectroMagnetic	
	Compatibility.	
ETSI EN 301 489-3	Electro Magnetic 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	



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2.4. TEST ITEMS AND THE RESULTS

No.	Basic Standard	Test Type	Result	
EMIS	EMISSION (EN 301 489-1 §7.1)			
1	EN 55032	Radiated emission	PASS	
2	EN 55032	Conducted emission, AC ports	PASS	
3	EN 55032	Conducted emission, Telecom ports	N/A	
4	EN 61000-3-2	Harmonic current emissions	PASS	
5	EN 61000-3-3	Voltage fluctuations & flicker	PASS	
IMMI	IMMUNITY (EN 301 489-1 §7.2)			
6	EN 61000-4-2	Electrostatic discharge immunity	PASS	
7	EN 61000-4-3	Radiated RF electromagnetic field immunity	PASS	
8	EN 61000-4-4	Electrical fast transient/burst immunity	PASS	
9	ISO 7637-1, -2	Transients and surges, DC ports	N/A	
10	EN 61000-4-5	Surge immunity, AC ports	PASS	
11	EN 61000-4-6	Immunity to conducted disturbances induced by RF fields	PASS	
12	EN 61000-4-11	Voltage dips and short interruptions immunity	PASS	

Note: 1. N/A- Not Applicable.

2. The latest versions of basic standards are applied.

2.5. ENVIRONMENTAL CONDITIONS

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

Temperature: 15-35°CRelative humidity: 30-60%

- Atmospheric pressure: 86-106kPa



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3. TEST MODE DESCRIPTION

TEST MODE DESCRIPTION		
NO.	EMI TEST MODE DESCRIPTION	
1	AC/DC Adapter Input 5V 2A + EUT + Wireless load(Full load)	
2	AC/DC Adapter Input 5V 2A + EUT + Wireless load(half load)	
3	AC/DC Adapter Input 5V 2A + EUT + Wireless load(null load)	
4	AC/DC Adapter Input 9V 1.67A + EUT + Wireless load(Full load)	
5	AC/DC Adapter Input 9V 1.67A + EUT + Wireless load(half load)	
6	AC/DC Adapter Input 9V 1.67A + EUT + Wireless load(null load)	
NO.	EMS TEST MODE DESCRIPTION	
1	AC/DC Adapter Input 5V 2A + EUT + Wireless load(Full load)	
•	Norber Maple Impace V 271 - 201 - Wilcies Icaa(i ali Icaa)	
2	AC/DC Adapter Input 5V 2A + EUT + Wireless load(half load)	
2	AC/DC Adapter Input 5V 2A + EUT + Wireless load(half load)	
2	AC/DC Adapter Input 5V 2A + EUT + Wireless load(half load) AC/DC Adapter Input 5V 2A + EUT + Wireless load(null load)	
2 3 4	AC/DC Adapter Input 5V 2A + EUT + Wireless load(half load) AC/DC Adapter Input 5V 2A + EUT + Wireless load(null load) AC/DC Adapter Input 9V 1.67A + EUT + Wireless load(Full load)	

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

I/O Port of EUT				
I/O Port Type	Number	Cable Description	Tested With	
USB Type-C	1	1.0m unshielded	1	



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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 CISPR and ANSI.

- Uncertainty of Conducted Emission, Uc = ±2.9dB
- Uncertainty of Radiated Emission below 1GHz, Uc = ±3.9dB
- Uncertainty of Radiated Emission above 1GHz, Uc = ±4.9 dB

5. SUPPORT EQUIPMENT

Product Name	Manufacturer	Model	Mains cable	Signal cable	Specifications
Wireless Charging Load	HUAWEI				Support 5W,7.5W,10W,15 W
Adapter	HUAWEI	HW-200440C00			AC 100-240V, 50/60Hz, 0.7A DC:5V3A/9V3A/ 12V2.25A/20V1.35 A/10V3A
Adapter	Jinbaotong	MDY-11-EF			AC 100-240V, 50/60Hz, 0.7A DC:5V3A/9V3A/ 12V2.25A/20V1.35 A/10V3A

Note: All the above equipment/cables were placed in worse case positions to maximize emission signals during emission test.



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6. IDENTIFICATION OF THE RESPONSIBLE TESTING LOCATION

Site	Attestation of Global Compliance (Shenzhen) Co., Ltd
Location	1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

TEST EQUIPMENT OF CONDUCTED EMISSION TEST

Equipment Manufacturer		Model	S/N	Cal. Date	Cal. Due	
Test Receiver	R&S	ESPI	101206	May 28, 2024	May 27, 2025	
Artificial Mains Network	R&S	ESH2-Z5	100086	May 28, 2024	May 27, 2025	
6dB Attenuator	Beijingtenghonh	LM-XX-6-5W	N/A	N/A	N/A	
Test Software	R&S	V1.71	N/A	N/A	N/A	

TEST EQUIPMENT OF RADIATED EMISSION TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 01, 2024	Jan. 31, 2025
Wideband Antenna	SCHWARZBEC K	VULB9168	D69250	May 11, 2023	May 10, 2025
Test Software	FARA	EZ-EMC(Ver.RA -03A)	N/A	N/A	N/A

TEST EQUIPMENT OF POWER HARMONICS / VOLTAGE FLUCTUATION / FLICKER TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Signal Conditioning Unit	Schaffner	CCN1000-1	72431	May 24, 2024	May 23, 2025
AC Source	Schaffner	NSG 1007	56825	May 24, 2024	May 23, 2025
Test Software	TC	4.29.0	N/A	N/A	N/A

TEST EQUIPMENT OF ESD TEST

Equipment Manufacturer		Model	S/N	Cal. Date	Cal. Due
ESD Simulator	Schaffner	NSG 438	782	Nov. 13, 2023	Nov. 12, 2024



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TEST EQUIPMENT OF SURGE/EFT/DIPS TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
EFT/Surge/DIPS Generator	Schaffner	Modula 6150	34437	May 24, 2024	May 23, 2025
Test Software	TC	2.31	N/A	N/A	N/A

TEST EQUIPMENT OF RS IMMUNITY TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due	
Horn Antenna	ETS	3117	00034609	Mar. 23, 2023	Mar. 22, 2025	
Signal Generator	Aglient	N5182A	MY49060745	Feb. 01, 2024	Jan. 31, 2025	
Directional coupler	Werlatone	C6026-10	99482	Feb .01, 2024	Jan. 31, 2026	
Directional coupler	Werlatone	C5571-10	99463 Feb .01, 20		Jan. 31, 2026	
Amplifer	Rflight	NTWPA-25601 00	17063183	Oct. 13, 2023	Oct. 12, 2024	
Power Amplifier	KALMUS	7100LC	04-02/17-06-001	N/A	N/A	
Power Meter	R&S	NRVD	8323781027	Mar. 24, 2022	Mar. 23, 2025	
Biconilog Antenna	ETS	3142C	00060447	N/A	N/A	
Test Software	Tonscend	2.0.1.8	N/A	N/A	N/A	

TEST EQUIPMENT OF CS IMMUNITY TEST

Equipment	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Directional coupler	Werlatone	C5571-10	99463	Feb. 01, 2024	Jan. 31, 2025
Signal Generator	Aglient	E4421B	MY43351603	Feb. 01, 2024	Jan. 31, 2025
Power Probe	R&S	URV5-Z4	100124	Mar. 24, 2023	Mar. 23, 2025
6dB attenuator	ZHINAN	E-002	N/A	Aug. 04, 2022	Aug. 03, 2024
Power Amplifier	AR	75A250 18464		N/A	N/A
CDN	ZHINAN	ZN3751	15004	Aug. 03, 2022	Sep. 02, 2024
Power Meter	R&S	NRVD	8323781027 Mar. 24, 202		Mar. 23, 2025
Test Software	Tonscend	2.0.1.7	N/A	N/A	N/A



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7. RADIATED DISTURBANCE MEASUREMENT

7.1. 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

Note: 1. The lower limit shall apply at the transition frequency.

2. Additional provisions may be required for cases where interference occurs.

7.2. 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.

