RF Test Report

Report No.: AGC05443240930ER03

PRODUCT DESIGNATION	:	Foldable wireless charger
BRAND NAME	:	N/A
TEST MODEL	:	MO2445
APPLICANT	:	MID OCEAN BRANDS B.V.
DATE OF ISSUE	:	Sep. 27, 2024
STANDARD(S)	:	ETSI EN 300 330 V2.1.1(2017-02)
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 27, 2024	Valid	Initial release

TABLE OF CONTENTS

1. 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
Factory Name	MID OCEAN BRANDS B.V.
Address	7/F. Kings Tower , 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Product Designation	Foldable wireless charger
Brand Name	N/A
Test Model	MO2445
Series Model	N/A
Declaration of Difference	N/A
Date of receipt of test item	Sep. 10, 2024
Date of test	Sep. 10, 2024~ Sep. 27, 2024
Test Result	PASS
Condition of Test Sample	Normal
Report Template	AGCRT-EC-SRD/RF

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

Prepared By	Bibo Zhang Bibo Zhang (Project Engineer)	Sep. 27, 2024
Reviewed By	Calvin Liu Calvin Liu (Reviewer)	Sep. 27, 2024
Approved By	Max Zhang Max Zhang Authorized Officer	Sep. 27, 2024

2. EUT DESCRIPTION

Details of technical specification for WPT refer to the description in follows:

Hardware Version	V1.0
Software Version	V1.0
Permitted Range Of Operating Frequency	148.5 KHz to 5 MHz (Manufacturer's declared frequency of product operation: 325KHz-330KHz)
Operation Frequency	325.7kHz
Modulation	ASK
Corrected Amplitude H-field	-35.35dBuA/m
RF Output Power (ERP)	0.00000008mW
Number of Channels:	1 Channel
Antenna Gain	0dBi
Antenna Type:	Coil Antenna
Power Supply	DC 5V/2A,9V/2A
Wireless Charging Output Power	5W, 7.5W, 10W, 15W
Receiver category	3
Product Class	1
Equipment type:	WPT systems

NOTE: For more information, please refer to User's Manual.

3. DESCRIPTION OF TEST MODES

The EUT has been tested under Normal Operation and standby condition.

4. TEST FACILITY

Test Site-1	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

5. TEST ITEMS AND THE RESULTS

The EUT has been tested according to ETSI EN 300 330 V2.1.1(2017-02).

ETSI EN 300330 V2.1.1(2017-02)	Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU

№	Basic Standard	Test Type	Test Mode	Result
1	ETSI EN 300 330 4.3.1	Permitted range of operating frequencies	TX	Pass
2	ETSI EN 300 330 4.3.2	Operating frequency ranges	TX	Pass
3	ETSI EN 300 330 4.3.3	Modulation bandwidth	TX	Pass
4	ETSI EN 300 330 4.3.4	Transmitter H-field requirements	TX	Pass
5	ETSI EN 300 330 4.3.8	Transmitter radiated spurious domain emission limits < 30 MHz	TX	Pass
6	ETSI EN 300 330 4.3.9	Transmitter radiated spurious domain emission limits > 30 MHz	TX	Pass
7	ETSI EN 300 330 4.4.2	Receiver spurious emissions	RX	Pass
8	ETSI EN 300 330 4.4.3	Adjacent channel selectivity	RX	N/A
9	ETSI EN 300 330 4.4.4	Receiver blocking or desensitization	RX	N/A

Note: 1.N/A means not applicable.
2. According to the standard section 4.4.1, this equipment belongs to other equipment (WPT system), and only has a single working channel, so it is not necessary to meet 4.3.3&4.3.4.
3. The EUT support 5V/9V/12V voltage input and recorded in this report as the worst case.

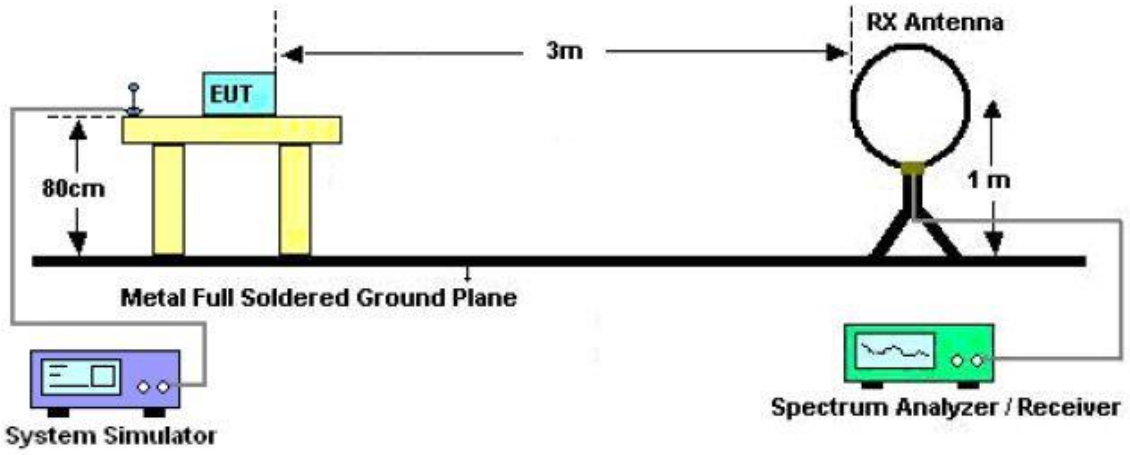
6. ETSI EN 300 330 REQUIREMENT TO TRANSMITTER

6.1 RF H-FIELD (RADIATED)

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCI	100694	Jun. 02, 2024	Jun. 01, 2025
Amplifier	Schwarzbeck	BBV 9718	9718-205	Jun. 02, 2024	Jun. 01, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 05, 2023	Jan. 04, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-D69250	May 11, 2023	May 10, 2025
LOOP ANTENNA	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:



TEST LIMITS:

Table 2: H-field limits at 10 m

Frequency range (MHz)	H-field strength limit (H_f) dBµA/m at 10 m or specified in mW e.r.p.
0,009 ≤ f < 0,090	72 descending 3 dB/oct above 0,03 MHz or according to note 1 (see note 5)
0,09 ≤ f < 0,119	42
0,119 ≤ f < 0,135	66 descending 3 dB/oct above 0,119 MHz or according to note 1 (see notes 3 and 5)
0,135 ≤ f < 0,140	42
0,140 ≤ f < 0,1485	37,7
0,1485 ≤ f < 30	-5 (see note 4)
0,315 ≤ f < 0,600	-5
3,155≤ f < 3,400	13,5
4,234	9 (see note 9)
4,516	7
7,400 ≤ f < 8,800	9
10,2 ≤ f < 11,00	9
12,5 ≤ f ≤ 20	-7
6,765 ≤ f ≤ 6,795	42 (see notes 3 and 7)
26,957 ≤ f ≤ 27,283	42 (see note 3)
13,410 ≤ f ≤13,553, 13,567 ≤ f ≤ 13,710	9 (see note 6)
13,110 ≤ f ≤ 13,410, 13,710 ≤ f ≤ 14,010	-3,5 (see note 6)
12,660 ≤ f ≤ 13,110, 14,010 ≤ f ≤ 14,460	-10 (see note 6)
11,810 ≤ f ≤ 12,660, 14,460 ≤ f ≤ 15,310	-16 (see note 6)
13,460 ≤ f ≤ 13,553, 13,567 ≤ f ≤ 13,660	27 (see note 6)
13,360 ≤ f ≤ 13,460, 13,660 ≤ f ≤ 13,760	Linear transition from 27 to -3,5 (see note 6)
13,110 ≤ f ≤ 13,360, 13,760 ≤ f ≤ 14,010	-3,5 (see note 6)
12,660 ≤ f ≤ 13,110, 14,010 ≤ f ≤ 14,460	-5 (see note 6)
13,553 ≤ f ≤ 13,567	42 (see note 3) or 60 (see notes 2 and 3)
27,095	42

Frequency range (MHz)	H-field strength limit (H_f) dBµA/m at 10 m or specified in mW e.r.p.
26,995, 27,045, 27,095, 27,145, 27,195 (see note 8)	100 mW

NOTE 1: For the frequency ranges 9 kHz to 135 kHz, the following additional restrictions apply to limits above 42 dBµA/m:
- for loop coil antennas with an area ≥ 0,16 m^2 this table and table B.1 with the antenna limitations apply;
- for loop coil antennas with an area between 0,05 m^2 and 0,16 m^2 table B.1 applies with a correction factor. The limit is: table value + 10 × log (area/0,16 m^2);
- for loop coil antennas with an area < 0,05 m^2 the limit is 10 dB below table B.1.

NOTE 2: For RFID (incl. NFC) and EAS applications only.
NOTE 3: Spectrum mask limit, see annex I.
NOTE 4: For further information see annex G.
NOTE 5: Limit is 42 dBµA/m for the following spot frequencies: 60 kHz ± 250 Hz, 66,6 kHz ± 750 Hz, 75 kHz ± 250 Hz, 77,5 kHz ± 250 Hz, and 129,1 kHz ± 500 Hz.
NOTE 6: Only in conjunction with spectrum mask, see annex I.
NOTE 7: The frequency range 6,765 MHz - 6,795 MHz is not a harmonised ISM frequency band according article 5.138 of the ITU Radio Regulations [i.13].
NOTE 8: Center frequencies for channelized systems by using ≤ 10 kHz bandwidth.
NOTE 9: The limit is valid in the range 984 kHz - 7 484 kHz for Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.

The H-field limit in dBµA/m at 3 m, H_{3m}, is determined by the following equation:

$$H_{3m} = H_{10m} + C_3 \quad (F.2)$$

Where: H_{10m} is the H-field limit in dBµA/m at 10 m distance according to the present document; and C_3 is a conversion factor in dB determined from figure F.2.

The limit at 10 m(H_{10m}) is -5 dBµA/m

For 325.7KHz:

Owing to the frequency EUT is 0.3265MHz, so the C_3 approach to 31.65dB.

Then the limit at 3m(H_{3m}) = H_{10m} + C_3 = -5 + 31.65 =26.65 dBµA/m.

The H Field Strength shall not exceed the values 26.65dBuA/m 3m Distance under normal test conditions.

- E(dBuV/m) = dBuA/m+51.5;
- ERP (dBm)=E(dBuV/m) +20lg(D)-104.8, D is the measurement distance;
- ERP=10lgP(mW)

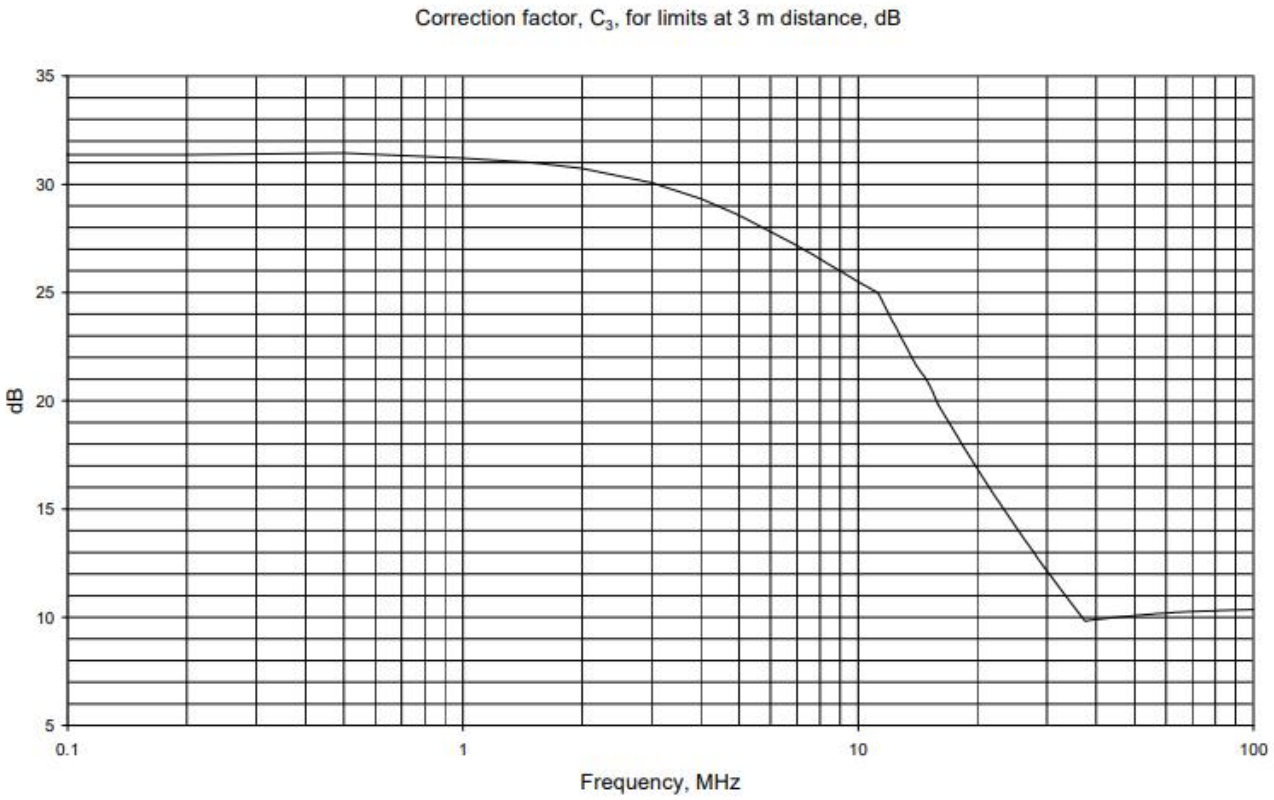


Figure H.2: Conversion factor C_3 versus frequency

TEST PROCEDURE:

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.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
The H-field is measured with a shielded loop antenna connected to a measurement receiver.
The measuring bandwidth and detector type of the measurement receiver shall be in accordance with EN 300 330 V2.1.1 clause 5.12.
The EUT operate with modulation under normal and extreme conditions.

