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TESTING
CNAS L6478

TEST REPORT

Reference No.	:	WTF24F06129670W001
Applicant	:	Mid Ocean Brands B.V.
Address	:	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	:	114538
Address	:	---
Product Name	:	Wireless 10000 mAh Power bank
Model No.	:	MO9821
Test specification	:	ETSI EN 303 417 V1.1.1 (2017-09)
Date of Receipt sample	:	2024-06-06
Date of Test	:	2024-06-17
Date of Issue	:	2024-06-25
Test Report Form No.	:	WEW-303417A-01B
Test Result	:	**Pass**

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

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1 Test Summary

Radio Spectrum			
Test	Test Requirement	Reference	Result
Permitted range of operating frequencies	ETSI EN 303 417 V1.1.1	4.3.2	Pass
Operating frequency ranges	ETSI EN 303 417 V1.1.1	4.3.3	Pass
H-field requirements	ETSI EN 303 417 V1.1.1	4.3.4	Pass
Transmitter spurious emissions	ETSI EN 303 417 V1.1.1	4.3.5	Pass
Transmitter out of band (OOB) emissions	ETSI EN 303 417 V1.1.1	4.3.6	Pass
WPT system unwanted conducted emissions	ETSI EN 303 417 V1.1.1	4.3.7	N/A
Receiver blocking	ETSI EN 303 417 V1.1.1	4.4.2	Pass

Remark:

Pass The EUT complies with the essential requirements in the standard

Fail The EUT does not comply with the essential requirements in the standard

N/A Not Applicable

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3 General Information

3.1 General Description of E.U.T.

Product Name ..... : Wireless 10000 mAh Power bank

Model No. ..... : MO9821

Remark ..... : ---

Rating ..... : Micro Input: DC 5V/2A or DC 9V/2A
USB Output: DC5V/2.4A (Total)
Type C Input: DC 5V/2A or DC 9V/2A
Type C Output: DC 5V/2A or DC 9V/2A or DC 12V /1.5A
Wireless Output: DC5V/1A or DC 7.5V/1A or DC 9V/1.12 or DC 9V/1.66A

Battery Capacity ..... : 10000mAh/37Wh (Li-Polymer battery)

Adapter Model..... : ---

3.2 Details of E.U.T.

Frequency Bands ..... : 110-205kHz

Radiated H-Field ..... : 20.65 dBuA/m(@3m)

Antenna installation ..... : Coil Antenna

Overview of operational modes within a WPT system

Operational Mode	Set-up	Function of base station	Function of mobile device	Test scenario	Conformance Requirements
Mode 1: base station in stand-by, idle mode	Single device	Transmitter	Not applicable	Single radiation test (TX) with the base station/charging pad. The test set-up as described in clause 6.1.2 shall be used.	Operating frequency range (clause 4.3.3) H-Field emission (clause 4.3.4) TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) Performance criteria test (RX test) (clause 4.4)
Mode 2: Communication before charging, adjustment charging mode / position	In combination	TX and RX	TX and RX	Specific test setup, declared by the manufacturer. Manufacturer shall declare the maximal distance between base station and mobile device the WPT system is able to communicate (distance D).The test setup- up shall be performed with the largest communication	Operating frequency range (clause 4.3.3) H-Field emission (clause 4.3.4) TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) Wanted performance criteria test (RX test) (clause 4.4)

Operational Mode	Set-up	Function of base station	Function of mobile device	Test scenario	Conformance Requirements
				distance.The test set-up as described in clause 6.1.3 shall be used.	
Mode3: Communication	WPT system alignment	TX and RX	TX and RX	Worst case alignment Both tests can be performed within one set-up, worst-case alignment. The test set-up as described in clause 6.1.4 shall be used.	Operating frequency range (clause 4.3.3) H-Field emission (clause 4.3.4) TX spurious (clauses 4.3.5, 4.3.6 and 4.3.7) Wanted Performance criteria test (RX test) (clause 4.4)
Mode 4: energy transmission	WPT system alignment	TX and RX	TX and RX		

3.3 Standards Applicable for Testing

The tests were performed according to following standards:

ETSI EN 303 417 V1.1.1 (2017-09)	Wireless power transmission systems, using technologies other than radio frequency beam in the 19 - 21 kHz,59 - 61 kHz, 79 - 90 kHz, 100 - 300 kHz,6 765 - 6 795 kHz ranges; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU.

3.4 Test Facility

The test facility has a test site registered with the following organizations:

- **ISED – Registration No.: 21895**

Waltek Testing Group (Foshan) Co., Ltd. has been registered and fully described in a report filed with the Innovation, Science an Economic Development Canada(ISED). The acceptance letter from the ISED is maintained in our files. Registration ISED number:21895, March 12, 2019

- **FCC – Registration No.: 820106**

Waltek Testing Group (Foshan) 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. Registration 820106, August 16, 2018

- **NVLAP – Lab Code: 600191-0**

Waltek Testing Group (Foshan) Co., Ltd. EMC Laboratory is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP/NIST). NVLAP Code: 600191-0.
This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

3.5 Subcontracted

Whether parts of tests for the product have been subcontracted to other labs:

☐ Yes ☒ No

If Yes, list the related test items and lab information:

Test items: ---

Lab information: ---

3.6 Abnormalities from Standard Conditions

None.

3.7 Disclaimer

The antenna gain information is provided by the customer. The laboratory is not responsible for the accuracy of the antenna gain information.

4 Equipment Used during Test

4.1 Equipment List

☒3m Semi-anechoic Chamber for Spurious Emission						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	3m Semi-anechoic Chamber	CHANGCHUANG	9m×6m×6m	-	2024-01-05	2025-01-04
2	EMI TEST RECEIVER	RS	ESR7	101566	2024-01-06	2025-01-05
3	Spectrum Analyzer	Agilent	N9020A	MY48011796	2024-01-04	2025-01-03
4	Trilog Broadband Antenna	SCHWARZBECK	VULB9162	9162-117	2024-01-05	2025-01-04
5	Coaxial Cable (below 1GHz)	H+S	CBL3-NN-12+3 m	214NN320	2024-01-06	2025-01-05
6	Broad-band Horn Antenna	SCHWARZBECK	BBHA 9120 D	01561	2024-01-05	2025-01-04
7	Broadband Preamplifier (Above 1GHz)	Lunar E M	LNA1G18-40	20160501002	2024-01-04	2025-01-03
8	Coaxial Cable (above 1GHz)	Times-Micorwave	CBL5-NN	-	2024-01-04	2025-01-03
☒**RF Conducted test**						
Item	**Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Last Calibration Date**	**Calibration Due Date**
1	Environmental Chamber	KSON	THS-D4C-100	5244K	2024-01-17	2025-01-16
2	Spectrum Analyzer	Agilent	N9020A	MY48011796	2024-01-04	2025-01-03
3	EXG Analog Signal Generator	Agilent	N5181A	MY48180720	2024-01-04	2025-01-03
4	RF Control Unit	CHANGCHUANG	JS0806-2	-	2024-01-04	2025-01-03
5	Wideband radio communication tester	Rohde&Schwarz	CMW500	1201.0002K50 -158178-Qf	2024-01-04	2025-01-03
6	USB Wideband Power Sensor	KEYSIGHT	U2021XA	MY56510008	2024-01-04	2025-01-03

☐: ***Not Used***

☒: ***Used***

4.2 Software List

Description	Manufacturer	Model	Version
EMI Test Software (Radiated Emission)	FARATRONIC	EZ-EMC	RA-03A1-1
RF Conducted Test	TONSCEND	JS1120-2	2.6

4.3 Special Accessories and Auxiliary Equipment

Item	Equipment	Technical Data	Manufacturer	Model No.
1.	AC Adapter	Input: AC 100-240V~, 50/60Hz, 0.5A Output: DC 5V, 2A or DC 9V, 2A	HUAWEI	HW-090200CH0

4.4 Measurement Uncertainty

Parameter	Uncertainty	Note
RF Output Power	±2.2dB	(1)
Occupied Bandwidth	±1.5%	(1)
Transmitter Spurious Emission	±3.8dB (for 25MHz-1GHz)	(1)
	±5.0dB (for 1GHz-18GHz)	(1)

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

4.5 Decision Rule

Compliance or non-compliance with a disturbance limit shall be determined in the following manner.