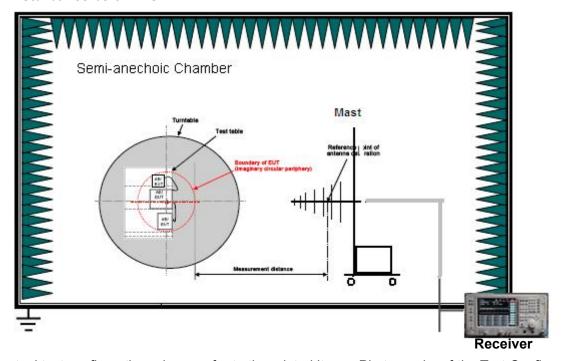


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7.3. BLOCK DIAGRAM OF TEST SETUP

System Diagram of Connections between EUT and Simulators

Radiated Disturbance below 1 GHz



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

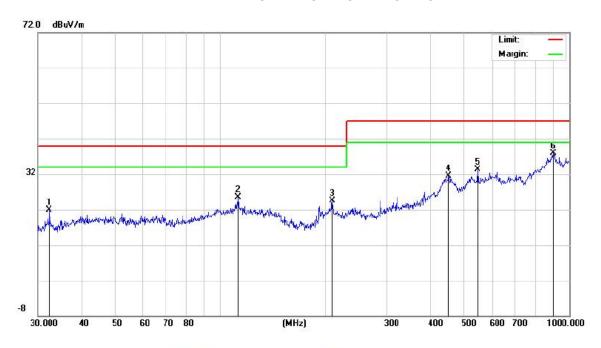


7.4 TEST RESULT

The test modes were carried out for all modes.

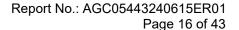
The worst test mode of the EUT was Mode 4, and its test data was showed as the follow:

RADIATED EMISSION BELOW 1GHZ-HORIZONTAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		32.2925	11.40	10.59	21.99	40.00	-18.01	peak
2		112.5244	9.10	16.33	25.43	40.00	-14.57	peak
3	8	209.3129	10.01	14.45	24.46	40.00	-15.54	peak
4	10	451.1350	6.88	24.71	31.59	47.00	-15.41	peak
5	1/4	545.1826	9.34	23.98	33.32	47.00	-13.68	peak
6	*	900.1474	6.13	31.78	37.91	47.00	-9.09	peak

RESULT: PASS





RADIATED EMISSION BELOW 1GHZ-VERTICAL



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector
1		32.6340	18.72	14.47	33.19	40.00	-6.81	peak
2		59.8588	13.98	17.10	31.08	40.00	-8.92	peak
3	*	112.9196	18.35	16.46	34.81	40.00	-5.19	peak
4		170.1948	8.57	18.35	26.92	40.00	-13.08	peak
5		443.2943	5.94	25.95	31.89	47.00	-15.11	peak
6		719.1995	7.00	28.77	35.77	47.00	-11.23	peak

RESULT: PASS



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8. MAINS TERMINAL DISTURBANCE VOLTAGE MEASUREMENT

8.1. LIMITS OF MAINS TERMINAL DISTURBANCE VOLTAGE

Eroguanov vongo (MUT)	Limits (dBuV) Class B ITE				
Frequency range (MHz)	Quasi-peak	Average			
0.15-0.50	66 to 56	56 to 46			
0.50-5	56	46			
5-30	60	50			

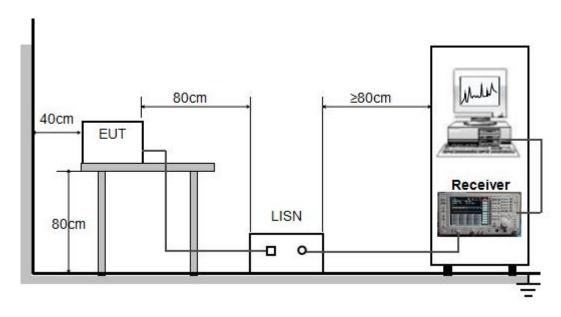
Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.50MHz.

8.2. TEST PROCEDURE

- (1) The EUT was placed 0.4 meters from the conducting wall of shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). The LISN provide $50\Omega/50\mu H$ of coupling impedance for the measuring instrument.
- (2) Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- (3)The frequency range from 150 kHz to 30 MHz was searched. Emission levels over 20dB under the prescribed limits are not reported.

8.3. TEST SETUP



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

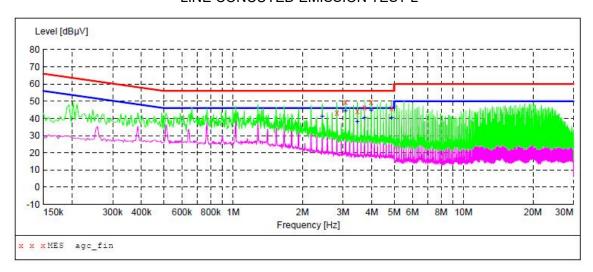


8.4. TEST RESULT

The test modes were carried out for all modes.

The worst test mode of the EUT was Mode 4, and its test data was showed as the follow:

LINE CONCUTED EMISSION TEST-L



MEASUREMENT RESULT: "agc fin"

2024/6/24 17:	31					
Frequency	Level	Transd	Limit	Margin	Detector	Line
MHz	dΒμV	dB	dΒμV	dB		
2.822000	43.30	6.3	56	12.7	QP	L1
3.074000	49.40	6.3	56	6.6	QP	L1
3.462000	44.00	6.3	56	12.0	QP	L1
3.718000	46.40	6.3	56	9.6	QP	L1
3.970000	49.40	6.3	56	6.6	QP	L1
4.870000	45.80	6.3	56	10.2	QP	L1

MEASUREMENT RESULT: "agc fin2"

2	a	0	Л	1	0	1	2	A	1	7	2	4	
4	u	4	7	1	Ю,	1	4	7	т,	1	0	_	

Frequency MHz	Level dBuV	Transd dB	Limit dBuV	Margin dB	Detector	Line
	шри	ab	арыч	ab		
2.434000	40.90	6.3	46	5.1	AV	L1
3.074000	44.30	6.3	46	1.7	AV	L1
3.462000	38.10	6.3	46	7.9	AV	L1
3.718000	40.30	6.3	46	5.7	AV	L1
3.970000	44.50	6.3	46	1.5	AV	L1
4.870000	40.10	6.3	46	5.9	AV	L1

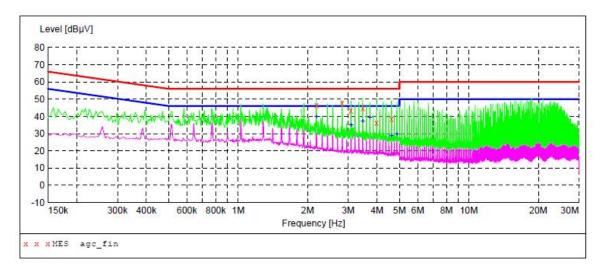
RESULT: PASS

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LINE CONCUTED EMISSION TEST-N



MEASUREMENT RESULT: "agc fin"

2024/6/	24	17:	28
Free			т

2027/0/27 1/.	20					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
2.182000	46.30	6.3	56	9.7	QP	N
2.822000	47.70	6.3	56	8.3	QP	N
3.082000	43.50	6.3	56	12.5	QP	N
3.466000	44.80	6.3	56	11.2	QP	N
3.982000	36.10	6.3	56	19.9	QP	N
4.622000	38.40	6.3	56	17.6	QP	N

MEASUREMENT RESULT: "agc fin2"

2024/6/24 17:28

2024/0/24 1/	. 40					
Frequency MHz	Level dBµV	Transd dB	Limit dBµV	Margin dB	Detector	Line
2.182000	39.70	6.3	46	6.3	AV	N
3.082000	35.10	6.3	46	10.9	AV	N
3.466000	37.00	6.3	46	9.0	AV	N
3.722000	39.30	6.3	46	6.7	AV	N
4.622000	28.60	6.3	46	17.4	AV	N
4.878000	29.70	6.3	46	16.3	AV	N

RESULT: PASS



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9. HARMONIC CURRENT MEASUREMENT

9.1. LIMITS OF HARMONIC CURRENT

Limits for Class A Equipment						
Harmonics Order n	Max. permissible harmonic current (A)					
Odd	harmonics					
3	2.30					
5	1.14					
7	0.77					
9	0.40					
11	0.33					
13	0.21					
15≤n≤39	0.15×15/n					
Even	harmonics					
2	1.08					
4	0.43					
6	0.30					
8≤n≤40	0.23×8/n					

Note: 1. According to section 5 of EN IEC 61000-3-2:2019/A1:2021, the EUT is Class A equipment.