TEST RESULTS:

Test Mode: Transmitting
Extreme conditions state

conditions	Test Temp	Test Volt.(V)	Note
TN/VN	25℃	9.0	Worst case
TL/ VL	-10℃	9.9	
TH/VL	40℃	9.9	
TL/VH	-10℃	8.1	
TH/VH	40℃	8.1	

Frequency	Reading	Corrected Factor	Corrected Amplitude E-field	Corrected Amplitude H-field(3m)	Corrected Amplitude H-field(10m)	Limit (10m)	Result
MHz	dBμV/m	dB	dBμV/m	dBμA/m	dBμA/m	dBμA/m	Pass
0.3257	25.94	21.86	47.80	-3.70	-35.35	-5	

Remark:
(1) Corrected Level (dBuA/m) = Reading Level + Antenna Factor
(2) For the calculated method, please refer to Annex F at EN 300330.
(3) All extreme conditions were considered for test, but only record the worst case.
(4) EIRP(dBm)=E(dBuV/m)+20lg(D)-104.8, D is the measurement distance.
E(dBuV/m)=dBuA/m+51.5, so the dBuA/m=EIRP(dBm)+43.7, EIRP=10lgP(mW)

6.2 PERMITTED FREQUENCY RANGE AND THE MODULATION BANDWIDTH

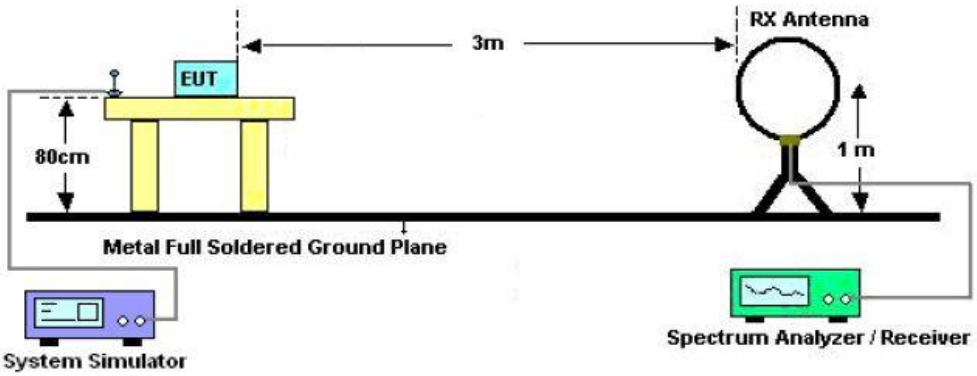
TEST LIMITS

The modulation bandwidth shall be within the assigned frequency band see table 1 or ±7,5 % of the carrier frequency whichever is the smallest. For RFID and EAS Systems, the modulation bandwidth shall be within the transmitter emission boundary of figures I.1, I.2, I.3 and I.4. For further information, see CEPT/ERC/REC 70-03 [i.1] or ERC/ECC/CEPT Decisions as implemented through National Radio Interfaces (NRI) and additional NRI as relevant.

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCI	100694	Jun. 02, 2024	Jun. 01, 2025
Amplifier	Schwarzbeck	BBV 9718	9718-205	Jun. 02, 2024	Jun. 01, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 05, 2023	Jan. 04, 2025
LOOP ANTENNA	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:



TEST PROCEDURE:

1). The EUT was placed on a turn table which is 0.8m above ground plane.

2). The EUT was modulated by normal signal,

3). Set SPA Center Frequency = fundamental frequency, RBW:300Hz,VBW=1000Hz, Span=2MHz.

4), Both normal test condition and extreme test condition applied

Test Limit

Table 1: Short Range Devices within the 9 kHz to 30 MHz permitted frequency bands

	Frequency Bands/frequencies	Applications
Transmit and Receive	9 kHz to 90 kHz	Inductive devices, Generic use
Transmit and Receive	90 kHz to 119 kHz	Inductive devices, Generic use
Transmit and Receive	119 kHz to 140 kHz	Inductive devices, Generic use
Transmit and Receive	140 kHz to 148,5 kHz	Inductive devices, Generic use
Transmit and Receive	148,5 kHz to 5 MHz	Inductive devices, Generic use
Transmit and Receive	400 kHz to 600 kHz	RFID only
Transmit and Receive	5 MHz to 30 MHz	Inductive devices, Generic use
Transmit and Receive	3 155 kHz to 3 400 kHz	Inductive devices, Generic use
Transmit and Receive	984 kHz to 7 484 kHz (Note 3, Centre frequency is 4 234 kHz)	Inductive devices, Railway applications
Transmit and Receive	4 516 kHz	Inductive devices, Railway applications
Transmit and Receive	6 765 kHz to 6 795 kHz	Inductive devices, Generic use
Transmit and Receive	7 400 kHz to 8 800 kHz	Inductive devices, Generic use
Transmit and Receive	10 200 kHz to 11,000 MHz	Inductive devices, Generic use
Transmit and Receive	11,810 MHz to 15,310 MHz (Centre frequency is 13,56 MHz)	RFID only
Transmit and Receive	12,5 MHz to 20 MHz	Inductive devices, Wireless healthcare
Transmit and Receive	13,553 MHz to 13,567 MHz	Inductive devices, Generic use
Transmit and Receive	26,957 MHz to 27,283 MHz	Inductive devices, Generic use
Transmit and Receive	27,090 MHz to 27,100 MHz	Inductive devices, Railway applications

NOTE 1: In addition, it should be noted that other frequency bands may be available in a country within the frequency range 9 kHz to 30 MHz.

NOTE 2: On non-harmonised parameters, national administrations may impose certain conditions such as the type of modulation, frequency, channel/frequency separations, maximum transmitter radiated power, duty cycle, and the inclusion of an automatic transmitter shut-off facility, as a condition for the issue of an Individual Rights for use of spectrum or General Authorization, or as a condition for use under "licence exemption" as it is in most cases for Short Range Devices.

NOTE 3: Transmitting only on receipt of a Balise/Eurobalise tele-powering signal from a train.

TEST RESULT

Test Conditions			99% Bandwidth (kHz)	F_L at 99% BW (kHz)	F_H at 99% BW (kHz)	Limit Band (kHz)	Result
Frequency (kHz)	Temperature (°C)	Voltage (V)					
325.7	25℃	9.0	0.925	325.2375	326.1625	325~330	Pass
	-10℃	9.9	0.917	325.2415	326.1585		Pass
	40℃	9.9	0.934	325.233	326.167		Pass
	-10℃	8.1	0.954	325.223	326.177		Pass
	40℃	8.1	0.915	325.2425	326.1575		Pass

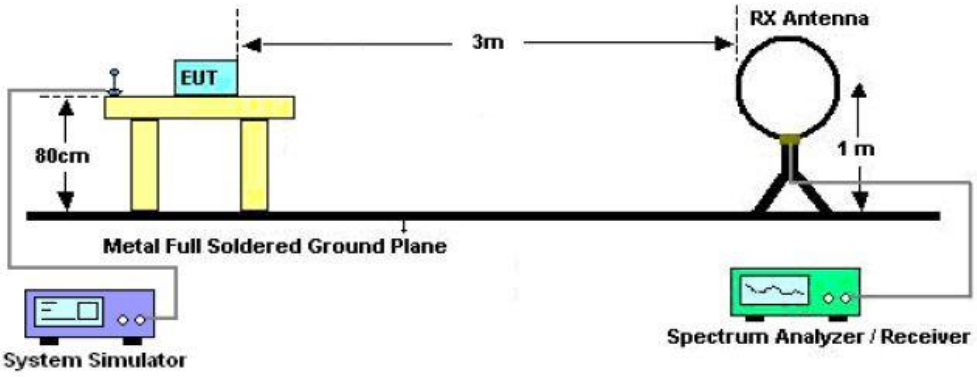
6.3 SPURIOUS DOMAIN EMISSION

MEASUREMENT EQUIPMENT USED:

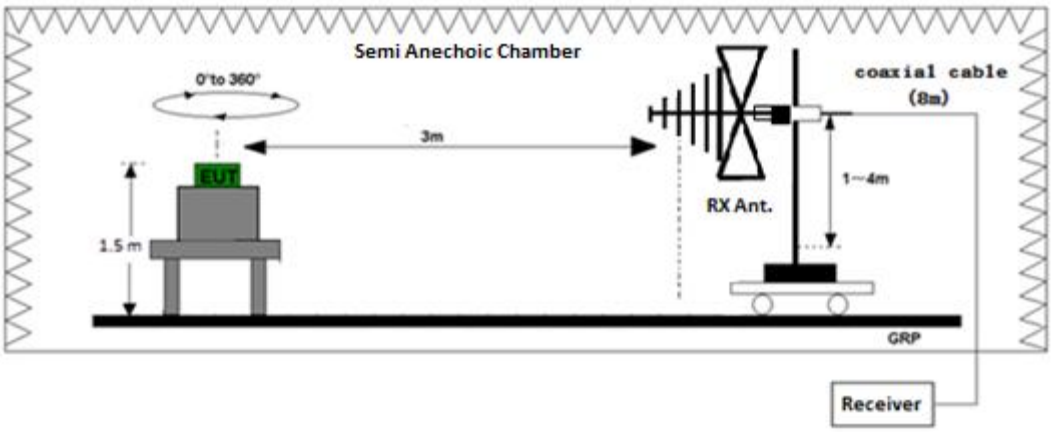
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCI	100694	Jun. 02, 2024	Jun. 01, 2025
Amplifier	Schwarzbeck	BBV 9718	9718-205	Jun. 02, 2024	Jun. 01, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 05, 2023	Jan. 04, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-D69250	May 11, 2023	May 10, 2025
LOOP ANTENNA	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:

FREQUENCY RANGE (9KHZ-30MHZ)



FREQUENCY RANGE (ABOVE 30MHZ)



TEST PROCEDURE:

For test method of frequency range (9 kHz-30MHz)

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.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

The H-field is measured with a shielded loop antenna connected to a measurement receiver.

The measuring bandwidth and detector type of the measurement receiver shall be in accordance with EN 300 330 V2.1.1 clause 5.12

The EUT operate with modulation under normal and extreme conditions.

For test method of frequency range (30 MHz-1000MHz)

EUT was placed on a 1.5m height wooden table. The search antenna is placed at 3m distances from the EUT and search antenna height is from 1-4m. With the transmitter operating at continuously mode, the turntable was slowly rotated to locate the direction of maximum emission. Once maximum direction is determined, the search antenna was raised and lowered in both vertical and horizontal polarizations.

The EUT was removed from the turntable and replaced with a linearly polarized antenna connected to a calibrated RF signal generator. The RF generator was set to a measured emission frequency and the search antenna was raised and lowered to produce a maximum received reading. The generator output was increased to match the radiated emission reading measured previously, and the result expressed in dB EIRP or ERP, correcting for substitution antenna gain at each frequency.

LIMITS OF RADIATED DISTURBANCES

Below 30MHz

Operating		
Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBμA/m Q.P.)
9 kHz ≤ f < 10 MHz	10	27dB μ A/m at 9 kHz descending 3 dB/oct
10 MHz ≤ f < 30 MHz	10	-3,5 dB μ A/m

Standby		
Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBμA/m Q.P.)
9 kHz ≤ f < 10 MHz	10	5,5 dB μ A/m at 9 kHz descending 3 dB/oct
10 MHz ≤ f < 30 MHz	10	-25 dB μ A/m

TEST LIMITS & RESULT

FREQUENCY RANGE (9KHZ-30MHZ)

OPERATION MODE					
Frequency	Reading level	Total Factor	Emission level	10M Limit	Margin
(MHz)	(dBμA/m)	(dB)	(dB μA/m)	(dBμA/m)	(dBμA/m)
--	--	--	--	27 dBμA/m at 9KHz descending 3dB/oct(9KHz – 10MHz)	--
--	--	--	--		--
--	--	--	--	-3.5 dBμA/m(10MHz – 30MHz)	--
--	--	--	--		--

STANDBY MODE					
Frequency	Reading level	Total Factor	Emission level	10M Limit	Margin
(MHz)	(dBμA/m)	(dB)	(dB μA/m)	(dBμA/m)	(dBμA/m)
--	--	--	--	5.5 dBμA/m at 9KHz descending 3dB/oct (9KHz – 10MHz)	--
--	--	--	--		--
--	--	--	--	-25 dBμA/m (10MHz – 30MHz)	--
--	--	--	--		--

Remark:

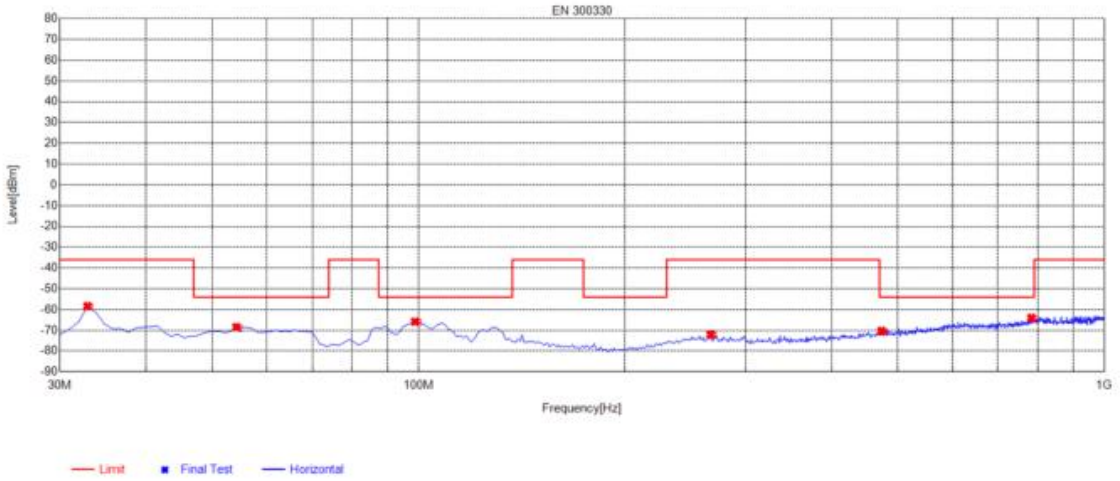
(1) Corrected Power (dBm) = Total Factor + Reading Level

(2) Measuring frequencies from 9KHz to the 30MHz.