If U_{LAB} is less than or equal to U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;

-Non-compliance is deemed to occur is any measured disturbance level exceeds the disturbance limt.

If U_{LAB} is greater than U_{cispr}, then

-Compliance is deemed to occur if no measured disturbance level, increased by (U_{LAB}-U_{cispr}) , exceeds the disturbance limit;

-Non-compliance is deemed to occur if any measured disturbance level, increased by (U_{LAB}-U_{cispr}) , exceeds the disturbance limit.

5 Test Conditions and Test mode

The equipment under test (EUT) was configured to measure its highest possible emission/immunity level. The test modes were adapted according to the operation manual for use, the EUT was operated in the continuous transmitting mode that was for the purpose of the measurements, more detailed description as follows:

Test Mode List		
Test Mode	Description	Remark
TM1	Transmitting	/
TM2	Receiving	/

Test Conditions	
Temperature:	25°C
Relative humidity:	45%
ATM Pressure:	101.9kPa

EUT Cable List and Details			
Cable Description	Length (m)	Shielded/Unshielded	With / Without Ferrite
USB Cable	0.95	Unshielded	Without Ferrite

6 Permitted Range of Operating Frequency

6.1 Standard Applicable

1. This applies to all WPT systems.

2. The permitted range of operating frequencies denotes the frequency ranges set out in Table 1. It likewise denotes the respective frequency range for accommodation of the fundamental WPT frequency of the EUT within its operating frequency range (OFR).

3. Limits

The permitted range of operating frequency range(s) for intentional emissions shall be within 19 - 21 kHz, 59 - 61 kHz,79 - 90 kHz, 100 - 300 kHz, 6 765 - 6 795 kHz, see Table 2.

6.2 Test Procedure

Please refer to ETSI EN 303 417 subclause 6.2.2.

6.3 Test Result

Permitted range of operating frequencies				
F_L(kHz)	**F_H(kHz)**	**Limit (kHz)**		**Result**
110	205	$F_L \geq 100$	$F_H \leq 300$	Pass

7 Operating Frequency Ranges

7.1 Standard Applicable

The operating frequency range is the frequency range over which the WPT system is intentionally transmitting (all operational modes, see clause 4.2.3, Table 2).

The operating frequency range(s) of the WPT system are determined by the lowest (f_L) and highest frequency (f_H) as occupied by the power envelope.

The WPT system could have more than one operating frequency range.

For a single frequency systems the OFR is equal to the occupied bandwidth (OBW) of the WPT system.

For multi-frequency systems the OFR is described in Figures 2 and 3.

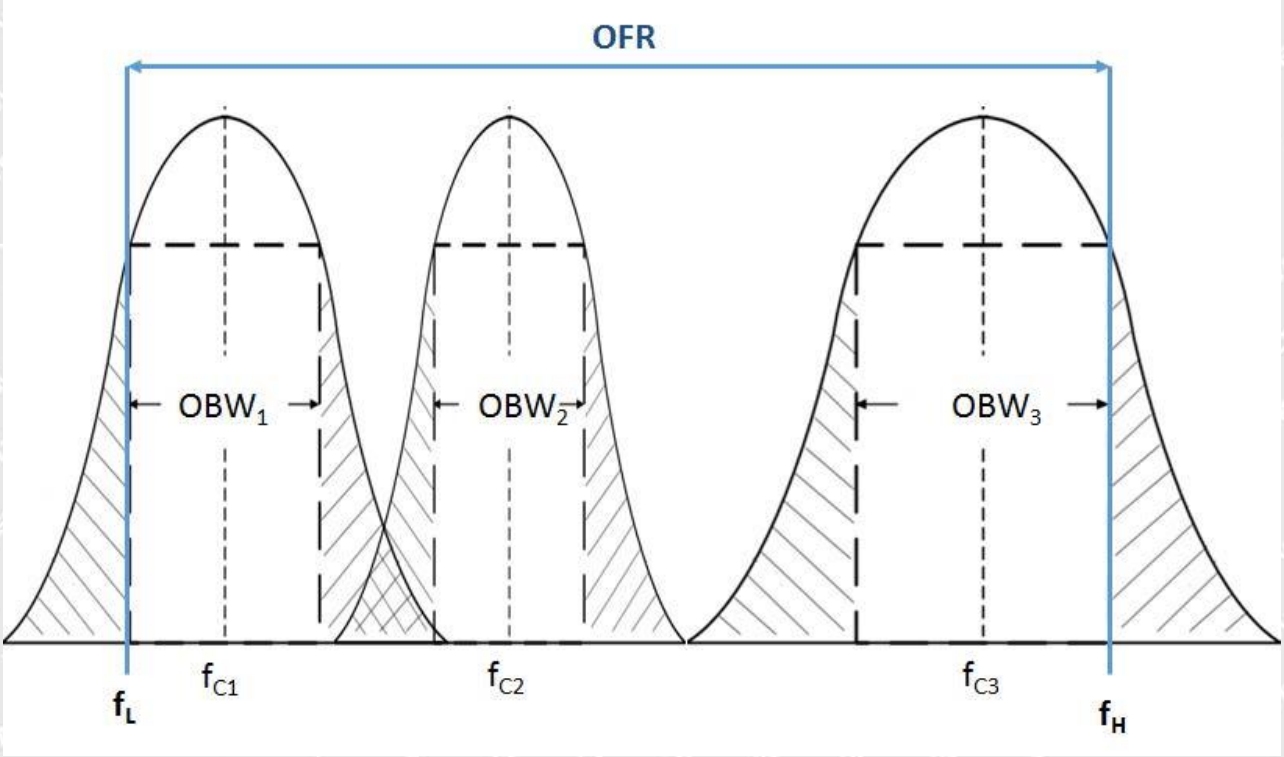


Figure 2: OFR of a multi - frequency WPT system within one frequency range of Table 2 and within one WPT system cycle time

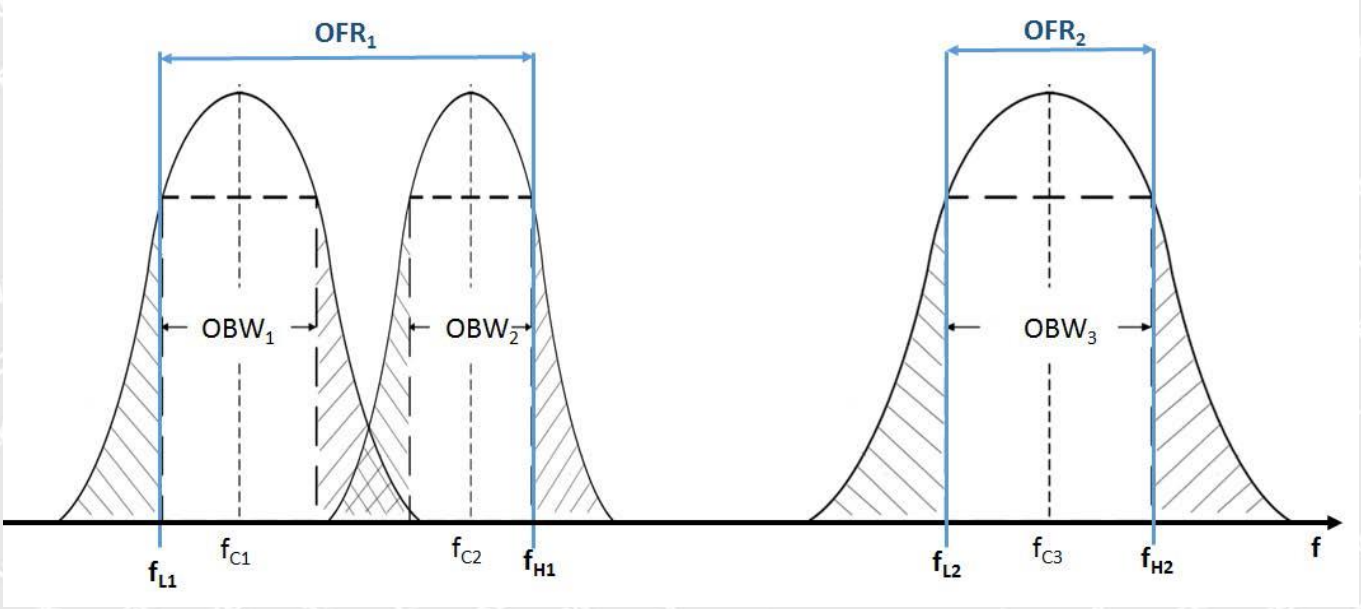


Figure 3: OFR of a multi - frequency WPT system within two frequency ranges of Table 2 and within one WPT system cycle time

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.