2. The above limits are for all applications having an active input power>75W. No limits apply for equipment with an active input power up to and including 75W.

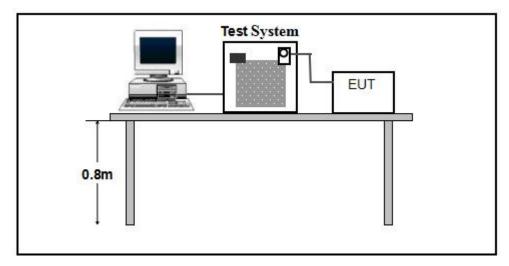
9.2. TEST PROCEDURE

- 1. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the maximum harmonic components under normal operating conditions for each successive harmonic component in turn.
- 2. The correspondent test program of test instrument to measure the current harmonics emanated from EUT is chosen. The measure time shall be not less than the necessary for the EUT to be exercised.



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9.3. TEST SETUP



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

9.4. TEST RESULT

Note: Equipment with a rated power less than or equal to 75W is deemed to fulfilled all relevant requirements of this standard without testing.



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10. VOLTAGE FLUCTUATIONS AND FLICK MEASUREMENT

10.1. LIMITS OF VOLTAGE FLUCTUATIONS AND FLICK

Test Item Limit		Note		
P_{st}	1.0	P _{st} means Short-term flicker indicator		
P _{lt}	0.65	P _{lt} means long-term flicker indicator		
T _{dt}	0.5	T _{dt} means maximum time that d _t exceeds 3.3%		
d _{max} (%)	4%	d _{max} means maximum relative voltage change.		
d _c (%)	3.3%	d₅ means relative steady-state voltage change.		

10.2. TEST PROCEDURE

- 1. The EUT was placed on the top of a wooden table 0.8 meters above the ground and operated to produce the most unfavorable sequence of voltage changes under normal conditions
- 2. During the flick measurement, the measure time shall include that part of whole operation changes. The observation period for short-term flicker indicator is 10 minutes and the observation period for long-term flicker indicator is 2 hours.

10.3. TEST SETUP

Same as 9.3

10.4. TEST RESULT

Test Specification

Test Frequency	50Hz	Test Voltage	230V AC
Waveform	Sine	Test Time	10 minutes(P _{st}); 2 hours (P _{lt})

Test Result

The test modes were carried out for all modes.

The worst test mode of the EUT was Mode 4, and its test data was showed as the follow:

Test Parameter	Measurement Value	Limit	Remarks
Time(mS) > dt:	0.0	500.0	Pass
Highest dc (%):	0.00	3.30	Pass
Highest dmax (%):	0.00	4.00	Pass
Highest Pst (10 min. period):	0.248	1.000	Pass
Highest Plt (2 hr. period):	0.108	0.650	Pass

Note: operating mode include all modes of EMS in page 9.



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11. IMMUNITY TEST

11.1. DESCRIPTION OF PERFORMANCE CRITERIA

The performance criteria are used to take a decision on whether a radio equipment passes or fails immunity tests.

For the purpose of the present document two categories of performance criteria apply:

- Performance criteria for continuous phenomena.
- Performance criteria for transient phenomena.

11.2. GENERAL PERFORMANCE CRITERIA

1. Performance criteria for continuous phenomena

During the test, the equipment shall:

- · continue to operate as intended;
- not unintentionally transmit;
- · not unintentionally change its operating state;
- not unintentionally change critical stored data.

2. Performance criteria for transient phenomena

For all ports and transient phenomena with the exception described below, the following applies:

- The application of the transient phenomena shall not result in a change of the mode of operation (e.g. unintended transmission) or the loss of critical stored data.
- After application of the transient phenomena, the equipment shall operate as intended.

For surges applied to symmetrically operated wired network ports intended to be connected directly to outdoor lines the following criteria applies:

- For products with only one symmetrical port intended for connection to outdoor lines, loss of function is allowed, provided the function is self-recoverable, or can be otherwise restored. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.
- For products with more than one symmetrical port intended for connection to outdoor lines, loss of function on the port under test is allowed, provided the function is self-recoverable. Information stored in non-volatile memory, or protected by a battery backup, shall not be lost.

For a 0 % residual voltage dip tests the following performance criteria apply:

• The performance criteria for transient phenomena shall apply.

For a 70 % residual voltage dip and voltage interruption tests, the following performance criteria apply:

- in the case where the equipment is fitted with or connected to a battery back-up, the performance criteria for transient phenomena shall apply;
- in the case where the equipment is powered solely from the AC mains supply (without the use of a parallel battery back-up) volatile user data may have been lost and if applicable the communication link need not to be maintained and lost functions should be recoverable by user or operator;
- no unintentional responses shall occur at the end of the test, when the voltage is restored to nominal;
- in the event of loss of function(s) or in the event of loss of user stored data, this fact shall be recorded.



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3. Performance Table

	EN 301 489-3 Performance criteria					
Criteria	During Test	After Test				
А	Operate as intended No loss of function No unintentional responses	Operate as intended No loss of function No degradation of performance No loss of stored data or user programmable functions				
В	May show loss of function No unintentional responses	Operate as intended Lost function(s) shall be self-recoverable No degradation of performance No loss of stored data or user programmable functions				

[•] performance criterion A applies for immunity tests with phenomena of a continuous nature;

Where "operate as intended" or "no loss of function" is specified, the EUT shall demonstrate correct functioning as described in EN 301 489-3 clause 5.

Where the EUT has more than one mode of operation, an unplanned transition from one mode to another is considered as an unintentional response. The EUT shall be tested in sufficient modes to confirm there are no such unintentional responses.

[•] performance criterion B applies for immunity tests with phenomena of a transient nature.



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12. ELECTROSTATIC DISCHARGE IMMUNITY TEST

12.1. TEST SPECIFICATION

Basic Standard	EN 61000-4-2		
Discharge Impedance	330Ω/150 pF		
Discharge Voltage	Air Discharge:±8kV, Contact Discharge:±4kV		
Polarity	Positive/Negative		
Number of Discharge	Minimum 25 times at each test point		
Discharge Mode	Single discharge		
Discharge Period	1-second minimum		

12.2. TEST PROCEDURE

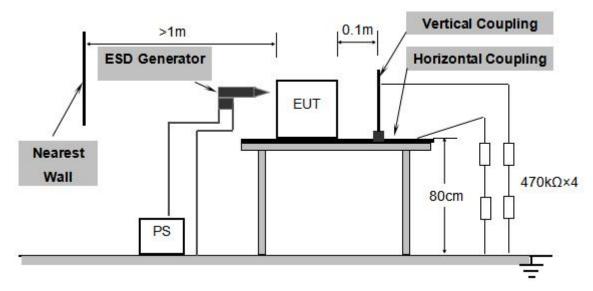
The test procedure was in accordance with EN 61000-4-2:

- Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
- b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- c. The time interval between two successive single discharges was at least 1 second.
- d. 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.
- e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- f. 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.
- g. 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.
- h. 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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12.3. TEST SETUP



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

ESD location:

Blue line: Air Discharge Red line: Contact discharge







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12.4. TEST RESULT

Times of Discharge	Voltage	Coupling	Test Mode	Performance criteria
Mini 25 / Point	±2kV; ±4kV	Contact discharge	Mode 1/2/3/4/5/6	А
Mini 25 / Point	±2kV; ±4kV; ±8kV	Air Discharge	Mode 1/2/3/4/5/6	А
Mini 25 / Point	±4kV	Indirect Discharge HCP	Mode 1/2/3/4/5/6	А
Mini 25 / Point	±4kV	Indirect Discharge VCP	Mode 1/2/3/4/5/6	А

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

12.5. PERFORMANCE

⊠ Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
☐ Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
☐ Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.
✓ Compliance	□ Not Compliance

Compliance	



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13. RADIATED, RADIO FREQUENCY ELECTROMAGNETIC FIELD IMMUNITY TEST

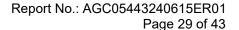
13.1. TEST SPECIFICATION

Basic Standard	EN 61000-4-3	
Frequency Range	80MHz-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	

13.2. TEST PROCEDURE

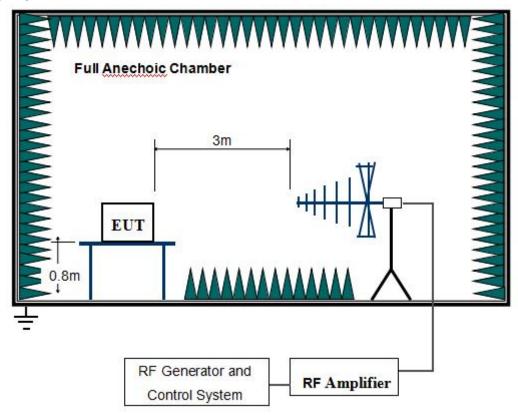
The test procedure was in accordance with EN 61000-4-3.