(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

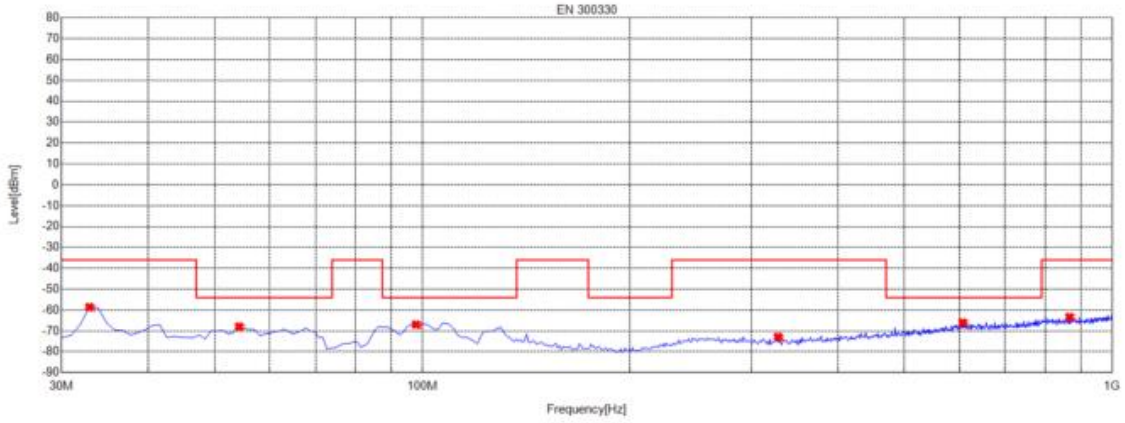
FREQUENCY RANGE (ABOVE 30MHZ)

EUT OPERATION MODE – HORIZONTAL



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	32.91	-87.57	-58.39	-36.00	22.39	29.18	360	Horizontal
2	54.25	-96.17	-68.47	-54.00	14.47	27.70	170	Horizontal
3	98.87	-86.41	-65.86	-54.00	11.86	20.55	160	Horizontal
4	266.68	-100.49	-72.04	-36.00	36.04	28.45	100	Horizontal
5	473.29	-101.69	-70.29	-54.00	16.29	31.40	330	Horizontal
6	782.72	-101.03	-64.03	-54.00	10.03	37.00	340	Horizontal

EUT OPERATION MODE – VERTICAL



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	32.91	-87.82	-58.64	-36.00	22.64	29.18	310	Vertical
2	54.25	-95.64	-67.94	-54.00	13.94	27.70	320	Vertical
3	97.9	-87.73	-66.98	-54.00	12.98	20.75	260	Vertical
4	327.79	-101.07	-72.89	-36.00	36.89	28.18	230	Vertical
5	607.15	-100.84	-66.01	-54.00	12.01	34.83	330	Vertical
6	867.11	-100.62	-63.37	-36.00	27.37	37.25	280	Vertical

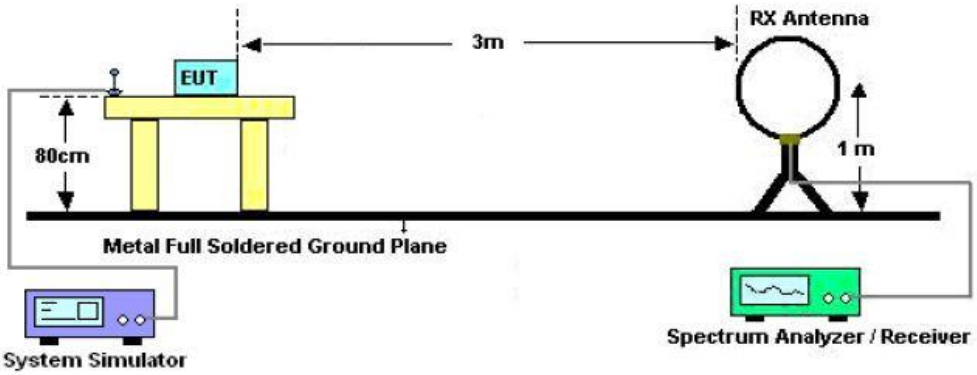
6.4 ETSI EN 300 330 Subclasses 4.4.2: Receiver spurious radiation

MEASUREMENT EQUIPMENT USED:

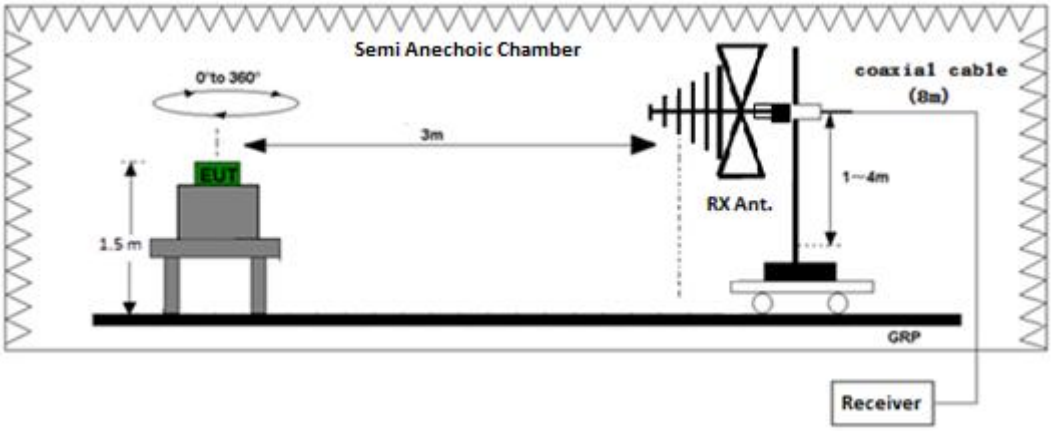
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
EMI Test Receiver	R&S	ESCI	100694	Jun. 02, 2024	Jun. 01, 2025
Amplifier	Schwarzbeck	BBV 9718	9718-205	Jun. 02, 2024	Jun. 01, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-494	Jan. 05, 2023	Jan. 04, 2025
WIDEBAND REQUENCY ANTENNA	SCHWARZBECK	VULB9168	VULB9168-D69250	May 11, 2023	May 10, 2025
LOOP ANTENNA	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:

FREQUENCY RANGE (9KHZ-30MHZ)



FREQUENCY RANGE (ABOVE 30MHZ)



TEST RESULT AND LIMIT

FREQUENCY RANGE (9KHZ-30MHZ)

Frequency (MHz)	Distance (m)	Maximum Field Strength Limit (dBμA/m Q.P.)
9 kHz ≤ f < 10 MHz	10	5.5dB μ A/m at 9 kHz descending 3 dB/oct
10 MHz ≤ f < 30 MHz	10	-25 dB μ A/m

RECEIVER MODE					
Frequency	Reading level	Total Factor	Emission level	10M Limit	Margin
(MHz)	(dBμA/m)	(dB)	(dBμA/m)	(dBμA/m)	(dBμA/m)
--	--	--	--	5.5 dBuA/m at 9KHz descending 3dB/oct (9KHz – 10MHz)	--
--	--	--	--		--
--	--	--	--	-25 dBuA/m (10MHz – 30MHz)	--
--	--	--	--		--

Remark:

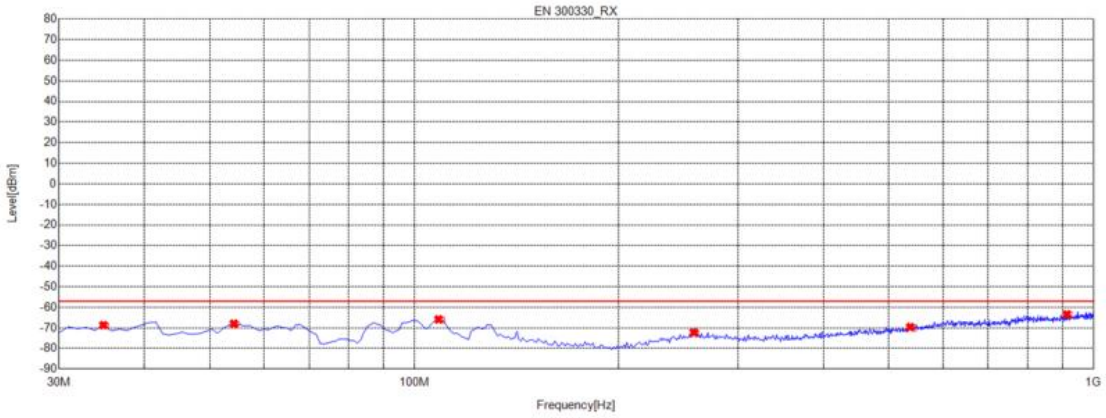
(1) Corrected Power (dBm) = Total Factor + Reading Level

(2) Measuring frequencies from 9KHz to the 30MHz.

(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

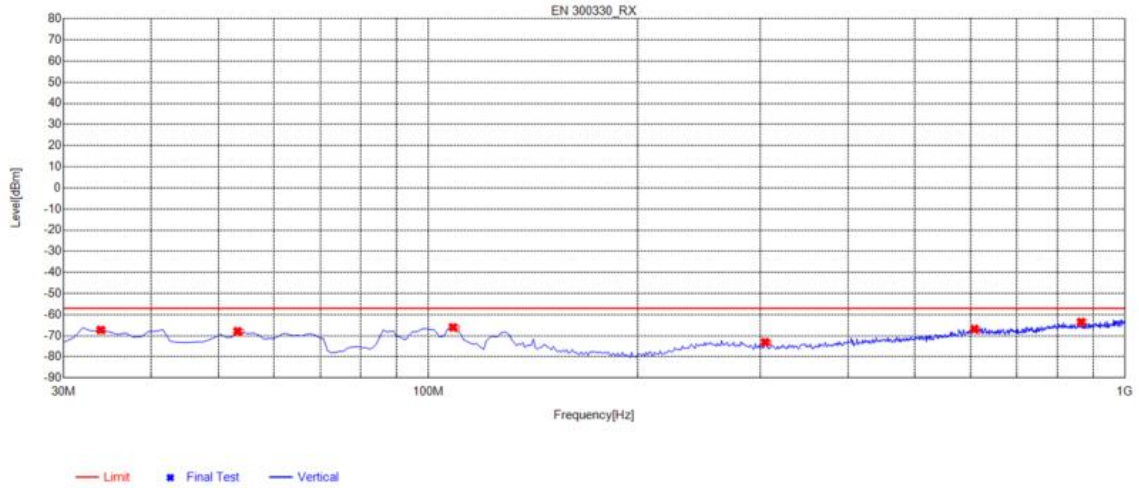
FREQUENCY RANGE (ABOVE 30MHZ)

EUT OPERATION MODE – HORIZONTAL



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	34.85	-97.93	-68.67	-57.00	11.67	29.26	160	Horizontal
2	54.25	-95.67	-67.97	-57.00	10.97	27.70	250	Horizontal
3	108.57	-86.44	-65.85	-57.00	8.85	20.59	20	Horizontal
4	257.95	-100.81	-72.24	-57.00	15.24	28.57	330	Horizontal
5	537.31	-102.17	-69.60	-57.00	12.60	32.57	210	Horizontal
6	913.67	-101.20	-63.41	-57.00	6.41	37.79	80	Horizontal

EUT OPERATION MODE – VERTICAL



NO.	Freq. [MHz]	Reading [dBm]	Level [dBm]	Limit [dBm]	Margin [dB]	Factor [dB]	Angle [°]	Polarity
1	33.88	-96.47	-67.26	-57.00	10.26	29.21	170	Vertical
2	53.28	-95.80	-67.88	-57.00	10.88	27.92	60	Vertical
3	108.57	-86.61	-66.02	-57.00	9.02	20.59	200	Vertical
4	304.51	-101.11	-73.08	-57.00	16.08	28.03	210	Vertical
5	608.12	-101.70	-66.87	-57.00	9.87	34.83	60	Vertical
6	865.17	-100.77	-63.53	-57.00	6.53	37.24	270	Vertical