7.2 Test Procedure

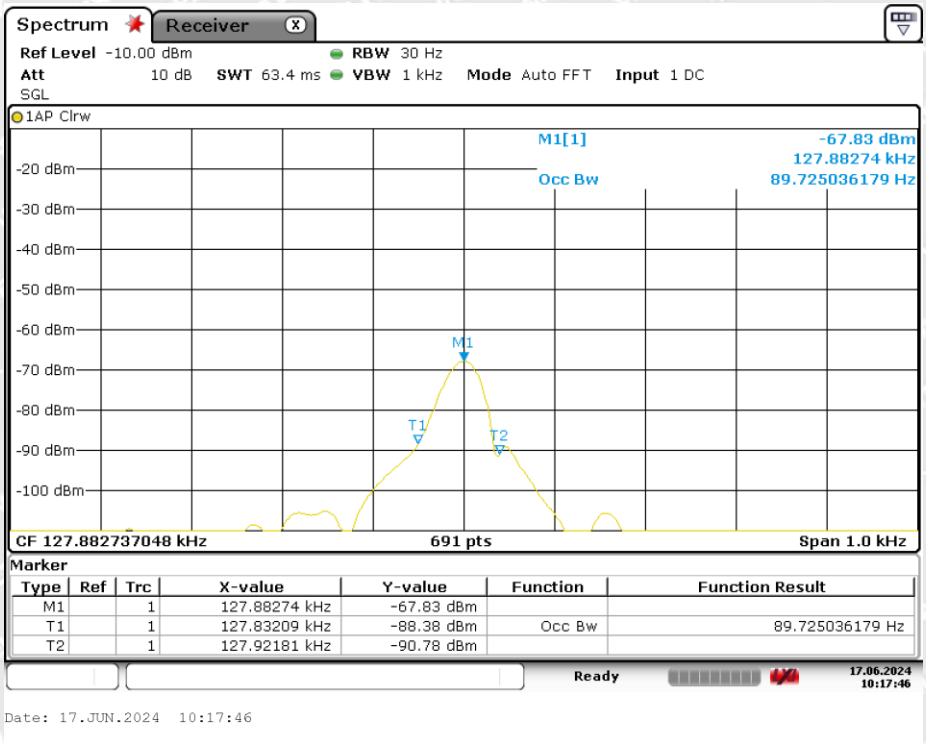
Please refer to ETSI EN 303 417 subclause 6.2.2.

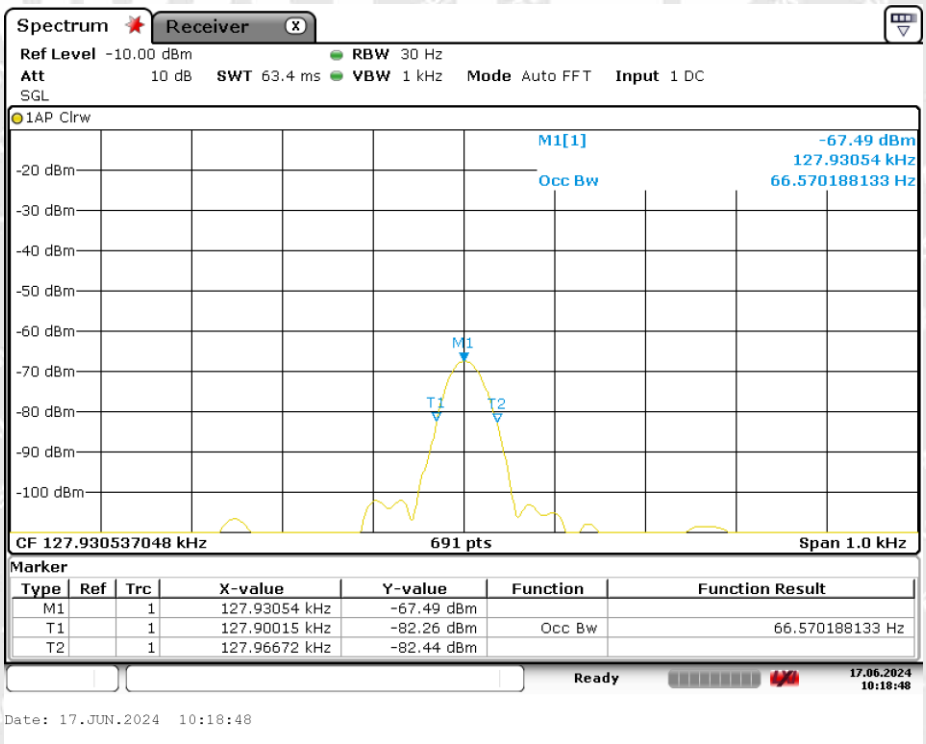
7.3 Test Result

Operating frequency range(s) (OFR)				
F_L(kHz)	F_H(kHz)	Limit (kHz)		Result
127.83	127.97	$F_L \geq 100$	$F_H \leq 300$	Pass

Test Plots:

Operating frequency range(s) (OFR)





8 Transmitter H-field Requirements

8.1 Standard Applicable

The radiated H-field is defined in the direction of maximum field strength under specified conditions of measurement.

The H-field limits are provided in Table 3.

They have been specified for control of any radiated emissions within the OFR originating from the WPT system (power transmission and accompanying data communication).

The H-field limits in Table 3 are EU wide harmonised according to EC Decision 2013/752/EU [i.2]. Further information is available in CEPT/ERC/REC 70-03 [i.1].

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.

8.2 Test Procedure

Please refer to ETSI EN 303 417 subclause 6.2.2

8.3 Test Result

Pre-scan EUT X,Y,Z axis,and find the worst case at X axis.

Frequency (MHz)	Level (dBuA/m)@3m	C_3 Factor (dB)	Level (dBuA/m)@10m	Limit (dBuA/m)@10m	Result
0.13	20.65	31.2	-10.55	42	Pass

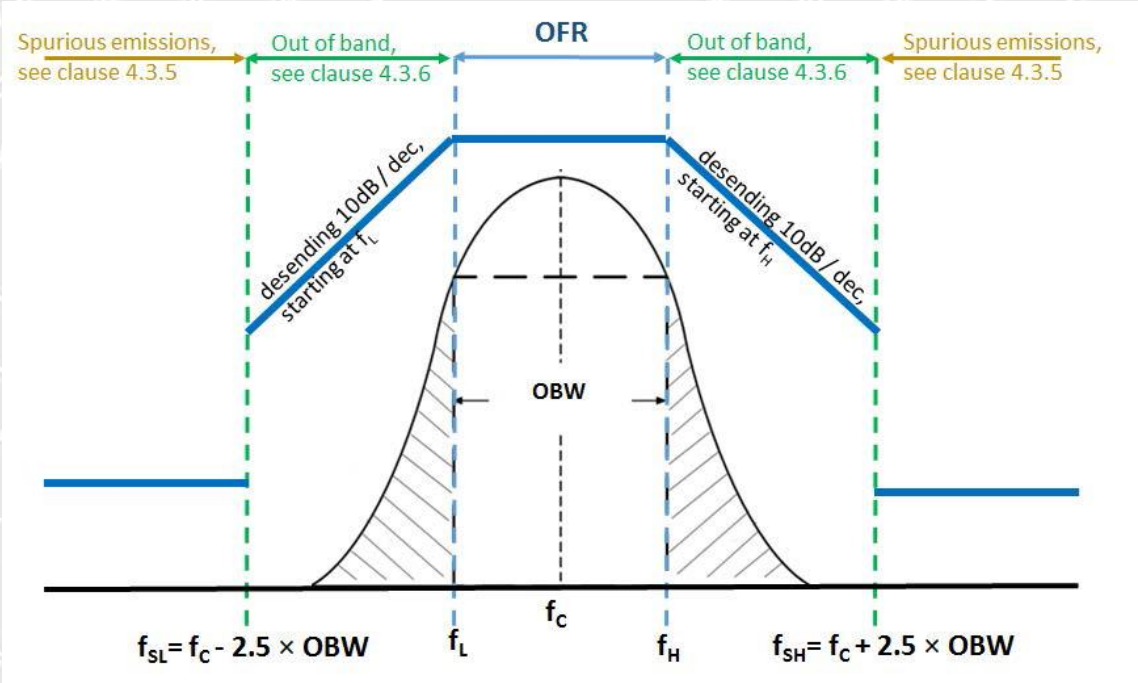
Note 1:$H_{3m}=H_{10m}+C_3$ refer to ETSI EN 300 330 Annex H.2