- a. The testing was performed in a fully anechoic chamber. The transmit antenna was located at a distance of 3 meters from the EUT.
- b. The test signal was 80% amplitude modulated with a 1 kHz sine wave.
- c. 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.
- d. The dwell time at each frequency shall be not less than the time necessary for the EUT to be able to respond.
- e. The field strength level was 3V/m.
- f. The test was performed with the EUT exposed to both vertically and horizontally polarized fields on each of the four sides.





13.3. TEST SETUP



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



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13.4. TEST RESULT

Field	Modulation	Polarity	Position	Test Mode	Performance criteria
3V/m	Yes	Н	Front	Mode 1/2/3/4/5/6	А
3V/m	Yes	Н	Back	Mode 1/2/3/4/5/6	А
3V/m	Yes	Н	Left	Mode 1/2/3/4/5/6	А
3V/m	Yes	Н	Right	Mode 1/2/3/4/5/6	А
3V/m	Yes	V	Front	Mode 1/2/3/4/5/6	А
3V/m	Yes	V	Back	Mode 1/2/3/4/5/6	А
3V/m	Yes	V	Left	Mode 1/2/3/4/5/6	А
3V/m	Yes	V	Right	Mode 1/2/3/4/5/6	А
	3V/m 3V/m 3V/m 3V/m 3V/m 3V/m	3V/m Yes 3V/m Yes	3V/m Yes H 3V/m Yes H 3V/m Yes H 3V/m Yes H 3V/m Yes V 3V/m Yes V 3V/m Yes V 3V/m Yes V	3V/m Yes H Front 3V/m Yes H Back 3V/m Yes H Left 3V/m Yes H Right 3V/m Yes V Front 3V/m Yes V Back 3V/m Yes V Left	3V/m Yes H Front Mode 1/2/3/4/5/6 3V/m Yes H Back Mode 1/2/3/4/5/6 3V/m Yes H Left Mode 1/2/3/4/5/6 3V/m Yes H Right Mode 1/2/3/4/5/6 3V/m Yes V Front Mode 1/2/3/4/5/6 3V/m Yes V Back Mode 1/2/3/4/5/6 3V/m Yes V Left Mode 1/2/3/4/5/6

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

13.5. PERFORMANCE

⊠ Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
☐ Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
☐ Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

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14. ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

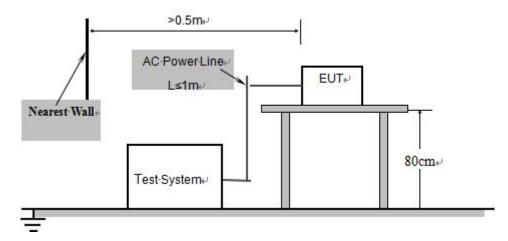
14.1. TEST SPECIFICATION

Basic Standard	EN 61000-4-4
Test Voltage	a.c. power port–1kV
Polarity	Positive/Negative
Impulse Frequency	5kHz
Impulse wave shape	5/50ns
Burst Duration	15ms
Burst Period	300ms
Test Duration	Not less than 1min.

14.2. TEST PROCEDURE

- 1. The EUT was tested with 1000 volt discharges to the AC power input leads.
- 2. Both positive and negative polarity discharges were applied.
- 3. The length of the "hot wire" from the coaxial output of the EFT generator to the terminals on the EUT should not exceed 1 meter.
- 4. The duration time of each test sequential was 1 minute.
- 5. The transient/burst waveform was in accordance with IEC 61000-4-4, 5/50ns.

14.3. TEST SETUP



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



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14.4. TEST RESULT

Test Point	Polarity	Test Level (kV)	Test Mode	Performance criteria
a.c. port, L	+/-	1	Mode 1/2/3/4/5/6	А
a.c. port, N	+/-	1	Mode 1/2/3/4/5/6	А
a.c. port, L-N	+/-	1	Mode 1/2/3/4/5/6	А

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

Note: operating mode include all modes of EMS in page 9.

14.5. PERFORMANCE

⊠ Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
☐ Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
☐ Criteria C:	Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.



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15. SURGE IMMUNITY TEST

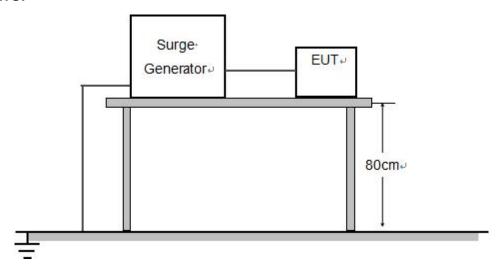
15.1. TEST SPECIFICATION

Basic Standard	EN 61000-4-5
Waveform	Voltage 1.2/50μs; Current 8/20μs
Test Voltage	a.c. power port, line to line 1.0kV
Polarity	Positive/Negative
Phase Angle	0°, 90°, 180°, 270°
Repetition Rate	60sec
Times	5 time/each condition.

15.2. TEST PROCEDURE

- a. The EUT and the auxiliary equipment were placed on a table of 0.8m heights above a metal ground reference plane. The size of ground plane is greater than 1m×1m and project beyond the EUT by at least 0.1m on all sides. The ground plane is connected to the protective earth. The length of power cord between the coupling device and the EUT was less than 2 meters (provided by the manufacturer).
- b. The EUT was connected to the power mains through a coupling device that directly couples the surge interference signal. The surge noise was applied synchronized to the voltage phase at the zero crossing and the peak value of the AC voltage wave (positive and negative).
- c. The surges were applied line to line and line(s) to earth. All lower levels including the selected test level were tested. The polarity of each surge level included positive and negative test pulses.

15.3. TEST SETUP



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



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15.4. TEST RESULT

Coupling Line	Polarity	Voltage (kV)	Test Mode	Performance criteria
a.c. power, L-N	+/-	1.0	Mode 1/2/3/4/5/6	А

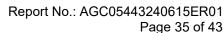
A: No degradation in the performance of the EUT was observed.

Note: operating mode include all modes of EMS in page 9.

1	5.	5.	Ρ	Ε	R	F	0	R	M	Δ	1	١	C	Ε
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⊠ Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
☐ Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
☐ Criteria C:	Temporary loss of function is allowed, provided the functions self recoverable or can be restored by the operation of controls.

Compliance	☐ Not Compliance





16. IMMUNITY TO CONDUCTED DISTURBANCES INDUCED BY RF FIELDS

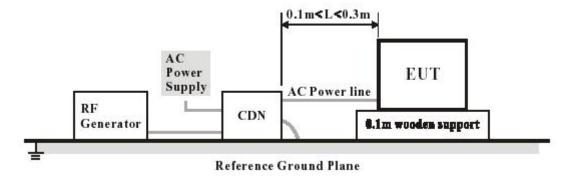
16.1. TEST SPECIFICATION

Basic Standard	EN 61000-4-6
Frequency Range	0.15MHz-80MHz
Field Strength	3Vrms
Modulation	1 kHz Sine Wave, 80% AM
Frequency Step	1% of fundamental
Coupled Cable	a.c. power line
Coupling Device	CDN-M2

16.2. TEST PROCEDURE

- 1. The EUT shall be tested within its intended operating and climatic conditions.
- The test shall be performed with the test generator connected to each of the coupling and decoupling devices in turn, while the other non-excited RF input ports of the coupling devices are terminated by a 50-ohm load resistor.
- 3. The test signal was 80% amplitude modulated with a 1 kHz sine wave
- 4. The frequency range is swept from 150 kHz to 80 MHz, using the signal level established during the setting process and with a disturbance signal of 80% amplitude. The sweep rate shall not exceed 1.5×10-3 decades/s. The step size shall not exceed 1% of the start and thereafter 1% of the preceding frequency value where the frequency is swept incrementally.
- 5. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised, and able to respond. Sensitive frequencies such as clock frequencies and harmonics or frequencies of dominant interest, shall be analyzed separately.
- 6. Attempts should be made to fully exercise the EUT during test, and to fully interrogate all exercise modes selected for susceptibility.