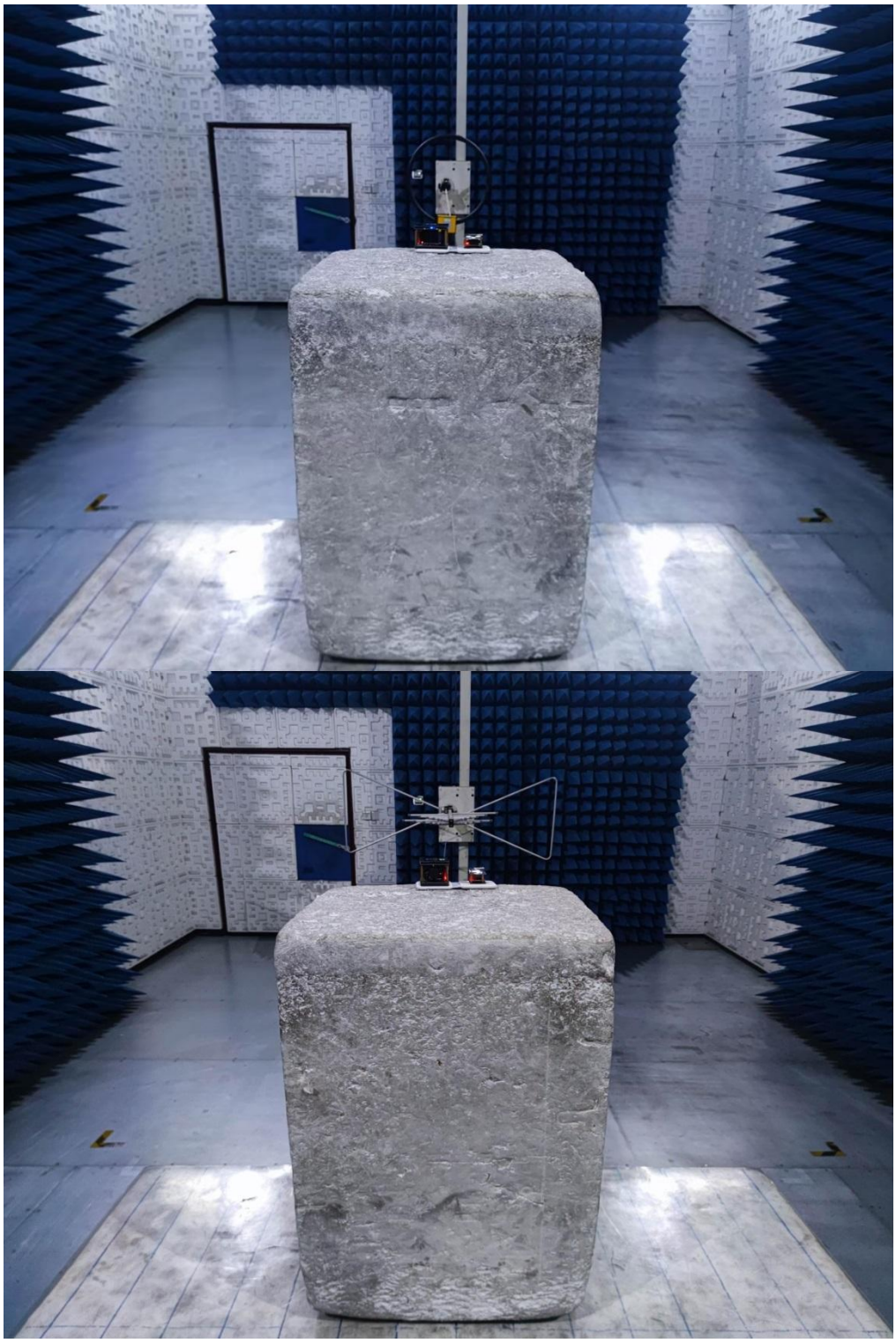
7. ETSI EN 300 330 V2.1.1: INTERPRETATION OF MEASUREMENT RESULTS

All the measurement equipments and accessories have been carefully selected to meet the maximum measurement uncertainty specified below:

RF Frequency	± 1 x 10^{-7}
RF Power, Conducted	± 0.75dB
Maximum Frequency Deviation: _ Within 300Hz and 6KHz of Audio Frequency _ Within 6KHz and 25KHz of Audio Frequency	 ± 5% ± 3dB
Adjacent channel power	± 3dB
Conducted Emission of Transmitter, Valid Up to 12.75GHz	± 4dB
Conducted Emissions of Receivers	± 3dB
Radiated Emission of Transmitter, Valid Up to 12.75GHz	± 6dB
Radiated Emissions of Receivers	± 6dB

P.S. Uncertainty figures are valid to confidence level of 95% calculated according to the methods described in the ETR 028[3].

APPENDIX I PHOTOGRAPHS OF TEST SETUP



APPENDIX II PHOTOGRAPHS OF TEST SETUP

Refer to the Report No.: AGC05443240930AP01

----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.

RF Test Report

Report No.: AGC05443240930ER02

PRODUCT DESIGNATION	:	Foldable wireless charger
BRAND NAME	:	N/A
MODEL NAME	:	MO2445
APPLICANT	:	MID OCEAN BRANDS B.V.
DATE OF ISSUE	:	Sep. 27, 2024
STANDARD(S)	:	ETSI EN 303 417 V1.1.1(2017-09)
REPORT VERSION	:	V1.0

***A**ttestation of **G**lobal **C**ompliance (Shenzhen) Co., Ltd.*

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 27, 2024	Valid	Initial Release

TABLE OF CONTENTS

1. 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
Factory	MID OCEAN BRANDS B.V.
Address	7/F. Kings Tower , 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Product Designation	Foldable wireless charger
Brand Name	N/A
Test Model	MO2445
Date of receipt of test item	N/A
Date of test	N/A
Date of receipt of test item	Sep. 10, 2024
Date of Test:	Sep. 10, 2024~ Sep. 27, 2024
Deviation	None
Condition of Test Sample	Normal
Test Result	Pass
Report Template	AGCRT-EC-RF

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

Prepared By	Bibo Zhang (Project Engineer)	Sep. 27, 2024
Reviewed By	Calvin Liu (Reviewer)	Sep. 27, 2024
Approved By	Max Zhang Authorized Officer	Sep. 27, 2024

2. EUT DESCRIPTION

Details of technical specification refer to the description in follows:

Hardware Version	V1.0
Software Version	V1.0
Operate Frequency	110kHz-205kHz
Modulation Type	ASK
OCW	Energy transmission: Low channel 0.947kHz, Middle Channel 0.958kHz, High channel 0.971kHz Data communication: 0.839kHz
Test Channels	Energy transmission: Low channel 119.6kHz, Middle Channel 152.4kHz, High channel 198.2kHz Data communication: 147.9kHz
Antenna Type	Coil Antenna
Operational Mode	Mode 1: base station in stand-by, idle mode Mode 3: communication Mode 4: energy transmission
EUT Input& Output Rating	Input(Type-C):DC 5V/2A,9V/2A Output:DC5V/0.3A,5V/1A,7.5V/1A,9V/1.12A,9V/1.66A
Wireless Charging Output Power	5W,7.5W,10W,15W

NOTE: 1. For more information, please refer to User's Manual.

2. During the initial establishment of the charging mode (mode 2), no or very low emission occur (below the sensitivity level of the test set-up), so the mode 2 can be assumed as irrelevant for the test.

3. Mode 3 and mode 4 have been performed within one set-up, worst-case alignment. But each mode have been tested separately with specific test software.

4. The maximum temperature of 40 is not a standard requirement and is measured according to the maximum service temperature stated by the manufacturer.

5. The communication frequency 147.9kHz corresponds to the maximum field strength.

3. DESCRIPTION OF TEST ITEMS

Harmonised Standard ETSI EN 303 417		
Requirement		Requirement Conditionality
No	Description	
1	Permitted range of operating frequencies	☒ Applicable ☐ Not Applicable
2	Operating frequency ranges	☒ Applicable ☐ Not Applicable
3	H-field requirements	☒ Applicable ☐ Not Applicable
4	Transmitter spurious emissions	☒ Applicable ☐ Not Applicable
5	Transmitter out of band (OOB) emissions	☒ Applicable ☐ Not Applicable
6	WPT system unwanted conducted emissions	☐ Applicable ☒ Not Applicable
7	Receiver blocking	☒ Applicable ☐ Not Applicable

4. TEST FACILITY

Test 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

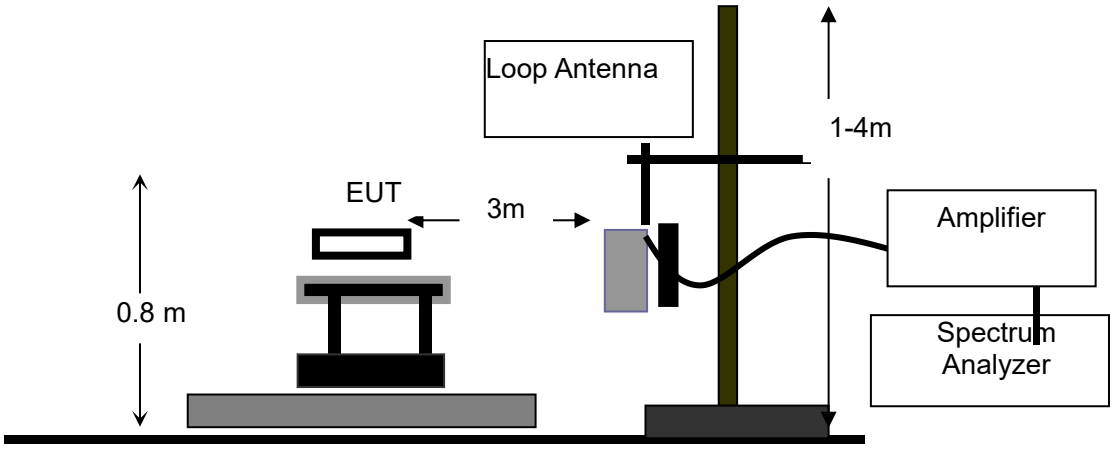
5. ETSI EN 303 417 REQUIREMENT

5.1 TRANSMITTER H-FIELD REQUIREMENTS

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 01, 2024	Jan. 31, 2025
Power amplifier	AR	75A250	18464	N/A	N/A
Active Loop Antenna (9K-30Mhz)	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:



TEST LIMITS:

The H-field limit in dBµA/m at 3 m, H_{3m}, is determined by the following equation:

$$H_{3m} = H_{10m} + C_3 \quad (F.2)$$

Where: H_{10m} is the H-field limit in dBµA/m at 10 m distance according to the present document; and C_3 is a conversion factor in dB determined from figure F.2.

According to EN 303 417 Tablet 3,

Table 3: H-field limits

Frequency range [MHz]	H-field strength limit [dBµA/m at 10 m]	Comments
0,019 ≤ f < 0,021	72	
0,059 ≤ f < 0,061	69,1 descending 10 dB/dec above 0,059 MHz	See note 1
0,079 ≤ f < 0,090	67,8 descending 10 dB/dec above 0,079 MHz	See note 2
0,100 ≤ f < 0,119	42	
0,119 ≤ f < 0,135	66 descending 10 dB/dec above 0,119 MHz	See note 1
0,135 ≤ f < 0,140	42	
0,140 ≤ f < 0,1485	37,7	
0,1485 ≤ f < 0,30	-5	
6,765 ≤ f < 6,795	42	
NOTE 1: Limit is 42 dBµA/m for the following spot frequencies: 60 kHz ± 250 Hz and 129,1 kHz ± 500 Hz. NOTE 2: At the time of preparation of the present document the feasibility of increased limits for high power wireless power transmission systems to charge vehicles [i.4] was prepared. New specific requirements for such systems (e.g. higher H-field emission limits in the 79 - 90 kHz band) will be reflected within a future revision of the present document.		

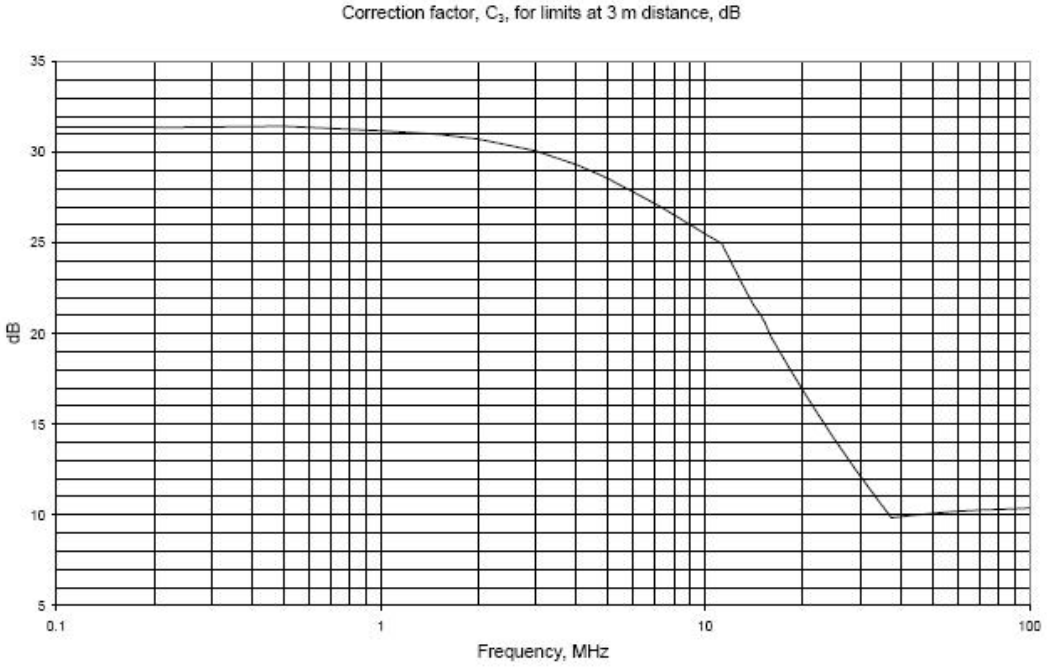


Figure F.2: Conversion factor C_3 versus frequency

TEST PROCEDURE:

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.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
The H-field is measured with a shielded loop antenna connected to a measurement receiver.
The measuring bandwidth and detector type of the measurement receiver shall be in accordance with EN 300 330 V2.1.1 Table 11.
The EUT operate with modulation under normal and extreme conditions.