9 Transmitter Spurious Emissions

9.1 Standard Applicable

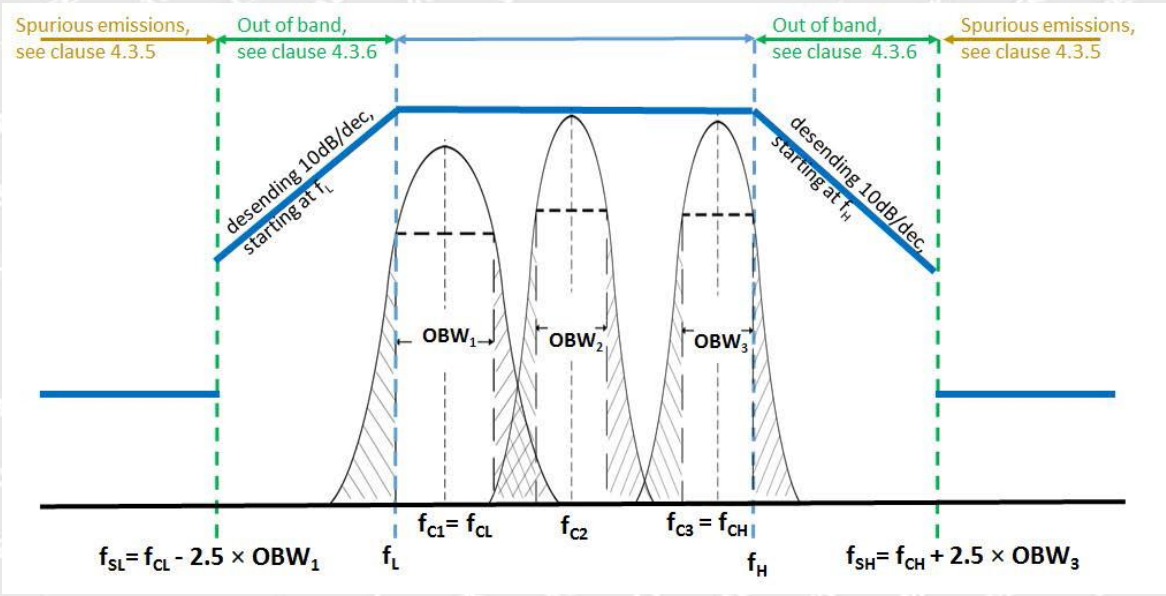
The transmitter spurious emissions for a single frequency system are to be considered in frequency ranges defined in Figure 4 ($f < f_{SL}$ and $f > f_{SH}$).

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



The transmitter spurious emissions for a multi frequency system (within one WPT frequency range from Table 2) are to be considered in frequency ranges defined in Figure 5 ($f < f_{SL}$ and $f > f_{SH}$).

Figure 5: Out of band and spurious domain of a multi - frequency system (during one WPT system cycle time).



Limit

The radiated field strength of spurious emissions below 30 MHz shall not exceed the generated H-field given in 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.		

The power of any radiated spurious emission between 30 MHz and 1 GHz shall not exceed the values given in 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.		

9.2 Test Procedure

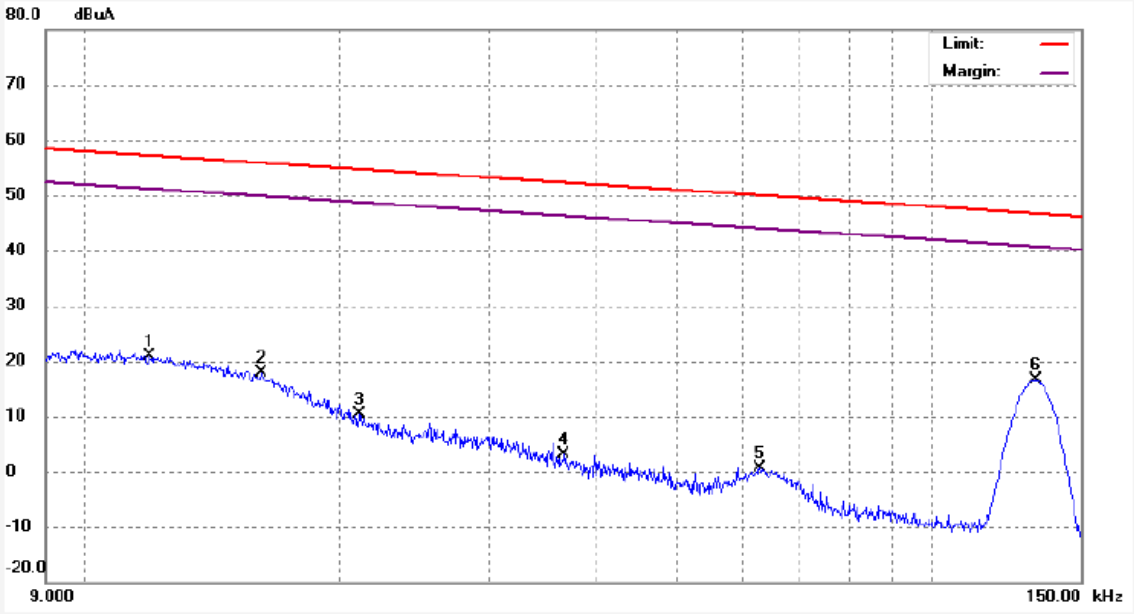
Please refer to ETSI EN 303 417 subclause 6.2.2 and subclause 6.2.3 for the measurement method

9.3 Test Result

Pre-scan EUT X,Y,Z axis,and find the worst case at X axis.