16.3. TEST SETUP



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



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16.4. TEST RESULT

Test Point	Frequency (MHz)	Level (V rms)	Test Mode	Performance criteria					
a.c. port	0.15 – 80	3	Mode 1/2/3/4/5/6	A					
A. No de que detien in the prefermence of the CLIT was absented									

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

Note: operating mode include all modes of EMS in page 9.

1	65	PF	RF	OR	МΔ	N	CE

⊠ Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
☐ Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
☐ Criteria C:	Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

☐ Not Compliance		



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17. VOLTAGE DIPS AND SHORT INTERRUPTIONS IMMUNITY TEST

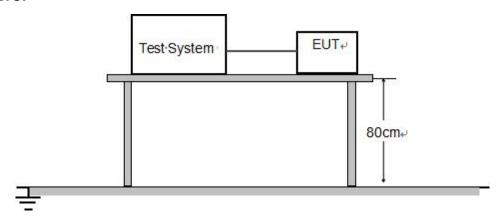
17.1. TEST SPECIFICATION

Basic Standard	EN 61000-4-11		
	100% reduction, 0.5 Cycle		
Voltage Dips	100% reduction, 1.0 Cycle		
	30% reduction, 25 Cycles		
Voltage Interruptions	100% reduction, 250 Cycles		
Voltage Phase Angle	0°, 45°, 90°, 135°, 180°, 225°, 270°, 315°		

17.2. TEST PROCEDURE

- a). The power cord was used as supplied by the manufacturer. The EUT was connected to the line output of the Voltage Dips and Interruption Generator.
- b). The EUT was tested for (1) 100% voltage dip of supplied voltage with duration of 0.5 cycles, (2)100% voltage dip of supplied voltage and duration 1.0 cycle. (3) 30% voltage dip of supplied voltage and duration 25 cycles. (4) 100% voltage interruption of supplied voltage with duration of 250 Cycles was followed.
- c). Voltage reductions occur at 0 degree crossover point of the voltage waveform. The performance of the EUT was checked after the voltage dip or interruption.

17.3. TEST SETUP



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



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17.4. TEST RESULT

Test Mode	Voltage Reduction	Duration (cycle)	Times	Interval (Sec)	Test Mode	Performance criteria
	100%	0.5	3	10	Mode 1/2/3/4/5/6	Α
Voltage dips	100%	1	3	10	Mode 1/2/3/4/5/6	Α
	30%	25	3	10	Mode 1/2/3/4/5/6	Α
Voltage interruptions	100%	250	3	10	Mode 1/2/3/4/5/6	В

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

B: Stop charging during the test and self-recoverable after test.

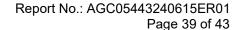
Performance Note: For a 70 % residual voltage dip and voltage interruption tests, the following performance criteria apply: Lost functions can be recoverable by user or operator because the equipment is powered solely from the AC mains supply (without the use of a parallel battery back-up).

Note: operating mode include all modes of EMS in page 9.

17.5. PERFORMANCE

⊠ Criteria A:	The apparatus continues to operate as intended. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance.
⊠ Criteria B:	The apparatus continues 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 apparatus is used as intended. In some cases the performance level may be replaced by a permissible loss of performance. During the test, degradation of performance is however allowed.
☐ Criteria C:	Temporary loss of function is allowed, provided the functions self-recoverable or can be restored by the operation of controls.

⊠ Compliance □ Not Compliance	
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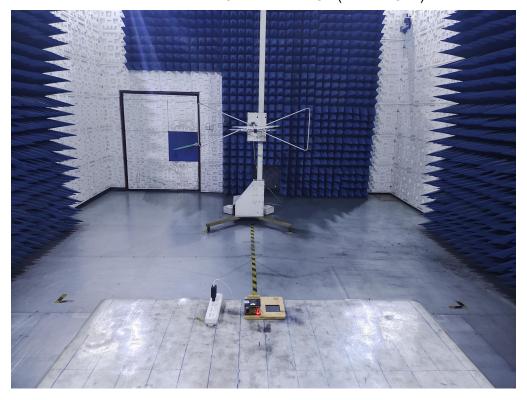


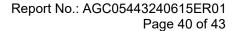
APPENDIX I: PHOTOGRAPHS OF TEST SETUP

LINE CONDUCTED EMISSION TEST SETUP



RADIATED EMISSION TEST SETUP (Below 1GHz)



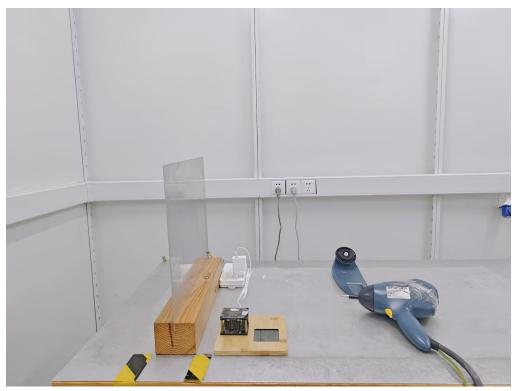


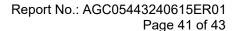


EN61000-3-3 VOLTAGE FLUCTUATION ANDFLICKER TEST SETUP



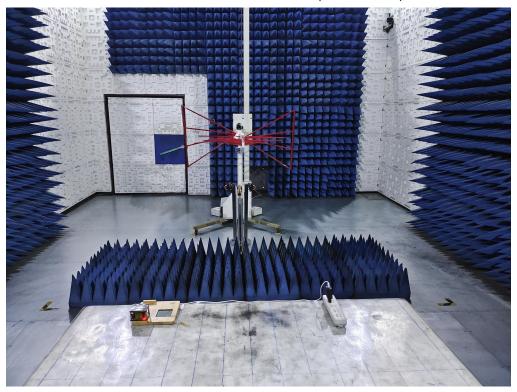
EN 61000-4-2 ESD TEST SETUP







EN 61000-4-3 RS TEST SETUP (Below 1GHz)



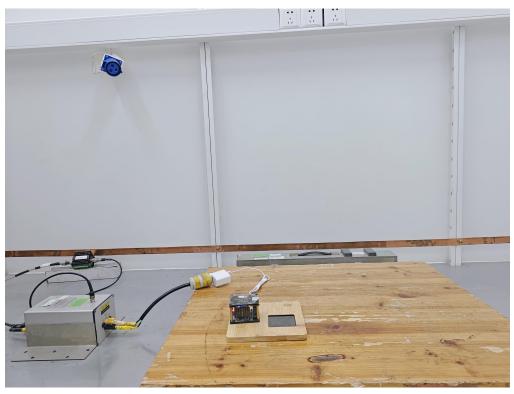
EN 61000-4-4/-5/-11EFT/SURGE/DIPS IMMUNITY TEST SETUP





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EN 61000-4-6 CS IMMUNITY TEST SETUP





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APPENDIX II: PHOTOGRAPHS OF THE EUT

Refer to the Report No.: AGC05443240615AP01

----END OF REPORT----



Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
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- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.



EMC Test Report

Report No.: AGC05443240615EE01

PRODUCT DESIGNATION: Bamboo weather station

BRAND NAME : N/A

MODEL NAME : M06665

APPLICANT: MID OCEAN BRANDS B.V.

DATE OF ISSUE : Jun. 25, 2024

STANDARD(S) : EN IEC 55014-1:2021 EN IEC 55014-2:2021

REPORT VERSION: V1.0

Attestation of Global Confilance (Shenzhen) Co., Ltd



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REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	1	Jun. 25, 2024	Valid	Initial release

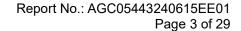
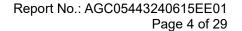




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1. General information

1. General information	
Applicant	MID OCEAN BRANDS B.V.
Address	Unit 201 2/F,. Laford Centre,838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hongkong
Manufacturer	MID OCEAN BRANDS B.V.
Address	Unit 201 2/F,. Laford Centre,838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hongkong
Factory	MID OCEAN BRANDS B.V.
Address	Unit 201 2/F,. Laford Centre,838 Lai Chi Kok Road, Cheung Sha Wan, Kowloon, Hongkong
Product Designation	Bamboo weather station
Brand Name	N/A
Test Model	MO6665
Series Model(s)	N/A
Difference Description	N/A
Deviation from Standard	No any deviation from the test method
Date of receipt of test item	Jun. 18, 2024
Date of Test	Jun. 18, 2024 to Jun. 25, 2024
Test Result	Pass
Test Report Form No	AGCER-EMC-GEN-V1
Note: The test results of the	is report relate only to the tested sample identified in this report.