TEST RESULTS:

Test Mode: Mode 1

Extreme conditions state

conditions	Test Temp	Test Volt.(V)	Note
TN/VN	25℃	9.0	Worst case
TL/VL	0℃	8.1	
TH/VL	40℃	8.1	
TL/VH	0℃	9.9	
TH/VH	40℃	9.9	

Test results tested at 3m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1385	23.53	-4.28	19.25	73.20

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1385	23.53	-35.48	-11.95	42.00

Test Mode: Mode 3

Extreme conditions state

conditions	Test Temp	Test Volt.(V)	Note
TN/VN	25℃	9.0	Worst case
TL/VL	-10℃	8.1	
TH/VL	45℃	8.1	
TL/VH	-10℃	9.9	
TH/VH	45℃	9.9	

Test results tested at 3m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1479	23.53	-7.42	16.11	68.90

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1479	23.53	-38.62	-15.09	37.70

Test Mode: Mode 4

Extreme conditions state

conditions	Test Temp	Test Volt.(V)	Note
TN/VN	25℃	9.0	Worst case
TL/VL	-10℃	8.1	
TH/VL	45℃	8.1	
TL/VH	-10℃	9.9	
TH/VH	45℃	9.9	

Test results tested at 3m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1196	23.53	-6.35	17.18	97.18
0.1524	23.53	-5.92	17.61	26.20
0.1982	23.53	-1.58	21.95	26.20

Test results calculated to 10m test sites:

Freq.	Antenna Factor	Reading Level	Corrected Level	Limit
(MHz)	(dB/m)	(dBuA)	(dBuA/m)	(dBuA/m)
0.1196	23.53	-37.55	-14.02	65.98
0.1524	23.53	-37.12	-13.59	-5.00
0.1982	23.53	-32.78	-9.25	-5.00

Remark:

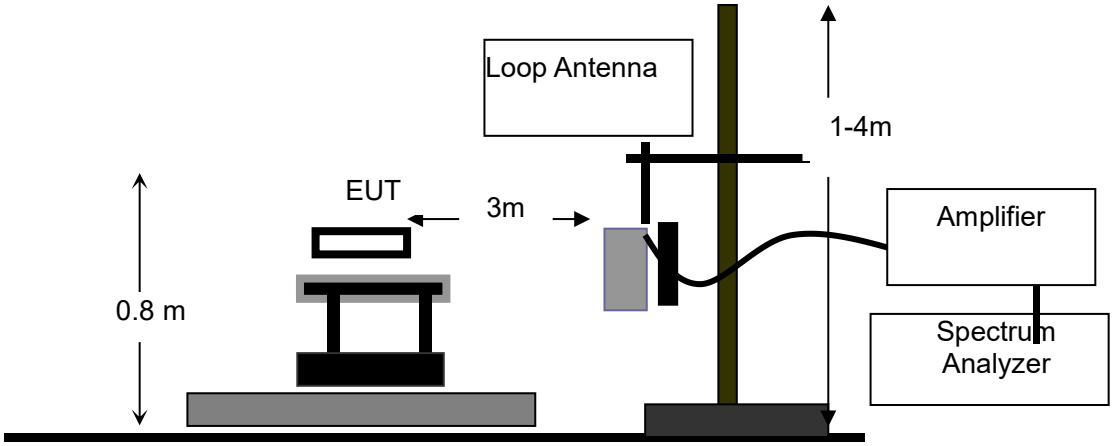
(1) Corrected Level (dBuA/m) = Reading Level + Antenna Factor
(2) For the calculated method, please refer to Annex F at EN 300330.
(3) All extreme conditions were considered for test, but only record the worst case.

5.2 OPERATING FREQUENCY RANGES

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 01, 2024	Jan. 31, 2025
Power amplifer	AR	75A250	18464	N/A	N/A
Active loop antenna(9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:



TEST PROCEDURE:

1). The EUT was placed on a turn table which is 0.8m above ground plane.

2). The EUT was modulated by normal signal,

3).Set SPA Center Frequency = fundamental frequency, RBW=VBW=200Hz, Span=5kHz, Detector=RMS. The 99 % OBW function shall be used to determine the operating frequency range, fH is the frequency of the upper marker resulting from the OFR, fL is the frequency of the lower marker resulting from the OFR.

4), Both normal test condition and extreme test condition applied

LIMITS

The operating frequency range for emissions shall be within one of the following limits: 19 - 21 kHz, 59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz.

TEST RESULT

Test Mode: Mode 1

Frequency Range Test Result

Test Temperature	Test Voltage (V DC)	Lowest Frequency(KHz)	Highest Frequency (KHz)	Limit
0℃	8.1	138.259	138.739	100kHz≤&≤300kHz
	8.1	138.262	138.737	100kHz≤&≤300kHz
25℃	9.0	138.259	138.741	100kHz≤&≤300kHz
40℃	9.9	138.261	138.737	100kHz≤&≤300kHz
	9.9	138.263	138.740	100kHz≤&≤300kHz
OFR		0.482kHz		
Results		PASS		

Test Mode: Mode 3

Frequency Range Test Result

Test Temperature	Test Voltage (V DC)	Lowest Frequency(KHz)	Highest Frequency (KHz)	Limit
-10℃	8.1	147.485	148.318	100kHz≤&≤300kHz
	8.1	147.482	148.315	100kHz≤&≤300kHz
25℃	9.0	147.481	148.320	100kHz≤&≤300kHz
45℃	9.9	147.482	148.315	100kHz≤&≤300kHz
	9.9	147.482	148.315	100kHz≤&≤300kHz
OFR		0.839kHz		
Results		PASS		

Test Mode: Mode 4

Frequency Range Test Result

Test Temperature	Test Voltage (V DC)	Lowest Frequency(K Hz)	Highest Frequency (KHz)	Limit
-10℃	8.1	119.131	198.681	100kHz≤&≤300kHz
	8.1	119.129	198.682	100kHz≤&≤300kHz
25℃	9.0	119.127	198.686	100kHz≤&≤300kHz
45℃	9.9	119.128	198.681	100kHz≤&≤300kHz
	9.9	119.130	198.684	100kHz≤&≤300kHz
OFR		79.559kHz		
Results		PASS		

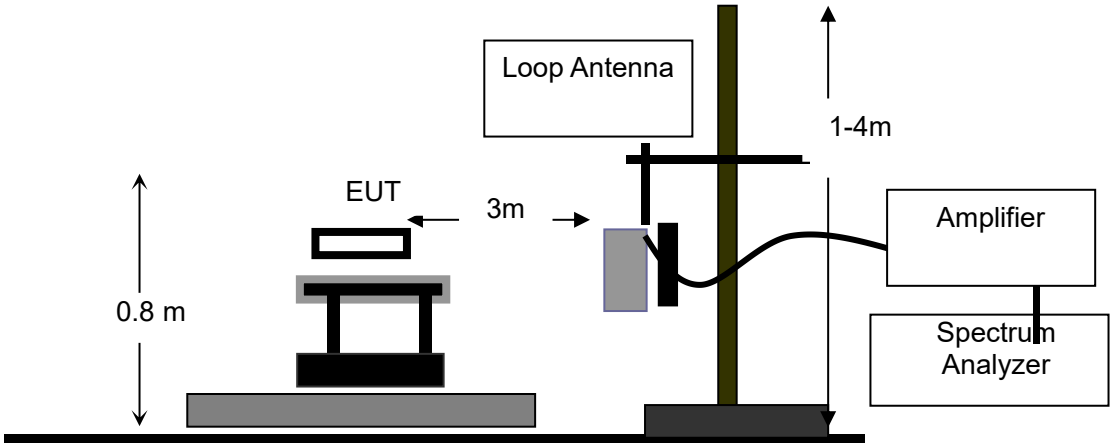
NOTE: *All the modes had been tested, but only the worst data recorded in the report.*

5.3 TRANSMITTER OUT OF BAND (OOB) EMISSIONS

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 01, 2024	Jan. 31, 2025
Power amplifer	AR	75A250	18464	N/A	N/A
Active loop antenna(9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026

TEST SETUP:



TEST PROCEDURE:

1). The EUT was placed on a turn table which is 0.8m above ground plane.

2). The EUT was modulated by normal signal,

3).Set SPA Center Frequency = fundamental frequency, RBW=VBW=200Hz, Span=5KHz, Detector=RMS. The 99 % OBW function shall be used to determine the operating frequency range, fH is the frequency of the upper marker resulting from the OFR, fL is the frequency of the lower marker resulting from the OFR.

4), Both normal test condition and extreme test condition applied

LIMITS

The OOB limits are visualized in figures; they are descending from the intentional limits from Table 3 at fH/fL with 10 dB/decade.

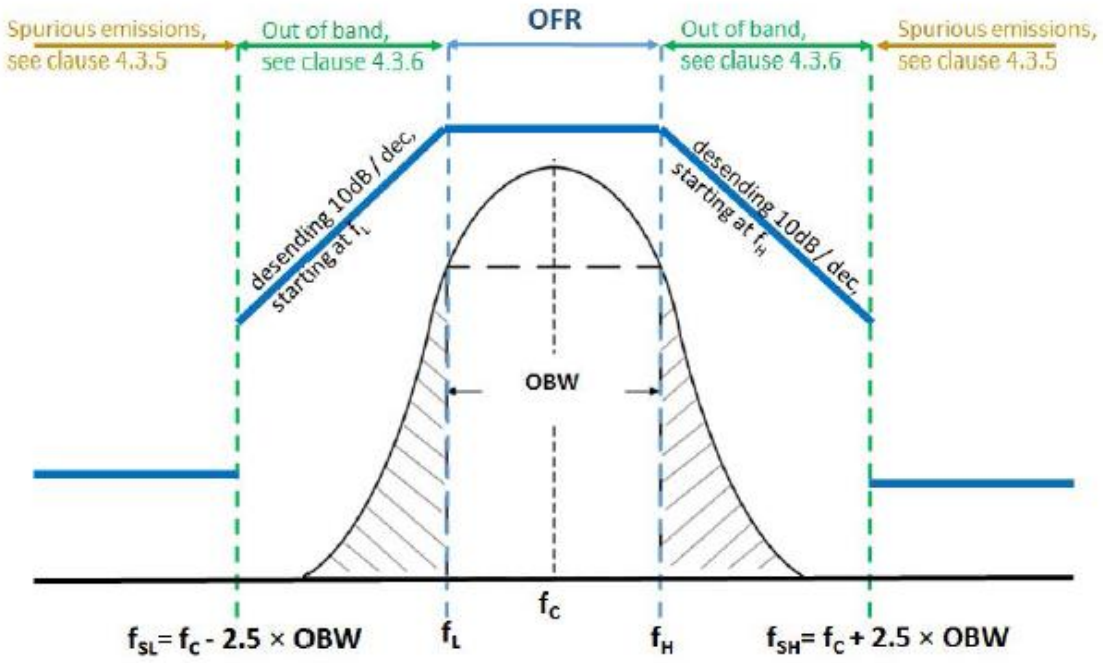


Figure 4: Out of band and spurious domain of a single frequency WPT system

TEST RESULT

Test Mode: Mode 1

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
fSL -fL	137.295 to 138.259	Less than -21.11	See figure 4	Pass
fL	138.259	-21.11	42.00	Pass
fH	138.741	-21.63	42.00	Pass
fH - fSH	138.741 to 139.705	Less than -21.63	See figure 4	Pass

Test Mode: Mode 3

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
fSL-fL	145.803 to 147.481	Less than -24.25	See figure 4	Pass
fL	147.481	-24.25	37.70	Pass
fH	148.320	-24.77	37.70	Pass
fH-fSH	148.32 to 149.998	Less than -24.77	See figure 4	Pass

Test Mode: Mode 4

Frequency range (KHz)		Maximum level @10m (dBuA/m)	Limit @ 10m (dBuA/m)	Result
fSL-fL	117.233 to 119.127	Less than -23.18	See figure 4	Pass
fL	119.127	-23.18	65.98	Pass
fH	198.686	-18.93	-5.00	Pass
fH-fSH	198.686 to 200.628	Less than -18.93	See figure 4	Pass

NOTE: *All the modes had been tested, but only the worst data recorded in the report.*

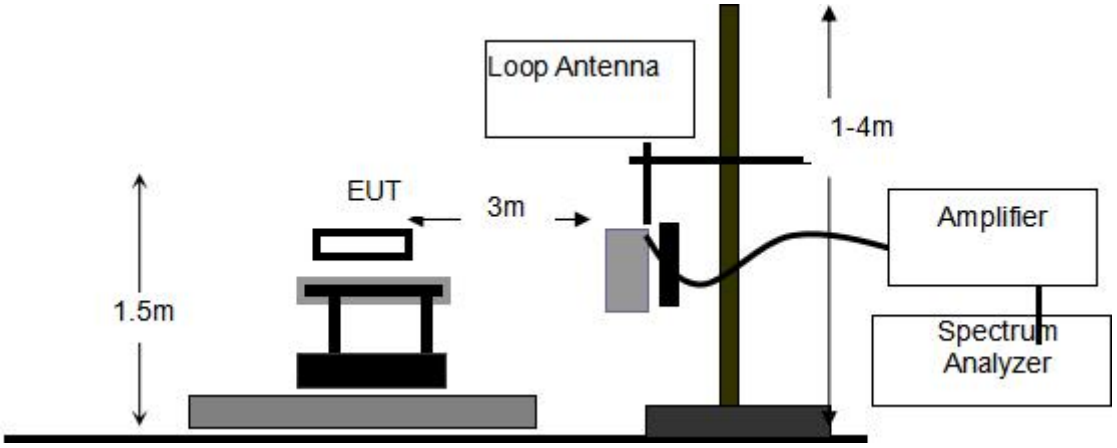
5.4 TRANSMITTER SPURIOUS EMISSIONS

MEASUREMENT EQUIPMENT USED:

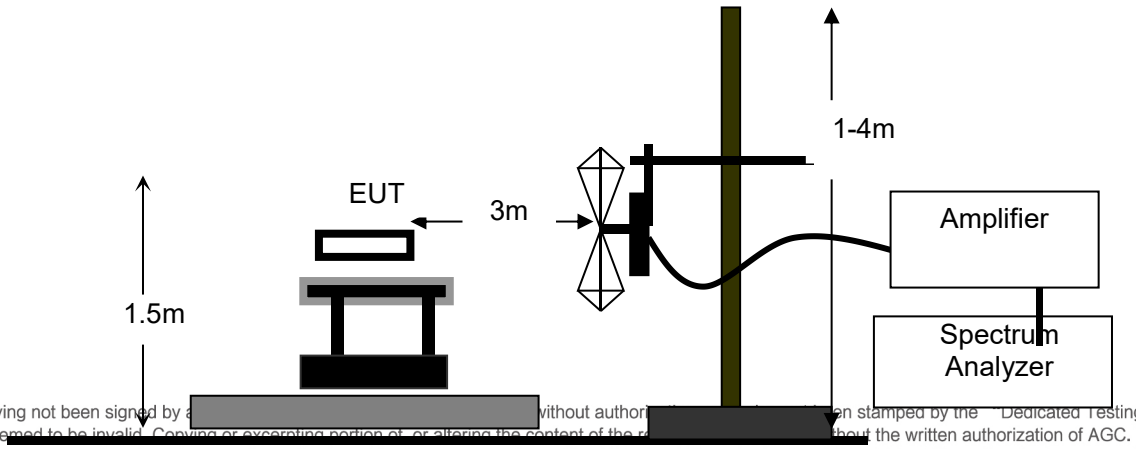
NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
Test Receiver	R&S	ESCI	10096	Feb. 01, 2024	Jan. 31, 2025
Power amplifer	AR	75A250	18464	N/A	N/A
Active loop antenna(9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026
ANTENNA	SCHWARZBECK	VULB9168	494	Jan. 05, 2023	Jan. 04, 2025

TEST SETUP:

FREQUENCY RANGE (9KHZ-30MHZ)

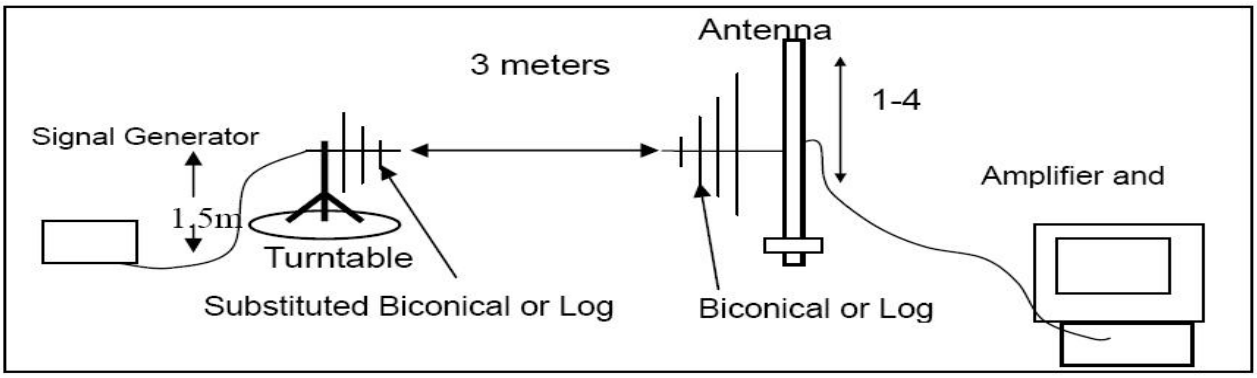


FREQUENCY RANGE (ABOVE 30MHZ)



SUBSTITUTION METHOD:

RADIATED BELOW 1GHZ



TEST PROCEDURE:

For test method of frequency range (9kHz-30MHz)

The EUT was placed on the top of an insulating table 1.5 meters above the ground at a semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
The H-field is measured with a shielded loop antenna connected to a measurement receiver.
The measuring bandwidth and detector type of the measurement receiver shall be in accordance with EN 300 330 Table 1.

For test method of frequency range (30 MHz-1000MHz)

EUT was placed on a 1.5m height wooden table. The search antenna is placed at 3m distances from the EUT and search antenna height is from 1-4m. With the transmitter operating at continuously mode, the turntable was slowly rotated to locate the direction of maximum emission. Once maximum direction is determined, the search antenna was raised and lowered in both vertical and horizontal polarizations.

The EUT was removed from the turntable and replaced with a linearly polarized antenna connected to a calibrated RF signal generator. The RF generator was set to a measured emission frequency and the search antenna was raised and lowered to produce a maximum received reading. The generator output was increased to match the radiated emission reading measured previously, and the result expressed in dB EIRP or ERP, correcting for substitution antenna gain at each frequency.

LIMITS OF RADIATED DISTURBANCES

Below 30MHz

Table 4

State (see note)	Frequency 9 kHz ≤ f < 10 MHz	Frequency 10 MHz ≤ f < 30 MHz
Operating	27 dBμA/m at 9 kHz descending 10 dB/dec	-3,5 dBμA/m
Standby	5,5 dBμA/m at 9 kHz descending 10 dB/dec	-25 dBμA/m
NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.		

ABOVE 30MHz

Table 5

State (see note)	47 MHz to 74 MHz 87,5 MHz to 118 MHz 174 MHz to 230 MHz 470 MHz to 790 MHz	Other frequencies between 30 MHz to 1 000 MHz
Operating	4 nW	250 nW
Standby	2 nW	2 nW
NOTE: "Operating" means mode 2, 3 and 4 according to Table 2; "standby" means mode 1 according to Table 2.		

TEST LIMITS & RESULT

Test Mode: Mode 3
FREQUENCY RANGE (9KHZ-30MHZ)

Operation Mode					
Frequency	Reading level	Total Factor	Emission level	Limit	Margin
(MHz)	(dB μA)	(dB/m)	(dB μA/m)	(dBμA/m)	(dBμA/m)
0.026	-7.78	-7.96	-15.74	22.35	38.09
0.289	-11.46	-7.96	-19.42	11.93	31.35
0.838	-12.63	-7.96	-20.59	7.31	27.89
1.613	-14.60	-3.98	-18.58	4.46	23.04
2.290	-13.22	-3.09	-16.31	2.94	19.25
3.802	-12.76	-1.25	-14.01	0.74	14.76

Remark:
(1) Corrected Power (dBm)= Total Factor + Reading Level
(2) Measuring frequencies from 9KHz to the 30MHz.
(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

FREQUENCY RANGE (ABOVE 30MHZ)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
82.53	32.98	V	-60.08	0.04	0.22	-59.90	-36.00	23.90
157.83	27.80	V	-66.70	0.06	0.90	-65.86	-36.00	29.86
354.81	31.71	V	-66.53	0.25	6.02	-60.76	-36.00	24.76
424.78	26.15	V	-73.79	0.33	7.02	-67.10	-36.00	31.10
626.77	29.40	V	-71.33	0.51	7.14	-64.70	-54.00	10.70
758.95	27.70	V	-70.99	0.61	6.50	-65.10	-36.00	29.10
95.43	31.81	H	-63.14	0.04	1.80	-61.38	-54.00	7.38
154.31	27.88	H	-66.63	0.06	0.70	-65.99	-36.00	29.99
350.63	29.48	H	-69.45	0.25	5.50	-64.19	-36.00	28.19
433.14	27.95	H	-70.73	0.34	6.69	-64.38	-36.00	28.38
632.75	29.33	H	-70.89	0.52	7.26	-64.14	-54.00	10.14
727.09	27.95	H	-72.27	0.59	6.65	-66.21	-36.00	30.21

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Mode: Mode 4(The low channel is the worst case)
FREQUENCY RANGE (9KHZ-30MHZ)

Operation Mode					
Frequency	Reading level	Total Factor	Emission level	Limit	Margin
(MHz)	(dB μA)	(dB/m)	(dB μA/m)	(dBμA/m)	(dBμA/m)
0.066	-7.66	-7.96	-15.62	18.38	34.00
0.233	-11.56	-7.96	-19.52	12.88	32.40
0.485	-12.60	-7.96	-20.56	9.68	30.24
1.558	-14.36	-3.98	-18.34	4.62	22.95
2.288	-13.18	-3.09	-16.27	2.95	19.22
4.347	-12.64	-1.25	-13.89	0.16	14.05

Remark:

(1) Corrected Power (dBm) = Total Factor + Reading Level

(2) Measuring frequencies from 9KHz to the 30MHz.

(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

FREQUENCY RANGE (ABOVE 30MHZ)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
86.34	32.41	V	-60.93	0.04	0.84	-60.13	-36.00	24.13
155.65	28.42	V	-65.60	0.06	0.70	-64.96	-36.00	28.96
352.36	31.70	V	-66.52	0.25	5.76	-61.01	-36.00	25.01
429.22	27.70	V	-72.18	0.34	6.92	-65.60	-36.00	29.60
630.33	29.38	V	-70.31	0.52	7.30	-63.53	-54.00	9.53
756.97	27.26	V	-72.64	0.61	6.40	-66.85	-36.00	30.85
98.42	31.26	H	-62.49	0.04	1.50	-61.03	-54.00	7.03
152.88	26.69	H	-66.32	0.06	0.70	-65.68	-36.00	29.68
353.95	29.59	H	-68.41	0.25	5.89	-62.77	-36.00	26.77
432.88	27.42	H	-72.95	0.34	6.76	-66.53	-36.00	30.53
629.02	29.56	H	-70.42	0.51	7.26	-63.67	-54.00	9.67
730.72	28.35	H	-71.94	0.59	6.80	-65.73	-36.00	29.73

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with "--" remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.

Test Mode: Mode 1
FREQUENCY RANGE (9KHZ-30MHZ)

Standby Mode					
Frequency	Reading level	Total Factor	Emission level	Limit	Margin
(MHz)	(dB μA)	(dB/m)	(dB μA/m)	(dBμA/m)	(dBμA/m)
0.026	-7.42	-7.96	-15.38	0.91	16.29
0.274	-10.36	-7.96	-18.32	-9.33	8.99
0.516	-11.18	-7.96	-19.14	-12.08	7.05
1.872	-23.41	-3.98	-27.39	-17.68	9.71
2.639	-28.01	-3.09	-31.10	-19.17	11.93
4.586	-26.77	-1.25	-28.02	-21.57	6.45

Remark:

(1) Corrected Power (dBm) = Total Factor + Reading Level

(2) Measuring frequencies from 9KHz to the 30MHz.

(3) Data of measurement within this frequency range shown " -- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

FREQUENCY RANGE (ABOVE 30MHZ)

Transmitter Spurious Emission below 1GHz (30MHz-1GHz)

Frequency	Reading Level	Antenna	S.G.	Cable Loss	Ant.Gain	Emission Level	Limit	Margin
(MHz)	(dBuv/m)	Polarization	(dBm)	(dB)	(dBi)	(dBm)	(dBm)	(dB)
91.25	26.32	V	-69.01	0.04	1.48	-67.57	-57.00	10.57
157.06	28.19	V	-65.16	0.06	0.90	-64.32	-57.00	7.32
357.03	29.02	V	-69.88	0.25	6.41	-63.72	-57.00	6.72
533.26	27.01	V	-71.66	0.44	6.78	-65.33	-57.00	8.33
673.02	31.88	V	-67.30	0.55	6.68	-61.17	-57.00	4.17
833.51	30.89	V	-68.04	0.66	6.51	-62.19	-57.00	5.19
132.52	27.65	H	-66.08	0.05	0.06	-66.07	-57.00	9.07
162.43	29.68	H	-64.85	0.06	1.36	-63.55	-57.00	6.55
343.98	29.66	H	-69.32	0.24	5.64	-63.92	-57.00	6.92
537.86	28.20	H	-72.25	0.45	7.02	-65.67	-57.00	8.67
676.31	29.42	H	-69.10	0.55	6.56	-63.08	-57.00	6.08
831.78	27.15	H	-72.23	0.66	6.37	-66.52	-57.00	9.52

Note: 1.The margins of the other spectrum are not exceeding the minimum value of margin, and this part of the results without recording in the test report.