9kHz-150kHz Emission @3m

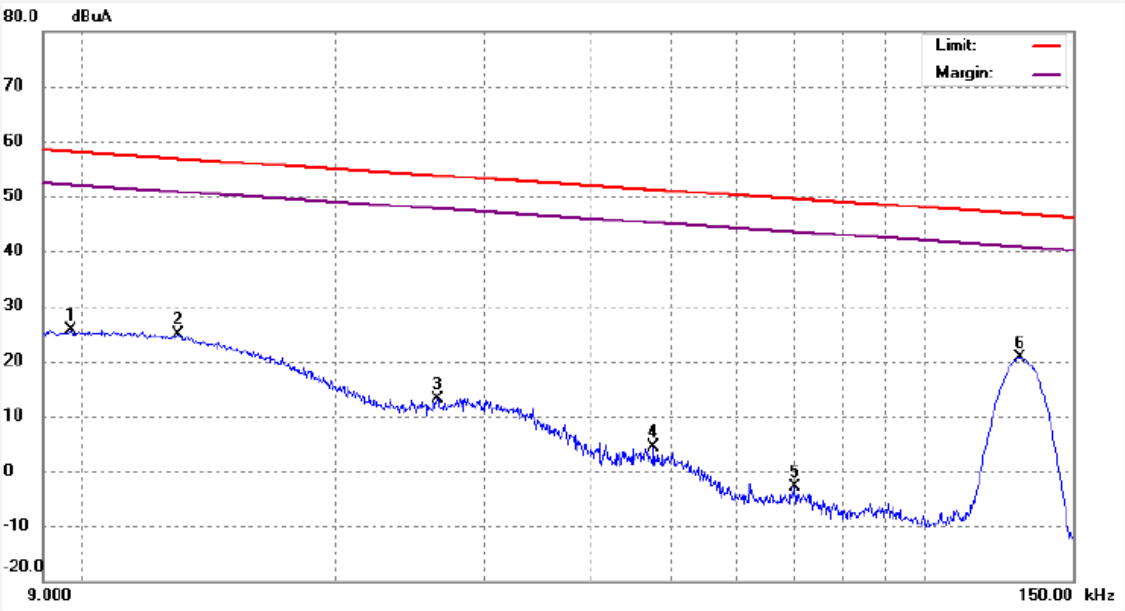
Vertical Polarization



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector	Remark
1	0.0119	22.97	-2.05	20.92	57.14	-36.22	peak	
2	0.0162	19.77	-2.01	17.76	55.81	-38.05	peak	
3	0.0211	12.38	-1.96	10.42	54.67	-44.25	peak	
4	0.0368	5.13	-2.01	3.12	52.26	-49.14	peak	
5	0.0627	2.97	-2.31	0.66	49.96	-49.30	peak	
6	0.1324	18.75	-2.24	16.51	46.69	-30.18	peak	

Note 1:$H_{3m}=H_{10m}+C_3$ refer to ETSI EN 300 330 Annex H.2

Horizontal Polarization

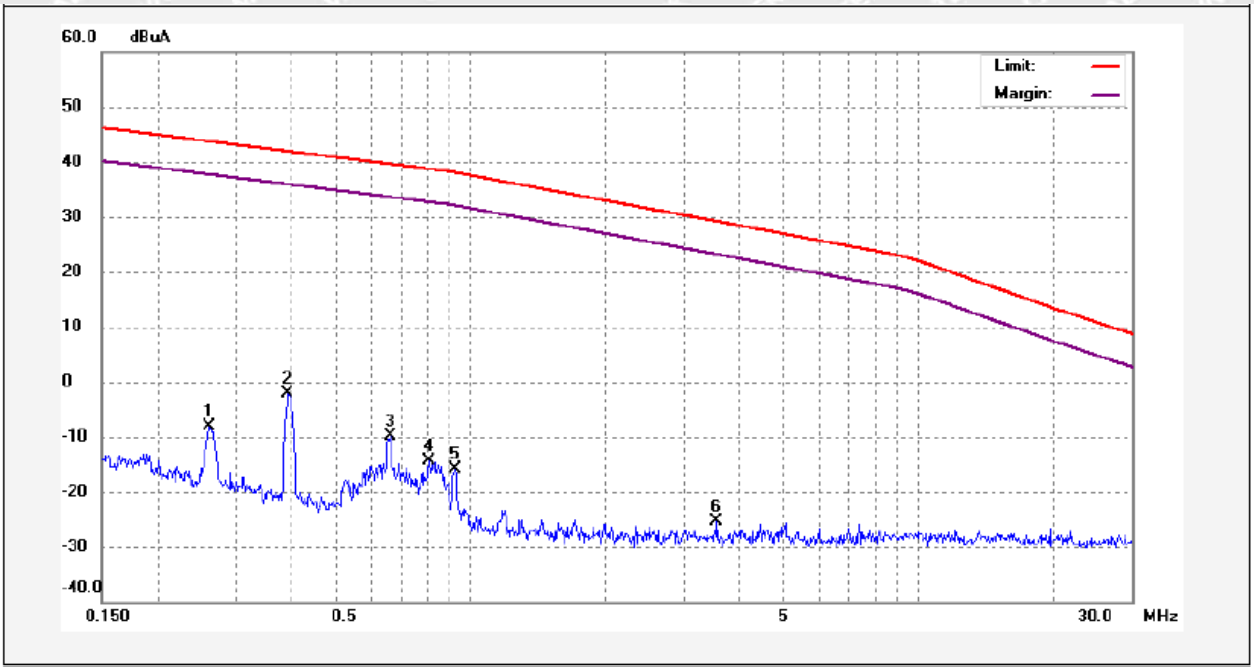


No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector	Remark
1	0.0097	27.71	-2.07	25.64	58.03	-32.39	peak	
2	0.0130	26.94	-2.04	24.90	56.76	-31.86	peak	
3	0.0264	15.14	-1.91	13.23	53.70	-40.47	peak	
4	0.0477	6.48	-2.22	4.26	51.14	-46.88	peak	
5	0.0702	-0.61	-2.34	-2.95	49.47	-52.42	peak	
6	0.1296	22.90	-2.25	20.65	46.78	-26.13	peak	

Note 1:$H_{3m}=H_{10m}+C_3$ refer to ETSI EN 300 330 Annex H.2

150kHz-30MHz Emission @3m

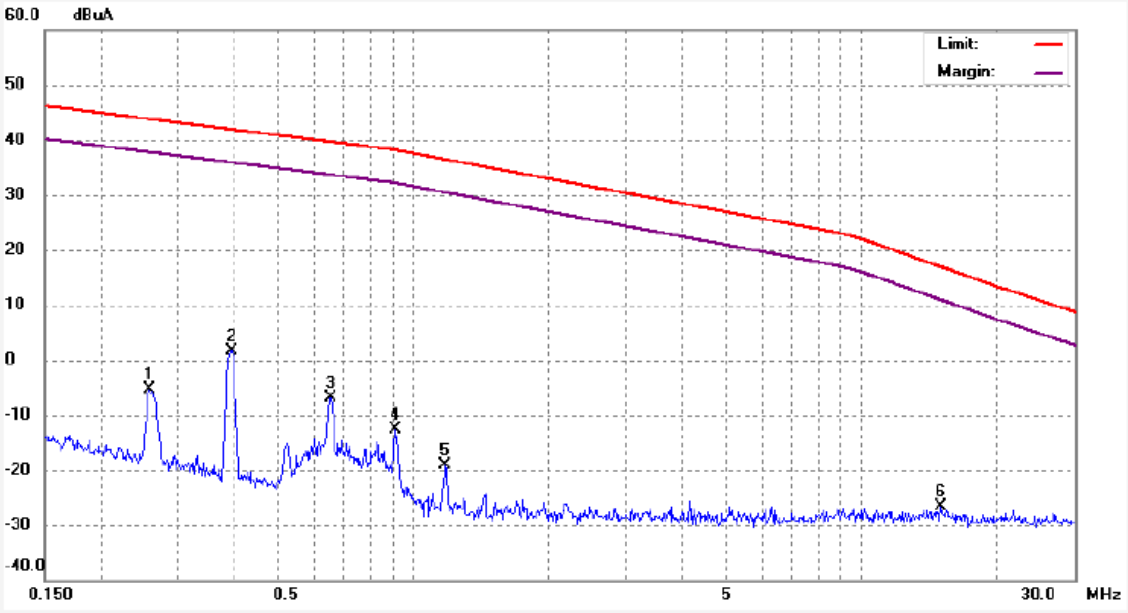
Vertical Polarization



No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector	Remark
1	0.2615	-5.91	-2.18	-8.09	43.67	-51.76	peak	
2	0.3914	0.01	-2.24	-2.23	41.88	-44.11	peak	
3	0.6613	-7.45	-2.46	-9.91	39.56	-49.47	peak	
4	0.8088	-11.80	-2.54	-14.34	38.67	-53.01	peak	
5	0.9233	-13.59	-2.36	-15.95	38.03	-53.98	peak	
6	3.5466	-22.89	-2.45	-25.34	29.15	-54.49	peak	