Prepared By	Jouk 6 ai	
	Jack Gui (Project Engineer)	Jun. 25, 2024
Reviewed By	Calin Lin	
	Calvin Liu (Reviewer)	Jun. 25, 2024
Approved By	Max Zhang	
	Max Zhang (Authorized Officer)	Jun. 25, 2024



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2. Description of Test Configuration

2.1. Technical Description of Product

Categorization of Equipment	Category III
Test arrangements of EUT	Table-top
Hardware Version	V1.0
Software Version	V1.0
Highest Internal Frequency	Less than 108MHz
EUT Input Rating	Clock :DC 3.0V by battery Wireless Charging :DC 5V/2A, DC 9.0V/1.67A by adapter
Wireless Charging Output Power	5W/10W

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

Port Type	Input/Output	Number	Cable Description	
USB Type-C	In	1	1.0m unshielded	

2.2. Description of Support Equipment

Device T	ype	Manufacturer	Model Name	Specifications	Data Cable	Power Cable
			1	1		-

2.3. Description of Test Modes

No.	Test Mode Description
1	Normal operation mode



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3. Summary of Measurement Results and Uncertainty

3.1. Test Specifications

EN IEC 55014-1:2021	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
EN IEC 55014-2:2021	Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity - Product family standard

3.2. Description of Measurement Results

Test Standard(s)	Verdict
EN IEC 55014-1	Pass
IEC 61000-4-2 a	Pass
IEC 61000-4-3 a	Pass
	EN IEC 55014-1 IEC 61000-4-2 a

Note:

a. The applicable versions of the basic standards are defined in the standard which listed in the test specification.



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Performance table

	Performance Criteria for Immunity				
Performance 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.				
Performance 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.				
Performance 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.				



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3.3. Description of 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%.

Item	Measurement Uncertainty
Radiated emissions at frequencies up to 1 GHz	Uc = ±3.9 dB



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4. Test Facility

Laboratory name: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Laboratory Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

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

CNAS-Lab Code: L5488

Attestation of Global Compliance (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laborat ories (CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories).

A2LA-Lab Cert. No.: 5054.02

Attestation of Global Compliance (Shenzhen) Co., Ltd. is accredited in accordance with the recognized International Standard ISO/IEC 17025:2017 General requirements for the competence of testing and calibration laboratories. This laboratory also meets the requirements of any additional program requirements in the Electrical field.

FCC-Registration No.: 975832

Attestation of Global Compliance (Shenzhen) Co., Ltd. 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 with Registration 975832.

IC-Registration No.: 24842

CAB identifier: CN0063

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

VCCI Membership No.: 4112

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered in accordance with VCCI Council Rules.

VCCI Registration No. C-20098 for conducted emissions at AC main power ports

VCCI Registration No. T-20102 for conducted emissions at telecommunication ports

VCCI Registration No. R-20136 for radiated emissions below 1GHz

VCCI Registration No. G-20132 for radiated emissions above 1GHz



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5. Measurement of Radiated Emissions at Frequencies up to 1 GHz

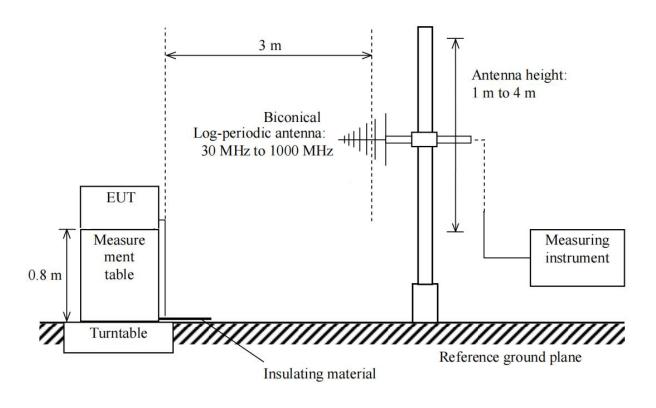
5.1. Requirements

Requirements for radiated emissions at frequencies up to 1 GHz at 3m distance

Test facility	Detector type/ bandwidth	Frequency Range (MHz)	Limits dB(µV/m)	Measurement specifications	
Quasi neak/		30 to 230	40	Instrumentation: CISPR 16-1-1, Clauses 4, Antennas: CISPR 16-1-4, Clause 4.5	
SAC	120kHz	230 to 1000	47	Test Site: CISPR 16-1-4, Clause 6 Method: CISPR 16-2-3, Clause 7.6	

Note:

5.2. Block Diagram of Test Setup



^{1.} The lower limit shall apply at the transition frequency.



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5.3. Equipment Details

Measuring Instruments

Instruments	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 01, 2024	Jan. 31, 2025
Antenna	SCHWARZBECK	VULB9168	D69250	May 11, 2023	May 10, 2025
Attenuator	East sheep	LM-XX-6-5W	N/A	Jun. 09, 2023	Jun. 08, 2025

Measuring Software

Software Name	Manufacturer	Details
EZ-EMC	FARA	For EMC Measurement, Version RA-03A

5.4. Configuration of the EUT and method of measurement

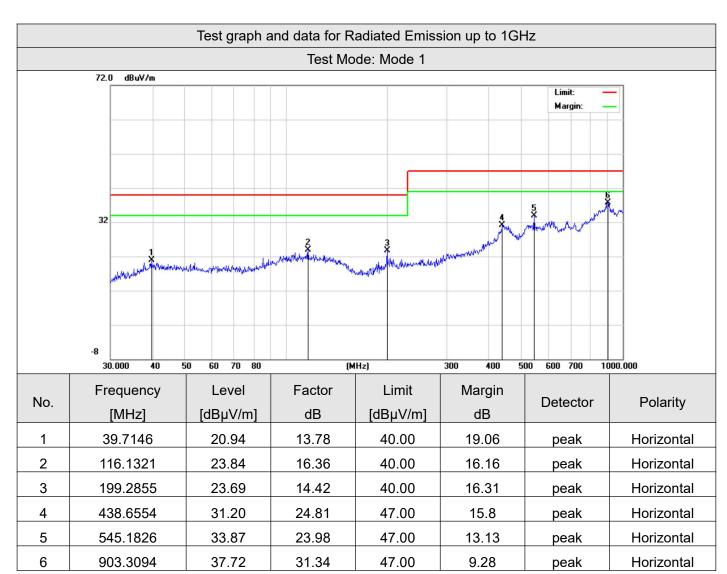
- a. The EUT was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, the EUT was placed on the top surface of a measurement table, 0.8 m high from the horizontal reference plane. When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 10 cm non-conductive covering to insulate the EUT from the ground plane.
- b. Support equipment, if needed, was placed as per CISPR 16-2-3.
- c. All I/O cables were positioned to simulate typical actual usage as per CISPR 16-2-3.
- d. The maximum receiving level of radiated emissions from the EUT was measured while the turntable was rotated from 0° to 360° and the antenna height was scanned between 1 m and 4 m. The cables were laid out to attain the maximum level of radiated emissions.
- e. The more description of the tests, the test methods, and the test set-ups are given in the applicable test standard.
- f. Record at least six highest emissions relative to the limits at each frequency of interest unless the emission is 10 dB or greater below the limit.
- g. A radiated emission is calculated by the following equation:
 - Measurement Level $dB(\mu V/m) = Receiver reading dB(\mu V) + Factor(dB/m)$
 - Factor(dB/m) = Antenna Factor(dB/m) + Cable Loss(dB)
 - Margin= Limit-Level



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5.5. Test Summary

Test Engineer	Carpe Lin	Temperature	22.8℃
Test Date	2024-06-22	Air Pressure	985 Mbar
Worst Mode	Mode 1	Relative Humidity	59.7%
Verdict	Pass		





Test graph and data for Radiated Emission up to 1GHz Test Mode: Mode 1 72.0 dBuV/m Limit: Margin: 60 70 80 (MHz) 300 400 600 700 1000.000 30.000 Frequency Level Factor Limit Margin No. **Polarity** Detector dB [dBµV/m] dΒ [MHz] [dBµV/m] 40.00 1 32.2925 29.12 14.36 10.88 peak Vertical 2 95.4270 25.39 14.82 40.00 14.61 Vertical peak 3 197.8928 24.94 17.96 40.00 15.06 Vertical peak 4 438.6554 47.00 Vertical 32.12 25.88 14.88 peak 5 11.2 721.7259 35.80 28.64 47.00 Vertical peak