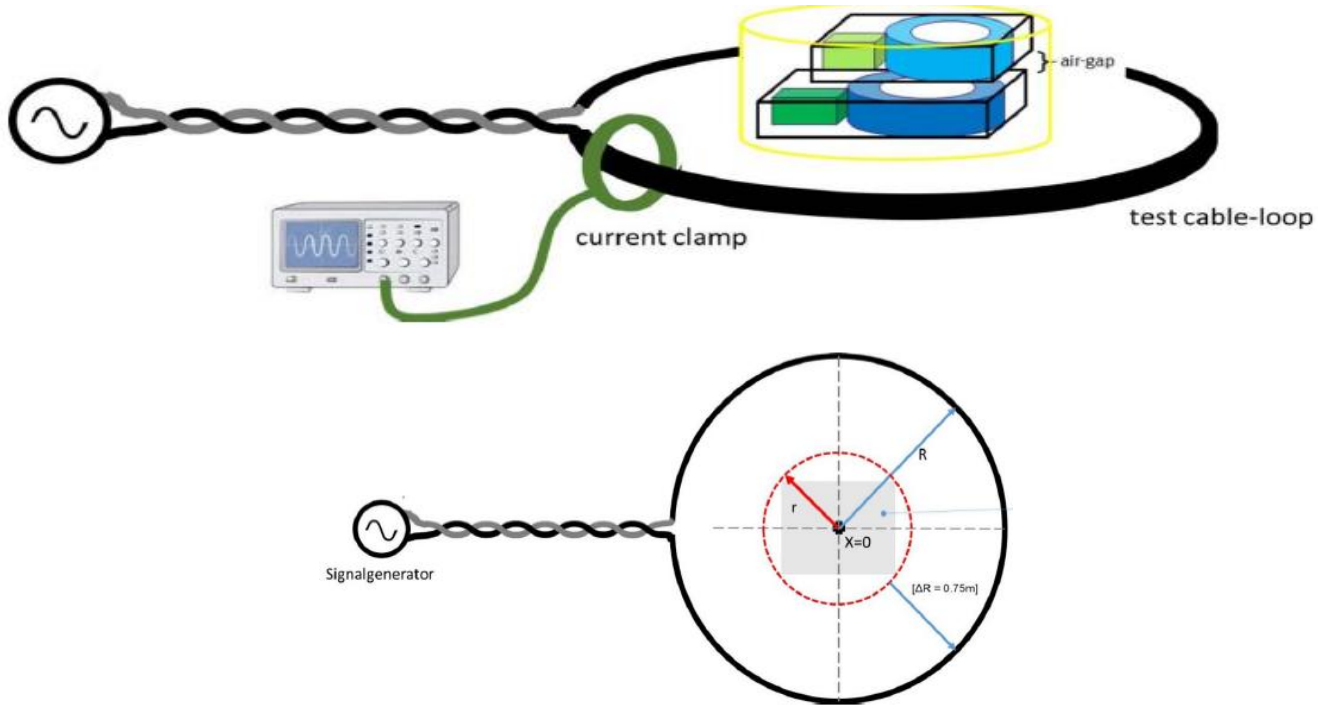
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser, with “--” remark, if no specific emission from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that’s already beyond the background noise floor.

5.5 RECEIVER BLOCKING

MEASUREMENT EQUIPMENT USED:

NAME OF EQUIPMENT	MANUFACTURER	MODEL	S/N	Cal. Date	Cal. Due
MXG X-Series Vector Signal Generator	Agilent	N5182B	MY53050647	Feb. 01, 2024	Jan. 31, 2025
Active loop antenna(9K-30MHz)	ZHINAN	ZN30900C	18051	Mar. 05, 2024	Mar. 04, 2026
Clamp meter	PROVA	PROVA-11	17200101	Sep. 02, 2024	Sep. 01, 2025

TEST SETUP:



TEST PROCEDURE:

1). The test shall be carried out inside a test chamber according to clauses C.1.1 and C.1.2 in ETSI EN 300 330

2). A test loop with a radius r shall be used to create the magnetic field; the test loop shall lie on a non-metallic ground and the minimum distance to metallic objects (e.g. ground plane) shall be 0,75 m.The EUT shall be placed to the centre of the test-loop

3).The test loop shall be sufficiently large so that the test loop itself does not influence the WPT system; The radius R of the test-loop shall be in minimum ΔR = 0,75 m larger than the maximum dimension r of the EUT.

$$R >= r + \Delta R.$$

The maximum H-Field can be calculated from the loop current I (into the test-loop) with the following formula:

$$H=I/2R$$

4)The required output current to achieve the required magnetic field at the WPT system shall be generated with a signal generator (unmodulated signal) at the test frequencies. For each test frequency the "reaction" of the device shall be recorded and checked against the performance criterion

LIMITS

The EUT shall achieve the wanted performance criterion, in the presence of the blocking signal.

Table 6: Receiver blocking limits

	In-band signal	OOB signal	Remote-band signal
Frequency	Centre frequency (f_c) of the WPT system (see clause 4.3.3)	f = f_c ± F (see note)	f = f_c ± 10 × F (see note)
Signal level field strength at the EUT	72 dBµA/m	72 dBµA/m	82 dBµA/m
NOTE: F = OFR see clause 4.3.3.			

TEST RESULT

Test Mode: Mode 1

Test Frequency(KHz)		Signal level @ EUT	Performance	Result
In-band signal	138.500	72dBuA/m	No function loss	Pass
OOB signal	138.018	72dBuA/m	No function loss	Pass
	138.982	72dBuA/m	No function loss	Pass
Remote-band signal	133.680	82dBuA/m	No function loss	Pass
	143.320	82dBuA/m	No function loss	Pass

Test Mode: Mode 3

Test Frequency(KHz)		Signal level @ EUT	Performance	Result
In-band signal	147.900	72dBuA/m	No function loss	Pass
OOB signal	147.061	72dBuA/m	No function loss	Pass
	148.739	72dBuA/m	No function loss	Pass
Remote-band signal	139.510	82dBuA/m	No function loss	Pass
	156.290	82dBuA/m	No function loss	Pass

6. INTERPRETATION OF MEASUREMENT RESULTS

All the measurement equipments and accessories have been carefully selected to meet the maximum measurement uncertainty specified below:

RF Frequency	± 1 x 10^{-7}
RF Power, Conducted	± 0.75dB
Maximum Frequency Deviation: _ Within 300Hz and 6KHz of Audio Frequency _ Within 6KHz and 25KHz of Audio Frequency	± 5% ± 3dB
Adjacent channel power	± 3dB
Conducted Emission of Transmitter, Valid Up to 12.75GHz	± 4dB
Conducted Emissions of Receivers	± 3dB
Radiated Emission of Transmitter, Valid Up to 12.75GHz	± 6dB

P.S. Uncertainty figures are valid to confidence level of 95% calculated according to the methods described in the ETSI TR 100 028.

APPENDIX I: PHOTOGRAPHS OF TEST SETUP

APPENDIX II: PHOTOGRAPHS OF THE EUT

Refer to the Report No.: AGC05443240930AP01

----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.

Health Test Report

Report No.: AGC05443240930EH01

PRODUCT DESIGNATION	:	Foldable wireless charger
BRAND NAME	:	N/A
MODEL NAME	:	MO2445
APPLICANT	:	MID OCEAN BRANDS B.V.
DATE OF ISSUE	:	Sep. 27, 2024
STANDARD(S)	:	EN IEC 62311:2020 EN 50665:2017
REPORT VERSION	:	V1.0

Attestation of Global Compliance (Shenzhen) Co., Ltd.

REPORT REVISE RECORD

Report Version	Revise Time	Issued Date	Valid Version	Notes
V1.0	/	Sep. 27, 2024	Valid	Initial release

TABLE OF CONTENTS

1. GENERAL INFORMATION

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
Factory	MID OCEAN BRANDS B.V.
Address	7/F. Kings Tower , 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Product Designation	Foldable wireless charger
Brand Name	N/A
Test Model	MO2445
Series Model	N/A
Difference Description	N/A
Date of receipt of test item	Sep. 10, 2024
Date of test	Sep. 10, 2024~ Sep. 27, 2024
Test Result	Pass

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

Prepared By	Bibo Zhang (Project Engineer)	Sep. 27, 2024
Reviewed By	Calvin Liu (Reviewer)	Sep. 27, 2024
Approved By	Max Zhang Authorized Officer	Sep. 27, 2024

2. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

Product Designation	Foldable wireless charger
Brand Name	N/A
Test Model	MO2445
Hardware Version	V1.0
Software Version	V1.0
Operation Frequency	WPT Band 1: 110-205HZ WPT Band 2: 325-330HZ
Modulation type	ASK
Antenna Type	Coil Antenna
EUT Input& Output Rating	Input(Type-C):DC 5V/2A,9V/2A Output:DC5V/0.3A,5V/1A,7.5V/1A,9V/1.12A,9V/1.66A
Wireless Charging Output Power	1.5W,5W,7.5W,10W,15W

Note: For more details, please refer to the user's manual of the EUT.

3. RF EXPOSURE MEASUREMENT

3.1 INTRODUCTION

This International Standard applies to electronic and electrical equipment for which no dedicated product- or product family standard regarding human exposure to electromagnetic fields applies.

This generic standard applies to electronic and electrical apparatus for which no dedicated product- or product family standard regarding human exposure to electromagnetic fields applies.

The frequency range covered is 0 Hz to 300 GHz.

The object of this generic standard is to provide assessment methods and criteria to evaluate such equipment against basic restrictions or reference levels on exposure of the general public related to electric, magnetic, electromagnetic fields and induced and contact current.

NOTE: This standard is intended to cover both intentional and non-intentional radiators. If the equipment complies with the requirements in another relevant standard, e.g. EN 62479 covering low power equipment, then the requirements of this standard (IEC 62311) are considered to be met and the application of this standard to that equipment is not necessary.

3.2 TEST LIMIT

According to EN 62311:2020, Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz).

Annex F Measurement of E and H field

A commonly used probe size is 100 cm^2, also the contribution of the three axes X, Y and Z can be evaluated separately.

Reference levels for electric, magnetic and electromagnetic fields (0 Hz to 300 GHz, unperturbed rms values)

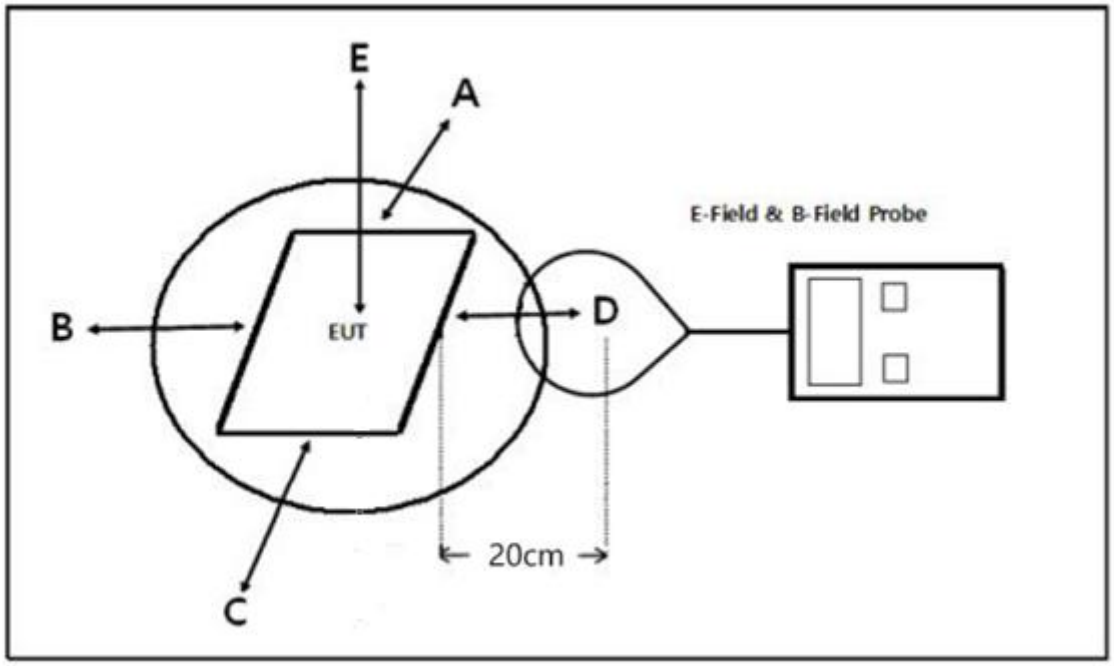
Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density S_{eq} (W/m^2)
0-1 Hz	—	$3,2 \times 10^4$	4×10^4	—
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	—
8-25 Hz	10 000	4 000/f	5 000/f	—
0,025-0,8 kHz	250/f	4/f	5/f	—
0,8-3 kHz	250/f	5	6,25	—
3-150 kHz	87	5	6,25	—
0,15-1 MHz	87	0,73/f	0,92/f	—
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	—
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375\ f^{1/2}$	$0,0037\ f^{1/2}$	$0,0046\ f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

3.3 EVALUATION METHODS

Measurement of E and H field

A commonly used probe size is 100 cm^2, also the contribution of the three axes X, Y and Z can be evaluated separately.

For Mobile：



Note: Position A: Front of EUT; Position B: Left of EUT; Position C: back of EUT; Position D: Right of EUT; Position E: Top of EUT

The measurement probe was placed at test distance (20cm) which is between the edge and center of probe

Based on the above standard limit, any device with output power below 5A/m cannot produce an exposure exceeding this restriction under the most pessimistic exposure conditions.

4. TEST EQUIPMENT LIST

Description	Manufacturer	Model	S/N	Cal. Date	Cal. Due
Broadband Field Meter	Narda Safety Test Solutions GmbH	ELT-400	J-0004	Jun. 06, 2024	Jun. 05, 2025
Probe FHP	Narda Safety Test Solutions GmbH	2300/90.10	J-0015	Jun. 06, 2024	Jun. 05, 2025

5. EUT OPERATION CONDITION

NO.	TEST MODE DESCRIPTION
1	AC/DC Adapter + EUT + Wireless load 1 (15W)
2	AC/DC Adapter + EUT + Wireless load 1 (10W)
3	AC/DC Adapter + EUT + Wireless load 1 (7.5W)
4	AC/DC Adapter + EUT + Wireless load 1 (5W)
5	AC/DC Adapter + EUT + Wireless load 1 + Wireless load 2 (15W)
6	AC/DC Adapter + EUT(Null load)
Note: All modes have been tested and only the worst mode test data recorded in the test report.	

4. TEST RESULT

Mobile

Frequency	Maximum Radiated H-Field at 20cm		Limit	Result
MHz	A/m		A/m	Pass/Fail
147.9kHz	position E	0.059	5	Pass
	position A	0.042		
	position B	0.047		
	position C	0.045		
	position D	0.046		

Since Radiated H-Field at worse case is 0.059A/m which cannot exceed the exempt condition, 5A/m. It is deemed to full fit the requirement of RF exposure basic restriction specified in EC Council Recommendation (1999/519/EC).