Note 1:$H_{3m}=H_{10m}+C_3$ refer to ETSI EN 300 330 Annex H.2

Horizontal Polarization

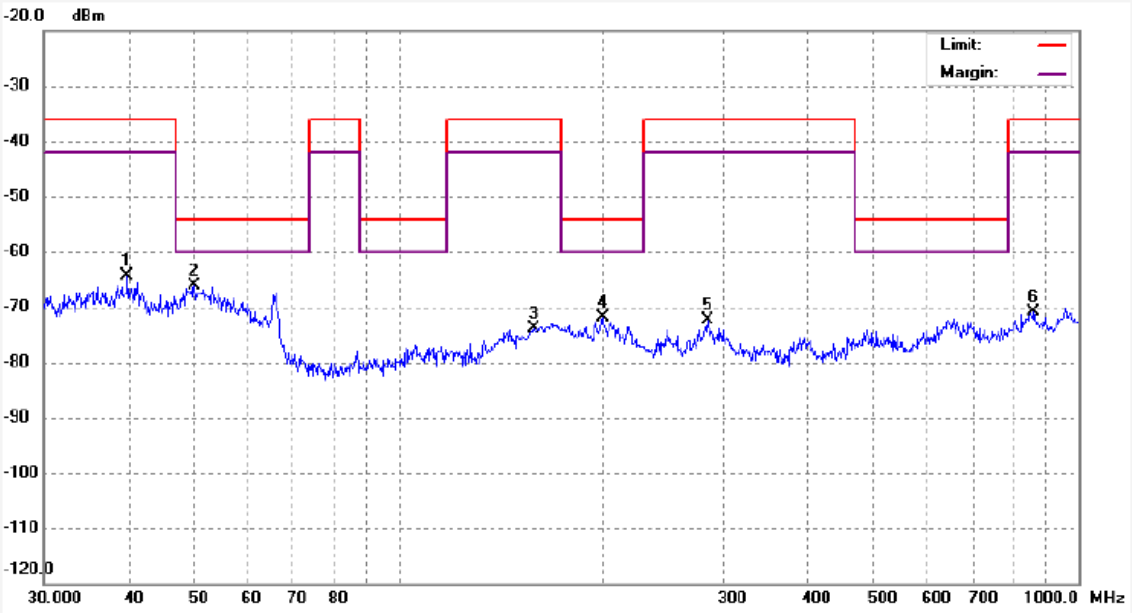


No.	Freq. (MHz)	Reading (dBuA)	Factor (dB)	Result (dBuA)	Limit (dBuA)	Margin (dB)	Detector	Remark
1	0.2575	-3.22	-2.18	-5.40	43.74	-49.14	peak	
2	0.3933	3.91	-2.24	1.67	41.86	-40.19	peak	
3	0.6543	-4.38	-2.45	-6.83	39.61	-46.44	peak	
4	0.9087	-10.36	-2.38	-12.74	38.14	-50.88	peak	
5	1.1781	-16.84	-2.26	-19.10	36.42	-55.52	peak	
6	15.0656	-24.21	-2.34	-26.55	16.92	-43.47	peak	

Note 1:$H_{3m}=H_{10m}+C_3$ refer to ETSI EN 300 330 Annex H.2

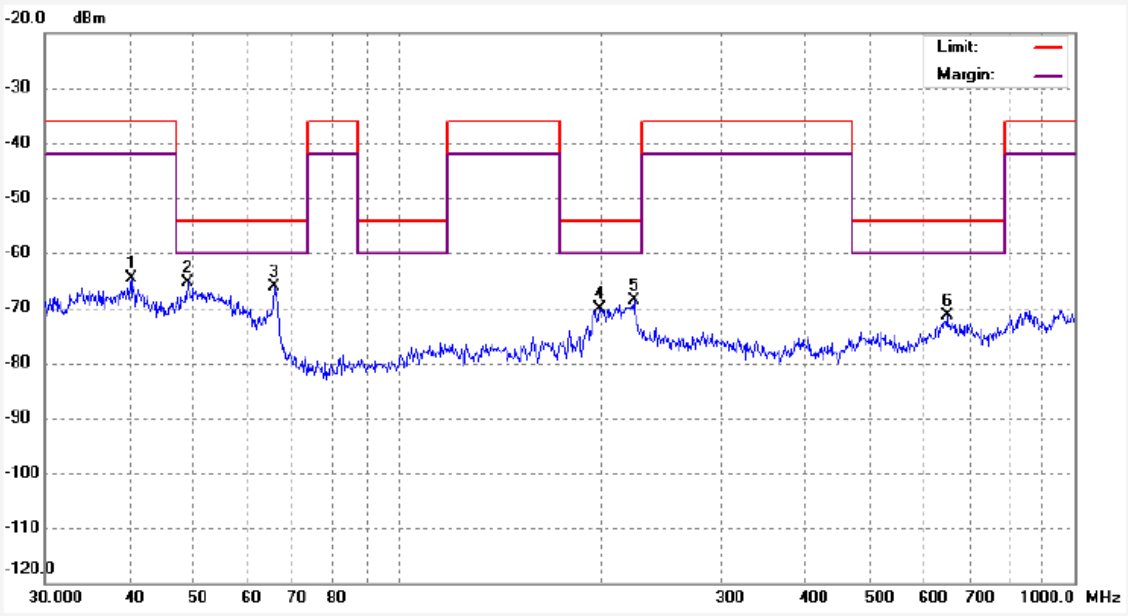
30MHz-1GHz Emission For TX

Vertical Polarization



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Remark
1	39.8542	-89.80	25.36	-64.44	-36.00	-28.44	peak	
2	50.0566	-91.94	25.87	-66.07	-54.00	-12.07	peak	
3	158.1123	-94.43	20.64	-73.79	-36.00	-37.79	peak	
4	199.2855	-98.88	26.89	-71.99	-54.00	-17.99	peak	
5	284.9767	-98.49	26.08	-72.41	-36.00	-36.41	peak	
6	860.0351	-105.67	34.83	-70.84	-36.00	-34.84	peak	

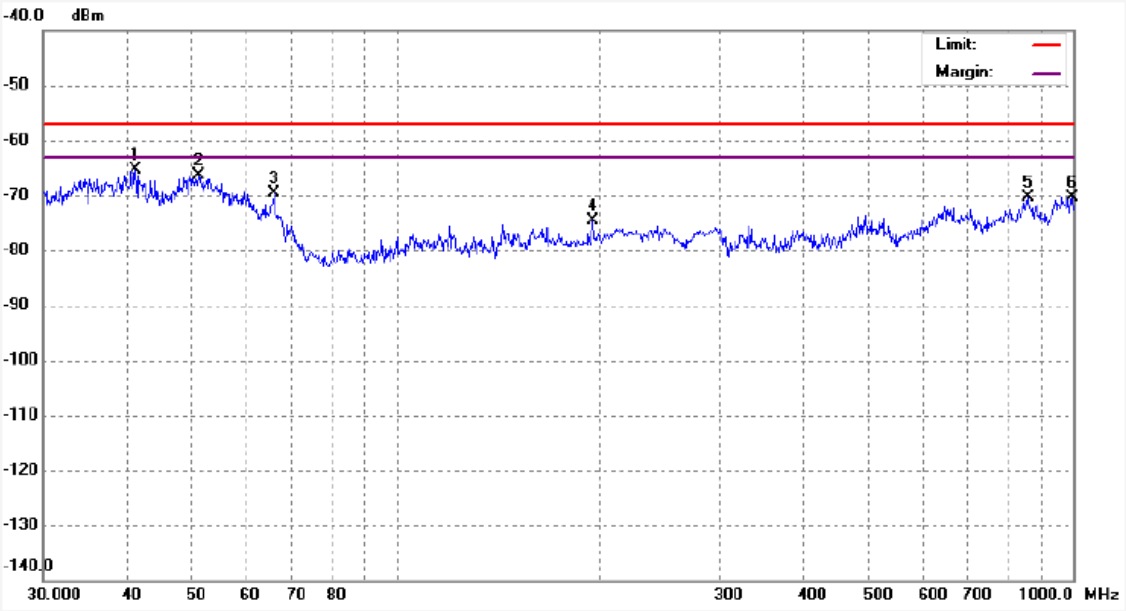
Horizontal Polarization



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Remark
1	40.2757	-89.85	25.27	-64.58	-36.00	-28.58	peak	
2	48.8429	-90.53	25.11	-65.42	-54.00	-11.42	peak	
3	65.5727	-83.91	17.88	-66.03	-54.00	-12.03	peak	
4	198.5880	-96.90	26.81	-70.09	-54.00	-16.09	peak	
5	222.9502	-96.97	28.32	-68.65	-54.00	-14.65	peak	
6	647.3856	-105.23	33.93	-71.30	-54.00	-17.30	peak	