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38.27

30.38

47.00

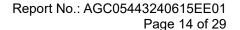
8.73

peak

Vertical

6

955.4381



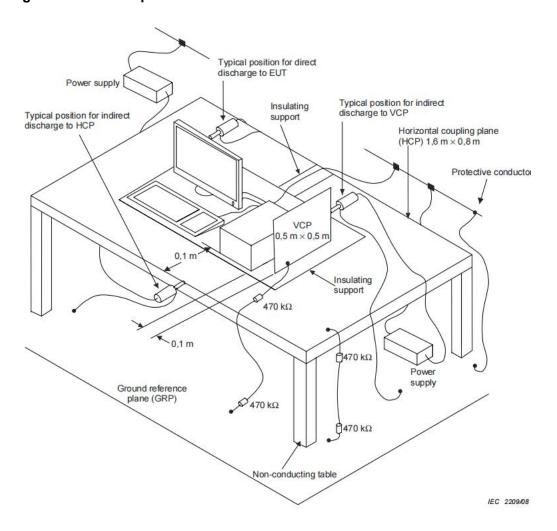


6. Measurement of Electrostatic discharge

6.1. Requirements

Port	Enclosure
Basic Standard	IEC 61000-4-2
Test Level	±8.0 kV (Air Discharge) ±4.0 kV (Contact Discharge) ±4.0 kV (Indirect Discharge)
Required Performance Criterion	В
Time Between Each Discharge:	1 second
Number of Discharge for Each Applied Voltage	10

6.2. Block Diagram of Test Setup





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6.3. Equipment Details

Measuring Instruments

Instruments	Manufacturer	Model	S/N	Cal. Date	Cal. Due
ESD Simulator	Schaffner	NSG 438	782	Nov. 13, 2023	Nov. 12, 2024

Measuring Software

Software Name	Manufacturer	Details

6.4. Configuration of the EUT and method of measurement

- a. Electrostatic discharges were applied only to those points and surfaces of the EUT that are accessible to users during normal operation.
- b. The test was performed with at least ten single discharges on the pre-selected points in the most sensitive polarity.
- c. The time interval between two successive single discharges was at least 1 second.
- d. 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.
- e. Contact discharges were applied to the non-insulating coating, with the pointed tip of the generator penetrating the coating and contacting the conducting substrate.
- f. 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.
- g. 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.
- h. 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.
- i. The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance criterion defined in the report.



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6.5. Test Summary

Test Engineer	Carpe Lin	Temperature	25.3℃
Test Date	2024-06-24	Air Pressure	985 Mbar
Test Mode(s)	Mode 1	Relative Humidity	52.8%
Verdict	Pass		

Voltage	Coupling	Observation	Performance
±4kV	±4kV Contact Discharge No degrad		А
±2KV, ±4kV, ±8kV	Air Discharge	No degradation of performance	A
±4kV	Indirect Discharge HCP	No degradation of performance	A
±4kV	Indirect Discharge VCP	No degradation of performance	А

ESD location:

Blue line: Air Discharge Red line: Contact discharge







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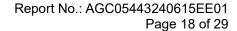
7. Measurement of Radio-Frequency Electromagnetic Field

7.1. Requirements

Port	Enclosure
Basic Standard	IEC 61000-4-3
Test Level	3V/m with 80% AM. 1kHz Modulation at 80 to 1000MHz
Required Performance Criterion	A
Antenna polarization	Vertical and Horizontal
Step size increment ^a	1%
Dwell time b	≤5 seconds
Test Distance	3m
EUT position facing antenna	Front side, back side, left side and right side

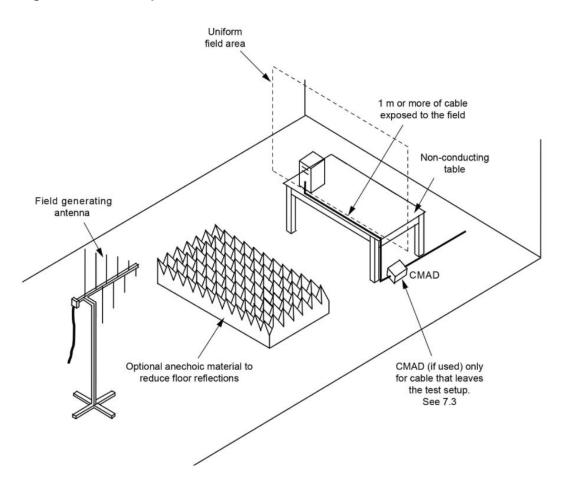
Notes:

- a. Recognizing that a 1% step size is preferred, the frequency range can be swept incrementally with a step size not exceeding 4% of the previous frequency with a test level of twice the value of the specified test level in order to reduce the testing time for equipment requiring testing in multiple configurations and/or long cycle times.
- b. The dwell time at each frequency shall not be less than the time necessary for the EUT to be exercised and to be able to respond. However, the dwell time shall not exceed 5 seconds at each of the frequencies during the scan. The time to exercise the EUT is not interpreted as a total time of a program or a cycle but related to the reaction time in case of failure of the EUT.





7.2. Block Diagram of Test Setup





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7.3. Equipment Details

Measuring Instruments

Instruments	Manufacturer	acturer Model		Cal. Date	Cal. Due
Signal Generator	Aglient	N5182A	MY50140530	Feb. 01, 2024	Jan. 31, 2025
Directional Couple	Werlatonee	C6026-10	99482	Feb. 01, 2024	Jan. 31, 2025
Directional Couple	Werlatonee	C5571-10	99463	Feb. 01, 2024	Jan. 31, 2025
Power Probe	R&S	URV5-Z4	100124	Mar. 24, 2023	Mar. 23, 2025
Power Meter	R&S	NRVD	8323781027	Mar. 24, 2023	Mar. 23, 2025
Power Amplifier	KALMUS	7100LC	04-02/17-06-001	Sep. 21, 2023	Sep. 20, 2024
Power Amplifier	Milmega	AS0104-55_55	1004793	Oct. 13, 2023	Oct. 12, 2024
Power Amplifier	Rflight	NTWPA-2560100	17063183	Oct. 13, 2023	Oct. 12, 2024
Double-Ridged Waveguide Horn	ETS-LINDGREN	3117	00034609	Mar. 31, 2024	Mar. 30, 2025
Wideband Antenna	ETS-LINDGREN	3142C	00060447	N/A	N/A

Measuring Software

Software Name	Manufacturer	Details
TS+[JS35-RS]	Tonscend	For EMC measurement, version 2.0.1.8

7.4. Configuration of the EUT and method of measurement

- a. The Equipment Under Test (EUT) was positioned within the Uniform Field Area (UFA) on a supporting table, ensuring a 3-meter separation from the transmitting antenna. This setup aligns with the calibrated square area, guaranteeing field uniformity during testing. The supporting units were strategically located outside the UFA to avoid any potential interference. Nonetheless, the cables connected to the EUT were intentionally exposed to the precisely calibrated field within the UFA.
- b. Before testing, it will verify the proper operation of the test equipment/system. This verification will involve measuring the field strength at one point within the Uniform Field Area (UFA) at various frequencies.
- c. The test shall be performed according to the above requirements and block diagram which shall specify the test setup.
- d. The test results shall be classified in terms of the loss of function or degradation of performance of the equipment under test, relative to a performance criterion defined in the report.