Frequency	Maximum Radiated H-Field at 20cm		Limit	Result
kHz	A/m		A/m	Pass/Fail
325.7kHz	position E	0.069	1.20	Pass
	position A	0.057		
	position B	0.052		
	position C	0.054		
	position D	0.056		

Since Radiated H-Field at worse case is 0.069A/m which cannot exceed the exempt condition, 2.03A/m. It is deemed to full fit the requirement of RF exposure basic restrisction specified in EC Council Recommendation (1999/519/EC).

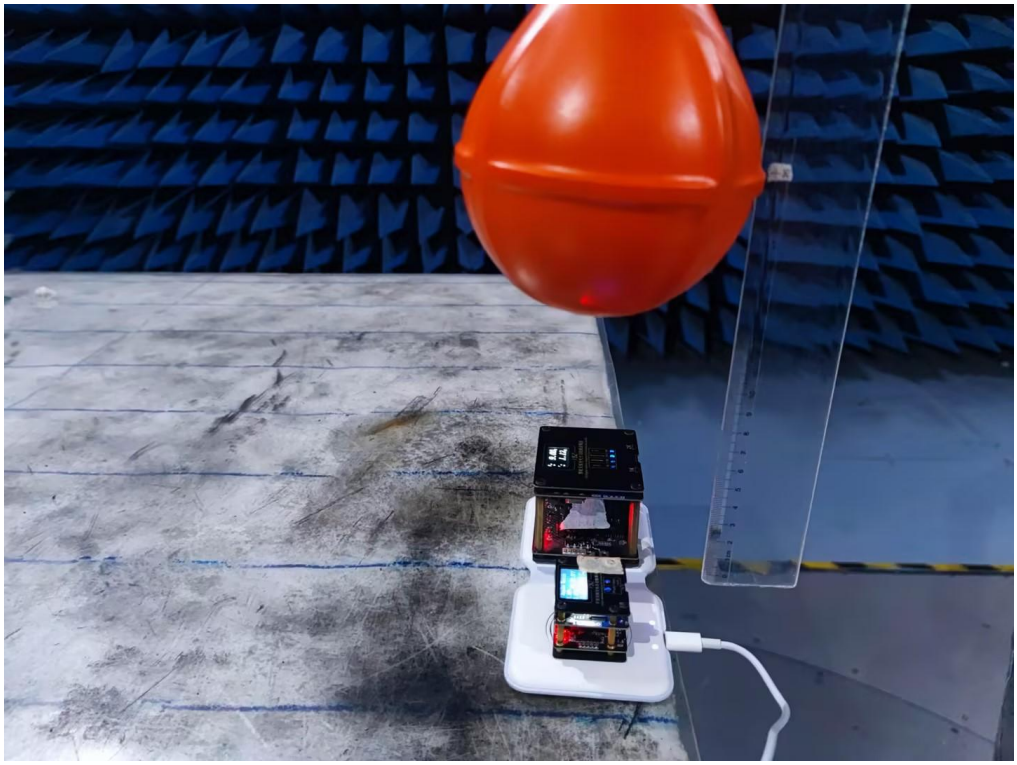
5. CONCLUSION

Remark: EUT meets the basic requirements in the standard.

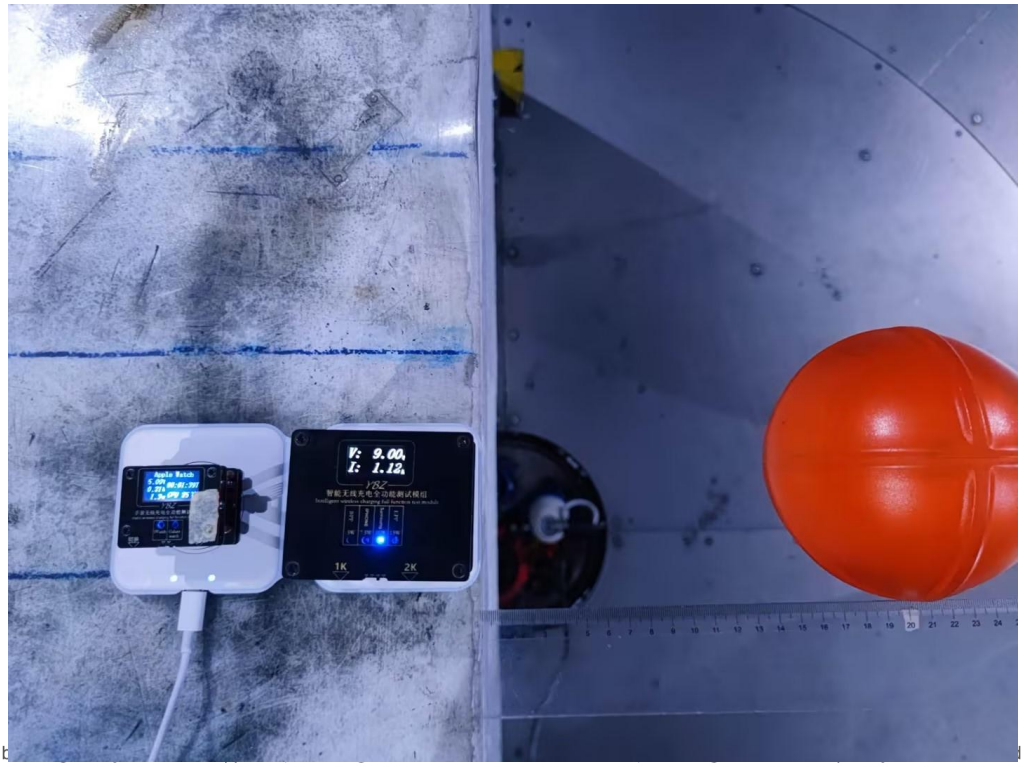
APPENDIX I: PHOTOGRAPHS OF TEST SETUP

For Frequency: (Mobile)

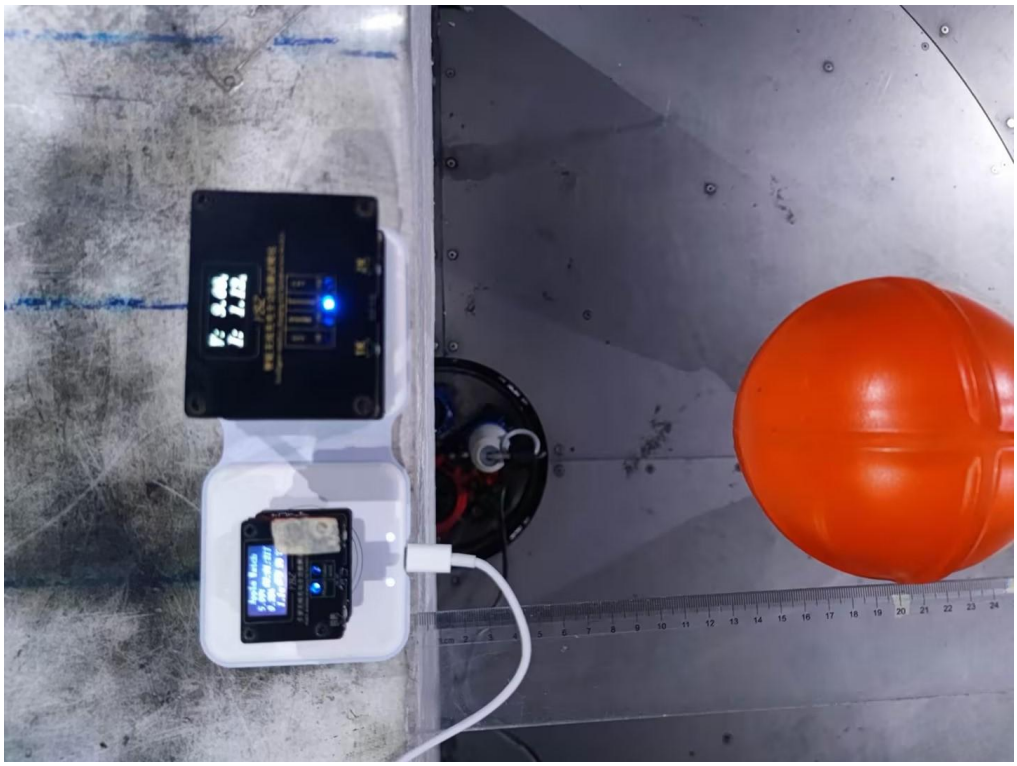
WPT Equipment_ Position E



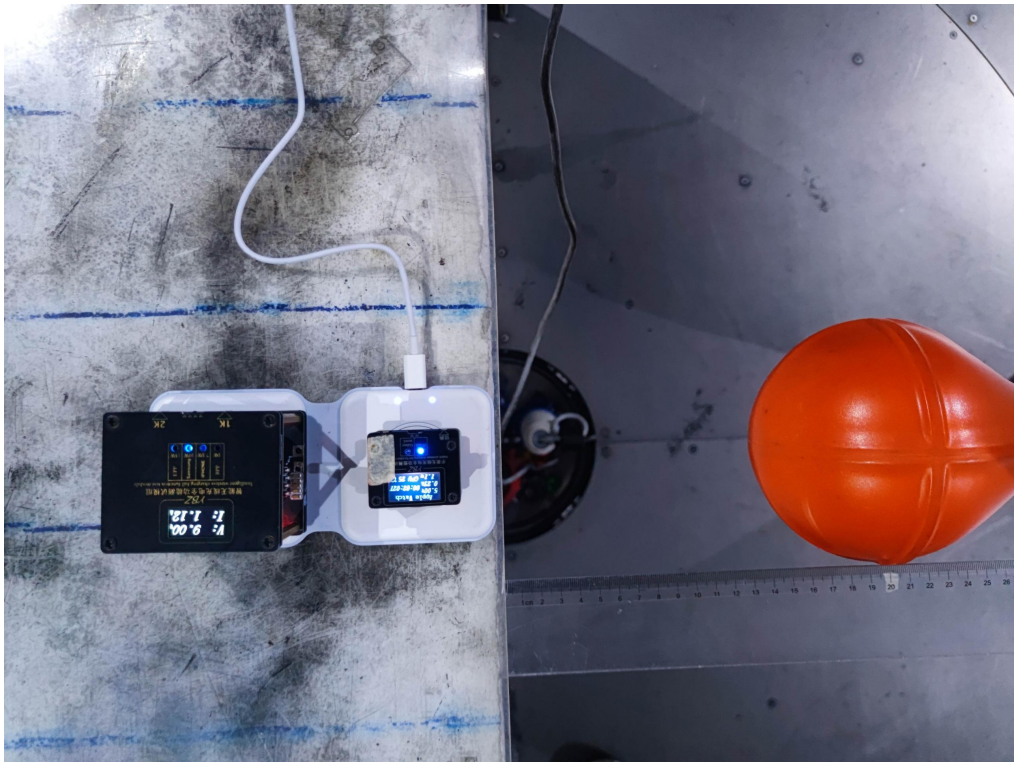
WPT Equipment_ Position A



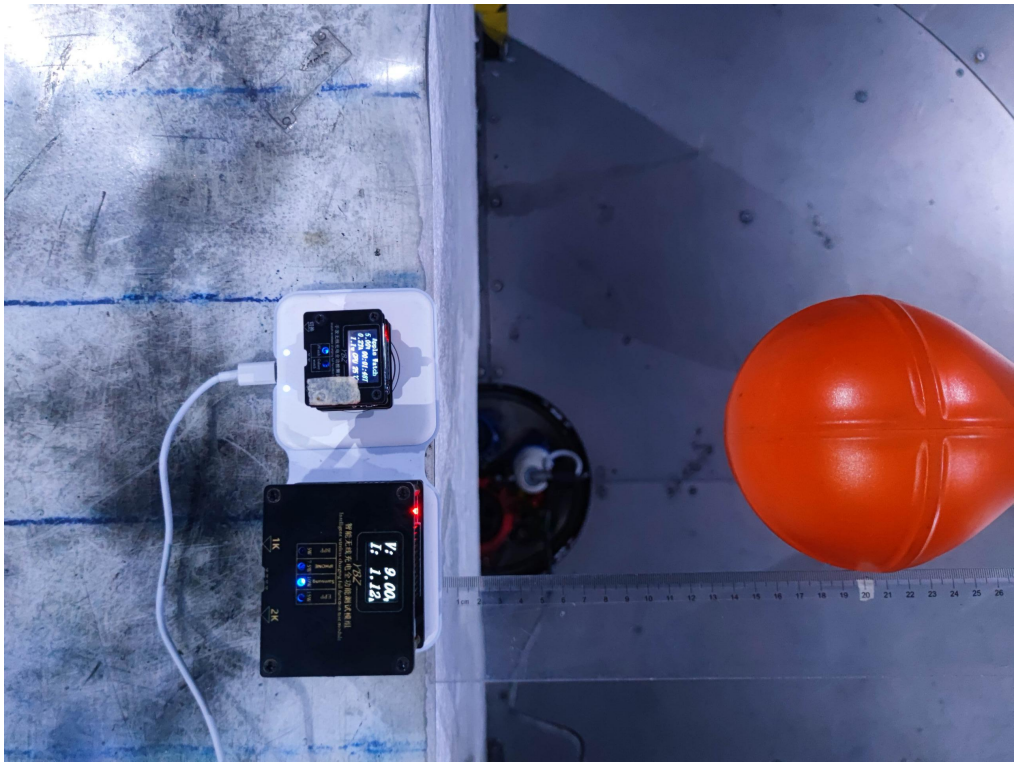
WPT Equipment_ Position B



WPT Equipment_ Position C



WPT Equipment_ Position D



----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.