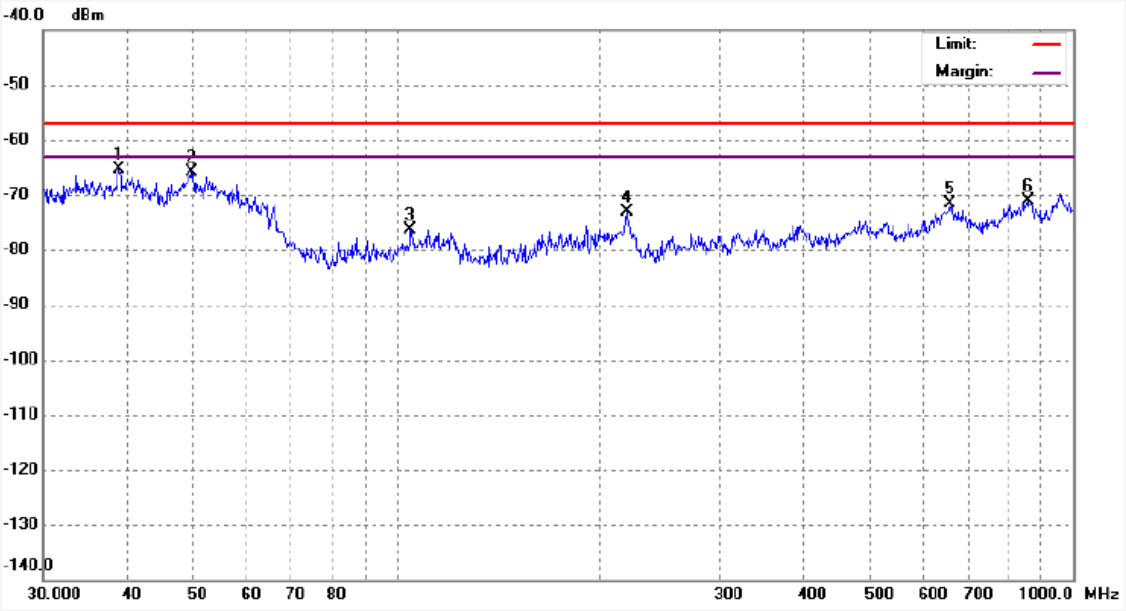
30MHz-1GHz Emission For RX

Vertical Polarization



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Remark
1	41.1320	-90.02	24.77	-65.25	-57.00	-8.25	peak	
2	50.9420	-92.08	25.61	-66.47	-57.00	-9.47	peak	
3	65.8030	-87.41	17.75	-69.66	-57.00	-12.66	peak	
4	195.1365	-101.17	26.44	-74.73	-57.00	-17.73	peak	
5	857.0247	-105.53	35.11	-70.42	-57.00	-13.42	peak	
6	996.4996	-104.07	33.74	-70.33	-57.00	-13.33	peak	

Horizontal Polarization



No.	Freq. (MHz)	Reading (dBm)	Factor (dB)	Result (dBm)	Limit (dBm)	Margin (dB)	Detector	Remark
1	38.8878	-90.21	24.88	-65.33	-57.00	-8.33	peak	
2	49.7068	-91.56	25.69	-65.87	-57.00	-8.87	peak	
3	104.9033	-93.18	16.92	-76.26	-57.00	-19.26	peak	
4	219.0753	-102.62	29.51	-73.11	-57.00	-16.11	peak	
5	656.5300	-105.27	33.74	-71.53	-57.00	-14.53	peak	
6	857.0247	-106.24	35.11	-71.13	-57.00	-14.13	peak	

Note1: Standby mode dose not produce any emission, which no emission been detected.

10 Transmitter Out of Band(OOB) Emissions

10.1 Standard Applicable

The WPT system out of band emissions are to be considered in frequency ranges defined in Figure 4 and Figure 5 (between f_{SL} and f_L and between f_H and f_{SH}).

Limit

The OOB limits are visualized in Figures 4 and 5; they are descending from the intentional limits from Table 3 at f_H/f_L with 10 dB/decade.

10.2 Test Procedure

Please refer to ETSI EN 303 417 subclause 6.2.2 for the measurement method

10.3 Test Result

No.	Frequency	Result@3m	C_3	Result@10	Limit@10	Margin	Remark
	(MHz)	(dBuA/m)	(dB)	(dBuA/m)	(dBuA/m)	(dB)	
1	F_{cL}-2.5 x OBW_1	18.73	31.2	-12.47	42	-54.47	peak
2	F_L	20.63	31.2	-10.57	42	-52.57	peak
3	F_H	20.35	31.2	-10.85	42	-52.85	peak
4	F_{cH}+2.5 x OBW_3	18.66	31.2	-12.54	42	-54.54	peak

Note 1:$H_{3m}=H_{10m}+C_3$ refer to ETSI EN300 330 Annex H.2

11 Receiver Blocking

11.1 Standard Applicable

This requirement applies to all WPT systems operation in Mode 1, Mode 2 and Mode 3.

Blocking is a measure of the capability of the receiver to receive a wanted signal without exceeding a given degradation due to the presence of an unwanted input signal at any frequencies other than those of the receiver spurious responses.

The test shall be performed in the relevant operational modes (see clause 4.2.3).

The wanted performance criteria from clause 4.2.2 shall be used as criterion for the receiver blocking tests.

Limit

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 = fc ± 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.			

The EUT shall achieve the wanted performance criterion, see clause 4.2.2, in the presence of the blocking signal.

11.2 Test Procedure

Please refer to ETSI EN 303 417 Sub-clause 6.2.3 for the measurement method

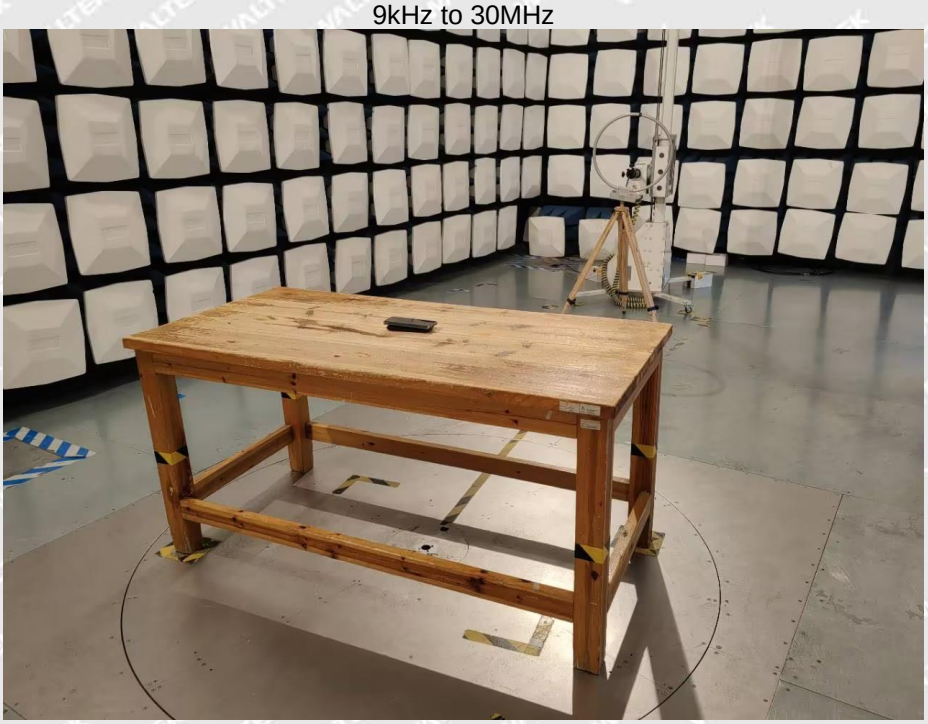
11.3 Test Result

Test Frequency	Blocking Signal(dBuA/m)	Performance Criterion	Result
fc -10 ×OFR	82	without degradation of performance	Pass
Fc+OFR	72	without degradation of performance	Pass
Fc	72	without degradation of performance	Pass
Fc+OFR	72	without degradation of performance	Pass
fc +10 ×OFR	82	without degradation of performance	Pass