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7.5. Test Summary

Test Engineer	Carpe Lin	Temperature	23.1℃
Test Date	2024-06-23	Air Pressure	985 Mbar
Test Mode(s)	Mode 1	Relative Humidity	59.4%
Verdict	Pass		

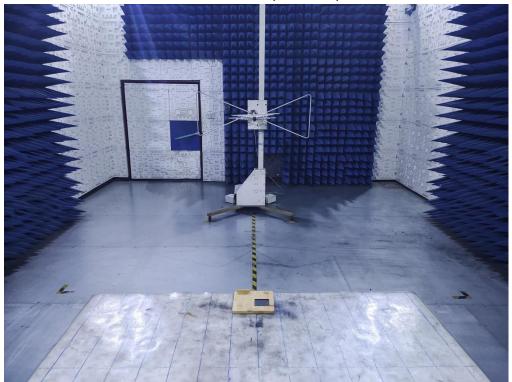
Swept test:

Frequency	Exposed Side	Field Strength (V/m)	Observation	Performance
80MHz to 1GHz	Front	3V/m (rms)	No degradation of performance	Α
	Left		No degradation of performance	А
	Rear		No degradation of performance	А
	Right		No degradation of performance	Α



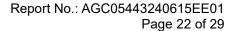
8. Photographs of Test Setup

Radiated emissions at frequencies up to 1 GHz



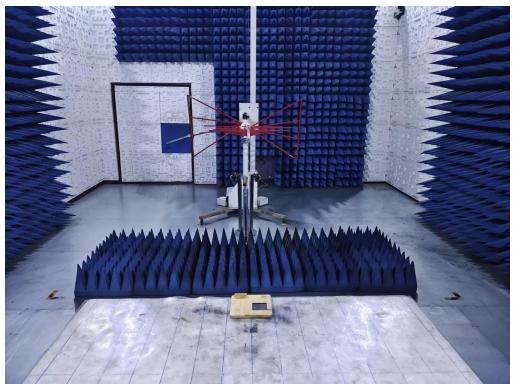
Electrostatic discharge

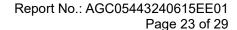














9. Photographs of EUT

ALL VIEW OF EUT

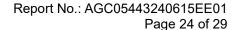


TOP VIEW OF EUT



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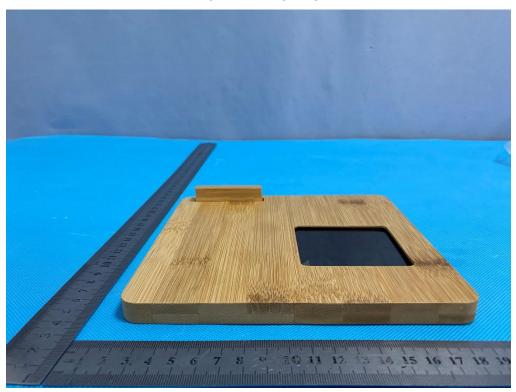


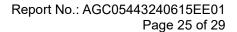


BOTTOM VIEW OF EUT



FRONT VIEW OF EUT



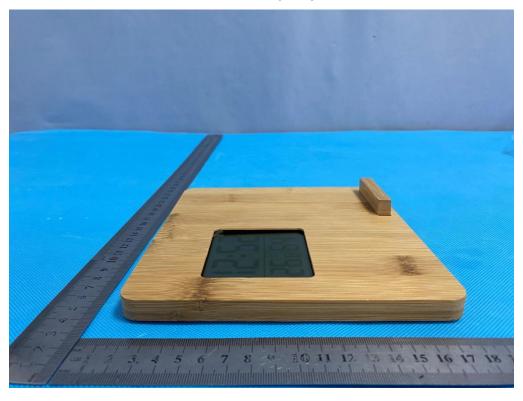




BACK VIEW OF EUT

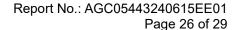


LEFT VIEW OF EUT



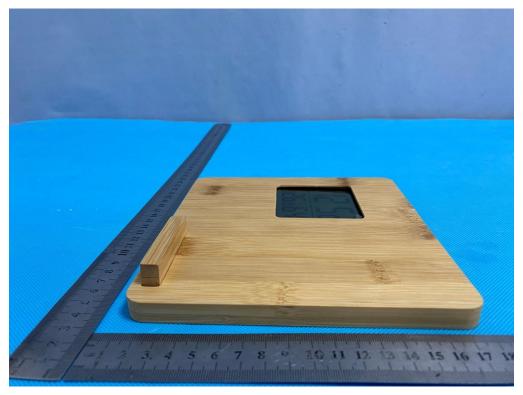
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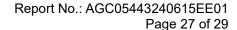


RIGHT VIEW OF EUT



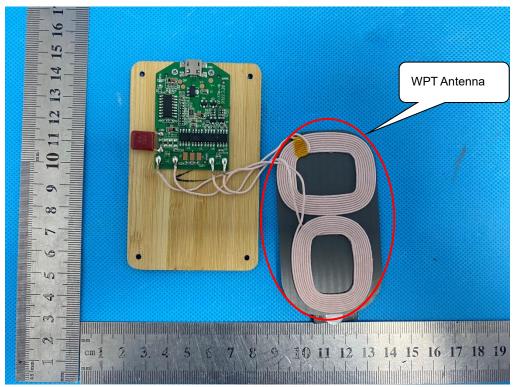
OPEN VIEW OF EUT (FIGURE 1)



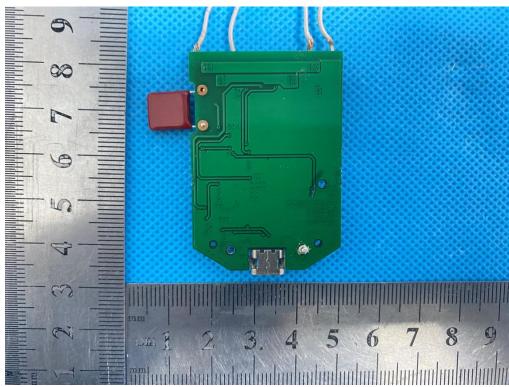




OPEN VIEW OF EUT (FIGURE 2)

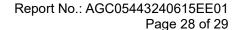


INTERNAL VIEW OF EUT (FIGURE 1)



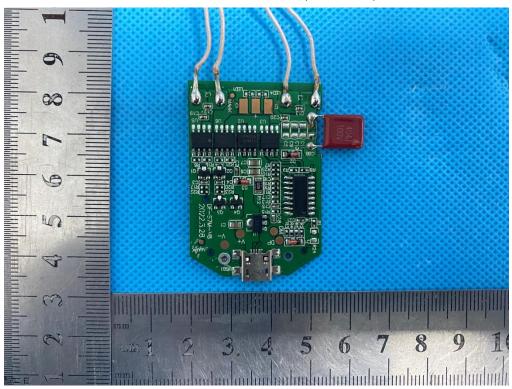
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

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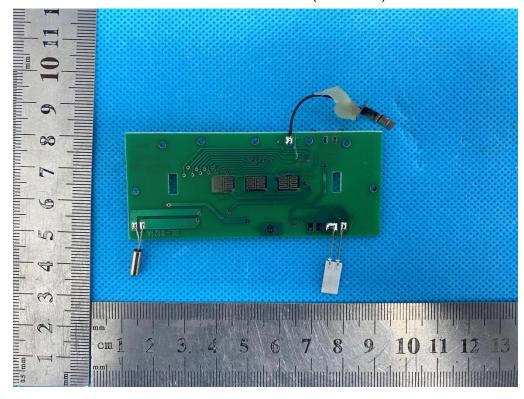




INTERNAL VIEW OF EUT (FIGURE 2)

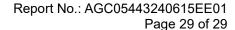


INTERNAL VIEW OF EUT (FIGURE 3)



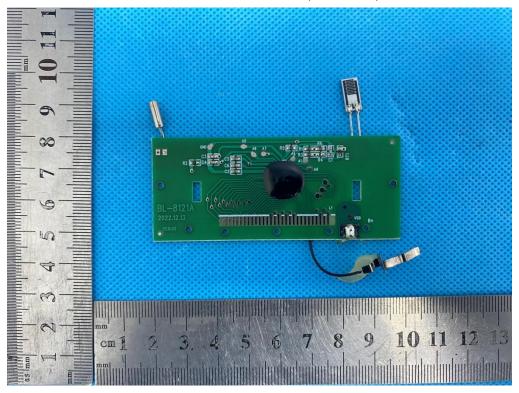
Any report having not been signed by authorized approver, or having been altered without authorization, or having not been stamped by the "Dedicated Testing/Inspection Stamp" is deemed to be invalid. Copying or excerpting portion of, or altering the content of the report is not permitted without the written authorization of AGC. The test results presented in the report apply only to the tested sample. Any objections to report issued by AGC should be submitted to AGC within 15days after the issuance of the test report. Further enquiry of validity or verification of the test report should be addressed to AGC by agc01@agccert.com.

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INTERNAL VIEW OF EUT (FIGURE 4)



----End of Report----



Conditions of Issuance of Test Reports

- 1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").
- 2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.
- 3. The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.
- 4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.
- 5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.
- 6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.
- 7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.
- 8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.
- 9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.