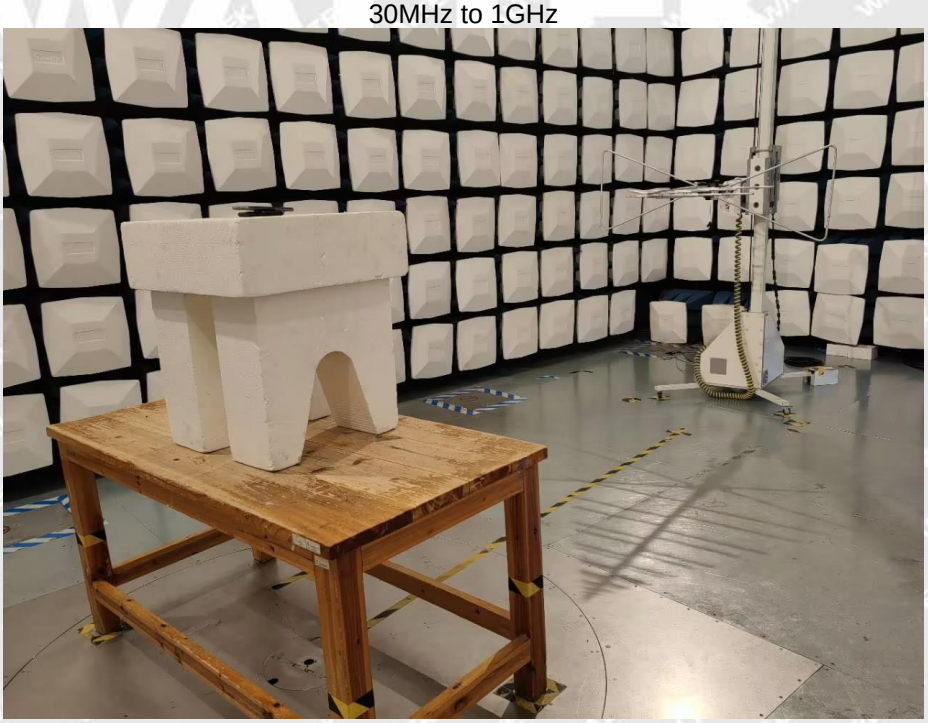
12 Photographs – Test Setup

12.1 Photograph – Spurious Emissions Test Setup

9kHz to 30MHz



30MHz to 1GHz



13 Photographs – EUT Constructional Details

Please refer to “ANNEX”.

======End of Report======

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检测
TESTING
CNAS L6478

TEST REPORT

Reference No.	:	WTF24F06129670W002
Applicant	:	Mid Ocean Brands B.V.
Address	:	7/F., Kings Tower, 111 King Lam Street, Cheung Sha Wan, Kowloon, Hong Kong
Manufacturer	:	114538
Address	:	---
Product Name	:	Wireless 10000 mAh Power bank
Model No.	:	MO9821
Test specification	:	EN IEC 62311:2020 EN 50665:2017
Date of Receipt sample	:	2024-06-06
Date of Test	:	2024-06-17
Date of Issue	:	2024-06-25
Test Report Form No.	:	WEW-62311A-01B
Test Result	:	Pass

Remarks:
The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of approver.

Prepared By:
Waltek Testing Group (Foshan) Co., Ltd.
Address: 1/F., Building 19, Sunlink Machinery City, Xingye 4 Road,
Guanglong Industrial Park, Chihua Neighborhood Committee, Chencun Town,
Shunde District, Foshan, Guangdong, China
Tel:+86-757-23811398 Fax:+86-757-23811381 E-mail:info@waltek.com.cn

Tested by:

Roy Hong

Approved by:

Danny Zhou

1 Test Summary

HEALTH			
Test	Test Method	Class / Severity	Result
RF Exposure	EN IEC 62311:2020 EN 50665:2017	-	Pass

Remark:

Pass Test item meets the requirement

N/A Not Applicable

2 Contents

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4.2 RF EXPOSURE TEST PROCEDURE 6
4.3 TEST RESULT OF RF EXPOSURE EVALUATION 6

3 General Information

3.1 General Description of E.U.T.

Product Name ..... : Wireless 10000 mAh Power bank

Model No. ..... : MO9821

Remark ..... : ---

Rating ..... : Micro Input: DC 5V/2A or DC 9V/2A
USB Output: DC5V/2.4A (Total)
Type C Input: DC 5V/2A or DC 9V/2A
Type C Output: DC 5V/2A or DC 9V/2A or DC 12V /1.5A
Wireless Output: DC5V/1A or DC 7.5V/1A or DC 9V/1.12 or DC 9V/1.66A

Battery Capacity ..... : 10000mAh/37Wh (Li-Polymer battery)

Adapter Model..... : ---

3.2 Technical Specification

Frequency Bands ..... : 110-205kHz

Radiated H-Field ..... : 20.65 dBuA/m(@3m)

Antenna installation ..... : Coil Antenna

3.3 Standards Applicable

The tests were performed according to following standards:

EN IEC 62311:2020	Assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz)
EN 50665:2017	Generic standard for assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz - 300 GHz).

4 Health Requirements

According to Council Recommendation: the criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation.

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

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (μT)	Equivalent plane wave power density Seq (W/m2)
0-1 Hz	-	3.2×10^4	4×10^4	-
1-8 Hz	10000	$3.2\times10^4/f^2$	$4\times10^4/f^2$	-
8-25 Hz	10000	4000/f	5000/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	0.095	2
400-2000 MHz	$1.375\ f^{1/2}$	$0.0037\ f^{1/2}$	$0.0046\ f^{1/2}$	f/200
2-300 GHz	61	0.16	0.2	10

Note:

1. f as indicated in the frequency range column.
2. For frequencies between 100 kHz and 10 GHz, Seq, E2, H2 and B2 are to be averaged over any six-minute period.
3. For frequencies exceeding 10 GHz, Seq, E2, H2 and B2 are to be averaged over any 68 / f1.05 minute period (f in GHz).
4. No E-field value is provided for frequencies<1 Hz, which are effectively static electric fields. For most people the annoying perception of surface electric charges will not occur at field strengths less than 25 kV/m. Spark discharges causing stress or annoyance should be avoided.

4.1 RF Exposure Evaluations

$$E = \sqrt{30PG_{(\theta,\phi)}} / r$$

Antenna gain in numeric (G): 10^ (Antenna gain in dBi /10)

Distance from EUT to Human (r): 0.20 m

4.2 RF Exposure test procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.3 Test Result of RF Exposure Evaluation

The antenna of the product, under normal use condition is at least 20 cm away from the body of the user. Warning statement to the user to keeping at least 20 cm separation distance and the prohibition of operating to a person has been printed on the user´s manual. So, this product under normal use is located on electromagnetic far field between the human body.

Frequency (kHz)	Radiated H-Field (dBμA/m)	Radiated H-Field (A/m)	Limit (A/m)	Result
130	25.37	0.00001078	5	Pass
Remark: For details of Radiated H-Field refer to report No. WTF24F06129670W001.				

Since average output power at worse case is: 0.00001078 A/m which cannot exceed the exempt condition, 5A/m specified in EN IEC 62311. It is deemed to full fit the requirement of RF exposure basic restriction specified in EC Council Recommendation (1999/519/EC).

======End of Report======